CEAM014600

Operation & Maintenance Manual

930E-3

DUMP TRUCK

SERIAL NUMBERS **A30329 - A30363**

KOMATSU®

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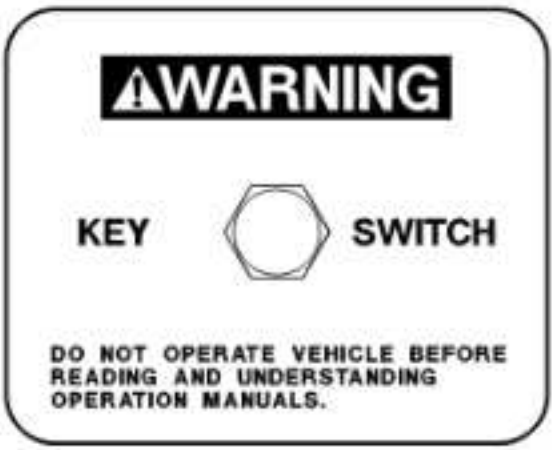
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PANEL GAUGES, INDICATORS, AND CONTROLS (Figure 32-7)

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 the discussion of rest switch (26, Figure 32-7) later in this chapter.

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.

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250 HOUR LUBRICATION AND MAINTENANCE CHECKS

The 10 hour lubrication and maintenance checks should also 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.	ENGINE - **Refer to Cummins Operation & Maintenance manual** for complete specifications regarding engine lube oil specifications. *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. Refer to engine Operation & Maintenance manual for specific oil and filter change intervals.* * The Centinel™ system is a duty-cycle-dependent lubrication management system whereby oil is blended with the fuel and burned and an extension of oil change intervals can occur. a. Change engine oil. Lube Key "A". b. Replace engine oil filters. *NOTE: When installing spin-on filter elements, follow the instructions as specified by 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**.* c. If the truck is equipped with a reserve engine oil tank, change the reserve tank oil filter. d. Check belt tension and condition of each accessory belt. Refer to Engine Operation & Maintenance manual for specific adjustment instructions. e. Check the torque on the cooling fan mounting capscrews (1, Figure 40-5). Tighten capscrews (2) to **175 ft.lbs. (237 Nm) torque**.			
2.	COOLING SYSTEM - a. COOLANT MIXTURE - Check for proper coolant mixture. Add coolant as required. b. COOLANT FILTERS - Change coolant filters. c. COOLING SYSTEM HOSES - Check cooling system hoses for damage and signs of deterioration. Refer to the engine maintenance manual for coolant filter replacement instructions and proper coolant mixture instructions.			

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MAJOR COMPONENT DESCRIPTION

Truck And Engine

The 930E-3 Dump Truck is an off-highway, rear dump truck with AC Electric Drive. The gross vehicle weight is 1,100,000 lbs. (498 960 kg). The engine is a Komatsu SSDA16V160 rated @ 2700 HP (2014 kW).

Alternator (GE-GTA41)

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. The rectified DC power is converted back to AC by groups of devices called "inverters", also within the main control cabinet. Each inverter consists of six "phase modules" under the control of a "gate drive unit" (GDU). The GDU controls the operation of each phase module.

Each phase module contains an air-cooled solid-state switch referred to as a "gate turn-off thyristor" (GTO). The GTO cycles 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 signal (VVVF). Frequency and voltage are changed to suit the operating conditions.

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.

AC Induction Traction Motorized Wheels

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

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

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 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

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

The dynamic retarding 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 wheel) in the operators cab and by setting the RSC (Retarder Speed Control). Dynamic Retarding is automatically activated, if the truck speed goes to a preset overspeed setting.

Brake System

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 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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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

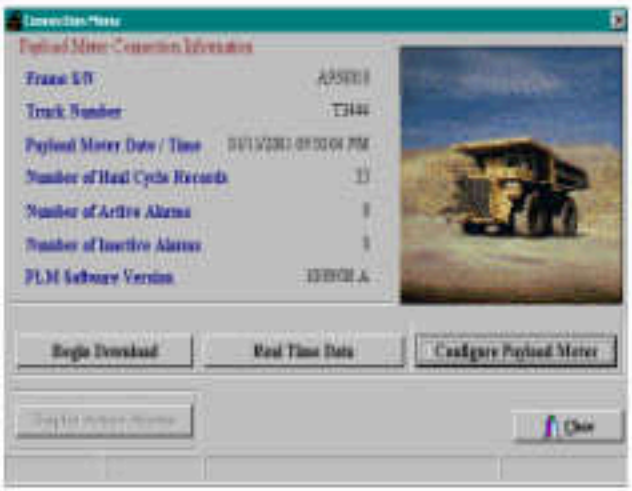
Long Tons: Payload is displayed in long tons, distances and speeds are displayed in Miles

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.

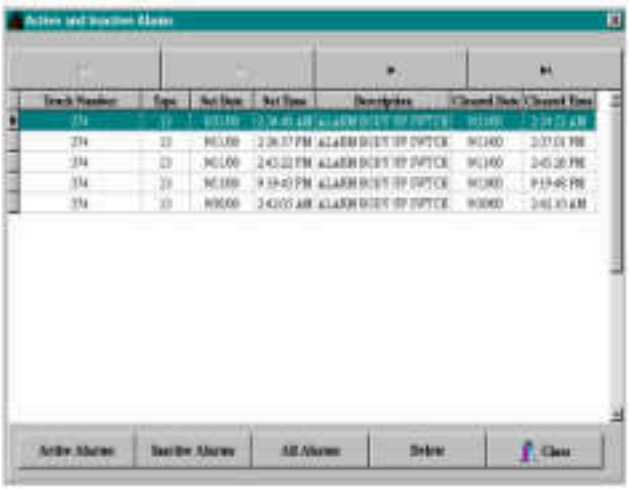
- Frame S/N should agree with the truck serial number from the serial plate located on the truck frame.
- Truck Number is an ID number assigned to the truck by the mine.
- The Payload Meter Date / Time values come from the payload meter at the moment of connection.
- Number of Haul Cycle Records is the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

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

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Viewing Alarms

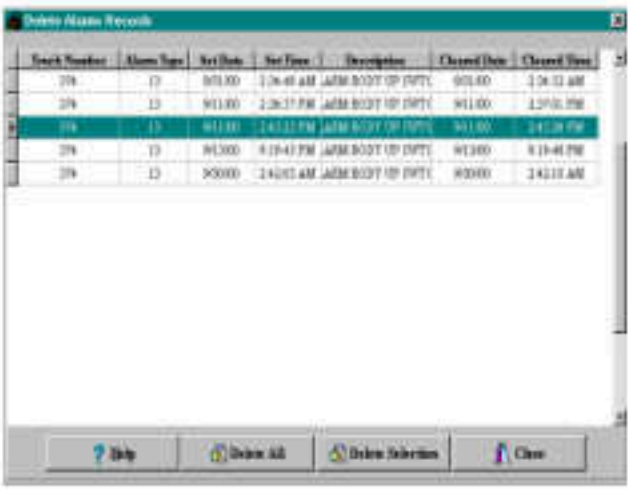
From the Payload Summary screen, click the ALARMS button to display the alarm screen. The alarms are sorted by the query settings from the Payload Summary screen. Alarms can be displayed as Active or Inactive.



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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