CEAM011900

Operation & Maintenance Manual

930E-2

DUMP TRUCK

SERIAL NUMBERS A30298, A30299

KOMATSU®

MidWestTech | Komatsu 930E-2 Dump Truck Operation & Maintenance Manual | Publicatio... Order the manual at mid-west-tech.com >

TABLE OF CONTENTS

SUBJECT - SECTION / PAGE

FOREWARD 10-1
"Alerts" Page - a description of DANGER, WARNING, and CAUTION symbols. 10-2
TABLE OF CONTENTS. 10-3
Truck Model Illustration 10-10
ABOUT THIS MANUAL 10-11

STANDARD CHARTS AND TABLES 12-1

SAFETY 20-1
Safety Rules 20-1
Safety Features 20-1
Clothing And Personal Items 20-1
Unauthorized Modification 20-1
Leaving The Operator's Seat 20-2
Mounting And Dismounting 20-2
Fire Prevention For Fuel And Oil 20-2
Precautions When Handling At High Temperatures 20-3
Asbestos Dust Hazard Prevention 20-3
Prevention Of Injury By Work Equipment 20-3
Fire Extinguisher And First Aid Kit 20-3
Precautions When Using ROPS 20-4
Precautions For Attachments 20-4
PRECAUTIONS DURING OPERATION 20-5
Safety Is Thinking Ahead 20-5
Safety At The Worksite 20-5
Fire Prevention 20-5
Preparing For Operation 20-5
Ventilation In Enclosed Areas 20-5
In Operator's Cab - Before Starting The Engine 20-6
Mirrors, Windows, And Lights 20-6
OPERATING THE MACHINE 20-6
When Starting The Engine 20-6
Truck Operation - General 20-6
Check When Traveling In Reverse 20-7
Traveling 20-7
Traveling On Slopes 20-8
Ensure Good Visibility 20-8
Operate Carefully On Snow 20-8
Avoid Damage To Dump Body 20-8
Driving Near High Voltage Cables 20-8

MidWestTech | Komatsu 930E-2 Dump Truck Operation & Maintenance Manual | Publicatio... Order the manual at mid-west-tech.com >

TABLE OF CONTENTS

SUBJECT - SECTION / PAGE

When Dumping . . . 20-9
Working On Loose Ground . . . 20-9
When Loading . . . 20-9
Parking The Machine . . . 20-9
TOWING . . . 20-9
WORKING NEAR BATTERIES . . . 20-10
Battery Hazard Prevention . . . 20-10
Starting With Booster Cables . . . 20-10
PRECAUTIONS FOR MAINTENANCE . . . 20-11
BEFORE PERFORMING MAINTENANCE . . . 20-11
Warning Tag . . . 20-11
Proper Tools . . . 20-11
Stopping The Engine Before Service . . . 20-11
Securing The Dump Body . . . 20-11
DURING MAINTENANCE . . . 20-12
Personnel . . . 20-12
Attachments . . . 20-12
Working Under The Machine . . . 20-12
Keep The Machine Clean . . . 20-12
Rules To Follow When Adding Fuel Or Oil . . . 20-12
Radiator Water Level . . . 20-13
Use Of Lighting . . . 20-13
Precautions With The Battery . . . 20-13
Handling High Pressure Hoses . . . 20-13
Precautions With High Pressure Oil . . . 20-13
Precautions When Performing Maintenance Near High Temperature Or High Pressure . . . 20-14
Rotating Fan And Belts . . . 20-14
Waste Materials . . . 20-14
TIRES . . . 20-15
Handling Tires . . . 20-15
Storing Tires After Removal . . . 20-15
ADDITIONAL JOB SITE RULES . . . 20-16
WHEN REPAIRS ARE NECESSARY . . . 20-17
SPECIAL PRECAUTIONS FOR WORKING ON A 930E TRUCK . . . 20-18
Preliminary Procedures Before Welding or Performing Maintenance . . . 20-18
Normal Engine Shutdown Procedure . . . 20-18
Engine Shutdown Procedure Before Welding or Performing Maintenance . . . 20-19

WARNINGS AND CAUTIONS . . . 22-1

MidWestTech | Komatsu 930E-2 Dump Truck Operation & Maintenance Manual | Publicatio...
Order the manual at mid-west-tech.com >

