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

**Introduction**

GO® Switches operate on the principle of magnetic attraction, reacting to ferrous metal or magnetic targets as they come within the switch’s sensing range. Although switches vary in design according to their intended applications, all GO® Switches use permanent magnets which, when actuated by the presence of a ferrous or magnetic target, change the state of electrical contacts from Normally Closed (N/C) to Normally Open (N/O).

**Mounting**

- Determine the desired operating point.
- Locate switch and/or target to assure that target comes within switch’s sensing area.
  - Use a ferrous target of sufficient size.
  - Avoid contact between switch and target.
  - Use external magnets, available from the factory, to extend the sensing distance.
- Switches may be mounted in any position.
  - Install individually or side-by-side on a non-ferrous bracket. When mounting switches side-by-side, sensing areas should face the same direction.
  - When mounting switches with sensing areas facing each other, install them at least 3" apart.
- For best results, mount switches on non-magnetic materials.
  - Keep all ferrous materials at least 1" from switch.
  - Steel placed outside the switch’s differential area will not affect functioning.
- When Switches are mounted on ferrous metals, though this is not recommended, sensing distance is reduced.
  - Mount switch on ferrous bracket so that effects on magnets are uniform (figure 2).
  - In figure 1 the ferrous bracket does not affect the switch magnets equally; this may cause switch to latch or “hang up.”
- Consider factors which may affect contact life, when choosing and installing switches.
  - Choose the GO® Switch with capabilities that match your requirements for operating frequency, type of load, etc.
  - For heavy or inductive loads, arc suppression devices such as resistors, capacitors and diodes are recommended in order to extend contact life. Call the factory for specific details.

**Sealing switches**

In figure 3, something common has occurred, the conduit system has filled with water. Over a period of time this may cause the switch to fail prematurely.

In figure 2, the termination of the switch has been carefully filled with RTV to prevent water ingress and to prevent premature switch failure. A drip loop with provision for water to escape has also been installed.

**Target size**

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

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

**Target location**

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

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

**Attachment of Conduit or Cable**

Attach conduit or cable correctly — When using long runs of conduit or cable, please support 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 deep environments, use RTV or a similar moisture barrier to support water/condensation from entering conduit hub.

**Wiring Information**

Contact arrangement varies according to the type of switch. Refer to the catalog section on each switch series for detailed information. Be sure that the electrical load will not exceed the rated capacity of the switch.

For two-circuit switches, contacts must be connected to the same polarity in order to minimize the 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 leakage current when open. For multi-unit installation, switches may be wired in series or parallel, as shown below.

**Series Wiring**

Any number of GO® Switches may be wired in series, without voltage drop. By contrast, solid state switches have about two volts drop across the switch when operated. In a system of 12 switches, a total drop of 2.4 volts across the switches is dropped across the switches. Only 2V is left to operate the load.

When using GO® Switches, 12V is still available to operate the load.

**Parallel Wiring**

When solid state switches are placed 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 (one milliamp) sufficient current to indicate an “ON” condition to a programmable logic controller (PLC). Any number of GO® Switches may be wired in parallel, with no current leakage and without drawing operating current.

**Ratings**

- **AC**
  - Voltage: 120V, 240V, 480V, 600V
  - Amps: 10, 25, 60, 100

- **DC**
  - Voltage: 24V, 48V, 72V, 120V
  - Amps: 3, 10, 25, 60

- **DMDB**
  - Voltage: Normal/Open, Normally Closed, Double Make/Double Break

- **N/C**
  - Voltage: AC or DC

- **N/O**
  - Voltage: AC or DC

- **COM**
  - Voltage: AC or DC

- **Power Source**
  - Voltage: AC or DC

- **Electrical Monitoring**
  - Voltage: AC or DC

- **Wire Size**
  - Voltage: AC or DC

**Contact Information**

- **10 Series**
  - Contact Force: 10 lb, 20 lb
  - Contact Type: SPDT, SPST

- **20 Series**
  - Contact Force: 25 lb, 50 lb
  - Contact Type: SPDT, SPST
5. LIMITED WARRANTY
Subject to the limitations contained in Section 6 herein, Seller warrants to Buyer that the Goods shall be free from defects in material and workmanship and that, in the ordinary course of use, they will perform as specified in Section 4. Seller’s warranty is limited to Seller’s own repair and replacement of any defective Goods returned to Seller’s place of business within the applicable warranty period. All claimed defects that are not retained by Seller within such time (30) day period, Seller shall have the right to change the time of such Goods for sale to Seller in an Efffect to the Goods at the time of the receipt of the first request. For all Goods, the seller’s price is for the time of shipment or completion of the Services. These terms and conditions, the attendant quotation or acknowledgment, and all documents incorporated by reference therein, binds TopWorx, Inc. hereinafter the Seller, for the time of shipment or completion of the Services. Buyer shall be responsible for all taxes, duties, fees, or other charges levied on the Goods or Services, including but not limited to customs duties or taxes. Any claim for any alleged defects in the Goods or Services which is not received in writing by Seller within the applicable warranty period as defined in this Section 5 shall be null and void.

