

HYDROSTATIC TRANSMISSION - TESTING & FAULT FINDING

WHEEL MOTOR PARKING BRAKE

STATIC TEST

To test the parking brake, drive the forklift with loaded forks onto a slope of 1:6 such as a loading ramp.

- Apply the parking brake and switch off the engine.
- The unit should remain stationary if the brake is functioning correctly.

To test the parking brake valve, repeat the above test with the engine running.

OPERATION TEST

For units with rear wheel parking brake, raise the front wheels clear of the ground by lowering the forks onto a wood block, figure 20.

For units with front wheel parking brakes, raise the rear wheel just clear of the ground by lifting the rated load with the mast fully forward and the stabilisers raised, figure 21.

- With the unit positioned as above, engage the diff lock and apply the parking brake.
- Run the engine at high rpm, and slowly depress the transmission control pedal to forward and then reverse travel, the brake should hold in both directions.

BRAKE RELEASE TEST

Raise the braked wheels clear of the ground as above.

- Start the engine and release the parking brake.
- Run the engine at low rpm and slightly depress the travel pedal, the raised wheels should slowly rotate indicating the brake is released.

It is essential that the hydrostatic transmission circuit is adequately clean before the system is operated under full load, this can only be achieved by flushing the system.

The object of flushing the system is to remove contamination which may have been introduced during component replacement, or remains in the system after mechanical failure, which if left in the closed loop circuit would otherwise contribute to premature component wear and possible failure.

INITIAL OIL FILL AND START UP

It is assumed that the hydraulic reservoir has been thoroughly cleaned and the strainers and filters replaced, refer to chapter 3, "Hydrostatic Transmission Field Service", pages 1 and 2.

Ensure the hydrostatic pump and wheel motors are primed with new filtered oil, refer to chapter 3, "Hydrostatic Transmission Field Service".

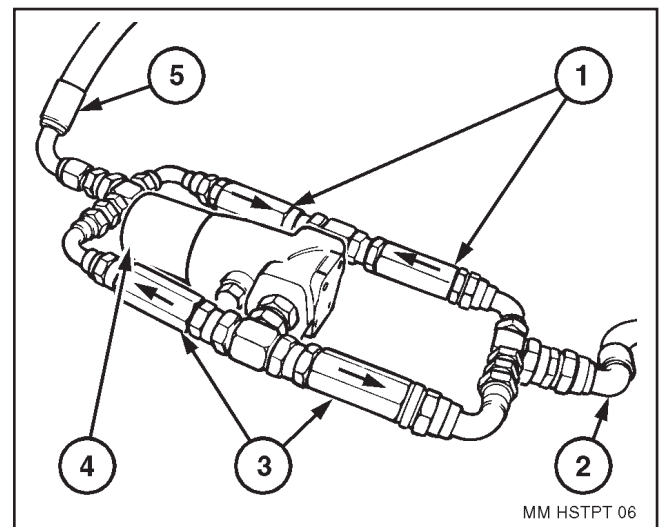


FIGURE 22. FILTRATION UNIT

1. Check Valve Assemblies
2. Hose "C" (Pump to Diff Lock Port "A")
3. Check Valves Assemblies
4. Filter Assembly
5. Temporary Hose "D"

- Connect the flushing unit, with a new filter, in series with the hydrostatic circuit.
- Install a pressure gauge (600 lbf/in² / 40 bar) into the wheel motor brake circuit, referring to gauge CP 1, figures 3 and 4.
- Fill the reservoir with clean filtered hydraulic oil.

