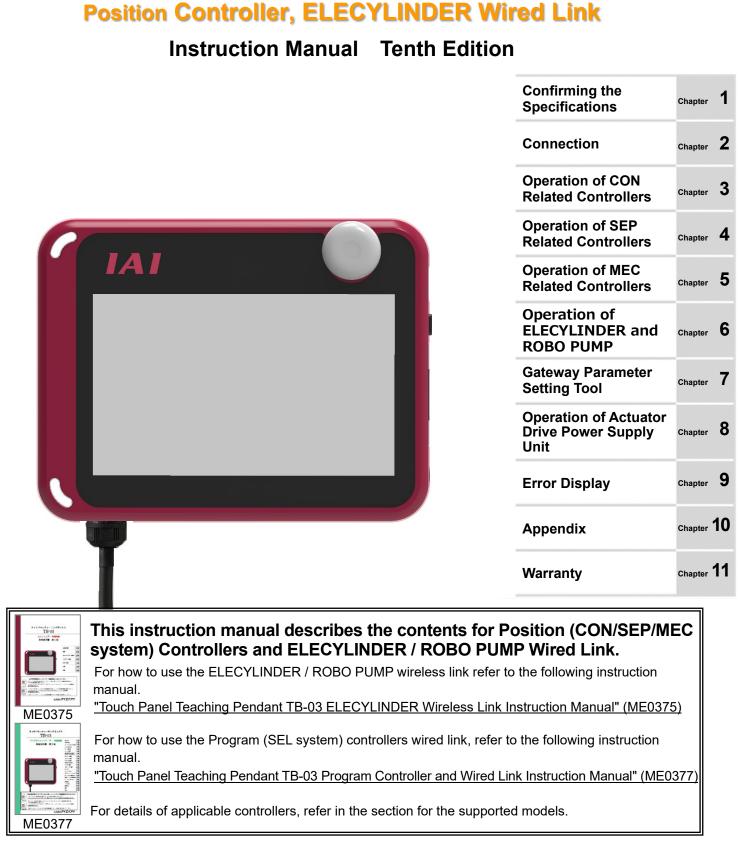
# Touch Panel Teaching Pendant TB-03



## **IAI** Corporation



### Please Read Before Use

Thank you for purchasing our product.

This instruction manual explains the handling methods, structure and maintenance of this product, providing the information you need in order to use the product safely.

Before using the product, be sure to read this manual and fully understand the contents explained herein to ensure safe use of the product.

Please downloaded the user's manual from our website.

You can download it free of charge. User registration is required for the first time downloading. URL : www.iai-robot.co.jp/data\_dl/CAD\_MANUAL/

When using the product, print out of the necessary portions of the relevant manual, or please display it on your computer, tablet terminal, etc. so that you can check it immediately.

After reading the instruction manual, keep it in a convenient place so that whoever is handling the product can refer to it quickly when necessary.

## [Important]

- This instruction manual is an original document dedicated for this product.
- This product cannot be used in ways not shown in this instruction manual. IAI shall not be liable for any result whatsoever arising from the use of the product in any other way than what is noted in the manual.
- The information contained in this instruction manual is subject to change without notice for the purpose of product improvement.
- If any issues arise regarding the information contained in this instruction manual, contact our customer center or the nearest sales office.
- Use or reproduction of this instruction manual in full or in part without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the text are registered trademarks.



## Supported Models

This Instruction Manual is for the Position (CON/SEP/MEC system) Controllers and ELECYLINDER / ROBO PUMP Wired Link.

For details on handling the ELECYLINDER / ROBO PUMP wireless link, refer to the separate "Touch Panel Teaching Pendant TB-03 ELECYLINDER Wireless Link Instruction Manual (ME0375)".

For details on handling the program controller (ASEL, PSEL, SSEL, XSEL, MSEL, TT/TTA, RSEL) wired link, refer to the separate "Touch Panel Teaching Pendant TB-03 Program Controller Wired Link Instruction Manual (ME0377)".

#### 1. Supported Model List

Refer to [2. List of Gateway Parameter Setting Tool Supported Models] for the supported models to the gateway parameter setting tool.

Controller model	Supported from version
ERC2 (Note 1)	V1.80
ERC3	V1.80
ACON	V1.80
DCON	V1.80
PCON (Note 5)	V1.80
SCON (Note 3)	V1.80
SCON2	V4.10
MCON (Note 2)	V1.80
MSCON	V1.80
RCP6S	V1.80
RCM-P6□C	V1.80
ELECYLINDER	Refer to Next Page

Controller model	Supported from version
ASEP	V1.80
DSEP	V1.80
PSEP	V1.80
MSEP	V1.80
AMEC	V1.80
PMEC	V1.80
RACON	V1.80
RPCON	V1.80
RCON (Note 4)	V2.10
REC	V2.70
ADTB-PEC	V4.40
ROBO PUMP	V4.70

Note1: Only ERC2 models with 4904 or higher stamped on the Serial No. sticker can be connected.

	Information on sticker	
I/O type	Not supported	Supported
NP	NP U5 M	NP T1 <b>4904, 4905, 6302</b>
PN	PN U3 M	PN T1 <b>4904, 4905, 6302</b>

Note that touch panel teaching pendants can be connected to ERC2 controllers of SE type via a SIO converter regardless of their version.

Note2: EtherCAT Motion of MCON-C/CG is applicable in V3.00 and later.

- Note3: EtherCAT Motion of SCON-CB/CGB is applicable in V3.00 and later.
- Note4: SSCNET III/H, MECHATROLINK-III and EtherCAT Motion of RCON are applicable in V3.10 and later.
- Note5: PCON-CBP/CGBP is applicable in V3.50 and later.

#### **ROBO** CYLINDER -

In the table below shows the models that support ELECYLINDER.

ELECYLINDER Type	Supported from version
$ \begin{array}{l} EC-S6^{\Box},  EC-S7^{\Box},  EC-R6^{\Box},  EC-R7^{\Box},  EC-S6^{\Box}CR,  EC-S7^{\Box}CR, \\ EC-S6^{\Box}H,  EC-S7^{\Box}H,  EC-RR6^{\Box},  EC-RR7^{\Box},  EC-R7^{\Box}W, \\ EC-RP4^{\Box},  EC-GS4^{\Box},  EC-GD4^{\Box},  EC-TC4^{\Box},  EC-TW4^{\Box}, \\ EC-RR6^{\Box}H,  EC-RR7^{\Box}H, \\ EC-S6^{\Box}AH,  EC-RR7^{\Box}AH,  EC-RR6^{\Box}AH,  EC-R71^{\Box}AH, \\ EC-S3^{\Box},  EC-S4^{\Box},  EC-S6^{\Box}R,  EC-S70^{\Box}R,  EC-S71^{\Box}AHR,  EC-RR3^{\Box},  EC-RR6^{\Box}R,  EC-RR71^{\Box}R, \\ \\ EC-RR6^{\Box}AHR,  EC-RR71^{\Box}AHR,  EC-S31^{\Box}CR,  EC-S41^{\Box}CR, \\ \\ EC-R76^{\Box}W,  EC-RR71^{\Box}W,  EC-B6S,  EC-B7S, \\ \\ \\ EC-R76^{\Box}W,  EC-RR71^{\Box}W,  EC-B6S,  EC-B7S, \\ \\ \\ \\ EC-R70^{\Box}H,  EC-R10^{\Box}R,  EC-R13^{\Box}R,  EC-S15ME, \\ \\ \\ \\ \\ \\ \\ $EC-R10^{\Box}M,  EC-R10^{\Box}M,  EC-S15S L} \\ \end{array} \right$	V3.40
EC-RR6X AH, EC-RR7X AH, EC-WS10 , EC-WS12, EC-S6 AHCR, EC-S7 AHCR, EC-GD5, EC-RP5, EC-TC5, EC-TW5, EC-GRB8M, EC-GRB10M, EC-GRB13M, EC-GRB13L, EC-S10, EC-S10X	V3.50
EC-S3 A, EC-S4 A, EC-S6 A, EC-S7 A, EC-S6X AH, EC-S7X AH, EC-WS10 R, EC-WS12 R, EC-WS10 CR, EC-WS12 CR, EC-ST11 E, EC-SRG11 EC-SRG15 C, EC-SL3 EC-GDS3 EC-GDB3 EC-T3	V3.70
EC-S6□D, EC-S7□D, EC-S6□W, EC-S7□W, EC-RTC18M	V3.80
EC-S18□, EC-S18X□	V3.90
EC-S3□AR, EC-S4□AR, EC-S6□AR, EC-S7□AR, EC-S3□ACR, EC-S4□ACR, EC-S6□ACR, EC-S7□ACR, EC-S6X□AHR, EC-S7X□AHR, EC-S6X□AHCR, EC-S7X□AHCR	V4.00
EC-B8S, EC-B8SS	V4.10
EC-RR8□, EC-RR10□, EC-RR8□R, EC-RR10□R, EC-S8□, EC-S8□A, EC-S8X□A, EC-S8□R, EC-S8□AR, EC-S8X□AR, EC-S8□CR, EC-S8□ACR, EC-S8X□ACR	V4.11
EC-GRC6M, EC-GRC7□, EC-GRST3□, EC-GRST6□, EC-GRST7□ EC-GRBP8M, EC-GRBP10M, EC-GRBP13□ EC-GRBP8MW, EC-GRBP10MW, EC-GRBP13□W	V4.20
EC-GRTR14□, EC-WER1, EC-WEGR2	V5.00

The table above shows the versions available for operation in any way of connection. Make sure to use a version started to support or later. (There should be some features not available to use in versions before supporting.)

\* The versions of the digital speed controller equipped type (EC-D ~ ) should be the same as those for the non equipped type.



#### 2. List of Gateway Parameter Setting Tool Supported Models

Shown below are the models supporting the gateway parameter setting tool.

Controller model	Supported from version
MSEP-C	V1.80
MCON-C/CG (Note 6)	V1.80
RCP6S Gateway	V1.80
RCON (Note 7)	V2.10
REC	V2.70

Note 6 SSCNET III/H, MECHATROLINK-III and EtherCAT Motion of MCON-C/CG are not applicable.

- Note 7 SSCNET III/H, MECHATROLINK-III and EtherCAT Motion of RCON-GW/GWG are applicable in V3.10 and later.
- Note PLC features equipped types (MSEP-LC, MCON-LC/LCG and RCON-LC/LCG) are not applicable.

#### 3. Version upgrade

How to version upgrade, refer to [10.2 Teaching Update].



## Table of Contents

Sat	ety Gu	ıide⋯		1
Ha	ndling	Precau	tions	8
Inte	ernatio	nal Sta	ndards Compliances ······	9
1	Confi	rming t	ha Spacifications	1 1
1.		Droduc	he Specifications ······	1 -1
	1.1	1.1.1	Component (excluding options)·····	
		1.1.1	Instruction manual related to this product	
		1.1.2	How to Read Model Nameplate	1 1
		1.1.3	How to Read Product Number	1 1
	1.2	Confirm	ning the Specifications	 1_6
	1.2	1.2.1	Basic Specification ······	····· 1-6
		1.2.2	Environmental Specifications	····· 1-7
	1.3	Explan	ation of Each Part.	1-8
		1.3.1	Front and Side Surface	1-8
		1.3.2	Back	1-9
		1.3.3	AC Adapter Joint	1-9
		1.3.4	Cable Joint	
	1.4	How to	Set in/out SD Memory Card ·····	····· 1 <b>-</b> 11
		1.4.1	How to Insert SD Memory Card	····· 1 <b>-</b> 11
		1.4.2	How to Take out SD Memory Card	·····1 <b>-</b> 12
	1.5	How to	Set in/out Battery Unit	·····1-13
		1.5.1	How to Take Out Battery Unit	·····1 <b>-</b> 13
		1.5.2	How to Attach Battery Unit	·····1-14
	1.6		al Dimensions	
	1.7	Life of	Touch Panel LCD	1-15
	1.8	Built-in	Battery (Life of Battery and Replacement of Battery)	1-15
	1.9		apter	1-16
		1.9.1	Common Specifications for Adapter	1-16
	1 10	1.9.2	AC adapter appearance	1 10
	1.10		Grip Belt (GRP-2)	1 10
		1.10.1	Strap (STR-1)	1 18
		1.10.2	Spiral Cord (SIC-1)······	1-10
	1.11	Δctuate	or Drive Power Supply Unit for Teaching Pendant	1_20
	1.11	1 11 1	Feature	·····1-20
			How to Read Product Number ·····	
		1.11.3	Basic Specification	·····1-22
		1.11.4	External Dimensions	1-23
		1.11.5	Explanation of Each Part	·····1-24
		1.11.6	Feature of Each Part and Pin Assignment on Connector	·····1-25
		1.11.7	Joining Unit	1-30
		1.11.8	Accessaries for ADTB-PEC	·····1 <b>-</b> 32
	1.12	Mainte	nance Parts	·····1 <b>-</b> 34
		1.12.1	Battery Unit (AB-7) (Enclosed to Main Unit) ·····	·····1 <b>-</b> 34
		1.12.2	Touch Pen (TCH-TB03) (Enclosed to Main Unit, For purpose of lost and	
			damaged)	1-34
	1.13	Specifi	cations Related to Battery Charge	1-35
		1.13.1	Types of Charger Mode	1-35
		1.13.2	Caution Related to Battery Charging	1-35
r	Conn	oction		
2.		Conne	cting with the Controller ·····	····· Z-1
	2.1	Conne		····· Z-1

		ROBO	
$\sim$			
	2.2	ELECYLINDER / Position Controller Cable ·····	··· 2-2
	2.3	Connection of Actuator Driving Power Supply Unit	··· 2-3
		2.3.1 Connecting with ELECYLINDER	··· 2-3
		2.3.2 Connecting with ROBOCYLINDER	··· 2-3
	2.4	Actuator Drive Power Supply Unit Connection Cable	··· 2-5
		2.4.1 EC Power Supply Connectivity Cable: CB-ADTB-PW RB	··· 2-5
		2.4.2 EC Power Supply + TB-03 Integrated Connectivity Cable:	
		CB-ADTB-PWTB	··· 2-5
		2.4.3 RCP Connection Cable: CB-ADPC-MPA	··· 2 <b>-</b> 5
		2.4.4 RCP Connection Conversion Cable: CB-CAN-AJ002	
		2.4.5 RCP Connection High-Thrust Conversion Cable: CB-ADTBF-AJ002	2-5
		2.4.6 List of Cables for RCP Connection of Actuator Drive Power Supply Unit	··· 2-6
	2.5	Actuator Drive Power Supply Unit Power Supply Cable	··· 2-7
		2.5.1 100V AC Power Supply Cable (Model: KWD-UJ-2MBS) ······	··· 2-7
		2.5.2 200V AC Power Supply Cable (Model: CB-APMEC-PW020-TM)	··· 2-7
3.	Opera	ation of CON Related Controllers	·· 3-1
•.	3.1	Displayed Language Change	··· 3-1
	3.2	Operating Menu	3-3
	3.3	Initial Screen	3-5
	3.4	Changing Operating Axis	
	3.5	Menu Selection	3-7
	3.6	Position Edit Guide	
	3.7	I/O Control Guide	
	3.8	Easy Setting	3_15
	3.9	Monitor ·····	3_17
	0.0	3.9.1 Monitor Screen	
		3.9.2 Maintenance Information Screen ······	
		3.9.3 Time Setting Screen for Controller	
	3.10	Position Edit	2 11
	5.10	3.10.1 Position Data	
		3.10.1 Position Data 3.10.1 Additional Setting Items for Controllers Applicable for	
		Position Data Comment Input	2 5 2
		3.10.3 Entering New Data	
		3.10.3 Entering New Data	2 50
	0.44	Parameter Edit	
	3.11		
	3.12		
		3.12.1 Jog/Inching Operation	
		3.12.2 Position Movement Operation	
		3.12.3 Direct Movement Operation	
	0.40	3.12.4 I/O Test	
	3.13	TP Operation Mode ·····	
	3.14	Alarm List	
	3.15	Controller Reset	
	3.16	Other Settings	
		3.16.1 Parameter Initialization	
		3.16.2 Axis Number Change	
		3.16.3 Load Cell Calibration	
		3.16.4 Load Cell Inactivation	
		3.16.5 I/O Customizing	
		3.16.6 Encorder cable length setting	
	<b>•</b> · -	3.16.7 Switching Drive Mode	
	3.17	Information Display	
		3.17.1 Display Screen for Each Type of Data	
		3.17.2 Axis Name Edit	3-81
	3.18	Environment Setting	
	3.19	Data Backup	
		3.19.1 Data Backup of the Controller	3-97
		3.19.2 Restore to Controller	3-99

## **ROBO** CYLINDER ———

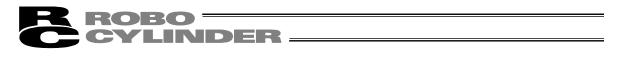
	3.20	Smart Tuning Function 3.20.1 Setting Operation for Max. Acceleration/Deceleration for Indicated Transported Load and Velocity	
		3.20.2 Operation to Automatically Set Velocity and Acceleration Speed from	
		Moving Distance	···· 3-104
	3.21	Maintenance Parts List ······	
		3.21.1 Check Cable Model Number, Controller Parts	··· 3-107
		3.21.2 Schematic Display and Parts List Display	3-109
	3.22	Easy Programming	···· 3-110
	3.23	Pulse Train Mode Setting ······	3-114
		3.23.1 [Configuration setting] ······	3-115
		3.23.2 [Electric gear setting]	3-116
		3.23.3 [Feedback pulse configuration setting]·····	3-116
		3.23.4 [Feedback Pulse Electric Gear Setting]	3-117
	3.24	Offboard Tuning ······	3-118
		3.24.1 For Controllers Applicable for Gain Calculation	
		(such as servomotor type controllers)······	3-119
		3.24.2 For Controllers Not Applicable for Gain Calculation	
		(such as pulse motor type controllers)	3-122
	3.25	(such as pulse motor type controllers) ······	3-124
	0.20	3.25.1 Servo Monitor (Waveform Display) Screen ······	3-126
		3 25 2 Sampling Period Setting	3-128
		3.25.2 Sampling Period Setting 3.25.3 Trigger Setting	3_120
		3.25.4 Operation to Save Data	2 120
	3.26	Press Program	
	3.20	3.26.1 Press Program Monitor	2 4 2 5
		3.26.2 Press Program Edit	0 440
		3.26.2 Press Program Edit	
		3.26.3 Press Program Test Run	3-155
		3.26.4 SD Memory Card	3-164
	3.27	Drive Recorder Feature	3-171
		3.27.1 Graph Display (Drive Recorder Screen)	···· 3-171
		3.27.2 Data Display Feature at Alarm Generation (Data at Occurrence)	
4.		ration of SEP Related Controllers	4-1
4.	4.1	Transition of Operating States	····· 4-1 ····· 4-1
4.		Transition of Operating States ······	····· 4-1 ····· 4-1 ····· 4-2
4.	4.1	Transition of Operating States ····· Operating Menu ······ Initial Screen ·····	····· 4-1 ····· 4-1 ····· 4-2 ····· 4-4
4.	4.1 4.2	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ·····	····· 4-1 ····· 4-1 ···· 4-2 ···· 4-2 ···· 4-4 ···· 4-5
4.	4.1 4.2 4.3	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ·····	····· 4-1 ····· 4-1 ···· 4-2 ···· 4-4 ···· 4-4 ···· 4-5 ···· 4-6
4.	4.1 4.2 4.3 4.4	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ····· Menu Selection ·····	····· 4-1 ····· 4-1 ····· 4-2 ····· 4-4 ···· 4-4 ···· 4-5 ···· 4-6 ···· 4-7
4.	4.1 4.2 4.3 4.4 4.5	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ·····	····· 4-1 ····· 4-1 ····· 4-2 ····· 4-4 ···· 4-4 ···· 4-5 ···· 4-6 ···· 4-7
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ····· Menu Selection ·····	····· 4-1 ····· 4-2 ····· 4-2 ····· 4-4 ····· 4-5 ····· 4-6 ···· 4-7 ···· 4-8
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ····· Monitor ····· Information ·····	····· 4-1 ····· 4-2 ····· 4-2 ····· 4-2 ····· 4-2 ····· 4-2 ····· 4-4 ····· 4-5 ····· 4-6 ····· 4-6 ····· 4-7 ····· 4-8 ····· 4-10
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ····· Monitor ····· Information ····· Alarm List ·····	····· 4-1 ····· 4-2 ···· 4-2 ···· 4-4 ···· 4-5 ···· 4-6 ···· 4-7 ···· 4-8 ···· 4-10 ···· 4-12
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ····· Menu Selection ····· Monitor ····· Information ····· Alarm List ··· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······	····· 4-1 ····· 4-2 ···· 4-2 ···· 4-4 ···· 4-5 ···· 4-5 ···· 4-5 ···· 4-6 ···· 4-7 ···· 4-8 ···· 4-10 ···· 4-12 ···· 4-12 ···· 4-14
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ····· Monitor ····· Information ····· Alarm List ···· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······· I/O Setting (Setting of Operation Parameters, Etc.) ·······	····· 4-1 ····· 4-2 ···· 4-2 ···· 4-4 ···· 4-5 ···· 4-5 ···· 4-5 ···· 4-6 ···· 4-7 ···· 4-8 ···· 4-10 ···· 4-12 ···· 4-12 ···· 4-14
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ······ Monitor ······ Information ······ Alarm List ····· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······· I/O Setting (Setting of Operation Parameters, Etc.) ········ Parameters (Parameter data editing, Ax. No. set., Parameter initial.,	····· 4-1 ···· 4-2 ···· 4-4 ···· 4-5 ···· 4-6 ···· 4-5 ···· 4-6 ···· 4-7 ···· 4-8 ···· 4-10 ···· 4-12 ···· 4-14 ···· 4-38
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ····· Monitor ····· Information ····· Alarm List ····· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······· I/O Setting (Setting of Operation Parameters, Etc.) ······· Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) ······	····· 4-1 ···· 4-2 ···· 4-2 ···· 4-4 ···· 4-5 ···· 4-6 ···· 4-5 ···· 4-6 ···· 4-5 ···· 4-6 ···· 4-7 ···· 4-8 ···· 4-10 ···· 4-12 ···· 4-12 ···· 4-14 ···· 4-38 ···· 4-9
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ····· Monitor ····· Information ····· Alarm List ····· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······ I/O Setting (Setting of Operation Parameters, Etc.) ······ Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) ····· Test (I/O Tests, Operation Tests for Axis Movement) ······	····· 4-1 ···· 4-2 ···· 4-4 ···· 4-5 ···· 4-6 ···· 4-5 ···· 4-6 ···· 4-7 ···· 4-8 ···· 4-10 ···· 4-12 ···· 4-12 ···· 4-14 ···· 4-38 ···· 4-49 ···· 4-59
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ······ Monitor ······ Information ······ Alarm List ····· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······· I/O Setting (Setting of Operation Parameters, Etc.) ······· Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) ······ Test (I/O Tests, Operation Tests for Axis Movement) ······· Environment Setting ······	4-1 4-2 4-4 4-5 4-6 4-7 4-8 4-10 4-12 4-12 4-14 4-38 4-49 4-59 4-63
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13	Transition of Operating States ····· Operating Menu ····· Initial Screen ····· Initial Setting ····· Changing Operating Axis ···· Menu Selection ······ Monitor ······ Information ······· Alarm List ····· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······· I/O Setting (Setting of Operation Parameters, Etc.) ········ Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) ······ Test (I/O Tests, Operation Tests for Axis Movement) ······· Environment Setting ······	····· 4-1 ···· 4-2 ···· 4-4 ···· 4-5 ···· 4-6 ···· 4-7 ···· 4-8 ···· 4-10 ···· 4-12 ···· 4-14 ···· 4-38 ···· 4-49 ··· 4-59 ··· 4-63 ··· 4-71
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14	Transition of Operating States ····· Operating Menu Initial Screen Initial Setting Changing Operating Axis ···· Menu Selection Monitor Information Alarm List ····· Position Setting (Setting of Position-related Data, Jog/Inching Operation) ······· I/O Setting (Setting of Operation Parameters, Etc.) Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) Test (I/O Tests, Operation Tests for Axis Movement) Environment Setting Data Backup 4.15.1 Data Backup of the Controller	4-1 4-2 4-4 4-5 4-6 4-7 4-8 4-10 4-12 4-14 4-38 4-49 4-59 4-63 4-71 4-72
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14 4.15	Transition of Operating States Operating Menu Initial Screen Initial Setting Changing Operating Axis Menu Selection Monitor Information Alarm List Position Setting (Setting of Position-related Data, Jog/Inching Operation) I/O Setting (Setting of Operation Parameters, Etc.) Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) Test (I/O Tests, Operation Tests for Axis Movement) Environment Setting Data Backup 4.15.1 Data Backup of the Controller 4.15.2 Restore to Controller	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
4.	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14 4.15	Transition of Operating States Operating Menu Initial Screen Initial Setting Changing Operating Axis Menu Selection Monitor Information Alarm List Position Setting (Setting of Position-related Data, Jog/Inching Operation) I/O Setting (Setting of Operation Parameters, Etc.) Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) Test (I/O Tests, Operation Tests for Axis Movement) Environment Setting Data Backup 4.15.1 Data Backup of the Controller 4.15.2 Restore to Controller	····· 4-1         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-5         ···· 4-5         ···· 4-5         ···· 4-10         ···· 4-12         ···· 4-14         ···· 4-38         ···· 4-59         ···· 4-59         ···· 4-71         ···· 4-72         ···· 4-74         ···· 5-1
	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14 4.15	Transition of Operating States Operating Menu Initial Screen Initial Setting Changing Operating Axis Menu Selection Monitor Information Alarm List Position Setting (Setting of Position-related Data, Jog/Inching Operation) I/O Setting (Setting of Operation Parameters, Etc.) Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) Test (I/O Tests, Operation Tests for Axis Movement) Environment Setting Data Backup 4.15.1 Data Backup of the Controller 4.15.2 Restore to Controller	····· 4-1         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-5         ···· 4-5         ···· 4-5         ···· 4-10         ···· 4-12         ···· 4-14         ···· 4-38         ···· 4-59         ···· 4-59         ···· 4-71         ···· 4-72         ···· 4-74         ···· 5-1
	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14 4.15 Oper 5.1	Transition of Operating States Operating Menu Initial Screen Initial Setting Changing Operating Axis Menu Selection Monitor Information Alarm List Position Setting (Setting of Position-related Data, Jog/Inching Operation) I/O Setting (Setting of Operation Parameters, Etc.) Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) Test (I/O Tests, Operation Tests for Axis Movement) Environment Setting Data Backup 4.15.1 Data Backup of the Controller 4.15.2 Restore to Controller Transition of MEC Related Controllers Transition of Operating States	····· 4-1         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-2         ···· 4-5         ···· 4-5         ···· 4-6         ···· 4-10         ···· 4-12         ···· 4-13         ···· 4-38         ···· 4-38         ···· 4-59         ···· 4-59         ···· 4-72         ···· 4-74         ···· 5-1         ···· 5-1
	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14 4.15 Oper 5.1 5.2	Transition of Operating States Operating Menu Initial Screen Initial Setting Changing Operating Axis Menu Selection Monitor Information Alarm List Position Setting (Setting of Position-related Data, Jog/Inching Operation) I/O Setting (Setting of Operation Parameters, Etc.) Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) Test (I/O Tests, Operation Tests for Axis Movement) Environment Setting Data Backup 4.15.1 Data Backup of the Controller 4.15.2 Restore to Controller Transition of MEC Related Controllers Transition of Operating States Operating Menu	····· 4-1         ···· 4-2         ···· 4-3         ···· 4-5         ···· 4-6         ···· 4-10         ···· 4-12         ···· 4-13         ···· 4-38         ···· 4-38         ···· 4-59         ···· 4-59         ···· 4-72         ···· 4-74         ···· 4-74         ···· 5-1         ···· 5-2
	4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14 4.15 Oper 5.1	Transition of Operating States Operating Menu Initial Screen Initial Setting Changing Operating Axis Menu Selection Monitor Information Alarm List Position Setting (Setting of Position-related Data, Jog/Inching Operation) I/O Setting (Setting of Operation Parameters, Etc.) Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password) Test (I/O Tests, Operation Tests for Axis Movement) Environment Setting Data Backup 4.15.1 Data Backup of the Controller 4.15.2 Restore to Controller Transition of MEC Related Controllers Transition of Operating States	····· 4-1         ···· 4-2         ···· 4-3         ···· 4-6         ···· 4-6         ···· 4-12         ···· 4-12         ···· 4-13         ···· 4-38         ···· 4-59         ···· 4-59         ···· 4-74         ···· 4-74         ···· 4-74         ···· 4-74         ···· 4-74         ···· 4-74         ···· 5-1         ···· 5-2         ···· 5-4



	5.5 5.6 5.7	Operation Axis Change MEC Menu Selection	5-7
	5.8	Position Setting (Position Data Setting and Manual Axis Operation	
		(Jogging, Inching))	-13
	5.9	Test Run	
	5.10	Information	
	5.11	Maintenance – Parameters 5-	
	5.12	Maintenance – I/O Tests	
	5.13	Maintenance – Alarm List	
	5.14	Maintenance – Data Backup ······5- 5.14.1 Data Backup of the Controller ·····5-	-48
		5.14.1 Data Backup of the Controller 5- 5.14.2 Restore to Controller 5-	-49
	5.15	Maintenance – Environment Setting ······5-	
	5.16	Monitor	-60
	5.10	Workton 3-	-00
6.	Oner	ation of ELECYLINDER and ROBO PUMP······	3-1
0.	6.1	Displayed Language Change	6-1
	6.2	Operating Menu	6-3
	6.3	Initial Screen ······	6-5
	6.4	Change Operating Axis	6-6
	6.5	Menu Selection	6-7
	6.6	Monitor ······	6-9
		6.6.1 Monitor Screen (ELECYLINDER) ······6-	-10
		6.6.2 Monitor Screen (ROBO PUMP) 6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-	-11
		6.6.3 Maintenance Information Window6-	-12
	6.7	Simple Data Setting (ELECYLINDER)6-	-17
		6.7.1 Positioning Operation	-19
		6.7.2 Pressing Operation ······6-	-26
		6.7.3 Manual Mode ······6-	
		6.7.4 Mounting Orientation Setting / Payload Setting ······6-	-36
		6.7.5 Auto servo OFF	-38
	6.8	ROBO PUMP Setting	-40
		6.8.1 Operation Status	-41
		6.8.2       I/O Signal       6-         6.8.3       Pressure setting       6-	-41
		6.8.3 Pressure setting	-4Z
		6.8.5 Manual Mode ······6-	
		6.8.6 Release Warning Confirmation Screen ······6-	
		6.8.7 Deleting Data in Edit Confirmation Screen ······6-	-44 _//
		6.8.8 ROBO PUMP Advanced Settigs screen ······6-	45
	6.9	Parameter Edit ····································	-48
	6.10	Test Run······6-	-50
		6.10.1 Jog Inching Operation6-	-51
		6.10.2 Position Movement Operation6-	-52
		6.10.3 Direct Movement Operation	-54
		6.10.4 I/O Test	
	6.11	TP Operation Mode ······6-	-56
	6.12	Alarm List ······6-	
	6.13	Controller Reset	
		6.13.1 ELECYLINDER Reset 6-	
		6.13.2 ROBO PUMP Reset ······6-	-59
	6.14	Other Setting	-60
		6.14.1 Parameter Initialization	-60
		6.14.2 Axis Number Change 6-	-61
	0.45	6.14.3 Operating noise adjustment (Applicable models only)6-	-62
	6.15	Information Display	-63
		6.15.1       Display Window for Each Type of Data         6.15.2       Axis Name Edit	-03
		0.15.2 AXIS INAME EQU	-05



	6.16 6.17	Environment Setting 6-67 Data Backup 6-77 6.17.1 Data Backup of the Controller 6-78 6.17.2 Restore to Controller 6-80
	6.18 6.19	Maintenance Parts List       6-82         Easy Programming       6-83
7.	Gatev 7.1 7.2 7.3	way Parameter Setting Tool       7-1         Starting up Gateway Parameter Setting Tool       7-1         Gateway Menu Select       7-3         Network Setting       7-4
		7.3.1       Network Setting       7-4         7.3.2       Special Parameter Setting       7-8
	7.4	Monitor Menu         7-12           7.4.1         Data Monitor         7-12           7.4.2         Diagnosis Information         7-13           7.4.3         Alarm List         7-14
	7.5	SD Memory Card7-157.5.1Save from Gateway to SD Memory Card7.5.2Transfer from SD Memory Card to Gateway7-16
	7.6	Clock Setting 7-18
8.	Opera 8.1	ation of Actuator Drive Power Supply Unit ····· 8-1 Guideline ····· 8-1
		8.1.1       Applicable Actuators       8-1         8.1.2       Operation       8-2         8.1.3       Initial Screen       8-2         8.1.4       Specifications, Dimensions, Name of Each Part, etc.       8-3         8.1.5       Connection       8-3
	8.2	Low Velocity Jog Mode       8-4         8.2.1       Low-speed jog mode screen         8.2.2       ADTB Connection Cable List Screen         8.2.3       Transfer to Coordinate Confirmation Operation Mode
	8.3	Coordinate Confirmation Operation Mode8-88.3.1Coordinate Confirmation Operation Mode screen8.3.2ADTB Data Backup8.3.3Transfer to Low Velocity Jog Mode
9.	Error 9.1	Display9-1Occurrence of Alarm9-19.1.1Alarms Detected by Controller9.1.2Messages which occur when operating the teaching pendant9-1
	10.1 10.2	ndix10-1Screenshot10-1Teaching Update10-210.2.1How to Update when ELECYLINDER and ROBO PUMP Connected10-310.2.2How to Update when CON System Controller Connected10-610.2.3How to Update when SEP System Controller Connected10-910.2.4How to Update when MEC System Controller Connected10-1110.2.5How to Update when Alarm Code 30C Displayed10-1310.2.6How to and Compulsorily Update (in Common for All Models)10-1510.2.7Troubleshooting10-16
11.	Warra 11.1 11.2 11.3	anty······ 11-1 Warranty Period 11-1 Scope of Warranty 11-1 Honoring the Warranty 11-1



11.4	Limited Liability
11.5	Conditions of Conformance with Applicable Standards/Regulations, Etc., and
	Applications 11-2
11.6	Other Items Excluded from Warranty
Change H	listory·····Post-1



## Safety Guide

"Safety Guide" has been written to use the machine safely and so prevent personal injury or property damage beforehand. Make sure to read it before the operation of this product.

## **Safety Precautions for Our Products**

The common safety precautions for the use of any of our robots in each operation.

No.	Operation Description	Description
1	Model Selection	<ul> <li>This product has not been planned and designed for the application where high level of safety is required, so the guarantee of the protection of human life is impossible. Accordingly, do not use it in any of the following applications.</li> <li>1) Medical equipment used to maintain, control or otherwise affect human life or physical health.</li> <li>2) Mechanisms and machinery designed for the purpose of moving or transporting people (For vehicle, railway facility or air navigation facility)</li> <li>3) Important safety parts of machinery (Safety device, etc.)</li> <li>Do not use the product outside the specifications. Failure to do so may considerably shorten the life of the product.</li> <li>Do not use it in any of the following environments.</li> <li>1) Location where there is any inflammable gas, inflammable object or explosive</li> <li>2) Place with potential exposure to radiation</li> <li>3) Location where there is added from direct sunlight or other large heat source</li> <li>5) Location where there is any corrosive gas (sulfuric acid or hydrochloric acid)</li> <li>7) Location subject to direct vibration or impact</li> <li>For an actuator used in vertical orientation, select a model which is equipped with a brake. If selecting a model with no brake, the moving part may drop when the power is turned OFF and may cause an accident such as an injury or damage on the work piece.</li> </ul>



No.	Operation Description	Description
2	Transportation	<ul> <li>When carrying a heavy object, do the work with two or more persons or utilize equipment such as crane.</li> <li>When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers.</li> <li>When in transportation, consider well about the positions to hold, weight and weight balance and pay special attention to the carried object so it would not get hit or dropped.</li> <li>Transport it using an appropriate transportation measure. The actuators available for transportation with a crane have eyebolts attached or there are tapped holes to attach bolts. Follow the instructions in the instruction manual for each model.</li> <li>Do not step or sit on the package.</li> <li>Do not put any heavy thing that can deform the package, on it.</li> <li>When using a crane capable of 1t or more of weight, have an operator who has qualifications for crane operation and sling work.</li> <li>When using a crane or equivalent equipments, make sure not to hang a load that weighs more than the equipment's capability limit.</li> <li>Use a hook that is suitable for the load. Consider the safety factor of the hook in such factors as shear strength.</li> <li>Do not leave a load hung up with a crane.</li> <li>Do not stand under the load that is hung up with a crane.</li> </ul>
3	Storage and Preservation	<ul> <li>The storage and preservation environment conforms to the installation environment. However, especially give consideration to the prevention of condensation.</li> <li>Store the products with a consideration not to fall them over or drop due to an act of God such as earthquake.</li> </ul>
4	Installation and Start	<ul> <li>(1) Installation of Robot Main Body and Controller, etc.</li> <li>Make sure to securely hold and fix the product (including the work part). A fall, drop or abnormal motion of the product may cause a damage or injury. Also, be equipped for a fall-over or drop due to an act of God such as earthquake.</li> <li>Do not get on or put anything on the product. Failure to do so may cause an accidental fall, injury or damage to the product due to a drop of anything, malfunction of the product, performance degradation, or shortening of its life.</li> <li>When using the product in any of the places specified below, provide a sufficient shield.</li> <li>1) Location where electric noise is generated</li> <li>2) Location with the mains or power lines passing nearby</li> <li>4) Location where the product may come in contact with water, oil or chemical droplets</li> </ul>



No.	Operation Description	Description
4	Installation and Start	<ul> <li>(2) Cable Wiring</li> <li>Use our company's genuine cables for connecting between the actuator and controller, and for the teaching tool.</li> <li>Do not scratch on the cable. Do not bend it forcibly. Do not pull it. Do not coil it around. Do not insert it. Do not put any heavy thing on it. Failure to do so may cause a fire, electric shock or malfunction due to leakage or continuity error.</li> <li>Perform the wiring for the product, after turning OFF the power to the unit, so that there is no wiring error.</li> <li>When the direct current power (+24V) is connected, take the great care of the directions of positive and negative poles. If the connection direction is not correct, it might cause a fire, product breakdown or malfunction.</li> <li>Connect the cable connector securely so that there is no disconnection or looseness. Failure to do so may cause a fire, electric shock or malfunction of the product.</li> <li>Never cut and/or reconnect the cables supplied with the product for the purpose of extending or shortening the cable length. Failure to do so may cause the product to malfunction or cause fire.</li> </ul>
		<ul> <li>(3) Grounding</li> <li>The grounding operation should be performed to prevent an electric shock or electrostatic charge, enhance the noise-resistance ability and control the unnecessary electromagnetic radiation.</li> <li>For the ground terminal (PE) on the AC power cable of the controller and the grounding plate in the control panel, make sure for grounding work. For security grounding, it is necessary to select an appropriate wire thickness suitable for the load. Perform wiring that satisfies the specifications (electrical equipment standards and criteria). For detail, follow the description in [an instruction manual of each controller or controller built-in actuator].</li> <li>Conduct functional grounding on the FG terminal for a controller supplying 24V DC or a controller built-in type actuator. In order to minimize influence to mechanical operation given by electromagnetic interference (noise) to an electrical device or insulation failure, conduct grounding on a terminal or a conductor that is electrically stable. The reference impedance should be Type D (Former Class 3, ground resistance 100Ω or less).</li> </ul>



No	Operation	Description
No. 4	Operation Description Installation and Start	<ul> <li>Description</li> <li>(4) Safety Measures</li> <li>When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers.</li> <li>When the product is under operation or in the ready mode, take the safety measures (such as the installation of safety and protection fence) so that nobody can enter the area within the robot's movable range.</li> <li>When the robot under operation is touched, it may result in death or serious injury.</li> <li>Make sure to install the emergency stop circuit so that the unit can be stopped immediately in an emergency during the unit operation.</li> </ul>
		<ul> <li>Take the safety measure not to start up the unit only with the power turning ON. Failure to do so may start up the machine suddenly and cause an injury or damage to the product.</li> <li>Take the safety measure not to start up the machine only with the emergency stop cancellation or recovery after the power failure. Failure to do so may result in an electric shock or injury due to unexpected power input.</li> <li>When the installation or adjustment operation is to be performed, give clear warnings such as "Under Operation; Do not turn ON the power!" etc. Sudden power input may cause an electric shock or injury.</li> </ul>
		<ul> <li>Take the measure so that the work part is not dropped in power failure or emergency stop.</li> <li>Wear protection gloves, goggle or safety shoes, as necessary, to secure safety.</li> <li>Do not insert a finger or object in the openings in the product. Failure to do so may cause an injury, electric shock, damage to the product or fire.</li> <li>When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.</li> </ul>
5	Teaching	<ul> <li>When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers.</li> <li>Perform the teaching operation from outside the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safety protection fence, prepare the "Stipulations for the Operation" and make sure that all the workers acknowledge and understand them well.</li> <li>When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency.</li> <li>When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly.</li> <li>Place a sign "Under Operation" at the position easy to see.</li> <li>When releasing the brake on a vertically oriented actuator, exercise</li> </ul>
		<ul> <li>When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.</li> <li>* Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.</li> </ul>



No.	Operation Description	Description
6	Trial Operation	<ul> <li>When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers.</li> <li>After the teaching or programming operation, perform the check operation one step by one step and then shift to the automatic operation.</li> <li>When the check operation is to be performed inside the safety protection fence, perform the check operation using the previously specified work procedure like the teaching operation.</li> <li>Make sure to perform the programmed operation check at the safety speed.</li> <li>Failure to do so may result in an accident due to unexpected motion caused by a program error, etc.</li> <li>Do not touch the terminal block or any of the various setting switches in the power ON mode.</li> <li>Failure to do so may result in an electric shock or malfunction.</li> </ul>
7	Automatic Operation	<ul> <li>Check before starting the automatic operation or rebooting after operation stop that there is nobody in the safety protection fence.</li> <li>Before starting automatic operation, make sure that all peripheral equipment is in an automatic-operation-ready state and there is no alarm indication.</li> <li>Make sure to operate automatic operation start from outside of the safety protection fence.</li> <li>In the case that there is any abnormal heating, smoke, offensive smell, or abnormal noise in the product, immediately stop the machine and turn OFF the power switch. Failure to do so may result in a fire or damage to the product.</li> <li>When a power failure occurs, turn OFF the power switch. Failure to do so may cause an injury or damage to the product, due to a sudden motion of the product in the recovery operation from the power failure.</li> </ul>



No.	Operation	Description	
	Description		
8	Maintenance and Inspection	<ul> <li>When the work is carried out with 2 or more persons, make it clear who is to be the "leader" and who to be the "follower(s)" and communicate well with each other to ensure the safety of the workers.</li> <li>Perform the work out of the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safet protection fence, prepare the "Stipulations for the Operation" and make sure that all the workers acknowledge and understand them well.</li> <li>When the work is to be performed inside the safety protection fence, basically turn OFF the power switch.</li> <li>When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency.</li> <li>When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly.</li> <li>Place a sign "Under Operation" at the position easy to see.</li> <li>For the grease for the guide or ball screw, use appropriate grease according to the instruction manual for each model.</li> <li>Do not perform the dielectric strength test. Failure to do so may result in a damage to the product.</li> <li>When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.</li> <li>The slider or rod may get misaligned OFF the stop position if the servo is turned OFF. Be careful not to get injured or damaged due to an unnecessary operation.</li> <li>Pay attention not to lose the removed cover or screws, and make sure to put the product back to the original condition after maintenance and inspection works.</li> <li>Use in incomplete condition may cause damage to the product or an injury.</li> </ul>	
9	Modification and Dismantle	• Do not modify, disassemble, assemble or use of maintenance parts not specified based at your own discretion.	
10	Disposal	<ul> <li>When the product becomes no longer usable or necessary, dispose of it properly as an industrial waste.</li> <li>When removing the actuator for disposal, pay attention to drop of components when detaching screws.</li> <li>Do not put the product in a fire when disposing of it. The product may burst or generate toxic gases.</li> </ul>	
11	Other	<ul> <li>Do not come close to the product or the harnesses if you are a person who requires a support of medical devices such as a pacemaker. Doing so may affect the performance of your medical device.</li> <li>See Overseas Specifications Compliance Manual to check whether complies if necessary.</li> <li>For the handling of actuators and controllers, follow the dedicated instruction manual of each unit to ensure the safety.</li> </ul>	



## **Alert Indication**

The safety precautions are divided into "Danger", "Warning", "Caution" and "Notice" according to the warning level, as follows, and described in the instruction manual for each model.

Level	Degree of Danger and Damage		Symbol	
Danger	This indicates an imminently hazardous situation which, if the product is not handled correctly, will result in death or serious injury.	Â	Danger	
Warning	This indicates a potentially hazardous situation which, if the product is not handled correctly, could result in death or serious injury.		Warning	
Caution	This indicates a potentially hazardous situation which, if the product is not handled correctly, may result in minor injury or property damage.		Caution	
Notice	This indicates lower possibility for the injury, but should be kept to use this product properly.	!	Notice	



## Handling Precautions

- In touch panel teaching pendant TB-03, the language to be displayed can be changed. Refer to the following for how to change it. • CON related controllers
  - 3.1 Displayed Language Change
  - SEP related controllers
- 4.1 Displayed Language Change
- MEC related controllers
- 5.1 Displayed Language Change
- ELECYLINDER / ROBO PUMP 6.1 Displayed Language Change
- Do not apply mechanical shocks on TB-03, because they may cause failure.
- When operating TB-03, be sure to hold the teaching pendant to prevent the cables from receiving unnecessary tensile loads.
- If using the liquid crystal display screen for a long time, the brightness decreases. In order to • extend the life of LCD, take measures such as to set the time setting to turn off in the environment setting to turn it off automatically or to disconnect from the controller when it is not in use.
- Do not touch more than one point at the same time, because the touch panel is an analog resistive film system. If you touch more than one point, the center position of more than one point may react and operate.
- Operate the touch panel by 0.5 N force or less. There is a risk that the panel will be broken if it is operated by stronger force than that.
- The life of the touch panel is around one million times under the condition of depression at the same point. (Based on the usage environment of 25 °C)
- Turn off the power to the controller before putting it in or out. Putting it in and out while the • power is on may cause malfunction.
- When putting it in, check the connector matching position and insert it carefully with no excess force applied to any unexpected direction. Do not attempt to insert it forcefully when it does not go in smoothly.
- For a SD memory card, choose a SD/SDHC memory card with 1G to 32G. (Toshiba-made recommended) Also, use FAT32 Format for the file system.
- About JOG Switch in RCON Driver Unit Front Panel In case the communication with a teaching tool gets disconnected during a window to operate an actuator is open, operation of JOG switch leaves invalid. In order to get the function of JOG switch back to valid, it is necessary to reboot the RCON system power supplier or conduct the software reset.

🔨 Caution : Touch panel teaching pendant TB-03 is exclusively designed for use with IAI controllers. Never connect it to other equipment. Failure may occur.



## International Standards Compliances

This TB-03 comply with the following international standards. Refer to Overseas Standard Compliance Manual (ME0287) for more detailed information.

RoHS3 Directive	CE Marking	UL
0	0	-





## 1. Confirming the Specifications

#### 1.1 Product Check

This product, if adopting a standard configuration, consists of the parts listed below.

#### 1.1.1 Component (excluding options)

No.	Product name	Model number	Number	Remarks				
1	Touch Panel Teaching Pendant	Refer to "How to Read Model Nameplate" and "How to Read Product Number".	1					
Acces	Accessories							
2	Battery unit	AB-7	1	Provided with the touch panel teaching pendant				
3	Touch pen	ТСН-ТВ03	1	Provided with the touch panel teaching pendant \$\overline{4.5 \times 100.5mm}\$				
4	ELECYLINDER / Position controller cable	CB-TB3-C050	1	When model <cable Type&gt; C or SC is selected</cable 				
5	Program controller cable	CB-TB3-S050	1	When model <cable Type&gt; S or SC is selected</cable 				
6	Replacement cable	CB-SEL-SJS002	1	When model <cable Type&gt; S or SC is selected</cable 				
7	AC adapter	(For use in Japan, North America, Mexico and Thailand) UN318-5928 (For use in China) UNZ318-5928 (For use in Europe) UNE318-5928 (For use in Korea) UNR318-5928	1	Depends on model code <enclosed Adapter Type&gt;</enclosed 				
8	Safety guide	<section-header></section-header>	1	The picture shows an image.				

R	ROBO ——	
	CYLINDER	

S
E
.ല
Ħ
ö
Ψ
. <u>5</u>
õ
0
S
Ð
Ē
<u> </u>
õ
⊒.
F
<u> </u>
Ę
F
ĸ
$\mathbf{C}$

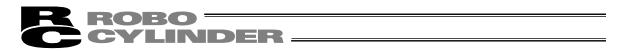
÷

No.	Product name	Model number	Number	Remarks
9	First step guide	<section-header><section-header></section-header></section-header>	1	The picture shows an image.

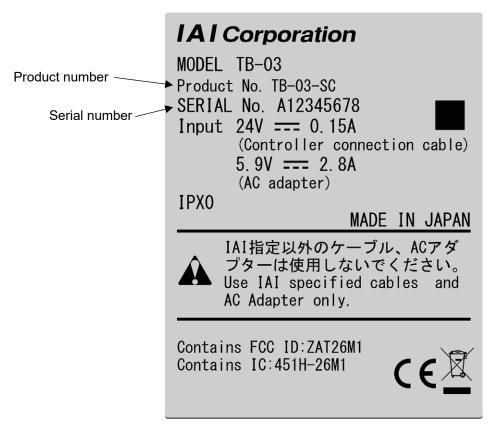
## **ROBO** CYLINDER

## 1.1.2 Instruction manual related to this product

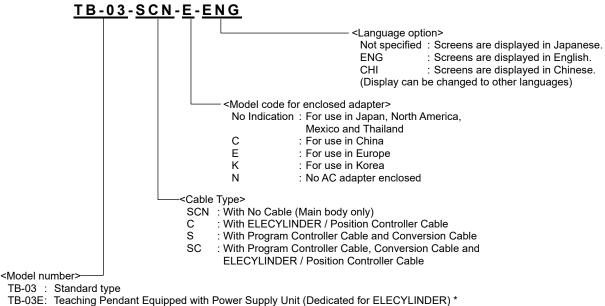
No.	Name	Control number
1	Touch Panel Teaching Pendant TB-03 Position Controller, ELECYLINDER	ME0376
2	Wired Link Instruction Manual Actuator with Integrated ERC2 Controller Instruction Manual <pio type=""></pio>	ME0158
3	Actuator with Integrated ERC2 Controller Instruction Manual <sio type=""></sio>	ME0159
4	Actuator with Integrated ERC3 Controller Instruction Manual	ME0297
5	PCP6S Fieldbus Communication Instruction Manual	ME0349
6	ACON-CA/DCON-CA Controller Instruction Manual	ME0326
7	ACON-CB/CGB, DCON-CB/CGB Controller Instruction Manual	ME0343
8	ACON-CYB/PLB/POB, DCON- CYB/PLB/POB Controller Instruction Manual	ME0354
9	PCON-CA/CFA Controller Instruction Manual	ME0289
10	PCON-CB/CGB/CFB/CGFB/CBP/CGBP Controller Instruction Manual	ME0342
11	PCON-CYB/PLB/POB Controller Instruction Manual	ME0353
12	SCON-CA/CAL/CGAL Controller Instruction Manual	ME0243
13	SCON-CB/CGB Controller Instruction Manual	ME0340
14	SCON-CB-F/CGB-F/LC-F/LCG-F Controller Servo Press Function Instruction Manual	ME0345
15	SCON2-CG Controller Instruction Manual	ME0458
16	SCON2-CG Controller Servo Press Function Instruction Manual	ME0470
17	RCON System Instruction Manual	ME0384
18	REC System Instruction Manual	ME0394
19	ROBONET Instruction Manual	ME0208
20	ASEP/PSEP/DSEP Controller Instruction Manual	ME0267
21	PMEC/AMEC Controller Instruction Manual	ME0245
22	MSEP-C/LC Controller Instruction Manual	ME0299
23	MCON-C/CG Controller Instruction Manual	ME0341
24	MSCON Controller Instruction Manual	ME0306
25	ELECYLINDER Rod Type / Table Type Instruction Manual	ME3778
26	ELECYLINDER Rod Type Dust and Drip Proof Instruction Manual	ME3779
27	ELECYLINDER Slider Type Instruction Manual	ME3793
28	ELECYLINDER Rod Type / Radial Cylinder Type Instruction Manual	ME3794
29	ELECYLINDER Belt Driven Type Instruction Manual	ME3798
30	ELECYLINDER Stopper Cylinder Instruction Manual	ME3799
31	ELECYLINDER Rotary Instruction Manual	ME3800
32	ELECYLINDER Large Slider Type Instruction Manual	ME3801
33	ELECYLINDER Cleanroom Specification Instruction Manual	ME3804
34	ELECYLINDER Gripper Instruction Manual	ME3806
35	ELECYLINDER Slider Type Dust and Drip Proof Instruction Manual	ME3814
36	Ultra Mini ELECYLINDER Instruction Manual	ME3815
37	ELECYLINDER Electricity Section Instruction Manual	ME3816
38	ELECYLINDER Long Stroke Gripper Instruction Manual	ME3824
39	ELECYLINDER Slider Type / Radial Cylinder Type Instruction Manual	ME3825
40	ELECYLINDER Compact Type Instruction Manual	ME3826
41	ELECYLINDER 3-finger gripper Instruction Manual	ME3829
42	ELECYLINDER Vertical Compact / Dust Proof/Splash Proof Gripper Type Instruction Manual	ME3830
43	ROBO PUMP Instruction Manual	ME3827



1.1.3 How to Read Model Nameplate



1.1.4 How to Read Product Number



TB-03E: Teaching Pendant Equipped with Power Supply Unit (In common for ELECYLINDER / ROBOCYLINDER) \*

\* Refer to [1.11.2 Actuator Drive Power Supply Unit for Teaching Pendant How to Read Model Code] for the model code of the teaching pendant equipped with power supply unit TB-03E/TB-03P



#### Cable Type

		Enclosed cable		
Connected Controller	Model	For ELECYLINDER / Position Controller	For Program Controller	
ELECYLINDER / Position controller	TB-03-C	1) CB-TB3-C050	Not Enclosed	
Program controller	TB-03-S	Not Enclosed	2) CB-TB3-S050 3) CB-SEL-SJS002	
ELECYLINDER / Position controller / TB-03-S Program controller		1) CB-TB3-C050	2) CB-TB3-S050 3) CB-SEL-SJS002	
ELECYLINDER (Wireless link)	TB-03-SCN	Not Enclosed	Not Enclosed	

#### Model code for enclosed adapter

Туре	Model	Model Code of Enclosed AC Adapter	
For use in Japan, North America, Mexico and Thailand	TB-03- <enclosed cable="" type=""></enclosed>	For use in Japan, North America, Mexico and Thailand : UN318-5928	
For use in China	TB-03- <enclosed cable="" type="">-C</enclosed>	For use in China : UNZ318-5928	
For use in Europe	TB-03- <enclosed cable="" type="">-E</enclosed>	For use in Europe : UNE318-5928	
For use in Korea	TB-03- <enclosed cable="" type="">-K</enclosed>	For use in Korea : UNR318-5928	
No AC adapter enclosed	TB-03- <enclosed cable="" type="">-N</enclosed>	No AC adapter enclosed	

#### Language option

Model Code for Language Option It is available to indicate the language displayed when the power gets turned on by defining <Language Option> on the last digit of the unit model code. (Language can be changed during operation.) (Displayed in Japanese when no indication) Screens are displayed in English. : -ENG Screens are displayed in Chinese. : -CHI

#### Model Code for Cable Itself

Model Code for Cable Itself		or Cable Itself	Remark
	1)	CB-TB3-C050	For ELECYLINDER / position controller connection
Separately sold cable	2)	CB-TB3-S050	For SEL System Controller Connection (XSEL-J/JX Type excluded)
	3)	CB-SEL-SJS002	For ASEL, PSEL, SSEL and MSEL Connection (used together with CB-TB3-S050)

#### Option model code

Option Model Code		Remark
Strap	STR-1	
Spiral Cord	SIC-1	Connect the stylus pen on the main unit in order to avoid loosing or dropping it
Grip Belt	GRP-2	Prepare your own and attach. Refer to [1.10.1 Grip Belt (GRP-2)]

#### Maintenance part code

Maintenance Part Code		Remark
Battery Unit for Main Unit AB-7		
Touch Pen	TCH-TB03	φ4.5 × 100.5mm



## 1.2 Confirming the Specifications

## 1.2.1 Basic Specification

Item	Specifications	
Power Input Voltage Range	24V DC $\pm 10\%$ (Supplied from controller) 5.9V DC (5.7 to 6.3V) (Supplied from AC adapter)	
Power Current	150mA (24V DC : Supplied from controller) 2.8A (5.9V DC : Supplied from AC adapter)	
Insulation resistance	Between GND and FG $$ 500V DC 10M $\Omega$	
Display colors	65536 colors (16-bit colors)	
Backlight method	White LED backlight	
Backlight life	15,000 hours	
Touch panel screen	7 inch TFT color WVGA (800 × 480)	
Touch detection method	4-wire resistive type	
Touch panel life	1 million times	
External memory	SD/SDHC memory card interface installed (1G to 32G) (Toshiba-made recommended)	
Cable length	5m (Standard), 10m (Maximum)	
Touch pen (Accessory)	∳4.5 × 100.5mm	
Language selection	Japanese/English/Chinese	
Touch sound	ON/OFF Volume Settable in 3 steps, S, M, and L	
Data save	Applicable to have data saved to and read from external SD memory card (FAT32 Format) (Position data, parameter, alarm list)	
Display adjustment	Brightness adjustable for contrast and backlight	
Time setting	Clock setting available with real time clock (Backup held with CR2032 button battery)	
Communication standard	Based on RS485	
Communication speed	115,200bps	
Duration from the power being off to turned on	More than 2 seconds	
Cooling method	Natural air-cooling	
Size	155mm (H) × 200mm (W) × 34 [54] mm (D) Stop switch included in [ ]	
Mass	485g approx. (Main body) + 175g approx. (Battery)	
	SD memory card is a trademark of SD-3C, LLC and SDA.	



## 1.2.2 Environmental Specifications

Item	Specifications	
Working ambient temperature	0 to 40°C	
Working ambient humidity	5%RH to 85%RH (There should be no water condensation or freeze)	
Storage ambient temperature	-20 to 40°C	
Storage ambient humidity	5%RH to 85%RH (There should be no water condensation or freeze)	
Altitude	1000 meters or less above the sea level	
Environment	Environment with no corrosive or flammable gas Avoid use in places with dust or in places where oil mist or cutting fluid splashes.	
Vibration resistance	Frequency 10 to 57Hz / Swing width: 0.075mm Frequency 57 to 150Hz / Acceleration: 9.8m/s <sup>2</sup> XYZ Each direction Sweep time: 10 min. Number of sweep: 10 times	
Dropped in package	From height 800mm, dropped on 1 corner + 3 edges + 6 surfaces	
Pollution degree	ll	
Protection class	IPX0	
Heat generation volume	3.6W	
Protection function against electric shock		



- Power Supply Switch It should be not used in wired link.
- 4) SD Memory Card Slot Cover There is an inlet for SD memory card inside the cover.
   Refer to [1.4 How to Set in/out SD Memory Card] to set in or out a SD memory card.
- 5) AC Adapter Joint It is a connector to have the AC adapter joined in.

1. Confirming the Specifications



6) Display and Touch Panel Parts

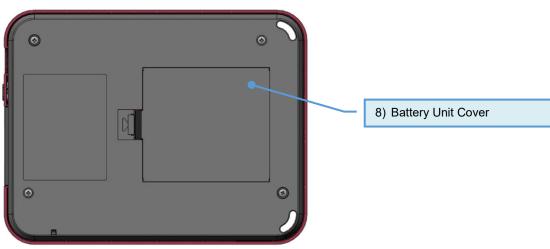
This screen is configured of a TFT color LCD and touch panel. Use this screen to edit the various setting values and to display the teaching details, etc. Touch the touch panel with a touch pen (or finger) to perform operations.

- \*1 In a use of the LCD display for a long term, the brightness may drop. To maximize the life of the LCD display, remove it from the controller when it is not in use. Set the turn-off time in the environment setting so it automatically turns OFF.
- \*2 This touch panel is of analog resistance membrane type, so do not touch two or more locations on the screen at the same time. If two or more locations are touched at the same time, the centers of all touched locations may respond and trigger multiple operations.
- \*3 When operating the touch panel, do not apply a force exceeding 0.5 N. If any greater force is applied, the touch panel may be damaged.
- \*4 The life of touch panel is approx. 1 million touches at the same location. (Assuming a use environment of 25°C)

#### 7) Cable Joint

Insert a cable applicable for each controller to establish wired link with controllers.

1.3.2 Back



 Battery Unit Cover There is the battery unit AB-7 inside the cover.

For how to attach or detach the battery unit, refer to [1.5 How to Set in/out Battery Unit].

#### 1.3.3 AC Adapter Joint

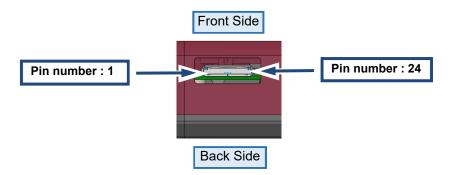
101	

#### Pin number : 2 (Extruded Inside)

Connector name : LGP2631-0101F (SMK) : (JEITA RC-5320A Voltage Classification 2)			
	. (ULTIAT C-302		
Pin number	Signal name	Explanation	
2	5.9V	Power supply input 5.9V	
3	GND	Signal ground	
4	GND	Signal ground	



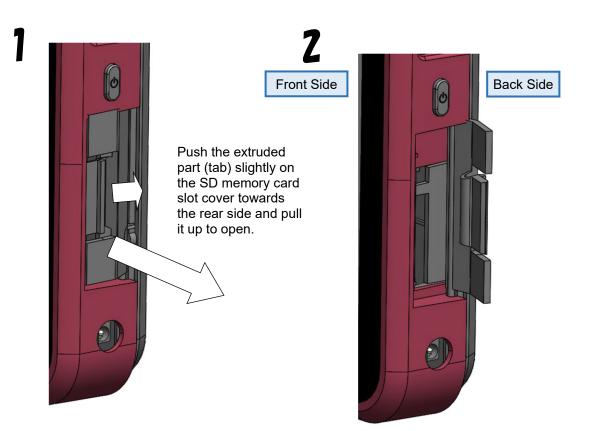
#### 1.3.4 Cable Joint

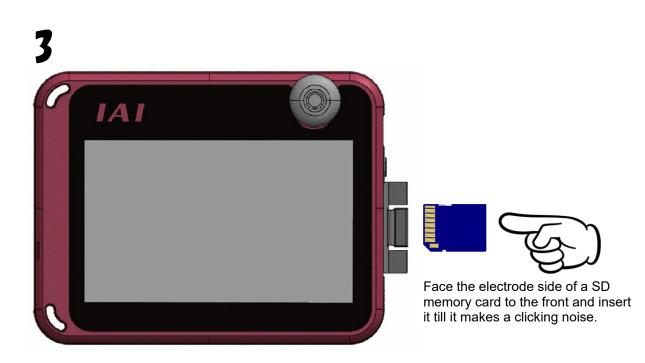


Connector name : ST60-24P (30) (HIROSE)		
Pin number	Signal name	Explanation
1	EMG1+	
2	EMG1-	- Stop Switch Line 1
3	EMG2+	Stan Switch Line 2
4	EMG2-	— Stop Switch Line 2
5	ENB1+	Enable Signal Line 1
6	ENB1-	To be short-circuited internally
7	ENB2+	Enable Signal Line 2
8	ENB2-	To be short-circuited internally
9	NC	Not connected
10	NC	Not connected
11	GND	Signal ground
12	TXD	Data Transmission for SEL System Controller
13	RXD	Data Reception for SEL System Controller
14	6.5V	Detection Signal for SEL System Controller
15	SRD+	Transmission and Reception Data Positive for EC/CON System Controller
16	SRD-	Transmission and Reception Data Negative for EC/CON System Controller
17	T5V	TP Connection Detection Signal for EC/CON System Controller
18	T24V	24V Power Input
19	GND	Signal ground
20	GND	Signal ground
21	NC	Not connected
22	NC	Not connected
23	NC	Not connected
24	FG	Frame Grounding
Shell	FG	Frame Grounding



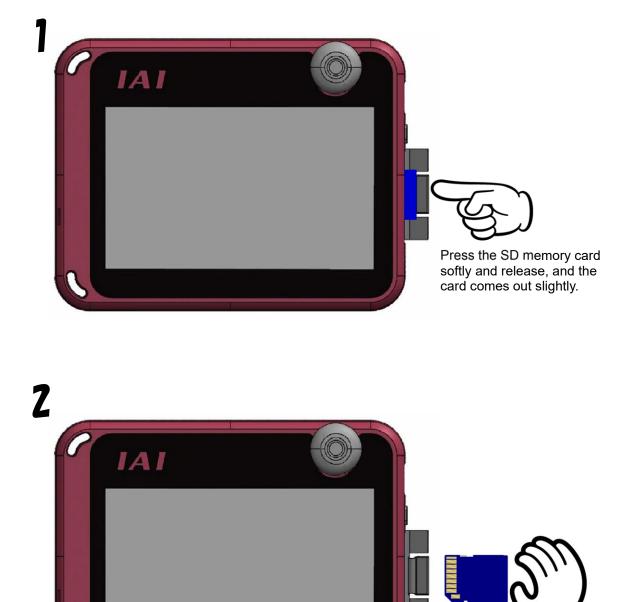
- 1.4 How to Set in/out SD Memory Card
- 1.4.1 How to Insert SD Memory Card







1.4.2 How to Take out SD Memory Card



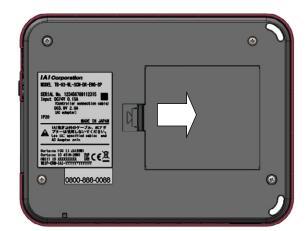
1. Confirming the Specifications

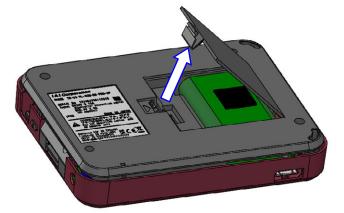
ME0376-10A

Pull it out straight.

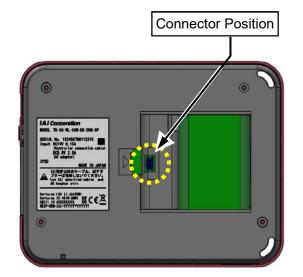


- 1.5 How to Set in/out Battery Unit
- 1.5.1 How to Take Out Battery Unit

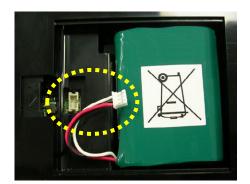




1) Push the tab towards the battery cover and the pull up batter cover.

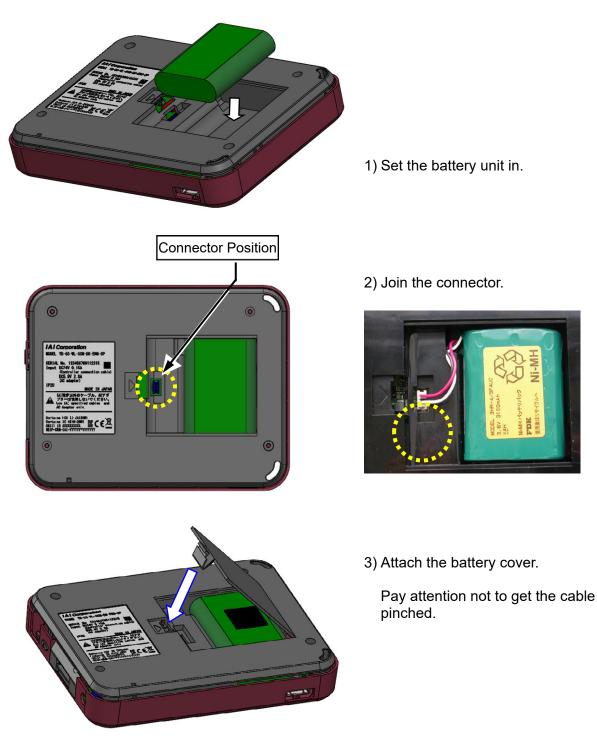


2) Pull out the connector and take out the battery unit.





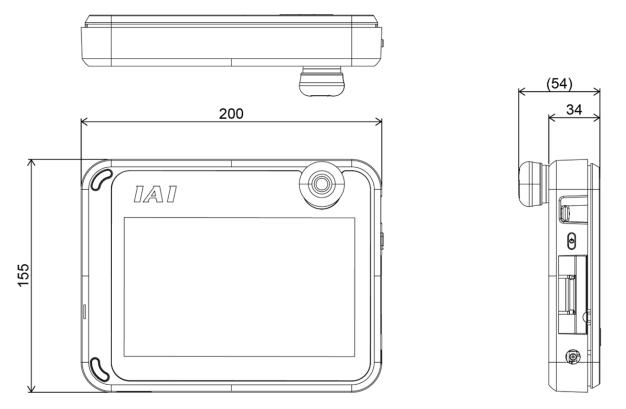
#### 1.5.2 How to Attach Battery Unit



Caution : When a battery is taken off and then put back on, the power would not turn on even with the power supply switch being pressed. Establish a start by connecting with controller or AC adaptor.



# 1.6 External Dimensions



# 1.7 Life of Touch Panel LCD

The product life of the touch panel is 1,000,000 times of touches and that of the LCD backlight is 15,000 hours. (Ambient temperature at  $25^{\circ}$ C)

## 1.8 Built-in Battery (Life of Battery and Replacement of Battery)

With a button battery built-in the main body, the data set in the environment setting window, such as time and language settings and touch sound setting, is retained. The data should get reset to the default setting once the battery gets flat.

The nominal life of the button battery CR2032 that the manufacturer states is approximately five years (Ambient temperature at 25°C).

You will get notified with a message "187 RTC Backup Battery Voltage Drop" once the voltage of the battery gets low. As the battery cannot be replaced at a customer's site, make a request to IAI.



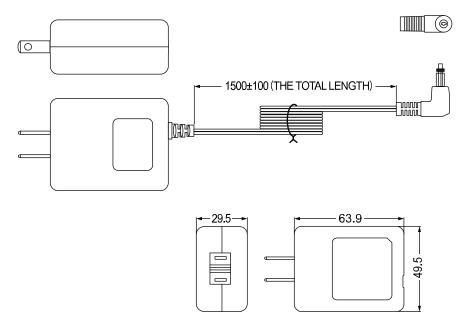
# 1.9 AC Adapter

#### 1.9.1 Common Specifications for Adapter

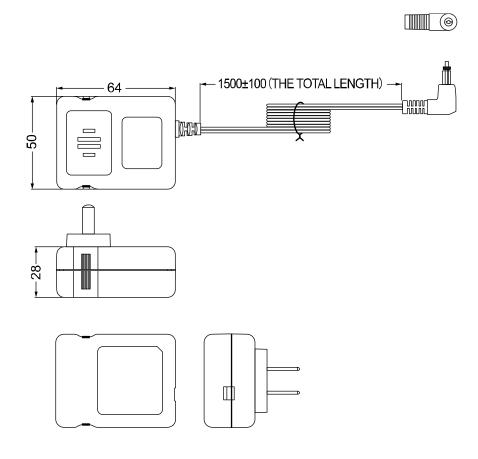
Item	Specifications			
Power Input Voltage Range	Single-Phase 100 to 240V ±10%			
Power Current	0.4Amax.			
Power Frequency Range	50/60Hz ±5%			
In-Rush Current	50A (at 25°C)			
Output Voltage	5.9V DC (5.7 to 6.3V)			
Output Current	2.8Amax.			
Cable Length	1500 ±100mm			

#### 1.9.2 AC adapter appearance

[For use in Japan, North America, Mexico and Thailand : UN318-5928]

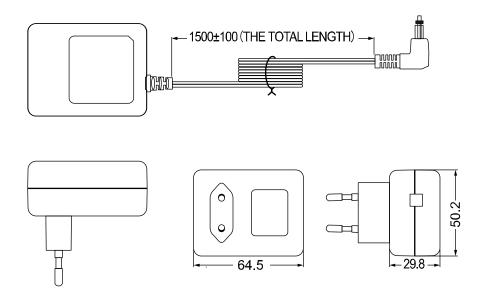


[For use in China : UNZ318-5928]



[For use in Europe : UNE318-592] [For use in Korea : UNR318-5928]

6





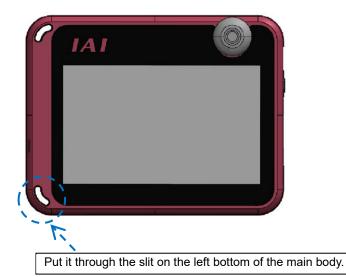
- 1.10 Optional Items
- 1.10.1 Grip Belt (GRP-2)



fastener on the open grip.

#### 1.10.2 Strap (STR-1)







# 1.10.3 Spiral Cord (SIC-1)



Putting it through the hole on the stylus pen, and then put it through the hole allocated on the bottom the main body. (In case the spiral code would not go through the hole well, pull the cord using a tool such as tweezers.)



# 1.11 Actuator Drive Power Supply Unit for Teaching Pendant

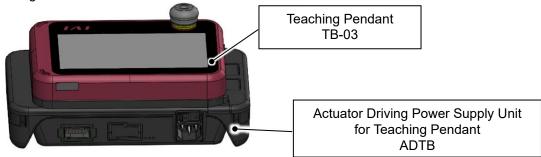
\* ELECYLINDER described in this section (1.11) includes ROBO PUMP.

#### 1.11.1 Feature

The actuator drive power supply unit is an option component of a teaching pendant that supplies power to an actuator in equipment with electric wiring not completed and enables brake release and simple operations at startup of the equipment. It saves time to currently build up the power supply line and enables to have a quick trial run.

It is detachable to a teaching pendant, and enables to have a trial run in such cases as actuator position tuning and data setting.

#### 1) Unit configuration



#### 2) Compatible actuator

The applicable actuator should differ between EC Type (ADTB-EC) and PEC Type (ADTB-PEC).

EC type ..... ELECYLINDER (24V pulse motor type) is available.

PEC type ...... Operation of ROBOCYLINDER (pulse motor type: RCP2 Series and later) and ELECYLINDER (24V pulse motor type) is available.

#### 3) Connection

For how to make connection, refer to [2.3 Connection of Actuator Drive Power Supply Unit].

4) Operation

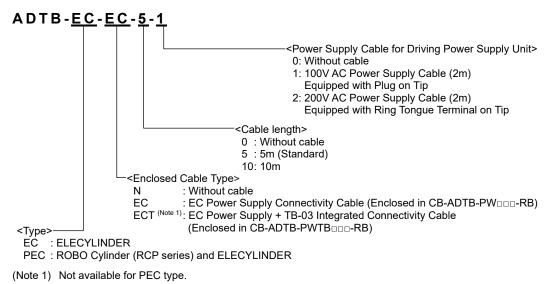
For how to operate ELECYLINDER, it is the same as that of normal ELECYLINDER. Refer to [Chapter 6 Operation of ELECYLINDER and ROBO PUMP].

For details on how to operate the ROBO Cylinder, refer to [Chapter 8 Operation of Actuator Drive Power Supply Unit].

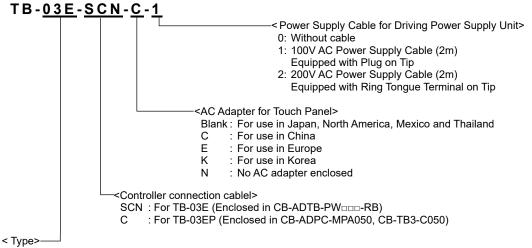


#### 1.11.2 How to Read Product Number

1) Model Code for Actuator Driving Power Supply Unit (ADTB) Individually



- \* When using for RPC Series, select "N" or "EC" for the enclosed cable type, and prepare an applicable motor / encoder cable separately.
  - Refer to [2.4.5 List of Cables for RCP Connection of Actuator Drive Power Supply Unit] for details.
- 2) Teaching Pendant Equipped with Power Supply Unit (TB-03 + Drive Power Supply Unit ADTB Set Model Code)



03E : Dedicated for ELECYLINDER

03P : Common for ELECYLINDER / ROBO Cylinder

\* Some types of RCP actuators to be connected may require another cable. Prepare an applicable motor/encoder cable separately. Refer to [2.4.5 List of Cables for RCP Connection of Actuator Drive Power Supply Unit] for details.

3) Model Code for Enclosed Power Supply Cables Individually

- 100V AC Power Supply Cable : KWD-UJ-2MBS (Cable length should be 2m)
- 200V AC Power Supply Cable : CB-APMEC-PW020-TM (Cable length should be 2m)



# 1.11.3 Basic Specification

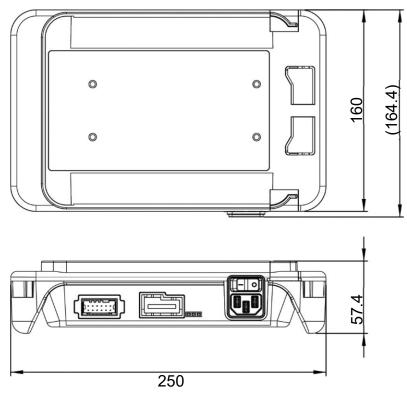
Item			Specifications		
Rated Input Voltage			Single-Phase 100 to 230V AC ±10%		
Input Current			1.4Atyp. (100V AC), 0.6Atyp. (230V AC)		
Frequen	cy Range		50/60Hz ±5%		
Current A	Amperage		141VA (100V AC), 145VA (230V AC)		
Output C	urrent		24V DC ±10%		
		Standard Dustproof and splashproof High-Stiffness	When Power Saving Setting Invalid : Rating 3.5A, Max. 4.2A When Power Saving Setting Valid : Rating 2.2A		
	ELECYLINDER	Slim and Small	Max. 2.0A		
Load Current		S8, B8S, RR8, RR10, RTC18	Max. 6.0A		
	ROBOCYLINDER	20P, 20SP, 28P, 35P, 42P, 42SP, 56P	When high output setting invalid : Max. 2.2A When high output setting enabled : Rating 3.5A Max. 4.2A		
		56SP, 60P, 86P	Max. 6.0A		
Heat Rad (ROBOC	diation YLINDER)	20P, 20SP, 28P, 35P, 42P, 42SP, 56P	RCP2, RCP3 : 5W RCP4, RCP5, RCP6 : 8W		
(	,	56SP, 60P, 86P	19.2W		
Ambient	operating temperatu	re	0 to 40°C (There should be no water condensation or freeze)		
Ambient	operating humidity		5%RH to 85%RH (There should be no water condensation or freeze)		
Ambient	storage temperature		-20 to 70°C		
Ambient	storage humidity		5%RH to 85%RH (There should be no water condensation or freeze)		
Environn	nent		Avoid corrosive gas and in particular avoid excessive dust		
Altitude			1000 meters or less above the sea level		
Vibration resistance			Frequency 10 to 57Hz / Swing width: 0.075mm Frequency 57 to 150Hz / Acceleration: 9.8m/s <sup>2</sup> XYZ Each direction Sweep time: 10 min. Number of sweep: 10 times		
Dropped in package			From height 800mm, dropped on 1 corner + 3 edges + 6 surfaces		
Overvoltage category			11		
Pollution	Pollution degree		2		
Protectio	n function against el	ectric shock	11		
Degree of	of protection		IP30		
Mass			ADTB-EC : Approx. 740g / ADTB-PEC : Approx. 825g		
Cooling r	nethod		TB-03E : Natural cooling / TB-03P : Forced air cooling with internal fan		

Note 20P, 20SP, 28P, 35P, 42P, 42SP, 56P, 56SP, 60P and 86P in ROBOCYLINDER show the motor type.

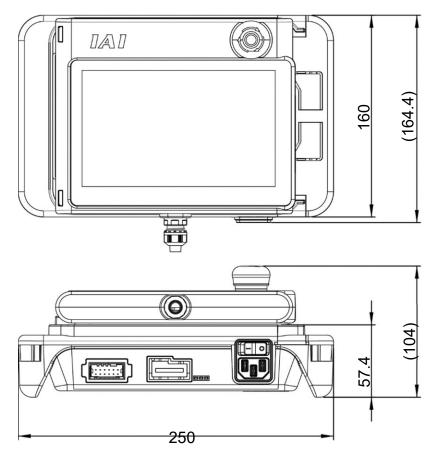


#### 1.11.4 External Dimensions

Driving Power Supply Unit Individually

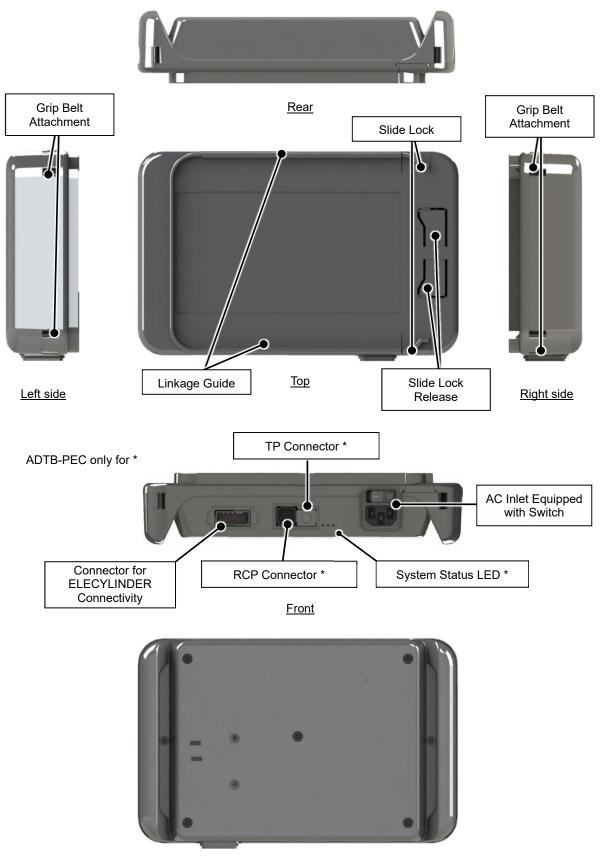


Teaching Pendant Equipped with Power Supply Unit (Linked with Drive Power Supply Unit)



#### **ROBO** CYLINDER —

# 1.11.5 Explanation of Each Part



<u>Bottom</u>



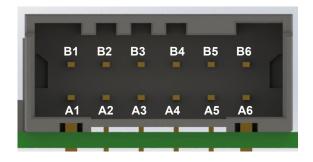
- 1.11.6 Feature of Each Part and Pin Assignment on Connector
  - 1) AC Inlet Equipped with Switch



Model	DC11.0001.403		
Manufacturer	SCHURTER		
Pin No.	Signal name	Explanation	
1	L	AC Input Live Terminal (Non-Grounding Side)	
2	Ν	AC Input Neutral Terminal (Grounding Side)	
3	PE Protective Grounding Terminal (Class D Grounding)		
Rated Voltage	Single-Phase 100 to 230V AC ±10%		
Input Current	1.4Atyp. (100V AC), 0.6Atyp. (230V AC)		
Connectivity Cable Spec	ifications		
Item	Model		
100V AC Power Supply Cable	KWD-UJ-2MBS		
200V AC Power Supply Cable	CB-APMEC-PW020-TM		



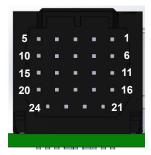
#### 2) Connector for ELECYLINDER Connectivity



Model	1-1871935-6				
Manufacturer	TE				
Pin No.	Signal name	Explanation			
A1	0V	GND			
A2	24V (CP)	24V output (CP)			
A3	NC	Not connected			
A4	NC	Not connected			
A5	NC	Not connected			
A6	NC	Not connected			
B1	24V (MP)	24V output (24V output (MP))			
B2	NC	Not connected			
B3	/EC_CONE	EC connector Fitting Detection Signal			
B4	NC Not connected				
B5	GND GND				
B6	NC	Not connected			
Output Voltage	24V DC±10%				
Load Current	Refer to [1.11.3 Basic s	specifications]			
Connectivity Cable Specif	ications				
Item		Model			
Connection Cable	EC Power Supply Connectivity Cable CB-ADTB-PW□□□-RB EC Power Supply + TB-03 Integrated Connectivity Cable CB-ADTB-PWTB□□□				



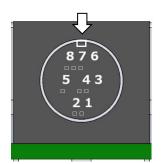
# 3) RCP Connector (ADTB-PEC only)



Model	DF62-24P-2.2DS(01)				
Manu- facturer	Hirose Elec	ctric Co., Ltd.			
Pin No.	Signal name	Explanation	Pin No.	Signal name	Explanation
1	A+	Encoder A-Phase + Input	13	LS_GND	Grounding for Limit Switch
2	BK-	Brake Release Negative Side	14	LS-	Limit Switch Negative Side
3	ФА+	Motor Drive Line A-Phase +	15	ФВ-	Motor Drive Line B-Phase -
4	ФА-	Motor Drive Line A-Phase -	16	В-	Encoder B-Phase - Input
5	VMM	Motor Power Supply Line	17	ENC_SD-	Battery-less Absolute Communication Line -
6	A-	Encoder A-Phase - Input	18	VPS	Encoder Line Driver Enable Output
7	GND	0V	19	NC	Not connected
8	LS+	Limit Switch Positive Side	20	BK+	Brake Release Positive Side
9	VMM	Motor Power Supply Line	21	VCC	Encoder Power Supply 5V for Motor
10	ФВ+	Motor Drive Line B-Phase +	22	CF_VCC	Encoder Power Supply 5V for High-Thrust Motor
11	B+	Encoder B-Phase + Input	23	NC	Not connected
12	ENC_SD+	Battery-less Absolute Communication Line +	24	FG	Frame Ground
Connectiv	ity Cable Sp	pecifications			
Item	Model				
Connec-	Motor Enco	oder Integrated Cable CB-/	ADPC-MPA		DPC-MPADDD-RB
tivity Cable	High-Thrus	t Conversion Cable CB-	ADTBF-AJ	002	



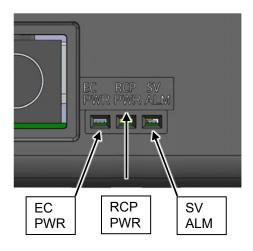
#### 4) TP Connector (ADTB-PEC only)



Model	TCS7587-0121077				
Manufacturer	Hosiden Corporation				
Pin No.	Signal name	Explanation			
1	SD+	RS485 Communication			
2	SD-	RS485 Communication			
3	T5V	TP Connection Detection			
4	ENB	Teaching Enable			
5	EMGA Teaching Stop Signal				
6	T24V Teaching Power Supply				
7	GND GND				
8	EMGB Teaching Stop Signal				
F1	GND	GND			
F2	GND	GND			
F3	GND GND				
Connectivity C	Connectivity Cable Specifications				
Item	Model				
Connectivity	TB-01 Controller Connection Cable (For A/P/SCON, A/PSEP and A/PMEC) CB-TB1-C□□□				
Cable TB-03 Controller Connection Cable C		tion Cable CON Connection Type			



# 5) System Status LED LED (ADTB-PEC only)



LED Display Type					
Panel Display	Display Color	Status	Explanation		
	Green	Light ON	In process to supply power to connector for ELECYLINDER (in normal condition)		
EC PWR	Red	Light ON	Alarm generated while supplying power to connector for ELECYLINDER		
	Light	OFF	Power supply to connector for ELECYLINDER stopped		
	Green Light ON		Green Light ON In process to s		In process to supply power to internal controller (in normal condition)
RCP PWR	Red	Light ON	Alarm generated while supplying power to internal controller		
	Light OFF		Power supply to internal controller stopped		
		Light ON	Servo-on		
	Green	Blinking	Update mode (repeating flashing 2 times in 2 Hz and turned off for 1 sec)		
SV ALM	Green	Light ON	Alarm above operation release levels in generation Motor power supply voltage dropped STOP in process to input (in drive power cutoff)		
		Blinking	In-rush detected (flashing in 1 Hz)		
	Light OFF		Servo-off		

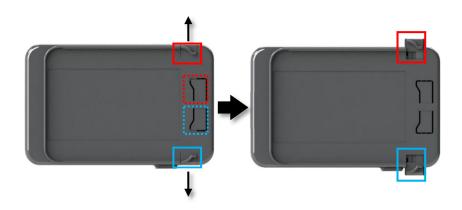
# **ROBO** CYLINDER -

# 1.11.7 Joining Unit

Here explains how to join an actuator driving power supply unit to a teaching pendant.

Z

While pressing the slide lock release (broken line areas) on the driving power supply unit, slide the slide locks to make them open.



Insert the slots (broken line areas in the figure) on a teaching pendant to the linkage guides on the actuator driving power supply unit from the right side.





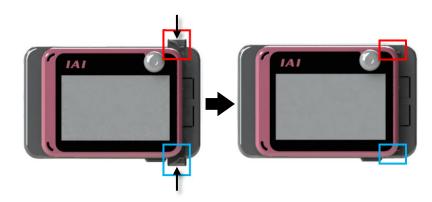
3

Insert the teaching pendant along the linkage guides on the actuator driving power supply unit till the teaching pendant reaches the area marked with the broken line.





Slide it till the slide locks get locked to lock the teaching pendant.



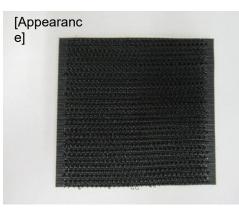


#### 1.11.8 Accessaries for ADTB-PEC

- (1) Cable Attachment Fabric Fastener (2 pcs)
- (2) Magic Band Strap Type (2 pcs)
- (3) 3.5mm WtoB/W Connector Housing: Female (1 pc)
- (4) DF62DL-24S-2.2C Connector Housing: Female (1 pc)
- (5) Protection Cap (1 pc)

#### 1.11.8.1 Accessaries for Cable Tie Fixation

(1) Cable Attachment Fabric Fastener (To be attached by user) Attach the fabric fasteners on the bottom of ADTB as shown in [Attached Condition].





(2) Magic Band Strap Type (To be attached by user) Attach the magic bands on the teaching cable as shown in [Attached Condition]. Color: Black, Size: 25mm x 200mm, Manufacturer: Kuraray Fastening Co.,Ltd.





Attached Condition of Accessaries for Cable Tie Fixation



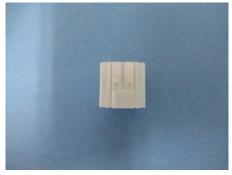
To the fabric fasteners attached on the bottom of the housing, put the magic bands tying the cable to fix the cable.



- 1.11.8.2 Accessaries for Electrostatic Discharge
- (3) 3.5mm WtoB/W Connector Housing: Female (To be attached by user)



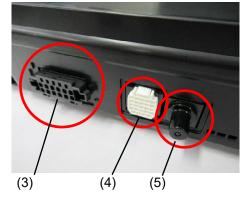
(4) DF62DL-24S-2.2C Connector Housing: Female (To be attached by user)



(5) Protection Cap: Female (To be attached by user)



Attached Condition of Accessaries for Electrostatic Discharge



When a cable is not connected, apply the accessaries for electrostatic discharge to each connector.

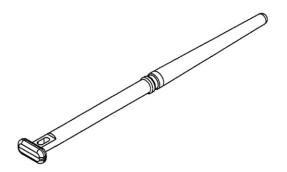


# 1.12 Maintenance Parts

1.12.1 Battery Unit (AB-7) (Enclosed to Main Unit)



1.12.2 Touch Pen (TCH-TB03) (Enclosed to Main Unit, For purpose of lost and damaged)





## 1.13 Specifications Related to Battery Charge

#### 1.13.1 Types of Charger Mode

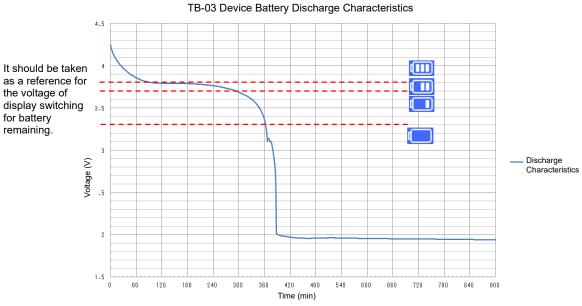
Charger Mode	Condition of Operation	Contents
Quick Charging of AC Adapter	<ul> <li>AC adapter connected</li> <li>Battery not fully charged</li> </ul>	<ul> <li>Battery should be fully charged from empty in approximately three hours.</li> </ul>
AC Adapter Additional Charging	<ul><li>AC adapter connected</li><li>Battery fully charged</li></ul>	<ul> <li>Battery should be remained almost fully charged.</li> </ul>
Wired Link Additional Charging	<ul> <li>AC adapter not connected</li> <li>Connected to controller with wire</li> </ul>	<ul> <li>Battery should be remained almost at the condition of start.</li> </ul>

#### 1.13.2 Caution Related to Battery Charging

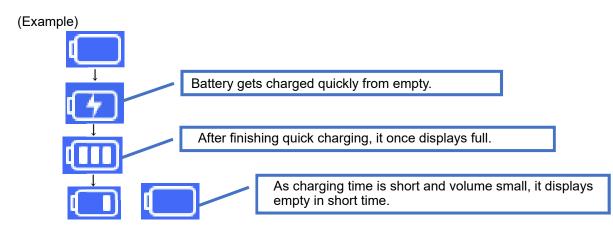
#### 1.13.2.1 Display of Battery Remained

Due to the voltage characteristics of NiMH battery electrical discharge, the duration of the battery.

remained display should not be constant. (Duration of battery full or remained small should be short.)



In case when the battery remained at start and the duration for charging is short, the display may show the battery condition full but show empty in short period.





# CYLINDER -

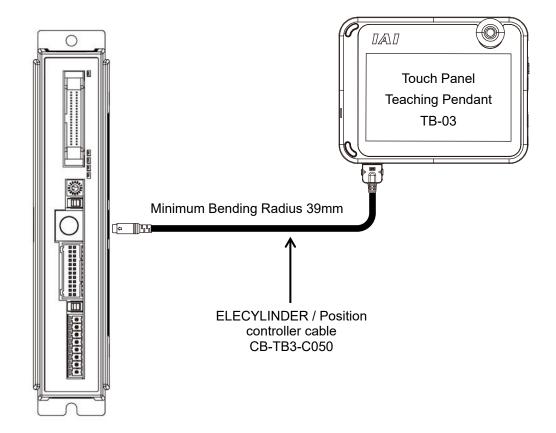
# 2. Connection

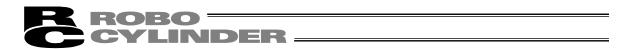
# 2.1 Connecting with the Controller

Turn the controller power OFF before connecting or disconnecting the touch panel teaching pendant TB-03.

Caution: • Connecting or disconnecting the unit while the controller power is ON could result in faults.

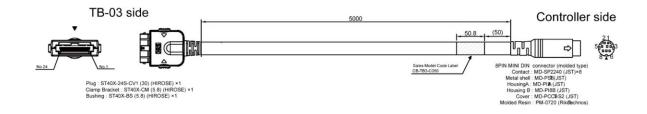
 Confirm the connector engagement section and connect/disconnect while taking care not to apply excessive force. If the connector does not fit in smoothly, do not push it in with force. Failure to observe this could result in faults.





# 2.2 ELECYLINDER / Position Controller Cable

Model	CB-TB3-C050
Name	TB-03 ELECYLINDER / Position controller connection cable
Controller side connector type	MD connector (JST Mfg. Co., Ltd.)
TB-03 unit side connector type	ST60-24P (30) (HIROSE)
Mass	285g approx. (5m)
Minimum cable bending radius	39mm





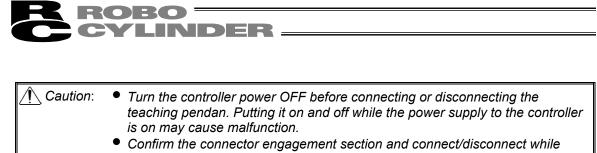
2.3 Connection of Actuator Driving Power Supply Unit

# 2.3.1 Connecting with ELECYLINDER



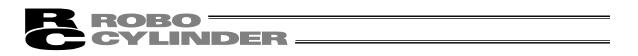
# 2.3.2 Connecting with ROBOCYLINDER





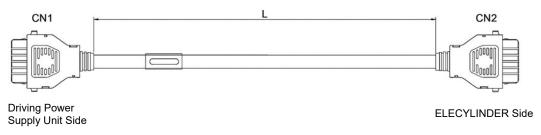
- Confirm the connector engagement section and connect/disconnect while taking care not to apply excessive force. If the connector does not fit in smoothly, do not push it in with force. Failure to observe this could result in faults.
- Do not attempt to connect (1) and (2) at the same time. It may cause malfunction.



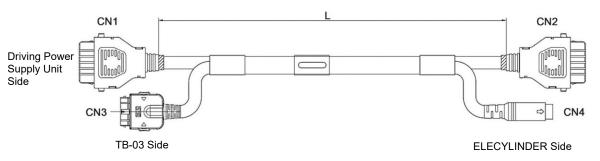


## 2.4 Actuator Drive Power Supply Unit Connection Cable

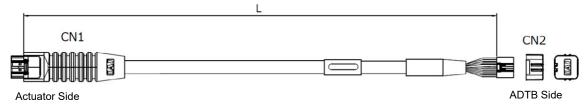
# 2.4.1 EC Power Supply Connectivity Cable: CB-ADTB-PW --RB



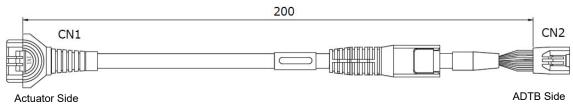
#### 2.4.2 EC Power Supply + TB-03 Integrated Connectivity Cable: CB-ADTB-PWTB



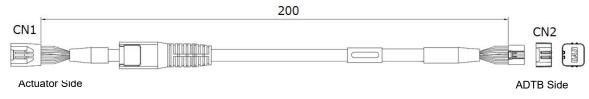
#### 2.4.3 RCP Connection Cable: CB-ADPC-MPA



#### 2.4.4 RCP Connection Conversion Cable: CB-CAN-AJ002



## 2.4.5 RCP Connection High-Thrust Conversion Cable: CB-ADTBF-AJ002





#### 2.4.6 List of Cables for RCP Connection of Actuator Drive Power Supply Unit

It is necessary to prepare the following cables / conversion units when connecting to RCP Series. When using a cable or conversion cable / conversion unit other than CB-ADPC-MPA050, it is necessary to prepare a teaching pendant and power supply unit separately.

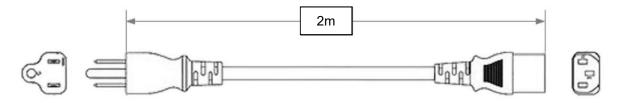
Actuator		Connection Cable (-RB: Robot Cable)		
Series	Туре			
RCP6 RCP6CR RCP6W RCP5	High-Thrust Type (56SP,60P,80P) SA8/WSA16 RA8/RA10/RRA8/WRA16	CB-ADPC-MPA (-RB)		
RCP5CR RCP5W	Other than High-Thrust Type	CB-ADPC-MPA(-RB)		
	SA3/RA3/ST4525E Gripper Type (All Models) GRSML/GRSLL/GRSWL GRLM/GRLL/GRLW	CB-ADPC-MPA		
RCP4 RCP4CR RCP4W	High-Thrust Type (56SP,60P,80P) RA6(56SP)	CB-ADPC-MPA C (-RB)		
	Models Other than Above SA5/SA6/SA7 RA5/RA6(56P) ST615E/ST68E	CB-ADPC-MPA (-RB)		
RCP3	All Models	CB-RCAPC-MPA 🗆 (-RB)		
RCP2	RTBS(L), RTCS(L)	CB-RPSEP-MPA		
	GRSS/GRLS/GRST/GRHM/GRHB SRA4R/SRGS4R/SRGD4R	CB-RCAPC-MPA		
RCP2	High-Thrust Type (56SP,60P,80P) HS8/RA8/RA10	RCM-CV-APCS		
RCP2CR RCP2W	Models Other than Above BA□/SA5/SA6/SA7/SS7/SS8 RA2/RA3/RA4/RA6 RGS□C/RGD□C/GR3LS/GR3LM Rotary Type in Standard Environment Specifications RTB(L)/RTBB(L)/RTC(L)/RTCB(L) Grippers in Standard Specifications GRS/GRM	RCM-CV-APCS CB-PSEP-MPA CB-ADPC-MPA CB-ADPC-MPA		
RCP2CR RCP2W	GRS/GRM/GR3SS/GR3SM Rotary Type (All Models) RTB(L)/RTBB(L)/RTBS(L) RTC(L)/RTCB(L)/RTCS(L)	CB-ADPC-MPA		

\* The cable length from ADTB to an actuator should be 20m at maximum regardless of a conversion unit.

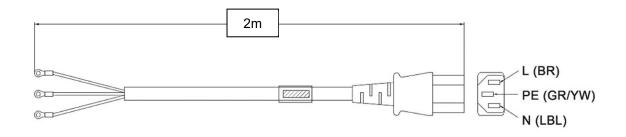
Note : Make sure to use a high-thrust conversion cable (CB-ADTBF-AJ002) for the high-thrust type. As the connector profile is the same, connection can be made without a conversion cable, but control cannot be established without a conversion cable being connected.



- 2.5 Actuator Drive Power Supply Unit Power Supply Cable
- 2.5.1 100V AC Power Supply Cable (Model: KWD-UJ-2MBS)



2.5.2 200V AC Power Supply Cable (Model: CB-APMEC-PW020-TM)





CYLINDER —

ROBO

# 3. Operation of CON Related Controllers

CON related controllers: ACON, DCON, PCON, SCON, SCON2, MCON, MSCON, RCP6S, RCM-P6□C, ERC2, ERC3, RACON, RPCON, RCON-PC/PCF/AC/DC/SC

# 3.1 Displayed Language Change

The language can be changed by following the steps below.

• Display change from English to Japanese



(Note) Skipping to another window without touching [上記設定を書き込み] will allow language to go back to that before changed.

Display change from Japanese to English

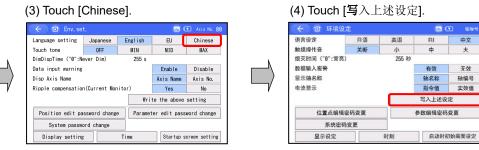
(1) Touch [	[メニュー2] in	メニュー1.		(2) Touch [環	境設定] in ン	メニュ	—2.	
(<)@ ×=:	а—1 (	HIDERH 00 MENO 00		(←) (@ メニュー2)		ille Riskin	#ENO. 00	
Z	<b>≣</b> ₹=9-	▶ 試運転		经作轴变更	1 新品	マテナンス リスト		
ポジション編集ガイ	「ド 🦯 ポジション編集	A 75-4U21		- TP操作モード	➡ 簡易	プログラム		
<b>↓1</b> 1/0 制御ガイド	「マントター編集	<b>(1)</b> 19 RX		環境設定	オフ チュ	ポード		
	SDメモリーカード	トラブル シューティング	, v	S	再起動 ジェ パル 制御	/ス列  モード設定		
簡単プログラム設計	ま サーボモニター	≠==-2 <b>^</b> >			*=	a-10	•	
(	(3) Touch [英語	i].		(-	4) Touch [Wr	rite the	above s	etting].
	← 🗇 環境設定		11 ##No. 00		← ☎ Env. set.			💽 Axis No. 00
	言語設定 日本語		中国語				nglish EU	Chinese
	タッチ操作音 消 消灯時間("0":常時点灯)	小中	大		Touch tone DimDispTime ("0":Never I	OFF Dim)	MIN MID 255 s	MAX
N I	データ入力警告	255 49	無効	N I	Data input warning		Enable	Disable
	軸名称表示	軸名称			Disp Axis Name		Axis Nam	e Axis No.
	リップル補償(電流モニター)	あり	なし		Ripple compensation(Cur	rent Monitor	) Yes	No
,		上記設定を	書き込み	,		l	Write the abo	ve setting
	ポジション編集パスワード	変更 パラメーター編集	パスワード変更		Position edit passwor	d change	Parameter edit p	assword change
	システムパスワード変!				System password ch	hange		
	表示設定	時刻起動	時初期画面設定		Display setting	Tin	e Startu	o screen setting

(Note) Skipping to another window without touching [Write the above setting] will allow language to go back to that before changed.



- Display change from English to Chinese
- (1) Touch [Menu2] in Menu1.





- (Note) Skipping to another window without touching [写入上述设定] will allow language to go back to that before changed.
- Display change from Chinese to English





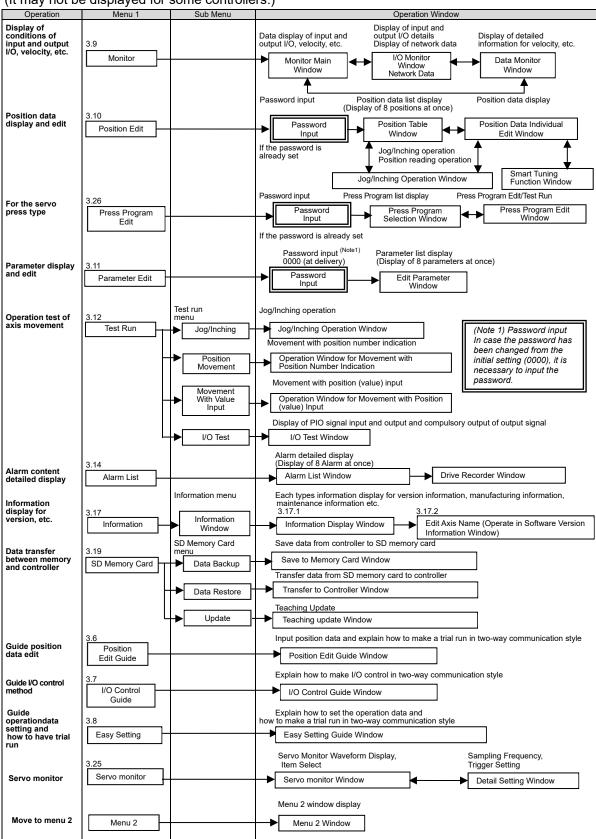
(Note) Skipping to another window without touching [Write the above setting] will allow language to go back to that before changed.

