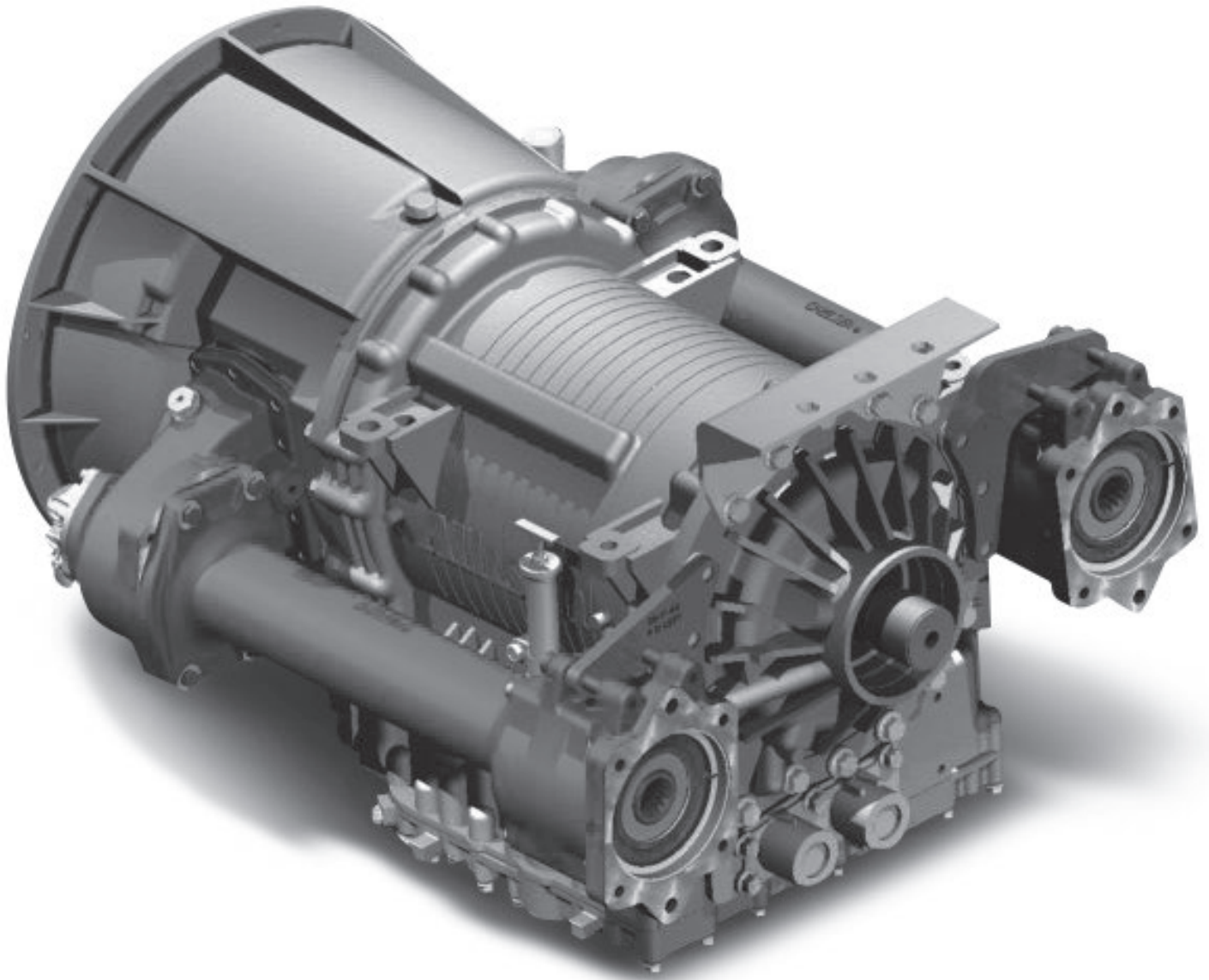


Effective: November 2018  
Supersedes: HY25-1890-M1/US May 2018



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# Power Take-Offs Owner's Manual

## 890, 892, 897, 899 Series



ENGINEERING YOUR SUCCESS.



### **WARNING — User Responsibility**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS 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 or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

### **Offer of Sale**

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:

7,159,701 7,007,565 6,962,093 1,326,036 60,321,840.7 9494227-B2

Other patents pending.

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## Foreword

This booklet will provide you with information on correct installation of Chelsea® Power Take-Offs (PTOs). Proper installation and set up procedures will help you get additional and more profitable miles from your truck equipment and components.

It is important that you be sure that you are getting the right transmission/PTO combination when you order a new truck. An inadequate transmission will overwork any PTO in a short period of time. In addition, a mismatched transmission and PTO combination can result in unsatisfactory performance of your auxiliary power system from the start.

If you have questions regarding correct PTO and transmission combination, please contact your local Chelsea® Auxiliary Power Specialist. They can help you select the properly matched components to ensure correct and efficient applications.

## Safety Information

These instructions are intended for the safety of the installer, operator & supporting personnel. 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 PTO



**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 to 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.



This symbol warns of possible personal injury.

## Safety Information (Continued)

### Cold Weather Operation of PowerShift PTO

 **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.

### 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 PTO 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 PTO 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 PTO** Always install the safety information decals according to the instructions provided. Place the owner's manual in the vehicle glove compartment.

 This symbol warns of possible personal injury.

**Safety Information (Continued)**

**! WARNING: Operating the PTO with the Vehicle in Motion**

Some Power Take-Offs may be operated when the vehicle is in motion. To do so, the PTO 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 PTO specifications and capabilities, avoid operating the PTO when the vehicle is in motion. Improper application and/or operation can cause serious personal injury or premature failure of the vehicle, the driven equipment, and/or the PTO.

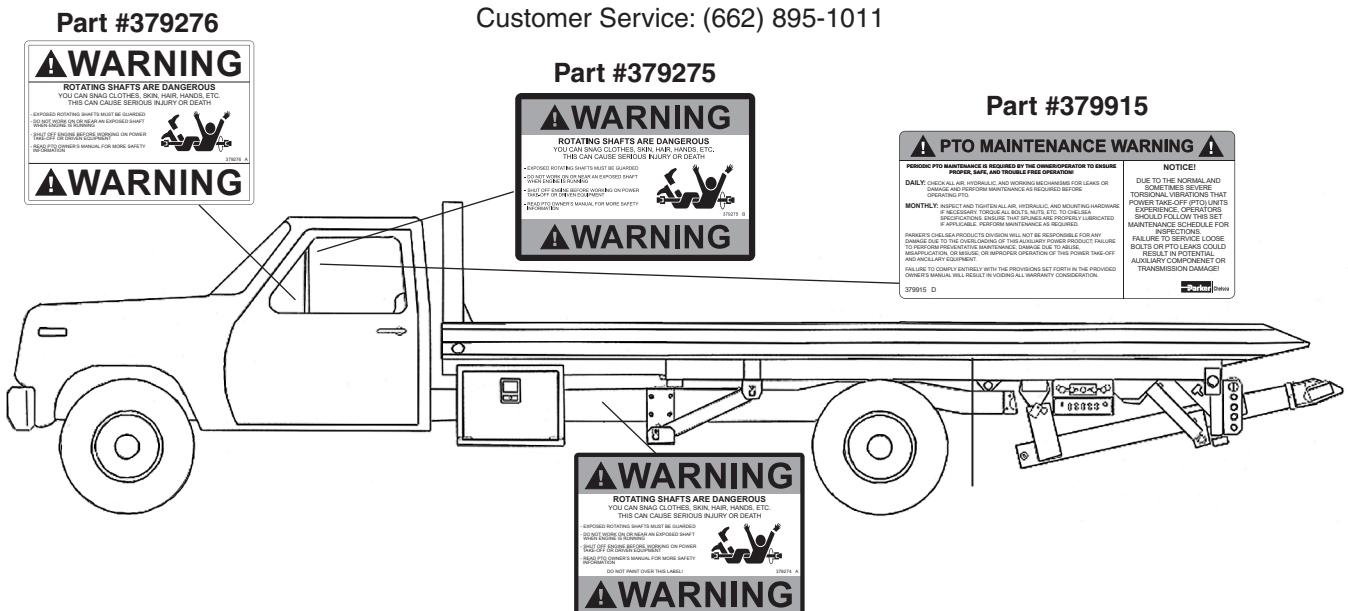
Always remember to disengage the PTO when the driven equipment is not in operation.

**Chelsea PTO 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 PTO 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 PTO visor label.
3. Place the one (1) red and white with black lettering 3.5" x 7" pressure sensitive vinyl label, part number 379915, on the opposite side of the visor from the above label part number 379275.
4. Place the one (1) white and black heavy duty card, part number 379276, in the vehicle glove box 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.

