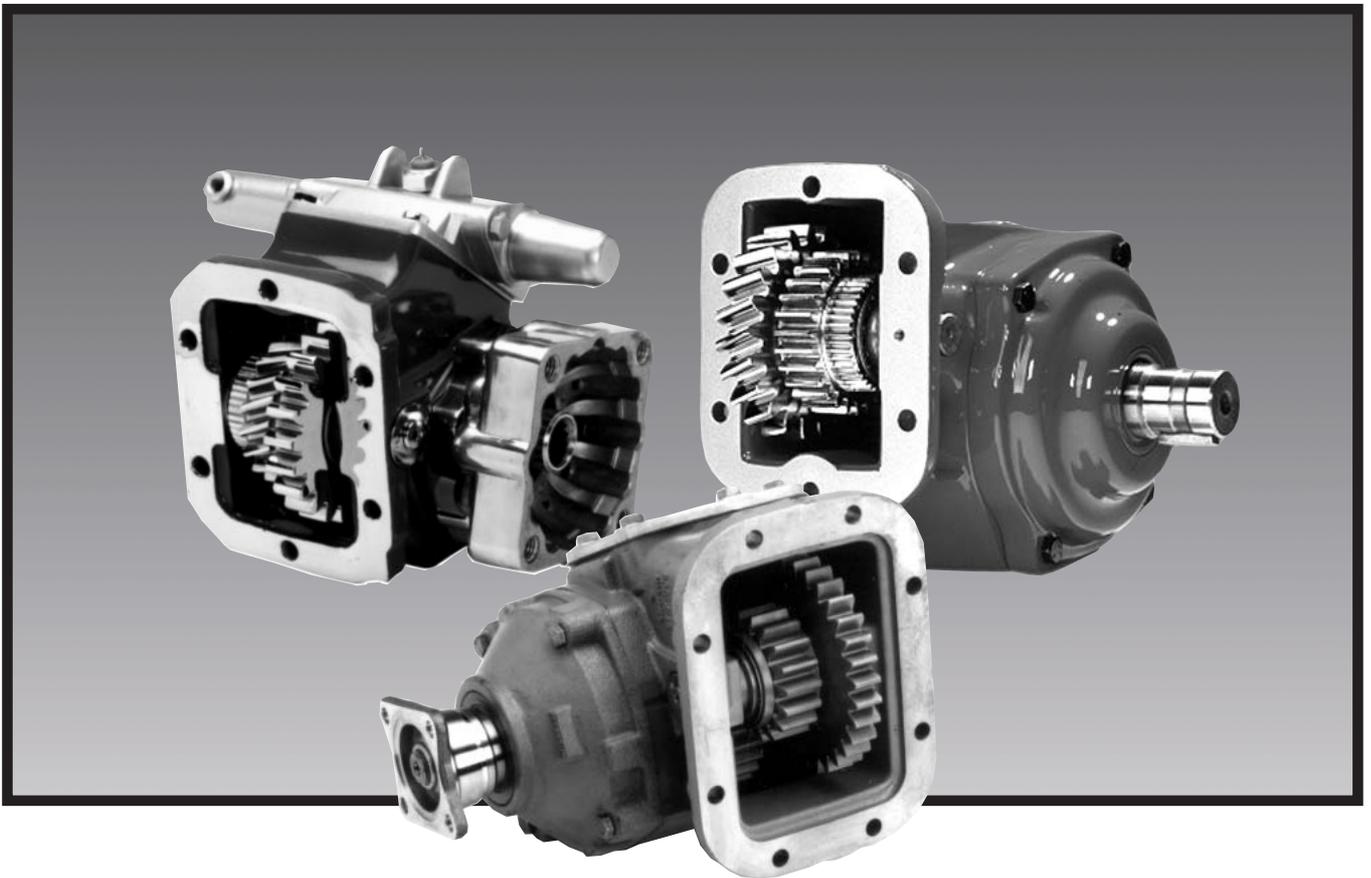


Chelsea

Bulletin HY25-1522-M1/UK, US

Owner's Manual Power Take-Offs

Effective: January 2004



522 Series



 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

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The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale".

Patent Information

The Chelsea® Power Take-Off or its components shipped with this owner's manual may be manufactured under one or more of the following U.S. patents:

4610175 5228355 4597301 5645363 6151975 6142274 6260682
Other patents pending.

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Safety Information

These instructions are for your safety and the safety of the end user. Read them carefully until you understand them.

General Safety Information

To prevent injury to yourself and/or damage to the equipment:

- Read carefully all owner's manuals, service manuals, and/or other instructions.
- Always follow proper procedures, and use proper tools and safety equipment.
- Be sure to receive proper training.
- Never work alone while under a vehicle or while repairing or maintaining equipment.
- Always use proper components in applications for which they are approved.
- Be sure to assemble components properly.
- Never use worn-out or damaged components.
- Always block any raised or moving device that may injure a person working on or under a vehicle.
- Never operate the controls of the Power Take-Off or other driven equipment from any position that could result in getting caught in the moving machinery.

