

Air-Oil Systems, Inc. www.airoil.com



The leader in reliable position sensing
for the most demanding plant conditions.

TOPWORX

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www.topworx.com

**GO
SWITCH**

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reliable and durable.

In the most demanding conditions of processing and manufacturing plants, customers require solutions that are

To be reliable means 'capable of being trusted - dependable.' To be durable means 'capable of withstanding wear and tear - long-lasting.'

When it comes to position sensing, reliability and durability are the perfect words to describe GO Switch leverless limit switches.

You see, GO Switches have a unique, hybrid design that combines the advantages of mechanical limit switches with the advantages of inductive proximity sensors - and leaves their drawbacks behind.

By combining the best of the two technologies, GO Switch enjoys a "double advantage," surpassing the capabilities that either technology could achieve by itself.

As a result, GO Switches deliver reliable, durable performance in demanding conditions that are too extreme for mechanical limit switches or inductive proximity sensors.

So if your plant processes include conditions that are extremely hot, cold, wet, dirty, corrosive, abusive, or explosive, be sure to demand technology with an advantage.

Specify GO Switch leverless limit switches.

our experience

- Automotive
- Biotech
- Cement
- Chemical
- Diecasting
- Food & Beverage
- Hydrocarbon
- Mining
- Nuclear Power
- Oil & Gas
- Petrochemical
- Power
- Pulp & Paper
- Steel
- Tire & Rubber
- Tool & Die
- Water/Wastewater

experience + expertise

our expertise

Abusive Applications

Because GO Switches have only one moving part and no metal-to-metal contact making it move, there is virtually nothing to wear out! They are built to last for high cycle, dirty, and physically abusive applications.

Corrosive Conditions

Because most GO Switches have stainless steel housings, they are the logical choice for applications around salt water, bleaches, or other caustic chemicals.

Explosive Environments

Because GO Switches use dry contacts, they are 'simple devices' suitable for use in Intrinsically Safe applications. And many models are rated for Zone 1 Class I Division 1 hazardous areas.

High & Low Temperature

Because of their unique design, GO Switches can operate effectively in extremely hot (up to 400°F) or extremely cold (down to -40°F) plant conditions.

Shock & Vibration

Because GO Switches use permanent magnets that deliver outstanding snap action and contact pressure, they eliminate 'contact teasing' and 'contact chatter' in high vibration areas.

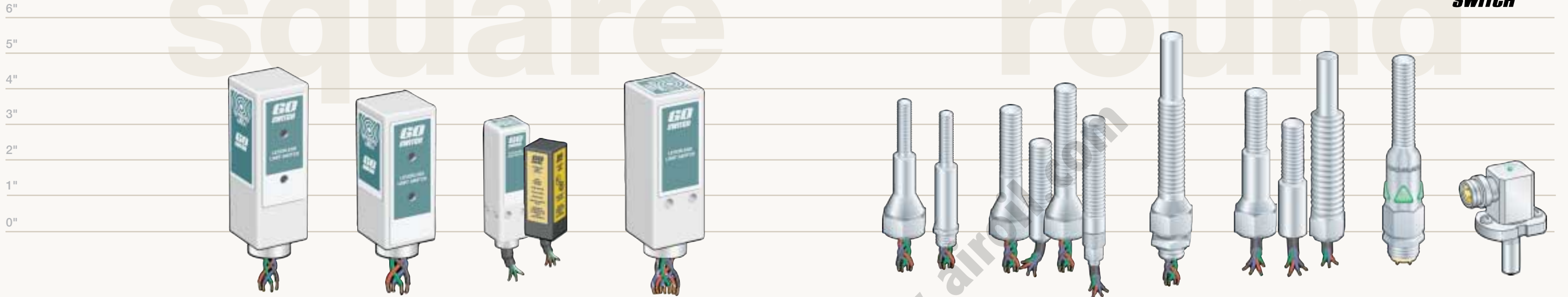
Washdown & Underwater

Because GO Switches are completely potted and sealed, no moisture can affect their operation. Some models are even rated for use 20,000 feet underwater!

GO Switch Product Overview



Square round



Series or Model	10 Series	20 Series	31, 32, 33, 35	80 Series	71, 72	73, 74, 75, 76	77	7G, 7H, 7I	7L	7C-7E																																																																																																																																																																																																																																																														
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Maximum Sensing Range	9/16" (14mm)	3/8" (104mm)	1/4" (6mm)	1/4" (6mm)	.040" (1mm)	.100" (2.5mm)	.100" (2.5mm)	.090" (2mm)	.100" (2.5mm)	.090" (2mm)																																																																																																																																																																																																																																																														
Maximum Sensing Range with Target Magnet	3 3/4" (95mm)	3 3/8" (86mm)	2 5/8" (66mm)	3 7/8" (98mm)	.15" (4mm)	.35" (9mm)	.35" (9mm)	.20" (5mm)	.35" (9mm)	N/A																																																																																																																																																																																																																																																														
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Enclosures Available	Brass Stainless Steel	Brass Stainless Steel	Copper ^(35 only) Stainless Steel ^(31, 32, 33)	Brass Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel																																																																																																																																																																																																																																																														
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Note: Please consult factory for application specific ratings.

Ordering made simple.

GO Switch Quick Selection Guide

Compare our full line of products to find the one that's best for you.

Select products by Area Classification or Special Capability.

Page numbers make for fast access to info.

Convenient Chart Analysis

Read a full description of the product and any special features it may include.

A complete list of our most popular 'Fast Track Delivery' models.

Models 73 and 74

Detailed specifications are right where you need them.

Look for the checkmark. It denotes the most common options and the models most likely to be in stock.

Convenient technical dimensions.

Custom build your product using our easy ordering guide! Choose your options, write the codes in the spaces provided, and simply give us a call to order!



FAST TRACK DELIVERY

TopWorx is committed to satisfying customer delivery requirements with speed and excellence. The products listed within the Fast Track Delivery program are standard products likely to be available for immediate shipment for normal size orders.

To Order
502.969.8000

Square Housing



Round Housing

General Purpose

- 11-12518-A2 SPDT, 9/16", Brass, Bottom Leads
- 81-20518-A2 DPDT, 1/4", Brass, Bottom Leads

General Purpose

- 73-13528-A2 SPDT, 0.100", Stainless, Leads
- 73-13528-DCA SPDT, 0.100", Stainless, Mini
- 74-13528-B2 SPDT, 0.100", Stainless, Cable
- 74-13528-DBA SPDT, 0.100", Stainless, Micro
- 7G-23528-A2 DPDT, 0.090", Stainless, Leads
- 7LR-13568-A2 SPDT, 0.100", 316SS, Leads, Red LED
- 7LG-13568-A2 SPDT, 0.100", 316SS, Leads, Green LED

Explosion Proof - Class I, Division 1

- 21-11524-A2 SPDT, 3/8", Stainless, Bottom Leads
- 81-20524-A2 DPDT, 1/4", Stainless, Bottom Leads

Explosion Proof - Class I, Division 1

- 73-13523-A2 SPDT, 0.100", Stainless, Leads
- 73-13524-A2 SPDT, 0.100", Stainless, Leads
- 7G-23523-A2 DPDT, 0.090", Stainless, Leads

Non-Incendive - Class I, Division 1

- 11-11110-00 SPDT, 3/8", Brass, Side Terminal
- 11-12110-00 SPDT, 9/16", Brass, Side Terminal
- 11-12510-00 SPDT, 3/8", Brass, Bottom Terminal
- 21-11110-00 SPDT, 3/8", Brass, Side Terminal
- 21-11510-00 SPDT, 3/8", Brass, Bottom Terminal
- 21-11516-A2 SPDT, 3/8", Brass, Bottom Leads
- 81-20516-A2 DPDT, 1/4", Brass, Bottom Leads

Non-Incendive - Class I, Division 1

- 73-13526-A2 SPDT, 0.100", Stainless, Leads
- 7G-23526-A2 DPDT, 0.090", Stainless, Leads
- 7LR-1356E-A2 SPDT, 0.100", 316SS, Leads, Red LED
- 7LG-1356E-A2 SPDT, 0.100", 316SS, Leads, Green LED

Cylinder Position Sensors - Stroke to GO

- 7C-23658-DCA SPST, 1.025" probe, Mini Connector
- 7C-43658-DCA SPDT, 1.025" probe, Mini Connector
- 7D-23658-DCA SPST, 1.250" probe, Mini Connector
- 7D-43658-DCA SPDT, 1.250" probe, Mini Connector
- 7E-23658-DCA SPST, 2.062" probe, Mini Connector
- 7E-43658-DCA SPDT, 2.062" probe, Mini Connector

Position Sensors 101

The purpose of position sensors

In automated manufacturing and processing plants, position sensors help monitor and control plant processes by confirming that critical activities are completed as intended. More specifically, their primary function is to detect the presence, or absence, of a moving object, or "target".

For the purpose of this tutorial, only "mainstream" technologies that sense the presence of metal targets – limit switches, inductive proximity sensors, reed switches, and leverless limit switches – will be discussed.

Key Terminology

When considering position sensors, it helps to understand the common terminology used by most sensor manufacturers.

Sensing range

the distance from the sensing face to the target that activates the switch

Hysteresis

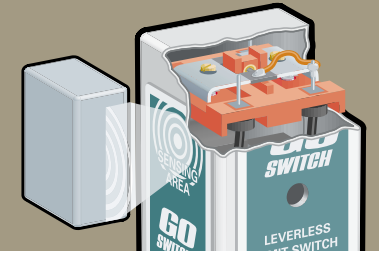
the distance between the activated and release points of the switch

Repeatability

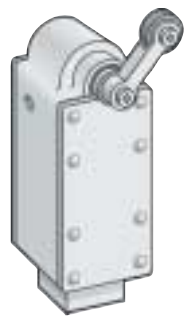
the switch's ability to detect the same target at the same range repeatedly during the life of the switch

Response Time

the amount of time between the detection of a target and the generation of the output signal



Limit Switches



Limit switches are electro-mechanical devices that detect the position of a target by making direct physical contact with the target.

ADVANTAGES

The advantages of mechanical limit switches:

- Do not require power
- Can handle high current loads
- Wide operating temperature range
- Immune to electrical noise
- Immune to radio frequency interference
- No leakage current
- No voltage drops
- Simple "Normally Open" or "Normally Closed"
- Not polarity or voltage sensitive

DISADVANTAGES

The disadvantages of mechanical limit switches:

- Multiple moving parts to maintain (lever arm, push button, body, base, head, contacts, terminals)
- Moving parts eventually wear and fail
- Physical contact encourages premature failure via damage
- Lever arm connection to internal contacts invites moisture and dust into contact chamber, causing failure or maintenance issues
- Poor repeatability due to wear and tear of moving parts
- Physical contact causes damage to the target
- Poor defense against moisture, dust, and corrosion
- Extra cost for sealed contacts and hazardous area approvals

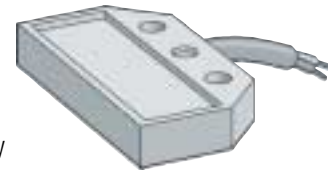
Reed Switches

Reed Switches are electro-mechanical devices that detect the position of a magnetic target by the attraction of the target's magnetic field.

ADVANTAGES

The advantages of reed switches:

- No physical contact is required
- Do not require power
- Immune to electrical noise
- Immune to radio frequency interference
- No leakage current
- No voltage drops
- Simple "Normally Open" or "Normally Closed"



DISADVANTAGES

The disadvantages of reed switches:

- Require a magnetic target to operate
- Reed element is fragile and can break with physical contact
- High vibration can cause contact chatter and false signals
- Bending metal reeds causes fatigue and premature failures
- Contacts can be "teased" causing uncertainty of target position
- Limited selection of shapes, sizes, and capabilities

Inductive Proximity Sensors

Inductive proximity sensors are solid-state electronic devices that detect the position of metal targets via the disturbance of their energy field.

ADVANTAGES

The advantages of inductive proximity sensors:

- No physical contact is required
- No moving parts to jam, wear, or break results in less maintenance
- Large selection of shapes and sizes for a variety of applications
- Not affected by dust or dirt



DISADVANTAGES

The disadvantages of inductive proximity sensors:

- Require external power to operate
- Cannot handle high current loads
- Limited operating temperature range – cannot be used in extreme heat or cold
- Affected by temperature fluctuations
- Affected by electrical noise
- Affected by radio frequency interference
- Suffer from leakage current and voltage drops
- Only special models are intrinsically safe
- Only rare, expensive models are explosion proof
- Polarity sensitive – typically must stock both "npn" and "pnp" models
- Voltage sensitive – typically must stock both AC and DC models
- "Contact" sensitive – typically must stock both "Normally Open" and "Normally Closed" models
- Susceptible to moisture ingress

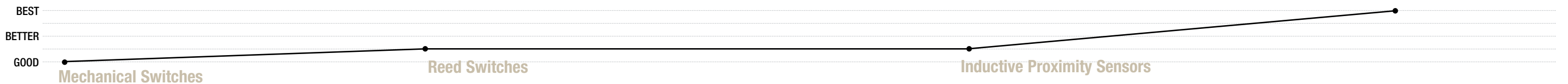
Leverless Limit Switches

Leverless limit switches use a unique, hybrid technology to detect the position of a ferrous target via an electro-magnetic field.

ADVANTAGES

The advantages of leverless limit switches:

- No physical contact is required
- Do not require power
- Only one moving part, with no metal-to-metal contact making it move – with nothing to jam, bend, break or wear out
- Can handle high current loads
- By far the widest operating temperature range
- Immune to electrical noise
- Immune to radio frequency interference
- No leakage current
- No voltage drops
- Simple "Normally Open" or "Normally Closed"
- Not polarity or voltage sensitive
- Can be wired in series or parallel
- Inherently intrinsically safe
- Large selection of shapes and sizes for a variety of applications
- Not affected by dust and dirt
- Not affected by moisture
- Not affected by physical contact
- Not affected by most caustics or chemicals
- Many explosion-proof options
- Water-proof and sub sea options
- Extended sensing ranges up to 4"



GO Switch Leverless Limit Switches

Unique Design Combines Three Technologies to Surpass Them All

The design behind GO Switch combines the best of all worlds, bringing together the advantages of mechanical limit switches, reed switches, and inductive proximity sensors to create a unique, hybrid technology that reaches new heights of performance.

By combining the best of three technologies, GO Switch enjoys a significant advantage, surpassing the capabilities that any of the three could achieve by itself.

As a result, the unique leverless limit switch design enables GO Switches to operate effectively under conditions that are too extreme for other technologies.

So if your plant processes include conditions that are extremely hot, cold, wet, dirty, corrosive, abusive, or explosive, be sure to demand technology with an advantage. Specify GO Switch leverless limit switches.



Abusive Applications

Because GO Switches have only one moving part and no metal-to-metal contact making it move, there is virtually nothing to wear out! They are built to last for high cycle, dirty, and physically abusive applications.

Explosive Environments

Because GO Switches use dry contacts, they are 'simple devices' suitable for use in Intrinsically Safe applications. And many models are available for Zone 1 Class I, Div 1 hazardous areas.

Corrosive Conditions

Because most GO Switches have stainless steel housings, they are the logical choice for applications around salt water, bleaches, or other caustic chemicals.

Washdown & Underwater

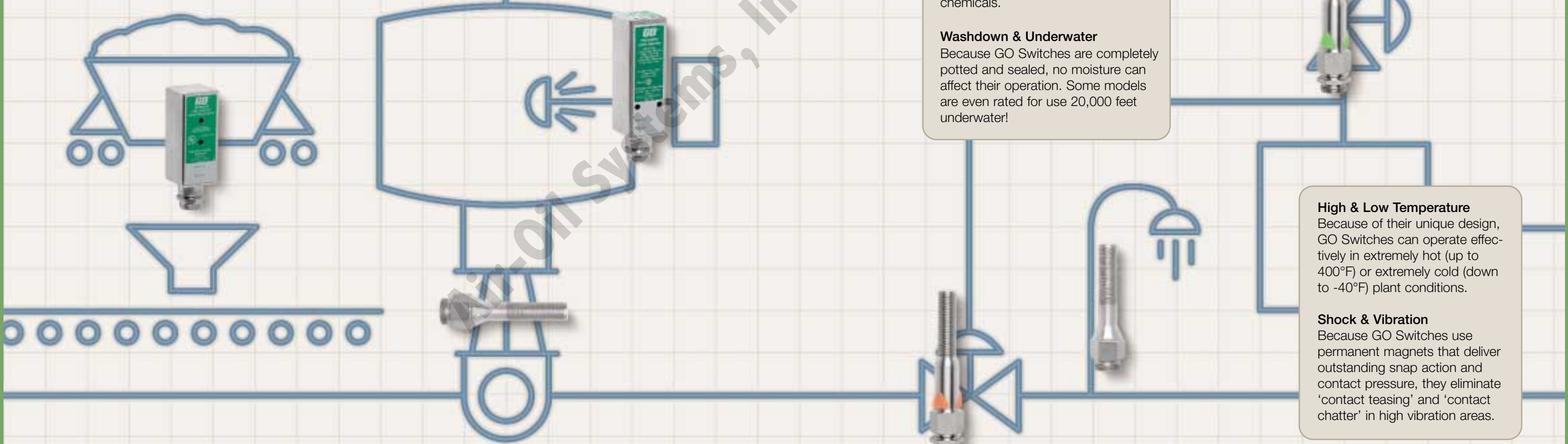
Because GO Switches are completely potted and sealed, no moisture can affect their operation. Some models are even rated for use 20,000 feet underwater!

High & Low Temperature

Because of their unique design, GO Switches can operate effectively in extremely hot (up to 400°F) or extremely cold (down to -40°F) plant conditions.

Shock & Vibration

Because GO Switches use permanent magnets that deliver outstanding snap action and contact pressure, they eliminate 'contact teasing' and 'contact chatter' in high vibration areas.



Air-Oil Systems, Inc. www.airoil.com

Square Sensors

TECHNOLOGY IN ACTION
10-20 Series

LEVERLESS LIMIT SWITCH

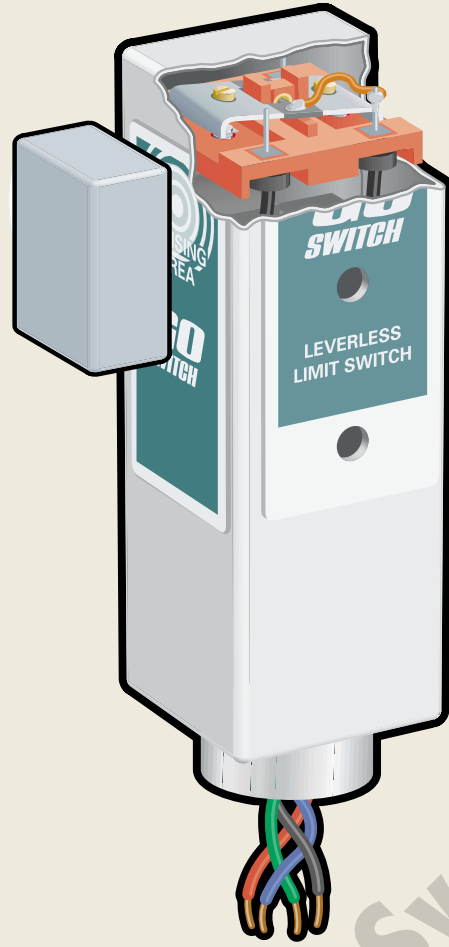
GO Switch 10 and 20 Series side sensing switches use two permanent magnets and a ferrous armature to control a set of dry contacts.



Unoperated

On the sensing side of the switch, one magnet is positioned closer to the armature, creating a dominant magnetic flux field which draws the armature down to its unoperated position, closing a contact circuit.

Shown: Model 11

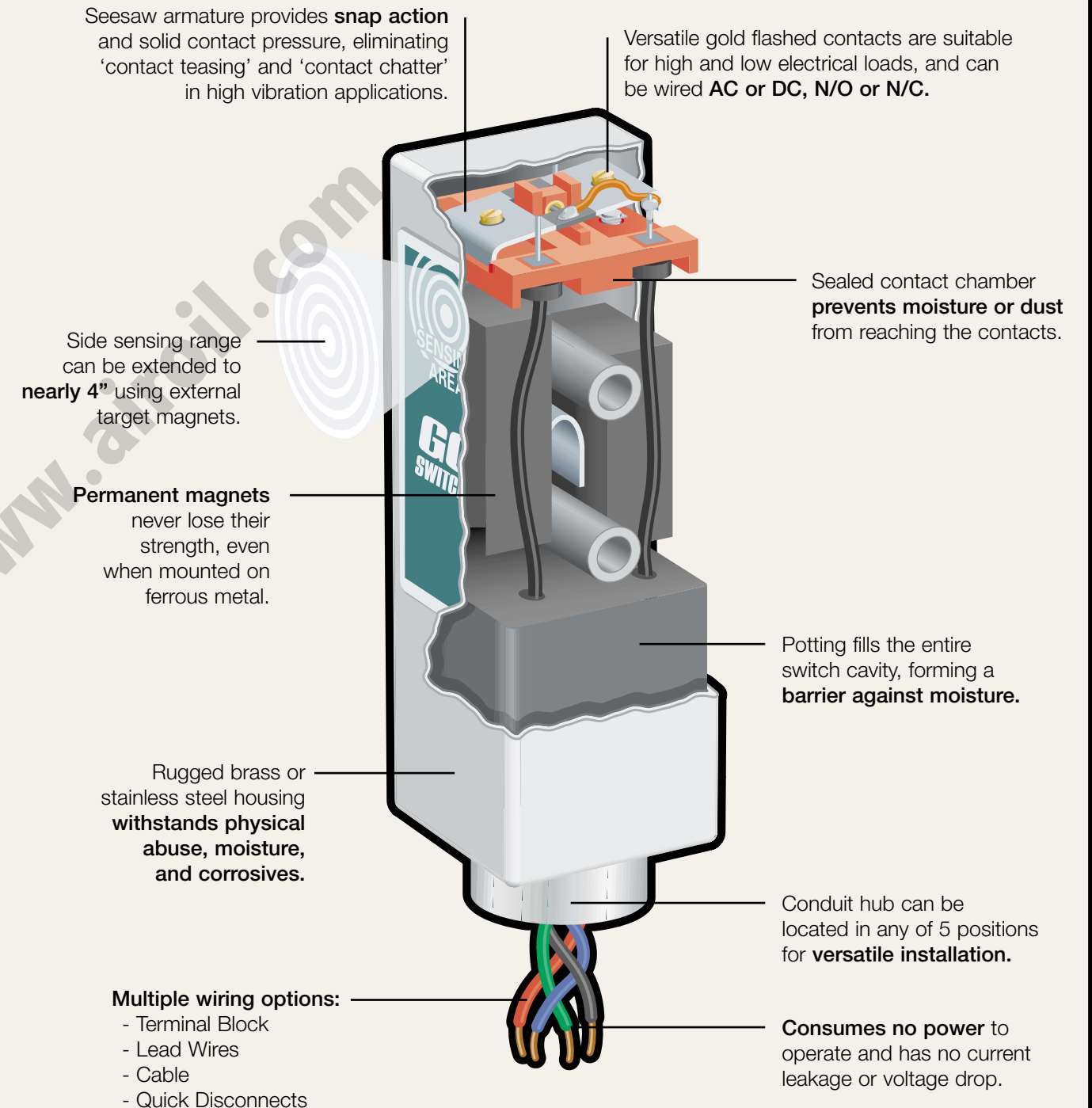


Operated

When a ferrous target enters the sensing area of the switch, it diverts flux lines from the armature to create a magnetic dominance on the opposite side. As a result, the armature snaps to its operated position, closing the other contact circuit.

When the target is removed the armature snaps back to its original, unoperated position.

A LOOK INSIDE - MODEL 11



Options Available

- Explosion Proof
- Extended Sensing
- HiTemp™ to 350°F
- SubSea™ Submersible
- Latching

Key Benefits

GO Switches are simple and built to last.

With only one moving part and no metal-to-metal contact forcing it to move, there is nothing to wear out!



Models 11 and 21

GO Switch Models 11 and 21 are the world's original leverless limit switches.

Their simple design, rugged enclosures, long sensing ranges, and global approvals make these switches the ideal choice wherever reliable position sensing is needed.

Features:

- SPDT 10A contacts
- Side Sensing
- 40° to 221°F operating temperature

Options:

- Suitable for Zone 0, 1, or 2 explosion proof
- 40° to 350°F high temperature
- Quick disconnect connector
- Underwater capabilities

FAST TRACK DELIVERY

11-11110-00 **21-11110-00**
 CSA Class I Div 2
 Side Terminal Block

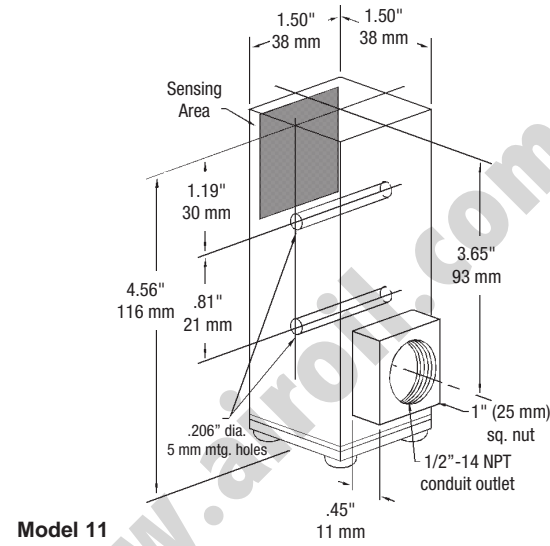
11-12110-00
 CSA Class I Div 2
 Extended Sensing

11-12510-00 **21-11510-00**
 CSA Class I Div 2
 Bottom Terminal Block

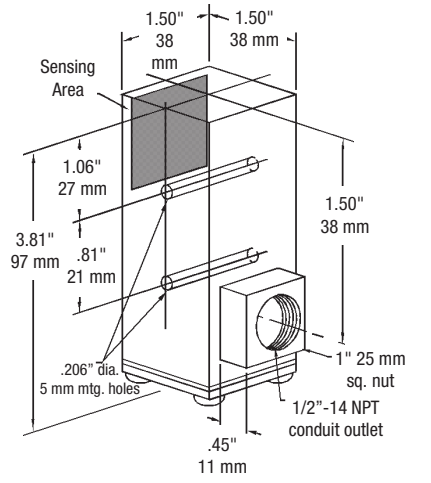
11-12518-A2 **21-11516-A2**
 UL/CSA General Purpose
 3 ft. leads

21-11524-A2
 CSA Class I Div 1; 3 ft. leads

Dimensions



Model 11



Model 21

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 5/16" (8 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C). HiTemp™ option to 350°F (176°C)</p> <p>✓ 11 Size: 1 1/2" (38 mm) square x 4 9/16" (116 mm) overall. Add 1/2" (13 mm) for bottom conduit outlet</p> <p>✓ 21 Size: 1 1/2" (38 mm) square x 3 13/16" (97 mm) overall. Add 1/2" (13 mm) for bottom conduit outlet</p>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Forms: SPDT, DMDDB</p> <p>Form C - SPDT</p> <p>Form Z - SPDT-DB</p> <p>Form Z - SPDT-DB</p> <p>Form C - SPDT</p> <p>Form Z - SPDT-DB</p>	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 3/8" (10mm) standard; 9/16" (14mm) extended sensing (Model 11)</p> <p>Sensing Range with Target Magnet: up to 3 3/4" (95 mm) (max)</p> <p>✓ 1 Standard sensing - approx. 3/8" (10 mm) side sensing</p> <p>✓ 2 Extended sensing - approx. 9/16" (14 mm) side sensing (Contact Form must be 1 or 3) (Model 11)</p> <p>7 Precision sensing - approx. 1/4" (6 mm) side sensing (minimal differential)</p>	<p>Contact Outlet: 1/2" NPT</p> <p>✓ 1 Behind sensing area</p> <p>2 Left of sensing area</p> <p>✓ 3 Right of sensing area</p> <p>4 Same side as sensing area</p> <p>✓ 5 Bottom of enclosure</p>	<p>Material: Brass or Stainless Steel</p> <p>✓ 1 Brass - coated with flat black lacquer</p> <p>2 Stainless steel**</p> <p>3 Brass - corrosion resistant coating (polyurethane)</p> <p>4 Stainless steel - corrosion resistant coating (polyurethane)**</p> <p>**All-welded stainless steel switches are recommended for wet or harsh environments.</p>	<p>UL SP FM MSHA</p> <p>2 High temperature to 350°F (176°C) with Teflon™ insulated leads (Model 11) (Contact form must be 1 or 3) (Sensing must be 1) (Enclosure must be 2) (Wiring must be F) UL General Purpose UL listed explosion proof for Cl I, Div 1 & 2; Grps A,B,C,D; Cl II, Div 1 & 2, Grps E-G; Cl III (Enclosure must be 2 or 4) (Lead seal req'd within 18")</p> <p>✓ 4 CSA / FM certified explosion proof for Cl I, Div 1 & 2; Grps A,B,C,D; Cl II, Div 1 & 2, Grps E-G; Cl III. (Enclosure must be 2 or 4)</p> <p>5 Mine Safety Health Administration (MSHA) approved "Explosion Proof", File #X / P-1504-1, X / P-1504-2; 6 ft. (1.829m) potted-in SO cable only (Enclosure must be 2) (Wiring must be B3)</p> <p>✓ 6 CSA / FM certified explosion proof for Cl I, Div 2; Grps A,B,C,D; Cl II, Div 2, Grps E-G; Cl III</p> <p>7 CSA certified General Purpose</p> <p>✓ 8 UL listed General Purpose</p> <p>✓ 0 CSA / FM certified Cl I, Div 2, Grps A,B,C,D; Cl II, Div 2, Grps F & G; Cl III Terminal block. (Contact form must be 1 or 3) (Wiring must be 00)</p> <p>A SAA: Ex s IIC T6 IP65; Cl I Zone 1 & 2; EX S IIC T6 IP65; Cl I Zone 0; DIP Cl II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be A or 00) (Metric hub available)</p> <p>B SAA: High Temp 350°F (176°C); EX S IIC T6 IP65; Cl I Zone 1 & 2; EX S IIC T6 IP65; Cl I Zone 0; DIP Cl II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be F) (Metric hub available)</p> <p>C SAA: Ex e IIC T6 IP65; Cl I Zone 1 (Rated to 275 VAC) (Wiring must be 00) (Metric hub available)</p>	<p>Terminal Block</p> <p>✓ 00 Terminal block only (not recommended for underwater use) (Approval must be 0, 7 or 8)</p> <p>Lead Wires 18 Gauge (.110" dia.) potted-in PVC insulated AWM / TEW stranded lead wires rated at 221°F (105°C) 600V UL / CSA listed</p> <p>✓ A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A ___ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (.450" dia.) potted-in SO rubber covered cable rated at 194°F (90°C) 600V UL / CSA listed</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B ___ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approval must be 7 or 8) Refer to pp. 92-103 for mating cable assemblies and Aura Light Adapters.</p> <p>Mini-change®</p> <p>DCA 3 - pin Mini-change® type</p> <p>DCD 4 - pin Mini-change® type</p> <p>DCG 5 - pin Mini-change® type</p> <p>Micro-change®</p> <p>DBA 3 - pin Micro-change® type</p> <p>DBD 4 - pin Micro-change® type</p> <p>DBG 5 - pin Micro-change® type</p> <p>SubSea™ Underwater Connector (Enclosure must be 2 or 4) (Approval 7 or 8)</p> <p>3DD 3 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>4DD 4 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>3DE 3 pin right-angle, certified not to leak underwater (Enclosure must be 2 or 4)</p> <p>4DE 4 pin right-angle, certified not to leak underwater (Enclosure must be 2 or 4)</p> <p>HiTemp Wire 18 gauge (.070" dia.) potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F ___ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>

Need Accessories?

See pp. 92-103 for:
 Range Extending
 Target Magnets
 Mounting Brackets
 Connectors and more!

Ordering Guide

Fill in the boxes to create your 'ordering number.'

Extended Sensing with External Target Magnets

AMP3 Target Magnet		10 Series			20 Series	
Contact Form		1 Standard	2 Extended	7 Precision	1 Standard	7 Precision
SPDT	Sensing Differential	1" (25mm) 1/2" (13mm)	1-1/4" (32mm) 5/8" (16mm)	11/16" (17mm) 7/16" (11 mm)	1" (25 mm) 3/4" (19 mm)	3/4" (19 mm) 7/16" (11 mm)
SPDT Latching	Sensing Differential	15/16" (24mm) N/A	1-1/4" (32mm) N/A	3/4" (19mm) N/A	1" (25 mm) N/A	13/16" (21 mm) N/A
DMDB	Sensing Differential	1" (25mm) 11/16" (17mm)	N/A	9/16" (14mm) 7/16" (11mm)	1" (25 mm) 1" (25 mm)	3/4" (19 mm) 11/16" (17 mm)
DMDB Latching	Sensing Differential	1" (25mm) N/A	N/A	N/A	1-1/4" (32 mm) N/A	N/A

AMS4 Target Magnet		10 Series			20 Series	
Contact Form		1 Standard	2 Extended	7 Precision	1 Standard	7 Precision
SPDT	Sensing Differential	1-1/4" (32mm) 11-16" (17mm)	1-9/16" (40mm) 11/16" (17mm)	7/8" (22mm) 1/2" (13 mm)	1-3/8" (35 mm) 7/8" (22 mm)	1" (25 mm) 7/16" (11 mm)
SPDT Latching	Sensing Differential	1-3/16" (30mm) N/A	1-5/8" (40mm) N/A	1" (25 mm) N/A	1-7/16" (37mm) N/A	1" (25 mm) N/A
DMDB	Sensing Differential	1-1/4" (32 mm) 7/8" (22 mm)	N/A	13/16" (21mm) 1/2" (13mm)	1-15/16" (37mm) 9/16" (14 mm)	1" (25 mm) 3/4" (19 mm)
DMDB Latching	Sensing Differential	1-11/32" (34 mm) N/A	N/A	N/A	1-9/16" (40mm) N/A	N/A

AMC5 Target Magnet		10 Series			20 Series	
Contact Form		1 Standard	2 Extended	7 Precision	1 Standard	7 Precision
SPDT	Sensing Differential	3-3/8" (86mm) 1-1/2" (38mm)	3-3/4" (95mm) 1-1/2" (38mm)	2-3/8" (60mm) 1" (25mm)	3-3/8" (86mm) 1-3/4" (44mm)	2-5/8" (66mm) 1" (25mm)
SPDT Latching	Sensing Differential	3-3/32" (79mm) N/A	3-7/8" (98mm) N/A	2-11/16" (68mm) N/A	3-7/16" (87mm) N/A	2-13/16" (71mm) N/A
DMDB	Sensing Differential	3-7/16" (87mm) 1-13/16" (46mm)	N/A	2-7/32" (56mm) 1" (25mm)	3-3/8" (86mm) 2" (51mm)	2-5/8" (67mm) 1-3/8" (35mm)
DMDB Latching	Sensing Differential	3-3/8" (86mm) N/A	N/A	N/A	3-7/8" (98mm) N/A	N/A

AMF6 Target Magnet		10 Series			20 Series	
Contact Form		1 Standard	2 Extended	7 Precision	1 Standard	7 Precision
SPDT	Sensing Differential	2-7/16" (62mm) 1-1/2" (38mm)	3" (76mm) 1-11/16" (38mm)	1-15/16" (33mm) 1-3/32" (28mm)	2-7/16" (62mm) 1-15/16" (49mm)	1-9/16" (40mm) 7/8" (22mm)
SPDT Latching	Sensing Differential	2-5/32" (55mm) N/A	3-3/16" (81 mm) N/A	1-9/16" (40mm) N/A	2-1/2" (64mm) N/A	1-13/16" (46mm) N/A
DMDB	Sensing Differential	2-1/4" (57mm) 1-13/16" (46mm)	N/A	1-1/8" (29mm) 1-3/32" (28mm)	2-3/8" (60mm) 2-13/16" (71mm)	1-1/2" (38mm) 1-1/2" (38mm)
DMDB Latching	Sensing Differential	2-7/16" (62mm) N/A	N/A	N/A	3" (76mm) N/A	N/A

Agency Approvals

Approvals	(3) UL Class 1 Div 1	(4) CSA/FM Class 1 Div 1	(5) MSHA	(6) CSA/FM Class 1 Div 2	(7) CSA General Purpose	(8) UL General Purpose	(0) CSA/FM Class 1 Div 2	(A) SAA Exs IIc T6 IP65	(C) SAA Exe IIc IP65
Termination Options									
00 - Terminal Block					X	X	X	X	X
A - Potted PVC Leads	X	X		X	X	X		X	
B - Potted SO Cable		X	X	X	X	X			
D - Quick Disconnect					X	X			
D - SubSea™ Connector					X	X			
F - Potted HiTemp™ Leads	X	X		X	X	X			

X = Approvals Available

NEMA Ratings

NEMA CLASSES	Non-Hazardous				Hazardous	
	4	4X	6	6P	7	9
00 - Terminal Block	X					
A - Potted PVC Leads	X	SS	X	SS	SS	SS
B - Potted SO Cable	X	SS	X	SS	SS	SS
D - Quick Disconnect	X	SS	X	SS		
D - SubSea™ Connector	X	SS	X	SS		
F - Potted HiTemp™ Leads	X	SS	X	SS	SS	SS

SS = Stainless steel

X = Designed to meet respective NEMA specifications

Wiring Diagrams (male view)

4 Wire PVC & HiTemp Leads	
N/C	Red
N/O	Blue
COM	Black
GND	Green

Terminations A & F

SO Cable	
N/C	Red
N/O	White
COM	Black
GND	Green

Termination B

DMDB Form Z PVC Leads	
N/C 1 & 2	Red & Red/White Stripe
N/O 1 & 2	Blue & Blue/White Stripe

Termination A

DMDB Form Z Mini-Change QDC - 4 Pin	
Pin 1	N/O 2
Pin 2	N/C 2
Pin 3	N/C 1
Pin 4	N/O 1

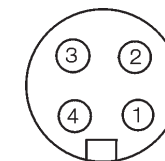
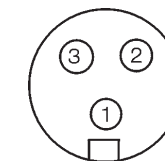
Termination DCD

Mini-Change QDC - 3 Pin	
Pin 1	COM
Pin 2	N/C
Pin 3	N/O

Termination DCA

Mini-Change QDC - 4 Pin	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination DCD



Mini-Change QDC - 5 Pin	
Pin 1	N/O
Pin 2	N/C
Pin 3	GND
Pin 4	Inactive
Pin 5	COM

Termination DCG

Micro-Change QDC - 4 Pin	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination DBD

Micro-Change QDC - 3 Pin	
Pin 1	COM
Pin 2	N/C
Pin 3	N/O

Termination DBA

SubSea - 3 Pin - Lock Sleeve	
Pin 1	N/C
Pin 2	COM
Pin 3	N/O

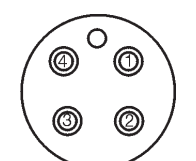
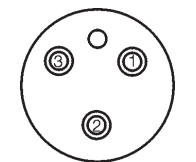
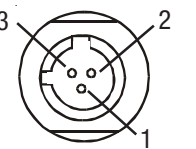
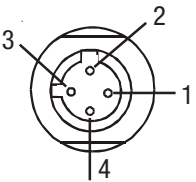
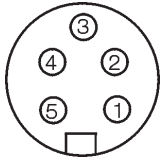
Termination 3DD

SubSea - 3 Pin - Right Angle	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C

Termination 3DE

SubSea - 4 Pin - Lock Sleeve	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination 4DD

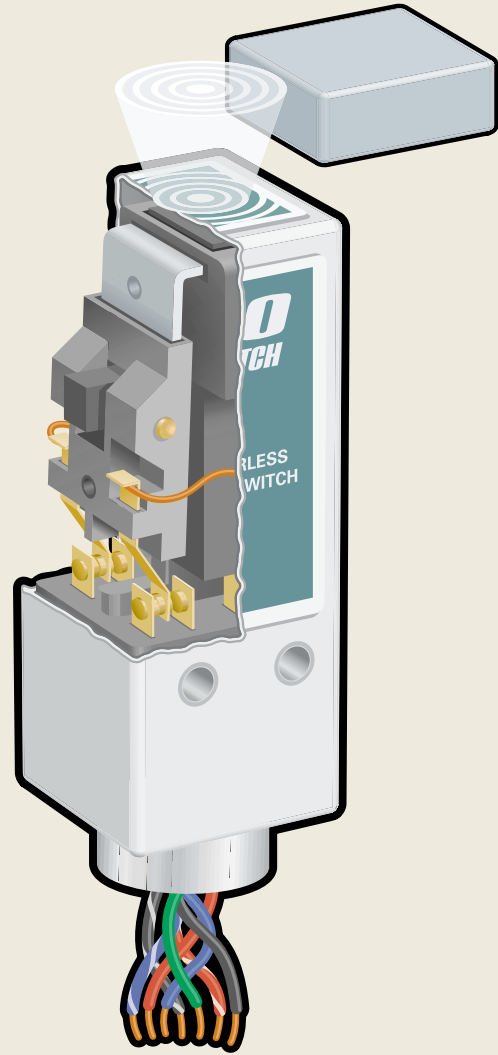


TECHNOLOGY IN ACTION

30 - 80 Series

LEVERLESS LIMIT SWITCH

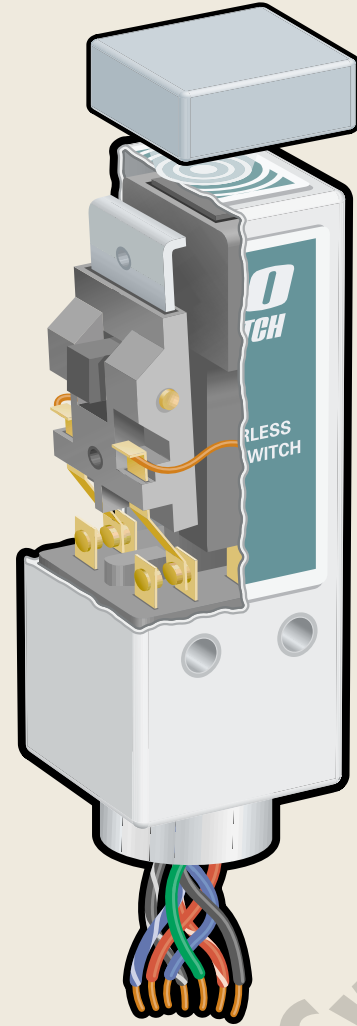
GO Switch 30 and 80 Series end sensing switches use one permanent magnet and a ferrous armature to control a set of dry contacts.