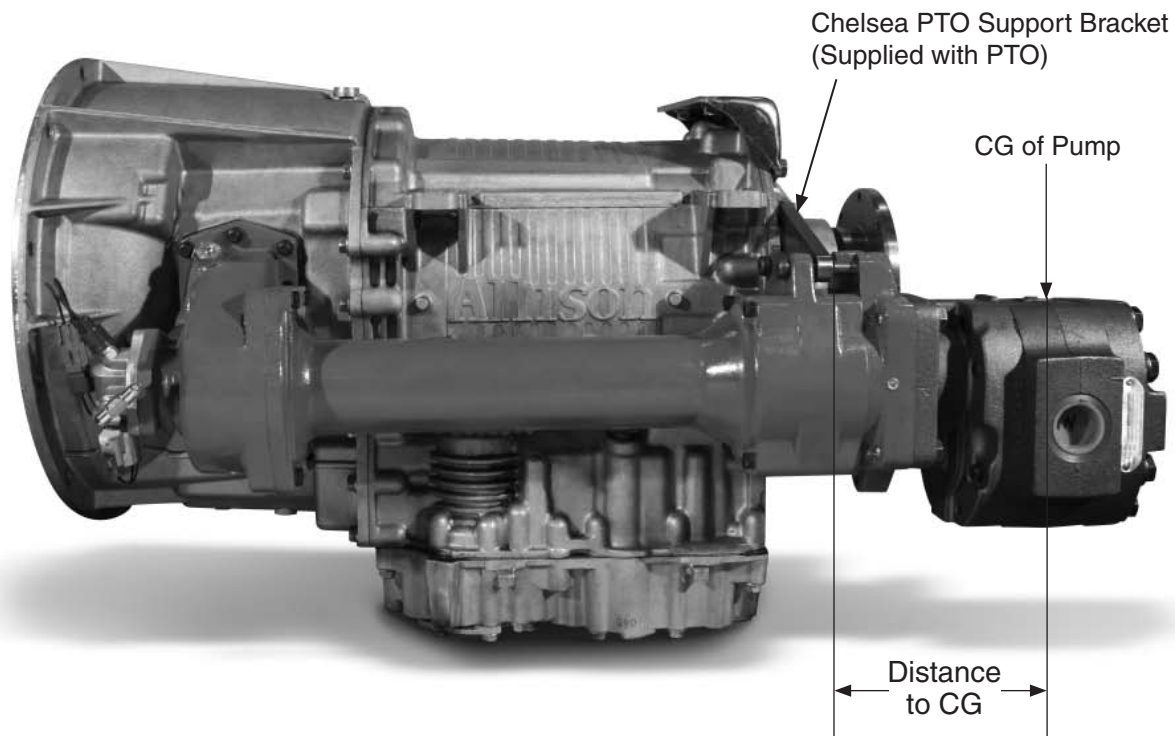
If you require labels, please order part number 328946X at no charge from your local Chelsea Warehouse or send request direct to:

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



**! This symbol warns of possible personal injury.**

## Direct Mount Pump Requirements



**⚠ Use caution to ensure that if additional pump support is required, the supplemental bracket does not pre-load the pump/PTO mounting.**

PTO warranty will be void if a pump bracket is not used when:

1. Equivalent Bending Moment (EBM) from the pump exceeds 180 lbs-ft (2160 lbs-in).
2. Pump weight exceeds 120 lbs, unless approved by Chelsea Engineering.
3. A center of gravity that exceeds 24" and 2160 lbs-in.

$(\text{Pump Weight [lbs]} \times \text{Distance of CG of pump to PTO Bracket Face}) = < 2160 \text{ lbs-in}$

Example 1:  $60 \text{ lbs} \times 18" = 1080 \text{ lbs-in}$  (no supplemental bracket required)

Example 2:  $120 \text{ lbs} \times 17.9" = 2148 \text{ lbs-in}$  (no supplemental bracket required)

Example 3:  $90 \text{ lbs} \times 25" = 2250 \text{ lbs-in}$  (supplemental bracket required)

CG = Center of Gravity

Supplemental bracket is to be provided and designed by the customer/installer.

## Function of Auxiliary Power Shafts

An auxiliary power shaft transmits torque from the power source to the driven accessory. The shaft must be capable of transmitting the maximum torque and RPM required of the accessory, plus any shock loads that develop.

An auxiliary power shaft operates through constantly relative angles between the power source and the driven accessory. Therefore, the length of the auxiliary power shaft must be capable of changing while transmitting torque. This length change, commonly called "slip movement", is caused by movement of the powertrain due to torque reactions and chassis deflections.

Joint operating angles are very important in an auxiliary power shaft application. In many cases, the longevity of a joint is dependent on the operating angles. (See chart below)

This information is limited to 1000 through 1310 Series applications. For applications requiring a series larger than 1310, contact your local Chelsea distributor.

## Determining Shaft Type

### 1) Solid or tubular?

- a) In applications requiring more than 1000 RPM or where the application necessitates a highly balanced auxiliary power shaft, a tubular shaft should be used.
- b) Spicer's solid shafting auxiliary power joints are designed for 1000 or less RPM intermittent service such as:
  - Driving small hydraulic pumps
  - Driving winches
  - Driving low speed product pumps

### 2) Joint Series should be determined using the chart on the following page.

<b>SPICER® UNIVERSAL JOINT OPERATING ANGLES</b>			
<b>Prop. Shaft RPM</b>	<b>Max. Normal Operating Angle</b>	<b>Prop. Shaft RPM</b>	<b>Max. Normal Operating Angle</b>
3000	5° 50'	1500	11° 30'
2500	7° 00'	1000	11° 30'
2000	8° 40'	500	11° 30'

Above based on angular acceleration of 100 RAD/SEC<sup>2</sup>

**Spicer® Universal Joint Engineering Data**

Joint Series	1000	1100	1280	1310
<b>Torque Rating</b>				
Automotive (Gas or Diesel Engine) lbs-ft Continuous	50	54	95	130
<b>Tubing</b>				
Diameter	1.750"	1.250"	2.500"	3.00"
Wall Thickness	.065"	.095"	.083"	.083"
W = Welded S = Seamless	W	S	W	W
<b>Flange Diameter (Swing Diameter)</b>				
Rectangular Type	3.500"	3.500"	3.875"	3.875"
<b>Bolt Holes - Flange Yoke</b>				
Circle	2.750"	2.750"	3.125"	3.125"
Diameter	.312"	.312"	.375"	.375"
Number	4	4	4	4
Male Pilot Dia.	2.250"	2.250"	2.375"	2.375"
<b>Distance Across Lugs</b>				
Snap Ring	2.188"	2.656"	3.469"	3.469"
Construction	2.188"	2.656"	3.469"	3.469"
<b>Bearing Diameter</b>	.938"	.938"	1.062"	1.062"

<b>Maximum Operating Speed * By Tube Size, Solid Shaft Size, and Length</b> *(For speed below 500 RPM or over 2500 RPM, contact your Chelsea Distributor)					
Tubing Dia. & Wall Thickness Joint & Shaft (W=Welded S=Seamless)	Max. Installed Length in Inches for Given RPM Centerline to Centerline of Joints for a Two Joint Assembly  or Centerline of Joint to Centerline of Center Bearing for a Joint & Shaft RPM - Revolutions per Minute				
	500	1000	1500	2000	2500
1.750" x .065" W	117"	82"	67"	58"	52"
1.250" x .095" S	91"	64"	52"	45"	40"
2.500" x .083" W	122"	87"	70"	62"	55"
3.000" x .083" W	-	-	-	85"	76"
Solid Shaft Diameter					
.750"	60"	42"	35"	30"	27"
.812"	62"	44"	36"	31"	28"
.875"	65"	46"	37"	32"	29"
1.000"	69"	49"	40"	35"	31"
1.250"	77"	55"	45"	39"	35"

## 890 Family Overview

The 890 family of Power Take-Offs (PTO) all install in the same manner to the transmission. The main difference will be the mounting plate that is used to attach the PTO output section to the rear of the transmission case. Refer to the chart below for PTO Series and Mounting Codes for information on your PTO

Always refer to the proper Chelsea applications page for proper Transmission/PTO model numbers. Or contact Chelsea Customer Service at 1-866-816-7950

APP PAGE	TRANSMISSION MODELS	STD	INTEGRAL COOLER	RETARDER	MOUNTING LOCATIONS		
					Left	Right	Top
<b>3000 Series</b>							
ALL-13	Side/Side Openings	X			890/897L 5	890/897R 5 890/897Y 5	
ALL-13C	Side/Side Openings		X		890/897N 3	890/897R 5	
ALL-13R	Side/Side Openings			X	890/897M 5		
ALL-16	Side/Top Openings	X			890/897E 5		890/897T 5
ALL-16C	Side/Top Openings		X		N/A		890/897T 5
ALL-16R	Side/Top Openings			X	890/897F 5		

<b>3000/3500 Series</b>							
ALL-16EV	EVS Side/Top Openings	X			890/897E 5		890/897T 5

<b>3700 Series</b>							
ALL-18		X			NO 890 APPLICATIONS AVAILABLE		

<b>4000 Series</b>							
ALL-14	Side/Side Openings	X			890/897H 5		890/897U 5
ALL-14C	Side/Side Openings		X		890/897C 3		890/897U 5
ALL-14R	Side/Side Openings			X	890/897J 3 890/897P 5		890/897K 5

<b>4700/4800 Series</b>							
ALL-19	Side/Top Openings	X			892/899H 5		892/899U 5
ALL-19C	Side/Top Openings		X		892/899C 3		892/899U 5
ALL-19R	Side/Top Openings			X	892/899J 3 892/899P 5		892/899K 5



## PTO Pre Installation

1. At installation, the input housing is installed to the transmission first. The 890/897 comes from the factory assembled. Remove the 4 bolts that connect the tube section to the input housing (**Fig. 1**).

