

## SKD...U Electronic Valve Actuator



### Product Description

The SKD...U actuator requires a 24 Vac supply signal to control a Flowrite™ 599 Series valve with a 3/4-inch (20 mm) stroke.

### Product Numbers

Non-Spring Return	Spring Return
SKD60U	SKD62U
SKD82.50U	SKD82.51U

### Warning/Caution Notations

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

### Required Tools

- 5 mm Allen wrench
- Small and medium flat-blade screwdrivers

### Expected Installation Time

20 minutes for factory-installed actuator  
45 minutes for 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 and static pressure in the valve to drop.

### Mounting Positions

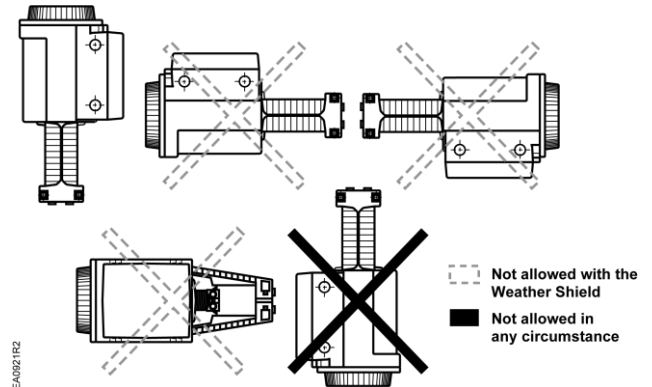


Figure 1. Acceptable Mounting Positions.

### Using the Weather Shield

The SKD must be in the vertical position. Complete instructions for the mounting of the Weather Shield are included with that product.

**NOTE:** Use the top knockout position when installing the Weather Shield. See Figure 17.

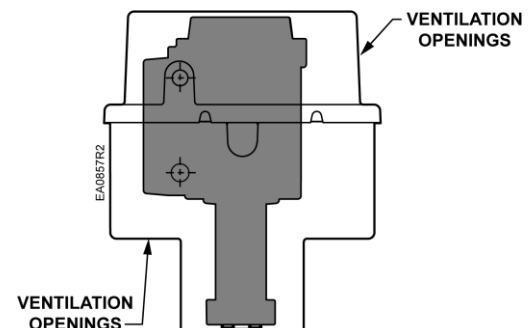


Figure 2. Weather Shield Installation Position.

### Installation

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

### Removing the Actuator from the Valve

1. Remove the actuator cover.
2. Disconnect the wires and conduit, if installed.
3. Loosen the valve stem retainer using a 5 mm Allen wrench and lower the valve stem into the valve.
4. Loosen the yoke nuts using a 5 mm Allen wrench in the actuator yoke.
5. Remove the actuator from the valve, being careful not to damage the valve stem.

Continue with *Mounting an Actuator to a Valve*.

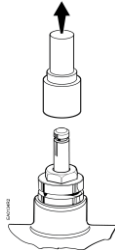


Figure 3. Preparing a new Valve.

### Mounting an Actuator to a Valve.

**NOTE:** Install the stem heating element, (P/N ASZ6.6), if used, before proceeding.

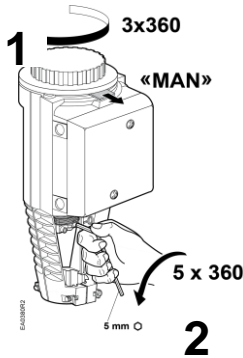


Figure 4.

**NOTE:** Ensure the yoke nuts are loose enough to allow the actuator to slip over the bonnet. See Figure 5.

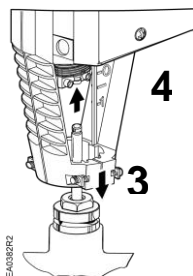


Figure 5.

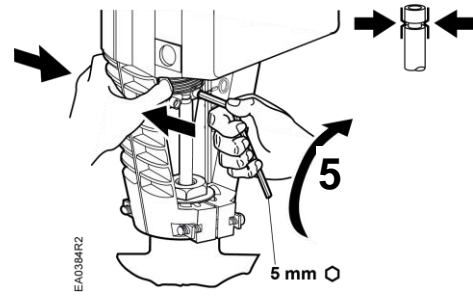


Figure 6.

**NOTE:** Hold the stem retainer in place as you tighten it around the valve stem. See Figure 6.

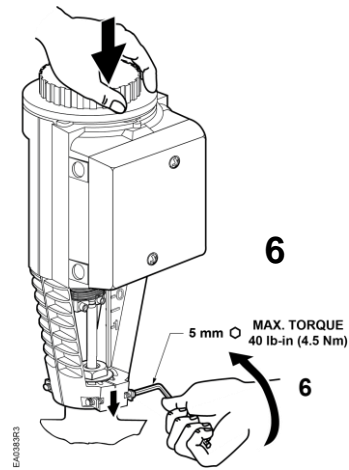


Figure 7.

