Metal Seal

Lateral Load Resisting Low Friction Cylinder

Series MQM

ø6, ø10, ø16, ø20, ø25

How to Order

MQM L B 10 □ □ – 15 D

Lateral load resisting low friction specification

Type

L	Lateral load resisting type (Built-in ball bushing)

Mounting

B	Basic type
L	Foot type
F	Rod side flange type
G	Head side flange type (Except for ø6)
C Note 1)	Single clevis type (Non-integrated type)
D Note 2)	Double clevis type

Note 1) Bore size: 20, 25 mm only

∗ Mounting brackets are included when shipped, but unassembled. (Except for clevis type.)

Note 2) ø6, ø10, ø16 ..... Integrated type
ø20, ø25 ..... Non-integrated type

Bore size

6	6 mm
10	10 mm
16	16 mm
20	20 mm
25	25 mm

Port thread type

Nil	M thread	ø6 to ø16
	Rc	ø20, ø25
TN	NPT	
TF	G	

Function

Nil	Standard type
H Note)	High speed/High frequency type (Without fixed orifice)

Note) Except for 6 mm bore size.

Action

D	Double acting

Cylinder stroke

Bore size (mm)	Standard stroke (mm)
6	15, 30, 45, 60
10	15, 30, 45, 60, 75, 100
16	15, 30, 45, 60, 75, 100
20	15, 30, 45, 60, 75, 100
25	15, 30, 45, 60, 75, 100

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

∗ The MQM series is not auto switch capable.

Mounting Style/Accessories

Mounting bracket		**B**: Basic	**L**: Foot	**F**: Rod side flange	**G**: Head side flange	**C**: Single clevis	**D**: Double clevis	Note
Standard	Mounting nut Note 1)	● (1 pc.)	● (2 pcs.)	● (1 pc.)	● (1 pc.)	— Note 1)	— Note 2)	
	Rod end nut	●	●	●	●	●	●	
	Clevis pin	—	—	—	—	—	●	
Option	T-bracket	—	—	—	—	—	●	With pin

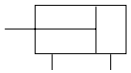
Note 1) Mounting nut is not included with the integral clevis, single clevis and double clevis types.
Note 2) Pin and retaining ring are packed with the double clevis type.

Mounting Bracket Part No.

Bore size (mm)	Foot Note 1)	Flange	Single clevis	Double clevis (with pin) Note 2)	T-bracket Note 3)
6	CJK-L016B	CJK-F016B	—	—	CJ-T010B
10	MQM-L010		—	—	
16	MQM-L016	CLJ-F016B	—	—	CJ-T016B
20	CM-L020B	CM-F020B	CM-C020B	CM-D020B	—
25	CM-L032B	CM-F032B	CM-C032B		—

Note 1-1) Bore size 6 mm:
1 foot bracket is included.
When ordering foot brackets, order 1 piece per a cylinder unit.
Note 1-2) Bore size other than 6 mm (10, 16, 20 and 25 mm) (Same as Series CM)

Symbol
Double acting, Single rod



Specifications

Bore size (mm)		6	10	16	20	25
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 Note 1)	**Standard type**	0.02MPa	0.005 MPa			
	H (High speed/ High frequency type)	—	0.01 MPa			
Ambient and fluid temperature		-10 to 80°C				
Cushion		Rubber bumper (Standard)				
Lubrication Note 2)		Not required (Non-lube)				
Stroke length tolerance		$^{+1.0}_{0}$				
Piston speed Note 3)	**Standard type**	0.5 to 1000 mm/s (Refer to page 1191.)				
	H (High speed/ High frequency type)	—	5 to 3000 mm/s (Refer to page 1191.)			
Total allowable leakage	**Supply pressure 0.1 MPa**	150 cm³/min or less		250 cm³/min or less		300 cm³/min or less
	Supply pressure 0.3 MPa	800 cm³/min or less		1000 cm³/min or less		1200 cm³/min or less
	Supply pressure 0.5 MPa	1500 cm³/min or less		2500 cm³/min or less		3000 cm³/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 mass of its moving parts and the pressure will likely increase by approx. 0.003 to 0.005 MPa due to an offset load from the mass of the rod.
Note 2) Refer to precautions on page 1189 regarding lubrication.
Note 3) Control low speed actuation with differential pressure and a speed controller, etc. (Refer to recommended circuit examples on page 1169 for further details.)

Mass: Standard Type, High Speed/High Frequency Type

Unit: g

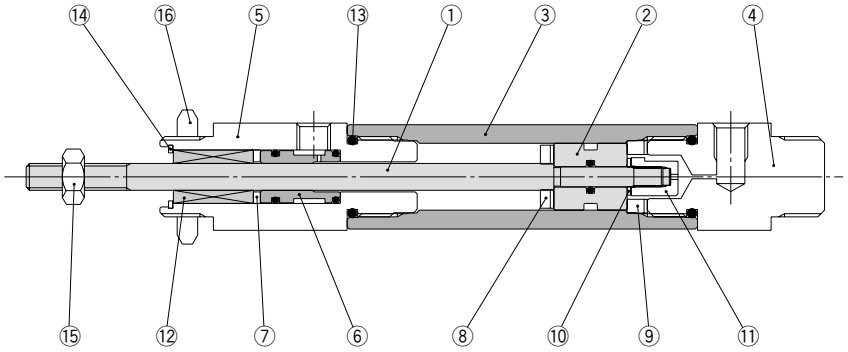
Bore size (mm)	Cylinder stroke (mm)					
	15	30	45	60	75	100
6	52.5	60.7	68.9	77.1	—	—
10	92.4	102.7	113.0	123.3	133.6	143.9
16	152.4	175.2	198.0	220.8	243.6	266.4
20	349.8	392.6	435.4	478.2	521.0	563.8
25	460.8	510.0	559.2	608.4	657.6	706.8

Theoretical Output

OUT IN Unit: N

Bore size (mm)	Rod size (mm)	Direction	Piston area (mm²)	Operating pressure (MPa)						
				0.1	0.2	0.3	0.4	0.5	0.6	0.7
6	4	IN	15.7	1.6	3.2	4.7	6.3	7.9	9.4	11.0
		OUT	28.3	2.8	5.7	8.5	11.3	14.2	17.0	19.8
10	4	IN	66.0	6.6	13.2	19.8	26.4	33.0	39.6	46.2
		OUT	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
16	5	IN	181.4	18.1	36.3	54.4	72.6	90.7	108.8	127.0
		OUT	201.1	20.1	40.2	60.3	80.4	100.6	120.7	140.8
20	8	IN	263.9	26.4	52.8	79.2	105.6	132.0	158.3	184.7
		OUT	314.2	31.4	62.8	94.3	125.7	157.1	188.5	219.9
25	10	IN	412.3	41.2	82.5	123.7	164.9	206.2	247.4	288.6
		OUT	490.9	49.1	98.2	147.3	196.4	245.5	294.5	343.6

