

SQX Electronic Valve Actuator



Product Description

The SQX Electronic Valve Actuator requires a 24 Vac, Class 2, supply signal to control a Flowrite™ 599 Series valve with a 3/4-inch (20 mm) standard stroke.

Product Numbers

SQX62U
 SQX82.00U
 SQX82.03U

Warning/Caution Notations

WARNING		Personal injury/loss of life may occur if you do not follow a procedure as specified.
CAUTION		Equipment damage or loss of data may occur if you do not follow a procedure as specified.

Required Tools

- 5 mm hex wrench
- Flat-blade screwdriver or Phillips screwdriver to remove wiring compartment cover

Expected Installation Time

30 minutes Wiring a factory-installed actuator
 45 minutes Field replacement of actuator

Prerequisites



WARNING:

If mounting the actuator to a valve already in line, either close the shut-off valves in the piping (upstream first, then downstream) or switch off the pump to allow the differential pressure in the valve to drop.

Mounting Positions

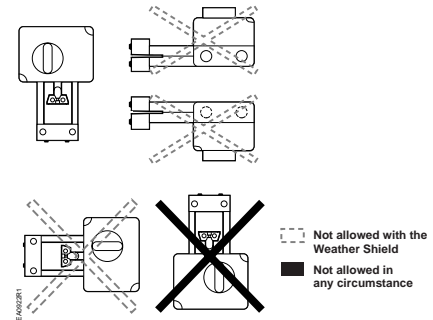


Figure 1. Acceptable Mounting Positions.

Using the Weather Shield

The SQX must be in the vertical position. Dimensions and complete instructions for mounting the weather shield are included with that product.

NOTE: The top knockout position should be used when installing the Weather Shield (See Figure 21.)

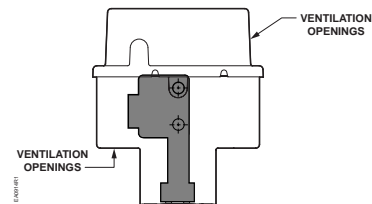


Figure 2. Weather Shield Installation Position.

Installation



CAUTION:

Do not damage or scratch the polished surface of the valve stem.

If you are mounting an actuator on a new valve, begin with the instructions on Figure 3.

Removing the actuator from a valve

1. Remove the actuator cover.
2. Disconnect the wires. Replace the cover on the actuator.
3. Use a 5 mm hex wrench to loosen the stem retainer screws. Lower the valve stem into the valve.
4. Use a 5 mm hex wrench to loosen the lock screw.
5. Use a 5 mm hex wrench to loosen the two yoke screws.
6. Remove the actuator from the valve, being careful not to damage the valve stem.
7. Continue at Figure 4.

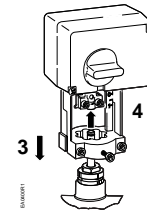


Figure 6.

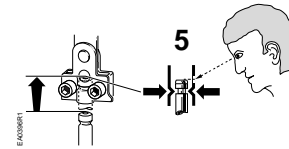


Figure 7.

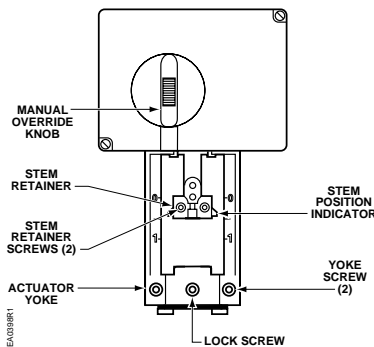


Figure 3. SQX Actuator.

Mounting an actuator to a valve

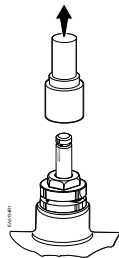


Figure 4. Preparing a New Valve.

NOTE: Before proceeding to Figure 5, install the packing heating element (Part Number 599-00417), if used.

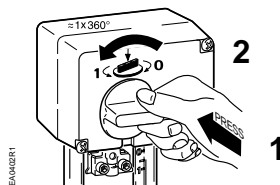


Figure 5.

Installation, Continued

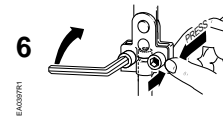


Figure 8.

NOTE: Hold the stem retainer in place as you tighten it around the valve stem

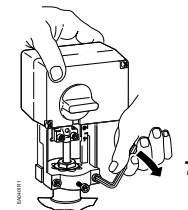


Figure 9.

NOTE: Position the actuator to accommodate the wiring. Hold the actuator in place while tightening the actuator yoke screws and lock screw.

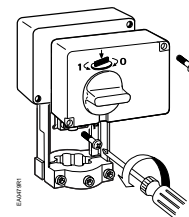


Figure 10. Accessing the Wiring Compartment.

NOTE: Use either a Phillips head screwdriver or a flat-blade screwdriver to remove the wiring compartment cover for access to the terminal block and DIPswitches.

The installation is now complete.

