

COMPACT GUIDED CYLINDER

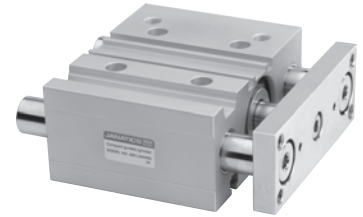
Series A91SL

Cat No A91SL - 01 - 01 - B

COMPACT GUIDED CYLINDER (Bushing type) - Ø12, 16, 20, 25, 32, 40, 50, 63mm

Features

- ❑ For ease of loading & unloading workpiece at restriction
- ❑ Compact cylinders with strong clamping force, Ø12 to 63mm
- ❑ 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
- ❑ Optional : High temperature (FKM seals) 150°C max. (only applicable for high temperature series)



Technical Specifications

Series	A91SL							
Bearing type	Bushing							
Cylinder bore Ø (mm)	12	16	20	25	32	40	50	63
Standard stroke * (mm)	10, 20, 30, 40, 50, 75, 100			20, 30, 40, 50, 75, 100, 125, 150, 175, 200		25, 50, 75, 100, 125, 150, 175, 200		
Working pressure (bar)	1.2 to 10			1 to 10				
Medium	Compressed air - Filtered - Non-lubricated (without moisture)							
Ambient temperature °C	-10 to +60 (Standard); -10 to +150 (only applicable for high temperature series)							
Medium temperature °C	+5 to +50 (Standard); +5 to +150 (only applicable for high temperature series)							
Materials of construction	Aluminium, Brass, Steel, Gunmetal, Polyurethane, Nitrile (Regular), FKM (High temperature)							
Cushion	Rubber bumper on both ends							
Stroke length tolerance (mm)	+1.5 0							

* For Non standard or longer stroke cylinders, contact your regional dealer or JANATICS

Output force (force in N : 1N = 0.1 kgf)

Bore dia (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure in bar								
				2	3	4	5	6	7	8	9	10
12	6	OUT	113	23	34	45	57	68	79	90	102	113
		IN	85	17	26	34	43	51	60	68	77	85
16	8	OUT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	76	91	106	121	136	151
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	OUT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	16	OUT	804	161	241	322	402	482	563	643	724	804
		IN	603	121	181	241	302	362	422	482	543	603
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803

(Above values have been worked out taking frictional loss into consideration)

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Weight Table - Bushing Type

Unit : (kg)

Bore dia (mm)	Model	Stroke (mm)											
		10	20	25	30	40	50	75	100	125	150	175	200
12	A91SL	0.24	0.28	-	0.31	0.35	0.39	0.50	0.59	-	-	-	-
16	A91SL	0.33	0.38	-	0.43	0.48	0.53	0.68	0.80	-	-	-	-
20	A91SL	-	0.67	-	0.75	0.83	0.91	1.17	1.37	1.57	1.76	1.96	2.16
25	A91SL	-	0.95	-	1.05	1.16	1.27	1.65	1.92	2.19	2.47	2.74	3.01
32	A91SL	-	-	1.69	-	-	2.07	2.47	2.85	3.24	3.62	4.00	4.38
40	A91SL	-	-	1.95	-	-	2.37	2.83	3.25	3.68	4.10	4.53	4.95
50	A91SL	-	-	3.36	-	-	4.00	4.73	5.37	6.01	6.65	7.29	7.93
63	A91SL	-	-	4.18	-	-	4.94	5.78	6.54	7.29	8.05	8.80	9.56

CAUTION NOTES

Be sure to read before handling

Precautions

1. Never place your hands or fingers between the plate and the body

Be very careful to prevent your hands or fingers from getting caught in the gap between the cylinder body and the plate when the air is applied.

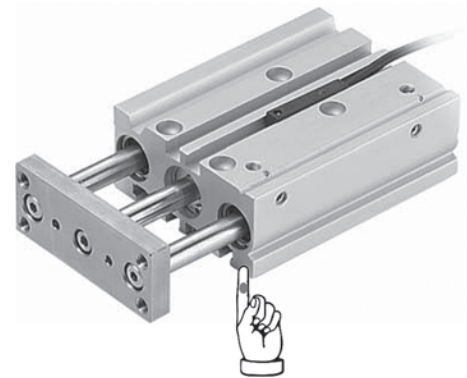
Caution

1. Do not scratch or gouge the sliding portion of the piston rod and the guide rod

Damaged seals, etc., will result in leakage or malfunction.

2. Bottom of cylinder

The guide rods may protrude from the bottom of the cylinder at the end of the retracting stroke. Therefore, wherever the cylinder is to be bottom mounted, it is necessary to provide bypass ports in the mounting surface for the guide rods, as well as holes for the hexagon socket head screws, which are used for mounting. Moreover, in applications where impact occurs from a stopper, etc., the mounting bolts should be inserted to a depth of 2d or more (1.5d or more for standard).



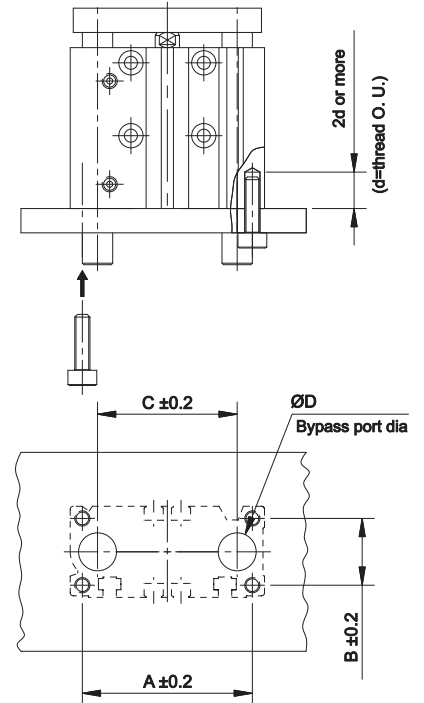
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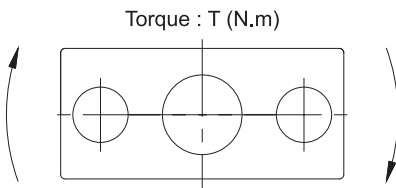
Standard Type

Bore dia (mm)	A	B	C	D	Hex. socket head cap screw
12	50	18	41	10	M4x0.7
16	56	22	46	12	M5x0.8
20	72	24	54	14	M5x0.8
25	82	30	64	18	M6x1.0
32	98	34	78	22	M8x1.25
40	106	40	86	22	M8x1.25
50	130	46	110	27	M10x1.5
63	142	58	124	27	M10x1.5



