Operation & Maintenance Manual

Dump Truck

930E-4SE

Serial Numbers A31035 — A31824

WARNING

Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read this manual before operating or maintaining this machine. This manual should be kept near the machine for reference and periodically reviewed by all personnel who will come into contact with it.

NOTICE

Komatsu has Operation & Maintenance Manuals written in some other languages. If a foreign language manual is necessary, contact your local distributor for availability.

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INTRODUCTION
FOREWORD 1-2
ABOUT THIS MANUAL 1-3
WARNINGS 1-4
California Proposition 65 Warnings 1-4
ALERTS 1-5
TRUCK MODEL ILLUSTRATION 1-6
NON-OEM PARTS IN CRITICAL SYSTEMS 1-7
STANDARD CHARTS AND TABLES
GENERAL INFORMATION 2-2
Effect Of Special Lubricants 2-2
Suggested Sources For Rust Preventive Grease 2-2
STANDARD TIGHTENING TORQUES 2-3
Class 10.9 Capscrews And Class 10 Nuts 2-3
SAE Grade 5 And Grade 8 Capscrews 2-4
SAE Grade 9 Capscrews 2-5
T-Bolt Clamps 2-5
Split Flange Clamps 2-6
Flared Tube And Hose Fittings 2-6
JIC 37° Swivel Nuts 2-7
Pipe Thread Fittings 2-8
O-Ring Boss Fittings 2-9
O-Ring Face Seal Fittings 2-10
CONVERSION MULTIPLIERS 2-11
Metric To English 2-11
English To Metric 2-12
Temperature Conversions 2-13
GENERAL SAFETY
GENERAL SAFETY 3-2
Safety Rules 3-2
Truck Safety Features 3-2
Clothing And Personal Items 3-2
Unauthorized Modification 3-2
Leaving The Operator's Seat 3-2
Mounting And Dismounting 3-2
Fire Extinguishers And First Aid Kits 3-3
Precautions For High Temperature Fluids 3-3
Asbestos Dust Hazard Prevention 3-3
Fire Prevention 3-3
ROPS Precautions 3-3
Preventing Injury From Work Equipment 3-4
Precautions For Optional Attachments 3-4
Precautions When Starting The Machine 3-4
PRECAUTIONS FOR TRUCK OPERATION 3-5
Safety Is Thinking Ahead 3-5
Safety At The Worksite 3-5
Preparing For Operation 3-5
Ventilation For Enclosed Areas 3-5
Mirrors, Windows, And Lights 3-5
Before Starting The Engine 3-5
Seat Belts And Tethers 3-5
Emergency Egress Ladders 3-6
OPERATING THE MACHINE 3-7
General Information 3-7

