

# T-Series Quick Start Guide

**STOP** This document contains only basic setup and calibration information. For more detailed information, please refer to our website at: [www.topworx.com/manuals](http://www.topworx.com/manuals)

## Installation Notes

Valvetop™ products can be used on both linear and rotary valve automation applications. Always use sound mechanical practices when mounting. When fastening the Valvetop switch box to the bracket on the actuator, torque the fasteners to 8 ft·lbs (10.8 N·m) after cycling the valve a couple of times. This allows the shaft to self-center in the pinion slot, or coupler. Be cautious not to allow undue axial (thrust) load on the shaft.

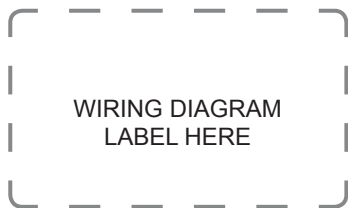
**Warning:** This product comes shipped with plastic plugs in the conduit entries and valve ports (if so equipped) in an effort to protect the internal components from debris during shipment and handling. It is the responsibility of the receiving and/or installing personnel to provide appropriate permanent sealing devices to prevent the intrusion of debris, or moisture, when stored outdoors or when installed.

**Warning:** It is the responsibility of the installer, or end user, to install this product in accordance with the National Electrical Code (NFPA 70 or any other national or regional code defining proper practices.

## Factory Preset

All Valvetop products are factory set for 90° rotation on normal acting actuators. The switch at full clockwise is for process valve closed and uses the red striker. When changing orientation the target disk will have to be relocated for your application. The Target is designed to be adjusted on 90° increments allowing the Valvetop unit to be rotated 90°, 180°, or 270° from standard. On reverse acting units the switch function will be transposed. Clockwise for open will become clockwise for closed. On units with indicator domes, the dome cover with mask will have to be rotated to give proper indication.

## Wiring Diagram



## Switch Calibration Procedure

**Warning:** Never perform the switch calibration procedure while in an area that could be hazardous. Intrinsically Safe models, unit must be wired in accordance the control drawing included with the product.

For Options L, M, K, T, P, R, AS, & PB, calibration may be performed using a Volt-Ohm meter by using the Ohm setting across COM and NO. When switch is active, the meter will read <0.5 Ohms, or the Diode setting may be used simply to indicate continuity. If a direct power source is being used, an appropriately sized resistor must be used in series with the contacts, or permanent damage will occur.

For all INDUCTIVE sensor options, a power source and resistors will be required for calibration. (Refer to the product nameplate for current limitations.)

## Setting Switches

**GO™ Switch, Mechanical Switches, Reed Switches, AS-i, Profibus, & ALL threaded, cylindrical inductive sensor options**

Each T-Series unit is equipped with 2 or 4 adjustable targets with a usable range between 45° and 90°. For normal acting applications the targets are color coded red for closed and green for open. The color code would be reversed for reverse acting units. After installing the unit on the actuator or valve assembly, the targets must be set.

**Warning:** Strikers are spring loaded and may eject forcefully upon disassembly. Use caution when disassembling.

Normal Acting Actuator:

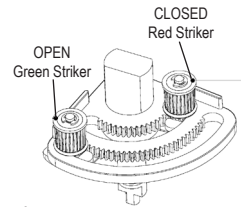
- Step 1: Rotate the valve full clockwise to the closed position.
- Step 2: Twist the red target button(s) as required to engage the switch.
- Step 3: Rotate the valve full counterclockwise to the open position.
- Step 4: Twist the green target button(s) as required to engage the switch

Reverse Acting Actuator:

- Step 1: Rotate the valve full clockwise to the open position.
- Step 2: Twist the red target button(s) as required to engage the switch.
- Step 3: Rotate the valve full counterclockwise to the closed position.
- Step 4: Twist the green target button(s) as required to engage the switch.

