

Compact slide cylinder(Recirculating linear ball bearing)——HLQ Series

Product series

| | | | | | |
|-------------|--|-------------|-----------|------------------------------|-------|
| Series name | | Acting type | Bore size | Collocation of sensor switch | |
| HLQ | | | | Double acting | DS1-H |
| | | 6 | ● | | |
| | | 8 | ● | | |
| | | 12 | ● | | |
| | | 16 | ● | | |
| | | 20 | ● | | |
| Page | | 332 | | 419 | |

Installation and application

1. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of impurities into the cylinder.
2. The medium used by cylinder should be filtered to 40 μm or below.
3. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
4. If the cylinder is dismantled and stored for a long time, pay attention to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports.

Criteria for selection: Cylinder thrust

Unit: Newton(N)

| Bore size (mm) | Rod size (mm) | Acting type | Pressure area (mm ²) | Operating pressure(MPa) | | | | | | |
|----------------|---------------|---------------|----------------------------------|-------------------------|-----|-----|-----|-----|-----|-----|
| | | | | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | |
| 6 | 3 | Double acting | Push side | 42 | 8 | 13 | 17 | 21 | 25 | 29 |
| | | | Pull side | 57 | 11 | 17 | 23 | 29 | 34 | 40 |
| 8 | 4 | Double acting | Push side | 75 | 15 | 23 | 30 | 38 | 45 | 53 |
| | | | Pull side | 101 | 20 | 30 | 40 | 51 | 61 | 71 |
| 12 | 6 | Double acting | Push side | 170 | 34 | 51 | 68 | 85 | 102 | 119 |
| | | | Pull side | 226 | 45 | 68 | 90 | 113 | 136 | 158 |
| 16 | 8 | Double acting | Push side | 302 | 60 | 91 | 121 | 151 | 181 | 211 |
| | | | Pull side | 402 | 80 | 121 | 161 | 201 | 241 | 281 |
| 20 | 10 | Double acting | Push side | 471 | 94 | 141 | 188 | 236 | 283 | 330 |
| | | | Pull side | 628 | 126 | 188 | 251 | 314 | 377 | 440 |
| 25 | 12 | Double acting | Push side | 756 | 151 | 227 | 302 | 378 | 454 | 529 |
| | | | Pull side | 982 | 186 | 295 | 393 | 491 | 589 | 687 |



HLQ

Compact slide cylinder(Recirculating linear ball bearing)



HLQ Series



Symbol



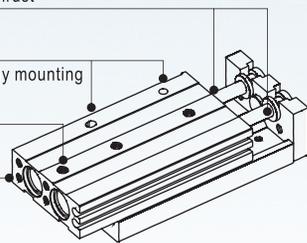
Product feature

1. Recirculating linear ball bearing, it achieves high precision, high rigidity, with antirust and dustproof function
2. Through hole for body mounting
3. Pin holes for positioning
Improved repeatability of work mounting
4. Floating joint design
Piston rod needn't endure additional torque
5. Dual rod-doubles the output thrust



HLQ

6. Pin holes for positioning
Improved repeatability of body mounting
7. Body mounting holes provide 3 mounting positions



Specification

| Bore size(mm) | 6 | 8 | 12 | 16 | 20 | 25 |
|-----------------------|--|----|----|-------------------|------|----|
| Guide rail width (mm) | 10 | 10 | 7 | 9 | 9 | 12 |
| Number of guide rail | Single guide rail | | | Double guide rail | | |
| Acting type | Double acting | | | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | | |
| Operating pressure | 0.15~0.7MPa(22~100psi)(1.5~7.0bar) | | | | | |
| Proof pressure | 1.05MPa(150psi)(10.5bar) | | | | | |
| Temperature °C | -20~70 | | | | | |
| Speed range mm/s | 50~500 | | | | | |
| Stroke tolerance | +1.0 0 | | | | | |
| Cushion type | Bumper(Both ends), Shock absorber | | | | | |
| Sensor switches ① | DS1-H□N、DS1-H□P | | | | | |
| Port size | M5×0.8 | | | | 1/8" | |

① Sensor switch should be ordered additionally, please refer to P419~442 for detail of sensor switch.

Stroke

| Bore size (mm) | Standard stroke (mm) | Max. stroke (mm) |
|----------------|-------------------------------|------------------|
| 6 | 10 20 30 40 50 | 50 |
| 8 | 10 20 30 40 50 75 | 75 |
| 12 | 10 20 30 40 50 75 100 | 100 |
| 16 | 10 20 30 40 50 75 100 125 | 125 |
| 20 | 10 20 30 40 50 75 100 125 150 | 150 |
| 25 | 10 20 30 40 50 75 100 125 150 | 150 |

Note) Consult us for non-standard stroke.

Ordering code

HLQ 20 × 30 S AS □

- Model**
HLQ: Compact slide cylinder
(Double acting type)
(Recirculating linear ball bearing)
- Bore size**
6, 8, 12, 16, 20, 25
- Stroke**
Refer to stroke table for details
- Magnet**
S: With magnet
- Thread type** ①
Blank: PT
T: NPT
G: G
- Adjuster option** ②
Blank: Without adjuster(Basic type)

| | |
|--|---|
| A: Adjustable rubber stopper(Both ends) | B: Shock absorber(Both ends) |
| AS: Adjustable rubber stopper(Extension) | BS: Shock absorber(Extension) |
| AF: Adjustable rubber stopper(Retraction) | BF: Shock absorber(Retraction) |

① When the thread is standard, the code is blank.

② B type, BS type, BF type are unavailable for bore size of Φ6.



Compact slide cylinder(Recirculating linear ball bearing)

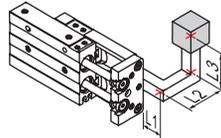
HLQ Series

Model Selection Method

Please select compact cylinder's type according to following procedure, and cross reference with data sheets.

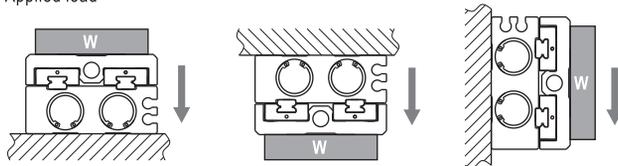
1) Operating conditions(According to mounting position and work form)

1. Model used(Bore size, Stroke)
2. Type of cushion(Bumper, Shock absorber)
3. Mounting position of work(Top, front)
4. Mounting direction(Axial, Vertical)
5. Average speed Va(mm/s)
6. Applied load W(N)
7. Overhang L1, L2, L3(mm)



Explain: L1 is the distance of load's center beyond the end plank's plane. If load's center is not beyond the end plank's plane, L1 is negative.

Fig. 1: Applied load



2) Kinetic energy check

Steps

1. Calculate kinetic energy of load E(J)

$$E = \frac{1}{2} \times \frac{W}{g} \times \left(\frac{1.4 \times Va}{1000} \right)^2$$

2. Calculate allowable kinetic energy Ea(J)

$$Ea = K \times E_{max}$$

K: Mounting work coefficient (Fig 2)

E_{max}: Maximum allowable kinetic energy (Table 1)

3. Check that kinetic energy of load doesn't exceed allowable kinetic energy:

$$E \leq Ea$$

3) Load check

Steps

1. Calculate allowable applied load Wa (N)

$$Wa = K \times \beta \times W_{max}$$

K: Mounting work coefficient (Fig 2)

W_{max}: Maximum allowable applied load (Table 1)

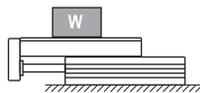
β: Applied load coefficient (Fig 3)

2. Check that load(W) doesn't exceed allowable applied load(Wa):

$$W \leq Wa$$

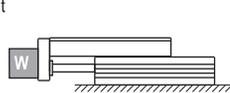
Fig 2: Mounting work coefficient (K)

Top



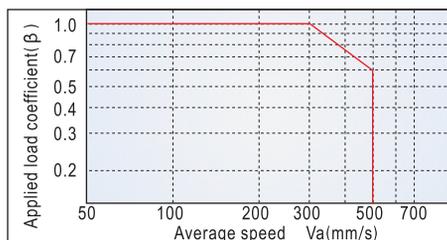
Mounting work coefficient K=1

Front



Mounting work coefficient K=0.6

Fig 3: Applied load coefficient (β)

