

# PARTS & SERVICE NEWS

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(C)	Page 1 of 16

**SUBJECT:** INTRODUCTION OF IMPROVED CONTROLLER TO PREVENT ENGINE OVERRUN ON HD465/HD605

**PURPOSE:** To introduce improved controllers for effectively preventing engine overruns on HD465-5 and HD605-5 dump trucks (electric engine throttle controller spec. vehicles)

**APPLICATION:** HD465-5 Dump Trucks (After the minor change),  
Serial Nos. 4626 thru 4762  
HD605-5 Dump Trucks (After the minor change),  
Serial Nos. 1013 thru 1072  
HD465-5 Dump Trucks (Before the minor change),  
Serial Nos. 4407 thru 4623  
HD465-5 Dump Trucks (Before the minor change),  
Serial Nos. 1001 thru 1012

**FAILURE CODE:** DAQ099

**DESCRIPTION:**

1. Introduction

This Service News introduces the improved controllers with modified retarder activating speed settings to prevent engine overruns, prepared as part of the measures to enhance the durability of SAA6D170E engines (electric engine throttle controller spec.) on HD465-5 and HD605-5 dump trucks.

(Be aware that the specifications and replacement parts vary depending on the serial numbers of the vehicles.)

## 2. List of parts

Part No.	Part Name	Q'ty	Remarks
After the minor change			
7818-53-4003 (7818-53-4002)	Controller (Controller)	1 (1)	Transmission controller
7818-52-4002 (7818-52-4001)	Controller (Controller)	1 (1)	Engine controller
7831-33-4002 (7831-33-4001)	Monitor (Monitor)	1 (1)	Panel (for Japanese market)
7831-33-3005 (7831-33-3004)	Monitor (Monitor)	1 (1)	Panel (for overseas markets)
569-44-65412 (569-44-65411)	Wiring harness (Wiring harness)	1 (1)	Refer to 4-1 (6).
Before the minor change			
7818-56-7000 (7818-56-1003)	Controller (Controller)	1 (1)	Transmission controller
7818-52-7000 (7818-52-1003)	Controller (Controller)	1 (1)	Engine controller

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### 3. Contents of the modification

#### 3-1. After the minor change

##### (1) Modification of the engine specifications

We have provided a new “high power mode” to lower the Hi-Idling speed of the engine, while the vehicle is traveling with the speed-shift lever set at a position other than “D” and when the speed reaches the maximum designated speed stage allocated to each lever position. The above mode is an addition to the existing engine mode changeover of “high power mode” and “economy mode”.

(The “halftone section” indicates the modified specifications.)

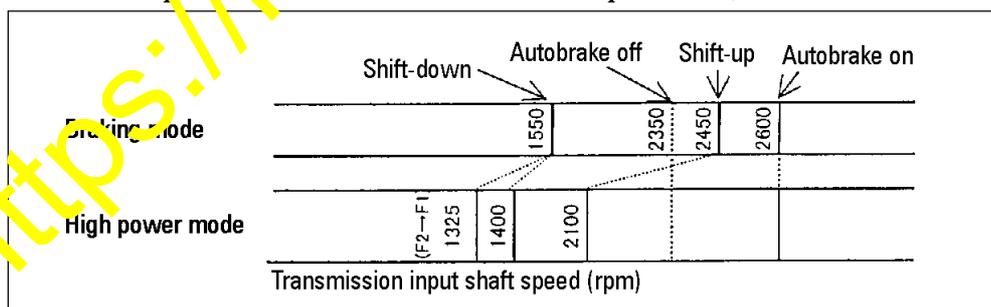
Items		Units	Current specs.	Improved specs.
High power mode	<ul style="list-style-type: none"> <li>• “D” position</li> <li>• Intermediate speed stages when the speed-shift lever is set at a position other than “D”.</li> </ul>	Rated output	ps/rpm	750/2,000
		Max. torque point	kgm/rpm	307/1,400
		Hi-Idling speed	rpm	2,400
	<ul style="list-style-type: none"> <li>• Maximum speed stage of a given speed-shift lever position other than “D”.</li> </ul>	Rated output	ps/rpm	750/2,000
		Max. torque point	kgm/rpm	307/1,400
		Hi-Idling speed	rpm	2,400
Economy mode		Rated output	ps/rpm	725/1,900
		Max. torque point	kgm/rpm	307/1,400
		Hi-Idling speed	rpm	2,200

