

MINIVALVE

Installation, Operation and Maintenance Instructions



Northvale Korting Ltd

Uxbridge Road, Melton Road, Leicester, LE47ST

Tel: 0116 266 5911 Fax: 0116 261 0050

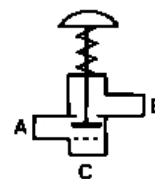
www.northvalekorting.co.uk

Diaphragm-Operated Control Valves

Maximum operating pressures with 4.0 BarG (60 psig) on diaphragm

All 2-way valves will operate against 16 BarG line pressure, inlet Port A, outlet Port B

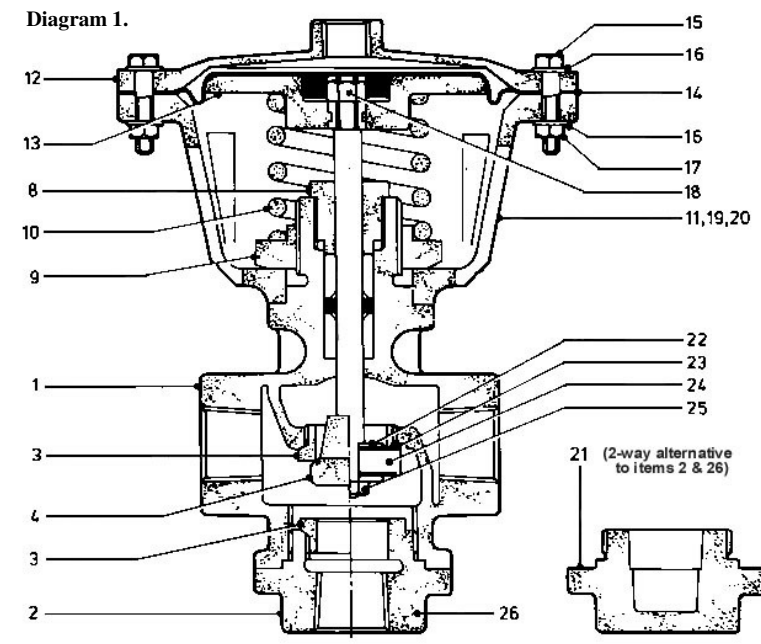
3-way diverting valves, inlet port A, outlet port B and C, are subject to the limited pressures detailed below: -



Size	Maximum differential pressure			
	Metal/Metal Seat		Soft Seat	
15mm (1/2")	16 BarG	(232 psig)	16 BarG	(232 psig)
20mm (3/4")	16 BarG	(232 psig)	16 BarG	(232 psig)
25mm (1")	16 BarG	(232 psig)	13 BarG	(190 psig)
40mm (1 1/2")	12 BarG	(174 psig)	11 BarG	(160 psig)
50mm (2")	7.3 BarG	(105 psig)	6.9 BarG	(100 psig)

When the valve is used for mixing duties, i.e. two inlets and one outlet, the valves should be reversed, inlets should be ports B and C and outlet port A. Assuming inlet pressures are equal, all valves will operate against 16 bar.

Diagram 1.



21	2-way bottom cover	Gunmetal
22	Retaining ring	Stainless steel
24	Plug	Stainless steel

1	Body	Gunmetal
2	3-way bottom cover	Gunmetal
3	Seat	Stainless steel
4	Plug & Spindle assembly	Stainless steel
8	Gland nut	Brass
9	Yoke retaining nut	Steel*
10	Actuator spring	Chrome vanadium
11	Actuator yoke	Aluminium
12	Actuator cover	Aluminium
13	Actuator Disc	Aluminium
14	Diaphragm	HNBR rubber
15	Hexagonal headed bolts	Steel*
16	Washers	Steel*
17	Hexagonal nuts	Steel*
18	Hexagonal nut	Steel*
19	Nameplate	Aluminium
20	Hammer drive screws	Alloy steel
25	Locknut	Stainless steel
23	Soft seat insert	Filled PTFE
26	3-way bottom cover with integral seat.	Gunmetal

* All steel parts zinc plated and passivated.

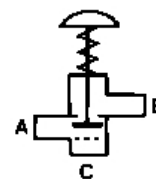
Note: The parts list above refers to the bronze bodied valve; stainless steel valves will have all wetted parts manufactured from stainless steel.

Electrically Actuated Control Valves

1. GEA Actuator.

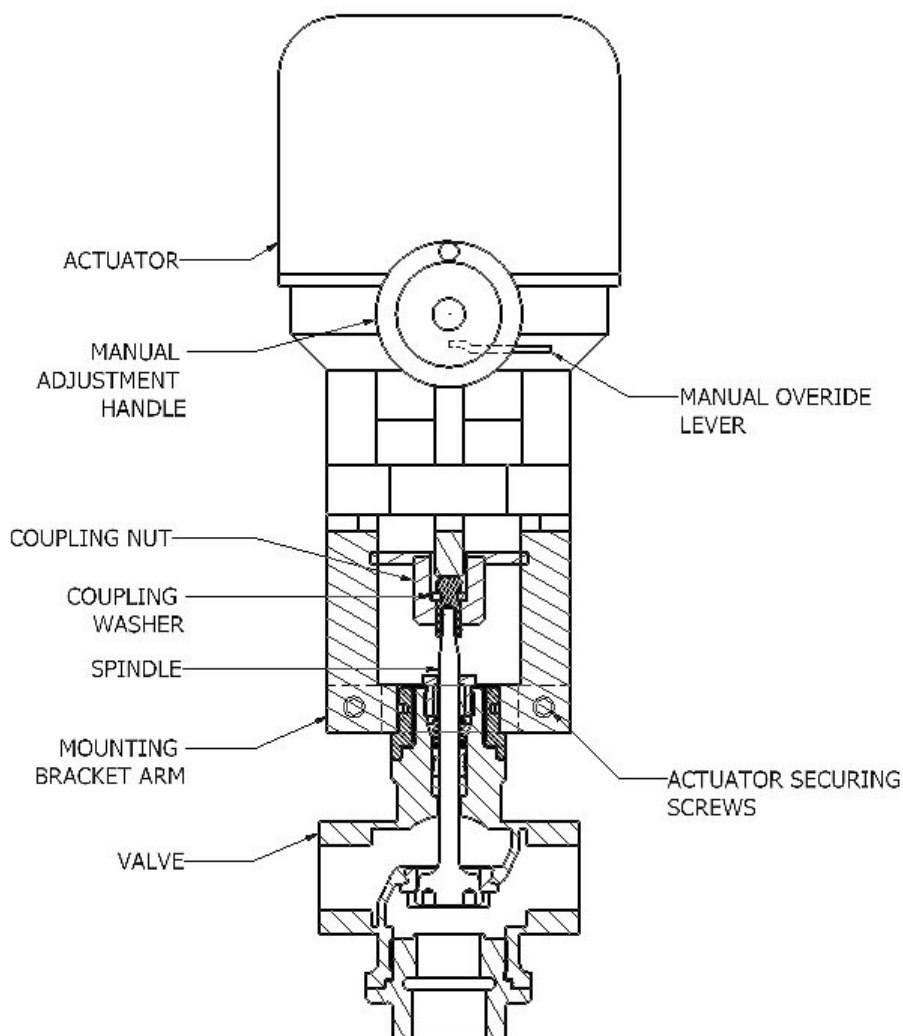
All 2-way valves will operate against 16 BarG line pressure, inlet Port A, outlet Port B