Operating Condition

Allowable Rotational Torque of Plate

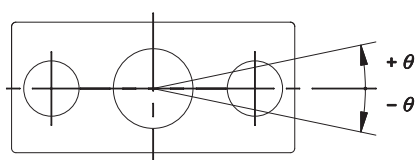


Bore dia (mm)	Stroke (mm)											
	10	20	25	30	40	50	75	100	125	150	175	200
12	0.39	0.32	-	0.27	0.24	0.21	0.43	0.36	-	-	-	-
	0.61	0.45	-	0.35	0.58	0.50	0.37	0.29	-	-	-	-
16	0.69	0.58	-	0.49	0.43	0.38	0.69	0.58	-	-	-	-
	0.99	0.74	-	0.59	0.99	0.86	0.65	0.52	-	-	-	-
20	-	1.05	-	0.93	0.83	0.75	1.88	1.63	1.44	1.28	1.16	1.06
	-	1.26	-	1.03	2.17	1.94	1.52	1.25	1.34	1.17	1.03	0.93
25	-	1.76	-	1.55	1.38	1.25	2.96	2.57	2.26	2.02	1.83	1.67
	-	2.11	-	1.75	3.37	3.02	2.38	1.97	2.05	1.78	1.58	1.41
32	-	-	6.35	-	-	5.13	5.69	4.97	4.42	3.98	3.61	3.31
	-	-	5.95	-	-	4.89	5.11	4.51	6.34	5.79	5.33	4.93
40	-	-	7.00	-	-	5.66	6.27	5.48	4.87	4.38	3.98	3.65
	-	-	6.55	-	-	5.39	5.62	4.96	6.98	6.38	5.87	5.43
50	-	-	13.0	-	-	10.8	12.0	10.6	9.50	8.60	7.86	7.24
	-	-	9.17	-	-	7.62	9.83	8.74	11.6	10.7	9.83	9.12
63	-	-	14.7	-	-	12.1	13.5	11.9	10.7	9.69	8.86	8.16
	-	-	10.2	-	-	8.48	11.0	9.74	13.0	11.9	11.0	10.2

T (N.m)

1 N.m = 10.2 kgf.cm

Non-Rotating Accuracy of Plate



Bore dia (mm)	Non-rotating accuracy θ
12	$\pm 0.08^\circ$
16	
20	$\pm 0.07^\circ$
25	

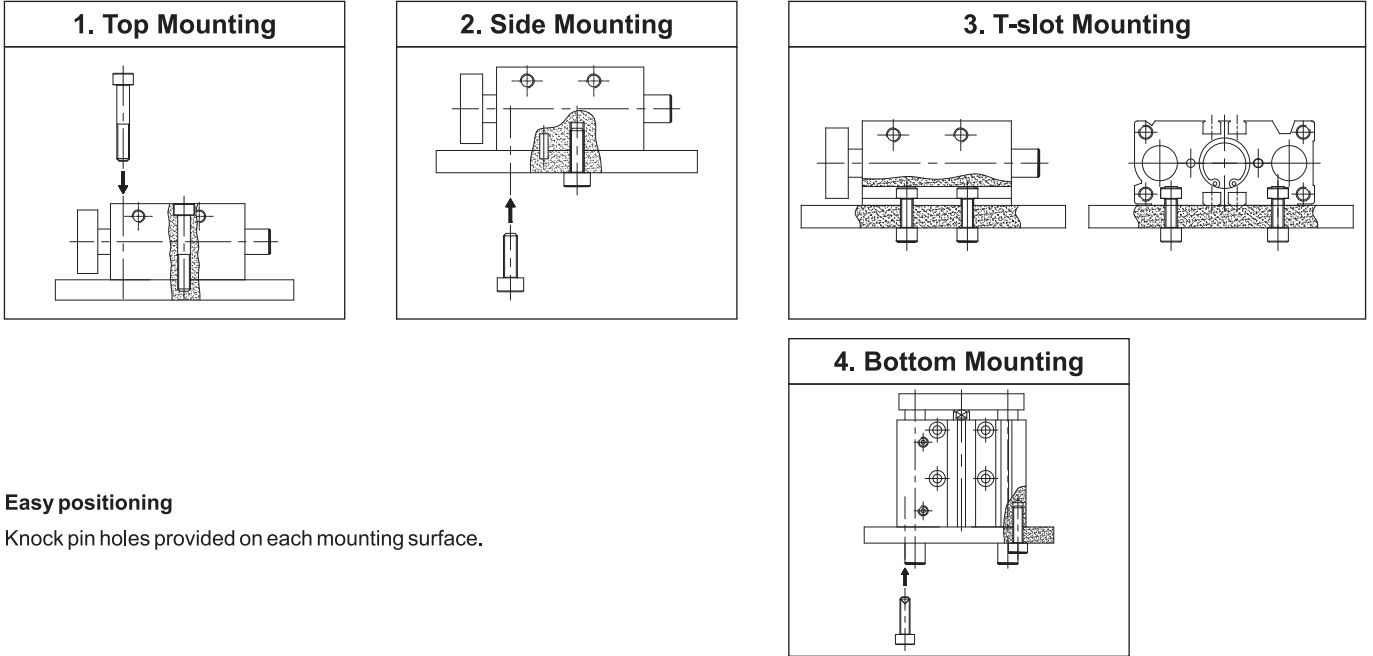
Bore dia (mm)	Non-rotating accuracy θ
32	$\pm 0.06^\circ$
40	
50	$\pm 0.05^\circ$
63	

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Four Mounting Style



Easy positioning

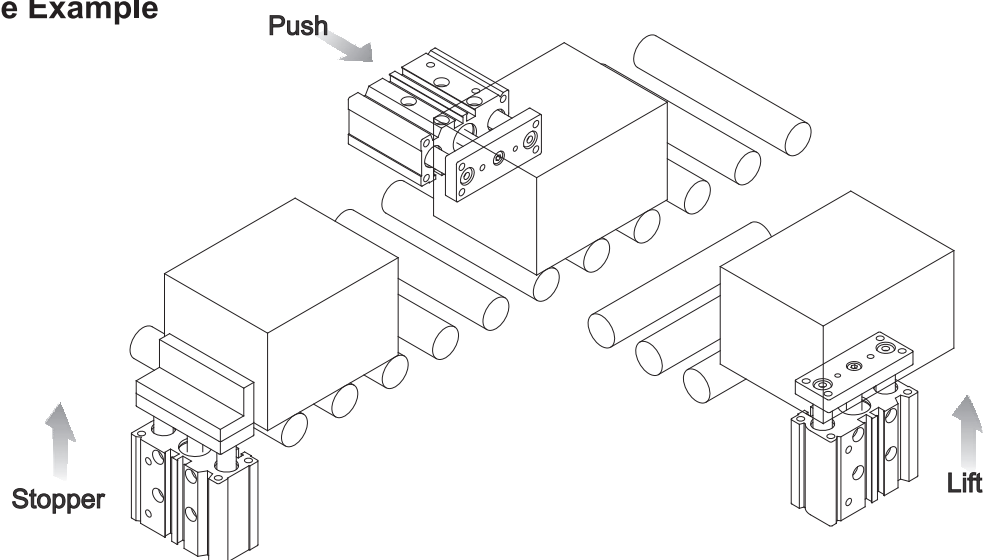
Knock pin holes provided on each mounting surface.

Stroke corresponding list - stroke variations

Bearing type	Bore dia (mm)	Stroke (mm)											
		10	20	25	30	40	50	75	100	125	150	175	200
A91SL Bushing	12	●	●	○	●	●	●	●	●				
	16	●	●	○	●	●	●	●	●				
	20		●	○	●	●	●	●	●	●	●	●	●
	25		●	○	●	●	●	●	●	●	●	●	●
	32			●	○	○	●	●	●	●	●	●	●
	40			●	○	○	●	●	●	●	●	●	●
	50			●	○	○	●	●	●	●	●	●	●
	63			●	○	○	●	●	●	●	●	●	●

(●) Standard stroke. (○) It's available, but please contact with us for detailed dimensions.

