



Application

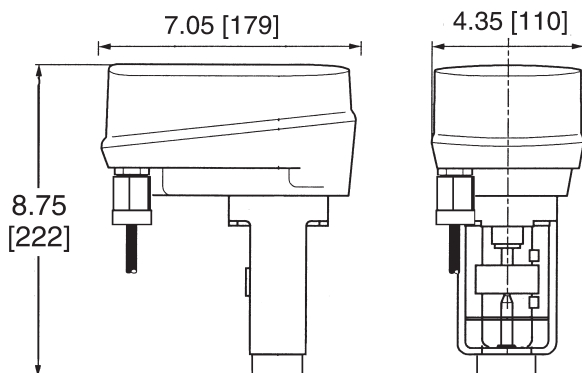
UNV-... Series Retrofit Kits are designed for use with NV Series actuators.

These kits include all parts needed to mount to any of the below valves (see chart).

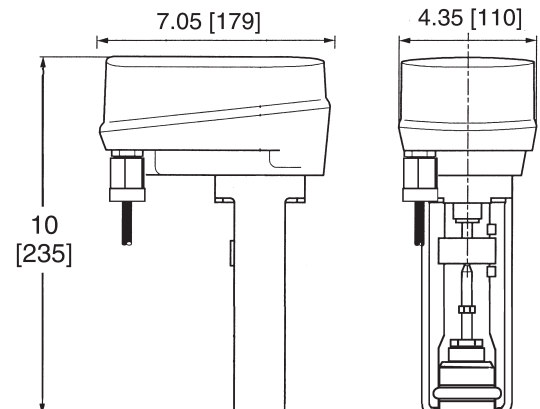
NV actuators are purchased separately.

Valve Manufacturer	Valve Body	Size	Kit	Stem Adjustment
Siebe / Invensys	VB7000 – 2-way and 3-way	½" to 2"	UNV-001	45 mm
	VB9000 – 2-way and 3-way	½" to 1¼"	UNV-001	44 mm
	Belimo USA G2 Series – 2-way	½" to 2"	UNV-001	45 mm
	Belimo USA G3 Series – 3-way	½" to 2"	UNV-001	45 mm
Siemens	VF 599 Series – 2-way	½" to 2"	UNV-003	No adjustment needed
	VF 599 Series – 3-way	½" to 2"	UNV-003	No adjustment needed
Landis	Powertop/Series VP 658 – 2-way and 3-way	½" to 1¼"	UNV-004	60 mm
	Flowrite/Series VP591 – 2-way	½" to 1"	UNV-005	65 mm
	Flowrite/Series VP591 – 3-way	½" to 2"	UNV-005	65 mm
Honeywell	V5011 Series – 2-way – screwed	½" to 3"	UNV-006	65 mm
	V5013 Series – 3-way – screwed	½" to 3"	UNV-006	65 mm
	V5011N Series – 2-way	½" to 3"	UNV-006	65 mm
	V5013N Series – 3-way	½" to 3"	UNV-006	65 mm
Robertshaw	V6600 – 3-way	½" to 2"	UNV-007	60 mm
	V6700 – 2-way	½" to 2"	UNV-007	60 mm
	V6800 – 2-way	¾"	UNV-007	64 mm
Johnson	V-3754 Series Bronze Cage Trim – 2-way	¾" to 2"	UNV-008	60 mm
	V-3974 Series Bronze Cage Trim – 2-way	¾" to 2"	UNV-008	60 mm
	V-4324 Series Bronze Cage Trim – 3-way	¾" to 2"	UNV-008	60 mm
	V-5844 Series – 2 and 3-way	¾" to 2"	UNV-008	60 mm
	VG7000 Series – 2 and 3-way	½" to ¾"	UNV-009	65 mm
	VG7000 Series – 2 and 3-way	1" to 2"	UNV-040	73 mm
Siebe / Invensys	VB7000 – 2-way	½" to 2"	UNV-035	67 mm
	VB9000 – 2-way	½" to 1¼"	UNV-035	66 mm
	Belimo USA G2...S Series – 2-way	½" to 2"	UNV-035	67 mm
Belimo USA	G6, G7...(S) (S-250) Series 2-way, 3-way	2½" to 3"	UNV-051	65 mm
Flanged Globe Valve Series	G6C...(S) Series 2-way	2½" to 3"	UNV-051	65 mm
	G7D...(S) (S-250) Series 3-way diverting	2½" to 4"	UNV-051	65 mm

