Globe Control Valve User Manual

⚠ " CAUTIONS "

Be sure to read this manual before using the product.

McSYS® MCSYS CO., LTD.
CONTROL VALVE MANUFACTURE

Contents

11. Control Valve Disassembly and Reassembly

12. Adjustment after reassembly of actuator and control valve

13. Disposal of Products and Parts

14. Maintenance Parts

1. Introduction to the Manual

This USER MANUAL addresses pneumatic diaphragm actuators and globe control valves produced by MCSYS Co., Ltd.

This Manual is comprised of two parts for MCSYS's Diaphragm Actuator Series and Globe Control Valve, respectively.

The operating methods described in this Manual cannot be used for other actuator or globe control valve models made by other companies.

We are convinced that this Manual is very helpful to new users as well as existing users of pneumatic diaphragm actuators and globe control valves produced by MCSYS.

Please read this Manual carefully before using pneumatic diaphragm actuators and globe control valves produced by MCSYS.

Once you have installed and started operating a pneumatic diaphragm actuator or a globe control valve made by MCSYS, always make this Manual available to plant operators or a maintenance/repair person whenever necessary.

The control valve you have purchased may not reflect the results of recent research and development related to the company's pneumatic diaphragm-operated globe valve design.

If you have any questions about the MCSYS pneumatic diaphragm-operated globe valve you have purchased or about this Manual, please contact us at:

McSYS®

enquiry@j-mcsys.com
TEL. 82-31-3196560, FAX.82-31-80413410

1-1. Safety Precautions

The proper handling and periodic maintenance of a pneumatic diaphragm actuator and a globe control valve made by MCSYS is essential to the receipt, transportation, storage, installation, preparation for operation, and safe operation of the product.

Before actually handling this control valve, please read the precautions contained in this Manual carefully.

The safety precautions contained herein can be observed only when the pneumatic diaphragm actuator and the globe control valve are used to control the transfer rate, pressure, temperature, and liquid level of a fluid.

The operator is solely responsible for the safety of operations not specifically stated in this Manual.

Special attention should be paid to the descriptions included in the boxes marked as “Warning” or “Caution.”

⚠“ WARNING “

Addresses cautions non-observance of which can lead to injury or death of person.

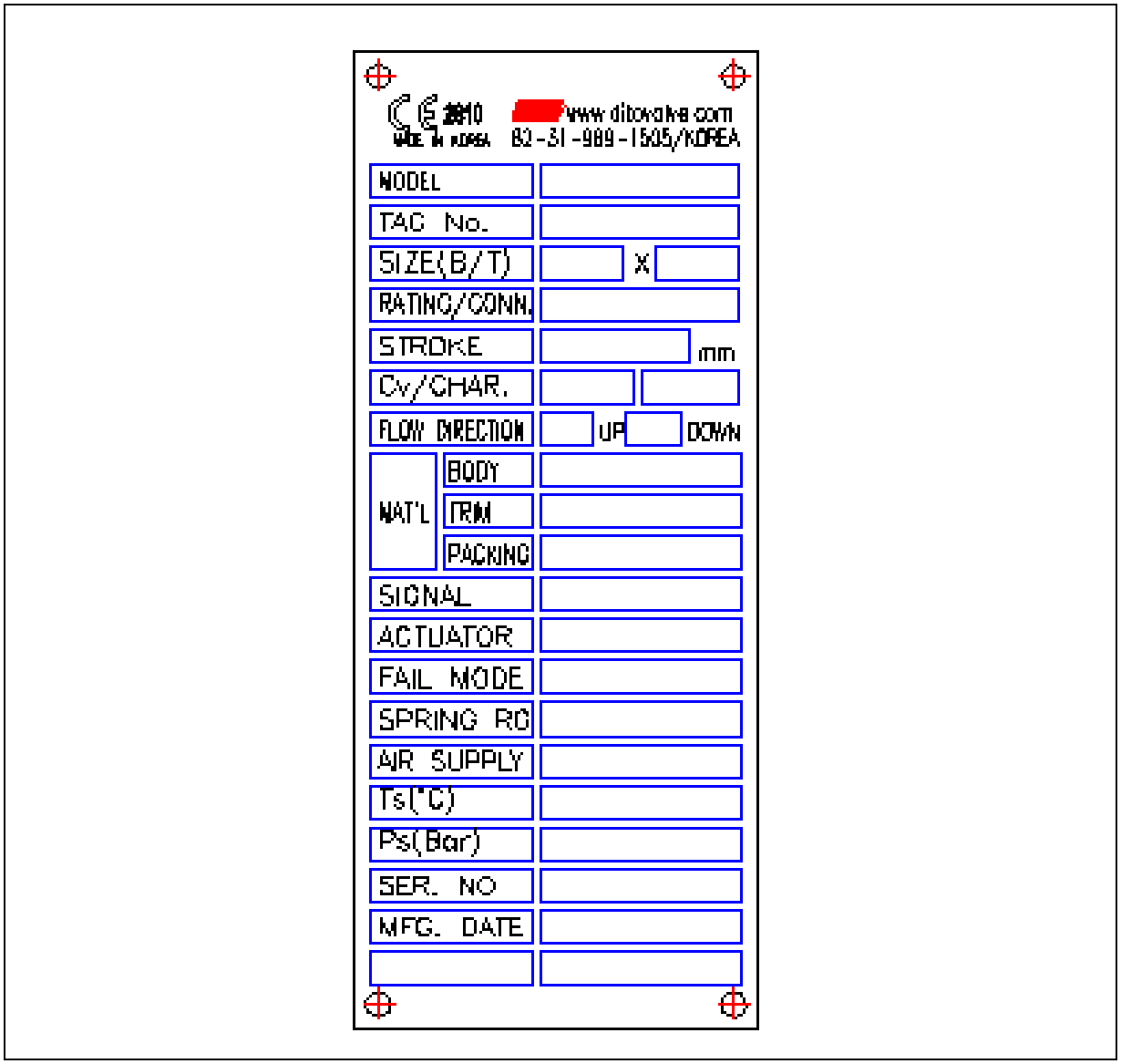
⚠“ CAUTIONS “

Addresses cautions non-observance of which can lead to failure or damage to this Control valve or other equipment.

1-2. Valve Identification

The valves are provided with a nameplate containing the necessary information according to the pressure devices guideline. A nameplate is attached to the actuator yoke of each valve assembly. The nameplate lists the serial number, model number as well as other information such as trim materials, Cv, stroke, etc.

When servicing valves, always use only MCSYS replacement parts. Please refer to the serial and model numbers on the nameplate when ordering replacement parts.



2. Product Handling and Storage

2-1. Product Handling

⚠ " WARNING "

W-1) Since a control valve is very heavy, it must be handwheel properly and carefully, according to the following instructions.
W-2) Failure to observe the following instructions can result in serious injury to the operator.

A) When transporting a control valve, use a hoist crane that meets the worker's safety and requirements for safety work.
B) Workers must not be standing below the hoist crane while the crane is being lifted.
C) The control valve weight is indicated on the valve package
D) For small size valves packed in cardboard boxes, extra caution shall be given to handling, because wet boxes can be easily torn.
When unpacking a box, check accurately the actual contents and the quantity inside the box with the packing list.
Taking photographs of the box before and after unpacking is also recommended.

2-2. Product Storage

A) Until the valve is installed in the line, keep it packed as originally delivered.
B) Avoid the following locations.
B-1) Location exposed to rainwater.
B-2) Location where the ambient temperature is over 60 degrees
B-3) High Levels of Dust
B-4) High Humidity
C) Even if unpacked to check the quantity, re-pack the product to store it in its original conditions.
D) Do not open sealing cable entry and air connection before installation.
E) If the product is to be stored over a year after receipt, the gland packing area may harden or deteriorate.
To prevent deterioration, open the top of the box and loosen blots for the gland packing flange about twice.
F) To store the control valve after use, comply with the following handling requirements.
F-1) Wash the inside of the valve with clean water and dry.
F-2) As described in Figure 2-1, avoid damage to the serration in the flange connection.
F-3) Treat corrosion inhibit to the valve areas vulnerable to corrosion
F-4) Provide with waterproof sealing to the cable entry and air connection

3. Unpacking

Follow the instructions for unpacking provided with Packing.

⚠" WARNING "

W-1) When taking out a valve from the packing box using a hoist crane, use a standard belt that can endure the valve's weight to prevent the product from falling.

W-2) As shown in figure 2-2, distribute the weight to both sides by using hoist fittings.
Violation of this instruction can result in the fall of the valve or injury to the operator.

Figure 2-1

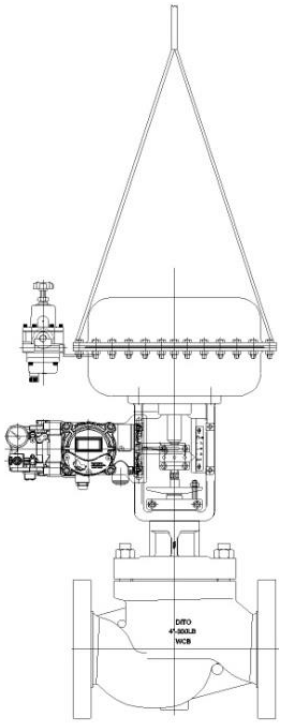


Figure 2-2

⚠ " CAUTIONS "

After opening or closing the packing of the control valve, observe the following instructions to prevent the valve from deterioration.

C-1) Make sure that there is no damage to the serrated face of flange. See Figure 2-1.

C-2) If the model you have purchased features a Positioner, a Booster-Relay a Solenoid Valve or a Manual Handwheel Type Actuator, exercise caution to avoid damage caused by a falling valve.

4. Installation

⚠ " WARNING "

Since the control valve is very heavy, it must be handwheeld properly and carefully, according to the following instructions
Failure to observe the following instructions can result in serious injury to the operator.

W-1) When transporting a control valve, use a hoist crane that meets the worker's safety and requirements for safety work.

W-2) Workers must not be standing below the hoist crane while the crane is being lifted.

⚠ " CAUTIONS "

Observe the following precautions to prevent the valve from deterioration.

C-1) Make sure that there is no damage to the serrated face of flange. See Figure 2-1.

