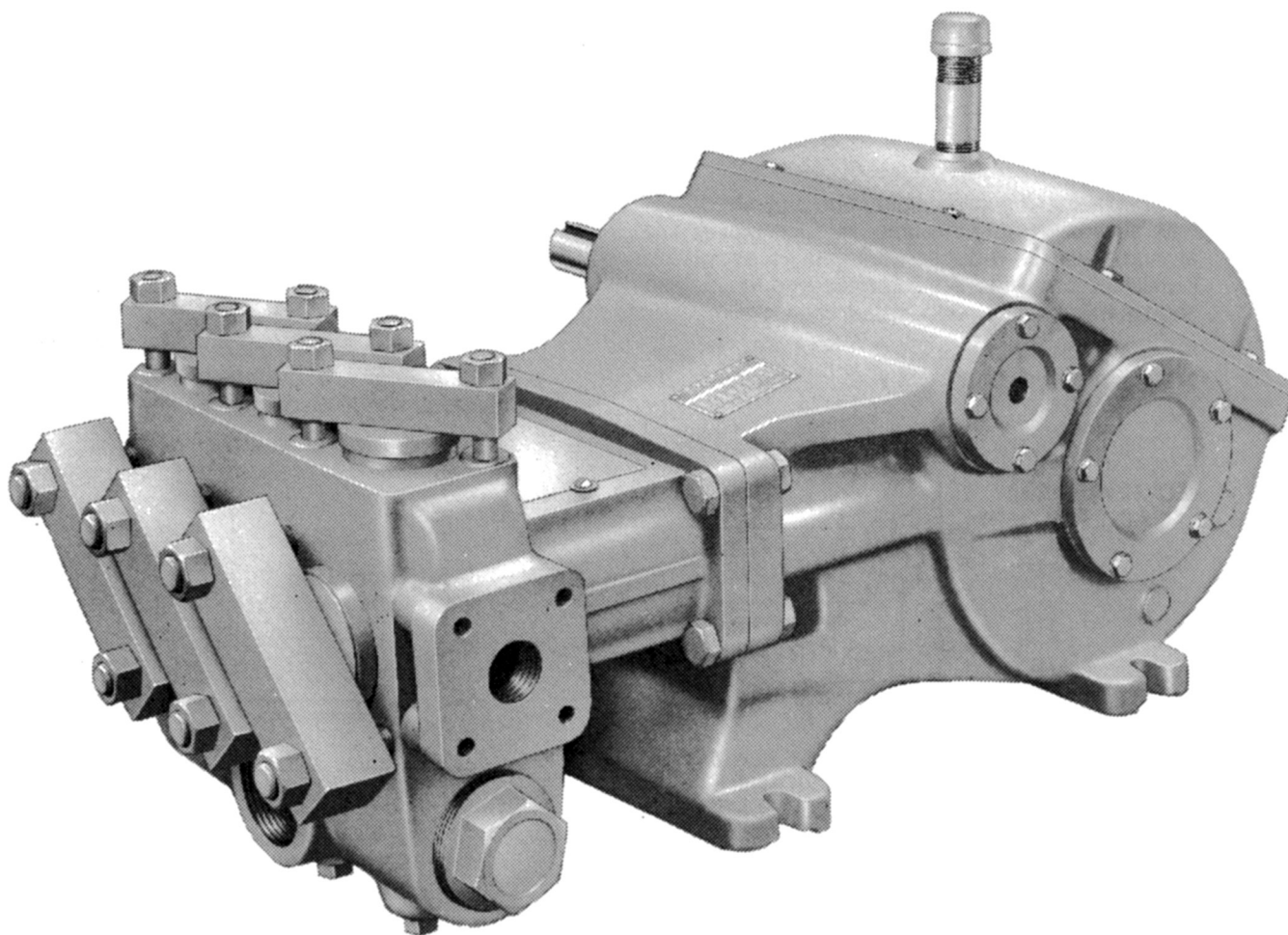




MYERS®



D35, D50 AND D60 SERIES **INDUSTRIAL PUMPS**

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

GENERAL INSTRUCTIONS

Reciprocating pumps of both the plunger and cup type are positive displacement in principle. Due to positive displacement characteristics, problems may arise through improper installation or application. When new or unusual installations are planned, or the material to be pumped is a liquid other than cold water, the customer should consult the factory for additional information.

Positive displacement pumps must have a proper size and operable type of pressure regulating valve or pressure relief valve piped into the discharge line. This is mandatory to prevent damage to pump and piping or possible injury to personnel. Do not install any valves or shutoff devices in the by-pass line from pressure regulator to tank or supply.

All pumps should be installed level. For mobile applications the maximum angle of intermittent operation should be no more than 5 degrees in any one direction.

CALIFORNIA PROPOSITION 65 WARNING:

▲ WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

INSTALLATION

Install suction piping one pipe size larger than suction tapping in pump. Reduce piping size at pump with a reducer coupling. A suction surge arrester will assure smoother operation. Keep suction piping as short and simple as possible with a minimum of lift when operating under suction lift conditions. Avoid any high points in suction line. Suction piping must not have any air leaks. Check suction piping assembly for leaks by using 20-80 psi air pressure and soap bubbles or submerging assembly under water.

Use suction strainer and screen of adequate size to avoid restriction of pump suction. Strainer mesh should be sufficiently small to prevent passage of trash which may lodge under pump valves. Keep screen clean with a regular maintenance schedule to avoid starving pump suction. Many pump problems and most plunger cup failures are directly traceable to a starved suction condition.

When pumping liquids that are heated, reduce pump speed to avoid suction problems. Be sure that discharge line is properly protected by means of a pressure regulating valve and a discharge surge arrester of proper size, capacity and pressure rating. The discharge line should be of comparable size to discharge tapping in pump. Discharge line velocity should not exceed 5 feet per second for most satisfactory operation.

Nozzle capacity or demand should not exceed 90% of pump capacity for satisfactory regulating valve operation. Nozzling in excess of this capacity may cause unstable pressure regulator operation. It is also preferred to nozzle in excess of 50% of pump capacity to reduce the rate of erosion or wear on the regulating valve and seat.

When lower system capacity demands are required, the pump speed should be reduced by changing drive ratios. This will reflect savings in power consumption, while reducing valve wear and extend pump life.

If line shock or water hammer is encountered, a second surge arrester should be installed in the discharge line adjacent to the spray gun or nozzles. Under some conditions it may also be desirable to isolate pump from piping with a suitable high pressure hose. This will eliminate transmission of line vibration to the pump and minimize possible failure of piping, pipe threads and pump casting.

Never pipe the bypass from a pressure regulating valve back into the pump suction. When the discharge line is shut off, the complete bypass is circulated back into the pump suction with a resulting rapid temperature rise which will destroy plunger cups and gaskets.

Avoid freezing by draining all water from pump and system in cold weather. Make sure that the drive is adequate for the horsepower required and is properly aligned and tensioned. With belt drives, the pulley on both the motor and pump should be located as closely as possible to the bearing to reduce bearing and shaft bending loads. Make sure that all bolts, nuts, set screws and keys are properly tightened and pump belts and pulleys are properly protected by guards according to code.

DIRECT DRIVE ENGINE DRIVEN PUMPS

It is desirable to align the Dodge® Para-Flex® couplings as accurately as possible to minimize flexing. After any repositioning, recheck both parallel and angular alignments by mounting indicators, near the O.D. of the flange, and rotate the shaft 360 degrees. A good installation indicator reading should exceed .030". Flange should be positioned on shaft to obtain 3-1/16" measured from adapter to rear of clamp ring. Adaptor bolts should be torqued to 300lbs and clamp ring bolts to 400lbs.

STARTING PUMP

Fill pump crankcase with recommended oil to the level mark on the oil saber. Oil recommendations are covered in lubrication section of pump instructions. Replace all drain plugs in pump and piping. Inspect tank to be sure that no foreign material is in tank or suction line. Fill tank at least half full or connect

suction to water supply. Open valve if present in suction line. If pumping from a pit, make sure that suction line is completely submerged. Make sure all valves, including spray gun or nozzles, are open in discharge line. Spray gun may be anchored to discharge back into the tank. Completely back off pressure adjusting screw on pressure regulating valve.

CAUTION: When pumping from a pit or under a suction lift condition, remove the cylinder end caps and pour water into each cylinder. This will assure that water is present in the cylinder to lubricate cups.

After starting, close discharge valve or spray gun slowly while watching pressure gauge to make sure relief valve or unloader is operating properly. Adjust relief valve or unloader to desired pressure. See regulator instructions. Cycle nozzles, or gun, on and off to be sure that pressure adjustment and regulator operation is satisfactory. Nozzle capacity should not exceed 90% of pump capacity for satisfactory regulating valve operation.

LUBRICATION

Fill gear case with Mobilgear 630 or equal additive to 3-1/2 qts for D35 Series and 5-1/2 qts for D50-60 Series. Maintain oil level at the mark on oil dipstick.

NOTE: After first 30 hours of operation, drain oil from gear case (preferably drain at operating temperature), replace plug and fill gear case with kerosene to normal oil level. Operate at full speed at zero pressure for two minutes then drain, replace plug and refill crankcase with new oil. Change oil every 300 hours thereafter. Check oil level daily and add oil as needed.

ADDITIVES FOR CRANKCASE OIL

Use of molybdenum disulfide (MoS₂) is highly recommended as an additive to the gear case oil in back geared pumps and speed reducers. The additive is compatible with all known oils. It appears to be so effective in reducing wear and friction that power train life may be doubled between overhauls.

- D35 volume MoS₂ concentrate or dispersion "M" for 5% – 6 fl. oz.
- D35 volume MoS₂ concentrate or dispersion "M" for 10% – 12 fl. oz.
- D50-60 volume MoS₂ concentrate or dispersion "M" for 5% – 9 fl. oz.
- D50-60 volume MoS₂ concentrate or dispersion "M" for 10% – 18 fl. oz.

SERVICE

Disconnect electrical leads to motor, or remove spark plug leads on engine.

REMOVING PLUNGERS: BELL SHAPED CUPS

Place plunger at front end of cylinder and remove valve assembly, if required, to provide clearance for pulling plunger. Remove socket head cap screw, thread plunger removal tool onto plunger stud and pull plunger out of cylinder liner.

REPLACING PLUNGER CUPS (MODELS D35-12D, D50-12, D60-10)

Remove nut from plunger stud and remove worn cup. Apply non-hardening sealing compound and replace with new cup. Thread nut back onto plunger stud and tighten nut to a snug compression loading.

CAUTION: Do not overtighten nut on plunger cup, as this will cause excessive squeeze at the cup heel resulting in rapid cup wear.

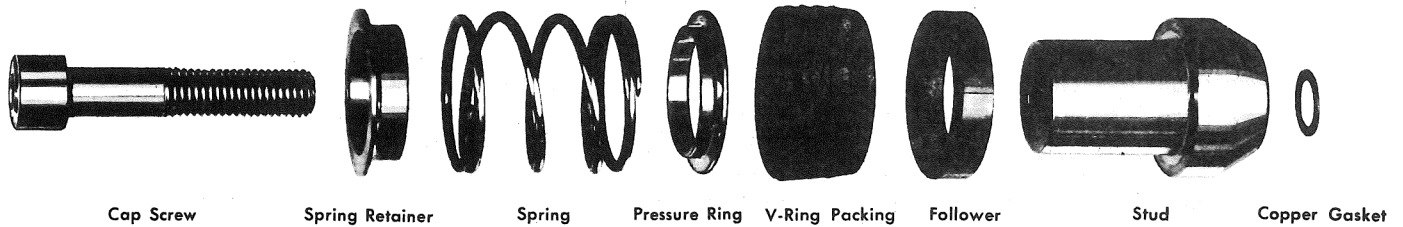
Before installing the plunger in the cylinder, the ring gasket seal between the plunger and rod should be inspected and replaced if worn. Inspect cylinders for linear grooving and replace cylinders if necessary. New cups will rapidly cut or wear out in groove cylinders.

Thread the plunger removal tool onto the plunger stud making it flush with the plunger nut. Lubricate plunger cup with Molykote® or Lubriplate® and check to be sure that the ring gasket is installed in plunger stud. Retract plunger rod by rotating pump crankshaft. Install plunger by driving plunger assembly back into cylinder. Replace plunger rod socket head cap screw.

