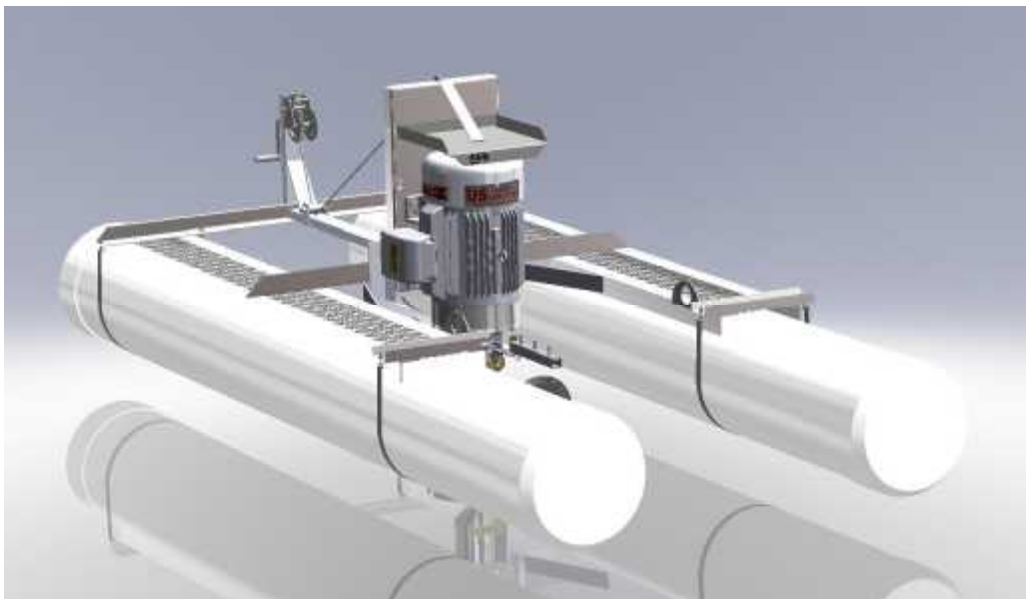


US FARM SYSTEMS

Direct Drive Float Pump Low Maintenance - 7.5hp –75hp 1200-1800 RPM

MAINTENANCE AND REPAIR



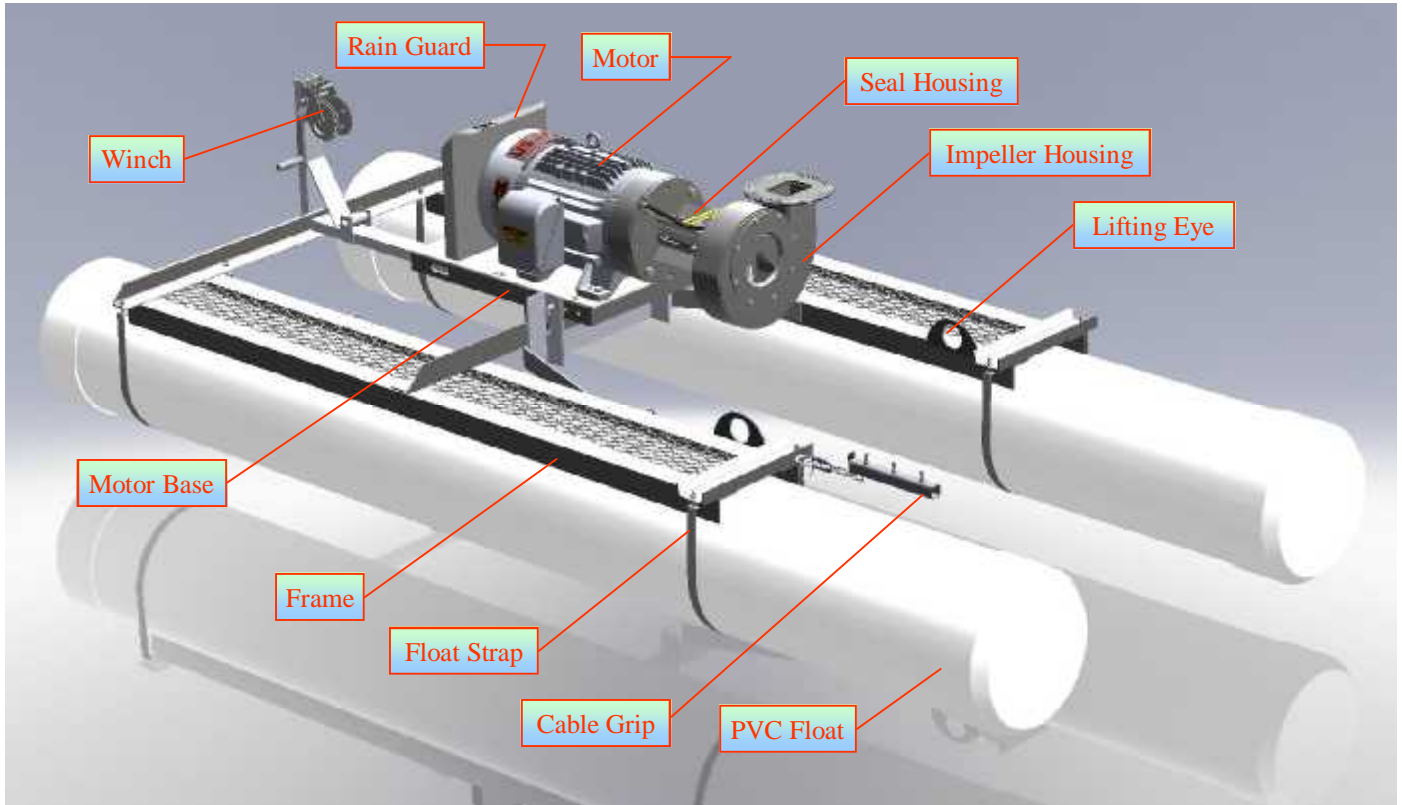
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Float Pump

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Float Pump



DESCRIPTION

The US Farm Systems Float Pump has many different applications in which it is used. It's used as an irrigation pump, flush pump, transfer pump, flush pit re-fill pump and an irrigation tail water pump. The advantage of this specific pump design is that it is very low maintenance. Keep in mind though that the more extreme the application, the shorter the lifespan. In an ideal situation, the float pump can last many years before anything will need to be repaired or replaced.



Fig 1

Discharge sizes range from 4" to 8", horsepower ranges from 7.5 to 75, and rpm comes in 1200, 1800, or 3600 for high pressure applications. Size specifications are determined based on individual application. There are no significant design changes between sizes. All Seal housings contain 4 seals, 2 restrictors, and are grease-able.

Factors that will lead to a shorter lifespan will basically be thick or sandy pumping conditions, or mis-use of pump. Note the flotation level line indicator just above the Impeller housing (fig 1). Sometimes this is overlooked and pumps are run with nearly the entire seal housing submersed. This will lead to failure of the motor bearings. Thick and/or sandy conditions will lead to excessive wear on the impeller and seals causing a need for repair or replacement.

Float Pump

ATTENTION

Installation Instructions

Attach electrical wires and check the rotation of pump before placing it in the water. The pump must rotate in the direction of the outlet - See rotation sticker on the motor.

If you rotate the pump backwards, the impeller will unscrew itself off the shaft and immediately damage the impeller, impeller shaft and intake plate.

To check rotation of motor:

IMPORTANT NOTE ON 3600RPM HIGH PRESSURE FLOATING PUMPS:

The 3600 RPM High Pressure Floating Pumps are not made to run horizontally. If run horizontally, you will damage the bearings and more than likely require replacements. The bearings are tapered and need the weight of the motor in order for them to work properly. Therefore, the pump should only be run in the vertical position. To check the rotation, you will have to look into the back of the motor, through the shroud, and verify the direction the fan is rotating.

