



To Use This Product Safely

Be sure to read this before use. For general cylinder information, see Intro 41, and for cylinder switches, see P. 1512.

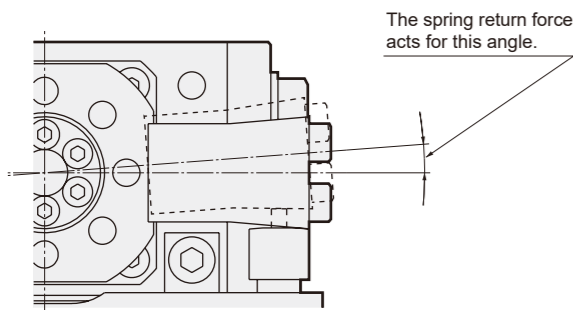
Individual Precautions: Rotary actuator GRC Series

Design / Selection

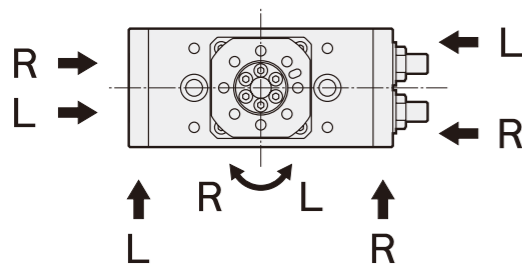
1. Common

CAUTION

- Generally, select a model so that the output torque is twice or more the torque required by the load. Since the GRC series adopts a double piston system, if the oscillation angle is adjusted with a stopper bolt, the holding torque at the oscillation end will be half the effective torque.
- Even if the required torque of the load is small during oscillating motion, the inertial force of the load may cause damage to the actuator. Be sure to consider the moment of inertia of the load, kinetic energy, and oscillation time, and use below the allowable energy.
- For types with external shock absorber, please note that the torque at the oscillation end will decrease by the return force of the shock absorber's internal spring.



- The external shock absorber is a device that absorbs the kinetic energy of the workpiece at the oscillation end and buffers the impact. Smooth stopping may not be possible depending on load conditions.
- Be sure to use a speed controller in the piping.
- The relationship between each piping port and oscillation direction is shown below.



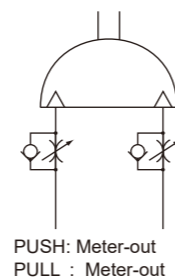
(R) Clockwise rotation (right)
L: Counterclockwise rotation (left)

- Angle adjustment screw (stopper bolt or shock absorber) that can adjust the oscillation angle is standard equipped. At shipment, the angle adjustment screw is set to an arbitrary position within the oscillation adjustment range, so please readjust to the required angle before use.
- When adjusting the angle, use within the adjustment range specified for the product. Using beyond the adjustment range will cause a malfunction and damage to the product. Refer to product specifications (P. 1250) and oscillating angle adjustment (P. 1277).
- Treat our shock suppressors as consumable parts. Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

2. Slow-Speed Type GRC-F

CAUTION

- Use without lubrication. (Lubrication not possible)
Lubrication may change characteristics.
- Install the speed controller near the rotary actuator. If installed far from the rotary actuator, adjustment will become unstable. Use SC-M3/M5, SC3W, SCD-M3/M5, SC3U series speed controllers.
- Generally, the higher the air pressure and the lower the load factor, the more stable the speed. Use with a load factor of 50% or less.
- Speed control with a meter-out circuit provides stability.



- Avoid use in places with vibration. Operation becomes unstable due to the influence of vibration.

During Use

CAUTION

- The adjustment angle per rotation of the angle adjustment screw (stopper bolt or shock absorber) is shown below.

