

24. PSE



W.S. Darley & Co.
REPAIR SERVICE INSTRUCTIONS
TYPE PSE ENGINE MOUNTED FIRE PUMP
WITH INJECTION PACKING

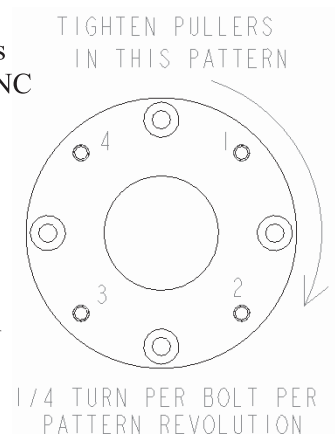
PSE PUMP DISASSEMBLY FOR OVERHAUL

Refer to Drawings DPC0605, DPC0008 & DPC0011

1. Remove the following items from the pump:
 - Gage Line Tubing
 - Heater Piping
 - Primer Tubing
 - Tachometer Drive Cable
2. Drain oil from gear case. Inspect oil for debris, or cloudiness (entrapped water).
3. Remove twelve 3/8-16UNC nuts and remove discharge head assembly from volute (30).
4. Remove eight 3/8-16UNC cap screws and suction adapter (34) from volute (30). Discard gasket (33).
5. Provide an overhead hoist to support the weight of the pump. Place a nylon strap or a chain around the discharge flange of the volute (30) and take up the slack.
6. Remove four 3/8-16UNC cap screws and remove bearing cap (113) by using the 5/16-18UNC puller holes. Discard gasket (22).
7. Remove three 1/2-13UNC cap screws holding the volute (30) and spacers (17) to the gear case (27). Separate the volute and impeller shaft (99) assembly from the gear case while keeping the parts square with each other to avoid damage to pinion gear (24) and impeller shaft. If prying is required, pry evenly on both sides.
8. Remove twelve 3/8-16UNC cap screws and remove the suction head (31) from the volute (30) by using the two 3/8-16UNC puller holes. Discard o-rings (32) & (114).
9. If necessary to replace outboard seal ring (35), pry or tap it out of suction head (31).
10. Remove cotter key (38), impeller nut (37), and washer (41) from impeller shaft (99).
11. Push impeller (36) off impeller shaft (99) with the two 3/8-16UNC holes in impeller hub.
12. Tap the impeller shaft assembly out of volute (30), keeping the shaft square with the bore to avoid damage to parts.
13. Pull or pry the oil seal (18) out of volute (30). Remove water slinger (26) from cavity.
14. If necessary to replace, remove four 1/4-20NC stainless flush head machine screws (130) and remove the stuffing box (39) from the volute (30) using the four 1/4-20NC puller holes. To remove, apply pressure with puller screws in a circular pattern, one-quarter turn per bolt per pattern revolution. The flush head machine screws may be used as the puller screws for stuffing box removal. Discard stuffing box o'ring (129).

Note:

 - Pumps older than Jan, 2002 may not have the stainless flush head machine screws. If this is the case with the pump you are repairing, press the stuffing box out of the volute.
 - The number of puller holes was changed from two to four June 2006.
15. If necessary to replace, pry inboard seal ring (35) out of volute (30).
16. Press bearing (6), spacer (103), and pinion gear (24) off the impeller shaft (99) all at once.
17. Remove pinion gear key (20).



18. Press bearing (108) off of impeller shaft (99).
19. Remove retaining ring and backup washer from impeller shaft (99). [**NOTE:** A shoulder has been added to the impeller shaft to eliminate the use of the retaining ring, and backup washer on pumps newer than Dec. 1995.]

GEAR CASE DISASSEMBLY FOR OVERHAUL

20. Provide a hoist to support the weight of the transmission. Place a nylon strap or chain around pump mounting arms of gear case (27) and around engine adapter (1) and take up the slack.
21. Remove the screws holding engine adapter (1) to engine.
22. Slide transmission straight away from rear of engine, be careful to avoid damaging trans. shaft (11).
23. Remove four 3/8-16UNC socket head cap screws and remove engine adapter (1) from gear case (27).
24. Remove four 3/8-16UNC cap screws and remove bearing cap (47) by using the 5/16-18UNC puller holes. Remove and discard gasket material.
25. Remove eight 3/8-16UNC cap screws and remove oil pan (3). Discard gasket (4).
26. Press transmission shaft (11) out of drive gear (5), spacer (49), bearing (6), and gear case (27) all at once.
27. Remove the drive gear key (50).

Note: After Jan 2002, the tachometer assembly became an option, it is possible that your pump does not have any tachometer parts.

28. If present, remove tachometer retainer (10) and slide tachometer worm (8) off transmission shaft (11).
29. If present, remove tachometer drive key (55).
30. Press bearing (6), and spacer off the transmission shaft (11). [**NOTE:** Spacer not present in pumps manufactured after Dec. 1995.]

NOTE: Tachometer disassembly is usually not required unless parts are severely worn.

31. If present, tap the drive lock pin (95) out of the tachometer gear (14).
32. If present, remove tachometer shaft (13) from gear (14) and bushing (12). Remove tachometer gear.
33. If present, press or tap tachometer bushing (12) and tachometer plug (96) out of engine adapter (1).

PARTS INSPECTION AND MEASUREMENT

1. Clean all parts and carefully examine for wear or deterioration. Replace any questionable parts.
2. Measure the impeller seal rings and the seal rings for wear. Use the following table for comparison.