Unoperated

The armature is positioned off-center of the magnet, creating a dominant magnetic flux field on the sensing end of the switch which draws the armature down to its unoperated position, closing a contact circuit.

Shown: Model 81

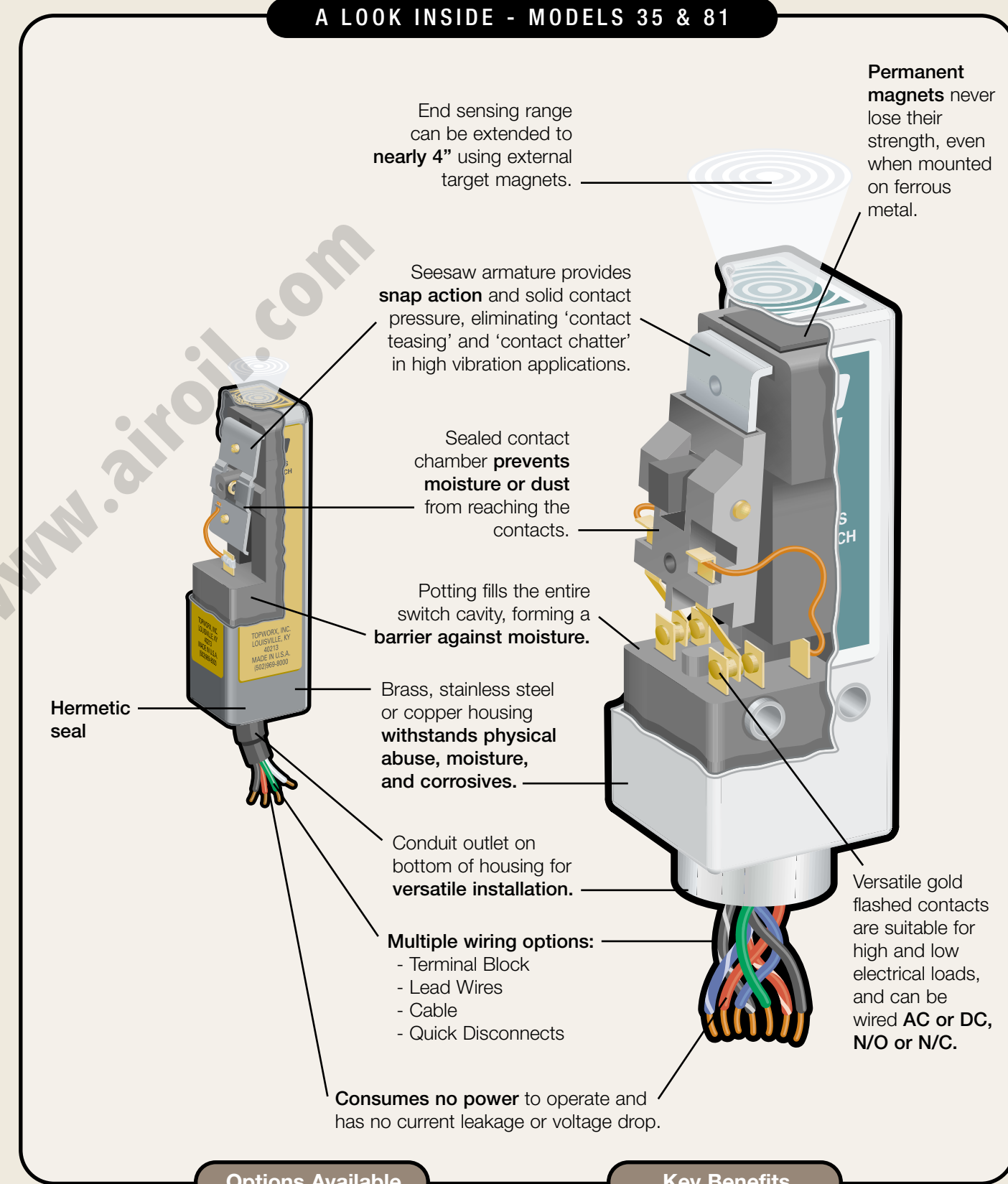


Operated

When a ferrous target enters the sensing area of the switch, it diverts flux lines from the armature to create a magnetic dominance on the opposite side. As a result, the armature snaps to its operated position, closing the other contact circuit.

When the target is removed the armature snaps back to its original, unoperated position.

A LOOK INSIDE - MODELS 35 & 81



Options Available

- Explosion Proof
- SPDT or DPDT
- HiTemp™ to 350°
- SubSea™ Submersible
- Hermetically Sealed

Key Benefits

GO Switches are simple and built to last.

With only one moving part and no metal-to-metal contact forcing it to move, there is nothing to wear out!



Models 31, 32, and 33

GO Switch Models 31, 32, and 33 offer end sensing in compact stainless steel enclosures.

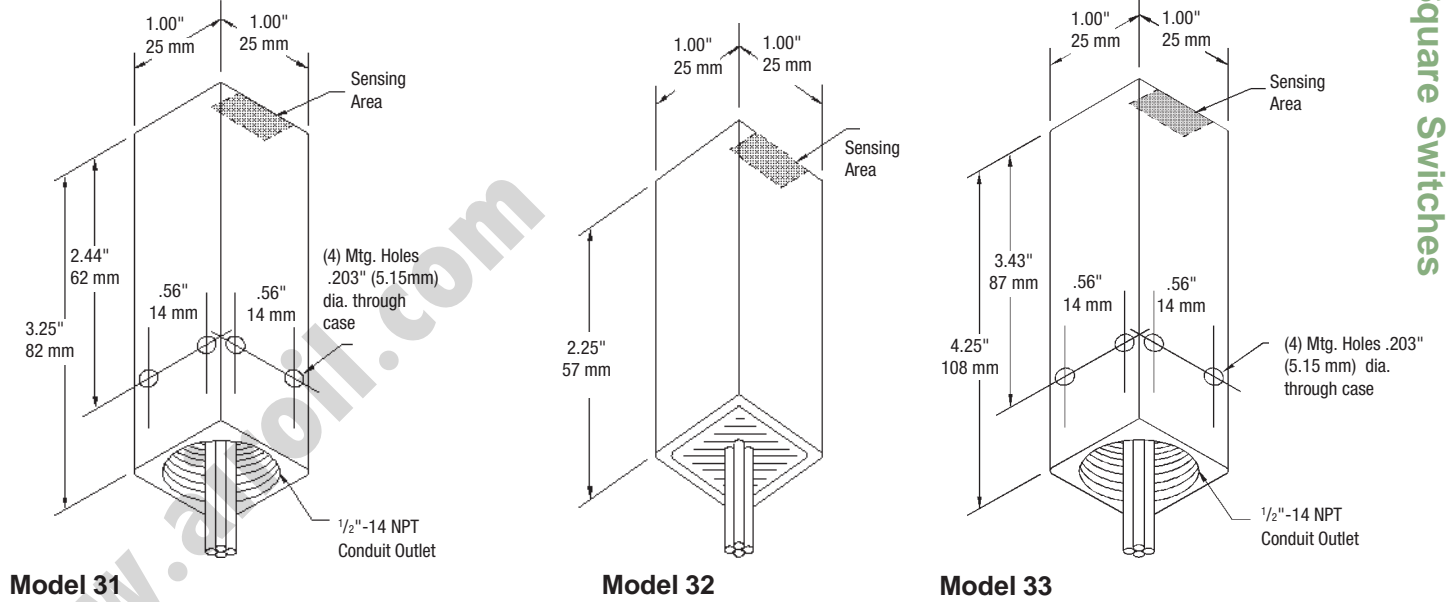
Features:

- SPDT 6A contacts
- End Sensing
- 40° to 221°F operating temperature

Options:

- Suitable for Zone 0, 1, or 2 explosion proof
- Quick disconnect connector

Dimensions



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																				
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 1/4" (6 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C)</p> <p>31 Size: 1" (25 mm) square x 3 1/4" (81 mm) overall</p> <p>32 Size: 1" (25 mm) square x 2 1/4" (57 mm) overall (includes mounting bracket)</p> <p>33 Size: 1" (25 mm) square x 4 1/4" (108 mm) overall</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Need Accessories?</p> <p>See pp. 92-103 for:</p> <ul style="list-style-type: none"> Range Extending Target Magnets Mounting Brackets Connectors and more! </div>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Form: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>6</td> <td>24</td> <td>2</td> </tr> <tr> <td>240</td> <td>3</td> <td>48</td> <td>*</td> </tr> <tr> <td>480</td> <td>*</td> <td>125</td> <td>*</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.25</td> </tr> </tbody> </table> <p><input checked="" type="checkbox"/> 1 Single Pole Double Throw (Form C)</p> <div style="text-align: center; margin-top: 10px;"> <p>Form C - SPDT</p> </div>	AC		DC		Volts	Amps	Volts	Amps	120	6	24	2	240	3	48	*	480	*	125	*			250	0.25	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 1/4" (6 mm)</p> <p>Sensing Range with Target Magnet: up to 2 5/8" (66 mm) (max)</p> <p><input checked="" type="checkbox"/> 7 Precision sensing - approx. 1/4" (6 mm) side sensing (minimal differential)</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Models 31 and 32</th> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td></td> <td>3/4"</td> <td>1-1/4"</td> </tr> <tr> <td>AMS4</td> <td></td> <td>1"</td> <td>1-1/2"</td> </tr> <tr> <td>AMC5</td> <td></td> <td>2-5/8"</td> <td>3-1/2"</td> </tr> <tr> <td>AMF6</td> <td></td> <td>1-5/8"</td> <td>4-1/4"</td> </tr> </tbody> </table>	Models 31 and 32	Magnet	Sensing	Differential	AMP3		3/4"	1-1/4"	AMS4		1"	1-1/2"	AMC5		2-5/8"	3-1/2"	AMF6		1-5/8"	4-1/4"	<p>Conduit Outlet: 1/2 NPT, bottom. (Model 31 and 33)</p> <p>3 No conduit hub (Model 32) (includes mounting bracket)</p> <p><input checked="" type="checkbox"/> 5 Conduit hub on bottom of enclosure with mounting holes (Model 31 and 33)</p>	<p><input checked="" type="checkbox"/> 2 Stainless steel</p> <p>4 Stainless steel - corrosion resistant coating (polyurethane)</p>	<p></p> <p><input checked="" type="checkbox"/> 4 CSA / FM certified explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III. (Model 31)</p> <p>6 CSA / FM certified explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III. (Model 31) (Wiring must be F)</p> <p>7 CSA certified General Purpose (Wiring must be A, B, or D)</p> <p><input checked="" type="checkbox"/> 8 UL listed General Purpose</p> <p>A SAA: Ex s IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Model 31 and 33) (Wiring must be A)</p>	<p>Lead Wires 18 Gauge (.110" dia.) potted-in PVC insulated AWM / TEW stranded lead wires rated at 221°F (105°C) 600V UL / CSA listed</p> <p><input checked="" type="checkbox"/> A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A_ _ _ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (.250" dia.) potted-in PVC rubber covered cable rated at 194°F (90°C) 600V UL / CSA listed</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B_ _ _ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approval must be 7 or 8) (Model 31 only and 33) Refer to pp. 92-103 for mating cable assemblies and Aura Light Adapters.</p> <table border="0" style="width: 100%; margin-top: 10px;"> <tr> <td style="text-align: center;">Mini-change®</td> <td style="text-align: center;">Micro-change®</td> </tr> <tr> <td>DCA 3 - pin Mini-change® type</td> <td>DBA 3 - pin Micro-change® type</td> </tr> <tr> <td>DCD 4 - pin Mini-change® type</td> <td>DBD 4 - pin Micro-change® type</td> </tr> <tr> <td>DCG 5 - pin Mini-change® type</td> <td>DBG 5 - pin Micro-change® type</td> </tr> </table> <p>HiTemp Wire 18 gauge (.070" dia.) potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F_ _ _ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>	Mini-change®	Micro-change®	DCA 3 - pin Mini-change® type	DBA 3 - pin Micro-change® type	DCD 4 - pin Mini-change® type	DBD 4 - pin Micro-change® type	DCG 5 - pin Mini-change® type	DBG 5 - pin Micro-change® type
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1	7	5	2	4	4, 6, 7, 8	A2, A3, A4, B2, B3, B4, F2, F3, F4																																																				



Model 35

The GO Switch Model 35 leverless limit switch has set the standard for reliable performance in valve position monitors.

With its hermetically sealed contacts, low hysteresis, and superior resistance to vibration, moisture, contaminants, abuse, and temperature extremes, the GO Switch 35 clearly out performs any other sensor on the planet.

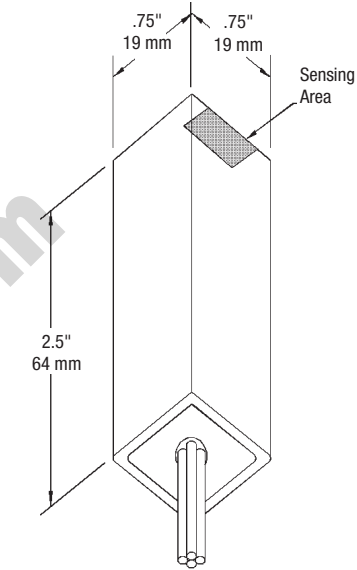
When ordering valve position monitors and switchboxes, be sure to specify "GO Switch inside."



FAST TRACK DELIVERY

35-13319-A2
Hermetic Seal

Dimensions



Model 35

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																							
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 5/32" (4 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C)</p> <p>✓ 35 Size: 3/4" (19 mm) square x 2 1/2" (64 mm) overall</p>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Forms: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>1</td> </tr> <tr> <td>480</td> <td>*</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>*</td> </tr> </tbody> </table> <p>Model 35</p> <p>✓ 1 Single Pole Double Throw (Form C)</p> <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	4	24	3	240	2	48	1	480	*	125	0.5			250	*	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 1/10" (2.5 mm)</p> <p>Sensing Range with Target Magnet: up to 3 5/8" (92mm) (max)</p> <p>✓ 3 Approx. 1/10" (2.5 mm) end sensing</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>1-5/32"</td> <td>15/16"</td> </tr> <tr> <td>AMS4</td> <td>1-1/2"</td> <td>1-3/4"</td> </tr> <tr> <td>AMC5</td> <td>3-5/8"</td> <td>1-3/4"</td> </tr> <tr> <td>AMF6</td> <td>2-9/16"</td> <td>2-5/8"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	1-5/32"	15/16"	AMS4	1-1/2"	1-3/4"	AMC5	3-5/8"	1-3/4"	AMF6	2-9/16"	2-5/8"	<p>✓ 3 No conduit hub</p>	<p>✓ 1 Copper - coated with flat black lacquer</p>	<p></p> <p>7 CSA certified General Purpose (Wiring must be A or B)</p> <p>8 UL listed General Purpose</p> <p>✓ 9 Hermetic seal; UL listed General Purpose</p>	<p>Lead Wires 18 Gauge (.110" dia.) potted-in PVC insulated AWM / TEW stranded lead wires rated at 221°F (105°C) 600V UL / CSA listed</p> <p>✓ A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A_ _ _ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (.250" dia.) potted-in PVC rubber covered cable rated at 194°F (90°C) 600V UL / CSA listed</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B_ _ _ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Need Accessories?</p> <p>See pp. 92-103 for:</p> <p>Range Extending Target Magnets</p> <p>Mounting Brackets</p> <p>Connectors and more!</p> </div>
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<p>Model</p> <p>35</p>	<p>Contact Form</p> <p>1</p>	<p>Sensing Range</p> <p>3</p>	<p>Outlet Position</p> <p>3</p>	<p>Enclosure Material</p> <p>1</p>	<p>Approvals</p>	<p>Wiring Options</p>																																							

Ordering Guide

Fill in the boxes to create your 'ordering number.'

Agency Approvals

Approvals	(4) CSA/FM Class 1 Div 1	(6) CSA/FM Class 1 Div 2	(7) CSA General Purpose	(8) UL General Purpose	(9) Hermetic Seal Model 35	(A) SAA Exs IIc T6 IP65
Termination Options						
A - Potted PVC Leads			X	X	X	X
B - Potted PVC Cable			X	X	X	
D - Quick Disconnect			X	X		
F - Potted HiTemp™ Leads	X	X		X		

X = Approvals Available

NEMA Ratings

NEMA CLASSES	Non-Hazardous				Hazardous	
	4	4X	6	6P	7	9
A - Potted PVC Leads	X	X				
B - Potted PVC Cable	X	X				
D - Quick Disconnect	X	X	X	X		
F - Potted HiTemp™ Leads	X	X	X	X	X	X
35 Series Hermetic seal w/ potting	X	X	X	X		

X = Designed to meet respective NEMA specifications

Wiring Diagrams (male view)

PVC & Teflon Leads - UL	
N/C	Red
N/O	Blue
COM	Black

Termination A & F

PVC & Teflon Leads - CSA	
N/C	Red
N/O	Blue
COM	Black
GND	Green

Termination A & F

PVC Cable - UL	
N/C	Red
N/O	White
COM	Black

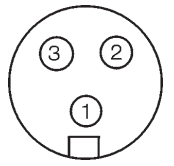
Termination B

PVC Cable - CSA	
N/C	Red
N/O	White
COM	Black
GND	Green

Termination B

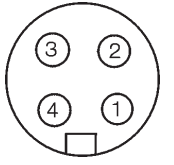
Mini-Change QDC - 3 Pin	
Pin 1	COM
Pin 2	N/C
Pin 3	N/O

Termination DCA



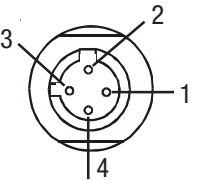
Mini-Change QDC - 4 Pin	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination DCD



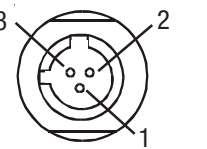
Micro-Change QDC - 4 Pin	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination DBD



Micro-Change QDC - 3 Pin	
Pin 1	COM
Pin 2	N/C
Pin 3	N/O

Termination DBA



www.air-oil.com
Air-Oil Systems, Inc.



Model 81

The GO Switch Model 81 offers end sensing and an optional Double Pole Double Throw contact arrangement. With its brass or stainless steel housings and global certifications, it is a popular choice around the world.

Features:

- SPDT or DPDT 10A contacts
- End Sensing
- 40° to 221°F operating temperature

Options:

- Suitable for Zone 0, 1, or 2 explosion proof
- 40° to 350°F high temperature
- Quick disconnect connector
- Underwater capabilities

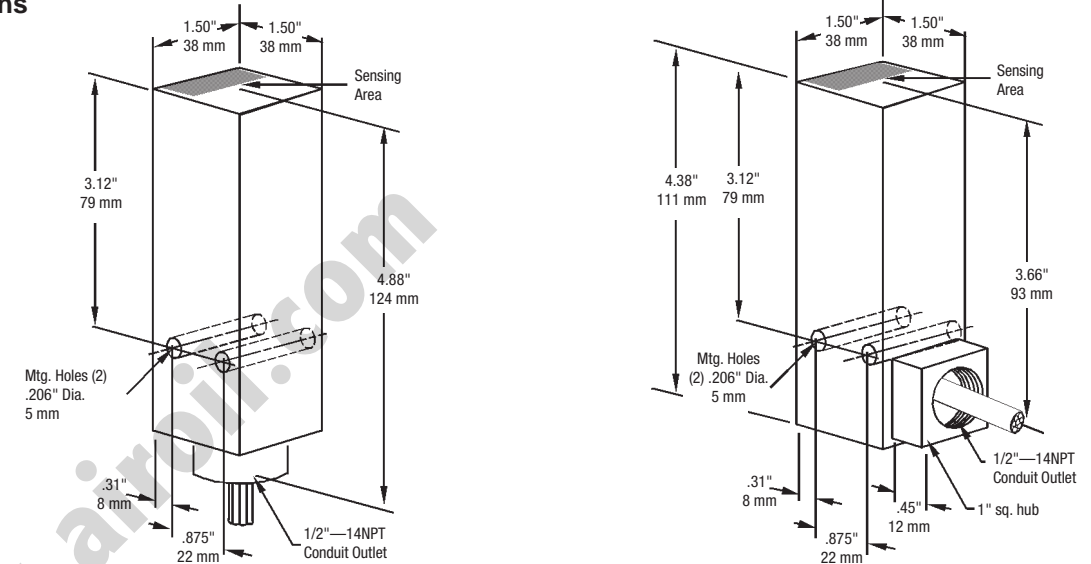
FAST TRACK DELIVERY

81-20516-A2
CSA Class I Div 2
DPDT Brass, 3 ft. leads

81-20518-A2
UL General Purpose
DPDT Brass, 3 ft. leads

81-20524-A2
CSA Class I Div 1
DPDT Stainless, 3 ft. leads

Dimensions



Model 81

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																							
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 1/4" (6 mm)</p> <p>Operating Temperature: -40° to 221°F (-40°C to 105°C). HiTemp™ option to 350°F (176°C)</p> <p>81 Size: 1 1/2" (38 mm) square x 4 3/8" (111 mm) overall. Subtract 1/2" (13 mm) from length for side conduit</p> <p>Need Accessories? See pp. 92-103 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p> <p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Forms: DPDT, Form CC; SPDT, Form C Electrically isolated</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>10</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>5</td> <td>48</td> <td>1</td> </tr> <tr> <td>480</td> <td>2.5</td> <td>120</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>1 Single Pole Double Throw (Form C)</p> <p>2 Double Pole Double Throw (Form CC)</p>	AC		DC		Volts	Amps	Volts	Amps	120	10	24	3	240	5	48	1	480	2.5	120	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 1/4" (6 mm)</p> <p>Sensing Range with Target Magnet: up to 3 7/8" (98 mm) (max)</p> <p>0 Approx. 1/4" (6 mm) end sensing</p> <p>Extended Sensing with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>15/16"</td> <td>3/4"</td> </tr> <tr> <td>AMS4</td> <td>1-3/8"</td> <td>1-1/8"</td> </tr> <tr> <td>AMC5</td> <td>3-7/8"</td> <td>2-1/8"</td> </tr> <tr> <td>AMF6</td> <td>2-3/4"</td> <td>1-5/8"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	15/16"	3/4"	AMS4	1-3/8"	1-1/8"	AMC5	3-7/8"	2-1/8"	AMF6	2-3/4"	1-5/8"	<p>Conduit Outlet: 1/2 NPT Two locations</p> <p>1 Side outlet</p> <p>5 Bottom of enclosure</p>	<p>Material: Brass or Stainless Steel</p> <p>1 Brass - coated with flat black lacquer</p> <p>2 Stainless steel</p> <p>3 Brass - corrosion resistant coating (polyurethane)</p> <p>4 Stainless steel - corrosion resistant coating (polyurethane)</p>	<p>Approvals: UL, SP, FM, SAA</p> <p>1 No Approvals (Wiring must be 00)</p> <p>2 High temperature to 350°F (176°C) with Teflon™ insulated leads</p> <p>3 UL listed explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III (Enclosure must be 2 or 4) (Lead seal req'd within 18") (DPDT, leads only)</p> <p>4 CSA / FM certified explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III. (Enclosure must be 2 or 4)</p> <p>6 CSA / FM certified explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III</p> <p>7 CSA certified General Purpose</p> <p>8 UL listed General Purpose</p> <p>A SAA: Ex s IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be A or 00)</p> <p>B SAA: High Temp EX S IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be F)</p>	<p>Terminal Block 00 Terminal block only (SPDT only, Approvals must be 1)</p> <p>Lead Wires 18 Gauge (.110" dia.) potted-in PVC insulated AWM / TEW stranded lead wires rated at 221°F (105°C) 600V UL / CSA listed</p> <p>A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A___ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (.450" dia.) potted-in SO rubber covered cable rated at 194°F (90°C) 600V UL / CSA listed (Contact Form must be 1)</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B___ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approval must be 7 or 8) Refer to pp. 92-103 for mating cable assemblies and Aura Light Adapters.</p> <p>Mini-change®</p> <p>DCA 3 - pin Mini-change® type</p> <p>DCD 4 - pin Mini-change® type</p> <p>DCG 5 - pin Mini-change® type</p> <p>SubSea™ Underwater Connector (Enclosure must be 2 or 4)</p> <p>3DD 3 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>4DD 4 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>8DD 8 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>3DE 3 pin right-angle, certified not to leak underwater (Enclosure must be 2 or 4)</p> <p>4DE 4 pin right-angle, certified not to leak underwater (Enclosure must be 2 or 4)</p> <p>HiTemp Wire 18 gauge (.070" dia.) potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F___ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>
AC		DC																																											
Volts	Amps	Volts	Amps																																										
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AMF6	2-3/4"	1-5/8"																																											
Model 81	Contact Form	Sensing Range 0	Outlet Position	Enclosure Material	Approvals	Wiring Options																																							

Agency Approvals

Approvals	(1) No Approvals	(3) UL Class 1 Div 1	(4) CSA/FM Class 1 Div 1	(6) CSA/FM Class 1 Div 2	(7) CSA General Purpose	(8) UL General Purpose	(A) SAA Exs IIc T6 IP65
Termination Options							
00 - Terminal Block	X						
A - Potted PVC Leads		X	X	X	X	X	X
B - Potted SO Cable		X	X	X	X	X	
D - Quick Disconnect					X	X	
D - SubSea™ Connector					X	X	
F - Potted HiTemp™ Leads		X	X	X	X	X	

X = Approvals Available

NEMA Ratings

NEMA CLASSES	Non-Hazardous				Hazardous	
	4	4X	6	6P	7	9
00 - Terminal Block	X					
A - Potted PVC Leads	X	SS	X	SS	SS	SS
B - Potted SO Cable	X	SS	X	SS	SS	SS
D - Quick Disconnect	X	SS	X	SS		
D - SubSea™ Connector	X	SS	X	SS		
F - Potted HiTemp™ Leads	X	SS	X	SS	SS	SS

SS = Stainless steel

X = Designed to meet respective NEMA specifications

Wiring Diagrams (male view)

4 Wire PVC & HiTemp Leads

N/C	Red
N/O	Blue
COM	Black
GND	Green

Terminations A & F

SO Cable

N/C	Red
N/O	White
COM	Black
GND	Green

Termination B

PVC Leads, Cable & Teflon Leads

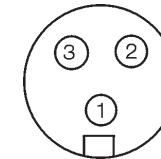
N/C1 - Red	N/C2 - Red/White Stripe
N/O1 - Blue	N/O2 - Blue/White Stripe
COM1 - Black	COM2 - Black/White Stripe
GND - Green	

Termination A & F

Mini-Change QDC - 3 Pin

Pin 1	COM
Pin 2	N/C
Pin 3	N/O

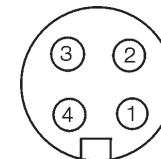
Termination DCA



Mini-Change QDC - 4 Pin

Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

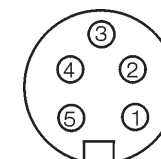
Termination DCD



Mini-Change QDC - 5 Pin

Pin 1	N/O
Pin 2	N/C
Pin 3	GND
Pin 4	Inactive
Pin 5	COM

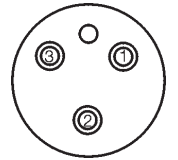
Termination DCG



SubSea - 3 Pin - Lock Sleeve

Pin 1	N/C
Pin 2	COM
Pin 3	N/O

Termination 3DD



SubSea - 3 Pin - Right Angle

Pin 1	COM
Pin 2	N/O
Pin 3	N/C

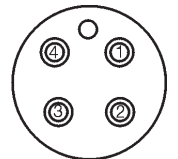
Termination 3DE



SubSea - 4 Pin - Lock Sleeve

Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

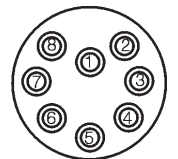
Termination 4DD



SubSea - 8 Pin - Lock Sleeve

Pin 1	COM ₁
Pin 2	N/O ₁
Pin 3	N/C ₁
Pin 4	GND
Pin 5	N/C ₂
Pin 6	N/O ₂
Pin 7	COM ₂
Pin 8	Inactive

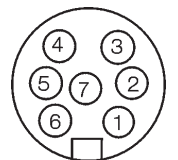
Termination 8DD



Mini-Change QDC - 7 Pin

Pin 1	N/O ₂
Pin 2	COM ₁
Pin 3	N/C ₂
Pin 4	N/C ₁
Pin 5	COM ₂
Pin 6	N/O ₁
Pin 7	GND

Termination DCH



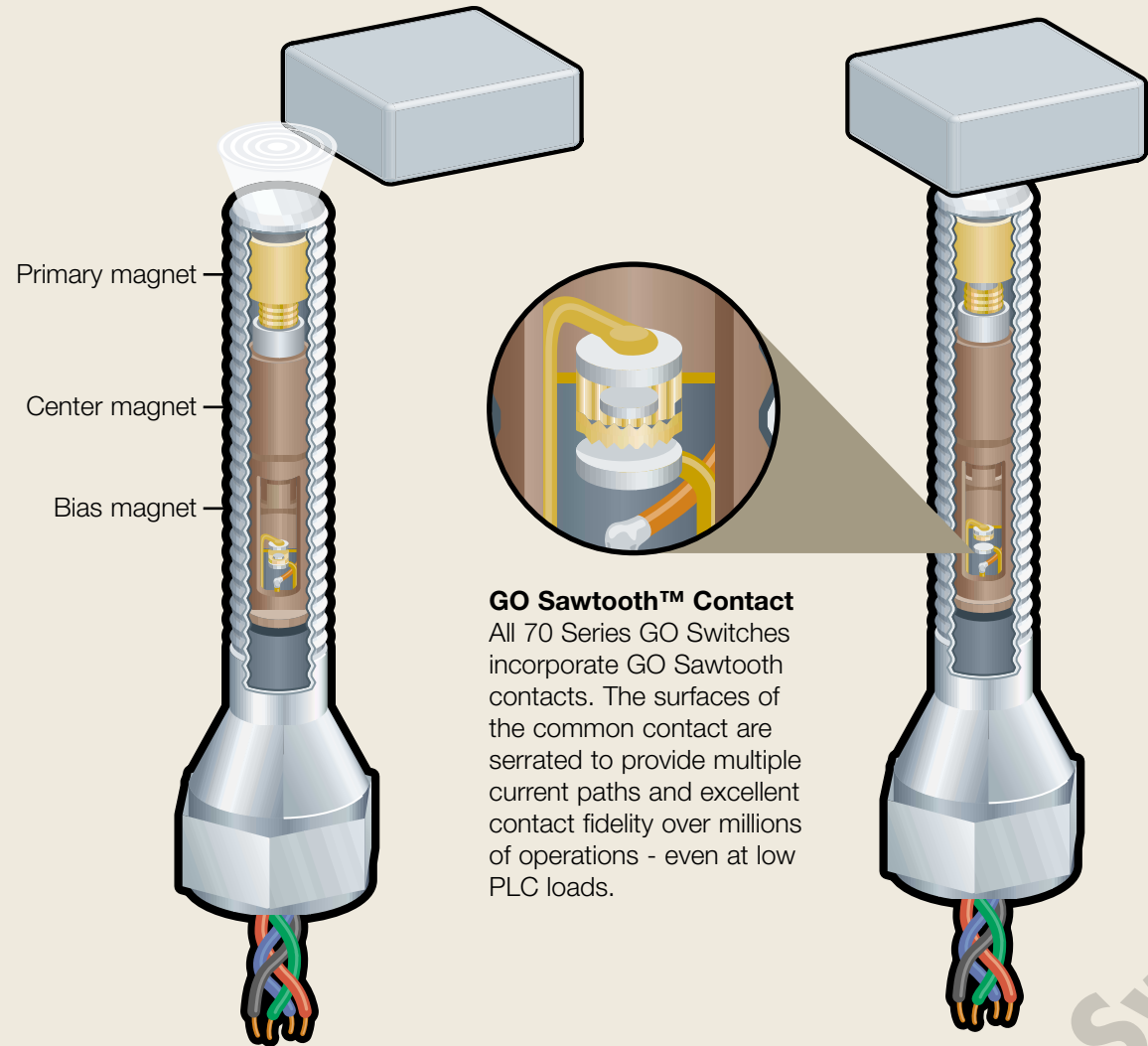
Air-Oil Systems, Inc. www.airoil.com

Round Sensors

70 Series

LEVERLESS LIMIT SWITCH

GO Switch 70 Series end sensing switches use three permanent magnets and push-pull plunger assembly to control a set of dry contacts.



GO Sawtooth™ Contact

All 70 Series GO Switches incorporate GO Sawtooth contacts. The surfaces of the common contact are serrated to provide multiple current paths and excellent contact fidelity over millions of operations - even at low PLC loads.

Unoperated

The center magnet simultaneously attracts the primary magnet and repels the bias magnet, pushing the connecting rod backward. As a result, the common contact rests in its unoperated position, closing a contact circuit.

Shown: Model 73

Operated

When a ferrous target enters the sensing area of the switch, it attracts the primary magnet, which pulls the connecting rod forward. As a result, the common contact snaps to its operated position, closing the other contact circuit.

When the target is removed the common contact snaps back to its original, unoperated position.

A LOOK INSIDE - MODEL 73

Permanent magnets never lose their strength, even when threaded into ferrous metal.

Unique sawtooth contacts are suitable for high and low electrical loads, and can be wired AC or DC, N/O or N/C.

Sealed contact chamber prevents moisture or dust from reaching the contacts.

Multiple wiring options:

- Lead Wires
- Cable
- Quick Disconnects

End sensing range can be extended using external target magnets.

Sensing face is stainless steel rather than plastic, preventing damage due to incidental physical contact.

Three magnets provide snap action and solid contact pressure, eliminating 'contact teasing' and 'contact chatter' in high vibration applications.

English or metric threads available.

Potting fills the entire switch cavity, forming a barrier against moisture.

One-piece stainless steel construction makes this the most durable proximity sensor in the world.

Consumes no power to operate and has no current leakage or voltage drop.

Options Available

- Explosion Proof
- SPDT or DPDT
- HiTemp™ to 400°F
- SubSea™ Submersible
- Hermetically Sealed
- High Pressure to 10,000 psi
- English or metric threads

Key Benefits

GO Switches are simple and built to last.

With only one moving part and no metal-to-metal contact forcing it to move, there is nothing to wear out!



Models 71 and 72

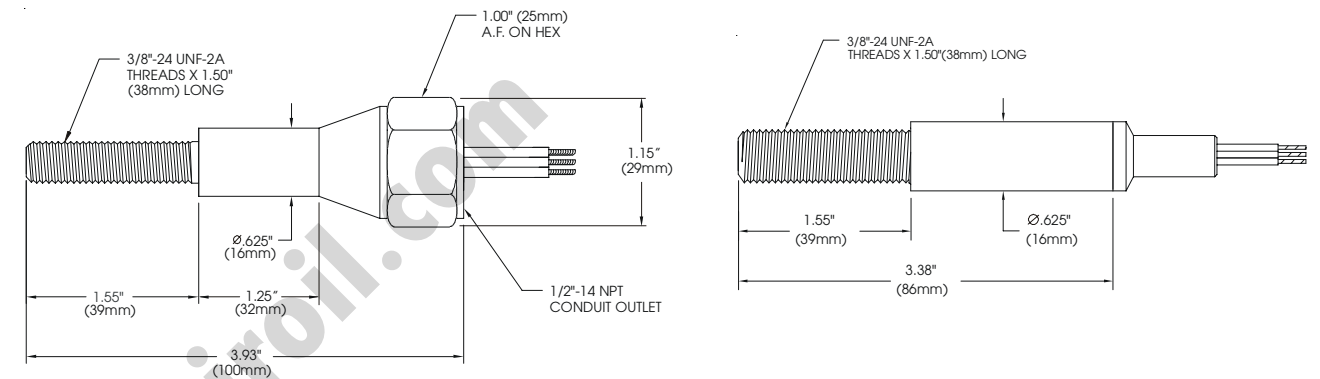
GO Switch Models 71 and 72 have the smallest diameters of any round leverless limit switch, and are used extensively in factory automation applications.

