

# Installation and Operation Manual

## Supervisory Switch

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*Fire Protection Product*  
SOSY-1

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*This manual is also available online.*



# SAFETY PRECAUTIONS



## Caution



Read and understand carefully this document prior attempting to install Fivalco® products. Failure to follow these instructions could cause severe injury, product and/or property damage.



Installation, maintenance and replacement of Fivalco® products must be implemented by an experienced, well trained installer. Wear safety glasses, helmet, hand and foot protection during installation.



The owner is responsible for maintaining the system in proper operation condition.



Fivalco shall not be held responsible for any incidents arising from improper installation, operation and maintenance work. The responsibility for this must rest with the installer and user.



## Disclaimer

This manual serves as a general guideline and reference to the installers and users. Every effort has been made to ensure the information contained in this manual is accurate at the time of publication. Fivalco Limited assumes no responsibility or liability for any errors and/or misinterpretation of the information. Contact your local vendor, distributor or Fivalco Limited for detail technical data and specification of each model, and if any additional information is required. We reserve the right to alter this manual without notice.

“The quality goes in before our name goes on”



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## Supervisory Switch

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## **SUPERVISORY SWITCH**

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### **1 GENERAL**

The SOSY-1 supervisory switch is used to monitor the open position of an OS&Y (outside screw and yoke) type gate valve. SOSY-1 supervisory switch shall be installed on each gate valve as to perform the intended function.

The SOSY-1 is NEMA-4 enclosures and suitable for both indoor and outdoor application. It has one set of SPDT (Form C) rated at 10.1 Amps (125/250 VAC) or 2.0 Amps (24 VDC)

### **2 UNLOADING & TRANSPORTATION**

A vital consideration in handling the Supervisory switches should be avoid damaging the cover, mounting plate and the rod. Ensure that there are no heavy and sharp objects are applied to the switches.

All switches should be unloaded carefully. Each switch should be carefully lowered from the truck to the ground; it should not be dropped. Failure to carefully follow these recommendations is likely to result in damage to the switches.

### **3 STORAGE**

Switches should be stored in proper packaging and to prevent the entry of foreign material. Whenever practical, switches should be stored indoor under dry, cool conditions, away from direct sunlight and corrosive or otherwise chemically active atmosphere. If outside storage is required, means should be provided to protect the switches from weather elements. During outside storage, switches should be protected from the weather, sunlight, ozone, and foreign materials.

### **4 INSPECTION PRIOR TO INSTALLATION**

The operation of the SOSY-1 supervisory switch and its associated protective monitoring system shall be inspected, tested, and maintained in accordance with all applicable local and national codes and standards and/or the authority having jurisdiction. A minimum test shall consist of turning the valve wheel toward the closed position. The SOSY-1 supervisory switch shall operate within the first two revolutions of the wheel. Fully close the valve and ensure the SOSY-1 supervisory switch does not restore. Fully open the valve and ensure SOSY-1 supervisory switch restore to normal.

### **5 INSTALLATION**

The SOSY-1 supervisory switch can be mounted on open yoke valves between ½" and 12" in diameter. If the switch is installed with the actuator pointing upward, water may leak into the interior of the switch. Therefore, do NOT install the SOSY-1 supervisory switch with its actuating lever pointing upward.

The SOSY-1 supervisory switch is equipped with a ground screw inside the switch housing near the conduit for those applications where grounding is required.

For narrow yoke valves, installing the valve with mounting bolts inside the yoke is recommended. However, some valves may have yokes that are too narrow for this arrangement. If this is the case, the bolts can be positioned on the outside of the yoke.

The SOSY-1 supervisory switch mounting bracket fits most of the open yoke valves used in fire protection systems. However, some of these valves, especially those less than 1½" in diameter, have irregularly shaped yokes or such limited clearances that the clamping bar cannot be installed properly and/or it causes the valve to bind. If this is the case, the use of J-bolts is required to attach the SOSY-1 to the valve (refer Fig#2), J-bolts can be purchased separately.

