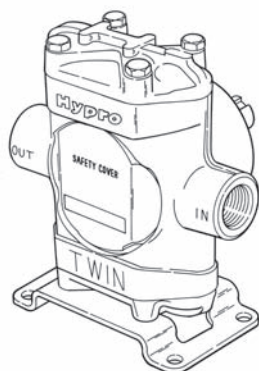


Installation, Operation, Repair and Parts Manual

10-05

Description



SERIES 5200C Cast Iron Big Twin Piston Pump

Max. Flow Rate:.....	6 gpm (5206) @ 600 rpm
	10 gpm (5210)
Max. Pressure:.....	400 psi
Max. Speed:.....	800 rpm (5206)
	600 rpm (5210)
Ports:	3/4" NPT inlet
	3/4" NPT outlet
Shaft:	1" solid
	1-3/8" hollow shaft

The Hypro Series 5200 Big Twin® piston pump is suitable for applications in high pressure washers for industrial and agricultural cleaning needs. It is also useful as a sprayer pump to apply a wide range of chemicals.

The Series 5200 is constructed of cast iron body and cylinder heads, unitized stainless steel valve assemblies and double row ball bearing supported crankshaft. Three cup materials are available to meet specific pumping needs. They are:

Leather—for pumping aromatic solvents and other chemicals damaging to rubber.

Fabric—for pumping most insecticides, herbicides and fertilizers.

Buna-N Rubber—for pumping soap and detergent solutions and some fertilizers.

Two crankshaft options are available—1" solid shaft for belt and pulley or flexible coupling drive, or 1-3/8" hollow shaft for direct mounting onto a 6-spline 540 rpm PTO shaft.



Safety Information

- Warning: Do not pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in explosive atmospheres. The pump should be used only with liquids compatible with the pump component materials. Failure to follow this warning can result in personal injury and/or property damage and will void the product warranty.**
- Be sure all exposed moving parts such as shafts, couplers and adapters are properly shielded or guarded and that all coupling devices are securely attached before applying power.
- Pumps mounted directly on to PTO shaft or other power shaft must be prevented from rotating with the power shaft by use of a torque arm. Pump must float freely on the power shaft and must not be tied rigidly to equipment on which it is mounted.
- Do Not Exceed** recommended speed, pressure and temperature for pump and equipment being used.
- Before Servicing**, disconnect all power, make sure all pressure in the system is relieved, drain all liquids from the system and flush.
- Secure the discharge lines before starting the pump. An unsecured line may whip, causing personal injury and/or property damage.
- Check hose for weak or worn condition before each use. Make certain that all connections are tight and secure.
- Periodically inspect the pump and the system components. Perform routine maintenance as required (see Maintenance section).
- Protect pump from freezing conditions by draining liquid and pumping rust inhibiting antifreeze solution through the system, coating the pump interior.
- Use only pipe, hose and fittings rated for the maximum psi rating of the pump.
- Do not use these pumps for pumping water or other liquids for human or animal consumption.

Drive Source Installation

This manual will cover the installation of the basic drive configurations available for the Hypro Big Twin Piston pumps. Consult the manufacturer of your motor or engine

for additional information. Read all instructions and general safety information before attempting to install or operate the pump.

Belt/Pulley Drive Installation

Mounting Belts and Pulleys

Mount pulleys as close to pump and motor engine shaft bearings as possible. Check alignment with a straight edge as shown in Fig. 1. Make sure that belt has proper tension. (Too much tension will cause bearing wear; too little will cause slippage.) See Fig. 2. Check with belt and pulley sources for specific recommendation.

To figure proper diameter of pump pulley, multiply the motor/engine rpm by the diameter of the motor/engine pulley and divide that figure by desired pump speed.

$$\text{Pump Pulley Size} = \frac{\text{Motor RPM} \times \text{Motor Pulley Size}}{\text{Desired Pump Speed}}$$

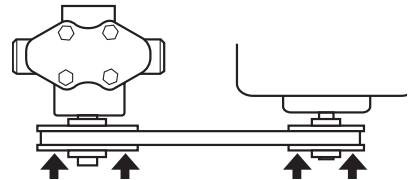
Refer to the pump performance chart on Page 5 to determine the desired speed to obtain the desired maximum flow.

NOTE: Shaft rotation can be either clockwise or counter clockwise.

1

Four points of contact indicate alignment.

NOTE: Pump may be mounted in other orientations with respect to the motor or engine



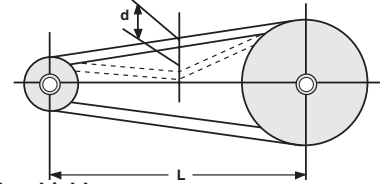
2

Push the belt midway between the pulleys, check the deflection (d) and adjust:

$$d = 0.016 \times L$$

Caution:

For safety, always install a shield over rotating shafts and belts.