UNV-001 Dimensions in inches (mm)



UNV-003-UNV-051 Dimensions in inches (mm)



Set-Up of NV24-3 US Actuators during Installation

General

Beneath the cover of the actuator are the terminals for the cable connection and the S1 switch. The floating point signal is processed in the microprocessor and conveyed to the motor. Supply voltage is created by the rectifier. The stroke direction can be reversed with the switch S1.2 (On/Off is indicated on switch). This defines if the valve closes with the plunger up or down. The direction of the plunger can also be inverted by exchanging the wires Y1 and Y2.

Note: Switch S1.2 must be set based on the valve closing point.

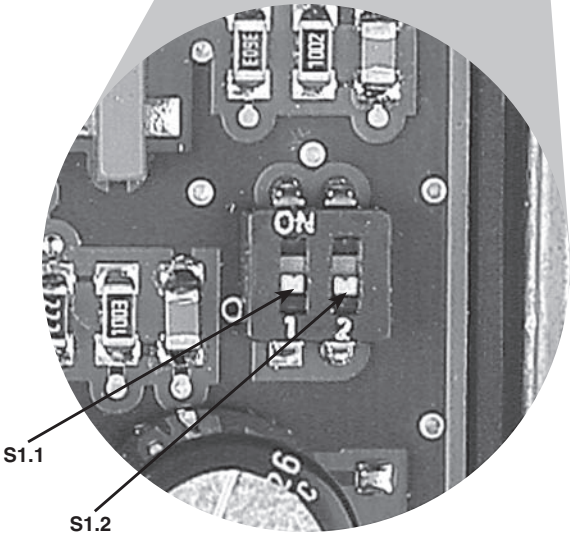
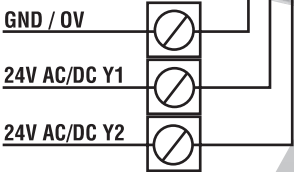
Functional description

Use Switches S1.1 and S1.2 to set the run time and select the valve closing point.

S1.1 Actuating time	
Off position	50s/.25" [7.5s/mm] (Default)
On position	Deactivated not used
S1.2 Selecting the closing point	
	Valve closing point is with the closing point actuator plunger extended or retracted
Off position	Valve closing point is with the actuator plunger retracted
On position	Valve closing point is with the actuator plunger extended

Note: NV24-3 US and NVD24-3 US do not contain test or adaptation functional switches. Adaptation is not necessary for the NV24-3 US and NVD24-3 US actuators.

NV(D)24-3 US



Set-Up of NV Series MFT Actuators during Installation

General

Beneath the cover of the actuator are the terminals for the cable connection, the S1 and S2 buttons, S3 switch, and the LED status display H1. The setting signal is processed in the microprocessor, and conveyed to the motor via drivers. By setting the slide switch S3 or pressing the buttons S1 and S2, the actuator can easily be configured on site to the requirements, if there are changes from the factory settings.

The NV(G) and NVF actuators are maintenance-free. The two-color LED display is located beneath the cover of the actuator. This display allows immediate recognition of the functional state of the actuator. In addition, it permits simple set-up if the factory settings need to be changed.

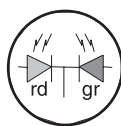
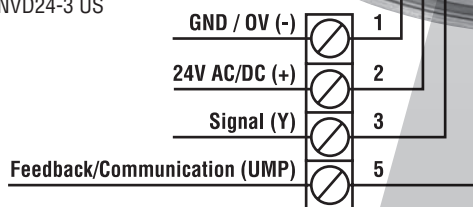
MFT and Spring Return Actuators Operation of Switches/LED

LED operating display H1

Green steady light	Actuator working properly
Green flashing light	Test run or adaptation with synchronization in progress
Red steady light	Fault; repeat adaptation
Red flashing light	After power interruption (>2 sec.). By the next closing movement the valve will be automatically synchronized in the chosen closing point. The LED indicator will change from a red flashing into green steady light.
Alternating red/green light	Master control system being addressed and operation of the adaptation button S2 in progress

Note: NV24-3 US and NVD24-3 US do not contain test or adaptation functional switches. Adaptation is not necessary for the NV24-3 US and NVD24-3 US actuators.