Features:

- SPDT 4A contacts
- Intrinsically Safe
- 40° to 221°F operating temperature

Options:

- Suitable for Zone 0, 1, or 2 explosion proof
- 40° to 400°F high temperature
- Quick disconnect connector
- English or Metric threads



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																				
<p>Repeatability: .002" (.05 mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C). HiTemp option to 400°F (204°C)</p> <p>✓ 71 Model 71 3/8" (10 mm) dia. x 3 15/16" (100 mm) long, with 3/8"-24 UNF x 1 1/2" (38 mm) threads and 1/2" NPT conduit hub</p> <p>71M Model 71 M12 x 1 external metric thread</p> <p>✓ 72 Model 72 3/8" (10 mm) dia. x 3 3/8" (86 mm) long, with 3/8"-24 UNF x 1 1/2" (38 mm) threads. No conduit hub</p> <p>72M Model 72 M12 x 1 external metric thread</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>1.25</td> </tr> <tr> <td>480</td> <td>-</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>✓ 1 Single Pole Double Throw (Form C)</p> <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	4	24	3	240	2	48	1.25	480	-	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. .040" (1 mm) end sensing</p> <p>Sensing Range with Target Magnet: up to .15" (4 mm)</p> <p>✓ 6 Standard sensing - approx. .040" (1 mm) end sensing</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>.12"</td> <td>.07"</td> </tr> <tr> <td>AMS4</td> <td>.15"</td> <td>.10"</td> </tr> <tr> <td>AMS7</td> <td>.13"</td> <td>.045"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	.12"	.07"	AMS4	.15"	.10"	AMS7	.13"	.045"	<p>Conduit Outlet: 1/2" NPT</p> <p>2 Side entry (Model 72) (Approval must be 8) (Wiring must be F)</p> <p>✓ 5 Bottom of enclosure</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> <p>Need Accessories?</p> <p>See pp. 93-104 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p> </div>	<p>✓ 2 303 stainless steel (rated 2,000 PSI)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p></p> <p>2 High temperature to 400°F (204°C) with Teflon™ insulated leads (Wiring must be F)</p> <p>3 UL listed explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III (Model 71) (Lead seal req'd within 18")</p> <p>4 CSA certified explosion proof for CI I, Div 1; Grps A,B,C,D; CI II, Div 1; Grps E-G; CI III (Model 71) (Lead seal req'd within 18")</p> <p>6 CSA certified CI I, Div 2; Grps A,B,C,D; CI II, Div 2; Grps E-G; CI III (Model 71) (Wiring must be A, B, or F) (Lead seal req'd within 18")</p> <p>7 CSA certified General Purpose</p> <p>✓ 8 UL listed General Purpose</p> <p>A SAA: Ex s IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be A) (Model 71)</p> <p>B SAA: High Temp EX S IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be F) (Model 71)</p>	<p>Lead Wires 18 Gauge (.110" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 600V UL / CSA listed</p> <p>✓ A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A_ _ _ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (.250" dia.) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B_ _ _ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Water Resistant 18 Gauge (.250" dia) PVC cable rated at 176°F (80°C) 300V with water-resistant squeeze connector. (Model 72) UL/CSA listed</p> <p>C2 36" (914 mm)</p> <p>C3 72" (1829 mm)</p> <p>C4 144" (3658 mm)</p> <p>C_ _ _ Lengths greater than 144" (Specify length in feet (e.g. C150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approval must be 7 or 8) Refer to pp. 93-104 for mating cable assemblies and Aura Light Adapters.</p> <table border="1"> <thead> <tr> <th colspan="2">Mini-change®</th> <th colspan="2">Micro-change®</th> </tr> </thead> <tbody> <tr> <td>DCA</td> <td>3 pin Mini-change® type</td> <td>DBA</td> <td>3 pin Micro-change® type</td> </tr> <tr> <td>DCD</td> <td>4 pin Mini-change® type</td> <td>DBD</td> <td>4 pin Micro-change® type</td> </tr> <tr> <td>DCG</td> <td>5 pin Mini-change® type</td> <td>DBG</td> <td>5 pin Micro-change® type</td> </tr> </tbody> </table> <p>HiTemp Leads 18 gauge (.070" dia.) potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed (Approval must be 2, 3, 4, 6, 7, 8, or B)</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F_ _ _ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>	Mini-change®		Micro-change®		DCA	3 pin Mini-change® type	DBA	3 pin Micro-change® type	DCD	4 pin Mini-change® type	DBD	4 pin Micro-change® type	DCG	5 pin Mini-change® type	DBG	5 pin Micro-change® type
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Model 71	Contact Form 1	Sensing Range 6	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																				



Models 73 and 74

The GO Switch Model 73 is our most popular leverless limit switch. Its solid stainless steel construction and global certifications make it the ideal choice for a variety of applications. Model 74 is the same, less the conduit hub.

Features:

- SPDT 4A contacts
- Intrinsically Safe
- 40° to 221°F operating temperature

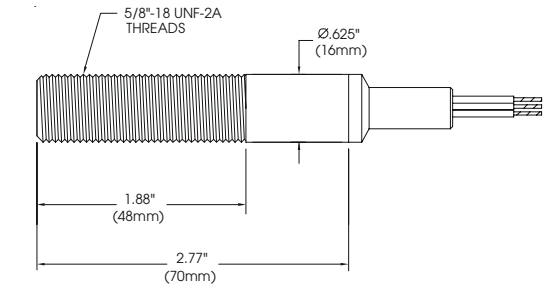
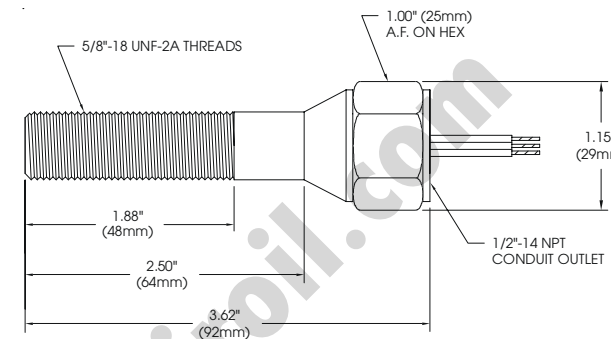
Options:

- Suitable for Zone 0, 1, or 2 explosion proof
- 40° to 400°F high temperature
- Quick disconnect connector
- Underwater capabilities
- English or Metric threads

FAST TRACK DELIVERY

- 73-13523-A2**
Class I Div 1, 3 ft. leads
- 73-13524-A2**
Class I Div 1, 3 ft. leads
- 73-13526-A2**
Class I Div 2, 3 ft. leads
- 73-13528-A2**
General Purpose 3 ft. leads
- 73-13528-DCA**
General Purpose, Mini Connector
- 74-13528-B2**
General Purpose, 3 ft. cable
- 74-13528-DBA**
General Purpose, Micro Connector

Dimensions



Model 73

Model 74

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																												
<p>Repeatability: .002" (.05mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C). HiTemp to 400°F (204°C)</p> <p>73 Model 73 5/8" (16 mm) dia. x 3 5/8" (92 mm) long with 5/8"-18 UNF x 1 7/8" (48 mm) threads and 1/2" NPT conduit hub</p> <p>73M Model 73 M18 x 1.5 external metric thread</p> <p>74 Model 74 5/8" (16 mm) dia. x 2 3/4" (70 mm) long with 5/8"-18 UNF x 1 7/8" (48 mm) threads. No conduit hub</p> <p>74M Model 74 M18 x 1.5 external metric thread</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>1.25</td> </tr> <tr> <td>480</td> <td>*</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>1 Single Pole Double Throw (Form C)</p> <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	4	24	3	240	2	48	1.25	480	*	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. .100" (2.5 mm) end sensing (2,000 PSI) .072" (1.8 mm) end sensing (5,000 PSI) .060" (1.5 mm) end sensing (10,000 PSI)</p> <p>Sensing Range with Target Magnet: up to .35" (9 mm)</p> <p>3 Standard sensing - approx. .100" (3 mm) end sensing (Enclosure must be 2 or 6)</p> <p>4 HiPressure sensing - approx. .072" (2 mm) end sensing (Enclosure must be 3 and Approvals must be 2, 7, 8, or 9)</p> <p>5 HiPressure sensing - approx. .060" (2 mm) end sensing (Enclosure must be 4 and Approvals must be 2, 7, or 8)</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>.20"</td> <td>.25"</td> </tr> <tr> <td>AMS4</td> <td>.35"</td> <td>.15"</td> </tr> <tr> <td>AMS7</td> <td>.20"</td> <td>.05"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	.20"	.25"	AMS4	.35"	.15"	AMS7	.20"	.05"	<p>Conduit Outlet: 1/2" NPT</p> <p>2 Side entry with Teflon insulated leads (Model 74) (Approval must be 8) (Wiring must be F)</p> <p>5 Bottom of enclosure</p> <p>Need Accessories? See pp. 93-104 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p>	<p>2 303 stainless steel (rated 2,000 PSI) (Sensing must be 3)</p> <p>3 HiPressure - 303 stainless steel (rated 5,000 PSI) (Sensing must be 4) (Approval must be 2, 7, 8, or 9)</p> <p>4 HiPressure - 303 stainless steel (rated 10,000 PSI) (Sensing must be 5) (Approval must be 2, 7, 8, or 9)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p>UL SP BASEEFA SAA</p> <p>2 High temperature to 400°F (204°C) with Teflon™ insulated leads (Wiring must be F)</p> <p>3 UL listed explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III (Model 73) (Lead seal req'd within 18")</p> <p>4 CSA certified explosion proof for CI I, Div 1; Grps A,B,C,D; CI II, Div 1; Grps E-G; CI III (Model 73) (Lead seal req'd within 18")</p> <p>6 CSA certified CI I, Div 2; Grps A,B,C,D; CI II, Div 2; Grps E-G; CI III (Model 73) (Wiring must be A, B, or F) (Lead seal req'd within 18")</p> <p>7 CSA certified General Purpose</p> <p>8 UL listed General Purpose</p> <p>9 CENELEC: EExdIIC T6 Zone 1. (EN 50 014 & EN 50 018, BASEEFA Certificate Ex89C1233X) (Model 73) (Wiring must be A or B)</p> <p>A SAA: Ex s IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be A)</p> <p>B SAA: High Temp 350°F (176°C): EX S IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be F)</p>	<p>Lead Wires 18 Gauge (.110" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 600V UL / CSA listed</p> <p>A2 36" (914 mm) A3 72" (1829 mm) A4 144" (3658 mm) A_ _ _ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (.250" dia.) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed</p> <p>B2 36" (914 mm) B3 72" (1829 mm) B4 144" (3658 mm) B_ _ _ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Water Resistant 18 Gauge (3 cond .250" dia; 4 cond .450" dia) PVC cable rated at 176°F (80°C) 300V with water-resistant squeeze connector. (Model 74)</p> <p>C2 36" (914 mm) C3 72" (1829 mm) C4 144" (3658 mm) C_ _ _ Lengths greater than 144" (Specify length in feet (e.g. C150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approvals must be 7 or 8) Refer to pp. 93-104 for mating cable assemblies and Aura Light Adapters.</p> <table border="0"> <tr> <td>7 Mini-change®</td> <td>8 Micro-change®</td> </tr> <tr> <td>DCA 3 - pin Mini-change® type</td> <td>DBA 3 - pin Micro-change® type</td> </tr> <tr> <td>DCD 4 - pin Mini-change® type</td> <td>DBD 4 - pin Micro-change® type</td> </tr> <tr> <td>DCG 5 - pin Mini-change® type</td> <td>DBG 5 - pin Micro-change® type</td> </tr> </table> <p>SubSea Underwater Connector (Model 73)</p> <p>3DD 3 pin, certified not to leak underwater 4DD 4 pin, certified not to leak underwater 3DE 3 pin right-angle, certified not to leak underwater 4DE 4 pin right-angle, certified not to leak underwater</p> <p>HiTemp Leads 18 gauge (.070" dia. potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed (Approval must be 2, 3, 4, 6, 7, 8 or B)</p> <p>F2 36" (914 mm) F3 72" (1829 mm) F4 144" (3658 mm) F_ _ _ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>	7 Mini-change®	8 Micro-change®	DCA 3 - pin Mini-change® type	DBA 3 - pin Micro-change® type	DCD 4 - pin Mini-change® type	DBD 4 - pin Micro-change® type	DCG 5 - pin Mini-change® type	DBG 5 - pin Micro-change® type
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42	1																																																	

Ordering Guide

Fill in the boxes to create your 'ordering number.'



Models 75, 76 & 77

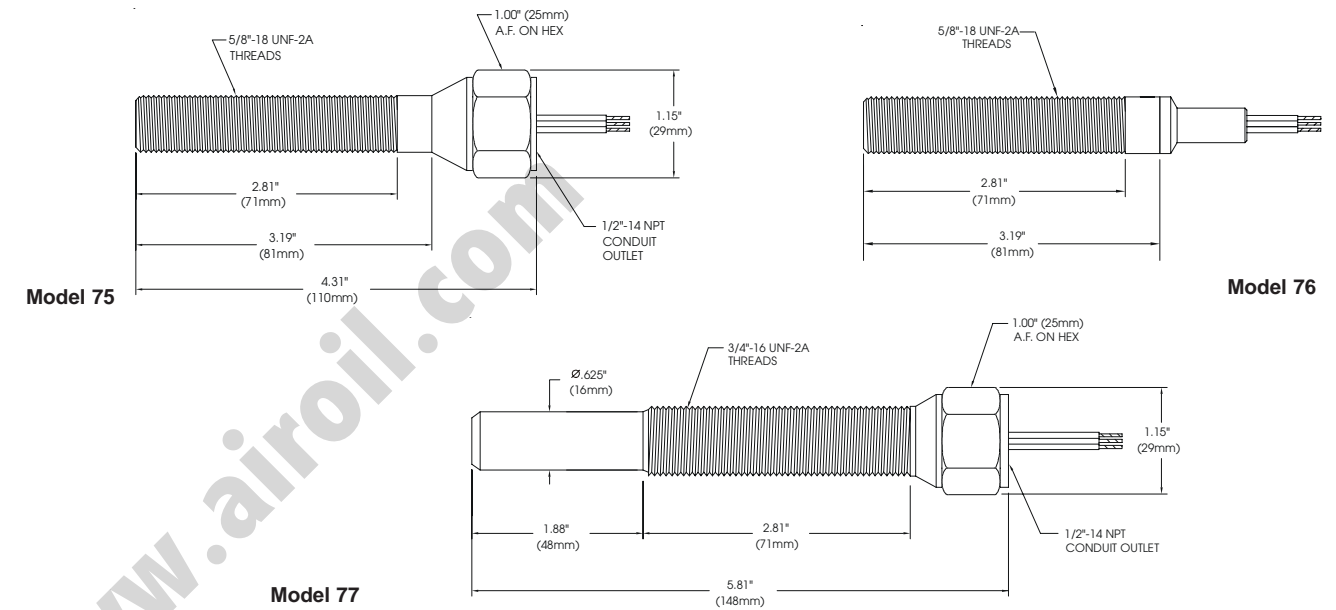
GO Switch Models 75 and 76 are the same as models 73 and 74, only slightly longer with more thread surface and therefore more adjustability. Model 77 is the longest and largest option in the 70 series family.

Features:

- SPDT 4A contacts
- Intrinsically Safe
- 40° to 221°F operating temperature

Options:

- Suitable for Zone 0, 1, or 2 explosion proof
- 40° to 400°F high temperature
- Quick disconnect connector
- Underwater capabilities
- English or Metric threads



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																				
<p>Repeatability: .002" (.05mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C). HiTemp to 400°F (204°C)</p> <p>75 Model 75 5/8" (16 mm) dia. x 4 5/16" (110 mm) long with 5/8"-18 UNF x 2 13/16" (71 mm) threads and 1/2" NPT conduit hub</p> <p>75M Model 75 M18 x 1.5 external metric thread</p> <p>76 Model 76 5/8" (16 mm) dia. x 3 3/16" (81 mm) long with 5/8"-18 UNF x 2 13/16" (71 mm) threads. No conduit hub</p> <p>76M Model 76 M18 x 1.5 external metric thread</p> <p>77 Model 77 3/4" (19 mm) dia. x 5 13/16" (148 mm) long with 3/4"-16 UNF x 2 13/16" (71 mm) threads.</p> <p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>1.25</td> </tr> <tr> <td>480</td> <td>*</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>1 Single Pole Double Throw (Form C)</p> <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	4	24	3	240	2	48	1.25	480	*	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: .100" (2.5 mm) end sensing (2,000 PSI) .072" (1.8 mm) end sensing (5,000 PSI) .060" (1.5 mm) end sensing (10,000 PSI)</p> <p>Sensing Range with Target Magnet: up to .35" (4 mm)</p> <p>3 Standard sensing - approx. .100" (3 mm) end sensing (must be 2 or 6)</p> <p>4 HiPressure sensing - approx. .072" (2 mm) end sensing (Enclosure must be 3 and Approvals must be 2, 7, 8, or 9)</p> <p>5 HiPressure sensing - approx. .060" (2 mm) end sensing (Enclosure must be 4 and Approvals must be 2, 7, or 8)</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>.20"</td> <td>.25"</td> </tr> <tr> <td>AMS4</td> <td>.35"</td> <td>.15"</td> </tr> <tr> <td>AMS7</td> <td>.20"</td> <td>.05"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	.20"	.25"	AMS4	.35"	.15"	AMS7	.20"	.05"	<p>Conduit Outlet: 1/2" NPT</p> <p>2 Side entry with Teflon insulated leads (Model 76) (Approval must be 8) (Wiring must be F)</p> <p>5 Bottom of enclosure</p> <p>Need Accessories? See pp. 93-104 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p>	<p>2 303 stainless steel (rated 2,000 PSI) (Sensing must be 3)</p> <p>3 HiPressure - 303 stainless steel (rated 5,000 PSI) (Sensing must be 4) (Approval must be 2, 7, 8, or 9)</p> <p>4 HiPressure - 303 stainless steel (rated 10,000 PSI) (Sensing must be 5) (Approval must be 2, 7, 8, or 9)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p>UL, SF, BASEEFA, SAA</p> <p>2 High temperature to 400°F (204°C) with Teflon™ insulated leads (Wiring must be F)</p> <p>3 UL listed explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III (Model 75 & 77) (Lead seal req'd within 18")</p> <p>4 CSA certified explosion proof for CI I, Div 1; Grps A,B,C,D; CI II, Div 1; Grps E-G; CI III (Model 75) (Lead seal req'd within 18")</p> <p>6 CSA certified CI I, Div 2; Grps A,B,C,D; CI II, Div 2; Grps E-G; CI III (Model 75 & 77) (Wiring must be A, B, or F) (Lead seal req'd within 18")</p> <p>7 CSA certified General Purpose</p> <p>8 UL listed General Purpose</p> <p>9 CENELEC: EExdIIC T6 Zone 1. (EN 50 014 & EN 50 018, BASEEFA Certificate Ex89C1233X) (Model 75 & 77) (Wiring must be A or B)</p> <p>A SAA: Ex s IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be A) (Model 75)</p> <p>B SAA: High Temp 350°F (176°C): EX S IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be F) (Model 75)</p>	<p>Lead Wires 18 Gauge (.110" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 600V UL / CSA listed</p> <p>A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A___ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (.250" dia.) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B___ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Water Resistant 18 Gauge (.250" dia.) PVC cable rated at 176°F (80°C) 300V with water-resistant squeeze connector. (Model 76) UL / CSA listed</p> <p>C2 36" (914 mm)</p> <p>C3 72" (1829 mm)</p> <p>C4 144" (3658 mm)</p> <p>C___ Lengths greater than 144" (Specify length in feet (e.g. C150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. 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Agency Approvals

Termination Options	(2) Hi-Temp	(3) UL Cl. 1, Div. 1	(4) CSA Cl. 1, Div. 1	(6) CSA Cl. 1, Div. 2	(7) CSA General Purpose	(8) UL General Purpose	(9) Cenelec EExdIIIC T6 Zone 1	(A) SAA Exs IIc T6 IP65
A - Potted PVC Leads		X	X	X	X	X	X	X
B - Potted PVC Cable		X	X	X	X	X	X	
C - Water squeeze (Models 72, 74 & 76)					X	X		
D - Quick Disconnect					X	X		
D - SubSea™ Connector (Models 73, 75 & 77)					X	X		
F - HiTemp™ Leads	X				X	X		X

NEMA Ratings

Models 71, 73, 75, 77	Non-Hazardous			Hazardous		
NEMA CLASSES	4	4X	6	6P	7	9
A - Potted PVC leads	X	X	X	X	X	X
B - Potted PVC cable	X	X	X	X	X	X
C - PVC Cable w/ squeeze	X	X				
D - Quick Disconnect	X	X	X	X		
D - SubSea™ Connector	X	X	X	X		
F - HiTemp™ Leads	X	X	X	X	X	X

X = Approvals Available

Models 72, 74, 76	Non-Hazardous			Hazardous		
NEMA CLASSES	4	4X	6	6P	7	9
A - Potted PVC leads	X	X				
B - Potted PVC cable	X	X				
C - PVC Cable w/ squeeze	X	X				
D - Quick Disconnect	X	X	X	X		
D - SubSea™ Connector	X	X	X	X		
F - HiTemp™ Leads	X	X				

X = Designed to meet respective NEMA specifications

Wiring Diagrams (male view)

3 Wire PVC & HiTemp Leads	
N/C	Red
N/O	Blue
COM	Black

Terminations A & F

3 Conductor PVC Cable	
N/C	Red
N/O	White
COM	Black

Termination B

4 Wire PVC & HiTemp Leads	
N/C	Red
N/O	Blue
COM	Black
GND	Green

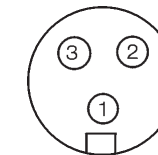
Terminations A & F

4 Conductor PVC Cable	
N/C	Red
N/O	White
COM	Black
GND	Green

Termination B

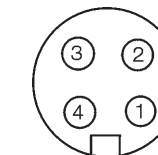
Mini-Change QDC - 3 Pin	
Pin 1	COM
Pin 2	N/C
Pin 3	N/O

Termination DCA



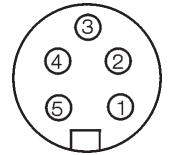
Mini-Change QDC - 4 Pin	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination DCD



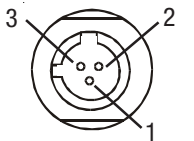
Mini-Change QDC - 5 Pin	
Pin 1	N/O
Pin 2	N/C
Pin 3	GND
Pin 4	Inactive
Pin 5	COM

Termination DCG



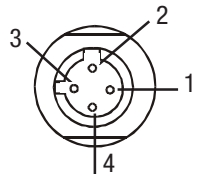
Micro-Change QDC - 3 Pin	
Pin 1	COM
Pin 2	N/C
Pin 3	N/O

Termination DBD



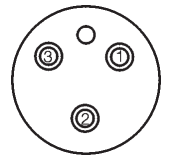
Micro-Change QDC - 4 Pin	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination DBA



SubSea - 3 Pin - Lock Sleeve	
Pin 1	N/C
Pin 2	COM
Pin 3	N/O

Termination 3DD



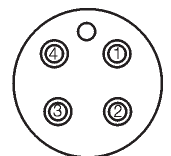
SubSea - 3 Pin - Right Angle	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C

Termination 3DE



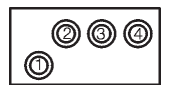
SubSea - 4 Pin - Lock Sleeve	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination 4DD



SubSea - 4 Pin - Right Angle	
Pin 1	COM
Pin 2	N/O
Pin 3	N/C
Pin 4	GND

Termination 4DE





Models 7G, 7H & 7I

GO Switch Models 7G, 7H & 7I offer unique options such as hermetically sealed and Double Pole Double Throw contact arrangements in a variety of enclosures.

Features:

- SPDT or DPDT 4A contacts
- Intrinsically Safe
- 40° to 221° F operating temperature

Options:

- Suitable for Zone 0, 1, or 2 explosion proof
- DPDT 4A contacts
- 40° to 400° F high temperature
- Hermetically sealed contacts

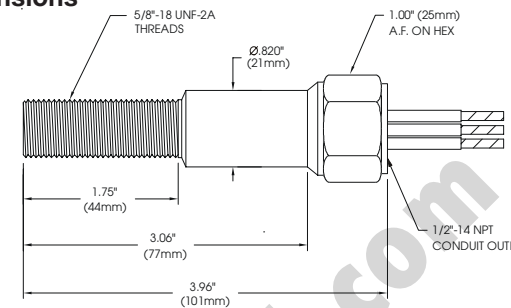
FAST TRACK DELIVERY

7G-23528-A2
DPDT General Purpose
3 ft. leads

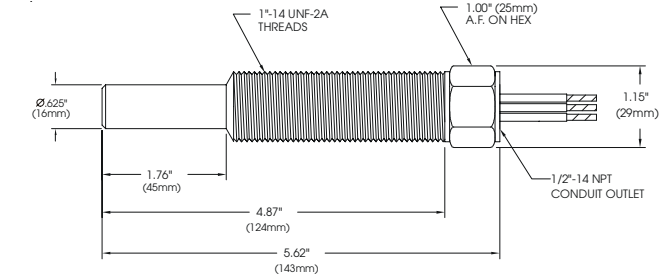
7G-23526-A2
DPDT Class I Div 2
3 ft. leads

7G-23523-A2
DPDT Class I Div 1
3 ft. leads

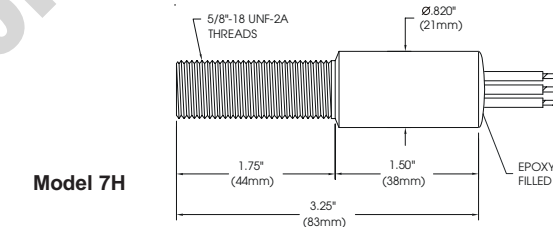
Dimensions



Model 7G



Model 7I



Model 7H

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																									
<p>Repeatability: .002" (.05 mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 221° F (-40° to 105° C) (Option to 400° F)</p> <p>7G Model 7G 5/8" (16 mm) dia. x 4" (101 mm) long with 5/8"-18 UNF x 1 3/4" (44 mm) threads and 1/2" NPT conduit hub</p> <p>7GM Model 7G M18 x 1.5 external metric thread</p> <p>7H Model 7H 5/8" (16 mm) dia. x 3 1/4" (83 mm) long with 5/8" - 18 UNF x 1 3/4" threads. No conduit outlet.</p> <p>7HM Model 7H M18 x 1.5 external metric thread</p> <p>7I Model 7I 1" (25 mm) dia. x 5 3/8" (148 mm) long with 1" - 14 UNF x 3" (76 mm) threads 1/2" NPT conduit outlet</p> <p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT Form C; DPDT Form CC</p> <p>Rated: Resistive</p> <table border="1"> <tr> <th colspan="4">AC</th> <th colspan="4">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> <tr> <td>120</td> <td>4</td> <td>24</td> <td>1</td> <td>120</td> <td>3</td> <td>24</td> <td>1</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>*</td> <td>240</td> <td>1.5</td> <td>48</td> <td>*</td> </tr> <tr> <td>480</td> <td>*</td> <td>120</td> <td>0.5</td> <td>480</td> <td>*</td> <td>120</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> <td></td> <td></td> <td>250</td> <td>0.1</td> </tr> </table> <p>SPDT DPDT</p> <p>1 Single Pole Double Throw (Form C) Hermetically Sealed (Model 7G & 7I) (Lead seal not required for hazardous locations)</p> <p>2 Double Pole Double Throw (Form CC)</p> <p>Form C - SPDT Form CC - DPDT</p>	AC				DC				Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	120	4	24	1	120	3	24	1	240	2	48	*	240	1.5	48	*	480	*	120	0.5	480	*	120	0.5			250	0.5			250	0.1	<p>Target Material: Ferrous steel</p> <p>Sensing Range: .090" (2.3 mm) end sensing (2,000 PSI)</p> <p>Sensing Range with Target Magnet: up to .20" (5 mm)</p> <p>3 Standard sensing - approx. .090" (2.3 mm) end sensing</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> <tr> <td>AMP3</td> <td>.15"</td> <td>.30"</td> </tr> <tr> <td>AMS4</td> <td>.20"</td> <td>.30"</td> </tr> </table>	Magnet	Sensing	Differential	AMP3	.15"	.30"	AMS4	.20"	.30"	<p>Conduit Outlet: 1/2" NPT</p> <p>5 Bottom of enclosure</p> <p>Need Accessories? See pp. 93-104 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p>	<p>Stainless Steel type 303</p> <p>2 303 stainless steel (rated 2,000 PSI)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p>UL SF BASEEFA SAA</p> <p>2 High temperature to 400° F (204° C) with Teflon™ insulated leads (Wiring must be F)</p> <p>3 UL listed explosion proof for CI I, Div 1 & 2; Grps A,B,C,D; CI II, Div 1 & 2, Grps E-G; CI III (Model 7G & 7I only) (Lead seal req'd within 18")</p> <p>4 CSA certified explosion proof for CI I, Div 1; Grps A,B,C,D; CI II, Div 1; Grps E-G; CI III (Model 7G & 7I) (Lead seal req'd within 18")</p> <p>6 CSA certified CI I, Div 2; Grps A,B,C,D; CI II, Div 2; Grps E-G; CI III (Model 7G & 7I) (Lead seal req'd within 18")</p> <p>7 CSA certified General Purpose</p> <p>8 UL listed General Purpose</p> <p>9 CENELEC: EExdIIC T6 Zone 1. (EN 50 014 & EN 50 018, BASEEFA Certificate Ex89C1233X) (Model 7G & 7I) (Wiring must be A or B)</p> <p>A SAA: Ex s IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Model 7G & 7I) (Wiring must be A)</p>	<p>Lead Wires 20 Gauge (.100" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221° F (105° C) 300V UL / CSA listed</p> <p>A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A_ _ _ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 22 Gauge (.215" dia) potted-in PVC cable, rated at 176° F (80° C) 300V, UL / CSA listed</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B_ _ _ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approvals must be 7 or 8) (Model 7G and 7I) Refer to pp. 93-104 for mating cable assemblies and Aura Light Adapters.</p> <p>Mini-change® DCH 7-pin mini-change type</p> <p>HiTemp Leads 20 gauge (19 strands at .08") potted-in Teflon™ insulated leads rated at 482° F (250° C) 600V UL / CSA listed (Approval must be 6, 7, or 8)</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F_ _ _ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>
AC				DC																																																											
Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps																																																								
120	4	24	1	120	3	24	1																																																								
240	2	48	*	240	1.5	48	*																																																								
480	*	120	0.5	480	*	120	0.5																																																								
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Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																									
48		3	5			49																																																									

Agency Approvals

Approvals Terminations	(3) UL Explosion Proof	(4) CSA/FM Cl. 1, Div. 1	(6) CSA/FM Cl. 1, Div. 2	(7) CSA General Purpose	(8) UL General Purpose	(9) Cenelec EExdIIC T6 Zone 1	(A) SAA Exs IIc T6 IP65
A - Potted PVC Leads	X	X	X	X	X	X	X
B - Potted PVC Cable	X	X	X	X	X	X	
D - Quick Disconnect				X	X		
F - HiTemp™ Leads			X	X	X		

X = Approvals Available

NEMA Ratings

NEMA CLASSES	NON-HAZARDOUS				HAZARDOUS	
	4	4X	6	6P	7	9
A - Potted PVC leads	X	X	X	X	X	X
B - Potted PVC cable	X	X	X	X	X	X
F - HiTemp™ Leads	X	X	X	X	X	X
7G Hermetic seal	X	X	X	X	X	X

X = Designed to meet respective NEMA specifications

Air-Oil Systems, Inc. www.airoil.com

Wiring Diagrams (male view)

SPDT

PVC & Teflon Leads	
N/C	Red
N/O	Blue
COM	Black

Terminations A & F

3 Conductor PVC Cable	
N/C	Red
N/O	White
COM	Black

Termination B

4 Conductor PVC Cable	
N/C	Red
N/O	White
COM	Black
GND	Green

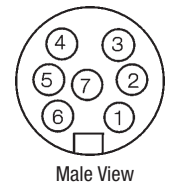
Termination B

DPDT

PVC Leads, Cable & Teflon Leads	
N/C1 - Red	N/C2 - Red/White Stripe
N/O1 - Blue	N/O2 - Blue/White Stripe
COM1 - Black	COM2 - Black/White Stripe
GND - Green	

Mini-Change QDC - 7 Pin	
Pin 1	N/O ₂
Pin 2	COM ₁
Pin 3	N/C ₂
Pin 4	N/C ₁
Pin 5	COM ₂
Pin 6	N/O ₁
Pin 7	GND

Termination DCH



New!



Model 7L GO Switch with LEDs

The new GO Switch Model 7L offers the same proven internals as our other 70 Series leverless limit switches, with the addition of Red or Green BriteLite LEDs. The new 7L brings increased plant safety and awareness to the reliability of the 70 Series.

- Features:
- 316 stainless steel enclosure
 - Red or Green BriteLite LEDs
 - Leverless Limit Switch design



FAST TRACK DELIVERY

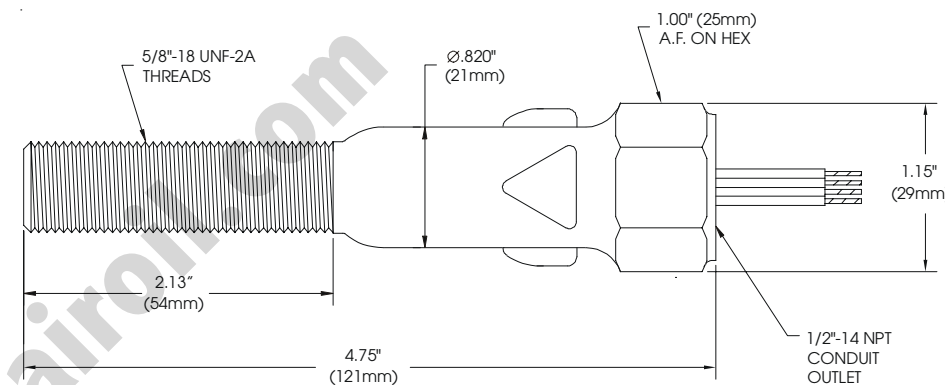
7LR-13568-A2
General Purpose
Red LEDs, 3 ft. leads

7LG-13568-A2
General Purpose,
Green LED, 3 ft. leads

7LR-1356E-A2
Class I Div 2
Red LED, 3 ft. leads

7LG-1356E-A2
Class I Div 2
Green LED, 3 ft. leads

Dimensions



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options												
<p>Repeatability: .002" (.05 mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 160°F (-40°C to 71°C).</p> <p>✓ 7LG Model 7LG 5/8" (16 mm) dia. x 4 3/4" (121 mm) long, with 5/8"-18 UNF x 2.13" (54 mm) threads and 1/2" NPT conduit hub</p> <p>✓ 7LR Model 7LR 5/8" (16 mm) dia. x 4 3/4" (121 mm) long, with 5/8"-18 UNF x 2.13" (54 mm) threads and 1/2" NPT conduit hub</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C</p> <p>Ratings: .25A @ 24VDC/120VAC Resistive</p> <p>✓ 1 Single Pole Double Throw (Form C)</p>	<p>Target Material: Ferrous</p> <p>Sensing Range: 0.100" nominal</p> <p>✓ 3 Standard sensing - approx. 0.100" (2.5 mm) end sensing</p>	<p>Conduit Outlet: 1/2" NPT</p> <p>✓ 5 Bottom of enclosure</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <ul style="list-style-type: none"> Range Extending Target Magnets Mounting Brackets Connectors and more! </div>	<p>Stainless Steel type 316</p> <p>✓ 6 316 stainless steel (rated 2,000 PSI)</p>	<p></p> <p>✓ 8 C-UL listed General Purpose</p> <p>✓ E C-UL listed Class I, Div 2, All groups Class II, Div 1 & 2, All groups Class III</p>	<p>Lead Wires 18 Gauge (.110" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 600V UL / CSA listed</p> <p>✓ A2 36" (914 mm)</p> <p>A3 72" (1829 mm)</p> <p>A4 144" (3658 mm)</p> <p>A_ _ _ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))</p> <p>Cable 18 Gauge (3 cond .250" dia; 4 cond .250" dia.) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed</p> <p>B2 36" (914 mm)</p> <p>B3 72" (1829 mm)</p> <p>B4 144" (3658 mm)</p> <p>B_ _ _ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))</p> <p>Quick Disconnect Male Quick Disconnect only, potted-in connector. (Approval must be 8) Refer to pp. 93-104 for mating cable assemblies and Aura Light Adapters.</p> <table border="0" style="width: 100%;"> <tr> <td colspan="2">Mini-change®</td> <td colspan="2">Micro-change®</td> </tr> <tr> <td>DCA 3 - pin Mini-change® type</td> <td>DBA 3 - pin Micro-change® type</td> <td>DCD 4 - pin Mini-change® type</td> <td>DBD 4 - pin Micro-change® type</td> </tr> <tr> <td>DCG 5 - pin Mini-change® type</td> <td>DBG 5 - pin Micro-change® type</td> <td></td> <td></td> </tr> </table>	Mini-change®		Micro-change®		DCA 3 - pin Mini-change® type	DBA 3 - pin Micro-change® type	DCD 4 - pin Mini-change® type	DBD 4 - pin Micro-change® type	DCG 5 - pin Mini-change® type	DBG 5 - pin Micro-change® type		
Mini-change®		Micro-change®																
DCA 3 - pin Mini-change® type	DBA 3 - pin Micro-change® type	DCD 4 - pin Mini-change® type	DBD 4 - pin Micro-change® type															
DCG 5 - pin Mini-change® type	DBG 5 - pin Micro-change® type																	
Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options												

Ordering Guide

Fill in the boxes to create your 'ordering number.'



LPS: Linear Position Sensor

The Luminator LPS is specifically designed to provide position feedback on linear control valves and knife-gate valves. Onboard Green or Red LEDs increase safety and awareness for plant operators.

