

EMERSON 7CX GO Switch Cylinder Position Sensor Instruction Manual

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EMERSON 7CX GO Switch Cylinder Position Sensor



Stroke-to-GO™ Switch Models 7CX & 7DX

Cylinder Position Sensor

Stroke-To-GO™ Switches provide precise end-of-stroke position indication on pneumatic and hydraulic cylinders. Designed to exceed automotive industry standards, the housing is machined from stainless steel bar stock to handle operating pressures to 3,000 PSI while withstanding the extreme external conditions such as weld slag, coolants, cutting fluids, physical abuse and even high temperatures.

Stroke-to-GO™ Switches incorporate the same 70 Series GO™ Switch mechanism that has been field proven in the most rigorous applications. This unique design offers the greatest benefits in cylinder position indication.

Unique Features

- Leakage current: None
- Voltage Drop: None
- Temperature Drift: None
- Weld Field Immune: Tested and exceeded General Motors EHS-320 specifications. Testing Agency – Candid Logic.
- Radio Frequency Interface (RFI): No affect at any frequency.
- Benefits
 - 70 Series GO Switches are unaffected by weld fields and RF interference.
 - 70 Series GO Switches may be mounted adjacent to or surrounded by ferrous metals however the proximity of ferrous metals will affect sensing distance. For the maximum rated sensing distance, avoid mounting near ferrous metals.

- GO Switches sense ferrous materials such as mild steel, 400 series and 17/4 stainless steel.
- The sensing and differential of the switch may vary depending on the target travel direction.
- Avoid contact between target and switch. Configure mounting of the switch and/or target so that target passes within the sensing area. Sensing range will vary according to the model number and mass of the target used.

Benefits Continued

- For optimum performance, provide sufficient mass of the target.
- For heavy or inductive loads, arc suppression devices or interposing relays are recommended for contact longevity. Contact factory for specifics.

Specifications

Housing

Size: Standard probe lengths: 1.025" (26 mm), and 1.250" (32 mm).

Materials: Stainless Steel bar stock Conduit Outlet: 1/2"-14 NPT

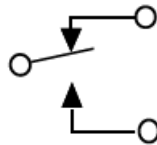
Sensing

Target Material: Ferrous Sensing Range: Approx.

.090" (2 mm) end sensing (3,000 PSI) (Recommended air gap .015" – .040")

Contacts

Materials: Palladium silver with Sawtooth® surface configuration Form: Single Pole, Double Throw (SPDT) Form C



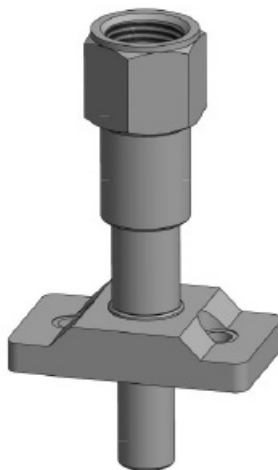
Electrical Ratings: Resistive

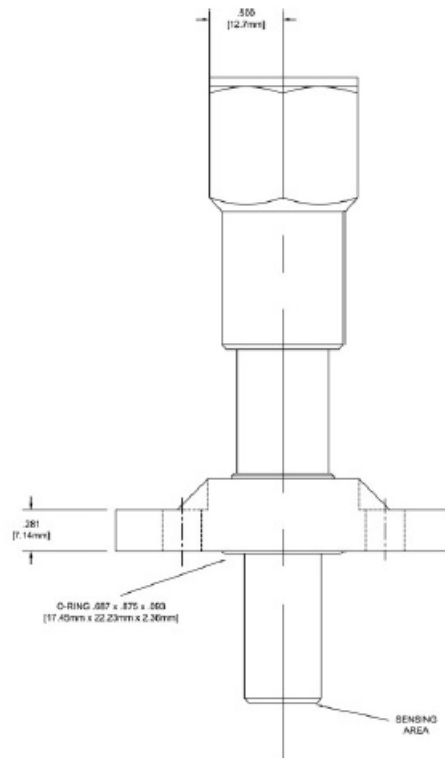
Performance

Repeatability: .002" (.05 mm) typical Response Time: 8 milliseconds Differential: Approximately .020" (.51 mm).

Operating Temperature: -40°F (-40°C) to 302°F (150°C)

Pressure Rating: Stainless steel 3,000 PSI operating.





