RCP4W-RA7C

ROBO Cylinder, Splash-Proof Rod Type, Actuator Width 75mm, 24V Pulse Motor

Model Specification Items: **RCP4W** — **RA7C** — **I** — **56P** — ☐ — ☐ — **P3** — ☐ — ☐

- Series: RCP4W
- Type: RA7C
- Encoder type: I: Incremental
- Motor type: 56P: Pulse motor, size 56☐; 56SP: High-thrust pulse motor, size 56☐
- Lead: 16: 16mm; 8: 8mm; 4: 4mm
- Stroke: 50: 50mm ~ 500: 500mm (50mm pitch increments)
- Applicable controller: P3: PCON-CA; P4: PCON-CFA; * The PCON-CFA is designed exclusively for the high-thrust specification.
- Cable length: N: None; P: 1m; S: 3m; M: 5m; X☐☐: Custom length; R☐☐: Robot cable
- Options: See Options below. * If the high-thrust pulse motor is selected, the actuator comes standard with option B (Brake).

* See page Pre-47 for details on the model descriptions.

Built-in Guide Mechanism

RoHS

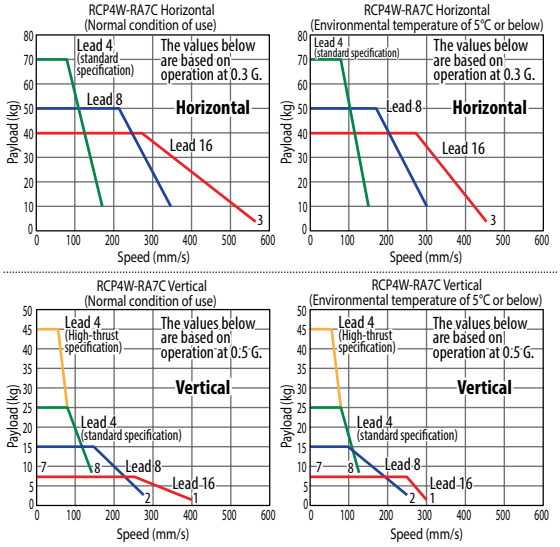
Technical References → Appendix P.5

POINT Notes on selection

(1) The maximum payload is the value when operated horizontally and vertically at 0.3G and 0.5G, respectively. Note that raising the acceleration causes the payload to drop. (Refer to page A-108 for the maximum payload by acceleration.)
(2) The horizontal payload is calculated by assuming that an external guide is also used.
(3) The high-thrust specification is designed exclusively for vertical operation. It comes standard with a brake.

■ Speed vs. Load Capacity

Due to its pulse motor characteristics, the RCP4 series provides lower payload at higher speed. Check the tables below to see if the desired speed and payload can be achieved.



Actuator Specifications

■ Lead and Payload

Model number		Lead (mm)	Maximum payload (kg) Horizontal (kg)	Maximum payload (kg) Vertical (kg)	Maximum push force (N)	Positioning repeatability (mm)	Stroke (mm)
Standard specification	RCP4W-RA7C-I-56P-16-①-P3-②-③	16	40	7	219	±0.02	50 to 500 (Every 50mm)
	RCP4W-RA7C-I-56P-8-①-P3-②-③	8	50	15	437		
	RCP4W-RA7C-I-56P-4-①-P3-②-③	4	70	25	875		
High-thrust specification	RCP4W-RA7C-I-56SP-4-①-P4-②-③-B	4	—	45	1030		

Code explanation ① Stroke ② Cable length ③ Options

■ Stroke and Maximum Speed (Unit: mm/s)

Lead \ Stroke	50 (mm)	100 ~ 500 (Every 50mm)
16	500 [450 <300>]	560 <400> [450 <300>]
8	340 <280> [300 <250>]	
4	170 <140> [150 <125>]	
4	<80> [<80>]	

* The values in < > apply when the actuator is used vertically.
* The values in [ ] apply when the actuator is used at an environmental temperature of 5°C or below.

①Stroke

Stroke (mm)	Standard price	
	Standard specification	High-thrust specification
50	—	—
100	—	—
150	—	—
200	—	—
250	—	—
300	—	—
350	—	—
400	—	—
450	—	—
500	—	—

②Cable Length

Type	Cable symbol	Standard Price
Standard	**P** (1m)	—
	S (3m)	—
	M (5m)	—
Special 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)	—

* See page A-59 for cables for maintenance.

