

# WPT POWER

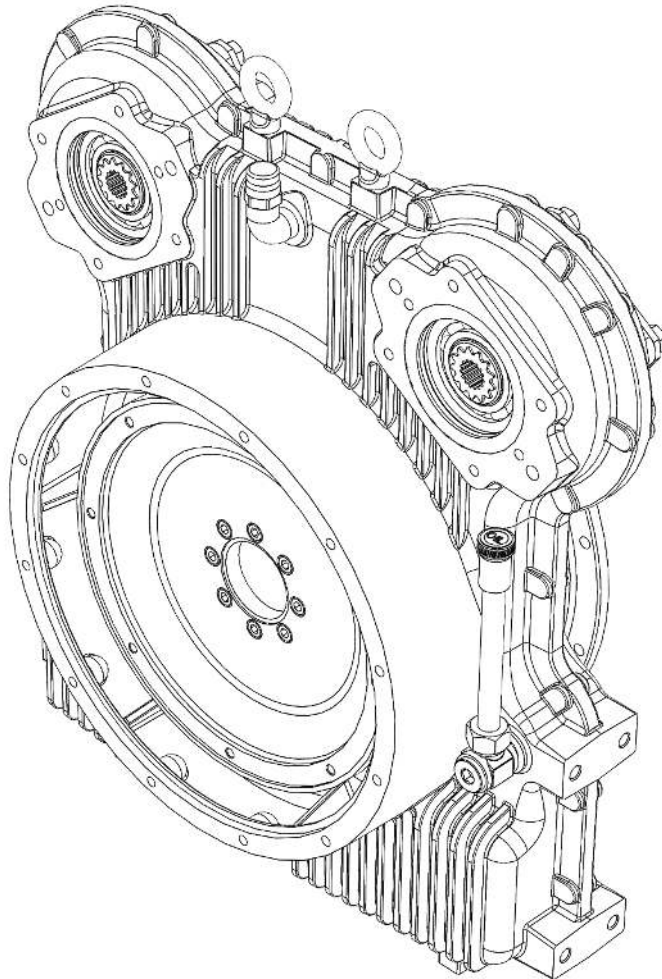


Power

## Pump Drive

*Installation & Maintenance*

*Model WPD-00*



Contents

- Cautions and Warnings ..... 3**
- 1.0 Installation and Maintenance Warnings ..... 3
- 2.0 Introduction ..... 4
- 3.0 Installation ..... 5
- 4.0 Coupling Replacement ..... 8
- 5.0 Maintenance ..... 10
- 6.0 Bolt Torque Specifications ..... 13
- 7.0 GeneralStorageGuidelines ..... 14

# Cautions and Warnings



## 1.0 Installation and Maintenance Warnings

Before assembling and operating the product, carefully read all the safety and operating instructions in this manual.

Always follow all the instructions and make sure that all operators standing by the machinery are wearing protective equipment necessary for the job type and application being performed.

Do not use the machinery if you do not understand these instructions. Please refer to the manufacturer or customer service for assistance.

The product must be protected by a convenient cover guard to avoid personal injury or injury to others.

Axial and radial ventilation openings should be incorporated in the guard for heat dissipation.

If the product is fitted with fusible plugs, the said openings should not be directed towards operators, hot parts, or electrical installations.

Throughout the manual there are several HAZARD WARNINGS that must be read and followed to prevent possible loss of equipment and/or personal injury and/or loss of life. The three warning words are “DANGER”, “WARNING” and “CAUTION”. They are used to indicate the severity of the hazard and are preceded by a safety alert symbol.



### **DANGER**

**Denotes the most serious injury hazard and is used when serious injury or death WILL result from misuse or failure to follow the specific instructions set forth in this manual.**



### **WARNING**

**Denotes when serious injury or death MAY result from misuse or failure to follow the specific instructions set forth in this manual.**



