CEAM014001

Operation & Maintenance Manual

930E-3SE

DUMP TRUCK

SERIAL NUMBERS A30171, A30318, A30319, A30322

KOMATSU®

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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
GENERAL SAFETY 20-1
Safety Rules 20-1
Truck Safety Features 20-1
Clothing And Personal Items 20-1
Unauthorized Modification 20-1
Leaving The Operator's Seat 20-1
Mounting And Dismounting 20-1
Fire Extinguishers And First Aid Kits 20-2
Precautions For High Temperature Fluids 20-2
Asbestos Dust Hazard Prevention 20-2
Fire Prevention For Fuel And Oil 20-2
ROPS Precautions 20-3
Preventing Injury From Work Equipment 20-3
Precautions For Optional Attachments 20-3
Precautions When Starting The Machine 20-3
PRECAUTIONS FOR TRUCK OPERATION 20-4
Safety Is Thinking Ahead 20-4
Safety At The Worksite 20-4
Fire Prevention 20-4
Preparing For Operation 20-4
Ventilation For Enclosed Areas 20-4
Mirrors, Windows, And Lights 20-4
In The Operator's Cab - Before Starting The Engine 20-5
OPERATING THE MACHINE 20-5
Starting The Engine 20-5
Truck Operation - General 20-5
Traveling In The Truck 20-6
Precautions When Traveling In Reverse 20-6
Traveling On Slopes 20-6
Ensuring Good Visibility 20-7
Operating On Snow 20-7
Avoid Damage To The Dump Body 20-7
Driving Near High Voltage Cables 20-7

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TABLE OF CONTENTS

SUBJECT . . . . . **SECTION / PAGE**
When Loading The Truck 20-7
When Dumping 20-7
Working On Loose Ground 20-7
Parking The Machine 20-8
TOWING 20-8
WORKING NEAR BATTERIES 20-8
Jump Starting With Booster Cables 20-8
PRECAUTIONS FOR MAINTENANCE 20-9
BEFORE PERFORMING MAINTENANCE 20-9
Stopping The Engine Before Service 20-9
Warning Tag 20-9
Proper Tools 20-9
Securing The Dump Body 20-9
DURING MAINTENANCE 20-10
Personnel 20-10
Attachments 20-10
Working Under The Machine 20-10
Keeping The Machine Clean 20-10
Rules To Follow When Adding Fuel Or Oil 20-10
Radiator Coolant Level 20-10
Use Of Lighting 20-10
Precautions With The Battery 20-11
Handling High Pressure Hoses 20-11
Precautions With High Pressure Oil 20-11
Maintenance Near High Temperatures And High Pressures 20-11
Rotating Fan And Belts 20-11
Waste Materials 20-11
TIRES 20-12
Handling Tires 20-12
Storing Tires After Removal 20-12
ADDITIONAL JOB SITE RULES 20-13
WHEN REPAIRS ARE NECESSARY 20-14
SPECIAL PRECAUTIONS FOR WORKING ON A 930E TRUCK 20-15
Preliminary Procedures before Welding or Performing Maintenance 20-15
Normal Engine Shutdown Procedure 20-15
Engine Shutdown Procedure before Welding or Performing Maintenance 20-15
WARNINGS AND CAUTIONS 22-1

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TABLE OF CONTENTS

SUBJECT . . . . . .SECTION / PAGE

TRUCK OPERATION 30-1

PREPARING FOR OPERATION 30-1
Safety Is Thinking Ahead 30-1
WALK AROUND INSPECTION 30-1
ENGINE START-UP SAFETY PRACTICES 30-5
AFTER STARTING THE ENGINE 30-6
Additional Guidelines 30-6
MACHINE OPERATION SAFETY PRECAUTIONS 30-6
MACHINE OPERATION ON THE HAUL ROAD 30-7
STARTING ON A GRADE WITH A LOADED TRUCK 30-8
PASSING 30-8
LOADING 30-8
DUMPING 30-8
Raising The Dump Body 30-8
Lowering The Dump Body 30-9
TOWING 30-10
SAFE PARKING PROCEDURES 30-11
NORMAL ENGINE SHUTDOWN PROCEDURE 30-11
DELAYED ENGINE SHUTDOWN PROCEDURE 30-11
SUDDEN LOSS OF ENGINE POWER 30-12
DISABLED TRUCK DUMPING PROCEDURE 30-13
Hookup 30-13
Raising the Body 30-13
Lowering the Body 30-13
RESERVE ENGINE OIL SYSTEM (Optional) 30-14

