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Our company are subject to change without prior notice

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SHOCK ABSORBERS /

2023/09



# SHOCK ABSORBERS

Outstanding Motion Controls  
Speed Up & Protection







C-JAC INDUSTRIAL CO., LTD.



Taiwan C-JAC Industrial Co., Ltd. was established in 1987. The Group currently has two production sites and over 200 people employees. The main products include heavy-duty and super-large damping cylinder shock absorbers, shock absorbers for circuit breakers, precision speed stabilizers, and pneumatic-driven check valves, among others. Shock absorbers are used in a wide range of industries, including heavy-duty stacking equipment, railroad stoppers, automation equipment, vacuum breakers, and other industries as a booster component for manufacturing. In addition to the domestic market, the Group actively expanded our overseas market in 1999 by establishing Dongguan and Shanghai Qingpu factories in China. To strengthen the company's research and development capabilities and expand its production capacity for the international market, C-JAC Industrial Co., Ltd. established its headquarters in Taichung Industrial Park in 2005 to grasp the global pulse and lead the company to the scale of a worldwide factory.

In 2013, Taiwan C-JAC Industrial Co., Ltd. established C-JAC Industrial Co., LLC. in Suzhou. Meanwhile, it also dedicated efforts to enhance the research, development, and production capabilities of the Taichung plant to serve as a benchmark for all the factories, continuously elevating the depth and breadth of CJAC Group.

Since its establishment, Taiwan C-JAC Industrial Co., Ltd. has continuously strived for excellence and made remarkable progress over the past 30 years. We have established our own brand CJAC and provide the industry with high-quality and reasonable-price components, playing an important role in industrial automation and upgrading. Furthermore, we have expanded our presence into the international market, receiving significant recognition. "With a steadfast approach rooted in its foundation while reaching outwards," CJAC has progressed steadily, step by step, and will be poised to enter a new era similarly.

Sustainable business management is the springhead of corporate survival and growth. Only by continuously improving product quality, meeting customer needs, and enhancing productivity can a company achieve its development goals. Our development goals are "technology as the guide, striving for excellence;" "prioritizing quality and pursuing perfection;" "innovation as the driving force, practicing pragmatic management;" and "treating customers with integrity and aiming for mutually beneficial outcomes."

"Customer foremost, quality first."



▲ C-JAC INDUSTRIAL CO. LTD.

▼ SZHOU C-JAC INDUSTRIAL CO., LTD



Why do we need a shock absorber?

At the present days, the competition in the market is getting bigger, and the acceleration of the production schedule is the fundamental way for enterprises to survive. Therefore, the easiest way to increase production volume is to increase the speed of the production machine, but this can easily lead to excessive vibration and noise, which may damage the machinery. Therefore, in this case, product verification would often render unqualified result, and because of the speed of the machine, excessive impact will also cause a significant drop in safety, which may cause irreparable damages. CJAC's industrial shock absorber reduces vibration and noise in automated machinery and converts the kinetic energy generated by moving objects into heat energy, and that is later released into the air. Therefore, it is possible to effectively balance the object during the operation, thereby increasing the efficiency of the machine, and increasing the productivity and prolonging the life of the machine. As a result, it can reduce the maintenance cost, stabilize the mechanical operation, and improve the product quality. This design makes the operation of the machine safer, reducing accident rates, making the working environment comfortable; therefore improves personnel efficiency and ultimately, it help increase the competitive advantage of the enterprise.

The benefits of industrial shock absorber?

Reduce equipment wear and extend machine life,  
Reduce maintenance costs and absorb impact energy,  
Reduce vibration noise and make working environment quiet and comfortable.  
Speed up machine frequency and improve productivity.  
Enhance production capacity and improve enterprise competitiveness

The buffering effect of the shock absorber?

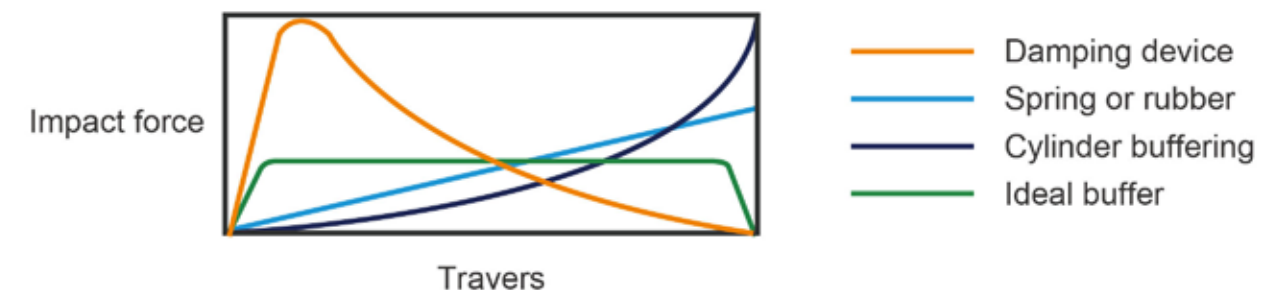
The impact resistance does not produce rebound force.  
The noise is small when colliding, the vibration is weak.  
The cushioning process is smooth. These are the old cushion, such as spring cushions or PU cushions cannot do.

Online calculation and selection of products?



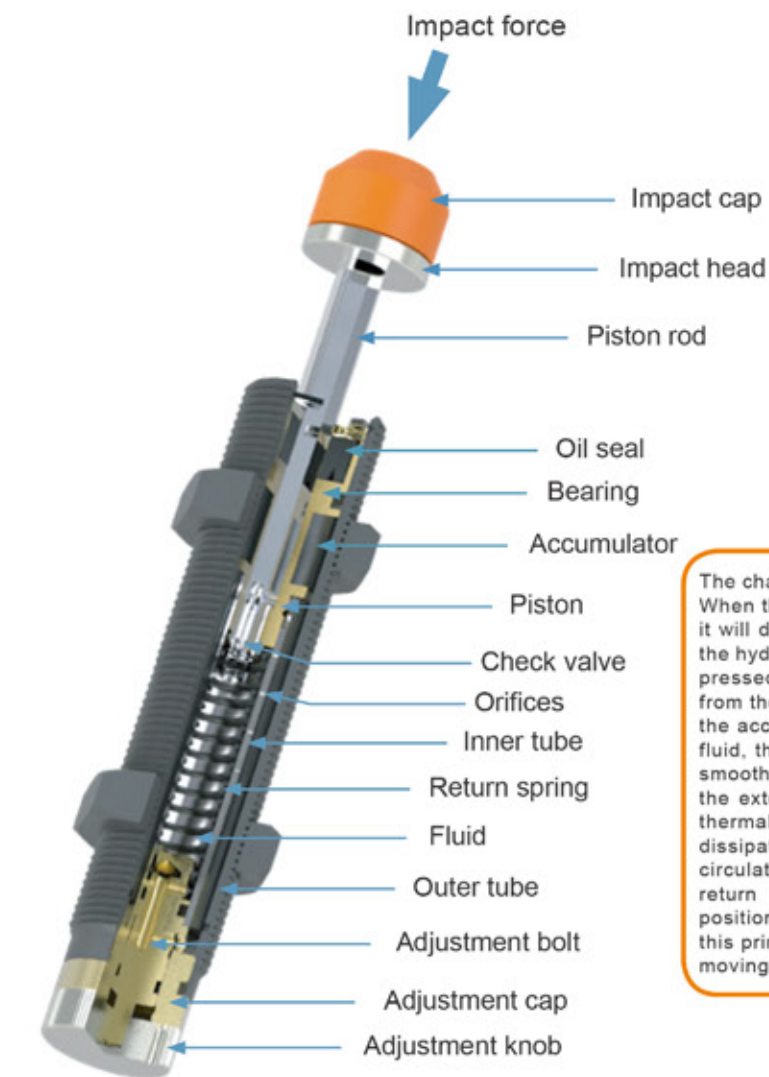
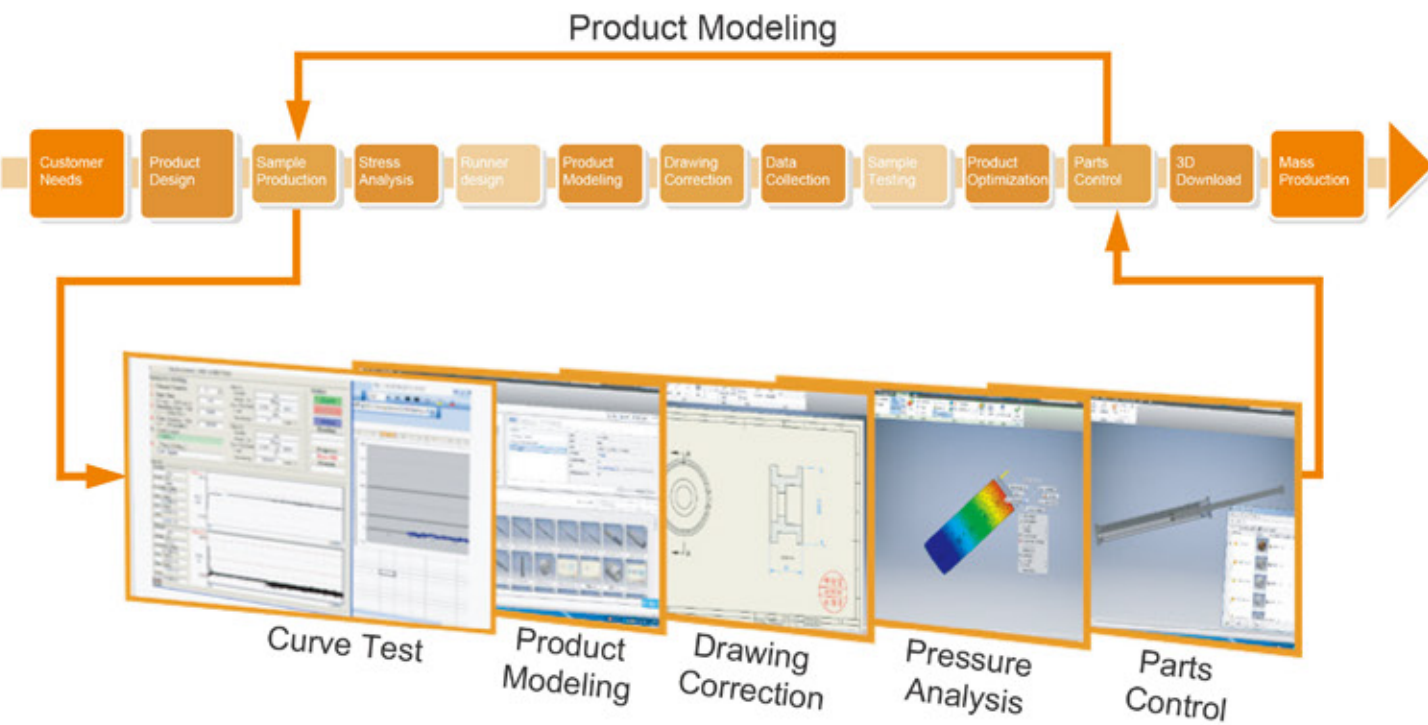
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Buffer effects comparison





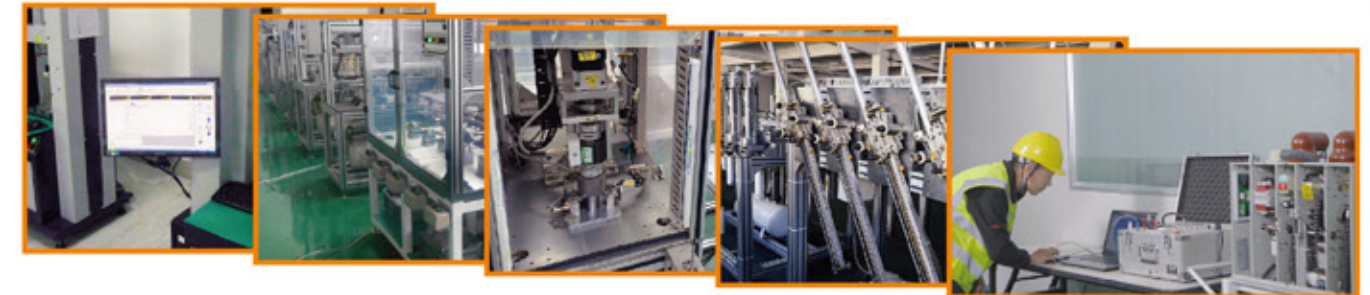
# CJAC Shock Absorber Research and Analysis System



The chart on the left is a typical shock absorber structure. When the impact head is stimulated by an external force, it will drive the piston rod to push the piston to squeeze the hydraulic oil in the inner tube. After the hydraulic oil is pressed, the specially designed oil drain will be applied from the inner tube. The holes flow out and also flow into the accumulator system. During the flow of the hydraulic fluid, the damper produces a curved damping effect that smoothly decelerates linearly until it stops. At this time, the external kinetic energy has been converted into the thermal energy of the buffer, and then the heat is dissipated into the air. Such a design can achieve energy circulation. When the external force disappears, the return spring returns the piston rod to the starting position, and it will wait for the next action. According to this principle, the shock absorber will be able to stop the moving object smoothly and effectively.

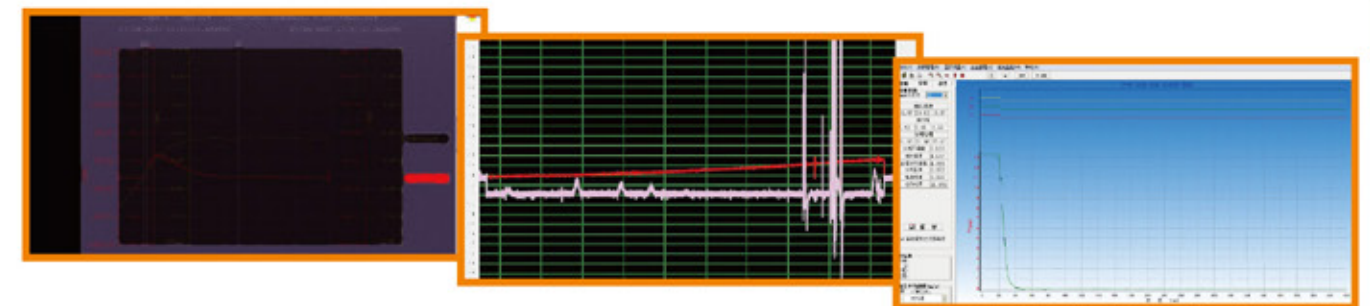
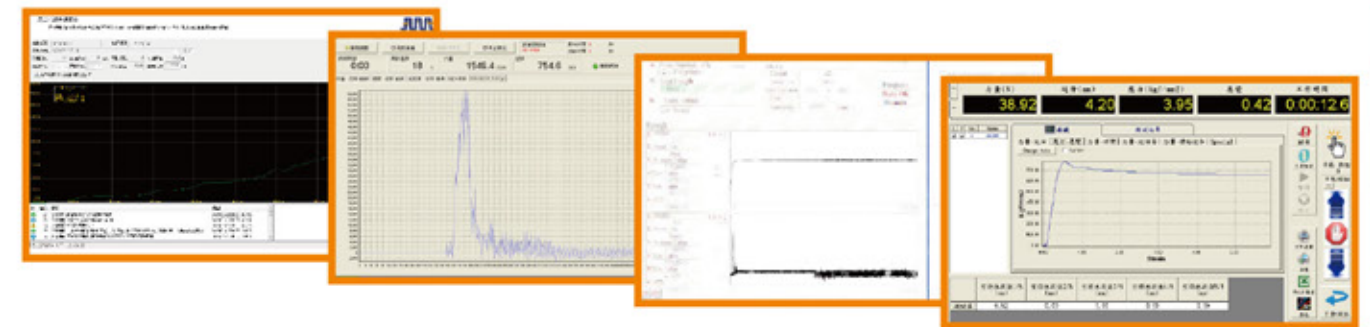


## CJAC Testing Equipment



## CJAC Testing Equipment

The quality of the shock absorber has always been the highest guiding principle of CJAC's business operations. Through industry-university cooperation, we continue to break through the cooperation with professional testing manufacturers to meet the important demands of CJAC's standard of shock absorber operation, which includes function testing, product lifespan testing, new product development, safety confirmation, etc. All of our tests are thoroughly checked by quality assurance personnel, and the process is accurate and objective. All the shock absorbers' performance data such as impact force, energy absorption, impact velocity, and force-stroke relationship diagrams can be obtained.



|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |





Self compensation type  
shock absorber  
AC Series  
P11



High-performance  
shock absorber  
AC-S Series  
P19



Shock absorber for  
rotating cylinder  
AC-RSN Series  
P21



Vibration damper  
BZ Series  
P47



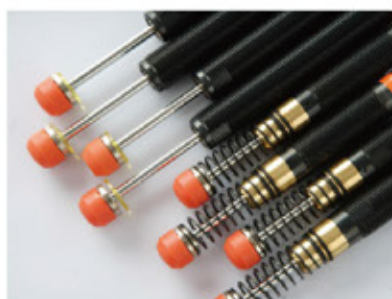
Heavy-duty shock absorber  
HD Series  
P49



Heavy-duty shock absorber  
HI Series  
P63



Shock absorber for  
rotating cylinder  
AC-R Series  
P23



Shock absorber for  
the robotic arm  
AC-K Series  
P24



Dual-side shock absorber  
for the robotic arm  
ACD Series  
P27



Pilot check valve  
PC Series  
P67



Air spring  
AS Series  
P69



Rotary damper  
RD Series  
P76



Shock absorber for  
stopper cylinder  
AC/AD Series  
P29



Adjustable shock absorber  
AD Series  
P31



Shock absorber for  
circuit breaker  
DL Series  
P37



Stainless steel wire  
vibration absorber  
WR Series



Shock absorber  
Accessories  
P41



Speed controllers  
HR Series  
P42



Dual-side hydraulic damper  
ADA Series  
P45

#### ▼ Vibration Control

Air Compressor, Processing Facility, Precision Device

#### ▼ Safe and Controllable

Amusement facility, Outdoor cable car, Port facility, Paper making machine, Railroad blocker, Steel & iron smelting, etc.

#### ▼ Movement Control

Oil seal trimming machine, Woodworking machine, Switch door, High speed railroad, Power drilling machine, heavy-duty stacking equipment, etc.

#### ▼ Vibration Control

Automation, fluid transmission & hydraulic pneumatic, printing technology - screen printing & pad printing machine, handling & clamping technology - robotic arm, blow molding machines, automobile production line, lithium battery production line, assembly production line, medical drug machine laser cutting, high-pressure switches - vacuum breakers, wooden house beams, brick and tile machinery, testing machine, metal processing machinery, tire machinery - vulcanizing machine & molding machine, truck & overhead crane, casting equipment, food packaging machine, etc.

|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
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| AC-R                   |
| AC-K                   |
| ACD                    |
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| HR                     |
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| BZ                     |
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| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |



# Calculation Example

## Common calculation formulae

Energy:  $E_k = mv^2/2$   
 Driving energy:  $E_D = F \cdot S$   
 Free fall velocity:  $v = \sqrt{2g \cdot H}$   
 Pneumatic cylinder propelling force:  $F = 0.0785Pd^2$   
 Maximum impact force (estimated):  $F_m = 1.2 \cdot E_T/S$   
 Propelling force generated by electric motor:  $F = kW \cdot 2.5/v$   
 Total energy absorbed per hour:  $E_{TC} = E_T \cdot C$

Before we decide the size specifications, we have to know four parameters:

1. Total weight of moving objects m(Kg)
2. Speed of the impact v(m/s)
3. Propelling force F(N)
4. Impacting times per hour C (/hr)

| Symbols  | Unit                | Description                                         |
|----------|---------------------|-----------------------------------------------------|
| $\mu$    |                     | Friction variables                                  |
| $\alpha$ | (rad)               | Inclined angle                                      |
| $\theta$ | (rad)               | Impacted angle while moving                         |
| $\omega$ | (rad/s)             | Angle speed                                         |
| A        | (m)                 | Width                                               |
| B        | (m)                 | Thickness                                           |
| C        | (/hr)               | Impacting times per hour                            |
| d        | (mm)                | Cylinder Inner Diameter                             |
| $E_D$    | (Nm)                | Driving energy                                      |
| $E_k$    | (Nm)                | Kinetic energy                                      |
| $E_T$    | (Nm)                | Energy                                              |
| $E_{TC}$ | (Nm)                | Total energy per hour                               |
| F        | (N)                 | Propelling force                                    |
| $F_m$    | (N)                 | Maximum impacting force                             |
| g        | (m/s <sup>2</sup> ) | Acceleration of gravity                             |
| H        | (m)                 | Height                                              |
| HM       |                     | Motor braking variables (normal value is 2.5)       |
| kW       | (kW)                | Power of the electric motor                         |
| m        | (Kg)                | Total weight of moving objects                      |
| Me       | (Kg)                | Counted weight                                      |
| P        | (bar)               | Activation pressure                                 |
| R        | (m)                 | Radius                                              |
| $R_s$    | (m)                 | Distance between shock absorber and rotational axis |
| S        | (m)                 | Stroke                                              |
| T        | (Nm)                | Driving torque                                      |
| t        | (s)                 | Deceleration time                                   |
| v        | (m/s)               | Speed of the impact                                 |

## 1. Horizontal Impact

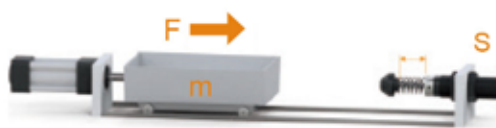


### Conditions Formulae and calculation demonstration

$m=300\text{Kg}$   
 $v=1.0\text{m/s}$   
 $S=0.05\text{m}$   
 $C=300/\text{hr}$   
 $E_k = \frac{mv^2}{2} = \frac{300 \cdot 1.0^2}{2} = 150\text{Nm}$   
 $E_T = E_k = 150\text{Nm}$   
 $E_{TC} = E_T \cdot C = 150 \cdot 300 = 45000\text{Nm/hr}$   
 $Me = \frac{2E_T}{v^2} = \frac{2 \cdot 150}{1.0^2} = 300\text{Kg}$

The result of the calculation suggests the use of one AD3650 shock absorber

## 2. Horizontal impacts with propelling force

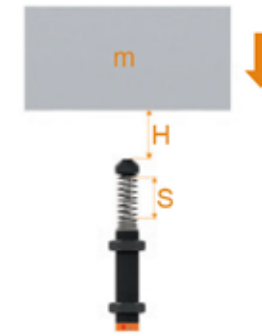


### Conditions Formulae and calculation demonstration

$m=300\text{Kg}$   
 $v=1.2\text{m/s}$   
 $S=0.05\text{m}$   
 $P=4\text{bar}$   
 $d=100\text{mm}$   
 $C=300/\text{hr}$   
 $E_k = \frac{mv^2}{2} = \frac{300 \cdot 1.2^2}{2} = 216\text{Nm}$   
 $E_D = F \cdot S = 0.0785Pd^2 \cdot S = 0.0785 \cdot 4 \cdot 100^2 \cdot 0.05 = 157\text{Nm}$   
 $E_T = E_k + E_D = 216 + 157 = 373\text{Nm}$   
 $E_{TC} = E_T \cdot C = 373 \cdot 300 = 111900\text{Nm/hr}$   
 $Me = \frac{2E_T}{v^2} = \frac{2 \cdot 373}{1.2^2} = 518\text{Kg}$

The result of the calculation suggests the use of one AD4250 shock absorber

## 3. Free fall impact



### Conditions Formulae and calculation demonstration

$m=40\text{Kg}$   
 $H=0.4\text{m}$   
 $S=0.06\text{m}$   
 $C=200/\text{hr}$   
 $v = \sqrt{2g \cdot H} = \sqrt{2 \cdot 9.81 \cdot 0.4} = 2.8\text{m/s}$   
 $E_k = \frac{mv^2}{2} = \frac{40 \cdot 2.8^2}{2} = 157\text{Nm}$   
 $E_D = F \cdot S = mg \cdot S = 40 \cdot 9.81 \cdot 0.06 = 23.5\text{Nm}$   
 $E_T = E_k + E_D = 157 + 23.5 = 180.5\text{Nm}$   
 $E_{TC} = E_T \cdot C = 180.5 \cdot 200 = 36100\text{Nm/hr}$   
 $Me = \frac{2E_T}{v^2} = \frac{2 \cdot 180.5}{2.8^2} = 46\text{Kg}$

The result of the calculation suggests the use of one AC3660 shock absorber

## 4. Free fall with propelling force



### Conditions Formulae and calculation demonstration

$m=40\text{Kg}$   
 $S=0.025\text{m}$   
 $P=5\text{bar}$   
 $d=50\text{mm}$   
 $C=200/\text{hr}$   
 $v=1.0\text{m/s}$   
 $E_k = \frac{mv^2}{2} = \frac{40 \cdot 1.0^2}{2} = 20\text{Nm}$   
 $E_D = F \cdot S = (mg + 0.0785Pd^2) \cdot S = (40 \cdot 9.81 + 0.0785 \cdot 5 \cdot 50^2) \cdot 0.025 = 34.3\text{Nm}$   
 $E_T = E_k + E_D = 20 + 34.3 = 54.3\text{Nm}$   
 $E_{TC} = E_T \cdot C = 54.3 \cdot 200 = 10860\text{Nm/hr}$   
 $Me = \frac{2E_T}{v^2} = \frac{2 \cdot 54.3}{1.0^2} = 108.6\text{Kg}$

The result of the calculation suggests the use of one AD2525 shock absorber

## 5. Horizontal impacts with motor driven

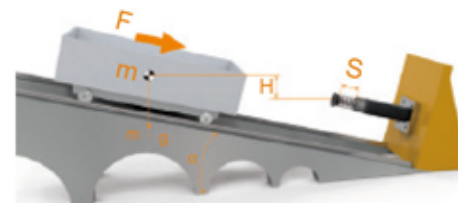


### Conditions Formulae and calculation demonstration

$m=400\text{Kg}$   
 $v=1.0\text{m/s}$   
 $kW=1.5\text{kW}$   
 $HM=2.5$   
 $S=0.075\text{m}$   
 $C=60/\text{hr}$   
 $E_k = \frac{mv^2}{2} = \frac{400 \cdot 1.0^2}{2} = 200\text{Nm}$   
 $E_D = F \cdot S = \frac{kW \cdot HM}{v} \cdot S = \frac{1500 \cdot 2.5}{1.0} \cdot 0.075 = 281\text{Nm}$   
 $E_T = E_k + E_D = 200 + 281 = 481\text{Nm}$   
 $E_{TC} = E_T \cdot C = 481 \cdot 60 = 28860\text{Nm/hr}$   
 $Me = \frac{2E_T}{v^2} = \frac{2 \cdot 481}{1.0^2} = 962\text{Kg}$

The result of the calculation suggests the use of one AD4275 shock absorber

## 6. Tilt impact



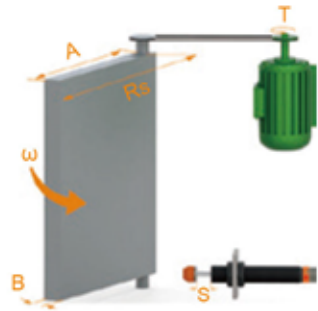
### Conditions Formulae and calculation demonstration

$m=150\text{Kg}$   
 $H=0.3\text{m}$   
 $S=0.075\text{m}$   
 $\alpha=30^\circ$   
 $C=200/\text{hr}$   
 $v = \sqrt{2g \cdot H} = \sqrt{2 \cdot 9.81 \cdot 0.3} = 2.43\text{m/s}$   
 $E_k = \frac{mv^2}{2} = \frac{150 \cdot 2.43^2}{2} = 443\text{Nm}$   
 $E_D = F \cdot S = m \cdot g \cdot S \cdot \sin \alpha = 150 \cdot 9.81 \cdot 0.075 \cdot \sin 30^\circ = 55.2\text{Nm}$   
 $E_T = E_k + E_D = 443 + 55.2 = 498.2\text{Nm}$   
 $E_{TC} = E_T \cdot C = 498.2 \cdot 200 = 99640\text{Nm/hr}$   
 $Me = \frac{2E_T}{v^2} = \frac{2 \cdot 498.2}{2.43^2} = 168.7\text{Kg}$

The result of the calculation suggests the use of one AD4275 shock absorber



## 7. Horizontal revolving door



### Conditions

$m=20\text{Kg}$   
 $\omega=2.0\text{rad/s}$   
 $T=20\text{Nm}$   
 $R_s=0.8\text{m}$   
 $A=1.0\text{m}$   
 $B=0.05\text{m}$   
 $S=0.016\text{m}$   
 $C=100/\text{hr}$

### Formulae and calculation demonstration

$$I = \frac{m(4A^2 + B^2)}{12} = \frac{20(4 \cdot 1.0^2 + 0.05^2)}{12} = 6.67 \text{ Kg} \cdot \text{m}^2$$

$$E_k = \frac{I\omega^2}{2} = \frac{6.67 \cdot 2.0^2}{2} = 13.34 \text{ Nm}$$

$$\theta = \frac{S}{R_s} = \frac{0.016}{0.8} = 0.02 \text{ rad}$$

$$E_D = T \cdot \theta = 20 \cdot 0.02 = 0.4 \text{ Nm}$$

$$E_T = E_k + E_D = 13.34 + 0.4 = 13.74 \text{ Nm}$$

$$E_{TC} = E_T \cdot C = 13.74 \cdot 100 = 1374 \text{ Nm/hr}$$

$$v = \omega \cdot R_s = 2.0 \cdot 0.8 = 1.6 \text{ m/s}$$

$$Me = \frac{2E_T}{v^2} = \frac{2 \cdot 13.74}{1.6^2} = 10.73 \text{ Kg}$$

The result of the calculation suggests the use of one AD2016 shock absorber

## 8. Rotational index with propelling force



### Conditions

$m=200\text{Kg}$   
 $\omega=1.0\text{rad/s}$   
 $T=100\text{Nm}$   
 $R=0.5\text{m}$   
 $R_s=0.4\text{m}$   
 $S=0.025\text{m}$   
 $C=100/\text{hr}$

### Formulae and calculation demonstration

$$I = \frac{mR^2}{2} = \frac{200 \cdot 0.5^2}{2} = 25 \text{ Kg} \cdot \text{m}^2$$

$$E_k = \frac{I\omega^2}{2} = \frac{25 \cdot 1.0^2}{2} = 12.5 \text{ Nm}$$

$$\theta = \frac{S}{R_s} = \frac{0.025}{0.4} = 0.0625 \text{ rad}$$

$$E_D = T \cdot \theta = 100 \cdot 0.0625 = 6.25 \text{ Nm}$$

$$E_T = E_k + E_D = 12.5 + 6.25 = 18.75 \text{ Nm}$$

$$E_{TC} = E_T \cdot C = 18.75 \cdot 100 = 1875 \text{ Nm/hr}$$

$$v = \omega \cdot R_s = 1.0 \cdot 0.4 = 0.4 \text{ m/s}$$

$$Me = \frac{2E_T}{v^2} = \frac{2 \cdot 18.75}{0.4^2} = 234.4 \text{ Kg}$$

The result of the calculation suggests the use of one AD3625 shock absorber

## 9. Conveyor with a horizontal force



### Conditions

$m=150\text{Kg}$   
 $v=0.5\text{m/s}$   
 $\mu=0.25$   
 $S=0.02\text{m}$   
 $C=120/\text{hr}$

### Formulae and calculation demonstration

$$E_k = \frac{mv^2}{2} = \frac{150 \cdot 0.5^2}{2} = 18.75 \text{ Nm}$$

$$E_D = F \cdot S = mg\mu \cdot S$$

$$= 150 \cdot 9.81 \cdot 0.25 \cdot 0.02 = 7.35 \text{ Nm}$$

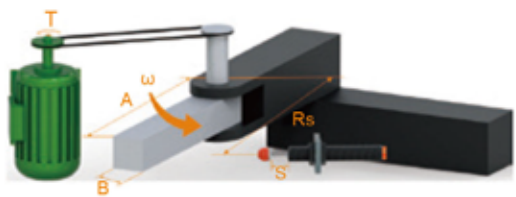
$$E_T = E_k + E_D = 18.75 + 7.35 = 26.1 \text{ Nm}$$

$$E_{TC} = E_T \cdot C = 26.1 \cdot 120 = 3132 \text{ Nm/hr}$$

$$Me = \frac{2E_T}{v^2} = \frac{2 \cdot 26.1}{0.5^2} = 208.8 \text{ Kg}$$

The result of the calculation suggests the use of one AC2020-3 shock absorber

## 10. Rotational arm with propelling force



### Conditions

$m=40\text{Kg}$   
 $\omega=2.0\text{rad/s}$   
 $T=10\text{Nm}$   
 $R_s=0.4\text{m}$   
 $A=0.5\text{m}$   
 $B=0.05\text{m}$   
 $S=0.016\text{m}$   
 $C=50/\text{hr}$

### Formulae and calculation demonstration

$$I = \frac{m(4A^2 + B^2)}{12} = \frac{40(4 \cdot 0.5^2 + 0.05^2)}{12} = 3.34 \text{ Kg} \cdot \text{m}^2$$

$$E_k = \frac{I\omega^2}{2} = \frac{3.34 \cdot 2.0^2}{2} = 6.68 \text{ Nm}$$

$$\theta = \frac{S}{R_s} = \frac{0.016}{0.4} = 0.04 \text{ rad}$$

$$E_D = T \cdot \theta = 10 \cdot 0.04 = 0.4 \text{ Nm}$$

$$E_T = E_k + E_D = 6.68 + 0.4 = 7.08 \text{ Nm}$$

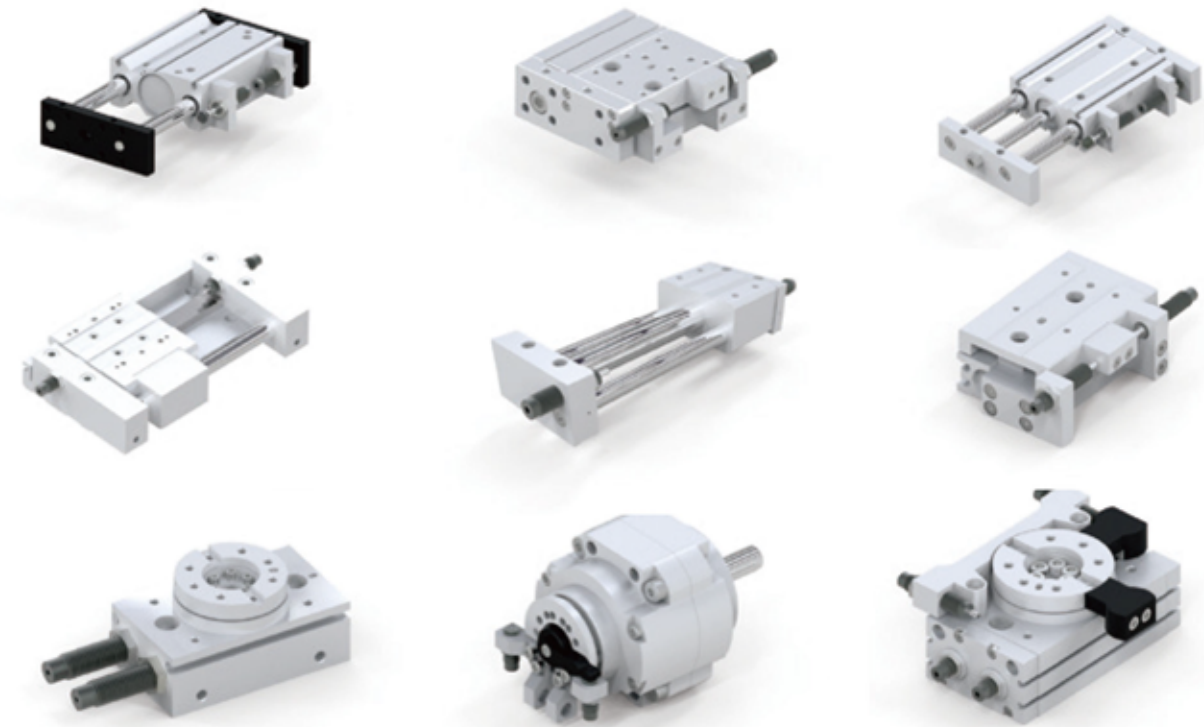
$$E_{TC} = E_T \cdot C = 7.08 \cdot 50 = 354 \text{ Nm/hr}$$

$$v = \omega \cdot R_s = 2.0 \cdot 0.4 = 0.8 \text{ m/s}$$

$$Me = \frac{2E_T}{v^2} = \frac{2 \cdot 7.08}{0.8^2} = 22.13 \text{ Kg}$$

The result of the calculation suggests the use of one AC1416-2 shock absorber

## Applications



\* We only provide shock absorbers

CJAC's shock absorber for cylinder application table

| Cylinder I.D.                                  | ø6  | ø10 | ø12 | ø16 | ø20  | ø25  | ø32 | ø40  | ø50 | ø63 | ø80 | Cylinder I.D.                                  | ø16 | ø20  | ø25  | ø32 | ø40  | ø50 | ø63 | ø80 | ø100 | ø125 | ø160 | ø200 | ø250 |
|------------------------------------------------|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|------------------------------------------------|-----|------|------|-----|------|-----|-----|-----|------|------|------|------|------|
| 5Kg/cm²<br>Cylinder<br>propulsive<br>force Kgf | 1.4 | 3.9 | 5.7 | 10  | 15.7 | 24.5 | 40  | 62.8 | 98  | 155 | 251 | 5Kg/cm²<br>Cylinder<br>propulsive<br>force Kgf | 10  | 15.7 | 24.5 | 40  | 62.8 | 98  | 155 | 251 | 393  | 613  | 1005 | 1570 | 2454 |
| AC0604-S                                       | ●   | ●   | ●   |     |      |      |     |      |     |     |     | AD1410                                         | ●   | ●    | ●    | ●   |      |     |     |     |      |      |      |      |      |
| AC0806                                         |     | ●   | ●   | ●   |      |      |     |      |     |     |     | AD1425                                         | ●   | ●    | ●    | ●   |      |     |     |     |      |      |      |      |      |
| AC1005                                         |     | ●   | ●   | ●   |      |      |     |      |     |     |     | AD2016                                         |     | ●    | ●    | ●   | ●    |     |     |     |      |      |      |      |      |
| AC1008                                         |     | ●   | ●   | ●   |      |      |     |      |     |     |     | AD2025                                         |     | ●    | ●    | ●   | ●    |     |     |     |      |      |      |      |      |
| AC1210                                         |     |     | ●   | ●   | ●    |      |     |      |     |     |     | AD2525                                         |     |      | ●    | ●   | ●    | ●   | ●   |     |      |      |      |      |      |
| AC1412                                         |     |     | ●   | ●   | ●    |      |     |      |     |     |     | AD2530                                         |     |      | ●    | ●   | ●    | ●   | ●   |     |      |      |      |      |      |
| AC1416                                         |     |     | ●   | ●   | ●    | ●    |     |      |     |     |     | AD2540                                         |     |      | ●    | ●   | ●    | ●   | ●   |     |      |      |      |      |      |
| AC1420                                         |     |     | ●   | ●   | ●    | ●    |     |      |     |     |     | AD2550                                         |     |      | ●    | ●   | ●    | ●   | ●   |     |      |      |      |      |      |
| AC2020                                         |     |     |     | ●   | ●    | ●    | ●   | ●    |     |     |     | AD2580                                         |     |      | ●    | ●   | ●    | ●   | ●   |     |      |      |      |      |      |
| AC2030                                         |     |     |     | ●   | ●    | ●    | ●   | ●    |     |     |     | AD3625                                         |     |      |      | ●   | ●    | ●   | ●   | ●   | ●    |      |      |      |      |
| AC2050                                         |     |     |     |     | ●    | ●    | ●   | ●    |     |     |     | AD3650                                         |     |      |      | ●   | ●    | ●   | ●   | ●   | ●    |      |      |      |      |
| AC2525                                         |     |     |     |     |      | ●    | ●   | ●    | ●   | ●   |     | AD4225                                         |     |      |      |     | ●    | ●   | ●   | ●   | ●    | ●    |      |      |      |
| AC2540                                         |     |     |     |     |      | ●    | ●   | ●    | ●   | ●   |     | AD4250                                         |     |      |      |     | ●    | ●   | ●   | ●   | ●    | ●    |      |      |      |
| AC2580                                         |     |     |     |     |      | ●    | ●   | ●    | ●   | ●   |     | AD4275                                         |     |      |      |     | ●    | ●   | ●   | ●   | ●    | ●    |      |      |      |
| AC3660                                         |     |     |     |     |      |      | ●   | ●    | ●   | ●   |     | AD64050                                        |     |      |      |     |      |     |     |     | ●    | ●    | ●    | ●    | ●    |
|                                                |     |     |     |     |      |      |     |      |     |     |     | AD64100                                        |     |      |      |     |      |     |     |     | ●    | ●    | ●    | ●    | ●    |
|                                                |     |     |     |     |      |      |     |      |     |     |     | AD64150                                        |     |      |      |     |      |     |     |     | ●    | ●    | ●    | ●    | ●    |
|                                                |     |     |     |     |      |      |     |      |     |     |     | AD85050                                        |     |      |      |     |      |     |     |     |      | ●    | ●    | ●    | ●    |
|                                                |     |     |     |     |      |      |     |      |     |     |     | AD85090                                        |     |      |      |     |      |     |     |     |      | ●    | ●    | ●    | ●    |
|                                                |     |     |     |     |      |      |     |      |     |     |     | AD85125                                        |     |      |      |     |      |     |     |     |      | ●    | ●    | ●    | ●    |





The AC series is designed for fixed construction. Linear deceleration of moving objects is maintained through specially designed and tested oil holes and alignment. From high-speed light loads to low speeds and high loads, this shock absorber absorbs the appropriate energy without adjustment. After the load is removed, the axis is pushed to the original position by the return spring. The AC series has three models of high speed, medium speed, and low speed to meet your different requirements.

