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Electronic Overspeed Control Owner's Manual

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.



WARNING: This product can expose you to chemicals including Lead and Lead Compounds, 1,3-Butadiene, Carbon black (airborne, unbound particles of respirable size), or Di(2-ethylhexyl)phthalate (DEHP) which are known to the State of California to cause cancer, and Lead and Lead Compounds, 1,3-Butadiene, Toluene, or Di(2-ethylhexyl) phthalate (DEHP) which are known to the state of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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 11,149,796 B2
Other patents pending.

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Foreword

What It Is

The Chelsea Electronic Overspeed Control (EOC) is an electronic controller that prevents the Power Take-Off and driven equipment from being operated at excessive speeds. This is done by automatically disengaging the Power Take-Off whenever a pre-set overspeed RPM is exceeded.

The EOC also prevents the PTO from being engaged or re-engaged if the engine RPM is too high.

How It Works

The Chelsea Electronic Overspeed Control (EOC) energizes the solenoid valve that engages the clutch in the Power Take-Off. The control also measures the speed of the Power Take-Off and electronically compares it to the pre-set overspeed RPM setting. As long as the operating speed is less than the high limit, the Power Take-Off will operate in a normal manner.

If the operating speed exceeds the selected high limit, the control will automatically de-energize the solenoid valve and the Power Take-Off clutch will disengage. The clutch will remain disengaged until the speed has been reduced to the pre-set low limit.

Likewise the EOC prevents the PTO from being engaged when the engine speed is too high. If the engine speed exceeds the selected low limit, then the PTO will not engage or re-engage.

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



WARNING: Before selecting or using this product, it is important that you read and follow the product warnings and instructions in the Owner's Manual.



This symbol warns of possible personal injury.

Safety Information (Continued)

General Safety Information (Continued)



WARNING: ailure or improper use of the Parker Chelsea Electronic Overspeed Control, Power Take-Offs (PTOs) or related accessories can cause death, personal injury and property damage. Possible consequences of failure or improper use of these products include but are not limited to the following:

- Operators, bystanders or equipment being crushed, impacted or caused to fall due to the sudden, inadvertent, unintended, uncontrolled or unexpected movement, stopping or starting of devices such as lifts, hoists, blowers, augers or pumps which are driven by a PTO. This can occur when the PTO is improperly or unexpectedly engaged or disengaged.
- Rotating shaft injuries resulting from skin, hands, clothing, hair or the like getting caught in the rotating shaft connected to a PTO or the rotating portion of the equipment driven by the PTO.



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



WARNING: When the Parker Chelsea Electronic Overspeed Control is set up in Auto Re-engagement Mode, the PTO will automatically engage when the engine RPM reaches the lower preset point thus causing the driven equipment to become operable. The vehicle or equipment operator must therefore make certain that other persons and property are not in a position to be crushed, impacted, caused to fall or otherwise injured when re-engagement occurs.



WARNING: Original equipment manufacturers incorporating the Parker Chelsea Electronic Overspeed Control into their equipment must undertake a Failure Mode and Effect Analysis (FMEA) to identify potential hazards created by the Automatic Re-engagement Mode. They must then incorporate fail safe designs into their equipment to protect operators, other persons and property from injury associated with unexpected disengagement or re-engagement of the PTO.



This symbol warns of possible personal injury.

The Control

Under the Dash:

Select a convenient location where the indicator lights will be visible and the ON-OFF button is accessible to the operator. Mark two mounting hole locations, using the control panel mounting bracket as a template.

CAUTION: Do not drill into wires or a vital part on the opposite side of the dashboard – check before drilling.

Then, drill two holes and temporarily mount the control to the dashboard, using the 1/4" screws, lock-washers and nuts provided.

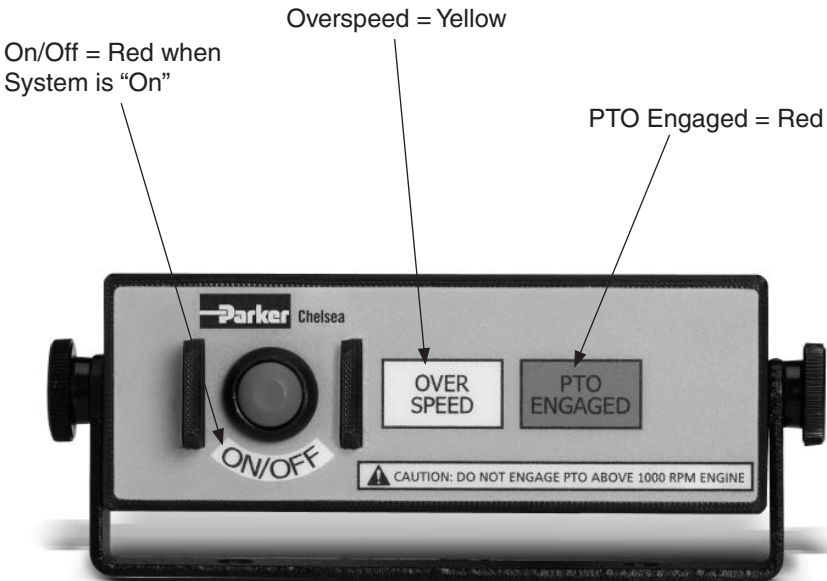
On the Engine Housing:

