General Description

The unit is available in stationary and trailer-mounted versions. It consists of a self-priming single-stage centrifugal pump, close-coupled to a gasoline or diesel engine, electric motor or transmission head driver. Its self-priming action is accomplished by the automatic recirculation of water during the priming cycle. There are no valves other than the check valve at the suction inlet. This type of pump operates best on total suction lift not exceeding 15 feet, but it will pump satisfactorily from depths to 25 feet at some reduction in capacity.

IMPORTANT!

Operation

PRIMING. Remove the priming plug from the top of the pump case. Fill the pump case completely with water. Refit the plug. NEVER OPERATE THE PUMP WITHOUT WATER IN THE PUMP CASE.

STARTING. Throw the motor switch, or start the engine in accordance with the manufacturer's instructions. The pump will deliver water as soon as the self-priming action has removed the air from the suction pipe.

Maintenance

CLEANING THE PUMP. Run clear water through the pump if possible after pumping dirty water. Do this for two or three minutes before stopping the engine or motor.

Lubrication

SEAL. The purpose of the mechanical seal is to prevent air from entering the pump around the shaft while priming or pumping, and to prevent water from leaking out around the shaft while pumping. The seal must be kept lubricated by the liquid being pumped and NEVER ALLOWED TO RUN DRY.

Dismantling and Reassembling of Pump

Remove capscrews that fasten pump case to bracket. Separate case and bracket gradually and carefully so as not to damage them and the assembly gasket. If the old gasket is to be used again, place it in water to keep it soft and pliable.

a. To remove impeller, hold the pump shaft from turning with an open-end wrench, and spin off the impeller in counter-clockwise direction. With engine-driven models, prevent shaft from turning by inserting Allen wrench in setscrew or other suitable method.

b. Remove and replace seal, if necessary, as described below.

REPLACING THE SHAFT SEAL. Handle the shaft seal with great care. Do not drop the carbon sealing washer or the ceramic floating seat, nor scratch their lapped surfaces, as they perform the sealing function. Always replace both the carbon washer and the floating seat, never only one of them.

After removing the impeller, slide the rotating portion of the old seal assembly (consisting of sealing washer, bellows, metal parts and spring) off the pump shaft. Press the old seat and ring out of the bracket. Lubricate the outside diameter of the new rubber seat ring with light oil; press the new seat and ring assembly into the bracket cavity, making certain that it is seated firmly and squarely.

If the seat and ring cannot be pressed into place with the fingers, cover the lapped seat face with the cardboard ring, which is packed with each new seal assembly, and tap seat and ring into place by placing a small wood block squarely against the seat and tapping it lightly with a light wooden mallet.

Be sure that pump shaft is clean and smooth, and that the lapped surfaces of the seal components are kept absolutely clean during installation. Use a thin coat of light oil on them, and on the shaft when sliding the rotating portion of the seal onto the shaft, the carbon washer facing the float seat in the bracket. Push only against the rubber rear face of the seal assembly when sliding it onto the shaft.

c. If pump shaft needs to be removed, the pump bracket must be separated from the motor and the shaft set screws loosened with a setscrew key.

d. Re-assemble pump by following above described steps in reverse order. Make sure that pump shaft is positioned on motor shaft so that impeller will rotate freely inside the pump case. Setscrews must seat properly in motor shaft keyway and be tightened securely.

Repair Parts
Clean and inspect all parts for wear or damage. Worn or deteriorated parts should be replaced with new parts from the factory. Order parts from the Repair Parts List and state complete pump nameplate information when ordering (not motor name plate data).

Motor service and parts can best be obtained from the motor manufacturer's authorized repair shop in your area. Check your telephone book, or write us for their address.

Lubrication – Engine
Refer to the manufacturer's instruction manual.

Lubrication – Motor
Relubrication of the motor bearing is required only at infrequent intervals. Refer to manufacturer's instructions.

Lubrication – Transmission Head Driver
Note the following instructions:

TRANSMISSION MODEL B1, B2, B3. These employ sealed ball bearings with lifetime lubrication, which requires no attention.

TRANSMISSION MODELS B4, B5, ZT3 AND ZT5, covering Pump Models B90M, B125M, B200M, W90M, W125M, W200M, D90M, D125M and D200M. These employ open oil-lubricated ball bearings. Remove the plugs from the top of the transmission housing and oil level fittings. Fill with Standard Oil Company CALOL TURBINE OIL OC No. 15, or other companies' equivalents. Refit plugs.

Draining
Remove the lower drain plug to drain the pump case when the unit is idle during freezing weather or in storage and let it drain completely.

Impeller Clearance
The clearance between the impeller face and the face of the case should be between .005 and .010 inch.

