

# Operation & Maintenance Manual

DG714



# 210M

## DUMP TRUCK

SERIAL SUFFIX

**BFA40DA** THRU **DN**  
**24501** THRU **24567**

# KOMATSU

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## About This Manual


This Manual is written for use by the operator and/or the service technician and is designed to help these persons to become fully knowledgeable of the truck and all its systems in order to keep it operating safely and efficiently. All operators and maintenance personnel should read and understand the materials in this manual before operating the truck or performing maintenance and/or operational checks on the truck. All safety notices, warnings, and cautions should be understood and followed when operating or accomplishing repairs on the truck.


The front cover of this manual includes a Form Number. This Form No. should be referenced when ordering additional copies of this manual, or for any other correspondence regarding the coverage in this manual.

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This first section is an Introduction to the manual and contains a Table of Contents to locate specific areas of interest. Other sections include Safety, Operation, Maintenance, Specifications, and Optional Equipment.

When searching for a specific area of interest, go first to the Table of Contents to locate the Section in which the subject might generally be included. Then, go to that Section of the Table of Contents to find a Subject description that most closely describes the specific area of interest to find a page number and go to that page. Section Numbers and Page Numbers are located at the top, outside corner of the page. 

 At the top, inside corner of the page is a document (module) number. If there is ever a question regarding the information in a particular Section, refer to the document (module) number, the manual Form No., and use the address shown above to correspond. If there is a date (month/year) behind the document (module) number, that indicates the latest revision date of that page.

The illustrations used in this manual are *TYPICAL* of the component shown and *may not be an exact* reproduction of what is found on the truck.

This manual shows dimensioning of U.S. standard and metric (SI) units throughout. All references to "Right", "Left", "Front", or "Rear" are made with respect to the operator's normal seated position, unless specifically stated otherwise.

When assembly instructions are provided without references to torque values, standard torque values should be assumed. Standard torque requirements are shown in torque charts on the following pages of this section, and in the General Information section of the truck service manual. Individual torques when provided in the text are in bold face type, such as **100 ft.lbs. (135 N.m)** torque. All torque specifications have  $\pm 10\%$  tolerance unless otherwise specified.



5. Look overhead at bottom of cab and check for leakage of the steering control valve, brake valves, and/or hoses.
6. Move outboard of the front wheel, and inspect attaching lugs/wedges to be sure all are tight and complete. Check tires for cuts, damage or "bubbles" and that inflation appears to be correct.
7. Move behind the rear of the front wheel, inspect for leaks at hub or brakes or any unusual conditions. Inspect suspension hardware to be sure it is all in place. Inspect the tie-rod and steering cylinder for proper greasing, and for security of all parts. Inspect for any hydraulic leaks.
8. Inspect sight glass for transmission oil level. With engine stopped, hydraulic fluid should be visible about half way up in the glass. Also check the transmission filter for leaks.
9. Move to the side of the hydraulic tank and check the hydraulic fluid level in the hydraulic tank. Oil should be visible in sight glass with engine stopped and body down.
10. Move on around the hydraulic tank and in front of the rear dual tires, inspect the hoist cylinder for any damage and leaks. Inspect both upper and lower hoist cylinder pins for security, and for proper greasing.
11. Before leaving this position, look to see that there is no leakage or any other unusual condition with transmission, drive shaft, or parking brake.
12. Move on around the dual tires, check to see that all lugs/wedges are in place and tight. Inspect wheel for any leakage that may be coming from inside the wheel housing that would indicate planetary leakage.  

Check dual tires for cuts, damage or "bubbles" and that inflation appears to be correct. If truck has been run on a "flat", **the tire must be cooled before parking truck inside.** Inspect for any rocks that might be lodged between dual tires, and that rock ejector is in good condition and straight so that it can not damage a tire.
13. Inspect left rear suspension for damage and for proper inflation, and that there are no leaks. Inspect also for proper greasing, and that the covers over the chromed piston rod are in good condition.
14. Check final drive housing breather. Clean or replace breather, if obstructed. Check for leakage around final drive housing and wet disc brake housings and the hoses connected to the housings.
15. While standing behind final drive housing, look up to see that rear lights are in good condition, along with back up horn. Inspect anti-sway bar to see that it is getting proper greasing. Also look at both body hinge pins for greasing and any abnormal condition.
16. Perform the same inspection on the right rear suspension as done on the left.
17. Move on around the right dual tires, inspect between the tires for rocks, and for condition of the rock ejector, inspect the tires for cuts or damage, and for correct inflation.
18. Perform the same inspection for wheel lugs/wedges, wheel cover latches, and for leaks that was done on the left hand dual wheels.
19. Move in front of right dual tires, and inspect the hoist cylinder the same as was done on the left side.  

