

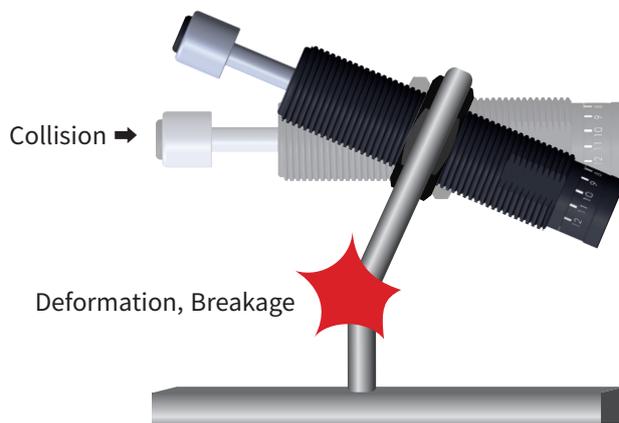
Instruction Manual

Shock Absorbers

※ Mentioned detail is subject to change without notice for performance improvement

1. KOBA Shock Absorber has been developed for million cycles and assures long life cycles if customers keep below matters.

- 1) Ensure correct energy capacity before operation of shock absorber.
- 2) Do not weld or paint shock absorber's body.
- 3) Do not scratch or paint piston rod. (shock absorber can fail by oil leakage.)
- 4) Adjustment dial knob is preset to "0" when released from factory. Once achieved the correct damping strength, lock the screw.
- 5) Shock absorber shall be kept away from fire because it can be ignited.
- 6) Always check strength of installation site before using and it is recommended to install shock absorber at strong base structure. Secure the strength as "max. shock energy x safety ratio(2.5)"



- 7) Refer to below table of proper lock nut installation tightening torque. Tightening with excessive force may cause malfunction or damage to product.

Shock Absorber Installation Torque.

나사외경 (mm)	M8x1.0	M10x1.0	M12x1.0	M14x1.0	M16x1.5	M20x1.5	M25x1.5	M27x1.5	M30x1.5	M36x1.5	M42x1.5
				M14x1.5			M25x2.0	M27x2.0			
								M27x3.0			
Nut 고정 Torque (Nm)	3.9	7.8	7.8	9.8	14.7	29.4	49	58.8	78.4	98	392

Applying anti-loosening adhesives is more efficient.

- 8) Be careful when using a snap ring structure shock absorber. In case of overloading the specification that mentioned on catalog, Snap ring and inner subparts can be swiftly extracted because inner pressure of shock absorber's Inner tube can be abnormally risen. Follow the designated specification and don't close your face to Snap ring type of shock absorber.
- 9) Don't carelessly dispose of oil in side of shock absorber for the environment and dispose according to waste control act.

- 10) Be careful of eccentric load and eccentric angle. If the impact load is over $\theta=1^\circ$ of declination, Piston Rod can't be properly returned by bending deformation, and performance decline can occurred because of uneven wear of sliding parts, and machine damage can be occurred. Impact should be in center line of Piston Load (below $\theta=1^\circ$).

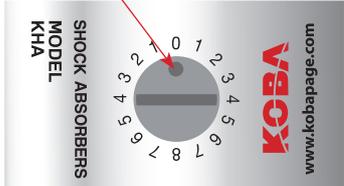


- 11) Check the operating temperature (-10~80°C) to get best performance. If you use it out of standard temperature range, the life expectancy of Seal and Accumulator can be decreased and it can be broken.
(If you need to use shock absorber in special temperature, please contact us.)
- 12) If you use it on the circumstance of outer pressure like vacuum status, etc. instrument breakage can be occurred. Don't use it where cutting debris, cutting oil, moisture, etc is attached to Piston Rod, which cause malfunction, instrument breakage.
(If you want to use it on these circumstances, please contact us.)
- 13) Adjustable type of shock absorber is designed to get suitable resistance force according to impact velocity by controlling the orifice area. Refer to below adjustment dial of KMA, KSA, and KHA Series.