Impeller Seal Ring O.D. - original -----	6.623 - 6.625"
Impeller Seal Ring I.D. - original -----	6.315 - 6.317"
Seal Ring O.D. - original -----	6.639 - 6.641"
Seal Ring I.D. - original -----	6.299 - 6.301"
Clearance O.D. - original -----	0.014 - 0.018"
Clearance I.D. - original -----	0.014 - 0.018"
3. If clearance exceeds 0.025" on diameter, impeller seal rings can be restored to its original size by soldering a ring over trued surface which retains at least 0.090" wall thickness. Stationary seal rings should also be replaced or you may purchase undersized rings. Call customer service for details.
4. Measure the impeller shaft and stuffing box for wear. Use the following table for comparison

Impeller Shaft diameter at packing area -----	1.749 - 1.750"
Stuffing Box bore - original -----	1.759 - 1.760"
Stuffing Box bore - max. -----	1.765 - 1.760"
Clearance on Diameter - original -----	0.013 - 0.015"

Clearance on Diameter - max. allowable ----- 0.020"

5. Measure bearing housing bores for proper size. Use the following table for comparison. If any bore exceeds the high limit by 0.0005", the part should be replaced.

PART	REP. NO.	ORIGINAL BORE DIAMETER
Bearing Cap -----	113 -----	3.5433 - 3.5442"
Gear Case -----	27 lower two bores-----	3.5433 - 3.5442"
Volute -----	30 -----	4.3307 - 4.3316"

6. Measure shaft bearing journals for proper size. Use the following table for comparison. The low limit under bearing is required to insure a press fit with inner bearing race.

PART	REP. NO.	ORIGINAL JOURNAL DIA.
Impeller Shaft -----	99 -----	small 1.5749 - 1.5753"
		large 1.7490 - 1.7495"
Transmission Shaft -----	11 -----	both 1.5749 - 1.5753"

7. The original impeller shaft diameter under the pinion gear is 1.7490 - 1.7495". The original pinion gear bore is 1.7495 - 1.7500" providing a 0.0000 to 0.0010" clearance. The parts are still serviceable up to 0.0015" clearance. The pinion gear may be reversed to work the other side of gear teeth.
8. The original transmission shaft diameter under the drive gear is 1.7490 - 1.7495". The original drive gear bore is 1.7500 - 1.7505" providing 0.0005 to 0.0015" clearance. The parts are still serviceable up to 0.0020" clearance. The drive gear may be reversed to work the other side of gear teeth.
9. The original transmission shaft diameter under the tachometer worm is 1.5605 - 1.5613". The original tachometer worm bore is 1.5616 - 1.5622" providing from 0.0003 to 0.0017" clearance. The parts are still serviceable up to 0.0030" clearance.

ASSEMBLY OF TYPE PSE ENGINE MOUNT FIRE PUMP
Refer to Drawings DPC0605, DPC0008 & DPC0011
TRANSMISSION ASSEMBLY

1. If present, press the tachometer bushing (12) into engine adapter (1), flush with inside of gear pocket.
2. If present, press the tachometer plug (96) into engine adapter (1). Allow .015" gap between the tachometer gear (14) and the tachometer plug (96).
3. If present, place tachometer gear (14) into position.
4. If present, insert tachometer shaft (13) through bushing (12) and into tachometer gear (14) with .104" square key drive hole end facing tachometer cable pocket.
5. If present, tap a 3/32" x 7/16" drive lock pin into tachometer gear (14) through the tachometer shaft (13).
6. If present, gear (14) and shaft (13) must rotate freely. Fill tachometer gear teeth, and tachometer pocket 1/3 - 1/2 full with grease.
7. Press oil seal (9) into engine adapter (1) with lip spring of seal facing tachometer pocket. Fill grease cavity of the oil seal 1/3 - 1/2 full with grease and lubricate oil seal lips.
8. Support gear case (27).
9. Place drive gear (5) in gear case (27).
10. Apply a light coating of oil to the transmission shaft (11). Place drive gear key (50) into transmission shaft keyway. Align with keyslot in drive gear (5); press shaft evenly into drive gear bore until shaft shoulder is tight against side of gear.
11. Apply a light coating of oil to both the inside and outside diameters of bearing (6). With the use of a sleeve to apply even pressure to both races, press the bearing onto the transmission shaft (11), and into the gearcase (27) on the engine side until the bearing is tight against shaft shoulder.
12. Slide spacer onto the transmission shaft (11). **[NOTE: Spacer not present in pumps manufactured after Dec 1995.]**

13. If present, place the woodruff key (55) into the slot in the transmission shaft (11) and press or slide the tachometer worm (8) onto the transmission shaft until the worm, spacer (if present) and inner race of bearing (6) are tight together. Install the retaining ring (10) with the sharp edge towards the splined end of the transmission shaft.
14. Tap spacer into gear case (27). [**NOTE:** Spacer not present in pumps manufactured after Dec 1995.]
15. Apply a thin layer of Loctite Master Gasket 518 or equivalent to the flange area of the gear case (27) where it engages the engine adapter (1).
16. Slide the engine adapter (1) over the transmission shaft (11) and into position against gear case (27). Apply Loctite 243 or equivalent to the threads of four 3/8-16UNC x 1/2" socket head cap screws and attach the adapter to the gear case (27) using these cap screws and four high collar lock washers. Torque to 23 ft-lb.
17. Slide spacer (49) onto transmission shaft (11).
18. Apply a light coating of oil to both the inside and outside diameters of bearing (6). With the use of a sleeve to apply even pressure to both races, press the bearing onto transmission shaft (11), and into gear case (27) until shaft shoulder, drive gear (5), spacer (49), and bearing (6) are tight together.
19. Apply Loctite 243 or equivalent to the threads of four 3/8-16UNC x 7/8" cap screws and apply a thin layer of Loctite Master Gasket 518 or equivalent to the flange area of bearing cap. Attach bearing cap (47) and with these cap screws and lock washers. Torque to 23 ft-lb. [**NOTE:** For pumps manufacture prior to Dec. 1995 use 1/64" paper gasket (not shown on DPC0002)]
20. Attach the oil pan (3) and gasket (4) to gear case (27) with eight 3/8-16UNC x 7/8" cap screws and lock washers. Use Loctite 243 or equivalent on the threads, and torque to 23 ft-lb.
21. Lift the transmission with the hoist. Slide the transmission shaft (11) into the drive disc (2) on the engine. Attach engine adapter (1) to engine with cap screws and lock washers. Use Loctite 243 or equivalent on the threads, and torque to 23 ft-lb.