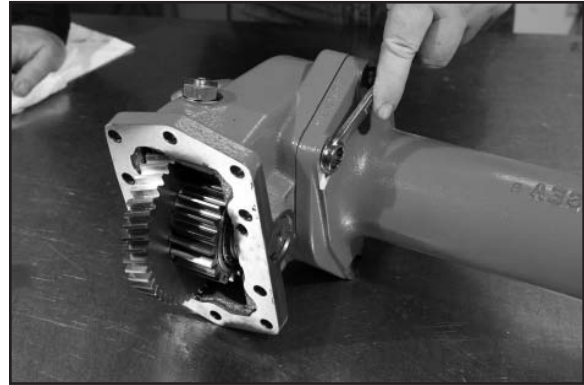


Fig. 1

2. Split the input from the output tube assembly. It will be tight because of the installed O-Ring seal. O-Ring must be installed into the O-Ring groove on the tube pilot shoulder (**Fig. 2**).



Fig. 2

**NOTE:** If O-Ring is damaged, replace it with the one supplied with the PTO Unit.

3. Install the fitting (1) into the pressure port on the valve cap as shown **Fig. 3**. Torque to 156-180 lbs-in [18-20 Nm]. Next install the pressure switch (890 Series Only) (2) into the port in the valve cap as shown and torque to 120-140 lbs-in [14-16 Nm] (**Fig. 3, 3a, & 3b**).

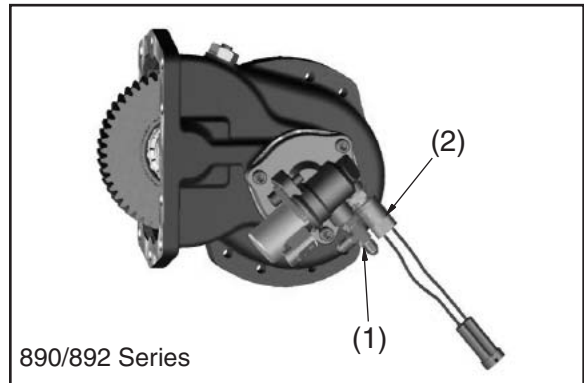


Fig. 3

**NOTE:** See Hose Installation Sketch SK-504 (890/892 Series) on [page 20](#) or SK492/SK-599 (897/899 Series) on [page 21](#).

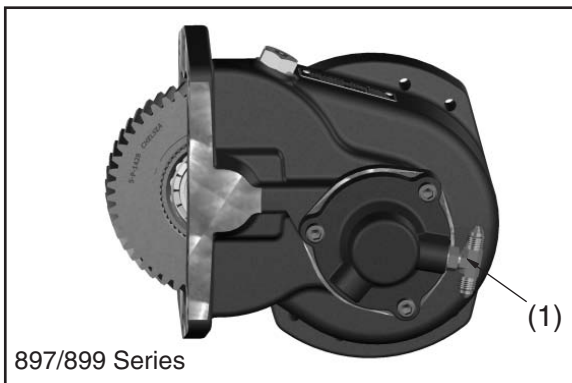


Fig. 3a Prior to 02/19/2016

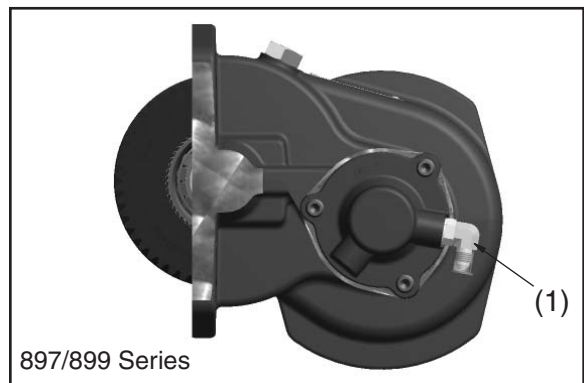


Fig. 3b After 02/22/16



## PTO Pre Installation (Continued)

When installing a PTO, always wear protective clothing and safety glasses.

- The suitable (by transmission model) **Mounting Bracket** is attached to the PTO output end using the **Shoulder Cap Screws 380071**. Torque to 30-35 lbs-ft [41-47 Nm] (**Fig. 4 & 4a**). For proper bracket and hose part numbers, see charts on [page 14](#).

**CAUTION:** After installation and torque, there may be space under the shoulder bolt heads. This is by design. **DO NOT** add washers under the shoulder bolt heads.

**NOTE:** When installing an 890 Family PTO with the DA output on a 3000 Series transmission. Install the bolts in the bracket prior to installing the bracket to the PTO (**Fig. 4b**).

**NOTE:** Lightly lube the cap screw shaft to help with installation.

## PTO Installation

- Begin by draining the oil from the transmission. Use caution, since the oil may be hot (**Fig. 5**).

- Remove the PTO aperture plate with a 15mm socket (**Fig. 6**).



Fig.4



Fig. 4a



Fig. 4b

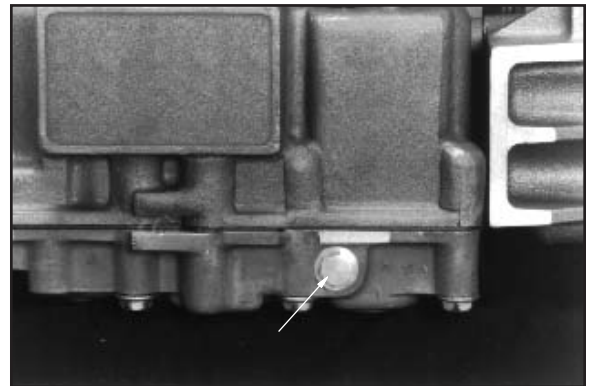


Fig. 5

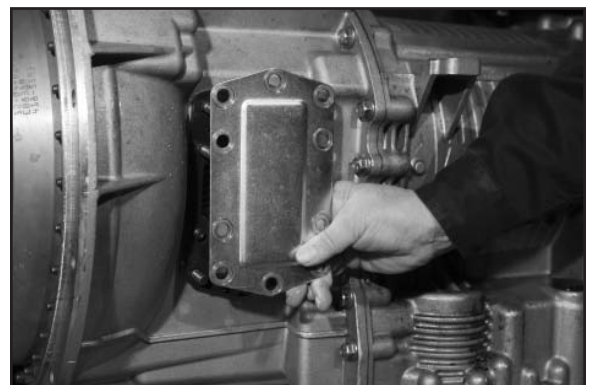


Fig. 6

### PTO Installation (Continued)

7. Remove the gasket and clean the aperture surface (**Fig. 7**).

**NOTE:** Do not reuse the gasket that comes with the transmission.

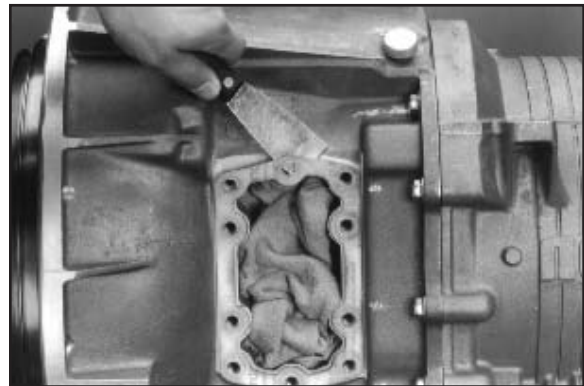


Fig. 7

8. Using a screwdriver, install the dowel pins until they bottom out (**Fig. 8**) (Refer to [page 13](#) for correct location and use).

**NOTE:** Do not use sealing compounds because they are generally incompatible with automatic transmission fluid.

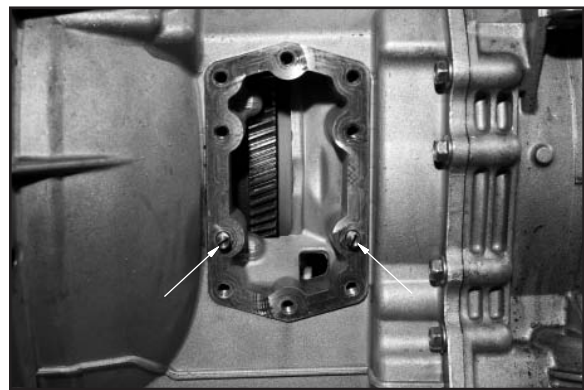


Fig. 8

9. Install the special gasket over the guide pins. The ribbed surface should face outward, toward the installer (**Fig. 9**).