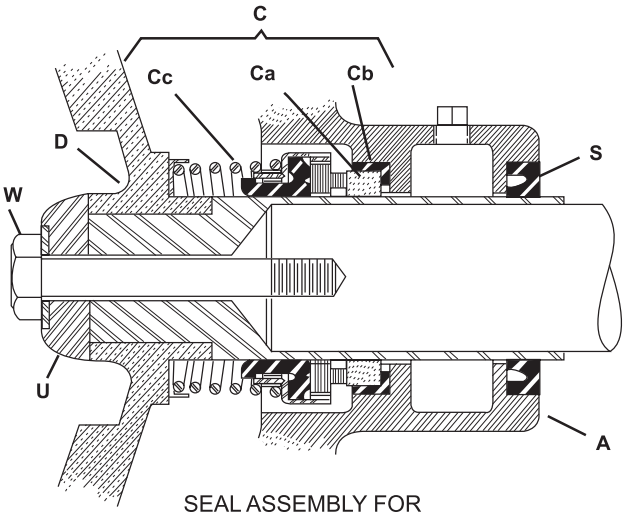
FOR MODELS UP TO AND INCLUDING 4" SIZES: Readjust the clearance as follows: Loosen the setscrews in the stub shaft coupling. Move the stub shaft along the driver shaft to obtain the required clearance. Retighten the setscrews. FOR MODELS WITH 6" PUMPS AND LARGER: Remove the bracket cap screws, and withdraw the pump case from the bracket. Remove the impeller from the shaft, and place shim washers between the shaft shoulder and the impeller hub to give the required clearance. Fit a new impeller and wear plate when 1/16" total adjustment has been made.

SERVICE SUGGESTIONS. Should the pump fail to prime when starting, or stop pumping during operation, check for the following:

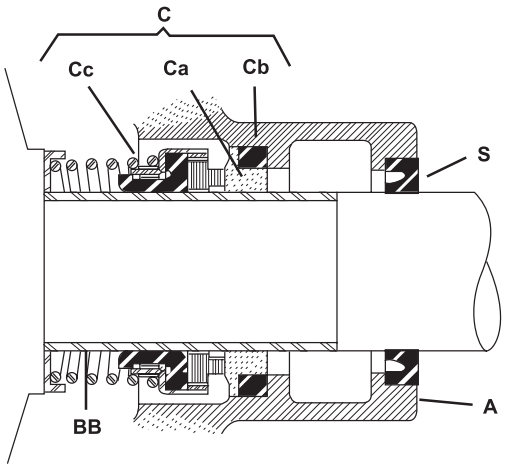
a. Air leaks in the suction line and fittings.
b. Air leaks at the shaft seal.
c. Proper submergence of the suction strainer.
d. Suction strainer clogged by leaves or grass.
e. Suction strainer buried in mud.
f. Sufficient priming water in pump case.
g. Suction hose with collapsed lining.
h. Priming port clogged.
i. Impeller clogged or broken.

Seal Replacement Instructions

Pump Sizes 6" and Larger



SEAL ASSEMBLY FOR
AIR-COOLED ENGINE DRIVEN
MODELS 40M, 70M



SEAL ASSEMBLY FOR
6" AND LARGER PUMPS
EXCEPT MODELS 40M, 70M

To Remove Seal

(also see parts diagram on page 4)

1. Remove pump case (F) from pump bracket (A).
2. Remove impeller lock capscrew (W) and adapter (U) or washer (Y) and pull off impeller (D).
3. Remove pump bracket (A) with seal assembly (C) and grease seal (S) from driver.
4. Remove stub shaft (B) or shaft sleeve (BB).
5. Rotating seal assembly (Cc) is loose and easily removed.
6. Remove stationary seal face (Ca) and gasket (Cb) from bracket (A).
7. Remove grease seal (S) from bracket (A). This is a press fit, and part must be driven loose.

To Replace Seal

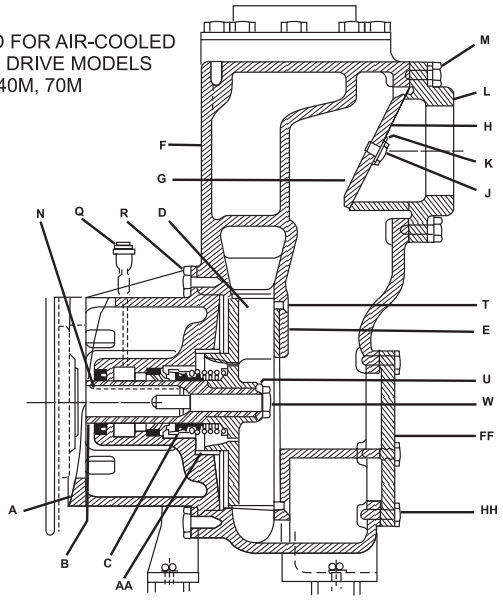
(also see parts diagram on page 4)

CAUTION: As sealing faces are matched parts, the shaft seal must be replaced as a complete assembly. Extreme care must be taken to keep seal faces and components perfectly clean during assembly.