Inspect the final drive anchor pivot area for evidence of proper greasing of the bearing and any evidence of wear or looseness in the pin or bearing.
20. Move on around the fuel tank, inspect the fuel breather. Inspect the attaching hardware for the fuel tank at the upper saddles, and then at the lower back of the tank for the security and condition of the mounts.  

On the inside of the frame rail, check the hoist control valve and auxiliary manifold for leakage and security.

Check pumps on the right front of transmission for leakage, and that all parts are secure.
21. Move in behind the right front wheel, and inspect the tie-rod and steering cylinder for proper greasing, and for security of all parts. Be sure the suspension protective cover is in good condition. Check suspension attaching hardware and suspension extension, as well as greasing and attaching hardware for the steering cylinder.
22. Move out and around the right front wheel, inspect that all lugs/wedges are in place and tight.
23. Move in behind the front of the right front wheel, check hub and brakes for leaks and any unusual condition. Inspect the engine compartment for any leaks and unusual condition. Inspect the fan guard, and belts also for any rags or debris behind radiator.
24. Move on around to the right front of the truck.

## (7) Service Brake Pedal

The Service Brake Pedal is the *middle* pedal of the three pedals. It controls a dual hydraulic valve, which applies both the front dry disc brakes and the rear wet disc brakes. The service brakes should be used to slow or stop the truck whenever safety and/or truck speed/load conditions exceeds the capability of the retarder.

## (8) Throttle Pedal

The Throttle Pedal is the *right* pedal of the three pedals. The operator increases engine RPM by depressing the throttle pedal. Engine RPM is decreased by releasing the pedal.

## (9) Lighter

Used for lighting cigars/cigarettes. Always use CAUTION with smoking materials.

## (10) Ash Tray

Used for extinguishing and depositing smoking materials. DO NOT use for flammable materials such as paper wrappers. Be certain that all fire ash is extinguished.

## (11) Range Selector

The lever-type range selector has nine positions (**R2**, **R1**, **N**, **D**, **5**, **4**, **3**, **2** and **1**). To change positions, release the range holding mechanism (below knob) on the lever, and move lever to the desired range.

**"N"** NEUTRAL - used when truck is stopped/parked with engine operating, and when starting engine. The truck cannot be started unless the Range Selector is in NEUTRAL position.

**"R1"** or **"R2"** REVERSE position - is used to back the truck. The Reverse Warning Horn is activated when either gear is selected. When selecting either reverse position, **COMPLETELY STOP** the truck and bring engine RPM to low idle before shifting from a FORWARD range to a REVERSE range or vice-versa.

**"R1"** position should be used for normal reverse operation.

This range selection utilizes the standard 5.12 : 1 gear reduction ratio.

**"R2"** position may be used for job operations that would benefit from a higher speed reverse operation.

This range selection utilizes a 3.43 : 1 gear reduction ratio.

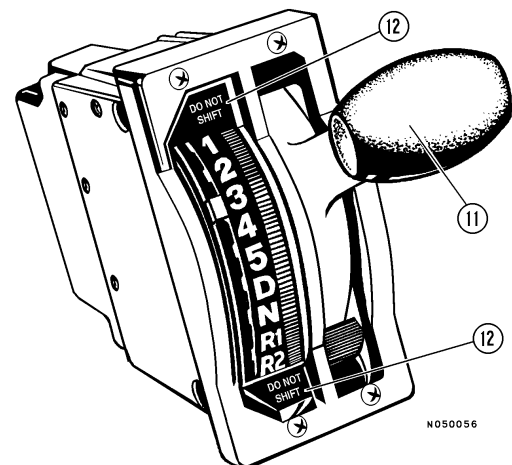
**COMPLETELY STOP** the truck and bring engine RPM to low idle before shifting from **"N"** to **"R1"**; **"R1"** to **"R2"**; **"R2"** to **"R1"**; or from either position to **"N"**.

**"D"** DRIVE - position. The transmission will shift to first gear and as truck speed increases, the transmission will automatically upshift through each gear to sixth gear operation. As the truck slows down, the transmission will automatically downshift to the correct gear.

**5, 4, 3, 2** - positions. Road and load conditions sometimes make it desirable to limit the automatic shifting to a lower range. These positions provide greater engine braking on grades. The transmission will not shift above the highest gear selected. When conditions improve, select position D for full range operation.