Proper Matching of P.T.O.



WARNING: A Power Take-Off must be properly matched to the vehicle transmission and to the auxiliary equipment being powered. An improperly matched Power Take-Off could cause severe damage to the vehicle transmission, the auxiliary driveshaft, and/or the auxiliary equipment being powered. **Damaged components or equipment could malfunction causing serious personal injury to the vehicle operator or to others nearby.**

To avoid personal injury and/or equipment damage:

- Always refer to Chelsea catalogs, literature, and owner's manuals and follow Chelsea recommendations when selecting, installing, repairing, or operating a Power Take-Off.
- Never attempt to use a Power Take-Off not specifically recommended by Chelsea for the vehicle transmission.
- Always match the Power Take-Off's specified output capabilities to the requirements of the equipment to be powered.
- Never use a Power Take-Off whose range of speed could exceed the maximum safe speed of the equipment to be powered.

Cold Weather Operation of Powershift P.T.O.s



WARNING: During extreme cold weather operation [32°F (0°C) and lower], a disengaged Powershift Power Take-Off can momentarily transmit high torque that will cause unexpected output shaft rotation. This is caused by the high viscosity of the transmission oil when it is extremely cold. As slippage occurs between the Power Take-Off clutch plates, the oil will rapidly heat up and the viscous drag will quickly decrease.

The Power Take-Off output shaft rotation could cause unexpected movement of the driven equipment resulting in serious personal injury, death, or equipment damage.

To avoid personal injury or equipment damage:

- Driven equipment must have separate controls.
- The driven equipment must be left in the disengaged position when not in operation.
- Do not operate the driven equipment until the vehicle is allowed to warm up.



This symbol warns of possible personal injury.

Safety Information

Rotating Auxiliary Driveshafts



WARNING:



- Rotating auxiliary driveshafts are dangerous. You can snag clothes, skin, hair, hands, etc. This can cause serious injury or death.
- Do not go under the vehicle when the engine is running.
- Do not work on or near an exposed shaft when the engine is running.
- Shut off the engine before working on the Power Take-Off or driven equipment.
- Exposed rotating driveshafts must be guarded.

Guarding Auxiliary Driveshafts



WARNING: We strongly recommend that a Power Take-Off and a directly mounted pump be used to eliminate the auxiliary driveshaft whenever possible. If an auxiliary driveshaft is used and remains exposed after installation, it is the responsibility of the vehicle designer and P.T.O. installer to install a guard.

Using Set Screws



WARNING: Auxiliary driveshafts may be installed with either recessed or protruding set screws. If you choose a square head set screw, you should be aware that it will protrude above the hub of the yoke and may be a point where clothes, skin, hair, hands, etc. could be snagged. A socket head set screw, which may not protrude above the hub of the yoke, does not permit the same amount of torquing as does a square head set screw. Also a square head set screw, if used with a lock wire, will prevent loosening of the screw caused by vibration. Regardless of the choice made with respect to a set screw, an exposed rotating auxiliary driveshaft must be guarded.

IMPORTANT: Safety Information and Owner's Manual

Chelsea Power Take-Offs are packaged with safety information decals, instructions, and an owner's manual. These items are located in the envelope with the P.T.O. mounting gaskets. Also, safety information and installation instructions are packaged with some individual parts and kits. **Be sure to read the owner's manual before installing or operating the P.T.O.** Always install the safety information decals according to the instructions provided. Place the owner's manual in the vehicle glove compartment.



WARNING: Operating the P.T.O. with the Vehicle in Motion

Some Power Take-Offs may be operated while the vehicle is in motion. To do so, the P.T.O. must have been properly selected to operate at highway speeds and correctly matched to the vehicle transmission and the requirements of the driven equipment.