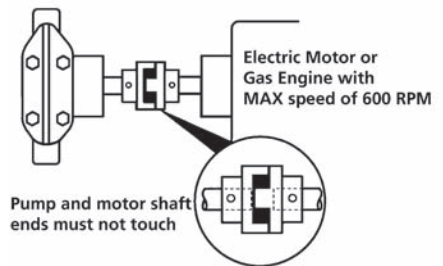


Direct Drive - Flexible Coupling Installation

First, slide coupling ends onto motor/engine and pump shafts as far as possible (Fig 3). Mount motor/engine and pump onto base, shimming pump or power unit so that shafts are aligned. Leave enough space between ends of shafts to allow coupling disc to be inserted. When alignment is made, slide coupling ends over coupling disc. Leave clearance between coupling ends and center disc. Tighten screws in both coupling ends. For electric motor drive, use couplings rated at least twice the horsepower required to operate pump. For gas engine drive, select couplings rated at three times the required pump horsepower.

3

Caution:
For safety, always install a shield over rotating shafts and couplings

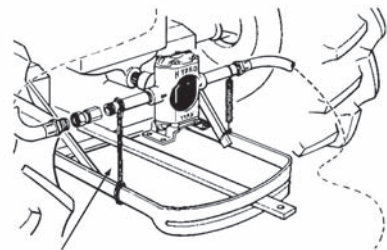


Direct Drive - Hollow Shaft Installation

Hollow shaft models may be mounted directly onto power shaft — motor or engine shaft, truck or tractor PTO shaft. **Important:** When direct mounting a hollow shaft pump, **Do Not** rigidly mount the pump base. The pump must be allowed to “float”. Secure a torque arm with a chain or flexible fastener to the frame or base, directly below and in-line with the pump. This prevents the pump from rotating with the shaft. Always check to see if the pump will turn by hand to ensure that the pump rotates freely. **Do Not** apply power to a pump where the shaft doesn't rotate freely.

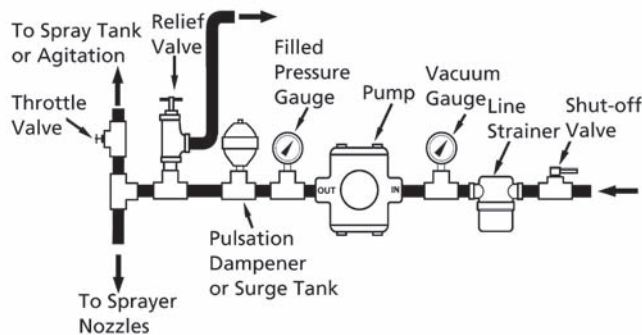
4

Caution:
For safety, always install a shield over rotating shafts and couplings



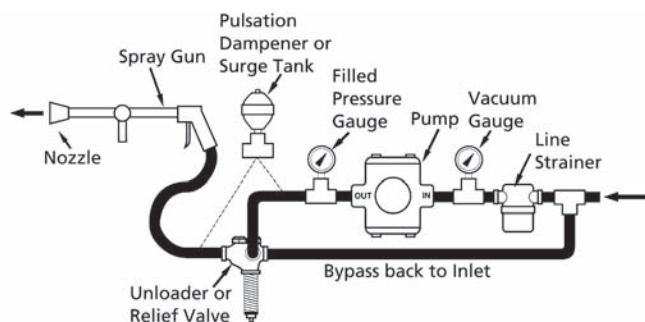
System Installation

5 Series 5200 Pump Hook-Up to Boom for Chemical Spraying



Note: A pulsation dampener such as our Model No. 3375-0017, 3375-0015 or surge tank Model No. 3375-0003 must be installed on the outlet side for optimum performance and maximum life. For the proper operation of some unloader valves, it may be necessary to install a pulsation dampener downstream from the unloader valve; however, for optimum system dampening, it may be installed upstream from the unloader valve provided that the unloader valve will still function properly.

Series 5200 Pump Hook-Up for Pressure Washing



Piston Pump Installation

Accessories should be installed with solid piping and be mounted as close to the pump as possible. Hose must be used right after accessories. **NOTE:** If remaining installation is solid piping, a two to four foot length of hose must be installed between accessories and solid piping.

Hose

Selection of the right size and type of hose is vital to good performance. Be sure to hook up to proper ports on pump (note markings "IN" and "OUT" on pump castings).