TABLE OF CONTENTS

SUBJECT ---------- SECTION / PAGE

OPERATING INSTRUCTIONS 30-1
PREPARING FOR OPERATION 30-1
Safety Is Thinking Ahead 30-1
At The Truck - Ground Level Walk Around Inspection 30-1
ENGINE START-UP SAFETY PRACTICES 30-4
Cold Weather Starting 30-5
AFTER ENGINE HAS STARTED 30-5
MACHINE OPERATION SAFETY PRECAUTIONS 30-6
MACHINE OPERATION ON THE HAUL ROAD 30-6
STARTING ON A GRADE WITH A LOADED TRUCK 30-7
PASSING 30-7
LOADING 30-7
DUMPING 30-8
Raising The Dump Body 30-8
Lowering The Dump Body 30-8
TOWING 30-10
SAFE PARKING PROCEDURES 30-10
NORMAL ENGINE SHUTDOWN PROCEDURE 30-10
DELAYED ENGINE SHUTDOWN PROCEDURE 30-11
SUDDEN LOSS OF ENGINE POWER 30-12
RESERVE ENGINE OIL SYSTEM (Optional) 30-13

OPERATOR CAB AND CONTROLS 32-1
STEERING WHEEL AND CONTROLS 32-2
Horn Button 32-2
Telescope Lock Ring 32-2
Tilt Wheel Lever 32-2
Turn Signal/Headlight Dimmer 32-2
DYNAMIC RETARDING 32-2
Retarder Control Lever 32-3
Dynamic Retarder/Service Brake Pedal 32-3
Accelerator (Throttle) Pedal 32-3
Starting on a Grade With a Loaded Truck 32-3
GRADE/SPEED RETARD CHART 32-4
INSTRUMENT PANEL 32-5
OVERHEAD PANEL AND DISPLAYS 32-5
CENTER CONSOLE 32-6
F-N-R Selector Switch 32-6
Hoist Control Lever 32-7
Raising The Dump Body 32-7
Lowering The Dump Body: 32-7

MidWestTech | Komatsu 930E-2 Dump Truck Operation & Maintenance Manual | Publicatio... Order the manual at mid-west-tech.com >

PANEL GAUGES, INDICATORS, AND CONTROLS (Figure 32-7)

Key Switch

Key switch (1, Figure 32-7) is a three position (OFF, RUN, START) switch.



Starting

When the switch is rotated one position clockwise, it is in the RUN position and all electrical circuits (except START are activated.

1. With selector switch in NEUTRAL, rotate keyswitch fully clockwise to START position, and hold this position until engine starts. START position is spring-loaded to return to RUN when key is released.
2. After engine has started, place rest switch in OFF position (de-activate the "rest" mode of operation). Refer to discussion of rest switch (26, Figure 32-7).

Engine Shutdown Switch with 5 Minute Idle Timer Delay



The timer delayed, engine shutdown switch (2, Figure 32-7) is a 3-position, rocker type switch with OFF, ON and MOMENTARY positions. When used, the engine is allowed to idle for approximately 5 minutes before actual shutdown occurs. The delayed shutdown feature allows the engine to cool down slowly, reducing internal temperatures as coolant is circulated through the engine.

Operation

1. Stop the truck, and reduce engine rpm to low idle. Place the selector switch in NEUTRAL and apply the parking brake switch. Place the rest switch in ON position (put drive system in "rest" mode of operation). Refer to the discussion of the rest switch later in this chapter.
2. Press the top of the engine shutdown switch to select the ON (center) position. Press the top of the switch again to activate the timer delay (MOMENTARY position). Release the switch and allow it to return to the ON position.

   When the engine shutdown timer has been activated, the timer delay indicator light (C4, Figure 32-8) in the overhead status panel will illuminate to indicate that the shutdown timing sequence has started. The engine will continue to idle for approximately 5 minutes to allow for proper engine cool-down before stopping.
3. Turn the keyswitch counterclockwise to the OFF position to cause the engine to shutdown when the timing sequence is complete. When the engine stops, this will activate the hydraulic bleeddown timer and turn off the 24 VDC electric circuits controlled by the keyswitch.

NOTE: To cancel the 5 minute idle timer sequence, press the timer delay shutdown switch to the OFF (lower) position. If the keyswitch is in the OFF position, the engine will stop. If the keyswitch is in the ON position, the engine will continue to run.

4. With keyswitch OFF, and engine stopped, wait at least 90 seconds. Ensure the steering circuit is completely bled down by turning the steering wheel back and forth several times. No front wheel movement will occur when hydraulic pressure is relieved.
5. Verify all the link voltage lights turn off within 5 minutes after the engine is shut down. (One is located in the cab behind the operator seat, two others are located in the access panel at the left front corner of the electrical cabinet. If the lights remain on, refer to Section E in the service manual for additional instructions and information.
6. Close and lock all windows, remove key from keyswitch and lock cab to prevent possible unauthorized truck operation. Dismount the truck properly.

MidWestTech | Komatsu 930E-2 Dump Truck Operation & Maintenance Manual | Publicatio... Order the manual at mid-west-tech.com >

1000 HOURS LUBRICATION AND MAINTENANCE CHECKS

Maintenance for every 10, 250, & 500 hour Lubrication and Maintenance Checks should be performed at this time.

NOTE: "Lube Key" references are to the Lubrication Chart.

Truck Serial Number_____ **Site Unit Number**_____ **Date**_____
Hourmeter_____ **Name of Service Technician**_____

	TASK	COMMENTS	CHECKED	INITIALS
1.	HYDRAULIC TANK - Drain the hydraulic tank and clean the inlet strainer. Refill the tank with oil; approximate capacity 250 gal. (947 l). Use Lube Key "B".			
2.	RADIATOR - Clean the cooling system with a quality cleaning compound. Flush with water. Refill the system with anti-freeze and water solution. Check the Cooling System Recommendation Chart in this section for the correct mixture. Refer to the Cummin's Operation and Maintenance Manual for the correct additive mixture.			
3.	FUEL TANK - Remove the breather and clean in solvent. Dry with pressurized air and reinstall.			
4.	OPERATOR'S SEAT - Apply grease to the slide rails. Lube Key "D".			
5.	AUTOMATIC BRAKE APPLICATION - Ensure the brakes are automatically applied when brake pressure decreases below the specified limit. Refer to Section J, Brake Check-out Procedure.			
6.	AUXILIARY BLOWER - Apply a few applications of grease to the auxiliary blower bearings. Two grease zerks (1, Figure 40-9) are located on blower (2).			

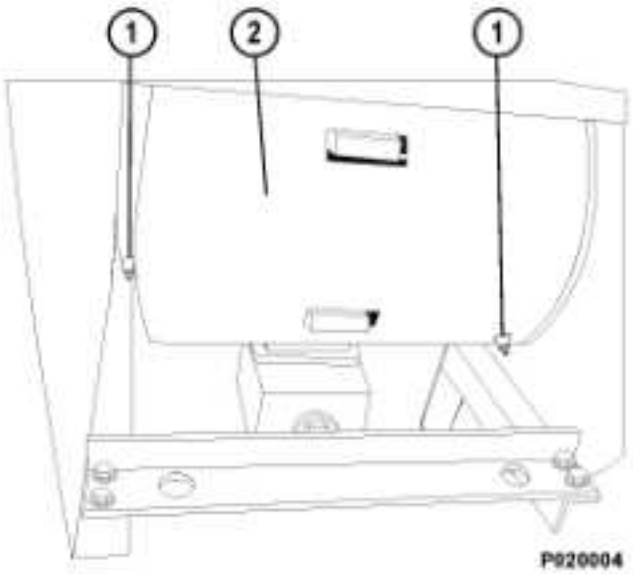


FIGURE 40-8. AUXILIARY BLOWER

1. Grease Zerk 2. Auxiliary Blower

 Order the manual at mid-west-tech.com >

INJECTORS (SL-1 Series "H"))

Injector Specifications

- Each lube injector services only one grease point. In case of pump malfunction, each injector is equipped with a covered grease fitting to allow the use of external lubricating equipment.
- Injector output is adjustable:
  Maximum output = 0.08 in^3 (1.31 cc).
  Minimum output = 0.008 in^3 (0.13 cc).
- Operating Pressure:
  Minimum - 1850 psi (12 755 kPa)
  Maximum - 3500 psi (24 133 kPa)
  Recommended - 2500 psi (17 238 kPa)
  Maximum Vent Pressure - (Recharge)
  600 psi (4 137 kPa)

Injector Adjustment

The injectors may be adjusted to supply from 0.008 in^3 to 0.08 in^3 (0.13 cc to 1.31 cc) of lubricant per injection cycle. The injector piston travel distance determines the amount of lubricant supplied. This travel is in turn controlled by an adjusting screw in the top of the injector housing.

