CEAM015901

Operation & Maintenance Manual

930E-3

DUMP TRUCK

SERIAL NUMBERS **A30364 - A30461**

KOMATSU®

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

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

- Cap screw 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 Cap screws

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 Cap screws & Class 10 Nuts

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

- Cap screw threads and seats shall not be lubricated when assembled. These specifications are based on all cap screws, 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 Cap screws & 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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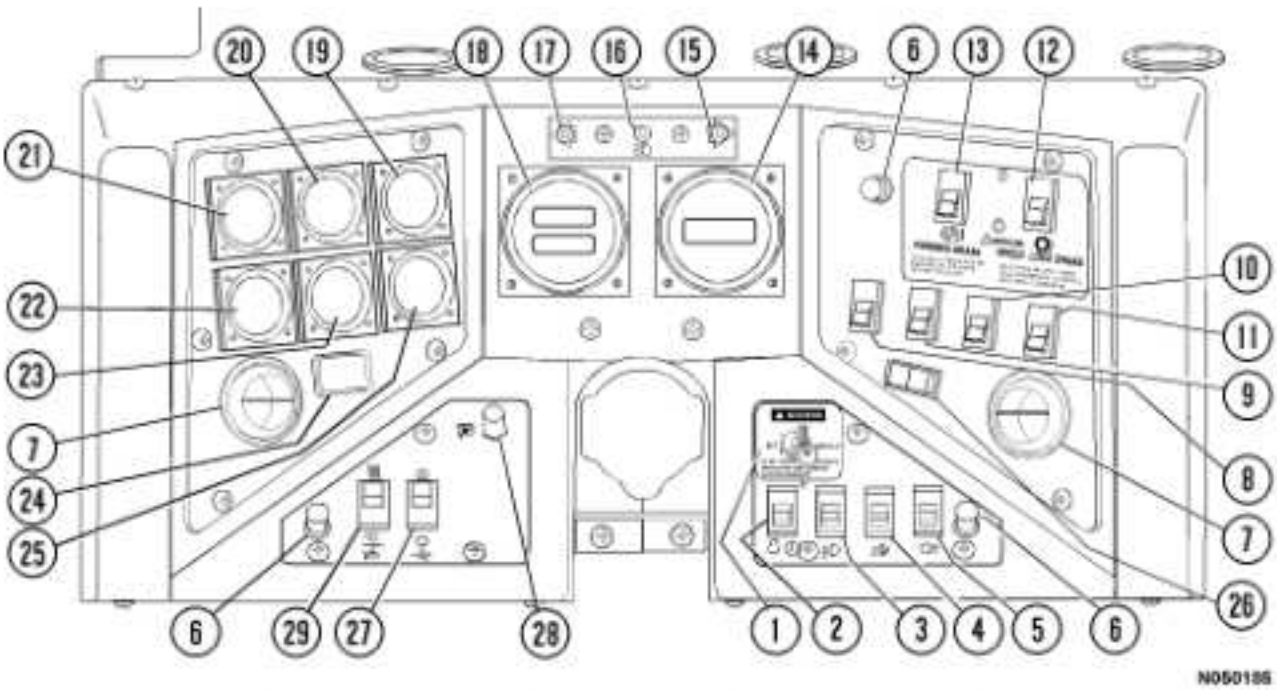


FIGURE 32-7. PANEL GAUGES, INDICATORS, AND CONTROLS

1. Key Switch
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. Panel Illumination Lights Dimmer Rheostat
29. Payload Meter Switch

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1000 HOURS LUBRICATION AND MAINTENANCE CHECKS

All *10 Hour (Daily) Inspections, 250 Hour Lubrication and Maintenance Checks,* and *500 Hour Lubrication and Maintenance Checks* should also be performed at this time.

NOTE: "Lube Key" references are to the ***Lubrication Chart*** *on page 40-3.*

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 strainers. Refer to "Hydraulic Tank Strainers" in Section L3 of the shop manual. Refill the hydraulic tank. (Lube Key "B")			
2.	RADIATOR - Clean the cooling system with a good quality cleaning compound. Flush with water. Fill the radiator with the proper coolant mixture as shown in the Cooling System Anti-Freeze Recommendation chart on page 40-2. Refer to the engine service manual for the proper coolant additives.			
3.	FUEL TANK - Remove the fuel tank breather and clean it in solvent. Dry the breather with pressurized air and install it on the tank.			
4.	OPERATOR'S SEAT - Apply grease to the slide rails. (Lube Key "D")			
5.	AUTOMATIC BRAKE APPLICATION - Make sure that the brakes are automatically applied when the brake pressure decreases below the specified limit. Refer to Section J, Brake Circuit Check-Out Procedure, in the shop manual.			

