

Parts and Service Manual Kerr Q5450HP Plunger Pump



Post Office Box 735 2214 West 14th Street
Sulphur, Oklahoma 73086
Phone: 580-622-4207 Fax: 580-622-4206
Website: www.kerrpumps.com
Email: information@kerrpumps.com

United States and Canada
800-441-8149

Kerr Pumps



Since 1946

NEW PUMP WARRANTY

- 1) KERR MACHINE COMPANY (Kerr Pumps) warrants its new pumps to be free from defective materials and/or workmanship for a period of one year from the date of sale by the Distributor, provided that the new pump is registered in accordance with Paragraph No. 2 hereof, properly installed and operated in accordance with the Company's Service Manual, and all other terms of this warranty agreement are complied with by the purchaser. As hereinafter provided, this warranty includes the replacement of parts and labor to correct any deficiency. All defective parts must be returned to the Company's Home Office for examination before this warranty is effective. This warranty applies to parts, which have been replaced under this warranty only so long as the original pump warranty is effective. This warranty is for the exclusive benefit of the purchaser and is not transferable.
- 2) Each Distributor of a new **KERR PUMP**, will provide the customer with a registration blank furnished to him by the Company which must state the date of sale, be signed by the purchaser and the Distributor, and delivered to the Home Office of the Company within fifteen (15) days of the date of sale.
- 3) In the event of a claim under this warranty, made within the one-year warranty period, the purchaser must notify the Distributor, and the Distributor shall contact **KERR PUMPS** before any repairs or service calls are made.
- 4) All warranty claims must be sent to **Kerr Pumps Home Office** on the authorized warranty claim form provided by **Kerr Pumps**, and available from the Distributor before any warranty claim will be considered. It is understood that **Kerr Pumps** will deteriorate due to ordinary wear, therefore, the following credits shall apply to all replacement parts, labor, surface freight, travel time and mileage allowance furnished under this warranty.
 - A. For the first ninety (90) days from the date of sale by the Distributor, 100% credit will be allowed on a current list price basis.
 - B. From 91 to 180 days from the date of sale by the Distributor, 75% credit will be allowed on a current list price basis.
 - C. From 181 days to 270 days by the Distributor, 50% credit will be allowed on a current list price basis.
 - D. From 271 days to one year after the date of sale by the Distributor, 25% credit will be allowed on a current list price basis.

The credit given to the Distributor for replacement parts or pumps under this warranty is based upon the Distributor's net cost paid Kerr Pumps for such replacement parts or pumps.

- 5) In the event of a warranty claim under this warranty made within ninety (90) days of the date of sale by the Distributor, **KERR PUMPS**, before any repairs are made, shall be contacted by the Distributor and given the option of having the Distributor either repair or replace the pump.
- 6) Upon any claim under this warranty, other than a claim wherein **KERR PUMPS** at its option replaced the pump as provided in Paragraph No. 5 hereof, the Distributor will make the necessary repairs an/or replacement, and **KERR PUMPS** shall allow the cost of labor on warranty claims. The labor cost may include travel time not to exceed (8) hours of actual travel time. **KERR PUMPS** will pay surface freight on warranty shipments. After making the necessary repairs and/or replacements, the Distributor will bill the customer for the full amount due for the repair. Thereafter, the Distributor will submit the warranty claim form provided by **KERR PUMPS** to the **KERR PUMPS** Home Office for consideration. In the event the warranty claim is honored by **KERR PUMPS** a Credit Memorandum will be issued to the Distributor in the amount determined by the table in Paragraph No. 4 hereof. Thereafter, the customer's invoice will be credited by the Distributor in the same percentage allowed the Distributor by **KERR PUMPS**.

If requested by **KERR PUMPS** the purchaser or the Distributor shall return the alleged defective product to **KERR PUMPS** factory, freight prepaid, for examination and testing. If **KERR PUMPS** determines the product is defective **KERR PUMPS** will either repair or replace such product with a like of **KERR PUMPS** manufacture, f.o.b. to the Distributor or allow the Distributor credit to an amount equal to the invoiced value of the defective product. The responsibility of **KERR PUMPS** is limited to the repairing or replacing defective material manufactured by it, provided **KERR PUMPS** examination discloses to its satisfaction that such material has not been altered or repaired, other than by **KERR PUMPS** approved procedures, subject to misuse, improper maintenance, negligence or accident. **KERR PUMPS** will not be responsible for loss of liquid or for damage of any kind, or from any cause, to any person or property of any person, or for loss of revenue of profit, or for any other special incidental or consequential damages.

- 7) The warranty applies only to new **KERR PUMPS**. The Company specifically excludes from this warranty the following.
 - A. All plungers, valves, plunger packing, valve springs, seals gaskets, and corrosion and/or erosion damage caused by the fluid handled by the Company's pump.
 - B. In addition, after the expiration of the pump warranty all replacement parts are no longer in warranty.
- 8) In extreme cases where in the opinion of **KERR PUMPS**, if a pump has been misused or is being misused, **KERR PUMPS** reserves the option to offer to redeem the pump from the purchaser. Should the purchaser refuse to allow the pump to be redeemed and chooses to continue improper operation, the warranty will be void.

- 9) Any parts or equipment which **KERR PUMPS** supplies and does not manufacture shall be subject only to the warranties of **KERR PUMPS** vendors to the extent **KERR PUMPS** can enforce such warranties.
- 10) Any repairs to, alterations of, or work done on alleged defective products without **KERR PUMPS** specific written authorization shall void **KERR PUMPS** warranty applicable thereto.
- 11) Any action for breach of warranty or other action under this agreement must be commenced within (1) year after such cause of action arises.

This limited warranty is in lieu of all other warranties, expressed or implied, including any implied warranty or merchantability or fitness.

KERR TROUBLE SHOOTER GUIDE

	REASON OR SERVICE NEEDED
Unusual pounding, knocking broken valve spring	Insufficient fluid at high speed. Check to see if the suction line is the proper size and is not constricted trash in line, valve partly opened, etc. There is also a possibility of gas in the fluid causing the roughness.
Loss of pressure or volume	Also above. Foreign matter may be holding valves open. Worn valves. Broken springs.
Consistent, rhythmic knock	Improper bearing adjustment. Worn bearings or connecting rods. NOTE: Valve noise is common and normal in high-speed pumps. It should not cause concern unless it becomes erratic.
Packing failure (Excessive)	Improper installation. Improper type lubrication. Incorrect type packing for particular installation. (Contact Kerr Pumps if in doubt) Excessively worn plungers.
Abnormal wear of fluid end parts	Abrasive or corrosive fluid.
Abnormal wear of power end parts	Lack of oil, overload on pump, foreign matter in oil.
Heat in power end	A new pump will run hot for a short period (2 or 3 days). Check above for persistent heating. Pump will operate near 140° F. under average conditions. Check for air in pump by bleeding at cover caps. Too much spring tension Reciprocating pumps have very limited pick up, check installation section.

INSTALLATION INSTRUCTIONS (SEE ILLUSTRATION)

The importance of proper installation cannot be overstressed. As the reciprocating pump is almost unable to lift fluid, proper suction flooding is a must. This is the First step toward satisfactory operation.