NV(G)...MFT US
NVF...MFT US
NVF...US



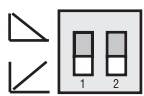
H1
Status



S1
Test



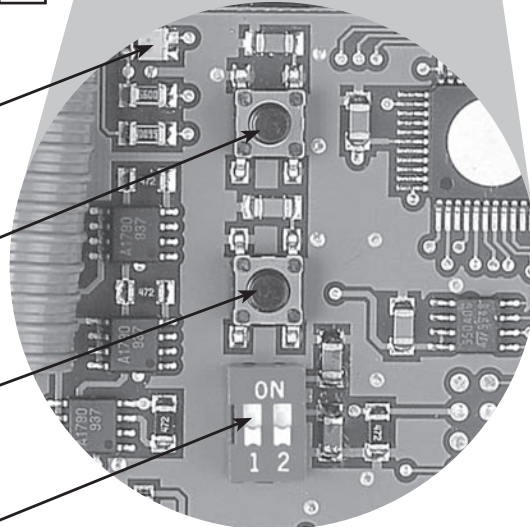
S2
Adaptation



S3.1 S3.2

On
Off

S3
Value



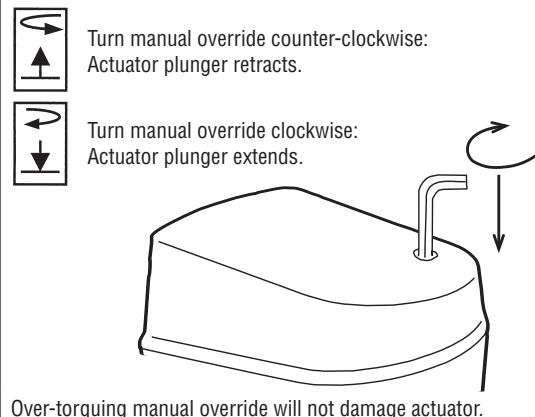
Manual Override

NV(G)...US Non-Spring Return

The valve coupling can be adjusted by inserting a 3/16" or 5 mm hex in the housing cover (Figure 3).

If the hex is turned clockwise, the coupling moves down; counterclockwise turning moves it up. The manual override is protected against overload. The coupling remains in the manual position as long as the actuator is not connected to the nominal voltage. With the nominal voltage applied to the actuator, the coupling follows the positioning signal.

Figure 3



NVF...US Spring Return

The valve coupling can be adjusted by inserting a 3/16" or 5 mm hex in the housing cover (Figure 3).

The spring return function in the actuator is pre-tensioned when delivered. The manual operating mechanism is overload-proof. The plunger will remain at the manual setting until the power supply to the actuator is turned on or, the next time the power supply is interrupted, it moves to whichever end position has been selected.

NOTE:

1. Do not override the NVF while power is applied to the actuator.
2. If the actuator is overridden while power is applied, remove cover and perform manual adaptation function by pressing S2 button.
3. When overriding the actuator turn the hex 3/4 turn and then press down to lock after the desired position is found. This prevents the gear from over-tightening into an end-position which would prevent the override mechanism from unlocking automatically during power up. If the manual override does not unlock automatically during power-up you must unlock the actuator manually with the hex.
4. Use the NV... MFT US in only closed control loops.

NVF...US Retracting, Spring Up

1 Disengaging manual operation

Turn the hex clockwise 45° until resistance is encountered. Then lift the key approx. 1/4" [7 mm] until the black socket for the key is level with the top of the housing cover. The spring mechanism will now rotate the key counter-clockwise and the plunger will retract.

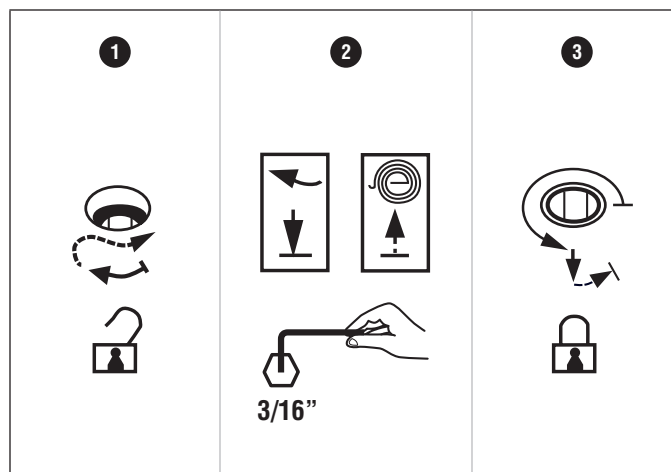
2 Manual operation

Turning the hex clockwise causes the plunger to extend to the required position.