REPLACING PLUNGERS V-RING PACKING (MODEL D35-12AVD)

Move plunger to the front end of the cylinder and remove valve assembly if required to provide clearance for pulling plunger. Remove cap screw and with plunger at extended position, back off piston rod and insert tool until large diameter catches behind stud. Force plunger assembly from liner by rotating crankshaft slowly. Inspect cylinders for linear grooving and replace cylinders if necessary. New packing will rapidly cut or wear out in grooved cylinders.

V-RING PLUNGER ASSEMBLY



V-rings should be lubricated with Molykote for ease in assembly. Do not use a graphite type grease.

When installing each V-ring plunger assembly, rotate crankshaft until piston rod is at the most extended position. Place copper gasket in position in the stud and use a small amount of Permatex® to hold in place. Insert plunger assembly into liner and drive slowly into place. Cap screw should then be inserted and torqued to 25 ft/lb.

REPLACING PLUNGERS SINGLE LIP CUP (MODEL D35-8PP)

Move plunger to front end of cylinder and remove suction valve if required for clearance for pulling plunger. Remove socket head cap screw and rotate crankshaft to retract plunger rod from cylinder. Insert V-ring packing tool into rear of cylinder and force plunger assembly from cylinder by slowly rotating crankshaft. Inspect cylinders for linear grooving and replace cylinders if necessary. New cups will rapidly cut or wear out in grooved cylinders.

Grease the O-ring and install in the groove on cup follower. With a flat plate behind cup, hold the cup and follower firmly in a vise with follower boss in hole in cup. Use a thin blunt tool and carefully push entire circumference of O-ring to the back of the groove and under the lip of the cup. Assemble all parts onto socket head cap screw and apply Lubriplate® to the outside of cup. With plunger rod in forward position, insert plunger assembly into cylinder and tighten cap screw.

REPLACING CYLINDER LINERS

Remove plungers and rotate crankshaft until piston rod is in rear position. Insert puller through the inside of cylinder and pilot over piston rod. Insert disc into slots on puller and slip plate over threads on puller. Screw nut onto thread on puller and snug up. Tighten nut until liner breaks loose. Loosen nut, slip disc out of slot and remove puller. Repeat to remove remainder of cylinder liners.

Reasonable care and judgment should be used when installing the new tapered cylinder shell. Clean out any accumulation of loose rust or corrosion in tapered cylinder slots. Insert shells into position by hand and drive into position firmly. Never use a hand or hydraulic arbor press to install cylinder shells. If extreme pressures are used during installation, parts will be very difficult to remove for later replacement and liners may be distorted.

REPLACING SEATS: CENTER POST VALVES

Remove the valve and cylinder caps which provide access to both the suction and discharge valves. Remove the stainless steel shoulder screw, which serves as a valve guide and spring retainer, spring and valve from the pump fluid end. Assemble stud, retainer and three screws. Insert screw heads through holes in valve seat. Rotate retainer to the right until heads catch and secure in place by screwing down stud firmly by hand. Place plate over stud and screw on nut. Torque slowly until seat breaks loose. Suction valve seats in similar manner, except two stud lengths are joined using coupling.

NOTE: Valve seats are usually distorted and cannot be reused unless face is reground to flat condition.

Inspect tapered valve seat bore in fluid end for rust and wipe out excess. Place a new lower seat in tapered hole and drive lower seat firmly into place. Repeat for upper seat being sure to also inspect the tapered bore in housing for rust. Reassemble the valve, spring and spring retainer, and verify that springs are in correct location. When upper and lower valve seats are the same size, the heavier spring is always installed on the upper or discharge valve.

NOTE: Be sure that shoulder screw is bottomed in valve seat and the valve disc is installed on valve with flat face down.

Inspect O-ring on valve and cylinder caps. Replace if they show signs of wear. Lubricate O-rings and replace cap, bar and nuts.

REPLACING SEATS: CAGED VALVES

Remove spring retaining bar, spring and flat valve. When removing upper valve seat, pass head of puller through hole in valve seat before the slide wedge is inserted alongside puller bolt. Draw down on the nut at the top of the bolt. When removing lower seats, drop puller bolt through opening for upper seat and remove in same manner using the slide wedge on pumps where lower seats are same size as upper seats.

Place new lower seat in tapered hole in cylinder body. Hold a soft brass or hardwood round bar against slot and drive into place. The knocker stem is in two pieces so that it can be shortened for installing discharge valves after suction valves have been installed.

REPLACING PLUNGER ROD SEALS

The rod seal assembly contains two seals and two oil seals with lips facing the power end. The oil seal can be replaced without taking the fluid end off by removing the cylinder and piston to allow access to oil seal housing. Unscrew the two Allen screws and place them into the other two tapped holes. Gradually screw them in to push oil seal housing off the retainer. After assembling new seals in oil seal housing, an assembly thimble should be used on the end of the crosshead rod for sliding the oil seal housing back into the retainer. Check gasket and replace if damaged.

REMOVING CRANKSHAFT AND PINION SHAFT

Remove plunger assemblies and remove connecting link caps. Move the link-crosshead assembly as far forward as possible. On some models, it may be necessary to remove the fluid cylinder body to obtain clearance for crankshaft removal.

Secure separation of the crankshaft gear and gear case so that crankshaft will be held in place against pinion shaft. Remove both crankshaft bearing caps. Hold crankshaft at ring gear and left-hand link journal to prevent dropping into bearing bores and remove from gear case by moving crankshaft to the right until left end can be swung free.

To remove pinion shaft, observe inside of gear case to see if small sheet metal plates are in front of each bearing. These plates must be removed prior to the bearing caps.

Tap the end of the pinion shaft extension to remove the bearing cup at the opposite end. After removing pinion shaft, the remaining bearing cup can be removed by gently tapping against the peripheral edge of the cup with a brass rod.

REPLACING PINION SHAFT AND SHIMMING BEARINGS

After installing the link-crosshead assemblies and moving them toward the fluid end as far as possible, tap the right-hand pinion shaft bearing cup into position using the bearing cap. Place pinion shaft in position and tap left-hand bearing cup into place. Replace sheet metal plates, if used on this model pump.

Cover the shaft keyway to protect lip of oil seal. Slide on the open bearing cap with a .030" shim. Tighten the four cap screws to recommended torque.

Install other cap using total shim thickness. Tighten cap screws holding pinion or crankshaft caps to gear case. Rotate pinion shaft back and forth, applying about 15 lbs. axial force to properly seat tapered rollers. Measure end-play by using an indicating gauge.

Subtract recommended end-play (.005" – .009") from actual end-play. This is the amount of shim that must be removed. After excess shim thickness has been removed, replace caps and retighten cap screws. Measure end-play, and if end-play is not within limits recommended, add or subtract shims as required.

Pinion bearing shims are made of .002" layers bonded together. Start separation of layers by heating edge, then peel back.

REPLACING CRANKSHAFT AND SHIMMING BEARINGS

Press the bearing cups into the caps. Place one cap into position on the right side with cap screws engaged about one turn. Install crankshaft, left end first, and push both bearing caps into place. Extreme care should be exercised to avoid damage to gear teeth, bearings and link journals.

For quiet operation and long life, the crankshaft and bearings must be installed with .003" to .005" preload. To adjust, loosen the four cap screws on the pinion shaft bearing cap. Place about a .045" shim on the right crankshaft bearing cap and tighten the five cap screws. Install the left cap without shims and secure with two cap screws. Torque at 13 ft/lbs and rotate the crankshaft. Retorque the cap screws. Repeat three times to properly seat the tapered roller bearings. Measure the shim gap remaining between the bearing cap and the gear case. Required shim thickness for this cap is equal to the average gap measurement plus .031" for D35 and .022" for D50-60 Series. Insert correct shim thickness under left bearing cap and tighten cap screws. Next, install connecting links and caps, and torque cap screws.

Check for adequate side clearance of links on crankshaft. Some shims must be moved from one end to the other until sideways movement of all links can be seen. Check the torque of cap screws on all bearing caps.

RECONDITIONED CRANKSHAFTS

When the crank throws are slightly damaged, they can sometimes be reconditioned for further use. This can be done by sandpapering and polishing until all ridges are completely removed. The final polishing operation should be with very fine emery cloth. If the surface is badly damaged, the crankshaft can often be salvaged by “metalizing” the crank throw, regrinding and polishing to the original diameter.

SERVICING CONNECTING LINKS

The connecting rod link is furnished with replaceable split sleeve bearing inserts at the crank throw. Do not attempt to re-fit connecting links to the crankshaft bearings by filing or grinding the mating faces of the link cap where it contacts the link. Always be sure that the proper side of the link is placed upward when attaching it to the crankshaft. The upper side contains an oil hole at the crosshead end of the link. This oil hole must be up to allow proper oil feeding to the crosshead pin bushing. The wrist pin is then press-fitted into the crosshead and slip-fitted through the bronze bushing. Use an arbor press to force in the wrist pin, checking to see if the link is free to rotate after the wrist pin is pressed in. Verify that both sides of the wrist pin do not protrude beyond the crosshead.

The crosshead end of the connecting link is fitted with a bronze bushing. New replacement link bushings are reamed to the proper size for immediate installation. If the bushing is removed from an old link, it may be necessary to ream the replaced bushing to the proper inside diameter after it is pressed into the link. When placing the bushing on the link, be sure that the oil holes in the bushing and link are in line after the bushing is pressed into position.

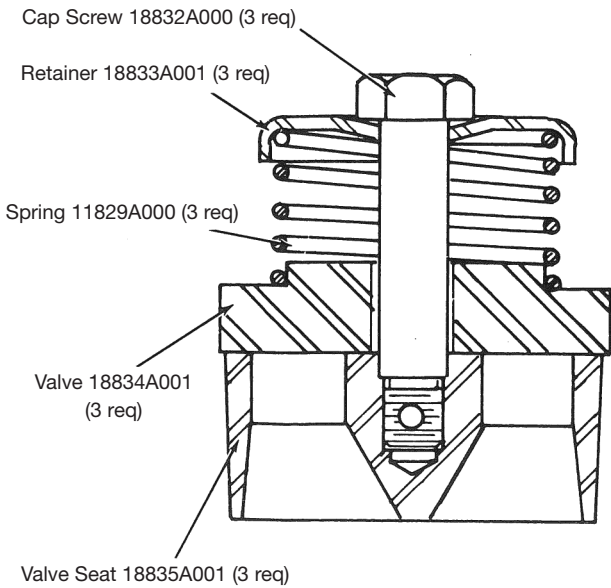
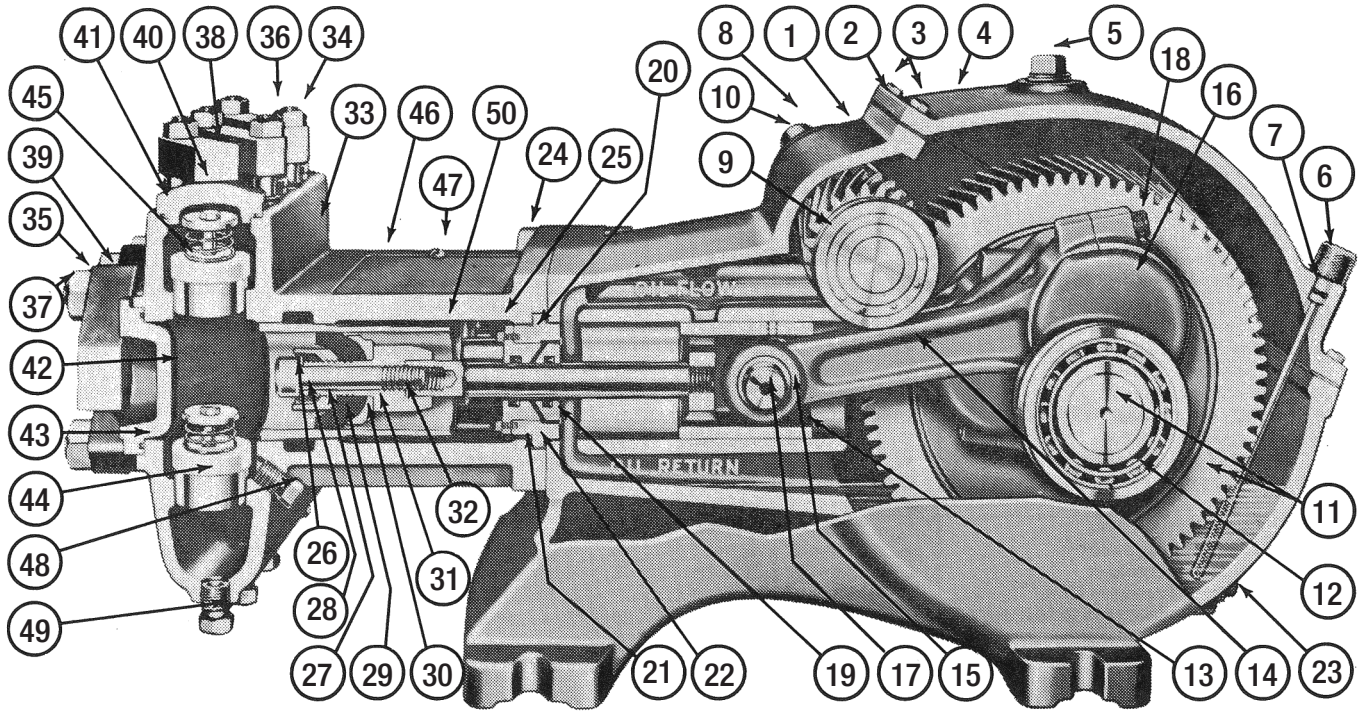
CROSSHEAD AND PISTON RODS

Repair parts for the crosshead and piston rod are supplied as a complete unit. If either of these parts becomes worn, it is necessary to replace both the crosshead and piston rod. It is not practical to attempt to tighten a loose piston rod in a crosshead. Under normal conditions a crosshead will not wear, nor will the bore of the crankcase wear to the extent that oversize crossheads will be required. A clearance of .002" to .004" is standard for the crosshead.

