

Compact Cylinder with Air Cushion Series RQ

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

The new standard for the future

New
**AIR
CUSHION**



NEW Air Cushion Cylinder



Uses a unique air cushion mechanism with no cushion ring.
Size ø63, ø80 and ø100 newly introduced to Series RQ.



CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

20-

Data

Future new standard for shock elimination,

noise reduction and improvement in repeatability

Employs a new construction for the air cushion mechanism.

Compact Cylinder with Air Cushion
Series RQ
 ø63, ø80 and ø100 newly introduced!

Minimal extended dimensions from **+2.5mm to 13mm**
 (Compared with series CDQS/CDQ2 of the same bore size with auto switches)

Series	Bore size	Extended dimension	Comparable cylinder
Series RDQ	20	+2.5mm	Series CDQS
	25	+4mm	
	32	+4mm	
	40	+4.5mm	Series CDQ2
	50	+9mm	
	63	+9mm	
	80	+10mm	
100	+13mm		

Debut of the air cushion series

New AIR CUSHION Unique air cushion construction with no cushion ring

Elimination of the cushion ring used in conventional cushion ring type air cushions has made it possible to reduce the overall length of the cylinder. This produces an air cushion cylinder which retains the merits of a compact design.

Working principle

- When the piston is retracting, exhaust is discharged from both A and A' until piston seal H passes the air passage A.
- After piston seal H has passed the air passage A, exhaust is discharged only from A'. The section marked with diagonal lines becomes a cushion chamber, and a cushioning effect is achieved.
- check seal opens and the piston starts with no delay.

Wide size variations from ø20 to ø100

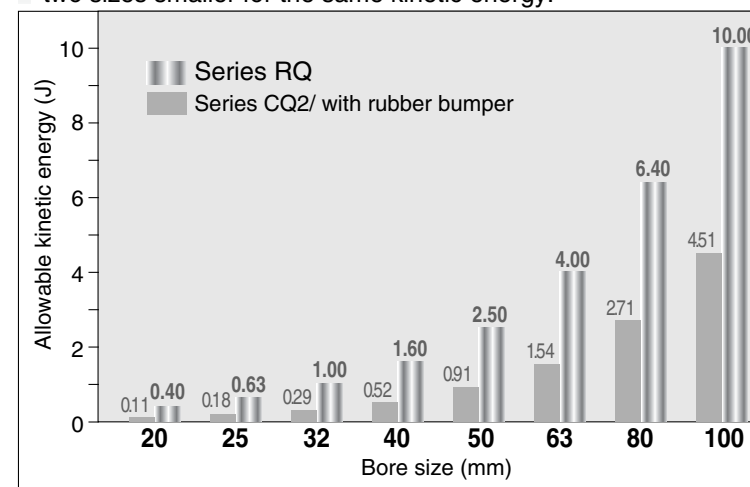
Model	Mounting	Rod end configuration	Standard stroke							Auto switch	
			15	20	25	30	40	50	75		100
R(D)Q□20	<ul style="list-style-type: none"> Through-hole Double end tapped Foot style Front flange style Rear flange style Double clevis style 	<ul style="list-style-type: none"> Female thread Male thread 	●	●	●	●	●	●	●	●	<ul style="list-style-type: none"> •ø20 to ø100 Direct mounting auto switch •ø32 to ø100 Rail mounting auto switch
R(D)Q□25			●	●	●	●	●	●	●	●	
R(D)Q□32			●	●	●	●	●	●	●	●	
R(D)Q□40			●	●	●	●	●	●	●	●	
R(D)Q□50			●	●	●	●	●	●	●	●	
New R(D)Q□63			●	●	●	●	●	●	●	●	
New R(D)Q□80	●	●	●	●	●	●	●	●			
New R(D)Q□100	●	●	●	●	●	●	●	●			

*Size ø20 and ø25 have through-holes and double end taps in common.



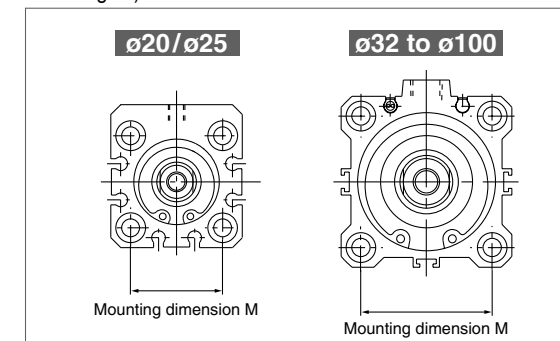
Nearly three times the allowable kinetic energy

(Compared to Series CQS/CQ2 with rubber bumper)
 Improved energy absorption allows selection of a cylinder that is two sizes smaller for the same kinetic energy.



Interchangeable mounting

The mounting dimension "M" is the same as the compact cylinder Series CQS/CQ2. (CQS/CQ2 mounting brackets can be used without any changes.)



Improved repeatability

The piston contact surface at the stroke end is metal, providing improved repeatability for the stopping position as compared with a rubber bumper.

Improved noise reduction (Stroke end impact noise reduced)

- Decrease of 19dB or more (Compared with Series CQ2 without cushion)
- Decrease of 14dB or more (Compared with Series CQ2 with rubber bumper)



Compact Cylinder with Air Cushion Double Acting, Single Rod Series RQ

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

How to Order

Without auto switch

With auto switch

RQ **B** **32** **50**

RDQ **B** **32** **50** **F9BW**

Number of auto switches

Nil	2 pcs.
S	1 pc
n	"n" pcs.

Auto switch

Nil	Without auto switch (Built-in magnet)
-----	---------------------------------------

Body option

Nil	Rod end female thread (Standard)
M	Rod end male thread

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 7-7-5.

Thread type

Nil	M thread	ø20, 25
	Rc	
TN	NPT	ø32 to ø100
TF	G	

Built-in magnet

Mounting style

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

Note 1) Mounting brackets are packed together when shipped (unassembled).
Note 2) Since sizes ø20 and ø25 have a body with type B (Through-hole) and type A (Both ends tapped style) in common, there is no type A part number. Example) RQA 20-30 does not exist.

Bore size

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

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-wired connector	Applicable load		
					DC	AC	ø32 to ø100		ø20 to ø100		0.5 (Nil)	3 (L)	5 (Z)	None (N)				
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	—	5V	—	—	A76H	A96V	A96	●	●	—	—	—	IC circuit	
						—	—	200V	A72	A72H	—	—	●	●	—	—	—	—
	Connector	2-wire		24V	12V	100V	—	—	A73H	—	—	—	●	●	—	—	—	
					—	—	—	A73C	—	—	—	—	—	—	●	●	●	●
Solid state switch	—	Grommet	Yes	3-wire (NPN)	—	5V, 12V	—	F7NV	F79	M9NV	M9N	●	●	○	—	○	IC circuit	
								F7PV	F7P	M9PV	M9P	●	●	○	—	○	—	—
	Connector	2-wire		12V	—	F7BV	J79	M9BV	M9B	●	●	○	—	○	—	—	—	
						J79C	—	—	—	●	●	●	●	—	—	—	—	—
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	—	5V, 12V	—	—	F7NVV	F79W	F9NVV	F9NW	●	●	○	—	○	IC circuit
									—	F7PW	F9PWV	F9PW	●	●	○	—	○	—
	Water resistance (2-color indication)	Grommet		3-wire (PNP)	—	5V, 12V	—	—	F7BVV	J79W	F9BVV	F9BW	●	●	○	—	○	—
									—	F7BA	—	F9BA	—	●	○	—	○	—
With diagnostic output (2-color indication)	Grommet	2-wire	—	12V	—	—	F7BAV	—	—	—	—	●	○	—	—	—		
							—	F79F	—	—	—	—	●	●	○	—	○	IC circuit

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

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

• Besides the models in the above catalog, there are some other auto switches that are applicable. For more information, refer to page 7-7-18.



Compact Cylinder with Air Cushion Double Acting, Single Rod Series RQ

Specifications



Type	Pneumatic (non-lube)
Fluid	Air
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C (with no freezing) With auto switch: -10°C to 60°C (with no freezing)
Rod end thread	Female thread
Rod end thread tolerance	JIS class 2
Stroke length tolerance	$\begin{matrix} +1.0 \\ 0 \end{matrix}$
Mounting	Through-hole
Piston speed	50 to 500mm/s

Standard Stroke

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

Manufacture of Intermediate Stroke

Description	Exclusive body	
Part no.	Refer to "How to Order" for standard model	
Method	Available in stroke increments of 1mm, using an exclusive body for the specified stroke.	
Stroke range	Bore size	Stroke range
	20, 25	16 to 49
	32, 40	21 to 99
	50, 63	31 to 99
	80, 100	41 to 99
Example	Part no.: RQB32-47 A special tube is manufactured for a 47mm stroke.	