3 Locking manual operation

Turn the hex 3/4 turn counter-clockwise and then press it down into the cover of the housing (the black socket will move inwards approx. 1/4" [7 mm]). Slight counter-clockwise rotation of the key will then lock the manual operating mechanism in position.

Note: Do not trigger the spring mechanism and turn the manual operating mechanism clockwise to the "spring-up" end position at the same time.



NVF...-E US Extending, Spring Down

1 Disengaging manual operation

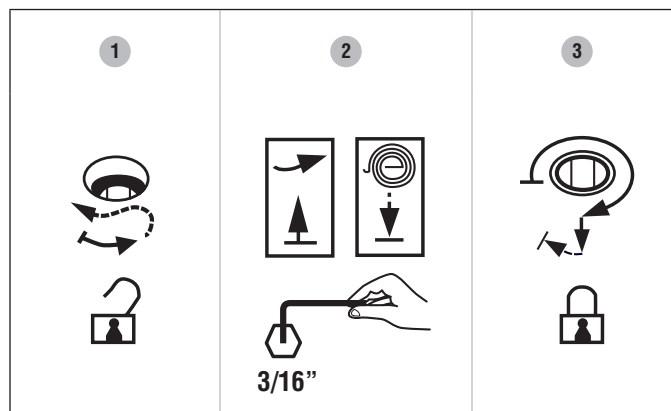
Turn the hex counter-clockwise 45° until resistance is encountered. Then lift the key approx. 1/4" [7 mm] until the black socket for the key is level with the top of the housing cover. The spring mechanism will now rotate the key clockwise, the plunger will extend.

2 Manual operation

Turning the hex counter-clockwise causes the plunger to retract to the required position.

3 Locking manual operation

Turn the hex back clockwise 3/4 turn and then press it down into the cover of the housing (the black socket will move inwards approx. 1/4" [7 mm]). Slight clockwise rotation of the key will then lock the manual operating mechanism in position.



Functional description NV(G)24-MFT US, NVF... US

The S1 button makes it simple to check the wiring and overall functioning of the actuator. The first time voltage is applied, the stroke is adapted automatically. Independently of this, an adaptation can be repeated as necessary by pressing button S2. Actuator will not do an adaptation after each power loss.

S1	Test	The valve performs full stroke at minimum running time and checks the adapted stroke.
S2	Adaptation	The stroke effected (between the two mechanical end-stops of the valve) is acquired as 100% stroke and stored in the microprocessor. The control signal and running time are then matched to this 100% stroke.

EXAMPLES

S3.1	OFF	At 2 Volts, the valve is closed.
S3.2	OFF	The valve closing point is STEM UP CLOSED.

Result of Input Signal and Feedback Signal: The valve will be closed at 2 Volts and will open as the actuator drives down. The control signal will read 2 Volts at the closed point and 10 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

S3.1	ON	At 2 Volts, the valve is open.
S3.2	OFF	The valve closing point is STEM UP CLOSED.

Result of Input Signal and Feedback Signal: The valve will be fully open at 2 Volts and will close as the actuator retracts. The control signal will read 10 Volts at the closed point and 2 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

S3.1	OFF	At 2 Volts, the valve is closed.
S3.2	ON	The valve closing point is STEM DOWN CLOSED.

Result of Input Signal and Feedback Signal: The valve will be closed at 2 Volts and will open as the actuator retracts. The control signal will read 2 Volts at the closed point and 10 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

S3.1	ON	At 2 Volts, the valve is open.
S3.2	ON	The valve closing point is STEM DOWN CLOSED.

Result of Input Signal and Feedback Signal: The valve will be open at 2 Volts and will close as the actuator drives down. The control signal will read 10 Volts at the closed point and 2 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

Set-Up of S3 switches

Note: It is very important to set Switches S3.1 and S3.2 to ensure proper valve operation.

1. Determine if the valve body is STEM UP CLOSED or STEM UP OPEN. In other words, when is the valve closed from Ports A to AB – when the stem is up or down?