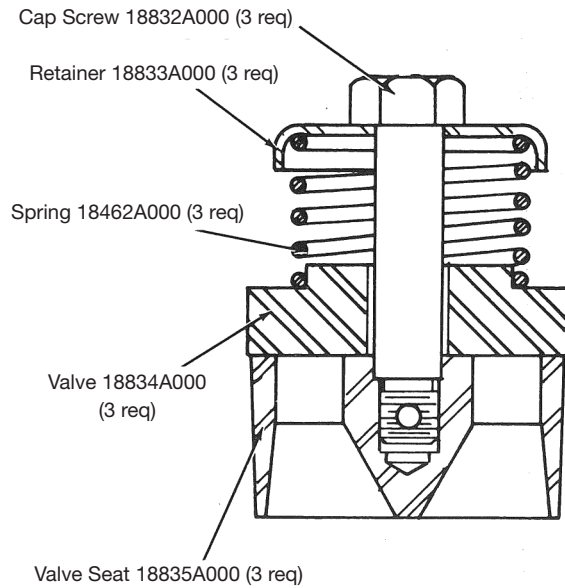
RECOMMENDED TORQUE VALUES (foot-pounds)

| FASTENER LOCATION |
|---|
| Link Bearing Caps - 40 |
| Crankshaft End Caps - 20 |
| Pinion Bearing End Caps - 20 |
| Fastener Plunger Assembly to Piston Rod Nut and Cap Screw- 25 |
| Valve Cover Clamps - 50 |
| Cylinder Cover Clamps - 50 |

D35-8PP-2H & D45-12PP INDUSTRIAL PUMPS PARTS LIST



DISCHARGE VALVE AND SEAT COMPLETE NO. 18925A001K



SUCTION VALVE AND SEAT COMPLETE NO. 18925A000K

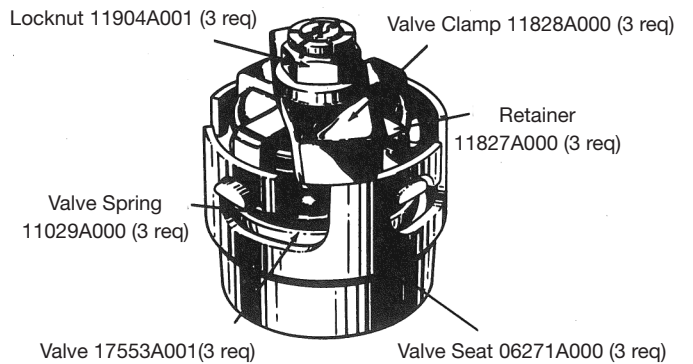
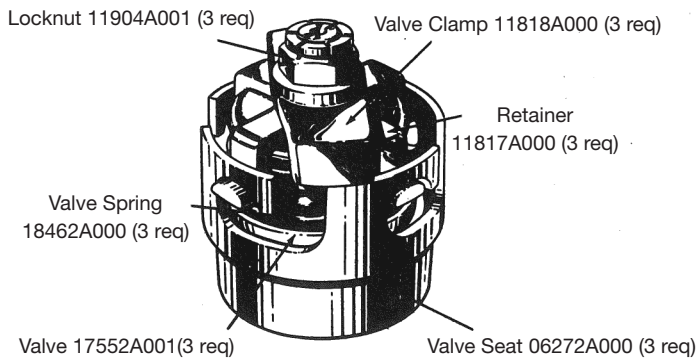
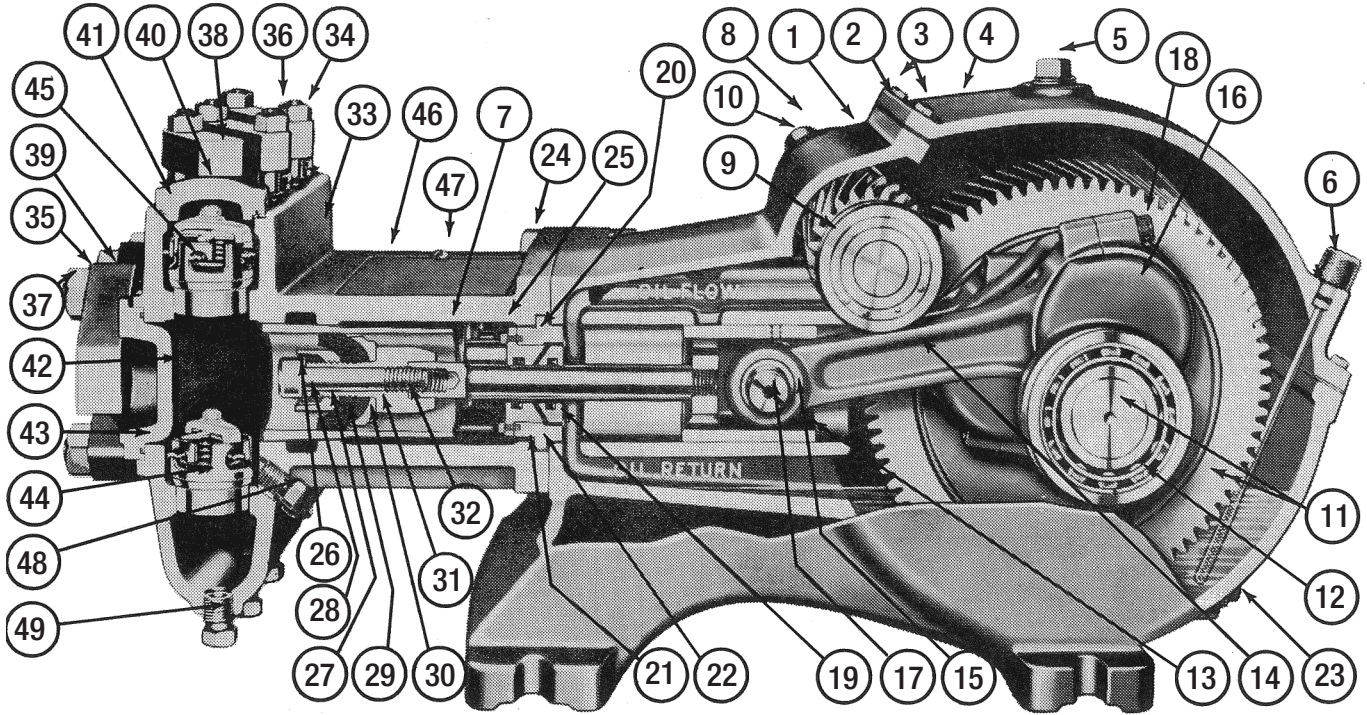
D35-8PP-2H & D45-12PP INDUSTRIAL PUMPS PARTS LIST

| Catalog Number of Industrial Pump (Helical Gears) | | | D35-8PP-2H | D45-12PP |
|---|---|------|------------|------------|
| Item | Description | Qty. | Eng. No. | Eng. No. |
| 1 | GEAR CASE | 1 | 04663E000 | 04663E000 |
| 2 | GASKET, FOR GEAR CASE LID | 1 | 06222C000 | 06222C000 |
| 3 | CAP SCREW, 5/16"-18 UNC x 7/8" | 8 | 19100A005 | 19100A005 |
| 4 | LID, FOR GEAR CASE | 1 | 04664B000 | 04664B000 |
| 5 | VENT AND OIL FILTER PLUG | 1 | 17388A000 | 17388A000 |
| 6 | OIL GAUGE WITH O-RING | 1 | 17360A010K | 17360A010K |
| 7 | CYLINDER LINER | 3 | 18806A001 | 18806A001 |
| | PLUG, 1-1/4" PIPE | 1 | 05022A041 | 05022A041 |
| | PLUG, 2" PIPE | 2 | 05022A048 | 05022A048 |
| | O-RING, FOR CYLINDER LINER | 3 | 05876A085 | 05876A085 |
| 8 | PINION SHAFT WITH HELICAL PINION | 1 | 19816B000 | 19816B000 |
| | SHIM PLASTIC FOR PINION SHAFT .003" THICK | 4 | 05231A074 | 05231A074 |
| | SHIM PLASTIC FOR PINION SHAFT .015" THICK | 4 | 05231A075 | 05231A075 |
| 9 | CONE, BEARING, PINION SHAFT | 2 | 05674A013 | 05674A013 |
| | CUP, BEARING, PINION SHAFT | 2 | 05675A009 | 05675A009 |
| 10 | CAP, OPEN, PINION SHAFT | 1 | 04563A001 | 04563A001 |
| | CAP, CLOSED, PINION SHAFT | 1 | 04741B000 | 04741B000 |
| | OIL SEAL, OPEN END OF PINION SHAFT | 1 | 05710A017 | 05710A017 |
| | CAP SCREW, 3/8"-UNC x 1", BEARING CAPS | 18 | 19101A009 | 19101A009 |
| | WASHER SEAL, FOR 3/8" CAP SCREWS | 18 | 14946A003 | 14946A003 |
| 11 | CRANKSHAFT WITH HELICAL GEAR | 1 | 19817C000 | 19817C000 |
| 12 | CONE, BEARING, FOR CRANKSHAFT | 2 | 05674A015 | 05674A015 |
| | CUP, BEARING, FOR CRANKSHAFT | 2 | 05675A011 | 05675A011 |
| | CAP, BEARING, FOR CRANKSHAFT | 2 | 18466B001 | 18466B001 |
| | SHIM PLASTIC, 4-17/32" I.D., 6-1/32" O.D., .003" THICK | 6 | 05068A017 | 05068A017 |
| | SHIM PLASTIC, 4-17/32" I.D., 6-1/32" O.D., .015" THICK | 5 | 05068A015 | 05068A015 |
| 13 | CROSSHEAD AND PISTON ROD | 3 | 06361B002 | 06361B002 |
| 14 | LINK AND BUSHING AND CAP SCREWS | 3 | 11651C002 | 11651C002 |
| 15 | BUSHING, FOR LINK | 3 | B1619A000K | B1619A000K |
| 16 | BEARING, HALVES REG., FOR LINK | 3 | 11647A012K | 11647A012K |
| 17 | WRIST PIN, CROSSHEAD TO LINK | 3 | M1525A001 | M1525A001 |
| 18 | CAP SCREW, FOR LINK | 6 | 06106A040 | 06106A040 |
| | WASHER, LOCK | 6 | 05454A025 | 05454A025 |
| 19 | HOUSING, OIL SEAL | 3 | 24959A001 | 24959A001 |
| | OIL SEAL | 6 | 22835A004 | 22835A004 |
| 20 | RETAINER, OIL SEAL HOUSING | 3 | 24958A000 | 24958A000 |
| | SCREW, ALLEN | 6 | 06106A034 | 06106A034 |
| | GASKET, SEAL HOUSING | 3 | 05059A434 | 05059A434 |
| | KIT FOR REF. NO. 19 & 20 | 1 | 24648A000 | 24648A000 |