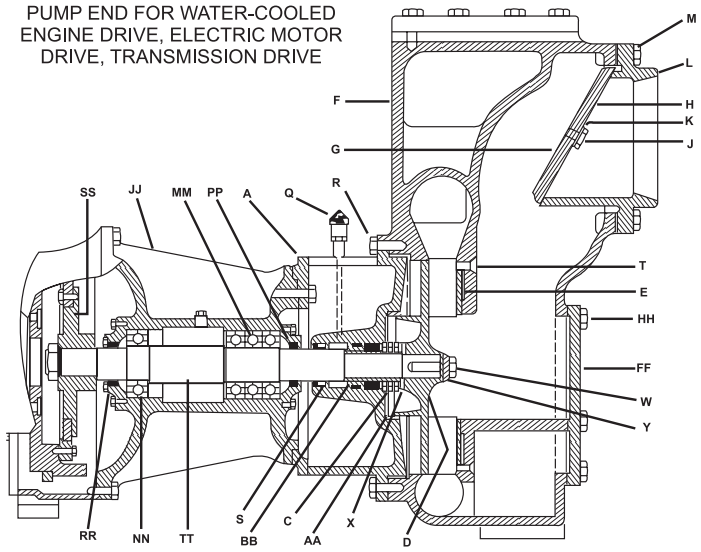
1. Inspect and clean stub shaft (B) or shaft sleeve (BB) and replace on driver shaft and key. (Shaft sleeve gasket must be installed between sleeve and shaft shoulder).
2. Install grease seal (S) in driver side of bracket (A) with seal lip facing pump end. The part is a drive fit and can be installed by covering seal with a flat block of wood and tapping evenly into position with a hammer or mallet.
3. Install stationary seal face (Ca) and gasket (Cb).
4. Replace bracket (A) on driver, tighten assembly capscrews.
5. Apply light coating of grease to stub shaft (B) or shaft sleeve (BB) and push shaft seal (Cc) against seal face already installed. Take care not to cut or invert neoprene member while forcing over shaft shoulder.
6. Replace impeller (D) making sure that seal spring goes over impeller hub and impeller key is in position.
7. Replace impeller lock capscrew (W) and adapter (U) or washer (Y) and tighten firmly.
8. Replace pump case (F) using new assembly gasket (P).
9. Recheck impeller clearance before again operating pump. Impeller clearance should be .005 to .010 inches from wear plate. Readjustment, if necessary, can be made by shimming between impeller hub and shaft shoulder. Clearance may be measured by using feeler gauge between impeller and wear plate.
10. Fill seal cavity completely with grease before operating. Use Mobile Grease No. 4 or equal.

Sizes 6” and Larger

PUMP END FOR AIR-COOLED ENGINE DRIVE MODELS 40M, 70M



PUMP END FOR WATER-COOLED ENGINE DRIVE, ELECTRIC MOTOR DRIVE, TRANSMISSION DRIVE



When ordering Repair Parts, always supply complete PUMP NAME PLATE DATA (not data on motor name plate).

List of Parts

A – Bracket and War Ring Assembly
B – Shaft and Coupling
C – Seal Assembly (Ca, Cb, Cc)
Ca – Stationary Seal Face
Cb – Stationary Seal Gasket
Cc – Rotating Seal Assembly
D – Impeller
E – Wear Plate
F – Pump Case
G – Check Valve Flapper
H – Check Valve Gasket
J – Check Valve Screw
K – Check Valve Washer
L – Check Valve Body
M – Check Valve Mounting Screws
N – Shaft Key
P – Pump Assembly Gasket (not shown)
Q – Grease Cup, Spring-loaded
R – Assembly Cap Screws
S – Grease Seal
T – Wear Plate Screws
U – Impeller Screw Adapter
W – Impeller Lock Screw
X – Impeller Spacer
Y – Impeller Washer
Z – Case Adapter Flange (not shown
AA – Bracket Wear Ring Only
BB – Shaft Sleeve
DD – Shaft Gasket (not shown)
EE – Shaft Shim (not shown)
FF – Cleanout Cover Plate
GG – Cleanout Plate Gasket (not show)
HH – Cleanout Plate Cap Screws
JJ – Transmission Housing
KK – Snap Ring (not shown)
MM – Front Bearing
NN – Rear Bearing
PP – Bearing Caps
QQ – Bearing Cap Gasket (not shown)
RR – Bearing Cap Seal
SS – Clutch Coupling
TT – Transmission Shaft
UU – Bearing Spacer Ring (not shown)