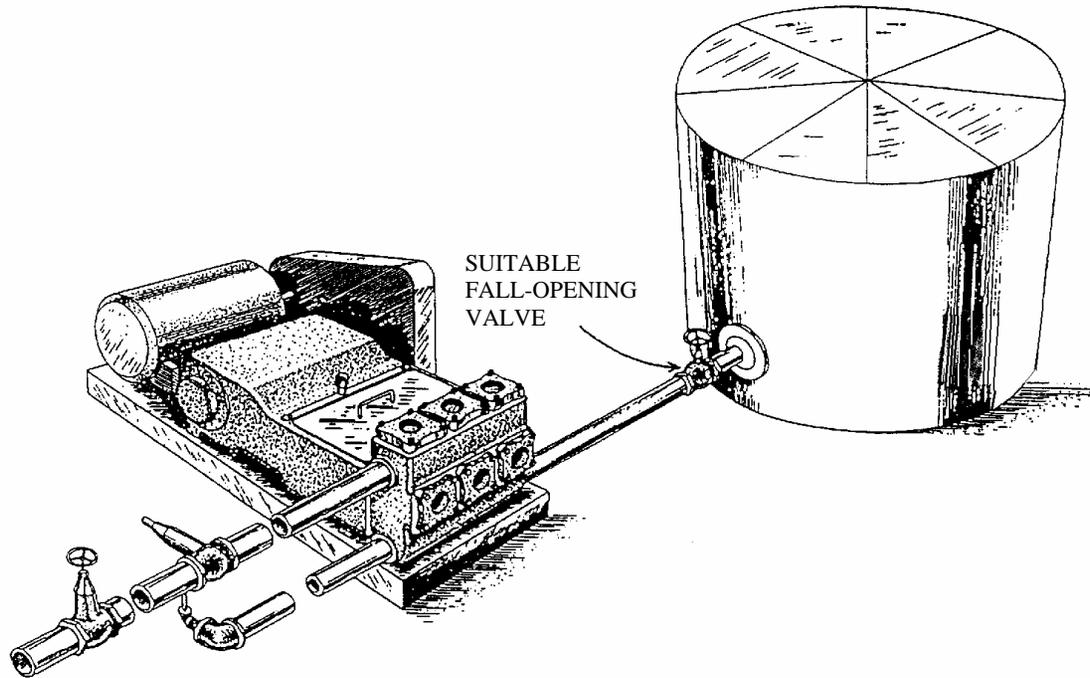
The **Kerr Pumps** Engineering Service will be happy to advise you in your installation problems. As almost every installation varies, you cannot exercise too much care in making certain your installation is proper.

Before Starting The Pump, read carefully the maintenance section in the following pages.

To start the pump, open the suction line valve and permit the intake chamber to fill on the pump. Air may be bled off by opening the valve covers slightly until there is a constant fluid flow. After bleeding, open the discharge line valve and start the pump. Roughness may occur from cavitation (air in line) or from starvation (lack of fluid). Eliminate these troubles before permitting continuous operation.

**RECOMMENDED INSTALLATION OF KERR PUMPS
FOR BEST RESULTS**

(A)	PRESSURE RELIEF VALVE (REQUIRED)
(B)	BY-PASSED FLUID SHOULD BE PIPED BACK IN SUCTION SUPPLY TANK WHEN POSSIBLE
(C)	USE FLEXIBLE HOSE IN DISCHARGE LINE WHEN POSSIBLE
(D)	DISCHARGE SHUT-OFF VALVE (OPTIONAL-USED FOR TOTAL SHUT-DOWN OR SERVICE ONLY)
(E)	DISCHARGE AND SUCTION ON EITHER SIDE OF FLUID END ON ALL MODELS.
(F)	PULSATION “DAMPENERS” MAY BE USED IN EITHER THE SUCTION OR DISCHARGE PIPING OR BOTH. DISCHARGE DAMPENERS SHOULD BE CAPABLE OF HANDLING PUMP DISCHARGE MAXIMUM PRESSURE



AS A GENERAL RULE, FLUID LEVEL MUST BE HIGHER THAN THE PUMP FLUID END AS PLUNGER PUMPS CANNOT "LIFT" FLUID. ABOUT 10 FEET OF HEAD IS A GOOD "RULE OF THUMB".

INSTALL PUMP AS CLOSE TO TANK AS POSSIBLE

CAUTION SHOULD BE TAKEN TO KEEP FITTINGS OUT OF THE SUCTION AND DISCHARGE PIPING AS THESE WILL RESULT IN POOR PERFORMANCE. EACH 90-DEGREE TURN IN THESE LINES RESULTS IN GREAT LOSS OF PUMPING EFFICIENCY.

PREVENTIVE MAINTENANCE

DAILY

1. Check and Maintain Lubricant Levels.

Standard Lubricant:

AGMA Grade (ASTM D 2422): 4 EP

ISO Viscosity Grade: 150

Viscosity in SSU @ 100 degree F: 625-765

Synthetic Lubricant:

SAE Viscosity Grade (J306-8): 75W-90

PUMP CAPACITIES (APPROXIMATE)

KD-1250	2 qts.	KT-3350	16 qts.
KJ-2250	3 qts.	KT-3400	16 qts.
KM-3250	4 qts.	KB-3500	20 qts.
KM-3300	4 qts.	KA-3500	36 qts.
KP-3300	12 qts.	KSB-6400	36 qts.
R335/R340	16 qts.	KSB-6500	36 qts.
Q5450	22.5 gal.	KCP-6300	24 qts.
KZ-3150	2 qts. Use SAE 30 weight non-detergent motor oil		

PLANETARY GEAR REDUCERS

#6 AUBURN	17 ozs.
#8 & #9 AUBURN	42 ozs.

2. If pump has lubricating facilities for stuffing boxes, check level of lubricant.
3. Maintain packing gland tension on packing (Do not over-tighten)
4. Visually inspect pump for apparent trouble.
5. Keep the pump clean.

MONTHLY

1. Drain and refill crankcase. It is recommended that oil be changed after the first week of operation.
2. Wash oil filler cap in kerosene.
3. Check valves for excessive wear, broken or bent springs, etc.
4. Check crankshaft bearings for endplay. (See section on crankshaft)
5. Keep all nuts, studs, etc. tight.
6. Check valve covers for leaks.
7. Check all seals and gaskets for leaks

GENERAL

Replace any work part before its eventual failure. Use the following instructions for removal and replacement of parts. Don't hesitate to call on **Kerr Pumps** for help if necessary.

SERVICE PROCEDURES (ALL MODELS)

1. VALVES (Wing-guided type):

- A. Discharge Valves: The discharge valve and seat can be exposed by first removing the discharge valve cover cap. Once the discharge cover cap has been removed you may lift out the discharge valve spring and the discharge valve. The valve seat will be held in place by a taper fit and must be “pulled” with an appropriate valve-pulling tool (available from the **Kerr Pumps** Dealers). Once the valve and seat have been removed they should be resurfaced or replaced if badly worn. To replace the discharge valve, first clean and inspect the seat bore for washout defects and then drop the seat into the bore. Replace the valve into the seat and strike the top of the valve a couple of good blows utilizing a brass bar and hammer to seat the valve seat in the fluid end valve bore. Replace the valve spring and cover cap after inspecting the spring and the seal of the cover cap.
- B. Suction Valves: The suction valves are located in the chamber directly below the suction or end valve cover caps. The suction valves are serviced in the identical manner as the discharge valves. Note: Discharge valves must be removed prior to any removal of the suction valves.

Service Procedure for KZ-3150 Valves

- C. **DISCHARGE VALVE:** *The discharge valve and seat can be exposed by first removing the discharge valve cover plate. Once the discharge cover cap has been removed you may lift out the discharge valve spring, discharge valve and valve seat. Once the valve and seat have been removed they should be replaced if badly worn. To replace discharge valve, first clean and inspect the seat bore for wash out defects and then drop the seat into the bore. Replace valve in seat then valve spring and cover cap, always-inspecting o’ring seals between seats and cover caps.*
 - D. **SUCTION VALVE:** *The suction valves are located in the chamber directly below the discharge valve seat. The suction valves are serviced in the identical manner as the discharge valves.*
2. VALVES (Disc-type): All disc-type valves are exposed for removal in a similar manner as the wing-guided valves. Instead of removing the valve body; the upper portion of the valve is removed by removal of the valve capscrew, spring retainer, valve spring, and valve spacer sleeve. The valve seat is then “pulled” from the fluid-end utilizing an authorized Kerr Valve Puller. Note: In all **Kerr Pumps** with disc-type valves the discharge and suction valves are identical.