Construction



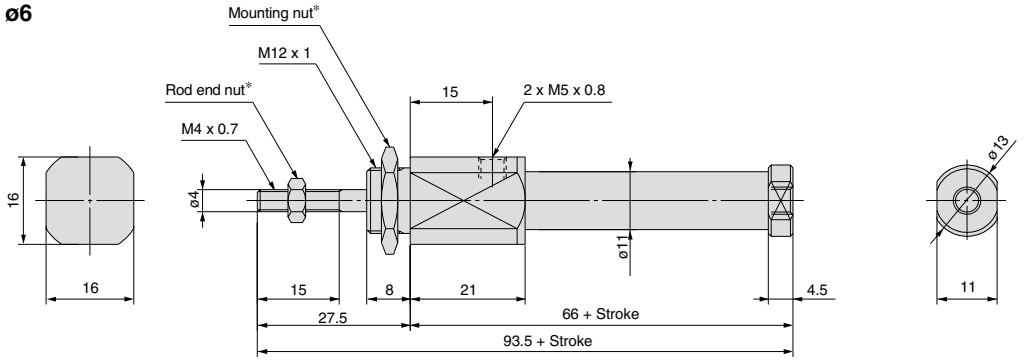
Component Parts

No.	Description	Material	Note
1	**Rod**	Carbon steel	Hard chrome plated
2	**Piston**	Special stainless steel	
3	**Tube**	Special stainless steel	
4	**Head cover**	Aluminum alloy	Hard anodized
5	**Rod cover**	Aluminum alloy	Hard anodized
6	**Sleeve**	Special stainless steel	
7	**Seat**	NBR	
8	**Bumper A**	Polyurethane	
9	**Bumper B**	Polyurethane	
10	**Bumper C**	Polyurethane	
11	**Nut**	Aluminum alloy	
12	**Ball bushing**		
13	**O-ring**	NBR	
14	**Retaining ring**	Carbon tool steel	Nickel plated
15	**Rod end nut**	Steel	Nickel plated
16	**Mounting nut**	Steel	

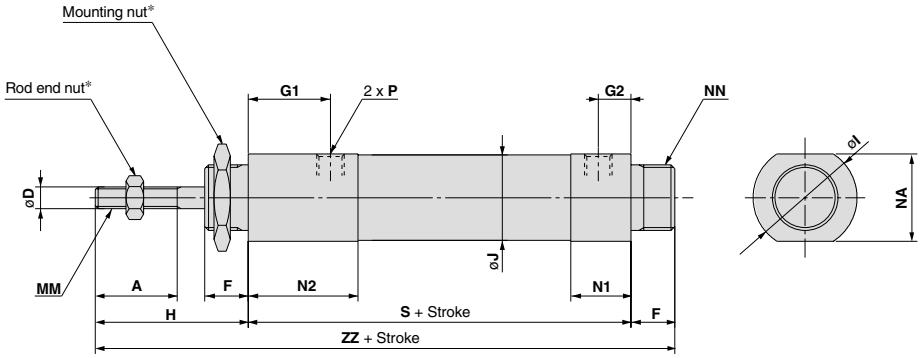
Dimensions

Basic type: MQMLB

ø6



ø10, ø16, ø20, ø25



(mm)

Bore size (mm)	A	D	F	G1	G2	H	I	J	MM	N1	N2	NA	NN	P			S	ZZ
														—	TN	TF		
10	15	4	8	15	6	28	18.5	16	M4 x 0.7	11	20	16	M12 x 1	M5 x 0.8	—	—	65	101
16	15	5	10	15	6	30	22	22	M5 x 0.8	12	21	19.5	M14 x 1	M5 x 0.8	—	—	74	114
20	18	8	13	25	8.5	40.5	31.5	28.5	M8 x 1.25	20.5	33	29	M20 x 1.5	Rc 1/8	NPT 1/8	G 1/8	97.5	151
25	18	10	13	30	8.5	44.5	34.5	32	M10 x 1.25	20.5	38	32	M26 x 1.5	Rc 1/8	NPT 1/8	G 1/8	102.5	160

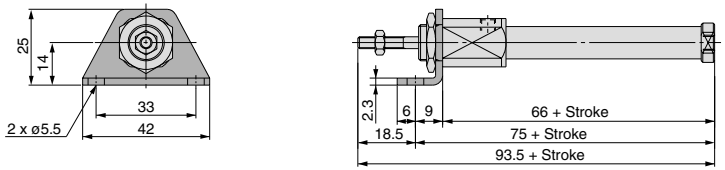
∗ Refer to page 1188 for details regarding the rod end nut and the mounting nut.

Refer to the basic type on page 1184 for other dimensions.

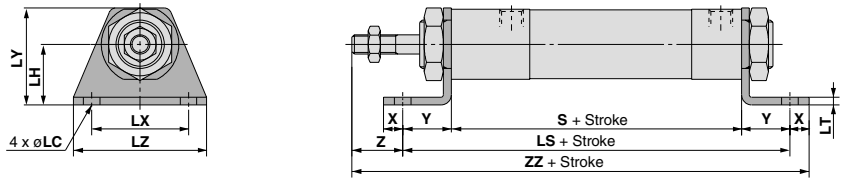
Dimensions

Foot type: MQMLL

ø6



ø10, ø16, ø20, ø25

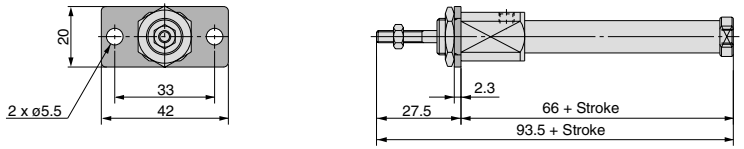


(mm)

