

Compact Cylinder: Standard Type Double Acting, Single Rod

Series CQ2

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch

CQ2 [B] [] [20] [] [30] [D] []

With auto switch

CDQ2 [B] [] [20] [] [30] [D] [] [J79W] [S]

Mounting style

B Through-hole (Standard)	F Rod side flange style
A Both ends tapped style	G Head side flange style
L Foot style	D Double clevis style

* Mounting brackets are shipped together, (but not assembled).

Type

Nil Pneumatic
H Air-hydro ^{Note)}

Note) Bore sizes available for air-hydro type are ø20 to ø100.

Bore size

12 12 mm	40 40 mm
16 16 mm	50 50 mm
20 20 mm	63 63 mm
25 25 mm	80 80 mm
32 32 mm	100 100 mm

Piping

Nil Screw-in piping
F Built-in One-touch fittings ^{Note)}

Note) Bore sizes available w/ One-touch fittings are ø32 to ø63. Besides, it is not possible to use for air-hydro type.

Auto switch

Nil Without auto switch (Built-in magnet)	S 2 pcs.
	n "n" pcs.

* For the applicable auto switch model, refer to the table below.

Body option

Nil Standard (Rod end female thread)
F With boss in head side
C With rubber bumper
M Rod end male thread ^{Note)}

* Combination of body options ("CM", "FC", "FM", "FCM") is available. Note) Air-hydro type with rubber bumper is not available.

Action

D Double acting

Cylinder stroke (mm)

For "Standard Stroke" and "Manufacture of intermediate of Stroke", refer to page 7-6-3.

Applicable Auto Switch/Refer to page 7-9-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator/light	Wiring (Output)	Load voltage		Rail mounting		Direct mounting		Lead wire length (m) *				Pre-wire connector	Applicable load				
					DC	AC	ø12 to ø100	ø32 to ø100	0.5 (Nil)	3 (L)	5 (Z)	None (N)	IC circuit	Relay, PLC						
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	A76H	A96V	A96	●	●	—	—	—	IC circuit	—			
				2-wire	—	200 V	A72	A72H	—	—	—	●	●	—	—	—	—	—		
		Connector		24 V	12 V	100 V	—	—	A93V	A93	—	—	—	—	—	—	—	—	Relay, PLC	
				—	—	—	A73C	—	—	—	—	—	●	●	●	●	—	—	—	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	—	F7NV	F79	M9NV	M9N	●	●	○	—	○	IC circuit			
				3-wire (PNP)				F7PV	F7P	M9PV	M9P	●	●	○	—	○	—	—		
		Connector		2-wire	12 V	—	F7BV	J79	M9BV	M9B	●	●	○	—	○	—	—	—		
				3-wire (NPN)	5 V, 12 V	—	F7NWV	F79W	F9NWV	F9NW	●	●	○	—	○	—	—	—		
		Grommet		3-wire (PNP)	5 V, 12 V	—	—	F7PW	F9PWV	F9PW	●	●	○	—	○	—	—	—	—	
				2-wire	24 V	12 V	—	—	F7BWV	J79W	F9BWV	F9BW	●	●	○	—	○	—	—	
				Water resistant (2-color indication)	—	—	—	—	—	F7BA	—	F9BA	—	●	○	—	○	—	—	
				With diagnostic output (2-color indication)	—	—	—	—	—	—	—	—	—	●	○	—	○	—	—	
				Magnetic field resistant (2-color indication)	4-wire (NPN)	5 V, 12 V	—	—	—	F7BAV	—	—	—	—	●	○	—	○	—	—
					2-wire	—	—	—	—	—	F79F	—	—	—	●	●	○	—	○	—
—	—	—	—	—	—	—	P5DW	—	—	—	●	●	—	○	—	—				

* Lead wire length symbols: 0.5 m Nil (Example) A73C
 3 m L (Example) A73CL
 5 m Z (Example) A73CZ
 None N (Example) A73CN

* Solid state switches marked with "○" are produced upon receipt of order.

- D-P5DWL type is available from ø40 up to ø100 only.
- There are other applicable auto switches other than the listed above. For details, refer to page 7-6-23.
- For details about auto switches with pre-wire connector, refer to page 7-9-36.

Compact Cylinder: Standard Type **Series CQ2**

Double Acting, Single Rod



JIS Symbol
Double acting,
Single rod



JIS Symbol
With boss in
head side



Standard Stroke

Pneumatic

Bore size (mm)	Standard stroke (mm)
12, 16	5, 10, 15, 20, 25, 30
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50 to 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

• When stroke exceeds the standard range, refer to page 7-6-121.

Air-hydro

Bore size (mm)	Standard stroke (mm)
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

Mounting Bracket Part No.

Bore size (mm)	Foot ⁽⁴⁾	Flange	Double clevis ⁽⁵⁾
12	CQ-L012	CQ-F012	CQ-D012
16	CQ-L016	CQ-F016	CQ-D016
20	CQ-L020	CQ-F020	CQ-D020
25	CQ-L025	CQ-F025	CQ-D025
32	CQ-L032	CQ-F032	CQ-D032
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L063	CQ-F063	CQ-D063
80	CQ-L080	CQ-F080	CQ-D080
100	CQ-L100	CQ-F100	CQ-D100

Note 4) When ordering foot bracket, order 2 pieces per cylinder.

Note 5) Parts belonging to each bracket are as follows. Foot, Flange: Body mounting bolt/Double clevis: Clevis pin, Type C snap ring for axis, body mounting bolt

Type

Bore size (mm)		12	16	20	25	32	40	50	63	80	100	
Pneumatic	Mounting	Through-hole (Standard)	●	●	●	●	●	●	●	●	●	
		Both ends tapped style	●	●	●	●	●	●	●	●	●	●
	Built-in magnet		●	●	●	●	●	●	●	●	●	●
	Piping	Screw-in type	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8 ⁽¹⁾ Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
		Built-in One-touch fittings	—	—	—	—	ø6/4 ⁽²⁾	ø6/4	ø8/6	ø8/6	—	—
	Rod end male thread		●	●	●	●	●	●	●	●	●	●
	With rubber bumper		●	●	●	●	●	●	●	●	●	●
With boss in head side		●	●	●	●	●	●	●	●	●	●	
Air-hydro	Mounting	Through-hole (Standard)	—	—	●	●	●	●	●	●	●	
		Both ends tapped style	—	—	●	●	●	●	●	●	●	
	Built-in magnet		—	—	●	●	●	●	●	●	●	
	Piping	Screw-in type	—	—	M5 x 0.8	M5 x 0.8	M5 x 0.8 ⁽¹⁾ Rc 1/8	Rc 1/8	Rc 1/4	Rc 1/4	Rc 3/8	Rc 3/8
	Rod end male thread		—	—	●	●	●	●	●	●	●	●
With boss in head side		—	—	●	●	●	●	●	●	●	●	

Note 1) In the case of without auto switch, M5 x 0.8 is used for 5 stroke only.

Note 2) In the case of built-in fitting, the 5 mm stroke with ø32 bore is the same external dimensions as 10 mm stroke.

Specifications

Type	Pneumatic (Non-lube)	Air-hydro
Fluid	Air	Turbine oil ⁽³⁾
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)	
Rubber bumper	None	—
Rod end thread	Female thread	
Rod end thread tolerance	JIS class 2	
Stroke length tolerance	+1.0 0	
Mounting	Through-hole	
Piston speed	50 to 500 mm/s	5 to 50 mm/s

Note 3) For caution on handling, refer to page 7-13-6.

* For applications involving lateral loads, refer to anti-lateral load type on page 7-13-132.