Multipurpose Example

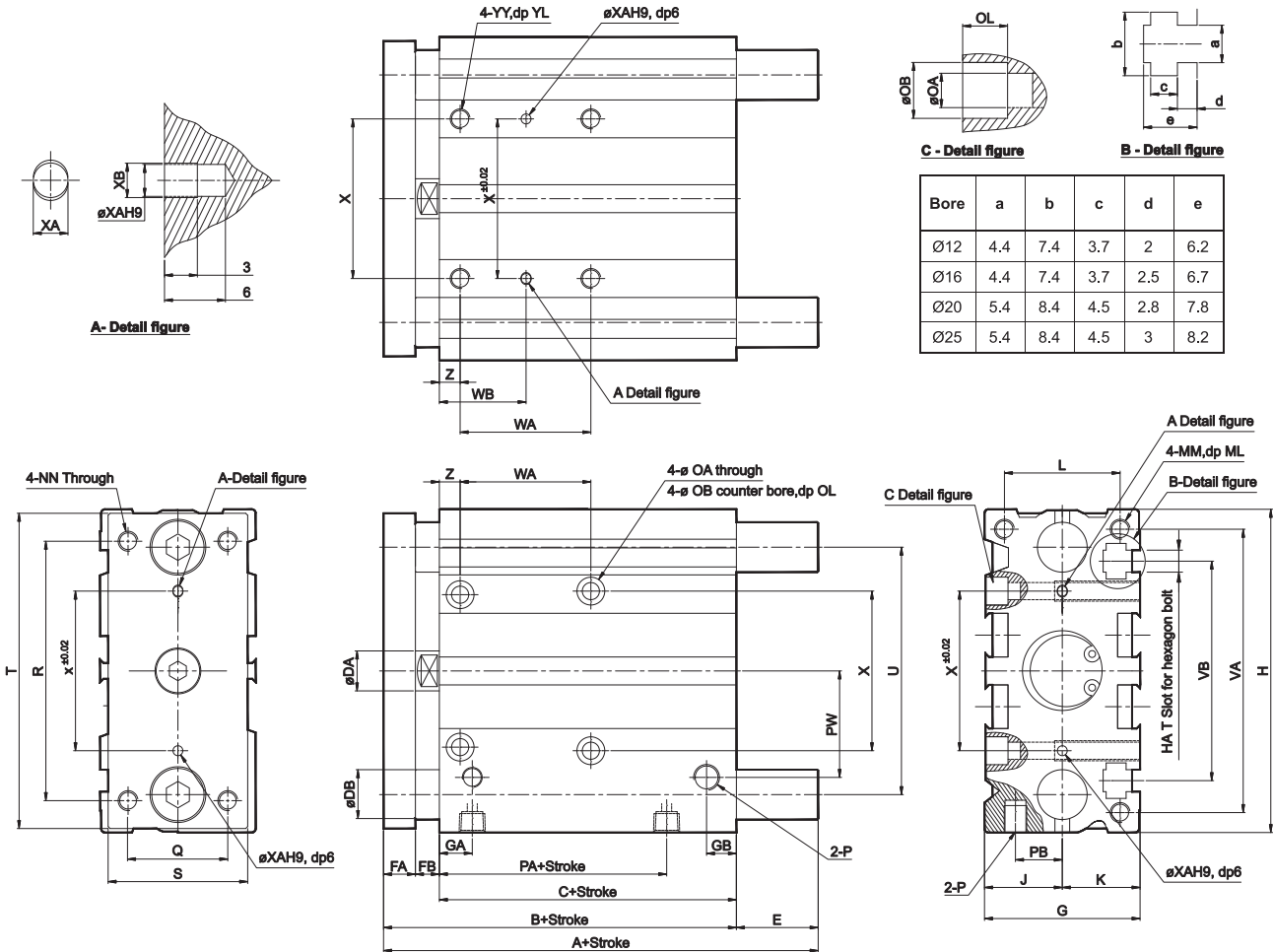


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Basic Dimensions



Bore	a	b	c	d	e
Ø12	4.4	7.4	3.7	2	6.2
Ø16	4.4	7.4	3.7	2.5	6.7
Ø20	5.4	8.4	4.5	2.8	7.8
Ø25	5.4	8.4	4.5	3	8.2

A91SL Common Dimensions

Bore	B	C	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW
Ø12	42	29	6	8	5	26	11	10	58	M4	13	13	18	M4x0.7	10	M4x0.7	4.3	8	4.5	M5x0.8	13	8	18
Ø16	46	33	8	8	5	30	11	9.5	64	M4	15	15	22	M5x0.8	12	M5x0.8	4.3	8	4.5	M5x0.8	15	10	19
Ø20	53	37	10	10	6	36	10.5	10.5	83	M5	18	18	24	M5x0.8	13	M5x0.8	5.3	9.5	5.5	G1/8	12.5	10.5	25
Ø25	53.5	37.5	12	10	6	42	11.5	11	93	M5	21	21	30	M6x1.0	15	M6x1.0	5.3	9.5	5.5	G1/8	12.5	13.5	28.5

Bore	Q	R	S	T	U	VA	VB	WA (stroke)					WB (stroke)					X	XA	XB	YY	YL	Z
								From 10 stroke to less than 40 stroke	From 40 stroke to less than 125 stroke	From 125 stroke to less than 250 stroke	From 250 stroke to less than 300 stroke	From 300 stroke to 400 stroke	From 10 stroke to less than 40 stroke	From 40 stroke to less than 125 stroke	From 125 stroke to less than 250 stroke	From 250 stroke to less than 300 stroke	From 300 stroke to 400 stroke						
Ø12	14	48	22	56	41	50	37	20	40	110	200	-	15	25	60	105	-	23	3	3.5	M5x0.8	10	5
Ø16	16	54	25	62	46	56	38	24	44	110	200	-	17	27	60	105	-	24	3	3.5	M5x0.8	10	5
Ø20	18	70	30	81	54	72	44	24	44	120	200	300	29	39	77	117	167	28	3	3.5	M6x1.0	12	17
Ø25	26	78	38	91	64	82	50	24	44	120	200	300	29	39	77	117	167	34	4	4.5	M6x1.0	12	17

A91SL (Bushing) A / DB / E Dimensions

Bore	A (stroke)			DB	E (stroke)		
	50 stroke or less	Over 50 stroke to 100 stroke	Over 100 stroke to 200 stroke		50 stroke or less	Over 50 stroke to 100 stroke	Over 100 stroke to 200 stroke
Ø12	42	60.5	85	8	0	18	43
Ø16	46	64.5	95	10	0	18	49