③Options

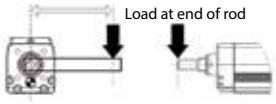
Name	Option code		Standard price
Cable exit from the left side face	**A1**	→ A-41	—
Cable exit from the right side face	**A3**	→ A-41	—
Cable exit from the top face	**AT**	→ A-41	—
Brake	**B**	→ A-42	—
With flange	**FL**	→ A-45	—
With foot bracket	**FT**	→ A-48	—
Non-motor side specification	**NM**	→ A-52	—

*The high-thrust specification comes standard with a brake.

Actuator Specifications

Item	Description
Drive method	Ball screw ø10mm, rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Rod	ø22 stainless steel pipe
Rod non-rotation accuracy	±0.1 degrees
Allowable load/allowable torque at end of rod	Refer to the page on the right.
Load offset distance at end of rod	100mm or less
Protective structure	IP67
Ambient operating temperature/ humidity	0 to 40°C, 85% RH or less (Non-condensing)

Offset distance at end of rod (100mm or less)



Dimensional Drawings

CAD drawings can be downloaded from the website. www.intelligentactuator.com

For Special Orders Appendix P.15

2D CAD

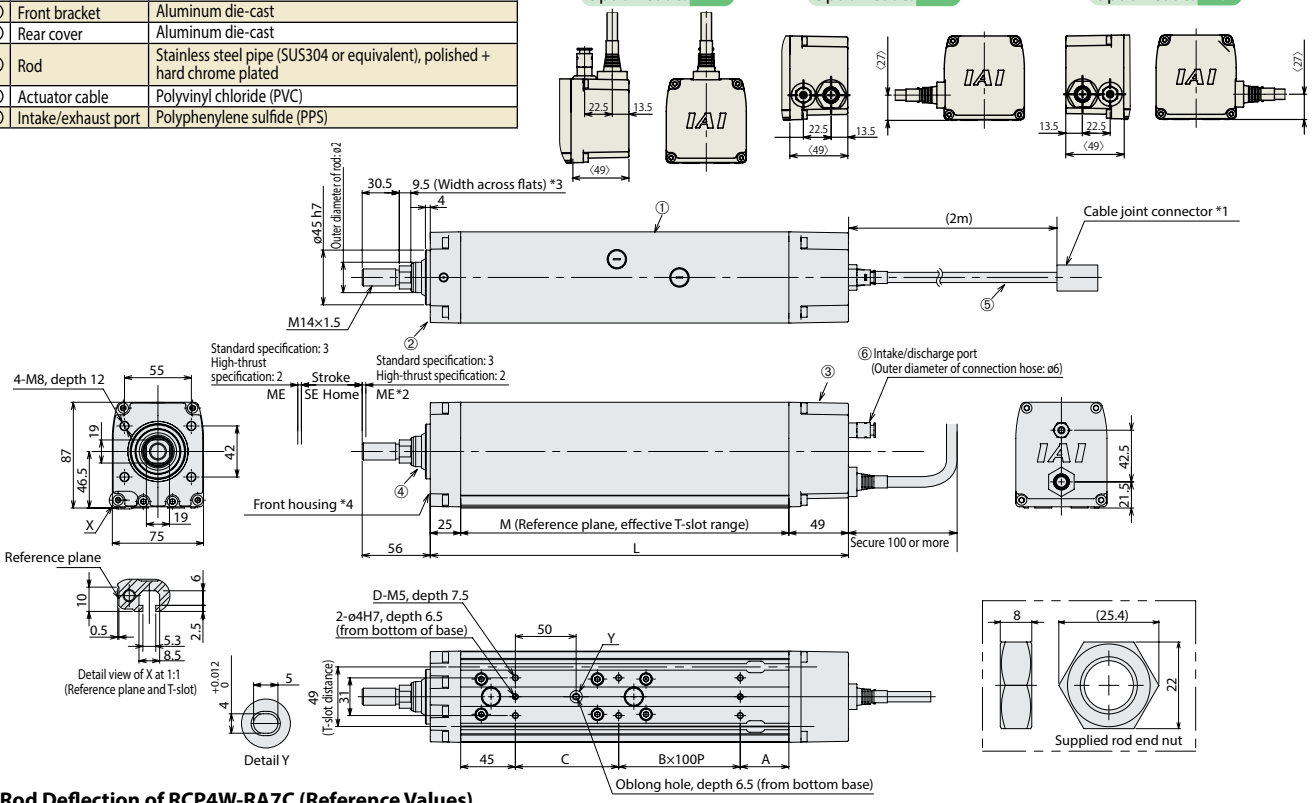
*1 Connect the motor-encoder integrated cable here.
*2 The rod moves to the ME during home return, so pay attention to possible contact with surrounding structures and objects.
*3 The orientation of the bolt varies from one product to another.
*4 When installing the actuator using the front housing or flange, make sure the actuator does not receive any external force.

