

Compact, lightweight,
space saving air
cylinder

- A variety of models for a wide range of application.
- A series of non-rotating types. (Double acting type and double rod type)
- Disassembly type convenient for maintenance.
- Female threaded rod end types and male threaded rod end are available.
- Non-lubrication type



Cylinder specifications

Series variations	Double acting single rod	Double acting double rod	Single acting type (SR type/SH type)
Cylinder bore (mm)	φ12·φ16·φ20·φ25·φ32·φ40 φ50·φ63·φ80·φ100·φ125	φ12·φ16·φ20·φ25·φ32·φ40 φ50·φ63·φ80·φ100·φ125	φ12·φ16·φ20·φ25 φ32·φ40·φ50
Working fluid	Air		
Lubrication	Unnecessary (but possible)		
Working pressure range	φ12・φ16：0.07 to 1 MPa φ20 to φ125：0.05 to 1 MPa		φ12・φ16：0.2 to 1 MPa φ20・φ25：0.18 to 1 MPa φ32 to φ50：0.12 to 1 MPa
Proof test pressure	1.5 MPa		
Working temperature range	-10 to +70℃ (no freezing)		
Structure of cushioning	φ12 and φ16: None φ20 to φ125: With cushion pad		φ12 and φ16: None SR type, φ20 to φ125: With cushioning pad on cap side SH type, φ20 to φ50: Both ends cushioned
Tolerance for thread	JIS 6H/6g		
Tolerance of stroke	+1.0 0 mm		
Note) Mounting style	SD (basic style), ST (tapped on both sides), LA, LB, FA, FB, CA and CB	SD (basic style), ST (tapped on both sides), LA, LB and FA	SD (basic style), ST (tapped on both sides), LA, LB, FA, FB, CA and CB
Rod end threads	Female thread and male thread		
Accessory	Bracket CB (φ40 to φ125)		
Rod end attachment	Rod eye, rod eye with spherical bearing, rod clevis with pin and floating joint		

Specifications / non-rotating rod

Series variations	Double acting single rod	Double acting double rod
Cylinder bore (mm)	φ20·φ25·φ32·φ40·φ50·φ63·φ80·φ100	
Working fluid	Air	
Lubrication	Unnecessary (but possible)	
Working pressure range	0.1 to 1 MPa	
Proof test pressure	1.5 MPa	
Working temperature range	-10 to +70°C (no freezing)	
Structure of cushioning	With cushion pad	
Allowable rotating angle	φ20·φ25 : ±1.5° φ32 to φ63 : ±1° φ80·φ100 : ±0.8°	
Allowable torque	φ20·φ25 : 0.49N·m φ32·φ40 : 0.98N·m φ50·φ63 : 3.33N·m φ80·φ100 : 9.61N·m	
Tolerance for thread	JIS 6H/6g	
Tolerance of stroke	+1.0 0 mm	
Note) Mounting style	SD (basic style), ST (tapped on both sides), LA, LB, FA, FB, CA and CB	SD (basic style), ST (tapped on both sides), LA, LB and FA
Rod end threads	Female thread and male thread	
Accessory	Bracket CB (φ40 to φ100)	
Rod end attachment	Rod Eye and rod clevis with pin	

(Notes)

- SD (basic) style cylinders are not tapped, and not available to fit them mounting accessory. When requiring only the cylinder body for cylinder with mounting accessory place an order for ST (tapped on both sides).
- Mounting accessory can be fitted to standard double acting type cylinders having bores of φ40 to φ125 and non-rotating double acting type cylinders having bores of φ40 to φ100. (Double rod cylinders of mounting style FB, CA and CB are not available.) Single acting cylinders are available only with bores of φ40 and φ50.
- All rod end attachments are for male thread specifications. The rod eye and rod clevis with pin are applicable to φ12 to φ125, the rod eye with spherical bearing is applicable to φ20 to φ100, and the floating joint is applicable to φ20 to φ125.

Product lineup

Unit: mm

Series Variations		φ12	φ16	φ20	φ25	φ32	φ40	φ50	φ63	φ80	φ100	φ125
Standard	Double acting single rod 10S-1	●	●	●	●	●	●	●	●	●	●	●
	Double acting double rod 10S-1D	●	●	●	●	●	●	●	●	●	●	●
	Single acting spring return 10S-1SR	●	●	●	●	●	●	●				
	Single acting spring-extended 10S-1SH	●	●	●	●	●	●	●				
Non-rotating	Double acting single rod 10S-1G			●	●	●	●	●	●	●	●	●
	Double acting double rod 10S-1GD			●	●	●	●	●	●	●	●	●

Single acting spring return type spring force

Unit: N

Bore (mm)	Load	Cylinder stroke (mm)									
		5	10	15	20	25	30	35	40	45	50
φ12	Initial load	9.8	7.8	8.8	7.8	—	—	—	—	—	—
	End load	11.8		14.7		—	—	—	—	—	—
φ16	Initial load	14.7	10.8	12.7	11.8	—	—	—	—	—	—
	End load	17.7				—	—	—	—	—	—
φ20	Initial load	18.6	15.7	17.7	16.7	15.7	14.7	—	—	—	—
	End load	21.6						—	—	—	—
φ25	Initial load	23.5	19.6	24.5	22.6	20.6	19.6	—	—	—	—
	End load	28.4		29.4		—	—	—	—	—	—
φ32	Initial load	33.3	28.4	35.3	33.3	31.4	29.4	—	—	—	—
	End load	39.2		41.2		—	—	—	—	—	—
φ40	Initial load	43.1	38.2	48.1	46.1	44.1	43.1	41.2	40.2	38.2	37.3
	End load	48.1		53.0							
φ50	Initial load	—	56.9	65.7	63.7	60.8	58.8	55.9	53.9	51.0	49.0
	End load	—	73.5								

Single acting spring-extended type spring force

Unit: N

Bore (mm)	Load	Cylinder stroke (mm)		
		5	10	20
φ12	Initial load	2.9	2.9	—
	End load	9.8	9.8	—
φ16	Initial load	4.9	4.9	—
	End load	13.7	13.7	—
φ20	Initial load	5.9	6.9	—
	End load	26.5	27.5	—
φ25	Initial load	5.9	6.9	—
	End load	26.5	27.5	—
φ32	Initial load	22.6	22.6	—
	End load	42.2	41.2	—
φ40	Initial load	22.6	22.6	—
	End load	42.2	41.2	—
φ50	Initial load	—	23.5	23.5
	End load	—	82.4	82.4

● How to order

● Standard/non-rotating



Standard

- 10S-1 : Double acting single rod
- 10S-1D : Double acting double rod
- 10S-1SR : Single acting spring return
- 10S-1SH : Single acting spring-extended

Non-rotating

- 10S-1G : Double acting single rod
- 10S-1GD : Double acting double rod

Mounting style

- (Notes) ● Since cylinders with the mounting style SD (basic style) do not have tapped holes, mounting accessories are not available to fit to the cylinders.
- When requiring only the cylinder body for the cylinder type with mounting accessory, place an order for ST (tapped on both sides). However, LA or LB accessories cannot be fitted to ST (tapped on both sides) style cylinders having the following strokes. Place an order for LA or LB style.

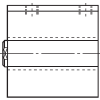
Bore	Stroke
φ63	10
φ80	10, 15, 20, 25
φ100	10, 15
φ125	10, 15, 20, 25, 30

- For the mounting styles LA, LB, FA, FB, CA and CB, the cylinder bore is φ40 to φ125.
- When purchasing ST style cylinder body (tapped on both sides) of mounting style FA, change the dimension WF to the following value.