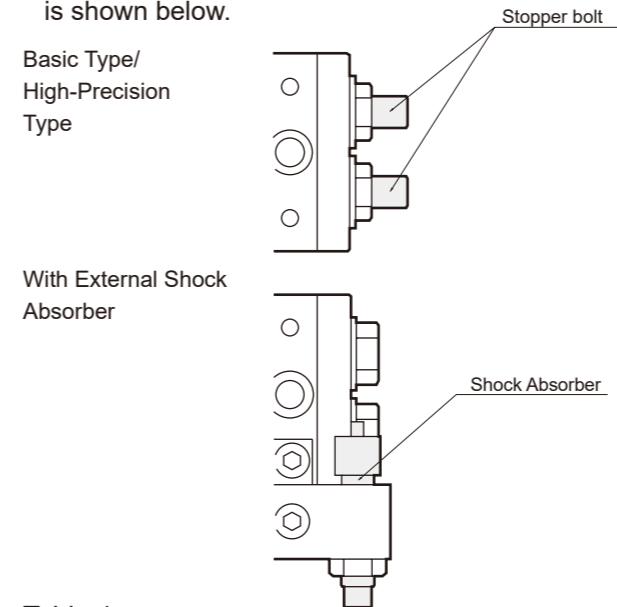


Table 1

Size	Adjustment Angle per Stopper Bolt Rotation	Adjustment Angle per Shock Absorber Rotation
5	8.7°	1.1°
10	4.9°	1.0°
20	5.7°	1.1°
30	3.8°	0.9°
50	3.5°	0.7°
80	3.5°	0.9°

- When performing angle adjustment, strictly follow the next steps (1) to (5). If adjustment is not performed by this method, the seal washer will be damaged after 1 or 2 adjustments.

[Angle Adjustment Procedure]

- (1) First, loosen the Hexagon Nut to the state shown in Figure 1.
- (2) Next, release the seal washer from the head cover by hand to the state shown in Figure 2.
- (3) In that state, turn the stopper bolt, Hexagon Nut, and seal washer together as shown in Figure 3 to adjust the angle. At this time, be careful not to let the rubber part of the seal washer get caught in the threaded part.
- (4) After angle adjustment, first bring the seal washer close to the head cover by hand as shown in Figure 4.
- (5) Then, securely tighten with the Hexagon Nut as shown in Figure 5. At this time, be careful not to let the rubber part of the seal washer get caught in the threaded part.

After angle adjustment, securely tighten the Hexagon Nut according to the tightening torque in Table 2. If the tightening torque is not observed, the Hexagon Nut will loosen during use, causing external leakage.

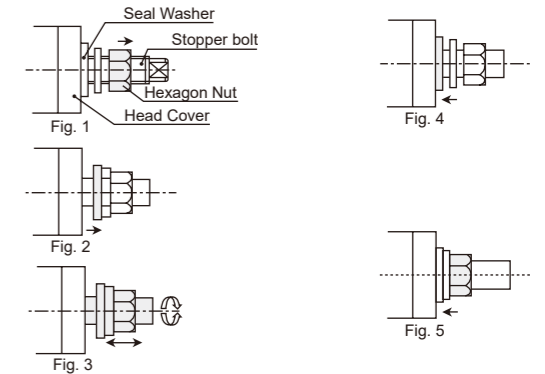


Table 2

Size	Tightening Torque (N·m)	
	Basic Type/High-Precision Type	With External Shock Absorber
5	5.9 ±10%	3.4 ±10%
10	9.4 ±10%	4.9 ±10%
20	11.8 ±10%	6.9 ±10%
30	11.8 ±10%	6.9 ±10%
50	22.1 ±10%	8.8 ±10%
80	22.1 ±10%	8.8 ±10%

- When retrofitting an external shock absorber set to A3 type, the tightening torque for the mounting Hexagon Socket head bolt and lever mounting Hexagon Socket head bolt is shown in Table 3.

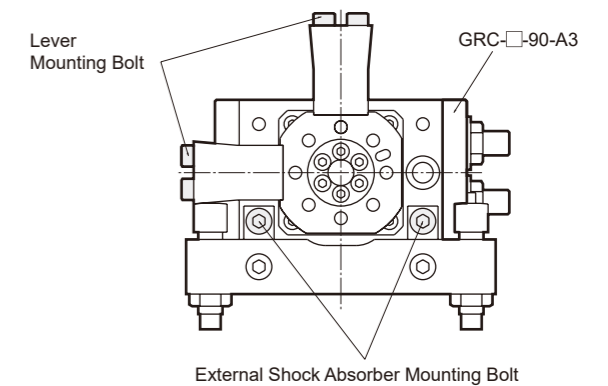


Table 3

Size	Lever Mounting Bolt	External Shock Absorber Mounting Bolt
	Tightening torque (N·m)	Tightening torque (N·m)
5	0.6 ±20%	1.4 ±20%
10	1.4 ±20%	2.9 ±20%
20	2.8 ±20%	4.8 ±20%
30	2.8 ±20%	4.8 ±20%
50	12.0 ±20%	12.0 ±20%
80	12.0 ±20%	12.0 ±20%

For precautions during mounting, installation, adjustment, use, and maintenance, refer to "During Use" in this catalog and the CKD Components Product website (<https://www.ckd.co.jp/kiki/en/>) -> "Model No." -> "Instruction Manual".