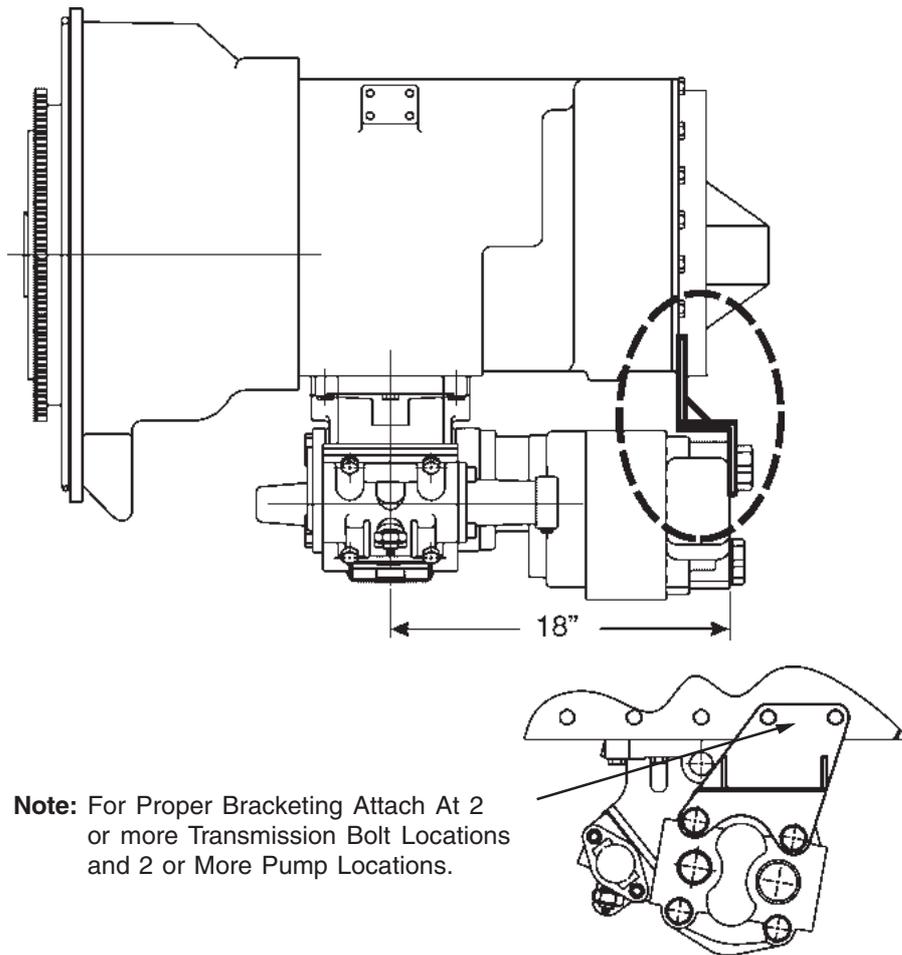
If in doubt about the P.T.O.s specifications and capabilities, avoid operating the P.T.O. when the vehicle is in motion. Improper application and/or operation can cause serious personal injury or permanent failure of the vehicle, the driven equipment, and/or the P.T.O.

Always remember to disengage the P.T.O. when the driven equipment is not in operation.



This symbol warns of possible personal injury.

Direct Mount Pump Support Recommendations



Note: See Page 8 for Pump Mounting Instructions for ZF Meritor Transmissions

Pump Installation Pre-calculations

Use a bracket to support the pump to the transmission if:

- The pump weighs **40 pounds** or more.
- The combined length of the P.T.O. and pump is **18 inches** or more from the P.T.O. centerline to the end of the pump.

Increased torsional vibrations found in high torque low R.P.M. engines can lead to premature wear of the mating shafts and is accelerated if the shafts are not lubricated. Each Chelsea P.T.O. that features a female pump shaft will include a packet of lubricant. Apply this to the male end of the pump shaft before installing the pump to the P.T.O.

⚠ Use caution to ensure that bracket does not pre-load pump/P.T.O. mounting

Chelsea strongly recommends the use of pump supports (Support Brackets) in all applications. P.T.O. warranty will be void if a pump bracket is not used when:

- 1) The combined weight of pump, fittings and hose exceed **40 pounds**.
- 2) The combined length of the P.T.O. and pump is **18 inches** or more from the P.T.O. centerline to the end of the pump.

ALSO: Remember to pack the female pilot of the P.T.O. pump shaft with grease before installing the pump on the P.T.O. (reference Chelsea grease pack 379688)

⚠ This symbol warns of possible personal injury.

Foreword

Since it is our major objective to show you how to get additional and more profitable miles from truck, tractor, and trailer components, we want to provide you with information on the installation of Chelsea Power Take-Offs.

We all realize that an inadequate transmission will overwork any Power Take-Off in a very short period of time. In addition, a mismatched transmission/P.T.O. combination can result in unsatisfactory performance of the equipment right from the start.

Before you order new trucks, be sure that you're getting the right transmission/P.T.O. combination. This is vital for efficient performance and adequate power. To help you select the proper type, size, and design of P.T.O., discuss your specific requirements with a Chelsea P.T.O. specialist. They know their products and have easy access to equipment, transmission, and Power Take-Off manufacturers. They can tell you everything you need to know about power, at the right time, before you specify components.

Chelsea P.T.O. Safety Label Instructions

1. The two black and orange on white 5" x 7" pressure sensitive vinyl labels, part number 379274; must be placed on the vehicle frame rails (one (1) on each side), in a position that would be HIGHLY visible to anyone that would go under the truck near the P.T.O. rotating shaft. If the vehicle is to be painted after these labels are installed, cover them with two-(2) blank masking covers. Remove the masking covers after painting.
2. Place the one (1) black and orange on white 3.5" x 5" pressure sensitive vinyl label, part number 379275, on the visor nearest the operator of the vehicle, this must be placed near the P.T.O. visor label.
3. Place the one (1) red and white with black lettering 3.5" x 7.5" sensitive vinyl label, part number 379915, on the opposite side of the visor from the above label # 379275.
4. Place the one (1) white and black heavy duty card, part number 379276, in the vehicle glove box. Again in a position highly visible to the operator, for example: try to place this card on top of whatever may be in the glove box.