Minimum Operating Pressure

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Pneumatic (Non-lube)	0.07		0.05							
Air-hydro	—		0.18			0.10				

Manufacture of Intermediate Stroke

Description	Spacer is installed in the standard stroke body.	Exclusive body (-XB10)
Part no.	Refer to "How to Order" for the standard model no. on page 7-6-2.	Suffix "-XB10" to the end of standard model no. on page 7-6-2.
Description	Dealing with intermediate stroke by the 1 mm interval is available by using spacer with standard stroke cylinder.	Dealing with the stroke by the 1 mm interval by using an exclusive body with the specified stroke.
Stroke range	Bore size	Bore size
	Stroke range	Stroke range
Example	12, 16	12, 16
	20, 25	20, 25
	32 to 100	32, 40
		50 to 100
	1 to 29	6 to 29
	1 to 49	6 to 49
	1 to 99	6 to 99
		11 to 99
	Part No.: CQ2B50-57D 18 mm width spacer is installed in the standard CQ2B50-75D. B dimension is 115.5 mm.	Part no. CQ2B50-57D-XB10 Makes 57 stroke tube. B dimension is 97.5 mm.



• Air-hydro type is excluded.

• In the case of spacer type, intermediate stroke with damper for ø40 to ø100, it can be manufactured by 5 mm intervals in 5 mm and 55 to 95 mm.

• In the case of an exclusive body with ø32 to ø100 (-XB10) with the stroke length exceeding 50 mm, the reference values of the longitudinal dimension will be changed. Calculate length dimensions by deducting from those of 75 or 100 mm stroke models.

• Regarding the long stroke which exceeds the stroke range, refer to page 7-6-121 for the long stroke type of either CQ2 or CQS.

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

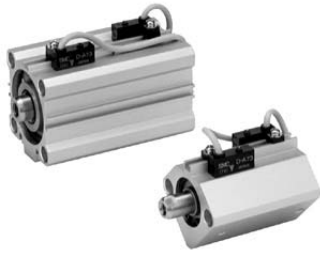
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Data

Compact Cylinder Series CDQ2 With Auto Switch



* Refer to page 7-9-1 for further information on auto switches.



Minimum Stroke for Auto Switch Mounting

(mm)

No. of auto switches mounted	D-F7□V D-J79C D-F9□V	D-A7□ D-A80 D-A73C D-A80C D-A9□V	D-F7□WV D-F9□WV D-F7BAVL	D-A7□H D-A80H D-F7□ D-J79 D-M9□ D-F9□W	D-A79W	D-F7□W D-J79W D-F7BAL D-F79F D-F9BAL	D-A9□	D-P5DWL
1 pc.	5	5	10	15	15	20	10	30
2 pcs.	5	10	15	15	20	20	10	30

Weight

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	47	54	60	67	74	80	—	—	—	—	—	—
16	73	82	92	101	110	119	—	—	—	—	—	—
20	109	122	136	150	164	178	191	205	219	233	—	—
25	144	161	178	195	211	228	245	262	278	295	—	—
32	190	211	232	252	273	294	315	335	356	377	482	587
40	282	305	328	351	375	398	421	444	467	490	610	730
50	—	487	523	559	595	632	668	704	740	777	965	1153
63	—	696	737	778	819	860	901	941	982	1023	1235	1446
80	—	1258	1325	1393	1461	1529	1597	1665	1732	1800	2135	2469
100	—	2118	2209	2299	2390	2481	2572	2662	2753	2844	3304	3764

Additional Weight

(g)

Bore size (mm)	12	16	20	25	32	40	50	63	80	100	
Both ends tapped style	1	1	3	3	6	6	6	19	45	45	
Rod end male thread	Male thread	1.5	3	6	12	26	27	53	53	120	175
	Nut	1	2	4	8	17	17	32	32	49	116
With boss in head side	0.7	1.3	2	3	5	7	13	25	45	96	
With rubber bumper	0	-1	-2	-3	-3	-7	-9	-18	-31	-56	
Built-in One-touch fittings	—	—	—	—	12	12	21	21	—	—	
Foot style (Including mounting bolt)	49	62	147	169	143	155	243	324	696	1062	
Rod side flange style (Including mounting bolt)	54	67	131	153	180	214	373	559	1056	1365	
Rear flange style (Including mounting bolt)	52	63	124	144	165	198	348	534	1017	1309	
Double clevis style (Including pin, snap ring, bolt)	29	35	78	114	151	196	393	554	1109	1887	

