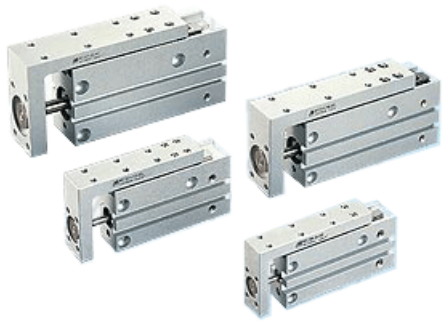


DOUBLE ACTING TYPE ..... D7S .....

Features

- Compact precision cylinder.
- Cylinder can take high lateral loads and is also non rotating.
- Cylinder can be mounted in 3 or 4 positions.
- Magnetic as standard.

Specification

Type	D7S
Bore	Φ6、10、16、20
Power fluid	Filtered air with or without lubrication
The range of pressure	1.2 ～ 7.1 kgf/cm^2
Proof pressure	10.7 kgf/cm^2
The range of temperature	-10 ～ +60 ℃ (Don't freeze)
Piston speed	50 ～ 500 mm/s
Allowable energy exercises J(kgf・cm)	Φ6：0.0125　Φ10：0.025　Φ16：0.05　Φ20：0.1
Cushion	Rubber bumpper
Material of cylinder barrel	Aluminium extrusion, Anodised 20 microns

How to order

D7S	–	20	50	–	A
Type		Bore	Stroke		Sensor switch
 D7S		6：Φ6 10：Φ10 16：Φ16 20：Φ20	Please see stroke table		ZE101

Stroke table

Bore	Stroke (mm)	Tolerance
Φ6、10、16、20	5,10,15,20,25,30,40,50,60	+1.0 –0

Theoretic force

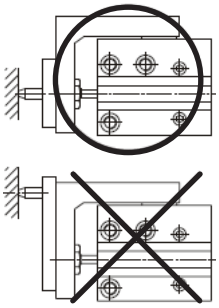
Unit：N

Bore	Piston rod(mm)	Operating direction	Piston area (cm^2)	Operating pressure (MPa)		
				0.3	0.5	0.7
Φ6	3	OUT	28.3	8.49	14.2	19.8
		IN	21.2	6.36	10.6	14.8
Φ10	4	OUT	78.5	23.6	39.3	55.0
		IN	66.0	19.8	33.0	46.2
Φ16	6	OUT	201.0	60.3	101.0	141.0
		IN	172.0	51.6	86.0	121.0
Φ20	8	OUT	314.0	94.2	157.0	220.0
		IN	264.0	79.2	132.0	185.0

D7S Precautions

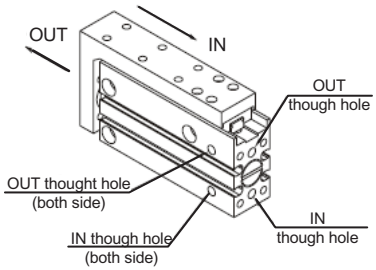
Operating precautions

1. Positively do not put fingers between the table and cylinder tube, as they can be caught when the piston rod retracts, if fingers are caught in a cylinder, there is a danger of injury due to the strong cylinder output, and therefore caution must be exercised.
2. Operate within the limits of the maximum movable weight and allowable moment.
3. When the output of the compact slide will be directly applied to the table, it should be applied along the rod axis. (See drawing below.)
4. Be sure to attach a speed controller, and adjust the speed to 500 mm/s or less.



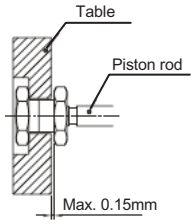
Operating direction with different pressure ports

1. The compact slide can be piped from 3 directions. Confirm the pressure ports and operating direction. (see drawing below.)

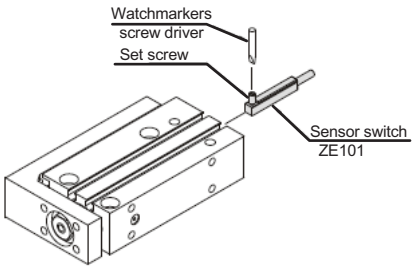


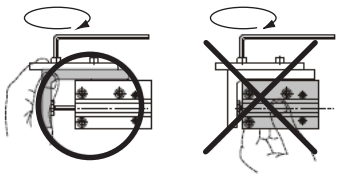
Stroke direction backlash

1. Since the connection between the piston rod and table is a floating structure, there is a maximum table backlash of 0.15 mm in the stroke direction. (See drawing below.)