**NOTE:** To ensure proper backlash and sealing of PTO to transmission, only use the gasket furnished with the PTO.

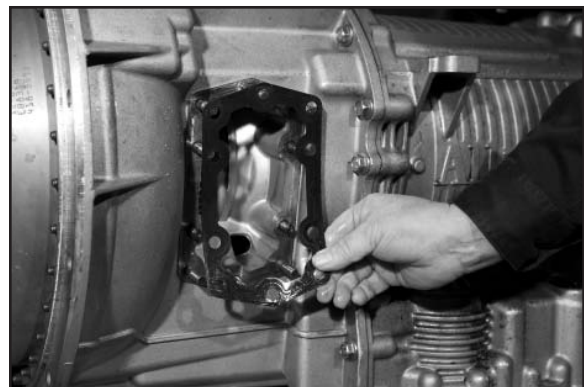


Fig. 9

10. Install the remaining capscrews. Torque all to 40-50 lbs-ft (54-68 Nm or 5.5-6.9 Kg.m) (**Fig. 10**).



Fig. 10

### PTO Installation (Continued)

- Securely attach the high pressure line to the PTO valve fitting (1), torque to 11-12 lbs-ft [15-16 Nm] (**Fig. 11**, **11a**, & **11b**).

**NOTE:** See SK-504 (890/892 Series) on [page 20](#) or SK492/SK-599 (897/899 Series) on [page 21](#) for complete plumbing installation of the transmission pressure hose and the wet spline hose.

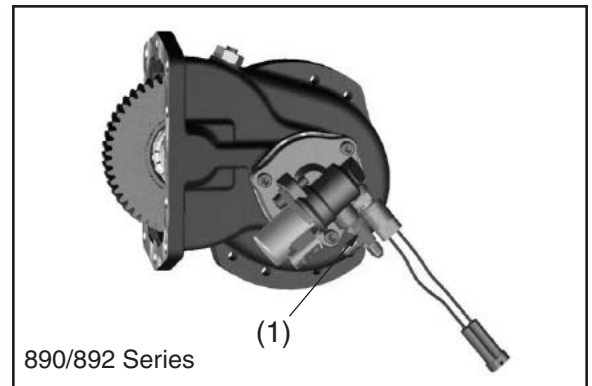


Fig. 11

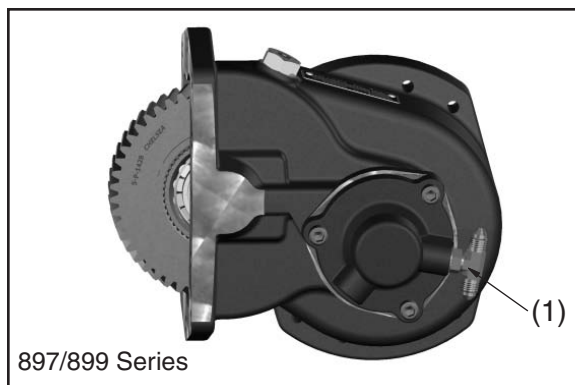


Fig. 11a Prior to 02/19/16

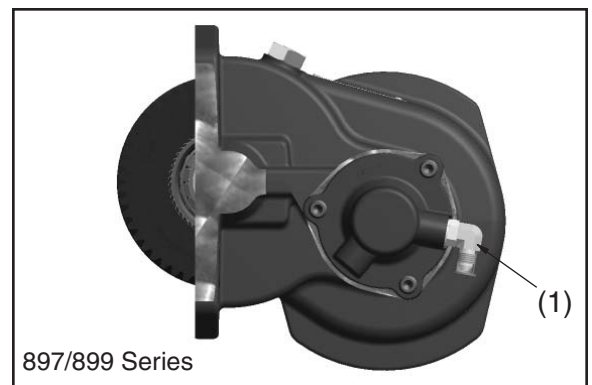


Fig. 11b After 02/22/16

- Install elbow fitting supplied with PTO into transmission main pressure port and torque nut to 13-15 lbs-ft or 156-180 lbs-in. See chart on [page 13](#) for pressure port locations.
  - Securely attach the high pressure line to the elbow fitting at the transmission high pressure port and torque to 11-12 lbs-ft [15-16 Nm]. This fitting is included with the PTO (**Fig. 12**).

**NOTE:** See SK-504 (890/892 Series) on [page 20](#) or SK492/SK-599 (897/899 Series) on [page 21](#) for complete plumbing installation of the transmission hose and the wet spline hose.

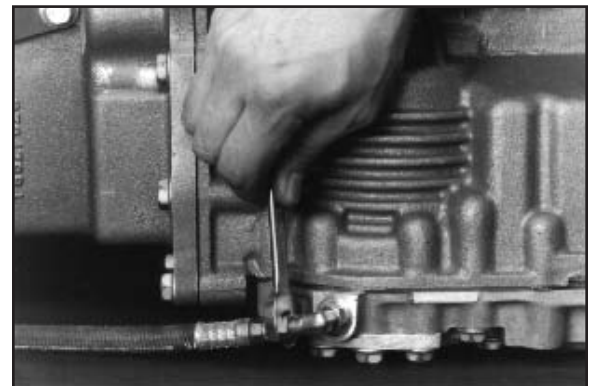


Fig. 12

- The 3 bolts on the transmission that will line up with the bracket must be removed. New longer Bolts (380075 M12-1.75" x 55mm) will be used for mounting the bracket to the transmission for all transmissions except 3000 Series w/ Retarders. For 3000 Series w/ Retarder use bolt 380364 (M12-1.75" x 140mm) (**Fig. 13 & 13a**).

**NOTE:** See Bracket Installation Chart on [page 14](#).

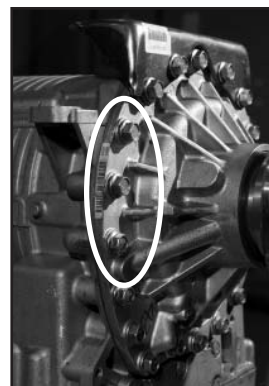


Fig. 13



Fig. 13a



## PTO Installation (Continued)

14. The tube assembly is lined up and inserted into the Input Housing. As this is done, the bolts for the bracket should be started into the rear of the transmission (**Fig. 14**).
15. As soon as at least 1 bolt is started, the tube assembly cannot fall. The unit can be aligned and slipped together with the transmission taking the weight (**Fig. 15**).

**NOTE:** When attaching the tube to the input housing use 4 NEW cap screws supplied with the PTO.

16. Install the 4 Hex Head Cap Screws (378431-13, 3/8"-16 x 1.375") and flat washers 380076-07 to make the final attachment between the input housing and the tube assembly. Torque the Cap Screws to 30-35 lbs-ft [41-47 Nm] (**Fig. 16**).
17. The 3 longer bolts in the transmission should be torqued as follows:  
3000 Family - 66-81 lbs-ft [90-110 Nm]  
4000 Family - 74-89 lbs-ft [100-120 Nm] (**Fig. 17**).
18. To complete installation of the PTO, see SK drawings on [pages 17-19](#) for wiring and plumbing installation.
19. See SK-493 [page 16](#) for installation of XV, AB, or AC Outputs.
20. When installing pumps use O-Ring supplied with PTO between pump and PTO output. Torque pump bolts to proper torque specifications. Refer to [page 4](#) of this manual for proper pump bracket support requirements.

**NOTE:** Do not use a gasket with O-Ring.

As with all auxiliary power systems, there are different concerns and needs with varying applications, duty cycles, and driven equipment. Chelsea endeavors to provide options that will ensure trouble free use of our products and system solutions.

For customers that would like an extra level of protection from pump seal leaks, there are double sealed pumps available from Parker to satisfy your needs. Please verify your requirements with your Parker/Chelsea PTO and Pump experts.



**WARNING:** Do not run PTO w/ wet spline output option if pump is not installed and connected to hydraulic system. Failure to do so may damage PTO and/or Transmission. See [page 15](#) for output cover plate options.