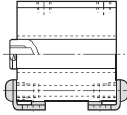
Female thread	φ40 to φ63 13.5
	φ80 to φ125 21.5
Male thread	φ40 to φ63 15
	φ80 to φ125 21.5

Mounting style

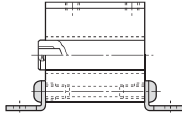
SD Basic style



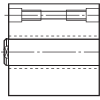
LA Side lugs



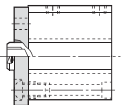
LB End angles



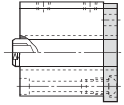
ST Basic style/tapped on both sides



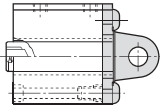
FA Rod rectangular flange



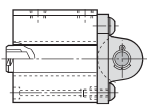
FB Cap rectangular flange



CA Cap eye



CB Cap clevis



- T Rod eye (T-end)
- S Rod eye with spherical bearing (S-end)
- Y Rod clevis (Y-end)
- F Floating joint (F-end)

(Note) Rod end attachments are for male thread type.

- Blank Female thread type
- T Male thread type

Cylinder stroke (mm)

Cylinder bore (mm)
φ12, φ16, φ20, φ25, φ32, φ40, φ50,
φ63, φ80, φ100, φ125

★ Notice

- In the following case, the cylinder will be fabricated as a semi-standard style.
- Rod end modification (Dimensional symbol: WF, A or KK)

Unit: mm

Standard stroke range

When an order for the ◎-marked SD style (basic style) cylinder body is placed, the body will come with mounting bolts. See Note 2.

Series variations	Cylinder bore	Stroke																With cushion pad	Male thread
		5	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100		
Standard	Double acting single rod	φ12	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ16	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ20	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ32	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	Double acting double rod	φ40	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ50	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ63	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ80	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ100	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	Single acting style (sprint return)	φ125	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ12	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ16	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ20	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Non-rotating	Double acting single rod	φ32	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ40	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ50	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ63	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ80	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	Double acting double rod	φ100	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ125	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ12	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ16	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ20	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	Single acting style (spring-extended)	φ25	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ32	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ40	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ50	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
		φ63	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

- (Notes) 1. For strokes other than the above standard strokes (◎ and ○), consult us.
2. When an order for the ◎-marked SD style (basic style) cylinder body is placed, the body will come with mounting bolts. For any ○-marked SD style (basic style) cylinder, separately place an order for mounting bolts referring to the mounting bolt kit list.
- Also in the following cases, separately place an order for mounting bolts. (Cylinders with special rod ends, fractional stroke cylinders, non-rotating double rod type cylinders, cylinders with special port diameter or special body, and other special cylinders)
- The mounting bolt size is restricted. If mounting bolt cannot be fitted, use an ST style (tapped on both sides) cylinder.
3. Do not use the cylinder in an unevenly loaded state.
- When using a cylinder having a stroke other than the ◎-marked ones or using rocking mounting accessory, consult us.

Specifications for order made cylinders

Dual stroke (double rod)



•Cylinder bore mm (Standard (round rod): ϕ 12 to ϕ 125
Standard (round rod)+non-rotating (hex. rod): ϕ 20 to ϕ 100

Dual stroke (single rod)



•Cylinder bore mm (Standard (round rod): ϕ 12 to ϕ 125
Non-rotating (hex. rod): ϕ 20 to ϕ 100

Adjustable stroke (Advanced stroke)



•Cylinder bore mm (Standard (round rod): ϕ 12 to ϕ 125
Non-rotating (hex. rod): ϕ 20 to ϕ 100