PUMP ASSEMBLY

22. Press inboard seal ring (35) into volute (30) until seated.

NOTE: Pumps older than Jan, 2002 may not have the stainless flush head machine screws holding stuffing boxes in. If this is the case with the pump you are repairing, apply Loctite 603 to the outside of stuffing box (39) and press into volute (30) until seated. **CAUTION:** The packing gland holes in the stuffing box must be aligned with the packing gland hole(s) in the volute. The cooling holes in the stuffing box must also be aligned with the cooling line(s) in the volute.

23. Apply a silicone lubricant to stuffing box o'ring (129), and place in groove of volute (30).
24. Align stuffing box (39) with volute (30) by placing four 1/4-20 NC x 3 cap screws through mounting holes of stuffing box and screw into corresponding tapped holes of volute. Press stuffing box into position and remove alignment cap screws. Apply Loctite 243 (or equivalent) to threads of, and install four 1/4-20 NC stainless flush head machine screws (130) to secure stuffing box in volute. Torque to 72 in-lbs.
25. Slide impeller shaft (99) into volute (30), through stuffing box (39).
26. Pack the stuffing box (39) using only Garlock style #926-AFP plastallic packing material, which can be purchased from W. S. Darley as part no. 3817101. Other packing materials will void warranty. (For procedure to follow when packing the pump, see "DARLEY INJECTION TYPE STUFFING BOX ADJUSTMENT")
27. Remove impeller shaft (99) and clean out any packing and/or debris that may have gotten into the 1/4" wide lantern groove in the stuffing box (39).
28. Apply grease to one side of water slinger (26). Firmly place greased side of water slinger into position against stuffing box (39). [**NOTE:** Grease is for retaining water slinger position during assembly only.]