Calculation: (Example) CDQ2D32-20DCM

- Cylinder weight: CDQ2B32-20D.....252 g
 - Option weight: Both ends tapped style.....6 g
Rod end male thread.....43 g
Rubber bumper.....-3 g
Double clevis style.....151 g
- 449 g

Add each weight of auto switches and mounting brackets.

Auto Switch Mounting Bracket Weight

Mounting bracket part no.	Applicable bore (mm)	Weight (g)
BQ-1	12 to 25	1.5
BQ-2	32 to 100	1.5

For the auto switch weight, refer to page 7-9-1.

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

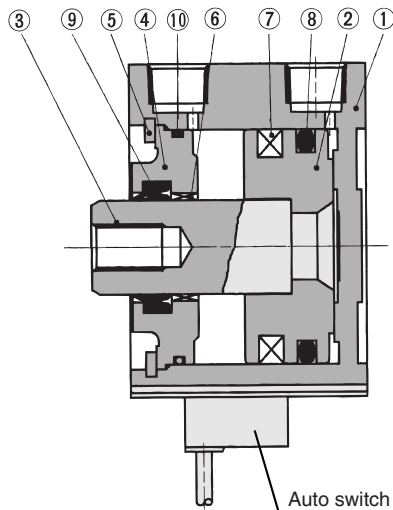
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Data

Series CDQ2

Construction



Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Piston	Aluminum alloy	Chromated
③	Piston rod	Stainless steel	ø12 to ø25
		Carbon steel	
④	Collar	Aluminum alloy	ø12 to ø40, Anodized
		Aluminum alloy casted	
⑤	Snap ring	Carbon tool steel	Phosphate coated
⑥	Bushing	Lead-bronze casted	For ø50 or larger only
⑦	Magnet	—	
⑧	Piston seal	NBR	
⑨	Rod seal	NBR	
⑩	Gasket	NBR	

Replacement Parts: Seal Kit

Series	Bore size (mm)	Kit no.	Contents
Pneumatic	12	CQ2B12-PS	Set of nos. above ⑧, ⑨, ⑩.
	16	CQ2B16-PS	
	20	CQ2B20-PS	
	25	CQ2B25-PS	
	32	CQ2B32-PS	
	40	CQ2B40-PS	
	50	CQ2B50-PS	
	63	CQ2B63-PS	
	80	CQ2B80-PS	
100	CQ2B100-PS		

Replacement Parts: Seal Kit

Series	Bore size (mm)	Kit no.	Contents
Air-hydro	20	CQ2BH20-PS	Set of nos. above ⑧, ⑨, ⑩.
	25	CQ2BH25-PS	
	32	CQ2BH32-PS	
	40	CQ2BH40-PS	
	50	CQ2BH50-PS	
	63	CQ2BH63-PS	
	80	CQ2BH80-PS	
	100	CQ2BH100-PS	

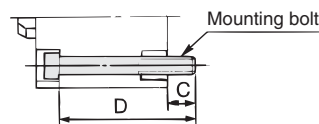
* Seal kits includes ⑧ ⑨ ⑩. Order the seal kit, based on each bore size.

Mounting Bolt for CDQ2 with Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQ2B is available as an option.

Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 35ℓ 2 pcs.