# 3.2 Operating Menu

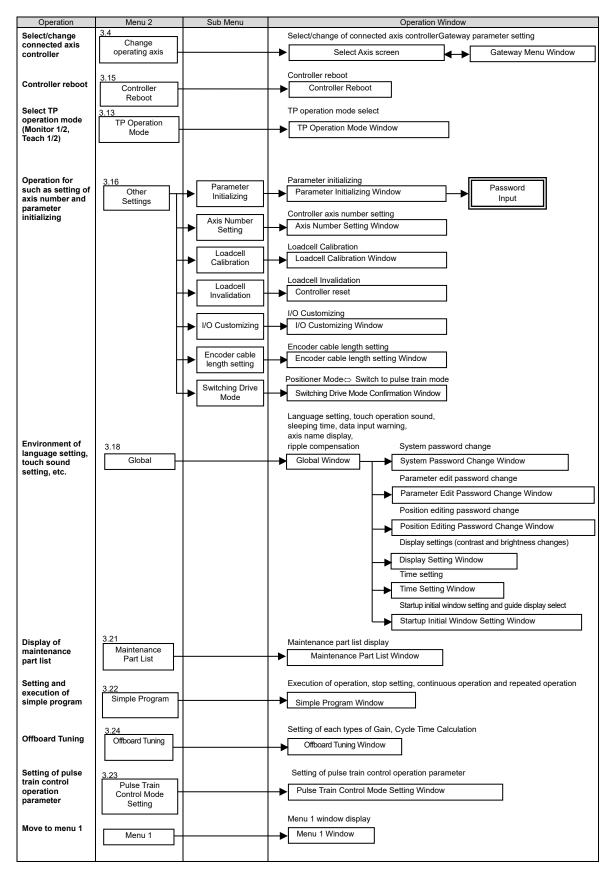
ROBO

Operating menu when the TB-03 is connected to a CON related controller is shown. (It may not be displayed for some controllers.)

INDER





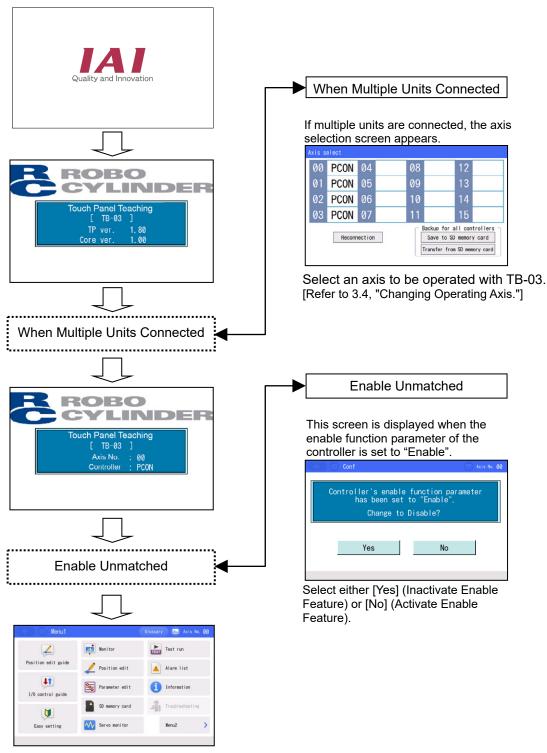


3. Operation of CON Related Controllers



## 3.3 Initial Screen

When the power is turned on, the IAI logo is displayed and then the version information is displayed.



The Menu 1 screen appears.

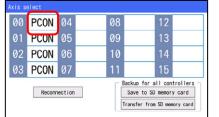


# 3.4 Changing Operating Axis

If multiple controllers are connected to the communication line, the axis selection screen appears.

Also, it opens by touching [Change operation axis] in the Menu 2 screen or [Axis Select] in the Gateway Menu screen.

If only one controller is connected, you need not select an axis.



Select the axis to be operated in this teaching pendant and touch it.



Connection with the selected controller axis starts.

$\in$ (e	) Conf	Axis No. 00
C	ontroller's enable has been set Change to	
	Yes	No

The following screen is shown when the enable feature parameter of the controller is valid.

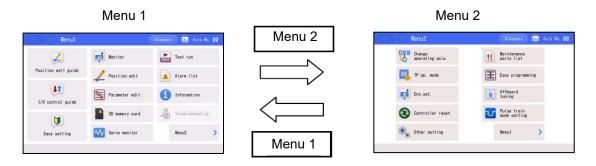
Select either [Yes] (Inactivate Enable Feature) or [No] (Activate Enable Feature).

🔶 💿 Menu1		Glossary	din Axis	No. 00
4	Monitor	TEST	Test run	
Position edit guide	🖌 Position edit		Alarm list	
I/O control guide	Parameter edit	6	Information	
	SD memory card	j.	Troubleshooting	
Easy setting	Servo monitor		Menu2	>

When connection with the controller is established, the Menu 1 screen appears.



# 3.5 Menu Selection



Two menu selection screens, Menu 1 and Menu 2, are available. Touching [Menu2] on the Menu 1 screen changes the display to the Menu 2 screen. Touching [Menu1] on the Menu 2 screen changes the display to the Menu 1 screen.

	5)	6)	1)	7) 8) 2) 3) 4)
K		0	Menu1 (Virtual A	xis) Glossary (1) (1) (1) Axis No. 00
		<b></b>	Moniter	Tast -
1)	Menu 1 (\	/irtual Axis	Screen Name	: Shows the name of a screen. A virtual axis should be displayed as (Virtual Axis).
2)			Monitor Button	: Opens the Monitor Screen
3)		<b>(7</b> )	Battery Display	: The mark indicating charging is displayed.
4)	Ax	is No. 00	Change operating	axis :Shows Select Axis screem. (It should not function in a screen available to operate axes)
5)		$\leftarrow$	Return Button	: Returns to Previous Screen
6)			Home Button	: Returns to Menu 1 Screen
7)	G	lossary	Glossary Button	: Shows the Explanation Screen for Terms
8) \$	Stop St	atus lo	cons An icon sho	uld blink in the following status.
	SOP			ld be displayed in a stop status. n and the "202: Stop" message should be displayed.
	EMG	Pr		l be displayed in an emergency stop status. n and the "202: Emergency stop" message should be
	MP	Pr		be displayed in a motor voltage drop status. n and the "203: Motor Voltage Drop" message should be
	ENB	Pr		be displayed in a disable status. n and the "226: Enable Circuit Open" message should be
	Safe	fu Pr	inction or driver stop	be displayed in the stop status in STO/SS1-t in the safety status. n and the "225: STO/SS1-t" or "206:DRV-STOP" message



Described below are the functions of each button on the menu selection screen.

[Menu 1]

There are the following menus in Menu 1. Touch either of them to select it. The screen should shift to the touched menu.

<ul> <li>Position edit guide</li> </ul>	Explains how to input position data and how to make a trial run in two-way communication style using the actual position data edit screen. [Refer to 3.6 Position Edit Guide]
I/O control guide	Explains with actual operation how to perform positioning operation by I/O control when PIO Pattern is set to 0 in two-way communication style. [Refer to 3.7 I/O Control Guide]
<ul> <li>Easy setting</li> </ul>	Conducts data setting necessary for the requested operation from the sample program and then makes a test run in order in two-way communication style. [Refer to 3.8 Easy Setting]
Monitor	Displays the actuator status, I/O signal status, maintenance information and manufacturing information. [Refer to 3.9 Monitor]
Position edit	Conduct setting for position, velocity and acceleration / decele3388ration in order to operate an actuator. [Refer to 3.10 Position Edit]
<ul> <li>Pressing program edit</li> </ul>	It should be displayed when a servo pressing type controller (such as SCON-CB-F/SCON2-CG-F) is connected. [Refer to 3.26 Press Program]
Parameter edit	Conduct parameter tunings to adjust system, to use additional features and so on. [Refer to 3.11 Parameter Edit]
SD memory card	Conduct readout of each type of data such as position data, parameters and alarm list, and save them and teaching update. [Refer to 3.19 Data Backup]
Servo monitor	The actual operation status of the actuator is displayed in a waveform. It is available to record the displayed data. [Refer to 3.25 Servo Monitor]
Test run	Conduct manual operation with JOG, Inching and number indication and also make a trial run of I/O. [Refer to 3.12 Test run]
Alarm list	Shows a list of alarms and the time when they occurred. [Refer to 3.14 Alarm List]
Information	Shows the software version, network information, manufacturing information, maintenance information and models available for connection. [Refer to 3.17 Information Display]
Troubleshooting	Shows the contents of an alarm and the countermeasure when an alarm has been generated.



### [Menu 2]

There are the following menus in Menu 2. Touch either of them to select it. The screen should shift to the touched menu.

Change operating axis	Select an axis to operate when multiple units of controllers are connected to the communication line. [Refer to 3.4 Changing Operating Axis]
• TP op. mode	Switch over between forbidden and permitted for PIO operation and between invalid and valid for the safety velocity. [Refer to 3.13 TP Operation Mode]
• Env. set.	Conduct settings for display language, touch sound, turn-off time, data input warning, axis name display, ripple compensation, password, display, clock and initial window setting at startup. [Refer to 3.18 Environment Setting]
<ul> <li>Controller reset</li> </ul>	Restart the controller. [Refer to 3.15 Controller Reset]
Other setting	Conduct parameter initializing and axis number, loadcell calibration, loadcell invalidation, I/O customizing change, switching drive mode. [Refer to 3.16 Other Settings]
Maintenance parts list	Displays information of maintenance parts. [Refer to 3.21 Maintenance Parts List]
<ul> <li>Easy programming</li> </ul>	It is a window that enables setting of movement between positions, timer and repeated operation by indicating number, and to have continuous operation manually. [Refer to 3.22 Easy Programming]
Offboard tuning	Setting of optimum controlling parameters, each types of gain and calculation of cycle time are performed. [Refer to 3.24 Offboard Tuning]
Pulse train mode setting	Conduct the settings to have the pulse train control. [Refer to 3.23 Pulse Train Mode Setting]

### [When Alarm Occurred]

When an alarm generates, the corresponding alarm code and message will appear at the bottom of the screen and the background color will change to orange (Red for some alarms).

Touch the gray part at the bottom of the window that the alarm information is displayed, and the screen switches to the display window of alarm details.

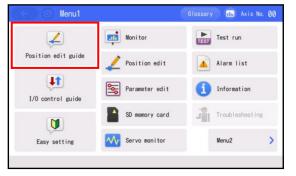
2	Monitor	Test run
Position edit guide	🟒 Position edit	🔺 Alarm list
I/O control guide	Parameter edit	1 Information
	SD memory card	Troubleshooting
Easy setting	Servo monitor	Menu2 )



# 3.6 Position Edit Guide

In the guide, explains how to input position data and how to make a trial run in two-way communication style using the actual position data edit screen.

Operate in the order of [Introduction]  $\rightarrow$  [Item select]  $\rightarrow$  [Position input]  $\rightarrow$  [Test run]  $\rightarrow$  [End].



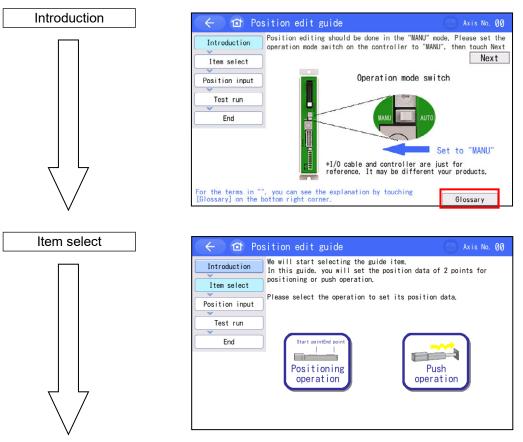
Touch [Position edit guide].

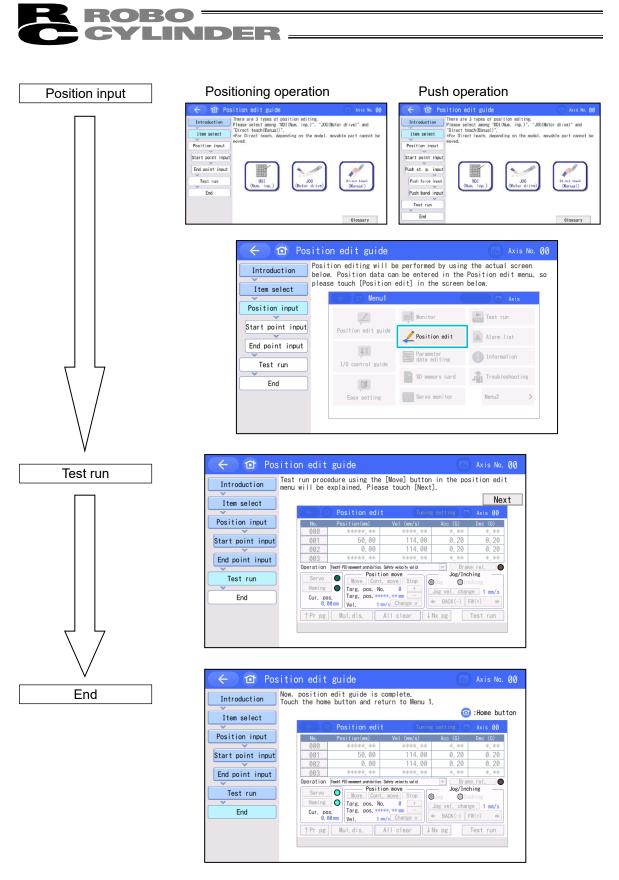
After that, follow the instruction on the screen to operate.

Touch [ $\leftarrow$ ] button and the screen goes back to the previous window.

Some processes may be skipped depending on the actuator condition.

For the terms bracketed with "", touch [Glossary] at the bottom right of the screen and the explanation can be confirmed.





Touch the home button to return to Menu 1 screen.

ω



## 3.7 I/O Control Guide

Here, explains with actual operation how to perform positioning operation by I/O control when PIO Pattern is set to 0 in two-way communication style.

Perform operation in order of [Introduction]  $\rightarrow$  [Servo ON]  $\rightarrow$  [Release of pause]  $\rightarrow$  [Homing]  $\rightarrow$  [Expl. for pos.]  $\rightarrow$  [Positioning]  $\rightarrow$  [End].



← ☎ I/O control	guide	(	db	Axis No.	00
In this guide, you can lea PIO pattern selection. There are different parame Please set the parameter N this guide menu again. *Check first, if you can o	eter settings currentl No.25(PIO pattern sele	у.			for
	Parameter data editing				
		[	GI	lossary	

Touch [I/O control guide].

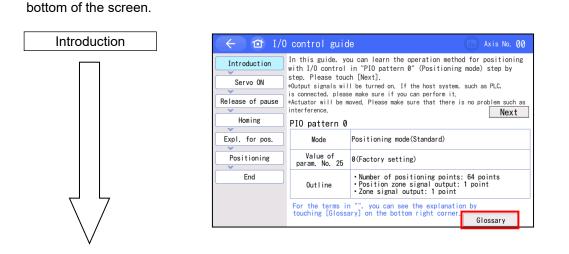
This window appears when PIO Pattern Select is set to a number except for "0".

Confirm that there would be no problem if a change is made to the parameter, set PIO Pattern Select to "0", and then select this guide menu.

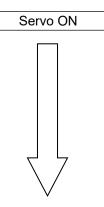
Follow the following descriptions to perform operation.

Touch [—] button to return to the previous screen.

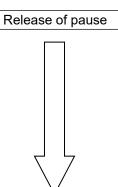
There may be some procedures to skip depending on the condition of the actuator. Also, for those terms marked with "", explanation can be checked by touching [Glossary] on the right

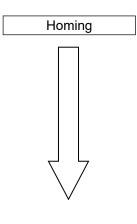


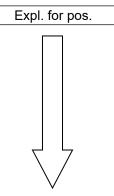
# **ROBO** CYLINDER



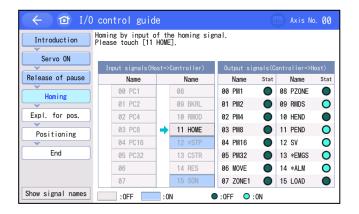
(← 1/0	1/0 control guide Axis No. 00						
Introduction	You can turn the Please touch [15			signal.			
Servo ON							
	Input signals(H		Output sig	gnals(Co			
Release of pause	Name	Name	Name	Stat	Name	Stat	
Homing	00 PC1	08	00 PM1	•	08 PZONE	•	
	01 PC2	09 BKRL	01 PM2	•	09 RMDS	0	
Expl. for pos.	02 PC4	10 RMOD	02 PM4	•	10 HEND	0	
Pasitissing	03 PC8	11 HOME	03 PM8	0	11 PEND	0	
Positioning	04 PC16	12 *STP	04 PM16	0	12 SV	0	
End	05 PC32	13 CSTR	05 PM32	Ō	13 *EMGS	0	
	06	14 RES	06 MOVE	Õ	14 *ALM	Õ	
	07	→ 15 SON	07 ZONE1	Ō	15 LOAD	Õ	
Show signal names	:0FF	:ON	):0FF 🔾:	ON			

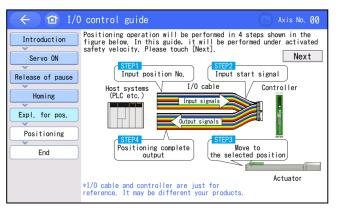




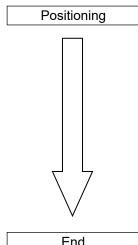


🔶 🗃 I/O control guide 👘 Axis No. 00								
Introduction	[*31F] OI the input signal. ([*31F] is a negative logic signal.							
Servo ON	Input signals(Host=)			nals(Con	troller=>H	ost)		
Release of pause	Name	Name	Name	Stat	Name	Stat		
V User in a	00 PC1	08	00 PM1		8 PZONE	•		
Homing	01 PC2	09 BKRL	01 PM2	0	9 RMDS	0		
Expl. for pos.	02 PC4	10 RMOD	02 PM4	0 1	0 HEND	•		
Positioning	03 PC8	11 HOME	03 PM8	0 1	1 PEND	•		
	04 PC16 🔶	12 *STP	04 PM16	0 1	12 SV	0		
End	05 PC32	13 CSTR	05 PM32	0 1	13 *EMGS	0		
	06	14 RES	06 MOVE	0 1	14 *ALM	0		
	07	15 SON	07 ZONE1	0 1	15 LOAD	•		
Show signal names	:0FF ::0	DN C	):0FF 🔾 :(	N				

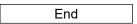








🔶 🇃 I/O control guide 🛛 Axis No. 00							
Introduction	After contribute the active position hot, rouch frequenting						
Servo ON	a position by touch Input signals(Ho	ing the button on t	the bottom le	ft corne			
Release of pause	Name	Name	Name	Stat	Name	Stat	
Homing	00 PC1	08	00 PM1	•	08 PZONE	•	
	→ 01 PC2	09 BKRL	01 PM2	•	09 RMDS	0	
Expl. for pos.	➡ 02 PC4	10 RMOD	02 PM4		10 HEND	0	
Positioning	03 PC8	11 HOME	03 PM8		11 PEND	0	
Tost troining	➡ 04 PC16	12 *STP	04 PM16		12 SV	0	
End	05 PC32	13 CSTR	05 PM32		13 *EMGS	0	
Check Example of	06	14 RES	06 MOVE		14 *ALM	0	
position data selecting a position	07	15 SON	07 ZONE1	0	15 LOAD	•	
Show signal names	→ Selected po	sition 000					



< ☎ I/0	← ☎ I/O control guide                   Axis No. 00							
Introduction	Introduction I/O control guide is complete. Please touch the home button to return to Menu 1.							
<b>v</b>				6	:Home bu	tton		
Servo ON						1 ton		
· ·	Input signals(Hos		Output sig			ost)		
Release of pause	Name	Name	Name	Stat	Name	Stat		
V Userian	00 PC1	08	00 PM1		08 PZONE			
Homing	01 PC2	09 BKRL	01 PM2	0	09 RMDS	0		
Expl. for pos.	02 PC4	10 RMOD	02 PM4	01	10 HEND	0		
Positioning	03 PC8	11 HOME	03 PM8		11 PEND	0		
Positioning	04 PC16	12 *STP	04 PM16	01	12 SV	0		
End	05 PC32	13 CSTR	05 PM32		13 *EMGS	0		
Check Example of	06	14 RES	06 MOVE	•	14 *ALM	0		
position data selecting a position	07	15 SON	07 ZONE1	0	15 LOAD			
Show signal names	:0FF	:0N	•:0FF •:	ON				

Touch the home button to return to Menu 1 screen.



# 3.8 Easy Setting

Conducts data setting necessary for the requested operation from the sample program and then makes a test run in order in two-way communication style.

Perform operation in order of [Sample program select]  $\rightarrow$  [Stop p. select]  $\rightarrow$  [Pos. d. create]  $\rightarrow$  [Test run]  $\rightarrow$  [End].

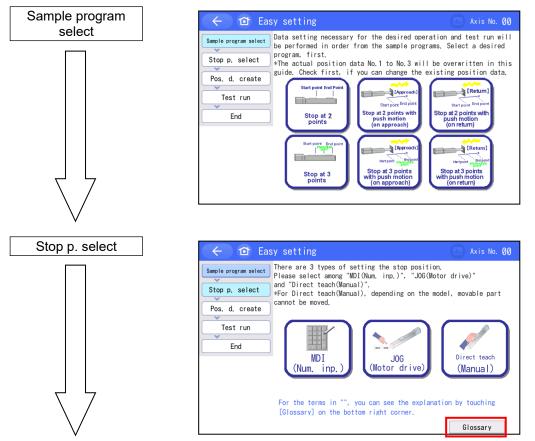


Follow the following descriptions to perform operation.

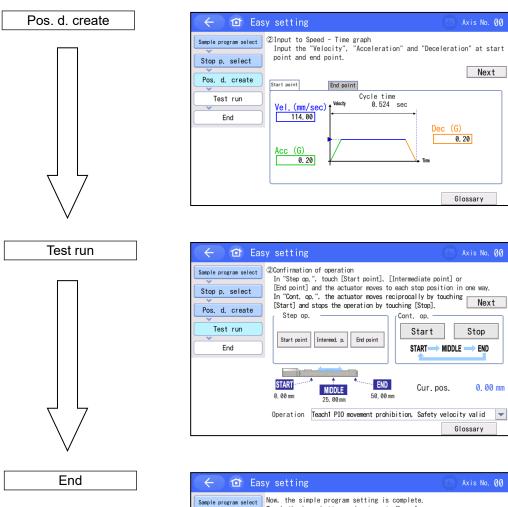
Touch [ $\leftarrow$ ] button to return to the previous screen.

There may be some procedures to skip depending on the condition of the actuator.

Also, for those terms marked with "", explanation can be checked by touching [Glossary] on the right bottom of the screen.







🔶 🔂 Eas	← ☎ Easy setting Axis No. 00								
Sample program select Stop p. select Pos. d. create	Now, the simple program setting is complete. Touch the home button and return to Menu 1. The data set this time are set to position data No.1 (Start point), No.2 (Intermediate point) and No.3 (End point). The value as "Push band" is set in the positioning band.								
		Position(mm)	0.00	Push force(%)	0				
Test run	No. 1	Vel.(mm/sec)	114.00	Pos band(mm)	0.10				
	(St. p.)	Acc (G)	0.20	Positi					
		Dec (G)	0.20	FOSILI	oning				
End		Position(mm)	25.00	Push force(%)	0				
	No. 2	Vel.(mm/sec)	114.00	Pos band(mm)	0.10				
	(In. p.)	Acc (G)	0.20	Desit					
		Dec (G)	0.20	Positi	oning				
		Position(mm)	50.00	Push force(%)	0				
	No. 3	Vel.(mm/sec)	114.00	Pos band(mm)	0.10				
	(End p.)	Acc (G)	0.20	Destri					
	Dec (G) 0.20 Positioning								
				(	Glossary				

Touch the home button to return to Menu 1 screen.

# 3.9 Monitor

The I/O statuses, current position and other information of the controller connected are displayed.

🤆 🕜 Menul		Glossary	📄 🕕 Axis No	00
Z	Monitor	TEST	Test run	
Position edit guide	🖌 Position edit		Alarm list	
I/O control guide	Parameter edit	6	Information	
۵	SD memory card	4	Troubleshooting	
Easy setting	Servo monitor		Menu2	>

Touch [Monitor] on the Menu 1 screen.

If the TP operation mode is not Monitor Mode 1 or 2, the following message screen appears.

Cen 6 Conf	💿 🗖 🗛 Axis No. 01
TP operation mo to be changed to "M Change TP operat	onitor mode".
* Changing the TP operating mo all connected co Yes	

Touch [Yes] to change to Monitor Mode 1 or 2. If not, touch [No].

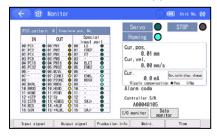
(Note) The safety speed does not change. If the current mode is Teaching Mode 1, it changes to Monitor Mode 1. If the current mode is Teaching Mode 2, it changes to Monitor Mode 2.

Note: For the multiple-axis controllers, TP Operation Mode of all the controllers should change.

Touch [OK].



The main monitor screen appears.

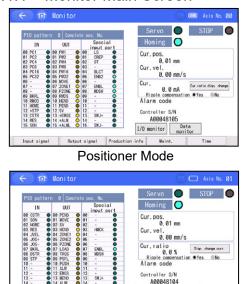


The items and buttons to be shown will differ depending on the controller models. The signal names to be shown will also differ depending on the controller models and operation patterns.



### 3.9.1 Monitor Screen

### 3.9.1.1 Monitor Main Screen



- 11	Monitor				Axis No.
PIO pattern	0 Comple	te pos. No.		Servo 🔘	STOP
IN	OUT	Special		Homing 🔵	
88 PC1 .	00 PM1 .			Ir. pos.	
1 PC2 • 2 PC4 •	01 PM2 0 02 PM4 0	01 CREP 02 0T		1 Pls	
13 PC8 🗢	03 PM8 O	03 -	• Cu	r.vel.	mn display chang
95 PC32 O	04 PM16 0 05 PM32 0	05 ENB2	8	0 PIs/	S
16 - O	06 MOVE 0 07 ZONE1 0		CL	r, ratio	Disp. change curr.
8 - 0	08 PZONE	08 MDSW	8	0.0% Ripple compensatio	
	09 RMDS O	00 - 10 -		arm code	
1 HOME	11 PEND 0 12 SV 0	11 -			
13 CSTR O	13 *EMGS O	13 SWJ+	6	A00048105	
4 RES 5 SON	14 *ALM O	14 - 15 SWJ-		Det	10
			1/0	monitor moni	tor
Input signal			Production info		Time
Input signal			Production info	Monitor moni	Time
<del>;</del> 🗇	Puls Monitor	e Tra	Production info	Monitor moni	Time ode
- î	Puls Monitor	e Tra	Preduction info	Moint or monitor monit	Time Dde IIII Axis No. STOP
- 12 PIO patter IN	Puls Monitor	ete pos. No.	Preduction info in Cor	Maint	Time Dde IIII Axis No. STOP
PIO patter IN 80 PC1 91 PC2	Puls	ete pos. No. Spocia input p 01 CREP	Preduction info in Cor	Moint or monit Maint, Introl Mc	Time Dde IIII Axis No. STOP
- 10 P10 patter IN 80 PC1 81 PC2 82 PC4	Puls	ete pos. No. Spocia input p 01 LS 01 CREP 02 OT 03 -	Preduction info in Cor	Mainter Maint. M	Time Dde IIII Axis No. STOP
PIO patter IN 60 PC1 61 PC2 62 PC4 63 PC8 64 PC16	Puls	ete pos. No. Specia official special official specia	Preduction info in Cor	Moint or monit Maint, Introl Mc	Time Dde IIII Axis No STOP STO/SS1-t
- 11 P10 patter IN 00 PC1 02 PC4 02 PC4 03 PC8 04 PC16 06 PC32 06 PC	Puls	ete pos. No. Spocia input p 01 CREP 02 OT 03 - 04 BLCT 05 ENR2 06 -	Preduction info	Maintor moni Maint. M	Time Dde III Axis No. STOP STO/SS1-t
- 101 P10 patter IN 60 P01 61 P02 22 P04 62 P04 66 P032 66 P032 66 P032	Puls	ete pos. No. specia input p 90 LS 91 CR2P 92 OT 94 BLCT 94 BLCT 95 BN82	Preduction info	Maintor moni Maint. Mai	Time Dde III Axis No. STOP STO/SS1-t
- 10 P10 patter IN 00 PC1 01 PC2 02 PC4 02 PC4 02 PC5 02 PC5	Puls Monitor	ete pos. No. Specia input p 90 LS 91 CREP 92 OT 93 - 94 BLCT 93 - 94 BLCT 94 BLCT 95 EN82 95 - 97 EN82 97 - 98 MOSH 99 -	Preduction info in Cor	Maint. Maint.	Time Dde III Axis No. STOP STO/SS1-t
- 121 PIO patter IN 60 PC1 61 PC2 62 PC4 62 PC4 66 PC32 66 PC32 66 PC32 72 66 PC3 72 73 74 74 75 75 75 75 75 75 75 75 75 75	Puls Monitor	ete pos. No. Spoola input p 00 LS 01 Crep 22 OT 33 44 BLCT 45 ER2 46 - 10 - 10 - 11 - 11 -	Preduction info	Maint. Maint.	Time Dde IIII Axis No. STOP STO/SS1-t
- 11 patter P10 patter IN 80 Pc1 81 Pc2 82 Pc8 82 Pc8 84 Pc16 84 Pc16 86 - 86 - 87 - 86 - 86 - 88 - 89 - 80 -	Puls Monitor	ete pos. No. Spocia input p 01 Cerp 01 Cerp 01 Cerp 03 - 04 BLCT 05 ENS2 06 - 07 ENBL 08 MOSH 09 -	Preduction info	Maint. Maint.	Time Dde III Axis No. STOP STO/SS1-t

Network Type

Equipped with Functional Safety Unit

Touch [I/O monitor] and the I/O monitor screen will be displayed. [Refer to 3.9.1.2 I/O Monitor Screen] Touch [Data monitor] and the data monitor screen will be displayed. [Refer to 3.9.1.3 Data Monitor Screen] (For Network Type Single Axis Controllers)

Touch [Network monitor] and the network data monitor window opens.

(For the network type single axis controllers) [Refer to 3.9.1.5]

Network monitor Maint,

Touch [Functional safety unit] and the functional safety unit screen will be displayed. (For equipped with functional safety unit) [Refer to 3.9.1.6]

Touch [Input signal] and the term explanation screen

for input signals will be displayed.

Touch [Output Signal] and the term explanation screen for output signals will be displayed.

[Refer to 3.9.1.4 Glossary Screen for Input and Output Signals]

Touch [Production info] and the manufacturing information screen will be displayed.

[Refer to 3.17 Information Display]

Touch [Maint.] and the maintenance information screen will be displayed.

[Refer to 3.9.2 Maintenance Information Screen]

Touch [Time] and the controller clock setting screen will be displayed.

[Refer to 3.9.3 Time Setting Screen for Controller]

Touch [Disp. change cur.] and the value of current will be displayed.

Touch [Cur. ratio disp. change] and the current ratio will be displayed.

For Pulse Train Control Mode

Touch [Disp. change pulse] and the current position is shown in PIs and the current velocity in PIs/s.

Touch [mm display change] and the current position is shown in mm and the current velocity in mm/s.

[Displayed Items]

- PIO pattern The PIO pattern number set to the controller is shown.
- Complete pos. No The position number achieved upon completion of positioning is shown.
- IN The status of each input port is shown. ON is lit. OFF is unlit.
- OUT The status of each output port is shown. ON is lit. OFF is unlit.
- Special input port The statuses of the enable switch, etc., are shown. ON is lit. OFF is unlit.



- Servo The servo ON status is shown. ON is lit. OFF is unlit.
- Homing
  - The home return status is shown. It on when the home-return operation is complete, and off when incomplete.
- It shows the status of stop. It is on when it is stopped. It turns off when Stop the stop condition is released.
- STO/SS1-t It shows the status of STO/SS1-t for STO/SS1-t type of SCON-CB/SCON2. It is on when in STO/SS1-t condition. It turns off when the condition is released.
  - Cur. pos. The current position is shown.
- The current speed is shown. Cur. vel.
- Cur. Shows the current.
- Cur. ratio The value of electrical current is shown as a percentage of the rated current.
- Ripple It can be chosen with the radio button whether to display the compensation (Note 1) current/current ratio with ripple compensation or without ripple
  - compensation.
  - Yes : Shown in command current (Note 2)
  - No : Shown in output current (Note 3)
  - The applicable alarm code is shown. Alarm code
- Controller S/N Shows the manufacturing number of the controller.

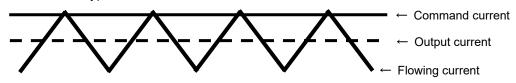
The items and buttons to be shown will differ depending on the controller models. The signal names to be shown will also differ depending on the controller models and operation patterns.

Note 1 Ripple compensation is a feature for the pulse motor type controllers. Shown below is the list of applicable models and applicable versions. (Same for Safety Category Complied Type)

Tool/Controller	Applicable Versions
Teaching Pendant TB-03	V2.40 and later
RCON-PC	V0004 and later
PCON-CB/CFB/CBP	V0006 and later
PCON-CB/CFB (MECHATROLINK-III Connected Type)	V0005 and later
PCON-CYB/POB/PLB	V0003 and later
MPCON/MPCON-A	V0007 and later
MPCON/MPCON-A (EtherCAT Motion Connected Type)	
MPCON/MPCON-A (MECHATROLINK- III Connected Type)	V0004 and later
MPCON/MPCON-A (SSCNET III /H Connected Type)	
RCP6S, RCM-P6PC	V0003 and later

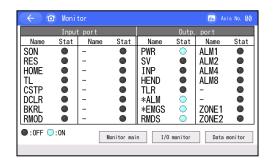
- In versions other than those listed above, the selections of ripple compensation should not be displayed.
- For those models with no selections of ripple compensation, the display should be shown in command current (Note 2).
- Note 2 In the pulse motor type controllers, the command current should compensate for the amount of current ripple considering transistor switching.
- Note 3 In the pulse motor type controllers, output current close to the effective value should be figured out by calculation as it will not acquire the output current.

Pulse motor type controllers





## 3.9.1.2 I/O Monitor Screen



Touch [Monitor main] and the monitor main screen will be displayed. [Refer to 3.9.1.1 Monitor Main Screen] Touch [Data monitor] and the data monitor screen will be displayed. [Refer to 3.9.1.3 Data Monitor Screen]

[Displayed Items]

- Input port The status of each input port is shown. ON is lit. OFF is unlit.
- Outp. port The status of each output port is shown. ON is lit. OFF is unlit.

The items and buttons to be shown will differ depending on the controller models. The signal names to be shown will also differ depending on the controller models and operation patterns.



### 3.9.1.3 Data Monitor Screen

Axis Status	Servo	STOP
Cur.pos. 0.00 mm	Homing	STO/SS1-t 🔵
Current vel. 0.00 mm/s	Analog	data
Alarm code	Contr. V	24.00 V
Overload level 0%	Motor V PCB temp.	23.40 V 25.00 °C
Cur, ratio disp. chang	Force cor	ntrol
Cur. 0mA Ripple compensation •Yes •No	Current loa	d 0.00 N
ontroller S/N A40	969950 Calib	oration 🔵



Touch [Monitor main] and the monitor main screen will be displayed. [Refer to 3.9.1.1 Monitor Main Screen] Touch [I/O monitor] and the I/O monitor screen will be displayed. [Refer to 3.9.1.2 I/O Monitor Screen]

Touch [Disp. change cur.] and the value of current will be displayed. Touch [Cur. ratio disp. change] and the current ratio will be displayed.

For Pulse Train Control Mode

Touch [Disp. change pulse] and the current position is shown in PIs and the current velocity in PIs/s. Touch [mm display change] and the current position is shown in mm and the current velocity in mm/s.

[Displayed Items]

.

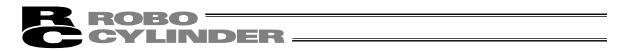
nopiayou nomoj	
Cur. pos.	The current position is shown.
<ul> <li>Current vel.</li> </ul>	The current speed is shown.
<ul> <li>Alarm code</li> </ul>	The applicable alarm code is shown.
<ul> <li>Overload level</li> </ul>	Shows the overload level.
Cur.	Shows the current.
Cur. ratio	The value of electrical current is shown as a percentage of the rated current.
Ripple compensation	It can be chosen with the radio button whether to display the current/current ratio with ripple compensation or without ripple compensation.
	<ul> <li>Yes : Shown in command current</li> </ul>
	<ul> <li>No : Shown in output current (Refer to 3.9.1.1 Monitor Main Screen for details of ripple compensation)</li> </ul>
<ul> <li>Controller S/N</li> </ul>	Shows the manufacturing number of the controller.
Servo	The servo ON status is shown. ON is lit. OFF is unlit.
Homing	The home return status is shown. It is on when it is stopped. It turns off when the stop condition is released.
• Stop	It shows the status of stop. It is on when it is stopped. It turns off when the stop condition is released.
<ul> <li>STO/SS1-t</li> </ul>	It shows the status of STO/SS1-t for STO/SS1-t type of SCON-CB/SCON2. It is on when in STO/SS1-t condition. It turns off when the condition is released.
<ul> <li>Control Voltage</li> </ul>	The voltage of the control power supply is shown.
Motor V	The voltage of the motor power supply is shown.
<ul> <li>PCB temp.</li> </ul>	The PCB temperature is shown.

When PCON-CBP/CGBP and SCON-CB-F/SCON2-CG-F controllers are connected, the following items should be displayed.

- Current load When a loadcell is connected, it should display the current load.
  - Calibration It should display the condition of loadcell calibration.
    - It is on when calibration is completed.

The items and buttons to be shown will differ depending on the controller models. The signal names to be shown will also differ depending on the controller models and operation patterns.

•



## 3.9.1.4 Glossary Screen for Input and Output Signals

In this screen, you can check the explanations for terms related to input and output signals. Touch [Glossary] in each item and you can check the details of features.

CSTR	signals(Host=>Control  Start signal	Glossarv	MODE	signals(Host=>Controll Teaching mode	Glossar
PC1~PC256	Command position No.	Glossary	JISL	Jog/Inching switch	Glossar
BKRL	Brake release	Glossary	J0G+/J0G-	Jog	Glossar
RMOD	Operation mode switch	Glossary	PWRT	Read current position	Glossar
*STP	Pause	Glossary	STØ~ST6	Start signal	Glossar
RES	Reset	Glossary	01.00		C1
SON	Servo ON	Glossary	CLBR	Load cell calibration	Glossar
HOME	Homing	Glossary			

**Glossary Screen for Input Signals** 

#### **Glossary Screen for Output Signals**

CALL CLOSSARY Axis No. 00							
Output :	Output signals						
Output	signals(Controller=>H	ost)	Output	signals(Controller=>H	ost)		
PEND/INP	Positioning complete	Glossary	MODES	Teaching mode output	Glossary		
PM1~PM256	Complete position No.	Glossary	WEND	Writing complete	Glossary		
HEND	Homing complete	Glossary	PE0~PE6	Current position No.	Glossary		
ZONE1	Zone	Glossary	LS0~LS6	Limit switch output	Glossary		
PZONE	Position zone	Glossary	CEND	Load cell calibration	01		
RMDS	Operation mode status	Glossary	CEND	Load cell calibration	Glossary		
*ALM	Alarm	Glossary	*BALM	Absolute battery low			
MOVE	Moving	Glossary	*BALM	voltage warning	Glossary		
SV	Servo ON	Glossary	LOAD	Load output jedgment	Glossary		
*EMGS	Emergency stop output	Glossary	TRQS	Torque level output	Glossary		
*You can se	e the explanation of e	ach funct	ion by touch	ing "Glossary".			
*"*" repres	ents a negative logic	s					

## 3.10.1.5 Network Data Monitor Screen

🔶 î Network	Data Monitor	Ax 🖸 🖬	is No. 00	← 1 Network	Data Monitor	(iii) 💭 Axis No. I
Network setting Fieldbus operation Fieldbus input/out		Full Ø		Network setting Fieldbus operatio Fieldbus input/ou		Full Ø
Data monitor Position(mm) Posband(mm) Vel (mm/s) Zonee(mm) Zonee(mm) Acc (6) Dec (6) Puth Load Current Threshold Control Signal 1 Control Signal 2	Input (PLC Output) 0,00	$\begin{array}{c} \mbox{Setting Available Range} & -0.15 \sim 560.15 \\ -0.05 \sim 560.36 \\ 0.00 \sim 50.300 \\ 0.00 \sim 500000 \\ 0.00 \sim 500000 \\ 0.00 \sim 90000 \\ 0.00 \sim 90000 \\ 0.00 \sim 0.50 \\ 0.01 \sim 0.50 \\ 0 \sim 102 \\ 0 \sim 255 \end{array}$	Inp Outp BIN HEX	Data monitor Current position(mm) Comman Current (mk) Current vel. (mm/s) Alarm code Overload ievel(%) Current load(%) Total travel count Total travel coint Total travel clist.(%) Status Signal1 Status Signal2	Output (PLC Input)           0.000         0.00         0.00           0.000         0.00         0.00           0.000         0.00         0.00           0.000         0.000         0.000           0.000000000000         0.000         0.000           0.0000000000000         0.00000000000000000000000000000000000	Inp Outp BIN HEX

Touch [Inp] and the input value should be displayed on the data monitor. Touch [Outp] and the output value should be displayed on the data monitor.

🔶 î Network	Data Monitor	(iii) 💭 🗛	is No. 00	$\leftarrow$	Network	Data Monitor	🖬 🗖 Axi	s No. 00
Network setting Fieldbus operatio Fieldbus input/ou		Full Ø		Field	k setting dbus operation dbus input/ou		Full Ø	
Data monitor Positien(mm) Positien(mm) Vel (mm/s) Zoner(mm) Zoner(mm) Dec (f) Dec (f) Load Current Threshold Control Signal1 Control Signal2	Input (PLC Output) 0,00 0,00 0,00 0,00 0,00 0,00 0,00 0,00 0,00 0,00 0,000	$\begin{array}{c} \mbox{Setting Available Barge} \\ -0.15 \sim 50.15 \sim 50.15 \\ 0.02 \sim 55.30 \\ 0.01 \sim 200.00 \\ -9999.99 \sim 9999.99 \\ -9999.99 \sim 9999.99 \\ -9999.99 \sim 9999.99 \\ 0.01 \sim 0.50 \\ 0.01 \sim 0.50 \\ 0.01 \sim 0.50 \\ 0 \sim 102 \\ 0 \sim 255 \end{array}$	Inp Outp BIN HEX	Contro	on(mm) ind(mm) im/s) imm) imm) i)	Input (PLC Output) 0,00	$\begin{array}{c} \text{Setting Available Reage} \\ -0.15 & -50.15 & -50.15 \\ 0.02 & -50.30 \\ 0.01 & -290.90 \\ -9999.99 & -9999.99 \\ -9999.99 & -9999.99 \\ -9999.99 & -9999.99 \\ 0.01 & -0.50 \\ 0.01 & -0.50 \\ 0 & -102 \\ 0 & -255 \end{array}$	Inp Outp BIN HEX

Values in "Control Signal 1" and "Control Signal 2" of input and "Status Signal 1" and "Status Signal 2" of output should be displayed in the binary numbers or hexadecimal numbers.

Touch [BIN] and the values are displayed in binary numbers. Touch [HEX] and the values are displayed in hexadecimal numbers.

[Displays]

- Network setting ------ [Refer to 3.9.1.5 (1) Network Setting]
- Data monitor (Positioner Type) - - [Refer to 3.9.1.5 (2) Data Monitor (Positioner Type)]
- Data monitor (Servo Press Type) - - [Refer to 3.9.1.5 (3) Data Monitor (Servo Press Type)]



# (1) Network Setting

letwork setting				
Fieldbus operatio	n mode		Half	
Fieldbus input/ou	itput format		3	
Half direct mode	velocity unit (0:1mm/	s 1:0.1mm/s)	0	
ata monitor		0-11-1-1-1-1		
Position(mm)	Input (PLC Output) 40,00	Setting Availab	- 100, 15	Inp
Pos band(mn)	0.10		- 100.30	
Vel (mm/s)	50		$1 \sim 125$	0utp
Acc/Dec(G)	0.20		~ 0.50	
Pushing Current Limit	0		0 ~ 102	
Control Signal	0000000000010001			
				BIN
				HEX

#### • Fieldbus operation mode

An operation mode name should be displayed in accordance with the setting in Parameter No. 84 "Fieldbus Operation Mode".

Parameter No. 84 Setting	Positioner Type	Servo Press Type
0	Remote I/O (Not Displayed)	Remote I/O (Not Displayed)
1	Simple Direct	Full Function
2	Half Direct	Pressing Direct
3	Full Direct	
4	Remote I/O 2	
5	Simple Direct 2	
6	Half Direct 2	
7	Remote I/O 3	
8	Half Direct 3	

Fieldbus operation mode setting

• Fieldbus input/output format

The value set in Parameter No. 90 [Fieldbus Input and Output Format] should be displayed. The setting will be reflected to the input and output values in the data monitor.

Parameter No. 90 Setting	Name
0	No swapping should be conducted. Data is to be sent as it is to PLC.
1	Upper bytes and lower bytes in each resistor should be swapped.
2	Upper words and lower words in two-word resistors should be swapped.
3	Upper bytes and lower bytes in each resistor should be swapped. For two- word resistors, upper words and lower words are to be swapped in addition.

• Half direct mode velocity unit

The value set in Parameter No.159 [Half Direct Mode Velocity Unit] should be displayed.

It should be displayed when the fieldbus operation mode setting is either "2. Half Direct", "6. Half Direct 2" or "8. Half Direct 3".



# (2) Data Monitor (Positioner Type)

Input values to a controller, settable range and output values from a controller should be displayed.

Fieldbus operation	mode	Full	
Fieldbus input/out		3	
Therabas Thput/out	put formut	5	
Data monitor	Input (PLC Output)	Setting Available Range	Inp
Position(mm)	40.00	-0.15 ~ 100.15	1100
Pos band (mm)	0, 10	0.01 ~ 100.30	
Vel (mm/s)	50,00	0.01 ~ 125.00	
Zone+(mm)	50,00	-9999, 99 ~ 9999, 99	)
Zone-(mm)	40,00	-9999, 99 ~ 9999, 99	
Acc (G)	0.20	0.01 ~ 0.50	
Dec (G)	0.20	0.01 ~ 0.50	
Pushing Current Limit	0	0~102	
Load Current Threshold	0	0 ~ 255	DIN
Control Signal1	00000000000000000	0 200	-
Control Signal2	0000000000010001		HEX

Fieldbus operation mode Full Fieldbus input/output format 3				
Output (PLC Input)	Inp			
40.00	Inp			
0	Outp			
	υυτρ			
2771				
	BIN			
0111100000010010				
	HEX			
	0utput (PLC Input) 0utput (PLC Input) 0 0 0 0 0 0 0 0 0 0 0 0 0			

The window shown above is the display in Fieldbus Operation Mode "3: Full Direct". Shown in "Input and Output Display List for Each Positioner Type Fieldbus Operation Mode" is the screen displayed in each setting of Fieldbus Operation Mode.

Desitioner Type Input and	Output Display List for Each	Eieldhue Operation Mode
Fusitionel Type input and	Output Display List for Each	rielubus Operation Mode

Fieldbus Operation Mode	Input Value	Output Value
0 : Remote I/O	Network data monitor s	hould not be displayed.
1 : Simple Direct	←     10*     Network Data Monitor     Avis No. 00       Network setting Fieldbus operation mode Fieldbus input/output format     Simple 3       Data monitor     Input (PLC Output) Selected position No. Control Signal     Desting Available Renes 0 0000000000010001     Input 0 0000       Dester double for the selected position No.     000000000000000000000000000000000000	Image: Status Signal     Output Status
2 : Half Direct	C         10 <sup>2</sup> Metwork Data Monitor         Aris to. 00           Network setting         Fieldbus input/output format         Helf         Fieldbus input/output format         1           Fieldbus input/output format         10         10         10         1         1           Data monitor         Input 0%C businet         5         10         1         1         1           Pass section         0         0         0         0         1         105         0           Method in the intervent limit         0         2         0         1         105         0           Matrix Garmet Limit         0         2         0         1         105         0	Of Network Data Monitor     Aris No. 00 Network setting     Fieldbus operation mode     Fieldbus input/output format     Fieldbus input/output format     Fieldbus input/output format     Fieldbus operation     Output/output (0:1mm/s 1:0, 1mm/s)     Output     Output
3 : Full Direct	Construct Data Monitor         Auis So. 00           Network setting Fieldbus operation mode Fieldbus input/output format         Full 3           Data monitor         Full Setting Analisis Rames (and an analysis)           Data monitor         Funct OLC Output)           Peritionian         Funct OLC Output)           Setting Analisis         Ino           Partimotion         Funct OLC Output)           Setting Analisis         Ino           Partimotion         Funct OLC Output)           Zamerical         600           Output         Control Setting Analisation Rames           Zamerical         60           Data for Correct Interesting         0.01 ~ 01 ~ 010.00           Centrol Signal         000000000000000000000000000000000000	Construct     Operation       Natwork setting     Fieldbus operation mode       Fieldbus operation mode     Full       Fieldbus input/output format     3       Data monitor     Output (PCC input)       Corrent setting     0.00       Corrent vel. (w/v)     0.00       Corrent setting     0.000       Corrent vel. (w/v)     0.000       Corrent vel. (w/v)     0.000       Status Signal 2     0111100000010010       HEX



Fieldbus Operation Mode	Input Value	Output Value
4 : Remote I/O 2	C Network Data Monitor     Avis No. 00     Network setting     Fieldbus operation mode     The dust input/output format     The	Image: Second
5 : Simple Direct 2	Control Signal     Instruct Data Monitor     Aris Rc. 00       Network setting     Fieldbus operation mode     Simple2       Fieldbus operation mode     Simple2     Simple2       Data monitor     Input OLC Output)     Setting Available Range     Input OLC Output)       Position(m)     40.00     -0.15 ~ 100.15     Outp       Sciencel Signal     000000000000000000000000000000000000	Control of the section mode     Simple2       Fieldbus operation mode     Simple2       Fieldbus operation mode     Simple2       Data monitor     Output format       Data monitor     Output format       Concerte sostion (m)     Output format       Concerte sostion (m)     Output format       Data monitor     Output format
6 : Half Direct 2	C     Detwork Data Monitor     Avia No. 80       Network setting     Heidfolus input/output format     Heidfolus input/output format     3       Heid firect mode velocity unit (0:1mm/s 1:0,1mm/s) 0     Data monitor     Immed 96.000     Heidfolus input/output format       Pres bandman     40,00     -0.15 ~ 100,150     Immed 96.000     Immed 96.000     Immed 96.000       Pres bandman     40,00     -0.15 ~ 100,150     Immed 96.000     Immed 96.000     Immed 96.000       Net/Decify     0.20     0.01 ~ 0.50     Immed 96.000     Immed 96.000     Immed 96.000       Central Signal     00000000000000000000000000     Immed 96.700     Immed 96.700     Immed 96.700       HEX     Immed 96.700     0.20     0.01 ~ 0.50     Immed 96.700     Immed 96.700	Construction     Asis No. 80       Network setting     Hair State Manitor       Fieldbus separation mode     Hair 2       Fieldbus separation mode     Hair 2       Fieldbus separation mode     Hair 2       Outpoint     1000000000000000000000000000000000000
7 : Remote I/O 3	Content Data Monitor     Avis No. 00     Network setting     Fieldbus operation mode     Fieldbus input/output format     3     Data monitor     Input (NLC Output)     Setting Available Reage     Outp     Outp	Contraction     Avis No. 00       Network setting     Fieldbus operation mode       Fieldbus input/output format     3   Data monitor       Outrant toxic     0xiput (%C town)       Outrant toxic     0xiput (%C town)         Outrant toxic     0xiput (%C town)         Outrant toxic     0xiput (%C town)
8 : Half Direct 3	Construction     Auis Nc. 00       Network setting     Hair3       Fieldbus operation mode     Hair3       Fieldbus operation mode     10       Fieldbus operation mode     10       Fieldbus operation mode     10       Paint mode     10       Data monitor     Innex 126: Control       Position(mode     10       Position(mode     10       Auis Net Observation     10       Position(mode     10 <td>Construct Data Monitor     Ause No. 00       Notwork setting     Hair3       Fieldbus operation mode     Hair3       Fieldbus input/fourbut format     3       Haif direct mode velocity unit (0:1mm/s 1:0.1mm/s) 0     0       Data monitor     Generation (0:00000000000000000000000000000000000</td>	Construct Data Monitor     Ause No. 00       Notwork setting     Hair3       Fieldbus operation mode     Hair3       Fieldbus input/fourbut format     3       Haif direct mode velocity unit (0:1mm/s 1:0.1mm/s) 0     0       Data monitor     Generation (0:00000000000000000000000000000000000

# ROBO CYLINDER

Shown in "Positioner Type Data List" is the input and output contents in each setting of Fieldbus Operation Mode.

#### Positioner Type Data List

	sitioner typ			Fieldbus	operatior	n Mode			
	0	1	2	3	4	5	6	7	8
		Target position	Target position	Target position	Occupied area (not displayed)	Target position	Target position	Occupied area (not displayed)	Target position
		Specified position No.	Positioning band	Positioning band		Specified position No.	Positioning band		Positioning band
		Control signal	Instruction velocity	Pressing current limit		Control signal	Instruction velocity		Instruction velocity
	Transition to network		Command velocity	Zone boundary on positive			Command velocity		Command velocity
Input	monitor information window			Zone boundary on negative			Push		Push
	cannot be conducted.		Control signal	Accelerate			Control signal		Control signal
				Decelerate					
				Load Current Threshold					
				Control signal 1 Control signal 2					
		Current	Current	Current	Current	Current	Current	Current	Current
		position	position	position	position	position	position	position	position
		Completed position No.	Command current value	Command current value	Command current value	Completed position No.	Current load	Current load	Command current value
		Status signal	Current velocity	Current velocity	/	Status signal	Current velocity		Current velocity
	Transition to network		Alarm code	Alarm code			Alarm code		Alarm code
Output	monitor		Status signal	Current load			Status signal		Status signal
Ō	window cannot be			Total number of					
	conducted.			movements Total					
				travelled distance					
				Status signal 1					
		/	/	Status signal 2	/	/	/	/	



Shown in "Positioner Type Input List" is the list of detailed explanations for the input items.

### Positioner Type Input List

	Item	Explanations
1	Target position	It shows the target position at direct position movement command. Unit : 0.01mm or 0.001mm
2	Positioning band	It shows the positioning band at direct position movement command. Unit : 0.01mm or 0.001mm
3	Command velocity	It shows the velocity at direct position movement command. Unit : 0.01mm/s
4	Acceleration and deceleration velocity	It shows the acceleration and deceleration at direct position movement command. Unit : 0.01G
5	Zone boundary on positive	It shows a value in the forward side when the zone output signal turns on. Unit : 0.01mm or 0.001mm Range available to indicate : -9999999 to 9999999
6	Zone boundary on negative	It shows a value in the backward side when the zone output signal turns on. Unit : 0.01mm or 0.001mm Range available to indicate : -9999999 to 9999999
7	Accelerate	It shows the acceleration at direct position movement command. Unit : 0.01G
8	Decelerate	It shows the deceleration at direct position movement command. Unit : 0.01G
9	Push	It shows the value in the pressing operation.
10	Load current threshold	It shows the threshold of the pressing motion.
11	Specified position No.	It shows the position number to be executed.
12	Control signal	It shows the control signals. Input should be displayed in the binary numbers or hexadecimal numbers. Refer to "Positioner Type Control Signals and Status Signals List" for show to set it up.
13	Control signal 1	It shows the control signal 1. Input should be displayed in the binary numbers or hexadecimal numbers. Refer to "Positioner Type Control Signals and Status Signals List" for show to set it up.
14	Control signal 2	It shows the control signal 2. Input should be displayed in the binary numbers or hexadecimal numbers. Refer to "Positioner Type Control Signals and Status Signals List" for show to set it up.



Shown in "Positioner Type Output List" is the list of detailed explanations for the input items.

### Positioner Type Output List

	Item	Explanations
1	Current position	It shows the current position.
2	Command current	It shows the command current.
3	Current velocity	It shows the current velocity.
4	Alarm code	It shows the alarm code which is currently being occurred. It shows "0000" when an alarm is not occurred.
5	Overload level	Shows the overload level. (SCON2 only)
6	Current load	It shows the feedback values of the load data from the loadcell attached on the tip of an axis.
7	Total number of movements	It shows the total number of movement.
8	Total travelled distance	It shows the total travelled distance.
9	Completed position No.	Is shows the completed position number.
10	Status signal	It shows the status signal. Output should be displayed in the binary numbers or hexadecimal numbers. Refer to "Positioner Type Control Signals and Status Signals List" for show to set it up.
11	Status signal 1	It shows the status signal 1. Output should be displayed in the binary numbers or hexadecimal numbers. Refer to "Positioner Type Control Signals and Status Signals List" for show to set it up.
12	Status signal 2	It shows the status signal 2. Output should be displayed in the binary numbers or hexadecimal numbers. Refer to "Positioner Type Control Signals and Status Signals List" for show to set it up.



			Fieldbus Operation Mode								
	Bits	0	1	0	3	3	4	F	G	7	0
		0	1	2	Control signal 1	Control signal 2	4	5	6	7	8
	00		CSTR	DSTR	-	DSTR		CSTR	DSTR		DSTR
	01	_	HOME	HOME	PUSH	HOME		HOME	HOME		HOME
	02		STP	STP	DIR	STP		STP	STP		STP
	03		RES	RES	INC	RES		RES	RES		RES
	04		SON	SON	GSL0	SON		SON	SON		SON
	05		JISL	JISL	GSL1	JISL		JISL	JISL		-
	06	ble	JVEL	JVEL	MOD0	JVEL	ble	JVEL	JVEL	ble	MOD0
Input	07	Not Applicable	JOG-	JOG-	MOD1	JOG-	Not Applicable	JOG-	JOG-	Not Applicable	MOD1
du	08	App	JOG+	JOG+	ASO0	JOG+	App	JOG+	JOG+	App	NTC0
	09	Not	PWRT	-	ASO1	CLBR	Not	CLBR	CLBR	Not	NTC1
	10		MODE	GSL0	-	-		-	GSL0		GSL0
	11		PMOD	GSL1	-	-		PMOD	GSL1		GSL1
	12		-	PUSH	NTC0	-		-	PUSH		PUSH
	13		-	DIR	NTC1	-		-	DIR		DIR
	14		RMOD	PMOD	-	PMOD		RMOD	PMOD		PMOD
	15		BKRL	BKRL	-	BKRL		BKRL	BKRL		BKRL
	ts	0	1	0		3	4	E	G	7	0
	Bits	0	1	2	Control signal 1	3 Control signal 2	4	5	6	7	8
	0 Bits	0	1 PEND	2 PEND			4	5 PEND	6 PEND	7	8 PEND
		0			Control signal 1	Control signal 2	4			7	
	00	0	PEND	PEND	Control signal 1 BALM	Control signal 2 PEND	4	PEND	PEND	7	PEND
	00 01	0	PEND HEND	PEND HEND	Control signal 1 BALM	Control signal 2 PEND HEND	4	PEND HEND	PEND HEND	7	PEND HEND
	00 01 02	0	PEND HEND MOVE	PEND HEND MOVE	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE	4	PEND HEND MOVE	PEND HEND MOVE	7	PEND HEND MOVE
	00 01 02 03	0	PEND HEND MOVE ALM	PEND HEND MOVE ALM	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM	4	PEND HEND MOVE ALM	PEND HEND MOVE ALM	7	PEND HEND MOVE ALM
	00 01 02 03 04	0	PEND HEND MOVE ALM SV	PEND HEND MOVE ALM SV	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM SV	4	PEND HEND MOVE ALM SV	PEND HEND MOVE ALM SV	7	PEND HEND MOVE ALM SV
put	00 01 02 03 04 05	0	PEND HEND MOVE ALM SV	PEND HEND MOVE ALM SV PSFL	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM SV PSFL	4	PEND HEND MOVE ALM SV PSFL	PEND HEND MOVE ALM SV PSFL	7	PEND HEND MOVE ALM SV
Output	00 01 02 03 04 05 06	0	PEND HEND MOVE ALM SV PSFL -	PEND HEND MOVE ALM SV PSFL -	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM SV PSFL PUSH	4	PEND HEND MOVE ALM SV PSFL PUSH	PEND HEND MOVE ALM SV PSFL PUSH	7	PEND HEND MOVE ALM SV PSFL -
Output	00 01 02 03 04 05 06 07	0	PEND HEND MOVE ALM SV PSFL - BALM	PEND HEND MOVE ALM SV PSFL - BALM	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM SV PSFL PUSH GHMS	4	PEND HEND MOVE ALM SV PSFL PUSH BALM	PEND HEND MOVE ALM SV PSFL PUSH BALM	7	PEND HEND MOVE ALM SV PSFL - BALM
Output	00 01 02 03 04 05 06 07 08	0	PEND HEND MOVE ALM SV PSFL - BALM RMDS	PEND HEND MOVE ALM SV PSFL - BALM RMDS	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM SV PSFL PUSH GHMS RMDS	4	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS	7	PEND HEND MOVE ALM SV PSFL BALM
Output	00 01 02 03 04 05 06 07 08 09	0	PEND HEND MOVE ALM SV PSFL - BALM RMDS WEND	PEND HEND MOVE ALM SV PSFL - BALM RMDS	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM SV PSFL PUSH GHMS RMDS TRQS	4	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS TRQS	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS	7	PEND HEND MOVE ALM SV PSFL BALM
Output	00 01 02 03 04 05 06 07 08 09 10	0	PEND HEND MOVE ALM SV PSFL - BALM RMDS WEND MODES	PEND HEND MOVE ALM SV PSFL - BALM RMDS	Control signal 1 BALM CEND -	Control signal 2 PEND HEND MOVE ALM SV PSFL PUSH GHMS RMDS TRQS LOAD	4	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS TRQS LOAD	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS	7	PEND HEND MOVE ALM SV PSFL BALM
Output	00 01 02 03 04 05 06 07 08 09 10 11	0	PEND HEND MOVE ALM SV PSFL - BALM RMDS WEND MODES PZONE	PEND HEND MOVE ALM SV PSFL - BALM RMDS - -	Control signal 1 BALM CEND - - - - - - - - - - - - - - - - - - -	Control signal 2 PEND HEND MOVE ALM SV PSFL PUSH GHMS GHMS RMDS TRQS LOAD PZONE	4	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS TRQS LOAD	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS CEND	7	PEND HEND MOVE ALM SV PSFL - BALM RMDS - -
Output	00           01           02           03           04           05           06           07           08           09           10           11           12	0	PEND HEND MOVE ALM SV PSFL - BALM RMDS WEND MODES PZONE ZONE1	PEND HEND MOVE ALM SV PSFL BALM RMDS - C - ZONE1	Control signal 1 BALM CEND - - - - - - - - - - - - - - - - - - -	Control signal 2 PEND MOVE ALM SV PSFL PUSH GHMS GHMS CRMDS TRQS LOAD PZONE1	4	PEND HEND MOVE ALM SV PSFL PUSH BALM BALM RMDS TRQS LOAD PZONE	PEND HEND MOVE ALM SV PSFL PUSH BALM RMDS CEND - - ZONE1	7	PEND HEND MOVE ALM SV PSFL - BALM RMDS - - - - ZONE1

Positioner Type Control Signals and Status Signals List

Refer to the instruction manual of each controller for the details of the signals.



## (3) Data Monitor (Servo Press Type)

### Full Feature Mode

It is the mode applicable for the program operations and direct position movement commands. It is not capable for a direct position movement command while a program is executed or program startup during direct position movement.

#### Display of Input Values

It shows the input (PLC output) values to a controller and the settable range.

\* Output a value within the settable range from the PLC.

Network setting					
Fieldbus operation mode Full Function					
Fieldbus input/	output format	3			
Data monitor			<b></b>		
	Input (PLC Output)	Setting Available Range	Inp		
Position(mm)	40.000	-0. <u>150</u> ~ <u>115</u> . <u>150</u>	-		
Pos band(mm)	0. 100	0.001 ~ 115.300	0utp		
Vel (mm/s)	50.00	$0.01 \sim 75.00$	outp		
Acc (G)	0.20	$0.01 \sim 0.30$			
Dec (G)	0.20	$0.01 \sim 0.30$			
Command Program No.	0	$0 \sim 63$			
Control Signal1	00000000000000000				
Control Signal2	1000000100000001		BIN		
	100000100000001		DIN		
			HEX		

Shown in "Servo Press Type Input List" is the list of detailed explanations for input items.

	Item	Explanations	
1	Position	It shows the target position at direct position movement command. Unit : 0.001mm	
2	Pos band	It shows the positioning band at direct position movement command. Unit : 0.001mm	
3	Vel	It shows the velocity at direct position movement command. Unit : 0.01mm/s	
4	Acc	It shows the acceleration at direct position movement command. Unit : 0.01G	
5	Dec	It shows the deceleration at direct position movement command. Unit : 0.01G	
6	Command Program No.	It shows the pressing program number to be executed.	
7	Control Signal 1	Reserved Domain	
8	Control Signal 2	It shows the status signal 2. Input should be displayed in the binary numbers or hexadecimal numbers. Refer to "Servo Press Type Status Signal 2 Detail" for the displayed contents.	

#### Servo Press Type Input List



Bits	Symbol	Name
00	SON	Servo ON command
01	HOME	Home return
02	RES	Alarm reset
03	CLBR	Loadcell calibration command
04	RMOD	Operation mode switchover
05	BKRL	Brake compulsory release
06	PSTR	Program startup
07	PHOM	Program home-position movement
08	ENMV	Axis operation permission
09	FPST	Program compulsory stop
10	SSTP	Searching stop
11	JISL	JOG/Inching switchover
12	JVEL	JOG velocity / Inching distance switchover
13	JOG+	JOG + Command
14	JOG-	JOG – Command
15	DSTR	Direct Positioning Startup Command



• Display of Output Values

It shows the output (PLC input) values from a controller.

🔶 î Network Monitoring Info. 🛛 Axis No. 00		
Network setting		
Fieldbus operation		Full Function
Fieldbus input/output format		3
Data monitor		
	Output (PLC Input)	Inp
Current position(mm)	40.000	
Feedback Current(%)	0.0	Outp
Current vel.(mm/s)	0.00	Outp
Current load(N)	0.15	
Prg. Alarm Code	0000	
Alarm code	0000	
Overload level(%)	0	
Executed Program Number	-1	BIN
Status Signal1	00000000000000000	DIN
Status Signal2	0000000011000011	
		HEX

Shown in "Servo Press Type Output List" is the list of detailed explanations for output items.

Servo Press Type	Output List
------------------	-------------

	Item	Explanations
1	Current position	It shows the current position.
2	Feedback Current	It shows the rate of the feedback current to the rated value.
3	Current vel.	It shows the current velocity.
4	Current load	It shows the feedback values of the load data from the loadcell attached on the tip of an axis.
5	Prg. Alarm Code	It shows the program alarm code which is currently being occurred. It shows "0000" when an program alarm is not occurred.
6	Alarm code	It shows the alarm code which is currently being occurred. It shows "0000" when an alarm is not occurred.
7	Overload level	It shows the overload level.
8	Executed Program Number	It shows the program number being executed by the program startup command. It should be "-1" before the pressing program is executed.
9	Status Signal 1	It shows the status signal. Output should be displayed in the binary numbers or hexadecimal numbers. Refer to "Servo Press Type Status Signal 1 Detail" for the displayed contents.
10	Status Signal 2	It shows the status signal. Output should be displayed in the binary numbers or hexadecimal numbers. Refer to "Servo Press Type Status Signal 2 Detail" for the displayed contents.



Bits	Symbol	Name
00	APRC	In Approaching Operation
01	SERC	In Searching Operation
02	PRSS	In Pressurizing Operation
03	PSTP	Pressurizing in Stop
04	DCMP	In Depressurizing Operation
05	RTRN	In Return Operation
06	WAIT	Program in Standby
07	-	(Reserved)
08	-	(Reserved)
09	-	(Reserved)
10	PJOK	Position (Distance) Judgment Passed
11	PJNG	Position (Distance) Judgment Failure
12	LJOK	Load Judgment Passed
13	LJNG	Load Judgment Failure
14	JDOK	Total Judgment Passed
15	JDNG	Total Judgment Failure

### Servo Press Type Control Signal 1 Details

### Servo Press Type Control Signal 2 Details

Bits	Symbol	Name
00	SV	Servo-on Status
01	HEND	Home-Return Complete
02	CEMD	Loadcell Calibration Complete
03	RMDS	Operation Mode Status
04	PEND	Positioning Completion
05	-	(Reserved)
06	ZONE1	ZONE 1
07	ZONE2	ZONE 2
08	PCMP	Program Completed in Normal Condition
09	PRUN	Program Executed
10	PORG	Program Home Position
11	MPHM	In Move to Program Home Position
12	PALM	Program Alarm
13	ALML	Light Malfunction Alarm
14	ALM	Alarm
15	EMSG	Emergency Stop



# 3.9.1.6 Functional Safety Unit Monitoring Screen

	Input po	rt		Output p	ort
Name	Connector	A Connector B	Name	Connector	A Connector B
STO IN	•	•	STO OUT	•	•
NC	•	•	SBC_OUT	•	•
SS1 IN	•	•	SS1_OUT	•	•
SS2 IN			SS2_OUT		
NC	Ö	Ö	SOS OUT	Ö	Ö
SM1 IN	õ	õ	SM1_OUT	ŏ	ě
SM2 IN	õ	õ	SM2_OUT	ě.	ě.
SM3_IN	ē	ō	SM3_OUT	Ö	•

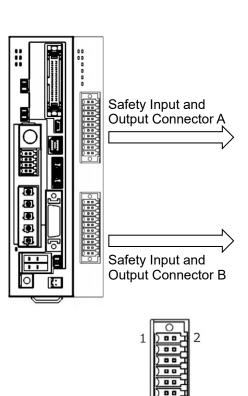
Touch [Monitor main] and it returns to the monitor main window. [Refer to 3.9.1.1]

[Display Detail]

- Input Port The status of t
- The status of the input port on the functional safety unit should be displayed. On when illuminated. Off when light out.
- Output Port The status of the output port on the functional safety unit should be displayed.

On when illuminated. Off when light out.

The safety input and output connector pin assignment of the functional safety unit should be as shown below.



20

19

Safety Input and Output Connector A			
No.	Signal Name	Signal Name	No.
1	STO_IN_A	STO_OUT_A	2
3	NC	SBC_OUT_A	4
5	SS1_IN_A	SS1_OUT_A	6
7	SS2_IN_A	SS2_OUT_A	8
9	NC	SOS_OUT_A	10
11	SM1_IN_A	SM1_OUT_A	12
13	SM2_IN_A	SM2_OUT_A	14
15	SM3_IN_A	SM3_OUT_A	16
17	IN_COM_A	OUT_COM_A	18
19	FG	FG	20

Safety Input and Output Connector B			
No.	Signal Name	Signal Name	No.
1	STO_IN_B	STO_OUT_B	2
3	NC	SBC_OUT_B	4
5	SS1_IN_B	SS1_OUT_B	6
7	SS2_IN_B	SS2_OUT_B	8
9	NC	SOS_OUT_B	10
11	SM1_IN_B	SM1_OUT_B	12
13	SM2_IN_B	SM2_OUT_B	14
15	SM3_IN_B	SM3_OUT_B	16
17	IN_COM_B	OUT_COM_B	18
19	FG	FG	20



# 3.9.2 Maintenance Information Screen

Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	1
Last time lubricated	2022/10/01 12:34:56	1
Travel distance after lubrication	0 km	n⇔kn

Touch either [Maintenance] in Monitor Window [3.9.1] or [Maintenance Information] in Information Window [3.17], and the maintenance information window should open.

	conducted when an actuator is to be replaced. .2.1, "Operating Method When Replacing the Actuator."]
	conducted when only the motor unit is to be replaced. 0.2.2, "Operating Method to Clear Pairing ID (When Replacing
	conducted when the fan is to be replaced. .2.3, "Operating Method When Replacing the FAN."]
	conducted when lubrication is to be supplied to an actuator. 0.2.4, "Operating Method of Updating Maintenance Information ubrication"]
brake eo	e conducted when a change is to be made whether there is a quipment or not. o 3.9.2.5, "Operation When Changing Setting of Brake ent"]
[Contents of Display]	
Total travel count	The cumulative total number of actuator movements is shown.
Total travel count threshold	A notice should be made with an alarm when the total number of movement times has exceeded this setting value.
Total travel distance	The cumulative total distance travelled by the actuator is shown.
<ul> <li>Total travel distance threshold</li> </ul>	A notice should be made with an alarm when the total

Total travel distance threshold	A notice should be made with an alarm when the total distance of drive has exceeded this setting value.
<ul> <li>Overload warning level</li> </ul>	It shows the threshold to output an overload alarm.
<ul> <li>FAN total running time <sup>(Note 1)</sup></li> </ul>	Shows the total driving time of the fan on the controller.
Actuator replacement time	It shows the day and time of when an actuator was replaced.
Last time lubricated (Note 2)	It shows the day and time of when lubrication was supplied.

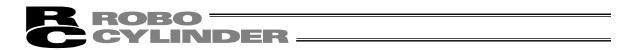
• Travel distance after lubrication (Note 2) It shows the travel distance after lubrication.

The items and buttons to be shown will differ depending on the controller models.

Note 1 It should be shown in a controller that is equipped with a fan.

Note 2 It should be shown when the controller and actuators are applicable for the information management system.

Note 3 It should be displayed when the controller is either SCON or SCON2.



[Setting Values for Total Travel Count and Total Travel Distance]

It is available to issue a message level alarm when the total travel count has exceeded the setting threshold for the total travel count or when the total travel distance has exceeded the threshold for the total travel distance.

The settings for the total travel count threshold and the total travel distance threshold can be established by the process below.

(1) Establish Setting in Maintenance Information Window

Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	
Last time lubricated	2022/10/01 12:34:56	
Travel distance after lubrication	0 km	n⇔kn

Touch Edit on the right hand of the total travel count threshold or on the right hand of the total travel distance threshold, and the setting can be adjusted for each value.

#### (2) Establish Setting by Parameters

145.GS velocity loop proportional gain	1938
146.GS velocity loop integral gain	11868
147. Total travel count threshold	12345
148. Total travel distance threshold	67890 п
149. Reserve	
150. Reserve	
151. Minor trouble alarm output select	1
152. High output mode (0:Dsbl 1:Enbl)	0
↑ No.sel.	Ļ

Show the following items in Parameter Edit screen [refer to 3.11] and touch each value to adjust the setting for each value.

Item	Parameter No.
Total travel count threshold	147
Total travel distance threshold	148

Adjustment of values in either way of (1) and (2) should be reflected to each other. \* It is necessary to reboot it in order to activate the settings.

#### Message Level Alarm to be Output

Alarm code	Name	Description
04E	Exceeded Movement Count Threshold	It should be issued when the movement count has exceeded the movement count threshold (Parameter No. 147).
04F	Exceeded Operated Distance Threshold	It should be issued when the operated distance has exceeded the operated distance threshold (Parameter No. 148).

#### [Example of use of Total travel distance]

For example when using the RCPW rod type actuator, if the travel distance within three months exceeds 300km, the scraper section should be greased during the periodic inspection after every 300km of travel. (If distance does not exceed 300km, grease every 3 months.) In this case, if the total travel distance threshold (Parameter No. 148) is set to '300' before starting operation, alarm will notify you the timing for grease supply at the timing of exceeding 300km of the drive distance.

After that, set the total travel distance threshold (Parameter No. 148) to '600', '900' ..., which are values that 300km of drive distance is added on top, and you can be continuously notified the timings for grease supply.



#### [About Overload Warning Level Setting]

With the motor temperature in operation in rated values as 100%, an alarm in the message level should be generated when the motor temperature has exceeded the ratio set in this section. Set it to 100% and a judgement should not be made.

The overload warning level setting should be established in the way shown below.

(1) Establish Setting in Maintenance Information Window

Total travel count	878	
Total travel count threshold	9	Edit
Total travel distance	8 m	meskn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	1
Last time lubricated	2022/10/01 12:34:56	
Travel distance after lubrication	0 km	neskn

Touch [Edit] on the right side of Overload Warning Level to set the value.

#### (2) Establish Setting by Parameters

137. Current control width number 3	
138. Servo gain switch time constant	10 msec
139. Home preset value	0. 00 mm
140. IP address(HEX)	CBA50001
141. Subnet mask(HEX)	FFFFF00
142. Default gateway(HEX)	00000000
143.Overload warning level	100 %
144.GS magnification upper limit	85
↑ No. sel.	1

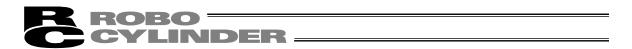
Show the following items in Parameter Edit screen refer to [3.11] and touch each value to adjust the setting for each value.

Item	Parameter No.
Over Load Warning Load Level Ratio	143

Adjustment of values in either way of (1) and (2) should be reflected to each other. \* It is necessary to reboot it in order to activate the settings.

#### Message Level Alarm to be Output

Alarm code	Name	Description
048	Driver overload warning	With motor temperature in operation in rated values as 100%, message level alarm to be generated when motor temperature exceeded ratio set in this section



### 3.9.2.1 Operating Method When Replacing the Actuator (When Replacing the Actuator)

The following shows the method that resets the Total travel count and Total travel distance at the time of replacing the actuator that connects to the controller with the maintenance information function.

(Note) Do not implement this procedure when replacing only the motor unit.

Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	
Last time lubricated	2022/10/01 12:34:56	
Travel distance after lubrication	0 km	n⇔kn

Touch [Actuator replacem.] to display the password entry screen.

Enter "5119", and then touch [ENT].

<	Conf	(in) Axis No. 01
	New maintenance informa due to actuator replaceme data will be overwritten. <i>H</i>	nt. Current information
	Yes	No

The actuator replacement confirmation screen appears.

Touch [Yes].

The pairing ID clear confirmation screen appears, if the actuator is equipped with a battery-less absolute encoder.

Do you want to clear the paired encoder's ID for actuator replacement? #Please don't clear during motor unit replacement.	00
Yes No	

Maintenance Total travel count 878 Total travel count threshold Total travel distance Total travel distance threshold Edit n⇔kn Edit Overload warning level FAN total running time Edit 0:00:00 d:h 2023/06/22 Actuator replac nt time Last time lubricated 2022/10/01 12:34:5 Travel distance after lubrication n⇔kn tustor replaces. Pairing ID clear FAN replaces. Lubrication Brake

The controller has the mechanism that if the encoder ID is different after checking the ID, then the absolute encoder error is output.

When replacing with the actuator which is absolutely reset, the last ID (pairing ID) of the actuator must be cleared.

Touch [Yes].

The Total travel count and Total travel distance are reset to 0.

The Actuator replacement time should be updated to the current day and time.

In the actuator which is equipped with the battery-less absolute encoder, the pairing ID is cleared.

With that, the preparatory work of actuator replacement is finished. Turn off the power of the controller, and then replace the actuator.

\* It is not possible to change the serial number and manufacturing information of the actuator which can be changed in the PC supported software.



### 3.9.2.2 Operating Method to Clear Pairing ID (When Replacing Motor Unit)

Stated below is how to clear only the pairing ID.

[Pairing ID Clear] button appears only when the actuator is equipped with the battery-less absolute encoder.

(Note) This process is to be conducted when only motor unit is to be replaced. Follow the process in "3.9.2.1 Operating Method When Replacing the Actuator" when replacing an actuator.

Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	
Last time lubricated	2022/10/01 12:34:56	
Travel distance after lubrication	0 km	n⇔kn

Touch [Pairing ID clear] to display the password entry screen.

Enter "5119", and then touch [ENT].

Ť			(iii) /	ixis No. (
the pairs for actual	ed encode tor repla	r's ID cement?	eplacer	nent.
Yes	ו	No	[	
	the paire for actua n't clear du	Do you want to o the paired encode for actuator repla n't clear during moto	Do you want to clear the paired encoder's ID for actuator replacement? n't clear during motor unit re	Do you want to clear the paired encoder's ID for actuator replacement? n't clear during motor unit replace

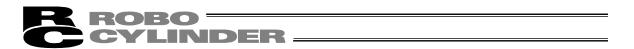
The controller has the mechanism that if the encoder ID is different after checking the ID, then the absolute encoder error is output.

When replacing with the actuator which is absolutely reset, the last ID (pairing ID) of the actuator must be cleared.

Touch [Yes].

The pairing ID is cleared.

Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	
Last time lubricated	2022/10/01 12:34:56	1
Travel distance after lubrication	0 km	n⇔kn



### 3.9.2.3 Operating Method When Replacing the FAN

Shown below is how to reset the total fan operation time at the time of the fan replaced. The total fan operation time and [FAN replacem.] should be shown only when the controller is equipped with a fan.

Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	
Last time lubricated	2022/10/01 12:34:56	
Travel distance after lubrication	0 km	n⇔kn
Travel distance after lubrication	0 km	n⇔kn

Touch [FAN replacem.] to display the password entry screen.

Enter "5119", and then touch [ENT].



The FAN total runninng time clear confirmation screen appears.

Touch [Yes].

← ⓓ Maintenance information	💼 🗖 🗛	s No. 00
Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edi t
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	
Last time lubricated	2022/10/01 12:34:56	
Travel distance after lubrication	0 km	n⇔kn
Actuator replaces. Pairing 10 clear FAN replaces. Lubrication Brake setting chg.		

The FAN total running time is reset to 0.



#### 3.9.2.4 Operating Method of Updating Maintenance Information Related to Lubrication

Shown below is how to record the time of lubrication and how to reset the drive distance after lubrication when lubrication to an actuator.

Last time lubrication, travel distance after lubrication and [Lubrication] button should be shown when both the controller and actuators are applicable for the information management system and Parameter No. 192 Actuator Identification System Use Flag is set to 1: Valid.

Edit
n⇔kn
Edit t
Edit
n⇔kn

Touch [Lubrication] to display the password entry screen.

Enter '5119', and then touch [ENT].

(€) (⊡	Conf		Axis No. 00
	Update the mainten related to lu Datawill be d Are you sure t	brication. verwritten.	
	Yes	No	

Lubrication information clear confirmation window should be displayed.

Touch [Yes].

← ☎ Controller reset	the Axis No. 60
Restart the controller?	
Yes No	

Confirmation window for controller reboot should appear.

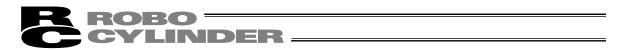
Touch [Yes].

If touch [No], controller would not reboot.

Total travel count	878	
Total travel count threshold	0	Edit
Total travel distance	8 m	n⇔kn
Total travel distance threshold	0 m	Edit
Overload warning level	100 %	Edit
FAN total running time	0:00:00 d:h:m	
Actuator replacement time	2023/06/22 11:04:47	
Last time lubricated	2022/10/01 12:34:56	
Travel distance after lubrication	0 km	n⇔kn

The lubrication time to the current day and time should be updated and the value in the drive distance after lubrication should be reset.

\* Some models may require the power to be rebooted instead of controller being restarted. Follow the message in the shown window to make operation.



### 3.9.2.5 Operation When Changing Setting of Brake Equipment

How to change the brake equipment setting is as shown below. [Brake setting chg.] button should be displayed when SCON/SCON2 controller gets connected.

Contraction       Avis No. 00         Total travel count       878         Total travel count threshold       0         Total travel distance       8 m         Total travel distance threshold       0 m         Total travel distance threshold       0 m         Overload warning level       100 %         Actuator replacement time       2023/86/22 01 doi:m         Actuator replacement time       2022/10/01 12:34:56         Travel distance after lubrication       0 km         Actuator replacement plotear       FNI replacement	Touch [Brake setting chg.].
C Message C C A Akis No. 00 The current mode is AUTO mode or Monitor mode. Please switch to MANU mode and Teach mode.	For Auto Mode and Monitoring Mode, there will be a message window shown up to encourage a switchover to MANU or Teaching Mode.
Back	Touch [Back] and the screen goes back to the maintenance window.
Refer to [3.13 TP Operation Mode] f	for mode switchover. For MANU and Teaching Mode, a window for confirmation of execution should appear. Confirm that there is no problem in executing it, and touch [Yes].
O brake installed setting change     O     Update the parameters that indicate the brake     application state.     Please select the state of the actuator.     Currently set of : no brake     with brake     no brake     Change     Cancel	Select wither there is a brake or not in the brake equipment setting window, and touch [Change].
The update of the brake installation state has been completed. Power cycle the controller.	A window to show that the setting has changed should show up. As the changed setting should become valid after the power supplied to the controller is rebooted, the power supplied to the controller should be rebooted.

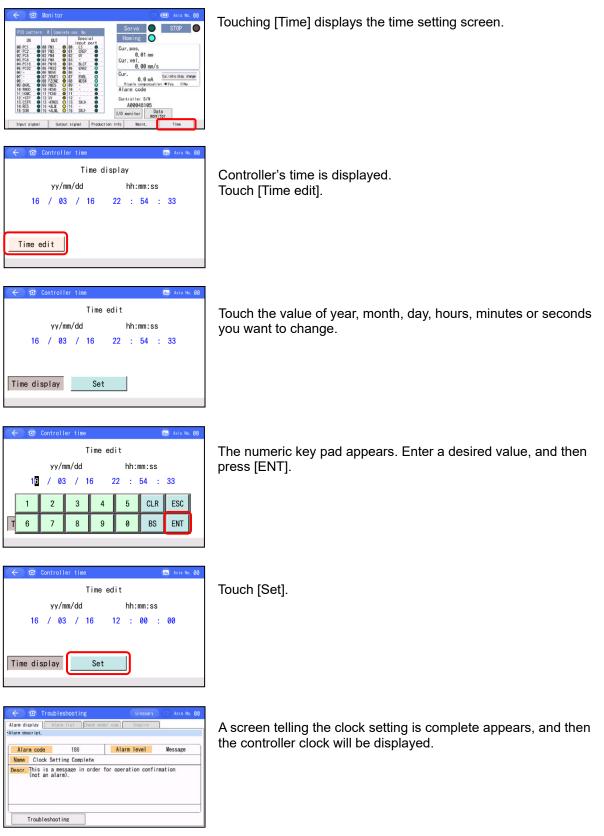
Note: If the information of a brake being equipped or not does not match in an actuator and a controller, not only that operation cannot be performed, but also it may cause malfunction. Make sure there is no mismatch in the setting.



## 3.9.3 Time Setting Screen for Controller

In the controller with a calendar function, the time setting for the controller can be set.

[How to Set Time]





# 3.10 Position Edit

Set/edit the target position, speed, acceleration, deceleration and other data related to positions. You can move the axis by jogging or inching.



Touch [Position edit] on the Menu 1 screen.

If a position edit password is other than "0000," the password entry screen appears.



Enter the position edit password. Touch [ENT].

The default position edit password is "0000." For how to change the position edit password, refer to 3.18, "Environment setting [Change Pos Edit Password]."

A position data table appears.

Position No. —

000		0.00	114	. 00	0.60	0.66
001	-	10.00	100	. 00	0.30	0.30
002		20,00	50	.00	0, 15	0, 15
003		30.00	100	.00	0, 30	0, 30
004		40.00	100	. 00	0, 30	0, 36
005		50.00	80	. 00	0.30	0.30
006		*****.**	****	**	*. **	*. **
007		*****, **	****	**	*, **	*, **

Touch [No. sel.] to set the position number you want to set, and a table showing the position number you have just set appears.

To set data other than the target position, speed, acceleration and deceleration shown in the table, touch other position number such as "000."

Data of the selected position number appears. (Position Data Individual Edit Screen)

Position No.	000	Push(%)	0	Thres. (%)	0
Position(mm)	0.00	Pos band (mm)	0.10	Acc/Dec mode	0
Vel (mm/s)	114,00	Incremental	0	Stop mode	0
Acc (G)	0, 60	Zone+(mm)	0.00	Transported	0
Dec (G)	0.60	Zone (mm)	0.00	V. s. No.	e
Operation Teach2		ohibition. Safety w	elocity invalid	Second Se	
Servo O	Nove	Cont. move Sto	0.000	Jog/Inching Olnching	
Homing O	1018. pos.		Jog ve	I. change 1 m	ı/s
Cur. pos. 0.00mm		0,00 mm 10 % Rate chan	ge + BACk	((-) FW(+)	+
1 Pr pg	Mul.dis.	Clear	↓Nx pg		

Touching [Mul. dis.] returns the screen to the position data table display.

The contents of display and setting items should differ depending on the controller. For a controller applicable for comment input to position data (Refer to 3.10.2)

Position data table screen

÷	₫	Position	edit	Tuni	ing setting	lin A	cis No. Ø	0
No.		Position(mm)	Vel (mm/s)	Acc (G)	Dec (G)	Commen	t	
000	Ľ	*****. **	****. **	*. **	*. **	*****	******	*
001	ø	0.00	125.00	0.30	0.10	Start positi	on	
002	<b>S</b>	300.00	165.00	0.20	0.20	End point		
003	ø	150.00	50.00	0.20	0.20			
	5							
005	Ľ	300.00	10.00	0.20	0.20	Low speed op	eration	
006	S	0.00	25.00	0.10	0.10	Push		
	5							
† Pr ∗Touch		No. sel. No. to go		clear reen	↓Nx pg	Tes	st run	

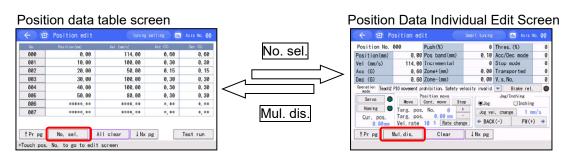
Position Data Individual Edit Screen

Position No.	000	Push(%)	01	hres. (%)	
Position(mm)	0.00	Pos band(mn)	0, 10 4	cc/Dec mode	(
Vol (mn/s)	10.00	Incremental	0 s	top mode	
Acc (6)	0.01	Zone+(nm)	0.000	ain set	
Dec (6)	0.01	Zone-(mn)	0.00	, s, No,	
Driving torque limit(0)	100	Connection No.		biting time(s)	
Collision detecting	0				
Operation Teach2 P		nibition, Safety velo	ity invalid	in the second se	rel.
Ser vo	Nove C	ition move Stop	. Jog	Jog/Inchin	nching
Homing 🔵	Targ, pos,	No. 0 +	lag up	, change	1/c
noarna 🗸					



## 3.10.1 Position Data

For the controllers applicable for comment input of the position data (RCON-PC/PCF/AC/DC/SC, SCON-CB RCON connection type and SCON2), refer to [3.10.2] together.



The items set in the position data table include target position, speed, acceleration, deceleration, push, positioning band, incremental, zone+, zone-, threshold, acceleration/deceleration mode, stop mode, transportation load / gain set and Vibration No. The setting of Zone +, Zone -, threshold, Acceleration / Deceleration Modes, Stop Mode, gain set and anti-vibration number are enabled or disabled depending on the controller types as shown in the table below, and the items to be displayed may differ accordingly.

Caution: Operation with JOG Switch on Front Panel of RCON If TB-03 gets disconnected from the controller in the condition that this window is open, JOG switch operation will get disabled.

#### (1) No.

The position data number is shown.

Warning: Be sure to specify absolute coordinates on PCON-C/CF/CA/CFA/CB/CFB/CBP, ACON-C/CA/CB, DCON-CA/CB, SCON-C/CA/CAL/CB, SCON2, ROBONET, ERC3 PIO Converter, RCP6S, MCON, MSCON (Remote I/O mode) controllers of solenoid valve mode 2, or PCON-CY/CYB, ACON-CY/CYB and DCON-CYB controllers of solenoid valve mode 1. (same for Safety Category Complied Type) If incremental coordinates are specified on these controllers, a position data error occurs. Also note that completion of push motion cannot be determined when the push is specified if incremental coordinates are specified.

## (2) Target position [mm]

Enter the target position to move the actuator to.

- Absolute coordinate specification
   Enter the target position you want to move the actuator to, based on the distance from the home. A negative value cannot be entered.
   Incremental coordinate specification
   Enter the target position you want to move the actuator to, based on the distance from the current position. A negative value can also be entered. (Negative direction on displayed coordinate system)
- (3) Speed [mm/sec]

Enter the speed at which to move the actuator.

The default value varies depending on the actuator type.

(Note) For SCON-CA/CAL/CB, SČON2, PCON-CA/ĊFA/CB/CFB/CBP/CYB,

ACON-CA/CB/CYB, DCON-CA/CB/CYB, ERC3, RCP6S, MCON and MSCON, an alarm will be displayed if the set value is lower than the minimum velocity. (Same for Safety Category Complied Type)



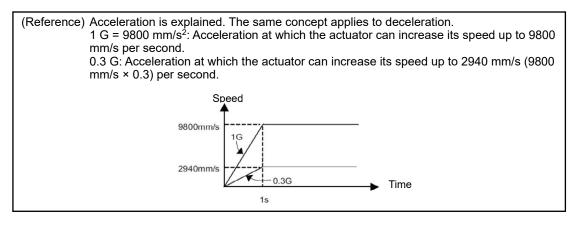
(4) Acceleration/deceleration [G]

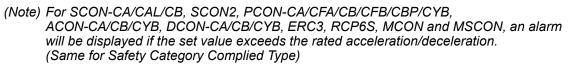
Enter the acceleration/deceleration at which to move the actuator.

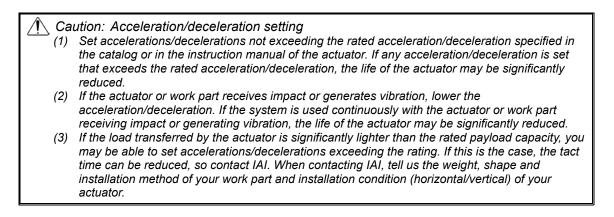
Basically you should set acceleration/deceleration not exceeding the rated value shown in the catalog.

The input range permits entry of values larger than the rated value shown in the catalog, but this is because "shorter tact time when the transferring mass is significantly lighter than the rated value" is assumed.

If the load vibrates during acceleration/deceleration to present problems, decrease the value set here.









(5) Push [%/N]

Select "Positioning operation" or "Push-motion operation." The factory setting is 0.

0 : Positioning operation is performed.

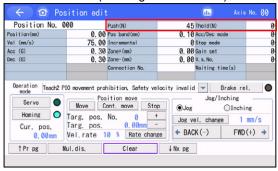
Other than 0: Push-motion operation with the entered value as the current-limiting value is performed.

In PCON-CBP/CGBP Controllers, values in N (newton) are also shown as a reference except for when the input value is 0.

(+) @	Position	edit		du	Axis No. 00
Position No	o. 001	Push(%)	60(600N)	Thres. (%)	20(200N)
Position (mm)	100.00	Pos band(mm)	15.00	Acc/Dec mode	0
				A.	

By setting Parameter No. 205 (Select Pressing Unit System) to 1: N Unit System in pressing using the force sensor in SCON2 Controller, the pressing force gets available to be input in N (Newton) unit.

Parameter No. 206 (Pressing Force Min. Unit) = 2: 1N



Parameter No. 206 (Pressing Force Min. Unit) = 3: 10N

Position No.	000	Push(N) (Inc. 10N)	40	Thold(N) (Inc.	10N)
osition(mm)	0.00	Pos band(mm)	0.10	Acc/Dec mode	
el (mm/s)	75.00	Incremental	0	Stop mode	
cc (G)	0.30	Zone+(mm)	0.00	Gain set	
ec (G)	0.30	Zone-(mm)	0.00	V. s. No.	
		Connection No.		Waiting time(	(s)
Operation mode Teach2		nibition, Safety ve	locity invalid		
Servo	Nove Co	nibition, Safety ve ition move ont. move Sto		Jog/Inch	
Servo Homing	Move Co Targ. pos.	No. 0	Jog	Jog/Inch	ing
Servo	Move Co Targ. pos. Targ. pos.	No. 0		Jog/Inch	ing Inching

\* In case of input in 10N unit system, the last digit of an input value should get rounded down.

(e.g.) In "45" is input, it should be "40".

(6) Positioning band [mm]

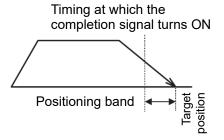
What this setting means is different between "Positioning operation" and "Push-motion operation."

"Positioning operation":

Define how far before the target position you want to turn the completion signal ON. The factory setting is 0.1 mm.

#### For the positioning operation (except for the solenoid valve mode below):

Increasing the value of positioning band quickens the start of the next sequence operation, so the tact time can be reduced. Set an optimal value by considering the balance of the entire system.

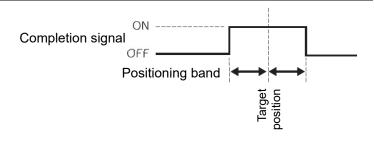




## For the positioning operation (of the solenoid valve mode below):

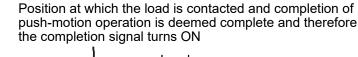
Note that on PCON-C/CF/CA/CFA/CB/CFB/CBP, ACON-C/CA/CB, DCON-CA/CB, SCON-C/CA/CAL/CB, SCON2, ROBONET, ERC3 PIO Converter, RCP6S, MCON and MSCON (Remote I/O mode) controllers of solenoid valve mode 2 or PCON-CY/CYB, ACON-CY/CYB, DCON-CYB controllers of solenoid valve mode 1, set the band after which the completion signal turns ON. (same for Safety Category Complied Type)

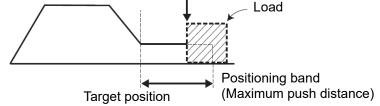
PCON-C/CF/CA/CFA/CB/CFB/CBP, ACON-C/CA/CB, DCON-CA/CB, SCON-C/CA/CAL/CB, SCON2, ROBONET, ERC3 PIO Converter, RCP6S, MCON and MSCON (Remote I/O mode) in solenoid valve mode 2, PCON-CY/CYB, ACON-CY/CYB and DCON-CYB in solenoid valve mode 1 (same for Safety Category Complied Type)



### For "Push-motion operation":

Define the maximum push distance from the target position in push-motion operation. Set an appropriate positioning band by considering the mechanical variation of the work part, by making sure positioning will not complete before the actuator contacts the work part.



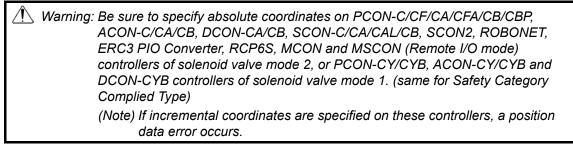


(Note) Depending on the combination with the actuator, PCON-CA/CFA/CB/CFB/CBP, SCON-CA/CAL/CB. SCON2 and ERC3 may not be able to set a value smaller than the minimum positioning width. (same for Safety Category Complied Type)

## (7) Incremental

Specify absolute coordinates or incremental coordinates.

- The factory setting is 0.
- 0: Absolute coordinate specification 1: Incremental coordinate specification

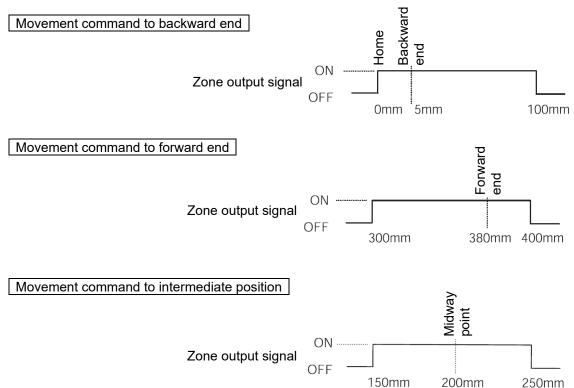


# **C**YLINDER

## (8) Zone +/- [mm]

Define, for the standard type, the zone in which the zone output signal turns ON. These parameters can be set differently for each target position. [Setting example]

No.	Position [mm]	Zone + [mm]	Zone - [mm]	Remarks
0	5.00	100.00	0.00	Backward end
1	380.00	400.00	300.00	Forward end
2	200.00	250.00	150.00	Intermediate position



(9) Threshold [%/N]

The setting of the threshold for the pressing torque should be established. The detection signal should be output when the torque (load current) reaches this set value or above in the range of the position zone during the pressing operation. It should be used for judgment of acceptance and failure of operation by monitoring the load current in such operation as press-fitting with the pressing operation.

\* In PCON-CBP/CGBP, values are also displayed in N (newton) as a reference. (Except for case of 0)

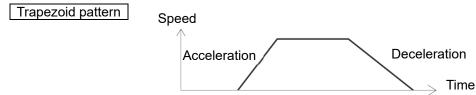
Also, by setting Parameter No. 205 (Select Pressing Unit System) to 1: N Unit System in pressing using the force sensor in SCON2 Controller, the threshold gets available to be input in N unit or 10N unit. Refer to [(5) Pressing]

Also, it can be used as the threshold for judgment in collision detection. Refer to [the instruction manual of the controller for detail.]

 Refer to [3.10.2 (6) Collision Detection (for SCON2-CG only)] for the collision detection of SCON2-CG.



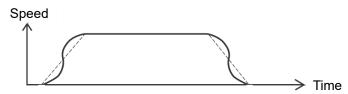
- (10) Acceleration/deceleration mode
   Define the acceleration/deceleration pattern.
   The factory setting is 0.
  - 0: Trapezoid pattern
  - 1: S-motion
  - 2: Primary delay filter



\* Set the acceleration and deceleration in the "Acc" and "Dcl" fields of the position table.

## S-motion

The acceleration curve rises gradually at first and then suddenly shoots up in the middle. Use this mode if you want to set high acceleration/deceleration to meet the required tact time, but want to move the actuator gradually at the start of movement and immediately before stopping.



\* The S-motion level is set by parameter No. 56 [S-motion ratio setting]. The setting unit is %, while the setting range is 0 to 100.

(The graph above assumes that the parameter is set to 100%.)

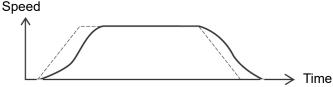
If 0 is set, the S-motion control is disabled.

Note that the setting made here is not reflected in jogging or inching feed performed from a PC or teaching pendant.

(Note) This setting is not available on ERC2 and PCON (excluding PCON-CA/CFA/CB/CFB/CBP) controllers. On these controllers, parameter No. 56 is reserved.

## Primary delay filter

The acceleration/deceleration curve becomes more gradual than linear acceleration/deceleration (trapezoid pattern). Use this mode if you don't want to apply fine vibration to the work part during acceleration/deceleration.



The primary delay level is set by parameter No. 55 [Primary filter time constant for position commands]. The setting unit is 0.1 msec, while the setting range is 0.0 to 100.0.
 If 0 is set, the primary delay filter is disabled.
 Note that the setting made here is not reflected in jogging or inching feed performed from a PC or

Note that the setting made here is not reflected in jogging or inching feed performed from a PC or teaching pendant.

(Note) This setting is not available on ERC2 and PCON (excluding PCON-CA/CFA/CB/CFB/CBP) controllers. On these controllers, parameter No. 55 is reserved.



#### (11) Stop mode

Define the power-saving mode to be used while the actuator is standing by after completion of positioning to the target position set in the "Position" field of the applicable position number.

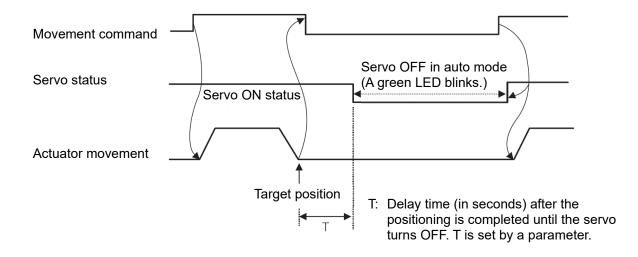
- 0: Disable power-saving mode \* The factory setting is 0 (Disable).
- 1: Auto servo OFF mode, with the delay time defined by parameter No. 36
- 2: Auto servo OFF mode, with the delay time defined by parameter No. 37
- 3: Auto servo OFF mode, with the delay time defined by parameter No. 38
- 4: Full servo control mode

#### Auto servo OFF mode

The servo is turned OFF automatically upon elapse of a specified time after completion of positioning.

(Since holding current does not flow, power consumption is reduced.)

When the PLC issues the next movement command, the servo is turned ON and then the actuator starts moving.



(Note) For RACON and RPCON, this mode cannot be set.

Full servo control mode selectable for the PCON (for the pulse motor) controller

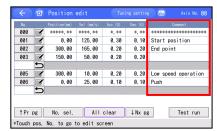
The holding current can be decreased by servo-controlling the pulse motor. Although the rate of decrease in holding current varies depending on the actuator model, loading condition, etc., the holding current decreases to approx. one-half to one-quarter. Note that the servo remains ON, meaning that unwanted position shift does not occur. The actual holding current can be checked on the current monitor screen of the PC software.



## 3.10.2 Additional Setting Items for Controllers Applicable for Position Data Comment Input

In addition to items in 3.10.1, setting should be available for controllers applicable for comment input in position data (RCON-PC/PCF/AC/DC/SC and SCON-CB RCON connection type and SCON2).

#### (1) Comment



Comment can be set with up to 20 characters of half size font.

The set comment data should be saved in the controller.

#### (2) One-Row Comment



Comment can be set with up to 56 characters of half size font.

The line set to one-row comment should not show a position number.

Touch for the right hand of a position number, and a confirmation window asking "Do you change the position data on one-row comment?" should appear. Touch [Yes] to set as a one-row comment.

Touch not the line set as a one-row comment, and a confirmation window asking "Do you change the one-row comment to the position data?" should appear. Touch [Yes] to set it back to position data.



Touch the comment box in a comment or a one-row comment, and the full keyboard should open and input in half size alphabetical and numerical symbols will get available. (If you use the PC software, full size characters will also get available for input.)