The figure below shows the typical adjustment dials of KMA, KSA and KHA series.

After completing the adjustment, be sure to fix the adjustment dial with the setting fixing bolt.

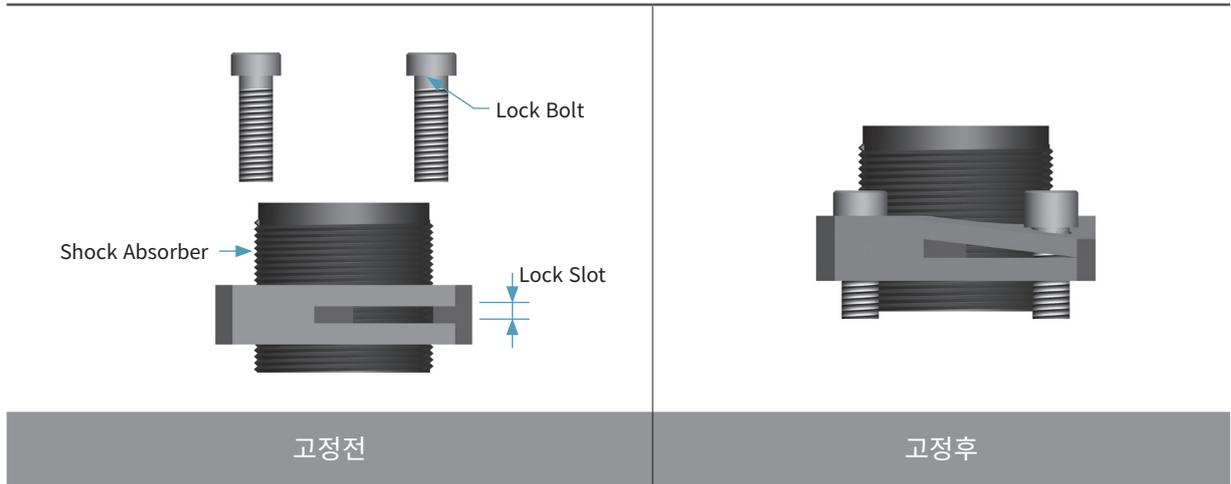
KMA & KSA & KHA Series Adjustment Dial

KMA Series	KSA Series	KHA Series
 <p>Set screw bolt</p>	 <p>Set screw bolt</p>	 <p>Set screw bolt</p>

Applying anti-loosening adhesives is more efficient.

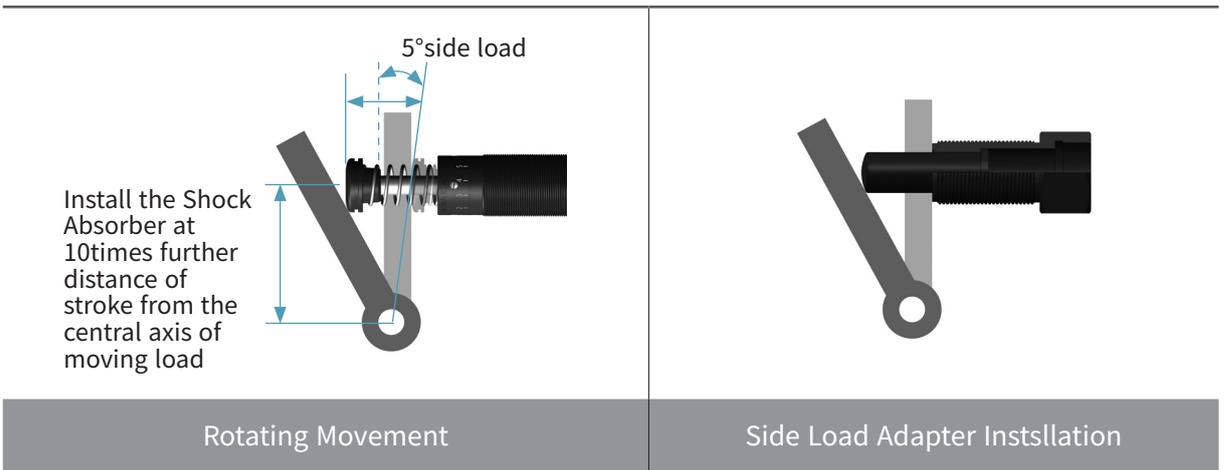
14) How to mount the Flange

After holding the flange in fixing position, tighten the Lock Bolt, and then pressure is applied to the Lock Slot to fix the position correctly. If you want to remove the shock absorber and Flange, loosen the bolt only.