Allowable kinetic energy

Refer to "Selection" on page 7-7-19 regarding the allowable kinetic energy.

Effective Cushion Length

Bore size (mm)	20	25	32	40	50	63	80	100
Effective cushion length (mm)	5.8	6.1	6.6	6.6	7.1	7	7.5	8

Mounting Bracket Part No.

Bore size (mm)	Note 1)		Note 3)
	Foot	Flange	Double clevis
20	CQS-L020	CQS-F020	CQS-D020
25	CQS-L025	CQS-F025	CQS-D025
32	CQ-L032	CQ-F032	CQ-D032
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L060	CQ-F060	CQ-D060
80	CQ-L080	CQ-F080	CQ-D080
100	CQ-L100	CQ-F100	CQ-D100

Note 1) When ordering foot brackets, order 2 pieces per cylinder.

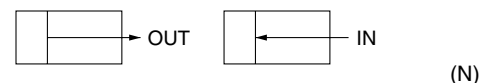
Note 2) The following parts are included with each bracket.

Foot/Flange : Body mounting bolts.

Double clevis: Clevis pins, type C snap ring for axis, and Body mounting bolts.

Note 3) Clevis pins and snap rings are included with the double clevis type.

Theoretical Output



Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
20	IN	71	118	165
	OUT	94	157	220
25	IN	113	189	264
	OUT	147	245	344
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1150
	OUT	589	982	1370
63	IN	841	1400	1960
	OUT	935	1560	2180
80	IN	1360	2270	3170
	OUT	1510	2510	3520
100	IN	2140	3570	5000
	OUT	2360	3930	5500

Series RQ

Weight

Basic Weight

(g)

Bore size (mm)	Standard stroke (mm)								
	15	20	25	30	40	50	75	100	
20	141	156	171	186	216	245	—	—	
25	203	221	239	258	294	331	—	—	
32	—	271	291	312	353	394	496	598	
40	—	390	413	436	482	528	643	758	
50	—	—	—	731	803	875	1055	1235	
63	—	—	—	940	1019	1099	1297	1495	
80	—	—	—	—	1819	1950	2278	2606	
100	—	—	—	—	2859	3038	3483	3928	

Additional Weight

(g)

Bore size (mm)	20	25	32	40	50	63	80	100
Magnet	5	6	11	13	14	22	24	35
Both ends tapped style	—	—	6	6	6	19	45	45
Rod end	Male thread	6	12	26	27	53	53	120
	Nut	4	8	17	17	32	32	49
Foot style (including bolt)	159	181	143	155	243	324	696	1062
Front flange style (including bolt)	143	180	180	214	373	559	1056	1365
Rear flange style (including bolt)	137	171	165	198	348	534	1017	1309
Double clevis style (including pin, snap ring and bolt)	92	127	151	196	393	554	1109	1887

Calculation example) RQD32-20M

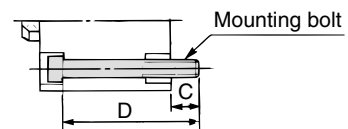
•Basic weight	: RQB32-20	271g
•Additional weight:	Double end tapped	6g
	Rod end male thread	43g
	Double clevis	151g
		471g

Mounting

Through-hole type mounting bolts for RQB are available.

How to order: Add "Bolt" in front of the bolts to be used.

Example) Bolt M5 x 50ℓ 4 pcs.



Model	C	D	Mounting bolt
R(D)QB20-15	9	50	M5 x 50ℓ
-20		55	x 55ℓ
-25		60	x 60ℓ
-30		65	x 65ℓ
-40		75	x 75ℓ
-50		85	x 85ℓ
R(D)QB25-15		9.5	55
-20	60		x 60ℓ
-25	65		x 65ℓ
-30	70		x 70ℓ
-40	80		x 80ℓ
R(D)QB32-20	10	60	M5 x 60ℓ
-25		65	x 65ℓ
-30		70	x 70ℓ
-40		80	x 80ℓ
-50		90	x 90ℓ
-75		115	x 115ℓ
-100		140	x 140ℓ

Model	C	D	Mounting bolt
R(D)QB40-20	8	65	M5 x 65ℓ
-25		70	x 70ℓ
-30		75	x 75ℓ
-40		85	x 85ℓ
-50		95	x 95ℓ
-75		120	x 120ℓ
-100		145	x 145ℓ
R(D)QB50-30	13.5	85	M6 x 85ℓ
-40		95	x 95ℓ
-50		105	x 105ℓ
-75		130	x 130ℓ
-100		155	x 155ℓ
R(D)QB63-30	15.5	90	M8 x 90ℓ
-40		100	x 100ℓ
-50		110	x 110ℓ
-75		135	x 135ℓ
-100		160	x 160ℓ
R(D)QB80-40	15	105	M10 x 105ℓ
-50		115	x 115ℓ
-75		140	x 140ℓ
-100		165	x 165ℓ
R(D)QB100-40	17.5	120	M10 x 120ℓ
-50		130	x 130ℓ
-75		155	x 155ℓ
-100		180	x 180ℓ

Compact Cylinder with Air Cushion Double Acting, Single Rod **Series RQ**

Replacement Parts: Seal Kit

Series	Bore size	Part no.	Contents
RQ	20	RQB20-PS	Kits consist of piston seal, rod seal and gasket
	25	RQB25-PS	
	32	RQB32-PS	
	40	RQB40-PS	
	50	RQB50-PS	
	63	RQB63-PS	
	80	RQB80-PS	
	100	RQB100-PS	

Auto Switch Mounting Bracket Part No.

Bore size (mm)	Bracket no.	Note	Applicable auto switch	
			Reed switch	Solid state switch
32, 40, 50, 63, 80, 100	BQ-2	<ul style="list-style-type: none"> •Switch mounting screw (M3 x 0.5 x 10t) •Switch spacer •Switch mounting nut 	D-A7□, A80	D-F7□, J79
			D-A73C, A80C	D-F7□V
			D-A7□H, A80H	D-J79C
			D-A79W	D-F7□W, J79W
			D-F7□WV	D-F7BAL
			D-F7BAVL	D-F79F
				D-F7NTL

[Stainless steel mounting screw kit]

Use the following stainless steel mounting screw kit (includes nut) depending on the operating environment.

(Auto switch spacer must be ordered separately.)

BBA2: For D-A7/A8/F7/J7

The above stainless steel screw kit is used for water resistant auto switch types D-F7BAL and D-F7BAVL when they are shipped mounted on a cylinder. Also, BBA2 is included when an auto switch alone is shipped.

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

20-

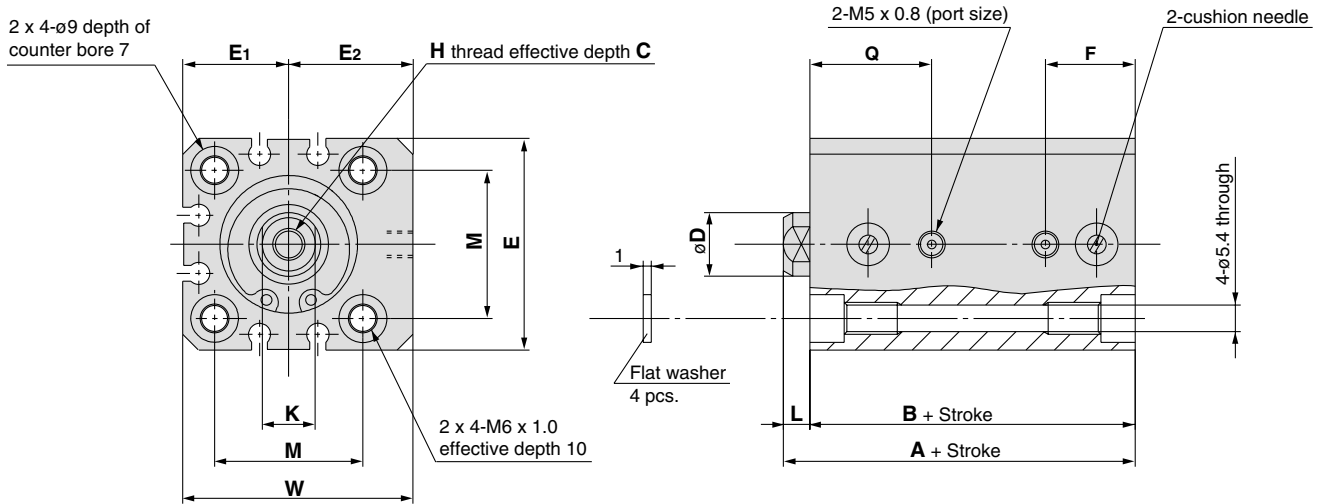
Data

Series RQ

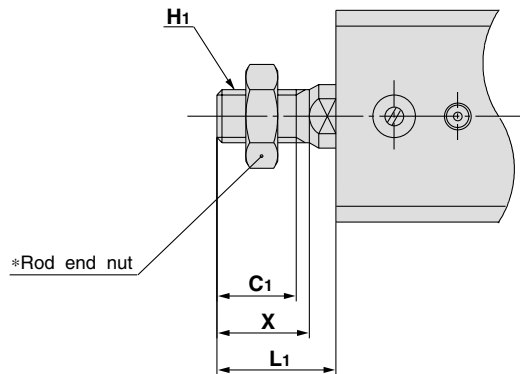
Dimensions: $\phi 20$, $\phi 25$

* For the auto switch mounting position and its mounting height, refer to page 7-7-16.