If you require additional labels, please order part number 328946X at no charge from your local Chelsea Warehouse or send request direct to:

**Parker Hannifin Corporation
Chelsea Products Division
8225 Hacks Cross Road
Olive Branch, MS 38654
Customer Service: (662) 895-1011**

For 522 Countershaft for Eaton Fuller, Mercedes, ZF and Volvo Transmission.

P.T.O. Shifting Procedure & Precautions

CAUTION: This vehicle is equipped with a POWER TAKE OFF. Shut Engine Off Before Working On POWER TAKE OFF Or Getting Below Vehicle. Consult Operating Instructions Before Using. (See Sun Visor)

POWER TAKE OFF OPERATION – VEHICLE STATIONARY

A. To Engage the Countershaft P.T.O.

1. Disengage the vehicle clutch and stop the vehicle.
2. Set the parking brakes and place the main transmission in neutral.
3. Engage the Countershaft P.T.O.
4. The light mounted next to the P.T.O. control will light when the P.T.O is engaged.
5. Slowly engage the clutch. The Countershaft P.T.O. will now start to rotate.

B. To Disengage the P.T.O.

1. Disengage the vehicle clutch and wait for the Countershaft to stop rotating.
2. Disengage the Countershaft P.T.O.
3. The light mounted next to the P.T.O. control will be "Off" when the P.T.O is disengaged.

IMPORTANT: Failure to follow proper shifting or operating sequences will result in premature P.T.O. failure with possible damage to other equipment.

1. Remove drain plug and drain oil from transmission.
After oil is drained, immediately re-install drain plug.

WARNING: Oil may be hot. Use extreme caution to assure that you do not accidentally come in contact with hot oil.

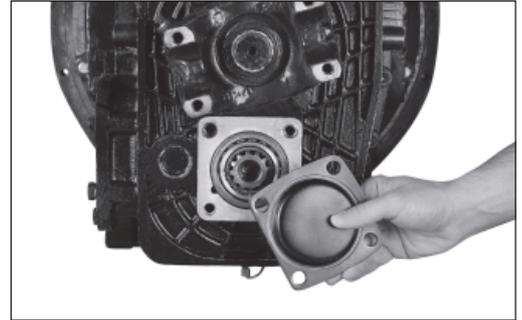


Figure 1

2. Remove extended countershaft bearing cover and gasket from transmission. Clean aperture surface and threaded holes. (See Figure 1)

3. Secure the P.T.O. to the transmission with the four bolts and mounting gasket supplied with the P.T.O. (See Figures 2 & 3)

NOTE: See page 8 for special installation instructions for ZF Astronic and ZF Meritor Transmissions

NOTE: Some transmissions may require an adapter plate for mounting the P.T.O. to the transmission, this will be supplied with the P.T.O.



Figure 2

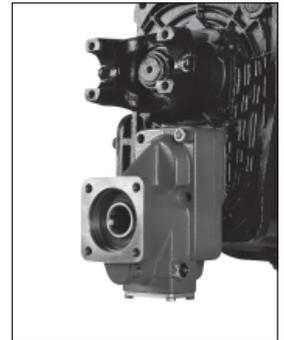


Figure 3

4. Torque the four bolts to 53-58 ft. lbs [71-79 N.m]. (See Figure 4)

NOTE: 1) After P.T.O. installation is complete, fill transmission to the proper oil level per transmission manufacture's instructions

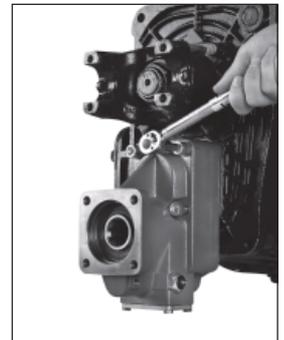


Figure 4

5. Install the male air fitting to the P.T.O. air shift port and plumb air circuit per sketch (See Figure 5)

6. See page 8 for Astronic™ and FreedomLine™ installation instructions.

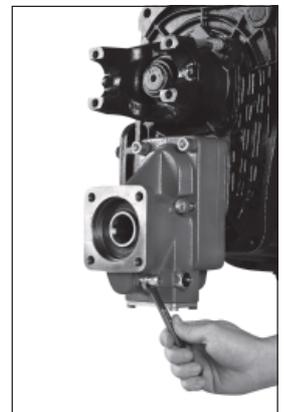


Figure 5

ZF Astronic & ZF Meritor FreedomLine™ Transmissions Installation Instructions

1. Installation of the 522 Series on the Astronic & Freedomline transmissions is the same as the standard installation instructions found on [page 7](#) except for the following.

