CEBM006300

Shop Manual



830E

DUMP TRUCK

SERIAL NUMBERS **A30625 thru A30649**

KOMATSU®

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OILING AND CHARGING PROCEDURE

GENERAL

These procedures cove the Oiling and Charging of HYDRAIR® II suspensions on Haulpak Trucks.

Suspensions which have been properly charged will provide improved handling and ride characteristics while also extending the fatigue life of the truck frame and improving tire wear.

NOTE: Inflation pressures and exposed piston lengths are calculated for a normal truck gross vehicle weight (GVW). Additions to truck weight by adding body liners, tailgates, water tanks, etc. should be considered part of the payload. Keeping the truck GVW within the specification shown on the Grade/Speed chart in the operator cab will extend the service life of the truck main frame and allow the HYDRAIR® II suspensions to produce a comfortable ride.

⚠WARNING

All HYDRAIR® II suspensions are charged with compressed nitrogen gas with sufficient pressure to cause injury or damage if improperly handled. Follow all safety instructions, cautions, and warnings provided in the following procedures to prevent any accidents during Oiling and Charging.

Proper charging of HYDRAIR® II suspensions requires that three (3) basic conditions be established in the following order:

1. Oil level must be correct.
2. Suspension piston rod extension for nitrogen charging must be correct and this dimension be maintained during nitrogen charging.
3. Nitrogen charge pressure must be correct.

For best results, HYDRAIR® II suspensions should be charged in pairs (fronts together and rears together). If rears are to be charged, the fronts should be charged first.

NOTE: Set up dimensions specified in the charts must be maintained during oiling and charging procedures. However, after the truck has been operated, these dimensions may vary.

EQUIPMENT LIST

HYDRAIR® Charging Kit
Jacks and/or Overhead Crane
Support Blocks (Front and Rear) for:

- Oiling Height Dimensions
- Nitrogen Charging Height Dimensions

HYDRAIR® Oil (See Specifications Chart)
Dry Nitrogen (See Specifications Chart)

HYDRAIR® CHARGING KIT

Assemble service kit as shown in Figure 4-1 and attach to container of pure dry nitrogen (8).

Installation of Charging Kit

1. Remove protective covers and charging valve caps from suspensions to be charged.
2. Turn "T" handles (1, Figure 4-1) of adapters (2) completely counterclockwise.

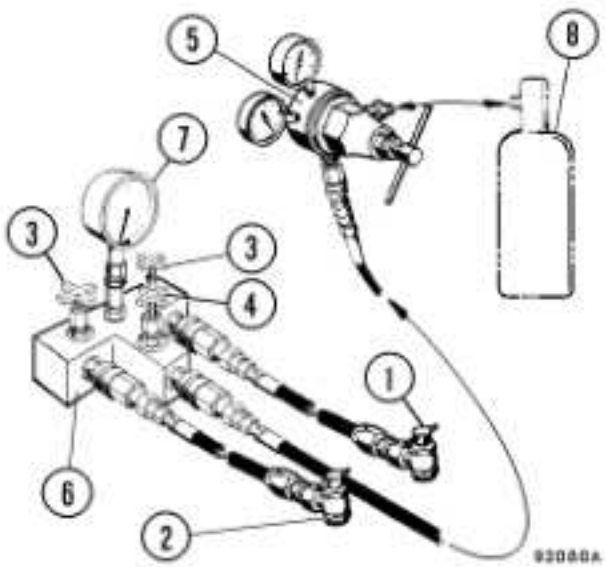


FIGURE 4-1. HYDRAIR® CHARGING KIT

NOTE: Arrangement of parts may vary from illustration above, depending on Charging Kit P/N.

1. "T" Handle Valve
2. Charging Valve Adapter
3. Manifold Outlet Valves (from gauge)
4. Inlet Valve (from regulator)
5. Regulator Valve (Nitrogen Pressure)
6. Manifold
7. Charging Pressure Gauge (Suspensions)
8. Dry Nitrogen Gas (Specifications Figure 4-5)

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ELECTRICAL CIRCUIT

The air conditioner's electrical circuit is fed from an accessory circuit and is fused with a 30-ampere fuse or circuit breaker.

