IAI
Quality and Innovation

**Low/Medium Push Force Rod Type
Pulse Press Models with Load Cell**
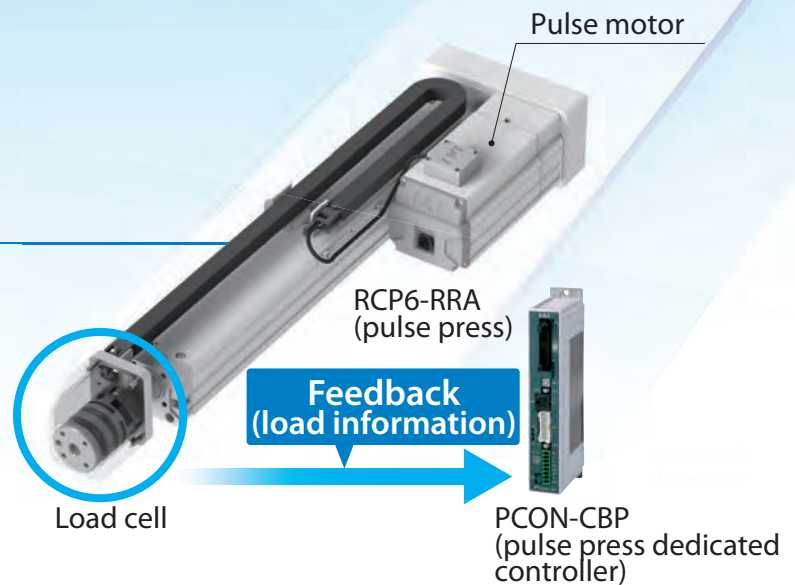
RCP6 RRA4/6/7R-LCT

**Actuator compatible with
presses that allows for simple power control**

IAI's new
pulse press!

Pulse motor

■ What is a pulse press?

A pulse press is an actuator combining a
stepper motor and load cell, that is
capable of performing power control.
It provides a loading repeatability of
±1.0% F.S. (full scale), based on feedback
from the load cell.

RCP6-RRA
(pulse press)

**Feedback
(load information)**

POINT

F.S. : Full Scale
        Maximum measurable value

Load cell

PCON-CBP
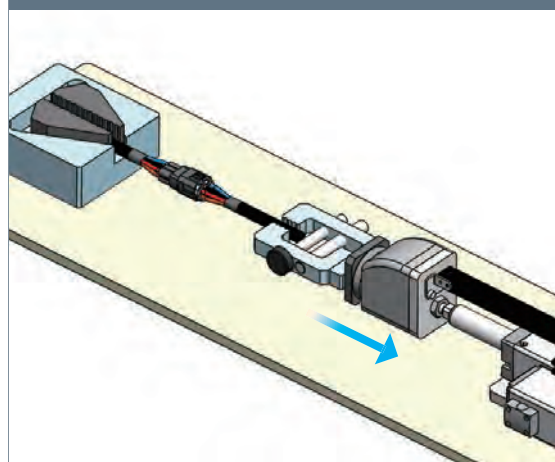(pulse press dedicated
controller)

1 Capable of both pushing and pulling

Both pushing and pulling are supported in the load direction. There are
no limitations on pushing or pulling times.

(Example) Washer press fitting (pushing)
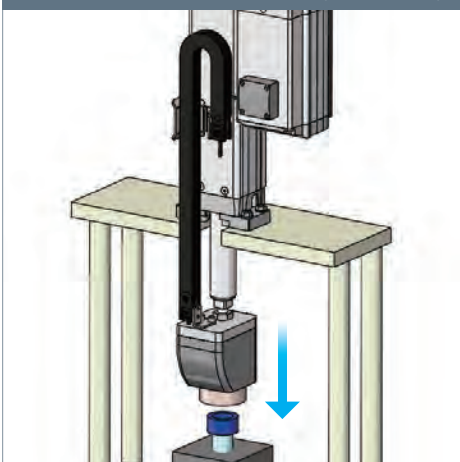
(Example) Wire harness pulling test

Example | System for inspecting air leaks in sweet bread packaging

2 Reasonable cost

Equipped with a pulse motor, it is less than half the cost of an IAI servo press.

3 Lineup

Select from several types based on use (push force from 60N to 2000N).

RCP6-RRA4R	60N~300N
RCP6-RRA6R	60N~600N
RCP6-RRA7R	200N~2000N

Easy setup using a dedicated tool

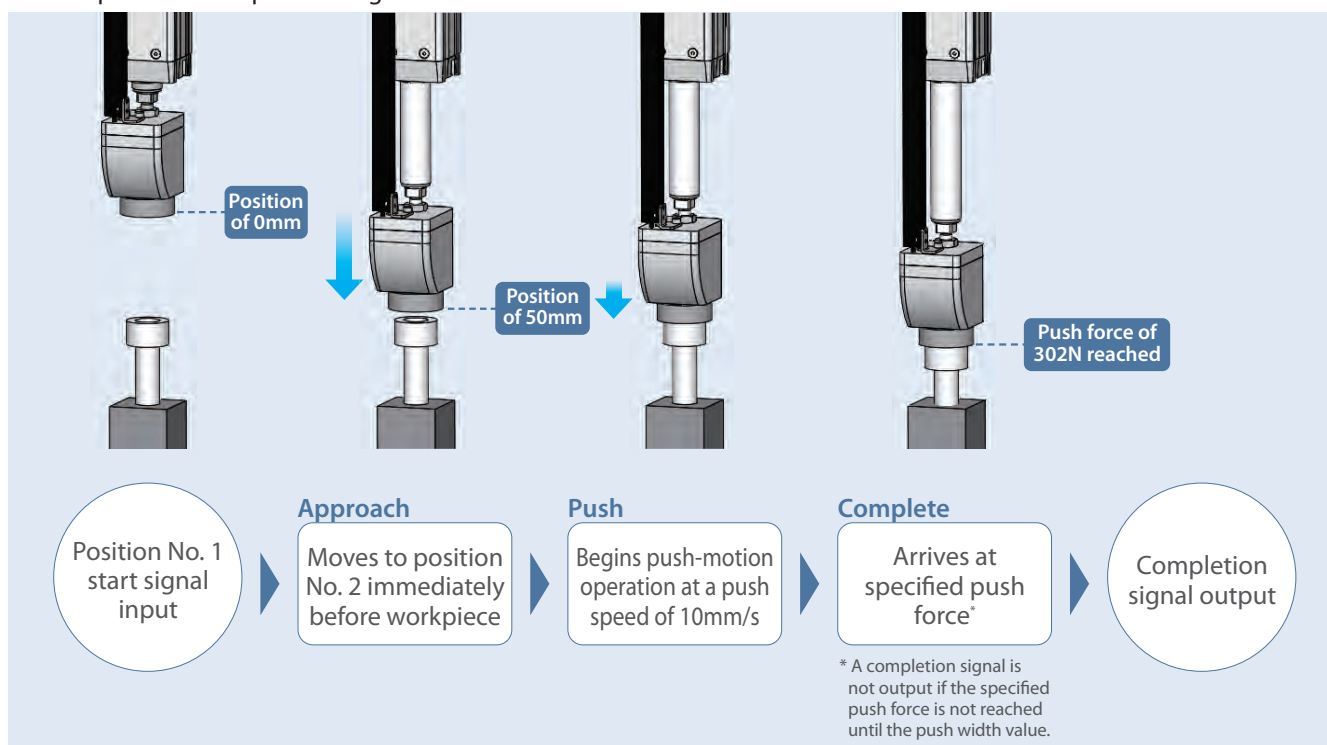**Pushing/pulling can easily be setup using the PC teaching software or teaching pendant.**

■ PC teaching software (screenshot)

Edit position data

No.	Position [mm]	Speed [mm/s]	Acceleration [G]	Deceleration [G]	Operation type (push force [%])	Positioning band [mm] / push band [mm]	Stop position specification method
0							
1	0.00	200.00	0.50	0.50	Positioning	0.10	0: absolute position
2	50.00	200.00	0.30	0.30	Push (30%)	20.00	0: absolute position
3							
4							

Input range: 1 to 60   Converted value: 302 [N]

Operation type (push force [%])   ✕

Select actuator operation type

○ Positioning
   (Move to the coordinate set in the position.)

◉ Push
   (After moving to the coordinate set in the position, push until receiving the load of push force set value.)

Push Force 30 % = 302[N]

Input range: 1 to 60

✔ OK

■ Example of washer press fitting

Position of 0mm

Position of 50mm

Push force of 302N reached

| Position No. 1 start signal input | **Approach** Moves to position No. 2 immediately before workpiece | **Push** Begins push-motion operation at a push speed of 10mm/s | **Complete** Arrives at specified push force* | Completion signal output |

* A completion signal is not output if the specified push force is not reached until the push width value.

3

Model Specification Items

RCP6 – [Type] – WA – [Motor type] – [Lead] – [Stroke] – P3 – [Cable length] – ([Options])

| Series | Type | Encoder | Motor type | Lead | Stroke | Applicable controllers | Cable length | Options |

Type

RRA4R	Side-mounted rod 40mm width
RRA6R	Side-mounted rod 58mm width
RRA7R	Side-mounted rod 73mm width

Encoder

| WA | Battery-less absolute |

Motor type

35P	(RRA4R type) 35□ pulse motor
42P	(RRA6R type) 42□ pulse motor
56P	(RRA7R type) 56□ pulse motor

Lead

2.5	(RRA4R type) Lead 2.5mm
1.5	(RRA6R type) Lead 1.5mm
4	(RRA7R type) Lead 4mm
2	(RRA7R type) Lead 2mm

Applicable controllers

| P3 | PCON-CBP/CGBP |

Cable length

N	No
P	1m
S	3m
M	5m
X□□	Specified length
R□□	Robot cable

Stroke

| (RRA4R type) | | (RRA6R type) | | (RRA7R type) | |
| 110 ～ 310 | 110mm ～ 310mm | 115 ～ 315 | 115mm ～ 315mm | 120 ～ 320 | 120mm ～ 320mm |

(every 50mm)

Options

B	Brake
CJB	Cable exit direction (bottom)
CJO	Cable exit direction (outside)
CJT	Cable exit direction (top)
FL	Flange (front)
FT	Foot bracket
LCT	Equipped with load cell (standard equipment)
ML	Motor side-mounted (left)
MR	Motor side-mounted (right)

*The range of selections varies according to the actuator type.
 Please refer to the pages of each type for details.

Specification Table

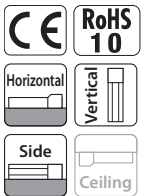| Type	Stroke (mm) and max speed (mm/s)									Lead (mm)	Max. push/ pull force (N)	Payload (kg)		Reference page
	* Length of band = Stroke (*Numbers in band = Maximum speed by stroke)											Horizontal	Vertical	
	110	115	120	- Stroke can be selected in 50mm units -			310	315	320					
RRA4R	200									2.5	300	3	3	P5
RRA6R		110								1.5	600	10	10	P8
RRA7R			160							4	1000	10	10	P11
			85							2	2000	10	10	

RCP6-RRA4R

(Pulse press specification)

| Battery-less Absolute | Side-mounted Motor | Body Width **40** mm | **24**v Pulse Motor |

■ Model Specification Items

| RCP6 | - | RRA4R | - | WA | - | 35P | - | 2.5 | - | | - | P3 | - | | - | |

Series	Type	Encoder type		Motor type		Lead		Stroke		Applicable controllers		Cable length			Option
		WA	Battery-less absolute	35P	Pulse motor 35□ size	2.5	2.5mm	110 ≀ 310	110mm ≀ 310mm (every 50mm)	P3	PCON	N	No		Refer to the options table.
												P	1m		
												S	3m		
												M	5m		
												X□□	Specified length		
												R□□	Robot cable		

CE RoHS 10

| Horizontal | Vertical |
| Side | Ceiling |

(Note) The figure above is the motor side-mounted to left (ML).

P O I N T
Selection Notes

(1) There are no limitations on the continuous push time or continuous pull time.
(2) Continuous operation is possible at a duty ratio of 100%.
(3) Pay close attention to the mounting method of the body. Please refer to P. 17 for details.
(4) Pay close attention to the mounting orientation. Please refer to P. 17 for details.
(5) Please refer to P. 17 for information on load cells.