If the valve is STEM UP OPEN – set Switch S3.2 to the ON position

If the valve is STEM UP CLOSED – set Switch S3.2 to the OFF position

By setting this switch, the actuator will be able to recognize its closing point during the ADAPTATION process.

2. Determine if you would like the valve to be Reverse or Direct Acting.

Direct Acting: if the valve should be CLOSED at minimum control signal – set Switch 3.1 to the OFF position.

Using this setting, the valve will be CLOSED at minimum control signal and will OPEN as the control signal increases. EX: Closed at 0 Volt signal and Open at 10 Volt signal.

Reverse Acting: if the valve should be OPEN at 2 Volts (or minimum control signal) – set Switch 3.1 to the ON position.

Using this setting, the valve will be OPEN at minimum control signal and will CLOSE as the control signal increases. EX: Closed at 10 Volt signal and Open at 2 Volt signal.

NOTE: The Feedback signal (Wire 5) of the NV Series actuator will follow the closing point of the valve- not the input control signal. In other words, the feedback will always read 2 Volts when the valve is closed regardless if the input control signal is set for Reverse or Direct Acting.

S3 Setting the direction of stroke and selecting the closing point.

	The stroke direction can be adjusted to be reverse or direct acting. Under the factory setting, the stroke increases as the setting signal increases. Depending upon the type of valve (NO/NC), the closing point (stroke = 0%) can be chosen with the valve stem retracted or extended.	
S3.1	Direction of stroke	The direction of stroke is inverted in relation to the control signal.
	Off position	Control signal = 0% corresponding to 0% stroke
	On position	Control signal = 100% corresponding to 0% stroke
S3.2	Selecting the closing point	This is the closing point of the valve. This closing point is dependent on the valve body- not the actuator. This setting must be correct for proper operation of the actuator.
	Off position	Valve is stem up closed (Flow from A to AB).
	On position	Valve is stem down closed (Flow from A to AB).

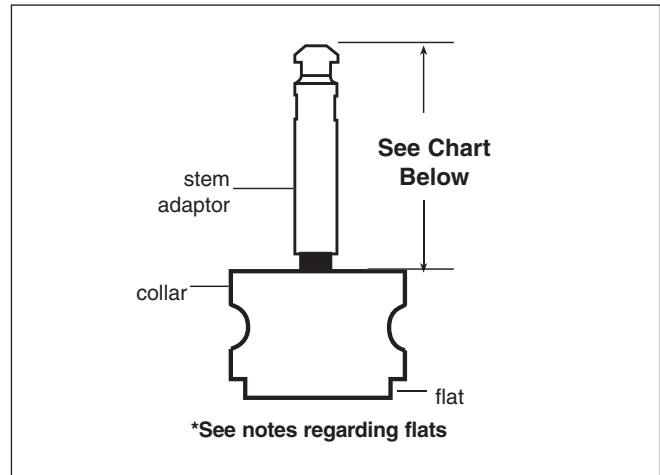
Operation/Installation UNV-003 to UNV-051 Series

Preparing The Valve

Kits with Threaded Collars

UNV-005, UNV-007, UNV-008 UNV-009, UNV-035, UNV-040, UNV-051

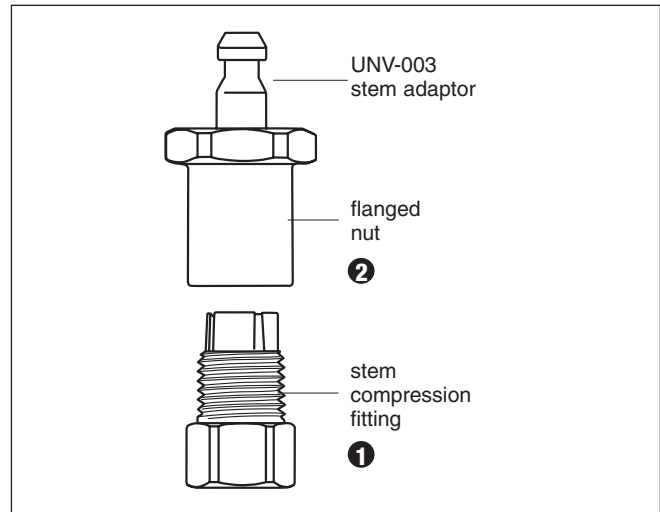
1. Remove all existing linkage from the valve.
2. Push stem into the fully down position.
3. Screw the Collar onto the valve neck and tighten. *Flats should be on the top for UNV-008 UNV-009, UNV-035, UNV-040 and UNV-051. Flats should be on the bottom for UNV-005 and UNV-007.
4. Screw the Lock Nut and the Stem Adapter onto the valve stem. Use chart to determine the correct height of the stem adapter. (Height is measure from the top of the valve collar to the top of the stem adapter, when the stem is in the fully down position.)
5. Tighten the Lock Nut against the Stem Adapter.