**1** - Use this range selection when pulling through mud and deep snow, or when maneuvering in tight spaces, and when driving up or down steep grades where maximum driving power and maximum engine braking is needed.

*NOTE: As engine and ground speed increases, the transmission will automatically UPSHIFT to the gear range required up to the highest range selected. However, DOWNSHIFTS will not occur, regardless of gear range selected, until engine and ground speed are reduced to match the next lower gear range requirements.*



RANGE SELECTOR

11. Range Selector Knob 12. DO NOT SHIFT Light

### (52) EQUAL FAULT Light

The charge condition of the two 12 Volt batteries is monitored to make sure that both batteries are being charged equally. The Equal Fault Light will illuminate if more than a 0.85 volt variance between the two batteries is detected.

### (53) CHECK TRANS Light

The ATEC system has a built in computer that monitors various functions and performances. When the computer senses that the system is not performing properly, the CHECK TRANS light comes "On" to warn and alert the operator that a problem has occurred and that the vehicle should be serviced as soon as possible. The CHECK TRANS light will come "On" when the ignition is turned "On". After about two seconds, the light will go "Off". This provides a light bulb check and a system check.

In cold weather, when the transmission oil is below -10°F (-23°C), the DO NOT SHIFT lights on the range selector and the CHECK TRANS light will stay on after the engine is started. The transmission will stay in NEUTRAL, regardless of which range is selected until the oil is warmer than -10°F (-23°C). When the transmission oil warms up, the CHECK TRANS and DO NOT SHIFT lights will turn off and the transmission will operate in first gear or reverse only. At 20°F (-7°C), the transmission may be operated safely in all ranges.

Sump Oil Temperature	Do Not Shift Light	Check Trans Light	Truck Operation
-10°F (-24°C) And BELOW	ON	ON	NEUTRAL ONLY
-9°F (-23°C) to + 19°F (-7°C)	OFF	OFF	NEUTRAL, 1st (FIRST), & REVERSE Only
+ 20°F (-6°C) And ABOVE	OFF	OFF	Full Operation In All Ranges

If the transmission oil temperature reaches 250°F (121°C), the CHECK TRANS indicator light will come "On". The ECU (Electronic Control Unit) will inhibit operation of the truck in higher gears.

*NOTE: The Transmission Temperature Gauge (23) indicates the converter temperature. The ECU senses oil temperature in the sump.*

**The two temperatures may be different.**

### (54) ALT. FAULT Light

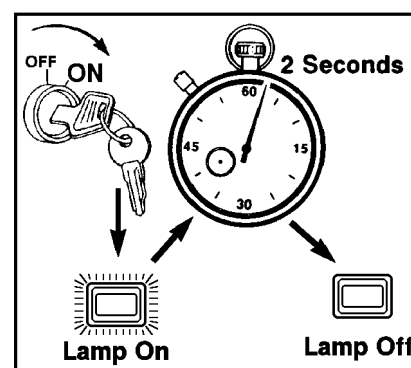
This light will illuminate if the alternator output exceeds 30 VDC, or battery voltage is less than 24 VDC, or if voltage for each battery differs more than 0.75 V.

### Cummins "Quantum" Engine Electronic Control System

The following information (items 55 through 59, Figure 3-6) relates to the Cummins "Quantum" Engine Electronic Control System.

If an abnormal engine condition develops, the control system will record a "fault" code associated with that condition. By use of a series of indicator lamps and switches, the system will display the numerical "fault" code.

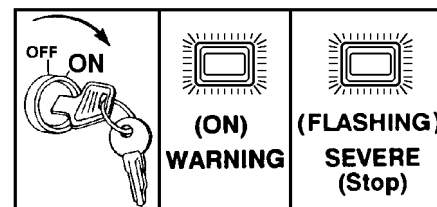
When the keyswitch is turned "On", the lamps (56, 57, 58) should illuminate for about 2 seconds and then turn "Off", if no "faults" are detected in the system. This is a system lamp test.



If a light stays ON, or FLASHES, then active "faults" have been detected by the system and the engine should not be started until the condition has been corrected. Refer to DETERMINING "FAULT" CODES.

During engine operation, if a "fault" is detected in the system, a light associated with that condition will turn "ON" and stay on for "Warning faults", or it will turn "ON and FLASH" for more severe faults that can affect engine operation and require immediate attention.

- "Warning" faults (light ON) are ones that require attention in the near future, but in most conditions will not greatly affect performance.
- "Severe" faults (light FLASHING) are ones that require **immediate** attention, because the engine could be significantly affected.



**Active fault conditions MUST be corrected as soon as possible.**



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