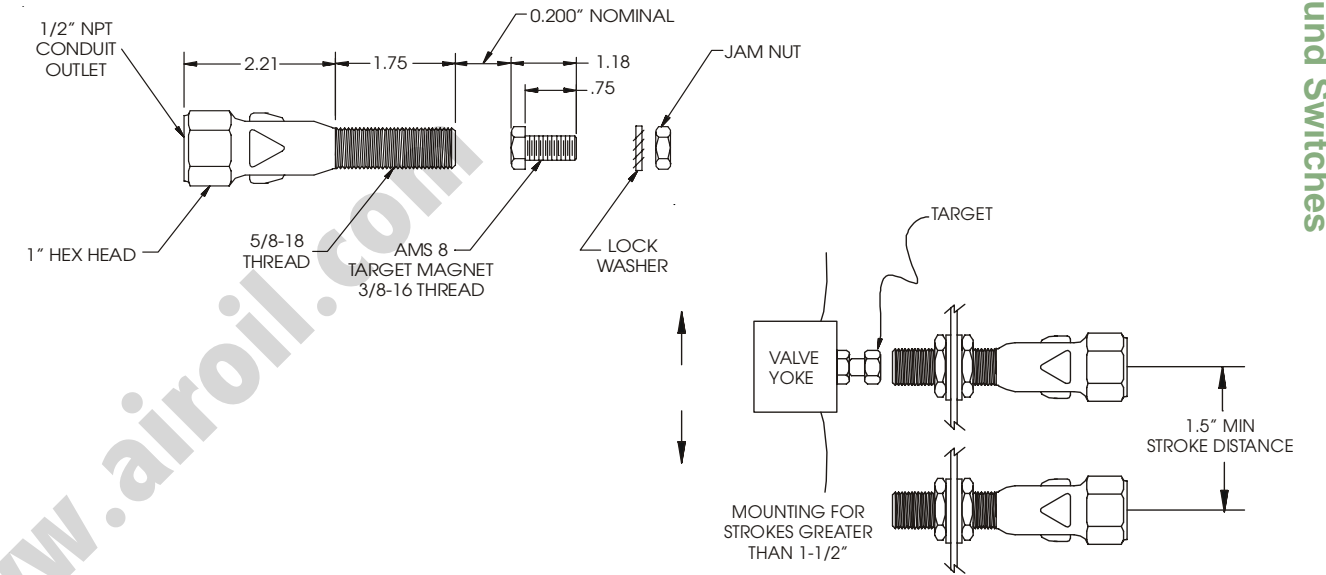
- Features:
- 316 stainless steel enclosure
 - Green or Red BriteLite LEDs
 - Hermetically sealed sensors
 - Snap-action contacts

FAST TRACK DELIVERY

LPS-DZ2RA2
Class I, Div 2 with Red BriteLite™

LPS-DZ2GA2
Class I, Div 2 with Green BriteLite™

Dimensions



Model	Sensor	Area Classification	Visual Display	Wiring
<p>Enclosure: 3.96" x 1", 316 series stainless steel</p> <p>Target: 1.05" x 0.65", 316 series stainless steel</p> <p>Conduit Outlet: 1/2" NPT</p> <p>Operating Temperature: -40° to 160°F (-40° to 71°C)</p> <p>Environment Zone 1 (Class I, Div 1): NEMA Type 4, 4X, 7 and 9 Zone 2 (Class I, Div 2): NEMA Type 4, 4X</p> <p>LPS Luminator Linear Position Sensor</p>	<p>D (1) Hermetically sealed SPDT</p> <p>Without BriteLite: 1A/120VAC; 0.5A/24VDC With BriteLite: 0.25A/120VAC; 0.25A/24VDC</p> <p>W (1) Hermetically sealed SPST</p> <p>Without BriteLite: 3A/120VAC; 2A/24VDC With BriteLite: 0.25A/120VAC; 0.25/24VDC</p>	<p>UL LISTED CE</p> <p>Z1 Explosion Proof Zone 1 Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III (Visual Display option must be N)</p> <p>Z2 Non-Incendive Zone 2 Class I, Div 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III</p> <p>May be installed Intrinsically Safe per NEC Article 504.</p> <p>Need Accessories? See pp. 93-104 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p>	<p>BriteLite: Triaxial LEDs</p> <p>BriteLite Colors: Green or Red</p> <p>G Green BriteLite 360° triaxial LED visual position indicator (Z0 & Z2 only)</p> <p>R Red BriteLite 360° triaxial LED visual position indicator (Z0 & Z2 only)</p> <p>N No visual indication</p>	<p>A2 3 ft. 18 gauge potted-in lead wires</p> <p>A3 6 ft. gauge potted-in lead wires</p> <p>A4 12 ft. 18 gauge potted-in lead wires</p> <p>DCA 3-pin mini change quick disconnect (Z2 only unless installed I.S. per NEC Article 504) (Sensor option must be W)</p> <p>DCD 4-pin mini change quick disconnect (Z2 only unless installed I.S. per NEC Article 504) (Sensor option must be W)</p>
Model	Sensor	Area Classification	Visual Display	Wiring

Ordering Guide

Fill in the boxes to create your 'ordering number.'

New!



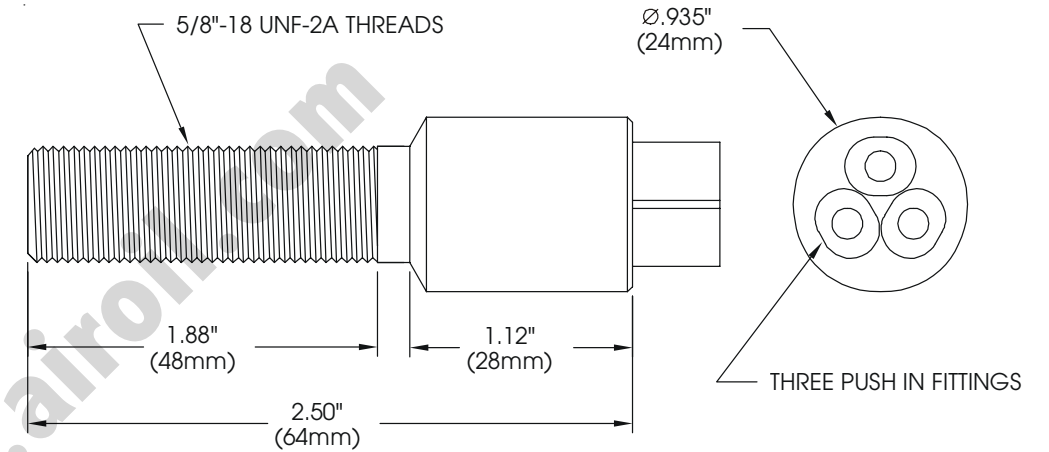
Model 7A Pneumatic Proximity Switch

The GO Switch model 7A is a unique pneumatic proximity switch. The 7A uses reliable leverless limit switch technology to operate a 3 way air valve at up to 100 PSI.

The GO Switch 7A is ideal for use as a cylinder position sensor in pneumatic cylinders, on many types of automated equipment, and in any hazardous areas where electrical signals should be avoided.

Features:

- Pneumatic proximity switch
- 3 way air valve
- 1.5 SCFM nominal flow rate
- Up to 100 PSI operation



Model	Port Arrangement	Sensing Range	Port Position	Enclosure Material	Approvals	Wiring Options
<p>Repeatability: .002" (.05 mm) typical</p> <p>Operating Temperature: 0° to 350°F (-20 to 180°C)</p> <p>Operating Pressure: 60-100 PSI</p> <p>✓ 7A Model 7A 5/8" (16 mm) dia. x 3.25" (82 mm) long with 5/8"-18 UNF threads</p>	<p>Ports: Three (pneumatic)</p> <p>✓ 7 Supply, Cylinder, and Exhaust</p>	<p>Target Material: Ferrous steel</p> <p>Sensing Range: .062" (1.6 mm) end sensing (2,000 PSI)</p> <p>✓ 3 Standard sensing - approx. .062" (1.6mm) end sensing</p>	<p>✓ 3 Three "push to release" fittings (For 5/32" O.D. tubing)</p>	<p>✓ 2 303 stainless steel (rated 2,000 PSI)</p> <p>6 Brass base, stainless steel body (rated 2,000 PSI)</p>	<p>✓ 1 Always a "1"</p>	<p>✓ 00 Straight "push to release" fittings</p> <p>90 Right-angle "push to release" fittings</p>
<p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>						
<p>Model 7A</p>	<p>Port Arrangement 7</p>	<p>Sensing Range 3</p>	<p>Port Position 3</p>	<p>Enclosure Material</p>	<p>Approvals 1</p>	<p>Wiring Options</p>

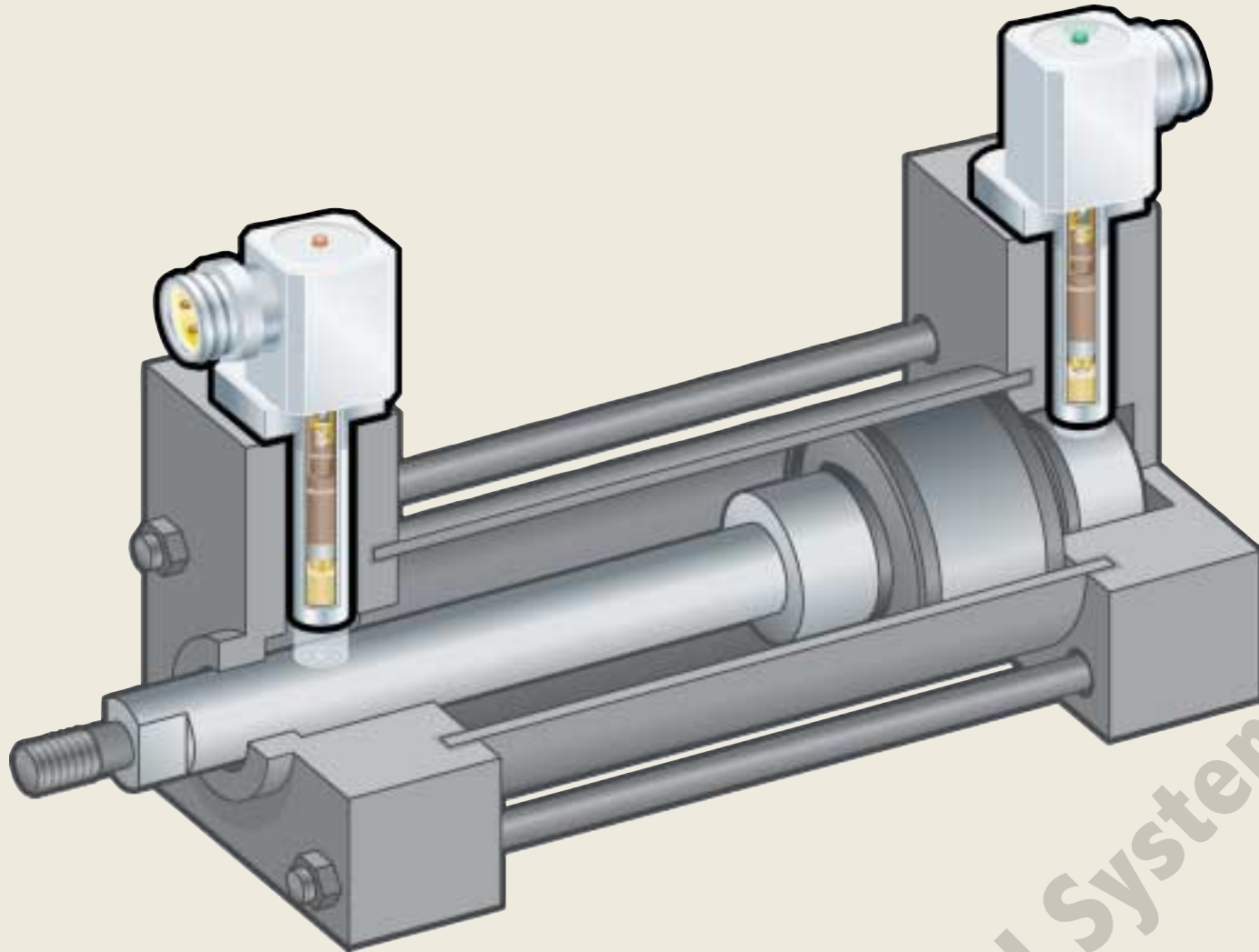
Air-Oil Systems, Inc. www.airoil.com

Cylinder Position Sensors

TECHNOLOGY IN ACTION
Stroke-to-GO

LEVERLESS LIMIT SWITCH

GO Switch Stroke-to-GO® cylinder position sensors use three permanent magnets and push-pull plunger assembly to control a set of dry contacts.



Unoperated

The center magnet simultaneously attracts the primary magnet and repels the bias magnet, pushing the connecting rod backward. As a result, the common contact rests in its unoperated position, closing a contact circuit.

Operated

When the ferrous cushion of a cylinder enters the sensing area of the switch, it attracts the primary magnet, which pulls the connecting rod forward. As a result, the common contact snaps to its operated position, closing the other contact circuit.

When the target is removed the common contact automatically returns to its original unoperated position.

A LOOK INSIDE - MODEL 7C

Multiple wiring options:

- Lead Wires
- Cable
- Quick Disconnects

Potting fills the entire switch cavity, forming a **barrier against moisture.**

O-Ring seals in **pressures up to 3,000 PSI**

Three magnet design provides **snap action** and solid contact pressure, eliminating 'contact teasing' and 'contact chatter' in high vibration applications.

Probe lengths ranging from 1" to 5" ensure a proper fit to virtually any cylinder.

Permanent magnets never lose their strength, even when mounted on ferrous metal.

Bi-Color red and green LED position indicator increases safety and awareness for plant personnel.

360° rotatable head makes installation simple and easy.

Versatile gold flashed contacts are suitable for high and low electrical loads, and can be wired **AC or DC, N/O or N/C.**

All stainless steel construction makes this **the most durable cylinder position sensor in the world.**

Sensing face is stainless steel rather than plastic, and is therefore more suitable for high pressure hydraulic cylinder applications.

Options Available

- SPST or SPDT
- HiTemp™ to 400°F
- SubSea™ Submersible

Key Benefits

Stroke-to-GO cylinder position sensors are simple and built to last.

With only one moving part and no metal-to-metal contact forcing it to move, there is nothing to wear out!



Models 7C, 7D, 7E & 7F

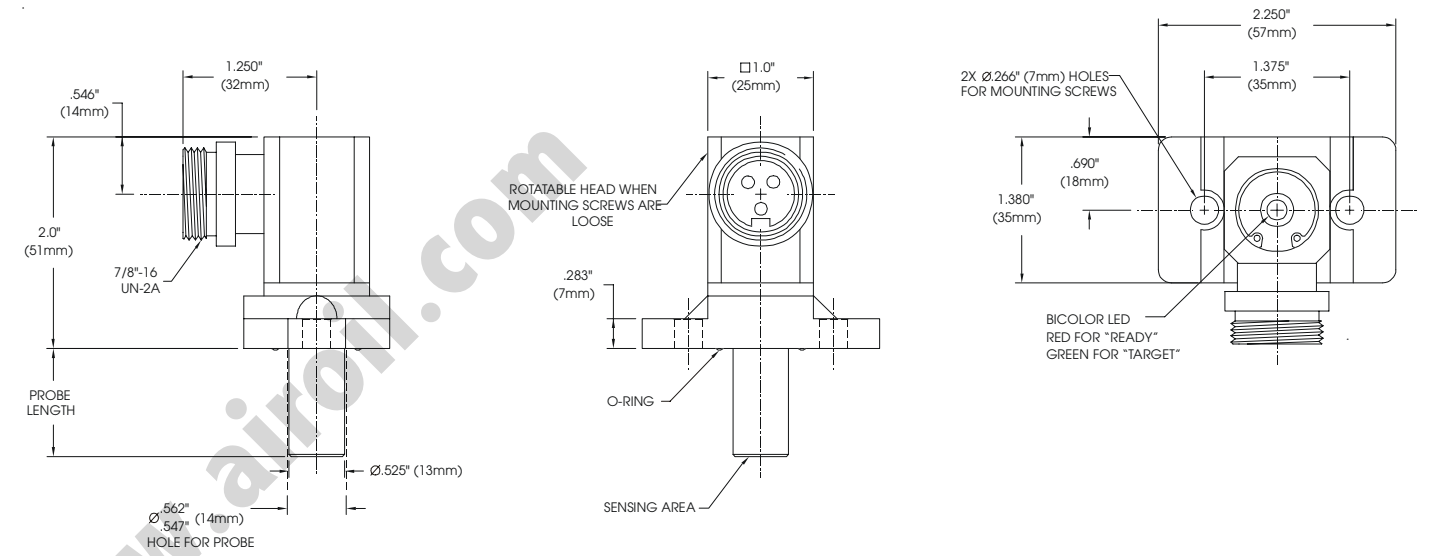
With their solid stainless steel housings and leverless limit switch design, Stroke to GO switches have set the standard for reliability and durability in cylinder position sensing.

- Features:**
 SPDT 4A contacts
 Inherently Intrinsically Safe
 -40° to 221°F operating temperature
- Options:**
 -40° to 400°F high temperature
 Quick disconnect connector
 Underwater capabilities

FAST TRACK DELIVERY

SPST	SPDT
7C-23658-DCA 1.025" Probe Mini Connector	7C-43658-DCA 1.025" Probe Mini Connector
7D-23658-DCA 1.250" probe Mini Connector	7D-43658-DCA 1.250" probe Mini Connector
7E-23658-DCA 2.062" probe Mini Connector	7E-43658-DCA 2.062" probe Mini Connector

Dimensions



Model

Repeatability: .002" (.05 mm) typical
Response Time: 8 milliseconds
Differential: Approx. .020" (.51 mm)
Operating Temperature: -40° to 160°F (-40° to 71°C) with LEDs -40° to 221°F (-40° to 105°C) without LEDs; HiTemp™ option to 400°F (204°C)

- 7C** Model 7C
1.025" (26 mm) probe length
- 7D** Model 7D
1.250" (32 mm) probe length
- 7E** Model 7E
2.062" (52 mm) probe length
- 7F** Custom probe lengths
1.000" (26 mm) - 5.000" (127 mm)*

*Probe lengths shorter than 1.000" require a taller upper switch housing

Ordering Guide
 Fill in the boxes to create your 'ordering number.'

Model

Contact Form

Contact Material: Palladium silver with sawtooth surface configuration
Form: SPDT, Form C (with or without LED indication) Single Pole, Single Throw (with or without LED indication) Form A or Form B

Ratings: Resistive

Without LED's				With LED's			
AC Volts	AC Amps	DC Volts	DC Amps	AC Volts	AC Amps	DC Volts	DC Amps
120	4	24	3	120	0.5	24	0.5
240	2	48	*	240	0.5	48	0.5
480	-	125	0.5	480	-	125	0.5
		250	0.5			250	0.5

- 1** Single Pole Double Throw (Form C)
- 2** Single Pole Single Throw (Form A) (N/O output with bi-color LED indication) (Operating voltage: 24 - 120V AC/DC) (Optional voltage: 48 - 240V AC/DC) (Leakage current is 1.0mA)
- 3** Single Pole Single Throw (Form B) (N/C output with bi-color LED indication) (Operating voltage: 24 - 120V AC/DC) (Optional voltage: 48 - 240V AC/DC) (Leakage current is 1.0 mA)
- 4** Single Pole Double Throw (Form C) (without LED) (No leakage)
- 5** Single Pole Double Throw (Form C) (with dual LED's) (Operating voltage: 24 - 240V AC/DC) (No leakage current)
- 7** Single Pole Single Throw (Form A) N/O output w/o LED indication; No leakage
- 8** Single Pole Single Throw (Form B) N/C output w/o LED indication; No leakage

Contact Form

Sensing Range

Target Material: Ferrous steel
Sensing Range: .090" (2.3 mm) end sensing (3,000 PSI) (Recommended air gap .015" - .040")

- 3** Standard sensing - approx. .090" (2.3 mm) end sensing

Need Accessories?
 See pp. 93-104 for:
 Range Extending
 Target Magnets
 Mounting Brackets
 Connectors and more!

Sensing Range
3

Outlet Position

- 2** Side entry 360° adjustable (Wiring must be A, B, C, or F) No conduit hub
- 6** Side outlet 360° adjustable with Quick Disconnect (Wiring must be D) (Approval must be 7)
- 7** Side outlet 360° adjustable with 1/2" NPT conduit hub (Wiring must be A, B, or F)
- 8** Top outlet (Wiring must be SubSea)

Outlet Position

Enclosure Material

Stainless Steel type 303
5 Stainless steel (rated 3,000 PSI operating) (3 to 1 safety factor applies to standard probe lengths)

Enclosure Material
5

Approvals

- 2** High temperature to 400°F (204°C) with Teflon™ insulated leads (Wiring must be F) (Contact form must be 4, 7, or 8)
- 7** CSA certified General Purpose
- 8** UL listed General Purpose

Approvals

Wiring Options

Lead Wires 18 Gauge (.110" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 600V UL / CSA listed
A2 36" (914 mm)
A3 72" (1829 mm)
A4 144" (3658 mm)
A_ _ _ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads))

Cable 18 Gauge (.250" dia.) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed
B2 36" (914 mm)
B3 72" (1829 mm)
B4 144" (3658 mm)
B_ _ _ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable))

Water Resistant 18 Gauge (.250" dia.) PVC cable rated at 176°F (80°C) 300V with water-resistant squeeze connector.
C2 36" (914 mm)
C3 72" (1829 mm)
C4 144" (3658 mm)
C_ _ _ Lengths greater than 144" (Specify length in feet (e.g. C150 = 150 ft. of cable))

Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approvals must be 7 or 8) Refer to pp. 93-104 for mating cable assemblies and Aura Light Adapters.

Mini-change®	Micro-change®
DCA 3 - pin Mini-change® type	DBA 3 - pin Micro-change® type
DCD 4 - pin Mini-change® type	DBD 4 - pin Micro-change® type
DCG 5 - pin Mini-change® type	

SubSea Underwater Connector (Outlet position must be 8)
3DD 3 pin, certified not to leak underwater
4DD 4 pin, certified not to leak underwater
3DE 3 pin right-angle, certified not to leak underwater
4DE 4 pin right-angle, certified not to leak underwater

HiTemp Leads 18 gauge (.070" dia. potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed (Approval must be 2, 7, or 8)
F2 36" (914 mm)
F3 72" (1829 mm)
F4 144" (3658 mm)
F_ _ _ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))

Wiring Options

Agency Approvals

Approvals	(2) HiTemp	(7) CSA General Purpose	(8) UL General Purpose
Termination Options			
A - Potted PVC Leads		X	X
B - Potted PVC Cable		X	X
C - Water squeeze connector		X	X
D - Quick Disconnect		X	X
D - SubSea™ Connector		X	X
F - HiTemp™ Leads	X	X	X

X = Approvals Available

NEMA Ratings

Models 7C, 7D, 7E, 7F	Non-Hazardous				Hazardous	
	4	4X	6	6P	7	9
NEMA CLASSES						
A - Potted PVC leads	X	X				
B - Potted PVC cable	X	X				
C - PVC Cable w/ squeeze	X	X	X	X		
D - Quick Disconnect	X	X	X	X		
D - SubSea™ Connector	X	X	X	X		
F - HiTemp™ Teflon leads	X	X				

X = Designed to meet respective NEMA specifications

Air-Oil Systems, Inc.

CONTACT FORMS		Leads		Cable		Water-Resistant		HiTemp
		UL	CSA	UL	CSA	UL	CSA	
2 - SPST Form A N/O w/ LED	COM	Black	Black	Black	Black	Black	Black	N/A
	N/O	Blue	Blue	White	White	White	White	
	GND	Green	Green	Red	Red	Red	Red	
3 - SPST Form B N/C w/ LED	COM	Black	Black	Black	Black	Black	Black	N/A
	N/C	Red	Red	Red	Red	Red	Red	
	GND	Green	Green	White	White	White	White	
4 - SPDT Form C No LED	COM	Black	Black	Black	Black	Black	Black	Black Blue Red
	N/O	Blue	Blue	White	White	White	White	
	N/C GND	Red Green	Red Green	Red Green	Red Green	Red Green	Red Green	
5 - SPDT Form C Dual LEDs	COM	Black	Black	Black	Black	Black	Black	N/A
	N/O	Blue	Blue	White	White	White	White	
	N/C GND	Red Green	Red Green	Red Green	Red Green	Red Green	Red Green	
7 - SPST Form A N/O w/o LED	COM	Black	Black	Black	Black	Black	Black	Black Blue Green
	N/O	Blue	Blue	White	White	White	White	
	GND	Green	Green	Red	Red	Red	Red	
8 - SPST Form B N/O w/o LED	COM	Black	Black	Black	Black	Black	Black	Black Red Green
	N/C	Red	Red	Red	Red	Red	Red	
	GND	Green	Green	White	White	White	White	

3 Pin Micro Change with or without LED

SPST, Form A, N/O	
PIN 1	GND
PIN 2	COM
PIN 3	N/O

SPST, Form B, N/C	
PIN 1	GND
PIN 2	COM
PIN 3	N/C

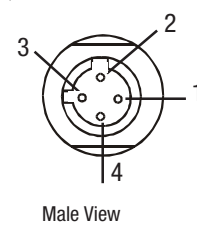
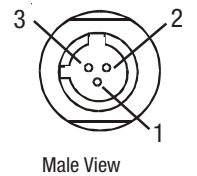
SPDT, Form C	
PIN 1	COM
PIN 2	N/C
PIN 3	N/O

4 Pin Micro Change with or without LED

SPST, Form A, N/O	
PIN 1	COM
PIN 2	N/O
PIN 3	INACTIVE
PIN 4	GND

SPST, Form B, N/C	
PIN 1	COM
PIN 2	INACTIVE
PIN 3	N/C
PIN 4	GND

SPDT, Form C	
PIN 1	COM
PIN 2	N/O
PIN 3	N/C
PIN 4	GND

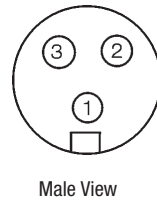


3 Pin Mini Change with or without LED

SPST, Form A, N/O	
PIN 1	GND
PIN 2	COM
PIN 3	N/O

SPST, Form B, N/C	
PIN 1	GND
PIN 2	COM
PIN 3	N/C

SPDT, Form C	
PIN 1	COM
PIN 2	N/C
PIN 3	N/O

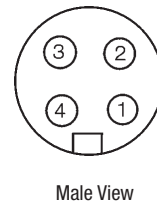


4 Pin Mini Change with or without LED

SPST, Form A, N/O	
PIN 1	COM
PIN 2	N/O
PIN 3	INACTIVE
PIN 4	GND

SPST, Form B, N/C	
PIN 1	COM
PIN 2	INACTIVE
PIN 3	N/C
PIN 4	GND

SPDT, Form C	
PIN 1	COM
PIN 2	N/O
PIN 3	N/C
PIN 4	GND

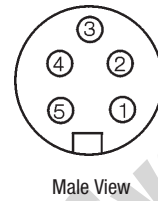


5 Pin Mini Change with or without LED

SPST, Form A, N/O	
PIN 1	N/O
PIN 2	Inactive
PIN 3	GND
PIN 4	Inactive
PIN 5	COM

SPST, Form B, N/C	
PIN 1	Inactive
PIN 2	N/C
PIN 3	GND
PIN 4	Inactive
PIN 5	COM

SPDT, Form C	
PIN 1	N/O
PIN 2	N/C
PIN 3	GND
PIN 4	Inactive
PIN 5	COM

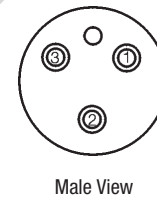


3 Pin SubSea without LED

SPST, Form A, N/O	
PIN 1	COM
PIN 2	N/O
PIN 3	GND

SPST, Form B, N/C	
PIN 1	COM
PIN 2	N/C
PIN 3	GND

SPDT, Form C	
PIN 1	N/C
PIN 2	COM
PIN 3	N/O

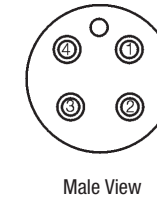


4 Pin SubSea without LED

SPST, Form A, N/O	
PIN 1	COM
PIN 2	N/O
PIN 3	INACTIVE
PIN 4	GND

SPST, Form B, N/C	
PIN 1	COM
PIN 2	INACTIVE
PIN 3	N/C
PIN 4	GND

SPDT, Form C	
PIN 1	COM
PIN 2	N/O
PIN 3	N/C
PIN 4	GND

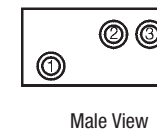


3 Pin SubSea - Right Angle without LED

SPST, Form A, N/O	
PIN 1	COM
PIN 2	N/O
PIN 3	GND

SPST, Form B, N/C	
PIN 1	COM
PIN 2	N/C
PIN 3	GND

SPDT, Form C	
PIN 1	COM
PIN 2	N/O
PIN 3	N/C



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Specialty Sensors



11 HiTemp™ Switch

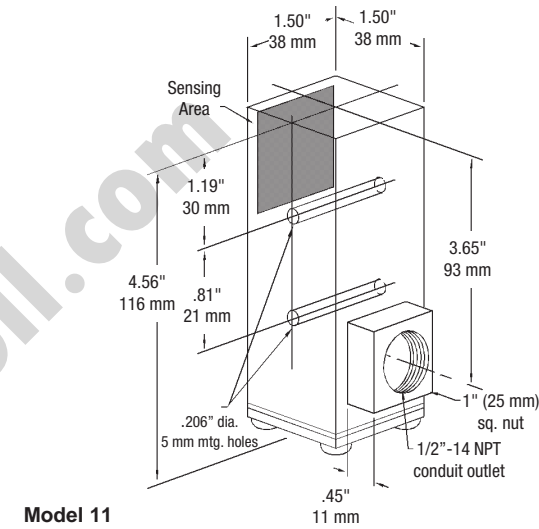
The GO Switch Model 11 HiTemp™ leverless limit switches are rated for continuous operation at 350°F. With its classic design, the 11 is useful when long sensing ranges are needed, in applications such as automotive paint booths, conveyors, automated driers, and valve position monitoring on steam valves and other high heat applications.

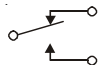
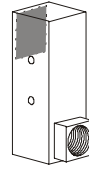
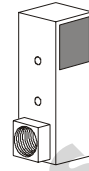

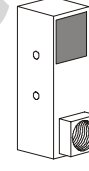
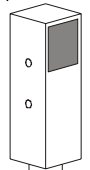
Features:

- SPDT 10A contacts
- Side sensing to 3/8"
- Continuous operation at 350°F

Options:

- Sensing range to 3-3/8" with target magnet
- Mica glass lead wires rated over 842°F



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																								
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 5/16" (8 mm)</p> <p>Operating Temperature: -40° to 350°F (-40° to 176°C).</p> <p>✓ 11 Size: 1 1/2" (38 mm) square x 4 9/16" (116 mm) overall. Add 1/2" (13 mm) for bottom conduit outlet</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <ul style="list-style-type: none"> Range Extending Target Magnets Mounting Brackets Connectors and more! </div> <p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Forms: SPDT</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>10</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>5</td> <td>48</td> <td>1</td> </tr> <tr> <td>480</td> <td>2.5</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>✓ 1 Single Pole Double Throw (Form C)</p> <p>3 Single Pole Double Throw (Form C) Latching (maintained contact) (Outlet position must be 2, 4 or 5)</p>  <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	10	24	3	240	5	48	1	480	2.5	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 3/8" (10mm) standard</p> <p>Sensing Range with Target Magnet: up to 3 3/8" (86 mm) (max)</p> <p>✓ 1 Standard sensing - approx. 3/8" (10 mm) side sensing</p>	<p>Contact Outlet: 1/2" NPT</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>1 Behind sensing area</p> </div> <div style="text-align: center;">  <p>2 Left of sensing area</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  <p>3 Right of sensing area</p> </div> <div style="text-align: center;">  <p>4 Same side as sensing area</p> </div> </div> <div style="text-align: center; margin-top: 10px;">  <p>✓ 5 Bottom of enclosure</p> </div>	<p>✓ 2 Stainless steel</p>	<p>UL SAA</p> <p>✓ 2 High temperature to 350°F (176°C) with Teflon™ insulated leads; UL General Purpose</p> <p>B SAA: High Temp 350°F (176°C): EX S IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.) (Wiring must be F)</p>	<p>HiTemp Wire 18 gauge (.070" dia. potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>✓ F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F_ _ _ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>
AC		DC																												
Volts	Amps	Volts	Amps																											
120	10	24	3																											
240	5	48	1																											
480	2.5	125	0.5																											
		250	0.5																											
Model 11	Contact Form	Sensing Range 1	Outlet Position	Enclosure Material 2	Approvals	Wiring Options																								



81 HiTemp™ Switch

The GO Switch Model 81 HiTemp™ leverless limit switch is rated for continuous operation at 350°F. The 81 offers end sensing and an optional Double Pole Double Throw contact arrangement. The 81 is useful when redundant signals are required in applications such as automotive paint booths, conveyors, automated driers, and valve position monitoring on steam valves and other high heat applications.

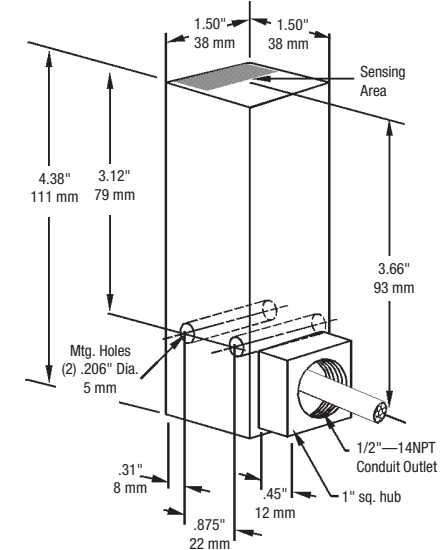
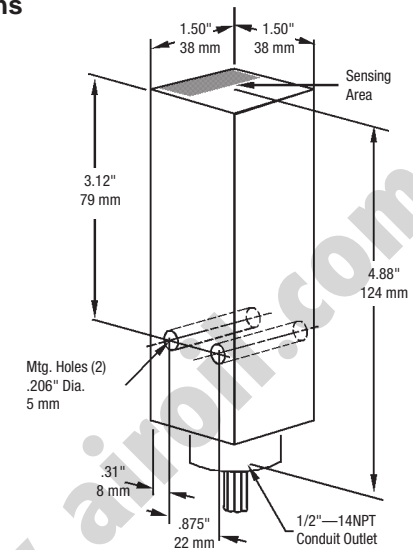
Features:

- SPDT or DPDT 10A contacts
- End sensing to 5/16"
- Continuous operation at 350°F

Options:

- Sensing range to 3-7/8" with target magnet
- Mica glass lead wires rated over 842°F

Dimensions



Model 81

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																							
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 1/4" (6 mm)</p> <p>Operating Temperature: -40° to 350°F (-40° to 176°C)</p> <p>✓ 81 Size: 1 1/2" (38 mm) square x 4 3/8" (111 mm) overall. Subtract 1/2" (13 mm) from length for side conduit</p>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Forms: DPDT Form CC, SPDT Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>10</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>5</td> <td>48</td> <td>1</td> </tr> <tr> <td>480</td> <td>2.5</td> <td>120</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>1 Single Pole Double Throw (Form C)</p> <p>✓ 2 Double Pole Double Throw (Form CC)</p>	AC		DC		Volts	Amps	Volts	Amps	120	10	24	3	240	5	48	1	480	2.5	120	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 1/4" (6 mm)</p> <p>Sensing Range with Target Magnet: up to 3 7/8" (98 mm) (max)</p> <p>✓ 0 Approx. 1/4" (6 mm) end sensing</p> <p>Extended Sensing with External Target Magnets Sensing (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>15/16"</td> <td>3/4"</td> </tr> <tr> <td>AMS4</td> <td>1-3/8"</td> <td>1-1/8"</td> </tr> <tr> <td>AMC5</td> <td>3-7/8"</td> <td>2-1/8"</td> </tr> <tr> <td>AMF6</td> <td>2-3/4"</td> <td>1-5/8"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	15/16"	3/4"	AMS4	1-3/8"	1-1/8"	AMC5	3-7/8"	2-1/8"	AMF6	2-3/4"	1-5/8"	<p>Conduit Outlet: 1/2 NPT. Two locations</p> <p>1 Side outlet</p> <p>✓ 5 Bottom of enclosure</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content; margin-top: 20px;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <ul style="list-style-type: none"> Range Extending Target Magnets Mounting Brackets Connectors and more! </div>	<p>✓ 2 Stainless steel</p>	<p>UL SAA</p> <p>✓ 2 High temperature to 350°F (176°C) with Teflon™ insulated leads</p> <p>B SAA: High Temp 350°F (176°C): EX S IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.)</p>	<p>✓ HiTemp Wire 18 gauge (.070") dia. potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F__ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>
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AMF6	2-3/4"	1-5/8"																																											
Model 81	Contact Form	Sensing Range 0	Outlet Position	Enclosure Material 2	Approvals	Wiring Options																																							

Ordering Guide

Fill in the boxes to create your 'ordering number.'



Models 71 and 72

GO Switch Models 71 and 72 have the smallest diameters of any round leverless limit switch, and are used extensively in factory automation applications.

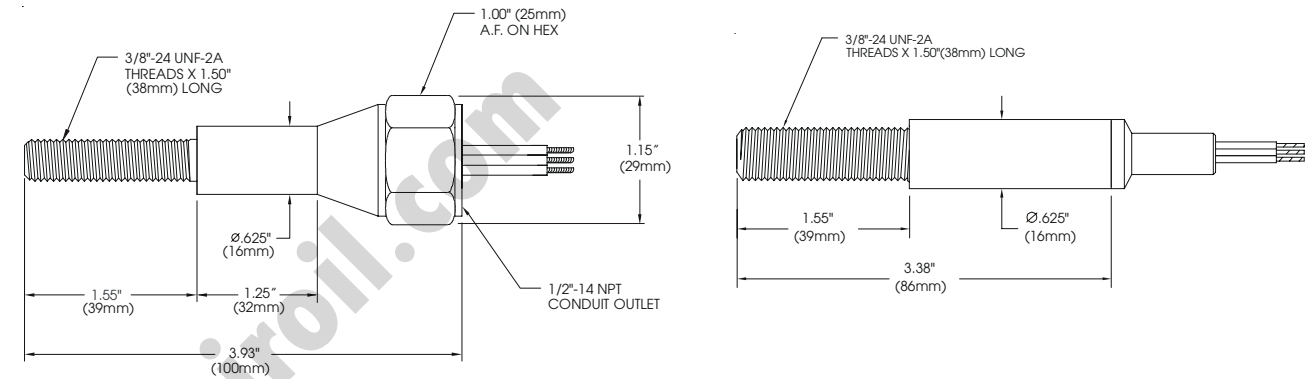
Features:

- SPDT 4A contacts
- Intrinsically Safe
- 40° to 400°F operating temperature

Options:

- English or Metric threads
- Mica glass lead wires rated over 842°F

Dimensions



Model 71

Model 72

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																				
<p>Repeatability: .002" (.05 mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 400°F (-40° to 204°C)</p> <p>✓ 71 Model 71 3/8" (10 mm) dia. x 3 15/16" (100 mm) long, with 3/8"-24 UNF x 1 1/2" (38 mm) threads and 1/2"-14 NPT conduit hub</p> <p>71M Model 71 M12 x 1 external metric thread</p> <p>✓ 72 Model 72 3/8" (10 mm) dia. x 3 3/8" (86 mm) long, with 3/8"-24 UNF x 1 1/2" (38 mm) threads. No conduit hub</p> <p>72M Model 72 M12 x 1 external metric thread</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>1.25</td> </tr> <tr> <td>480</td> <td>*</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>✓ 1 Single Pole Double Throw (Form C)</p> <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	4	24	3	240	2	48	1.25	480	*	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. .040" (1 mm) end sensing</p> <p>Sensing Range with Target Magnet: up to .15" (4mm)</p> <p>✓ 6 Standard sensing - approx. .040" (1 mm) end sensing</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>.12"</td> <td>.07"</td> </tr> <tr> <td>AMS4</td> <td>.15"</td> <td>.10"</td> </tr> <tr> <td>AMS7</td> <td>.13"</td> <td>.045"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	.12"	.07"	AMS4	.15"	.10"	AMS7	.13"	.045"	<p>Conduit Outlet: 1/2" NPT</p> <p>2 Side entry (Model 72)</p> <p>✓ 5 Bottom of enclosure</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <ul style="list-style-type: none"> Range Extending Target Magnets Mounting Brackets Connectors and more! </div>	<p>✓ 2 303 stainless steel (rated 2,000 PSI)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p>SAA</p> <p>✓ 2 High temperature to 400°F (204°C) with Teflon™ insulated leads</p> <p>B SAA: High Temp 350°F (176°C): EX S IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.)</p>	<p>✓ HiTemp Leads 18 gauge (.070" dia.) potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F_ _ _ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>
AC		DC																																								
Volts	Amps	Volts	Amps																																							
120	4	24	3																																							
240	2	48	1.25																																							
480	*	125	0.5																																							
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<p>Model</p> <p>71</p>	<p>Contact Form</p> <p>1</p>	<p>Sensing Range</p> <p>6</p>	<p>Outlet Position</p>	<p>Enclosure Material</p>	<p>Approvals</p>	<p>Wiring Options</p>																																				

Ordering Guide

Fill in the boxes to create your 'ordering number.'