All 3-way valves will also operate against 16 BarG line pressure; diverting valves, inlet port A, outlets ports B and C; for mixing duties, the valves should be reversed, inlets should be ports B and C, outlet port A.



In the event of a power failure the actuator will remain at the last controlled position.

Diagram 2



The details of the body components are the same as for the diaphragm-operated valve (items 1-4 & 21-26).

2. MVL Actuator.

All 2-way and 3-way valves are subject to the limiting pressures detailed below: -

Size	Maximum differential pressure			
	Fail 'Stayput' Actuator		Spring Return Actuator	
15mm (1/2")	16 BarG	(230 psig)	8 BarG	(115 psig)
20mm (3/4")	16 BarG	(230 psig)	8 BarG	(115 psig)
25mm (1")	12 BarG	(175 psig)	5 BarG	(70 psig)
40mm (1 1/2")	12 BarG	(175 psig)	5 BarG	(70 psig)
50mm (2")	8 BarG	(115 psig)	3.5 BarG	(50 psig)

Porting arrangements are as follow: -

Valve Style	Inlet	Outlet
2-way valves	Port A	Port B
3-way diverting valves	Port A	Ports B and C
3-way mixing valves	Ports B and C	Port A

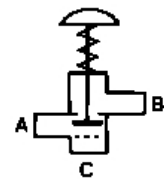
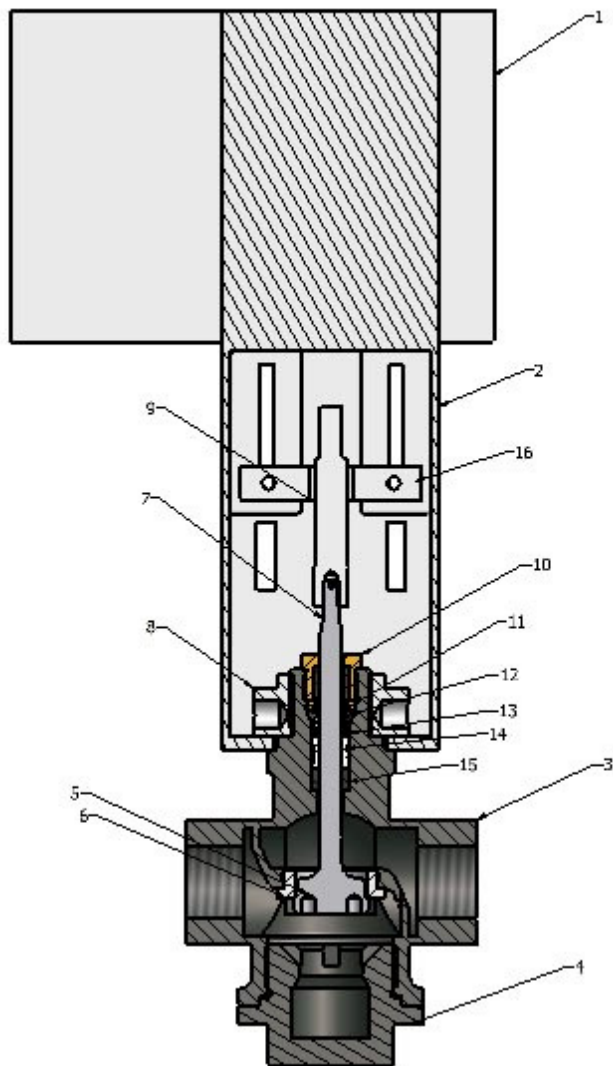


Diagram 3



Item	Description	Material
1	Actuator	Various
2	Yoke	Coated carbon steel (Integral with actuator)
3	Valve body	Gunmetal
4	Bottom cover	Gunmetal
5	Plug	Stainless steel With PTFE for on/off
6	Seat	Stainless steel Gunmetal (Integral for on/off)
7	Spindle	Stainless steel
8	Retaining nut	Brass
9	Spindle coupling	Brass
10	Gland nut	Brass
11	Spring washer	Brass
12	Spring	Alloy steel
13	Washer	Brass
14	Chevron packing	PTFE
15	Guide bush	Filled PTFE
16	Guide	Plated carbon steel

In the event of loss of power the 'stayput' actuator will remain at the last controlled position. The spring return actuator can be arranged for the valve to be fully open or fully closed should the power be lost.

Installation Instructions.

1. Clean all pipelines thoroughly.
2. Carefully unpack the valve, examine the control valve for any damage in transit and remove all stops and protective plugs etc.
3. Inspect valve interior to the extent practical through the end ports. Is it reasonably clean, free from foreign matter?
4. Check that the flow direction arrow points in the correct direction and install the valve in the proper flow orientation using standard procedure, below.
5. For electrically actuated valves ensure that the actuator is in an allowable orientation; see the actuator details at the back of this document.

For Threaded Valves.

