

Metal Seal

# Compact Low Friction Cylinder

## Series **MQQ**

ø10, ø16, ø20, ø25, ø30, ø40

### How to Order

**MQQ T B 10 10 D**

**Compact low friction specification**

<b>T</b>	Standard type
<b>L</b>	Lateral load resisting type (Built-in ball bushing)

**Type**

**Mounting**

<b>B</b>	Through hole & Double end tapped (Standard)
<b>L</b>	Foot type
<b>F</b>	Front flange type
<b>G</b>	Rear flange type
<b>D</b> (Note)	Double clevis type

Note) Available only for MQQL□.

\* Mounting brackets are included when shipped, but unassembled.

**Bore size**

<b>10</b>	10 mm
<b>16</b>	16 mm
<b>20</b>	20 mm
<b>25</b>	25 mm
<b>30</b>	30 mm
<b>40</b>	40 mm

**Body option**

<b>Nil</b>	Standard (Rod end female thread)
<b>M</b> (Note)	Rod end male thread

Note) A rod end thread adapter is attached.  
\* A rod end thread adapter is shipped being assembled.

**Action**

<b>D</b>	Double acting
----------	---------------

**Cylinder stroke**

Bore size (mm)	Standard stroke (mm)
<b>10</b>	10, 20, 30, 40
<b>16</b>	10, 20, 30, 40, 50, 60
<b>20</b>	10, 20, 30, 40, 50, 60
<b>25</b>	10, 20, 30, 40, 50, 75, 100
<b>30</b>	10, 20, 30, 40, 50, 75, 100
<b>40</b>	10, 20, 30, 40, 50, 75, 100

\* Strokes are available in 1 mm increments by installing spacers in standard stroke cylinders.

**Port thread type**

<b>Nil</b>	M thread	ø10 to ø20
	Rc	
<b>TN</b>	NPT	ø25 to ø40
<b>TF</b>	G	

\* Series MQQ is not auto switch capable.

### Mounting Bracket Part No.

Bore size (mm)	Foot (Note 1)	Flange	Double clevis	Rod end thread adapter (with nut)
<b>10</b>	CQS-L016	CQS-F016	CQS-D016	MQ10-M
<b>16</b>	CQS-L020	CQS-F020	CQS-D020	MQ16-M
<b>20</b>	CQS-L025	CQS-F025	CQS-D025	MQ20-M
<b>25</b>	MQ-L032	MQ-F032	MQ-D032	MQ25-M
<b>30</b>	MQ-L040	MQ-F040	MQ-D040	MQ28-M
<b>40</b>	CQ-L050	CQ-F050	MQ-D050	

Note 1) When ordering foot brackets, order 2 pcs. for each cylinder.

Note 2) The following parts are included with the respective brackets.

Foot, Flange ..... Body mounting bolts  
Double clevis ..... Clevis pin, C type snap ring for shaft, Body mounting bolts

Compact Low Friction Cylinder Metal Seal **Series MQQ**



**Specifications: Standard Type/MQQT**

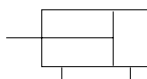
Bore size (mm)		10	16	20	25	30	40
Seal construction		Metal seal					
Action		Double acting, Single rod					
Fluid		Air					
Proof pressure		1.05 MPa					
Maximum operating pressure		0.5 MPa					
Minimum operating pressure <sup>Note 1)</sup>		0.005 MPa					
Ambient and fluid temperature		-10 to 80°C					
Cushion		Rubber bumper (Provided as standard)					
Lubrication <sup>Note 2)</sup>		Not required (Non-lube)					
Rod end thread		Female thread					
Rod end thread tolerance		JIS class 2					
Stroke length tolerance		+1.0 0					
Piston speed <sup>Note 3)</sup>		0.3 to 300 mm/s (Refer to page 19.)					
Total allowable leakage	Supply pressure 0.1 MPa	150 cm <sup>3</sup> /min or less	200 cm <sup>3</sup> /min or less	300 cm <sup>3</sup> /min or less	400 cm <sup>3</sup> /min or less	600 cm <sup>3</sup> /min or less	800 cm <sup>3</sup> /min or less
	Supply pressure 0.3 MPa	800 cm <sup>3</sup> /min or less	1000 cm <sup>3</sup> /min or less	1200 cm <sup>3</sup> /min or less	1600 cm <sup>3</sup> /min or less	2000 cm <sup>3</sup> /min or less	2400 cm <sup>3</sup> /min or less
	Supply pressure 0.5 MPa	1500 cm <sup>3</sup> /min or less	2000 cm <sup>3</sup> /min or less	3000 cm <sup>3</sup> /min or less	4000 cm <sup>3</sup> /min or less	6000 cm <sup>3</sup> /min or less	8000 cm <sup>3</sup> /min or less

Note 1) Value when horizontal. (Use clean, dry, and nonfreezing air) However, as the stroke increases, it will likely be affected by the weight of the moving parts and the pressure will likely increase by approx. 0.003 to 0.005 MPa. This is due to an offset load from the weight of the rod.

Note 2) Refer to precautions on page 18 regarding lubrication.