#### Input Operation on Full Keyboard

If you touch a text box in a comment or a one-row comment, the text set in the box should be displayed and a cursor should be shown at the end of the text. If a text is entered in this condition, the text already there should all be erased and a new text will be entered. If it is required to keep the existing text and add another, use an arrow key to move the cursor once, and then enter a text. When you want to finish text edit without confirming the entered text, touch ESC.



#### Position Data Individual Edit Screen

Position No.	000	Push(%)	Ø Thres. (%)	6
Position (mm)	0.00	Pos band(mn)	0, 10 Acc/Dec mode	6
Vol (m/s)	10,00	Incremental	ØStop mode	6
Acc (6)		Zone+ (nm)	0.00 Gain set	6
Dec (C)	0.01	Tenne (un)	0.00 V a No	
Driving torque limit(0)	100	Connection No.	Maiting time	(a)
Collision detecting	0			
Operation Teach2	PIO movement proh	hibition. Safety velo	city invalid 💌 🛛 Rra	ake rel.
noae		ition move	Landid Longitude	
Ser vo	Pos		Jog/Inch	
noae	Pos	ont. move Stop	Jog/Inch	ing Inching
Ser vo	Targ. pos. Targ. pos.	ont. move Stop	Jog/Inch SJog C Jog vel. change	ing Inching

(3) Parameter Select Area

The setting items should differ depending on the value set in Parameter No. 191 Position Data Extension Feature.

Parameter No.191	Setting Item
0	No Setting Item
1	Drive Torque Limitation
2	Push speed

Drive Torque Limitation : Setting for movement current limitation at position movement can be established.

: Setting for pressing velocity limitation at position movement can be established.

(4) Linked Number

A position number to move to in a row after a movement has finished can be set. Make it blank and linked operation will get invalid. (If you want it blank, touch [CLR] and [ENT].)

(5) Wait Time

When the setting is established for the linked number, standby time after a movement has finished can be set.

Setting should be available in a range between 0.01 and 600.00 [s].

(6) Collision detection (SCON2-CG only)

There are three types of parameter sets prepared for collision detection. Establish the parameter set to use for the collision detection for each position.

Collision detection	Parameter Set to be Used
0	Not to be Used
1	Parameter set 1
2	Parameter set 2
3	Parameter set 3

Each parameter set operates with the parameters below.

Collision Detection Feature		Parameter No.					
Parameter Names	0:	1::	2:	3:			
Falameter Names	Not to be Used	Set No.1	Set No.2	Set No.3			
Collision Judgment Current		213	217	221			
Collision Judgment Distance		214	218	222			
Collision Judgment Time		215	219	223			
Reversing Operation Position Number at Collision Detection		216	220	224			
Collision Detection Feature Output Selection			225				

\* Refer to [SCON2 Instruction Manual (ME0458)] for details such as the input range of parameters.



# 3.10.3 Entering New Data

You can enter new position data in one of four ways.

(1) Numerical input · · ·	Enter position data directly as numerical values from the numerical keypad on the teaching pendant.
(2) Direct teaching · · ·	Turn off the servo control, move the rod or slider by hand to the target position, and then acquire the achieved position (current
(3) Jogging	position) into the position table and specify that position. Use [FW+] or [BACK-] to jog the actuator to the target position, and then acquire the achieved position (current position) into the position data table and specify that position.
(4) Inching · · ·	Use [FW+] or [BACK-] to inch the actuator to the target position, and then acquire the achieved position (current position) into the position data table and specify that position. Touching [FW+] or [BACK-] once moves the actuator by the specified feed pitch (0.01, 0.10, 0.50, 1.00 or 5.00 (mm)). Touching and holding the key for 2 seconds will start jogging movement at 1 mm/sec. Thereafter, the speed increases every second. This way, the actuator can be moved more finely than when jogged.

Warning: To enter position data after the power is turned on, or enter position data beforehand using the method of (2), (3) or (4), you must perform home return first. (Incremental specification) Before home return is completed, jogging/inching is possible only to the mechanical end. Operate the actuator by visually checking for potential interference.



#### (1) Basic operation

[Data entry on the position data table screen] You can set the target position, speed, acceleration and deceleration in the position data table.

Touch [ $\uparrow$  Pr pg] and [ $\downarrow$  Nx pg] to display the table showing the desired position data number. Or, touch [No. sel.] and set the desired position data number to display the table.

	No	Position(mm)	Val (mm/s)	Acc	: (G)	Dec (G)
	000	0.00	114.	00	0.60	0,60
	001	10,00	100.	00	0.30	0.30
	002	20,00	50.	00	0, 15	0, 15
	003	30.00	100.	00	0.30	0.30
	004	40.00	100.	00	0.30	0.30
ouch.	005	50,00	80.	00	0.30	0.30
	006	*****. **	****.	**	*. **	*. **
	007	*****, **	****.	**	*, **	*, **
	† Pr pg	No, sel,	All clear	↓Nx pg	100	Test run

Touch a value in the target position or other field of the desired position data number. When the numeric keypad appears, key in the desired value and touch [ENT], and the value will be entered.

Touching [All clear] clears all position data.

#### [Important]

Do not touch [ $\uparrow$  Pr pg] key or [ $\downarrow$  Nx pg] key too fast to switch the windows. '0' is occasionally shown to the data values that are already registered. The data is not lost even though '0' is displayed. Touch [ $\uparrow$  Pr pg] key and [ $\downarrow$  Nx pg] key to switch the window and come back, and you will find the data showing the right values.

[Data Input in Position Data Individual Edit Screen]

In Position Data Individual Edit screen, all the items are available for setting.

 Image: Second Second

Touch a value in the target position or other desired field.

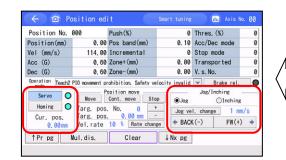
When the numeric keypad appears, key in the desired value and touch [ENT], and the value will be entered.

Touch [ $\uparrow$  Pr pg] or [ $\downarrow$  Nx pg] to change to the screen of the previous or next position number. Touching [Mul. dis.] returns the screen to the position data table display.



## [JOG / Inching Operation]

Movement and position data reading can be performed by JOG / Inching operation.



dot.

Position No.	000	Push(%)	0	Thres. (%)	
Position(mm)	0.00	Pos band(mm)	0.10	Acc/Dec mode	
Vel (mm/s)	114.00	Incremental	0	Stop mode	
Acc (G)	0,60	Zone+(mm)	0.00	Transported	
Dec (G)	0,60	Zone-(mm)	0.00	V. s. No.	
Operation Teach2	PIO movement p	rohibition. Safety ve	locity invalid	Brake re	I. (
Servo O Homing O	Move	Cont, move Sto	goLO 4	Jog/Inching Inching	ng
	101 S. 000		Inc. d	is, change 0.0	01 mm
Cur. pos. 0.00mm	Targ. pos. Vel.rate	10 % Rate chan	e 🕈	K(-) FW(	+) 🔸

Operation in Position edit Window

[Servo]

: Touching [Servo] while the servo is OFF turns on the axis servo and O becomes lit. Touching [Servo] while the servo is ON turns off the axis servo and O becomes unlit.

- [Homing]
- O Jog O Inching
- : Touching [Homing] while home return is not yet completed causes the axis to return home and O becomes lit.
  : Select either JOG or Inching operation. Touch the letter, and the circle (radio button) on the touched side will be marked with a black

While JOG Selected;

- [Jog vel. change]
- [BACK(-)], [FW(+)]
- : The jog speed changes in the order of 1, 10, 30, 50 and 100 mm/s every time [Jog vel. change] is touched.
- : While touching, the axis moves in JOG. [BACK(-)] performs JOG operation in negative direction, and [FW(+)] in positive direction.

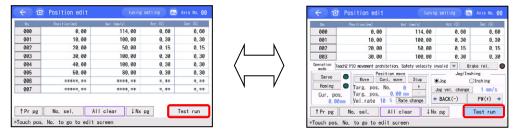
While Inching Selected;

- [Inc. dis. change]
- [BACK(-)], [FW(+)]
- Inching distance changes in order of 0.01, 0.10, 0.50, 1.00 and 5.00mm/s for every touch on [Inc. dis. change]
  A touch performs inching operation of an axis. [BACK(-)] performs

inching operation in negative direction, and [FW(+)] in positive direction.

Touch and hold it for two seconds, and JOG operation will be performed in 1mm/sec. The speed increases in every 1 second afterwards.

It is also available to perform JOG / Inching operation by touching [Test run] in the window of the multi-display.

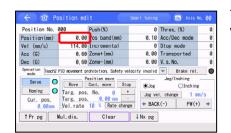


Touch [Test run] again and the window goes back to the multi-display.

CYLINDER -

## Position acquisition operation

Move to the position that you would like to read by JOG / Inching operation.



Touch the target position of the position number that you would like to read.

← 12 Po	sition ed	it		Input -0.15	range ~ 50	15	s No. 00
Position No. (	999	Push(%)	-				0
Position(mm)	0.00	Pos band	7	8	9	ESC	
Vel (mm/s)	114.00	Incremen					0
Acc (G)	0.60	Zone+(mm	4	5	6	+/-	0
Dec (G)	0.60	Zone-(mm	4	5	0	+/-	0
Servo O	Nove	cohibition, 3 osition move Cont. move	1	2	3		el. C
Homing O Cur. pos. 0.00mm	Targ. pos.	0.00	0	BS	CLR	ENT	mm/s (+) ⇒
†Pr pg	lul.dis.	Cle		Pos.	set		

Touch [Pos. set].

← 🖸 Conf		📶 Axis No. 🚷
Position No.	0	1
Tar. p.	0.00 mm	↓ <b> </b>
Current posit	0.00 mm	
	Teach pos.?	
Yes		No

Return to the position edit window.

The confirmation window appears. You can touch  $[\uparrow]$  or  $[\downarrow]$  to change the position number. Touching [Yes] acquires the current position.



# 3.10.4 Changing Position Data

You can change all position data by overwriting the current values. Accordingly, four cases are considered just like when data is entered anew.

(1) Numerical input	Enter position data directly as numerical values from the numerical keypad on the teaching pendant.
(2) Direct teaching	Turn off the servo control, move the rod or slider by hand to the target position, and then acquire the achieved position (current position) into the position data table and specify that position.
(3) Jogging	Use [FŴ(+)] or [BACK(-)] to jog the actuator to the target position, and then acquire the achieved position (current position) into the position data table and specify that position.
(4) Inching	<ul> <li>Use [FW(+)] or [BACK(-)] to inch the actuator to the target position, and then acquire the achieved position (current position) into the position data table and specify that position.</li> <li>The axis moves by the specified pitch (0.01, 0.10, 0.50, 1.00 or 5.00 (mm)) every time [FW(+)] or [BACK(-)] is touched. Touch and hold it for two seconds, and JOG operation will be performed in 1mm/sec.</li> <li>The speed increases in every 1 second afterwards. Severer movement than JOG operation is available.</li> </ul>

Take note of the following points when performing a data change operation:

- \* In the case of numerical input, only the items overwritten from the numeric keypad will change.
- \* In the case of direct teaching, jogging or inching, only the target position will be updated after the current position is acquired. The speed, etc., will remain unchanged.
- \* Once the position data is cleared, none of the previously set data will remain. Accordingly, the default data values will be applied, other than positions, the next time you register position data.

To clear the position data table specified for push-motion operation and register data again, be sure to check all position data items and enter necessary data.



# 3.11 Parameter Edit

Parameters are displayed and edited.

< ) 🗇 Menul		Glossary	📄 💷 Axis	s No. Ø
4	Monitor	TEST	Test run	
Position edit guide	🟒 Position edit		Alarm list	
I/O control guide	Parameter edit	6	Information	
Ø	SD memory card	j,	Troubleshoo	ting
Easy setting	Servo monitor		Menu2	;

Touch [Parameter edit] on the Menu 1 screen.

If a system password is not "0000," the password entry screen appears.



#### A parameter table is displayed.

1. Zone boundary + side	50, 30 mm
2, Zone boundary - side	-0, 30 nm
3.Soft limit + side	50, 30 nm
4.Soft limit - side	-0, 30 mm
5. Homing direction (0:CW 1:CCW)	1
8. Pushing stop recognition time	255 macc
7. Servo gain number	11
B. Velocity initial value	114 mm/sec
↑ No. sel.	1

Touch [ENT]. The parameter edit password at delivery is set to

Input the parameter edit password.

"0000". For how to change the parameter edit password, refer to 3.18 Environmental Setting [Parameter Edit Password Change].

\* The types of parameters vary from one controller to another. Refer to the instruction manual for each controller.



#### (1) Basic operation

1. Zone boundary + side	50, 30 mm
2. Zone boundary - side	-0, 30 m
3. Soft limit + side	50, 30 m
4. Soft limit - side	-0, 30 mm
5. Homing direction (0:CW 1:CCW)	1
3. Pushing stop recognition time	255 msec
7. Servo gain number	11
3. Velocity initial value	114 mm/sec

Touch  $[\uparrow]$  to return to the previous screen.

Touch  $[\downarrow]$  to move to the next screen.

Touch [No. sel.] and enter a desired parameter number, and the screen showing the parameter you want to set will appear.

Soft limit + side         56.30 nm           Soft limit - side         -4.30 nm           Homing direction (0:CW 1:CCW)         1		50, 30 mm
Soft limit - side -0.30 m Homing direction (0:CW 1:CCW) 1	Zone boundary - side	-0, 30 nm
Homing direction (0:CW 1:CCW)	Soft limit + side	50, 30 mm
	Soft limit - side	~0, 30 nm
Auching stop recognition time	Homing direction (0:CW 1:CCW)	1
usining stop recognition thine 200 mg	Pushing stop recognition time	255 msec
Servo gain number 11	Servo gain number	11
Velocity initial value 114 mm	Velocity initial value	114 mm/se

Touch Soft limit+ side, and the numeric keypad will appear. Enter a value and then touch [ENT] on the numeric keypad.

To cancel the change after the numeric keys are displayed, touch [ESC].

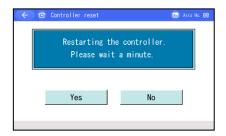
←	the Axis No. 00
Restart the controller?	
Yes No	

Touching the (1) Home button opens a confirmation screen with a message asking if you want to restart the controller.

Touch [Yes].

Touch [No] to return to the parameter screen without restarting the controller or reflecting the parameter you have set. To reflect the parameter you have set, you must restart the controller.

Caution: If the controller is not restarted, the parameter that has been rewritten does not translate to the intended action. The parameter will become effective once the controller is restarted or power is reconnected.



The controller is restarted, after which the parameter you have set will be reflected.



# 3.12 Test Run

You can perform jogging/inching operations, move to a position or continuously to multiple positions registered in the position table, or move to a position by specifying the position directly.



Touch [Test run] on the Menu 1 screen.

The movement menu screen appears.

←	t run	ito Axis No. 0
	Jog inching	
	Position move	
	Direct move	
	I/O test	

Touch either one of [Jog inching], [Position move], [Direct move] or [I/O test].

(1) Jog inching

Perform jog/inching operation. Refer to [3.12.1 JOG / Inching Operation] for details about how to operate.

(2) Position move

Move to a position or continuously to multiple positions registered in the position table.

• Move

The actuator moves, in a single step, from the current position to the position corresponding to an arbitrary position data number registered in the position table.

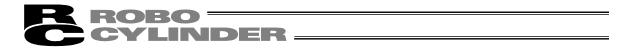
Continuous

The actuator operates continuously from the specified position data number through successive position data numbers.

\* What is continuous movement?

Assume that the following position table has been set. If a continuous movement command is issued from position No. 2, the actuator operates over a group of positions from the position at which the movement command is issued through successive positions where data is available (until the position before the one where no data is registered(\*)), such as position No.  $2 \rightarrow No. 3 \rightarrow No. 1 \rightarrow No. 2$ , and so on.

No.	Position(mm)	Vol (mm/s)	flee (G)	Dec. (6)
000	*****. **	****. **	*, **	*, **
901	0.00	100.00	0.30	0.30
102	10.00	100,00	0.30	0.30
003	50.00	100.00	0.30	0.30
004	100.00	100.00	0.30	0.30
005	*****, **	****, **	*. **	*. **
006	0.00	114.00	0.20	0.20
007	100.00	114.00	0.20	0, 20
Pr pg	No. sel.	All clear ↓Nx	pg	Test run



On a teaching pendant, continuous movement is only permitted over 64 positions from position No. 000 to 063, 064 to 127, etc.

As shown in the example, the actuator returns to position No. 061 after No. 063 (returns to the beginning of a group of successive positions where position data is entered), and moves continuously.

It does not move from position No. 063 to No. 064.

No.	Target position (mm)	Speed (mm/s)	
000	*	*	
001	100.00	20	
	I		1
	I		
060	*	*	
061	300.00	30	
062	400.00	40	
063	500.00	50	
064	600.00	60	
065	700.00	70	
	I		
	I		

Refer to [3.12.2 Position Movement Operation] for details about how to operate.

(3) Direct move

Input the target position and the speed on the numeric keys to perform movement. Refer to [3.12.3 Direct Movement Operation] for details about how to operate.

(4) I/O test

Monitoring of the PIO input signals and compulsory output of the output signals can be conducted.

Refer to [3.12.4 I/O test] for details about how to operate.



# 3.12.1 Jog/Inching Operation

← 🖻 Jog in	nching	📶 🖅 Axis No. 00	< 🕁 🤄
Cur.pos. Jog vel. 1mm/s 10mm/s 30mm/s	0.65 mm Inching 0.01mm 0.10mm 0.50mm	Servo Honing Brake rel.	Cur.pos. Jog vel 1mm 10mm 30mm
<ul><li>50mm/s</li><li>100mm/s</li></ul>	<ul><li>1. 00mm</li><li>5. 00mm</li></ul>	♣ BACK(-) FWD(+) ⇒	• 50mm • 100mm

				Homing	
Jog vel. 1mm/s	Inching 0.01mm			Brake rel.	
<ul> <li>10mm/s</li> </ul>	0. 10mm			Alarm rese	t
● 30mm/s	• 0. 50mm				
• 50mm/s	<ul> <li>1.00mm</li> </ul>	4	BACK(-)	FWD(+)	
● 100mm/s	● 5.00mm	÷.	DACK (-)	FWD(T)	-

Jog/inching Screen

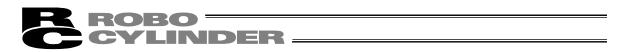
When Alarm Generated

[Operation on the jog/inching screen]

: Select either of 1, 10, 30, 50 or 100mm/s of JOG speed or 0.01, 0.10, Jog vel. / Inching 0.50, 1.00, 5.00mm of inching distance, and JOG operation with the selected speed or inching operation with the selected distance can be conducted. The circle (radio button) on the selected one will be marked with a black dot. : Touching [Servo] while the servo is OFF turns on the axis servo and O [Servo] becomes lit. Touching [Servo] while the servo is ON turns off the axis servo and O becomes unlit. [Homing] : Touch [Home-Return] and the home-return operation should get executed after a confirmation window for execution is displayed. O display should get illuminated when the home-return operation is completed and O display should turn off when the home-return operation is incomplete. [Brake rel.] : For an actuator equipped with a brake, touch [Brake rel.] and the brake gets compulsorily released and the circle turns on. Touch [Brake rel.] again and the brake works and the circle turns off. : After removing a cause of an error, touch [Alarm reset] to cancel the [Alarm reset] alarm. [BACK(-)], [FWD(+)]: When JOG operation is selected, while touching them, the axis moves in the set speed. When inching operation is selected, every time touching them, the axis moves for the set distance. [BACK(-)] performs JOG operation in negative direction. [FWD(+)] performs JOG operation in positive direction. In inching operation, touch and hold them for two seconds, and JOG operation will be performed in 1mm/sec. The speed increases in every 1 second afterwards.

Caution: An axis could drop if the brake compulsory release is performed while the servo is off when the axis is installed in the vertical orientation.

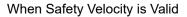
Caution: Operation with JOG Switch on Front Panel of RCON If TB-03 gets disconnected from the controller in the condition that this window is open, JOG switch operation will get disabled.



## 3.12.2 Position Movement Operation

Move to a position or continuously to multiple positions registered in the position table. The items to be displayed should differ depending on valid/invalid of the safety velocity. [Refer to 3.13 TP Operation Mode]

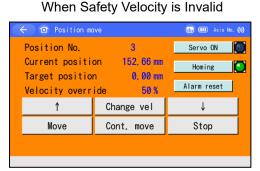
← @ Position mo	ove	un 🎟 Axis No. 00
Position No.	1	Servo ON
Current positio	on 152.66 mm	Homing 🎦
Target position	n 0.00 mm	
Vel.	10 mm/s	Alarm reset
↑	Change vel	$\downarrow$
Move	Cont. move	Stop

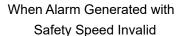


Position No.	1	Servo ON
Current positio	n 152,66 mm	Homing
Target position		Alarm reset
Vel.	10 mm/	S
<u>↑</u>	Change vel	↓
Move	Cont. move	Stop

When Alarm Generated with Safety Speed is Valid





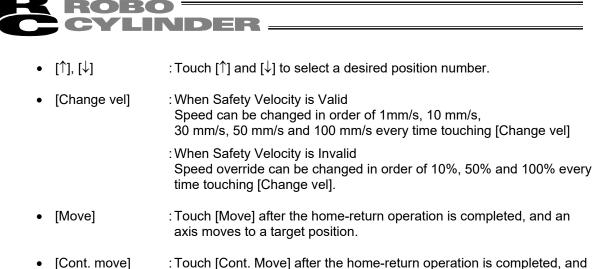


[Operation on the position movement screen]

- Position No. : Displays the selected position number.
- Current position : Displays the current position.
- Target position : Displays the target position set in the selected position number.
- When Safety Velocity is Valid;
- Vel. : The set velocity (mm/s) should be displayed.

When Safety Velocity is Invalid;

- Velocity override : Displays the selected speed override (%).
- [Servo ON] : Touching [Servo ON] while the servo is OFF turns on the axis servo and O becomes lit. Touching [Servo OFF] while the servo is ON turns off the axis servo and O becomes unlit.
- [Homing] : Touch [Home-Return] and the home-return operation should get executed after a confirmation window for execution is displayed. O display should get illuminated when the home-return operation is completed and O display should turn off when the home-return operation is incomplete.
- [Alarm reset] : After removing a cause of an error, touch [Alarm reset] to cancel the alarm.



- [Cont. move] : Touch [Cont. Move] after the home-return operation is completed, and an axis performs continuous drive until pressing [Stop].
- [Stop] : Touching [Stop] stops the axis.

Caution: Operation with JOG Switch on Front Panel of RCON
If TB-03 gets disconnected from the controller in the condition that this window is
open, JOG switch operation will get disabled.



# 3.12.3 Direct Movement Operation

A position is specified directly to move the axis.

🗧 🔁 Direct move	un 🖅 Axis No. 00	🗧 🔶 🖆 Direct move	💼 🂷 Axis No. 00
Current position Target position	SV OFF         SV           0. 65 mm         Homing         Image: State of the state	Current position Target position	Servo ON SER
Vel. Move	0.00 mm/s	Vel. Move	0.00 mm/sAlarm reset
Direct Movemen	t Operation Screen	When Ala	arm Generated

[Operation on the direct movement screen]

- Current position : Displays the current position.
- : Touching "Target position" displays the numeric keypad. Enter a Target position desired target position and then touch [ENT]. Vel. : Touching "Vel." displays the numeric keypad. Enter a desired speed and then touch [ENT]. [Servo ON] : Touching [Servo ON] while the servo is OFF turns on the axis servo and O becomes lit. Touching [Servo OFF] while the servo is ON turns off the axis servo and O becomes unlit. : Touch [Home-Return] and the home-return operation should get [Homing] executed after a confirmation window for execution is displayed. O display should get illuminated when the home-return operation is completed and O display should turn off when the home-return operation is incomplete. : After removing a cause of an error, touch [Alarm reset] to cancel the [Alarm reset] alarm. [Move] : Touching [Move] moves the axis to the target position you have set. : Touching [Stop] stops the axis movement. [Stop] /Caution: Operation with JOG Switch on Front Panel of RCON If TB-03 gets disconnected from the controller in the condition that this window is

open, JOG switch operation will get disabled.



## 3.12.4 I/O Test

PIO input signal and the output signal can be monitored. You can also touch OUT00 to OUT15 to forcibly turn ON/OFF the corresponding output signals.

[Operation on the I/O test screen]

(+) 🕁 I	/O test			ili (	III Axis No. 00
IN00	IN08	Inp	0utp	0UT00	0UT08
INØ1	IN09			0UT01	0UT09
IN02	IN10			0UT02	OUT10
IN03	IN11			0UT03	OUT11
IN04	IN12			0UT04	0UT12
IN05	IN13			0UT05	0UT13
IN06	IN14			0UT06	0UT14
IN07	IN15			0UT07	0UT15
	OFF : IN	OUT	ON :	IN OUT	

If it is required to have OUT00 in status of off to turn on, touch [OUT00].

(+) @ 1	/O test			do (	III Axis No. 00
IN00	IN08	Inp	Outp	OUT00	0UT08
IN01	IN09			OUT01	OUT09
IN02	IN10			0UT02	OUT10
IN03	IN11			0UT03	OUT11
IN04	IN12			0UT04	0UT12
IN05	IN13			0UT05	0UT13
IN06	IN14			OUT06	0UT14
IN07	IN15			0UT07	0UT15
	OFF : IN	OUT	ON :	IN OUT	

OUT00 should turn on. Touch [OUT00] again and it should turn off.



# 3.13 TP Operation Mode

An operation mode is set if the manual (MANU) mode is selected.



Touch [TP op. mode] on the Menu 2 screen.

The TP operation mode screen appears.

eration mode 👘 Axis No. 00
PIO movement prohibition, Safety velocity valid
PIO movement prohibition, Safety velocity invalid
PIO movement permittion, Safety velocity valid
PIO movement permittion, Safety velocity invalid
OK

Select and touch [Teach1] or other desired mode.

Select a manual operation mode from the menu containing the following four items:

• Teach1 (Safety velocity valid / PIO movement prohibition)

PIO movement prohibition	: You can write position data, parameters, etc., to the controller
	and issue actuator operation commands.
Safety velocity valid	: The maximum speed corresponds to the safety speed set by a parameter, regardless of the speed specified in the position data table.

• Teach2 (Safety velocity invalid / PIO movement prohibition)

PIO movement prohibition	: You can write position data, parameters, etc., to the controller
	and issue actuator operation commands.
Safety velocity invalid	: You can move the actuator at the speed (greater than the
	safety speed) set in the position data table.

• Monitor1 (Safety velocity valid / PIO movement permittion)

PIO movement permittion	: Only monitoring is permitted. You cannot write position data,
	parameters, etc., to the controller or issue actuator operation
	commands. Operation commands (jog, home return, etc.)
	cannot be issued from the teaching tool.
Safety velocity valid	: The maximum speed corresponds to the safety speed set by a
	parameter, regardless of the speed command from the PLC.

 Monitor2 (Safety velocity invalid / PIO movement permittion) PIO movement permittion

 Only monitoring is permitted. You cannot write position data, parameters, etc., to the controller or issue actuator operation commands. Operation commands (jog, home return, etc.) cannot be issued from the teaching tool.
 You can move the actuator at the speed (greater than the safety speed) according to the command from the PLC.



# 3.14 Alarm List

A list of alarms that may generate after the controller power is turned on is shown. [For alarm details, refer to 9 "Error Display."]

🔄 🗇 Menul		Glossary du Axis No. 00
Z	Monitor	Test run
Position edit guide	🯒 Position edit	🔺 Alarm list
I/O control guide	Parameter edit	1 Information
	SD memory card	Troubleshooting
Easy setting	Servo monitor	Menu2 >

Touch [Alarm list] on the Menu 1 screen.

The controller's alarm list appears.

Controller without the calendar function

		Alarm list	Check model num.	Inquir	v	
larn	list					
ouch	the ala	rm No. to check th	e alarm description ar	nd perform	troub	leshooting.
No,	Code		Nane	Address	; Detail	Tino (whereas)
0	008	Deviation Over flow		****	****	0:27:00
1	FFF	PowerUP No Error		****	4288	!!
2	0E5	Encoder Receipt Error		8888	0001	0:00:36
4	1					
						1.1
ő						: :
						1 1
		†Pr pg	↓Nx pg			Clear

Touching  $[\downarrow Nx pg]$  displays the list of the next screen.

	display	Alarm list	Check model num,	Inquiry	
arn	list				
uch t	the alarm No	, to check th	e alarm description an	d perform trouble	ashooting,
No.	Code		Name	Address Dotail	Time (hh:mm:ss)
					: :
9					: :
10					: :
11					: :
					: :
					: :
					: :
		_			
10	1 Pr	pg	↓Nx pg		Clear

Touching [<sup>↑</sup> Pr pg] displays the list of the previous screen.

Touching [Clear] clears all alarm details.

(Note) PowerUP No Error indicates that the controller power was turned on.
 It does not indicate an error.
 The time of occurrence of each alarm is indicated by an elapsed time from this PowerUP No Error.

Controller with the calendar function

larn		1	Alarm list	Ch	eck model	num,		Inquiry	r -		
larn	list										
buch	the ala	rm No.	to check	the ala	arm descri	ption	and	perform	trou	bleshcot	ing.
No,	Code			Nan	e			Address	Detail		inne ihh:nn:ss)
0	FFF	PowerU	P No Error					****	****	23/10/12	18:48:37
1	0D9	Softwa	re stroke limi	t exceed	ed			4884	0001	23/10/12	13:19:02
2	FFF	PowerU	P No Error					*88*	8848	23/10/12	13:14:29
3	0E5	Encode	r Receipt Erro	or .				(689)	0001	23/10/12	08:57:32
4	0E5	Encode	r Receipt Erro	or				6884	8661	23/10/12	08:55:27
5	0E5	Encode	r Receipt Erro	or .				****	0001	23/10/12	08:50:27
6	FFF	Powert	P No Error					****			08:50:25
7	ano	Coller	ce etcole liei	Levend	ed.		_	40.04	0001	22/18/11	19-51-17
	1 P	r pg	↓ Nx	pg	Graph		S	ave		Clea	r

Touching [ $\uparrow$  Pr pg] displays the list of the previous screen. Touching [ $\downarrow$  Nx pg] displays the list of the next screen.

Touch [Save] and the screen goes to the window to save to a Secure Digital memory card to save the alarm information. Refer to [3.19.1 Controller Data Backup]

Touching [Clear] clears all alarms.

The screen can be moved to the drive recorder screen from [Graph] from SCON2 controller. Refer to [3.27 Drive Recorder Function]

(Note) "PowerUP No Error" indicates that the controller power was turned on. It does not indicate an error.

The occurrence time corresponds to the time each alarm occurred.



# 3.15 Controller Reset

#### The controller is restarted.

(←) @ Menu2	Glossary 🕕 Axis No. 👀
Change operating axis	Maintenance parts list
TP op. mode	Easy programming
Env. set.	0ffboard tuning
Controller reset	Pulse train mode setting
0ther setting	Menu1 >

Touch [Controller reset] on the Menu 2 screen.



## Touch [Yes].

Touch [No] to return to the Menu 2 screen without restarting the controller.



This window appears if the servo is on. Touch [Yes]. Touch [No] to return to the Menu 2 screen without restarting the controller.



The controller is restarted.

Returns to Menu 1 Screen.



# 3.16 Other Settings

Parameter initializing, axis number change, loadcell calibration, loadcel invalidation and I/O customizing, switching drive mode can be conducted.



Touch [Other setting] in Menu 2 screen.



Other setting screen opens. (Buttons to be displayed should differ depending on the controller models.)

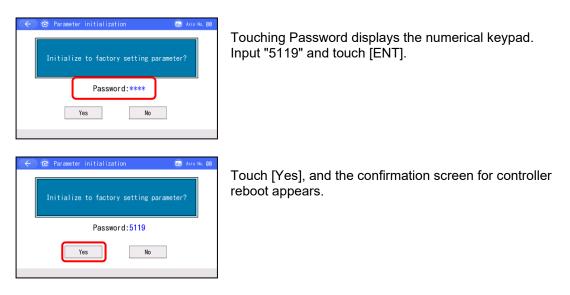
Touch a button of the feature that you would like to conduct such as [Parameter initialization].

## 3.16.1 Parameter Initialization

The parameters are reset to their factory default settings (initialized).

Caution: Once the parameters are initialized (to their factory default settings), all parameters the user has set will return to the values set at the factory. Exercise caution.

Touch [Parameter initialization] in Other setting screen to display Parameter initialization screen.







## Touch [Yes].

Touch [No], and the controller will not be rebooted and the screen returns to the previous.

Caution: If the controller is not restarted, the parameters that have been rewritten to their factory ∕∕∖∖ settings do not translate to the factory-set operations. The factory settings will become effective once the controller is restarted or power is reconnected.

## 3.16.2 Axis Number Change

Touch [Change axis No.] in Other setting window to display Axis No. setting screen.

← @ Axis No. setting •Axis No.	🕅 Axis No. 00	You can set a value between 0 and 15. Set a desired axis number and then touch [ENT].
	4 5 CLR ESC 9 0 BS ENT	
← ☎ Axis No. setting •Axis No.	1. Axis No. 60	Touch [Execute].
Exe	cute	

## 3.16.3 Load Cell Calibration

Loadcell calibration can be conducted on an actuator equipped with a loadcell. (SCON-CB-F, SCON2-CG-F, PCON-CBP/CGBP)

Touch [Load cell calibration] in Other setting window to display Load cell calibration screen.



Touch [Yes].



## 3.16.4 Load Cell Inactivation

Function of the loadcell can be invalidated temporarily on an actuator equipped with a loadcell. (SCON-CB-F, SCON2-CG-F, PCON-CBP/CGBP)

Touch [Load cell inactivation] in Other setting screen, and the controller gets rebooted and the loadcell becomes invalid.

Caution: There will be no confirmation window appearance after touching [Load cell inactivation] button.

Loadcell becomes valid at reboot of the next controller or when the power is back on.

3.16.5 I/O Customizing

Feature Dedicated for PCON-CYB/ACON-CYB/DCON-CYB

I/O customizing becomes available if PIO pattern is set to "5: User Select Mode" in PCON-CYB, ACON-CYB and DCON-CYB.

Select a desired number of the positions (4, 8, 16, 32 or 64), and necessary number of command position number signals (PC\*) and the start signal CSTR should be assigned to the input ports, and necessary number of complete position number signals (PM\*) and the positioning complete signal PEND to the output ports. Desired signals from the indicated signals (refer to Signals Available for Assignment) can be assigned to the other ports.

Touch [I/O customize] in Other Setting window to show the I/O customizing window.

		Number of positioning points O4 positions O8 positions @16 positionsO32 positionsO64 positions										
I/O se	I/O setting Input port Output port											
IN00 F IN01 F IN02 F	PC2	INØ4 INØ5 INØ6	-	OUT00 OUT01 OUT02	PM1 PM2	OUT04 OUT05 OUT06	- 🗸					
IN03 F	IN02         IN07         IN07           IN03         PC8         IN07         IN07											

(It is set to the initial assignment condition as shown in the table below at delivery.)

Select a number of positions.

In accordance with the selected number of positions, necessary signals should be assigned to the input and output ports.

l mh e r	1/C								
Number of positioning points									
⊖4 positions ⊙8 positions ⊛16 positions⊝32 positions⊝64 positions									
I/O setting									
		out port			(	Dutput	port		
INØØ	PC1	IN04 C	STR	OUTØ	0 PM1		OUTØ4	PEND	
INØ1	PC2	IN05 *	STP 🔽	ООТО	1 PM2	- (	0UT05	MOVE	-
IN02	PC4	IN06 H	ome 👻	OUT0	2 PM4		0UTØ6	ZONE1	-
IN03	PC8	IN07 -	-	OUT0	3 PM8		OUTØ7	-	-
				OK					
				ОК					
÷	1/C	) customiz		OK				Axis	No. 00
• · ·				OK				Axis	No. 00
lumber	of posi	tioning p	oints						
lumber	of posi		oints		s⊖32 p	positio			
Number ⊖4 pos	of posi	tioning p	oints		ıs⊜32 ¢	oositio			
Number ⊖4 pos	of posi sitions ( atting	tioning p	oints			positio	ons©6		
Number ⊖4 pos	of posi sitions ( atting Ing	tioning p D8 positio	ooints ⊮ns ⊛16	position		Output	ons©6	i4 pos	
Number ⊙4 po: I/O se	of posi sitions ( etting Inp PC1	tioning p D8 positio	ooints ns ⊛16 STR	position	(	Output	ons⊝6 port	i4 pos PEND	
Aumber 04 pos I/O se IN00 IN01 IN02	of posi sitions ( etting PC1 PC2 PC4	tioning p D8 positio Dut port IN04 C	ooints wns ®16 STR STP 💌	position	( 0 PM1	Output	ons⊝6 port 0UTØ4	i4 pos PEND MOVE	itions
Aumber O4 pos I/O se IN00 IN01	of posi sitions ( etting PC1 PC2 PC4	tioning p D8 positio put port IN04 C IN05 #	ooints wns ®16 STR STP 💌	position	( 0 PM1 1 PM2	Output	pons () 6 port OUTØ4 OUTØ5	PEND MOVE ZONE1	itions

A pulldown button v should be displayed to a port available for signal assignment.

Touch the pulldown  $|\Psi|$  and select a signal to be assigned.

Once all the necessary items are selected, touch [OK] to confirm the assignment.

The number of positioning points will be changed and the input and output signals will become valid after a reboot.

R	ROBO ——
C	CYLINDER =

Number of positioning points	IN/ OUT	IN/OUT 0	IN/OUT 1	IN/OUT 2	IN/OUT 3	IN/OUT4	IN/OUT5	IN/OUT 6	IN/OUT 7
4 nointe	IN	PC1	PC2	CSTR	Available for Assignment				
4 points	OUT	PM1	PM2	PEND	Available for Assignment				
0 nointe	IN	PC1	PC2	PC4	CSTR	Available for Assignment	Available for Assignment	Available for Assignment	Available for Assignment
8 points	OUT	PM1	PM2	PM4	PEND	Available for Assignment	Available for Assignment	Available for Assignment	Available for Assignment
40 m e inte	IN	PC1	PC2	PC4	PC8	CSTR	Available for Assignment	Available for Assignment	Available for Assignment
16 points	OUT	PM1	PM2	PM4	PM8	PEND	Available for Assignment	Available for Assignment	Available for Assignment
00 m e inte	IN	PC1	PC2	PC4	PC8	PC16	CSTR	Available for Assignment	Available for Assignment
32 points	OUT	PM1	PM2	PM4	PM8	PM16	PEND	Available for Assignment	Available for Assignment
C4 mainte	IN	PC1	PC2	PC4	PC8	PC16	PC32	CSTR	Available for Assignment
64 points	OUT	PM1	PM2	PM4	PM8	PM16	PM32	PEND	Available for Assignment

Initial Assi	gnmer	nt at Delive	ery						
64 points	IN	PC1	PC2	PC4	PC8	PC16	PC32	CSTR	RES
	OUT	PM1	PM2	PM4	PM8	PM16	PM32	PEND	*ALM

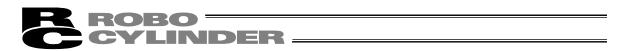
■Signals Available for Assignment

Any signal in the list of signals below can be selected. For the detail of each signal, please refer to the instruction manual of each controller.

Input		
Signal name	Content	
NC (-)	Feature not assigned	
* STP	Release of pause : Pause command when OFF	
SON	Servo ON command : Servo turned on when ON	
HOME	Home returnc : Home-return command when ON	
RES	Reset : Reset executed when ON	
JISL	Jog/inching switching : JOG operation when OFF, Inching operation when ON	
JVEL	Jog-speed/inch-distance switching : Parameter No. 26 "JOG Velocity" and Parameter No. 48 "Inching Distance" are used when it is off and Parameter No. 47 "JOG Velocity 2" and Parameter No. 49 "Inching Distance 2" when it is on.	
JOG+/JOG-	Jog : JOG+: Movement to direction opposite home when ON JOG- : Movement to direction of home when ON * The direction of movement should be the other way around of the reversed type.	
RMOD	Operation mode: AUTO Mode when OFF, MANU Mode when ON	
BKRL	Brake release : Brake Released when ON	

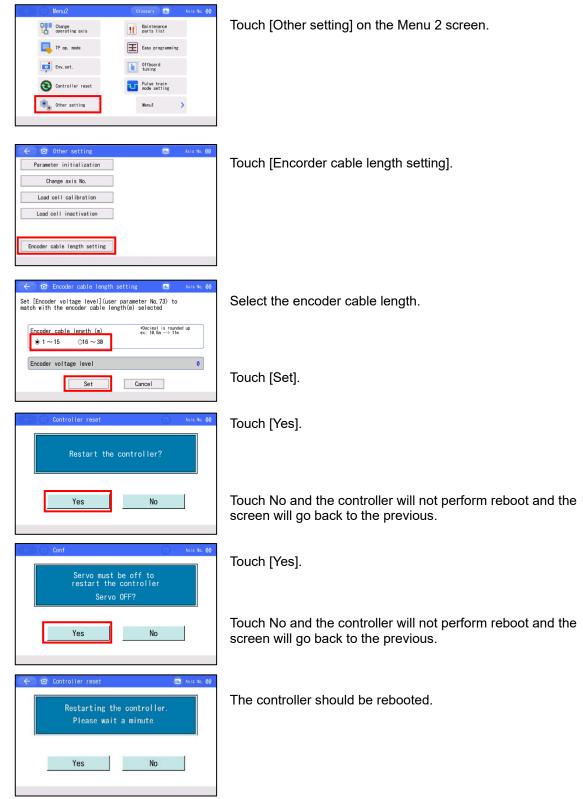
Output				
Signal name	Content			
NC(-)	Feature not assigned			
MOVE	Moving signal : It turns ON during actuator movement process			
SV	Operation preparation end : Servo turned on when ON			
HEND	Home return completion : Home-return command when ON			
* ALM	Alarm : It turns OFF when an alarm is generated			
ZONE1	ZONE : It turns ON when the current position is in the zone setting			
ZONE2	ZONE 2 : It turns ON when the current position is in the zone setting			
PZONE	Position zone : It turns ON when the current position is in the position zone setting			
* EMGS	Emergency stop : It turns OFF when in emergency stop status.			
RMDS	Operation Mode Condition : It turns off when the current condition is in AUTO Mode and on when in MANU Mode			
LOAD	Load Output Judgment : It turns ON when reached and OFF when not reached			
TRQS	Torque level : It turns ON when reached and OFF when not reached			
PSFL	Pressing and a miss : It turns ON when miss-pressing occurred			
PWR	Controller ready : It turns ON when it is ready			
CM1, CM2, CM4, CM8	<ul> <li>With the combination of the output of these signals, the current command current rate (ratio to the rated value) should be output.</li> <li>* In order to output the command current rate, it is necessary that all of the four signals, CM1, CM2, CM4 and CM8 are assigned. With this as a reason, it is available only when the number of positioning points is either four points or eight points.</li> <li>• PCON-CYB outputs the current load current in every 6.25% period.</li> <li>• ACON-CYB and DCON-CYB output the current load current in every 18.75% period.</li> </ul>			
PUSH	In Pressing Process : It turns on during pressing process			
GHMS	In Home-Return Process : It turns on during home-return process			
* ALMC	Critical Malfunction Status : It turns off when an alarm occurred which disables operation to be continued (It is necessary to reboot the power)			
MEND	It turns on when positioning is complete, pressing is complete or miss-pressing is occurred and turns off when operation started			
* OVLW	Overload Warning Signal : It turns on when the estimated motor temperature exceeds the setting and turns off when it falls below the setting			
* ALML	Light Malfunction Status : It turns off when an alarm occurred for light malfunction which operation is still possible to continue			

(Note) "\*" in the symbol names above shows signals in active low.



## 3.16.6 Encorder cable length setting

Set the "Encoder Voltage Level" suitable for the selected encoder cable length (m).



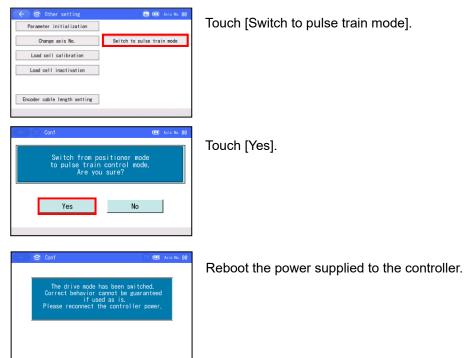
Return to the Menu 1 screen.



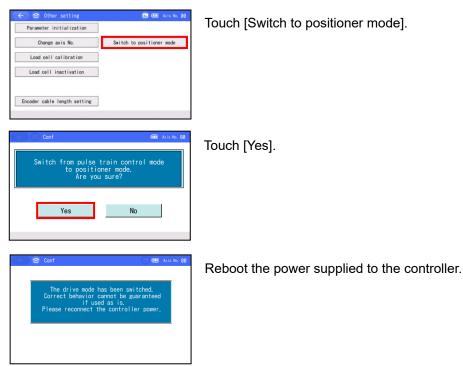
## 3.16.7 Switching Drive Mode

It is a feature dedicated for SCON2 controllers.

The mode can be switched over between Positoner Mode and Pulse Train Control Mode. [1] Switching over from Positioner Mode to Pulse Train Control Mode



## [2] Switching over from Pulse Train Control Mode to Positioner Mode





# 3.17 Information Display

Information such as the controller version, manufacturing information and maintenance information is displayed.



Touch [Information] on the Menu 1 screen.



The information screen appears.

Touch a button of the feature that you would like to display such as [Software version information].

# 3.17.1 Display Screen for Each Type of Data

## 3.17.1.1 Software Version Information

Touch [Software version information] in Information screen.

Series/Type	PCON-CA			
Controller version	AE30000F	AE30000F		
Controller core version	FF810002			
TP version	1.00			
TP core version	1.00			

Software version information screen opens. In this, shows the series/type of the controller and versions of the controller and this teaching pendant.

Touch [Edit Axis Name] and the name of axes can be edited. Refer to [3.17.2 Axis Name Edit] for how to edit an axis

Refer to [3.17.2 Axis Name Edit] for how to edit an axis name.

## 3.17.1.2 Network Information

Series	DeviceNet
Address	1
Communication speed	Auto
Operation mode	Rmt I/O
MAC address	
Module ver.	00000000

Touch [Network information] in Information screen.

Network information screen opens. In this, shows various of information regarding the network.



## 3.17.1.3 Production Information

Touch [Production information] in Information screen.

Controller S/N	A40969950
Controller PCB revision	M, REV:0K / M, REV:11
Actuator S/N	*

Production information screen opens. In this, shows manufacturing information such as the serial number of the controller and actuators.

0K / M.REV:11 399	1	
399		
	(0	cess(Convey completed)

Actuator S/N, actuator model number and user note should be displayed when both the controller and actuators are applicable for the information management system and Parameter No. 192 Actuator Identification System Use Flag is set to 1: Valid.

For the Actuator S/N, actuator model number and user note, the information saved in the encoder should be displayed.

Controller S/N	A40969950
Controller PCB revision	M. REV:0K / M. REV:11
Actuator S/N	A70615399
q w e r t CAP a s d f g SHIFT z x c v b	y u i o p [ ] h j k l ; ' n m , . / ENT

Touch [User Note Editing], show the full keyboard, and it is available to edit the memo.

The user note is available for editing up to 124 characters in half size at the maximum. (Only half size alphabetical and numerical characters and half size symbols are available for input in TB-03.)

Refer to "Input Operation on Full Keyboard" in 3.10.2 for entering a text.

## 3.17.1.4 Maintenance Information

Touch [Maintenance information] in Information screen.



Maintenance information screen opens.

Refer to [3.9.2 Maintenance Information Screen] for the items to be shown and how to operate the buttons.



## 3.17.1.5 Connectable Model

Touch [Connectable model] in Information screen.

← @ Connectable model	<b></b>
in current version, the controllers	listed below can be connected.
ACON-C/CY/SE/PO/PL	XSEL-K/KX/KT/KET
ACON-CA/CB/CYB/POB/PLB	XSEL-P/Q/PX/QX/PCT/QCT
PCON-C/CF/CY/SE/P0/PL	XSEL-R/S/RA/SA
PCON CA/CFA/CB/CFB/CYB/POB/PLB	XSEL-RX/SX/RAX/SAX
PCON-CBP	XSEL-RXD/SXD/RAXD/SAXD
DCON-CA/CB/CYB/POB/PLB	TT-A/C. TTA-A/C
SCON-C/CA/CAL	ASEL-C/CS, PSEL-C/CS
SCON-CB/LC/CB-*F/LC-*F	SSEL-C/CS
SCON2-CG/CG-*F	MSEL-PC/PG/PCF/PGF/PCX/PG>
ERC2, ERC3, RCP6S	RSEL
ROBONET, RCM-P6AC/P6PC/P6DC MCON-C/LC, MSCON-C, RCON, ADTB	
	EC, REC, CCM
ASEP-C, PSEP-C, DSEP-C	
AMEC-C, PMEC-C	Teaching update
MSEP-C/LC	reaching update

Connectable model screen opens. Controllers connectable to this teaching pendant with the current version should be displayed.

Refer to [10.2 Teaching Update] for how to update teaching.

## 3.17.1.6 Inquiry

Touch [Inquiry] in Information window.



Inquiry window opens.

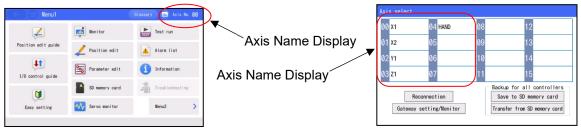
3. Operation of CON Related Controllers



# 3.17.2 Axis Name Edit

A name can be set on an axis. To show the axis name, select Axis Name at the axis name display section in the environment setting screen. Refer to [3.18 Environment Setting [Axis Name Display]]

Axis name is shown in the right top of each screen or select axis screen. Even if the axis name is set to be shown, axis number will be shown if there is no axis name setting conducted.



(Note) The available characters for setting in TB-03 are capitalized font English characters (from A to Z) and numbers (from 0 to 9).

# [Axis Name Edit Operation]



Touch [Env. set.] on the Menu 2 screen.

Language setting	Innenes	English	EU	Chinese
Language setting	Japanese	English	EU	unnese
Touch tone	0FF	MIN	MID	MAX
DimDispTime ("0":N	ever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name			Axis Name	Axis No.
Ripple compensatio	n(Current Mon	nitor)	Yes	No
		Wri	te the above	setting
	eeword change	e Paramet	er edit pass	word change
Position edit pa	issiioru change			

Set to "Axis Name" for the axis name display.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.



Touch [Information] on the Menu 1 screen.





Information screen opens.

Touch [Software version information].

Series/Type	PCON-CA	
Controller version	AE30000F	
Controller core version	FF810002	
TP version	1.00	
IP core version	1.00	

Touch [Edit Axis Name] in Software version information screen.

÷	1	oftwar	e versi	on info	ormatio	n	th	Axis	No. 00
Serie	s/Type				SCON-CE	3	_		
Contr	oller ve	ersion			AA0900	14			
Contr	oller co	ore vers	ion		AA8400	3	_		
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	Ε	F	G	Н	CLR
Ι	J	К	L	М	N	0	Р	Q	BS
R	S	Т	U	۷	W	Х	Y	Z	ENT
		[	]		SPACE		-	#	

On the right of the Controller core version display is the input area. Character select buttons are shown in the half bottom of the screen.

$\leftarrow$	1	oftwar	e versi	on info	ormation	n		Axis	No. 00
Serie	s/Type				SCON-CE	3	_		
Contr	oller ve	ersion			AA09001	14	123	345678	39012
Contr	oller co	ore vers	sion		AA84000	3	_		
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	E	F	G	Н	CLR
Ι	J	К	L	М	N	0	Р	Q	BS
R	S	Т	U	۷	W	Х	Y	Z	ENT
		[	]		SPACE		-	#	

Input a name and touch [ENT].

The number of characters available for input is 12 in half-size font characters.

Touch [ENT] with nothing input, and it is defined as no setting. With no setting, an axis number will be shown.

() ()	Conf		123456789012
		ill be changed. e to continue?	
	Yes	No	

The axis name should be shown on the top right. (Temporary setting)

Touch [Yes].

Touch [No] and the condition goes back to before setting.

CYLINDER -

# 3.18 Environment Setting

You can change the language setting, touch operation sound setting, dim display time setting, data input warning setting, axis name display setting, ripple compensation, position editing password change / PrsProgram edit password change, parameter edit password change, system password change, display setting, time setting and Startup screen setting.

$\leftarrow$	Menu2	Glossary 🕕 Axis No. 00
	Change operating axis	Maintenance parts list
	TP op. mode	Easy programming
	Env. set.	0ffboard tuning
	Controller reset	Pulse train mode setting
	0ther setting	Menu1 >

Touch [Env. set.] on the Menu 2 screen.



The Env. set. screen appears.

### Servo Press Type Controller

Language setting	Japanese	English	EU	Chinese
Touch tone	OFF	NIN	MID	MAX
DimDispTime ("0":N	lever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name			A 1 . M	
DISP MAIS Malle			Axis Name	Axis No.
	n(Current Mor	itor)	Yes	Axis No. No
Ripple compensatio	n(Current Mor			No
		Wri	Yes	No setting
Ripple compensatio	password chan	Wri	Yes te the above	No setting

For the servo press type controllers; [PrsProgram edit password change] button should be shown instead of [Position edit password change] button.

### [Language setting]

Select a language to show from Japanese / English / EU / Chinese.

Language setting	Japanese	English	EU	Chinese
Touch tone	0FF	MIN	MID	MAX
DimDispTime ("0":N	lever Dim)	255 s		
Data input warning	3		Enable	Disable
Disp Axis Name			Axis Name	Axis No.
			AXIS Name	AATS NO.
	on(Current Mor	nitor)	Yes	No
	on(Current Mor			No
		Wri	Yes	No
Ripple compensatio	assword change	Wri	Yes te the above	No

Touch a language (such as [Japanese]) to show.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

For the operation procedures in detail to change the language, refer to [3.1 Switching Display Language].



#### [Touch tone]

You can select whether or not to output a touch tone.

Language setting	Japanese	English	EU	Chinese	
Touch tone	0FF	MIN	MID	MAX	
DimDispTime ("0":N	ever Dim)	265 s			
Data input warning			Enable	Disable	
Disp Axis Name			Axis Name	Axis No.	
Ripple compensatio	n(Current Mor	nito <u>r)</u>	) Yes No		
		Wri	te the above	setting	
Position edit pa	assword chang	e Parame	ter edit pass	word change	
System passw	ord change				

Touch [OFF]. A touch tone is not output.

Touch [MAX], [MID] or [MIN]. A touch tone is output.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

#### [DimDispTime]

Set the dim display time when not being operated. Zero seconds mean the display is on all the time.

Language setting	Japanese	English	EU	Chinese
Touch tone	OFF	MTN	MID	MAX
DimDispTime ("0":M	lever Dim)	255 s		
Data input warning	Enable	Disable		
Disp Axis Name			Axis Name	Axis No.
Disp Axis Name Ripple compensatio	on(Current Mor	nitor)	Axis Name Yes	Axis No. No
	on(Current Mor			No
		Wri	Yes	No setting

Touching [DimDispTime ("0": Never Dim) 0 sec] displays the numerical keypad. Enter a desired time and touch [ENT]. You can set a value between 0 to 255 seconds.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

#### [Data input warning]

The warning can be output when a value less than the minimum speed and a value exceeding the rated acceleration/deceleration speed are entered in the position data. Note that the value is entered even if the warning occurs. Always use within the specification of the actuator.

anguage setting.	Japanese	English	EU	Chinese		
Fouch tone	0FF	MIN	MID	MAX		
DimDispTime ("0":N	ever Dim)	255 s				
Data input warning		) I	Enable	Disable		
Disp Axis Name		•	Axis Name Axis No			
Ripple compensatio	n(Current Mor	nitor)	Yes No			
Write the above setting						
	Position edit password change Parame					
Position edit pa	ssword chang	e Paramet	er edit pass	word change		
Position edit pa System passw		Paramet	er edit pass	word change		

Touch [Enable] to give the warning. Touch [Disable] not to give the warning.

Select either Enable or Disable,

and then touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

#### [Axis Name Display]

Make a selection whether to show the name or number for axis display.

← 🎯 Env. se	t.			🖸 Axis No. 0			
Language setting	Japanese	English	EU	Chinese			
Touch tone	0FF	MIN	MID	MAX			
DimDispTime ("0":N	ever Dim)	255 s					
Data input warning			Enable	Disable			
Disp Axis Name		(	Axis Name	Axis No.			
Ripple compensatio	n(Current Mon	itor)	Yes No				
Write the above setting							
Position edit pa	ssword change	Paramet	er edit pass	word change			
Position edit pa System passw		Paramet	er edit pass	word change			

- Axis Name Display

Touch [Axis Name] and the name will be shown. Touch [Axis No.] and the number will be shown.

Select either Axis Name or Axis No, and touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

The axis name can be set in Software version information screen. Refer to [3.17.2 Axis Name Edit]



### [Ripple Compensation]

Setting should be conducted whether to have the ripple compensation or not in the monitor window and data monitor window.

🔶 î Env. se	t.			🗲 Axis No. 00		
Language setting	Japanese	English	EU	Chinese		
Touch tone	0FF	MIN	MID	MAX		
DimDispTime ("0":Ne	DimDispTime ("0":Never Dim) 255 s					
Data input warning			Enable	Disable		
Disp Axis Name			Axis Name	Axis No.		
Ripple compensation	n(Current Mor	itor)	Yes	No		
		Wr	ite the above	setting		
Position edit pa	ssword change	e Parame	neter edit password change			
System passwo	ord change					
Display setting	:	Time	Startup s	creen setting		

Touch [Yes] and the setting should be established with ripple compensation.

Touch [No] and the setting should be established without ripple compensation.

Select either yes or no and touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.



[Change Pos Edit Password / Prs Program edit password change] Change the position edit password or Prs Program edit password.

In Change Prs Program Edit Password, the display "Position Edit Password" is replaced with "Prs Program Edit Password", but the way to operate the window should be the same.

🗧 🖆 Env. set. 🌐 🖽 Axis No. I					
Language setting	Japanese	English	EU	Chinese	
Touch tone	OFF	MIN	MID	MAX	
DimDispTime ("0":N	ever Dim)	255 s			
Data input warning			Enable	Disable	
Disp Axis Name			Axis Name	Axis No.	
Ripple compensation	n(Current Mor	nitor)	Yes No		
		Wri	te the above	setting	
Position edit pa	ssword chang	e Paramet	er edit pass	word change	
System password change					
Display setting Time Startup screen setti					

Touch [Position edit password change] or [Prs Program edit password change].

If the system password is not "0000," the password entry screen appears.

$\langle$	C T System password the Axis No. 00							
	Please enter password.							
	0000							
	1	2	3	4	5	CLR	ESC	
	6	7	8	9	0	BS	ENT	

Input a system password. Touch [ENT].

The default system password is "5119." For how to change the system password, refer to [Change System Password] as described later.

C Position edit password change Axis No. 00							
New password: 0000							
				[			I
1	2	3	4	5	CLR	ESC	
6	7	8	9	0	BS	ENT	

Enter the new position edit password / Prs Program edit password change to change to. If the position edit password/Prs Program edit password is not set, enter "0000."

Touch [ENT].



New password: 0000

0K

Touch [Change].

The new password after change will be displayed. Make sure it shows the same as the password you have set.

Touch [OK].



### [Change Parameter Edit Password]

Change the parameter edit password.

Language setting	Japanese	English	EU	Chinese
Touch tone	0FF	MIN	MID	MAX
DimDispTime ("0":N	ever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name			Axis Name	Axis No.
Ripple compensatio	n(Current Mor	nitor)	Yes	No
		Wri	te the above	setting
Position edit pa	assword change	e Paramet	er edit pass	word change
System passw	ord change			

Touch [Parameter edit password change].

If the system password is not "0000," the password entry screen appears.

$\langle$	🗧 🍯 System password 👘 Axis No. 00								
	Please enter password.								
	0000								
								I	
	1	2	3	4	5	CLR	ESC		
	6 7 8 9 0 BS ENT								

Input a system password. Touch [ENT].

The default system password is "5119." For how to change the system password, refer to [Change System Password] in the next page.

← @	Change F	arameter	ł	6	•			
New password: 1234								
1	2	3	4	5	CLR	ESC		
6	7	8	9	0	BS	ENT		

Enter the new parameter edit password to change to. If the parameter edit password is not set, enter "0000."

Touch [ENT].

← ☎ Change Parameter Password	
New password:	1234
	_
Change	

Touch [Change].



The new password after change will be displayed. Make sure it shows the same as the password you have set.

Touch [OK].



## [Change System Password]

Change the system password.



Touch [System password change ].

If the system password is not "0000," the password entry screen appears.

$\leftarrow$	🔶 🇃 System password 🖬 Axis No. 00								
	Please enter password.								
	0000								
	1 2 3 4 5 CLR ESC								
	6 7 8 9 0 BS E								

Input the system password that is currently set.

Touch [ENT].

The default system password is "5119."

← 🖸 System password change						<b>I</b> 0	
New password: 5119							
							1
1	2	3	4	5	CLR	ESC	
6	7	8	9	0	BS	ENT	

Enter the new system password to change to. If you do not set the system password, enter 0000.

Touch [ENT].

←	do
New password:	5119
Change	

Touch [Change].



The new password after change will be displayed. Make sure it shows the same as the password you have set.

Touch [OK].



### [Display setting]

Adjustment of contrast and brightness of the screen, position tuning for touch panel and LCD screen check can be performed.

🤆 🏟 Env. set. 🔐 🐼 Axis No. 00						
Language setting	Japanese	EU	Chinese			
Touch tone	0FF	MIN	MID	MAX		
DimDispTime ("0":Never Dim) 255 s						
Data input warning			Enable	Disable		
Disp Axis Name Axis No.						
Ripple compensation	n(Current Mor	nitor)	Yes	No		
Write the above setting						
Position edit password change Parameter edit password change						
System passwo	ord change					
Display setting Time Startup screen setting						

Touch [Display setting].

Display setting menu window is displayed.

-	1 D	lisplay setting	66
		Contrast/Brightness	
		Touch panel position calibration	
		LCD check	1

Select Display setting menu.

•Change the Contrast/Brightness

You can adjust contrast (shading of liquid crystal) and brightness (of liquid crystal).

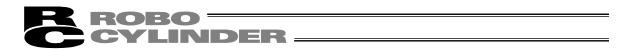


Touch [Contrast/Brightness].

←	<b>(16</b> )
•Contrast	+
•Brightness	+

Contrast adjustment Touch [–] and [+] under Contrast to adjust the contrast of the screen.

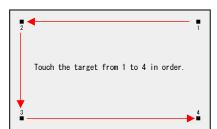
Brightness adjustment Touch [–] and [+] under Brightness to adjust the brightness of the screen.



- •Touch panel position calibration
  - A calibration for the position detection of the touch panel is performed.



Touch [Touch panel position calibration].



Touch  $[\blacksquare]$  in the order of 1, 2, 3 and 4.

The display returns to Display setting menu screen.



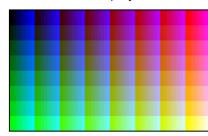
### •LCD Check

LCD display can be checked in the order of Color Pattern, White Only and Black Only.



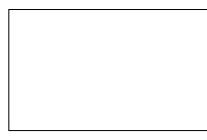
Touch [LCD check].

Color Pattern is displayed



Touch any point on the screen.

White Only is displayed



Touch any point on the screen.

Black Only is displayed



Touch any point on the screen.

The display returns to Display setting menu screen.



#### [Time Setting]

You can set the time for TB-03 or controller with the calendar function.

1) Time setting for TB-03.



Touch [Time].

🔶 🎓 Teaching time		the Axis No. 00
Time d	isplay	
yy/mm/dd	hh:mm:ss	5
16 / 03 / 01	10 : 10	: 23
Time edit		

The time of TB-03 is displayed. Touch [Time edit].

← 1 Teaching	time		ҧ Axis No. 00
	Time	edit	
yy/m	m/dd	hh:mm:	SS
16 / 03	/ 01	10 : 10	: 31
Time display	Se	t Set	as controller clock

Touch the value of year, month, day, hour, minute or second that is required to be changed.

÷	• •	Teaching	time			0	h Axis No.	00
	Time edit							
		yy/n	nm/dd		hh:m	nm:ss		
	16 / 03 / 01   10 : 10 : 31							
	1	2	3	4	5	CLR	ESC	
	6	7	8	9	0	BS	ENT	ock

Numeric keys are displayed Input a value and touch [ENT]

(←) @	Teaching time				the Axis No. 00
		Time e	edit		
	yy/mm/do	1	hh	:mm:ss	
16	/ 03 /	01	12 :	00	: 00
Time di	isplay	Set		Set as	controller clock

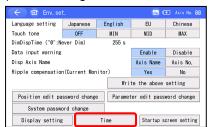
Touch [Set].



essage

The clock setting complete window is shown and the clock in TB-03 gets changed.

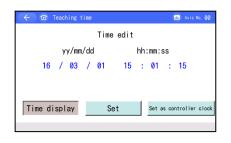
2) Time setting for controller with the calendar function.



Touch [Time].

🔶 🎓 Teaching time	th Axis No. 00
Time d	lisplay
yy/mm/dd	hh:mm:ss
16 / 03 / 01	15 : 01 : 07
Time edit	

TB-03 time is displayed. Touch [Time edit].



You don't need to change the time in the case of setting the time of the TB-03 to the controller. Touch the value of year, month, day, hour, minute or second that is required to be changed.

(←) @	Teaching	time			6	In Axis No	. 00
		Т	ime ed	it			
	yy/mm/dd hh:mm:ss						
16	/ 03	3 / 0	1 1	15 :	01 :	15	
				-		500	1
	2	3	4	5	CLR	ESC	
6	7	8	9	0	BS	ENT	lock

Numeric keys are displayed Input a value and touch [ENT]





Touch [Set as controller clock].

	arm list Check mod	el num, Inquir	1
larm descript,			
Alarm code	186	Alarm level	Message
Name Time set	ting complete		
Descr.			
00301.			
00301.			

The clock setting complete screen is shown and the clock in the controller gets changed.

#### [Startup screen setting]

Setting can be established for the window shown in the screen first after the power is turned on. Also, show / hide can be selected for the icons of Position edit guide, I/O control guide and Easy setting in Menu 1 screen.

DER

🔶 🇃 Env. se	t.			🖅 Axis No. 00			
Language setting	Japanese	English	EU	Chinese			
Touch tone	0FF	MIN	MID	MAX			
DimDispTime ("0":N	ever Dim)	255 s					
Data input warning Enable Disable							
Disp Axis Name Axis No.							
Ripple compensation	n(Current Mor	nitor)	Yes	No			
		Wri	te the above	setting			
Position edit pa	ssword chang	e Paramet	ter edit pass	word change			
System passw	ord change						
Display setting	:	Time	Startup s	creen setting			

Touch [Startup screen setting].

#### 1) Guide Icon Display Select

Main menu screen (w	vith guide) Nain menu	screen (without guide)
Monitor screen	Position edit screen	Parameter edit scree
Test run screen	Information screen	]

[Main menu screen (with guide)] : Displays the guide icons <sup>(Note 1)</sup>.

[Main menu screen (without guide)] : Displays no guide icon <sup>(Note 1)</sup>.

Touch [OK].

(Note1) Position edit guide Icon, I/O control guide Icon and Easy setting Icon

Menu 1 screen with guide icons (Note 1) hidden

🤄 🗇 Men	u1	Glo	isary (	La Axis	No. 00
Mon	itor	Test	un		
🖌 Pos	ition edit	Alarm	list		
Par	amoter edit	Inform	ation		
SD SD	memory card	Troub	eshooting		
Ny Ser	vo monitor	Menu2		>	

#### 2) Initial Screen Select at Startup

Main menu screen (v	with guide) Main menu	screen (without guide)
Monitor screen	Position edit screen	Parameter edit scree
Test run screen	Information screen	

Select a screen from those below for the screen shown first after the power is turned on.

[Monitor screen] [Position edit screen] [Parameter edit screen] [Test run screen] [Information screen]

Touch either one to select and touch [OK].

🔶 🏦 Startup so	creen setting 🕕 Axis No. 00
You can select start	up screen from screens below.
Main menu screen (w	ith guide) Main menu screen (without guide)
Monitor screen	Prs Prg. Edit Window Parameter edit screen
Test run screen	Information screen
*Update s	OK Cancel

For the servo press type controllers;

[Prs Prg. Edit Window] should be shown instead of [Position edit screen].



## 3.19 Data Backup

Data is transferred between the SD memory card in the teaching pendant and the controller.

(Note) Type of Stored Data

This includes the position data, parameters and alarm list. It is not applicable to the backup data storable in the RC PC software. \* For how to operate the press program data, refer to 3.26.4 SD Memory Card

- (Note) Extensions of the Stored Data
  - The file extensions of the data stored to the SD card are the same as those dealt in RC PC software, and are compatible. For instance, the position data for the PCON-C controllers is ptpc and the parameters are prpc.
  - [Refer to the details of the file extensions in the RC PC Software Instruction Manual] • The alarm list can only have the backup. It cannot be restored. Data is in a CSV file.
- (Note) Directories of the Stored Data
  - The folders to store the backup data of the controller and the folder to read the data from when restoring the data to the controller are as listed below. The directories to store the files cannot be changed. The files existing in other directories other than the specified folders cannot be listed up in the file name list in the file select at the initial setting or restore. If the folder does not exist, it is automatically created.
  - Position Data : \TB\_CON\Position\File Name
  - Parameter : \TB\_CON \Parameter\File Name
  - Alarm List : \TB\_CON \Alarmlist\File Name

(Note) Files with Chinese names are not supported.

Caution: For a Secure Digital memory card, choose a SD/SDHC memory card with 1G to 32G. (Toshiba-made recommended) Also, Have FAT32 Format for the file system.



## 3.19.1 Data Backup of the Controller

The data in the controller is transferred to the SD memory card for backup.



Touch [SD memory card] in Menu 1 screen.

L	Save from controller to SD memory card
	Transfer from SD memory card to controller
Γ	Teaching update

SD memory card screen opens.

Touch [Save from controller to SD memory card].

🗧 🔶 🇃 Save to SD memory card	Axis No.	00
Please select the data to save.		
Position data		
Parameter		
Alarm list		
Save		

Select the data type for the backup such as [Position data] and touch it. (Multiple selection available) The data type been selected will be shown in light blue.

Touch [Save].

← ☎ SD memory card				tto A	xis No. 0
Transfer mode : (	Controller		SD m	emory	card
Transfer data :	Posit	tion o	lata		
	ata will be want to cor			d.	
Yes		No	)	1	

Touch [Yes].

Touch [No], and the screen returns to the previous screen.

÷	0	lackup '	file na	me desi	gnation	ı		Axis	No. 00
	ion d		0010						
File	name	RCF	2RA30	01603	312A				
1	2	3	4	5	6	7	8	9	ESC
0	A	В	C	D	E	F	G	Н	CLR
Ι	J	К	L	M	N	0	Р	Q	BS
R	S	Т	U	V	W	Х	Y	Z	ENT
	_	[	]		SPACE		-	#	

Numeric keys are displayed. Input a file name and touch [ENT].

The file name is to be typed with 32 characters at maximum in letters and numbers.



🗧 🖆 Backup	file name	designation	ito	
Position data File name				
RCP2RA3C20	160312A			
		Save		
	_			_

Touch [Save].

← 1	1	File na	ime con1	irmatio	n		0	)	
File na	ame								
RCP2RA	302	201603	312A. p	otpa					
				above sure					
			Yes			No			
									_

The screen below appears if the same name is not found.

Touch [Yes].

If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.

 Image: Constraint of the same name already exists.
 To

 A file of the same name already exists.
 To

 Yes
 No
 If [

The screen below appears if the same name is found.

Touch [Yes] if overwriting data.

If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.

🔶 🗃 Data backup	ili.	≡àlio. 80
Transferring data.		
Please wait a minute.		
		1
		]
50%		
Transfer mode:Controller ⇒ SD me	mory (	card
Transfer data:Position data		

Data transfer screen will be shown.



A message to tell the data transfer is complete pops up and the backup process is finished.

Touch [OK], and the screen returns to SD Memory Card screen.



## 3.19.2 Restore to Controller

Data in the SD Memory card is transferred to the controller.



Touch [SD memory card] in Menu 1 screen.



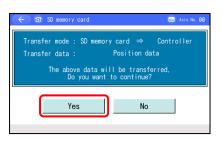
SD memory card screen opens.

Touch [Transfer from SD memory card to controller].

← ① Transfer to controller	📶 Axis No. 00
Please select the data to transfer.	
Position data	
Parameter	
Transfer	

Select the data type to transfer to the controller, such as [Position data], and touch it. (Multiple selection available) The data type been selected will be shown in light blue.

Touch [Transfer].

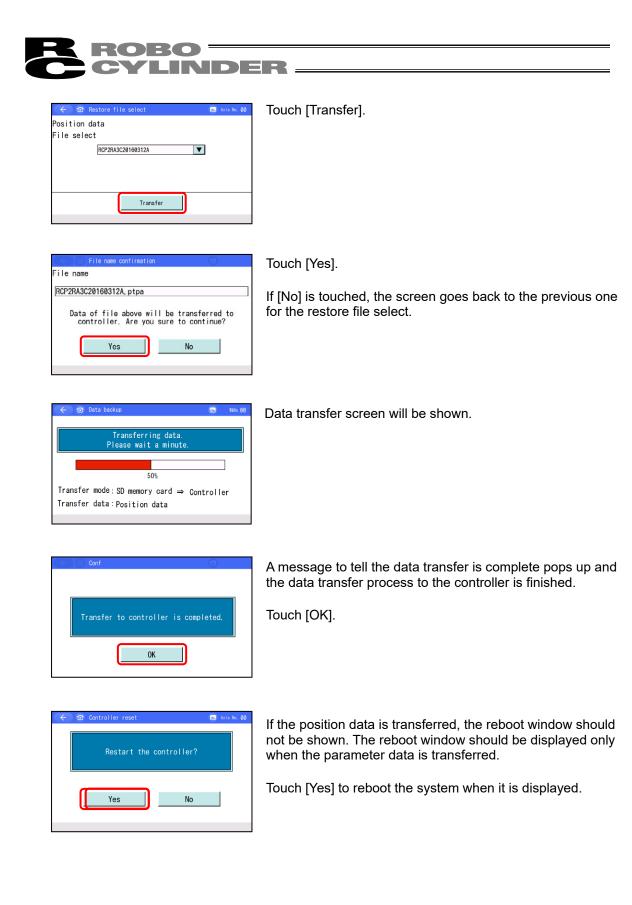


Touch [Yes].

If [No] is touched, the screen goes back to the data backup screen.



Touch  $\blacktriangle$  and  $\bigtriangledown$  to select a file to transfer to the controller from the list of the backed up file names.





## 3.20 Smart Tuning Function

With the Smart Tuning Function, the following 2 operations can be performed.

- 1) Setting of maximum acceleration/deceleration speed considering the indicated transported load and velocity
- 2) Setting of acceleration/deceleration speed to provide the shortest operation time figured out from the indicated transported load and moving distance
- (1) Setting of maximum acceleration/deceleration speed considering the indicated transported load and velocity

It is the function to set the maximum acceleration/deceleration speed available at the indicated transported load and velocity.

(2) Setting of acceleration/deceleration speed to provide the shortest operation time figured out from the indicated transported load and moving distance

It is the function to set the combination of velocity and acceleration/deceleration that provide the shortest operation time for the indicated moving distance in several patterns of selectable combinations of the velocity and acceleration/deceleration with accordance with the transported load.

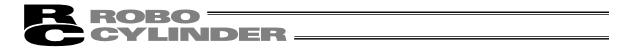
When 12.0 [Kg] is indicated for the transported load, for an instance, the combination of the velocity and acceleration/deceleration to provide the shortest operation time for each moving distance is as shown below:

- 1) When 30.00 [mm] is indicated
- $\Rightarrow$  Velocity and acceleration for shortest operation time : 250.00 [mm/sec], 0.70 [G] 2) When 40.00 [mm] is indicated
- $\Rightarrow$  Velocity and acceleration for shortest operation time : 300.00 [mm/sec], 0.50 [G]
- (Note) The search of the combination of velocity and acceleration/deceleration for the shortest operation time refers to the operation schedule time.

For a reference, the following table shows the list of the operation time for each moving distance.

	-		5	
Carrier load [Kg]	Movement distance [mm]	Velocity [mm/sec]	Acceleration/ Deceleration [G]	Operation time [msec]
	20.00	250.00	0.70	156
12.0	30.00	300.00	0.50	161
12.0	40.00	250.00	0.70	196
	40.00	300.00	0.50	195

#### List of Operation Time for Each Moving Distance



### 3.20.1 Setting Operation for Max. Acceleration/Deceleration for Indicated Transported Load and Velocity

1) Basic Information Settings

Set the model code, lead, stroke, actuator posture and the payload of the applicable actuator.



Touch [Position edit] button.

Touch [Tuning setting].

Tuning setting screen opens.

000	*****. **	****.*	18 2	4. **	*. **
001	0.00	100.00 0.		9. 30	0.30
002	10, 00	100, 6	00 00	9, 30	0, 30
003	50,00	100, 6	00	0.30	0, 30
004	100.00	100.6	0 0	9. 30	0.30
005	*****, **	****.*	tik s	k, ##	*, **
006	0.00	114. 6	00 00	9. 20	0.20
007	100, 00	114, 6	0 0	9, 20	0,20
1 Pr pg	No. sel.		INX pg	Test	

Series	RCP4	-	
Model number	RCP4-SA5C	•	
Lead(mm)	3	•	
Stroke(mm)	50	Reference (Current parameter	
Actuator orient	ation OHorizontal OVertical	Lead size of ballscrew	
_oad No.0	Kg	3 mm Soft limit +	
Load No. 1	Кд	50.30 mm	
Load No. 2	Kg	OK	
load No. 3	Кд	UK	

AXIS NO. 06 Series RCP6 Model numbe RCP6-SA8C Lead(mm) 30 . Stroke(mm) 50 Reference Lead siz ent param Actuator orientation 🕬 OVer t Soft limit + 50,30 Load No. 0 28.000 Kg Load No. 1 28.000 Kg Load No. 2 28,000 Kg OK Load No. 3 28.000 Kg

Touch $\blacksquare$ and $\blacktriangle$ to select the applicable series, model
type, lead (mm). For the stroke, numeric keys will appear if
touching it. Input a value on the numeric keys.
Select the actuator posture from either horizontal or
vertical.

Series	RCP6			
Model number	RCP6-SA8C		-	
Lead(mm)	30			
Stroke(mm)	50		Reference (Curr	ent narameter)
Actuator orient	tation @Horizonta	Vertical	Lead size of	ballscrew
	5,000	Kg	Soft limit +	30 mm
Load No. 0				
	10.000	Kg	5	9,30 mm
Load No. 0 Load No. 1 Load No. 2			5	9,30 mm

Touch the number input box from Load No. 0 to No. 3. Numeric keys appear. Set the payload.

Touch [OK] to return to Position edit screen.



 Way to Handle Smart Tuning Function Set the velocity and carrier load number to the set position number. Select "Automatically Tune Acceleration from Transported Load and Velocity" from the ways for tuning.

No					
000	*****. **	****	**	*, **	*. **
001	0.00	100.00		0.30	0.30
002	10, 00	0 100,00		0, 30	0, 30
003	50,00	100.	00	0.30	0, 30
004	100.00	100.	00	0.30	0.30
005	*****, **	****	**	*, **	*, **
006	0.00	114.	00	0.20	0.20
007	100,00	114.	00	0,20	0, 20
† Pr pg	No. sel.	All clear	↓Nx pg		Test run

Select the position to have Smart Tuning Function and touch it.

Position No.	004	Push(%)	0	Thres. (%)	
Position(mm)	100.00	Pos band(mm)	0.10	Acc/Dec mode	- 1
Vel (mm/s)	100.00	Incremental	0	Stop mode	
Acc (G)	0.30	Zone+(mm)	0, 00	Transported	
Dec (G)	0.30	Zone-(mm)	0.00	V. s. No.	-
Operation Teach2	PIO movement pr	rohibition. Safety w	elocity invalid	<ul> <li>Brake rel</li> </ul>	. (
Servo O		Cont. move St	goL ( Jog	Jog/Inching ()Inchin	*
Homing O Cur. pos.	Targ. pos.	. 100. 00 mm	+ Jog ve	I. change 1	m/s
0. 00mm	Vel. rate	10 % Rate char	e 🕈 BACH	((-) FW(+	+) +

Select one from 0 (Transported Load No. 0) to 3 (Transported Load No. 3) and set to the transported load.

Set the necessary items except for acceleration and deceleration such as target position.

Touch [Smart tuning].

←	-	Axis No.	00
Auto-tuning of acceleration from load and v	reloc	ity	
Auto-tuning of acceleration from travel distance	and	velocit	y

Touch [Auto-tuning of acceleration from load and velocity].

← û Conf	16
Load (Kg)	28.000
Vel (mm/s)	100.00
Acc/Dec(G)	0. 10
Current setti	ed above will be set. ing will be overwritten. sure to continue?
Yes	No

Acceleration and deceleration after automatic tuning are shown.

Touch [Yes].

3) Maximum acceleration speed and maximum deceleration speed are set for the indicated velocity and transported load number.

Position No.	004	Push(%)	0	Thres. (%	) (
Position(mm)	100.00	Pos band(mm)	0.10	Acc/Dec	mode
Vel (mm/s)	100 00	Incremental	0	Stop mod	le (
Acc (G)	0.10	Cone+(mm)	0.00	Transpor	ted
Dec (G)	0, 10	(one-(mm)	0.00	V. s. No.	
operation mode Teach2		ohibition. Safety	elocity invalid		
Servo	Nove	Cont. move S	op ()Jog	Jog/Inch	Inching
Homing	1015. pou.		+ Jog ve	I. change	1 mm/s
Cur. pos.		100.00 mm 10 % Rate cha	nge + BAC	K(-)	FW(+) 🔶



### 3.20.2 Operation to Automatically Set Velocity and Acceleration Speed from Moving Distance

1) Basic Information Settings

Set the model code, lead, stroke, actuator posture and the payload of the applicable actuator.



Touch [Position edit].

000	*****. **	****. **	*. **	*. *
001	0.00	100.00	0.30	0.3
002	10, 00	100, 00	0, 30	0, 3
003	50,00	100,00	0, 30	0, 30
004	100.00	100.00	0.30	0.3
005	*****, **	****, **	*, **	*, *
006	0.00	114.00	0.20	0.2
007	100, 00	114,00	0, 20	0, 20
† Pr pg	No. sel.		K Pg	Test run

Touch [Tuning setting].

Series	RCP4	1		*	
Model number	RCP4	-SA5C			
Lead(mm) 3					
Stroke(mm)	50	)		Reference ()	Current parameter
Actuator orient	ation	⊛Horizontal	OVertical		of ballscrew
Load No. 0			Kg	Soft limi	
Load No. 1			Kg		50, 30 mm
Load No. 2			Kg		OK
Load No. 3			Kg		

Tuning setting screen opens.

Series	RCP6			-
Model number	RCP6-SA	8C		w
Lead(mm)	30			T
Stroke(mm)	50			Reference (C rrent parameter
Actuator orien	tation 🕬	rizontal	OVertical	Lead size of ballscrew
Load No. 0		28.000	Kg	30 mm Soft limit +
Load No. 1		28.000	Kg	50,30 mm
Load No. 2		28,000	Kg	ОК

Touch  $\checkmark$  and  $\blacktriangle$  to select the applicable series, model type, lead (mm). For the stroke, numeric keys will appear if touching it. Input a value on the numeric keys. Select the actuator posture from either horizontal or vertical.

Series	RCP6				*		
Model number	RCP6-SA8C				*		
Lead(mm)	30				*		
Stroke(mm)	50			Reference	e (Curre	nt paramet	er)
Actuator orient	ation ®Horiz	ontal	OVertical	Lead s	ize of b	allscrew	
Load No. 0	5.	000	Kg	Soft I		30 mm	
	10.	000	Kg		50	.30 mm	
Load No. 1							
Load No. 1 Load No. 2	20.	000	Kg			ок	

Touch the number input box from Load No. 0 to No. 3. Numeric keys appear. Set the payload.

Touch [OK] to return to Position edit window.



 Way to Handle Smart Tuning Function Set the distance and carrier load number to the set position number. Select "Automatically Tune Acceleration from Transported Load and Velocity" from the ways for tuning.

-					
000	*****. **	***	*. **	*, **	*. **
001	0.00	10	0.00	0.30	0.30
002	10, 00	10	9, 99	0, 30	0, 30
003	50,00	10	0.00	0.30	0, 30
004	100.00	10	0.00	0.30	0.30
005	*****, **	***	*, **	*, **	*, **
006	0.00	114	4.00	0.20	0.20
007	100, 00	114	4.00	0.20	0.20
Pr pg	No. sel.	All clear	↓Nx p	g	Test run

Select the position to have Smart Tuning Function and touch it.

Position No.	004	Push(%)	0	Thres. (%)	(
Position(mm)	100.00	Pos band(mm)	0.10	Acc/Dec mode	(
Vel (mm/s)	100.00	Incremental	0	Stop mode	
Acc (G)	0, 30	Zone+(mm)	0.00	Transported	1
Dec (G)	0, 30	Zone-(mm)	0.00	V. s. No.	(
Operation mode Teach2		ohibition, Safety ve	locity invalid	land land	
Servo	Nove	Cont. move Sto	p @Jog	Jog/Inching Olnching	
Homing 🔘			Jog ve	I, change 1	m/s
Cur. pos. 0, 00mm		100.00 mm		((-) FW(+	) +
† Pr pg	lul.dis.	Clear	↓Nx pg		

Select one from 0 (Transported Load No. 0) to 3 (Transported Load No. 3) and set to the transported load.

Set the necessary items except for acceleration and deceleration such as target position.

Touch [Smart tuning].

Auto-tuning of acceleration from load and velocity Auto-tuning of acceleration from travel distance and velocity
Auto-tuning of acceleration from travel distance and velocity
,

Touch [Auto-tuning of acceleration from travel distance and velocity].

There are two ways to set up the moving distance.

- Position 2 points designation
- Travel distance designation



### (Position 2 points designation)

Start pos	ition	1 (Position	0.00	mm)
End posit	ion	2 (Position	10.00	mm)

Select Position 2 points designation. Touch the value on the start position and the numeric key will be shown. Set the Start position.

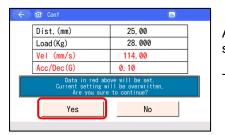
Touch the value on the end position and the numeric key will be shown. Set the End position.

(Note) For the end position, the position number to have Smart Tuning Function is shown. The end position can be changed. However, even if the end position is changed, it is set to the position where Smart Tuning Function is held by the calculation of the velocity, acceleration and deceleration from the distance between the set start position and end position.

#### (Travel distance designation)



Select [Travel distance designation]. Touch the value on the moving distance [mm] and the numeric key will be shown. Set the Distance.



Acceleration and deceleration after automatic tuning are shown.

Touch [Yes].

3) The velocity, acceleration and deceleration are set to provide the shortest tact time to run between two points for the indicated transported load number.

Position No.	004	Push(%)	0	Thres. (%)	(
Position(mm)	100.00	Pos band(mm)	0.10	Acc/Dec mode	(
Vel (mm/s)	114.00	ncremental	0	Stop mode	(
Acc (G)	0.10	one+(mm)	0.00	Transported	1
Dec (G)	0, 10	one-(mm)	0.00	V. s. No.	(
Servo O	Nove	Cont. move St	ap (SJog	Brake rel. Jog/Inching	_`
Homing Cur. pos.	Targ. pos.	No. 4 100.00 mm 10 % Rate char	Jog ve	I. change 1 m	



# 3.21 Maintenance Parts List

Information of maintenance components is displayed.

🤆 🔿 🔯 Meni	iu2	Glossary 🕕 Axis No. (	Touch [Maintenance parts list] in Menu 2 screen.
Chai	ange erating axis	Maintenance parts list	
📑 тр	op. mode	Easy programming	
Env.	v. set.	0ffboard tuning	
(S) Con	ntroller reset	Pulse train mode setting	
🔍 Oth	her setting	Menu1 >	
수 ① Mai	intenance parts list	🕕 Axis No.	Maintenance parts list screen opens.
	intenance parts list RCP0(Straight)	DD Axis No. 1	Maintenance parts list screen opens.
Series select			
← ⊕ Mai Series select Type select Cable exit direction		T	
Series select Type select Cable exit		▼ ▼ Schematic displa	
Series select Type select Cable exit		Schematic displa	
Series select Type select Cable exit	PCP0(Straight)	Schematic displa     Schematic displa     Parts list displ	
Series select Type select Cable exit direction	PCP0(Straight)	Temperature       Temperature       Temperature       Parts list display	
Series select Type select Cable exit direction	PCP9(Straight) Plasse check the mo	Schematic displa     Schematic displa     Parts list displ	

3.21.1 Check Cable Model Number, Controller Parts

[Check cable model nul	mber]
------------------------	-------



12 Check model number of motor/encoder cable
 12 Avia No. 08

Touch [Check cable model number].

Check model number of motor / encoder cable opens.

Touch [—] button and the screen goes back to the previous page.

Caution: For the model number of the motor / encoder cable, check the cable model number that is actually used referring to "Check cable model number".



### [Controller parts]

Series select	RCP6(Straight)	
Type select		Schematic display
Cable exit direction		
		Parts list display
Check cable model	Please check the model number of cable by using "Check cable by	

Touch [Controller parts].

 C
 127
 Maintenance parts list
 CD
 Avis Bc. 00

 Fam
 Battery
 Battery pictures

 Societa/System
 Boold number
 Battery type

 05-5-C1
 Aris
 Roold number

 RD-C
 Aris
 Roold number

 SSL-V/R
 Orgetz
 System Namory

 SSL-V/R
 Linke-BT
 Roold number

 I The pg
 J Na pg



The battery list opens.

Touch [  $\uparrow$  Pr pg], and the screen shifts to the list in the previous window.

Touch [  $\downarrow$  Nx pg], and the screen shifts to the list in the next screen.

Touch [Battery pictures] button.

The screen shows the list of battery pictures.

Touch [—] button and the screen goes back to the previous page.

Touch [Fan].

Fan Battery		Battery pictures	
Series/Type			
DS-S-C1	3/V80H	System Memory	
RCS-C	AB-1	Absolute Battery	
RCP-C	AB-2	Absolute Battery	
RCP2-C	AB-4	Absolute Battery	
E-CON	AB-1	Absolute Battery	
SCON-C/CA	AB-5	Absolute Battery	
XSEL-J/K	CR2032	System Memory	
XSEL-J/K	IA-XAB-BT	Absolute Battery	

Fan Battery		
Series/Type	Model number	
RCP2-CF (CON)	NGA4024YB-A10	
E-CON	F412R-24NB (ECON)	
SCON-C/CA(More than 40	010 MGA4024LB-010	
SCON-CB(400~750W)	NGT4024LB-010	
SCON-CB(3000~3300W)	MGT6024HB-010 (SCON-CB)	
XSEL-J/K	F412R-24MB (XSEL)	
XSEL-P/Q	MGA4024YB-A10	
XSEL-R/S	NGT4024YB-010	

The fan list opens.

Touch [  $\uparrow$  Pr pg], and the screen shifts to the list in the previous screen.

Touch [  $\downarrow$  Nx pg], and the screen shifts to the list in the next screen.



# 3.21.2 Schematic Display and Parts List Display

## [Schematic display]

Imaintenance parts list     Imaintenance parts list       Series select     RCP6(Straight)	Open Maintenance parts list window.
Type select Schematic display Cable exit Provention Parts list display	Touch $\blacksquare$ and $\blacktriangle$ in the series select column to choose the actuator model type.
Oteck cable model number Please check the model number of the model number. Controller parts	
← 107 Nointenance parts list 000 Avis No. 00 Series select 1050 ▼           Type select 5445	Items to be displayed will differ depending on the selected model type.
Brooder Type Battery-Tess Absolute V Motor wattage 169# Cable exit girection From the left (315) V Parts list display	Touch 👿 and 🔺 in each item to choose the appropriate contents.
Oteck cable model number Please check the model number of the motor and encoder cable by using "Dheck cable andel number". Controller parts	
C 121 Naintenance parts list 11 Auro 00 Series select 1753	Touch [Schematic display].
Type select SABC V Schematic display Encoder Type Battery-less Absolute V Rotor mattage 1988 Cable exit Cable exit Granthe left (MS) V Parts list display	(Note) There are some models with no Schematic display.
Oneck cable model number Please check the model number of the motor and encoder coble hy using "Dieck cable model number". Controller parts	
C Waintenance parts list (Maintenance parts list RCS3 series Vaintenance parts list KCSANK ANN, ANN, ANN, ANN, ANN, ANN, ANN, A	Schematic display is displayed.



Touch [Maintenance parts list] to display the components list described below.

Touch [ $\leftarrow$ ] button to return to the previous screen.

### [Parts list display]

ry-less Absolute	Schematic display
ry-less Absolute	•
	•
he left (A1S)	■ Parts list displa
Please check the mode cable by using "Check	el number of the motor and encoder k cable model number".
	Please check the mod

	Series		Type	
	RCS3		SABC	
	Battery-less Absolute	108/	From the left (A13)	
	Maintenance	parts name	Model number	
1	Stainless stee	-		
2	Notor Unit (Notor Type)	equipped without brake	RCS3-MU8C-100-MA-A1S-CO	
3	Wotor Unit (Notor Type	) equipped with brake	RCS3-MU8C-100-WA-A1S-B-CO	
۲	Equipped with	th Coupling	0	
5	Equipped w	th Pulley	-	
6	Timing Belt	Nodel Code	20 <b>4</b> 3	
Ø	Load ce	I type	022	
8				

Touch [Parts list display].

The parts list opens.

Touch [ $\leftarrow$ ] button to return to the previous screen.



# 3.22 Easy Programming

The easy programming is a test mode same as the position movement. You can set any movement order or set time for pause between movements to perform continuous operation. You can also indicate the number of repeated times.

[How to Establish Setting]

Set the position number (0 to maximum position number) of the destination to the easy programming input part (step). In order to have a pause between operations, use prepared five timers T1 to T5. Timer can be set in 0.1 second unit from 0 to 99.9sec. When it is required to repeat operation, input R (repeat indication symbol) at the end.

The number of steps available to indicate is 10 at maximum including R.

If there is a space, the step after that is not valid. The easy programming stops. Steps after R are also invalid.



Touch [Easy programming] in Menu 2 screen.

		Vel (mm/s)		
000	*****, **	****, **	*, **	*, **
001	0.00	100.00	0.30	0.30
002	10.00	100.00	0.30	0.30
003	50.00	100.00	0.30	0.30
Servo Homing	Easy programming		Start Clear	Exampl
Homing Cur. pos.		me T1 0.0 s T2 0.0 s T3		
8, 88 .	Program ex. c	ount 🛛 🖉 I	Remaining	Reset
1 Pr pg	No. sel.	ll clear ↓Nx		

 C: Easy programming
 C: Easy programming

 e.g. 1) Move to position No. 1 ⇒ Pause for "T1" seconds.

 ⇒ Move to position No. 2 ⇒ Move to position

 e.g. 2) Move to position AD and finish

 1 T1 2

 a.g. 2) Move to position No. 3 ⇒ Move to position

 Execute this operation and finish

 3 4 R

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

 →

Easy programming screen opens.

Touch [Example] and examples for how to construct a program are displayed.

Touch [ $\leftarrow$ ] button to return to the previous screen.

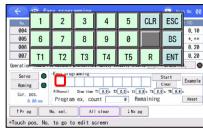
Take this as a reference when constructing a Easy programming.

Caution: Operation with JOG Switch on Front Panel of RCON If TB-03 gets disconnected from the controller in the condition that this window is open, JOG switch operation will get disabled.

3. Operation of CON Related Controllers



## [Driving Easy Programming]



Touch the first (on the most left) step of the easy programmng.

No	1	2	3	4	5	CLR	ESC	: (G)
004 005 006	6	7	8	9	0		BS	0. *. 0
000 007 peration	T1	T2	T3	T4	T5	R	ENT	0. 0.
Servo Homing Cur. p		Easy prog	Stop time	T1 0.0 + T2		R H * T4 Q		
8.	88 mm	Program	n ex. co	unt   I clear	Ø R≀ ↓N× i	emaining		Rec

Input a position number or a timer (T1 to T5) and touch [ENT].

000	*****, **	****, **	*, **	*, *
001	0.00	100.00	0.30	0.3
002	10,00	100.00	0.30	0, 3
003	50,00	100,00	0,30	0.3
	h2 P10 movement prohit	bition. Safety velocity invi ng		ske rel.
Servo			alid V Bra	Examo
	Easy programmi	ng T2 3 T3 R time 11 & 8 s 12 & 8 s 13	Star	Examp

Set the next step and after in the same manner. Set R at the end when it is required to repeat the operation.



Touch a timer to use (T1 to T5) when it is required to have time for pause.

000	****	*, **	**	***, **	*, **	*, **
001		0.00	1	100.00	0.30	0.30
002	1	0.00	1	100.00	0, 30	0.30
003	5	0,00	1	100,00	0, 30	0, 30
Servo Homing	Easy pro	1 2	T2 3 T3	R	Star	Exampl
Cur, pos, 8, 88 s	R(Repeat) Progra	Step BIT EX.			1.8 T4 0.0 s T emaining	Resot
	No. sel.		All clear	↓ Nx		

(mm) \*\*\*\_ \*\* 0. 00 10. 00 \*\*\*\*, \*\* 100, 00 100, 00 \*. \*\* 0. 30 0. 30 \*. \*\* 0. 30 0. 30 000 001 002 100,00 0,30 0,30 Safety velocity invalid ▼ Brake rel. ● 003 50.00 Operation Teach2 PIO m ment prohibition. Servo O Honing O Start Example 
 Honing
 O
 1
 T1
 2
 T2
 3
 T3
 R
 Clear

 Gur, pos, 0, 80 mm
 8 mm
 Start im T1
 0.2%
 75
 1.3%
 1.4%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1.6%
 1 Resot ↑Prpg No. sel. All clear ↓Nx pg \*Touch pos. No. to go to edit screen

Have the servo on and the home-return conducted, and then touch [Start] to start the operation.

Set the time for pause.



000	*****, **	****, **	*, **	*, *
001	0.00	100.00	0.30	0.3
002	10,00	100,00	0, 30	0.3
003	50,00	100.00	0, 30	0.3
Unatara 🔿			Clear	
Homing O Cur. pos.	R(Repeat) Stop Program ex.	time 11 0.2 c 12 0.5 c 13 Count 0 R		eee e Heset

During the operation, the [Start] and the step number in execution turn to blue.

To stop operation, touch the [Start] again.

Operation stops.

000	*****. **	****. **	*, **	*. **
001	0.00	100.00	0.30	0.3
002	10,00	100.00	0, 30	0, 3
003	50,00	100,00	0,30	0, 3
Servo C	Easy programmi		Start	-
Homing C	1 T1 2	T2 3 T3 R	Clear	Exarrol
Cur. pos.		time T1 8 2 12 8 5 1 T Count 8	Remaining	e e e

2 3 4 5 CLR ESC 1 6 7 8 9 0 BS ENT ation Teach2 PIO movement prohibition. Safety velocity invalid 💌 Brake rel. 🔵 
 Server
 O
 Fair programming
 Start
 Clear programming
 Clear programing
 Clear programming
 <th 
 t Pr pg
 No. cel.
 All clear
 J Nx pg

 #Touch pos.
 No. to go to edit screen

Touch the number to execute the program when it is required to set number of repeating.

1	2	3	4	5	CLR	ESC
6	7	8	9	0	BS	ENT
			ion. Safety w	elocity inva		
Servo	C Easy p	nt prohibiti rogramming T1 2 T2			Sta	Brake rel.
Servo	C Easy pr	rogramming T1 2 T2	2 3 T3	R		art [

000		*****	**			*	***. **	F	*, *	*	*, **
001		0.	00				100.0	3	0.3	0	0.3
002		10	00				100. 0	3	0.3	0	0, 3
003		50	00				100, 0	0	0, 3	10	0, 3
Servo Homing Cur, pos.	0	ay prog 1 T1 (epeat)	2	T2			R 285 s	13 1.6		Start Cloar Dis 15 p	Exampl
13, 85 1	P	rogram	ex.	. co	unt		100	Rema	aining	(1	9 Reset
1 Pr pg	No.	sel.		AI	I cle	sar		Nx pg			

000	*****, **	****, **	*, **	*, *
001	0.00	100.00	0.30	0.3
002	10,00	100.00	0.30	0, 3
003	50,00	100,00	0, 30	0.3
	P10 movement prohib	ition. Safety velocity inv		ake rel.
Servo C	PIO movement prohib		alid V Bra	Examo
	PIO movement prohib Easy programmi 1 T1 2	T2 3 T3 R 11 0.2 × 12 0.5 × 13	Start	Examp

Set the number to repeat and touch [ENT].

Touch [Start] to start operation.

The number of remaining for repeating is displayed, and counts down as 100  $\rightarrow\,$  99  $\rightarrow\,$  98  $\rightarrow\,$  ...

Touch [Reset] and the remained times go back to the number of program execution times.



No.	Position(mm)	Vel (mm/s)	Acc (G)	Dec (G)
000	*****, **	****, **	*, **	*, **
001	0.00	100.00	0.30	0.30
002	10,00	100.00	0, 30	0, 30
003	50,00	100,00	0, 30	0, 30
Homing	0		Clear	
Homing Cur. pos.	R(Repeat) Stop	time 11 0.2 c 12 0.5 c 13	1.8 × 14 0.0 × 1	5.0.0
Cur. pos. 18, 88 m	m Program ex.	count 100 R	1.8 to os n emaining	
Cur. pos.	R(Repeat) Stop		1.8 to os n emaining	

Touch [Clear], and the set easy program will be all deleted.

	roubreanoornig		
Alarm display	Alarm list Check mod	lel num, Inquiry	
Alarm descript.			
Alarm code	117	Alarm level	Message
Name No m	ove data		
Descr.			
Trouble	eshooting		

 Caution: When there is an alarm issued due to such a reason as making a mistake in position number indication, go back to Easy programming screen with [←] button. In case of moving from Menu 2 screen to Easy programming screen, the set simple program will be deleted.

(Note) A Easy programming cannot be saved.



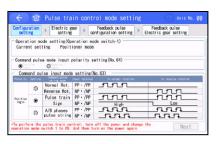
# 3.23 Pulse Train Mode Setting

Establish the settings to conduct the pulse-train control.

4	Menu2	Glossary 📶 Axis No. 00
	Change operating axis	Maintenance parts list
	TP op. mode	Easy programming
	Env. set.	0ffboard tuning
	Controller reset	Pulse train mode setting
	0ther setting	Menu1 >

Touch [Pulse train mode setting] in Menu 2 screen.

The icon will not be shown for the controllers that are not applicable for the pulse-train control.



A message in red will appear if the setting is not done appropriately for the pulse-train control mode. Follow the massage for appropriate action.

(Shown in the figure on the left is the display for SCON)

setti	ng .	> Electric ge setting	ear 🕨 o	Feedback pulse onfiguration setting	Feedback pulse Electric gear setting
		ode setting(Op ting Pulse			
€ <sup>Pocit</sup> logic	lium	e mode input p O <sup>Negation</sup>			
		lse input mode			
		Compand pulse atring mode		I In normal rotation	In reverse rotation
		Normal Rot,	PP · /PP		In reverse rotation
Palarita	O	Normal Rot. Reverse Rot.	PP · /PP NP · /NP	I In normal rotation	In reverse rotation
Comma Palarita Pasitian Togic	Settine	Normal Rot,	PP · /PP NP · /NP		Is reverse rotation
Palarita	O	Normal Rot. Reverse Rot. Pulse train Sign	PP • /PP NP • /NP PP • /NP NP • /NP NP • /NP PP • /NP	I In normal rotation	- 

[E = all = all multiple and finance the south of the set

For the pulse-train control mode, pulse-train control mode setting screen is displayed.

In the pulse-train control mode setting, set the parameters necessary for control in four screens.

[D-f-++ 0.00.0]

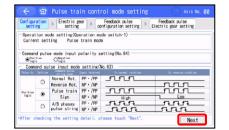
🗧 🔶 🖆 Pulse train control mode setting	Axis No. 00
Configuration setting         Electric gear setting         Feedback pulse configuration setting	Feedback pulse Electric gear setting
[Configuration setting]······	[Refer to 3.23.1]
↓ [Electric gear setting] ······	[Refer to 3.23.2]

[Feedback pulse	configuration setting	I [Refer to	3.23.3]
$\downarrow$		`	Ļ

[Feedback pulse Electric	c gear setting] ·······	[Refer to 3.23.4]
--------------------------	-------------------------	-------------------



# 3.23.1 [Configuration setting]



First, display the [Configuration setting] screen.

Once setting is finished, touch [Next].

### [Contents of Display]

- Operation mode setting
- Command pulse mode input polarity setting
- Command pulse input mode setting

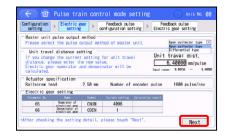
Displays the current operation mode. Confirm that it shows Pulse-Train Control Mode. Set the input polarity whether active high or active low. (Parameter No. 64)

Set the format for the command pulse input. (Parameter No. 63)

Comr	nand Pulse Train Format	Input Terminal	In Clockwise	In Counterclockwise	Setting Value
	CW Pulse Train	PP•/PP			2
	CCW Pulse Train	NP • /NP		<u>↓</u> ↓↓	2
	CW pulse train shows	the motor rotation	amount in clockwise and CCW pulse t	rain in counterclockwise.	
>	Pulse Train	PP · /PP	€€	╶	1
Active Low	Symbol	NP•/NP	Low	High	1
Ac	The command pulse sl	hows the motor ro	ptation amount, and the command syml	bol shows the rotation direction.	
		PP•/PP	<u>+</u> +++	<u>t</u> ftf	0
	A/B-Phase Pulse Train	NP • /NP	<u>↓</u> ∱↓∱	t t t t	U
	It is the A/B phase qua amount and the rotatio		n pulse of the phase difference in 90de	g, and is the command for rotation	
	CW Pulse Train	PP•/PP	_₹Ŀ₹Ŀ₹		2
	CCW Pulse Train	NP · /NP		ŦĿŦĿŦĹ	2
łigh	Pulse Train	PP•/PP	_╉╏╋╏╋	₹L₹L₹L	1
Active High	Symbol	NP · /NP	High	Low	1
	A/B-Phase Pulse Train	PP•/PP		ftft	0
	Avd-Phase Puise Train	NP • /NP	₽₽₽₽	_ftft	0



# 3.23.2 [Electric gear setting]



Second, display the [Electric gear setting] screen.

