



## Hardened Sprayer Pump Heads

**Product:** Multi Pro

January 16, 2017

**Affected Units:**

**Models:**

**Serial Numbers:**

Multi Pro® 5800 Base Gas	41594	315000001-316999999
Multi Pro® 5800 Base Diesel	41593	311000001-316999999
Multi Pro® 5800 Diesel	41593N	313000001-314699999
Multi Pro® 5800 ExcelaRate Diesel	41393	316000001-316999999
Multi Pro® 5800 ExcelaRate Gas	41394	316000001-316999999
Multi Pro® 1750	41188	314000001-316999999
Multi Pro® Workman	41240	314000001-316999999

**Subject:** Hardened Sprayer Pump Heads

**Situation:** Important Information

Premature spray pump head wear has been reported on some 6-piston spray system pumps (Figure 1).



Figure 1

Material wear can be attributed to three causal areas.

1. **Spray Pump Maintenance:** Improper rinsing and neutralizing can cause residual chemicals left in the 6-diaphragm system to drain down and collect in the pump heads at the bottom of the pump. These chemicals degrade the internal surfaces of the heads, diaphragms and valve components.

Toro recommends a triple rinse every time the sprayer is used, along with chemical appropriate neutralizers (identified by the chemical manufacturer) for the particular chemical(s) being used. Refer to the sprayer operator's manual for additional product specific maintenance information and requirements.

2. **Spray Pump Cavitation:** Cavitation can be the leading cause of pump head and diaphragm wear. When the suction is restricted, this can cause excess vacuum that will introduce air into the pump inlet. When these air molecules change from a vacuum state to a pressure state in the pump, they will cause damage to the surrounding surface area. Toro recommends sizing the suction and pressure filter accordingly to accommodate the viscosity of the chemical mixture being sprayed. For low viscosity (i.e., water) product mixes, finer mesh (80m) screens are acceptable; for high viscosity (i.e., latex paint) product mixes, coarse mesh (30m) screens are recommended.

**Sprayer Filter Reference Chart**

	Suction	Pressure		Tip
	Current	Previous	Current	Current
16 MESH		131-0212	133-0383	
30 MESH	100-6991	131-0211	133-0384	
50 MESH	100-8642	131-0210	133-0385	120-0699
80 MESH	100-6992	131-0209	133-0386	
100 MESH		131-0208	133-0387	120-0698

3. **High Concentrations of Abrasive and Corrosive Chemicals:** Heavy abrasives and corrosive mixtures (i.e., irons and salts) can accelerate the material wear of the pump and pump heads. It is known that heavy iron usage can lead to premature pump wear.

**Correction:**

Those customers who experience historical failures of spray pump heads are encouraged to purchase hardened spray pump heads as they have been proven to last up to twice as long in durability testing and they are more wear resistant to harsh chemicals such as iron. Cavitation will still be a threat to deterioration of the material surface and due diligence is still required in adhering to proper maintenance practices (i.e., rinsing and neutralizing).

**Parts:**

Currently available.

**\*\*IMPORTANT\*\***

Part replacement should be done as a set. Do not mix older style pump heads with hardened heads to avoid potential repeat pump head failures. Doing so will cause pump head interference and not allow pump head to fully seat correctly.

133-2824	Cover-Pump, Hardened (Single Head)	Qty: 6
133-2898	Pump Head Kit – HD (Set of 6 Heads)	Qty: 1

Should you have any questions, contact your local distributor for assistance. If you need assistance locating your distributor, visit our website at <https://www.toro.com/en/locator> .

### Situation:

The original Hardi pump heads may wear prematurely. Replace them with the upgraded hardened pump heads to increase the life of the pump. The new heads are gray in color and are a different design than the older heads they are replacing.

**Note:** Inspect the condition of the diaphragms and the inlet and outlet valves of each cylinder while the pump heads are removed. If the diaphragms and/or valves are worn, rebuild the pump using rebuild kit P/N 120-0796.

### Instructions:

1. Remove the pump from the machine. Refer to the appropriate service manual for step-by-step instruction on this procedure, based on your specific model.



Figure 1

2. Remove and replace one pump head at a time. Begin the upgrade with the top two pump heads, as they are connected with the lift bracket. See Figure 2.



Figure 2

**Note:** One corner of each of the two upper pump heads is secured to the pump with a longer bolt than the other corners to compensate for the thickness of the lift bracket.

3. Transfer the inlet and outlet valves from the old pump head to the new pump head.

**Note:** The two pump inlet valves in the upper pump head positions (on either side of the pump suction port) are different from the rest of the valves used in the pump. These two valves can be identified by their white color and the presence of a vent hole in the center of the valve. See Figure 3.



Figure 3



4. As you install each successive new pump head, turn the pump crankshaft to move each diaphragm to its lowest position. There should be no gap between the diaphragm and the surface of the pump case. See Figure 4.



Figure 4

1. Diaphragm gap, indicating incorrect crankshaft position
  2. Diaphragm is flush with pump case surface, indicating correct crankshaft position
5. When installing a pump head, ensure the inlet and outlet valves remain seated in their proper position. Holding the inlet valve in its respective port while placing the pump head in position is the best way to accomplish this. See Figure 5.