Basic style (Through-hole/Both ends tapped common): RQB/RDQB



Rod end male thread



Rod End Male Thread

Bore size (mm)	C ₁	X	H ₁	L ₁
20	12	14	M8 x 1.25	18.5
25	15	17.5	M10 x 1.25	22.5

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	E ₁	E ₂	F	H	K	L	M	Q	W
20	15 to 50	36.5	32	7	10	36	18	21	15.5	M5 x 0.8	8	4.5	25.5	21	39
25	15 to 50	41.5	36.5	12	12	40	20	23.5	17	M6 x 1.0	10	5	28	23	43.5

* Refer to page 7-7-14 for details on rod end nut and accessories.

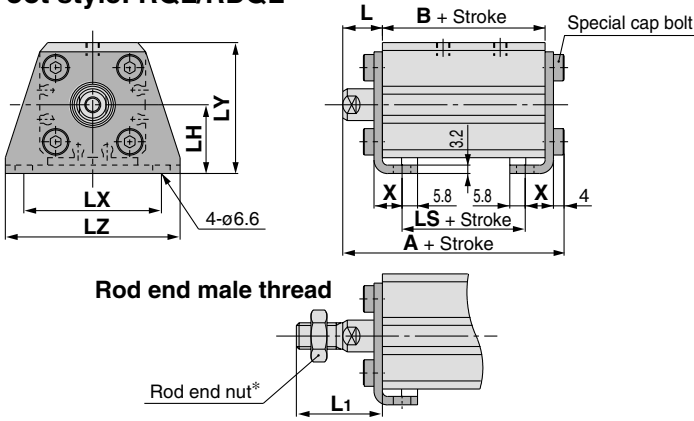


• Add the stroke to calculate the length of intermediate strokes.

Compact Cylinder with Air Cushion Double Acting, Single Rod **Series RQ**

Mounting Bracket Dimensions

Foot style: RQL/RDQL



Foot Style

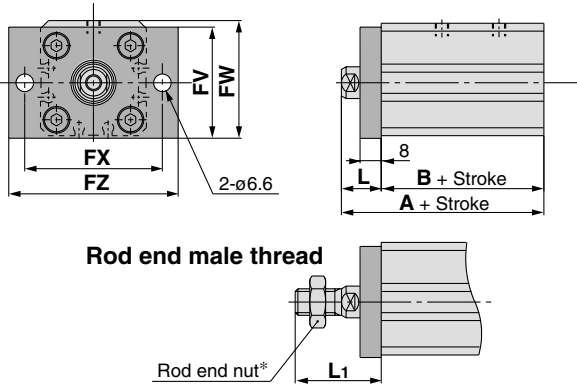
Bore size (mm)	Stroke range (mm)	A	LS	L	L ₁
20	15 to 50	53.7	20	14.5	28.5
25	15 to 50	58.7	21.5	15	32.5

Bore size (mm)	B	LH	LX	LY	LZ	X
20	32	24	48	45	62	9.2
25	36.5	26	52	49.5	66	10.7

(All dimensions but A, LS, L and L₁ are identical to those of the basic style.)

Foot bracket material: Carbon steel

Rod side flange style: RQF/RDQF



Rod Side Flange Style

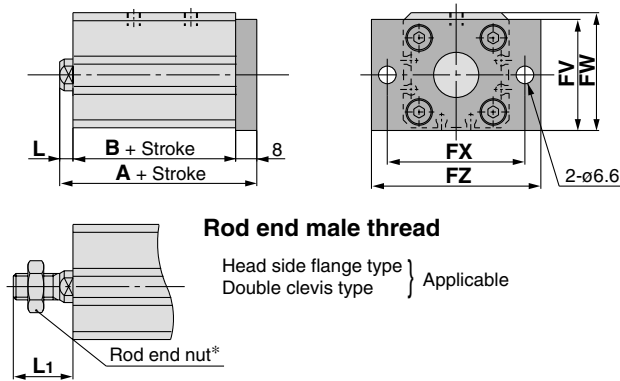
Bore size (mm)	Stroke range (mm)	A	L	L ₁
20	15 to 50	46.5	14.5	28.5
25	15 to 50	51.5	15	32.5

Bore size (mm)	B	FV	FW	FX	FZ
20	32	39	40.5	48	60
25	36.5	42	44.5	52	64

(All dimensions but A, L and L₁ are identical to those of the basic style.)

Flange material: Carbon steel

Head side flange style: RQG/RDQG



Head Side Flange Style

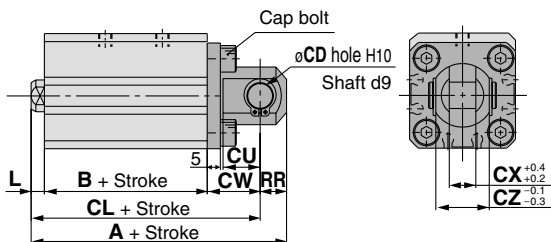
Bore size (mm)	Stroke range (mm)	A
20	15 to 50	44.5
25	15 to 50	49.5

Bore size (mm)	B	L	FV	FW	FX	FZ
20	32	4.5	39	40.5	48	60
25	36.5	5	42	44.5	52	64

(All dimensions but A is identical to those of the basic style.)

Flange material: Carbon steel

Double clevis style: RQD/DQD



Double Clevis Style

Bore size (mm)	Stroke range (mm)	A	CL
20	15 to 50	63.5	54.5
25	15 to 50	71.5	61.5

Bore size (mm)	B	L	L ₁	CD	CU	CW	CX	CZ	RR
20	32	4.5	18.5	8	12	18	8	16	9
25	36.5	5	22.5	10	14	20	10	20	10

(All dimensions but A and CL are identical to those of the basic style.)

* Refer to page 7-7-14 for details on rod end nut and accessories.