Siemens Building Technologies, Inc.

Wiring

Do not use autotransformers. Use earth ground isolating step-down Class 2 power supply transformers.

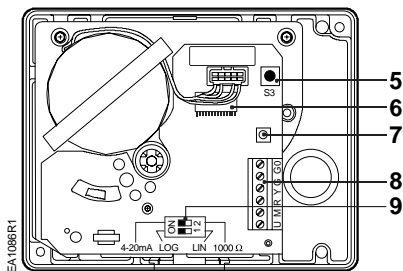
Determine supply transformer rating by summing total VA of all actuators used. The maximum rating for a Class 2 step-down power supply is 100 VA.

Operating more actuators requires additional transformers or separate 100 VA power trunks.

Wiring Diagrams

SQX62U Figures 13 and 14
 SQX82.00U/03U Figures 15 and 16

SQX62U



5	Button S3 "Manual calibration"
6	Microprocessor
7	LED, red/green (operating status indication)
8	Terminal strip
9	DIP switches No. 1: "log" or "lin" No. 2: 4 to 20 mA or 1000 ohm *) Bold print = Factory setting

Figure 11. SQX62U Circuit Board. (Cover Removed).

DIP Switch Setting - See Figure 12.

Switch 1: Flow Characteristic

Do not change the characteristic switch. The proper flow characteristic is designed into the Flowrite 599 Series valve.

SWITCH					
Control Signal	4 to 20 mA		0 to 1000Ω	4 to 20 mA	0 to 1000
	Default		Modified *	Default	Modified *
Flow Character	Default		Modified *	Default	Modified *
	Default		Modified *	Default	Modified *

*Changing the default setting will modify an equal percentage valve to a linear flow characteristic. When set to default, the flow characteristic is determined by the valve body.

Figure 12. DIP Switch Settings.

Switch 2: Control Signal

Select between 4 to 20 mA or 0 to 1000 ohm input signal for terminal R (4 to 20 mA default).

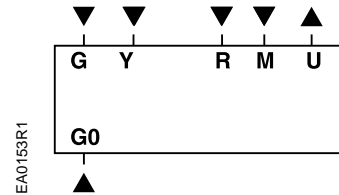


Figure 13. Wiring Diagram.

Connecting Terminals

Operating voltage 24 Vac	
G	System Potential (SP)
G0	System Neutral (SN)
Y	Control input 0 to 10 Vdc
R	Input for 4 to 20 mA or 0 to 1000 ohm remote setting unit. DIP switch selectable.
M	Measuring neutral
U	Output for 0 to 10 Vdc or 4 to 20 mA measuring voltage. It will match the input signal type.

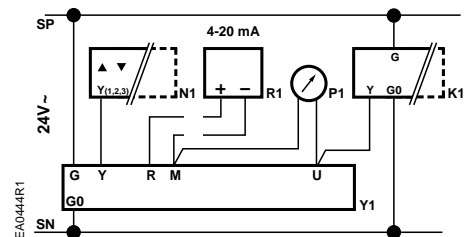


Figure 14. Applications.

The wiring diagrams show all possible connections. The application determines which connections are used.

- K1 On/Off switch
- N1 Controller
- P1 Indicating unit
- R1 Remote setting unit 4 to 20 mA
- Y1 Actuator

Wiring Diagrams, Continued

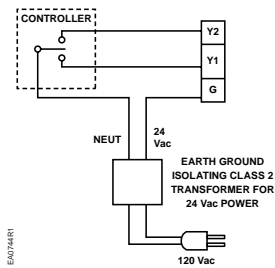


Figure 15. Wiring Diagram.

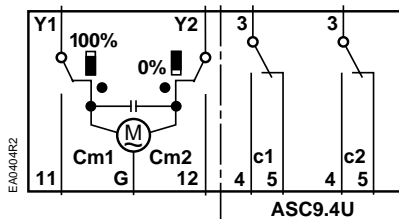


Figure 16. Application.

Connecting Terminals

G	System potential 24 Vac (+)
Y1	Inward movement of the stem retainer (0 to 1)
Y2	Outward movement of the stem retainer (1 to 0)
Cm1	Limit switch
Cm2	Limit switch
c1	ASC9.4U dual auxiliary switch, Class 2
c2	ASC9.4U dual auxiliary switch, Class 2

The wiring diagrams show all possible connections. The application determines which connections are used.

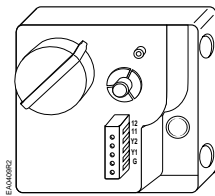


Figure 17. Terminal Location on the SQX82...U Circuit Board. (Cover Removed).

Manual Override

Press and turn the manual override knob.

- Turn the knob clockwise to move the stem retainer toward the "0" stroke position.
- Turn the knob counterclockwise to move the stem retainer toward the "1" stroke position.

Each complete revolution (360°) is equal to a 1/4-inch (7 mm) stroke.