Once setting is finished, touch [Next].

# [Contents of Display]

- Unit travel distance setting
- Actuator specification
- Electronic gear setting

 Master unit pulse output method Select the pulse output system of the host unit whether it is the open collector type or differential (line drive) type. Set the unit movement amount of the actuator for one pulse. With this input value, the numerator and the denominator of the electronic gear are automatically figured out. In case the value is out of the input range as a result of calculation, an error message will be displayed in red. Change the value. The ball screw lead and the number of encoder pulses of the actuator are displayed.

It is a parameter to determine the unit movement amount of the actuator for one pulse of the command pulse train input. Input the unit movement amount and this parameter can be automatically figured out and the set numbers for the numerator and the denominator of the electronic gear get displayed.

Electronic Gear Numerator (Parameter No. 65) Electronic Gear Denominator (Parameter No. 66)

# 3.23.3 [Feedback pulse configuration setting]

setti	ation	> Electric g	ear > con	Feedback pulse figuration setting	Feedback pulse Electric gear setting
OVal *In ca	id se vor dback	●Invalid don't use fe	edback pul:	g (Parameter No.68) se, please set it in (Parameter No.70)	valid.
		les sestimire	tion cattin	(Parameter No. 69)	
			Input terminal		In reverse rotation
	Settine	Company pulse string mode	Input terminal		In reverse ratation
		Company pulse string mode	AFB · /AFB	In normal rotation	
Polarity	Settine	Normal Rot. Reverse Rot.	AFB • /AFB BFB • /BFB	In normal rotation	
	Settine	Normal Rot. Reverse Rot. Pulse train	AFB • /AFB BFB • /BFB	โรงกรุง (1997) ภายายา ภายายา	กกก
Polarity	Settine	Normal Rot. Reverse Rot. Pulse train	AFB · /AFB BFB · /BFB AFB · /AFB BFB · /BFB	In senal relation	

Third, display the [Feedback pulse configuration setting] screen.

Once setting is finished, touch [Next].

[Contents of Display]

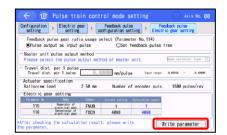
• Feedback pulse output enable setting Set the validation of the feedback pulse output. (Parameter No. 68)

When the feedback pulse output is "valid", conduct the following settings.

<ul> <li>Feedback pulse polarity setting</li> </ul>	Set the feedback pulse whether active high or active low. (Parameter No. 70)
Feedback pulse configuration Setting	Set the format for the feedback pulse output. (Parameter No. 69)



# 3.23.4 [Feedback Pulse Electric Gear Setting]



Lastly, display the [Feedback pulse Electric gear setting] screen.

Once setting is finished, touch [Write parameter].

[Contents of Display]

• Feedback pulse gear ratio usage select Select whether to have the feedback pulse output and input pulse in equal ratio or to be set individually. (Parameter No. 114)

When Feedback pulse gear ratio usage select is set to "Set feedback pulse free", conduct the following settings.

<ul> <li>Master unit pulse output method</li> </ul>	Select the pulse output system of the host unit whether it is the open collector type or differential (line drive) type.
• Travel dist. per 1 pulse	Set the unit movement amount of the actuator for one pulse. With this input value, the numerator and the denominator of the electronic gear are automatically figured out. In case the value is out of the input range as a result of calculation, an error message will be displayed in red. Change the value.
<ul> <li>Actuator specification</li> </ul>	The ball screw lead and the number of encoder pulses of the actuator are displayed.
<ul> <li>Electronic gear setting</li> </ul>	It is a parameter to determine relation between the movement amount of the actuator and the number of output pulse.
	Input the unit movement amount and this parameter can be automatically figured out and the set
	numbers for the numerator and the denominator of the electronic gear get displayed.
	Electronic Gear Numerator (Parameter No. 115) Electronic Gear Denominator (Parameter No. 116)



# 3.24 Offboard Tuning

Offboard tuning function is a feature established in purpose of calculating the optimum gain considering the payload. By inputting the operational conditions, optimum controlling parameter (each types of gain) settings and cycle time will be figured out.







The gain to be calculated is the following six types (from 1) to 6)). There are four gain set prepared to save the six types of the gain to the controller parameters, and it is available to write the calculated gain in the indicated gain set.

	Parameter Name	Parameter No.					
	Falameter Name	Set No.0	Set No.1	Set No.2	Set No.3		
1)	Servo gain number	7	120	126	132		
2)	Position field forward gain	71	121	127	133		
3)	Speed loop proportional gain	31	122	128	134		
4)	Speed loop integral gain	32	123	129	135		
5)	Torque filter constant	33	124	130	136		
6)	Current control band number	54	125	131	137		

# Restrictions

### 1. Actuators not Applicable for Offboard Tuning Function

Actuators not listed in the select menu for the model code in the offboard tuning setting screen are not applicable for the offboard tuning function.

### 2. Caution for Gain Set No. 0

As the home-return operation is performed by using the gain in Gain Set No. 0, it is necessary to establish setting in Gain Set No. 0 following the caution notes below.

- (1) When the payload is lighter than the rating
  - 1) In Gain Set No. 0, set either type of the gain below.
    - · Gain that is set at delivery
    - Adjusted gain suitable to the rated payload
  - 2)Adjusted gain is to be set in Gain Set No. 1 to 3, not in Gain Set No. 0. If an adjusted gain is set in Gain Set No. 0, it may cause a problem at home-return operation such as vibration.

(2) When the payload is heavier than the rating

Adjusted gain is to be set in Gain Set No. 0.

As the load is heavier than the rated payload in the gain set at the delivery, homereturn operation may not be able be conducted.

# ROBO CYLINDER

3.24.1 For Controllers Applicable for Gain Calculation (such as servomotor type controllers)

Setting of controlling parameters (each types of gain) and cycle time calculation are available.



Touch [Offboard tuning] in Menu 2 screen.

Series	ISB	<b>•</b>
Model number	ISB-SXM-60	•
Lead(mm)	4	
Stroke(mm)	100	Reference (Current parameter)
Actuator orient	tation @Horizontal OVertical	Lead size of ballscrew 5.00 mm
Transported lo	bad kg	Soft limit + 100.30 mm
		Next

Offboard tuning window is displayed.

Series	RCS2	2		
Model number	RCS2-SA	2		
Lead(mm)	5			
Stroke(mm)	100		Reference	o (urrent parameter)
Actuator orient	tation 🝽	orizontal OVertical	Lead s	ize of ballscrew 5,00 mm
Transported lo	bad	6. 000 kg	Soft I	
				Next

Select and input the following items and touch [Next].

- Series
- Model number
- Lead (mm)
- Stroke (mm)
- Actuator orientation
- Transported load

Position(mm) Pos band(mm)	Vel(mm/s) S motion	Acc(0) Incresen		Dec(6) Fause time	
0, 00					Load from position data
100.00 0.10	330. 00 0		0.30 0	0. 30 0. 000	Load from position data
uning method	Base contro	ol width	OSimple	tuning	
uning	ODefault	OTight	ORatio	OStiff	Calculatio

Set the start the positions of the start point and end point, velocity, acceleration / deceleration, positioning band, S-shaped motion, incremental and standby duration after movement.

Touch a value on an item to make setting. To read in from the position data, touch [Load from position data] on the start or end point.

	Position(mm) Pos band(mm)	Vel(mm/s) S motion	Acc Incre					
Ì	0.00	3 10(101	Incre	7	8	9	ESC	from on da
l	100.00 0.10	330. 00 0		4	5	6	+/-	from on da
т	uning method	i ⊛Base contr	ol width	1	2	3		ĺ
	uning	ODefault	OTig	0	BS	CLR	ENT	latio

<To input setting value>

Input a setting value and touch [ENT].

No.	Position(mm)	Vel (mm/s)	Acc (G)	Dec (G)
000	*****. **	****. **	*. **	*. **
001	0.00	330.00	0.30	0.30
002	10.00	330.00	0.30	0.30
003	20.00	330.00	0.30	0.30
004	30, 00	330.00	0, 30	0.30
005	40.00	330.00	0.30	0.30
006	50.00	330.00	0.30	0.30
007	*****. **	****. **	*. **	*. **

<To read in from position data>

Touch a position number to read in from.



				Dec(0) Paute time after moving(s)	
	0.00				Load from position data
I	100.00 0.10	330.00 0	0.30 0	0.30 0.000	Load from position data
	Tuning metho Tuning		ol width ()Simol		Calculation

Select either "Base Control width" or "Simple Tuning" in the tuning method.

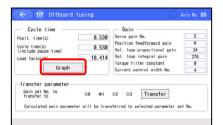
Base Control	It is suitable when it is required to
Width	calculate the gain automatically
	considering the payload, but not
	necessary to increase the responsiveness.
Simple Tuning	It is suitable when it is required to
	calculate the gain automatically
	considering the payload, and also to
	increase the responsiveness.



When "Simple Tuning" is selected in the tuning method, select a tuning rule from the following four types.

Touch [Calculation].

Tuning Rules	Explanations
Default	Select the optimum rule to the selected actuator and tuning is performed based on that rule. (Note) Optimum Rule : Out of three rules, Tight, Ratio and Stiff, a rule capable to consider not to generate vibration and abnormal noise, and to increase responsiveness as much as possible at the same time
Tight	It is a rule that increases the responsiveness the most in the three rules, but has the highest risk of generating vibration and abnormal noise at the same time.
Ratio	It is a rule of which the increase of the responsiveness is higher than Stiff and lower than Tight, and the risk of generating vibration and abnormal noise is lower than Tight and higher than Stiff.
Stiff	It is a rule that generates less vibration and abnormal noise in the three rules, but makes smallest increase to the responsiveness in the three.



Cycle time and gain value are calculated and displayed.

Touch [Graph], and the graph of the cycle time will be displayed.

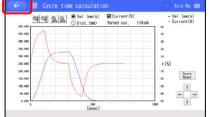
Calculated Items

Cvcl	e time	
0,00	00	

Item name	Unit
Posit. time	(s)
Cycle time (include pause time) Load factor	(s)
Posit. time	(%)

3. Operation of CON Related Controllers





Select either velocity (mm/s) or drive distance (mm) to show its graph. (Values displayed on the left) The graph for current (%) will be displayed at the same time.

: Touch it to slide the displayed

: Touch it to slide the displayed

waveform frame downwards.

: Touch it to slide the displayed

waveform frame to the right.

waveform frame to the left. : Touch it to slide the displayed

waveform frame upwards.

Touch  $[\leftarrow]$  button to return to the offboard tuning screen.

(Values displayed on the right)

1

↓

←

 $\rightarrow$ 

[Window Setting Buttons]

۔	<b>ے</b>	€.	Q	

Scale Reset

- Touch it to enlarge the scale of the graph in vertical axis.
- Touch it to reduce the scale of the graph in vertical axis
- Image: Second second
- Solution : Touch it to reduce the scale of the graph in horizontal axis

: Touch it to initialize the scale of the graph.

Cycle	time		- Gain	
Posit, time	s)	0, 530	Servo gain No.	5
Cycle time(s) (include pause time)		0.530	Position feedforward gain	0
		0. 530	Vel. loop proportional gain	34
Load factor (%)	10,414 Vel. loop integral gain	Vel. loop integral gain	279	
			Torque filter constant	0
	Graph		Current control width No.	4
-Transfer Gain set transfer		00 ⊛1	02 03 Transfer	

The calculated gain values can be transferred to a controller.

Select the gain set number (from 0 to 3) to be transferred and touch [Transfer].

🤆 🔟 Offboard tuning	🛄 Axis No. 00
Gain set No.0 is used during the f In case the gain is set for the li than the rated, there are possibil problems such as vibration occur o homing, so please pay attention. Do you transmit the calculated gai to the gain set No.0?	ghter load ities that during the

\*Transferred gain parameter will be reflected during operation by setting the number as "gain set" of position data.

OK

As stated in the restrictions, a confirmation window will appear to show that a problem could occur if transferred to Gain Set No. 0.

Touch [Yes] or [No].

As the transfer is complete, a window for caution before reflection will show up.

Set a gain set number to the position data and use it.

Touch [OK].



# 3.24.2 For Controllers Not Applicable for Gain Calculation (such as pulse motor type controllers)

Setting of controlling parameters (each types of gain) cannot be performed, but cycle time calculation is available.

Setting of controlling parameters (each types of gain) and cycle time calculation are available.



Touch [Offboard tuning] in Menu 2 screen.

Series	ERC3	<b>•</b>
Model number	ERC3-SA5	×
Lead(mm)	3	
Stroke(mm)	50	Reference (Current parameter)
Actuator orient Transported lo	tation ®Horizontal OVertical	Lead size of ballscrew 2,50 mm Soft limit + 300,30 mm

Offboard tuning window is displayed.

eries	RCP6	<b>~</b>
lodel number	RCP6-SA8C	*
.ead(mm)	10	-
itroke(mm)	200	Reference (Carrent parameter)
ctuator orien ransported l	tation ®Horizontal OVertical oad 12,500 kg	Lead size of ballscrew 2.50 mm Soft limit + 300.30 mm

Select and input the following items and touch [Next].

- Series
- Model number
- Lead (mm)
- Stroke (mm)
- Actuator orientation
- Transported load

	Dec(6) Passe time	Acc (0)	Vel(mm/s)	Position(mm)
Load from position da				0, 00
Load from position da	0.50 0.000	0.50 0	400.00 0	200. 00 0. 10

Set the start the positions of the start point and end point, velocity, acceleration / deceleration, positioning band, S-shaped motion, incremental and standby duration after movement.

Touch a value on an item to make setting. To read in from the position data, touch [Load from position data] on the start or end point.

Position(mm) Pos band(mm)	Vel(mm/s) S motion	Acc Incre					
0.00	SHOLIDI	Incre	7	8	9	ESC	from on data
200.00 0.10	400.00 0		4	5	6	+/-	from on data
		[	1	2	3		
		ľ	0	BS	CLR	ENT	atio

<To input setting value>

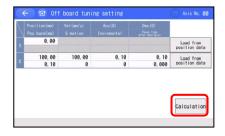
Input a setting value and touch [ENT].

No,	Position(mm)	Vel (mm/s)	Acc (G)	Dec (G)
000	*****. **	****. **	*. **	*.*:
001	0.00	330.00	0.30	0.3
002	10.00	330.00	0.30	0.3
003	20.00	330.00	0.30	0.3
004	30, 00	330, 00	0, 30	0.3
005	40.00	330.00	0.30	0.3
006	50.00	330.00	0.30	0.3
007	*****, **	****. **	*. **	*.*

<To read in from position data>

Touch a position number to read in from.





Touch [Calculation].



Cycle time is calculated and displayed.

Item name	Unit
Posit. time	(s)
Cycle time (include pause time)	(s)

Touch [Graph], and the graph of the cycle time will be displayed.

Select either velocity (mm/s) or drive distance (mm) to show its graph. (Values displayed on the left)

Touch  $[\leftarrow]$  button to return to the offboard tuning window.

[Window Setting Buttons]

 ब्राव्य <u>क</u> g el O Dis

250



358, 09 308, 09 254, 04 200, 00 158, 00

- Touch it to enlarge the scale of the graph in vertical axis.
- Touch it to reduce the scale of the graph in vertical axis
- Touch it to enlarge the scale of the graph in horizontal axis
- Touch it to reduce the scale of the graph in horizontal axis

Scale : Touch it to initialize the scale of the graph.

Val (ma/a)

Scale Reset ↑ ↓

Scale Reset

	1	
←		$\rightarrow$
	¥	

- ↑ : Touch it to slide the displayed waveform frame upwards.
- ↓ : Touch it to slide the displayed waveform frame downwards.
- Touch it to slide the displayed waveform frame to the left.
- Touch it to slide the displayed waveform frame to the right.



# 3.25 Servo Monitor

The actual operation status of the actuator is displayed in a waveform. It is available to record the displayed data.

Caution: As ACON-C, PCON-C, SCON-C, SCON-CAL, ERC2, RACON and RPCON are not equipped with the servomotor features, there will be no servo monitor icons displayed. (Same for Safety Category Complied Type)



Touch [Servo monitor] in Menu 1 screen.

	alot a la l	Scale	Current dise			Motor rated cu	ir. 420nA
	्य ्य 🧕 🗟	Scale Reset	@ Current(	nA) O Ratio	(\$)	Channel settin	s Set
1998, 608				-0		CH1	
500.000				-0		2002	
588, 888				-0		EQ043	
400, 600				-0	-	100H4	
288.888				-0		2016	1
8,000				-0		EOCH6	1
-288, 608						2047	1
-400 600				-0		EDOH8	
-688.888						#Stop	
				_	1		_
1888. 868				-		Start	Details

The servo monitor (waveform display) screen is displayed. Operations can be performed in this screen to select items, display settings, start/stop monitoring and display/save waveform.

Refer to [3.25.1 Servo Monitor (Waveform Display) Screen] for details of each button in this screen.

Touch [Details].

#### For ACON-CB/CYB, DCON-CB/CYB, PCON-CB/CYB/CBP, SCON-CB, SCON2, MCON and RCP6S



Display the window to conduct the sampling frequency setting and trigger setting. (Same for Safety Category Complied Type) Refer to [3.25.2 Sampling Period Setting] and [3.25.3 Trigger Setting for details of item settings].

Touch [Ex. Scr.] and the screen returns to the servo monitor (waveform display) screen.

#### For ACON-CA, DCON-CA, PCON-CA, SCON-CA, MSCON, ERC3 and ERC3-GW



Current sampling frequency setting and continuous monitoring available time can be checked. Sampling frequency setting is to be conducted in Parameter No. 113 "Monitoring Frequency". Trigger setting cannot be conducted. (Same for Safety Category Complied Type)

Touch [Ex. Scr.] and the screen returns to the servo monitor (waveform display) screen.





After confirming the channel setting, touch [Start Monitoring] to start monitoring. To have it in standby status for triggering, touch [Trigger].

Caution: Moving to another window during monitoring or trigger standby, the status of monitoring and trigger standby will be cancelled.

#### Automatic Scroll Feature



After monitoring has started, when the graph is drawn up to the end of the display area, the display area will be shifted.



Automatic Scroll

010	22	Scale Reset		isp, setting t(nA) O Ra				r rated ou	
258.600		Reset	a curren	T(IN) O Ha	it io(s)		Chan	nel settin	K Set
238 660					- CHI (	(mm)	<b>D</b> OH	Current posi	tion
					- CH2 (		<b>M</b> CK	Ourrent vel.	
158.000					CH3	m4)	Ø04	Canand Carn	ent i
138 888	1				- CH4 (		DO:	Feedback our	rent
58.000					CHE	an,			
8.000	when				016			()	
-58, 600	1				- 047				
130.000	1				CHS				
158, 600					-			Stop	
238.682				_	1				
258.000					4-	->		Start	Details
3103		5500 [msec]		1010	1		<b>n</b>	Trigger	3a

The automatic scroll stops if the monitoring is finished or any of [Scroll Reset],  $[\uparrow]$ ,  $[\rightarrow]$ ,  $[\downarrow]$  or  $[\leftarrow]$  button (a button to scroll the display area) is pressed.



# 3.25.1 Servo Monitor (Waveform Display) Screen



Display Setting Buttons [Refer to 3.25.1.2]

3.25.1.1 Channel Settings

Select an item to be monitored in channel settings.

Channel setting Set	
✔CH1 Current position	▼
✔CH2 Operation vel.	▼
✔CH3 Instruction vel.	•
✔CH4 Current vel.	•
✔CH5 Instruction current	▼
✔CH6 Deflection	•
▼CH7 Overload level monitor	•
СН8	-

Select an item to be monitored from the select menu in each channel. Once selection is made, touch [Set] to set it to monitoring standby status.

Checkmarks in the Left of Items

Items with a checkmark on can show the waveform in the screen. For the items with no checkmark, the waveform will not be shown, but the data is acquired.

About Number of Channels

For the number of channels, selection can be made from 2, 4 and 8 (4 and 8 for SCON-CA). Number of channels can be set in Parameter No. 112 "Monitoring Mode Select".

[Reference] (Note) It differs depending on models.

- Number of channels when No. 112 is 1 = 4
- Number of channels when No. 112 is 2 = 8
- Number of channels when No. 112 is 3 = 2

The monitor items are shown in the table below.

(Note) Items subject to monitoring differ depending on models.

1)Current Position[mm] $\leftarrow$ 2)Velocity Operation Amount[mm/s] $\leftarrow$ 3)Velocity Actual Command Value[mm/s] $\leftarrow$ 4)Current Velocity[mm/s] $\leftarrow$ 5)Command Current[mA][%]6)Feedback Current[mA][%]7)Current Load (for SCON-CA/CB/CGB, SCON2, PCON-CBP/CGBP only)[N] $\leftarrow$ 8)Deviation[Pls] $\leftarrow$ 9)Command Pulse Counter[Pls] $\leftarrow$		Item name	Units	Unit (Note 1)
3)       Velocity Actual Command Value       [mm/s]       ←         4)       Current Velocity       [mm/s]       ←         5)       Command Current       [mA]       [%]         6)       Feedback Current       [mA]       [%]         7)       Current Load (for SCON-CA/CB/CGB, SCON2, PCON-CBP/CGBP only)       [N]       ←         8)       Deviation       [Pls]       ←	1)	Current Position	[mm]	$\leftarrow$
4)       Current Velocity       [mm/s]       ←         5)       Command Current       [mA]       [%]         6)       Feedback Current       [mA]       [%]         7)       Current Load (for SCON-CA/CB/CGB, SCON2, PCON-CBP/CGBP only)       [N]       ←         8)       Deviation       [Pls]       ←	2)	Velocity Operation Amount	[mm/s]	$\leftarrow$
5)       Command Current       [mA]       [%]         6)       Feedback Current       [mA]       [%]         7)       Current Load (for SCON-CA/CB/CGB, SCON2, PCON-CBP/CGBP only)       [N]       ←         8)       Deviation       [Pls]       ←	3)	Velocity Actual Command Value	[mm/s]	$\leftarrow$
6)       Feedback Current       [mA]       [%]         7)       Current Load (for SCON-CA/CB/CGB, SCON2, PCON-CBP/CGBP only)       [N]       ←         8)       Deviation       [Pls]       ←	4)	Current Velocity	[mm/s]	$\leftarrow$
7)       Current Load (for SCON-CA/CB/CGB, SCON2, PCON-CBP/CGBP only)       [N]       ←         8)       Deviation       [Pls]       ←	5)	Command Current	[mA]	[%]
7)       (for SCON-CA/CB/CGB, SCON2, PCON-CBP/CGBP only)       [N]       ←         8)       Deviation       [PIs]       ←	6)	Feedback Current	[mA]	[%]
	7)	•	[N]	$\downarrow$
9) Command Pulse Counter [PIs] ←	8)	Deviation	[Pls]	$\downarrow$
	9)	Command Pulse Counter	[Pls]	$\rightarrow$
10)     Overload Level Monitor     [%]     ←	10)	Overload Level Monitor	[%]	$\rightarrow$
11)       Motion Driver Target Position (Motion type only)       [Pls]       ←	11)	Motion Driver Target Position (Motion type only)	[Pls]	$\leftarrow$

Note 1 : Unit when rated ratio display selected

# RORO NDER

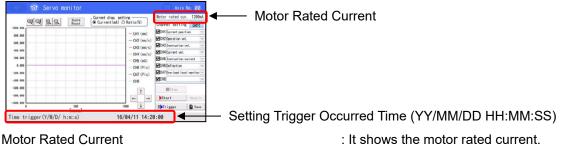
# 3.25.1.2 Display Setting Buttons

	€į	: Touch it to enlarge the scale of the graph in vertical axis.
	୍	: Touch it to reduce the scale of the graph in vertical axis
	€	: Touch it to enlarge the scale of the graph in horizontal axis
	<u>Q</u>	: Touch it to reduce the scale of the graph in horizontal axis
	Scale Reset	: Touch it to initialize the scale of the graph.
Current disp. setting - ● Current(mA) ○ Rat	io(%)	: Current Display Setting: System to display current can be selected
	1	: Touch it to slide the displayed waveform frame upwards.
$\uparrow$	$\downarrow$	: Touch it to slide the displayed waveform frame downwards.
↓ I	~	: Touch it to slide the displayed waveform frame to the left.
	$\downarrow$	: Touch it to slide the displayed waveform frame to the right.

### 3.25.1.3 Monitor Operation Buttons

Start Details ♪Start Save	[Stop] : [Trigger] :	Touch it to start monitoring. Touch it to stop monitoring and trigger standby. Monitoring starts once the triggering conditions are satisfied. [Refer to 3.25.3 Trigger Setting] Touch it to display the window to conduct sampling frequency
	[Save] :	setting and trigger setting. [Refer to 3.25.2 Sampling Period Setting and 3.25.3 Trigger Setting] It is available to touch when [Confirm] button is not on. Touch it to save the acquired data to a SD memory card in the CSV format. [Refer to 3.25.4.1 How to Save Waveform Data for the details of procedures]

### 3.25.1.4 Other Displays



Setting Trigger Occurred Time (YY/MM/DD HH:MM:SS) : It shows the time when the triggering

: It shows the motor rated current.

conditions are satisfied and monitoring is started.



# 3.25.2 Sampling Period Setting

Press [Details] button in the servo monitor (waveform display) screen to show this screen.

Sampling period set. and continuous monitoring available time display can be conducted. There are some models that setting of the Sampling period set. cannot be conducted, and only display of the current Sampling period set. is available.

(For the models only with display, the setting can be conducted in Parameter No. 113 "Monitoring Period")

- 🖸 Servo monitor	(th) Axis No. 00
Sampling period set. 1 msec ⇒ Max. continuous monitoring time 000h 00m 02s 048ms	]
Image: Program Setting         Data type         OP10 function input signals assignment         OP10 function output signals assignment         OP10 function gradies assignment         OP10 function output signals assignment         OP10 function output signals assignment         OP10 function output signals assignment	
Signal select PC1	
Time before trigger 1.000 s	
*Monitoring after the trigger is possible for the time period that "Holding time before trigger" is taken from "Max. continuous monitoring time".	Ex. scr.

🗲 🗊 Servo monitor	( Axis No. 00
Sampling period set. 1 msoc  Max. continuous monitoring time 000h 00m 00m 00m 00m 768ms	

Sampling Period Setting in This Screen

- After transition to this window, the value in Parameter No. 113 "Monitoring Period" gets initialized and the setting items for the sampling frequency will be displayed.
- Change to the setting is available in the range of the sampling period setting (refer to table below) for each controller.
- The value in Parameter No. 113 "Monitoring Period" will not be changed.

The sampling period and the number of records available to monitor for each controller are shown in the table below.

Controller	Sampling pe	eriod [ms]	Number o	of Records Av Monitor	ailable to
(Same for Safety Category Complied Type)	Availability of Setting	Setting Range	2-Channel Mode	4-Channel Mode	8-Channel Mode
ACON-CA, DCON-CA	Display Only	1 to 1000	8192	4096	2048
PCON-CA, ERC3	Display Only	1 to 1000	3072	1536	768
SCON-CA	Display Only	1 to 1000	-	15000	7500
MSCON	Display Only	1 to 1000	30000	15000	7500
SCON-CB, SCON2	Available for Setting	1 to 1000	30000	15000	7500
ACON-CB/CYB/PLB/POB, DCON-CB/CYB/PLB/POB, PCON-CB/CBP/CYB/PLB/POB, RCP6S	Available for Setting	1 to 60000	8192	4096	2048
MCON	Available for Setting	1 to 60000	4096	2048	1024

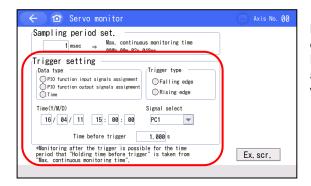
Continuous monitoring available time should be: Sampling period \* Number of Records Available to Monitor



# 3.25.3 Trigger Setting

Trigger setting is available on ACON-CB/CYB/PLB/POB, DCON-CB/CYB/PLB/POB, PCON-CB/CYB/PLB/POB, SCON-CB, SCON2, MCON and RCP6S. (Same for Safety Category Complied Type)

Press [Details] button in the servo monitor (waveform display) screen to show this screen.



Left of the screen, for purposes of explanation, it displays all of the configuration items. Depending on the model and setting values that are connected, there are items that you do not want to display.

### 3.25.3.1 Setting Items in Trigger Setting

#### [Data type]

Select a condition to start monitoring from the three types below:

Data type
○ PIO function input signals assignment
OPIO function output signals assignment
○ Time

OPIO function input signals assignment OPIO function input signals assignment OTime

### [Trigger type]

When "PIO Function Input Assignment (Bit)" or "PIO Function Output Assignment (Bit)" has been selected as the data type, select with which of the signal rising or falling the monitor should be started.



### [Time (Y/M/D)]

When "Clock" has been selected at the data type, set the monitoring starting day.

Time(Y/M/D)

14 : 13 : 51 16 / 04 / 11

#### [Signal select]

When "PIO Function Input Assignment (Bit)" or "PIO Function Output Assignment (Bit)" has been selected as the data type, select the trigger signal.

#### Signal select

PC1

It is available to select the signals assigned to the operation mode for each controller.

[Time before trigger]

-

It is available to acquire data for the indicated time from the triggering condition satisfaction.

1.000 s

Time before trigger

(Note) The time to acquire data after the triggering condition satisfaction is time that "Retain Time before Triggering" is subtracted from "Continuous Monitoring Available Time".

Feature for

SCON-CB, SCON2 Only



3.25.3.2 When Conducting Trigger Setting with Input and Output Signals

Indicate the condition to start monitoring with the input or output signal (1 bit) assigned to the operation mode for each controller.

1 msec 🔲 Max. continuou 000h 00h 00h 02a 0	s monitoring time 48ms	
Data type Data type @PIO function input signals assignment PIO function output signals assignment Time	Falling edge Rising edge ignal select PC1	
		Ex. scr.

Select either of "PIO Function Input Assignment (Bit)" or "PIO Function Output Assignment (Bit)" in the data type.

When required to establish setting with input signal: select "PIO Function Input Assignment (Bit)" When required to establish setting with output signal: select "PIO Function Output Assignment (Bit)"

Sampling period set. 1 msec	s monitoring time 40ms	
Trigger setting Data took © P10 function imput signals assignment © P10 function undput signals assignment © Time	Falling edge Rising edge Signal select CSTR	
		Ex. scr.

Select either of "Falling edge" or "Rising edge" in the trigger type.

When required to establish setting with falling: select "Falling edge"

When required to establish setting with rising: select "Rising edge"



Select a signal that can be a trigger in the signal select.

Signal can be selected from the input or output signals assigned to the operation mode for each controller.

Feature for SCON-CB, SCON2 Only

Sampling period ret. 1 mace	nucus monitoring time 2s 048ms	
Trigger setting Data type @P10 function nutur signals assignme @P10 function output signals assignme @Time		
Time before trigger	1,000 s	

Setting of the retain time before triggering is available.

By setting the time to this item, it is available to acquire data for the indicated time from the triggering condition satisfaction. Set 0 when it is not required to use this feature.

(Note) The time to acquire data after the triggering condition satisfaction is time that this setting is subtracted from the continuous monitoring available time.

Sampling period set.	us monitoring time Mäms	
Trigger setting Data type © 10 function input signals assignment 0 find function output signals assignment 0 Time	Trigger type Falling edge Rising edge	
The before below 1	Signal select	
Time before trigger +Monitoring after the trigger is possil	1,000 s	

Touch [Ex. scr.] button and the screen returns to the servo monitor (waveform display) window.



#### 3.25.3.3 When Having Trigger Setting with Timer

The condition to start monitoring is indicated by day and time.

Sampling period set. 1 msec	
Data type P10 function input signals assignment P10 function output signals assignment Time	
Time(Y/M/D) [16] / [04] / [11] [15] : [00] : [00]	Ex. scr.

Select "Time" in Data Type.

Sampling period set. 1 msoc  Wax, continuous monitoring time 900% 00m 02s 040ms	
Trigger setting Data type OP10 function input signals assignment OP10 function mutput signals assignment @Tree	
Time(Y/M/D) 16/04//11 15:00:00	
	Ex. scr.

The item setting for Year/Month/Day, Time gets displayed. In the item setting, Year/Month/Day, Time when the screen was transited to the servo monitor window gets displayed.

Set Year/Month/Day, Time that is later than now.



Touch [Ex. scr.] button and the screen returns to the servo monitor (waveform display)

### 3.25.3.4 Start Trigger Standby Status

Trigger standby status can be started with procedures below for both situations when trigger setting was conducted with input and output signals and when conducted with time.

confirm the channel setting.

		Conta	Current disp,			Motor rated cu	1288-
1000.000	<b>Q Q Q Q</b>	Scale Reset	Current (m/	) O Ratio(N	0	Channel settin	Set
				- CH1	(mm)	CHI Current posi	tion 1
588, 868					(mn/s)	CH2 Operation ve	L 19
588, 888					(mm/s)	CH3 Instruction	vel,
488, 868					(mn/s)	CH4 Current vel.	
200, 000					(mA)	CH5 Instruction	ourrent in
8.000					(PIs)	CH6 Deflection	
288, 888				- CH7		CH7 over load lev	el monitor
-200, 000				- CH8	0.13)	E CH8	
-588, 888					t	#Stop	
-500, 800				+	-	Start	Details
1000,000	•	600 [msec]		1809	Ļ	<b>A</b> ▶Trigger	Seve

Touch [Set] in the servo monitor (waveform display) window to

	অ্	99	Scale Resat	Current disc Current (	A) ORa	tio	(8)	Notor rated co Channel settin		
100, 000 100, 000 100, 000 200, 000 0, 000 100, 000 100, 000						08	1 (em) 2 (nm/s) 3 (em/s) 3 (em/s) 4 (nm/s) 5 (nA) 5 (P1s) 7 (P1s) 8	Control Contr	ition el. i vel. i current vel non	2 2 2 2 2 2 2
000.000			500 [msec]		1888		1	<b>Λ</b> ) Trigger		Save

Touch [Trigger] to make it to the trigger standby status. In order to cancel the trigger standby status, touch [Stop].

Monitoring starts once the triggering conditions are satisfied. Monitoring start time gets displayed on the right in "Setting Trigger Occurred Time" on the very bottom of the screen.



# 3.25.4 Operation to Save Data

#### 3.25.4.1 How to Save Waveform Data

Insert a SD memory card.



Touch [Save] while monitoring is stopped.

÷	ØF	ile na	ne desi	gnatior	1			Axis	No. 00
File	name								
	SERVO	MONIT	OR						
1	2	3	4	5	6	7	8	9	ESC
0	A	В	C	D	E	F	G	Н	CLR
Ι	J	К	L	М	N	0	Р	Q	BS
R	S	Т	U	V	W	Х	Y	Z	ENT
	_	[	]		SPACE		-	#	

The file name indication screen opens. Input a file name and touch [ENT].

÷	🗊 🗊 File name designation	🛄 Axis No, 00
File	name	
	SERVOMONITOR	
	Save	

Touch [Save].

File name confirmation Avis No. 88 File name SERVOMONITOR.csv File name above will be saved. Are you sure to continue? Yes No

The file name confirmation screen pops up. Touch [Yes].

Save the data, and return to the servo monitor screen.

ile name			
SERVOMON	ITOR.csv		
A fi	le of the same Do you want t	name already to overwrite i	exists. t?

In case there is a file with the same name exists, overwriting confirmation window appears. Touch [Yes] if it is allowed to overwrite the old.

Save the data, and return to the servo monitor screen.

Domain to Save Data (cannot be changed)

The domain that the servo monitor data is saved is the folder stated below in a SD memory card.

\TB\_CON\MonitorData\FileName.csv



#### 3.25.4.2 To Obtain Screenshot

It is not available to obtain a screenshot while in monitoring. Stop monitoring first, and then obtain a screenshot. (For detail of operation, refer to 10.1 Screenshot)



# 3.26 Press Program

Operation of controller in the servo pressing type should be conducted in windows for pressing program.

- SCON-CB Controller Servo Pressing Type ... Applicable in Ver. 1.40 and later
- SCON2 Controller Servo Pressing Type ...... Applicable in Ver. 4.10 and later

The pressing program is to be used instead of the position data in the servo press type. Therefore, "Position Edit" icon will be replaced with "Press program edit" icon, and the display of the operation windows for test run and SD memory card will be changed to those applicable for the operations and edit / save for the pressing programs. Monitoring feature also be changed to that suitable for the servo press type.

Below shows the items that have windows dedicated for the pressing programs.



- 1) Windows in the monitor will differ. [Refer to 3.26.1 Press Program Monitor]
- "Edit Pressing Program" icon will be displayed in Menu 1 window. [Refer to 3.26.2 Press Program Edit]
- 3) Windows in the test run will differ. [Refer to 3.26.3 Press Program Test Run]
- 4) Windows in the SD memory card will differ. [Refer to 3.26.4 SD Memory Card]
- 5) Windows partially differ in the environment setting. [Refer to 3.18 Environment Setting]
- 6) Guide related features (Note 1) cannot be used. (Guide icon in Menu 1 window will not be displayed)

Note 1 Features of "Position Edit Guide", "I/O Control Guide" and "Simple Program Setting"

In 3.26, explains about 1) to 4).

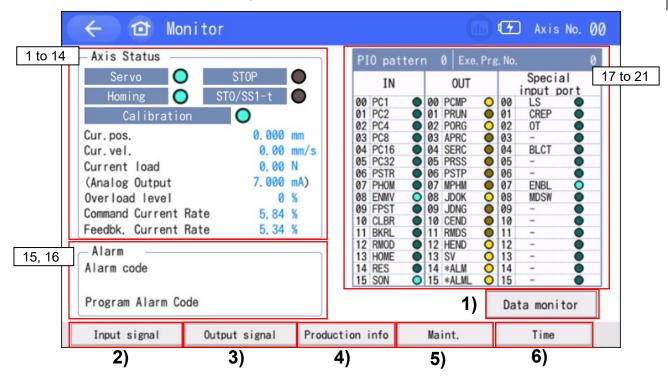


# 3.26.1 Press Program Monitor

3.26.1.1 Press Program Monitor Screen

Touch [Monitor] on the Menu 1 screen.

It shows the I/O status and current position of the connected controller.



### Press program Monitor Screen Button List

	Botton Name Explanations			
1)	Data monitor	Data monitor screen opens. [Refer to 3.26.1.2]		
2)	Input signal	It shows the term explanation window for input signals. [Refer to 3.26.1.3]		
3)	Output signal	It shows the term explanation window for output signals. [Refer to 3.26.1.4]		
4)	Production info	Productrion information screen opens. [Refer to 3.17]		
5)	Maint.	Maintenance screen opens. [Refer to 3.9.2]		
6)	Time	It shows the controller clock setting window. [Refer to 3.9.3]		



# Press Program Monitor Screen Display List

	Name	Explanations		
1	Servo	The servo status is shown. ON is lit. OFF is unlit.		
2	Homing	The home return status is shown. Lit, if home return has completed.		
3	Stop	It shows the status of stop. It is on when it is stopped. It turns off when the stop condition is released.		
4	STO/SS1-t	It shows the status of STO/SS1-t for STO/SS1-t type of SCON-CB/SCON2. It is on when in STO/SS1-t condition. It turns off when the condition is released.		
5	Calibration	The status of loadcell calibration is shown. Lit, if loadcell calibration has completed.		
6	Cur. pos.	The current position is shown.		
7	Cur. vel.	The current speed is shown.		
8	Current load	The current load is shown.		
9	Analog output	It shows the analog current output from the MF I/F connector on the controller in accordance with the current load.		
10	Overload level	Tthe overload level is shown.		
11	Command current rate	The command value of electrical current is shown as a percentage of the rated current. The current value will be shown if touching the command current rate.		
12	Feedbk. current ratio	It shows the rate of the feedback current to the rated value. The current value will be shown if touching the feedback current rate.		
13	Command current value	The command current value is shown. The current rate will be shown if touching the command current value.		
14	Feedbk. Current Value	The feedback current is shown. The current rate will be shown if touching the feedback current value.		
15	Alarm code	It shows the alarm codes of the controller. It shows a blank if there is no alar occurred.		
16	Program Alarm Code	The program alarm code is shown.		
17	PIO pattern	It shows the PIO pattern numbers set to the controller.		
18	Exe. Prg. No.	It shows the pressing program number currently being executed.		
19	IN	The press program home return status is shown. ON is lit. OFF is unlit.		
20	OUT	The output status is shown. ON is lit. OFF is unlit.		
21	Special Input port	It shows the status of such as the enable switch. ON is lit. OFF is unlit.		

R	ROBO CYLINDER	
C		

#### 3.26.1.2 Data Monitor Screen

Touch [Data Monitor] button in the pressing program monitor window.

Axis Status           1 to 14         Servo         O           Homing         O         Calibration	STOP STO/SS1-t	Press Program Status Exe. Prg. No. Comment End Pos. 50. 45mm	0 17 to 2
Cur. pos.	0.000 mm	Mode Vel.C	trl./Pos.Stop
Cur.vel. Current load	0.00 mm/s 0.29 N	Prg. Home	0
(Analog Output Overload level	7.004 mA) 6 %	Stage	Standby
Command Current Rate Feedbk. Current Rate	6. 17 % 6. 34 %	Pos.(Dist.) Judgment Load Judgment	ОК
15, 16 Alarm code		Total Judgment	OK
Program Alarm Code			

# Press Program Data Monitor Screen Display List

	Name	Explanations
1	Servo	The servo status is shown. ON is lit. OFF is unlit.
2	Homing	The home return status is shown. Lit, if home return has completed.
3	Stop	It shows the status of stop. It is on when it is stopped. It turns off when the stop condition is released.
4	STO/SS1-t	It shows the status of STO/SS1-t for STO/SS1-t type of SCON-CB/SCON2. It is on when in STO/SS1-t condition. It turns off when the condition is released.
5	Calibration	The status of loadcell calibration is shown. Lit, if loadcell calibration has completed.
6	Cur. po	The current position is shown.
7	Cur. vel	The current speed is shown.
8	Current load	The current load is shown.
9	Analog Output	It shows the analog current output from the MF I/F connector on the controller in accordance with the current load.
10	Overload level	Tthe overload level is shown.
11	Command Current Rate	The command value of electrical current is shown as a percentage of the rated current. The current rate will be shown if touching the command current value.



	Name	Explanations			
12	Feedbk. Current Rate	It shows the rate of the feedback current to the rated value. The current value will be shown if touching the feedback current rate.			
13	Command Current Value	The command current is shown. The current rate will be shown if touching the command current value.			
14	Feedbk. Current Value	The feedback current is shown. The current rate will be shown if touching the feedback current value.			
15	Alarm code	It shows the alarm codes of the controller. It shows a blank if there is no alar occurred.			
16	Program Alarm Code	The program alarm code is shown.			
17	Exe. Prg No.	It shows the pressing program number currently being executed.			
18	Comment	It shows the comment set in the pressing program number currently being executed.			
19	Mode	It shows the pressurizing operation mode set in the pressing program number currently being executed.			
20	Prg Home	The program home return status is shown. It turns on when the movement operation to the program home position is complete.			
21	Stage	It shows the control stage of the pressing program number currently being executed.			
22	Pos. (Dist.) Judgment	It shows the result of the position (distance) judgment. If the result is passed, it shows OK and NG if it resulted failed. It shows blank before judgment is conducted.			
23	Load Judgment	It shows the result of the load judgment. If the result is passed, it shows OK and NG if it resulted failed. It shows blank before judgment is conducted.			
24	Total Judgment	It shows the result of the position (distance) judgment and the load judgment. It shows OK if both of the positon (distance) judgment and the load judgment resulted passed. It shows NG if both of the positon (distance) judgment and the load judgment resulted failed. It shows NG if the positon (distance) judgment resulted passed but the load judgment failed, or the positon (distance) judgment resulted failed while the load judgment passed. It shows OK if the positon (distance) judgment resulted passed but the load judgment unjudged, or the positon (distance) judgment is unjudged while the load judgment resulted passed. It shows blank before judgment is conducted.			

## 3.26.1.3 Input Signals Glossary

Touch [Input Signals] button in the pressing program monitor window.

Input signals							
Input signals(Host=>Controller) Input signals(Host=>Controller)							
PC1~PC32	Command Program No.	Glossary	HOME	Homing	Glossary		
PSTR	Program Start	Glossary	RES	Reset	Glossary		
PHOM	Program Home-return	Glossary	SON	Servo ON	Glossary		
ENMV	Axis Motion Enabling	Glossary	BKRL	Brake rel.	Glossary		
FPST	Prg. Compulsory Termination	Glossary	JISL	Jog/Inching switch	Glossary		
SSTP	Search Stop	Glossary	IVEL	Jog Speed / Inching	01		
	Load cell calibration command	Glossary	JVEL	Distance Switchover	Glossary		
CLBR			J0G+/J0G-	Jog	Glossary		
RMOD	Operation mode switch	Glossary	DSTR	Positioning Start	Glossary		

Touch [Glossary] in each item and you can check the details of features.

# 3.26.1.4 Output Signals Glossary

Touch [Output Signals] button in the pressing program monitor window.

C C Glossary Axis No. 00						
Output signals						
Output signals(Controller=>Host) Output signals(Controller=>Host)						
PCMP	Prg. Nrml. Completion	Glossary	*ALML	Minor Malfunction Alarm	Glossary	
PRUN	Program Running	Glossary	*ALM	Alarm	Glossary	
PORG	Program Home Position	Glossary	EMGS	Emergency stop output	Glossary	
APRC	Approach	Glossary	SV	Servo ON	Glossary	
SERC	Searching	Glossary	HEND	Homing complete	Glossary	
PRSS	Pressurizing	Glossary	PEND	Positioning complete	Glossary	
PSTP	Pressurizing Stop	Glossary	RMOD	Operation mode output	Glossary	
MPHM	Program Home-return Running	Glossary		Load cell calibration	<u></u>	
JDOK/JDNG	Pass/Fail Judgment	Glossary	CEND	complete	Glossary	
PALM	Program Alarm	Glossary	ZONE1	Zone	Glossary	
*You can se	*You can see the explanation of each function by touching "Glossary".					
*"*" repres	sents a negative logic	signal.				

Touch [Glossary] in each item and you can check the details of features.



# 3.26.2 Press Program Edit

### 3.26.2.1 Press Program Select Screen

Touch [Press program edit] on the Menu 1 screen.

It is a window to select, copy and delete the saved pressing programs.

🔶 🖆 Press Program Edit 🛛 🕕 Axis No. 00							
No.	Pressurizing Op		Progra	m Comment			
000	1:Vel.Ctrl./Pos.S	top	End Pos.	50.45mm			
001	2:Vel.Ctrl./Dis.S	End Dist.	1.5mm				
002	0:Program Invalid		End Pos.	50.5mm			
003	3:Vel.Ctrl./Ld.Stop		Caulking 550N			1,	
004	3:Vel.Ctrl./Ld.Stop		Approach - First Press 100N				
005	3: Vel.Ctrl./Ld.St	ор	Second Press 150N				
006	7:Frc. Ctrl./Ld.	Stop	Third Press 500N - Return 10.00m				
007	1:Vel.Ctrl./Pos.S	top	Only Approach 75mm/s				
1) <u>2) 3) 4) 2)</u>					5)		
↑Pr pg	No. sel.	All	clear	↓Nx pg		Сору	y
* To Edit Window by Touching Press Program Number							

#### Press Program Select Screen Button List

	Botton Name	Explanations
1)	Press Program No.	It shows the individual edit window for the selected pressing program number.
2)	↑ Pr pg, ↓ Nx pg	It shows the previous and next pages of the pressing program list.
3)	No. sel.	Indicate a pressing program number, and it show the page including the indicated pressing program.
		Delete all the pressing programs in the controller. [Refer to 3.26.2.4 (1) How to Delete All Pressing Programs at Once]
5)	Сору	The press program copy is shown. [Refer to 3.26.2.3 Press Program Copy]

# Press Program Select Screen Display List

	Botton Name	Explanations
1	Pressurizing Op. Md.	It shows the pressurizing operation mode set to the pressing program.
2	Program Comment	It shows the comment set in the pressing program. It can show 32 half-size font characters and 16 full-size font characters at the maximum, and show "…" after that.

# 3.26.2.2 Press Program Edit Screen

NDER -

Touch a button for the pressing program number to be edited in the pressing program select window.

Pressing program setting can be performed.

ROBO

CImage: Press Program EditImage: Axis No.									
1 Program No. 000 Pressuriz	zing Op.Md. 1:Vel.C	trl./Pos.Stop		i					
Program Comment End Pos.	Program Comment End Pos. 50.45mm								
Overall 1. Approach 2.	Overall 1. Approach 2. Search 3. Press 4. Deprs 5. Return								
2	Overall								
Prg. Home 1, Approach	Prg. Home(mm)	0.000 Wait T	ime (s)	1.0					
Wait	Linked Prg. No.	No 🔽 Prg. Al	lw.Time(s)	60.0					
Jdg.	Return Operation	at Prg.Alm. 🖲 Yes	⊖ No						
3. Press 4. Deprs Pos. (Stop)	Gain set	• 0	010	2 0 3					
	Lump-sum Accel.	Setting Acc/De	c(G)	0.20					
↑ PrvPrg Reload	Prg. Clr.	↓NxtPrg	ransfer	Test run					
2) 3)	4)	2)	5)	6)					

## Press Program Select Screen Button List

	Botton Name	Explanations
1)	Tab Select	Select each tab and the input display can be switched over. If any change is made in a tab, the name of the tab gets displayed in red. If the setting in the pressurizing operation mode has not been established, no tab but the overall tab can be selected.
2)	↑ PrvPrg, ↓ NxtPrg	The previous pressing program and the next pressing program can be displayed.
3)	Reload	It puts back the values in the pressing program to the ones before change. It cannot be made before making any change.
4)	Prg. Clr.	It deletes the pressing programs in display in the controller. [Refer to 3.26.2.4 (2) How to Delete Pressing Program Individually]
5)	Transfer	It transfers the setting values which change is made in the pressing program to a controller. It cannot be made before making any change.
6)	Test run	It shows the test run window for the pressing program. [Refer to 3.26.3 Press Program Test Run]



## Press Program Select Screen Display List

	Name Explanations	
1	Program No.	It shows the pressing program number which is currently in edit.
2	Figure of Control Stage	It shows the name and the arrow of the control stage which is currently in edit in red. It shows the name and the arrow of the control stage in gray when each control stage is inactivated. It shows all the names and arrows in gray when the pressurizing operation mode is set to "0: Program Invalid" and no registration is made.

#### Press Program Select Screen Input List

	Name	Explanations			
		Fol mo		ng settings can be performed in the	pressurizing operation
				Pressurizing Op.Md.	
				Blank (program setting not established)	
			0	Program Invalid	
			1	Velocity Control / Positon Stop	
			2	Velocity Control / Distance Stop	
			3	Velocity Control / Load Stop	
l i	Pressurizing Op. Md.		4	Velocity Control / Incremental Load Stop	
	· · · · · · · · · · · · · · · · · · ·		5	Force Control / Position Stop	
			6	Force Control / Distance Stop	
		blar Any app Ref	7	Force Control / Load Stop	
			8	Force Control / Incremental Load Stop	
			9	Force Control / Position Stop 2	
			nk. / pre olical	in each item cannot be changed if [ ssurizing operation mode that the c ble will not be displayed. the instruction manual of the contro	ontroller is not
ii	Program Comment	A comment can be input for the pressing program. A comment can be made with 64 half-size font characters at the maximum. The display is also capable for full-size font characters. A comment can be input even when the pressurizing operation mode is set to [0: Program Invalid]. A comment cannot be input when the pressurizing operation mode is blank.			

# Information for Each Tab

# (1) Overall : Touch [Overall] tab.

🔶 ᡠ Press Pro	ogram Edit	dn Axis No. 00					
Program No.       000       Pressurizing Op. Md.       1 : Vel. Ctrl. /Pos. Stop         Program Comment       End Pos.       50.45mm							
Overall 1. Approach 2.	Overall     1. Approach     2. Search     3. Press     4. Deprs     5. Return     Jdg.       Overall     0verall						
Prg. Home 1. Approach Vait 2. Search 5. Return 3. Press Jdg. (Stop)	Prg. Home(mm)1) 0.Linked Prg. No.2) NoReturn Operation at Prg. P						
	1 Lump-sum Accel. Setting						
<b>↑PrvPrg</b> Reload	Prg. Clr. ↓1	NxtPrg Transfer Test run					

Press Program Select Screen [Overall] tab Setting List

	Name	Explanations
1)	Prg. Home (mm)	The program home position can be input.
2)	Linked Prg. No.	The pressing program number to be executed next can be input. The pressing program currently running can also be available for setting.
3)	Wait Time (s)	The standby time after finishing a pressing program can be input.
4)	Prg. Allw. Time (s)	Program execution allowable time can be input. It does not include the standby time. Input the program allowable time to make "Program Allowable Time > Pressurizing Stop Time". Monitoring of the program allowable time will not be conducted if set to "0".
5)	Return Operation at Prg. Alm.	Setting can be established for operation after a program alarm has been generated. With Setting: Returns to the program home position when a program alarm has been generated. With No Setting: Stays at the current position when a program alarm has been generated.
6)	Gain set	Gain set can be established.
7)	Acc/Dec (G)	Acceleration and deceleration of the whole pressing program can be input. If the acceleration and deceleration in the whole pressing program are the same at the time of change to acceleration and deceleration lump-sum setting, the value should be displayed. In case it is different, "*" will be displayed.



Press Program Select Screen	[Overall] tab	Button List
-----------------------------	---------------	-------------

	Botton Name	Explanations
1	Lump-sum Accel. Setting	Select if acceleration and deceleration setting should be conducted at once. If "Lump-sum Accel. Setting" button is selected, acceleration and deceleration can be input. If "Lump-sum Accel. Setting" button is not selected, acceleration and deceleration input box will not be displayed.

# (2) Approach : Touch [1. Approach] tab.

🔶 🖸 Press Program Edit	un Axis No. 00
Program No. 000 Pressurizing Op. Md. 1: Vel. Ctrl. /Pos. Stop Program Comment End Pos. 50.45mm	•
Overall     1. Approach     2. Search     3. Press     4. Deprs	5. Return Jdg.
Prg.       Time,         Home       1. Approach         Vait       5. Return         S. Press       4. Deprs         Yes       (G)         Yes       0. 20         Dec       3)         Dec       0. 20         End Pos       0. 20         Maximum Load (N)       5)         30. 00	
↑PrvPrg Reload Prg. Clr. ↓NxtPrg Tran	nsfer Test run

Press Program Select Screen	[Annroach] tab	Setting List
Fless Flogialli Select Scieeli	[Approach] tab	Setting List

	Name	Explanations	
1)	Approaching Valid / Invalid	Setting should be established whether to perform the approaching operation. Put a check mark to activate it. Remove a check mark to make it invalid, and input of velocity, acceleration, deceleration, complete position and maximum load will become unavailable.	
2)	Vel (mm/s)	Velocity of the approaching operation can be input.	
3)	Acc (G) Dec (G)	Acceleration and deceleration of the approaching operation can be input. The setting should basically be made within the range of the rated value stated in the catalog. A greater number than the rated value stated in the catalog may be able to be selected for the input range, however, it is for the case assuming "the purpose to shorten the takt time in the case that the transported weight is much lighter than the rated value". Decrease the value if a problem could be caused by vibration on transported object during acceleration and deceleration. If the acceleration and deceleration lump-sum setting is valid, input cannot be made.	
4)	End Pos (mm)	A positon to complete the approaching operation can be input. Input should be made for the complete position to make it "Approaching Complete Position < Searching Limit Position" and "Approaching Complete Position ≤ Pressurizing Complete Position".	
5)	Maximum Load (N)	The allowable value for the load in the approaching operation can be input.	



# (3) Search : Touch [2. Search] tab.

🔶 ᡠ Press Pro	ogram Edit		du Axis No. 00
	zing Op.Md. 1 : Vel.C 50.45mm	trl./Pos.Stop	•
Overall 1. Approach 2	Search 3, Pres	ss 4. Deprs	5, Return Jdg.
Prg. Home 1. Approach Wait 2. Search 5. Return 3. Press (Stop)	<pre>✓ 2. Search 1) Vel (mm/s) Acc (G) Dec (G) End Load (N) Limit Pos (mm)</pre>	2)       1.00         0.20         3)       0.20         4)       60.00         5)       50.000	
↑ PrvPrg Reload	Prg. Clr.	↓NxtPrg	Transfer Test run

Press Program Select Screen	[Search] tab	Setting List
r regram eeleet eeleen	[oouron] tub	

	Name	Explanations	
1)	Search Valid / Invalid	Setting should be established whether to perform the searching operation. Put a check mark to activate it. Remove a check mark to make it invalid, and input of velocity, acceleration, deceleration, complete position and maximum load will become unavailable.	
2)	Vel (mm/s)	Velocity of the searching operation can be input.	
3)	Acc (G) Dec (G)	Acceleration and deceleration of the searching operation can be input. The setting should basically be made within the range of the rated value stated in the catalog. A greater number than the rated value stated in the catalog may be able to be selected for the input range, however, it is for the case assuming "the purpose to shorten the takt time in the case that the transported weight is much lighter than the rated value". Decrease the value if a problem could be caused by vibration on transported object during acceleration and deceleration. If the acceleration and deceleration lump-sum setting is valid, input cannot be made.	
4)	End Load (N)	A load to complete the approaching operation can be input.	
5)	Limit Pos (mm)	A limit positon for the searching operation can be input. Input should be made for the limit position to make it "Approaching Complete Position < Searching Limit Position" and "Searching Limit Position ≤ Pressurizing Complete Position".	

# (4) Press : Touch [3. Press] tab.

🔶 ᡠ Press Pro	gram Edit		db	Axis No. 00
Program No. 000 Pressuriz	ing Op.Md. 1:Vel.C	trl./Pos.Sto	op	
Program Comment End Pos.	50.45mm			
Overall     1. Approach     2. Search     3. Press     4. Deprs     5. Return     Jdg.       3. Press				
Prg.	Vel (mm/s)	<b>1)</b> 10.00	Stop Time (s)	<b>5)</b> 1.0
Home 1. Approach Wait	Acc (G)	0, 20	Op.Allw.Time(s)	<b>6)</b> 0.0
2. Search 5. Return	Dec (G)	<b>2)</b> 0. 20	Vel. Sw. Load(N)	7) 550.00
3. Press 4. Deprs Pos. (Stop)	Maximum Load (N)	<b>3)</b> 600. 00	Vel.Sw.Pos.(mm)	<b>8)</b> 50. 300
	End Pos (mm)	<b>4)</b> 50. 450	Sw. Vel. (mm/s)	<b>9)</b> 1.00
↑PrvPrg Reload Prg. Clr. ↓NxtPrg Transfer Test run				

Press Program Select Screen	[Press] tah	Setting List
FIESS FIUGIAIII SEIEUL SUIEEII	[FIESS] lab	

	Name	Explanations	
1)	Vel (mm/s)	Velocity of the pressurizing operation can be input.	
2)	Acc (G) Dec (G)	Acceleration and deceleration of the pressurizing operation can be input. The setting should basically be made within the range of the rated value stated in the catalog. A greater number than the rated value stated in the catalog may be able to be selected for the input range, however, it is for the case assuming "the purpose to shorten the takt time in the case that the transported weight is much lighter than the rated value". Decrease the value if a problem could be caused by vibration on transported object during acceleration and deceleration. If the acceleration and deceleration lump-sum setting is valid, input cannot be made.	
3)	Maximum Load (N)	<ul> <li>Allowable value of the load in the pressurizing operation can be input.</li> <li>* It should be displayed when "1: Velocity Control / Position Stop", "2: Velocity Control / Distance Stop", "5: Force Control / Position Stop" or "6: Force Control / Distance Stop" in the pressurizing operation mode is selected.</li> </ul>	
	End Load (N)	<ul> <li>The load to finish the pressurizing operation can be input.</li> <li>* It should be displayed when "3: Velocity Control / Load Stop" in the pressurizing operation mode is selected.</li> </ul>	
	Target Load (N)	<ul> <li>The load to target the pressurizing operation can be input.</li> <li>* It should be displayed when "7: Force Control / Load Stop" and "9: Force Control / Position Stop 2" in the pressurizing operation mode is selected.</li> </ul>	
	Complete Incremental Load (N)	Incremental value from the start of pressurizing operation to the load can be input. * It should be displayed when "4: Velocity Control / Incremental Load Stop" in the pressurizing operation mode is selected.	



	Name	Explanations
	Target Incremental Load (N)	The load to be targeted in pressurizing operation can be input in incremental value from the pressurizing operation start. * It should be displayed when "8: Force Control / Incremental Load Stop" in the pressurizing operation mode is selected.
	End Pos (mm)	The position to finish the pressurizing operation can be input. Input should be made for the complete position to make it "Approaching Complete Position ≤ Pressurizing Complete Position" and "Searching Limit Position ≤ Pressurizing Complete Position".
4)	Complete Distance (mm)	<ul> <li>The position to finish the pressurizing operation can be input in distance from the pressurizing operation start.</li> <li>* It should be displayed when "2: Velocity Control / Distance Stop" or "6: Force Control / Distance Stop" in the pressurizing operation mode is selected.</li> </ul>
	Limit Pos (mm)	<ul> <li>The limit position to finish the pressurizing operation can be input.</li> <li>"Approaching Complete Position ≤ Pressurizing Complete Position" and "Searching Limit Position ≤ Pressurizing Complete Position".</li> <li>* It should be displayed when "3: Velocity Control / Load Stop" or "7: Force Control / Load Stop" in the pressurizing operation mode is selected.</li> </ul>
5)	Stop Time (s)	The stop time after the pressurizing operation can be input.
6)	Op. Allw. Time (s)	The allowable time for the pressurizing operation can be input.
7)	Vel. Sw. Load (N)	<ul> <li>Load to switch the speed during the pressurizing operation can be input.</li> <li>Load to switch over during the pressurizing operation can be input.</li> <li>* It should be displayed when "1: Velocity Control / Position Stop", "2: Velocity Control / Distance Stop", "3: Velocity Control / Load Stop", "5: Force Control / Position Stop", "6: Force Control / Distance Stop", "6: Force Control / Distance Stop", "7: Force Control / Load Stop" or "9: Force Control / Position Stop 2" in the pressurizing operation mode is selected.</li> </ul>
	Velocity Switchover Incremental Load (N)	<ul> <li>Incremental to switch the speed during the pressurizing operation can be input.</li> <li>* It should be displayed when "4: Velocity Control / Incremental Load Stop" or "8: Force Control / Incremental Load Stop" in the pressurizing operation mode is selected.</li> </ul>
8)	Vel. Sw. Pos. (mm)	<ul> <li>Position to switch the speed during the pressurizing operation can be input.</li> <li>* It should be displayed when "1: Velocity Control / Position Stop", "3: Velocity Control / Load Stop", "4: Velocity Control / Incremental Load Stop", "5: Force Control / Position Stop", "7: Force Control / Load Stop", "8: Force Control / Incremental Load Stop" or "9: Force Control / Position Stop 2" in the pressurizing operation mode is selected.</li> </ul>
	Velocity Switchover Distance (mm)	Distance to switch the speed during the pressurizing operation can be input. * It should be displayed when "2: Velocity Control / Distance Stop" or "6: Force Control / Distance Stop" in the pressurizing operation mode is selected.
9)	Sw. Vel. (mm/s)	Velocity to switch over during the pressurizing operation can be input.

# (5) Deprs : Touch [4. Deprs] tab.

← ☎ Press Program Edit	du Axis No. 00			
Program No. 000 Pressurizing Op. Md. 1: Vel. Ctrl. /Pos. Stop				
Program Comment End Pos. 50.45mm				
Overall 1. Approach 2. Search 3. Press 4. Deprs	Overall 1. Approach 2. Search 3. Press 4. Deprs 5. Return Jdg.			
Time. ▼ 4. Deprs 1)				
Vel (mm/s) 2) 10.00				
1. Approach 2. Search 5. Return				
Jdg. Jdg.				
Pos. 4. Deprs (Stop) End Load (N) 4) 30.00				
	]			
↑PrvPrg Reload Prg. Clr. ↓NxtPrg Tra	nsfer Test run			

Droop Drogrom Solast Saraan	[Donrol toh	Cotting List
Press Program Select Screen	ideoisi iao	Setting List
	[	

	Togram Select Screen		
	Name	Explanations	
1)	Deprs Valid / Invalid	Setting should be established whether to perform the deceleration operation. Put a check mark to activate it. Remove a check mark to make it invalid, and input of velocity, acceleration, deceleration, complete position and maximum load will become unavailable.	
2)	Vel (mm/s)	Velocity of the deceleration operation can be input.	
3)	Acc (G) Dec (G)	Acceleration and deceleration of the deceleration operation can be input. The setting should basically be made within the range of the rated value stated in the catalog. A greater number than the rated value stated in the catalog may be able to be selected for the input range, however, it is for the case assuming "the purpose to shorten the takt time in the case that the transported weight is much lighter than the rated value". Decrease the value if a problem could be caused by vibration on transported object during acceleration and deceleration. If the acceleration and deceleration lump-sum setting is valid, input cannot be made.	
4)	End Load (N)	A load to complete the deceleration operation can be input.	



# (6) Return : Touch [5. Return] tab.

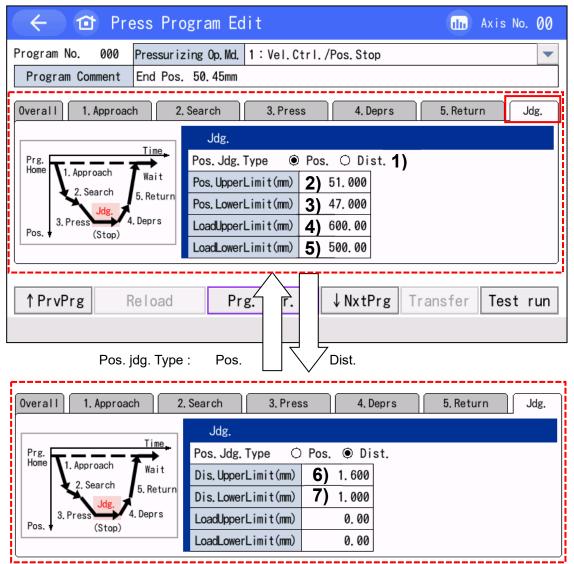
🔶 ᡠ Press Pr	ogram Edit	un Axis No. 00			
	Overall 1. Approach 2. Search 3. Press 4. Deprs 5. Return Jdg. ☑ 5. Return 1)				
Prg. Home 1. Approach 2. Search Jdg.	Vel (mm/s)         2)         75.00           Acc (G)         0.20           Dec (G)         0.20				
3. Press 4. Deprs Pos. (Stop)					
↑ PrvPrg Reload	Prg. Clr. ↓NxtPrg	Transfer <b>Test run</b>			

#### Press Program Select Screen [Return] tab Setting List

	Togram Geleet Geleen		
	Name	Explanations	
1)	Return Valid / Invalid	Setting should be established whether to perform the return operation. Put a check mark to activate it. Remove a check mark to make it invalid, and input of velocity, acceleration, deceleration, complete position and maximum load will become unavailable.	
2)	Vel (mm/s)	Velocity of the return operation can be input.	
3)	Acc (G) Dec (G)	Acceleration and deceleration of the return operation can be input. The setting should basically be made within the range of the rated value stated in the catalog. A greater number than the rated value stated in the catalog may be able to be selected for the input range, however, it is for the case assuming "the purpose to shorten the takt time in the case that the transported weight is much lighter than the rated value". Decrease the value if a problem could be caused by vibration on transported object during acceleration and deceleration. If the acceleration and deceleration lump-sum setting is valid, input cannot be made.	



(7) Jdg. : Touch [Jdg.] tab.





Press Program Select Screen [Jdg.]	j tab Setting L	_ist
------------------------------------	-----------------	------

	Name	Explanations
1)	Pos. Jdg. Type	Position judgment method can be set. Select "Position" to make the judgment made with position, and "Distance" with distance.
2)	Pos. UpperLimit (mm)	The upper limit for the position judgement can be input. Set the upper and lower positions to the same value and the position judgement becomes invalid.
3)	Pos. LowerLimit (mm)	The lower limit for the position judgement can be input. Set the upper and lower positions to the same value and the position judgement becomes invalid.
4)	LoadUpperLimit (N)	The upper limit for the load judgement can be input. Set the upper and lower loads to the same value and the load judgement becomes invalid.
5)	LoadLowerLimit (N)	The lower limit for the load judgement can be input. Set the upper and lower loads to the same value and the load judgement becomes invalid.
6)	Dis. UpperLimit (mm)	The upper limit for the distance judgement can be input. Set the upper and lower distance s to the same value and the distance judgement becomes invalid.
7)	Dis. LowerLimit (mm)	The lower limit for the distance judgement can be input. Set the upper and lower distance s to the same value and the distance judgement becomes invalid.

# **ROBO** CYLINDER

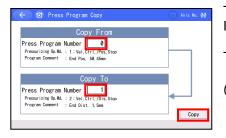
# 3.26.2.3 Press Program Copy

Copy of a saved pressing program can be made.

000	1 : Vel. Ctrl. /Pos. Stop	End Pos, 50, 45mm
001	2:Vel.Ctrl./Dis.Stop	End Dist. 1.5mm
002	0:Program Invalid	End Pos. 50.5mm
003	3 : Vel.Ctrl./Ld.Stop	Caulking 550N
004	3 : Vel. Ctrl. /Ld. Stop	Approach - First Press 100N
005	3 : Vel. Ctrl. /Ld. Stop	Second Press 150N
006	7:Frc. Ctrl./Ld. Stop	Third Press 500N - Return 10.00m
007	1 : Vel. Ctrl. /Pos. Stop	Only Approach 75mm/s
†Pr pg	No. sel. All Window by Touching Pre	clear ↓Nx pg Copy

Check the program number to make a copy from and the domain number to make a copy to in the pressing program select window.

Touch [Copy].



The press program copy screen appears. Input the number to copy from and the number to copy to.

Touch [Copy].

(Note) [Copy] cannot be touched unless both of the number to copy from and the number to copy to are input.

Cent Conf		Axis No. 00
Settings are already establish in the press programs at the destination Do you want to overwrite them?	for	сору.
Press Program Copy : No. 0 📫 No		1
Yes No		

A confirmation window for overwriting will show up if a pressing program is saved in the number to make a copy to.

Touch [Yes] when overwriting.

Touch [No] to cancel overwriting.

(The screen will go back to the pressing program copy window in this case.)

💼 Axis No. ≬	(1) Complete
e completed to be copied.	The press programs
No. 0 📥 No. 1 OK	Press Program C
UK	L

Copy Complete window will be displayed once the copy is complete.

Touch [OK].

Return to the press program edit scrren.



#### 3.26.2.4 Erasing Pressing Programs

#### (1) How to Delete All Pressing Programs at Once

No.	Pressurizing Op.Nd.	Program Comment		
000	1 : Vel, Ctrl, /Pos, Stop	End Pos. 50.45mm		
001	2:Vel.Ctrl./Dis.Stop	End Dist. 1.5mm		
002	0:Program Invalid	End Pos, 50,5mm		
003	3 : Vel. Ctrl. /Ld. Stop	Caulking 550N		
004	3 : Vel. Ctrl. /Ld. Stop	Approach - First Press 100N		
005	3 : Vel. Ctrl. /Ld. Stop	Second Press 150N		
006	7:Frc. Ctrl./Ld. Stop	Third Press 500N - Return 10.00m		
007	1 : Vel. Ctrl. /Pos. Stop	Only Approach 75mm/s		
↑Prpg No.sel. Allclear ↓Nxpg Copy				

nt to clear all the press progra Ø to 63) in the controller? Yes No

Touch [All clear] on the press program edit screen.

The press program all clear confirmation screen appears. Touch [Yes].

To cancel the clear all, touch [No].

Return to the press program edit scrren.

#### (2) How to Delete Pressing Program Individually

No	Pressurizing Op.Md.	Program Comment
000	1 : Vel, Ctrl, /Pos, Stop	End Pos. 50.45mm
001	2:Vel.Ctrl./Dis.Stop	End Dist. 1.5mm
002	0:Program Invalid	End Pos. 50.5mm
003	3 : Vel. Ctrl. /Ld. Stop	Caulking 550N
004	3 : Vel. Ctrl. /Ld. Stop	Approach - First Press 100N
005	3 : Vel. Ctrl. /Ld. Stop	Second Press 150N
006	7:Frc. Ctrl./Ld. Stop	Third Press 500N - Return 10.00m
007	1 : Vel, Ctrl, /Pos, Stop	Only Approach 75mm/s
↑Pr pg	No. sel. All	clear ↓Nx pg Copy

bach 2. Search 3.1 Jdg. 03 † PrvPrg ↓NxtPrg Transfer Test run Prg. Cir

Touch the pressing program numbers that you would like to delete in the pressing program select window.

The press program clear confirmation screen appears.

Touch [Prg. Clr.].

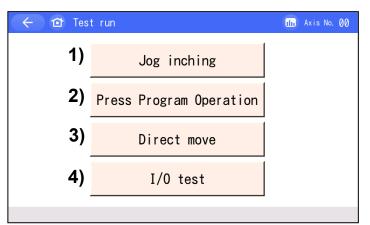
Do you want to clear the press program? (Data in the controller also gets cleared.) Yes No

The press program clear conf screen appears. Touch [Yes].

Return to the press program edit scrren.

# 3.26.3 Press Program Test Run

Touch [Test run] in Menu 1 window.



Press Program Test run Menu Screen Button List

	Botton Name	Explanations
1)	Jog inching	It shows the window for JOG / Inching. [Refer to 3.26.3.1]
2)	Press Program Operation	It shows the pressing program operation window. [Refer to 3.26.3.2]
3)	Direct move	It shows the direct numerical command movement window. [Refer to 3.26.3.4]
4)	I/O test	It shows the I/O testing window. [Refer to 3.12.4]

3.26.3.1 Jog Inching Screen

JOG / Inching operation can be conducted.

Touch the [Jog inching] button in the pressing program test run menu window.

_Axis Status			1)	Servo
0 Calibration	$\bigcirc$		2)	Homing
Cur.pos.	0.000 mm		3)	Brake rel.
Cur.vel.	0.00 mm/s 0.00 N		·	
Current load (Analog Output	7.000 mA)		4)	Alarm reset
Overload level	0 %	ſ	🖲 Jog 🛛 –	
Command Current Rate	1.50 %	_	Vel.	30.00 mm/s
Feedbk. Current Rate	1.50 %	5)		
		ſ	○ Inching	
			Dist.	0.100 mm
		6)	<ul> <li>BACK (-)</li> </ul>	FWD(+) →



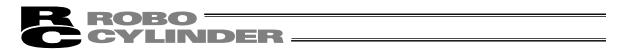
# Press Program Jog Inching Screen Button List

	Name	Explanations
1)	Servo	Touch [Servo] while the servo is off to turn the servo on for an axis and turn on the status display. If touching [Servo] while the servo is on, the servo for an axis will turn off and the status display turns off.
2)	Homing	Touch [Home-Return], and an axis performs the home-return operation and the status display turns on.
3)	Brake rel.	For an actuator equipped with a brake, touch [Brake Compulsory Release], and the screen shifts to the brake compulsory release confirmation window. Once the brake gets compulsorily released, the status display turns on. Touch [Brake Compulsory Release] again, and the brake gets locked and the status display turns off.
4)	Alarm reset	Touch [Alarm Reset] to cancel an alarm.
5)	Jog / Inching	Select JOG, and the JOG velocity becomes valid and input gets available. Select Inching, and the inching velocity becomes valid and input gets available. While JOG setting is activated, input of inching distance becomes unavailable. While inching setting is activated, input of JOG velocity becomes unavailable.
6)	FWD (+), BACK (-)	When the JOG operation is selected, an axis moves in the set velocity while it is being touched. When the inching operation is selected, an axis moves in the set distance every time it is touched. [FWD (+)] moves an axis in the positive direction. [BACK (+)] moves an axis in the negative direction. Touching it and hold it for two seconds in the inching operation, and JOG operation can be made in 1mm/s. After that the speed increases as 1mm/s $\rightarrow$ 10mm/s $\rightarrow$ 30mm/s $\rightarrow$ 50mm/s $\rightarrow$ 100mm/s in every one second.



	Botton Name	Explanations
1	Calibration	The loadcell calibration status is shown. It turns on if calibration has been completed.
2	Cur. pos.	The current position is shown.
3	Cru. vel.	The current speed is shown.
4	Current load	The current load is shown.
5	Analog Output	It shows the analog current output from the MF I/F connector on the controller in accordance with the current load.
6	Overload level	The overload level is shown.
7	Command Current Rate	The command value of electrical current is shown as a percentage of the rated current. The current value will be shown if touching the command current rate.
8	Feedbk. Current Rate	It shows the rate of the feedback current to the rated value. The current value will be shown if touching the feedback current rate.
9	Command Current Value	The command current is shown. The current rate will be shown if touching the command current value.
10	Feedbk. Current Value	The feedback current is shown. The current rate will be shown if touching the feedback current value.

# Press Program Jog Inching Screen Display List



#### 3.26.3.2 Press Program Operation Screen

A pressing program can be indicated and made executed.

Touch [Run Pressing Program] in the pressing program test run menu window. Or, touch [Test Run] in the pressing program edit window.

Prg. Home 1. Approach 2. Search Jdg.	2) Homing 🔘	i Press Program Operation Start Prg. No. 0 5) Prg 6) Search Stop7) Prg. Start 8)	
Pos. 4. Deprs Pos. 4. Deprs (Stop)	4)Alarm reset	Press Program Status Exe.Prg.No. 0 Mode Vel.Ctr	Standby
Calibration Cur.pos.	0,000 mm	Comment End Pos. 50.45mm	
Cur. vel.	0.00 mm/s	_ Jdg	
Current load	0.00 N	Pos.(Dist.) Judgment	OK
(Analog Output	7.000 mA)	Load Judgment	OK
Overload level Command Current Rate	6 % 6.01 %	Total Judgment	OK
Feedbk. Current Rate	5.84 %	9) Trial	Run w/Graph

### Press Program Operation Screen Button List

	Botton Name	Explanations
1)	Servo	Touch [Servo] while the servo is off to turn the servo on for an axis and turn on the status display. If touching [Servo] while the servo is on, the servo for an axis will turn off and the status display turns off.
2)	Homing	Touch [Home-Return], and an axis performs the home-return operation and the status display turns on.
3)	Brake rel.	For an actuator equipped with a brake, touch [Brake Compulsory Release], and the screen shifts to the brake compulsory release confirmation window. Touch [Brake Compulsory Release] again, and the brake gets locked and the status display turns off.
4)	Alarm reset	Touch [Alarm Reset] to cancel an alarm.
5)	Prg. Home	An axis moves to the program home position of the pressing program set in Start Prg No. The status display turns on once the axis movement has completed. The status display flashes during the depressurizing operation and return operation.

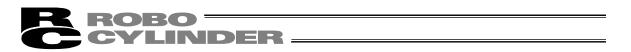
	Botton Name	Explanations
6)	Search Stop	It performs the operation in the control stage [1. Approaching] and [2. Searching] and stops an axis. Touch [Prg Start] while [Searching Stop] is selected, and an axis gets in the searching stop status, and gets in the normal execution when it is not selected. If it is executed with [1. Approaching] invalid, operation of only [2. Searching] will be conducted. If it is executed with [2. Searching] invalid, operation of only [1. Approaching] will be conducted. If it is executed with be conducted. If it is executed with both [1. Approaching] and [2. Searching] invalid, the axis operation will not be conducted.
7)	Prg. Start	The pressing program set in Start Prg No. should be executed.
8)	Prg. Stop	Touch [Stop], and the axis stops.
9)	TrialRun w/Graph	It shows the pressing program run (graph) window. [Refer to 3.26.3.3 Press Program Operation (Graph) Screen]

# Press Program Operation Screen Display List

	Botton Name	Explanations
1	Figure of Control Stage	It shows the status of the control stage being executed. The arrow and letter for the control stage that is currently being executed should be shown in red. It shows the arrow and the letters in gray after the program has been executed when operation in each control stage is inactivated.
2	Axis Status	Monitor main in common
3	Press Program Status	Data monitor in common

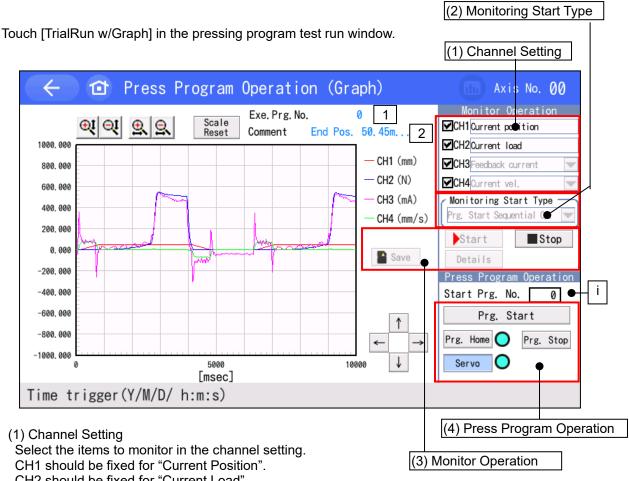
# Press Program Operation Screen Setting List

	Botton Name	Explanations
i	Start Prg. No.	The pressing program number to be executed first can be indicated. When transited from the pressing program individual edit window, the pressing program number can be carried over.



### 3.26.3.3 Press Program Operation (Graph) Screen

Pressing program and servo monitoring can be conducted at the same time.



CH2 should be fixed for "Current Load".

Select items to monitor from the list for CH3 and CH4. "Feedback Current" is set in CH3 and "Current Velocity" in CH4 in the initial display.

Check Marks on Left of Items

A waveform can be displayed in the screen for those with a check mark.

Even though a waveform is not displayed in the screen for those without a check mark, data is acquired.

Channel Setting	Monitoring List

Item Name	Unit	Item Name	Unit
Current position	mm	Command current	mA
Velocity Operation Amount	mm/s	Feedback current	mA
Velocity Actual Command Value	mm/s	Current load	Ν
Current vel.	mm/s	Deviation	Pls
		Overload Level Monitor	%

# (2) Monitoring Start Type List of Monitoring Start Method

Item Name	Explanations
Prg. Start Sequential Op.	Monitoring starts at the same time as a program starts.
Normal Monitoring	Touch [Start], and monitoring starts.
Trigger	Monitoring starts with a method indicated in the trigger setting in the detail setting window.

# (3) Monitor Operation Button List

	Botton Name	Explanations
1)	Start	Touch [Start], and monitoring starts when the monitoring start type is set to "Normal Monitoring". When the monitoring start type is "Standby for Trigger", touch [Start], and the status gets to the standby for a trigger, and [Start] starts flashing. When the monitoring start type is "Linked with Prg Start", [Start] becomes invalid.
2)	Stop	It stops monitoring and standby for a trigger.
3)	Details	It shows the window for sampling cycle settings and trigger settings.
4)	Save	Acquired data can be saved in CSV format to a SD memory card.

# (4) Press Program Operation Button List

	Botton Name	Explanations	
5)	Prg. Start	The pressing program set in Start Prg No. should be executed. When the monitoring start type is "Linked with Prg Start", touch [Prg Start], and monitoring starts at the same time.	
6)	Prg. Home	It moves an axis to the program home position set in the pressing program edit. The status display turns on once the axis movement has completed.	
7)	Prg. Stop	Touch [Stop], and an axis stops.	
8)	Servo	Touch [Servo] while the servo is off to turn the servo on for an axis and turn on the status display. If touching [Servo] while the servo is on, the servo for an axis will turn off and the status display turns off.	

# Press Program Operation Display List

	Name	Explanations
1	Exe. Prg. No.	It shows the pressing program number currently being executed.
2	Comment	It shows the comment set in the pressing program number currently being executed. It can show 15 half-size font characters and 7 full-size font characters at the maximum, and show "…" after that.

# Press Program Operation Setting List

Name		Explanations
i	Start Prg. No.	A pressing program number to start with can be set.



#### 3.26.3.4 Direct Move Screen

Indicate the target position and velocity directly to make an operation.

Touch [Direct move] in the pressing program test run menu window.

- Axis Status		1) Servo 🔘
to 10 Calibration	$\bigcirc$	2) Homing 🔾
Cur.pos. Cur.vel.	45.000 mm 0.11 mm/s	3) Brake rel.
Current load (Analog Output Overload level	0.00 N 7.000 mA) 0 %	4) Alarm reset
Command Current Rate Feedbk. Current Rate	0.66 % 0.83 %	Target Pos. i 45.000 mm
		Vel. ii 10.00 mm/s
		5) Move 6) Stop

# Press Program Direct Move Screen Button List

	Botton Name	Explanations
1)	Servo	Touch [Servo] while the servo is off to turn the servo on for an axis and turn on the status display. If touching [Servo] while the servo is on, the servo for an axis will turn off and the status display turns off.
2)	Homing	Touch [Home-Return] while home-return operation is incomplete, and an axis performs the home-return operation and the status display turns on.
3)	Brake rel.	For an actuator equipped with a brake, touch [Brake Compulsory Release], and the screen shifts to the brake compulsory release confirmation window. Touch [Brake Compulsory Release] again, and the brake gets locked and the status display turns off.
4)	Alarm reset	Touch [Alarm Reset] to cancel an alarm.
5)	Move	Touch [Move], and an axis moves to the target position in the set velocity.
6)	Stop	Touch [Stop], and the axis stops.

	Name	Explanations
1	Calibration	The loadcell calibration status is shown. It turns on if calibration has been completed.
2	Cur. pos.	The current position is shown.
3	Cur. vel.	The current speed is shown.
4	Current load	The current load is shown.
5	Analog Output	It shows the analog current output from the MF I/F connector on the controller in accordance with the current load.
6	Overload level	The overload level is shown.
7	Command Current Rate	The command value of electrical current is shown as a percentage of the rated current. The current value will be shown if touching the command current rate.
8	Feedbk. Current Rate	It shows the rate of the feedback current to the rated value. The current value will be shown if touching the feedback current rate.
9	Command Current Value	The command current is shown. The current rate will be shown if touching the command current value.
10	Feedbk. Current Value	The feedback current is shown. The current rate will be shown if touching the feedback current value.

### Press Program Direct Move Screen Status Display List

Press Program Direct Move Screen Display List

ĺ		Name	Explanations
	i	Target Pos. (mm)	The target position for an axis to be moved can be input.
	ii	Vel. (mm/s)	The velocity to move an axis can be input.



# 3.26.4 SD Memory Card

Data is transferred between the SD memory card in the teaching pendant and the controller.

#### (Note) Type of Stored Data

*This includes the position data, parameters and alarm list. It is not applicable to the backup data storable in the RC PC software.* 

#### (Note) Extensions of the Stored Data

- The file extensions of the data stored to the SD card are the same as those dealt in RC PC software, and are compatible. For instance, the position data for the PCON-C controllers is ptpc and the parameters are prpc.
- [Refer to the details of the file extensions in the RC PC Software Instruction Manual]
- The alarm list can only have the backup. It cannot be restored. Data is in a CSV file.

#### (Note) Directories of the Stored Data

The folders to store the backup data of the controller and the folder to read the data from when restoring the data to the controller are as listed below. The directories to store the files cannot be changed. The files existing in other directories other than the specified folders cannot be listed up in the file name list in the file select at the initial setting or restore. If the folder does not exist, it is automatically created.

- Press Program : \TB\_CON \PressProgram \File Name
- Parameter : \TB\_CON \Parameter\File Name
- Alarm List : \TB\_CON \Alarmlist\File Name

(Note) Files with Chinese names are not supported.

Caution: For a Secure Digital memory card, choose a SD/SDHC memory card with 1G to 32G. (Toshiba-made recommended) Also, Have FAT32 Format for the file system.

# **ROBO**CYLINDER

# 3.26.4.1 Press Program Save

( 🗧 ) 🙆 Menu1	Glossary dhi Axis No. 00
Monitor	Test run
Press program	🔺 Alarm list
Parameter edit	1 Information
SD memory card	Troubleshooting
Servo monitor	Menu2 >

Touch [SD memory card] in Menu 1 screen.

← ☎ SD memory card	Axis No. 00
Save from controller to SD memory card	
Transfer from SD memory card to controller	
Teaching update	
* In case you save or transfer for all controllers, please conduct it from the axis select window.	

SD memory card screen opens.

Touch [Save from controller to SD memory card].

(+ @	Save to SD memory card	📄 Axis No. 00
	Please select the data to save.	
	Press Program	
	Parameter	
	Alarm list	
	Save	

Select the data type for the backup such as [Press program] and touch it. (Multiple selection available) The data type been selected will be shown in light blue.

Touch [Save].

Transfer mode :	Controller	$\Rightarrow$ SD memory of	ard
Transfer data :	Pre	ess Program	
The above data will be Do you want to co			
		1	

Touch [Yes].

Touch [No], and the screen returns to the previous screen.

÷	🔶 🖆 Backup file name designation 👘 Axis No. 00								
Press File		gram							
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	E	F	G	Н	CLR
Ι	J	К	L	М	N	0	Р	Q	BS
R	S	Т	U	۷	W	Х	Y	Z	ENT
	_	]	]	SPACE			-	#	

Numeric keys are displayed. Input a file name and touch [ENT].

The file name is to be typed with 32 characters at maximum in letters and numbers.



🔶 🇃 Backup f	ile name designation	🕕 Axis No. 00
Press Program File name		
160826LINE0	1	
	Save	

Touch [Save].

(<) 🗇 File name confirmation	() Axis No. 00			
File name				
160826LINE01.prg				
File name above will be saved. Are you sure to continue?				
Yes	No			

The screen below appears if the same name is not found.

Touch [Yes].

If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.

🔄 🎯 File name confirmation	1 6	Axis No. 00
File name		
160826LINE01.prg		
A file of the same n Do you want to		ts.
Yes	No	

The screen below appears if the same name is found.

Touch [Yes] if overwriting data.

If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.

🔶 🖆 Data backup	Axis No. 80
Transferr	ing data.
Please wai	t a minute.
	50 %
Transfer mode :Controlle	r $\Rightarrow$ SD memory card
Transfer data :Press Pro	gram

Data transfer screen will be shown.



A message to tell the data transfer is complete pops up and the backup process is finished.

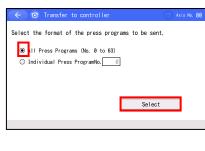
Touch [OK], and the screen returns to SD Memory Card screen.

# 3.26.4.2 Press Program Transfer

Contension     Contension <th>Touch [SD memory card] in Menu 1 screen.</th>	Touch [SD memory card] in Menu 1 screen.
SD memory card      Avis No. 00      Save from controller to SD memory card      Transfer from SD memory card to controller      Teaching update      * In case you save or transfer for all controllers.     please conduct it from the axis select window.	SD memory card screen opens. Touch [Transfer from SD memory card to controller].
Transfer to controller     Avis No. 00 Please select the data to transfer.      Press Program      Parameter      Transfer	Select [Press Program] and touch [Transfer]. (Multiple selection available)
SD memory card Axis No. 00 Transfer mode : SD memory card ⇒ Controller Transfer data : Press Program The above data will be transferred, Do you want to continue? Yes No	Touch [Yes]. If [No] is touched, the screen goes back to the data backup screen.
Craster file select     Avis No. 00 Press Program File select     160626LINE01     Transfer	Touch ▲ and ▼ to select a file to transfer to the controller from the list of the backed up file names. Touch [Transfer].
Controller     Aus No. 00 Select the format of the press programs to be sent.     All Press Programs (No. 0 to 63)     Individual Press ProgramNo.     Select	A window to select a pressing program to be transferred will show up. If transferring all the pressing programs, conduct the operation of 1), and conduct 2) if transferring individual pressing programs.



### (1) Transfer of All Press Programs



Select All Press programs.

Touch [Select].

Conf Nis No. 00 All the press programs (No. 0 to 63) will be sent. The press programs that settings are already established will be overwritten. Are you sure you want to proceed? Yes No Aris No. 00

> Transferring data. Please wait a minute

> > 50%

⇒ Controller

Transfer mode :SD memory card

Transfer data :Press Program

Touch [Yes].

Touch [No], and the screen goes back to the pressing program transfer format select window.

A window stating transferring data will be displayed.

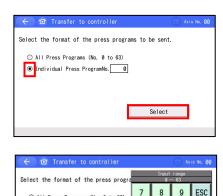
$( \in )$	仓 Conf		Axis No	00
[				
	Transfer	to controller	is completed.	
l				
		ОК		

A message telling data transfer is completed will show up. The data transfer to a controller has now been completed.

Touch [OK], and the screen goes back to the SD memory card window.



### (2) Transfer of Individual Press Programs



All Press Programs (No. 0

Individual Press ProgramN

Select Individual Press ProgramNo..



4 5 6

1 2 3

0 BS CLR ENT Touch Individual Press ProgramNo..

The numeric keys will appear. Input the input range and touch [ENT].

Touch [Select].

Touch [↑PrvPrg] and [↓NextPrg] to select a pressing program to be transferred.

Touch [Transfer].



Input a pressing program number that the data is to be transferred to.

← 🖸 Transfer to controller			(III) Ax	is No. 00
			range ~ 63	
Destination for Transfe	7	8	9	ESC
Press Program Number 8 Pressurizing 0p. Md. : Program Comment :	4	5	6	
	1	2	3	
	0	BS	CLR	ENT

The numeric keys will appear. Input a pressing program number that the data is to be transferred to and touch [ENT].

Indicate a pressing program number that the data is to be transferred to and touch [Transfer].





ings are already established rograms at the destination for sending you want to overwrite them?

No

Settings

Yes

A pressurizing operation mode and a program comment will be displayed if a pressing program has already been registered.

Select the pressing program number already registered, and this window will be shown.

Touch [Yes] if overwriting data.

Touch [No], and the screen goes back to the previous destination pressing program number select window.



A window stating transferring data will be displayed.

(<) 🕜 Conf	💼 Axis No. (	80
Transfe	er to controller is completed.	
	ОК	

A message telling data transfer is completed will show up. The data transfer to a controller has now been completed.

Touch [OK], and the screen goes back to the SD memory card window.



3.27 Drive Recorder Feature

It is a feature dedicated for SCON2 controllers.

The drive recorder feature is a feature to support root cause analysis and quick recovery by recording behaviors of an actuator when an alarm is generated. This feature should be categorized into two functions as stated below.

- Graph Display Function Saving the operation data for several tens of seconds before and after generation of an alarm and shows it in a graph. [Refer to 3.27.1]
- 2) Data Display at Alarm Generation Function Saving the data at the moment of an alarm being generated and shows it. [Refer to 3.27.2]
- \* Refer to SCON2 Controller Instruction Manual (ME0458) for detail of the drive recorder feature.

# 3.27.1 Graph Display (Drive Recorder Screen)



Display of Drive Recorder Screen

Touch [Alarm list] in the Menu 1 screen.



An alarm list of a controller should be displayed.

Touch [Graph].

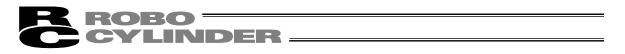
Alarn		y Alarn list Check model num. Inquiry							
Alarm	list								
íouch t	the ala	arm No, to check the alarm description and perform troublesh	ooting.						
No.	Code	Name	Graph						
0	FFF	overUP No Error							
1	0D9	oftware stroke limit exceeded							
2	FFF	lawerUP No Error							
3	0E5	incoder Receipt Error							
4 0E5 Encoder Receipt Error									
5	0E5	Encoder Receipt Error	Disp						
6	FFF	PowerUP No Error	Disp						
7	0D9	Software stroke limit exceeded	Disp						
	1 P	'r pg ↓Nx pg Standard Save CI	ear						



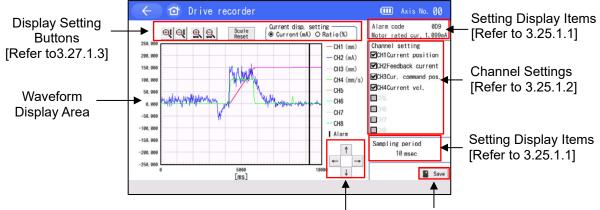
A button to show a graph should be shown on the right of each alarm.

Touch [Disp] on the right of an alarm that you would like to check.

After a window of data acquisition in process is shown, the drive recorder screen should appear.



Drive Recorder Screen



Display Setting Buttons [Refer to 3.27.1.4] Save Button [Refer to 3.27.1.5]

#### 3.27.1.1 Setting Display Items

- Alarm Code : A code number of an alarm in displayed data should be displayed.
- Motor rated current : The motor rated current value should be displayed.
- Sampling Frequency : The sampling frequency of data should be displayed.

The sampling frequency can be changed in Parameter No. 212 in SCON2 controller. (1 to 1000ms)

### 3.27.1.2 Setting Display Items

The monitoring items selected in each channel should be displayed. The monitoring items should be determined in Parameter No. 210 in SCON2 controller.

Para	amete	er No	.210	СН	Item name	Unit
0	1	2	3		item name	Unit
•	-	-	-	-	Drive recorder feature inactivated	_
×	•	•	•	1	Current position	[mm] or [pulse]
×	•	●	•	2	Feedback current	[%] or [mA]
×	•	•	×	3	Current command position	[mm] or [pulse]
×	•	•	×	4	Current velocity	[mm] or [pps]
×	×	●	×	5	Operation plan velocity	[mm] or [pps]
×	×	•	×	6	Current load	[N]
×	×	•	×	7	DC bus voltage	[V]
×	×	•	×	8	Estimated regenerative discharge electric energy	[VV]

The monitor items are shown in the table below.

\* About Check Marks I on Left of Item Names in Screen

The items with a check mark on show a wave form on the screen.

Those with no check mark should not show a wave form on the screen, but the data is acquired.

Refer to SCON2 Controller Instruction Manual (ME0458) for details.

# **ROBO** CYLINDER —

# 3.27.1.3 Display Setting Buttons

	🔍 : Touch it to enlarge the scale of the graph in vertical axis.
	et it to reduce the scale of the graph in vertical axis.
<u> </u>	🖳 : Touch it to enlarge the scale of the graph in horizontal axis.
	S : Touch it to reduce the scale of the graph in horizontal axis.
	Scale Reset : Touch it to initialize the scale of the graph.
Current disp. setting Current(mA) 〇 Rat	

# 3.27.1.4 Monitor Operation Buttons



Touch it to slide the displayed waveform frame upwards.

: Touch it to slide the displayed waveform frame downwards.

- : Touch it to slide the displayed waveform frame to the left.

→ : Touch it to slide the displayed waveform frame to the right.

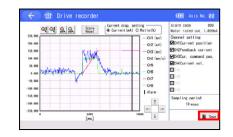
# 3.27.1.5 Data Save

[Save] : The acquired data should be saved in a Secure Digital memory card in the CSV format.

\* Refer to the next page for the process to save data.



# How to Save Drive Recorder Data



Insert a Secure Digital memory card.

Touch [Save] while monitoring is stopped.

	ile na	me desi	gnatior	ı		. 🗇 🛛	III Axis	No. 00
	RECO	RDER						
2	3	4	5	6	7	8	9	ESC
A	В	С	D	Е	F	G	Н	CLR
J	К	L	М	N	0	Р	Q	BS
S	Т	U	۷	W	Х	Y	Z	ENT
_	[	]		SPACE		-	#	
	name DRIVE 2 A J	name DRIVE RECO 2 3 A B J K	name DRIVE RECORDER 2 3 4 A B C J K L	name DRIVE RECORDER 2 3 4 5 A B C D J K L M S T U V	23456ABCDEJKLMNSTUVV	name DRIVE RECORDER 2 3 4 5 6 7 A B C D E F J K L M N 0	Aname         State         State <th< td=""><td>ABB         CC         DC         DC         <thc< th=""> <thc< th="">         C         C</thc<></thc<></td></th<>	ABB         CC         DC         DC         C <thc< th=""> <thc< th="">         C         C</thc<></thc<>

The file name indication screen opens. Input a file name and touch [ENT].

←	
DRIVE RECORDER	
	_

Touch [Save].

File na	File name confirmation me	n <u>w</u> u	E Axis No.	00
¥TB_CON¥E	)riveRecorder¥			
DRIVE	RECORDER.csv			
	Are you sure		_	
	Yes	No		

The file name confirmation screen pops up. Touch [Yes].

Save the data, and return to the servo monitor screen.

🗧 🕜 🙆 File name confirmation	(11) 🎟 🗛 Axis No. 00
File name	
¥TB_CON¥DriveRecorder¥	
DRIVE RECORDER. csv	
A file of the same name alre Do you want to overwri Yes	

In case there is a file with the same name exists, overwriting confirmation window appears. Touch [Yes] if it is allowed to overwrite the old.

Save the data, and return to the servo monitor screen.

Domain to Save Data (cannot be changed)

The domain that the servo monitor data is saved is the folder stated below in a Secure Digital memory card.

\TB\_CON\DriveRecorder\FileName.csv



# 3.27.2 Data Display Feature at Alarm Generation (Data at Occurrence)

# Display of Data at Occurrence



Touch [Alarm list] in the Menu 1 screen.

- 1 - I			pleshooti	'°		1.00	ossary		· • • •	oxis No	
Alarm		/ A	larm list	Chec	k nodel n	л,	Inquiry	r i			
larn	list										
ouch t	the ala	rm No. t	o check the	aları	n descript	ion and	perform	trou	ub l eshoo	ting.	
No,	Code		1	Narre			Address	Detai	(yy/m/)	ľinne ⊨d hh∋nn s	:55)
9	FFF	PowerUP N	lo Error				\$888	****	23/10/1	2 18:4	8:37
1	0D9	Software	stroke limit ex	ceeded			8888	0601	23/10/1	2 13:1	9:02
2	FFF	PowerUP No Error					\$888	8844	23/10/1	2 13:14	4:28
3	0E5	Encoder Receipt Error					6883	0661	23/10/1	2 08:5	7:32
4	0E5	Enceder R	eccipt Error				6883	0001	23/10/1	2 08:5	5:27
5	0E5	Enceder R	eceipt Error				\$888	0001	23/10/1	2 08:5	3:27
6	FFF	PowerUP N	lo Error				8888	****	23/10/1	2 08:5	3:25
7	0D9	Software	stroke limit ex	ceeded			8888	0001	23/10/1	1 18:5	1:17
	1 P	r pg	↓Nx pg		Graph	9	ave		Cle	ər	

An alarm list of a controller should be displayed.

Touch [No.] on an alarm that you would like to check.

$\leftarrow$	î Troub	leshooting		Glossary	) 📖 💷 Axis No. 00
Alarm dis	splay AL	arm list Ch	neck model num	. Inquir	y Occ. Info.
Alarn des	cript.				
Alar	rm code	0D9	ŀ	larm level	Cancel by reset (Operation release)
Name	Software	stroke limi	t exceeded		
Descr.	Moving pa	rt is outsid	de the soft	limit rang	ge.
	After ala or by han	rm reset, m d to return	ove the mov to within	ing part by the soft li	y JOG operation imit range.
Detai	I code: 0001	Adrs: ***	* Time(	yy/mm/dd hh:r	mm:ss) 23/10/12 22:58:18
	How to de	eal			

The alarm display screen should be displayed.

Touch the tab of the data at occurrence.

larm display			Occ. Info.
sourcence information			
Current command position(mm)	152, 662	Current load(N)	0,00
Current position(mm)	152, 662	Overload level(%)	6
Dperation plan speed(mm/s)	0,00	DC Bus Voltage(V)	278.0
Current vel. (mm/s)	0,00	Est regenerated discharge(W)	5
Feedback Current(%)	-0.7	PC8 temperature("C)	39

The window for data at occurrence should be displayed and the data when an alarm was generated can be checked.



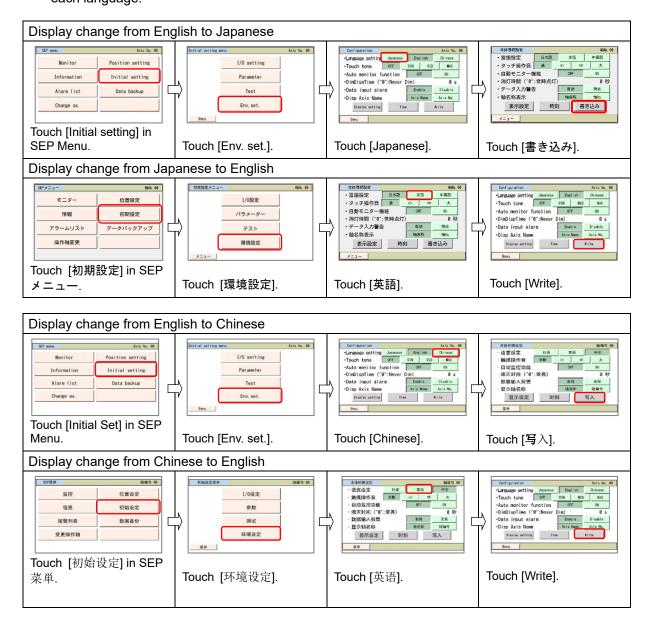


# 4. Operation of SEP Related Controllers

SEP related controllers: ASEP, PSEP, DSEP, MSEP

# 4.1 Transition of Operating States

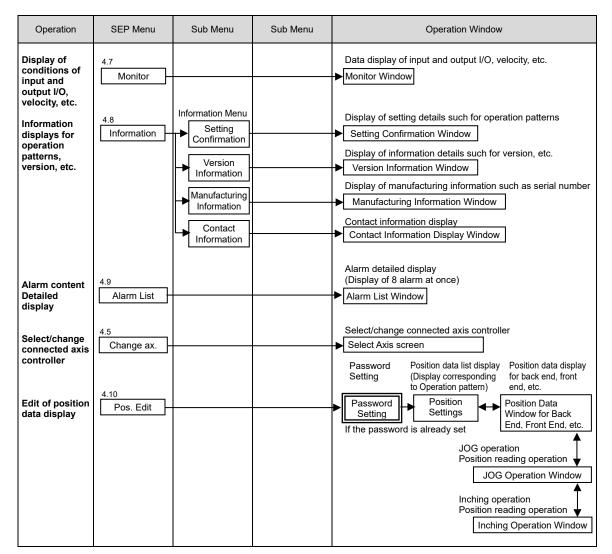
The language can be changed by following the steps below. For the operations after the language change, please refer to the instruction manual written in each language.