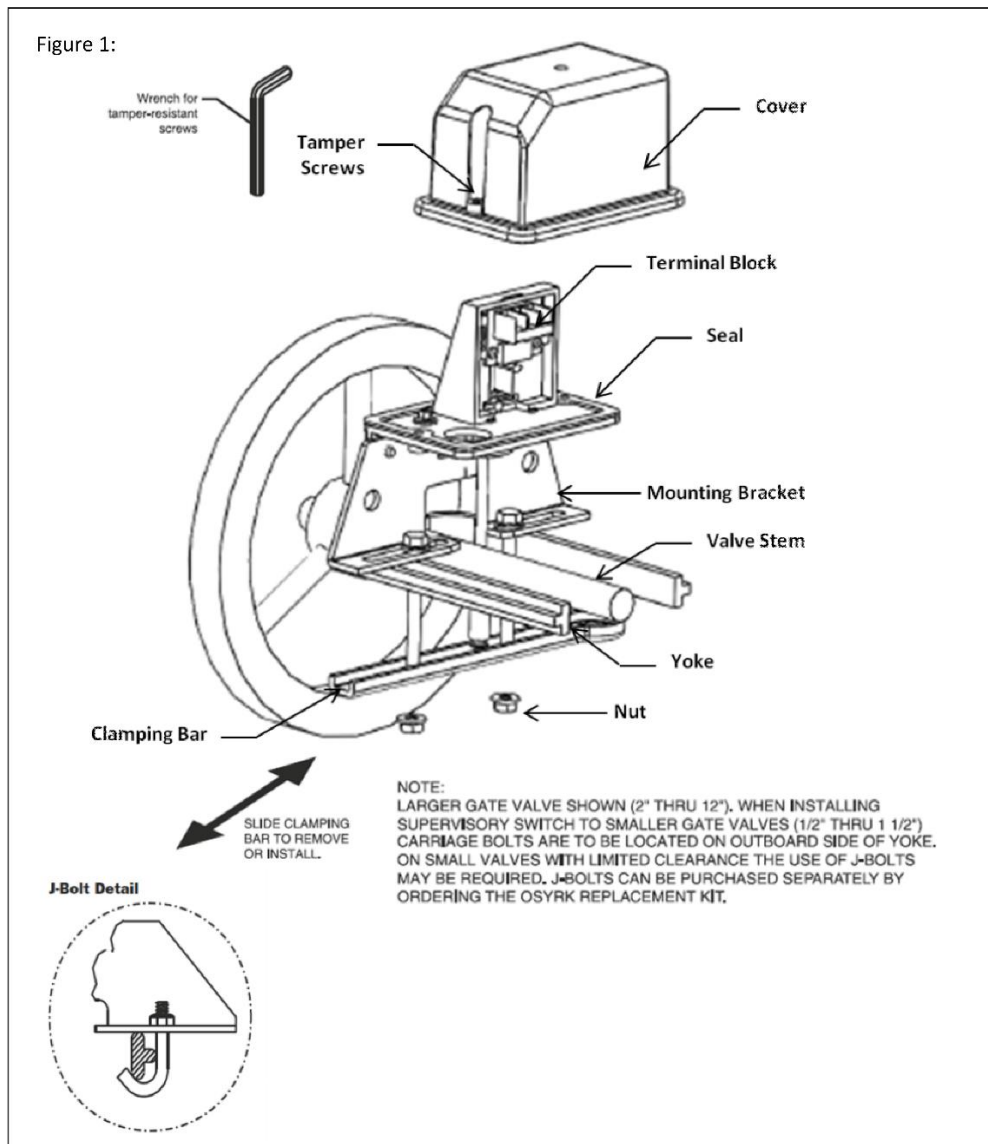
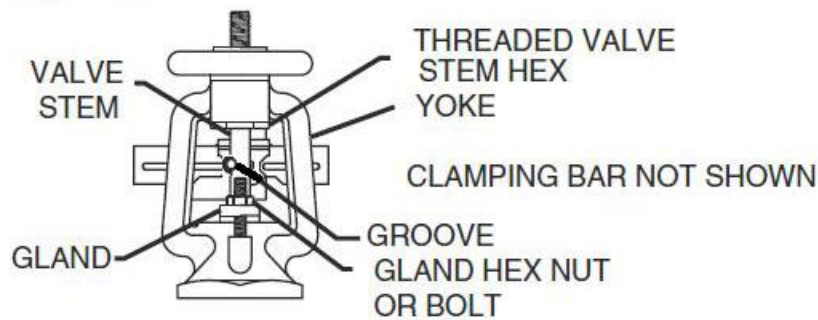


Figure 1

Refer to Fig#1 and #2 as required, while performing the procedure that follows.