Attachment of Conduit or Cable

Attach conduit or cable correctly.

- When using long runs of conduit or cable, place supports close to the switch to avoid pulling switch out of position.
- If the switch is mounted on a moving part, be sure the flexible conduit is long enough to allow for movement and positioned to eliminate binding or pulling.
- For installation in hazardous locations, check local electrical codes.
- All conduit-connected electrical devices, including GO Switches, must be sealed against water ingress through the conduit system. In figure 1, something common has occurred, the conduit system has filled with water. Over a period of time this may cause the switch to fail prematurely. In figure 2, the termination of the switch has been carefully filled with electronics grade RTV to prevent water ingress and to prevent premature switch failure. A drip loop with provision for water to escape has also been installed.

For hazardous locations install per Electrical Code. Dry contact devices, such as GO Switch, may be installed intrinsically safe with a matched barrier. When installed as explosion-proof, lead seal fittings required within 18" of switch.

EU Declaration of Conformity

The products described herein, conform to the provisions of the following Union Directives, including the latest amendments:

Low Voltage Directive (2014/35/EU)

EMD Directive (2014/30/EU)

UNION Directive (2014/34/EU)



Figure 1. Incorrect

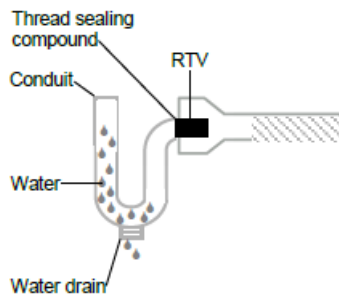


Figure 2. Correct

Figure 2. Correct

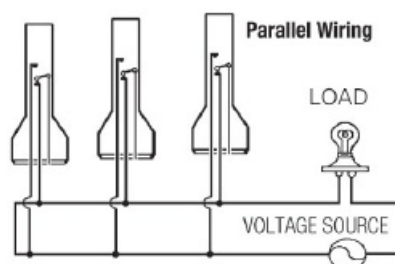
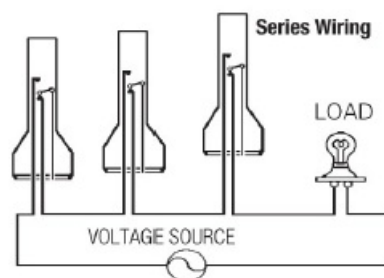
All GO Switches are “pure” contact switches, meaning they have no voltage drop when closed, nor do they have any leakage current when open. For multi-unit installation, switches may be wired in series or parallel, as shown below.

Series Wiring

Any number of GO Switches may be wired in series, without voltage drop. By contrast, solid-state switches have about two volts drop across the switch when operated. In a 12 volt solid state system with four switches in series, 8 volts is dropped across the switches. Only 4V is left to operate the load. When using GO Switches, 12V is still available to operate the load. (Except 7L – approx. 5V drop)

Parallel Wiring

When solid state switches are placed in parallel, there is about 100 microamps leakage through each switch. If ten solid state switches were wired in parallel, the total leakage current would be 1000 microamps or one milliamp – sufficient current to indicate an “ON” condition to a programmable logic controller (PLC). Any number of GO™ Switches may be wired in parallel, with no current leakage and without drawing operating current. (Except 7L – approx. 5V drop)



model numbers, data sheets, specifications, dimensions, and certifications.

Application Considerations

- The cylinder cushion must be ferrous.
- The air gap between the switch sensing face and cushion should be .015" to .040" (outside this range please consult factory).
- The largest diameter of a target (cushion) should cover at least 75% of probe sensing face.
- The sensing face of Stroke-To-GO Switch must be at least .125" from piston rod for proper switch reset. This may at times require an air gap distance greater than .040".
- For cushion diameters less than .50", air gap should be .015" to .025".

