ROTARY CLAMP CYLINDER

Series A01R1

Cat No A01R1 - 01 - 01 - A

ROTARY CLAMP CYLINDER - (Ø12, 16, 20, 25, 32, 40, 50, 63mm)

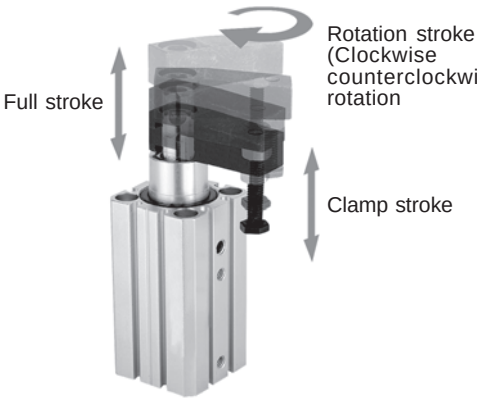
Features

- For ease of loading & unloading workpiece at restriction
- High speed operation : 0.2 sec/stroke
- Compact cylinders with strong clamping force, Ø12 to 63mm
- Reed switches can be mounted on cylinder surfaces as input signals to controllers
- Improved mounting accuracy. Guide bush and positioning pin hole ensure high-precision mounting
- Body machined from extruded aluminium that mounts directly to equipment for rigid, secure mounting in small space
- Compact equipment design is possible. Suited for electronic parts inspection clamps. Ideal for use in small mounting space
- A built-in magnet is standard, sensor can be directly mounted. Mounting from 3 directions (Ø12 to 16mm) (4 directions for Ø20 to 63mm)

Technical Specifications

Series	A01R1							
Action	Double acting, Magnetic piston type							
Bore size	12	16	20	25	32	40	50	63
Angle of swing	90° ± 10°							
Direction of swing	L : Anti-clockwise R : Clockwise							
Swing stroke	8.5		11		13		18	
Clamp / Overall stroke	18.5 / 28.5		21 / 31		23 / 33		38 / 68	
Allowable torque Nm	1	3.8	7	13	27	47	107	182
Theoretical clamping force N *	40	75	100	185	300	525	852	1400
Operating fluid	Compressed air							
Max. operating pressure	10 bar (10.2kgf / cm^2)							
Proof pressure	15 bar (15kgf / cm^2)							
Piston speed	50 - 200mm / sec							
Temperature range	-10°C to +70°C							
Lubrication	Not required							

* Where the operating pressure is 5 bar (5.1 kgf/cm^2)



Standard Stroke

Stroke \ Bore	12	16	20	25	32	40	50	63
10	●	●	●	●	●	●		
20	●	●	●	●	●	●	●	●
50							●	●

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Theoretical Output Table

Model	Piston rod (mm)	Swing Direction	Effective area (cm^2)	Operating pressure kgf / cm^2			
				3	5	7	10
A01R1-12	6	R	0.8	2.4	4	5.6	8
		L	1.1	3.3	5.5	7.7	11
A01R1-16	8	R	1.5	4.5	7.5	10.5	15
		L	2	6	10	14	20
A01R1-20	12	R	2	6	10	14	20
		L	3	9	15	21	30
A01R1-25	12	R	3.7	11.1	18.5	25.7	37
		L	4.9	14.7	24.5	34.3	49
A01R1-32	16	R	6	18	30	42	60
		L	8	24	40	56	80
A01R1-40	16	R	10.5	31.5	52.5	73.5	105
		L	12.5	37.5	62.5	87.5	125
A01R1-50	20	R	16.5	49.5	82.5	115.5	165
		L	19.6	58.8	98	137.2	196
A01R1-63	20	R	28	84	140	196	280
		L	31.2	93.6	156	218.4	312

Weight Table

Unit : (g)

Stroke \ Bore	12	16	20	25	32	40	50	63
10	70	100	250	280	500	595	-	-
20	87	123	290	320	525	640	1100	1520
50	-	-	-	-	-	-	1350	1805

Table of Extra Weight

Unit : (g)

Stroke \ Bore	12	16	20	25	32	40	50	63
Arm	13	32	100	100	200	200	350	350
Rear flange	-	-	133	153	166	198	345	531