5000 HOUR MAINTENANCE CHECKS

All *10 Hour (Daily) Inspections, 250 Hour Lubrication and Maintenance Checks, 500 Hour Lubrication and Maintenance Checks,* and *1000 Hour Lubrication and Maintenance Checks* should also be performed at this time.

NOTE: "Lube Key" references are to the ***Lubrication Chart*** *on page 40-3.*

Truck Serial Number_____ **Site Unit Number**_____ **Date**_____

Hourmeter_____ **Name of Service Technician**_____

	TASK	COMMENTS	CHECKED	INITIALS
1.	AIR CLEANERS - Clean the Donaclone tubes in the precleaner section of the air filter. Use low pressure cold water or low pressure air to clean the tubes. Refer to Section C, Air Cleaners, in the shop manual.			

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PLM III SYSTEM CONFIGURATION

Starting Communications

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



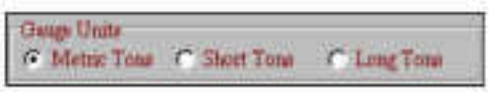
Before connecting to the payload meter, select "Change Program Options" and confirm that the program has selected the correct laptop serial port. Most laptops use Comm 1 for serial communications. The units displayed for reports and graphs by the PC software can be set on this form. Click "Done" to return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

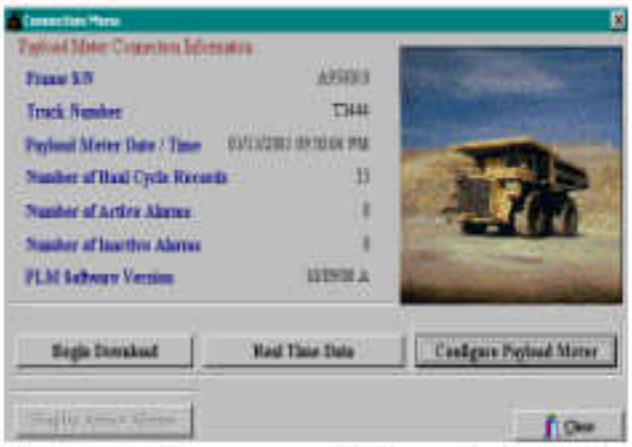
Long Tons: Payload is displayed in long tons, distances and speeds are displayed in Miles

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.

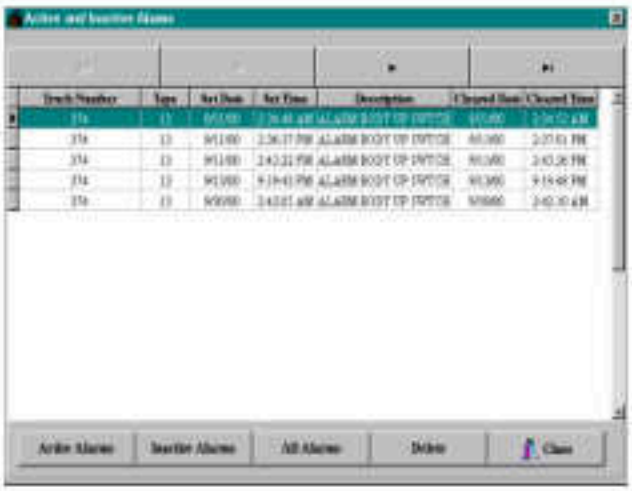
- Frame S/N should agree with the truck serial number from the serial plate located on the truck frame.
- Truck Number is an ID number assigned to the truck by the mine.
- The Payload Meter Date / Time values come from the payload meter at the moment of connection.
- Number of Haul Cycle Records is the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

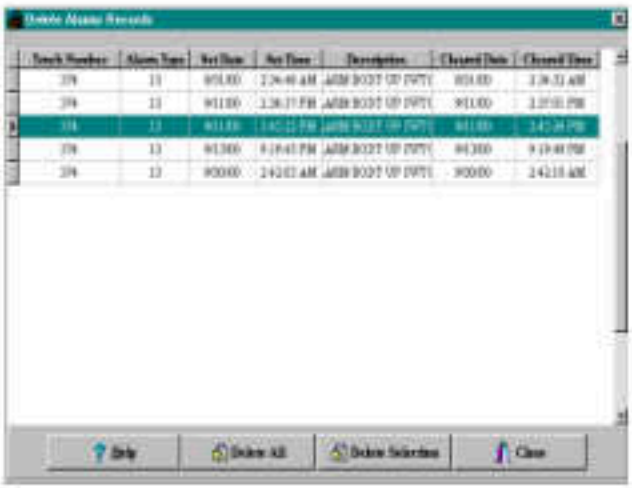
From the Payload Summary screen, click the "Alarms" button to display the alarm screen. The alarms are sorted by the query settings from the Payload Summary screen. Alarms can be displayed as Active or Inactive.



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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