| Document Title: **Hydraulic system, description** | Function Group: **900** | Information Type: **Service Information** | Date: **2015/1/6 0** |
|---|---|---|---|
| Profile: **GRD, G970 [GB]** | | | |

# Hydraulic system, description

The main hydraulic system consists of several different components, which collectively make up a complete hydraulic system. For details on the included components, see the description for each component.

The main hydraulic system is a pressure and flow compensated (load sensing) system with a variable displacement axial type piston pump. A priority flow control valve ensures the steering system has priority over the implement circuit. Each work section of the ten bank directional flow valve has built in internal flow compensators. All sections of the ten bank directional flow valve have restricted motor spools. Thermal relief valves protect each circuit from pressure caused due to the thermal expansion of oil.

The hydraulic operated cooling fan circuit is fully independent of the main hydraulic system. It does however, use the same hydraulic oil tank and oil.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Hydraulic oil, description** | **900** | **Service Information** | **2015/1/6 0** |
| Profile: **GRD, G970 [GB]** | | | |

# Hydraulic oil, description

The machine is standard equipped with mineral-based hydraulic oil. Bio-degradable oil is available as an option.

The hydraulic oil contains selected additives which give good oxidation stability, corrosion protection and lubrication characteristics. The hydraulic oil has good compatibility with bearings containing lead alloys.

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Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Hydraulic oil, storing and handling** | **900** | **Service Information** | **2015/1/6 0** |
| Profile: **GRD, G970 [GB]** | | | |

# Hydraulic oil, storing and handling

- Hydraulic oil should be stored in tightly sealed containers or barrels.
- Only containers approved for transporting hydraulic oil should be used for this purpose.
- Hydraulic oil should be stored indoors or in temperature controlled facilities. If hydraulic oil is stored outdoors, the barrels should be horizontal to prevent penetration of water and eradication of barrel markings.
- In order to avoid condensation, hydraulic oil should not be stored in temperatures above 60° C (140° F), or be exposed to intense sunlight or cold temperatures.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Hydraulic components, storage and transport** | **900** | **Service Information** | **2015/1/6 0** |
| Profile: **GRD, G970 [GB]** | | | |

# Hydraulic components, storage and transport

- All hydraulic components should be stored in plastic bags. They should also be plugged. The packaging must not be opened until the component is to be used.
- Service vehicles should be equipped with an interior which facilitates good order and cleanliness.
- Each service vehicle should have a roll of plastic sheeting, plastic plugs of the most common dimensions and plastic containers for components. Plugs and plastic sheeting should be of the disposable type; that is, for one time use only.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Oil and filtration** | **900** | **Service Information** | **2015/1/6 0** |
| Profile: **GRD, G970 [GB]** | | | |

# Oil and filtration

The main function of the oil in the hydraulic system is to transfer energy from the engine driven hydraulic pumps to the various hydraulic actuators (cylinders and motors). It must also lubricate the moving parts in the hydraulic components, protect them against corrosion and transport all dirt particles and heat out of the hydraulic system. It is therefore, important to choose the correct oil with the correct additives and properties to suit the machine's operating parameters. Refer to the **OPERATOR'S MANUAL** for the proper selection of the systems hydraulic oil. Effective filtration is the most important precondition in ensuring that the hydraulic system performs reliably and has a long working life. The oil in the hydraulic system must be maintained to a minimum cleanliness level of 18/13 as per ISO standard 4406 standard at all times.

In the event of a major component failure, the oil in the system will be contaminated and must be cleaned using an external filtration system such as a filter cart. Volvo strongly recommends scheduled oil sampling of the systems hydraulic oil as part of a preventative maintenance procedure.

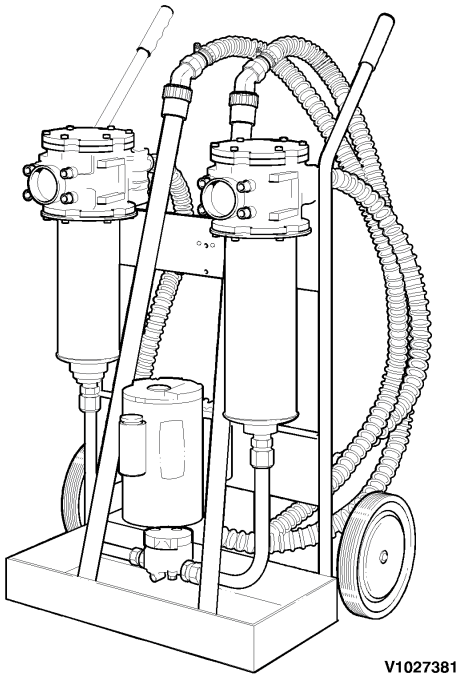


**Figure 1**
**Commercial filter cart**

Biodegradable oil conforming to ISO 46 specifications are suited for use on G900 series machines. Refer to special instructions for converting the machine from mineral oil to biodegradable oil.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Hydraulic components, cleanliness when handling** | **900** | **Service Information** | **2015/1/6 0** |
| Profile: **GRD, G970 [GB]** | | | |

# Hydraulic components, cleanliness when handling

**WARNING**

**Hot hydraulic oil and hydraulic oil under pressure may result in severe personal injuries**

**NOTICE**

**It is very important to keep the hydraulic system free from any impurities, as these can cause abnormal wear and may lead to expensive downtime. Greatest possible cleanliness should be maintained during all handling of hydraulic components and hydraulic oil.**

**NOTE!**

A vacuum pump should be used for work on the hydraulic system in order to avoid oil spills.

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Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Hydraulic components, repairing in workshop** | **900** | **Service Information** | **2015/1/6 0** |
| Profile: **GRD, G970 [GB]** | | | |

# Hydraulic components, repairing in workshop

- Always wear clean coveralls and maintain strict personal cleanliness.
- Work with hydraulic components should be performed separate from other work in the shop in a clean environment. There should be good ventilation and the floor should be coated with a binding material. Machining, grinding, etc. must not be performed in this environment.
- The workplace should be equipped with thoroughly cleaned tools and suitable containers for cleaning hydraulic components.
- Containers used for cleaning hydraulic components must not be used for other cleaning. The containers should be cleaned often and filled with new fluid.
- Clean all components that are going to be handled in the designated clean environment. Do not use caustic soda solutions or similar, which will result in corrosion.
- Always plan work on the hydraulic system so that it can be completed without long interruptions.
- When cleaning during repairs — use dry and clean compressed air — not rags.
- When work is completed, always plug components with clean plastic plugs of suitable dimensions and package them.
- When cleaning hydraulic components, use methods that do not stir up dust and dirt.

| Document Title: **Hydraulic pump, checking and adjusting standby pressure** | Function Group: **910** | Information Type: **Service Information** | Date: **2015/1/6 0** |
|---|---|---|---|
| Profile: **GRD, G970 [GB]** | | | |

# Hydraulic pump, checking and adjusting standby pressure

The G900 machine has three hydraulic test ports. The test ports are fitted with quick disconnect couplers. They are identified as follows:

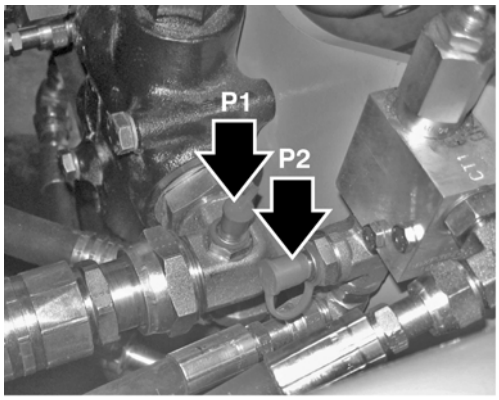


**Figure 1**
**P1 and P2 test port locations**

- P1 - measures the pump output pressure
- P2 - measures the load sense signal from the various valves into the pump flow compensator
- P3 - measures steering pressure

**Testing the load sense control flow regulator (standby pressure P1)**

**Op nbr 913-003**

14360064 Pressure checking set

1. Install the hydraulic test kit at test port P1.
2. Run the engine at low idle r/min.
3. The pressure at P1 should read 2.4 MPa (24 bar, 350 psi).