6. For tight sealing, threaded pipe joints depend on a good intimate fit between the male and female pipe threads and usually, the presence of a special soft or viscous material between the assembled threads. Check the threads on both the valve and mating pipe for form, cleanliness and length.
7. Use care to align threads at point of assembly. Tapered pipe threads are inherently loose fit at entry; substantial wrenching force should not be applied until it is apparent that threads are properly engaged.
8. Assemble joint wrench-tight. Wrench on the valve should be on the valve end into which the pipe is being threaded.
9. Caution: because there is no clear limit on the torque that may be developed in a tapered thread joint, it is possible to damage valves by applying excessive twisting forces through the body.
10. Repeat the process at second valve end. Against apply the wrench at the end of the valve to which pipe is being assembled.

For Flanged Valves.

11. Ensure that the flange seating surfaces and gaskets are free from debris before bolting the valve into line. Do not over tighten the flange bolts.

For Diaphragm Valves.

12. For on/off valves connect an air supply to the pressure connector on the actuator cover. For modulating valves connect a main air supply and the control air signal to the valve positioner (See page 7 for further details).
13. **The maximum main air supply pressure is 4.0 BarG to the actuator or 2.5 BarG to the valve positioner. For specific application pressures refer to Northvale Korting's sales department.**

For Electrically Actuated Valves.

14. Connect up the main power supply and control signals according the instructions given in the electric actuator sections of this manual.
15. The valve is now ready to be operated.

Maintenance Instructions.

Diaphragm-Operated Valves.

1.0 Operation

An important factor in maintaining control valves is an understanding of their basic construction and mode of operation. With this knowledge and a sectioned drawing of the valve, see diagram 1, maintenance is simple.

The control valve plug spindle is moved to the required position by means of an applied pneumatic pressure to the actuator. For ON/OFF valve applications, the fully-open and fully-closed positions are used. For successful performance the valve plug must move freely in response to loading pressure changes. If it does not, check for:

1. Leaking pressure tubing and connections.
2. Ruptured diaphragm.
3. Leaking diaphragm housing.
4. Binding between valve spindle and guide.

If the valve leaks, check for excessive wear or damage between seat and valve plug. Renew if necessary.

Damaged or worn packings cause leakage from the valve gland, renew if necessary.

2.0 Procedures.

2.1 Diaphragm Renewal:

- a) Isolate the control valve and relieve the actuator spring compression by exhausting the air from the actuator.
- b) Remove the actuator cover (12) from the actuator body (11) by removing the eight or twelve nuts and bolts (17 and 15). Remove the diaphragm (14).
- c) Insert the new diaphragm and reassemble in the reverse order.

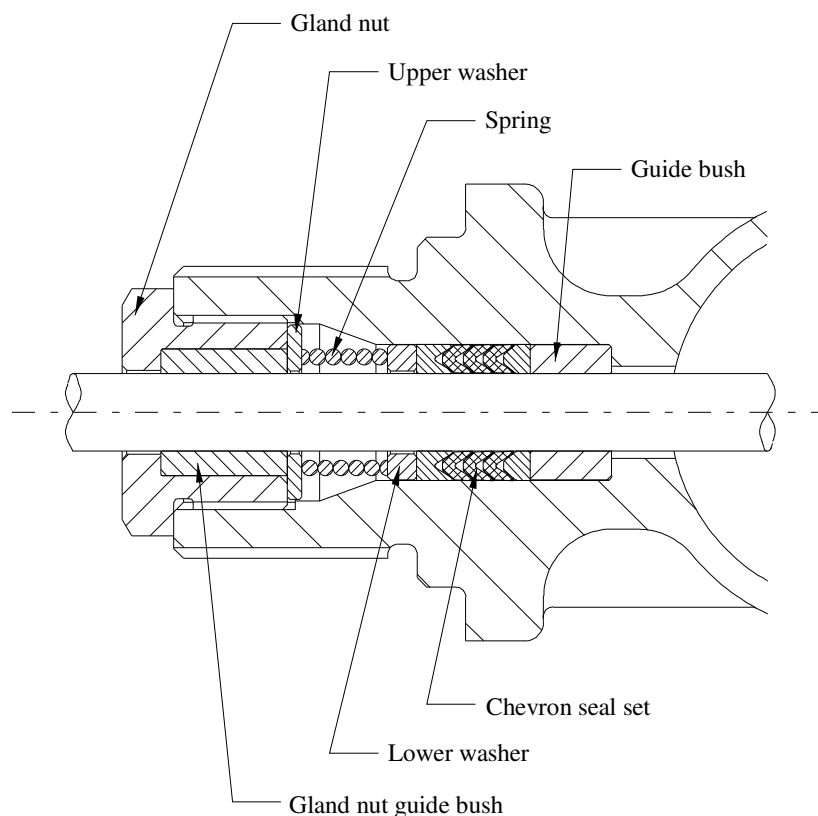
2.2. Actuator Spring Renewal:

- a) Isolate the control valve and relieve any pressure from the valve body. Relieve the actuator spring compression by exhausting the air from the actuator.
- b) Remove the diaphragm as instructed in Section 2.1 'Diaphragm Renewal'.
- c) Heat the joint between the valve body (1) and bottom cover (2 or 21). Unscrew the bottom cover.
- d) Locate the plug tool into the plug-spindle assembly (4) and remove the locknut (18) and actuator disk (13).

NOTE: Take care when removing actuator disk (13) since the actuator spring (10) is under preload compression.

- e) Remove actuator spring.
- f) Fit new actuator spring and reassemble in reverse order.
- g) When fitting bottom cover (2 or 21) apply 'Loctite 510' to the flange face.

2.3. Plug/Spindle Assembly and Gland Seal Renewal:



Note: This is the gland seal arrangement used on valves from January 1998, for valves manufactured earlier than this date please contact our Sales Office for specific advice.

- a) Isolate the control valve and relieve any pressure from the valve body. Exhaust any actuator pressure.
- b) Dismantle the actuator spring (10) as described in section 2.2 'Actuator Spring Renewal'.
- c) Remove the plug/spindle assembly (4) from the valve. Check for damage of the plug or wear of the spindle. Renew if necessary. Clean spindle with polishing paper.
- d) Unscrew the gland nut (8) and remove the old gland seal completely.
- e) Ensure that gland bore and spindle are clean and free from debris, oil and grease.
- f) Push the plug/spindle assembly (4) up through the stuffing box.