3. VALVES (Ball & Seat): In **Kerr Pumps** with block/billet type fluid-ends the valves are ball and seat design. These are exposed for removal/inspection by removal of the appropriate valve cover. The flat seats are kept in place by a screw-in valve retainer that can be best removed with a Kerr Valve Wrench made for the appropriate pump. Springs are normally incorporated with the discharge valves while the suction valves operate with a “free ball”. A copper washer/gasket is used under all valve seats for a seal. When installing or removing a flat type valve seat a good “rap” on top of the valve wrench will “seat/unseat” the seat and copper gasket prior final tightening or removal. Failure to “seat” the valve seat in this manner can result in the “washing out” of the fluid-end. For *pressurized suction*, valves will need to be spring loaded. Call **Kerr Pumps** for this change.
4. PLUNGERS: Following the removal of the suction valve, the plunger may be removed by breaking the union between the plunger and pony rod and forcing the plunger out the back of the fluid-end. Loosening the packing nut/gland will facilitate the removal of the plunger. The reverse of this procedure is used to install a plunger. Lubrication and some slight force may be used to pass plunger through the packing. Always retighten the plunger and pony rod union periodically following the removal of the plunger to insure it is securely made up and will not vibrate loose.
5. PLUNGER PACKING: This manual includes illustrations of the packing sets for each model pump. Generally, once the plunger has been removed from the pump, the packing can be exposed for removal by completely removing whatever device is used to tighten the packing (i.e. the packing or stuffing box nut or gland). There will be various amounts of metal rings and packing components depending upon the type of packing and the model of pump (refer to appropriate illustration or chart). After the removal of all rings and equipment from the stuffing box; thoroughly clean it and inspect for damage, which might keep the new packing from working properly. If the stuffing box is in satisfactory condition, install the new packing as per the appropriate illustration. It is a good idea to lubricate new packing with a light oil prior to installation. Most of the standard packing used in **Kerr Pumps** should be tightened with the original equipment-packing wrench while the pump is running under normal operating pressure. After a two or three hour run-in, check the packing for tightness and re-adjust as necessary. Packing should be checked for tightness on a periodic basis, but it is not a good idea to attempt to periodically tighten the packing as part of routine maintenance. This tends to “wear out” the packing prematurely. When the packing leaks in an excessive amount it should be replaced. There is no value in constantly “re-tightening” leaking packing.

If your pump is equipped with optional “spring loaded” packing, there is no adjustment in this equipment during its operational life. The stuffing box nut is initially tightened as much as possible and there is no further adjustment. Note: In all cases the spring goes in the stuffing box before the packing rings.

When using the optional Kevlar or Teflon packing, be sure to rotate the “splits” so that none are “aligned” to insure that the packing holds properly. Normally, this packing is not lubricated and requires less tension on the stuffing box nut during operation.

CAUTION: An “airtight” seal is not desirable with this plunger packing. Some slight dripage is desirable during operation. Attempts to tighten packing until it completely “seals off” will result in premature failure from too much friction. The Kevlar & Teflon packing must be allowed to drip a small amount to assure normal life.

6. PONY ROD and PONY ROD PACKING: Kerr Pumps use two pony rod sealing arrangements, models KD-1250, KJ-2250, KM-3250 and KCP-6300 use a screw in seal gland, all other models use a bolt in seal gland, these glands use press in oil seals with snap ring retainers. Some Bolt in gland use adjustable packing arrangements with bolt in or screw in followers to adjust packing. By unscrewing plunger from pony rod a gap may be facilitated to allow the removal of the various sealing arrangements. A special wrench will be needed to remove and replace pony rod to crosshead. (This wrench is available from **Kerr Dealers**) All pony rods have a jam nut to align tighten pony rod to crosshead, care must be exercised in installing new seal on pony rod not to damage it.
7. DISASSEMBLY OF POWER END. (CAUTION: Prior to disassembly of any power end, the plunger, pony rod, and pony rod seal housing must be removed.) Expose the crankshaft and connecting rods by removing the pan cover. Connecting rod caps may now be removed and the connecting rod and crosshead should be shoved all the way to the rear (toward the fluid end) to facilitate crankshaft removal out either side as convenient. The connecting rods and crossheads may now be taken out the front cavity exposed by removing the crankshaft. Connecting rods may be removed from the crosshead by loosening the setscrew and driving out the wrist pin from the crosshead. A bronze bushing is used in the rod it may be driven out of the rod and replaced with a new bushing. Reassembly is the reverse of the above outlined sequence with the following considerations for “fits” or tolerance:
 - A. General: All Kerr components are machined on modern production machine tools and are of the same specifications and close tolerances you would expect in a modern automobile engine. It must be pointed out that at top speed (350 to 400 RPM) your pump will not even be approaching idle speed for a gasoline engine so “field fits” are possible and practical when making repairs and replacements away from the factory. All procedures outlined below are possible with only hand tools and absolutely no instruments, special tools, or gauges are needed.
 - B. Connecting rod and wrist pin: Proper fit will find the wrist pin turning freely in its bore in the connecting rod, but it should have no “wobble” that is discernable up and down the main axis of the connecting rod. This looseness in the

wrist pin fit is the most probable cause of “knocking” which is traceable to the power end of most all pumps. The only solution for loose fitting wrist pins is to discard the connecting rod wrist pin bushing and replace with a new one. If any wear is visible on the wrist pin it should always be replaced.

- C. Crankshaft End Play and Lateral adjustments: Adjustment of the Taper Roller bearings used in all Kerr Pumps is accomplished by removing or adding shims under the bearing housing. Shims are taken out or added until the crankshaft (without connecting rods) will turn freely, but with no endplay felt when attempting to pull or push the jackshaft end of the crankshaft along its long axis. Some lateral adjustment is possible by removing shims from one side of the crankshaft and adding them to the opposite side. (Note: Lateral adjustment is the “centering” of the crankshaft in the power frame housing.)
 - D. Connecting Rod to Crankshaft fitting: Factory bored connecting rods will normally fit the standard crankshaft journal just by bolting the cap on the rod with the standard rod shims being used. If the caps do require adjustment this is accomplished by removing or adding various thicknesses of rod shims. The standard connecting rod shim used on all Kerr Pumps is 1/32” thick and is comprised of .002” laminates, which can be “pealed “ off separately. Proper fit of the connecting rod will allow the pump crankshaft to be rotated while not allowing in-and-out slack in the connecting rod along its long or main axis. A well-fitted rod will have none of the in-and-out slack, but should be free enough to be moved from side to side on the rod journal. This insures the rod not being too tight. A point of caution when installing the connecting rod assembly in the pump is to make certain the oil holes in the rod are “UP” and not toward the bottom of the pump. This will result in lubrication failure in these parts and the pump will fail in a short period of time. An additionally important step is to make sure that the rod cap is bolted back on the rod as it came off. The rod and cap carry a “mark” or “number” which allows you to match them back properly. Failure to do this will cause the rod not to fit the journal for which it was made.
8. Power End/Fluid End Connection: A common misconception is that there is some form of fluid seal between the power end and the fluid end. This is false. The fluid end is merely bolted to the power frame. It can be removed by breaking the plunger connection, backing off the packing nut or gland, removing the various fluid end bolts, and sliding the entire fluid end off the power frame. Corrosion may tend to seize the two components together making their separation difficult in some isolated cases. On models KP-3300, KT-3350/KT-3400 and R335/R340 the bolted in stuffing box assemblies must be removed prior to removal of the entire fluid end. They are held in place by four studs each. On all other units the stuffing boxes can be left intact. On the remaining pumps (with the exception KD-1250B, KJ-2250B, KM-3250B, and KCP-6300) the stuffing boxes are held in place in the fluid end by a friction or “press” fit. They should be removed with a hydraulic press if possible. These press-in type stuffing boxes carry a gasket and/or an o-ring to insure a good seal. The boxes on the KD-1250B, KJ-2250B, KM-3250B, and KCP-6300 are screw-in type and carry only a copper gasket.



TECHNICAL DATA SHEET

T.D.S. NO. 4.2
Page 1 OF 2
Date 03-10-06

PCN: _____

Supercedes PCN: _____

TITLE: Short Term Storage Preparation Procedure

1.0 SCOPE

This procedure applies to Kerr Pumps ONLY. Storage procedures for any other unit components or accessories (gear reducers, engines, etc.) are to be prepared to the specific manufacture's recommendations.

1.1 Short-term storage is defined as storage and/or transient time less than six (6) months in an environment defined in Paragraph 2. If storage exceeding six months is expected, the Long Term Pump Storage Preparation Procedure should be followed.

1.2 Kerr Pumps will only prepared for short term storage if so specified in the purchaser or customer order control document.

2.0 STORAGE ENVIRONMENT

A minimal environmental condition, to be met by the customer or purchaser, is a closed shelter to eliminate effects of sun, wind, sand or other debris. Large temperature and humidity changes should be avoided to prevent coating deterioration or contamination by moisture.