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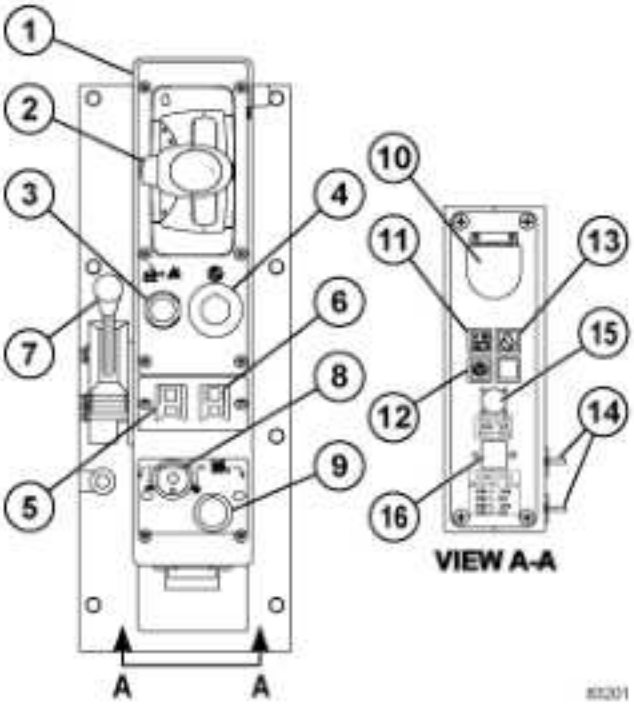
Starting The Engine 3-7
Traveling In The Machine 3-7
Traveling In Reverse 3-7
Traveling On Slopes 3-8
Traveling On Snow 3-8
Traveling Near High Voltage Cables 3-8
Traveling On Loose Ground 3-8
Ensuring Good Visibility 3-8
Avoid Damage To The Dump Body 3-8
Safe Parking Of The Machine 3-9
Loading The Machine 3-9
Dumping The Machine 3-9
Towing The Machine 3-9
EXTERIOR LIGHTING 3-10
Fog Lights 3-10
Headlights 3-10
Brake Lights 3-10
Retard Lights 3-10
Clearance/Turn Signal Lights 3-10
Backup Lights 3-11
Retard Lights 3-11
Brake Lights 3-11
Backup Alarm 3-11
HID Backup Light 3-11
PRECAUTIONS FOR MAINTENANCE 3-12
BEFORE PERFORMING MAINTENANCE 3-12
Securing The Dump Body 3-12
DURING MAINTENANCE 3-13
Warning Tag 3-13
Proper Tools 3-13
Attachments 3-13
Working Under The Machine 3-13
Keeping The Machine Clean 3-13
Adding Fuel Or Oil To The Machine 3-13
Radiator Coolant Level 3-14
Use Of Lighting 3-14
Handling High Pressure Hoses 3-14
Precautions With High Pressure Oil 3-14
Maintenance Near High Temperatures And High Pressures 3-14
Rotating Fan And Belts 3-14
Waste Materials 3-14
Use Of Tie-Off Anchor During Maintenance 3-15
Handling Tires 3-15
Tire Maintenance 3-15
Storing Tires After Removal 3-15
Battery Hazard Prevention 3-16
Jump Starting With Jumper Cables 3-16
Jump Starting With Receptacles 3-17
WHEN REPAIRS ARE NECESSARY 3-18
Observe The Following Precautions 3-18
SPECIAL PRECAUTIONS 3-19
Preliminary Procedures Before Welding Or Performing Maintenance 3-19
Engine Shutdown Procedure Before Welding or Performing Maintenance 3-19
Before Welding On The Machine, Obey The Following Guidelines: 3-19

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Discharging Control Cabinet Capacitors 3-20
WARNING AND CAUTIONS
GENERAL INFORMATION 4-2
PIN PLATE 4-2
GRADE SPEED CHART 4-3
MACHINE SAFETY 4-3
KEY SWITCH 4-5
OIL FILL AND CHECK 4-5
HIGH PRESSURES 4-6
BATTERY AND ENGINE SHUTDOWN 4-9
HIGH VOLTAGE 4-10
WELDING 4-12
LIFTING POINTS 4-13
EMERGENCY DUMPING 4-14
ROPS/FOPS 4-14
TOWING 4-15
LUBRICATION CHART 4-15
OPERATING INSTRUCTIONS
PREPARING FOR OPERATION 5-2
Safety Is Thinking Ahead 5-2
Walk Around Inspection 5-2
RETRACTABLE LADDER SYSTEM (If Equipped) 5-7
General Information 5-7
Ladder System Description 5-7
Ladder System Operation 5-7
In-Cab Control Panel 5-8
Ground Level Control Box 5-10
Emergency Down Valve 5-10
PRE-SHIFT BRAKE TEST 5-11
OPERATION 5-11
Service Brake Test 5-12
Parking Brake Test 5-12
Retard System Test 5-13
Brake Test Exit Criteria 5-13
TRUCK OPERATION 5-14
ENGINE START-UP SAFETY 5-14
After Engine Has Started 5-14
MACHINE OPERATION SAFETY PRECAUTIONS 5-15
Machine Operation On The Haul Road 5-16
Starting On A Grade With A Loaded Truck 5-16
Retarding On A Grade 5-16
Passing 5-17
Loading 5-17
Overload Speed Limit Function 5-18
Dumping 5-18
Lowering The Dump Body (When Dumping On Flat Ground) 5-19
Lowering The Dump Body (When Dumping Over A Berm Or Into A Crusher) 5-19
SUDDEN LOSS OF ENGINE POWER OR LOSS OF DRIVE SYSTEM FUNCTION 5-20
EMERGENCY STEERING SYSTEM 5-20
Operation 5-20
Pre-Operation Testing 5-21
Additional Guidelines 5-22
FUEL DEPLETION 5-22
SAFE PARKING PROCEDURES 5-22