Use only qualified electrician for all electrical. Check rotation with pump out of pit.

Turn off power, disconnect holding contact wire. Close and secure door, turn power on. Turn selector switch to "Hand", then quickly push and release starter button (this is a quick bump of the starter switch). After rotation is verified as correct, reconnect holding contact wire. Close and secure door and you are ready to proceed.

Check the pump motor amp draw as follows:

NOTE - The more water the pump moves, the more amps the motor will draw. If there is a restriction in the piping or the outlet valves are not open the amp reading will be lower than normal.

1. Make sure there is no restriction in the piping
2. Make sure the outlet valves are open as they would be in normal pump operation.
3. Check the allowable amps on the placard on motor.
4. Set-up amp meter and start the pump. Initial reading may be high until the piping is full.
5. If the amp readings are within the range specified, a qualified electrician should set the overload to 10% above usage to protect the motor.

AMPS Too High

1. It will be necessary to reduce the pump speed or pump flow. Call US Farm Systems, 1-800-811-9462. **DO NOT** run the motor if the amp readings are too high. The motor will be damaged and warranty will not cover the loss.



Float Pump

Maintenance

Maintenance on the float pump is very minimal and the checklist is short:

1. Grease the seal housing 45 shots every 200 hours (more often for pumps in extreme conditions)
Important - *Do not* use paraffin based, water proof grease. Use Lubri-plate # 1242 or equivalent
2. Make sure pump float level is correct (running too low will cause water to enter the motor, destroying the bearings and/or burning up the motor)
3. Oil/chain lube the winch occasionally. (this will help with the next step)
4. Crank up the pump housing to check the wear on the impeller and in some cases if any twine has been caught in the blades.
5. Listen to the sound of the motor (there should be no rattling)
6. Check to make sure float strap bolts are intact and have not rusted off.
7. Inspect floats for signs of cracking

Repair

Note: Most major repair will require removal of the pump from the pit.

Disassembly of Seal Housing From Motor

1. Remove intake plate (fig 1)
2. Rotate impeller to hole in shaft
3. Insert a 1/2" diameter rod about 6" long through slot and into the 1/2" hole in shaft (fig 2) and tap with

Fig 1



hammer to seat. This will prevent shaft from turning, so impeller can be unscrewed from shaft.

4. Unscrew impeller using removal tool (fig 3), USF Tool # 20-30-144 available for purchase
5. Remove the 8 (or 4) bolts that attach the c-face to the motor. This operation will take two people, one to remove the bolts and one to support the pump housing, as the pump housing has a tendency to rotate in the direction of the outlet tube (fig 4)