| Catalog Number of Industrial Pump (Helical Gears) | | | D35-8PP-2H | D45-12PP |
|---|--|------|-------------|------------|
| Item | Description | Qty. | Eng. No. | Eng. No. |
| 21 | SPRING, FOR RETAINER FOR OIL SEAL WIPER | 3 | M01643A000 | M01643A000 |
| 22 | GASKET, VELLUMOID, FOR OIL SEAL ASSEMBLY | 3 | 05059A058 | 05059A058 |
| 23 | DRAIN PLUG, MAGNETIC 3/4" | 1 | 17481A002 | 17481A002 |
| 24 | CAP SCREW, 3/4"-10 UNC x 3" | 4 | 06106A038 | 06106A038 |
| | CYLINDER BODY TO GEAR CASE | | | |
| | LOCK WASHER, 3/4", FOR REF. 24 | 4 | 05454A003 | 05454A003 |
| 25 | CAP SCREW, 5/8"-11 UNC x 2" | 4 | 19105A008 | 19105A008 |
| | CYLINDER BODY TO GEAR CASE | | | |
| 26 | CAP SCREW, PLUNGER TO PISTON ROD | 3 | 16654A006 | 16654A006 |
| 27 | FOLLOWER, FOR PLUNGER | 3 | † 20161A001 | 17537A000 |
| 28 | O-RING, FOR PLUNGER FOLLOWER | | NOT REQ | NOT REQ |
| 29 | PLUNGER CAP (FLAT) | 3 | † 13046A026 | 06086A011 |
| 30 | O-RING, FOLLOWER TO BACKUP RING | 3 | 05876A022 | 05876A022 |
| 31 | RING, BACKUP, FOR PLUNGER | 3 | 20162A001 | 17535A000 |
| 32 | STUD, PLUNGER | 3 | 20163A000 | 17533A000 |
| 33 | CYLINDER BODY | 1 | 18791F000 | 18791F000 |
| 34 | NUT, 1/2"-13 UNC, FOR STUD REF. 36 | 6 | 19109A097 | 19109A097 |
| 35 | NUT, 1/2"-13 UNC, FOR STUD REF. 37 | 6 | 19109A097 | 19109A097 |
| 36 | STUD, FOR VALVE CAP CLAMPS | 6 | 05659A548 | 05659A548 |
| 37 | STUD, FOR CYLINDER CAP CLAMPS | 6 | 05659A548 | 05659A548 |
| 38 | CLAMP, VALVE CAP | 3 | M01517A000 | M01517A000 |
| 39 | CLAMP, CYLINDER CAPS | 3 | M01517A000 | M01517A000 |
| 40 | VALVE CAP, DISCHARGE | 3 | 17390A000 | 17390A000 |
| 41 | O-RING, FOR VALVE CAPS | 3 | 05876A064 | 05876A064 |
| 42 | CYLINDER CAP, SUCTION | 3 | 17391A000 | 17391A000 |
| 43 | O-RING, FOR CYLINDER CAPS | 3 | 05876A065 | 05876A065 |
| 44 | SUCTION VALVE AND SEAT COMPLETE | 3 | 18925A000K | 18925A000K |
| 45 | DISCHARGE VALVE AND SEAT COMPLETE | 3 | 18925A001K | 18925A001K |
| 46 | LID, OVER PLUNGERS | 1 | M01820A000 | M01820A000 |
| 47 | MACHINE SCREW, FOR LID OVER PLUNGERS | 2 | 148850001 | 148850001 |
| | WASHER, STEEL, FOR REF. 47 MACHINE SCREW | 2 | 05030A020 | 05030A020 |
| 48 | DRAIN PLUG, 3/8" PIPE | 3 | 06136A000 | 06136A000 |
| 49 | DRAIN PLUG, 1" PIPE | 3 | 06206A000 | 06206A000 |

† The parts above are used on newer D35-8PP-2H pumps. It can be differentiated by the follower and cup. Use 06737A031 if your cup is all rubber and no fabric. The 13046A026 contains fabric and rubber. Use 20161A000 & 05876A040 O-ring if your follower has an O-ring groove on the outside diameter. The 20161A001 follower has no groove and does not need an O-ring groove on the outside diameter. This does not apply to D45-12PP.

D35-12D-2H INDUSTRIAL PUMP PARTS LIST



SUCTION VALVE AND SEAT COMPLETE NO. 11902A001K

DISCHARGE VALVE AND SEAT COMPLETE NO. 11903A001K

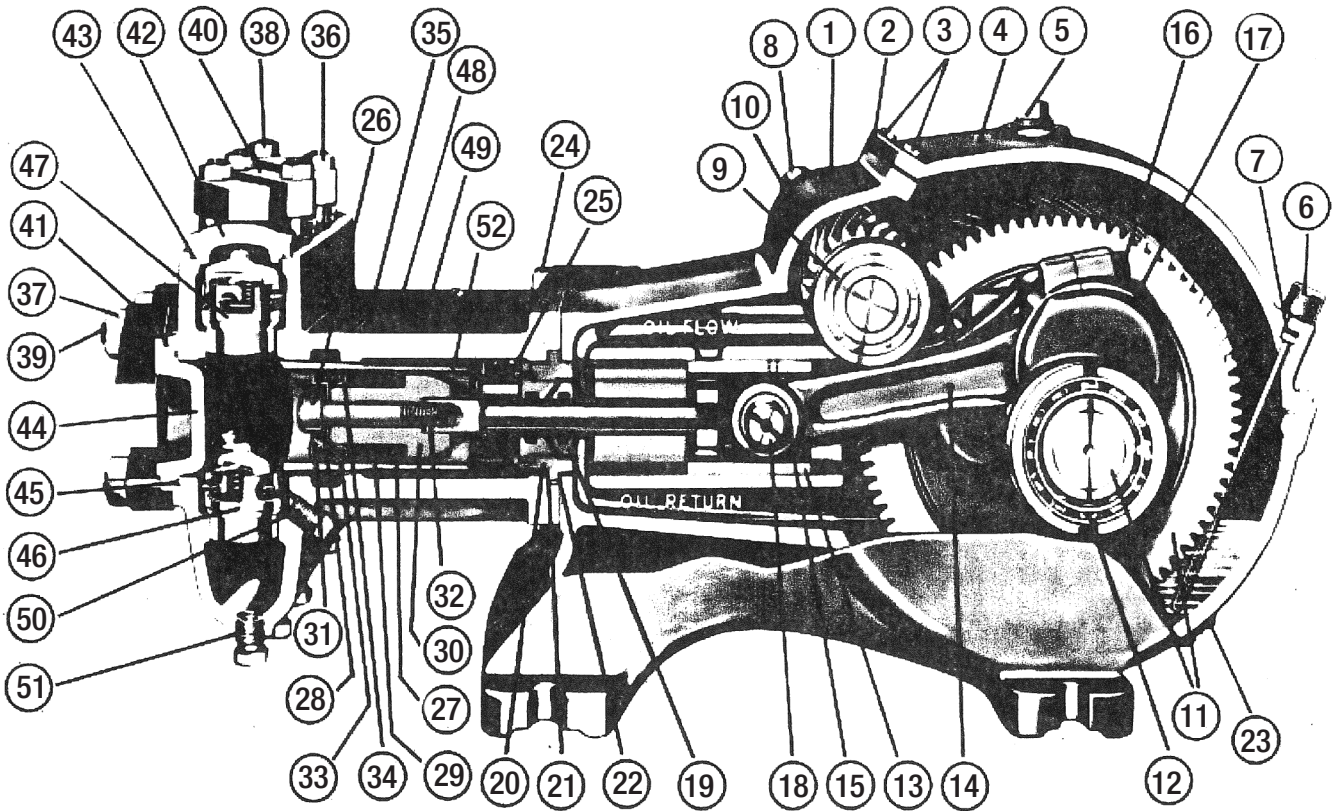
D35-12D-2H

INDUSTRIAL PUMP PARTS LIST

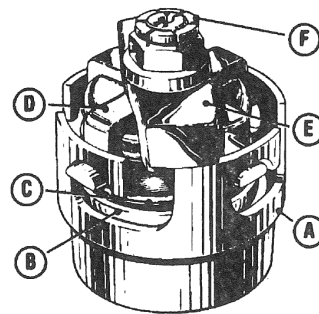
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|---|--|------|------------|
| Item | Description | Qty. | Eng. No. |
| 1 | GEAR CASE | 1 | 04663E000 |
| 2 | GASKET, FOR GEAR CASE LID | 1 | 06222C000 |
| 3 | CAP SCREW, 5/16"-18 UNC x 7/8" | 8 | 19100A005 |
| 4 | LID, FOR GEAR CASE | 1 | 04664B000 |
| 5 | VENT AND OIL FILTER PLUG | 1 | 17388A000 |
| 6 | OIL GAUGE WITH O-RING | 1 | 17360A001 |
| 7 | O-RING, FOR OIL GAUGE | 1 | 000790031 |
| 8 | PINION SHAFT WITH HELICAL PINION | 1 | 19816B000 |
| | SHIM PLASTIC FOR PINION SHAFT .003" THICK | 4 | 05231A074 |
| | SHIM PLASTIC FOR PINION SHAFT .015" THICK | 4 | 05231A075 |
| 9 | CONE, BEARING, PINION SHAFT | 2 | 05674A013 |
| | CUP, BEARING, PINION SHAFT | 2 | 05675A009 |
| 10 | CAP, OPEN, PINION SHAFT | 1 | 04563A001 |
| | CAP, CLOSED, PINION SHAFT | 1 | 04741B000 |
| | OIL SEAL, OPEN END OF PINION SHAFT | 1 | 05710A017 |
| | CAP SCREW, 3/8"-UNC x 1", BEARING CAPS | 18 | 19101A009 |
| | SEAL WASHER, FOR 3/8" CAP SCREWS | 18 | 14946A003 |
| 11 | CRANKSHAFT WITH HELICAL GEAR | 1 | 19817C000 |
| 12 | CONE, BEARING, FOR CRANKSHAFT | 2 | 05674A015 |
| | CUP, BEARING, FOR CRANKSHAFT | 2 | 05675A011 |
| | CAP, BEARING, FOR CRANKSHAFT | 2 | 18466B001 |
| | SHIM PLASTIC, 4-17/32" I.D., 6-1/32" O.D., .003" THICK | 6 | 05068A017 |
| | SHIM PLASTIC, 4-17/32" I.D., 6-1/32" O.D., .015" THICK | 5 | 05068A015 |
| 13 | CROSSHEAD AND PISTON ROD | 3 | 06361B002 |
| 14 | LINK AND BUSHING AND CAP SCREWS | 3 | 11651C002 |
| 15 | BUSHING, FOR LINK | 3 | B01619A001 |
| 16 | BEARING, HALVES REG., FOR LINK | 3 | 11647A012K |
| 17 | WRIST PIN, CROSSHEAD TO LINK | 3 | M01525A001 |
| 18 | CAP SCREW, FOR LINK | 6 | 06106A040 |
| | WASHER, LOCK | 6 | 05454A025 |
| 19 | HOUSING, OIL SEAL | 3 | 24959A001 |
| | OIL SEAL | 6 | 22835A004 |
| 20 | RETAINER, OIL SEAL HOUSING | 3 | 24958A000 |
| | SCREW, ALLEN | 6 | 06106A034 |
| | GASKET, SEAL HOUSING | 3 | 05059A434 |
| | KIT FOR REF. NO. 19 & 20 | 1 | 24648A000 |
| 21 | SPRING, FOR RETAINER FOR OIL SEAL WIPER | 3 | M01643A000 |

| Catalog Number of Industrial Pump (Helical Gears) | | | D35-12D-2H |
|---|---|------|------------|
| Item | Description | Qty. | Eng. No. |
| 22 | GASKET, VELLUMOID, FOR OIL SEAL ASSEMBLY | 3 | 05059A058 |
| 23 | DRAIN PLUG, MAGNETIC 3/4" | 1 | 17481A002 |
| 24 | CAP SCREW, 3/4"-10 UNC x 3" CYLINDER BODY TO GEAR CASE | 4 | 06106A038 |
| | LOCK WASHER, 3/4", FOR REF. 24 | 4 | 05454A003 |
| 25 | CAP SCREW, 5/8"-11 UNC x 2" CYLINDER BODY TO GEAR CASE | 4 | 19105A008 |
| 26 | CAP SCREW, PLUNGER TO PISTON ROD | 3 | 16654A006 |
| 27 | NUT | 3 | 17512A000 |
| 28 | WASHER LOCK | 3 | 06107A013 |
| 29 | CUP | 3 | 06086A010 |
| 30 | FOLLOWER | 3 | 17511A000 |
| 31 | WASHER | 3 | 05030A128 |
| 32 | STUD, PLUNGER | 3 | 17545A000 |
| 33 | CYLINDER BODY | 1 | 18782F000 |
| 34 | NUT, 1/2"-13 UNC, FOR STUD REF. 36 | 6 | 19109A097 |
| 35 | NUT, 1/2"-13 UNC, FOR STUD REF. 37 | 6 | 19109A097 |
| 36 | STUD, FOR VALVE CAP CLAMPS | 6 | 05659A059 |
| 37 | STUD, FOR CYLINDER CAP CLAMPS | 6 | 05659A059 |
| 38 | CLAMP, VALVE CAP | 3 | 17438A000 |
| 39 | CLAMP, CYLINDER CAPS | 3 | 17438A000 |
| 40 | VALVE CAP, DISCHARGE | 3 | 17390A000 |
| 41 | O-RING, FOR VALVE CAPS | 3 | 05876A064 |
| 42 | CYLINDER CAP, SUCTION | 3 | 17391A000 |
| 43 | O-RING, FOR CYLINDER CAPS | 3 | 05876A065 |
| 44 | SUCTION VALVE AND SEAT COMPLETE | 3 | 11902A001K |
| 45 | DISCHARGE VALVE AND SEAT COMPLETE | 3 | 11903A001K |
| 46 | LID, OVER PLUNGERS | 1 | M01820A000 |
| 47 | MACHINE SCREW, FOR LID OVER PLUNGERS | 2 | 148850001 |
| | WASHER, STEEL, FOR REF. 47 MACHINE SCREW | 2 | 05030A020 |
| 48 | DRAIN PLUG, 3/8" PIPE | 3 | 06136A000 |
| 49 | DRAIN PLUG, 1" PIPE | 3 | 06206A000 |
| 50 | CYLINDER LINER | 3 | 18806A003 |
| | PLUG, 1-1/4" PIPE | 1 | 05022A047 |
| | PLUG, 2" PIPE | 2 | 05022A048 |
| | O-RING, FOR CYLINDER LINER | 3 | 05876A085 |

