

Mini Cylinder **RCD**



New Ultra-Compact Motorized Cylinder with 12mm Cross-Section



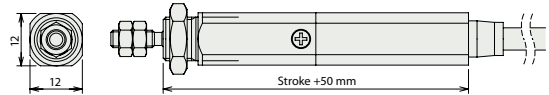
DSEP controller

Features

1. Ultra-compact size enables it to replace compact air cylinders

Ultra-compact size has been achieved, with a cross-section of only 12 mm with a body length as short as 60 mm.

The Mini Cylinder RCD is small enough to replace compact air cylinders used for short-stroke travel, pressing, hoisting, etc.

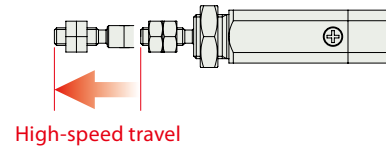


Slim actuator

2. High-speed performance with maximum acceleration/deceleration of 1 G and maximum speed of 300 mm/s

The Mini Cylinder RCD incorporates a newly developed brushless DC motor that generates sufficient torque despite its compact size.

Its high-speed performance with maximum acceleration/deceleration of 1 G and maximum speed of 300 mm/s is highly effective in reducing cycle time in a variety of systems.

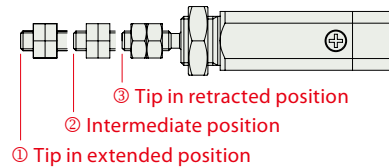


High-speed travel

3. Capable of 3-point positioning, acceleration rate adjustment, and pressing

The Mini Cylinder RCD easily achieves 3-point positioning and acceleration/deceleration rate adjustments, which are difficult to achieve using air cylinders.

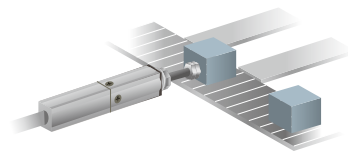
Push-motion operation similar to that available with air cylinders is also possible, and the force exerted during a push-motion operation is adjustable.



③ Tip in retracted position
② Intermediate position
① Tip in extended position

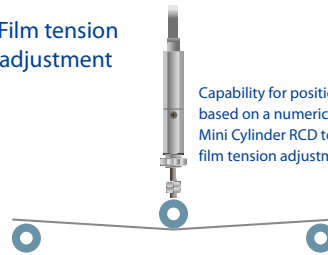
Application Examples

1. Part push-out



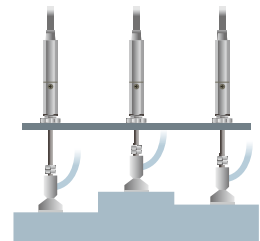
Setting the appropriate acceleration/deceleration rate enables the Mini Cylinder RCD to push out a workpiece without impact.

2. Film tension adjustment



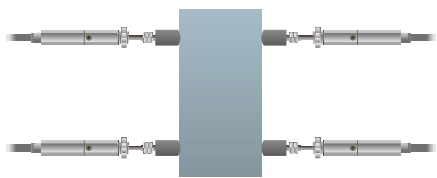
Capability for position adjustment based on a numeric value allows the Mini Cylinder RCD to achieve precise film tension adjustment.

3. Suction pads for height adjustment



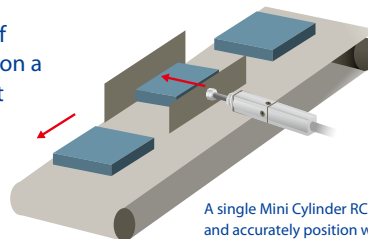
Three-point positioning enables the Mini Cylinder RCD to handle a workpiece with variable height dimensions.

4. Workpiece positioning



Multiple Mini Cylinder RCDs can be used to position a workpiece precisely by pushing it from both sides.

5. Positioning workpieces of varying sizes on a conveyor belt



A single Mini Cylinder RCD can push and accurately position workpieces of different sizes.