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CENTER CONSOLE D.63-0000051505



1. Center Console
2. Directional Control Lever
3. Override/Fault Reset Switch
4. Engine Stop Switch
5. LH Window Control Switch
6. RH Window Control Switch
7. Hoist Control Lever
8. Retarder Speed Control Dial
9. Retarder Speed Control Switch
10. Data Store Button
11. KOMTRAX Plus Snapshot In Progress Light
12. Link Energized Light (Red)
13. Service Engine Light (Blue)
14. 12V Auxiliary Power Outlets
15. Fire Suppression Control Outlet
16. Communication Radio Outlet

Figure 6-3 CENTER CONSOLE

Directional Control Lever

Directional control lever (2) is mounted on a console to the right of the operator's seat. It is a four position lever that controls the park, reverse, neutral, and forward motion of the truck. Before moving the directional control lever, apply the service brakes to completely stop the truck. Depress the button on the side to release the detent lock, then move the control lever to the desired position. When the control lever is in the center N position, it is in NEUTRAL. When the control lever is in the P position, it is in PARK, and the parking brake will be applied. The parking brake is spring applied and hydraulically released. It is designed to hold the truck stationary when the engine is off and the key switch is turned OFF. The truck must be completely stopped before moving the control lever to PARK, or damage may occur to the park brake. When the key switch is ON, and the control lever is in PARK, the parking brake indicator light in the overhead panel will be illuminated.

NOTE: *The directional control lever must be in PARK to start the engine. DO NOT move the directional control lever to the PARK position at the shovel or dump.*

Select FORWARD drive by moving the control lever to the F position.

Select REVERSE drive by moving the control lever to the R position. DO NOT allow the control lever to travel too far and go into the PARK position when REVERSE is desired.

NOTE: *The truck must be completely stopped before the control lever is moved to a drive position or into PARK. A drive system fault will be recorded if the control lever is placed into the PARK position while the truck is still moving.*

Override/Fault Reset Switch

Override/fault reset switch (3) is spring-loaded to the OFF position. When pushed in and held, this switch may be used for several functions.



1. This switch permits the operator to override the body-up limit switch and move the truck forward when the directional control lever is in FORWARD, the dump body is raised, and the brakes are released.

   Use of the override switch for this purpose is intended for emergency situations only!

2. The push button deactivates the retard pedal function when truck speed is below 5 kph (3 mph).

3. The override switch is also used to reset an electric system fault when indicated by a red warning light. Refer to OVERHEAD STATUS/WARNING INDICATOR, page 6-23 in this section.

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EVERY 250 HOUR LUBRICATION AND MAINTENANCE E.28-0000051633

NOTE: *The 10 hour lubrication and maintenance checks must also be performed at this time. "Lube Key" references are to the lubrication chart.*

EVERY 250 HOUR LUBRICATION AND MAINTENANCE	
Item	**Task**
ENGINE	• Change the engine oil. (Lube Key "A"). • Replace engine oil filters. • Check belt tension and the condition of each accessory belt. Refer to the engine Operation & Maintenance manual for specific adjustment instructions. ***NOTE:*** *If the engine is equipped with the Centinel™ oil system and/or the Eliminator™ filter system, engine oil and filter change intervals are extended beyond 250 hours. Take an engine oil sample for analysis.* ***NOTE:*** *When installing spin-on filter elements, follow the instructions of the filter manufacturer. The tightening instructions are normally printed on the outside of the filter.* ***Do not use a wrench or strap to tighten filter elements.*** Refer to the engine Operation & Maintenance manual for complete specifications regarding engine lube oil specifications.
COOLING SYSTEM	• Check for proper coolant mixture. Add coolant as required. • Change coolant filters. • Check cooling system hoses for damage and signs of deterioration. • Check the torque on the cooling fan mounting capscrews: **237 N·m (175 ft lb)**. Refer to the engine maintenance manual for coolant filter replacement instructions and proper coolant mixture instructions.
FUEL SYSTEM	• Change the fuel filters (fuel separators). Refer to the engine Operation & Maintenance manual for specific filter replacement instructions. • Drain water and sediment from the fuel tank. Refer to FUEL SYSTEM SERVICE, page 7-6 for detailed instructions.
AIR INTAKE PIPING	Check all mounting hardware, joints and connections. Ensure that there are no air leaks and all hardware is properly tightened.
HYDRAULIC SYSTEM	• Add one or two applications of grease to each grease fitting on the pump drive shaft. Non - moly grease only. • Replace filter elements after the initial 250 hours of operation; then at each 500 hours of operation thereafter. Refer to (Lube Key "B"). Refer to HYDRAULIC SYSTEM SERVICE, page 7-2 for detailed instructions.
STEERING LINKAGE	• Check the torque on the pin retaining nuts located on the steering linkage - **1017 N·m (750 ft lb)**.