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

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STANDARD ASSEMBLY TORQUES For 12-Point, Grade 9 Capscrews (SAE)

The following specifications apply to required assembly torques for all 12-point, Grade 9 (170,000 psi minimum tensile) capscrews.

- Capscrew threads and seats shall be lubricated when assembled.

NOTE: Unless the instructions specifically recommend otherwise, these standard torque values are to be used with simple lithium base chassis grease (multi-purpose EP NLGI) or a rust preventive grease (see list, this page) on the threads.

- Torques are calculated to give a clamping force of approximately 75% of proof load.
- The maximum torque tolerance shall be ±10% of the torque value shown.

TABLE II. STANDARD ASSEMBLY TORQUE for 12-Point, Grade 9 Capscrews

CAPSCREW SIZE*	TORQUE ft. lbs.	TORQUE N·m	TORQUE kg·m
0.250 - 20	12	16	1.7
0.312 - 18	24	33	3.3
0.375 - 16	42	57	5.8
0.438 -14	70	95	9.7
0.500 -13	105	142	14.5
0.562 - 12	150	203	20.7
0.625 - 11	205	278	28.3
0.750 - 10	360	488	49.7
0.875 - 9	575	780	79.4
1.000 - 8	860	1166	119
1.000 - 12	915	1240	126
1.125 - 7	1230	1670	170
1.125 - 12	1330	1800	184
1.250 - 7	1715	2325	237
1.250 - 12	1840	2495	254
1.375 - 6	2270	3080	313
1.375 - 12	2475	3355	342
1.500 - 6	2980	4040	411
1.500 - 12	3225	4375	445

* Shank Diameter (in.) - Threads per inch

This table represents standard values only. Do not use these values to replace torque values which are specified in assembly instructions.

STANDARD ASSEMBLY TORQUES For Class 10.9 Capscrews & Class 10 Nuts

The following specifications apply to required assembly torques for all metric Class 10.9 finished hexagon head capscrews and Class 10 nuts.

- Capscrew threads and seats shall not be lubricated when assembled. These specifications are based on all capscrews, nuts, and hardened washers being phosphate and oil coated.

NOTE: If zinc-plated hardware is used, each piece must be lubricated with simple lithium base chassis grease (multi-purpose EP NLGI) or a rust preventive grease (see list, this page) to achieve the same clamping forces provided below.

- Torques are calculated to give a clamping force of approximately 75% of proof load.
- The maximum torque tolerance shall be within ±10% of the torque value shown.

TABLE III. STANDARD ASSEMBLY TORQUE for Metric Class 10.9 Capscrews & Class 10 Nuts

CAPSCREW SIZE*	TORQUE N·m	TORQUE ft.lbs.	TORQUE kg·m
M6 x1	12	9	1.22
M8 x 1.25	30	22	3.06
M10 x 1.5	55	40	5.61
M12 x 1.75	95	70	9.69
M14 x 2	155	114	15.81
M16 x 2	240	177	24.48
M20 x 2.25	465	343	47.43
M24 x 3	800	590	81.6
M30 x 3.5	1600	1180	163.2
M36 x 4	2750	2028	280.5

* Shank Diameter (mm) - Threads per millimeter

This table represents standard values only. Do not use these values to replace torque values which are specified in assembly instructions.