## For switching angle under 45°:

When the switch box is mounted to a linear actuator or when the actuator strokes less than 45°, we recommend the following:



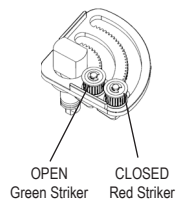
- Step 1: Remove shaft from switch box by removing the circlip underneath the switch box.
- Step 2: Remove the circlip underneath the cam if equipped, then push the cam down the shaft by 3-4mm and turn it 90°.
- Step 3: Push the cam back up, you will see the flats fit snugly between the locating lugs inside the hub.
- Step 4: Replace the circlip
- Step 5: Remove the closed switch from the bracket and install it on the inside of the bracket next to the open switch

To re-assemble:

- Step 1: Replace the screws with M3 X 25mm long screws (insert through both switches and bracket and fasten with the nut on the inside closest to the switch box bearing).
- Step 2: Remove the Closed striker assembly (red) by removing the circlip or screw on top, and install it on the inner rack.
- Step 3: Twist the green striker to the other end of the cam's rack (The red striker assembly should be twisted to the other end of the inner rack).
- Step 4: Re-install the shaft in the switch box and fit the s/s washer and circlip to the underside of the switchbox.
- Step 5: The switches can now be set anywhere between 0° & 45°.

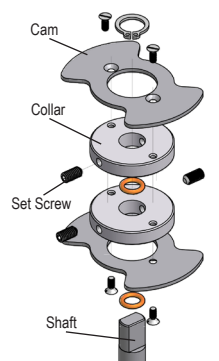
For switching angle up to 180°:

- Step 1: Remove shaft from switch box by removing the circlip underneath the switch box.
- Step 2: Remove the open switch from the bracket and install it on the inside of the bracket.
- Step 3: Remove the Open striker assembly (green) by removing the circlip or screw on top, and install it on the inner rack next to the red striker assembly.
- Step 4: Re-install the shaft in the switch box and fit the s/s washer and circlip to the underside of the switchbox.
- Step 5: The open switch can now be set anywhere between 90° & 180°.



## Setting Slotted Inductive Sensors

- Step 1: Loosen set screw
- Step 2: Rotate cam(s) and collar(s) until desired switch function is achieved
- Step 3: Tighten set screw

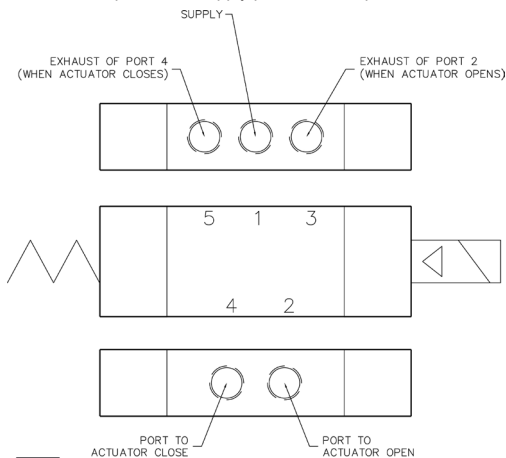


### Pneumatic Hookup Procedures

Prior to connecting the supply air to the spool valve, flush the system to remove any debris or contaminants. Galvanized pipe can easily flake and contaminate the system and therefore is not recommended. A 40 micron point of use filter at every device is recommended.

### 4-Way Spool Valves

The TopWorx™ spool valve is a 5 port, 4-way valve driven by an internally mounted pilot valve. The spool valve supply port and work ports are marked as follows:



**STOP** Never Plug, Block, or Restrict Port 5

### Highly Recommended

TopWorx highly recommends Loctite 567 brand thread sealant. Do not use a hard setting pipe compound. If Teflon thread seal tape is used, start the wrap on the second thread from the leading thread of the fitting. This will prevent tape shreds from contaminating the spool valve seals.

Breathers (AL-M30 1/8"NPT) should be installed in the exhaust ports to keep debris from falling into the spool valve and damaging the seals. This must be addressed prior to installation, or storage.



A flow control may be used in Port 3, but should NEVER BE USED in Port 5. Any blockage or restriction may cause an internal pressure build-up inside the enclosure and pose a safety issue.