Astronic & FreedomLine

2. The 522 must be positioned as shown in Fig. 6. This will allow for proper lubrication of the P.T.O. The oil feed port on the transmission and the P.T.O. oil feed port must line up for proper operation. Also there may be a transmission end yoke swing diameter clearance issue if not mounted in this position.

**Note: Remove plug in oil feed port before installing P.T.O.

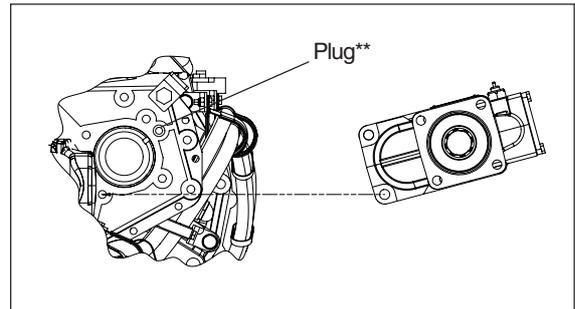
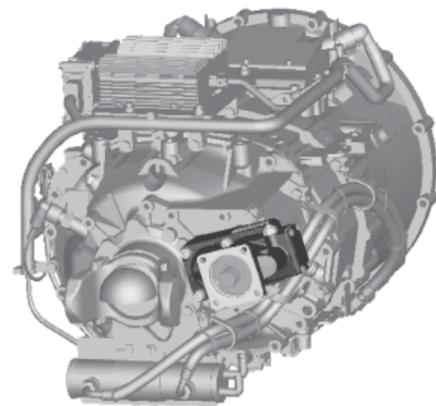


Figure 6



Pump Limits

5.8 PTO Weight (From ZF Meritor Installation Instructions G-105)

5.8.1 Limit - The FreedomLine™ transmission PTO flange will accommodate a maximum combined gravity torque of 37 foot-pound (50 Newton-meter), taking into account all accessories (i.e. PTO, pump, fittings, etc) attached directly to the transmission-PTO flange.

Gravity Torque Equation	Parameters
<p>$M = s \cdot G$</p> <p>Center of Gravity</p> <p>s</p> <p>G</p>	<p>G = Combined weight of all accessories (i.e. PTO, pump, fittings, etc)</p> <p>M = Gravity torque</p> <p>s = Distance between the center of gravity of all accessories (i.e. PTO, pump, fittings, etc.) and the flange mounting face</p>

5.8.1.1 PTO Driveshaft Angle – The PTO driveshaft angle must not exceed 7 degrees at the transmission.

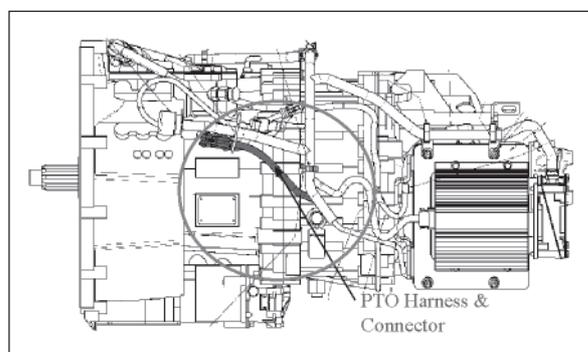
Overview of ZF Meritor FreedomLine™ Transmissions

- FreedomLine™ transmissions are designed to operate in automatic or manual mode through a two -pedal driving system (brake and accelerator). Clutch actuation and transmission shifts are pneumatically powered and electronically controlled using a TCU (ZMTEC). P.T.O. installers must ensure that P.T.O.s are integrated in a manner that permits proper transmission control of P.T.O. engagement and PTO disengagement. FreedomLine™ transmissions are designed to communicate transmission – P.T.O. activity to drivers via the transmission display in the vehicle.

CAUTION! To prevent damage to components: P.T.O. interface with FreedomLine™ transmissions must be in accordance with P.T.O. manufacturer guidelines, any attempt to bypass transmission-control may result in damage to FreedomLine™ transmissions.