Suggested* Sources for Rust Preventive Grease:

- AMERICAN ANTI-RUST GREASE #3-X from Standard Oil Company (also American Oil Co.)
- GULF NORUST #3 from Gulf Oil Company.
- MOBILARMA 355, Product No. 66705 from Mobil Oil Corporation.
- RUST BAN 326 from Humble Oil Company.
- RUSTOLENE B GREASE from Sinclair Oil Co.
- RUST PREVENTIVE GREASE - CODE 312 from the Southwest Grease and Oil Company.

NOTE: This list represents the current engineering approved sources for use in Komatsu manufacture. It is not exclusive. Other products may meet the same specifications of this list.

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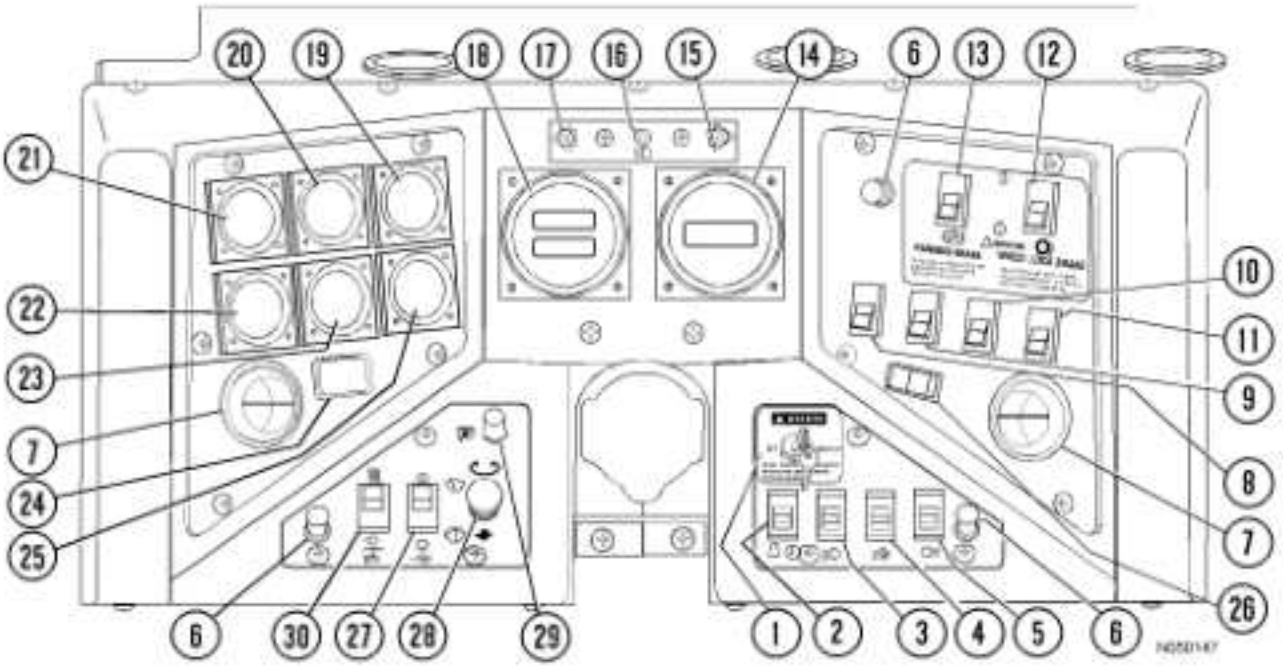