Note 3) Control low speed actuation with differential pressure and a speed controller, etc. (Refer to recommended circuit examples for further details.)

Symbol  
Double acting, Single rod



**Specifications: Lateral Load Resisting Type/MQQL**

Bore size (mm)		10	16	20	25	30	40
Seal construction		Metal seal					
Action		Double acting, Single rod					
Fluid		Air					
Proof pressure		1.05 MPa					
Maximum operating pressure		0.7 MPa					
Minimum operating pressure <sup>Note 1)</sup>		0.005 MPa					
Ambient and fluid temperature		-10 to 80°C					
Cushion		Rubber bumper (Provided as standard)					
Lubrication <sup>Note 2)</sup>		Not required (Non-lube)					
Rod end thread		Female thread					
Rod end thread tolerance		JIS class 2					
Stroke length tolerance		+1.0 0					
Piston speed <sup>Note 3)</sup>		0.5 to 500 mm/s (Refer to page 19.)					
Total allowable leakage	Supply pressure 0.1 MPa	150 cm <sup>3</sup> /min or less	200 cm <sup>3</sup> /min or less	300 cm <sup>3</sup> /min or less	400 cm <sup>3</sup> /min or less	600 cm <sup>3</sup> /min or less	800 cm <sup>3</sup> /min or less
	Supply pressure 0.3 MPa	800 cm <sup>3</sup> /min or less	1000 cm <sup>3</sup> /min or less	1200 cm <sup>3</sup> /min or less	1600 cm <sup>3</sup> /min or less	2000 cm <sup>3</sup> /min or less	2400 cm <sup>3</sup> /min or less
	Supply pressure 0.5 MPa	1500 cm <sup>3</sup> /min or less	2000 cm <sup>3</sup> /min or less	3000 cm <sup>3</sup> /min or less	4000 cm <sup>3</sup> /min or less	6000 cm <sup>3</sup> /min or less	8000 cm <sup>3</sup> /min or less

Note 1) Value when horizontal. (Use clean, dry, and nonfreezing air) However, as the stroke increases, it will likely be affected by the weight of the moving parts and the pressure will likely increase by approx. 0.003 to 0.005 MPa. This is due to an offset load from the weight of the rod.

Note 2) Refer to precautions on page 18 regarding lubrication.

Note 3) Control low speed actuation with differential pressure and a speed controller, etc. (Refer to recommended circuit examples for further details.)

**Weight: Standard Type/MQQT**

Unit: g

Bore size (mm)	Cylinder stroke (mm)							
	10	20	30	40	50	60	75	100
10	94	118	142	166	—	—	—	—
16	166	206	246	286	326	366	—	—
20	228	290	352	414	476	538	—	—
25	395	487	579	671	763	—	993	1223
30	479	567	655	743	831	—	1052	1272
40	728	846	964	1082	1200	—	1495	1790

**Weight: Lateral Load Resisting Type/MQQL (Built-in Ball Bushing)**

Unit: g

Bore size (mm)	Cylinder stroke (mm)							
	10	20	30	40	50	60	75	100
10	148	172	196	220	—	—	—	—
16	284	324	364	404	444	484	—	—
20	383	445	507	569	631	693	—	—
25	552	644	736	828	920	—	1150	1380
30	911	999	1087	1175	1263	—	1485	1705
40	1337	1455	1573	1691	1809	—	2104	2399

**Theoretical Output**

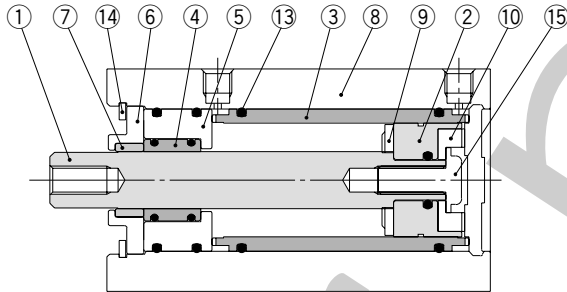
Unit: N

Bore size (mm)	Rod size (mm)	Direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)						
				0.1	0.2	0.3	0.4	0.5	0.6	0.7
10	6	IN	50.3	5.0	10.1	15.1	20.1	25.2	30.2	35.2
		OUT	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
16	8	IN	145.8	14.9	29.2	43.7	58.3	72.9	87.5	102.1
		OUT	196.1	19.6	39.2	58.9	78.4	98.1	117.7	137.3
20	10	IN	235.6	23.6	47.1	70.7	94.2	117.8	141.4	164.9
		OUT	314.2	31.4	62.8	94.3	125.7	157.1	188.5	219.9
25	12	IN	377.8	37.8	75.6	113.3	151.1	188.9	226.7	262.5
		OUT	490.9	49.1	98.2	147.3	196.4	245.5	294.5	343.6
30	16	IN	505.8	50.6	101.2	151.8	202.4	253.0	303.6	354.2
		OUT	706.9	70.7	141.4	212.1	282.8	353.5	424.2	494.9
40	16	IN	1055.6	105.6	211.2	316.8	422.4	528.0	633.6	739.2
		OUT	1256.6	125.7	251.4	377.1	502.8	628.5	754.2	879.9