73-74-75-76-77 HiTemp™ Switches

GO Switch Models 73, 75, and 77 HiTemp™ leverless limit switches are rated for continuous operation at 400°F, the highest rating of any position sensors on the market. These models are useful when precision sensing is required, in applications such as cylinder position sensing in automated paint booths, driers, and conveyors, and valve position monitoring on steam valves and other high heat applications.

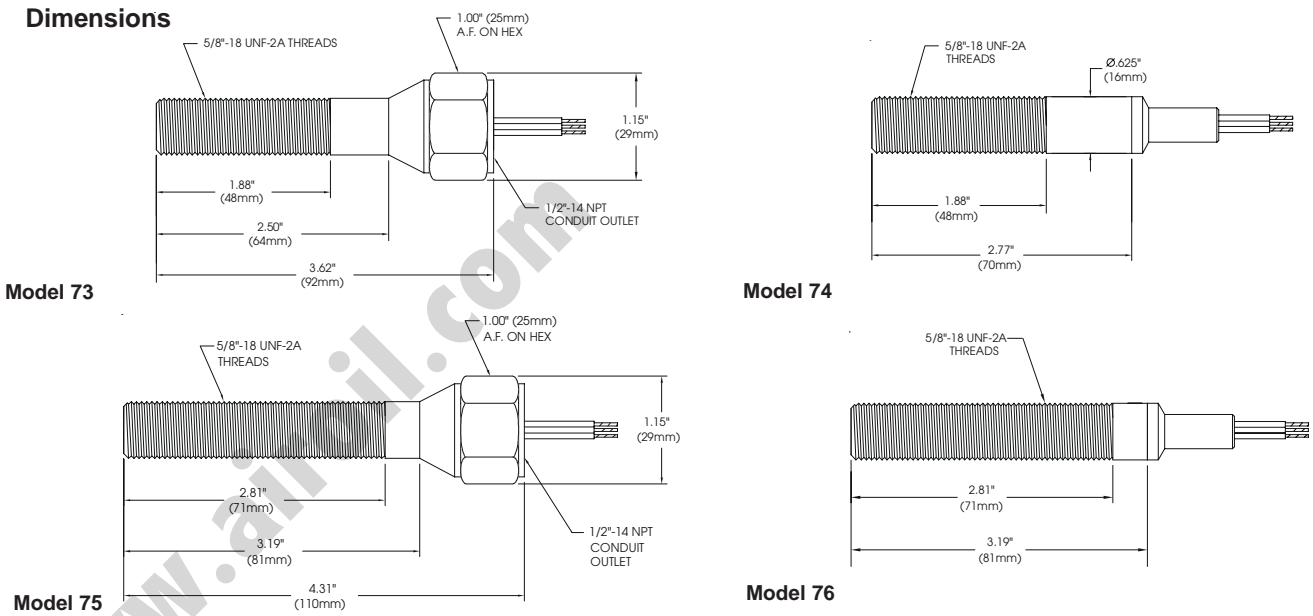
Features:

- SPDT 4 amp contacts
- End sensing to 0.100"
- Continuous operation at 400°F

Options:

- Sensing range to .35" with target magnet
- Mica glass lead wires rated over 842°F

Dimensions



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																				
<p>Repeatability: .002" (.05mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 400°F (-40° to 204°C)</p> <p>73 Model 73 5/8" (16 mm) dia. x 3 3/8" (92 mm) long with 5/8"-18 UNF x 1 7/8" (48 mm) threads and 1/2"-14 NPT conduit hub</p> <p>73M M18 x 1.5 external metric thread</p> <p>74 Model 74 5/8" (16 mm) dia. x 2 3/4" (70 mm) long with 5/8"-18 UNF x 1 7/8" (48 mm) threads. No conduit hub</p> <p>74M M18 x 1.5 external metric thread</p> <p>75 Model 75 5/8" (16 mm) dia. x 4 5/16" (110 mm) long with 5/8"-18 UNF x 2 3/16" (71 mm) threads and 1/2" NPT conduit hub</p> <p>75M M18 x 1.5 external metric thread</p> <p>76 Model 76 5/8" (16 mm) dia. x 3 3/16" (81 mm) long with 5/8"-18 UNF x 2 3/16" (71 mm) threads. No conduit hub</p> <p>76M Model 76 M18 x 1.5 external metric thread</p> <p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1"> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>1.25</td> </tr> <tr> <td>480</td> <td>1</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </table> <p>1 Single Pole Double Throw (Form C)</p> <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	4	24	3	240	2	48	1.25	480	1	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. .100" (2.5 mm) end sensing (2,000 PSI) .072" (1.8 mm) end sensing (5,000 PSI) .060" (1.5 mm) end sensing (10,000 PSI)</p> <p>Sensing Range with Target Magnet: up to .35" (9 mm)</p> <p>3 Standard sensing - approx. .100" (3 mm) end sensing (Enclosure must be 2 or 6)</p> <p>4 HiPressure sensing - approx. .072" (2 mm) end sensing (Enclosure must be 3)</p> <p>5 HiPressure sensing - approx. .060" (2 mm) end sensing (Enclosure must be 4)</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> <tr> <td>AMP3</td> <td>.20"</td> <td>.25"</td> </tr> <tr> <td>AMS4</td> <td>.35"</td> <td>.15"</td> </tr> <tr> <td>AMS7</td> <td>.20"</td> <td>.05"</td> </tr> </table>	Magnet	Sensing	Differential	AMP3	.20"	.25"	AMS4	.35"	.15"	AMS7	.20"	.05"	<p>Conduit Outlet: 1/2" NPT</p> <p>2 Side entry with Teflon insulated leads (Model 74)</p> <p>5 Bottom of enclosure</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> <p>Need Accessories?</p> <p>See pp. 93-104 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p> </div>	<p>2 303 stainless steel (rated 2,000 PSI) (Sensing must be 3)</p> <p>3 HiPressure - 303 stainless steel (rated 5,000 PSI) (Sensing must be 4)</p> <p>4 HiPressure - 303 stainless steel (rated 10,000 PSI) (Sensing must be 5)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p>SAA, BASEEFA</p> <p>2 High temperature to 400°F (204°C) with Teflon™ insulated leads (Wiring must be F)</p> <p>4 CSA certified explosion proof for CI I, Div 1; Grps A,B,C,D; CI II, Div 1; Grps E-G; CI III (Model 73) (Wiring must be H) (Rated 298° (148°C)) (Lead seal req'd within 18")</p> <p>9 CENELEC: EExdIIC T3 Zone 1. (EN 50 014 & EN 50 018, BASEEFA Certificate Ex89C1233X).(Model 73 & 75) (Wiring must be H)</p> <p>B SAA: High Temp 400°F (204°C): EX S IIC T3 IP65; CI I Zone 1 & 2; EX S IIC T3 IP65; CI I Zone 0; DIP CI II (Intrinsically safe with entity approved barrier. Install per NEC Article 501.)</p>	<p>HiTemp Leads 18 gauge (.070" dia. potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F___ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p> <p>HiTemp Leads 16 gauge potted-in Peek insulated leads with silver plated copper conductor rated at 500°F (260°C) 600V; UL / CSA listed</p> <p>H2 36" (914 mm)</p> <p>H3 72" (1829 mm)</p> <p>H4 144" (3658 mm)</p> <p>H___ Lengths greater than 144" (Specify length in feet (e.g. H150 = 150 ft. of leads))</p>
AC		DC																																								
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120	4	24	3																																							
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Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																				



7G-7H-7I HiTemp™ Switches

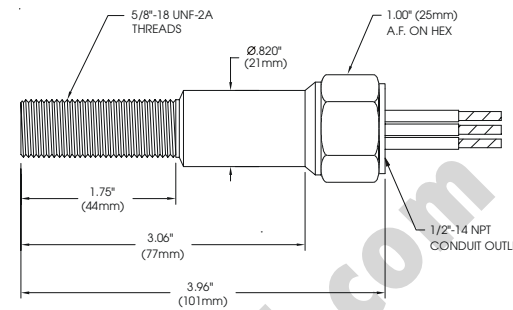
GO Switch Models 7G, 7H, and 7I HiTemp™ leverless limit switches are rated for continuous operation at 400°F, the highest rating of any position sensors on the market. These models offer end sensing and an optional Double pole Double Throw contact arrangement. They are useful when precision sensing and redundant signals are needed, in applications such as cylinder position sensing in automated paint booths, driers, and conveyors, and valve position monitoring on steam valves and other high heat applications.

Features:

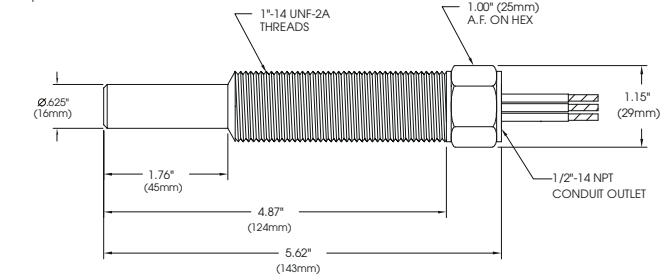
- SPDT or DPDT 4A contacts
- End sensing to .090"
- Continuous operation at 400°F

Options:

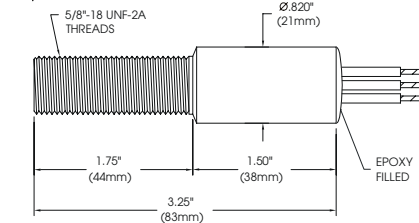
- Sensing range to .20" with target magnet
- Mica glass lead wires rated over 842°F



Model 7G



Model 7H



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																									
<p>Repeatability: .002" (.05 mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C) (Option to 400°F)</p> <p>✓ 7G Model 7G 5/8" (16 mm) dia. x 4" (101 mm) long with 5/8"-18 UNF x 1 3/4" (44 mm) threads and 1/2" NPT conduit hub</p> <p>7GM Model 7G M18 x 1.5 external metric thread</p> <p>7H Model 7H 5/8" (16 mm) dia. x 3 1/4" (83 mm) long with 5/8" - 18 UNF x 1 3/4" threads. No conduit outlet.</p> <p>7HM Model 7H M18 x 1.5 external metric thread</p> <p>7I Model 7I 1" (25 mm) dia. x 5 5/8" (148 mm) long with 1" - 14 UNF x 3" (76 mm) threads 1/2" NPT conduit outlet</p> <p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT Form C; DPDT Form CC</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>1</td> <td>120</td> <td>3</td> <td>24</td> <td>1</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>*</td> <td>240</td> <td>1.5</td> <td>48</td> <td>*</td> </tr> <tr> <td>480</td> <td>*</td> <td>120</td> <td>0.5</td> <td>480</td> <td>*</td> <td>120</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> <td></td> <td></td> <td>250</td> <td>0.1</td> </tr> </tbody> </table> <p>SPDT DPDT</p> <p>1 Single Pole Double Throw (Form C) Hermetically Sealed (Model 7G & 7I) (Lead seal not required for hazardous locations)</p> <p>✓ 2 Double Pole Double Throw (Form CC)</p> <p>Form C - SPDT Form CC - DPDT</p>	AC		DC		AC		DC		Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	120	4	24	1	120	3	24	1	240	2	48	*	240	1.5	48	*	480	*	120	0.5	480	*	120	0.5			250	0.5			250	0.1	<p>Target Material: Ferrous steel</p> <p>Sensing Range: .090" (2.3 mm) end sensing (2,000 PSI)</p> <p>Sensing Range with Target Magnet: up to .20" (5 mm)</p> <p>✓ 3 Standard sensing - approx. .090" (2.3 mm) end sensing</p> <p>Extended Sensing Range with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>.15"</td> <td>.30"</td> </tr> <tr> <td>AMS4</td> <td>.20"</td> <td>.30"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	.15"	.30"	AMS4	.20"	.30"	<p>Conduit Outlet: 1/2" NPT</p> <p>✓ 5 Bottom of enclosure</p> <p>Need Accessories? See pp. 93-104 for: Range Extending Target Magnets Mounting Brackets Connectors and more!</p>	<p>Stainless Steel type 303</p> <p>✓ 2 303 stainless steel (rated 2,000 PSI)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p>✓ 2 High temperature to 400°F (204°C) with Teflon™ insulated leads</p>	<p>HiTemp Leads 20 gauge (19 strands at .08") potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed (Approval must be 6, 7, or 8)</p> <p>✓ F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F___ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>
AC		DC		AC		DC																																																									
Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps																																																								
120	4	24	1	120	3	24	1																																																								
240	2	48	*	240	1.5	48	*																																																								
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Model	Contact Form	Sensing Range 3	Outlet Position 5	Enclosure Material	Approvals	Wiring Options																																																									



Stroke-to-GO HiTemp™ Switches

Stroke-to-GO Models 7C, 7D, 7E, and 7F HiTemp™ cylinder position sensors are rated for continuous operation at 400°F, the highest rating of any cylinder position sensors on the market. These models are useful in applications such as cylinder position sensing in automated paint booths, driers, and conveyors, and other high heat applications.

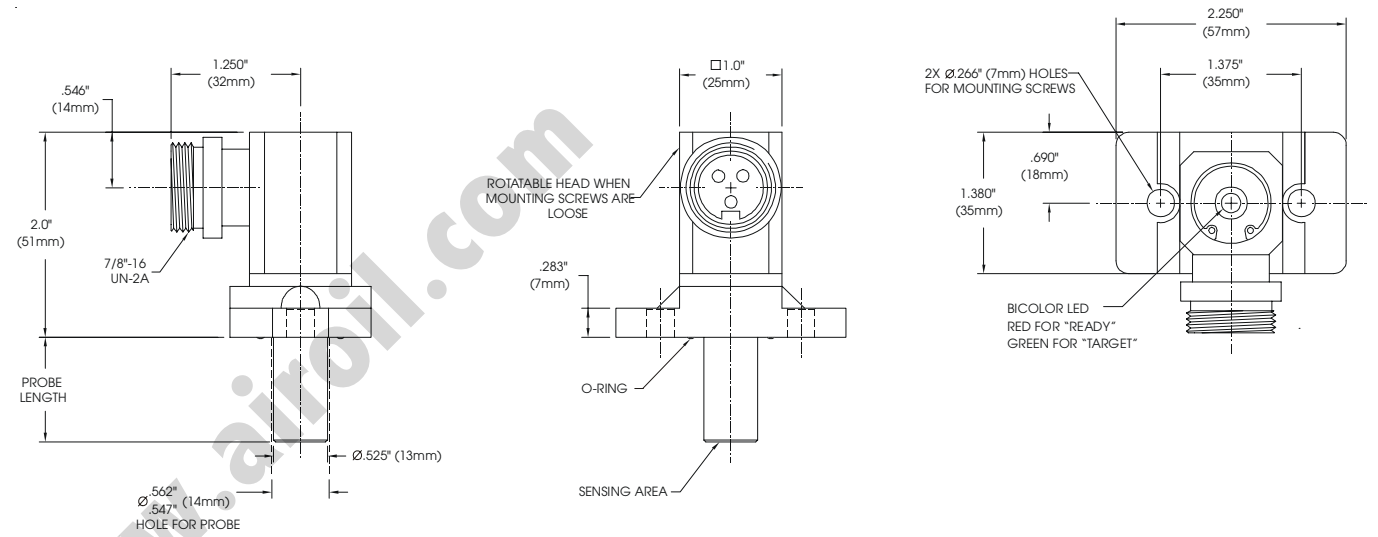
Features:

- SPST or SPDT 4A contacts
- Continuous operation at 400°F

Options:

- Custom probe lengths up to 5" long
- Mica glass lead wires rated over 842°F

Dimensions



Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																								
<p>Repeatability: .002" (.05 mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 400°F (-40° to 204°C) without LEDs</p> <p>✓ 7C Model 7C 1.025" (26 mm) probe length</p> <p>✓ 7D Model 7D 1.250" (32 mm) probe length</p> <p>✓ 7E Model 7E 2.062" (52 mm) probe length</p> <p>7F Custom probe lengths 1.000" (26 mm) - 5.000" (127 mm)*</p> <p>*Probe lengths shorter than 1.000" require a taller upper switch housing</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C (with or without LED indication) Single Pole, Single Throw (with or without LED indication) Form A or Form B</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amperes</th> <th>Volts</th> <th>Amperes</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>*</td> </tr> <tr> <td>480</td> <td>*</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>Without LED's</p> <p>✓ 4 Single Pole Double Throw (Form C) (without LED) (No leakage)</p> <p>7 Single Pole Single Throw (Form A) (N/O output w/o LED indication) (No leakage)</p> <p>8 Single Pole Single Throw (Form B) (N/C output w/o LED indication) (No leakage)</p>	AC		DC		Volts	Amperes	Volts	Amperes	120	4	24	3	240	2	48	*	480	*	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: .090" (2.3 mm) end sensing (3,000 PSI) (Recommended air gap .015" - .040")</p> <p>✓ 3 Standard sensing - approx. .090" (2.3 mm) end sensing</p>	<p>Conduit Outlet: 1/2" NPT</p> <p>✓ 2 Side entry 360° adjustable No conduit hub</p> <p>7 Side outlet 360° adjustable with 1/2" NPT conduit hub</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <p>Range Extending Target Magnets Mounting Brackets Connectors and more!</p> </div>	<p>Stainless Steel type 303</p> <p>✓ 5 Stainless steel (rated 3,000 PSI operating) (3 to 1 safety factor applies to standard probe lengths)</p>	<p>✓ 2 High temperature to 400°F (204°C) with Teflon™ insulated leads</p>	<p>HiTemp Leads 18 gauge (.070" dia. potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed</p> <p>✓ F2 36" (914 mm)</p> <p>F3 72" (1829 mm)</p> <p>F4 144" (3658 mm)</p> <p>F__ Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads))</p>
AC		DC																												
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Model	Contact Form	Sensing Range 3	Outlet Position	Enclosure Material 5	Approvals 2	Wiring Options																								

Ordering Guide

Fill in the boxes to create your 'ordering number.'



11/21 SubSea™ Switches

GO Switch Models 11 and 21 SubSea™ leverless limit switches are submersible to 434 feet. With their classic design, the 11 and 21 are useful when long sensing ranges are needed, in applications such as lock and dam gates, military hatch doors, ships and vessels, and offshore oil platforms.

Features:

- SPDT 10A contacts
- Side sensing to 9/16"
- Permanent submersion to 434 feet

Options:

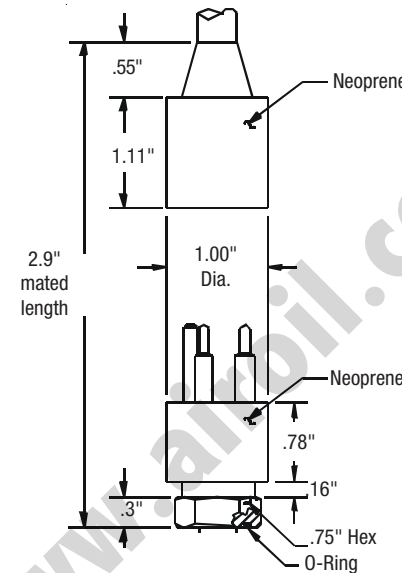
- Sensing range to 3-3/8" (86mm) with target magnet
- Straight or right angle SubSea connector

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																												
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 5/16" (8 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C).</p> <p>✓ 11 Size: 1 1/2" (38 mm) square x 4 9/16" (116 mm) overall. Add 1/2" (13 mm) for bottom conduit outlet.</p> <p>21 Size: 1 1/2" (38 mm) square x 3 13/16" (97 mm) overall. Add 1/2" (13 mm) for bottom conduit outlet.</p>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Forms: SPDT, DMDB</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>10</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>5</td> <td>48</td> <td>1</td> </tr> <tr> <td>480</td> <td>2.5</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>✓ 1 Single Pole Double Throw (Form C)</p> <p>3 Single Pole Double Throw (Form C) Latching (maintained contact) (Outlet position must be 2, 4 or 5)</p> <p>5 Double Make Double Break, two-circuit, Form Z</p> <p>6 Double Make Double Break, two circuit, Form Z Latching (maintained contact) (Outlet position must be 2, 4 or 5)</p>	AC		DC		Volts	Amps	Volts	Amps	120	10	24	3	240	5	48	1	480	2.5	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 3/8" (10mm) standard; 9/16" (14mm) extended sensing (Model 11)</p> <p>1 Standard sensing - approx. 3/8" (10 mm) side sensing</p> <p>✓ 2 Extended sensing - approx. 9/16" (14 mm) side sensing (Contact Form must be 1 or 3) (Model 11)</p> <p>See pg. 20 for Extended Sensing Range with External Target Magnets</p>	<p>Contact Outlet: 1/2" NPT</p> <p>1 Behind sensing area</p> <p>2 Left of sensing area</p> <p>3 Right of sensing area</p> <p>✓ 5 Bottom of enclosure</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <p>Range Extending Target Magnets Mounting Brackets Connectors and more!</p> </div>	<p>Material: Stainless Steel</p> <p>Pressure Rating: 200 PSI</p> <p>✓ 2 304 Stainless steel</p> <p>4 304 Stainless steel - corrosion resistant coating (polyurethane)</p>	<p></p> <p>7 CSA certified General Purpose</p> <p>✓ 8 UL listed General Purpose</p>	<p>SubSea™ Underwater Connector Refer to pp. 93-104 for mating cable assemblies.</p> <p>✓ 3DD 3 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>4DD 4 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>3DE 3 pin right-angle, certified not to leak underwater</p> <p>4DE 4 pin right-angle, certified not to leak underwater</p> <table border="1"> <thead> <tr> <th colspan="2">SubSea - 3 Pin - Lock Sleeve</th> <th colspan="2">SubSea - 3 Pin - Right Angle</th> </tr> </thead> <tbody> <tr> <td>Pin 1</td> <td>N/C</td> <td>Pin 1</td> <td>COM</td> </tr> <tr> <td>Pin 2</td> <td>COM</td> <td>Pin 2</td> <td>N/O</td> </tr> <tr> <td>Pin 3</td> <td>N/O</td> <td>Pin 3</td> <td>N/C</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">SubSea - 4 Pin - Right Angle</th> <th colspan="2">SubSea - 4 Pin - Lock Sleeve</th> </tr> </thead> <tbody> <tr> <td>Pin 1</td> <td>COM</td> <td>Pin 1</td> <td>COM</td> </tr> <tr> <td>Pin 2</td> <td>N/O</td> <td>Pin 2</td> <td>N/O</td> </tr> <tr> <td>Pin 3</td> <td>N/C</td> <td>Pin 3</td> <td>N/C</td> </tr> <tr> <td>Pin 4</td> <td>GND</td> <td>Pin 4</td> <td>GND</td> </tr> </tbody> </table>	SubSea - 3 Pin - Lock Sleeve		SubSea - 3 Pin - Right Angle		Pin 1	N/C	Pin 1	COM	Pin 2	COM	Pin 2	N/O	Pin 3	N/O	Pin 3	N/C	SubSea - 4 Pin - Right Angle		SubSea - 4 Pin - Lock Sleeve		Pin 1	COM	Pin 1	COM	Pin 2	N/O	Pin 2	N/O	Pin 3	N/C	Pin 3	N/C	Pin 4	GND	Pin 4	GND
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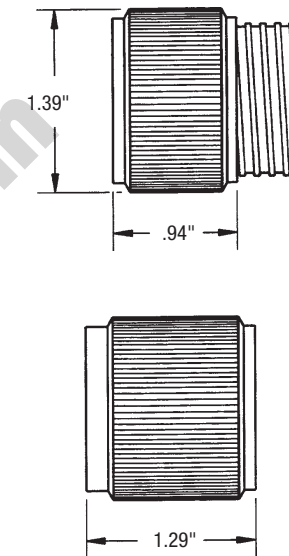
Ordering Guide

Fill in the boxes to create your 'ordering number.'

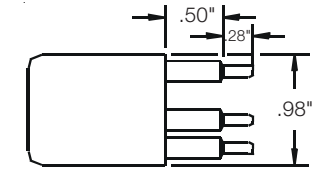
SubSea Connector with Delrin Lock Sleeve



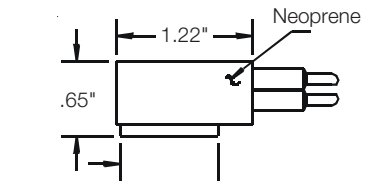
Delrin Lock Sleeves (mating cable sold separately)



SubSea Right Angle Connector No lock sleeve required



Top View



Side View



81 SubSea™ Switch

The GO Switch Model 81 SubSea™ leverless limit switch is submersible to 434 feet. The 81 offers end sensing and an optional Double Pole Double Throw contact arrangement. The 81 is useful when redundant signals are required in applications such as lock and dam gates, military hatch doors, ships and vessels, and offshore oil platforms.

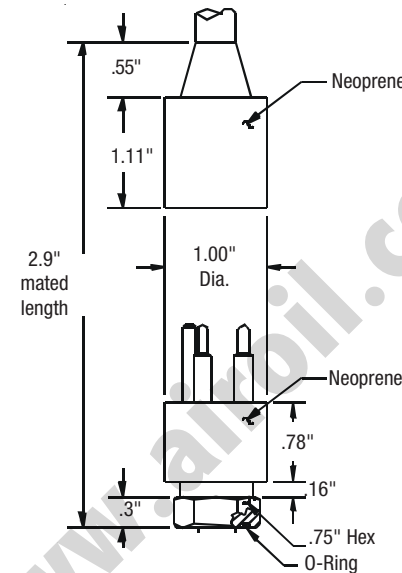
Features:

- SPDT or DPDT 10 amp contacts
- End sensing to 1/4"
- Permanent submersion to 434 feet

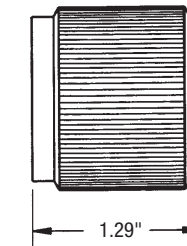
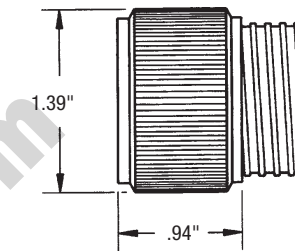
Options:

- Sensing range to 3-7/8" with target magnet
- Straight or right angle SubSea™ connector

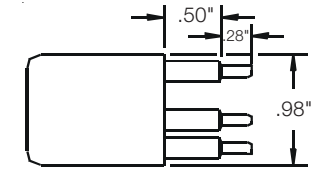
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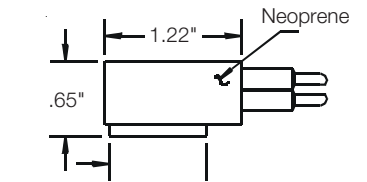
Delrin Lock Sleeves (mating cable sold separately)



SubSea Right Angle Connector No lock sleeve required



Top View



Side View

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																																																																									
<p>Repeatability: .002" (.05 mm)</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. 1/4" (6 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C).</p> <p>81 Size: 1 1/2" (38 mm) square x 4 3/8" (111 mm) overall. Subtract 1/2" (13 mm) from length for side conduit</p>	<p>Contact Material: Silver cadmium oxide, gold flashed</p> <p>Forms: DPDT Form CC, SPDT Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>10</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>5</td> <td>48</td> <td>1</td> </tr> <tr> <td>480</td> <td>2.5</td> <td>120</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>1 Single Pole Double Throw (Form C) (Wiring must be 3DD, 4DD, 3DE or 4DE)</p> <p>2 Double Pole Double Throw (Form CC) (Wiring must be 8DD)</p>	AC		DC		Volts	Amps	Volts	Amps	120	10	24	3	240	5	48	1	480	2.5	120	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range: Approx. 1/4" (6 mm)</p> <p>Sensing Range with Target Magnet: up to 3 7/8" (98 mm) (max)</p> <p>0 Approx. 1/4" (6 mm) end sensing</p> <p>Extended Sensing with External Target Magnets (See Accessories for External Target Magnets)</p> <table border="1"> <thead> <tr> <th>Magnet</th> <th>Sensing</th> <th>Differential</th> </tr> </thead> <tbody> <tr> <td>AMP3</td> <td>15/16"</td> <td>3/4"</td> </tr> <tr> <td>AMS4</td> <td>1-3/8"</td> <td>1-1/8"</td> </tr> <tr> <td>AMC5</td> <td>3-7/8"</td> <td>2-1/8"</td> </tr> <tr> <td>AMF6</td> <td>2-3/4"</td> <td>1-5/8"</td> </tr> </tbody> </table>	Magnet	Sensing	Differential	AMP3	15/16"	3/4"	AMS4	1-3/8"	1-1/8"	AMC5	3-7/8"	2-1/8"	AMF6	2-3/4"	1-5/8"	<p>Conduit Outlet: 1/2" NPT. Two locations.</p> <p>1 Side outlet</p> <p>5 Bottom of enclosure</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <p>Range Extending Target Magnets</p> <p>Mounting Brackets</p> <p>Connectors and more!</p> </div>	<p>Material: Stainless Steel</p> <p>2 Stainless steel</p> <p>4 Stainless steel - corrosion resistant coating (polyurethane)</p>	<p></p> <p>7 CSA certified General Purpose</p> <p>8 UL listed General Purpose</p>	<p>SubSea™ Underwater Connector Refer to pp. 93-104 for mating cable assemblies.</p> <p>3DD 3 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>4DD 4 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>8DD 8 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>3DE 3 pin right-angle, certified not to leak underwater</p> <p>4DE 4 pin right-angle, certified not to leak underwater</p> <table border="1"> <thead> <tr> <th colspan="2">SubSea - 3 Pin - Lock Sleeve</th> <th colspan="2">SubSea - 4 Pin - Lock Sleeve</th> </tr> </thead> <tbody> <tr> <td>Pin 1</td> <td>N/C</td> <td>Pin 1</td> <td>COM</td> </tr> <tr> <td>Pin 2</td> <td>COM</td> <td>Pin 2</td> <td>N/O</td> </tr> <tr> <td>Pin 3</td> <td>N/O</td> <td>Pin 3</td> <td>N/C</td> </tr> <tr> <td></td> <td></td> <td>Pin 4</td> <td>GND</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">SubSea - 3 Pin - Right Angle</th> <th colspan="2">SubSea - 8 Pin - Lock Sleeve</th> </tr> </thead> <tbody> <tr> <td>Pin 1</td> <td>COM</td> <td>Pin 1</td> <td>COM₁</td> </tr> <tr> <td>Pin 2</td> <td>N/O</td> <td>Pin 2</td> <td>N/O₁</td> </tr> <tr> <td>Pin 3</td> <td>N/C</td> <td>Pin 3</td> <td>N/C₁</td> </tr> <tr> <td></td> <td></td> <td>Pin 4</td> <td>GND</td> </tr> <tr> <td></td> <td></td> <td>Pin 5</td> <td>N/C₂</td> </tr> <tr> <td></td> <td></td> <td>Pin 6</td> <td>N/O₂</td> </tr> <tr> <td></td> <td></td> <td>Pin 7</td> <td>COM₂</td> </tr> <tr> <td></td> <td></td> <td>Pin 8</td> <td>Inactive</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">SubSea - 4 Pin - Right Angle</th> </tr> </thead> <tbody> <tr> <td>Pin 1</td> <td>COM</td> </tr> <tr> <td>Pin 2</td> <td>N/O</td> </tr> <tr> <td>Pin 3</td> <td>N/C</td> </tr> <tr> <td>Pin 4</td> <td>GND</td> </tr> </tbody> </table>	SubSea - 3 Pin - Lock Sleeve		SubSea - 4 Pin - Lock Sleeve		Pin 1	N/C	Pin 1	COM	Pin 2	COM	Pin 2	N/O	Pin 3	N/O	Pin 3	N/C			Pin 4	GND	SubSea - 3 Pin - Right Angle		SubSea - 8 Pin - Lock Sleeve		Pin 1	COM	Pin 1	COM ₁	Pin 2	N/O	Pin 2	N/O ₁	Pin 3	N/C	Pin 3	N/C ₁			Pin 4	GND			Pin 5	N/C ₂			Pin 6	N/O ₂			Pin 7	COM ₂			Pin 8	Inactive	SubSea - 4 Pin - Right Angle		Pin 1	COM	Pin 2	N/O	Pin 3	N/C	Pin 4	GND
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Ordering Guide

Fill in the boxes to create your 'ordering number.'



73-75-77 SubSea™ Switches

GO Switch Models 73, 75, and 77 SubSea™ leverless limit switches are submersible to as deep as 23,000 feet. With their solid, one-piece stainless steel housings, there is no means for water to penetrate the contact chamber. These models are useful when precision sensing is required, in applications such as valve position monitoring, pig detection, pin placement detection, and cylinder position sensing on lock and dam gates, military hatch doors, ships and vessels, and offshore oil platforms.