Installation of sensor switch





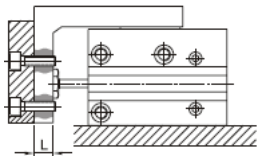
Mounting

Work pieces can be mounted on 2 surfaces of the compact slide.

Work piece mounting type

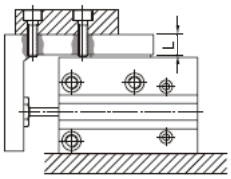
1. Since the table is supported by the linear guide, take care not to apply strong impact or large moment, etc. when mounting work pieces.
2. Hold the table when fastening work pieces to it with bolts, etc. If the body is held while tightening bolts, etc., the guide section will be subjected to large moment, and there may be a loss of precision.
3. For connection with a load having an external support/ guide mechanism, select an appropriate connection method and perform careful alignment.
4. Use caution, as scratches or nicks, etc. on the sliding parts of the piston rod can cause malfunction and air leakage.

1. Front mounting



Type	Bolt	Max. torque(Nm)	L(mm)
D7S-6	M3x0.5	1.1	5.5
D7S-10	M4x0.7	2.5	7.5
D7S-16	M4x0.7	2.5	10
D7S-20	M5x0.8	5.1	11

2. Top mounting



Type	Bolt	Max. torque(Nm)	L(mm)
D7S-6	M3x0.5	1.1	6.5
D7S-10	M4x0.7	2.5	8
D7S-16	M4x0.7	2.5	9
D7S-20	M5x0.8	5.1	9.5

D7S Precautions

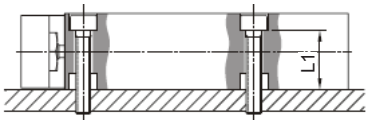
Mounting

When mounting a compact slide, tighten the screws properly at a torque value within the limiting range.

Compact slide mounting

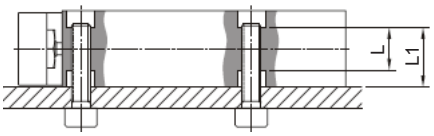
1. A compact slide can be mounted from 4 directions. Make a selection suitable for the applicable machinery and work pieces, etc.

Lateral mounting(through holes)



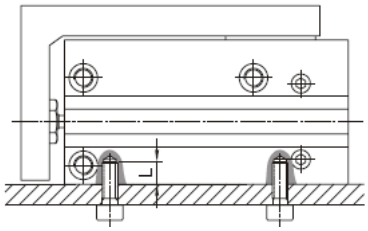
Type	Bolt	Max. torque (Nm)	L1(mm)
D7S-6	M3x0.5	1.1	12.7
D7S-10	M4x0.7	2.5	15.6
D7S-16	M4x0.7	2.5	20.6
D7S-20	M5x0.8	5.1	24.0

Lateral mounting (tapped holes)



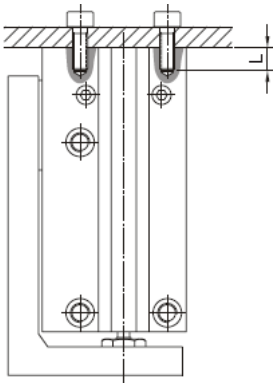
Type	Bolt	Max. torque (Nm)	L(mm)	L1(mm)
D7S-6	M4x0.7	2.5	9.4	12.7
D7S-10	M5x0.8	5.1	11.2	15.6
D7S-16	M5x0.8	5.1	16.2	20.6
D7S-20	M6x1.0	8.1	16.0	24.0

Vertical mounting (Tapped holes)



Type	Bolt	Max. torque(Nm)	L (mm)
D7S-6	M3x0.5	1.1	4.8
D7S-10	M4x0.7	2.5	6
D7S-16	M4x0.7	2.5	6
D7S-20	M5x0.8	5.1	8

Axis mounting (Tapped holes)



Type	Bolt	Max. torque(Nm)	L(mm)
D7S-6	M3x0.5	1.1	4.8
D7S-10	M4x0.7	2.5	6
D7S-16	M4x0.7	2.5	6
D7S-20	M5x0.8	5.1	8

Table accuracy

Operating parallelism	Stroke (st)	
	5 ~ 30	40 ~ 60
	0.05mm or less	0.1mm or less

Allowable moment (N · m)

Type	Pitch moment Mp	Yaw moment My	Roll moment Mr
D7S-6	0.47	0.39	0.59
D7S-10	0.96	0.82	1.37
D7S-16	1.88	1.59	2.75
D7S-20	3.14	2.75	5.49

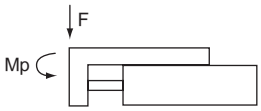
Design precautions

1. Bore size selections cannot be made with the above graphs alone. Perform bore size selections with the model selection method provided on pages 5 and 6.
2. The displacement may increase after the action of an impact load. When the table is subjected to an impact load, there may be permanent distortion of the guide unit and increased displacement.