Kits with Set Screw Collars

UNV-004 and UNV-006

1. Remove all existing linkage from the valve.
2. Push stem into the fully down position.
3. Slide the Collar down over the valve neck and secure in place by installing and tightening the Setscrews. (The threaded Setscrew holes in the collar should be towards the bottom.)
4. Screw the Lock Nut and the Stem Adapter onto the valve stem. Use chart to determine the correct height of the stem adapter. (Height is measure from the top of the valve collar to the top of the stem adapter, when the stem is in the fully down position.)
5. Tighten the Lock Nut against the Stem Adapter.



Kit UNV-003

1. Remove all existing linkage from the valve.
2. Pull the stem into the fully up position.
3. Place Stem Compression Fitting (1) over valve stem.
4. Insert the UNV-003 Stem Adapter into the Flanged Nut so that the top of the Stem Adapter comes out the top of the Flanged Nut.
5. Screw the Flanged Nut down on to the Compression Fitting and tighten. Be sure that the stem adapter remains vertical as the pieces are tightened.

Stem Adjustment

UNV Number	Height	
	Inches	mm
UNV-001	1.77	45
UNV-003	na	na
UNV-004	2.36	60
UNV-005	2.56	65
UNV-006	2.56	65
UNV-007**	2.36	60
UNV-008	2.36	60
UNV-009	2.56	65
UNV-035	2.64	67
UNV-040	2.87	73
UNV-051	2.56	65

** When retrofitting a V6800 series valve the stem adjustment is 64 mm.

Operation/Installation UNV-003 to UNV-051 Series

Preparing the Actuator and Mounting the Valve All UNV Kits excluding UNV-001

1. Slide the black coupling lock (C) up into the unlocked position. (See Figure 3).
2. Attach Valve Coupling (D) to Actuator Plunger (H). This is done by pushing the bottom of the coupling apart with your thumbs while pressing it on to the actuator plunger. (See Figure 1).
3. Slide the Bracket (E) over the Valve Coupling and the 4 standoffs on the actuator base.
4. Attach the Bracket to the Actuator (A) using 4 Screws (B).
5. Attach Stroke Indicators (G) above and below the valve coupling.
6. Push the valve stem in to the fully down position
7. Use the U-bolt (F) and secure the valve into the bracket, tighten using a 10mm wrench. (U-bolt will fit into the groove in the collar, or the valve neck in the case of UNV-003).
8. Lower plunger (H) using manual override until stem adaptor (I) meets valve coupling. When connected, the valve stem adaptor will be captured by the valve coupling.
9. Slide the coupling lock (C) down in to its locked position.
10. Move Stroke Indicators (G) so that they are directly above and below the valve coupling. They will be automatically repositioned to the maximum stroke when power is applied to the actuator.
11. Set Actuator switches S3.1 and S3.2 to desired setting.