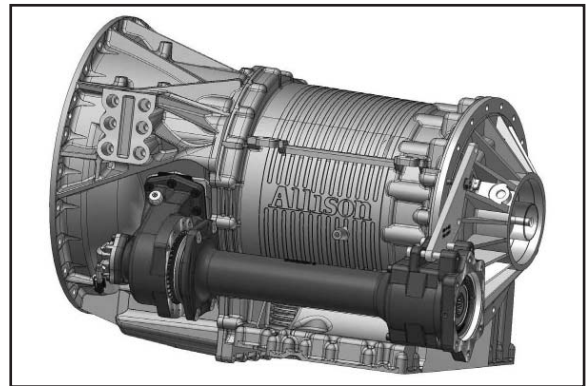


Fig. 14



Fig. 15

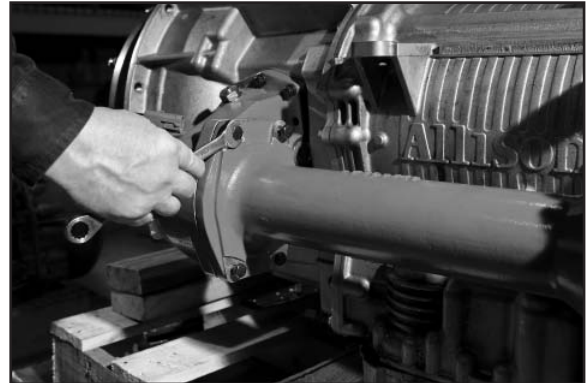


Fig. 16

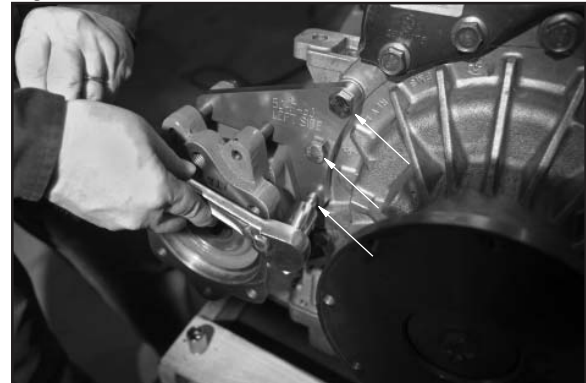
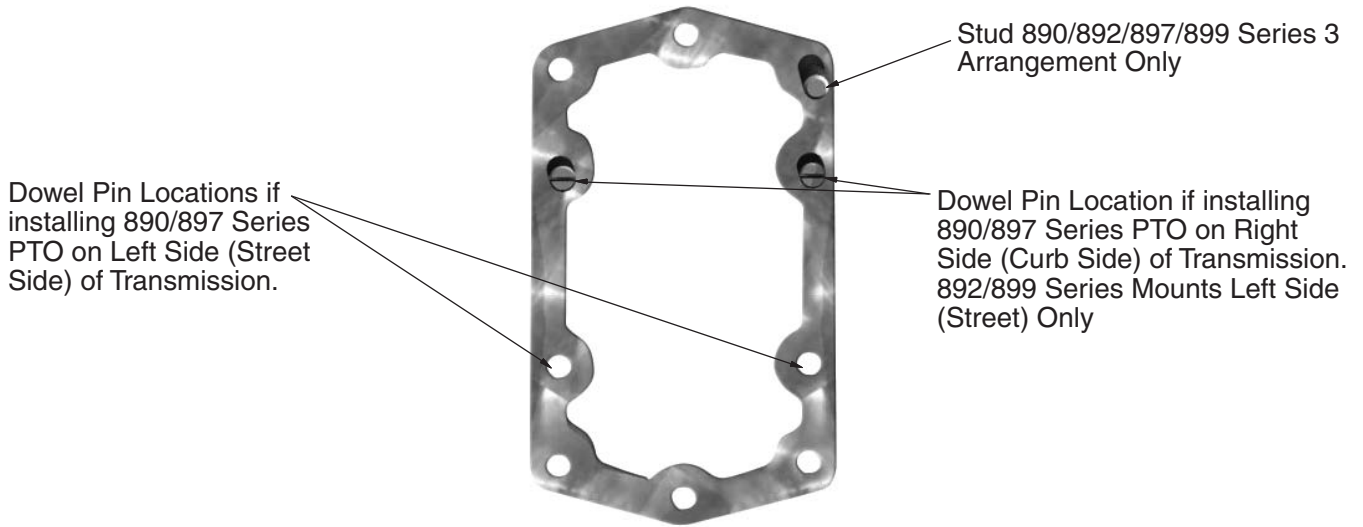


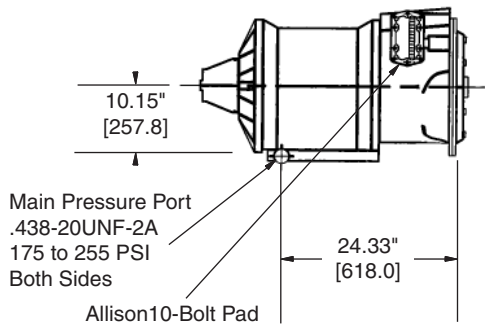
Fig. 17

**Installation Mounting Kit Instructions**

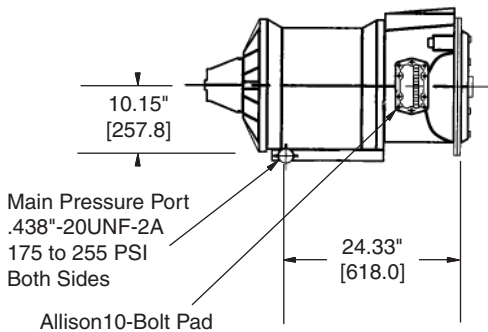
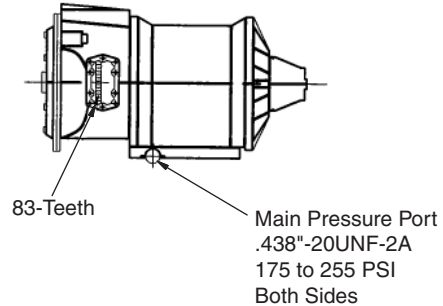


**Pressure Port and Aperture Opening Identification**

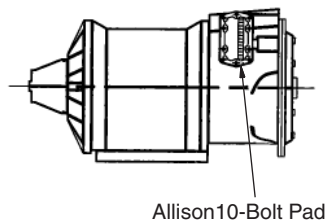
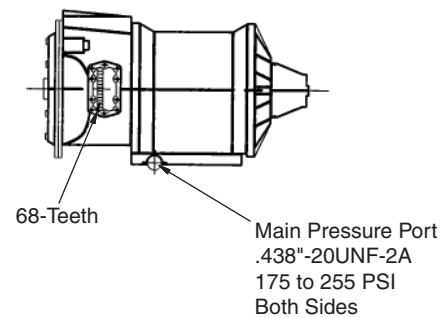
These drawings represent left and right views of the MD and HD pressure ports on the transmission.



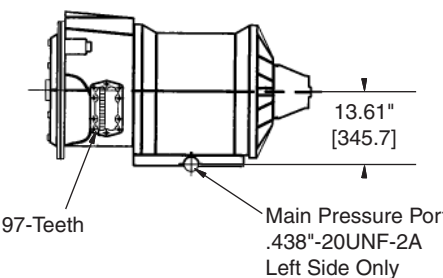
**MD**  
Top/Left



**MD**  
Right/Left



**HD**  
Top/Left



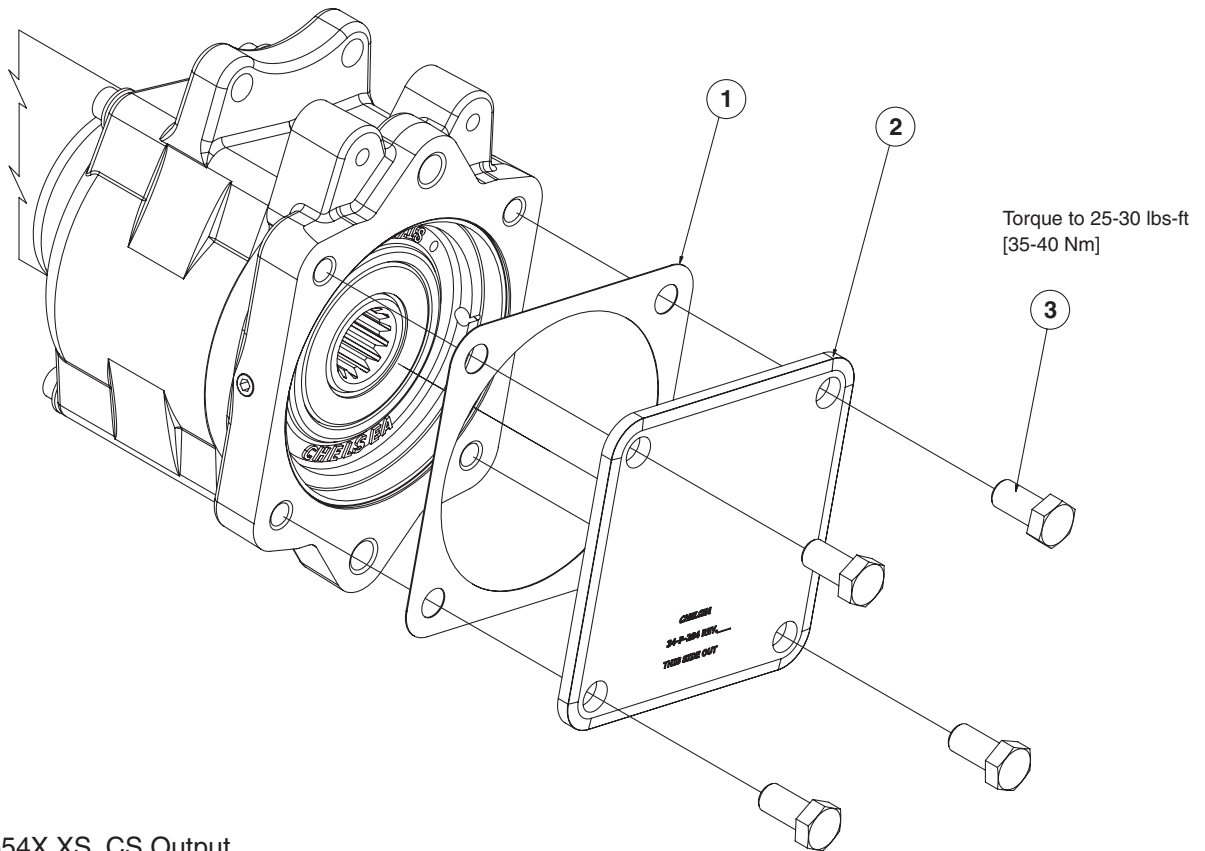
**Bracket & Hose Installation Chart**

PTO SERIES	PTO ARR	TRANS MODEL	LOC	BRACKET & HOSE KIT				
				Kit Number	Bracket	Trans to PTO Hose	Shoulder Bolts (Qty.)	Trans Bracket Bolts (Qty.)
890/897L	5	MD (3000 Series)	L	329897-1X	50-P-60	329130-5X	380071 (2)	380075 (3)
890/897R	5	MD (3000 Series)	R	329897-2X	50-P-61	329130-11X	380071 (2)	380075 (3)
890/897M	5	MD (3000 Series)	L	329897-12X	50-P-128	329130-5X	380071 (2)	380075 (3)
890/897N	3	MD (3000 Series)	R	329897-13X	50-P-120	329130-11X	380071 (2)	380075 (3)
890/897H	5	HD (4000 Series)	L	329897-3X	50-P-62	329130-4X	380071 (2)	380075 (3)
890/897U	5	HD (4000 Series)	T	329897-6X	50-P-73	329075-2X	380071 (2)	380075 (3)
890/897C	3	HD w/COOLER	L	329897-7X	50-P-74	329130-4X	380071 (2)	380075 (3)
890/897J	3	HD w/RETARDER	L	329897-10X	50-P-126	329130-4X	380071 (2)	380075 (3)
890/897K	5	HD w/RETARDER	T	329897-11X	50-P-127	329075-2X	380071 (2)	380075 (3)
890/897E	5	MD SIDE/TOP	L	329897-4X	50-P-72	329130-5X	380071 (2)	380075 (3)
890/897T	5	MD SIDE/TOP	T	329897-5X	50-P-67	329075-2X	380071 (2)	380075 (3)
890/897F	5	MD SIDE/TOP	L	329897-14X	50-P-129	329130-5X	380071 (2)	380075 (3)
892/899H	5	HD 4700/4800	L	329897-3X	50-P-62	329130-4X	380071 (2)	380075 (3)
892/899U	5	HD 4700/4800	T	329897-6X	50-P-73	329075-2X	380071 (2)	380075 (3)
892/899C	3	HD 4700/4800 w/COOLER	L	329897-7X	50-P-74	329130-4X	380071 (2)	380075 (3)
892/899J	3	HD 4700/4800 w/RETARDER	L	329897-10X	50-P-126	329130-4X	380071 (2)	380075 (3)
892/899P	5	HD 4700/4800 w/RETARDER	L	329897-19X	50-P-130	329130-4X	380071 (2)	380075 (3)
892/899K	5	HD 4700/4800 w/RETARDER	T	329897-11X	50-P-127	329075-2X	380071 (2)	380075 (3)

L = Left  
R = Right  
T = Top

PTO SERIES	WET SPLINE HOSE KIT			
	Kit Number	Elbow	Orifice	Hose
890	329899-1X	500841	379964	329130-11X
892	329899-2X	500841	379964	329075-2X

**Wet Spline Output Cover Plates**

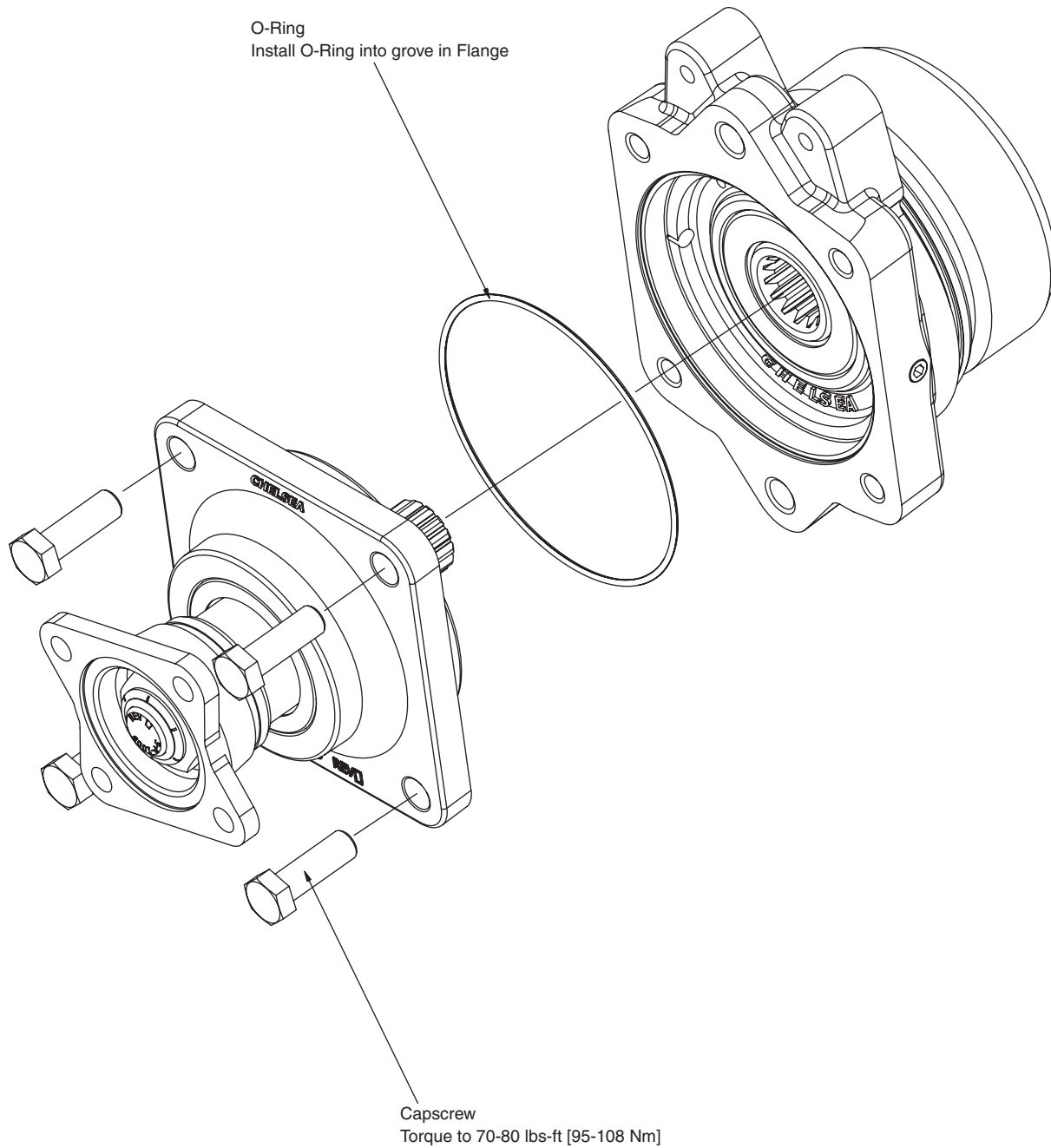


**KITS:** 329654X XS, CS Output  
 329658X XK, AF, AZ, CK, CF, CZ Output  
 329659X XY, CY Output  
 329722X DA Output

Item	Part Number	Description	Qty.
1	22-P-25-2	Gasket XS, CS Output.....	1 or
	35-P-104	Gasket XK, AF, AZ, CK, CF, CZ Output.....	1 or
	379943	Gasket XY, CY Output.....	1 or
	22-P-114	Gasket DA Output.....	1
2	34-P-284	Cover XS, CS.....	1 or
	34-P-285	Cover XK, AF, AZ CK, CF, CZ.....	1 or
	379940	Cover XY, CY.....	1 or
	34-P-309	Cover DA Output.....	1
3	378433-10	Capscrew XS, CS.....	4 or
	378433-10	Capscrew XK, AF, AZ, CK, CF, CZ.....	4 or
	379579-4	Capscrew XY, CY.....	4 or
	500403-7	Hex Capscrew DA.....	4