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MAJOR COMPONENT DESCRIPTION C.3-0000051647

Truck and Engine A.2-0000061081

The 930E-4SE dump truck is an off-highway, rear dump truck with AC electric drive. The gross vehicle weight is 505 611 kg (1,114,670 lbs). The engine is a Komatsu SSDA18V170 rated at 2 611 kW (3,500 HP).

Traction Alternator D.13-0000051645

The diesel engine drives an in-line alternator at engine speed. The alternator produces AC current which is rectified to DC within the main control cabinet.

Cooling air for the control / power group and wheel motors, as well as the alternator itself, is provided by dual fans mounted on the alternator shaft.

Main Control Cabinet A.2-0000060880

Each phase module contains paired positive and negative semiconductor switches referred to as insulated gate bipolar transistors (IGBT). The IGBTs cycle on and off at varying frequencies to create an AC power signal from the DC supply.

The AC power signal produced by each inverter is a variable-voltage, variable-frequency (VVVF) signal. Frequency and voltage are changed to suit the operating conditions.

AC Induction Traction Motorized Wheels C.3-0000051644

The alternator output supplies electrical energy to the two wheel motors attached to the rear axle housing. The motorized wheels use three-phase AC induction motors with full-wave AC power.

The two wheel motors convert electrical energy back to mechanical energy through built-in gear trains within the wheel motor assembly. The direction of the wheel motors is controlled by a forward or reverse hand selector switch located on the center console.

Suspension D.3-0000051643

Hydrair II® suspension cylinders located at each wheel provide a smooth and comfortable ride for the operator and dampens shock loads to the chassis during loading and operation.

Operator's Cab D.16-0000051642

The operator cab has been engineered for operator comfort and to allow for efficient and safe operation of the truck. The cab provides wide visibility, with an integral 4-post ROPS/FOPS structure, and an advanced analog operator environment. It includes a tinted safety-glass windshield and power-operated side windows, a deluxe interior with a fully adjustable seat with lumbar support, a fully adjustable tilt/telescope steering wheel, controls mounted within easy reach of the operator, and an analog instrument panel which provides the operator with all instruments and gauges which are necessary to control and/or monitor the truck's operating systems.

Power Steering D.1-0000051641

The truck is equipped with a full time power steering system which provides positive steering control with minimum operator effort. The system includes nitrogen-charged accumulators which automatically provide emergency power if the steering hydraulic pressure is reduced below an established minimum.

Dynamic Retarding Grid E.13-0000051640

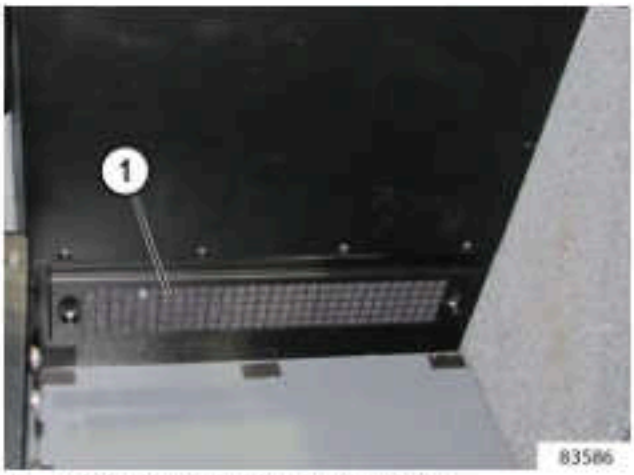
The dynamic retarding grid is used to slow the truck during normal operation or control speed coming down a grade. The dynamic retarding ability of the electric system is controlled by the operator through the activation of the retarder pedal (or by operating a lever on the steering column) in the operator's cab and by setting the speed control. Dynamic Retarding is automatically activated if the truck speed goes to a preset overspeed setting.