Tilt cabs may require the control to be mounted on the engine housing, with the mounting bracket and screws provided. Mark two mounting hole locations, using the mounting bracket as a template.

CAUTION: Do not drill into wires or a vital part on the opposite side of the engine housing – check before drilling.

Then drill two holes and temporarily mount the control and mounting bracket to the engine housing.

NOTE: Adjustments will be required at the bottom of the control.
(See pages 7-11)



The Solenoid Valve

Select a convenient location, near the Power Take-Off to allow the use of shorter hoses, but away from moving parts and the hot exhaust pipe. Mark the mounting hole locations, using the solenoid valve mounting bracket as a template.

CAUTION: Do not drill into wires or a vital part on the opposite side of the mounting surface – check before drilling.

Attach the solenoid valve to the mounting bracket using the screws provided and mount them to the vehicle.

The Pressure Switch

Install the pressure switch, the screen adapter and the three hoses, as shown in the SK drawing for your Power Take-Off.

The Speed Pick-up

In case the speed pick-up was not installed at the factory, remove and discard the plug in the Power Take-Off case over the input gear. Install the speed pick-up and tighten it with a crows foot adapter and a torque wrench to approximately 24 ft-lbs torque. Proceed with the electrical hook-up of the control system, as shown in the SK drawing for your Power Take-Off.

Routing the Cables

Tilt Cabs: To permit the cab to tilt, the cables must be routed around the cab pivot point. Cab over chassis may require an additional length of cable to ensure the cable is not too tight.

Cable part number:
328923-10X (10' cable) (Included)
328923-5X (5' cable)

Conventional Cabs: Holes in the firewall are usually provided for the speedometer cable or wiring harnesses and the control cables can usually be routed through them.

Through-Hole: If an existing through-hole cannot be used, drill a 1" diameter hole and install the split rubber grommet provided, after all the wires have been installed.

CAUTION: Do not drill into wires or a vital part on the opposite side – check before drilling.

Wiring the Control Unit

Input Power: Connect the red wire to a source of power that is “switched” or hot only when the key is in the ON position, using the instant connector provided. This unit can be wired to 12V or 24V DC supply (Minimum 5 amp).



WARNING: EOC box is supplied with a 3 amp fuse. DO NOT REPLACE FUSE with a higher amperage fuse. This may cause failure of the EOC electronics and void warranty.

Input Ground: Use a test light or multimeter to locate a chassis ground. Connect the black wire to the good ground connection as it is important to proper operation. Do not ground to fiberglass or plastic panels.

Wiring the Solenoid Valve

Ground: Crimp the ring connector provided to one of the red ground leads and make a good ground connection, preferably on the truck frame.

Power: Connect the other red lead to the green wire with the butt connector provided. Route this green wire to the control unit and connect it to the green wire.

Wiring the Pressure Switch

Ground: Using the black wire provided in the kit, connect one end onto either terminal of the pressure switch (379547). Connect the other end of the black wire to a confirmed chassis ground. Using the blue wire provided in the kit, attach the ring connector onto the other terminal of the pressure switch. Route the wire to the control unit and crimp it to the blue wire with the butt connector provided.

Wiring the Speed Pick-up

Selecting the Cable: A ten foot long cable is provided in the kit, which should be adequate for most installations. Additional five or ten foot long cables are available and can be connected end-to-end if necessary. Any extra length should be coiled up and tucked away under the dash. The cables are specially shielded and must not be cut or spliced.

Routing & Protecting the Cables: Bundle together the speed pick-up cable, the pressure switch wire, and the solenoid wire. Route the wires away from moving parts, hot pipes, sharp edges, and up out of the way.