### **CAUTION**

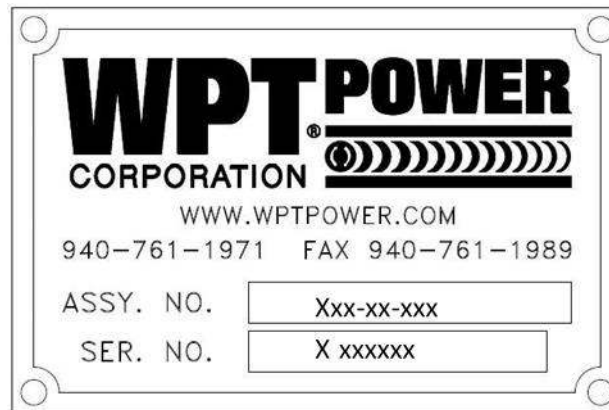
**Denotes when injury, product or equipment damage may result from the misuse or failure to follow the specific instructions set forth in this manual.**

## 2.0 Introduction

The PPD is a multi-pump drive that attaches to the engine similar to a power-take off and distributes the power to one or two heads. Each head has the possibility to mount two pumps. With a flange adapter, a Type D, 4-hole mount is available. On the engine side flange, there are Type B, 2-hole and Type C, 2- and 4-hole mounting pads.

The input is connected to the flywheel of the engine through an elastic coupling which is connected to the main shaft and consequently to the gears. On the output shaft a flywheel is available. Thus, any equipment with SAE 3 J617 / SAE 11,5 J620 can be installed

When ordering replacement parts, use the part numbers from the Bill of Material and drawing supplied with the Brake. The most current documents may be obtained by contacting WPT or an authorized distributor. When ordering parts, provide the assembly number and serial number for the unit found on the brass tag affixed to the front of the Brake. See the example shown in the figure immediately below.



For a complete list of spare parts that are recommended, contact WPT.

### 3.0 Installation

#### 3.1 Mount driving ring of the elastic coupling on the flywheel.

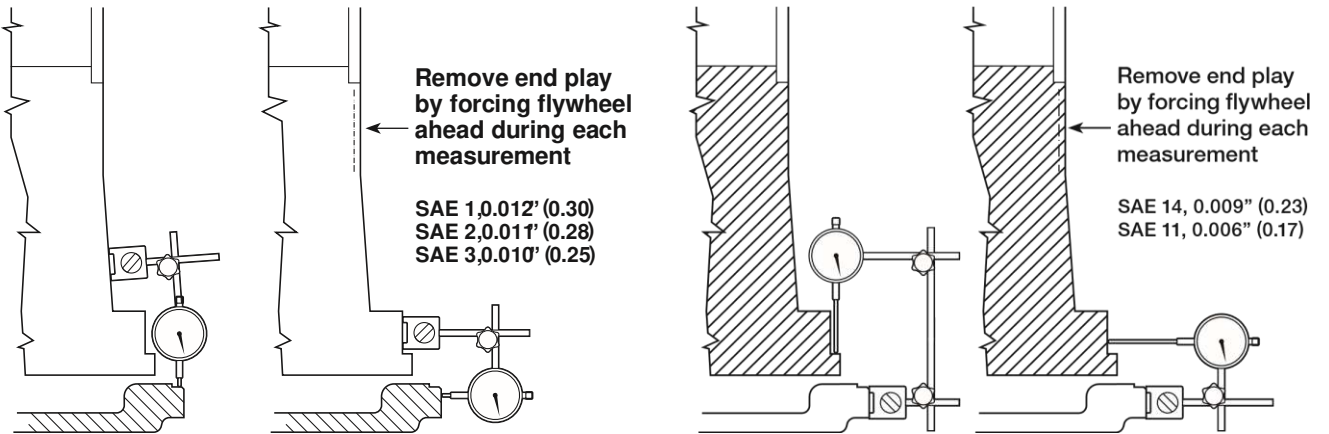


Figure 1

<p><b>NOTE</b></p> <p>WPT recommends performing a transmission line torsional vibration analysis. Especially when the driven machine is equipped with an additional elastic coupling.</p>	<p>Before mounting the PPD onto the engine, it is important to check that flywheel is within SAE tolerances (see Fig. 1).</p> <p>Following the provided technical specifications are recommended for increased product life and safe operation.</p>
<p><b>NOTICE: Thermal dissipation of the PPD is designed for an ambient temperature of 122°F [50°C] max. Ambient temperature should be measured at a distance about 7.9-11.8 inch [20-30 cm]. For ambient temperatures above 122°F [50°C], oil temperatures must be monitored. Design of engine enclosure must be well vented.</b></p>	

