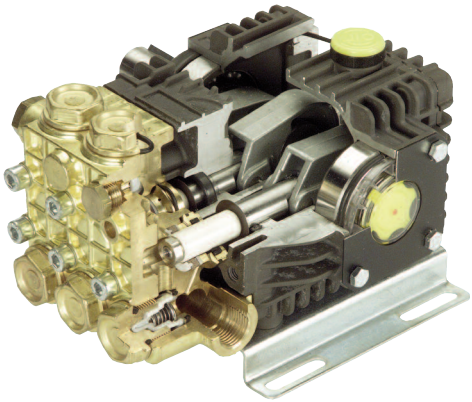
GENERAL PUMP *A member of the Interpump Group*

TC Series "60"

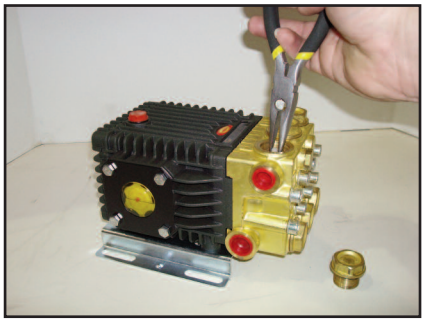
Triplex Plunger Pump

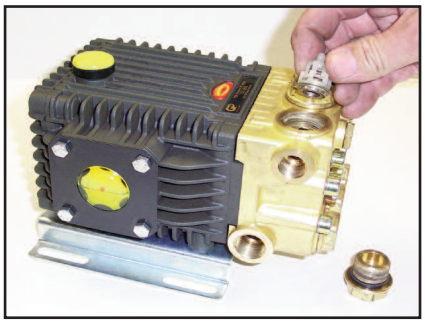
SERVICING INSTRUCTIONS



SERVICING PUMP PROCEDURES

Valve Replacement: All inlet and discharge valves can be serviced without disrupting the inlet or discharge plumbing. The inlet and discharge valves are identical in all 63 series models.





To service any valve:

1) Remove valve cap and examine o-ring. Replace o-ring if there is any evidence of cuts, abrasions, distortion or wear.
2) Remove valve assembly (retainer, spring, valve, valve seat) from valve cavity.
3) Remove valve seat o-ring from valve cavity.
4) Inspect manifold for wear or damage.
5) Install new o-ring in valve cavity.
6) Insert valve assembly into valve cavity.
7) Replace valve cap and torque to specification.

NOTE: Only one valve kit is necessary to repair all the valves in the pump. The kit includes new o-rings, valve seat, poppet, spring and retainer. All are pre-assembled.

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TRIPLEX

TC Series "60" Servicing Instructions

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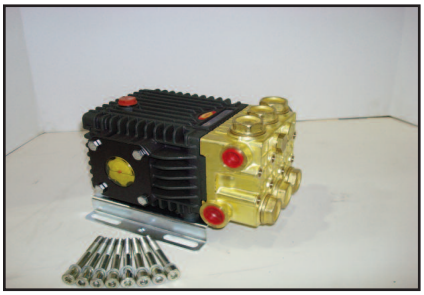

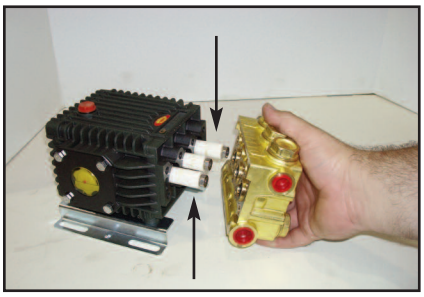

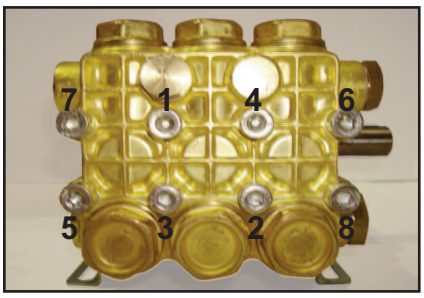

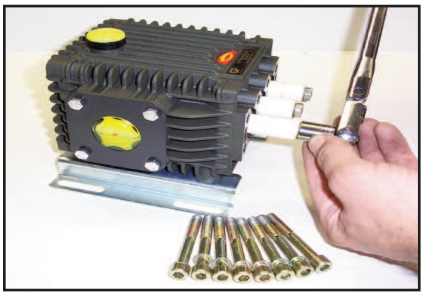

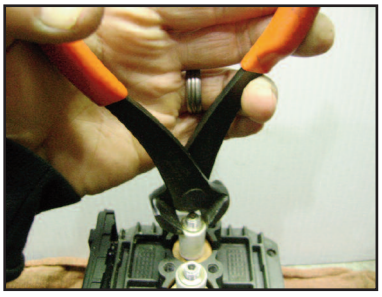

Removing/Installing Manifold:

1) Remove fasteners retaining manifold.