Double clevis bracket material: Carbon steel

- CUJ
- CU
- CQS
- CQM
- CQ2
- RQ**
- MU
- D-
- X
- 20-
- Data

Series RQ

Dimensions: $\phi 32$, $\phi 40$, $\phi 50$

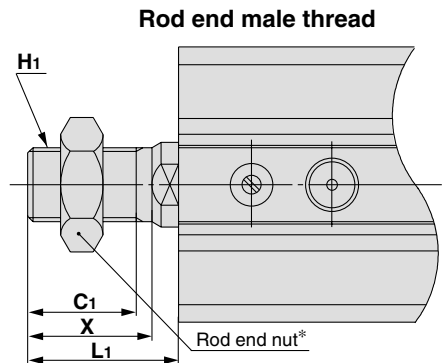
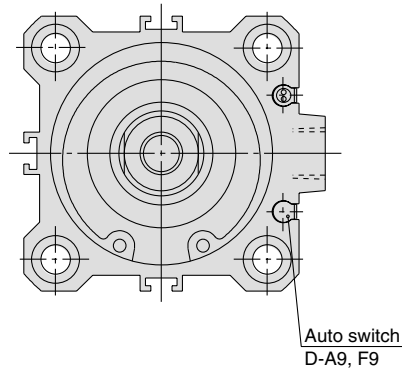
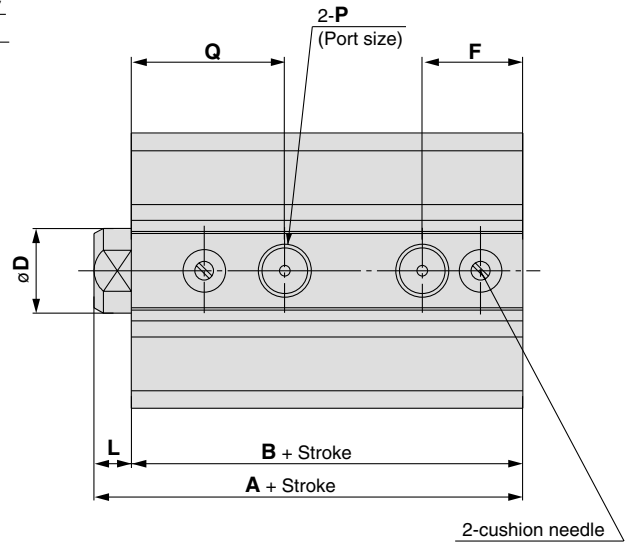
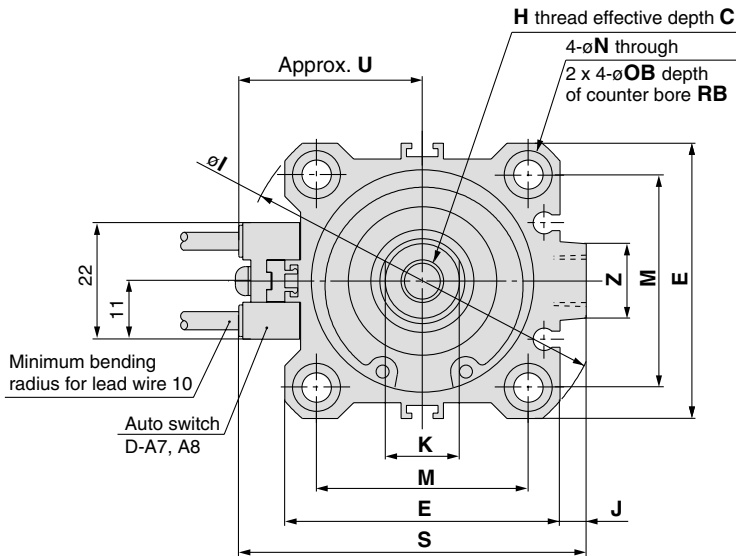
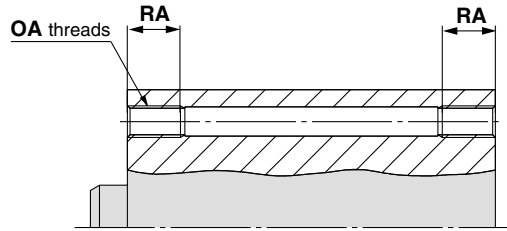
* For the auto switch mounting position and its mounting height, refer to page 7-7-16.

Basic style (Through-hole): RQB/RDQB

Double end tapped

Bore size (mm)	OA	RA
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14

Both ends tapped style: RQA/RDQA



Rod End Male Thread

Bore size (mm)	C1	X	H1	L1
32	20.5	23.5	M14 x 1.5	28.5
40	20.5	23.5	M14 x 1.5	28.5
50	26	28.5	M18 x 1.5	33.5

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	J	K	L	M	N
32	20 to 100	44	37	13	16	45	18.5	M8 x 1.25	60	4.5	14	7	34	5.5
40	20 to 100	51	44	13	16	52	20	M8 x 1.25	69	5	14	7	40	5.5
50	30 to 100	57.5	49.5	15	20	64	28.5	M10 x 1.5	86	7	17	8	50	6.6

Bore size (mm)	OB	P	Q	RB	S	U	Z
32	9	Rc 1/8	23	7	58.5	31.5	14
40	9	Rc 1/8	28	7	66	35	14
50	11	Rc 1/4	31.5	8	80	41	19

* Refer to page 7-7-14 for details on rod end nut and accessories.

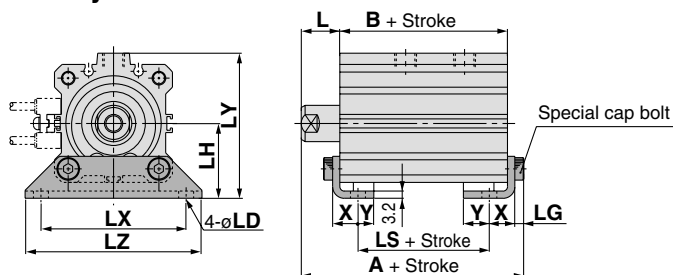


• Add the stroke to calculate the length of intermediate strokes.

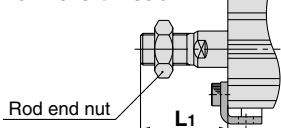
Compact Cylinder with Air Cushion Double Acting, Single Rod **Series RQ**

Mounting Bracket Dimensions

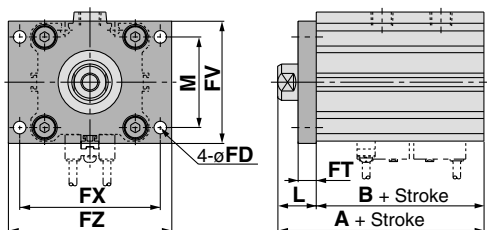
Foot style: RQL/RDQL



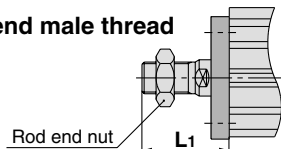
Rod end male thread



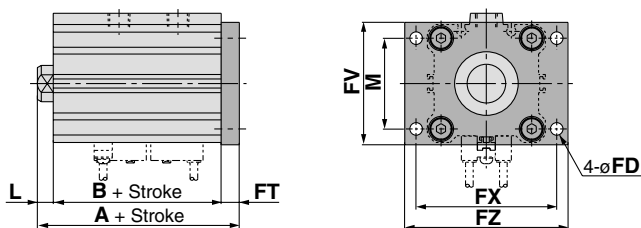
Rod side flange style: RQF/RDQF



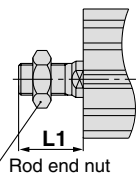
Rod end male thread



Head side flange style: RQG/RDQG

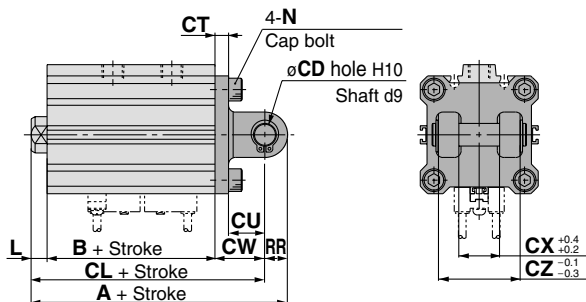


Rod end male thread



Head side flange type } Applicable
Double clevis type

Double clevis style: RQD/RDQD



Foot Style

Bore size (mm)	Stroke range (mm)	A	B	LS	L	L ₁	LD
32	20 to 100	61.2	37	21	17	38.5	6.6
40	20 to 100	68.2	44	28	17	38.5	6.6
50	30 to 100	75.7	49.5	26.5	18	43.5	9

Bore size (mm)	LG	LH	LX	LY	LZ	X	Y
32	4	30	57	57	71	11.2	5.8
40	4	33	64	64	78	11.2	7
50	5	39	79	78	95	14.7	8

Foot bracket material: Carbon steel

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV
32	20 to 100	54	37	5.5	8	48
40	20 to 100	61	44	5.5	8	54
50	30 to 100	67.5	49.5	6.6	9	67

Bore size (mm)	FX	FZ	L	L ₁	M
32	56	65	17	38.5	34
40	62	72	17	38.5	40
50	76	89	18	43.5	50

Flange material: Carbon steel

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	A	L	L ₁
32	20 to 100	52	7	28.5
40	20 to 100	59	7	28.5
50	30 to 100	66.5	8	33.5

(* All dimensions but A, L and L₁ are identical to those of the rod side style.)

Flange material: Carbon steel

Double Clevis Style

Bore size (mm)	Stroke range (mm)	A	B	CL	CD	CT	CU
32	20 to 100	74	37	64	10	5	14
40	20 to 100	83	44	73	10	6	14
50	30 to 100	99.5	49.5	85.5	14	7	20

Bore size (mm)	CW	CX	CZ	L	L ₁	N	RR
32	20	18	36	7	28.5	M6 x 1.0	10
40	22	18	36	7	28.5	M6 x 1.0	10
50	28	22	44	8	33.5	M8 x 1.25	14

* Refer to page 7-7-14 for details on rod end nut and accessories.

* Clevis pins and snap rings are included in the package.