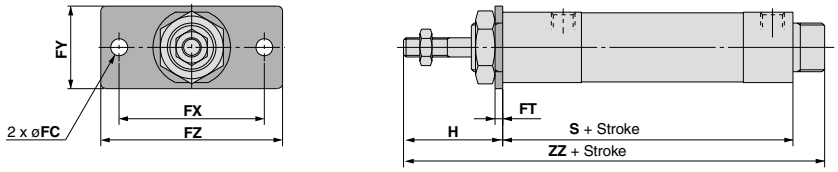
Bore size (mm)	LC	LH	LS	LT	LX	LY	LZ	S	X	Y	Z	ZZ
10	5.5	14	83	2.3	33	25	42	65	6	9	19	108
16	5.5	18	92	2.3	42	30	54	74	6	9	21	119
20	6.8	25	137.5	3.2	40	40	55	97.5	8	20	20.5	166
25	6.8	28	142.5	3.2	40	47	55	102.5	8	20	24.5	175

Rod side flange type: MQMLF

ø6



ø10, ø16, ø20, ø25



(mm)

Bore size (mm)	FC	FT	FX	FY	FZ	H	S	ZZ
10	5.5	2.3	33	20	42	28	65	101
16	5.5	2.3	42	24	54	30	74	114

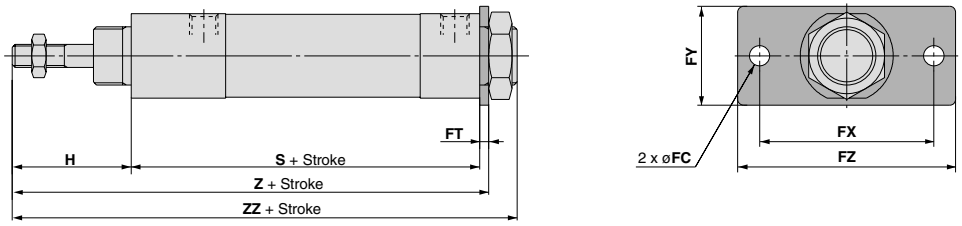
REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□

Dimensions

Refer to the basic type on page 1184 for other dimensions.

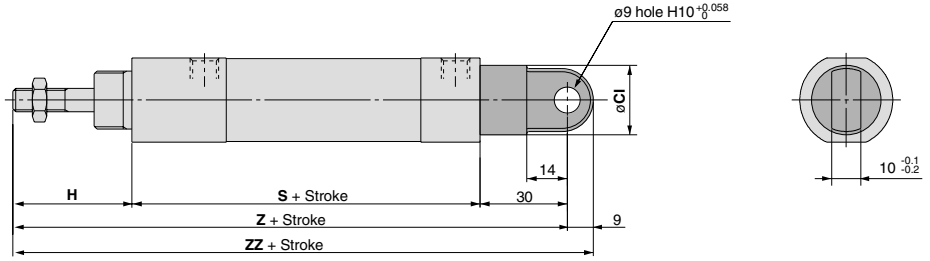
Head side flange type: MQMLG (Except for ø6)
ø10, ø16, ø20, ø25



(mm)

Bore size (mm)	FC	FT	FX	FY	FZ	H	S	Z	ZZ
10	5.5	2.3	33	20	42	28	65	95.3	101
16	5.5	2.3	42	24	54	30	74	106.3	114
20	7	4	60	34	75	40.5	97.5	142	151
25	7	4	60	40	75	44.5	102.5	151	160

Single clevis type: MQMLC (ø20 and ø25 only)
ø20, ø25 (Non-integrated type)