Fig 2



Fig 3



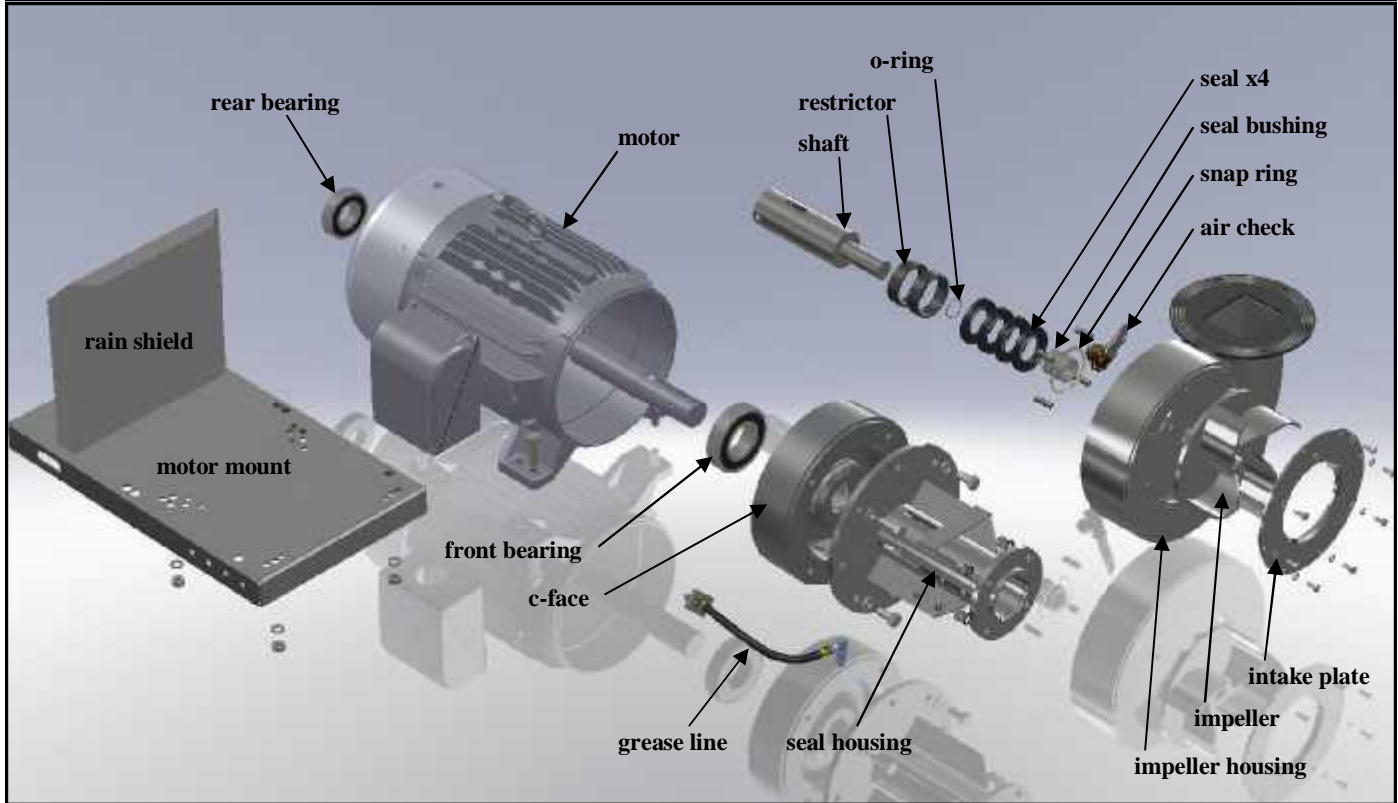
Fig 4



Fig 5

6. Slide c-face off shaft (fig 5)

Float Pump



- Remove the 4 set screws attaching the shaft to the motor. Because red Loctite 271 is used on all set screws, removing may require heating the area around the set screws
- Slide shaft off motor. This may require a slide hammer to remove from motor shaft. If this is the case, the two will possibly need to be welded together, and after removal, cut apart (fig 6)



Replacement of Motor bearings

- Remove fan cover
- Remove fan (requires snap ring pliers, pry bar or puller - fig 7)
- Remove front and rear motor faces (fig 8)
- Remove front and rear bearings (rear bearing will require snap ring removal, both bearing are pressed on and will require a puller - fig 9)

Float Pump

Fig 9



5. Install rear bearing first (will require a bearing driver and possibly a bearing heater - fig 10)

Fig 10



6. Re-install snap ring
7. Re-install rear motor face (fig 11)

Fig 11



8. Re-install fan and snap ring
9. Install front bearing (will require a bearing driver and possibly a bearing heater - fig 10)
10. Re-install front motor face
11. Re-install fan shroud

Installation of new Seal Housing

1. Lubricate motor shaft with an anti sieze compound
2. Install shaft (will require shaft driving tool - fig 12)

Fig 12



3. Install keyway and securely tack in place (fig 13)

Fig 13



4. Drill into motor shaft .063 - .125 at each set screw location in order to securely tighten impeller shaft to motor shaft (fig 14)