Damage to the flange can cause fluid leakage.

C-2) When taking out a valve from the packing box using a hoist crane, use a standard belt that can endure the valve's weight to prevent the product from falling.

Comply with "Caution" and "Warning" in the unpacking procedure.

C-3) Before installation of the valve for the service, clean it and remove foreign materials. The same to the pipe line by blowing must be done.
Foreign materials remaining in the valve or pipe lines can cause fluid leakage between the plug and the seat ring.
Especially welding debris often causes fatal damages to the valve trim parts.

C-4) Until the wiring and air connection begins, do not remove the sealing for cable entry and air connections.

C-5) Do not drop the valve or cause a serious shock to the valve while installing it to the pipeline

C-6) After installation, sufficient space shall be secured for the maintenance and repairs.

C-7) If the control valve is supplied with a handwheel, enough space shall be secured for safe and easy operation.

C-8) Avoid any location affected by severe vibration or loads.

C-9) For convenient maintenance and repairs, DO NOT install the actuator upside down.

C-10) Make sure that the ambient temperatures of the valve do not exceed the specified values in 3-1.

4-1. Ambient Temperatures of the Installation Site

Recommended ambient conditions shall be as per the actuator specification as standard, high temperature, and low temperature depending upon project requirements.
If the ambient temperature of the valve exceeds the values specified below owing to sunlight or other reasons, the valve shall be protected by the shade or insulation.

A) Standard range: -10 TO +70 'C
B) Low-temperature range: -40 TO +40 'C
C) High-temperature range: 0 TO +100 'C

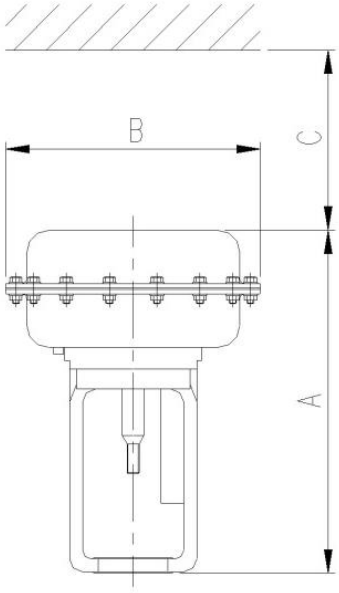
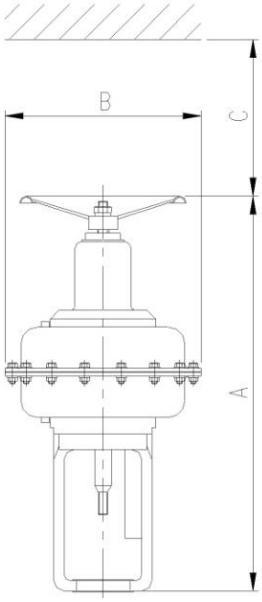
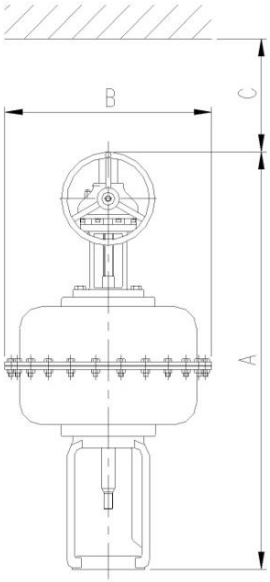
4-2. Protection against exceeding the allowable limits of pressure equipment

Where, under reasonably foreseeable conditions, the allowable limits could be exceeded, the pressure equipment shall be fitted with, or provision made for the fitting of, suitable protective devices, unless the equipment is intened to be protected by other protective devices within an assembly.

The suitable device or combination of such devices shall be determined on the basis of the particular characteristics of the equipment or assembly.

4-3. Space for Maintenance and Repairs

A) To replace the actuator and inspect the inside of the valve, provide the space specified below.
If the valve is too large to be removed manually, a chain block will be utilized to lift the actuator.
B) The mounting dimensions will be calculated by adding up the distance between chain block hooks and the following distance.
C) The following represents the Actuator Dimension Tables for the Diaphragm type provided by the company.

		
Normal Type	**Top Handwheel Type**	**Side Handwheel Type**

Normal Type Actuator Dimension Table

Actuator Size	A	B	C
250	350	252	180
290	390	292	180
370	430	372	190
480	650	482	220
550	710	552	230

Top Handwheel Type Actuator Dimension Table

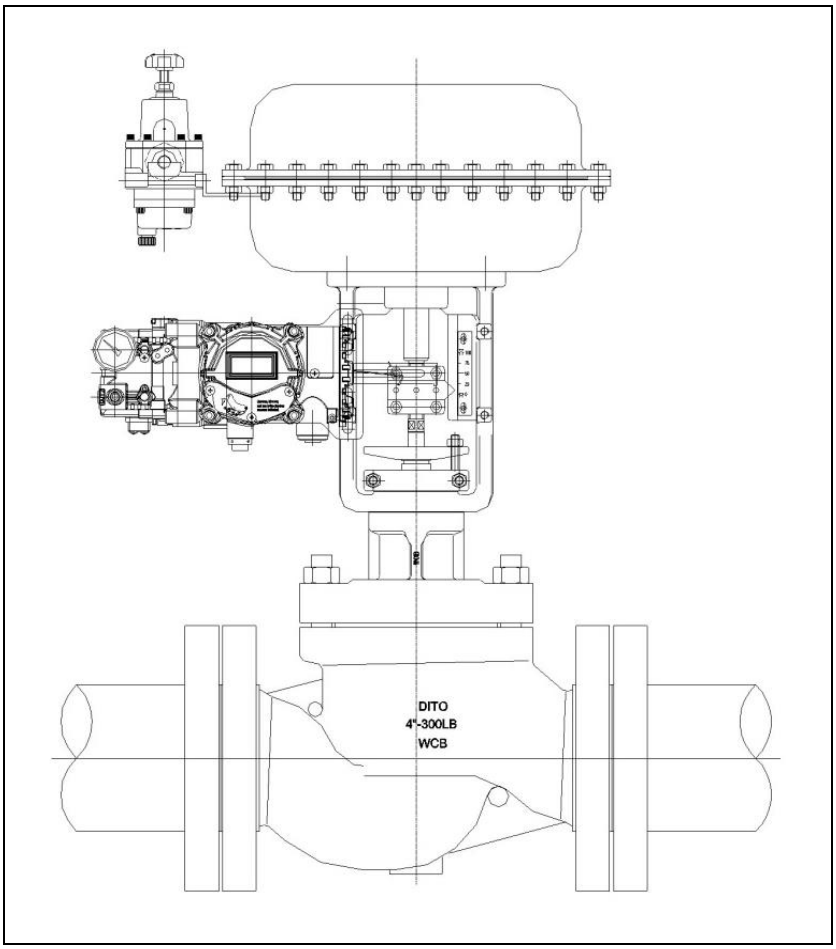
	A	B	C
250	525	252	180
290	565	292	180
370	610	372	190

Side Handwheel Type Actuator Dimension Table

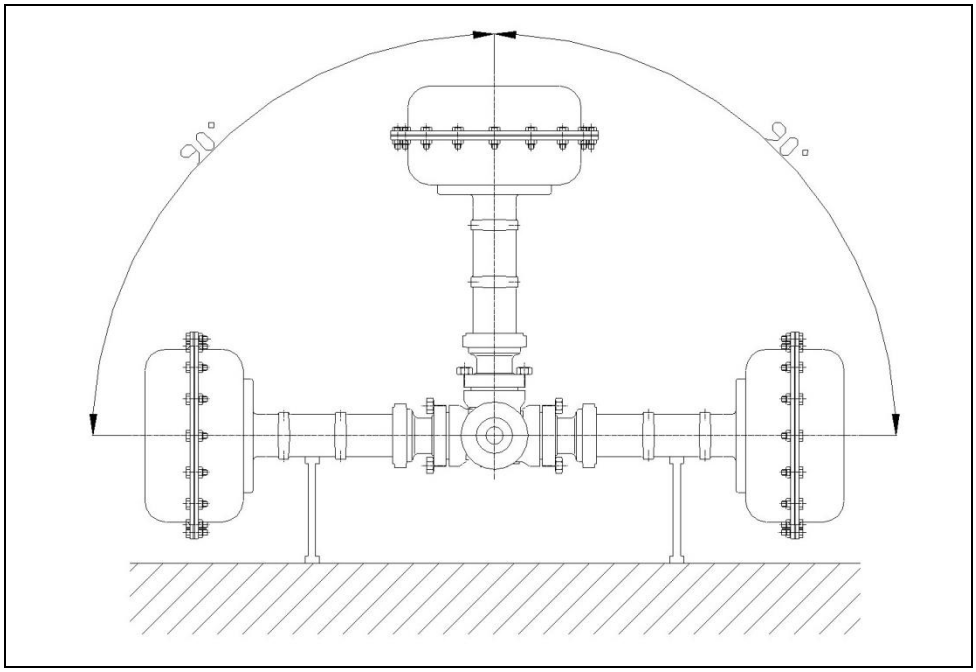
	A	B	C
480	980	482	220
550	1140	552	230

4-4. Installation Location

A) Recommended installation should be in vertical position as shown below:



B) If vertical installation is impossible, alternative positions may be considered as illustrated in the below picture.
When the actuator is not installed in a vertical position, if necessary, the air ventilation shall be declined downward to protect from foreign materials including rain.
If the valve is exposed to vibration or external forces, the valve or pipe must be supplied supports.



C) If the control valve provided with a handwheel, it should be installed in a safe and easily manipulative location.

4-5. Piping and Wiring

⚠ " WARNING "

W-1) When connecting an instrument air supply to a positioner or a booster relay, use a pipe with a diameter that prevents a pressure drop in the pipe.
W-2) When handling control valves for storage, installation or during transportation, extra care must be given to protect accessories, air piping and tubing from damage, which are provided with valves.
W-3) Do not apply seal tape to the air supply connections. Such application may cause malfunction.
W-4) Do not perform wire connection work when it rains or under the environment where water can splash on the control valve. It can cause electric leakage or shock.
W-5) For wiring work to the device, check if there is a possibility that rainwater can flow into the device along with the wire.