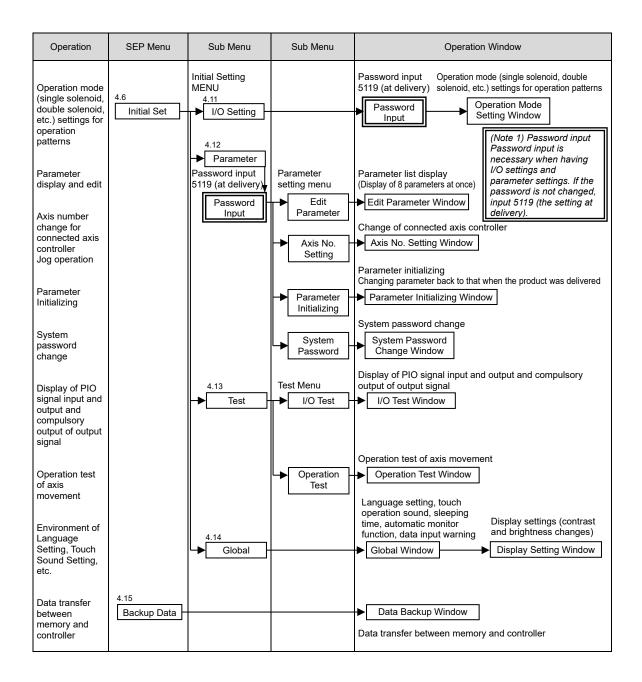


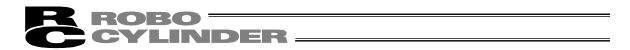
# 4.2 Operating Menu

Transition of operating states when the TB-03 is connected to a SEP related controller is shown.



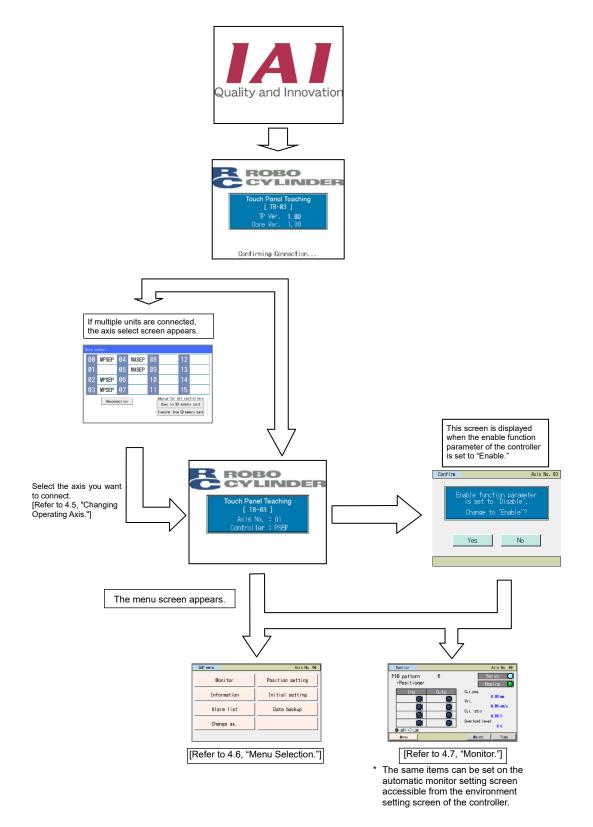






# 4.3 Initial Screen

When the power is turned on, the IAI logo is displayed and then the version information is displayed.

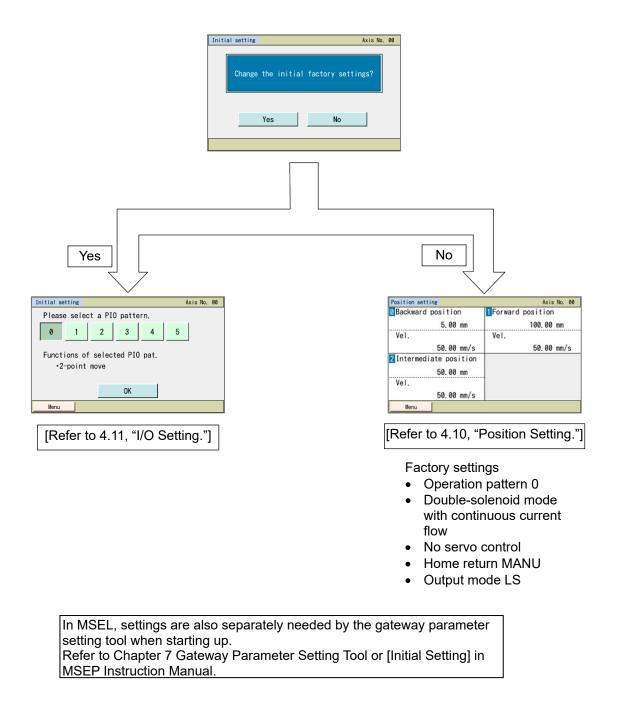




# 4.4 Initial Setting

When the power is turned on for the first time after the delivery of the controller, the initial setting screen will appear.

- Select [Yes], and the display will change to the I/O setting screen where you can set the
  operation pattern (PIO pattern). Select a desired operation pattern and, depending on the
  selected operation pattern, also set the single-solenoid, double-solenoid or other
  operation mode.
- Select [No], and the factory set operation pattern, or specifically operation pattern 0 of double-solenoid mode, will remain effective.





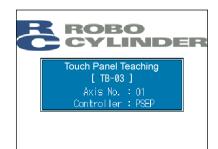
# 4.5 Changing Operating Axis

If multiple controllers are connected to the communication line, the axis selection screen appears.

This screen also appears when [Change ax.] is touched on the menu screen. If only one controller is connected, you need not select an axis.

00	MPSEP	04	MASEP	08		12	
01		05	MASEP	09		13	
02	MPSEP	06		10		14	
03	MPSEP	07		11		15	
	Reconn	ection		[	Backup for a Save to SD Transfer from	memor	y card

Select and touch the axis you want to connect this teaching pendant to.



Connection with the selected controller axis starts.

Position setting
Initial setting
Data backup

When connection with the controller is established, the SEP menu screen appears.



# 4.6 Menu Selection

# SEP menu Axis No. 00 Nonitor Position setting Information Initial setting Alarm list Data backup Change ax. Initial setting

The SEP menu has seven items. Select and touch one of them. The screen changes to the one corresponding to the menu item you have touched.

Menu list

٠	Monitor	Display the controller status. [Refer to 4.7, "Monitor."]
•	Information	Display the operation pattern, version and other information. [Refer to 4.8, "Information."]
٠	Alarm list	Display alarm details. [Refer to 4.9, "Alarm List."]
•	Change ax.	Select an axis to operate the teaching pendant to. [Refer to 4.5, "Changing Operating Axis."]
•	Position setting	Set the position, push power, push band, etc. Move by jogging. [Refer to 4.10, "Position Setting."]
•	Data backup	Transfer data between the teaching pendant and controller. [Refer to 4.15, "Data Backup."]

• Initial setting

Touch [Initial Setting], and the screen goes to the initial setting menu screen which is the next selection screen.

Initial setting me	nu		Axis	No.	00
	I/O setting				
	Parameter				
	Test				
	Env. set.				
Menu		-			

There are four types of menu in the initial setting menu screen. Select one of them and touch it. The screen goes to the touched menu.

Touch Menu to return to the previous SEP menu screen.

Initial setting menu list

initial setting menu list	
I/O setting	Select an operation pattern (PIO pattern 0 to 5), set an operation mode (single solenoid, double solenoid), etc. [Refer to 4.11, "I/O Setting."]
Parameter	Set parameters such as the default positioning band. [Refer to 4.12, "Parameters."
• Test	Perform I/O tests and operation tests for axis movement. [Refer to 4.13, "Test."]
• Env. set.	Set the environment such as touch tone. [Refer to 4.14, "Environment Setting."]

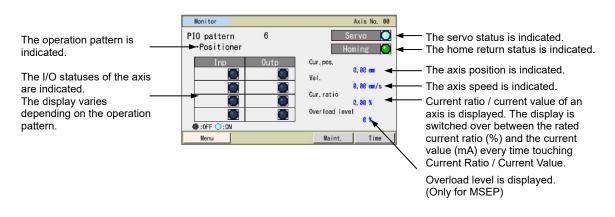


# 4.7 Monitor

The current position, speed, electrical current and system I/O statuses of the controller are displayed.

Position setting
Initial setting
Data backup

Touch [Monitor] on the SEP menu screen.



Touch [Menu] to return to the SEP menu screen.

#### For the MSEP controller:

Touch [Maint.] to change to the maintenance information screen. Displayed items are the same as CON-related controllers. (FAN Total Driving is not displayed.) Set a target value for the total number of movements by the parameter No. 26 and a target value for the total driving time by the parameter No. 27. [Refer to 3.9.2, "Maintenance information screen."] When replacing the actuator, the operating method is the same as CON-related controllers. [Refer to 3.9.2.1, "Operating method when replacing the actuator."]

Touch [Time] to change to the time editing screen. The time setting method is the same as CON-related controllers. [Refer to 3.9.3, "Controller time setting screen."]



PIO pattern			Displayed it	tem	
Operation mode		IN3 (input)/OUT3 (output)	IN2 (input)/OUT2 (output)	IN1 (input)/OUT1 (output)	IN0 (input)/OUT0 (output)
Standard movement	Input	-/ SON (servo ON signal) *1	-/ RES (reset signal)	-/ *STP (pause signal)	ST0 (move signal)
between 2 points: 0 Single solenoid	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	HEND (home return complete signal)/ SV (servo ON output signal) *3	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2
Standard movement between 2	Input	-/ SON (servo ON signal) *1	۔/ RES (reset signal)	ST1 (forward end movement signal) (-)	ST0 (backward end movement signal)
points: 0 Double solenoid	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	HEND (home return complete signal)/ SV (servo ON output signal) *3	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2
Change travel speed: 1	Input	-/ SON (servo ON signal) *1	SPDC (travel speed switching signal) RES (reset signal)	-/ *STP (pause signal)	ST0 (backward end movement signal)
Single solenoid	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	HEND (home return complete signal)/ SV (servo ON output signal) *3	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2
Change travel speed: 1	Input	/ SON (servo ON signal) *1	SPDC (travel speed switching signal) RES (reset signal)	ST1 (forward end movement signal) (-)	ST0 (backward end movement signal)
Double solenoid	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	HEND (home return complete signal)/ SV (servo ON output signal) *3	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2
Position data change: 2	Input	-/ SON (servo ON signal) *1	CN1 (target position switching signal) RES (reset signal)	-/ *STP (pause signal)	ST0 (backward end movement signal)
Single solenoid	Output	SON (servo ON signal) *1     signal) RES (reset signal)     *STP (pause signal)       *ALM (alarm output signal)/ / (servo ON output signal) *3     HEND (home return complete signal)/ SV (servo ON output signal) *3     LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2		
Position data change: 2	Input	-/ SON (servo ON signal) *1	CN1 (target position switching signal) RES (reset signal)	ST1 (forward end movement signal) (-)	ST0 (backward end movement signal)
Double solenoid	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	HEND (home return complete signal)/ SV (servo ON output signal) *3	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2
Movement by 2	Input	-/ SON (servo ON signal) *1	-/ RES (reset signal)	۔/ ST1 (forward end movement signal)	ST0 (movement signal 1)
inputs among 3 points: 3	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	LS2 (intermediate position detection signal)/ PE2 (intermediate positioning complete signal)*2	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2
Movement by 3 inputs among 3	Input	-/ SON (servo ON signal) *1	ST2 (position movement 2) RES (reset signal)	ST1 (forward end movement signal) (-)	ST0 (backward end movement signal)
points: 4 Double solenoid	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	LS2 (intermediate position detection signal)/ PE2 (intermediate positioning complete signal)*2	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2
	Input	/ SON (servo ON signal) *1	-/ RES (reset signal)	-/ *STP (pause signal)	ASTR (continuous back-and- forth operation signal)
Continuous back-and-forth operation: 5	Output	*ALM (alarm output signal)/ SV (servo ON output signal) *3	HEND (home return complete signal)/ SV (servo ON output signal) *3	LS1 (forward end position detection signal)/ PE1 (forward end positioning complete signal)*2	LS0 (backward end position detection signal)/ PE0 (backward positioning complete signal)*2

### I/O display on monitor screen

The signal name in parentheses indicates the signal state before home return.

- \*1
- If the default I/O setting for servo control is set to "Control", the SON signal applies. If the default I/O setting for output signal type is set to "Limit Switch", LS is applied. If it is set to "Position End", \*2 PE is applied.
- When " $\dot{SV}$ " is selected by the default I/O setting for output selection. In this case, the SV signal applies. \*3 Either OUT2 or OUT3 can be set depending on the operation parameter and operation mode.



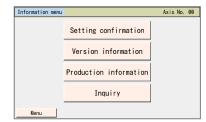
# 4.8 Information

The operation pattern, version and other information is displayed.

Axis No. 00
Position setting
Initial setting
Data backup

Touch [Information] on the SEP menu screen.

#### The information selection screen appears.



Touch the screen you want to display.

Touch [Menu] to return to the SEP menu screen.

### [Current Setup]

You can confirm the operation pattern, operation mode and other information currently set.

PIO pattern	2 (Position data change)		
Solenoid method	Double solenoid		
Input signal meth.	Cont. energ. type		
Servo control	Yes		
Homing operation	MANU		
Output signal type	Limit switch		
OUT2	HEND		
	*ALM		

#### [Version]

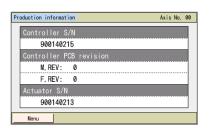
You can check the version information, etc.

Series / Type		PSEP-NP	
Controller versi	on	AE200003	
		AE840000	
TP version		Ver, 2,81	
TP core version		Ver, 1,00	
ABS board version		00000005	



## [Product]

You can check the serial number and other manufacturing information.



# [Inquiry]

You can check how to contact IAI.





# 4.9 Alarm List

A list of alarms that may generate after the controller power is turned on is shown. [For alarm details, refer to 9. "Error Display."]

SEP menu	Axis No. 00
Monitor	Position setting
Information	Initial setting
Alarm list	Data backup
Change ax.	

Touch [Alarm list] on the SEP menu screen.

The controller's alarm list appears.

# Controller without the calendar function

No			Address		Time of occurrence
00	FFF	PowerUP No Error	****	****	:
01	0E8	A.B disconnect	****	****	0:00:01
02	FFF	PowerUP No Error	****	****	:
03	000		****	****	::
04	000	122 - 22 - 22	****	****	::
05	000		****	****	:
06	000		****	****	:
07	000		****	****	:
		↓			Clear

Touching  $[\downarrow]$  displays the list of the next screen.

_				_	
No	Code	Message	Address	Detail	Time of occurrence
08	000		****	****	:
09	000		****	****	:
10	000		****	****	:
11	000		****	****	:
12	000		****	****	:
13	000		****	****	::
14	000		****	****	:
15	000		****	****	:
		↑			Clear

Touching  $[\uparrow]$  displays the list of the previous screen.

Touching [Clear] clears all alarm details.

(Note) PowerUP No Error indicates that the controller power was turned on.
 It does not indicate an error.
 The time of occurrence of each alarm is indicated by an elapsed time from this PowerUP No Error.



## Controller with the calendar function

Cont	roller	Alarm List	Axis No. 0	0
No	Alarm Code	Address Detail Code		-
00	FFF	<u>****</u> ****	<u>11/08/03_18:32:13</u> PowerUP No Error	-
01	0E8	<u>****</u> ****	<u>11/08/03_17:21:22</u> A,B disconnect	-
02	FFF	<u>****</u> ****	11/08/03_17:15:12 PowerUP No Error	-
03	0E8	<u>****</u> ****	11/08/03_17:14:17 A,B disconnect	-
	Ŷ		↓ Clear	
M	enu			

Touching [^] displays the list of the previous screen. Touching [ $\downarrow$ ] displays the list of the next screen.

Touching [Clear] clears all alarm details.

(Note) PowerUP No Error indicates that the controller power was turned on. The occurrence time corresponds to the time each alarm occurred.



# 4.10 Position Setting (Setting of Position-related Data, Jog/Inching Operation)

Position-related data, such as position, push power and push band, are set. You can move the axis by jogging or inching.

SEP menu Axis No. (		
Monitor	Position setting	
Information	Initial setting	
Alarm list	Data backup	
Change ax.		

Touch [Position setting] on the SEP menu screen.

If the position data edit password is not "0000," the password entry screen appears.

Position setting Axis No. 00 Please enter password.								
0000								
1		2			E		FEC	L
1		2	3	4	5	CLR	ESC	

Enter a password and touch [ENT].

You can set a position data edit password from "Position edit password" on the parameter edit screen.

If the correct password has been entered, the display changes to the screen showing a position setting list.

The display varies depending on the operation pattern.

Position setting	Axis No. 00
Backward position	Forward position
5.00 mm	100.00 mm
Vel.	Vel.
50.00 mm/s	50.00 mm/s
Intermediate position	
50.00 mm	
Vel.	1
50.00 mm/s	
Menu	

Touch the position you want to set. Touch [Menu] to return to the SEP menu screen. The screen shown to the left is an example of operation pattern 3. The settings of various positions are shown.

Number of positions set	
-------------------------	--

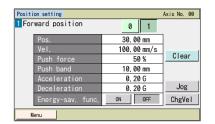
Operation pattern	Move	Number of positions set
Standard movement between 2 points: 0	Movement between two points	2
Change travel speed: 1	Movement between two points	2
Change position: 2	Movement between two points	4
Movement by 2 inputs among 3 points: 3	Movement among three points	3
Movement by 3 inputs among 3 points: 4	Movement among three points	3
Continuous back-and-forth operation: 5	Movement between two points	2
Positioner Mode: 6*1	-	256

\*1 It is available to set only for Fieldbus Type of MSEP Controllers.



Touching a desired position displays the screen for setting the target position/speed for the position you have touched.

Set the position, speed, push power, push band, acceleration and deceleration.

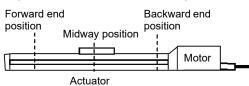


Touch [Menu] to return to the SEP menu screen.

You can perform jog operation on this setting screen.

#### [1] Position data

Set position data with which to operate the actuator.



Position data

F	Position	[1]	[2]	[3]	[4]	[5]	[6]	[7]
	Data	Pos. [mm]	Vel. [mm/s]	Acceleration [G]	Deceleration [G]	Push force [%]	Push band [mm]	Energy- sav. func.
[1]	Forward Position	200.00	50.00	0.1	0.1	70	1.00	Valid
[2]	Backward Position	0.00	50.00	0.1	0.1	0	0	Valid
[3]	Midway Position	100.00	50.00	0.1	0.1	0	0	Valid

[1] Pos. [mm]

 $\cdots$  Set the position to move the actuator to.

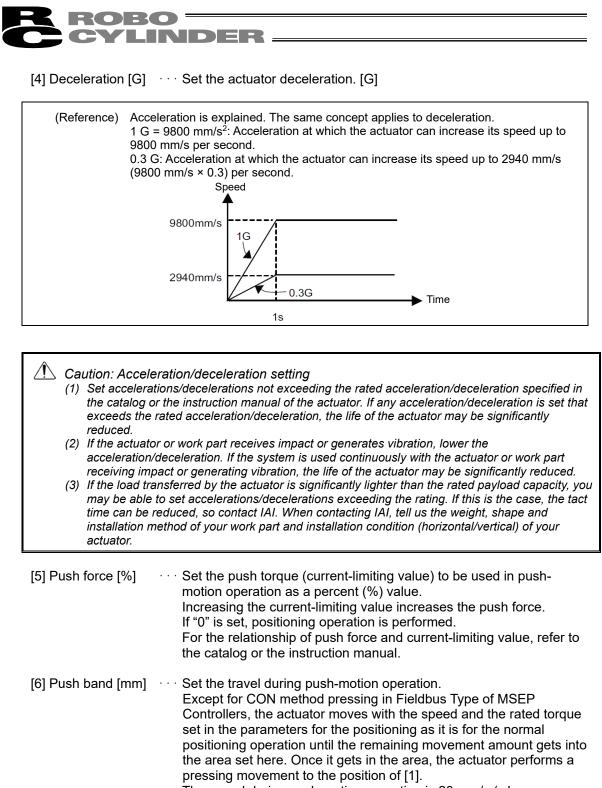
The positions must satisfy the following relationships: Backward position < Intermediate position < Forward position

	· · · · ·		Setting position	n
Operation pattern	Move	Forward Position	Backward Position	Intermediate Position
Standard movement between 2 points: 0	Movement between two points	0	0	
Change travel speed: 1	Movement between two points	0	0	
Position data change: 2	Movement between two points	0	0	
Movement by 2 inputs among 3 points: 3	Movement among three points	0	0	0
Movement by 3 inputs among 3 points: 4	Movement among three points	0	0	0
Continuous back-and-forth operation: 5	Movement between two points	0	0	

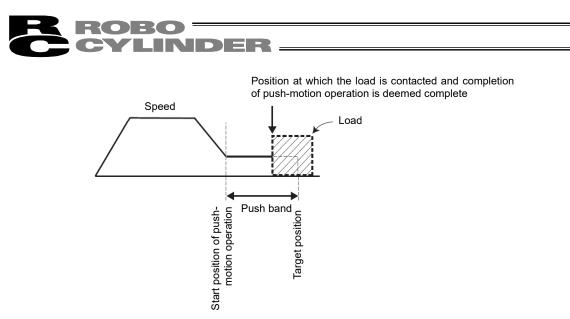
[2] Vel. [mm/s] . Set the actuator speed.

[3] Acceleration [G] Set the actuator acceleration.

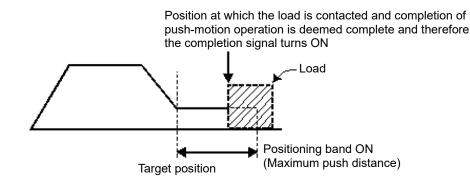
The input range permits entry of values greater than what is specified in the catalog. Refer to the catalog or instruction manual of your actuator.



The speed during push motion operation is 20 mm/s (when parameter number 7 is set as default). Do not specify the setting exceeding 20 mm/s. When the setting in [2] is less than the pushmotion speed, push-motion will be performed at the speed of the setting value.



If CON method pressing in Fieldbus Type of MSEP Controllers is selected, the maximum pressing amount in the pressing operation from the target position is defined in Position Mode. While considering the mechanical inconsistency of the work piece, set the positioning band so the positioning would not end before the work piece gets pressed towards the target.



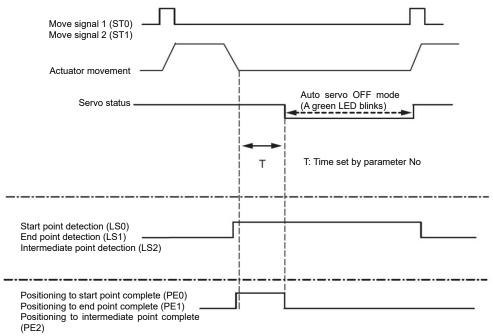
[7] Energy-sav. func. · · · When Ecology is enabled, you can have the motor power (servo) turned off automatically upon elapse of a specified period to save power after completion of positioning. Set the applicable period beforehand using a parameter.

Parameter No.	Parameter name	Initial value	Setting range
10	Auto servo OFF delay time [sec]	1	0 ~ 9999



## [Auto servo OFF]

The servo will turn off automatically upon elapse of a specified period after completion of positioning. When the next positioning command is issued, the servo turns on automatically and positioning is performed. Since no holding current flows while the motor is at standstill, power consumption can be reduced.



[Statuses of position detection output signals when the push function is not used] Even when the servo is turned off, as long as the actuator is positioned within the positioning band (parameter No. 1) the start point detection signal (LS0), end point detection signal (LS1) or intermediate point detection signal (LS2) will turn ON according to the applicable position, just like when a sensor is used. Accordingly, the position detection signal that has turned ON will remain ON after completion of positioning unless the actuator moves.

[Status of position complete signals when the push function is used]

In push-motion operation, the servo does not turn off automatically while the actuator is pushing the work part.

If the actuator has missed the work part, the servo turns off automatically.

Once the servo turns off, a position complete status is lost. Accordingly, the push complete signal 0 (PE0), push complete signal 1 (PE1) and push complete signal 2 (PE2) will all turn OFF regardless of the stop position.

A Caution: No holding torque is applied in the auto servo OFF mode. Since the actuator will move in this condition if an external force is applied, pay due attention to contact and safety when setting any operation involving auto servo OFF.

To change the travel speed for operation pattern (PIO pattern) 1, set the position at which to change the speed, and the new speed, in addition to the position data.

Position setting screen	Speed Chg Pos		
Position Data	[8] Change position [mm]	[9] Change speed [mm]	
[0] Forward Position	60.00	30.00	
[1] Backward Position	40.00	30.00	



[8] Speed Chg Pos
 Set the position at which to switch the speed while the actuator is moving to the forward end position or backward end position.
 [9] Speed Chg Vel
 Set the speed to change to.

To change the position data for operation pattern (PIO pattern) 2, set the new position data for forward end or backward end, in addition to the current position data for forward end position or backward end position.

- If CN1 (Operation switching signal) is OFF, the position data for forward end position becomes [1]: Forward end position.
  - If the signal is ON, the position data becomes [3]: Forward end position.
- If CN1 (Operation switching signal) is OFF, the position data for backward end position becomes [0]: Backward end position.

If the signal is ON, the position data becomes [2]: Backward end position.

Position Data	Position	Velocity	Accelerate	Decelerate	PushPower	PushBand	Ecology
[0]: Backward Position	0.00	50.00	0.1	0.1	0	0	Valid
[1]: Forward Position	200.00	50.00	0.1	0.1	70	1.00	Valid
[2]: Backward Position	10.00	50.00	0.1	0.1	0	0	Valid
[3]: Forward Position	100.00	50.00	0.1	0.1	60	1.00	Valid

# [2] Basic operation

Position setting		Axis No. 00
Ø Backward position	0 1	2
Pos.	0. 00 mm	
Vel.	50.00 mm/s	
Push force	50 %	Clear
Push band	0.10 mm	
Acceleration	0. 30 G	
Deceleration	0. 30 G	Jog
Energy-sav. func.	ON OFF	
Menu		

Touch the value of the position or other setting item. When the numeric keypad appears, enter a desired value and then touch [ENT].

Touching [0], [1] or [2] switches to the corresponding setting screen for 0 (backward end position), 1 (forward end position) or 2 (intermediate position).

(Note) For the position, set a value meeting the condition "Home *≤* Backward end position *≤* Intermediate position *≤* Forward end position."

Touching [Jog] switches to jog operation.



## [Jog operation]

You can acquire position data via jogging operation.

Jog			Axis No. 00
Position N	o.	0	SV OFF
Current po	sition	0.00 mm	Homing
Jog-	Jog+	Change	Jog vel. 1 mm/s 10 mm/s 30 mm/s 50 mm/s
		Teach	100 mm/s Inching
Menu			

Operation on the jog screen

- [Jog-], [Jog+] : The axis jogs while each button is touched. [Jog-] moves the axis in the negative direction, while [Jog+] moves the axis in the positive direction.
- [SV ON] : Touching [SV ON] while the servo is OFF turns on the axis servo and O becomes lit. Touching [SV OFF] while the servo is ON turns off the axis servo and O becomes unlit.
- [Homing] : Touching [Homing] while home return is not yet completed causes the axis to return home and O becomes lit.
- [Change vel] : The jog speed changes in the order of 1, 10, 30, 50 and 100 mm/s every time [Change vel] is touched.
- [Inching] : Touching [Inching] changes to the inching screen.

## Position acquisition operation

Touch [Teach]. A confirmation screen appears. You can touch [ $\uparrow$ ] or [ $\downarrow$ ] to change the position number. Touching [Yes] acquires the current position.

Conf			Axis	s No. 00
Position No.	0		<b>↑</b>	
Target position	0.	. 00 mm	Ļ	1
Current position	0.	. 00 mm		
	Teach p	os.?		
Yes			No	



# [Inching operation]

You can acquire position data via inching operation.

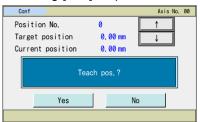
Inching				Axis No. 00
Position N	lo.	0		SV OFF
Current po	osition	0.00 mm		Homing 💽
Inching-	Inching+	Change	dist	Inching ● 0.01 mm ● 0.10 mm ● 0.50 mm ● 1.00 mm ● 5.00 mm
	T	each		Jog
Menu				

## Operation on the jog screen

• [Inching-], [Inching+]	: Touching each button once moves the axis by inching. [Inching-] moves the actuator in the negative direction. [Inching+] moves the actuator in the positive direction.
• [SV ON]	: Touching [SV ON] while the servo is OFF turns on the axis servo and O becomes lit. Touching [SV OFF] when the servo is ON turns off the axis servo and O becomes unlit.
• [Homing]	: Touching [Homing] while home return is not yet completed causes the axis to return home and O becomes lit.
[Change dist]	: The inching distance changes in the order of 0.01, 0.10, 0.50, 1.00 and 5.00 mm every time [Change dist] is touched.
• [Jog]	: Touching [Jog] changes to the jog screen.

# Position acquisition operation

Touch [Teach]. A confirmation screen appears. You can touch [ $\uparrow$ ] or [ $\downarrow$ ] to change the position number. Touching [Yes] acquires the current position.





- [3] Examples of position setting operations Respective operations are explained by giving specific examples.
  - Setting of position, speed, acceleration and deceleration An example of operation mode 0 (standard) is explained. Set positions to move the actuator back and forth between 10.0 mm and 100.0 mm.
     Forward end position: 100.0 mm, backward end position: 10.0 mm, back-and-forth speed: 50 mm/sec, back-and-forth acceleration: 0.3 G, back-and-forth deceleration: 0.3 G

No.	Operation	Screen	Remarks
1	On the SEP menu screen: Touch [Position setting].	SEP menu     Axis No. 00       Monitor     Position setting       Information     Initial setting       Alarm list     Data backup       Change ax.	
2	If the position data edit password is other than "0000," the password input screen appears. Input a position data edit password and touch [ENT].	Position setting Axis No. 00 Please enter password. 00000 1 2 3 4 5 CLR ESC 6 7 8 9 0 BS ENT Menu	You can set a position data edit password from "Position data edit password" on the parameter edit screen.
3	Set the position, acceleration and deceleration relating to the backward end position. Touch [Backward position].	Position setting         Axis No. 00           ØBackward position         0.00 mm           Vel.         20.00 mm/s           Vel.         120.00 mm/s	Touch [Menu] to return to the SEP menu screen.
4	Touch the value in Pos. The numeric keypad appears. Touch [1] and [0], and touch [ENT].	Position setting     Axis No. 00       9 Backward position     0       10.00 mm     Vel.       20.00 mm/s     Push force       9 Push band     ****, ** mm       Acceleration     0.10 G       Deceleration     0.10 G       Energy-sav. func.     ON       Menu     Menu	Touch [Menu] to return to the position setting screen.
5	10.00 is shown in Pos.	Position setting     Axis No. 00       0     Backward position     0       1     Pos.     10.00 mm/s       Vel.     20.00 mm/s     Clear       Push force     0%     S       Push band     ****, *** mm     Acceleration       Acceleration     0.10 G     Jog       Energy-sav. func.     0%     0FF	Touch [Menu] to return to the position setting screen.

No.	Operation	Screen	Remarks
6	Touch the value in Vel. The numeric keypad appears. Touch [5] and [0], and touch [ENT].	Position setting     Axis No. 00       Ø Backward position     0       1     Pos.       Vel.     20.00 mm/s       Push force     0%       Push band     *****, *** mm       Acceleration     0.10 G       Deceleration     0.10 G       Energy-sav. func.     0W       Weru     Weru	Touch [Menu] to return to the position setting screen.
7	50.00 is shown in Vel.	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       10.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     *****, *** mm       Acceleration     0.10 G       Deceleration     0.10 G       Energy-sav. func.     04	Touch [Menu] to return to the position setting screen.
8	Touch the value in Acceleration. The numeric keypad appears. Touch [0], [.] and [3], and touch [ENT].	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       10.00 mm     1       Vel.     50.00 mm/s       Push force     0 %       Push bond     #### ## mm       Acceleration     0.10 G       Deceleration     0.10 G       Energy-sav. func.     04       Weru     Weru	Touch [Menu] to return to the position setting screen.
9	0.30 is shown in Accelerattion.	Position setting     Axis No. 00       Ø Backward position     0       Pos.     10.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     ****.** ** mm       Acceleration     0.30 G       Deceleration     0.10 G       Energy-sav. func.     04	Touch [Menu] to return to the position setting screen.
10	Touch the value in Deceleration. The numeric keypad appears. Touch [0], [.] and [3], and touch [ENT].	Position setting     Axis No. 00       Ø Backward position     0       Pos.     10.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     ****, ** mm       Acceleration     0.30 G       Deceleration     0.10 G       Energy-sav, func,     04       Menu     ****	Touch [Menu] to return to the position setting screen.
11	0.30 is shown in Deceleration.	Position setting     Axis No. 00       Ø Backward position     0       Pos.     10.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     *****, *** mm       Acceleration     0.30 G       Energy-sav. func.     04       Wenu     Wenu	Touch [Menu] to return to the position setting screen.

R	ROBO —
C	CYLINDER

No.	Operation	Screen	Remarks
12	Touch [Menu].	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       10.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     **** ** ** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0%	
13	Set the position, acceleration and deceleration relating to the forward end position. Touch [Forward position].	Position setting         Axis No. 00           0 Backward position         0.00 mm           0.00 mm         50.00 mm           Vel.         20.00 mm/s           120.00 mm/s	Touch [Menu] to return to the SEP menu screen.
14	The display switches to the forward end screen. Set the position, acceleration and deceleration relating to the forward end position.	Position setting     Axis No. 00       1 Forward position     0       1 Forward position     0       1 Pos.     50.00 mm       Vel.     120.00 mm/s       Push force     0 %       Push band     *****, *** mm       Acceleration     0.10 G       Deceleration     0.10 G       Energy-sav. func.     0N       Weru     Weru	Touch [Menu] to return to the position setting screen.
15	Touch the value in Pos. The numeric keypad appears. Touch [1], [0] and [0], and touch [ENT].	Position setting     Axis No. 00       1     Forward position     0       1     Forward position     0       1     Pos.     50.00 mm       Vel.     120.00 mm/s     Clear       Push force     0 %     Clear       Push band     *****, *** mm     Acceleration       Acceleration     0.10 G     Jog       Energy-sav. func.     0%     OFF	Touch [Menu] to return to the position setting screen.
16	100.00 is shown in Pos.	Position setting     Axis No. 00       1     Forward position     0       1     Forward position     0       1     Pos.     100.00 mm       Vel.     120,000 mm/s       Push force     0 %       Push band     ****.*** mm       Acceleration     0.10 G       Deceleration     0.10 G       Energy-sav. func.     0N	Touch [Menu] to return to the position setting screen.
17	Touch the value in Vel. The numeric keypad appears. Touch [5] and [0], and touch [ENT].	Position setting     Axis No. 00       1     Forward position     0       1     Forward position     0       1     Pos.     100.00 mm       Vel.     120.00 mm/s     Clear       Push force     0 %     Clear       Acceleration     0.10 G     Jog       Energy-sav. func.     0N     OFF	Touch [Menu] to return to the position setting screen.
18	50.00 is shown in Vel.	Position setting     Axis No. 00       1     Forward position     0       1     Forward position     0       1     Pos.     100.00 mm/s       Vel.     50.000 mm/s       Push force     0 %       Push band     ****.***mm       Acceleration     0.10 G       Energy-sav. func.     0N	Touch [Menu] to return to the position setting screen.



No.	Operation	Screen	Remarks
19	Touch the value in Acceleration. The numeric keypad appears. Touch [0], [.] and [3], and touch [ENT].	Position setting     Axis No. 00       1 Forward position     0       1 Forward position     0       1 Pos.     100.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push force     0 %       Acceleration     0.10 G       Deceleration     0.10 G       Energy-sav. func.     ON       Weru     Veru	Touch [Menu] to return to the position setting screen.
20	0.30 is shown in Acceleration.	Position setting     Axis No. 00       1 Forward position     0     1       Pos.     100.00 mm/s     1       Push force     0 %     1       Push band     ****. ** mm     Acceleration       Acceleration     0.30 6     10 6       Deceleration     0.10 6     Jog	Touch [Menu] to return to the position setting screen.
21	Touch the value in Deceleration. The numeric keypad appears. Touch [0], [.] and [3], and touch [ENT].	Position setting     Axis No. 00       1 Forward position     0       1 Forward position     0       Vel.     50.00 mm/s       Push force     0 %       Push band     **** ** mm       Acceleration     0.30 G       Deceleration     0.10 G       Energy-sav. func.     0N       Meru	Touch [Menu] to return to the position setting screen.
22	0.30 is shown in Deceleration.	Position setting     Axis No. 00       1 Forward position     0       1 Forward position     0       Vel.     56.00 mm/s       Push force     0 %       Push bond     #**** ** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0K	Touch [Menu] to return to the position setting screen.
23	Touch [Menu].	Position setting     Axis No. 00       1 Forward position     0       1 Forward position     0       1 Pos.     100.00 mm/s       Vel.     50.00 mm/s       Push force     0 %       Push band     *****, *** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0N       Neru	Touch [Menu] to return to the position setting screen.
24		Position setting         Axis No. 00           0 Backward position         1 Forward position           10,00 mm         100,00 mm           Vel.         Vel.           50.00 mm/s         50.00 mm/s	Touch [Menu] to return to the SEP menu screen.



 Direct teaching (Manually move the slider to the target position and then acquire the achieved position (current position) as the forward end position or backward end position) An example of operation mode 0 (standard movement between 2 points) is explained. How to acquire the current position, 50.0 mm, as the backward end position is explained.

No.	Operation	Screen	Remarks
1	On the SEP menu screen: Touch [Position setting].	SEP menu     Axis No. 00       Monitor     Position setting       Information     Initial setting       Alarm list     Data backup       Change ax,	
2	If the position data edit password is other than "0000," the password input screen appears. Input a position data edit password and touch [ENT].	Position setting Axis No. 00 Please enter password. 00000 1 2 3 4 5 CLR ESC 6 7 8 9 0 BS ENT Menu	You can set a position data edit password from "Position edit password" on the parameter edit screen.
3	Set the position, acceleration and deceleration relating to the backward end position. Touch [Backward position].	Position setting         Axis No. 00           Backward position         0.00 mm           Vel.         50.00 mm/s	Touch [Menu] to return to the SEP menu screen.
4	Touch [Jog].	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       0.00 mm       Vel.     50,000 mm/s       Push force     0 %       Push band     ***** ** mm       Acceleration     0,30 G       Deceleration     0,30 G       Energy-sav. func.     01	Touch [Menu] to return to the position setting screen. * Perform home return if not already completed.
5	If the servo is ON, touch [SV OFF] to turn off the servo.	Jog     Axis No.     0       Position No.     0     SV GFF       Current position     0.00 mm     Homing       Jog vell.     0     10 mm/s       Jog-     Jog+     Change vell       Teach     Inching       Menu	
6	Manually move the slider or rod to the target position of 50.0 mm. Touch [Teach].	Jog     Axis No.     00       Position No.     0     SV OFF     ○       Current position     50.00 mm     Howing     ○       Jog vel.     0     10 mm/s     10 mm/s       Jog-     Jog+     Change vel     ● 50 mm/s       Teach     Inching     Inching	

No.	Operation	Screen	Remarks
7	Touch [Yes].	Conf     Axis No.     0       Position No.     0     ↑       Target position     0.00 mm     ↓       Current position     50.00 mm       Teach pos.?       Yes     No	
8	Touch [Menu].	Jog     Axis No.     0       Position No.     0     SV OFF       Current position     50.00 mm     Homing       Jog-     Jog+     Change vell       Jog-     Teach     Inching       Kenu     Kenu     Kenu	
9	50.00 is shown in Pos. It is now confirmed that the position data has been acquired.	Position setting     Axis No. 00       Ø Backward position     0       Pos.     50.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     ####. ##mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0N	Touch [Menu] to return to the position setting screen.
10	Touch [Menu].	Position setting     Axis No. 00       0     Backward position     0       1     Pos.     50.00 mm       Vel.     50.00 mm/s     Clear       Push force     0 %     Clear       Push band     #***.** mm     Acceleration       Acceleration     0.30 G     Jog       Energy-sav. func.     0N     0FF	Touch [Menu] to return to the position setting screen.
11		Position setting         Axis No. 00           Q Backward position         Forward position           50.00 mm         100.00 mm           Vel.         50.00 mm/s           120.00 mm/s         120.00 mm/s	Touch [Menu] to return to the SEP menu screen.

ROBO CYLINDER -



 Jog (Use the arrow keys [Jog-] and [Jog+] to jog the actuator to the target position and then acquire the achieved position (current position) as the forward end position or backward end position).

An example of operation mode 0 (standard movement between 2 points) is explained. How to acquire the current position, 80.0 mm, as the backward end position is explained.

No. Operation Screen Remarks 1 Touch [Position setting] on Axis No. 00 SEP menu the SEP menu screen. Position setting Monitor Information Initial setting Alarm list Data backup Change ax. If the position data edit You can set a position data 2 Position setting Axis No. 00 password is other than edit password from "Position Please enter password. "0000," the password input edit password" on the 0000 parameter edit screen. screen appears. 3 4 5 CLR ESC 2 Input a position data edit 6 8 9 BS ENT 0 password and touch [ENT]. 3 Set the position, acceleration Touch [Menu] to return to the Axis No. 00 and deceleration relating to Backward position Forward position SEP menu screen. 0.00 mm 100.00 mm the backward end position. Vel Vel 50.00 mm/s 120.00 mm/s Touch [Backward position]. Menu 4 Touch [Jog]. Touch [Menu] to return to the Axis No. 00 Position setting Ø Backward position position setting screen. 0 1 Perform home return if not 0.00 mm 50.00 mm/s Clear already completed. 0% \*\*\*\* \*\* mm 0.30 G Jog 0.30G OFF 5 If the servo is off, touch [SV Axis No. 00 ON] to turn on the servo. Position No. SV OFF 0 Current position 0 00 mm Homing 💽 Jog vel. 10 mm/s
 30 mm/s
 50 mm/s
 100 mm/s Jog+ Change vel Jog-Teach Inching Menu Touch [Change vel] to set a 6 Axis No. 00 Jog desired jog speed. Position No. SV OFF Current position 0.00 m Homing 💽 Jog vel. 1 mm/s 10 mm/s 30 mm/s 50 mm/s 100 mm/s Change vel Jog-Jogt Teach Inching Menu



No.	Operation	Screen	Remarks
7	Use [Jog-] and [Jog+] to move the slider or rod to the target position of 80.0 mm.	Jog     Axis No. 00       Position No.     0       Current position     80.00 mm       Jog vel.     1 mm/s       Jog-     Jog+       Change vel     0 mm/s       100 mm/s     100 mm/s	
8	Touch [Teach].	Jog Axis No. 00 Position No. 0 Current position 80.00 mm Homing  Jog V01. Jog V01. Jog V01. Jog V01. Teach Inching Menu	
9	Touch [Yes].	Conf     Axis No.     00       Position No.     0     ↑       Target position     0.00 mm     ↓       Current position     80.00 mm       Teach pos. ?       Yes     No	
10	Touch [Menu].	Jog Axis No. 00 Position No. 0 Current position 80.00 mm Jog v01. Jog Jog+ Change vel Teach Inching Weru	
11	80.00 is shown in Pos. It is now confirmed that the position data has been acquired.	Position setting     Axis No. 00       Ø Backward position     0       Pos.     80.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     ****. ** mm       Acceleration     0.30 G       Deceleration     0,30 G       Energy-sav. func.     0N	Touch [Menu] to return to the position setting screen.
12	Touch [Menu].	Position setting     Axis No. 00       Ø Backward position     0       Pos.     80.00 mm       Vel.     50.00 mm/s       Push force     0 %       Push band     ****, ** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0N       Menu	Touch [Menu] to return to the position setting screen.
13		Position setting         Axis No. 00           0 Backward position         1 Forward position           80.00 mm         100.00 mm           Vel.         50.00 mm/s           120.00 mm/s	Touch [Menu] to return to the SEP menu screen.



4) Inching (Use the arrow keys [Inching-] and [Inching+] to inch the actuator to the target position and then acquire the achieved position (current position) as the forward end position or backward end position).

An example of operation mode 0 (standard movement between 2 points) is explained. How to acquire the current position, 30.0 mm, as the backward end position is explained.

No. Operation Screen Remarks 1 On the SEP menu screen: SEP menu Axis No. 00 Touch [Position setting]. Monitor Position setting Information Initial setting Alarm list Data backup Change ax. 2 If the position data edit You can set a position data Position setting Axis No. 00 password is other than edit password from "Position Please enter password. "0000," the password input edit password" on the 0000 screen appears. parameter edit screen. 4 5 CLR ESC 1 3 6 q BS ENT Input a position data edit 7 8 Ø password and touch [ENT]. 3 Set the position, acceleration Touch [Menu] to return to the Axis No. 00 Forward position Backward position and deceleration relating to SEP menu screen. 100.00 mm 0.00 mm the backward end position. Vel 50.00 mm/s 120.00 mm/s Touch [Backward position]. Touch [Menu] to return to the 4 Touch [Jog]. Axis No. 00 Position setting Backward position 0 1 position setting screen. 0.00 mm Perform home return if not 50.00 mm/s 0% Clear already completed. \*\*\*\*. \*\* mm 0. 30 G Jog 0.30G OFF 5 If the servo is off, touch [SV Axis No. 00 Position No. ON] to turn on the servo. SV OFF Current position 0. 00 Homing 🚺 Jog vel. Jog+ Change ve 50 mm/s 50 mm/s 100 mm/s Inching Teach 6 Touch [Inching]. Touch [Menu] to return to the Axis No. 00 Position No. SV OFF itemized position setting Current position 0.00 m Homing 💽 The display switches to the screen. Jog vel. inching screen. 1 mm/s 10 mm/s 30 mm/s 50 mm/s 100 mm/s Jog+ Change vel Jog-Teach Inching Menu



No.	Operation	Screen	Remarks
7	Touch [Change vel] and set a desired inching distance.	Jog     Axis No.     00       Position No.     0     SV OFF     Image: Comparison of the second sec	
8	Use [Inching-] and [Inching+] to move the slider or rod to the target position of 30.0 mm.	Inching Axis No. 00 Position No. 0 Current position 30.00 mm Homing Inching Inching Inching Teach Jog Meru	
9	Touch [Teach].	Inching Axis No. 00 Position No. 0 Current position 30.00 mm Homing Inching-Inchingt Change dist Unching Unchingt Unchin	
10	Touch [Yes].	Conf     Axis No.     00       Position No.     0     1       Target position     0.00 mm     1       Current position     30.00 mm     1       Teach pos. ?       Yes     No	
11	Touch [Menu].	Inching Axis No. 00 Position No. 0 Current position 30.00 mm Inching-Inching+ Change dist I.00 mm Inching Venu	
12	30.00 is shown in Pos. It is now confirmed that the position data has been acquired.	Position setting     Axis No. 00       Ø Backward position     0       Pos.     30.00 mm       Vel.     50.06 mm/s       Push force     0 %       Push band     **** ** ** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0K	Touch [Menu] to return to the position setting screen.
13	Touch [Menu].	Position setting     Axis No. 00       Ø Backward position     0       1     Pos.       20 Backward position     0	Touch [Menu] to return to the position setting screen.



No.	Operation	Sci	reen	Remarks
14		Position setting Pastion setting Pastward position 30.00 mm/ Vel. 50.00 mm/s Menu	Axis No. 00 Forward position 100.00 mm Vel. 120.00 mm/s	Touch [Menu] to return to the SEP menu screen.

# ROBO CYLINDER

5) Setting of push-motion operation (push froce, push band)
 An example of operation mode 0 (standard movement between 2 points) is explained.
 An example of push-motion operation at the backward end is explained.
 Push force: 50%, push band: 5.0 mm

No.	Operation	Screen	Remarks
1	On the SEP menu screen: Touch [Position setting].	SEP menu     Axis No. 00       Monitor     Position setting       Information     Initial setting       Alarm list     Data backup       Change ax.	
2	If the position data edit password is other than "0000," the password input screen appears. Input a position data edit password and touch [ENT].	Position setting Axis No. 00 Please enter password. 00000 1 2 3 4 5 CLR ESC 6 7 8 9 0 BS ENT Neru	You can set a position data edit password from "Position edit password" on the parameter edit screen.
3	Set the position, acceleration and deceleration relating to the backward end position. Touch [Backward position].	Position setting         Axis No. 00           Backward position         0.00 mm           Vel.         100.00 mm/s           Vel.         120.00 mm/s	Touch [Menu] to return to the SEP menu screen.
4	Touch the value in [Push force]. The numeric keypad appears. Touch [5] and [0], and touch [ENT].	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       0.00 mm       Vel.     56.00 mm/s       Push force     0 %       Push bond     #***.** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     000	Touch [Menu] to return to the position setting screen.
5	50 is shown in Push force.	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       0.00 mm       Vel.     50.00 mm/s       Push force     50 %       Push band     0.10 mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0M       Weru     Weru	Touch [Menu] to return to the position setting screen.
6	Touch the value in [Push band]. The numeric keypad appears. Touch [5], and touch [ENT].	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       0.00 mm/s       Vel.     50.00 mm/s       Push force     50.%       Push band     0.10 mm       Acceleration     0.30 G       Energy-sav. func.     0H	Touch [Menu] to return to the position setting screen.

R	ROBO ——
C	CYLINDER

No	Operation	Saraan	Demorko
No.	Operation	Screen	Remarks
7	5.00 is shown in Push band.	Position setting     Axis No. 00       0 Backward position     0       1     Pos.       0.00 mm       Vel.     50.00 mm/s       Push force     50%       Push band     5.00 mm       Acceleration     0.30 G       Energy-sav. func.     0N       Wenu	Touch [Menu] to return to the position setting screen.
8	Touch [Menu].	Position setting     Axis No. 00       Ø Backward position     0       Pos.     0.00 mm       Vol.     50,00 mm/s       Push force     50 %       Push band     5.00 mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0N       Wenu	Touch [Menu] to return to the position setting screen.
9		Position setting         Axis No. 00           0 Backward position         0.00 mm           0.00 mm         100.00 mm           Vel.         Vel.           50.00 mm/s         120.00 mm/s	Touch [Menu] to return to the SEP menu screen.



ROBO CYLINDER

6) Setting of ecology function (automatic servo OFF function) An example of operation mode 0 (standard) is explained. How to turn off the servo automatically 5.0 seconds after stopping is explained.

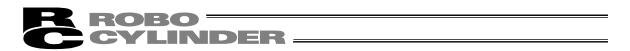
No.	Operation	Screen	Remarks
1	On the SEP menu screen: Touch [Initial setting].	SEP menu     Axis No. 00       Monitor     Position setting       Information     Initial setting       Alarm list     Data backup       Change ax.	
2	Set a desired automatic servo OFF delay time. Touch [Parameter].	Initial setting menu Axis No. 00 I/O setting Parameter Test Env. set. Wenu	
3	If the system password is other than "0000," the password input screen appears. Input a system password and touch [ENT].	Parameter         Axis No. 00           Please enter password.         00000           1         2         3         4         5         CLR         ESC           6         7         8         9         0         BS         ENT           Menu         Menu	The default system password is "5119". For how to change the system password, refer to 4.12, "Parameters [Change System Password]."
4	Touch [Parameter data editing].	Parameter menu Axis No. 00 Parameter data editing Ax. No. set. Parameter initial. System password Kenu	
5	Touch [↑] and [↓] to navigate through the screens until the one for setting the automatic servo OFF delay time is displayed.	Parameter edit     Axis No. 00       1. Positioning band     10.39 m       2. Jog velocity     100.99 m       1. Servo gain selection     11       4. Torque filter constant     0       5. Velocity loop proportional gain     177       6. Velocity loop integral gain     2.732       7. Push velocity     5.9 m/mc       8. Pushing stor recognition time     25 msc       1     No. sel.	
6	Touch the value of automatic servo OFF delay time. The numeric keypad appears. Touch [5], and touch [ENT].	Parameter edit     Axis No. 00       9. Pushing fails current     Push current       10. Auto servo OFF delay time     1 asc       11. Stop mode     Stop Servo       12. Default positioning current limit     245       13. Default hosing current limit     248       14. Naiting time for cont. operation     #######       16. Homing offset     2.20 mm       16. Homing offset     2.20 mm       16. Homing offset     2.20 mm       17. No. sel.     ¥	

R	ROBO ——
	CYLINDER

No.	Operation	Screen	Remarks
7	5 is shown.	Parameter edit     Axis No. 00       9. Pushing fails current     Push current     Stop current       10. Auto servo OFF delay time     5xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	
8	Touch [Menu].	Parameter edit     Axis No. 00       9. Pushing fails current     Push current     Stop current       10. Auto servo 00F delay time     5+=>       11. Stop mode     Stop Servo     Opmolete stop       12. Default positioning current limit     3+3       13. Default positioning current limit     7+       14. Waiting time for cont. operation     4-99 sec       15. Soft limit     104. Sec       16. Homing offset     2-80 sec       1     No. sel.       Menu     Menu	
9	Touch [Yes].	Controller restart Axis No. 00 Restart the controller? Yes No	Touch [No], and the new setting will not be reflected in the controller until the power is reconnected.
10		Soft Reset Axis No. 00 Restarting the controller. Please wait a minute.	
11	The controller is restarted and the SEP menu screen will appear. Touch [Position setting].	SEP menu     Axis No. 00       Monitor     Position setting       Information     Initial setting       Alarm list     Data backup       Change ax.	
12	If the position data edit password is other than "0000," the password input screen appears. Input a position data edit password and touch [ENT].	Position setting Axis No. 00 Please enter password. 0000 1 2 3 4 5 CLR ESC 6 7 8 9 0 BS ENT Menu	You can set a position data edit password with the "Position edit password" parameter on the parameter edit screen.
13	Set the ecology function at the backward end position. Touch [Backward position].	Position setting         Axis No. 00           ØBackward position         IForward position           0.00 mm         100.00 mm           Vel.         50.00 mm/s           120.00 mm/s	Touch [Menu] to return to the SEP menu screen.

No.	Operation	Screen	Remarks
14	Touch [ON].	Position setting     Axis No. 00       0     Backward position     0       1     Pos.     0.00 mm       Vel.     50.00 mm/s     Clear       Push force     0 %     Clear       Acceleration     0.30 G     Jog       Energy-sav. func,     OV     OFF	Touch [Menu] to return to the position setting screen.
15	Touch [Menu].	Position setting         Axis No. 00           0 Backward position         0.00 mm           0.00 mm         100.00 mm           Vel.         50.00 mm/s           120.00 mm/s	Touch [Menu] to return to the SEP menu screen.
16	Set the ecology function at the forward end position. Touch [Forward position].	Position setting         Axis No. 00           Ø Backward position         0.00 mm           0.00 mm         100.00 mm           Vel.         50.00 mm/s           Menu         Menu	Touch [Menu] to return to the SEP menu screen.
17	The display switches to the forward end screen. Set the ecology function related to the forward end position.	Position setting     Axis No. 00       1 Forward position     0       1 Forward position     0       1 Pos.     100.00 mm       Vel.     120.00 mm/s       Push force     0 %       Push band     **** ** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0N	Touch [Menu] to return to the position setting screen.
18	Touch [ON].	Position setting     Axis No. 60       1 Forward position     0       1 Pos.     100.00 mm/s       Vel.     120.00 mm/s       Push force     0 %       Push band     ****.** ** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0W	Touch [Menu] to return to the position setting screen.
19	Touch [Menu].	Position setting     Axis No. 00       1 Forward position     0       1 Pos.     100.00 mm       Vel.     120.00 mm/s       Push force     0 %       Push band     **** ** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     0W       Weru	Touch [Menu] to return to the position setting screen.
20		Position setting         Axis No. 00           Ø Backward position         0.00 mm           0.00 mm         106.00 mm           Vel.         50.00 mm/s           120.00 mm/s	Touch [Menu] to return to the SEP menu screen.

ROBO CYLINDER -



# 4.11 I/O Setting (Setting of Operation Parameters, Etc.)

You can select an operation pattern (PIO pattern) (0 to 5), set an operation mode (single solenoid, double solenoid), etc.

SEP menu	Axis No. 00
Monitor	Position setting
Information	Initial setting
Alarm list	Data backup
Change ax.	

Touch [Initial setting] on the SEP menu screen.

Initial setting me	nu	Axis No. 00
(	I/O setting	
	Parameter	
	Test	
	Env. set.	
Menu		-

Touch [I/O setting]

Touch [Menu] to return to the SEP menu screen.

If the system password is other than '0000', the password entry screen appears.

Pos	Position setting Axis No. 00							
Please enter password.								
	0000							
	1 2 3 4 5 CLR ESC							
	6 7 8 9 0 BS ENT							
	Menu							

Enter a system password and then touch [ENT].

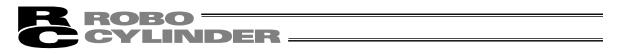
The default system password is '5119'. For how to change the system password, refer to 4.12, "Parameters [Change System Password]."

If the correct password has been entered, the display changes to the screen for setting the operation pattern.

Initial setting	Axis No. 00					
Please select a PIO pattern.						
0 1 2 3 4 5						
Functions of selected PIO pat. •2-point move						
ОК						
Menu						

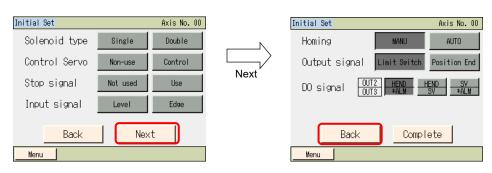
Select and touch one of operation patterns [0] to [5], and then touch [OK].

(Note) If connected to Fieldbus Type in MSEP Controllers, [6] (Positioner Mode) is shown. If selecting [6], it is not necessary to have an operation for the initial setting. The operation is complete.

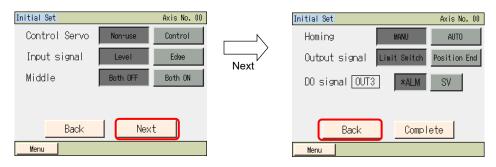


The screen corresponding to the selected operation pattern appears.

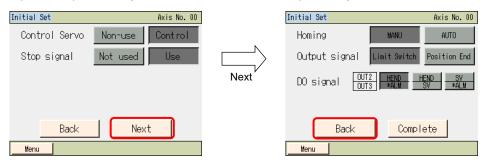
Operation pattern 0 (standard movement between 2 points), operation pattern 1 (change travel speed), operation pattern 2 (change position data)



Operation pattern 3 (movement by 2 inputs among 3 points), operation pattern 4 (movement by 3 inputs among 3 points)



## Operation pattern 5 (continuous back-and-forth operation)



The items that can be set vary with each operation mode.

Touch [Back] to return to the operation pattern screen.



				Setting item	1		-	-	
Operation	Operation mode	Intermediate position Movement method	Double solenoid type	Pause Signal *STP	Control Servo SON	OUT2, OUT3	OUT3	Home return	DO signal
pattern	Single solenoid/ double solenoid	Both OFF/ Both ON	Level/ Edge	Not used/ Use	Non-use/ Control	HEND,*ALM/ SV,*ALM/ HEND,SV	*ALM/ SV	MANU/ AUTO	Limit switch LS/ Positioning PE
PIO pattern 0 Standard movement between 2 points	0		Double solenoid is selected O	Single solenoid is selected O	0	0		0	0
PIO pattern 1 Change travel speed	0		Double solenoid is selected O	Single solenoid is selected O	0	0		0	0
PIO pattern 2 Position data change	0		Double solenoid is selected O	Single solenoid is selected O	0	0		0	0
PIO pattern 3 Movement by 2 inputs among 3 points		0			0		0	0	0
PIO pattern 4 Movement by 3 inputs among 3 points			0		0		0	0	0
PIO pattern 5 Continuous back-and-forth operation				0	0	0		0	0

For details on each setting item, refer to the instruction manual for your "ASEP/PSEP/DSEP controller Instruction Manual", "MSEP controller Instruction Manual".



#### Operation pattern Equivalent air cylinder circuits are shown for your reference.

	Equit	Alent air cylinder circuits are Motorized cylinder connection	
Operation pattern	Description	method	Air cylinder circuit (reference)
PIO pattern 0 Single solenoid type (Standard movement between 2 points)	The actuator can be moved between two points using the same control you normally use with an air cylinder. The target position (forward end, backward end) can be set. The travel speed and acceleration/deceleration can be specified. Push-motion operation can also be performed.	Motorized cylinder	Air cylinder PLC Backward end position Forward end position detection signal (USI) Movement signal (STIO) River and State River and St
PIO pattern 0 Double solenoid type (Standard movement between 2 points)		Motorized cylinder	Ala overneer PLC Backward end position detection signal (LS0) detection signal (LS0) forward end position Backward end position detection signal (S10) R1 P2 (Air) (Air)
PIO pattern 1 Single solenoid type (Movement between 2 points) (Change travel speed)	The actuator can be moved between two points using the same control you normally use with an air cylinder. The speed can be changed during movement. The target position (forward end, backward end) can be set. The travel speed and acceleration/deceleration can be specified. Push-motion operation can also be performed.	PLC PLC detection signal (SPDC)	Air cylinder PLC Backward end position detection signal (LSD) Movement signal (STO) Travel speed switching signal (SPDC) R1 P (Air)
PIO pattern 1 Double solenoid type (Movement between 2 points) (Change travel speed)		PLC PLC PLC PLC PLC PLC Dedicated ASEP, Description detection signal (LS0) Dedicated ASEP, DSEP, DSEP, DSEP, DSEP, Travel speed switching Travel speed switching signal (SPDC) The signal Symbols correspondent	Air cylinder Air cylinder PLC Backward end position forward end position detection signal (LSt) Forward end position rowernert signal (ST) Riter Riter Rit

(Note) The air cylinder circuits are drawn with signal symbols corresponding to those used by ASEP/PSEP/DSEP/MSEP controllers. For details on signal symbols, refer to your "ASEP/PSEP/DSEP Instruction Manual", "MSEP controller Instruction Manual".



## Operation pattern Equivalent air cylinder circuits are shown for your reference.

		Alent air cylinder circuits are s	
Operation pattern	Description	Motorized cylinder connection method	Air cylinder circuit (reference)
PIO pattern 2 Single solenoid type (Movement between two points) (Position data change)	The actuator can be moved between two points using the same control you normally use with an air cylinder. You can switch between positioning operation and push-motion operation during operation. The target position (forward end, backward end) can be set. The travel speed and	Motorized cylinder	PLC Backward end position Forward end position detection signal (LS0) Forward end position detection signal (LS0) Movement signal (LS0) R1 R2 P(Air)
PIO pattern 2 Double solenoid type (Movement between two points) (Position data change)	acceleration/deceleration can be specified. Push-motion operation can also be performed.	Motorized cylinder	PLC Backward end position detection signal (CSI) Forward end position detection signal (CSI) Forward end position Backward end position Rovement signal (CSI) Target position switching signal (CNI)
PIO pattern 3 Single solenoid type (Movement by 2 inputs among 3 points)	The actuator can be moved among three points using the same control you normally use with an air cylinder. The target position (forward end, backward end) can be set. The travel speed and acceleration/deceleration can be specified. Push-motion operation can also be performed.	PLC         Motorized cylinder           Backward end position detection signal (LS0)         Dedicated ASEP, Midway         Dedicated cable           Midway         position detection signal (LS2)         Dedicated Movement signal 1 (ST0)         Dedicated cable           Movement signal 1 (ST1)         +24V         +24V	PLC Air cylinder Backward end position detection signal (LSD) Georgen (LSD) Midway position detection signal (LSD) Movement signal 1 (STO) Movement signal 2 (STI) P(Air)
PIO pattern 4 Double solenoid type (Movement by 3 inputs among 3 points)	The actuator can be moved among three points using the same control you normally use with an air cylinder. The target position (forward end, backward end) can be set. The travel speed and acceleration/deceleration can be specified. Push-motion operation can also be performed.	PLC Backward end position detection signal (LS1) Midway position detection signal (LS2) Midway position detection signal (LS2) Midway position Backward end movement signal (S1) Backward end movement signal (S1)	PLC Air cylinder Backward end position detection signal (IS1) Midway position detecton signal (IS2) Forward end mosition Midway position detecton signal (IS2) Forward end movement Backward end movement signal (ST) P (Air)
PIO pattern 5 (Continuous back- and-forth operation)	The actuator moves back and forth between the two points of forward end and backward end. The target position (forward end, backward end) can be set. The travel speed and acceleration/deceleration can be specified. Push-motion operation can also be performed.	ith signal symbols correspond	ing to these used by

(Note) The air cylinder circuits are drawn with signal symbols corresponding to those used by ASEP/PSEP/DSEP/MSEP controllers. For details on signal symbols, refer to your "ASEP/PSEP/DSEP Instruction Manual", "MSEP controller Instruction Manual".

# **ROBO** CYLINDER —

[1] Types of I/O setting (setting of operation parameters, etc.)

#### [Operation mode]

Select either the single-solenoid operation mode or double-solenoid operation mode.

[Intermediate move method]

Select whether to move to the intermediate position with both ST0 and ST1 turned ON, or OFF, when operation pattern 3 is set.

#### [Double solenoid type]

Select either Level or Edge as the condition for turning the double solenoids ON when the double-solenoid type operation mode and operation pattern 4 are set.

[Pause signal \*STP]

Select whether to use or not use the pause signal \*STP (input to IN2) when the singlesolenoid type operation mode and operation pattern 5 are set.

[Servo control SON]

Select whether to use or not use the servo control (IN3 input signal SON (servo ON/OFF control)).

#### [Output signal selection, operation pattern 0, 1, 2, 5]

When operation pattern 0, 1, 2 or 5 is set, set the OUT2 and OUT3 output signals if you have selected to use the servo control.

Select from the three patterns shown in the table.

	Selection 1	Selection 2	Selection 3
OUT2	HEND (home return complete signal)	SV (servo ON output signal)	HEND (home return complete signal)
OUT3	*ALM (alarm output signal)	*ALM (alarm output signal)	SV (servo ON output signal)

[Output signal selection operation pattern 3, 4]

When operation pattern 3 or 4 is set, set the OUT3 output signal if you have selected to use the servo control.

Select either ALM (alarm status signal) or SV (servo ON status signal).

[Home return operation]

Select a home return method.

- AUTO : Home return starts when the power is turned on.
- MANU : Home return starts when the first ST0 signal is input following the power on.

[Output signal]

Select the output signal to turn ON when the actuator moves and positioning is completed. Select either Limit Switch (LS) or Position End (PE).



## [2] Basic operation

The setting method is explained using an example of operation pattern 0.

Initial setting	Axis No.	00
Please select a PIO pattern.		
0 1 2 3 4 5		
Functions of selected PIO pat. •2-point move		
ОК		
Menu		

Touch [0] and touch [OK].

Touch [Menu] to return to the initial setting menu screen.

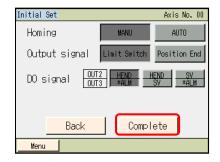
Initial Set		Axis No. 00
Solenoid type	Single	Double
Control Servo	Non-use	Control
Stop signal	Not used	Use
Input signal	Level	Edge
	1	. 1
Back	Ne>	(t
Menu		

Select and touch either [Single] or [Double].

Touch [Menu] to return to the initial setting menu screen.

Hereafter, set one by one the items denoted by a O in the table of setting items in 4.11. When all items on this screen have been set, touch [Next].

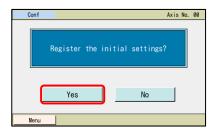




When the setting is complete, touch [Complete].

Touch [Back] to return to the previous screen.

Touch [Menu] to return to the initial setting menu screen. All settings you have made under the selected operation pattern become invalid.



Touch [Yes].

Touch [No] to return to the operation pattern selection screen. All settings you have made under the selected operation pattern become invalid.



Touch [Yes]. The controller is restarted. The controller operates according to the operation pattern settings you have made. The display returns to the SEP menu screen.



Touch [No], and the controller will not operate according to the operation pattern settings you have made until restarted.



# [3] Examples of I/O setting operations

Respective operations are explained by giving specific examples.

Example of operation mode 0 (standard movement between 2 points) Set as follows:

Operation mode	Single solenoid
Use of pause command (*STP)	Not used
Control Servo	Control
OUT2, OUT3 output signals	OUT2 HEND, OUT3 *ALM
Home	AUTO (start home return upon power on)
DO signal	LS0 (backward end position detection), LS1 (forward end position detection)

No.	Operation	Screen	Remarks
1	On the SEP menu screen: Touch [Initial setting].	SEP menu     Axis No. 00       Monitor     Position setting       Information     Initial setting       Alarm list     Data backup       Change ax,     Initial setting	
2	Touch [I/O setting].	Initial setting menu Axis No. 00 I/O setting Parameter Test Env. set. Weru	Touch [Menu] to return to the SEP menu screen.
3	If the system password is other than "0000," the password input screen appears. Input a system password and touch [ENT].	Init.set         Axis No. 00           Please enter password.         00000           1         2         3         4         5         CLR         ESC           6         7         8         9         0         BS         ENT           Menu	The default system password is "5119". For how to change the system password, refer to 4.12, "Parameters [Change System Password]."
4	Touch [0] and touch [OK]. Operation pattern 0 is selected.	Initial setting     Axis No. 00       Please select a PIO pattern.     0       0     1     2     3     4     5       Functions of selected PIO pat.     -2-point move     0K       Wenu     0K	Touch [Menu] to return to the initial setting menu screen.
5	Touch [Single]. The single-solenoid operation mode is selected.	Initial Set Axis No. 00 Solenoid type Single Double Control Servo Non-use Control Stop signal Not used Use Input signal Level Edge Back Next Menu	Touch [Menu] to return to the initial setting menu screen.

No.	Operation	Screen	Remarks
6	Touch [Control]. Servo control is selected.	Initial Set     Axis No. 00       Solenoid type     Simale     Double       Control Servo     Non-use     Control       Stop signal     Not used     Use       Input signal     Level     Edme       Back     Next	Touch [Menu] to return to the initial setting menu screen.
7	Touch [Not used]. Non-use of pause command (*STP) is selected.	Initial Set Axis No. 00 Solenoid type Single Double Control Servo Non-use Control Stop signal Not used Use Input signal Level Edge Back Next	Touch [Menu] to return to the initial setting menu screen.
8	Touch [Next].	Initial Set     Axis No. 00       Solenoid type     Single     Double       Control Servo     Non-use     Control       Stop signal     Not used     Use       Input signal     Lavel     Edge       Back     Next	
9	Touch [AUTO]. AUTO home return is selected.	Initial Set     Axis No. 00       Homing     MANU       Output signal     Limit Switch       D0 signal     OUT2       HAM     SV       SV     *ALM       Back     Complete	Touch [Menu] to return to the initial setting menu screen.
10	Touch [Limit Switch]. LS0 (backward end position detection) and LS1 (forward end position detection) are selected as the output signals.	Initial Set     Axis No. 00       Homing     MANU       Output signal     Limit Switch       D0 signal     0072 0073       HEND     HEND       Back     Complete       Menu     Menu	Touch [Menu] to return to the initial setting menu screen.
11	Touch [HEND*ALM]. HEND and *ALM are selected as the OUT2 and OUT3 outputs.	Initial Set     Axis No. 00       Homing     MANU       Auto       Output signal     Limit Switch       D0 signal     OUT2       HEND     HEND       Back     Complete       Menu     Menu	Touch [Menu] to return to the initial setting menu screen.
12	Touch [Complete].	Initial Set     Axis No. 00       Homing     MANU       Output signal     Limit Switch       D0 signal     OUT2       HEND     HEND       Back     Complete       Menu     Menu	Touch [Back] to return to the previous screen. Touch [Menu] to return to the initial setting menu screen.

ROBO CYLINDER -

No.	Operation	Screen	Remarks
13	Touch [Yes].	Conf A Register the initial settings? Yes No Menu	Touch [No] to return to the operation pattern selection screen. All settings you have made under the selected operation pattern become invalid.
14	Touch [Yes].	Controller restart Restart the controller? Yes No	The controller does not operate according to the operation pattern settings you have made until restarted.
15		Soft Reset Ax Restarting the controller. Please wait a minute.	is No. 00
16		SEP menu A Monitor Position set	After the controller has restarted, the display switch to the SEP menu screen.
		Information Initial set Alarm list Data back Change ax.	



# 4.12 Parameters (Parameter data editing, Ax. No. set., Parameter initial., System password)

Parameters and axis number are set. You can change the system password or reset the parameters to their factory default settings.

SEP menu	Axis No. 00	
Monitor	Position setting	
Information	Initial setting	
Alarm list	Data backup	
Change ax.		

Touch [Initial setting] on the SEP menu screen.

Initial setting mer	u	Axis No. 00
	I/O setting	
	Parameter	
	Test	1
	Env. set.	
Menu –		_

Touch [Parameter].

If the system password is other than '0000', the password input screen appears.

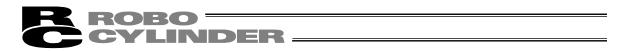
P	arameter						Axis No.	00	
	Please enter password.								
	0000								
			L	0000					
	1 2 3 4 5 CLR ESC								
	6	7	8	9	0	BS	ENT		
	Menu								

Enter a system password and then touch [ENT].

The default system password is '5119'. For how to change the system password, refer to 4.12, "Parameters [Change System Password]."

Parameter menu		Axis No. 00
	Parameter data editing	
	Ax. No. set.	
	Parameter initial.	
	System password	
Menu		

Select and touch [Parameter data editing], [Ax. No. set.], [Parameter initial.] or [System password].



The screen corresponding to the selected menu item appears.

• Parameter edit: You can set 36 types of parameters.

Parameter edit	Axis No. 00		
1. Positioning band	83. 60 m		
2. Jog velocity	100.00 m/sec		
3. Servo gain selection	11		
4. Torque filter constant	9		
5. Velocity loop proportional gain	137		
6. Velocity loop integral gain	2, 732		
7. Push velocity	5,60 mm/sec		
8. Pushing stop recognition time	255 msec		
↑ No. sel.	Ļ		
Menu			

• Axis No. setting: Set the axis number.

00	Axis No.	Axis No. setting
	Ø	•Axis No.

• Initial parameter: You can reset the parameters to their factory settings (initialize the parameters).



• System password change: You can change the password for I/O setting and parameter editing.





- Types of parameter editing For details on each parameter, refer to the instruction manual for your ASEP/PSEP/DSEP controller or MSEP controller.
  - No.1 (Default positioning band) Set the positioning band.
  - No.2 (Jog speed) Set the speed of jog operation.
  - No.3 (Servo gain number) Set the servo gain number that determines the response of position control loops in servo control.

No.4 (Torque filter constant) Set the torque filter time constant that determines the filter time constant for torque commands in servo control.

No.5 (Speed loop proportional gain) Set the speed loop proportional gain that determines the response of speed control loops in servo control.

No.6 (Speed loop integral gain) Set the speed loop integral gain that determines the response of speed control loops in servo control.

No.7 (Push speed) Set the speed of push-motion operation.

No.8 (Push recognition time)

Set the push recognition time to recognize completion of operation after the work part was contacted in push-motion operation.

No.9 (Pushing fails current)

Set whether to use the push current or stop current as the current limiting value when the work part was missed in push-motion operation.

For ASEP/DSEP/MSEP (for servo motor), if the stop current is selected when the work part was missed in push-motion operation, the torque limit at the travel current limiting value is set.

No.10 (Auto servo OFF delay time) Set the time until the servo turns off automatically when the ecology function is enabled.



No.11 (Stop mode) <u>Displayed for PSEP, MSEP (for pulse motor) controllers</u> Set whether to implement servo stop based on the full servo control method or complete stop

Set whether to implement servo stop based on the full servo control method or complete stop without servo control when the actuator stops.

(Note) When this parameter is changed, the new setting will not be reflected until the position data is written to the controller again.

No.12 (Current limiting value while stopped after positioning) <u>Displayed for PSEP, MSEP (for pulse motor) controller</u>

Set the current limiting value to be applied while the actuator is stopped after positioning.

No.13 (Current limiting value during home return) Set the current limiting value to be applied during home return operation.

No.14 (Position execution wait time during continuous operation) Set the stop time after the current movement is completed until the next movement is performed when operation pattern 5 (continuous operation) is set.

No.15 (Soft limit) Set the positive soft limit.

No.16 (Home return offset) Set the offset for home return.

No.17 (Home return direction)

Set whether to perform home return in the motor direction or front side direction. The home return direction cannot be changed for some actuators, such as rod-type actuators.

No.18 (Simple Absolute board) <u>Displayed for absolute specification controllers</u> Set whether to enable or disable this function when the controller is of absolute specification.

No.19 (Battery maintenance) <u>Displayed for absolute specification controllers</u> Set how long the data will be maintained by the absolute battery when the controller is of absolute specification.

No.20 (Position edit password) Set the password for editing position data.



No.21 (Zone boundary 1 + side) Set + side of the area in which the zone signal (ZONE 1) is turned ON.

No.22 (Zone boundary 1 - side) Set - side of the area in which the zone signal (ZONE 1) is turned ON.

No.23 (Zone boundary 2 + side) Set + side of the area in which the zone signal (ZONE 2) is turned ON.

No.24 (Zone boundary 2 - side) Set - side of the area in which the zone signal (ZONE 2) is turned ON.

No.25 (PIO inching distance) Set an inching distance for the inching entry command from PLC.

No.26 (Target value for total travel count) If the total travel count exceeds the setting of this parameter, an alarm is generated to inform.

No.27 (Target value for total travel distance) If the total travel distance exceeds the setting of this parameter, an alarm is generated to inform.

No.28 (High output setting) Set whether to use the high output function. However, the actuator complying with high power<sup>(Note 1)</sup> has to be connected.

(Note 1) Actuator complying with high power: RCP 4 and RCP 5 series (except for high thrust types)

No.29 (BU Speed Loop Proportional Gain) When setting the high output setting parameter valid, this parameter is effective for the speed loop proportional gain.

No.30 (BU Speed Loop Integral Gain) When setting the high output setting parameter valid, this parameter is effective for the speed loop integral gain.

No.31 (Overload Level Ratio)

If it exceeds the rated current ratio set, the overload alarm (message level) is turned ON.

No.32 (Minor Failure Alarm Output Selection)

With setting 0, if the rated current ratio exceeds the value set in the overload level ratio parameter, ALM is output.

With setting 1, ALM is output by even message level alarms, such as the maintenance information error, in addition to the result of the overload level ratio.



#### No.33 (Enabled/disabled axis selection)

If you want to operate fewer axes than you bought, by setting this parameter disabled, the axis is considered as disabled and the alarm does not occur.

You can connect and operate only specific axes when starting up, or set them for expansion in future.

No.34 (Initial movement direction of excitation phase signal detection operation)

When the servo is first turned ON after power-on, the excitation detection is performed <sup>(Note 1)</sup>. Define the detection direction at this time.

Usually, this parameter does not need to be changed. However, when it gets in touch with the mechanical end or any interfering object at the time of starting up, set the direction in which the motor is easy to move.

(Note 1) In the simple absolute specification, the excitation detection is performed at the time of completing home return.

No.35 (Excitation phase signal detection time)

When the servo is first turned ON after power-on, the excitation detection is performed <sup>(Note 2)</sup>. Define the detection time at this time.

Usually, this parameter does not need to be changed. However, when the excitation detection error or any malfunction occurs, it may be effective to change the setting of this parameter. If you want to change this parameter, contact to us.

(Note 2) In the simple absolute specification, the excitation detection is performed at the time of completing home return.

No.36 (Excitation detection type)

When the servo is first turned ON after power-on, the excitation detection is performed <sup>(Note 3)</sup>. The new method makes this operation smooth and makes it possible to reduce noise. (In this company's comparison)

(Note 3) In the simple absolute specification, the excitation detection is performed at the time of completing home return.



[2] Basic operation

Set parameters.

#### [Parameter]

Parameter edit	Axis No. 00		
1. Positioning band	89. 60 m		
2. Jog velocity	100.00 m/sec		
3. Servo gain selection	11		
4. Torque filter constant	0		
5. Velocity loop proportional gain	137		
6. Velocity loop integral gain	2, 732		
7. Push velocity	5, 80 m/sec		
8. Pushing stop recognition time	255 msec		
↑ No. sel.	$\downarrow$		
Nepu			

Touch  $[\uparrow]$  to return to the previous screen.

Touch  $[\downarrow]$  to move to the next screen.

Three screens are available, including one showing the default positioning band and others used to edit position data and password.

Touch [Menu] to return to the parameter menu screen.

An example of setting a soft limit is explained.

Touch [ $\uparrow$ ] and [ $\downarrow$ ] on the displayed screen until the soft limit setting screen appears.

Parameter edit		Axis No. 00		
9. Pushing fails current	Push current	Stop current		
10. Auto servo OFF delay time		1 sec		
11. Stop mode	Stop Servo	Complete stop		
12. Default positioning current lim	it	35 % 70 %		
13. Default homing current limit				
14. Waiting time for cont. operation	n	0,810 sec		
15. Soft limit		100, 60 m		
16. Homing offset		2, 80 m		
↑ No. sel		Ļ		
Menu				

Touch the current value.

When the numeric keypad appears, enter a desired value and then touch [ENT].

Parameter edit		Axis No. 00		
9, Pushing fails current	Push current	Stop current		
10. Auto servo OFF delay time		1 sec		
11. Stop mode	Stop Servo	Complete stop		
12. Default positioning current lim	it	35 %		
13. Default homing current limit		78 %		
14. Waiting time for cont. operatio	n	0, 810 sec		
15. Soft limit		100, 60 m		
16. Homing offset		2.80 m		
↑ No. sel		Ļ		
Menu				

Change parameters and touch [Menu] to return to the controller restart screen.





Touch [Yes].

The controller is restarted. The controller operates according to the operation pattern settings you have made. The display returns to the initial setting screen.



Touch [No], and the controller will not operate according to the operation pattern parameters you have set until restarted.



#### [Axis No. setting] Axis number is set.

Axi	is No. se	etting					Axis No.	00	
•Axis No.							0		
	1	2	3	4	5	CLR	ESC		
	6	7	8	9	0	BS	ENT		
	Menu								
_									
Axi	is No. se	etting					Axis No.	00	

When the numeric keypad appears, enter a desired value and then touch [ENT]. You can set a value between 0 and 15.

Touch [Execute]. In this example, 15 is set.

[Initial parameter]

•Axis No.

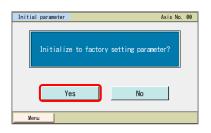
Men

Controller restart

The parameters are reset to their factory default settings.

Axis No. 00

15



Restart the controller?

No

Yes

Execute

Touch [Yes].

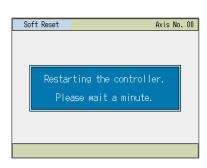
Touch [No] to return to the parameter menu screen without resetting the parameters to their factory default settings.

Touch [Yes].

The controller is restarted. The controller operates according to the factory-set parameters.

The display returns to the initial setting screen.

Touch [No], and the controller will not operate according to the factory-set parameters until restarted.





#### [System password change] Change the system password.

System p	assword (	change							
	N	ew pas	sword	: 511	9				
1 2 3 4 5 CLR ESC									
1 2 3 4 5 CLR ESC									
6	7	8	9	0	BS	ENT			
Menu									

Enter the new system password to change to. If you do not set the system password, enter 0000.

Touch [ENT].



Touch [Change].

Information
System password change complete.
New password : 5119
ОК

The system password changes. Touch [OK] to return to the parameter menu screen.

Parameter menu		Axis No. 00
	Parameter data editing	
	Ax. No. set.	
	Parameter initial.	
	System password	
Menu		



### 4.13 Test (I/O Tests, Operation Tests for Axis Movement)

You can perform I/O tests and operation tests for axis movement.

SEP menu	Axis No. 00
Monitor	Position setting
Information	Initial setting
Alarm list	Data backup
Change ax.	

Touch [Initial setting] on the SEP menu screen.

Initial setting m	enu	Axis No. 00
	I/O setting	
	Parameter	
	Test	]
	Env. set.	
Menu		

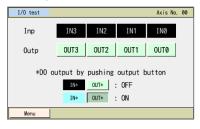
Touch [Test].

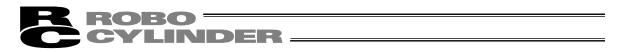
Touch [Menu] to return to the SEP menu screen.

Test menu		Axis No. 00
	I/O test	
	Test oper.	
Menu		

Select and touch either [I/O test] or [Test oper.].

• I/O Test: PIO input signals can be monitored. Also, the output signals can be forcibly turned ON or OFF by touching OUT0, OUT1, OUT2 and OUT3.





 Pos Test: Operation tests for axis movement can be performed. The screen corresponding to the selected operation pattern appears.



**Operation pattern 2** 

(change position data)

Stop

Forward

Axis No. 00

0.01 mm

75.42 %

0.00 mm/s

10 %

Position change

Test operation

Menu

Cur.pos.

Cur.ratio

Backward

Velocity override

Vel.

**Operation pattern 0** 

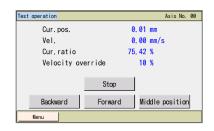
#### Operation pattern 1 (change travel speed)

Test operation		Axis No. 00		
Cur.pos.	0.01 mm			
Vel.	0.00 mm/s			
Cur.ratio	75.42 %			
Velocity ov	10 %			
		1		
	Stop			
Backward	Forward	Change velocity		
Menu				

#### Operation pattern 3 (movement by 2 inputs among 3 points)



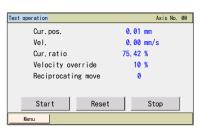
#### Operation pattern 4 (movement by 3 inputs among 3 points)



#### Operation pattern 6 (positioner)

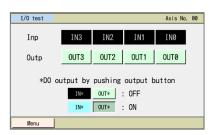
Position No.	1	SV OFF
Current posit Target positi Velocity over	on 100.00 mm	Homing
t	Change vel	Ļ
Move	Cont. move	Stop

#### Operation pattern 5 (continuous back-and-forth operation)



[1] Basic operation

### [I/O test]



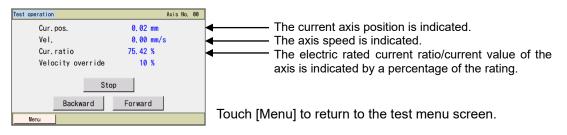
ON/OFF of input signals can be monitored.

The output signals OUT0 to OUT3 can be forcibly output by touching each signal.

Touch [Menu] to return to the test menu screen.

### [Test operation]

The operating method is explained using an example of operation pattern 0.



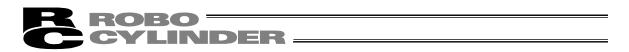
• Cur. ratio/Current

· Velocity override

- You can switch the display between the rated current ratio (%) and current value (mA) every time you touch [Cur. ratio] or [Current].
  You can change the moving speed of the actuator to 10%, 50% or 100% of the speed set in the position data every time you touch
- Backward
- : Touching [Backward] moves the actuator backward.
- Forward : Touching [Forward] moves the actuator forward.

[Velocity override].

- Stop
- : Touching [Stop] stops the actuator.



The settings of operation pattern 5 (continuous back-and-forth operation) vary partially from other operation patterns.

Test operation	Axis No. 00	
Vel. 0. Cur. ratio 75.	01 mm 00 mm/s 42 % 10 % 0 Stop	<ul> <li>The current axis position is indicated.</li> <li>The axis speed is indicated.</li> <li>The electric rated current ratio/current value of the axis is indicated by a percentage of the rating.</li> <li>The back-and-forth operation times of the axis is indicated.</li> </ul>
Menu		

- Cur. ratio/Current
- : You can switch the display between the rated current ratio (%) and current value (mA) every time you touch [Cur. ratio] or [Current].
- Velocity override : You can change the moving speed of the actuator to 10%, 50% or 100% of the speed set in the position data every time you touch [Velocity override].
- Start : Continuous operation stops once the operation test screen appears. Touching [Start] causes the actuator to move back and forth continuously at the speed set by the override parameter.
- Stop : Touching [Stop] stops the actuator.
- Reset : Touching [Reset] resets the back-and-forth counter to 0.

Continuous operation resumes once the operation test screen closes.



## 4.14 Environment Setting

You can set the language, touch operation sound, auto monitor function, sleeping time, data input warning, display and time.

SEP menu	Axis No. 00
Monitor	Position setting
Information	Initial setting
Alarm list	Data backup
Change ax.	

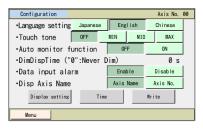
Touch [Initial setting] on the SEP menu screen.

I/O setting	
Parameter	
Test	
Env. set.	]
	Test

Touch [Env. set.].

Touch [Menu] to return to the SEP menu screen.

The environment setting screen appears.





- [1] Basic operation
- Language setting: Select a language to display.
   Display for Japanese/English/Chinese languages setting change

Configuration				Axis No.	00
•Language setting	Japanese Engli:		lish	h Chinese	
<ul> <li>Touch tone</li> </ul>	OFF	MIN	MID	MAX	I
•Auto monitor f	OF	F	ON		
•DimDispTime ("0":Never Dim)				0 s	
•Data input ala	Ena	ble	Disable		
•Disp Axis Name		Axis	Name	Axis No.	
Display setting	T	ime		Write	
Menu					

Touch a desired language ([English] etc.).

Touch [Write].

- (Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.
- Touch tone: Set whether to output or not output a touch tone.

Configuration					Axis No.	00
•Language setting	Japanese	Eng	lish	Chinese		
•Touch tone	OFF	MIN	MID		MAX	
•Auto monitor fu	unction	OF	F		ON	
•DimDispTime ("0":Never Dim) 0 s						
•Data input alar	m	Enable			Disable	
•Disp Axis Name		Axis	Name	A	xis No.	
Display setting Time Write						
Menu				_		

Touch [OFF]. A touch tone is not output. Touch [MAX], [MID] or [MIN]. A touch tone is output.

Touch [Write].

- (Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.
- Auto monitor function: You can have the monitor screen appear first after the teaching pendant is connected.

Configuration					Axis No.	00	
•Language setting	Japanese	Eng	lish				
•Touch tone	OFF	MIN	MID		MAX		
•Auto monitor f	unction	0F	F		ON		
•DimDispTime ("	0":Never	Dim)			0 s		
•Data input ala	rm	Enat	ole	Disable			
•Disp Axis Name		Axis	Name	A	xis No.		
Display setting Time Write							
Menu							

Touch [ON] to enable the auto monitor function. Touch [OFF] to disable the auto monitor function.

Select either ON or OFF, and then touch [Write].

- (Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.
- DimDispTime: Set the lights-out time when not being operated. If "0 sec" is set, the display will remain lit at all times.

Configuration			Axis No.	00		
•Language setting	Japanese	English	Chinese			
•Touch tone	OFF	MIN	MID MAX			
•Auto monitor fu	OFF	ON				
•DimDispTime ("G	0 s	]				
•Data input ala	rm	Enable	Disable			
•Disp Axis Name		Axis Name	Axis No.			
Display setting Time Write						
Menu						

Touch [DimDispTime ("0": Never Dim) 0 sec].

Enter the light off time. A desired value between 0 and 255 sec can be set.

Touch [Write].

(Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.



• Data input alarm: The warning can be output when a value less than the minimum speed and a value exceeding the rated acceleration/deceleration speed are entered in the position data. Note that the value is entered even if the warning occurs. Always use within the specification of the actuator.

Configuration		Axis No. 00					
•Language setting Japanese	English	Chinese					
Touch tone     OFF	MIN NID MAX						
•Auto monitor function	OFF	ON					
•DimDispTime ("0":Never Dim) 0 s							
•Data input alarm	Enable	Disable					
•Disp Axis Name	Axis Name	Axis No.					
Display setting Time Write							
Menu							

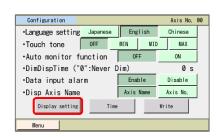
Touch [Enable] to give the warning. Touch [Disable] not to give the warning.

Select either Enable or Disable, and then touch [Write].

(Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.

#### [Display setting]

Adjustment of contrast and brightness of the screen, position tuning for touch panel and LCD screen check can be performed.



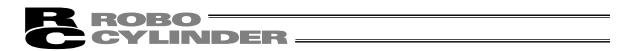
Touch [Display setting].

Display menu Window is displayed.

Display setti	ng	
	Contrast/Brightness	
	Touch panel position calibration	
	LCD check	
Menu		

Select Display Setting menu.

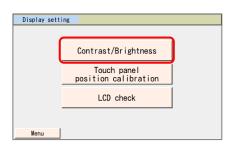
Touch [Menu] and the display returns to EnvironmetSet screen.



Touch [Contrast/Brightness].

•Change the Contrast/Brightness

You can adjust contrast (shading of liquid crystal) and brightness (of liquid crystal).

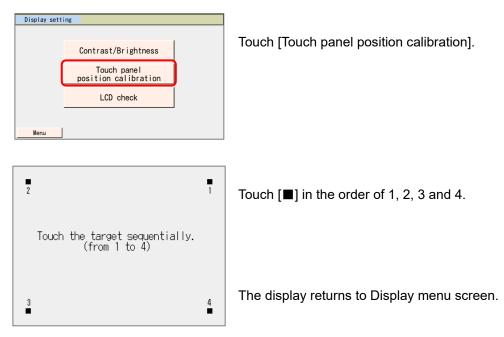


Display setting - Contrast - Brightness - Menu Contrast adjustment Touch [–] and [+] under Contrast to adjust the contrast of the screen.

Brightness adjustment Touch [–] and [+] under Brightness to adjust the brightness of the screen.

Touch [Menu] to save the setting status and the display returns to Display menu screen.

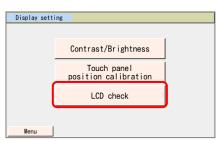
- •Touch panel position calibration
  - A calibration for the position detection of the touch panel is performed.





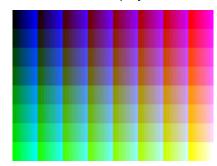
•LCD check

LCD display can be checked in the order of Color Pattern, White Only and Black Only.



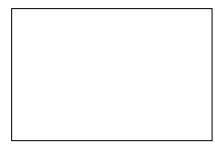
Touch [LCD check].

Color Pattern is displayed.



Touch any point on the screen.

White Only is displayed.



Touch any point on the screen.

Black Only is displayed.



Touch any point on the screen.

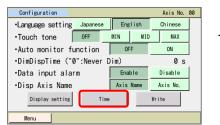
The display returns to Display menu screen.



#### [Time setting]

Time setting can be performed for TB-03 or controller with a calendar function.

1) Time setting for TB-03



Touch [Time].

Teaching time	Axis	No.	00						
Time display									
yy/mm/dd hh:mm:ss									
20 / 06 / 24 11 : 49 :	41								
Time edit									
Menu									

The TB-03 is displayed. Touch [Time edit].

Teaching time	Axis	No.	00
Time edit			
yy/mm/dd hh:mm:ss			
20 / 06 / 24 11 : 49 :	58		
Time display Set			
Menu			

Touch the value of year, month, day, hour, minute or second that is required to be changed.

		Т	ime ed	it					
yy/mm/dd hh:mm:ss									
20 / 06 / 24 11 : 52 : 58									
1	2	3	4	5	CLR	ESC			
T 6	7	8	9	0	BS	ENT			

Numeric keys are displayed. Input a value and touch [ENT].

Teaching	time							Axis	No.	00
			Time	edit						
	yy/mm/dd hh:mm:ss									
20	/ 06	6 /	24	11	:	52	:	58		
Time dis	splay	Г	Set		ו					
Menu	1	_			<b>,</b>					
nienu										

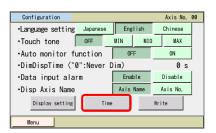
Touch [Set].





The time of the TB-03 is changed. Touching [Back] can go back to the controller time setting screen. Touching [Inquiry] displays the inquiry screen.

2) Time setting for controller with a calendar function



Touch [Time].

Teaching f	time								Axis	No.	00
Time display											
	yy/mm/dd hh:mm:ss										
20	/ 06	7	24		14	:	38	:	30		
	_										
Time ed	lit										
Menu											

The time of TB-03 is displayed. Touch [Time edit].

Teaching	time				Axis No.	00
		Time	edit			
	yy/mm,	/dd	h	h:mm:ss		
20	/ 06	/ 24	14	38 :	47	
Time dis	splay	Set		Set as con	ntroller cl	ock
Nenu						_
Menu						

When setting the time of TB-03 to the controller, the time does not need to be changed. Touch any one of year, month, day, hour, minute and second to change the time.

	Teaching	time					Axis No.	00	
	Time edit								
	yy/mm/dd hh:mm:ss								
	20 / 06 / 24 14 : 39 : 47								
								1	
	1	2	3	4	5	CLR	ESC		
Т	6	7	8	9	0	BS	ENT	ock	
	Menu								

Numeric keys are displayed. Input a value and touch [ENT].





Touch [Set as controller clock].

Message			Axis	No.	00
	Message	e No. 186			
	Time settin	g complete			
	Back	Inquiry		1	

The time of the controller is changed. Touch [Back] to return to the teaching time setting screen. Touch [Inquiry] to display the inquiry screen.



### 4.15 Data Backup

Data is transferred between the SD memory card in the teaching pendant and the controller.

(Note) Type of Stored Data

This includes the position data, parameters and alarm list. It is not applicable to the backup data storable in the RC PC software.

(Note) Extensions of the Stored Data

- The file extensions of the data stored to the SD card are the same as those dealt in RC PC software, and are compatible. The position data for the ASEP controllers is ptas and parameters are pras. The position data for the PSEP controllers is ptps and parameters are prps.
- [Refer to the details of the file extensions in the RC PC Software Instruction Manual] • The alarm list can only have the backup. It cannot be restored. Data is in a CSV file.

#### (Note) Directories of the Stored Data

The folders to store the backup data of the controller and the folder to read the data from when restoring the data to the controller are as listed below. The directories to store the files cannot be changed. The files existing in other directories other than the specified folders cannot be listed up in the file name list in the file select at the initial setting or restore. If the folder does not exist, it is automatically created.

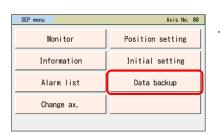
- Position Data : \TB\_CON\Position\File Name
- Parameter : \TB\_CON\Parameter\File Name
- Alarm List : \TB\_CON\Alarmlist\File Name

(Note) Files with Chinese names are not supported.



### 4.15.1 Data Backup of the Controller

The data in the controller is transferred to the SD memory card for backup.



Touch [Data backup] on the SEP Menu screen.

### A screen for data transfer appears.

Data backup		Axis No. 00
Backup/Restore		Data type
Backup		Position data
		Parameter
Restore		Alarm list
	Tran	nsfer
Menu		

Touch [Backup].

Select the data type for the backup such as [Position data] and touch it.

Touch [Transfer].

Data backup			Axis	No.	00
Transfer mode : Co	ontroller	⇒	SD memory	car	d
Transfer data :	Posit	tion	lata		
The above da Do you	ta will be t want to con				
Yes		No			
Menu					

Touch [Yes].

If [No] is touched, the screen goes back to the data backup screen.

Backup file name designation									
Position data File name									
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	E	F	G	Н	CLR
Ι	J	К	L	M	N	0	Р	Q	BS
R	S	T	U	۷	W	X	Y	Z	ENT
	_	[	]		SPACE		-	#	

Numeric keys show up. Input a file name.

The file name is to be typed with 32 characters at maximum in letters and numbers.

Input a name and touch [ENT].

4-73

A message to tell the data transfer is complete pops up and	ł
the backup process is finished.	

Touching [Back] can go back to the Backup Data screen.

File name confirmation
File name
AAA. ptps
A file of the same name already exists. Do you want to overwrite it? Yes No
Menu

The screen below appears if the same name is not found.

Touch [Yes].

Touch [Save].

If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.

The screen below appears if the same name is found.

Touch [Yes].

If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.

A file of the same name already Do you want to overwrite i	
Yes No	
Menu	
Backup Data	Axis No. 00
Transferring Data.	

100% TransMode: Controller  $\Rightarrow$  SD Card DataType : Position & Parameter

> Message No.184 Data transfer completed

> > Inquiry

Axis No. 00

<b>ROBO</b> CYLINDER

Backup file name	designation		
Position data			
File name 🗛			
		_	
	Save		
Menu			
morra			

File name above will be saved. Are you sure to continue?

No

File name confirmation

Yes

File name AAA.ptps

Menu

Messa

Back

Data transfer screen will be shown.



### 4.15.2 Restore to Controller

Data in the SD card is transferred to the controller.

SEP menu	Axis No. 00
Monitor	Position setting
Information	Initial setting
Alarm list	Data backup
Change ax.	

Touch [Data backup] on the SEP Menu screen.

### A window for data transfer appears.

Data backup		Axis No. 00
Backup/Restore	Da	ata type
Backup	_	Position data
		Parameter
Restore		Alarm list
	Transf	er
Menu		

Data backup Axis No. 00
Transfer mode : Controller $\Rightarrow$ SD memory card
Transfer data : Position data
The above data will be transferred.
Do you want to continue?
Yes No
Nenu

Touch [Restore].

Select the data type to transfer to the controller, such as [Position data], and touch it.

Touch [Transfer].

Touch [Yes].

If [No] is touched, the screen goes back to the data backup screen.

Restore file select		Axis	No.	00
Position data				
File select				
AAA	V			
AAA BBB CCC	-			
	Transfer			
	Transfer			
Menu				

Touch  $\blacktriangle$  and  $\blacktriangledown$  to select a file to transfer to the controller from the list of the backed up file names.

Touch [Transfer].

	R
File name confirmation	
File name	Touch [Yes].
AAA. ptps	
Data of file above will be transferred to controller. Are you sure to continue?	If [No] is touched, the screen goes back to the previous one for the restore file select.
Yes No	
Backup Data Axis No. 00 Transferring Data. Please wait a minute.	Data transfer screen will be shown.
100%	
TransMode: SD Card ⇒ Controller	
DataType : Position Data	
Message Axis No. 00	A managed to tall the data transfer is complete none up
Message No. 184	A message to tell the data transfer is complete pops up and the data transfer process to the controller is finished.
Data transfer completed	

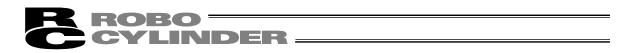
ROBO

Back

Inquiry

Touching [Back] can go back to the Backup Data screen.



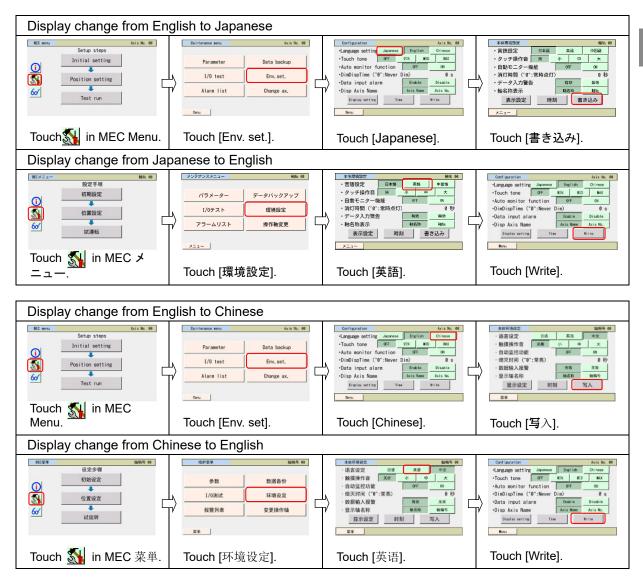


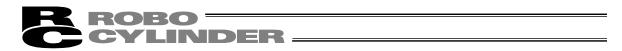
5. Operation of MEC Related Controllers

MEC related controllers: PMEC, AMEC and ERC3 (MEC mode)

### 5.1 Transition of Operating States

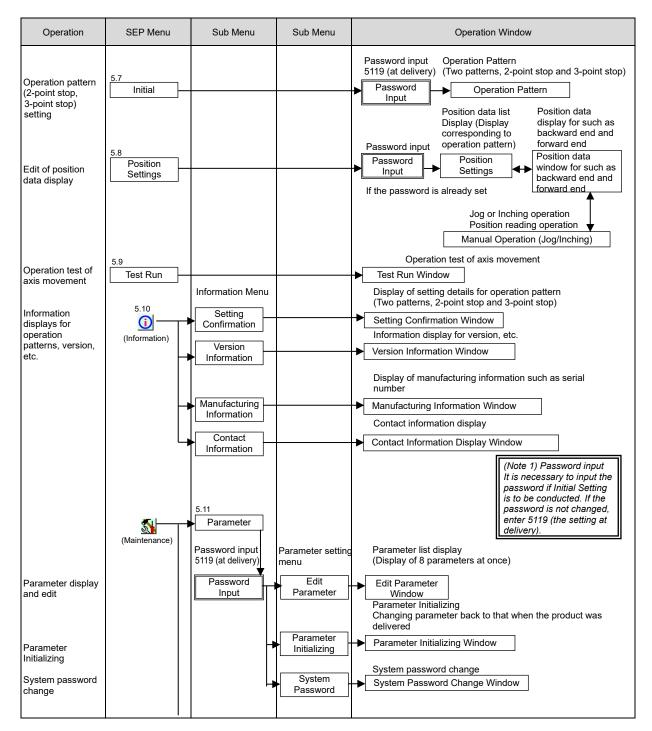
The language can be changed by following the steps below. For the operation after the language change, please refer to the instruction manual written in each language





### 5.2 Operating Menu

Transition of operating states when the TB-03 is connected to a MEC related controller is shown.