HYDROSTATIC TRANSMISSION - TESTING & FAULT FINDING

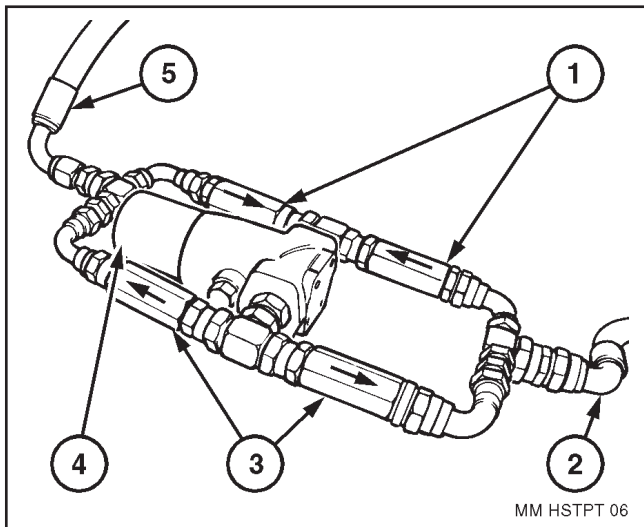


FIGURE 23. UNIT CONNECTION IN SERIES

1. Hose "C" (Pump to Diff Lock Port "A")
2. Diff Lock Port 'A' Adaptor*

*Hose 'D' connection point

- Ensure that both gate valves in the pump suction lines are open.
- Raise the unit so that the wheels are clear of the ground.
- With **Kubota engine models**, have an assistant hold the stop control lever in the "STOP" position, or remove the solenoid fuse as applicable, while cranking the engine for 10 seconds, then wait 20 seconds and repeat. This will partially fill the system.
- Start and run the engine at low rpm while slightly depressing the transmission control pedal forwards. If after 30 seconds there is no indicated charge pressure or the wheels do not turn, stop the engine and investigate the cause.
- Allow the engine to run for 5 minutes at half engine speed keeping the control pedal forward enough to keep the wheels turning. Stop the engine and top up the reservoir.
- Continue flushing as described as follows.