Parts For Model 20MPC

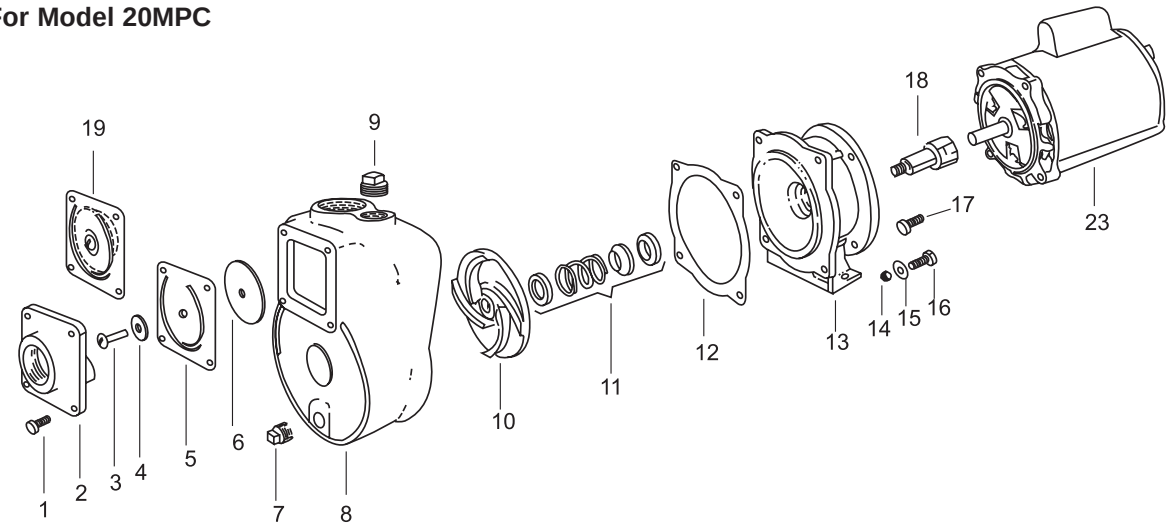


Figure No.	Part No.	Description	
1	14-0743-14-R	Capscrew 5/16-18 x 1" (4 req'd)	
2	16-0009-03	Check Valve Body 1-1/2 NPT for 5JM (To be discontinued 6/93)	
	16-0010-00-R	Check Valve Body 2 NPT for 1 & 1.5JM	
	16-0342-09	Check Valve Body 2-5/8 NPT for 2 & 3JM (OBS Limited Stock)	
3	14-1403-13-R	Pan M.S. 5/16-18 x 5/8"	
4	14-0740-09-R	Washer	
5	13-0090-06-R	Gasket-Flapper	
6	16-0421-11-R	Flapper	
7	31-0061-17-R	Plug 1/2 NPT Galv.	
8	03-0640-03	Case 1-1/2" for 5 & 1JM	
	03-0641-02-R	Case 2" for 1-1/2, 2, & 3JM	
9	31-0063-07-R	Plug 1 NPT Galv.	
10	05-3220-03-R	Impeller, 1/2HP	
	05-3219-06-R	Impeller, 1HP	
	05-3218-07-R	Impeller, 1-1/2HP	
	05-3217-08-R	Impeller, 2HP	
	05-3216-09-R	Impeller, 3HP	
11	10-1203-01	Mechanical Seal	
12	13-0314-06-R	Gasket	
13	02-0905-04-R	Bracket	
14	14-0005-17-R	Nylon Grommet (4 req'd)	
15	14-0005-09-R	Copper Grommet (4 req'd)	
16	14-1293-24-R	Capscrew 3/8-16 x 7/8" 4 ea.	
17	14-1292-25-R	Capscrew 3/8-16 x 3/4" (4 req'd)	
18	07-3610-09-R001	Shaft coupling w/ set screws 14-0002-02	
19	16-0309-00-R	Valve/Flapper Assembly 1-1/2, 2, & 2-1/2"	
23		**Motor Selection**	
	1 Phase	3-Phase	115/230-460V 56C 3450 RPM
	9010-2294-R	9010-2419-R	1/2HP
	9010-2310-R	9010-2435-R	1HP
	9010-2328-R	9010-2443-R	1-1/2HP
	9010-2336-R	9010-2450-R	2HP
	9011-2897-R	9011-0628-R	3HP

Note: For material other than standard construction, consult the factory.
Note: See Water Systems Price Book for current motor prices.