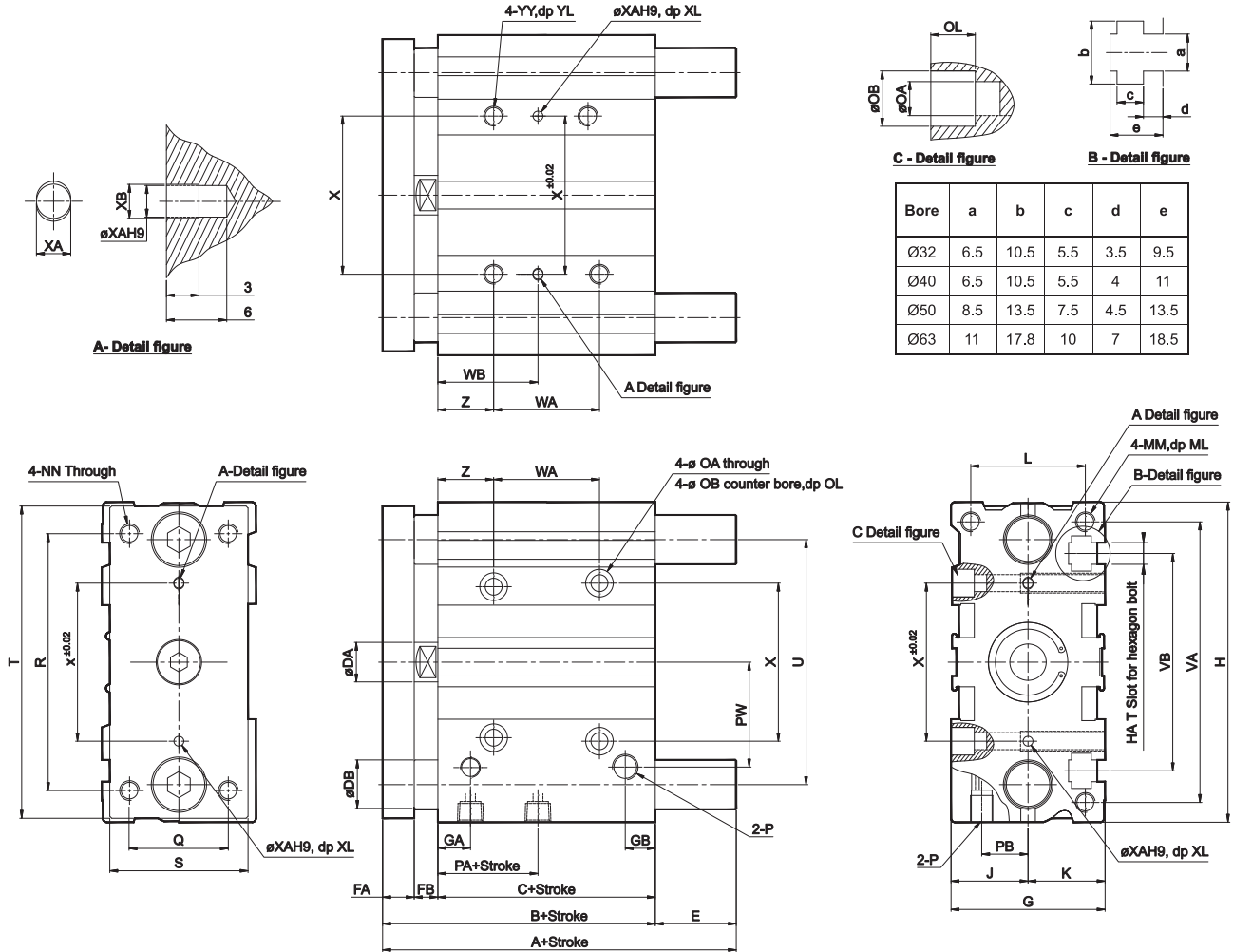
Bore	A (stroke)		DB	E (stroke)	
	50 stroke or less	Over 50 stroke to 200 stroke		50 stroke or less	Over 50 stroke to 200 stroke
Ø20	53	84.5	12	0	31
Ø25	53.5	85	16	0	31.5

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Basic Dimensions



A91SL Common Dimensions

Bore	B	C	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW
Ø32	59.5	37.5	16	12	10	48	12.5	11.5	112	M6	24	24	34	M8x1.25	20	M8x1.25	6.6	11	7.5	G1/8	7	15	34
Ø40	66	44	16	12	10	54	15	15	120	M6	27	27	40	M8x1.25	20	M8x1.25	6.6	11	7.5	G1/8	13	18	38
Ø50	72	44	20	16	12	64	15.5	14.5	148	M8	32	32	46	M10x1.5	22	M10x1.5	8.6	14	9.5	G1/4	9	21.5	47
Ø63	77	49	20	16	12	78	16.5	15	162	M10	39	39	58	M10x1.5	22	M10x1.5	8.6	14	9.5	G1/4	14	28	58

Bore	Q	R	S	T	U	VA	VB	WA (stroke)					WB (stroke)					X	XA	XB	XC	XL	YY	YL	Z
								From 25 stroke to less than 50 stroke	From 50 stroke to less than 125 stroke	From 125 stroke to less than 250 stroke	From 250 stroke to 300 stroke	Over 300 stroke to 400 stroke	From 25 stroke to less than 50 stroke	From 50 stroke to less than 125 stroke	From 125 stroke to less than 250 stroke	From 250 stroke to 300 stroke	Over 300 stroke to 400 stroke								
Ø32	30	96	44	110	78	98	63	24	48	124	200	300	33	45	83	121	171	42	4	4.5	3	6	M8x1.25	16	21
Ø40	30	104	44	118	86	106	72	24	48	124	200	300	34	46	84	122	172	50	4	4.5	3	6	M8x1.25	16	22
Ø50	40	130	60	146	110	130	92	24	48	124	200	300	36	48	86	124	174	66	5	6	4	8	M10x1.5	20	24
Ø63	50	130	70	158	124	142	110	28	52	128	200	300	38	50	88	124	174	80	5	6	4	8	M10x1.5	20	24

A91SL (Bushing) A / DB / E Dimensions

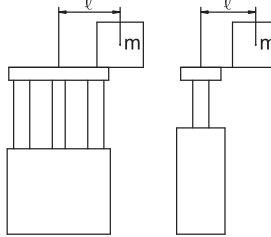
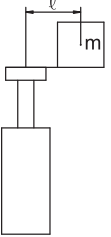
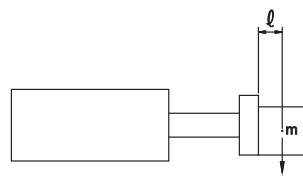
Bore	A (stroke)		DB	E (stroke)	
	50 stroke or less	Over 50 stroke to 200 stroke		50 stroke or less	Over 50 stroke to 200 stroke
Ø32	97	102	20	37.5	42.5
Ø40	97	102	20	31	36
Ø50	106.5	118	25	34.5	46
Ø63	106.5	118	25	29.5	41

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Series A91SL

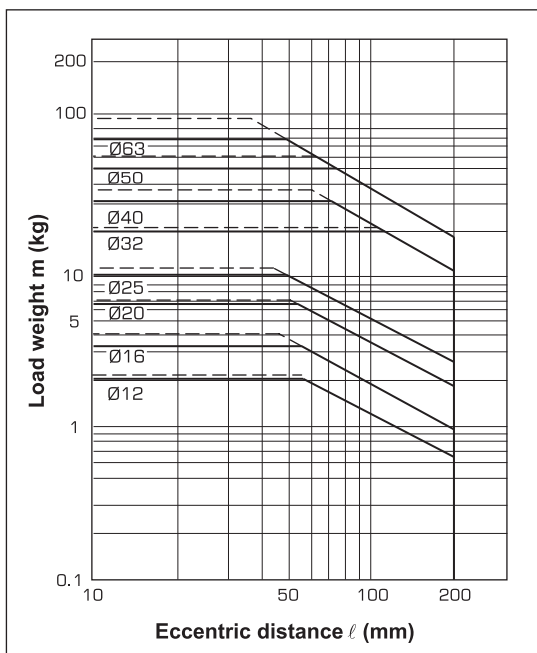
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Model Selection