Perform step 1 on valves 1½" in diameter and smaller only. Proceed directly to step 2 if the switch is being installed on a valve larger than 1½" in diameter.

**Figure 2:**



1. Remove and discard the "C-clips" and "roller" from the actuating lever.
2. Set the valve to its fully open position. Remove the SOSY-1 Supervisory Switch from the carton and adjust the position of the retaining nuts to provide sufficient bolt length for the yoke thickness of the valve.

Position the switch on the valve with the bolts on the inside (preferably) or outside of the yoke, depending on the clearance.

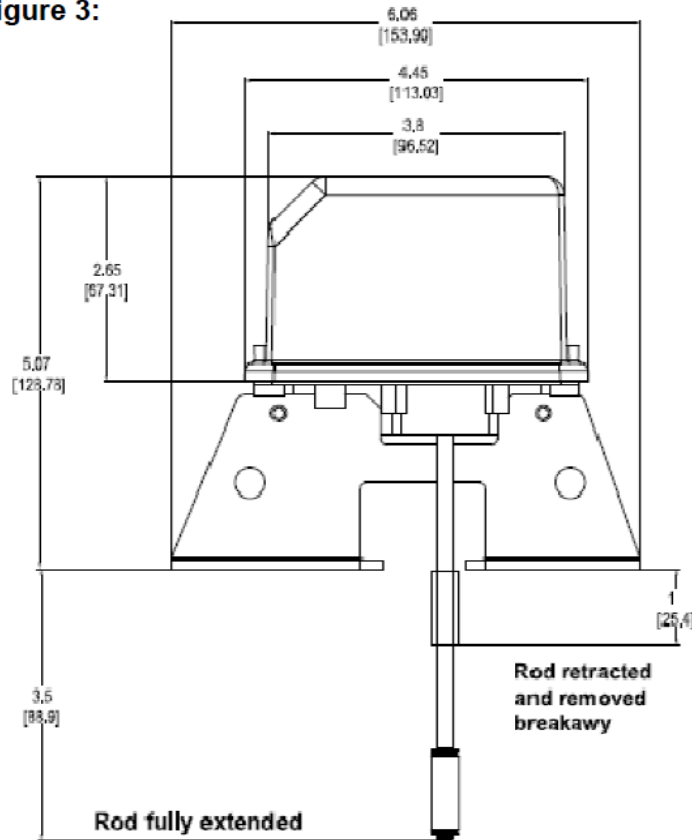
Adjust the position of the SOSY-1 supervisory switch as far as possible from the valve gland and in a location where the actuating lever contacts the unthreaded section of the valve stem (if the valve stem is already grooved, proceed directly to step 6). Mount the SOSY-1 supervisory switch loosely with the carriage bolts and clamp bar supplier.

3. Loosen the locking screw that holds the trip rod in place and adjust the rod length. When adjusted properly, the rod should extend past the valve stem, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place and properly seal the enclosure.

**Note:**

If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off one inch long as Fig#3 and Fig#4. Reinstall trip rod and repeat Step 3 procedure.

**Figure 3:**



## Breaking Excessive Rod Length

**Figure 4:**



4. Mark the point on the valve stem where the actuating lever contacts the valve stem.
5. Remove the SOSY-1 by loosening the nuts and sliding the clamping bar, remove the SOSY-1 supervisory switch from the valve and set it aside.
  - (a) Valves 1½" in diameter and smaller only.

Use a ¼" untampered round file to file a groove ⅛" minimum deep groove centered on the mark on the valve stem. Deburr and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.
  - (b) Valves larger than 1½" inches in diameter only.

Use a ⅜" or ½" untampered round file to file a groove ⅛" minimum deep groove centered on the mark on the valve stem. Deburr and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.
6. Mount the switch loosely with the actuating lever centered in the groove. When the switch is in position on the valve, slide the open end of the clamping bar onto the bolts as Fig#1.