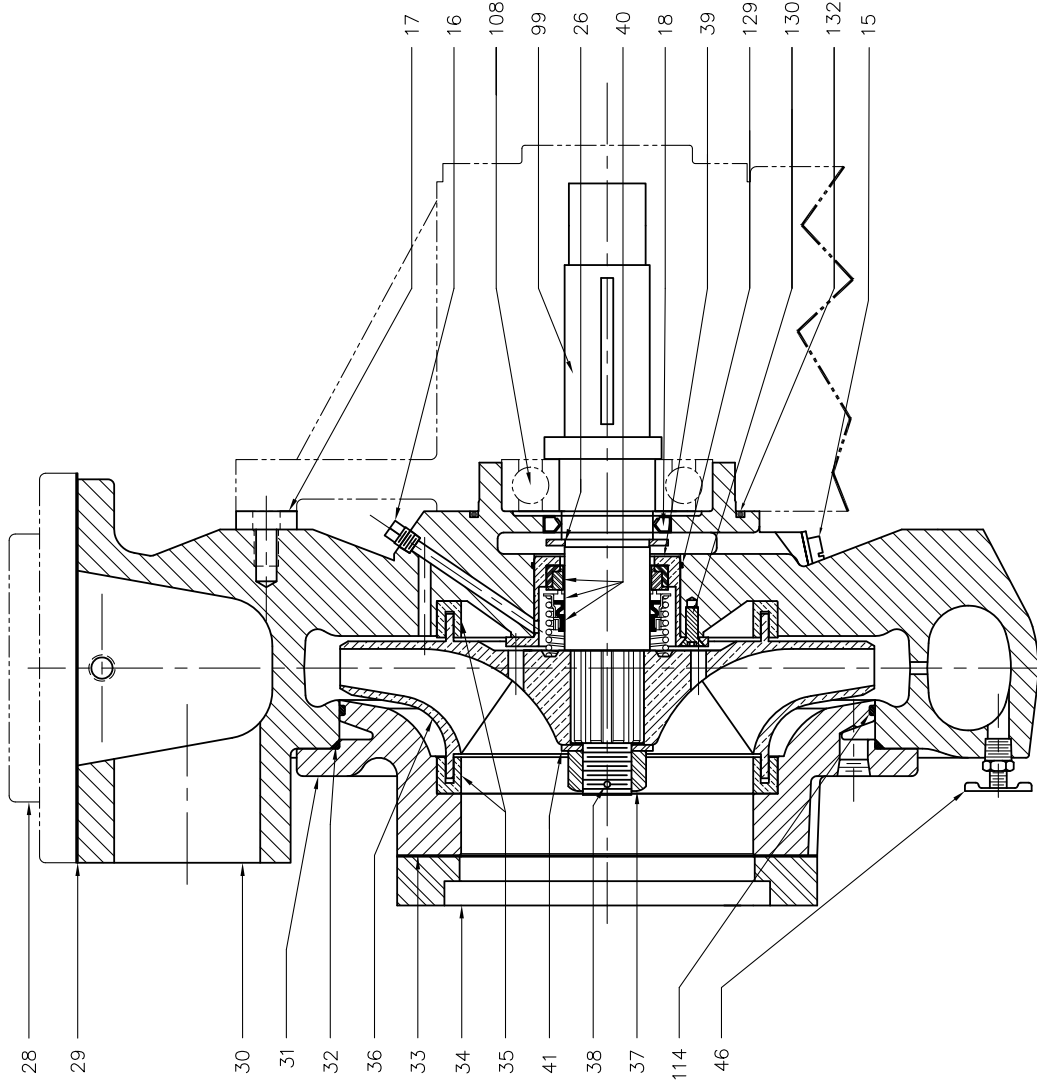
29. Press oil seal (18) into volute (30) with lip spring of seal facing bearing cavity. Fill grease cavity 1/3 - 1/2 full with grease and lubricate oil seal lips.
30. Apply a light coating of oil to impeller shaft (99). Place pinion gear key (20) in impeller shaft keyway, align with keyslot in pinion gear (24) and press shaft evenly into pinion gear bore until shaft shoulder is tight against side of gear.
31. Place retaining ring in groove on impeller shaft (99) with sharp edge towards pinion gear (24). Retaining ring should be tight in groove. Replace ring if it is loose. Slide bearing backup washer onto impeller shaft (99). **[NOTE: A shoulder has been added to the impeller shaft to eliminate the use of the retaining ring, and backup washer on pumps newer than Dec. 1995.]**
32. Press bearing (108) onto impeller shaft (99) against shaft shoulder.
33. Slide spacer (103) onto impeller shaft (99).
34. Apply a light coating of oil to the inside diameter of bearing (6), and press it onto impeller shaft (99) until inner race of bearing, spacer (103), and pinion gear (24) are tight together.
35. Apply a light coating of oil to outside diameter of bearing (108), and gently tap impeller shaft (99) through water slinger (26), and into volute (30) until bearing is seated in bearing pocket of volute. Make sure oil seal (18) is seated. Slide water slinger (26) into position in groove in the impeller shaft.
36. Slide impeller (36) and impeller washer (41) onto impeller shaft (99).
37. Temporarily tighten impeller nut (37) finger tight until it contacts the impeller washer (41)
38. Apply a thin layer of Loctite Master Gasket 518 or equivalent to the flange surface of the volute (30) where it engages the gear case (27).
39. Apply oil to the outer diameter of bearing (6) on the impeller shaft (99).
40. Lift the pump with the hoist.
41. Insert pinion gear (24) into gear case (27) and slide flange of volute (30) into the gear case pilot. With the three spacers (17) between the mounting pads of the volute and the mounting arms of the gear case, attach the volute to gear case with three 1/2-13UNC x 1-1/2" cap screws and lock washers with Loctite 243 or equivalent applied to the threads. Torque to 57 ft-lb. **[NOTE: Tighten the cap screws in the opposing arms first, then tighten the third one.]**
42. Apply Loctite 243 or equivalent to the threads of four 3/8-16UNC x 7/8" cap screws and attach bearing cap (113) and gasket (22) with these cap screws and lock washers. Make sure that bearing (6) enters evenly into the bearing pocket in the bearing cap. Torque to 23 ft-lb.
43. Remove impeller nut (37).
44. Clean and dry threads of both the impeller shaft (99) and impeller nut (37). All dirt, grease, and oil must be removed. (Loctite Klean N' Prime can be used to clean parts and shorten cure time of thread-locker.)
45. Apply Loctite 243 or equivalent thread-locker to impeller shaft (99) thread.
46. Tighten impeller nut (37) finger tight until it contacts the impeller washer (41), then turn to the next cotter key hole. **DO NOT OVER TIGHTEN.**
47. Install a 1/8" x 1" STAINLESS STEEL cotter key (38) through the impeller nut (37) and impeller shaft (99) cotter key hole.
48. Press outboard seal ring (35) into suction head (31).
49. Apply a silicon lubricant, such as Dow Corning Compound 111 or equivalent to suction head o-rings (32) and (114) and place on suction head (31).
50. Apply Loctite 243 or equivalent to the threads of the twelve suction head mounting studs in the volute (30). Tap the suction head (31) into position on the volute and attach with twelve 3/8-16UNC nuts. Torque to 23 ft-lb.

51. Apply Loctite 243 or equivalent to the threads of the twelve discharge head mounting studs. Attach the discharge head assembly to the volute (30) with twelve 3/8-16UNC nuts. Torque to 23 ft-lb.
52. Apply Loctite 243 or equivalent to the threads of the eight 3/8-16UNC cap screws and attach the suction adapter (34) to the suction head (31). Torque to 23 ft-lb.
53. Reconnect the following items to the pump:
 - Gage Line Tubing
 - Heater Piping
 - Primer Tubing
 - Tachometer Drive Cable
54. Fill gear case (27) with SAE80W/90 gear lube oil to the level of the oil-level plug on the gear case.

**IF FURTHER INFORMATION IS NEEDED, CALL W.S. DARLEY & CO. at
CHIPPEWA FALLS, WI at 800-634-7812 or 715-726-2650**

REVISIONS

LTR	DESCRIPTION	DATE	CHG NO.	APPR'D
A	ADDED O-RING	2JUL2004	2004-192	DAB



REP#	NAME OF PART	QTY
15	PACKING HOLE PLUG	2
16	PLUG - 1/8" NPT	2
17	SPACER - GEARCASE	1
18	OIL SEAL - IMPELLER SHAFT	1
26	WATER SLINGER	1
28	DISCHARGE FLANGE	1
29	DISCHARGE GASKET	1
30	VOLUTE	1
31	SUCTION HEAD	1
32	PUMP CASING O'RING	1
33	SUCTION FLANGE GASKET	1
34	SUCTION FLANGE	1
35	SEAL RING	2
36	IMPELLER	1
37	IMPELLER NUT	1
38	COTTER KEY	1
39	MECHANICAL SEAL BOX - REMOVABLE	1
40	MECHANICAL SEAL	1
41	IMPELLER SHAFT WASHER	1
46	DRAIN COCK	1
99	IMPELLER SHAFT	1
108	BEARING - IMPELLER SHAFT	1
114	O-RING - HEATER CHAMBER	1
129	O-RING - 3.00 x 3.12 x 0.06	1
130	FHMS - .250-20 x 0.63, SS	4
132	O-RING - PUMP/GEARCASE	1 (A)

