



Engineering Standards/Specifications

Procedure No.

SES 26-718

Title

FLUSHING AND CLEANING OF HYDRAULIC SYSTEMS

V.P. of Manufacturing	V.P. of Engineering	V.P. of QA/QC	V.P. of Sales/ Marketing	Revision Description		Release Date	Rev. Ltr
Written By		Revised By					



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1.0 Scope:

- 1.1 This specification describes a process for Flushing and cleaning of hydraulic systems. This specification is to be used to flush accumulator units and or hydraulic power units and free them of contaminated fluids.

2.0 Purpose:

- 2.1 The flushing treatment described in this specification is intended to clean the system of contaminated fluids.
- 2.2 Contaminated oils if are present in the hydraulic system have a tendency of contaminating the system and also the allied equipment connected to the hydraulic power pack.

3.0 Applicable Requirements and Specifications:

- 3.1 ASTM D4174-89(1999) Standard Practice for Cleaning, Flushing, and Purification of Petroleum Fluid Hydraulic Systems.

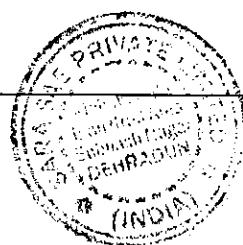
4.0 Treatment Procedure:

4.1 Double oil filter change

This technique involves an initial oil drain and filter change, which expels a large percentage of contaminants and degraded fluid. The system is then filled to the minimum level required and the fluid circulated until operating temperature is reached and the fluid has been turned over at least five times. The oil is drained and the filters changed a second time. An appropriate oil analysis test should be performed to determine the success of the flush. To maximize the effectiveness of this technique, the system should be drained as thoroughly as possible and the reservoir mechanically cleaned.

The leg pipes should be closed at the initial stage then the plugs to be opened of the leg pipe and the contaminated fluid to drained out. Operate the open close valves at-least ten times and repeat the procedure listed above.

4.2 Reservoir Cleaning



4.2.1 Stop the pumps

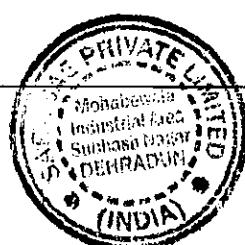
- 4.2.1.1 Open manifold bleeder and release the system pressure.
- 4.2.1.2 Drain the fluid from the fluid from the system, remove any sludge/slime or other material from the reservoir.
- 4.2.1.3 Flush the entire system with 140 degree F (60 degree C) hot water.
- 4.2.1.4 Circulate a mixture of hot water and Trisodium Phosphate (2 pounds in 5 gallons of water) until the sludge and oil are removed from metal parts. Optional – Circulate a warm or hot bacteriacidal solution through system.
- 4.2.1.5 Rinse the system thoroughly with hot water.
- 4.2.1.6 Refill the system with hydraulic fluid mixture.
- 4.2.1.7 Start pumps and operate to ensure the pumps are primed.
- 4.2.1.8 Close manifold bleeder valve.

4.3 Strainer Cleaning

- 4.3.1 Open the strainer and the high pressure filter and clean the filter element and the strainer element.

4.4 System Cleaning and flushing**Power flushing**

Power flushing involves the use of a purpose-built rig to circulate a low viscosity fluid at high velocities to create turbulent flow conditions (Reynolds number > 2000). Introduce air into the system and fill the system with hot water and the above solution and clean the system.

5.0 References:

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5.0 Exceptions:

- 5.1 At Engineering's discretion the immersion requirement of 4.2 may be replaced with "swabbing of solution". This exception must be received in writing to be in effect.
- 5.2 No other deviations are allowed unless specifically agreed to in writing by Engineering prior to treatment.