##### (2) Modification of the automatic speed change graph

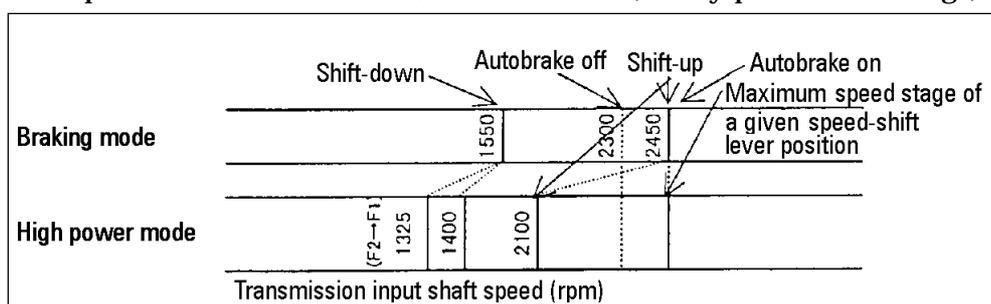
In addition to the existing speed change modes, we have provided a new speed-change mode effective while the speed-shift lever is set at the “5”, “4”, “3” or “L” position, which is designed to function in the maximum speedrange of each lever position to lower the engine overrun preventive retarder activating speed from “2,600 rpm” to “2,450 rpm”.

(The engine overrun preventive retarder activating speed remains the same when the speed-shift lever is set at the “D” position.)

##### a. While the speed-shift lever is set at the “D” position (Same as the current state)



##### b. When the travel speed reaches the maximum speed stage of a given speed-shift lever position of either the “5”, “4”, “3” or “L” (Newly provided settings)



- ☆ With this modification, the maximum travel speed under the respective conditions changes as shown below.  
(This is because the engine Hi-Idling speed for respective maximum speed stages of respective speed-shift lever positions other than “D” has changed.)

<Conditions> When the vehicle is not loaded and the tire size is 24.00-35.

Set speed stages		Maximum travel speed (km/h)
F1	Current maximum speed	11.5
	New maximum speed	11.0
F2	Current maximum speed	16.0
	New maximum speed	15.5
F3	Current maximum speed	21.5
	New maximum speed	21.0
F4	Current maximum speed	29.5
	New maximum speed	29.0
F5	Current maximum speed	39.0
	New maximum speed	38.0
F6	Current maximum speed	52.5
	New maximum speed	51.0
F7	Current maximum speed	70.0
	New maximum speed	70.0

- ※ With vehicles after the minor change, since the engine overrun preventive retarder activating speed settings change only while the speed-shift lever is set at a position other than the “D”, the maximum travel speed of “70 km/h” remains the same.

### 3-2. Before the minor change

#### (1) Modification of the engine specifications

With the existing engine modes of “high power mode” and “economy mode”, we have lowered the Hi-Idling speed of the engine in “high power mode” as follows :

(The “half-tone section” indicates the modified specifications.)

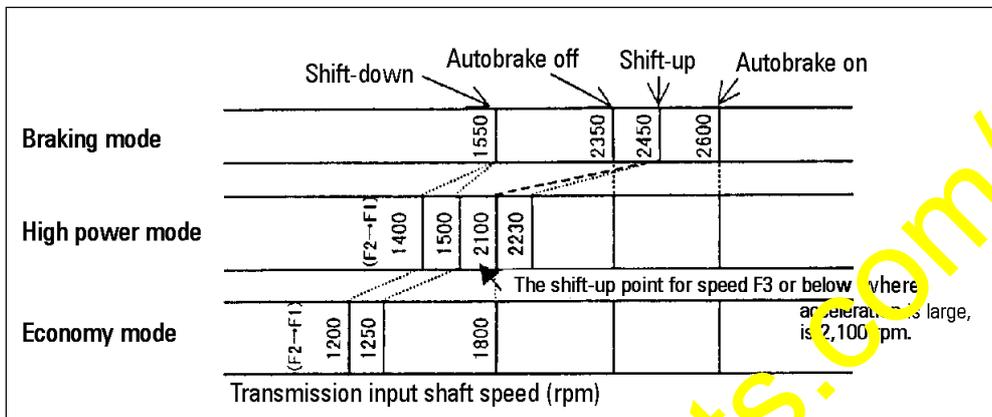
Items		Units	Current specs.	Improved specs.
High power mode	Rated output	ps/rpm	750/2,000	750/2,000
	Max. torque point	kgm/rpm	307/1,400	307/1,400
	Hi-Idling speed	rpm	2,400	2,350
Economy mode	Rated output	ps/rpm	725/1,900	725/1,900
	Max. torque point	kgm/rpm	307/1,400	307/1,400
	Hi-Idling speed	rpm	2,200	2,200

(2) Modification of the automatic speed change graph

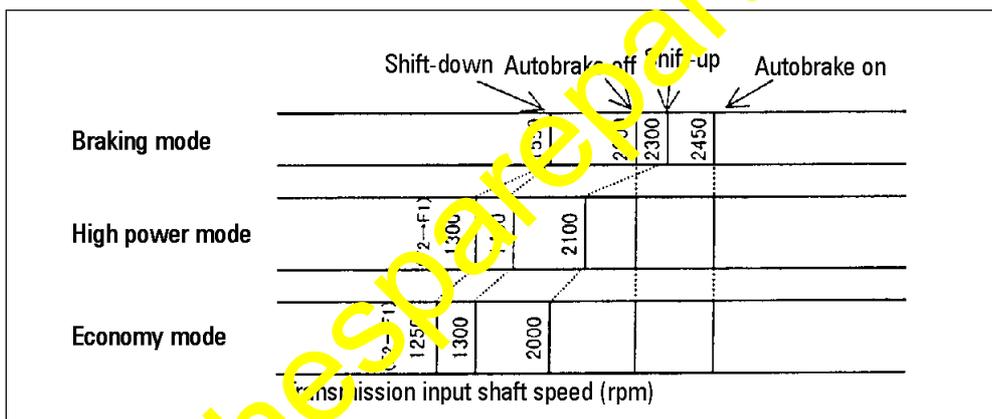
The engine overrun preventive retarder activating speed has been changed from "2,600 rpm" to "2,450 rpm".

With this modification, the speed shifting points in the respective modes have been changed as follows :

a. Before the modification



b. After the modification



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- ☆ With this modification, the maximum travel speed under the respective conditions changes as shown below.  
(This is because the engine Hi-Idling speed at the maximum speed stages has been changed.)

<Conditions> When the vehicle is not loaded and the tire size is 24.00-35.

	Set speed stages	Maximum travel speed (km/h)
F1	Current maximum speed	11.5
	New maximum speed	11.0
F2	Current maximum speed	16.0
	New maximum speed	15.5
F3	Current maximum speed	21.5
	New maximum speed	21.0
F4	Current maximum speed	29.5
	New maximum speed	29.0
F5	Current maximum speed	39.0
	New maximum speed	38.0
F6	Current maximum speed	52.5
	New maximum speed	51.5
F7	Current maximum speed	70.0
	New maximum speed	68.5

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## 4. Replacement procedures

### 4-1. After the minor change

To implement this modification, it is necessary to prepare all the new parts (4 improved items) shown below and to make new settings on the respective controllers. Since the new parts, namely, the transmission controller, engine controller and the panels, have high-order interchangeability with the current parts, they can be individually supplied for use on vehicles currently in use.

In this case, however, the contents of the modification according to Section 3-1 above will not be incorporated and the specifications will remain the same as the existing ones.

(1) Park the vehicle on a level surface, apply the parking brake, turn off the starting key and insert tire blocks.

(2) Open the cover of the controller box located behind the operator's seat inside the operator's cab and disconnect all the transmission controller connectors.

(Refer to Fig. 1 and Fig. 2.)

The numbers of the connectors to be disconnected at 5 places are ATC1, ATC2, ATC3A, ATC3B, ATC4, ATC5A and ATC5B.

When disconnecting these connectors, be careful not to let the connector pins touch the neighboring parts and structures.

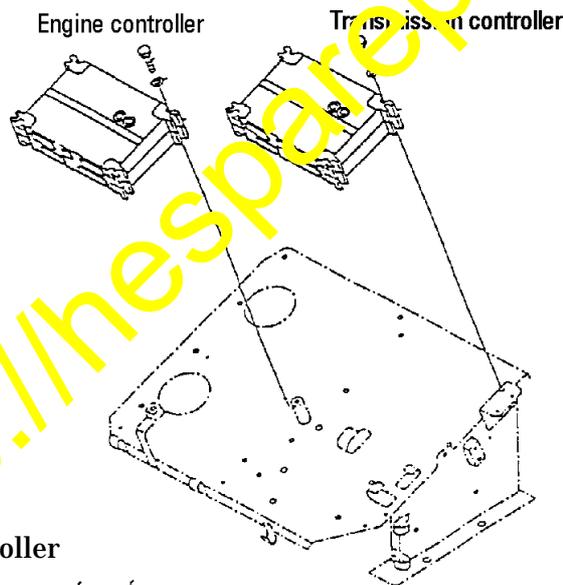


Fig.1

Transmission controller

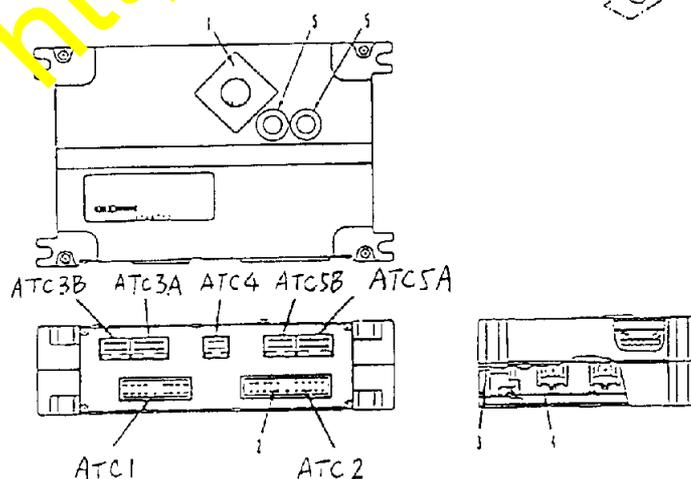


Fig. 2

1. Self-diagnoses indicator (LED)
2. Connector
3. Case
4. Printed wiring board
5. Model selection switch (Rotary switch 1)
6. Network connection switch (Rotary switch 2)

(3) Unscrew the mounting bolts (4 bolts) for the transmission controller and remove the controller (refer to Fig. 1).

(4) Install the new transmission controller (7818-53-4003) on the chassis using the mounting bolts.

☆ Tightening torque for the controller mounting bolts: 2.8 – 3.5 kgm (27.5 – 34.3 Nm)

(5) Make the rotary switch settings of the transmission controller.

Rotary switch (SW1) — 6

Rotary switch (SW2) — 9 (equipped with a suspension controller)

B (not equipped with a suspension controller)

☆ Refer to “Testing and Adjusting” in the Shop Manual for the location of the rotary switches (refer to Fig. 2 and Fig. 3).

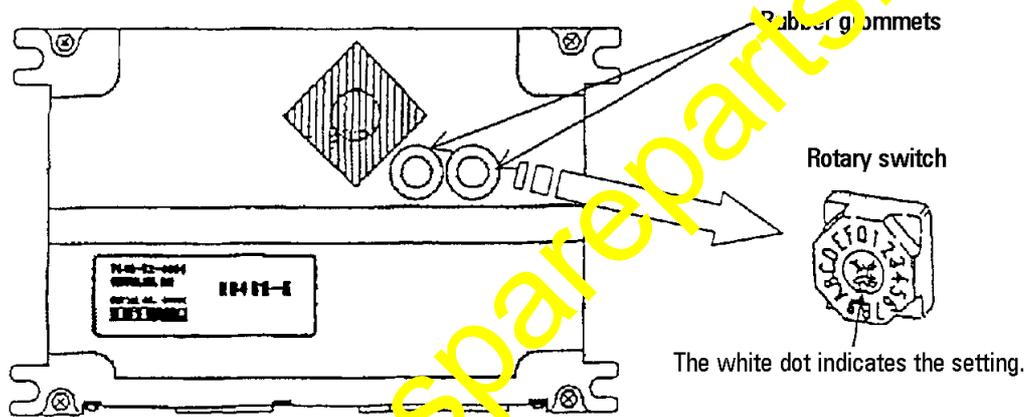


Fig. 3

- (6) Then, rework with the wiring harness for the transmission controller as follows:  
 Cut the No. 12 harness wire (black wire) leading to the ATC5B connector and insulate both of the cut ends with vinyl tape (refer to Fig. 4).

☆ Since the function of the reworked wiring harness is the same as that of the 569-44-65412 wiring harness, the above rework corresponds to replacing the current 569-44-65411 wiring harness with the new 569-44-65412 wiring harness.