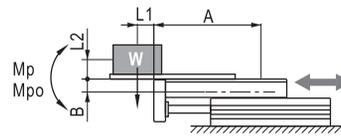


4) Moment check

Steps

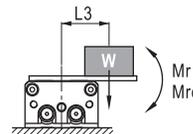
Horizontal

1. Calculate actual moment: Mp, Mpo, My, Myo, Mr, Mro (Nm)



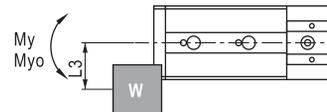
Dynamic moment:
Mp = W × (L1 + A) / 1000

Static moment:
Mpo = $\frac{W \times (L1 + A)}{1000} + \frac{W \times a \times (L2 + B)}{1000 \times g}$



Dynamic moment:
Mr = W × L3 / 1000

Static moment:
Mro = (W × a × L3) / 1000g



Dynamic moment:
My = 0

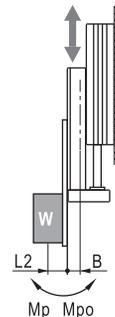
Static moment:
Myo = (W × a × L3) / 1000g

2. Check

| | |
|-----------------|--|
| Dynamic moment: | $\frac{Mp}{Mp_{max}} + \frac{My}{My_{max}} + \frac{Mr}{Mr_{max}} \leq 1$ |
| Static moment: | $\frac{Mpo}{Mpo_{max}} + \frac{Myo}{Myo_{max}} + \frac{Mro}{Mro_{max}} \leq 1$ |

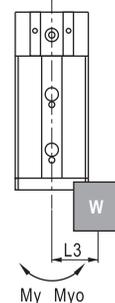
Vertical

1. Calculate actual moment: Mp, Mpo, My, Myo (Nm)



Dynamic moment:
Mp = W × (L2 + B) / 1000

Static moment:
Mpo = $\frac{W \times (L2 + B)}{1000} + \frac{W \times a \times (L2 + B)}{1000 \times g}$



Dynamic moment:
My = W × L3 / 1000

Static moment:
Myo = $\frac{W \times a \times L3}{1000g} + \frac{W \times L3}{1000}$

2. Check

| | |
|-----------------|--|
| Dynamic moment: | $\frac{Mp}{Mp_{max}} + \frac{My}{My_{max}} \leq 1$ |
| Static moment: | $\frac{Mpo}{Mpo_{max}} + \frac{Myo}{Myo_{max}} \leq 1$ |

Explain:

L1, L2, L3: The distance of load center to mount plane (Determined by actuality).

A, B: Correction value for center position distance of moment (Refer to table 2).

Mp_{max}, My_{max}, Mr_{max}, Mpo_{max}, Myo_{max}, Mro_{max}: Maximum allowable moment (Refer to table 2).

g: Acceleration of gravity (g=9.81m/s²).

a: Acceleration of inertia

(Bumper: a=1600 × (Va/1000)², Shock absorber: a=400 × (Va/1000)²)

W: Load weight (Determined by actuality).



HLQ

Compact slide cylinder(Recirculating linear ball bearing)



HLQ Series

Note: Symbol and unit

| Symbol | Item | Unit |
|--|---|------------------|
| A, B | Correction value for center position distance of moment | mm |
| a | Acceleration of inertia | - |
| E | Kinetic energy | J |
| Ea | Allowable kinetic energy | J |
| E _{max} | Maximum allowable kinetic energy | J |
| g | Acceleration of gravity g=9.81 | m/s ² |
| K | Mounting work coefficient | - |
| L1, L2, L3 | Overhang | mm |
| Mp, My, Mr | Dynamic moment(Pitch, Yaw, Roll) | Nm |
| Mp _{max} , My _{max} , Mr _{max} | Maximum allowable dynamic moment(Pitch, Yaw, Roll) | Nm |
| Mpo, Myo, Mro | Static moment(Pitch, Yaw, Roll) | Nm |
| Mpo _{max} , Myo _{max} , Mro _{max} | Maximum allowable static moment(Pitch, Yaw, Roll) | Nm |
| Va | Average speed | mm/s |
| W | Applied load | N |
| W _{max} | Maximum allowable applied load | N |
| β | Applied load coefficient | - |

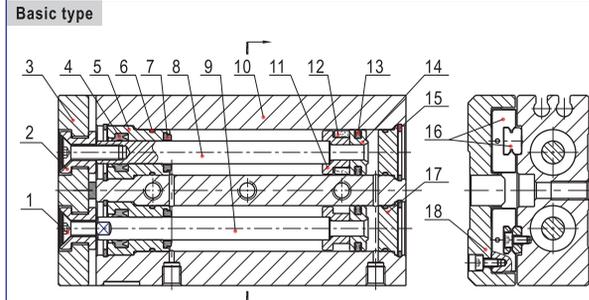
Table 1: Maximum allowable kinetic energy(E_{max}), Maximum allowable applied load(W_{max})

| Model | Max. allowable kinetic energy | | E _{max} (J) | Max. allowable applied load W _{max} (N) |
|-------|-------------------------------|---------------------|----------------------|--|
| | Basic type | Robber stopper type | | |
| HLQ6 | 0.01 | 0.01 | - | 4 |
| HLQ8 | 0.024 | 0.024 | 0.048 | 8 |
| HLQ12 | 0.05 | 0.05 | 0.1 | 15 |
| HLQ16 | 0.1 | 0.1 | 0.2 | 30 |
| HLQ20 | 0.13 | 0.13 | 0.26 | 40 |
| HLQ25 | 0.22 | 0.22 | 0.44 | 70 |

Table 2: Maximum allowable moment(Nm), Correction value for center position distance of moment(mm)

| Bore size | Stroke | Static moment | | | Dynamic moment | | | Correction value | |
|-----------|--------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|------------------|----|
| | | Mpo _{max} | Myo _{max} | Mro _{max} | Mp _{max} | My _{max} | Mr _{max} | A | B |
| 6 | 10 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 30 | 7 |
| | 20 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 40 | |
| | 30 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 50 | |
| | 40 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 60 | |
| | 50 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 70 | |
| 8 | 10 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 30 | 7 |
| | 20 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 40 | |
| | 30 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 50 | |
| | 40 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 60 | |
| | 50 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 70 | |
| | 75 | 3.4 | 3.4 | 5.4 | 0.7 | 0.7 | 1.2 | 95 | |
| 12 | 10 | 5.5 | 5.5 | 8.5 | 1.5 | 1.5 | 2.5 | 32 | 11 |
| | 20 | 5.5 | 5.5 | 8.5 | 1.5 | 1.5 | 2.5 | 44 | |
| | 30 | 5.5 | 5.5 | 8.5 | 1.5 | 1.5 | 2.5 | 54 | |
| | 40 | 5.5 | 5.5 | 8.5 | 1.5 | 1.5 | 2.5 | 62 | |
| | 50 | 5.5 | 5.5 | 8.5 | 1.5 | 1.5 | 2.5 | 72 | |
| | 75 | 36 | 36 | 58 | 13 | 13 | 21 | 115 | |
| 16 | 10 | 15 | 15 | 23 | 3 | 3 | 5.4 | 49 | 12 |
| | 20 | 15 | 15 | 23 | 3 | 3 | 5.4 | 49 | |
| | 30 | 15 | 15 | 23 | 3 | 3 | 5.4 | 59 | |
| | 40 | 15 | 15 | 23 | 3 | 3 | 5.4 | 69 | |
| | 50 | 15 | 15 | 23 | 3 | 3 | 5.4 | 79 | |
| | 75 | 62 | 62 | 103 | 21 | 21 | 38 | 120 | |
| | 100 | 74 | 74 | 103 | 29 | 29 | 38 | 150 | |
| 20 | 10 | 15 | 15 | 23 | 3 | 3 | 5.4 | 53 | 14 |
| | 20 | 15 | 15 | 23 | 3 | 3 | 5.4 | 53 | |
| | 30 | 15 | 15 | 23 | 3 | 3 | 5.4 | 63 | |
| | 40 | 15 | 15 | 23 | 3 | 3 | 5.4 | 73 | |
| | 50 | 15 | 15 | 23 | 3 | 3 | 5.4 | 83 | |
| | 75 | 62 | 62 | 103 | 21 | 21 | 38 | 123 | |
| | 100 | 74 | 74 | 103 | 29 | 29 | 38 | 157 | |
| 25 | 10 | 25 | 25 | 36 | 6.3 | 6.3 | 10.7 | 60 | 17 |
| | 20 | 25 | 25 | 36 | 6.3 | 6.3 | 10.7 | 60 | |
| | 30 | 25 | 25 | 36 | 6.3 | 6.3 | 10.7 | 70 | |
| | 40 | 25 | 25 | 36 | 6.3 | 6.3 | 10.7 | 80 | |
| | 50 | 25 | 25 | 36 | 6.3 | 6.3 | 10.7 | 90 | |
| | 75 | 110 | 110 | 190 | 36 | 36 | 70 | 130 | |
| | 100 | 165 | 165 | 190 | 68 | 68 | 70 | 168 | |
| | 125 | 195 | 195 | 190 | 77 | 77 | 70 | 205 | |
| 150 | 200 | 200 | 190 | 77 | 77 | 70 | 230 | | |