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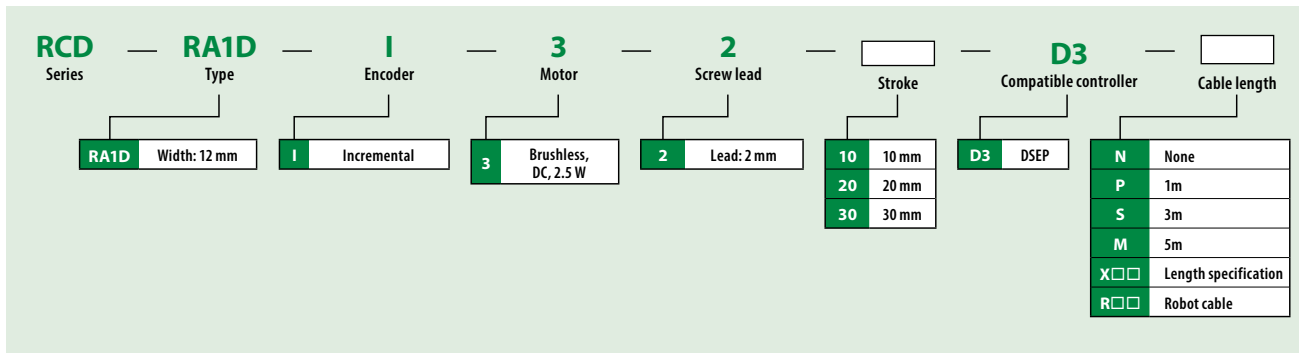
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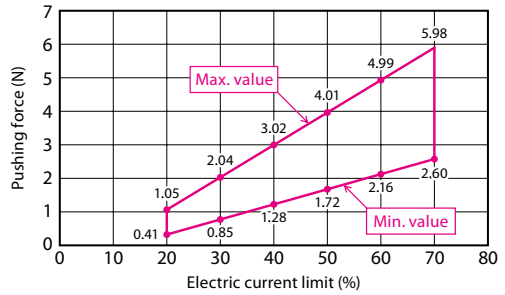
Actuator Specifications

Item	Description	
Drive method	-	Lead screw with 3mm diameter and 2mm lead
Stroke	(mm)	10/20/30
Rated acceleration	(G)	1.0
Rated speed (Note 1)	(mm/s)	300
Rated thrust	(N)	4.2
Payload (Note 2)	(kg)	Horizontal 0.7, Vertical 0.3
Positioning repeatability (Notes 3, 4)	(mm)	±0.05
Encoder resolution	(pulses/rev)	400
Lost motion (Notes 3, 4)	(mm)	0.2 or smaller
Rod static allowable load moment	(Nm)	0.02
Rod non-rotating accuracy	(degrees)	±3
Service life	(cycles)	10 million cycles (for horizontal and vertical)
Ambient operating temperature; Humidity	-	0-40°C; 10%-85% RH or less

Note 1: The rated speed may not be achieved, depending on the stroke.
 Note 2: When using an external guide and a free joint.
 Note 3: Value shown is the initial value, which may change depending on usage conditions because a lead screw is used.
 Note 4: If positioning repeatability is required, take lost motion into account and perform positioning from only one direction.