Spool Valve Specifications	
Medium	Dried, filtered air (40 micron)
Operating Pressure	30psi (2.76Bar) - 100psi (6.89Bar)
Flow Coefficient	1.0Cv
Environment Rating	Type 4, 4X, IP67 (metal enclosures only)
Port Size	1/4" NPT or BSP for 1.0Cv valve
Ambient Temperature Range	Refer to product nameplate marking
Valve Body	Available in Hardcoat Anodized Aluminum or 316 Stainless Steel
Valve Seals	Buna-N/EPDM

### Special Conditions of Safe Use (All installations)

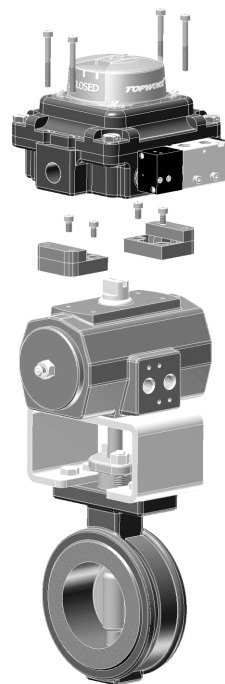
Clean only with a damp cloth to prevent possibility of electrostatic discharge. For Explosion Proof installations, the internal ground connection shall be used and the external ground connection, if supplied in addition, is supplemental bonding allowed where local authorities permit, or is required. Refer to the T-Series Master IOM for Proof Testing instructions.

When installing with a third party listed nipple-mount solenoid, it is the responsibility of the installer to provide fittings, and apparatus, suitable for the area classification in accordance with the National Electrical Code. All cable entry devices or conduit stopping boxes shall be certified in type of explosion protection 'd', suitable for the conditions of use and correctly installed. The IIC enclosures are excluded from use in Carbon disulphide atmospheres. The air pressure to the valve block, when fitted, shall not exceed 7 bar.

### Preventative Maintenance

TopWorx Valvetop switch boxes are designed to operate for one million cycles without servicing. Call TopWorx when you are approaching this milestone for a preventative maintenance kit and instructions.

### Typical Mounting Assembly



### About TopWorx:

TopWorx, a division of Emerson Process Management, is the global leader in valve control and position sensing for the process industries. Our solutions enable plants, platforms, and pipelines to manage and control operations more intelligently and efficiently under the most demanding and extreme conditions.

Valvetop discrete valve controllers enable automated on/off valves to communicate via FOUNDATION Fieldbus, Profibus, DeviceNet, AS-Interface, and HART protocols. They attach to all rotary and linear valves and actuators and carry a variety of global certifications.

GO Switch leverless limit switches provide the ultimate position sensing reliability and durability in extremely hot, wet, cold, dirty, abusive, corrosive, and explosive environments.

For more information please visit [www.topworx.com](http://www.topworx.com).

### TopWorx Global Locations:

#### Americas

3300 Fern Valley Road  
Louisville, Kentucky 40213  
USA  
+1 502 969 8000

#### Europe

Horsfield Way  
Bredbury Industrial Estate  
Stockport SK6 2SU  
United Kingdom  
+44 0 161 406 5155

#### Asia-Pacific

1 Pandan Crescent  
Singapore 128461  
+65 6891 7550

#### Middle East

P.O. Box 17033  
Jebel Ali Free Zone  
Dubai 17033  
United Arab Emirates  
+971 4 811 8283

#### Africa

24 Angus Crescent  
Longmeadow Business Estate East  
Modderfontein  
Gauteng  
South Africa  
+27 11 451 3700



The Emerson logo is a trademark and service mark of Emerson Electric Co. ©2013 Emerson Electric Co. ©2013 TopWorx All rights reserved. TopWorx, Valvetop, Lumitech, GO Switch, and VIP are all trademarks of TopWorx. All other marks used in this document are the property of their respective owners. Information contained herein is subject to change without notice.