A) For control valves featuring accessories, see the manual for the wiring and tubing work to the devices.

5. Preparing and Operation for Control Valve Operation

5-1. Preparation for Control Valve Operation

Before being shipped or delivered to the plant, control valves have been already calibrated and tested based on the specifications you provided with MCSYS.
However, there is a possibility of physical or electric shock that may occur during the transportation or installation work, and therefore calibration and testing must be carried out by construction or pre-commissioning contractor prior to put in service.

⚠ " WARNING "

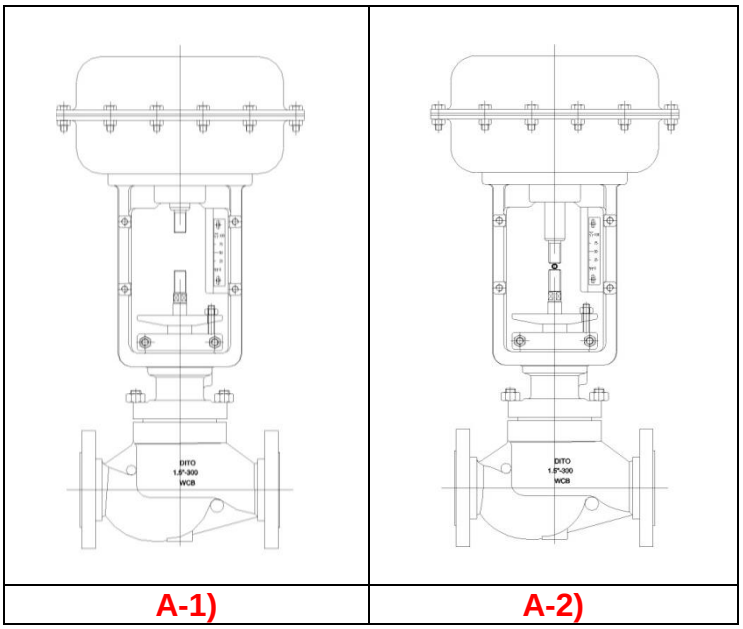
W-1) If accessories are attached to the actuator of the control valve, do not perform the installation of control valve when it rains or in an environment where water can be splashed on the control valve.
W-2) If the accessories require power supply, check the voltages indicated on the labels of the accessories before connecting the power supply.
If the provided power supply voltage is different from the voltage indicated on the label, secure and use the correct power supply.
W-3) The air pressure to the control valves must be dry and clean. Make sure that the air pressure does not exceed the specified value, but not lower than the actuator spring range to secure tight shut-up.
W-4) Check if air is not leaking at air connections and joints of actuator diaphragm. If there is an air leak, disassemble the actuator as per Chapter **11-2** and identify the cause of leak and fix it.

A) Direct Action

An RA actuator controls leakage by pressing the valve's stem and plug and making them contact the seat surface using the force of Air.

The clamping work of the valve's stem and the actuator's stem will be in accordance with following order.
If a DA actuator is incorrectly clamped, it may not achieve the desired valve stroke.

A-1) Place the actuator carefully on the valve body and connect Air Supply.
A-2) Since it is unclear whether the valve body plug is in contact with the seat surface, place proper materials on the body stem such as Nut and pushdown the valve stem by the actuator stem using Air Regulator in order to secure complete contact of plug and seat.



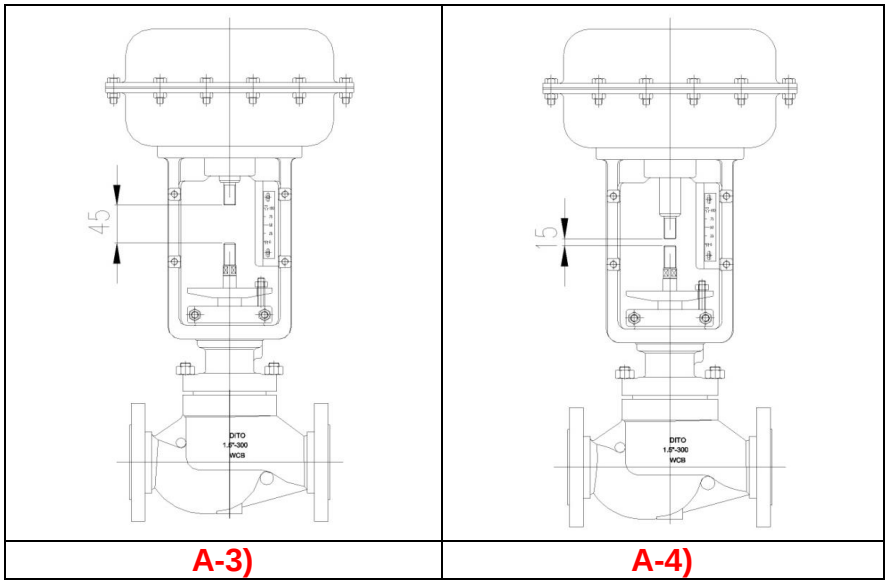
A-1) A-2)

A-3) Place the actuator stem return fully upward by releasing air supply and measure the distance between the pressed valve stem and the actuator stem fully pushed up.
As Fig. A-3), for instance it is 45 mm.

A-4) After that, check actual required stroke from the valve data sheet, and calculate the clamping distance as follows;

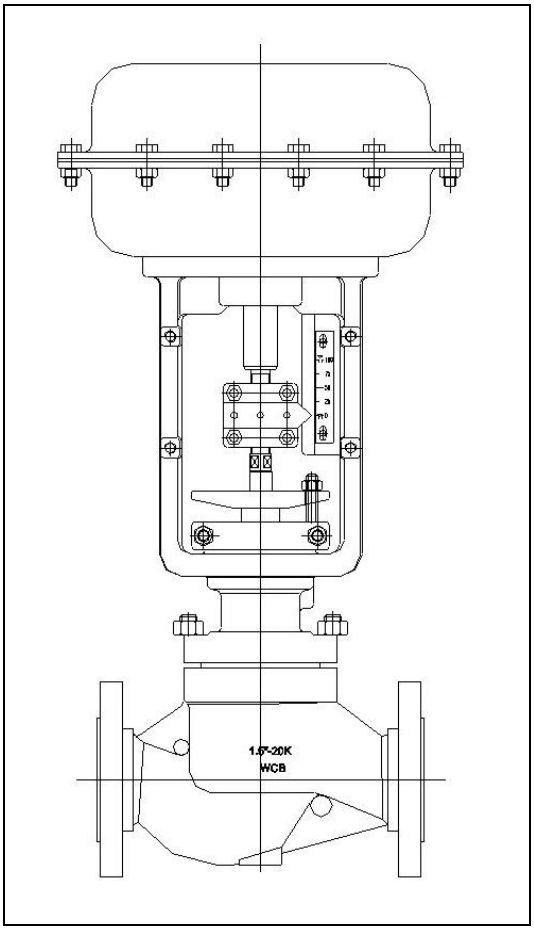
- From Fig. A-3 : 45mm (Example Figure)
- From Data sheet : 30mm (Example Figure)
- Required Distance for Clamping : 45 – 30 = 15 mm (Fig. A-4))

For clamping work, introduce Air to the actuator and position the actuator stem at the calculated clamping distance, i.e. 15mm by adjusting Air Regulator, and then locate clamp to install.



A-3) A-4)

A-5) Fasten the stem clamp.



B) Reverse Action

Basically, an RA actuator controls leakage by pressing the valve's stem and plug and making them contact the seat surface using the force of springs.

Therefore, when clamping the valve's stem and the actuator's stem, it is important to set an appropriate spring range. Otherwise, while in failure mode, or when an input signal goes to the minimum 4mA, the spring force of the actuator may not enough for tight close and this results in leakage.

5-2. Control Valve Operation

⚠ " Caution"

During operation, put on covers of accessories and wiring terminal box after connection.
If the control valve operates with them open, rainwater may get in, cause electric leakage, shock or malfunction.

A) Manual Operation (Manual Handwheel Type)
In case of manual operation, the valve can be opened and closed in failure mode or normal position (NC or NO)
(Optional at a client's request)

⚠ "Caution"

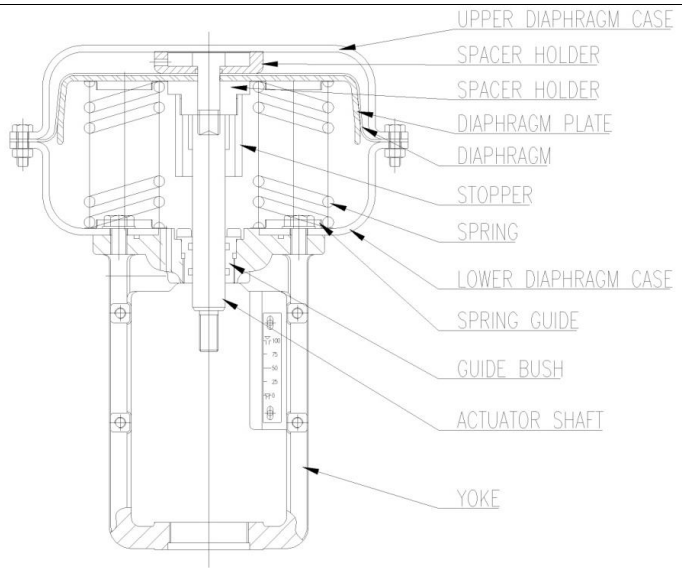
Once manual operation is completed, return the handwheel stem to its original position.
If the handwheel stem does not return to its original position, the control valve may not have enough strokes in auto mode.
Do not use excessive power to turn the handwheel because there is a risk of damage.

A-1) Turn the handwheel clockwise to close the valve and turn counterclockwise to open the valve.
A-2) In auto mode, make sure that the handwheel is always in position.
Since a stroke indicator is attached to the handwheel stand, it can be visually checked.
A-3) Reference Figures for the position of handwheel.