Operation	SEP Menu	Sub Menu	Sub Menu	Operation Window
Display of PIO signal input and output, Compulsory output of output signal Alarm content detailed display Data transfer between memory and controller Environment of Language Setting, Touch Sound Setting, etc. Display of conditions of input and output I/O, velocity,	5.16	5.12 I/O Test 5.13 Alarm List 5.14 Data Backup 5.15 Global 5.5 Change ax.		Display of PIO signal input and output and compulsory output of output signal I/O Test Window Alarm detailed display (Display of 8 alarm at once) Alarm List Window Data transfer between memory and controller Data Backup Window Language setting, touch operation sound, sleeping time, automatic monitor function, data input warning Global Window Select Axis screen Monitor Window

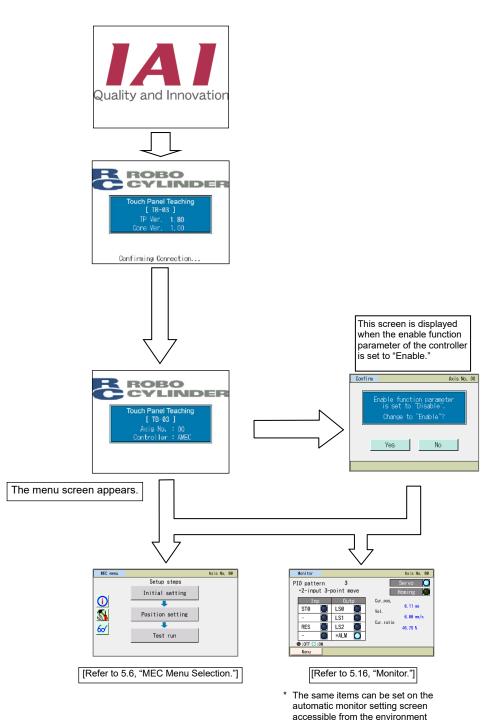
**R**ROBO

=



### 5.3 Initial Screen

When the power is turned on, the IAI logo is displayed and then the version information is displayed.



setting screen of the controller.

ME0376-10A



### 5.4 Initial Setting

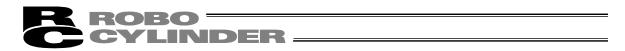
When the power is turned on for the first time after the delivery of the controller, the initial setting screen will appear.

- Select [Yes], and the display will change to the initial setting screen where you can set the • operation pattern.
- Select [No], and the factory set operation pattern, specifically the 2-point stopping operation mode, will remain effective.

The display will switch to the position setting screen.

In	nitial Set Axis No	. 00
Yes		No
Initial setting         Axis No. 00           Stop position         2-point stop           Pushing Control         3-point stop           With pushing         Without pushing	]	Position setting     Axis No. 00       ③Start point     ■End point       0.00 mm     30.00 mm       Vel.     Vel.       50.00 mm/s     75.00 mm/s
[Refer to 5.7, "Initial Setting."]		[Refer to 5.8, "Position Setting."]

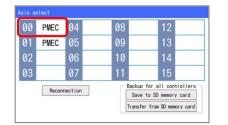
- ny seungs
- Operation pattern: Stopping at 2 points



### 5.5 Operation Axis Change

The axis select window is displayed when several units of controllers are connected to the communication line. Also, it can be displayed by touching [M] (Maintenance)  $\rightarrow$  [Change ax.] in the menu screen.

It is not necessary to select the axis when only one unit of controller is connected.



Select the axis to connect this teaching pendant and touch it.



Connection to the selected axis controller gets started.

MEC menu		Axis No. 00
	Setup steps	
	Initial setting	
$\mathbf{i}$	+	
5	Position setting	
6~	+	
<u>~</u>	Test run	

Once the connection to the controller is established, MEC menu screen opens.



# 5.6 MEC Menu Selection

MEC menu				
MEC menu		Axis No. 00		
	Setup steps			
	Initial setting			
	+			
5	Position setting			
6~	+			
<u></u>	Test run			

The MEC menu has six items. Select and touch one of them. The screen changes to the one corresponding to the menu item you have touched.

Menu list

•	Initial setting	Set the operation pattern (stopping at 2 points or 3 points). [Refer to 5.7, "Initial Setting."]
•	Position setting	Set the position, push force, push band, etc. The axis can be operated manually.
		[Refer to 5.8, "Position Setting."]
٠	Test run	Conduct axis movement operation tests. [Refer to 5.9, "Test run"]
•		The operation pattern, version and other information are displayed. [Refer to 5.10, "Information."]
•	Maintenance 🔬	Touching switches the display to the maintenance menu screen,

which is the next selection screen.

Maintenance menu	Axis No. 00
Parameter	Data backup
I/O test	Env. set.
Alarm list	Change ax.

The maintenance screen shows six buttons, so select and touch a desired button. The display will change to the menu screen corresponding to the button you have touched. Touch [Menu] to return to the previous MEC menu screen.

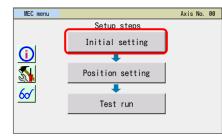
Maintenance menu list

Parameter	Set the default positioning band and other parameters. [Refer to 5.11, "Maintenance – Parameters."]
<ul> <li>I/O test</li> </ul>	Conduct I/O Tests. [Refer to 5.12, "Maintenance – I/O Tests."]
Alarm list	Detail internal information of alarms are displayed. [Refer to 5.13, "Maintenance – Alarm List."]
Data backu	p Transfer data between the teaching pendant and controller. [Refer to 5.14, "Maintenance – Data Backup."]
Env. set.	Set the touch sound and other environment specifications. [Refer to 5.15, "Maintenance-Environment Setting."]
Change ax.	Select an axis to operate the teaching pendant to. [Refer to 5.5, "Operation Axis Change."]



# 5.7 Initial Setting

Select whether to stop at 2 points or 3 points.



Touch [Initial setting] on the MEC menu screen.

The password entry screen appears if the system password is other than '0000'.

]	lnit, set						Axis No.	00
	Please enter password.							
	0000							
			L	0000				
	1	2	3	4	5	CLR	ESC	1
	<u>.</u>						200	
	6	7	8	9	0	BS	ENT	
	Menu							

Enter the password and touch [ENT].

The default system password is '5119'. For how to change the system password, refer to 5.11, "Maintenance – Parameters [Change System Password]."

If the valid password has been entered, the display switches to the initial setting screen.

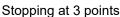
#### Stopping at 2 points

Initial setting	Axis No. 00
Stop position	
2-point stop	3-point stop
Pushing Control	
With pushing	Without pushing
	ок
Menu	

Select and touch either [2-point stop] or [3-point stop]. To perform positioning operation, select and touch [Without pushing]. To perform push-motion operation, select and touch [With pushing].

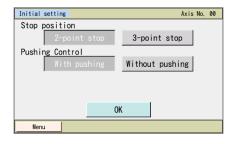
To stop at 3 points, select [Both OFF] or [Both ON] as the position specification method.

- (Note) Take note that if push-motion operation is performed and therefore [Without pushing] is selected, the completion signal will not be output.
- \* If [Without pushing] is selected, LS0 and LS1 (LS2) will be used as output signals. If [With pushing] is selected, PE0 and PE1 (PE2) will be used as output signals.



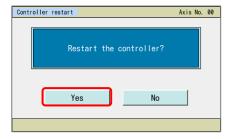






## Touch [OK].

Touch [Menu] to return to the MEC menu screen. All initial settings you have made will be discarded.



### Touch [Yes].

The controller will restart.

After the restart, the controller will operate according to the initial settings you have made. Return to the MEC menu screen.

If you touch [No], the initial settings you have made will not be reflected until the controller is restarted.

Soft I	Reset	Axis	No.	00
	Restarting the controlle Please wait a minute.	r.		



#### **Operation Pattern**

PMEC and AMEC and ERC3 (MEC mode) controllers offer two operation patterns. The table below gives an overview of the Operation specification of each pattern. [For the setting methods, refer to the sections on initial setting and stop position setting.]

Operation p	pattern	Description	Air cylinder circuit (Reference)	How to connect motorized cylinder
Stopping at 2 points (2-point positioning)	Movement by 1 input between 2 points [Single-solenoid mode]	You can move the actuator between 2 points using the same control you would normally use with an air cylinder. You can set the positions of the end point and start point. You can specify the moving speed and acceleration/deceleration. You can also specify push-motion Operation. The actuator moves to the end point when the ST0 turns ON, and returns to the start point when the signal turns OFF.	PLC Detection of start position (LS1) Move to end point (S70) R1 R2 P (Air)	Motorized cylinder
Stopping at 3 points (3-point positioning)	Movement by 2 input between 2 points [Double-solenoid mode]	You can move the actuator between 2 points using the same control you would normally use with an air cylinder. You can set the positions of the end point and start point. You can set the position of an intermediate point and perform positioning to the intermediate point. You can specify the moving speed and acceleration/deceleration. You can also specify push-motion operation. The actuator moves to the end point when the ST1 turns ON, and moves to the start point when the ST0 turns ON.	PLC PLC PLC PLC PLC PLC PLC PLC	PLC Deticated cable (LS0) Deticated cable AMEC /PMEC (LS1) Move to end position (LS1) Move to start point 2 (ST0) Power supply
	Movement by 2 input between 3 points [3-point positioning]	[Intermediate movement mode, both OFF] When both the ST0 and ST1 are turned OFF, the actuator will position to and stop at an intermediate point. When both the ST0 and ST1 are turned ON, the actuator will stop in the middle of movement.	PLC Air cylinder Detection of starr position (LS0) Detection of end position (LS1) Move signal 1 (ST0) Move signal 2 (ST1) P(Air) P(Air) P(Air)	Motorized cylinder

(Note) The air cylinder circuits are drawn with symbols of signals corresponding to those used by PMEC, AMEC and ERC3 (MEC mode) controllers. For details on signals, refer to the "PMEC, AMEC and ERC3 (MEC mode) instruction manual."



#### [1] Example of initial setting operation The operation is explained using specific examples.

Example of stopping at 2 points Set as follows.

No.	Operation	Screen	Remarks
1	Touch [Initial setting] on the MEC menu screen.	Initial setting       Initial setting       Position setting       Test run	
2	If the system password is not '0000', the password entry screen appears. Enter the system password, and then touch [ENT].	Parameter         Axis No. 00           Please enter password.         00000           1         2         3         4         5         CLR         ESC           6         7         8         9         0         BS         ENT           Memu	The default system password is '5119'. For how to change the system password, refer to 5.11, "Maintenance – Parameters [Change System Password]."
3	<ul> <li>Touch and select either [2-point stop] or [3-point stop] based on the number of positioning points.</li> <li>To perform positioning operation select [Wiyhout pushing]. To perform pushmotion operation select [With pushing].</li> <li>In the case of positioning to the intermediate position in the 3-point stop pattern, select [Both OFF] or [Both ON] for the ST0 and ST1 input signals, and then touch [OK].</li> </ul>	Stopping at 2 points Initial setting Aris No. 00 Stop position 3-point stop Pushing Control Without pushing OK Menu Stopping at 3 points Stop position 2-point stop Pushing Control Without pushing Without pushing Wi	Touch [Menu] to return to the first MEC menu screen. (Reference) Factory setting Stop position: [2-point stop] Push function: [Without pushing] Intermediate point specification method: [Both ON]
4	Touch [Yes].	Controller restart Axis No. 00 Restart the controller? Yes No	To make the specified items effective, you must restart the controller. The settings you have made will not be reflected until the controller is restarted. Touch [No] to return to the previous screen.
5		Soft Reset Axis No. 00 Restarting the controller. Please wait a minute.	



No.	Operation	Screen	Remarks
6		No. 00       Setup steps       Initial setting       Position setting       Test run	Once the controller has restarted, the MEC menu screen appears.



# 5.8 Position Setting (Position Data Setting and Manual Axis Operation (Jogging, Inching))

The position, push force, push band and other position data are set. You can move the actuator by jogging or inching.



Touch [Position setting] on the MEC menu screen.

The password entry screen appears if the position data edit password is other than '0000'.



A position data adit password can be pat in the

Enter the password and then touch [ENT].

A position data edit password can be set in the 'position data edit password' field of the parameter edit screen.

If the valid password has been entered, the display switches to the position setting list screen. The displayed items vary depending on the operation pattern.

Position se			Axis No. 00
Start p	point	1 End point	
	0.00 mm		30.00 mm
Vel.		Vel.	
	50.00 mm/s		75.00 mm/s

The screen shown to the left is an example of stopping at 2 points. The set value of each position is shown.

Touch the position you want to set.

Touch [Menu] to return to the MEC menu screen.

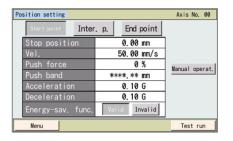
Number of pos	sitions to be set
---------------	-------------------

Operation pattern	Movement	Number of positions to be set
Stopping at 2 points	Move between 2 points	2
Stopping at 3 points	Move among 3 points	3



Touch the position you want to set, and the target position/speed setting screen of the touched position will appear.

Set the stop position, velocity, push force, push band, acceleration and deceleration.

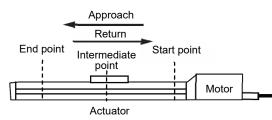


Touch [Menu] to return to the MEC menu screen.

You can select jog operation from this setting screen.

[1] Position data

Set the position data used to operate the actuator.



In the figure, the home is located on the motor side.

Position data							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Position data	Stop position	Vel.	Acceleration	Deceleration	Push force	Push band	Energy-sav.
	[mm]	[mm/s]	[G]	[G]	[%]	[mm]	Func.
[1] End point	200.00	50.00	0.1	0.1	70	1.00	Enabled
[0] Start point	0.00	50.00	0.1	0.1	0	0	Enabled
[2] Intermediate point	100.00	50.00	0.1	0.1	0	0	Enabled

1) Stop position [mm] ···· Set the position to move the actuator to.

The positions must satisfy the following relationships: Start point < Intermediate point < End point

		Positions to be set		
Operation pattern	Move	End point	Start point	Intermediate point
Stopping at 2 points	Move between 2 points	0	0	
Stopping at 3 points	Move among 3 points	0	0	0

2) Vel. [mm/s] ······Set the velocity of the actuator.

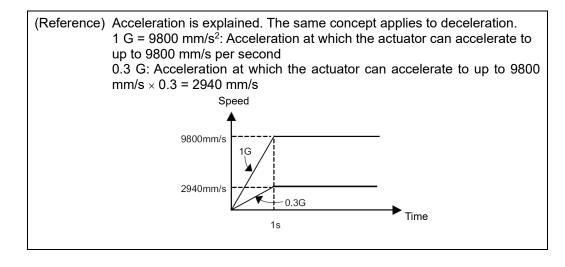
3) Acceleration [G] ······Set the acceleration of the actuator.

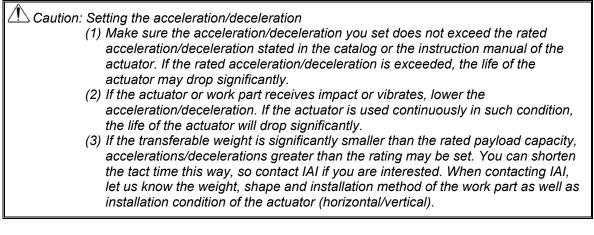
The input range permits entry of values greater than what is specified in the catalog.

Refer to the catalog or instruction manual of your actuator.



4) Deceleration [G] .....Set the deceleration (G) at which the actuator stops.





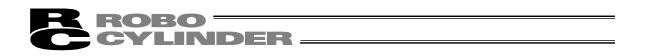
5) Push force [%] ......Set the push torque (current-limiting value) to be used in push-motion operation as a percent (%) value. Increasing the current-limiting value increases the push force. If "0" is set, positioning operation is performed. For the relationship of push force and current-limiting value, refer to the catalog or the instruction manual."
6) Push band [mm] ......Set the travel during push-motion operation. When push-motion operation is performed, the actuator moves at the speed and rated torque set as part of positioning information, just like normal positioning, until the remaining travel enters the range set

here. Once the remaining travel enters this range, the actuator moves to the position set in 1) while pushing the load. The speed of push-motion operation is set in parameter No. 7 Do not

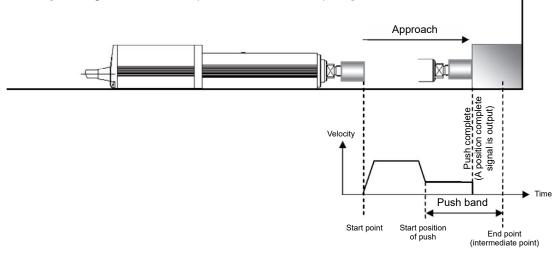
use any setting that causes this speed to be exceeded.

If the setting in 2) is less than the push speed, the actuator pushes the work part at the set speed.

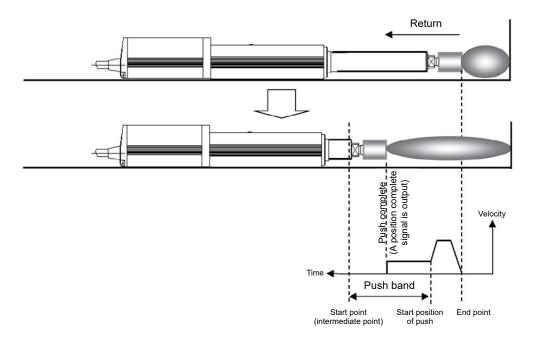
How the actuator operates as it pushes the work part toward the end point, start point and intermediate point is illustrated below.



[Pushing toward the end point or intermediate point]



[Pushing toward the start point or intermediate point = Pulling]



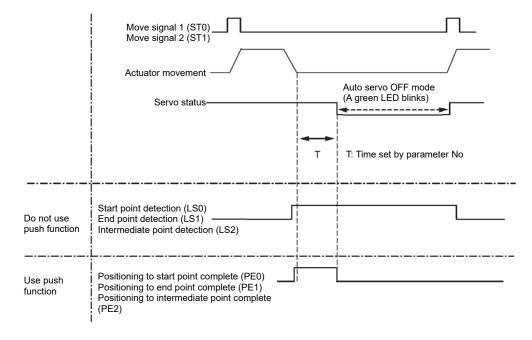
7) Energy-sav. func......When Energy-Saving is enabled, you can have the motor power (servo) turned off automatically upon elapse of a specified period to save power after completion of positioning. Set the applicable period beforehand using a parameter.

Parameter	Parameter name	Initial	Setting
No.		value	range
10	Auto servo OFF delay time [sec]	1	0 to 9999

CYLINDER \_\_\_\_\_

[Auto motor power (Auto servo) OFF]

The motor power (servo) will turn off automatically upon elapse of a specified period after completion of positioning. When the next positioning command is issued, the motor power (servo) turns on automatically and positioning is performed. Since no holding current flows while the motor is at standstill, power consumption can be reduced.



[Statuses of position detection output signals when the push function is not used] Even when the motor power (servo) is turned off, as long as the actuator is positioned within the positioning band (parameter No. 1) the start point detection signal (LS0), end point detection signal (LS1) or intermediate point detection signal (LS2) will turn ON according to the applicable position, just like when a sensor is used. Accordingly, the position detection signal that has turned ON will remain ON after completion of positioning unless the actuator moves.

[Status of position complete signals when the push function is used]

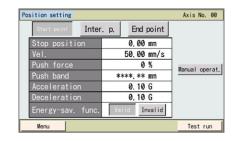
In push-motion operation, the motor power (servo) does not turn off automatically while the actuator is pushing the work part.

If the actuator has missed the work part, the motor power (servo) turns off automatically. Once the motor power (servo) turns off, a position complete status is lost. Accordingly, the push complete signal 0 (PE0), push complete signal 1 (PE1) and push complete signal 2 (PE2) will all turn OFF regardless of the stop position.

Caution: No holding torque is applied in the auto servo OFF mode. Since the actuator will move in this condition if an external force is applied, pay due attention to contact and safety when setting any operation involving auto motor power (servo) OFF.



#### [2] Basic operation



Touch the value field of each setting item such as position.

When the numeric keypad is displayed, enter a desired value and then touch [ENT].

Touch either of Start, End or Int and the screen changes to the corresponding setting window for [Start point], [End point] or [Inter. p.].

(Note) The positions must satisfy the following relationships: Home *≤* Start position *≤* Midway position *≤* End position

Touching [Jog] switches to jog operation.

#### [Manual axis operation (jogging/inching)]

You can load position data via manual axis operation (jogging/inching).

Pos. data se	t				Axis No.	00
Start poir	nt Inf	ter. p.	End	point		
Current p	ositio	n	0.00	mm	Teach	
Servo	0FF	$\bigcirc$	Ho	oming	$\bigcirc$	
High speed	tiddle speed	Low speed	Low speed	Niddle speed	High speed	
1. 0mm	<b>0.</b> 1mm	0. 01mm	0. 01mm	0. 1mm	1. 0mm	
Menu						

Operation on the manual axis operation (jogging/inching) screen



[Servo ON]

While any of these buttons is touched, the axis jogs in the direction of the arrow. The axis moves at 1 mm/s in the low-speed mode, 10 mm/s in the medium-speed mode, or 50 mm/s in the high-speed mode. Select one of the speed.

While any of these buttons is touched, the axis inches in the direction of the arrow. Select 0.01 mm, 0.1 mm or 1.0 mm as the inching distance.

Touching [Servo ON] when the motor power (servo) is turned off turns on the motor power (servo) and the O lamp will become lit. Touching [Servo OFF] when the motor power (servo) is turned on turns off the motor power (servo) and the O lamp will become unlit.

• [Homing] Touching [Homing] before the home return is completed causes the axis to return home and the O lamp will become lit.



Position loading operation Touch [Teach]. The confirmation screen appears. You can change the position number by touching [ $\uparrow$ ] / [ $\downarrow$ ]. Touching [Yes] loads the current position.

Conf		Axis No. 00
Position No.	0	↑ I
Target position	0. 00 mm	↓
Current position	50, 00 mm	
Te	ach pos.?	
Yes		No



[3] Example of position setting operation

The operation is explained using specific examples.

 Setting the position, velocity, acceleration and deceleration An example of stopping at 2 points is explained. Positions are set to operate the actuator back and forth between 10.0 mm and 100.0 mm. End point: 100.0 mm, Start point: 10.0 mm

No.	Operation	Screen	Remarks
1	Touch [Position setting] on the MEC menu screen.	NEC menu     Axis No. 88       Setup steps     Initial setting       Position setting     Test run	
2	If the position data edit password is not '0000', the password entry screen appears. Enter the position data edit password and touch [ENT].	Position setting Axis No. 00 Please enter password. 00000 1 2 3 4 5 CLR ESC 6 7 8 9 0 8S ENT Menu	A position data edit password can be set in the 'position data edit' field of the parameter edit screen.
3	Set the position relating to the start point, acceleration, and deceleration. Touch [Start point].	Distant point         Aris No. 00           Start point         End point           0.00 mm         50.00 mm           Vel.         Vel.           20.00 mm/s         180.00 mm/s	Touch [Menu] to return to the MEC menu screen.
4	Touch the value field of stop position. When the numeric keypad is displayed, touch [1], [0], and then [ENT].	Position setting     Aris No. 00       The time     End point       Stop position     0,00 mm       Yel.     20.00 mm/s       Push force     0 %       Push force     0,10 G       Deceleration     0,10 G       Energy-sav. func.     Walid       Menu     Test run	Touch [Menu] to return to the position setting screen.
5	"10.00" appears next to "Position."	Position setting     Axis No.     00       Instruming     End point     Stop position     10,00 mm/s       Yet.     20,00 mm/s     Number of the stop position     Number of the stop position       Push force     0 %     %     Mark stop position       Acceleration     0,10 G     Energy-sav. func.     Invalid       Menu     Test run	Touch [Menu] to return to the position setting screen.



No.	Operation	Screen	Remarks
6	Touch the value field of velocity. When the numeric keypad is displayed, touch [5], [0], and then [ENT].	Position setting     Axis No. 10       Text sum     End point       Stop position     10.00 mm/       Vel.     20.00 mm/       Push force     0 %       Push band     *****, ** mm       Acceleration     0,10 G       Deceleration     0,10 G       Energy-sav. func.     Valid Invalid       Manual     Test run	Touch [Menu] to return to the position setting screen.
7	"50.00" is shown in the velocity field.	Position setting     Axis No. 60       Tard sumining     End point       Stop position     10, 60 mm       Vel.     50, 60 mm/s       Push force     0 %       Push band     #####, ## mm       Accosteration     0, 10 G       Deceleration     0, 10 G       Energy-sav. func.     tariat       Meru     Test run	Touch [Menu] to return to the position setting screen.
8	Touch the value field of acceleration. When the numeric keypad is displayed, touch [0], [.], [3], and then [ENT].	Position setting     Axis No. 00       Intervention     End point       Stop position     10, 60 mm/s       Push force     0, 8       Push force     0, 10 G       Deceleration     0, 10 G       Energy-sav, func.     Weild       Meru     Test run	Touch [Menu] to return to the position setting screen.
9	"0.30" is shown in the acceleration field.	Position setting     Axis No. 00       Instruction     End point       Stop position     10, 60 mm/s       Push force     0 %       Push band     #****, ** mm       Acceleration     0, 30 G       Deceleration     0, 10 G       Energy-sav, func,     Wold       Meru     Test run	Touch [Menu] to return to the position setting screen.
10	Touch the value field of deceleration. When the numeric keypad is displayed, touch [0], [.], [3], and then [ENT].	Fosition setting     Axis No. 80       Stop position     10.00 mm       Yel.     50.00 mm/s       Push force     0.%       Push band     ####,## mm       Acceleration     0.90.0       Deceleration     0.10.0       Energy-sav. func.     immid       Meru     Test run	Touch [Menu] to return to the position setting screen.
11	"0.30" is shown in the deceleration field.	Position setting     Axis No. 00       iset sum     End point       Stop position     10, 00 mm/s       Vel.     50, 00 mm/s       Push force     0 %       Push bond     ####, ### minimage       Acceleration     0, 30 G       Deceleration     0, 30 G       Energy-sav. func.     Valid Invalid       Weru     Test run	Touch [Menu] to return to the position setting screen.

R	ROBO ——
C	CYLINDER

No.	Operation	Screen	Remarks
12	Touch [Menu].	Position setting     Axis No. R0       Storp position     10,00 mm/s       Vel.     50,00 mm/s       Push force     0 %       Push band     ****,*** mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     ***iiid Invalid       Nerval     Test run	
13	Set the position relating to the end point, acceleration, and deceleration. Touch [End point].	Position setting     Avia Mo RM       Start point     0.00 mm       Vel.     50.00 mm/s       100.00 mm/s	Touch [Menu] to return to the MEC menu screen.
14	The display switches to the end point screen. Set the position relating to the end point, acceleration, and deceleration.	Position satting     Axis No. 00       Start pint     End point       Stop position     50,00 mm/s       Push force     0 %       Push band     ++++, ++ mm       Acceleration     0,10 G       Deceleration     0,10 G       Energy-sav. func.     Waild       Neru     Test run	Touch [Menu] to return to the position setting screen.
15	Touch the value field of stop position. When the numeric keypad is displayed, touch [1], [0], [0], and then [ENT].	Fosition satting     Axis No. 00       Start pint     End point       Stop position     50,00 mm       Veil     100.00 mm/s       Push force     0 %       Push band     ++++, ++ mm       Acceleration     0,10 G       Deceleration     0,10 G       Energy-sav. func.     Valid       Weru     Test run	Touch [Menu] to return to the position setting screen.
16	"100.00" is shown in the stop position field.	Position satting     Axis No. 00       Start pinit     End point       Stop position     100,00 mm/s       Push force     0 %       Push band     ****, ** and       Acceleration     0,10 G       Deceleration     0,10 G       Energy-sav. func.     *stail immidid       Meru     Test run	Touch [Menu] to return to the position setting screen.
17	Touch the value field of velocity. When the numeric keypad is displayed, touch [5], [0], and then [ENT].	Fosition settine     Axis No. 80       Start print     End point       Stop position     180.80 mm/s       Vel.     180.80 mm/s       Push force     0 %       Push band     ****, ** mm       Acceleration     0, 10 G       Deceleration     0, 10 G       Energy-sav. func.     Valid       Meru     Test run	Touch [Menu] to return to the position setting screen.
18	"50.00" is shown in the velocity field.	Fosition setting     Axis No. 80       Start pint     End point       Stop position     180,00 mm/s       Push force     0 %       Push band     ++++, ++ m       Acceleration     0,10 G       Deceleration     0,10 G       Energy-sav. func.     Valid       Neru     Test run	Touch [Menu] to return to the position setting screen.



No.	Operation	Screen	Remarks
19	Touch the value field of acceleration. When the numeric keypad is displayed, touch [0], [.], [3], and then [ENT].	Position settine     Axis No. 00       Start point     End point       Stop position     100,00 mm/s       Push force     0 %       Push band     sits sit mm       Acceleration     0,10 %       Energy-sav. func.     Valiel       Iteru     Test run	Touch [Menu] to return to the position setting screen.
20	"0.30" is shown in the acceleration field.	Position setting     Axis No. 00       Start point     End point.       Stop position     100, 00 mm/s       Vel.     50.00 mm/s       Push force     0.%       Push band     ####, ## mm       Acceleration     0.30 G       Deceleration     0.10 G       Energy-sav.     func.       Wenu     Test run	Touch [Menu] to return to the position setting screen.
21	Touch the value field of deceleration. When the numeric keypad is displayed, touch [0], [.], [3], and then [ENT].	Position setting     Axis No. R0       Start smint     End point       Stop position     100.00 mm/s       Push force     0.%       Push band     extra sem       Acceleration     0.30 G       Deceleration     0.10 G       Energy-saw. func.     immaild       Kenu     Test run	Touch [Menu] to return to the position setting screen.
22	"0.30" is shown in the deceleration field.	Position setting         Axis No. 00           Start point         End point           Stop position         100.00 mm/s           Push force         0 %           Push band         #***.* ** ann           Acceleration         0.30 G           Deceleration         0.30 G           Energy-sav.         function           Kenu         Test run	Touch [Menu] to return to the position setting screen.
23	Touch [Menu].	Position setting     Axis No. 00       Start point     End point       Stop position     100,00 mm/s       Push force     0 %       Push band     ####, ## mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav.     func.       Weru     Test run	Touch [Menu] to return to the position setting screen.
24		Position setting     Axis No. 00       ①Start point     11End point       10,00 mm     100,00 mm       Vel.     Vel.       50,00 mm/s     50,00 mm/s	Touch [Menu] to return to the MEC menu screen.

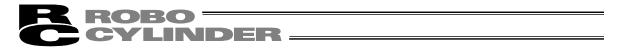


How to load the current position of 80.0 m as the start point is explained.

No.	Operation	Screen	Remarks
1	Touch [Position setting] on the MEC menu screen.	No.     No.     No.       Initial setting       Position setting       Corr       Test run	
2	If the position data edit password is not '0000', the password entry screen appears. Enter the position data edit password and touch [ENT].	Position setting Axis No. 00 Please enter password. 00000 1 2 3 4 5 CLR ESC 6 7 8 9 0 6S ENT Neru	A position data edit password can be set in the 'position data edit password' field of the parameter edit screen.
3	Set the position relating to the start point, acceleration, and deceleration. Touch [Start point].	Position estime Axis No. 00 Start point 0, 00 mm Vel. 50, 00 mm/s 100, 00 mm/s Nerv Test num	Touch [Menu] to return to the MEC menu screen.
4	Touch [Manual operat.].	Fosition satting     Axis No. 00       Inter sent     End point       Stop position     10, 00 mm       Vels     50, 00 mm/s       Push force     0 %       Push band     ****, ** No.       Acceleration     0, 30 G       Deceleration     0, 30 G       Deceleration     0, 30 G       Emergy-sav. func.     Valid Invalid       Weru     Test run	Touch [Menu] to return to the position setting screen.
5	If the motor power (servo) is currently OFF, touch [Servo ON] to turn ON the motor power (servo).	Pers. data set     Aris No. 00       Start point     End point       Current position     0,00 mm       Servo OFF     Homing       Servo OFF     Homing       Servo OFF     Lower Person       Servo Person     Lower Person	<ul> <li>If home return is not yet complete, perform home return first.</li> </ul>
6	Use the slider or rod to the target position of 80.0 mm.	Pet. data set Later sond Current position Servo OFF Later and Full and Later Later and Later and Later and Later Later and Later and L	<ul> <li>Jogging Touch any of,</li></ul>

No.	Operation	Screen	Remarks
7	Touch [Teach].	Proc. data set     Axis No. 00       Start point     End point       Current position     0,00 mm       Servo 0FF     Homing       Servo 1FF     Homing       Units     1 mm       Units     0,01 mm       Servo 0FF     Homing       Units     1 mm       Units     0,01 mm	
8	Touch [Yes].	Cent     Axis No.     0       Position No.     0     1       Target position     0.00 mm     1       Current position     80.00 mm     1       Teach pos. ?       Yes     No	
9	"80.00" is shown in the stop position field. This confirms that the position data has been loaded. Touch [Menu].	Position setting     Axia No. 00       Text paint     End point       Stop position     80, 00 mm       Vei.     50. 00 mm/s       Push force     0 %       Push band     ####, ## mm       Acceleration     0, 30 G       Energy-sav, func,     Valid Invalid       Meru     Test run	
10	Return to the position setting screen.	Position setting         Avis No. 00           ①Start point         1 End point           80, 00 mm         100, 00 mm           Vel.         Vel.           50.00 mm/s         100, 00 mm/s           Werru         Test run	Touch [Menu] to return to the MEC menu screen.

ROBO CYLINDER =



3) Direct teaching (Moving the slider by hand to the target position, and then loading the achieved position (current position) as the end point or start point)
 An example of stopping at 2 points is explained.
 How to load the current position of 50.00 mm as the start point is explained.

No. Operation Remarks Screen 1 Touch [Position setting] on the MEC no Axis No. 00 Setup steps MEC menu screen. Initial setting  $(\mathbf{i})$ 5 Position setting 60 Test run 2 If the position data edit A position data edit password password is not '0000', the can be set in the 'position Please enter password. data edit password' field of password entry screen 0000 appears. the parameter edit screen. Enter the position data edit 4 5 CLR ESC 3 password and touch [ENT]. BS ENT 9 Ø 6 8 3 Set the position relating to the Touch [Menu] to return to the start point, acceleration, and MEC menu screen. 100.00 m deceleration. 0.00 mm Vel Vel 50 00 mm/ 100.00 mm/s Touch [Start point]. Test run 4 Touch [Manual operat.]. Touch [Menu] to return to the Axis No. 00 position setting screen. End point 0.00 mm 50.00 mm/s 0 % Manual operat 0.30 ( 0.30 ( If the motor power (servo) is 5 If home return is not yet currently ON, touch [Servo complete, perform home Inter. p. End point ON] to turn OFF the motor return first. 0.00 mm Current position power (servo). Servo OFF Homing  $\bigcirc$ itile sear Low sear Histo snaar 0. 01mm 0. 01mm 0. 1mm 0. 1mm 6 Move the slider or rod by : No. 88 hand to the target position of End point Current position 50.00 mm Tear 50.00 mm. Servo OFF Homing Lov speed Low screed Niddle ap High speed Touch [Teach]. 0.01mm 0.01mm 0.1mm 1.0mm

	_
ROBO	
CYLINDER	_

No.	Operation	Screen	Remarks
7	Touch [Yes].	Cent     Axis No. 00       Position No.     0       Target position     0.00 mm       Current position     80.00 mm       Teach pos. ?       Yes     No	
8	"50.00" is shown in the stop position field. This confirms that the position data has been loaded. Touch [Menu].	Position setting     Axis No. 00       Taxin number     End point       Stop position     50, 00 mm/s       Push force     0 %       Push force     0 %       Push band     #***, ** mm       Acceleration     0, 30 G       Energy-sav, func.     Timalid       Keru     Test run	
9	Return to the position setting screen.	Position setting         Axis No. 60           []Start point         1           50, 60 mm         100, 00 mm           Vel.         Vel.           50, 60 mm/s         100, 00 mm/s	Touch [Menu] to return to the MEC menu screen.



 Setting for push-motion operation (push force, push band) An example of stopping at 2 points is explained. In this example, push-motion operation is performed at the start point. Push force: 50%, Push band: 5.0 mm

No.	Operation	Screen	Remarks
1	Touch [Position setting] on the MEC menu screen.	IEC monu     Axis No. 00       Setup steps     Initial setting       Initial setting     Position setting       Corr     Test run	
2	If the position data edit password is not '0000', the password entry screen appears. Enter the position data edit password and touch [ENT].	Position setting Axis No. 00 Please enter password. 00000 1 2 3 4 5 CLR ESC 6 7 8 9 0 BS ENT Menu	A position data edit password can be set in the 'position data edit password' field of the parameter edit screen.
3	Set the position relating to the start point, acceleration, and deceleration. Touch [Start point].	Position setting     Axis No. 00       Start point     0.00 mm       0.00 mm     100.00 mm       Vel.     50.00 mm/s       Menu     Test run	Touch [Menu] to return to the MEC menu screen.
4	Touch the value field of [Push force]. When the numeric keypad is displayed, touch [5], [0], and then [ENT].	Position setting     Axis No. 00       Stop position     End point       Stop position     0, 00 mm       Veia     50.00 mm/s       Push force     0 %       Push band     ********       Acceleration     0, 30 G       Deceleration     0, 30 G       Energy-sav. func.     ***iii Invalid       Meru     Test run	Touch [Menu] to return to the position setting screen.
5	"50.00" is shown in the push power field.	Position setting     Axis No. 00       Stop position     0.00 mm       Vel.     50.00 mm       Push force     50.9 mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     1mmild       Meru     Test run	Touch [Menu] to return to the position setting screen.
6	Touch the value field of [Push band]. When the numeric keypad is displayed, touch [5] and then [ENT].	Position setting     Axis No. 00       Stop position     0.00 mm       Vei.     50.00 mm/s       Push force     60.4x       Push band     0.10 mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     Valid       Neru     Test run	Touch [Menu] to return to the position setting screen.



No.	Operation	Screen	Remarks
7	"5.00" is shown in the push band field.	Position setting     Aris No. IN       Stop position     0, 00 mm       Vel.     50.00 mm/s       Push force     50.00 mm/s       Push band     5.00 sm       Acceleration     0, 30 G       Deceleration     0, 30 G       Energy-sav. func.     Test run	Touch [Menu] to return to the position setting screen.
8	Touch [Menu].	Position setting     Axis No. 00       The training     End point       Stop position     0.00 mm/s       Push force     50.00 mm/s       Push band     5.00 mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     Itmail d       Meru     Test run	Touch [Menu] to return to the position setting screen.
9		Position setting         Axis No. 00           Start point         IEnd point           0.00 mm         100.00 mm           Vel.         Vel.           50.00 mm/s         100.00 mm/s	Touch [Menu] to return to the MEC menu screen.



 Setting the energy-saving function (auto motor power (auto servo) OFF function) An example of stopping at 2 points is explained. How to automatically turn off the servo in 5.0 seconds after stopping is explained.

No.	Operation	Screen	Remarks
1	Touch 🚮 on the MEC menu screen.	IEC meru     Aria No. 88       Setup steps     Initial setting       Position setting     Initial setting       Fest run     Initial setting	
2	Set the auto motor power (auto servo) OFF delay time. Touch [Parameter].	Nointenance menu     Axia No. 80       Parameter     Data backup       I/0 test     Env. set.       Alarm list     Change ax.       Menu     Menu	
3	If the system password is other than '0000', the password input screen appears. Input a system password and touch [ENT].	Parameter         Axis No. 00           Please enter password.         0000           1         2         3         4         5         CLR         ESC           6         7         8         9         0         ES         ENT           Reru	The default system password is '5119'. For how to change the system password, refer to 5.11, "Maintenance – Parameters [Change System Password]."
4	Touch [Parameter data editing].	Parameter neru Axia No. 88 Parameter data editing Parameter initial. System password Meru	
5	Touch [↑] / [↓] to navigate through the screens until the auto servo OFF delay time setting screen appears.	Parameter ofit     Axis No. 80       1. Positioning band     £ 9 m       2. dag velocity     100 mm/sci       3. Serve gain selection     8       4. Torque filter constant     10       5. Velocity loop proceeding again     5.40       7. Pub velocity     20 mm/sci       8. Velocity loop proceeding again     5.40       7. Pub velocity     20 mm/sci       8. Velocity loop integral gain     5.40       7. Pub velocity     20 mm/sci       8. Velocity loop integral gain     5.40       7. Pub velocity     20 mm/sci       8. Velocity loop integral gain     5.40       9. Velocity loop integral gai	
6	Touch the value field of auto servo OFF delay time. When the numeric keypad is displayed, touch [5] and then [ENT].	Parameter of it     Avia No. 80       9. Pushing fails current     Push current       10. Auto serce OFF delay time     Tase       11. Ston odd     Stop Serce Generate approximation of the serce of	



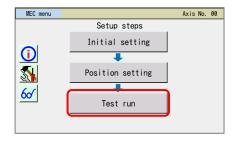
No.	Operation	Screen	Remarks
7	"5" is shown.	Parameter odit     Axis No. 00       9. Rushing fails current     Push current       10. Auto servo DFF delay time     suc       11. Ston node     Ston Servo       12. Default positioning current limit     ms       13. Befault honing current limit     ms       14. Maiting time front, oparation     ####################################	
8	Touch [Menu].	Parameter ofit     Avis No. 00       9. Pushing fails current     Push current       19. Auto serve 0FF delay time     some       11. Stop node     Stop Serve       12. Brault positioning current limit     so       13. Befault hosting current limit     so       16. Botting time for cont. operation     #######       16. Botting time for cont. operation     #####       16. Botting time for cont. operation     #####       16. Botting time for cont. operation     #####       17. Mon. sel.     J	
9	Touch [Yes].	Centreller restart Axis No. 00 Restart the controller?	If you touch [No], the settings you have made will not be reflected until the controller is restarted.
10		Soft Reset Axis No. 00 Restarting the controller. Please wait a minute.	
11	The controller is restarted and the MEC menu screen appears. Touch [Position setting].	EEC meru     Axis No. 00       Setup steps     Initial setting       Position setting     Test run	
12	If the position data edit password is not '0000', the password entry screen appears. Enter the position data edit password and touch [ENT].	Position settine Axis No. 00 Please enter password. 00000 1 2 3 4 5 CLR ESC 6 7 8 9 0 8 BS ENT Venu	A position data edit password can be set in the 'position data edit password' field of the parameter edit screen.
13	Set the energy-saving function at the start point. Touch [Start point].	Desition satisfier     Axis No. 00       Start point     End point       0.00 mm     100.00 mm       Vel.     50.00 mm/s       Heru     Test run	Touch [Menu] to return to the MEC menu screen.

R	ROBO ——
C	CYLINDER

No.	Operation	Screen	Remarks
14	Touch [Valid].	Position setting     Axis No. 00       Stop position     0,00 mm       Vei.     50,00 mm/s       Push force     0 %       Push bond     +++*, +s m       Acceleration     0,30 G       Deceleration     0,30 G       Energy-sav. func.     Invalid       Weru     Test run	Touch [Menu] to return to the position setting screen.
15	Touch [Menu].	Position setting     Axis No. 00       Start point     IEnd point       0.00 mm     100.00 mm       Vel.     50.00 mm/s       100.00 mm/s     100.00 mm/s	Touch [Menu] to return to the MEC menu screen.
16	Set the energy-saving function at the end point. Touch [End point].	Position setting     Axis No. 00       OStart point     End point       0.00 mm     100.00 mm       Vel.     50.00 mm/s       Weru     Test run	Touch [Menu] to return to the MEC menu screen.
17	The display switches to the end point screen. Set the energy-saving function relating to the end point.	Position settine         Axis No. 00           Start point         End point           Stop position         100, 00 mm/s           Vel.         100, 00 mm/s           Push force         0 %           Push bond         ++++, ++ m           Acceleration         0, 30 G           Deceleration         0, 30 G           Energy-sav. func.         Naid Invalid           Meru         Test run	Touch [Menu] to return to the position setting screen.
18	Touch [Valid].	Position settine     Aris No. 00       Start point     End point       Stop position     100.00 mm       Vei.     100.00 mm/s       Push force     0 %       Push bond     ++++, ++ mm       Acceleration     0.30 G       Deceleration     0.30 G       Energy-sav. func.     Test run	Touch [Menu] to return to the position setting screen.
19	Touch [Menu].	Position settine         Axis No. 60           Start point         End point           Stop position         100. 60 mm/s           Push force         0.5           Push bond         ++++, ++ +           Acceleration         0, 30 G           Deceleration         0, 30 G           Deceleration         0, 30 G           Energy-say, func,         Test run	Touch [Menu] to return to the position setting screen.
20		Position setting     Axis No. 60       @Start point     IEnd point       0. 80 mm     100.00 mm       Vel.     50.00 mm/s       Nemu     Test run	Touch [Menu] to return to the MEC menu screen.

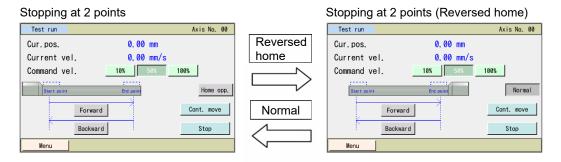
# 5.9 Test Run

You can perform I/O tests and axis movement operation tests.

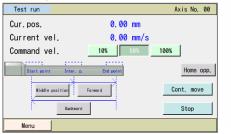


Touch [Test run] on the MEC menu screen.

 Operation test: You can perform operation tests of axis movement. A screen corresponding to the operation pattern you have selected appears. The display can be switched between the normal mode and reversed-home mode. If your actuator is of the reversed-home specification, you can switch to the reversed-home mode to align the display with the actual actuator.

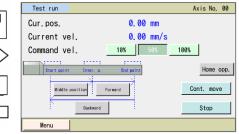


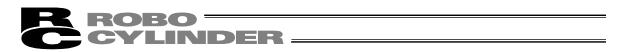
#### Stopping at 3 points



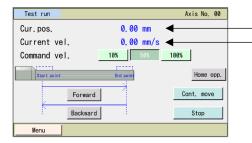


#### Stopping at 3 points (Reversed home)





The operating direction is shown by using an example of stopping at 2 points.



The current position of the axis is shown.
The velocity of the axis is shown.

- Command vel.: Select [10%], [50%] or [100%] as the speed for test run. If the speed set on the position setting screen is 600 mm/s, for example, the test run speed will become 600 mm/s if [100%] is selected, 300 mm/s if [50%] is selected, or 60 mm/s if [10%] is selected.
- Forward: Touching [Forward] causes the actuator to move toward the end point.
- Backward: Touching [Backward] causes the actuator to move toward the start point.
- Cont. move: Touching [Continuous] causes the actuator to move continuously until [Stop] is touched.

If the actuator is set to stop at 2 points, it will move between the start point and end point repeatedly.

If the actuator is set to stop at 3 points, it will move in the sequence of intermediate point  $\rightarrow$  end point  $\rightarrow$  start point repeatedly.

- Stop: Touching [Stop] causes the actuator to stop.
- Home opp./Normal: Touching [Opp] or [Normal] toggles the display mode between normal and reversed-home.



# 5.10 Information

The operation pattern, version and other information are shown.

MEC menu		Axis No. 00	
	Setup steps		
	Initial setting		Touch <u>()</u> on the MEC menu screen.
$\bigcirc$	+		
	Position setting		
60	+		
<u></u>	Test run		

The information selection screen appears.

Information menu		Axis	No.	00
	Setting confirmation			
	Version information			
	Production information			
	Inquiry			
Menu				

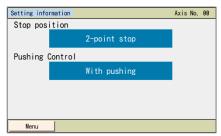
Touch the screen you want to display.

Touch [Menu] to return to the MEC menu screen.

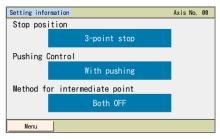
#### [Current Setup]

You can check the operation pattern, operation mode and other information currently set.

#### (Stopping at 2 points)



#### (Stopping at 3 points)





#### [Version/Production information] You can check the version information, etc.

Series / Type	PMEC-NP
Controller version	AE210002
Controller core version	AE840001
TP version	Ver. 2.81
TP core version	Ver. 1.00
NEC panel version	A500FFFA
NEC panel board core ver.	A5800000

#### [Production information]

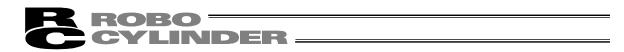
You can check the serial numbers and other manufacturing information.

Production information	Axis No. 00
Controller S/N 000059312	
Controller PCB revision	
M. REV: 0	
F. REV: 0	
Actuator S/N	
*	
Menu	

## [Inquiry]

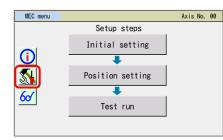
You can check the contact information of IAI.

Inquiry	
	IAI customer support center "EIGHT"
	0800-888-0088
(	24-hour-support! Weekends and holidays: 8:00AM to 5:00PM) http://www.iai-robot.co.jp/



## 5.11 Maintenance – Parameters

Set the parameters and axis number. You can change the system password and reset all parameters to their factory defaults.



Touch 🔬 on the MEC menu screen.

Parameter	Data backup
I/O test	Env. set.
Alarm list	Change ax.

Touch [Parameter]. Touch [Menu] to return to the MEC menu screen.

The password entry screen appears if the system password is other than '0000'.

Р	arameter						Axis No.	00
	Please enter password.							
	0000							
	1	2	3	4	5	CLR	ESC	
	6	7	8	9	0	BS	ENT	
							<u> </u>	
	Menu							

Enter the password and then touch [ENT].

The default system password is '5119'. For how to change the system password, refer to 5.11, "Maintenance – Parameters [Change System Password]."

Parameter menu		Axis	No.	00
_	Parameter data editing			
	Parameter initial.			
-	System password			

Select and touch [Parameter data editing], [Parameter initial.] or [System password].



A screen corresponding to the menu you have selected appears.

• Parameter edit : You can set 24 parameters.

Parameter edit	Axis No. 00
1. Positioning band	0, 10 mn
2. Jog velocity	100,00 mm/sec
3. Servo gain selection	8
4. Torque filter constant	56
5. Velocity loop proportional gain	355
6. Velocity loop integral gain	5, 435
7. Push velocity	20.00 mm/sec
8. Pushing stop recognition time	255 msec
↑ No. sel.	¥
Menu	

• Initial parameter : You can reset all parameters to their factory defaults (initialize the parameters).

Initial	parameter Axis	No.	00
_			
	Initialize to factory setting parameter?		
	Initialize to factory setting parameters		
	Yes No		
	163		
Menu			

• System password change : You can change the parameter edit password, etc.

System p	assword o	change					
	N	ew pas	sword	: 511	9		
							I
1	2	3	4	5	CLR	ESC	
6	7	8	9	0	BS	ENT	
0			9		B2		
Menu							



- Types of parameter editing For details on each parameter, refer to the instruction manual for your PMEC/AMEC controller and ERC3 (MEC mode).
  - No.1 (Positioning band) Set the positioning band.
  - No.2 (Jog speed) Set the speed of jog operation.

No.3 (Servo gain selection)

Set the servo gain number that determines the response of position control loops in servo control.

No.4 (Torque filter constant) Set the torque filter time constant that determines the filter time constant for torque commands in servo control.

No.5 (Speed loop proportional gain)

Set the speed loop proportional gain that determines the response of speed control loops in servo control.

No.6 (Speed loop integral gain)

Set the speed loop integral gain that determines the response of speed control loops in servo control.

- No.7 (Push speed)
- Set the speed of push-motion operation.

No.8 (Push recognition time)

Set the push recognition time to recognize completion of operation after the work part was contacted in push-motion operation.

No.9 (Pushing fails current)

Set whether to use the push current or stop current as the current limiting value when the work part was missed in push-motion operation.

For AMEC, if the stop current is selected when the work part was missed in push-motion operation, the torque limit at the travel current limiting value is set.

No.10 (Auto servo OFF delay time)

Set the time until the auto motor power (auto servo) turns off automatically when the ecology function is enabled.

No.11 (Stop mode) <u>Displayed for PMEC, ERC3 (MEC mode) controllers</u> Set whether to implement servo stop based on the full servo control method or complete stop without full servo control when the actuator stops.

- (Note) When this parameter is changed, the new setting will not be reflected until the position data is written to the controller again.
- No.12 (Current limiting value while stopped after positioning) <u>Displayed for PMEC, ERC3 (MEC mode) controller</u>

Set the current limiting value to be applied while the actuator is stopped after positioning.

No.13 (Current limiting value during home return)

Set the current limiting value to be applied during home return operation.



No.14 (Position execution wait time during continuous operation) This parameter is not used with PMEC, AMEC and ERC3 (MEC mode) controllers.
No.15 (Soft limit) Set the positive soft limit.
No.16 (Home return offset) Set the offset for home return.
No.17 (Home return direction) Set whether to perform home return in the motor direction or front side direction. The home return direction cannot be changed for some actuators, such as rod-type actuators.
No.18 (Position edit password) Set the password for editing position data.
No.46 (PIO Inching distance) <u>Displayed for ERC3</u> Set the inching distance for when conducting the inching operation in Quick Teach.
No.147 (Target value for total travel count) <u>Displayed for ERC3</u> Set the threshold for total travel count. The total number of the actuator operation is counted in the maintenance function of ERC3. An alarm is generated when the total operation distance exceeds the value set to threshold for total number of movements.
No.148 (Target value for total travel distance) <u>Displayed for ERC3</u> Set the threshold for total travel distance. The total travelled distance of the actuator operation is counted in the maintenance function of ERC3. An alarm is generated when the total operation distance exceeds the value set to threshold
for total travelled distance.

No.152 (High Output Setting) <u>Displayed for ERC3</u> Set whether to use the high output function. Enabling : Set to use the high output function.

No.153 (BU Speed Loop Proportional Gain) <u>Displayed for ERC3</u> When the high output setting is activated, this parameter setting becomes effective for the speed loop proportional gain.

No.154 (BU Speed Loop Integral Gain) <u>Displayed for ERC3</u> When the high output setting is activated, this parameter setting becomes effective for the speed loop integral gain.



[2] Basic operation Set parameters.

Set paramete

## [Parameter]

Parameter edit	Axis No. 00
1. Positioning band	0, 10 mm
2. Jog velocity	100.00 mm/sec
3. Servo gain selection	8
4. Torque filter constant	56
5. Velocity loop proportional gain	355
6. Velocity loop integral gain	5, 435
7. Push velocity	20.00 mm/sec
8. Pushing stop recognition time	255 msec
↑ No. sel.	Ļ
Menu	

Touch  $[\uparrow]$  to return to the previous screen.

Touch  $[\downarrow]$  to move to the next screen.

Three screens are available, including one showing the default positioning band and others used to edit position data and password.

Touch [Menu] to return to the parameter menu screen.



An example of setting a soft limit is explained. Touch [ $\uparrow$ ] and [ $\downarrow$ ] on the displayed screen until the soft limit setting screen appears.

	1 sec Complete stop
	Complete stop
it	35 N
	35 %
n 🖉	0,010 sec
	250, 00 mn
_	3. 80 mn
1	
	n <b>(</b>

Touch the current value. When the numeric keypad appears, enter a desired value and then touch [ENT].

	Parameter edit		Axis No. 00
	9. Pushing fails current	Push current	Stop current
	10. Auto servo OFF delay time		1 sec
Г	11. Stop mode	Stop Servo	Complete stop
Γ	12. Default positioning current lim	35 N	
Г	13. Default homing current limit		35 %
Γ	14. Waiting time for cont. operation	n	0.010 sec
Γ	15. Soft limit		250, 00 mm
	16. Homing offset		3. 80 mm
	↑ No. sel		$\downarrow$
	Menu		

Change parameters and touch [Menu] to return to the controller restart screen.



Touch [Yes].

The controller is restarted. The controller operates according to the operation pattern settings you have made.

The display returns to the initial setting screen.

Touch [No], and the controller will not operate according to the operation pattern parameters you have set until restarted.





## [Initial parameter]

The parameters are reset to their factory default settings.

Initial parameter	Axis No. 00
Initialize to factory setting paramet	er?
Yes No	
Menu	

Touch [Yes].

Touch [No] to return to the parameter menu screen without resetting the parameters to their factory default settings.

Controller restart	Axis No. 00
Restart the controller?	
Yes No	

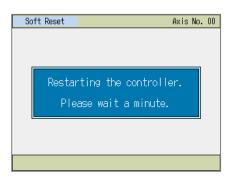
## Touch [Yes].

The controller is restarted.

The controller operates according to the factory-set parameters.

The display returns to the initial setting screen.

Touch [No], and the controller will not operate according to the factory-set parameters until restarted.





#### [System password change] Change the system password.

System password change New password : 0000 3 5 CLR ESC 1 2 4 6 7 8 9 0 BS ENT Menu

New password : 5119

System password change

Enter the new system password to change to. If you do not set the system password, enter 0000.

Touch [ENT].



0K

Touch [Change].

The system password changes.

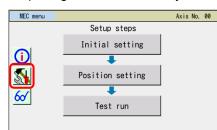
Touch [OK] to return to the parameter menu screen.

Parameter menu		Axis	No.	00
_	Parameter data editing			
	Parameter initial.			
	System password			
Menu				



## 5.12 Maintenance – I/O Tests

You can monitor PIO input signals. Output signals can be forcibly turned ON or OFF.



Touch 🚮 on the MEC menu screen.

Maintenance menu	Axis No. 00
Parameter	Data backup
I/O test	Env. set.
Alarm list	Change ax.
Menu	

Touch [I/O test].

Touch [Menu] to return to the MEC menu screen.

I/O test				Axis No	. 00
Inp	IN3	IN2	IN1	INØ	
0utp	OUT3	OUT2	0UT1	OUTØ	
*D0 or	utput by IN*		output b : OFF : ON	outton	
Menu					

You can monitor the ON/OFF statuses of input signals.

Output signals OUT0 to OUT3 can be forcibly output by touching each signal button.

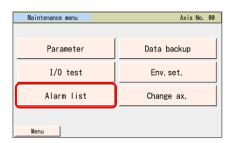
Touch [Menu] to return to the maintenance menu screen.



## 5.13 Maintenance – Alarm List

A list of alarms that have generated after the controller power was turned on is displayed. [Refer to 9, "Error Display" for the details of alarms.]

MEC menu		Axis No. 00		<b>F</b> .1
	Setup steps		Touch 🕈	🐪 on the MEC menu screen.
<b>i</b>	Initial setting			
5	Position setting			
6~				
<u> </u>	Test run			



Touch [Alarm list].

Touch [Menu] to return to the MEC menu screen.

The alarm list of the controller is displayed.

No	Code	Message	Address	Detail	Time of occurrence
00	FFF	PowerUP No Error	****	****	:
01	0E9	A disconnect	****	****	0:24:07
02	0E8	A, B disconnect	****	****	0:00:04
03	FFF	PowerUP No Error	****	****	:
04			****	****	
05			****	****	
06			****	****	
07			****	****	
		↓			Clear

Controller alarm list Axis No. 00 No Co 08 \*\*\*\* \*\*\*\* 0:00:00 09 10 \*\*\*\* \*\*\*\* 0:00:00 \*\*\*\* 0:00:00 \*\*\*\* 11 \*\*\*\* \*\*\*\* 12 13 14 15 \*\*\*\* \*\*\*\* \*\*\*\* 0:00:00 \*\*\*\* \*\*\*\* \*\*\*\* 0:00:00 \*\*\*\* \*\*\*\* 0:00:00 Clear 1 Menu

Touch  $[\downarrow]$  to display the list of the next screen.

Touch  $[\uparrow]$  to display the list of the previous screen.

Touch [Clear], and the details of all alarms will be cleared.

(Note) PowerUP No Error indicates that the controller power was turned on.
 It does not indicate an error.
 The time of occurrence of each alarm is indicated by an elapsed time from this PowerUP No Error.



## Controller with the calendar function

Controller Alarm List A				Axis No. 00
No	Alarm Code	Address Detail Code		n∕dd_hh:mm:ss) essage
00	FFF	**** ****		03_18:32:13 9 No Error
01	0E8	**** ****		<u>03_17:21:22</u> sconnect
02	FFF	**** ****		03 17:15:12 9 No Error
03	0E8	**** ****		03_17:14:17 sconnect
	↑ ↓ Clear			
M	enu			

Touching [ $\uparrow$ ] displays the list of the previous screen. Touching [ $\downarrow$ ] displays the list of the next screen.

Touching [Clear] clears all alarms.

(Note) "PowerUP No Error" indicates that the controller power was turned on. The occurrence time corresponds to the time each alarm occurred.



## 5.14 Maintenance – Data Backup

Data is transferred between the SD memory card in the teaching pendant and the controller.

#### (Note) Type of Stored Data

This includes the position data, parameters and alarm list. It is not applicable to the backup data storable in the MEC PC software. Please note that MEC PC Software cannot deal with individual position data and parameters.

#### (Note) Extensions of the Stored Data

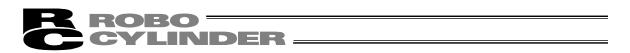
- The file extensions for AMEC Controllers to be stored in the SD card are ptam for the position data and pram for the parameters. The position data extension for PMEC controllers is ptpm and the parameters extension is prpm.
- The alarm list can only have the backup. It cannot be restored. Data is in a CSV file.

#### (Note) Directories of the Stored Data

The folders to store the backup data of the controller and the folder to read the data from when restoring the data to the controller are as listed below. The directories to store the files cannot be changed. The files existing in other directories other than the specified folders cannot be listed up in the file name list in the file selection at the initial setting or when restoring.

- If the folder does not exist, it is automatically created.
- Position Data : \TB\_CON\Position\File Name
- Parameter : \TB\_CON\Parameter\File Name
- Alarm List : \TB\_CON\Alarmlist\File Name

(Note) Files with Chinese names are not supported.



## 5.14.1 Data Backup of the Controller

The data in the controller is transferred to the SD memory card for backup.

	Axis No. 00	🦝	
Setup steps		I ouch 🔬	on the MEC menu screen.
Initial setting			_
+			
Position setting			
+			
Test run			
	Initial setting Position setting	Setup steps Initial setting Position setting	Setup steps Initial setting Position setting

Parameter	Data backup
I/O test	Env. set.
Alarm list	Change ax.

Touch [Data backup].

Touch [Menu] to return to the MEC menu screen.

A screen for data transfer appears.

Data backup	Axis No. 00
Backup/Restore	Data type
Backup	Position data
	Parameter
Restore	Alarm list
	Transfer
Menu	

Touch [Backup].

Select the data type for the backup such as [Position data] and touch it.

Touch [Transfer].

Data backup			Axis	No. 0
Transfer mode :	Controller		SD memory	card
Transfer data :	Posi	tion	data	
	data will be you want to co			
Yes		No		

Touch [Yes].

If [No] is touched, the screen goes back to the data backup screen.

В	ackup f	ile na	ne desi	gnatior	ı				
Posit	ion c	lata							
File	name								
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	E	F	G	н	CLR
Ι	J	К	L	М	N	0	Р	Q	BS
R	S	Т	U	V	W	X	Y	Z	ENT
	_	[	]		SPACE		-	#	

Numeric keys show up. Input a file name.

The file name is to be typed with 32 characters at maximum in letters and numbers.

Input a name and touch [ENT].

	3
Backup file name designation Position data File name AAA	Touch [Save].
Save Menu	
File name confirmation	The screen below appears if the same name is not found.
AAA.ptpm File name above will be saved. Are you sure to continue?	Touch [Yes].
Yes No	If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.
File name confirmation	The screen below appears if the same name is found.
ile name NAA.ptpm	Touch [Yes].
A file of the same name already exists. Do you want to overwrite it? Yes No	If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.
Backup Data Axis No. 00	
Transferring Data. Please wait a minute.	Data transfer screen will be shown.
100% TransMode: Controller ⇒ SD Card DataType : Position & Parameter	
Message Axis No. 00 Message No. 184	A message to tell the data transfer is complete pops up and the backup process is finished.
Data transfer completed	Touching [Back] can go back to the Backup Data
Back Inquiry	screen.



## 5.14.2 Restore to Controller

Data in the SD card is transferred to the controller.

Setup steps Touch 🔊 on the MEC menu screen	
Initial setting	
Position setting	
60 Test run	

Parameter	Data backup
I/O test	Env. set.
Alarm list	Change ax.

Touch [Data backup].

Touch [Menu] to return to the MEC menu screen.

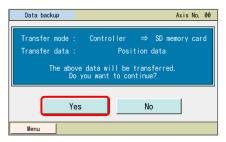
## A screen for data transfer appears.

Data backup		Axis No. 00
Backup/Restore	Da	ata type
Backup		Position data Parameter
Restore		Parameter
	Transfe	er
Menu		

Touch [Restore].

Select the data type to transfer to the controller, such as [Position data], and touch it.

Touch [Transfer].



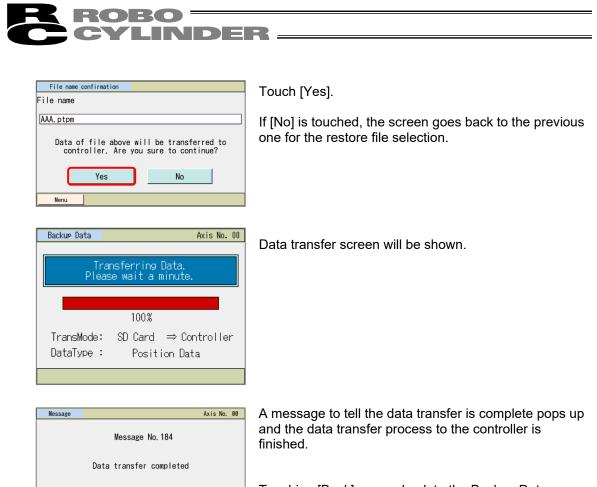
Touch [Yes].

If [No] is touched, the screen goes back to the data backup screen.

Restore file select			Axis	No.	00
Position data					
File select					
AAA		▼			
AAA					
BBB CCC		•			
ſ	Transfer				
Menu		<u> </u>			

Touch  $[\blacktriangle]$  and  $[\blacktriangledown]$  to select a file to transfer to the controller from the list of the backed up file names.

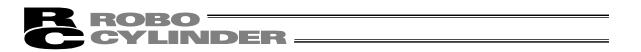
Touch [Transfer].



Touching [Back] can go back to the Backup Data screen.

Back

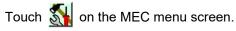
Inquiry



# 5.15 Maintenance - Environment Setting

You can set the language, touch operation sound, auto monitor function, dim display time, data input warning, display and time.

MEC menu		Axis No. 0
	Setup steps	
	Initial setting	
Û	+	
5	Position setting	
6~	+	
	Test run	



Maintenance menu	Axis No. 00
Parameter	Data backup
I/O test	Env. set.
Alarm list	Change ax.

Touch [Env. set.].

Touch [Menu] to return to the MEC menu screen.

The environment setting screen appears.

Configuration					Axis No.	00
•Language setting	Japanese	Eng	lish		Chinese	
<ul> <li>Touch tone</li> </ul>	0FF	MIN	MID		MAX	Ī
•Auto monitor f	unction	0F	F		ON	
•DimDispTime ("	0":Never D	im)			0 s	
•Data input ala	rm	Enal	ole		Disable	
•Disp Axis Name		Axis	Name	1	Axis No.	
Display setting	Time			Wri	te	-
Menu						



- [1] Basic operation
  - Language setting: Select a language to display.
     Display for Japanese/English/Chinese languages setting change

Configuration				Axis	No. 00
•Language setting	Japanese	Eng	lish	Chine	se
<ul> <li>Touch tone</li> </ul>	0FF	MIN	MID	M	ŧΧ
•Auto monitor f	unction	OF	F	ON	
•DimDispTime ("	0":Never	Dim)		(	0 s
•Data input ala	rm	Ena	ble	Disab	le
•Disp Axis Name		Axis	Name	Axis N	lo.
Display setting	Tim	9		Write	
Menu					

Touch a desired language ([English] etc.).

Touch [Write].

(Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.

• Touch tone: Set whether to output or not output a touch tone.

Configuration				Axis No.
·Language setting	Japanese	Eng	lish	Chinese
<ul> <li>Touch tone</li> </ul>	0FF	MIN	MID	MAX
•Auto monitor f	unction	0F	F	ON
•DimDispTime ("(	)":Never [	Dim)		0 s
•Data input ala	rm	Enal	ole	Disable
•Disp Axis Name		Axis	Name	Axis No.
Display setting	Time			Write

Touch [OFF]. A touch tone is not output. Touch [MAX], [MID] or [MIN]. A touch tone is output.

Touch [Write].

- (Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.
- Auto monitor function: You can have the monitor screen appear first after the teaching pendant is connected.

Configuration				Axi	s No.	00
•Language setting	Japanese	Eng	lish	Chi	nese	
<ul> <li>Touch tone</li> </ul>	0FF	MIN	MID	MAX		
•Auto monitor f	OF	F	0	N		
•DimDispTime ("	Dim)			0 s		
•Data input ala	rm	Enal	able Di		able	
•Disp Axis Name		Axis	Name	Axis	No.	
Display setting Time Write						
Menu						

Touch [ON] to enable the auto monitor function. Touch [OFF] to disable the auto monitor function.

Select either ON or OFF, and then touch [Write].

- (Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.
- DimDispTime: You can set a desired dim display time when not being operated. If "0 sec" is set, the display will remain lit at all times.

Configuration				A	xis No.	00
•Language setting	Japanese	Eng	lish	Ch	inese	
<ul> <li>Touch tone</li> </ul>	0FF	MIN	MID	MAX		
•Auto monitor fu	OF	F		ON		
•DimDispTime ("0":Never Dim) 0 s						]
•Data input ala	rm	Enal	ole	Di	sable	
•Disp Axis Name		Axis	Name	Axi	s No.	
Display setting Time Write						-
Menu						

Touch [DimDispTime ("0" : Never Dim) 0 sec]. Enter the light off time.

A desired value between 0 and 255 sec can be set.

Touch [Write].

(Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.



• Data input alarm: The alarm can be output when a value less than the minimum speed and a value exceeding the rated acceleration/deceleration speed are entered in the position data. Note that the value is entered even if the alarm occurs. Always use within the specification of the actuator.

Configuration					Axis No.	00
•Language setting	Japanese	Eng	lish	Chinese		
•Touch tone	0FF	MIN	MID	MAX		
•Auto monitor fu	OF	F		ON		
•DimDispTime ("0":Never <u>Dim) 0 s</u>						
•Data input alar	m	Enal	ble	D	isable	
•Disp Axis Name		Axis	Name	A	xis No.	
Display setting Time Write						
Menu						

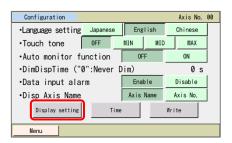
Touch [Enable] to give the warning. Touch [Disable] not to give the warning.

Select either Enable or Disable, and then touch [Write].

(Note) If writing is not conducted, the setting will go back to those before making a change when moving to another screen.

## [Display setting]

Adjustment of contrast and brightness of the screen, position tuning for touch panel and LCD screen check can be performed.



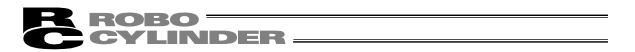
Touch [Display setting].

#### Display setting menu Window is displayed.

Display sett	ing	
	Contrast/Brightness	
	Touch panel position calibration	
	LCD check	
Menu		

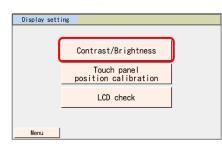
Select Display setting menu.

Touch [Menu] and the display returns to EnvironmetSet screen.

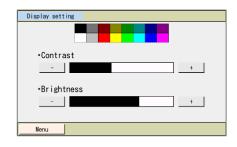


## •Change the Contrast/Brightness

You can adjust contrast (shading of liquid crystal) and brightness (of liquid crystal).



Touch [Contrast/Brightness].



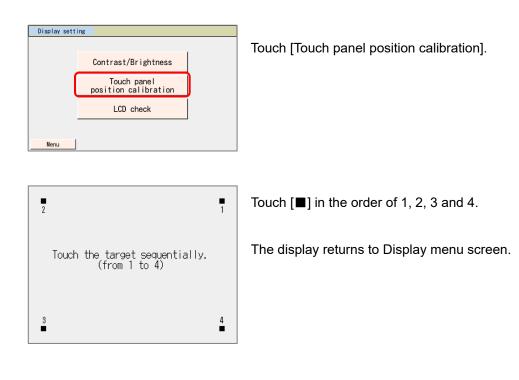
Contrast adjustment Touch [–] and [+] under Contrast to adjust the contrast of the screen.

Brightness adjustment Touch [–] and [+] under Brightness to adjust the brightness of the screen.

Touch [Menu] to save the setting status and return to Display menu screen.

• Touch panel position calibration

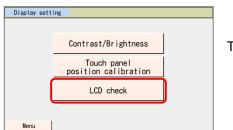
A calibration for the position detection of the touch panel is performed.





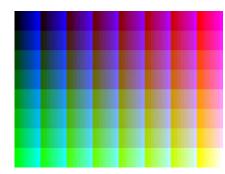
#### •LCD check

LCD display can be checked in the order of Color Pattern, White Only and Black Only.



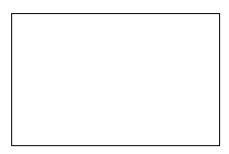
Touch [LCD check].

Color Pattern is displayed.



Touch any point on the screen.

White Only is displayed.



Touch any point on the screen.

Black Only is displayed.



Touch any point on the screen.

The display returns to Display menu screen.



#### [Time Setting]

Time setting can be performed for TB-03.



Touch [Time].

 Teaching time
 Axis No. 00

 Time display

 yy/mm/dd
 hh:mm:ss

 20
 / 06
 / 19
 13
 : 43
 : 11

The time of TB-03 is displayed. Touch [Time edit].

Teaching	time							Axis	No.	00
			Time	edit						
	yy/mm	/dd			hh:	: mm : s	ss			
20	/ 06	7	19	13	:	43	:	29		
Time dis	splay		Set							
Menu										

Touch the value of year, month, day, hour, minute or second that is required to be changed.

1	[eaching	; time					Axis No.	00
	Time edit							
	yy/mm/dd hh:mm:ss							
	20 / 06 / 19 13 : 43 : 29							
-								1
	1	2	3	4	5	CLR	ESC	
F	6	7	8	9	0	BS	ENT	
1	Menu							

Numeric keys are displayed. Input a value and touch [ENT].



Touch [Set].





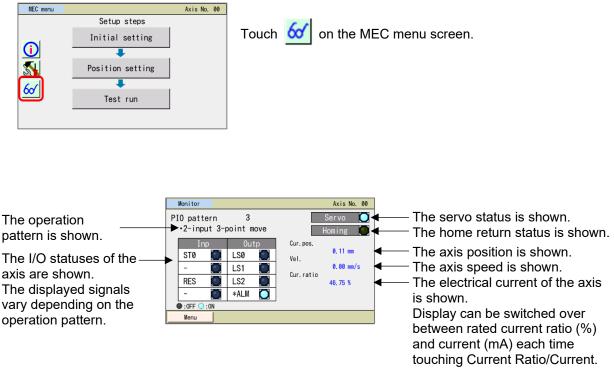
## The time of the TB-03 is changed. Touching [Back] can go back to the controller time setting screen.

Touching [Inquiry] displays the inquiry screen.



## 5.16 Monitor

The current position, speed, electrical current, system status and I/O statuses of the controller are displayed.



Touch [Menu] to return to the MEC menu screen.

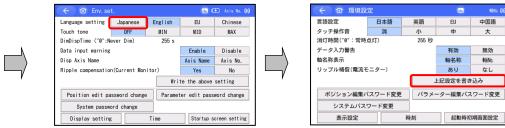
# 6. Operation of ELECYLINDER and ROBO PUMP

## 6.1 Displayed Language Change

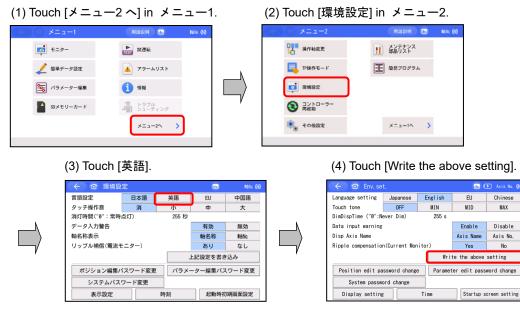
The language can be changed by following the steps below. For the operations after the language change, please refer to the instruction manual written in each language.

• Display change from English to Japanese

(1) Toi	uch [Menu2] i	n Menu1.		(2	2) Touch [E	inv. Set.] ii	n Menu	12.		
	Menu 1	Glossary Eth Axis No.	00		← 1 @ Menu2		Glossary	dta Axis No.	00	
	Monitor	Test run			Change operating a	αis	Maintenance parts list			
4	🖉 Simple Data Setting	🔺 Alarm list			TP op. mode	Ξ	Easy program	ning		
2	Parameter edit	1 Information			Env. sot.					
	SD memory card	Troubleshooting		V	Controller	reset				
		Menu2 >			0ther setti	ng	Menu 1	>		
	(3) Touch	[Japanese].				(4) Touch	[上記詞	没定を	書き込	み].
	🤶 🖆 Env	v. set.	<b>III</b> (2)	Axis No. 00		← 🗇 環境部	定		(h)	Bâlio. (
	Language setti		EU	Chinese		言語設定	日本語	英語	EU	中国語
	Touch tone	OFF MIN	MID	MAX		タッチ操作音	消	小	中	大



- (Note) Skipping to another window without touching [上記設定を書き込み] will allow language to go back to that before changed.
- Display change from Japanese to English



(Note) Skipping to another window without touching [Write the above setting] will allow language to go back to that before changed.



Display change from English to Chinese



- (Note) Skipping to another window without touching [写入上述设定] will allow language to go back to that before changed.
- Display change from Chinese to English



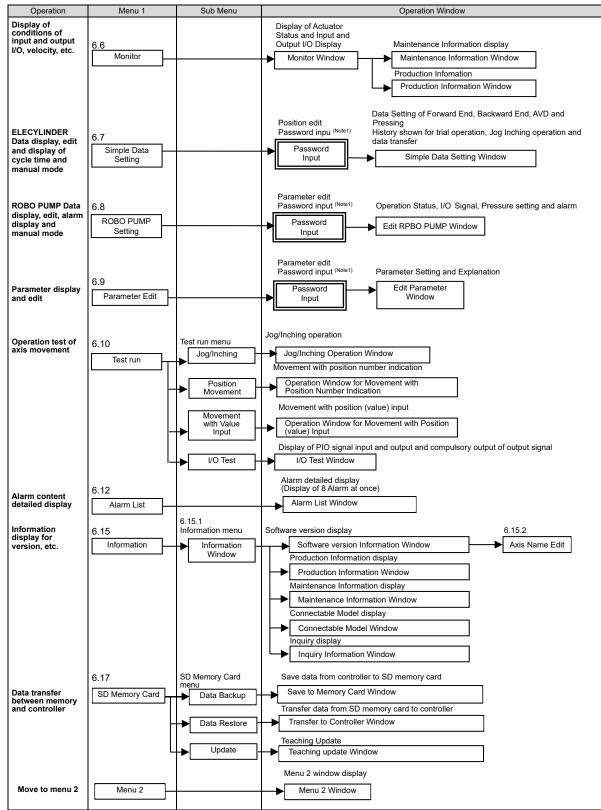


(Note) Skipping to another window without touching [Write the above setting] will allow language to go back to that before changed.



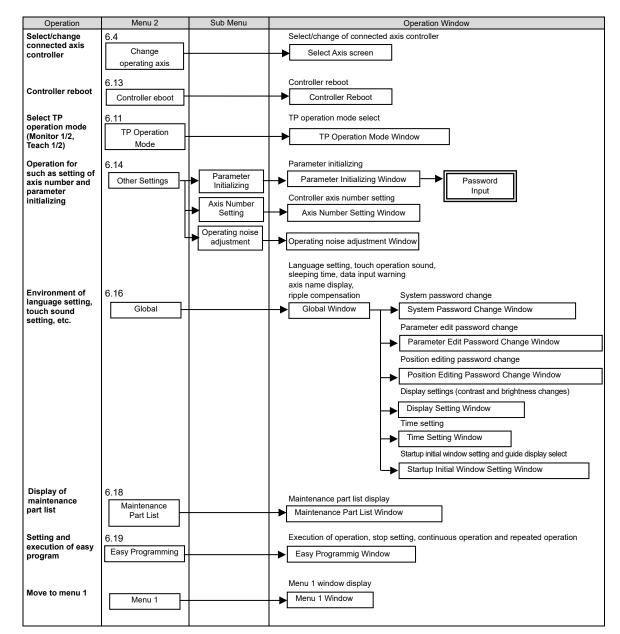
## 6.2 Operating Menu

Operating menu when the TB-03 is connected to ELECYLINDER or ROBO PUMP is shown.



(Note 1) Password input in case the password has been changed from the initial setting (0000), it is necessary to input the password.





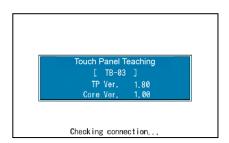


## 6.3 Initial Screen

When the power is turned on, the IAI logo is displayed and then the version information is displayed.



IAI logo will be displayed in the screen for a few seconds.



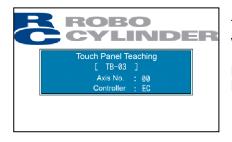
Versions of the teaching and core will be displayed.

00	EC	04	EC	08		12	
01	EC	05	EC	09		13	
02	EC	06		10		14	
03	EC	07		11		15	
Reconnection Backup for all controllers Save to SD memory card							

[Displayed only in multiple-unit connection]

If multiple units are connected, the axis selection screen appears.

Select an axis to be operated with this teaching pendant. [Refer to 6.4 Change Operating Axis].



 Kenul
 Bioserv
 Ass No. 08

 Image
 Monitor
 Image
 Test run

 Image
 Simple Data Setting
 Image
 Alarn list

 Image
 Parameter edit
 Information

 Image
 SD memory card
 Image

 Image
 SD memory card
 Image

The number of axis to be operated and the type of controller will be displayed.

EC: ELECYLINDER RP: ROBO PUMP

The Menu 1 screen appears.



## 6.4 Change Operating Axis

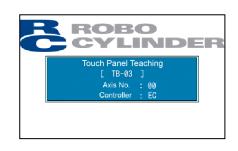
If multiple controllers are connected to the communication line, the axis selection screen appears.

It also can be shown by touching [Change operating axis] in the Menu 2 screen or Change axis operation Button on the top left of Menu 2 screen [Refer to 6.5 Menu Selection].

00	EC	04	EC	08		12	
01	EC	05	EC	09		13	
02	EC	06	RP	10		14	
03	EC	07		11		15	
	Recon	nection		Г	Backup for	all contro	llers

Select the axis to be operated in this teaching pendant and touch it.

EC: ELECYLINDER RP: ROBO PUMP



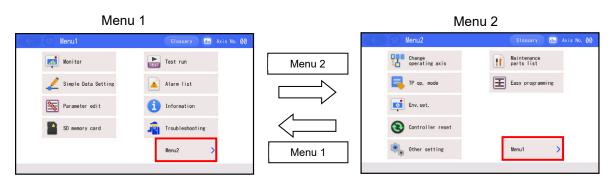
The connection with the controller of the selected ELECYLINDER and ROBO PUMP will be started.

🔶 🕜 Menul	Glossary din Axis No. 00
Monitor	Test run
🖌 Simple Data Setting	🔺 Alarm list
Parameter edit	i Information
SD memory card	Troubleshooting
	Menu2 >

When connection with the controller is established, the Menu 1 screen appears.



## 6.5 Menu Selection



Two menu selection screens, Menu 1 and Menu 2, are available. Touching [Menu2] on the Menu 1 screen changes the display to the Menu 2 screen.

Touching [Menu1] on the Menu 2 screen changes the display to the Menu 1 screen.

	1)	2)	3) 7) 4) 5) 6)
		Menu1	Glossary 🕕 🕞 Axis No. 00
		Monitor	Tact -
1)	÷	Return Button	: Returns to Previous Screen
2)		Home Button	: Returns to Menu 1 Screen
3)	Glossary	Glossary Button	: Shows the Explanation Screen for Special Terms
4)		Monitor Button	: Opens the Monitor Screen
5)		Battery Display	: It displays the condition and remaining of battery. [1.13.2.1 Display of Battery Remained]
6)	Axis No. 00	Change operating axis Button	(It should not function in a simple data setting screen)
7) S	Stop Status	Icons An icon should blink in	the following status.
	<b>SOP</b>	The "STOP" icon should be dis Press and hold the icon and the	played in a stop status. e "202: Stop" message should be displayed.
	<b>E</b>		layed in an emergency stop status. e "202: Emergency stop" message should be
			yed in a motor voltage drop status. e "203: Motor Voltage Drop" message should be
	ENB	The "ENB" icon should be disp Press and hold the icon and the displayed.	layed in a disable status. e "226: Enable Circuit Open" message should be
s			he battery display. Although, In the actual use, e displayed in all the screens on the gets

# NDER

## [Menu 1]

Monitor	Displays the actuator status, I/O signal status, maintenance information and manufacturing information. [Refer to 6.6 Monitor]
Simple Data Setting	Conduct settings of position, velocity acceleration/deceleration to operate the actuator. [Refer to 6.7 Simple Data Setting (Position Editing)]
<ul> <li>ROBO PUMP Setting</li> </ul>	Setting of suction, release and monitoring display of ROBO PUMP should be established. Refer to [6.8 ROBO PUMP Setting]
<ul> <li>Parameter edit</li> </ul>	Conduct settings such as to adjust operation range or home position, or to change the direction of home-return operation. [Refer to 6.9 Parameter Edit]
SD memory card	Perform readout of position data and parameters, file saving and storage of the alarm list. Teaching update also can be conducted in this menu. [Refer to 6.17 Data Backup]
Test run	Conduct manual operation with JOG, Inching and number indication and also make a trial run of I/O. [Refer to 6.10 Test Run]
Alarm list	Shows a list of alarms and the time when they occurred. [Refer to 6.12 Alarm List]
<ul> <li>Information</li> </ul>	Shows the software version, manufacturing information, maintenance information and models available for connection. [Refer to 6.15 Information Display]
<ul> <li>Troubleshooting</li> </ul>	Shows the contents of an alarm and the countermeasure when an alarm has been generated.
[Menu 2]	
<ul> <li>Change operating axis</li> </ul>	Select an axis to operate when multiple units of controllers are connected to the communication line. [Refer to 6.4 Change Operating Axis]
• TP op. mode	Switch over between forbidden and permitted for PIO operation and between invalid and valid for the safety velocity. [Refer to 6.11 TP Operation Mode]
• Env. set.	Conduct settings for display language, touch sound, turn-off time, data input warning, axis name display, ripple compensation, password, display, clock and initial window setting at startup. [Refer to 6.16 Environment Setting]
<ul> <li>Controller reset</li> </ul>	Restart the controller. [Refer to 6.13 Controller Reset]
Other setting	Conduct parameter initialization, axis number change and operation sound tuning. [Refer to 6.14 Other Setting]
<ul> <li>Maintenance parts list</li> </ul>	Displays information of maintenance parts. [Refer to 6.18 Maintenance Parts List]
<ul> <li>Easy programming</li> </ul>	It is a window that enables setting of movement between positions, timer and repeated operation by indicating number, and to have continuous operation manually at the ELECYLINDER. [Refer to 6.19 Easy Programming]
[When Alarm Occurred]	



While an alarm is generated, the alarm group (Alarm code for ROBO PUMP) and the alarm name should be displayed at the bottom of the window, and the background should turn into orange (Red for some alarms).

Touch the gray part at the bottom of the window that the alarm information is displayed, and the screen switches to the display window of alarm details.



The monitor screen of ROBO PUMP Refer to [6.6.1 Monitor Screen (ROBO PUMP)]

The monitor screen of ELECYLINDER

Refer to [6.6.1 Monitor Screen (ELECYLINDER)]

## 6.6 Monitor

The I/O statuses, current position and other information of the controller connected are displayed.



NDER

Touch [Monitor] on the Menu 1 screen.

If the TP operation mode is not Monitor Mode 1 or 2, the following message screen appears.

(←)@ ೲ	nf	(m) Axis No. 00
to	TP operation be changed to Change TP open	"Monitor mode".
	Yes	No

Touch [Yes] to change to Monitor Mode 1 or 2. If not, touch [No].

(Note) The safety speed does not change. If the current mode is Teaching Mode 1, it changes to Monitor Mode 1. If the current mode is Teaching Mode 2, it changes to Monitor Mode 2.

Note: For the multiple-axis controllers, TP Operation Mode of all the controllers should change.



Cur, pos

Cur.vel.

Cycle time

Cur, ratio

Ripple compensati Overload level PCB temp.

Alarm Group

Actuator S/N

Production info Maint.

Input signal:

0

IN0 Backward IN1 Forward

IN1 Forward IN2 Alarm reset

OUT0 Bwd, End [LS0]

OUT1 Fwd. End[LS1] OUT2 Alarm[norm clos]

vo-on status (

comp status

🗇 Monite

Touch [OK].

The monitor screen of ELECYLINDER or ROBO PUMP appears.

17.80 mm

0.000 s

44.83 %

●No 12 % 41 °C

Standby

0.00 mm/s



## 6.6.1 Monitor Screen (ELECYLINDER)

(Applicable for Ri	pple Compensation
🔶 🇃 Monitor	🕞 🖅 Axis No. 00
Input signals IN0 Backward IN1 Forward IN2 Alarm reset	Cur.pos.         17.80 mm           Cur.vel.         0.00 mm/s           Cycle time         0.000 s
Output signals OUT0 Bwd. End[LS0] OUT1 Fwd. End[LS1] OUT2 Alarm[norm clos]	Cur,ratio 44,83 % Ripple compensation ®Yes ©No Overload level 12 % PCB temp. 41 °C
Servo-on status O Home comp status O	Alarm Group Actuator S/N
	Production info Maint.

(Not Applicable	for Ripple	e Comper	nsation)
🔶 🍅 Monitor		🔟 🖅 🗛 Axis No. 00	
Input signals	Cur pos	17.80 mm	



Touch [Production info] and the production information screen will be displayed. Refer to [6.15 Environment Setting]

Touch [Maint.] and the maintenance information screen will be displayed.

Refer to [6.6.3.1 Maintenance Information Screen]

[Displayed Items]

[Displayed iterno]	
<ul> <li>Input signals</li> </ul>	<ul> <li>The status of each input signal is shown. ON is lit. OFF is unlit.</li> <li>* An input signal that a signal is not assigned (with a display of "-") should not illuminate even if it is turned on.</li> </ul>
<ul> <li>Output signals</li> </ul>	The status of each output signal is shown. ON is lit. OFF is unlit.
• Cur. pos.	The current position is shown.
Cur. vel.	The current speed is shown.
Cycle time	The cycle time calculated from the velocity and acceleration / deceleration set for the way forth and the way back is shown.
Cur. ratio	The value of electrical current is shown as a percentage of the rated current.
Ripple compensation <sup>(Note 1)</sup>	It can be chosen with the radio button whether to display the current/current ratio with ripple compensation or without ripple compensation.
	• Yes : Shown in command current <sup>(Note 2)</sup>
	No : Shown in output current (Note 3)
<ul> <li>Overload level</li> </ul>	The overload level is shown in the rate that the motor raising temperature assumed to generate the overload alarm set as 100%.
<ul> <li>PCB temp.</li> </ul>	Temperature of the control PC board in the actuator is shown.
<ul> <li>Alarm Group</li> </ul>	The applicable alarm group is shown.
<ul> <li>Actuator S/N</li> </ul>	Shows the manufacturing number of the actuator

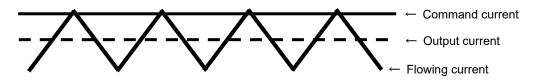
Actuator S/N Shows the manufacturing number of the actuator.

Note 1 Versions Applicable for Ripple Compensation

Tool/Actuator	Applicable Versions
Teaching Pendant TB-03	V2.40 and later
ELECYLINDER	V0006 and later

• In versions other than those listed above, the selections of ripple compensation should not be displayed.

- For those models with no selections, calculations should be performed in command current (Note 2).
- Note 2 The command current should compensate for the amount of current ripple considering transistor switching.
- Note 3 In ELECYLINDER, output current close to the effective value should be figured out by calculation as it will not acquire the output current.





## 6.6.2 Monitor Screen (ROBO PUMP)

## (PIO Pattern 0 or 1)

	Input signals	Or an at the status	Chandless
INØ	- 0	Operation status	Standby
IN1	Suction/Release 🔘	Pressure	0 kPa
IN2	Alarm reset	Motor speed	0 rpm
IN3		PCB temp.	33 °C
	Output signals	Overload Lv.	63 %
OUTØ		Command Current	3 mA
OUT1	Conf. suction	Command Current Rate	0.60 %
OUT2	Alarm[norm clos] 🔘	1	
OUT3	- 🔘	Alarm code	
	Stop 🤇	Atarm coue	
	Drive power	Serial No.	
	Drive ready	1234	
		Production info	Maint.

(PIO pattern 2)



Touch [Production info] and the production information screen will be displayed. Refer to [6.15 Environment Setting]

Touch [Maint.] and the maintenance information screen will be displayed. Refer to [6.6.3.2 Maintenance Information Screen]

[Displayed Items]

- Input signals The status of each input signal is shown. ON is lit. OFF is unlit.
- Output signals The status of each output signal is shown. ON is lit. OFF is unlit.
- Stop The status of Emergency stop is shown. ON is lit. OFF is unlit.
- Drive power The status of Drive power is shown. ON is lit. OFF is unlit.
- Drive ready The status of Servo on is shown. ON is lit. OFF is unlit.
- Operation status The operation status of the ROBO POMP is shown.
- Pressure The pressure of the vacuum pump should be displayed.
- Motor speed The revolution count of the motor should be displayed.
- PCB temp
   Temperature of the control PC board in the ROBO PUMP is shown.
- Over load Lv.
   Command Current
   The overload level is shown in the rate that the motor raising temperature assumed to generate the overload alarm set as 100%.
   The Command Current is shown.
- Command Current Rate The value of electrical current is shown as a percentage of the rated command current.
- Alarm code
- Serial No.
- The applicable alarm code is shown. Shows the manufacturing number of the ROBO PUMP.



## 6.6.3 Maintenance Information Window

#### 6.6.3.1 Maintenance Information Screen (ELECYLINDER)

(1) Total travel count and total travel distance

A warning should get output when the total travel count or total travel distance has exceeded each setting.

Touch [m  $\Leftrightarrow$  km] and the display of unit for the total travel distance (current value) can be switched between m and km.

(Rotary type excluded)

(Display in m f	for distance)		(Display in km for	distance)
← @ Maintenance informatio	on 👘 🎟 Axis No. 00		← ថ Maintenance information	🔲 🎟 🗛 🗰 🗰
Total travel count Total travel count threshold Total travel distance Total travel distance threshold Overload warning level Actuator replacem.	123, 455 1, 000, 000 750, 643 = tent 1, 250, 800 tent 70 % Edit	$\begin{array}{c} & & \\ \hline \\ m \Leftrightarrow km \end{array}$	Total travel count Total travel count threshold Total travel distance Total travel distance threshold Overload warning level	123.455 1.000.000 750 Km minin 1.250.000 m Corre 70 % Edit

[Contents of Display]

- Total travel count The cumulative total number of actuator movements is shown.
- Total travel distance The cumulative total distance travelled by the actuator is shown. (Rotary type: travel count for round trip between 0 and 180deg (To be figured out from total drive distance))

[Items of Setting]

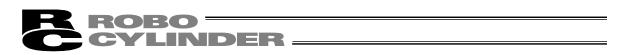
- Total travel count threshold Set the total travel count to output a warning.
  - Total travel distance threshold Set the total travel distance to output a warning.
- (Rotary type: setting of travel count for round trip between 0 and 180deg)

Total travel count	123, 456	_
Total travel count threshold	1,000,000	Edit
Total travel distance	750,643 m	neskn
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit

Total travel count	123, 456	
Total travel count threshold	1,000,000	Edit
Total travel distance	750,643 m	neska
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit

Touch [Edit] on the right of Total travel count threshold to change the setting for the total travel count threshold.

Touch [Edit] button on the right of Total travel distance threshold to change the setting for the total travel distance threshold.

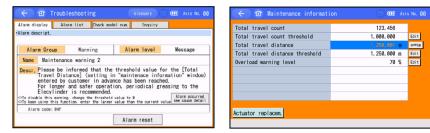


#### When Total Travel Count has Exceeded Total Travel Count Threshold

Alarm Group     Marning     Alarm level     Message       Name     Maintenance warning 1     Message       Descr. Please be informed that the threshold value for the [Tote] entered by customer in drawnech as been reached.     Total travel distance     78 kg message       For longer and safer operation, periodical gressing to the Elecylinder is recommended.     Total     1     1	Alarm display Alarm list Check model num, Inquiry	Total travel count	
Alarm Group         Warning         Alarm level         Message           Name         Maintenance warning 1         Total travel distance threshold         1,250,000 m         East           Descr. Please be informed that the threshold value for the [Totel entered by custorer in advance has been reached.         Total travel distance threshold         70 %         East           For longer and safer operation, periodical greasing to the Elecylinder is recommended.         Descr. Please has the information of the safer operation.         For longer and safe	Alarn descript.	Total travel count threshold	1,000,000 Edit
Name         Maintenance warning 1         Total travel distance threshold         1,200,000 m         East           Descr. Please be informed that the threshold value for the [Total Travel Count] (setting in "maintenace information" window) entered by custorer in advance has been reached.         70 %         East           For longer and safer operation, periodical greasing to the Elecylinder is recommended.         90 metrics         90 metrics         90 metrics		Total travel distance	750,643 m m⇔km
Descr. Please be informed that the threshold value for the [Total Travel Count] (setting in "maintenace information" window) entered by custorer in advance has been reached. For longer and safer operation, periodical greasing to the Elecylinder is recommended.	Alarm Group Warning Alarm level Message	Total travel distance threshold	1,250,000 m Edit
Travel Count] (setting in "maintenace information" window) entered by customer in advance has been reached. For longer and safer operation, periodical greasing to the Elecylinder is recommended.	Name Maintenance warning 1	Overload warning level	70 % Edit
	Travel Court] (setting in "maintenace information" window) entered by customer in advance has been reached. For longer and safer operation, periodical greasing to the Elecylinder is recommended.		

You will be notified in Maintenance warning 1 window. The number in total travel count blinks in maintenance information window.

When Total Travel Distance has Exceeded Total Travel Distance Threshold



LED lamps on ELECYLINDER flash red and green in turn in all of Maintenance Warning 1, 2 and 3.

/ 🔵 flash in turn

You will be notified in Maintenance warning 2 window.

The number in total travel distance blinks in maintenance information window.

[Resetting Total travel count and Total travel distance]

Total travel count	123, 456	
Total travel count threshold	1,000,000	Edit
Total travel distance	750,643 m	neskn
Total travel distance threshold	1,250,000 m	Edit
Overload warning level	70 %	Edit

Touch [Actuator replacem.] to display the password entry screen.

Input "5119" and touch [ENT].

$(\leftarrow)$ ( $\bigcirc$ Conf	
due to actuator re	e information will be imported replacement. Current information
data will be overwr	ritten. Are you sure to continue?
Yes	No

The actuator replacement confirmation screen appears.

Touch [Yes].

The Total travel count and Total travel distance are reset to 0.



#### (2) Over Load Warning

With the motor rising temperature estimated to generate an overload alarm set as 100%, an overload warning can get output when the temperature has exceeded the rate of the motor temperature set in this window.

Total travel count	123, 456	
Total travel count threshold	1,000,000	Edit
Total travel distance	750,643 m	neska
Total travel distance threshold	1.250.000 m	Edit
Overload warning level	70 %	Edit
		-
		-

Touch [Edit] on the right of Over load warning level to change the setting for the over load warning level.

## [Items of Setting]

Over load warning level

Set the level to generate the over load warning alarm. Set to 100, and a warning should be generated.

#### When Over load Level has Exceeded Setting Rate

	arm list Check me	del num, Inquiry	
arm descript,			
Alarm Group	Warning	Alarm level	Message
Name Maintena	nce warning 3		
(setting in has been rea Before the E maintenance	"maintenace informat ched, lecylinder stops wit by following the tro	shold value for the "Ovi ion" window) entered by h "Overload alarm", visi ubleshooting are recomm	customer in advance ual inspection and ended.
(setting in has been rea Before the E maintenance * To disable	"maintenace informat ched, lecylinder stops wit by following the tro	ion" window) entered by h "Overload alarm", vis ubleshooting are recomm e the setting of "Overlo	customer in advance ual inspection and ended.
(setting in has been rea Before the E maintenance * To disable	"maintenace informat ched. Tecylinder stops wit by following the tro this warning, chang	ion" window) entered by h "Overload alarm", vis ubleshooting are recomm e the setting of "Overlo	customer in advance ual inspection and ended. ad Alarm occurred

You will be notified as an overload warning in Maintenance warning 3 window.

LED lamps on ELECYLINDER flash red and green in turn.



- 6.6.3.2 Maintenance Information Screen (ROBO PUMP)
- (1) Total number of suction and Total motor rotation time

A warning should get output when the total number of suction or total motor rotation time has exceeded each setting.

🔶 🎓 Maintenance information	0 🗆 Ax	is No. 00
Total number of suction	33	
Total number of suction threshold	0	Edit
Total motor rotation time	0:00:00 d:h:m	
Total motor rotation time threshold	1:23:50 d:h:m	Edit
Overload warning level	100 %	Edit

[Contents of Display]

- Total number of suction
- Total motor rotation time

The cumulative of suction count for ROBO PUMP should be displayed.

The cumulative of motor revolution time for ROBO PUMP should be displayed.

[Items of Setting]

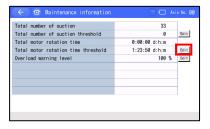
- Total number of suction threshold Set the Total number of suction threshold to output a warning.
- Total motor rotarion time threshold Set the Total motor rotarion time to output a warning.

🔶 🖆 Maintenance information	60	Axis No. 80
Total number of suction	33	
Total number of suction threshold	0	Edit
Total motor rotation time	0:00:00 d:h:m	
Total motor rotation time threshold	1:23:50 d:h:m	Edit
Overload warning level	100	% Edit

Touch [Edit] on the right of Total number of suction threshold to change the setting for the Total number of suction threshold.



When the total count of suction has exceeded the setting for the total count of suction, a notification should be made by displaying "E4E Exceeded Suction Count Threshold".



Touch [Edit] on the right of Total morot rotation time threchold to change the setting for the Total morot rotation time threchold.

Varm di: Narm de:		arm list Check mo	del num, Inquiry						
Ala	rm code	E4F	Alarm level	Wessage					
Name	Exceeded	Total Motor Rota	tion Time Threshold						
Descr.	Please be informed that the threshold value for the "Total Motor Rotation Time" (setting in Maintenace information screen) entered by customer in advance has been reached. Consider realozine the ROBO PUMP.								
	consider	Detail code: **** Adrs: **** Time(h:m:s) 0:10:40							

When the total motor rotation time has exceeded the setting for the total motor rotation time, a notification should be made by displaying "E4F Exceeded Total Motor Rotation Time Threshold".



#### (2) Over Load Warning

With the motor rising temperature estimated to generate an overload alarm set as 100%, an overload warning can get output when the temperature has exceeded the rate of the motor temperature set in this window.

Total number of suction	33	
Total number of suction threshold	0	Edit
Total motor rotation time	0:00:00 d:h:m	
Total motor rotation time threshold	1:23:50 d:h:m	Edit
Overload warning level	100 %	Edit
		-

Touch [Edit] on the right of Over load warning level to change the setting for the over load warning level.

[Items of Setting]

• Over load warning level

larm di: larm des	· · ·	arm list Check	model num.	Inquiry				
Tarm des	cript.							
Ala	rm code	E48	Ala	arm level	Message			
Name	Driver O	Driver Overload Warning						
Descr.	The current	overload level ha	s exceeded t	he pre-set wa	rning level set on			
Descr.	Maintenance simulation nor problem	screen. Use this of the product lif	as reference e. This alar	m does not in	maintenance and dicate any trouble			

Set the level to generate the over load warning alarm. Set to 100, and a warning should be generated.

When the Over load warning level has exceeded the setting for the Over load warning level threshold, a notification should be made by displaying "E48 Driver Over load Warning".

## [When Touching [Edit] While in Suction of ROBO PUMP]

🗧 🖆 Troubleshooting Glassary 🗈 🗔 Axis No.						
Alarm dis	play Al	arm list Check	model num.	Inquiry		
Alarm des	cript.					
Alarm code 224 Alarm level Message						
Name Operation status of data editing prohibited						
Descr. This is the operation state in which data editing is prohibited. For the release operation to set the operation status to "Standby", and then edit the data.						
		Adrs:	Time(yy/m	n∕dd hh:mn:ss	3)	
	How to de	al				

When [Edit] in any of the following is touched while in suction of ROBO PUMP, "224 Operation status of data editing prohibited" should be displayed.

- [Edit] at the Right of Total number of suction threshold
- [Edit] at the Right of Total morot rotation time threchold
- [Edit] at the Right of Over load warning leve



## 6.7 Simple Data Setting (ELECYLINDER)

Setting and editing of data related to operation such as forward end, backward end, velocity (V), acceleration (A), deceleration (D) and pressing setting can be performed. Also, JOG operation can be performed.



Touch [Simple Data Setting] on the Menu 1 screen.

If a position edit password is other than "0000," the password entry screen appears.

←	← ☎ Position edit Axis No. 00							
	Please enter password.							
	0000							
	1 2 3 4 5 CLR ESC							
	6 7 8 9 0 BS ENT							

Enter the position edit password. Touch [ENT].

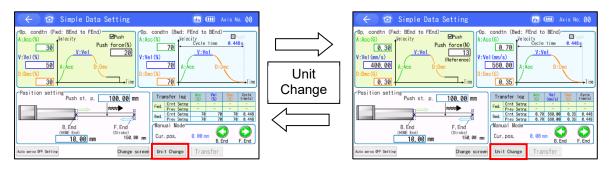
The default position edit password is "0000". For how to change the position edit password, refer to 6.16, "Environment Setting [Change Pos Edit Password]".