Double clevis bracket material: carbon steel

- CUJ
- CU
- CQS
- CQM
- CQ2
- RQ**
- MU
- D-
- X
- 20-
- Data

Series RQ

Dimensions: ø63 to ø100

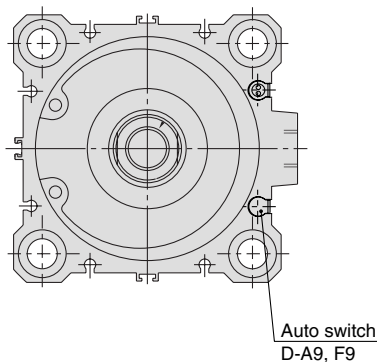
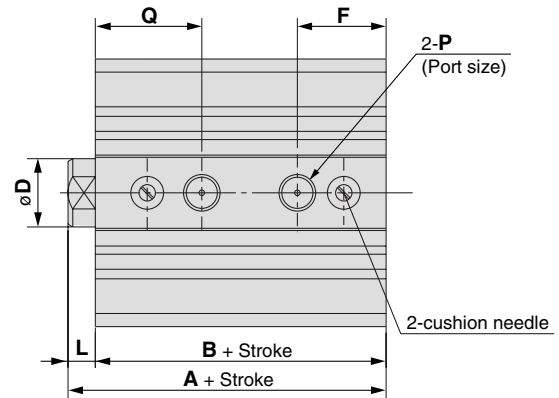
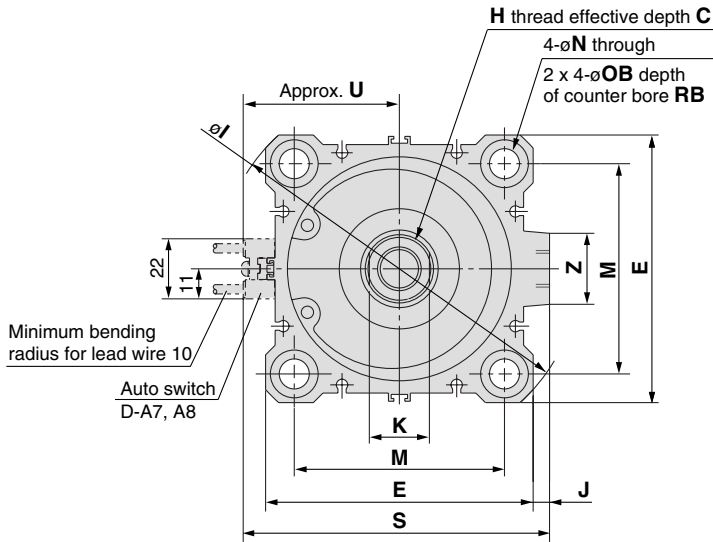
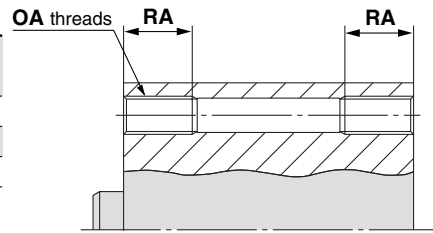
* For the auto switch mounting position and its mounting height, refer to page 7-7-16.

Basic style (Through-hole)

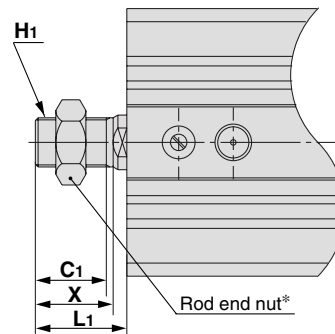
Both ends tapped style: RQA/RDQA

Both Ends Tapped Style

Bore size (mm)	OA	RA
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22



Rod end male thread



Rod End Male Thread

Bore size (mm)	C1	X	H1	L1
63	26	28.5	M18 x 1.5	33.5
80	32.5	35.5	M22 x 1.5	43.5
100	32.5	35.5	M26 x 1.5	43.5

Basic Style

Bore size (mm)	Stroke range (mm)	A	B	C	D	E	F	H	I	J	K	L	M	N	OB	P
63	30 to 100	63	55	15	20	77	31	M10 x 1.5	103	7	17	8	60	9	14	Rc 1/4
80	40 to 100	73.5	63.5	21	25	98	35.5	M16 x 2.0	132	6	22	10	77	11	17.5	Rc 3/8
100	40 to 100	88	76	27	30	117	40	M20 x 2.5	156	6.5	27	12	94	11	17.5	Rc 3/8

Bore size (mm)	Q	RB	S	U	Z
63	34	10.5	93	47.5	19
80	39	13.5	112.5	57.5	26
100	43	13.5	132.5	67.5	26

* Refer to page 7-7-14 for details on rod end nut and accessories.

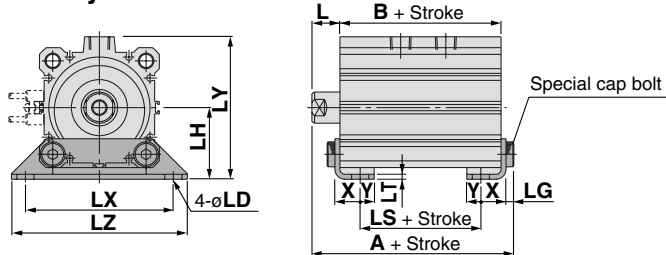


• Add the stroke to calculate the length of intermediate strokes.

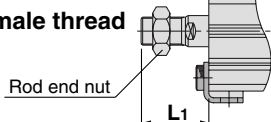
Compact Cylinder with Air Cushion Double Acting, Single Rod **Series RQ**

Mounting Bracket Dimensions

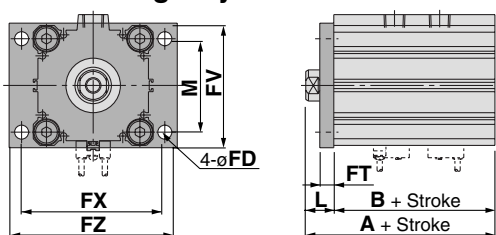
Foot style: RQL/RDQL



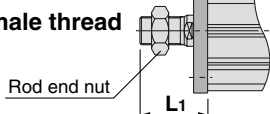
Rod end male thread



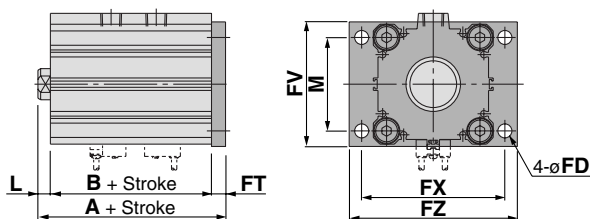
Rod side flange style: RQF/RDQF



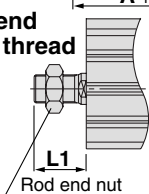
Rod end male thread



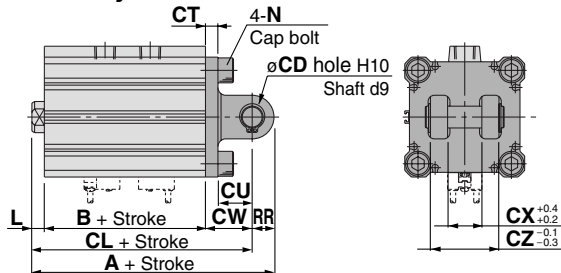
Head side flange style: RQG/RDQG



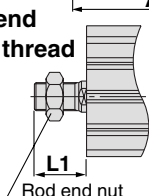
Rod end male thread



Double clevis style: RQD/RDQD



Rod end male thread



Foot Style

Bore size (mm)	Stroke range (mm)	A	B	LS	L	L1	LD	LG	LH	LT
63	30 to 100	81.2	55	29	18	43.5	11	5	46	3.2
80	40 to 100	95	63.5	33.5	20	53.5	13	7	59	4.5
100	40 to 100	111	76	42	22	53.5	13	7	71	6

Bore size (mm)	Stroke range (mm)	LX	LY	LZ	X	Y
63	10 to 50	95	91.5	113	16.2	9
	75, 100					
80	10 to 50	118	114	140	19.5	11
	75, 100					
100	10 to 50	137	136	162	23	12.5
	75, 100					

Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX	FZ	L	L1	M
63	30 to 100	73	55	9	9	80	92	108	18	43.5	60
80	40 to 100	83.5	63.5	11	11	99	116	134	20	53.5	77
100	40 to 100	98	76	11	11	117	136	154	22	53.5	94

Head Side Flange Style

Bore size (mm)	Stroke range (mm)	A	L	L1
63	30 to 100	72	8	33.5
80	40 to 100	84.5	10	43.5
100	40 to 100	99	12	43.5

Double Clevis Style

Bore size (mm)	Stroke range (mm)	A	B	CL	CD	CT	CU	CW	CX	CZ	L
63	30 to 100	107	55	93	14	8	20	30	22	44	8
80	40 to 100	129.5	63.5	111.5	18	10	27	38	28	56	10
100	40 to 100	155	76	133	22	13	31	45	32	64	12

Bore size (mm)	Stroke range (mm)	L1	N	RR
63	10 to 50	33.5	M10 x 1.5	14
	75, 100			
80	10 to 50	43.5	M12 x 1.75	18
	75, 100			
100	10 to 50	43.5	M12 x 1.75	22
	75, 100			

* Refer to page 7-7-14 for details on rod end nut and accessories.
* Clevis pins and snap rings are included in the package.