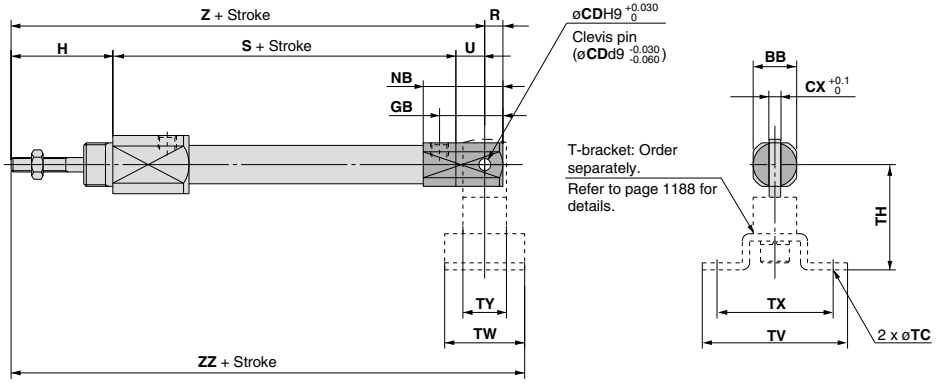
(mm)

Bore size (mm)	CI	H	S	Z	ZZ
20	24	40.5	97.5	168	177
25	30	44.5	102.5	177	186

Dimensions

Refer to the basic type on page 1184 for other dimensions.

Double clevis type: MQMLD
ø6, ø10, ø16 (Integrated type)



(mm)

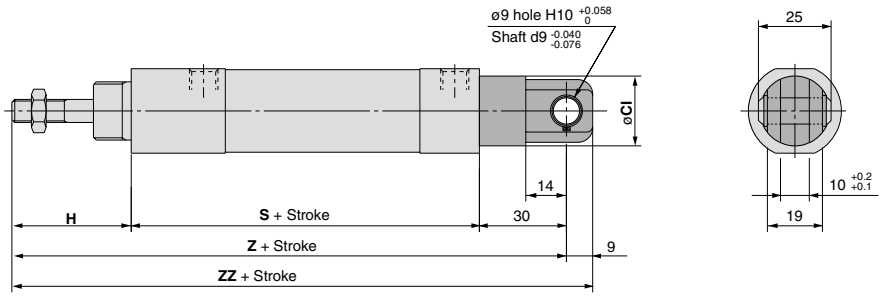
Bore size (mm)	BB	CD	CX	GB	H	NB	R	S	U	Z	ZZ
6	12	3.3	3.3	17.5	27.5	22	5	70.5	8	106	117
10	12	3.3	3.3	19	28	24	5	65	8	101	112
16	18	5	6.6	24	30	30	8	74	10	114	128

T-bracket Related Dimensions Note)

Part no.	Applicable bore size (mm)	TC	TH	TV	TW	TX	TY
CJ-T010B	**6, 10**	4.5	29	40	22	32	12
CJ-T016B	**16**	5.5	35	48	28	38	16

Note) Refer to page 1188 for details.

ø20, ø25 (Non-integrated type)



(mm)

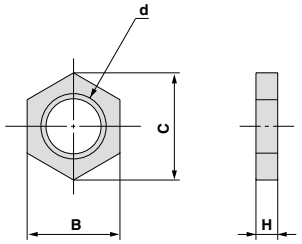
Bore size (mm)	CI	H	S	Z	ZZ
20	24	40.5	97.5	168	177
25	30	44.5	102.5	177	186

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□

Accessory Dimensions

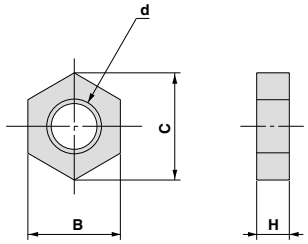
Mounting nut



Material: Carbon steel

Part no.	Applicable bore size (mm)	B	C	d	H
SNKJ-016B	6, 10	17	19.6	M12 x 1	4
SNLJ-016B	16	19	21.9	M14 x 1	5
SN-020B	20	26	30	M20 x 1.5	8
SN-032B	25	32	37	M26 x 1.5	8