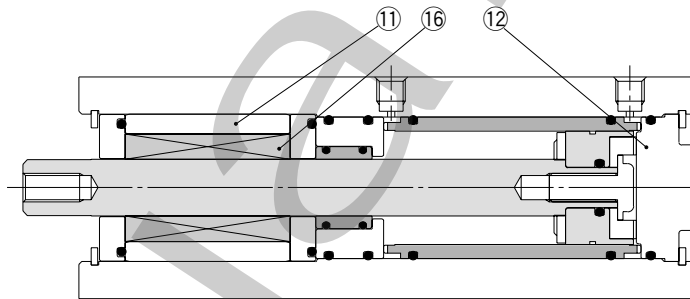
# Series MQQ

## Construction

### Standard type: MQQT



### Lateral load resisting type: MQQL (Built-in ball bushing)



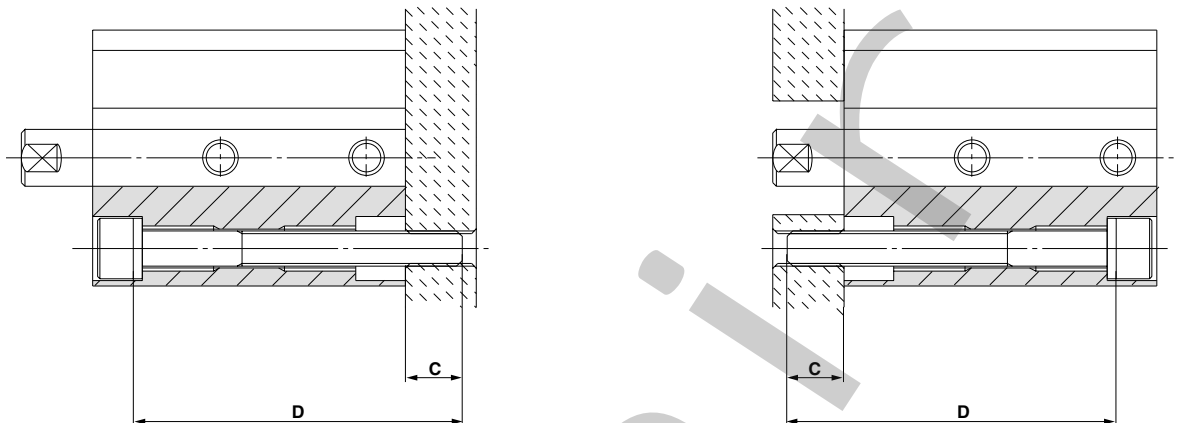
### Component Parts

No.	Description	Material	Note
1	Rod	Carbon steel	Hard chrome plated
2	Piston	Special stainless steel	
3	Liner	Special stainless steel	
4	Sleeve	Special stainless steel	
5	Sleeve retainer	Aluminum alloy	
6	Plate	Aluminum alloy	Hard anodized
7	Guide	Fluororesin	
8	Cylinder tube	Aluminum alloy	Hard anodized
9	Bumper A	Polyurethane	
10	Bumper B	Polyurethane	
11	Bushing	Aluminum alloy	
12	Bottom plate	Aluminum alloy	Hard anodized
13	O-ring	NBR	
14	Retaining ring	Carbon tool steel	Nickel plated
15	Bolt	Carbon tool steel	Nickel plated
16	Ball bushing		

## Mounting

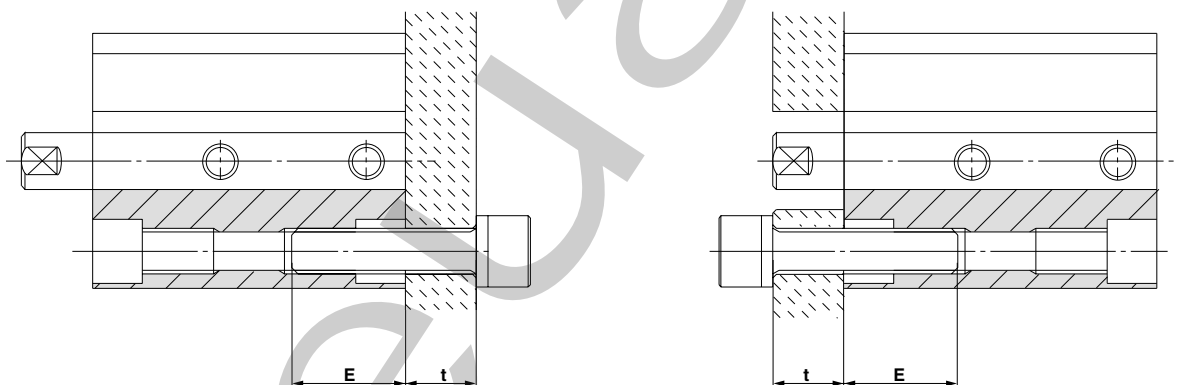
### Mounting bolts

a) **A type mounting** (when using the mounting plate threads)