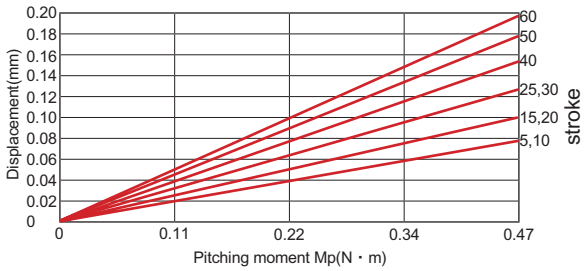
D7S Platform addendum coefficient

Table displacement due to pitch moment

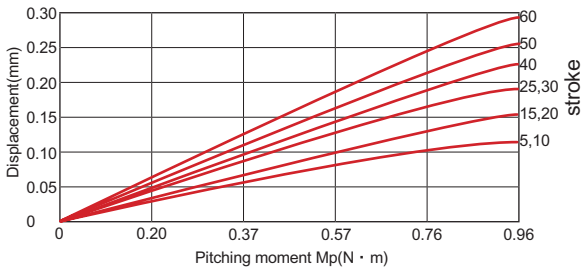
Table displacement (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.



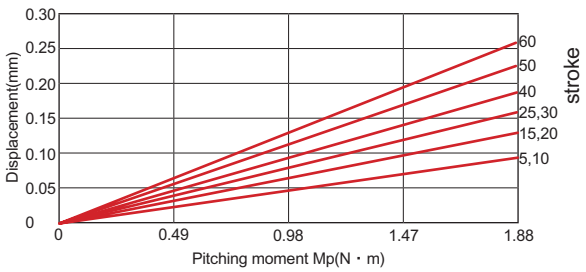
Φ6



Φ10



Φ16



Φ20

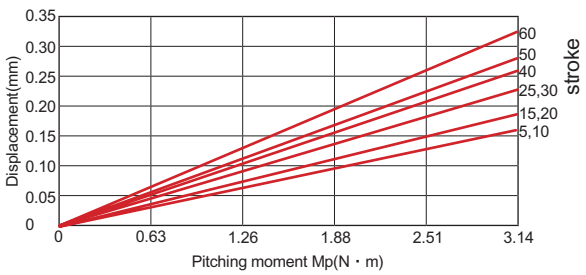
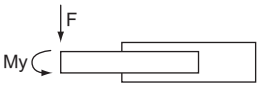
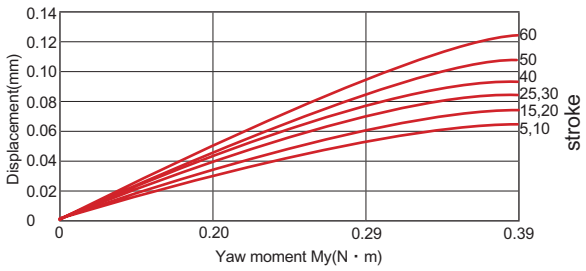


Table displacement due to yaw moment

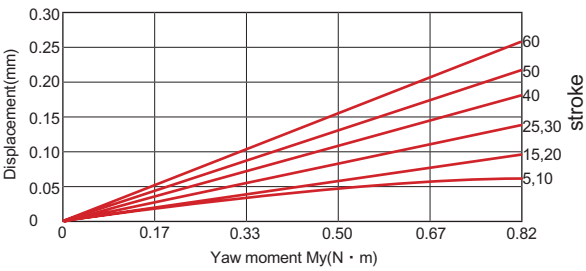
Table displacement (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.