Stroke adjusting range: 0 to 10 mm

Weight table/Double acting standard/non-rotating

Unit: g

Bore (mm)	Basic weight (SD style · ST style)				Additional weight								
	Standard		Non-rotating		Additional weight per mm of stroke			Mounting accessory weight					Rod end male thread weight
	Double acting single rod	Double acting double rod	Double acting single rod	Double acting double rod	Standard	Non-rotating		LA style	LB style	FA · FB style	CA style	CB type	
						Double acting single rod	Double acting double rod						
φ12	25	45	—	—	1.5	—	—	—	—	—	—	—	
φ16	35	70	—	—	2	—	—	—	—	—	—	—	2
φ20	80	135	120	175	2.5	2.5	3.4	—	—	—	—	—	8
φ25	110	180	175	245	2.5	2.5	3.7	—	—	—	—	—	8
φ32	145	280	205	340	4.8	4.5	5.6	—	—	—	—	—	16.5
φ40	275	505	340	570	5.3	5	6.5	110	100	275	205	165	16.5
φ50	415	830	490	905	7.8	7.8	9.6	160	150	415	275	275	60
φ63	500	1185	655	1340	13.5	13.5	11.5	260	240	560	375	395	60
φ80	1260	1755	1445	1940	14.5	14.5	17.8	520	500	1515	890	920	125
φ100	2030	2565	2290	2825	17	17	21.1	590	580	1950	1090	1275	125
φ125	3460	4440	—	—	26	—	—	1200	1190	2995	1890	2045	290

Weight table/Single acting spring return

Unit: g

Bore (mm)	Basic weight (SD style · ST style)									
	5	10	15	20	25	30	35	40	45	50
ϕ 12	32.6	40.1	47.7	55.2	—	—	—	—	—	—
ϕ 16	45.5	55.5	66	76	—	—	—	—	—	—
ϕ 20	85.6	100.6	113.7	126.2	139.3	151.8	—	—	—	—
ϕ 25	118.5	131	144.5	157	170.5	183	—	—	—	—
ϕ 32	160.5	184.5	210	234	259.5	283.5	—	—	—	—
ϕ 40	289.8	316.3	346.1	372.6	402.4	428.9	458.7	485.2	515	541.5
ϕ 50	—	472.1	515.2	554.2	597.3	636.3	679.4	718.4	761.5	800.5

(Note) • For additional weights other than the basic weights, see the above table.

Weight table/Single
acting spring-extended

Unit: g

Bore (mm)	Basic weight (SD style · ST style)		
	5	10	20
ϕ 12	32.5	40	—
ϕ 16	45.1	55.2	—
ϕ 20	87.7	100.4	—
ϕ 25	117.7	130.4	—
ϕ 32	154.6	178.6	—
ϕ 40	282.1	309.1	—
ϕ 50	—	454.8	534.6

(Note) • For additional weights other than the basic weights, see the above table.

Calculation formula

Cylinder weight (g)=Basic weight+(Cylinder stroke (mm)×Additional weight per mm of stroke)+Mounting accessory weight+Rod end male thread weight

Calculation example

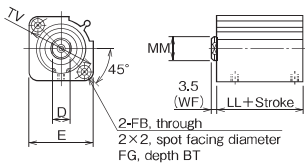
10S-1, Double acting single rod standard, Cylinder bore ϕ 63, Stroke 50 mm, LB style, Female thread type, (500+13.5×50+240=1415g)

10S-1/TAS1 Bore is available. CAD/DATA is available.

SD

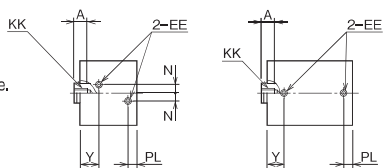
Standard/double acting single rod
10S-1 SD Bore N Standard Stroke

- Bore $\phi 12$ to $\phi 32$



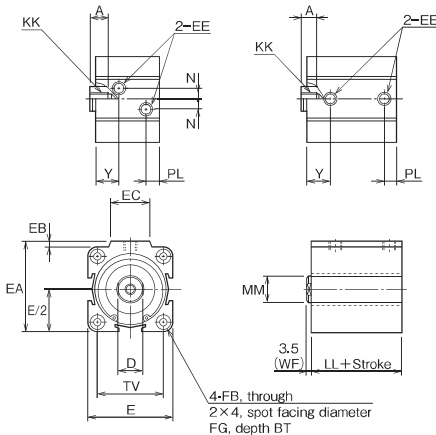
- Ports position of stroke 5mm
- Ports position of stroke 10mm or more

- Bore $\phi 12$ to $\phi 40$:
Port positions of stroke 5mm differ from those of stroke 10mm and more.
- Bore $\phi 50$ and $\phi 63$:
Port positions of stroke 10mm differ from those of stroke 15mm and more.