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10. **SOFTWARE AND FIRMWARE:** Notwithstanding any other provision herein to the contrary, Seller or applicable third party owner shall retain all rights of ownership and title in its respective firmware and software, including all copyrights relating to such firmware and software and all copies of such firmware and software. Except as otherwise provided herein, Buyer is hereby granted a nonexclusive, royalty free license to use firmware and software, and copies of firmware and software, incorporated into the Goods only in conjunction with such Goods and only at the Buyer's plant site where the Goods are first used. Buyer may negotiate with Seller separate licenses to use such copies and firmware and software at other plant sites. Buyer's use of certain firmware (as specified by Seller) and all other software shall be governed exclusively by Seller's and/or third party owner's applicable license terms.
11. **BUYER SUPPLIED DATA:** To the extent that Seller has relied upon any specifications, information, representation of operating conditions or other data or information supplied by Buyer to Seller ("Data") in the

selection or design of the Goods and/or provision of the Services and the preparation of Seller's quotation, and in the event that actual operating conditions or other conditions differ from those represented by Buyer and relied upon by Seller, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

12. EXPORT/IMPORT: Buyer agrees that all applicable import and export control laws, regulations, orders and requirements, including without limitation those of the United States and the European Union, and the jurisdictions in which the Seller and Buyer are established or from which items may be supplied will apply to its receipt and use of Goods and Services. In no event shall Buyer use, transfer, release, import, export, or re-export Goods in violation of such applicable laws, regulations, orders, or requirements.
13. GENERAL PROVISIONS: (a) Buyer shall not assign its rights or obligations under the Agreement without Seller's prior written consent; (b) there are no understandings, agreements or representations, express or implied, not specified in the Agreement; (c) no action, regardless of form, arising out of transactions under the Agreement, may be brought by either party more than two years after the cause of action has accrued; (d) any modification of these terms and conditions must be set forth in a written instrument signed by a duly authorized representative of Seller; (e) the Agreement is formed and shall be construed, performed and enforced under the laws of the State of Missouri (however, Buyer and Seller agree that the proper venue for all actions arising under the Agreement shall be only in the State where the Goods involved in such actions were manufactured; (f) The 1980 United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement; (g) If any provision of the Agreement is invalid under any statute or rule of law, such provision, to that extent only, shall be deemed to be omitted without affecting the validity of the remainder of the Agreement; (h) Seller specifically objects to the application of any Federal Acquisition Regulation ("FAR") or other governmental procurement provision or clause to the Agreement; (i) UNLESS OTHERWISE SPECIFICALLY PROVIDED IN SELLER'S QUOTATION, GOODS AND SERVICES HEREUNDER ARE NOT INTENDED FOR USE IN ANY NUCLEAR OR NUCLEAR RELATED APPLICATIONS. Buyer (i) accepts Goods and Services in accordance with the restriction set forth in the immediately preceding sentence, (ii) agrees to communicate such restriction in writing to any and all subsequent purchasers or users and (iii) agrees to defend, indemnify and hold harmless Seller from any and all claims, losses, liabilities, suits, judgments and damages, including incidental and consequential damages, arising from use of Goods and Services in any nuclear or nuclear related applications, whether the cause of action be based in tort, contract or otherwise, including allegations that the Seller's liability is based on negligence or strict liability; (j) The rights, remedies and protections afforded to Seller under this Agreement, including but not limited to indemnification of Seller, limitation of remedy and liability and limited warranty shall extend to Seller and to its affiliates, subsidiaries, or related companies performing or supplying work, services, or products under this Agreement or any agreement into which it is incorporated by reference; and (k) Seller does not agree to: (i) indemnify Buyer; or (ii) name Buyer as an additional insured.

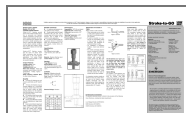
Special Conditions for Safe Use and Possible Misuse

- The overheated or individual conductors must be suitably protected against mechanical damage and terminated within a terminal or junction facility suitable for the conditions of use.
- Three wire devices are not provided with an external connection facility for the earthing or bonding conductor. It is the user's responsibility to ensure adequate earth continuity via the mounting arrangements.
- The proximity switches do not require a connection to earth for safety purposes, but an earth connection is provided which is directly connected to the metallic enclosure. Normally an intrinsically safe circuit may be

earthed at one point only. If the earth connection is used, the implications of this must be fully considered in any installation. i.e. by the use of a galvanically isolated interface.

- The switch must be supplied from a Certified Ex ia IIC intrinsically safe source.
- The flying leads must be terminated in a manner suitable for the zone of installation.
- An external ground connection must be protected by an external mounting device and / or cable connections/conduits.

Documents / Resources



[EMERSON 7CX GO Switch Cylinder Position Sensor](#) [pdf] Instruction Manual
7CX, 7DX, GO Switch Cylinder Position Sensor, Cylinder Position Sensor, Position Sensor, GO Switch, Sensor

[Manuals+](#)