- g) Find or make a suitable tool to push the sealing set components down with; a piece of suitable bore pipe with a square, burr free end is best.
- h) Fit the lower guide bush over the spindle and using the tool push it fully down.
- i) Fit the base ring of the chevron packing set over the spindle and push down using the tool.
- j) Fill each of the three sealing rings of the chevron packing set with petroleum jelly. Fit over the spindle one-by-one and push each one down with the tool.
- k) Fill the header ring of the chevron packing set with petroleum jelly. Fit over the spindle and push down with the tool.
- l) Fit the lower washer (smaller diameter) over the spindle and push down with the tool.
- m) Fit the spring and then the upper washer (larger diameter) over the spindle and allow to drop.
- n) Fit the gland nut guide bush into the gland nut. Fit the gland nut over the spindle and engage into the stuffing box threads. Full tighten the gland nut down using a suitable spanner.
- o) Reassemble the valve components in the reverse order as described in Section 2.2 'Actuator Spring Removal'.

2.4. Seat Renewal:

a) 3-Way bottom cover seat

- i) Isolate the control valve and relieve any pressure in the valve body. Exhaust any pressure in the actuator.
- ii) Heat the joint between the valve body (item 1) and the bottom cover (item 2) and unscrew the bottom cover.
- iii) Using an expanding mandrel or similar tool, unscrew the seat (item 3) and renew.
- iv) Apply 'Loctite 648' to the thread on the new seat (item 3) and using the seat tool, screw the seat into the bottom cover (item 2).
- v) Apply 'Loctite 510' to the flange face of the bottom cover and then screw into the valve body.

b) 2-Way and 3-Way body seat

- vi) Isolate the control valve and relieve any pressure from the valve body. Exhaust any pressure in the actuator.
- vii) Remove the actuator spring (item 10) following the instructions (a) to (e) in Section 2.2 'Actuator Spring Renewal'.
- viii) Remove the plug/spindle assembly (item 4) from the valve body.
- ix) Using an expanding mandrel or similar tool, unscrew the seat (item 3) and renew.
- x) Apply 'Loctite 648' to the thread on the new seat and using the seat tool screw the seat into the valve body.
- xi) Replace the plug/spindle assembly into the valve.
- xii) Reassemble the valve components in the reverse order as described in Section 2.2 'Actuator Spring Removal'.

Valve Positioner.

The P2 positioner, previously fitted to modulating valves, became obsolete at the end of 1997 and has been superseded by the AK positioner described below. If details on installation or setting-up of the P2 positioner are required please contact our Sales Office.

AK Positioner - General Description:

A positive positioner pneumatic relay is used to accurately position the actuator stroke with respect to the signal pressure from the controller. The unit makes automatic correction for deviations from the true valve position, caused by factors such as stem friction or valve loading. The correcting action is affected by sensing the true stem position through the feed back lever.

The positioner is constructed of non-corrodible materials, with the housing being "Polysulphone" and the diaphragm "Neoprene".

Specifications:

Control Action: Proportional, direct acting.



Adjustments:

The AK performs the control functions outlined under the General Description. After the unit has been installed, carry out the following adjustments.

- With the signal pressure at the required start point, turn the start point adjusting screw until the valve just begins to move – Screw (B).
- Vary the signal pressure over the range and position the "Span adjusting slide screw" until the valve stroke gives the required span – screw (A).

Air Pressure:

Main air: Normal 2BarG (30 lbf/in²).

Instrument pressure 0.2 to 1.0 BarG (3 to 15 lbf/in²).

Field Adjustments:

Proportional band. Field-adjustable from 0.14 to 0.88 kgf/cm² (2 to 13 lbf/in²).

Start point. Field-adjustable from 0.14 to 0.88 kgf/cm² (2 to 13 lbf/in²).

Maximum Air Consumption: 0.49m³/hr (1.7 ft³/hr) free air.

Maintenance and Repair

The positioner cannot be field repaired; it should be replaced if not operating correctly.

Environment

Not suitable for external installations. Environmental range is 0 – 40°C continuously and –20 _ 60°C for unsustained periods.

Electrically Actuated Valves.

1.0 Operation

An important factor in maintaining control valves is an understanding of their basic construction and mode of operation. With this knowledge and a sectioned drawing of the valve, see diagram 2 & 3, maintenance is simple.

The control valve plug spindle is moved to the required position by means of an electric actuator. For ON/OFF valve applications, the fully-open and fully-closed positions are used. For successful performance the valve plug must move freely in response to loading pressure changes. If it does not, check for binding between the valve spindle and guide.

In the event of a loss of power the actuator typically remains at its current position (fail 'stayput') but an actuator with a spring return is available.

If the valve leaks, check for excessive wear or damage between seat and valve plug. Renew if necessary.

Damaged or worn packings cause leakage from the valve gland, renew if necessary.

2.0 Procedures.

2.1 GEA Actuator (Diagram 2).

2.1.2. Actuator Removal:

- a) Disconnect actuator power and control signal electrical lines.
- b) Unscrew coupling nut from actuator spindle and remove coupling washer, putting to one side for later re-assembly.
- c) Undo the two securing screws on the actuator yoke using a 6mm hexagonal wrench and remove the actuator from the valve.
- d) Remove the coupling nut from the valve spindle, putting to one side for later re-assembly.

2.1.3. Plug/Spindle Assembly and Gland Seal Renewal:

- a) As section 2.3 in the diaphragm operated valves section (page 6).

2.1.4. Seat Renewal:

- a) As section 2.3 in the diaphragm operated valves section (page 7).

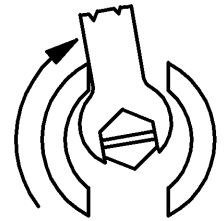
2.1.5. Actuator Assembly onto Valve:

- a) Fit coupling nut onto valve spindle.
- b) Mount GEA actuator to valve and tighten the two securing screws using a 6mm hexagonal wrench.
- c) Fit coupling washer to valve spindle.
- d) Screw coupling nut onto actuator spindle and tighten.
- e) Set actuator lever to manual override position and using the manual adjustment handle, wind the plug to the bottom seat position.
- f) Then wind to the top seat position (to set the range); wind off the top seat 1 turn, refer to Appendix 1 (actuator manufacturer's installation manual).
- g) Connect the signal and power supply lines to the actuator, check settings and adjust if necessary.
- h) Set the actuator lever to auto position.
- i) Follow the auto-setting procedure as per Appendix 1 (actuator manufacturer's installation manual).