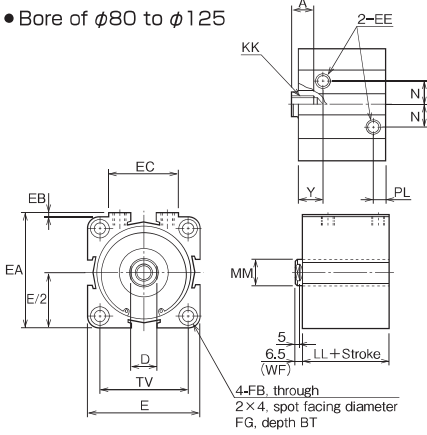


- Bore $\phi 40$ to $\phi 63$

Bore $\phi 40$ and stroke 5mm: Bore $\phi 40$ and stroke 10mm or more:
Bore $\phi 50$ and $\phi 63$, and stroke 10mm: Bore $\phi 50$ and $\phi 63$, and stroke 15mm or more:



- Bore of $\phi 80$ to $\phi 125$



Dimensional table

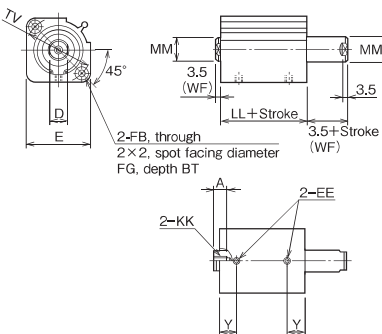
• The parenthesized values of Y apply in the case where the stroke is 5.

Symbol Bore	A	BT	D	E	EA	EB	EC	EE	FB	FG	KK	LL	MM	N	PL	TV	Y
$\phi 12$	6	3.5	5	25	—	—	—	M5×0.8	$\phi 3.4$	$\phi 6.5$	M3×0.5	17	$\phi 6$	2	5	$\phi 22$	10 (8.5)
$\phi 16$	6	3.5	5	29	—	—	—	M5×0.8	$\phi 3.4$	$\phi 6.5$	M3×0.5	17	$\phi 6$	2	5	$\phi 28$	10 (8.5)
$\phi 20$	7	5.5	8	37	—	—	—	M5×0.8	$\phi 5.5$	$\phi 9.5$	M5×0.8	20	$\phi 10$	4.5	6	$\phi 36$	11
$\phi 25$	7	5.5	8	40	—	—	—	M5×0.8	$\phi 5.5$	$\phi 9.5$	M5×0.8	21	$\phi 10$	4.5	6	$\phi 40$	12
$\phi 32$	12	5.5	14	45	—	—	—	M5×0.8	$\phi 5.5$	$\phi 9.5$	M8×1.25	25	$\phi 16$	5	6	$\phi 48$	13
$\phi 40$	12	5.5	14	53	57	4	28	Rc1/8	$\phi 5.5$	$\phi 9.5$	M8×1.25	30	$\phi 16$	5	8.5	$\phi 40$	16.5
$\phi 50$	15	6.5	18	64	68	4	30	Rc1/8	$\phi 6.6$	$\phi 11$	M10×1.5	32	$\phi 20$	6	9	$\phi 50$	18
$\phi 63$	15	8.6	18	77	84	7	35	Rc1/4	$\phi 9$	$\phi 14$	M10×1.5	36	$\phi 20$	6	11	$\phi 60$	19
$\phi 80$	20	16.5	22	100	101.5	1.5	62	Rc1/4	$\phi 11$	$\phi 17.5$	M16×2	46.5	$\phi 25$	21	11	$\phi 77$	21.5
$\phi 100$	20	18	22	117	117	—	—	Rc1/4	$\phi 11$	$\phi 17.5$	M16×2	53	$\phi 25$	29	13	$\phi 94$	25
$\phi 125$	25	19.5	29	144	144	—	—	Rc3/8	$\phi 14$	$\phi 20$	M20×2.5	59.5	$\phi 32$	37	16	$\phi 116$	28