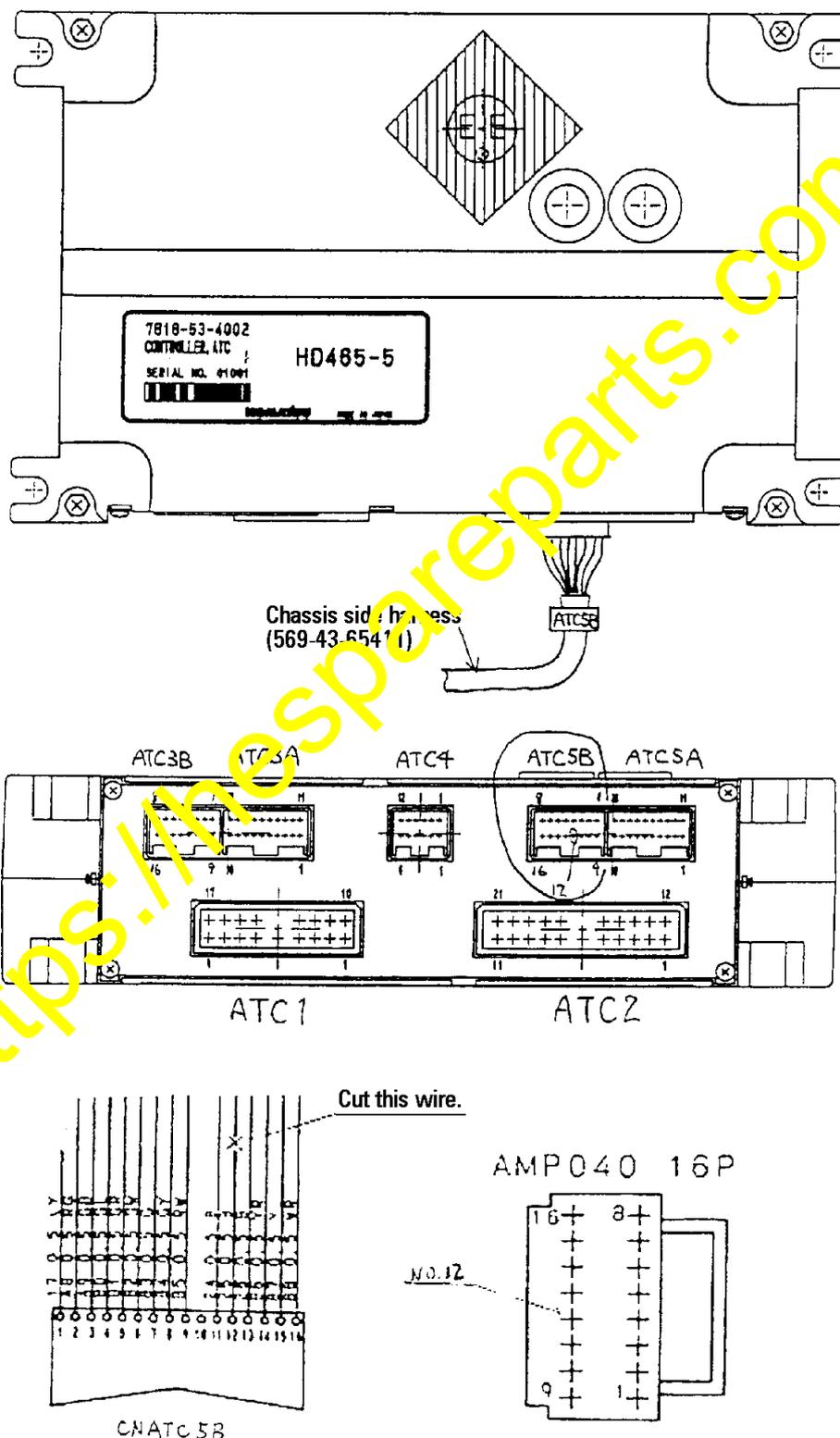


Fig. 4

- (7) Reconnect all the connectors previously disconnected.  
 When doing this, carefully check the connector numbers of the harnesses and their connection points.  
 Since the sizes of the connectors ATC3A and ATC5A and the connectors ATC3B and ATC5B are the same, be careful not to make connection errors (refer to Fig. 2).
- (8) Next, disconnect all engine controller connectors (refer to Fig. 1 and Fig. 5).  
 The numbers of the connectors to be disconnected at 6 places are EC1, EC2, EC3A, EC3B, EC4 and EC5A.  
 When disconnecting these connectors, be careful not to let the connector pins touch the neighboring parts and structures.