2.2 MVL Actuator (Diagram 3).

2.2.1. Actuator Removal:

- a) Disconnect actuator power and control signal electrical lines.
- b) For the spring return versions of the actuator remove the domed cap on the back of the actuator to reveal the manual adjustment nut. Using a 10mm spanner turn this nut half-a-turn, to lift the plug from the seat, and lock the spanner in the protruding flanges (see sketch)
- c) Unscrew locknut from actuator spindle and remove spindle coupling (small valves) or unscrew spindle from actuator (large valves). Put nut and coupling to one side for later re-assembly.
- d) Undo the actuator-securing nut using a suitable tommy bar and remove from the valve, putting to one side for later re-assembly.
- e) Remove the actuator from the valve.



2.2.2. Plug/Spindle Assembly and Gland Seal Renewal:

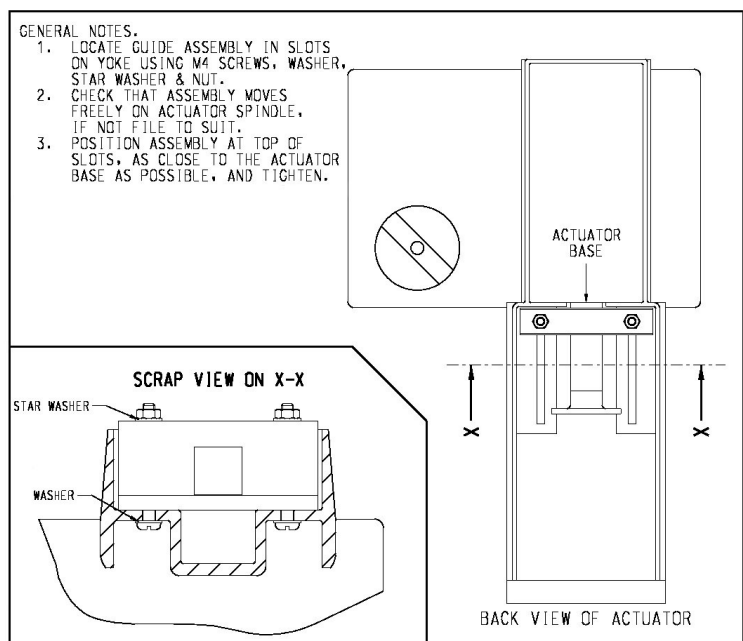
- a) As section 2.3 in the diaphragm operated valves section (page 6).

2.2.3. Seat Renewal:

- a) As section 2.3 in the diaphragm operated valves section (page 7).

2.2.4. Actuator Assembly onto Valve:

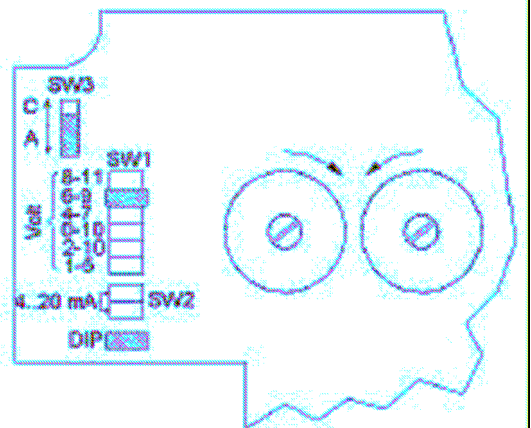
- a) For small valves fit the M6 locknut onto the valve spindle and screw right down. Fit the spindle coupling onto the valve spindle and, ensuring a minimum thread engagement of 6mm on the valve spindle, lock in position with the lock nut.
- b) Fit the M8 locknut onto the valve spindle coupling (small valves) or the valve spindle (large valves) and screw all the way down.
- c) Push plug and spindle fully down onto the bottom seat.
- d) For the on/off version of the actuator use the manual adjustment knob to wind the actuator spindle down fully and then ease back by one turn.
- f) For the spring return versions of the actuator remove the domed cap on the back of the actuator to reveal the manual adjustment nut. Using a 10mm spanner turn this nut back a half-a-turn for the fail-down (open) version or wind fully down and ease back half-a-turn for the fail-up (closed) version. Then lock the spanner in the protruding flanges (see sketch above).
- e) For a new actuator fit the actuator spindle guiding as per the instructions in the drawing alongside.
- f) Position the actuator and actuator-securing nut over the valve spindle/spindle coupling. Then, by rotating the actuator, screw the actuator onto the valve spindle/spindle coupling until the actuator yoke bottoms on the valve body. It may be necessary to prevent the valve spindle/spindle coupling from rotating during this operation using a suitable spanner or soft-jawed pliers.



- g) Orientate the actuator correctly on the valve and tighten down the actuator-securing nut using a suitable tommy bar (it must be a good fit in the holes on the actuator-securing nut). Then tighten the M8 lock nut to the actuator spindle.
- h) For the spring return versions of the actuator remove the spanner from the manual adjustment nut and refit the domed cap.
- i) Remove the actuator top cover and connect the power supply and signal source (if appropriate) according to the table below; **do not power up unit yet**.

Actuator Type	Connection	Action	Notes
On/Off (No spring return)	Y1 – Power supply line	Raise spindle (valve closes)	Power supply line is externally switched between Y1 and Y2 to move the valve.
	N – Power supply neutral		
	Y2 – Power supply line	Lower spindle (valve opens)	
On/Off (With spring return)	L1 – Power supply line		Linking is done by volt free contacts externally to move the valve (only one link at once). 'Raise' and 'lower' action is from failure position.
	L2– Power supply neutral		
	Y1 – Raise spindle	Link to N to raise spindle	
	N - Neutral		
	Y2 – Lower spindle	Link to N to lower spindle	
Modulating	L1 – Power supply line		
	L2– Power supply neutral		
	M – Control signal neutral		
	Y – Control signal positive		

- j) For modulating actuators, using a screwdriver, the right-hand potentiometer must be turned fully anti-clockwise and the left-hand potentiometer turned fully clockwise. Then the actuator must be moved through its full stroke using the manual adjustment knob or a 10mm spanner on the spring return versions (see sketch). Also the links on SW1 and SW2 have to be set for the appropriate control signal; for voltage control SW1 link should be set for the appropriate range (typically 0-10 VDC) and SW2 link is set on DIP (bottom position); for 4-20 mA control both links should be on the 4-20 mA positions on SW2 (top two positions).