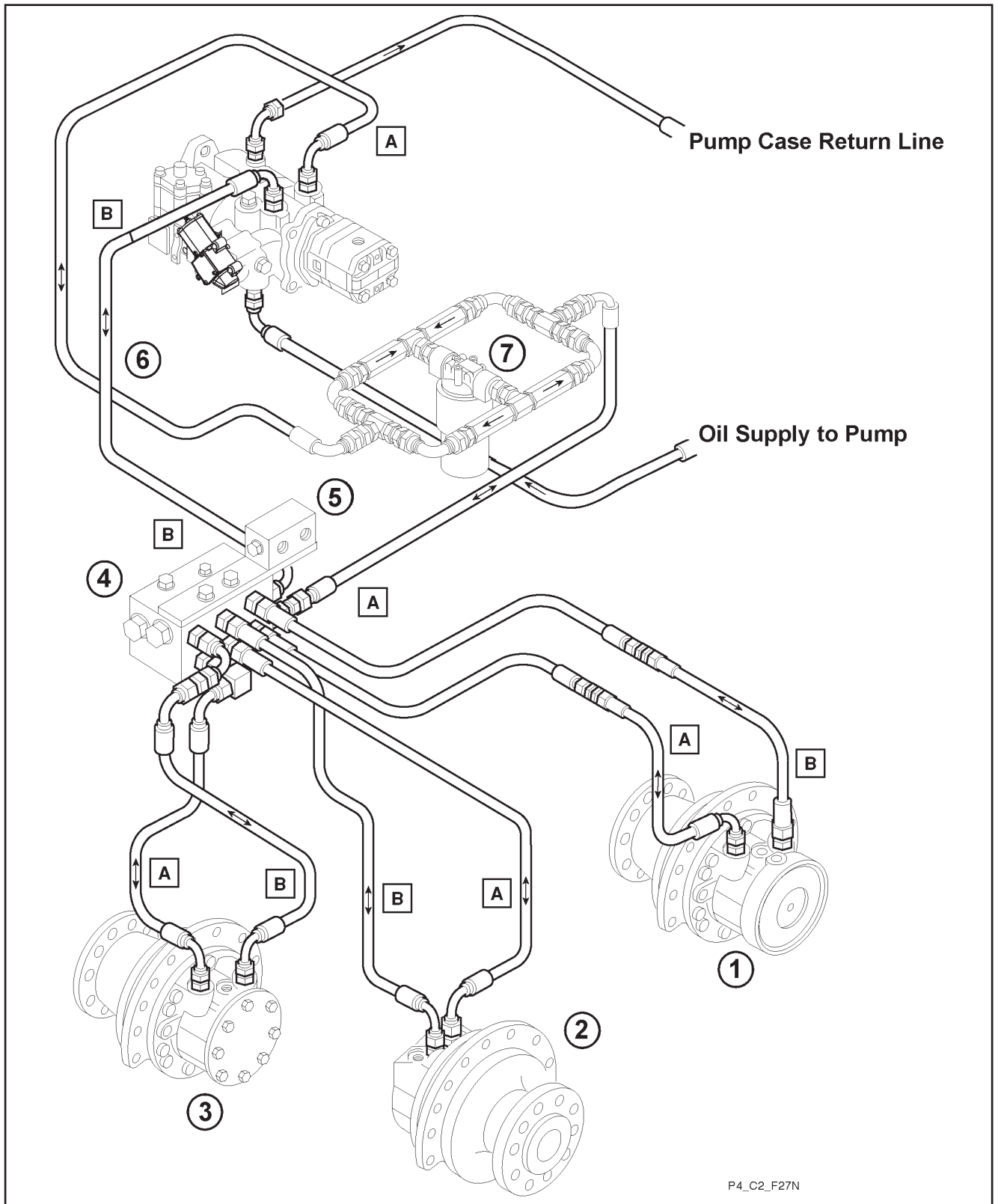
FLUSHING THE COMPLETE SYSTEM

- If flushing the complete system, lower the wheels onto the ground and remove the jacks.
- Locate the filtration unit securely on the unit keeping the filter upright.
- Slowly drive the unit forwards several hundred meters, then change direction. Repeat sequence and continue for 20-30 minutes. Gradually build up speed and use the differential lock occasionally and check the oil temperature frequently.
- If the temperature rises to 70° C., stop the unit and allow the oil temperature to drop below 60° C.
- Remove the filtration unit, reconnect the system hoses and top up the reservoir.

FLUSHING THE PUMP AND HOSES

- When flushing the pump and hoses, isolate the wheel motors using $\frac{7}{8}$ " JIC male/male adaptors to loop the wheel motor hoses together. Ensure the wheel motor port adaptors are capped to prevent contamination.
- Continue flushing, as in initial start up, for another 10 minutes.
- Remove the filtration unit, reconnect the system hoses and top up the reservoir.