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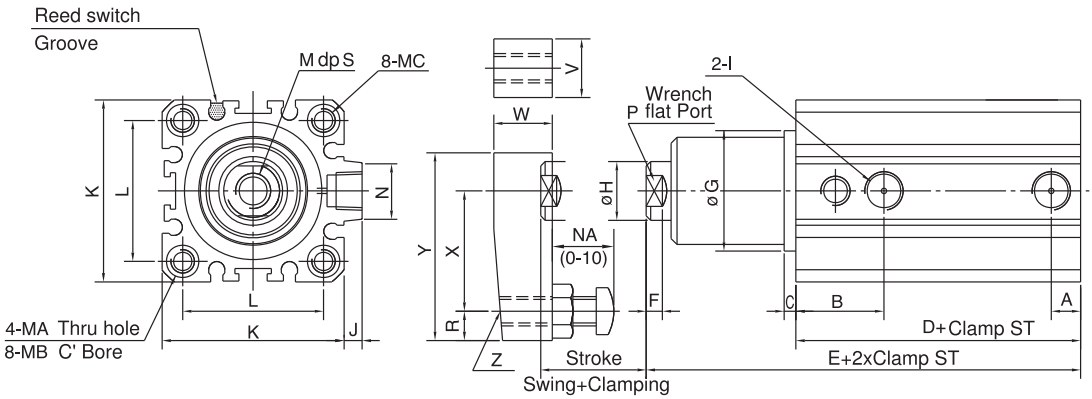
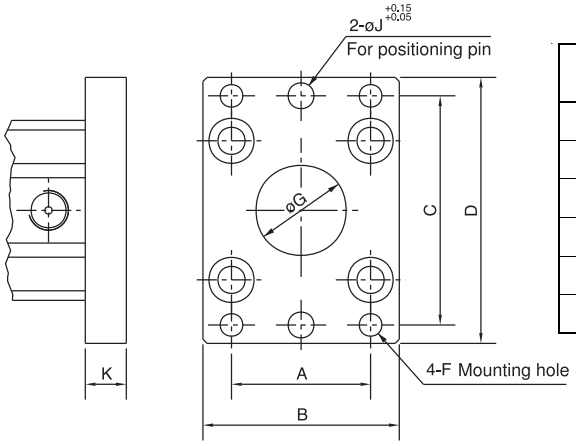
External Dimensions



Model	A	B	C	D	E	F	G	H	I	J	K	L	M	S
A01R1-12	5	16	2	35.5	48	2.5	-	6	M5 x 0.8	-	25	15.5	M3 x 0.5	6
A01R1-16	5	16	2	35.5	48	2.5	-	8	M5 x 0.8	-	29	20	M5 x 0.8	10
A01R1-20	7.5	27	3	62	72.5	3	20	12	M5 x 0.8	-	36	25.5	M8 x 1.25	12
A01R1-25	8	28	3	63	73.5	3	23	12	M5 x 0.8	-	40	28	M8 x 1.25	12
A01R1-32	9	33	4	72	94	5.5	30	16	RC(PT)1/8	4.5	45	34	M10 x 1.5	15
A01R1-40	10	26	4	65	94	5.5	30	16	RC(PT)1/8	5	52	40	M10 x 1.5	15
A01R1-50	10	30	4	77	112	5.5	37	20	RC(PT)1/4	7	64	50	M12 x 1.75	20
A01R1-63	12	31	4	80	114	5.5	48	20	RC(PT)1/4	7	77	60	M12 x 1.75	20