Fig 14



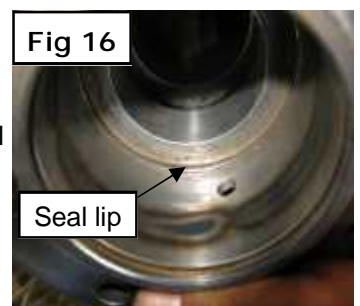
5. Install set screws (use red loctite 271)
6. Thoroughly clean new (or used) seal housing
7. Install 1st restrictor. Will require special driving tool. Note: restrictor will not bottom out, you have to watch the side of the housing and drive the restrictor until you see it pass the second hole. Try to center the restrictor on this hole (fig 15)

Fig 15

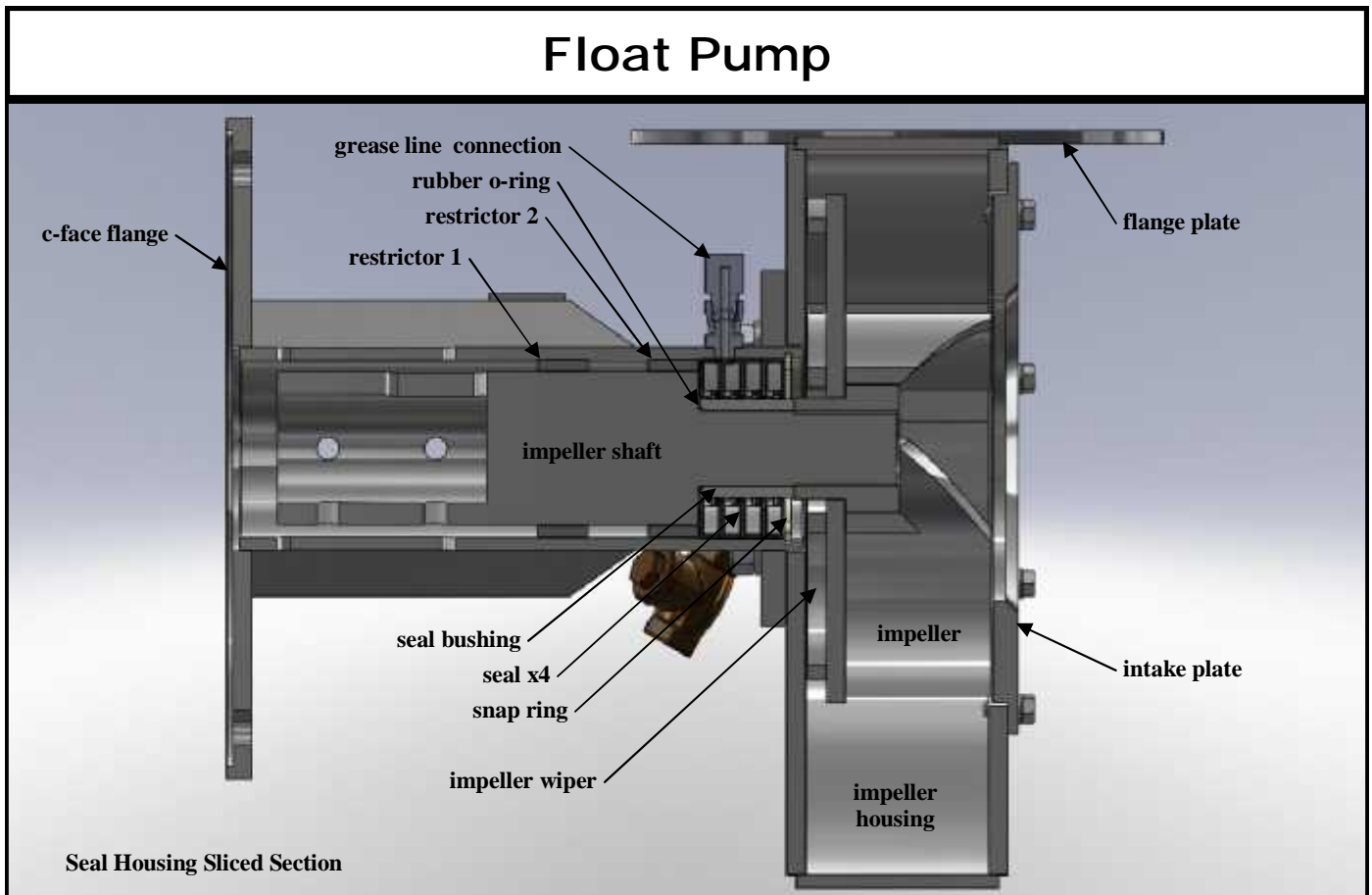


8. Install restrictor set screw (use red loctite 271)
9. Install 2nd restrictor. Will require special driving tool. Note: install this restrictor just past the seal lip (fig 16)

Fig 16



Float Pump



10. Install 2nd restrictor set screw (use red loctite 271)
11. Slide seal housing over impeller housing and match up bolts to c-face on motor
12. Install grease line mount bracket at location shown (fig 17)



Fig 17

13. Install remaining seal housing bolts connecting on the motor and torque down
14. Install studs into the back of the impeller housing (use red loctite 271) (fig 18)



Fig 18

15. Grind off remaining stud material from the inside of the impeller housing (fig 19)



Fig 19

16. Slide the Impeller Housing onto the Seal Housing and torque down all the nuts (fig 20)



Fig 20

17. Blow a hole approximately 1/2" diameter in the location shown (fig 21) for the air check valve installation



Fig 21

Float Pump

18. Grind down the slag on the other side of the hole and blow out the housing to clear out any remaining metal (note: be careful not to get any metal into the seal housing. Stuff a rag into it during grinding) (fig 22)



Fig 22

19. Weld the pipe nipple onto the back of the housing in the position shown (fig 23)



Fig 23

20. Install the rubber o-ring and seal bushing (note: this is a good time to apply some never seize to the shaft) (fig 24)



Fig 24

21. Lock the shaft using a 1/2" bolt. You will have to spin the shaft until the locking hole is visible through the slots on the housing (fig 25)