HYDROSTATIC TRANSMISSION - TESTING & FAULT FINDING



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FIGURE 24. FILTRATION UNIT INSTALLED TO FLUSH THE COMPLETE SYSTEM

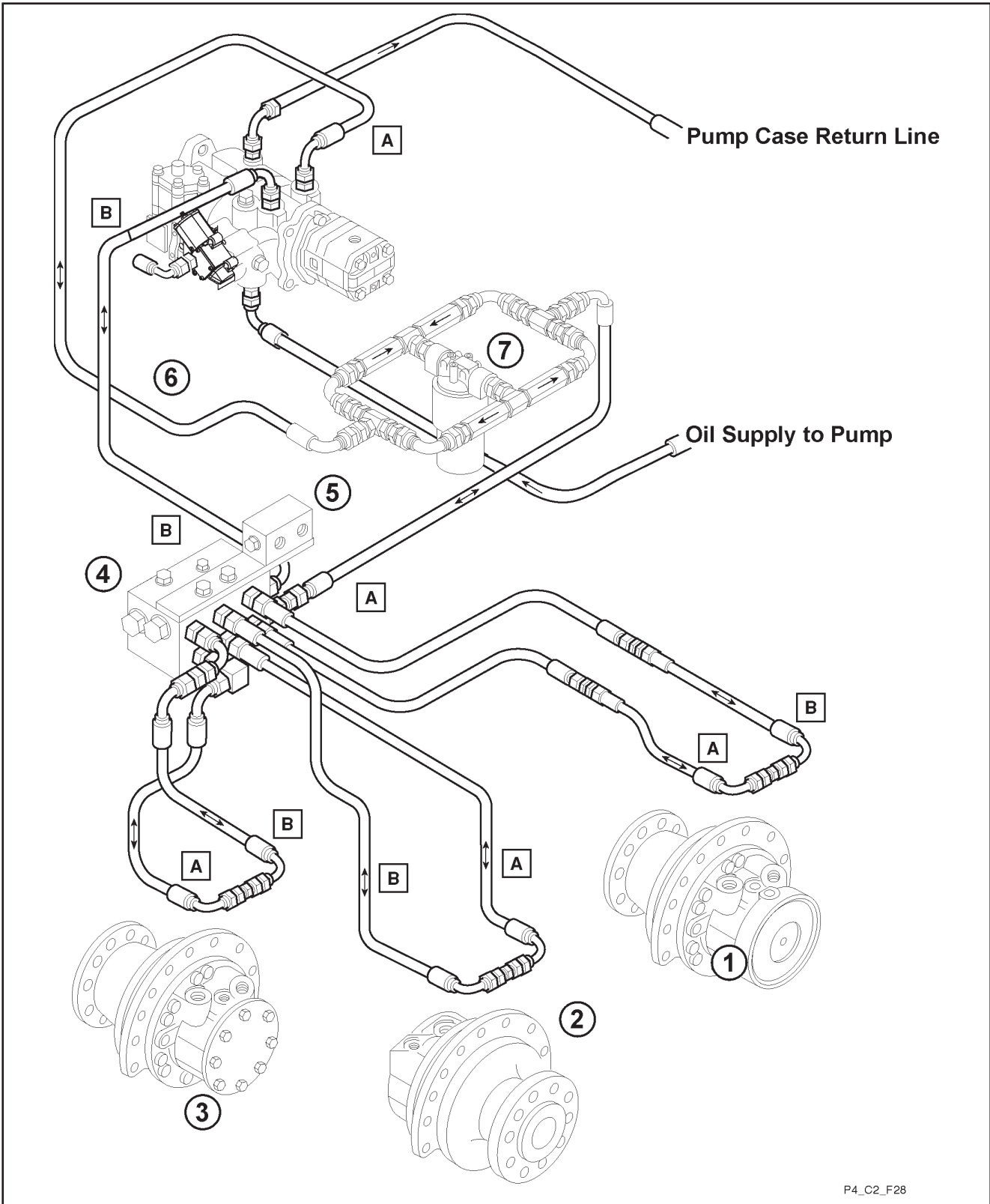
A. FORWARD TRAVEL PRESSURE

- 1. Rear Wheel Motor
- 2. Front Left Hand Wheel Motor
- 3. Front Right Hand Wheel Motor

B. REVERSE TRAVEL PRESSURE

- 4. Differential Lock Valve
- 5. Manifold
- 6. Hydrostatic Pump
- 7. Filtration Unit

HYDROSTATIC TRANSMISSION - TESTING & FAULT FINDING



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FIGURE 25. FILTRATION UNIT INSTALLED TO FLUSH THE PUMP AND HOSES

A. FORWARD TRAVEL PRESSURE

B. REVERSE TRAVEL PRESSURE

1. Rear Wheel Motor

4. Differential Lock Valve

2. Front Left Hand Wheel Motor

5. Manifold

3. Front Right Hand Wheel Motor

6. Hydrostatic Pump

HYDROSTATIC TRANSMISSION - TESTING & FAULT FINDING

FLUSHING THE PUMP

- If flushing only the pump, the filtration unit must be connected directly to the hydrostatic pump.
- Continue flushing, as in initial start up, for another 5 minutes changing from forward to reverse occasionally.
- Remove the filtration unit, reconnect the system hoses and top up the reservoir.

NB. Always clean out the filter bowl and visually check the filter element after each flushing operation. Replace the filtration unit filter after four or five flushes or, after any flushing operation where contamination is severe.

- Do not overload the unit for the first hour of operation after any component replacement and subsequent flushing.

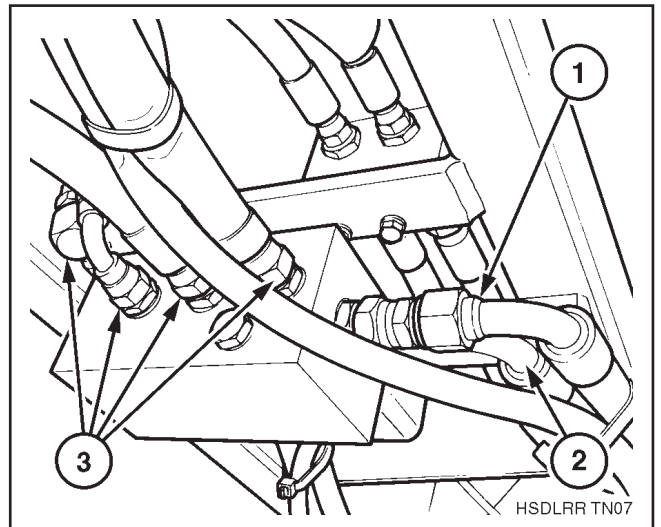


FIGURE 26. FILTRATION UNIT CONNECTIONS TO THE HYDROSTATIC PUMP

1. Hose - Pump to Diff Lock Port "A"
2. Hose - Pump to Diff Lock Port "B"
3. Wheel Motor Hoses

NB. The pump to diff lock hoses must be disconnected from the diff lock and reconnected to the filtration unit.