3.0 PRESERVATIVE PRODUCT

3.1 The specified rust preservative will protect the internal power end parts from corrosion due to atmospheric moisture, and may be left in the pump when filled with appropriate lubricant and placed into service. The elevated temperature of service will cause rapid depletion of the preventative protection.

3.2 The following rust preventative products or their equivalents are recommended for use in Kerr Pumps and usually available in 5 gallon, 55 gallon containers:

CITGO: RUST-O-LINE OIL 10
SHELL: ENSIS OIL N

4.0 PROCEDURE

4.1 Preparation from; factory testing, inventory, or a distributor rebuild facility.

4.1.1 Drain any oil that may be in the power end, and then fill the complete power end cavity with the specified rust preventative. After 15 to 20 minutes, drain the rust preventative back into its storage drum for future use.

4.1.2 Remove and clean oil level gages, pressure gages and breather caps. Replace with pipe plugs in threaded openings.

4.1.3 All breathers shall be replaced with airtight seals, plugs or gasketed plates. No venting is recommended as it may allow moist air in.



TECHNICAL DATA SHEET

T.D.S. NO. 4.2
Page 2 OF 2
Date 03-10-06

PCN: _____

Supersedes PCN: _____

- 4.1.4 Remove the wiper box seals and cap/plug the seal opening.
- 4.1.5 Clean the pump outer surfaces prior to painting.
- 4.1.6 If painting is required mask crank and lubricator shaft surfaces and keyways. If painting does not apply, go to Para. 4.1.8.
- 4.1.7 Paint as specified by the customer order or as required.
- 4.1.8 Apply a thin layer of grease to the exposed oil seal lips.
- 4.1.9 Apply a thin layer of heavy rust preventative to the exposed crank and lubricator shaft surfaces and keyways.
- 4.1.10 Wrap the exposed crank and lubricator shafts with waxed tape.
- 4.1.11 Carefully wrap the following parts prior to placing them into polyurethane bags. Oil level gages, lube pressure gages, and breather caps.
- 4.1.12 Finish box, crate and mark the parts from Para. 4.1.2 after final inspection (see Para. 4.2.2).

4.2 Shipping/Receiving (New Pumps Only)

- 4.2.1 All pumps and accessories (as applicable) will be final inspected by Kerr Pump personnel prior to shipping. Any witnessed or third party inspection will be signed-off by the purchaser or customer representative prior to final crating and shipment.
- 4.2.2 Export crating will be performed by either an approved Kerr Pump source or as specified by the purchaser or customer. Any third party inspection will be coordinated with the source.
- 4.2.3 Upon receipt of the shipment, the purchaser or customer is responsible for inspection and repair of damaged coatings at the expense of the shipper.

5.0 WARRANTY/START-UP

- 5.1 Pumps prepared per the above procedure qualify for the "Standard Terms & Conditions" in force on the date of shipment.
- 5.2 If the pump storage period is less than 6 months, follow the Short Term Pump Preparation Procedure.
- 5.3 Prior to start-up:
 - 5.3.1 Remove all storage caps, plugs, and covers.
 - 5.3.2 Replace any damaged or cracked O-rings or gaskets.
 - 5.3.3 Inspect power end shaft oil seals and replace if cracked, split or damaged.
 - 5.3.2 Install crankcase drain plug, lubrication level site glass and breather cap.
 - 5.3.3 Install, if applicable, any oil pressure and/or temperature gage.
 - 5.3.4 Check the connection of the plunger and pony rod to the crosshead prior to, and after, initial run-in of the pump.
 - 5.3.5 Fill the crankcase to the proper level with the specified lubricant.



TECHNICAL DATA SHEET

T.D.S. NO. 4.3

Page 1 OF 2

Date 03-10-06

PCN: _____

Supercedes PCN: _____

TITLE: Long Term Storage Preparation Procedure

1.0 SCOPE

This procedure applies to Kerr Pumps ONLY. Storage procedures for any other unit components or accessories (gear reducers, engines, etc.) are to be prepared to the specific manufacture's recommendations.

1.1 Long-term storage is defined as storage and/or transient time exceeding six (6) months in an environment defined in Paragraph 2. If storage for less than six months is expected, the Short Term Pump Storage Preparation Procedure should be followed.

1.2 Kerr Pumps will only prepared for short term storage if so specified in the purchaser or customer order control document.

2.0 STORAGE ENVIRONMENT

A minimal environmental condition, to be met by the customer or purchaser, is a closed shelter to eliminate effects of sun, wind, sand or other debris. Large temperature and humidity changes should be avoided to prevent preventative deterioration or contamination by moisture.

3.0 RUST PREVENTATIVE PRODUCT

3.1 The recommended rust preservative should protect the internal power end parts from corrosion due to atmospheric moisture, and may be left in the pump when filled with appropriate lubricant and placed into service. The elevated temperature of service will cause rapid depletion of the preventative protection.

3.2 The following rust preventative products or their equivalents are recommended for use in Kerr Pumps and usually available in 5 gallon, 55 gallon containers:

CITGO: RUST-O-LINE OIL 10

SHELL: ENSIS OIL N

4.0 PROCEDURE

4.1 Preparation from; factory testing, inventory, or a distributor rebuild facility.

4.1.1 Drain any oil that may be in the power end and then fill the complete power end cavity with the specified rust preventative. After 15 to 20 minutes, drain the rust preventative back into its storage drum for future use.

4.1.2 Remove all plungers, pony rods (if applicable), baffle discs, packing and junk rings.

4.1.3 Remove and clean oil level gages, pressure gages and breather caps. Replace with pipe plugs in threaded openings.



TECHNICAL DATA SHEET

T.D.S. NO. 4.3

Page 2 OF 2

Date 03-10-06

PCN: _____

Supercedes PCN: _____

- 4.1.4 All breathers shall be replaced with airtight seals, plugs or gasketed plates. No venting is recommended as it may allow moist air in.
- 4.1.5 Remove the wiper box seals and cap/plug the seal opening.
- 4.1.6 Clean the pump outer surfaces prior to painting.
- 4.1.7 If painting is required mask crank and lubricator shaft surfaces and keyways. If painting does not apply, go to Para. 4.1.9.
- 4.1.8 Paint as specified by the customer order or as required.
- 4.1.9 Apply a thin layer of grease to the exposed oil seal lips.
- 4.1.10 Apply a thin layer of heavy rust preventative to the exposed crank and lubricator shaft surfaces and keyways.
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- 4.1.12 Carefully wrap the following parts prior to placing them into polyurethane bags. Oil level gages, lube pressure gages, and breather caps.
- 4.1.13 Finish box, crate and mark the parts from Para. 4.1.10 after final inspection (see Para. 4.2.2).

4.2 Shipping/Receiving (New Pumps Only)

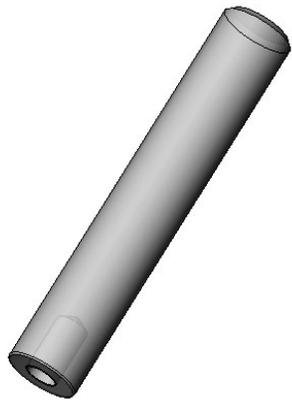
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- 4.2.2 Export crating will be performed by either an approved Kerr Pump source or as specified by the purchaser or customer. Any third party inspection will be coordinated with the source.
- 4.2.3 Upon receipt of the shipment, the purchaser or customer is responsible for inspection and repair of damaged coatings at the expense of the shipper.

5.0 WARRANTY / START-UP

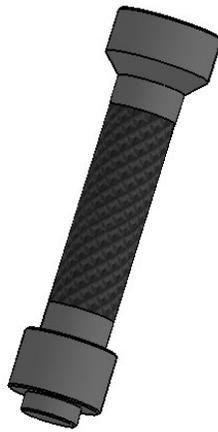
- 5.1 Pumps prepared per the above procedure qualify for the "Standard Terms & Conditions" in force on the date of shipment.
- 5.2 If the pump storage period will exceed 6 months, follow the Long-Term Pump Preparation Procedure.
- 5.3 Prior to start-up:
 - 5.3.1 Remove all storage caps, plugs, and covers.
 - 5.3.2 Install the packing, junk rings, plungers, pony rods (if applicable), baffle discs, and wiper box seals. Replace any damaged or cracked O-rings or gaskets.
 - 5.3.3 Inspect power end shaft oil seals and replace if cracked, split or damaged.
 - 5.3.2 Install crankcase drain plug, lubrication level site glass and breather cap.
 - 5.3.3 Install, if applicable, any oil pressure and/or temperature gage.
 - 5.3.4 Check the connection of the plunger and pony rod to the crosshead prior to, and after, initial run-in of the pump.
 - 5.3.5 Fill the crankcase to the proper level with the specified lubricant.