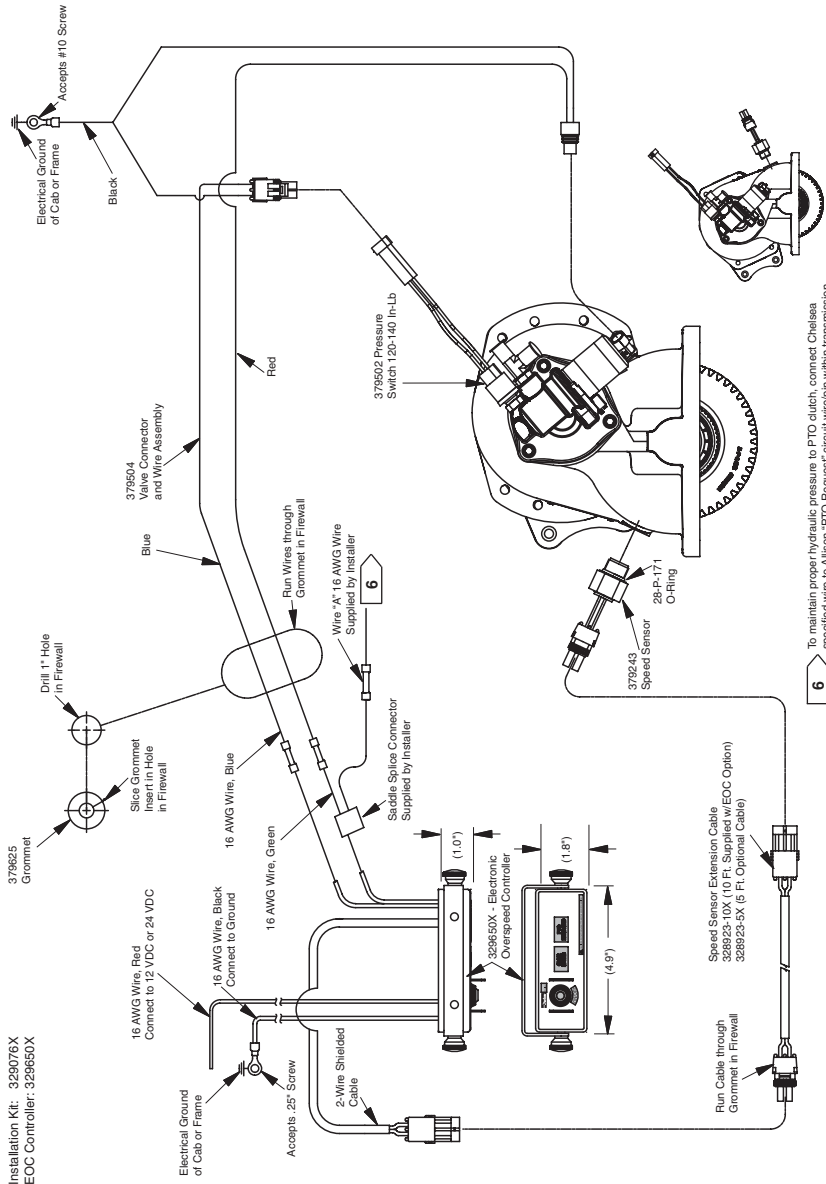


This symbol warns of possible personal injury.

Electronic Overspeed Control (EOC)

These are general wiring instructions for reference. Detailed EOC wiring diagrams are available in each PTO series Owner's Manual. Downloadable copies of Owner's Manuals can be found at parker.com/chelsea.

(SK-475 Rev B)



Control Adjustment Instructions

Selecting the Overspeed RPM:

This is usually based on safety, noise control or fuel economy considerations. The high limit set point should be set no greater than the maximum speed allowed by the manufacturer of the driven equipment, and the engine, BUT IN NO CASE GREATER THAN 3000 RPM.

Selecting the Reset RPM:

The control is set to provide a reset, after an overspeed disengagement. The automatic reset, or "Low Limit", should be set above the engine fast idle speed, BUT NO GREATER THAN 1000 RPM.

Safety Precautions and Preparations:

The control settings are to be made with the engine running – provide adequate ventilation and exhaust elimination or make the adjustments outdoors. Put the vehicle transmission in neutral, set the vehicle brakes and chock the wheels.

Disengage the driven equipment.

Connect a tachometer to the engine, if there is not one in the vehicle.

Setting Procedure - Enabling the Speed Signal Detection Feature

NOTE: The unit is preset from the factory with this feature disabled.