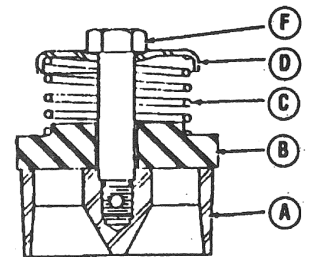
D35-12AVD-2H, D35-AVD-2HL, D35-12AVD-CP, D35-12AVAB, D35-12AVAB-CP & D35-12AVABL-CP INDUSTRIAL PUMPS PARTS LIST



| STYLE VALVE ASSEMBLY | | | Y | Z | Z |
|--------------------------|-------------------------------|------|------------|------------|------------|
| SUCTION VALVE ASSEMBLY | | | 11902A001K | 18925A000K | 18925A010K |
| DISCHARGE VALVE ASSEMBLY | | | 11903A001K | 18925A001K | 18925A014K |
| SEAT MATERIAL | | | 420F | 420F | 316 |
| Item | Description | Qty. | Eng. No. | Eng. No. | Eng. No. |
| A | SEAT, VALVE SUCTION | 3 | 06272A000 | 18835A000 | 18835A003 |
| | SEAT, VALVE DISCHARGE | 3 | 06271A000 | 18835A001 | 18835A004 |
| B | VALVE, SUCTION | 3 | 17552A001 | 18834A000 | 18834A000 |
| | VALVE, DISCHARGE | 3 | 17553A001 | 18834A001 | 18834A001 |
| C | SPRING, SUCTION | 3 | 18462A000 | 18462A000 | 18462A000 |
| | SPRING, DISCHARGE | 3 | 11829A000 | 11829A000 | 11829A000 |
| D | RETAINER, SUCTION | 3 | 11817A000 | 18833A000 | 18833A000 |
| | RETAINER, DISCHARGE | 3 | 11827A000 | 18833A001 | 18833A001 |
| E | CLAMP FOR RETAINER, SUCTION | 3 | 11818A000 | — | — |
| | CLAMP FOR RETAINER, DISCHARGE | 3 | 11828A000 | — | — |
| F | LOCK NUT OR CAP SCREW | 6 | 11904A001 | 18832A000 | 18832A001 |



VALVE Y



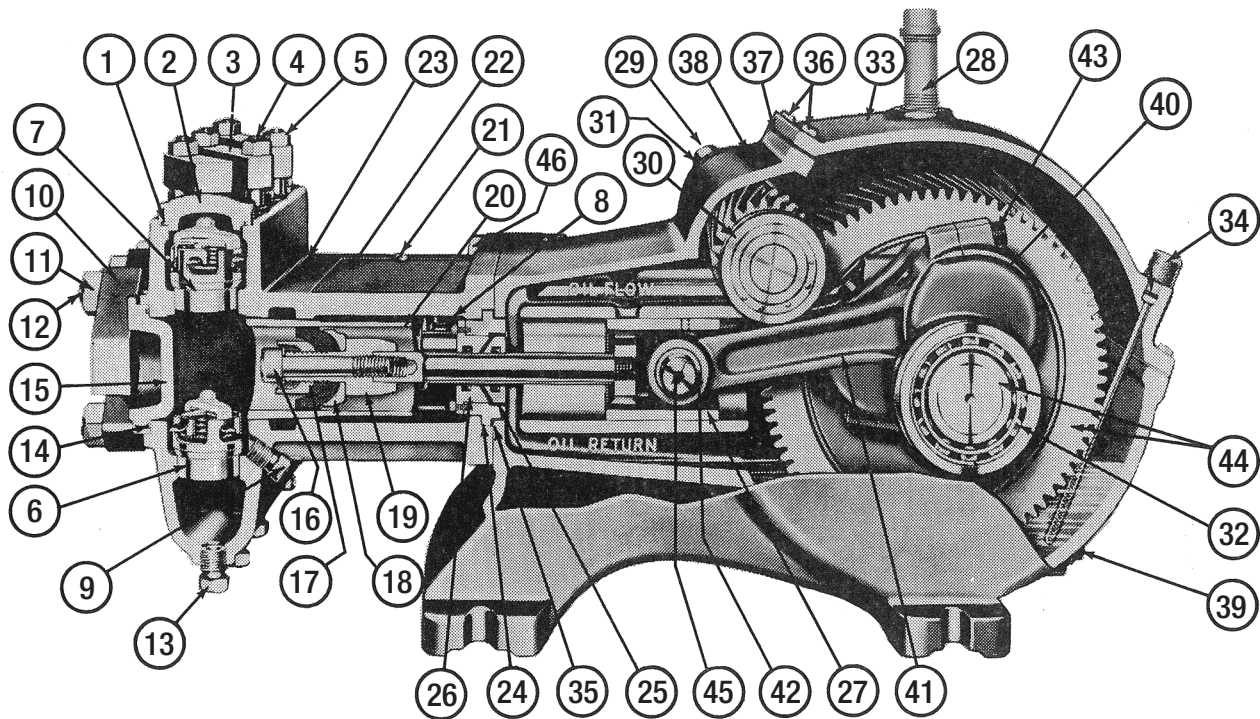
VALVE Z

D35-12AVD-2H, D35-AVD-2HL, D35-12AVD-CP, D35-12AVAB, D35-12AVAB-CP & D35-12AVABL-CP INDUSTRIAL PUMPS PARTS LIST

| Item | Description | Qty. | Eng. No. |
|------|--|------|-------------|
| 1 | GEAR CASE | 1 | 04663E000 |
| 2 | GASKET, FOR GEAR CASE LID | 1 | 06222C000 |
| 3 | CAP SCREW, 5/16"-18 UNC x 7/8" FOR GEAR CASE LID | 8 | 19100A005 |
| 4 | LID, FOR GEAR CASE | 1 | 04664B000 |
| 5 | VENT AND OIL FILTER PLUG | 1 | 17388A000 |
| 6 | OIL GAUGE WITH O-RING | 1 | 17360A010K |
| 8 | PINION SHAFT WITH HELICAL PINION | 1 | 19816B000 |
| | SHIM, PLASTIC FOR PINION SHAFT .003" THICK | 4 | 05231A074 |
| | SHIM, PLASTIC FOR PINION SHAFT .015" THICK | 4 | 05231A075 |
| 9 | CONE, BEARING, PINION SHAFT | 2 | 05674A013 |
| | CUP, BEARING, PINION SHAFT | 2 | 05675A009 |
| 10 | CAP, OPEN, PINION SHAFT | 1 | 04563A001 |
| | CAP, CLOSED, PINION SHAFT | 1 | 04741B000 |
| | OIL SEAL, OPEN END OF PINION SHAFT | 1 | 05710A017 |
| | CAP SCREW, 3/8"-16 UNC x 1", BEARING CAPS | 18 | 19101A009 |
| | SEAL WASHER, FOR 3/8" CAP SCREWS FOR BEARING CAPS | 18 | 14946A003 |
| 11 | CRANKSHAFT WITH HELICAL GEAR | 1 | 19817C000 |
| 12 | CONE, BEARING, FOR CRANKSHAFT | 2 | 05674A015 |
| | CUP, BEARING, FOR CRANKSHAFT | 2 | 05675A011 |
| | CAP, BEARING, FOR CRANKSHAFT | 2 | 18466B001 |
| | SHIM PLASTIC, 4-17/32" I.D., 6-1/32" O.D., .003" THICK | 6 | 05068A017 |
| | SHIM PLASTIC, 4-17/32" I.D., 6-1/32" O.D., .015" THICK | 5 | 05068A015 |
| 13 | CROSSHEAD AND PISTON ROD (SLIP FIT WRIST PIN) | 3 | N/A |
| | CROSSHEAD AND PISTON ROD (PRESSED FIT WRIST PIN) | 3 | 06361B002 |
| 14 | LINK AND BUSHING AND CAP SCREWS | 3 | 11651C002 |
| 15 | BUSHING FOR LINK | 3 | B01619A000K |
| 16 | CAP SCREW FOR LINK | 6 | 06106A040 |
| | WASHER, LOCK FOR CAP SCREWS FOR LINK | 6 | 05454A025 |
| | WIRE FOR CAP SCREWS FOR LINK NO LONGER USED USE LOCK WASHER 05454A025 | | N/A |
| 17 | BEARING, FOR LINK TO CRANKSHAFT | 3 | 11647A012K |
| 18 | WRIST PIN, CROSSHEAD TO LINK FOR SLIP FIT CROSSHEAD | 3 | M01525A000 |
| | WRIST PIN, CROSSHEAD TO LINK FOR PRESSED FIT CROSSHEAD | 3 | M01525A001 |
| 19 | OIL ASSEMBLY (NEW STYLE) PICTURE DEPICTS NEW STYLE | 1 | 24648A000 |
| 20 | HOUSING, OIL SEAL | 3 | 24959A001 |
| | WIPER, OIL SEAL FOR PISTON ROD (NEW STYLE) | 6 | 22835A004 |
| | RETAINER, OIL SEAL HOUSING | 3 | 24958A000 |
| | SCREW, ALLEN, OIL SEAL HOUSING TO RETAINER | 6 | 06106A034 |
| | GASKET, BETWEEN OIL SEAL HOUSING AND RETAINER | 3 | 05059A434 |
| 21 | SPRING, BETWEEN RETAINER & CYLINDER BODY | 3 | M01643A000 |
| 22 | GASKET, BETWEEN RETAINER & GEAR CASE | 3 | 05059A058 |
| 23 | DRAIN PLUG, OIL, MAGNETIC 3/4" PIPE | 1 | 17481A002 |
| 24 | CAP SCREW, ALLEN HEAD 3/4"-10 UNC x 2-1/2" TO GEAR CASE | 4 | 06106A038 |
| | LOCKWASHER, 3/4" FOR CAP SCREW, REF. 24 | 4 | 05454A003 |
| 25 | CAP SCREW, 5/8"-11 UNC x 2" LG. CYLINDER BODY TO GEAR CASE | 4 | 19105A008 |
| 26 | CAP SCREW, PLUNGER TO PISTON ROD | 3 | 16654A006 |
| 27 | FOLLOWER FOR PLUNGER | 3 | 18923A000 |
| 28 | LOCKWASHER FOR PLUNGER CAP SCREW | 3 | 06107A013 |
| 29 | "V" PACKING FOR PLUNGER | 3 | 18922A000 |