■ Main Specifications

	Item	Description
Lead	Ball screw lead (mm)	2.5
Horizontal	Payload	Maximum payload (kg) (high-output enabled)	3
		Maximum payload (kg) (high-output disabled)	3
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200
		Rated acceleration/deceleration (G)	0.5
		Max. acceleration/deceleration (G)	0.5
Vertical	Payload	Maximum payload (kg) (high-output enabled)	3
		Maximum payload (kg) (high-output disabled)	3
	Speed / acceleration/ deceleration	Max. speed (mm/s)	200
		Rated acceleration/deceleration (G)	0.5
		Max. acceleration/deceleration (G)	0.5
Push		Max. push force (N)	300
		Min. push force (N)	60
		Max. push speed (mm/s)	10
Pull		Max. pull force (N)	300
		Min. pull force (N)	60
		Max. pull speed (mm/s)	10
Brake		Brake specification	Non-excitation actuating solenoid brake
		Brake holding force (kg)	3
Stroke		Min. stroke (mm)	110
		Max. stroke (mm)	310
		Stroke pitch (mm)	50

Item	Description
Drive system	Ball screw, ø8mm, rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Load cell rated capacity	600N
Loading repeatability (Note 1)	±1.0% F.S. (Note 2)
Ambient operating temperature, humidity	0 ~ 40℃, 85%RH or less (no condensation)
Ingress protection	IP20
Vibration & shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor
Encoder type	Battery-less absolute
Number of encoder pulses	8192 pulse/rev

(Note 1) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity.
(Note 2) F.S.: Full Scale, the maximum measurable value.

Options * Please check the Options reference pages to confirm each option.

Name	Option code	Reference page
Brake (Note 1)	B	14
Cable exit direction (bottom) (Note 1, 2)	CJB	14
Cable exit direction (outside) (Note 1)	CJO	14
Cable exit direction (top) (Note 1)	CJT	14
Flange (front) (Note 1)	FL	14
Foot bracket (Note 2, 3)	FT	15
Equipped with load cell (standard equipment) (Note 4)	LCT	15
Motor side-mounted (left) (Note 5)	ML	15
Motor side-mounted (right) (Note 5)	MR	15

(Note 1) Cable exit direction (CJB/CJO/CJT) and flange (front) (FL) cannot be selected when selecting brake (B) with a stroke of 110mm.
(Note 2) Foot bracket (FT) cannot be selected when selecting cable exit direction (bottom) (CJB).
(Note 3) Please refer to P. 15 for the number of brackets included.
(Note 4) Be sure to enter a selection in the options section of the model number.
(Note 5) Be sure to enter a code in the options section of the model number.

Cable Length

Type	Cable code
Standard type	P (1m)
	S (3m)
	M (5m)
Specified length	X06 (6m) ~ X10 (10m)
	X11 (11m) ~ X15 (15m)
	X16 (16m) ~ X20 (20m)
Robot cable	R01 (1m) ~ R03 (3m)
	R04 (4m) ~ R05 (5m)
	R06 (6m) ~ R10 (10m)
	R11 (11m) ~ R15 (15m)
	R16 (16m) ~ R20 (20m)

Tables of Payload by Speed/Acceleration

■ **High-output setting enabled** (the unit for payload is kg)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.5	0.5
0	3	3
40	3	3
85	3	3
130	3	3
150	3	3
200	3	3

■ **High-output setting disabled** (the unit for payload is kg)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.5	0.5
0	3	3
40	3	3
85	3	3
130	3	3
150	3	3

Stroke and Max Speed

High-output setting	Stroke (mm)				
	110	160	210	260	310
Enabled	200				
Disabled	150				

(Unit: mm/s)

Correlation diagram between push force and push command value
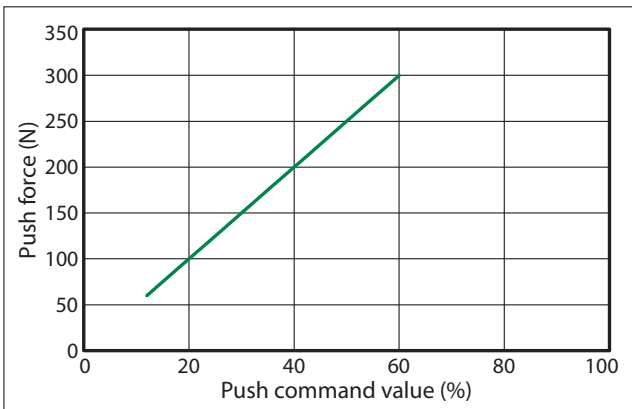
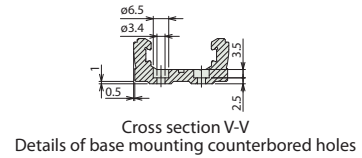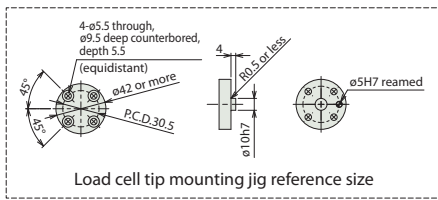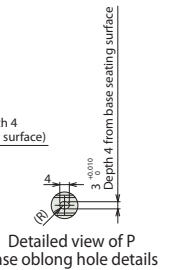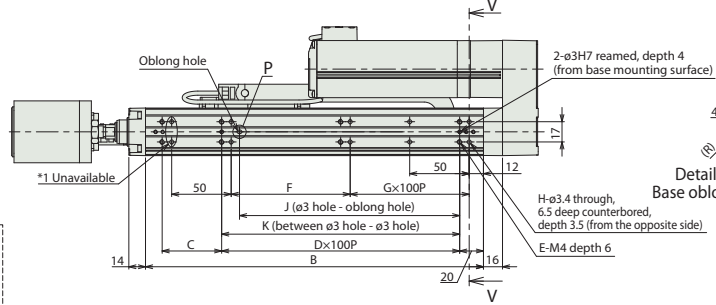### Correlation diagram between pull force and pull command value

RCP6 RoboCylinder

Dimensions

CAD drawings can be downloaded from our website.
www.robocylinder.de

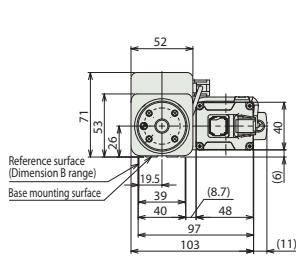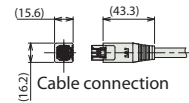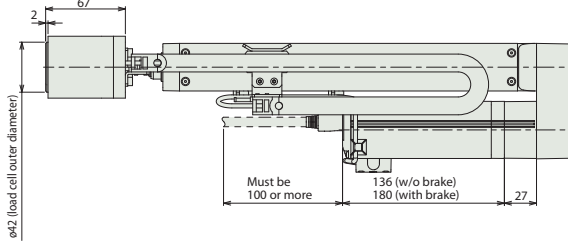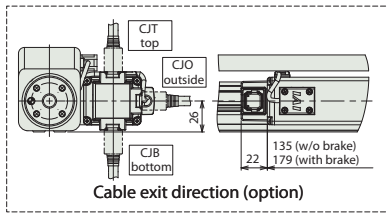2D CAD | 3D CAD
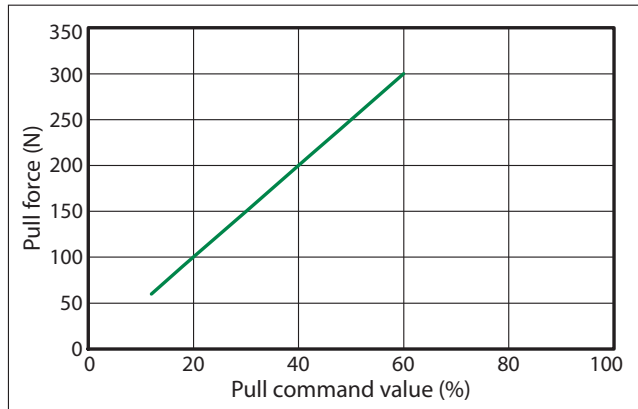
*1   The 2 counterbored mounting holes shown in the figure cannot be used.
(Note) When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.

ST: Stroke
M.E: Mechanical end
S.E: Stroke end

Cable exit direction (option)

Cable connection

Cross section of S-S

Jig mounting dimensions details

Load cell tip mounting jig reference size

Detailed view of P
Base oblong hole details

Cross section V-V
Details of base mounting counterbored holes
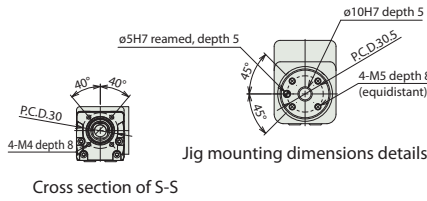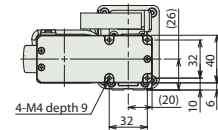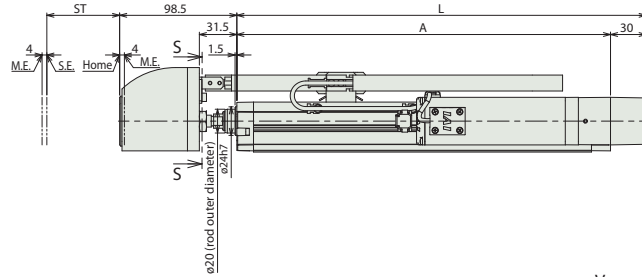
Dimensions by stroke

Stroke	110	160	210	260	310
L	244	294	344	394	444
A	214	264	314	364	414
B	184	234	284	334	384
C	50	100	50	100	50
D	1	1	2	2	3
E	6	6	8	8	10
F	100	50	100	50	100
G	0	1	1	2	2
H	8	10	10	12	12
J	85	85	185	185	285
K	100	100	200	200	300

Mass by stroke

Stroke		110	160	210	260	310
Mass (kg)	Without brake	2.2	2.3	2.4	2.6	2.7
	With brake	2.4	2.5	2.7	2.8	2.9

Applicable Controllers

The actuators on this page can be operated by the controllers indicated below. Please select the type depending on your intended use.

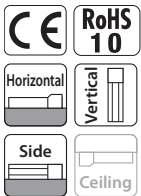| Name	External view	Maximum number of connectable axes	Power supply voltage	Control method														Maximum number of positioning points	Reference page
				Positioner	Pulse-train	Program	Network (*Option)												
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM		
PCON-CBP/ CGBP		1	24VDC	● *Option	-	-	●	●	-	●	●	-	-	●	●	●	-	-	512 (768 for network spec.)	18

(Note)   Please refer to P. 19 for information on network abbreviation codes such as DV and CC.

RCP6-RRA6R

(Pulse press specification)

| Battery-less Absolute | Side-mounted Motor | Body Width **60** mm | **24**v Pulse Motor |

■ Model Specification Items

RCP6 - RRA6R - WA - 42P - 1.5 - [ ] - P3 - [ ] - [ ]

Series	Type	Encoder type	Motor type	Lead	Stroke	Applicable controllers	Cable length	Option
		WA	Battery-less absolute	42P	Pulse motor 42□ size	1.5	1.5mm	115 ≀ 315	115mm ≀ 315mm (every 50mm)	P3	PCON	N	No	Refer to the options table.
										P	1m	
										S	3m	
										M	5m	
										X□□	Specified length	
										R□□	Robot cable	

CE RoHS 10

Horizontal Vertical Side Ceiling

(Note) The figure above is the motor side-mounted to left (ML).

POINT Selection Notes

(1) There are no limitations on the continuous push time or continuous pull time.
(2) Continuous operation is possible at a duty ratio of 100%.
(3) Pay close attention to the mounting method of the body. Please refer to P. 17 for details.
(4) Pay close attention to the mounting orientation. Please refer to P. 17 for details.
(5) Please refer to P. 17 for information on load cells.

Main Specifications

	Item	Description
Lead	Ball screw lead (mm)	1.5
Horizontal	Payload	Maximum payload (kg) (high-output enabled)	10
		Maximum payload (kg) (high-output disabled)	10
	Speed / acceleration/ deceleration	Max. speed (mm/s)	110
		Rated acceleration/deceleration (G)	0.3
		Max. acceleration/deceleration (G)	0.3
Vertical	Payload	Maximum payload (kg) (high-output enabled)	10
		Maximum payload (kg) (high-output disabled)	10
	Speed / acceleration/ deceleration	Max. speed (mm/s)	110
		Rated acceleration/deceleration (G)	0.3
		Max. acceleration/deceleration (G)	0.3
Push	Max. push force (N)	600
	Min. push force (N)	60
	Max. push speed (mm/s)	10
Pull	Max. pull force (N)	600
	Min. pull force (N)	60
	Max. pull speed (mm/s)	10
Brake	Brake specification	Non-excitation actuating solenoid brake
	Brake holding force (kg)	10
Stroke	Min. stroke (mm)	115
	Max. stroke (mm)	315
	Stroke pitch (mm)	50

Item	Description
Drive system	Ball screw, ø10mm, rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Load cell rated capacity	600N
Loading repeatability (Note 1)	±1.0% F.S. (Note 2)
Ambient operating temperature, humidity	0 ~ 40℃, 85%RH or less (no condensation)
Ingress protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor
Encoder type	Battery-less absolute
Number of encoder pulses	8192 pulse/rev

(Note 6) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity.
(Note 7) F.S.: Full Scale, the maximum measurable value.