Inner structure



| NO. | Item | Material |
|-----|--------------------------|--------------------------------------|
| 1 | Screw | Carbon steel |
| 2 | Floating jointer | Carbon steel |
| 3 | Fixing plate | Aluminum alloy |
| 4 | Rod seal | NBR |
| 5 | Front cover | Aluminum alloy |
| 6 | O-ring | NBR |
| 7 | Bumper | TPU |
| 8 | Piston rod A | Stainless steel |
| 9 | Piston rod B | Carbon steel |
| 10 | Body | Aluminum alloy |
| 11 | Magnet holder | Brass |
| 12 | Magnet | Sintered metal(Neodymium-iron-boron) |
| 13 | Piston seal | NBR |
| 14 | Piston | Brass |
| 15 | C clip | Spring steel |
| 16 | Linear guide combination | |
| 17 | Back cover | Brass |
| 18 | Slide table | Aluminum alloy |



HLQ



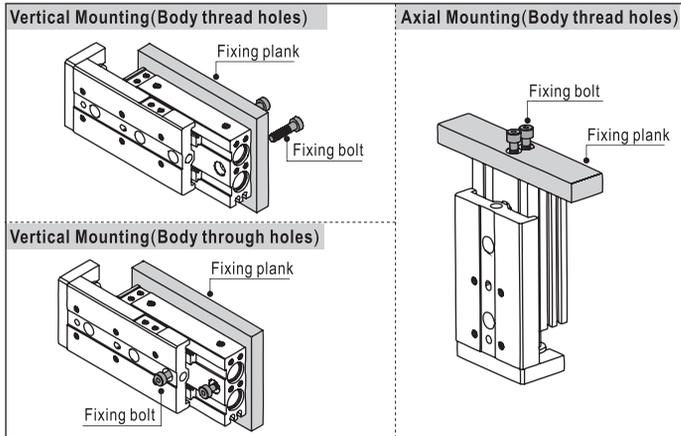
Compact slide cylinder(Recirculating linear ball bearing)

HLQ Series

Installation and application

1. How to mount cylinder:

1.1) Cylinder can be mounted from 3 directions



1.2) When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding or falling off from its position.

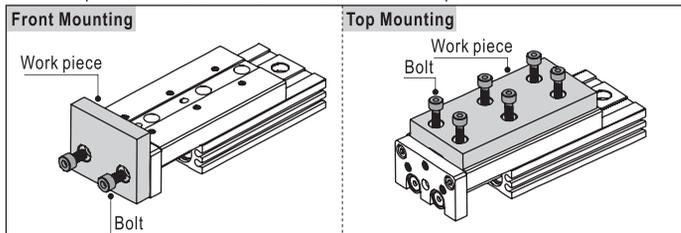
| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|-------|-----------|-----------------------------|-------------------------|
| HLQ6 | M4 × 0.7 | 2.1 | 8 |
| HLQ8 | M4 × 0.7 | 2.1 | 8 |
| HLQ12 | M5 × 0.8 | 4.4 | 10 |
| HLQ16 | M6 × 1.0 | 4.4 | 10 |
| HLQ20 | M6 × 1.0 | 7.4 | 12 |
| HLQ25 | M8 × 1.25 | 18.0 | 16 |

| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|-------|-----------|-----------------------------|-------------------------|
| HLQ6 | M3 × 0.5 | 1.2 | 8.0 |
| HLQ8 | M3 × 0.5 | 1.2 | 9.6 |
| HLQ12 | M4 × 0.7 | 2.8 | 13.4 |
| HLQ16 | M5 × 0.8 | 5.7 | 16.7 |
| HLQ20 | M5 × 0.8 | 5.7 | 22.0 |
| HLQ25 | M6 × 1.0 | 10.0 | 27.0 |

| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|-------|-------------|-----------------------------|-------------------------|
| HLQ6 | M2.5 × 0.45 | 0.5 | 3.5 |
| HLQ8 | M3 × 0.5 | 0.9 | 4.0 |
| HLQ12 | M4 × 0.7 | 2.1 | 6.0 |
| HLQ16 | M5 × 0.8 | 4.4 | 7.0 |
| HLQ20 | M5 × 0.8 | 4.4 | 8.0 |
| HLQ25 | M6 × 1.0 | 7.4 | 10.0 |

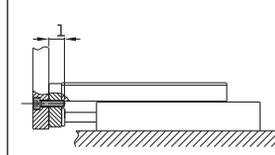
2. Work Piece Mounting:

2.1) Work pieces can be mounted on 2 surfaces of the compact slide.



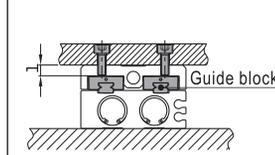
2.2) When mounting a work piece, tighten the bolts properly at a torque value within the limiting range. Use bolts at least 0.5mm shorter than maximum thread depth to prevent bolts from contacting the guide block. If the bolts are too long, they hit the guide block and cause damage.

Front Mounting



| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|-------|-----------|-----------------------------|-------------------------|
| HLQ6 | M3 × 0.4 | 0.9 | 5 |
| HLQ8 | M4 × 0.7 | 2.1 | 6 |
| HLQ12 | M5 × 0.8 | 4.4 | 8 |
| HLQ16 | M6 × 1.0 | 7.4 | 10 |
| HLQ20 | M6 × 1.0 | 7.4 | 13 |
| HLQ25 | M8 × 1.25 | 18.0 | 15 |

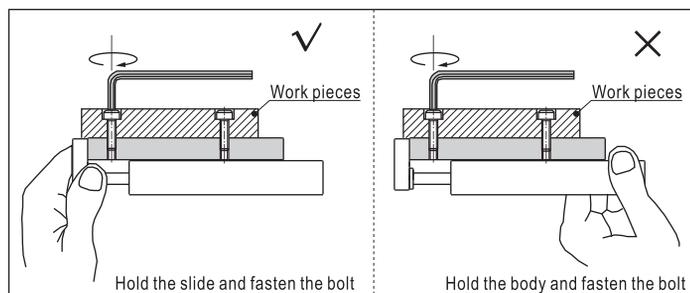
Top Mounting



| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|-------|-----------|-----------------------------|-------------------------|
| HLQ6 | M3 × 0.5 | 0.9 | 4.7 |
| HLQ8 | M3 × 0.5 | 0.9 | 4.7 |
| HLQ12 | M4 × 0.7 | 2.1 | 5.0 |
| HLQ16 | M5 × 0.8 | 4.4 | 5.0 |
| HLQ20 | M5 × 0.8 | 4.4 | 8.0 |
| HLQ25 | M6 × 1.0 | 7.4 | 9.0 |

2.3) Since the table is supported by the linear guide, take care not to apply strong impact or large moment to the guide section.

2.4) Hold the slide when fastening work pieces to it with bolts, If the body is held while tightening bolts, excessive moment may damage guide section.



3. About shock absorber:

3.1) Shock absorbers are expendable. Promptly replace them when energy absorbing capacity decreases.

3.2) Never turn or adjust the screws on bottom of the shock absorber body. The screws are not for adjusting. Otherwise would cause oil leakage.

3.3) Follow the table for tightening torque of shock absorber to lock nuts.

| Model | Shock absorber | Tightening torque |
|-------|------------------------|-------------------|
| HLQ6 | Without shock absorber | |
| HLQ8 | ACA0806-1N | 1.67(Nm) |
| HLQ12 | ACA0806-1N | 1.67(Nm) |
| HLQ16 | ACA1007-1N | 3.14(Nm) |
| HLQ20 | ACA1210-1N | 3.14(Nm) |
| HLQ25 | ACA1412-1N | 10.8(Nm) |

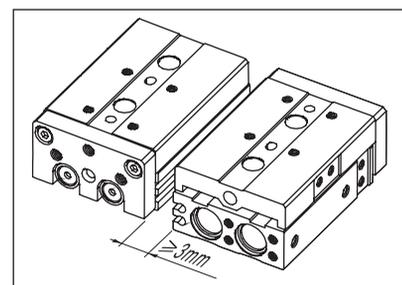
The screws are not adjustable otherwise would cause oil leakage.