FIGURE 32-7. PANEL GAUGES, INDICATORS, AND CONTROLS

1. Keyswitch
2. Engine Shutdown Switch with Timer Delay
3. Fog Light Switch (N./O.)
4. Ladder Light Switch (3 - Way)
5. Backup Light Switch (N./O.)
6. Panel Illumination Light(s)
7. Vent(s) - Cab Air Conditioner/Heater
8. Spare
9. Rotating Beacon Light Switch (N./O.) (Optional)
10. Heated Mirror Switch (N./O.) (Optional)
11. Spare
12. Wheel Brake Lock Switch (N./O.)
13. Parking Brake Switch (N./O.)
14. Digital Tachometer
15. Right Turn Signal Indicator Light
16. High Beam Headlight Indicator Light
17. Left Turn Signal Indicator Light
18. Digital Speedometer / Payload Meter
19. Voltmeter Gauge
20. Engine Oil Pressure Gauge
21. Engine Water Temperature Gauge
22. Fuel Gauge
23. AC Drive System Temperature
24. Engine Hour Meter
25. Hydraulic/Brake Oil Temperature
26. AC Rest Switch
27. Headlights Switch (N./O.)
28. Wiper / Washer Switch
29. Panel Illumination Lights Dimmer Rheostat
30. Payload Meter Switch

WIRE NUMBERS

1. 712K/21S/11KS
2. 11KS/11TD/11R
3. 11L/48F
4. 11L/48A/48B
5. 712K/47S/47L/710
6. 49/710
7. N/A
8. 712E/28E
9. 11L/11RB
10. 712E/69M/SPR56/SPR57
11. 71P/79M/79H/72F
12. 712BL/52B/39H/710/39HA/7PB
13. 7PB/52C/21PB/21A/52BPO
14. 41TS/74X/74Z/710
15. 45R/710
16. 41H/710
17. 45L/710
18. 77E/77F/710/712PL/35L4/35L2
19. 712D/710/49
20. 712D/31PS/710/49
21. 712D/31TS/710/49
22. 712D/38G/710/49
23. 15V/72MT/49/710
24. 11L/36
25. 15V/52BT/710/49
26. 710/72RQ/71P
27. 11D/41L/41TS
28. High 63H / Low 63L / 710/ Park 63P /712 /Washer 63W /63
29. 49/41TS
30. 35L11/35L12

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500 HOUR LUBRICATION AND MAINTENANCE CHECKS

Maintenance requirements for every 10 & 250 hour Lubrication and Maintenance Checks should also be carried out 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.	FINAL DRIVE CASE BREATHERS - Remove the breather elements for the motorized wheels. Clean or replace the elements.			
2.	HYDRAULIC SYSTEM FILTERS - Replace the tank breathers and high pressure filter elements. Check the oil level. Add oil as necessary. Lube Key "B".			
3.	HYDRAIR® SUSPENSION - Check for proper piston extension (front and rear).			
4.	THROTTLE AND BRAKE PEDAL - Lubricate the treadle roller and hinge pins with lubricating oil. Lift the boot from the mounting plate and apply a few drops of lubricating oil between the mounting plate and the plunger.			
5.	HOIST ACTUATOR LINKAGE - Check operation. Clean, lubricate, and adjust as necessary.			
6.	PARKING BRAKE - Refer to Section J, Parking Brake Maintenance. Perform the recommended inspections.			
7.	RESERVE ENGINE OIL SYSTEM (OPTIONAL) a. Check electrical system connections for tightness, corrosion and physical damage. Check the battery, oil pressure switch, junction boxes, remote control fill box and the circuit breakers. b. Examine all electrical cables over their entire length for possible damage. c. Examine all hoses, including those on the reserve tank and the ones leading to and from the engine. Check for leaks, cracks or other damage. Check all fittings for tightness, leakage or damage.			
8.	Check all steering and brake system accumulator precharge pressures. Refer to shop manual for details.			
9.	WHEEL MOTOR OIL - Change or filter wheel motor gear oil. The oil must be filtered/changed prior to 500 hours if oil analysis indicates contaminated oil.			
10.	VHMS DATA DOWNLOAD - Using a laptop PC with the *VHMS Technical Analysis Tool Box* program, perform a data download from the VHMS controller. Send the data to WebCARE using the FTP feature. Refer to Section D in the applicable shop manual for more detailed instructions.			