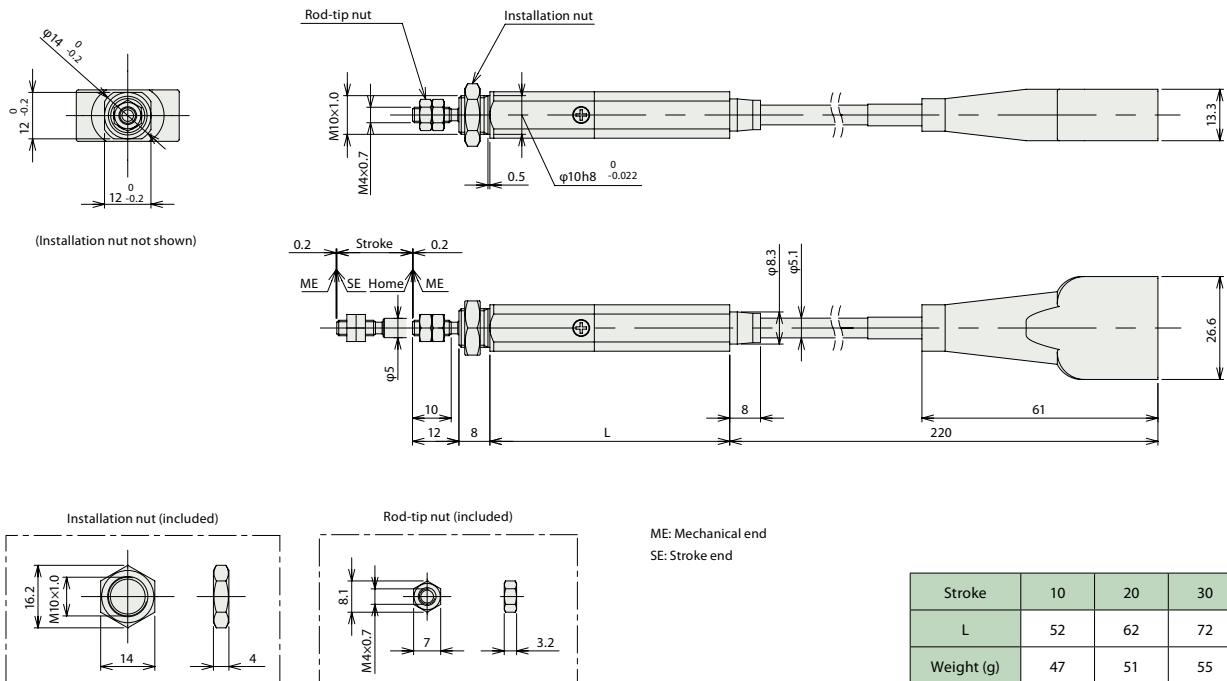
Electric Current Limit and Pushing Force

Electric current limit and pushing force (Push speed of 5 mm/sec)

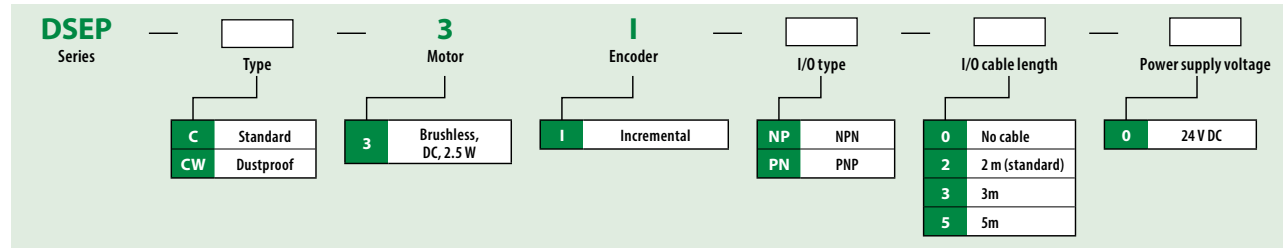


Note: The ranges shown in this graph take into account efficiency deterioration caused by wear on the lead screw. Always use the product within the maximum and minimum values.

Dimensions



Controller Model Description

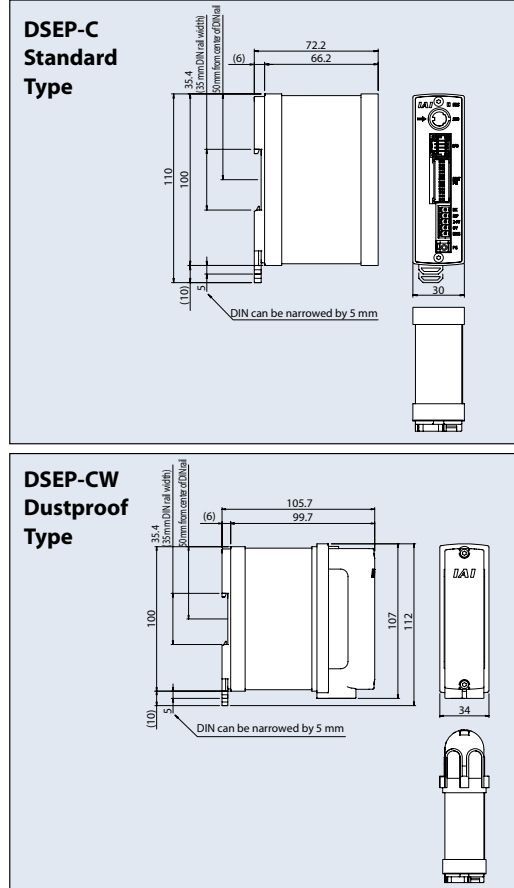


Controller Specifications

Item	Specifications
Connectable teaching box	CON-PTA, SEP-PT (V3.00 or newer), RCM-PST-□
Supported software for connected PC	RCM-101-MW/USB
Connectable actuator	RCD actuator
Number of control axes	1 axis
Operating method	Positioner type
Number of positioning points	2-point or 3-point (selectable)
Backup memory	EEPROM
I/O connector	10-pin connector
Number of I/O points	4 input points / 4 output points
I/O power supply	Externally supplied DC, 24 V ±10%
Serial communication	RS485 1 ch
Peripheral device communication cable	CB-APSEP-PIO□□□
Position detection method	Incremental encoder (Note: A simple absolute unit cannot be connected)
Motor-encoder cable	CB-CA-MPA□□□
Input power supply	DC 24 V ±10%
Control power supply capacity	0.5 A
Motor power supply capacity	Rated at 0.7 A (max. 1.5 A)
Inrush current (Note 1)	Max 10 A
Heat generated	4 W
Dielectric strength voltage	DC500 V 10 MΩ
Vibration resistance	XYZ directions 10–57 Hz One-side width: 0.035 mm (continuous), 0.075 mm (intermittent) 58–150 Hz 4.9 m/s ² (continuous), 9.8 m/s ² (intermittent)
Ambient temperature	0–40°C
Ambient humidity	85% RH or less (no condensation)
Ambient atmosphere	Free from corrosive gases
Protection class	IP20
Weight	Approx. 130 g

Note 1: Inrush current is approximately 5–12 times greater than the rated current and flows for approximately 1–2 ms after power is turned on. Note that the inrush current varies depending on the impedance of the power supply line.

External Dimensions



I/O Signal Table

Pin No.	Cable color	PIO pattern number		0		1		2		3		4		5	
		PIO pattern name		Standard 2-position movement		Moving speed change		Position data change		2-input, 3-position travel		3-input, 3-position travel		Continuous cycle operation	
		Solenoid type		Single	Double	Single	Double	Single	Double	Single	Double	–	–	–	–
1	Brown	COM		24V		24V		24V		24V		24V		24V	
2	Red	COM		0V		0V		0V		0V		0V		0V	
3	Orange	Input	0	ST0	ST0	ST0	ST0	ST0	ST0	ST0	ST0	ST0	ST0	ASTR	
4	Yellow		1	*STP	ST1 (-)	*STP	ST1 (-)	*STP	ST1 (-)	*STP	ST1 (-)	ST1	ST1 (-)	-/*STP	
5	Green		2	– (RES)		SPDC (RES)		CN1 (RES)		– (RES)		ST2 (RES)		– (RES)	
6	Blue	Output	3	–/SON		–/SON		–/SON		–/SON		–/SON		–/SON	
7	Purple		0	LS0/PE0		LS0/PE0		LS0/PE0		LS0/PE0		LS0/PE0		LS0/PE0	
8	Gray		1	LS1/PE1		LS1/PE1		LS1/PE1		LS1/PE1		LS1/PE1		LS1/PE1	
9	White	Output	2	HEND/SV		HEND/SV		HEND/SV		LS2/PE2		LS2/PE2		HEND/SV	
10	Black		3	*ALM/SV		*ALM/SV		*ALM/SV		*ALM/SV		*ALM/SV		*ALM/SV	

*These signals are always on except during operation.

Note: For an explanation of signal names in this table, see the description for PSEP/ASEP in the ROBO Cylinder* General Catalog.