RCP6 *RoboCylinder*

Options * Please check the Options reference pages to confirm each option.

Name	Option code	Reference page
Brake	**B**	14
Cable exit direction (bottom) (Note 1)	**CJB**	14
Cable exit direction (outside)	**CJO**	14
Cable exit direction (top)	**CJT**	14
Flange (front)	**FL**	14
Foot bracket (Note 1, 2)	**FT**	15
Equipped with load cell (standard equipment) (Note 3)	**LCT**	15
Motor side-mounted (left) (Note 4)	**ML**	15
Motor side-mounted (right) (Note 4)	**MR**	15

(Note 1) Foot bracket (FT) cannot be selected when selecting cable exit direction (bottom) (CJB).
(Note 2) Please refer to P. 15 for the number of brackets included.
(Note 3) Be sure to enter a selection in the options section of the model number.
(Note 4) Be sure to enter a code in the options section of the model number.

Cable Length

Type	Cable code
Standard type	**P** (1m)
	S (3m)
	M (5m)
Specified length	**X06** (6m) ~ **X10** (10m)
	X11 (11m) ~ **X15** (15m)
	X16 (16m) ~ **X20** (20m)
Robot cable	**R01** (1m) ~ **R03** (3m)
	R04 (4m) ~ **R05** (5m)
	R06 (6m) ~ **R10** (10m)
	R11 (11m) ~ **R15** (15m)
	R16 (16m) ~ **R20** (20m)

Tables of Payload by Speed/Acceleration

■ High-output setting enabled (the unit for payload is kg)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.3	0.3
0	10	10
35	10	10
70	10	10
100	10	10
110	10	10

■ High-output setting disabled (the unit for payload is kg)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.3	0.3
0	10	10
35	10	10
80	10	10

Stroke and Max Speed

High-output setting	Stroke (mm)				
	115	165	215	265	315
Enabled	110				
Disabled	80				

(Unit: mm/s)

Correlation diagram between push force and push command value
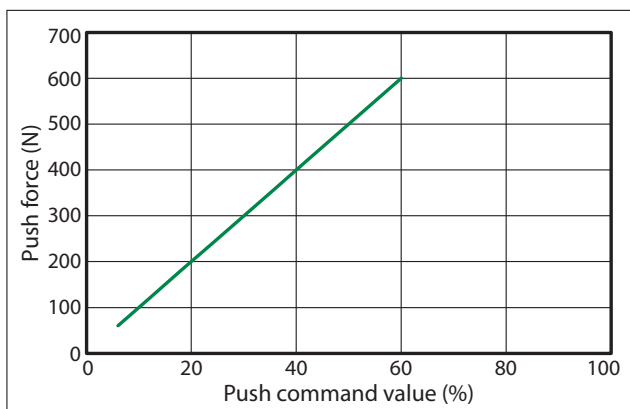
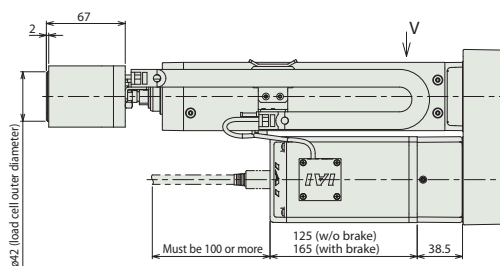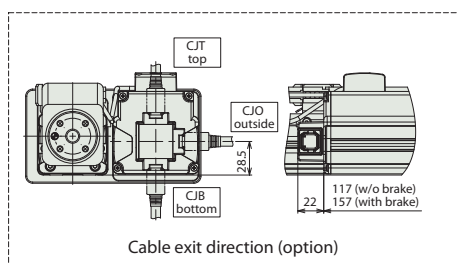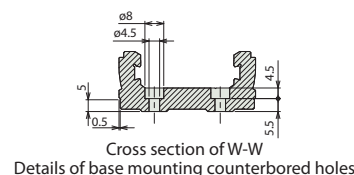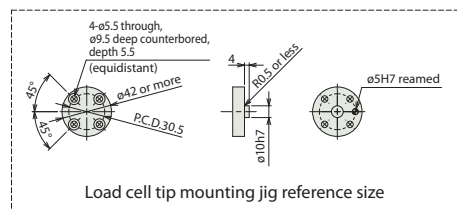## Correlation diagram between pull force and pull command value

Dimensions

CAD drawings can be downloaded from our website.
www.robocylinder.de

2D CAD 3D CAD

ST: Stroke
M.E: Mechanical end
S.E: Stroke end

(Note) When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.

Cable exit direction (option)

Cable connection

Arrow view V
Greasing port

Cross section of S-S

Jig mounting dimensions details

Detailed view of P
Base oblong hole details

Load cell tip mounting jig reference size

Cross section of W-W
Details of base mounting counterbored holes
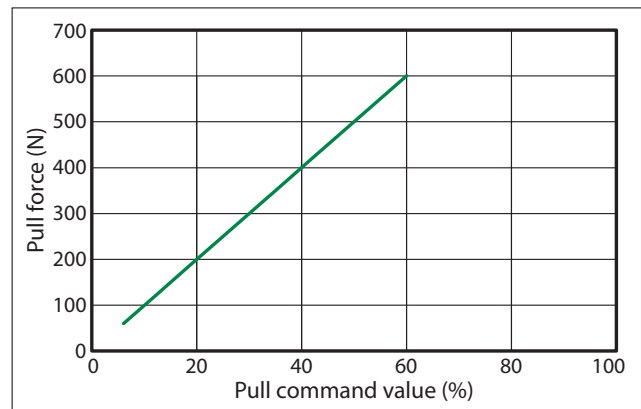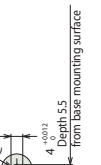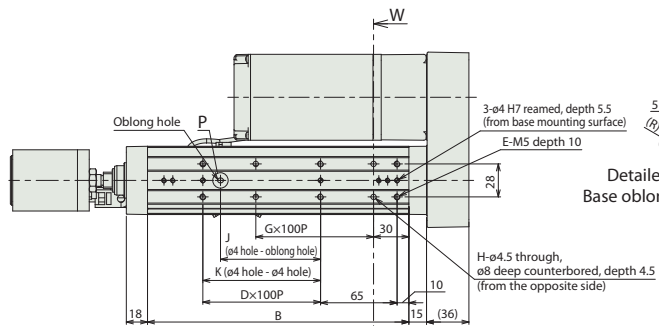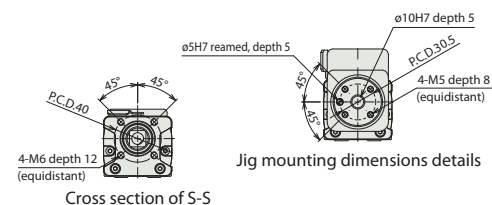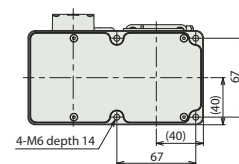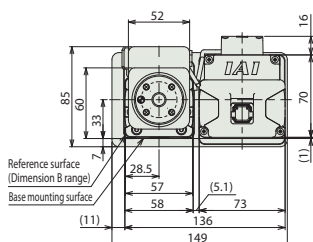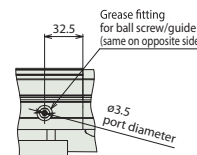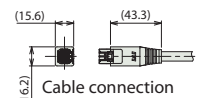
■ Dimensions by stroke

Stroke	115	165	215	265	315
L	291	341	391	441	491
A	255	305	355	405	455
B	222	272	322	372	422
D	1	1	2	2	3
E	6	6	8	8	10
G	1	2	2	3	3
H	4	6	6	8	8
J	85	85	185	185	285
K	100	100	200	200	300

■ Mass by stroke

Stroke		115	165	215	265	315
Mass (kg)	Without brake	4.0	4.2	4.5	4.7	4.9
	With brake	4.2	4.4	4.6	4.9	5.1

Applicable Controllers

The actuators on this page can be operated by the controllers indicated below. Please select the type depending on your intended use.

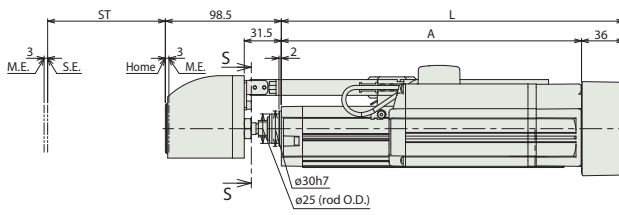| Name	External view	Maximum number of connectable axes	Power supply voltage	Control method															Maximum number of positioning points	Reference page
				Positioner	Pulse-train	Program	Network (*Option)													
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM		
PCON-CBP/ CGBP		1	24VDC	● *Option	-	-	●	●	-	●	●	-	-	●	●	●	-	-	512 (768 for network spec.)	18

(Note) Please refer to P. 19 for information on network abbreviation codes such as DV and CC.

RCP6-RRA7R

(Pulse press specification)

Battery-less Absolute | Side-mounted Motor | Body Width **70** mm | **24**v Pulse Motor
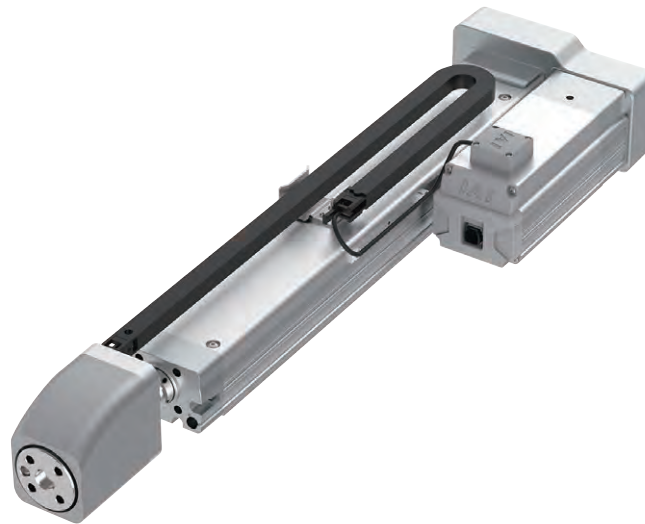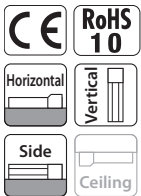
■ Model Specification Items

RCP6 - RRA7R - WA - 56P - ☐ - ☐ - P3 - ☐ - ☐

Series	Type	Encoder type		Motor type		Lead		Stroke		Applicable controllers		Cable length		Option
		WA	Battery-less absolute	56P	Pulse motor 56☐ size	4	4mm	120	120mm	P3	PCON	N	No	Refer to the options table.
						2	2mm	≀	≀			P	1m	
								320	320mm			S	3m	
									(every 50mm)			M	5m	
												X☐☐	Specified length	
												R☐☐	Robot cable	

CE RoHS 10

Horizontal | Vertical
Side | Ceiling

(Note) The figure above is the motor side-mounted to left (ML).

POINT Selection Notes

(1) There are no limitations on the continuous push time or continuous pull time.
(2) Continuous operation is possible at a duty ratio of 100%.
(3) Pay close attention to the mounting method of the body. Please refer to P. 17 for details.
(4) Pay close attention to the mounting orientation. Please refer to P. 17 for details.
(5) Please refer to P. 17 for information on load cells.

■ Main Specifications

Item			Description	
Lead	Ball screw lead (mm)		4	2
Horizontal	Payload	Maximum payload (kg) (high-output enabled)	10	10
		Maximum payload (kg) (high-output disabled)	10	10
	Speed / acceleration/ deceleration	Max. speed (mm/s)	160	85
		Rated acceleration/deceleration (G)	0.3	0.3
		Max. acceleration/deceleration (G)	0.3	0.3
Vertical	Payload	Maximum payload (kg) (high-output enabled)	10	10
		Maximum payload (kg) (high-output disabled)	10	10
	Speed / acceleration/ deceleration	Max. speed (mm/s)	160	85
		Rated acceleration/deceleration (G)	0.3	0.3
		Max. acceleration/deceleration (G)	0.3	0.3
Push	Max. push force (N)		1000	2000
	Min. push force (N)		200	200
	Max. push speed (mm/s)		10	10
Pull	Max. pull force (N)		1000	2000
	Min. pull force (N)		200	200
	Max. pull speed (mm/s)		10	10
Brake	Brake specification		Non-excitation actuating solenoid brake	
	Brake holding force (kg)		10	10
Stroke	Min. stroke (mm)		120	120
	Max. stroke (mm)		320	320
	Stroke pitch (mm)		50	50

Item	Description
Drive system	Ball screw, ø12mm, rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Load cell rated capacity	2000N
Loading repeatability (Note 1)	±1.0% F.S. (Note 2)
Ambient operating temperature, humidity	0 ~ 40℃, 85%RH or less (no condensation)
Ingress protection	IP20
Vibration & shock resistance	4.9m/s^2
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor
Encoder type	Battery-less absolute
Number of encoder pulses	8192 pulse/rev

(Note 1) Ratio (in percentage) of the load variations caused by the repeated operations to the load cell rated capacity.
(Note 2) F.S.: Full Scale, the maximum measurable value.