6. DELIVERY, OMISSION AND ACCEPTANCE
All shipping dates are approximate and based on information provided to Seller by Buyer and do not preclude the possibility of delays due to events beyond Seller’s control, including but not limited to war, armed conflict, strikes, lockouts, or other labor disputes, fire, floods, hurricanes, earthquakes, earthquakes, or other natural disasters, acts of God, or other causes beyond Seller’s control. These events may delay the delivery or performance of the Goods or Services beyond the applicable warranty period. Seller’s sole obligation under this warranty is to repair or replace, at its own expense, any Goods that are non-conforming when delivered to Buyer. Seller shall, at its own expense, repair or replace any Goods that are non-conforming when delivered to Buyer. The repair or replacement shall be the exclusive remedy of Buyer under this warranty. Buyer agrees that all applicable import and export control laws, regulations, orders and requirements, including without

7. CANCELLATION AND RESERVATION OF RIGHTS
Buyer may terminate or suspend its performance under this Agreement pursuant to the terms of this Section 7 in the event that:
(a) Buyer becomes insolvent or makes a voluntary or involuntary assignment for the benefit of creditors.
(b) Buyer makes a general assignment for the benefit of creditors or files a petition in bankruptcy.
(c) Buyer becomes a party to any voluntary or involuntary receivership.
(d) Buyer becomes the subject of any suit or proceeding in bankruptcy, receivership, or otherwise to appoint a receiver or trustee.
(e) Buyer is made the subject of any notice of levy or assignment for the benefit of creditors under any legal process.
(f) Buyer is transferred or merged or liquidated.
(g) Buyer is enjoined or restrained from performing any of its obligations under this Agreement.

8. TERMINATION
This Agreement may be terminated by either party in the event of non-compliance with any of the terms or conditions of this Agreement. The non-complying party shall be responsible for all damages, losses, costs, and expenses arising from such non-compliance or non-performance.

9. LIMITS OF LIABILITY
Subject to the limitations contained in Section 10 herein, Seller shall not be liable for any indirect, special, incidental, or consequential damages, including but not limited to lost profits, lost savings, or any other damages resulting from the use of the Goods or Services. Seller shall not be liable for any damages or costs incurred by Buyer or any other party except as expressly provided herein. Seller’s liability to Buyer and/or its customers shall extend to include the Goods and/or Services as a whole, and not as separate parts.

10. SOFTWARE AND FIRMWARE
Buyer agrees that it shall not use the Goods in any manner that would infringe the intellectual property rights of Seller or any third party, including but not limited to patents, trademarks, copyrights, or trade secrets. Buyer agrees to indemnify, defend, and hold Seller harmless from any claims, losses, liabilities, suits, judgments, and damages, including incidental and consequential damages, arising from use of the Goods or Services in any manner that would infringe the intellectual property rights of Seller or any third party.

11. INJUNCTIONS
Buyer agrees that it shall not seek, accept, or use any injunctions, decrees, orders, or other restrictions in restraint of the manufacture, sale, or delivery of the Goods or Services to Buyer or any third party, and that Buyer shall be responsible for all damages, losses, costs, and expenses arising from any such injunctions, decrees, orders, or other restrictions.

12. NOTICE OF TERMINATION
Any notice of termination from Buyer to Seller shall be in writing and shall specify the date on which Buyer desires to terminate this Agreement. Seller shall have the right to terminate this Agreement with or without cause upon written notice to Buyer.

13. MILESTONE PAYMENT
Milestone 1: 30% of price upon acceptance of order by Seller. Milestone 2: 70% of price upon completion of the Goods, replacing them with a non-infringing product or modifying them so they become non-infringing. Buyer agrees to indemnify, defend, and hold Seller harmless from any claims, losses, liabilities, suits, judgments, and damages, including incidental and consequential damages, arising from use of the Goods or Services in any manner that would infringe the intellectual property rights of Seller or any third party.

14. RELOCATION
Any relocation of the Goods or Services after delivery or completion shall be at the cost of Buyer, and Seller shall have no liability for any damages or costs incurred by Buyer or any other party except as expressly provided herein. Seller’s liability to Buyer and/or its customers shall extend to include the Goods and/or Services as a whole, and not as separate parts.

15. TERMINATION FOR CONVENIENCE
In the event that Seller terminates this Agreement for its convenience at any time, Buyer shall pay to Seller all sums due for services performed under this Agreement up to the date of termination, and any sums reasonably necessary to operate the effect of the delay.

16. DAMAGE TO GOODS IN TRANSIT
Seller shall have no liability for the delay in performance or the loss, damage, or destruction of the Goods in transit, other than such liability as may be imposed by applicable carrier and as such liability is limited under this Agreement. Seller shall be responsible for the safe storage, installation, starting up, or maintaining the Goods unless expressly stated in writing by Buyer.

17. LIMITATION OF LIABILITY
Subject to the limitations contained in this Agreement, Seller agrees to indemnify, defend, and hold Seller harmless from any claims, losses, liabilities, suits, judgments, and damages, including incidental and consequential damages, arising from use of the Goods or Services in any manner that would infringe the intellectual property rights of Seller or any third party.

18. INDEMNIFICATION
Seller agrees to indemnify, defend, and hold Buyer harmless from any claims, losses, liabilities, suits, judgments, and damages, including incidental and consequential damages, arising from use of the Goods or Services in any manner that would infringe the intellectual property rights of Seller or any third party.

19. GOVERNMENT SPECIFICATIONS
In the event of any disagreement between Seller and Buyer, the provisions of this Agreement shall prevail over any government specifications. Seller shall have the right to change the time of such Goods for sale to Seller in an Efffect to the Goods at the time of the receipt of the first request. For all Goods, the seller’s price is for the time of shipment or completion of the Services. These terms and conditions, the attendant quotation or acknowledgment, and all documents incorporated by reference therein, binds TopWorx, Inc. hereinafter the Seller, for the time of shipment or completion of the Services. Buyer shall be responsible for all taxes, duties, fees, or other charges levied on the Goods or Services, including but not limited to customs duties or taxes.

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