Brake System B.10-0000060879

Service brakes at each wheel are oil-cooled multiple disc brakes applied by an all-hydraulic actuation system. Depressing the brake pedal actuates both front and rear brakes after first applying the retarder. All wheel brakes will be applied automatically if the brake system pressure decreases below a preset minimum.

The parking brake is a dry disc type, mounted inboard on each rear wheel motor, and is spring-applied and hydraulically-released with wheel speed application protection (will not apply with truck moving).

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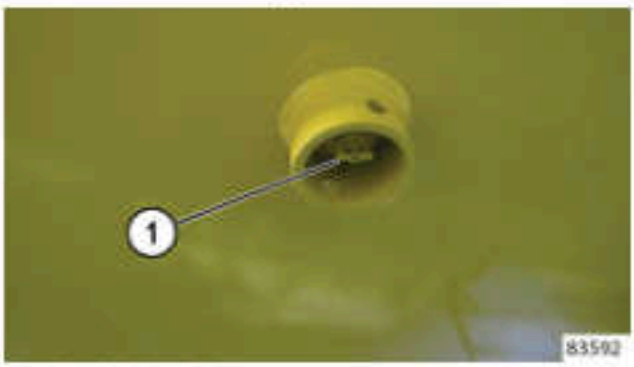
1. HVAC Recirculation Filter Element

Figure 7-7 HVAC RECIRCULATION FILTER LOCATION

1. Clean both filter elements (1, Figure 7-6 CAB AIR FILTER LOCATION, page 7-5 and Figure 7-7 HVAC RECIRCULATION FILTER LOCATION, page 7-6) with mild soap and water.
2. Rinse completely clean and air dry with a maximum of 275 kPa (40 psi).
3. Reinstall the filters.

FUEL SYSTEM SERVICE G.33-0000051601

Fuel Tank Cleaning

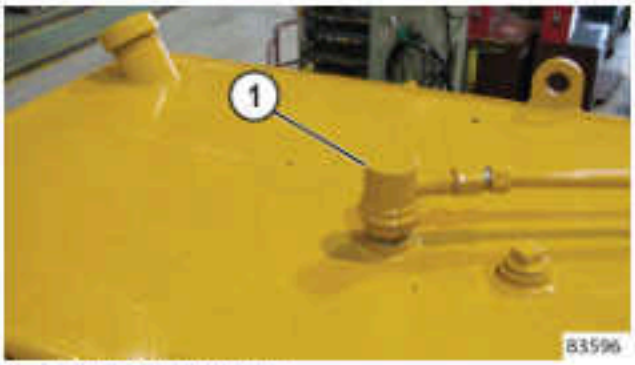


1. Fuel Tank Drain

Figure 7-8 FUEL TANK

Open fuel tank drain (1, Figure 7-8 FUEL TANK, page 7-6) to drain water and sediment from the fuel tank. The fuel tank is provided with a drain and a cleaning port in the side that allows steam or solvent to be utilized in cleaning tanks that have accumulated foreign material.

It is not necessary to remove the tank from the truck for cleaning of sediment, however rust and scale on the walls and baffles may require complete tank removal. Prior to a cleaning procedure of this type, all vents, fuel gauge, and hose connections should be removed and temporarily sealed. After all scale, rust, and foreign material has been removed, the temporary plugs can be removed. A small amount of light oil must be sprayed into the tank to prevent rust if the tank is to remain out of service. All openings should be sealed for rust prevention.