Note) Be sure to use a flat washer for the A type mounting.

b) **B type mounting** (when using the cylinder tube threads)



### Compatible Mounting Bolt Dimensions

Model	A type mounting			B type mounting		
	Mounting bolt size	C (mm)	D: Bolt length (mm)	Mounting bolt size	E (mm)	
Standard type MQQT	MQQT10-□D	M3 x 0.5	7	35 + Stroke	M4 x 0.7	8 to 11
	MQQT16-□D	M5 x 0.8	7	35 + Stroke	M6 x 1	13 to 17
	MQQT20-□D		8.5	40 + Stroke		
	MQQT25-□D		9	45 + Stroke		
	MQQT30-□D		7.5	50 + Stroke		
	MQQT40-□D		6	50 + Stroke		
Lateral load resisting type MQQL (Built-in ball bushing)	MQQLB10-□D	M3 x 0.5	7	65 + Stroke	M4 x 0.7	8 to 11
	MQQLB16-□D	M5 x 0.8	5.5	70 + Stroke	M6 x 1	13 to 17
	MQQLB20-□D		8	80 + Stroke		
	MQQLB25-□D		6.5	85 + Stroke		
	MQQLB30-□D		7	105 + Stroke		
	MQQLB40-□D		M6 x 1	7		

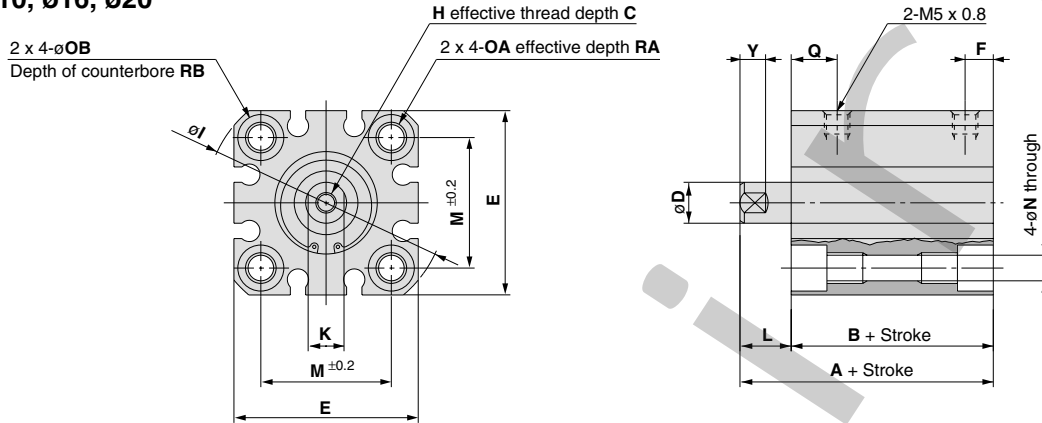
□: Stroke

# Series MQQ

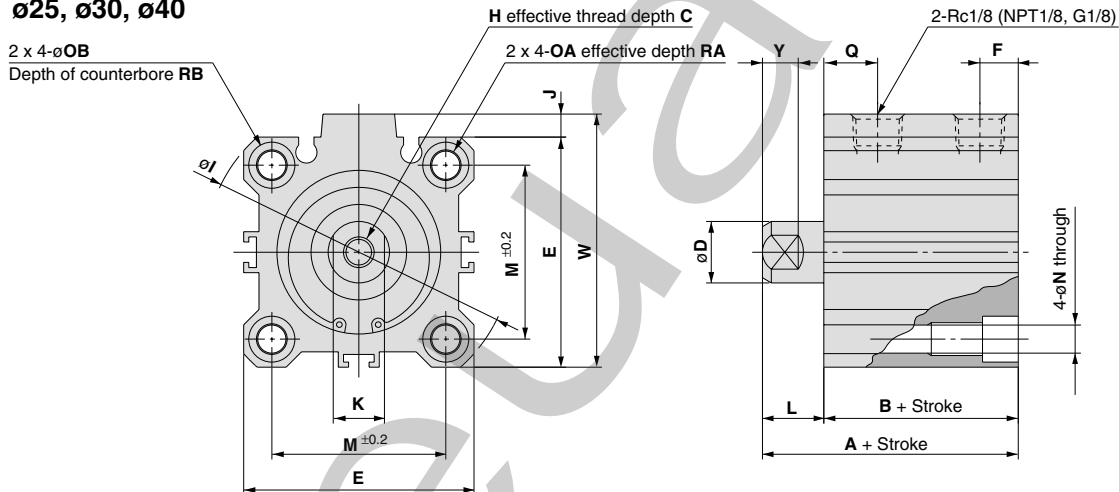
## Dimensions

### Standard/Basic type (Through hole & Double end tapped): MQQTB

ø10, ø16, ø20



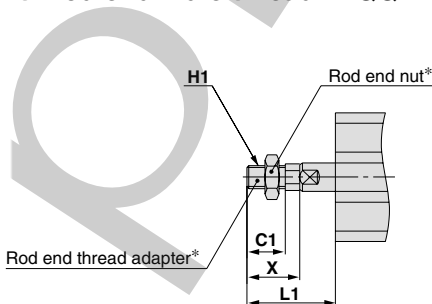
ø25, ø30, ø40



Bore size (mm)	Stroke range (mm)	A	B	C	Note) D	E	F	H	I	J	K	L	M	N	OA	OB	Q	RA	RB	W	Y
10	10 to 40	39.5	31.5	6	6 ( 5.8)	29	5.5	M3 x 0.5	38	—	5	8	20	3.5	M4 x 0.7	6.5	14.5	7	4	—	5
16	10 to 60	44	34	8	8 ( 7.8)	36	5.5	M4 x 0.7	47	—	7	10	25.5	5.4	M6 x 1.0	9	18	10	7	—	5
20	10 to 60	47.5	37.5	10	10 ( 9.8)	40	5.5	M5 x 0.8	52	—	8	10	28	5.4	M6 x 1.0	9	19.5	10	7	—	6
25	10 to 50, 75, 100	54	42	12	12(11.8)	45	8.5	M6 x 1.0	60	4.5	10	12	34	5.5	M6 x 1.0	9	23	10	7	49.5	7
30	10 to 50, 75, 100	60.5	48.5	13	16(15.8)	52	8.5	M8 x 1.25	69	5	14	12	40	5.5	M6 x 1.0	9	26	10	7	57	10