Outputs XV, AB, AC  
890/897 & 892/899 Series

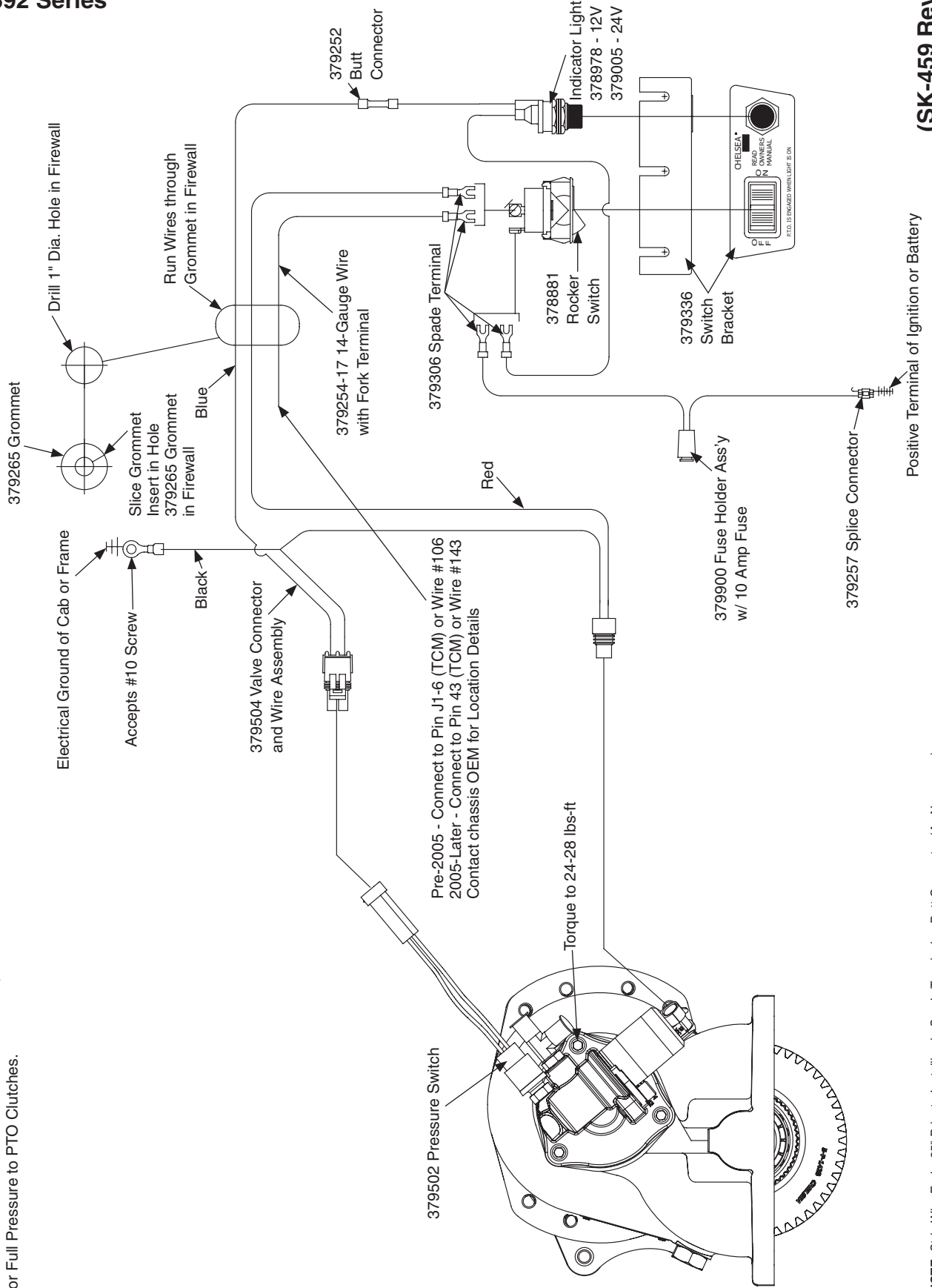
(SK-493)





**Elec/Hyd Shift Option B (12V) & D (24V) – w/o EOC  
 890/892 Series**

Reference Kit - 329024-12X for 12V Installation.  
 Reference Kit - 329024-24X for 24V Installation.  
 Connection to Transmission Controller is Required  
 for Full Pressure to PTO Clutches.

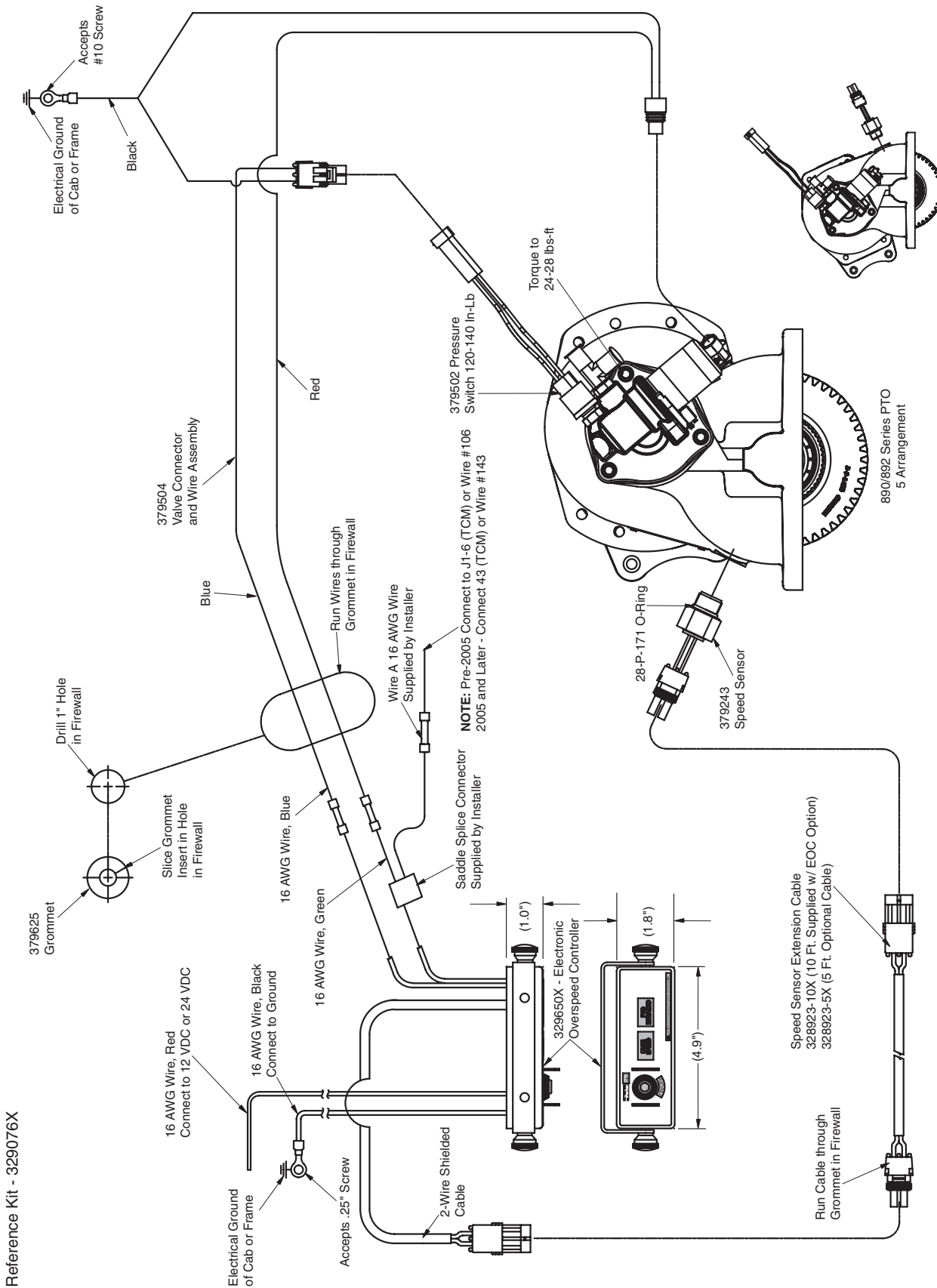


**(SK-459 Rev B)**

NOTE: Strip Wire Ends .25" Prior to Installing in Spade Terminal or Butt Connector (As Necessary)

**Elec/Hyd Shift Option K (12V) & L (24V) – w/ EOC**  
**890/892 Series**

**(SK-475 Rev B)**



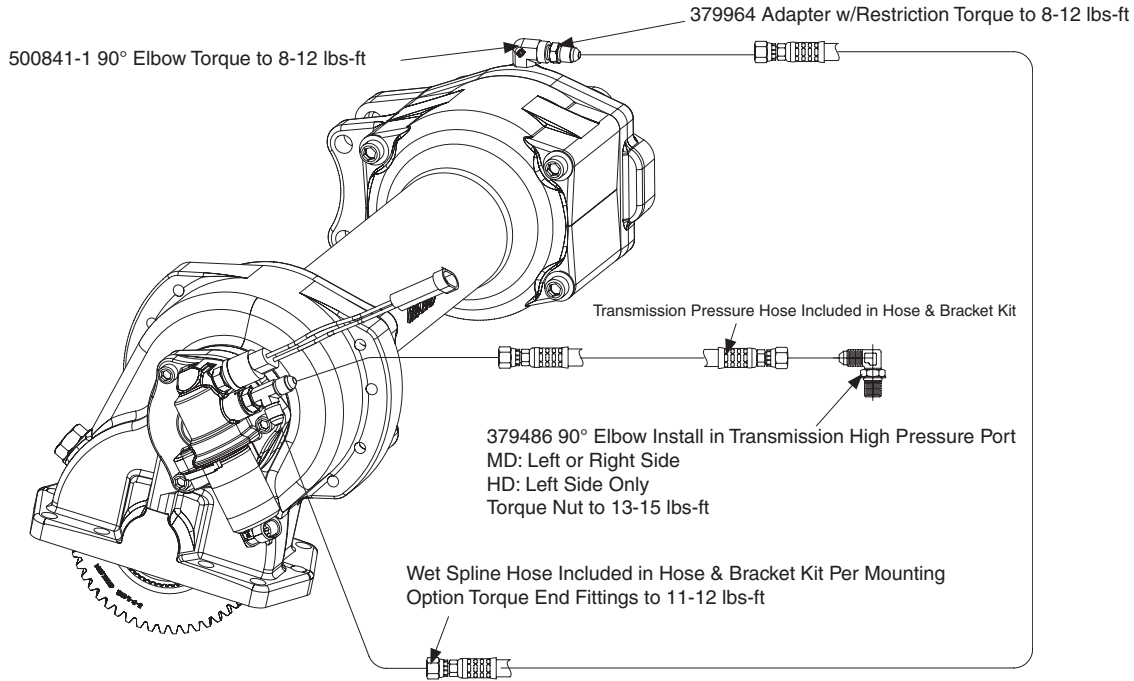
**NOTE:** Strip Wire Ends .25" Prior to Installing in Spade Terminal or Butt Connector (As Necessary)



