Pump Shaft Seal Replacement

Remove the pump.

1. Start by isolating the electrics and turning off the power at the RCD. Once you have gained access to the equipment area you must now unplug the power lead connected to the electrical control box. This may be a 'JJ' plug or an 'AMP' type.

2. Close any valves (if fitted) or drain your Spa.

3. Disconnect the two water pipes connected to your Wet End and screws holding the pump down. Also disconnect and external earthing that may be fitted to the pump.
   You can now remove the pump from your Spa and work on it in a convenient place.

Wet end removal.

1. Start by removing the faceplate of the Wet End by undoing the screws that hold it on. Note orientation

2. With the screws removed, the faceplate will have to be levered out due to the 'o' ring inside sealing it to the housing. Take a small flat bladed screwdriver and prise the faceplate apart in equal measures around the housing. Take care not to damage the sealing surfaces or the o-ring should you wish to re-use it. Our recommendation would be to replace the o-ring at the same time as the shaft (mechanical seal) since it may have deteriorated over time and is just good practice. If there is a wear ring fitted over the impeller, (looks like a top hat), note the orientation for re-assembly, and remove.

   Impeller removal is done by locking the motor shaft and winding the impeller off anti-clockwise. This can be done via the following methods and will depend on motor and wet end combination.

   a) Insert a flat bladed screwdriver into the fan end of the motor and locate it in the machined slot, You may find that the fan cowling may need to be removed. You may find that the Armature holding tool works better for this as more leverage can be applied. Firmly hold the tool or screwdriver in place and with your spare hand rotate the impeller off anti-clockwise.

   b) As above but with a suitable pair of mole grips you can clamp the exposed part of the motor shaft. Unwind the impeller.
   For stubborn impellers we recommend using the following tools as extra leverage can be applied.

   Armature holding tool
   Impeller wrench – Open Faced Impellers (vanes visible)
   Impeller Wrench – Closed Faced impellers (vanes not visible)

3. With the impeller removed you can now detach the wet end housing from the Motor.
   First note the orientation of the discharge port for reassembly.
   Depending on the make of motor the housing will be attached with 4 bolts these differ and are as follows:
   European style motors (finned body) 4 short bolts through the flange of the motor.
   USA style motor (smooth body) 4 long bolts the run from the back of the motor

   If they are the short type bolts use the correct sized spanner to undo. The wet end housing can now be removed

   If they are the long type use the correct sized spanner **BUT** gently apply force to see if they will undo!! (You don't want to break these screws as they are almost impossible to obtain). If they do undo great, undo and pull them back a bit (you don't have to pull them all the way), remove wet end housing.

If they don't undo leave the wet end housing attached and carry on to the next step. You will still be able to change the seal its just a bit easier if you have the wet end completely off.

Shaft seal removal

Rotating Seal (Sprung part)

Pry the seal off the impeller or housing (depending on wet end orientation). Use 2 flat bladed screw drivers to ease the seal off. Note if this part was secured with silicone and if any spacers were situated under it. (See diagram below.)

Floating Seat (white part)

a) If situated on impeller, you can slide them off or use a small flat bladed screw driver to pry the white part from the rubber seat, once removed pry the rubber seat out. (See diagram below.)

b) If situated in wet end housing you can usually tap this out from the rear and then remove the rubber seat or again pry out with flat blade as above. (See diagram below.)