Figure 5

1. Inlet valve, being held in position during installation
2. Outlet valve, installed properly in the outlet port during installation

**Note:** The new pump heads have a lift hook feature cast integrally into them. When viewed from the driven side of the pump, the lift hooks should all be facing in a clockwise direction. See Figure 6 .

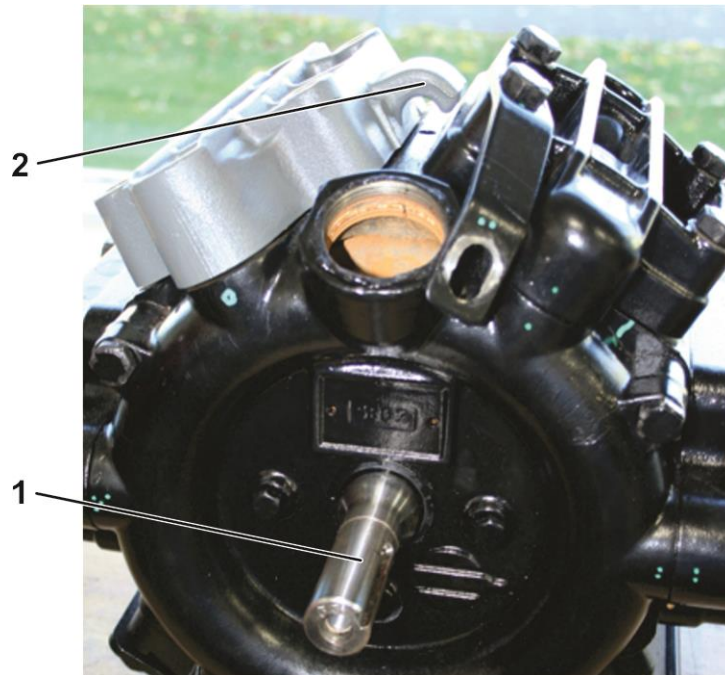
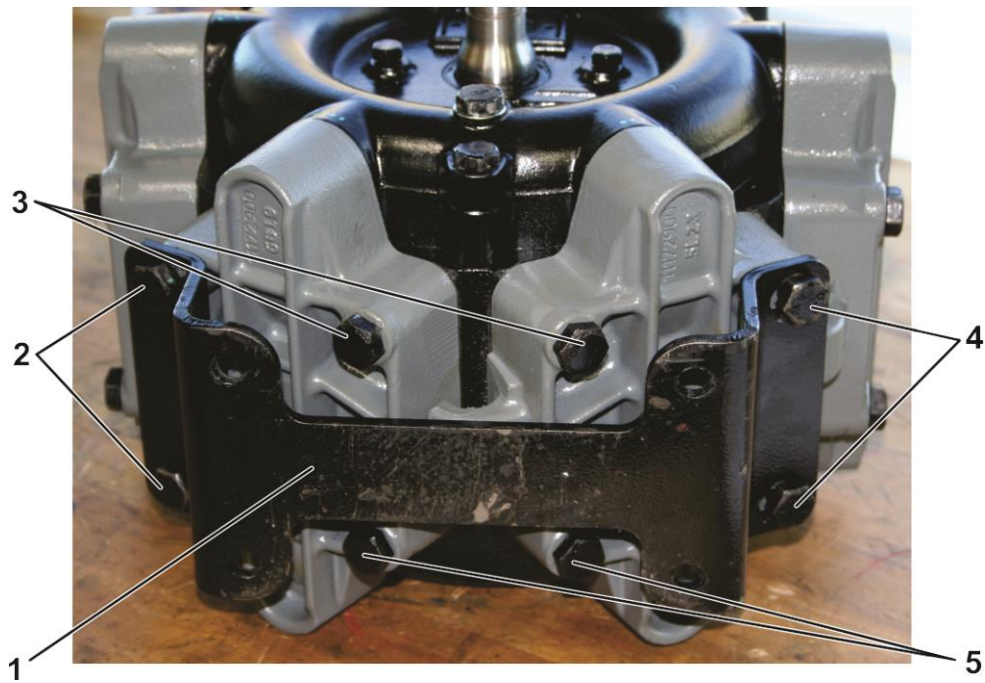


Figure 6

1. Pump drive
2. Pump head lift hook

6. Install the four fasteners and tighten them in a crisscross pattern to 45–55 ft.-lbs. (61–75 N-m).
7. Once the top two heads have been replaced, move to the heads on either side of the pump.
8. Replace the bottom two pump heads last, as they need to be done simultaneously to account for the pump foot bracket mounting.

**Note:** The two lower heads are secured to the bottom of the pump with four longer bolts to compensate for thickness of the foot mount bracket. See Figure 7.



**Figure 7**

1. Pump foot bracket
  2. Long pump head bolts
  3. Short pump head bolts
  4. Long pump head bolts
  5. Short pump head bolts
9. When the installation of the new pump heads is complete, the pump assembly can be installed back into the machine. Before operating the pump, refer to the appropriate service manual for step-by-step instructions on pump installation and proper priming, based on your specific model.