Model: TM80/120 Serial #: All	Oct. 28, 2016
Product Bulletin #TM-026	

Maintaining Hydraulic Oil Cleanliness with Shared HPU and Replacing the High-Pressure Filter

Issue

The maximum recommended hydraulic fluid contamination level for the Torq-Matic™ (TM) automated floor wrench for both the TM80 and TM120 is ISO 4406 18/15 or better. In order to achieve the desired cleanliness, hydraulic fluid filters should have an efficiency rating of $\beta 10 \geq 75$ or better. Contaminated hydraulic fluid can cause hydraulic components on the wrench to fail.

Incidents where wrench hydraulic components have failed have been particularly prevalent on rigs where a common hydraulic power unit (HPU) supplies hydraulic oil to the wrench and other pieces of equipment. The wrench vertical counterbalance valve is usually the first hydraulic component to fail and observations of the wrench vertical lift assembly slowly drifting down is a strong indicator that contaminated oil has caused the valve to fail.

Multiple failure analysis investigations have revealed high levels of contamination in oil samples taken from the HPU in question. These investigations have also revealed contamination levels in the wrench high-pressure filter elements high enough to put the filter in bypass mode.

Recommendations

Canrig recommends circulating the hydraulic oil through the wrench high-pressure filter and circulation valve when installing a wrench on a new rig, or when the lines are known to be contaminated.

Once the wrench is in service, checking the HPU return filters and the wrench high-pressure filter on a regular basis is critical for maintaining clean hydraulic oil. Filters should be replaced before they go into bypass mode, and oil samples should be taken and analyzed periodically to verify oil cleanliness.

Parts List

The Canrig part number for the high-pressure filter element needed to perform the circulation procedure is listed below. Contact RIGLINE 24/7™ for price and availability.

Item	Part Number	Description	Qty
1	H10340	Filter Element, HI Press, 6 Micron FHP	1

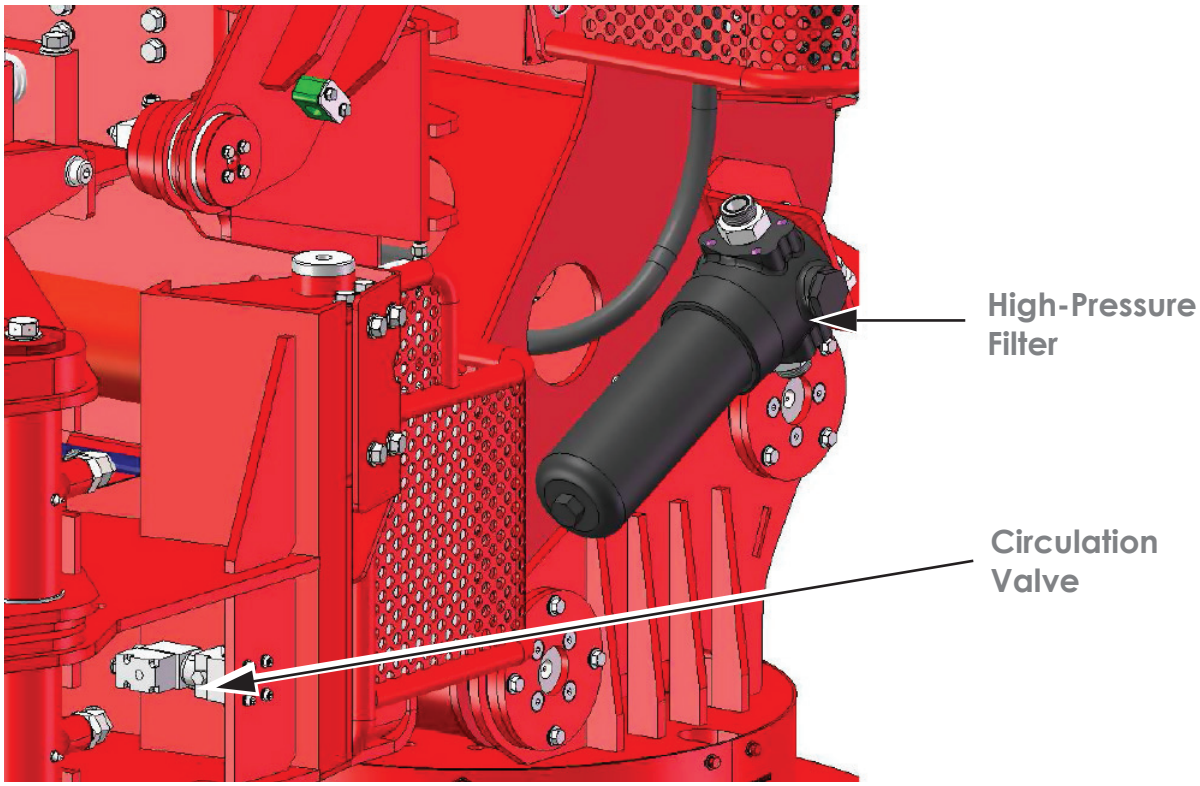

Figure 1: High-Pressure Filter and Circulation Valve

Circulation Procedure

Perform the following steps prior to connecting the hydraulic pressure and return lines to the wrench.