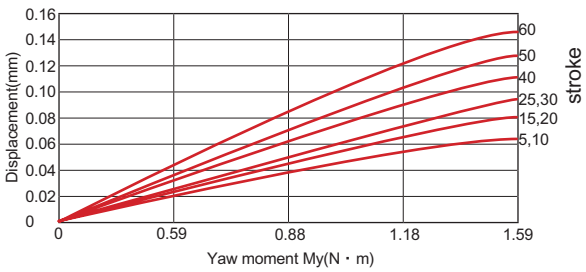
Φ6



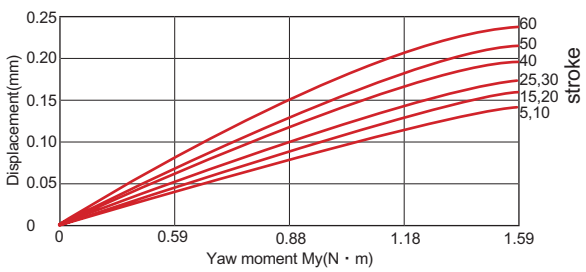
Φ10



Φ16



Φ20

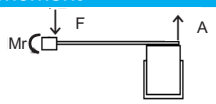


D7S

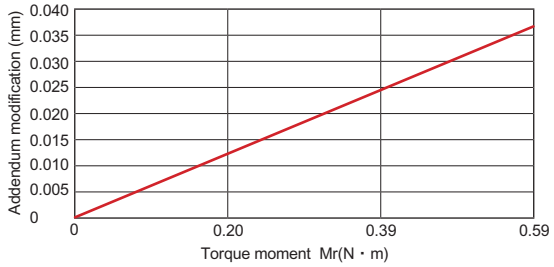
D7S Table displacement

Table displacement due to roll moment

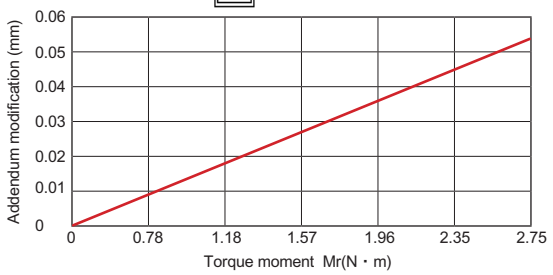
Determine the selection conditions in order, starting from the upper row in the table below, and choose one of the selection graphs to be used the compact slide.



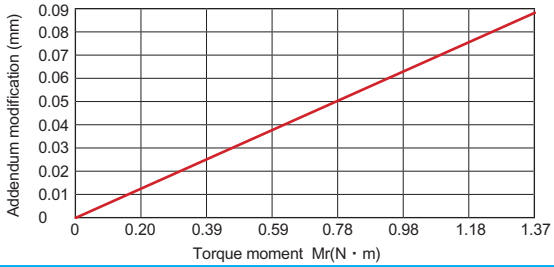
Φ6



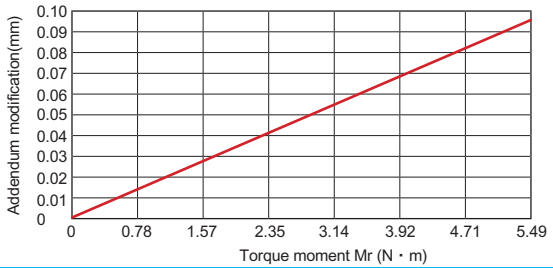
Φ16



Φ10

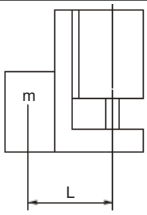
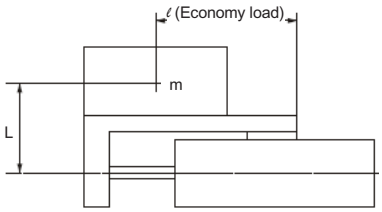


Φ20

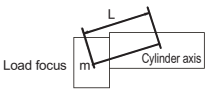


Selection conditions

Determine the selection conditions in order, staring from the upper row in the table below, and choose one of the selection graphs to be used the compact slide.

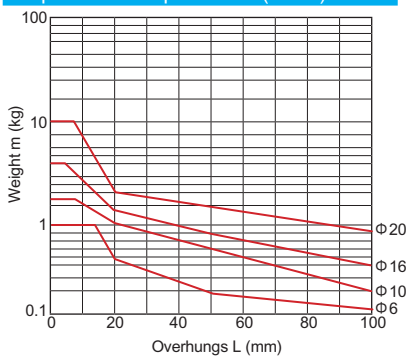
	Vertical			Horizontal								
Mounting position												
Max. speed mm/s	～100	～300	～500	～100			～300			～500		
Load eccentricity L mm				50	100	200	50	100	200	50	100	200
Selected graph	1	2	3	4	5	6	7	8	9	10	11	12

＊L：Overhang (the distance from the cylinder shaft center to the load center of gravity)
The direction of can also be a diagonal direction. (See drawing at right.)