- k) The power supply can now be connected and the unit should be checked for correct operation.

Appendix 1.

**Manufacturer's Installation & Operating
Manuals for GEA Electric Actuators.**

ON-OFF VALVE ACTUATOR INSTRUCTION MANUAL

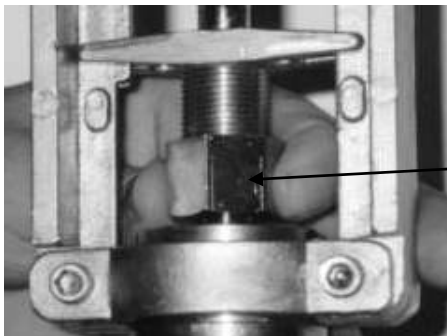
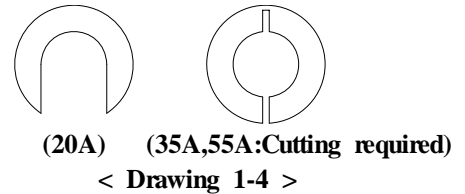
MODEL : GEA-20A, 35A, 55A

■ MOUNTING NOTES :

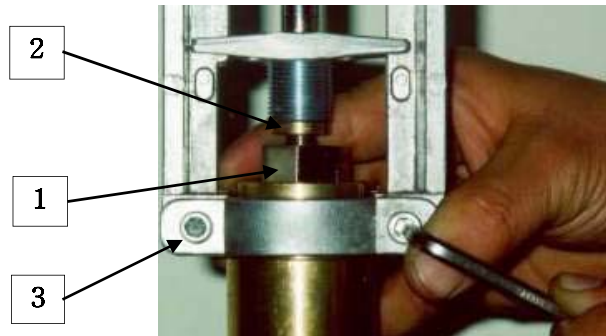
1. Please make sure to select correct model.
2. To prevent from water soak into Actuator, mount Actuator upright position of valve body.
3. To protect Actuator, it was adjusted at 50% position on delivery, it should be operated with signal input after assembling with valve.

■ VALVE AND ACTUATOR ASSEMBLY :

1. Fit Hexagonal coupling nut into valve shaft < Drawing 2-1 >
2. Fit coupling washer into the hole of valve shaft < Drawing 2-2 >
3. Fix Actuator on the hole of valve body and fix tightly with hexagonal wrench (6mm). < Drawing 2-3 >
4. Connect coupling nut into Actuator's coupling and joint tightly



< Drawing 1 >



< Drawing 2 >

■ MANUAL OPERATION < Drawing 3 >

As automatic operation is set on delivery. use only manual operation on power off condition

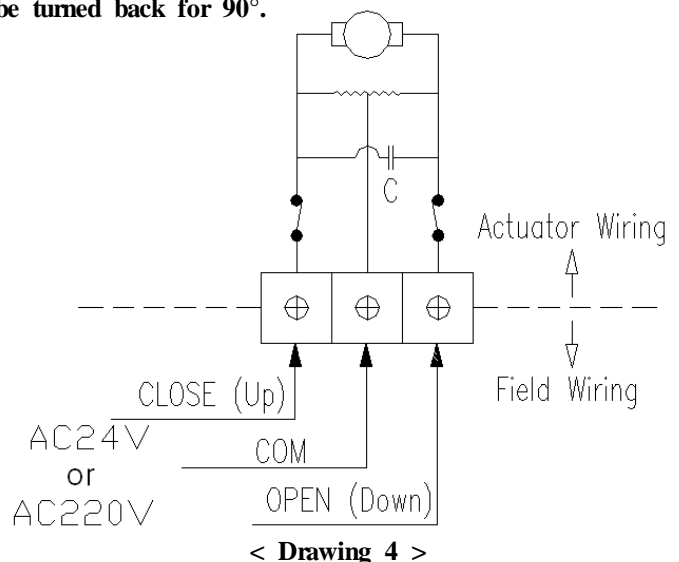
1. In the position of pushing down the Manual lever
2. Turn the manual lever(1) clockwise (CW) for 90°. (Turn round manual lever slightly)
3. When turn the manual lever clockwise(CW), actuator's shaft moves down, and turn counter clockwise (CCW) to move upward. (Drawing 3-2)
4. For automatic conversion, Manual lever should be turned back for 90°.



< Drawing 3 >

■ WIRING :

UP	COM	DOWN
AC220V AC24V	0V	AC220V AC24V



< Drawing 4 >

PROPORTIONAL ACTUATORS INSTALLATION MANUAL

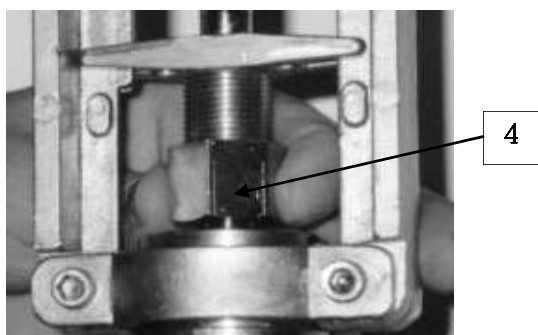
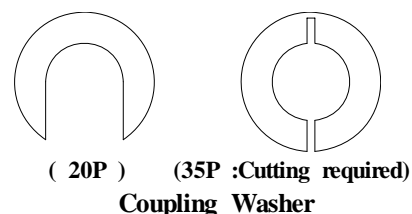
MODEL : GEA - 20P, 35P / GEA - 20PD, 35PD (AC24V)

■ MOUNTING NOTES :

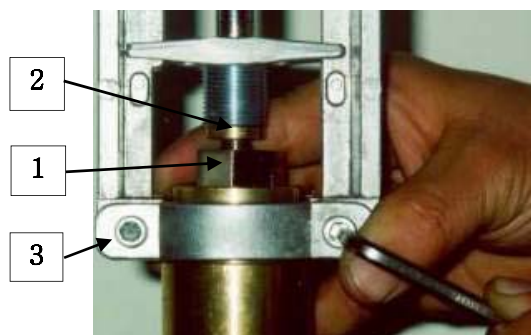
1. To prevent water soak into Actuator, mount actuator upright position of valve body
2. To protect Actuator, it was adjusted at 50% position on delivery, it should be operated after assembling with valve.