15) Precaution in case of rotation moving

As shown in the figure, Rotation location from shock absorber's center shall be ten times of stroke length. If the distance is short, the life span of absorber can be shortened by uneven load. In particular, do not use Urethane Cap in rotary motion. If the center distance of the shock absorber is to be inevitably shortened, use the uneven wear adapter.



2. General Checking

1) Regular Checking

- ① Check the below things regularly.

Because disassemble repair of shock absorber is not possible, in case of malfunction change it as new one. Don't carelessly dispose of oil in side of shock absorber for the environment and dispose according to Waste Control Act.

2) Checking Point

- Lock Nut fastening condition
- Condition of Piston Rod (Damage or Scratch)
- Checking the Stroke
- Outer Appearance of shock absorber
- Oil Leakage
- Noise on operation

If any trouble to be found, please refer the below “3) Trouble and Count measure”.

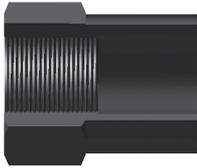
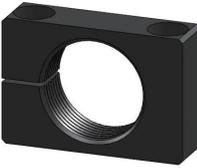
3) Trouble and Count measure

Trouble	Cause	Counter Measure
Lock nut is not fastened tightly	Lack of fixing torque	Fasten the nut or bolt tightly
	Vibration of machine	Check the vibration and adjust it
No suitable Shock Absorption	Applied energy is over the capacity	Change it with higher capacity one
	No suitable dial adaption	Set adjustment dial to “0”
	During Stroke transfer, the movement is stopped by stopper	Adjust the stopper location to use long stroke
	The shock absorber is not in center line	Install the shock absorber in center line
	Impact angle is over 1° from the center axis	
	Vibration on impact material	Install the guide to remove the vibration
	Body of shock absorber is used as Stopper	Install Stop Collar or Stopper
	Ambient temperature is high	Change it to heat-resisting type
	Oil Seal is damaged because of foreign material on the Piston Rod	Clean Piston Rod and cover the Piston Rod
	Moving material is shocked directly to shock absorber	Install Side Load Adaptor
Life span is over	Change it a new one	
Oil leakage	Oil Seal is damaged because of foreign material on the Piston Rod	Clean Piston Rod and cover the Piston Rod
	Ambient temperature is too low	Change it to cold-resisting type
	Life span is over	Change it a new one
Rod is not returned	The shock absorber is not in center line	Install the shock absorber in center line
	Impact angle is over 1° from the center axis	
	Vibration on impact material	Install the guide to remove the vibration
	Body of shock absorber is used as Stopper	Install Stop Collar or Stopper
	Ambient temperature is too low	Change it to cold-resisting type
	Life span is over	Change it a new one

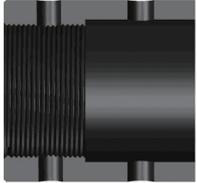
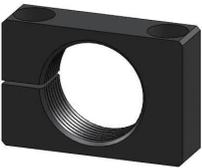
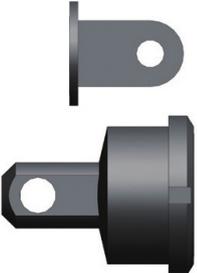
※ If Shock absorber is installed inside of Chamber, please use after consulting with us.