Model	MA	MB	MC	N	NA	P	R	V	W	X	Y	Z
A01R1-12	Ø3.4	Ø6.5 dp 4	M4 x 0.7 Thread dp 8	-	18	5	4	8	8	20	29	M4 x 0.7
A01R1-16	Ø3.4	Ø6.5 dp 4	M4 x 0.7 Thread dp 8	-	18	7	5	11	11	25	36	M4 x 0.7
A01R1-20	Ø5.5	Ø9 dp 7	M6 x 1.0 Thread dp 10	-	22	10	7.5	16	16	35	51	M6 x 1.0
A01R1-25	Ø5.5	Ø9 dp 7	M6 x 1.0 Thread dp 10	-	22	10	7.5	16	16	35	51	M6 x 1.0
A01R1-32	Ø5.5	Ø9 dp 7	M6 x 1.0 Thread dp 12	14	25	14	10	19	19	45	67	M8 x 1.25
A01R1-40	Ø5.5	Ø9 dp 7	M6 x 1.0 Thread dp 10	15	25	14	10	19	19	45	67	M8 x 1.25
A01R1-50	Ø6.6	Ø11 dp 8	M8 x 1.25 Thread dp 15	19	40	17	10	22	22	65	88	M10 x 1.5
A01R1-63	Ø9	Ø14 dp 10.5	M10 x 1.5 Thread dp 18	22	40	17	10	22	22	65	88	M10 x 1.5

Rear Flange



Ordering No.	A	B	C	D	F	G	J	K
MR13020	25.5	38	48	60	6.3	13	6.6	8
MR13025	28	42	52	64	6.3	15	6.6	8
MR13032	34	48	56	65	5.5	21	6.3	10
MR13040	40	56	62	72	5.5	28	6.3	10
MR13050	50	67	76	89	6.6	35	6.3	10
MR13063	60	80	92	108	9	35	6.3	10

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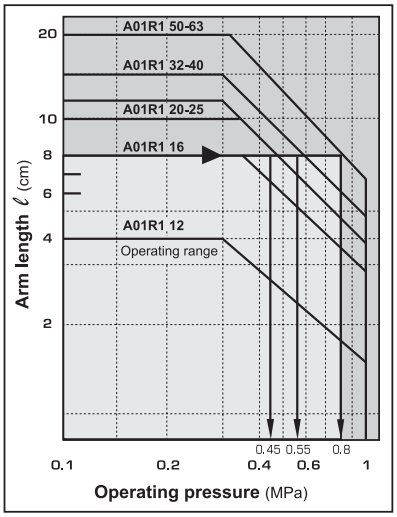
Precautions for designing and mounting arms

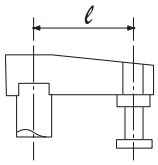
When arms are to be made separately, their length and weight should be within the following range.

1. Allowable bent moment

Use the arm length and operating pressure within graph 1 due to allowable bent moment loaded piston rod.

Graph1



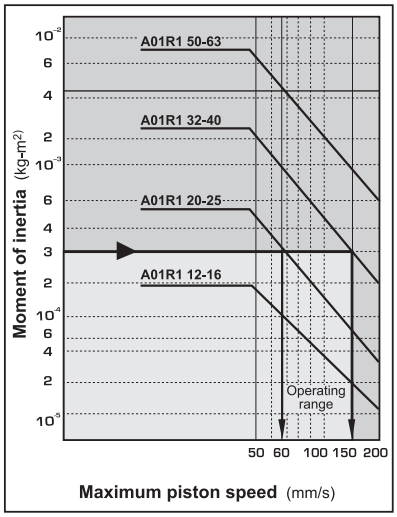


Example:
When arm length is 8cm, pressure should be less than.
A01R1 20 - 25 : 0.45MPa
A01R1 32 - 40 : 0.55MPa
A01R1 50 - 63 : 0.8MPa

2. Inertia moment

When the arm is long and heavy, damage of internal parts may be caused due to inertia. Use the inertia moment and cylinder speed within graph 2 based on arm requirements.

Graph2



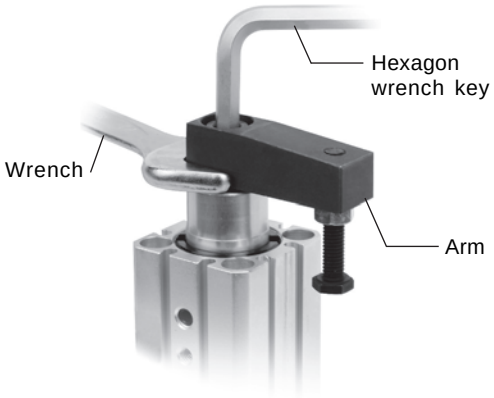
Example:
When arm inertia moment is $3x10^{-4}$ kg-m^2, cylinder speed be less than.
A01R1 20 - 25 : 65 mm/s
A01R1 32 - 40 : 150 mm/s

To attach and detach the arm to and from the piston rod, fix the arm with a wrench or vise and then tighten the bolt. (Excessive force in the direction of rotation applied to the piston rod may damage the internal mechanism). Refer to the following table for the tightening torque for mounting.