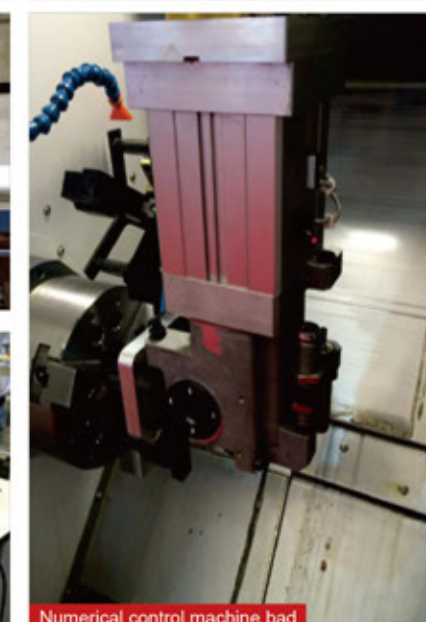
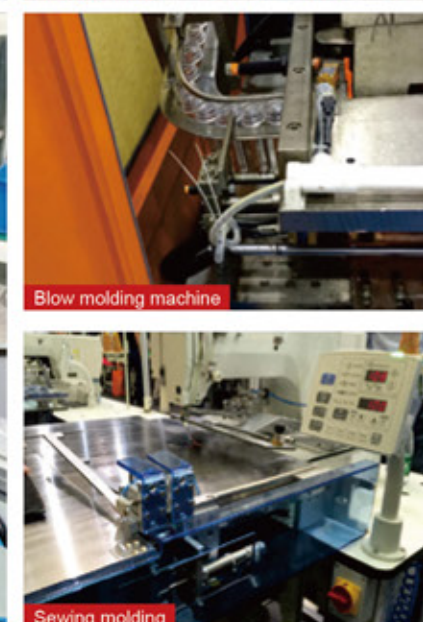
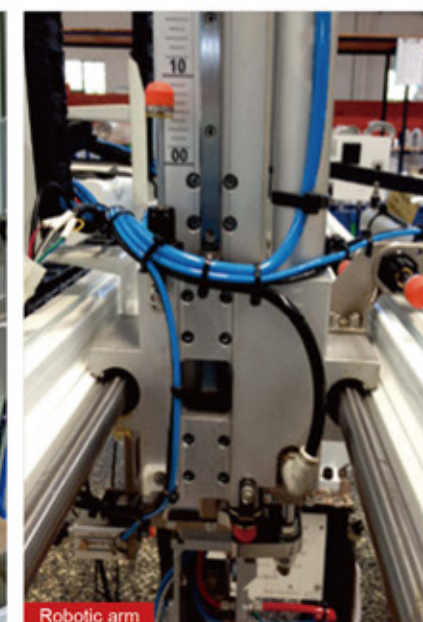
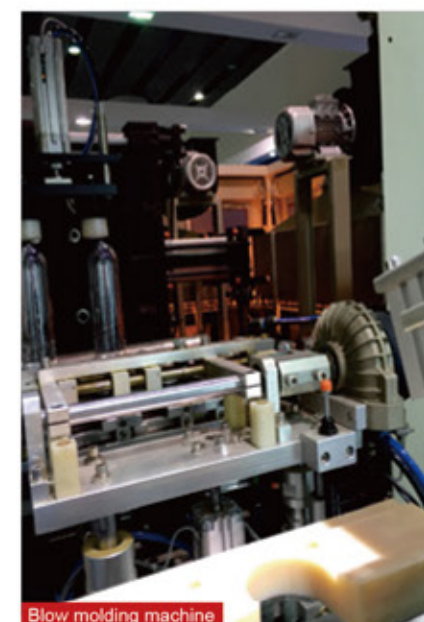
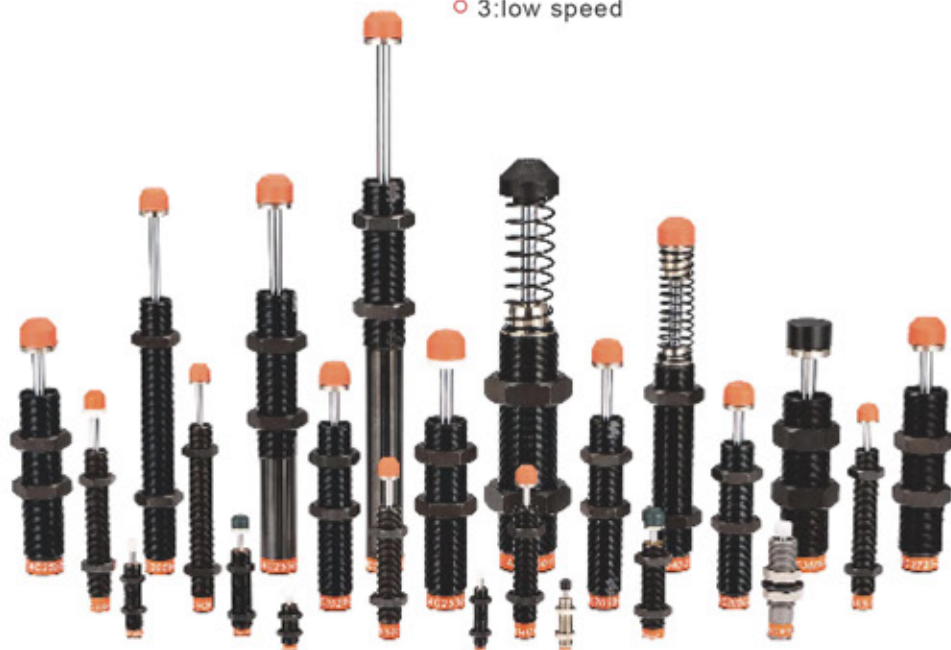
- Material ———— Outer pipe: AISI1215 and STKM11A oxidized black, nickel plating treatment, and Nitriding blasting enhances rust resistance. Some models are made of SUS303 stainless steel, which has a stronger rust resistance.  
Piston rod: hard chromium plating treatment and special seals for longer lifespans.  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning.
- Speed range ———— 0.5~4.0m/s
- Temperature range ———— -10~+80°C
- Installation ———— CJAC offers customers a variety of mounting options such as nut (NUT), flange (F), positioning stop nut (SC), angle adapter (SLA), and more. In addition, customers can also customize services according to their own requirements.
- Special demands ———— CJAC can customize solutions based on your requirements.

AC      08      -      06      -      1      -      

Model      outer diameter (mm)      Buffer stroke (mm)      1:high speed      Blank:With impact head

2:medium speed      N:Without impact head

3:low speed

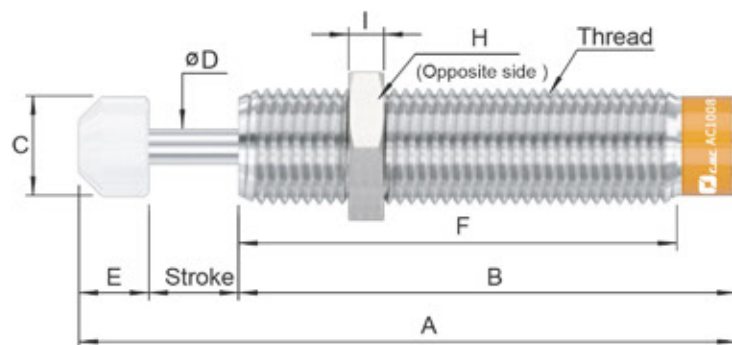


|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| Hi                     |
| PG                     |
| AS                     |
| RD                     |
| Instructions           |



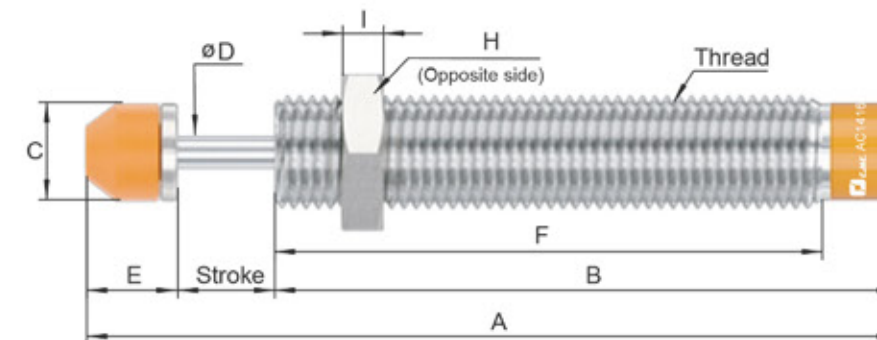
| Model    | Stroke<br>(mm) | Maximum<br>absorbed<br>energy<br>Nm(E <sub>r</sub> ) | Absorbed<br>energy<br>per hour<br>Nm(E <sub>10</sub> ) | Maximum<br>effective<br>weight<br>kg(M <sub>e</sub> ) | Highest<br>impact<br>speed<br>m/s(v) | Without<br>impact<br>head | With<br>impact<br>head | Positioning<br>nut<br>(SC) | Operating<br>temperature<br>(Non-frozen)<br>(°C) | Weight<br>(g) |
|----------|----------------|------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------|--------------------------------------|---------------------------|------------------------|----------------------------|--------------------------------------------------|---------------|
| AC0805   | 5              | 1.8                                                  | 7,800                                                  | 0.5                                                   | 2.0                                  | o                         | o                      | o                          | -10~+80                                          | 10            |
| AC0806-1 | 6              | 2                                                    | 8,800                                                  | 0.5                                                   | 2.0                                  | o                         | o                      | o                          | -10~+80                                          | 11            |
| AC0806-2 | 6              | 2                                                    | 8,800                                                  | 2.0                                                   | 1.0                                  | o                         | o                      | o                          | -10~+80                                          | 11            |
| AC0806-3 | 6              | 2                                                    | 8,800                                                  | 6.0                                                   | 0.5                                  | o                         | o                      | o                          | -10~+80                                          | 11            |
| AC1005-1 | 5              | 3                                                    | 10,800                                                 | 1.0                                                   | 3.0                                  | o                         | o                      | o                          | -10~+80                                          | 14            |
| AC1005-2 | 5              | 3                                                    | 10,800                                                 | 3.0                                                   | 1.5                                  | o                         | o                      | o                          | -10~+80                                          | 14            |
| AC1005-3 | 5              | 3                                                    | 10,800                                                 | 7.0                                                   | 0.8                                  | o                         | o                      | o                          | -10~+80                                          | 14            |
| AC1008-1 | 8              | 4                                                    | 15,200                                                 | 2.0                                                   | 3.0                                  | o                         | o                      | o                          | -10~+80                                          | 20            |
| AC1008-2 | 8              | 4                                                    | 15,200                                                 | 4.0                                                   | 1.5                                  | o                         | o                      | o                          | -10~+80                                          | 20            |
| AC1008-3 | 8              | 4                                                    | 15,200                                                 | 9.0                                                   | 0.8                                  | o                         | o                      | o                          | -10~+80                                          | 20            |
| AC1210-1 | 10             | 5                                                    | 17,640                                                 | 5.0                                                   | 3.0                                  | o                         | o                      | o                          | -10~+80                                          | 31.5          |
| AC1210-2 | 10             | 5                                                    | 17,640                                                 | 10.0                                                  | 1.5                                  | o                         | o                      | o                          | -10~+80                                          | 31.5          |
| AC1210-3 | 10             | 5                                                    | 17,640                                                 | 30.0                                                  | 0.8                                  | o                         | o                      | o                          | -10~+80                                          | 31.5          |
| AC1408   | 8              | 12                                                   | 22,000                                                 | 6                                                     | 3.0                                  | o                         | o                      | o                          | -10~+80                                          | 65            |
| AC1412-1 | 12             | 15                                                   | 30,000                                                 | 8                                                     | 3.0                                  | o                         | o                      | o                          | -10~+80                                          | 80            |
| AC1412-2 | 12             | 15                                                   | 30,000                                                 | 50                                                    | 1.5                                  | o                         | o                      | o                          | -10~+80                                          | 80            |
| AC1412-3 | 12             | 15                                                   | 30,000                                                 | 100                                                   | 0.8                                  | o                         | o                      | o                          | -10~+80                                          | 80            |
| AC1416-1 | 16             | 20                                                   | 35,000                                                 | 10                                                    | 3.0                                  | o                         | o                      | o                          | -10~+80                                          | 85            |
| AC1416-2 | 16             | 20                                                   | 35,000                                                 | 70                                                    | 1.5                                  | o                         | o                      | o                          | -10~+80                                          | 85            |
| AC1416-3 | 16             | 20                                                   | 35,000                                                 | 150                                                   | 0.8                                  | o                         | o                      | o                          | -10~+80                                          | 85            |

FIG. 1



| Model    | Thread  | Stroke<br>(mm) | A<br>(mm) | B<br>(mm) | C<br>(mm) | D<br>(mm) | E<br>(mm) | F<br>(mm) | H<br>(mm) | I<br>(mm) | Illustration |
|----------|---------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|
| AC0805   | M8x1.0  | 5              | 42        | 32        | 6         | 2.8       | 5         | 27.3      | 11        | 3         | 1            |
| AC0806-1 | M8x1.0  | 6              | 50        | 38        | 6.6       | 3         | 6         | 33        | 11        | 3         | 1            |
| AC0806-2 | M8x1.0  | 6              | 50        | 38        | 6.6       | 3         | 6         | 33        | 11        | 3         | 1            |
| AC0806-3 | M8x1.0  | 6              | 50        | 38        | 6.6       | 3         | 6         | 33        | 11        | 3         | 1            |
| AC1005-1 | M10x1.0 | 5              | 38.7      | 27.7      | 8.6       | 2.8       | 6         | 22.9      | 12.7      | 3         | 1            |
| AC1005-2 | M10x1.0 | 5              | 38.7      | 27.7      | 8.6       | 2.8       | 6         | 22.9      | 12.7      | 3         | 1            |
| AC1005-3 | M10x1.0 | 5              | 38.7      | 27.7      | 8.6       | 2.8       | 6         | 22.9      | 12.7      | 3         | 1            |
| AC1008-1 | M10x1.0 | 8              | 57        | 43        | 8.6       | 3         | 6         | 38        | 12.7      | 3         | 1            |
| AC1008-2 | M10x1.0 | 8              | 57        | 43        | 8.6       | 3         | 6         | 38        | 12.7      | 3         | 1            |
| AC1008-3 | M10x1.0 | 8              | 57        | 43        | 8.6       | 3         | 6         | 38        | 12.7      | 3         | 1            |
| AC1210-1 | M12x1.0 | 10             | 68.8      | 50        | 10.3      | 3         | 8.8       | 45.5      | 14        | 4         | 2            |
| AC1210-2 | M12x1.0 | 10             | 68.8      | 50        | 10.3      | 3         | 8.8       | 45.5      | 14        | 4         | 2            |
| AC1210-3 | M12x1.0 | 10             | 68.8      | 50        | 10.3      | 3         | 8.8       | 45.5      | 14        | 4         | 2            |
| AC1408   | M14x1.5 | 8              | 73.5      | 55        | 12        | 4         | 11.2      | 50.5      | 19        | 5         | 2            |
| AC1412-1 | M14x1.5 | 12             | 99.2      | 76        | 12        | 4         | 11.2      | 67        | 19        | 5         | 2            |
| AC1412-2 | M14x1.5 | 12             | 99.2      | 76        | 12        | 4         | 11.2      | 67        | 19        | 5         | 2            |
| AC1412-3 | M14x1.5 | 12             | 99.2      | 76        | 12        | 4         | 11.2      | 67        | 19        | 5         | 2            |
| AC1416-1 | M14x1.5 | 16             | 122.2     | 95        | 12        | 4         | 11.2      | 86        | 19        | 5         | 2            |
| AC1416-2 | M14x1.5 | 16             | 122.2     | 95        | 12        | 4         | 11.2      | 86        | 19        | 5         | 2            |
| AC1416-3 | M14x1.5 | 16             | 122.2     | 95        | 12        | 4         | 11.2      | 86        | 19        | 5         | 2            |

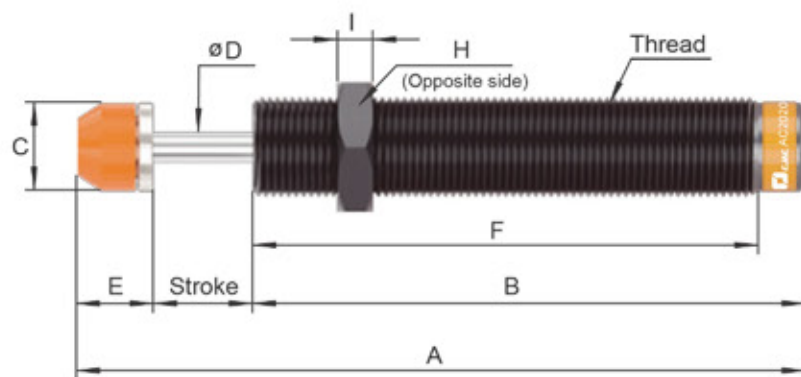
FIG. 2





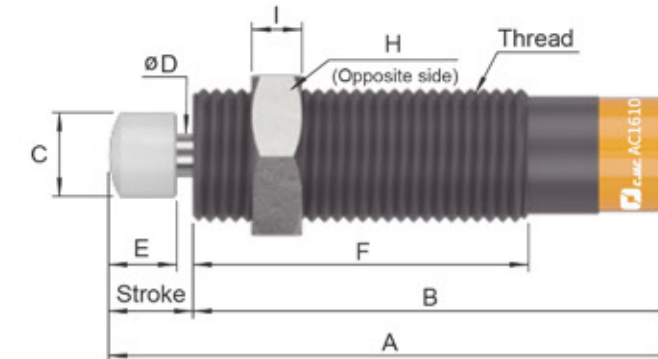
| Model     | Stroke<br>(mm) | Maximum<br>absorbed<br>energy<br>Nm(Er) | Absorbed<br>energy<br>per hour<br>Nm(Erc) | Maximum<br>effective<br>weight<br>kg(Me) | Highest<br>impact<br>speed<br>m/s(v) | Without<br>impact<br>head | With<br>impact<br>hea | Positioning<br>nut<br>(SC) | Operating<br>temperature<br>(Non-frozen)<br>(°C) | Weight<br>(g) |
|-----------|----------------|-----------------------------------------|-------------------------------------------|------------------------------------------|--------------------------------------|---------------------------|-----------------------|----------------------------|--------------------------------------------------|---------------|
| AC1416-1C | 16             | 20                                      | 35,000                                    | 10                                       | 3.0                                  | o                         | o                     | o                          | -10~+80                                          | 80            |
| AC1416-2C | 16             | 20                                      | 35,000                                    | 70                                       | 1.5                                  | o                         | o                     | o                          | -10~+80                                          | 80            |
| AC1416-3C | 16             | 20                                      | 35,000                                    | 150                                      | 0.8                                  | o                         | o                     | o                          | -10~+80                                          | 80            |
| AC1420-1  | 20             | 24                                      | 36,000                                    | 15                                       | 3.0                                  | o                         | o                     | o                          | -10~+80                                          | 95            |
| AC1420-2  | 20             | 24                                      | 36,000                                    | 90                                       | 1.5                                  | o                         | o                     | o                          | -10~+80                                          | 95            |
| AC1420-3  | 20             | 24                                      | 36,000                                    | 180                                      | 0.8                                  | o                         | o                     | o                          | -10~+80                                          | 95            |
| AC1425-1  | 25             | 28                                      | 37,000                                    | 20                                       | 3.0                                  | o                         | o                     | o                          | -10~+80                                          | 105           |
| AC1425-2  | 25             | 28                                      | 37,000                                    | 150                                      | 1.5                                  | o                         | o                     | o                          | -10~+80                                          | 105           |
| AC1425-3  | 25             | 28                                      | 37,000                                    | 250                                      | 0.8                                  | o                         | o                     | o                          | -10~+80                                          | 105           |
| AC1610    | 10             | 16                                      | 42,000                                    | 30                                       | 3.5                                  | o                         | o                     | o                          | -10~+80                                          | 165           |
| AC2020-1  | 20             | 40                                      | 40,000                                    | 30                                       | 3.5                                  | o                         | o                     | o                          | -10~+80                                          | 215           |
| AC2020-2  | 20             | 40                                      | 40,000                                    | 200                                      | 2.0                                  | o                         | o                     | o                          | -10~+80                                          | 215           |
| AC2020-3  | 20             | 40                                      | 40,000                                    | 700                                      | 1.0                                  | o                         | o                     | o                          | -10~+80                                          | 215           |
| AC2030-1  | 30             | 50                                      | 48,000                                    | 30                                       | 3.5                                  | o                         | o                     | o                          | -10~+80                                          | 220           |
| AC2030-2  | 30             | 50                                      | 48,000                                    | 200                                      | 2.0                                  | o                         | o                     | o                          | -10~+80                                          | 220           |
| AC2030-3  | 30             | 50                                      | 48,000                                    | 700                                      | 1.0                                  | o                         | o                     | o                          | -10~+80                                          | 220           |
| AC2050-1  | 50             | 60                                      | 60,000                                    | 60                                       | 3.5                                  | o                         | o                     | o                          | -10~+80                                          | 300           |
| AC2050-2  | 50             | 60                                      | 60,000                                    | 400                                      | 2.0                                  | o                         | o                     | o                          | -10~+80                                          | 300           |
| AC2050-3  | 50             | 60                                      | 60,000                                    | 1,200                                    | 1.0                                  | o                         | o                     | o                          | -10~+80                                          | 300           |
| AC2525-1  | 25             | 80                                      | 54,000                                    | 200                                      | 4.0                                  | o                         | o                     | o                          | -10~+80                                          | 330           |
| AC2525-2  | 25             | 80                                      | 54,000                                    | 800                                      | 2.5                                  | o                         | o                     | o                          | -10~+80                                          | 330           |
| AC2525-3  | 25             | 80                                      | 54,000                                    | 1,500                                    | 1.0                                  | o                         | o                     | o                          | -10~+80                                          | 330           |
| AC2530-2  | 30             | 92                                      | 62,100                                    | 900                                      | 2.0                                  | o                         | o                     | o                          | -10~+80                                          | 350           |

FIG. 1



| Model     | Thread  | Stroke<br>(mm) | A<br>(mm) | B<br>(mm) | C<br>(mm) | D<br>(mm) | E<br>(mm) | F<br>(mm) | H<br>(mm) | I<br>(mm) | Illustration |
|-----------|---------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|
| AC1416-1C | M14x1.5 | 16             | 103.2     | 76        | 12        | 4         | 11.2      | 67        | 19        | 5         | 1            |
| AC1416-2C | M14x1.5 | 16             | 103.2     | 76        | 12        | 4         | 11.2      | 67        | 19        | 5         | 1            |
| AC1416-3C | M14x1.5 | 16             | 103.2     | 76        | 12        | 4         | 11.2      | 67        | 19        | 5         | 1            |
| AC1420-1  | M14x1.5 | 20             | 126.2     | 95        | 12        | 4         | 11.2      | 86        | 19        | 5         | 1            |
| AC1420-2  | M14x1.5 | 20             | 126.2     | 95        | 12        | 4         | 11.2      | 86        | 19        | 5         | 1            |
| AC1420-3  | M14x1.5 | 20             | 126.2     | 95        | 12        | 4         | 11.2      | 86        | 19        | 5         | 1            |
| AC1425-1  | M14x1.5 | 25             | 146.2     | 110       | 12        | 4         | 11.2      | 101       | 19        | 5         | 1            |
| AC1425-2  | M14x1.5 | 25             | 146.2     | 110       | 12        | 4         | 11.2      | 101       | 19        | 5         | 1            |
| AC1425-3  | M14x1.5 | 25             | 146.2     | 110       | 12        | 4         | 11.2      | 101       | 19        | 5         | 1            |
| AC1610    | M16x1.5 | 10             | 68        | 58        | 10        | 5         | 8         | 40        | 19        | 6         | 2            |
| AC2020-1  | M20x1.5 | 20             | 145.3     | 110       | 17.8      | 6         | 15.3      | 101       | 26        | 7         | 1            |
| AC2020-2  | M20x1.5 | 20             | 145.3     | 110       | 17.8      | 6         | 15.3      | 101       | 26        | 7         | 1            |
| AC2020-3  | M20x1.5 | 20             | 145.3     | 110       | 17.8      | 6         | 15.3      | 101       | 26        | 7         | 1            |
| AC2030-1  | M20x1.5 | 30             | 158.3     | 113       | 17.8      | 6         | 15.3      | 104       | 26        | 7         | 1            |
| AC2030-2  | M20x1.5 | 30             | 158.3     | 113       | 17.8      | 6         | 15.3      | 104       | 26        | 7         | 1            |
| AC2030-3  | M20x1.5 | 30             | 158.3     | 113       | 17.8      | 6         | 15.3      | 104       | 26        | 7         | 1            |
| AC2050-1  | M20x1.5 | 50             | 232.8     | 167       | 17.8      | 6         | 15.8      | 158       | 26        | 7         | 1            |
| AC2050-2  | M20x1.5 | 50             | 232.8     | 167       | 17.8      | 6         | 15.8      | 158       | 26        | 7         | 1            |
| AC2050-3  | M20x1.5 | 50             | 232.8     | 167       | 17.8      | 6         | 15.8      | 158       | 26        | 7         | 1            |
| AC2525-1  | M25x1.5 | 25             | 155       | 111       | 22        | 8         | 19        | 101       | 32        | 9         | 1            |
| AC2525-2  | M25x1.5 | 25             | 155       | 111       | 22        | 8         | 19        | 101       | 32        | 9         | 1            |
| AC2525-3  | M25x1.5 | 25             | 155       | 111       | 22        | 8         | 19        | 101       | 32        | 9         | 1            |
| AC2530-2  | M25x1.5 | 30             | 160       | 111       | 22        | 8         | 19        | 101       | 32        | 9         | 1            |

FIG. 2





| Model    | Stroke<br>(mm) | Maximum<br>absorbed<br>energy<br>Nm(E <sub>1</sub> ) | Absorbed<br>energy<br>per hour<br>Nm(E <sub>1</sub> ·h) | Maximum<br>effective<br>weight<br>kg(Me) | Highest<br>impact<br>speed<br>m/s(v) | Without<br>impact<br>head | With<br>impact<br>hea | Flange<br>F | Positioning<br>nut<br>(SC) | Operating<br>temperature<br>(Non-frozen)<br>("C) | Weight<br>(g) |
|----------|----------------|------------------------------------------------------|---------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------|-----------------------|-------------|----------------------------|--------------------------------------------------|---------------|
| AC2540-1 | 40             | 120                                                  | 75,000                                                  | 300                                      | 4.0                                  | —                         | o                     | —           | o                          | -10~+80                                          | 430           |
| AC2540-2 | 40             | 120                                                  | 75,000                                                  | 1,200                                    | 2.5                                  | —                         | o                     | —           | o                          | -10~+80                                          | 430           |
| AC2540-3 | 40             | 120                                                  | 75,000                                                  | 2,000                                    | 1.0                                  | —                         | o                     | —           | o                          | -10~+80                                          | 430           |
| AC2550-1 | 50             | 135                                                  | 90,000                                                  | 200                                      | 4.0                                  | o                         | o                     | —           | o                          | -10~+80                                          | 435           |
| AC2550-2 | 50             | 135                                                  | 90,000                                                  | 900                                      | 2.5                                  | o                         | o                     | —           | o                          | -10~+80                                          | 435           |
| AC2550-3 | 50             | 135                                                  | 90,000                                                  | 1,680                                    | 1.0                                  | o                         | o                     | —           | o                          | -10~+80                                          | 435           |
| AC2580-1 | 80             | 150                                                  | 120,000                                                 | 150                                      | 4.0                                  | o                         | o                     | —           | o                          | -10~+80                                          | 535           |
| AC2580-2 | 80             | 150                                                  | 120,000                                                 | 600                                      | 2.5                                  | o                         | o                     | —           | o                          | -10~+80                                          | 535           |
| AC2580-3 | 80             | 150                                                  | 120,000                                                 | 1,200                                    | 1.0                                  | o                         | o                     | —           | o                          | -10~+80                                          | 535           |
| AC2725-1 | 25             | 80                                                   | 54,000                                                  | 200                                      | 4.0                                  | o                         | o                     | —           | o                          | -10~+80                                          | 380           |
| AC3025-1 | 25             | 180                                                  | 60,000                                                  | 300                                      | 3.0                                  | —                         | o                     | —           | o                          | -10~+80                                          | 950           |
| AC3025-2 | 25             | 180                                                  | 60,000                                                  | 700                                      | 2.0                                  | —                         | o                     | —           | o                          | -10~+80                                          | 950           |
| AC3025-3 | 25             | 180                                                  | 60,000                                                  | 1,300                                    | 1.0                                  | —                         | o                     | —           | o                          | -10~+80                                          | 950           |
| AC3660-1 | 60             | 250                                                  | 120,000                                                 | 400                                      | 4.0                                  | —                         | o                     | o           | o                          | -10~+80                                          | 1,030         |
| AC3660-2 | 60             | 250                                                  | 120,000                                                 | 1,500                                    | 2.5                                  | —                         | o                     | o           | o                          | -10~+80                                          | 1,030         |
| AC3660-3 | 60             | 250                                                  | 120,000                                                 | 2,400                                    | 1.0                                  | —                         | o                     | o           | o                          | -10~+80                                          | 1,030         |

FIG. 1

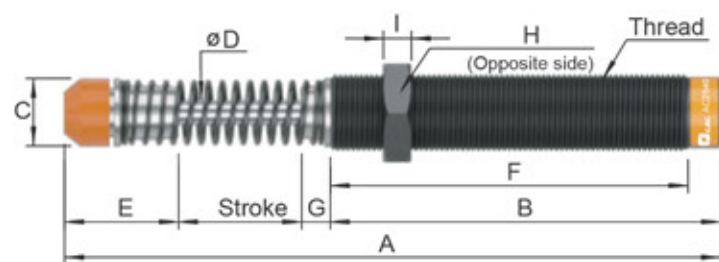
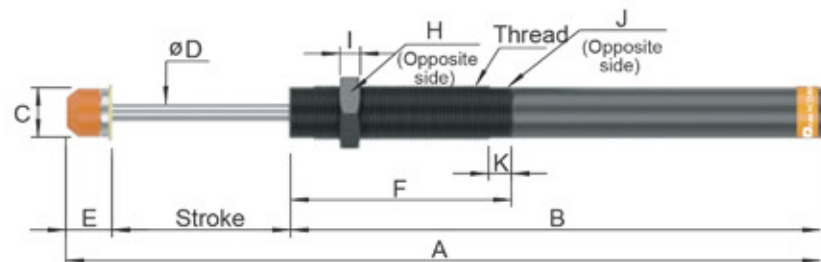


FIG. 2



| Model    | Thread  | Stroke<br>(mm) | A<br>(mm) | B<br>(mm) | C<br>(mm) | D<br>(mm) | E<br>(mm) | F<br>(mm) | G<br>(mm) | H<br>(mm) | I<br>(mm) | J<br>(mm) | K<br>(mm) | Illustration |
|----------|---------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|
| AC2540-1 | M25x1.5 | 40             | 214       | 127       | 22        | 8         | 37        | 117       | 10        | 32        | 9         | —         | —         | 1            |
| AC2540-2 | M25x1.5 | 40             | 214       | 127       | 22        | 8         | 37        | 117       | 10        | 32        | 9         | —         | —         | 1            |
| AC2540-3 | M25x1.5 | 40             | 214       | 127       | 22        | 8         | 37        | 117       | 10        | 32        | 9         | —         | —         | 1            |
| AC2550-1 | M25x1.5 | 50             | 239.5     | 170.5     | 22        | 8         | 19        | 100       | —         | 32        | 9         | 22.8      | 11        | 2            |
| AC2550-2 | M25x1.5 | 50             | 239.5     | 170.5     | 22        | 8         | 19        | 100       | —         | 32        | 9         | 22.8      | 11        | 2            |
| AC2550-3 | M25x1.5 | 50             | 239.5     | 170.5     | 22        | 8         | 19        | 100       | —         | 32        | 9         | 22.8      | 11        | 2            |
| AC2580-1 | M25x1.5 | 80             | 336       | 237       | 22        | 8         | 19        | 100       | —         | 32        | 9         | 22.8      | 11        | 2            |
| AC2580-2 | M25x1.5 | 80             | 336       | 237       | 22        | 8         | 19        | 100       | —         | 32        | 9         | 22.8      | 11        | 2            |
| AC2580-3 | M25x1.5 | 80             | 336       | 237       | 22        | 8         | 19        | 100       | —         | 32        | 9         | 22.8      | 11        | 2            |
| AC2725-1 | M27x1.5 | 25             | 155       | 111       | 22        | 8         | 19        | 101       | —         | 32        | 9         | —         | —         | 3            |
| AC3025-1 | M30x1.5 | 25             | 151       | 106.5     | 27        | 10        | 19.5      | 96.5      | —         | 36        | 14        | —         | —         | 3            |
| AC3025-2 | M30x1.5 | 25             | 151       | 106.5     | 27        | 10        | 19.5      | 96.5      | —         | 36        | 14        | —         | —         | 3            |
| AC3025-3 | M30x1.5 | 25             | 151       | 106.5     | 27        | 10        | 19.5      | 96.5      | —         | 36        | 14        | —         | —         | 3            |
| AC3660-1 | M36x1.5 | 60             | 248       | 162       | 35.5      | 10        | 26        | 134       | 17        | 46        | 15        | —         | —         | 4            |
| AC3660-2 | M36x1.5 | 60             | 248       | 162       | 35.5      | 10        | 26        | 134       | 17        | 46        | 15        | —         | —         | 4            |
| AC3660-3 | M36x1.5 | 60             | 248       | 162       | 35.5      | 10        | 26        | 134       | 17        | 46        | 15        | —         | —         | 4            |

FIG. 3

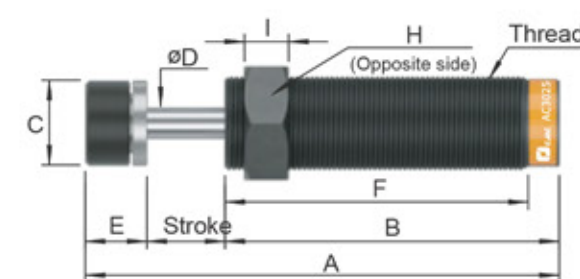
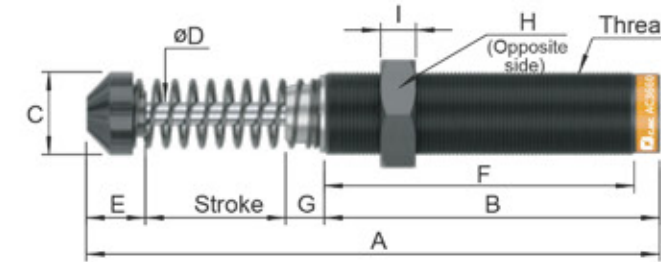


FIG. 4





# AC-S Series

## High-performance shock absorber

The AC series is designed for fixed automatic compensation type construction. Compared with the AC series, the AC-S series has the advantages of smaller installation length, higher frequency of use, greater energy absorption, stronger product structure, and higher safety. This model is suitable for equipment with a compact structure and smaller space. The bottom of the product is provided with a six-shaped slot for easy installation.

- Material** — Outer pipe: AISI 1215 and STKM11A nitriding sandblasting treatment enhances rust resistance. Some models adopt SUS303 stainless steel material, offering stronger anti-rust performance. Axis: hard chromium plating treatment + special seals for longer lifespan. Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning.
- Speed range** — 0.3~5.0m
- Temperature range** — -10~+80°C
- Installation** — CJAC offers customers a variety of mounting options such as nut (NUT) and flange. In addition, customers can also customize services according to their own requirements.
- Special demands** — CJAC can customize solutions based on your requirements.