4. How to mount sensor switch:

4.1) HLS Series are all with magnet.

The matching sensor switches are DS1-H, DS1-HL series. Please refer to page 419~442 for details.

4.2) Maintain a minimum spacing of at least 3mm if two compact cylinders are used side by side in order to avoid malfunction.



5. Make sure to connect the compact cylinder to speed controller at the meter-out side, and the speed of compact cylinder must below 500mm/s.

6. Don't apply a load beyond the range of the operation limits. Different load or torque will cause different deflection to table, please see below for details.

HLQ

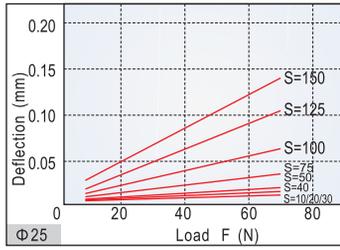
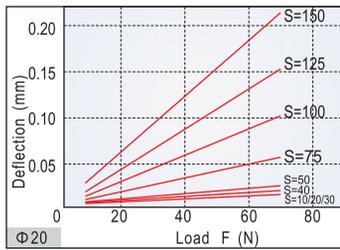
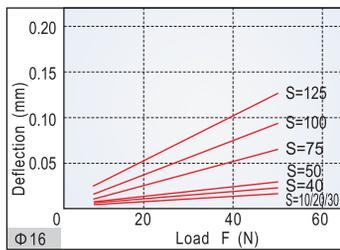
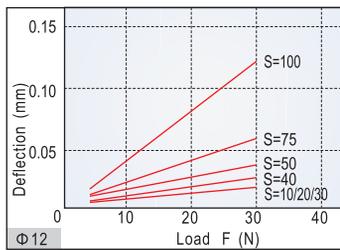
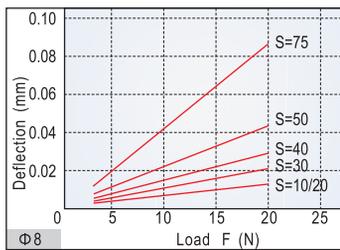
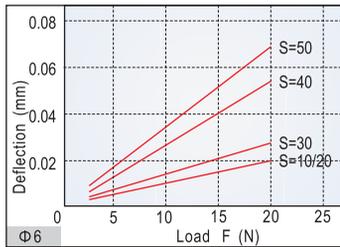
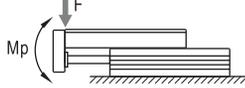
Compact slide cylinder(Recirculating linear ball bearing)



HLQ Series

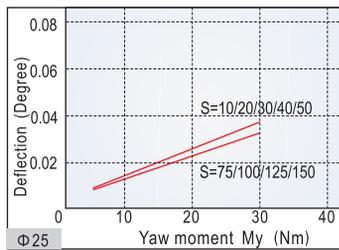
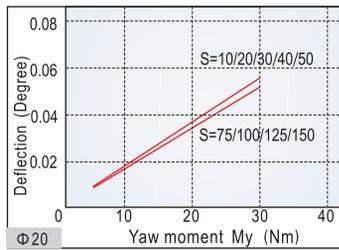
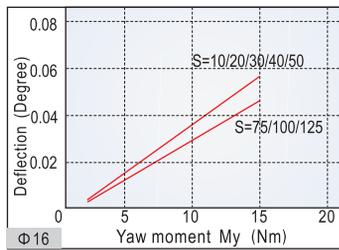
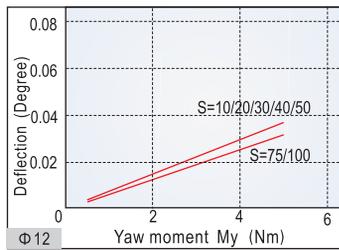
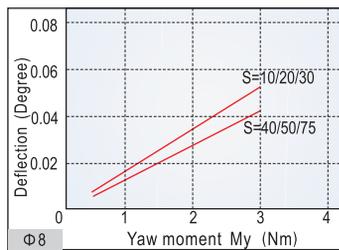
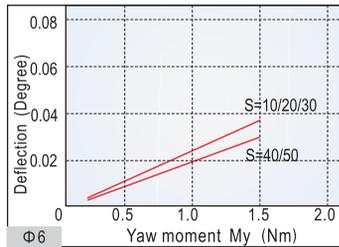
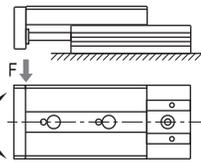
6.1) Table deflection due to pitch moment:

Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.



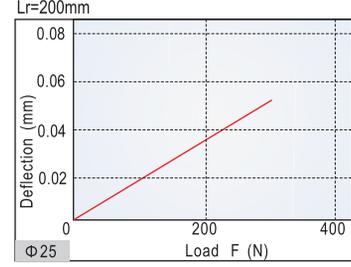
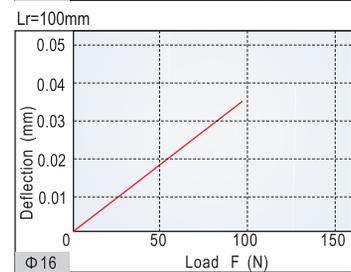
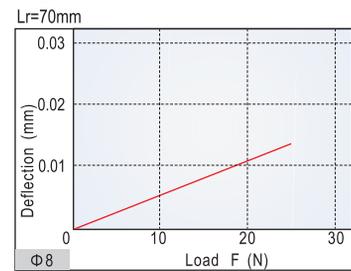
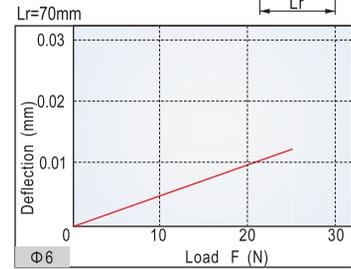
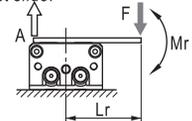
6.2) Table deflection due to yaw moment:

Table deflection (arrow) when a load acts upon the section marked with the arrow at the full stroke of the compact slide.



6.3) Table deflection due to roll moment:

Table deflects (A) when a load acts upon section F at the full stroke of the compact slide.

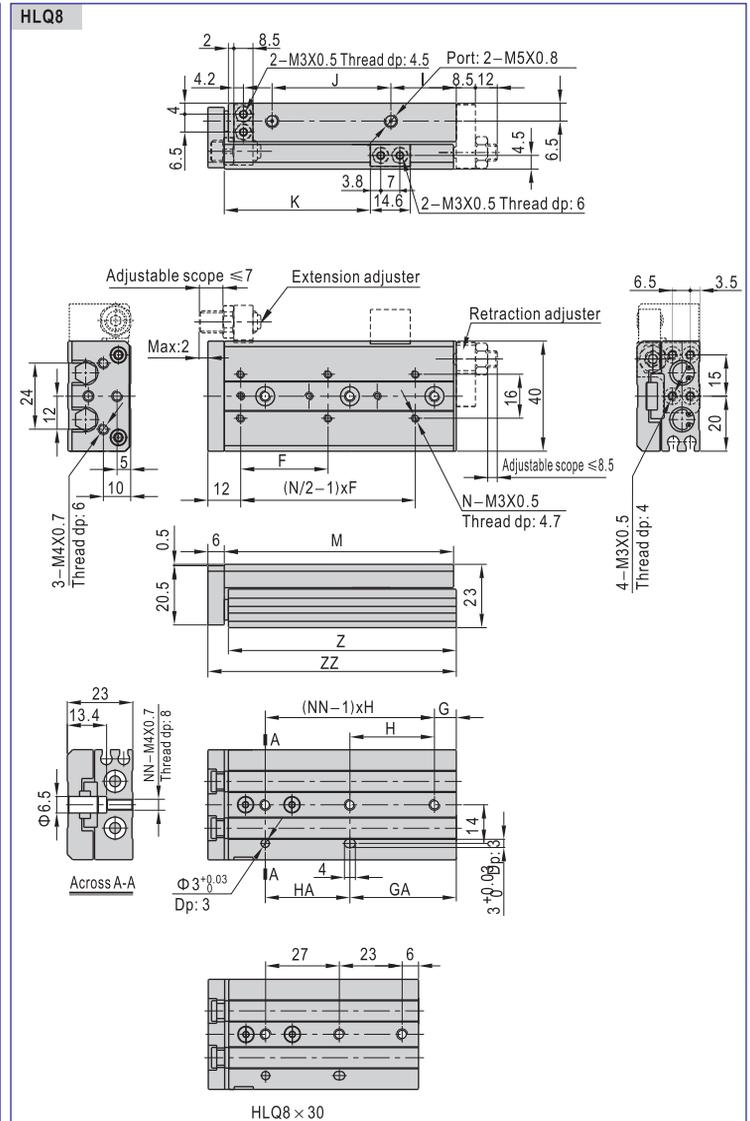
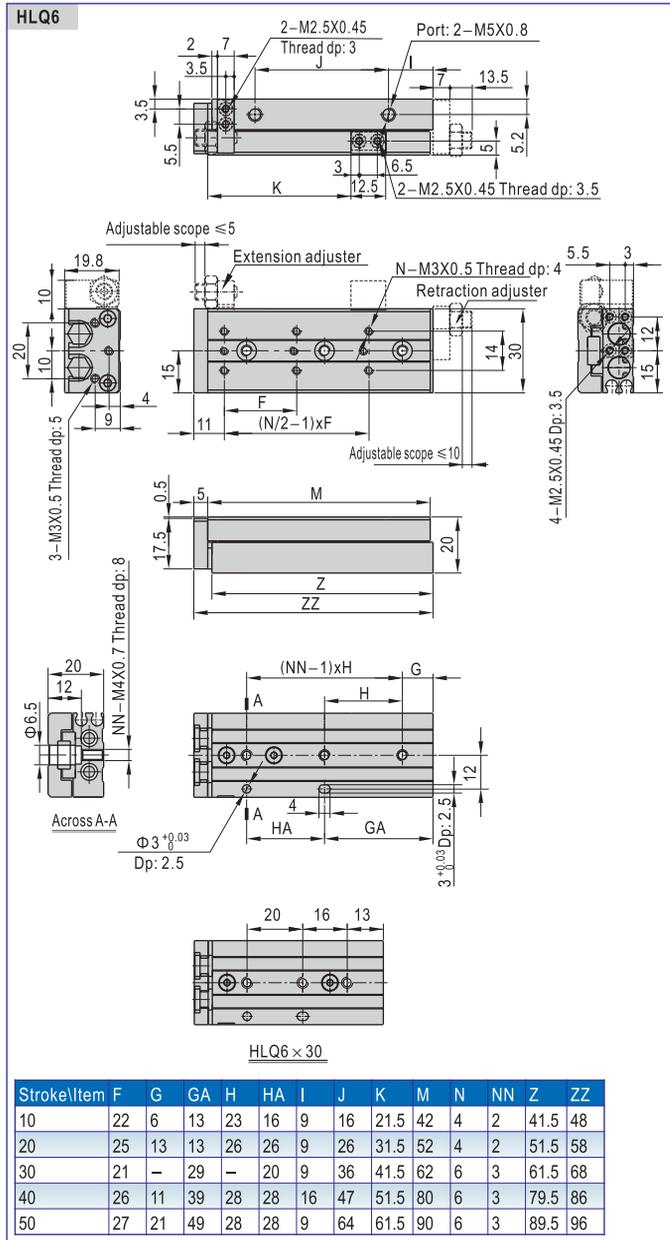


Compact slide cylinder(Recirculating linear ball bearing)



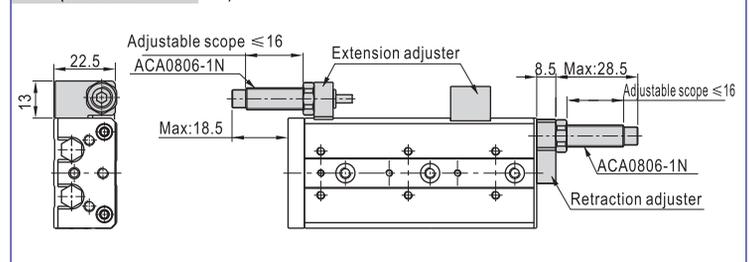
HLQ Series

Dimensions



HLQ

HLQ8(With shock absorber)

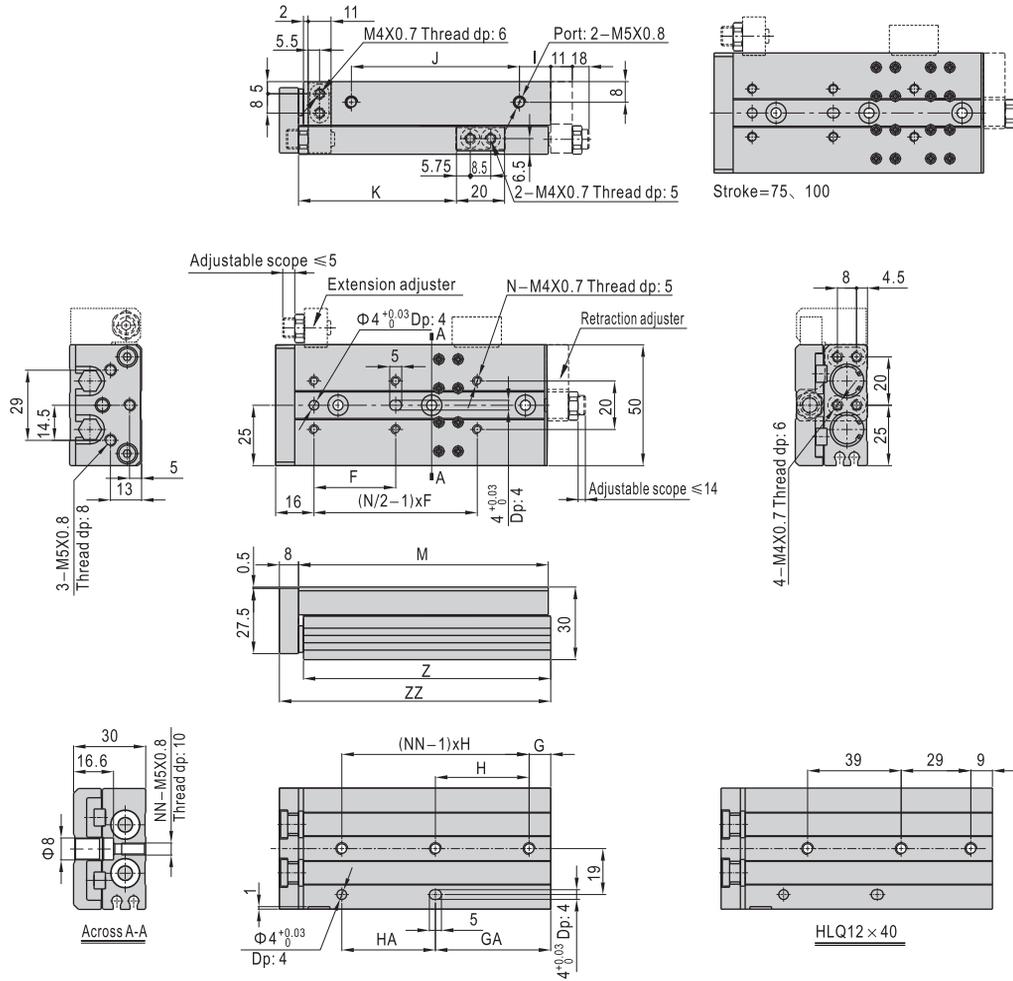


Compact slide cylinder(Recirculating linear ball bearing)



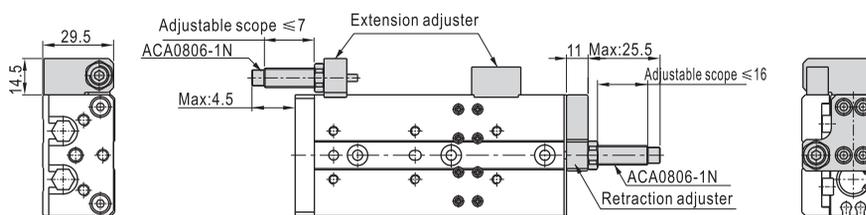
HLQ Series

HLQ12



| Stroke\Item | F | G | GA | H | HA | I | J | K | M | N | NN | Z | ZZ |
|-------------|----|----|----|----|----|----|-------|-----|-----|----|----|-----|-----|
| 10 | 28 | 18 | 18 | 32 | 32 | 13 | 32.5 | 35 | 67 | 4 | 2 | 66 | 76 |
| 20 | 28 | 18 | 18 | 32 | 32 | 13 | 32.5 | 45 | 67 | 4 | 2 | 66 | 76 |
| 30 | 38 | 20 | 20 | 40 | 40 | 13 | 42.5 | 55 | 77 | 4 | 2 | 76 | 86 |
| 40 | 34 | - | 38 | - | 39 | 13 | 59.5 | 65 | 94 | 6 | 3 | 93 | 103 |
| 50 | 34 | 9 | 48 | 39 | 39 | 13 | 69.5 | 75 | 104 | 6 | 3 | 103 | 113 |
| 75 | 36 | 23 | 59 | 36 | 72 | 13 | 113.5 | 99 | 148 | 8 | 4 | 147 | 157 |
| 100 | 36 | 12 | 84 | 36 | 72 | 17 | 134.5 | 124 | 173 | 10 | 5 | 172 | 182 |

HLQ12(With shock absorber)

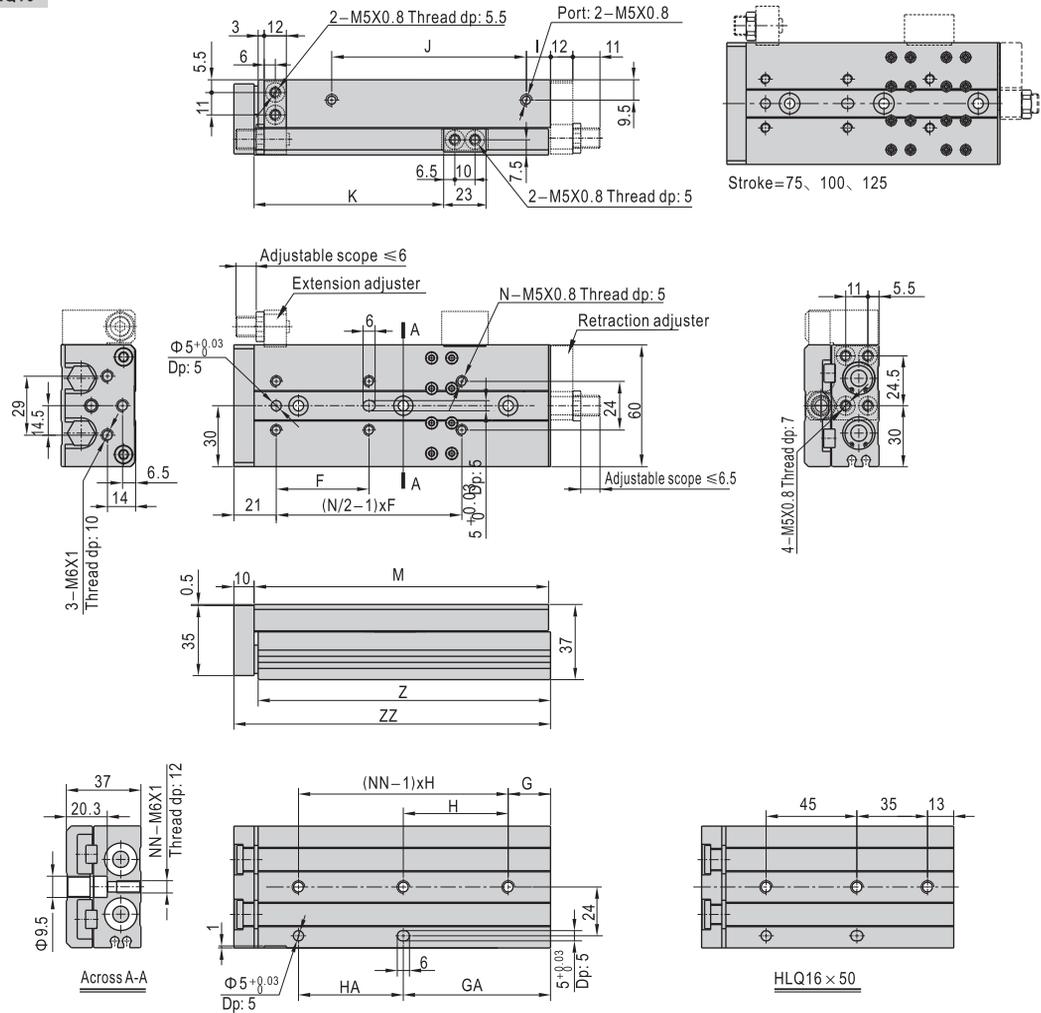


Compact slide cylinder(Recirculating linear ball bearing)

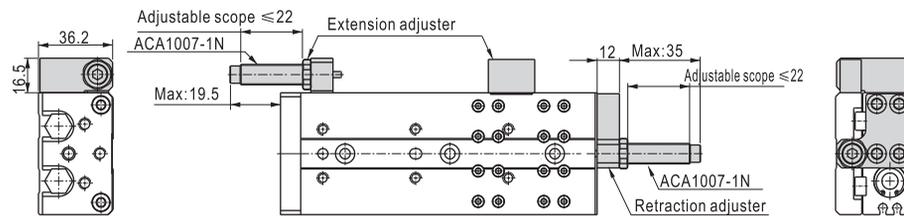


HLQ Series

HLQ16



HLQ16(With shock absorber)



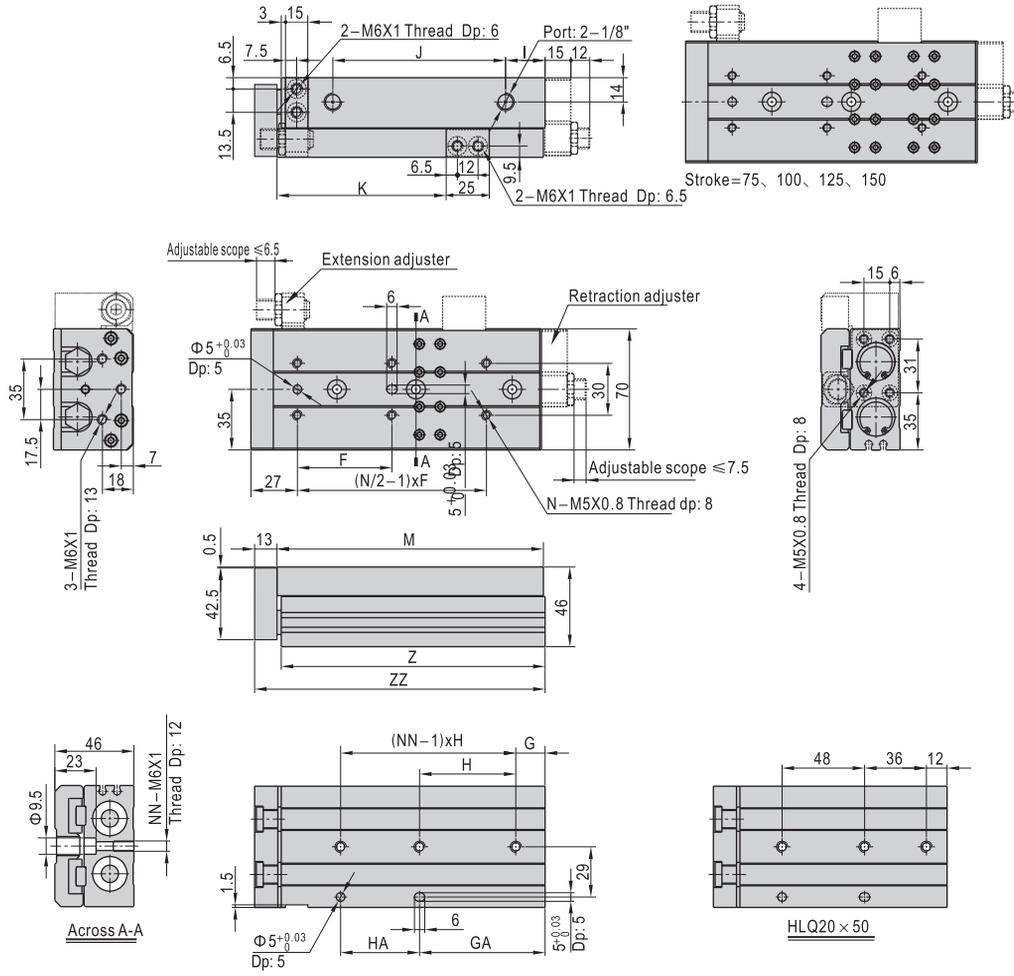
HLQ



Compact slide cylinder(Recirculating linear ball bearing)