Bore size (mm)	Standard tightening torque (Nm)
12	0.4 - 0.6
16	2 - 2.4
20, 25	4 - 6
32, 40	8 - 10
50, 63	14 - 16

Precautions

- ❑ Flush piping thoroughly before the connection in order to prevent dust or chips from entering the cylinder.
- ❑ Make sure that no scratches or dents are made on the slide part of the piston rod. Otherwise, seals may be damaged, resulting in leaks.
- ❑ Mount the cylinder so that the clamping piston will be approximately in the center of the clamp stroke.
- ❑ Do not apply clamping and other loads when the piston rod is turning.



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Series A01R1

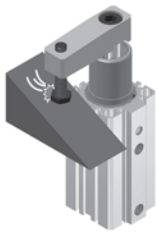
Cat No A01R1 - 01 - 01 - A

Warning

The cylinder could malfunction or the non-rotating accuracy could be affected if a rotational force is applied to the piston rod. Therefore, read the particulars given below before operating the cylinder.

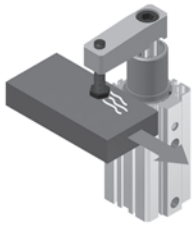
- ❑ Make sure to mount the cylinder vertically (Fig 4)
- ❑ Do not absolutely perform any work in the rotary direction (Fig 5)
- ❑ To clamp, make sure to do within the clamp stroke (straight-line stroke) range (Fig 3)
- ❑ Make sure that the clamping surface of the workpiece is vertical to the cylinder's axial line (Fig 1)
- ❑ While being clamped, do not operate the cylinder in such a way that an external force causes the work piece to move (Fig 2)
- ❑ Furthermore, do not operate the cylinder when a rotational force is applied to the piston rod

(Fig 1)



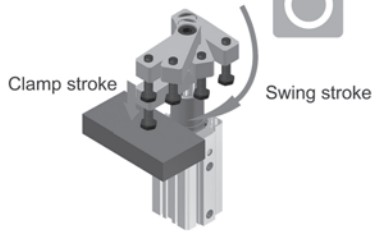
❑ Do not clamp on a slanted surface.

(Fig 2)



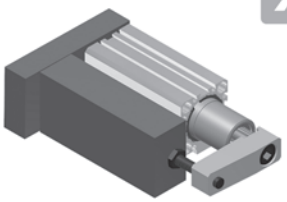
❑ Make sure that the workpiece dosen't move during clamping.

(Fig 3)



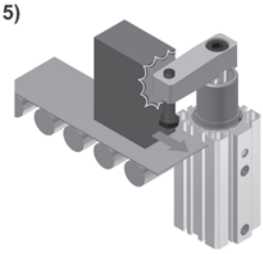
❑ Do not clamp during the rotary stroke.

(Fig 4)



❑ Do not operate the cylinder horizontally.

(Fig 5)



❑ Do not perform any work in the rotary direction.

How to order

A01R1 ○○○

Bore (mm)	
012	- Ø12
016	- Ø16
020	- Ø20
025	- Ø25
032	- Ø32
040	- Ø40
050	- Ø50
063	- Ø63

○○

Stroke (mm)	
Ø12 - 40	10 & 20mm
Ø50 - 63	20 & 50mm

○

Direction of swing	
R	- Clockwise
L	- Anti-clockwise

○

Mountings	
B	- Basic
F	- Rear Flange

Ordering Example :

Ordering no. for cylinder with 40 dia bore, 20 mm stroke, Clockwise direction of swing with flange mounting :
A01R1 040 20 R F