### Model Description

AC — Model  
04 — Outer (mm)  
— 04 — Buffer stroke (mm)  
— -S — -S: With impact head  
— -SN: Without impact head



| Model     | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ETC) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Without impact head | With impact head | Positioning nut (SC) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|-----------|-------------|--------------------------------|----------------------------------|---------------------------------|-----------------------------|---------------------|------------------|----------------------|-----------------------------------------|------------|
| AC0404-S  | 4           | 0.1                            | 270                              | 1.5                             | 0.3-1.0                     | o                   | o                | o                    | -10~+80                                 | 2.6        |
| AC0604-S  | 4           | 0.5                            | 720                              | 3                               | 0.3-1.0                     | o                   | o                | o                    | -10~+80                                 | 4.0        |
| AC0806-S  | 6           | 3                              | 7,000                            | 6                               | 0.3-2.5                     | o                   | o                | o                    | -10~+80                                 | 14         |
| AC1007-S  | 7           | 6                              | 12,400                           | 12                              | 0.3-3.5                     | o                   | o                | o                    | -10~+80                                 | 28         |
| AC1210-S  | 10          | 12                             | 22,500                           | 22                              | 0.3-4.0                     | o                   | o                | o                    | -10~+80                                 | 36         |
| AC1412-S  | 12          | 20                             | 33,000                           | 40                              | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 67         |
| AC1412-SM | 12          | 14                             | 24,000                           | 25                              | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 60         |
| AC2015-S  | 15          | 59                             | 38,000                           | 120                             | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 160        |
| AC2525-S  | 25          | 80                             | 60,000                           | 180                             | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 295        |
| AC2725-S  | 25          | 147                            | 72,000                           | 270                             | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 375        |

| Model     | Thread  | Stroke (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | I (mm) | Illustration |
|-----------|---------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|
| AC0404-S  | M4x0.5  | 4           | 32.7   | 24.7   | 2.9    | 1.2    | 4      | 19.7   | 0.5    | 7      | 2      | 1            |
| AC0604-S  | M6x0.75 | 4           | 36.5   | 28.5   | 4.5    | 1.8    | 4      | 22.5   | 2      | 8      | 3      | 1            |
| AC0806-S  | M8x1.0  | 6           | 55.2   | 40.6   | 6.6    | 2.9    | 8.6    | 33.6   | 2      | 11     | 3      | 2            |
| AC1007-S  | M10x1.0 | 7           | 62.6   | 47     | 8.6    | 3      | 8.6    | 39     | 3      | 12.7   | 3      | 2            |
| AC1210-S  | M12x1.0 | 10          | 71.3   | 52.5   | 10.3   | 3      | 8.8    | 44     | 3      | 14     | 4      | 2            |
| AC1412-S  | M14x1.5 | 12          | 93.2   | 70     | 12     | 4      | 11.2   | 61     | 4      | 19     | 5      | 2            |
| AC1412-SM | M14x1.5 | 12          | 81.2   | 58     | 12     | 4      | 11.2   | 49.5   | 3.5    | 19     | 5      | 2            |
| AC2015-S  | M20x1.5 | 15          | 106.3  | 76     | 17.8   | 6      | 15.3   | 65     | 4      | 26     | 7      | 2            |
| AC2525-S  | M25x1.5 | 25          | 136    | 92     | 22     | 8      | 19     | 82     | —      | 32     | 9      | 2            |
| AC2725-S  | M27x1.5 | 25          | 146    | 102    | 22     | 8      | 19     | 86     | 5      | 32     | 6      | 2            |

FIG. 1

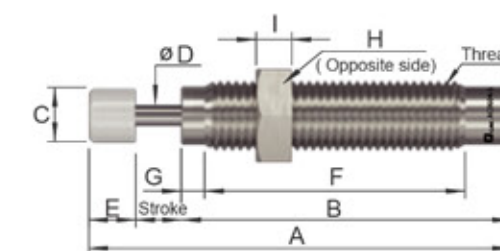
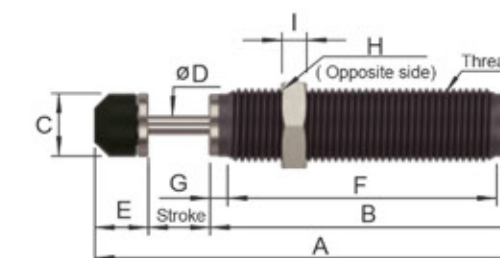


FIG. 2





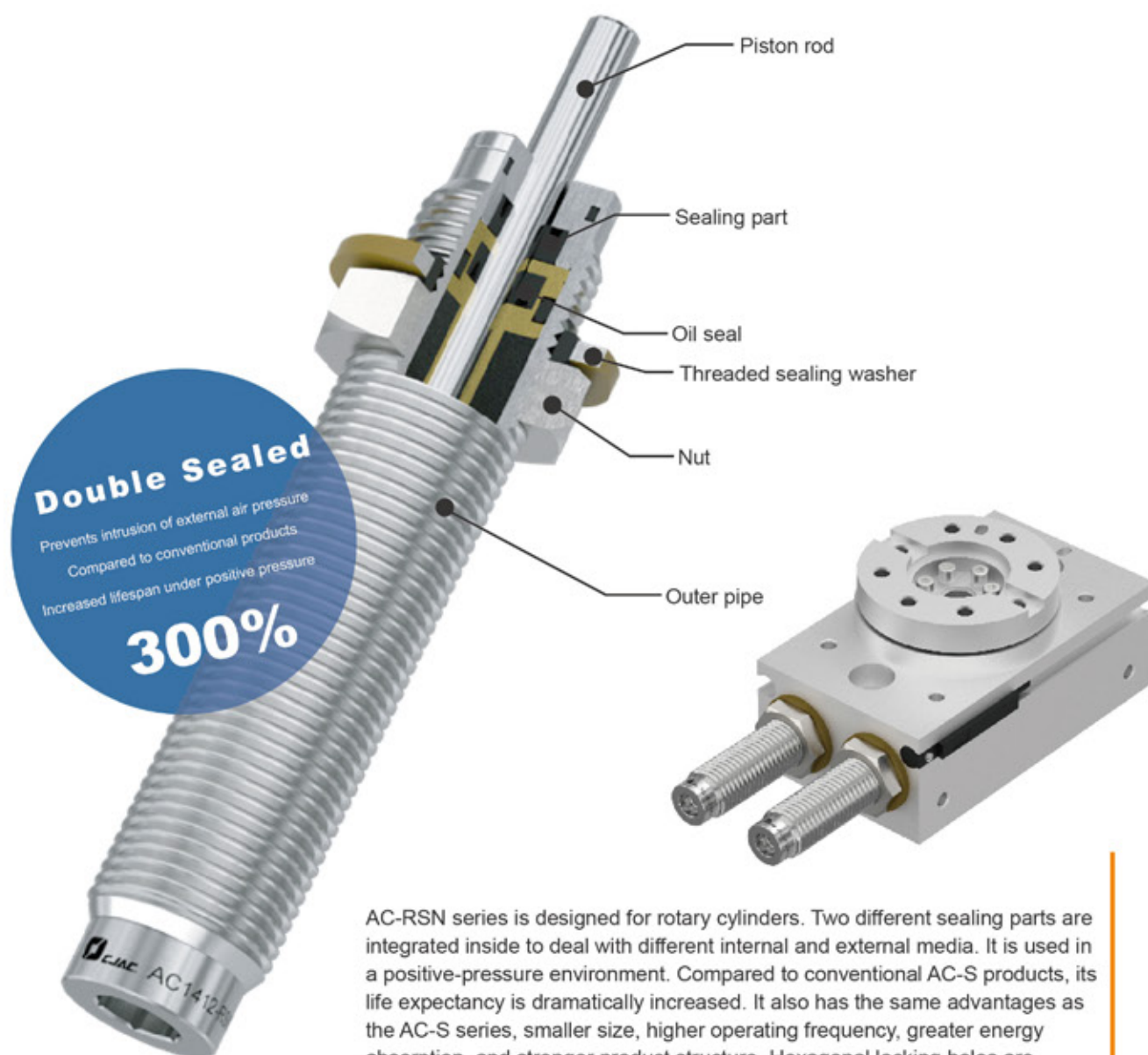
# AC-RSN



AC-RSN series  
Performance and Shape Parameters

## Shock absorber for rotating cylinder

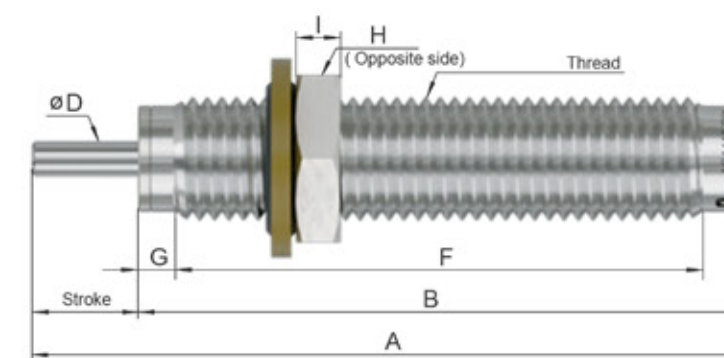
- Material — Outer pipe: AISI 1215 nitriding sandblasting treatment or SUS303 enhances rust resistance.  
Axis: hard chromium plating treatment + special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning
- Installation — CJAC offers customers a variety of mounting options such as nut (NUT), flange (F), and angle adapter (SLA). In addition, customers can also customize services according to their own requirements.
- Speed range — 0.3~5.0m/s
- Temperature range — -10~+80°C
- Special demands — CJAC can customize solutions based on your requirements.



AC-RSN series is designed for rotary cylinders. Two different sealing parts are integrated inside to deal with different internal and external media. It is used in a positive-pressure environment. Compared to conventional AC-S products, its life expectancy is dramatically increased. It also has the same advantages as the AC-S series, smaller size, higher operating frequency, greater energy absorption, and stronger product structure. Hexagonal locking holes are provided at the bottom for more convenient installation.

| Model      | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ETC) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Without impact head | With impact head | Positioning nut (SC) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|------------|-------------|--------------------------------|----------------------------------|---------------------------------|-----------------------------|---------------------|------------------|----------------------|-----------------------------------------|------------|
| AC0806-RSN | 6           | 3                              | 7,000                            | 6                               | 0.3-2.5                     | o                   | o                | o                    | -10~+80                                 | 12         |
| AC1007-RSN | 7           | 6                              | 12,400                           | 12                              | 0.3-3.5                     | o                   | o                | o                    | -10~+80                                 | 22         |
| AC1210-RSN | 10          | 12                             | 22,500                           | 22                              | 0.3-4.0                     | o                   | o                | o                    | -10~+80                                 | 34         |
| AC1412-RSN | 12          | 20                             | 33,000                           | 40                              | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 56         |
| AC2015-RSN | 15          | 59                             | 38,000                           | 120                             | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 138        |
| AC2725-RSN | 25          | 147                            | 72,000                           | 270                             | 0.3-5.0                     | o                   | o                | o                    | -10~+80                                 | 345        |

| Model      | Thread   | Stroke (mm) | A (mm) | B (mm) | D (mm) | F (mm) | G (mm) | H (mm) | I (mm) |
|------------|----------|-------------|--------|--------|--------|--------|--------|--------|--------|
| AC0806-RSN | M8xP1.0  | 6           | 48.2   | 42.2   | 2.9    | 35.2   | 2      | 11     | 3      |
| AC1007-RSN | M10xP1.0 | 7           | 58.4   | 51.4   | 3      | 43.4   | 3      | 12.7   | 3      |
| AC1210-RSN | M12xP1.0 | 10          | 64.5   | 54.5   | 3      | 46     | 3      | 14     | 4      |
| AC1412-RSN | M14xP1.5 | 12          | 81     | 69     | 4      | 60     | 4      | 19     | 5      |
| AC2015-RSN | M20xP1.5 | 15          | 91     | 76     | 6      | 65     | 4      | 26     | 7      |
| AC2725-RSN | M27xP1.5 | 25          | 129.5  | 104.5  | 8      | 91.5   | 5      | 32     | 9      |

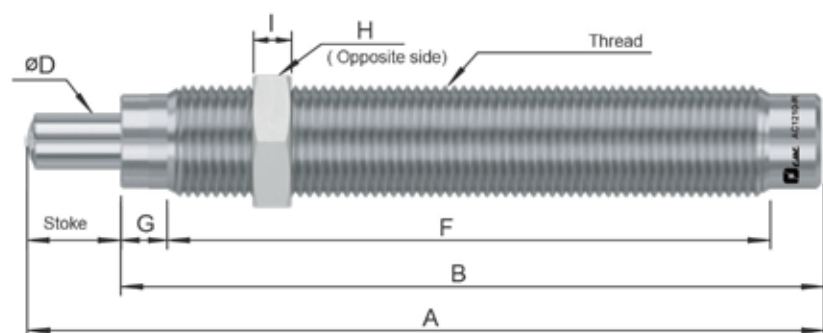
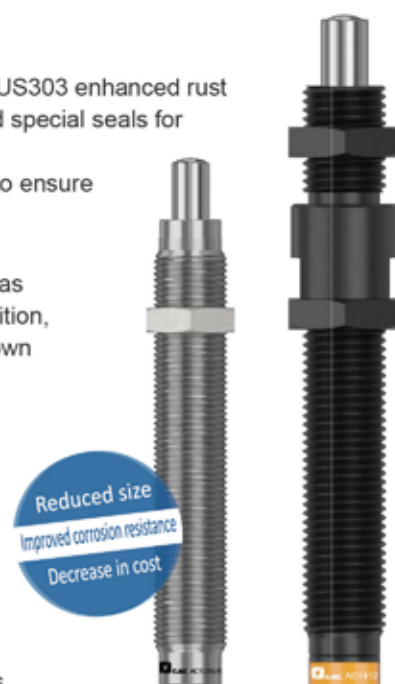




# AC-R Series

## Shock absorber for rotating cylinder

- Material — Outer pipe: AISI 1215 nitriding sandblasting treatment or SUS303 enhanced rust resistance. Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning
- Installation — CJAC offers customers a variety of mounting options such as nut (NUT), flange (F), and positioning stop nut (SC). In addition, customers can also customize services according to their own requirements.
- Speed range — 0.3~5.0m/s
- Temperature range — -10~+80°C
- Special demands — CJAC can customize solutions based on your requirements.



| Model    | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ET) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|----------|-------------|--------------------------------|---------------------------------|---------------------------------|-----------------------------|-----------------------------------------|------------|
| AC1412-R | 12          | 12                             | 22,500                          | 22                              | 0.3-4.0                     | -10~+80                                 | 47         |

| Model    | Thread  | Stroke (mm) | A (mm) | B (mm) | D (mm) | F (mm) | G (mm) | H (mm) | I (mm) |
|----------|---------|-------------|--------|--------|--------|--------|--------|--------|--------|
| AC1412-R | M14x1.0 | 12          | 105.4  | 93.2   | 8      | 79.9   | 8.5    | 14     | 5      |

# AC-K Series

## Shock absorber for robotic arms

AC series  
Shape parameters



AC-K series products can effectively absorb the vibration and noise generated by high-speed motion, and can convert kinetic energy into heat energy and release it into the air. Therefore, this product can stop the items smoothly and effectively in each movement. In the past, many conventional manufacturers used to utilize PU rubber, springs, and other materials as buffers to save costs. However, this often results in poor performance, and the noise issue is still and the machine is not efficient, while the mechanical equipment is prematurely depleted. The adoption of CJAC's shock absorber will effectively solve the disadvantages caused by bad buffers, improving mechanical efficiency, increasing production capacity, and protecting the lifespan of the machine. Both AC-K and ACD are suitable for high-speed impact working environments, and their long-traverse mobile devices are mostly used for robotic arms.

- Material — Outer pipe: AISI1215 and STKM11A oxidized black treatment enhances rust resistance.  
Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning
- Speed range — 1.0~6.8m/s
- Temperature range — -10~+80°C
- Installation — CJAC offers customers a variety of mounting options such as nut (NUT), flange (F), and positioning stop nut (SC). In addition, customers can also customize services according to their own requirements.
- Special demands — CJAC can customize solutions based on your requirements.

### Model Description

AC — Model  
14 — Outer diameter (mm)  
— 15 — Buffer stroke (mm)  
— 6K — The higher the speed, the higher the permitted collision speed.





| Model        | Stroke<br>(mm) | Maximum<br>absorbed<br>energy<br>Nm(ET) | Absorbed<br>energy<br>per hour<br>Nm(ETC) | Maximum<br>effective<br>weight<br>kg(Me) | Highest<br>impact<br>speed<br>m/s(v) | Without<br>impact<br>head | Positioning<br>nut<br>(SC) | Operating<br>temperature<br>(Non-frozen)<br>(°C) | Weight<br>(g) |
|--------------|----------------|-----------------------------------------|-------------------------------------------|------------------------------------------|--------------------------------------|---------------------------|----------------------------|--------------------------------------------------|---------------|
| AC1415-6K    | 15             | 9.8                                     | 35,280                                    | 30                                       | 1.0                                  | o                         | o                          | -10~+80                                          | 80            |
| AC1415-7K    | 15             | 9.8                                     | 35,280                                    | 15                                       | 1.5                                  | o                         | o                          | -10~+80                                          | 80            |
| AC2020-2K    | 20             | 36                                      | 22,000                                    | 27                                       | 2.0                                  | o                         | o                          | -10~+80                                          | 170           |
| AC2030-5K    | 30             | 44                                      | 26,460                                    | 60                                       | 1.2                                  | o                         | —                          | -10~+80                                          | 185           |
| AC2030-6K    | 30             | 44                                      | 26,460                                    | 30                                       | 1.7                                  | o                         | —                          | -10~+80                                          | 185           |
| AC2030-7K    | 30             | 44                                      | 26,460                                    | 15                                       | 2.4                                  | o                         | —                          | -10~+80                                          | 185           |
| AC2030-8K    | 30             | 44                                      | 26,460                                    | 8                                        | 2.8                                  | o                         | —                          | -10~+80                                          | 185           |
| AC2030-16K   | 30             | 44                                      | 26,460                                    | 5                                        | 4.2                                  | o                         | —                          | -10~+80                                          | 205           |
| AC2030-18K   | 30             | 44                                      | 26,460                                    | 3                                        | 6.0                                  | o                         | o                          | -10~+80                                          | 205           |
| AC2050-10K   | 50             | 59                                      | 35,280                                    | 30                                       | 2.0                                  | o                         | o                          | -10~+80                                          | 250           |
| AC2050-11K   | 50             | 59                                      | 35,280                                    | 22                                       | 2.4                                  | o                         | o                          | -10~+80                                          | 250           |
| AC2050-12K   | 50             | 59                                      | 35,280                                    | 15                                       | 2.8                                  | o                         | o                          | -10~+80                                          | 250           |
| AC2050-16K   | 50             | 59                                      | 35,280                                    | 5                                        | 5.0                                  | o                         | o                          | -10~+80                                          | 250           |
| AC2050-17K   | 50             | 59                                      | 35,280                                    | 3                                        | 6.8                                  | o                         | o                          | -10~+80                                          | 250           |
| AC2050D-13SK | 50             | 59                                      | 35,280                                    | 8                                        | 3.8                                  | o                         | o                          | -10~+80                                          | 275           |
| AC2065-2KW   | 65             | 65                                      | 38,300                                    | 28                                       | 3.0                                  | o                         | o                          | -10~+80                                          | 275           |

FIG. 1

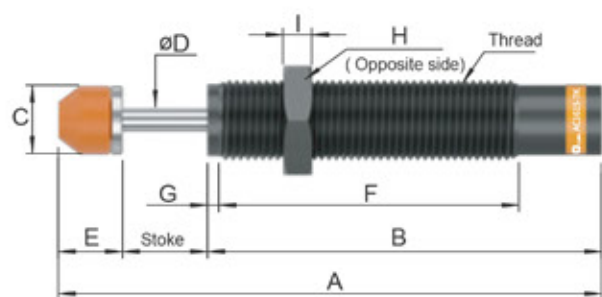


FIG. 2

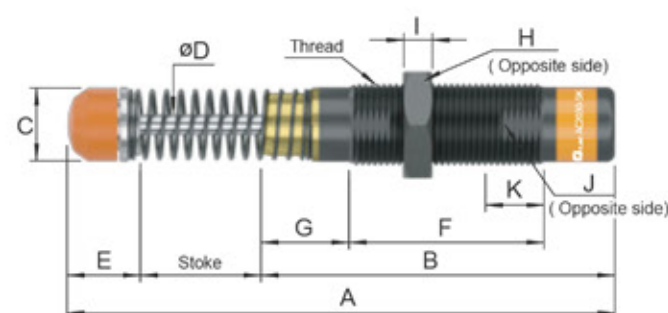


FIG. 3

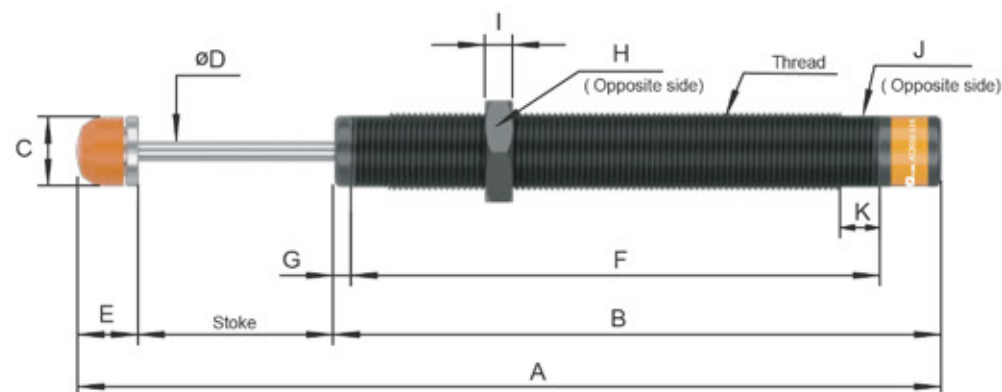


FIG. 4

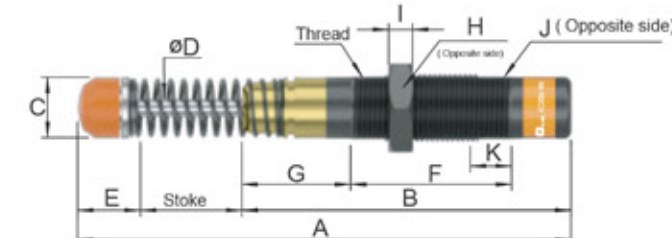
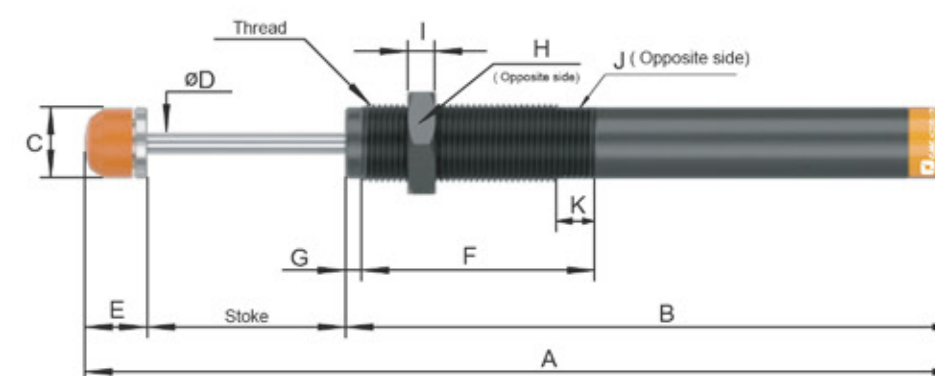


FIG. 5



| Model        | Thread  | Stroke<br>(mm) | A<br>(mm) | B<br>(mm) | C<br>(mm) | D<br>(mm) | E<br>(mm) | F<br>(mm) | G<br>(mm) | H<br>(mm) | I<br>(mm) | J<br>(mm) | K<br>(mm) | Illustration |
|--------------|---------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|
| AC1415-6K    | M14x1.5 | 15             | 95.6      | 69.4      | 12        | 4         | 11.2      | 52.7      | 2         | 19        | 5         | —         | —         | 1            |
| AC1415-7K    | M14x1.5 | 15             | 95.6      | 69.4      | 12        | 4         | 11.2      | 52.7      | 2         | 19        | 5         | —         | —         | 1            |
| AC2020-2K    | M20x1.5 | 20             | 128.8     | 93        | 17.8      | 5         | 15.8      | 74.5      | 3.8       | 26        | 7         | —         | —         | 1            |
| AC2030-5K    | M20x1.5 | 30             | 133.7     | 86        | 17.8      | 5         | 17.7      | 48        | 21        | 26        | 7         | 18.2      | 10        | 2            |
| AC2030-6K    | M20x1.5 | 30             | 133.7     | 86        | 17.8      | 5         | 17.7      | 48        | 21        | 26        | 7         | 18.2      | 10        | 2            |
| AC2030-7K    | M20x1.5 | 30             | 133.7     | 86        | 17.8      | 5         | 17.7      | 48        | 21        | 26        | 7         | 18.2      | 10        | 2            |
| AC2030-8K    | M20x1.5 | 30             | 133.7     | 86        | 17.8      | 5         | 17.7      | 48        | 21        | 26        | 7         | 18.2      | 10        | 2            |
| AC2030-16K   | M20x1.5 | 30             | 146.5     | 97.8      | 17.8      | 5         | 17.7      | 48        | 32.8      | 26        | 7         | 18.2      | 10        | 2            |
| AC2030-18K   | M20x1.5 | 30             | 146.5     | 97.8      | 17.8      | 5         | 17.7      | 48        | 32.8      | 26        | 7         | 18.2      | 10        | 2            |
| AC2050-10K   | M20x1.5 | 50             | 221.8     | 156       | 17.8      | 5         | 15.8      | 136.5     | 4         | 26        | 7         | 18.2      | 10        | 3            |
| AC2050-11K   | M20x1.5 | 50             | 221.8     | 156       | 17.8      | 5         | 15.8      | 136.5     | 4         | 26        | 7         | 18.2      | 10        | 3            |
| AC2050-12K   | M20x1.5 | 50             | 221.8     | 156       | 17.8      | 5         | 15.8      | 136.5     | 4         | 26        | 7         | 18.2      | 10        | 3            |
| AC2050-16K   | M20x1.5 | 50             | 221.8     | 156       | 17.8      | 5         | 15.8      | 136.5     | 4         | 26        | 7         | 18.2      | 10        | 3            |
| AC2050-17K   | M20x1.5 | 50             | 221.8     | 156       | 17.8      | 5         | 15.8      | 60        | 4         | 26        | 7         | 18.2      | 10        | 5            |
| AC2050D-13SK | M20x1.5 | 50             | 195       | 120.7     | 17.8      | 5         | 17.7      | 70.6      | 32.7      | 26        | 7         | 18.2      | 10        | 4            |
| AC2065-2KW   | M20x1.5 | 65             | 267.3     | 186.5     | 17.8      | 6         | 15.8      | 64.5      | 3.5       | 26        | 7         | 18.2      | 10        | 5            |



# ACD Series

## Shock absorber (Two-way damper) for robotic arms



The ACD series adopt a two-way buffer structure, so they have different damping effects at both ends. They are suitable for high-speed places, and they are commonly used in mechanical arms to eliminate equipment noise and vibration, which can greatly improve the operating speed of the robotic arm.

- Material** — Outer pipe: AISI1215 and STKM11A oxidized black treatment enhances rust resistance  
Piston rod: hard chromium plating treatment + special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning
- Speed range** — 1.0~3.5m/s
- Temperature range** — -10~+80°C
- Installation** — CJAC offers customers a variety of mounting options such as nut (NUT) and positioning stop nut (SC). In addition, customers can also customize services according to their own requirements.
- Special demands** — CJAC can customize solutions based on your requirements.

AC series  
Shape parameters

| Model            | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ETC) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|------------------|-------------|--------------------------------|----------------------------------|---------------------------------|-----------------------------|-----------------------------------------|------------|
| ACD2050-2(WY)    | 50          | 70                             | 72,000                           | 530                             | 3.5                         | -10~+80                                 | 470        |
| ACD2050-2(WY)X   | 50          | 70                             | 72,000                           | 530                             | 3.5                         | -10~+80                                 | 450        |
| ACD2050-2(WY)X-A | 50          | 70                             | 72,000                           | 530                             | 3.5                         | -10~+80                                 | 470        |
| ACD2050-2(WY)X-B | 50          | 70                             | 72,000                           | 530                             | 3.5                         | -10~+80                                 | 460        |

| Model            | Thread  | Stroke (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E1 (mm) | E2 (mm) | F (mm) | H (mm) | I (mm) | M (mm) | Illustration |
|------------------|---------|-------------|--------|--------|--------|--------|---------|---------|--------|--------|--------|--------|--------------|
| ACD2050-2(WY)    | M20x1.5 | 50          | 313.8  | 172.8  | 17.8   | 6      | 20.5    | 20.5    | 12.5   | 26     | 7      | 32     | 1            |
| ACD2050-2(WY)X   | M20x1.5 | 50          | 313.8  | 172.8  | 17.8   | 6      | 20.5    | 20.5    | 12.5   | 26     | 7      | 27     | 1            |
| ACD2050-2(WY)X-A | M20x1.5 | 50          | 317.8  | 172.8  | 17.8   | 6      | 20.5    | 24.5    | 13     | 26     | 7      | 27     | 2            |
| ACD2050-2(WY)X-B | M20x1.5 | 50          | 313.8  | 172.8  | 17.8   | 6      | 20.5    | 20.5    | 13.5   | 26     | 7      | 27     | 1            |

FIG. 1

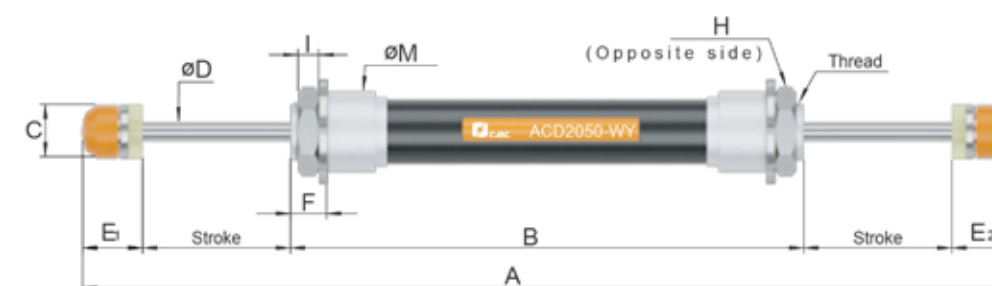
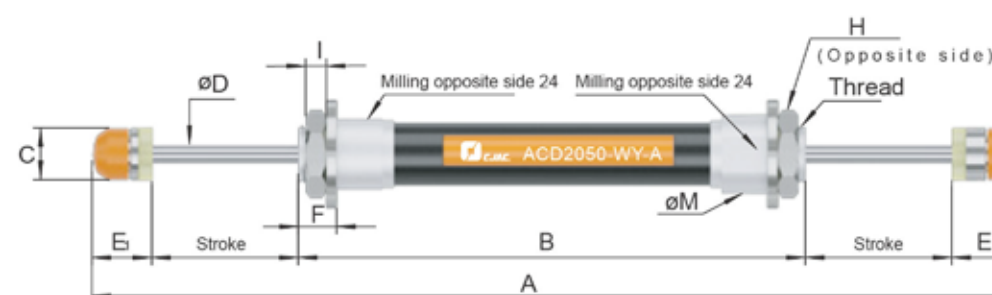


FIG. 2





# AC/AD Series

## Shock absorber for stopper cylinder

The shock absorber for the stopper cylinder can be divided into two types of structures: automatic compensation type and adjustable type. It can be installed inside the stopper cylinder to provide smooth deceleration and stoppage for moving objects.

**Automatic compensation model:** The design of the external pressure cylinder is composed of a one-piece structure; the structure is compact and safe, so as to avoid deformation of the piston rod caused by the oblique angle impact during machine operation. In order to reduce the friction between the end face of the piston rod, it is recommended that the interface surface be designed for rolling friction.

**Adjustable model:** In order to avoid the adverse effects caused by the off-angle impact, the piston rod adopts a two-stage structure. The impact end face adopts a rounded design. In this structure, there is a unilateral eccentricity adjustment ranging from 0° to 270°, which can effectively increase the adjustment range, making it more adaptable to a wider range.

○ **Material** — Outer pipe: AISI1215 and STKM11A oxidized black, and the nickel plating treatment enhances rust resistance  
Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning.

○ **Temperature range** — -10~+85°C

○ **Installation** — The users can use the threaded mounting method, or directly put it in the cylinder.

○ **Special demands** — CJAC can customize solutions based on your requirements.

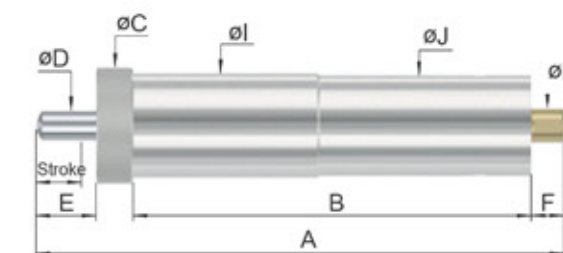
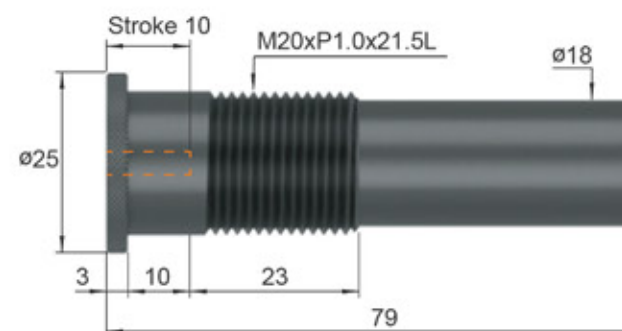


| Model     | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ETC) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|-----------|-------------|--------------------------------|----------------------------------|---------------------------------|-----------------------------|-----------------------------------------|------------|
| HC2010-N  | 10          | 25                             | 15,000                           | 120                             | 3.0                         | -10~+80                                 | 123.5      |
| SFC2010-N | 10          | 25                             | 15,000                           | 120                             | 3.0                         | -10~+80                                 | 118        |
| YAD1408-N | 8           | 16                             | 12,000                           | 40                              | 4.0                         | -10~+80                                 | 56.5       |
| AD2207-N  | 7           | 28                             | 18,000                           | 230                             | 3.5                         | -10~+80                                 | 170.5      |
| AD2208-N  | 8           | 30                             | 19,000                           | 240                             | 3.5                         | -10~+80                                 | 178.5      |
| AD2911-N  | 11          | 40                             | 35,000                           | 300                             | 3.0                         | -10~+80                                 | 373        |
| AD3615-N  | 15          | 50                             | 45,000                           | 450                             | 3.0                         | -10~+80                                 | 812.5      |

| Model     | Stroke (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | I (mm) | J (mm) | L (mm) | Illustration |
|-----------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|
| YAD1408-N | 8           | 70.9   | 53.5   | 15.6   | 4      | 8      | 4.4    | —      | 4.6    | 14     | 13.5   | —      | 1            |
| AD2207-N  | 7           | 102.1  | 72.3   | 25     | 8      | 15.5   | 5      | 3.3    | 8      | 22     | 21.6   | 14     | 2            |
| AD2208-N  | 8           | 102    | 73     | 24     | 8      | 12.2   | 4.8    | —      | 8      | 22     | 21.6   | —      | 1            |
| AD2911-N  | 11          | 129.5  | 93.5   | 34     | 8      | 13.5   | 14.4   | —      | 8      | 28.9   | —      | —      | 1            |
| AD3615-N  | 15          | 161    | 116.5  | 42     | 10     | 17.5   | 19     | —      | 10     | 35.9   | —      | —      | 1            |

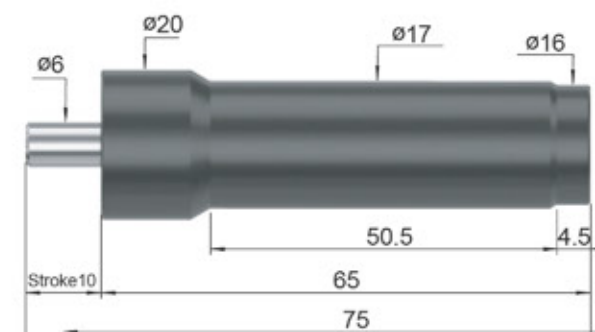
HC2010-N

FIG. 1



SFC2010-N

FIG. 2





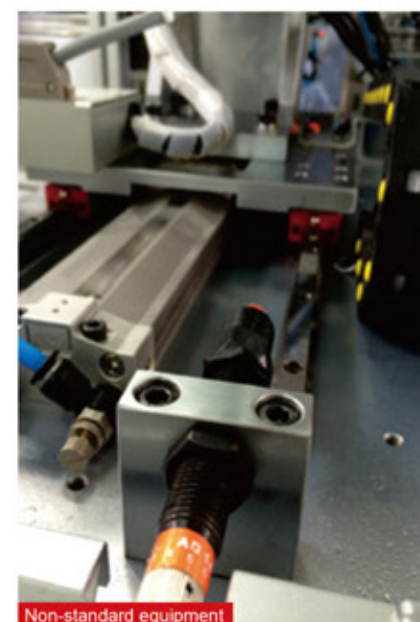
# AD Series



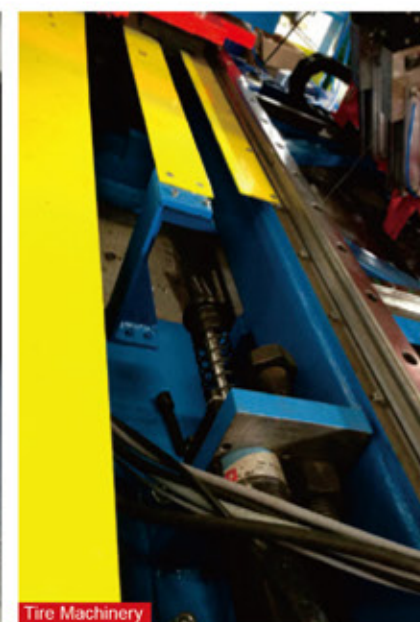
## Shock absorber (Adjustable damper)

The AD series is designed with an adjustable structure. When encountered with different loading, and different impact speeds, users can adjust the adjustment knob to modify the most appropriate scale, and perfectly absorb the energy generated by the objects. Compared to the AC series, the AD series has a higher energy absorption capacity and a larger range of applications.

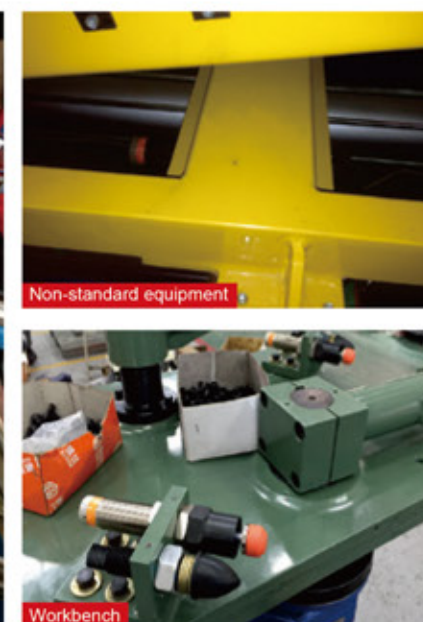
- Material — Outer pipe: AISI1215 and STKM11A oxidized black, and the nickel plating treatment enhances rust resistance. Some models adopt SUS303 stainless steel material, offering stronger anti-rust performance.  
Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning
- Speed range — 0.3~4.5m/s
- Temperature range — -10~+80°C
- Installation — CJAC offers customers a variety of mounting options such as nut (NUT), flange (F), positioning stop nut (SC), angle adapter (SLA), and more. In addition, customers can also customize services according to their own requirements.
- RoHS Certificates — All the AD1410, AD1425, AD2016, AD2025, AD2525, AD2540, AD2550, AD2580, AD3625, AD3650 have received the RoHS certifications. CJAC can customize
- Special demands — CJAC can customize solutions based on your requirements.