Suction Hose

Always use genuine suction hose of at least the same inside diameter as pump ports. Hose should have some elasticity, but not overly soft so that it collapses. Use 3/4" (ID) hose or larger for a Series 5200 pump. If suction hose is over 6 feet long on Series 5200 use next larger size hose. Keep suction hose as short as possible and restrictions such as elbows, check valves, etc. at a minimum.

Discharge Hose

High pressure pumps require the use of special high pressure discharge hose (2 rayon braid or equivalent). Use a hose rated at least 50% greater than the highest operating pressure required of pump. Example: If required pump pressure is 200 psi, use discharge hose rated at minimum of 300 psi working pressure.

Unloader or Relief Valve

The unloader or relief valve has a very important safety function in your piston pump hook-up. The valve protects the pump by unloading or bypassing the pump's flow when gun is shut off or discharge is otherwise blocked.

Strainers

Use a suction line strainer with an open screen area of at least 3 to 5 times the suction port area. For example, an area of approximately 2-1/3 to 4 square inches for a 1" suction port. Be sure the screen is suitable for the liquid being pumped. Keep filter clean. A clogged strainer will cause cavitation, which usually leads to a poor performance, wear and failure of pump parts.

Vacuum Gauge (Optional)

Pump should not be subjected to high suction line vacuums. To check on this, install a vacuum gauge at pump inlet. Generally, it should not read over 5 inches of mercury.

Suction Line Shut-Off

This suction line accessory allows the pump to be removed for service without draining the tank. Be sure valve is open before starting pump.

Surge Tank or Pulsation Dampener

This device absorbs the shock and smooths out the pump discharge pulsations, providing smoother operation. A charge of 50% of operating pressure is normally optimum. **Note: A surge tank or pulsation dampener is required on Series 5210 and optional on Series 5206.**

Pressure Gauge/Dampener

Use gauge capable of reading double the pump working pressure. Use a filled gauge or a gauge dampener to protect the gauge needle against pressure surges to provide easier reading and longer life.

Spray Gun

Use a Model No. 3381-0010 spray gun or a 3381-0013 Turbo 400 spray gun with the correct nozzle. For 5206 models use a 3385-3000 nozzle and for the 5210 models use a 3385-4000 to obtain a maximum pressure of 400 psi.

Operation

Priming

If liquid is below level of pump, some means should be provided in installation to prime pump — such as a Riser Pipe. If there is a suction lift use a Foot Valve or Check Valve to hold prime. In general, keep suction lift to minimum and avoid unnecessary bends in suction line. Before starting pump, make sure air bleeder valve or spray gun is open — or unloader/relief valve is adjusted to its lowest pressure. After starting pump, open and close gun several times if necessary to aid priming the pump. If pump does not prime within a few seconds, stop motor and inspect installation for suction line leaks or obstructions. Make sure that strainer is not clogged. Be sure that suction line is not obstructed, kinked or blocked.

If pump is to operate hours at a time, check frequently for:

1. Adequate liquid supply. Pump must not run dry for more than 30 seconds.
2. Temperature rise. Overheating is harmful to bearings and piston cups.

Care of Pump

Your pump will last longer and give best performance when properly taken care of. Proper pump care depends a lot on the liquid being pumped and when the pump will be used again.

Generally, after each use, flush pump with a neutralizing solution for the liquid just pumped. Follow with a clear water rinse. This is especially important for corrosive chemicals. Then flush out pump with a 50% solution of automotive radiator anti-freeze (ethylene glycol type such as Prestone, Zerex, etc.) containing a rust inhibitor...or use a commercial rust-inhibitor such as **Fluid Film**.

While this flushing is not absolutely necessary for short periods of idleness (as over night) it is good practice to clean the pump after each use to prevent deposits from forming and damaging the pump. The antifreeze not only coats the interior of the pump with an inhibitor, but acts as a lubricant as well, keeping the valves from sticking and protecting against any remaining moisture freezing in cold weather.

For infrequent use and before long periods of storage, drain pump thoroughly. Open any drain plugs, remove suction hose from liquid and run pump “dry” from 0 to 30 seconds (not longer). Flush with a 50% solution of anti-freeze and water. Then, plug both ports to keep out air until pump is used again.

Lubrication

Use a small push-type grease gun to lubricate Hypro Series 5200 Piston Pumps. **Do not use airpowered or hand lever operated grease guns** as they develop too much pressure and may cause damage to the sealed cam bearing. Lubricate a minimum every 100 hours or when bearing appears to need grease. Use Moly-Lithium No. 2 wheel bearing grease.

Exception: In applications where FDA approval is required, use one of these greases: Chevron FM#2, Mobile FM#2 Keystone (Penwalt Corp.) Nevastane SP Medium.