7. Adjust the length of the lever by loosening the screw, sliding the lever in or out, as needed, and retightening the screw.
8. Adjust the supervisory switch position on the valve so that the micro-switch is depressed (COM and NC terminal circuit is open) when the actuating lever is in the groove with the valve in the full open position. The COM to NC circuit should close within two turns when the valve is operated from the FULL OPEN towards the CLOSED position.
9. Tighten the nuts securely with a wrench and check the operation of the SOSY-1 supervisory switch as in step 8. If necessary, reposition the SOSY-1 supervisory switch and test it again.
10. Wire the supervisory switch as shown in Fig#5.
11. Replace the SOSY-1 supervisory switch cover and tighten the tamper-resistant cover screws with a special wrench provided. Store this wrench in a secure location.
12. Test the operation of the SOSY-1 supervisory switch by closing the valve with two full turns. The circuit between COM and NC should indicate a closure during this procedure. If it does not, readjust the supervisory switch and actuator position until the switch activates when the valve is operated.

**Testing:**

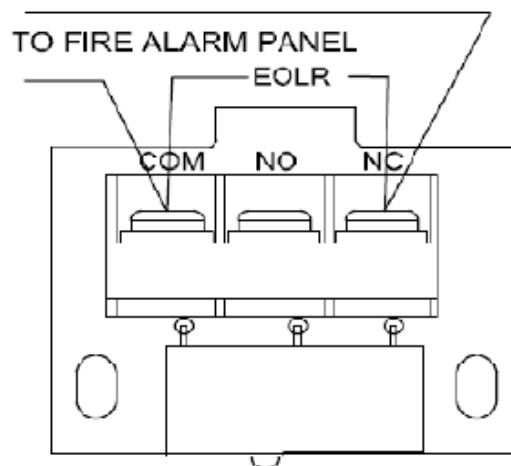
Test the operation of all supervisory switches before they are placed into service and at least semiannually, or as required by the authority having jurisdiction.

**Note:**

Notify the proper authorities that the supervisory switches are undergoing maintenance, therefore, will be temporarily out of service. Disable the system or zone undergoing testing to prevent unwanted alarms.

**Field Typical Electrical Connections:**

**Figure 5:**





## 6 OPERATION

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SOSY-1 is a 3-position switch. The center position is standard position when the switch is installed on the gate valve, the valve is fully opened and the rod of the supervisory switch hanging at the groove of the valve stem. When the valve is closing, the rod will move upward of the groove and thus activates the switches. When the supervisory switch is dismantled or removed from the gate valve, the spring will pull the rod in an opposite direction and switches will be activated.

Supervisory switches shall be mounted so as not to interfere with the normal operation of the valve and shall be adjusted to operate with two revolutions of the valve control or when the stem has moved no more than one-fifth of the distance from its normal position.

## 7 MAINTENANCE

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The operation of the SOSY-1 and its associated protective monitoring system shall be inspected, tested and maintained in accordance with all applicable local codes and standards and/or authority having jurisdiction, recommended on a quarterly or monthly basis. User shall ensure that the supervisory switch is properly attached to the gate valve and the wiring connection is intact.

Supervisory switches have a normal life span of 10~12 years. However, the life span maybe be shortened due to the environmental conditions.

## 8 WARNINGS

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Installation must be performed by qualified personnel and in accordance with all local codes and ordinances.

Fully close the valve to confirm that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a false valve open position.

Before opening any closed valve, ensure that opening of the valve will not cause any damage from water flow due to open or missing sprinklers, piping, etc.

Disconnect the power source before servicing. Serious injury or death could result.



# WARRANTY STATEMENT

**Fivalco's products are designed, engineered and manufactured within its specification of intended use, under the highest quality control possible. Commitment on quality and performance is always at the top of our agenda.**

**Fivalco warrants that for a period of thirty-six (36) months following delivery, the Fivalco products will perform in accordance with published specifications, and will be free from defects in material or workmanship provided that the products are stored and installed in accordance with recommendations in our catalogues.**

**Fivalco's obligation shall be to replace any product found to be defective in design, material or workmanship during the warranty period. Fivalco shall not be obligated to refund the purchase price and other liabilities on monetary compensation, nor shall it be obligated to pay for any labor or costs associated with the removal of the defective products or the reinstallation of those products. No warranty coverage will be provided for products that have been altered and / or used for a purpose other than that for which they were designed or installed contrary to Fivalco's guidelines.**

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