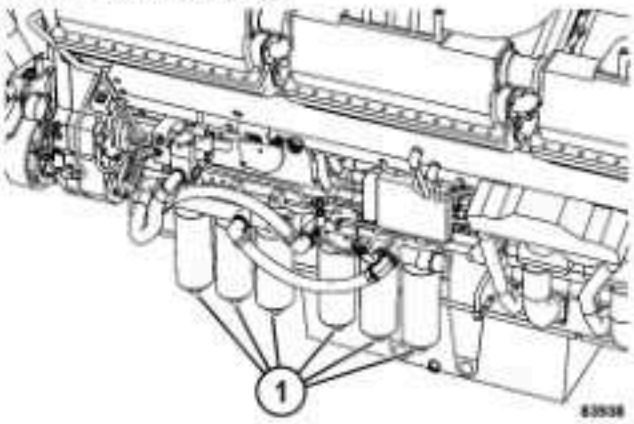


1. Fuel Tank Breather

Figure 7-9 FUEL TANK BREATHER

Remove breather (1, Figure 7-9 FUEL TANK BREATHER, page 7-6) and clean in solvent. Dry with pressurized air and reinstall.

Fuel Filter Service



1. Water Drain Valves

Figure 7-10 WATER SEPARATOR DRAIN

Open water drain valves (1, Figure 7-10 WATER SEPARATOR DRAIN, page 7-6) to remove water from the fuel/water separators daily.

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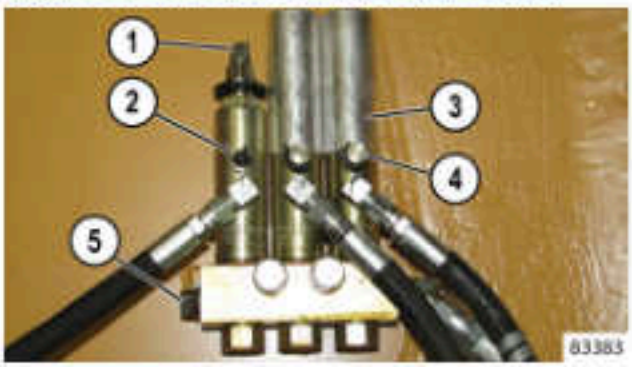
Priming The Automatic Lubrication System

The system must be full of grease and free of air pockets to function properly. After maintenance, if primary or secondary lubrication lines were replaced, it will be necessary to prime the system to eject all entrapped air.



1. Vent Valve
2. Main Supply Line

Figure 5-18 AUTO LUBE MAIN SUPPLY LINE



1. Injector Indicator
2. Injector Grease Zerk
3. Injector Cover
4. Injector Grease Zerk Cap
5. Injector Manifold Plug

Figure 5-19 INJECTOR MANIFOLD

To prime the main supply lines, perform the following:

1. Fill lube reservoir with lubricant, if necessary.
2. Remove injector manifold plug (5, Figure 5-19 INJECTOR MANIFOLD, page 5-50) from injector manifold. Always start with the injector manifold closest to the pump. The last grease line to be purged should be the main grease line to the rear axle (longest grease line).
3. Disconnect main supply line (2, Figure 5-18 AUTO LUBE MAIN SUPPLY LINE, page 5-50) from vent valve (1). Connect an external grease supply to main supply line (2).
4. Pump grease in main supply line (2) until grease appears at the injector manifold plug.
5. Re-install the injector manifold plug. Repeat for remaining injector groups.

After all main supply lines are purged of air, the injector circuits must now be primed.

To prime the secondary supply lines, perform the following:

1. If necessary, disconnect an injector grease line from the component that particular injector supplies grease to.
2. Remove injector grease zerk cap (4) from each injector and connect an external grease supply to injector grease zerk (2) on the injector.
3. Pump grease into the injector until grease appears at the far end of the individual grease line or the joint being greased.
4. Reconnect injector grease line to the component, remove the external grease supply, and reinstall injector grease zerk cap.
5. Repeat steps 1 through 4 until all secondary supply lines have been primed.
6. After all grease lines are primed, use the override switch to cycle the automatic lubrication pump a few times to lube the components.

PREVENTIVE MAINTENANCE PROCEDURES E.6-0000051465

Use the following maintenance procedures to ensure proper system operation.

Daily Lubrication System Inspection

1. Check the grease reservoir level after each shift of operation. Grease usage should be consistent from day-to-day operations. Lack of lubricant usage would indicate an inoperative system. Excessive usage would indicate a broken supply line.
2. Check filter bypass indicator when filling reservoir. Replace element if bypassing.
3. Check all grease hoses from the injectors to the lubrication points.
   a. Repair or replace all damaged feed line hoses.
   b. Ensure that all air is purged and all new feed line hoses are filled with grease before returning the truck to service.

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