■ Materials of Key Components

①	Frame	Aluminum extrusion material (A6063SS-T5 or equivalent) with white alumite coating
②	Front bracket	Aluminum die-cast
③	Rear cover	Aluminum die-cast
④	Rod	Stainless steel pipe (SUS304 or equivalent), polished + hard chrome plated
⑤	Actuator cable	Polyvinyl chloride (PVC)
⑥	Intake/exhaust port	Polyphenylene sulfide (PPS)

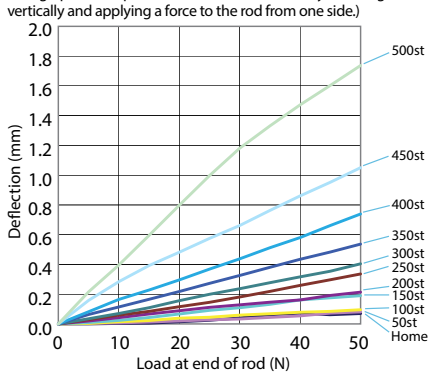
<Cable Exit Direction Option>

Exit from the top — Option code: AT
Exit from the left side face — Option code: A1
Exit from the right side face — Option code: A3



■ Rod Deflection of RCP4W-RA7C (Reference Values)

(The graph below plots deflection as measured by installing the actuator vertically and applying a force to the rod from one side.)



■ Dimensions and Weight by Stroke

Stroke		50	100	150	200	250	300	350	400	450	500
L	Without brake	344	394	444	494	544	594	644	694	744	794
	With brake (*)	399	449	499	549	599	649	699	749	799	849
A	Without brake	40	40	40	40	40	40	40	40	40	40
	With brake (*)	95	95	95	95	95	95	95	95	95	95
B		1	1	2	2	3	3	4	4	5	5
C		85	135	85	135	85	135	85	135	85	135
D		6	6	8	8	10	10	12	12	14	14
M	Without brake	270	320	370	420	470	520	570	620	670	720
	With brake	325	375	425	475	525	575	625	675	725	775
Allowable static load at end of rod (N)		112.7	91.5	76.7	65.7	57.2	50.4	44.8	40.2	36.2	32.7
Allowable dynamic load at end of rod (N)	Load offset 0 mm	49.0	37.4	29.9	24.5	20.4	17.1	14.5	12.3	10.3	8.6
	Load offset 100 mm	38.7	31.0	25.5	21.4	18.1	15.4	13.2	11.2	9.5	8.0
Allowable static torque at end of rod (N•m)		11.4	9.3	7.9	6.8	6.0	5.4	4.9	4.5	4.1	3.8
Allowable dynamic torque at end of rod (N•m)		3.9	3.1	2.5	2.1	1.8	1.5	1.3	1.1	1.0	0.8
Weight (kg)	Without brake	5.6	6.1	6.6	7.2	7.7	8.2	8.7	9.2	9.7	10.2
	With brake	6.4	6.9	7.4	7.9	8.4	9.0	9.5	10.0	10.5	11.0

(*) The dimensions of the high-thrust specification include the brake.

Applicable Controller

RCP4W series actuators can be operated with the controller indicated below. Select the type according to your intended application.

Name	External view	Model number	Features	Maximum number of positioning points	Input Power	Power supply capacity	Standard price	Reference page
Positioner type		PCON-CA-56PI-Ⓘ-2-0	Equipped with a high-output driver Positioner type based on PIO control	512 points	DC24V	Refer to P618	–	Refer to P607
Pulse-train type		PCON-CA-56PI-PL□-2-0	Equipped with a high-output driver Pulse-train input type	—			–	
Field network type		PCON-CA-56PI-Ⓝ-0-0	Equipped with a high-output driver Supporting 7 major field networks	768 points			–	
Positioner type		PCON-CFA-56SPI-Ⓘ-2-0	High-thrust specification Positioner type based on PIO control	512 points	DC24V	Refer to P618	–	Refer to P607
Pulse-train type		PCON-CFA-56SPI-PL□-2-0	High-thrust specification Pulse-train input type	—			–	
Field network type		PCON-CFA-56SPI-Ⓝ-0-0	High-thrust specification Supporting 7 major field networks	768 points			–	

* Ⓘ indicates I/O type (NP/PN). * □ indicates N (NPN specification) or P (PNP specification) symbol * Ⓝ indicates field network specification symbol.