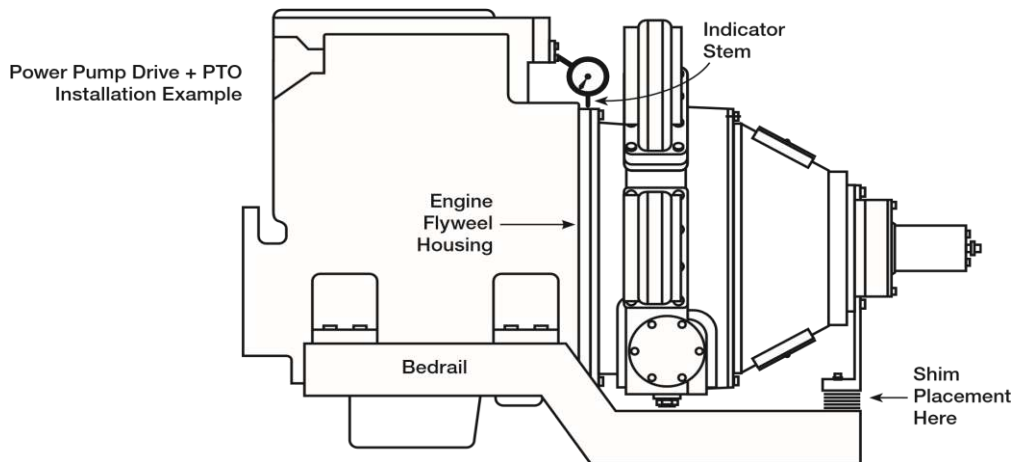


Figure 2

- 3.2 Locate a dial indicator as per Fig. 2 and set it to zero in order to detect an eventual flywheel housing deflection.
- 3.3 Mount the PPD on the flywheel housing of the engine keeping in mind to align the teeth of the elastic coupling in the respective teeth of the driving ring.

**To align the PPD housing and flywheel housing, use three threaded rods with adequate lengths, mounted 120° apart on the flywheel housing.**

To perform this operation, lift the assembly. In cases where the group includes a power take-off or hydraulic coupling, support the assembly adequately to ease alignment.

- 3.4 Carefully release the lifting force and properly shim as shown on Fig. 2 in order keep the dial indicator at zero. If indicator changes after bolts are tightened, re-shim until indicator remains at zero.
- 3.5 Mount the pumps on the heads, inserting the respective adapters for your pump connections see assembly drawing for detail. Utilize pump manufacturers recommended grease on both internal and external splines of the adapter.

 **CAUTION**

**The PPD is supplied without oil.**

- 3.6 Fill the unit by removing the breather (vent) plug located near the top center of the pump drive. Please refer to the Maintenance section on how to properly check the oil level.

 **CAUTION**

**ATTENTION: DO NOT OVERFILL.**

**Excess oil level will cause overheating and foaming.**

**The approximate oil level volume is 3.7 gal. (14 liters). See approved oils list.**

- 3.7 Read pumps and other installed devices maintenance manual to assure proper lubrication.
- 3.8 Follow a run-in cycle of 15 minutes with the engine at idling speed to ensure correct lubrication of internal components. Check units to ensure that no oil leaks are present.

**⚠ CAUTION**

3.9 After mounting of the pump drive, it is important to verify the pump drive has adequate shaft end play with a dial indicator. The PPD endplay requirement is 0.008" [0.20mm] to 0.016" [0.40mm].

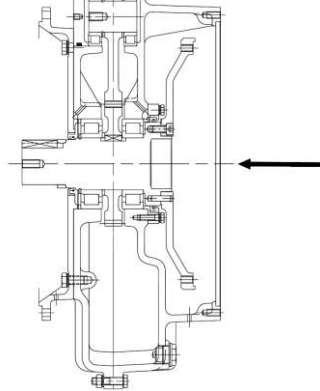
**⚠ CAUTION**

3.10 Thrust applied to any pump drive shaft will cause rapid failure. Every effort should be taken to prevent axial thrust on all pump drive shafts.

3.11 If installing a product which utilizes a pilot bearing to the main output of the pump drive, it is important to relieve the bearings of any axial force added during installation.