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PLM III SYSTEM CONFIGURATION

Starting Communications

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



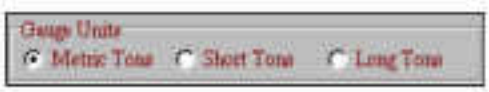
Before connecting to the payload meter, select "Change Program Options" and confirm that the program has selected the correct laptop serial port. Most laptops use Comm 1 for serial communications. The units displayed for reports and graphs by the PC software can be set on this form. Click "Done" to return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

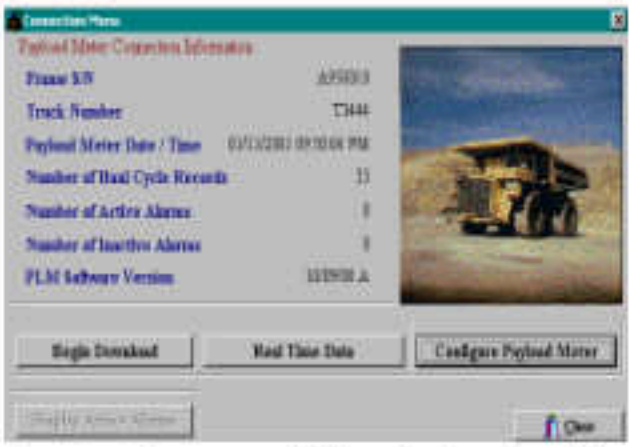
Long Tons: Payload is displayed in long tons, distances and speeds are displayed in Miles

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.

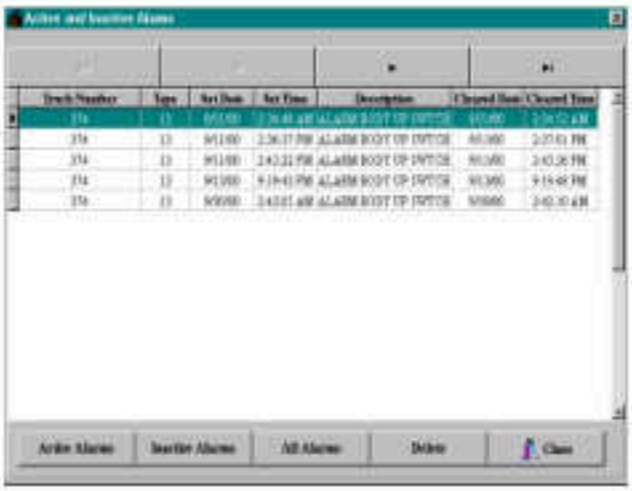
- Frame S/N should agree with the truck serial number from the serial plate located on the truck frame.
- Truck Number is an ID number assigned to the truck by the mine.
- The Payload Meter Date / Time values come from the payload meter at the moment of connection.
- Number of Haul Cycle Records is the 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.

The information on the connection menu comes from the configuration of the payload system on the truck.

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Viewing Alarms

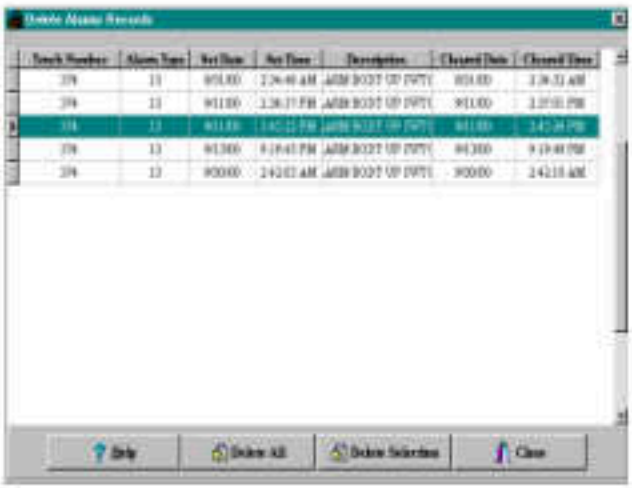
From the Payload Summary screen, click the "Alarms" button to display the alarm screen. The alarms are sorted by the query settings from the Payload Summary screen. Alarms can be displayed as Active or Inactive.



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.



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