The simple data setting screen appears.

Unit Change

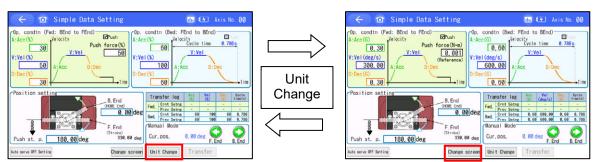
[Unit Change] switches the unit between % and mm/s for velocity, % and G for acceleration / deceleration and % and N for pressing force (Rotary type excluded).

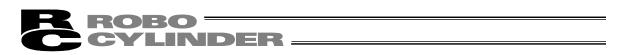
Rod type: Simple data setting screen for pressing operation (2-position setting)



[Unit Change] switches the unit between % and deg/s for velocity, % and G for acceleration / deceleration and % and N•m for pressing force (Rotary type).

Rotary type: Simple data setting screen for pressing operation (2-position setting)

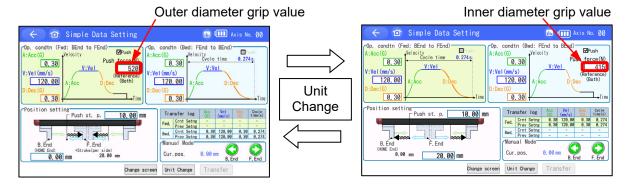




Wire Cylinder: Simple data setting screen for positioning operation (3-position setting)



3-finger gripper type: Simple data setting screen for pressing operation (2-position setting)



Caution: The 3-finger gripper is different in the grip force for outer diameter grip and inner diameter grip.

In a versions earlier than V5.00, when the display unit for the three-finger gripper (EC-GRTR14) is in [N], it should show the grip force for outer grip even if it is inner grip.

There than V not in

Therefore, when using the 3-finger gripper (EC-GRTR14) in versions earlier than V5.00 with gripping at the inner diameter, use the displayed unit in [%], not in [N], for grip force (pressing force).

• To set up the grip force for the inner diameter grip, refer to the graph shown in [Relation Between Grip Force and Current Limit] in 3-finger gripper Instruction Manual (ME3829) to set it up in [%].



# 6.7.1 Positioning Operation

Shown below is the content of setting for the position data for the positioning operation (2-position setting). (Rotary and Wire Cylinder excluded)

🔶 🔂 Simple Data Sett	ting 💷 Axis No. 00
A.Acc (x)     I     Cycle time     0.550       3)     30     V:Vel     5)       2)     50     A:Acc     D:Dec       0:Dec (%)     1     1     0.550	Op_ condtn (Bwd: FEnd to BEnd)       A: Acc (%)     Velocity       3)     70       V: Vel (%)     V: Vel       D: Dec (%)     A: Acc       D: Dec (%)     70
(HOME End) 10.00 mm	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
1) Position setting [mm]	<ul> <li>Input the positions of the backward end and forward end.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is mm and input can be made down to two decimal places.</li> </ul>
2) Vel [% or mm/s]	: Set the velocity of operation. Set a number from 0% to 100%. Also, the unit can be switched to mm/s by pressing [Unit Change]. Input can be made down to the two decimal places for mm/s. Note 1 Figure out the minimum velocity by using the formula below. Min. Velocity [mm/s [deg/s]] = Lead Length [mm] / 800 / 0.001 [s] (Number of 200V servo motor type encoder pulse: 16384)
3) Acc [% or G]	: Set the acceleration at start. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) [Transfer] button	: Once the data setting is complete, touch [Transfer] to transfer the data to the controller.
8) Auto servo OFF Setting	: Setting the Auto servo OFF delay time. [Refer to 6.7.5 Auto servo OFF]
back to those b	other window without transferring data, all the data settings will go before. ransferring, operation by the manual operation switch will not be



Shown below is the content of setting for the position data for the positioning operation (2-position setting). (Rotary)

	,				
🗧 🔶 🖆 Simple Data Se	tting	du		Axis No	. 00
	Push 313 s 313 s 313 s	Itn         (Bwd: FEnd           60         Velocity           1         Cvc           1         Velocity           1         Velocity </th <th>to BEnd) Te time Ver D:D</th> <th>□Pu 0.786 5)</th> <th></th>	to BEnd) Te time Ver D:D	□Pu 0.786 5)	
Position setting	. B. End (HOME_End) 0.00 deg Bwd.	Prev Setng Crnt Setng Prev Setng nual Mode	30 50 30 50 60 100 60 100	30 30 60 60	Cycle time(s) 1.313 1.313 0.786 0.786 0.786
Auto servo OFF Setting 8)			ansfer	)7)	

1) Position setting [deg]	<ul> <li>Input the positions of the backward end and forward end.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is deg and input can be made down to two decimal places.</li> </ul>
2) Vel [% or deg/s]	: Set the velocity of operation. Set a number from 0% to 100%. Also, the unit can be switched to deg/s by pressing [Unit Change]. Input can be made down to the two decimal places for deg/s. Note 1 Figure out the minimum velocity by using the formula below. Min. Velocity: 20deg/s
3) Acc [% or G]	: Set the acceleration at start. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) [Transfer] button	: Once the data setting is complete, touch [Transfer] to transfer the data to the controller.
8) Auto servo OFF Setting	: Setting the Auto servo OFF delay time. [Refer to 6.7.5 Auto servo OFF]

Caution: If moving to another window without transferring data, all the data settings will go back to those before. Also, without transferring, operation by the manual operation switch will not be available.



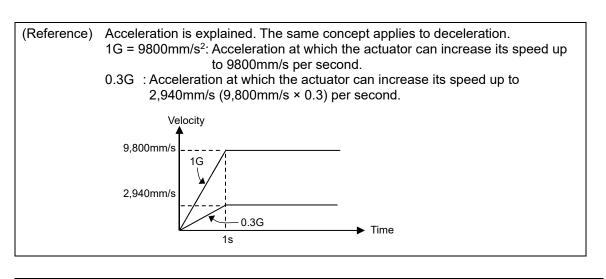
Shown below is the content of setting for the position data for the positioning operation (2-position setting). (Wire Cylinder)

← 🖆 Simp	le Data Setting	📶 💽 Axis No. 00
3) 30 Prelocity BEnd-FEnd V: Vel (%) 50 2 V: Vel 5 D: Dec (%) 4; Acc 0: 0	Push         A: Acc (%)         Push         0.225 s           3)         40 Velocity FEnd-HEEnd         0.222 s           V: Vel (%)         2)         V: Vel           0: Dec (%)         40 Acc         0.202 s           1: Dec (%)         2)         V: Vel           1: Dec (%)         40 Acc         0.202 s	
Position setting	1) I	lal Mode Fest run OJog OInching Servo OFF O Brake rel. Mur. pos. 0.00 mm I 6) 6 B, End F, End
B. End (HOME End) 0.00 mm	F. End	
Auto servo OFF Setting 8)	Unit Char	nge Transfer 7)

1) Position setting [mm]	: Input the positions of the backward end and forward end. Positioning coordinate value. Enter is as the distance from the home position. The unit is mm and input can be made down to two decimal places.
2) Vel [% or mm/s]	: Set the velocity of operation. Set a number from 0% to 100%. Also, the unit can be switched to mm/s by pressing [Unit Change]. Input can be made down to the two decimal places for deg/s. Note 1 Figure out the minimum velocity by using the formula below. Min. Velocity [mm/s [deg/s]] = Lead Length [mm] / 800 / 0.001 [s] (Number of 200V servo motor type encoder pulse: 16384)
3) Acc [% or G]	: Set the acceleration at start. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) [Transfer] button	: Once the data setting is complete, touch [Transfer] to transfer the data to the controller.
8) Auto servo OFF Setting	: Setting the Auto servo OFF delay time. [Refer to 6.7.5 Auto servo OFF]
Caution: If moving to anot back to those be	ther window without transferring data, all the data settings will go efore.

Also, without transferring, operation by the manual operation switch will not be available.





Caution: If the actuator or work part receives impact or generates vibration, lower the acceleration/deceleration. If the system is used continuously with the actuator or work part receiving impact or generating vibration, the life of the actuator may be significantly reduced.

	Tra	nsfer log	Acc (%)	Vel (%)	Dec (%)	Cycle time(s)
.	Fwd.	Crnt Setng	30	65	30	0.535
)	Fwu.	Prev Setng	30	60	30	0.572
	Bwd.	Crnt Setng	30	85	30	0.510
	bwa.	Prev Setng	30	75	30	0.536
Manual Mode Cur.pos. 0.00 mm B.End F.End						
				D, C	nu	F. Enu

9) Transfer log

Once the data of the velocity and acceleration/deceleration for the way forth and the way back is transferred by pressing [Transfer], the old setting parameters will be shown in the previous setting area and the new parameters in the current setting area, and the cycle time calculated from these parameters will be displayed.

However, it cannot be checked for the wire cylinder.

10) Manual Mode

Touch [B.End] or [F.End] in the manual operation area, and the actuator can be moved forward or backward. (JOG Operation)

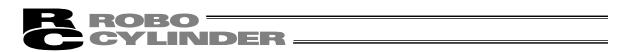
Operation is available when [B.End] and [F.End] are activated in green. If they are not activated in green, the setting values are not transferred. Transfer the parameters to the controller by pressing [Transfer], first.



Shown below is the content of setting for the position data for the positioning operation (3-position setting). (Rotary and Wire Cylinder excluded)

🔶 🔂 Simple Data Setting	un 🕑 Axis No. 00
0p. condtn (Fed 58nd or Nid. to FEnd)         0p. condtn (FEn5); BEnd to Nid.)           A:Acc(%)         D:Dush         A:Acc(%)           3)         30) Yelocity End+End         4.528+1           100         V:Vel (%)         V:Vel (%)           100         2)         V:Vel (%)           0:Dec (%)         4, Acc         0:Dec (%)	A:Acc(%) 065 20 Welocity FEnd→BEnd 0.528 s
Positival setting         1)           B. End         Mid. p.         F. End           (Holle End)         50.00 mm         100.00 mm	Manual Node       Test run OJog       Servo OFF       Brake rel.       Cur. pos.       0.00 mm       Brake rel.       Mid. p.
Auto servo OFF Setting 8)	Change Transfer 7

1) Position setting [mm]	<ul> <li>Input the positions of the backward end, forward end and middle point.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is mm and input can be made down to two decimal places.</li> </ul>
2) Vel [% or mm/s]	: Set the velocity of operation. Set a number from 0% to 100%. Also, the unit can be switched to mm/s by pressing [Unit Change]. Input can be made down to the two decimal places for mm/s. <i>Note 1 Figure out the minimum velocity by using the formula</i> <i>below.</i> <i>Min. Velocity [mm/s [deg/s]] = Lead Length [mm] / 800 /</i> 0.001 [s] (Number of 200V servo motor type encoder pulse: 16384)
3) Acc [% or G]	: Set the acceleration at start. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) [Transfer] button	: Once the data setting is complete, touch [Transfer] to transfer the data to the controller.
8) [Auto servo OFF Setting]	: Setting the Auto servo OFF delay time. Refer to [6.7.5 Auto servo OFF]



Shown below is the content of setting for the position data for the positioning operation (3-position setting). (Rotary)

🔶 🔂 Simple Data	Setting	du) (	🗹 Axis No. 00
$3) 30 \frac{\text{Welocity BEnd} \rightarrow \text{FEnd}}{\text{Mid} \rightarrow \text{FEnd}} \frac{0.528 \text{ s}}{0.396 \text{ s}}$	2. condtn (FEnd av BEnd to Mid.)           Acc (%)           30           400           100           20           100           20           100           20           100           20           100           20           100           21           100           <	A:Acc(%)	Find or Nid. to BEnd) Dush Dity FEnd-BEnd 0.528 Nid-BEnd 0.3065 V:Vel Co Dipec
Nid. p. 50.000deg	F. End 1) •	ual Mode Test run OJog Servo OFF O Cur. pos. 0. B. End Mid.	OInching Brake rel. 00 deg 1 6 p. F. End
Auto servo OFF Setting 8)	Unit Cha	nge Trans	fer <b>7</b> )

1) Position setting [mm]	<ul> <li>Input the positions of the backward end, forward end and middle point.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> </ul>
	The unit is mm and input can be made down to two decimal places.
2) Vel [% or mm/s]	: Set the velocity of operation. Set a number from 0% to 100%. Also, the unit can be switched to deg/s by pressing [Unit Change]. Input can be made down to the two decimal places for deg/s.
	Note 1 Figure out the minimum velocity by using the formula below. Min. Velocity [20 deg/s]
3) Acc [% or G]	: Set the acceleration at start. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) [Transfer] button	: Once the data setting is complete, touch [Transfer] to transfer the data to the controller.
8) [Auto servo OFF Setting]	: Setting the Auto servo OFF delay time. Refer to [6.7.5 Auto servo OFF]



Shown below is the content of setting for the position data for the positioning operation (3-position setting). (Wire Cylinder)

← ☆ Simp	le Data Setting		du CD	Axis No. 00
A :+cc+(k) - 5) 3) 30 Helocity BEnd→FEnd V: Vet V: Vet 100 2 0: T0+(th) - 1 A isoc 4) 30	to FEnd) Pueh \$200 \$30 \$10	nd→Mid. 0.3065 J ( <u>)</u> 0:0ec Time 4)	cc (%)5) 30 Welocity el (%) 100 2) ec (%) A;Acc 30	d or Mid. to BEnd) 
Postition sotting	Wid. p.	1)	run OJog 0FF O 0s. 0.00 m	OInching Brake rel.
(HOME End) 0.00 mm		100. 00 mm		
Auto servo OFF Setting 8)		Unit Change	Transfer	7)

1) Position setting [mm]	<ul> <li>Input the positions of the backward end, forward end and middle point.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is mm and input can be made down to two decimal places.</li> </ul>
2) Vel [% or mm/s]	: Set the velocity of operation. Set a number from 0% to 100%. Also, the unit can be switched to mm/s by pressing [Unit Change]. Input can be made down to the two decimal places for deg/s. Note 1 Figure out the minimum velocity by using the formula below. Min. Velocity [mm/s [deg/s]] = Lead Length [mm] / 800 / 0.001 [s] (Number of 200V servo motor type encoder pulse: 16384)
3) Acc [% or G]	: Set the acceleration at start. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
4) Dec [% or G]	: Set the deceleration at stop. Set a number from 0% to 100%. Also, the unit can be switched to G by pressing [Unit Change]. Input can be made down to the two decimal places for G.
5) Cycle time [s]	: The cycle time calculated from the velocity and acceleration / deceleration set is shown.
6) Cur. pos. [mm]	: Displays the current position.
7) [Transfer] button	: Once the data setting is complete, touch [Transfer] to transfer the data to the controller.
8) [Auto servo OFF Setting]	: Setting the Auto servo OFF delay time. Refer to [6.7.5 Auto servo OFF]

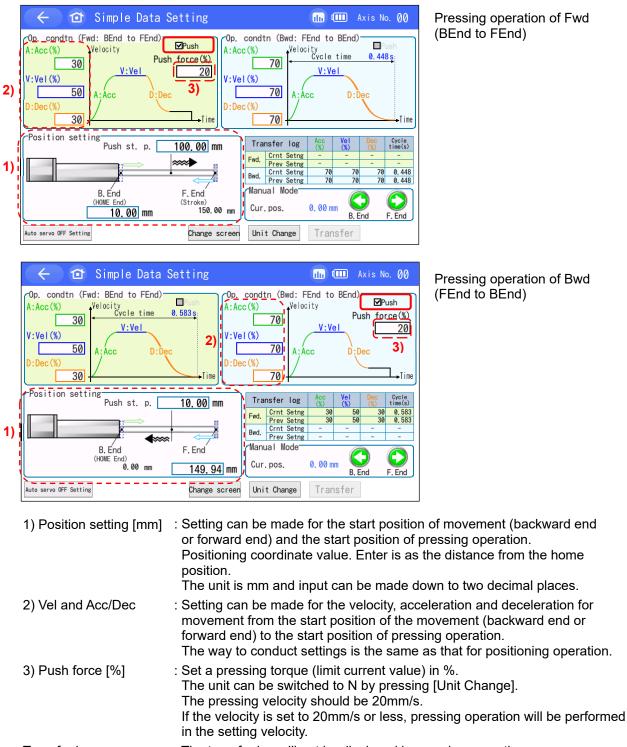


## 6.7.2 Pressing Operation

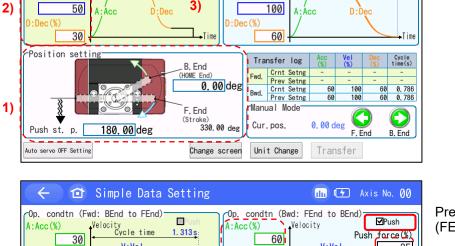
Shown below is the content of setting for the position data for the pressing operation (2-position setting). (Rotary and Wire Cylinder excluded)

Put a check mark  $\checkmark$  in the check box  $\square$ Push and the screen goes to the setting window for the pressing operation.

(The belt driven types (EC-B6 and B7) are not available for pressing operation.)



Transfer log: The transfer log will not be displayed in pressing operation.<br/>The transfer operation and manual operation is the same as the positioning<br/>operation. [Refer to 6.7.1 Positoning Operation]



2)

Tim

(HOME End) 0.00 deg

330.00 deg

Change screen

B. End

F. End

V:Vel(%)

:Dec(%)

Fwd.

Bwd.

100

60

Transfer log

Manual Mode

Unit Change

Cur.pos.

Crnt Setng Prev Setng Crnt Setng Prev Setng

A;Ácc

Г

A:Acc(%)

V:Vel(%)

Г

NDER

Shown below is the content of setting for the position data for the pressing operation (2-position

Put a check mark ✓ in the check box □Push and the screen goes to the setting window for the

Op. condtn (Bwd: FEnd to BEnd)

60

Velocity Cycle time

V:Vel

V:Vel

Acc (%) Vel (%)

30 30

0.00 deg

Transfer

35

→Time

Cycle time(s)

1.313

Ð

B. End

3)

D;Dec

50 50 30 30

F End

🕕 🖅 Axis No. 00

0. 786 s

ROBO

Simple Data Setting

V:Vel

V:Vel

15

20 · /

180.00 deg

. Acc

₽ush

50

3)

Push force(%)

setting). (Rotary)

 $\leftarrow$ 

A:Acc(%)

V:Vel(%)

V:Vel(%)

D:Dec(%

1)

50

30

Position setting

Push st. p.

Auto servo OFF Setting

pressing operation.

30

Op. condtn (Fwd: BEnd to FEnd)

Velocity

Pressing operation of Bwd (FEnd to BEnd)

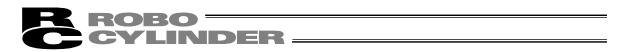
Pressing operation of Fwd

(BEnd to FEnd)

1) Position setting [mm]	<ul> <li>Setting can be made for the start position of movement (backward end or forward end) and the start position of pressing operation.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is mm and input can be made down to two decimal places.</li> </ul>
2) Vel and Acc/Dec	: Setting can be made for the velocity, acceleration and deceleration for movement from the start position of the movement (backward end or forward end) to the start position of pressing operation. The way to conduct settings is the same as that for positioning operation.
3) Push force [%]	<ul> <li>Set a pressing torque (limit current value) in %.</li> <li>The unit can be switched to N•m by pressing [Unit Change].</li> <li>The pressing velocity should be 20deg/s.</li> <li>If the velocity is set to 20deg/s or less, pressing operation will be performed in the setting velocity.</li> </ul>
Transfer log	: The transfer log will not be displayed in pressing operation. The transfer operation and manual operation is the same as the positioning operation. [Refer to 6.7.1 Positoning Operation]

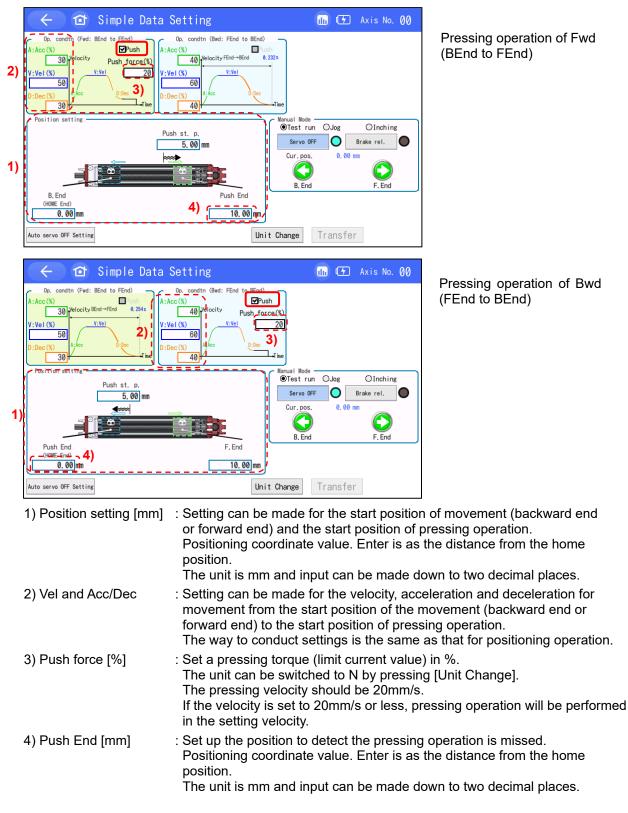
ME0376-10A

#### 6-27



Shown below is the content of setting for the position data for the pressing operation (2-position setting). (Wire Cylinder)

Put a check mark  $\checkmark$  in the check box  $\Box$ Push and the screen goes to the setting window for the pressing operation.



Shown below is the content of setting for the position data for the pressing operation (3-position setting). (Rotary and Wire Cylinder excluded)

Put a check mark  $\checkmark$  in the check box  $\Box$ Push and the screen goes to the setting window for the pressing operation.

A:Acc(%)

:Vel(%)

Servo OFF

B. End

Unit Change

Cur.pos

30

100

me <u>30</u> Manual Node ⊛Test run OJog

0

Mid. p

Transfer

🕕 🖅 Axis No. 00

Mid, →BEnd

Push 0. 528 s 0. 306 s

OInching

Ð

F. End

Brake rel.

condtn (Bwd: FEnd or Mid. to BEnd)

(The belt driven types (EC-B6 and B7) are not available for pressing operation.)

0. 306

NDER

(FEnd or BEnd to Mid

F. End (Stroke) 100.00 mm

🖆 Simple Data Setting

20

Mid. p.

50.00 mm

3)

condtr

/:Vel(%)

30

100

30

Push st. p.

70.00 mm

to FEnd

sh\_force(%

Push

 $\leftarrow$ 

A:Acc(%)

/:Vel(%)

1)

Г

12)

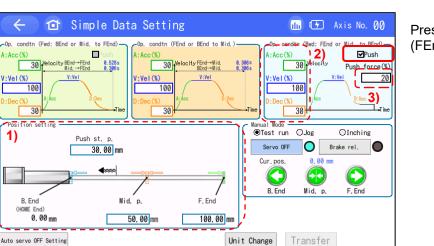
30 t

100

30

B. End

0.00 mm Auto servo OFF Setting



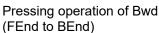
Pressing operation of Fwd

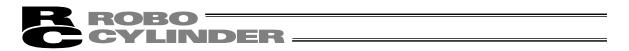
(BEnd to FEnd)

.) i oolaon oolang []	or forward end) and the start position of pressing operation and middle point. Positioning coordinate value. Enter is as the distance from the home position. The unit is mm and input can be made down to two decimal places.
2) Vel and Acc/Dec	: Setting can be made for the velocity, acceleration and deceleration for movement from the start position of the movement (backward end or forward end) to the start position of pressing operation. The way to conduct settings is the same as that for positioning operation.
3) Push force [%]	<ul> <li>Set a pressing torque (limit current value) in %.</li> <li>The unit can be switched to N by pressing [Unit Change].</li> <li>The pressing velocity should be 20mm/s.</li> <li>If the velocity is set to 20mm/s or less, pressing operation will be performed in the setting velocity.</li> </ul>
Transfer log	: The transfer log will not be displayed in pressing operation. The transfer operation and manual operation is the same as the positioning

operation. Refer to [6.7.1 Positoning Operation]

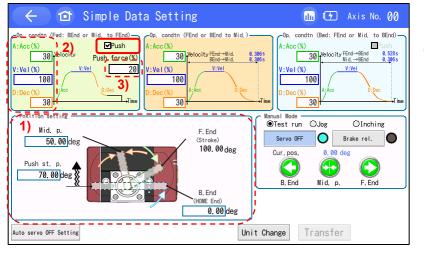
1) Position setting [mm] : Setting can be made for the start position of movement (backward end



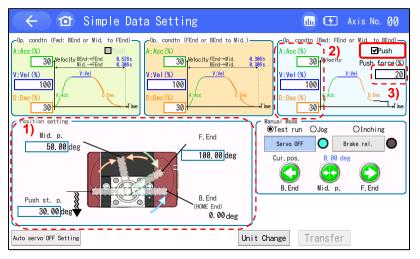


Shown below is the content of setting for the position data for the pressing operation (3-position setting). (Rotary)

Put a check mark  $\checkmark$  in the check box  $\Box Push$  and the screen goes to the setting window for the pressing operation.



Pressing operation of Fwd (BEnd to FEnd)



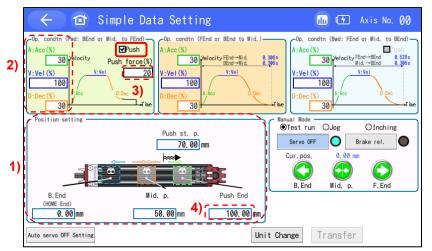
Pressing operation of Bwd (FEnd to BEnd)

1) Position setting [mm]	<ul> <li>Setting can be made for the start position of movement (backward end or forward end) and the start position of pressing operation and middle point.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is mm and input can be made down to two decimal places.</li> </ul>
2) Vel and Acc/Dec	: Setting can be made for the velocity, acceleration and deceleration for movement from the start position of the movement (backward end or forward end) to the start position of pressing operation. The way to conduct settings is the same as that for positioning operation.
3) Push force [%]	<ul> <li>Set a pressing torque (limit current value) in %.</li> <li>The unit can be switched to N•m by pressing [Unit Change].</li> <li>The pressing velocity should be 20deg/s.</li> <li>If the velocity is set to 20deg/s or less, pressing operation will be performed in the setting velocity.</li> </ul>
Transfer log	: The transfer log will not be displayed in pressing operation. The transfer operation and manual operation is the same as the positioning operation. Refer to [6.7.1 Positoning Operation]

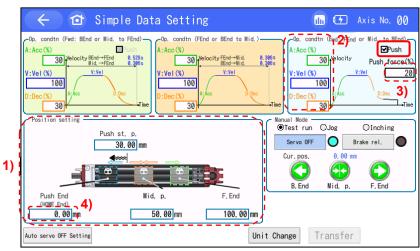


Shown below is the content of setting for the position data for the pressing operation (3-position setting). (Wire Cylinder)

Put a check mark  $\checkmark$  in the check box  $\square$ Push and the screen goes to the setting window for the pressing operation.



Pressing operation of Fwd (BEnd to FEnd)

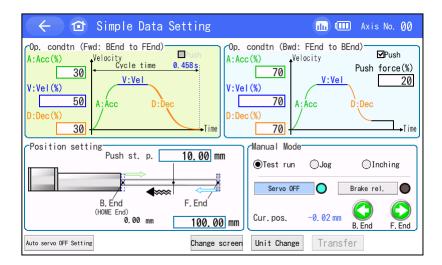


Pressing operation of Bwd (FEnd to BEnd)

1) Position setting [mm]	<ul> <li>Setting can be made for the start position of movement (backward end or forward end) and the start position of pressing operation and middle point.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is mm and input can be made down to two decimal places.</li> </ul>
2) Vel and Acc/Dec	: Setting can be made for the velocity, acceleration and deceleration for movement from the start position of the movement (backward end or forward end) to the start position of pressing operation. The way to conduct settings is the same as that for positioning operation.
3) Push force [%]	: Set a pressing torque (limit current value) in %. The unit can be switched to N by pressing [Unit Change]. The pressing velocity should be 20mm/s. If the velocity is set to 20mm/s or less, pressing operation will be performed in the setting velocity.
4) Push End [mm]	<ul> <li>Set up the position to detect the pressing operation is missed.</li> <li>Positioning coordinate value. Enter is as the distance from the home position.</li> <li>The unit is mm and input can be made down to two decimal places.</li> </ul>



## 6.7.3 Manual Mode



Once the simple data setup window is shown, the manual operation box should show up in the right bottom of the screen.

Selection can be made with  $\circ$  (radio buttons) from Trial Run, Jog and Inching.

(1) Test Run

Select Test run in radio buttons ( $\bigcirc$ ).

2-position setting

Manual Mode				
⊙Test run	⊖Jog	◯Inch	ning	◯Inching
Servo OFF	0	Brake rel.		Brake rel.
Cur.pos.	0. 00 mm	C B. End	F. End	B. End F. End Set values not transferred

#### 3-position setting

ſ	Manual Mode Test run			Inching	$\mathbf{r}$	Manual Mode —	OJog	OInchir	ıg
	Servo OFF Cur. pos. B. End	0. 0 Mid.	Brake	F. End		Servo OFF Cur. pos. B. End	0. 0 Mid.	Brake rel. 0 mm p. F. End	



It should be switched over between power on and off by touching [Servo OFF]. It should be switched over between brake compulsory release on and off by touching [Brake rel.].

An actuator should move to the backward end if you touch [B. End]. Make operation using velocity and acceleration/deceleration in the operation conditions (Way back: from F. End to B. End).

An actuator should move to the forward end if you touch [F. End]. Make operation using velocity and acceleration/deceleration in the operation conditions (Way forward: from B. End to F. End).

An actuator should move to the forward end if you touch [Mid. P.]. Make operation using velocity and acceleration/deceleration in the operation conditions (From F. End / B. End to Mid. P).

Both forward and backward operations should activate while the button is touched and held. Release the button and the operation should stop.

[B. End] and [F. End], [Mid. P] are ready for operation when they are shown in green. If they are not green, the set values are not transferred. Transfer the set value data to a controller in advance by pressing [Transfer] button.

(2) JOG

Select JOG in radio buttons (O). Manual Mode OTest run OJog OInching Jog vel. change 1 mm/s Cur. pos. 0.00 mm O Forward Backward Forward

An actuator keeps moving backward while touching [Backward]. Regardless of the backward end setting, the actuator should move backwards till the home position.

An actuator keeps moving forward while touching [Forward]. Regardless of the forward end setting, the actuator should move forwards till the stroke end.

Touch [Jog vel. change] and the velocity to move backward/forward should change in the order below.

1 mm/s (deg/s)  $\rightarrow$  10 mm/s (deg/s)  $\rightarrow$  30 mm/s (deg/s)  $\rightarrow$  50 mm/s (deg/s)  $\rightarrow$  100 mm/s (deg/s)



(3) Inching

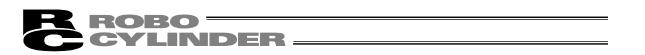
Select Inching in radio buttons ( $\bigcirc$ ).						
Manual Mode						
⊖Test run	⊖Jog	€Inc	ching			
Inc. dis.	change	0.50 i	nm			
Cur.pos.	0. 00 mm	Backward	Forward			

Touch [Backward] and an actuator should move backward in a certain distance. Regardless of the backward end setting, the actuator should move backwards till the home position.

Touch [Forward] and an actuator should move forward in a certain distance. Regardless of the forward end setting, the actuator should move forwards till the stroke end.

Touch [Inc. dis. change] and the distance to move in one touch should change in the order below.

0.01 mm (deg)	) $ ightarrow$ 0.10 mm (deg) $ ightarrow$ 0.50 mm (deg) $ ightarrow$ 1.00 mm (deg) -	$\rightarrow$ 5.00 mm (deg)
<b>↑</b>		



(4) Transfer log display (Not displayed in Wire Cylinder or 3-position setting)

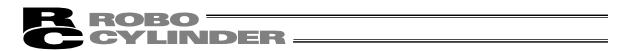
🔶 🖆 Simple Data Setting	🕕 💷 Axis No. 00
A:Acc (G) Velocity Push Cycle time 0.558 V:Vel (mm/s) 400.00 A;Acc D:Dec	condtn (Bwd: FEnd to BEnd) cc (G) Velocity Cycle time 0.448s 560.00 ac (G) 0.35
Position setting	Transfer         log         Acc (5)         Vel (mets)         Dec (6)         Cycle (6)           Find.         Crnt Setng         0.30         400.00         0.30         0.558           Prev         Setng         0.30         400.00         0.30         0.558           Bid.         Crnt Setng         0.70         560.00         0.35         0.448           Prev Setng         0.70         560.00         0.35         0.448
B. End F. End (HOWE End) 10.00 mm 150.00 mm	Manual Mode         Output         Ou
Auto servo OFF Setting Change screen	Unit Change Transfer

Touch [Change screen] and the screen should be switched over between the manual operation display and data transfer history display. Switchover is available in any condition of Test run, Jog and Inching.

Tra	nsfer	log	Acc (%)	Vel (%)	Dec (%)	Cycle time(s)
Fwd.	Crnt	Setng	30	60	30	1.448
Fwa.	Prev	Setng	30	60	30	1.448
Bwd.	Crnt	Setng	30	75	30	1. 191
Dwa.	Prev	Setng	30	75	30	1. 191
Manu Cur.	pos.		0. 00 m	m C	Ind	F. End

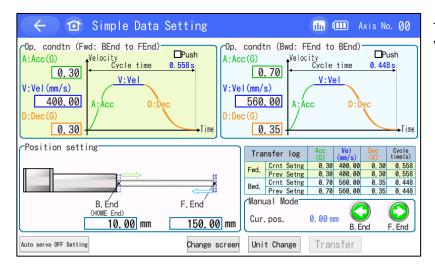
In the data transfer history display, the manual operation buttons work as [B. End] and [F. End] for Test Run.

Once you switch the screen back to the manual operation display, the setting should go back to the test run.



# 6.7.4 Mounting Orientation Setting / Payload Setting

By setting "Payload (kg/kg-m<sup>2</sup>)" and "Mounting Orientation" on the way back and forth in advance, the acceleration and deceleration you can choose can be determined.

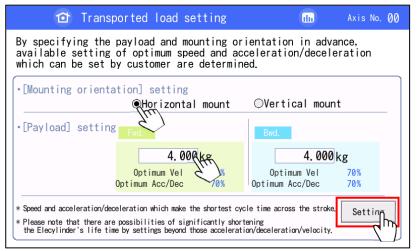


Touch either acceleration, velocity or deceleration.

Input range 1 ~ 100						
7	8	9	ESC			
4	5	6				
1	2	3				
0	BS	CLR	ENT			
Load setting	.oad setting(Fmd) 4.000 kg Chang					

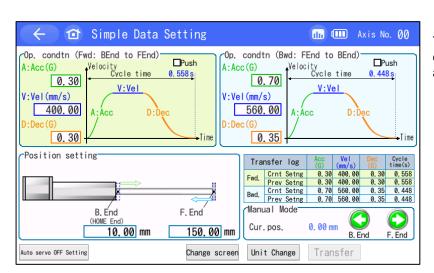
The numeric key pad should open. Touch [Change] on the right bottom.

The models not applicable for the payload setting (refer to next page) should not have [Change] displayed.



Select "Mounting orientation", input "Payload" and then touch [Setting].

The unit is "kg-m<sup>2</sup>" for rotary type



**JDER** 

ROBO

Touch an operational condition to be set or adjusted.

Input range 1 ~ 100					
7	8	9	ESC		
4	5	6			
1	2	3			
0	BS	CLR	ENT		
Load setting(Fwd) 4.000 kg					

Input a value in the numeric keys and touch [ENT].

Tra	nsfer log	Acc (%)	Vel (%)	Dec (%)	Cycle time(s)
Fwd.	Crnt Setng	10	80	10	0.683
Fwa.	Prev Setng	20	100	20	0.514
Bwd.	Crnt Setng	10	80	10	0.683
Dwa.	Prev Setng	20	100	20	0.514
Manual Mode Cur.pos. 1.53 mm B.End F.End					
Unit Change Transfer					

Touch [Transfer].

The values should get written to the controller, [B. End] and [F. End] should turn into green and "Transfer liog" should be updated.

## Payload Setting Not Applicable Model

- Ultra Mini ELECYLINDER : EC-SL3
   /GDS3L/GDB3
   /T3
- Gripper Type : EC-GRB /GRBP (W)/GRC /GRST /GRTR
- Stopper Cylinder ECO Type : EC-ST15M
- Wire Cylinder : EC-WER1/WEGR2



## 6.7.5 Auto servo OFF

When the automatic servo-of is set, the servo should turn off when the automatic servo off latency has passed after the operation completed. The automatic servo-off latency can be set to each of back and forth ways.

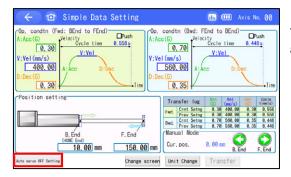
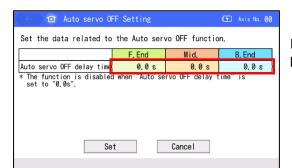


 Image: Control of the serve of the serve

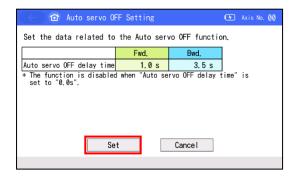
Touch [Auto servo OFF Setting] and the automatic servo-off setup window should appear.

Set the automatic servo-off latency to back and forth ways.

\* Set it to "0.0s", and the feature should be inactivated.



In the 3-position setting, setup for the middle point comes available.



Touch [Set up] after input.



Controller reset	<u> </u>	🗋 Axis No. 00
Restart the	controller?	
Yes	No	

The applicable version of ELECYLINDER

Models	Version
24V system ELECYLINDER	V000D or later
200V system ELECYLINDER	V0005 or later
Ultra Mini ELECYLINDER	V0002 or later

Touch [Yes].

Reboot the controller and the automatic servo-off setup is complete.



# 6.8 ROBO PUMP Setting

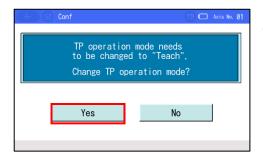
When ROBO PUMP is connected and ROBO PUMP is selected in the Select Axis screen, the [ROBO PUMP Settings] button should be shown in the Menu 1 screen. Touch it and the screen should shift to the ROBO PUMP Setting screen.

In the ROBO PUMP setting screen, settings for suction of ROBO PUMP, release, display of status monitor, pressure setting and detail settings are available.



Touch [ROBO PUMP settings] on the Menu 1 screen.

If the TP operation mode is not Monitor Mode 1 or 2, the following message screen appears.



Touch [Yes] to change to Teach Mode 1 or 2.

If not, touch [No].

(Note) The safety speed does not change.

ROBO PUMP Settings screen appears.

The contents of pressure setting may differ depending on the PIO patterns and enable or disable of the Energy-saving mode.

	If the PIO pattern is 0 or 1	If the PIO pattern is 2
Energy- saving mode Disabled	Coeration status Operation status Operation status Operation status Pressure : e kPa 1/0 signal Suction conf. OF level kPa Utorin conf. OF level kPa Utori	Constraints     Constraints       Operation status     Operation status       Operation status     Pressure satting       Depration status     Evel of suction conf.       Suction conf.     Image: State of the set of suction conf.       Release conf.     Image: State of the set of set of the set of set of the set
Energy- saving mode Enabled	Aris Ro     B     Aris Ro     80       Operation status     Operation status     Suction conf, ON level     -40     kPa       Pressure :     8 kPa     Suction conf, OF level     -50     kPa       1/0 signal     Suction conf, OF level     -50     kPa       Suction conf, OF     Suction conf, OF level     -50     kPa       Month and the second se	Constraint     Constraint       Operation status     Constraint       Subtion conf.     Operation       Operation conf.     Operation       Aliant     Constraint       Operation conf.     Operation       Operation conf.     Operation       Aliant     Constraint       Operation conf.     Operation       Operation conf.     Operation       Operation conf.     Operation       Operation conf.     Operation       Ope



## 6.8.1 Operation Status

Operation sta	atus			
Operation statu	s:S	tand	by	
Pressur	e:	0	kPa	

Shown below is the displayed Items.

[Displayed Items]

- Operation status : The operation status of the ROBO POMP is shown.
- Pressure [kPa] : Pressure at the vacuum pump part should be displayed.

### 6.8.2 I/O Signal

Shown below is the displayed Items.

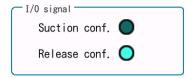
If the PIO pattern is 0 or 1.

I/O signal	
Suction conf.	0
	•

### [Displayed Items]

- Suction conf.
- : It should turn on when suction is complete.
  - : It should be off when suction is not complete.

#### If the PIO pattern is 2.



[Displayed Items]

- Suction conf. : It should turn on when suction is complete.
- Release conf. : It should turn on when release is complete.



## 6.8.3 Pressure setting

If the PIO pattern is 0 or 1.	If the PIO pattern is 2.
Pressure setting	Pressure setting
Suction conf. ON level -45 [kPa]	Level of suction conf45 [kPa]
Suction conf. OFF level5 [kPa]	Level of release conf5 [kPa]
Details Transfer	Details Transfer

The display details, process when each button is touched are as shown below.

[Display Details When PIO Pattern is 0 or 1]

<ul> <li>Suction conf. ON level [kPa]</li> </ul>	: The upper limit of pressure to terminate suction should be set up. The unit is [kPa] and integers in negative can also be input. Settings cannot be changed during suction or release in the monitoring mode.
<ul> <li>Suction conf. OFF level [kPa]</li> </ul>	: The upper limit of pressure to terminate release should be set up. The unit is [kPa] and integers in negative can also be input. Settings cannot be changed during suction or release in the monitoring mode.
<ul> <li>Pressure setting graph</li> </ul>	: The relation between the suction confirmation ON and OFF levels and the pressure should be shown.
[Display Details When PIO Pattern	n is 21
Level of suction conf. [kPa]	: The upper limit of pressure to terminate suction should be set up. The unit is [kPa] and integers in negative can also be input. Settings cannot be changed during suction or release in the monitoring mode.
• Level of release conf. [kPa]	: The upper limit of pressure to terminate release should be set up. The unit is [kPa] and integers in negative can also be input. Settings cannot be changed during suction or release in the monitoring mode.
<ul> <li>Pressure setting graph</li> </ul>	: The relation between the suction confirmation and release confirmation levels and the pressure should be shown.
[Button]	
• [Details] button	: ROBO PUMP Details screen should be displayed Refer to [6.8.8.1 ROBO PUMP Advanced Settigs 1 screen (Energy-saving mode), 6.8.8.2 ROBO PUMP Advanced Settigs 2 screen (Level setting)].
• [Transfer] button	: The changed setting should be sent to ROBO PUMP.

\* The [Transfer] button should be inactivated when there is no change to the settings in the monitoring mode and teaching mode or during operation of suction or release.



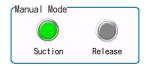
## 6.8.4 Alarm

Alarm Alarm code	E81 Other alarm	
Description	An alarm has occurred. Check the troubleshooting.	Troubleshooting
	Check the troubleshooting.	

The display details, process when each button is touched are as shown below.

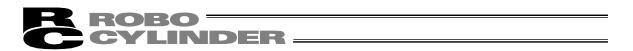
- Alarm code : An occurred alarm code should be displayed. "None" should be shown when there is no alarm occurred.
  Content : An occurred alarm code should be displayed.
- [Troubleshooting] button : The screen moves to the troubleshooting window.

### 6.8.5 Manual Mode



The process when each button is touched is as follows.

- [Suction] button : Touch it and the suction operation should start. When it is in standby and data is not yet sent, it should be valid.
- [Release] button : Touch it and the release operation should start. When PIO Pattern = 0 or 2, it should be valid during release or in standby. When PIO Pattern = 1, it should be valid only during suction.
  - \* The [Suction] and [Release] buttons should be inactivated in the monitoring mode and when there is changed data before transferred.



## 6.8.6 Release Warning Confirmation Screen

When it is attempted to move to the Menu 1 window or Select Axis window during suction, the release warning confirmation window should open.

🗧 🕜 Warning	🛄 💭 Axis No. 00
If you switch to the screen, you can Otherwise, the workpiece may drop unexpect personal injury or damage to the workpie Execute the release operation to change t Are you sure?	tedly, resulting in ace or equipment.
Yes : After release, then switch to the sc No : Screen transition without the releas Cancel : Back to previous screen without rele	se operation.
Yes No	Cancel

The process when each button is touched is as follows.

- [Yes] button : The screen should go to the Menu 1 window or Select Axis screen after the release process is completed.
- [No] button : The release process should not be performed before the screen goes to the Menu 1 screen or Select Axis screen.
- [Cnacel] button : The release process should not be performed, and the screen should go back to the ROBO PUMP Settings (ROBO PUMP Advanced Settings) screen.

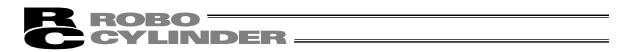
## 6.8.7 Deleting Data in Edit Confirmation Screen

When data has been edited, but the [Transfer] was not touched and attempted to go to the Menu 1 screen or Select Axis screen, the Deleting Data in Edit Confirmation screen should come out.

$( \in )$	Conf	0	Axis No. 00
	Edited data will be al Are you sure to com		
	Yes	No	

The process when each button is touched is as follows.

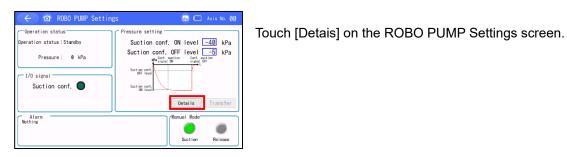
- [Yes] button : The data should be deleted and the screen goes to the Menu 1 screen or Select Axis screen.
- [No] button : The data should not be deleted, and the screen goes back to the ROBO PUMP Settings (ROBO PUMP Advanced Settings) screen.



### 6.8.8 ROBO PUMP Advanced Settigs screen

By touching the [Details] in the ROBO PUMP Settings screen, the screen goes to ROBO PUMP Advanced Settings Screen 1.

In ROBO PUMP Advanced Settings Screen 1, the Energy-saving mode enable/disable can be switched over.



The ROBO PUMP Advanced Settigs screen will be displayed.



Next

<u>ل</u>

otn @OFF

Conf. suctio

SUC

Axis No. 00

ÔON

### Energy-saving mode: Disabled

😰 ROBO PUMP Advanced Setting

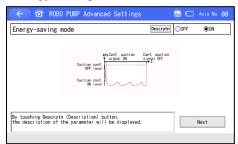
Suction conf. OFF leve

By touching Descrptn (Description) button, the description of the parameter will be displayed

Energy-saving mode

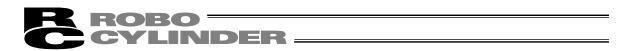
🗧 🔂 ROBO PU	MP Advanced Settings	(		Axis No. 00
Energy-saving mode		Descrptn	OFF	ON
		onf. suction ignal OFF		
By touching Descrptn (De the description of the p	scription) button, arameter will be displayed.			Next

### Energy-saving mode: Enabled



The display, setting details and process when each button is touched are as shown below.

<ul> <li>[Descrptn] button</li> </ul>	: Touch it and an explanation of the Energy-saving mode should be shown at the bottom of the window.
• [OFF], [ON] radio buttor	<ul> <li>Setting for disable and enable of the Energy-saving mode can be conducted.</li> <li>Touch o (radio button) at the item that you would like to set up or text string.</li> <li>o (radio button) of the selected item should turn into black.</li> </ul>
<ul> <li>Pressure setting graph</li> </ul>	It should display the relation between the suction confirmation ON/OFF level and pressure when the PIO pattern is 0 or 1, and relation between suction confirmation and release confirmation levels and pressure when the PIO pattern is 2.
•Energy-saving mode	: Touch the [Descrptn], and an explanation of the Energy-saving mode should be shown.
<ul> <li>[Next] button</li> </ul>	: ROBO PUMP Advanced Settigs screen 2 (Level setting) should be displayed.



#### 6.8.8.2 ROBO PUMP Advanced Settigs 2 screen (Level setting)

By touching the [Next] in ROBO PUMP Advanced Settings Screen 1, the screen goes to ROBO PUMP Advanced Settings Screen 2.

In ROBO PUMP Advanced Settings Screen 2, setting of suction confirmation ON level, suction confirmation OFF, suction confirmation and release confirmation level can be conducted. The suction confirmation ON level, suction confirmation OFF, suction confirmation and release confirmation level are to be determined by the setting of the PIO patterns. Also, when the Energy-saving mode is enabled, the setting of the suction stop level can be established.

Touch [Next] on the ROBO PUMP Settings screen 1.

The ROBO PUMP Settings screen 2 will be displayed.

The display details, process when each button is touched are as shown below.

[Display Details When PIO Pattern is 0 or 1]

#### Energy-saving mode: Disabled

← ☎ ROBO PUMP Advanced Settings	(	un 💭 Axis No. 00
Suction conf. ON level	Descrptn	-40 kPa
Suction conf. OFF level	Descrptn	-5 kPa
Suction conf. suction Conf. suction Suction conf. GF rest Git rest Git rest By touching Descrptin (Description) button.		
the description of the parameter will be displayed.		Transfer

#### Energy-saving mode: Enabled

🗧 🔂 ROBO PUMP Advanced S	ettings	🖬 🗆 Axis No. 00
Suction conf. ON level	Descrptn	-40 kPa
Suction conf. OFF level	Descrptn	−5 kPa
Level of suction stop	Descrptn	-45 kPa
Peconf section Conf action transformer and the section Sectio	96% of level of suction stop Level of suction stop	suction Resume suction

 Suction conf. ON level : The pressure to turn the suction confirmation signal ON is set up. A negative integer can be input. The suction confirmation signal should turn ON when the pressure gets below the set value.
 Suction conf.OFF level : The pressure to turn the suction confirmation signal OFF is set up. A negative integer can be input. The suction confirmation signal OFF is set up. A negative integer can be input. The suction confirmation signal should turn OFF when the pressure gets above the set value.
 Level of suction stop : Pressure to stop suction operation when the Energy-saving mode is

A negative integer can be input. Once the pressure reaches the value set in this parameter, the suction action stops, and the suction action resumes when the pressure goes above 90% of the set value.



#### [Display Details When PIO Pattern is 2]

#### Energy-saving mode: Disabled

Level of release conf.	Descrptn	-40 kPa -15 kPa
se Conf. suction Conf. release		
Level of		
Level of		

#### Energy-saving mode: Enabled

Suction conf. ON level	Descrptn	-40 kPa
Suction conf. OFF level	Descrptn	−5 kPa
Level of suction stop	Descrptn	−45 kPa
kPaConf, suction Conf, suction	kPa Stop	suction Resume suction

<ul> <li>Level of suction conf.</li> </ul>	<ul> <li>The pressure to turn the suction confirmation signal ON is set up.</li> <li>A negative integer can be input.</li> <li>The suction confirmation signal should turn ON when the pressure gets below the set value.</li> </ul>
Level of release conf.	<ul> <li>The pressure to turn the release confirmation signal ON is set up. A negative integer can be input. The release confirmation signal should turn ON when the pressure gets above the set value. The release confirmation signal should turn ON when the pressure gets above the set value. It should turn OFF when the suction signal turns on.</li> </ul>
<ul> <li>Level of suction stop</li> </ul>	<ul> <li>Pressure to stop suction operation when the Energy-saving mode is activated should be set.</li> <li>A negative integer can be input.</li> <li>Once the pressure reaches the value set in this parameter, the suction action stops, and the suction action resumes when the pressure goes above 90% of the set value.</li> </ul>

ROBO PUMP advanced setting screen 2 process when each button is touched are as shown below.

- [Descrptn] button : Touch the Descrptn button, and an explanation of the level setting should be shown at the bottom of the screen.
   Parameter : Touch the [Descrptn], and an explanation of the parameter should be shown.
- [Transfer] button : The changed setting should be sent to ROBO PUMP.
  - \* The [Transfer] button should be inactivated when there is no change to the settings in the monitoring mode and teaching mode or during operation of suction or release.



# 6.9 Parameter Edit

### Parameters are displayed and edited. Conduct it while an actuator or ROBO PUMP is not in operation.



Touch [Parameter edit] on the Menu 1 screen.

If a system password is not "0000," the password entry screen appears.

Please enter password.           0000           1         2         3         4         5         CLR         ESC           6         7         8         9         0         BS         ENT	$\leftarrow$	🔶 🖆 Parameter Password 🛛 🖬 Axis No. 00							
1 2 3 4 5 CLR ESC		Please enter password.							
<mark>──┤──┤──┤──┤──┤──┤──</mark>		0000							
<mark>──┤──┤──┤──┤──┤──┤──</mark>	_								
6 7 8 9 0 BS ENT		1	2	3	4	5	CLR	ESC	
<mark></mark>		6 7 8 9 0 BS ENT							

1. Operation Range Adjustment	Descrptn	250, 00 mm
2. AutSwitch"LS" SignI Detctn Rng Adjst	Descrptn	0.10 mm
3. HOME Direction Change	Descrptn	©0pposite@0efault
4. HOME Position Adjustment	Descrptn	3. 00 mm
5.Smooth accel/decel Setting	Descrptn	⊛Disable ⊜Enable
6.Current control setting while stop	Descrptn	⊛Disable ⊜Enable
7.Wireless Function Setting	Doscrptn	Olisable @Enable
8. Reserve		

Input the parameter edit password. Touch [ENT].

The parameter edit password at delivery is set to "0000". For how to change the parameter edit password, refer to 6.16 Environment Setting [Parameter Edit Password Change].

The displayed items may differ depending on models.



(1) Basic operation

There are two types of input, one is to input a setting value and the other is to touch  $\circ$  (radio button) to select.

#### Item to input a setting value

	ration Ra Switch"LS		. 00 mm				
3. HOME Direction Change Descrptn						O0pposite(	€Default
4. HOME Position Adjustment Description						3	00 mm
1	2	3	4	5		CLR	ESC
6	7	8	9	0		BS	ENT

Touch the item that you would like to make a setting, and the setting parameter starts flashing and numeric keys will show up.

Touch numbers on the numeric keys to input and touch [ENT].

When the process needs to be cancelled after the numeric keys appear, touch [ESC].

#### Item to tach $\circ$ (radio button) to select

🔶 🗃 Parameter		🌆 🎟 Axis No. 00
1. Operation Range Adjustment	Descrptn	250.00 mm
2. AutSwitch"LS" SignI Detctn Rng Adjst	Descrptn	0.10 mm
3. HOME Direction Change	Descrptn	©0pposite€Default
4. HOME Position Adjustment	Descrptn	3. 00 mm
5. Smooth accel/decel Setting	Descrptn	©0isable ⊜Enable
6.Current control setting while stop	Descrptn	©0isable ⊜Enable
7.Wireless Function Setting	Descrptn	⊙Disable ⊛Enable
8. Power saving setting	Descrptn	⊛Disable ⊜Enable
By touching Descrptn (Description) button, the description of the parameter will be displayed.		

Touch  $\circ$  (radio button) of the item or the text itself that you would like to select.

A black dot will be marked in  $\circ$  (radio button) that you selected.

#### Descriptions

🗧 🔂 Parameter		🌆 🎟 🗛 Axis No. 00				
1. Operation Range Adjustment	Descrptn	250. 00 mm				
2. AutSwitch"LS" SignI Detctn Rng Adjst	Descrptn	0. 10 mm				
3. HOME Direction Change	Descrptn	⊙Opposite €Default				
4. HOME Position Adjustment	Descrptn	3. 00 mm				
5. Smooth accel/decel Setting	Descrptn	©0isable ⊜Enable				
6.Current control setting while stop	Descrptn	©0isable ⊜Enable				
7.Wireless Function Setting	Descrptn	©0isable ⊛Enable				
8. Power saving setting Descrptn @Disable @Enable						
Actuator operation range (stroke) adjustment. Please do not input the value longer than the actual It may cause damage to the unit.	stroke.					

Touch [Descrptn] button and the descriptions of the setting items will be shown in the bottom of the screen.



Touch Home Button once all the settings are completed. A confirmation window asking "Restart the controller?" will come up. Touch [Yes] if you have made a change.

Touch [No] to return to the parameter screen without restarting the controller or reflecting the parameter you have set. To reflect the parameter you have set, you must restart the controller.

Caution: If the controller is not restarted, the parameter that has been rewritten does not translate to the intended action. The parameter will become effective once the controller is restarted or power is reconnected.



The controller is restarted, after which the parameter you have set will be reflected.



# 6.10 Test Run

You can perform jog/inching operation, move to a position or continuously to multiple positions registered in the position table, or move to a position by specifying the position directly. As it comes to the feature of only the I/O test for ROBO PUMP, the button should get to [I/O Test].



Touch [Test run] on the Menu 1 screen.

For ROBO PUMP, touch the [I/O test] and the screen shifts to the I/O test window. Refer to [6.10.4 I/O Test]

### The test run menu screen appears.

(+ @	Tes	trun		ili	Axis N	o. 00
			Jog inching			
			Position move			
			Direct move			
			I/O test			

Touch either one of [Jog inching], [Position move], [Direct move] or [I/O test].

(1) Jog inching

Perform jog/inching operation.

Refer to [6.10.1 Jog Inching Operation] for details about how to operate.

#### (2) Position move

Movement to the forward end or backward end or continuous movement should be performed.

Move

Movement should be made from the current position to either of the forward end or the backward end which has been indicated. (One time of movement only)

 Countinuous Movement should be made repeatedly between the forward end and the backward end.

Refer to [6.10.2 Position Movement Operation] for details about how to operate.

(3) Direct move

Input the target position and the speed on the numeric keys to perform movement.

Refer to [6.10.3 Direct Movement Operation] for details about how to operate.

(4) I/O test

Monitoring of the input and output signals and compulsory output of the output signal can be conducted.

Refer to [6.10.4 I/O Test] for details about how to operate.



# 6.10.1 Jog Inching Operation

You can perform jog operation and inching operation.

ur.pos.	0.65 mm		Servo	0
Jog vel.	Inching		Homing	0
og ver. ● 1mm/s	<ul> <li>0.01mm</li> </ul>		Brake rel.	
<ul> <li>10mm/s</li> </ul>	<ul> <li>0. 10mm</li> </ul>		Alarm reset	
30mm/s	<ul> <li>0, 50mm</li> </ul>			
50mm/s	<ul> <li>1.00mm</li> </ul>	+ BACK (-	) FWD(+) +	
100mm/s	5. 00mm	- DACK		



Jog/Inching Screen

[Operation on the Jog inching screen]

• Jog vel. / Inching	: Select either of 1, 10, 30, 50 or 100mm/s of JOG speed or 0.01, 0.10, 0.50, 1.00, 5.00mm of inching distance, and JOG operation with the selected speed or inching operation with the selected distance can be conducted. The circle (radio button) on the selected one will be marked with a black dot.
• [Servo]	: It shows the status of the servo whether it is ON or OFF for the axis. When the servo is ON, display of $\circ$ is activated and it is inactivated when the servo is OFF.
• [Homing]	: Touch [Homing] and the home-return operation should get executed after a confirmation window for execution is displayed. O display should get illuminated when the home-return operation is completed and O display should turn off when the home-return operation is incomplete.
• [Brake rel.]	: For an actuator equipped with a brake, touch [Brake rel.] and the brake gets compulsorily released and the circle turns on. Touch [Brake rel.] again and the brake works and the circle turns off.
• [Alarm reset]	: After removing a cause of an error, touch [Alarm reset] to cancel the alarm.
• [BACK (-)], [FWD (+)]	<ul> <li>When JOG operation is selected, while touching them, the axis moves in the set speed. When inching operation is selected, every time touching them, the axis moves for the set distance.</li> <li>[BACK (-)] performs JOG operation in negative direction.</li> <li>[FWD (+)] performs JOG operation in positive direction.</li> </ul>
	In inching operation, touch and hold them for two seconds, and JOG operation will be performed in 1mm/sec. The speed increases in every 1 second afterwards.

Caution: An axis could drop if the brake compulsory release is performed while the servo is off when the axis is installed in the vertical orientation.



## 6.10.2 Position Movement Operation

Move to a position or continuously to multiple positions registered in the position table. The items to be displayed should differ depending on valid/invalid of the safety velocity. [Refere to 6.11 TP Operation Mode]

← 🗇 Position mo	ove	du 🎟 Axis No. 00
Position No.	1	Servo ON
Current positi	on 152.66 mm	Homing
Target position	n 0.00 mm	
Vel.	10 mm/s	Alarm reset
1	Change vel	Ļ
Move	Cont. move	Stop





When Alarm Generated with Safety Velocity Activated







When Alarm Generated with Safety Velocity Inactivated

[Operation on the position movement screen]

Position No.

: "1" should be shown when the forward end is selected and "0" when the backward end is selected.

axis. When the servo is ON, display of  $\circ$  is activated and it is

- Current position : Displays the current position.
- Target position : Displays the target position set in the selected position number.

When Safety Velocity is Valid;

• Vel. : The set velocity (mm/s) should be displayed.

#### When Safety Velocity is Invalid;

- Velocity override : Displays the selected speed override (%).
  [Servo ON] : It shows the status of the servo whether it is ON or OFF for the
- [Homing]
   Touch [Homing] and the home-return operation should get executed after a confirmation window for execution is displayed. O display should get illuminated when the home-return operation is completed and O display should turn off when the home-return operation is incomplete.
- [Alarm reset] : After removing a cause of an error, touch [Alarm reset] to cancel the alarm.

end, 0:

<b>ROB</b> CYL	INDER
• [↑], [↓]	: Touch [↑] or [↓] to select a position number (1: forward backward end) for the movement target.

- [Change vel] : When Safety Velocity is Valid Speed can be changed in order of 1mm/s, 10mm/s, 30mm/s, 50mm/s and 100mm/s every time touching [Change vel].
   : When Safety Velocity is Invalid Speed override can be changed in order of 10%, 50% and 100% every time touching [Change vel].
- [Move] : Touching [Move] moves the axis to the target position.
- [Cont. move] : Touch [Cont. Move] and the axis performs continuous operation between the forward end and backward end till touching [Stop].
- [Stop] : Touching [Stop] stops the axis.



## 6.10.3 Direct Movement Operation

A position is specified directly to move the axis.

←	din 🖙 Axis No. 00	( 🔶 🗇 Di
Current position Target position Vel.	SV OFF         Image: Constraint of the section o	Current Target p Vel.
Move	Stop	
	1.0	

←			un 🎟 Axis No. 00	
			Servo ON 💭	
Current	position 1	52. 66 mm	Homing 🎦	
Target (	position	0. 00 mm		
Vel.		0.00 mm/s-	Alarm reset	
	Move	Stop		
When Alarm Generated				

Direct Movement Screen

[Operation on the direct movement screen]

- Current position : Displays the current position.
- Target position : Touching "Target position" displays the numeric keypad. Enter a desired target position and then touch [ENT].
- Vel. : Touching "Vel." displays the numeric keypad. Enter a desired speed and then touch [ENT].
- [Servo ON] : It shows the status of the servo whether it is ON or OFF for the axis. When the servo is ON, display of ○ is activated and it is inactivated when the servo is off.
- [Homing] : Touch [Homing] and the home-return operation should get executed after a confirmation window for execution is displayed. O display should get illuminated when the home-return operation is completed and O display should turn off when the home-return operation is incomplete.
- [Alarm reset] : After removing a cause of an error, touch [Alarm reset] to cancel the alarm.
- [Move] : Touching [Move] moves the axis to the target position you have set.
- [Stop] : Touching [Stop] stops the axis.



#### 6.10.4 I/O Test

PIO input signal and the output signal can be monitored. You can also touch OUT00 to OUT03 to forcibly turn ON/OFF the corresponding output signals.

Output signal ON/OFF should not be available in any status other than release of ROBO PUMP.

[Operation on the I/O test screen]

← ☆ I/0 test		🕕 🂷 Axis No. 00
IN00	Inp	Outp OUT00
IN01		OUTØ1
IN02		OUT02
IN03		OUT03
0FF :	IN OUT	ON : IN OUT

If it is necessary to turn on OUT00 which is currently off, touch [OUT00].

← ☎ I/O test		ҧ 💷 Axis No. 00
IN00 IN01 IN02 IN03	Inp	Outp 0UT00 0UT01 0UT02 0UT02
0FF : 🗖	N OUT	ON : IN OUT

OUT00 turns on.

Touch [OUT00] again and it turns off.



# 6.11 TP Operation Mode

An operation mode is set if the manual (MANU) mode is selected.

$\leq$	Menu2	Glossary 🕕 Axis No. 👀
	Change operating axis	Maintenance parts list
	TP op. mode	Easy programming
	Env. set.	
	Controller reset	
	(intersetting	Menu1 >

Touch [TP op. mode] on the Menu 2 screen.

The TP operation mode screen appears.

$(\leftarrow)$ ( $\bigcirc$ TP opera	tion mode Axis No. 00
Teach1	PIO movement prohibition, Safety velocity valid
Teach2	PIO movement prohibition, Safety velocity invalid
Monitor1	PIO movement permittion, Safety velocity valid
Monitor2	PIO movement permittion, Safety velocity invalid
	ОК

Select and touch [Teach1] or other desired mode.

Select a manual operation mode from the menu containing the following four items:

- Teach1 (PIO movement prohibition / Safety velocity valid)
  - PIO movement prohibition : Writing of contents and parameters in the simple data setting screen to the controller and command to the actuator operation system are available.
     Safety velocity valid : The maximum velocity should be the safety velocity (100m/s)
  - Safety velocity valid : The maximum velocity should be the safety velocity (100m/s) regardless of the velocity indication in the simple data setting screen.
- Teach2 (PIO movement prohibition / Safety velocity invalid)

PIO movement prohibition : Writing of contents and parameters in the simple data setting screen to the controller and command to the actuator operation system are available.
Safety velocity invalid : Operation in the velocity set in the simple data setting screen (higher than the safety velocity) becomes available.

• Monitor1 (PIO movement permittion / Safety velocity valid)

PIO movement permittion : Only monitoring is permitted. Writing of contents and parameters in the simple data setting screen to the controller or command to the actuator operation system are not available. Operation commands (jog, home return, etc.) cannot be issued from the teaching tool.

- Safety velocity valid : The maximum velocity should be the safety velocity (100m/s) regardless of the velocity command from the PLC.
- Monitor2 (PIO movement permittion / Safety velocity invalid)
- PIO movement permittion : Only monitoring is permitted. Writing of contents and parameters in the simple data setting screen to the controller or command to the actuator operation system are not available. Operation commands (jog, home return, etc.) cannot be issued from the teaching tool.
- Safety velocity invalid : You can move the actuator at the velocity (higher than the safety velocity) according to the command from the PLC.



# 6.12 Alarm List

A list of alarms that may generate after the controller power is turned on is shown.



Touch [Alarm list] on the Menu 1 screen.

Alarm list will be displayed.

- ELECYLINDER display items
- ROBOPUMP display items

irm	display	/ Alarm list	Check model num.	Inquiry		
arm	list					
Joh	the ala	rm No, to check the	alarm description a	nd perform	troub	leshooting.
No,	Group		Name	Addr ess	Code	Timo (virum res.)
0	Other	PowerUP No Error		****	FFF	
1	Warning	Maintenance warning 1			84E	0:03:41
2	E	Power supply voltage/cap	acity alarn	8888	0CE	0:02:46
3	Other	Undefined error detected		RF82	BA3	0:02:38
4	Other	Undefined error detected		0F02	013	0:02:24
5	D	Controller encoder alarm		8888	<b>ØEE</b>	0:01:01
6	Other	PowerUP No Error			FFF	:
7		-				
_	+ D	r pg ↓Nx pg	1	Save		Clear

:No., Group, Name, Address, Code, Time (hh:mm:ss) :No., Code, Name, Address, Detail, Time (hh:mm:ss)

A list of 8 items of the latest alarms and warnings should be displayed.

Touch [ $\downarrow$  Nx pg] and a list of the next 8 items should be shown.

Alarm display	Alarm list Check model num	. Inquirs		
larn list	u			
ouch the alarm No.	to check the alarm descriptio	on and perform	troubl	eshooting.
No. Group	Nane	Address	Code	Time (hh:mm:ss)
8				
9 10				
11				
12				
14				
15				
↑Pr pg	↓Nx pg	Save		Clear

Touch [ $\uparrow$  Pr pg] and a list of the previous 8 items should be shown.

Touching [Clear] clears all alarm details.

The time of occurrence of each alarm is indicated by an elapsed time from this "FFF PowerUP No Error".

larn		Alarn List	Check model	num, Inquiry	r -	
larn	list					
ouch	the ala	rm No, to check	the alarm descrip	tion and perform	trout	leshooting.
No,	Group	-	Nane	Address	Code	Time Otherwest
0	Other	PowerUP No Error		****	FFF	;;
1	Marning	Waintenance warning	1	8888	84E	0:03:41
2	E	Power supply voltage	capacity alarm	****	ØCE	0:02:46
3	Other	Undefined error dete	ected	BF82	RA3	8:82:38
4	Other	Undefined error dete	icted	0F82	6A3	0:02:24
5	D	Controller"encoder a	alarn	****	ØEE	0:01:01
6	Uther	PowerUP No Error		8888	FFF	;;
7						
	† P	rpg ↓Nx	PR	Save		Clear

Touch [Save] and the screen goes to the screen to save to a Secure Digital memory card.

Refer to [6.17 Data Backup] for how to operate to save data to a Secure Digital memory card.



# 6.13 Controller Reset

The controller is restarted.

## 6.13.1 ELECYLINDER Reset

Image: Conception axis controller reset     Image: Conception axis controller reset       Image: Conception axis controller reset       Image: Controller reset       Image: Controller reset       Image: Controller reset	Touch [Controller reset] on the Menu 2 screen.
← 12° Controller reset       Controller reset     Controller No. 00       Restart the controller?       Yes   No	Touch [Yes]. Touch [No] to return to the Menu 2 screen without restarting the controller.
<ul> <li>← 12 Conf</li> <li>Conf</li> <li>Servo must be off to restart the controller Servo OFF?</li> <li>Yes</li> <li>No</li> </ul>	This window appears if the servo is ON. Touch [Yes]. Touch [No] to return to the Menu 2 screen without restarting the controller.
<ul> <li>← 12 Controller reset</li> <li>Cast Avia No. 00</li> <li>Restarting the controller. Please wait a minute.</li> <li>Yes</li> <li>No</li> </ul>	The controller is restarted.
Image: Solution of the soluti	Returns to Menu 1 screen.



## 6.13.2 ROBO PUMP Reset



Touch [Controller reset] on the Menu 2 screen.



Touch it while in suction, and the window to show reboot prohibited should be displayed.

Touch [OK] to return to the Menu 2 screen to have it desorbed, and touch [Controller Reboot again].

🤆 ) 🗃 Controller reset	🕞 🗔 Axis No. 00
restart and executi When a workpiece is there is a risk that resulting in injury to to the workpiec	being held in place, he workpiece may fall, the operator or damage
Yes	No

In order to have a release operation at the same time as execution of reboot, a message to pull attention should be displayed.

Confirm that there is no problem in rebooting, and touch [Yes].

Touch [No] to return to the Menu 2 screen without restarting the controller.



The controller is restarted.



Returns to Menu 1 screen.



# 6.14 Other Setting

Parameter initialization, axis number change and operating noise adjustment should be conducted.

🤆 🖂 🖆 Menu2			Glossary	<u>dh</u>	Axis No.	00
Change operating	g axis		Maintenance parts list			
TP op. mc	ode	€	Easy programm	ing		
Env. set.						
Controlle	er reset					
🔍 Other set	tting		Menu1	>		

Touch [Other setting] in Menu 2 screen.

For ROBO PUMP, have it conducted while it is desorbed.

Parameter initialization	Operating noise adjustment
Change axis No.	1
Gildinge axis no.	

Other setting screen opens.

Select one from [Parameter initialization], [Change axis No.] and [Operating noise adjustment] that you would like to carry on and touch the button.

There is no feature to adjust the operational sounds for ROBO PUMP.

#### 6.14.1 Parameter Initialization

The parameters are reset to their factory default settings (initialized).

Caution: Once the parameters are initialized (to their factory default settings), all parameters the user has set will return to the values set at the factory. Exercise caution.

Touch [Parameter initialization] in Other setting screen to display Parameter initialization screen.



Initialize to factory setting parameter?

Password: 5119

No

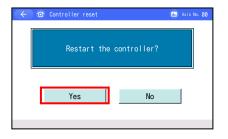
Yes

ilii Axis

Touching [Password] displays the numerical keypad. Input "5119" and touch [ENT].

Touch [Yes], and the confirmation screen for controller reboot appears.





Touch [Yes].

Touch [No], and the controller will not be rebooted and the screen returns to the previous.

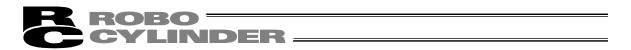
Caution: If the controller is not restarted, the parameters that have been rewritten to their factory settings do not translate to the factory-set operations. The factory settings will become effective once the controller is restarted or power is reconnected.

# 6.14.2 Axis Number Change

Touch [Change axis No.] in Other setting window to display Axis No. setting screen.

Axis No.     Axis No.       1     2       3     4       5     CLR       6     7       8     9       0     BS	You can set a value between 0 and 15. Set a desired axis number and then touch [ENT].
Axis No.     Image: Second secon	Touch [Execute].
← 1 Controller reset ▲ Axis No. 00     Restarting the controller.     Please wait a minute.	The controller is restarted.

Returns to Menu 1 screen.

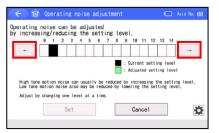


#### 6.14.3 Operating noise adjustment (Applicable models only)

The operation noise can be tuned. By having it tuned, possibility of an operation noise error could be reduced.

Touch [Operating noise adjustment] in Other setting window to display operating noise adjustment screen.

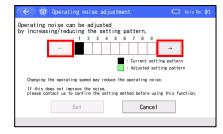
#### • For models that support level setting



Touch  $[\leftarrow]$  and  $[\rightarrow]$  on the right and left of the levels to adjust the level one by one to perform tuning.

Once the tuning is finished, touch [Set].

#### • For models that support pattern setting



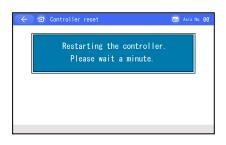
Touch  $[\leftarrow]$  and  $[\rightarrow]$  on the right and left of the pattern to adjust the pattern one by one to perform tuning.

Once the tuning is finished, touch [Set].



Touch [Yes].

Touch [No] and a restart of the controller would not be performed and the screen goes back to the previous window.



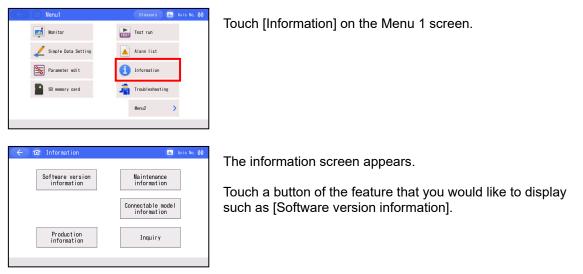
The controller is restarted.

Returns to Menu 1 screen.



# 6.15 Information Display

Information such as the controller version, manufacturing information and maintenance information is displayed.



## 6.15.1 Display Window for Each Type of Data

#### 6.15.1.1 Software version information

Touch [Software version information] in Information screen.

Software version information screen opens.

Series/Type	EC
Controller version	EC02FFAE
Controller core version	EC80FFFC
TP version	2. 11
TP core version	1. 15
ABS unit version	0000020
BLE module ver.	1.01
Interface board version	0000FFDD

ELECYLINDER software version information screen.

Touch [Edit Axis Name] and the name of axes can be edited. Refer to [6.15.2 Axis Name Edit] for how to edit an axis name.

Series/Type	RP-VPM
Controller version	EF01FFBA
Controller core version	EF81FFFD
TP version	8.45
TP core version	2.10
Interface board version	00000006

ROBOPUMP software version information screen.

Touch [Edit Unit Name] and the name of unit can be edited. Refer to [6.15.2 Axis Name Edit] for how to edit a unit name.



#### 6.15.1.2 Production information

Touch [Production information] in Information screen.

Controller S/N	A40969950
Controller PCB revision	M. REV:0K / M. REV:11
Actuator S/N	*

Production information screen opens.

#### 6.15.1.3 Maintenance information

Touch [Maintenance information] in Information screen.

Total travel count	123, 456	
Total travel count threshold	1,000,000	Edit
Total travel distance	750,643 m	meska
Total travel distance threshold	1.250.000 m	Edit
Overload warning level	70 %	Edit

Maintenance information screen opens.

Refer to [6.6.3 Maintenance Information Screen] for how to operate displayed button.

#### 6.15.1.4 Connectable model

Touch [Connectable model] in Information screen.



Connectable model screen opens.

Refer to [10.2 Teaching Update] for how to update teaching.

#### 6.15.1.5 Inquiry



Touch [Inquiry] in Information screen.

Inquiry screen opens.

Language setting

Data input warning

Disp Axis Name

DimDispTime ("0":Never Dim)

Ripple compensation(Current Monitor

Position edit password change

System password change

Display setting

Monitor

Parameter edit

Touch tone

Japanese

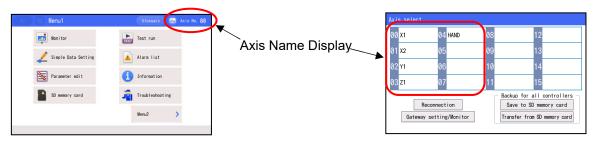
OFF

# 6.15.2 Axis Name Edit

A name can be set on an axis of the ELECYLINDER and a unit of the ROBO PUMP. To show the axis name, select "Axis Name" at the axis name display section in the environment setting screen. [Refer to 6.16 Environment Setting [Axis Name Display]]

NDER

The set name should be displayed on the right top of each window and the Select Axis screen. Even if "Axis Name" is selected in the environment setting screen, axis numbers should be displayed if the axis name is not set.



(Note) The available characters for setting in TB-03 are capitalized font English characters (from A to Z) and numbers (from 0 to 9).

## [Axis Name Edit Operation]

÷	Menu2	Glossary 💼 Axis No. 👀
	Change operating axis	Maintenance parts list
	TP op. mode	Easy programming
	Env. set.	
	Controller reset	
	(in the setting	Menu1 >

English

MIN

Time

255 s

**m** (7)

Chinese

Disable

No

Axis No

EU

MID

Enable

Axis Name

Write the above setting

Parameter edit password change

Startup screen setting

Yes

Test run

 Alarm list

 Information

Troubleshooting

Touch [Env. set.] on the Menu 2 screen.

For ROBO PUMP, have it conducted while it is desorbed.

Set to "Axis Name" for the axis name display.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

Touch [Information] on the Menu 1 screen.





Information screen opens.

Touch [Software version information].

Series/Type	EC		
Controller version	EC000006		
Controller core version	EC800000		
TP version	2.82		
TP core version	1.00		
ABS unit version	00000020		
BLE module ver.	1. 01		
		Ed	it Axis Name
Interface board version	00000006	_	
	the second second second second		it Unit Name

The Software version information screen will be displayed.

Touch [Edit Axis Name] in the case of ELECYLINDER.

Touch [Edit Unit Name] in the case of ROBO PUMP.

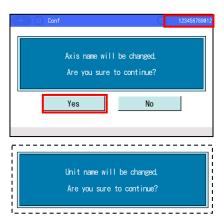
÷	🗧 🖆 Software version information						th	EC-RF	6SR-115
Serie	Series/Type EC								_
Contr	Controller version			EC00000	96				
Controller core version			EC80000	90					
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	Е	F	G	Н	CLR
Ι	J	К	L	М	N	0	Р	Q	BS
R	S	Т	U	٧	W	Х	Y	Z	ENT
	_	[	]	SPACE			-	#	

On the right of the Controller version display is the input area. Character select buttons are shown in the half bottom of the screen.

(	1	Software	e versi	on info	ormation	n	16	EC-RF	t6SR-115
Contr	Series/Type El Controller version El Controller core version El						123	345678	3901 <b>2</b>
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	E	F	G	н	CLR
Ι	J	K	L	М	N	0	Р	Q	BS
R	S	T	U	٧	W	X	Y	Z	ENT
	_	[	]	SPACE			-	#	

Input a name and touch [ENT]. The number of characters available for input is 12 in half-size font characters.

Touch [ENT] with nothing input, and it is defined as no setting. With no setting, an axis number will be shown.



The change confirmation screen will appear, with the axis name input shown in the right top.

This status is still a temporary setting. Touch [Yes] to confirm the setting.

Touch [No] and the condition goes back to before setting.

(Display of change confirmation window in ROBO PUMP)

# 6.16 Environment Setting

You can change the language setting, touch operation sound setting, dim display time setting, data input warning setting, axis name display setting, ripple compensation setting, position editing password change parameter edit password change, system password change, display setting, time setting and Startup screen setting.

JDER -

Change operat	ing axis	•	Maintenance parts list	
TP op.	node	Ŧ	Easy programmi	ng
Env. se	t.			
S Contro	ller reset			
0ther :	setting		Menu1	>

Touch [Env. set.] on the Menu 2 screen.

The environment setting screen appears.

Env. set. Axis No. 00								
Language setting	Language setting Japanese English							
Touch tone	0FF	MIN	MID	MAX				
DimDispTime ("0":Never Dim) 255 s								
Data input warning Enable Disable								
Disp Axis Name Axis No.								
Ripple compensation	n(Current Mor	nitor)	Yes	No				
Write the above setting								
Position edit password change Parameter edit password change								
System passwo	ord change							
Display setting		Time	Startup s	creen setting				

[Language setting]

Select a language to show from Japanese/English/EU/Chinese.

🔶 🗇 Env. se	et.				🖅 Axis No. 00		
Language setting	Japanese	E	nglish	EU	Chinese		
Touch tone	0FF		MIN	MID	MAX		
DimDispTime ("0":N							
Data input warning Enable Disable							
Disp Axis Name		Axis Name Axis No.					
Ripple compensatio	n(Current Mor	ni tor	)	Yes	No		
		[	Wri	te the above	setting		
Position edit pa	Position edit password change				word change		
System passw	ord change						
Display setting	e	Tir	ne	Startup s	creen setting		

Touch a language (such as [Japanese]) to show.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

For the operation procedures in detail to change the language, refer to [6.1 Display Language Change].

#### [Touch tone]

You can select whether or not to output a touch tone.

🔶 🖆 Env. se	t.			di C	🖅 Axis No. 00	
Language setting	Japanese	Eng	lish	EU	Chinese	
Touch tone	0FF	М	IN	MID	MAX	
DimDispTime ("0":N	ever Dim)	255 s				
Data input warning	Enable	Disable				
Disp Axis Name			Axis Name Axis No.			
Ripple compensatio	n(Current Mor	nitor)		Yes	No	
			Writ	te the above	setting	
Position edit pa	assword change	е	Parameter edit password change			
System passw	ord change					
Display setting	3	Time		Startup s	creen setting	

Touch [OFF]. A touch tone is not output.

Touch [MAX], [MID] or [MIN]. A touch tone is output.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.



#### [DimDispTime]

Set the dim display time when not being operated. Zero seconds mean the display is on all the time.

🗧 🖆 Env. se	t.			🖅 Axis No. 🛛	
Language setting	Japanese	English	EU	Chinese	
Touch tone	OFF	MIN	MID	MAX	
DimDispTime ("0":N					
Data input warning			Enable	Disable	
Disp Axis Name			Axis Name	Axis No.	
Ripple compensatio	n(Current Mon	itor)	Yes No		
		Wri	te the above	setting	
Position edit password change Paramete			ter edit pass	word change	
System passw					
Display setting Time			Startup s	creen setting	

Touching [DimDispTime ("0": Never Dim) 0 sec] displays the numerical keypad. Enter a desired time and touch [ENT].

You can set a value between 0 to 255 seconds.

Touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

#### [Data input warning]

The warning can be output when a value less than the minimum speed and a value exceeding the rated acceleration/deceleration speed are entered in the position data. Note that the value is entered even if the warning occurs. Always use within the specification of the actuator.

Language setting	Japanese	English	EU	Chinese
Touch tone	0FF	MIN	MID	MAX
DimDispTime ("0":N	lever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name			Axis Name	Axis No.
Ripple compensatio	n(Current Mor	nitor)	Yes	No
Ripple compensatio	n(Current Mor		Yes te the above	
Ripple compensatio		Wri		setting
Ripple compensation Position edit pa System passw	assword chang	Wri	te the above	setting

Touch [Enable] to give the warning. Touch [Disable] not to give the warning.

Select either Enable or Disable, and then touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

#### [Axis Name Display]

Make a selection whether to show the name or number for axis display.

CE Drv. set. db 🖸 Axis No. 00						
Language setting	Japanese	English	EU	Chinese		
Touch tone	ouch tone OFF MIN			MAX		
DimDispTime ("0":N	DimDispTime ("0":Never Dim) 255 s					
Data input warning	Enable	Disable				
Disp Axis Name		Axis Name Axis No.				
Ripple compensation	nitor)	Yes No				
		Wri	te the above	setting		
Position edit pa	ssword chang	e Paramet	ter edit pass	word change		
System password change						
Display setting Time			Startup s	creen setting		

Axis Name Display

Touch [Axis Name] and the name will be shown. Touch [Axis No.] and the number will be shown.

Select either Axis Name or Axis No, and touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

The axis name can be set in Software version information screen. [Refer to 6.15.2 Axis Name Edit]

#### [Ripple Compensation]

Setting should be established to select whether to have ripple compensation or not to have it in the monitor window as the initial setting.

Language setting	Japanese	English	EU	Chinese
Touch tone	OFF MIN			MAX
DimDispTime ("0":N	ever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name	Axis Name Axis No.			
			AATS Nallie	AXIS NU.
Ripple compensatio	n(Current Mor	nitor)	Yes	No
Ripple compensatio	n(Current Mor			No
Ripple compensatio Position edit pa		Wri	Yes	No setting
Ripple compensatio		Wri	Yes te the above	No setting

Touch [Yes] and the setting should be established with ripple compensation. Touch [No] and the setting should be established without ripple compensation.

Select either yes or no and touch [Write the above setting]. The setting will not be changed when you move to another window without touching it.

CYLINDER -

# [Change Pos Edit Password]

Change the position edit password.

🔶 î Env. se	t.		do C	🖅 Axis No. 0
Language setting	Japanese	English	EU	Chinese
Touch tone	Fouch tone OFF MIN			MAX
DimDispTime ("0":Ne				
Data input warning			Enable	Disable
Disp Axis Name	Axis Name	Axis No.		
Ripple compensation	n(Current Mor	nitor)	Yes	No
		Wri	te the above	setting
Position edit pa	e Parame	ter edit pass	word change	
System passwo				
Display setting Time			Startup s	creen setting

Touch [Position edit password change].

If the system password is not "0000", the password entry screen appears.



New password: 0000

2 3 4 5

6 7 8 9 0 BS ENT

CLR ESC

Input a system password. Touch [ENT].

The default system password is "5119". For how to change the system password, refer to [Change System Password] as described later.

Enter the new position edit password to change to. If the position edit password is not set, enter "0000".

Touch [ENT].

Position edit password change
 Aus No. 00
 New password: 0000
 Change

Information

 Aus No. 00

 Position edit password change complete

 New password: 0000

 OK

Touch [Change].

The new password after change will be displayed. Make sure it shows the same as the password you have set.

Touch [OK].



# [Change Parameter Edit Passward] Change the parameter edit password.

			FU	_
Language setting	Japanese English			Chinese
Touch tone	Fouch tone OFF MIN			
DimDispTime ("0":N	ever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name			Axis Name	Axis No.
Ripple compensatio	n(Current Mor	itor)	Yes	No
		Wri	te the above	setting
Position edit password change Parame			ter edit pass	word change
System passw				
Display setting Time			Stortup o	creen setting

Touch [Parameter edit password change].

If the system password is not "0000", the password entry screen appears.



New password: 1234

2 3 4 5

6 7 8 9 0 BS ENT

CLR ESC

Input a system password. Touch [ENT].

The default system password is "5119". For how to change the system password, refer to [Change System Password] in the next page.

Enter the new parameter edit password to change to. If the parameter edit password is not set, enter "0000".

Touch [ENT].

Change Parameter Password Contract Change

Information
 Parameter Passwordchange complete.
 New password: 1234
 OK

Touch [Change].

The new password after change will be displayed. Make sure it shows the same as the password you have set.

Touch [OK].



#### [Change System Password] Change the system password.

C C Env. set. III C Axis No. 00					
Language setting	Japanese	EU	Chinese		
Touch tone	0FF	MID	MAX		
DimDispTime ("0":Never Dim) 255 s					
Data input warning	Data input warning				
Disp Axis Name	Disp Axis Name				
Ripple compensation	n(Current Mor	nitor)	Yes	No	
		Wri	te the above	setting	
Position edit pa	Position edit password change Paramet			word change	
System password change					
Display setting Time Startup screen setting					

Touch [System password change].

If the system password is not "0000", the password entry screen appears.

-	- Ø	System p	assword			6	In Axis No.	. 00
	Please enter password.							
				000 <mark>0</mark>				
	1	2	3	4	5	CLR	ESC	
	6	7	8	9	0	BS	ENT	

New password: 5119

9

0

2 3 4 5 CLR

6 7 8

ESC

ENT

BS

Input the system password that is currently set. Touch [ENT].

The default system password is "5119".

Enter the new system password to change to. If you do not set the system password, enter 0000.

Touch [ENT].

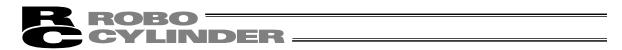
← 13 System password change
New password: 5119
Change

( <del>(</del> ) 🕆	Information dm	
	System password change complete	
	New password: 5119	
	ОК	

Touch [Change].

The new password after change will be displayed. Make sure it shows the same as the password you have set.

Touch [OK].



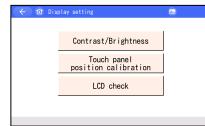
#### [Display setting]

Adjustment of contrast and brightness of the screen, position tuning for touch panel and LCD screen check can be performed.

< 쉽 Env. set. 🖬 👁 Axis No. 00					
Language setting Japanese English			EU	Chinese	
Touch tone	OFF	MIN	MID	MAX	
DimDispTime ("0":Never Dim) 255 s					
Data input warning	Enable	Disable			
Disp Axis Name	Axis Name Axis No.				
Ripple compensation	n(Current Mor	nitor)	Yes No		
		Wri	te the above	setting	
Position edit pa	ter edit pass	word change			
System password change					
Display setting Time Startup screen settin				creen setting	

Touch [Display setting].

Display setting menu screen is displayed.



Select Display setting menu.

• Change the Contrast/Brightness You can adjust contrast (shading of liquid crystal) and brightness (of liquid crystal).



Touch [Contrast/Brightness].

🔶 🖆 Display setting	dia
•Contrast	+
•Brightness	+

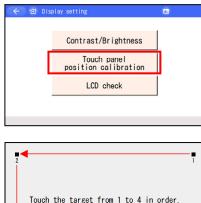
Contrast adjustment Touch [–] and [+] under Contrast to adjust the contrast of the screen.

Brightness adjustment Touch [–] and [+] under Brightness to adjust the brightness of the screen.



#### • Touch panel position calibration

A calibration for the position detection of the touch panel is performed.



Touch [Touch panel position calibration].



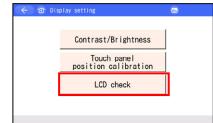
Touch [I] in the order of 1, 2, 3 and 4.

The display returns to Display setting menu screen.



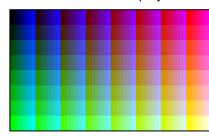
• LCD Check

LCD display can be checked in the order of Color Pattern, White Only and Black Only.



Touch [LCD check].

#### Color Pattern is displayed.



Touch any point on the screen.

White Only is displayed.



Touch any point on the screen.

Black Only is displayed.



Touch any point on the screen.

The display returns to Display setting menu screen.

R	ROBO ——	
C	CYLINDER	_

# [Time Setting]

You can	set th	ne time	e for T	В-03.
🔶 🎓 Env. se	t.		ilii	Axis No. 00
Language setting	Japanese	English	EU	Chinese
Touch tone	OFF	MIN	MID	MAX
DimDispTime ("0":N	ever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name			Axis Name	Axis No.
Ripple compensatio	n(Current Mor	nitor)	Yes	No
		Wri	te the above	setting
Position edit pa	ssword chang	e Paramet	ter edit pass	word change
System passw	ord change		_	
Display setting	:	Time	Startup s	creen setting

# ← 107 Teaching time ● ■ Mix Rc. 00 Time display yy/mm/dd hh:mm:ss 16 / 03 / 01 10 : 10 : 23 Time edit

← 1 Teaching time	ҧ Axis No. 00
Time edit	
yy/mm/dd hł	n:mm:ss
16 / 03 / 01 10 :	10 : 31
Time display Set	

#### Touch [Time].

The time of TB-03 is displayed. Touch [Time edit].

Touch the value of year, month, day, hour, minute or second that is required to be changed.

<ul><li>&lt; ₫</li></ul>	Teaching	; time			(	In Axis No	. 00
		Т	ime ed	it			
	yy/r	nm/dd		hh:m	nm:ss		
1	6 / 03	3 / 0	1 1	0 :	10 :	31	
1	2	3	4	5	CLR	ESC	
6	7	8	9	0	BS	ENT	lock
_						_	

#### Numeric keys are displayed Input a value and touch [ENT]

← 10 Teaching time
Time edit
yy/mm/dd
hh:mm:ss
16 / 03 / 01
12 : 00 : 00
Time display
Set

Touch [Set].

	bleshooting	Glossary	(iii) Axis No. 8
	larm list Check mode	el num, Inquiry	
larm descript.			
Alarm code	186	Alarm level	Message
Name Time set	ting complete		
Descr.			

The clock setting complete window is shown and the clock in TB-03 gets changed.



#### [Startup screen setting]

Setting can be established for the window shown in the screen first after the power is turned on. Also, show/hide can be selected for the icons of Position edit guide, I/O control guide and Easy setting in Menu 1 screen.

🔶 🖆 Env. se	t.			🗲 Axis No. 00
Language setting	Japanese	English	EU	Chinese
Touch tone	0FF	MIN	MID	MAX
DimDispTime ("0":N	ever Dim)	255 s		
Data input warning			Enable	Disable
Disp Axis Name			Axis Name	Axis No.
Ripple compensation(Current Monitor)		Yes	No	
		Wri	te the above	setting
Position edit pa	ssword change	e Paramet	ter edit pass	word change
System passw	ord change			
Display setting	:	Time	Startup s	creen setting

Touch [Startup screen setting].

#### Guide Icon Display Select This button is not to be used for ELECYLINDER and ROBO PUMP.

Main menu screen (	vith guide) Nain menu	screen (without guide
Monitor screen	Position edit screen	Parameter edit scre
Test run screen	Information screen	]

#### 2) Initial Screen Select at Startup

Main menu screen (	with guide) Main menu	screen (without gui
Monitor screen	Position edit screen	Parameter edit scr
Test run screen	Information screen	

Select a screen from those below for the screen shown first after the power is turned on. [Monitor screen] [Position edit screen] [Parameter edit screen] [Test run screen] <sup>(Note 1)</sup> [Information screen]

Touch either one to select and touch [OK].

- Note 1 Select [Position edit screen], and Simple Data Setting Screen should be displayed at the startup.
- Note 2 The Menu 1 screen should be displayed at startup for ROBO PUMP.

# CYLINDER -

# 6.17 Data Backup

Data is transferred between the SD memory card in the teaching pendant and the controller.

- (Note) Type of Stored Data
   This includes the position data, parameters and alarm list.
   There is no position data in ROBO PUMP.
   It is not applicable to the backup data storable in the RC PC software.
- (Note) Extensions of the Stored Data
  - The file extensions of the data stored to the Secure Digital card are the same as those dealt in RC PC software, and are compatible. For instance, the position data for the ELECYLINDER is ptpc and the parameters are prpc.
  - Refer to the [details of the file extensions in the RC PC Software Instruction Manual] • The alarm list can only have the backup. It cannot be restored. Data is in a CSV file.

#### (Note) Directories of the Stored Data

The folders to store the backup data of the controller and the folder to read the data from when restoring the data to the controller are as listed below. The directories to store the files cannot be changed. The files existing in other directories other than the specified folders cannot be listed up in the file name list in the file select at the initial setting or restore.

- If the folder does not exist, it is automatically created.
- Position Data: \TB\_CON\Position\File Name
- Parameter : \TB\_CON\Parameter\File Name
- Alarm List : \TB\_CON\Alarmlist\File Name

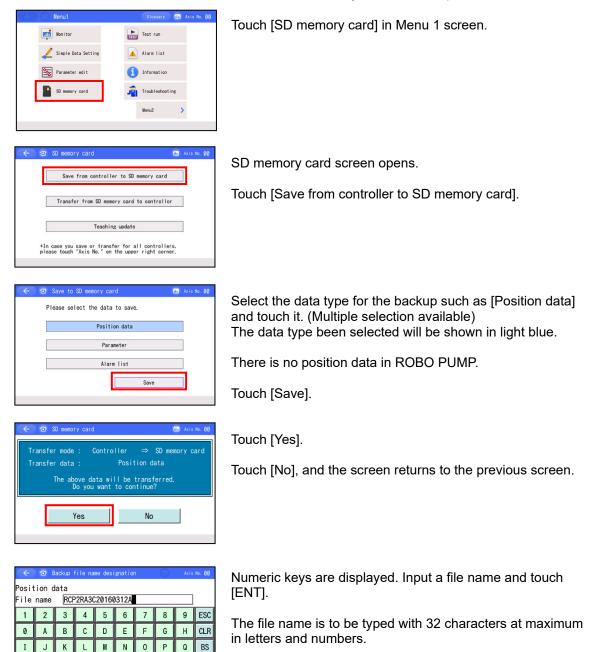
(Note) Files with Chinese names are not supported.

Caution: For a Secure Digital memory card, choose a SD/SDHC memory card with 1G to 32G. (Toshiba-made recommended) Also, Have FAT32 Format for the file system.



#### 6.17.1 Data Backup of the Controller

The data in the controller is transferred to the SD memory card for backup.



R S T U V W X Y Z ENT

[]]

SPACE

#

CYLIND	
← 12 Backup file name designation 13 Position data File name RCP2RA3C20160312A	Touch [Save].
Save	
Image: Confirmation     Image: Confirmation       File name       RCP2RA3C20160312A.ptpa       File name above will be saved. Are you sure to continue?       Yes     No	The screen below appears if the same name is not found. Touch [Yes]. If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.
Image: Construction     Image: Construction       File name       RCP2RA3C20160312A.ptpa       A file of the same name already exists. Do you want to overwrite it?       Yes     No	The screen below appears if the same name is found. Touch [Yes] if overwriting data. If [No] is touched, the screen goes back to the previous one to indicate the backup file name in which the numeric keys were shown.
← ② Data backup Transferring data. Please wait a minute. 50% Transfer mode: Controller ⇒ SD memory card Transfer data: Position data	Data transfer screen will be shown.
← tor Cont to SD memory card	A message to tell the data transfer is complete pops up and the backup process is finished. Touch [OK], and the screen returns to SD memory card screen.



# 6.17.2 Restore to Controller

Data in the SD Memory card is transferred to the controller.

Kenul     Cleasary     Aris No. 00       Image: Nonitor     Image: Test run       Image: Simple Data Setting     Image: Alare list	Touch [SD memory card] in Menu 1 screen.
Parameter edit S0 memory card Werw2	For ROBO PUMP, have it conducted while it is desorbed.
Image: SD memory card     Image: SD memory card       Save from controller to SD memory card       Transfer from SD memory card to controller       Teaching update       *In case you save or transfer for all controllers, please touch "Axis No." on the uppor right corner.	SD memory card screen opens. Touch [Transfer from SD memory card to controller].
Constant to controller     Constant to controller     Please select the data to transfer.     Position data     Parameter     Transfer	Select the data type to transfer to the controller, such as [Position data], and touch it. (Multiple selection available) The data type been selected will be shown in light blue. There is no position data in ROBO PUMP. Touch [Transfer].
<ul> <li>← 10 SD memory card</li> <li>▲ Akis No. 00</li> <li>Transfer mode : SD memory card ⇒ Controller</li> <li>Transfer data : Position data</li> <li>The above data will be transferred, Do you want to continue?</li> <li>Yes</li> <li>No</li> </ul>	Touch [Yes]. If [No] is touched, the screen goes back to the data backup screen.
107 Restore file select     107 Aus No. 00 Position data File select     ROP2RA3C20100312A     ROP2RA3C20100312B     ROP2RA3C20100312B     ROP2RA3C20100312B     ROP2RA3C20100312B     Transfer	Touch ▲ and ▼ to select a file to transfer to the controller from the list of the backed up file names.

<b>ROBO</b>	ER
Conception data File select RCP2RA3C20160312A	Touch [Transfer].
Transfer	
Control     File name confirmation       File name       RCP2RA3C20160312A, ptpa       Data of file above will be transferred to controller. Are you sure to continue?       Yes	Touch [Yes]. If [No] is touched, the screen goes back to the previous one for the restore file select.
← ① Data backup Transferring data. Please wait a minute. 50% Transfer mode : SD memory card ⇒ Controller Transfer data : Position data	Data transfer screen will be shown.
Conf Transfer to controller is completed.	A message to tell the data transfer is complete pops up and the data transfer process to the controller is finished. Touch [OK].
Controller reset Controller Restart the controller?	In the case of the ELECYLINDER. If the position data is transferred, the reboot window should not be shown. The reboot window should be displayed only when the parameter data is transferred.
Yes No	Touch [Yes] to reboot the system when it is displayed.
<ul> <li>Controller reset</li> <li>Performs a release coaration with the controller's restart and secution at the same time. When a workpicce is being held in place. there is a risk that the solupiace any fall, resulting in injury to the operator or damage to you want to restart?</li> </ul>	In the case of the ROBO PUMP In order to have a release operation at the same time as execution of reboot, a message to pull attention should be displayed.
Yes No	Confirm that there is no problem in rebooting, and touch [Yes].



# 6.18 Maintenance Parts List

Information of maintenance components is displayed.

-	hange perating axis P op. mode	Ш	parts list	
Ц, п	2 an mada			
	op. node	E	Easy programming	
<b>E</b>	nv. set.			
<b>(3)</b> C	ontroller reset			
۰.	ther setting		Menu1	>

Touch [Maintenance parts list] in Menu 2 screen.

Type select	
.,,,	<ul> <li>Schematic display</li> </ul>
Cable exit direction	~
	Parts list display

Maintenance parts list screen opens.

# 6.19 Easy Programming

It is a feature not applicable for ROBO PUMP.

In the easy programming, pause duration can be set between sets of operations and continuous operation can be performed by indicating the number of repeating times.

[How to Establish Setting]

Set the position number (0: backward end, 1: forward end) of the destination to the easy programming input part (step). In order to have a pause between operations, use prepared five timers T1 to T5. Timer can be set in 0.1 second unit from 0 to 99.9sec. When it is required to repeat operation, input R (repeat indication symbol) at the end.

The number of steps available to indicate is 10 at maximum including R.

0.30

0.30 0.30

id 💌 Brake rel. 🔘

NDER

If there is a space, the step after that is not valid. The easy programming stops. Steps after R are also invalid.

<	Glossary 📶 Axis No. 🕅
Change operating axis	Naintenance parts list
TP op. mode	Easy programming
Env. set.	
Controller reset	
Other setting	Menu1 >

0. B. End

0

0.00 150.00

Easy programming R(Repeat) Stop time

Program ex coun

Touch [Easy programming] in Menu 2 screen.

Easy programming screen opens.

Touch [Example] and examples for how to construct a program are displayed.

🗲 🔂 Easy programming	🔟 Axis No. 00
e.g. 1) Move to position No.1 $\Rightarrow$ Pause for "T1" sec $\Rightarrow$ Move to position No.2 Execute this operation and	
1 T1 2	
e.g. 2) Move to position No.3 $\Rightarrow$ Move to position Execute this operation and finish	
3 4 R Program	ex. count 🛛 0
e.g. 3) Move to position No.6 $\Rightarrow$ Move to position N $\Rightarrow$ Pause for "T2"seconds Execute this operation for	
6 5 T2 R Program	ex. count 50

Touch [ $\leftarrow$ ] to return to the previous screen.

Take this as a reference when constructing an Easy programming.



#### [Driving Easy Programming]

0. B. End	0.00	500.00	0, 30	0. 3
1. F. End	150.00	400.00	0.30	0.3
		ition. Safety velocity inv	silo 💌 bra	ike rel.
Servo	e Easy programmir	time T1 0.0 s T2 0.0 s T3	Start Clear	Examp

Touch the first (on the most left) step of the easy programmng.



Input a position number or a timer (T1 to T5) and touch [ENT].

0. B. End	0.	00	500.00	0.	30	0.
1. F. End	150.	00	400.00	0.	30	0.
			. Safety velocity i	nvalid 💌	Brake	rel.
Operation Tec Servo Homing		amming	R	nval id 💌	Start Clear	Exam

Set the next step and after in the same manner. Set R at the end when it is required to repeat the operation.

<	🗊 Easy	program	ming		 	is No. 🖁
1	2	3	4	5	CLR	ESO
6	7	8	9	0	BS	EN
Servo Homing	0	asy program 1 T1 0	ming T2 R	ety velocity	Brake r Start Clear	Exampl

Touch a timer to use (T1 to T5) when it is required to have time for pause.

No.	Position(mm)	Vel (mm/s)	Acc (G)	Dec (6)
0. B. End	0.00	500.00	0.30	0.30
1. F. End	150.00	400.00	0, 30	0, 30
Servo Homing Cur. pos.	1 T1 0 T	T2 R		Example
0, 06 mm	Program ex.	count 0 F	Remaining	Reset

Set the time for pause.

 Serve
 Operation
 Start
 Example

 Bend
 0.00
 500.00
 0.30
 0.30

 1, F, End
 150.00
 400.00
 0.30
 0.30

 Operation
 Test programming
 Test programming
 Test programming

 Operation
 Test programming
 Test programming
 Test programming

 Test programming
 Test programming
 Test programming
 Test programming

 Operation
 Operation
 Test programming
 Test programming
 Test programming

 Program operation
 Test programming
 Test programming
 Test programming
 Test programming

 Program operation
 Test programming
 Test programming
 Test programming
 Test programming

 Program operation
 Test programming
 Test programming
 Test programming
 Test programming

 Program operation
 Test programming
 Test programming
 Test programming
 Test programming

Have the servo ON and the home-return conducted, and then touch [Start] to start the operation.