40	10 to 50, 75, 100	62	50	13	16(15.8)	64	12	M8 x 1.25	86	7	14	12	50	6.6	M8 x 1.25	11	26	14	8	71	10

Note) Figures in ( ) are the dimensions for applying a wrench.

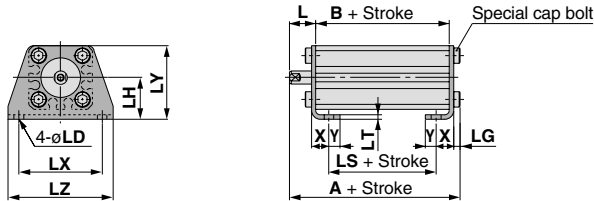
### With rod end male thread: MQQ□-□DM



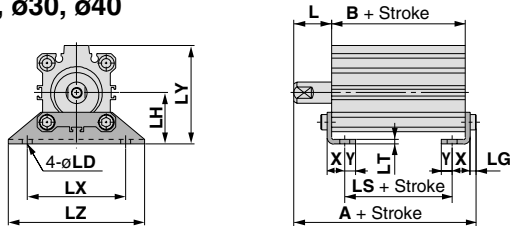
Bore size (mm)	L1	C1	H1	X
10	23.5	10.5	M5 x 0.8	15.5
16	26.5	11.5	M6 x 1.0	16.5
20	28.5	13.5	M8 x 1.25	18.5
25	34.5	16.5	M10 x 1.25	22.5
30	40.5	22.5	M14 x 1.5	28.5
40	40.5	22.5	M14 x 1.5	28.5

\* Refer to page 9 for details regarding the rod end thread adapter and the rod end nut.

**Foot type: MQQTL**  
ø10, ø16, ø20



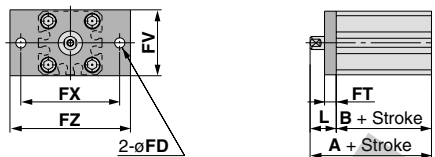
ø25, ø30, ø40



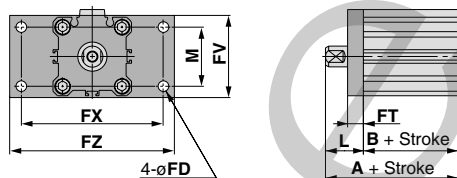
Bore size (mm)	Stroke range (mm)	A	B	L	LD	LG	LH
10	10 to 40	44.3	31.5	8	4.5	2.8	19
16	10 to 60	51.2	34	10	6.6	4	24
20	10 to 60	54.7	37.5	10	6.6	4	26
25	10 to 50,75,100	61.2	42	12	6.6	4	30
30	10 to 50,75,100	67.7	48.5	12	6.6	4	33
40	10 to 50,75,100	70.2	50	12	9	5	39

Bore size (mm)	LS	LT	LX	LY	LZ	X	Y
10	19.5	2	38	33.5	48	8	5
16	22	3.2	48	42	62	9.2	5.8
20	22.5	3.2	52	46	66	10.7	5.8
25	26	3.2	57	57	71	11.2	5.8
30	32.5	3.2	64	64	78	11.2	7
40	27	3.2	79	78	95	14.7	8

**Front flange type: MQQTF**  
ø10, ø16, ø20



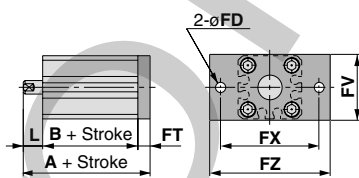
ø25, ø30, ø40



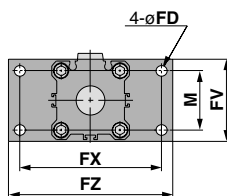
Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX
10	10 to 40	49.5	31.5	4.5	5.5	30	45
16	10 to 60	54	34	6.6	8	39	48
20	10 to 60	57.5	37.5	6.6	8	42	52
25	10 to 50,75,100	64	42	5.5	8	48	56
30	10 to 50,75,100	70.5	48.5	5.5	8	54	62
40	10 to 50,75,100	72	50	6.6	9	67	76