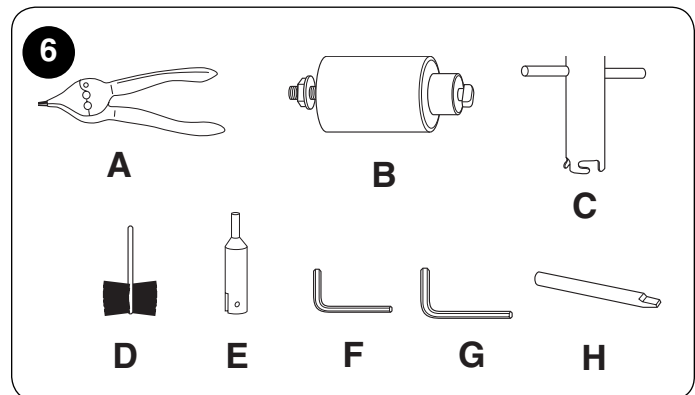
Do not under-grease or premature bearing failure may result.

Do not grease excessively. Remove (do not **WASH** out) any excess grease from pump cavity to prevent grease build-up.

Repair Instructions

Recommended Repair Tools For Hypro Big Twin Piston Pumps

Ref.	Description	Part No.
A	Internal External Pliers	3010-0084
B	Valve Seat Extractor	3010-0130
C	Valve Cage Extractor	3010-0052
D	Wire Brush	3010-0066
E	Wire Brush Holder	3010-0067
F	Allen Wrench	3020-0009
G	Allen Wrench	3020-0008
H	Sleeve Extractor	3010-0064
	Tool Box (Not Shown)	3010-0168



Model 5206C Performance

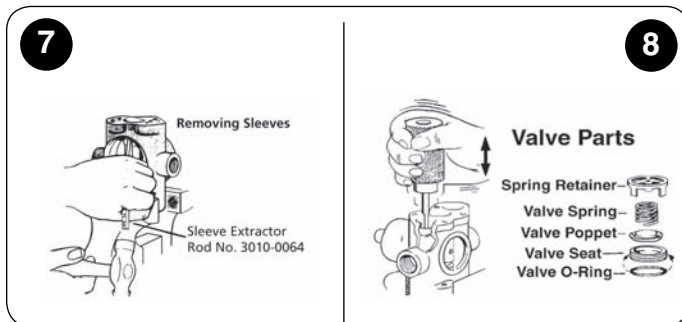
RPM	25 PSI		100 PSI		200 PSI		300 PSI		400 PSI	
	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
400	3.9	.26	3.9	.40	4.0	.66	3.9	.89	3.9	1.1
500	4.9	.29	5.0	.46	5.0	.75	5.0	1.1	4.9	1.4
540	5.4	.31	5.4	.50	5.4	.81	5.3	1.2	5.3	1.5
600	6.0	.34	6.0	.56	6.0	.90	5.9	1.3	5.9	1.6
700	7.0	.40	7.0	.65	6.9	1.1	6.9	1.5	6.9	1.9
800	8.0	.46	7.9	.74	7.8	1.2	7.7	1.7	7.7	2.2

Model 5210C Performance

RPM	25 PSI		100 PSI		200 PSI		300 PSI		400 PSI	
	GPM	HP	GPM	HP	GPM	HP	GPM	HP	GPM	HP
400	7.3	.39	7.3	.69	7.2	1.2	7.2	1.7	7.2	2.1
500	8.9	.57	8.9	.87	8.8	1.5	8.8	2.0	8.7	2.6
540	9.4	.66	9.4	.94	9.3	1.6	9.3	2.2	9.2	2.7
600	10.0	.73	9.9	1.10	9.9	1.7	9.8	2.3	9.8	3.0

Disassembly

1. Remove nameplate and both cylinder heads with a 9/16" combination wrench or socket.
2. Remove both piston cap screws with 1/4" allen wrench.
3. Remove piston cup spreader seal ring with O-ring piston guide and support ring.
4. Place the body into a vise as shown in Fig. 7. With care, drive out the cylinder sleeves using the sleeve extractor tool and a hammer.
5. Remove connecting rod.