		Flameproof TXP/S Only		Intrinsically Safe		
Option	Switch	W/O Solenoid	W/Solenoid	TXP/S	TVA	TXP/S
				W/O Solenoid		W/Solenoid
M	Mechanical switch - SPDT	-40C to +80C	-20C to +80C	-50C to +60C	-40C to +60C	-10C to +40C
K	Mech. switch w/Au contact	-40C to +80C	-20C to +80C	-50C to +60C	-40C to +60C	
L	35 GO Switch	-50C to +80C	-20C to +80C	-50C to +85C	-40C to +60C	
R	200mA Reed Switch	-40C to +80C	-20C to +80C	-50C to +60C	-40C to +60C	
P	3A Reed Switch	-40C to +80C	-20C to +80C	-50C to +60C	-40C to +60C	
N	Hans Turk	-40C to +80C	-20C to +80C	-25C to +50C	-25C to +50C	
N	IFM Electronic	-40C to +80C	-20C to +80C	-20C to +50C	-20C to +50C	
AS	Asi w/Reed Switches	-40C to +80C	-20C to +80C	not available	not available	
T	Mech.Switch DPDT	-40C to +80C	-20C to +80C	-50C to +60C	-40C to +60C	
AM	Asi w/Mech Switches	-40C to +80C	-20C to +80C	not available	not available	
PB	Profibus	-40C to +80C	-20C to +80C	not available	not available	
1	NPN inductive	-40C to +80C	-20C to +80C	not available	not available	
2	PNP inductive	-40C to +80C	-20C to +80C	not available	not available	
<b>PEPPERL+FUCHS SWITCH OPTIONS - STANDARD</b>						
4	NBB2-V3-E2	-25C to +70C	-20C to +70C	not available	not available	-10C to +40C
5	NBB3-V3-Z4	-25C to +80C	-20C to +80C	not available	not available	
E	NJ2-V3-N	-25C to +80C	-20C to +80C	-25C to +60C	-25C to +60C	
B	NJ2-12GK-N	-25C to +80C	-20C to +80C	not available	not available	
F	NJ2-12GK-SN	-40C to +80C	-20C to +80C	not available	not available	
<b>PEPPERL+FUCHS SWITCH OPTIONS - CUSTOM</b>						
<N001>	NCB5-18GM40-NO-V1	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	-10C to +40C
<N002>	NJ4-12GM-N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N003>	SJ3.5-N	-25C to +80C	-20C to +80C	-25C to +60C	-25C to +60C	
<N004>	SJ3.5-SN	-40C to +80C	-20C to +80C	-50C to +40C	-40C to +40C	
<N005>	NCN4-12GM35-NO	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N006>	NJ2-12GK-SN	-40C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N007>	SJ3.5-S1N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N008>	NJ5-18GK-SN	-40C to +80C	-20C to +80C	-40C to +40C	-40C to +40C	
<N009>	NJ4-12GK-SN	-40C to +80C	-20C to +80C	-50C to +40C	-40C to +40C	
<N010>	NJ5-11-N-G	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N011>	NJ2-11-N-G	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N012>	NJ3-18GK-S1N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N013>	NJ5-18GK-N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N014>	SC3.5G-N0	-25C to +80C	-20C to +80C	-25C to +60C	-25C to +60C	
<N015>	NJ2-12GM-N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N016>	NJ5-18GM-N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N017>	NJ2-12GK-N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N018>	NCB5-18GM40-NO	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N019>	NJ2-12GM40-E2	-25C to +80C	-20C to +80C	not available	not available	
<N020>	NCB2-12GM35-N0	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	
<N021>	SJ3.5-N-BU	-25C to +80C	-20C to +80C	-25C to +60C	-25C to +60C	
<N022>	NBN4-12GM40-Z0	-25C to +80C	-20C to +80C	not available	not available	
<N023>	NJ2-11-SN-G	-40C to +80C	-20C to +80C	-40C to +40C	-40C to +40C	
<N024>	NBB5-18GM40-Z0	-25C to +70C	-20C to +70C	not available	not available	
<N025>	NCB2-12GM40-Z0	-25C to +70C	-20C to +70C	not available	not available	
<N026>	NJ4-12GK-N	-25C to +80C	-20C to +80C	-25C to +40C	-25C to +40C	

**TERMS AND CONDITIONS OF SALE**

These terms and conditions, the attendant quotation or acknowledgment, and all documents incorporated by reference herein, binds TopWorx, Inc. hereinafter the Seller, and the buyer, hereinafter Buyer, and constitutes the entire agreement (Agreement) between Buyer and Seller for the provision of services (Services) and/or the sale of goods (Goods) including (except as provided in Section 10) firmware incorporated therein.