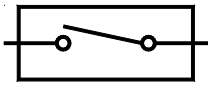
Subject to change

ROTARY CLAMP CYLINDER

Series A01R1

Cat No A01R1 - 01 - 01 - A

ACCESSORIES FOR ROTARY CLAMP CYLINDER



MAGNETIC SENSOR - AM100

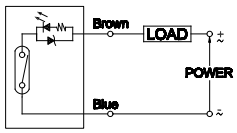
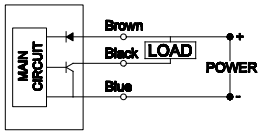
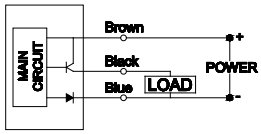
Features

- ❑ Integrated LED
- ❑ Moulded cable with flying lead and Quick Disconnect (QD) connector versions
- ❑ Direct mounting, simple installation
- ❑ Reed contact type & Solid state type versions

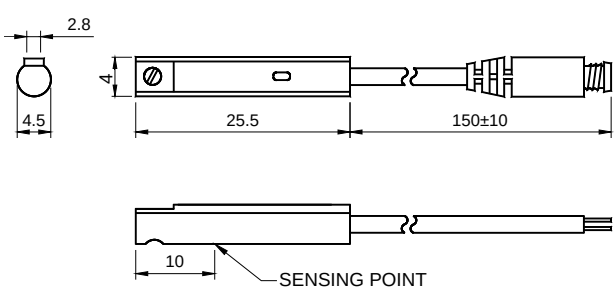
Function

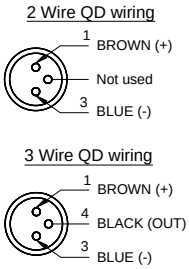
The pistons of these cylinders are equipped with a permanent magnet, which activates the cylinder switches when it approaches these. The switch in question then outputs an electrical or pneumatic signal.

Technical Specifications

Circuit and connection diagram			
Model	**AM100**		
Bore dia mm	12, 16, 20, 25, 32, 40, 50, 63		
Wiring system	Two lead wire type	Three lead wire type	
Sensor type	Reed switch	NPN. Current sinking	PNP. Current sourcing
Operating voltage	DC: 5 ~ 120V AC: 5 ~ 120V	DC: 5 ~ 30V	
Switching current	50mA max.	200mA max.	
Switching rating	6W max.		
Current consumption	---	20 mA @ 24 V max. (Switch active)	
Internal voltage drop	0.5@200 mA max.	2.5 V max.	
Leakage current	0.01 mA max.	---	
Colour of LED	Red	Red	Green
Cable	Ø 2.8, 2C	Ø 2.8, 3C	
Operating temperature	-10° to 70° C		
Production grade	IEC 529, IP-67		
Protection circuit	None	Power source reverse polarity: Surge Suppression	

AM100

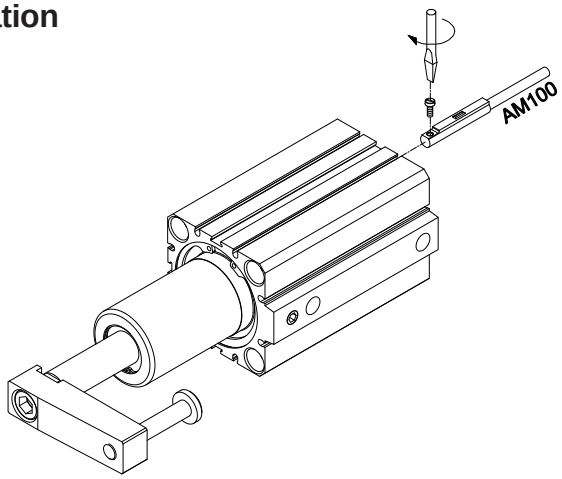




ROTARY CLAMP CYLINDER

Series A01R1

Sensor switch installation



How to order

AM100 – –

Switch type	End connection	Connection type
0 - Reed switch 2 wire type 2 - Solid state type, current sourcing (PNP) 3 - Solid state type, current sinking (NPN)	FL - 04 (Flying lead with 2 meter cable length) QD - 02 (Quick disconnecter with 300 mm cable length)	S - Straight type L - Angle type

Ordering example :- Reed switch 2 wire type with Flying lead of 2 meter cable length, straight type : **AM100-0FL-04S**