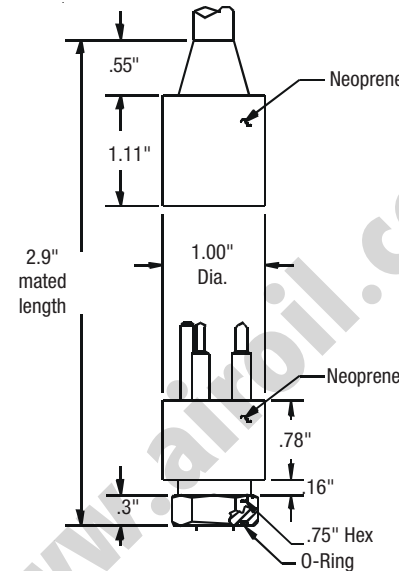
Features:

- SPDT 4 amp contacts
- End sensing to 0.100"

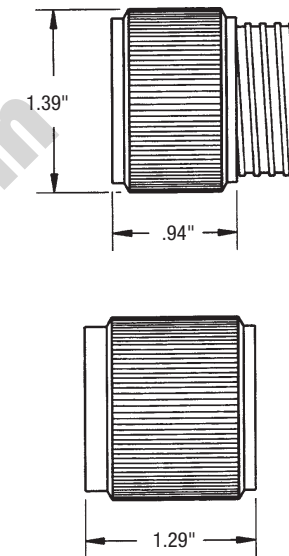
Options:

- Optional submersion depth to 11,500 feet
- Optional submersion depth to 23,000 feet
- Sensing range to .35" with target magnet
- Straight or right angle SubSea connector

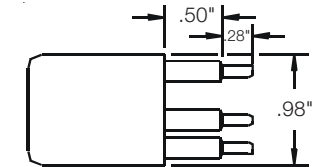
SubSea Connector with Delrin Lock Sleeve



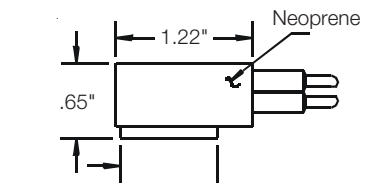
Delrin Lock Sleeves



SubSea Right Angle Connector
No lock sleeve required



Top View



Side View

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options																																																												
<p>Repeatability: .002" (.05mm) typical</p> <p>Response Time: 8 milliseconds</p> <p>Differential: Approx. .020" (.51 mm)</p> <p>Operating Temperature: -40° to 221°F (-40° to 105°C)</p> <p>✓ 73 Model 73 5/8" (16 mm) dia. x 3 5/8" (92 mm) long with 5/8"-18 UNF x 1 7/8" (48 mm) threads and 1/2" NPT conduit hub</p> <p>73M Model 73 M18 x 1.5 external metric thread</p> <p>✓ 75 Model 75 5/8" (16 mm) dia. x 4 5/16" (110 mm) long with 5/8"-18 UNF x 2 13/16" (71 mm) threads and 1/2" NPT conduit hub</p> <p>75M Model 75 M18 x 1.5 external metric thread</p> <p>77 Model 77 3/4" (19 mm) dia. x 5 13/16" (148 mm) long with 3/4"-16 UNF x 2 13/16" (71mm) threads</p> <p>Ordering Guide Fill in the boxes to create your 'ordering number.'</p>	<p>Contact Material: Palladium silver with sawtooth surface configuration</p> <p>Form: SPDT, Form C</p> <p>Ratings: Resistive</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> <tr> <th>Volts</th> <th>Amps</th> <th>Volts</th> <th>Amps</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>4</td> <td>24</td> <td>3</td> </tr> <tr> <td>240</td> <td>2</td> <td>48</td> <td>1.25</td> </tr> <tr> <td>480</td> <td>*</td> <td>125</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td>250</td> <td>0.5</td> </tr> </tbody> </table> <p>✓ 1 Single Pole Double Throw (Form C)</p> <p>Form C - SPDT</p>	AC		DC		Volts	Amps	Volts	Amps	120	4	24	3	240	2	48	1.25	480	*	125	0.5			250	0.5	<p>Target Material: Ferrous steel</p> <p>Sensing Range:</p> <ul style="list-style-type: none"> .100" (2.5 mm) end sensing (2,000 PSI) .072" (1.8 mm) end sensing (5,000 PSI) .060" (1.5 mm) end sensing (10,000 PSI) <p>✓ 3 Standard sensing - approx. .100" (3 mm) end sensing (Enclosure must be 2 or 6)</p> <p>4 HiPressure sensing - approx. .072" (2 mm) end sensing (Enclosure must be 5)</p> <p>5 HiPressure - approx. .060" (2 mm) end sensing (Enclosure must be 4)</p>	<p>Conduit Outlet: 1/2-14 NPT</p> <p>✓ 5 Bottom of enclosure</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Need Accessories?</p> <p>See pp. 93-104 for:</p> <ul style="list-style-type: none"> Range Extending Target Magnets Mounting Brackets Connectors and more! </div>	<p>Material: 303 Stainless Steel</p> <p>✓ 2 303 stainless steel (rated 2,000 PSI) (Sensing must be 3)</p> <p>3 HiPressure - 303 stainless steel (rated 5,000 PSI) (Sensing must be 4)</p> <p>4 HiPressure - 303 stainless steel (rated 10,000 PSI) (Sensing must be 5)</p> <p>6 316 stainless steel (rated 2,000 PSI)</p>	<p></p> <p>7 CSA certified General Purpose</p> <p>✓ 8 UL listed General Purpose</p>	<p>SubSea Underwater Connector Refer to pp. 93-104 for mating cable assemblies.</p> <p>3DD 3 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>4DD 4 pin, certified not to leak underwater (includes male/female Delrin™ lock sleeves)</p> <p>3DE 3 pin right-angle, certified not to leak underwater</p> <p>4DE 4 pin right-angle, certified not to leak underwater</p> <table border="1"> <thead> <tr> <th colspan="2">SubSea - 3 Pin - Lock Sleeve</th> <th colspan="2">SubSea - 3 Pin - Right Angle</th> </tr> </thead> <tbody> <tr> <td>Pin 1</td> <td>N/C</td> <td>Pin 1</td> <td>COM</td> </tr> <tr> <td>Pin 2</td> <td>COM</td> <td>Pin 2</td> <td>N/O</td> </tr> <tr> <td>Pin 3</td> <td>N/O</td> <td>Pin 3</td> <td>N/C</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">SubSea - 4 Pin - Right Angle</th> <th colspan="2">SubSea - 4 Pin - Lock Sleeve</th> </tr> </thead> <tbody> <tr> <td>Pin 1</td> <td>COM</td> <td>Pin 1</td> <td>COM</td> </tr> <tr> <td>Pin 2</td> <td>N/O</td> <td>Pin 2</td> <td>N/O</td> </tr> <tr> <td>Pin 3</td> <td>N/C</td> <td>Pin 3</td> <td>N/C</td> </tr> <tr> <td>Pin 4</td> <td>GND</td> <td>Pin 4</td> <td>GND</td> </tr> </tbody> </table>	SubSea - 3 Pin - Lock Sleeve		SubSea - 3 Pin - Right Angle		Pin 1	N/C	Pin 1	COM	Pin 2	COM	Pin 2	N/O	Pin 3	N/O	Pin 3	N/C	SubSea - 4 Pin - Right Angle		SubSea - 4 Pin - Lock Sleeve		Pin 1	COM	Pin 1	COM	Pin 2	N/O	Pin 2	N/O	Pin 3	N/C	Pin 3	N/C	Pin 4	GND	Pin 4	GND
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Pin 4	GND	Pin 4	GND																																																															



Defender Turbine Trip Switch

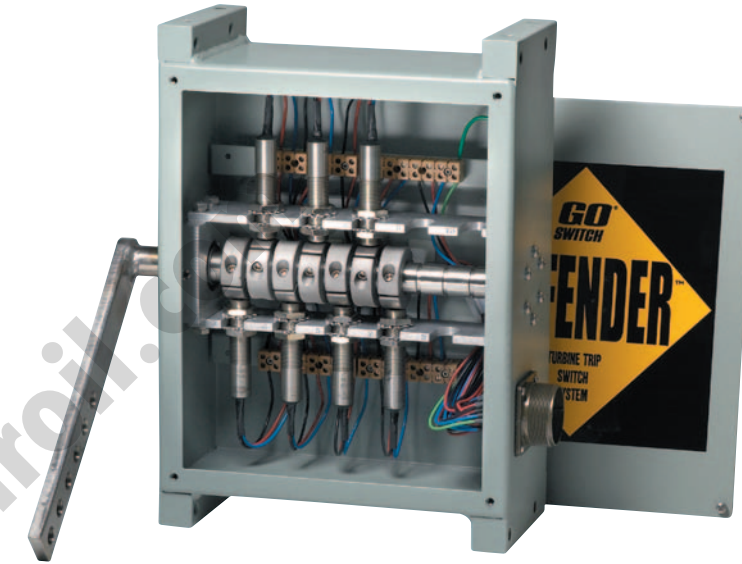
In the power generation industry, reliability is a must. This is especially true when it comes to turbine control valves. But one of the more common difficulties in power plants is the typical limit switch arrangement on throttle, governor, intercept, and reheat stop valves. Conventional limit switches in this application are notorious for failing due to heat and physical abuse, and for falling out of tolerance and requiring readjustment.

TopWorx has solved this problem with the Defender turbine trip switch system. Made especially for turbine valves, the Defender is packed with up to 10 reliable GO Switch leverless limit switches, and is designed as a direct, drop-in replacement for existing OEM limit switches on Westinghouse or General Electric turbines.

FAST TRACK DELIVERY

48-07000-000
Turbine Valve Monitoring System with 7 GO Switches

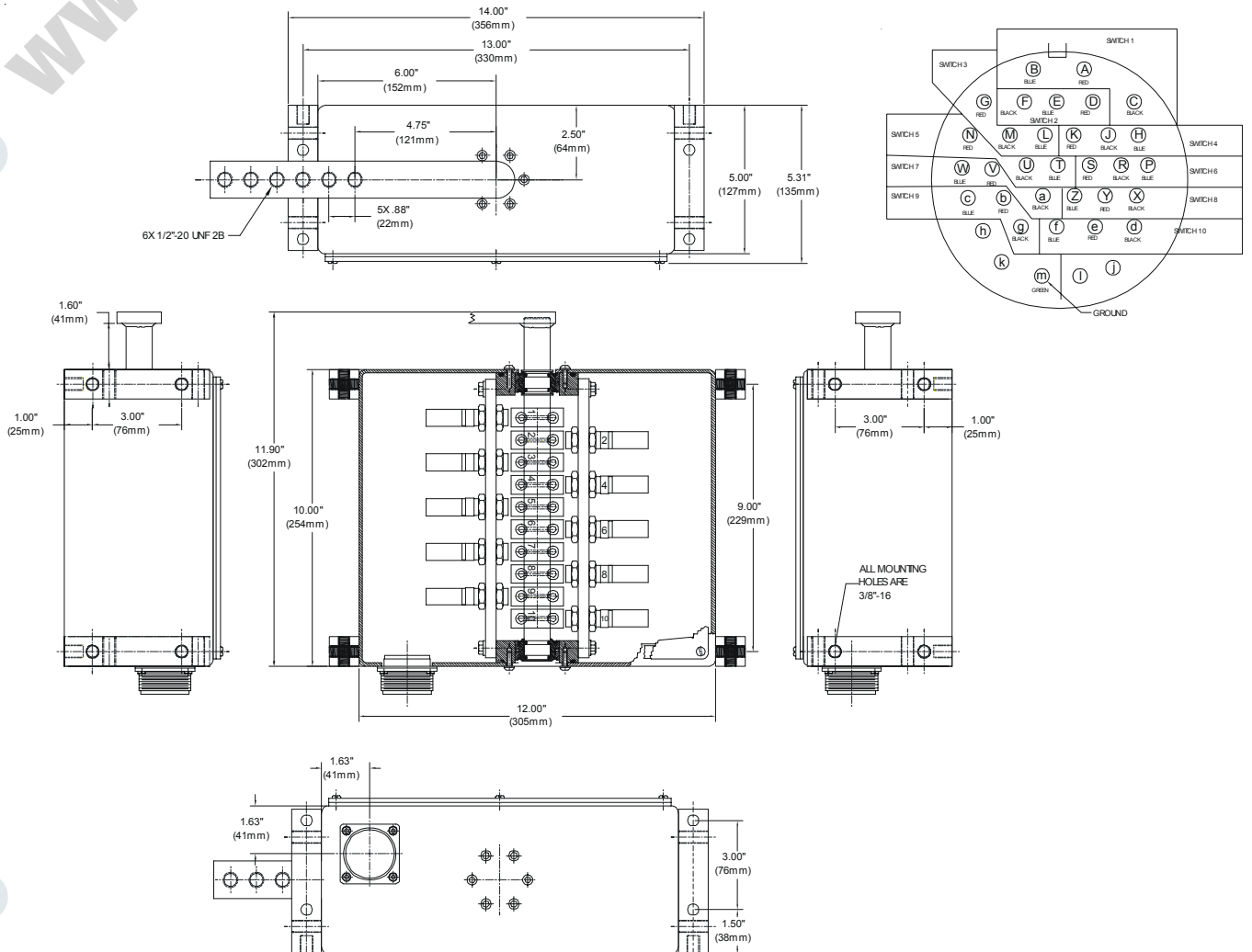
Dimensions



Model	GO Switches	Wiring Options
<p>48 Defender Turbine Valve Monitoring System</p> <p>Heavy Duty 11 Gauge Steel 12" x 10" x 5" - ANSI 61 Light Gray</p>	<p>Model 74-LLS: SPDT, environmentally sealed, rated 4A @ 120VAC, 3A @ 24VDC, maximum 240 VAC or 240VDC, with prewired HiTemp™ Teflon lead wires</p> <p>Choose number of switches (minimum 1, maximum 10)</p> <p>010000 One Leverless Limit Switch 020000 Two Leverless Limit Switches 030000 Three Leverless Limit Switches 040000 Four Leverless Limit Switches 050000 Five Leverless Limit Switches 060000 Six Leverless Limit Switches 070000 Seven Leverless Limit Switches 080000 Eight Leverless Limit Switches 090000 Nine Leverless Limit Switches 100000 Ten Leverless Limit Switches</p>	<p>00 Male/Female Mil Spec Quick Disconnect with back shell connection to 1-1/4" flex conduit</p> <p>01 Male/Female Mil Spec Quick Disconnect with 25 ft. of cable</p> <p>02 Male/Female Mil Spec Quick Disconnect with 50 ft. of cable</p> <p>03 Male/90° Female Mil Spec Quick Disconnect with back shell connection to 1-1/4" flex conduit</p> <p>04 Male/90° Female Mil Spec Quick Disconnect with 25 ft. of cable</p> <p>05 Male/90° Female Mil Spec Quick Disconnect with 50 ft. of cable</p> <p>06 Male/45° Female Mil Spec Quick Disconnect with back shell connection to 1-1/4" flex conduit</p> <p>07 Male/45° Female Mil Spec Quick Disconnect with 25 ft. of cable</p> <p>08 Male/45° Female Mil Spec Quick Disconnect with 50 ft. of cable</p> <p>10 Male/90° Female Mil Spec Quick Disconnect with 25 ft. of HiTemp™ cable</p> <p>12 Male/Female Mil Spec Quick Disconnect with 75 ft. of cable</p> <p>13 Male/90° Female Mil Spec Quick Disconnect with 100 ft. of cable</p> <p>16 Male/90° Female Mil Spec Quick Disconnect with 50 ft. of HiTemp™ cable</p> <p>Accessories ACP48 DEFENDER Calibration Unit <i>Only one unit is required to calibrate any quantity of Defender Systems</i></p> <p>74-LLS Replacement GO Switch and Target Cam Package</p>
Model 48	GO Switches _ _ 0000	Wiring Options

Ordering Guide

Fill in the boxes to create your 'ordering number.'



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Accessories

Quality-engineered connectors and cordsets make installation and maintenance a snap.

Standard designs are shown, with custom connectors available on special order.

Refer to the Wiring Options portion of each GO Switch Ordering Guide for detailed information.

Micro Change® Quick Disconnect

22 gauge (3 pin .23" dia.; 4 pin .25 dia.; 5 pin .26 dia.) molded PVC anodized aluminum shell rated 221°F (105°C) 300V

Available on all GO Switches



Mini Change® Quick Disconnect

16 gauge (3 pin .41" dia.; 4 pin .44" dia.; 5 pin .52" dia.; 7 pin .54 dia.) molded PVC anodized aluminum shell rated 221°F (105°C) 600V

Available on all GO Switches



Water Resistant Squeeze Connector

Stainless steel water resistant strain relief. Approx. 1" (25 mm) in length.

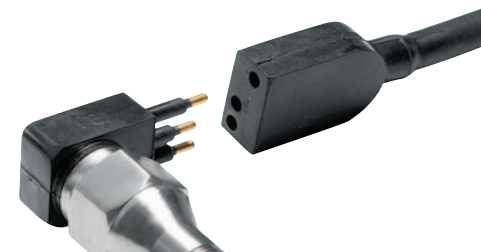
Available on GO Switch Models 72, 74, 76, 7C, 7D, 7E and 7F



High Pressure Right Angle SubSea Quick Disconnect

Overall length of connector is 2.85" (72 mm) X .65" (17 mm).

Available on 10, 20, 70, and 80 Series GO Switches



High Pressure SubSea Quick Disconnect

Molded Neoprene™ Quick Disconnect with Delrin™ lock-sleeves. Provides water-tight seal, safety and quick change-out. Overall length of connector is 2.9" (74 mm) X 1.23" (31 mm) dia.

Available on 10, 20, 70, 80 Series and Stroke to GO Switches



New!

Connection Heads by Minco Products, Inc.

TopWorx offers connection heads from Minco Products, Inc. suitable for use with any GO Switch. There are three base models available. A 4, 4X rated aluminum with epoxy coating, a 316 stainless steel version, and an aluminum with epoxy coating certified EEx d IIc Zone 1.

These units are being offered as an accessory to our GO Switch product line, but may also be certified as an assembly under a special quote number.

Consult factory for details.

Mini-Change® Cordsets

A-ECA	3 - Pin, 3 ft. (914 mm)
A-ECA-90	3 - Pin, 3 ft. 90° (914 mm)
A-ECB	3 - Pin, 6 ft. (1829 mm)
A-ECB-90	3 - Pin, 6 ft. 90° (1829 mm)
A-ECC	3 - Pin, 12 ft. (3658 mm)
A-ECC-90	3 - Pin, 12 ft. 90° (3658 mm)
A-ECU	3 - Pin, 20 ft. (6096 mm)
A-ECV	3 - Pin, 30 ft. (9144 mm)
A-ECD	4 - Pin, 3 ft. (914 mm)
A-ECE	4 - Pin, 6 ft. (1829 mm)
A-ECF	4 - Pin, 12 ft. (3658 mm)
A-ECW	4 - Pin, 20 ft. (6096 mm)
A-ECX	4 - Pin, 30 ft. (9144 mm)
A-ECG	5 - Pin, 3 ft. (914 mm)
A-ECT	5 - Pin, 6 ft. (1829 mm)
A-ECL	5 - Pin, 12 ft. (3658 mm)
A-ECY	5 - Pin, 20 ft. (6096 mm)
A-ECZ	5 - Pin, 30 ft. (9144 mm)
A-ECH	7 - Pin, 3 ft. (914 mm)
A-ECJ	7 - Pin, 6 ft. (1829 mm)
A-ECK	7 - Pin, 12 ft. (3658 mm)
A-EFA	7 - Pin, 20 ft. (6096 mm)
A-EFB	7 - Pin, 30 ft. (9144 mm)

Micro-Change® Cordsets

A-EBB	3 - Pin, 6 ft. (1829 mm)
A-EBC	3 - Pin, 12 ft. (3658 mm)
A-EBU	3 - Pin, 20 ft. (6096 mm)
A-EBV	3 - Pin, 30 ft. (9144 mm)
A-EBE	4 - Pin, 6 ft. (1829 mm)
A-EBF	4 - Pin, 12 ft. (3658 mm)
A-EBW	4 - Pin, 20 ft. (6096 mm)
A-EBX	4 - Pin, 30 ft. (9144 mm)
A-EBT	5 - Pin, 6 ft. (1829 mm)
A-EBL	5 - Pin, 12 ft. (3658 mm)
A-EBY	5 - Pin, 20 ft. (6096 mm)
A-EBZ	5 - Pin, 30 ft. (9144 mm)

Class I Div 2 Quick Disconnect Guard **New!**

NXS-4101 Guard fits all molded mini-change cordsets. Prevents against mechanical separation of male/female connectors and is **suitable for use in CI I Div 2 applications.**

Watertight Cable Gland **New!**

A-GLD1	3 or 4 conductor SO cable
A-GLD2	3 or 4 conductor PVC cable

Plastic cable gland is easy to install on any stainless steel GO Switch with a 1/2" conduit hub using the "B" cable termination option. It provides a water-tight seal rated to IP 68 - 5 bar (comparable to NEMA 6) and is an excellent way of protecting all GO Switches in wet environments. Not suitable for use with conduit.

SubSea™ Underwater Cordsets

(Specify length of cable (ft.) required.)
(e.g. 3ED20 = 3 pin and 20 ft. of cable)

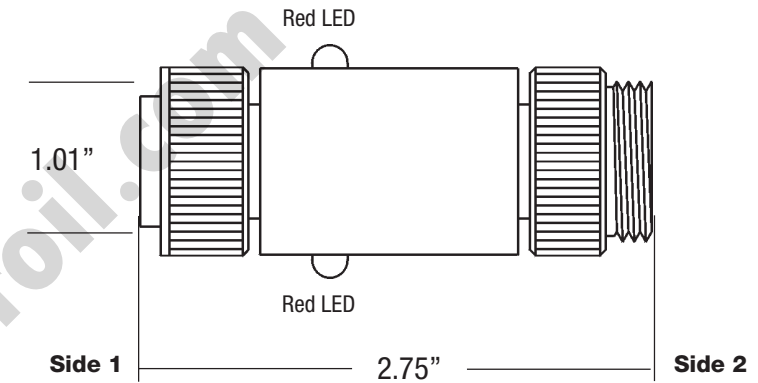
A-3ED__	3 pin female connector with Delrin™ lock sleeve and minimum 12 ft. (610 mm) of 16 gauge (3 pin .395" dia.) SO cable rated 194°F (90°C) 600V (certified not to leak underwater)
A-4ED__	4 pin female connector with Delrin™ lock sleeve and minimum 12 ft. (610 mm) of 16 gauge (4 pin .425" dia.) SO cable rated 194°F (90°C) 600V (certified not to leak underwater)
A-8ED__	8 pin female connector with Delrin™ lock sleeve and minimum 12 ft. (610 mm) of 16 gauge (8 pin .645" dia.) SO cable rated 194°F (90°C) 600V (certified not to leak underwater)
A-3EE__	3 pin right angle female connector with minimum 12 ft. (610 mm) of 16 gauge (3 pin .395" dia) SO cable rated 194°F (90°C) 600V (certified not to leak underwater)
A-4EE__	4 pin right angle female connector with minimum 12 ft. (610 mm) of 16 gauge (4 pin .425" dia) SO cable rated 194°F (90°C) 600V (certified not to leak underwater)

Aura™ Light Adapter

The Aura Light Adapter provides LED position confirmation on any N/O GO Switch using a 3, 4, or 5 pin Mini-Change connector.



Dimensions



Model	Control Arrangement	Connector	Options
<p>LED Adapter Module</p> <p>ALA1 Aura Light Adapter for one contact (requires a load)</p>	<p>R (2) Red LEDs for normally open (N/O) output</p> <p>G (2) Green LEDs for normally open (N/O) output</p>	<p>3 3-pin Mini-Change type connector</p> <p>4 4-pin Mini-Change type connector</p> <p>5 5-pin Mini-Change type connector</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>3-Pin</p> <p>PIN 1 - COM PIN 2 - NOT USED PIN 3 - N/O</p> </div> <div style="text-align: center;"> <p>4-Pin</p> <p>PIN 1 - COM PIN 2 - N/O PIN 3 - NOT USED PIN 4 - GND</p> </div> </div> <div style="text-align: center; margin-top: 20px;"> <p>5-Pin</p> <p>PIN 1 - N/O PIN 2 - NOT USED PIN 3 - GND PIN 4 - NOT USED PIN 5 - COM</p> </div>	<p>0 None</p> <p>1 Contact Wash Circuit</p>
<p>Model ALA</p>	<p>Control Arrangement</p>	<p>Connector</p>	<p>Options</p>

Ordering Guide

Fill in the boxes to create your 'ordering number.'

Target Magnets Increase the Sensing Range of GO Switches

AMP3 Magnet/Resin Cover

AMC3 magnet in plastic molded bracket with mounting holes. $\frac{7}{8}$ " (22 mm) x $2\frac{9}{16}$ " (65 mm) x $\frac{17}{32}$ " (13 mm) thick with $\frac{7}{32}$ " (6 mm) holes.

For all GO Switches



AMS4 Magnet/Stainless Cover

AMC4 magnet molded into stainless steel cover, with mounting holes. $1\frac{1}{4}$ " (32 mm) x $1\frac{7}{16}$ " (37 mm) x 1" (25 mm) thick with $\frac{3}{16}$ " (5 mm) holes.

For all GO Switches



AMC5 Magnet/ Stainless Cover

AMC1 magnet molded into stainless cover with mounting holes. $\frac{7}{8}$ " (22 mm) x $2\frac{9}{16}$ " (65 mm) x $\frac{17}{32}$ " (13 mm) thick with $\frac{7}{32}$ " (6 mm) holes.

For all square GO Switches



AMS7 Magnet/Stainless

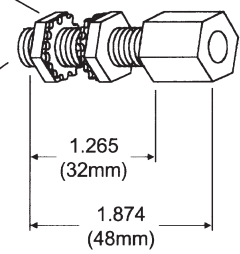
Magnet assembly. 2" (50 mm) x $\frac{1}{2}$ " (13mm) $\frac{7}{16}$ -20 UNC threads.

For 70 Series GO Switches



2 NUTS &
LOCKWASHERS
PROVIDED

$\frac{7}{16}$ -20
UNF



AMF6 Magnet (Machinable)

Flexible sensing amplifier/external magnet. 3" (76 mm) x 12" (305 mm) x $\frac{3}{8}$ " (10 mm) thick.







For all square GO Switches



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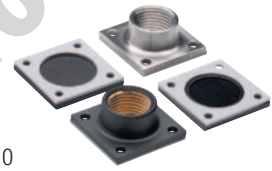

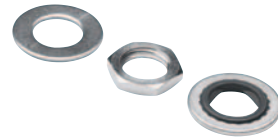

Refer to individual GO Switch models for extended sensing ranges with external target magnets.

Standard mounting brackets are available to cover most GO Switch installations. They are designed to provide secure installation without interfering with the operation of the switch.

Item
<p>Heavy Duty Mounting Bracket</p> <p>Side mount bracket for 10 Series GO Switches</p> 
<p>Universal Mounting Bracket for 10/20 Series</p> <p>Universal mounting bracket for 10 Series and 20 Series GO Switches</p> 
<p>Combination Cover Plate and Mounting Bracket</p> <p>Bottom mount for 10 or 20 Series GO Switches</p> 
<p>Universal Mounting Bracket for 80 Series</p> <p>Side mount bracket adapts 80 Series GO Switches for rotary valve position indication</p> 
<p>Strap Bracket</p> <p>Strap brackets for 30 Series GO Switches</p> 
<p>Heavy Duty "L" Mounting Bracket</p> <p>"L" bracket for 70 Series Model 73, 74, 75, 76 & 7G GO Switches</p> 

Part Number & Description
<p>ABS2 3" (76mm) x 3 1/4" (82mm) x 1/8" (3mm) thick stainless steel</p>
<p>ABS3 6" (152mm) x 1-1/2" (38mm) x 3/16" (5mm) stainless steel</p>
<p>ABB4 3" (76mm) x 1-1/2" (38mm) x 1/8" (3mm) thick brass</p>
<p>ABS5 3" (76mm) x 1-1/2" (38mm) x 1/8" (3mm) thick stainless steel</p>
<p>ABS6 10 gauge (.134") type 304 stainless steel</p>
<p>ABS7 1" (25mm) wide x .050" thick stainless steel for Model 31, 32, & 33 GO Switches</p>
<p>ABS11 3/4" (19mm) x 3/4" (19mm) x .030" thick stainless steel for Model 35 GO Switches</p>
<p>ABS9 1-1/4" (32mm) wide. 11 gauge (.120") thick non-magnetic stainless steel</p>

<p>AHB1 Brass; 1-1/2" (38mm) x 1-1/2" (38mm) x 1/8" (3mm)</p> <p>AHS2 Stainless steel; 1-1/2" (38mm) x 1-1/2" (38mm) x 1/8" (3mm)</p>
<p>AHB3 Brass; 1-1/2" (38mm) x 1-1/2" (38mm) x 1/8" (3mm)</p>
<p>AHS7 (2) 3/8" nickel plated brass for Model 71 and 72 GO Switches</p> <p>AHS8 (2) 5/8" nickel plated brass for Model 73-76, 7G and 7H GO Switches</p> <p>AHS18 (2) 5/8" stainless steel for Model 73-76, 7G and 7H GO Switches</p> <p>AHS9 (2) 3/4" stainless steel for Model 77 GO Switches</p> <p>AHS16 (2) 1" nickel plated brass for Model 71 GO Switches</p>
<p>AHS13 3/8" zinc plated steel for Model 71 and 72 GO Switches</p> <p>AHS14 5/8" zinc plated steel for Model 73-76, 7G & 7H GO Switches</p> <p>AHS19 5/8" Viton for Model 73-76, 7G & 7H GO Switches</p> <p>AHS15 3/4" zinc plated steel for Model 77 GO Switches</p> <p>AHS20 3/4" Viton for Model 77 GO Switches</p> <p>AHS17 1" zinc plated steel for Model 71 GO Switches</p>
<p>AHF16 .005" x 24"</p>

Item
<p>Cover Plates</p> <p>Cover plate for 10 and 20 Series GO Switches.</p>  <p>Bottom mount cover plate/conduit for 10 and 20 Series GO Switches. Furnished with gasket and screws</p>
<p>Jam Nuts</p> <p>Nickel plated brass jam nuts for 70 Series GO Switches</p> 
<p>Parker Seal Nut and Washer</p> <p>ThredSeal Kits for 70 Series GO Switches. Zinc plated steel with nitrile rubber (standard) or Viton (hi-temp or hydraulic fluids detergent) washer</p> 
<p>Sealant Tape</p> <p>Grafoil sealant tape for 70 Series GO Switches. Forms a leak-tight temperature-stable joint. Recommended for high pressure and/or high temperature</p> 

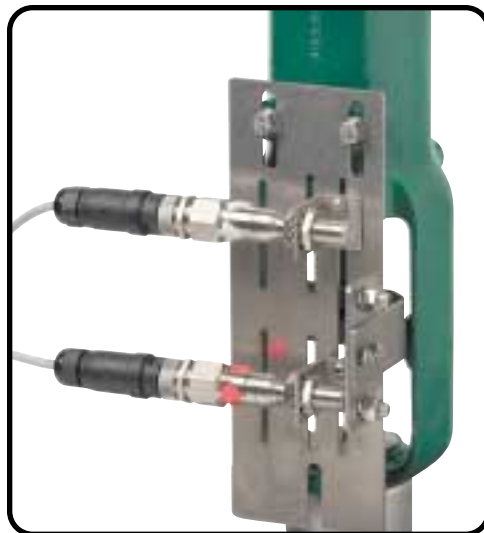
Over the years, customers have asked us to mount our GO Switch leverless limit switches to just about every type and brand of valve and actuator on the planet.

As a result, TopWorx has amassed over 1,200 different mounting kit designs.

So whether your valve application is rotary or linear, NAMUR or non-NAMUR, in production or obsolete, TopWorx is sure to have a mounting kit that fits your need.

Valve and Actuator Manufacturers

Annin	Foxboro	Pacific Valves
Apollo	General Torque	Parker Hydropower
Autoclave	General Valve Company	Pliaxseal
Automax	Grinnel Corporation	Posi-Seal
Axelson	Hills McCanna	Pratt, Henry
Badger Meter	Honeywell	Ramcon
Bettis	Hycon Actuators	Raymond Control Systems (RCS)
Bray	Hytork	Remote Control
Brooks	ITT Compactorque	Research Control Valves
BV&B Valves	ITT Engineered Valves	Rockwell, McCannaseal
Cameron	ITT Grinnell	Rockwell, Ramcon
Centerline	ITT Barten	Rotork
Century	Jamesbury	Saunders Valve
Clarkson	Kamyr	Schuf Valve
CompacTorque	Keystone	Serk-Audco
Conbraco	Kielely & Mueller	Shafer Actuators
Contromatics	Kinetrol	SVF
Cooper Valve	KTM-General Torque	Taylor Instrument
CPV Mfg.	LeDeen Actuators	TK Valve
Dahl, G. W.	Limitorque	Tork-Pak
Demco	Magnetrol	Tuffline
DeZurik	Marpac	Unitorq
Dover	Masonellan-Dresser	Valtek
Dresser	Mastergear Gear Operators	Velan
Durco	Matryx	Walworth
Dynatorque	McCannaseal	Watts Regulator
Elliott, Kenneth	Mercoid Liquid Level	Whitey Valves & Actuators
El-O-Matic	Controls	WKM Dynaseal Actuators
Execco Gear Operators	Metrodyne	Worcester Controls
Fabri Valve	Morin Actuators	Xomox
Fisher Controls	Neles Automation	
Flexible Valve Company	Orbit Valve	



Control Valves

NAMUR Mounting Kits

The vast majority of rack and pinion valve actuators come with an ISO/NAMUR mounting pattern. This worldwide standard provides a consistent bolt pattern and shaft height regardless of the actuator brand. As a result, there is less need for expensive, custom made mounting kits, making it easier and less expensive to mount topworks accessories.

TopWorx offers several cast aluminum and stainless steel mounting kits that make it easy to attach GO Switch 70 Series switches to rack and pinion actuators.



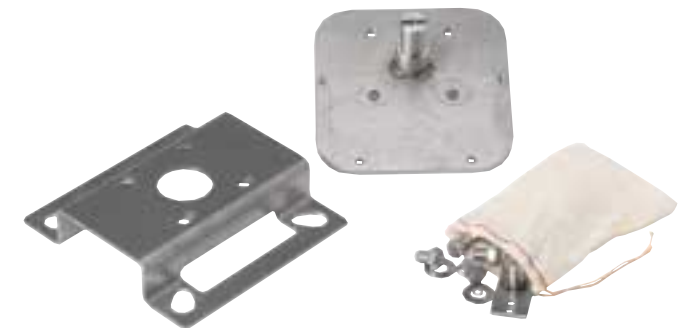
Custom (Non-NAMUR) Mounting Kits

Rotary valve actuators that do not use the ISO/NAMUR standard, such as scotch-yoke or vane actuators, require custom designed mounting kits to attach GO Switches.

This can be a complex procedure that should not be overlooked by the end user. Since there are no standards, it is more difficult to ensure the proper fit and function of brackets, and consequently the automated valve system itself.

TopWorx has a team of designers experienced at solving this problem, making it easy to mount GO Switch products to scotch-yoke and vane actuators. With an existing library of over 1,200 different designs, there is probably already a design ready for your application.

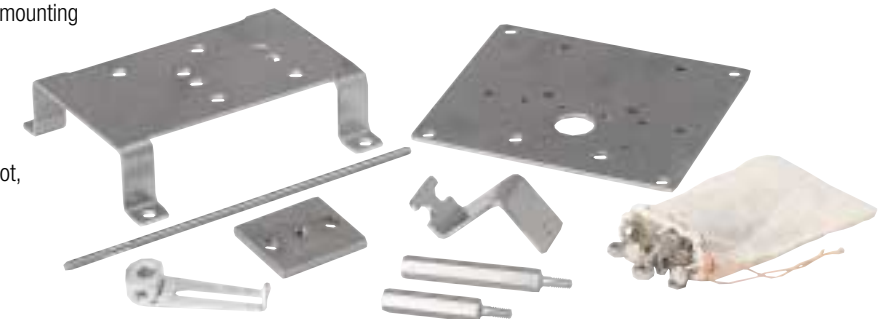
Note: TopWorx custom mounting kits are always made of heavy-gauge stainless steel, ensuring the proper amount of support in the field.



Linear Valve Mounting Kits

Linear valves, such as control valves, globe valves, knifegate valves, or diaphragm valves, do not conform to any standard mounting patterns. Therefore, custom designed mounting kits are necessary to attach GO Switches.

Since TopWorx has been mounting GO Switch leverless limit switches onto linear valves and actuators for several decades, there is probably already a design ready for your application - if not, we will create one.



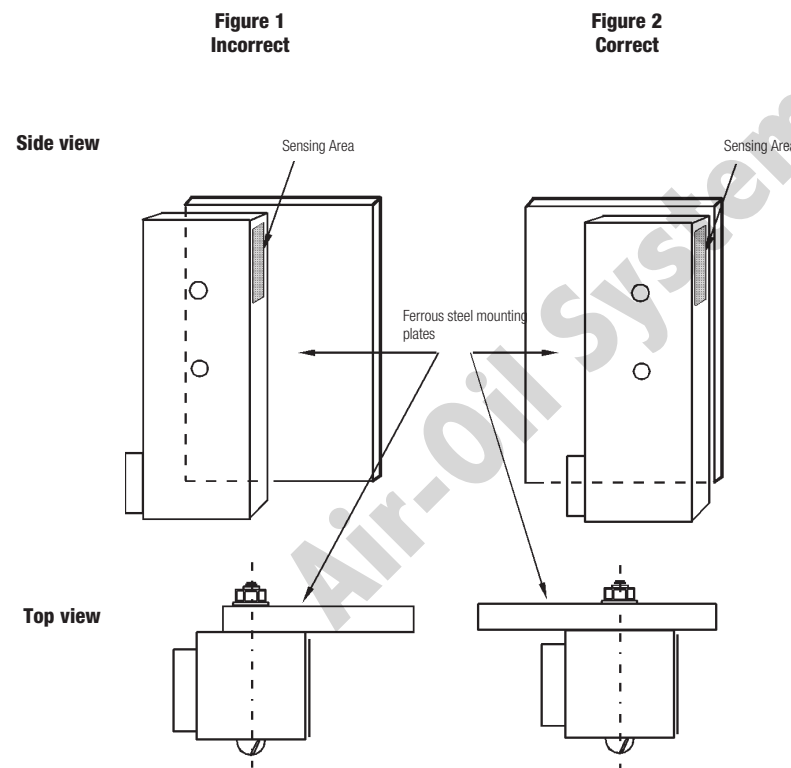
Air-Oil Systems, Inc. www.airoil.com

Installation

Installation Principle - Square Switches

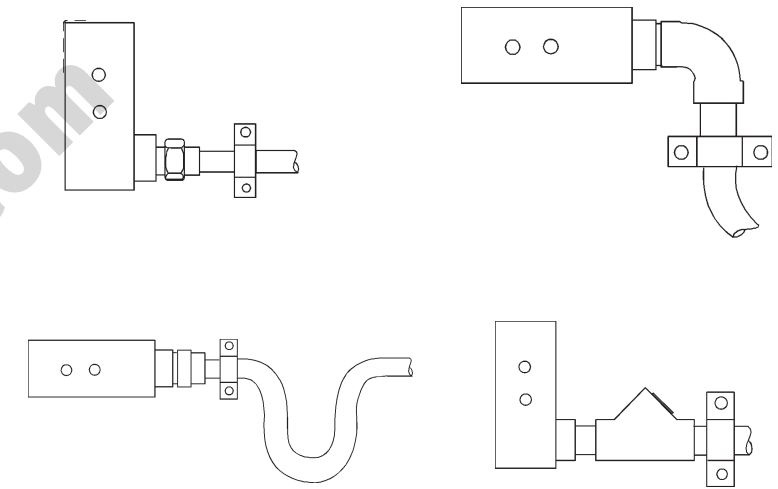
- Non-ferrous brackets/plates are recommended (stainless steel or aluminum).
- GO Switches may be mounted on ferrous materials but it is not recommended. Loss of sensing range will result.
- It is recommended to mount switches 1" to 1-1/2" away from surrounding ferrous materials when possible.
- If mounting on ferrous material, insure uniform coverage of the switch, biasing the internal magnet(s) equally. (Fig. 2) If magnets are biased unequal, latching may occur. (Fig. 1)
- GO Switches sense ferrous materials such as mild steel, 400 series and 17/4 stainless steel.
- Avoid contact between target and switch. Configure mounting of switch and/or target so that target passes within proximity range of sensing area. Sensing range will vary according to model number and size (mass) of target used.
- Target magnets, available through TopWorx, will increase the sensing range of the switch. Reference sensing ranges in corresponding sections throughout the catalog.
- For optimum performance, provide sufficient mass of target, and choose the appropriate GO Switch model to match the application requirements for operating frequency, type of load, etc.
- The greater mass of target the better for maximum contact pressure, especially in low current applications.
- For heavy or inductive loads, arc suppression devices, or interposing relays are recommended for contact longevity. Contact factory for specifics.
- GO Switches may be mounted in any plane.
- When mounting GO Switches side by side, place 2-1/4" apart edge to edge, not center to center.
- Contact factory for side by side mounting.

See individual switch Ordering Guides for wiring diagrams and information on external target magnets for increased sensing ranges.



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 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. Switches must be installed according to local electrical codes.
 - In damp environments, use 1/4" thick non-conductive RTV or a similar moisture barrier to prevent water/condensation from entering conduit hub



Satisfy these 3 criteria to reduce possible premature failures

Sealing switches

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 filled with 1/4" thick non-conductive RTV to prevent water intrusion and to prevent premature switch failure. A drip loop with provision for water to escape has also been installed.

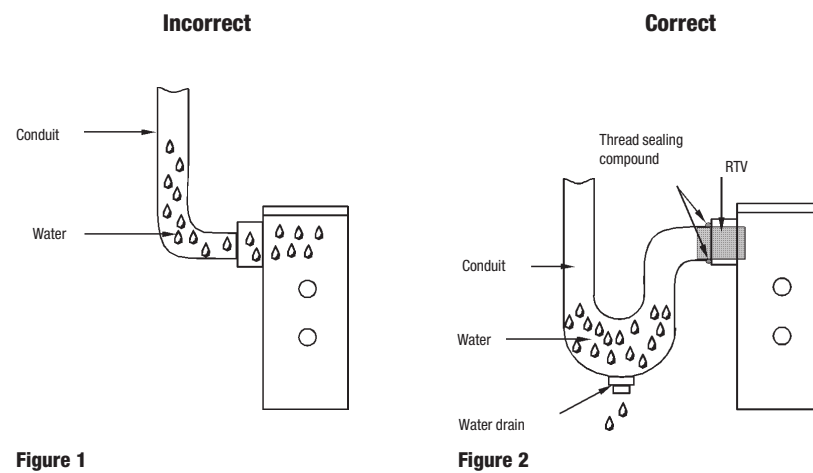


Figure 1

Figure 2

Target size

In figure 3, the ferrous target is too small to be detected reliably.

In figure 4, the target has sufficient size and mass for long term, reliable operation.