| Item | Description | Qty. | Eng. No. |
|------|---|------|------------|
| 30 | STUD FOR PLUNGERS | 3 | 18924A000 |
| | STUD FOR PLUNGERS, 316 SST FOR AVAB-CP PUMP | 3 | 18924A010 |
| 31 | RETAINER, SPRING FOR PLUNGERS | 3 | 18879A000 |
| | RETAINER, SPRING FOR PLUNGERS, 316 SST FOR AVAB-CP PUMPS | 3 | 18879A003 |
| 32 | WASHER, COPPER, STUD TO PISTON ROD | 3 | 05030A128 |
| 33 | SPRING FOR PLUNGERS | 3 | 18920A000 |
| 34 | RING, PRESSURE FOR PLUNGERS | 3 | 18921A000 |
| | RING, PRESSURE FOR PLUNGERS, 316 SST FOR AVAB-CP PUMP | 3 | 18921A002 |
| 35 | CYLINDER BODY | 1 | 18782F000 |
| | CYLINDER BODY, ALUM. BRONZE FOR AVAB & AVAB-CP PUMPS | 1 | 18782F002 |
| 36 | NUT, 1/2"-13 UNC FOR STUD | 6 | 19109A097 |
| 37 | NUT, 1/2"-13 UNC FOR STUD | 6 | 19109A097 |
| 38 | STUD, 1/2"-13 UNC x 3-5/16" FOR VALVE CAP CLAMPS | 6 | 05659A059 |
| 39 | STUD, 1/2"-13 UNC x 3-5/16" FOR CYLINDER CAP CLAMPS | 3 | 05659A059 |
| 40 | CLAMP FOR VALVE CAPS | 3 | 17438A000 |
| 41 | CLAMP FOR CYLINDER CAPS | 3 | 17438A000 |
| 42 | VALVE CAP, DISCHARGE | 3 | 17390A000 |
| | VALVE CAP, DISCHARGE, ALUM. BRONZE FOR AVAB & AVAB-CP PUMPS | 3 | 17390A002 |
| 43 | O-RING, 2-3/8" I.D., 2-9/16" O.D., 3/32" DIA. | 3 | 05876A064 |
| 44 | CYLINDER CAP, SUCTION | 3 | 17391A000 |
| | CYLINDER CAP, SUCTION, ALUM. BRONZE FOR AVAB & AVAB-CP PUMPS | 3 | 17391A002 |
| 45 | O-RING, 2-7/8" I.D., 3-1/16" O.D., 3/32" DIA. | 3 | 05876A065 |
| 46 | SUCTION VALVE AND SEAT COMPLETE, VALVE Y | 3 | 11902A001K |
| | SUCTION VALVE AND SEAT COMPLETE, VALVE Z | 3 | 18925A000K |
| | SUCTION VALVE AND SEAT COMPLETE FOR AVAB-CP PUMP, VALVE Z | 3 | 18925A010K |
| 47 | DISCHARGE VALVE AND SEAT COMPLETE, VALVE Y | 3 | 11903A001K |
| | DISCHARGE VALVE AND SEAT COMPLETE, VALVE Z | 3 | 18925A001K |
| | DISCHARGE VALVE AND SEAT COMPLETE FOR AVAB-CP PUMP, VALVE Z | 3 | 18925A014K |
| 48 | LID, OVER PLUNGERS | 1 | M01820A000 |
| 49 | MACHINE SCREW, 1/4"-20 UNC x 1/2" FOR LID OVER PLUNGERS | 2 | 148850001 |
| | WASHER, STEEL, 5/16" I.D., 3/4" O.D., 1/16" THICK FOR MACHINE SCREW, REF. 47 | 2 | 05030A020 |
| 50 | DRAIN PLUG, 3/8" | 3 | 06136A000 |
| | DRAIN PLUG, 3/8" 316 SST FOR AVAB & AVAB-CP PUMPS | 3 | 05022A062 |
| 51 | DRAIN PLUG, 1" | 3 | 06206A000 |
| | DRAIN PLUG, 1" ALUM. BRONZE FOR AVAB & AVAB-CP PUMPS | 3 | 05022A064 |
| 52 | CYLINDER LINER, 2" I.D. FOR ALL PUMPS | 3 | 18806A003 |
| | O-RING FOR CYLINDER LINER | 3 | 05876A085 |
| | PLUG, 1-1/4" FOR DISCHARGE | 1 | 05022A041 |
| | PLUG, 1-1/4" FOR DISCHARGE ALUM. BRONZE FOR AVAB & AVAB-CP PUMPS | 1 | 05022A065 |
| | PLUG, 2" FOR SUCTION | 2 | 05022A048 |
| | PLUG, 2" FOR SUCTION ALUM. BRONZE FOR AVAB & AVAB-CP PUMPS | 2 | 05022A066 |

D50-12D-3H & D50-12AB INDUSTRIAL PUMPS PARTS LIST

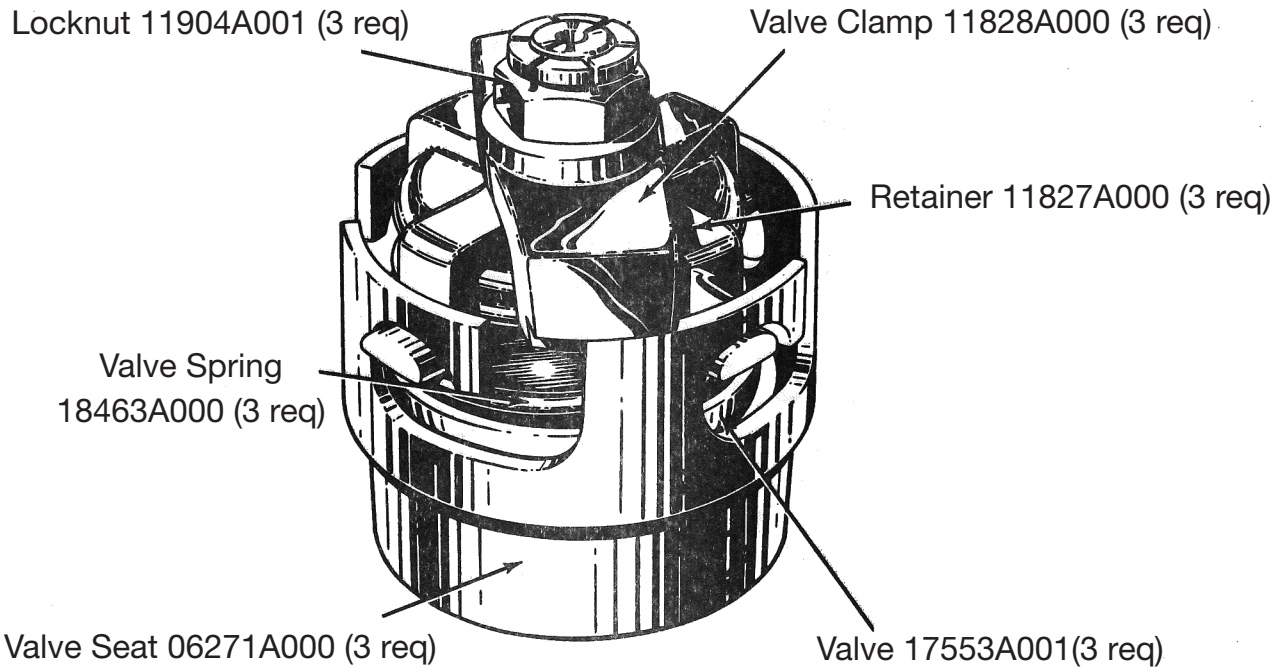


| Item | Description | Qty. | Eng. No. |
|------|-----------------------------------|------|------------|
| 1 | O-RING | 3 | 05876A064 |
| 2 | VALVE CAP | 3 | 17390A000 |
| | VALVE CAP FOR AB PUMP | 3 | 17390A002 |
| 3 | CLAMP | 3 | 17438A000 |
| 4 | STUD | 6 | 05659A059 |
| 5 | HEX NUT | 6 | 19109A097 |
| 6 | SUCTION VALVE AND SEAT COMPLETE | 3 | 11903A002K |
| 7 | DISCHARGE VALVE AND SEAT COMPLETE | 3 | 11903A001K |
| 8 | CAP SCREW | 4 | 19105A008 |
| 9 | PLUG 1/2" PIPE | 3 | B01053A000 |
| 10 | CLAMP | 3 | 17389B000 |
| 11 | HEX NUT | 6 | 19109A046 |
| 12 | STUD | 6 | 05659A0560 |
| | PLUG 1-1/4" PIPE | 1 | 05022A041 |
| | PLUG 3" | 2 | 03210A000 |
| 13 | PLUG 1" PIPE | 3 | 06206A000 |
| 14 | O-RING | 3 | 05876A066 |
| 15 | CYLINDER CAP | 3 | 17392A000 |
| 16 | CAP SCREW | 3 | 16654A006 |
| | NUT | 3 | 17535A000 |
| | LOCK WASHER | 3 | 06107A013 |
| 17 | CUP, NEOPRENE & FABRIC | 3 | 06086A011 |
| 18 | FOLLOWER | 3 | 17537A000 |
| 19 | STUD | 3 | 17533A000 |
| | WASHER | 3 | 05030A128 |
| 20 | CYLINDER LINER | 3 | M01512A004 |
| | O-RING FOR CYLINDER LINER | 3 | 05876A095 |
| 21 | MACHINE SCREW | 2 | 148850001 |
| | WASHER | 2 | 05030A020 |
| 22 | CYLINDER LID | 1 | M01520A000 |
| 23 | CYLINDER BODY | 1 | 18639F000 |
| | CYLINDER BODY (FOR AB PUMP) | 1 | 18639F003 |
| 24 | SPRING | 3 | M01643A000 |
| 25 | HOUSING, OIL SEAL | 3 | 24959A001 |
| | OIL SEAL | 6 | 22835A004 |
| 26 | RETAINER, OIL SEAL HOUSING | 3 | 24958A000 |
| | SCREW, ALLEN | 6 | 06106A034 |

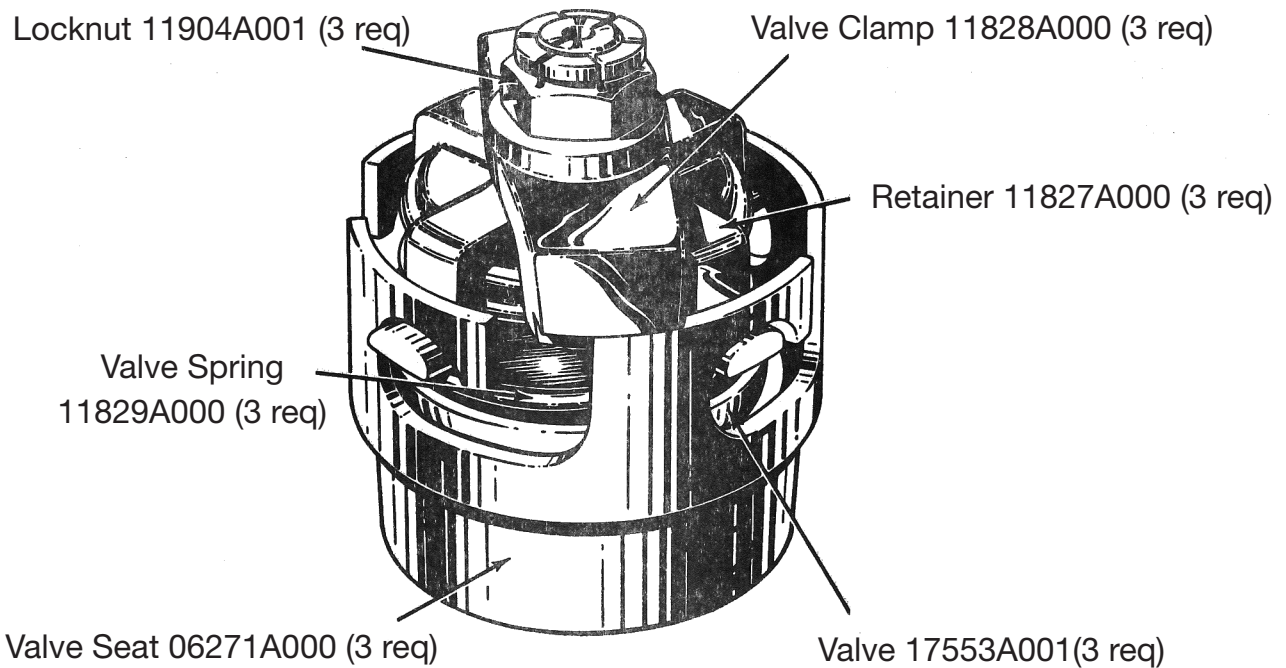
| Item | Description | Qty. | Eng. No. |
|------|-----------------------------------|------|-------------|
| 26 | GASKET, SEAL HOUSING | 3 | 05059A434 |
| | KIT FOR REF. NO. 25 & 26 | 1 | 24648A000 |
| 27 | CROSSHEAD | 3 | 06211B041 |
| 28 | VENT PLUG | 1 | 17388A000 |
| 29 | SHAFT PINION | 1 | 20164B020K |
| | SPACER | 1 | 20164B022A |
| | CUP BEARING | 2 | 05675A009 |
| 30 | CONE BEARING | 2 | 05674A013 |
| | SHIM FOR PINION SHAFT .003" THICK | 4 | 05231A074 |
| | SHIM FOR PINION SHAFT .015" THICK | 4 | 05231A075 |
| | CAP CLOSED | 1 | 04741B001 |
| | OIL SEAL | 1 | 05710A017 |
| 31 | CAP OPEN | 1 | 04563A001 |
| | WASHER, SEAL | 18 | 14946A003 |
| | CAP SCREW | 18 | 19101A009 |
| | CUP BEARING | 2 | 05675A012 |
| 32 | CONE, BEARING | 2 | 05674A017 |
| | BEARING CAP | 2 | 04624B002 |
| | O-RING FOR BEARING CAP | 2 | 05876A098 |
| | SHIM, GREEN .015" | 6 | 05068A018 |
| | SHIM, PINK .003" | 6 | 05068A016 |
| 33 | LID | 1 | 04561B000 |
| 34 | OIL GAUGE WITH O-RING | 1 | 17360A011K |
| 35 | GASKET | 3 | 05059A058 |
| 36 | CAP SCREW | 8 | 19100A005 |
| 37 | LID GASKET | 1 | 06201C000 |
| 38 | GEAR CASE | 1 | 04625E001K |
| 39 | PLUG, PIPE MAGNETIC | 1 | 17481A002 |
| 40 | BEARING TWO HALVES | 3 | 15245A101K |
| 41 | LINK | 3 | 17042C002 |
| 42 | BUSHING | 3 | B01619A000K |
| 43 | CAP SCREW | 6 | 19103A016 |
| | LOCK WASHER | 6 | 05454A004 |
| 44 | CRANK SHAFT WITH HELICAL GEAR | 1 | 20355C022K |
| 45 | WRIST PIN | 3 | M01525A001 |
| 46 | CAP SCREW | 4 | 06106A038 |
| | LOCK WASHER | 4 | 05454A003 |