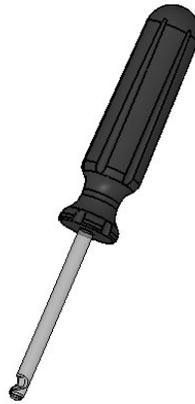
KM-76M
WING-
GUIDED
SEAT
TRI-PIN
TYPE
PULLER
ASS'Y



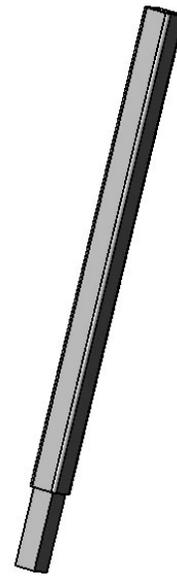
KM-306
VALVE SEAT
SEATING TOOL



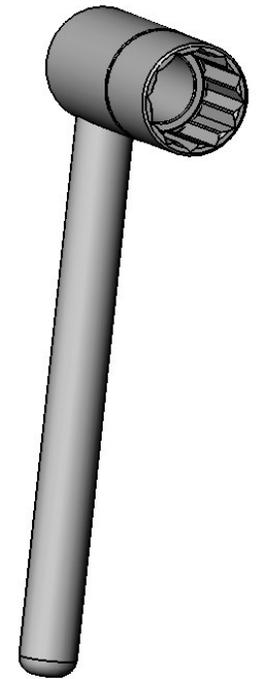
KA-276
PONY ROD
SEAL TOOL



AP-71T
VALVE
INSERT
TOOL



AP-425
STUFFING
BOX NUT
WRENCH



KA-277
PONY
ROD
WRENCH

**SPECIAL TOOLS
FOR Q5450HP**

How To Put Inserts In Valves Using Kerr Valve Insert Tool



1) Push Valve Insert over valve legs. Hint: (Insert will be more pliable if heated first-- warm to the touch not hot).



2) Put Tool between valve and valve insert with groove against valve.



3) Holding Valve insert down with thumb.



4) While holding valve down with thumb, rotate around valve with tool. (Similar to mounting a tire on a rim).



5) Continue rotating around valve with tool until insert is completely in groove.

Wing Guided Valve Changing Instructions



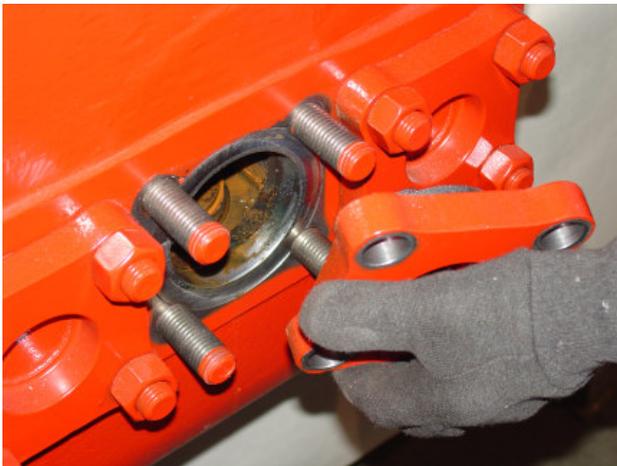
1.) Remove the nuts/cap screws from the top cover.



**2.A) Remove the top cover and discharge spring.
2.B) Inspect the o-ring for damage.**



3.) Remove the discharge valve.



**4.A) Remove the end cover cap and suction spring.
4.B) Inspect the valve spring for damage.**

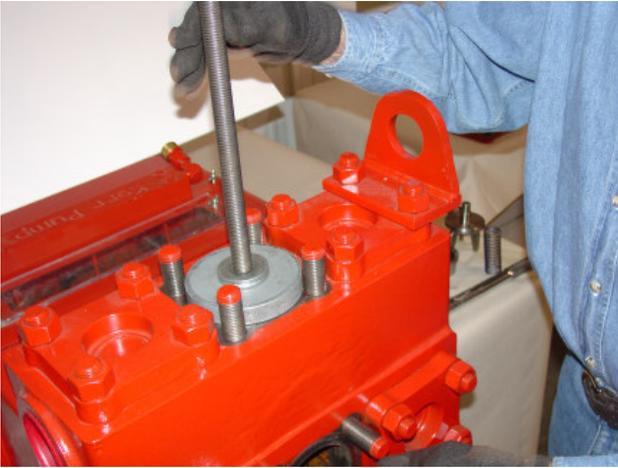


5.) Remove the suction valve.



6.) Insert the tri-pin puller head, all pins retracted, into the discharge seat.

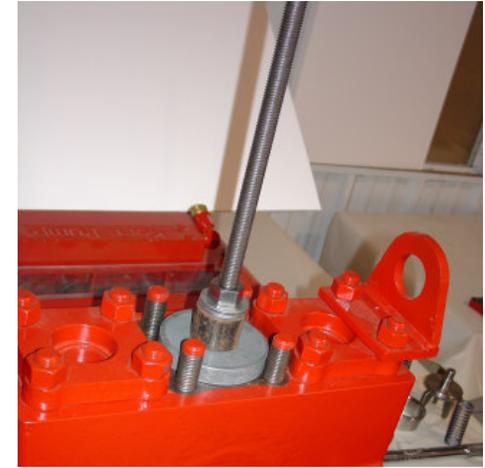
Wing Guided Valve Changing Instructions (...continued)



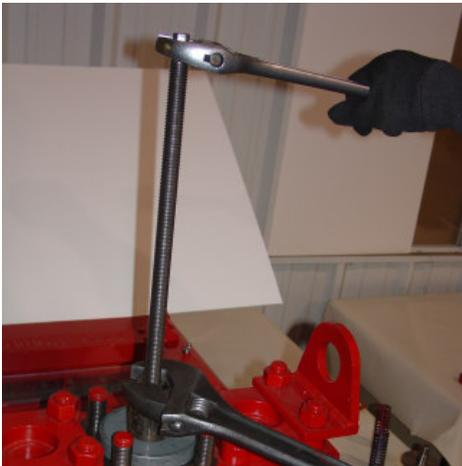
7.) Slide puller plate, spacer and washers down the puller rod.



8.) Turn the puller rod until the pins are fully extended.



9.) Lifting the puller rod, turn the nut until firmly in contact with the washers.



10.) Holding the top of the puller rod in place, tighten the nut until the seat releases.



11.) Remove the puller assembly with seat attached.



12.) Loosen the puller rod to retract the pins and remove the seat.

» Repeat steps 6 thru 12 for suction valve.

Wing Guided Valve Changing Instructions (...continued)



13.) Install the suction seat and valve. Drive in firmly using bar and hammer.



14.) Install the discharge seat and valve. Drive in firmly using bar and hammer.



15.) Install the suction spring.



16.) Install the discharge spring.

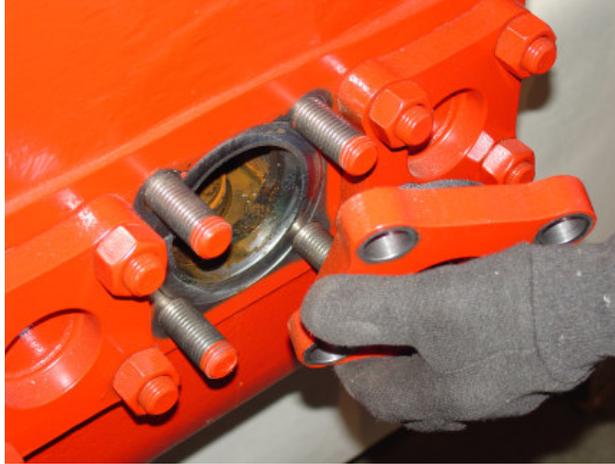


17.) Tighten all bolts/nuts to specified torque from chart.