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

20-

Data

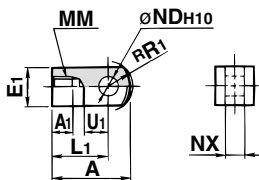
Series RQ

Accessory Bracket Dimensions

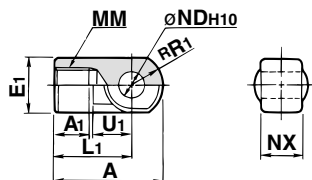
Single Knuckle Joint

For I-G02, I-G03

For I-G04, I-G05



Material: Carbon steel

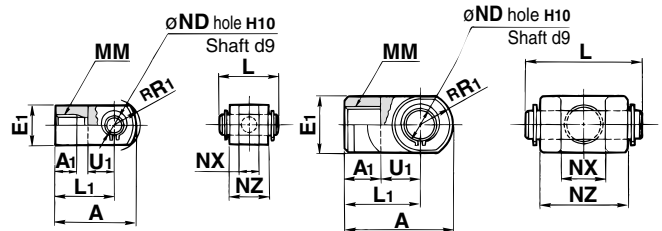


Material: Cast iron

Double Knuckle Joint

For Y-G02, Y-G03

For Y-G04, Y-G05



Material: Carbon steel

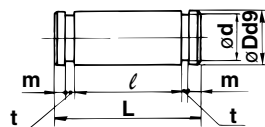
Material: Cast iron

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	RR ₁	U ₁	ND	NX
I-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} ₀	8 ^{-0.2} _{-0.4}
I-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} ₀	10 ^{-0.2} _{-0.4}
I-G04	32, 40	42	14	∅22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{-0.3} _{-0.5}
I-G05	50, 63	56	18	∅28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{-0.3} _{-0.5}
I-G08	80	71	21	∅38	50	M22 x 1.5	21	27	18 ^{+0.070} ₀	28 ^{-0.3} _{-0.5}
I-G10	100	79	21	∅44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{-0.3} _{-0.5}

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	RR ₁	U ₁	ND	NX	NZ	L	Applicable pin no.
Y-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 ^{+0.058} ₀	8 ^{+0.4} _{+0.2}	16	21	IY-G02
Y-G03	25	41	10.5	□20	30	M10 x 1.25	12.8	14	10 ^{+0.058} ₀	10 ^{+0.4} _{+0.2}	20	25.6	IY-G03
Y-G04	32, 40	42	16	∅22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{+0.5} _{+0.3}	36	41.6	IY-G04
Y-G05	50, 63	56	20	∅28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{+0.5} _{+0.3}	44	50.6	IY-G05
Y-G08	80	71	23	∅38	50	M22 x 1.5	21	27	18 ^{+0.070} ₀	28 ^{+0.5} _{+0.3}	56	64	IY-G08
Y-G10	100	79	24	∅44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{+0.5} _{+0.3}	64	72	IY-G10

* Knuckle pin and snap ring are included.

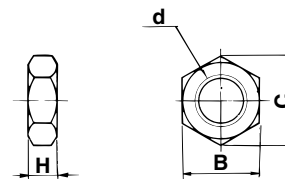
Knuckle Pin (Common with double clevis pin)



Material: Carbon steel

Part no.	Applicable bore size (mm)	D	L	d	ℓ	m	t	Snap ring
IY-G02	20	8 ^{-0.040} _{-0.076}	21	7.6	16.2	1.5	0.9	C8 type for pivot
IY-G03	25	10 ^{-0.040} _{-0.076}	25.6	9.6	20.2	1.55	1.15	C10 type for pivot
IY-G04	32,40	10 ^{-0.040} _{-0.076}	41.6	9.6	36.2	1.55	1.15	C10 type for pivot
IY-G05	50,63	14 ^{-0.050} _{-0.093}	50.6	13.4	44.2	2.05	1.15	C14 type for pivot
IY-G08	80	18 ^{-0.050} _{-0.093}	64	17	56.2	2.55	1.35	C18 type for pivot
IY-G10	100	22 ^{-0.065} _{-0.117}	72	21	64.2	2.55	1.35	C22 type for pivot

Rod End Nut



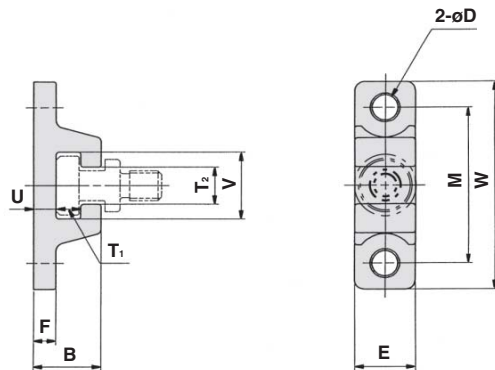
Material: Carbon steel

Part no.	Applicable bore size (mm)	d	H	B	C
NT-02	20	M8 x 1.25	5	13	15.0
NT-03	25	M10 x 1.25	6	17	19.6
NT-04	32, 40	M14 x 1.5	8	22	25.4
NT-05	50, 63	M18 x 1.5	11	27	31.2
NT-08	80	M22 x 1.5	13	32	37.0
NT-10	100	M26 x 1.5	16	41	47.3

Simple Joint: $\phi 32$ to $\phi 100$



Type A Mounting Bracket



**Joint And Mounting Bracket
(Type A, Type B) Part No.**

YA	03	Applicable air cylinder bore • 03 For $\phi 32, \phi 40$ • 05 For $\phi 50, \phi 63$ • 08 $\phi 80$ • 10 $\phi 100$
• Mounting bracket		
YA	Type A mounting bracket	
YB	Type B mounting bracket	
YU	Joint	

Allowable Eccentricity

Bore size (mm)	32	40	50	63	80	100
Eccentricity tolerance	± 1			± 1.5		± 2
Backlash	0.5					

<Ordering>

- Joints are not included with the A or B type mounting brackets. Order them separately.

(Example)

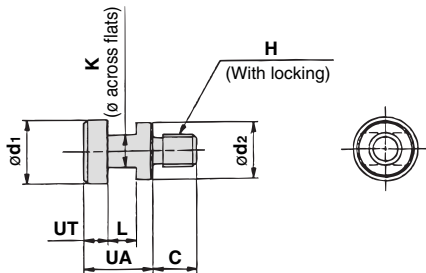
Bore size $\phi 40$ Part no.

- Type A mounting bracket YA-03

- Joint YU-03

Joint Part No.

Bore size (mm)	Joint	Applicable mounting bracket		Weight (g)
		Type A mounting bracket	Type B mounting bracket	
32, 40	YU-03	YA-03	YB-03	25
50, 63	YU-05	YA-05	YB-05	40
80	YU-08	YA-08	YB-08	90
100	YU-10	YA-10	YB-10	160



Material: Chrome molybdenum steel (Nickel plated)

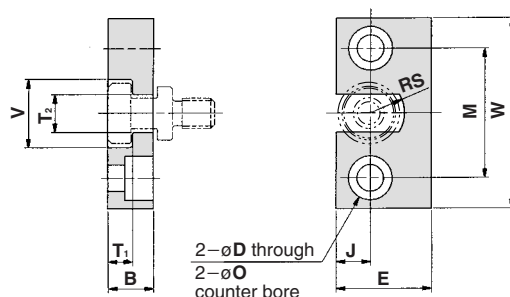
Part no.	Applicable bore size (mm)	UA	C	d ₁	d ₂	H	K	L	UT	Weight (g)
YU-03	32, 40	17	11	15.8	14	M8 x 1.25	8	7	6	25
YU-05	50, 63	17	13	19.8	18	M10 x 1.5	10	7	6	40
YU-08	80	22	20	24.8	23	M16 x 2	13	9	8	90
YU-10	100	26	26	29.8	28	M20 x 2.5	14	11	10	160

Material: Chrome molybdenum steel (Nickel plated)

Part no.	Bore size (mm)	B	D	E	F	M	T ₁	T ₂
YA-03	32, 40	18	6.8	16	6	42	6.5	10
YA-05	50, 63	20	9	20	8	50	6.5	12
YA-08	80	26	11	25	10	62	8.5	16
YA-10	100	31	14	30	12	76	10.5	18

Part no.	Bore size (mm)	U	V	W	Weight (g)
YA-03	32, 40	6	18	56	55
YA-05	50, 63	8	22	67	100
YA-08	80	10	28	83	195
YA-10	100	12	36	100	340