D50-12D-3H & D50-12AB INDUSTRIAL PUMPS PARTS LIST

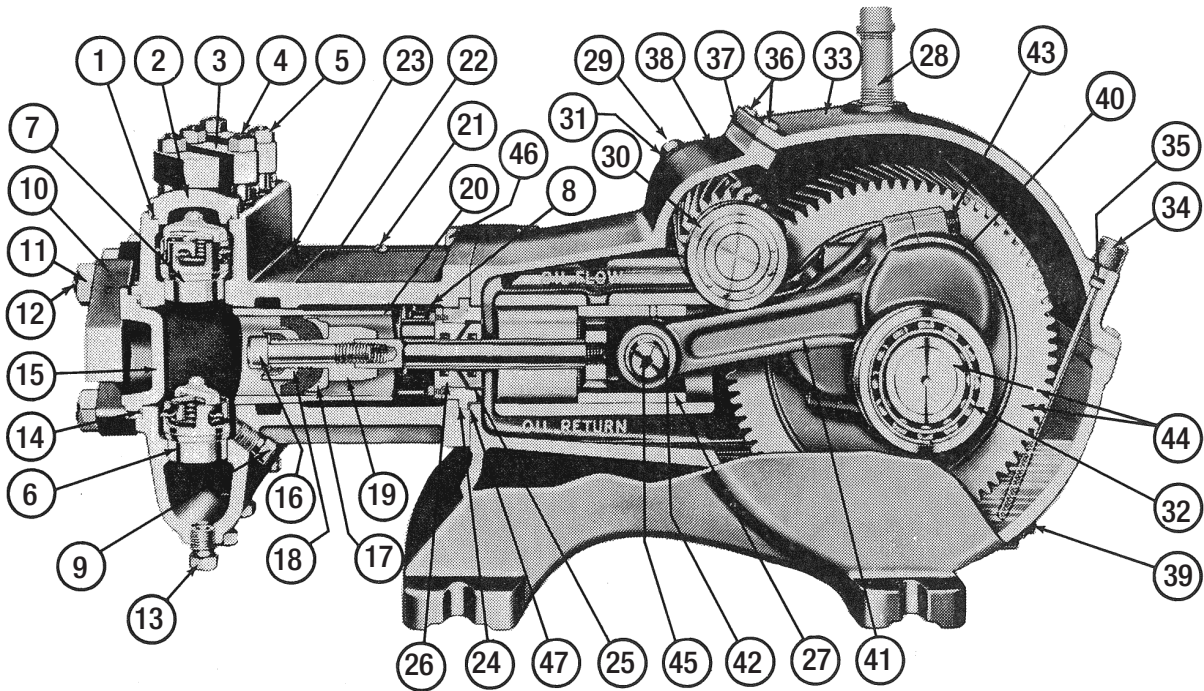
SUCTION VALVE AND SEAT COMPLETE NO. 11903A002K



DISCHARGE VALVE AND SEAT COMPLETE NO. 11903A001K



D60-10D-3H, D60-10D-3HL & D60-10AB INDUSTRIAL PUMPS PARTS LIST

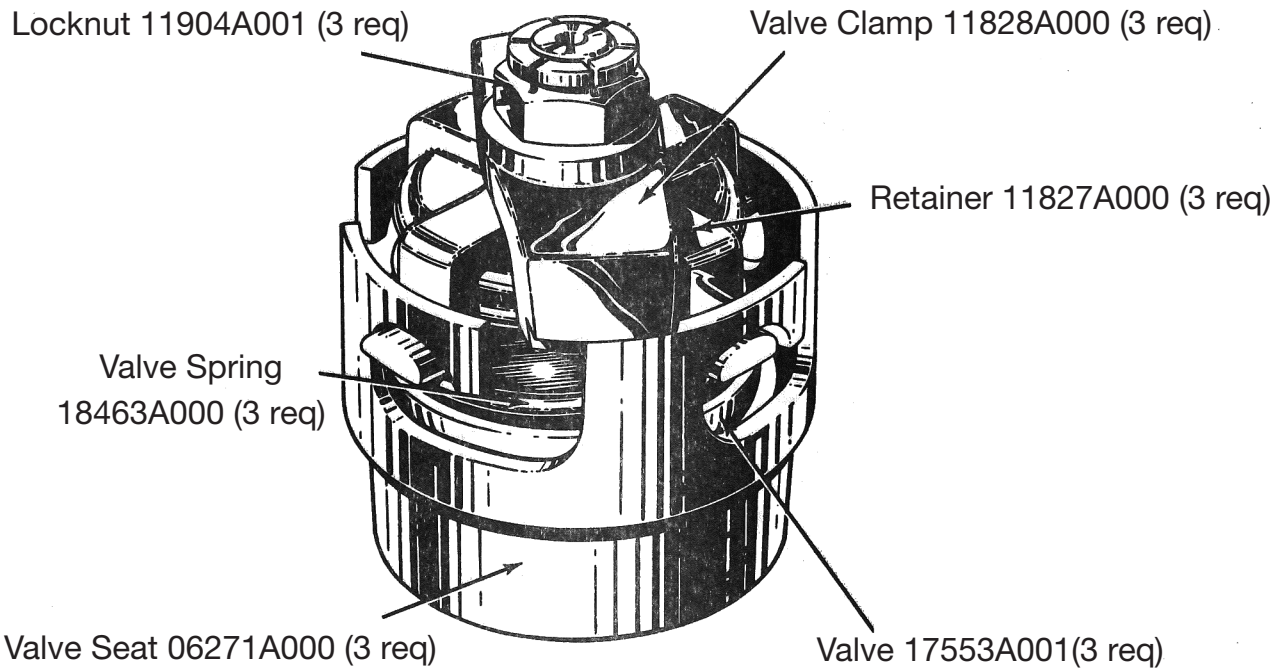


| Item | Description | Qty. | Eng. No. |
|------|--|-------------|-------------------------------------|
| 1 | O-RING | 3 | 05876A064 |
| 2 | VALVE CAP VALVE CAP FOR AB PUMP | 3 | 17390A000 17390A002 |
| 3 | CLAMP | 3 | M01517A000 |
| 4 | STUD | 6 | 05659A548 |
| 5 | HEX NUT | 6 | 19109A097 |
| 6 | SUCTION VALVE AND SEAT COMPLETE | 3 | 11903A002K |
| 7 | DISCHARGE VALVE AND SEAT COMPLETE | 3 | 11903A001K |
| 8 | CAP SCREW | 4 | 19105A008 |
| 9 | PLUG 1/2" PIPE | 3 | B01053A000 |
| 10 | CLAMP | 3 | M01516A000 |
| 11 | HEX NUT | 6 | 19109A046 |
| 12 | STUD PLUG 1-1/4" PIPE PLUG 3" | 6 1 2 | 05659A560 05022A041 03210A000 |
| 13 | PLUG 1" PIPE VALVE LIFTERS | 3 3 | 06206A000 13015A002 |
| 14 | O-RING | 3 | 05876A066 |
| 15 | CYLINDER CAP | 3 | 17392A000 |
| 16 | CAP SCREW NUT LOCK WASHER | 3 3 3 | 16654A006 18458A000 06107A013 |
| 17 | CUP, NEOPRENE & FABRIC | 3 | 06086A012 |
| 18 | FOLLOWER | 3 | 17534A000 |
| 19 | STUD WASHER | 3 3 | 17533A000 05030A128 |
| 20 | CYLINDER LINER O-RING FOR CYLINDER LINER | 3 3 | M01512A003 05876A095 |
| 21 | MACHINE SCREW WASHER | 2 2 | 148850001 05030A020 |
| 22 | CYLINDER LID | 1 | M01520A000 |
| 23 | CYLINDER BODY (FOR ALL MODELS EXCEPT D60-10AB) CYLINDER BODY (FOR D60-10AB) | 1 1 | 18639F000 18639F003 |
| 24 | SPRING | 3 | M01643A000 |
| 25 | HOUSING, OIL SEAL OIL SEAL | 3 6 | 24959A001 22835A004 |
| 26 | RETAINER, OIL SEAL HOUSING SCREW, ALLEN | 3 6 | 24958A000 06106A034 |