Non-standard equipment



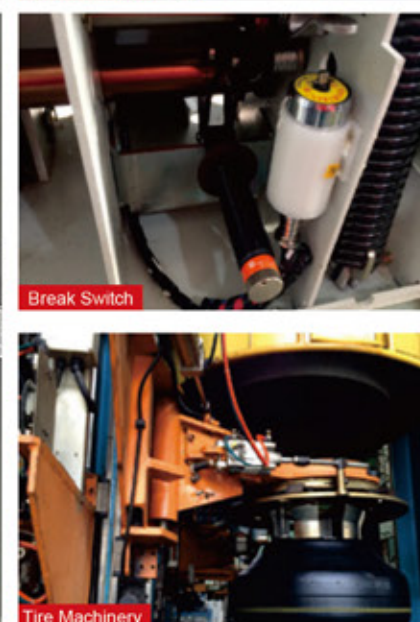
Tire Machinery



Workbench



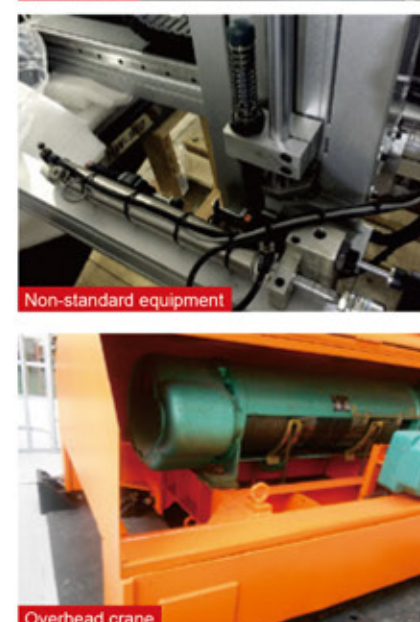
Break Switch



Tire Machinery



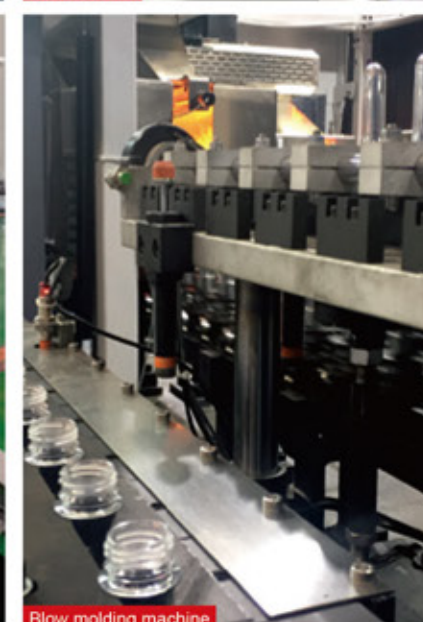
Break Switch



Non-standard equipment



Break Switch



Blow molding machine

|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |



| Model    | Stroke (mm) | Maximum absorbed energy Nm(E <sub>r</sub> ) | Absorbed energy per hour Nm(E <sub>h</sub> ) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Without impact head | With impact head | Flange F | Positioning nut (SC) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|----------|-------------|---------------------------------------------|----------------------------------------------|---------------------------------|-----------------------------|---------------------|------------------|----------|----------------------|-----------------------------------------|------------|
| EAD1007  | 7           | 6                                           | 12,400                                       | 25                              | 3.0                         | o                   | o                | —        | o                    | -10~+80                                 | 28         |
| EAD1210  | 10          | 12                                          | 22,000                                       | 35                              | 3.0                         | o                   | o                | —        | o                    | -10~+80                                 | 66         |
| AD1410   | 10          | 20                                          | 25,000                                       | 80                              | 3.0                         | o                   | o                | —        | o                    | -10~+80                                 | 90         |
| AD1415   | 15          | 24                                          | 26,000                                       | 100                             | 3.0                         | o                   | o                | —        | o                    | -10~+80                                 | 120        |
| AD1425   | 25          | 28                                          | 27,500                                       | 140                             | 3.0                         | o                   | o                | —        | o                    | -10~+80                                 | 194        |
| AD1612   | 12          | 22                                          | 27,500                                       | 130                             | 3.0                         | o                   | o                | —        | o                    | -10~+80                                 | 200        |
| AD2016   | 16          | 28                                          | 28,500                                       | 200                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 245        |
| AD2016-C | 16          | 28                                          | 28,500                                       | 200                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 215        |
| AD2020   | 20          | 34                                          | 29,000                                       | 298                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 235        |
| AD2025   | 25          | 39                                          | 30,000                                       | 312                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 240        |
| AD2050   | 50          | 69                                          | 52,000                                       | 420                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 330        |
| AD2525   | 25          | 85                                          | 54,000                                       | 400                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 350        |
| AD2530   | 30          | 95                                          | 60,000                                       | 480                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 365        |
| AD2540   | 40          | 100                                         | 80,000                                       | 700                             | 3.5                         | —                   | o                | —        | o                    | -10~+80                                 | 455        |
| AD2550   | 50          | 120                                         | 90,000                                       | 720                             | 4.0                         | o                   | o                | —        | o                    | -10~+80                                 | 510        |
| AD2580   | 80          | 150                                         | 120,000                                      | 800                             | 4.0                         | o                   | o                | —        | o                    | -10~+80                                 | 585        |
| AD2725   | 25          | 85                                          | 54,000                                       | 400                             | 3.5                         | o                   | o                | —        | o                    | -10~+80                                 | 403        |
| AD3326   | 26          | 195                                         | 75,700                                       | 1400                            | 3.3                         | —                   | o                | —        | —                    | -10~+80                                 | 482        |
| AD3352   | 52          | 385                                         | 98,962                                       | 2400                            | 3.3                         | —                   | o                | —        | —                    | -10~+80                                 | 708        |

FIG. 1

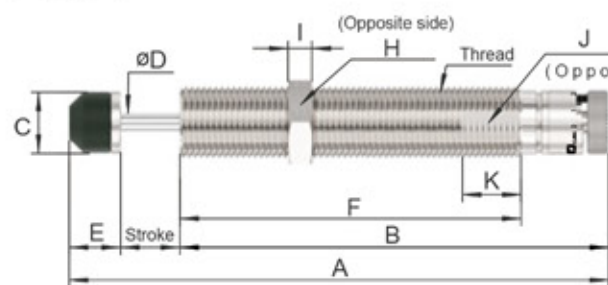


FIG. 2

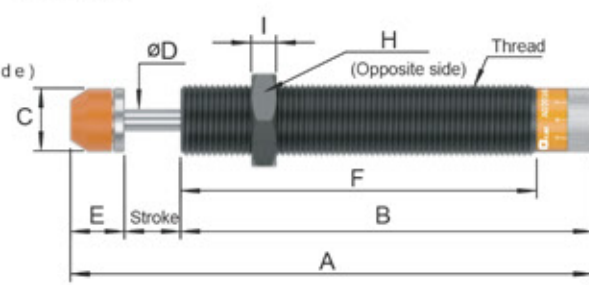
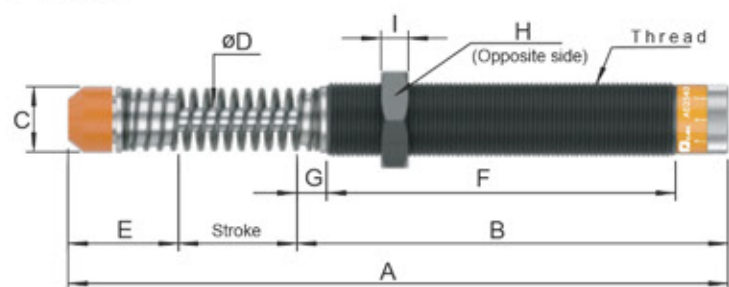


FIG. 3



| Model    | Thread  | Stroke (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | I (mm) | J (mm) | K (mm) | Illustration |
|----------|---------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|
| EAD1007  | M10x1.0 | 7           | 65     | 49.4   | 10.3   | 3      | 8.6    | 35.5   | 3.6    | 12.7   | 3      | —      | —      | 1            |
| EAD1210  | M12x1.0 | 10          | 90.3   | 71.7   | 10.3   | 3      | 8.6    | 57.3   | —      | 14     | 4      | —      | 10     | 1            |
| AD1410   | M14x1.5 | 10          | 109.7  | 88.5   | 12     | 4      | 11.2   | 72.5   | —      | 19     | 5      | —      | —      | 2            |
| AD1415   | M14x1.5 | 15          | 128.2  | 102    | 12     | 4      | 11.2   | 86     | —      | 19     | 5      | —      | —      | 2            |
| AD1425   | M14x1.5 | 25          | 153.2  | 117    | 12     | 4      | 11.2   | 101    | —      | 19     | 5      | —      | —      | 2            |
| AD1612   | M16x1.5 | 12          | 99     | 76.5   | 14     | 4      | 11.2   | 54.9   | —      | 19     | 6      | —      | —      | 2            |
| AD2016   | M20x1.5 | 16          | 148.3  | 117    | 17.8   | 6      | 15.3   | 101    | —      | 26     | 7      | —      | —      | 2            |
| AD2016-C | M20x1.5 | 16          | 127.3  | 96     | 17.8   | 6      | 15.3   | 80     | —      | 26     | 7      | —      | —      | 2            |
| AD2020   | M20x1.5 | 20          | 152.3  | 117    | 17.8   | 6      | 15.3   | 101    | —      | 26     | 7      | —      | —      | 2            |
| AD2025   | M20x1.5 | 25          | 157.3  | 117    | 17.8   | 6      | 15.3   | 101    | —      | 26     | 7      | —      | —      | 2            |
| AD2050   | M20x1.5 | 50          | 239.3  | 174    | 17.8   | 6      | 15.3   | 158    | —      | 26     | 7      | —      | —      | 2            |
| AD2525   | M25x1.5 | 25          | 162.5  | 118.5  | 22     | 8      | 19     | 101    | —      | 32     | 9      | —      | —      | 2            |
| AD2530   | M25x1.5 | 30          | 167.5  | 118.5  | 22     | 8      | 19     | 101    | —      | 32     | 9      | —      | —      | 2            |
| AD2540   | M25x1.5 | 40          | 221.5  | 144.5  | 22     | 8      | 37     | 117    | 10     | 32     | 9      | —      | —      | 3            |
| AD2550   | M25x1.5 | 50          | 247    | 178    | 22     | 8      | 19     | 100    | —      | 32     | 9      | 22.8   | 11     | 4            |
| AD2580   | M25x1.5 | 80          | 343.5  | 244.5  | 22     | 8      | 19     | 100    | —      | 32     | 9      | 22.8   | 11     | 4            |
| AD2725   | M27x1.5 | 25          | 162.5  | 118.5  | 22     | 8      | 19     | 101    | —      | 32     | 9      | —      | —      | 2            |
| AD3326   | M33x1.5 | 26          | 150.3  | 110.5  | 28.5   | 10     | 13.8   | 77.9   | 19.1   | 45     | 11     | 29.7   | 16     | 5            |
| AD3352   | M33x1.5 | 52          | 217.3  | 151.5  | 28.5   | 10     | 13.8   | 118.7  | 19.1   | 45     | 11     | 29.7   | 16     | 5            |

FIG. 4

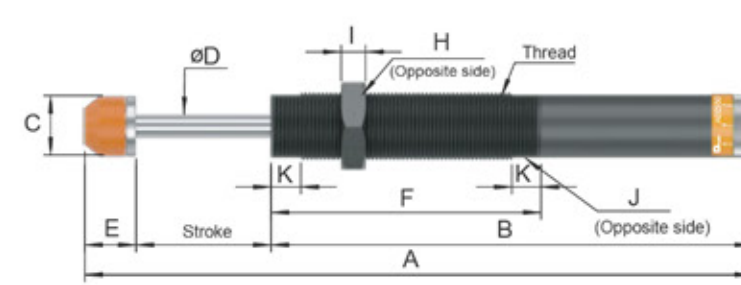
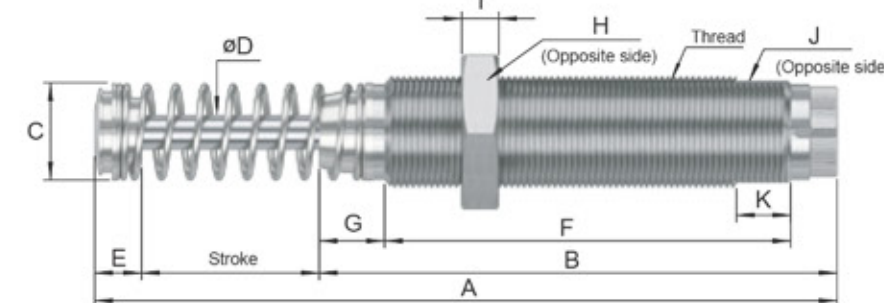


FIG. 5





| Model         | Stroke<br>(mm) | Maximum<br>absorbed<br>energy<br>Nm(E <sub>i</sub> ) | Absorbed<br>energy<br>per hour<br>Nm(E <sub>h</sub> ) | Maximum<br>effective<br>weight<br>kg(Me) | Highest<br>impact<br>speed<br>m/s(v) | Without<br>impact<br>head | With<br>impact<br>head | Flange<br>F | Positioning<br>nut<br>(SC) | Operating<br>temperature<br>(Non-frozen)<br>(°C) | Weight<br>(g) |
|---------------|----------------|------------------------------------------------------|-------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------|------------------------|-------------|----------------------------|--------------------------------------------------|---------------|
| AD3625        | 25             | 150                                                  | 81,000                                                | 1400                                     | 3.0                                  | —                         | o                      | o           | o                          | -10~+80                                          | 940           |
| AD3650        | 50             | 300                                                  | 100,000                                               | 2400                                     | 3.0                                  | —                         | o                      | o           | o                          | -10~+80                                          | 1,120         |
| AD4225        | 25             | 260                                                  | 125,000                                               | 3,000                                    | 3.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,260         |
| AD4225-W      | 25             | 260                                                  | 125,000                                               | 3,000                                    | 3.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,150         |
| AD4225-NH-AI  | 25             | 260                                                  | 125,000                                               | 3,000                                    | 3.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,140         |
| AD4250        | 50             | 500                                                  | 150,000                                               | 4,000                                    | 4.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,480         |
| AD4250-W      | 50             | 500                                                  | 150,000                                               | 4,000                                    | 4.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,350         |
| AD4250-NH-AI  | 50             | 500                                                  | 150,000                                               | 4,000                                    | 4.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,340         |
| AD4275        | 75             | 750                                                  | 180,000                                               | 6,000                                    | 4.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,700         |
| AD4275-W      | 75             | 750                                                  | 180,000                                               | 6,000                                    | 4.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 1,600         |
| AD64050(-B)   | 50             | 1,200                                                | 150,500                                               | 12,727                                   | 1.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 4,050         |
| AD64050(-B)-W | 50             | 1,200                                                | 150,000                                               | 12,727                                   | 1.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 3,500         |
| AD64100(-B)   | 100            | 2,400                                                | 200,000                                               | 18,181                                   | 1.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 5,150         |
| AD64100(-B)-W | 100            | 2,400                                                | 200,000                                               | 18,181                                   | 1.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 4,400         |
| AD64150(-B)   | 150            | 3,600                                                | 250,000                                               | 23,636                                   | 1.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 6,700         |
| AD64150(-B)-W | 150            | 3,600                                                | 250,000                                               | 23,636                                   | 1.5                                  | —                         | o                      | o           | —                          | -10~+80                                          | 5,970         |
| AD85050-W     | 50             | 2,300                                                | 372,000                                               | 16,800                                   | 4.3                                  | —                         | o                      | o           | —                          | -10~+80                                          | 6,370         |
| AD85090-W     | 90             | 4,000                                                | 652,000                                               | 30,000                                   | 4.3                                  | —                         | o                      | o           | —                          | -10~+80                                          | 7,510         |
| AD85125-W     | 125            | 5,700                                                | 933,000                                               | 42,000                                   | 4.3                                  | —                         | o                      | o           | —                          | -10~+80                                          | 8,000         |

FIG. 1

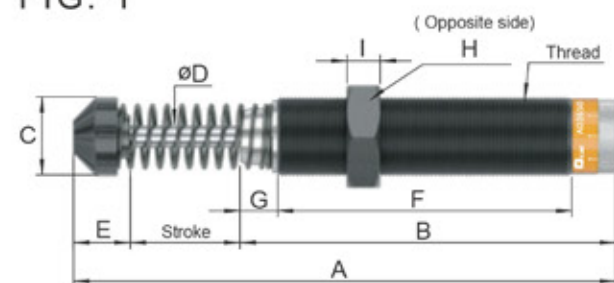


FIG. 3

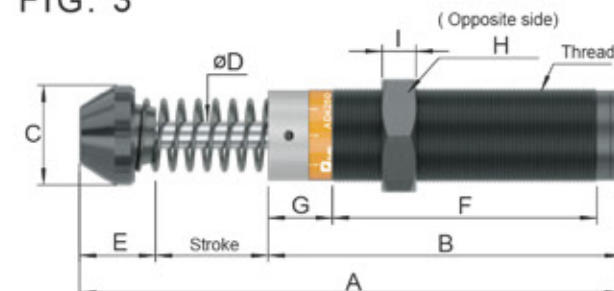
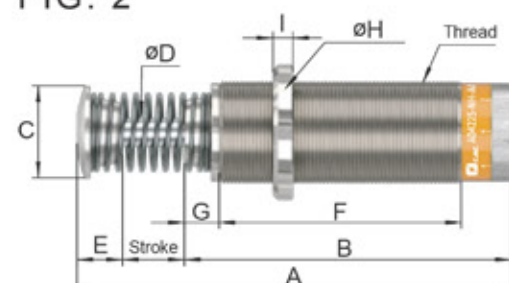


FIG. 2



| Model         | Thread                       | Stroke<br>(mm) | A<br>(mm) | B<br>(mm) | C<br>(mm) | D<br>(mm) | E<br>(mm) | F<br>(mm) | G<br>(mm) | H<br>(mm) | I<br>(mm) | Illustration |
|---------------|------------------------------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|
| AD3625        | M36x1.5                      | 25             | 184       | 133       | 35.5      | 10        | 26        | 103       | 10        | 46        | 15        | 1            |
| AD3650        | M36x1.5                      | 50             | 247       | 171       | 35.5      | 10        | 26        | 134       | 17        | 46        | 15        | 1            |
| AD4225        | M42x1.5                      | 25             | 186.5     | 127.5     | 44.5      | 12        | 34        | 99        | 28.5      | 50        | 15        | 3            |
| AD4225-W      | M42x1.5                      | 25             | 166.3     | 95.3      | 44.5      | 12        | 34        | 29.3      | 37.9      | —         | —         | 5            |
| AD4225-NH-AI  | M42x1.5                      | 25             | 176.1     | 132.6     | 37.5      | 12        | 18.5      | 98.5      | 14.1      | 55        | 8         | 2            |
| AD4250        | M42x1.5                      | 50             | 241       | 157       | 44.5      | 12        | 34        | 117.5     | 28.5      | 50        | 15        | 3            |
| AD4250-W      | M42x1.5                      | 50             | 219.6     | 123.6     | 44.5      | 12        | 34        | 47        | 48.2      | —         | —         | 5            |
| AD4250-NH-AI  | M42x1.5                      | 50             | 230.6     | 162.1     | 37.5      | 12        | 18.5      | 128       | 14.1      | 55        | 8         | 2            |
| AD4275        | M42x1.5                      | 75             | 301.5     | 187.5     | 44.5      | 12        | 39        | 148       | 28.5      | 50        | 15        | 3            |
| AD4275-W      | M42x1.5                      | 75             | 284.1     | 158.1     | 44.5      | 12        | 39        | 63        | 67.2      | —         | —         | 5            |
| AD64050(-B)   | M64x2.0<br>+(-B)UNF2 1/2 -12 | 50             | 247.8     | 146       | 59        | 20        | 51.8      | 26        | 24        | 76.2      | 9.4       | 4            |
| AD64050(-B)-W | M64x2.0<br>+(-B)UNF2 1/2 -12 | 50             | 243.8     | 140       | 59        | 20        | 51.8      | 50        | 50        | —         | —         | 5            |
| AD64100(-B)   | M64x2.0<br>+(-B)UNF2 1/2 -12 | 100            | 347.8     | 196       | 59        | 20        | 51.8      | 26        | 24        | 76.2      | 9.4       | 4            |
| AD64100(-B)-W | M64x2.0<br>+(-B)UNF2 1/2 -12 | 100            | 345.8     | 192       | 59        | 20        | 51.8      | 76        | 76        | —         | —         | 5            |
| AD64150(-B)   | M64x2.0<br>+(-B)UNF2 1/2 -12 | 150            | 467.8     | 256       | 59        | 20        | 61.8      | 26        | 24        | 76.2      | 9.4       | 4            |
| AD64150(-B)-W | M64x2.0<br>+(-B)UNF2 1/2 -12 | 150            | 455.8     | 242       | 59        | 20        | 61.8      | 76        | 76        | —         | —         | 5            |
| AD85050-W     | M85x2.0                      | 50             | 245       | 140       | 76        | 22        | 47        | 51        | 51        | —         | —         | 5            |
| AD85090-W     | M85x2.0                      | 90             | 322.5     | 179       | 76        | 22        | 47        | 71        | 71        | —         | —         | 5            |
| AD85125-W     | M85x2.0                      | 125            | 397.6     | 217       | 76        | 22        | 47        | 71        | 71        | —         | —         | 5            |

Note: With \*\*\* for non-standard tooth pitch, please contact CJAC for more installation methods

FIG. 4

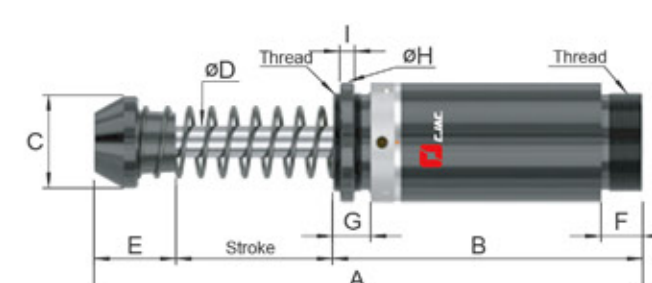
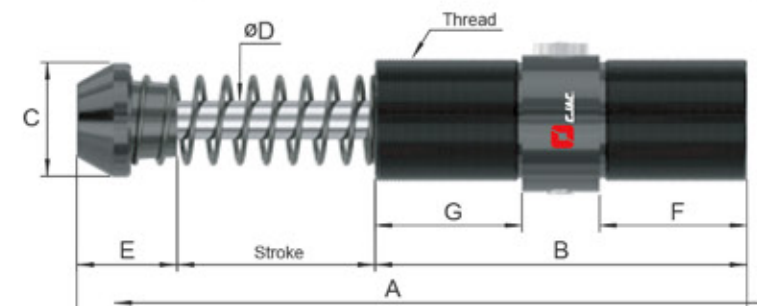


FIG. 5





# DL Series

## Shock absorber for circuit breaker

Among the high-voltage circuit breakers, the shock absorber is a very important core component. There are many reasons for this wide application. Firstly, when the circuit breaker is opened and closed, the mechanism moves the open end of the arc extinguishing chamber to a limited position, and the high-speed motion will produce a violent collision, so the metal collision will inevitably rebound. The rebound reduces the opening distance of the fracture, so that the withstand voltage of the fracture will be reduced, and the closing of the fracture will fail in critical circumstances.

CJAC designed a specific shock absorber for the circuit breaker. The shock absorber dedicated to the circuit breaker can absorb the collision energy generated during the machine opening, so it will minimize the rebound. In order to reduce the arcing time, the circuit breaker requires a faster opening speed. Moreover, in order to reduce the impact on the opening speed of the circuit breaker, we have designed the front section of the softer damping.

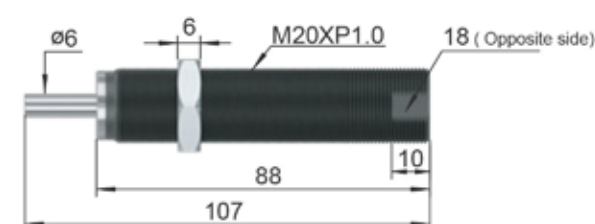
- Material — Outer pipe: AISI1215 and STKM11A oxidized black, and the nickel plating treatment enhances rust resistance  
Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure a long-lasting and stable cushioning effect
- Speed range — 0.5~5.0m/s (Can be customized to 20m/s)
- Temperature range — -20~+85°C (Can be customized to range from -40 to +85°C)
- Installation — CJAC offers you a variety of mounting options such as nuts (NUT) and flanges (F).  
CJAC can also customize solutions according to your demands
- Special demands — CJAC can customize solutions based on your requirements.



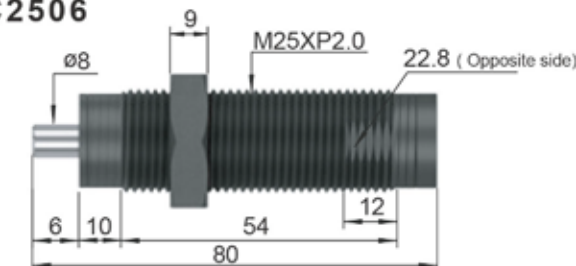
Passed Dutch KEMA test verification

| Model   | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ETC) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Without impact head | Without impact head | Operating temperature (Non-frozen) (°C) | Weight (g) |
|---------|-------------|--------------------------------|----------------------------------|---------------------------------|-----------------------------|---------------------|---------------------|-----------------------------------------|------------|
| DLC2019 | 19          | 160                            | 162,000                          | 36                              | 3.0                         | o                   | —                   | -30~+85                                 | 165        |
| DLC2506 | 6           | 19.6                           | 13,000                           | 9.8                             | 2.0                         | o                   | —                   | -30~+85                                 | 195        |
| DLC2511 | 11          | 35                             | 23,200                           | 120                             | 3.0                         | o                   | —                   | -30~+85                                 | 200        |
| DLC2512 | 12          | 38                             | 25,900                           | 100                             | 4.0                         | —                   | o                   | -40~+85                                 | 220        |
| DLC3010 | 10          | 90                             | 100,000                          | 201                             | 3.0                         | o                   | o                   | -20~+85                                 | 337        |
| DLC3012 | 12          | 65                             | 54,000                           | 143                             | 3.0                         | —                   | o                   | -20~+85                                 | 410        |
| DLC3613 | 13          | 78                             | 70,200                           | 270                             | 3.8                         | —                   | o                   | -20~+85                                 | 540        |

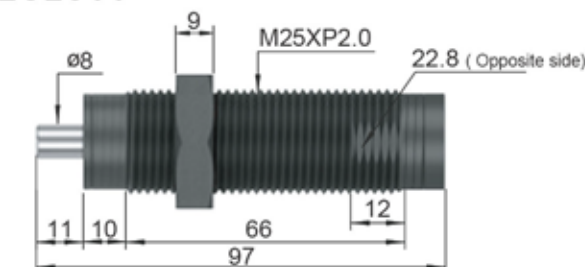
DLC2019



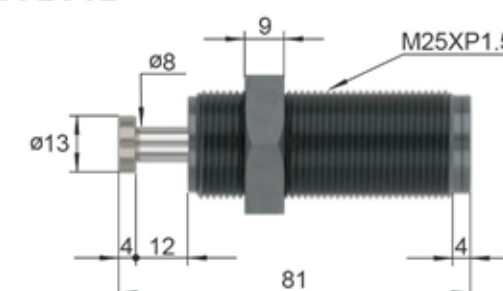
DLC2506



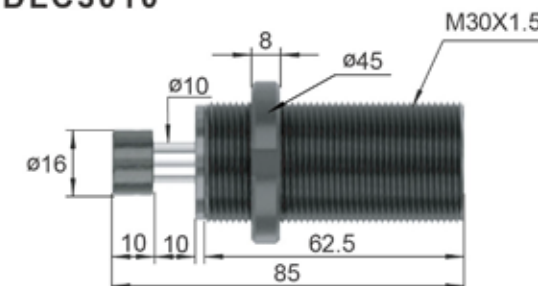
DLC2511



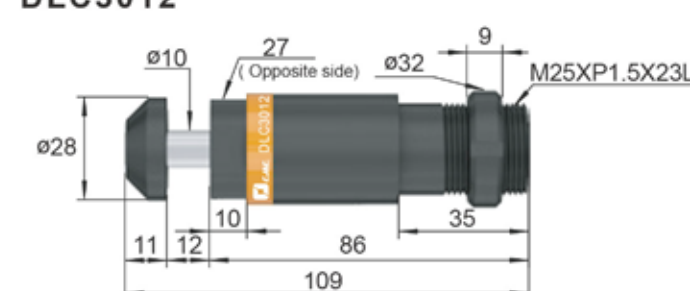
DLC2512



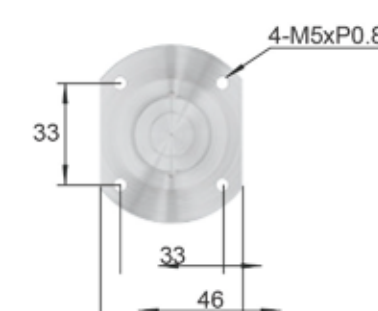
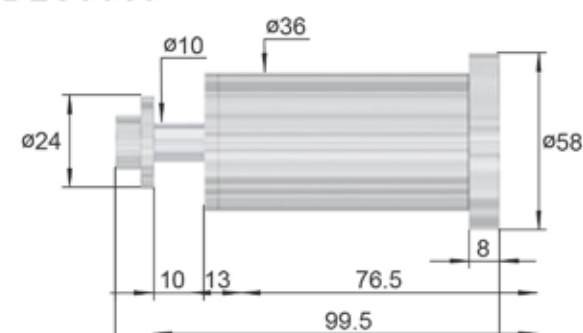
DLC3010



DLC3012



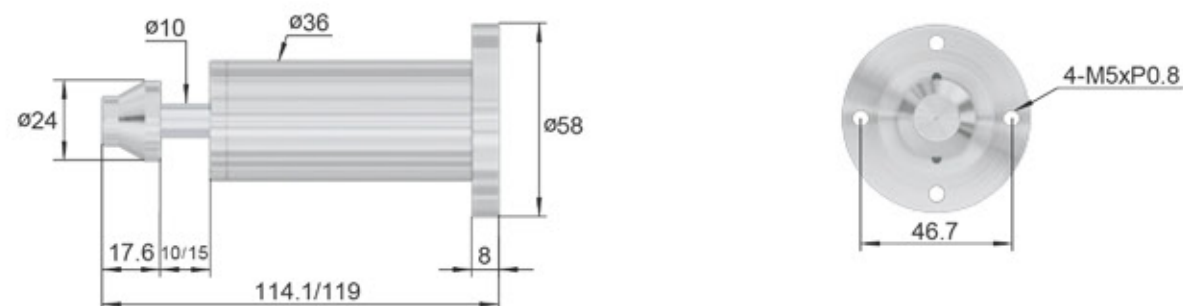
DLC3613



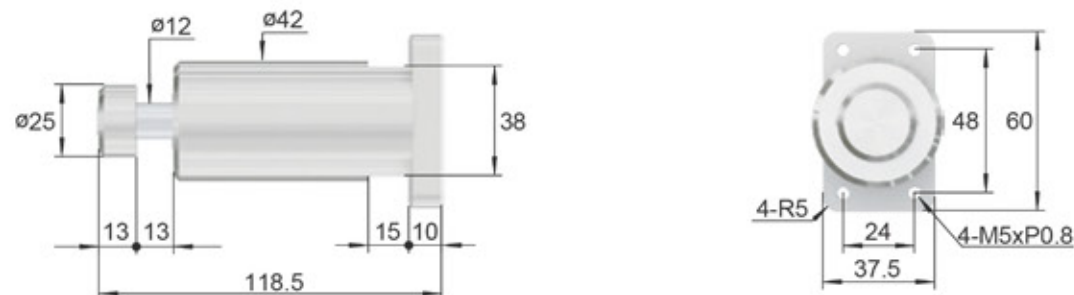


| Model    | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ETC) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|----------|-------------|--------------------------------|----------------------------------|---------------------------------|-----------------------------|-----------------------------------------|------------|
| DLC3610  | 10          | 60                             | 54,000                           | 260                             | 3.5                         | -20~+85                                 | 634        |
| DLC3615  | 15          | 84                             | 75,600                           | 400                             | 4.0                         | -20~+85                                 | 650        |
| DLC4213  | 13          | 155                            | 186,000                          | 1,240                           | 1.0                         | -20~+85                                 | 890        |
| DLC10010 | 10          | 1050                           | 1260,000                         | 10                              | 15                          | -40~+85                                 | 8800       |

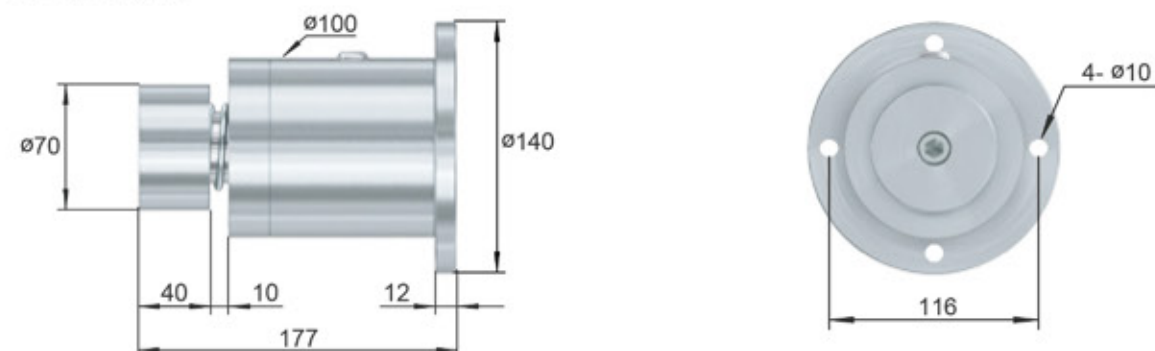
## DLC3610/DLC3615



## DLC4213

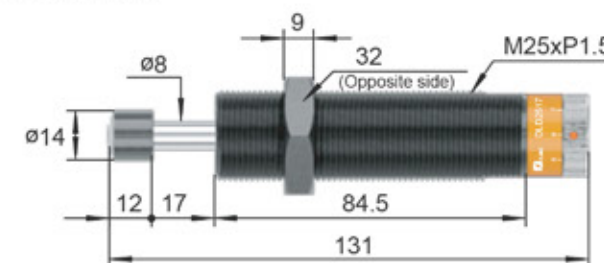


## DLC10010

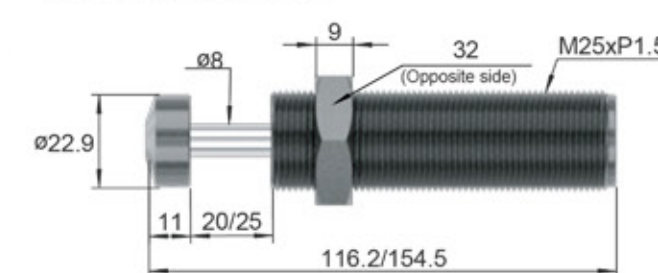


| Model   | Stroke (mm) | Maximum absorbed energy Nm(ET) | Absorbed energy per hour Nm(ETC) | Maximum effective weight kg(Me) | Highest impact speed m/s(v) | Positioning nut (SC) | Operating temperature (Non-frozen) (°C) | Weight (g) |
|---------|-------------|--------------------------------|----------------------------------|---------------------------------|-----------------------------|----------------------|-----------------------------------------|------------|
| DLD2517 | 17          | 55                             | 37,200                           | 300                             | 1.5                         | o                    | -20~+85                                 | 337        |
| DLD2520 | 20          | 68                             | 43,200                           | 200                             | 4.5                         | o                    | -20~+85                                 | 269        |
| ET300   | 25          | 84                             | 75,600                           | 240                             | 4.0                         | o                    | -20~+85                                 | 364        |
| DLD3010 | 10          | 65                             | 54,000                           | 143                             | 3.0                         | —                    | -20~+85                                 | 342        |
| DLD3015 | 15          | 98                             | 81,400                           | 250                             | 3.0                         | —                    | -20~+85                                 | 368        |
| DLD3607 | 7.5         | 65                             | 85,800                           | 240                             | 4.0                         | —                    | -20~+85                                 | 667        |
| DLD3608 | 8           | 75                             | 99,000                           | 306                             | 4.0                         | —                    | -20~+85                                 | 620        |
| DLD4212 | 12          | 140                            | 168,000                          | 1,100                           | 8.0                         | —                    | -40~+85                                 | 1610       |

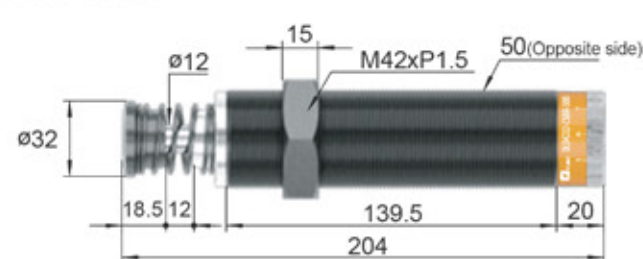
## DLD2517



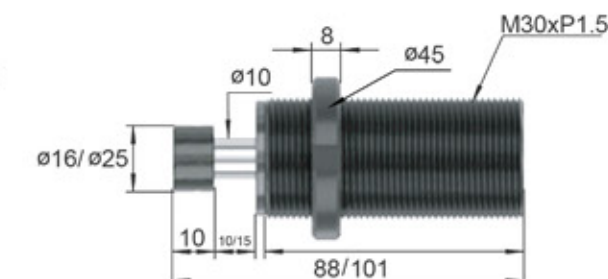
## DLD2520/ET300



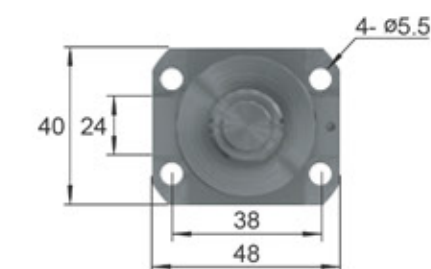
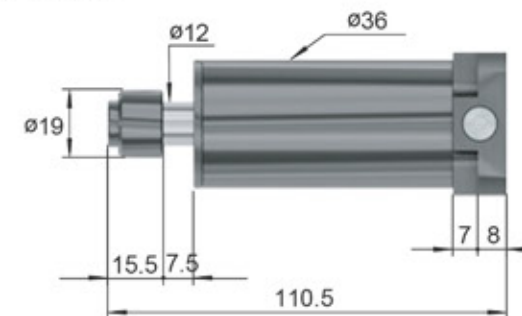
## DLD4212



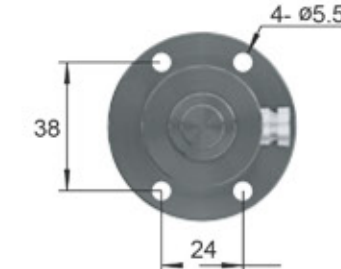
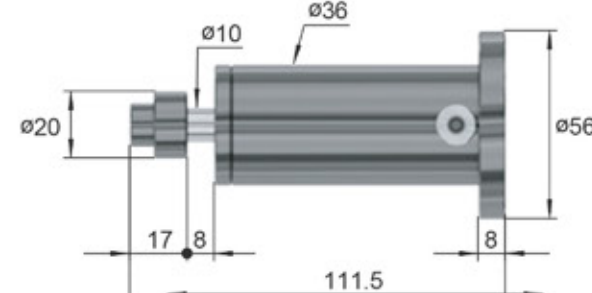
## DLD3010/DLD3015



## DLD3607



## DLD3608





## Positioning Locknut

| Model    | W<br>(mm) | L<br>(mm) | D<br>(mm) | M        | Illustration |
|----------|-----------|-----------|-----------|----------|--------------|
| SC08     | 11        | 14        | —         | M8xP1.0  | 1            |
| SC10     | 12.7      | 16        | —         | M10xP1.0 | 1            |
| SC12     | 14        | 20        | —         | M12xP1.0 | 1            |
| SC14     | 19        | 27        | 18        | M14xP1.5 | 2            |
| SC20     | 26        | 35        | 25        | M20xP1.5 | 2            |
| SC25     | 32        | 45        | 31.3      | M25xP1.5 | 2            |
| SC25-25L | 32        | 25        | 31.3      | M25xP1.5 | 2            |
| SC25-65L | 32        | 65        | 31.3      | M25xP1.5 | 2            |
| SC27     | 32        | 45        | 31.3      | M27xP1.5 | 2            |
| SC36     | 46        | 80        | 45        | M36xP1.5 | 2            |

FIG. 1

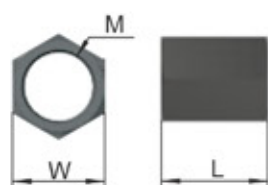
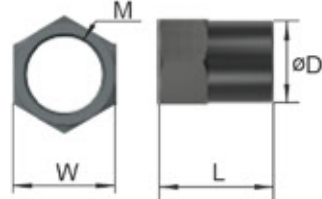
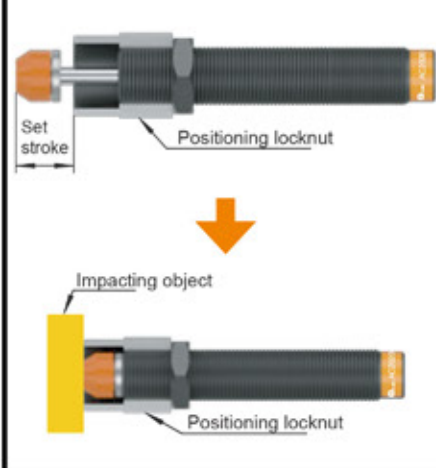


FIG. 2

Positioning Locknut  
Application Illustration

## Flange

FIG. 1

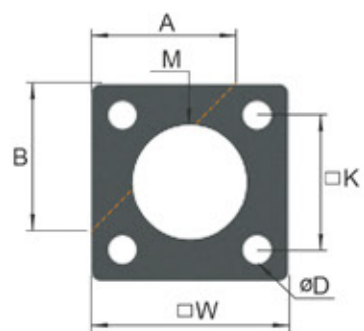
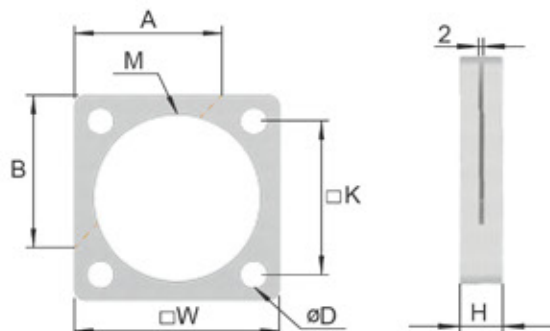


FIG. 2



| Model | A<br>(mm) | B<br>(mm) | H<br>(mm) | W<br>(mm) | K<br>(mm) | D<br>(mm) | M                        | Weight<br>(g) | Illustration |
|-------|-----------|-----------|-----------|-----------|-----------|-----------|--------------------------|---------------|--------------|
| F36   | 45        | 45        | 16        | 60        | 41        | 8.5       | M36xP1.5                 | 282           | 1            |
| F42   | 45        | 45        | 16        | 60        | 41        | 8.5       | M42xP1.5                 | 236           | 1            |
| F64   | 55        | 55        | 16        | 89        | 70        | 10.5      | M64xP2.0<br>2 1/2 -12UNF | 540           | 1            |
| F85   | 75        | 75        | 19        | 101.6     | 76.2      | 13.5      | M85xP2.0                 | 590           | 2            |

## HR Series

## Hydraulic speed controller



The HR hydraulic speed controller can continuously and steadily control the moving speed of an object for a long time. The design of the product is carried out in a spring and pneumatic movement. In order to be appropriate for use in various environments, an external dust cover is also designed to ensure the service life and stability of the product in addition to dust-proof devices inside the product. The HR series also uses special hydraulic oil so that it does not cause a rise in the propulsion speed due to the warming of the moving load. The product is small in size and easy to install and has 0~30 scale of options to allow the user to adjust the speed of the controlled object.

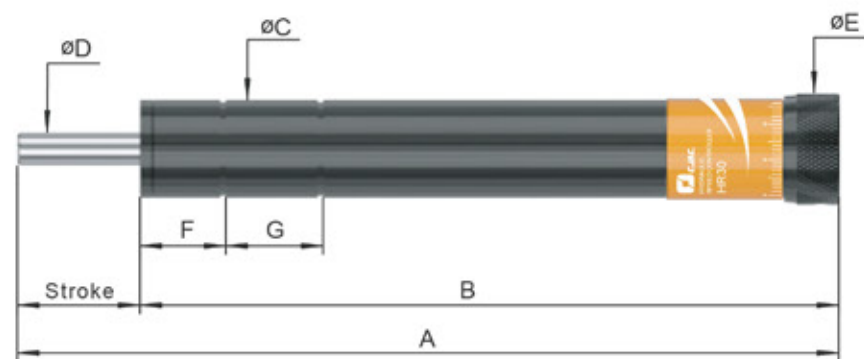
- Material — Outer pipe: AISI1215 and STKM11A oxidized black, and the nickel plating treatment enhances rust resistance  
Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning
- Temperature range — 0~+60°C
- Special demands — CJAC can customize solutions based on your requirements.