**⚠ CAUTION**

3.12 Strike the output end of clutch shaft with a soft face hammer (brass) to relieve bearing preloading caused by installation, see sketch below (appearance in some models vary).



**⚠ CAUTION**

3.13 Torsional vibrations must be managed with proper coupling selection, regardless of its position in the drivetrain. When not properly dealt with, torsional vibrations can cause major damage to the machine. Before installing a PPD, contact the equipment manufacture or WPT to verify the proper analysis has been completed.

## 4.0 Coupling Replacement

### Instructions for replacing an input coupling.

- 4.1 Please refer to the equipment manual for proper steps on how to remove peripheral items such as belts, guards, etc.
- 4.2 Remove the Power Pump Drive (PPD) assembly from the machine and place on flat, sturdy work surface.
- 4.3 The PTO, if equipped, does not need to be removed from the PPD. The entire PTO and PPD assembly may be removed as one.

<p>Solid Rubber Coupling (SRC)</p>	<p>Rubber Block Drive Coupling (RBDC)</p>
<p>#1 QD Bushing</p>	<p>#1 QD Bushing</p>
<p>#2 Drive Plate</p>	<p>#2 Drive Plate</p>
<p>#3 QD Hub</p>	<p>#3 QD Hub</p>
<p>#4 Drive Ring</p>	<p>#4 Drive Ring</p>
<p>#5 SHCS</p>	<p>#5 SHCS</p>
<p>#6 Lock Washer</p>	<p>#6 None</p>
<p>#7 HHCS</p>	<p>#7 HHCS</p>
<p>#8 None</p>	<p>#8 Nut</p>

- 4.4 Remove drive ring coupling from engine flywheel.
- 4.5 Remove the four (4) socket head cap screws (Item 1,3 & 5) from the coupling hub and QD bushing.



- 4.6 QD bushing will be reused to mount replacement coupling.
- 4.7 Remove RBD input coupling from PPD.
- 4.8 Use the bolts from step #4 as jack bolts to assist in removal of coupling. See item 5 and Jack bolt hole.

NOTE: Replace old bolts with new bolts when install new coupling.

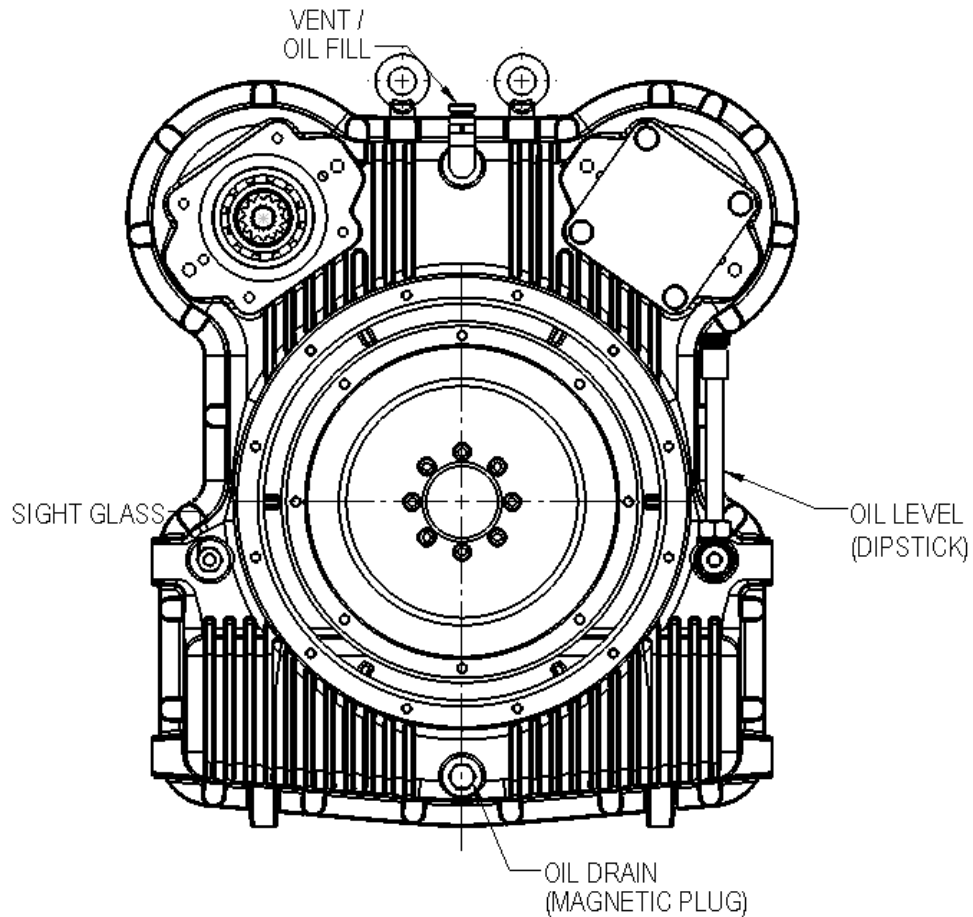
- 4.9 Assemble the input coupling (items 2 & 3).
- 4.10 Tighten bolts to:
  - 4.10.1 SRC: Torque the twelve (12) hex head cap screw (item 7), securing the hub and coupling. Torque 155 lbf•ft. [210 Nm]
  - 4.10.2 RBD: Torque the twelve (12) nuts (items 6 & 7), securing the hub and coupling. Torque 70lbf•ft [95 Nm].
- 4.11 Attached new drive ring to the engine flywheel using new hardware.
- 4.12 Refer to torque chart in the back of the instructions or torque to engine manufactures recommended setting.
- 4.13 Attach the new coupling to QD bushing using the four (4) included socket head cap screws (item 5).
- 4.14 Apply 242 Loctite or equal to bolts and tighten evenly in 3 stages securing the hub and coupling with the socket head cap screw (item 5).