3. Accessories Installation

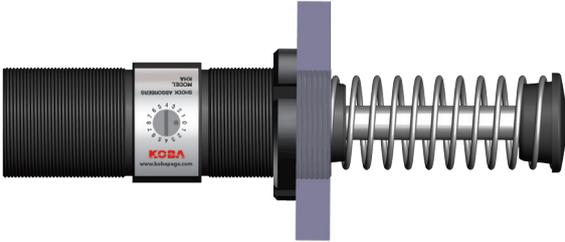
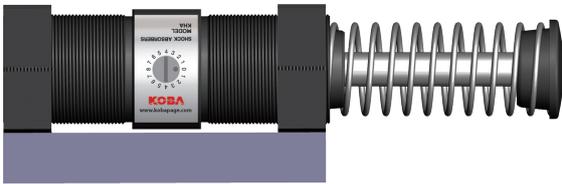
1) KMA · KMS Accessories Installation

NAME	Accessories	Installation	Remark
Lock Nut			<p>As a basic mounting way, by using Lock nut, shock absorber can be installed easily.</p>
Stop Collar + Lock Nut			<p>Stop Collar makes it easy to stop precisely and easy to select location to set and it prevents troubles so called bottom-out(piston shooting) problem in the position.</p>
Side Load Adapter + Lock Nut			<p>Main application is rotational motion control, and when the center distance of the shock absorber is inevitably short, it can help to prevent one-sided wear trouble of Shock Absorber Piston Rod.</p>
Flange Mount			<p>By using Flange or Rectangular Flange, Shock Absorber can be fixed conveniently.</p>
Clamp Mount			<p>By Clamp Mount location adjustment and installation are easy. It is possible to mount it on single side or both sides of shock absorber.</p>

2) KSA Accessories Installation

NAME	Accessories	Installation	Remark
Lock Collar			<p>As a basic mounting way, by using Lock nut, shock absorber can be installed easily.</p>
Stop Collar + Lock Collar			<p>Stop Collar makes it easy to stop precisely and easy to select location to set and it prevents troubles so called bottom-out(piston shooting) problem in the position.</p>
Flange Mount			<p>By using Flange or Rectangular Flange, Shock Absorber can be fixed conveniently.</p>
Clamp Mount			<p>It can helps to use on long shock absorber body settlement.</p>
Clevis Mount			<p>Main application is for cycle movement and it can help to decelerate indirectly and it can prevent damage from side load.</p>

3) KHA Accessories Installation

NAME	Installation	Remark
Lock Collar		<p>Installation is simply done by fastening Lock Collar. This is basic installation.</p>
Stop Collar + Lock Collar		<p>Stop Collar guarantees accurate stopping and positioning and protects piston shooting problem (so called "Bottom-out" problem) of Piston.</p>
Flange Mount		<p>Use to Square Flange or Rectangular Flange to conveniently fix Shock Absorber.</p>
Clamp Mount		<p>Clamp mount is used in horizontal installation usually specially if the shock absorber is long.</p>
Clevis Mount		<p>Clevis mount is used in rotation movement to absorb the collision force indirectly and protect from unbalanced shock absorption.</p>



The product is manufactured through strict quality control.
The product warranty period is 12 months from shipment date .

1. Free service instruction

If any trouble occurs within the warranty period under normal conditions, contact our distributor of your country or head office in Korea.
If you request service based on your service request form, we will repair or replace it free of charge. Delivery cost will be charged separately.

2. Paid service instruction

Free service is not available in the following cases. And service will be done by payment in advance.

- 1) Mishandling in use
- 2) When the free warranty period has expired
- 3) In case malfunction comes from abnormal operation out of original application conditions
- 4) In the case failure or damage caused by operator's negligence (arbitrarily disassembling, assembling, or remodeling)
- 5) When failure and damage caused by natural disasters (forced majeure)
- 6) In case of damage caused by mistake during transportation
- 7) Failure or damage caused by external shock, leakage, etc.
- 8) When the returned parts are not in the condition to assemble



12F, A Block KabeulGreatvalley, 32, Digital-ro 9-gil, Geumcheon-gu,
Seoul, Republic of Korea

TEL : 02-3397-7800 / FAX : 02-3397-7811 / E-Mail : koba@koba.co.kr