The blower control is a switch which provides a range of blower speeds from fast to slow. When the blower switch is turned on, current is fed to the thermostat. Once the blower is turned on, fan speeds may be changed without affecting the thermostat sensing level.

The thermostat reacts to changing temperatures which cause electrical contacts to open and close. The thermostat has a capillary tube extended into the evaporator coil to sense temperature.

When the contacts are closed, current flows to the clutch field and energizes the clutch, causing the crankshaft to turn which starts the refrigeration cycle. When the temperature of the evaporator coil drops to a predetermined point, the contacts open and the clutch disengages.

When the clutch is disengaged, the blower remains at the set speed. After the evaporator temperature rises about twelve degrees above the cutout point, the contacts in the thermostat close and the refrigeration cycle resumes.

THERMOSTAT

An electromagnetic clutch is used on the compressor to provide a means of constant temperature control of the cab. The clutch is controlled by a thermostat in the evaporator which is set initially by the driver to a predetermined point. Coil temperature is then maintained by the cycling action of the clutch.

The thermostat is simply a thermal device which controls an electrical switch. When warm, the switch is closed; when cold, it is open. Most thermostats have a positive OFF position as a means to turn the clutch OFF regardless of temperature.

The bellows type thermostat has a capillary tube connected to it which is filled with refrigerant. The capillary tube is attached to the bellows inside of the thermostat. Expansion of the gases inside the capillary tube exerts pressure on the bellows, which in turn closes the contacts at a predetermined temperature.

COMPRESSOR CLUTCH

An electromagnetic clutch is used in conjunction with the thermostat to disengage the compressor when it is not needed, such as when a defrost cycle is indicated in the evaporator, or when the system is turned off.

The stationary field clutch is the most desirable type since it has fewer parts to wear out. The field is mounted to the compressor by mechanical means depending on the type field and compressor. The rotor is held on the armature by a bearing and snap rings. The armature is mounted on the compressor crankshaft.

When no current is fed to the field, there is no magnetic force applied to the clutch and the rotor is free to rotate on the armature, which remains stationary on the crankshaft.

When the thermostat or switch is closed, current is fed to the field. This sets up a magnetic force between the field and armature, pulling it into the rotor. When the armature becomes engaged with the rotor, the complete unit rotates while the field remains stationary. This causes the compressor crankshaft to turn, starting the refrigeration cycle.

When the switch or thermostat is opened, current is cut off. The armature snaps back out and stops while the rotor continues to turn. Pumping action of the compressor is stopped until current is again applied to the field. In addition, safety switches in the compressor clutch electrical circuit control clutch operation, disengaging the clutch if system pressures are abnormal.

SAFETY SWITCHES

Trinary™ Switch

The Trinary™ switch performs three distinct functions to monitor and control refrigerant pressure in the system. This switch is installed between the condenser and expansion valve, usually on the receiver-drier. The switch functions are:

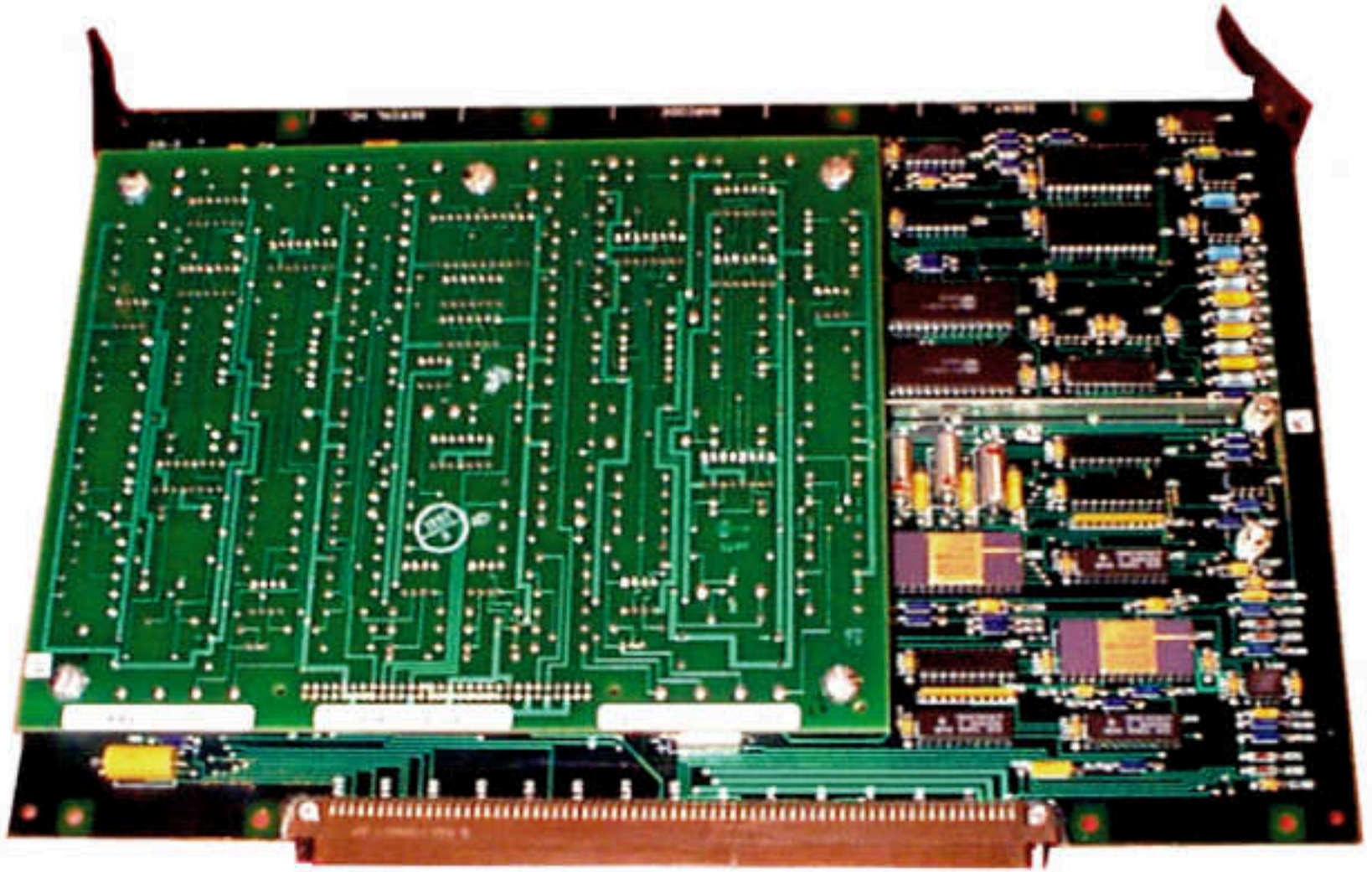
- ☐ The low-pressure switch prevents compressor operation if the refrigerant has been lost or the ambient temperature is too low. Low ambient temperature results in very low system pressure.
- ☐ The mid-range function actuates the engine fan clutch if installed.
- ☐ The high-range pressure function disengages the compressor clutch if system pressure is too high.

The switch functions will automatically reset when system pressure returns to normal.