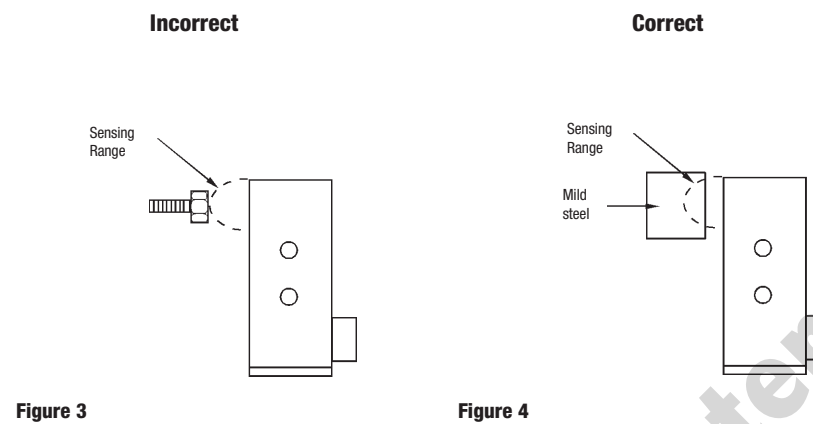


Figure 3

Figure 4

Target location

In figure 5, the target has been positioned to stop on the outside edge of the sensing range. This is a marginal condition for long term reliable operation.

In figure 6, the target has been positioned to stop well within the sensing range which will assure long term reliable operation.

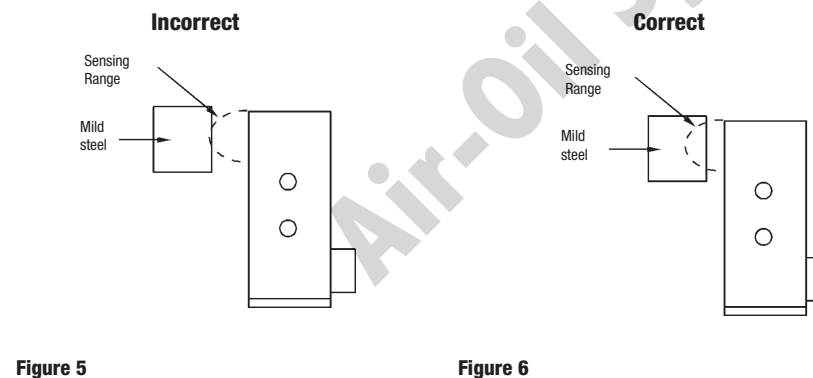
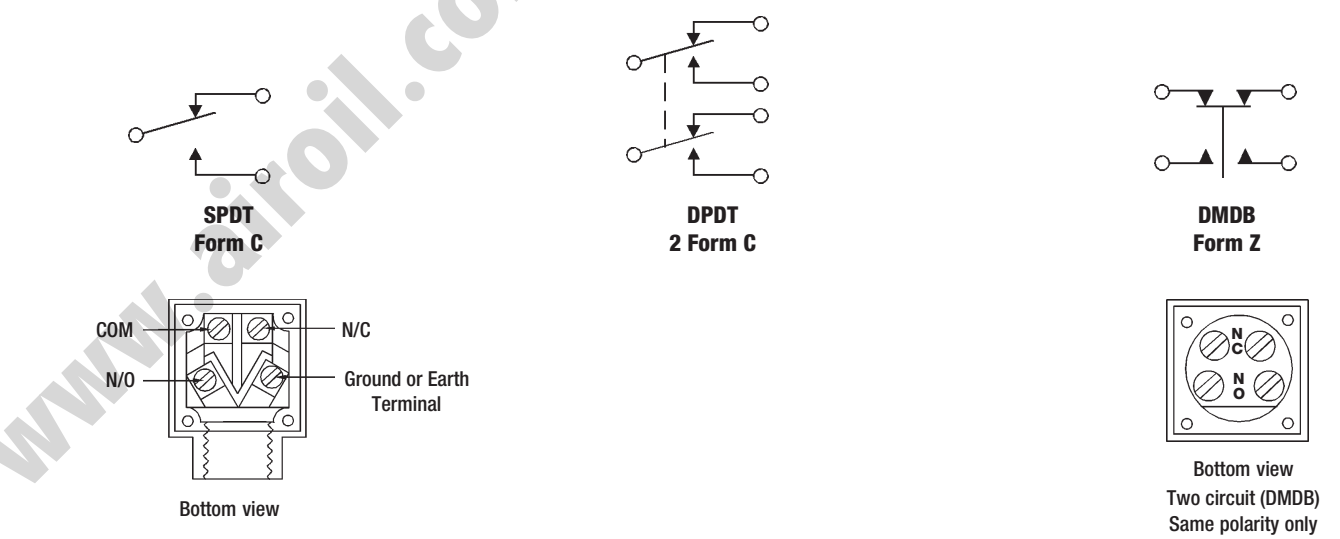


Figure 5

Figure 6

Contact arrangements vary according to type of switch. Refer to sections on each switch series for detailed information. Be sure that electrical load will not exceed rated capacity of the switch. For two-circuit switches (DMDB), contacts must be connected same polarity only in order to minimize possibility of a line-to-line short.

All GO® Switches are "pure" contact switches, meaning that 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.



ATTENTION!
Please refer to individual switch sections for wiring diagrams.

Installation Instructions

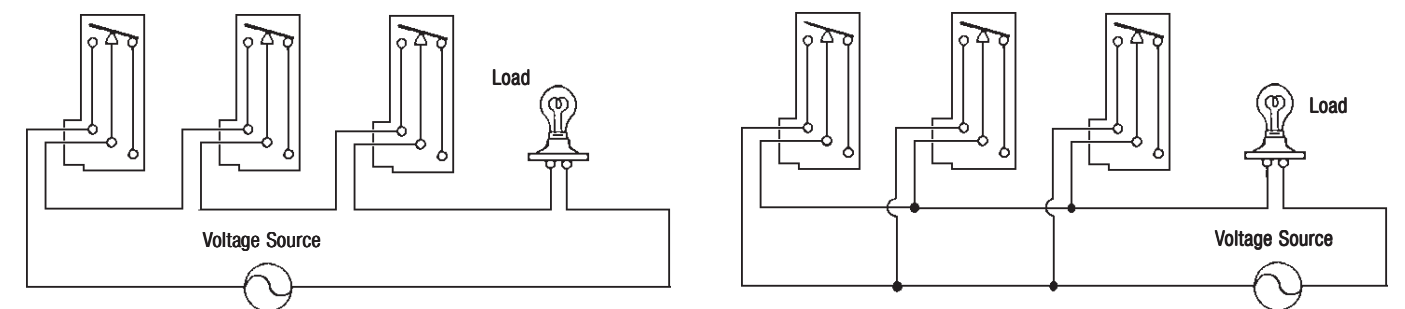
Series and Parallel Wiring

Series Wiring

Any number of GO® Switches may be wired in series, without voltage drop. By contrast, conventional solid state switches have about two volts drop across the switch when operated. With a system of 12 volts and four switches in series, 8 volts is dropped across the switches and only 4V is left to operate the load. When using GO® Switches, 12V is still available to operate the load.

Parallel Wiring

Any number of GO® Switches may be wired in parallel, with no current leakage and without drawing operating current. When conventional solid state switches are wired in parallel, there is about 100 microamps leakage through each switch. If ten 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).



No Voltage Drop with GO® Switches

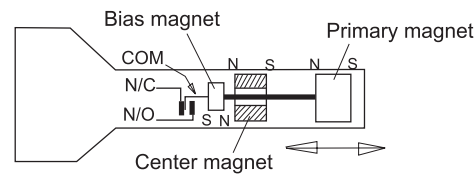
No Current Leakage with GO® Switches

Setting Up A 70 Series GO®Switch For Optimum Performance

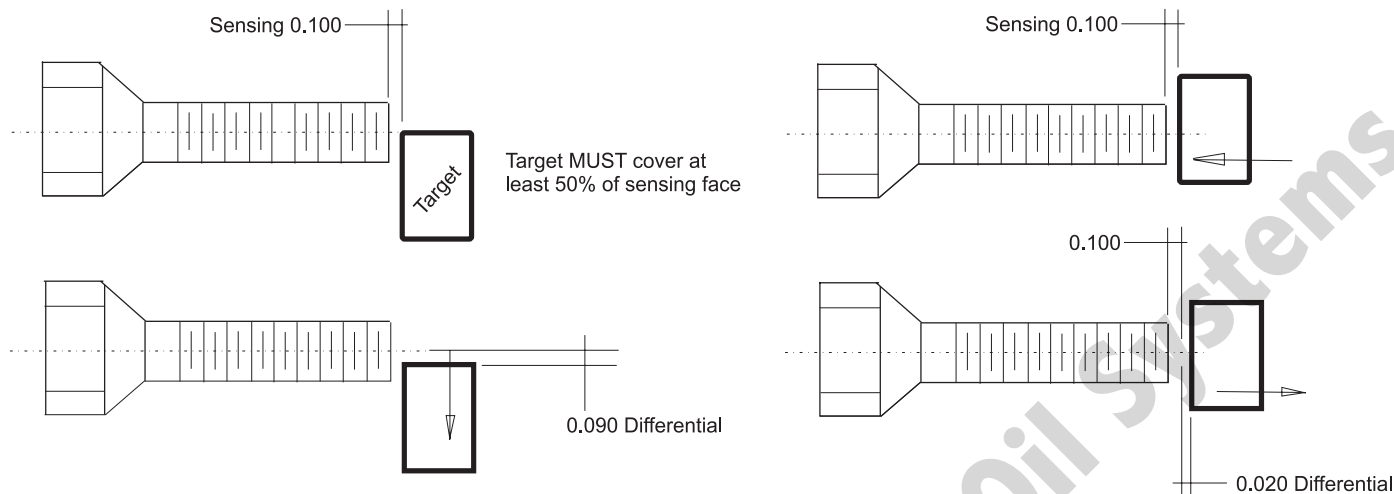
GO Switch 70 Series end sensing switches use three permanent magnets and a push-pull plunger to control a set of mechanical contacts. The center magnet simultaneously attracts the primary magnet and repels the bias magnet, pushing the connecting rod and common contact into the normally closed position, closing a contact circuit. When a ferrous or magnetic target enters the sensing area of the switch, it attracts the primary magnet, which pulls the connecting rod and common contact into the normally open position, closing the other contact circuit.

The **sensing distance** is the maximum distance between the switch and target when the switch first operates; the trip point. The **differential**, also known as deadband or hysteresis, is the distance that the target must move from the sensing area in order to allow the switch to reset.

The internal mechanism is shown here:



To apply the 70 Series GO Switch to obtain the least differential, the direction the target approaches the switch must be considered. Below are two possible orientations that illustrate the differences in target movement and the affects on switch differential.



The measurements shown are nominal and can vary as much as .030-.050" depending on the material and size of target used in the application. As you can see, the best scenario for least differential is to orient the switch and target as shown in **Orientation B**. However, in this application, the possibility of getting debris between the switch and target must also be considered.

When trying to determine differential of an application, it is directly proportional to the distance the target will travel in the application. For example: a linear valve stroke is 1". A switch is applied to indicate the closed position of the valve. Using **Orientation A**, the differential is 0.090 ". The 'deadband' is therefore 9% of travel. If the switch were re-oriented, as shown in the **Orientation B**, the deadband would be only 2% of the total valve travel.

Remember, there is no exact science to use when applying a GO Switch. However, once the switch is set, and the target travels to the same position every time (within .002"), the GO Switch will maintain calibration for life. **Set it and forget it!**

Installation Principle - Round Switches

- 70 Series GO Switches are inherently shielded, and are **unaffected by surrounding ferrous material, weld fields and RF interference**.
- GO Switches sense ferrous materials such as mild steel, 400 series and 17/4 stainless steel.
- Sensing and differential of switch may vary depending on target travel direction.
- Avoid contact between target and switch. Configure mounting of switch and/or target so that target passes within proximity range of sensing area. Sensing range will vary according to model number and size (mass) of target used.
- Target magnets, available through TopWorx, will increase the sensing range of the switch. Reference sensing ranges in corresponding sections throughout the catalog.
- For optimum performance, provide sufficient mass of target, and choose the appropriate GO Switch model to match the application requirements for operating frequency, type of load, etc.
- The greater mass of target the better for maximum contact pressure, especially in low current applications.
- For heavy or inductive loads, arc suppression devices, or interposing relays are recommended for contact longevity. Contact factory for specifics.
- Do not use excessive force on external threads when installing. (36 in/lbs. max)
- Configure mounting so bracket dissects switch as close to the middle of the length of body as possible (Fig. 1). This eliminates undue stress caused by heavy cables, connectors, etc.
- Two appropriately sized jam nuts are included with switch. Lock washers are recommended in high vibration applications.

For cylinder applications, see pg. 65 for set up recommendations.

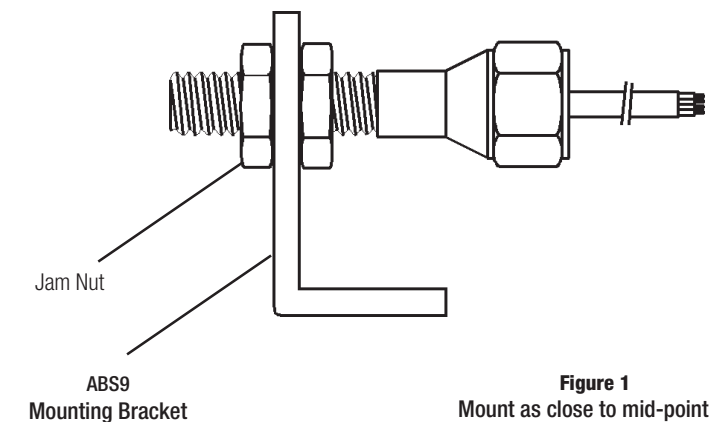
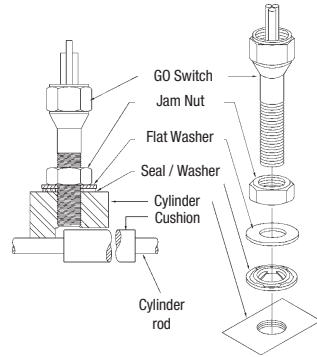


Figure 1
Mount as close to mid-point of length of switch

See individual switch Ordering Guides for wiring diagrams and information on external target magnets for increased sensing ranges.

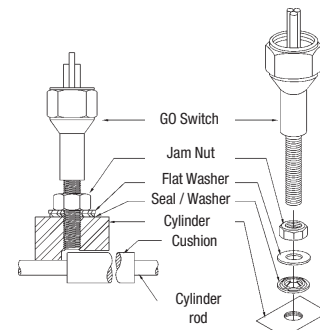
Pressure Sealing Methods

GO Switch recommends the use of our Parker ThredSeal® Washer Kits in lieu of other commercially available sealing hardware. Provided with the Parker ThredSeal® Washer Kit are torque values for specific pressure ratings as well as the maximum torque values.



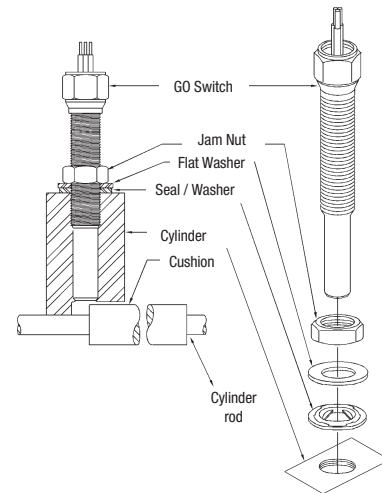
Models 73-76 - 5/8" Diameter

Torque Jam Nuts to:
 15 lbs-ft to achieve seal at 2,000 PSI
 25 lbs-ft to achieve seal at 5,000 PSI
 Do not exceed 30 lbs-ft



Models 71 & 72 - 3/8" Diameter

Torque Jam Nuts to:
 15 lbs-in to achieve seal at 2,000 PSI
 30 lbs-in to achieve seal at 5,000 PSI
 Do not exceed 45 lbs-ft



Model 77 - 3/4" Diameter

Torque Jam Nuts to:
 20 lbs-ft to achieve seal at 2,000 PSI
 65 lbs-ft to achieve seal at 5,000 PSI
 Do not exceed 75 lbs-ft

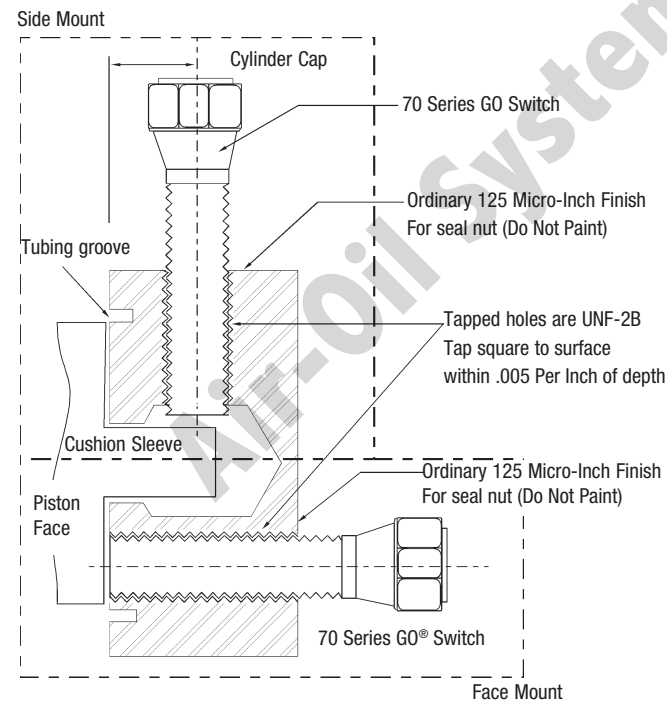
Air and Hydraulic Cylinders

A ferrous cylinder cushion or piston will actuate the switch.

To determine the correct thread length, measure the distance from the head cap surface to the cushion and add 1/2" for seal nut. 70 Series are rated 2,000 PSI operating pressure; 5,000 PSI operating and 10,000 PSI non-shock optional on models 73 through 77.

Thread seal nut onto switch. Screw switch into cylinder by hand until switch touches cushion. Back out 1/4 to 1/2 turn. Tighten seal nut.

- 70 Series GO® Switches are unaffected by surrounding ferrous steel.



Factors Affecting Contact Life

GO Switches are designed to provide optimum performance over a long period. Their premium grade components and inherently durable design keeps them working, trouble-free, year after year. Some of the conditions that can decrease contact life are:

Contact Erosion

There are two types of contact erosion, mechanical and electrical. Electrical contact erosion is caused by heavy electrical loads. The contacts may overheat and become molten if there isn't sufficient off time to allow cooling between cycles. Mechanical erosion occurs as a result of friction between contacts cycling at high speeds with little or no electrical load. Mechanical wear can also occur due to operating a switch at a frequency higher than its design capability. The high operating speed of GO Switches make them ideal for almost any application. For those with unusually high-frequency switching demands, please consult factory.

Electrical wear caused by arcing, can be eliminated by utilizing high quality contact materials, such as the gold-flashed silver cadmium oxide used in GO Switches, and by operating the switches within the voltage parameters for which they are designed. The use of arc suppressors such as resistor-capacitor combinations or blowout coils can also serve to prevent arcing, a consideration which is particularly important in certain hazardous operating environments.

Contact Transfer

When switches are operated above rated voltage or at high speeds, contact material can transfer from one contact to the other. For this reason, it is important to observe the input voltage specifications supplied for each GO Switch.

Welding or Sticking

The GO Switch design virtually eliminates welding or sticking due to mechanical armature hang-ups. Excessive voltage and the resultant arcing, however, can cause overheating of the contacts and welding or sticking. By operating the GO Switch within its specified parameters, this problem can be eliminated.

NEC 500-4 Protection Techniques for Hazardous Locations

- 500-4(a) Explosionproof Apparatus
- 500-4(e) Intrinsically Safe Systems
- 500-4(f)(2) Nonincendive Equipment
- 500-4(h) Hermetically Sealed
- NEC 500-5(a) Class I Group Classifications
- NEC 500-5(b) Class II Group Classifications
- NEC 500-7 Class I Locations Definitions
 - 500-7(a) Class, I, Division 1.
 - 500-7(b) Class I, Division 2
- NEC 500-8 Class II Locations Definitions
 - 500-8(a) Class II, Division 1
 - 500-8(b) Class II, Division 2
- NEC 500-9 Class III Locations Definitions
 - 500-9(a) Class III, Division 1
 - 500-9(b) Class III, Division 2

NEC 501-4 Wiring Methods

- 501-4(a) Class I, Division 1
- 501-4(b) Class I, Division 2
- NEC 501-5 Sealing and Drainage
 - 501-5(a) Conduit Seals, Class I, Division 1 (Conduit Seal Locations)
 - 501-5(b) Conduit Seals, Class I, Division 2 (Conduit Seal Locations)
 - 501-5(c) Class I, Divisions 1 and 2 (Seal Fitting Compliance)
 - 501-5(d) Cable Seals, Class I, Division 1
 - 501-5(e) Cable Seals, Class I, Division 2
 - Table 5.1 Conduit and Cable Seal Requirements for Hazardous Locations
- NEC 501-6 Switches, Circuit Breakers, Motor Controllers and Fuses.
 - 501-6(a) Class I, Division 1
 - 501-6(b) Class I, Division 2
 - 501-6(1) Type Required
 - 501-6(1)(a) Hermetic seal
 - 501-6(1)(b) Factory seal
 - 501-6(1)(d) Solid state switch
- NEC 501-7 Control Transformers and Resistors (Solenoids)
- NEC 501-12 Receptacles and Attachment Plugs, Class I, Divisions 1 & 2 (Disconnect Plugs)
- NEC 501-16 Grounding, Class I, Divisions 1 & 2

NEC 502-4 Wiring Methods

- 502-4(a) Class II, Division 1
- 502-4(b) Class II, Division 2
- NEC 502-5 Sealing, Class II, Divisions 1 & 2
- NEC 502-6 Switches, Circuit Breakers, Motor Controllers and Fuses
 - 502-6(a) Class II, Division 1
 - 502-6(a)(1) Type required
 - 502-6(a)(2) Isolating Switches
 - 502-6(a)(3) Metal dusts
 - 502-6(b) Class II, Division 2
- NEC 502-7 Control Transformers and Resistors (Solenoids)
 - 502-7(a) Class II, Division 1
 - 502-7(b) Class II, Division 2

NEC 504 Intrinsically Safe Systems

- 504-2 Definitions
 - Associated apparatus
 - Control drawing
 - Intrinsically safe apparatus
 - Simple apparatus
- 504-4 Equipment Approval
- 504-10 Equipment Installation
 - 504-10(a) Control drawing
 - 504-10(b) Location
- 504-20 Wiring Methods

505 Class I, Zone 0, 1 and 2 Locations

- 505-3 Location and General Requirements
 - 505-3(a) Classification of locations
- 505-4 Protection Techniques
 - 505-4(a) Flameproof "d"
 - 505-4(c) Intrinsically safe
 - 505-4(d) Type of protection "n"
 - 505-4(f) Increased safety "e"
 - 505-4(g) Encapsulation "m"
- 505-5 Reference Standards
- 505-7 Grouping and Classification
 - 505-7(a) Group IIC
 - 505-7(b) Group IIB
 - 505-7(c) Group IIA
- 505-9 Zone Classification
 - 505-9(a) Class I, Zone 0
 - 505-9(b) Class I, Zone 1
 - 505-9(c) Class I, Zone 2
- 505-10 Listing, Marking and Documentation
 - 505-10(a) Listing
 - 505-10(b) Marking
 - 505-10(c) Documentation
- 505-15 Wiring Methods
 - 505-15(a) Zone 0
 - 505-15(b) Zone 1
 - 505-15(c) Zone 2
- 505-20 Equipment
 - 505-15(a) Zone 0
 - 505-15(b) Zone 1
 - 505-15(c) Zone 2

Definitions as referenced by NEC Article 100

Ampacity

The current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

Approved

Acceptable to the authority having jurisdiction.

Bonding

The permanent joining of metallic parts to form an electrically conductive path that will ensure electrical continuity and the capacity to conduct safely any current likely to be imposed.

Bonding jumper

A reliable conductor to ensure the required electrical conductivity between metal parts required to be electrically connected.

Device

A unit of an electrical system that is intended to carry but not utilize electric energy.

Disconnecting

A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.

Dustproof

Constructed or protected so that dust will not interfere with its successful operation.

Dusttight

Constructed so that dust will not enter the enclosing case under specified test conditions.

Enclosure

The case or housing of apparatus . . . to prevent personnel from accidentally contacting energized parts, or to protect the equipment from physical damage.

Explosionproof apparatus

Apparatus enclosed in a case that is capable of withstanding an explosion of a specified gas or vapor that may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosions of gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited thereby.

Ground

A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

Grounded

Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient

current carrying capacity to prevent the buildup of voltages that may result in undue hazards to connected equipment or to persons.

Labeled

Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Listed

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or services meets identified standards or has been tested and found suitable for a specified purpose.

Live parts

Electric conductors, buses, terminals, or components that are uninsulated or exposed and a shock hazard exists.

Nonincendive circuit

A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment, is not capable, under specified test conditions, or igniting the flammable gas, vapor, or dust-air mixture. See Section 500-4(f) for details regarding this protection method allowable in Class I and II, Division 2 classified areas.

Qualified person

One familiar with the construction and operation of the equipment and the hazards involved.

Rainproof

Constructed, protected, or treated so as to prevent rain from interfering with the successful operation of the apparatus under specified test conditions.

Raintight

Constructed or protected so that exposure to a beating rain will not result in the entrance of water under specified test conditions.

Watertight

Constructed so that moisture will not enter the enclosure under specified test conditions.

Weatherproof

Constructed or protected so that exposure to the weather will not interfere with successful operation.

Air-Oil Systems, Inc. www.airoil.com

Applications

AUTOMOTIVE

Chemical washdown areas
Conveyors
Cylinder end-of-stroke indication
Eye wash stations
Marmac position sensing
Paint incineration damper indication
Paint mixing valves
Paint spray areas
Part present indication
Pneumatic and hydraulic clamping and welding fixtures
Positioning and indexing
Powerhouse (see Power Generation)
Safety showers
Speed control on conveyors

CEMENT PLANTS

Bagging
Chutes
Conveyors
Crushers
Hopper doors
Kilns
Loaders
Machinery
Packaging
Valve position indication

CHEMICAL PROCESSING

Emergency showers
Eye wash stations
Filters
Hose Couplings
Transfer panels
Valve position indication

CONSTRUCTION

Concrete block mfg.
Concrete ready mix trucks (counting revolutions of drum)
Cranes

ELEVATORS/ESCALATORS

Leveling switch in mining elevators

EQUIPMENT

On all equipment where the value of the switch is judged by its performance and long life

FLUID POWER

Cylinders
Valves

FOOD PROCESSING

Canning/bottling equipment
Conveyors
Cylinder indication
Freezers
Labelers
Material handling
Mixers
Ovens
Packaging equipment
Scales
Showers and eyewash stations
Valve position indication

FOUNDRIES

Conveyors
Crane
Dampers
Ladle positioning
Mold positioning
Shakers
Showers and eyewash stations

GLASS

Conveyors
Limits in all high heat areas
Mixers

LUMBER AND WOOD PRODUCTS

Conveyors
Eyewash stations
Sawdust bins
Saws
Ventilation equipment

MACHINERY

Car wash
Commercial laundry

Compacting
Engraving
Freezing
Gluing
Heavy Equipment (Komatsu, John Deere, Hyundai, etc.)
Lubricators
Mixing
Printing
Other machinery dealing with abrasive, explosive, corrosive or otherwise "hard to handle" environments
Rock crushing

MATERIAL HANDLING

Baggers/Balers
Bulk loading/unloading equipment
Conveyors
Crating equipment
Labelers
Lifts
Packaging machines

MILITARY/MARINE

Ballast transfer pumps
Davits
Elevators
Elevator speed control
Hatch interlock
Safety interlocks
Shipboard cranes
Valve position indication

MINING

Any limit application
Conveyors
Cylinders
Dump bed up indication
Longwall equipment
Shower and eyewash stations
Track signal

GAS TRANSMISSION/DISTRIBUTION

Door security
Valve position indication

NUCLEAR POWER PLANTS

Fuel transfer systems
Valve position indication

OFF ROAD EQUIPMENT

Boom alignment
Cranes
Cylinders
Dump truck bed indication
Ore/coal pile reclaimers

OIL/GAS EXPLORATION

Off-shore sites
Sub-sea applications
Valve position indication

PETROLEUM REFINING

Interlocks
Motor phase monitoring
Shower and eyewash stations
Valve position indication

POWER GENERATION

Air preheaters
Air preheater blowers
Ash bins
Ash handling valves
Bag houses
Barge unloaders
Blow down valves
Boiler feed pump recirculation valve
Boiler oil injectors
Bottom ash valves
Burner valves
Coal car dumpers
Coal feeders
Coal handling apparatus
Coal pulverizing swing valves
Coal samplers
Coal transport conveyors
Conveyors
Dampers
Damper valves
Economizers
Feedwater heater level detection
Fly ash valves
Hopper gates

Igniters
Louvered dampers
Master trip valves
Pyrite gates
Pulverizer and pulverizer valves
Scrubber valves
Showers and eyewash stations
Soot blowers
Steam valves
Stokers
Stop control valves
Turbine control valves
Ventilator valves
Wallblowers
Water de-mineralization valves

PULP AND PAPER

Agitators
Conveyors
Mixers
Shower and eyewash stations
Speed monitors
Valve position indication

RAILROADS

Bridges (draw and swing)
Car Maintenance Eqpt.
Couplers
Cranes
Crossing gates
Track maintenance vehicles & machinery
Track manipulation equipment (Railway Technologies)

SOLID WASTE DISPOSAL/CO-GENERATION

Conveyors
Cranes
Dampers
Valve position indication
Ventilation equipment

STEEL MILLS

Bullwheels
Cold rolling units
Conveyors
Cranes
Dampers
Draw benches
Fans
Hot mill applications
Shower and eyewash stations
Track monitors
Valve position indication

TIRE AND RUBBER

Any machinery handling carbon black
Conveyors
Curing presses
Cylinder end-of-stroke indication
Shower and eyewash stations
Tire mold closure interlocks
Tire scrivers

TOOL & DIE

Plastic injection molding
Aluminum die-casting
Rubber molding
High temperature applications

TRANSPORTATION EQUIPMENT

Airport fuel transfer equipment
Davits
Hangar doors
Hatch interlocks
K-Loaders
Passenger jetways
Scissor lifts
Shipboard cranes
Valve position indication
Vehicle interlocks

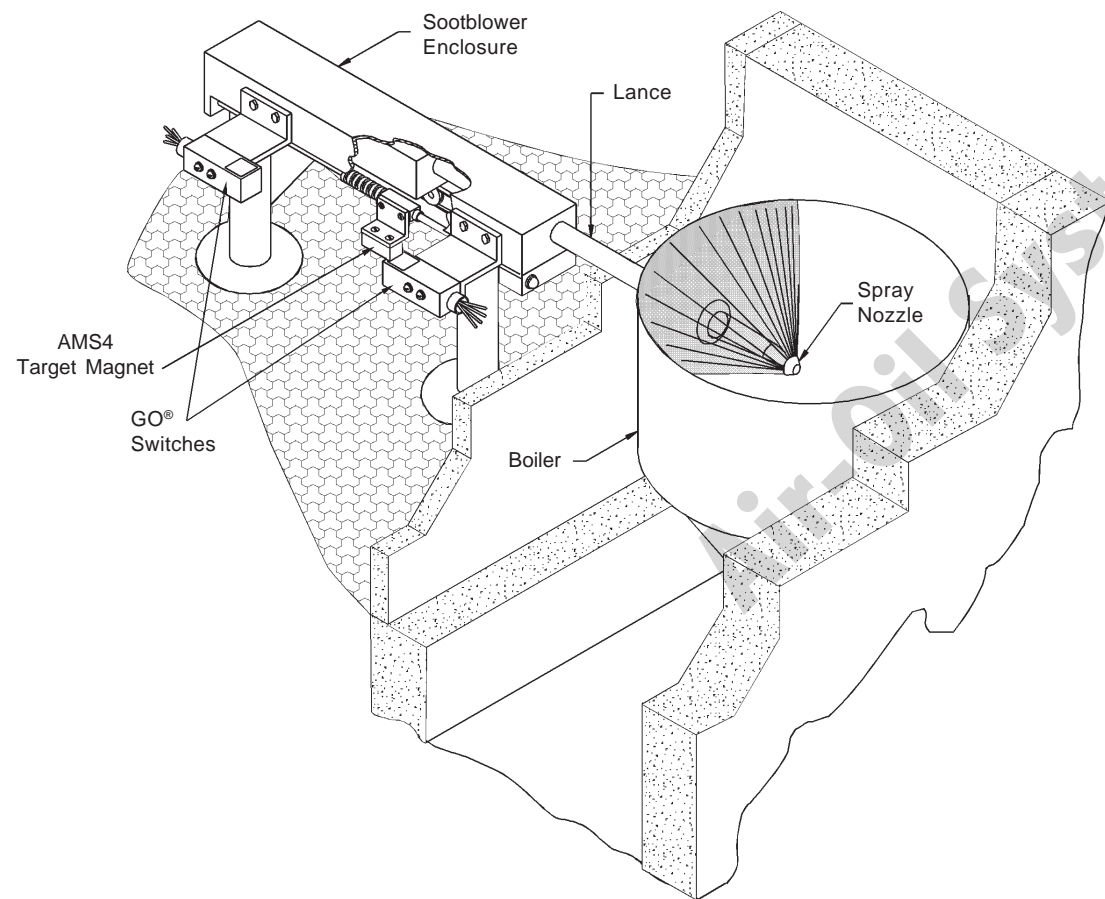
SOOT BLOWER POSITION INDICATION

Wherever power is generated, whether it is at a power generation station or a pulp and paper facility, soot blowers are used to eliminate slag buildup from the inside wall of a boiler. The lance of the soot blower penetrates the side of the boiler wall and extends inside. As it enters the boiler, the lance rotates in a clockwise motion spraying high pressure steam from the end of the lance back toward the boiler wall. This high pressure spray removes the slag in a circular pattern that enlarges as the lance extends further into the boiler. After the lance is fully extended, it retracts and rotates counter-clockwise to its original inactive state until a predetermined time when the process starts again. Depending on the size of the boiler, there can be as many as 60 soot blowers to service one boiler!

As you might imagine, the area in which the soot blowers operate is a demanding environment. High temperature and physical abuse make mechanical limit switches a constant maintenance headache. If a soot blower is out of service, the boiler wall is not being cleaned and as a result, power is not being generated efficiently. Translation: downtime, maintenance costs and lost revenue.

Fortunately, GO Switch has the solution. Each soot blower can be retrofitted using two Double Pole, Double Throw 80 Series GO Switches and one (1) AMS4 target magnet. As the soot blower lance extends and retracts into the boiler, the target magnet travels to the sensing area of each GO Switch, providing maintenance-free, fit and forget position indication.

The GO Switch is wired like a mechanical switch so existing wiring can be used for easy installation. Since the GO Switch does not depend on lever arms or internal moving parts, maintenance is immediately eliminated. This has been field tested and proven in thousands of applications already.



AUTOMOTIVE SKID CONVEYOR INDICATION

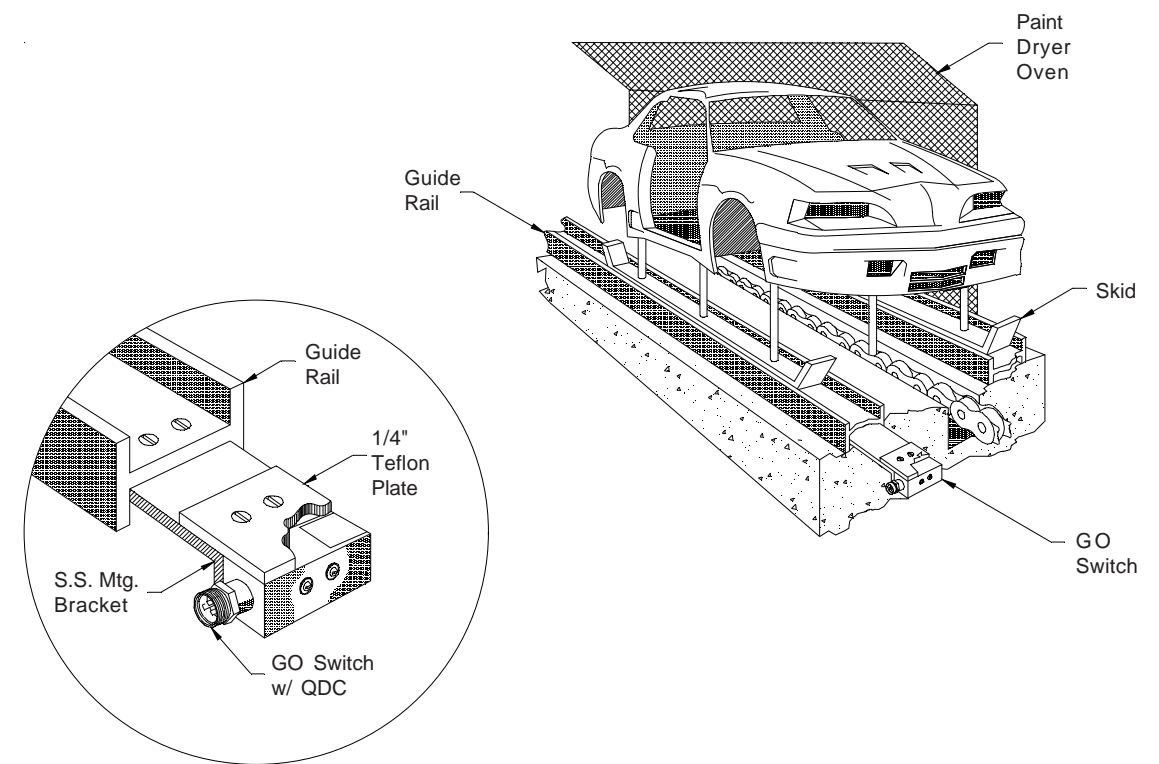
Automotive manufacturers need reliable position indication of body skids along the skid conveyor system. The critical areas are at the entrance, exit, and even inside of the paint-drying ovens where temperatures can reach close to 400°F. Mechanical limit switches and inductive proximity switches cannot withstand the heat or the physical abuse of this application. Fortunately...

GO Switch has the answer.

We recommend our stainless steel high temperature 10 Series GO Switch with extended sensing, and a 400°F continuous temperature rating.

The GO Switch will provide reliable maintenance-free position indication in this tough application.

Contact the paint shop supervisor, electrical engineers, and/or maintenance people responsible for the paint booth. They will be glad you called!