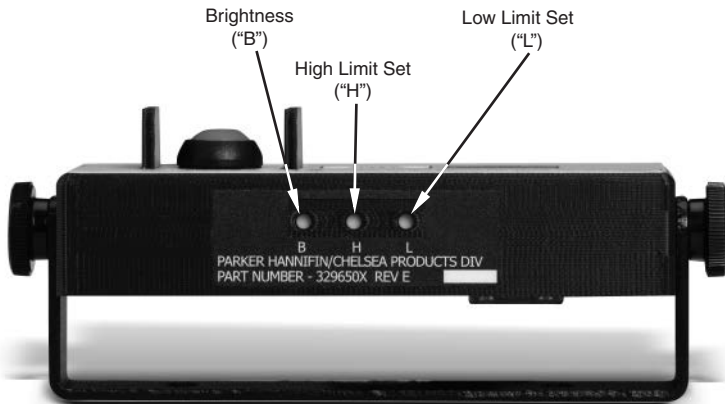
There are transmission applications such as Allison 3000/4000 Series, as well as the Ford Super Duty, that have a continuous "Live Drive" PTO gear in the transmission. This means that when the transmission is in "Drive", the PTO is being driven whether the vehicle is moving or at a stop.

It is recommended for these transmission applications that the Speed Signal Detection Feature be enabled. This will inform the operator should there be an interruption of the speed signal from the PTO to the Electronic Overspeed Controller.

Control Adjustment Instructions (Continued)

To Enable the Speed Signal Detection Feature

1. Turn on the vehicle ignition but do not engaged the PTO. The white backlight around the On/Off button will be illuminated.
2. Depress the “B” and “L” buttons simultaneously to enable the unit to detect/display an error due to the lack of a speed signal from the speed sensor. Both the red and yellow LEDs flash (4) times to acknowledge the speed signal detection is enabled.



NOTE: If there is a lack of a speed signal in this mode, the PTO will be disengaged and the white backlight around the On/Off button will flash continuously. Depress the On/Off button to reset the unit to Off.

3. Depress the “B” and “L” buttons simultaneously again to disable the unit from detecting a lack of a signal from the speed sensor. In this mode the unit does not detect/display any faults due to the lack of a speed signal from the speed sensor. The system remains in an operable mode as long as 12 or 24 VDC remains supplied to the unit. The unit will flash the red and yellow LED's (5) times to acknowledge the speed signal detection is disabled.

Control Adjustment Instructions (Continued)

Description of Re-Engagement Modes

1. Manual Engagement Mode - In this mode the user must manually depress the On/Off button to re-engage the PTO after an overspeed condition.

NOTE: The unit is preset from the factory in this mode

2. Auto Engagement Mode - In this mode the unit automatically re-engages the PTO after an overspeed condition and the lower set point has been reached.



WARNING: When the Parker Chelsea Electronic Overspeed Controller is set up in Auto Re-engagement Mode, the PTO will automatically engage when the engine RPM reaches the lower preset point thus causing the driven equipment to become operable. The vehicle or equipment operator must therefore make certain that other persons and property are not in a position to be crushed, impacted, caused to fall or otherwise injured when re-engagement occurs.

Setting Procedure - Re-Engagement Modes

1. Turn Off the unit to set the re-engage modes.
2. By depressing the Brightness ("B") and High Limit Set ("H") buttons simultaneously the unit's mode of re-engagement is changed from "Manual Engagement Mode" to "Auto Engagement Mode". Both the red and yellow LEDs flash once to notify the installer the unit is in "Auto Engagement Mode". In "Auto Engagement Mode" the PTO re-engages automatically once the engine's RPM reach the lower set point.
3. Depressing the "B" and "H" buttons simultaneously again switches the unit from "Automatic Engagement Mode" back to "Manual Engagement Mode". Both the red and yellow LEDs flash twice to notify the installer the unit is in "Manual Engagement Mode".



This symbol warns of possible personal injury.

Control Adjustment Instructions (Continued)