Grade of bolt	Stage 1 lbf•ft [Nm]	Stage 2 lbf•ft [Nm]	Stage 3 lbf•ft [Nm]
Grade 8.8	22 [30]	44 [60]	55 [75]
Grade 12.9	44 [60]	77 [105]	89 [120]

- 4.15 Install PPD onto engine ensuring coupling aligns with drive ring.
- 4.16 Refer to torque chart at the end of the instructions or torque to engine manufactures recommendation.
- 4.17 Reinstall peripheral items such as belts, guards, etc. per equipment manual.

## 5.0 Maintenance

- Initial oil replacement is recommended after the first 300 hours of operation.
- Replace oil every 1000 working hours or six months whichever comes first.
- Check magnetic plug during every oil change for any evidence of metal shavings and grease bushings in heads with Klüber paste ALTEMP Q NB 50, or equal.
- Check oil level every 300 hours.



## Oil Level Check – Dipstick Version

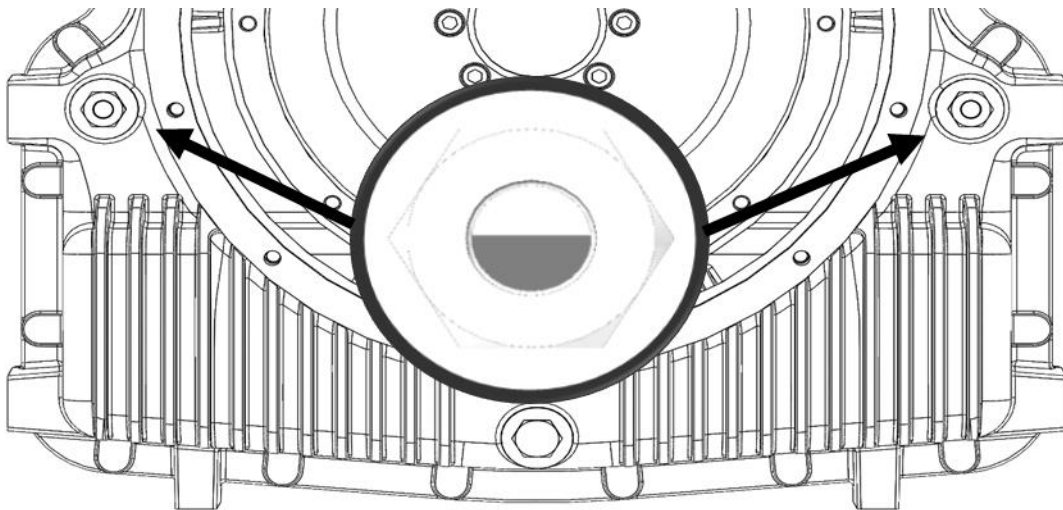
When equipped with a dipstick, ensure the machine is off and is on solid level ground. Remove the dipstick and wipe away any oil on the dipstick. Reinsert the dipstick until fully seated. Slowly remove the dipstick. If oil level is low, add oil and continue checking until it reaches the Max Fill line (see illustration). Note: if PPD is equipped with sight glass and dipstick, sight glass should always be full of oil.