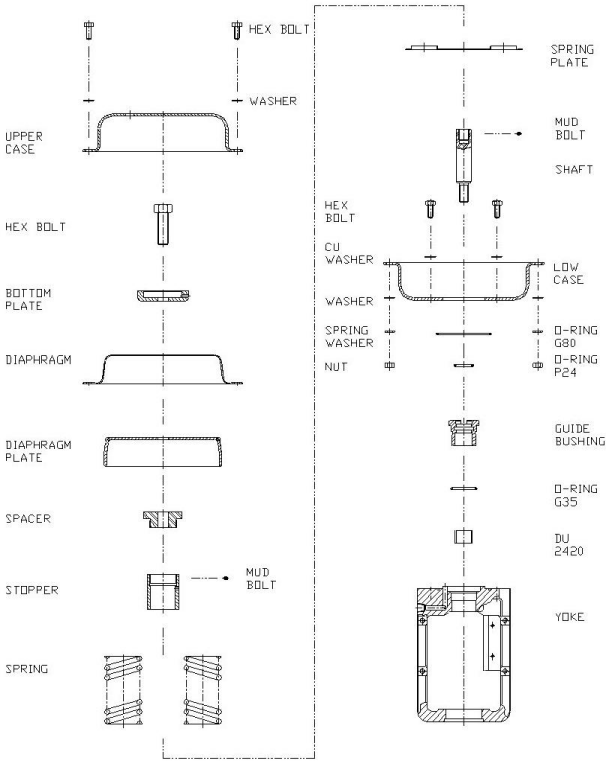
6. Structure of Control Valve and Actuator

6-1. Actuator Structures

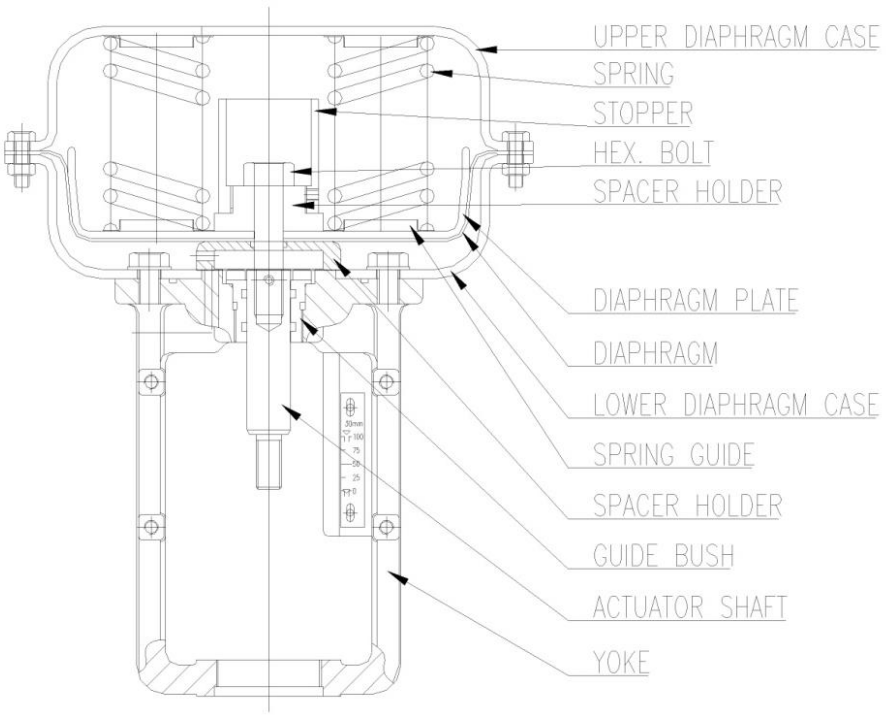
A valve actuator is the mechanism for opening and closing a valve. Depending upon type of power sources, the type is called such as Manual, Pneumatic, Hydraulic, Motor operated and Solenoid.
The pneumatic actuators provided by the company have the following structures:



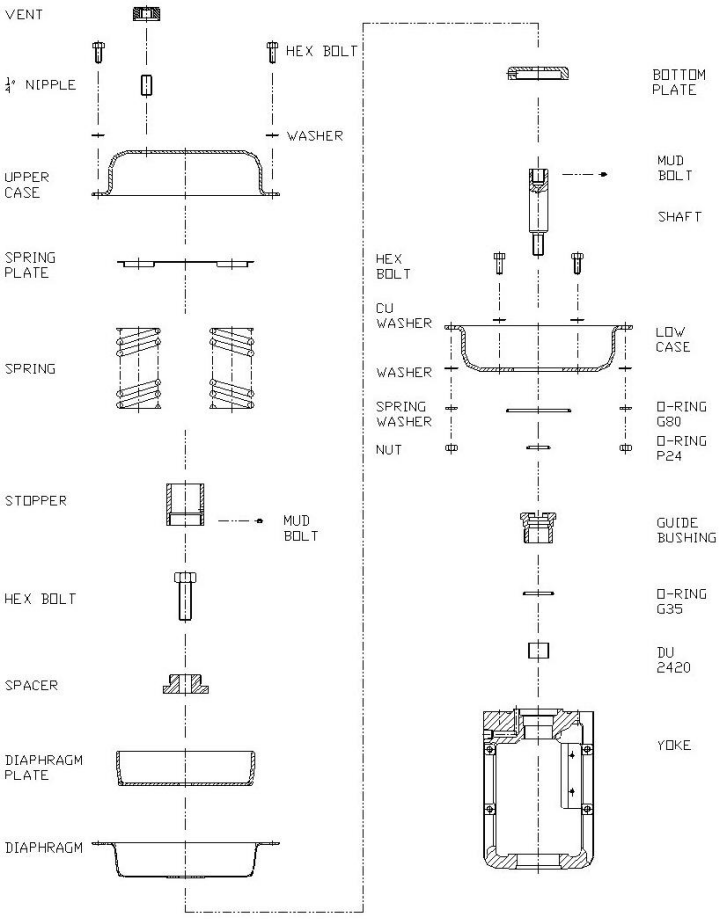
Normal Direct Action Type



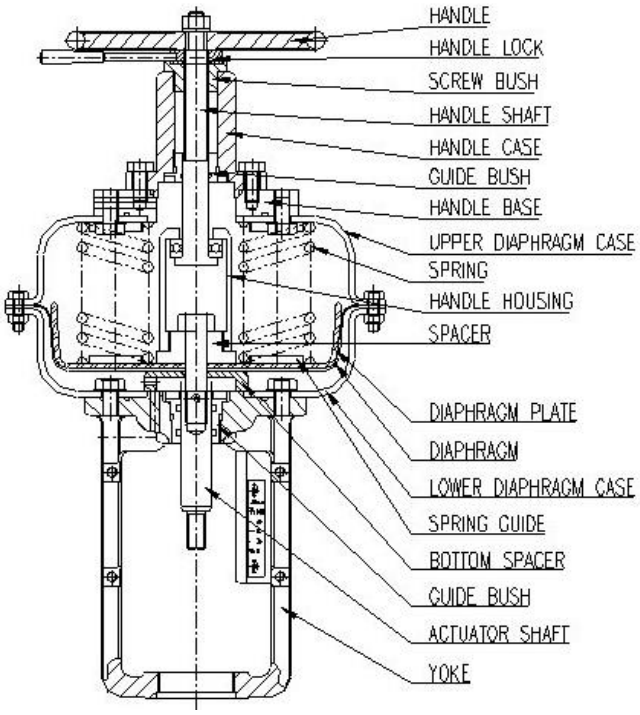
Disassembly & Assembly(Normal Direct Action Type)