Disc Valve Changing Instructions



1.) Remove the nuts/cap screws from the top and end covers.



2.) Remove the top and end covers.



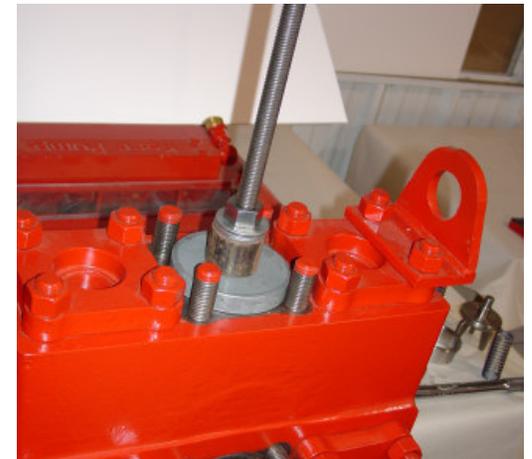
3.) Unthread the discharge valve cap screw and remove with retainer, spring, disc and sleeve.



4.) Insert the "J" puller head into and through the discharge seat.



5.) Slide puller plate spacer and washers down the puller rod.



6.) Rotate the puller rod 1/4 turn clockwise and lift it. Thread the nut by hand down to the washers

Disc Valve Changing Instructions (...continued)



7.) Holding the top of the puller rod in place, tighten the nut until the seat releases.



8.) Remove the puller assembly with seat attached.



9.) Remove the seat from the puller head and remove the remaining discharge seats

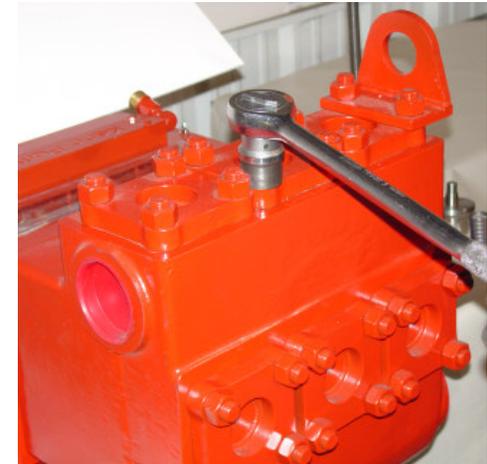
» Repeat steps 4 thru 9 for suction valve.



10.) Install seat only in the lower suction location and with an old/used disc on top of the new seat, drive in firmly with a hollow bar.



11.) Install the disc sleeve spring, retainer and cap screw. Tighten to the specified torque.

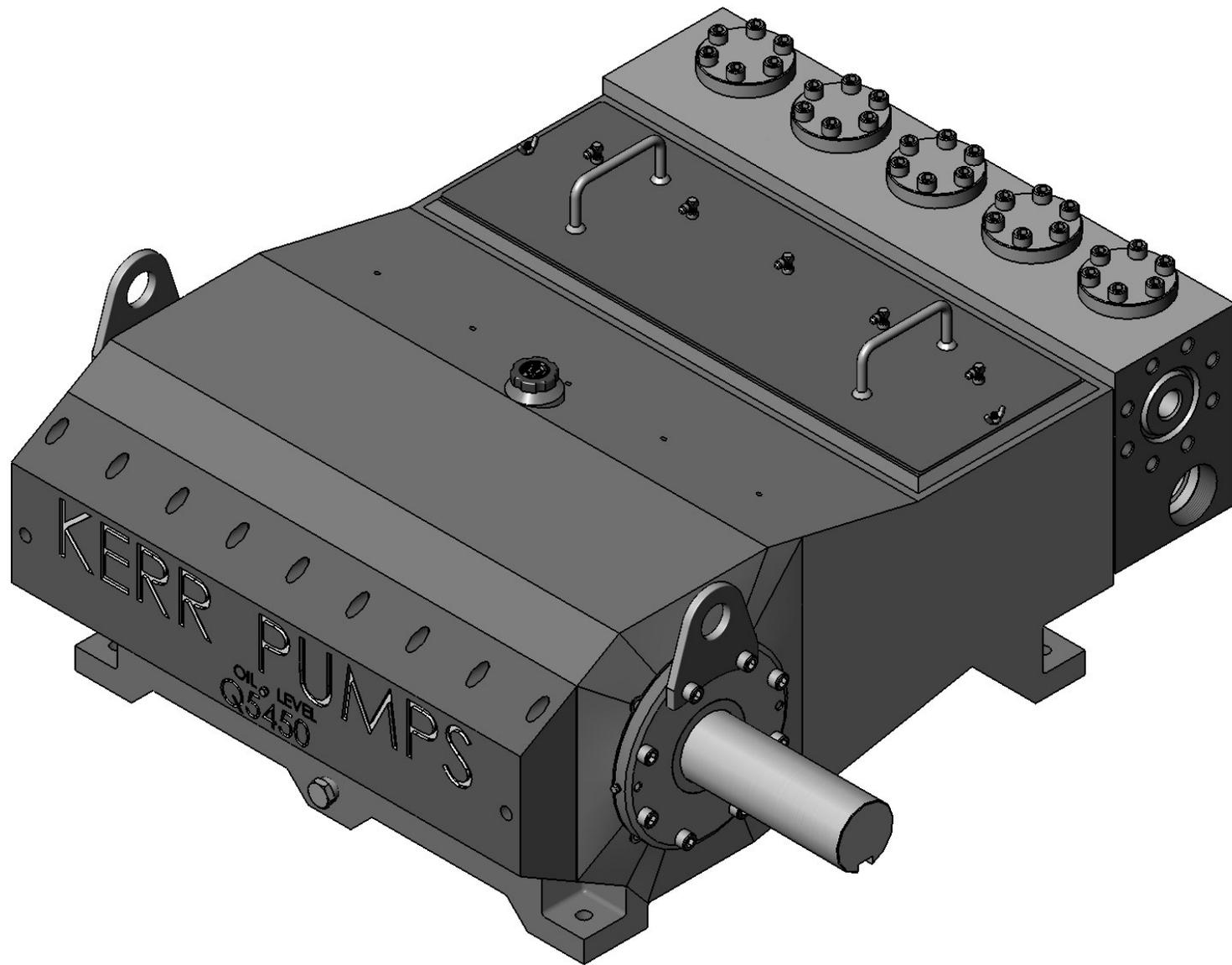


12.) Install covers with seals, nut/cap screws and tighten to specified torque from chart.