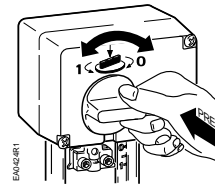


Figure 18. Manual Override.

Start Up

Check the wiring for proper connections.

Normally closed valve

Stem retainer moves outward (0 to 1): Valve opens.
 Stem retainer moves inward (1 to 0): Valve closes.

Normally open valve

Stem retainer moves outward (0 to 1): Valve closes.
 Stem retainer moves inward (1 to 0): Valve opens.

Three-way valve

Stem retainer moves outward: Valve opens between Port NC and C.
 Stem retainer moves inward: Valve opens between Ports NO and C.

NOTE: The valve body assembly determines the complete assembly action.

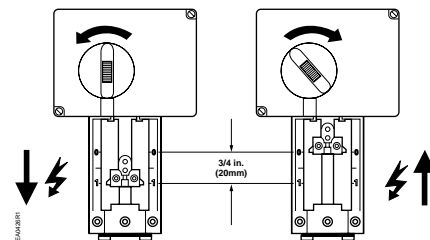


Figure 19. Operation.

Dimensions

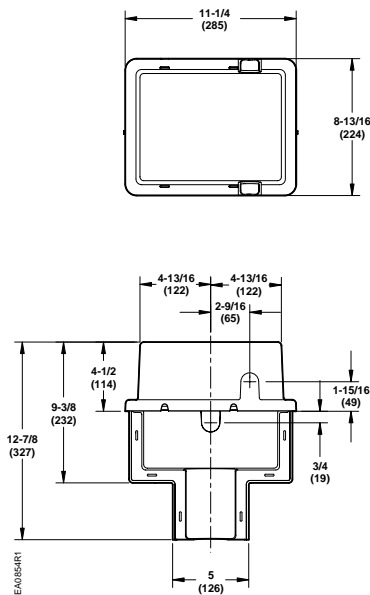


Figure 20. Dimensions of the 599-10071 Weather Shield.

NOTE: The top knockout position should be used when installing the Weather Shield.

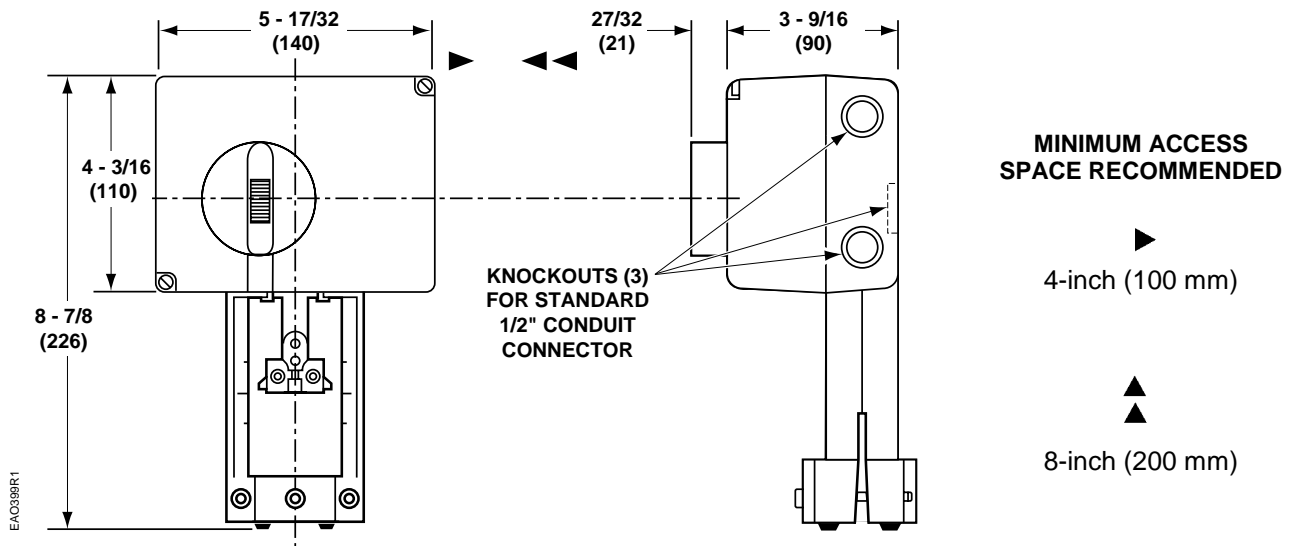


Figure 21. SQX Dimensions in Inches (Millimeters).

References

Technical Instructions

EA 599-6 Flowrite EA599 Series 155-182P25
 SQX Electronic Valve Actuator Proportional Control

EA 599-7 Flowrite EA599 Series 155-186P25
 SQX Electronic Valve Actuator 3-position (floating) Control

Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced. Flowrite is a trademark of Siemens Building Technologies, Inc. Other product or company names mentioned herein may be the trademarks of their respective owners. © 2002 Siemens Building Technologies, Inc.