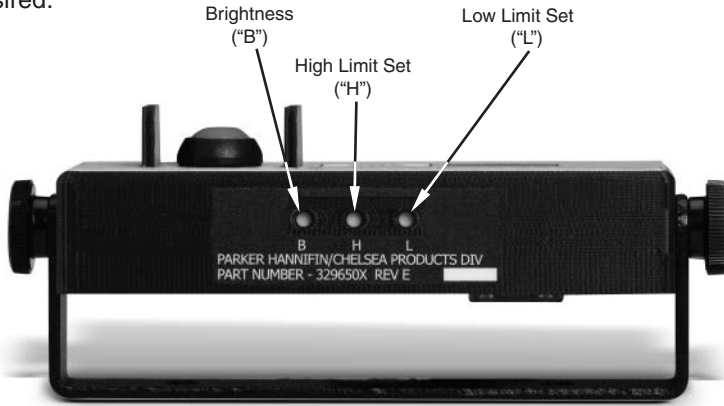
Setting Procedure - Speed Limits

1. Start the engine and allow it to idle. The "On/Off" will be illuminated white to indicate the unit is turned Off. The PTO should be disengaged.
2. Turn the system On by depressing the "On/Off" button. You must hold the button down momentarily for the unit to turn On. When turned On, the "On/Off" will turn from white to red, the PTO will engage and the red "PTO Engaged" will illuminate.
3. Ramp up the vehicle's RPM to the RPM the user desires the PTO to automatically disengage. Depress the "H" (High Limit) button on the bottom of the unit using a small tool or pencil point. The yellow "Over Speed" will illuminate, the PTO will disengage, the red "PTO Engaged" will turn off.
4. Slowly let the vehicle's RPM fall to the lower RPM setting where the user desires the PTO to be able to be re-engaged. Depress the "L" (Low Limit) button on the bottom of the unit using a small tool or pencil point. The yellow "Overspeed" will turn off and the "On/Off" button will be red and flashing. Further lower the RPM slightly. The "On/Off" button flashing red indicates that the unit is ready to re-engage the PTO.
5. Depress the flashing "On/Off" button to re-engage the PTO. The PTO will engage and the red "PTO Engaged" will illuminate.
6. If the unit is in the "AUTOMATIC Engagement Mode" the PTO will be engaged automatically when the "Low Limit" RPM is reached.
7. These settings are permanently held in memory until they are changed or the user resets the unit to the "Default" mode.

Control Adjustment Instructions (Continued)

To Cancel Speed Limits

1. To reset the unit to the "Factory Default" mode the EOC must be turned Off. Depress both the "L" and "H" buttons simultaneously. All LEDs will flash 3 times to acknowledge the unit has been reset to the default mode. In the "Factory Default" mode, only the "On/Off" button is active and the over-speed feature is inactive. The unit may be used in this mode if desired.



Setting the LED Brightness

1. The LED brightness can be adjusted to (4) different intensities. Locate the "B" button on the bottom of the unit.
2. Continuously depress the "B" button until the desired brightness is obtained.

Final Installation of the Control:

After the overspeed and the reset set points are correctly set, complete the installation of the control, under the dash or on the engine housing, utilizing the supplied bracket and hardware. Be sure the EOC unit is located within easy reach of the operator and is clearly visible.

Before Starting the Engine

With the vehicle turned OFF, all lights in the EOC unit should be OFF.

Engaging the Power Take-Off

1. When the vehicle ignition is on and the EOC unit is Off, the "On/Off" is illuminated white.
2. To turn On the EOC unit, depress the "On/Off" button. You must hold down the button momentarily for the unit to activate. This helps prevent unintentional PTO engagement. Upon activation the "On/Off" will turn from white to red.
3. When the PTO engages, the pressure switch will close and the red "PTO Engaged" will illuminate.
4. Should the operating RPM reach the overspeed set point, the yellow "Overspeed" will illuminate, the PTO will disengage and the red "PTO Engaged" will turn off due to the lack of a signal from the PTO pressure switch.
5. To re-engage the PTO lower the vehicle RPM to less than the lower set point.
 - a. When the lower RPM set point is reached, the yellow "Overspeed" will turn off and the red backlight on the "On/Off" will begin to flash if in the "MANUAL Engagement Mode". Depress the "On/Off" button momentarily to re-engage the PTO.
 - b. Once depressed, the flashing red "On/Off" returns to solid red, the PTO re-engages and the red "PTO Engaged" will illuminate due to the signal from the PTO pressure switch.
 - c. If the unit is in the "Auto Engagement Mode" then the PTO re-engages automatically when the lower RPM threshold is reached.
 - d. Once the PTO is re-engaged, the "On/Off" red backlight stops flashing, the PTO solenoid is re-energized and the red "PTO Engaged" LED should illuminate due to the signal from the PTO pressure switch.



WARNING: When the Parker Chelsea Electronic Overspeed Controller is set up in Auto Re-engagement Mode, the PTO will automatically engage when the engine RPM reaches the lower preset point thus causing the driven equipment to become operable. The vehicle or equipment operator must therefore make certain that other persons and property are not in a position to be crushed, impacted, caused to fall or otherwise injured when re-engagement occurs.



This symbol warns of possible personal injury.

Engaging the Power Take-Off (Continued)

6. Should the user try to turn On the PTO while the RPM is above the lower set point, the yellow "Overspeed" will illuminate, the "On/Off" will turn from white to flashing red but the PTO will not engage.
7. Reduce the RPM till it is below the lower set point, the yellow "Over Speed" will turn off and the "On/Off" will continue to flash. Depress the "On/Off" (momentarily) to engage the PTO.