Fig 25

22. Test fit the impeller. Spin it all the way down and tighten it until it stops. Check the clearance between the back of the impeller and the housing. It should not be rubbing, but it should be as close as possible. Anything over 1/16" is too much. You will have to get the next size smaller bushing, or modify the existing

one. If the bushing is too short, then you can get the next size larger or use shims as spacers. (fig 26)



Fig 26

no more than 1/16" here

23. Once you get the right size bushing for the impeller, you are ready to install the seals. You will need a special nut to lock in the bushing so that the bushing does not slide out when you are tapping in the seals. This nut is available through US Farm Systems part # 20-20-204. Install this nut hand tight. (fig 27)



Fig 27

24. Grease the seals thoroughly.
25. Using a seal driving tool, install the 4 seals into the housing (Note: A trick to installing these is to slide a zip tie in with the first seal to provide a gap for air to escape. When all 4 seals are in, you just pull out the zip tie) (fig 28)



Fig 28

26. Install the snap ring at the end of the seals
27. Remove the special retainer nut
28. Apply some more anti seize to the shaft and then spin the impeller on and tighten. (Note: A special wrench is available through US Farm Systems for the impeller, part # 20-30-144) (fig 29)



Fig 29

Float Pump

29. Install the intake plate (fig 22)



30. Weld on the cutting blade at the bottom of the intake plate with 1/16" gap between the cutter and the impeller. (Note: place a washer in between the blades while welding to achieve the right gap) (fig 31)



31. Level the flange plate and weld on to the impeller housing. (fig 32)



32. Install the grease line
33. Now all that is left is to grease the bearing, paint, and you are done.

Final Product