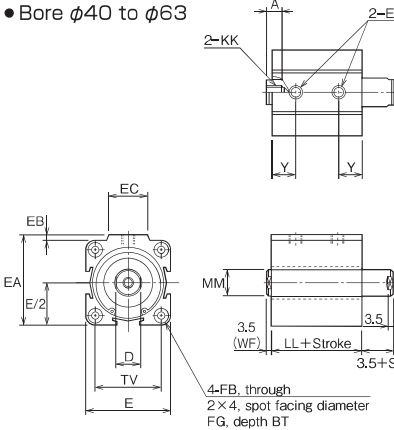
SD

Standard/double acting double rod
10S-1D SD Bore N Standard Stroke

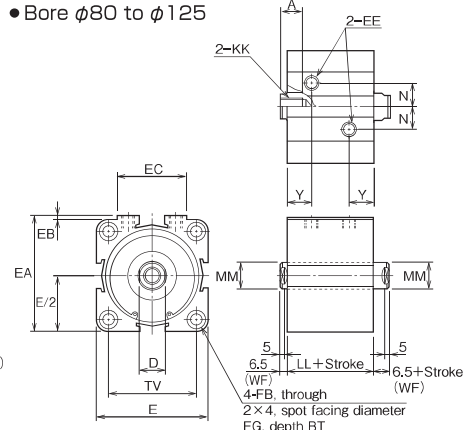
- Bore $\phi 12$ to $\phi 32$



- Bore $\phi 40$ to $\phi 63$



- Bore $\phi 80$ to $\phi 125$



Dimensional table

Symbol Bore	A	BT	D	E	EA	EB	EC	EE	FB	FG	KK	LL	MM	N	TV	Y
$\phi 12$	6	3.5	5	25	—	—	—	M5×0.8	$\phi 3.4$	$\phi 6.5$	M3×0.5	27	$\phi 6$	—	$\phi 22$	10
$\phi 16$	6	3.5	5	29	—	—	—	M5×0.8	$\phi 3.4$	$\phi 6.5$	M3×0.5	27	$\phi 6$	—	$\phi 28$	10
$\phi 20$	7	5.5	8	37	—	—	—	M5×0.8	$\phi 5.5$	$\phi 9.5$	M5×0.8	30	$\phi 10$	—	$\phi 36$	11
$\phi 25$	7	5.5	8	40	—	—	—	M5×0.8	$\phi 5.5$	$\phi 9.5$	M5×0.8	31	$\phi 10$	—	$\phi 40$	12
$\phi 32$	12	5.5	14	45	—	—	—	M5×0.8	$\phi 5.5$	$\phi 9.5$	M8×1.25	35	$\phi 16$	—	$\phi 48$	13
$\phi 40$	12	5.5	14	53	57	4	28	Rc1/8	$\phi 5.5$	$\phi 9.5$	M8×1.25	45	$\phi 16$	—	$\phi 40$	16.5
$\phi 50$	15	6.5	18	64	68	4	30	Rc1/8	$\phi 6.6$	$\phi 11$	M10×1.5	47	$\phi 20$	—	$\phi 50$	18
$\phi 63$	15	8.6	18	77	84	7	35	Rc1/4	$\phi 9$	$\phi 14$	M10×1.5	51	$\phi 20$	—	$\phi 60$	19
$\phi 80$	20	16.5	22	100	101.5	1.5	62	Rc1/4	$\phi 11$	$\phi 17.5$	M16×2	61.5	$\phi 25$	21	$\phi 77$	21.5
$\phi 100$	20	18	22	117	117	—	—	Rc1/4	$\phi 11$	$\phi 17.5$	M16×2	68	$\phi 25$	29	$\phi 94$	25
$\phi 125$	25	19.5	29	144	144	—	—	Rc3/8	$\phi 14$	$\phi 20$	M20×2.5	74.5	$\phi 32$	37	$\phi 116$	28