Model	C	D	Mounting bolt
CDQ2B12-5D	5.5	35	M3 x 35ℓ
-10D		40	x 40ℓ
-15D		45	x 45ℓ
-20D		50	x 50ℓ
-25D		55	x 55ℓ
-30D		65	x 60ℓ
CDQ2B16-5D	8	40	M3 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
CDQ2B20-5D	10.5	40	M5 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
-35D		70	x 70ℓ
-40D		75	x 75ℓ
-45D		80	x 80ℓ
-50D		85	x 85ℓ
CDQ2B25-5D	9.5	40	M5 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
-35D		70	x 70ℓ
-40D		75	x 75ℓ
-45D		80	x 80ℓ
-50D		85	x 85ℓ

Model	C	D	Mounting bolt
CDQ2B32-5D	9	40	M5 x 40ℓ
-10D		45	x 45ℓ
-15D		50	x 50ℓ
-20D		55	x 55ℓ
-25D		60	x 60ℓ
-30D		65	x 65ℓ
-35D		70	x 70ℓ
-40D		75	x 75ℓ
-45D		80	x 80ℓ
-50D		85	x 85ℓ
CDQ2B40-5D	7.5	45	M5 x 45ℓ
-10D		50	x 50ℓ
-15D		55	x 55ℓ
-20D		60	x 60ℓ
-25D		65	x 65ℓ
-30D		70	x 70ℓ
-35D		75	x 75ℓ
-40D		80	x 80ℓ
-45D		85	x 85ℓ
-50D		90	x 90ℓ
CDQ2B50-10D	12.5	55	M6 x 55ℓ
-15D		60	x 60ℓ
-20D		65	x 65ℓ
-25D		70	x 70ℓ
-30D		75	x 75ℓ
-35D		80	x 80ℓ
-40D		85	x 85ℓ
-45D		90	x 90ℓ
-50D		95	x 95ℓ
-75D		120	x 120ℓ
-100D	145	x 145ℓ	

Model	C	D	Mounting bolt
CDQ2B63-10D	14.5	60	M8 x 60ℓ
-15D		65	x 65ℓ
-20D		70	x 70ℓ
-25D		75	x 75ℓ
-30D		80	x 80ℓ
-35D		85	x 85ℓ
-40D		90	x 90ℓ
-45D		95	x 95ℓ
-50D		100	x 100ℓ
-75D		125	x 125ℓ
CDQ2B80-10D	15	65	M10 x 65ℓ
-15D		70	x 70ℓ
-20D		75	x 75ℓ
-25D		80	x 80ℓ
-30D		85	x 85ℓ
-35D		90	x 90ℓ
-40D		95	x 95ℓ
-45D		100	x 100ℓ
-50D		105	x 105ℓ
-75D		130	x 130ℓ
-100D	155	x 155ℓ	
CDQ2B100-10D	15.5	75	M10 x 75ℓ
-15D		80	x 80ℓ
-20D		85	x 85ℓ
-25D		90	x 90ℓ
-30D		95	x 95ℓ
-35D		100	x 100ℓ
-40D		105	x 105ℓ
-45D		110	x 110ℓ
-50D		115	x 115ℓ
-75D		140	x 140ℓ
-100D	165	x 165ℓ	

Series CDQ2

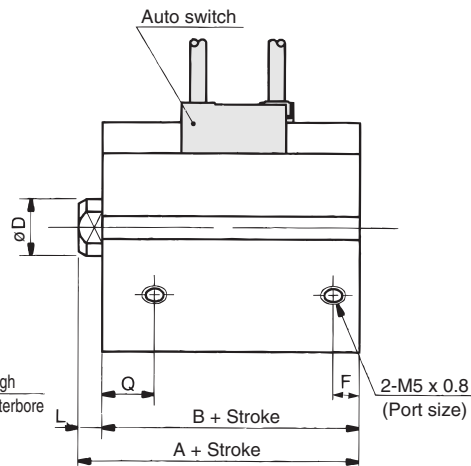
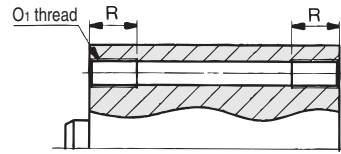
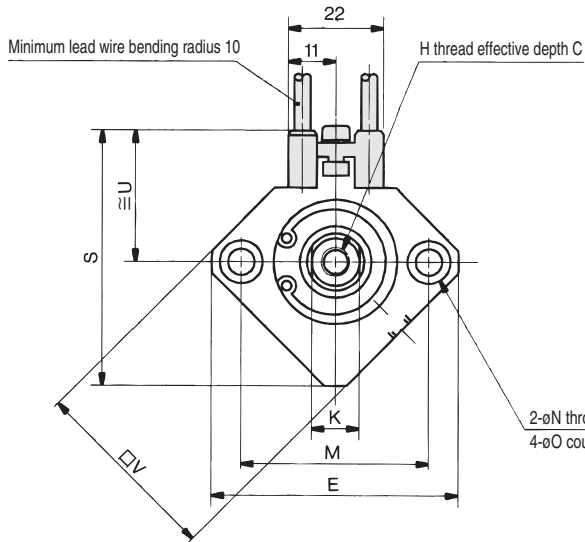
Dimensions: $\phi 12$ to $\phi 25$ /With Auto Switch