Shaft seal installation

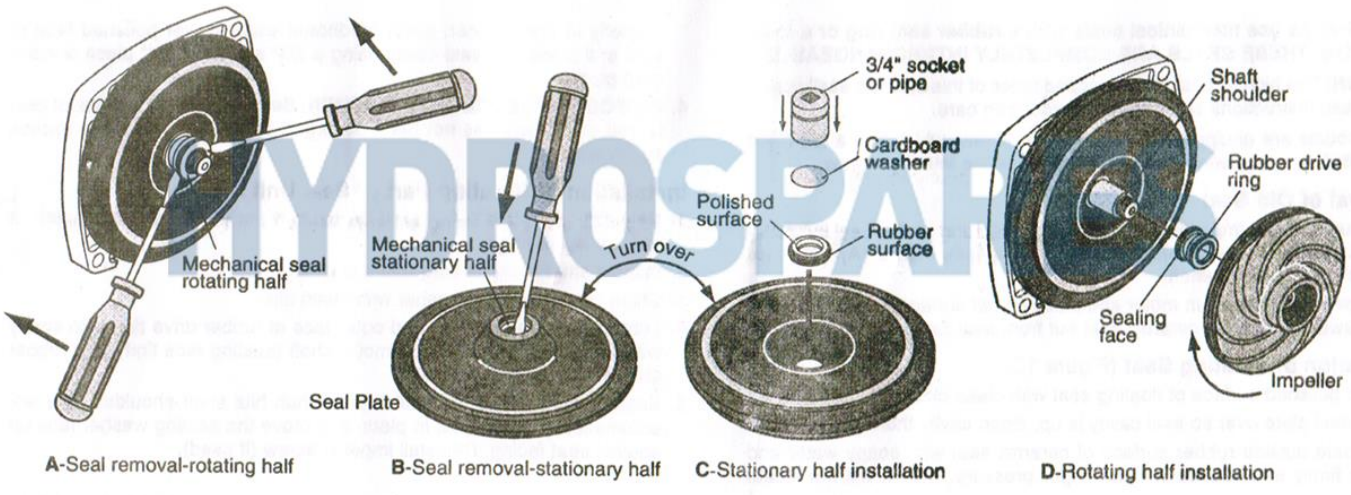
CAUTION: The highly polished and lapped faces of seals are easily damaged. Do not use any oil or grease for installation. Use only P-80 Shaft Seal Fitting Lubricant and lint free cloths.

Floating Seat (white part)

1. Clean polished surface with lint free cloth. Ensure seat on either impeller or wet end housing is clean as well (depending on wet end orientation). (See diagram below.)
2. Lubricate rubber seat with P-80 and press into position, you can use a small piece of card to protect the polished part and use a socket or pipe of a similar size to help locate it.
   Make sure polished surface is clean. (See diagram below.)

Rotating Seal (Sprung part)

1. Clean polished surface with lint free cloth. This surface will marry up to the white part. Ensure seat on either impeller or wet end housing is clean as well (depending on wet end orientation). (See diagram below.)
2. Ensure motor shaft is clean.
3. Lubricate inner part of seal with P-80 and push onto impeller shaft or into wet end housing. (Depending on wet end orientation). (See diagram below.)
   NOTE: If this part of the seal was situated in the wet end housing and was secured with silicone or had spacers, you will need to re-install with silicone and spacers if any.



You're now ready to re-assemble. The P-80 lube can be wiped away however it does not compromise seal integrity. On to assembly

Wet end assembly

1. Fit wet end housing back onto motor, if removed. Remembering to orientate the discharge port correctly. Tighten 4 retaining bolts.
2. Re-install impeller back onto motor shaft using your preferred method of holding the motor shaft in place. The impeller should be tight but don't over tighten. DO NOT use grease to lubricate as this may cause the newly fitted seal to fail if it contacts it.

3. Replace the wear ring, correctly orientated.

4. Smear a thin layer of grease around the large faceplate o- ring and press the faceplate back into the wet end housing. Note the orientation from removal.

5. Re-install the removed retaining screws and do up using a screw driver. (Use of an electrical screwdriver or drill is not recommended as you can very easily crack the housing around the screw hole lugs).

Re-install your pump

CAUTION: Do Not Run Your Pump Dry. Dry Running will damage the newly installed seal causing the pump to leak.

1. Position pump and connect the two water pipes onto the pump.

2. Tighten down the pump foot screws, making sure you have replaced any shims that may have been under the motor foot.

3. Plug-in the motor power lead into your Spa control box. Reconnecting any external earthing
   NOTE: Resist replacing any covers or trims around your Spa at this point as you may need to re-tighten the water pipe unions.

4. Open the gate valves if you have them and re-fill your Spa. Check for leaks, re-tighten if necessary.

5. Turn on your Spa, check for leaks and if everything is good replace the spa trims or covers!

   "Congratulations you have successfully replaced your shaft seal. Time for a cuppa!"