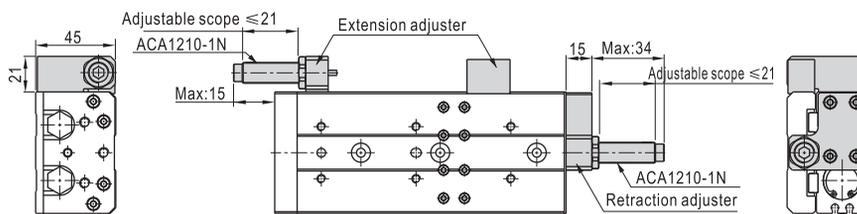
HLQ Series

HLQ20



| Stroke\Item | F | G | GA | H | HA | I | J | K | M | N | NN | Z | ZZ |
|-------------|----|----|-----|----|-----|----|-------|-------|-----|---|----|-------|-----|
| 10 | 45 | 22 | 18 | 46 | 50 | 16 | 46.5 | 32.5 | 94 | 4 | 2 | 92.5 | 108 |
| 20 | 40 | 22 | 18 | 46 | 50 | 16 | 46.5 | 42.5 | 94 | 4 | 2 | 92.5 | 108 |
| 30 | 48 | 22 | 18 | 46 | 50 | 16 | 46.5 | 52.5 | 94 | 4 | 2 | 92.5 | 108 |
| 40 | 58 | 22 | 22 | 56 | 56 | 16 | 56.5 | 62.5 | 104 | 4 | 2 | 102.5 | 118 |
| 50 | 42 | - | 48 | - | 48 | 18 | 72.5 | 72.5 | 122 | 6 | 3 | 120.5 | 136 |
| 75 | 55 | 17 | 73 | 56 | 56 | 25 | 98.5 | 97.5 | 155 | 6 | 3 | 153.5 | 169 |
| 100 | 50 | 18 | 74 | 56 | 112 | 25 | 155.5 | 122.5 | 212 | 8 | 4 | 210.5 | 226 |
| 125 | 55 | 37 | 96 | 59 | 118 | 25 | 183.5 | 147.5 | 240 | 8 | 4 | 238.5 | 254 |
| 150 | 62 | 56 | 118 | 62 | 124 | 25 | 211.5 | 172.5 | 268 | 8 | 4 | 266.5 | 282 |

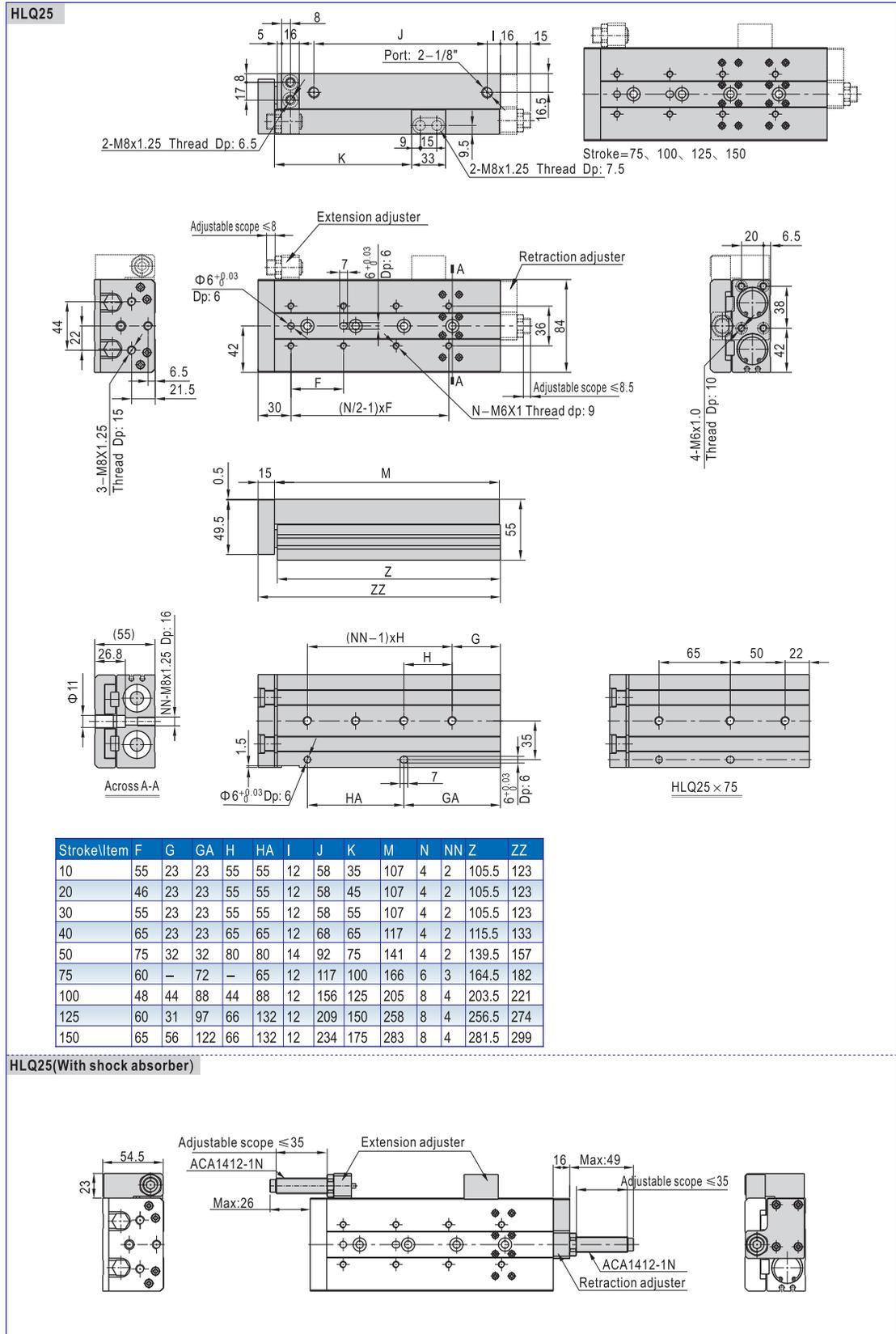
HLQ20(With shock absorber)



Compact slide cylinder(Recirculating linear ball bearing)



HLQ Series



Compact slide cylinder(Recirculating linear ball bearing)



HLQ Series—Accessories

Ordering code

| F-HLQ 20 AS | |
|-------------|---|
| Accessory | Accessory type |
| Model | A: Adjustable rubber stopper(Both ends) |
| Bore size | AS: Adjustable rubber stopper(Extension) |
| | AF: Adjustable rubber stopper(Retraction) |
| | B: Shock absorber(Both ends) |
| | BS: Shock absorber(Extension) |
| | BF: Shock absorber(Retraction) |

Accessory selection

| Accessories\Bore size | | 6 | 8 | 12 |
|-----------------------|-------------------------------|----------|----------|-----------|
| Both ends | A(Adjustable rubber stopper) | F-HLQ6A | F-HLQ8A | F-HLQ12A |
| | B(Shock absorber) | × | F-HLQ8B | F-HLQ12B |
| Extension | As(Adjustable rubber stopper) | F-HLQ6AS | F-HLQ8AS | F-HLQ12AS |
| | BS(Shock absorber) | × | F-HLQ8BS | F-HLQ12BS |
| Retraction | AF(Adjustable rubber stopper) | F-HLQ6AF | F-HLQ8AF | F-HLQ12AF |
| | BF(Shock absorber) | × | F-HLQ8BF | F-HLQ12BF |

| Accessories\Bore size | | 16 | 20 | 25 |
|-----------------------|-------------------------------|-----------|-----------|-----------|
| Both ends | A(Adjustable rubber stopper) | F-HLQ16A | F-HLQ20A | F-HLQ25A |
| | B(Shock absorber) | F-HLQ16B | F-HLQ20B | F-HLQ25B |
| Extension | As(Adjustable rubber stopper) | F-HLQ16AS | F-HLQ20AS | F-HLQ25AS |
| | BS(Shock absorber) | F-HLQ16BS | F-HLQ20BS | F-HLQ25BS |
| Retraction | AF(Adjustable rubber stopper) | F-HLQ16AF | F-HLQ20AF | F-HLQ25AF |
| | BF(Shock absorber) | F-HLQ16BF | F-HLQ20BF | F-HLQ25BF |

Note): A=AS+AF; B=BS+BF.