Shift/Lube Hose Installation  
890/892 Series

(SK-504 Rev A)

**!** **WARNING:** Restriction Fitting Required to Prevent  
Damage to PTO, Transmission and Hydraulic Pump



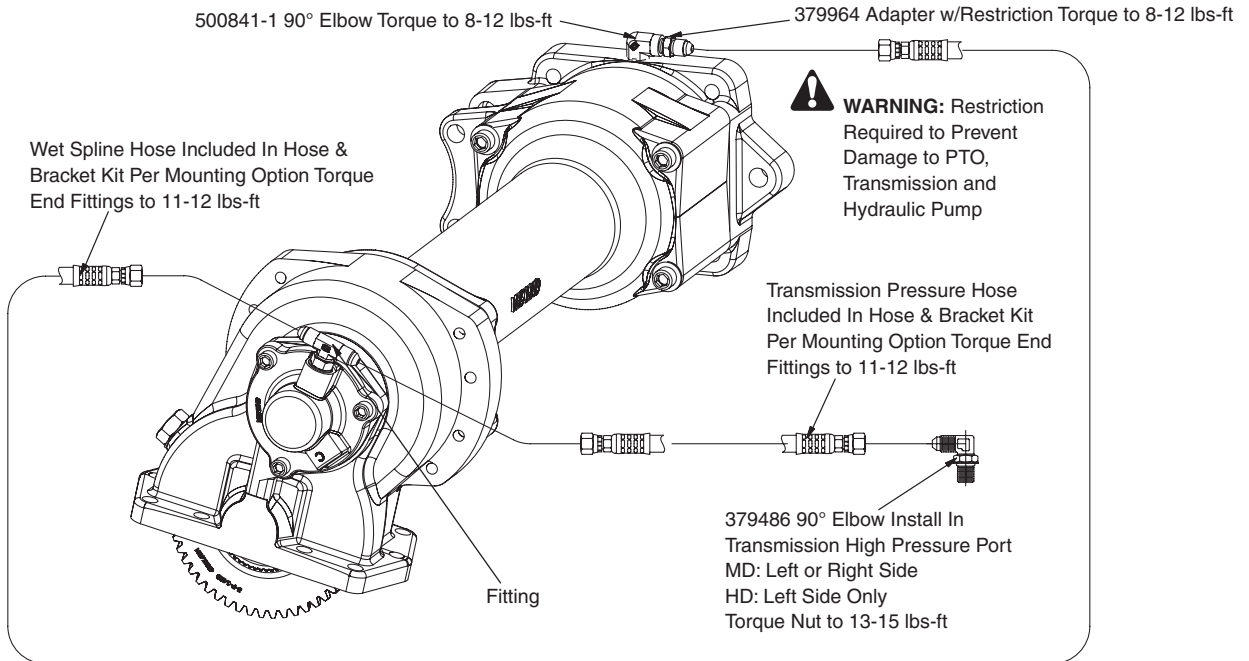
NOTE: See [page 14](#) for Hose Chart

**!** This symbol warns of possible personal injury.

Lube Hose Installation  
897/899 Series

(SK-492 Rev C)

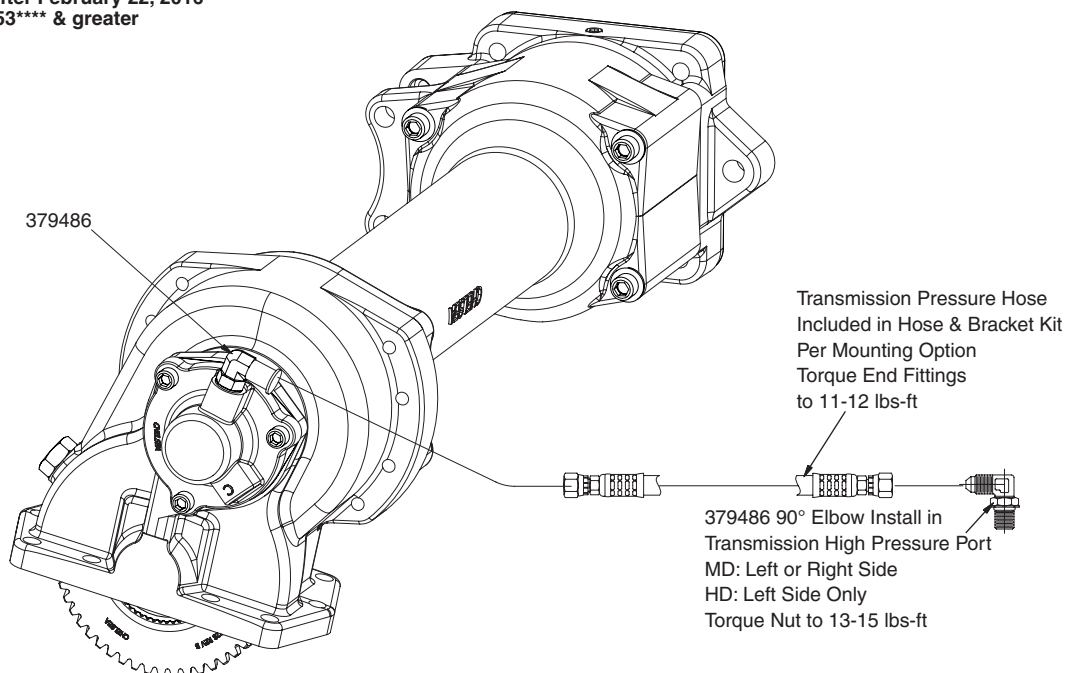
Units built on or prior to February 19, 2016  
Serial Number 6050\*\*\*\* & less than



Lube Hose Installation  
897/899 Series

(SK-599)

Units built on or after February 22, 2016  
Serial Number 6053\*\*\*\* & greater



**!** This symbol warns of possible personal injury.

**PTO Shifting Procedure & Precautions**

**CAUTION:** This vehicle is equipped with a Power Take-Off. Shut engine off before working on the Power Take-Off or getting below the vehicle. Consult the operating instructions before using the PTO. (See sun visor.)

**POWER TAKE-OFF OPERATION — VEHICLE STATIONARY****Automatic Transmission with PowerShift PTOs**

Engage the PTO with the engine at idle speed.

**NOTE:** PowerShift PTOs: The engine must be at idle or below 1000 RPM when the PTO is engaged. See the transmission manufacturer's instructions for special procedures.

**IMPORTANT:**

**Failure to follow the proper shifting or operating sequences will result in premature PTO failure with possible damage to other equipment.**

**Warning:** Cold Weather Operation of PowerShift PTOs

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 quickly decreases.

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.
- Driven equipment must be left in the disengaged position when not in operation.
- Driven equipment must not be operated until the vehicle is allowed to warm up.

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 PTO 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 PTO 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. Ensure that splines are properly lubricated, if applicable. Perform maintenance as required.

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









Parker Hannifin Corporation – Chelsea Division  
**Offer of Sale**

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors ("Seller") are hereby offered for sale at prices to be established by Seller. 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 item described in its document, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer. All goods, services or work described will be referred to as "Products".

**1. Terms and Conditions.** Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is subject to these Terms and Conditions or any newer version of the terms and conditions found on-line at [www.parker.com/saleterms/](http://www.parker.com/saleterms/). Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document issued by Buyer.

**2. Price Adjustments; Payments.** Prices stated on Seller's quote or other documentation offered by Seller are valid for 30 days, and do not include any sales, use, or other taxes unless specifically stated. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and is due 30 days from the date of invoice or such other term as required by Seller's Credit Department, after which Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.

**3. Delivery Dates; Title and Risk; Shipment.** All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon placement of the products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyer's request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

**4. Warranty.** Seller warrants that all products sold, other than the 590 Series, conform to the applicable Parker Chelsea standard specification for the lesser period of 2 years (24 Months) from date of service or 2-1/2 years (30 Months) from date of build (as marked on the product name plate). Seller warrants that the 590 Series will conform to the applicable Seller standard specification for the lesser period of 2 years (24 Months) from date of service or 2000 hours of usage. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

**5. Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 30 days after delivery. Buyer shall notify Seller of any alleged breach of warranty within 30 days after the date the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for an amount due on any invoice) must be commenced within 12 months from the date of the breach without regard to the date breach is discovered.

**6. LIMITATION OF LIABILITY. UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

**7. User Responsibility.** The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

**8. Loss to 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, will be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer ordering the items 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. Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. 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 Products, 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.

**10. Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

**11. Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

**12. Cancellations and Changes.** Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

**13. Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

**14. Force Majeure.** Seller does not assume the risk 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, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

**15. Waiver and Severability.** Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

**16. Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) dissolves or liquidates all or a majority of its assets.

**17. Governing Law.** This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

**18. 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 Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("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 a Product sold pursuant to this Agreement 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 a Product 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 the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product 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 Products 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 Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

**19. Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

**20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act.** Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

07/14

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**JP – Japan,** Fujisawa

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**KR – South Korea,** Seoul

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**SG – Singapore**

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**TW – Taiwan,** New Taipei City

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