■ VALVE AND ACTUATOR ASSEMBLY :

- ① Unfasten the coupling nut from actuator and fix actuator upright position to the valve shaft. <Figure 2-① >
- ② Fit the coupling washer into the hole of the shaft. <Figure 2-② >
- ③ Fit the actuator to the groove of valve body and fix tightly with hexagonal wrench (6mm) <Figure 2 - ③ >
- ④ Connect coupling nut with actuator's coupling and fix high enough and tighten. < Drawing 1-4 >



<Figure 1>

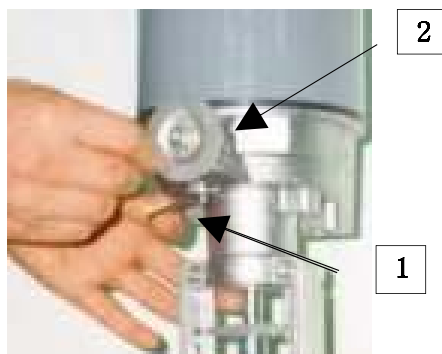


<Figure 2>

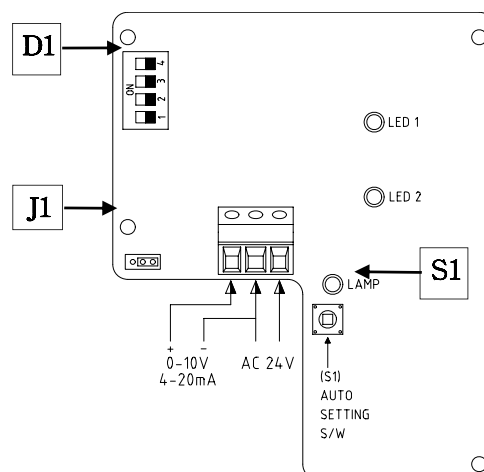
■ MANUAL OPERATION

- ① As automatic operation is set on delivery, use only manual operation on power off condition<Drawing 3 >
- ② Turn the manual lever① counter clockwise(CCW) for 90°. (turn round manual lever slightly)
- ③ When turn the manual lever clockwise(CW), actuator's shaft moves down and turn counter clockwise (CCW) to move upward. <Figure 3-② >

* For automatic conversion after manual operation, manual lever should be turned back for 90° and round manual lever should be also turned back slightly.



<Figure 3>

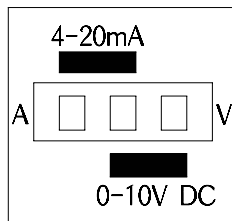


<Figure 4>

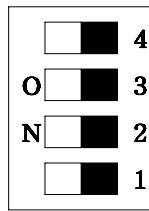
* Manual Operation : Do not use when power on.

■ SELECTION MODE <Figure 4>

- Use Jumper(J1) on the lower side and Dip Switch(D1) on the upper side.



Jumper (J1)



Dip Switch (D1)

D1	ON	OFF
4	MAIN POWER ON:Auto/Setting	MANUAL PUSH Auto/Setting
3	200 Step	100 Step
2	N.O Mode (Left moves)	N.C Mode (Right moves)
1	4~20mA (2~10V DC)	0~10V DC (Right moves)

How to change Selection Mode(D1)

- Jumper(J1) : When signal is Volt(DC), switch Jumper PIN to V(Volt) direction to use 0 ~ 10V DC and 2 ~ 10V DC, and for mA signal, move Jumper PIN to A(Amp) direction
- DIP Switch (D1)
 1. Signal Selection
 - : To convert to 0~10V DC, move right (OFF) only DIP Switch (D1) No.1
 - : To convert to 2~10V DC, move left (ON) only DIP Switch (D1) No.1
 - : To convert to 4~20mA, operate Jumper (J1) and DIP Switch (D1) together that Jumper (J1) should be put from V(Volt) to A(Amp) and No.1 of DIP Switch (D1) should be move to left position (ON)
 2. N.C & N.O Change Mode : At N.C Mode, The shaft of actuator moves upward at 0V and No.2 of Dip Switch(D1) is OFF position. (standard)
 - : At N.O Mode, The shaft of actuator moves downward at 0V and No.2 of Dip Switch(D1) is ON position.
 3. Step Operation Conversion : 200Steps of Stroke accuracy at ON position, 100Steps at OFF position.
 4. Auto Setting Mode : Auto Setting will be operated when power is ON at Dip Switch ON position, and at OFF position, press Switch button (S1) by manual. (Drawing D1)

■ AUTO SETTING <Figure 4>

AC24V GK PCB for Proportional control

1. Connect the power line to the terminal box.
The lamp on the lower side of Terminal will blink about 1 second interval when power is on.
3. Press the Auto Setting Switch(S1) for 3 - 5 seconds to start auto setting and the lamp on the right side will blink about 0.5 second interval.
4. The shaft of actuator moves down first to cognize 100% and moment later it moves up to cognize 0% and it stops for Auto setting completion.
5. Connect the Input Signal to the terminal box to use.