**NOTE: Some dipsticks are only supplied with two level notches. In this case they represent the min & max level.**



## Oil Level Check – Sight Glass Only Version

When not equipped with a dipstick, ensure the machine is off and is on solid level ground. Top of oil should be visible in both sight glasses. If both sight glasses are completely covered with oil, you may need to remove oil.



Confirm PPD main shaft endplay every 1000 hours to be between 0.008 - 0.015 in [0.2 - 0.4 mm]

**Approved Oil Listing and Operating Speeds**

SHELL OMALA OIL 220 (or equivalent) Viscosity @ 100°F: 220 cSt Viscosity index: 100 Max working speed: up to 2200 r/min
MOBIL Mobilgear XP100 (or equivalent) Viscosity @ 100°F: 100 cSt Viscosity index: 97 Max working speed: 2200 - 2500 r/min
AGIP OSO 32 (or equivalent) Viscosity @ 100°F: 30 cSt Viscosity index: 100 Max working speed: 2500 - 2600 r/min
SHELL Spirax S2 ATF AX (or equivalent) Viscosity @ 100°F: 34.6 cSt Viscosity index: 174 Max working speed: 2500 - 2600 r/min

## 6.0 Bolt Torque Specifications

Bolt Size [mm]	Pitch [mm]	Bolt Torque lbf-ft [Nm]					
		8.8		10.9		12.9	
4	0.7	2	[3.1]	3	[4.3]	4	[5.2]
5	0.8	4	[6]	6	[8.5]	7	[10.1]
6	1	8	[10.4]	11	[14.6]	13	[17.5]
7	1	12	[15.7]	16	[22]	19	[26.4]
8	1.25	18	[24.6]	26	[34.7]	31	[41.6]
10	1.5	37	[50.1]	52	[70.5]	62	[84.6]
12	1.75	63	[84.8]	88	[119]	105	[143]
14	2	100	[135]	140	[190]	168	[228]
16	2	151	[205]	212	[288]	255	[346]
18	2.5	209	[283]	294	[398]	353	[478]
20	2.5	295	[400]	415	[562]	497	[674]
22	2.5	392	[532]	552	[748]	662	[897]
24	3	510	[691]	716	[971]	863	[1170]
27	3	745	[1010]	1047	[1420]	1254	[1700]
30	3.5	1010	[1370]	1423	[1930]	1704	[2310]

## 7.0 General Storage Guidelines

Upon receipt of parts or assemblies, they should be inspected for corrosion or other related damage. If any problem is detected, contact vendor.

It is the owner's primary responsibility to store and protect the PPD product.

Products should be stored in a manner that it is protected from the environment and outside sources, which may include but are not limited to the following:

- **Environmental storage requirements should be maintained as follows:**
  - No exposure to rainwater
  - Temperatures 32F° (0C°) to 110F° (43C°)
  - Below 50% average humidity
  - Average sunlight
  
- **Hazards that require addition protection:**
  - Dust and debris
  - Oil, water, saltwater, acids, or other chemicals
  - Any other foreign items which may damage the product
  - Other measures include covering the product to prevent ingress of foreign matter
  
- **Additional Protection Measures for Long-Term Storage  
(For storage exceeding one month):**
  - Coat exposed metal with Cosmoline RP-342 "HEAVY" Military-Grade Rust Preventive Aerosol Spray, or equal
  - Coating of painted surfaces is not required or recommended
  - Visually inspect the product for degradation once every three-months

**WPT Power Corporation**  
**1600 Fisher Road - Wichita Falls, TX 76305**  
**P.O. Box 8148 - Wichita Falls, TX 76307**  
**Ph. 940-761-1971**  
**[www.WPTpower.com](http://www.WPTpower.com)**