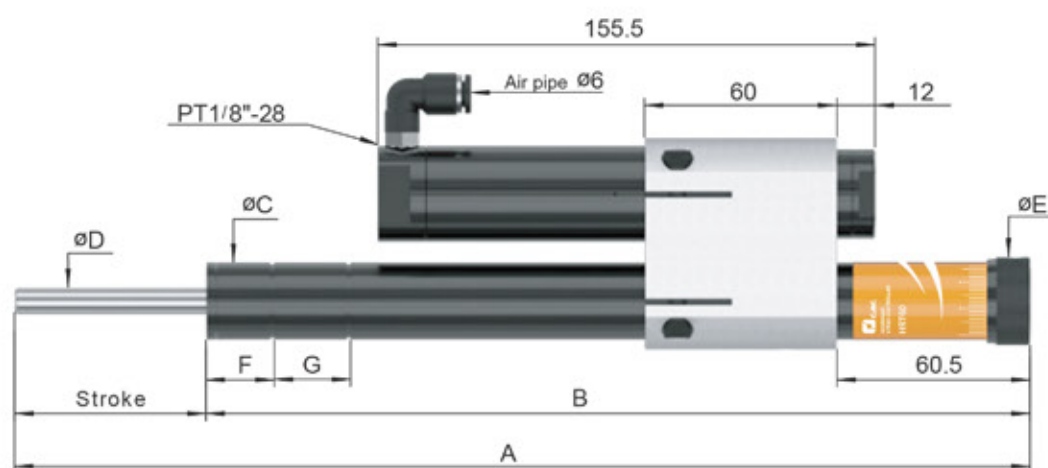


| Model  | Stroke (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | Operating temperature (Non-frozen) (°C) | Maximum Load (kgf) | Weight (g) |
|--------|-------------|--------|--------|--------|--------|--------|--------|--------|-----------------------------------------|--------------------|------------|
| HR15   | 15          | 152    | 137    | 24     | 8      | 27.3   | 21     | 24     | 0~60                                    | 15-350             | 385        |
| HR15-L | 15          | 172.5  | 157.5  | 24     | 8      | 27.3   | 21     | 27     | 0~60                                    | 15-350             | 365        |
| HR30   | 30          | 203    | 173    | 24     | 8      | 27.3   | 21     | 24     | 0~60                                    | 15-350             | 465        |
| HR30-L | 30          | 202.5  | 172.5  | 24     | 8      | 27.3   | 21     | 27     | 0~60                                    | 15-350             | 430        |
| HR60   | 60          | 283.5  | 223.5  | 24     | 8      | 27.3   | 21     | 24     | 0~60                                    | 15-350             | 580        |
| HR80   | 80          | 350.7  | 270.7  | 24     | 8      | 27.3   | 21     | 24     | 0~60                                    | 15-350             | 680        |
| HR100  | 100         | 396.5  | 296.5  | 24     | 8      | 27.3   | 21     | 24     | 0~60                                    | 15-350             | 740        |
| HR3160 | 60          | 331    | 271    | 30.8   | 12     | 36     | 37.2   | 43.5   | 0~60                                    | 30-420             | 1,000      |
| HRT60  | 60          | 317.5  | 257    | 24     | 8      | 27.3   | 21     | 24     | 0~60                                    | 15-350             | 1,555      |
| HRT100 | 100         | 389.5  | 289.5  | 24     | 8      | 27.3   | 21     | 24     | 0~60                                    | 15-350             | 1,635      |

## HR/HR-L



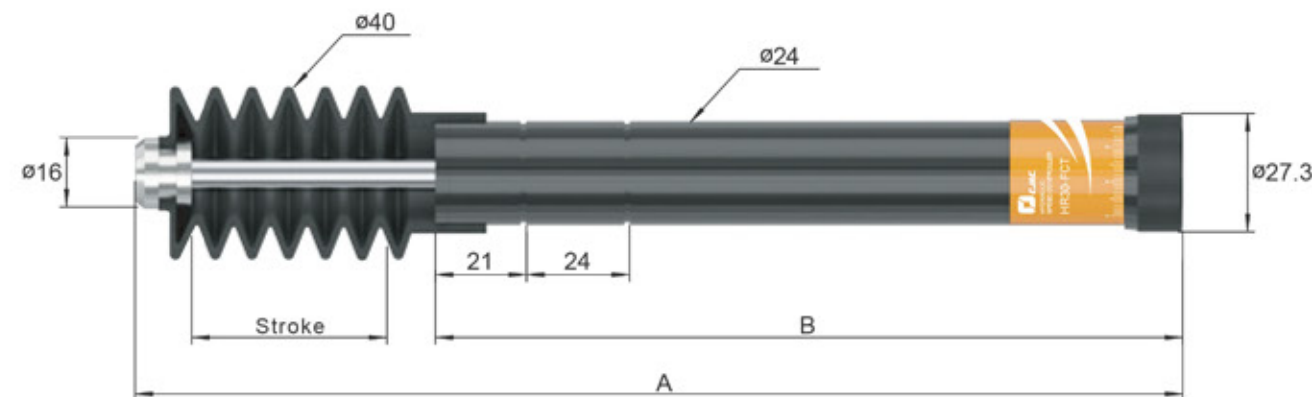
## HRT



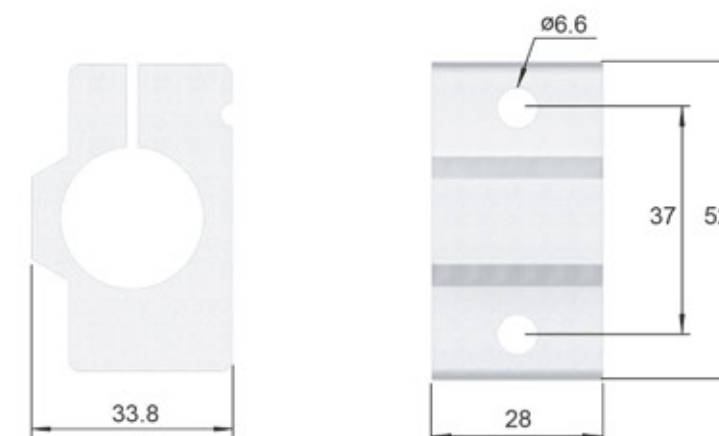
## Dust Cover

- Prolong the lifetime of the hydraulic speed controller.
- The product uses organic polymer materials for greater durability.
- Removable design for easy replacement.
- This accessory adds dust protection to hydraulic speed controllers and provides extra security design for other complex environments.

| Model    | A (mm) | B (mm) | Maximum Load (kgf) | Operating temperature (Non-frozen) (°C) | Maximum Load (kgf) | Weight (g) |
|----------|--------|--------|--------------------|-----------------------------------------|--------------------|------------|
| HR15-FCZ | 179.1  | 138    | 15                 | 0~60                                    | 15-350             | 490        |
| HR30-FCZ | 242.6  | 173    | 30                 | 0~60                                    | 15-350             | 525        |



## Fixed mount



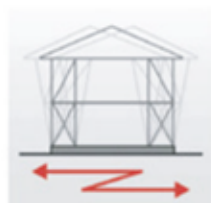


# ADA Series

## Dual-side hydraulic damper



General Buildings



No shock absorber Maximum displacement 13 cm

Shock absorbers installation



Maximum displacement 8 cm  
38 % reduction in maximum displacement

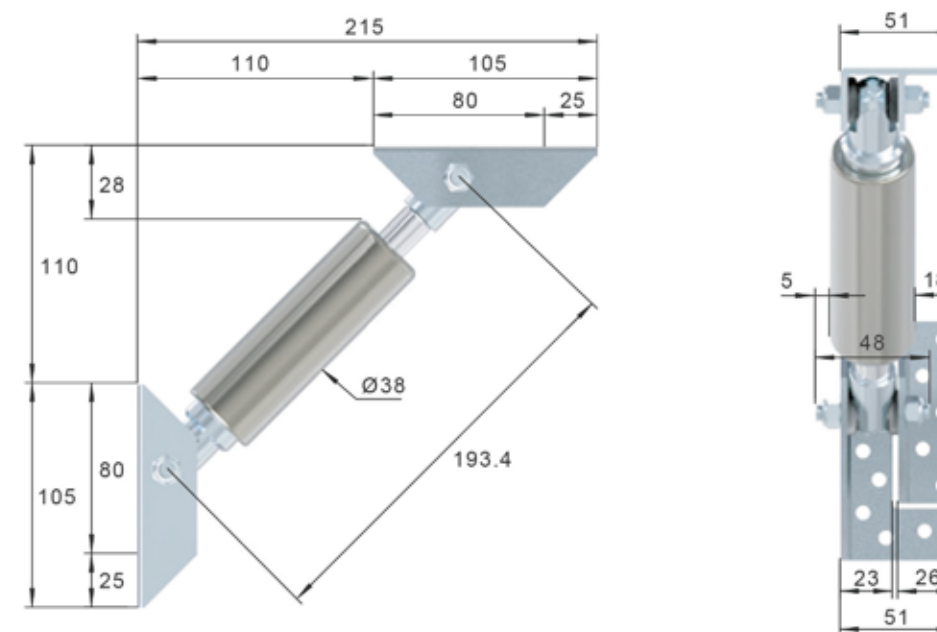
Great Hanshin-Awaji Earthquake (EW wave)



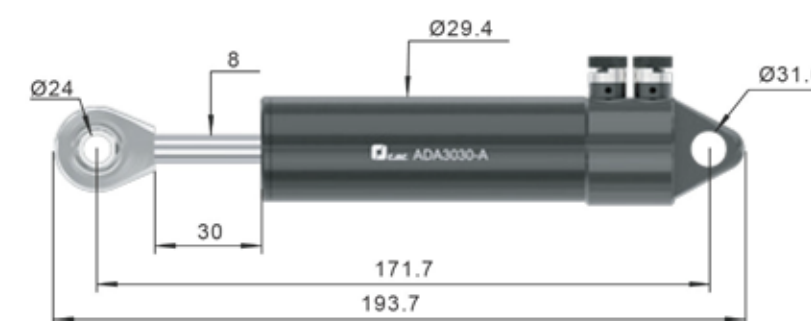
ACD3831 can be used in wooden houses to resist earthquakes and effectively improve structural safety. Compared with the existing quake-resistance method, the ACD series absorbs and mitigates the shaking caused by 1/3 of the earthquake events. (This is because the oil shock absorber absorbs the shock and increases the safety of the house.) The superior attenuation effect and continuous quake-resistance effect of the ACD series (this is not only for the occurrence of major earthquakes but also subsequent earthquakes) apply to all wooden buildings (corresponding to the traditional three-story wooden shaft construction method and also for insulated buildings).

SMALL, SMART, LOW COST! (Small size and lightweight, compared to other methods, and it only needs low cost to be converted into a shock-resistance house)

High durability, no maintenance required (long durability, almost continuous effect, no need for maintenance after construction).



| Model   | Stroke (mm) | Maximum Load (kg) | Operating temperature (°C) | Weight (g) |
|---------|-------------|-------------------|----------------------------|------------|
| ACD3831 | ±15         | 350-590           | 0~60                       | 350        |



| Model     | Stroke<br>(mm) | Maximum Load<br>(N) |             | Operating temperature<br>(°C) | Weight<br>(g) |
|-----------|----------------|---------------------|-------------|-------------------------------|---------------|
|           |                | Stretch             | Compression |                               |               |
| ADA3030-A | 30             | 350-590             | 590         | -10~80                        | 350           |

|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |



# BZ Series

## Vibration dampers

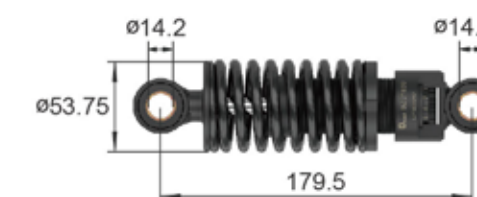


The BZ series is specifically designed for applications such as shock absorption and vibration isolation in mobile equipment Automated Guided Vehicles (AGVs) and amusement devices. It is divided into two structures: the BZC fixed model and the BZD adjustable model to meet the different needs of each application. The piston rod adopts a valve plate design, providing better consistency in damping characteristics."

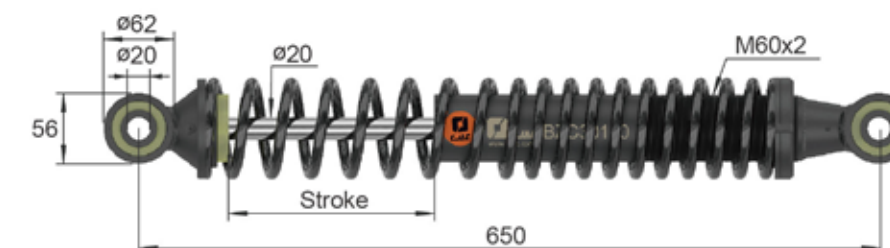
- Material** — Outer pipe: carbon steel oxidized black enhances rust resistance.  
Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning.
- Temperature range** — -10~+80°C
- Installation** — CJAC offers customers a variety of fixing methods such as ear hooks, universal joints, and hole installation. In addition, customers can also customize services according to their own requirements.
- Special demands** — CJAC can customize solutions based on your requirements.

| Model      | Absorbing travel (mm) | Damping force (N) | Initial elastic force kg | End elastic force kg | speed m/s | Operating temperature (Non-frozen) (°C) |
|------------|-----------------------|-------------------|--------------------------|----------------------|-----------|-----------------------------------------|
| BZD1830    | 30                    | 1600              | 90                       | 140                  | 0.52      | -10~+80                                 |
| BZC30180   | 180                   | 4000              | 50                       | 260                  | 0.52      | -10~+80                                 |
| BZD55180-M | 180                   | 18000             | —                        | —                    | 0.52      | -10~+80                                 |

### BZD1830



### BZC30180



### BZD55180-M



|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |



# HD Series

## Heavy-duty shock absorber

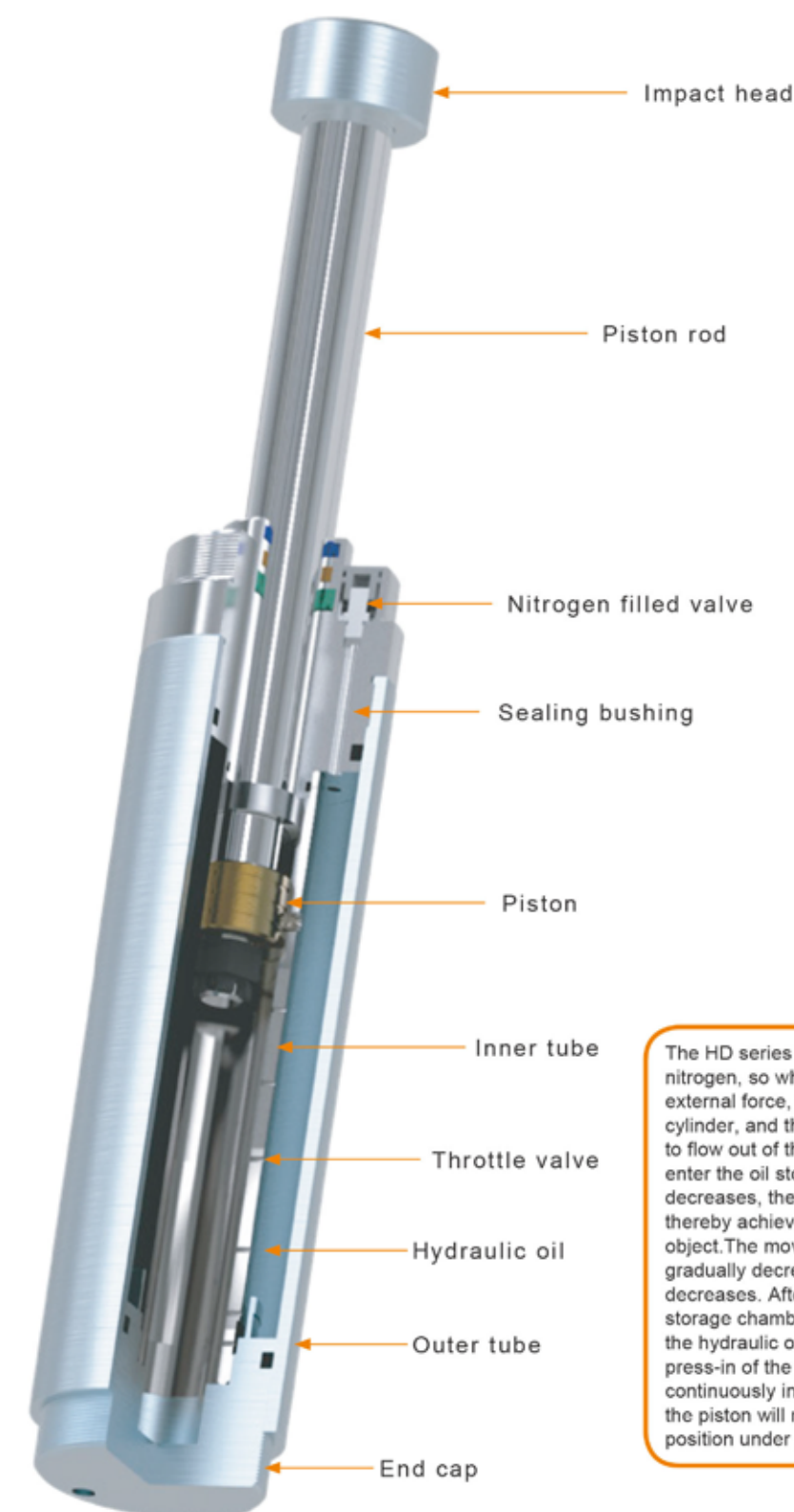
HD heavy-duty shock absorber provides a safe working environment for large machinery. Under the premise of meeting industrial safety standards, CJAC has designed a large-scale hydraulic damper with a large bore diameter, long travel, and high absorption energy. It is suitable for various working conditions and realizes stable linear deceleration of large mechanical equipment.

- **Material** ——— Outer pipe: Galvanized treatment enhances rust resistance  
Piston rod: hard chromium plating treatment and special seals for longer lifespan  
Piston: We adopt materials with excellent wear resistance to ensure long-lasting and stable cushioning
- **Applications** ——— Automatic storage system, transmission system, gantry crane system, cement machinery system, paper machinery system, large production line, large robotic arm, rubber & plastic machinery, vehicle manufacturing, shipyard, petrochemical plant, steel & heavy industry, transportation, freight Cars, bulldozers & excavators, handling machines, cranes, mines, mine carts, railway blockers, railways, gates, port machinery, environmental protection facilities, etc.
- **Temperature range** — -10~+80°C
- **Installation** ——— CJAC provides you with flanged tripods and other installation methods.
- **Special demands** ——— CJAC can customize solutions based on your requirements.

## Model Description

|       |                      |   |                       |   |                              |   |                           |   |                       |
|-------|----------------------|---|-----------------------|---|------------------------------|---|---------------------------|---|-----------------------|
| HD    | 75                   | - | 100                   | - | F                            | - | UC                        | - | 00001                 |
| Model | Piston diameter (mm) |   | Absorbing travel (mm) |   | Piston diameter              |   | Accessories               |   | Production Serial No. |
|       |                      |   |                       |   | ○ F Front flange             |   | ○ SC Safety chain         |   |                       |
|       |                      |   |                       |   | ○ R Rear flange              |   | ○ UC Silencer sleeve      |   |                       |
|       |                      |   |                       |   | ○ FR Front and rear flange S |   | ○ EH Enlarged impact head |   |                       |
|       |                      |   |                       |   | ○ S Front tripod             |   | ○ CP Corrugated pipe      |   |                       |
|       |                      |   |                       |   | ○ SS Front and rear tripods  |   | ○ MC Metal Casing         |   |                       |
|       |                      |   |                       |   | ○ CM U-clamp                 |   | ○ PS Proximity switch     |   |                       |
|       |                      |   |                       |   | ○ V Vertical installation    |   |                           |   |                       |

- HD Special customized products can be made for customers.  
Please provide us with all the relevant information to meet your needs!



The HD series is filled with hydraulic oil and nitrogen, so when the impact head is hit by an external force, the piston rod is pressed into the cylinder, and the piston will force the hydraulic oil to flow out of the orifices of different sizes and enter the oil storage chamber. As the travel decreases, the orifice will be gradually closed, thereby achieving linear deceleration of the moving object. The moving speed of the moving object gradually decreases as the travel of the buffer decreases. After the hydraulic oil flows into the oil storage chamber, the nitrogen gas originally above the hydraulic oil is reduced in volume due to the press-in of the piston rod, and the pressure is continuously increased. When the load is evacuated, the piston will return the piston rod to its original position under the pressure of nitrogen.

|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |

## 1. Free fall



### Conditions

m=1500Kg  
H=0.5m  
S=0.25m  
C=1/hr

### Formulas and calculation demonstration

$E_k = m \cdot g \cdot H = 7358 \text{ Nm}$   
 $E_d = m \cdot g \cdot S = 3679 \text{ Nm}$   
 $E_T = E_k + E_d = 11037 \text{ Nm}$   
 $E_{TC} = E_T \cdot C = 11037 \text{ Nm/hr}$

Model selection  
HD40-250

## 2. Horizontal movement



### Conditions

m=15000Kg  
v=2.0m/s  
F=4000N  
S=0.25m  
C=5/hr

### Formulas and calculation demonstration

$E_k = \frac{mv^2}{2} = 30000 \text{ Nm}$   
 $E_d = F \cdot S = 1000 \text{ Nm}$   
 $E_T = E_k + E_d = 31000 \text{ Nm}$   
 $E_{TC} = E_T \cdot C = 155000 \text{ Nm/hr}$

Model selection  
HD75-250

## 3. Horizontal moving object with absorber



### Conditions

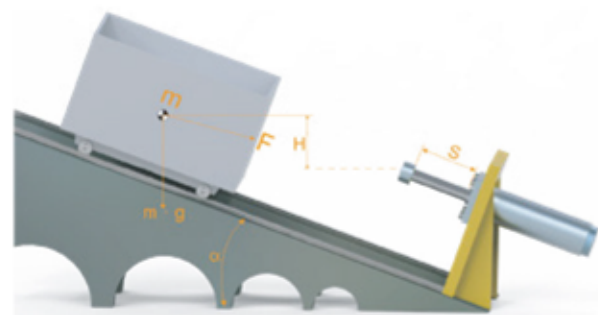
m=12000Kg  
v=2.8m/s  
F=5000N  
S=0.5m  
C=8/hr

### Formulas and calculation demonstration

$E_k = \frac{mv^2}{2} = 23520 \text{ Nm}$   
 $E_d = F \cdot S = 2500 \text{ Nm}$   
 $E_T = E_k + E_d = 26020 \text{ Nm}$   
 $E_{TC} = E_T \cdot C = 208160 \text{ Nm/hr}$

Model selection  
HD50-500

## 4. Slope movement



### Conditions

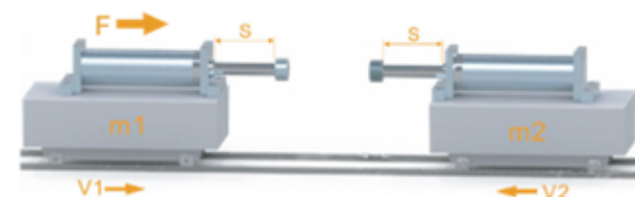
m=10000Kg  
H=0.5m  
α=20°  
S=0.5m  
C=4/hr

### Formulas and calculation demonstration

$E_k = m \cdot g \cdot H = 49050 \text{ Nm}$   
 $E_d = m \cdot g \cdot \sin \alpha \cdot S = 16776 \text{ Nm}$   
 $E_T = E_k + E_d = 65826 \text{ Nm}$   
 $E_{TC} = E_T \cdot C = 263304 \text{ Nm/hr}$

Model selection  
HD75-500

## 5. Collision of two horizontally moving objects



### Conditions

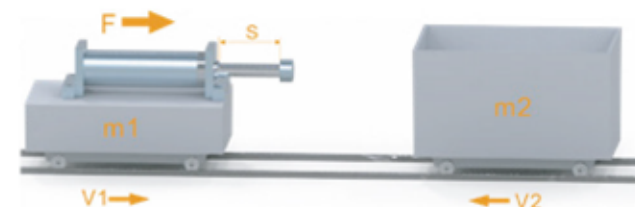
m1=18000Kg  
m2=16000Kg  
v1=2.0m/s  
v2=1.8m/s  
F=5000N  
S=0.5m  
C=10/hr

### Formulas and calculation demonstration

$E_k = \frac{(m1 \cdot m2) \cdot (v1 + v2)^2}{4(m1 + m2)} = 30579 \text{ Nm}$   
 $E_d = F \cdot S = 2500 \text{ Nm}$   
 $E_T = E_k + E_d = 33079 \text{ Nm}$   
 $E_{TC} = E_T \cdot C = 330790 \text{ Nm/hr}$

Model selection  
HD50-500

## 6. Collision of two horizontally moving objects



### Conditions

m1=10000Kg  
m2=20000Kg  
v1=1.5m/s  
v2=1.5m/s  
F=6000N  
S=0.5m  
C=8/hr

### Formulas and calculation demonstration

$E_k = \frac{(m1 \cdot m2) \cdot (v1 + v2)^2}{2(m1 + m2)} = 30000 \text{ Nm}$   
 $E_d = F \cdot S = 3000 \text{ Nm}$   
 $E_T = E_k + E_d = 33000 \text{ Nm}$   
 $E_{TC} = E_T \cdot C = 264000 \text{ Nm/hr}$

Model selection  
HD50-500

| Symbols  | Unit                | Description                                     |
|----------|---------------------|-------------------------------------------------|
| $E_d$    | (Nm)                | Driving energy                                  |
| $E_k$    | (Nm)                | Energy                                          |
| $E_T$    | (Nm)                | Total energy                                    |
| $E_{TC}$ | (Nm)                | Total energy per hour                           |
| $F$      | (N)                 | Propelling force                                |
| $g$      | (m/s <sup>2</sup> ) | Acceleration of gravity (9.81m/s <sup>2</sup> ) |
| $H$      | (m)                 | Height                                          |
| $m$      | (Kg)                | Weight                                          |
| $M_e$    | (Kg)                | Counted weight                                  |
| $S$      | (m)                 | Traverse                                        |
| $C$      | (/hr)               | Impacting times per hour                        |
| $v$      | (m/s)               | Impact speed                                    |
| $v_e$    | (m/s)               | Effective impact speed                          |
| $F_N$    | (N)                 | Reactive force                                  |
| $a$      | (m/s <sup>2</sup> ) | Deceleration                                    |
| $t$      | (s)                 | Deceleration time                               |

## Formula

Reactive force

$$F_N = \frac{E_T \cdot 1.5^*}{S}$$

Deceleration time

$$t = \frac{2 \cdot S \cdot 1.2^*}{v_e}$$

Deceleration

$$a = \frac{v_e^2}{2 \cdot S} \cdot 1.2^*$$

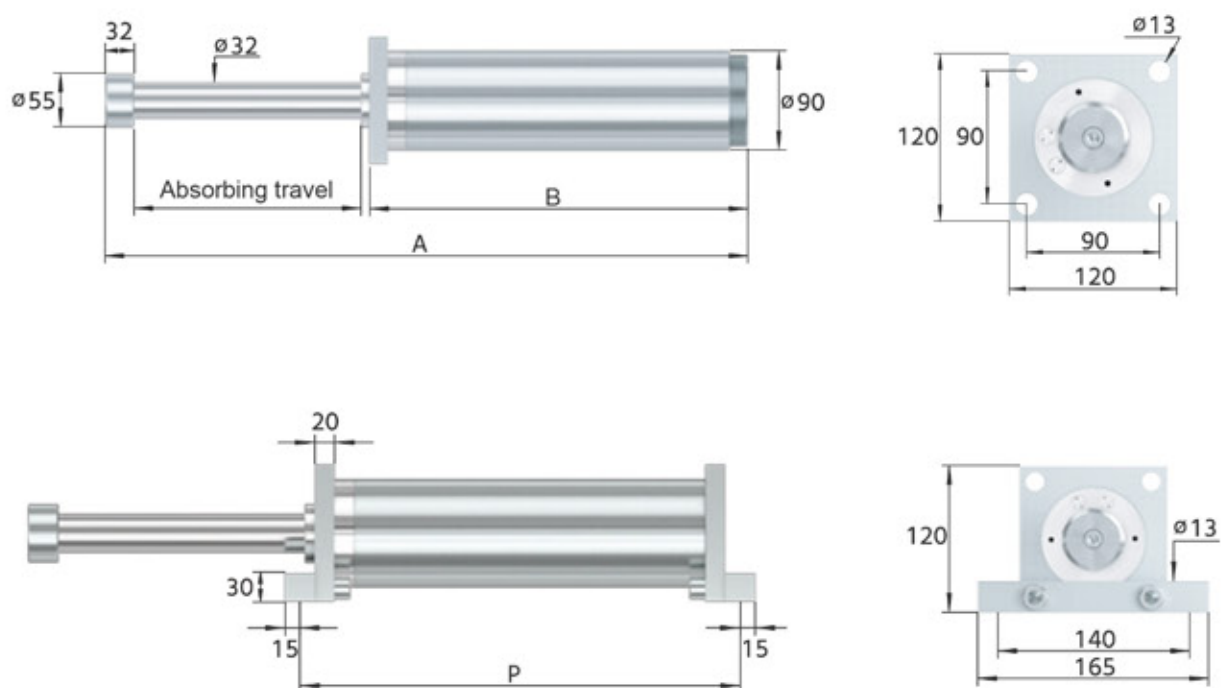
Traverse

$$S = \frac{v_e^2}{2 \cdot a} \cdot 1.2^*$$

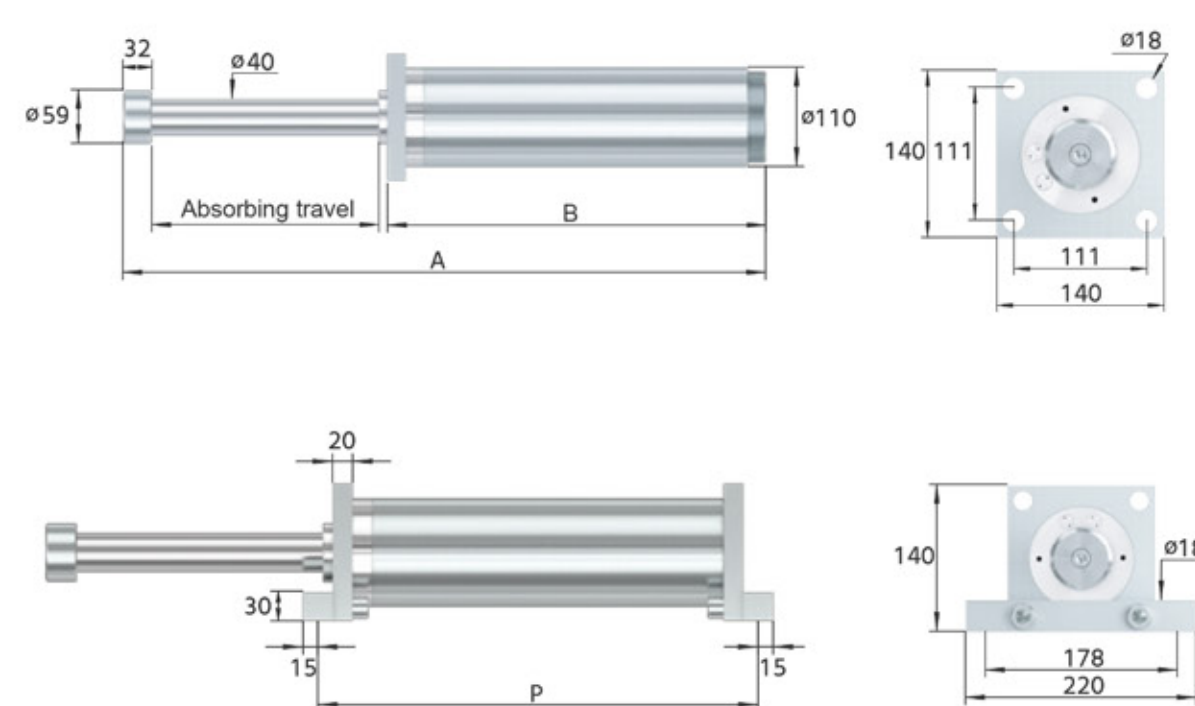
\*Calculate the most suitable model with a safety margin!



| Model     | Absorbing travel (mm) | Piston diameter (mm) | Maximum absorbed energy (Nm) | Maximum reaction force (N) | Maximum absorbed energy per hour (Nm) | Horizontal installation |       |       | Vertical installation |       |       | Maximum deflection angle |               |
|-----------|-----------------------|----------------------|------------------------------|----------------------------|---------------------------------------|-------------------------|-------|-------|-----------------------|-------|-------|--------------------------|---------------|
|           |                       |                      |                              |                            |                                       | A mm                    | B mm  | P mm  | A mm                  | B mm  | P mm  | Emergency location       | Constant load |
| HD40-050  | 50                    | 40                   | 3,000                        | 80,000                     | 90,000                                | 298                     | 206   | 236   | 298                   | 206   | 236   | 2.5°                     | 2.5°          |
| HD40-100  | 100                   | 40                   | 6,000                        | 80,000                     | 180,000                               | 398                     | 256   | 286   | 448                   | 306   | 336   | 2.5°                     | 2.0°          |
| HD40-150  | 150                   | 40                   | 9,000                        | 80,000                     | 270,000                               | 498                     | 306   | 336   | 548                   | 356   | 386   | 2.5°                     | 2.0°          |
| HD40-200  | 200                   | 40                   | 12,000                       | 80,000                     | 360,000                               | 598                     | 356   | 386   | 648                   | 406   | 436   | 2.5°                     | 2.0°          |
| HD40-250  | 250                   | 40                   | 16,000                       | 80,000                     | 480,000                               | 698                     | 406   | 436   | 798                   | 506   | 536   | 2.5°                     | 1.0°          |
| HD40-300  | 300                   | 40                   | 19,000                       | 80,000                     | 570,000                               | 798                     | 456   | 486   | 898                   | 556   | 586   | 2.5°                     | 1.0°          |
| HD40-350  | 350                   | 40                   | 22,000                       | 80,000                     | 660,000                               | 898                     | 506   | 536   | 998                   | 606   | 636   | 2.0°                     | 1.0°          |
| HD40-400  | 400                   | 40                   | 25,000                       | 80,000                     | 750,000                               | 1008                    | 556   | 586   | 1108                  | 656   | 686   | 2.0°                     | 0.5°          |
| HD40-450  | 450                   | 40                   | 28,000                       | 80,000                     | 840,000                               | 1118                    | 606   | 636   | 1218                  | 706   | 736   | 1.5°                     | 0.5°          |
| HD40-500  | 500                   | 40                   | 32,000                       | 80,000                     | 960,000                               | 1228                    | 656   | 686   | 1328                  | 756   | 786   | 1.5°                     | 0.5°          |
| HD40-600  | 600                   | 40                   | 38,000                       | 80,000                     | 1,140,000                             | 1448                    | 806   | 836   | 1548                  | 906   | 936   | 1.0°                     | 0.5°          |
| HD40-650  | 650                   | 40                   | 41,000                       | 80,000                     | 1,225,000                             | 1558                    | 856   | 886   | 1658                  | 956   | 986   | 1.0°                     | 0.5°          |
| HD40-700  | 700                   | 40                   | 44,000                       | 80,000                     | 1,320,000                             | 1668                    | 906   | 936   | 1768                  | 1006  | 1036  | 1.0°                     | 0.5°          |
| HD40-750  | 750                   | 40                   | 48,000                       | 80,000                     | 1,440,000                             | 1778                    | 956   | 986   | 1878                  | 1056  | 1086  | 1.0°                     | 0.5°          |
| HD40-800  | 800                   | 40                   | 51,000                       | 80,000                     | 1,560,000                             | 1888                    | 1,006 | 1,036 | 1988                  | 1,106 | 1,136 | 1.0°                     | 0.5°          |
| HD40-900  | 900                   | 40                   | 50,000                       | 80,000                     | 1,620,000                             | 2,108                   | 1,156 | 1,186 | 2,208                 | 1,256 | 1,286 | 1.0°                     | 0.5°          |
| HD40-1000 | 1,000                 | 40                   | 48,000                       | 80,000                     | 1,680,000                             | 2,328                   | 1,306 | 1,336 | 2,428                 | 1,406 | 1,436 | 1.0°                     | 0.5°          |
| HD40-1100 | 1,100                 | 40                   | 45,000                       | 80,000                     | 1,740,000                             | 2,548                   | 1,456 | 1,486 | 2,648                 | 1,556 | 1,586 | 1.0°                     | 0.5°          |
| HD40-1200 | 1,200                 | 40                   | 43,000                       | 80,000                     | 1,800,000                             | 2,768                   | 1,606 | 1,636 | 2,868                 | 1,706 | 1,736 | 1.0°                     | 0.5°          |

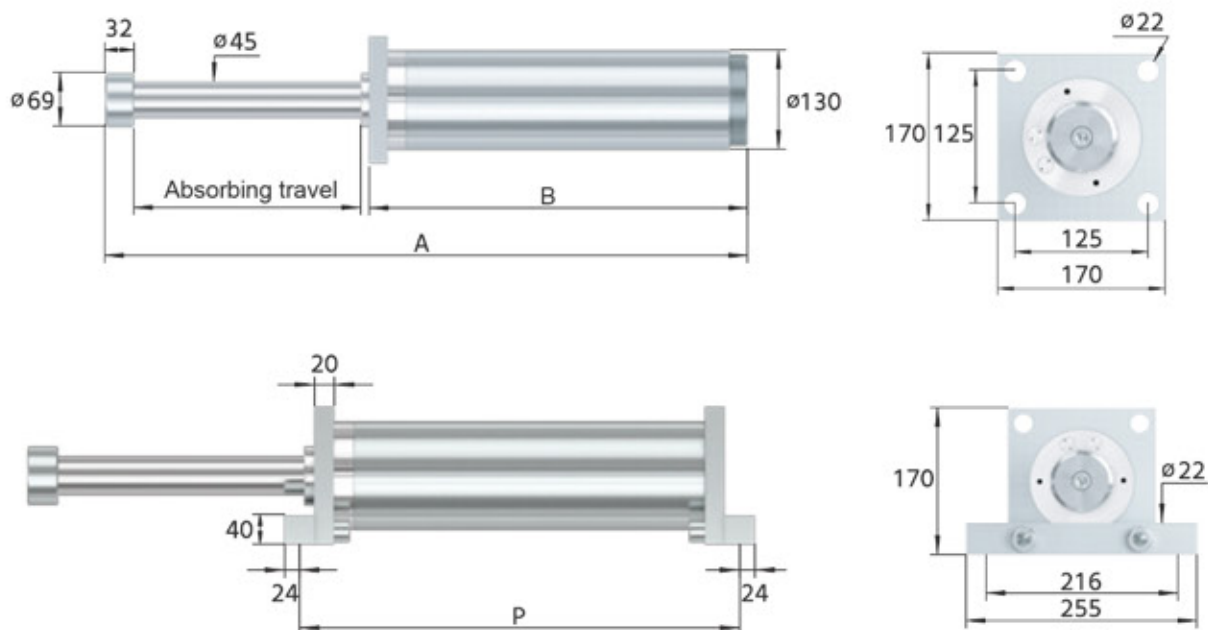


| Model     | Absorbing travel (mm) | Piston diameter (mm) | Maximum absorbed energy (Nm) | Maximum reaction force (N) | Maximum absorbed energy per hour (Nm) | Horizontal installation |       |       | Vertical installation |       |       | Maximum deflection angle |               |
|-----------|-----------------------|----------------------|------------------------------|----------------------------|---------------------------------------|-------------------------|-------|-------|-----------------------|-------|-------|--------------------------|---------------|
|           |                       |                      |                              |                            |                                       | A mm                    | B mm  | P mm  | A mm                  | B mm  | P mm  | Emergency location       | Constant load |
| HD50-050  | 50                    | 50                   | 4,000                        | 120,000                    | 120,000                               | 310                     | 218   | 248   | 310                   | 218   | 248   | 2.5°                     | 2.5°          |
| HD50-100  | 100                   | 50                   | 9,000                        | 120,000                    | 270,000                               | 409                     | 267   | 297   | 459                   | 317   | 347   | 2.5°                     | 2.0°          |
| HD50-150  | 150                   | 50                   | 14,000                       | 120,000                    | 420,000                               | 509                     | 317   | 347   | 559                   | 367   | 397   | 2.5°                     | 2.0°          |
| HD50-200  | 200                   | 50                   | 19,000                       | 120,000                    | 570,000                               | 609                     | 367   | 397   | 659                   | 417   | 447   | 2.5°                     | 2.0°          |
| HD50-250  | 250                   | 50                   | 24,000                       | 120,000                    | 720,000                               | 709                     | 417   | 447   | 759                   | 467   | 497   | 2.5°                     | 1.0°          |
| HD50-300  | 300                   | 50                   | 28,000                       | 120,000                    | 840,000                               | 809                     | 467   | 497   | 859                   | 517   | 547   | 2.5°                     | 1.0°          |
| HD50-350  | 350                   | 50                   | 33,000                       | 120,000                    | 990,000                               | 909                     | 517   | 547   | 959                   | 567   | 597   | 2.0°                     | 1.0°          |
| HD50-400  | 400                   | 50                   | 38,000                       | 120,000                    | 1,140,000                             | 1,009                   | 567   | 597   | 1,059                 | 617   | 647   | 2.0°                     | 0.5°          |
| HD50-450  | 450                   | 50                   | 43,000                       | 120,000                    | 1,290,000                             | 1,119                   | 617   | 647   | 1,169                 | 667   | 697   | 1.5°                     | 0.5°          |
| HD50-500  | 500                   | 50                   | 48,000                       | 120,000                    | 1,440,000                             | 1,229                   | 667   | 697   | 1,279                 | 717   | 747   | 1.5°                     | 0.5°          |
| HD50-600  | 600                   | 50                   | 57,000                       | 120,000                    | 1,625,000                             | 1,449                   | 807   | 837   | 1,499                 | 857   | 887   | 1.0°                     | 0.5°          |
| HD50-700  | 700                   | 50                   | 67,000                       | 120,000                    | 1,675,000                             | 1,669                   | 927   | 957   | 1,719                 | 977   | 1,007 | 1.0°                     | 0.5°          |
| HD50-800  | 800                   | 50                   | 76,000                       | 120,000                    | 1,700,000                             | 1,889                   | 1,047 | 1,077 | 1,939                 | 1,087 | 1,117 | 1.0°                     | 0.5°          |
| HD50-900  | 900                   | 50                   | 72,000                       | 100,000                    | 1,440,000                             | 2,109                   | 1,167 | 1,197 | 2,159                 | 1,207 | 1,237 | 1.0°                     | 0.5°          |
| HD50-1000 | 1,000                 | 50                   | 72,000                       | 90,000                     | 1,080,000                             | 2,329                   | 1,287 | 1,317 | 2,379                 | 1,327 | 1,357 | 1.0°                     | 0.5°          |
| HD50-1100 | 1,100                 | 50                   | 68,000                       | 80,000                     | 1,020,000                             | 2,569                   | 1,427 | 1,457 | 2,619                 | 1,467 | 1,497 | 1.0°                     | 0.5°          |
| HD50-1200 | 1,200                 | 50                   | 64,000                       | 67,000                     | 960,000                               | 2,769                   | 1,527 | 1,557 | 2,819                 | 1,567 | 1,597 | 1.0°                     | 0.5°          |
| HD50-1300 | 1,300                 | 50                   | 61,000                       | 60,000                     | 915,000                               | 3,019                   | 1,677 | 1,707 | 3,069                 | 1,717 | 1,747 | 1.0°                     | 0.5°          |
| HD50-1400 | 1,400                 | 50                   | 57,000                       | 56,000                     | 855,000                               | 3,369                   | 1,827 | 1,857 | 3,419                 | 1,867 | 1,897 | 1.0°                     | 0.5°          |