Adjusting the Throttle Opening

The Chelsea Electronic Overspeed Control is not a governor, and changing load conditions will make it necessary to make corresponding changes in the throttle opening to maintain a uniform rate of working, without lugging or overspeeding the equipment.

| Problem | Possible Causes | Remedy |
|--|---|--|
| PTO will not engage | Blown fuse in back of unit | Replace fuse with 3 amp automotive stab fuse. |
| | Poor ground connections | Check all ground connections. Connect securely to chassis. |
| | PTO Solenoid valve | Check wiring to solenoid valve Replace solenoid valve. |
| | EOC control | Check wiring to EOC |
| PTO will not engage but red light comes on | Shorted pressure switch | Check wiring to Pressure switch. |
| | Defective PTO | Check for solenoid malfunction. |
| PTO engages, but red light doesn't come on | Defective red LED | Replace EOC unit. |
| | Open pressure switch | Check wiring to pressure switch. Check that ground is secure to chassis. |
| | Poor ground connection on pressure switch | Check that ground is secure to chassis. |
| White LED's around ON/OFF button flash | No Speed Signal present | Check speed sensor on PTO |
| | | Check wiring harness and connectors between controller and speed sensor. |

NOTE: Unit should be checked periodically to make sure speed sensor is operating. Speed sensor is checked by going to overspeed condition. If yellow light does NOT come on in overspeed condition, speed sensor may not be operating or the EOC unit may be in Default Mode. See "Setting Procedure". This could also indicate that control box is not operating either. Wiring harness should also be checked for breaks or disconnections.

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.

With regards to the direct mounted pump splines, the PTO 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 PTO 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 PTO 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 PTO, and the second is a 14-ounce grease cartridge (379831). Chelsea also offers greaseable shafts for select 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

1. Definitions. As used herein, the following terms have the meanings indicated.

Buyer: means any customer receiving a Quote for Products.

Buyer’s Property: means any tools, patterns, plans, drawings, designs, specifications materials, equipment, or information furnished by Buyer, or which are or become Buyer’s property.

Confidential Information: means any technical, commercial, or other proprietary information of Seller, including, without limitation, pricing, technical drawings or prints and/or part lists, which has been or will be disclosed, delivered, or made available, whether directly or indirectly, to Buyer.

Goods: means any tangible part, system or component to be supplied by Seller.

Intellectual Property Rights: means any patents, trademarks, copyrights, trade dress, trade secrets or similar rights.

Products: means the Goods, Services and/or Software as described in a Quote.

Quote: means the offer or proposal made by Seller to Buyer for the supply of Products.

Seller: means Parker-Hannifin Corporation, all divisions, subsidiaries and businesses selling products under these terms.

Seller’s IP: means patents, trademarks, copyrights, or other intellectual property rights relating to the Products, including without limitation, names, designs, images, drawings, models, software, templates, information, any improvements or creations or other intellectual property developed prior to or during the relationship contemplated herein.

Services: means any services to be provided by Seller.

Software: means any software related to the Goods, whether embedded or separately downloaded.

Special Tooling: means equipment acquired by Seller or otherwise owned by Seller necessary to manufacture Goods, including but not limited to tools, jigs, and fixtures.

Terms: means the terms and conditions of this Offer of Sale.

2. Terms. All sales of Products by Seller will be governed by, and are expressly conditioned upon Buyer’s assent to, these Terms. These Terms are incorporated into any Quote provided by Seller to Buyer. Buyer’s order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic

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WARNING: This product can expose you to chemicals including Lead and Lead Compounds, and Di (2-ethylhexyl) phthalate (DEHP) which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Offer of Sale (continued)

commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgement to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms or conditions of purchase. Any Quote made by Seller to Buyer shall be considered a firm and definite offer and shall not be deemed to be otherwise despite any language on the face of the Quote. Seller reserves all rights to accept or reject any purported acceptance by Buyer to Seller's Quote if such purported acceptance attempts to vary the terms of the Quote. If Seller ships Products after Buyer issues an acceptance to the Quote, any additional or different terms proposed by Buyer will not become part of the parties' business relationship unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence. If the transaction proceeds without such agreement on the part of Seller, the business relationship will be governed solely by these Terms and the specific terms in Seller's Quote.