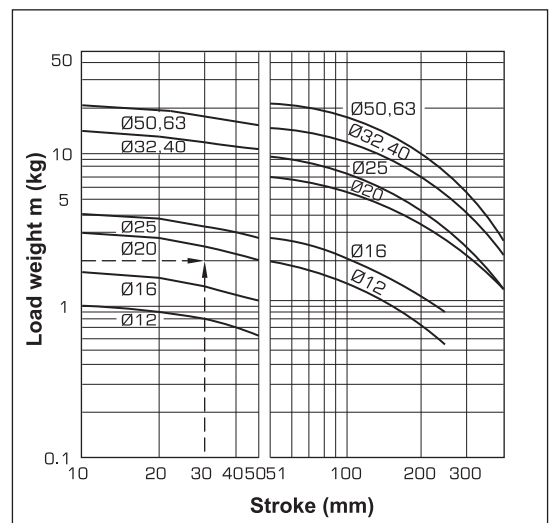
Mounting orientation	Vertical		Horizontal	
				
Max speed (mm/s)	200	400	200	400
Graph (bushing type)	(A), (B)	(C), (D)	(M), (N)	(O), (P)

Selection example 1 (Vertical mounting)	Selection example 1 (Horizontal mounting)
<p>Selection conditions</p> <p>Mounting : Vertical</p> <p>Bearing type : Bushing</p> <p>Stroke : 30mm</p> <p>Max. speed : 200 mm/s</p> <p>Load weight (m): 3kg</p> <p>Eccentric distance (l): 90mm</p> <p>Find the point of intersection for the load weight of 3kg and the eccentric distance of 90mm on graph (A), based on vertical mounting with bushing type. The stroke is 30mm while the speed is 200 mm/s.</p> <p>So A91SL25x30 is selected.</p>	<p>Selection conditions</p> <p>Mounting : Horizontal</p> <p>Bearing type : Bushing</p> <p>Distance between plate and load center of gravity (l): 50mm</p> <p>Max. speed : 200 mm/s</p> <p>Load weight (m): 2kg</p> <p>Stroke : 30mm</p> <p>Find the point of intersection for the load weight of 2kg and stroke 30mm on graph (M), based on horizontal mounting with bushing type. The distance is 50mm between the plate and load center of gravity while the speed is 200 mm/s.</p> <p>So A91SL20x30 is selected.</p>

Graph (A) 50mm stroke or less, V=200mm/s



Graph (M) l=50mm, V=200mm/s



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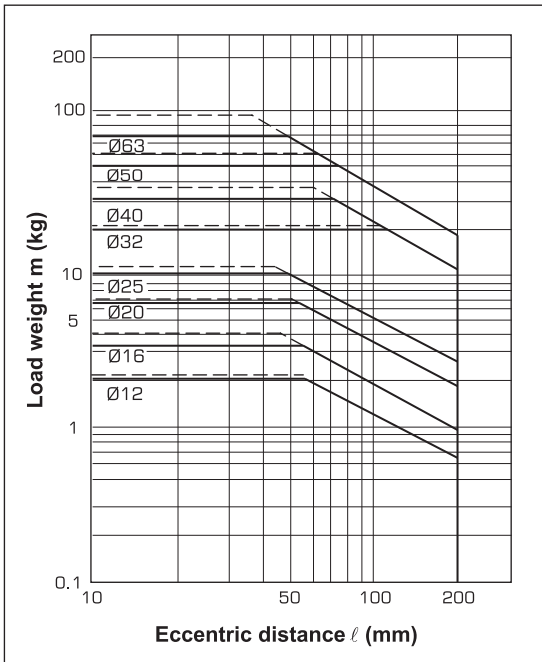
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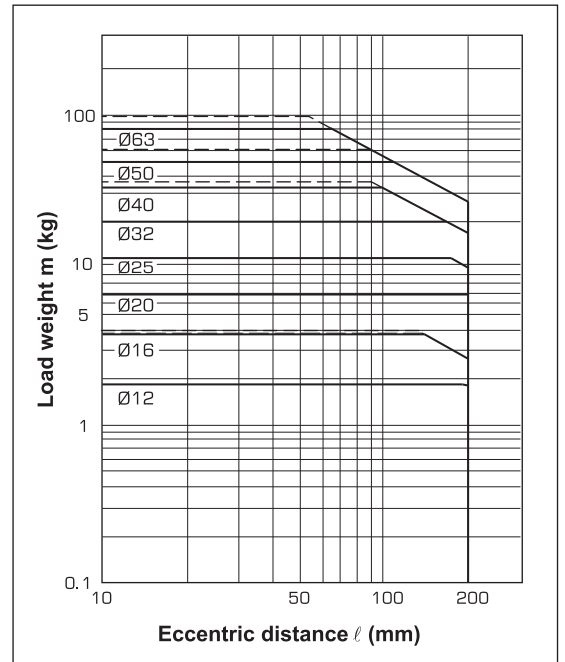
Vertical mounting (Bushing)
- A91SL 12 to 63mm