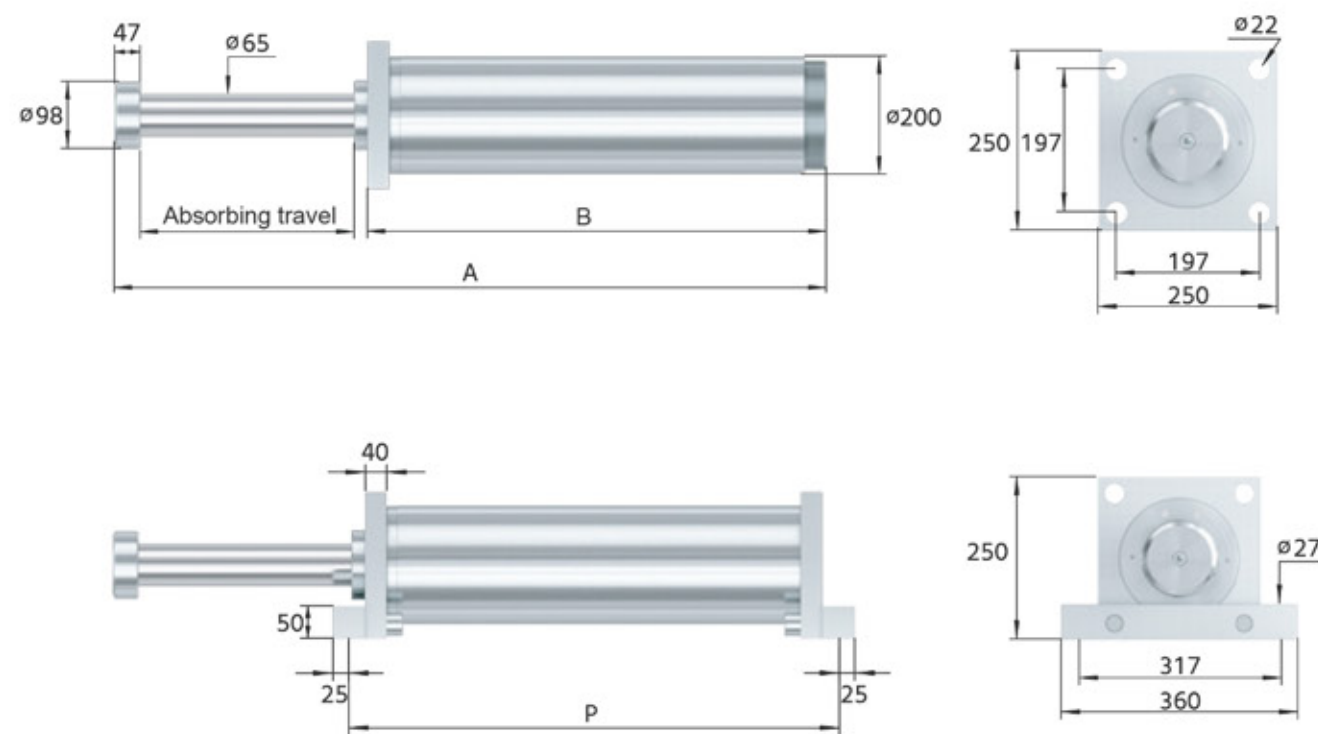




| Model     | Absorbing travel (mm) | Piston diameter (mm) | Maximum absorbed energy (Nm) | Maximum reaction force (N) | Maximum absorbed energy per hour (Nm) | Horizontal installation |      |      | Vertical installation |      |      | Maximum deflection angle |               |
|-----------|-----------------------|----------------------|------------------------------|----------------------------|---------------------------------------|-------------------------|------|------|-----------------------|------|------|--------------------------|---------------|
|           |                       |                      |                              |                            |                                       | A mm                    | B mm | P mm | A mm                  | B mm | P mm | Emergency location       | Constant load |
| HD75-050  | 50                    | 75                   | 9,600                        | 240,000                    | 288,000                               | 318                     | 226  | 258  | 318                   | 226  | 258  | 2.0°                     | 2.0°          |
| HD75-100  | 100                   | 75                   | 19,200                       | 240,000                    | 576,000                               | 418                     | 276  | 308  | 418                   | 276  | 308  | 2.0°                     | 1.5°          |
| HD75-150  | 150                   | 75                   | 28,800                       | 240,000                    | 864,000                               | 540                     | 348  | 380  | 540                   | 348  | 380  | 2.0°                     | 1.5°          |
| HD75-200  | 200                   | 75                   | 38,400                       | 240,000                    | 1152,000                              | 618                     | 376  | 408  | 718                   | 476  | 508  | 1.5°                     | 1.0°          |
| HD75-250  | 250                   | 75                   | 48,000                       | 240,000                    | 1440,000                              | 718                     | 426  | 458  | 868                   | 576  | 608  | 1.5°                     | 0.5°          |
| HD75-300  | 300                   | 75                   | 57,600                       | 240,000                    | 1728,000                              | 818                     | 476  | 508  | 918                   | 576  | 608  | 1.5°                     | 0.5°          |
| HD75-350  | 350                   | 75                   | 67,200                       | 240,000                    | 2016,000                              | 968                     | 576  | 608  | 1070                  | 678  | 710  | 1.5°                     | 0.5°          |
| HD75-400  | 400                   | 75                   | 76,800                       | 240,000                    | 2304,000                              | 1069                    | 627  | 659  | 1171                  | 729  | 761  | 1.5°                     | 0.5°          |
| HD75-450  | 450                   | 75                   | 86,400                       | 240,000                    | 2592,000                              | 1170                    | 678  | 710  | 1322                  | 830  | 862  | 1.5°                     | 0.5°          |
| HD75-500  | 500                   | 75                   | 94,000                       | 235,000                    | 2350,000                              | 1271                    | 729  | 761  | 1474                  | 932  | 964  | 1.5°                     | 0.5°          |
| HD75-600  | 600                   | 75                   | 112,800                      | 235,000                    | 2820,000                              | 1472                    | 830  | 862  | 1675                  | 1033 | 1065 | 1.0°                     | 0.5°          |
| HD75-700  | 700                   | 75                   | 136,900                      | 230,000                    | 3420,000                              | 1674                    | 932  | 964  | 1924                  | 1182 | 1214 | 1.0°                     | 0.5°          |
| HD75-800  | 800                   | 75                   | 134,000                      | 195,000                    | 2680,000                              | 1875                    | 1033 | 1065 | 2024                  | 1182 | 1214 | 1.0°                     | 0.5°          |
| HD75-900  | 900                   | 75                   | 134,000                      | 185,000                    | 2680,000                              | 2124                    | 1182 | 1214 | 2424                  | 1482 | 1514 | 1.0°                     | 0.5°          |
| HD75-1000 | 1000                  | 75                   | 134,000                      | 170,000                    | 2010,000                              | 2324                    | 1282 | 1314 | 2604                  | 1562 | 1594 | 1.0°                     | 0.5°          |
| HD75-1100 | 1100                  | 75                   | 134,000                      | 160,000                    | 2010,000                              | 2524                    | 1382 | 1414 | 2874                  | 1732 | 1764 | 1.0°                     | 0.5°          |
| HD75-1200 | 1200                  | 75                   | 134,000                      | 150,000                    | 2010,000                              | 2724                    | 1482 | 1514 | 3140                  | 1898 | 1930 | 1.0°                     | 0.5°          |
| HD75-1400 | 1400                  | 75                   | 134,000                      | 140,000                    | 2010,000                              | 3274                    | 1832 | 1864 | 3624                  | 2182 | 2214 | 0.8°                     | 0.3°          |
| HD75-1500 | 1500                  | 75                   | 130,000                      | 140,000                    | 1300,000                              | 3490                    | 1948 | 1980 | 3874                  | 2332 | 2364 | 0.8°                     | 0.3°          |
| HD75-1600 | 1600                  | 75                   | 120,000                      | 140,000                    | 1200,000                              | 3724                    | 2082 | 2114 | 4074                  | 2432 | 2464 | 0.6°                     | 0.2°          |
| HD75-1800 | 1800                  | 75                   | 120,000                      | 140,000                    | 1200,000                              | 4174                    | 2332 | 2364 | 4574                  | 2732 | 2764 | 0.5°                     | 0.2°          |

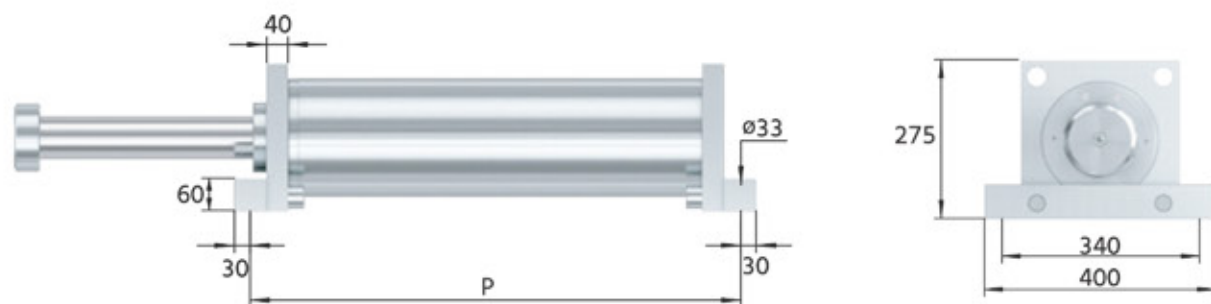
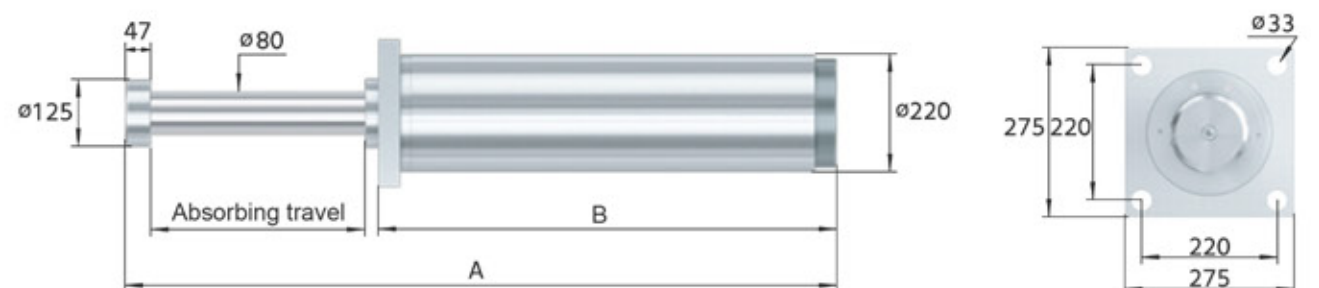


| Model      | Absorbing travel (mm) | Piston diameter (mm) | Maximum absorbed energy (Nm) | Maximum reaction force (N) | Maximum absorbed energy per hour (Nm) | Horizontal installation |      |      | Vertical installation |      |      | Maximum deflection angle |               |
|------------|-----------------------|----------------------|------------------------------|----------------------------|---------------------------------------|-------------------------|------|------|-----------------------|------|------|--------------------------|---------------|
|            |                       |                      |                              |                            |                                       | A mm                    | B mm | P mm | A mm                  | B mm | P mm | Emergency location       | Constant load |
| HD100-050  | 50                    | 100                  | 15,500                       | 360,000                    | 465,000                               | 425                     | 313  | 363  | 425                   | 313  | 363  | 2.0°                     | 2.0°          |
| HD100-100  | 100                   | 100                  | 31,000                       | 360,000                    | 930,000                               | 525                     | 363  | 413  | 525                   | 363  | 413  | 2.0°                     | 1.5°          |
| HD100-150  | 150                   | 100                  | 46,500                       | 360,000                    | 1395,000                              | 625                     | 413  | 463  | 625                   | 413  | 463  | 2.0°                     | 1.5°          |
| HD100-200  | 200                   | 100                  | 62,000                       | 360,000                    | 1860,000                              | 725                     | 463  | 513  | 755                   | 493  | 543  | 1.5°                     | 1.0°          |
| HD100-250  | 250                   | 100                  | 77,500                       | 360,000                    | 2325,000                              | 825                     | 513  | 563  | 865                   | 553  | 603  | 1.5°                     | 0.5°          |
| HD100-300  | 300                   | 100                  | 93,000                       | 360,000                    | 2790,000                              | 1000                    | 638  | 688  | 1000                  | 638  | 688  | 1.5°                     | 0.5°          |
| HD100-400  | 400                   | 100                  | 124,000                      | 360,000                    | 3720,000                              | 1200                    | 738  | 788  | 1200                  | 738  | 788  | 1.5°                     | 0.5°          |
| HD100-500  | 500                   | 100                  | 155,000                      | 360,000                    | 4650,000                              | 1405                    | 843  | 893  | 1405                  | 843  | 893  | 1.5°                     | 0.5°          |
| HD100-600  | 600                   | 100                  | 186,000                      | 360,000                    | 4650,000                              | 1605                    | 943  | 993  | 1635                  | 973  | 1023 | 1.5°                     | 0.5°          |
| HD100-700  | 700                   | 100                  | 217,000                      | 360,000                    | 5425,000                              | 1805                    | 1043 | 1093 | 1845                  | 1083 | 1133 | 1.0°                     | 0.5°          |
| HD100-800  | 800                   | 100                  | 248,000                      | 360,000                    | 4960,000                              | 2015                    | 1153 | 1203 | 2065                  | 1203 | 1253 | 1.0°                     | 0.5°          |
| HD100-900  | 900                   | 100                  | 279,000                      | 360,000                    | 5580,000                              | 2215                    | 1253 | 1303 | 2295                  | 1333 | 1383 | 1.0°                     | 0.5°          |
| HD100-1000 | 1000                  | 100                  | 250,000                      | 300,000                    | 5000,000                              | 2415                    | 1353 | 1403 | 2515                  | 1453 | 1503 | 1.0°                     | 0.5°          |
| HD100-1200 | 1200                  | 100                  | 212,000                      | 212,000                    | 3180,000                              | 2815                    | 1553 | 1603 | 2965                  | 1703 | 1753 | 1.0°                     | 0.5°          |

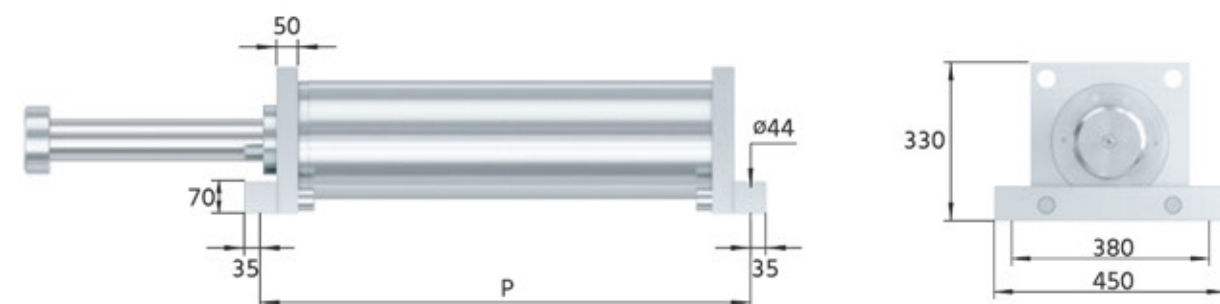
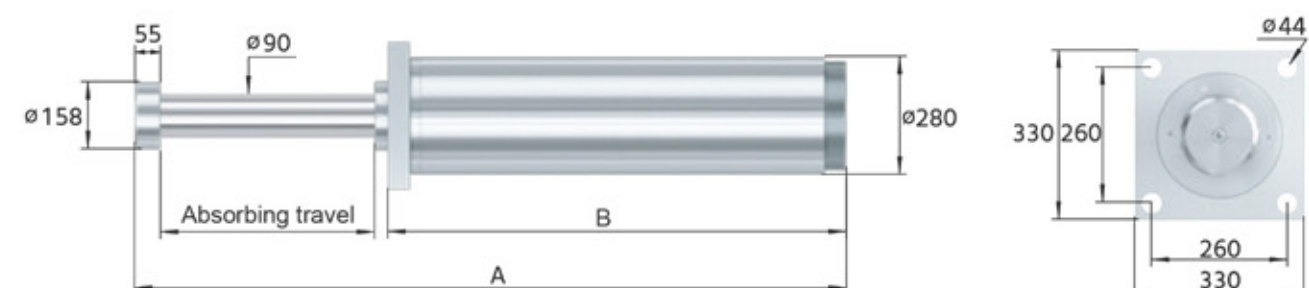




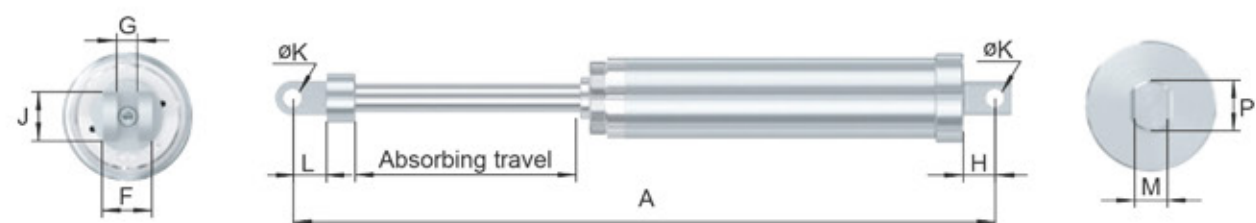
| Model      | Absorbing travel (mm) | Piston diameter (mm) | Maximum absorbed energy (Nm) | Maximum reaction force (N) | Maximum absorbed energy per hour (Nm) | Horizontal installation |      |      | Vertical installation |      |      | Maximum deflection angle |               |
|------------|-----------------------|----------------------|------------------------------|----------------------------|---------------------------------------|-------------------------|------|------|-----------------------|------|------|--------------------------|---------------|
|            |                       |                      |                              |                            |                                       | A mm                    | B mm | P mm | A mm                  | B mm | P mm | Emergency location       | Constant load |
| HD125-050  | 50                    | 125                  | 23,000                       | 552,000                    | 690,000                               | 447                     | 325  | 385  | 447                   | 325  | 385  | 2.0°                     | 2.0°          |
| HD125-100  | 100                   | 125                  | 46,000                       | 552,000                    | 1380,000                              | 577                     | 405  | 465  | 577                   | 405  | 465  | 2.0°                     | 1.5°          |
| HD125-150  | 150                   | 125                  | 69,000                       | 552,000                    | 2070,000                              | 712                     | 490  | 550  | 712                   | 490  | 550  | 2.0°                     | 1.5°          |
| HD125-200  | 200                   | 125                  | 92,000                       | 552,000                    | 2760,000                              | 842                     | 570  | 630  | 842                   | 570  | 630  | 1.5°                     | 1.0°          |
| HD125-250  | 250                   | 125                  | 115,000                      | 552,000                    | 2875,000                              | 977                     | 655  | 715  | 977                   | 655  | 715  | 1.5°                     | 0.5°          |
| HD125-300  | 300                   | 125                  | 138,000                      | 552,000                    | 3450,000                              | 1117                    | 745  | 805  | 1117                  | 745  | 805  | 1.5°                     | 0.5°          |
| HD125-400  | 400                   | 125                  | 185,000                      | 552,000                    | 4625,000                              | 1387                    | 915  | 975  | 1387                  | 915  | 975  | 1.5°                     | 0.5°          |
| HD125-500  | 500                   | 125                  | 231,000                      | 552,000                    | 5775,000                              | 1657                    | 1085 | 1145 | 1657                  | 1085 | 1145 | 1.5°                     | 0.5°          |
| HD125-600  | 600                   | 125                  | 277,000                      | 552,000                    | 5540,000                              | 1927                    | 1255 | 1315 | 1927                  | 1255 | 1315 | 1.5°                     | 0.5°          |
| HD125-700  | 700                   | 125                  | 325,000                      | 552,000                    | 6500,000                              | 2142                    | 1370 | 1430 | 2142                  | 1370 | 1430 | 1.0°                     | 0.5°          |
| HD125-800  | 800                   | 125                  | 370,000                      | 552,000                    | 5550,000                              | 2412                    | 1540 | 1600 | 2412                  | 1540 | 1600 | 1.0°                     | 0.5°          |
| HD125-900  | 900                   | 125                  | 415,000                      | 552,000                    | 6225,000                              | 2672                    | 1700 | 1760 | 2672                  | 1700 | 1760 | 1.0°                     | 0.5°          |
| HD125-1000 | 1000                  | 125                  | 460,000                      | 552,000                    | 4600,000                              | 2982                    | 1910 | 1970 | 2982                  | 1910 | 1970 | 1.0°                     | 0.5°          |
| HD125-1200 | 1200                  | 125                  | 410,000                      | 410,000                    | 4100,000                              | 3462                    | 2190 | 2250 | 3462                  | 2190 | 2250 | 1.0°                     | 0.5°          |



| Model      | Absorbing travel (mm) | Piston diameter (mm) | Maximum absorbed energy (Nm) | Maximum reaction force (N) | Maximum absorbed energy per hour (Nm) | Horizontal installation |      |      | Vertical installation |      |      | Maximum deflection angle |               |
|------------|-----------------------|----------------------|------------------------------|----------------------------|---------------------------------------|-------------------------|------|------|-----------------------|------|------|--------------------------|---------------|
|            |                       |                      |                              |                            |                                       | A mm                    | B mm | P mm | A mm                  | B mm | P mm | Emergency location       | Constant load |
| HD160-050  | 50                    | 160                  | 37,000                       | 900,000                    | 270,000                               | 472                     | 352  | 422  | 472                   | 352  | 422  | 2.0°                     | 2.0°          |
| HD160-100  | 100                   | 160                  | 75,000                       | 900,000                    | 750,000                               | 572                     | 402  | 472  | 572                   | 402  | 472  | 2.0°                     | 1.5°          |
| HD160-150  | 150                   | 160                  | 112,000                      | 900,000                    | 1120,000                              | 682                     | 462  | 532  | 682                   | 462  | 532  | 2.0°                     | 1.5°          |
| HD160-200  | 200                   | 160                  | 150,000                      | 900,000                    | 1500,000                              | 802                     | 532  | 602  | 802                   | 532  | 602  | 1.5°                     | 1.0°          |
| HD160-250  | 250                   | 160                  | 190,000                      | 900,000                    | 1900,000                              | 912                     | 592  | 662  | 912                   | 592  | 662  | 1.5°                     | 0.5°          |
| HD160-300  | 300                   | 160                  | 220,000                      | 900,000                    | 2200,000                              | 1032                    | 662  | 732  | 1032                  | 662  | 732  | 1.5°                     | 0.5°          |
| HD160-400  | 400                   | 160                  | 300,000                      | 900,000                    | 3000,000                              | 1252                    | 782  | 852  | 1252                  | 782  | 852  | 1.5°                     | 0.5°          |
| HD160-500  | 500                   | 160                  | 380,000                      | 900,000                    | 3800,000                              | 1482                    | 912  | 982  | 1482                  | 912  | 982  | 1.5°                     | 0.5°          |
| HD160-600  | 600                   | 160                  | 455,000                      | 900,000                    | 4550,000                              | 1712                    | 1042 | 1112 | 1712                  | 1042 | 1112 | 1.5°                     | 0.5°          |
| HD160-700  | 700                   | 160                  | 530,000                      | 900,000                    | 5300,000                              | 1942                    | 1172 | 1242 | 1942                  | 1172 | 1242 | 1.0°                     | 0.5°          |
| HD160-800  | 800                   | 160                  | 605,000                      | 900,000                    | 3025,000                              | 2172                    | 1302 | 1372 | 2172                  | 1302 | 1372 | 1.0°                     | 0.5°          |
| HD160-900  | 900                   | 160                  | 680,000                      | 900,000                    | 3400,000                              | 2402                    | 1432 | 1502 | 2402                  | 1432 | 1502 | 1.0°                     | 0.5°          |
| HD160-1000 | 1000                  | 160                  | 795,000                      | 900,000                    | 3975,000                              | 2632                    | 1562 | 1632 | 2632                  | 1562 | 1632 | 1.0°                     | 0.5°          |
| HD160-1200 | 1200                  | 160                  | 800,000                      | 800,000                    | 4000,000                              | 3092                    | 1822 | 1892 | 3092                  | 1822 | 1892 | 1.0°                     | 0.5°          |



| Model     | A<br>mm | F<br>mm | G<br>mm | H<br>mm | J<br>mm | K<br>mm | L<br>mm | M<br>mm | P<br>mm |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| HD40-050  | 382     | 38.1    | 16.3    | 35      | 38.1    | 20      | 38      | 25      | 38      |
| HD40-100  | 482     | 38.1    | 16.3    | 35      | 38.1    | 20      | 38      | 25      | 38      |
| HD40-150  | 582     | 38.1    | 16.3    | 35      | 38.1    | 20      | 38      | 25      | 38      |
| HD40-200  | 682     | 38.1    | 16.3    | 35      | 38.1    | 20      | 38      | 25      | 38      |
| HD40-250  | 782     | 38.1    | 16.3    | 35      | 38.1    | 20      | 38      | 25      | 38      |
| HD40-300  | 882     | 38.1    | 16.3    | 35      | 38.1    | 20      | 38      | 25      | 38      |
| HD50-050  | 398     | 55      | 25      | 34      | 40      | 20      | 40      | 25      | 40      |
| HD50-100  | 497     | 55      | 25      | 34      | 40      | 20      | 40      | 25      | 40      |
| HD50-150  | 597     | 55      | 25      | 34      | 40      | 20      | 40      | 25      | 40      |
| HD50-200  | 697     | 55      | 25      | 34      | 40      | 20      | 40      | 25      | 40      |
| HD50-250  | 797     | 55      | 25      | 34      | 40      | 20      | 40      | 25      | 40      |
| HD50-300  | 897     | 55      | 25      | 34      | 40      | 20      | 40      | 25      | 40      |
| HD75-050  | 432     | 90      | 38      | 32      | 60      | 25      | 45      | 38      | 60      |
| HD75-100  | 520     | 90      | 38      | 32      | 60      | 25      | 45      | 38      | 60      |
| HD75-150  | 642     | 90      | 38      | 32      | 60      | 25      | 45      | 38      | 60      |
| HD75-200  | 736     | 90      | 38      | 32      | 60      | 25      | 45      | 38      | 60      |
| HD75-250  | 838     | 90      | 38      | 32      | 60      | 25      | 45      | 38      | 60      |
| HD75-300  | 940     | 90      | 38      | 32      | 60      | 25      | 45      | 38      | 60      |
| HD100-050 | 570     | 140     | 65      | 50      | 100     | 50      | 70      |         |         |
| HD100-100 | 672     | 140     | 65      | 50      | 100     | 50      | 70      |         |         |
| HD100-150 | 772     | 140     | 65      | 50      | 100     | 50      | 70      |         |         |
| HD100-200 | 875     | 140     | 65      | 50      | 100     | 50      | 70      |         |         |
| HD100-250 | 976     | 140     | 65      | 50      | 100     | 50      | 70      |         |         |
| HD100-300 | 1143    | 140     | 65      | 50      | 100     | 50      | 70      |         |         |
| HD125-050 | 640     | 150     | 70      | 70      | 100     | 60      | 80      |         |         |
| HD125-100 | 751     | 150     | 70      | 70      | 100     | 60      | 80      |         |         |
| HD125-150 | 853     | 150     | 70      | 70      | 100     | 60      | 80      |         |         |
| HD125-200 | 955     | 150     | 70      | 70      | 100     | 60      | 80      |         |         |
| HD125-250 | 1055    | 150     | 70      | 70      | 100     | 60      | 80      |         |         |
| HD125-300 | 1157    | 150     | 70      | 70      | 100     | 60      | 80      |         |         |



## Installation



F: Front flange



FR: Front and rear flange



S: Front tripod



R: Rear flange



CM U-clamp



SS: Front and rear tripods

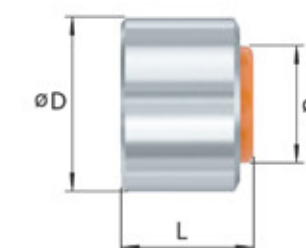
- When the buffering travel is longer than 300 mm, the rear flange is not suggested
- We also offer necessary components and accessories

## Safety chain



! For safety reasons, we recommend the installation of an anti-fall safety chain when the HD Series heavy-duty shock absorber is mounted at a height greater than 2m.

## Silencer



| Model | D<br>mm | L<br>mm | E<br>mm |
|-------|---------|---------|---------|
| HD40  | 55      | 45      | 40      |
| HD50  | 59      | 45      | 40      |
| HD75  | 69      | 45      | 48      |



Protection device



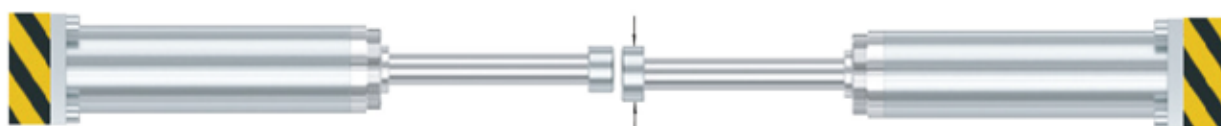
To protect the piston rod from high-temperature liquids and metal chips, we have made a metal sleeve for the piston rod which is stronger and less prone to deterioration and breakage.

To adapt the absorber to more harsh environments, we customized a protective ripple tube to protect the piston rod from external influences to extend the life of the buffer.

Proximity switch



Enlarged impact head



! Application: Absorber impact absorber

| Model | Diameter |
|-------|----------|
| HD40  | 70       |
| HD50  | 80       |
| HD75  | 100      |
| HD100 | 125      |
| HD125 | 160      |

Precautions

- 1.Ensure that the impact surface is perpendicular to the piston rod during installation.
- 2.The flange fixing bolt must not be smaller than 2mm from the mounting holes during installation.
- 3.To protect the piston rod, it is recommended to use the tripod or front and rear flange mounting method for the absorber stroke of 500mm and above.
- 4.Do not use the absorber outside the temperature range, otherwise, it may cause premature deterioration or damage to the absorber, which will result in system damage and mechanical accidents.
- 5.Keep corrosive fluids away from the absorber, and ensure the piston rod area is clean.
- 6.The absorber is filled with high-pressure gas, do not open it without authorization to avoid injury. ! ! !

Initial use checks

Before the initial use of the absorber, it should be checked for correct installation and operated with lower buffer speed and impact energy so that the actual operation of the absorber in the early stages keeps a certain discrepancy from the theoretical values. This approach helps to avoid system damage.

Inspection after large load impact

After experiencing a full load impact (e.g., during emergencies), HD needs to undergo another verification process for deceleration or weight reduction. This involves checking if the piston rod fully returns, inspecting for any oil leakage, and ensuring the secure installation of components.

Maintenance

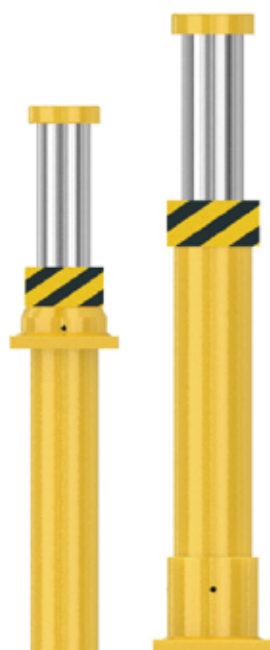
HD is an absorber with a sealed system that does not require special maintenance. When the buffer is not regularly used (e.g., only prepared for emergency stop systems), it should undergo safety inspections at fixed intervals, with a frequency of no less than once a year. During inspections, pay attention to whether the piston rod can fully extend and remains intact. If the buffer is regularly used, it is recommended to conduct inspections every three months.

! HD is shipped with the accessories that the customer has chosen. When you receive the goods, please check whether the accessories are complete. Please ensure the product information is identical to the ordering information before use.

|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-SSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |

# HI Series

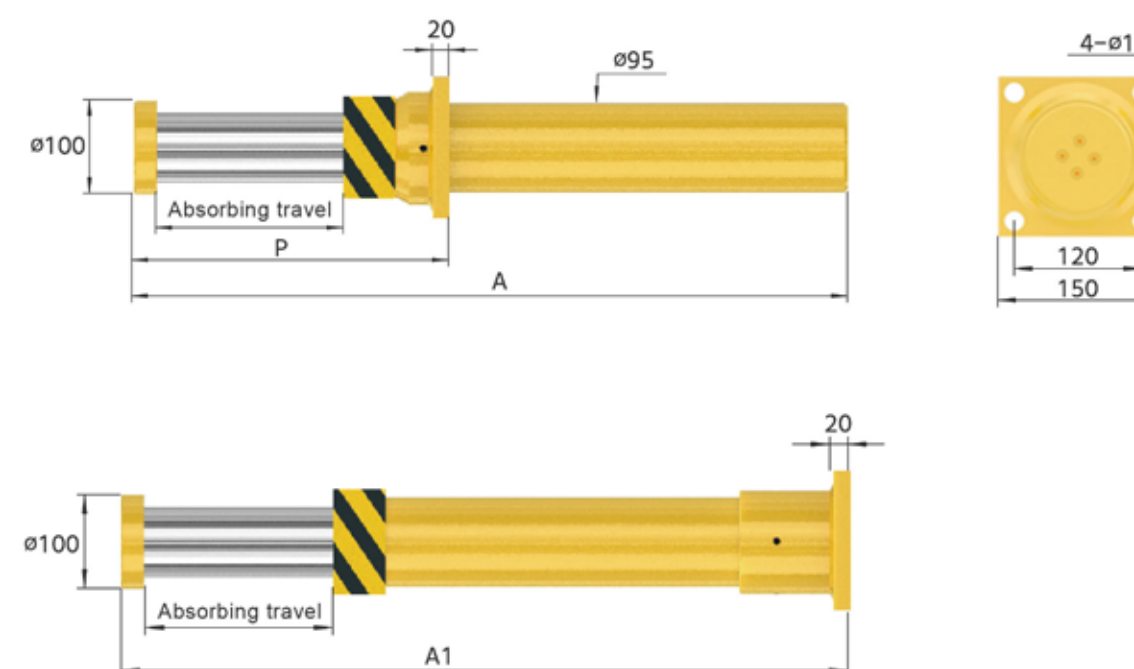
## Heavy-duty shock absorber



The HI series of shock absorber is specially for the safety of heavy-duty mechanical equipment. They are air-liquid separated and are returned with nitrogen. This design facilitates maintenance. At the same time, the HI series also features large bore and high absorption energy to protect the safety of heavy machinery. It is used in port, railway, steel and other industries. Its characteristics are cylinder bore drilling and high energy absorption. It can effectively reduce the moving load of heavy-duty machinery and equipment. Its working principle is that when the impact head is impacted by external force, the piston rod moves downward and compresses the hydraulic oil to pass through the orifice to produce damping force. At the same time, the hydraulic oil squeezes the nitrogen in the air chamber. When the load is removed, the high-pressure nitrogen will press the hydraulic oil to push the piston to move up to reset the piston rod and complete a working cycle.