Options   * Please check the Options reference pages to confirm each option.

Name	Option code	Reference page
Brake	**B**	14
Cable exit direction (bottom) (Note 1)	**CJB**	14
Cable exit direction (outside)	**CJO**	14
Cable exit direction (top)	**CJT**	14
Flange (front)	**FL**	14
Foot bracket (Note 1, 2)	**FT**	15
Equipped with load cell (standard equipment) (Note 3)	**LCT**	15
Motor side-mounted (left) (Note 4)	**ML**	15
Motor side-mounted (right) (Note 4)	**MR**	15

(Note 1) Foot bracket (FT) cannot be selected when selecting cable exit direction (bottom) (CJB).
(Note 2) Please refer to P. 15 for the number of brackets included.
(Note 3) Be sure to enter a selection in the options section of the model number.
(Note 4) Be sure to enter a code in the options section of the model number.

Cable Length

Type	Cable code
Standard type	**P** (1m)
	S (3m)
	M (5m)
Specified length	**X06** (6m) ~ **X10** (10m)
	X11 (11m) ~ **X15** (15m)
	X16 (16m) ~ **X20** (20m)
Robot cable	**R01** (1m) ~ **R03** (3m)
	R04 (4m) ~ **R05** (5m)
	R06 (6m) ~ **R10** (10m)
	R11 (11m) ~ **R15** (15m)
	R16 (16m) ~ **R20** (20m)

Tables of Payload by Speed/Acceleration

■ **High-output setting enabled** (the unit for payload is kg)

Lead 4 (1000N)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.3	0.3
0	10	10
35	10	10
70	10	10
115	10	10
160	10	10

Lead 2 (2000N)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.3	0.3
0	10	10
35	10	10
70	10	10
85	10	10

■ **High-output setting disabled** (the unit for payload is kg)

Lead 4 (1000N)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.3	0.3
0	10	10
35	10	10
70	10	10
115	10	10

Lead 2 (2000N)

Orientation	Horizontal	Vertical
Speed (mm/s)	Acceleration (G)	
	0.3	0.3
0	10	10
35	10	10
60	10	10

Stroke and Max Speed

Lead (mm)	Push force Pull force	High-output setting	Stroke (mm)				
			120	170	220	270	320
4	1000N	Enabled	160				
		Disabled	115				
2	2000N	Enabled	85				
		Disabled	60				

(Unit: mm/s)

Correlation diagram between push force and push command value
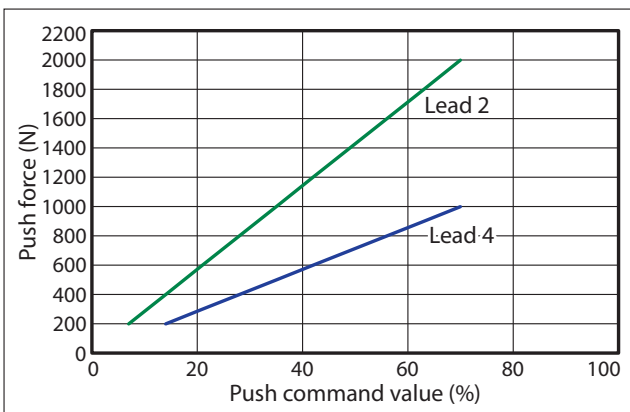
Correlation diagram between pull force and pull command value

Dimensions

CAD drawings can be downloaded from our website.
www.robocylinder.de **2D CAD** **3D CAD**

ST: Stroke
M.E: Mechanical end
S.E: Stroke end

(Note) When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.

Cable connection

Arrow view V
Greasing port

Cross section of S-S

Jig mounting dimensions details

Load cell tip mounting jig reference size

Detailed view of P
Base oblong hole details

Cross section of W-W
Details of base mounting counterbored holes
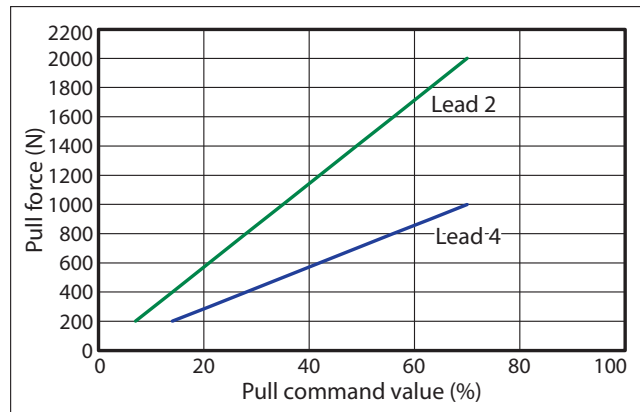
■ Dimensions by stroke

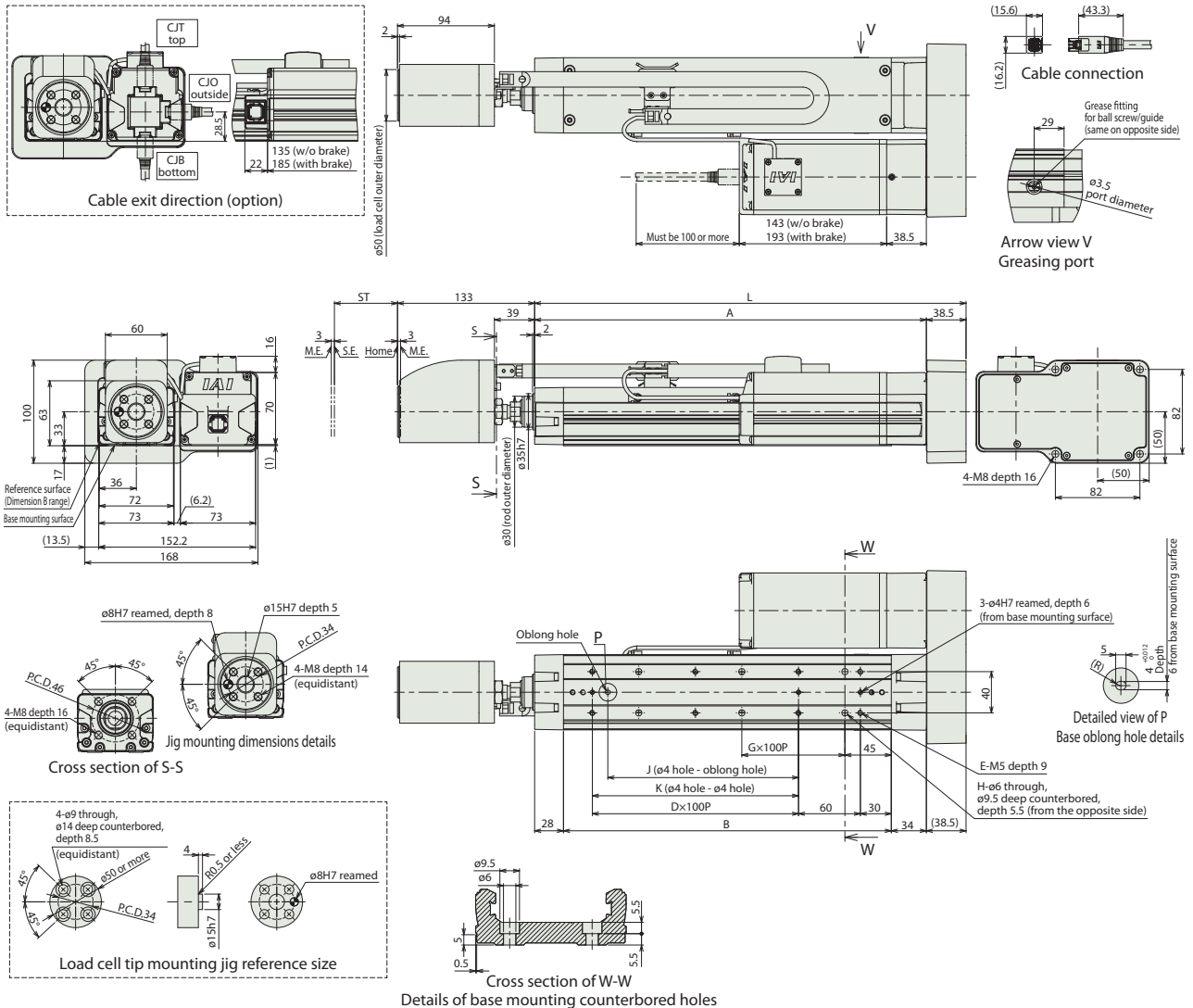| Stroke	120	170	220	270	320
L	318.5	368.5	418.5	468.5	518.5
A	280	330	380	430	480
B	218	268	318	368	418
D	1	1	2	2	3
E	6	6	8	8	10
G	1	2	2	3	3
H	4	6	6	8	8
J	85	85	185	185	285
K	100	100	200	200	300

■ Mass by stroke

Stroke		120	170	220	270	320
Mass (kg)	Without brake	6.0	6.3	6.6	6.9	7.2
	With brake	6.6	6.9	7.2	7.5	7.8

Applicable Controllers

The actuators on this page can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Maximum number of connectable axes	Power supply voltage	Control method														Maximum number of positioning points	Reference page
				Positioner	Pulse-train	Program	Network (*Option)												
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM		
PCON-CBP/ CGBP		1	24VDC	● *Option	-	-	●	●	-	●	●	-	-	●	●	●	-	-	512 (768 for network spec.)	18

(Note) Please refer to P. 19 for information on network abbreviation codes such as DV and CC.
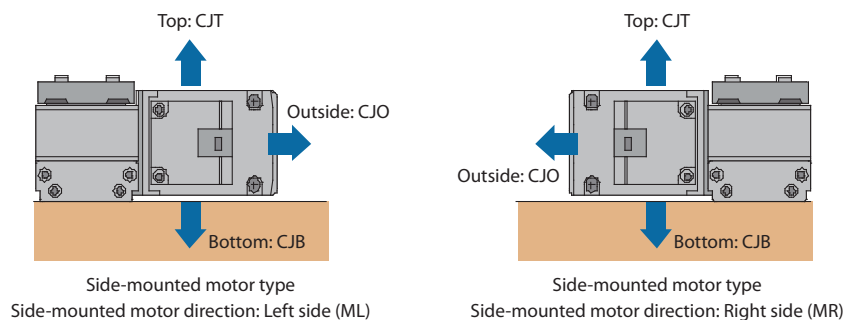
Options

Brake

Model **B**

Description When the actuator is mounted vertically, this works as a holding mechanism that prevents the rod from falling and damaging any attachments when the power or servo is turned off.

Cable exit direction

Model **CJT / CJB / CJO**

Description This option allows the exit direction of the motor-encoder cable to be changed to top, bottom, or outside.
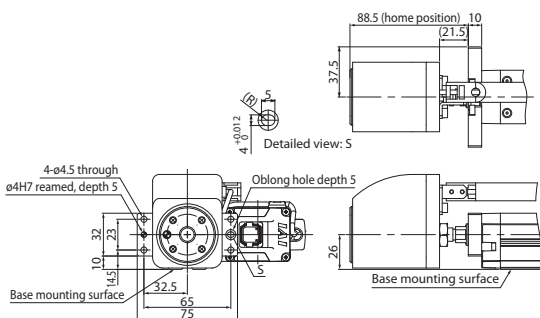
Top: CJT
Outside: CJO
Bottom: CJB
Side-mounted motor type
Side-mounted motor direction: Left side (ML)

Top: CJT
Outside: CJO
Bottom: CJB
Side-mounted motor type
Side-mounted motor direction: Right side (MR)

Flange (front)

Model **FL**

Description This bracket is used for mounting the actuator body side with bolts.