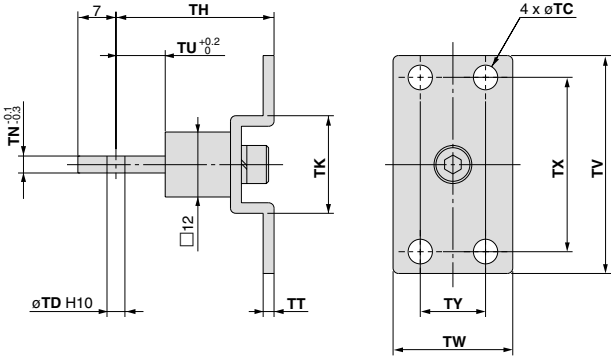
Rod end nut



Material: Carbon steel

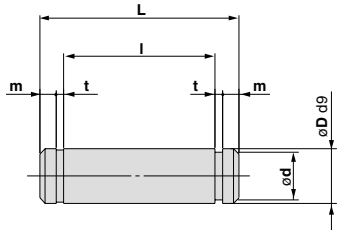
Part no.	Applicable bore size (mm)	B	C	D	H
NTJ-010A	6, 10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4
NT-02	20	13	15	M8 x 1.25	5
NT-03	25	17	19.6	M10 x 1.25	6

T-bracket



Part no.	Applicable bore size (mm)	TC	TD	TH	TK	TN	TT	TU	TV	TW	TX	TY
CJ-T010B	6, 10	4.5	3.3	29	18	3.1	2	9	40	22	32	12
CJ-T016B	16	5.5	5	35	20	6.4	2.3	14	48	28	38	16

Clevis pin



Material: Stainless steel

Part no.	Applicable bore size (mm)	d	D	l	L	m	t
CD-J010	6, 10	3	3.3	12.2	15.2	1.2	0.3
CD-Z015	16	4.8	5	18.3	22.7	1.5	0.7

Series MQQ/MQM
Specific Product Precautions 1

Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Operation

⚠ Caution

1. **When mounting, thoroughly flush out the connector piping and be sure that dirt and chips, etc., do not get inside the cylinder.**
2. **Install an air filter with a filtration degree of 5 μm or less on the air supply. Furthermore, when controlling for low speed or controlled output, use clean air (atmospheric pressure dew point temperature of −10°C). Installation of a mist separator (filtration degree 0.3 μm or less) is also recommended.**
3. **Use a metal seal type when using solenoid valves for cylinder actuation. If a rubber seal type is used, there may be an increase in operating resistance due to grease sprayed from the main valve.**
4. **Operate so that the load applied to the piston rod is normally in the axial direction.**

   In the event that a lateral load is unavoidable, do not exceed the range of the allowable lateral load at the rod end (refer to pages 1190 and 1191). (Use outside of the operating limits may cause an adverse effect on the life of the unit through problems such as looseness in the guide unit and a loss of precision.)
5. **Take care not to scratch or gouge the sliding portion of the rod. This may cause malfunction or shorten the unit's life.**
6. **When attaching a work piece to the end of the rod, move the rod to the fully retracted position and use the wrench flats at the end of the rod. Fasten the work piece without applying a large amount of torque to the rod.**
7. **Be certain to connect a load so that the rod axis is aligned with the load and its direction of movement.**

   Especially when a cylinder rod is connected directly to a guide function (such as bearings, etc.) on the equipment side, the following is likely to occur. Either an offset load will occur and the sliding resistance will not be stable or galling will occur on the metal seal parts. Therefore, be sure to use a floating joint or a spherical joint.
8. **When a piston rod is driven with a circuit from an external force such as force, control, tension control, etc., a stick-slip phenomenon will likely occur and sliding resistance will not be stable if the amount of displacement is 0.05 mm or less.**
9. **When it is used in locations where a constant vibration is applied, such as a polishing machine, etc., consult with us.**

Disassembly

⚠ Caution

1. **The component parts of the metal seal cylinder are manufactured to precision tolerances, and therefore cannot be disassembled.**

Lubrication

⚠ Caution

1. **Lubrication of non-lube type cylinder**

   Do not apply lubrication when controlling for low speed or controlled output. If lubrication is applied, there may be changes in operating resistance due to factors such as the viscosity and surface tension of the oil. Also, use a metal seal type when using solenoid valves for cylinder actuation. If a rubber seal type is used, there may be an increase in operating resistance due to grease sprayed from the main valve.
   Lubrication is also unnecessary for high speed actuation, but in the event that lubrication is applied, use turbine oil class 1 (with no additives) ISO VG32. (Do not use spindle oil or machine oil.)