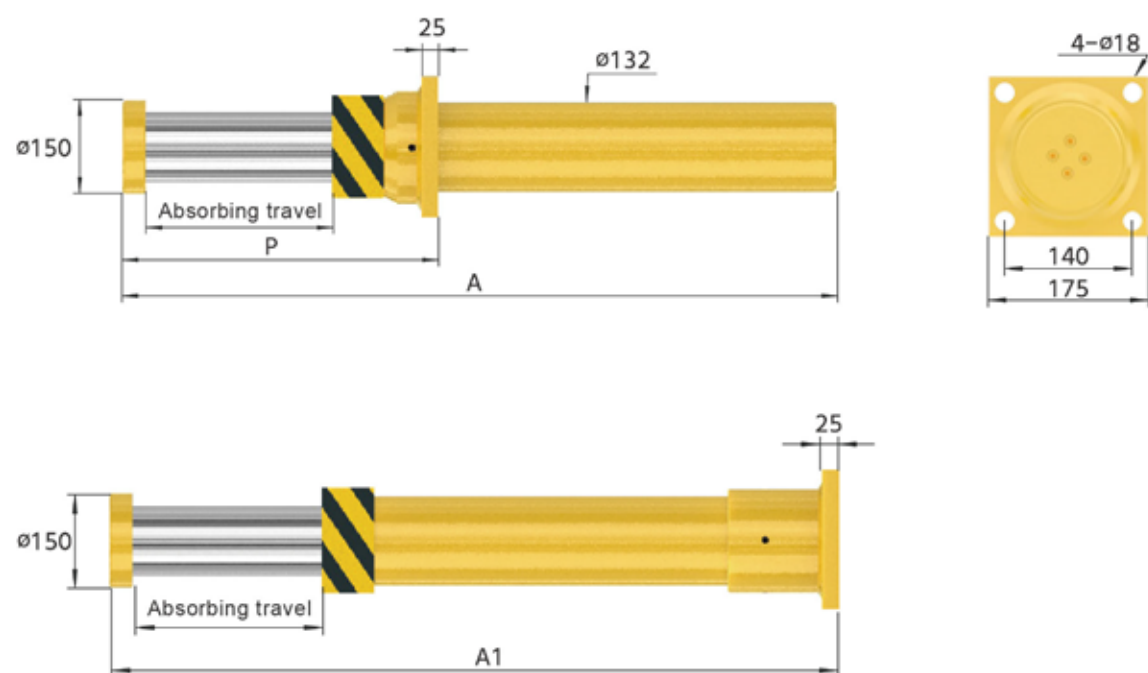
- Material ———— Outer pipe: carbon steel paint treatment to enhance rust resistance.  
Axis: Hard chromium treatment plus special seals for longer lifespan
- Temperature ———— -10~+80°C
- Installation ———— CJAC provides you with flanged tripods and other installation methods.  
Moreover, CJAC can customize solutions based on your requirements.
- Special demand ———— CJAC can customize solutions based on your requirements

| Model    | Absorbing travel (mm) | Maximum absorbed energy (Nm) | Maximum impact (kN) | Restoring force |               | Weight (g) | A mm | A1 mm | P mm |
|----------|-----------------------|------------------------------|---------------------|-----------------|---------------|------------|------|-------|------|
|          |                       |                              |                     | Stretch (kN)    | Compress (kN) |            |      |       |      |
| HI75-50  | 50                    | 10000                        | 250                 | 1.65            | 18            | -          | 312  | 322   | 212  |
| HI75-100 | 100                   | 20000                        | 250                 | 1.65            | 18            | -          | 447  | 457   | 262  |
| HI75-150 | 150                   | 30000                        | 250                 | 1.65            | 18            | -          | 593  | 603   | 312  |
| HI75-200 | 200                   | 40000                        | 250                 | 1.65            | 18            | -          | 743  | 753   | 362  |
| HI75-400 | 400                   | 80000                        | 250                 | 1.65            | 18            | -          | 1333 | 1343  | 562  |

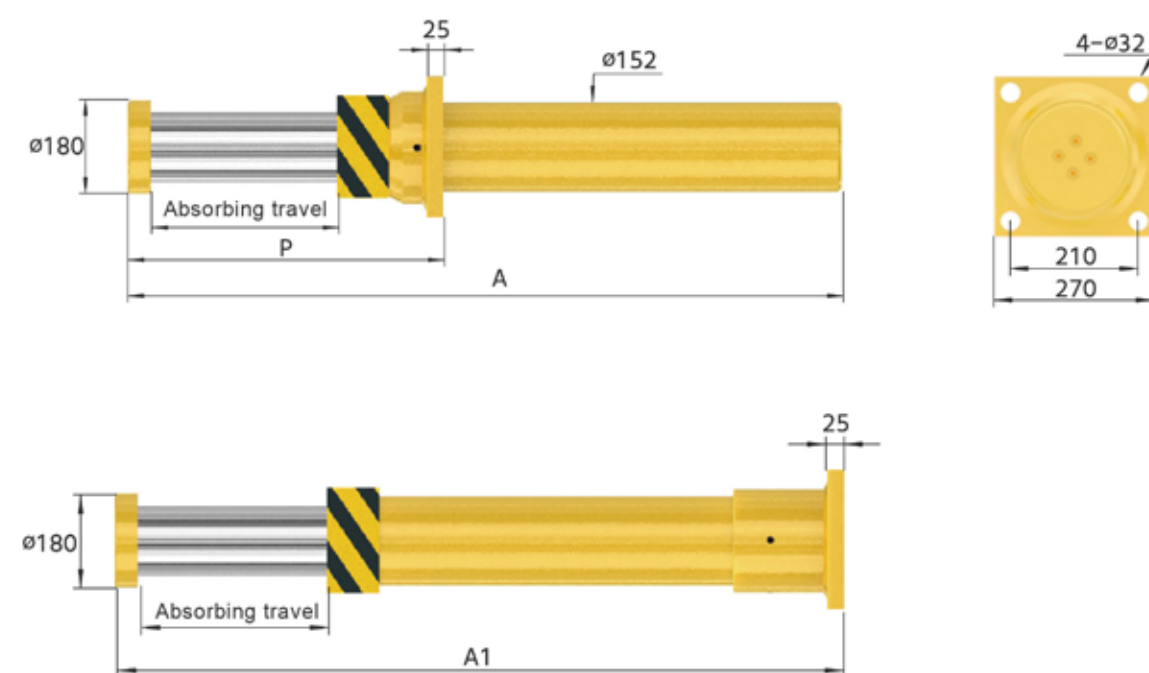




| Model     | Absorbing travel (mm) | Maximum absorbed energy (Nm) | Maximum impact (kJ) | Restoring force |               | Weight (g) | A mm | A1 mm | P mm |
|-----------|-----------------------|------------------------------|---------------------|-----------------|---------------|------------|------|-------|------|
|           |                       |                              |                     | Stretch (kN)    | Compress (kN) |            |      |       |      |
| HI100-100 | 100                   | 40000                        | 500                 | 3               | 45            | -          | 464  | 479   | 282  |
| HI100-200 | 200                   | 80000                        | 500                 | 3               | 45            | -          | 734  | 749   | 382  |
| HI100-250 | 250                   | 100000                       | 500                 | 3               | 45            | -          | 864  | 879   | 440  |
| HI100-300 | 300                   | 120000                       | 500                 | 3               | 45            | -          | 1004 | 1019  | 502  |
| HI100-400 | 400                   | 160000                       | 500                 | 3               | 45            | -          | 1274 | 1289  | 602  |
| HI100-500 | 500                   | 200000                       | 500                 | 3               | 45            | -          | 1534 | 1549  | 702  |



| Model      | Absorbing travel (mm) | Maximum absorbed energy (Nm) | Maximum impact (N) | Restoring force |               | Weight (kg) | A mm | A1 mm | P mm |
|------------|-----------------------|------------------------------|--------------------|-----------------|---------------|-------------|------|-------|------|
|            |                       |                              |                    | Stretch (kN)    | Compress (kN) |             |      |       |      |
| HI120-100  | 100                   | 60000                        | 645                | 4               | 60            | -           | 458  | 473   | 292  |
| HI120-150  | 150                   | 82000                        | 645                | 4               | 60            | -           | 578  | 593   | 342  |
| HI120-200  | 200                   | 105000                       | 645                | 4               | 60            | -           | 708  | 723   | 392  |
| HI120-500  | 500                   | 275000                       | 645                | 4               | 60            | -           | 1478 | 1493  | 712  |
| HI120-1000 | 1000                  | 510000                       | 600                | 4               | 60            | -           | 2758 | 2773  | 1335 |



|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
| AD                     |
| DL                     |
| Accessories            |
| HR                     |
| ADA                    |
| BZ                     |
| HD                     |
| Calculation Example    |
| HD Accessories         |
| HI                     |
| PC                     |
| AS                     |
| RD                     |
| Instructions           |

# PC Series

## Pilot check valve air pressure check valve

Safety circuit for pressure preservation.

Prevention of self-driven situations after the stop of the cylinder.

The positioning of the sudden stop of the cylinder is highly accurate.

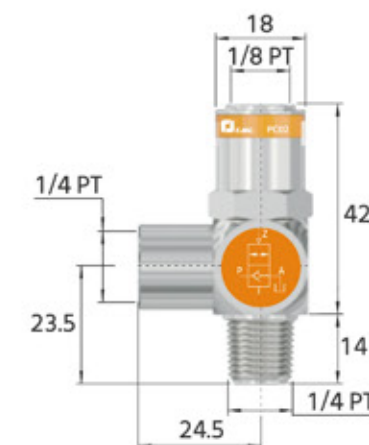
Special circuit design applications.

- Material — Body frame: JIS C3604 nickel plating treatment enhances rust resistance.  
Body sleeve: aluminum alloy plus anodized primary color
- Pressure range — 0.5~9.5Kg/cm<sup>2</sup>
- Temperature range — -10~+70°C
- Frequency — 40-60/min
- Specific demands — CJAC can customize solutions based on your requirements.

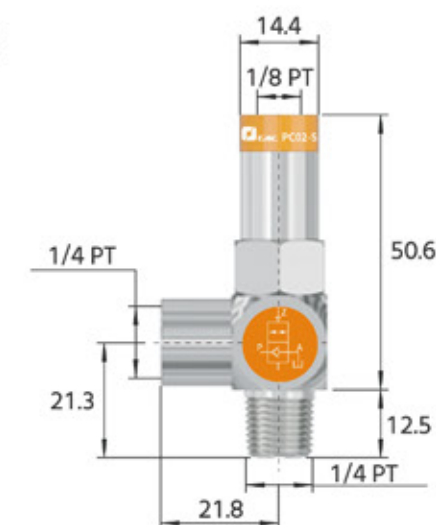


| Model  | Pressure range (kg/cm <sup>2</sup> ) | Temperature used (°C) | Effective cross-sectional area (mm <sup>2</sup> ) | Operation frequency (times/min) | Weight (g) | Suggested cylinder         |
|--------|--------------------------------------|-----------------------|---------------------------------------------------|---------------------------------|------------|----------------------------|
| PC02   | 0.5~9.5                              | -10~+70               | 24                                                | 60                              | 100        | 50 and below (50 included) |
| PC02-S | 0.5~9.5                              | -10~+70               | 24                                                | 60                              | 93         | 50 and below (50 included) |
| PC03   | 0.5~9.5                              | -10~+70               | 79                                                | 40                              | 340        | 63~80                      |

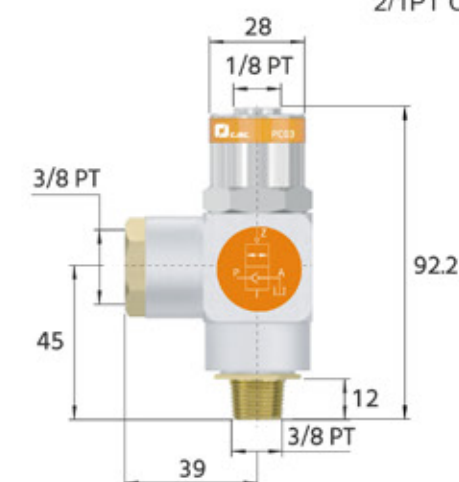
PC02



PC02-S



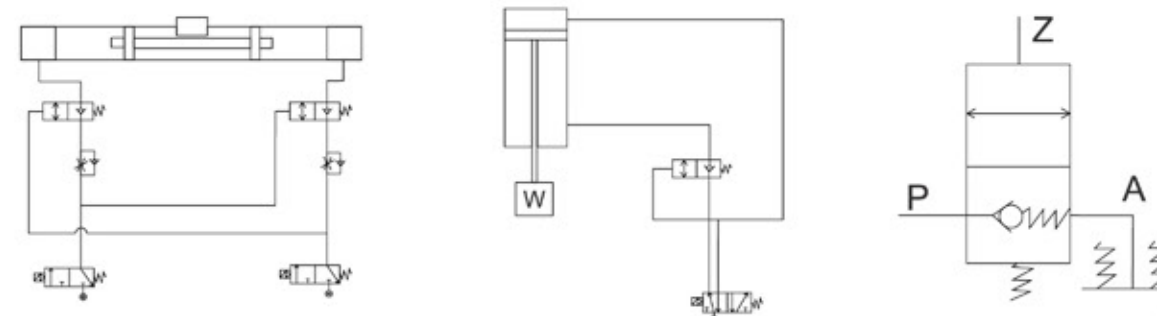
PC03



2/1PT Connector Conversion Diagram



### Airway Usage Examples

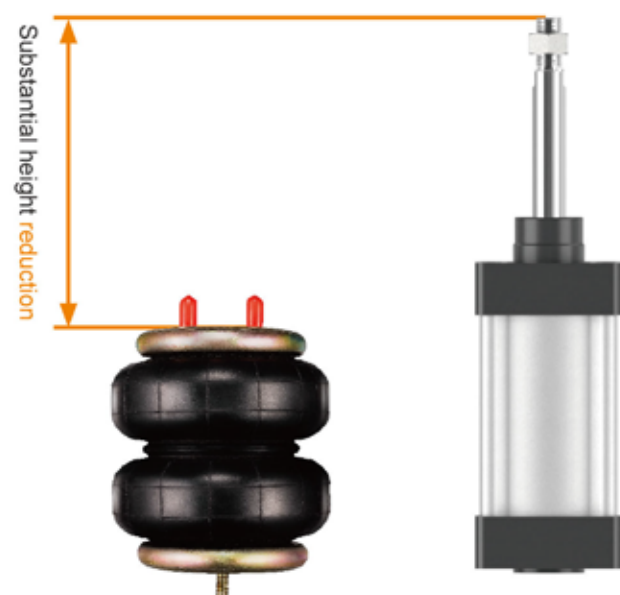


|                        |
|------------------------|
| Order Example          |
| Model Index            |
| Calculation Example    |
| AC                     |
| AC-S                   |
| AC-RSN                 |
| AC-R                   |
| AC-K                   |
| ACD                    |
| Stopper Cylinder AC/AD |
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| AS                     |
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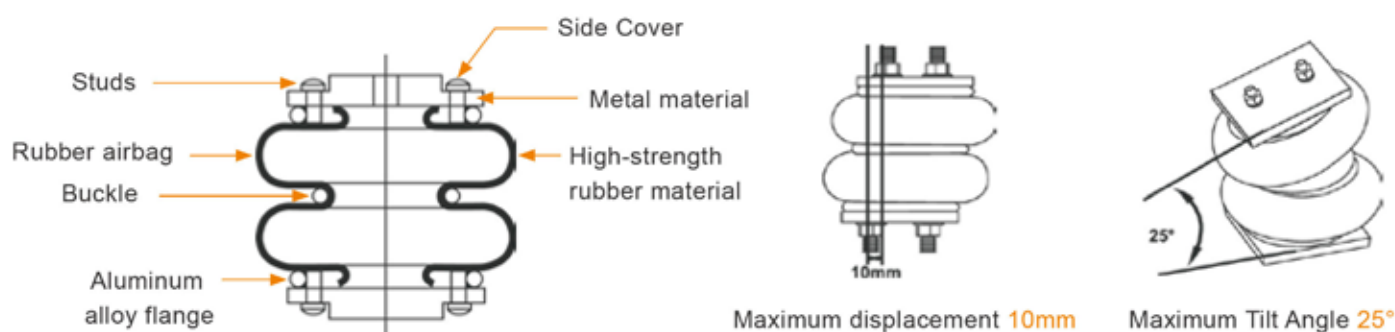
# AS Series

## Air spring



AS series air springs can be applied in mechanical shock, vibration, pressure, handling, and actuation. This product has small installation space requirements and features simple control load and is maintenance-free. It also provides excellent vibration isolation. It can be used to replace the jack, with the cylinder to provide thrust force.

- Material ——— End cap: Galvanized carbon steel and nickel plating treatment increase rust resistance  
Rubber bag: neoprene plus fiber
- Frequency ——— 3.0~5.0Hz
- Air pressure range ——— 0~0.5Mpa
- Temperature range ——— -35~70°C
- Installation ——— CJAC provides you with standard threaded mounting installation, which can be fixed in both internal and external teeth. If you have specific demands, CJAC can also offer custom offers.
- Specific demands ——— CJAC can customize solutions based on your requirements.

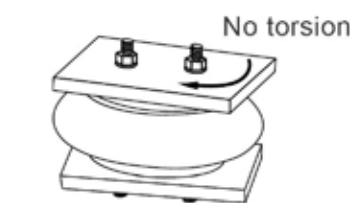


The air spring is a convoluted capsule structure, usually with 1 to 3 convoluted capsules. The connection method is a fixed flange, and the size of the connecting caps at both ends of the air spring is slightly smaller than the maximum outer diameter of the convoluted capsule, and the end caps and the air bag are tightly connected with a buckle. The operation principle is to fill a closed air spring with compressed air or an oil-air mixture, so that the pressure inside the convoluted capsule rises, and the force generated by multiplying the cross-sectional area of the convoluted capsule by the pressure ( $F=A \times P$ ) is utilized to connect the actuator with the function of the vibration isolator.

### Installation Precautions

1. It is necessary to install the air spring with clearance from the machine because the convoluted capsules will expand after being filled with compressed gas.
2. Not to be twisted. (FIG. 1)
3. Air springs must not be subjected to excessive tilting or transverse forces during use.
4. Air springs should be installed as close as possible to the device's center of gravity.
5. Air springs are high-pressure products and are strictly prohibited from burning collision, and needling.
6. Use a guide post to protect the air spring.
7. Ambient temperature: -35°C ~70°C (-40°C ~90°C for specific manufacturing)
8. Only fill with compressed air if there is a load, maximum operating pressure: 7 bar. (FIG. 2)
9. When the ascending stroke is terminated, a fixing device should be provided to limit the height of use, to prevent exceeding the permissible maximum stroke height, which may cause the air spring to burst and be damaged. (FIG. 3)
10. When the descending stroke is terminated, a fixing device should be provided to limit the height of use and to prevent damage caused by the forcing of the air spring. (FIG. 4)

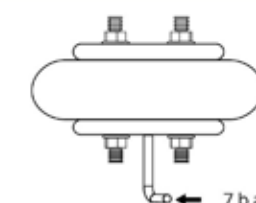
#### No torsion of air spring



(FIG. 1)

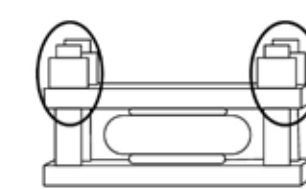
#### Filled Pressure Value

Do not exceed the rated air pressure (7bar).

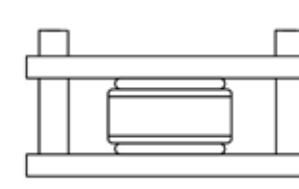


(FIG. 2)

When the **ascending stroke** is terminated, a fixing device **should be** provided.



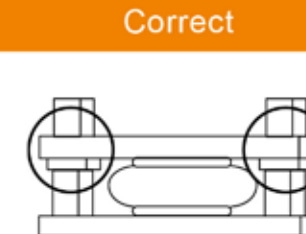
Correct



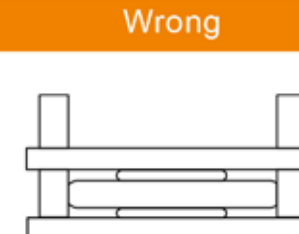
Wrong

(FIG. 3)

When the **descending stroke** is terminated, a fixing device **should be** provided.



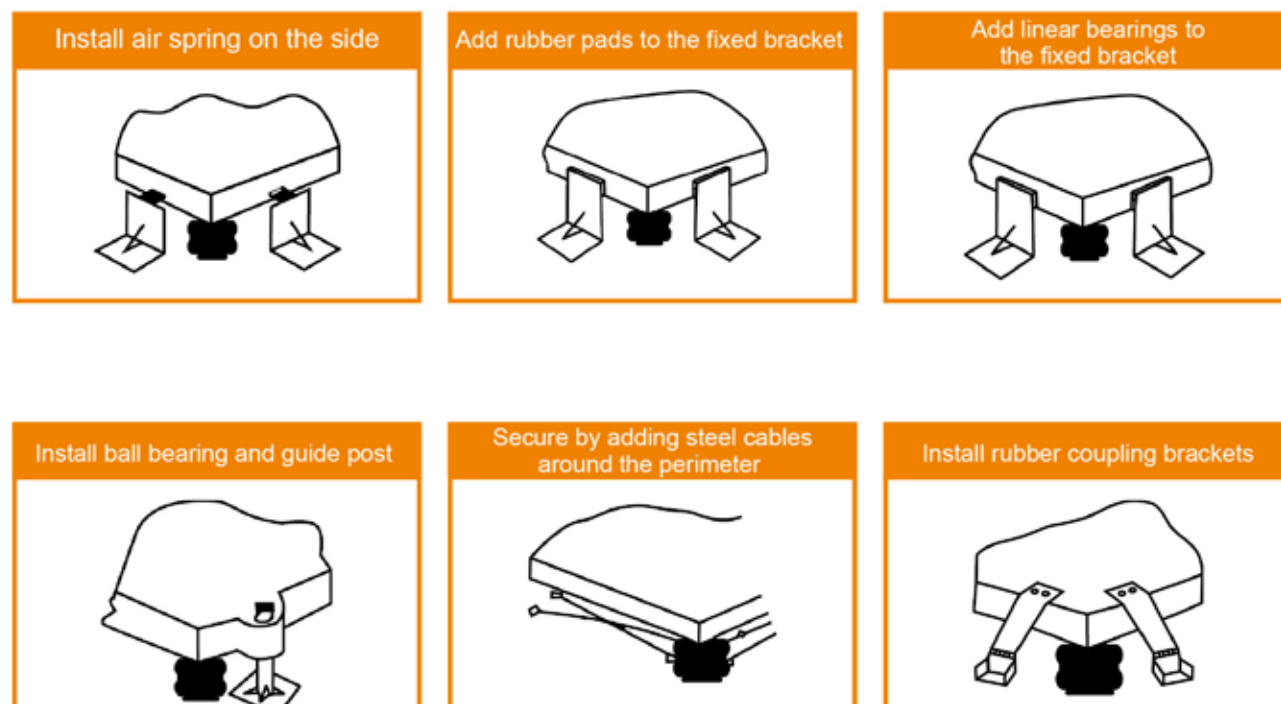
Correct



Wrong

(FIG. 4)

The guidance method uses guide posts, rubber pads, steel cables, etc., on the side of the vibrating object as follows.



### Air spring calculation

|                                                  | Actuator | Vibration Isolators |
|--------------------------------------------------|----------|---------------------|
| Internal pressure of air spring P(bar)           | ●        | ●                   |
| Required stroke(S,mm)                            | ●        |                     |
| Lifting weight (m,kg)                            | ●        |                     |
| Number of air springs (n)                        | ●        | ●                   |
| Minimum height of the mounting structure (H,mm)  | ●        | ●                   |
| Minimum diameter of mounting structure (D,mm)    | ●        | ●                   |
| Temperature (T,°C)                               | ●        | ●                   |
| Object Weight (m,kg)                             |          | ●                   |
| Frequency of machine vibration (f,Hz)            |          | ●                   |
| Expected efficiency of vibration isolation (I,%) |          | ●                   |

Optional conditions for air springs (provided by the customer)

### Example 1: Air spring option (actuator)

| Requirements                                                                  |        |       |                                                                                    |
|-------------------------------------------------------------------------------|--------|-------|------------------------------------------------------------------------------------|
| Lifting weight                                                                | m(kg)  | 2200  |                                                                                    |
| Required stroke                                                               | (S,mm) | 220   | The stroke of the selected air spring should be greater than the S value           |
| Number of air springs                                                         | n      | 4     |                                                                                    |
| Internal pressure of air spring                                               | P(bar) | 5.5   | P is less than 7bar                                                                |
| Minimum height of mounting structure                                          | H(mm)  | 100   | The minimum height of the selected air spring should be less than the H value      |
|                                                                               | D(mm)  | 400   |                                                                                    |
| Temperature range                                                             | T(°C)  | 25    | The T value must be within the range of -35°C to 70°C.                             |
| Calculation result                                                            |        |       |                                                                                    |
| The respective load forces of each air spring (calculated using formula 1-1). | F      | 5390N | The actuating force of the selected air spring should be greater than the F value. |

$$\text{Selected formula : } F = \frac{m \times g}{n} \quad (1-1)$$

### Example 2: Air spring option (actuator)

| Requirements                                                           |        |       |                                                                                                |
|------------------------------------------------------------------------|--------|-------|------------------------------------------------------------------------------------------------|
| Object's Weight                                                        | m(kg)  | 2400  |                                                                                                |
| Motor speed                                                            | RPM    | 870   |                                                                                                |
| Expected efficiency of vibration isolation (%)                         | I(%)   | 90    |                                                                                                |
| Number of air springs                                                  | n      | 6     |                                                                                                |
| Internal pressure of air spring                                        | P(bar) | 5.5   | P is less than 7bar                                                                            |
| Minimum height of mounting structure                                   | H(mm)  | 120   | The minimum height of the selected air spring should be less than the H value                  |
| Minimum diameter of mounting structure                                 | D(mm)  | 380   | The pressurized diameter of the selected pneumatic spring should be smaller than the D value." |
| Temperature range                                                      | T(°C)  | 24    | The T value must be within the range of -35°C to 70°C.Calculation result                       |
| Requirements                                                           |        |       |                                                                                                |
| Loading force of individual gas springs (Calculated using formula 2-1) | F      | 5100N | The selected pneumatic spring load should be greater than the F value.                         |
| Frequency of object vibration (Calculated using formula 2-2)           | f (Hz) | 14.5  |                                                                                                |
| Air spring natural frequency (calculated using formula 2-3)            | fo     | 4.37  | Optional air spring with natural frequency less than 4.37                                      |

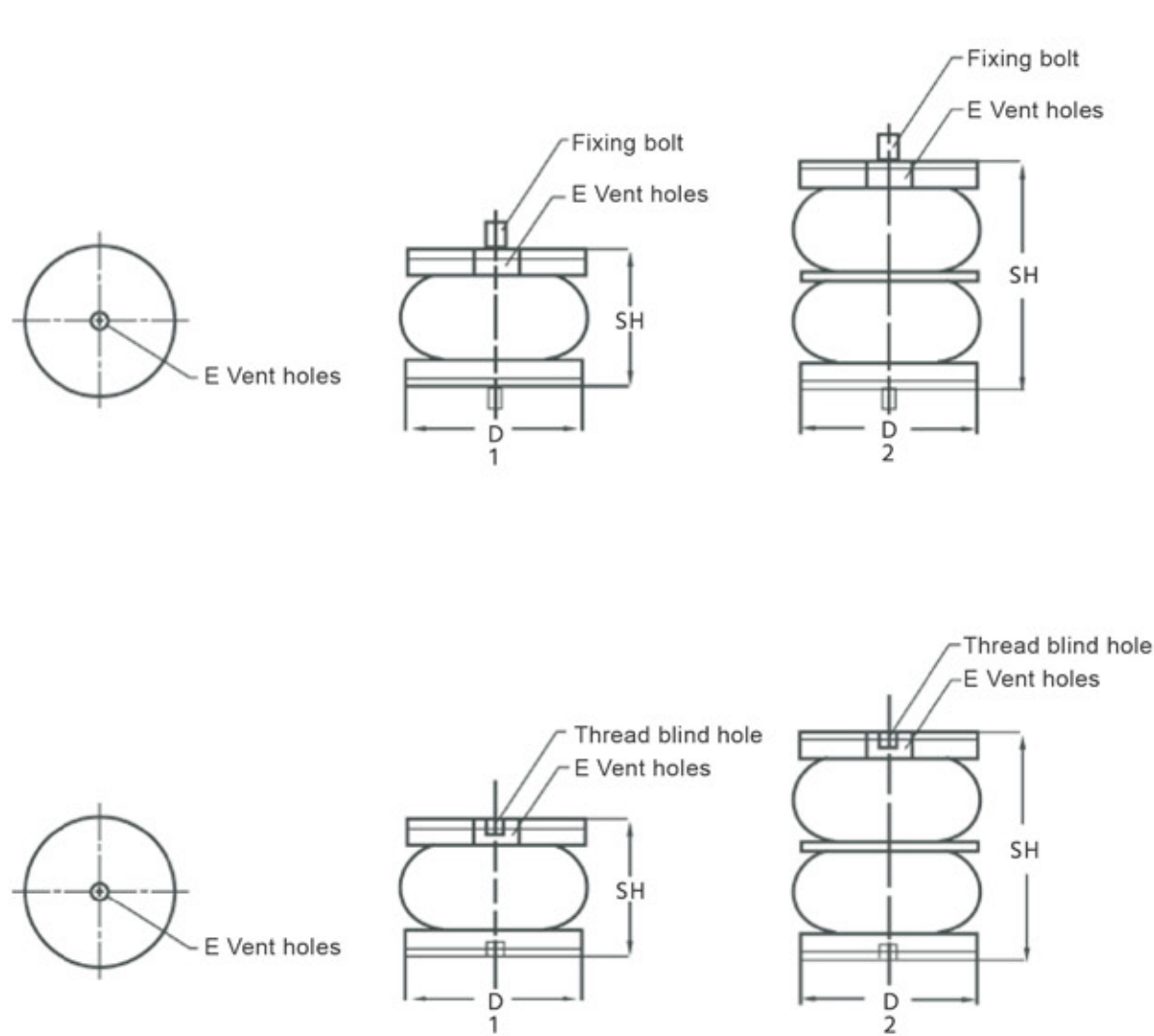
$$\text{Selected formula : } F = \frac{1.3 \times (m \times g)}{n} \quad (2-1)$$

$$f = \frac{\text{CPM or RPM}}{60} \quad (2-2)$$

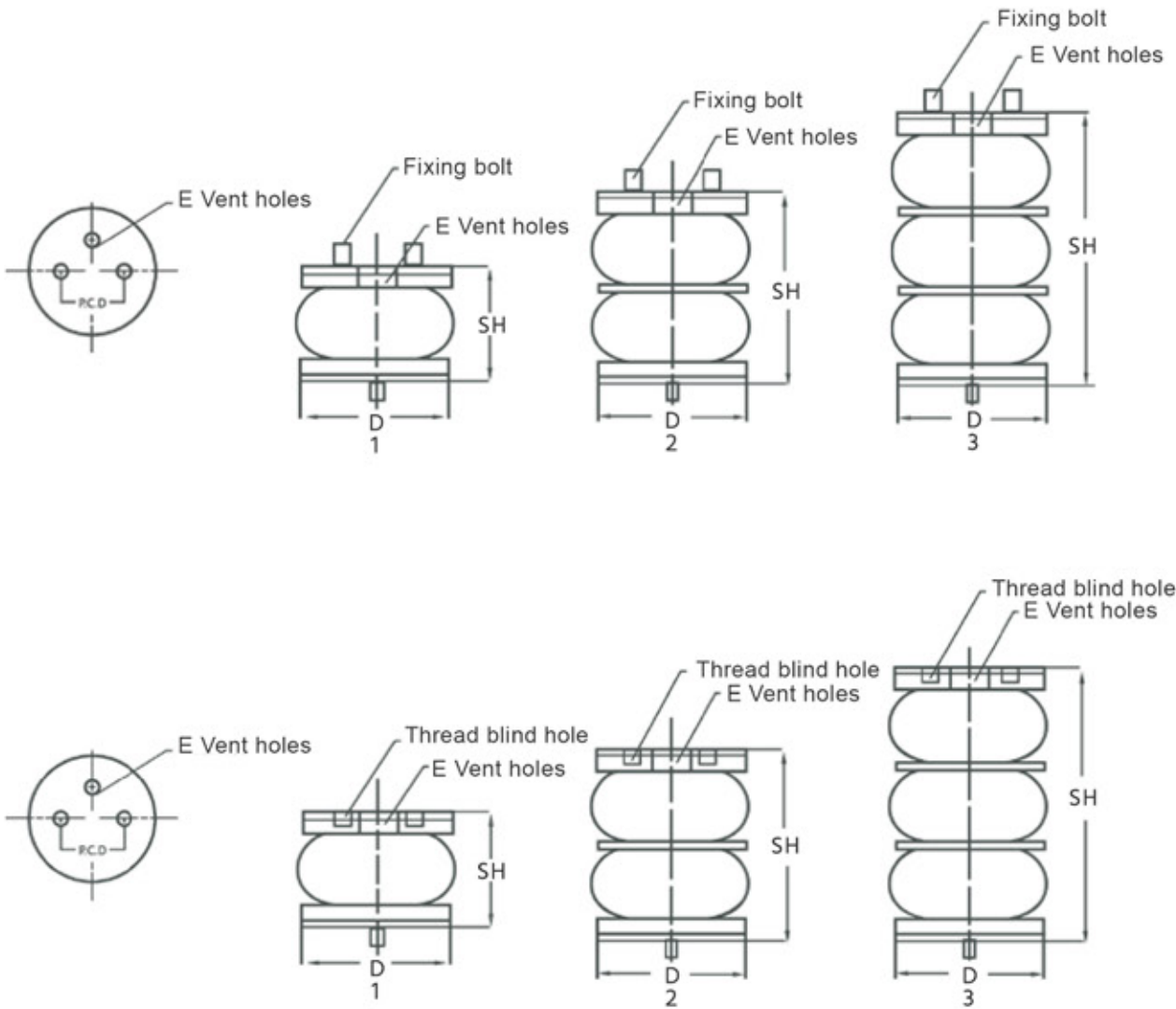
$$f = \frac{f}{\sqrt{\frac{2-I}{1-I}}} \quad (2-2)$$



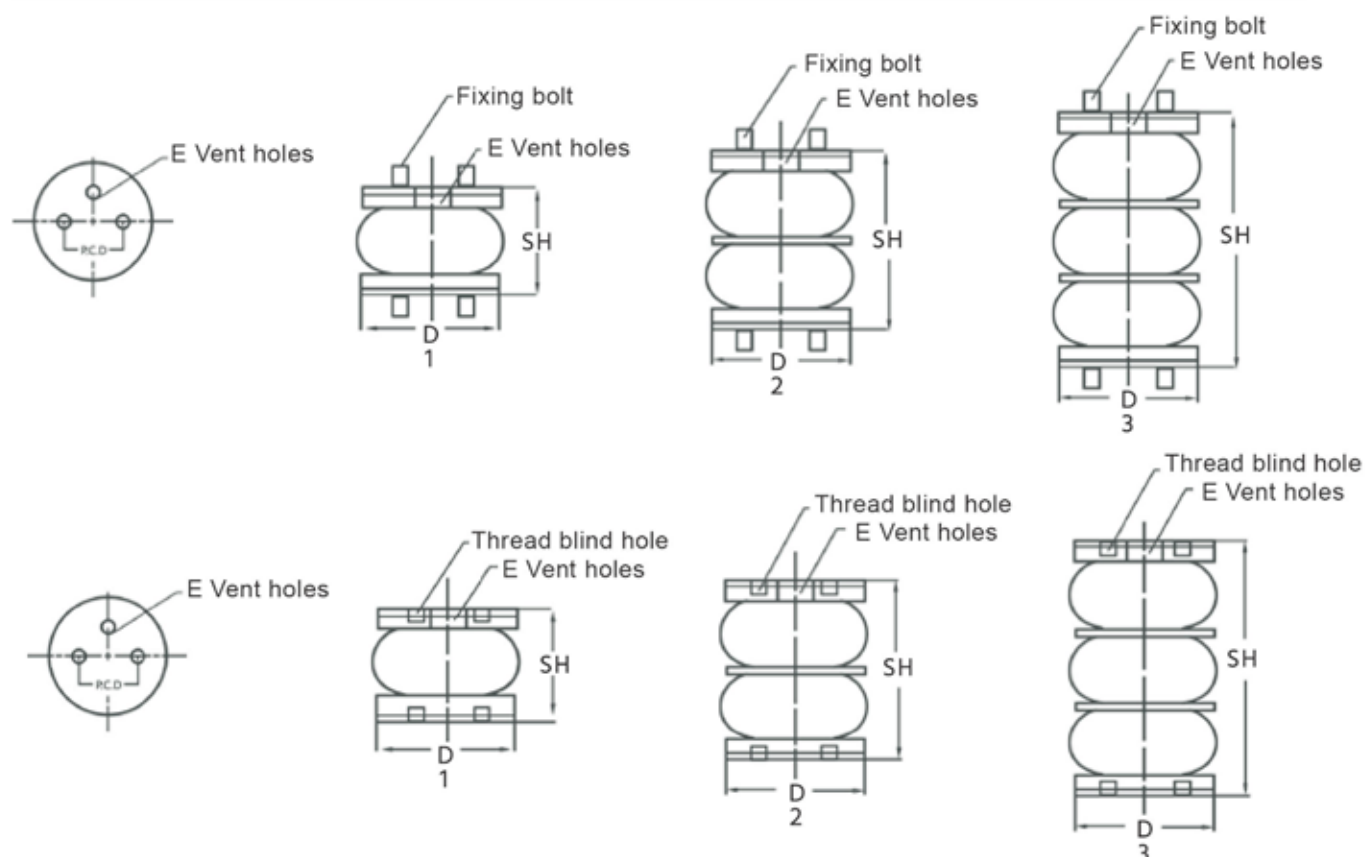
| Specifications<br>Static outer<br>diameter - Numbers | Height<br>(mm)   |                   |                          | Stroke<br>(mm) | Mounting<br>block<br>diameter<br>5bar | Maximum<br>diameter<br>(mm) | P.C.D<br>(mm) | Vent hole<br>(E) | Fixing bolt / Thread blind hole |         |
|------------------------------------------------------|------------------|-------------------|--------------------------|----------------|---------------------------------------|-----------------------------|---------------|------------------|---------------------------------|---------|
|                                                      | Lowest<br>height | Tallest<br>height | Standard<br>height<br>SH |                |                                       |                             |               |                  | Specifications                  | Numbers |
| AS-130-1                                             | 44               | 100               | 50                       | 56             | 104                                   | 142                         | \             | 1/4*PT           | M10*P1.5                        | 2       |
| AS-130-1N                                            | 44               | 100               | 50                       | 56             | 104                                   | 142                         | \             | 1/4*PT           | M10*P1.5                        | 2       |
| AS-130-2                                             | 54               | 152               | 84                       | 98             | 104                                   | 142                         | \             | 1/4*PT           | M10*P1.5                        | 2       |
| AS-130-2N                                            | 54               | 152               | 84                       | 98             | 104                                   | 142                         | \             | 1/4*PT           | M10*P1.5                        | 2       |



| Specifications<br>Static outer<br>diameter - Numbers | Height<br>(mm)   |                   |                          | Stroke<br>(mm) | Mounting<br>block<br>diameter<br>5bar | Maximum<br>diameter<br>(mm) | P.C.D<br>(mm) | Vent hole<br>(E) | Fixing bolt / Thread blind hole |         |
|------------------------------------------------------|------------------|-------------------|--------------------------|----------------|---------------------------------------|-----------------------------|---------------|------------------|---------------------------------|---------|
|                                                      | Lowest<br>height | Tallest<br>height | Standard<br>height<br>SH |                |                                       |                             |               |                  | Specifications                  | Numbers |
| AS-135-1                                             | 55               | 90                | 80                       | 35             | 109.5                                 | 140                         | 44.5          | 3/8*PT           | 3/8"-19                         | 3       |
| AS-135-1N                                            | 55               | 90                | 80                       | 35             | 109.5                                 | 140                         | 44.5          | 3/8*PT           | 3/8"-19                         | 3       |
| AS-135-2                                             | 100              | 145               | 135                      | 45             | 109.5                                 | 140                         | 44.5          | 3/8*PT           | 3/8"-19                         | 3       |
| AS-135-2N                                            | 100              | 145               | 135                      | 45             | 109.5                                 | 140                         | 44.5          | 3/8*PT           | 3/8"-19                         | 3       |
| AS-155-2                                             | 75               | 175               | 155                      | 100            | 109.5                                 | 160                         | 44.5          | 3/8*PT           | 3/8"-19                         | 3       |
| AS-155-2N                                            | 75               | 175               | 155                      | 100            | 109.5                                 | 160                         | 44.5          | 3/8*PT           | 3/8"-19                         | 3       |
| AS-180-1                                             | 65               | 100               | 90                       | 35             | 133                                   | 180                         | 69            | 3/8*PT           | 3/8"-19                         | 3       |
| AS-180-2                                             | 90               | 185               | 165                      | 95             | 133                                   | 180                         | 69            | 3/8*PT           | 3/8"-19                         | 3       |
| AS-180-3                                             | 120              | 300               | 260                      | 180            | 133                                   | 180                         | 69            | 3/8*PT           | 3/8"-19                         | 3       |



| Specifications<br>Static outer<br>diameter - Numbers | Height<br>(mm)   |                   |                          | Stroke<br>(mm) | Mounting<br>block<br>diameter<br>5bar | Maximum<br>diameter<br>(mm) | P.C.D<br>(mm) | Vent hole<br>(E) | Fixing bolt / Thread blind hole |         |
|------------------------------------------------------|------------------|-------------------|--------------------------|----------------|---------------------------------------|-----------------------------|---------------|------------------|---------------------------------|---------|
|                                                      | Lowest<br>height | Tallest<br>height | Standard<br>height<br>SH |                |                                       |                             |               |                  | Specifications                  | Numbers |
| AS-147-2                                             | 71               | 216               | 152                      | 145            | 108                                   | 162                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-147-2N                                            | 71               | 216               | 152                      | 145            | 108                                   | 162                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-160-1                                             | 44               | 100               | 70                       | 56             | 120                                   | 176                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-160-1N                                            | 44               | 100               | 70                       | 56             | 120                                   | 176                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-160-2                                             | 62               | 168               | 104                      | 106            | 120                                   | 176                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-160-2N                                            | 62               | 168               | 104                      | 106            | 120                                   | 176                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-160-3                                             | 80               | 236               | 174                      | 156            | 120                                   | 176                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-160-3N                                            | 80               | 236               | 174                      | 156            | 120                                   | 176                         | 44.45         | 1/4"PT           | M10*P1.5                        | 4       |
| AS-210-1                                             | 48               | 125               | 80                       | 77             | 150                                   | 230                         | 69.9          | 3/8"PT           | M10*P1.5                        | 4       |
| AS-210-1N                                            | 48               | 125               | 80                       | 77             | 150                                   | 230                         | 69.9          | 3/8"PT           | M10*P1.5                        | 4       |
| AS-210-2                                             | 70               | 238               | 140                      | 168            | 150                                   | 230                         | 69.9          | 3/8"PT           | M10*P1.5                        | 4       |
| AS-210-2N                                            | 70               | 238               | 140                      | 168            | 150                                   | 230                         | 69.9          | 3/8"PT           | M10*P1.5                        | 4       |
| AS-210-3                                             | 95               | 340               | 200                      | 245            | 150                                   | 230                         | 69.9          | 3/8"PT           | M10*P1.5                        | 4       |
| AS-210-3N                                            | 95               | 340               | 200                      | 245            | 150                                   | 230                         | 69.9          | 3/8"PT           | M10*P1.5                        | 4       |
| AS-250-1                                             | 50               | 162               | 92                       | 112            | 168                                   | 270                         | 88.9          | 1/2"PT           | M10*P1.5                        | 4       |
| AS-250-1N                                            | 50               | 162               | 92                       | 112            | 168                                   | 270                         | 88.9          | 1/2"PT           | M10*P1.5                        | 4       |
| AS-250-2                                             | 78               | 238               | 160                      | 160            | 168                                   | 270                         | 88.9          | 1/2"PT           | M10*P1.5                        | 4       |
| AS-250-2N                                            | 78               | 238               | 160                      | 160            | 168                                   | 270                         | 88.9          | 1/2"PT           | M10*P1.5                        | 4       |
| AS-250-3                                             | 106              | 385               | 232                      | 279            | 168                                   | 270                         | 88.9          | 1/2"PT           | M10*P1.5                        | 4       |
| AS-250-3N                                            | 106              | 385               | 232                      | 279            | 168                                   | 270                         | 88.9          | 1/2"PT           | M10*P1.5                        | 4       |



# R D Series

## Rotary damper



Using high-viscosity silicone oil for the braking effect (resistance) of rotating parts, the sealed viscous grease inside the body generates resistance to the movement of components. The torque generated depends on the viscosity of the grease, the clearance between moving parts, and the contact area of the oil.