Turn the adjusting screw (1, Figure 42-7) counterclockwise to increase lubricant amount delivered and clockwise to decrease the lubricant amount.

When the injector is not pressurized, maximum injector delivery volume is attained by turning the adjusting screw (1) fully counterclockwise until the indicating pin (8) just touches the adjusting screw. At the maximum delivery point, about 0.38 inch (9.7 mm) adjusting screw threads should be showing. Decrease the delivered lubricant amount by turning the adjusting screw clockwise to limit injector piston travel. If only half the lubricant is needed, turn the adjusting screw to the point where about 0.19 inch (4.8 mm) threads are showing. The injector will be set at minimum delivery point with about 0.009 inch (0.22 mm) thread showing.

NOTE: The above information concerns adjustment of injector delivery volume. The timer adjustment should also be changed, if overall lubricant delivery is too little or too much. Injector output should NOT be adjusted to less than one-fourth capacity.

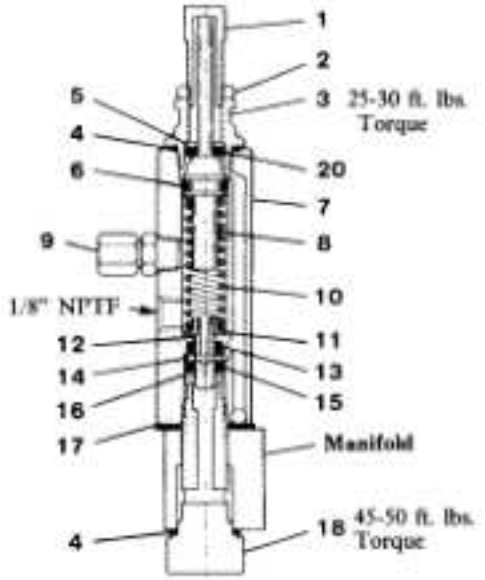


FIGURE 42-7. TYPE SL-1 INJECTOR

1. Adjusting Screw
2. Locknut
3. Piston Stop Plug
4. Gasket
5. Washer
6. Vito O-Ring
7. Injector Body Assy.
8. Piston Assembly
9. Fitting Assembly
10. Plunger Spring
11. Spring Seat
12. Plunger
13. Viton Packing
14. Inlet Disc
15. Viton Packing
16. Washer
17. Gasket
18. Adapter Bolt
19. Adapter
20. Viton Packing

NOTE: Piston assembly (8) has a visible indicator pin at the top of the assembly to verify the injector operation.

MidWestTech | Komatsu 930E-2 Dump Truck Operation & Maintenance Manual | Publicatio... Order the manual at mid-west-tech.com >

PLMIII SYSTEM CONFIGURATION

Starting Communications

The PDM software allows users to download and configure the system.



Before connecting to the payload meter, select "Change Program Options" and confirm that the program has selected the correct laptop serial port. Most laptops use Comm 1 for serial communications. The units displayed for reports and graphs by the PC software can be set on this form. Click "Done" to return to the main menu.



From the main menu, click the "Connect to Payload Meter" button. The PC will try to connect to the payload meter and request basic information from the system. In the event of communications trouble, the PC will try 3 times to connect before "timing-out". This may take several seconds.

Displayed Payload Units



Three options are available for the display of units in the PC software, reports, and graphs:

Short Tons: Payload is displayed in short tons, distances and speeds will be displayed in Miles

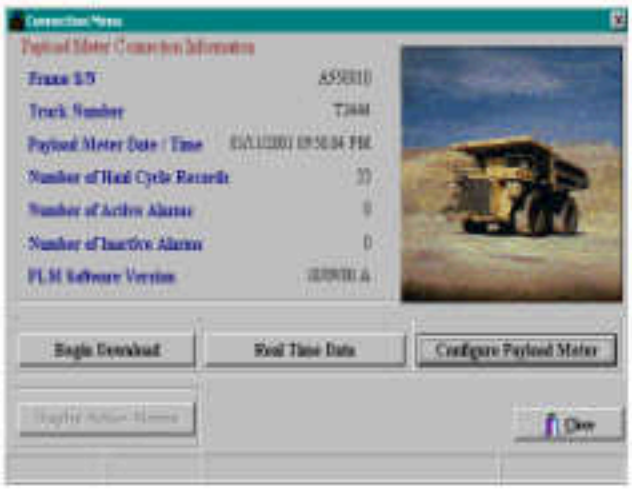
Metric Tons: Payload is displayed in metric tons, distances and speeds are displayed in Kilometers