GINICE KOREA

PROPORTIONAL ACTUATORS INSTALLATION MANUAL

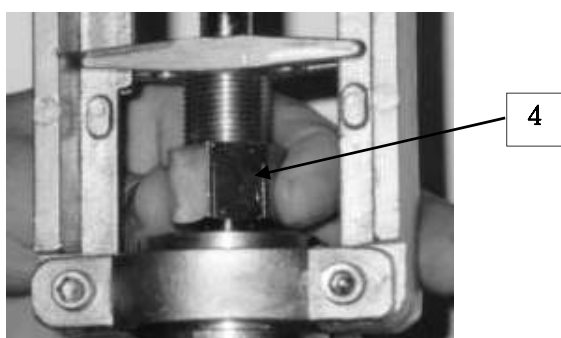
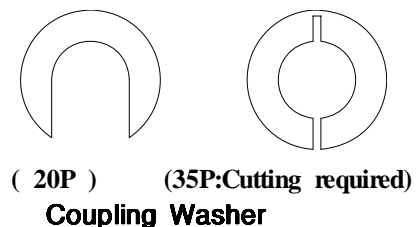
MODEL: GEA - 20P,35P / GEA - 20P,35P (AC220V)

■ MOUNTING NOTES :

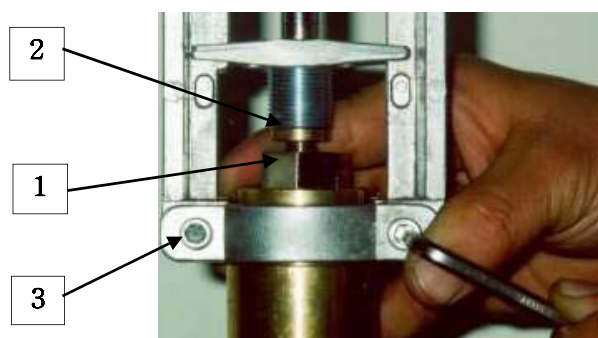
1. To prevent water soak into Actuator, mount actuator upright position of valve body
2. To protect Actuator, it was adjusted at 50% position on delivery, it should be operated after assembling with valve

■ VALVE AND ACTUATOR ASSEMBLY

1. Unfasten the coupling nut from actuator and fix actuator upright position to the valve shaft. <Figure 2-1>
2. Fit the coupling washer into the hole of the shaft. <Figure 2-2>
3. Fit the actuator to the groove on the valve body and fix tightly with hexagonal wrench (6mm) < Figure 2-3>
4. Connect coupling nut with actuator's coupling and fix high enough and tighten. <Figure 1 4>



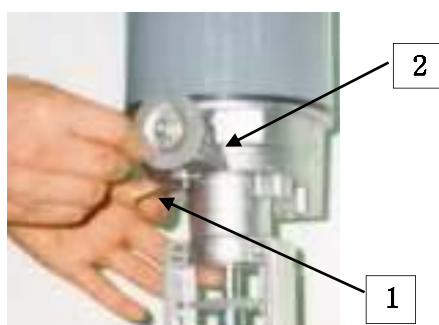
<Figure 1>



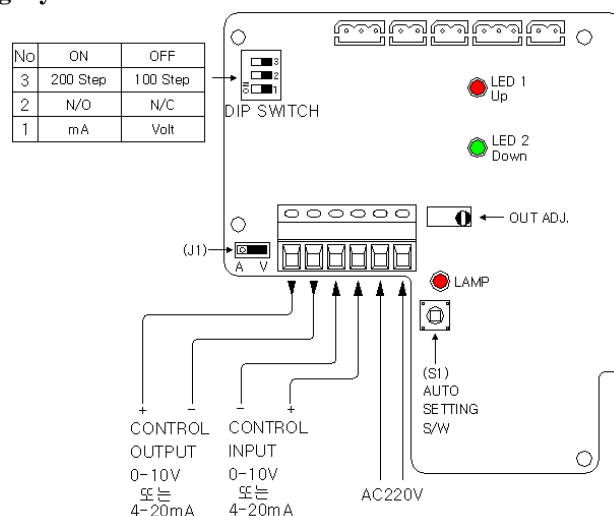
<Figure 2>

■ MANUAL OPERATION

1. As automatic operation is set on delivery, use only manual operation on power off condition <Figure 3>
 2. Turn the manual lever1 to counter clockwise(CCW) for 90°. (turn round manual lever slightly)
 3. When turning the manual lever clockwise(CW), the actuator's shaft moves down and turn counter clockwise(CCW) to move upward. <Figure 3-2>
- * For automatic conversion after manual operation, manual lever should be turned back for 90° and round manual lever should be also turned back slightly.



<Figure 3>



<Figure 4>

* Manual Operation : Do not use when power on.

■ SELECTION MODE <Figure 4>

1. Input Selection: The Actuator is set on 0 ~ 10V DC or 4 ~ 20mA upon customer's request and can not be changed at user's disposal. (Standard 0 ~ 10VDC setting on delivery)
 - : In case of 0 ~ 10V DC, No. 1 of Dip Switch is OFF condition (right position).
 - : In case of 4 ~ 20mA, No. 1 of Dip Switch is ON condition (left position).
2. N.C & N.O Change Mode:
 - : At N.C Mode, The shaft of actuator moves upward at 0V and No. 2 of Dip Switch(D1) is OFF position.
 - : At N.O. Mode, the shaft of actuator moves downward at 0V and No. 2 of Dip Switch(D1) is ON position.
3. Step Operation Conversion:
 - : At 100 Steps operation, No. 3 of Dip Switch is OFF position.
(Standard 100 Steps setting.)

■ PIN (J1) for JUMPER :

- : For 0 ~ 10V DC, the PIN is put on V(Volt) direction, and for 4 - 20mA, the PIN is put on A(Amp) direction.

■ OUTPUT ADJUSTMENT :

- : To match Input Signal and Output Signal (0 ~ 10V or 4 ~ 20mA), use the Output Adjustment volume control.

■ AUTO SETTING <Figure 4>

AC220V GK-200A PCB FOR PROPORTIONAL CONTROL

1. Connect the power line to the terminal box.
The lamp No.3 on the lower side of terminal will blink about 1 second interval when power is ON.
2. Press the Auto Setting Switch(S1) for 3 - 5 seconds to start auto setting and the lamp No.3 on the right side of terminal will blink about 5 seconds interval.
3. The shaft of actuator moves down first to cognize 100% and moment later it moves up to cognize 0% and it stops for Auto setting completion.
4. Connect the Input Signal to the terminal box to use. (0 ~ 10VDC, 4 ~ 20mA etc.)