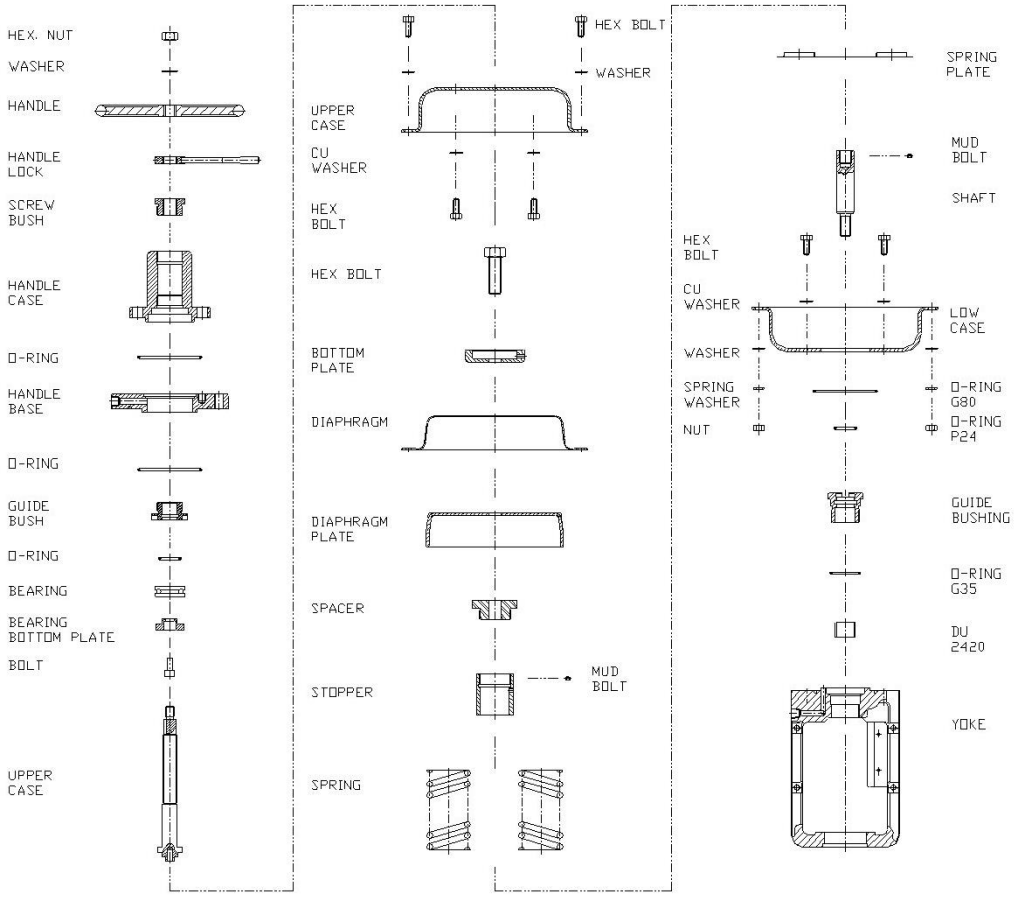
Normal Reverse Action Type



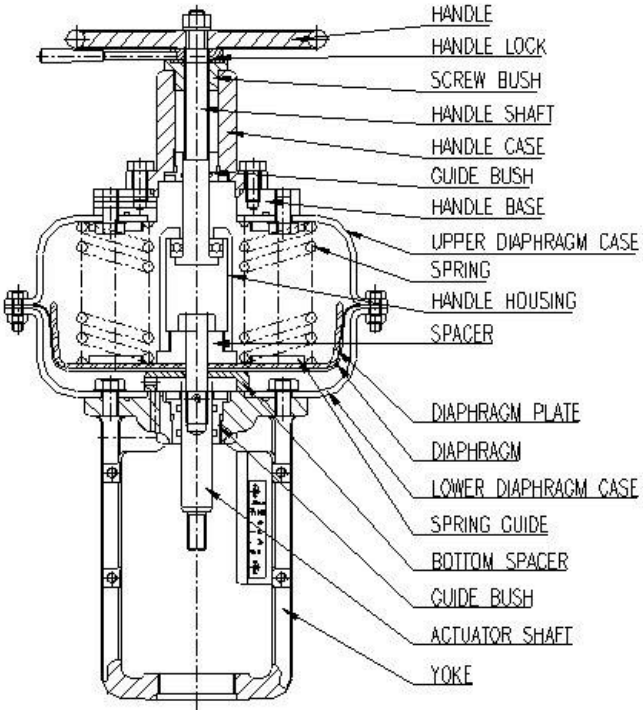
Disassembly & Assembly (Normal Reverse Action Type)



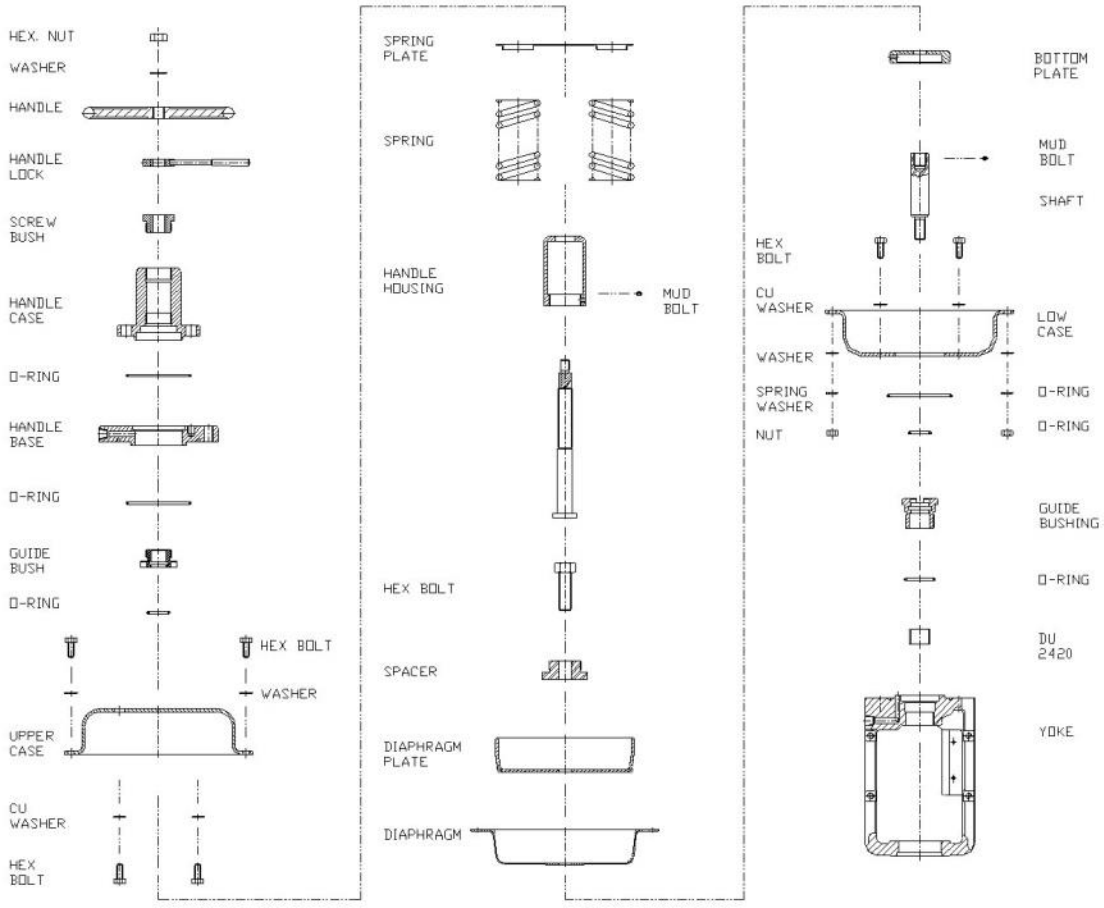
Top Handwheel Direct Action Type



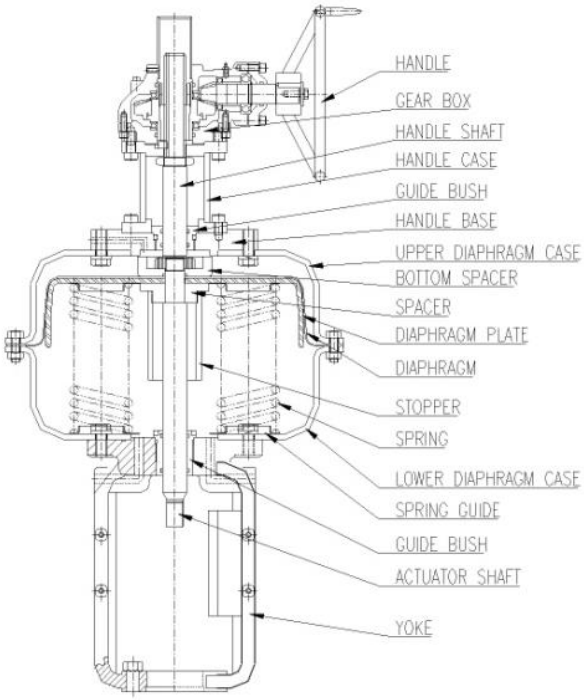
Disassembly & Assembly (Top Handwheel Direct Action Type)



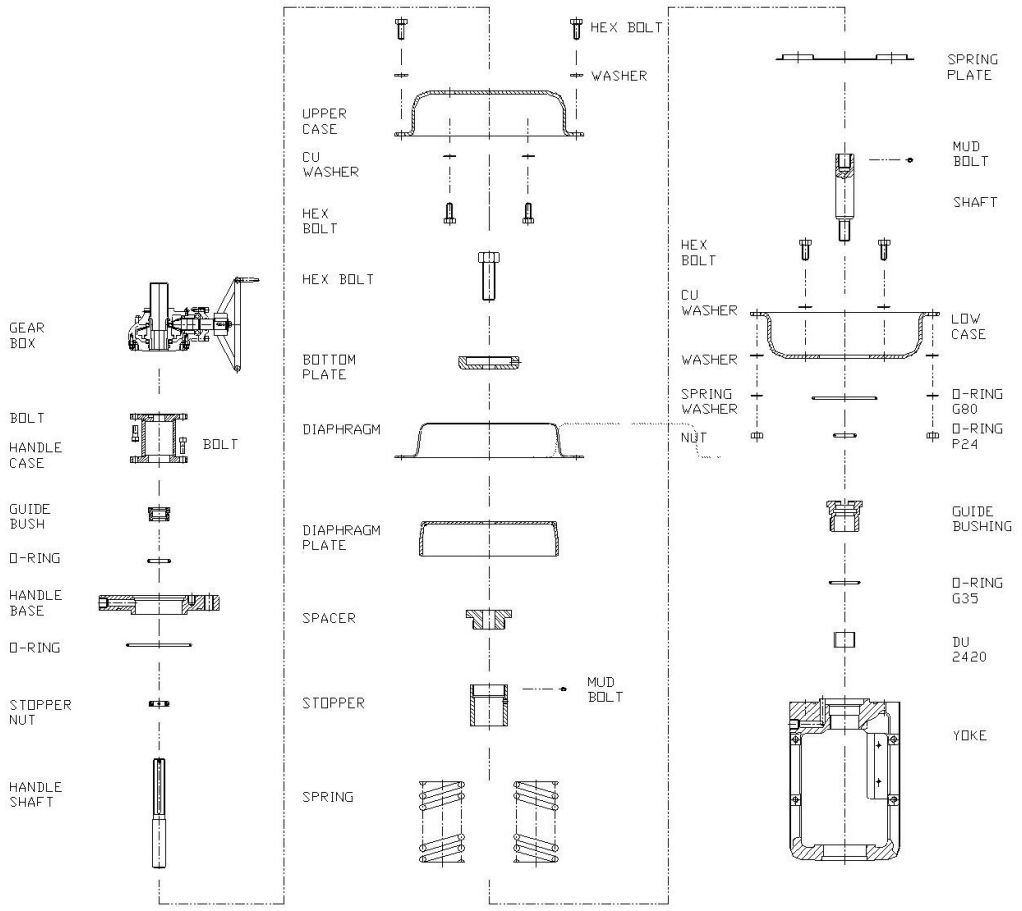
Top Handwheel Reverse Action Type



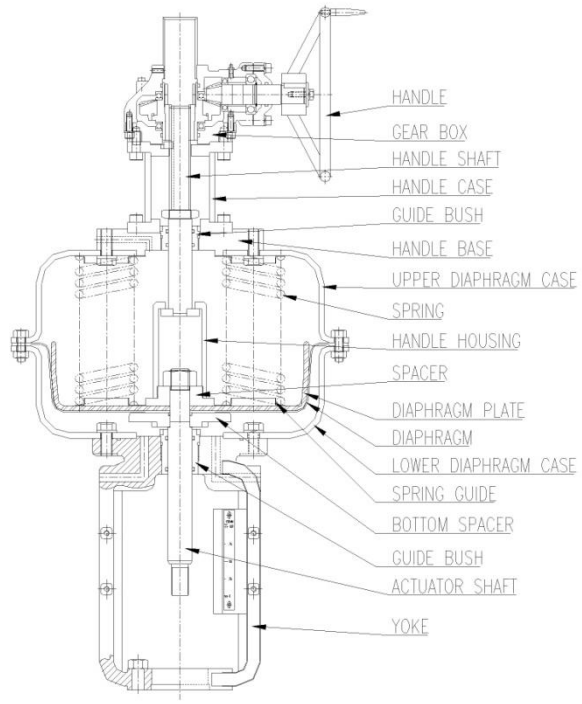
Disassembly & Assembly (Top Handwheel Reverse Action Type)