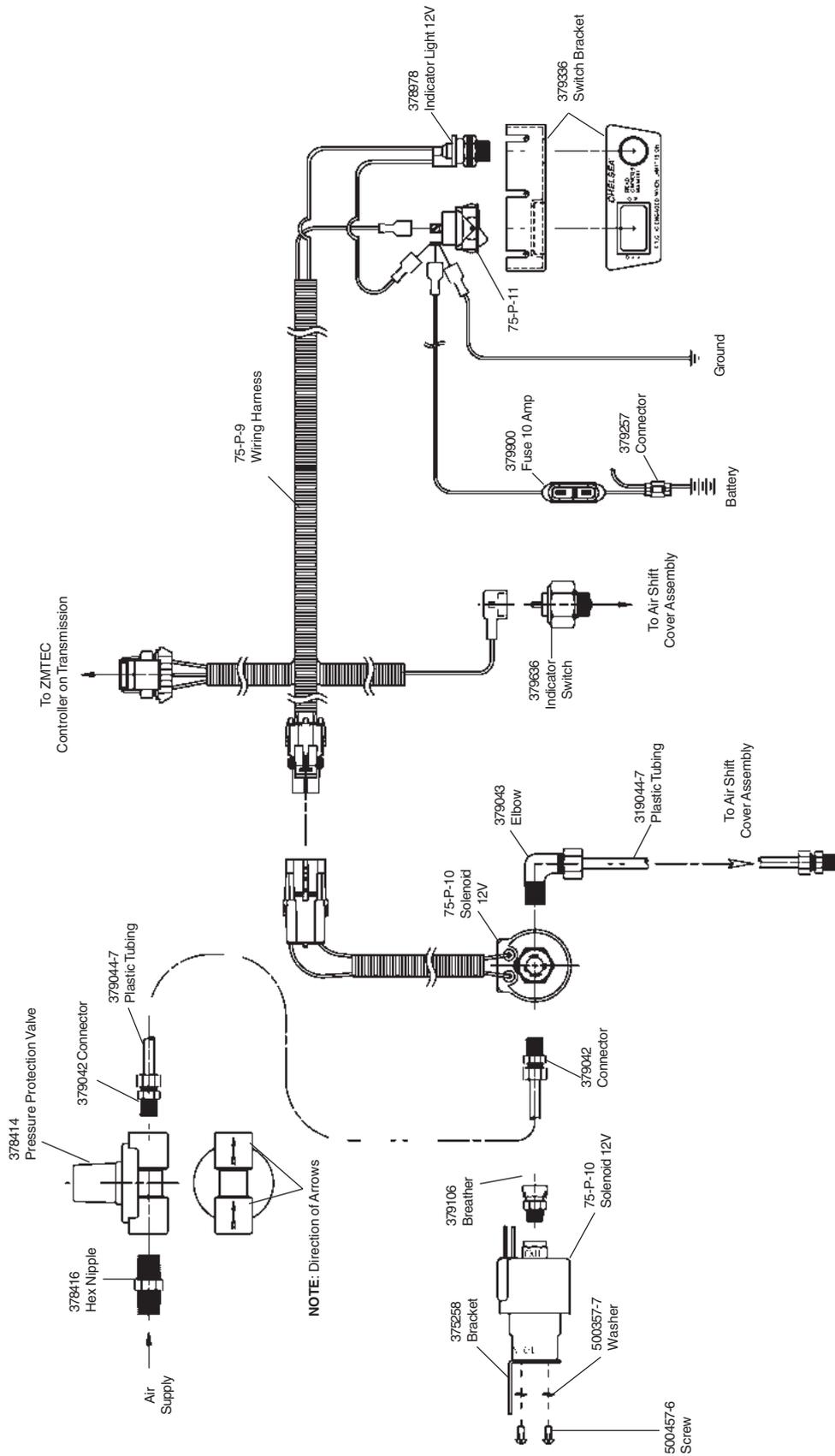
FreedomLine

3. For installation of the 522 Series on the ZF Meritor Freedomline™ transmissions a wiring harness must be used to connect the transmission control to the P.T.O.
4. Connect Chelsea wiring harness 75-P-9 to the ZF Meritor P.T.O. harness connector. (Figure 7)
5. [See SK-354](#) for complete FreedomLine™ wiring installation