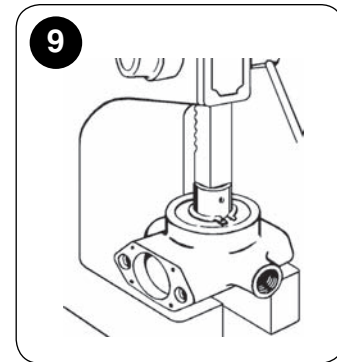


6. Remove the four valves, using the valve seat extractor to pry out the seat (See Fig. 8). Use a valve cage extractor tool to remove each spring retainer. Lift out the other parts, using penetrating oil as necessary to loosen parts.
7. Place the pump body onto an arbor press with the shaft end of the pump up. Press the crankshaft and bearing out of the pump body (See Fig. 9). The main bearing will come out with the crankshaft.
8. Sand the body ends and cylinder heads (mating surfaces) lightly to remove all foreign material. Use a belt sander, flat sanding block or flat file.
9. With wire brush mounted in an electric drill, clean all valve cavities, sleeve cavities and ports. Wash pump body out with solvent and let dry.

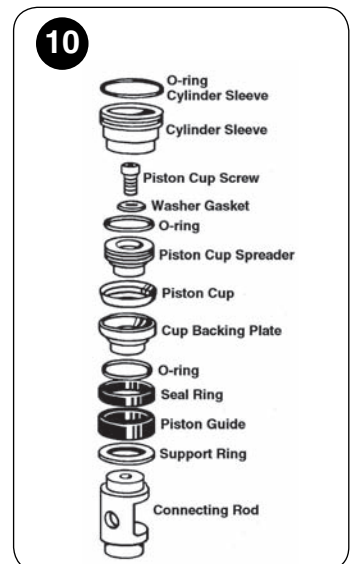
Inspection of pump parts

Before reassembling the pump, thoroughly inspect all parts, with special consideration given to following points:

- a. Inspect the pump body for erosion at all O-ring seal points and in valve and sleeve holes. Check main bearing housing for proper bearing fit. Check for cracks at the ports.
- b. Check for excessive wear in the cylinder heads. This can result from erosion and/or valve seat hammer.
- c. Check crankshaft assembly for general wear. Rotate main and cam bearing to check for roughness due to moisture or lack of grease damage. If bearings do not turn smoothly or appear to be damaged, they should be replaced. See section on **replacing bearings** in this manual.
- d. Carefully inspect cylinder sleeves. Polish sleeves not more than .008" — using No. 120 grit emery cloth. For final finish use a fine No. 320 grit emery cloth. If at this point all grooves have not been removed, replace the parts. **Note:** If there is some pitting only at the top of the sleeves, they can still be used. Grooves are more likely to be the problem here instead of pitting.



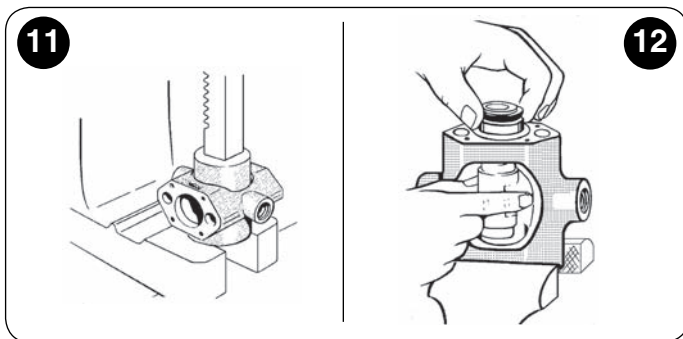
- e. Inspect the piston guides for chips, cracks and score marks. Compare guides with new one. If there is noticeable amount of clearance between the guide and sleeve wall, the guide should be replaced.
- f. Check for erosion on the underside of piston cup screw head. **Note:** the condition of the screws is very important — if there is erosion or grooves, leakage will occur.



- g. Next check the connecting rod for wear. If there are visible signs of wear or damage to the hard coating, the connecting rod should be replaced. If there is more than .005" of wear, the connecting rod should be replaced. A worn connecting rod results in low volume, low pressure and a hammering sound. If not replaced, this situation will damage the cam bearing as well.
- h. The valve seat, poppet, spring and guide in valve sets should be carefully inspected for cracks, pitting, etc. and replaced as necessary. Note in particular the seat and matching poppet; replace both — as a set — if one new part will not mate with other old part.
- i. When repairing the Series 5200 pump it is usually a good idea to replace the piston cups. Piston repair kits are available with either leather, fabric (rubber impregnated) or pure rubber (Buna-N) cups.
- j. Inspect complete crankshaft assembly for general wear. If the pump has had as much as 500 hours of use, it is suggested to replace the assembly. If broken cam bearing is found — the reason is usually that the pump has been operating over the 400 psi maximum. Another possible cause is that the pump has not been equipped with the proper surge tank or pulsation dampener to smooth out the pressure surges inherent in a large displacement 2-cylinder pump.
- k. Check all fittings — make certain that all sizes are correct for port size of the pump. Thoroughly inspect and clean before reinstalling.
- l. At this point all parts should have been inspected and cleaned. All parts should now be oiled (particularly the O-rings) and placed on a clean work bench for reassembly.