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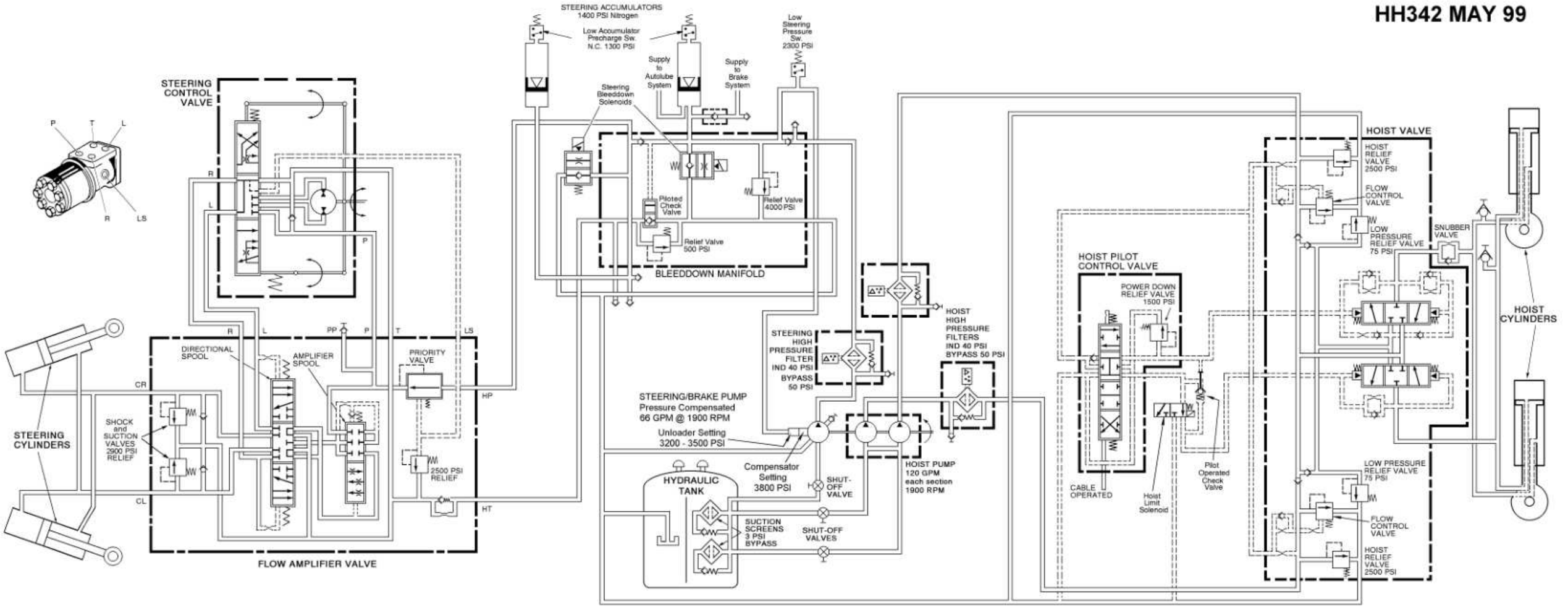
POSSIBLE CAUSES	*SUGGESTED CORRECTIVE ACTION*
TROUBLE: Pressure Gauge Does Not Register Pressure	
No system pressure to the pump motor.	Check hydraulic hose from steering system.
No 24 VDC signal at pump solenoid.	Determine problem in 24 VDC electric system.
Pressure reducing valve set too low.	Refer to "Pressure Control Valve Adjustment".
24V Relay may be defective.	Replace relay.
TROUBLE: Pump Pressure Builds Very Slowly Or Not At All	
No signal at 24V relay.	Check Timer.
Pressure switch may be defective	Replace pressure switch.
Pressure reducing valve may be set too low.	Refer to "Pressure Control Valve Adjustment".
Grease viscosity may be too high for temperature at which pump is operating.	Replace grease with a lower viscosity lubricant.
Pump inlet check or outlet check may have foreign matter trapped causing leakage.	Remove, inspect and clean, if necessary. Inspect sealing surfaces between checks. Replace if rough or pitted.
Lubricant supply line leaks or is broken.	Repair lubricant supply line
Insufficient hydraulic oil supply.	Check oil pressure and flow to motor.
TROUBLE: 24VDC Timer Not Operating	
Timer BAT (-) connection is not on grounded member.	Connect to good ground.
Timer BAT (+) connection not on circuit continuously connected to BAT (+) terminal during operation of vehicle.	Establish direct connection between Timer BAT (+) connection and 24 V BAT (+) terminal.
Loose wire connections at any of the timer terminals.	Secure wire connections.
TROUBLE: Timer Stays Timed Out	
Commutation failure in timer caused by damaged component.	Replace Timer.
Output relay contacts welded shut caused by extended short to ground.	Replace Timer
Solenoid valve connected to LUBE SW terminal of timer instead of terminal marked SOL.	Correct wiring hook-up.

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