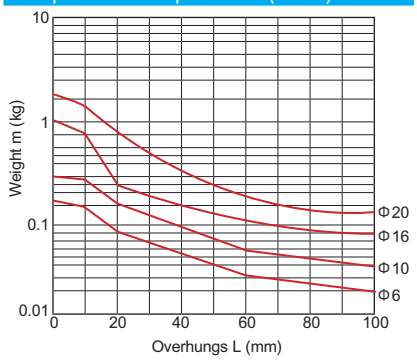


Selection graphs：1 ～ 3 (Vertical mounting)

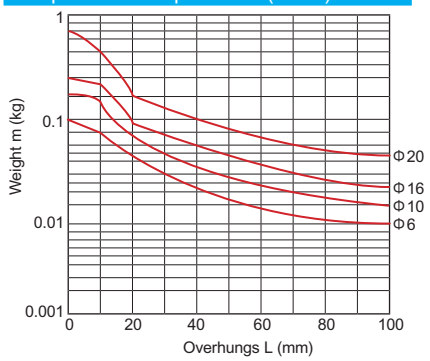
Graph 1：Max. speed 100 (mm/s) or less



Graph 2：Max. speed 300 (mm/s) or less



Graph 3：Max. speed 500 (mm/s) or less

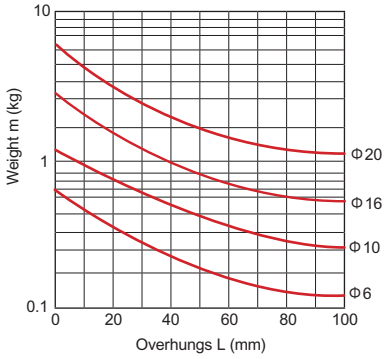


D7S Product selection method

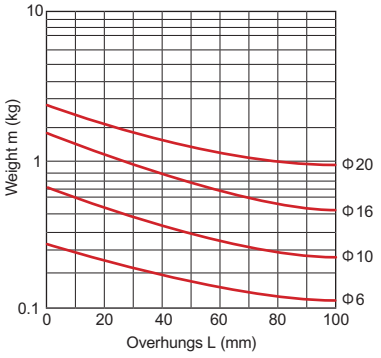
Selection graphs：4 ～ 12(Horizontal mounting)