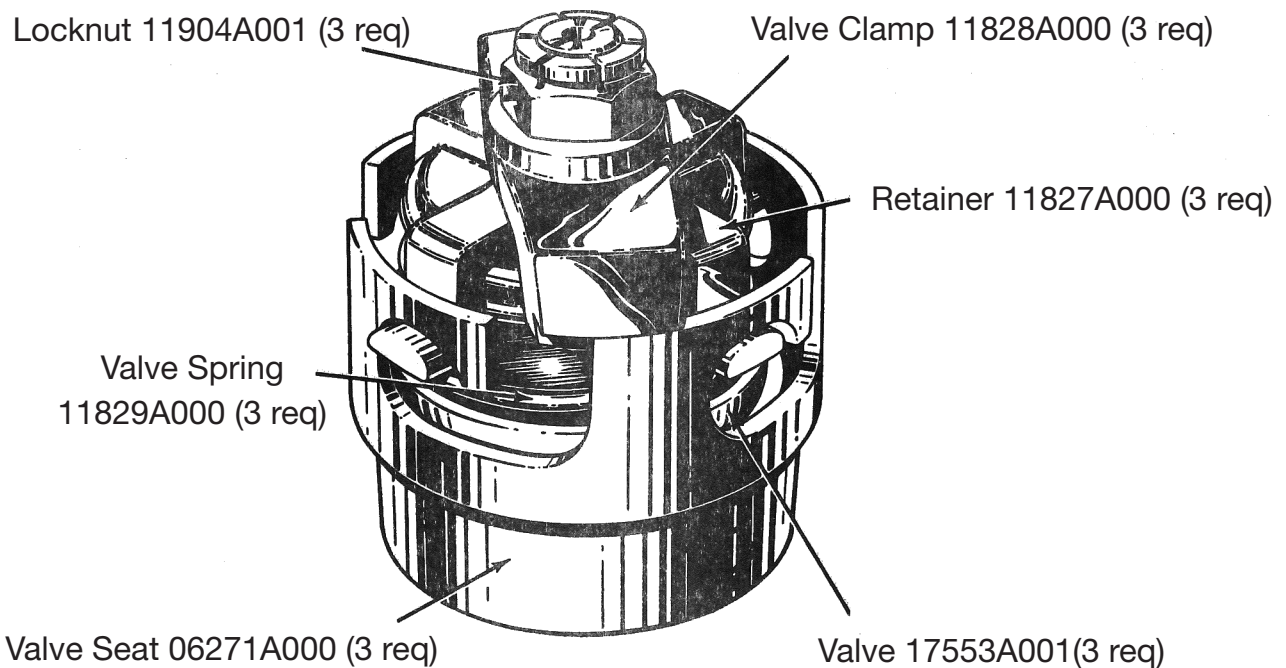
| Item | Description | Qty. | Eng. No. |
|------|--|-----------------------|---|
| 26 | GASKET, SEAL HOUSING KIT FOR REF. NO. 25 & 26 | 3 1 | 05059A434 24648A000 |
| 27 | CROSSHEAD PIPE CAP | 3 1 | 06211B041 05737A002 |
| 28 | VENT PLUG | 1 | 17995A000 |
| 29 | SHAFT PINION SPACER CUP BEARING | 1 1 2 | 20164B020K 20164B022A 05675A009 |
| 30 | CONE BEARING SHIM FOR PINION SHAFT .003" THICK SHIM FOR PINION SHAFT .015" THICK CAP CLOSED OIL SEAL | 2 4 4 1 1 | 05674A013 05231A074 05231A075 04741B001 05710A017 |
| 31 | CAP OPEN WASHER, SEAL CAP SCREW CUP BEARING | 1 18 18 2 | 04563A001 14946A003 19101A009 05675A012 |
| 32 | CONE, BEARING BEARING CAP O-RING FOR BEARING CAP SHIM, GREEN .015" SHIM, PINK .003" | 2 2 2 6 6 | 05674A017 04624B002 05876A098 05068A018 05068A016 |
| 33 | LID | 1 | 04561B000 |
| 34 | OIL GAUGE WITH O-RING | 1 | 17360A011K |
| 35 | O-RING, 3/8" I.D. x 9/16" O.D. x 1/16" THICK | 3 | 110-000110-201 |
| 36 | CAP SCREW | 8 | 19100A005 |
| 37 | LID GASKET | 1 | 06201C000 |
| 38 | GEAR CASE | 1 | 04625E001K |
| 39 | PLUG, PIPE MAGNETIC | 1 | 17481A002 |
| 40 | BEARING TWO HALVES | 3 | 15245A101K |
| 41 | LINK | 3 | 17042C002 |
| 42 | BUSHING | 3 | B01619A000K |
| 43 | CAP SCREW LOCK WASHER | 6 6 | 19103A016 05454A004 |
| 44 | CRANK SHAFT WITH HELICAL GEAR | 1 | 20355C022 |
| 45 | WRIST PIN | 3 | M01525A001 |
| 46 | CAP SCREW LOCK WASHER | 4 4 | 06106A038 05454A003 |

D60-10D-3H, D60-10LD-3H & D60-10AB INDUSTRIAL PUMPS PARTS LIST

SUCTION VALVE AND SEAT COMPLETE NO. 11903A002K



DISCHARGE VALVE AND SEAT COMPLETE NO. 11903A001K



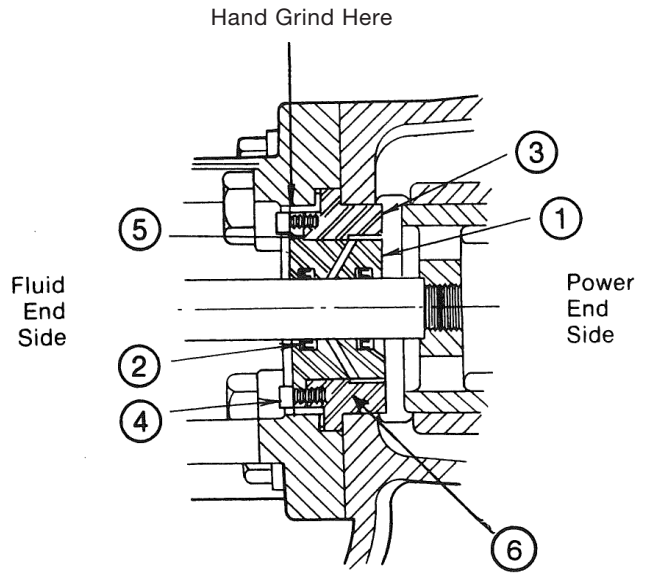
5. If the pressure regulator unloading valve is worn, it will allow too much of the pump capacity to be bypassed and recirculated back to the tank. By examining the flow from this valve with the discharge turned on, it can be determined whether or not the valve is worn. If a heavy flow continues when the discharge is turned on, it is usually a good indication of a worn valve and should be replaced.
6. Worn plunger cups, valves or valve seats will cause a severe drop in pump capacity pressure. Worn plunger cups are detected by water leakage past the cups and immediately should be replaced. Water getting into the pump crankcase will cause severe corrosion of the bearings. Worn valves can only be detected by visual examination of each valve assembly. Abrasive liquid will cause wire cuts which begin as a very small groove, but increase rapidly once the valve starts to leak through this groove. If the valve plates are replaced as soon as they start to show this cutting action, it will prevent the valve seat from becoming cut in a similar manner.
7. Pump cylinder bodies withstand an extreme amount of shock and pulsation while in operation, but if the pump is allowed to freeze, by not being drained, the freezing may crack the cylinder body walls in almost any location. If the crack occurs on the suction valve or cylinder portion of the body, it may allow a small amount of air to enter on the suction stroke and cause noisy operation or a decrease in pumping capacity. If the crack develops in the walls between the cylinder cavities or discharge valve cavity, it may allow the water to flow from one cavity to the adjacent cavity and cause uneven displacement.
8. The holes in the gun or nozzle discs are continually subject to wear because of the high velocity of the liquid through the holes. If the holes become worn, they may allow a higher rate of discharge than the pump is able to provide, then a drop in pressure will be noticed. This can quickly be checked by reducing the number of nozzles or guns while watching the amount of overflow from the pressure regulator. If there is considerable overflow, it is an indication that the regulator valve is worn rather than the gun or nozzle disc.
9. Suction surge arresters should be installed on the suction line of reciprocating pumps, 1-1/2" or 2" can be used. A standing height of 12"-15" will be sufficient with the top end closed by an ordinary pipe cap.
10. Water may accumulate in the pump crankcase from two sources; leakage of the plunger cups or an accumulation of condensation/moisture inside the crankcase due to changes in weather or the repeated heating and cooling of the pump. Pumps used consistently, running for a considerable period of time to heat the oil and other working parts, will not normally accumulate water by condensation. Replace the plunger cups as soon as they start to leak.
11. Worn connecting link bearings are caused by unusual or adverse operating conditions and are seriously affected by corrosion if water is present in the crankcase. They will wear out from overheating if adequate oil is not provided in the crankcase. It is recommended to drain, clean and refill with new oil prior to any storage period. Replace bearings as soon as any damage is discovered to avoid possible damage to crankshaft.
12. Low oil in the crankcase can quickly cause failure of the pump's power end and result in extensive repairs. Oil level should be checked periodically during normal operation and during all maintenance work.
13. A foaming mixture will sometimes have the same effect as a small air leak in the suction line. This is because various quantities of the foam are drawn through the suction line into the pump disrupting the normal flow of water.
14. Pressure regulators and unloading valves may become sluggish in action due to the plunger sticking or fitting too tightly in its cylinder. This may happen by an accumulation of chemicals collecting in and around the plunger or due to excessive corrosion of the plunger parts. To check this condition, remove and clean the plunger and cover the parts with a waterproof grease before assembling.
15. The stuffing box nut on the unloading valve lifting post should not be tightened to severely grip or bind the packing on the post. Tighten this nut just enough to prevent leakage and chatter. The pressure regulator and unloading valves may chatter or vibrate excessively due to an unstable operation from nozzling in the high or low capacity range of the regulator or unloader. The range should be at least 50% to 90% of pump capacity. With unloader valves, nozzle capacity should be at least 20% and not exceed 90% of pump capacity.
16. If foreign matter becomes lodged between the pump valve and valve seat, a drastic drop in capacity and considerable surge or pulsation will occur in the discharge line. Examine each valve if this occurs.
17. When a pump is used for a long period of time, a waterlogged discharge surge could cause pulsation at the discharge. The suction should be opened into the atmosphere to allow air to be drawn through the pump to recharge the surge arrester. Do this with the pressure release valve open so the pump operates at no pressure.
18. Noisy pump operation can be caused by a loose plunger rod in the crosshead. This noise usually has a regular cadence timed with each stroke of the plunger. When this occurs, always replace both the rod and the crosshead.
19. Increased preload to the crankshaft bearings will reduce bearing life, require more power and generate more heat, while insufficient preload may cause a knock, timed with the crankshaft rotation. Check for loose bolts on the crankshaft end caps or adjust shims to obtain proper bearing preload.

D SERIES CROSSHEAD SEALS

24648A000 KIT

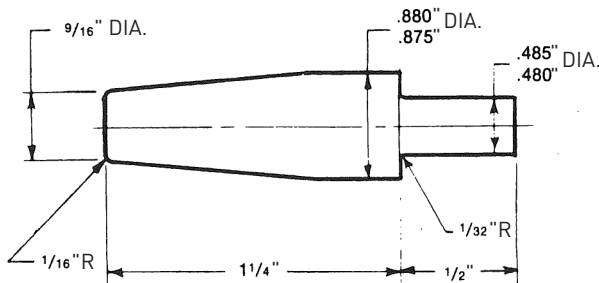
Field installation of these kits will require removal of the fluid end to replace the existing retainer and seals. On some fluid ends it may be necessary to hand grind I.D. of fluid end to fit new kit. The same spring and gasket is used to hold and seal the retainer.

The rod seal assembly contains two seals, and two oil seals with lips facing the power end. The oil seal can be replaced without taking the fluid end off by removing the piston and the cylinder liner to allow access to oil seal housing. Unscrew two Allen screws and place into the other two tapped holes. Gradually screw them in to push the oil seal housing off the retainer. After assembling new seals in the oil seal housing, an assembly thimble should be used on the end of the crosshead rod for sliding oil seal housing back into the retainer. Check gasket and replace if damaged. The thimble should be machined from high carbon steel and polished on the exterior to reduce the possibility of seal lip damage. Place two Allen screws into clearance holes and tighten snug.



OIL SEAL HOUSING ASSEMBLY

RECOMMENDED THIMBLE



| ITEM | DESCRIPTION | QTY. | ENG. NO |
|------|----------------------------|------|-----------|
| 1 | HOUSING, OIL SEAL | 3 | 24959A001 |
| 2 | OIL SEAL | 6 | 22835A004 |
| 3 | RETAINER, OIL SEAL HOUSING | 3 | 24958A000 |
| 4 | SCREW, ALLEN | 6 | 06106A034 |
| 5 | GASKET, SEAL HOUSING | 3 | 05059A434 |
| 6 | GASKET | 3 | 05059A058 |

STANDARD LIMITED WARRANTY CENTRIFUGAL & RECIPROCATING PUMPS

Pentair Myers® warrants its products against defects in material and workmanship for a period of 12 months from the date of shipment from Pentair Myers or 18 months from the manufacturing date, whichever occurs first – provided that such products are used in compliance with the requirements of the Pentair Myers catalog and technical manuals.

During the warranty period and subject to the conditions set forth, Pentair Myers, at its discretion, will repair or replace to the original user, the parts that prove defective in materials and workmanship. Pentair Myers reserves the right to change or improve its products or any portions thereof without being obligated to provide such a change or improvement for prior sold and/or shipped units.

Seals, piston cups, packing, plungers, liners and valves used for handling clear, fresh, nonaerated water at a temperature not exceeding 120°F are warranted for ninety days from date of shipment. All other applications are subject to a thirty day warranty. Accessories such as motors, engines and auxiliary equipment are warranted by the respective manufacturer and are excluded in this standard warranty. Under no circumstance will Pentair Myers be responsible for the cost of field labor, travel expenses, rented equipment, removal/reinstallation costs or freight expenses to and from the factory or an authorized Pentair Myers service facility.

This limited warranty will not apply: (a) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with the printed instructions provided; (b) to failures resulting from abuse, accident or negligence; (c) to normal maintenance services and parts used in connection with such service; (d) to units that are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) if unit is used for purposes other than for what it is designed and manufactured; (g) to any unit that has been repaired or altered by anyone other than Pentair Myers or an authorized Pentair Myers service provider; (h) to any unit that has been repaired using non factory specified/OEM parts.

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Warranty Rev. 12/13