3. Price; Payment. The Products set forth in the Quote are offered for sale at the prices indicated in the Quote. Unless otherwise specifically stated in the Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices for any reason and at any time by giving ten (10) days prior written notice. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2020). All sales are contingent upon credit approval and full payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Under any circumstances, Buyer may not withhold or suspend payment of any amounts due and payable as a deduction, set-off or recoupment of any amount, claim or dispute with Seller. Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under

applicable law. Seller reserves the right to require advance payment or provision of securities for first and subsequent deliveries if there is any doubt, in Seller's sole determination, regarding the Buyer's creditworthiness or for other business reasons. If the requested advance payment or securities are not provided to Seller's satisfaction, Seller reserves the right to suspend performance or reject the purchase order, in whole or in part, without prejudice to Seller's other rights or remedies, including the right to full compensation. Seller may revoke or shorten any payment periods previously granted in Seller's sole determination. The rights and remedies herein reserved to Seller are cumulative and in addition to any other or further rights and remedies available at law or in equity. No waiver by Seller of any breach by Buyer of any provision of these terms will constitute a waiver by Seller of any other breach of such provision.

4. Shipment; Delivery; Title and

Risk of Loss. All delivery dates are approximate, and Seller is not responsible for damages or additional costs resulting from any delay. All deliveries are subject to our ability to procure materials from our suppliers. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the carrier at Seller's facility. Unless otherwise agreed prior to shipment and for domestic delivery locations only, Seller will select and arrange, at Buyer's sole expense, the carrier and means of delivery. When Seller selects and arranges the carrier and means of delivery, freight and insurance costs for shipment to the designated delivery location will be prepaid by Seller and added as a separate line item to the invoice. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions. Buyer shall not return or repackage any Products without the prior written authorization from Seller, and

(Continued on Next Page)

Offer of Sale (continued)

any return shall be at the sole cost and expense of Buyer.

5. Warranty. The warranty for the Products is as follows:

(i) Seller warrants that all products sold 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); (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the date of completion of the Services; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end-user, from the date of the initial download.

All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **EXEMPTION CLAUSE; DISCLAIMER OF WARRANTY, CONDITIONS, REPRESENTATIONS: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY, CONDITION, AND REPRESENTATION, PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, CONDITIONS, AND REPRESENTATIONS, WHETHER STATUTORY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE RELATING TO DESIGN, NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR FAULT-TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED, UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER, THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH-RISK**

ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".

6. Claims; Commencement of Actions.

Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

7. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCTS, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING ANY LOSS OF REVENUE OR PROFITS, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.

8. Confidential Information. Buyer acknowledges and agrees that Confidential Information has been and will be received in confidence and will remain the property of Seller. Buyer further agrees that it will not use Seller's Confidential Information for any purpose other than for the benefit of Seller and shall return all such Confidential Information to Seller within thirty (30) days upon request.

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WARNING: This product can expose you to chemicals including Lead and Lead Compounds, and Di (2-ethylhexyl) phthalate (DEHP) which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Offer of Sale (continued)

9. Loss to Buyer's Property. Buyer's Property will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using Buyer's Property. Also, Seller shall not be responsible for any loss or damage to Buyer's Property while it is in Seller's possession or control.

10. Special Tooling. Seller may impose a tooling charge for any Special Tooling. Special Tooling shall be and remain Seller's property. In no event will Buyer acquire any interest in the Special Tooling, even if such Special Tooling has been specially converted or adapted for manufacture of Goods for Buyer and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property owned by Seller in its sole determination at any time.

11. Security Interest. To secure payment of all sums due from Buyer, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be 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 Seller's security interest.

12. User Responsibility. Buyer, through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and any technical information provided with the Quote or the Products, such as Seller's instructions, guides and specifications. If Seller provides options of or for Products based upon data or specifications provided by Buyer, Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and

reasonably foreseeable uses of the Products. In the event Buyer is not the end-user of the Products, Buyer will ensure such end-user complies with this paragraph.

13. Use of Products, Indemnity by Buyer. Buyer shall comply with all instructions, guides and specifications provided by Seller with the Quote or the Products. If Buyer uses or resells the Products in any way prohibited by Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Further, Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, arising out of or in connection with: (a) improper selection, design, specification, application, or any misuse of Products; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of Buyer's Property; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing, tampering with or repackaging the Products; or (e) Buyer's failure to comply with these Terms, including any legal or administrative proceedings, collection efforts, or other actions arising from or relating to such failure to comply. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

14. Cancellations and Changes. Buyer may not cancel or modify, including but not limited to movement

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Offer of Sale (continued)

of delivery dates for the Products, any order 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 and any additional expense. Seller, at any time, may change features, specifications, designs and availability of Products.