W.S. DARLEY & CO.
MELROSE PARK, IL - CHIPPEWA FALLS, WI

DWG - PS PUMP, MECH SEAL - REMOVABLE
CROSS SECTION

DATE NOV27,01
SCALE 1/2

DRN WAH
CHKO DMD
TRCD

OLD PART NO.
P.224-2

DO NOT SCALE PRINT

ALL DIMENSIONS IN INCHES UNLESS NOTED

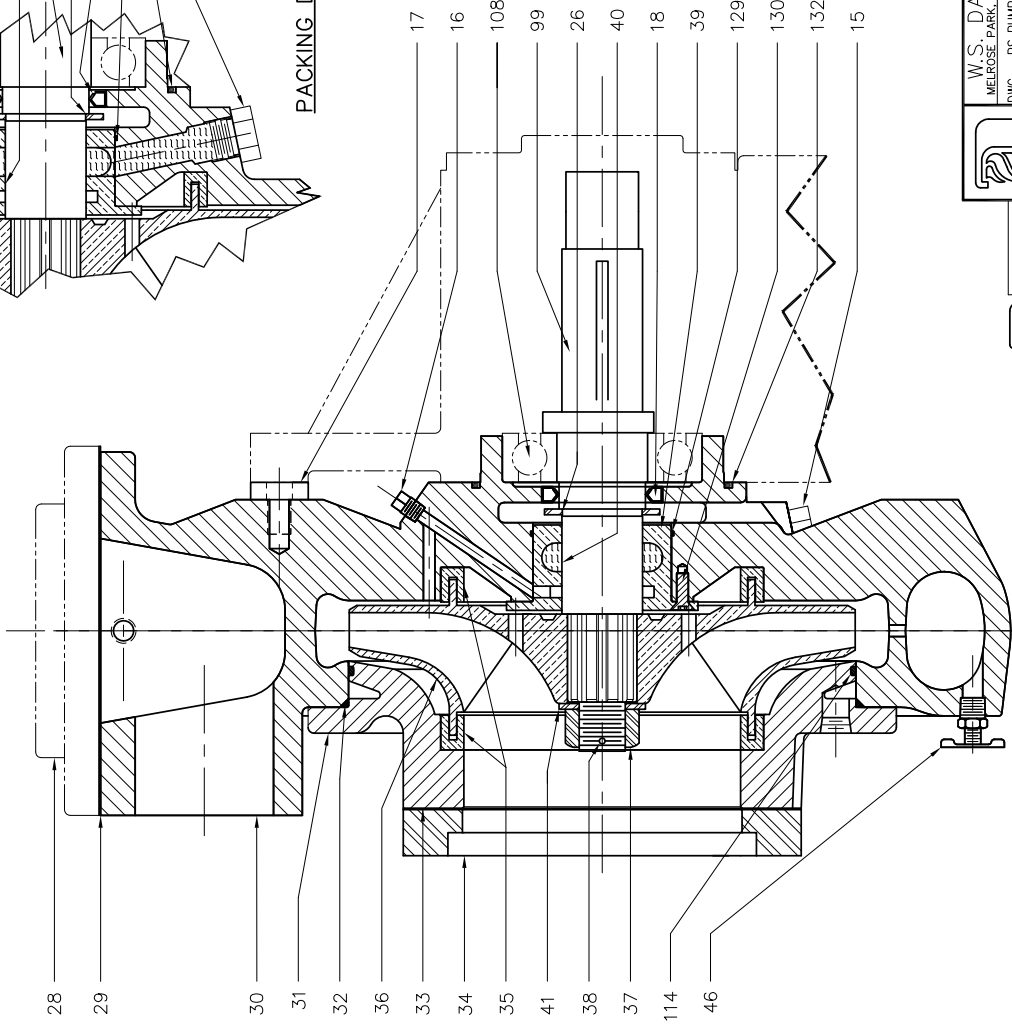
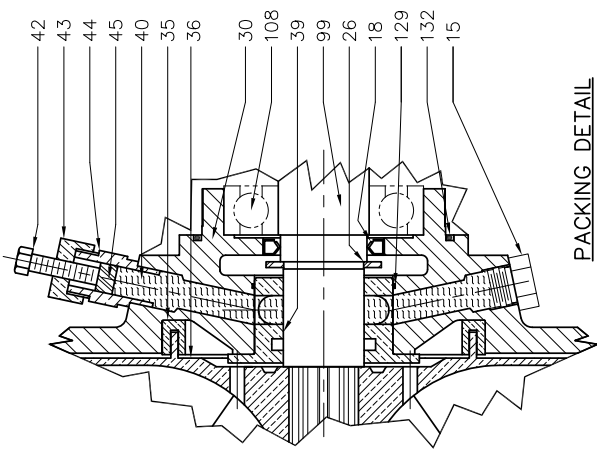
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DPC0604

REVISIONS

LTR	DESCRIPTION	DATE	CHG NO.	APPR'D
A	ADDED O-RING TO DRAWING	2JUL2004	2004-192	DAB

REP#	NAME OF PART	QTY
15	PACKING HOLE PLUG	1
16	PLUG - 1/8 NPT	2
17	SPACER - GEARCASE	1
18	OIL SEAL - IMPELLER SHAFT	1
26	WATER SLINGER	1
28	DISCHARGE FLANGE	1
29	DISCHARGE GASKET	1
30	VOLUTE	1
31	SUCTION HEAD	1
32	PUMP CASING O'RING	1
33	SUCTION FLANGE GASKET	1
34	SUCTION FLANGE	1
35	SEAL RING	2
36	IMPELLER	1
37	IMPELLER NUT	1
38	COTTER KEY	1
39	PACKING BOX	1
40	PACKING	1
41	IMPELLER SHAFT WASHER	1
42	PACKING PLUNGER STUD	1
43	GLAND NUT	1
44	PACKING PLUNGER GUIDE	1
45	PACKING PLUNGER	1
46	DRAIN COCK	1
99	IMPELLER SHAFT	1
108	BEARING - IMPELLER SHAFT	1
114	O-RING - HEATER CHAMBER	1
129	O-RING - 3.00 x 3.12 x 0.06	1
130	FHMS - .250-20 x 0.63, SS	4
132	O-RING - PUMP/GEARCASE	1 (A)

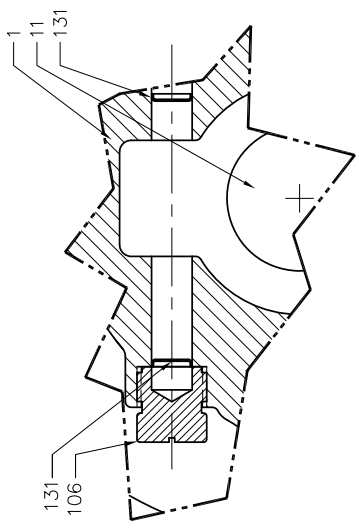



W.S. DARLEY & CO.
 MELROSE PARK, IL - CHIPPEWA FALLS, WI
 DWG - PS PUMP, PACKING - REMOVABLE
 CROSS SECTION
 DATE NOV27,01
 SCALE 1/2
DPC0605

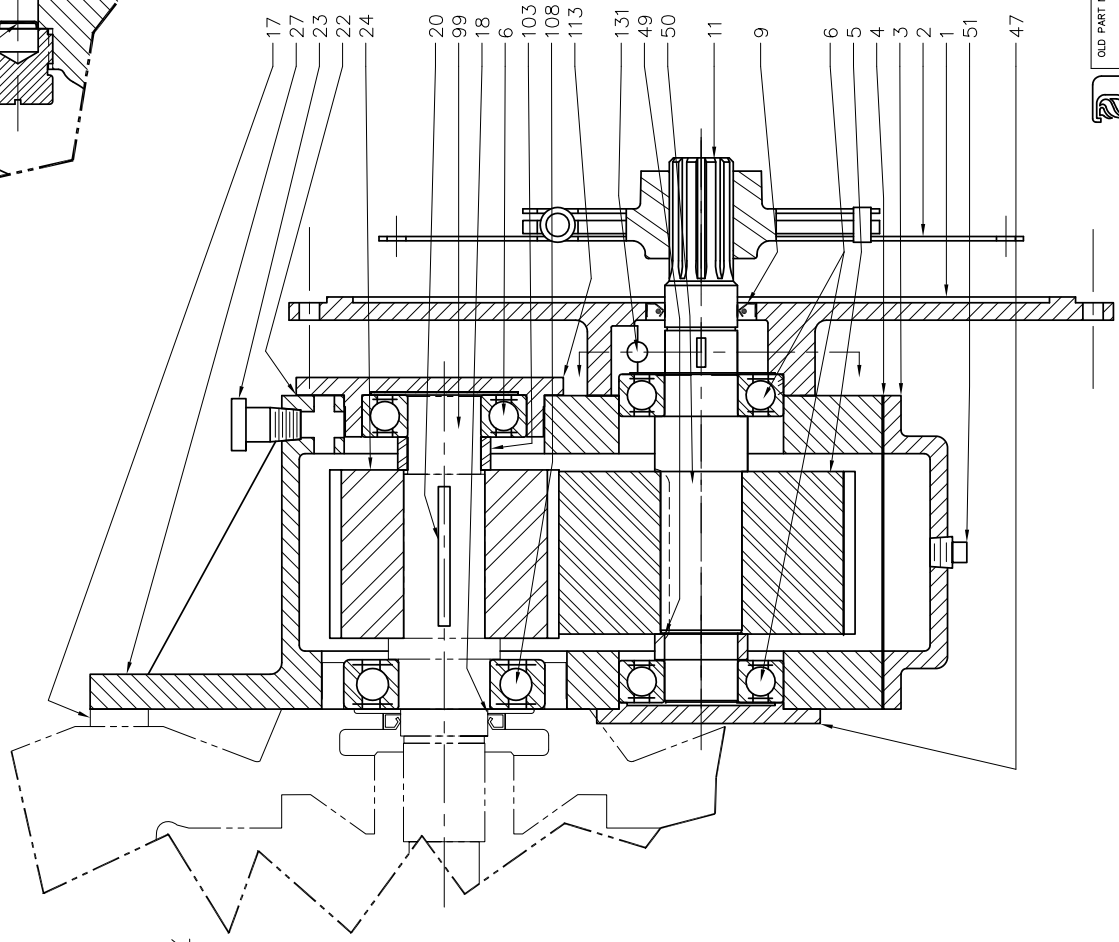
OLD PART NO.
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LT#	DESCRIPTION	DATE	CHG. NO.	APPRD