————— Operating pressure 4 bar
- - - - - Operating pressure 5 bar or above

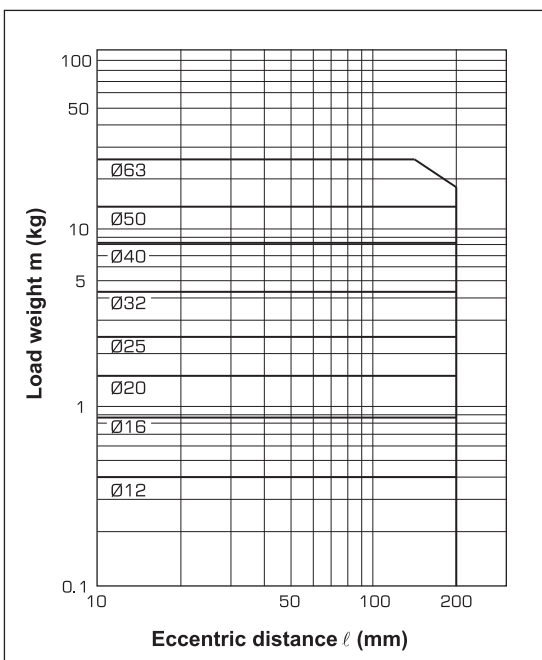
(A) 50mm stroke or less, V=200mm/s



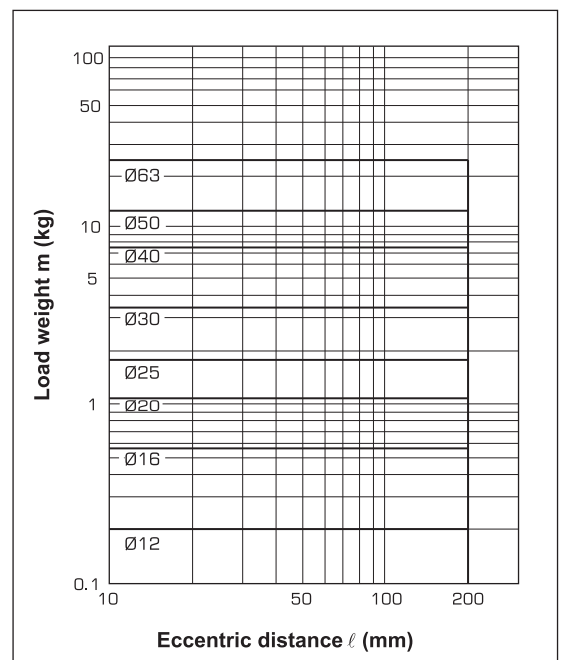
(B) Over 50 stroke, V=200mm/s



(C) 50mm stroke or less, V=400mm/s



(D) Over 50 stroke, V=400mm/s



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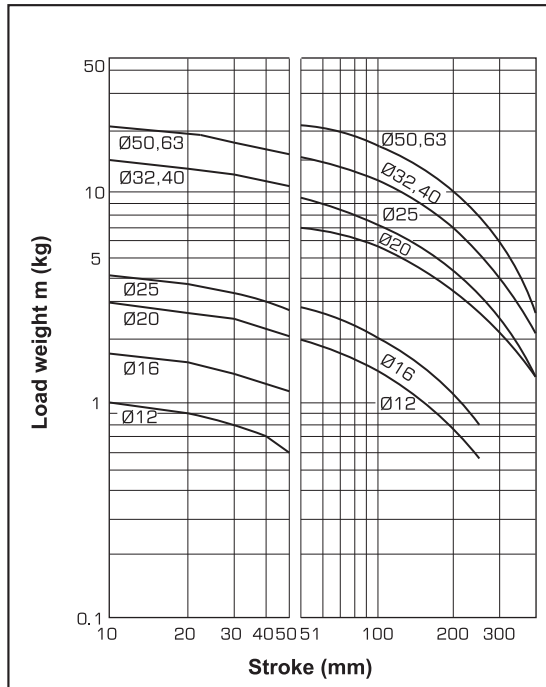
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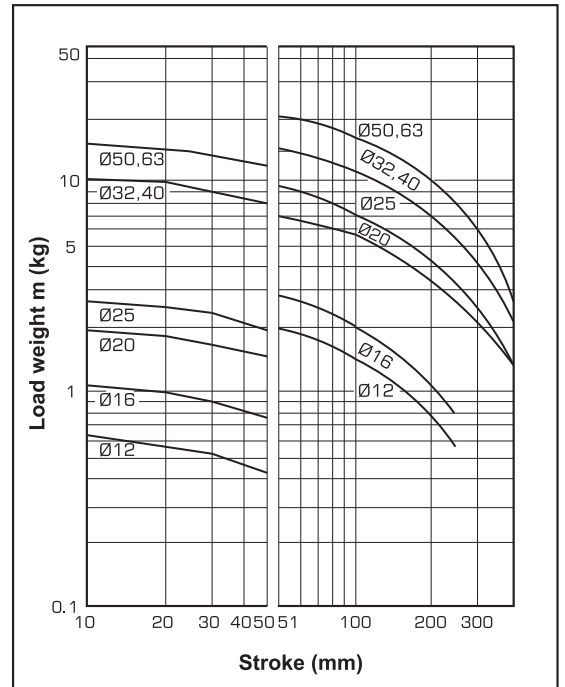
Horizontal mounting (Bushing) - A91SL 12 to 63

————— Operating pressure 4 bar

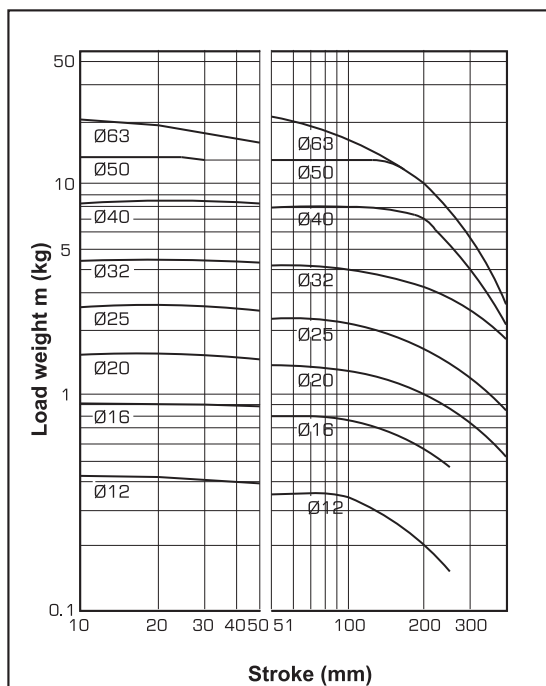
(M) $\ell=50\text{mm}$, $V=200\text{mm/s}$



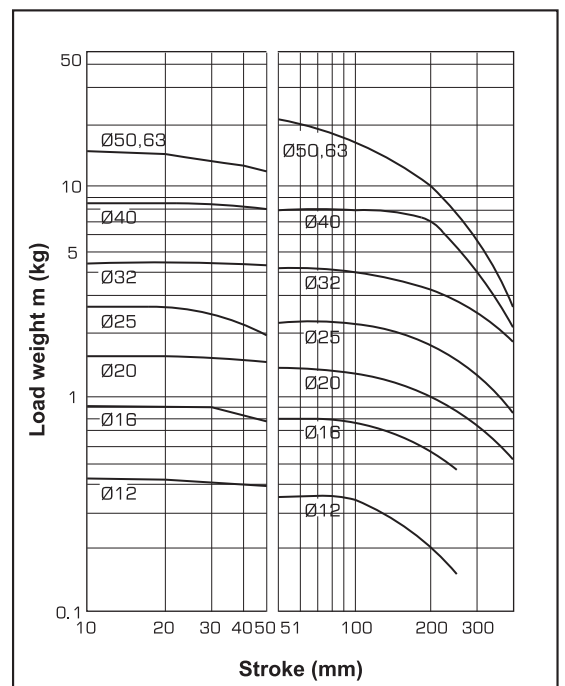
(N) $\ell=100\text{mm}$, $V=200\text{mm/s}$



(O) $\ell=50\text{mm}$, $V=400\text{mm/s}$



(P) $\ell=100\text{mm}$, $V=400\text{mm/s}$



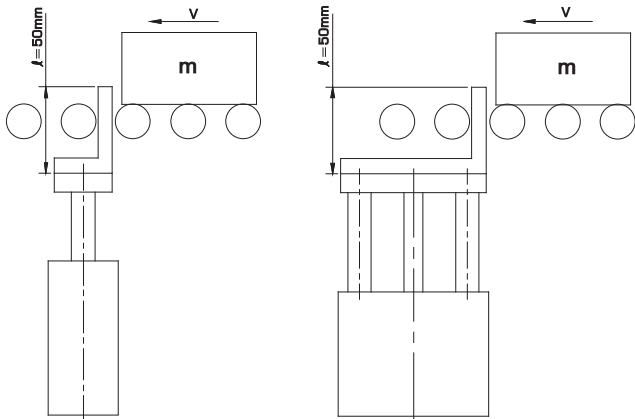
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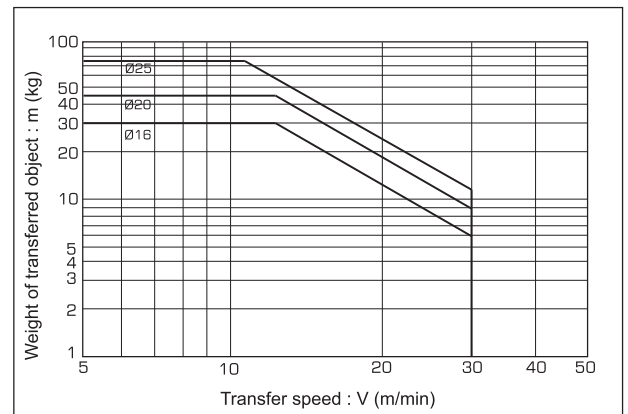
Cat No A91SL - 01 - 01 - B

