

Hydraulic and Commissioning Manual – Module 2A



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1 Features

- High efficiency
- Open or closed centre configuration
- Accurate/smooth control
- Long service life

2 Hydraulic Commissioning

2.1 Functional Purpose

The purpose of following a special commissioning or start-up procedure after installation of a new or overhauled system is to accomplish four major objectives. This procedure can be followed for any type of hydraulic spreader system start-up.

- The objectives
- Start-up pump at no load
- Flush System at high and low pressure
- Bleed air and fix leaks
- Verify performance and function

2.2 System Description

The Compu-Spread Hydraulic System will consist of either a fixed displacement (open centre system) or a variable displacement (closed centre system) pump. Combined with an appropriate Basic Technologies valve bank, all hydraulic functions can now be controlled. The hydraulic system is optimized with an electronic control system for instant response, accurate control, high efficiency, and long life.

3 Hydraulic Commissioning Instructions

Refer to hydraulic installation and commissioning drawing.

Note: These instructions are for variable displacement pump systems. If your system is equipped with a fixed displacement (gear or vane) type pump, there will be no pump adjustments available, and no case to fill. However, you will need to set the maximum system pressure by turning the adjustment screw located on the inlet of the valve bank. To do this, simply ignore Step #9 and apply Steps #4 and #11 at the valve rather than at the pump. The standby setting is fixed in the valve and should read approximately 150 PSI.

1. Ensure all components are flushed clean and free of grit and dirt.
2. Fill the reservoir and pump only through a fine filter (i.e. 10 micron absolute) to avoid adding more contamination to the system.
Important: Fill pump and motor cases to the highest case drain or vent port. Use clean filtered fluid.
Note: Drum and bulk oil is dirty by hydraulic oil standards. Care should always be taken when filling or topping off the reservoir by using a filling filter.
3. Ensure all hoses, fittings, etc. are tightened correctly.
Note: All pipelines must enter the tank sufficiently far below the minimum permissible oil level (approximately 2 inches (5cm)) so as to prevent foaming.
4. Turn the maximum pressure adjustment screw on the pump control counter clockwise as far as possible. Do not adjust standby pressure.
5. Disconnect the pressure and tank lines from the valve bank. Couple these lines together to create a non-restricted flow path from the reservoir through the pump, through specified filter (i.e. 10 micron absolute) then back to the reservoir again.
6. Start prime mover to allow system to fill with fluid and ensure adequate lubrication. If the pump is not delivering fluid free of air bubbles within 60 seconds, shut down and check the system again. If okay, and no leaks and all sounds well, allow system to run for a few minutes to purge any entrapped air.
7. Shut the system down, uncouple the pressure line from the tank line and re-connect them to the valve bank. Also, install a 3000 PSI pressure gauge in the pressure line from the pump (this may be easily accomplished by installing test fitting P/N101077 into the test port of the variable displacement pump. See detail "C" of the Hydraulic & Commissioning drawing).
8. Start the prime mover again.
9. Check the standby pressure. Pressure gauge should read 200 PSI as per factory setting. If not, adjust to read 200 PSI by turning small adjustment screw clockwise to increase or counter clockwise to decrease.

Note: In some applications it may be necessary to increase standby pressure, do not exceed 300 PSI.

10. To set the maximum system pressure you will have to “Deadhead” one of the valve functions (i.e. fully extend a cylinder or plug off a working port while keeping that valve section shifted).
11. While “Dead Heading” turn the large adjustment screw on the pump clockwise. Turn until you read the maximum pressure your system requires on the pressure gauge (usually 1500 - 2500 PSI).
12. Ensure you lock both pump adjustments in place with the jam nuts.
13. Releasing the valve function will cause pressure to drop back down to the standby setting.
14. Push in the solenoid override pins of the spinner and conveyor sections to assure correct function and rotation.
15. Run the system under load until oil reaches operating temperature (should not exceed 140°F) and check for leaks.
16. Ensure there is still a sufficient quantity of oil in the reservoir now that all lines, etc. are full.
17. Erratic operation may indicate there is still air trapped in the system. By working control valves both ways the remaining air can be eliminated. The system is free of air when all functions can be operated smoothly and the oil in the reservoir shows no foam on the surface.

4 Additional Information

4.1 Filtration

In order to guarantee reliable function, the hydraulic fluid should be filtered through a 10 micron absolute filter.

4.2 Filter Inspection

In good practice ensure filters are inspected within the following time frames.

1. Daily after commissioning
2. If free of contamination, weekly
3. After approximately 100 operating hours, monthly

4.3 Oil Replacement

1. After the first 500 hours of operation
2. After the following 2000 operating hours
3. Every 2000 operating hours thereafter or once a year

When changing the oil, ensure the fluid used is capable of bridging both summer and winter temperature ranges while maintaining the minimum viscosity at operating temperature.

Common errors made in practice during an oil change:

- Lack of cleanliness (dirt introduced into system)
- Failure to clean tank
- Filing of tank without filter

4.4 Oil Tank (Reservoir)

The capacity of the tank must be selected to suit the operating conditions. The suction and return lines should be arranged so as to allow free flow. All pipelines must enter the tank sufficiently far below the minimum permissible oil level so as to prevent foaming. An air breather is necessary for volume compensation due to varying work cycles and temperature fluctuations and should be fitted at the highest point on the tank.

Notes: