



3SPX Pumps Service Sheet: Seal Repair

This sheet covers replacing the seals on a 3SPX pump. Most of the information here was taken from the CAT Pumps Service Manual for this pump. We have included some helpful hints where we thought it would be appropriate.

Notes before beginning:

- 1.) This repair sheet assumes that the pump has been removed from the pressure washer.
- 2.) This should go without saying, but make sure everything is turned off on your pressure washer before working on it. Turn off the gas engine or unplug the electricity. Turn off the water supply. Disconnect both the garden hose and the high pressure hose.
- 3.) We highly suggest that you replace all the seals at the same time, using the seal kit that CAT Pumps has put together (IPF CT31674). These are wear parts that are under a lot of stress while the pump is running; if one part has gone bad, the rest are probably on their way out as well.



Figure 1 – Pump head and seals



Figure 2 – Seal Kit IPF CT31674

Disassembly

NOTE: 3SPX model pumps require 1 seal kit (IPF CT31674) to repair all seals in the pump. Each pump contains (3) high pressure seals, (3) low pressure seals, (3) plunger retainer gaskets, (3) seal case o-rings, and (3) male adapters.

1. Using an M5 allen wrench, remove the hex socket head (HSH) screws from the face of the manifold head.
2. Insert flat head screwdrivers on each side between the crankcase and manifold head. Gently apply pressure to the head to begin separation.
3. Support the manifold head from the underside and pull the manifold head away from the crankcase.

CAUTION: Keep the manifold head properly aligned with the ceramic plungers when removing to avoid damage to the plungers.

NOTE: The seal case may stay in the manifold or on the ceramic plungers.

4. Place manifold head on work surface with crankcase side up.
5. Remove seal retainer from each plunger rod.
6. Use a screwdriver to pry out the Lo-Pressure seal from each seal case.

CAUTION: Be careful, screwdriver may damage seal during removal.

7. Use reverse pliers to remove seal case from each seal chamber.

NOTE: Insert the reverse pliers into the second lip to avoid damage to the seal case.

8. Carefully insert a small screwdriver under the o-ring and roll the o-ring off each seal case.

CAUTION: Exercise caution as the screwdriver may score o-ring sealing surface.

9. Models 3DNX, 3SP and 3SPX: Remove V-Packing and male adapter from each seal chamber by hand or with a reverse plier.

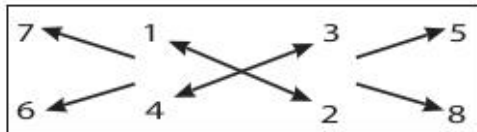
Reassembly

NOTE: If you are installing all new seals, skip to step 6. If you are using these instructions to clean and examine your seals, start at step 1.

1. Examine the manifold chamber walls for scale buildup or damage.
2. Examine Hi-Pressure seals or V-Packings for frayed edges or uneven wear and replace as needed.
3. Examine seal case o-rings for cuts or deterioration and replace as needed.
4. Examine Lo-Pressure seals for wear to the internal ridges, outer surfaces for broken springs and replace as needed.

NOTE: Seals and o-rings are available in seal kit IPF CT31674

5. Examine seal retainers for deformation and replace as needed.
6. Models 3DNX, 3SP and 3SPX: Install male adapter with notch side down. Lubricate and install new V-Packing by hand into seal chamber with grooved side down.
7. Lubricate and install o-ring on each seal case. Press small end of seal case into each seal chamber.
8. Press new Lo-Pressure seal into each seal case with the garter spring down.
9. Examine ceramic plunger for cracks or scale buildup. If you find cracks, you will need to replace them. Clean them if you simply find scale buildup.
10. Models 3DNX, 3SP and 3SPX: Slide seal retainer over each ceramic plunger with the tabs facing out. Press into the crankcase.
11. Rotate crankshaft by hand so the two outside plungers are extended equally.
12. Lightly lubricate ceramic plungers, then carefully slide the manifold head over the ceramic plungers, supporting it from the underside to avoid damage to the plungers or seals. Press the manifold head up to the crankcase until flush.
13. Thread HSH screws in hand tight. Torque in sequence to specifications in torque chart.



TORQUE CHART					
Pump Item	Thread	Tool Size [P/N]	Torque		
			in. lbs.	ft. lbs.	Nm
Plunger Retainer	M6	M10 Hex [25082]	55	4.6	6.2
Manifold Head Screws	M6	M5 Allen	55	4.6	6.2
Valve Plugs					
1DX.MIST, 2DX, 2DX.MIST, M20		M19 Hex	520	43	58
3DX, 3DNX, 3SP, 3SPX	M22	M24 Hex [44046]	870	72.5	98
Bearing Cover Screws	M6	M10 Hex [25082]	50	4.0	5.4
Bubble Oil Gauge	M28	Oil Gauge Tool [44050]	45	3.6	5