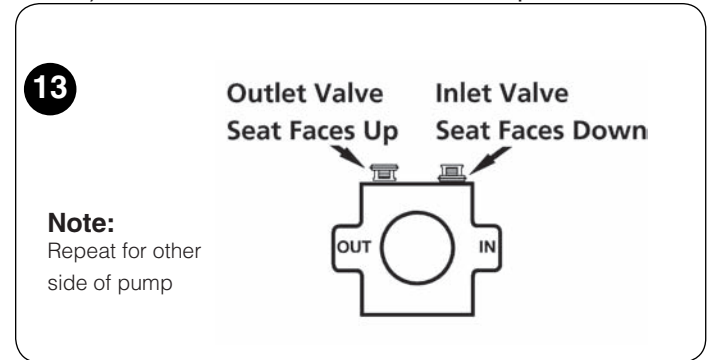
Reassembly

1. Using bearing seat tool, press the crankshaft assembly into the pump body (see Fig. 11).



2. Insert connecting rod over the cam bearing.
3. Insert both cylinder sleeves with oiled O-rings in cylinder bores.
4. Place pump in vise with ports horizontal (See Fig. 12). Rotate crankshaft to raise connecting rod to its highest position. Place support ring over top of connecting rod.
5. Insert piston guide.

6. Place seal ring on top of guide.
7. Place cup backing plate with O-ring in place over seal ring.
8. Insert piston cup.
9. Insert cup spreader with new O-ring in place. Press into hollow of the piston cup.
10. Place a new copper washer gasket in the countersunk screw hole of cup spreader.
11. Tighten piston cap screw securely with 1/4" allen wrench.
12. Insert inlet and outlet valves with O-ring seals (See Fig. 13). These are identical, but in reverse positions.



Note the pump ports which are the "IN" and "OUT" sides.

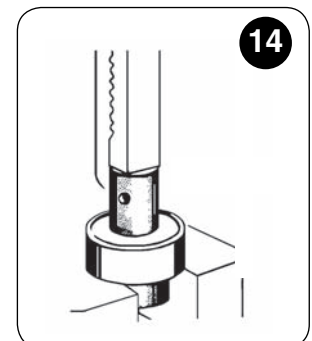
13. Install cylinder head with a new O-ring seal and tighten head bolts securely with a 9/16" wrench or socket.
14. Repeat steps 5 through 13 for assembling the other half of the pump.

Note: Follow proper lubrication procedures as listed in the Operating the Pump section of this manual

15. Replace the nameplate. The pump can now be tested — pumping clear water.

Main Bearing Replacement

1. Remove set screws, bolts or keys from the shaft and smooth off any burrs or rough spots
2. Remove retainer rings from shaft with external pliers. For convenience, you can remove just the one closest to the drive end of the shaft.
3. Support bearing in arbor press and press shaft out as shown in Fig. 14.
4. New bearing is pressed on in reverse manner. Front retainer ring (closest to cam bearing) should be in place to provide a stop for the bearing.
5. After bearing has been pressed into place, install the other retainer ring in shaft groove with the external pliers as before.



Piston Stack Parts Kits

Leather Cup Kit No. 3430-0037 (STD)

Consists of two each of the following parts: No. 2220-0013 Piston Cap Screw (Ref. 6A), No. 2270-0012 Washer (Ref. 6B), No. 1720-0030 O-Ring (Ref. 6C), No. 2150-0001 Leather Cup (Ref. 6D), No. 1720-0065 O-Ring (Ref. 6E) and No. 1440-0012 Seal Ring (Ref. 6F).

Fabric Cup Kit No. 3430-0039

Same as Leather Cup Kit except with two No. 2150-0012 Fabric Cups.

Rubber Cup Kit No. 3430-0189

Same as Leather Cup Kit except with two No. 2150-0042 Rubber Cups.