1. Using air pressure and a hose/pipe pig cleaning kit, clean the rig hydraulic pressure and return hoses and hard piping that are part of the wrench circuit.
2. Using air pressure and the pig cleaning kit, clean the wrench hydraulic pressure and return hoses.
3. Ensure that the circulation valve is enabled. This is found in the Advanced settings for wrenches with an Omron PLC. For Allen-Bradley wrenches, use the Configuration screen.
4. Turn off the hydraulic oil heater circuit breaker in the PLC power box to ensure that the hydraulic oil heater remains OFF throughout the procedure.
5. Connect hydraulic pressure and return hoses to the wrench.
6. Start circulating hydraulic oil through the wrench high-pressure filter and circulation valve.

7. For rigs with Omron PLC controls, press **WARM UP ON** on the main HMI screen. See Figure 2.

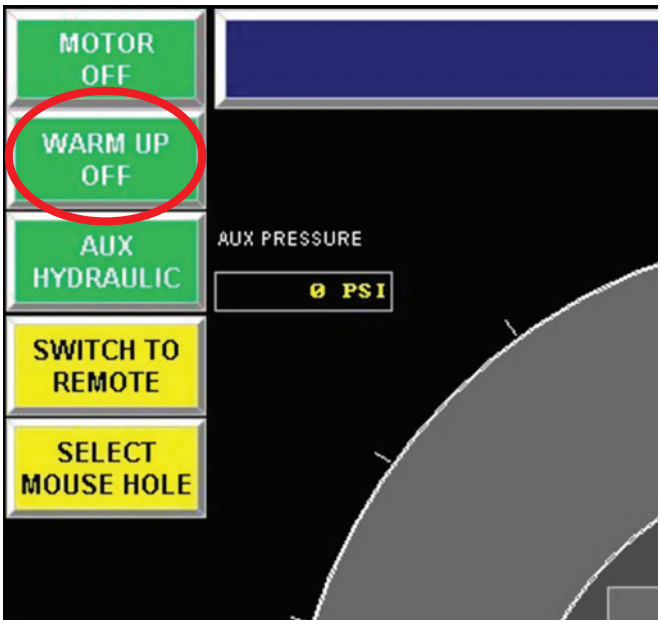

Figure 2: HMI Screenshot for Omron PLC.

8. On rigs with wrench Allen-Bradley PLC controls, select the "Temperature" screen from the page tabs and press **Circ Valve On/Off**. See Figure 3.

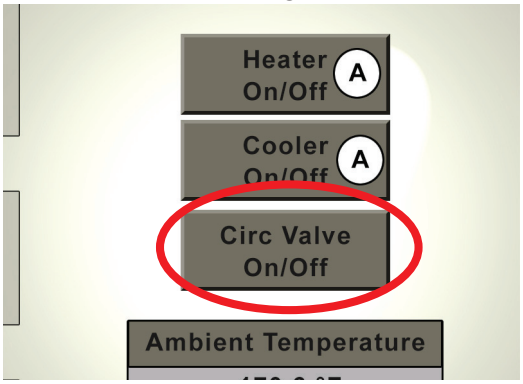

Figure 3: HMI Screenshot with Allen-BradleyPLC

9. Wait 30 minutes, and then turn off the oil circulation by pressing the same button again.
10. Switch the hydraulic oil heater circuit breaker in the PLC power box back ON.

Replacing the Wrench High-Pressure Filter Element

The high-pressure filter element should be changed when following the current Torq-Matic™ preventative maintenance procedures, or when the color-coded differential pressure indicator shows red while running.

Figure 4: The Differential Pressure Indicator Turns Red to Indicate the Need for Changing the High-Pressure Oil Filter

Warning!

Perform lock out and tag out of electrical equipment in accordance with local procedures prior to replacing element.

Warning!

Lines pressure can exceed 5,000 psi. Ensure all pressure is bled from the system prior to replacing element.

1. Perform a Job Safety Analysis (JSA).
2. Lock out and tag out the wrench and HPU.
3. Disconnect the 37C and 10C cables at the wrench.
4. Dissipate any residual hydraulic pressure in the wrench hydraulic circuit by manually actuating the upper tong and lower tong control valves on the tong valve bank.
5. Place a bucket under the high-pressure filter and place absorbent pads around the bucket to capture any leaking hydraulic fluid.
6. Disconnect the hydraulic pressure QD connection upstream of the high-pressure filter.
7. Use a 1-3/16" wrench on the hex nut at the bottom of the filter housing to remove the housing.
8. Replace the filter element and reinstall the housing. Ensure the seal is seated properly.
9. Reconnect the hydraulic pressure line and electrical cables.
10. Once the wrench has been restored to operational mode, set the HPU to run in idle mode, and slightly loosen the hose fitting for the return line on the tong valve bank. Manually actuate the lower tong valve until oil starts to leak from the port. This will bleed residual air in the circuit. Re-tighten the hose fitting.