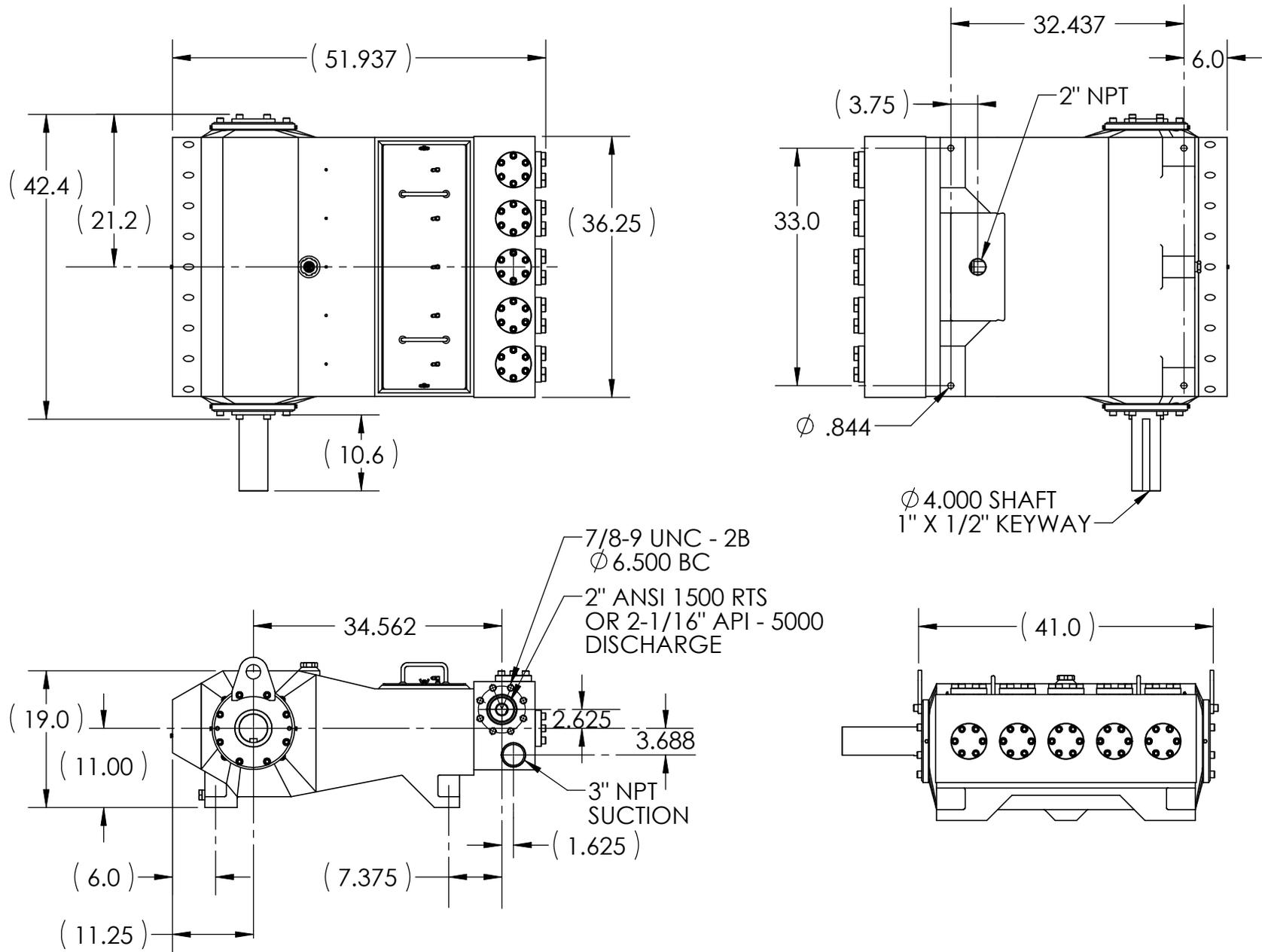
WARNING

Do NOT use a solid bar it will overload and deflect the center pod

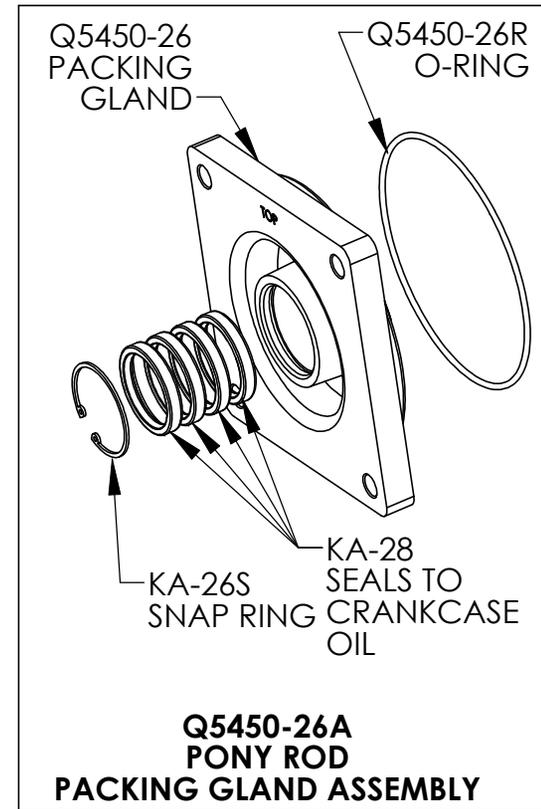
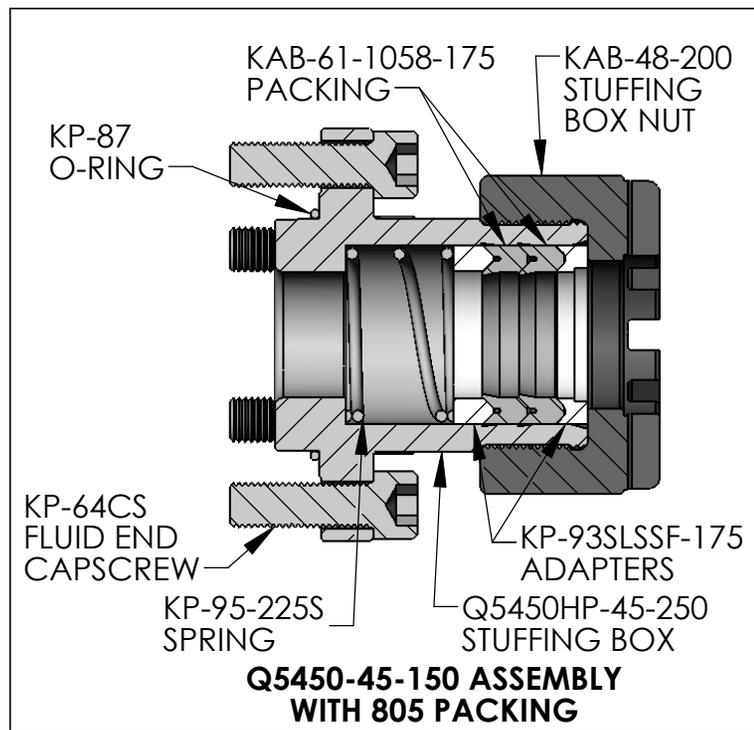
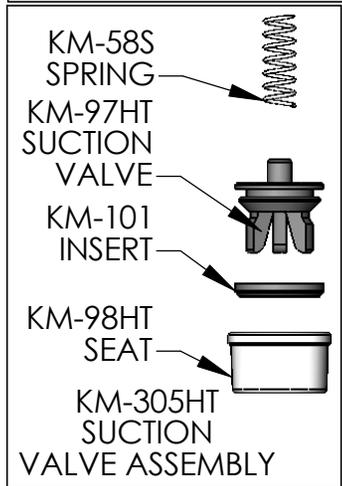
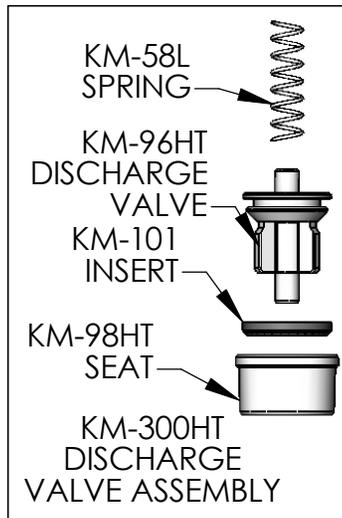
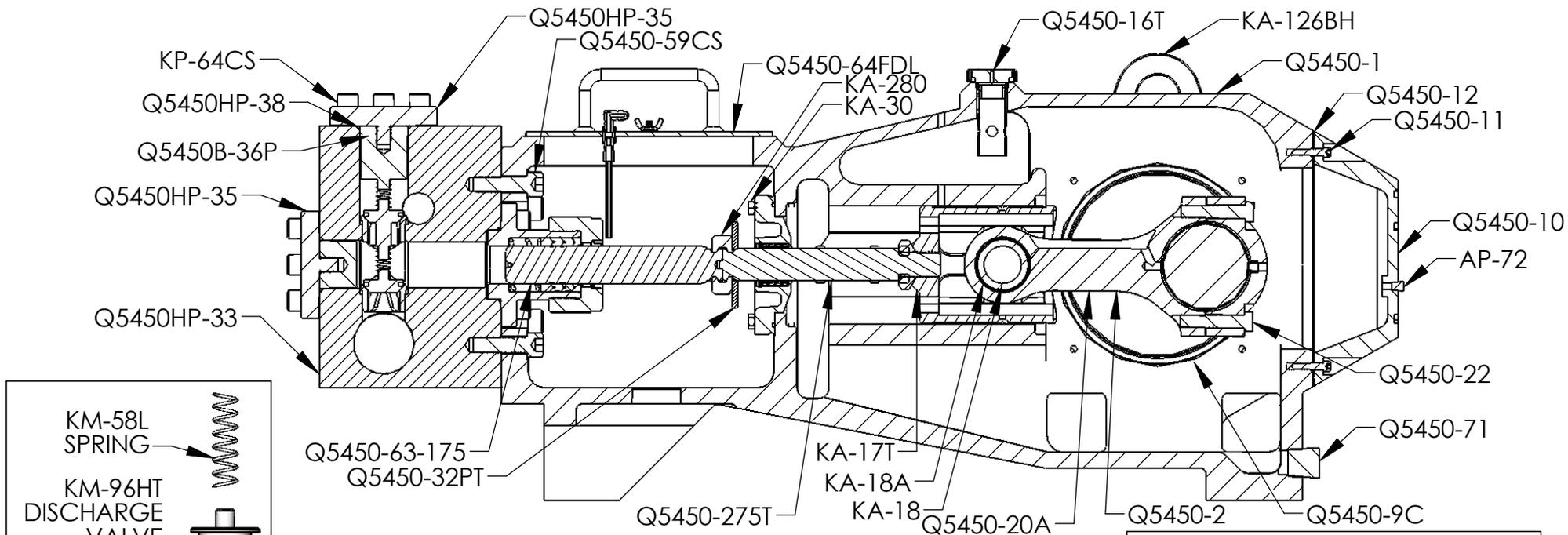
» Repeat steps 10 thru 12 for upper discharge location.