RCP6-RRA4R (LCT)
Individual model number: RCP6L-FL-RRA4 (Note 1)
(Individual weight: 0.14kg / Material: Steel)

88.5 (home position) 10
(21.5)
37.5
$4^{+0.012}_{0}$
Detailed view: S
4-ø4.5 through
ø4H7 reamed, depth 5
Oblong hole depth 5
10 32 23
14.5
32.5
65
75
26
Base mounting surface
Base mounting surface

RCP6-RRA6R (LCT)
Individual model number: RCP6L-FL-RRA6 (Note 1)
(Individual weight: 0.20kg / Material: Steel)

86.5 (home position) 12
(19.5)
42.5
8
6
Detailed view: S
Oblong hole depth 6
4-ø6.6 through
ø6H7 reamed, depth 6
38 25
14
20.5
36
72
85
33
Base mounting surface
Base mounting surface
Base mounting surface
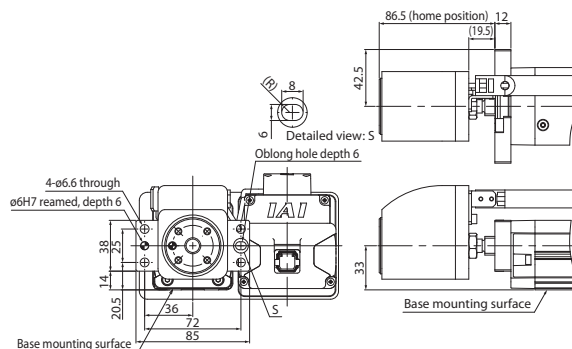
RCP6-RRA7R (LCT)
Individual model number: RCP6L-FL-RRA7 (Note 1)
(Individual weight: 0.36kg / Material: Steel)

118 (home position) 15
(24)
52.5
10
$8^{+0.015}_{0}$
Detailed view: S
Oblong hole depth 8
4-ø9 through
ø8H7 reamed, depth 8
47 30
9.5
18
44.5
89
105
33
Base mounting surface
Base mounting surface
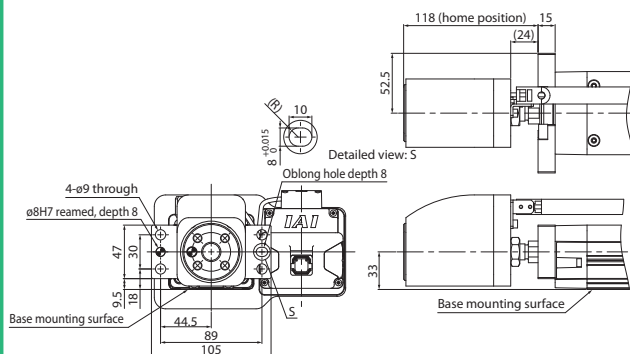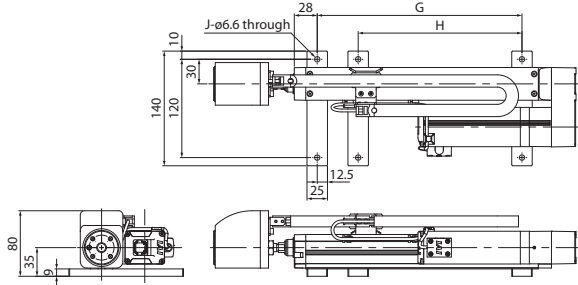
(Note 1) 4 hex socket bolts enclosed

Options

Foot bracket

Model FT

Description This bracket is used for mounting the actuator body from the top with bolts.
The actuator body may be twisted or deformed if an insufficient number of mounting foot brackets are used. Actuator life could also be shortened.
* Refer to the installation dimensions in the actuator drawing for the installation pitch between the foot brackets.

RCP6-RRA4R
Individual model number: RCS3-FT-RA4-2 (Note 1)

ST	G	H	J	"FT" selected as option	
				No. of foot brackets	Number of hex socket bolts enclosed
110	150	0	4	2	4
160	200	0	4	2	4
210	250	200	6	3	6
260	300	200	6	3	6
310	350	200	6	3	6

RCP6-RRA6R
Individual model number: RCS3-FT-RA6-2 (Note 1)
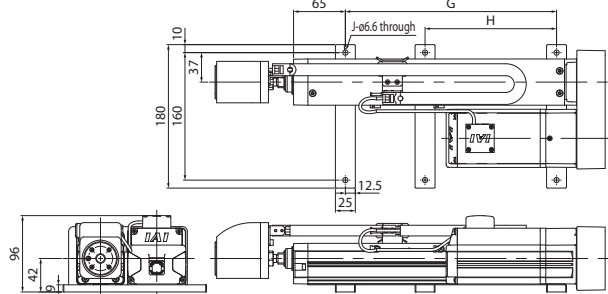
ST	G	H	J	"FT" selected as option	
				No. of foot brackets	Number of hex socket bolts enclosed
115	165	0	4	2	4
165	165	0	4	2	4
215	265	165	6	3	6
265	265	165	6	3	6
315	365	165	6	3	6

RCP6-RRA7R
Individual model number: RCS3-FT-RA7-2 (Note 1)
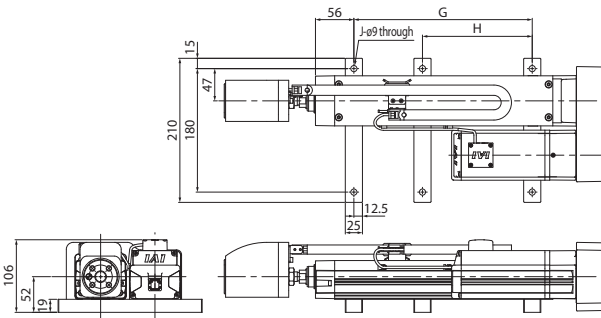
ST	G	H	J	"FT" selected as option	
				No. of foot brackets	Number of hex socket bolts enclosed
120	160	0	4	2	4
170	160	0	4	2	4
220	260	160	6	3	6
270	260	160	6	3	6
320	360	160	6	3	6

(Note 1) 2 hex socket bolts enclosed

Equipped with load cell
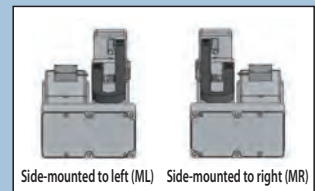
Model LCT

Description This option installs a load cell to the rod tip and operates with force control.
*LCT must be selected for pulse press.
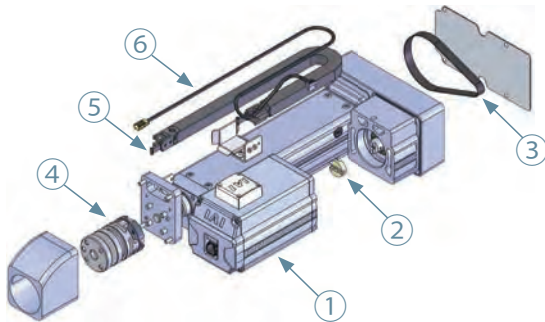
Motor side-mounted direction

Model ML / MR

Description This code is for specifying the motor side-mounted direction.
Side-mounted to left is ML and right is MR.

Side-mounted to left (ML)   Side-mounted to right (MR)

Maintenance parts

Maintenance part schematics

① Motor unit
② Coupling spacer
③ Timing belt
④ Load cell unit
⑤ Cable track assembly
⑥ Load cell cable assembly

* Please refer to the dimensions on the product pages for the direction and dimensions when selecting the cable exit direction option.

Maintenance part model list

The numbers in the tables match the numbers in the schematics.

① Motor unit

Type	Motor side-mounted direction	Cable exit direction	① Motor unit model	
			Without brake	With brake
RRA4R	Left/right same	Not specified	RCP6-MUPP4R	RCP6-MUPP4R-B
	Left side	Bottom	RCP6-MUPP4R-CJB-ML	RCP6-MUPP4R-B-CJB-ML
		Outside	RCP6-MUPP4R-CJO-ML	RCP6-MUPP4R-B-CJO-ML
		Top	RCP6-MUPP4R-CJT-ML	RCP6-MUPP4R-B-CJT-ML
	Right side	Bottom	RCP6-MUPP4R-CJB-MR	RCP6-MUPP4R-B-CJB-MR
		Outside	RCP6-MUPP4R-CJO-MR	RCP6-MUPP4R-B-CJO-MR
		Top	RCP6-MUPP4R-CJT-MR	RCP6-MUPP4R-B-CJT-MR
RRA6R	Left side	Not specified	RCP6-MUPP6R-ML	RCP6-MUPP6R-B-ML
		Bottom	RCP6-MUPP6R-CJB-ML	RCP6-MUPP6R-B-CJB-ML
		Outside	RCP6-MUPP6R-CJO-ML	RCP6-MUPP6R-B-CJO-ML
		Top	RCP6-MUPP6R-CJT-ML	RCP6-MUPP6R-B-CJT-ML
	Right side	Not specified	RCP6-MUPP6R-MR	RCP6-MUPP6R-B-MR
		Bottom	RCP6-MUPP6R-CJB-MR	RCP6-MUPP6R-B-CJB-MR
		Outside	RCP6-MUPP6R-CJO-MR	RCP6-MUPP6R-B-CJO-MR
		Top	RCP6-MUPP6R-CJT-MR	RCP6-MUPP6R-B-CJT-MR
RRA7R	Left side	Not specified	RCP6-MUPP7R-ML	RCP6-MUPP7R-B-ML
		Bottom	RCP6-MUPP7R-CJB-ML	RCP6-MUPP7R-B-CJB-ML
		Outside	RCP6-MUPP7R-CJO-ML	RCP6-MUPP7R-B-CJO-ML
		Top	RCP6-MUPP7R-CJT-ML	RCP6-MUPP7R-B-CJT-ML
	Right side	Not specified	RCP6-MUPP7R-MR	RCP6-MUPP7R-B-MR
		Bottom	RCP6-MUPP7R-CJB-MR	RCP6-MUPP7R-B-CJB-MR
		Outside	RCP6-MUPP7R-CJO-MR	RCP6-MUPP7R-B-CJO-MR
		Top	RCP6-MUPP7R-CJT-MR	RCP6-MUPP7R-B-CJT-MR

② Coupling spacer

Type	② Coupling spacer model
RRA4R	CPG-RCP6-S
RRA6R	
RRA7R	CPG-RCP6-M

③ Timing belt

Type	③ Timing belt model
RRA4R	TB-RCS3-RA4R
RRA6R	TB-RCS3-RA6R
RRA7R	TB-RCS3-RA7R

④ Load cell unit

Type	④ Load cell model
RRA4R	K-TIAI/600N1-1-PT
RRA6R	
RRA7R	K-TIAI/2KN1-1-PT

⑤ Cable track assembly

Type	Stroke	⑤ Cable track assembly model
RRA4R	110mm	CVR-P6PP-16
	160mm	CVR-P6PP-18
	210mm	CVR-P6PP-23
	260mm	CVR-P6PP-28
	310mm	CVR-P6PP-31
RRA6R	115mm	CVR-P6PP-18
	165mm	
	215mm	CVR-P6PP-23
	265mm	CVR-P6PP-28
	315mm	CVR-P6PP-33
RRA7R	120mm	CVR-P6PP-18
	170mm	CVR-P6PP-23
	220mm	
	270mm	CVR-P6PP-28
	320mm	CVR-P6PP-33

⑥ Load cell cable assembly

Type	Stroke	⑥ Load cell cable assembly model
RRA4R	110mm	CB-P6PP-LDC006
	160mm	CB-P6PP-LDC007
	210mm	CB-P6PP-LDC008
	260mm	CB-P6PP-LDC009
	310mm	CB-P6PP-LDC010
RRA6R	115mm	CB-P6PP-LDC006
	165mm	CB-P6PP-LDC007
	215mm	CB-P6PP-LDC008
	265mm	CB-P6PP-LDC009
	315mm	CB-P6PP-LDC010
RRA7R	120mm	CB-P6PP-LDC006
	170mm	CB-P6PP-LDC008
	220mm	
	270mm	CB-P6PP-LDC009
	320mm	CB-P6PP-LDC010

Mounting orientation and load cell handling precautions

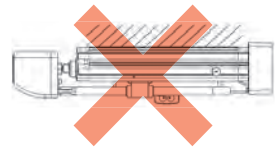### Mounting orientation

| Horizontal mounting on flat surface	Vertical mounting	Horizontal mounting to side	Horizontal mounting suspended

- Keep the body installation surface and workpiece mounting surface flatness at 0.05mm/m or lower.
  Uneven flatness will increase the sliding resistance of the slider and may cause a malfunction.

Precautions for installation

Keep the following in mind when using a screw hole or foot bracket to fix in place.

1 Do not attempt to apply any external force to the body of RoboCylinder. External force may cause malfunctions or damage to parts.