Max. speed 100 (mm/s) or less

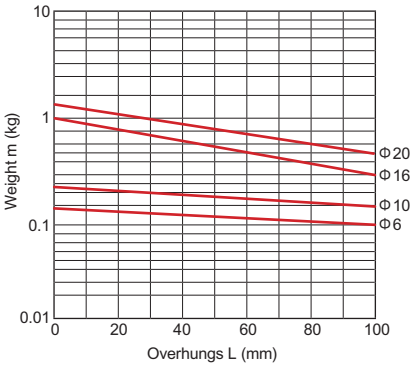
Graph 4：Load eccentricity 50mm



Graph 5：Load eccentricity 100mm

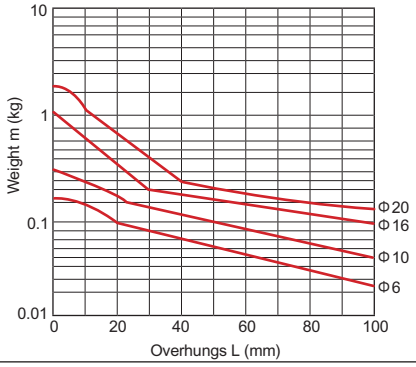


Graph 6：Load eccentricity 200mm

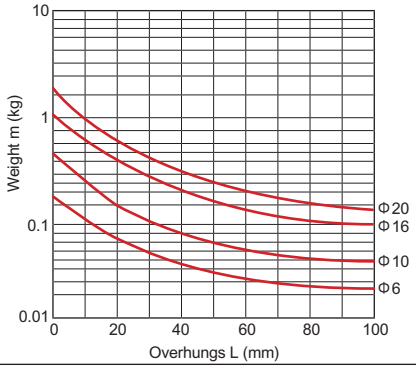


Max. speed 300 (mm/s) or less

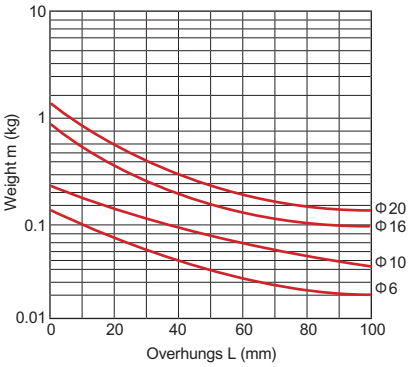
Graph 7：Load eccentricity 50mm



Graph 8：Load eccentricity 100mm

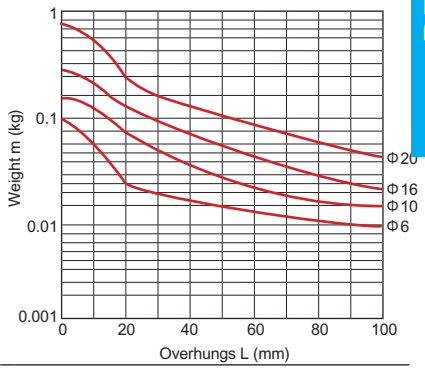


Graph 9：Load eccentricity 200mm

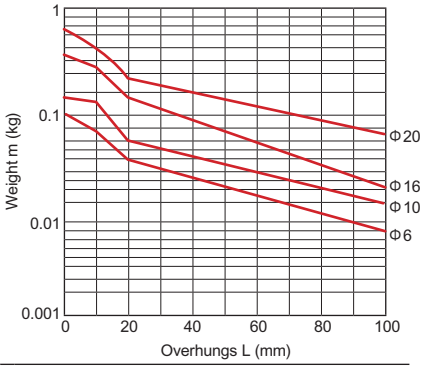


Max. speed 500 (mm/s) or less

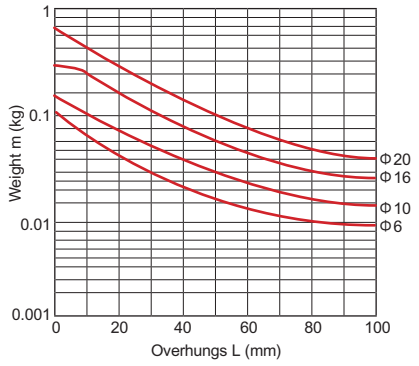
Graph 10：Load eccentricity 50mm



Graph 11：Load eccentricity 100mm



Graph 12：Load eccentricity 200mm



Selection examples

1.Selection conditions

Mounting：Vertical
Maximum Speed ：500 mm/s
Overhang：40 mm
Load weight：0.1 kg

Refer to Graph 3 based on vertical mounting and a speed of 500 mm/s. In Graph 3, find the intersection of a 40mm overhang and load weight of 0.1KG, which results in a determination of φ20.

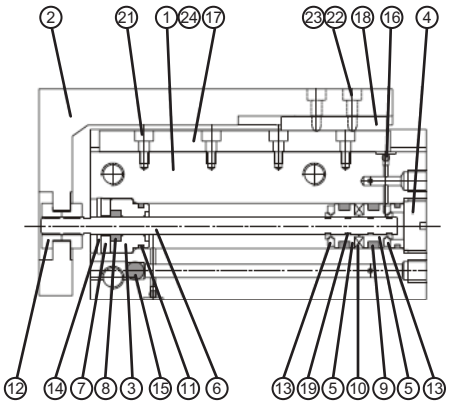
2.Selection conditions

Mounting：Horizontal
Maximum speed ：500 mm/s
Load eccentricity：50 mm
Overhang：30 mm
Load weight：0.1 kg

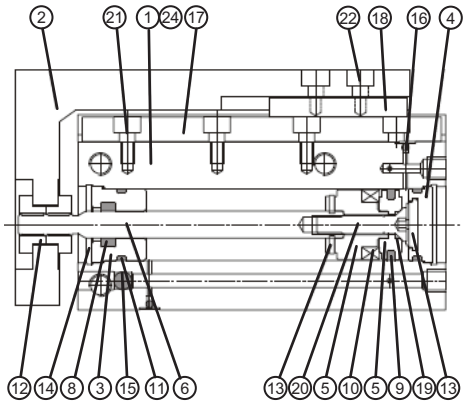
Refer to Graph 10 based on horizontal mounting, a speed of 500mm/s and load eccentricity of 50mm.
In Graph 10, find the intersection of a 30mm overhang and load weight of 0.1kg, which results in a determination of φ16.