1. **PRICES:** Unless otherwise specified by Seller, Seller's price for the Goods and/or Services shall remain in effect for thirty (30) days after the date of Seller's quotation or acceptance of the order for the Goods/Services, whichever is delivered first, provided an unconditional, complete authorization for the immediate manufacture and shipment of the Goods and/or provision of Services pursuant to Seller's standard order processing procedures is received and accepted by Seller within such time period. If such authorization is not received by Seller within such thirty (30) day period, Seller shall have the right to change the price for the Goods/Services to Seller's price in effect for the Goods/Services at the time the order is released to final manufacture. Prices for Goods do not cover storing, installing, starting up or maintaining Goods unless expressly stated in Seller's quotation. Notwithstanding the foregoing, the price for Goods/Services sold by Seller, but manufactured by others, shall be Seller's price in effect at the time of shipment to Buyer.

2. **DELIVERY, ORDER ACCEPTANCE AND DOCUMENTATION:** All shipping dates are approximate and are based upon Seller's prompt receipt of all necessary information from Buyer to properly process the order. Notwithstanding any provisions to the contrary in this or other documents related to this transaction, and regardless of how price was quoted, whether FOB, FAS, CIF or otherwise, legal title to the Goods and risk of loss thereto shall transfer to Buyer as follows: for sales in which the end destination of the Goods is within the United States, upon delivery to the freight carrier at the shipping point; for sales in which the end destination of the Goods is outside of the United States, immediately after the Goods have passed beyond the territorial limits of the United States. Seller shall provide Buyer with that data/documentation which is specifically identified in the quotation. If additional copies of data/documentation or non-standard data/documentation are to be provided by Seller, they shall be provided to Buyer at Seller's price then in effect. Data/documentation marked as confidential or proprietary may not be reproduced or used for any purpose other than the purpose for which it was provided and may not be disclosed to third parties without the prior written permission of Seller.

3. **EXCUSE OF PERFORMANCE:** Seller shall not be liable for delays in performance or for non-performance due to failure or interruption of computer or telecommunication systems, acts of God, war, riot, fire, terrorism, labor trouble, unavailability of materials or components, explosion, accident, compliance with governmental requests, laws, regulations, orders or actions, or other unforeseen circumstances or causes beyond Seller's reasonable control. In the event of such delay, the time for performance or delivery shall be extended by a period of time reasonably necessary to overcome the effect of the delay.

4. **TERMINATION AND SUSPENSION BY BUYER:** Buyer may terminate or suspend its order for any or all of the Goods/Services covered by the Agreement provided that Buyer gives Seller reasonable advance written notice of such termination or suspension and reimburses Seller for all losses, damages, costs and expenses arising from such termination or suspension.

5. **LIMITED WARRANTY:** Subject to the limitations contained in Section 6 herein, Seller warrants that the licensed firmware embodied in the Goods will execute the programming instructions provided by Seller, and that the Goods manufactured or Services provided by Seller will be free from defects in materials or workmanship under normal use and care. The foregoing warranties will apply until the expiration of the applicable warranty period. All other Goods are warranted for twelve (12) months from the date of shipment by Seller. Consumables and Services are warranted for a period of 90 days from the date of shipment or completion of the Services. Products purchased by Seller from a third party for resale to Buyer ("Resale Products") shall carry only the warranty extended by the original manufacturer. Buyer agrees that Seller has no liability for Resale Products beyond making a reasonable commercial effort to arrange for procurement and shipping of the Resale Products. If Buyer discovers any warranty defects and notifies Seller thereof in writing during the applicable warranty period, Seller shall, at its option, correct any errors that are found by Seller in the firmware or Services or repair or replace F.O.B. point of manufacture that portion of the Goods or firmware found by Seller to be defective, or refund the purchase price of the defective portion of the Goods/Services. All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, unsuitable power sources or environmental conditions, accident, misuse, improper installation, modification, repair, use of unauthorized replacement parts, storage or handling, or any other cause not the fault of Seller are not covered by this limited warranty, and shall be at Buyer's expense. Seller shall not be obligated to pay any costs or charges incurred by Buyer or any other party except as may be agreed upon in writing in advance by Seller. All costs of procurement, reinstallation and freight and the time and expenses of Seller's personnel and representatives for site travel and diagnosis under this warranty clause shall be borne by Buyer unless accepted in writing by Seller. Goods repaired and parts replaced by Seller during the warranty period shall be in warranty for the remainder of the original warranty period or ninety (90) days, whichever is longer. This limited warranty is the only warranty made by Seller and can be amended only in a writing signed by Seller. **THE WARRANTIES AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE. THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR ANY OTHER MATTER WITH RESPECT TO ANY OF THE GOODS OR SERVICES.**