Engine controller

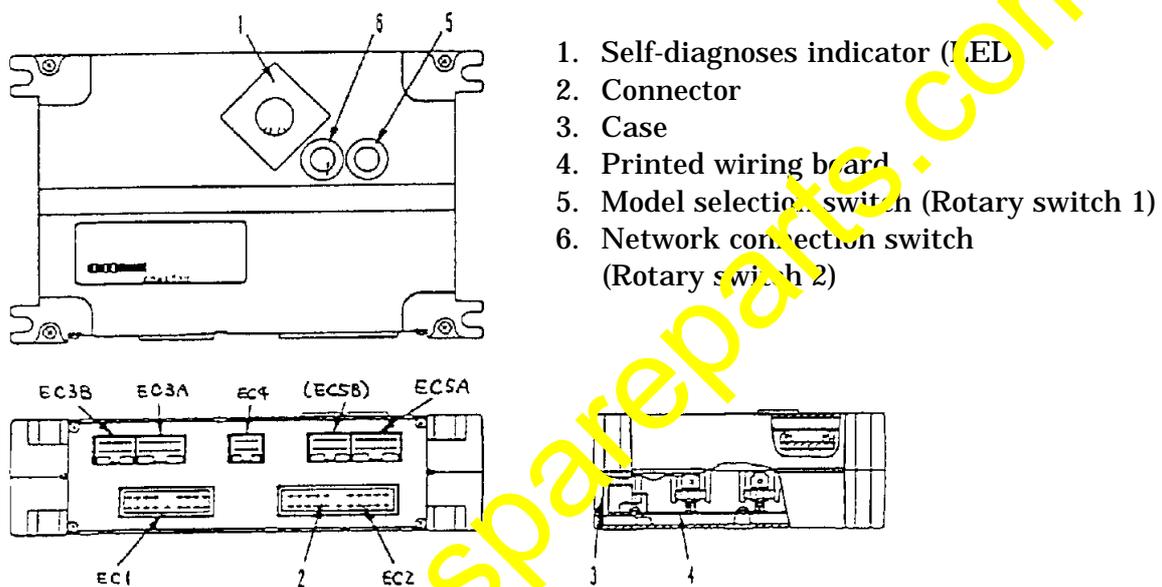


Fig. 5

- (9) Unscrew the mounting bolts (4 bolts) for the engine controller and remove the controller (refer to Fig. 1).
- (10) Install the new engine controller (7818-52-4002) on the chassis using the mounting bolts.  
 ☆ Tightening torque for the controller mounting bolts: 2.8 – 3.5 kgm (27.5 – 34.3 Nm)
- (11) Adjust the “Q” (fuel injection rate) of the engine controller.  
 ☆ Make the setting the same as that for the current engine controller. For the adjustment procedures, refer to “Testing and Adjusting” in the Shop Manual.
- (12) Reconnect all the connectors previously disconnected.  
 When doing this, carefully check the connector numbers of the harnesses and their connection points.  
 Since the sizes of the EC3A and EC5A connectors are the same, be careful not to make connection errors (refer to Fig. 5).



(14) Disconnect all the monitor panel connectors.

The numbers of the connectors to be disconnected at 13 places are DP01, DP02, DP03, DP04, DP05, DP06, DP07, DP08, DP09, DP10, DP11, DP12 and DP13 (refer to Fig. 8).

When disconnecting these connectors, be careful not to let the connector pins touch the neighboring parts and structures.

Model	Tire size	Loaded radius of tire, empty	Eng. Rev. Pulse	Set Dial		
				1	2	3
HD785	STD. Tire 27.00R49	1270	138	-	7	0
HD605	STD. Tire 24.00R35	1031	118	-	7	0
HD465	STD. Tire 24.00-35	1031	118	-	7	0
	STD. Tire 21.00-35	992	118	-	C	0
HD405	STD. Tire 18.00R33	880	148	-	7	0
HD325	STD. Tire 18.00-33	880	148	-	7	0