TACH. DRIVE DETAIL
SCALE: 1=1



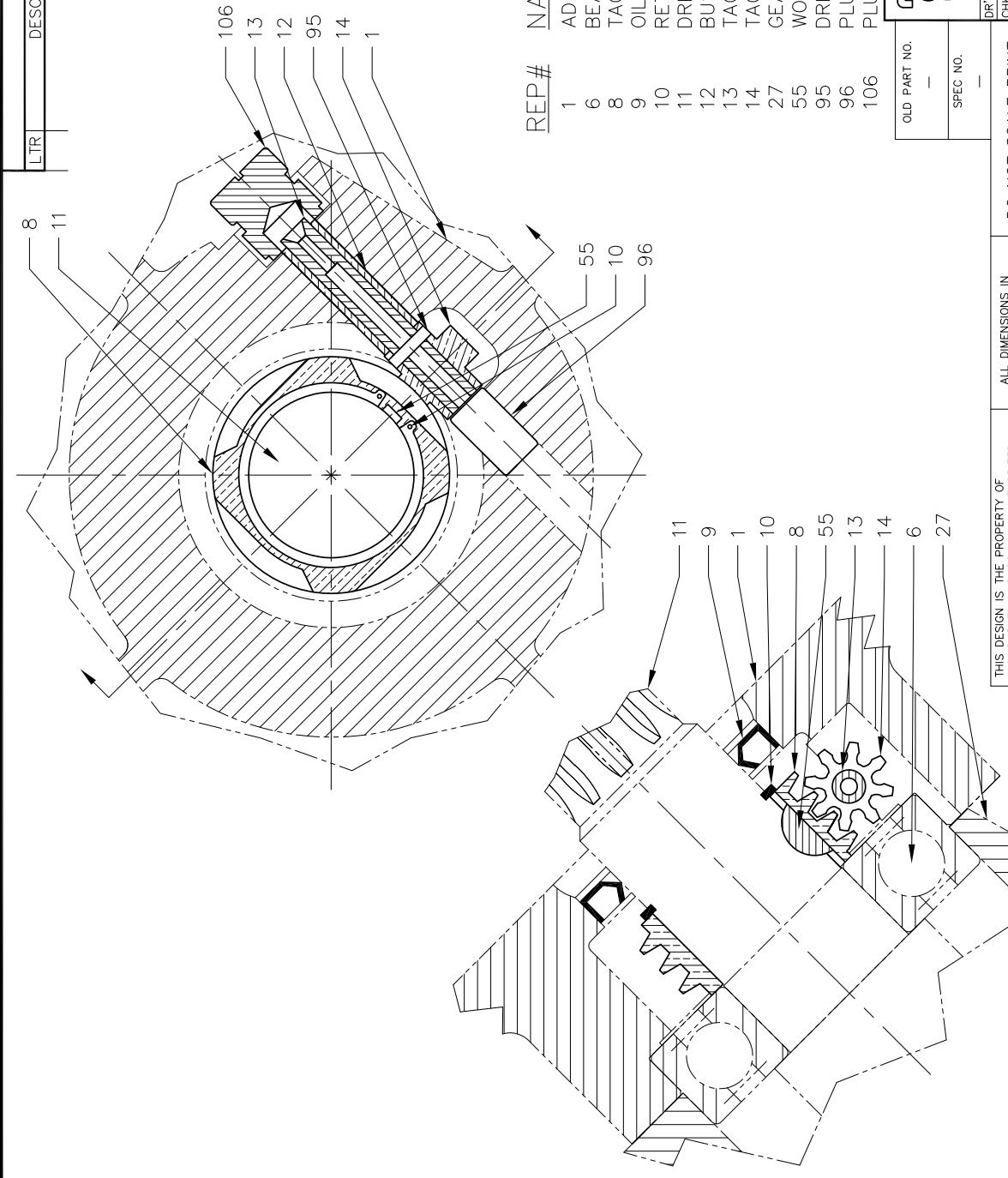
REP#	NAME OF PART	QTY
1	ENGINE ADAPTER	1
2	DRIVE DISC	1
3	OIL PAN	1
4	OIL PAN GASKET	1
5	DRIVE GEAR	1
6	BEARING	3
9	OIL SEAL - DRIVE SHAFT	1
11	DRIVE SHAFT	1
17	GEARCASE SPACER - REF	1
18	OIL SEAL - IMPELLER SHAFT - REF	1
20	KEY - PINION GEAR	1
22	GASKET - IMPELLER SHAFT BEARING CAP	1
23	VENT PLUG - GEAR CASE	1
24	PINION GEAR	1
27	GEARCASE	1
47	BEARING CAP - DRIVE SHAFT	1
49	SPACER - DRIVE GEAR	1
50	KEY - DRIVE GEAR	1
51	DRAIN PLUG - MAGNETIC	1
99	IMPELLER SHAFT - REF	1
103	SPACER - PINION GEAR	1
106	PLUG - REF	1
108	BEARING - IMPELLER SHAFT	1
113	BEARING CAP - IMPELLER SHAFT	1
131	7/16 FROST PLUG - REF	2


W.S. DARLEY & CO.
 MERGSE PARK, IL - GRIFFEN, FALLS, WI
 DWG - PSE TRANSMISSION
 NO TACH, CROSS SECTION
 DATE 02JAN2002
 SCALE 1/2

OLD PART NO. -
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REVISIONS			
LTR	DESCRIPTION	DATE	CHG NO.



