IOM

TopWorx™ engineers are happy to provide technical assistance on GO™ Switch products. However, it is the customer's responsibility to determine the safety and suitability of the product in their application. It is also the customer's responsibility to install the switch using the current electrical codes in their region.

C7, C8, H7, H8, M7,M8, R7, SV7

GO SWITCH™

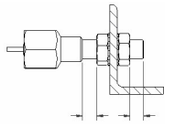
Introduction
GO™ Safety Related Switches operate on the principle of magnetic attraction, reacting to magnetic targets as they come within the switch's sensing range. Although switches vary in design according to their intended applications, all GO Switches use permanent magnets which, when actuated by the presence of a magnetic target, change the state of electrical contacts.

Mounting

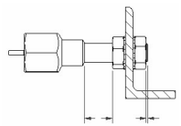
- Nuclear service GO Switches are immune to EMC and RF interference.
- Use non-ferrous, stainless steel mounting brackets only. Consult factory for available mounting kits. For the maximum rated sensing distance, avoid mounting near ferrous metals or in a ferrous metal bracket.
- C7, C8, H7, H8, M7,M8, R7 and SV-7 nuclear service GO Switches must be installed with TopWorx qualified target magnets. Reference sensing ranges in corresponding sections throughout the catalog.
- Sensing and differential of switch may vary depending on target travel direction.
- Configure mounting of the switch and/or target so that target passes within the sensing area without physically contacting the switch. Sensing range will vary according to switch and target mode.

Caution: Do not use excessive force on external threads when installing. The switch threads need to be properly torqued as indicated below when mounted to any fixture. Over-torquing or under-torquing the switch threads may cause the switch to operate improperly. TopWorx recommends a torque value of 35 lbs - ft. (47.45 Nm) with a tolerance of + /- 2 lbs.- ft. (2.71 Nm).

- The switch must be mounted on the bracket and bolted close to the end of its threads, near its center of mass. This eliminates undue stress caused by heavy cables, connectors, etc.



YES!



NO!

- For heavy or inductive loads, arc suppression devices, or interposing relays are recommended for contact longevity. Contact factory for specifics.
- Installation must use included Jam nuts and Lock washers.
- Recommended installation distance is equal to the half of published sensing distance per switch.

H7, M7, & SV7
Specifications - SPDT

Coaxial Sensing Distance w/ C-AMS7A Target
Average Sensing 0.190” ± 0.040” (4.83 mm ± 1.02 mm)
Average Reset 0.023” ± 0.010” (0.58 mm ± 0.25 mm)

Coaxial Sensing Distance w/C-AMS12 Target
Average Sensing 0.350” ± 0.025” (8.89 mm ± 0.64 mm)
Average Reset 0.031” ± 0.015” (0.79 mm ± 0.38 mm)

Pressure Rating At Sensing Surface: 2,000 psi (137.89 bar)

Thread Options: 5/8”-18 UNF (Consult TopWorx for metric thread options)

Operating Temperature:

Qualified Life (Years)	Max. Normal Op. Temp.*	
	H7 & M7 SWITCHES	SV7 SWITCHES
5	76 °C	85 °C
10	69 °C	78 °C
20	63 °C	71.5 °C
40	57 °C	65 °C
60	52.5 °C	61.5 °C

ATEX (all except SV7): -40°C (-40°F) to 150°C (302°F)

*The switch service (qualified) life depends on its operating temperature.

Contact Material: Palladium silver with Sawtooth surface configuration

Contacts: Single Pole, Double Throw, Form C.

Electrical Ratings

Contact Ratings* (Resistive)	AC	DC
Power (W)	0.5 - 480	0.2 - 72
Voltage (V)	100 - 250	24 - 137
Current (A)	0.004 - 5.0	0.004 - 3.0

ATEX (all except SV7): 4A @120VAC / 3A @ 24VDC

*Consult factory for higher Amp rating requirements

Target Material: Target magnets C-AMS7A or C-AMS12
Enclosure Material: SS type 303 or 316
Conduit Outlet: 1/2”-14 NPT. One location

C7 & R7
Specifications - SPDT

Coaxial Sensing Distance w/ C-AMS7A Target
Average Sensing 0.100” ± 0.020” (2.54 mm ± 0.51 mm)
Average Reset 0.023” ± 0.010” (0.58 mm ± 0.25 mm)

Coaxial Sensing Distance w/C-AMS12 Target
Average Sensing 0.250” ± 0.025” (6.35 mm ± 0.64 mm)
Average Reset 0.031” ± 0.015” (0.79 mm ± 0.38 mm)

Pressure Rating At Sensing Surface: 2,000 psi (137.89 bar)

Thread Options: 5/8”-18 UNF (Consult TopWorx for metric thread options)

Operating Temperature:

C7 & R7 SWITCHES	
Qualified Life (Years)	Max. Normal Op. Temp.*
5	76 °C
10	69 °C
20	63 °C
40	57 °C
60	52.5 °C

ATEX: -40°C (-40°F) to 150°C (302°F)

*The switch service (qualified) life depends on its operating temperature.