2) Separate manifold from crankcase.

Note: it may be necessary to rotate the crankshaft, or tap the manifold lightly with rawhide mallet to loosen the manifold from crankcase.
Caution: When sliding head from crankcase use caution not to damage plungers.

3) The seal assemblies may come off with the manifold. At this point examine the ceramic plungers. Plunger's surface should be smooth and free from scoring, pitting, or cracks; if not, replace.

4) Coat each plunger with grease.

5) Align outside pistons in the forward position.

6) Reinstall manifold and torque to specifications per sequence described below.

TORQUE SEQUENCE FOR TIGHTENING MANIFOLD:

- Install all manifold bolts finger tight.
- Torque to 10 foot pounds in sequence as shown.
- Next torque to specification; again, in sequence.

Replacing ceramic plungers:

1) Remove the stainless steel fasteners retaining the plungers.

2) Remove the brass bushing and ceramic plunger from piston rod.

3) If copper slinger washer comes off with plunger, be certain this is replaced before new plunger is installed.

4) Install new o-ring and Teflon back-up ring on piston rod.

NOTE: a film of grease on the outside of the o-ring insures a better installation.

5) Slide new plunger over the piston rod, insert new brass bushing.

6) Apply a drop of removable anaerobic thread sealant to threads of piston rod.

7) Install the stainless steel fasteners retaining the plungers and torque to specifications.

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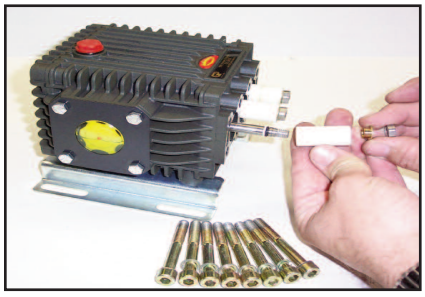

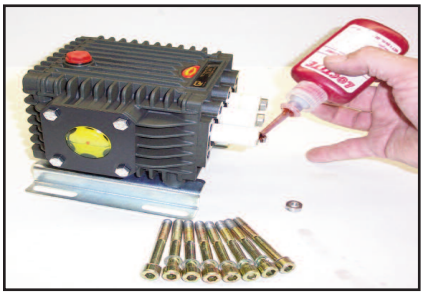

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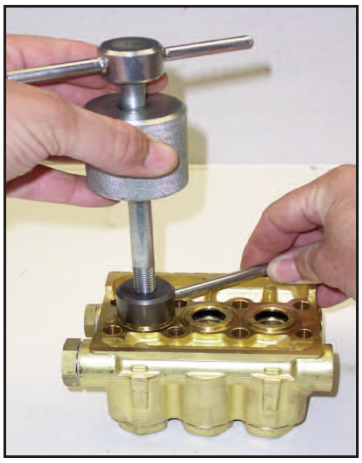

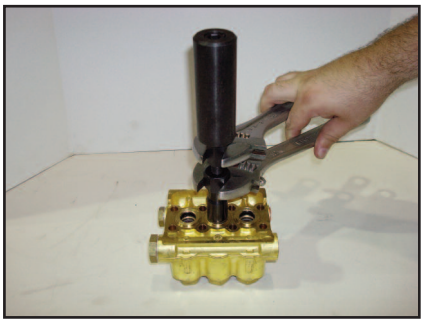

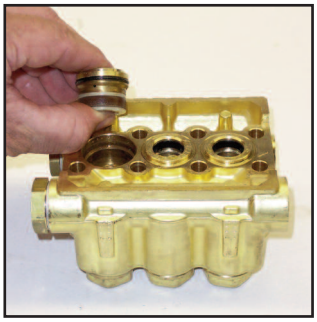

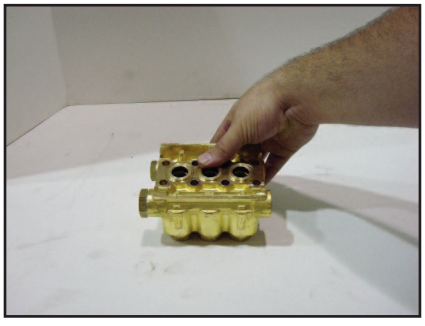

Replacing packings:

1) Remove manifold from crankcase.