Bore size (mm)	FZ	L	M
10	55	18	—
16	60	20	—
20	64	20	—
25	65	22	34
30	72	22	40
40	89	22	50

**Rear flange type: MQQTG**  
ø10, ø16, ø20



ø25, ø30, ø40



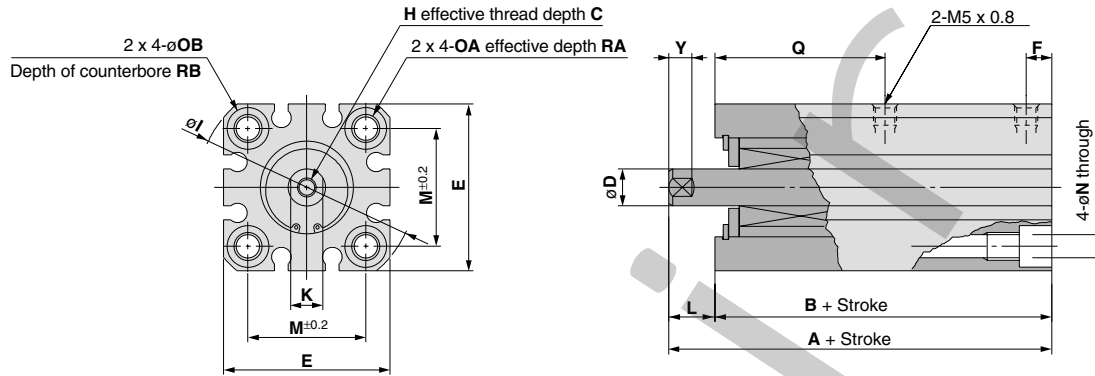
Bore size (mm)	Stroke range (mm)	A	L
10	10 to 40	45	8
16	10 to 60	52	10
20	10 to 60	55.5	10
25	10 to 50,75,100	62	12
30	10 to 50,75,100	68.5	12
40	10 to 50,75,100	70	12

(Dimensions other than A and L are the same as the front flange type.)

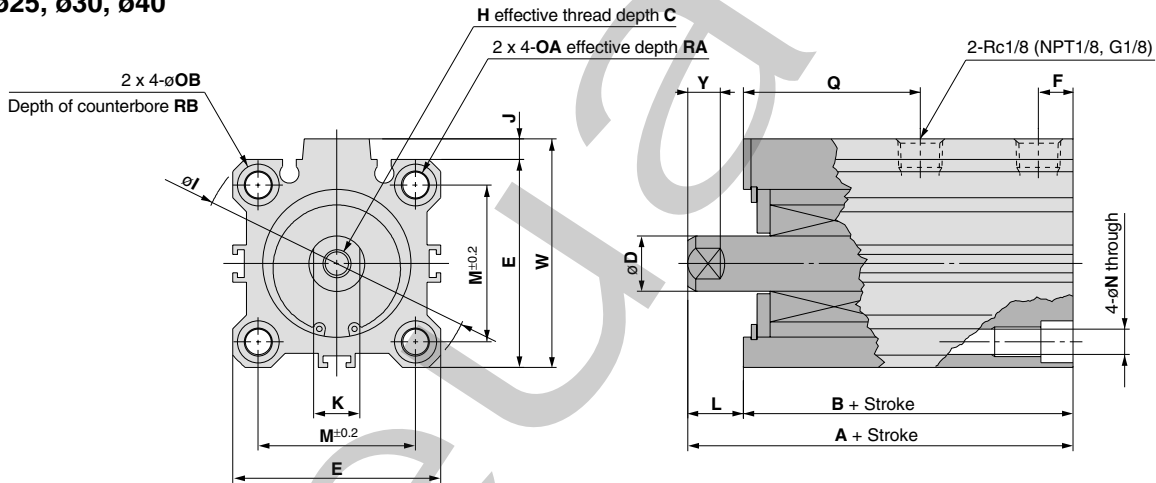
# MQQ Series

## Dimensions

### Lateral load resisting/Basic type (Through hole & Double end tapped): MQQLB ø10, ø16, ø20



### ø25, ø30, ø40

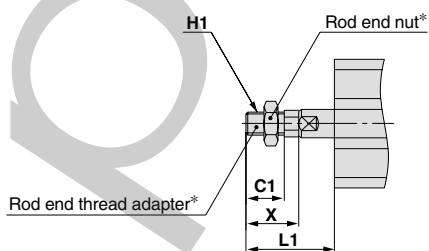


(mm)