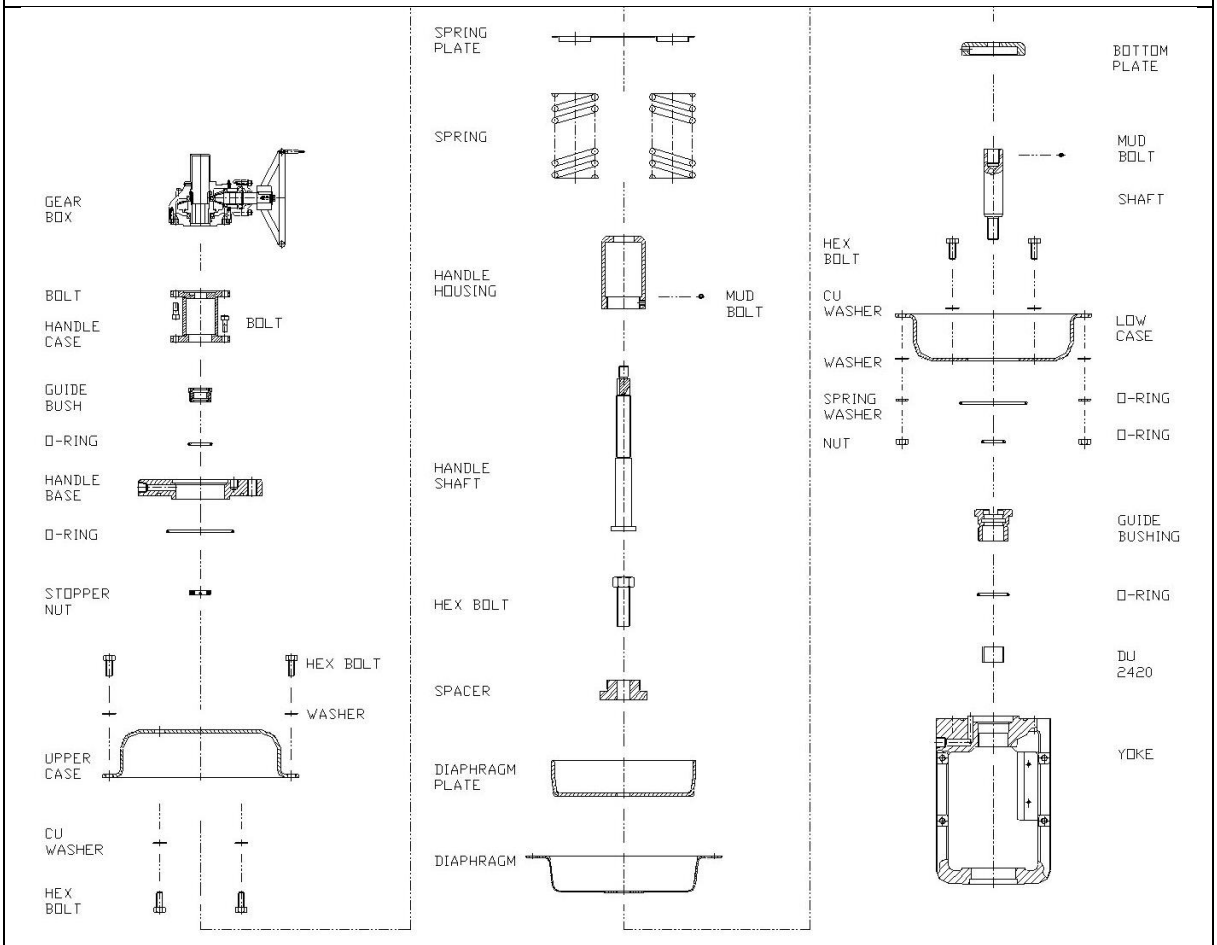
Side Handwheel Direct Action Type



Disassembly & Assembly (Side Handwheel Direct Action Type)



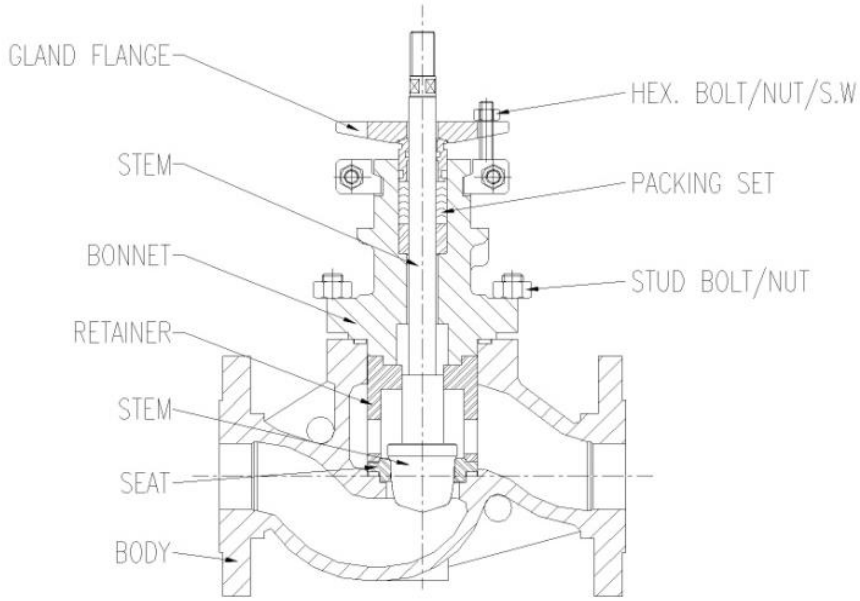
Side Handwheel Reverse Action Type



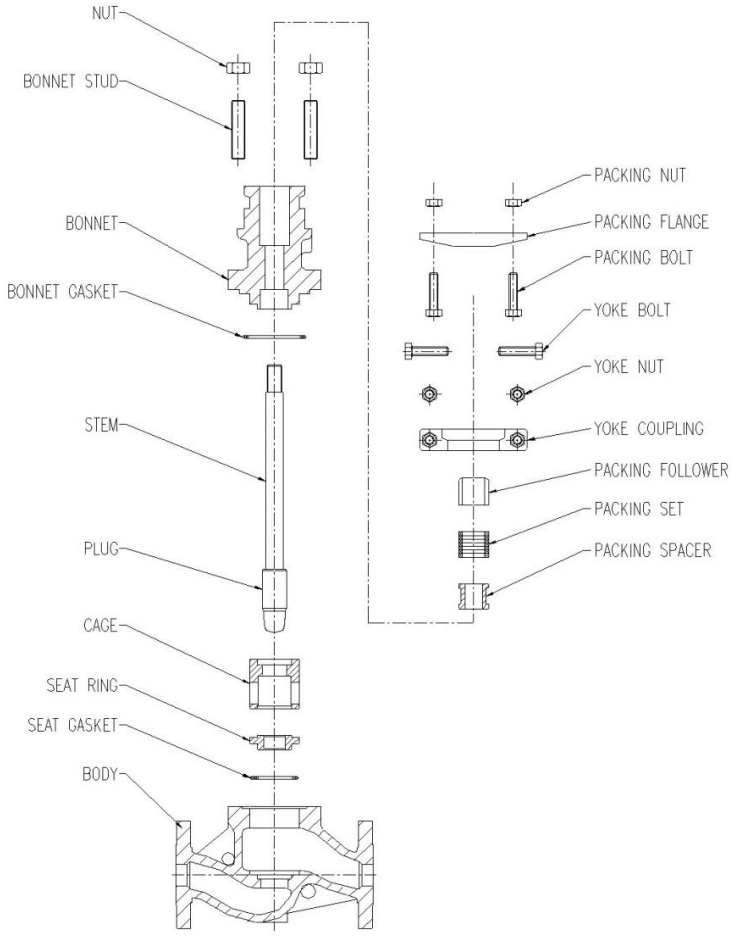
Disassembly & Assembly (Side Handwheel Reverse Action Type)

6-2. Control Valve Structures

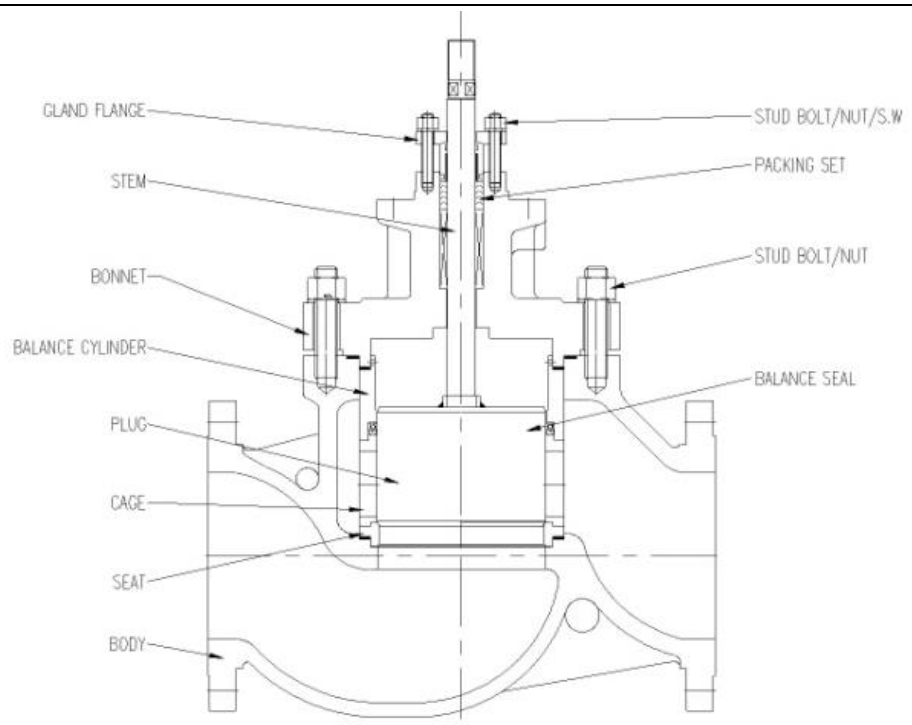
The following represents the structure of a globe control valve.