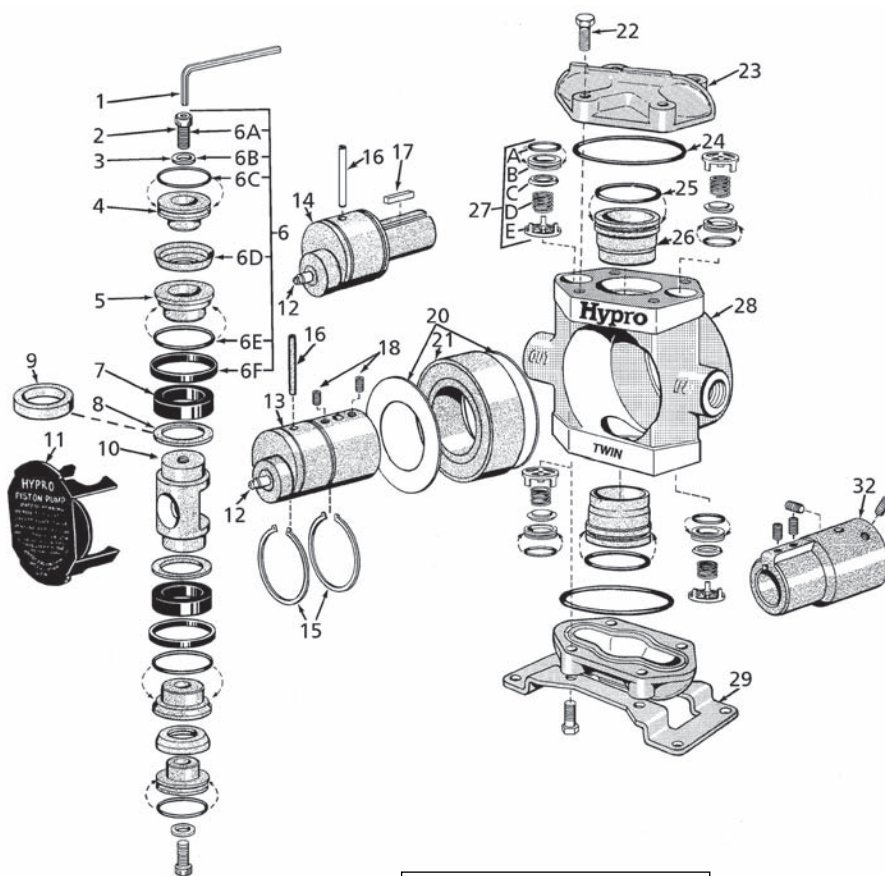
Crankshaft Assemblies

Sub-Assemblies

Include Grease Fitting (Ref. 12), Crankshaft with cam bearing (Ref. 13 or 14) and Crankpin Retainer (Ref. 16).

Complete Assemblies

Include Sub-Assembly components plus Retaining Rings (Ref. 15), slinger rings (Ref. 20) and Bearing (Ref. 21).



NOTE: When ordering parts, give **quantity, part number, description, and complete model number.** Reference numbers are used **ONLY** to identify parts in the drawing and are **NOT** to be used as order numbers.

Sub-Assembly PART NO.	Complete Assembly PART NO.	Pump Model Number
with 1-3/8" Hollow PTO Shaft (Ref. 13)		
5503-5206	5501-5206	5206C-H
5503-5210	5501-5210	5210C-H
with 1" Solid Shaft (Ref. 14)		
5003-5206	5001-5206	5206C
5003-5210	5001-5210	5210C

Ref. No.	Qty. Req'd.	Part No.	Description
1	1	3020-0008	Allen Wrench (Optional)
2	2	2220-0013	Piston Cap Screw
3	2	2270-0012	Washer
4	2	1830-0039	Piston Cup Spreader
5	2	1410-0054	Cup Backing Plate
6	1	3430-0037	Piston Stack Parts Kit with Leather Cups (Standard)
6	1	3430-0039	Piston Stack Parts Kit with Fabric Cups (Models 5200-F)
6	1	3430-0189	Piston Stack Parts Kit with Buna-N Cups (Models 5200-R)
7	2	1440-0005	Piston Guide
8	2	1410-0018	Support Ring For 5210 Models Only
9	2	1410-0020	Support Ring For 5206 Models Only
10	1	0503-5200	Connecting Rod
11	1	0602-5200	Safety Cover
12	1	2405-0006	Grease Fitting Assembly
13	1	See Listing	Crankshaft (Solid Shaft Models)
14	1	See Listing	Crankshaft (Hollow Shaft Models)
15	2	1810-0001	Retainer Ring
16	1	1600-0013	Crankpin Retainer

Ref. No.	Qty. Req'd.	Part No.	Description
17	1	1610-0005	Key (Solid Shaft Models)
18	2	2230-0003	Set Screw
20	2	1410-0006	Slinger Ring
21	1	2005-0002	Main Bearing
22	8	2210-0062	Cylinder Head Bolt
23	2	0203-5200CB	Cylinder Head
24	2	1720-0028	O-Ring – for cylinder head
25	2	1720-0019	O-Ring – for cylinder sleeve
26	2	3550-0007	Cylinder Sleeve
27	4	3400-0038	Valve Assembly—Consists of: O-ring (Ref. A), Valve Seat (Ref. B), Valve Poppet (Ref. C), Valve Spring (Ref. D) and Valve Spring Retainer (Ref. E)
28	1	0100-5200C	Body
29	1	1510-0024	Base
32	1	1320-0081	Adapter-Adapts 1" solid shaft to 1-3/8" 6-spline PTO hollow shaft. (Includes set screws.)