External force
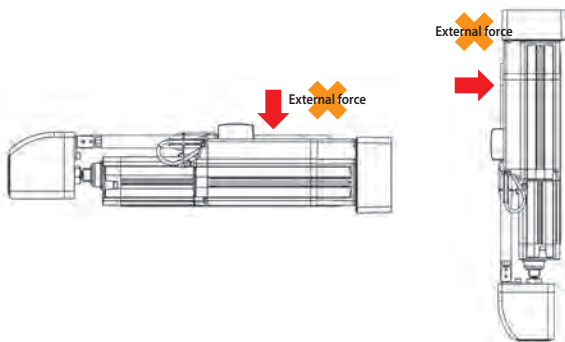
External force

2 Prepare a support block as shown in the figure below when fixing the base seating surface horizontally, even if there is no external force applied on the body.

Support block placement range

Support block
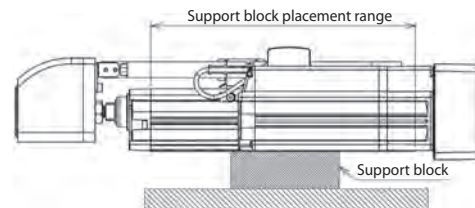
Load cell handling precautions

- Never push/pull during positioning operations. Doing so will damage the load cell.
- Use with a jig mounted to the load cell.

Jig
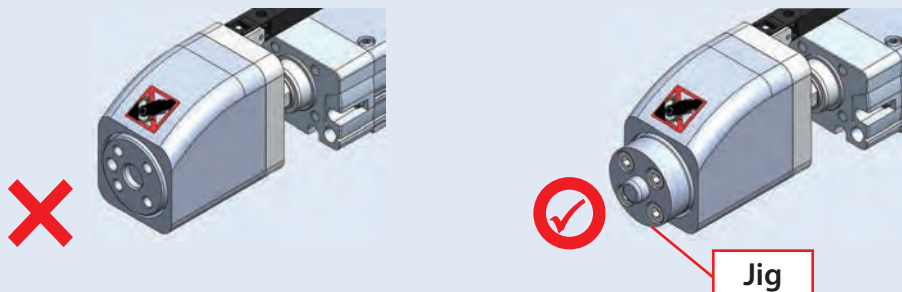
- Do not apply a radial load or moment load to the body of the load cell.
- Do not subject the body of the load cell to collisions or other shocks exceeding the specified value.
  Be especially careful not to mistakenly collide with the load cell during mounting.
- Be careful not to hold the product by the load cell when transporting it.
- The load cell must be periodically calibrated.
  Please refer to the instruction manual for information on calibration.

PCON-CBP

Pulse press dedicated controller

CE RoHS 10 c(UL)us

Features

1 High resolution battery-less absolute encoder support

Pulse press specification actuators are equipped with high resolution battery-less absolute encoders. As no battery is needed for retaining position data, it is possible to save space around the control panel, which helps to keep down the cost of the equipment.

2 Supports force control using a load cell

The current load value can be read from the load cell.
Load directions are supported from either press fitting or pulling, and can be easily switched out by specifying position data.

3 N unit display support for target loads

Position data pushing (%) is displayed as a converted target load (N).
If the collision detection function is disabled, a converted "N" value is also displayed for the threshold (%).

[PC-compatible teaching software]
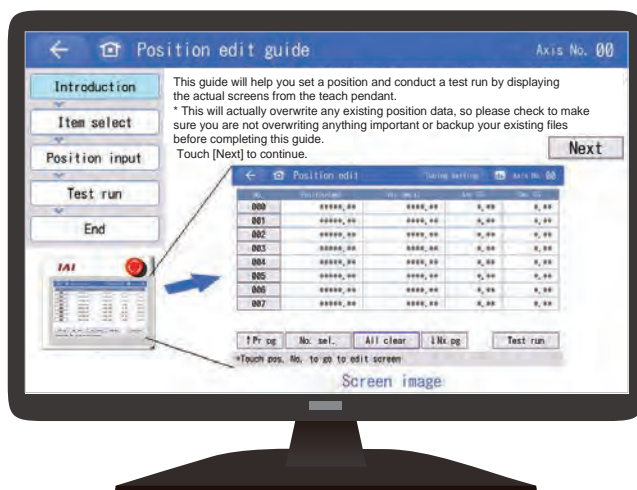
RCM-101: Position editing screen

[Teaching pendant]

TB-02: Position editing screen

PCON-CBP Controller

List of Models

Model	PCON-CBP/CGBP						
External view							

I/O type	Positioner type	Field network type						
		DeviceNet	**CC-Link**	**PROFIBUS**	**CompoNet**	**EtherCAT.**	**EtherNet/IP**	**PROFINET**
		DeviceNet connection specification	CC-Link connection specification	PROFIBUS-DP connection specification	CompoNet connection specification	EtherCAT connection specification	EtherNet/IP connection specification	PROFINET IO connection specification
I/O type model number	NP/PN	DV	CC	PR	CN	EC	EP	PRT
Supported encoder	High-res battery-less absolute							

Model Specification Items

PCON — ☐ — ☐ **WAI** — ☐ — ☐ — **0** — ☐

Series — Type — Motor type — Encoder type — I/O type — I/O cable length — Power supply voltage — Mounting specification

CBP	Pulse press standard type
CGBP	Pulse press safety category specification

35P	35☐
42P	42☐
56P	56☐

(Example)
35P: Supports 35☐ pulse motor

NP	PIO (NPN) specification
PN	PIO (PNP) specification
DV	DeviceNet connection specification
CC	CC-Link connection specification
PR	PROFIBUS-DP connection specification
CN	CompoNet connection specification
EC	EtherCAT connection specification
EP	EtherNet/IP connection specification
PRT	PROFINET IO connection specification

0	No cable
2	2m (standard)
3	3m
5	5m

* When a field network specification is selected, the I/O cable length is "0" (no cable).

Left blank	Screw mounting specification
DN	DIN rail mounting specification

0	24VDC

WAI	Battery-less absolute

System Configuration

PLC

Field network
DeviceNet/CC-Link/PROFIBUS-DP/
CompoNet/EtherCAT/EtherNet/IP/PROFINET IO

Included with the controller for PIO specification

PIO cable
(See backside)
<Model: CB-PAC-PIO020>
Standard 2m

Dedicated connection cable

Supplied with actuator cable

**Motor/encoder cable
Motor/encoder robot cable**
These items will be provided if the cable length is specified in the actuator model name.
Please refer to backside for the maintenance cable

Controller
<Model: PCON-CBP/CGBP>

Option

DC24V power supply
* Coming soon.
(See P. 26)
<Model: PSA-24>

DC24V
Power Supply

24V ◎
0V ◎
FG ◎

DC24V Power supply
* Can be provided by the customer.

Supplied with PCON-CGBP

Dummy plug
(See P. 26)
<Model: DP-5>

Pulse press actuator
<Model: RCP6-RRA□>

PIO Input/Output Interface

■ Input/output External input specification

Item	Specifications
Input voltage	24VDC ±10%
Input current	5mA, 1 circuit
ON/OFF voltage	ON voltage: 18VDC min. OFF voltage: 6VDC max.
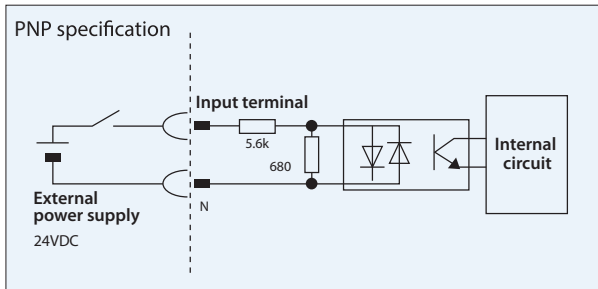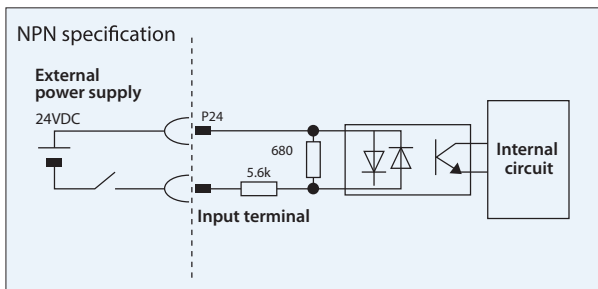
■ Input/output External input specification

Item	Specifications
Load voltage	24VDC
Maximum load current	50mA, 1 circuit
Leakage current	2mA max./point

NPN specification

External power supply
24VDC
P24
680
5.6k
Input terminal
Internal circuit

NPN specification

Internal circuit
P24
Output terminal
15
Load
External power supply
24VDC
N

PNP specification

Input terminal
5.6k
680
Internal circuit
External power supply
24VDC
N

PNP specification

Internal circuit
P24
External power supply
24VDC
Output terminal
15
Load
N

Types of PIO Patterns (Control Patterns)

This controller has 8 types of control methods.

Please set the PIO pattern that best suits your application in Parameter No.25, "PIO Pattern Selection."

Type	Set value of parameter No.25	Mode	Overview	
PIO pattern 0	0 (factory setting)	Positioning mode (standard type)	•Number of positioning points: 64 points •Zone signal output[*1] : 1 point	•Position number command: Binary code •Position zone signal output[*2] : 1 point
PIO pattern 1	1	Teaching mode (teaching type)	•Number of positioning points: 64 points •Position zone signal output[*2] : 1 point •Current position data can be written to the position table using PIO signals	•Position number command: Binary code •Jog (inching) operation using PIO signals is supported
PIO pattern 2	2	256-point mode (256 positioning points type)	•Number of positioning points: 256 points •Position number command: Binary code •Position zone signal output[*2] : 1 point	
PIO pattern 3	3	512 mode (512 positioning points type)	•Number of positioning points: 512 points •Position number command: Binary code •No zone signal output	
PIO pattern 4	4	Solenoid valve mode 1 (7-point type)	•Number of positioning points: 7 points •Zone signal output[*1] : 1 point	•Position number command: Individual number signal ON •Position zone signal output[*2] : 1 point
PIO pattern 5	5	Solenoid valve mode 2 (3-point type)	•Number of positioning points: 3 points •Completion signal: A signal equivalent to a LS (limit switch) signal can be output •Zone signal output[*1] : 1 point	•Position number command: Individual number signal ON •Position zone signal output[*2] : 1 point
PIO pattern 6	6	Force control mode 1	•Number of positioning points: 32 points •Position zone signal output[*2] : 1 point •Load cell calibration command	•Position number command: Binary code
PIO pattern 7	7	Force control mode 2	•Number of positioning points: 5 points •Position zone signal output[*2] : 1 point •Load cell calibration command	•Position number command: Individual number signal ON

*1 Zone signal output: Please set the desired zone range in Parameter No.1/2 or 23/24. It will remain effective once home return is completed.

*2 Position zone signal output: This command function relates to the position number. Set the desired zone range in the position table.
This function will only become enabled when the corresponding position is specified. It will be disabled for all other position commands.

PIO Patterns and Signal Assignments

The table below lists the signal assignments for the I/O flat cable under different PIO patterns.

Connect an external device (such as a PLC) according to this table.