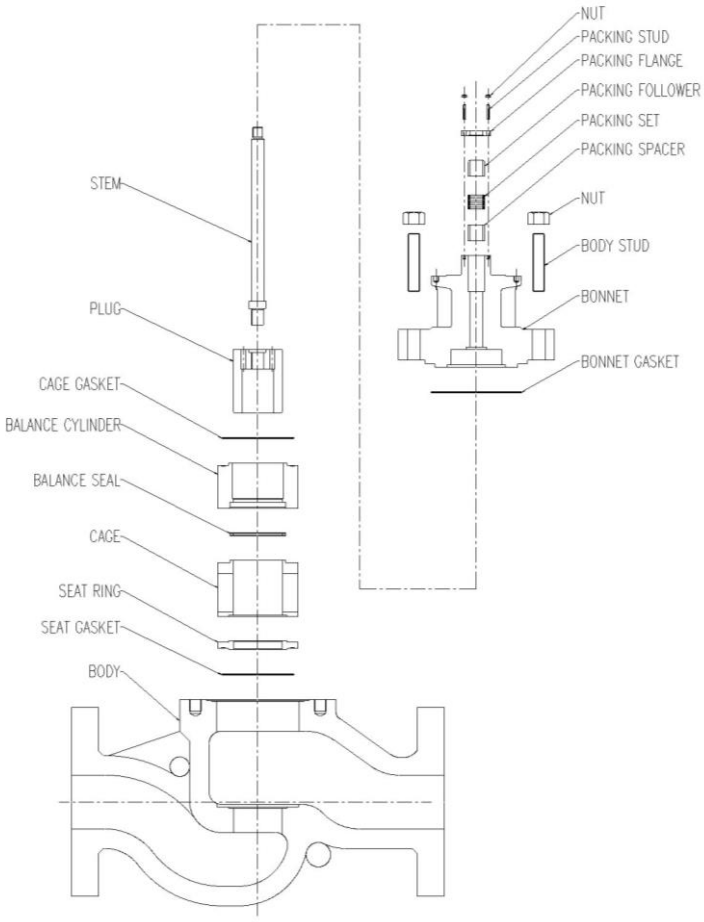
Unbalance Type



Disassembly & Assembly (Unbalance Type)



Balance Type

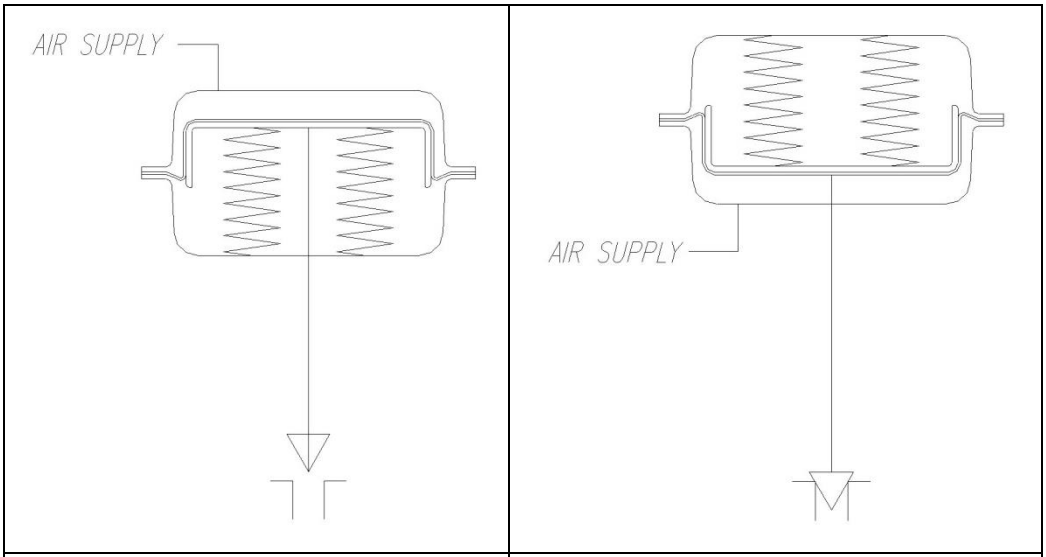


Disassembly & Assembly (Balance Type)

7. Principles of Operation of Control Valve

7-1. DA Type (Direct Action)

The Direct Action (DA) type moves down the control valve stem according to increasing air pressure in the diaphragm chamber.
When air pressure is supplied to the diaphragm chamber from the instrumentation air connection port located on top of the upper diaphragm case, the air pushes down the diaphragm plate against spring force.
At the same time, the actuator stem, which is attached to the diaphragm and the diaphragm plate, also gets pushed down.
As explained, this movement closes or opens valve by clamped the actuator stem and valve stem.
And therefore, if maximum signal is applied, the valve will be closed, and vice versa.



DA Type	RA Type

7-2. RA Type (Reverse Action)

The Reverse Action (RA) type moves up the control valve stem according to increasing air pressure in the diaphragm chamber.
When air pressure is supplied to the diaphragm chamber from the instrumentation air connection port located on the yoke, the air pushes up the diaphragm plate against spring force.
At the same time, the actuator stem, which is attached to the diaphragm and the diaphragm plate, also gets pushed up.
As explained, this movement opens or closes valve by clamping the actuator stem and valve stem.
And therefore, if maximum signal is applied, the valve will be opened, and vice versa.

8. Control Valve Inspection and Inspection Frequency

8-1. Daily Check

⚠ " WARNING "

When daily check is performed on a control valve, please observe "Chapter 4-1 Preparation for Control Valve Operation."

Perform daily check in the order described below, if you deem the check essential to the operation of the pipeline where the control valve is installed.

A) To prevent malfunction, check the surroundings of the instrument air inlet pipe connection area for air leaks.
B) To prevent the leakage of a fluid, check the gland packing and gasket areas. If a fluid leak is detected, check if the valve stem is damaged. If the valve stem is found to be damaged, tighten the gland packing while checking the operating status.
C) If the control valve features a positioner, check if the valve is working without hunting, and if the valve stem is moving smoothly. If the control valve is in operation, check if there is no vibration in the control valve and pipe.

8-2. Periodic Check

⚠ " CAUTIONS "

When performing periodic check, follow "Warning" instructions in below Chapters.

C-1) 5-2. Control Valve Operation.
C-2) 11. Disassembly and Reassembly.

⚠ " WARNING "

When performing periodic check, follow "Warning" instructions in below Chapters.

W-1) 4-4. Piping and Wiring
W-2) 5-1. Preparation for Control Valve Operation
W-3) 5-2. Control Valve Operation
W-4) 11. Control Valve Disassembly and Reassembly

A) Monthly or Bi-monthly Check

A-1) To prevent abnormal operation, check the instrument air inlet pipe connection area for air leaks.

A-2) To prevent the leakage of a fluid, check the gland packing and gasket areas.
If a fluid leak is detected, check if the valve stem is damaged.
If the valve stem is found to be damaged, tighten the gland packing while checking the operating status.

A-3) If the control valve features a positioner, check if the valve is working without hunting, and if the valve stem is moving smoothly.

A-4) If the control valve is in operation, check if there is no vibration in the control valve and pipe.
If any problem that cannot be repaired immediately can cause the facility to stop, perform repairs later on or request MCSYS for A/S.

B) Annual or Biennial Check

Inspect, check, lubricate, or replace the following parts.
The following check should be performed by a qualified engineer of MCSYS.

B-1) Actuator

① Lubricate the friction area and the manual handwheel area of the actuator stem. Lubricant is recommended by MCSYS (Super Lube Synthetic Grease)

② Check for cracks or ply breaks in the diaphragm

③ Check for damage in bolts and nuts and visually inspect the shape changes caused by corrosion. Replace the damaged bolts and nuts with new ones.

C-**2) Valve Assemblies**

① Separate the bonnet and the flange from the body according to the valve disassembly procedure.

② Check the valve parts and replace the damaged parts with new ones.

9. Control Valve Troubleshooting

Problem	Cause	Measures
No Action (Slow Response)	Air pressure supply is low	Increase air pressure
	The air pipe is clogged, stuck or leaking	Clean the inside of the air pipe, tighten the pipe joint or replace the damaged pipe
	Air leaking from the bolt holes of the diaphragm	Tighten the bolts or check if the bolt holes on the diaphragm are damaged. If damaged, replace them
	Defects in accessories (Positioner, Booster-Relay , Solenoid Valve)	Instead of applying air pressure through an accessory, apply it directly to the actuator instrument air inlet. If the control valve is working properly, replace the accessory defected.
	Failure of the valve assembly or actuator	Remove the stem clamp and check the actuator's operation. If the actuator is not working properly, disassemble and check the actuator. If the actuator is working properly, disassemble and check the valve assembly.
	If the manual handwheel apparatus of the manual handwheel type is not in manual position	Return to the original position.
	Improper sensitivity of the positioner	Replace the Capacitance Spring in accordance with the instructions for positioners. If the same is still experiencing , ask the positioner manufacturer for technical advice or request A/S.
Unstable operation (Involving hunting)	Defects in Accessories	Change defected one.
	Check air supply and signal from control room,	Check air supply and signal from control room. If necessary, troubleshoot problems.
	Improper selection of actuator	Consult MCSYS with actual process conditions. If actuator is under sized, change actuator with upper size.