**NOTE:** Position the actuator to accommodate the wiring. Hold the actuator in place while tightening the yoke nuts. See Figure 7.

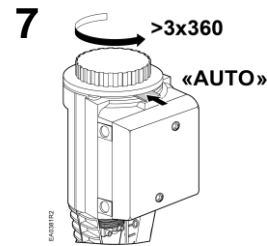


Figure 8.

## Wiring



### CAUTION:

Use care when removing the knockout. Do not damage the circuit board.

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

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

Actuator	Power Consumption	Actuators Per Class 2 Supply Circuit* (80% of Transformer VA)
SKD6...U	17 VA	4
SKD82.50U	13 VA	8
SKD82.51U	18 VA	5

\* Operating more actuators requires additional transformers or separate 100 VA power supplies.

## Wiring Diagrams

SKD60U/SKD62U  
 SKD82.50U/51U

Figures 9 and 10  
 Figures 11 through 13

### SKD6...U

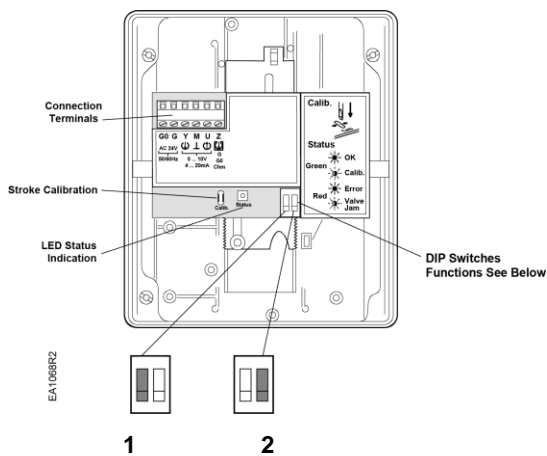


Figure 9. SKD6...U.

DIP Switches	1 Selection of Control Signal	2 Selection of Flow Characteristic
ON	4 to 20 mA	Modified*
OFF (Factory Setting)	0 to 10 Vdc	Default

\*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.

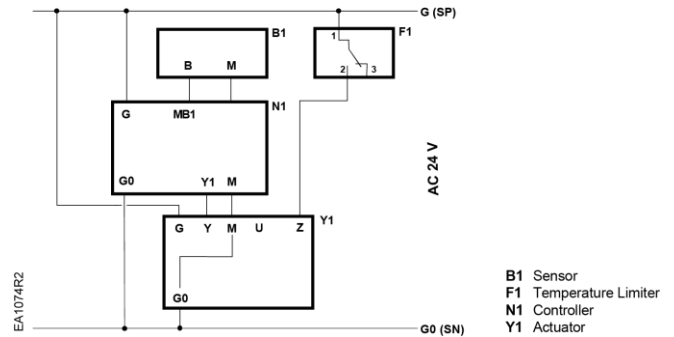


Figure 10.

## Connecting Terminals

24 Vac	
G	System Potential (SP)
G0	System Neutral (SN)
Y	Control Input: 0 to 10 Vdc or 4 to 20 mA (DIP switch selectable)
Z	Override Control (See <i>Technical Instructions</i> 155-180P25)
M	Measuring Neutral
U	Output for 0 to 10 Vdc or 4 to 20 mA measuring voltage. It will match the input signal type.

The position output signal **U** will switch from 0 to 10 Vdc to 4 to 20 mA when a 4 to 20 mA input signal is selected and used on the terminal.

## Wiring for SKD82...U

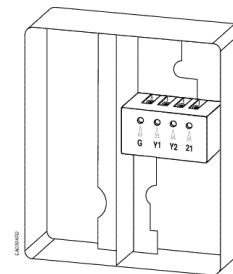


Figure 11. Location of Terminals.

## Wiring for SKD82...U, Continued

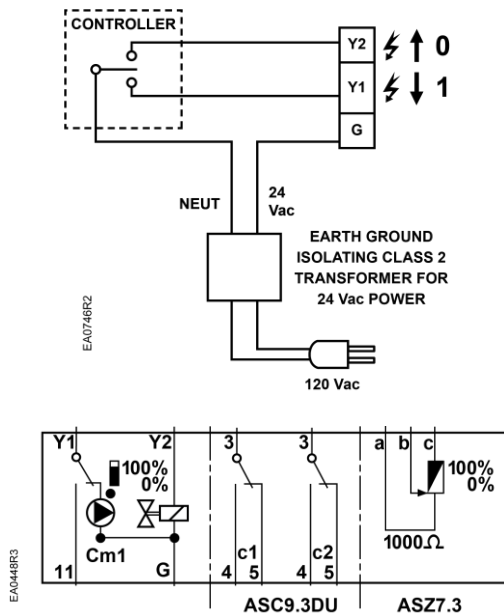


Figure 12. Non-Spring Return SKD82.50U.