Dimensions

AS: Adjustable rubber stopper(Extension)

Body Mounting

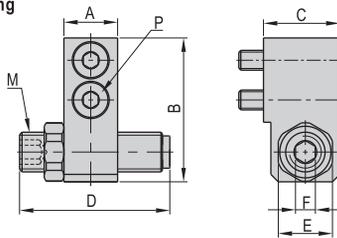
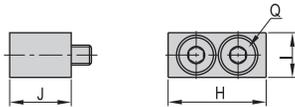


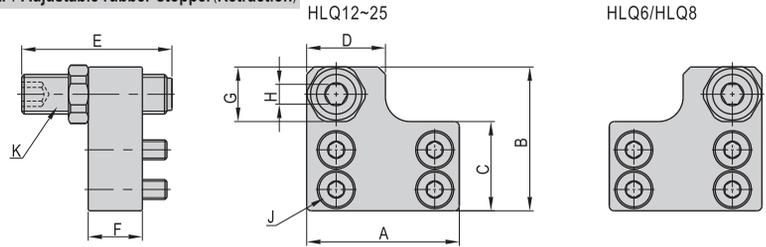
Table Mounting



| Bore size\Item | Adjusting stroke range | A | B | C | D | E | F |
|----------------|------------------------|-----|------|------|------|----|---|
| 6 | 5 | 7 | 19 | 10.5 | 16.5 | 8 | 3 |
| 8 | 5 | 8.5 | 22 | 14 | 21.5 | 11 | 4 |
| 12 | 5 | 11 | 29 | 15.5 | 30.5 | 11 | 4 |
| 16 | 5 | 12 | 36 | 17.5 | 24 | 14 | 5 |
| 20 | 5 | 15 | 44.5 | 22 | 28 | 17 | 6 |
| 25 | 5 | 16 | 54 | 24 | 32 | 19 | 6 |

| Bore size\Item | M | P | H | I | J | Q |
|----------------|-----------|-----------------|------|------|------|-----------------|
| 6 | M6 × 1.0 | M2.5 length :10 | 12.5 | 6.5 | 10.5 | M2.5 length :10 |
| 8 | M8 × 1.0 | M3 length :14 | 14.5 | 8 | 12 | M3 length :14 |
| 12 | M8 × 1.0 | M4 length :16 | 20 | 9 | 12.5 | M4 length :12 |
| 16 | M10 × 1.0 | M5 length :16 | 23 | 10.5 | 17 | M5 length :16 |
| 20 | M12 × 1.0 | M6 length :20 | 25 | 12.5 | 21 | M6 length :20 |
| 25 | M14 × 1.5 | M8 length :20 | 33 | 16.5 | 23 | M8 length :20 |

AF: Adjustable rubber stopper(Retraction)



| Bore size\Item | Adjusting stroke range | A | B | C | D | E | F | G | H | J | K |
|----------------|------------------------|------|------|------|----|------|-----|----|---|----------------|-----------|
| 6 | 5 | 18 | 19 | 11 | 8 | 21.5 | 7 | 8 | 3 | M2.5 length :6 | M6 × 1.0 |
| 8 | 5 | 24 | 22.2 | 13 | 14 | 21.5 | 8.5 | 8 | 3 | M3 length :8 | M6 × 1.0 |
| 12 | 5 | 31 | 29 | 18 | 16 | 30.5 | 11 | 11 | 4 | M4 length :12 | M8 × 1.0 |
| 16 | 5 | 37 | 36 | 21.5 | 18 | 24 | 12 | 14 | 5 | M5 length :12 | M10 × 1.0 |
| 20 | 5 | 45.5 | 44 | 25.5 | 23 | 28 | 15 | 17 | 6 | M5 length :16 | M12 × 1.0 |
| 25 | 5 | 54 | 53.6 | 31.6 | 28 | 32 | 16 | 19 | 6 | M6 length :18 | M14 × 1.5 |

BS: Shock absorber(Extension)

Body Mounting

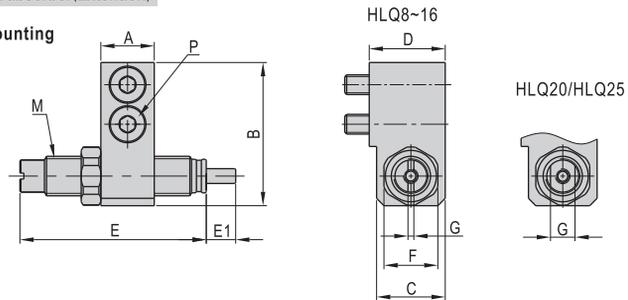
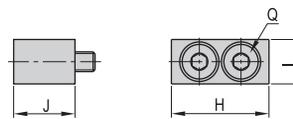
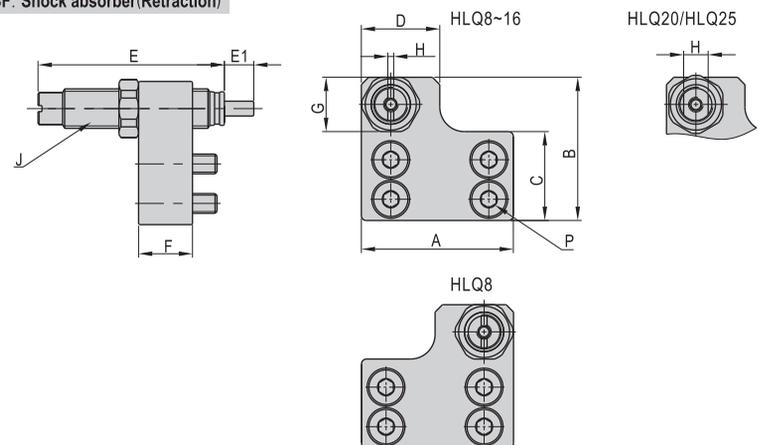


Table Mounting



| Bore size\Item | A | B | C | D | E | E1 | F | G | M | P | H | I | J | Q |
|----------------|-----|------|------|------|----|----|----|-----|-----------|---------------|------|------|------|---------------|
| 8 | 8.5 | 22 | 12.5 | 14 | 38 | 6 | 11 | 1.2 | M8 × 1.0 | M3 length :14 | 14.5 | 8 | 12 | M3 length :14 |
| 12 | 11 | 29 | 14 | 15.5 | 38 | 6 | 11 | 1.2 | M8 × 1.0 | M4 length :16 | 20 | 9 | 12.5 | M4 length :12 |
| 16 | 12 | 36 | 16 | 17.5 | 48 | 7 | 14 | 1.2 | M10 × 1.0 | M5 length :16 | 23 | 10.5 | 17 | M5 length :16 |
| 20 | 15 | 44.5 | 20 | 22 | 50 | 10 | 17 | 1.1 | M12 × 1.0 | M6 length :20 | 25 | 12.5 | 21 | M6 length :20 |
| 25 | 16 | 54 | 22 | 24 | 66 | 12 | 19 | 1.2 | M14 × 1.5 | M8 length :20 | 33 | 16.5 | 23 | M8 length :20 |

BF: Shock absorber(Retraction)



| Bore size\Item | A | B | C | D | E | E1 | F | G | H | J | P |
|----------------|------|------|------|----|----|----|-----|----|-----|-----------|---------------|
| 8 | 24 | 23.5 | 13 | 14 | 38 | 6 | 8.5 | 11 | 1.2 | M8 × 1.0 | M3 length :8 |
| 12 | 31 | 29 | 18 | 16 | 38 | 6 | 11 | 11 | 1.2 | M8 × 1.0 | M4 length :12 |
| 16 | 37 | 36 | 21.5 | 18 | 48 | 7 | 12 | 14 | 1.2 | M10 × 1.0 | M5 length :12 |
| 20 | 45.5 | 44 | 25.5 | 23 | 50 | 10 | 15 | 17 | 1.1 | M12 × 1.0 | M5 length :16 |
| 25 | 54 | 53.6 | 31.6 | 28 | 66 | 12 | 16 | 19 | 1.2 | M14 × 1.5 | M6 length :18 |