Bore size (mm)	Stroke range (mm)	A	B	C	Note) D	E	F	H	I	J	K	L	M	N	OA	OB	Q	RA	RB	W	Y
10	10 to 40	69.5	61.5	6	6( 5.8)	29	9	M3 x 0.5	38	—	5	8	20	3.5	M4 x 0.7	6.5	39.5	7	4	—	5
16	10 to 60	80.5	70.5	8	8( 7.8)	36	11.5	M4 x 0.7	47	—	7	10	25.5	5.4	M6 x 1.0	9	48.5	10	7	—	5
20	10 to 60	89	79	10	10( 9.8)	40	12	M5 x 0.8	52	—	8	10	28	5.4	M6 x 1.0	9	55	10	7	—	6
25	10 to 50, 75, 100	96.5	84.5	12	12(11.8)	45	13.5	M6 x 1.0	60	4.5	10	12	34	5.5	M6 x 1.0	9	58	10	7	49.5	7
30	10 to 50, 75, 100	116	104	13	16(15.8)	52	17.5	M8 x 1.25	69	5	14	12	40	5.5	M6 x 1.0	9	71	10	7	57	10
40	10 to 50, 75, 100	116	104	13	16(15.8)	64	17.5	M8 x 1.25	86	7	14	12	50	6.6	M8 x 1.25	11	71	14	8	71	10

Note) Figures in ( ) are the dimensions for applying a wrench.

### With rod end male thread: MQQ□-□DM



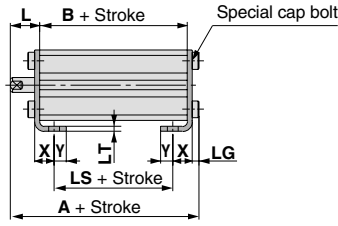
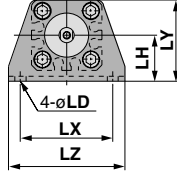
(mm)

Bore size (mm)	L1	C1	H1	X
10	23.5	10.5	M5 x 0.8	15.5
16	26.5	11.5	M6 x 1.0	16.5
20	28.5	13.5	M8 x 1.25	18.5
25	34.5	16.5	M10 x 1.25	22.5
30	40.5	22.5	M14 x 1.5	28.5
40	40.5	22.5	M14 x 1.5	28.5

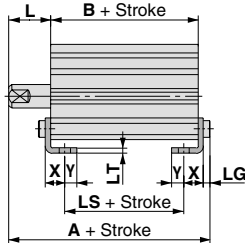
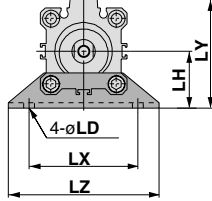
\* Refer to page 9 for details regarding the rod end thread adapter and the rod end nut.

Compact Low Friction Cylinder Metal Seal **Series MQQ**

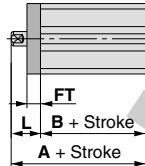
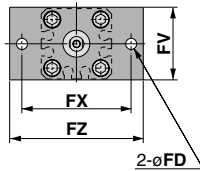
Foot type: MQQLL  
 ø10, ø16, ø20



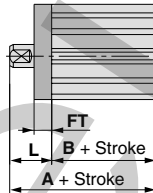
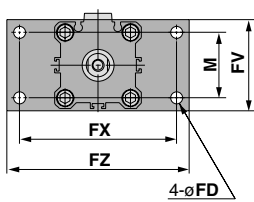
ø25, ø30, ø40



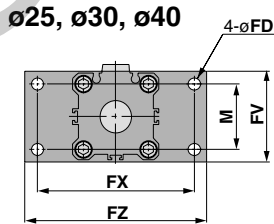
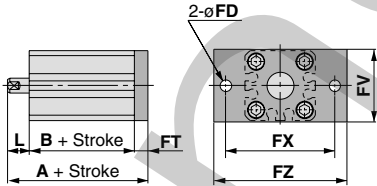
Front flange type: MQQLF  
 ø10, ø16, ø20



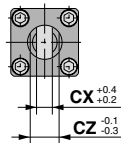
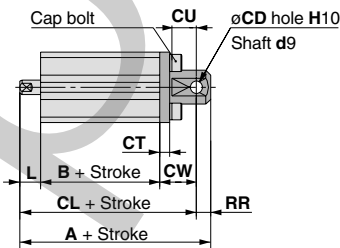
ø25, ø30, ø40



Rear flange type: MQQLG  
 ø10, ø16, ø20



Double clevis type: MQQLD



(mm)

Bore size (mm)	Stroke range (mm)	A	B	L	LD	LG	LH
10	10 to 40	74.3	61.5	8	4.5	2.8	19
16	10 to 60	87.7	70.5	10	6.6	4	24
20	10 to 60	96.2	79	10	6.6	4	26
25	10 to 50,75,100	103.7	84.5	12	6.6	4	30
30	10 to 50,75,100	123.2	104	12	6.6	4	33
40	10 to 50,75,100	124.2	104	12	9	5	39

Bore size (mm)	LS	LT	LX	LY	LZ	X	Y
10	49.5	2	38	33.5	48	8	5
16	58.5	3.2	48	42	62	9.2	5.8
20	64	3.2	52	46	66	10.7	5.8
25	68.5	3.2	57	57	71	11.2	5.8
30	88	3.2	64	64	78	11.2	7
40	81	3.2	79	78	95	14.7	8