6. **LIMITATION OF REMEDY AND LIABILITY:** SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE. THE REMEDIES OF BUYER SET FORTH IN THIS AGREEMENT ARE EXCLUSIVE. IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE TO BUYER OF THE SPECIFIC GOODS MANUFACTURED OR SERVICES PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. BUYER AGREES THAT IN NO EVENT SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, REVENUE OR USE AND COSTS INCURRED INCLUDING WITHOUT LIMITATION FOR CAPITAL, FUEL AND POWER, AND CLAIMS OF BUYER'S CUSTOMERS.

7. **PATENTS:** Subject to the limitations contained in Section 6, Seller shall defend any suits brought against Buyer based on a claim that use of the Goods manufactured by Seller constitutes an infringement of a valid patent of the United States, and shall pay any damages awarded therein against Buyer, provided that Buyer: promptly notifies Seller in writing of the filing of such suit or the threat thereof; permits Seller to control completely the defense or compromise of such claim of infringement; and provides all reasonable assistance and cooperation requested by Seller for the defense of such suit. In the event that only the Goods manufactured by Seller are held to be infringing in such suit and their use is enjoined, Seller shall, at its sole option and expense, provide a commercially reasonable alternative, including, but not limited to, procuring for Buyer the right to continue using the Goods, replacing them with a non-infringing product or modifying them so they become non-infringing. Buyer agrees that Seller shall not be liable for infringement, and that Buyer shall fully indemnify Seller therefore, if infringement is based upon the use of Goods in connection with goods not manufactured by Seller or in a manner for which the Goods were not designed by the Seller or if the Goods were not designed by the Seller or if the Goods were designed by the Buyer or were modified by or for the Buyer in a manner to cause them to become infringing.

8. **TAXES:** Any tax or governmental charge payable by the Seller because of the manufacture, sale or delivery of the Goods, or provision of Services, may at Seller's option be added to the price herein specified. The foregoing shall not apply to taxes based upon Seller's net income.

9. **TERMS OF PAYMENT:** Subject to the approval of Seller's Credit Department, terms are F.O.B. shipping point, net 30 days from date of Seller's invoice in U.S. currency, except for applicable milestone payments covered below or export shipments for which Seller may require other arrangements. Freight charges may include shipping and handling charges, and Buyer shall pay all such charges. If any payment owed to Seller hereunder is not paid when due, it shall bear interest at a rate 1-1/2% per month interest from the date on which it is due until it is received and future shipments may be placed on hold. Seller shall have the right, among other remedies, either to terminate the Agreement or to suspend further deliveries under this and/or other agreements with Buyer in the event Buyer fails to make any payment hereunder when due. Buyer shall be liable for all expenses attendant to collection of past due amounts, including attorneys' fees. Unless otherwise provided in Seller's written quotation, periodic milestone payments shall be made by Buyer when the purchase price of this Agreement exceeds \$100,000. In such cases, invoices shall be issued by Seller and paid by Buyer based on the following milestones: Milestone 1: 30% of price upon acceptance of order by Seller. Milestone 2: 30% of price upon release by Seller of approved bills of material to manufacturing for assembly. Milestone 3: 40% of price upon shipment of the Goods by Seller. Seller reserves the right to designate additional Milestones where the Agreement provides for Services in excess of \$50,000.

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

11. **BUYER SUPPLIED DATA:** To the extent that Seller has relied upon any specifications, information, representation of operating conditions or other data or information supplied by Buyer to Seller ("Data") in the selection or design of the Goods and/or provision of the Services and the preparation of Seller's quotation, and in the event that actual operating conditions or other conditions differ from those represented by Buyer and relied upon by Seller, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

12. **EXPORT/IMPORT:** Buyer agrees that all applicable import and export control laws, regulations, orders and requirements, including without limitation those of the United States and the European Union, and the jurisdictions in which the Seller and Buyer are established or from which items may be supplied will apply to its receipt and use of Goods and Services. In no event shall Buyer use, transfer, release, import, export, or re-export Goods in violation of such applicable laws, regulations, orders, or requirements.

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