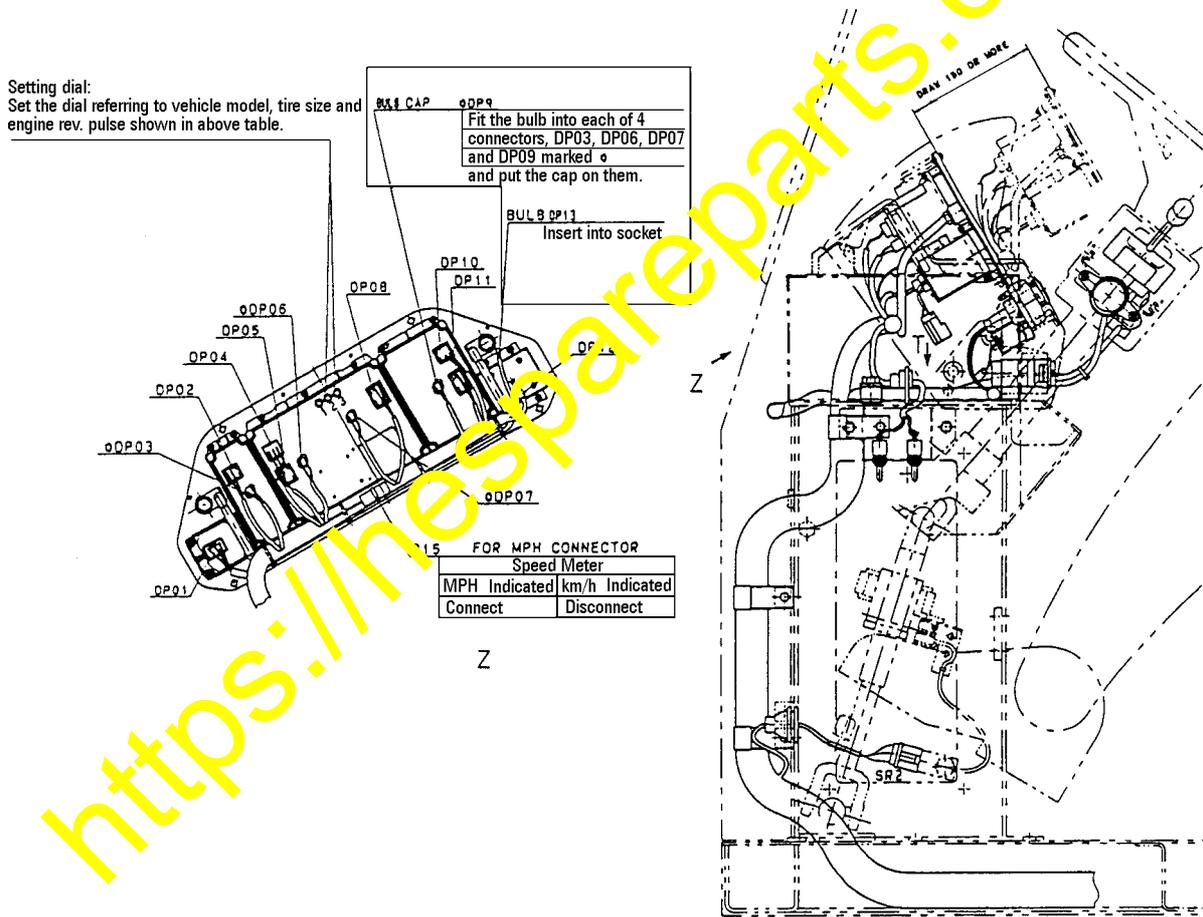


Fig. 8

- (15) Replace the current monitor panel with the new monitor panel (7818-33-3005).
- ☆ Before installing the new monitor panel, make adjustments on the back of the speedometer located on the rear of the monitor panel.  
Make the settings the same as those for the current monitor panel, referring to “Testing and Adjusting” in the Shop Manual (refer to Fig. 8).
- (16) After installing the new monitor panel, reinstall the hood in its original position.
- (17) Turn on the starting key to turn on the electric power and check if the LED on each controller box flashes.  
Check and make sure that the indicator on the engine controller reads “00” and that on the transmission controller reads “00” or “0C”, finally.  
If the indicators on the engine controller and the transmission controller do not read “00” and “00” or “0C”, respectively, and if “E” or “EC” and the service code appear alternately, carry out trouble shooting by referring to the Shop Manual.
- (18) Remove the tire blocks, start the engine, release the parking brake, and drive the vehicle to check that speed shifting and panel indication are normal.

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## 4-2. Before the minor change

To implement this modification, it is necessary to prepare all the new parts (improved transmission controller and engine controller) in a set.

If only the transmission controller or the engine controller is replaced with the improved part, they will not work normally.

When supplying controllers for use on vehicles currently in use, the old part numbers can also be used.

In this case, however, the contents of the modification according to Section 3-2 above will not be incorporated and the specifications will remain the same as the existing ones.

- (1) Park the vehicle on a level surface, apply the parking brake, turn off the starting key and insert tire blocks.
- (2) Open the controller box cover located behind the operator's seat inside the operator's cab and disconnect all the transmission controller connectors (refer to Fig. 9 and Fig. 10).  
The numbers of the connectors to be disconnected at 4 places are SC1, SC2, SC3 and SC4. When disconnecting these connectors, be careful not to let the connector pins touch the neighboring parts and structures.

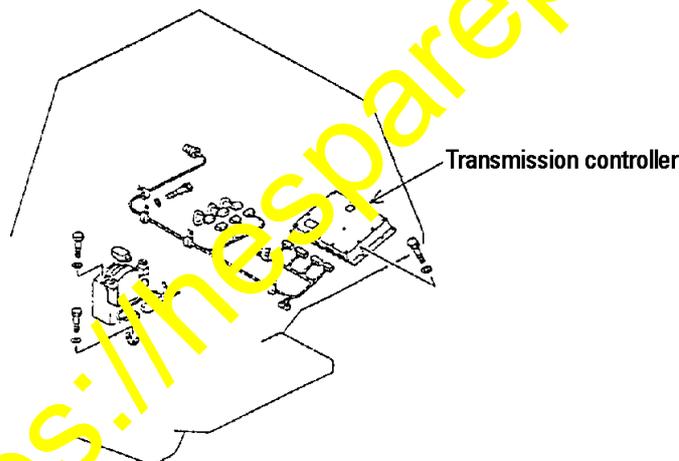


Fig. 9

Location of the transmission controller connectors

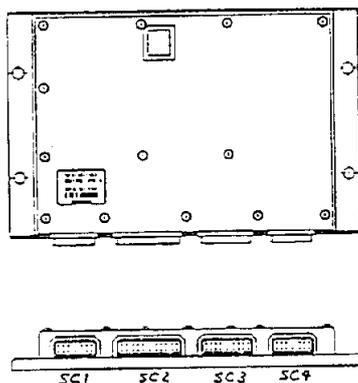


Fig. 10

- (3) Unscrew the mounting bolts (4 bolts) for the transmission controller to remove the controller (refer to Fig. 9).
- (4) Install the new transmission controller (7818-56-7000) on the chassis using the mounting bolts.  
 ☆ Tightening torque for the controller mounting bolts: 2.8 – 3.5 kgm (27.5 – 34.3 Nm)
- (5) Reconnect all the connectors previously disconnected.  
 When doing this, carefully check the connector numbers of the harnesses and their connection points (refer to Fig. 10).
- (6) Then, disconnect all the engine controller connectors (refer to Fig. 11 and Fig. 12).  
 The numbers of the connectors to be disconnected at 6 places are EC1, EC2, EC3A, EC3B, EC4 and EC5A.  
 When disconnecting these connectors, be careful not to let the connector pins touch the neighboring parts and structures.