Basic style (Through-hole): CDQ2B

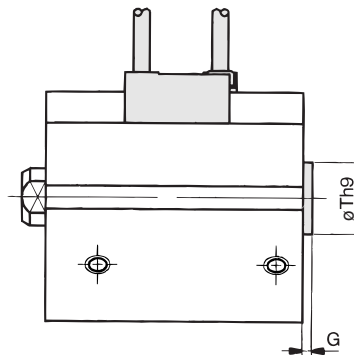
Both ends tapped style: CDQ2A

Both Ends Tapped Style

Bore size (mm)	O ₁	R
12	M4 x 0.7	7
16	M4 x 0.7	7
20	M6 x 1.0	10
25	M6 x 1.0	10



With boss in head side

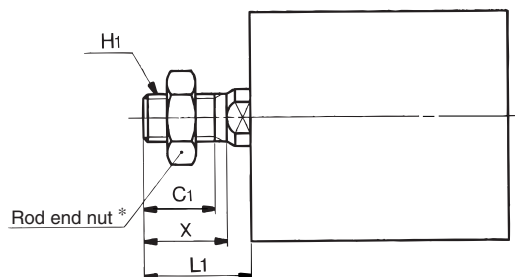


With Boss in Head Side

Bore size (mm)	G	Th9
12	1.5	15 ⁰ _{-0.043}
16	1.5	20 ⁰ _{-0.052}
20	2	13 ⁰ _{-0.043}
25	2	15 ⁰ _{-0.043}

Note 1) With boss in rod side:
Option
(Suffix "-XC36" to the end of part number.)

Rod end male thread



Rod End Male Thread

Bore size (mm)	C ₁	X	H ₁	L ₁
12	9	10.5	M5 x 0.8	14
16	10	12	M6 x 1.0	15.5
20	12	14	M8 x 1.25	18.5
25	15	17.5	M10 x 1.25	22.5

Auto switch shown above is D-A73 type and D-A80 type.
For the auto switch mounting position and its mounting height, refer to page 7-6-22.

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	K	L	M	N	O	Q	S	U	V
12	5 to 30	31.5	28	6	6	32	6.5	M3 x 0.5	5	3.5	22	3.5	6.5 depth 3.5	11	35.5	19.5	25
16	5 to 30	34	30.5	8	8	38	5.5	M4 x 0.7	6	3.5	28	3.5	6.5 depth 3.5	10	41.5	22.5	29
20	5 to 50	36	31.5	7	10	47	5.5	M5 x 0.8	8	4.5	36	5.5	9 depth 7	10.5	48	24.5	36
25	5 to 50	37.5	32.5	12	12	52	5.5	M6 x 1.0	10	5	40	5.5	9 depth 7	11	53.5	27.5	40

Note 2) External dimensions with rubber bumper are same as standard type as shown above.

* For details about the rod end nut and accessory brackets, refer to page 7-6-20.

Note 3) For calculation on the longitudinal dimension of the intermediate strokes, refer to page 7-6-3.