### Connecting Terminals

G	System Potential 24 Vac (+)
Y1	Outward movement of coupling piece (0 to 1)
Y2	Inward movement of coupling piece (1 to 0)
Cm1	Limit switch for 100% stroke
c1	ASC9.3DU double auxiliary switch
c2	ASC9.3DU double auxiliary switch
1000 Ω	ASZ7.3 potentiometer

The diagram shows all possible connections. How many and which are used depend on the application.

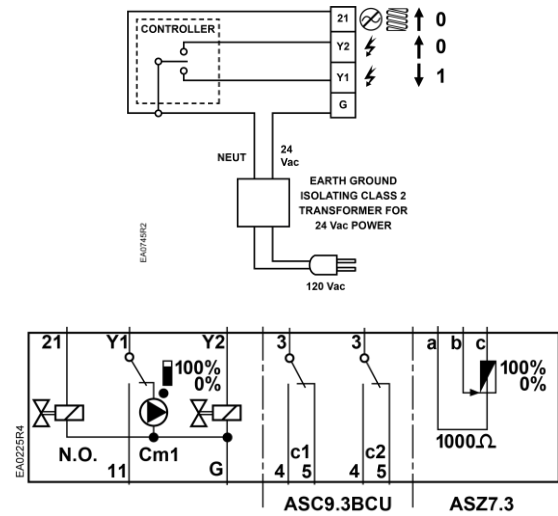


Figure 13. Spring Return SKD82.51U.

### Connecting Terminals

G	System Potential 24 Vac (+)
21	System Neutral (SN)
Y1	Outward movement of coupling piece (0 to 1)
Y2	Inward movement of coupling piece (1 to 0)
Cm1	Limit switch for 100% stroke
c1	ASC9.3DU double auxiliary switch
c2	ASC9.3DU double auxiliary switch
1000 Ω	ASZ7.3 potentiometer

The diagram shows all possible connections. How many and which are used depend on the application.

## Start-Up

Check the wiring for proper connections.

Consult *Flowrite 599 Series SKD6xU Electronic Valve Actuators 24 Vac Proportional Technical Instructions 155-180P25* for detailed commissioning information.

## Normally Closed Valve

Actuator pressure cylinder moves:

- Outward (0 to 1): Valve opens.
- Inward (1 to 0): Valve closes.

## Normally Open Valve

Actuator pressure cylinder moves:

- Outward (0 to 1): Valve closes.
- Inward (1 to 0): Valve opens.

### Three-Way Valve

Actuator pressure cylinder moves:

- Outward: Valve opens between port NC and C.
- Inward: Valve opens between ports NO and C.

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

### Reference

Technical Instruction	Document Number
Flowrite EA599 Series SKD Electronic Valve Actuator Proportional Control	155-180P25
Flowrite EA599 Series SKD Electronic Valve Actuator 3-position (Floating) Control	155-181P25

### Manual Operation

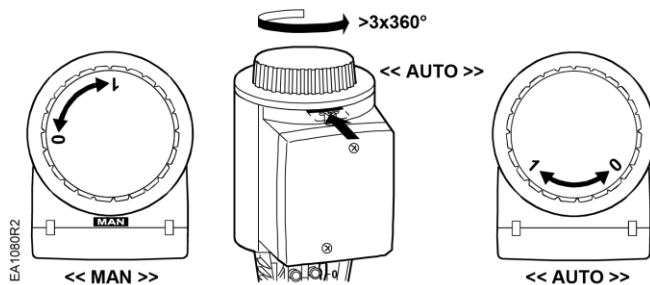


Figure 14. Manual Override in Manual and Automatic Position.

Each complete revolution (360°) is equal to 3/32-inch (2.5 mm) stroke.

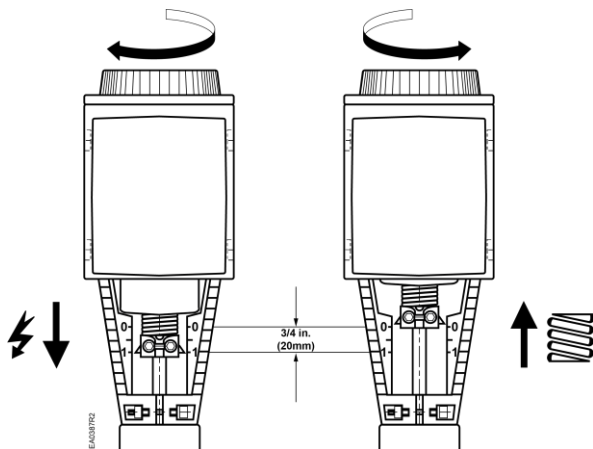


Figure 15. Valve Stem Travel Indication.

### Dimensions

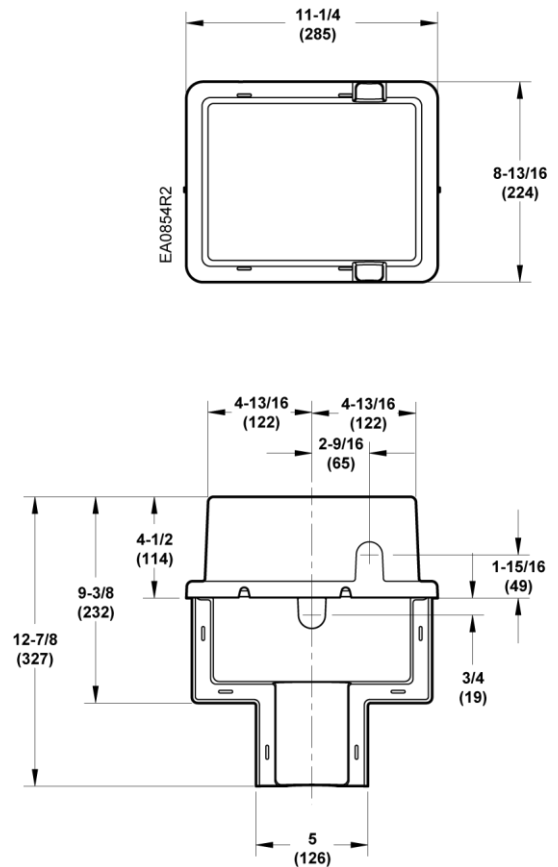


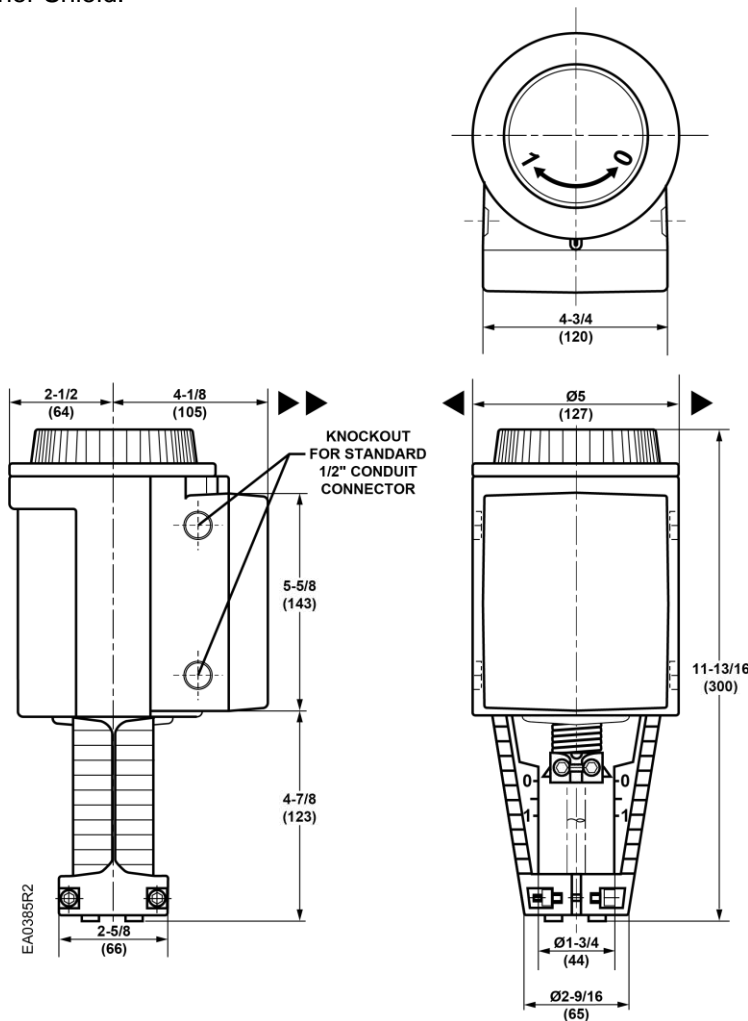
Figure 16. Dimensions of the 599-10071 Weather Shield in Inches (Millimeters).

## Dimensions, Continued



**CAUTION:**  
 Be careful when removing the knockout. Do not damage the circuit board.

**NOTE:** Use the top knockout position when installing the Weather Shield.



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▶  
 4 inches (100 mm)

▲  
 8 inches (200 mm)

**Figure 17. SKD...U Dimensions in Inches (Millimeters).**

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