Pin number	Category	PIO function	Parameter No.25, "PIO Pattern Selection"							
			0	1	2	3	4	5	6	7
			Positioning mode	Teaching mode	256-point mode	512-point mode	Solenoid valve mode 1	Solenoid valve mode 2	Force control mode 1	Force control mode 2
Pin number	Input	Number of positioning points	64 points	64 points	256 points	512 points	7 points	3 points	32 points	5 points
		Home return signal	○	○	○	○	○	—	○	○
		Jog signal	—	○	—	—	—	—	—	—
		Teaching signal (current position writing)	—	○	—	—	—	—	—	—
		Brake release	○	—	○	○	○	○	○	○
	Output	Moving signal	○	○	—	—	—	—	—	—
		Zone signal	○	△ (Note 1)	△ (Note 1)	—	○	○	△ (Note 1)	△ (Note 1)
		Position zone signal	○	○	○	—	○	○	○	○
1A	24V		P24							
2A	24V		P24							
3A	—		—							
4A			—							
5A	Input	IN0	PC1	PC1	PC1	PC1	ST0	ST0	PC1	ST0
6A		IN1	PC2	PC2	PC2	PC2	ST1	ST1(JOG+)	PC2	ST1
7A		IN2	PC4	PC4	PC4	PC4	ST2	ST2 (non-functional)	PC4	ST2
8A		IN3	PC8	PC8	PC8	PC8	ST3	—	PC8	ST3
9A		IN4	PC16	PC16	PC16	PC16	ST4	—	PC16	ST4
10A		IN5	PC32	PC32	PC32	PC32	ST5	—	—	—
11A		IN6	—	MODE	PC64	PC64	ST6	—	—	—
12A		IN7	—	JISL	PC128	PC128	—	—	—	—
13A		IN8	—	JOG+	—	PC256	—	—	CLBR	CLBR
14A		IN9	BKRL	JOG-	BKRL	BKRL	BKRL	BKRL	BKRL	BKRL
15A		IN10	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD
16A		IN11	HOME	HOME	HOME	HOME	HOME	—	HOME	HOME
17A		IN12	*STP	*STP	*STP	*STP	*STP	—	*STP	*STP
18A		IN13	CSTR	CSTR/PWRT	CSTR	CSTR	—	—	CSTR	—
19A		IN14	RES	RES	RES	RES	RES	RES	RES	RES
20A		IN15	SON	SON	SON	SON	SON	SON	SON	SON
1B	Output	OUT0	PM1(ALM1)	PM1(ALM1)	PM1(ALM1)	PM1(ALM1)	PE0	LSO	PM1	PE0
2B		OUT1	PM2(ALM2)	PM2(ALM2)	PM2(ALM2)	PM2(ALM2)	PE1	LS1(TRQS)	PM2	PE1
3B		OUT2	PM4(ALM4)	PM4(ALM4)	PM4(ALM4)	PM4(ALM4)	PE2	LS2 (Note 2)	PM4	PE2
4B		OUT3	PM8(ALM8)	PM8(ALM8)	PM8(ALM8)	PM8(ALM8)	PE3	—	PM8	PE3
5B		OUT4	PM16	PM16	PM16	PM16	PE4	—	PM16	PE4
6B		OUT5	PM32	PM32	PM32	PM32	PE5	—	TRQS	TRQS
7B		OUT6	MOVE	MOVE	PM64	PM64	PE6	—	LOAD	LOAD
8B		OUT7	ZONE1	MODES	PM128	PM128	ZONE1	ZONE1	CEND	CEND
9B		OUT8	PZONE/ZONE2	PZONE/ZONE1	PZONE/ZONE1	PM256	PZONE/ZONE2	PZONE/ZONE2	PZONE/ZONE1	PZONE/ZONE1
10B		OUT9	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS
11B		OUT10	HEND	HEND	HEND	HEND	HEND	HEND	HEND	HEND
12B		OUT11	PEND	PEND/WEND	PEND	PEND	PEND	—	PEND	PEND
13B		OUT12	SV	SV	SV	SV	SV	SV	SV	SV
14B		OUT13	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS
15B		OUT14	*ALM	*ALM	*ALM	*ALM	*ALM	*ALM	*ALM	*ALM
16B		OUT15	LOAD/TRQS *ALML	*ALML	LOAD/TRQS *ALML	LOAD/TRQS *ALML	LOAD/TRQS *ALML	*ALML	*ALML	*ALML
17B	—		—							
18B			—							
19B	0V		N							
20B	0V		N							

(Note) In the table above, the asterisk (*) symbol accompanying each code indicates a negative logic signal. PM1 through PM8 are alarm binary code output signals that are used when an alarm is generated.
(Note 1) In all PIO patterns other than pattern 3, this signal can be switched with PZONE by setting Parameter No.149 accordingly.
(Note 2) The setting will not become effective until the home return is completed.

Reference: Negative logic signals
Signals denoted by * are negative logic signals. Negative logic input signals are processed when turned OFF.
Negative logic output signals normally remain ON while the power is supplied, and turn OFF when the signal is output.

Field Network Specification: Explanation of Operation Modes

If controlling via a field network, one of the following 8 modes can be selected to operate the actuator.

Please note that the data areas required on the PLC side will vary depending on the mode.

■ Mode description

	Mode	Description
0	Remote I/O mode	Similar to the PIO specification, this mode operates by turning bits ON/OFF over a network. The number of positioning points and functions will vary depending on the operation patterns (PIO patterns) set by the controller's parameters.
1	Position/simple direct value mode	The target position value is directly input, while all other operational conditions (speed, acceleration, etc.) are used by specifying the position number of the desired operating condition entered in position data.
2	Half direct value mode	The actuator is operated by directly inputting values other than the target position (speed, acceleration/deceleration, and push current).
3	Full direct value mode	The actuator is operated by directly inputting values for the target position, speed, acceleration/deceleration rate, push current limit value, etc. The current position, current speed, command current value, and load cell data can also be read.
4	Remote I/O mode 2	This mode is the same as the remote I/O mode above, with the added functionality of reading the current position and command current value.
5	Position/simple direct value mode 2	This mode provides a force control function instead of the display and zone functions of the position/simple direct value mode above.
6	Half direct value mode 2	This can read load cell data instead of the command current (which is a function of the half direct value mode above).
7	Remote I/O mode 3	This mode is the same as the remote I/O mode above, with the added functionality of reading current position and load cell data.

■ Required data size for each network

	Mode	DeviceNet	CompoNet	CC-Link	PROFIBUS-DP	EtherCAT	EtherNet/IP	PROFINET IO
0	Remote I/O mode	2 bytes	2 bytes	1 station	2 bytes	2 bytes	2 bytes	2 bytes
1	Position/simple direct value mode	8 bytes	8 bytes	1 station	8 bytes	8 bytes	8 bytes	8 bytes
2	Half direct value mode	16 bytes	16 bytes	2 stations	16 bytes	16 bytes	16 bytes	16 bytes
3	Full direct value mode	32 bytes	32 bytes	4 stations	32 bytes	32 bytes	32 bytes	32 bytes
4	Remote I/O mode 2	12 bytes	12 bytes	1 station	12 bytes	12 bytes	12 bytes	12 bytes
5	Position/simple direct value mode 2	8 bytes	8 bytes	1 station	8 bytes	8 bytes	8 bytes	8 bytes
6	Half direct value mode 2	16 bytes	16 bytes	2 stations	16 bytes	16 bytes	16 bytes	16 bytes
7	Remote I/O mode 3	12 bytes	12 bytes	1 station	12 bytes	12 bytes	12 bytes	12 bytes

■ List of functions by operation mode

Mode	Remote I/O mode	Position/simple direct value mode	Half direct value mode	Full direct value mode	Remote I/O mode 2	Position/simple direct value mode 2	Half direct value mode 2	Remote I/O mode 3
Number of positioning points	512 points	768 points	Unlimited	Unlimited	512 points	768 points	Unlimited	512 points
Operates by direct assignment of position data	—	○	○	○	—	○	○	—
Direct assignment of speed/acceleration	—	—	○	○	—	—	○	—
Push-motion operation	○	○	○	○	○	○	○	○
Current position reading	—	○	○	○	○	○	○	○
Current speed reading	—	—	○	○	—	—	○	—
Operates by specifying position No.	○	○	—	—	○	○	—	○
Completed position number reading	○	○	—	—	○	○	—	○
Force control	△ (Note)	—	—	○	△ (Note)	○	○	△ (Note)
Current load data reading	—	—	—	○	—	○	○	○

* ○ indicates that the operation is supported, and – indicates that it is not supported.
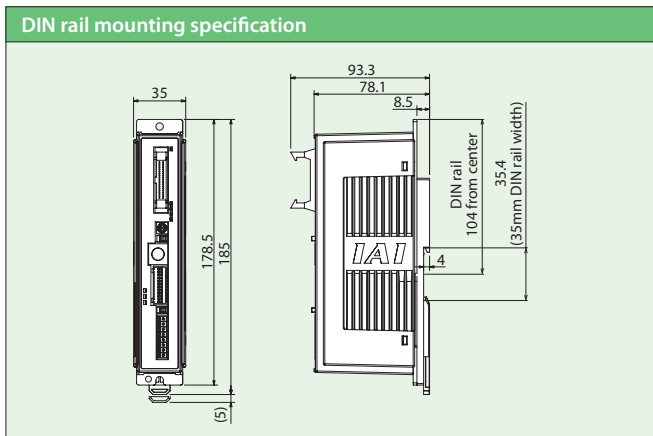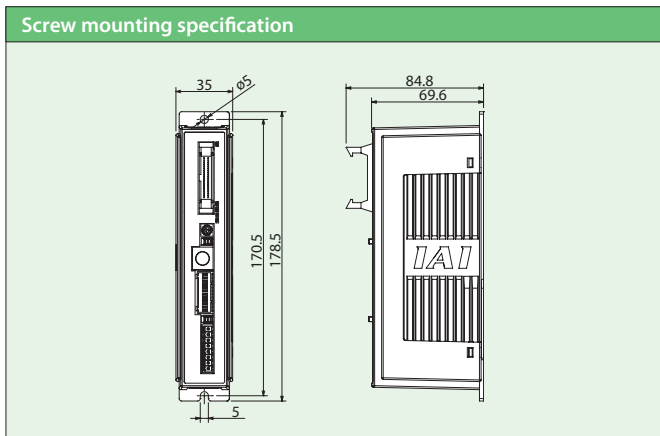(Note) Usable when PIO pattern is set to 6 or 7.

Specification List

Item		Specification
		PCON-CBP/CGBP
Number of controlled axes		1 axis
Power supply voltage		24VDC ±10%
Load current (including control-side current consumption) (Note 1)		High-output setting disabled: 2.2A max. High-output setting enabled: 3.5A rated / 4.2A max.
Electromagnetic brake power (for actuator with brake)		24VDC±10%, 0.15A (max.)
Inrush current (Note 2)		8.3A
Momentary power failure resistance		500µs max.
Supported encoders		High-resolution battery-less absolute encoder: 8192 pulses/rev
Actuator cable length		Up to 20m
External interface	PIO specification	Dedicated 24VDC signal input/output (NPN/PNP selection) Input max. of 16 points, output max. of 16 points, cable length max. of 10m
	Field network specification	DeviceNet, CC-Link, PROFIBUS-DP, CompoNet, EtherCAT, EtherNet/IP, PROFINET IO
Data setting, input method		PC teaching software, touch panel teaching pendant
Data retention memory		Position data and parameters are saved in non-volatile memory (no limit to rewrite)
Operation mode		Positioner mode
Number of positioner-mode positions		Up to 512 points for positioner type or up to 768 points for network type (Note) The total number of positioning points varies depending on which PIO pattern is selected
Insulation resistance		10MΩ or more at 500VDC
Electric shock protection mechanism		Class I, basic insulation
Mass (Note 3)		Screw mounting specification: 250g or less, DIN rail mounting specification: 285g or less
Cooling method		Natural air cooling
Environment	Ambient operating temperature	0 ~ 40°C
	Ambient operating humidity	85% RH or less (no condensation)
	Operating environment	Free from corrosive gases
	Ingress protection	IP20

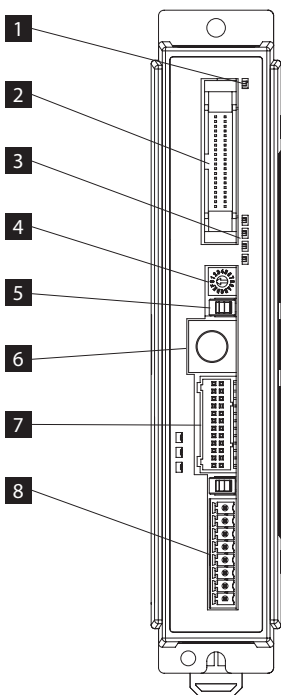(Note 1) 0.3A higher for the field network specification.
(Note 2) Inrush current flows for approx. 5 msec after power is turned ON (at 40°C). Please note that the inrush current value varies depending on the impedance of the power line.
(Note 3) 30g heavier for the field network specification.

External Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.de

2D CAD · 3D CAD

\<PCON-CBP/CGBP\>

Screw mounting specification	DIN rail mounting specification

Part Names

1 Controller display status LED

Indicates the status of the controller.

○: ON, –: OFF, ★: Blinking

LED		Operating status
SV (green)	ALM (red)	
–	–	Control power OFF
		Servo OFF
–	○	Alarm (operation cancel level or above)
		Motor drive power supply
		Emergency stop
○	–	Servo ON
★	–	AUTO servo OFF
○ (orange)		Initialized when power is turned ON

2 PIO connector /field network connector

Cable connector for performing parallel communication with peripheral devices such as PLC.

3 Current/alarm monitor LED

Displays the normal command current ratio. Displays the alarm code when an alarm occurs.

LED	Operating status				
STS3 (green)	Status display ·Servo ON: Displays the current command current ratio (proportion of rated value).				
STS2 (green)		STATUS				Command current ratio
	3	2	1	0	
	ALM8	ALM4	ALM2	ALM1	Simple alarm code
	–	–	–	–	0.00% ~ 6.24%
STS1 (green)	–	–	–	○	6.25% ~ 24.99%
	–	–	○	○	25.00% ~ 49.99%
	–	○	○	○	50.00% ~ 74.99%
STS0 (green)	○	○	○	○	75.00% ~ 100.00% or higher
·During alarm: Displays a simple alarm code.					