D7S Inside structure

● Bore Φ6 ~ 10



● Bore Φ16 ~ 20

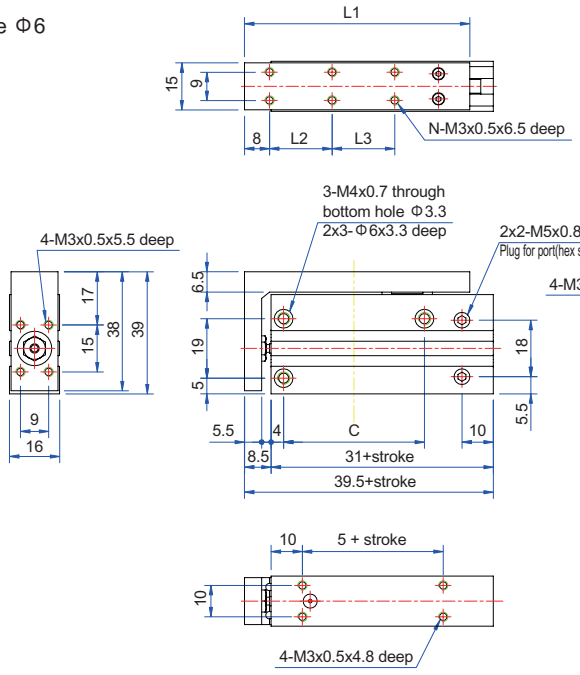


Parts list

No.	Part name	No.	Part name	No.	Part name
1	Body	9	Piston seal ring	17	Linear guideway
2	Platform	10	Magner	18	slide seat holder
3	Rod cover	11	Cylinder tube washer	19	PIston washer
4	Head cover	12	Rod nut	20	Piston bolt
5	Piston	13	Cushion washer	21	Socket head cap screw A
6	PIston rod	14	Hole C-ring	22	Socket head cap screw B
7	Washer	15	Air lock steel ball A	23	Phillip Head Screw
8	Piston rod seal ring	16	Air lock steel ball B	24	Plug

D7S Dimensional features

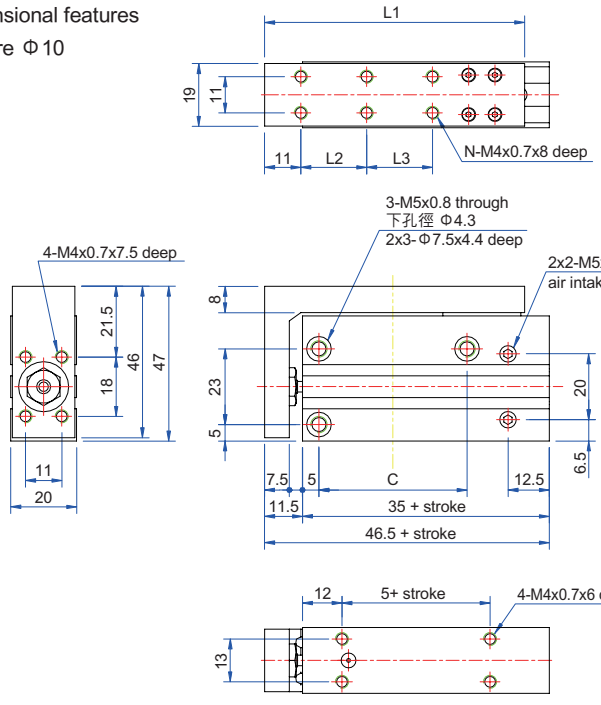
● Bore Φ6



Mark / Bore	C	L1	L2	L3	N
5	14	42	10	-	4
10	14	42	10	-	4
15	24	52	20	-	4
20	24	52	20		4
25	30	62	30	-	4
30	30	62	30	-	4
40	45	72	20	20	6
50	55	82	25	25	6
60	60	92	30	30	6