15. Assignment. Buyer may not assign its rights or obligations without the prior written consent of Seller.

16. Force Majeure. Seller is not liable for delay or failure to perform any of its obligations by reason of any events or circumstances beyond its reasonable control. Such circumstances include without limitation: accidents, labor disputes or stoppages, government acts or orders, acts of nature, pandemics, epidemics, other widespread illness, or public health emergency, cyber related disruptions, cyber-attacks, ransomware sabotage, delays or failures in delivery from carriers or suppliers, shortages of materials, sudden increases in the price of raw material or components, shutdowns or slowdowns affecting the supply of raw materials or components, or the transportation thereof, oil shortages or oil price increases, energy crisis, energy or fuel interruption, war (whether declared or not) or the serious threat of same, riots, rebellions, acts of terrorism, embargoes, fire or any reason whether similar to the foregoing or otherwise. Seller will resume performance as soon as practicable after the event of force majeure has been removed. All delivery dates affected by an event of force majeure shall be tolled for the duration of such event of force majeure and rescheduled for mutually agreed dates as soon as practicable after the event of force majeure ceases to exist. The right to allocate capacity is in

the Seller's sole discretion. An event of force majeure shall not include financial distress, insolvency, bankruptcy, or other similar conditions affecting one of the parties, affiliates and/or subcontractors. An event of force majeure in the meaning of these Terms means any circumstances beyond Seller's control that permanently or temporarily hinders performance, even where that circumstance was already foreseen. Buyer shall not be entitled to cancel any orders following its claim of an event of force majeure.

17. Waiver and Severability. Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice either party's right to enforce that provision in the future. Invalidation of any provision of these Terms shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

18. Duration. Unless otherwise stated in the Quote, any agreement governed by or arising from these Terms shall: (a) be for an initial duration of one (1) year; and (b) shall automatically renew for successive one-year terms unless terminated by Buyer with at least 180-days written notice to Seller or if Seller terminates the agreement pursuant to Section 19 of these Terms

19. Termination. Seller may, without liability to Buyer, terminate any agreement governed by or arising from these Terms for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms, (b) becomes or is deemed insolvent, (c) appoints or has appointed a trustee, receiver or custodian for all or any part of Buyer's property, (d) files a petition for relief in bankruptcy on its own behalf, or one is filed against Buyer by a third party, (e) makes an

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Offer of Sale (continued)

assignment for the benefit of creditors; or (f) dissolves its business or liquidates all or a majority of its assets

20. Ownership of Rights. Buyer agrees that (a) Seller (and/or its affiliates) owns or is the valid licensee of Seller's IP and (b) the furnishing of information, related documents or other materials by Seller to Buyer does not grant or transfer any ownership interest or license in or to Seller's IP to Buyer, unless expressly agreed in writing. Without limiting the foregoing, Seller retains ownership of all Software supplied to Buyer. In no event shall Buyer obtain any greater right in and to the Software than a right in a license limited to the use thereof and subject to compliance with any other terms provided with the Software. Buyer further agrees that it will not, directly or through intermediaries, reverse engineer, decompile, or disassemble any Software (including firmware) comprising or contained within a Product, except and only to the extent that such activity may be expressly permitted, either by applicable law or, in the case of open source software, the applicable open source license.

21. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any Intellectual Property Rights except as provided in this Section. 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 a third-party claim that one or more of the Products infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by Seller to Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all

negotiations for settlement or compromise. If one or more Products is subject to such a claim, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer (including Seller's use of Buyer's Property); or (ii) directed to any Products for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for claims of infringement of Intellectual Property Rights.

22. Governing Law. These Terms, the terms of any Quote, and the sale and delivery of all Products are 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 the sale and delivery of the Products.

23. Entire Agreement. These Terms, along with the terms set forth in the Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale and purchase. In the event of a conflict between any term set forth in the Quote and these Terms, the terms set forth in the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect.

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Offer of Sale (continued)

No modification to these Terms will be binding on Seller unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence, 'clickwrap' or other purported electronic assent to different or additional terms. Sections 2-25 of these Terms shall survive termination or cancellation of any agreement governed by or arising from these Terms.

24. No 'Wrap' Agreements/No Authority to Bind. Seller's clicking any buttons or any similar action, such as clicking "I Agree" or "Confirm," to utilize Buyer's software or webpage for the placement of orders, is NOT an agreement to Buyer's Terms and Conditions. **NO EMPLOYEE, AGENT OR REPRESENTATIVE OF SELLER HAS THE AUTHORITY TO BIND SELLER BY THE ACT OF CLICKING ANY BUTTON OR SIMILAR ACTION ON BUYER'S WEBSITE OR PORTAL.**

25. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations

promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer represents that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Products from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws. Buyer agrees to promptly and reliably provide Seller all requested information or documents, including end-user statements and other written assurances, concerning Buyer's ongoing compliance with Export Law.

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