Hazardous Substance Alert

1. Always drain and flush pump before servicing or disassembling for any reason (see instructions).
2. Always drain and flush pumps prior to returning unit for repair.
3. Never store pumps containing hazardous chemicals.
4. Before returning pump for service/repair, drain out all liquids and flush unit with neutralizing liquid. Then, drain the pump. Attach tag or include written notice certifying that this has been done. Please note that it is illegal to ship or transport any hazardous chemicals without United States Environmental Protection Agency Licensing.

Troubleshooting

Symptom	Probable Cause(s)	Corrective Action(s)
Low Discharge	Pump not primed	See Priming section of this manual.
	Clogged suction strainer	Clear strainer screen.
	Suction hose collapsed	Replace suction hose with stronger wall hose.
	Excessive vacuum on inlet	Reduce inlet restrictions by eliminating items such as elbows, valves or too small of inlet hose.
	Pump running at wrong speed	Check speed of pump and adjust accordingly.
Low Pressure	Valves worn or hung-up	Inspect valves and replace if necessary.
	Unloader or Relief Valve set improperly	Readjust unloader or relief valve.
	Nozzle worn or damaged	Check nozzle and replace.
	Valves worn or hung-up	Inspect valves and replace if necessary.
Liquid leaking from center of pump	Insufficient power from gas engine or electric motor	Check performance chart to find proper HP needed for flow and pressure desired.
	Seals worn	Replace with new seal kit.

Limited Warranty on Hypro Pumps and Other Hypro Products

Hypro warrants to the original purchaser of its products (the "Purchaser") that such products will be free from defects in material and workmanship under normal use for the period of one (1) year for all products except: oil crankcase plunger pumps will be free from defects in material and workmanship under normal use for the period of five (5) years, and accessories will be free from defects in material and workmanship under normal use for the period of ninety (90) days. In addition, Hypro warrants to the purchaser all forged brass pump manifolds will be free from defects in material and workmanship under normal use and from damage resulting from environmental conditions for the life of the pump.

"Normal use" does not include use in excess of recommended maximum speeds, pressures, vacuums and temperatures, or use requiring handling of fluids not compatible with component materials, as noted in Hypro product catalogs, technical literature, and instructions. This warranty does not cover freight damage, freezing damage, normal wear and tear, or damage caused by misapplication, fault, negligence, alterations, or repair that affects the performance or reliability of the product.

This warranty is exclusive. Hypro makes no other warranty, express or implied, including but not limited to any warranty of merchantability or fitness for a particular purpose.

Hypro's obligation under this warranty is, at Hypro's option, to either repair or replace the product upon return of the entire product to the Hypro factory in accordance with the return procedures set forth below. **This is the exclusive remedy for any breach of warranty.**

In no event shall Hypro be liable for any incidental or consequential damages of any kind, whether for breach of any warranty, for negligence, on the basis of strict liability, or otherwise.

Return Procedures

All pumps or products must be flushed of any chemical (ref. OSHA Section 0910.1200 (d)(e)(f)(g)(h)) and hazardous chemicals must be labeled before being shipped* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data sheet from the Purchaser for any pump or product Hypro deems necessary. Hypro reserves the right to "disposition as scrap" pumps or products returned which contain unknown substances, or to charge for any and all costs incurred for chemical testing and proper disposal of components containing unknown substances. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown substances.

For technical or application assistance, call the **Hypro Technical/Application number: 1-800-445-8360.**

To obtain service or warranty assistance, call the Hypro Service and Warranty number: 1-800-468-3428;

or call the Hypro Service and Warranty FAX: (651) 766-6618.

Hypro may request additional information, and may require a sketch to illustrate the problem.

Contact the factory to receive a return material authorization before sending the product. All pumps returned for warranty work should be sent shipping charges prepaid to:

HYPRO
Attention: Service Department
375 Fifth Avenue NW
New Brighton, Minnesota 55112

*Carriers, including U.S.P.S., airlines, UPS, ground freight, etc., require specific identification of any hazardous materials being shipped. Failure to do so may result in a substantial fine and/or prison term. Check with your shipping company for specific instructions.



HYPRO®

**Pentair Water
SPRAY GROUP**

375 Fifth Avenue NW • New Brighton, MN 55112
Phone: (651) 766-6300 • 800-424-9776 • Fax: 800-323-6496
www.hypropumps.com