The diff lock ports must be capped.

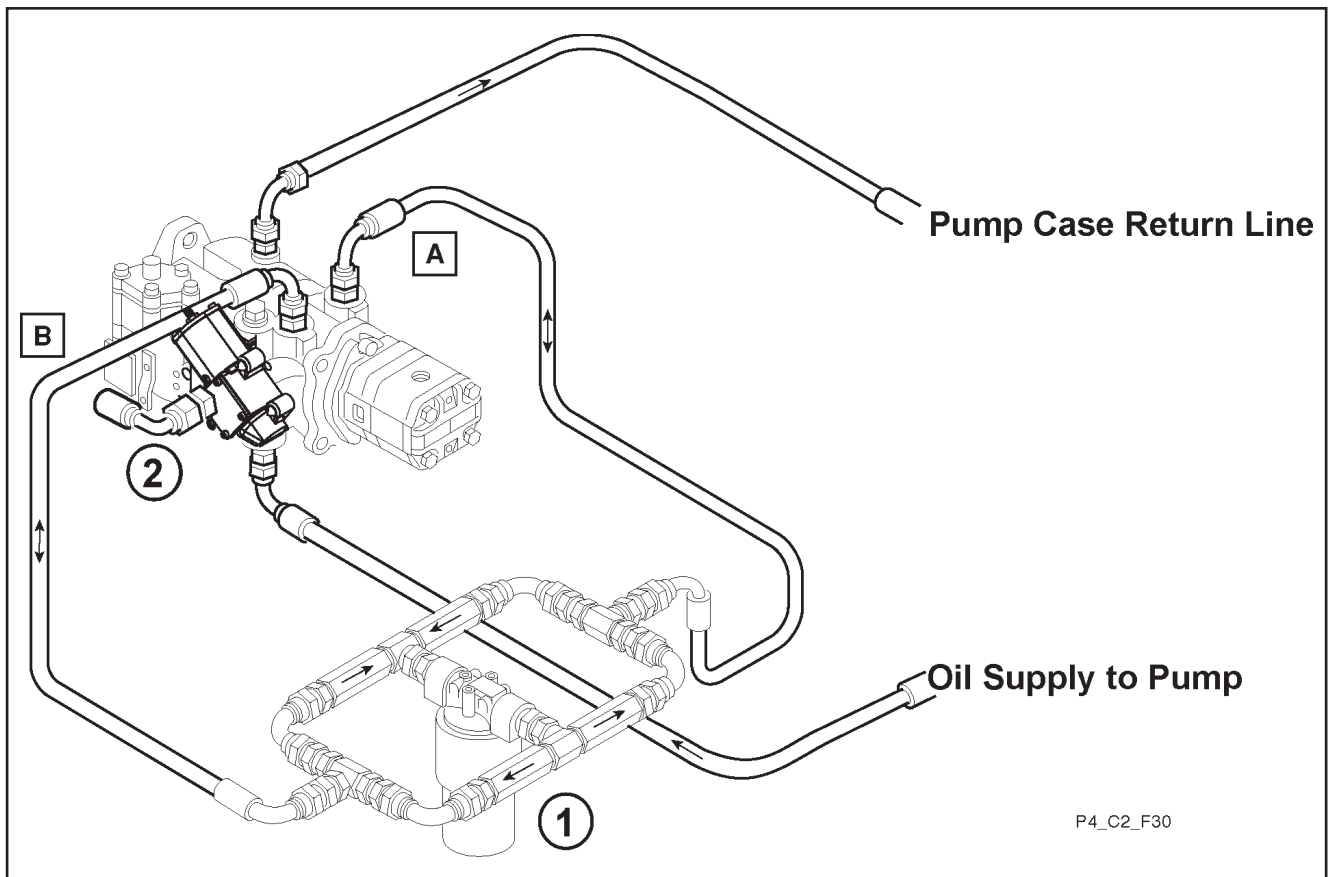


FIGURE 27. FILTRATION UNIT INSTALLED TO FLUSH THE HYDROSTATIC TRANSMISSION PUMP ONLY

1. Filtration Unit
2. Hydrostatic Pump