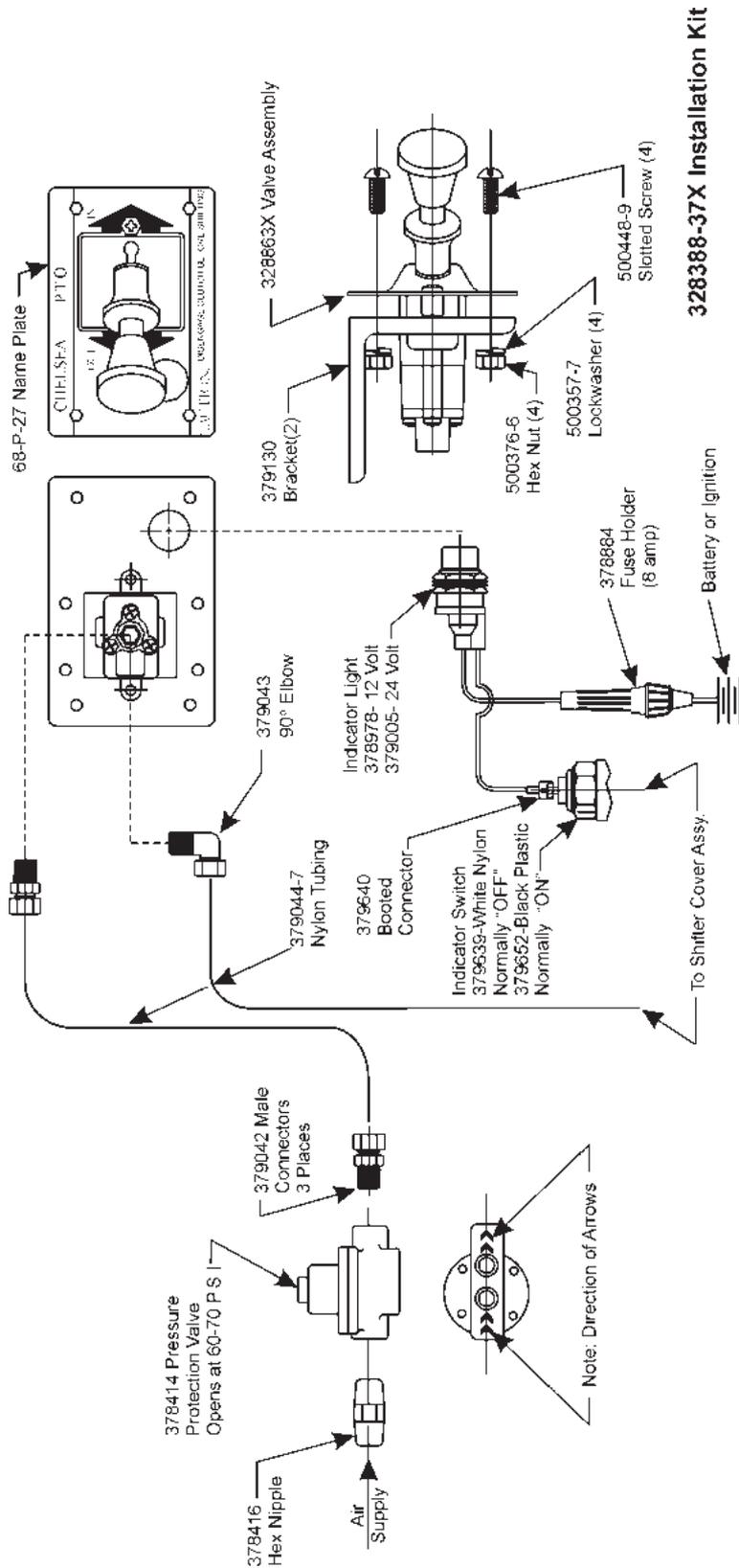


Side View
Figure 7

12 V Electric/Air Shift Installation with ZMTEC Connector for 522 Series (SK-354 Rev. A)



Air Shift Installation Sketch for 100, 221, 260, 429, 434, 435, 436, 437, 438, 442, 447, 489, 522, 660, 680 and 812 Series Using: WILLIAMS VALVE (SK-231 REV B)



328388-37X Installation Kit



Warning: Connect directly to air supply. Do not use tubing between air supply and pressure protection valve.

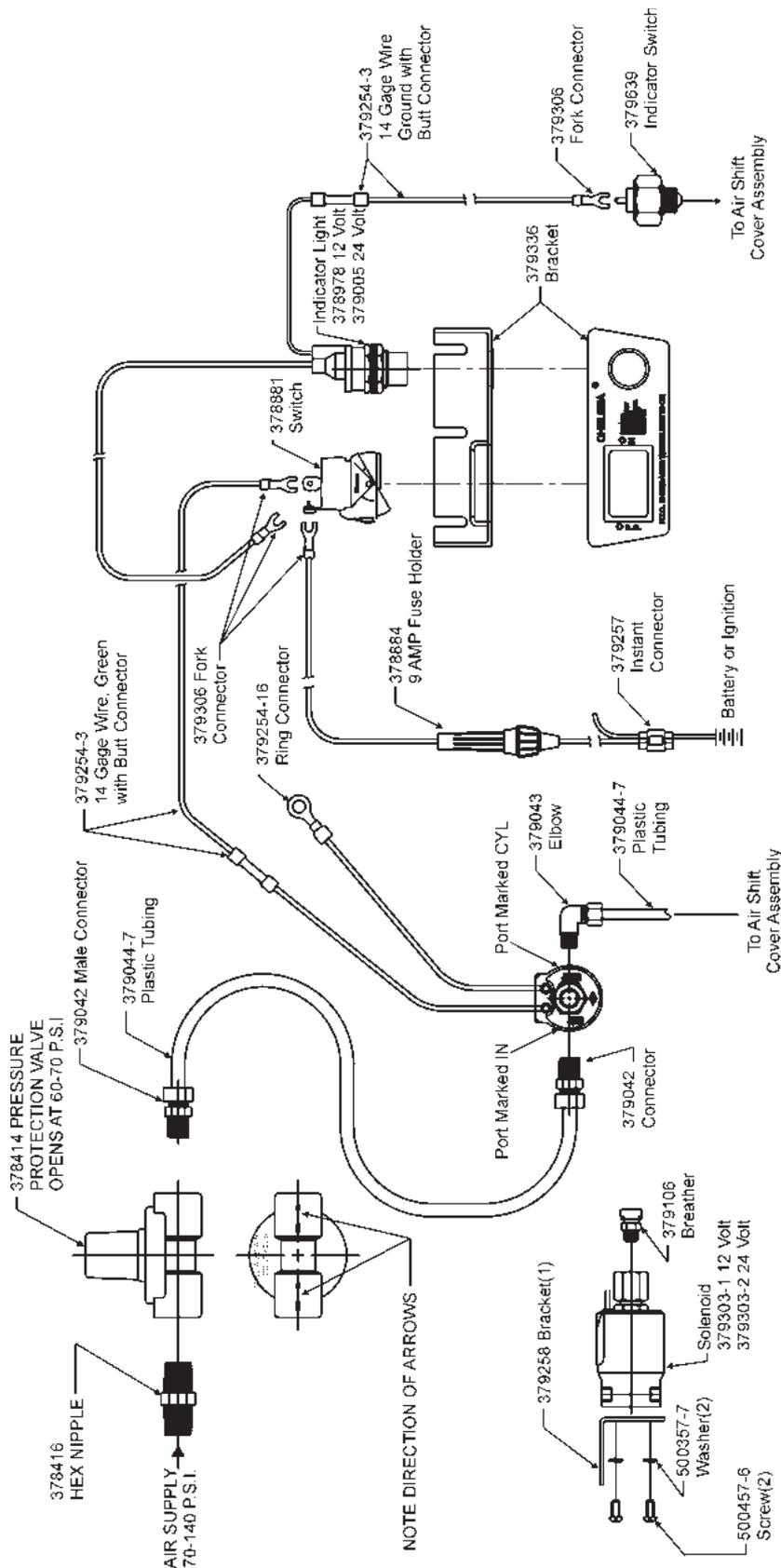
Caution: When installing nylon tubing avoid sharp angles, exhaust and manifold systems.