Contact Material: Palladium silver with Sawtooth surface configuration

Contacts: Single Pole, Double Throw, Form C.

Electrical Ratings

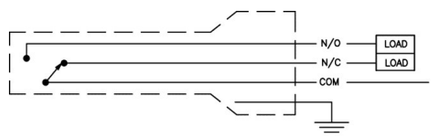
Contact Ratings* (Resistive)	AC	DC
Power (W)	0.5 - 480	0.2 - 72
Voltage (V)	100 - 250	24 - 137
Current (A)	0.004 - 5.0	0.004 - 3.0

ATEX: 4A @ 120VAC / 3A @ 24VDC

*Consult factory for higher Amp rating requirements

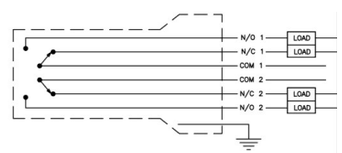
Target Material: Target magnets C-AMS7A or C-AMS12
Enclosure Material: SS type 303 or 316L (RCC-EK1+)
Conduit Outlet: 3/4”-14 NPT. One location

GO SWITCH HOOK-UP DIAGRAMS C7, R7, H7, M7, and SV7



SPDT (Form C) Contacts May be wired Form A (N/O) or B (N/C)

C8, H8, and M8



DPDT (2 Form C) Contacts

C8, H8, & M8
Specifications - DPDT

Coaxial Sensing Distance w/ C-AMS7A Target
Average Sensing 0.100” ± 0.020” (2.54 mm ± 0.51mm)
Average Reset 0.023” ± 0.010” (0.58 mm ± 0.25mm)

Coaxial Sensing Distance w/C-AMS12 Target
Average Sensing 0.250” ± 0.025” (6.35 mm ± 0.64 mm)
Average Reset 0.031” ± 0.015” (0.79 mm ± 0.38 mm)

Pressure Rating At Sensing Surface: 2,000 psi (137.89 bar)

Thread Options: 1”-14 UNF (Consult TopWorx for metric thread options)

Operating Temperature:

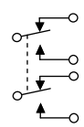
C8, H8, & M8 SWITCHES	
Qualified Life (Years)	Max. Normal Op. Temp.*
5	76 °C
10	69 °C
20	63 °C
40	57 °C
60	52.5 °C

ATEX: -40°C (-40°F) to 150°C (302°F)

*The switch service (qualified) life depends on its operating temperature.

Contact Material: Palladium silver with Sawtooth surface configuration

Contacts: Double Pole Double Throw, 2 Form C.



Electrical Ratings:

Contact Ratings* (Resistive)	AC	DC
Power (W)	0.5 - 480	0.2 - 72
Voltage (V)	100 - 250	24 - 137
Current (A)	0.004 - 5.0	0.004 - 3.0

ATEX: 3A @ 120VAC / 1A @ 24VDC

*Consult factory for higher Amp rating requirements

Target Material: Target magnets C-AMS7A or C-AMS12
Enclosure Materials: SS type 303
Conduit Outlet: 3/4”-14 NPT. One location

Setting Up A Nuclear Service GO Switch For Optimum Performance

Nuclear service GO Switches use permanent magnets and a push-pull plunger to control a set of dry contacts. When a target magnet enters the sensing area of the switch, it attracts the primary magnet, which pulls the connecting rod and common contact. The normally closed and normally open contacts change state.
(Continued on page 2.)

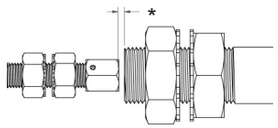
Attachment of Conduit or Cable Continued:
The sensing distance recommended by TopWorx is the maximum distance between the switch and target magnet trip point. The average reset, also known as deadband or hysteresis, is the distance that the target magnet must move from the sensing area in order to allow the switch to reset.

To apply the Nuclear service GO Switch and obtain the least differential, the direction the target approaches the switch must be considered (axial, radial).

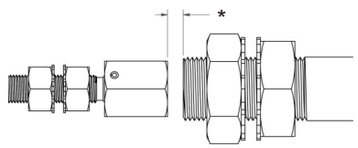
The measurements shown are nominal depending on the size of target magnet used in the application. Consult the coaxial sensing distance for each switch model listed in this IOM.

With proper mounting, once the switch is set, the GO Switch will maintain calibration for life. See illustration below for correct switch alignment.

C-AMS7A Target Magnet



C-AMS12 Target Magnet



*Refer to switch specifications for average sensing distance.

The target magnet threads need to be properly torqued when mounted to any fixture. The target magnets were mounted at a torque value of 35 lbs-ft (47.45 Nm) with a tolerance of + /- 2 lbs.-ft. (2.71 Nm) during seismic testing.