Operating range when used as stopper

Cylinder bore size Ø12 to 25 (Bushing)



A91SL Ø12 to 25 (Bushing)



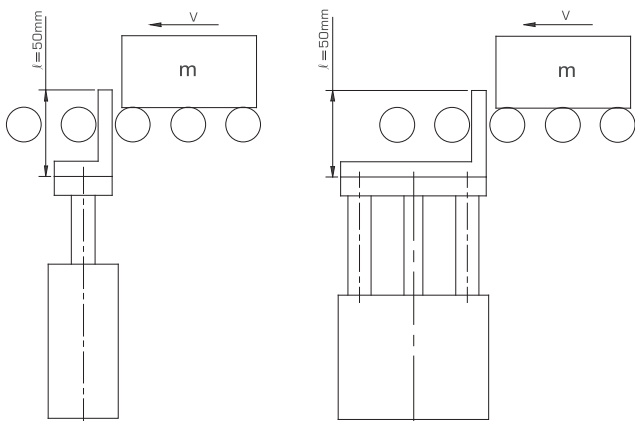
When selecting a model with a longer (ℓ) dimension, be sure to choose a bore size which is sufficiently large.

Caution

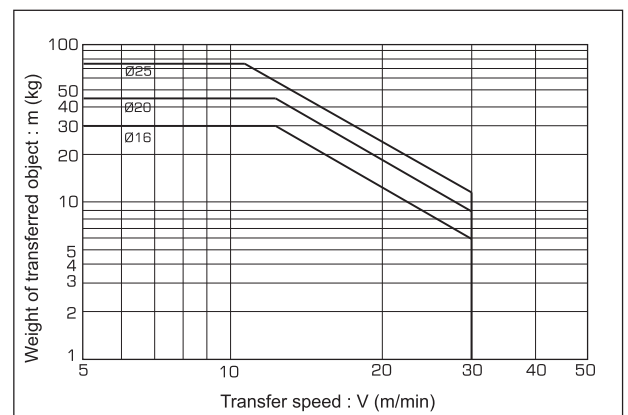
Caution on handling

Note 1 : When using as a stopper, select a model with 30 stroke or less.

Cylinder bore size Ø32 to 63 (Bushing)



A91SL Ø32 to 63 (Bushing)



When selecting a model with a longer (ℓ) dimension, be sure to choose a bore size which is sufficiently large.

Caution

Caution on handling

Note 1 : When using as a stopper, select a model with 30 stroke or less.

COMPACT GUIDED CYLINDER

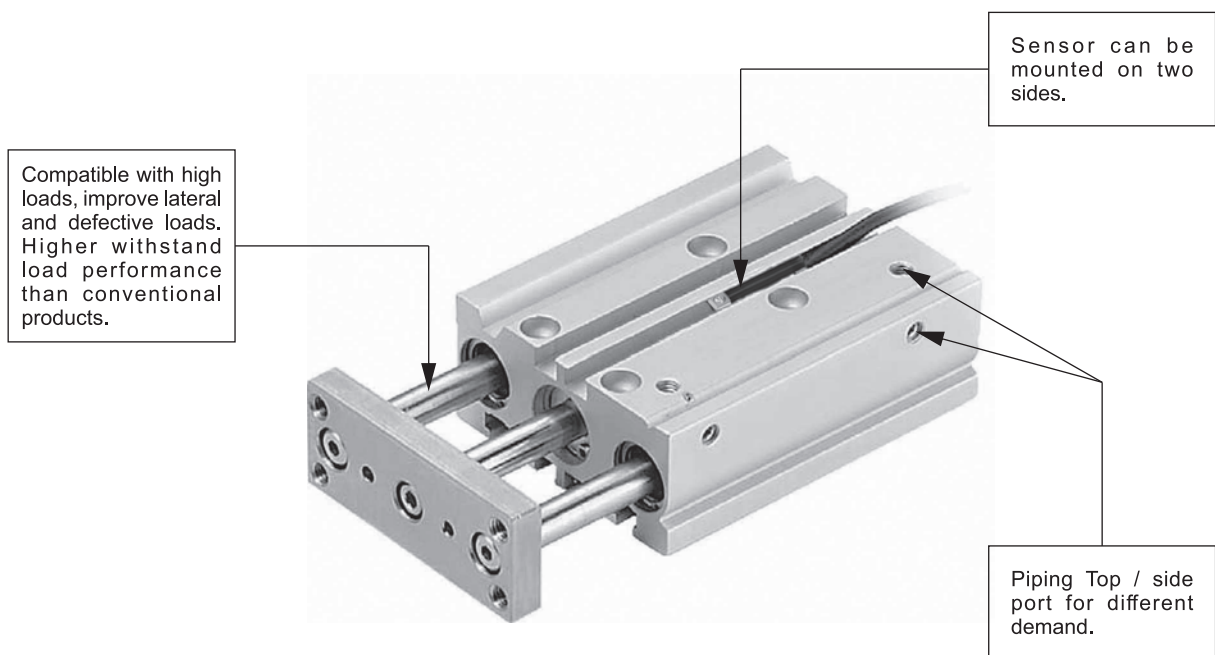
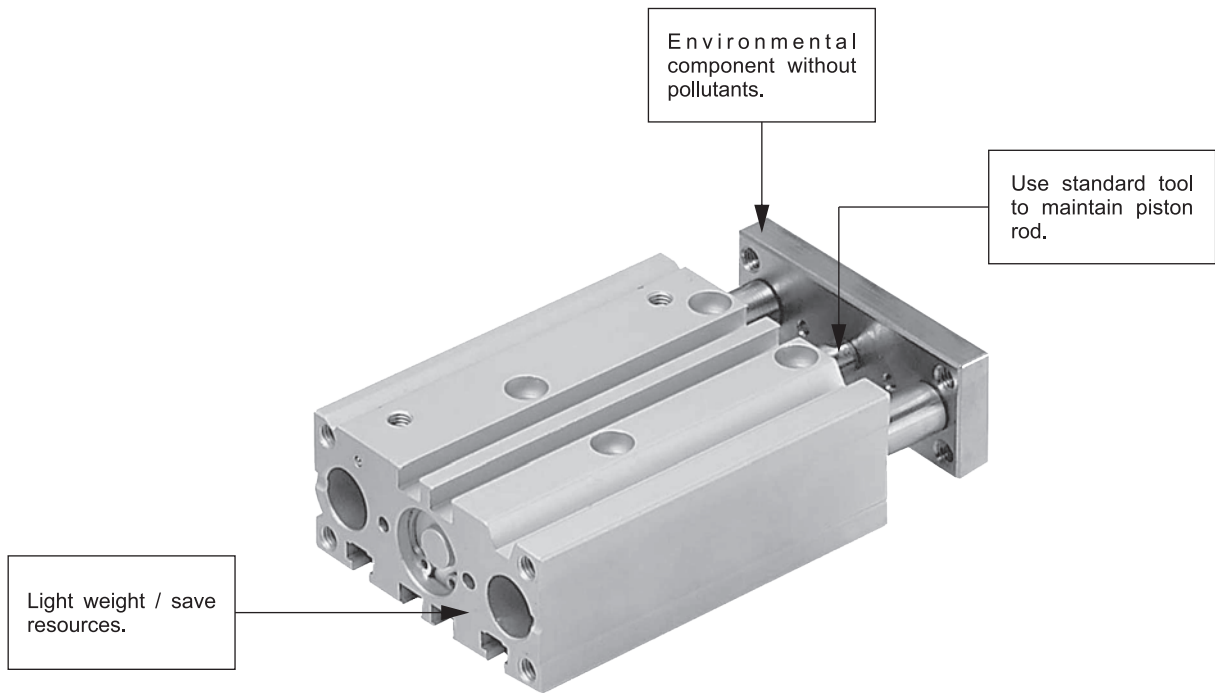
Series A91SL