Type B Mounting Bracket



Material: Precision die-casting material equivalent to stainless steel 304

Part no.	Bore size (mm)	B	D	E	J	M	O
YB-03	32, 40	12	7	25	9	34	11.5 depth 7.5
YB-05	50, 63	12	9	32	11	42	14.5 depth 8.5
YB-08	80	16	11	38	13	52	18 depth 12
YB-10	100	19	14	50	17	62	21 depth 14

Part no.	Bore size (mm)	T ₁	T ₂	V	W	RS	Weight (g)
YB-03	32, 40	6.5	10	18	50	9	80
YB-05	50, 63	6.5	12	22	60	11	120
YB-08	80	8.5	16	28	75	14	230
YB-10	100	10.5	18	36	90	18	455

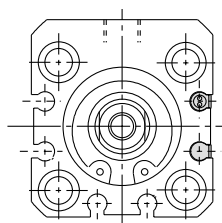
- CUJ
- CU
- CQS
- CQM
- CQ2
- RQ**
- MU
- D-
- X
- 20-
- Data

Series RQ

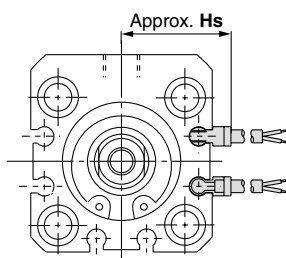
Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

ø20/ø25

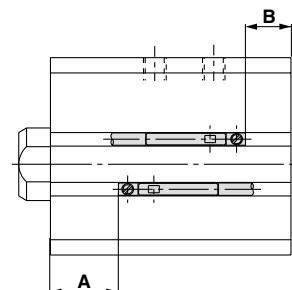
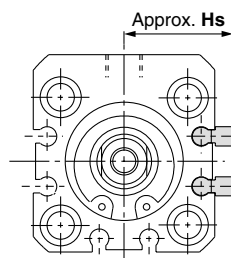
D-A9□
D-M9□
D-F9□W



D-A9□V
D-M9□V
D-F9□WV

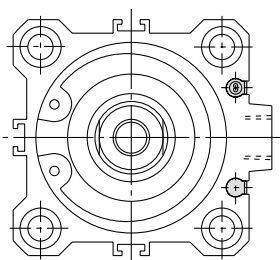


D-F9BAL

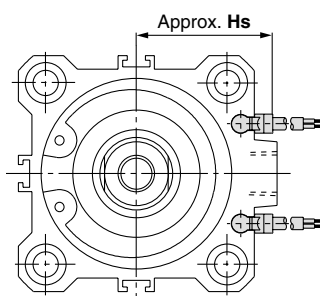


ø32 to ø100

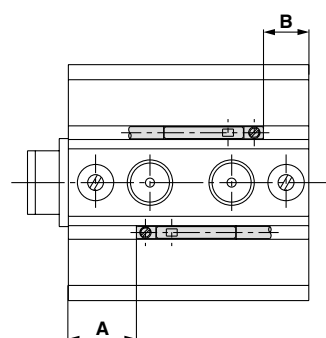
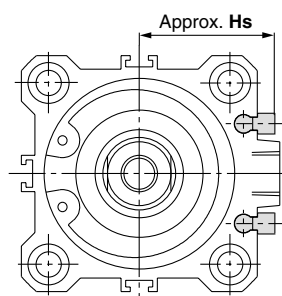
D-A9□
D-M9□
D-F9□W



D-A9□V
D-M9□V
D-F9□WV



D-F9BAL



Proper Auto Switch Mounting Positions

Bore size (mm)	D-A9□ D-A9□V		D-M9□ D-M9□V D-F9□W D-F9□WV		D-F9BAL	
	A	B	A	B	A	B
	20	9.5	3	13.5	7	12.5
25	11	5.5	15	9.5	14	8.5
32	12.5	4.5	16.5	8.5	15.5	7.5
40	17	7	21	11	20	10
50	17	12.5	21	16.5	20	15.5
63	19.5	15.5	23.5	19.5	22.5	18.5
80	24.5	19	28.5	23	27.5	22
100	31	25	35	29	34	28

Auto Switch Mounting Height

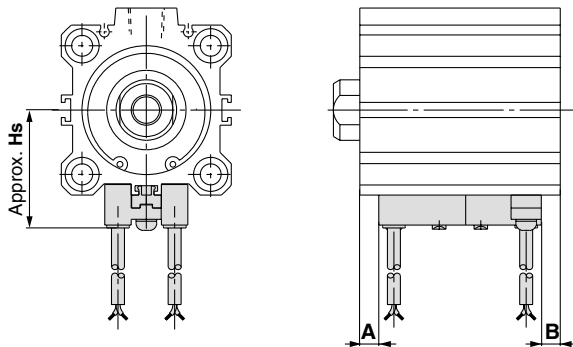
Bore size (mm)	D-A9□V	D-M9□V D-F9□WV	D-F9BAL
	Hs	Hs	Hs
20	22.5	24.5	22
25	24.5	26.5	24
32	27	29	26.5
40	30.5	32.5	30
50	36.5	38.5	36
63	40	42	39.5
80	50	52	49.5
100	60	62	59.5

Compact Cylinder with Air Cushion
Double Acting, Single Rod **Series RQ**

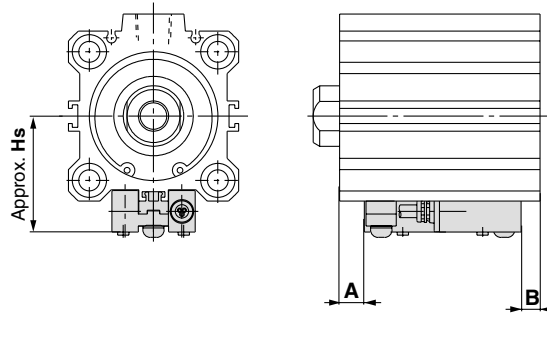
Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

ø32 to ø100

D-A7□
D-A80

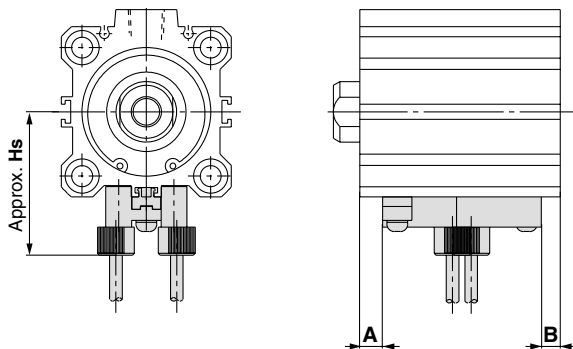


D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F
D-F7NTL
D-F7BAL

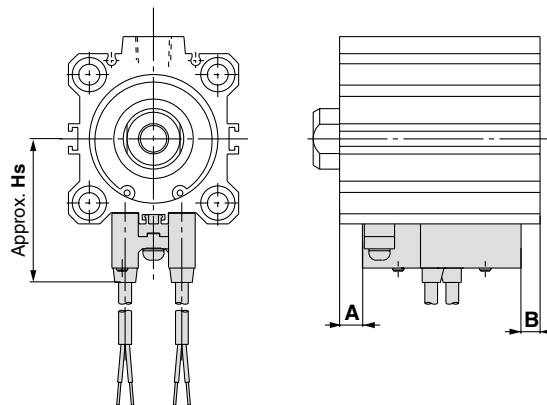


ø32 to ø100

D-A73C
D-A80C
D-J79C



D-A79W
D-F7□V
D-F7□WV
D-F7BAVL



CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

20-

Data

Proper Auto Switch Mounting Position

Bore size (mm)	D-A7□, A80		D-A7□H, A80H D-A73C, A80C D-F7□, F7□V D-F79F, J79 D-J79C, F7□W D-F7□WV, J79W D-F7BAL, F7BAVL		D-A79W		D-F7NTL	
	A	B	A	B	A	B	A	B
20	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—
32	13.5	5.5	14	6	11	3	19	11
40	18	8	18.5	8.5	15.5	5.5	23.5	13.5
50	18	13.5	18.5	14	15.5	11	23.5	19
63	20.5	16.5	21	17	18	14	26	22
80	25.5	20	26	20.5	23	17.5	31	25.5
100	32	26	32.5	26.5	29.5	23.5	37.5	31.5

Auto Switch Mounting Height

Bore size (mm)	D-A7□ D-A80	D-A7□H D-A80H D-F7□ D-J79 D-F7□W	D-J79W D-F7BAL D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W
	Hs	Hs	Hs	Hs	Hs	Hs	Hs
20	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—
32	31.5	32.5	38.5	35	38	34	—
40	35	36	42	38.5	41.5	37.5	—
50	41	42	48	44.5	47.5	43.5	—
63	47.5	48.5	54.5	51	54	50	—
80	57.5	58.5	64.5	61	64	60	—
100	67.5	68.5	74.5	71	74	70	—

Series RQ

Operation Range

Switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
D-A7□, A80 D-A7□H, A80H D-A73C, A80C	12	12	12	11	10	12	12	13
D-A79W	13	13	13	14	14	16	15	17
D-A9□, A9□V	—	—	9.5	9.5	9.5	11.5	9	11.5
D-F7□, F7□V D-J79, J79C, J79W D-F7□W, F7□WV D-F79F, F7BAL D-F7BAVL	5.5	5	6	6	6	6.5	6.5	7
D-M9□, M9□V	4	4	4	4	4.5	—	—	—
D-M9□W, M9□WV D-F9BAL	—	—	5.5	5.5	5.5	6.5	5.5	6.5

* Hysteresis specifications are given as a guide, it is not a guaranteed range. (Tolerance $\pm 30\%$)
Hysteresis may fluctuate due to the operating environment.