CE 2813 UKCA 0518 Ex II 2 GD IECEx

Ex d IIC T3 Gb; Ex tb IIIC T200 °C Db (Tamb - 40 °C to + 150 °C)
Baseefa08ATEX0360X BAS21UKEX0667X
IECEx BAS 08.0122X
120VAC/4A AND 24VDC/3A FOR SPDT SWITCHES
120VAC/3A AND 24VDC/1A FOR DPDT SWITCHES
PLEASE NOTE: THE SV7 SWITCH IS NOT CERTIFIED BY ATEX OR IECEx.

Attachment of Conduit or Cable
Attach conduit or cable correctly.

The switch conduit or cable needs to be properly supported when mounted to any fixture. During seismic testing, the stainless steel conduit (with PEEK cable) was supported at 3.28 ft (1 m) from the back of the switch while the Rockbestos or PEEK cables were supported at 1 ft (0.305 m) away from the back of the switch. EGS Flex conduit and support kit are available from TopWorx as an option. During seismic testing of the C7 switch with EGS QDC and flex conduit, the flex conduit was supported 15”- 48” from the QDC interface. Please consult factory for more detailed information.

– If the switch is mounted on a moving part, be sure 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.

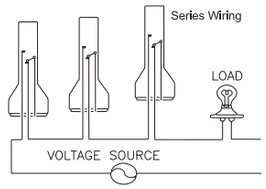
– All conduit connected switches should be installed using proper installation methods.

– The GO Switch must have a qualified QDC, a qualified sealed stainless steel conduit, or other types of qualified accepted seal when used in submerged applications or exposed to 100% humidity. For LOCA DBA type submergence, however, only the C7 switch has been qualified for this application.

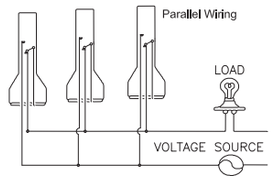
– Per Qualtech Report No. TR-23009-14, the EGS O-ring qualified life at continuous operation, without disconnection, is 25.1 years at 144.14 °F (62.3 °C). If for any reason these assemblies need to be detached prior to installation or while in operation, the O-rings must then be replaced. The maximum shelf life that can be assigned for the O-Ring is 10 years from the cure date. As long as the O-Rings have been stored per the guidelines of ANSI N45.2.2, Level B (now ASME NQA-1, Part II, Subpart 2.2, Level B), the O-Ring may be placed into installed service any time prior to the shelf life expiration date without impinging on the qualified life outlined above

All GO Switches are “pure” contact switches, meaning they have negligible 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 to the right.

Series Wiring
Any number of GO Switches may be wired in series, without voltage drop.



Parallel Wiring
Any number of GO™ Switches may be wired in parallel, with no current leakage and without drawing operating current.



Special Conditions for Safe Use
The field side wires should be protected against damage and terminated to a terminal or junction box suitable for the conditions of use.

Due to the GO Switch’s sealed construction, field service is not available. Refer to our trouble shooting guide for a possible solution. If problem persists, please contact the factory directly.

EU Declaration of Conformity
The products described herein, conform to the provisions of the following European Community Directives, including the latest amendments:

Low Voltage Directive (2014/35/EU)
EMC Directive (2014/30/EU)
ATEX Directive (2014/34/EU)

C7 & R7 SPDT 4 COND. Peek Cable	
N/C	Red
N/O	Blue
COM	Black
GND	Green

C8, H8, & M8 DPDT 7 COND. Peek Cable & EGS Connector	
N/C1	Red
N/O1	Blue
COM1	Black
N/C2	Yellow
N/O2	Brown
COM2	Natural
GND	Green

EGS 4 Pin Connector	
N/C	A Red
N/O	B White
COM	C Black
GND	D Green

有毒或有害物質 (Hazardous Substance)						
零件名称 (Part Name)	铅 (Lead) (Pb)	汞 (Mercury) (Hg)	镉 (Cadmium) (Cd)	六价铬 (Hexavalent Chromium) (Cr+6)	多溴联苯 (Polybrominated biphenyls) (PBB)	多溴二苯醚 (Polybrominated diphenyl ethers) (PBDE)
接触组件 (Contact Assembly)	X	O	X	O	O	O
磁铁 (Magnets)	O	O	O	O	O	O
壳体 (Enclosure)	O	O	O	O	O	O
塑料 (Plastic)	O	O	O	O	O	O
接线 (Wiring)	X	O	O	O	X	X

○：表示该有毒有害物质在该部件所有物质材料中的含量均低于GB/T26572规定的限量要求以下
×：表示该有毒有害物质至少在该部件的某一物质材料中的含量超出GB/T26572规定的限量

EMERSON™

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Visit www.topworx.com for comprehensive information on our company, capabilities, and products– including model numbers, data sheets specifications, dimensions, and certifications.

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