2) Insert proper extractor collet through main seal retainer. Tighten collet and extract retainers, packings and head rings.

3) Apply grease to the packing assembly before installing in cylinders.

4) Install packing assembly into manifold

5) Repeat this sequence for each cylinder.

6) Align outside pistons in forward position.

7) Coat each plunger with grease.

8) Install manifold and torque retainers to specifications.

Recommended Tools/Supplies:

1) **100783** Complete Extraction Kit
   Includes the following tools:

2530016	*handle*	2530020	*15mm sleeve*
2530017	*bolt*	2530021	*18mm sleeve*
2530018	*pin*		

2) **190446** Oil Drain Kit

3) **100295** General Pump Series 100 Oil (1-16 oz. bottle)
   100214 General Pump Series 100 Oil (6-16oz. bottles)
   100216 General Pump Series 100 Oil (24-16 oz. bottles)

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GENERAL PUMP

TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
Pulsation	Valve stuck open.	Check all valves, remove foreign matter.
	Faulty pulsation damper.	Check precharge; if low, rechargeit or install a new one.
Low pressure	Worn nozzle.	Replace nozzle, of proper size.
	Belt slippage.	Tighten or replace; use correct belt.
	Air leak in inlet plumbing.	Disassemble, reseal and reassemble.
	Relief valve stuck; partially plugged or improperly adjusted valve seat worn.	Clean, adjust relief valve; check for worn and dirty valve seats. Kit available.
	Inlet suction strainer clogged or improperly sized.	Clean. Use adequate size. Check more frequently.
	Worn packing. Abrasives in pumped fluid or severe cavitation. Inadequate water.	Install proper filter. Suction at inlet manifold must be limited to lifting less than 20 feet of water or -8.5 PSI vacuum.
	Fouled or dirty inlet or discharge valves.	Clean inlet and discharge valve assemblies.
	Worn inlet, discharge valve blocked or dirty.	Replace worn valve seats and/or discharge hose
	Leaky discharge hose.	
Pump runs extremely rough, pressure very low.	Restricted inlet or air entering the inlet plumbing.	Proper size inlet plumbing; check for air tight seal
	Inlet restrictions and/or air leaks. Stuck inlet or discharge valve.	Replace worn cup or cups, clean out foreign material, replace worn valves.
Water leakage from under manifold. Slight leakage.	Worn packing.	Install new packing.
	Cracked plunger.	Replace plunger(s).
Oil leak between crankcase and pumping section.	Worn crankcase piston rod seals. O-rings on plunger retainer worn.	Replace crankcase piston rod seals. Replace o-rings.
Oil leaking in the area of crankshaft.	Worn crankshaft seal or inproperly installed oil seal o-ring.	Remove oil seal retainer and replace damaged o-ring and/or seals.
	Bad bearing.	Replace bearing and any spacer or cover damaged by heat.
Excessive play in the end of the crankshaft pulley.	Worn main bearing from excessive tension on drive belt.	Replace crankcase bearing and/ or tension drive belt.
Water in crankcase.	May be caused by humid air condensing i nto water inside the crankcase	Change oil intervals. Use General Pump SAE 30 non-detergent oil.
	Worn packing and/or piston rod sleeve, o-rings on plunger retainer worn.	Replace packing. Replace o-rings.
	Cracked plunger	Replace plunger(s).
Oil leaking from underside of crankcase.	Worn crankcase piston rod seals.	Replace seals.
	Scored piston rod.	Replace piston rod.
Oil leaking at the rear portion of the crankcase.	Damaged crankcase, rear cover o-ring, drain plug o-ring, or sight glass o-ring.	Replace cover or-ring, drain plug o-ring, or sight glass o-ring.
Loud knocking noise in pump.	Pulley loose on crankshaft.	Check key and tighten screw.
	Broken or worn bearing on rod(s).	Replace bearing or rod(s).
	Valve stuck open or shut, or not opening enough.	Replace bad valve.
Frequent or premature failure of the packing.	Scored, damaged or worn plunger.	Replace plungers.
	Overpressure to inlet manifold.	Reduce inlet pressure.
	Abrasive material in the fluid being pumped.	Install proper filtration on pump inlet plumbing.
	Excessive pressure and/or temperature of fluid being pumped.	Check pressures and fluid inlet temperature; be sure they are within specified range.
	Overpressure of pump.	Reduce pressure.
	Running pump dry.	Do not run pump without water.
	Upstream chemical injection.	Use downstream chemical injection.

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