Problem	Cause	Measures
Leakage from the valve seat	Valve seat damaged, clogged, stuck or problems in actuating system	Check the setting balance of the actuator and re-calibrate, or disassemble the valve seat to inspect, repair or replace
Leakage from Gland Packing / Gasket	Loosen nuts, damaged valve stem, or deteriorated/hardened gland packing or gasket	Tighten the loosened packing flange, or replace the gland packing or gasket. Repair the surface of the valve stem or replace the stem.

10. Preparation for Control Valve Disassembly

⚠ " WARNING "

W-1) Before removing the control valve from the operating line, check if the block valves at inlet and outlet of the control valve are fully closed.

W-2) Before removing the control valve from the operating line for inspection disassembles the valve while the valve bonnet and the valve body are coupled.
Before setting the valve up to check or repair the valve's inside, check if the pressure inside the valve is equal to the atmospheric pressure and if the temperature is less than 45'C.

W-3) If the control valve has been used in the line carrying fatally toxic fluids, then check if the valve has been completely cleaned inside before disassembling it.

11. Control Valve Disassembly and Reassembly

⚠ " WARNING "

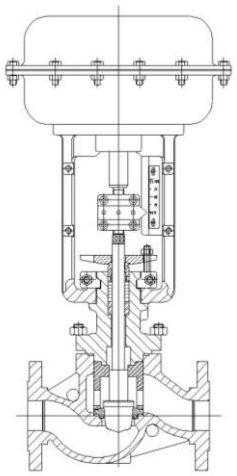
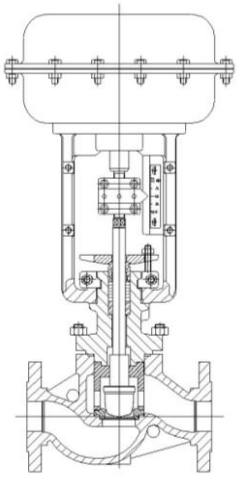
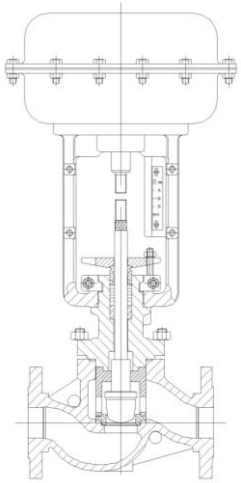
Since this control valve is very heavy, it must be handled properly and carefully, according to the following instructions.
Failure to observe the following instructions can result in serious injury to the operator.

11-1. Procedure for Separating the Actuator from the Control valve

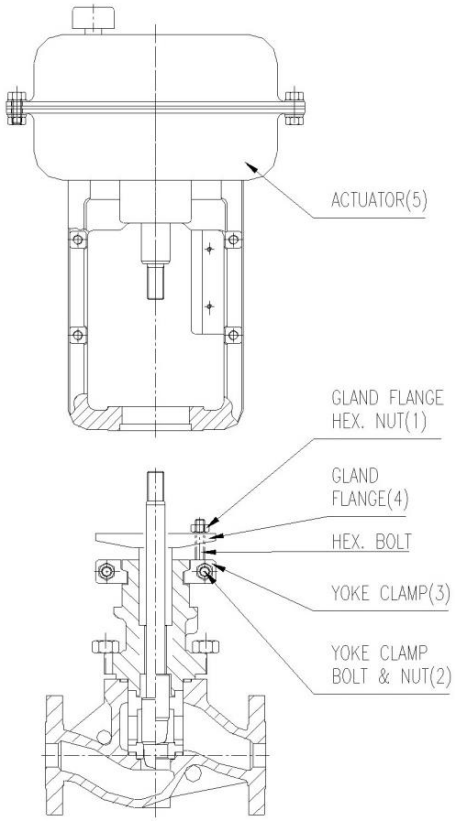
To separate the actuator from the valve assembly, see Chapter 5 Control Valve and Actuator Structures in this manual and follow the procedure
.

A) While separating the value assembly and the actuator, attention should be paid to the stem and plug to avoid damage.
Open the control valve to 50% using Instrument Air.

B) Loosen the stem clamp and remove it.

		
Valve is fully closed	**Valve is 50% open**	**Stem clamp is removed**

C) Separate the yoke clamp.
To separate the yoke clamp, turn the bolts of the yoke clamp bolts counterclockwise and separate the hex nut.
D) Loosen and separate the bolts of the packing flange.
E) Widen the yoke clamp consisting of two couplings.
F) Disconnect the yoke clamp from the actuator.
G) Lift the actuator from the valve bonnet.
H) Remove the packing flange from the actuator, which has been lifted with the yoke.



(1)→(2)→(3)→(4)→(5)

11-2. Actuator Disassembly

⚠ " WARNING "

W-1) Before disassembling the actuator, check if the diaphragm chamber is atmospheric pressure. Failure to check this point can result in serious injury to the operator caused by compressed air.

W-2) Failure to observe the proper procedure can result in serious injury caused by springs popping up. Comply with the following disassembly procedure.

⚠ " CAUTIONS "

C-1) To avoid damage to the inside and outer surface of the diaphragm chamber and to the actuator stem, exercise extra caution during disassembly.

C-2) Check the surfaces of the diaphragm and the actuator stem with the naked eye and DO NOT disassemble the part if any problems are detected Inner and outer surfaces of the diaphragm and surface of the actuator stem. In that case change them with new one, if spare parts are available.

11-3 Control Valve Disassembly

⚠ " WARNING "

W-1) If you have a large-sized control valve assembly, the body and the bonnet are heavy.
Exercise caution so that the valve's body or bonnet does not fall or slip from the hand.
If the valve body or bonnet slips or falls from the hand, it can cause hand or leg injury.

W-2) Always wear protective goggles when performing grinding to remove rust or performing repairs.

⚠ " CAUTIONS "

C-1) Exercise caution to avoid damage to the gasket on the flange.

C-2) DO NOT perform disassembly on a hard surface such as concrete or tiles.

11-4. Control Valve Reassembly

To reassemble the disassembled control valve, observe the precautions and follow the instructions in 11-3 Control Valve assembly in reverse order.

⚠ " CAUTIONS "

Precautions for Control Valve Reassembly

C-1) Do not place the disassembled parts on a hard surface such as concreter tiles.

C-2) Prepare supplies such as gland packing sets or gaskets in advance. These parts must be replaced with new ones after the valve is disassembled.

C-3) If parts with expired service life or damaged parts are detected during the disassembly, prepare new ones in advance.

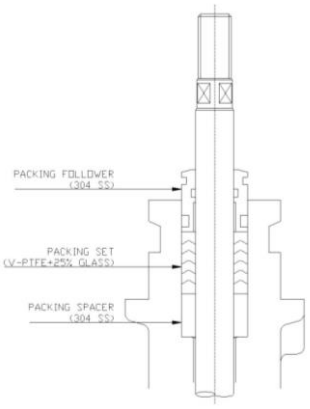
Exercise caution when handling seat, plug, stem assemblies or retainers (cage).
Otherwise, leakage may worsen through the valve seat after reassembling the valve.

C-4) Pay attentions to the gland packing coupling procedure.
It must be assembled in the same procedure as the pictures below.

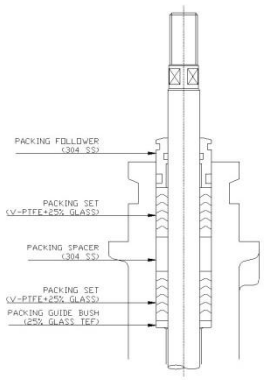
C-5) Exercise caution to avoid damage to the surfaces of the gland packing (inside, outside, top, bottom).

C-6) If the gland packing is Teflon V-packing, checks if the coupling direction is correct.

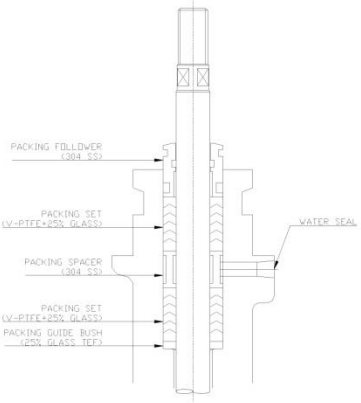
A) The following represents the bonnet packing boxes for control valves.



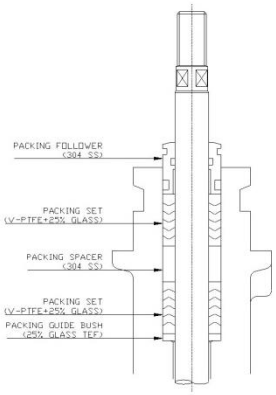
Single V-ptfe Packing



Double V-ptfe Packing



Water Seal Double V-ptfe Packing



Double Vacuum V-ptfe Packing

11-5. Actuator Re-Assembly

⚠ " CAUTIONS "

Before reassembling the actuator, replace old or damaged parts with new ones, perform annual or biannual check as described in **8. Control Valve Inspection and Inspection Frequency**, and lubricate the friction area and the manual handwheel area of the actuator stem.

For the actuator reassembly procedure, follow the instructions for actuator disassembly in 11-2 in reverse order.

11-6. Reassembling the Actuator and the Control Valve

Follow the detailed instructions described in Chapter 4, Preparation and Operation of Control Valve.

12. Calibration after Reassembling the Actuator to the Control Valve

Once the reassembly is complete, conduct performance testing.
If any problems occur with performance, disassemble the part in question, find the cause, and reassemble the part.

12-1) Check if it is working smoothly.
12-2) Test leakage in the gasket or gland packing
12-3) Check if the leakage from the valve seat is within specified limits.
12-4) Check if Hysteresis and Linearity are within specified limits.
12-5) To re-install the reassembled control valve in the pipeline,
see Chapter 4, Installation in this Manual.

13. Disposal of Product and Parts

To dispose of this product or parts in an area where “waste management” is contracted out by a company authorized by a local government or governmental agency, obtain approval or authorization from the said government or governmental agency.

⚠ “ CAUTIONS “

Do not incinerate the gland packing.
If incinerated, it is decomposed at high temperature and emits fluoride gas, which is harmful to humans.

14. Parts for Maintenance and Repairs

If you need parts or supplies for maintenance or repairs due to expiration of service life or due to damage, contact MCSYS ;

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GYUNGGI-DO, KOREA
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