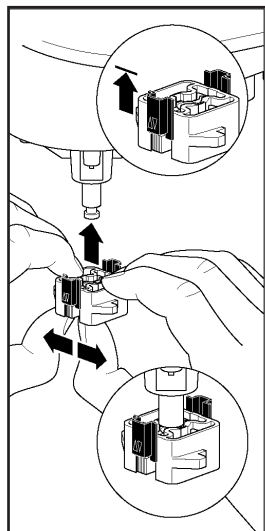


Fig. 1

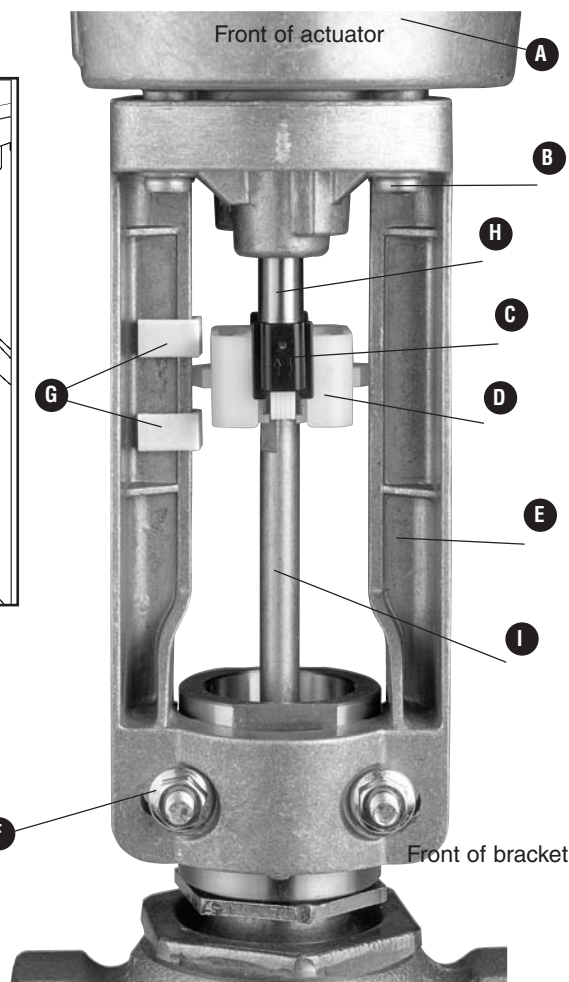


Fig. 2

When disassembling, move the coupling lock (C) up to the unlocked position and squeeze the sides of the coupling while pulling the valve away from the coupling.

Recommended installation location

It is permissible to install the NV actuator upright or horizontally. However, it is not recommended that the valve stem be installed facing downward. Allow 12 inches of clearance for removal of actuator and 6 inches for removal of actuator cover.

Initial start-up

The unit must not be started up until the valve and actuator have been assembled according to instructions. Adaptation (initialization) will only occur the first time the actuator is powered. To reset, remove housing cover and press adaptation button S2. (See attached set-up information).

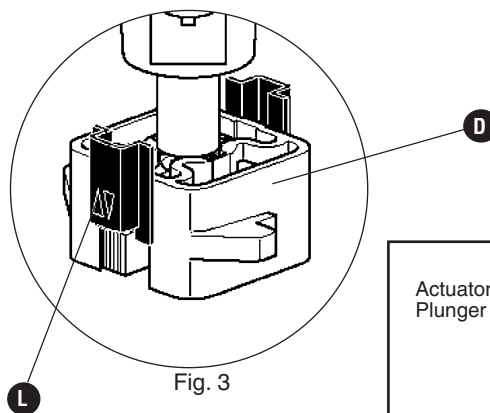


Fig. 3

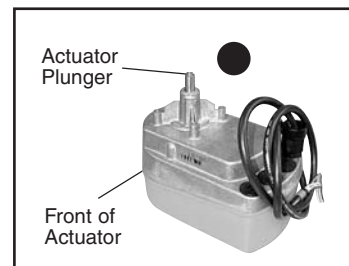


Fig. 4

Operation/Installation UNV-001 Series

Installation instructions for Siebe VB7000 and VB9000 series valves

Preparing the Valve

1. Remove all existing linkage and push stem to down position.
2. Screw lock nut (L) and stem adaptor (I) onto valve stem.
3. With stem pushed down completely adjust stem adaptor (I) height for corresponding valve. Tighten lock nut (L). (See Figure 1).