No. 0. B. End 1. F. End

> 0 Servo ing

B	ROI CYI	BO	ER
Contraction of the second		6	

0. B. End 1. F. End	0.00 150.00	500.00 400.00	0.30	0.30
1. F. End	150.00	100 00		
		400,00	0, 30	0, 30
Servo C Homing C	Easy programming	ion. Safety velocity invo	alid V Brai	ke rel. Exampl
Cur. pos. 0, 02 mm		me T1 1.0 s T2 2.0 s T3 count 0 R		0.0s 0 Reset

500.00 400.00

 Easy programing
 Start
 Example

 1
 1
 0
 12
 R
 Clear
 Example

 Program
 0
 12
 R
 1
 Clear
 Real
 Remaining
 0
 Rest

0.00 150.00

ment prohibition, Safety

0. B. End 1. F. End

Servo

Servo O Homing O

During the operation, the [Start] and the step number in execution turn to blue.

To stop operation, touch the [Start] again.

Operation stops. 0.30 0.30 0.30

s No. 00

(G) 0, 30 0, 30

0.30 0.30

invalid 👻 Brake rel. 🔵

CLR ESC 1 2 3 4 5 6 7 9 0 BS ENT 8 lid 💌 Brake rel. . wh2 P10 nt prohibition 
 Servo Nearing Cur. post. 8.82 me
 Easy programming To To To To Nearing Result for the service s

Touch the number to execute the program when it is required to set number of repeating.

<u> </u>					CLR	ESC
6	7	8	9	0	BS	ENT
ration Tead	h2 P10 moveme	nt prohibiti	on, Safety ve	locity inval	id 💌 B	rake rel.
Servo		rogramming T1 0 T2			Sta	Exam
	R(Repeat		R 11 1.0 s T2	2.8 4 72 8	Cle	ar
Cur. pos. 0, 02 m		ram ex. ci	-		aining	0 Res

😰 Easy programming

0.00 150.00

Set the number to repeat and touch [ENT].

Touch [Start] to start operation.

counts down as  $100 \rightarrow 99 \rightarrow 98 \rightarrow \dots$ 

0. B. End 0. 00 500. 00 0. 30 0. I. F. End 150. 00 400. 00 0. 38 0.	. 30
I. F. End 150. 00 400. 00 0. 30 0	20
	. 30
eration Teach2 P10 movement prohibition. Safety velocity invalid 💌 Brake rel.	
Servo O Easy programming Start	mple
Homing O 1 T1 0 T2 R Clear Exa	mp i i
Cur. pos.         R(Repeat)         Stop time T1         T0         T2         T0         T0 <th< td=""><td>set</td></th<>	set

500.00 400.00

t prohibition. Safety velocity invalid 💌 Brake rel. 
 Easy programming
 Start
 Example

 1
 1
 0
 72
 R
 Clear
 Example

 R0weet)
 Stee time 11
 0, 12
 R
 Clear
 Example

 Program ex. count
 100
 Remaining
 10
 Rest
 Rest

The number of remaining for repeating is displayed, and

Touch [Reset] and the remained times go back to the number of program execution times.



No.	Position (mm)	Vel (mm/s)	Acc (G)	Dec (G)
0. B. End	0.00	500.00	0.30	0.3
1. F. End	150.00	400.00	0, 30	0.30
Servo	Easy programmin		Start	

Touch [Clear], and the set easy program will be all deleted.

🔶 🗇 Trau	bleshooting	Gloss	ary 🕕 Axis No. 00
Alarm display	llarm list Check mode	alnum, Inquir	y I
Alarm descript.			
Alarm code	117	Alarm level	Message
Name No move	data		
Descr.			
L			
Troublesh			

Caution: When there is an alarm issued due to such a reason as making a mistake in
 position number indication, go back to Easy programming screen with [←].
 In case of moving from Menu 2 screen to Easy programming screen, the set easy
 program will be deleted.

(Note) An Easy programming cannot be saved.



Next

There are 2 Gateway controllers in the network. Select the Gateway controller to be connected, Then touch [Next].

●MSEP 0

Backup for all controllers

⊖MSEP 1

Axis select window is displayed when several units are connected.

[Gateway setting/Monitor] button is shown in the right bottom of the screen for the supported models.

Touch [Gateway setting/Monitor].

When there are two or more gateway controllers in the same network, the gateway select window opens.

Select the controller to be connected and touch [Next].

# 7. Gateway Parameter Setting Tool

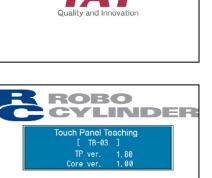
NDER

Gateway Parameter setting can be performed when TB-03 is connected to a supported model. Refer to "Applicable Models for Gateway Parameter Setting Tool" in this instruction manual for the models to support.

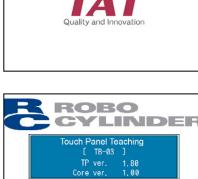
Each window in the gateway parameter setting tool should differ depending on the type of controller to be used, field network, structure of axes, operation mode and settings in each parameter. Therefore, explanation in this section is prepared using some representative windows.

#### 7.1 Starting up Gateway Parameter Setting Tool

Gateway parameter setting tool should be started in the procedures described below.







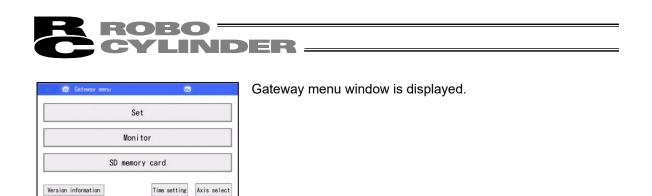
Checking connection.

00 MPSEP 04 MPSEP 08

01 MPSEP 05 02 MPSEP 06

03 MPSEP 07

IAI logo is displayed for approximately 1 second when the power is turned on.



(Note) The display language cannot be changed in the gateway parameter setting tool. Switch the display language in the environment setting of CON/SEP/MEC Controller, and then start up the gateway parameter setting tool.



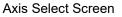
# 7.2 Gateway Menu Select

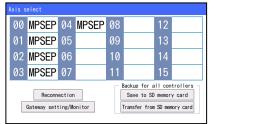
Gateway Menu Window

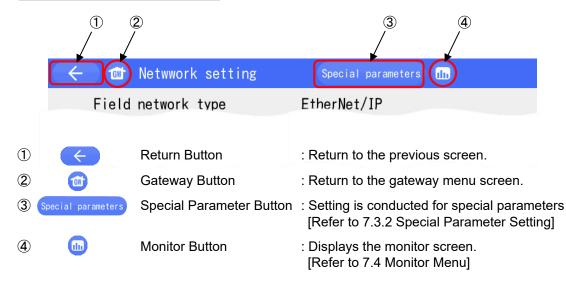
🔶 🍘 Gatemay menu 📾	
Set	Version information for followings is displayed.
Monitor	Gateway firmware version
SD memory card	<ul><li>Module version</li><li>Teaching pendant version</li></ul>
Version information Time setting Axis select	

There are five types of menu in the gateway menu. Select one of them and touch it. The screen goes to the touched menu.

• Set	: Network setting is conducted. [Refer to 7.3 Network Setting]
Monitor	:Data monitor, diagnosis information and alarm list are displayed. [Refer to 7.4 Monitor Menu]
• SD memory card	:Backup / restore of the gateway setting data is conducted. [Refer to 7.5 SD Memory Card]
<ul> <li>Time setting</li> </ul>	: Clock setting on the controller is conducted. [Refer to 7.6 Clock Setting]
• Axis select	: Selection is made for axis to be operated with the teaching pendant. [Refer to 3.4 Operation Axis Change] (for CON system controllers) [Refer to 4.5 Operation Axis Change] (for SEP system controllers)









# 7.3 Network Setting

Set
Monitor
SD memory card

Touch [Set] button in the gateway menu screen to show the network setting screen.

#### 7.3.1 Network Setting

Network setting is conducted. Refer to the instruction manual for each controller for the detail of settings.

■ For models except for MSEP-C, MCON-C/CG, RCP6S Gateway, REC and SSCNET III/H, MECHATROLINK-III and EtherCAT Motion of RCON

#### [Step 1] Network Setting Screen

Field network type	EtherNet/IP	
Address	Ø	
Baudrate	AUTO	
IP address	192.168.0.1	
Subnet mask	255.255.255.0	
Default gateway	0.00.00	
MAC Address	B8:DC:87:00:F3:05	
	Next	

Establish number)	the settings or display for the address (station
IP addres	s <sup>(Note 2)</sup> , Subnet mask <sup>(Note 2)</sup> , Default gateway <sup>(Note 2)</sup>
and MAC	441122Address (Note 3).
Touch [Ne	ext] when setting is finished.
(Note 1)	Set for those except for EtherNet/IP and
	PROFINET IO
(Noto 2)	77 AASat for EthorNot/IP

Note 2) 77--44Set for EtherNet/IP

(Note 3) Set for EtherNet/IP, PROFINET IO and CC-Link IE Field

Touch [Special parameters] when setting up the special parameters. Refer to [7.3.2 Setup of Special Parameters]

#### [Step 2] Basic Setting Screen (only for RCON)

Number of axis sett.	12
# of Option Units	1
Axis No. assignment / unit config confirmatio	n OAUTO OManua I
Operation mode setting	Individual set 🔽

Settings for Number of axis sett., # of Option Units, Axis No. assignment / unit config confirmation and operation mode setting should be established. Touch [Match with the current configuration], and the setting of such as number of axes should be adjusted to what can be operated following the current hardware construction.

Touch [Next] when setting is finished.

If "Auto" is selected in the axis number assignment / unit configuration setting and also an option other than individual setting is selected in the operation mode setting, the procedure will move on to [Step 4] Transfer Confirmation Screen.

Touch [Special parameters] when setting up the special parameters. Refer to [7.3.2 Setup of Special Parameters]



[Step 3] Setting of Number of Axes and Operation Mode

(1) Each Axis Setting Screeb for MSEP-C and MCON-C/CG

mber of is sett		0			0
Axis Simple	Posit1	Full	Posit2	Positioner 3	SEP IO
0					
1					
2					
3					
4					
5					
6					
7					

Set the operation mode and number of axes.

If required to set the special parameters, touch [Special parameters]. [Refer to 7.3.2 Special Parameter Setting]

Touch [Transfer to Gateway] when setting is finished.

# Example of each axis setting Screen

	🖿 Example	e of each		(	10	
le of s	etting for 0	th-1st axes	and 4th-5th	axes in sir	nple direct m	tode, and E
ber o						
s set	t.		191			<u> </u>
				_	-	_
Axis	Simple	Posit1	Full	Posit2	Positioner 3	SEP IO
9	Valid axis					
1	Valid axis	_				
2			Setting for 2	axes at a ti	ne.	
3	1	1	hen you clear	the setting.	set the 2 a	
4	Valid axis					
5	Reserved axis					
6						
7						

Touch [Example for Setting] in the each axis setting screen, and an example for each axis setting should appear. Refer to it for setting.

Touch [←] to return.

# (2) Each Axis Setting Screen for RCP6S



Set the operation mode and number of axes.

If required to set the special parameters, touch [Special parameters]. [Refer to 7.3.2 Special Parameter Setting]

Touch [Transfer to Gateway] when setting is finished.

(2 1)	Avic Numbor	Accianmont /	Unit Configurativ	on Setting Screen in RC0	ואר
J-1		Assignment /			אוכ

Unit No.	0	1	2	3	4	5	6	7
Unit type	PC	PC	PCF	AC	DC	Reserve	Reserve	Reserve
Number of axes	2	2	1	2	2	1	1	1
AxisNo. (Drv. 0)	99	84	06	61	07	09	10	11
AxisNo, (Drv, 1)	03	05		82	88			
Unit No.	8	9	10	11	12	13	14	15
Unit type	Reserve	Reserve	Reserve	Reserve				
Number of axes	1	1	1	1			2	1
AxisNo. (Drv. 0)	12	13	14	15				
AxisNo. (Drv. 1)								
	Over V	ies 🔒 —	0 Unit1 0 Drv. 0	Unit15 Drv. 0 Drv. 1	[		Next	

If you select "Manual" in the axis number assignment / unit configuration setting, settings of the axis number assignments and unit configuration can be adjusted.

Touch [Next] when setting is finished.

# (3-2) Operation Mode Setting Screen in RCON

Axis00	Simple	V	Axis08	Positioner 3	▼1
Axis01	Simple	V	Axis09	Positioner 3	V
Axis02	Posit1	$\mathbf{\nabla}$	Axis10	Positioner 3	▼
Axis03	Posit1	V	Axis11	Positioner5	V
Axis04	Posit1	▼	Axis12	Positioner5	V
Axis0/5	Posit2	V	Axis13	Positioner5	V
Axis06	Posit2	V	Axis14	Full	V
Axis07	Posit2	V	Axis15	Full	V
at.: Ver.2 Rem tended cyclic: mber of occi	ote device station 8 times 2 station			Transfer to Gat	teway

If you select "Individual Setting" in the operation mode setting, operation mode for each axis can be selected.

Touch [Transfer to Gateway] when setting is finished.



# [Step 4] Transfer Confirmation Screen

Conf 🚥	Touch [Yes].
Transfer the setting       Are you sure to continue?       Yes     No	Touch [No] and the screen goes back to [Step 3].
Conf	Confirmation window is shown when the operation mode switch on the controller is set to AUTO. Touch [OK] and the screen goes back to [Step 3].
Conf	A message window to tell transfer is complete is shown when the transfer is completed in normal condition. Touch [OK].
Conf	Reboot the controller after transfer is completed to activate the setting. Touch [Yes]. Reboot is cancelled if touching [No]. The transferred setting will not be activated in that case.

[Step 5] Corresponding PIO pattern Screen (only for MSEP-C and MCON-C/CG)

🤄 🎯 Corresponding	🗧 👘 Corresponding PIO pattern and a second contraction in the contract of th							
Before starting operation, PIO pattern for each axis in the parameter must be set to correct operating mode.								
If the combination is no motions may occur.	If the combination is not found in the following table, unexpeted motions may occur.							
PIO pattern	n for different oper	ation mode						
	SEP I/0	Other modes						
MSEP	MSEP 0, 1, 2, 3, 4, 5 6							
	ОК							

For MSEP-C and MCON-C/CG, the window for the applicable PIO patterns is displayed. Set the PIO pattern of the controller following the displayed contents. It is not necessary to set the PIO pattern for RCP6S and RCON.

Touch [OK] to return to the gateway menu screen.



# ■ For SSCNET III/H, MECHATROLINK-III and EtherCAT Motion of RCON

#### [Step 1] Network setting Screen

← m Network setting	Special parameters du
Field network type	MECHATROLINK III
Address	3
Baudrate(bps)	100M
Data Size(byte)	32 48
N	ext

Setting of the address  $^{(\text{Note 1})}$  and data size  $^{(\text{Note 2})}$  should be established.

Touch [Next] when setting is finished.

(Note 1) To be set up for MECHATROLINK-III and SSCNET III/H (Note 2) To be set up for MECHATROLINK-III

Touch [Special parameters] when setting up the special parameters. Refer to [7.3.2 Setup of Special Parameters]

#### [Step 2] Basic setting Screen

Setting items Number of axis sett.	Special marameters (1) Autoh with the current configuration
Axis No. assignment / unit config confirmation	⊖AUTO
	Next

Axis quantity setting and axis number Axis No. assignment / unit config confirmation should be established. Touch [Match with the current configuration] and operation can be performed with the setting of the number of axes following the setting of the hardware configuration.

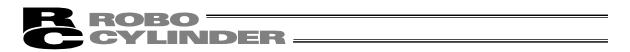
When "Manual" is selected in the Axis No. assignment / unit config confirmation, touch [Next]. When "Automatic" is selected in the Axis No. assignment / unit config confirmation, touch [Transfer to Gateway].

Touch [Special Parameters] when setting up the special parameters. Refer to [7.3.2 Setup of Special Parameters]



Set up the number of axes and axis numbers.

Touch [Transfer to Gateway] to complete the setup.



# 7.3.2 Special Parameter Setting

Establish the settings for the special parameters if necessary.

Touch [Special parameters] button on the top of either the network setting screen, basic setting screen or Each axis setting screen to show the special parameter screen.

← 🗇	Netwwork set	ting	Special paramet	ers <mark>du</mark>			
Field	network type	Et	herNet/IP				
Addr Baud	← 🔂 B	asic setting tems	Speci	al paramet	ers (III)	-	
IP a Subn Defa		Axis Simple Axis	Positi	8 () Ful1	Special p Posit2	Positioner 3	

(1) Special Parameters for MSEP-C and MCON-C/CG

#### GW Parameter

🗧 🍯 Special parameters	du
GW parameter GW mode selection	Unit select
ERR_T/C occur latch	⊂Vailt ⊙Invalid
SERVO-OFF in ERR_C	●Vailt ○Invalid
Velocity unit (Only for Direct indication mode) Internal communication retry count	● 1.0mm/s ○ 0.1mm/s 2
Fulltime fan run	⊂Vailt ⊙Invalid
Fan monitor	●Vailt ○Invalid
BATT charge volt monitor	ON OFF
Calendar function	⊂Vailt €Invalid
OK	

# [Setting Items]

- Condition latch after the servo is turned off when ERR\_T occurred (Vailt/Invalid)
- Servo-off when ERR\_C occurred (Vailt/Invalid)
- Velocity unit (in Direct Numerical Mode only)
- Communication Retry Number Setting
- Fan always-on operation (Vailt/Invalid)
- Fan revolution monitoring (Vailt/Invalid)
- Absolute battery charge voltage monitoring (ON/OFF)
- Calendar feature (Vailt/Invalid)
- GW Mode Select

GW parameter GW mode selection	Unit sele	ct
Enable valid	⊂Vailt	● Invalid
Byte swap	⊂Vailt	Invalid
Word swap in D-byte data	⊂Vailt	Invalid
Enable valid in AUTO mode	⊂Vailt	Invalid
Push type (Only for Direct indication mode)	● CON mod	de 🔿 SEP mode
OK	1	

Ur	nit	Se	eleo	Ct
1				

🔶 🎯 Special	l parameters		ilii
GW parameter	GW mode selection	Unit sele	ct
Multi drop enabl	e	Accept	● Not accept
Unit No.		• 0	01
St. axis No.(0∼	15)	0	
	ОК		

#### [Setting Items]

- Enable valid (Vailt/Invalid)
- Byte swap (Vailt/Invalid)
- Double byte data word swap (Vailt/Invalid)
- Enable valid at AUTO (Vailt/Invalid)
- Pressing system in Direct Numerical Mode (CON mode/SEL mode)

[Setting Items]

- Multidrop Permission (Accept/Not accept)
- Unit Number (0/1)
- Top Axis Number (0 to 15)



.....

SV-OFF Shutdown

○ Invalid

T

€Vailt

(2) Special Parameters for RCP6S

#### **GW** Parameter

← 💣 Special parameters			the	
GW parameter GW mode sele	ction			
Latch after SERVO-OFF in ERR_	т	⊖Vailt	● Invalid	
SERV0-OFF in ERR_C		●Vailt	$\bigcirc$ Invalid	
Velocity unit (Only for Direct indication m Internal communication retry		C 2	<b>○</b> 0.1mm/s	
Fulltime fan run		○Vailt	⊙ Invalid	
Fan monitor		⊙Vailt	$\bigcirc$ Invalid	
BATT charge volt monitor		• ON	OFF	
Calendar function		⊂Vailt	Invalid	V
	ОК			

GW mode selection

#### [Setting Items]

- Condition latch after the servo is turned off when ERR\_T occurred (Vailt/Invalid)
- Servo-off when ERR\_C occurred (Vailt/Invalid)
- Velocity unit (in Direct Numerical Mode only)
- Communication Retry Number Setting
- Fan always-on operation (Vailt/Invalid)
- Fan revolution monitoring (Vailt/Invalid)
- Absolute battery charge voltage monitoring (ON/OFF)
- Calendar feature (Vailt/Invalid)
- Enable valid (SV-OFF/Shutdown)
- MON Signal (Vailt/Invalid)

Pages are to be switched over with  $\blacktriangle$  and  $\bigtriangledown$  buttons.

#### **GW Mode Select**

GW parameter

Enable operation

MON Signal

🗲 🇃 Special parameters		the
GW parameter GW mode selection		
Enable valid	⊂Vailt	● Invalid
Byte swap	○Vailt	Invalid
Word swap in D-byte data	○Vailt	● Invalid
Enable valid in AUTO mode	○Vailt	Invalid
ОК	1	
UK		

0K

#### [Setting Items] • Enable valid (Vailt/Invalid)

- Byte swap (Vailt/Invalid)
- Double byte data word swap (Vailt/Invalid)
- Enable valid at AUTO (Vailt/Invalid)



(3) Special parameters for RCON (except for SSCNET III/H, MECHATROLINK-III and EtherCAT Motion)

#### Gateway parameter

# Composition Option Unit Of parameter Option Option Unit Of parameter Option Option Unit ERR\_C occur Latch Valid Invalid SERVO-OFF in ERR\_C Option Option Option Invalid Valid Internal communication mode) Option Option Option Invalid NON signal Option Option Option Option Invalid Calendar function OK Option Option Invalid Invalid

← 🐨 Special parameters	du .
GW parameter GW mode selection Number of power supply units connecte Power supply unit monitor type Power supply unit connection retry ti Weiting the for init, internel process com. [ms]	Output voltage 💌
	T

- [Setting Items]
- ERR\_C occur latch (Vald/Invalid)
- SERVO-OFF in ERR\_C (Valid/Invalid)
- Velocity unit (in Direct Numerical Mode only)
- Internal communication retry count
- MON signal (Valid/Invalid)
- Calendar function (Valid/Invalid)
- Number of power supply units connected (Not used/1/2/3/4/5)
- Power supply unit monitor type (Output voltage / Auxiliary winding wire voltage / Output current / Peak hold current / Load factor / Fan rotating speed / PCB temperature)
- Power supply unit connection retry times
- Waiting time for init. internal process comm. [ms]

Pages are to be switched over with  $\blacktriangle$  and  $\bigtriangledown$  buttons.

# GW Mode Select

OK

# Image: Constraint of the selection Option Unit Image: Constraint of the selection Option Unit Enable validity Ovalid Image: Constraint of the selection Byte swap Ovalid Image: Constraint of the selection Word swap in Double word data Ovalid Image: Constraint of the selection Driver shutdown release Image: Constraint of the selection OK OK

#### [Setting Items]

- Enable validity (Valid/Invalid)
- Byte swap (Valid/Invalid)
- Word swap in Double word data (Valid/Invalid)
- Driver shutdown release dalay time [ms]

#### Option Unit

🗧 🍘 Spec	ial parameters	th	
GW parameter	GW mode selection	Option	Unit
RCON-EC JOG sw	itch	●Valid ○I	nvalid

# [Setting Items] • RCON-EC JOG switch (Valid/Invalid)



(4) Special parameters for SSCNET III/H, MECHATROLINK-III and EtherCAT Motion of RCON

#### GW parameter

GW mode selection

Internal communication retry count

Calendar functio

#### [Setting Items]

●Valid ◯Invalid 💌

- Internal communication retry count
- Calendar function (Valid/Invalid)



OK

2

Waiting time for init. internal process comm [ms]

Pages are to be switched over with  $\blacktriangle$  and  $\bigtriangledown$  buttons.

#### GW Mode Select

🗧 🗑 Special parameters	(th)	
GW parameter GW mode selection		
Enable validity	⊂Valid ●Inva	lid
Byte swap	⊂Valid ●Inva	lid
Word swap in Double word data	⊂Valid ⊙Inva	lid
Driver shutdown release delay time[ms]		0
ОК		

# [Setting Items]

- Enable validity (Valid/Invalid)
- Byte swap (Valid/Invalid)
- Word swap in Double word data (Valid/Invalid)
- Driver shutdown release dalay time [ms]



#### Monitor Menu 7.4

Touch [Monitor] button in the gateway menu window to show the monitor screen.

#### Monitor Screen

(+) 🇃 M	loni tor	(III)
	Data monitor	
	Diagnostic information	
	Alarm list	

There are three types of menu in the monitor screen. Select one of them and touch it. The screen goes to the touched menu.

- : Received data and sent data are displayed. [Refer to 7.4.1 Data Data monitor Monitor]
- Diagnosis information : Number of communication error occurrence and number of emergency stop detection are displayed. [Refer to 7.4.2 Diagnosis Information] Alarm list
  - : The alarm list is displayed. [Refer to 7.4.3 Alarm List]

#### 7.4.1 Data Monitor

Gatewa

□Synch. scroll

Change scre

Touch [Monitor] in the gateway menu screen  $\rightarrow$  [Data monitor] to show the data monitor screen.

#### Data monitor Screen

÷	💼 Data m	onitor			(III)	
	Master →	Gateway		Gatewa	ay → Mas	ter
	Address	Data		Address	Data	
	+00	0000		+00	9890	
	+01	0000	1	+01	0000	
	+02	0000	1	+82	0000	
	+03	0000	1	+03	0000	
	+84	0909	7	+84	0909	
	+05	0000	1	+05	0000	
	+06	0000	1	+06	0000	
	+07	0000	$\mathbf{v}$	+07	0000	▼
	⊏Synch Change	. scroll screen		BIN	IEX	

Gateway

HEX

BIN

→ Maste

The data that the gateway unit has received from the host (master) and the data sent back to the host (master) are displayed.

Data is shown in hexadecimal numbers when [HEX] is on.

The data switches to binary number display if touching [BIN].

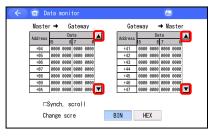


→ Maste

8

Gateway

BIN HEX



Gateway

⊠ynch. scroll Change scre Touch the scroll keys  $\blacktriangle$  and  $\bigtriangledown$  to change the displayed address.

Check on Synch. scroll and the sent and received data can be scrolled together.

# 7.4.2 Diagnosis Information

Touch [Monitor] in the gateway menu screen  $\rightarrow$  [Diagnosis information] to show the diagnosis information screen.

## **Diagnosis Information Screen**

🔶 🎯 Diagnostic information	dn
Driver Unit Scan time[ms] ERR_T counter ERR_C counter EMG counter	0 Clear 0 Clear 0 Clear
Option Unit Scan time[ms] # of times communication error occurred	5
ОК	

Information of scan time, number of occurrence times of communication error (ERR\_T and ERR\_C) and number of detection times for emergency stop (EMG) is displayed.

Touch [Clear] on each counter, and the value goes back to 0.

← @ Diagnostic information	alto
Driver Unit Scan time[ms] ERR_T counter ERR_C counter ENG counter	1 0 Clear 0 Clear 0 Clear
Option Unit Scan time[ms] # of times communication error occurred OK	

Touch [Clear] on each counter, and the value goes back to 0.



# 7.4.3 Alarm List

Touch [Monitor] in the gateway menu screen  $\rightarrow$  [Alarm list] to show the alarm list screen.

shown.

delete is shown.

# Alarm list Screen

					Time (yy/mm/dd hh:mn:ss)
9	890	Driver Board Nount Error		0003	16/02/18 23:04:26
1	FFF	PowerUP No Error			16/02/18 22:59:51
2	890	Driver Board Mount Error		0003	16/02/09 19:44:16
3	FFF	PowerUP No Error			16/02/09 19:44:16
4	898	Driver Board Mount Error		0003	16/02/09 19:43:34
5	898	Driver Board Mount Error		0003	16/02/09 19:43:09
6	898	Driver Board Mount Error		0003	16/02/09 19:32:55
7	898	Driver Board Mount Error		0003	16/02/09 19:25:58
viou	us pa	ge Update Al	l cle	ar	Next page↓

Show the alarm list of the gateway.

Touch [Update] and the alarm list can be read out again.

Touch [Next page], and the list in the next screen is shown.

Touch [Previous page], and the list in the previous screen is

Touch [All clear], and the confirmation screen for alarm list all

🐨 Alarm list **m**  
 Other
 <th Driver Board Nount Error PowerUP No Error Driver Board Nount Error PowerUP No Error Driver Board Nount Error Driver Board Nount Error Driver Board Nount Error 
 0
 890

 1
 FFF

 2
 890

 3
 FFF

 4
 890

 5
 890

 6
 890

 7
 890
 evious page All clear Next page . Update

PowerUP No Error Driver Board Nount Error Slave Axes Comunication Driver Board Nount Error PowerUP No Error Driver Board Nount Error PowerUP No Error 16/02/09 19:25:58 16/02/09 19:25:08 16/02/09 19:24:07 7777 898 898 898 FFF 898 FFF 898 0003 0003 16/02/09 19:24:03 16/02/09 19:24:03 16/02/09 19:22:52 16/02/09 19:22:52 0003 ount Erro 6663 evious page Update All clear Next page↓



Touch [Yes], and all in the alarm list will be deleted.

Touch [No], and the delete will be cancelled.

The alarm list is shown again.

÷		Alarm I	ist			du
No.	Code		Name	Address	Detai I	Tinn (yy/nnn/dd h
0						11
1						17
2						//
3						11
4						11
5						//
6						//
7						11

# 7.5 SD Memory Card

Touch [SD memory card] button in the gateway menu screen to show the SD memory card window.

SD Memory Card Screen

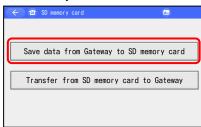
÷	🖬 SD memory card	dn
	Save data from Gateway	to SD memory card
	Transfer from SD memor	y card to Gateway

There are two types of menu in the SD memory card screen. Select one of them and touch it. The screen goes to the touched menu.

Save from Gateway to SD Memory Card : [Refer to 7.5.1 Save from Gateway to SD Memory Card]
 Transfer from SD Memory Card to Gateway : [Refer to 7.5.2 Transfer from SD Memory Card to Gateway]

# 7.5.1 Save from Gateway to SD Memory Card

SD Memory Card Screen



Touch [Save data from Gateway to SD memory card].



File name indication screen opens.

Input a file name and touch the [ENT].

🔶 🗃 File name	designation	(the
File name		
MSEPGW01		
	Save	

Touch [Save].





÷	1	File na	ame confirma	ition		ilu	
File	name	e					
	RCP	2RA3C2	20160312A	. spgw			
	A f	ile of Do v	the sam you want	e name to ove	already rwrite i	exists. t?	
	(	2	Yes		No		
€ (	1	Conf				<b>1</b> 0	

Saved to SD memory card

0K

Set Monitor SD memory card

Version information

When the same file name does not exist in the SD memory
card, confirmation screen for saving is shown.

Touch [Yes] and the data will be saved.

Touch [No] and the data will not be saved, and the screen goes back to the SD memory card screen.

When the same file name exists in the SD memory card, confirmation window for overwriting is shown.

Touch [Yes] and the data will be overwritten.

Touch [No] and the data will not be overwritten, and the screen goes back to the SD memory card screen.

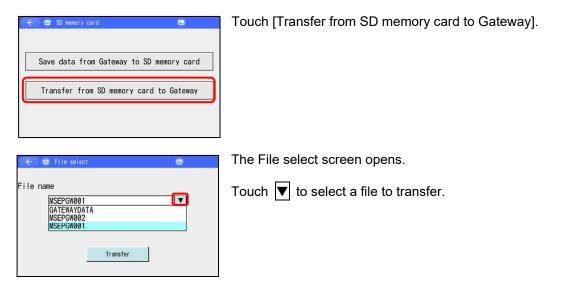
If touching [Yes], a message window to notify the data saving (overwriting) is completed is displayed.

Touch [OK].

The screen goes back to the gateway menu screen.

# 7.5.2 Transfer from SD Memory Card to Gateway

Time setting Axis select



← & File select   File name  MSEPGW001  ▼	Touch [Transfer] button.
Transfer	
🗧 🐨 File name confirmation 🛛 🕅	Confirm the file name and touch [Yes].
File name MSEPGW001.spgw Data of file above will be transferred to controller. Are you sure to continue? Yes No	Touch [No] and the screen goes back to the SD memory card screen.
수 @r Conf @	If the network type of the selected file is different, confirmation screen opens.
It is different from the field network type set in the Gateway. Transfer is cancelled. OK	Touch [OK] to cancel the transfer. The screen goes back to the gateway menu screen after cancellation.
🔶 🖆 Conf 🔤	If the transfer is completed in normal condition, a message screen to notify that the transfer is completed will be shown.
Transferred to Gateway	Touch [OK].
Conf 🔤	After transportation, reboot the controller to activate the settings.
Restart the controller. Are you sure to continue?	Touch [Yes].
Yes No	Touch [No] and the controller will not be rebooted. In this case the transferred change will not become activated.
🗧 🖬 Gateway menu 🚥	The screen goes back to the gateway menu screen.
Set	5 5
Monitor	
SD memory card	
Version information Time setting Axis select	



# 7.6 Clock Setting

Establish the setting for the clock on the controller. Selection can be made from an option to transfer the time data from this teaching pendant and another one to set the time manually.

Touch [Time setting] button in the gateway menu window to show the clock setting screen.

Time setting Screen

g ti								du)
	me							
1	02	1	18	23	:	19	:	13
Y	y/mm	/dd			hh:	: mm : :	55	
1	01	1	01	00	:	00	:	00
			Tran	sfer				
	y	yy/mm	yy/mm/dd	yy/mm/dd / 01 / 01	yy/mm/dd	yy/mm/dd hh: /01/0100:	yy/mm/dd hh:mm:: / 01 / 01 00 : 00	/ 01 / 01 00 : 00 :

(1) Transfer the clock information in this teaching pendant

eaching	gti	me							
16	1	02	1	18	23	:	19	:	25
Manual									
	у	y/mm	/dd			hh	:mm::	55	
00	1	01	1	01	00	Ĩ	00	:	00
				Tran	ofor				

Select the radio button in the teaching clock.

Touch [Transfer] to transfer the clock data.

#### (2) Set the time manually and transfer

C 1 2 3 4 5 CLR	
	ESC
6 7 8 9 0 BS	ENT
⊙anual yy/mm/dd hh:mm:ss	
00 / 01 <u>/ 01 00 :</u> 00 : 0	)
Transfer	

Select the radio button on Manual.

Input yy/mm/dd hh:mm:ss. (Input numbers to each item. Touch [ENT] to confirm it.)

Touch [Transfer] to transfer the clock data.



# 8. Operation of Actuator Drive Power Supply Unit

# 8.1 Guideline

The actuator drive power supply unit (hereinafter called ADTB) is to be connected to TB-03 and not to use any controller installed separately, it enables a trial run of an actuator with a teaching pendant itself.

# 8.1.1 Applicable Actuators

There are EC Type (ADTB-EC) that capable of operation of ELECYLINDER only and PEC Type (ADTB-PEC) that is capable of operation of ELECYLINDER and pulse motor mounted ROBOCYLINDER.

EC Type Trial run of ELECYLINDER (24V pulse motor type) is capable. PEC Type Trial run of ROBOCYLINDER (pulse motor type: RCP2 Series and later) and ELECYLINDER (24V pulse motor type).

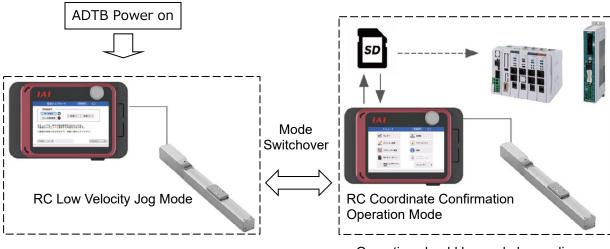
When having a trial run of ELECYLINDER, as an actuator is operated by the controller built in ELECYLINDER, ADTB is to be used only for power supply to ELECYLINDER.



Supply power to ELECYLINDER and ELECYLINDER can operate in normal condition.

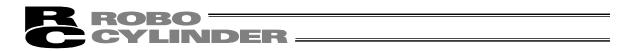
When having a trial run on ROBOCYLINDER, ADTB can be a simple controller.

Operation such as jog operation in low velocity without using parameters and operation with parameters applicable for a position controller installed separately read from a Secure Digital card to ADTB is capable.



Jog operation in low velocity should be made without using parameters.

Operation should be made by reading ADTB parameters. Editing positions and position data operation are capable.



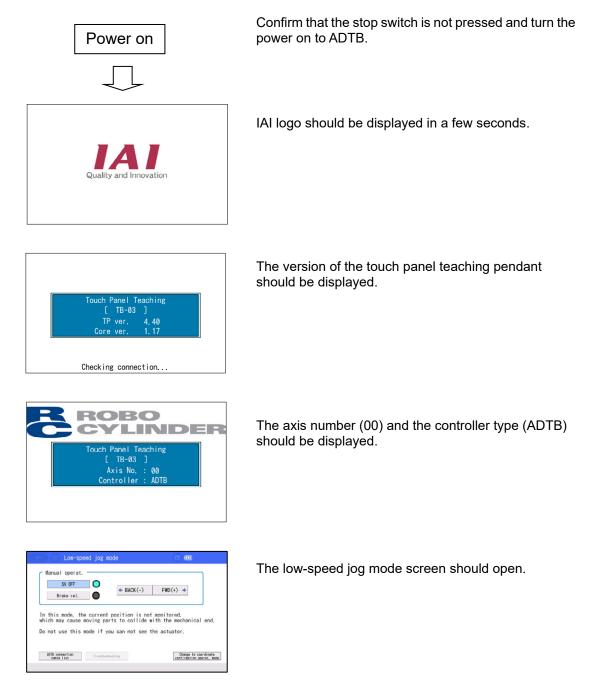
# 8.1.2 Operation

The way to operate ELECYLINDER is the same as that for normal ELECYLINDER. Refer to [Chapter 6 Operation of ELECYLINDER and ROBO PUMP].

For how to operate ROBOCYLINDER, should be explained in this chapter and Chapter 3.

# 8.1.3 Initial Screen

After the power gets turned on, the IAI logo and version information should be shown and then it gets to the low-speed jog mode screen.





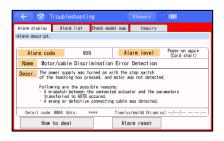
When Power is Turned on While Stop Switch is Pressed

ing to each iter

Count.m.

Count.m.

Count.m



display Alarm list Check model num. Inquiry

er was turned or Code : 0004)

With parameters for high thrust motors (565P set to ADTB, joint cables are not connected. (Detail Code : 0002)

Wismatch between the con

If the power is turned on while the stop switch is being pressed, as the motor cannot be defined, the low velocity jog mode screen would not be displayed and the screen for Alarm Code 099 should be displayed.

Touch [How to deal].

The Troubleshooting 1 window should be displayed.

Touch [Countermeasure] on the right side of (1) Power was turned on while the stop switch was being pressed.



Alarm reset

The Troubleshooting 2 screen shows up.

Following the instruction in the screen, turn the stop switch to the right for 45 degrees to release the locking feature on the stop switch and touch [Alarm Reset].



In this mode, the current position is not monitored, which may cause moving parts to collide with the mechanical end. Do not use this mode if you can not see the actuator.

Low-speed log mod

ADTB connection Troubleshooting

Manual operat.

Brake rel.

A confirmation window to reboot ADTB should show up.

Touch [Yes] to execute.

The File neme confirmation screen shows up.

# 8.1.4 Specifications, Dimensions, Name of Each Part, etc. Refer to [1.11 Actuator Driving Power Supply Unit for Teaching Pendant].

()

Change to coordinate confirmation operat, mode

← BACK(-) FWD(+) →

# 8.1.5 Connection

Refer to [2.3 Connection of Actuator Drive Power Supply Unit].



# 8.2 Low Velocity Jog Mode

Operation should be made in low velocity (300rpm) without using parameters. (The velocity cannot be changed.)

Only jog operation is available and home-return operation or position data movement is not available.

# 8.2.1 Low-speed jog mode screen

SV OFF	0		
		ACK (-)	FWD(+) 🔿
Brake rel.			
	ne current positio		
			monitored, ith the mechanical en
which may cause		collide w	ith the mechanical en
which may cause	moving parts to o	collide w	ith the mechanical en
which may cause	moving parts to o	collide w	ith the mechanical en

[Operation on the low-speed jog mode screen]

 [Servo ON] :Touching [SV ON] while the servo is OFF turns on the axis servo and O becomes lit. [Servo OFF] Touching [SV OFF] while the servo is ON turns off the axis servo and O becomes unlit. [Brake rel.] :For an actuator equipped with a brake, touch [Brake rel.] and the brake gets compulsorily released and the circle turns on. Touch [Brake rel.] again and the brake works and the circle turns off. • [BACK(-)], [FWD(+)] : The axis moves in 300rpm while touching it. [BACK(-)] performs JOG operation in negative direction. [FWD(+)] performs JOG operation in positive direction. The operation velocity of an actuator should be the lead of actuator  $\times$  5 [mm/s]. (300rpm: 300 rounds in 1 minute = 5 rounds in 1 seconds) [ADTB connection cable list] Touch it and the cable connected to RCP actuator should be displayed. [8.2.2 ADTB Connection Cable List Screen] [Change to coordinate confirmation operat. mode] Touch it and it is switched to the coordinate operation confirmation mode. [8.2.3 Transfer to Coordinate Confirmation Operation Mode] It should be displayed when an alarm is generated. Touch it and the [Troubleshooting] troubleshooting screen should appear. Refer to [Chapter 9 Error Display] Caution: In the low velocity jog mode, the coordinate of an actuator should not be monitored and back and forth operation should be made. Therefore, operation should be made in a constant velocity until the stroke end. Stop the actuator before it hits the stroke end. Operation till the stroke end may shorten the product life or cause malfunction.

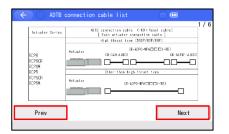
Caution: An axis could drop if the brake compulsory release is performed while the servo is off when the axis is installed in the vertical orientation.



# 8.2.2 ADTB Connection Cable List Screen

	nual operat.				
	SV OFF		+ BACK(-)	FWD(+) >	
	Brake rel,		I DRONG /	1 10 (1)	
			75.55 PA	- 2/5 - 26	
			anition in out	monitored	
	is mode, the may cause m				ical end.
which	n may cause m	noving part		ith the mechani	ical end,

Touch [ADTB connection cable list] in the low-speed jog mode screen.



The ADTB connection cable list screen (1/6) should be displayed.

Touch [Next] and the next screens ( $\rightarrow 2/6 \rightarrow \cdots \rightarrow 6/6$  $\rightarrow 6/1 \rightarrow \cdots$ ) should be displayed in order. Touch [Prev] and the previous screens ( $\rightarrow 6/6 \rightarrow \cdots \rightarrow$  $1/6 \rightarrow 6/6 \rightarrow \cdots$ ) should be displayed in order.

Actuator Series	401B connection cable (-RB: Robot cable) [ Each actuater connection cable ]
RCP2	BCF2/BCF2CR/BCF2S, excluding scene BAID/SA5/SA6/SA7/SS7/SS8/BA2/RA3/RA4/BA6/RBSIDO/RB3IDO/ BRBLS/GR3LH/BRSGRM/RTB(L)/RTB8(L)/RTC(L)/RTCB(L)
RCP20R	Actuator C8-PSEP-#PA
RCP2M	Conversion unit
	PON-CV-AFCS

Touch [ $\leftarrow$ ] and it returns to the low-speed jog mode screen.

Manual operat.		]
SV OFF Brake rel,	● ★ BACK(-)	FWD(+) >
which may cause m		le with the mechanical end.
which may cause m		le with the mechanical end.

The low-speed jog mode screen should be displayed.



# 8.2.3 Transfer to Coordinate Confirmation Operation Mode

#### [About Parameter File for ADTB]

The parameter file for ADTB is necessary in order to switch over to the coordinate confirmation operation mode.

A parameter file for ADTB cannot be created by a user.

If a parameter file is required, confirm the model code of an actuator and the serial number described on the model code nameplate sticker attached on the side of the main unit, and request to a sales person in charge.

SV OFF	● ◆ BAC	K(-) FWD(1) →	
Brake rel,			
	N C 1949	De	
	moving parts to co	is not monitored, Ilide with the mecha	anical end.
	mode if you can no	t see the actuator	

Touch [Change to coordinate confirmation operat. mode] in the low-speed jog mode screen.

(←)@ ۵	onf		
	Starts in coord operation mode.	dinate confirmation Is this okay?	
and r	s in coordinate ver efers to SD memory o n to low-speed jog n		e
	Yes	No	
be sure to wr If different		actuator to be connected befor nly will the product not opera	

A confirmation screen for coordinate confirmation operation mode switchover should appear.

Touch [Yes] to switch over to the coordinate confirmation operation mode. Touch [No] and it returns to the low-speed jog mode screen.

Do you	want to transfer ADTB parameter from SD memory card?
	ory card (Transites to Restore file select screen meter settings (Transites to Menul screen) Yes No
-Current parameter se Model number:RCP4 Lead(mm) : Stroke(mm) : 1	-SA4R-WA-35P 16.00

← ☎ Restore file	e select	
ADTB Parameter		
File select		
¥TB_CON¥Para	meter¥	
RCP6-SA4R-WA	-35P-16-100	V
[	Transfer	

A confirmation screen for transferring a parameter for ADTB from a Secure Digital memory card should be displayed.

Touch [Yes] and it moves to a screen to select a file to transfer.

Touch [No] and the parameter would not be transferred and the current parameter settings should be used. It moves to the Menu 1 screen.

The restore file selection screen should be displayed. Select a file to be transferred in the pulldown menu.

A parameter file stored in \TB\_CON\Parameter folder in a Secure Digital card will become available to select.



🔶 🕜 File name confirmation 👘
File name
¥TB_CON¥Parameter¥
RCP6-SA4R-WA-35P-16-100.adpr
Setting parameter file Note in the set of t
Yes No

The file name confirmation screen should be displayed.

The information regarding model code, lead and stroke in the selected file should be displayed. Check if there is any problem.

Touch [Yes] and parameters should be transferred to ADTB. Touch [No] and it should return to the restore file select screen.



The transfer complete screen should appear.

Touch [OK].

$( \in ) \textcircled{a}$	DTB Restart		
	Do you want	to restart?	
	Yes	No	]

A confirmation screen for rebooting should come up.



If the servo is on, a confirmation screen to turn the servo off should be displayed.

Touch [Yes] and the servo should be turned off and reboot. Touch [No] and it returns to the restore file select screen.

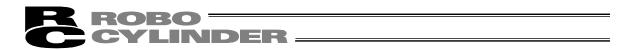


After rebooting, Menu 1 should be displayed.

Operation according to the parameter should be available.

As the operation should basically be that of the CON system controller, refer to [Chapter 3 Operation for CON System Controller].

\* There some features not available for operation.



# 8.3 Coordinate Confirmation Operation Mode

Operation should be made with parameters for ADTB read in. Editing positions and position data operation are capable.

For how to switch over to the coordinate confirmation operation mode, refer to [8.2.2 Transfer to Coordinate Confirmation Operation Mode].

# 8.3.1 Coordinate Confirmation Operation Mode screen

( 🗧 🔞 Menu1	Glos	sary 📶 💷		( 🕜 Menu2	Glossary 🕕 🎹
Ļ	Monitor	Test run	Menu 2		Maintenance parts list
Position edit guide	🖌 Position edit	🔺 Alarm list		TP op. mode	Easy programming
	Parameter edit	1 Information		Env. set.	Offboard tuning
V	SD memory card	Troubleshooting		Controller reset	
Easy setting	Change to low-speed iog mode	Menu2	Menu 1		Menu1 >

As well as the position controller, the following features should be available to execute. (Features not available for execution should not be displayed, such as dedicated functions for the pulse press actuator, are hidden.)

#### [Menu 1]

- Position edit guide Refer to [3.6 Position Edit GuidePosition Edit Guide]
- Easy setting Refer to [3.8 Easy Program Setting]
- Monitor Refer to [3.9 Monitor]
- Position edit Refer to [3.10 Position Editing] \* There is no feature of I/O monitoring.
- Parameter edit Refer to [3.11 Parameter Editing]
- SD memory card Refer to [8.3.2 ADTB Data Backup]
- Test run
   Refer to [3.12 Test Run]
- Alarm list Refer to [3.14 Alarm List]
- Information Refer to [3.17 Information Display] \*There is no feature of axis name edit.
- Troubleshooting Shows the contents of an alarm and the countermeasure when an alarm has been generated.

#### [Menu 2]

- TP op. mode Refer to [3.13 TP Operation Mode]
- Env. set. Refer to [3.18 Environment Setting]
- Controller reset
   Refer to [3.15 Controller Reset]
- Maintenance parts list Refer to [3.21 Maintenance Parts List]
- Easy programming Refer to [3.22 Easy Programming]
- Offboard tuning Refer to [3.24 Offboard Tuning]

# CYLINDER \_\_\_\_\_

# 8.3.2 ADTB Data Backup

Data is transferred between the Secure Digital memory card in the touch panel teaching pendant and ADTB.

- (1) Type of Stored Data It is available to save position data, parameters and alarm list.
- (2) Compatibility of Saved Data
  - The position data saves files in four types of extensions in one saving operation. The extensions of files and readable controllers are as shown below.

File Extension	Controller
.ptpb	PCON-CB/CFB/CGB/CGFB
.ptpbp	PCON-CBP/CGPB
.ptpcl	PCON-CYB
.ptc2	RCON-PC/PCF

- A parameter file can not be read in a controller.
- The alarm list can only have the backup. It cannot be restored. Data is in a CSV file.
- (3) Directories of the Stored Data

The folders to store the backup data of ADTB and the folder to read the data from when restoring the data to ADTB are as listed below. The directories to store the files cannot be changed. The files existing in other directories other than the specified folders cannot be listed up in the file name list in the file select at the initial setting or restore. If the folder does not exist, it is automatically created.

- Position Data : \TB\_CON\Position\File Name
- Parameter : \TB\_CON\Parameter\File Name
- Alarm List : \TB\_CON\Alarmlist\File Name
- (4) Destination to save parameter data for coordinate confirmation operation mode The parameter file for ADTB to read out when switching over to the coordinate confirmation operation mode should be stored in the following folder.
  - Parameter for ADTB : \TB\_CON\Parameter\File Name
- (Note) Data in a file name with 33 letters of half-size font characters or more should not be shown in the data list at restore.
  - Files with Chinese names are not supported.

Caution: For a Secure Digital memory card, choose a SD/SDHC memory card with 1G to 32G. (Toshiba-made recommended) Also, Have FAT32 Format for the file system.



# 8.3.2.1 ADTB Data Backup

ADTB data is transferred to the Secure Digital memory card for backup.



Touch [SD memory card] in Menu 1 screen.

← @	SD memory card	
	Save from ADTB to SD memory card	
[	Transfer from SD memory card to ADTB	
[	Teaching update	
(←) @	Save to SD memory card	
	Please select the data to save.	
	Position data	
l	ADTB Parameter	
	Alarm list	

SD memory card screen opens.

Touch [Save from ADTB to SD memory card].

Save to SD memory card screen opens.

Select the data type for the backup such as [Position data] and touch it. (Multiple selection available)

Touch [Save].

A confirmation screen for data to back up should be
displayed.

If there is no problem in the selection, touch [Yes].

Touch [No], and the screen returns to the previous screen.

$\leftarrow$	G Backup file name designation								
Posit	Position data								
File	name	AD1	в то	SD CA	ARD F	POSITI	ON		
1	2	3	4	5	6	7	8	9	ESC
0	A	В	С	D	E	F	G	Н	CLR
Ι	J	K	L	M	N	0	Р	Q	BS
R	S	Т	U	V	W	X	Y	Z	ENT
	_	[	]		SPACE		-	#	

ADTB

bove data will be transferred. Do you wan<u>t to continue?</u>

No

SD memory card

Transfer mode

Transfer data

Yes

A screen to input a backup file name should be displayed.

- Input a file name with a keyboard and touch [ENT].
- \* The file name should be alphanumeric or symbols and the number of characters should be 32 or less.

🗧 🖆 Bac	ckup fil	e name o	lesignat	i on 🛛 💼		
Position da	Position data					
File name	ADTB	TO SD	CARD	POSITION		
			Save			

Backup file name designation screen opens.

If there is no problem in the file name that was input, touch [Save].

Touch  $[\leftarrow]$  for redoing.



(<) ( File name confirmation	n 🙃				
File name					
¥TB_CON¥Position¥					
ADTB TO SD CARD POSITION.pt*					
File name above Are you sure					
Position data is simultaneously that can be transferred to PCOM					
Yes	No				

The screen below appears if the same name is not found.

If there is no problem in the file name, touch [Yes].

Touch [No] and it returns to a screen to indicate the backup file name with a keyboard.

$(\leftarrow)$ ( $\textcircled{O}$ ) File name confirmat	ion 💮			
File name ¥TB_CON¥Position¥				
ADTB TO SD CARD POSITION.pt*				
	name already exists. o overwrite it?			
Position data is simultaneous that can be transferred to P	sly saved in a file format CON and RCON-PC.			
Yes	No			

The screen below appears if the same name is found.

Touch [Yes] if there is no problem to overwrite.

Touch [No] and it returns to a screen to indicate the backup file name with a keyboard.

		Conf	$\leftarrow$
1			
	Saved to SD memory card		
	ŬK		
	Saved to SD memory card		

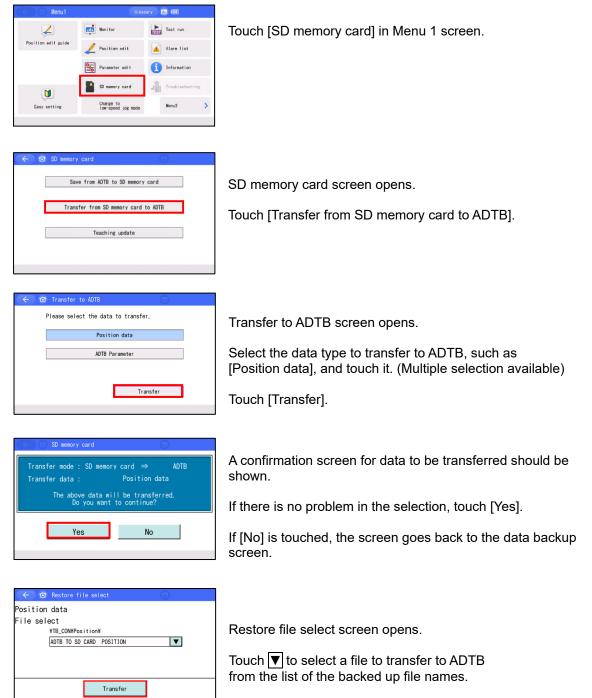
After a screen for data transfer is shown, a message screen for the data transfer complete should be displayed.

The backup process is finished. Touch [OK], and the screen returns to Secure Digital Memory Card screen.



# 8.3.2.2 Restore to ADTB

Data in the Secure Digital Memory card is transferred to ADTB.



Touch [Transfer].

🥧 🗇 File name confirmation 👘					
File name					
¥TB_CON¥Position¥					
ADTB TO SD CARD POSITION.ptpb					
Transfer the above data file to ADTB. Are you sure to continue?					
Yes No					

A confirmation window for the file name to transfer should appear when the position data is to be transferred.

Touch [Yes] if there is no problem in the selected file.

If [No] is touched, the screen goes back to the previous one for the restore file select.

(<)@	File name confirmat	ion 💿			
File nam	e				
¥TB_CON¥Parameter¥					
RCP6-SA4R-WA-35P-16-100. adpr					
Moo Lea	Setting parameter file           Model number: RCP6-SAR-MA-35P           Lead(mn)         108,00           Stroke(mn)         108,00				
Transfer the above parameter file to ADTB. Are you sure to continue?					
	Yes	No			

A confirmation window for the file name to transfer and the parameter setting should appear when the parameter data is to be transferred.

Touch [Yes] if there is no problem in the selected file.

Touch [No] and it should return to the select restore file window.



After a screen for data transfer is shown, a message screen for the data transfer complete should be displayed.

The data transfer to ADTB has completed. Touch [OK].



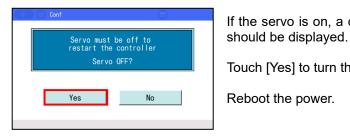
The window should return to the one for ADTB transfer when the position data is to be transferred.

The window for ADTB reboot should be displayed when the parameter data is to be transferred.

Touch [Yes] to execute reboot.

Touch [No] and the screen goes back to that for ADTB transfer.

If the servo is on, a confirmation screen to turn the servo off



Monitor 4 Test run Position edit guide tion edit 🔥 Alarn list Change to low-speed jog mod Easy setting Menu2

Return to Menu 1 after rebooting.

Touch [Yes] to turn the servo off.

Reboot the power.



# 8.3.3 Transfer to Low Velocity Jog Mode



Touch [Change to low-speed jog mode] in Menu 1 screen.



A confirmation screen for low velocity jog mode switchover should be displayed.

- [Yes] Should be switched over to the low velocity jog mode.
- [No] Return to Menu 1.

Manu	al operat.				
	SV OFF		+ BACK(-)	FWD(+) >	
3	Brake rel,		+ DAGR( )	110(1) 4	
					_
			position is no ts to collide	t monitored, with the mechani	cal end.
which	may cause	moving part		with the mechani	cal end,
which	may cause	moving part	ts to collide	with the mechani	cal en

Low-speed jog mode screen opens.

# 9. Error Display

# 9.1 Occurrence of Alarm

If an alarm occurs, the alarm screen appears.

# Controller of the CON System

$\left( \leftarrow \right)$	🕆 Troubleshooting 👘 💷 Axis No. 🕅	0				
Alarm di:	olay Alarm list Check model num. Inquiry Occ. Info.	1				
•Alarn des	•Alarn descript.					
Ala	n code 0E5 Alarm level Power-on again (Cold start)	ר				
Name	Encoder Receipt Error					
Descr.	position information to the controller properly.					
	Turn off the power, check the encoder cable wiring, reinsert the cable, and then turn on the power again, If the problem persists, please check the countermeasure.					
Detai	code: 0001 Adrs: **** Time(yy/mm/dd hh:mm:ss) 23/10/10 21:19:1	7				
	How to deal Alarm reset					

Controller of the SEP System / MEC System System



# 9.1.1 Alarms Detected by Controller

Alarms of codes 000 to 0FF are those detected by the controller. These alarms include major alarms relating to the servo control system, power system, etc. For details on these alarms, refer to the instruction manual for your controller.

If an alarm occurs, remove the cause of each alarm and then perform the following operation.

- To reset operation -cancellation level alarms, touch [Alarm reset] on the alarm screen.
- To reset cold-start level alarms, reconnect the control power.

# 9.1.2 Messages which occur when operating the teaching pendant

Codes from 100 to 3FF are messages which occur when operating the teaching pendant.

- 100 to 1FF: Message level (entry errors, guide messages)
- 200 to 2FF: Operation cancellation level (errors having a disadvantage for operation)
- 300 to 3FF: Cold-start level (which requires re-power-on or reconnection)

The following table shows the list and countermeasures.

Code	Message	Contents, occurring cases, and countermeasures
112	Input data error	An inadequate value was entered in the parameter setting. Retype a proper value with reference to the actuator specification and the parameter list.
113	Data too small	The input value is smaller than the setting range. Retype a proper value with reference to the actuator specification and the parameter list.
114	Data too large	The input value is bigger than the setting range. Retype a proper value with reference to the actuator specification and the parameter list.
115	Not yet Homed	The operation of acquiring the current position was performed under the uncompleted home return in the teaching (display) mode. In first, execute the home return.



Code	Message	Contents, occurring cases, and countermeasures
117	No position data	The target position is not set to the selected position number. In first, enter a target position.
11E	Unmatched pairdata	Inadequate values were entered in the magnitude relation of the data in a pair. (Example) The case in which soft limit+ and limit- are the same on the parameter. Retype a proper value
11F	Value too small	The minimum settable travel to the target position depends on the lead length of the driving system and the resolution of the encoder. If the input target position is smaller than this minimum travel, this message is displayed. (Example) If the lead length is 20 mm for the actuators of RCP2 series, since the resolution of the encoder is 800 pulses, the minimum travel is 0.025 mm/pulse (= 20 ÷ 800). In this case, if 0.02 mm is entered in the target position, this alarm occurs.
121	Search value error	The final arrival position exceeds the soft limit due to the push-motion operation. Set a value within the soft limits.
122	Duplicate link	An axis number was allocated despite that more than one axis were connected. Always allocate the axis number only when one axis is connected.
123	Password error	The input value of the system password, position editing password, or position data edit password does not match the setting value. Retype the correct password.
131	Unrecognizable Large Category Code Detected	The software of this teaching tool is not applicable for the connected controller. Updating this teaching tool is necessary. Refer to [10.2 Teaching Update]
132	Detect Undefined Controller	An unsupported controller was recognized. (Example) When connected ACON-CA applied from Ver 2.10 in Ver 2.00 Follow the process in [10.2 Teaching Update] to update the software in an applicable version or later. Refer to [Support Models] for the applicable versions.
133	Prohibit changing Axis No.	The axis number was changed by the teaching pendant connected to the controller by which the axis number is set with the rotary switch on the front panel. The teaching pendant cannot change the axis number. Change the number by the rotary switch on the front panel.



Code	Message	Contents, occurring cases, and countermeasures
134	Controller Unsupport Function	The function number to which the controller does not correspond in the user adjustment mode was allocated. (Example) If the adjustment number 6 "Load cell calibration execution" is performed to the model which does not support the load cell function.
150	Write-in Prohibited	Writing was attempted to a domain prohibited for write-in. Consult with IAI if the phenomenon would not be improved even with reconnection.
160	SDcard open error	A file in the SDcard could not open. Data backup was attempted without a SDcard inserted. Insert a SDcard.
161	SDcard write error	<ul> <li>SD card cannot be written.</li> <li>Check that the condition is not as follows.</li> <li>Free space of the SD card is insufficient.</li> <li>SD card write-protect switch is engaged.</li> <li>File is set to the write prohibit property in overwriting.</li> <li>An unsupported SD card is inserted.</li> </ul>
162	SDcard read error	A SDcard was not inserted when data restore (transfer) was attempted. Have restore conducted with a SDcard inserted.
164	SDcard file format error	Restore (transfer) of the saved data could not be performed properly. The data saved in the SDcard may be damaged. Save data from the PC to the SDcard again, and try to transfer it. If an error occurs even with it, the original data in the PC should be damaged. Redo the work from backup of the data.
180	Axis No. Change Complete	Messages to confirm the operation
183	IO-function changed	(It is not to say any operation mistake or
184	Data transfer completed	abnormal occurrence)
185	LoadCell calibration completed	Check the contents, and then press the " $\leftarrow$ " button on the top left of the screen to return to the
186	Time setting completed	original screen.
187	Brownout of RTC backup battery	Voltage of the battery inside the teaching pendant is reduced. (Note) Settings for time, languages, and touch operation sound are initialized. The message is displayed only in Japanese (the default language). Consult us about replacing the battery.



Code	Message	Contents, occurring cases, and countermeasures
188	Input warning of below Min. Vel	The speed, which is less than the "minimum speed" that depends on the lead and encoder pulses, was entered in the "speed" of position data. The message is displayed, but entering data is possible. Retype a proper value after the confirmation of the specification, because the movement in less than the minimum speed may cause abnormal noise and vibration.
189	Input warning of over ratings ACC/DCL	An acceleration/deceleration speed, which exceeds the "rated acceleration/deceleration speed" of the actuator connected, was entered in the "acceleration/deceleration speed" of the position data. The message is displayed, but entering data is possible. Retype a proper value after the confirmation of the specification, because the movement in the excess high acceleration/deceleration speed may lead to actuator failures.
18A	Sending Loadcell Invalidation Command at Servo-off	It occurs when the loadcell is invalidated while the servo is on. Invalidate the loadcell after turning the servo off.
18B	Battery not connected	It is a condition that a battery cannot be detected or no battery connected. Battery drive is not available. Operation should be available if connected to an AC adapter or controller.
18C	Battery Error	<ol> <li>The battery cannot be charged in quick charging (connected to an AC adapter).</li> <li>The battery voltage is less than 1.0V in slow charging (connected to a controller).</li> <li>It can be concerned the malfunction of the battery.</li> <li>Battery drive is not available. Operation should be available if connected to an AC adapter or controller.</li> </ol>
18D	Battery Power Drop Warning	It occurs when the battery voltage gets below the warning output threshold voltage (3.27V). (Operation can be continued till the voltage reaches 3.1V. The power should be turned off when it goes below 3.1V.) It is necessary to connect an AC adapter or controller and charge the battery.
202	Stop	<ul> <li>The system is stopped on the safety circuit at the equipment side or at the teaching pendant.</li> <li>1) Turn the stop button on the teaching pendant clockwise and pull it towards you.</li> <li>2) Set the circuit to have +24V that is output from STOP+ to input to STOP</li> </ul>



Code	Message	Contents, occurring cases, and countermeasures
203	MotorPower sag	For the controller of the "external cutout relay type," the motor driving power is not supplied from MPI terminals adequately. (Note) Despite that the proper voltage is applied to MPI terminals, if this error occurs, the controller may be broken down.
204	ABS-Battery Power sag	ABS battery brownout at power-on was detected. Replace the ABS battery.
205	STO/SS1-t	The safety requirement input signal has been input.Insert the dummy plug to the controller when unexpectedly output.
206	DRV STOP	The driver stop signal has been input. Insert the dummy plug to the controller when unexpectedly output.
20A	Servo OFF while moving	<ol> <li>Movement operation was performed with the servo OFF.</li> <li>Since the servo ON signal (SON) from PLC was turned OFF during the movement operation, the servo was turned OFF and the movement operation became impossible. Turn the servo ON before the operation.</li> </ol>
20C	Start ON while moving	The start signal (CSTR) from PLC was turned ON during the movement operation, so the movement command was duplicated. Check the output of the start signal (CSTR) from PLC.
20D	STP OFF while moving	The pause signal (*STP) from PLC was turned OFF during the movement operation, so the operation became impossible. Check the output of the pause signal (*STP) from PLC.
20E	Over soft-limit	It reached the soft limits. Check the settings of the soft limits, and use within the settings.
210	HOME ON while moving	The home return signal (HOME) from PLC was turned ON during the movement operation. Check the output of the home return signal (HOME) from PLC.
211	JOG ON while moving	The jogging movement signal (JOG) from PLC was turned ON during the movement operation. Check the output of the jogging movement signal (JOG) from PLC.



Code	Message	Contents, occurring cases, and countermeasures
212	Operational Command During Drive Cutoff	<ol> <li>The motor power voltage is at 16.8V or below. Check the supplied motor power voltage. Confirm that the cables for drive source are those with complied cable diameter.</li> <li>[Compatible wire diameter]</li> <li>Motor drive power supply: AWG20 to 8 (Copper Wire)</li> <li>Control power: AWG22 or more (Copper Wire)</li> <li>The stop switch at the right top of the front of this tool has been pressed. Turn the stop switch at the right top of the front of this tool to the right to release it.</li> <li>As the equipment is in emergency stop status, +24V cannot be supplied to STOP- in the system I/O connector. Supply +24V to STOP- in the system I/O connector.</li> <li>TB-02D (equipped with a dead man's switch) is connected. Make operation while gripping the dead man's switch.</li> <li>* Operation can be made by retaining middle position of the three positions.</li> <li>An alarm has been generated in the gateway for RCON or REC. Check the alarm code in the gateway unit and remove the cause.</li> <li>There is a communication error occurred in one of the actuators connected to RCON-EC. Unplug the cable connector while the controller power supply is off, confirm that there is no bent on the pins, and insert it again firmly till the end.</li> </ol>
213	Suction / Release commands prohibited	<ul> <li>Suction / Release command was issued while suction / Release commands are prohibited.</li> <li>In Suction Command Set the operation status to "Standby" before conducting it.</li> <li>In Release Command Set the operation status to "Suctioning" before conducting it.</li> </ul>
220	Write prohibit (AUTO)	The position data or parameter was written during the AUTO mode. Write them after changing to the teaching mode.
221	Write prohibit (MON)	The position data or parameter was written during the monitor mode. Write them after changing to the teaching mode.
222	Move prohibit (AUTO)	The actuator movement was operated during the AUTO mode. Operate the movement after changing to the teaching mode.



Code	Message	Contents, occurring cases, and countermeasures
223	Move prohibit (MON)	The actuator movement was operated during the monitor mode. Operate the movement after changing to the teaching mode.
224	Data Edit Prohibited Operation Status	It is the operation status that editing data is prohibited. Conduct release to set the operation status to "Standby" before editing.
225	Transmitted message-related error	There was an error while generating a sending message. (e.g.) The version of a teaching pendant is old Program error of a teaching pendant
226	Enable Circuit Open	<ol> <li>The contact connected to ENB Line is open. Revise the circuit and wirings.</li> <li>The dead man's switch at the back of the main unit is not at the middle position. Grip the dead man's switch till it gets to the middle position.</li> <li>There is an alarm generated in the gateway of R-Unit. Release the alarm of the gateway.</li> </ol>
301	Overrun error	Abnormality occurred on the serial communication with the controller
302	Framing error	1) The controller connection cable may be open.
303	Parity error	<ul><li>Check the connection cable for wrong wiring or wire breakage.</li><li>2) The controller connection cable connector may</li></ul>
304	SCI Recieve-Que overflow	be inserted improperly. Securely insert the connection cable connector.
305	SCI Send-Que overflow	<ul><li>3) Garbled data could occur due to the influence of noise.</li></ul>
306	Recieve-Buffer overflow	Review the wiring run, installation, etc. so that the noise does not influence them.
308	Response time out	<ol> <li>In the control of multiple units with the serial communication, the slave station number could be duplicated.</li> </ol>
30A	Packet Recieve-Que overflow	Change the number so that the slave station number is not duplicated.
30B	Packet Send-Que overflow	If still having trouble, consult us.



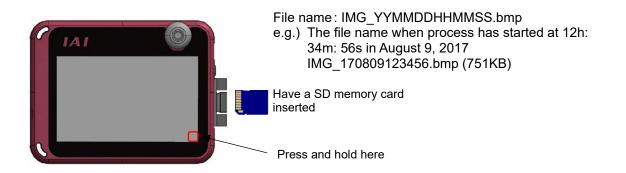
Code	Message	Contents, occurring cases, and countermeasures
30C	Not connected	<ul> <li>The axis number of the controller cannot be recognized.</li> <li>1) The version of the teaching pendant is old and not applicable for the connected controller. Check the latest version in the IAI homepage and have the version updated following the procedures in "10.2 Teaching Update" if the version is old.</li> <li>2) The controller may not be functioning properly. Check that the RDY lamp of the controller is lighted. If the lamp is not lighted, the controller is broken down.</li> <li>3) The communication lines (SGA/SGB) of the provided cable could break. Replace to a spare teaching pendant or replace with a PC to see if the problem solves.</li> <li>4) If a SIO converter is used, the link cable could not be connected, though the power, 24 V, is supplied to the converter. Supply the power after connecting the link cable between the converter and the controller.</li> <li>5) The same number could be mistakenly set by the ADRS switches under the condition that multiple controllers are connected. Do not duplicate the settings of the ADRS switches.</li> </ul>
30D	Recieve exept responce	The abnormal response was returned from the controller. (This may be a temporary abnormality caused by noise, etc.) If the condition occurs frequently, check the cables, noise elimination measures taken on the power supply, etc.
320	Both CON and SEP are detected	CON-related and SEP-related controllers are on the same communication line. (Example) Axis number 0: PCON-CA, axis number 1: if PSEP is linked

### **ROBO** CYLINDER

# 10. Appendix

#### 10.1 Screenshot

The capture of the displayed screen (screenshot) can be saved in the SD memory card. When capturing a screenshot, press and hold on the right bottom of the screen for approximately two seconds while a SD memory card is inserted. After making a "pip" sound, screenshot saving process starts. (The sound will not be made if the touch operation sound is set off.) The saved file name will be displayed on the screen for three seconds when the saving is complete.



Domain to Save Data (cannot be changed)

The domain that the screenshot data is saved is the folder stated below in a SD memory card. \TB\_CON\ScreenShot\

#### [Caution]

- 1. The saving process takes approximately 10 seconds at the maximum.
- 2. During the saving process, the monitor display (such as the current position) on the screen does not get updated.
- 3. There are some windows that you cannot get screenshots.

Warning: As keys do not work on the screen during saving process, **emergency stop will not work by keys**. Do not attempt to use this feature when an actuator is operated (continuous movement, simple program, etc.) from the teaching.



#### 10.2 Teaching Update

The software in TB-03 can be updated using a SD memory card. Also, in case the menu window of TB-03 would not be displayed due to a failure in updating for reasons such as the power got shut during updating process, it is available to make a recovery by having a compulsory update.

(Note) This update should update the software of TB-03. It should not update the softwares of ELECYLINDER or each controller. This update should update all the softwares of TB-03 for ELECYLINDER (for wireless link and wired link)/ROBO PUMP/CON/SEP/MEC/SEL regardless of connection status. Update takes approximately 35 minutes.

Normal Update

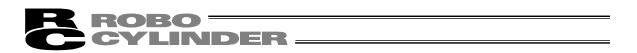
- ELECYLINDER : Perform "10.2.1 How to Update when ELECYLINDER and ROBO PUMP Connected"
- ROBO PUMP : Perform "10.2.1 How to Update when ELECYLINDER and ROBO PUMP Connected"
- CON System
   : Perform "10.2.2 How to Update when CON System Controller Connected"
- SEP System : Perform "10.2.3 How to Update when SEP System Controller Connected"
- MEC System
   : Perform "10.2.4 How to Update when MEC System Controller Connected"
- When Alarm Generated : Perform "10.2.5 How to Update when Alarm Code 30C Displayed"
   Compulsory Update
   : Perform "10.2.6 How to Compulsorily Update (in Common for All Models)"

#### Preparation

The same updating file as TB-02 should be used for TB-03.

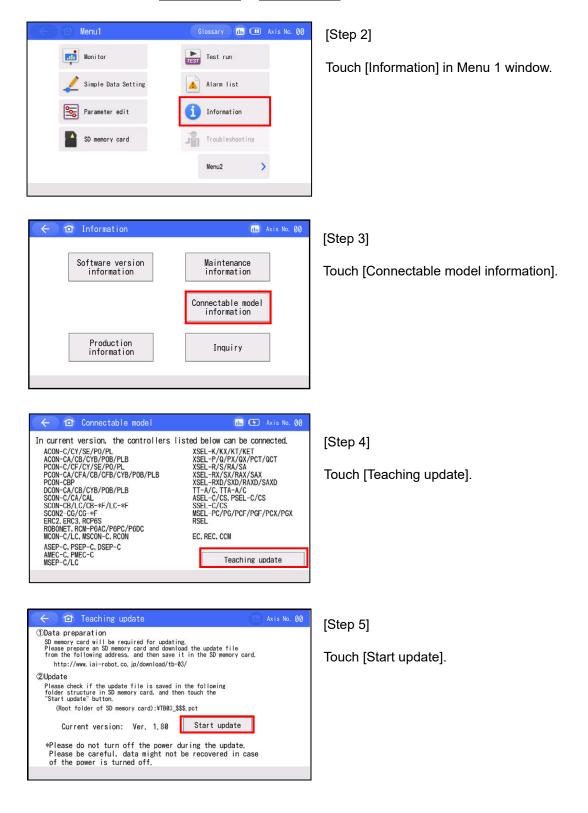
- Preparation 1 Prepare a SD memory card or a SD High-Capacity memory card with 1GB to 32GB formatted in FAT32 (hereafter described as a SD memory card).
- Preparation 2 Access homepage http://www.iai-robot.co.jp/download/tb-02/ and download the TB-02/03 update file TB02\_\$\$\$.zip and unzip it. (\$\$\$ should be replaced by the version number in three digits.)
- Preparation 3Copy the unzipped update file TB02\_\$\$\$.pct to the root folder of the SD memory<br/>card. (\$\$\$ should be replaced by the version number in three digits.)<br/>(Note) Update cannot be conducted if there are two or more update files in the root<br/>folder.
- Preparation 4 Take the SD memory card cover is open, and insert a SD memory card while the power to TB-03 is off. [Refer to 1.4 How to Set in/out SD Memory Card.]

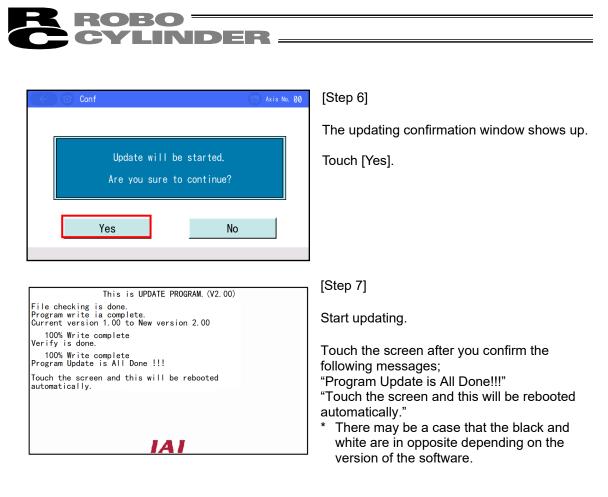
#### Preparation 5 Supply power to the controller to which TB-03 is connected and start up TB-03.



#### 10.2.1 How to Update when ELECYLINDER and ROBO PUMP Connected

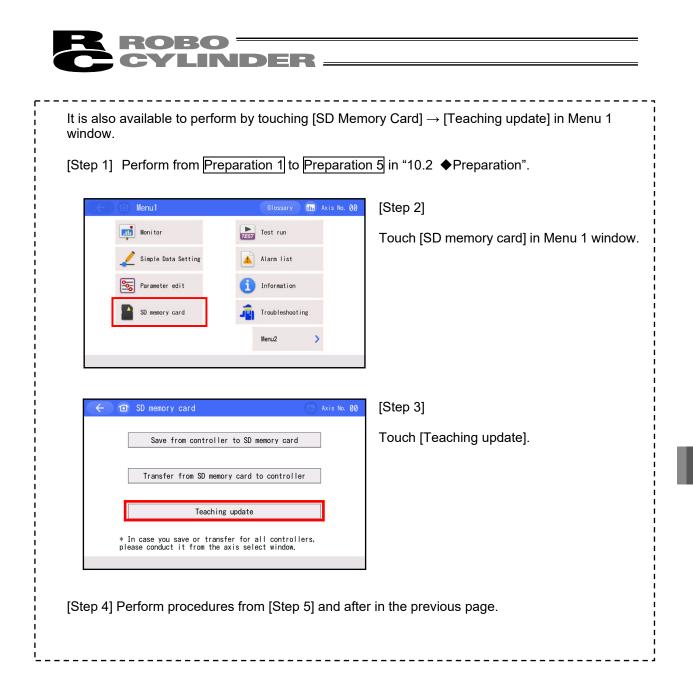
- (Note) Refer to "10.2.5 No Connected Axis Error (Alarm Code 30C)" if Alarm Code 30 gets shown after the power is turned on.
- [Step 1] Perform from Preparation 1 to Preparation 5 in "10.2 Preparation".

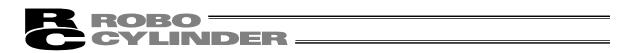




TB-03 will start up in the new version.

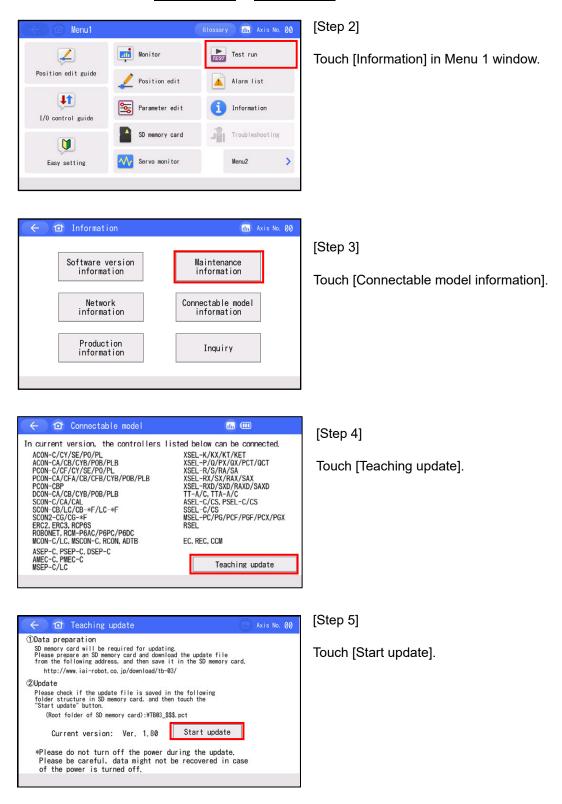
A Caution: Do not attempt to turn off the power to TB-03 while in updating.

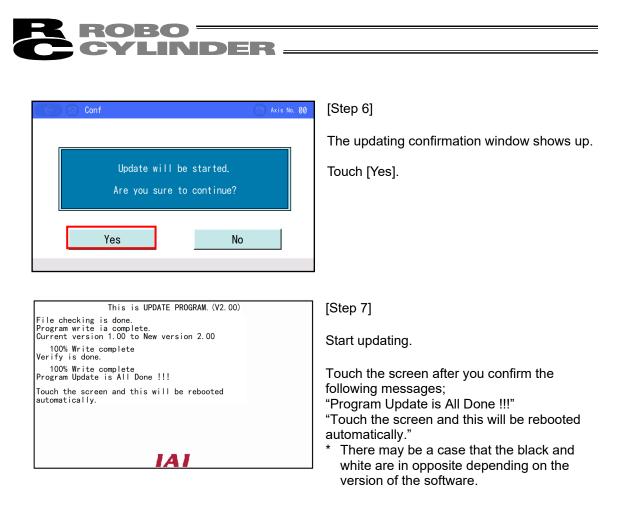




#### 10.2.2 How to Update when CON System Controller Connected

- (Note) Refer to "10.2.5 No Connected Axis Error (Alarm Code 30C)" if Alarm Code 30 gets shown after the power is turned on.
- [Step 1] Perform from Preparation 1 to Preparation 5 in "10.2 Preparation".





TB-03 will start up in the new version.

window.			emory Card] $\rightarrow$ [Teaching update] in Menu 1 tion 5 in "10.2 $\blacklozenge$ Preparation".
( e) @ Menu1		Glossary dln Axis No. 00	[Step 2]
Position edit guide	Monitor Position edit Position edit Parameter edit SD memory card Servo monitor	Test run         Alarm list         Information         Troubleshooting         Menu2	Touch [SD memory card] in Menu 1 window
← 🗗 SD memor	y card	(iii) Axis No. 00	[Step 3]
	from controller to SD m r from SD memory card t		Touch [Teaching update].
	Teaching update save or transfer for a t it from the axis sele		



#### 10.2.3 How to Update when SEP System Controller Connected

[Step 1] Perform from Preparation 1 to Preparation 5 in "10.2 Preparation".

SEP menu	Axis No. 00
Monitor	Position setting
Information	Initial setting
Alarm list	Data backup
Change ax.	

[Step 2]

Touch [Information] in SEP Menu window.

Information menu		Axis	No.	00
	Setting confirmation			
	Version information			
	Production information			
	Inquiry			
Menu				

[Step 3]

Touch [Version information].

Series / Type	MPSEP
Controller version	AE280004
Controller core version	AE880000
TP version	Ver. 1.20
TP core version	Ver. 1.00

#### [Step 4]

Touch [Teaching update].

Conf			Axis No.	00
	Update will	be started.		
	Are you sure	to continue?		
	Ale you sule	to continue:		
	Yes	No		

#### [Step 5]

The updating confirmation window shows up.

Touch [Yes].



This is UPDATE PROGRAM. (V2.0	0)
File checking is done. Program write ia complete. Current version 1.00 to New version 2.00	
100% Write complete Verify is done.	
100% Write complete Program Update is All Done !!!	
Touch the screen and this will be rebooted automatically.	
IAI	

[Step 6]

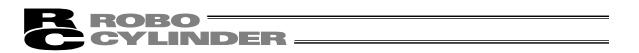
Start updating.

Touch the screen after you confirm the following messages; "Program Update is All Done !!!" "Touch the screen and this will be rebooted automatically."

\* There may be a case that the black and white are in opposite depending on the version of the software.

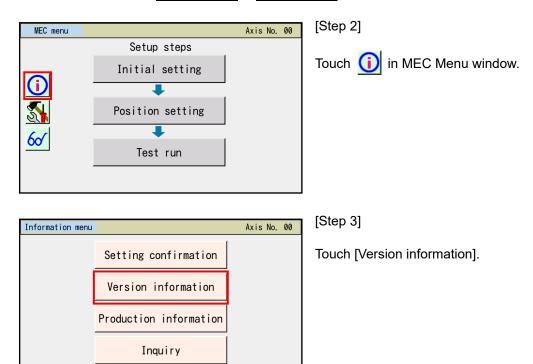
TB-03 will start up in the new version.

Caution: Do not attempt to turn off the power to TB-03 while in updating.



#### 10.2.4 How to Update when MEC System Controller Connected

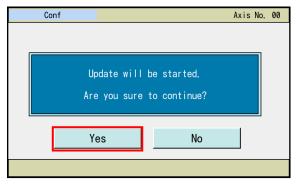
[Step 1] Perform from Preparation 1 to Preparation 5 in "10.2 Preparation".



Version information	Axis No. 00
Series / Type	PMEC-NP
Controller version	AE210003
Controller core version	AE840001
TP version	Ver. 1.20
TP core version	Ver. 1.00
MEC panel version	A5000002
MEC panel board core ver.	A5800000
Menu	Teaching update

#### [Step 4]

Touch [Teaching update].



#### [Step 5]

The updating confirmation window shows up.

Touch [Yes].

Menu



This is UPDATE PROGRAM. (V2.00)
File checking is done. Program write ia complete. Current version 1.00 to New version 2.00
100% Write complete Verify is done.
100% Write complete Program Update is All Done !!!
Touch the screen and this will be rebooted automatically.

IAI

[Step 6]

Start updating.

Touch the screen after you confirm the following messages; "Program Update is All Done !!!" "Touch the screen and this will be rebooted

automatically."
\* There may be a case that the black and white are in opposite depending on the version of the software.

TB-03 will start up in the new version.

A Caution: Do not attempt to turn off the power to TB-03 while in updating.



#### 10.2.5 How to Update when Alarm Code 30C Displayed

[Step 1] Perform from Preparation 1 to Preparation 5 in "10.2 Preparation".

$(\leftarrow)$ (d) Troub	leshooting	Glossary	💷 Axis No.
Alarm display Al	arm list Check mod	del num. Inquiry	]
•Alarm descript.			
Alarm code	30C	Alarm level	Message
Name No Connec	table Axis Error		
Or, the fi		cted controller was aching tool is not a	
	Adrs:	Time(yy/mm/dd hh:mm:ss)	)
How to de	al	Reconnection	

#### [Step 2]

While the alarm display window (Alarm: 30C) is being displayed, touch [How to deal].

Alarm display Alarm list Check mod	el num, Inquiry	
Troubleshooting 1 [Cause Classification] 1/3	(30C:No Connectab	le Axis Error)
following items could be the cause. Please	take a measure correspo	nding to each item.
<ol> <li>The firmware of this teaching tool is for the connected controller.</li> <li>The controller to be connected is one</li> </ol>		Count.m.
RCS-E, P-Driver, and ERC.		Count.m.
(3) The SIO converter is connected to seve	ral controllers. the SIO conver	ter 📂 Count.m.
	Reconnection	See other factors

#### [Step 3]

Touch an applicable [Count.m].

Alarm display Alarm list Ch	neck model num. Inquiry
Troubleshooting [Countermeasure (1)]	(30C:No Connectable Axis Error)
[Cause] The firmware of this teaching for the connected controller.	ng tool is not applicable
[Countermeasure] The version of the teaching pendant the connected controller. Check the version of the teaching p The data for version upgrade can be	
[URL]https://www.intelligentactuato	or.com/
Lone Juripa.// www. Interingentactuato	
Low Jurips.// www. Interingentactuato	Connectable mode information

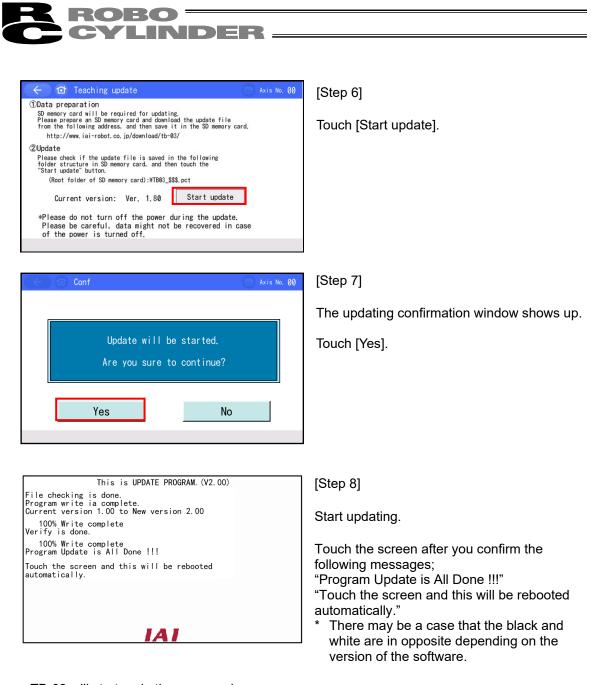
# ← Connectable model In current version, the controllers listed below can be connected. ACON-C/CY/SE/PO/PL ACON-C/CY/SE/PO/PL PCON-C/CF/CY/SE/PO/PL PCON-CA/CB/CYB/POB/PLB PCON-C/CF/CYB/POB/PLB PCON-C/CB/CYB/POB/PLB SCON-CA/CB/CYB/POB/PLB SCON-C/CA/CB/CYB/POB/PLB SCON-C/C/CA/CB SCON-C/CB/CB/CYB/POB/PLB SCON-C/CA/CB SCON-C/CA/CAL SCON-C/CA/CAL SCON-C/C/CB/CYB-#F/LC-\*F SCON-CB/C/CB-\*F BROBNET, RCM-P6AC/P6PC/P6DC MICO-C/LC, MISCON-C, RCON, ADTB ASEP-C, PSEP-C, DSEP-C AMEC-C, PMEC-C MISEP-C/LC

#### [Step 4]

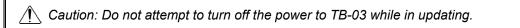
Touch [Connectable model information].

#### [Step 5]

Touch [Teaching update].



TB-03 will start up in the new version.

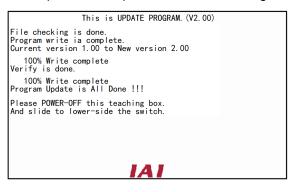




10.2.6 How to and Compulsorily Update (in Common for All Models)

Follow the procedures below to update again in case the menu window of TB-03 would not be displayed due to a failure in updating for reasons such as the power got shut during updating process.

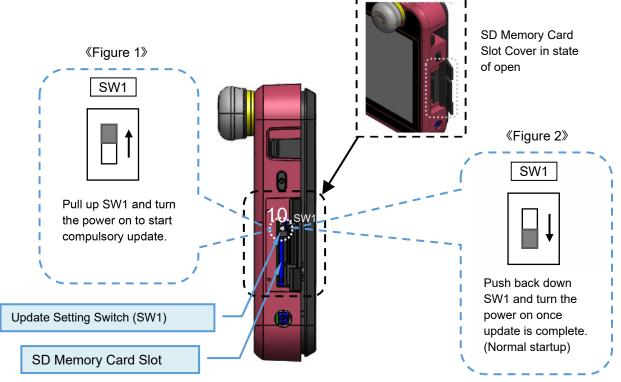
- [Step 1] Perform from Preparation 1 to Preparation 4 in 10.2 ◆Preparation. (Turning the power on in Preparation 5 should be performed in [Step 3].)
- [Step 2] Slide the update setting switch on the SD memory card slot (hereafter described as SW1) upward (to the side opposite the SD memory card slot). «Refer to Figure 1»
- [Step 3] Follow Preparation 5 in ◆Preparation to turn on the power to TB-03. Once the power gets supplied, updating process starts without any confirmation window.
- [Step 4] Once the update is complete, a window showing "Program Update is All Done !!!" appears.



There may be a case that the black and white are in opposite depending on the version of the software.

[Step 5] Shut (turn off) the power slide SW1 downwards (towards the SD memory card), and then supply (turn on) the power again. «Refer to Figure 2»

TB-03 will start up in the new version.





# 10.2.7 Troubleshooting

Condition	Considerable Cause	Check Items and Counteractions
[Teaching Update] or [Start Updating] is not active (grayed out) and cannot touch it.	<ol> <li>No memory card is inserted (or can be identified).</li> <li>There is no update file found in the route folder of the memory card.</li> <li>There are several update files found in the route folder of the memory card.</li> </ol>	<ol> <li>Make sure that a SD memory card with 1GB to 32GB capacity formatted in FAT32 is firmly inserted.</li> <li>Check that there is one file existed in the route folder of the memory card named "TB02_\$\$\$.pct" (three digits of version number come in \$\$\$).</li> </ol>
Display appears stating "Software is not installed." when the power gets turned on.	Software in normal condition is not written due to a reason such as failure in update.	Perform compulsory update. Refer to [10.2.6 How to and Compulsorily Update]
Display appears stating "File Format Error (Check sum Error)" at the start of update.	"TB02_\$\$\$.pct" saved in the memory card is either not an update file or destroyed.	Save the update file again and try updating again.
Display appears stating "SD Card Access NG !!! " at the start of update.	The memory card is inappropriate.	Try another memory card and update.
There is nothing shown on the screen after more than 1 minute passed after the update has started.	There is nothing shown on the screen after more than 1 minute passed after the update has started.	<ul> <li>[Process for Recovery]</li> <li>1. Take out the memory card.</li> <li>2. Turn the power off.</li> <li>3. Conduct the compulsory update. Refer to [10.2.6 How to and Compulsorily Update]</li> </ul>
Display appears stating "Update_Appl_WrteFROM NG !!!" during updating process.	The memory card was taken out during updating process.	Do not attempt to take out the memory card till updating is complete.
Display appears stating "SD Card Not Inserted !!!" at the start of compulsory update.	No memory card is inserted (or can be identified).	Make sure that a SD memory card with 1GB to 32GB capacity formatted in FAT32 is firmly inserted.
Display appears stating "File not found. !!! " at the start of compulsory update.	<ol> <li>There is no update file found in the route folder for the memory card.</li> <li>There are several update files found in the route folder of the memory card.</li> </ol>	Check that there is one file existed in the route folder of the memory card named "TB02_\$\$\$.pct" (three digits of version number come in \$\$\$).

## **ROBO** CYLINDER

# 11. Warranty

#### 11.1 Warranty Period

One of the following periods, whichever is shorter:

- 18 months after shipment from our company
- 12 months after delivery to the specified location

#### 11.2 Scope of Warranty

Our products are covered by warranty when all of the following conditions are met. Faulty products covered by warranty will be replaced or repaired free of charge:

- (1) The breakdown or problem in question pertains to our product as delivered by us or our authorized dealer.
- (2) The breakdown or problem in question occurred during the warranty period.
- (3) The breakdown or problem in question occurred while the product was in use for an appropriate purpose under the conditions and environment of use specified in the Instruction Manual and catalog.
- (4) The breakdown or problem in question was caused by a specification defect or problem, or by a quality issue with our product.

Note that breakdowns due to any of the following reasons are excluded from the scope of warranty:

- Anything other than our product
- Modification or repair performed by a party other than us (unless we have approved such modification or repair)
- Anything that could not be easily predicted with the level of science and technology available at the time of shipment from our company
- A natural disaster, man-made disaster, incident or accident for which we are not liable
- Natural fading of paint or other symptoms of aging
- Wear, depletion or other expected result of use
- Operation noise, vibration or other subjective sensation not affecting function or maintenance

Note that the warranty only covers our product as delivered and that any secondary loss arising from a breakdown of our product is excluded from the scope of warranty.

#### 11.3 Honoring the Warranty

As a rule, the product must be brought to us for repair under warranty.

#### 11.4 Limited Liability

- (1) We shall assume no liability for any special damage, consequential loss or passive loss such as a loss of expected profit arising from or in connection with our product.
- (2) We shall not be liable for any program or control method created by the customer to operate our product or for the result of such program or control method.

# 11.5 Conditions of Conformance with Applicable Standards/Regulations, Etc., and Applications

NDER

- (1) If our product is combined with another product or any system, device, etc., used by the customer, the customer must first check the applicable standards, regulations and/or rules. The customer is also responsible for confirming that such combination with our product conforms to the applicable standards, etc. In such a case we will not be liable for the conformance of our product with the applicable standards, etc.
- (2) Our product is for general industrial use. It is not intended or designed for the applications specified below, which require a high level of safety. Accordingly, as a rule our product cannot be used in these applications. Contact us if you must use our product for any of these applications:
  - · Medical equipment pertaining to maintenance or management of human life or health
  - A mechanism or mechanical equipment intended to move or transport people (such as a vehicle, railway facility or aviation facility)
  - · Important safety parts of mechanical equipment (such as safety devices)
  - · Equipment used to handle cultural assets, art or other irreplaceable items
- (3) Contact us at the earliest opportunity if our product is to be used in any condition or environment that differs from what is specified in the catalog or Instruction Manual.

#### 11.6 Other Items Excluded from Warranty

The price of the product delivered to you does not include expenses associated with programming, the dispatch of engineers, etc. Accordingly, a separate fee will be charged in the following cases even during the warranty period:

- Guidance for installation/adjustment and witnessing of test operation
- Maintenance and inspection
- Technical guidance and education on operating/wiring methods, etc.
- Technical guidance and education on programming and other items related to programs



# Change History

Revision Date	Description of Revision	
September 2017	First Edition	
August 2018	<ul> <li>Second Edition</li> <li>Applicable for RCON System</li> <li>Confirmation of Product: Correction made to model codes for program controller cables</li> <li>1.12 Battery-Charging Related Specifications: Descriptions revised</li> <li>2.1, 2.2 Note added for cable minimum bending radius</li> <li>9.2 Time for teaching update revised</li> </ul>	
October 2018	<ul> <li>Third Edition</li> <li>Models added for ELECYLINDER supported</li> <li>6.6.2, 6.14 Figure for Maintenance Information Screen swapped, description revised</li> <li>6.7.3 Manual Mode added</li> <li>6.8 Figure for Parameter Edit Screen swapped</li> <li>Correction made</li> </ul>	
November 2018	Edition 3B • Data Setter changed to (Touch Panel) Teaching Pendant • 2.2 Connection cable wiring diagram deleted	
February 2019	Edition 3C <ul> <li>Models added for ELECYLINDER supported</li> </ul>	
May 2019	<ul> <li>Fourth Edition</li> <li>Models added for ELECYLINDER supported</li> <li>3.9.1.1, 3.9.1.3, 3.18, 6.6.1, 6.15 Selection of with or without ripple compensation added to display of current/current ratio</li> <li>3.9.1.1, 3.9.1.3, 3.26.1.1, 3.26.1.2 STO/SS1-t condition displayed for STO/SS1-t type SCON</li> <li>6.7.3 [Servo OFF] and [Brake rel.] buttons added in ELECYLINDER Simple Data Setting Screen</li> </ul>	
July 2020	<ul> <li>Fifth Edition</li> <li>Models added for supported</li> <li>1.1.2 Instruction manuals related to this product stored in DVD added</li> <li>3.2, 3.16.6 Encoder Cable Length Setting added</li> <li>3.17.1, 3.19.1, 3.25.4.1, 3.26.4.1, 6.16.1 Change made to figure for teaching numeric key pad</li> <li>Chapter 4 Update and change made to SEP system controllers operation teaching figures</li> <li>Chapter 5 Update and change made to MEC system controllers operation teaching figures</li> <li>6.2, 6.5, 6.16, 6.13.3 Operating noise adjustment added</li> <li>6.6.2, 6.7 Descriptions added and changed related to rotary type</li> <li>6.7.2 Description added for pressing operation</li> <li>6.7.4 Loading Posture Setting / Payload Setting added</li> <li>Correction made, terms integrated, change made to teaching figures</li> </ul>	



Revision Date	Description of Revision	
November 2020	<ul> <li>Sixth Edition</li> <li>Caution note added for supported models</li> <li>1.1.4 TB-03E added in how to read model code plate</li> <li>3.5 Change made to explanation of menu screen</li> <li>3.2, 4.2, 5.2, 6.2 Change made to operation axes in Menu 2 and names of operation screens</li> <li>3.10.3, 6.5 Change made to [Change operating axis] in Menu 2 and names of operation screens</li> <li>3.12.1, 3.12.2 Change made to button explanation sentences</li> <li>7.3 Applicable for Gateway Parameter Setting Tool RCON Motion</li> <li>30C of error display, Message of Contents, example of occurrence and countermeasure added</li> <li>Correction made, change made to teaching window</li> </ul>	
April 2021	<ul> <li>Edition 6B</li> <li>Models added for ELECYLINDER supported</li> <li>Change made to [Change vel] content in 6.9.2 Position Movement Operation</li> <li>Terms integrated</li> </ul>	
May 2021	Seventh Edition • Supported models added • PCON-CBP/CGBP added • Correction made	
April 2022	Edition 7B • Supported models added • 1.11.2 Correction made in how to read model code • 6.13.3 Comment added in Operation Noise Tuning	
June 2022	<ul> <li>Edition 7C</li> <li>Image of window swapped</li> <li>Supported models added, Correction made</li> <li>1.8 Description revised regarding built-in battery</li> <li>6.7.4 Descriptions added for Payload Setting Not Applicable Model</li> <li>6.13 Description revised regarding Other Setting</li> </ul>	
August 2022	Edition 7D • Supported models added	



Revision Date	Description of Revision
July 2023	Edition 7E • Models change and added for ELECYLINDER supported • 1.1.2 [ELECYLINDER Electricity Section Instruction Manual] added • 1.5.2 [Caution] added • 6.7 Change made to Simple Data Setting content • 6.7.5 Auto servo OFF added • 7.3.1 [Step1] "MAC Address" to the network setting screen addde • 9.2 Black and white display change of the update start screen image • 9.2.5 Partially changed the Step
November 2023	<ul> <li>Eighth Edition</li> <li>SCON2 controller applied for functional safety unit</li> <li>The table of supported models of ELECYLINDER is integrated with the description of SEL system.</li> <li>1.11, 2.3 to 2.5, Chapter 8 The table of supported models of ELECYLINDER is integrated with the description of SEL system.</li> <li>3.9.2 Brake equipment setting change feature added in maintenance data window</li> <li>3.12 Alarm rest feature added in trial run window</li> <li>3.27 Drive Recorder Feature added</li> <li>6.9 Alarm rest feature added in trial run window</li> <li>From Chapter 8 onward, moved the chapter number forward.</li> <li>10.1.2 Message Code 225 added</li> <li>Correction made, terms integrated</li> </ul>
March 2024	<ul> <li>Edition 8B</li> <li>1.11.3 Revised the basic specifications of the actuator drive power supply unit.</li> <li>1.11.8 Accessaries for ADTB-PEC added</li> <li>3.10.2 Collision Detection Feature added</li> <li>Chapter 3 Insufficient information added, description content revised</li> <li>Chapter 6 Insufficient information added, description content revised</li> <li>Chapter 9 Information added in No. 202, 205 and 206</li> <li>Correction made, terms integrated</li> </ul>
June 2024	Edition 8C • 1.1.2 Instruction Manual Related to This Product added • 6.7 Note added related to grip force of ELECYLINDER 3-finger gripper



Revision Date	Description of Revision	
August 2024	Ninth Edition         • Applicable for ROBO PUMP Standard type (RP-VPM)         • Supported models of ELECYLINDER added.         • 3.5, 6.5       Stop status icon display on screen added         • 9.1.2       Message No. 131,150,212,213,224,226 added.         Deleted for Message No. 181.182, Contents changed for 160 to 186         • 10.2       Time for teaching update revised.         • Correction made, terms integrated.	
March 2025	<ul> <li>Edition 9B</li> <li>Became applicable for 3 position mode specification (option model code MF) of ELECYLINDER</li> <li>6.7 Caution contents added for ELECYLINDER 3-finger gripper</li> <li>6.7.4 GRBP□(W) and GRTR□ added to subject models not applicable for payload setting</li> </ul>	
April 2025	Tenth Edition • Applicable for Wire Cylinder • Supported models of ELECYLINDER added • 6.7 Simple Data Setting Window description revised for unit switchover • 6.7 Caution contents chenged for ELECYLINDER 3-finger gripper • Correction made	



# **IAI** Corporation

Head Office: 1210 Ihara Shimizu-KU Shizuoka City Shizuoka 424-0114, Japan TEL +81-54-364-5105 FAX +81-54-364-2589 website: www.iai-robot.co.jp/

# IAI America, Inc.

Head Office: 2690 W. 237th Street, Torrance, CA 90505 TEL +1-310-891-6015 FAX +1-310-891-0815 Chicago Office: 110 East State Parkway, Schaumburg, IL 60173 TEL +1-847-908-1400 FAX +1-847-908-1399 Atlanta Office: 1220 Kennestone Circle, Suite 108, Marietta, GA 30066 TEL +1-678-354-9470 FAX +1-678-354-9471 website: www.intelligentactuator.com

Technical Support available in Europe

## IAI Industrieroboter GmbH

Ober der Röth 4, D-65824 Schwalbach am Taunus, Germany TEL +49(0)6196-88950 FAX +49(0)6196-889524 website:www.iai-automation.com

Technical Support available in Great Britain



Duttons Way, Shadsworth Business Park, Blackburn, Lancashire, BB1 2QR, United Kingdom TEL +44(0)1254-685900 website: www.lcautomation.com

# IAI (Shanghai) Co., Ltd.

SHANGHAI JIAHUA BUSINESS CENTER A8-303, 808, Hongqiao Rd. Shanghai 200030, China TEL+86-21-6448-4753 FAX +86-21-6448-3992 website: www.iai-robot.com

# IAI Robot (Thailand) Co., Ltd.

825 PhairojKijja Tower 7th Floor, Debaratana RD., Bangna-Nuea, Bangna, Bangkok 10260, Thailand TEL +66-2-361-4458 FAX +66-2-361-4456 website:www.iai-robot.co.th