Important: When this installation is used on vehicles with automatic transmissions the P.T.O. drive gear must be stopped before shifting.

Note: Tube nut is reusable as long as nylon tubing is not removed from the tube nut.

Note: Template for control plate on page 13.

Electric Over Air Shift Installation Sketch for 100, 221, 260, 429, 434, 435, 436, 437, 438, 442, 447, 489, 522, 660, 680 and 812 Series (SK-238 REV F)



Warning: Connect directly to air supply. Do not use tubing between air supply and pressure protection valve.

Caution: When installing nylon tubing avoid sharp angles, exhaust and manifold systems.

Important: When this installation is used on vehicles with automatic transmissions the P.T.O. drive gear must be stopped before shifting.

Note: Tube nut is reusable as long as nylon tubing is not removed from the tube nut.

Power Take-Off Maintenance

Due to the normal and sometime severe torsional vibrations that power take-off units experience, operators should follow a set maintenance schedule for inspections. Failure to service loose bolts or power take-off leaks could result in potential auxiliary Power Take-Off or transmission damage.

Periodic P.T.O. MAINTENANCE is required by the owner/operator to ensure proper, safe and trouble free operation.

Daily: Check all air, hydraulic and working mechanisms before operating P.T.O. Perform maintenance as required.

Monthly: Inspect for possible leaks and tighten all air, hydraulic and mounting hardware, if necessary. Torque all bolts, nuts, etc. to Chelsea specifications. Insure that splines are properly lubricated, if applicable. Perform maintenance as required.

With regards to the direct mounted pump splines, the P.T.O. requires the application of a specially formulated anti-fretting, high pressure, high temperature grease. The addition of the grease has been proven to reduce the effects of the torsional vibrations, which result in fretting corrosion on the P.T.O. internal splines as well as the pump external splines. Fretting corrosion appears as a "rusting and wearing" of the pump shaft splines. Severe duty applications, which require long P.T.O. running times and high torque may require more frequent regreasing. Applications such as Utility Trucks that run continuously and are lightly loaded also require frequent regreasing due to the sheer hours of running time. It is important to note that service intervals will vary for each and every application and is the responsibility of the end user of the product. Chelsea also recommends that you consult your pump owners manuals and technical services for their maintenance guidelines. Fretting corrosion is caused by many factors and without proper maintenance; the anti-fretting grease can only reduce its effects on components.

Chelsea offers the grease to our customers in two packages. The first is a 5/8 fluid ounce tube (379688), which is included with every applicable P.T.O., and the second is a 14-ounce grease cartridge (379831). Chelsea also offers greaseable shafts for most all output designators.

Warranty: Failure to comply entirely with the provisions set forth in the appropriate Owner's Manual will result in voiding of ALL Warranty consideration.

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of:

(A) All Power Take-Off units one (1) year from date of installation.
(B) Except 267, 277, 278, 242, 244, 245, 250, 251 and 859 series two (2) years from date of installation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.**

5. Limitation Of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall

have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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