4 Axis number setting switch

Used to set an address to identify each controller, when controllers are linked.

5 Operation mode setting switch

Switch for the interlock.

Name	Description
MANU	Commands from PIO are not received
AUTO	Commands from PIO can be received

* The emergency stop switch on the touch panel teaching pendant is enabled when the connection is made, regardless of the status (AUTO or MANU). Be sure to turn the power OFF when disconnecting the touch panel teaching pendant and SIO communication cable.

6 SIO connector

Connector for touch panel teaching pendant or PC communication connection.

7 Motor/encoder connector

Connector to connect an actuator motor and encoder cable.

8 Power supply connector

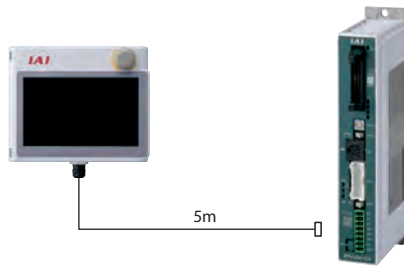Connector for power supply and emergency stop status signal input.

Options

Touch panel teaching pendant

■**Features** A teaching device equipped with functions such as position teaching, trial operation, and monitoring.

■**Model** **TB-02-□**

■**Configuration**

5m

■**Specifications**

|	
Rated voltage	24VDC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0 ~ 40℃
Ambient operating humidity	5%RH ~ 85%RH (no condensation)
Environmental resistance	IP20
Weight	470g (TB-02 unit only)

Teaching software for PC (Windows only)

■**Features** The start-up support software which comes equipped with functions such as position teaching, trial operation, and monitoring.
A complete range of functions needed for making adjustments contributes to a reduced start-up time.

Supported Windows versions: 7 / 8 / 10

■**Model** **RCM-101-MW** (with an external device communication cable + RS232 conversion unit)
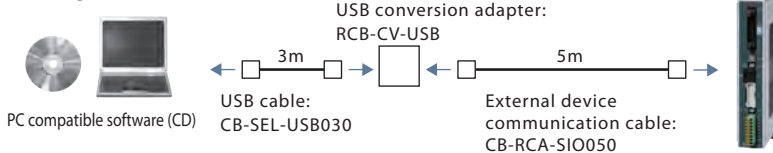
Please contact IAI for the current supported versions.

■**Configuration**

PC compatible software (CD)

RS232 conversion adapter RCB-CV-MW

0.3m

5m

External device communication cable CB-RCA-SIO050
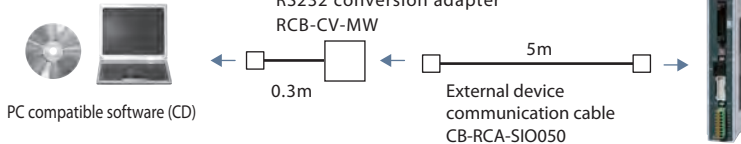
■**Model** **RCM-101-USB** (with an external device communication cable +USB conversion adapter + USB cable)

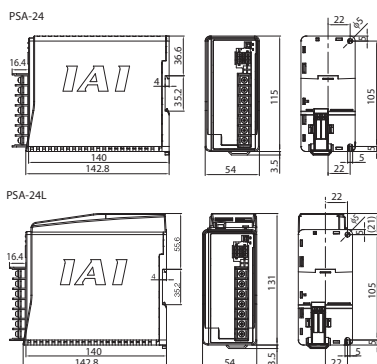Please contact IAI for the current supported versions.

■**Configuration**

PC compatible software (CD)

USB conversion adapter: RCB-CV-USB

3m

USB cable: CB-SEL-USB030

5m

External device communication cable: CB-RCA-SIO050

24V power

■**Overview**
This power source supplies 24VDC.
The "Calculator" software can be used to confirm the ideal power capacity.

■**Model** **PSA-24 (without fan)** *Coming soon*

■**Model** **PSA-24L (with fan)** *Coming soon*

Dummy plug

■**Features**
When using safety category specification (PCON-CGBP), this will be required.

■**Model** **DP-5**

PSA-24

16.4 36.6 35.2 4 115 140 142.8 54 3.5 22 22 105

PSA-24L

16.4 56.6 35.2 4 131 140 142.8 54 3.5 22 22 105

Item	Specifications
	230VAC input
Power input voltage range	230VAC±10%
Input power supply current	1.9A or less
Power capacity	Without fan: 280VA With fan: 380VA
Inrush current *1	Without fan: 34A (typ.) With fan: 54.8A (typ.)
Generated heat	20.4W
Output voltage range *2	24V ±10%
Continuous rated output	Without fan: 8.5A (204W), with fan: 13.8 (330W)
Peak output	17A (408W)
Efficiency	90% or more
Parallel connection *3	Up to 5 units

*1 The pulse width of flowing inrush current is 5ms or less.
*2 This power supply can vary the output voltage according to the load in order to enable parallel operation. The power supply is therefore for use with IAI controllers only.
*3 Parallel connection cannot be used under the following conditions.
• Parallel connection of PSA-24 (specification without fan) and PSA-24L (specification with fan)
• Parallel connection with a power supply unit other than this power supply

Maintenance Parts

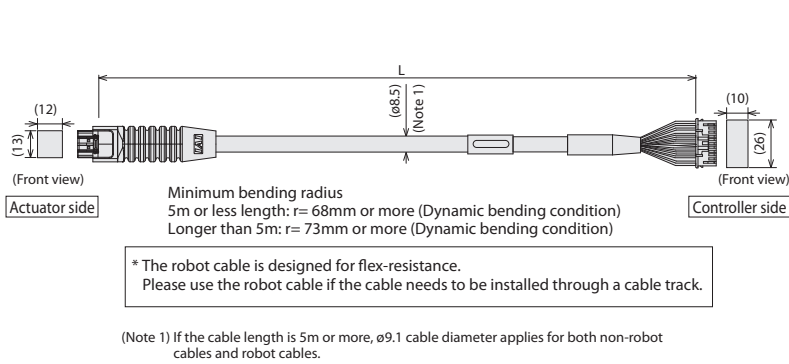**When placing an order for a replacement cable after purchasing a product, please use the model name shown below.**

■ **Table of compatible cables**

Model name	Motor/encoder cable	Motor/encoder robot cable
RCP6-RRA□R-LCT	CB-CAN-MPA□□□	CB-CAN-MPA□□□-RB

Model name	PIO flat cable
PCON-CBP/CGBP	CB-PAC-PIO□□□

Model **CB-CAN-MPA□□□/CB-CAN-MPA□□□-RB**

* Please indicate the cable length (L) in □□□, maximum 20m
Example) 080 = 8m

Minimum bending radius
5m or less length: r= 68mm or more (Dynamic bending condition)
Longer than 5m: r= 73mm or more (Dynamic bending condition)

* The robot cable is designed for flex-resistance.
 Please use the robot cable if the cable needs to be installed through a cable track.

(Note 1) If the cable length is 5m or more, ø9.1 cable diameter applies for both non-robot cables and robot cables.

Actuator side
DF62DL-24S-2.2C (Hirose)

Color		Signal name	Pin No.
Standard cable	Robot cable		
Blue (AWG22/19)	Blue (AWG22/19)	øA	3
Orange (AWG22/19)	Orange (AWG22/19)	VMM	5
Brown (AWG22/19)	Brown (AWG22/19)	øB	10
Gray (AWG22/19)	Gray (AWG22/19)	VMM	9
Green (AWG22/19)	Green (AWG22/19)	ø_A	4
Red (AWG22/19)	Red (AWG22/19)	ø_B	15
Light blue (AWG26)	Light blue (AWG26)	SA[mABS]	12
Orange (AWG26)	Orange (AWG26)	SB[mABS]	17
Green (AWG26)	Green (AWG26)	A+	1
Brown (AWG26)	Brown (AWG26)	A-	6
Gray (AWG26)	Gray (AWG26)	B+	11
Red (AWG26)	Red (AWG26)	B-	16
Black (AWG26)	Black (AWG26)	VPS	18
Yellow (AWG26)	Yellow (AWG26)	LDC_VCC	8
Light blue (AWG26)	Light blue (AWG26)	BK+	20
Orange (AWG26)	Orange (AWG26)	BK-	2
Gray (AWG26)	Gray (AWG26)	VCC	21
Red (AWG26)	Red (AWG26)	GND,LDC_GND	7
Brown (AWG26)	Brown (AWG26)	LDC_SD+	14
Green (AWG26)	Green (AWG26)	LDC_SD-	13
—	—	—	19
Pink (AWG26)	Pink (AWG26)	CF_VCC	22
—	—	—	23
Black (AWG26)	Green (AWG26)	FG	24

Controller side
PADP-24V-1-S (J.S.T. Mfg. Co., Ltd.)

Pin No.	Signal name	Color	
		Standard cable	Robot cable
1	øA	Blue (AWG22/19)	Blue (AWG22/19)
2	VMM	Orange (AWG22/19)	Orange (AWG22/19)
3	øB	Brown (AWG22/19)	Brown (AWG22/19)
4	VMM	Gray (AWG22/19)	Gray (AWG22/19)
5	ø_A	Green (AWG22/19)	Green (AWG22/19)
6	ø_B	Red (AWG22/19)	Red (AWG22/19)
11	SA[mABS]	Light blue (AWG26)	Light blue (AWG26)
12	SB[mABS]	Orange (AWG26)	Orange (AWG26)
13	A+	Green (AWG26)	Green (AWG26)
14	A-	Brown (AWG26)	Brown (AWG26)
15	B+	Gray (AWG26)	Gray (AWG26)
16	B-	Red (AWG26)	Red (AWG26)
18	VPS	Black (AWG26)	Black (AWG26)
7	LDC_VCC	Yellow (AWG26)	Yellow (AWG26)
9	BK+	Light blue (AWG26)	Light blue (AWG26)
10	BK-	Orange (AWG26)	Orange (AWG26)
17	VCC	Gray (AWG26)	Gray (AWG26)
19	GND,LDC_GND	Red (AWG26)	Red (AWG26)
8	LDC_SD+	Brown (AWG26)	Brown (AWG26)
20	LDC_SD-	Green (AWG26)	Green (AWG26)
22	—		
21	CF_VCC	Pink (AWG26)	Pink (AWG26)
23	—		
24	FG	Black (AWG26)	Green (AWG26)

Model **CB-PAC-PIO□□□**

* Please indicate the cable length (L) in □□□, maximum 10m
Example) 080 = 8m

Flat cable (20-core) × 2
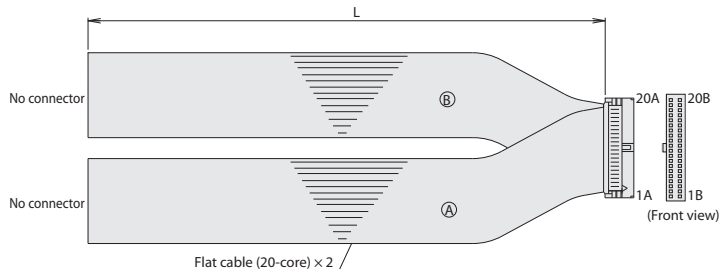
HIF6-40D-1. 27R (Hirose)

No.	Signal name	Cable color	Wiring	No.	Signal name	Cable color	Wiring
1A	24V	Brown-1		1B	OUT0	Brown-3	
2A	24V	Red-1		2B	OUT1	Red-3	
3A	—	Orange-1		3B	OUT2	Orange-3	
4A	—	Yellow-1		4B	OUT3	Yellow-3	
5A	IN0	Green-1		5B	OUT4	Green-3	
6A	IN1	Blue-1		6B	OUT5	Blue-3	
7A	IN2	Purple-1	Flat cable (pressure-welded) Ⓐ	7B	OUT6	Purple-3	Flat cable Ⓑ (pressure-welded) AWG28
8A	IN3	Gray-1		8B	OUT7	Gray-3	
9A	IN4	White-1		9B	OUT8	White-3	
10A	IN5	Black-1		10B	OUT9	Black-3	
11A	IN6	Brown-2		11B	OUT10	Brown-4	
12A	IN7	Red-2		12B	OUT11	Red-4	
13A	IN8	Orange-2		13B	OUT12	Orange-4	
14A	IN9	Yellow-2		14B	OUT13	Yellow-4	
15A	IN10	Green-2		15B	OUT14	Green-4	
16A	IN11	Blue-2		16B	OUT15	Blue-4	
17A	IN12	Purple-2		17B	—	Purple-4	
18A	IN13	Gray-2		18B	—	Gray-4	
19A	IN14	White-2		19B	0V	White-4	
20A	IN15	Black-2		20B	0V	Black-4	