(mm)

Bore size (mm)	Stroke range (mm)	A	B	FD	FT	FV	FX
10	10 to 40	79.5	61.5	4.5	5.5	30	45
16	10 to 60	90.5	70.5	6.6	8	39	48
20	10 to 60	99	79	6.6	8	42	52
25	10 to 50,75,100	106.5	84.5	5.5	8	48	56
30	10 to 50,75,100	126	104	5.5	8	54	62
40	10 to 50,75,100	126	104	6.6	9	67	76

Bore size (mm)	FZ	L	M
10	55	18	—
16	60	20	—
20	64	20	—
25	65	22	34
30	72	22	40
40	89	22	50

(mm)

Bore size (mm)	Stroke range (mm)	A	L
10	10 to 40	75	8
16	10 to 60	88.5	10
20	10 to 60	97	10
25	10 to 50,75,100	104.5	12
30	10 to 50,75,100	124	12
40	10 to 50,75,100	124	12

(Dimensions other than A and L are the same as the front flange type.)

(mm)

Bore size (mm)	Stroke range (mm)	A	B	CD	CL	CT	CU
10	10 to 40	90.5	61.5	5	84.5	4	10
16	10 to 60	107.5	70.5	8	98.5	5	12
20	10 to 60	119	79	10	109	5	14
25	10 to 50,75,100	126.5	84.5	10	116.5	5	14
30	10 to 50,75,100	148	104	10	138	6	14
40	10 to 50,75,100	158	104	14	144	7	20

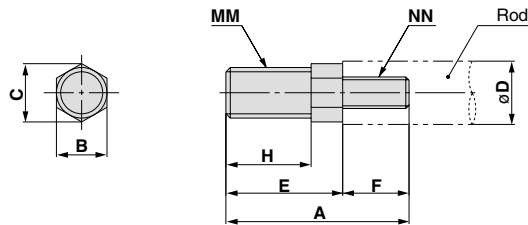
Bore size (mm)	CW	CX	CZ	L	RR
10	15	6.5	12	8	6
16	18	8	16	10	9
20	20	10	20	10	10
25	20	18	36	12	10
30	22	18	36	12	10
40	28	22	44	12	14



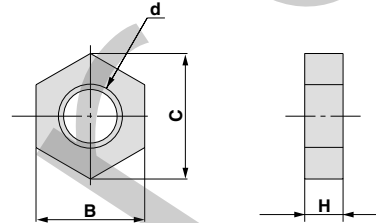
# Series MQQ

## Accessory Dimensions

### Female-male thread conversion joint



### Rod end nut

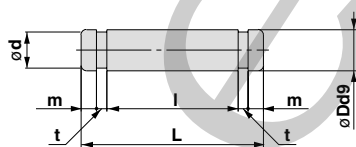


Part no.	Applicable bore size (mm)	A	B	C	D	E	F
MQ10-M	10	20.5	8	9.2	6	15.5	5
MQ16-M	16	22.5	8	9.2	8	16.5	6
MQ20-M	20	24.5	8	9.2	10	18.5	6
MQ25-M	25	33.5	10	11.5	12	22.5	11
MQ28-M	30, 40	40.5	14	16	16	28.5	12

Part no.	Applicable bore size (mm)	B	C	d	H
NTJ-015A	10	8	9.2	M5 x 0.8	4
NT-015A	16	10	11.5	M6 x 1.0	5
NT-02	20	13	15	M8 x 1.25	5
NT-03	25	17	19.6	M10 x 1.25	6
NT-04	30, 40	22	25.4	M14 x 1.5	8

Part no.	Applicable bore size (mm)	H	MM	NN
MQ10-M	10	10.5	M5 x 0.8	M3 x 0.5
MQ16-M	16	11.5	M6 x 1.0	M4 x 0.7
MQ20-M	20	13.5	M8 x 1.25	M5 x 0.8
MQ25-M	25	16.5	M10 x 1.25	M6 x 1.0
MQ28-M	30, 40	22.5	M14 x 1.5	M8 x 1.25

### Clevis pin



Part no.	Applicable bore size (mm)	Dd9	L	d	l	m	t	Applicable snap ring
IY-J015	10	5 <sup>-0.030</sup> <sub>-0.040</sub>	16.6	4.8	12.2	1.5	0.7	C type 5 for shaft
IY-G02	16	8 <sup>-0.040</sup> <sub>-0.076</sub>	21	7.6	16.2	1.5	0.9	C type 8 for shaft
IY-G03	20	10 <sup>-0.040</sup> <sub>-0.076</sub>	25.6	9.6	20.2	1.55	1.15	C type 10 for shaft
IY-G04	25, 30	10 <sup>-0.040</sup> <sub>-0.076</sub>	41.6	9.6	36.2	1.55	1.15	C type 10 for shaft
IY-G05	40	14 <sup>-0.050</sup> <sub>-0.093</sub>	50.6	13.4	44.2	2.05	1.15	C type 14 for shaft