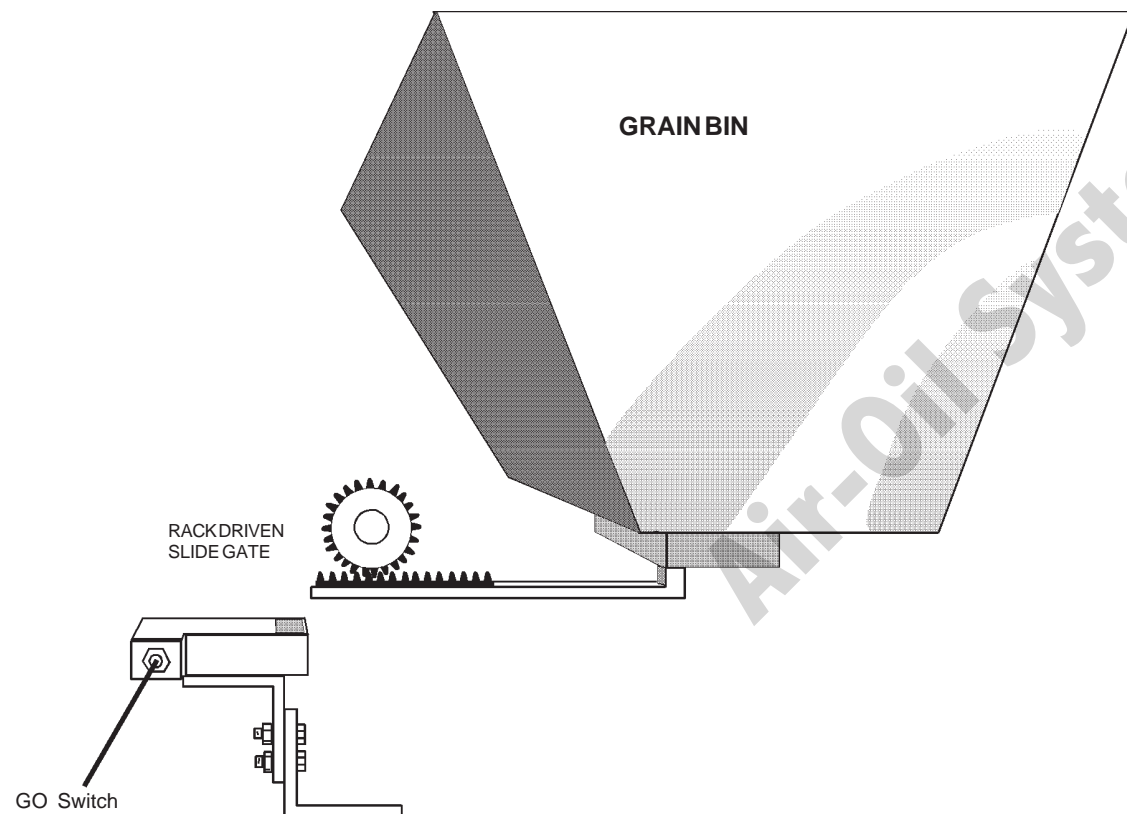
GRAIN BIN OPEN/CLOSED GATE POSITION

Grain elevators need an explosion-proof sensing device to signal when the slide gate of a grain bin is fully closed. This permits grain to be fed into the bin without waste.

The switch not only had to be explosion-proof, but also had to withstand dirty and dusty conditions.

A GO Switch was mounted on a stainless steel bracket, 1/4" below the moving rack drive. This allows 1/8" of play in the drive movement, while providing accurate sensing of the position of the bin gate.

The dependable GO Switch costs less than other explosion-proof limit switches.



BAR SCREEN TRASH RAKES FOR WATER TREATMENT

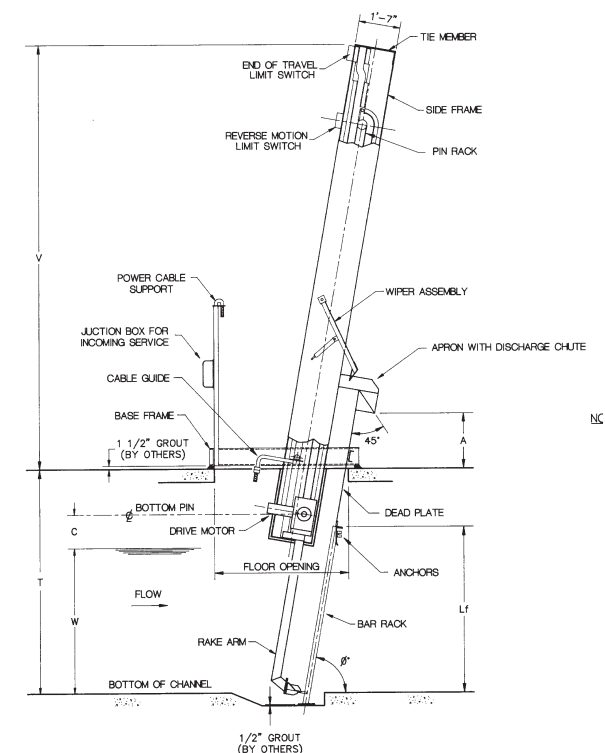
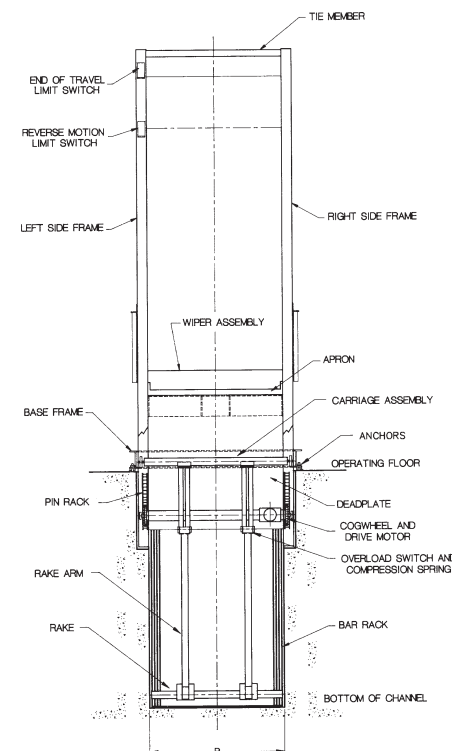
Bar screens are typically used in the intake channels of water treatment plants to remove solid debris from the water to prevent damage of subsequent equipment. When debris has accumulated on the screen, cleaning is required. It is done with a trash rake that is usually mounted in front of the screen on a support frame. Some of these trash rakes are manually operated and most are motor propelled so an operator only has to push a button to activate the rake. Some are activated by a timer. The rake goes through a cycle descending in front of the screen to the bottom moving towards the screen and then moving upward transporting the accumulated debris to a discharge chute where a container or a conveyor takes it away.

The motor operated trash rakes usually have two limit switches on them mounted to the support frame well above the water level. The end-of-travel limit switch defines the exact position at which the assembly will stop at the end of the cycle. The overload protection switch is activated when the rake comes in contact with an obstruction in the screen too large for it to remove.

Stainless steel 10 series or 80 series are the best limit switches for these applications. The harsh and moist environments in water treatment plants are too much for mechanical or solid state switches. Often the switches must be explosion proof and magnets must be used as targets because of the variation in the traveling rake position.

Water treatment plants are in a number of facilities including:

- Electrical generating stations
- Chemical processing plants
- Plastics manufacturing plants
- Food processing plants
- Industrial plants
- Pulp and paper mills
- Irrigation projects
- Oil refineries
- Sewage treatment plants
- Fish conservation projects
- Flood control pumping stations



REFUSE TRUCKS

Refuse trucks have as few as three switches and as many as ten switches per truck. The most common competitive switches used are mechanical lever-arm and push-button limit switches. Some trucks incorporate electronic proximity sensors.

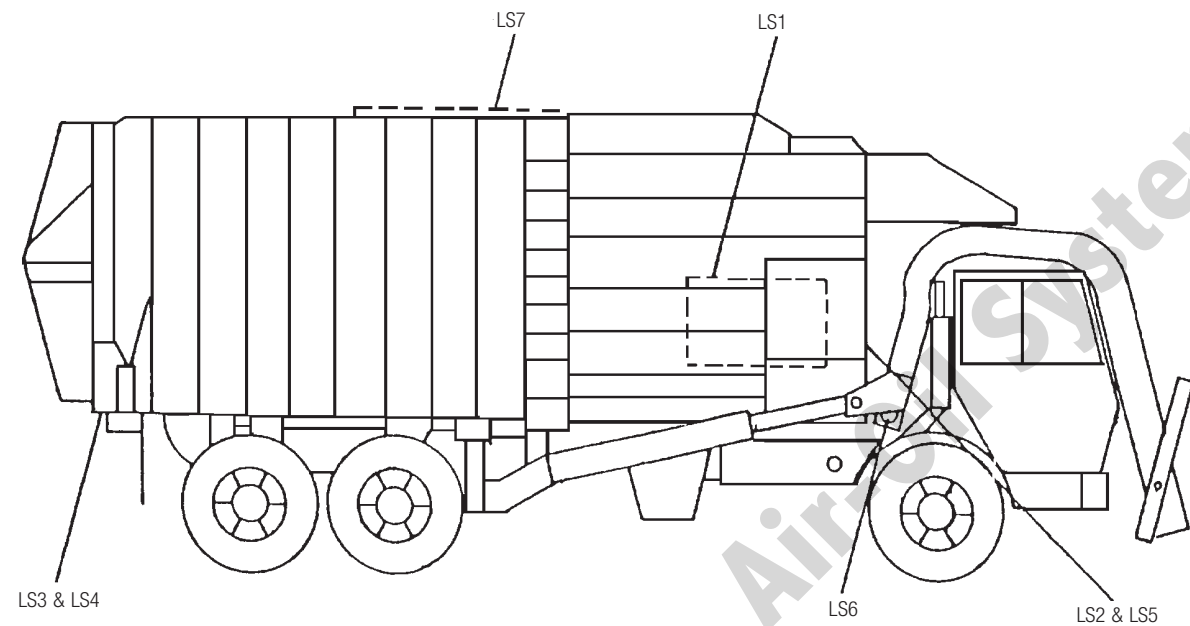
Limit switch/sensor failures are prevalent in the refuse collection business. These switch/sensor failures are attributed to mechanical wear and tear, moisture-ingression, corrosion and temperature extremes.

Vehicles out of service for any period of time cause lost revenue.

GO Leverless Limit Switches will prevent these failures and downtime while reducing maintenance costs.

Visit the refuse collection companies in your area. They will be glad you called!

- LS1 = Normally open: held closed when side door is closed and latched.
- LS2 = (7 & 8 normally closed) (1 & 2 normally open): switches at end of packer stroke.
- LS3 = Normally closed: opens when tailgate is latched.
- LS4 = Normally closed: opens when tailgate is latched.
- LS5 = Normally closed: opens when packer is fully retracted.
- LS6 = Normally open: (1 & 2 normally open) (5 & 6 normally open): closes when arms are above cab.
- LS7 = Normally closed: opens when top door opens.



SAFETY SHOWERS AND EYEWASH STATIONS

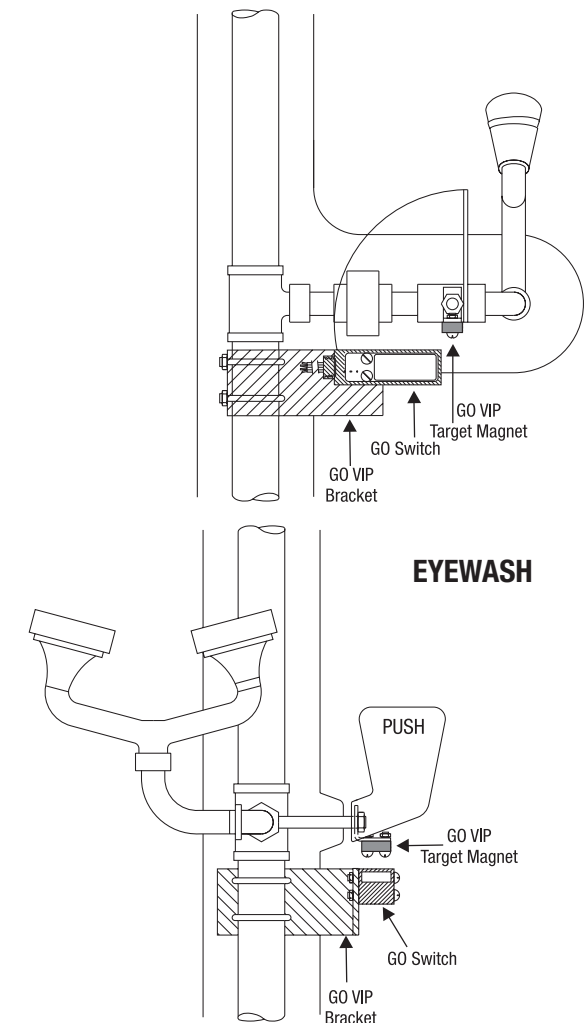
In an emergency first-aid is crucial and according to the OSHA Plant Safety regulations; Subpart G-Occupational Health and Environmental Control; Section 1910.94, Paragraph (d) (9) (vii):

(vii) Near each tank containing a liquid which may burn, irritate, or otherwise be harmful to the skin if splashed upon the worker's body, there shall be a supply of clean cold water. The water pipe (carrying a pressure not exceeding 25 pounds) shall be provided with a quick opening valve and at least 48 inches of hose not smaller than three-fourths inch, so that no time may be lost in washing off liquids from the skin or clothing. Alternatively, deluge showers and eye flushes shall be provided in cases where harmful chemicals may be splashed on the body.

Deluge Showers and eye flushes are plentiful in chemical processing facilities How are the proper personnel notified should an emergency occur? Flow switches are used, but have corrosion and freezing problems.

GO Switch has the answer.

The GO Switch VIP for deluge showers and eye flushes can be mounted on any new or existing unit. Using the GO DPDT 80 Series switch allows for flexibility in signalling the proper personnel. For example, when the shower or eye flush valve is opened the GO Switch can signal the central control room and first-aid personnel simultaneously, or signal the control room and sound an alarm. When personal injury occurs time is of the essence.



Air-Oil Systems, Inc. www.airoil.com

Reference Material

Type 1	General Purpose	indoor	accidental contact (cage or skeleton) will not rust
Type 2	Drip-proof	indoor	limited amounts of falling water and dirt (not dust-tight) will not rust
Type 3	Dust-tight, rain-tight	outdoor	windblown dust, rain, sleet, and undamaged by external ice formation
Type 3R	Dust-tight, rain-tight	outdoor	same as type 3 above, plus diverts water from live parts, provision for drainage, will not rust
Type 3S	Dust-tight, rain-tight	outdoor	same as type 3 above, operation of external mechanism when ice laden, will not rust
Type 4	Water-tight/dust-tight	indoor/ outdoor	windblown dust and rain, splashing water, and hose directed water, undamaged by ice formation, will not rust
Type 5	Dust-tight	indoor	dust and falling direct, will not rust
Type 6	Water-tight, dust-tight	indoor/ outdoor	temporary entry of water during limited submersion (6 ft. for 30 min), undamaged by formation of ice, will not rust
Type 6P	Water-tight/dust-tight	indoor/ outdoor	same as type 6 above plus prolonged submersion at 6 psig, will not rust
Type 7	Explosion proof Cl I, Gps A, B, C, D	indoor	Hazardous locations: protection against corrosive effects of liquids and gases
Type 8	Explosion proof Cl I, Gps A, B, C, D	indoor/ outdoor	Hazardous locations: protection against corrosive effects of liquids and gases; contacts or connections immersed in oil
Type 9	Explosion proof Cl II, Gps E or G	indoor	Hazardous locations: dust-tight, hazardous dust
Type 10	Hazardous Locations	indoor	(MSHA) Mine Safety and Health Adm. per 30 C.F.R., Part 18
Type 11	Oil-tight/Corrosion	indoor	protection from corrosive effects of gases and liquid dripping, seepage and external condensation of corrosives, oil immersion
Type 12	Oil-tight/Dust-tight	indoor	fibers, lint, dust and light splashing, seepage, and dripping condensation of non-corrosive liquids
Type 12K	Oil-tight/Dust-tigh	indoor	same as type 12 above, enclosure has knockouts
Type 13	Oil-tight/Dust-tight	indoor	dust, spraying of water, oil and corrosive coolant, oil resistant gaskets

Approval Agencies

This group defines the options or approvals which may be required for a particular application. Safety requirements, the demands of the machinery on which the switch will be used, or the type of environment will all play a role in determining the type of approval needed.

	Underwriters Laboratories (UL) DEMCO (Subsidiary of UL)	Our file number is E79070 for hazardous location switches and E81878 for general purpose switches.
	Mine Safety and Health Administration (MSHA)	Our file number is X/P-1504-1 November 20, 1984.
	Factory Mutual (FM)	Factory Mutual approved switches are listed in the Factory Mutual Approved Guide.
	Canadian Standard Association (CSA)	Our file number is LR-24226, (CSA) which includes most GO® Switches except special models.
	Standards Association of Australia (SAA) Ex109.	Our file number is EL/29:78062/M90
	British Approvals Service for Electrical Equipment in Flammable Atmospheres (BASEEFA) (Cenelec)	Our file number is Ex 89C1233X for use in Zone 1 Hazardous areas.

UL Hazardous Locations

**Class I
Flammable Gases, Vapors or Liquids
Class I Area Classification**

Division 1:
Where ignitable concentrations of flammable gases, vapors, or liquids can exist all of the time or some of the time under normal operating conditions.

Zone 0:
Where ignitable concentrations of flammable gases, vapors or liquids can exist all of the time or long periods of time under normal operating conditions.

Division 2:
Where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operating conditions.

Zone 1:
Where ignitable concentrations of flammable gases, vapors or liquids can exist some of the time under normal operating conditions.

Zone 2:
Where ignitable concentrations of flammable gases, vapors, or liquids are not likely to exist under normal operating conditions.

Class I Groups

Division 1 & 2
A (acetylene)
B (hydrogen)
C (ethylene)
D (propane)

Zone 0, 1 & 2
IIC (acetylene & hydrogen)
IIB (ethylene)
IIA (propane)

Class I Temperature Codes

Division 1 & 2
T1 ($\leq 450^{\circ}\text{C}$)
T2 ($\leq 300^{\circ}\text{C}$)
T2A, T2B, T2C, T2D ($\leq 280^{\circ}\text{C}$, $\leq 260^{\circ}\text{C}$, $\leq 230^{\circ}\text{C}$, $\leq 215^{\circ}\text{C}$)
T3 ($\leq 200^{\circ}\text{C}$)
T3A, T3B, T3C ($\leq 180^{\circ}\text{C}$, $\leq 165^{\circ}\text{C}$, $\leq 160^{\circ}\text{C}$)
T4 ($\leq 135^{\circ}\text{C}$)
T4A ($\leq 120^{\circ}\text{C}$)
T5 ($\leq 100^{\circ}\text{C}$)
T6 ($\leq 85^{\circ}\text{C}$)

Zone 0, 1 & 2
T1 ($\leq 450^{\circ}\text{C}$)
T2 ($\leq 300^{\circ}\text{C}$)
T3 ($\leq 200^{\circ}\text{C}$)
T4 ($\leq 135^{\circ}\text{C}$)
T5 ($\leq 100^{\circ}\text{C}$)
T6 ($\leq 85^{\circ}\text{C}$)

**Class II
Combustible Dusts
Class II Area Classification**

Division 1:
Where ignitable concentrations of combustible dusts can exist all of the time or some of the time under normal operating conditions.

Division 2:
Where ignitable concentrations of combustible dusts are not likely to exist under normal operating conditions.

Class II Groups

Division 1 & 2
E (metals - Div. 1 only)
F (coal)
G (grain)

Class II Temperature Codes

Division 1 & 2
T1 ($\leq 450^{\circ}\text{C}$)
T2 ($\leq 300^{\circ}\text{C}$)
T2A, T2B, T2C, T2D ($\leq 280^{\circ}\text{C}$, $\leq 260^{\circ}\text{C}$, $\leq 230^{\circ}\text{C}$, $\leq 215^{\circ}\text{C}$)
T3 ($\leq 200^{\circ}\text{C}$)
T3A, T3B, T3C ($\leq 180^{\circ}\text{C}$, $\leq 165^{\circ}\text{C}$, $\leq 160^{\circ}\text{C}$)
T4 ($\leq 135^{\circ}\text{C}$)
T4A ($\leq 120^{\circ}\text{C}$)
T5 ($\leq 100^{\circ}\text{C}$)
T6 ($\leq 85^{\circ}\text{C}$)

**Class III
Ignitable Fibers & Flyings
Class III Area Classification**

Division 1:
Where easily ignitable fibers or materials producing combustible flyings are handled, manufactured or used.

Division 2:
Where easily ignitable fibers are stored or handled.

Class III Groups

Division 1 & 2
None.

Class III Temperature Codes

Division 1 & 2
T3B, T3C ($\leq 165^{\circ}\text{C}$, $\leq 160^{\circ}\text{C}$)
T4 ($\leq 135^{\circ}\text{C}$)
T4A ($\leq 120^{\circ}\text{C}$)
T5 ($\leq 100^{\circ}\text{C}$)
T6 ($\leq 85^{\circ}\text{C}$)

Note: Article 503 of the NEC limits the maximum temperature codes for Class III equipment to 165°C for equipment not subject to overloading and to 120°C for equipment that may be overloaded.

UL Hazardous Locations

Class I, Division 1 & 2 Protection Methods

Area	Protection
Division 1	Explosion proof Intrinsically safe (2 fault) Purged/pressurized (Type X or Y)
Division 2	Non-incendive Non-sparking device Purged/pressurized (Type Z) Hermetically sealed Any Class I, Div. 1 method Any Class I, Zone 1 or 2 method

Applicable Certification Documents

U.S.	Canada
UL 1203	CSA-30
UL 913	CSA-157
NFPA 496	NFPA 496

UL 1604	CSA-213
UL 1604	CSA-213
NFPA 496	NFPA 496
UL 1604	CSA 213
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Class I, Zone 0, 1 & 2 Protection Methods

Area	Protection	U.S.
Zone 0	Intrinsically safe, 'ia' (2 fault) Class I, Div. 2 Intrinsically safe, (2 fault) method	UL 2279, Pt. 11 UL 913
Zone 1	Encapsulation, 'm' Flameproof, 'd' Increased safety, 'e' Intrinsically safe, 'ib' (1 fault) Oil immersion, 'o' Powder filling, 'q' Purged/pressurized, 'p' Any Class I, Zone 0 method Any Class I, Div. 1 method	UL 2279, Pt. 18 UL 2279, Pt. 1 UL 2279, Pt. 7 UL 2279, Pt. 11 UL 2279, Pt. 6 UL 2279, Pt. 5 --- --- ---
Zone 2	Non-incendive, 'nC' Non-sparking device, 'nA' Restricted breathing, 'nR' Hermetically Sealed, 'nC' Any Class I, Zone 0 or 1 method Any Class I, Div. 1 or 2 method	UL 2279, Pt. 15 UL 2279, Pt. 15 UL 2279, Pt. 15 UL 2279, Pt. 15 --- --- ---

Applicable Certification Documents

Canada	IEC	Europe
CSA-E79-11	IEC 60079-11	EN50020
CSA-157	---	---
CSA-E79-18	IEC 60079-18	EN 50028
CSA-E79-1	IEC 60079-1	EN 50018
CSA-E79-7	IEC 60079-7	EN 50019
CSA-E79-11	IEC 60079-11	EN 50020
CSA-E79-6	IEC 60079-6	EN 50015
CSA-E79-5	IEC 60079-5	EN 50017
CSA-E79-2	IEC 60079-2	EN 50016
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CSA-E79-15	IEC 60079-15	prEN 50021
CSA-E79-15	IEC 60079-15	prEN 50021
CSA-E79-15	IEC 60079-15	prEN 50021
CSA-E79-15	IEC 60079-15	prEN 50021
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UL Hazardous Locations

Class II, Division 1 & 2 Protection Methods

Area	Protection	Applicable Certification Documents	
		U.S.	Canada
Division 1	Dust-ignition proof	UL 1203	CSA-25 or CSA-E-1241-1-1
	Intrinsically safe	UL 913	CSA-157
	Pressurized	NFPA 496	NFPA 496
Division 2	Dust-tight	UL 1604	CSA-157 or CSA-E-1241-1-1
	Non-incendive	UL 1604	---
	Non-sparking	UL 1604	---
	Pressurized	NFPA 496	NFPA 496
	Any Class II, Div. 1 method	---	---

Hazardous Locations Markings

Class I, II & III, Division 1 & 2 (U.S. & Canada) -- This marking would include: Class(es), Division(s), Gas/Dust Group(s), Temperature Code. *Example:* Class I, Division 1, Groups C & D, T4A.

Class I, Zone 0, 1 & 2 (U.S. & Canada) -- This marking would include:

Method A: For Zone Listings based on UL 2279 or the CSA-E79 Series Class, Zone(s), Ex, Protection Method(s), Gas Group, Temporary Code. *Example:* Class I, Zone 1, Ex de IIB T4.

Method B: For Zone Listings based on UL or CSA Division Certification Documents Class, Zone(s), Gas Group, Temperature Code. *Example:* Class I, Zone 1, Group IIB T4.

Note: For U.S. Zone Listings based on UL 2279, Article 505 of the 1999 NEC requires that the "Ex" element of the marking string shall read "AEx."

Note: For Canadian Zone Listings based on the CSA-E79 Series, the "Class" and "Zone" elements of the marking string are optional.

Zone 0, 1 & 2 (IEC only) -- This marking would include: Ex, Protection Method(s), Gas Group, Temperature Code. *Example:* Ex de IIB T4.

Zone 0, 1 & 2 (Europe only) -- This marking would include: EEX, Protection Method(s), Gas Group, Temperature Code. *Example:* EEX de IIB T4.

UL Hazardous Locations

Class III, Division 1 & 2 Protection Methods

Area	Protection	Applicable Certification Documents	
		U.S.	Canada
Division 1	Dust-tight	UL 1604	CSA-157
	Intrinsically safe	UL 913	CSA-157
Division 2	Dust-tight	UL 1604	CSA-157
	Intrinsically safe	UL 913	CSA-157

UL's Hazardous Locations Standards

ANSI/UL 674	Electric motors and generators for use in Division 1 hazardous (classified) locations.
ANSI/UL 698	Industrial control equipment for use in hazardous (classified) locations.
ANSI/UL 781	Portable electric lighting units for use in hazardous (classified) locations.
ANSI/UL 783	Electric flashlights and lanterns for use in hazardous (classified) locations.
ANSI/UL 823	Electric heaters for use in hazardous (classified) locations.
ANSI/UL 844	Electric lighting fixtures for use in hazardous (classified) locations.
ANSI/UL 877	Circuit breakers and circuit-breaker enclosures for use in hazardous (classified) locations.
ANSI/UL 886	Outlet boxes and fittings for use in hazardous (classified) locations.
ANSI/UL 894	Switches for use in hazardous (classified) locations.
ANSI/UL 913	Intrinsically safe apparatus and associated apparatus for use in Class I, II and III, Division I, hazardous (classified) locations.
ANSI/UL 1002	Electrically operated valves for use in hazardous (classified) locations.
ANSI/UL 1010	Receptacle-plug combinations for use in hazardous (classified) locations.
ANSI/UL 1067	Electrically conductive equipment and materials for use in flammable anesthetizing locations.
ANSI/UL 1203	Explosion-proof and dust-ignition-proof electrical equipment for use in hazardous (classified) locations.
ANSI/UL 1207	Sewage pumps for use in hazardous (classified) locations.
UL 1604	Electrical equipment for use in Class I and II, Division 2, and Class III hazardous (classified) locations.
UL 2208	Solvent distillation units.
UL 2225	Metal-clad cables and cable-sealing fittings for use in hazardous (classified) locations.
ANSI/UL 2279	Electrical equipment for use in Class I, Zone 0, 1 and 2 hazardous (classified) locations.

Ambient Temperature

The temperature for a medium, such as gas or liquid, surrounding an object.

Analog Signal

A signal in which the data is represented or transmitted in continuously varying quantities, as opposed to a digital signal.

ANSI

Abbreviation for American National Standards Institute.

AWG

Abbreviation for American Wire Gauge; based on circular mil system.

AWM

Appliance Wiring Material.

Axial Motion

A motion of the target along the reference axis.

BASEEFA

Abbreviation for British Approvals Service for Electrical Equipment in Flammable Atmospheres.

CEE

Abbreviation for the International Commission on Rules for the approval of Electrical Equipment.

CE Mark

A trademark that allows a manufacturer trade privileges with the European Union. The CE Mark, by responsibility of the manufacturer, insures that certain directives have been met through testing and documentation.

CENELEC

European Committee for Electrotechnical Standardization.

C-UL

Products bearing this mark are a UL listed device, and tested to CSA standards.

Contact Bounce

A condition that can occur with switching circuits in which the movable contacts close against the stationary contacts with enough energy to "bounce" and reopen the contacts. This may occur several times, very rapidly, during a contact closure.

Contact Pressure

The amount of force holding the movable and stationary contacts together.

CSA

Abbreviation for Canadian Standards Association.

DEMCO

A subsidiary of Underwriter's Laboratories.

Differential (Hysteresis) (Reset)

The distance which a target must move from the sensing point in order to allow the switch to reset.

Differential Travel

A distance between the operating and release points.

Digital Signal

A signal in which the data is transmitted or represented by a series of discrete pulses or steps of constant amplitude.

Dry Circuit

A circuit in which the open circuit voltage is 0.03V or less and the current is 200 mA or less. At such low levels, the current is not able to break through the film of oxides, sulfides or other films which may build up on the contact surfaces.

Environmental Seal

A seal created by gaskets, seals, potting or other means, designed to keep out contamination which might reduce performance. An environmental seal is sometimes referred to as a "factory seal."

Explosion Proof

The property of being able to contain an explosion within the sensor or housing.

Frequency

The number of cycles completed by an alternating current in one second. The newest term Hertz, abbreviated "Hz," is equivalent to "cycles per second."

Hermetic seal

A permanent seal created by fusion, soldering, welding, brazing or other means, to prevent the transmission of gases. A hermetic seal is also referred to as "helium tight," "leak tight," or "vacuum tight." For most applications, a hermetic seal is one where the leakage rate is less than 1×10^{-8} cubic centimeters per second of helium, at a differential of one atmosphere.

Hi-Pot

A device used to place a high voltage across an insulator, to test its insulating properties. The typical Hi-Potential Breakdown Test specified by CSA and UL requires that the voltage be twice the rated voltage, plus 1000 volts, plus 20% of that total. For example, a 600v switch would be tested at $[(600 \times 2) + 1000] \times 1.2 = 2640$ volts. This voltage is placed across the insulator for 1 second, if the insulator doesn't break down, it is considered acceptable.

Hysteresis (Differential) (Reset)

The distance which a target must move from the sensing point in order to allow the switch to reset.

IEC

Abbreviation for the international Electrical and Electronics Engineers.

(IS) Intrinsically Safe

Intrinsic safety may be attained through integral circuitry or an appropriately sized barrier, both of which are current limiting devices. The on-board circuitry, or barrier, is designed for the area classification which the monitoring device is to be used. The basis of intrinsic safety is to limit the amount of current through a device, so that if there is exposure to the surrounding atmosphere there is not sufficient heat generated to ignite that atmosphere.

ISO

Abbreviation for the International Standards Organization.

Latching Condition

A condition where the switch will not reset to its unoperated mode. It must be operated, then reset, in two separate operations.

Lateral Motion

A motion of the target perpendicular to the reference axis.

Leakage Current

Minute amounts of current which flow through a switch even in the unoperated state. Leakage current occurs with electronic switches since they require an external power supply. GO® Switches do not require a power supply and, therefore have no leakage current.

MSHA

Abbreviation for Mine Safety Health Administration

NEMA

Abbreviation for the National Electrical Manufacturers Association.

NEC

National Electric Code.

Non-incendive

Non-incendive equipment contain components that do not allow arcs or sparks to ignite concentrations of flammable gases. One method of producing a non-incendive switch is by sealing off the contact chamber with a hermetic seal so that a flammable gas cannot enter into the arcing / sparking area of the switch.

Normally Closed Circuit

Circuit which passes current when the GO Switch is not actuated. Symbolized by N/C.

Normally Open Circuit

Circuit which passes current when the GO Switch is actuated. Symbolized by N/O.

Operating Distance

A distance at which the target under its axial or lateral approaching causes the switch to operate. An axial operating distance is a distance between an operating point and the sensing face; a lateral operating distance is a distance between an operating point and the reference axis.

(PPM) Pulses Per Minute

Refers to applications, particularly in motion control circuits on rotary applications, where several operations of a switch take place with each revolution of the actuator device. If the actuator turns at "X" revolutions per minute and there are "Y" operations per revolution, the pulses per minute rate would be "X" x "Y" PPM.

PSI

Pounds per square inch. A unit of measure for pressure on a given surface.

PVC

Polyvinyl chloride.

Proximity Switch

A position switch which is operated without mechanical contact with a moving target.

Rated Temperature

Maximum temperature at which an electric component can operate for extended periods without breaking down due to heat.

Rated Voltage

Maximum voltage at which an electric component can operate for extended periods without undue degradation or safety hazard.

Reference Axis

An axis perpendicular to the sensing face and passing through its center.

Release Point

A position of the target at its axial or lateral moving away from the switch when it returns to non-operating state.

Repeatability

Ability to perform the same task operating parameters, consistently, time after time.

Reset (Differential) (Hysteresis)

The distance which a target must move from the sensing point in order to allow the switch to reset.

Response Time

The amount of time required for the switch to move from N/C position to N/O position, or vice versa.

RTV

Abbreviation for Room Temperature Vulcanizing.

SAA

Abbreviation for Standards Association of Australia.

SAE

Abbreviation for Society of Automotive Engineers.

Same Polarity Only

On DMDB switches the like terminals must be wired with the same voltage polarity.

Sensing Area

That location marked on a GO® Switch that is most sensitive to a ferrous or magnetic target.

Sensing Distance Range

Maximum gap between switch and target when the switch first operates; the trip point.

Sensing Face

A surface of the switch through which the magnetic field interact with a moving target and causes the switch operate.

SO Cable

A cable designed for industrial use that has the PVC insulated lead wires protected by a rubber (usually neoprene) jacket.

Standard Target

A specified object used for making comparative measurements of the operating and differential distances.

TEW

Thermoplastic Equipment Wire.

Temperature Rating

Maximum and minimum temperature at which an insulating material can be used in continuous operation without loss of basic properties.

UL

Abbreviation for Underwriter's Laboratories.

Voltage Drop

The amount of voltage across a pair of closed contacts. In GO Switches, this voltage drop is extremely low, compared to solid state switches.

Voltage Rating

The highest voltage that may be continuously applied to an electrical device in conformance with standards or specifications.

Conversion Factors

PSI x 27.71 = in. H₂O
 PSI x 2.036 = in. Hg
 PSI x 703.1 = mm H₂O
 PSI x 51.75 = mm Hg
 PSI x .0703 = kg/cm²
 PSI x .0689 = bar
 PSI x 68.95 = mbar
 PSI x 6895 = Pa
 PSI x 6.895 = kPa

Note: conversion factors are rounded.

Pressure*			
BAR	ATM.	Kg cm2	P.S.I.
1	1	1	15
2	2	2	30
3	3	3	45
5	5	5	75
10	10	10	150
20	20	20	300
30	30	30	450
50	50	50	750
100	100	100	1500
200	200	200	3000
300	300	300	4500
500	500	500	7500
1000	1000	1000	15000

Pressure
 Standard Atmosphere Pressure is 15 psi (14.7)
 15 Pounds = 1 Atmosphere
 Square Inch

Bar is a Unit of Pressure Equal to 1 Atmosphere or
 Approx. 15 Pounds
 Square Inch

*Conversions are approximate for convenience of users.

Fraction/Decimal/Millimeter Conversion Chart

Inches	Decimals	Millimeters	inches	Decimals	Millimeters
1/64	0.0157	0.40	33/64	0.5156	13.10
1/32	0.0313	0.80	17/32	0.5312	13.49
3/64	0.0469	1.19	35/64	0.5469	13.89
1/16	0.0625	1.59	9/16	0.5625	14.29
5/64	0.0781	1.98	37/64	0.5781	14.68
3/32	0.0938	2.38	19/32	0.5938	15.08
7/64	0.1094	2.78	39/64	0.6094	15.48
1/8	0.125	3.18	5/8	0.6250	15.88
9/64	0.1406	3.57	41/64	0.6406	16.27
5/32	0.1563	3.97	21/32	0.6563	16.67
11/64	0.1719	4.37	43/64	0.6719	17.07
3/16	0.1875	4.76	11/16	0.6875	17.46
13/64	0.2031	5.15	45/64	0.7031	17.86
7/32	0.2188	5.56	23/32	0.7188	18.26
15/64	0.2344	5.95	47/64	0.7344	18.65
1/4	0.2500	6.35	3/4	0.7500	19.05
17/64	0.2656	6.75	49/64	0.7656	19.45
9/32	0.2813	7.14	25/32	0.7813	19.84
19/64	0.2969	7.54	51/64	0.7969	20.24
5/16	0.3125	7.94	13/16	0.8125	20.64
21/64	0.3281	8.33	53/64	0.8281	21.03
11/32	0.3438	8.73	27/32	0.8438	21.43
23/64	0.3594	9.13	55/64	0.8594	21.83
3/8	0.3750	9.53	7/8	0.8750	22.23
25/64	0.3906	9.92	57/64	0.8906	22.62
13/32	0.4063	10.32	29/32	0.9063	23.02
27/64	0.4219	10.72	59/64	0.9219	23.42
7/16	0.4375	11.11	15/16	0.9375	23.81
29/64	0.4531	11.51	61/64	0.9531	24.21
15/32	0.4688	11.91	31/32	0.9688	24.61
31/64	0.4844	12.30	63/64	0.9844	25.00
1/2	0.5000	12.70	1	1	25.40

1 mm = .040" .001" = .0254 mm

Temperature Conversion

Fahrenheit Centigrade

F	C
-40	-40.00
-30	-34.44
-20	-28.89
-10	-23.33
0	-17.78
10	-12.22
20	-6.67
30	-1.11
40	4.44
50	10.00
60	15.56
70	21.11
80	26.67
90	32.22
100	37.78
110	43.33
120	48.89
130	54.44
140	60.00
150	65.56
160	71.11
170	76.67
180	82.22
190	87.78
200	93.33
250	121.11
275	135.00
300	148.89
325	162.78
350	176.67
375	190.55
400	204.44
425	218.33
450	232.22
475	246.11
500	260.00

Temperature conversion formula

$$C = \frac{5}{9} (F - 32)$$

$$F = \frac{9}{5} C + 32$$

Basic Contact Forms

A Make SPST-NO		J Make, Make, Break	
B Break SPST-NC		K Center off SPDT	
C Break, Make Transfer SPDT		L Break, Make, Make	
D Make, Break (Continuity Transfer)		U Double make Contact on arm	
E Break, Make, Break		V Double break Contact on arm	
F Make, Make		W Double break, Double make, Contact on arm	
G Break, Make		X Double make	
H Break, Break, Make		Y Double break	
I Make, Break, Make		Z Double make Double break SPDT-DB	

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