Long Tons: Payload is displayed in long tons, distances and speeds are displayed in Miles

Time Units

Minutes and Seconds Example:
Five minutes and thirty-two seconds = 5:32
Decimal Minutes Example:
Five minutes and thirty-two seconds = 5.53

Connection Menu



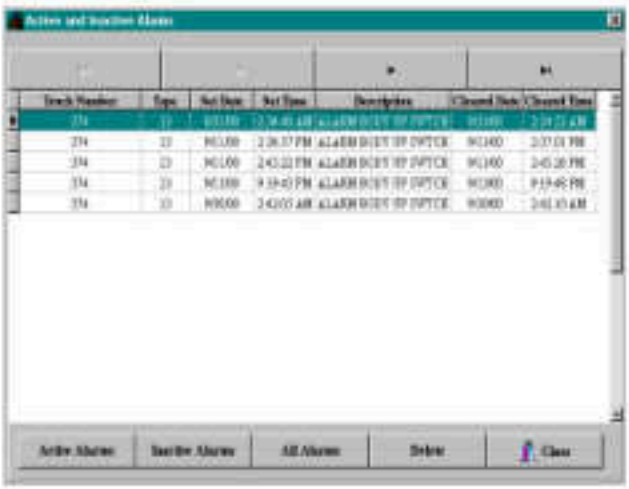
The connection screen displays basic system information to the user.

- Frame S/N should agree with the truck serial number from the serial plate located on the truck frame.
- Truck Number is an ID number assigned to the truck by the mine.
- The Payload Meter Date / Time values come from the payload meter at the moment of connection.
- Number of Haul Cycle Records is the number of haul cycles records stored in memory and available for download.
- Number of Active Alarms shows how many alarms are currently active in the system at the time of connection. If there are active alarms, the "Display Active Alarms" button is available.
- Number of Inactive Alarms shows how many alarms have been recorded in memory and are available for download.
- PLM Software Version displays the current version of software in the payload meter.

MidWestTech | Komatsu 930E-2 Dump Truck Operation & Maintenance Manual | Publicatio... Order the manual at mid-west-tech.com >

Viewing Alarms

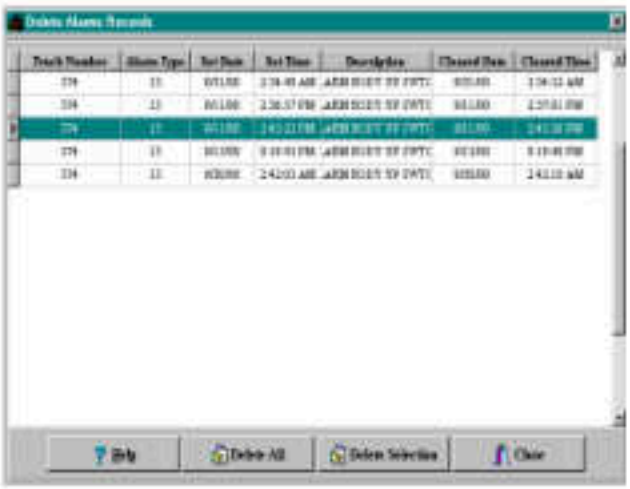
From the Payload Summary screen, click the "Alarms" button to display the alarm screen. The alarms are sorted by the query settings from the Payload Summary screen. Alarms can be displayed as Active or Inactive.



Deleting Alarm Records

To delete alarm records from the main database, press the "Delete" button at the bottom of the "Alarm Display" screen. The program will display a summary of the alarms from the query. To delete an alarm, select one at a time and press the "Delete" button. It is recommended that the query data be exported to a ".zip" file for archival purposes before deletion. Multiple records may be selected by holding down the Shift key. Pressing the "Delete All" button will select all the alarms from the current query and delete them.

NOTE: There is no recovery for alarms that have been deleted from the main database. It is highly recommended that all records be exported and archived in a compressed file format for future reference before being deleted.



Order the manual at mid-west-tech.com >