Cat No A91SL - 01 - 01 - B

Sensors can be mounted on two sides

Bushing type

The lateral withstand load is more than twice that of a traditional stopper cylinder (round bar type) and is usable for use with lateral loads accompanied by impact.

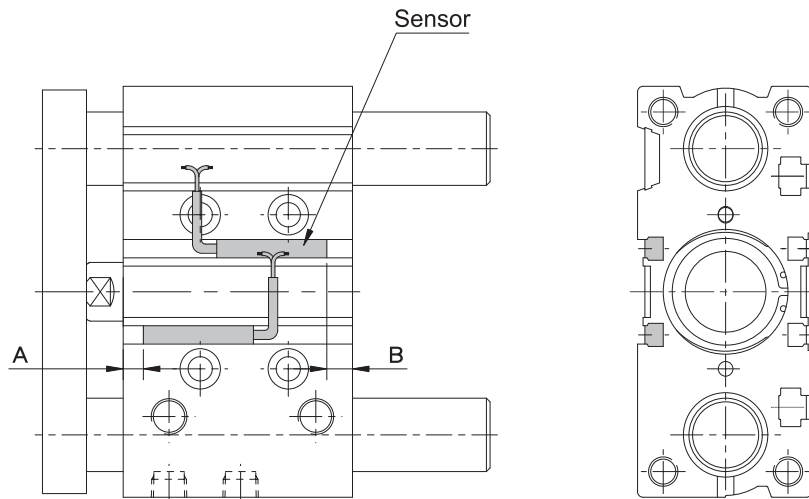


COMPACT GUIDED CYLINDER

Series A91SL

Cat No A91SL - 01 - 01 - B

Proper sensor mounting position (Detection at stroke end) and its mounting height



Proper mounting

Cylinder Bore dia (mm)	A	B
12	2	0
16	1.5	1
20	4.5	2
25	2	7

Cylinder Bore dia (mm)	A	B
32	0	7
40	2.5	12
50	10	4.5
63	10.5	9

Reed Switch Mounting

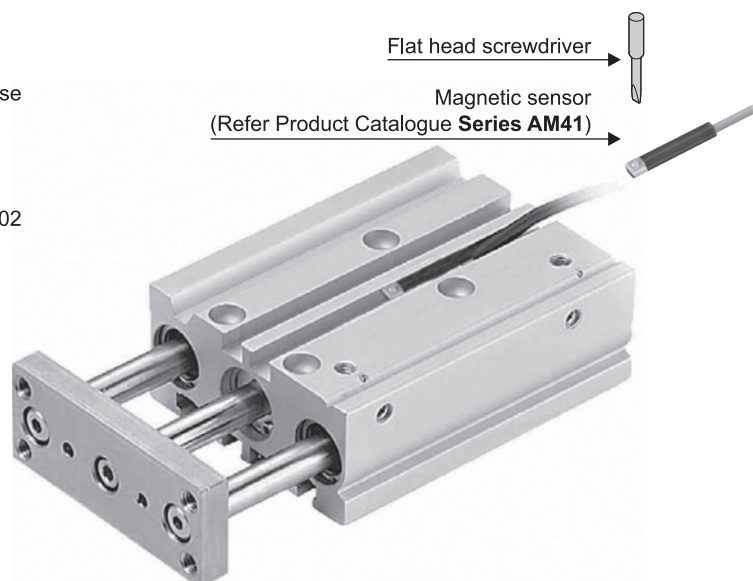
Caution

Application tool

To tighten the fixed screws on the reed switch, please use $\varnothing 5\sim\varnothing 6$ flat head screwdriver.

Torque to tighten

Please tighten when the output is 0.05 to 0.1 Nm (0.51 to 1.02 kgf/cm) then turn round 90° before feeling tight.

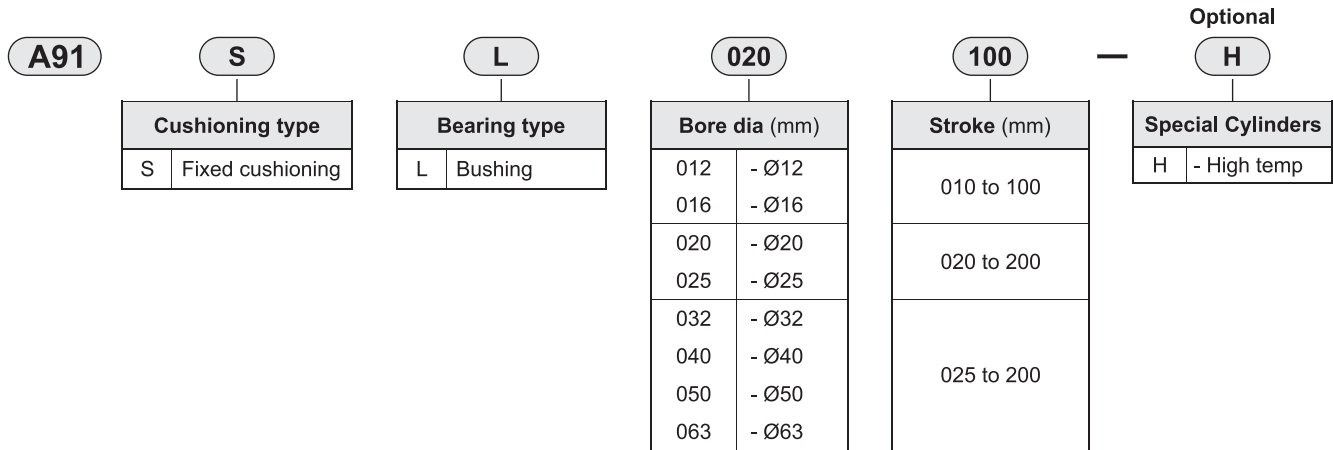


COMPACT GUIDED CYLINDER

Series A91SL

Cat No A91SL - 01 - 01 - B

How to order



Ordering Example:

Compact guided cylinder, bore Ø20, stroke 100 mm, bushing type : **A91SL020100**

Compact guided cylinder, bore Ø20, stroke 100 mm, bushing type with High temp : **A91SL020100-H**