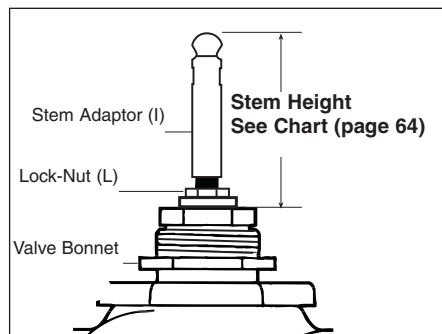


Fig. 1

Preparing the Actuator and Mounting the Valve

1. Slide the black coupling lock (C) up into the unlocked position. (See Figure 3).
2. Attach it to the end of the actuator plunger (K). This is done by pushing the bottom of the coupling apart with your thumbs while pressing it onto the actuator plunger. (See Figure 5).
3. Attach bracket (E) onto bottom of NV actuator (A) with 4 provided screws (B).
4. Attach stroke indicators (G) above and below the valve coupling.
5. Screw NV actuator (A) onto valve, and tighten valve bonnet nut (J).
6. Lower plunger (K) using manual override until stem adaptor (I) meets valve coupling. When connected, the valve stem adaptor will be captured by the valve coupling.
7. Slide the coupling lock (C) down in to its locked position.
8. Move sliding stroke indicators (G) to sit above and below lip on valve coupling (H). Stroke indicators are automatically repositioned to the maximum stroke when power is applied to actuator.
9. Set actuator switches S3.1, S3.2 to desired settings (See attached data).

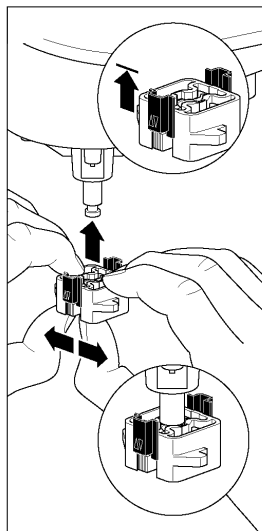


Fig. 5

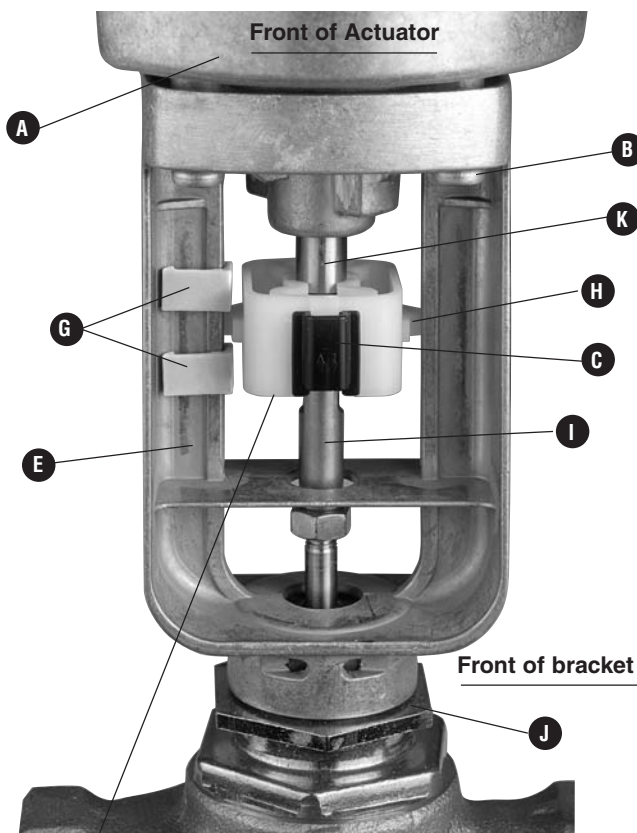


Fig. 2

When disassembling, move the coupling lock (C) up to the unlocked position and squeeze the sides of the coupling while pulling the valve away from the coupling.

Recommended installation location

It is permissible to install the NV actuator upright or horizontally. However, it is not recommended that the valve stem be installed facing downward. Allow 12 inches of clearance for removal of actuator and 6 inches for removal of actuator cover.

Initial start-up

The unit must not be started up until the valve and actuator have been assembled according to instructions. Adaptation (initialization) will only occur the first time the actuator is powered. To reset, remove housing cover and press adaptation button S2. (See attached set-up information).

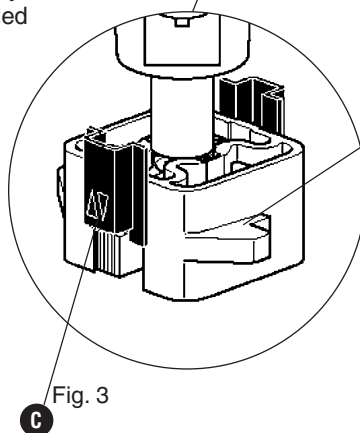


Fig. 3

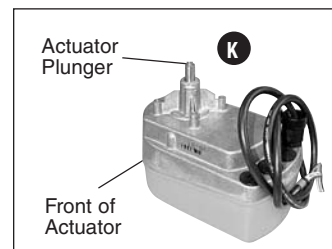


Fig. 4