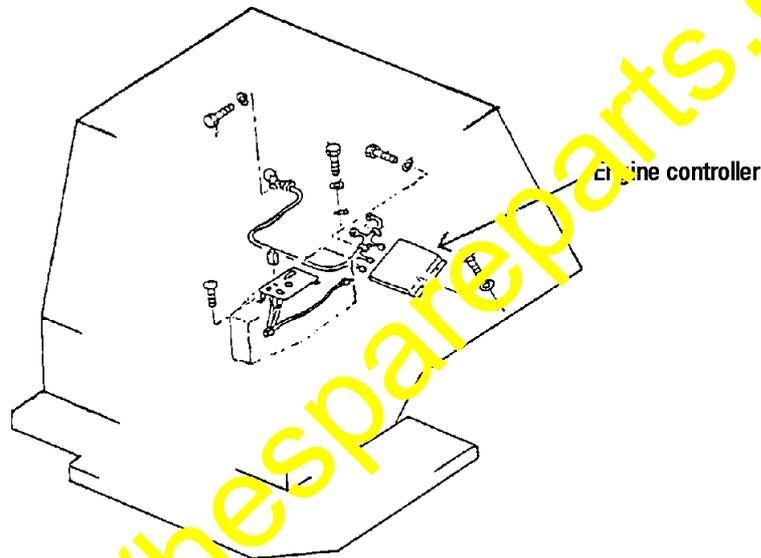
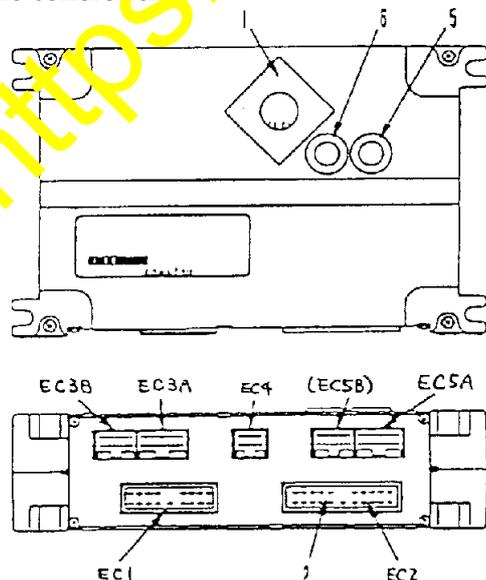


Fig. 11

Engine controller



1. Self-diagnoses indicator (LED)
2. Connector
3. Case
4. Printed wiring board
5. Model selection switch (Rotary switch 1)
6. Network connection switch (Rotary switch 2)

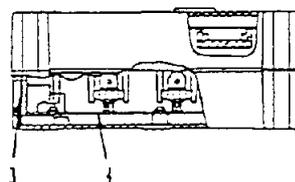


Fig. 12

- (7) Unscrew the mounting bolts (4 bolts) for the engine controller and remove the controller (refer to Fig. 11).
- (8) Install the new engine controller (7818-52-7000) on the chassis using the mounting bolts.
  - ☆ Tightening torque for the controller mounting bolts: 2.8 – 3.5 kgm (27.5 – 34.3 Nm)
- (9) Adjust the “Q” (fuel injection rate) of the engine controller.
  - ☆ Make the setting the same as that for the current engine controller.  
For the adjustment procedures, refer to “Testing and Adjusting” in the Shop Manual.
- (10) Reconnect all the connectors previously disconnected.  
When doing this, carefully check the connector numbers of the harnesses and their connection points (refer to Fig. 12).
- (11) Turn on the starting key to turn on the electric power and check if the LED on each controller box flashes.  
Check and make sure that the indicator on the engine controller reads “00” and that on the transmission controller reads “00” or “0C”, finally.  
If the indicators on the engine controller and the transmission controller do not read “00” and “00” or “0C”, respectively, and if “E” or “EC” and the service code appear alternately, carry out trouble shooting by referring to the Shop Manual.
- (12) Remove the tire blocks, start the engine, release the parking brake, and drive the vehicle to see that speed shifting and panel indication are normal.