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted. For detailed specifications, refer to page 7-9-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-A80	Grommet (perpendicular)	Without indicator light	32 to 100
	D-A80H	Grommet (in-line)		
	D-A80C	Connector (perpendicular)		
	D-A90	Grommet (in-line)		20 to 100
	D-A90V	Grommet (perpendicular)		
Solid state switch	D-F7NTL	Grommet (in-line)	With timer	32 to 100

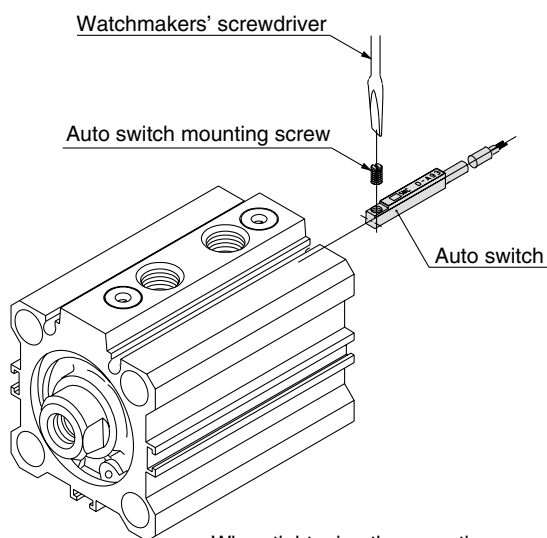
* D-F7NTL is also available with prewire connector.

* Normally closed type (NC = b contact) solid state auto switches are also available (D-F9G, F9H).

Mounting of Auto Switch

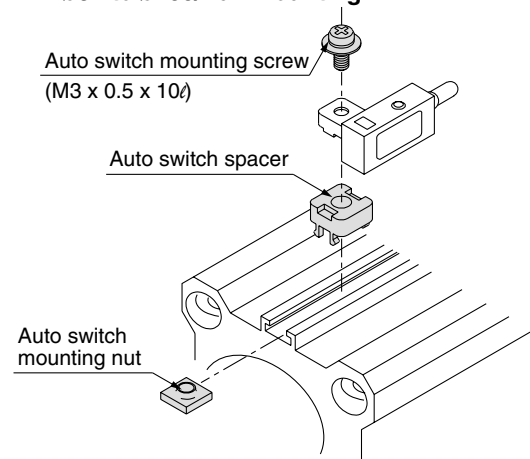
Follow the procedures below to mount auto switches.

ø20 to ø100/Direct mounting



- When tightening the mounting screw, use a watchmakers' screw driver with a handle 5 to 6 mm in diameter. Tighten with a torque of 0.10 to 0.20 N·m.

ø32 to ø100/Rail mounting



- Use a tightening torque of 0.5 to 0.7 N·m for auto switch mounting screws.

* Auto switch mounting brackets are packed together for cylinders with built-in magnets.



Specific Product Precautions

Be sure to read before handling.

Installation and Removal of Snap Ring

⚠ Caution

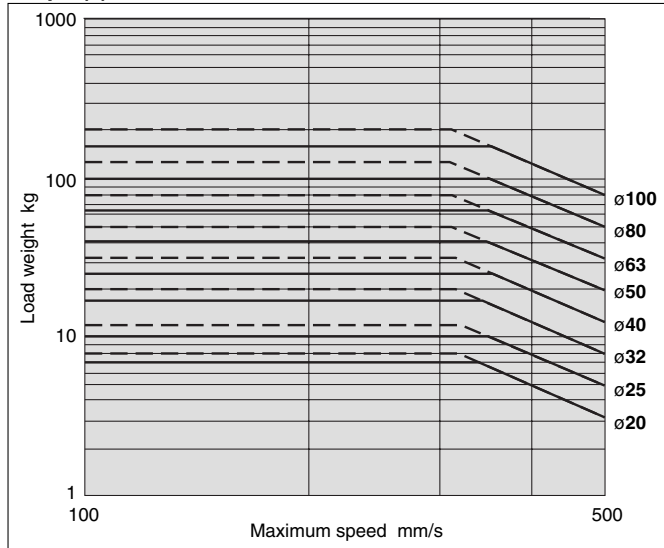
1. Use appropriate pliers (Type C snap ring installing tool) for installation and removal.
2. Even when using appropriate pliers (Type C snap ring installing tool), proceed with caution as there is a danger of the snap ring flying off the end of the pliers (Type C snap ring installing tool) and causing human injury or damage to nearby equipment. After installation, confirm that the snap ring is securely seated into the snap ring groove before supplying air.

Selection

⚠ Caution

1. Operate the cylinder to the stroke end.
When the stroke is restricted by an external stopper or a clamped work piece, satisfactory cushioning and noise reduction may not be achieved.
2. Strictly observe the limiting ranges for load weight and maximum speed (Graph (1)). Also, the limiting ranges are based on operation of the cylinder to the stroke end and proper adjustment of the cushion needle.
If operated beyond the limiting ranges, excessive impact will occur and this may cause damage to equipment.

Graph (1)



3. Adjust the cushion needle to reduce excessive kinetic energy from the piston impact at the stroke end by absorbing enough kinetic energy during the cushion stroke.

If the piston impacts the stroke end with excessive kinetic energy (values in Table 1 or more), an excessive impact will occur and this may cause damage to equipment.

Table (1) Allowable Kinetic Energy At Piston Impact Unit: [J]

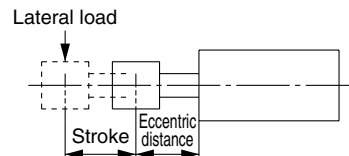
Piston speed	20	25	32	40	50	63	80	100
	50 to 500mm/s							
Allowable kinetic energy	0.055	0.09	0.15	0.26	0.46	0.77	1.30	2.27

Selection

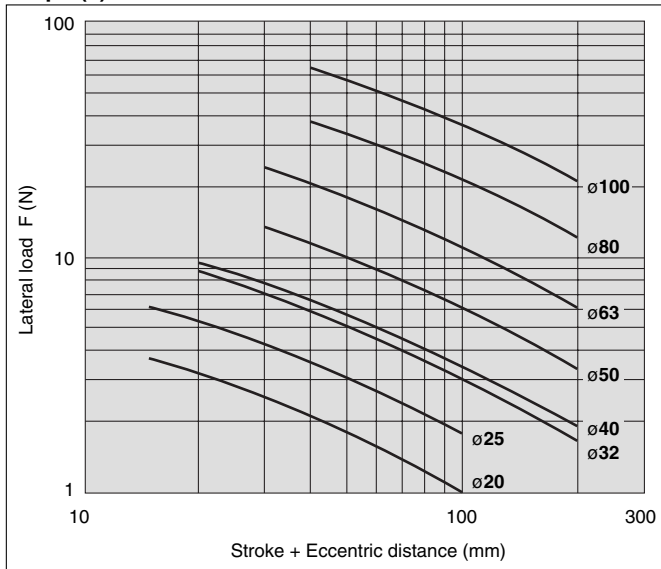
⚠ Caution

4. Strictly observe the limiting ranges for the piston rod lateral load (Graph (2)).

If operated beyond the limiting ranges, this may cause the equipment life to be reduced or damage to equipment may occur.



Graph (2)



Cushion Needle Adjustment

⚠ Caution

1. Keep the adjustment range for the cushion needle between the closed position and the rotations shown below.

	Rotations
ø20 to ø100	2.5 rotations or less

Use a 3mm flat head watchmakers screw driver to adjust the cushion needle. The adjustment range for the cushion needle must be between the closed position and the open position ranges above. A retaining mechanism prevents the cushion needle from coming out, however, it may spring out during operation if it is rotated beyond the ranges shown above.

CUJ

CU

CQS

CQM

CQ2

RQ

MU

D-

-X

20-

Data