- Material — Outer pipe: zinc alloy and engineering plastics  
Axis: Carbon steel with nickel plating and engineering plastics
- Torque Size — 0.3~8N·m
- Temperature range — -5~50°C
- Installation — CJAC provides you with installation methods such as fixed-through holes and square shafts. Your special demands can also be customized according to your specifications.
- Specific demands — CJAC can customize solutions based on your requirements.

### Selection of rotary damper

- The rotation axis is directly connected to the damper shaft or inner hole  $T=L/xM$  (center position or center of gravity position). Usually, when the cover is used as shown in the figure, the maximum torque is determined when the cover is in the horizontal position, and the damper is selected by calculation to satisfy the following equation.

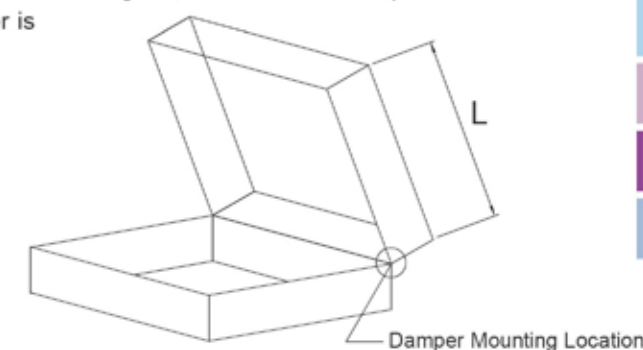
$$\text{Torque } T = L/2 \times 9.8 \times M (\text{N} \cdot \text{m})$$

L : Cover size (m)

M: Cover weight (kg)

The above calculation formula provides the maximum torque value that occurs when the cover is about to be closed. Please use this torque value for practical operations to confirm the final required torque. The adjustment of the torque can be achieved by replacing the high-viscosity oil.

- The rotation axis and the damper shaft are interconnected via gears, and the calculation of torque varies depending on the gear ratio or lever ratio





| RDS                                                                                      | 18           | W                                                                                                                                                                                                                   | L1                                                                                                                                                                                                                                                                                         | G1                                                                                          |
|------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>○ RDS: Swinging</li> <li>○ RDR: Rotary</li> </ul> | Product O.D. | <ul style="list-style-type: none"> <li>○ W: White axis, from highest to lowest damping force</li> <li>○ B: Black axis, from lowest to highest damping force</li> <li>○ P: Axis</li> <li>○ Blank: No Axis</li> </ul> | <ul style="list-style-type: none"> <li>○ L: Left, torque when rotating counterclockwise</li> <li>○ R: Right, torque when rotating clockwise</li> <li>○ RL: Both clockwise and counterclockwise rotations generate torque.</li> <li>○ 1: Maximum operating torque 1N·m(10kgf·cm)</li> </ul> | <ul style="list-style-type: none"> <li>○ G1: Gear code</li> <li>○ Blank: No gear</li> </ul> |

## G1 Gear specification

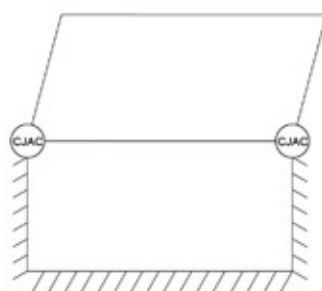
| Serial No. | Item                  | Specification               |
|------------|-----------------------|-----------------------------|
| 1          | Gear type             | Standard spur circular gear |
| 2          | Tooth profile         | Involute                    |
| 3          | Modulus               | 0.8                         |
| 4          | Pressure angle        | 20°                         |
| 5          | Gear number           | 11                          |
| 6          | Pitch circle diameter | 8.8mm                       |

## G2 Gear specification

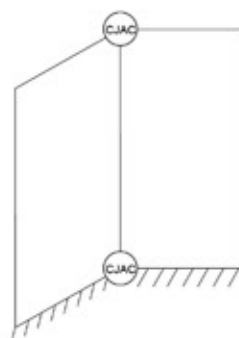
| Serial No. | Item                  | Specification               |
|------------|-----------------------|-----------------------------|
| 1          | Gear type             | Standard spur circular gear |
| 2          | Tooth profile         | Involute                    |
| 3          | Modulus               | 1.0                         |
| 4          | Pressure angle        | 20°                         |
| 5          | Gear number           | 12                          |
| 6          | Pitch circle diameter | 12mm                        |

## Installation

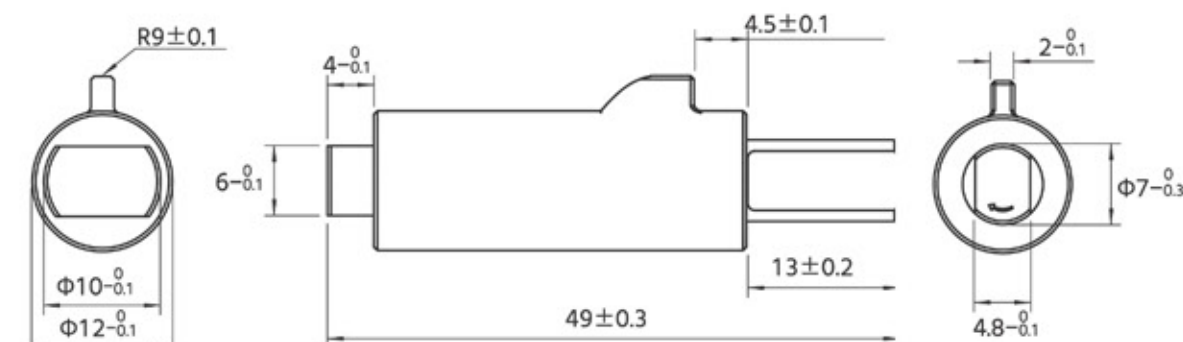
Rotary damper installation diagram:



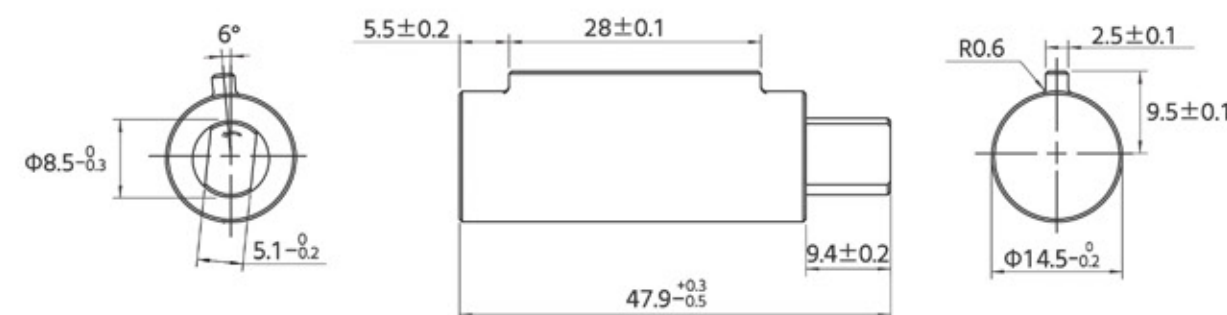
Horizontal Installation



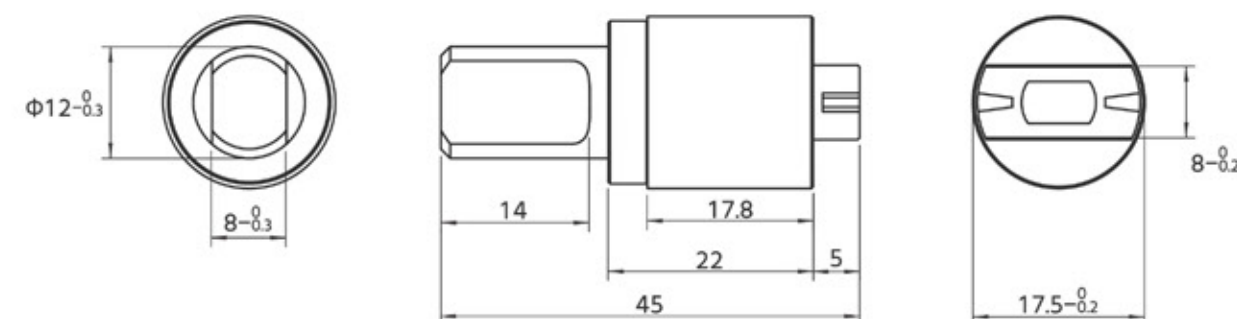
Vertical Installation



| Model      | Torque             | Torque force without damping direction | Revering direction | Maximum angle | Temperature range |
|------------|--------------------|----------------------------------------|--------------------|---------------|-------------------|
| RDS12-B-R1 | 1N·m<br>(10kgf·cm) | 0.3N·m<br>(3kgf·cm)                    | Clockwise          | 110°          | -5-+50°C          |
| RDS12-B-L1 |                    |                                        | Counterclockwise   | 110°          | -5-+50°C          |



| Model      | Torque             | Torque force without damping direction | Revering direction | Maximum angle | Temperature range |
|------------|--------------------|----------------------------------------|--------------------|---------------|-------------------|
| RDS15-B-L3 | 3N·m<br>(30Kgf·cm) | 0.8N·m<br>(8kgf·cm)                    | Counterclockwise   | 110°          | 0-50°C            |



| Model        | Torque               | Torque force without damping direction | Revering direction | Maximum angle | Temperature range |
|--------------|----------------------|----------------------------------------|--------------------|---------------|-------------------|
| RDS18-B-R1   | 1N·m<br>(10kgf·cm)   | 0.3N·m<br>(3kgf·cm)                    | Clockwise          | 115°          | -5-50°C           |
| RDS18-B-L1   |                      |                                        | Counterclockwise   | 115°          | -5-50°C           |
| RDS18-B-R1.8 | 1.8N·m<br>(18kgf·cm) | 0.8N·m<br>(8kgf·cm)                    | Clockwise          | 115°          | -5-50°C           |
| RDS18-B-L1.8 |                      |                                        | Counterclockwise   | 115°          | -5-50°C           |

\* Note: The specified torque is based on a speed of 20 rotations per minute and data recorded at a temperature of 23±3°C.

Order Example

Model Index

Calculation Example

AC

AC-S

AC-RSN

AC-R

AC-K

ACD

Stopper Cylinder AC/AD

AD

DL

Accessories

HR

ADA

BZ

HD

Calculation Example

HD Accessories

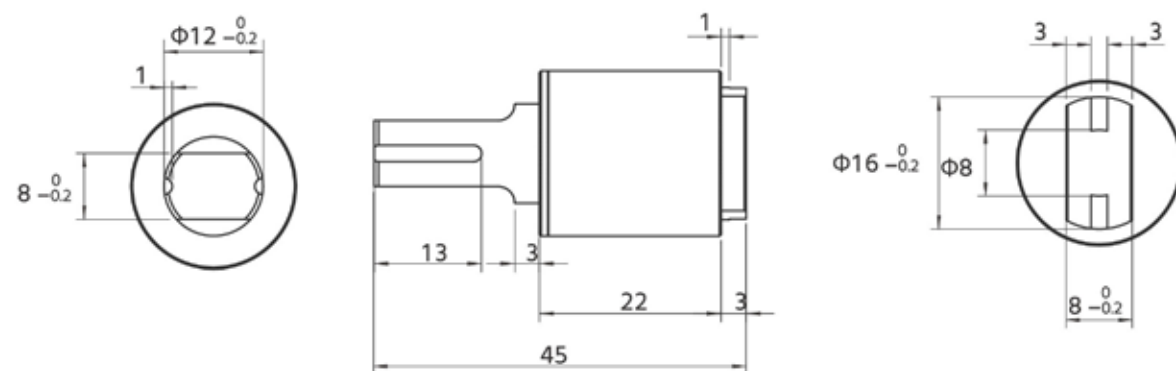
HI

PC

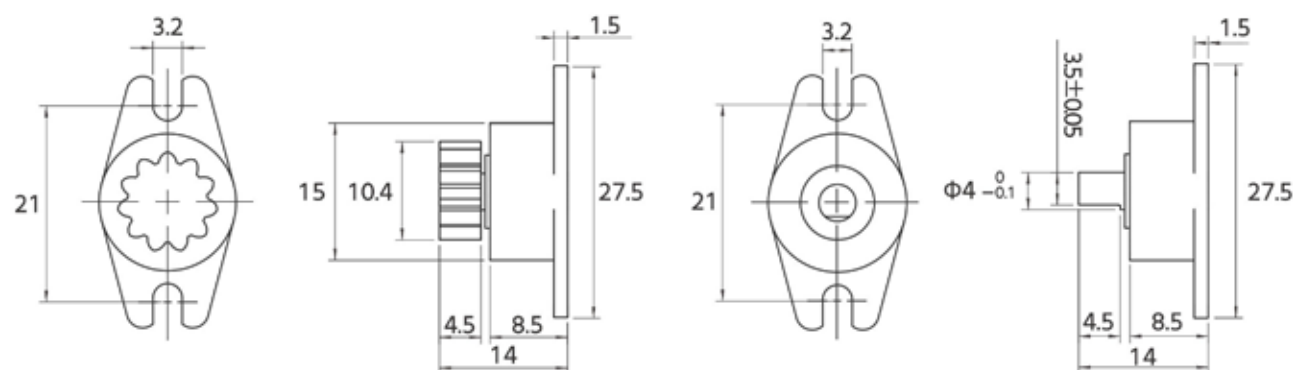
AS

RD

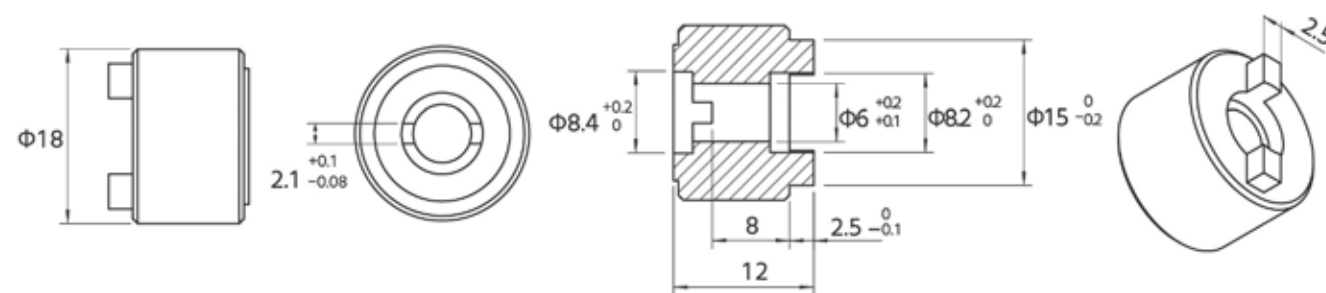
Instructions



| Model      | Torque             | Torque force without damping direction | Revering direction | Maximum angle | Temperature range |
|------------|--------------------|----------------------------------------|--------------------|---------------|-------------------|
| RDS20-B-R1 | 1N·m<br>(10kgf·cm) | 0.2N·m<br>(2kgf·cm)                    | Clockwise          | 110°          | -5-50°C           |
| RDS20-B-L1 |                    |                                        | Counterclockwise   | 110°          | -5-50°C           |
| RDS20-B-R2 | 2N·m<br>(20kgf·cm) | 0.4N·m<br>(4kgf·cm)                    | Clockwise          | 110°          | -5-50°C           |
| RDS20-B-L2 |                    |                                        | Counterclockwise   | 110°          | -5-50°C           |
| RDS20-B-R3 | 3N·m<br>(30kgf·cm) | 0.8N·m<br>(8kgf·cm)                    | Clockwise          | 110°          | -5-50°C           |
| RDS20-B-L3 |                    |                                        | Counterclockwise   | 110°          | -5-50°C           |

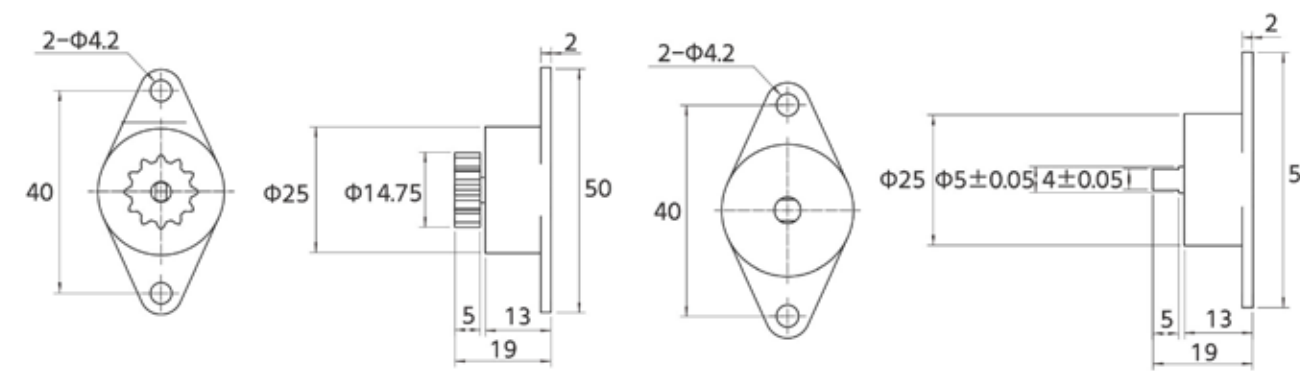


| Model          | Torque                      | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|----------------|-----------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR15-P-RL0.03 | 0.03N·m<br>(0.3±0.08kgf·cm) | Two-way            | 50 rpm                 | 10 times/minute | 0-+50°C           |

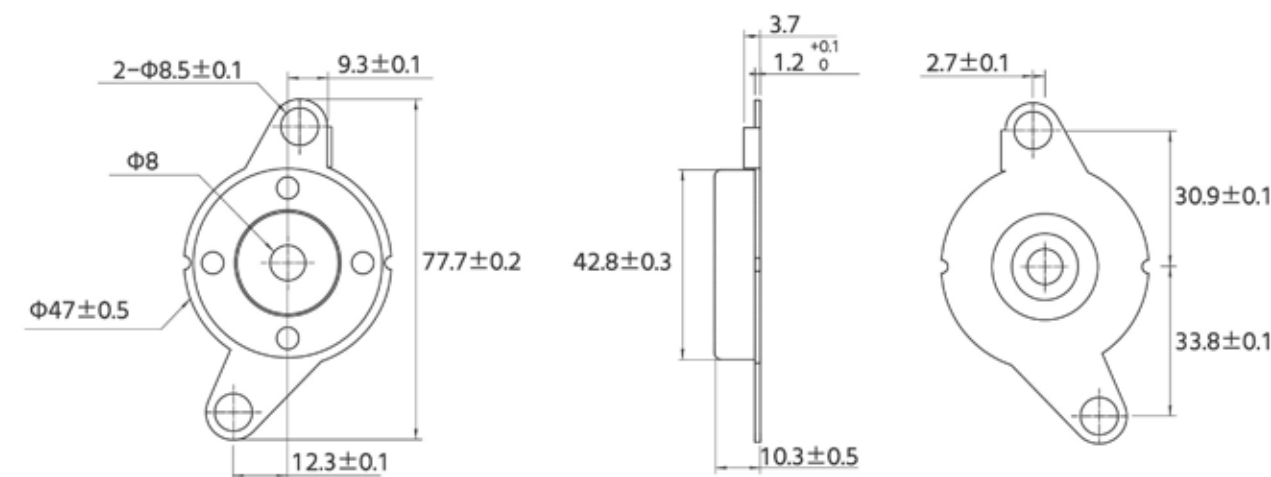


| Model        | Torque                     | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|--------------|----------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR18-RL0.09 | 0.09N·m<br>(0.9±0.1kgf·cm) | Two-way            | 150 rpm                | 10 times/minute | 0-+50°C           |

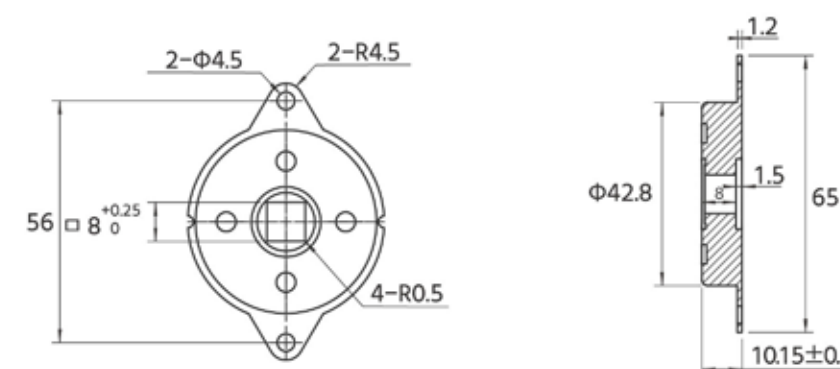
\* Note: The specified torque is based on a speed of 20 rotations per minute and data recorded at a temperature of 23±3°C.



| Model             | Torque                          | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|-------------------|---------------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR25-P-RL0.05-G2 | 0.05±0.01N·m<br>(0.5±0.1kgf·cm) | Two-way            | 50 rpm                 | 12 times/minute | 0-+50°C           |



| Model    | Torque                   | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|----------|--------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR43-R3 | 3±0.4N·m<br>(30±4kgf·cm) | Clockwise          | 50 rpm                 | 12 times/minute | -20-+50°C         |
| RDR43-L3 |                          | Counterclockwise   |                        |                 |                   |



| Model     | Torque                   | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|-----------|--------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR43-RL2 | 2±0.3N·m<br>(20±3kgf·cm) | Two-way            | 50 rpm                 | 12 times/minute | -10-+50°C         |

\* Note: The specified torque is based on a speed of 20 rotations per minute and data recorded at a temperature of 23±3°C.

Order Example

Model Index

Calculation Example

AC

AC-S

AC-BSN

AC-R

AC-K

ACD

Stopper Cylinder AC/AD

AD

DL

Accessories

HR

ADA

BZ

HD

Calculation Example

HD Accessories

HI

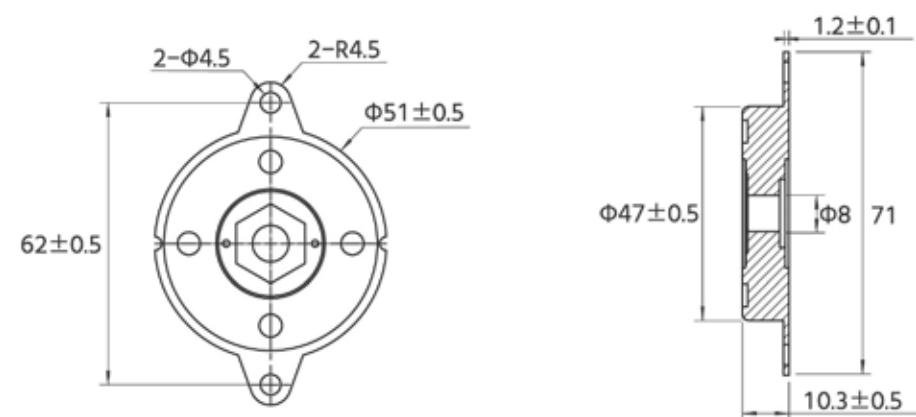
PC

AS

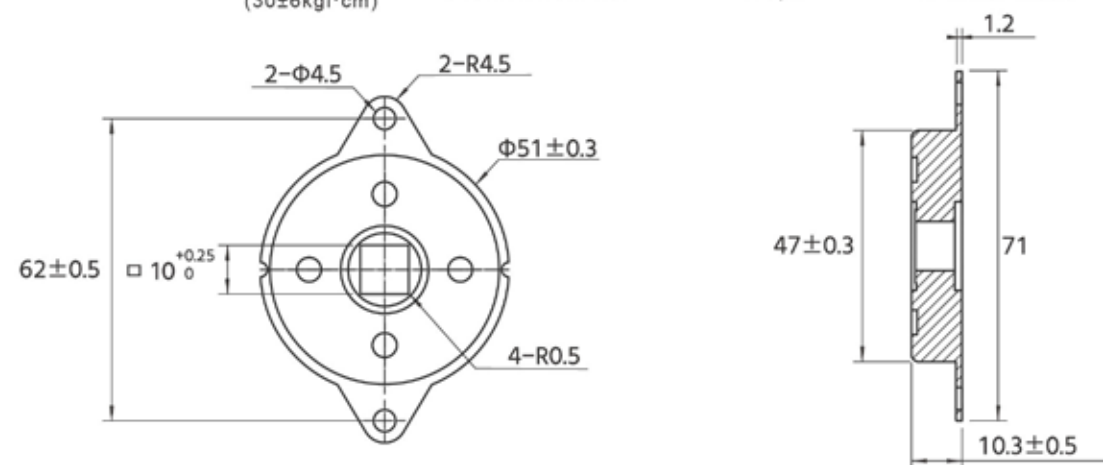
RD

Instructions



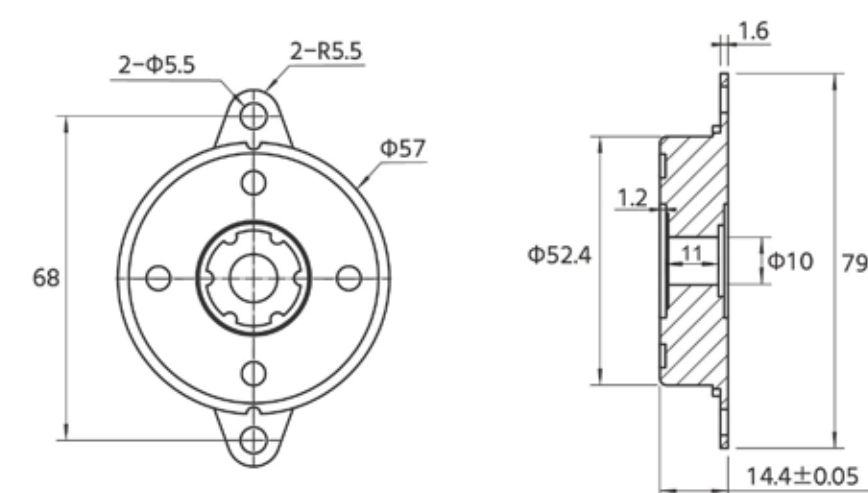


| Model      | Torque                                                                               | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|------------|--------------------------------------------------------------------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR47-R1.5 | $1.5 \pm 0.3 \text{ N} \cdot \text{m}$<br>( $15 \pm 3 \text{ kgf} \cdot \text{cm}$ ) | Clockwise          | 50 rpm                 | 12 times/minute | -10-+50°C         |
| RDR47-L1.5 | $1.5 \pm 0.3 \text{ N} \cdot \text{m}$<br>( $15 \pm 3 \text{ kgf} \cdot \text{cm}$ ) | Counterclockwise   | 50 rpm                 | 12 times/minute | -10-+50°C         |
| RDR47-R2   | $2 \pm 0.4 \text{ N} \cdot \text{m}$<br>( $20 \pm 4 \text{ kgf} \cdot \text{cm}$ )   | Clockwise          | 50 rpm                 | 12 times/minute | -10-+50°C         |
| RDR47-L2   | $2 \pm 0.4 \text{ N} \cdot \text{m}$<br>( $20 \pm 4 \text{ kgf} \cdot \text{cm}$ )   | Counterclockwise   | 50 rpm                 | 12 times/minute | -10-+50°C         |
| RDR47-R2.5 | $2.5 \pm 0.5 \text{ N} \cdot \text{m}$<br>( $25 \pm 5 \text{ kgf} \cdot \text{cm}$ ) | Clockwise          | 50 rpm                 | 12 times/minute | -10-+50°C         |
| RDR47-L2.5 | $2.5 \pm 0.5 \text{ N} \cdot \text{m}$<br>( $25 \pm 5 \text{ kgf} \cdot \text{cm}$ ) | Counterclockwise   | 50 rpm                 | 12 times/minute | -10-+50°C         |
| RDR47-R3   | $3 \pm 0.6 \text{ N} \cdot \text{m}$<br>( $30 \pm 6 \text{ kgf} \cdot \text{cm}$ )   | Clockwise          | 50 rpm                 | 12 times/minute | -10-+50°C         |
| RDR47-L3   | $3 \pm 0.6 \text{ N} \cdot \text{m}$<br>( $30 \pm 6 \text{ kgf} \cdot \text{cm}$ )   | Counterclockwise   | 50 rpm                 | 12 times/minute | -10-+50°C         |

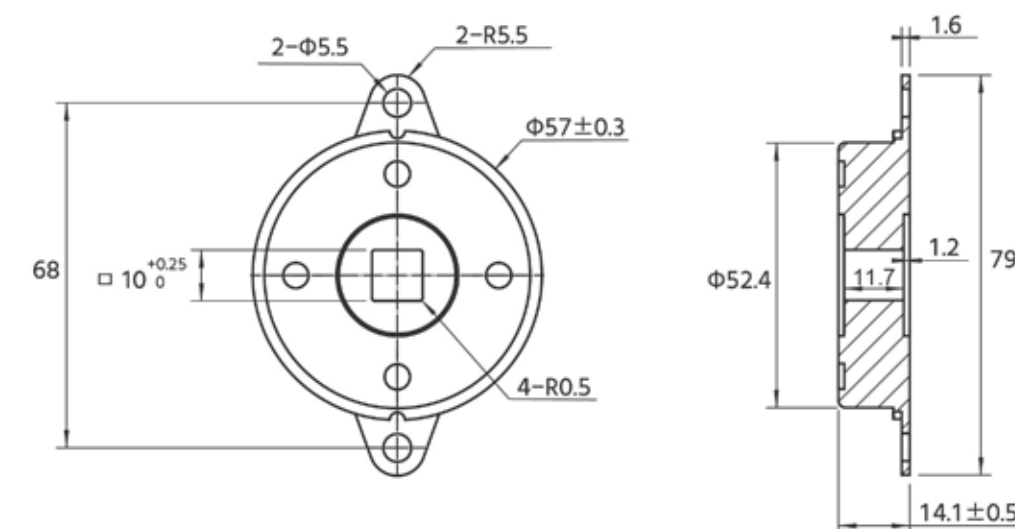


| Model       | Torque                                                                               | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|-------------|--------------------------------------------------------------------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR47-RL1.5 | $1.5 \pm 0.3 \text{ N} \cdot \text{m}$<br>( $15 \pm 3 \text{ kgf} \cdot \text{cm}$ ) | Two-way            | 50 rpm                 | 50 times/minute | -10-+50°C         |
| RDR47-RL2   | $2 \pm 0.4 \text{ N} \cdot \text{m}$<br>( $20 \pm 4 \text{ kgf} \cdot \text{cm}$ )   | Two-way            | 50 rpm                 | 50 times/minute | -10-+50°C         |
| RDR47-RL2.5 | $2.5 \pm 0.5 \text{ N} \cdot \text{m}$<br>( $25 \pm 5 \text{ kgf} \cdot \text{cm}$ ) | Two-way            | 50 rpm                 | 50 times/minute | -10-+50°C         |
| RDR47-RL3   | $3 \pm 0.6 \text{ N} \cdot \text{m}$<br>( $30 \pm 6 \text{ kgf} \cdot \text{cm}$ )   | Two-way            | 50 rpm                 | 50 times/minute | -10-+50°C         |

\* Note: The specified torque is based on a speed of 20 rotations per minute and data recorded at a temperature of  $23 \pm 3^\circ\text{C}$ .



| Model    | Torque                                                                             | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|----------|------------------------------------------------------------------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR53-R3 | $3 \pm 0.4 \text{ N} \cdot \text{m}$<br>( $30 \pm 4 \text{ kgf} \cdot \text{cm}$ ) | Clockwise          | 50 rpm                 | 12 times/minute | -10-50°C          |
| RDR53-L3 |                                                                                    | Counterclockwise   | 50 rpm                 | 12 times/minute | -10-50°C          |



| Model    | Torque                                                                             | Revering direction | Maximum revering speed | Maximum freque  | Temperature range |
|----------|------------------------------------------------------------------------------------|--------------------|------------------------|-----------------|-------------------|
| RDR53-R3 | $3 \pm 0.4 \text{ N} \cdot \text{m}$<br>( $30 \pm 4 \text{ kgf} \cdot \text{cm}$ ) | Two-way            | 50 rpm                 | 12 times/minute | -10-50°C          |

\* Note: The specified torque is based on a speed of 20 rotations per minute and data recorded at a temperature of  $23 \pm 3^\circ\text{C}$ .

# Product Instruction Manual

## Read before use



Please read this article with a full understanding of the meaning of the symbols as follows

**Caution** The product must be used under normal conditions, otherwise, the product will be damaged.



**Warning** Strictly follow the operating procedures, repair methods, and other regulations to avoid the possibility of personal injury and damage to the equipment.



## Warning

### Warnings

- ! Burning is strictly prohibited**
- As the oil is sealed, burning it in a fire can cause fire and accidents.
- Disposal of waste oil should be carried out according to the regulations.



## Caution

### Cautions

- ! Insufficient strength of the carrier causing the absorber to stop operating**
- Insufficient overall strength can damage the machine and lead to the risk of injury.
- Pre-confirmation of overall strength: maximum resistance \* factor of safety (For maximum resistance, please refer to the product catalog or consult CJAC)
- Strictly prohibit keeping the hydraulic buffer in a compressed state for an extended period of time, as it can result in poor product reset or even failure to reset.

### Torque situation

- An unusual phenomenon caused by over-torque operation, which may damage the machine and buffer.
- Please note the amount of torque

| Over-torquing of nuts is prohibited |      |       |       |         |         |         |
|-------------------------------------|------|-------|-------|---------|---------|---------|
| Thread O.D. (mm)                    | M8x1 | M10x1 | M12x1 | M14x1.5 | M16x1.5 | M20x1.5 |
| Nut Mounting Torque                 | 3.9  | 7.8   | 7.8   | 9.8     | 14.7    | 29.4    |

### Watch out for detached buckles

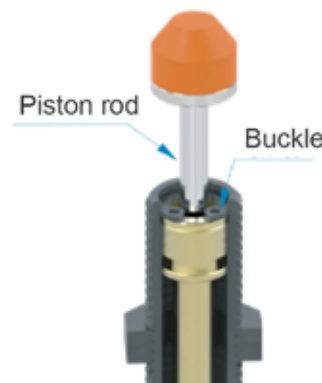
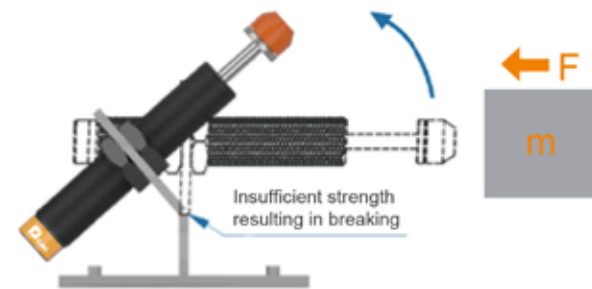
- If the operating method is improper, the internal pressure may rise abnormally, causing the buckle to detach and internal components to fly out.
- Keep your face away from the buckle-type shock absorber being used.

### Littering of grease-stained products is prohibited

- Please protect the environment by not disposing of items containing oil and grease.
- Please dispose of waste oil according to regulations.

### Be aware of accidents caused by product damage or accidents

- Caused by product damage and ejection due to non-compliant operations.
- Please install protective covers or other devices.



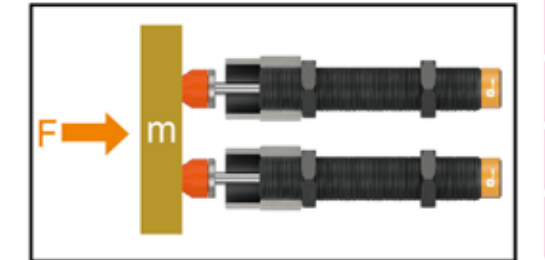
### Be cautious of the eccentricity and the angle of eccentricity.

- Load  $\pm 2.5^\circ$  or more will cause the piston line to bend, resulting in damage to the machine due to friction and poor performance.
- Please operate within the central axis range of the piston (angle within  $\pm 2.5^\circ$ ).



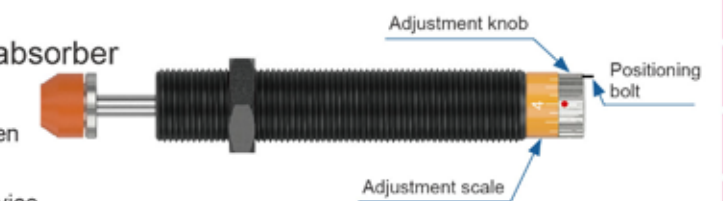
### Precautions for parallel use

- The use of shock absorbers should be operated under appropriate conditions and in a regulated manner.
- When using 2 or more products in parallel, they must be of the same model to ensure equal pressure distribution. Adjusting type products for parallel use may be challenging due to absorption characteristics, so careful consideration is necessary during their application.
- The shock absorber itself is not recommended for use as a safety positioning device. If precise positioning is required, it is advised to install a positioning stop nut.



### Adjustment method of adjustable shock absorber

- For the first-time use, set the adjustment knob to the position marked "4," observe the impact effect, and then adjust it to the most suitable position.
- Caution: When adjusting, be sure to use the safety device - tighten the positioning bolt to secure the shock absorber; otherwise, the adjustment knob may loosen, resulting in the inability to absorb normal impacts.



Note: Use the red dot on the adjustment knob as the reference mark.

### Caution regarding the operating environment

- Please use within the operating temperature range of  $-10^\circ\text{C}$  to  $+80^\circ\text{C}$  and humidity range of 0% to 80%.
- Please use at standard atmospheric pressure; strictly avoid using in vacuum or high-pressure environments, as it may damage the product.
- Do not allow the shaft to be contaminated with sewage or dirty oil. It must operate in a clean condition, as usage in corrosive environments will reduce its service life. If the working environment is harsh, please install a dustproof cover or protective shield (refer to the dimensions and usage precautions of this product).
- If there are special requirements, please consult CJAC.

### Maintenance and repair

- A damaged axis will lead to reduced durability and hinder the smooth reset of the product.
- Damage to the sealing components will result in oil leakage and reduced product durability. The bolt at the bottom oil filling port of the hydraulic damper must not be rotated, as it may cause oil leakage.
- Regarding durability, it varies depending on the operating conditions. For details, please consult CJAC.
- This shock absorber cannot be disassembled and must be stored intact. If you disassemble the shock absorber on your own, please exercise caution as it contains a spring that may cause the safety device to eject, posing a risk of injury.

### Selection of shock absorber

- Please refer to the selected calculation method for shock absorbers in the product catalog or consult CJAC.

### List of accessories

- Installation wrenches
- Dry protectors

Please contact your local CJAC agent for assistance, or visit our website at [www.c-jac.com](http://www.c-jac.com)  
Thank you for choosing CJAC products!