D7S Dimensional features

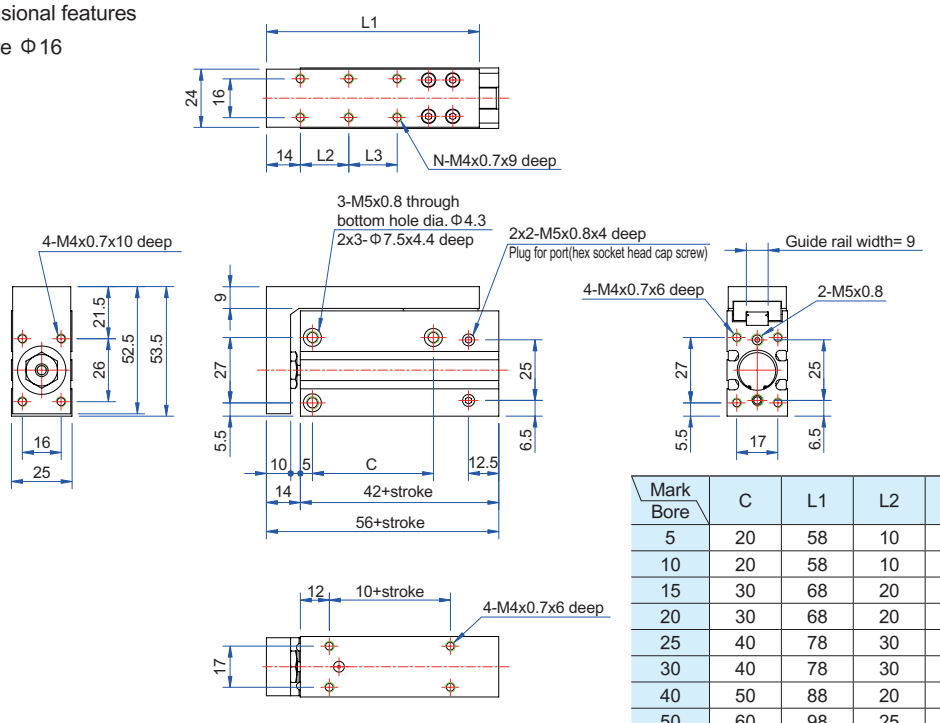
● Bore Φ10



Mark / Bore	C	L1	L2	L3	N
5	14	49	10	-	4
10	14	49	10	-	4
15	24	59	20	-	4
20	24	59	20		4
25	30	69	30	-	4
30	30	69	30	-	4
40	45	79	20	20	6
50	55	89	25	25	6
60	60	99	30	30	6

D7S Dimensional features

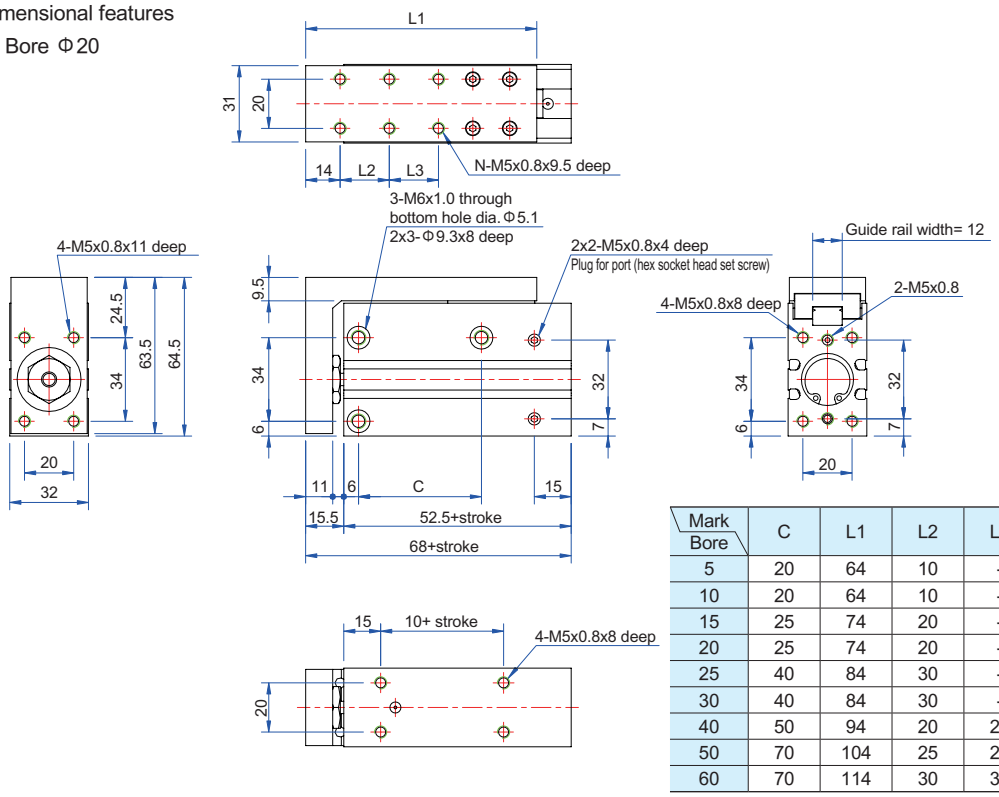
● Bore Φ16



Mark / Bore	C	L1	L2	L3	N
5	20	58	10	-	4
10	20	58	10	-	4
15	30	68	20	-	4
20	30	68	20	-	4
25	40	78	30	-	4
30	40	78	30	-	4
40	50	88	20	20	6
50	60	98	25	25	6
60	60	108	30	30	6

D7S Dimensional features

● Bore Φ20



Mark / Bore	C	L1	L2	L3	N
5	20	64	10	-	4
10	20	64	10	-	4
15	25	74	20	-	4
20	25	74	20	-	4
25	40	84	30	-	4
30	40	84	30	-	4
40	50	94	20	20	6
50	70	104	25	25	6
60	70	114	30	30	6