REP#	NAME OF PART	QTY
1	ADAPTER - REF	1
6	BEARING - REF	3
8	TACH WORM	1
9	OIL SEAL - DRIVE SHAFT - REF	1
10	RETAINING RING - TACH WORM	1
11	DRIVE SHAFT - REF	1
12	BUSHING - TACH DRIVE	1
13	TACH DRIVE SHAFT	1
14	TACH GEAR	1
27	GEARCASE - REF	1
55	WOODRUFF KEY - TACH WORM	1
95	DRIVE LOCK PIN - TACH DRIVE	1
96	PLUG - TACH DRIVE	1
106	PLUG - TACH	1


W.S. DARLEY & CO.
 MELROSE PARK, IL - CHIPPEWA FALLS, WI
 DWG - OPTIONAL PSE & PSF TACH DRIVE
 CROSS SECTION

OLD PART NO.	
SPEC NO.	
DRN	WAH
CHKD	TED
TRCD	

DATE 03JAN2002
SCALE 1/1

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DPC0011



W. S. DARLEY & CO.

DARLEY INJECTION TYPE STUFFING BOX ADJUSTMENT

⚠ Prop 65 Warning: This product contains lead, a chemical known to the State of California to cause cancer, birth defects, and other reproductive harm. Wash hands after handling.

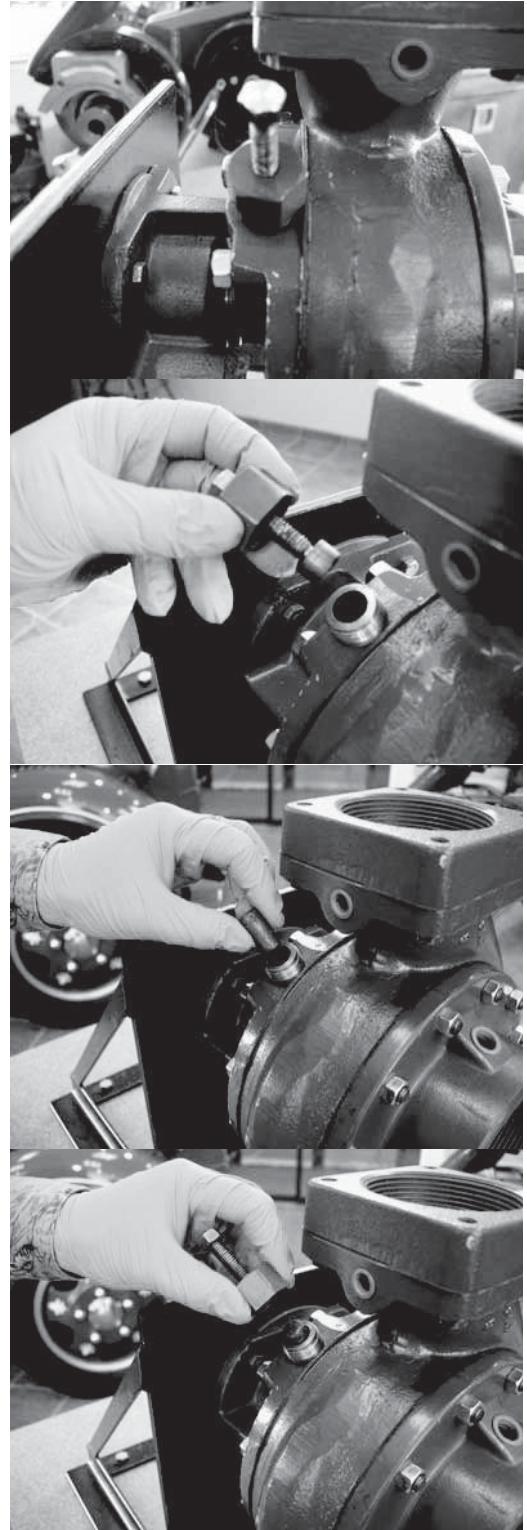
⚠ Caution: Do not attempt to use anything but Darley injection packing. Using the wrong packing material in your pump may cause catastrophic failure of the pump shaft sealing components.

Only use W.S. Darley & Co.'s plastallic injection packing material. It is made of a special composition of shredded fibers, and a special bonding and lubricating compound.

It is important that the stuffing box is completely filled solid with packing and compressed firm during adjustment to prevent formation of voids and excessive leakage.

To pack the stuffing box when empty and assembled in the pump, remove the packing screw and nut assembly, and insert pellet form packing into the packing plunger guide. Replace the packing screw assembly and use a hand speed wrench to force the pellets into the gland. DO NOT USE A POWER TOOL! Repeat pellet additions while turning the impeller shaft by hand until resistance to turning is felt when the stuffing box is almost full. Continue turning packing screw by hand using a standard 6" long 9/16" end wrench until 4 lb. of force is felt at the end of the wrench. This is equivalent to 2 ft-lb or 24 in-lb torque. Continue turning until a few flakes of packing are extruded out the opening between the impeller shaft and the stuffing box hole. The gland is now ready for pressure testing or pumping.

After priming the pump with water, start the pump and raise the discharge pressure to 50 psi. Tighten the packing screw using a 6" long 9/16" end wrench until 4 lb. force is felt at the end of the wrench (24 in-lb torque). Continue operating the pump at 50 psi for 5 minutes to dissipate packing pressure against the shaft and permit cooling water to flow between the shaft and stuffing box hole. Make sure that water actually does come through before operating pump at any higher pressure. The normal drip rate may vary between 5 and 60 drops per minute.



Operate the pump for 10 minutes at the highest normal operating pressure flowing sufficient water to prevent overheating. Do not run the pump blocked tight. Lower discharge pressure to 50 psi and repeat the packing screw tightening procedure outlined above.

The pump may now be operated for any time period required within its rated capacity. However, the drip rate should be monitored more frequently during the first few hours, and adjusted if necessary to achieve a stable flow rate. Several more adjustments may be required.



For a list of approximate quantity of packing pellets required by model (completely repacked), see below:

Model	Approximate # Packing Pellets
A	6
2BE	6
EM	15
H	8
JM	8
KD	10
KS	8
LD	15
LS	9
P	10
U2	5
U4	10

If further information is needed, call **W.S. DARLEY & CO.**
at Chippewa Falls, WI. at 800-634-7812 or 715-726-2650