Q5450HP



Q5450HP GENERAL DIMENSIONS



Q5450HP PARTS ILLUSTRATION

Kerr Q5450HP Plunger Type Pump

Part Number	Description	# Req
Q5450-1	Case, Pump	1
Q5450-2	Crankshaft, Heat Treated	1
KA-3	Crankshaft Oil Seal	1
Q5450-4	Bearing Housing, Blind Side	1
Q5450-5	Bearing Housing, Shaft Side	1
KA-7	Bearing Housing Gaskets	2
KA-8-005	Main Bearing Adjusting Shims .005	As Req
KA-8-010	Main Bearing Adjusting Shims .010	As Req
KA-8-015	Main Bearing Adjusting Shims .015	As Req
Q5450-9C	Bearing, Center Main	2
KA-9	Main Bearings	2
Q5450-10	Pan Cover	1
Q5450-11	Capscrew, Pan Cover	20
Q5450-12	Gasket, Pan Cover	1
AP-16T	Breather Cap (Oil Filler) Threaded Style	1
KA-17T	Crosshead Tapered	5
KA-18A	Wrist Pin Bushing	5
KA-18	Wrist Pin	5
Q5450-20	Connecting Rod ~ without Inserts	5
Q5450-20A	Connecting Rod ~ Inserted Both Ends	
Q5450-21-000	Connecting Rod Insert Bearing (Std)	5
Q5450-21-015	Connecting Rod Insert Bearing (.015)	5
Q5450-21-030	Connecting Rod Insert Bearing (.030)	5
Q5450-22	Capscrew, Connecting Rod	10
KA-26S	Pony Rod Gland Snap Ring	5
Q5450-26R	O-Ring, Pony Rod Gland	5
Q5450-26A	Gland Ass'y, Pony Rod (Pony Rod Gland, Snap Ring, Seals)	5
Q5450-26	Gland, Pony Rod, Snap Ring Type	5
KA-28	Pony Rod Seal (4 Seals per Set)	5 sets
KA-30	Pony Rod Gland Capscrews SS	20
Q5450PT-32	Pony Rod Splash Guard	5
Q5450HP-33FSS	Fluid End (Forged Stainless Steel)	1
Q5450HP-33FS	Fluid End Vessel Only (Forged Steel)	1
Q5450HP-35	Cover Cap	10
Q5450HP-35P	Top Valve Plug	5
Q5450HP-36P	End Valve Plug	5
Q5450HP-38	O-Ring Cover Cap	10
Q5450HP-45-250	Stuffing Box, 2-1/2" ID [1-3/4" - 2" Plungers]	5
Q5450HP-45-300	Stuffing Box, 3" ID [2-1/4" to 2-1/2" Plungers]	5
KAB-48-200	Stuffing Box Nut (Fits 2 Plungers)	5
KM-58L	Valve Spring (Wing-Guided) (Long) (Discharge)	5

Kerr Q5450HP Plunger Type Pump

Part Number	Description	# Req
KM-58S	Valve Spring (Wing-Guided) (Short) (Suction)	5
Q5450-59CS	Capscrew, Fluid End	30
KAB-61-1058-175	1058 SSF Pressure Rings Only 1 3/4	5
KAB-61-1058-200	1058 SSF Pressure Rings Only 2"	5
Q5450HP-63-175	Plunger, Clamp Style 1-3/4" Colmonoy	5
Q5450HP-63-200	Plunger, Clamp Style 2" Colmonoy	5
Q5450-64DL	Chamber Cover, Plunger, Drip Lube	1
Q5450-64	Chamber Cover, Plunger, Standard	1
Q5450-64L	Chamber Cover, Plunger, Pressure Lube	1
KP-64CS	Fluid End Capscrew Sockethead	30
KA-68M	Wing-Guided Seat Tri-Pin Type Puller Ass'y	1
AP-72	1/8 NPT Oil Level/Stuffing Box Hex Plug (AB)	1
AP-77T	Valve Insert Tool	1
KP-90GSLSSF-175AB	1058 SSF Spring Loaded Packing Set 1 3/4 (ALBZ)	5
KP-90GSLSSF-200AB	1058 SSF Spring Loaded Packing Set 2 (ALBZ)	5
KP-90GSLSSF-175S	1058 SSF Spring Loaded Packing Set 1 3/4 (Steel)	5
KP-90GSLSSF-200S	1058 SSF Spring Loaded Packing Set 2 (Steel)	5
KP-90GSLSSF-175SS	1058 SSF Spring Loaded Packing Set 1 3/4 (Stainless Steel)	5
KP-90GSLSSF-200SS	1058 SSF Spring Loaded Packing Set 2 (Stainless Steel)	5
KP-93SLSSF-175SS	SSF Packing Adapters Spring Loaded (Stainless Steel)	5
KP-93SLSSF-200SS	SSF Packing Adapters Spring Loaded (Stainless Steel)	5
KM-96HT	Discharge Valve, Heat Treated, A/R with Insert	5
KM-97HT	Suction Valve, Heat Treated, A/R with Insert	5
KM-98HT	Valve Seat, Heat Treated, A/R	10
KM-101A	Abrasive Resistant Valve Insert (Aflax)	10
KM-101N	Abrasive Resistant Valve Insert (Nitrile)	10
KM-101R	Abrasive Resistant Valve Insert	10
Q5450HP-113	Q5450HP Rebuild Gasket Kit Complete Includes the Following Parts: (1) Q5450-3, (2) Q5450-7, (1) Q5450-12, (5) Q5450-26R, (5 Sets) Q5450-28, (5) Q5450-32, (10) Q5450HP-38	1
Q5450-114	Packing Lubrication System, Complete	1
Q5450-115H	Lubricator Hose Kit Complete	1
AP-115	Check Valve Stainless Steel 1/8 Pipe	5
AP-116	55 Single Pump for Forced Feed Lubricator	5
AP-117L	Lubricator Sheave	1
KA-117	Crankshaft Lubrication Sheave	1
Q5450-118	Belt, Lubricator	1
Q5450-119	Bracket, Lubricator	1
Q5450-275T	Pony Rod with Tapered Jam Nut	5
KA-276	Installation Tool for Pony Rod Seal	1
KA-277	Installation Wrench, Pony Rod	1
KA-280	Clamp, Pony Rod to Piston Rod	5

Kerr Q5450HP Plunger Type Pump

Part Number	Description	# Req
KM-300HT	Abrasive Resistant Discharge Valve Complete (KM-96HT, KM-98HT & KM-58L)	5
KM-305HT	Abrasive Resistant Suction Valve Complete (KM-97HT, KM-98HT & KM-58S)	5
AP-306	Valve Seat Seating Tool	1
AP-425	Wrench, Stuffing Box Nut	1
KA-550	Cage Wrench	1
KA-555	Disc Seat "J" Type Puller Ass'y	1

All prices and part numbers are subject to change without prior notice.