

PARTS & SERVICE NEWS

REF NO.	AA02222
DATE	Oct 8, 2002

SUBJECT: INTRODUCTION OF ENGINE COUNTER TAMPER PROOF FOR EPA EXHAUST EMISSION REGULATION

PURPOSE: To introduce the tamper proof for the Q-adjustment of the engine controller

APPLICATION: Refer to Page 11 for applicable models and serial numbers

FAILURE CODE: A010MA

DESCRIPTION:

This **PARTS & SERVICE NEWS** will introduce tamper proof function of the engine controller and its replacement procedure.

For the engine being used in areas where the emission control regulations of the EPA are being enforced, it is obligatory to seal the adjustment mechanism for the engine controller.

As the tamper proof function for the Q-adjustment of the engine has been installed into the software of the engine controller, the Q-adjustment adjusting procedure is being introduced in this Parts & Service News.

Since the modification made this time requires special tools (Q-adjustment setting harness), it is so functioned that the engine output may not be changed by unjust measures.

Therefore, when it becomes necessary to make "Q-adjustment adjusting work" after replacement of the engine controller, make the Q-adjustment adjusting work following the procedure outlined in this Parts & Service News.

Description regarding the precautions when using the Q-adjustment adjusting tool are being given and introduction of the additional plate, additional sheet and the engine controller adjusting tool equipment with the DEUTCH connector are being introduced in this Parts & Service News.

2. List of parts

Part No.	Part Name	Q'ty	Remarks
7872-10-1500	Sheet	1	For the rotary switch cover
6162-85-9980	Wiring harness	1	} For the Q-adjustment work
6162-85-9990	Wiring harness	1	

2.1 Table of part numbers

The engine controllers applicable to the descriptions of this Service News are the following common rail engine controllers for the engines passing the secondary emission control regulations.

No.	Machine/vehicle model and type	Part No. of the engine controller proper	Manufacturer	Type
1	HD325-6	7872-10-230X	KOMATSU	CRI-A
2	WA500-3	7872-10-520X	KOMATSU	CRI-A
3	PC600-6	7872-10-410X	KOMATSU	CRI-A
4	D155AX-5	7872-10-310X	KOMATSU	CRI-A
5	HM400-1	7872-10-210X	KOMATSU	CRI-A
6	PC1800-6	7872-20-420X	KOMATSU	CRI-D
7	PC600 Extreme cold weather spec.	7872-10-410X	KOMATSU	CRI-A
8	D275-5	7872-20-320X	KOMATSU	CRI-D
9	HM300-1	7872-10-220X	KOMATSU	CRI-A
10	WA470/480-5	7872-20-510X	KOMATSU	CRI-D

Note 1: The "X" being given as a last digit of the part number of the controller indicates that this Service News is to be commonly applied to the controllers regardless their part number changes at their last digits.

Note 2: CRI-A indicates the AMP 070 connector specifications and CRI-D indicates the DEUTZ connector specifications.

The "CR" represents the common rail fuel injection system controllers.

Be careful since there can be cases where the part number of the controller may be changed.

- ★ Although the engine controllers of these part numbers are being shipped to other destinations than the areas under the emission control regulations of the EPA, since the tamper-proof function is being accommodated in the engine controllers, make the adjustment work as per the procedure being introduced in this Service News when adjusting the Q-adjustment.

3. "Q-adjustment adjusting procedure" for the engine controllers equipped with the tamper-proof function
 - ★ "Q-adjustment adjusting procedure" for the engine controllers equipped with the tamper-proof function is being described below.
 - ★ Refer to the Shop Manual for the subject machine/vehicle model regarding the replacement procedure for the engine controller itself.

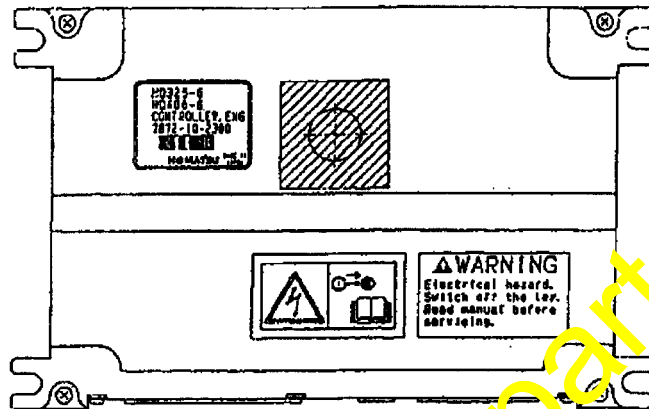
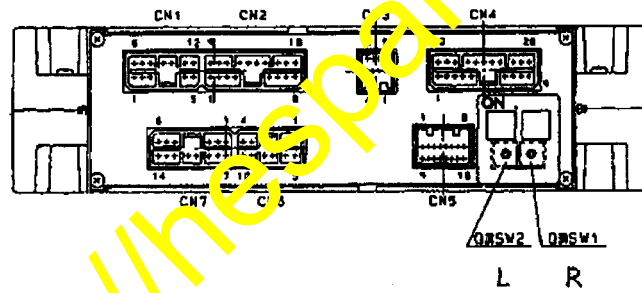


Fig 1-1
Engine controller
CRI-A



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3.1 Preparations before starting the "Q-adjustment adjusting work"

- 1) To conduct the Q-adjustment adjusting work, it is necessary to set the engine controller to the "Q-adjustment adjusting mode".

Set to the "Q-adjustment adjusting mode" following the procedures being shown on the next page and start the Q-adjustment No. changing work.

If errors are made during these procedures, the Q-adjustment data (the data being memorized by the engine controller) will not be revised.

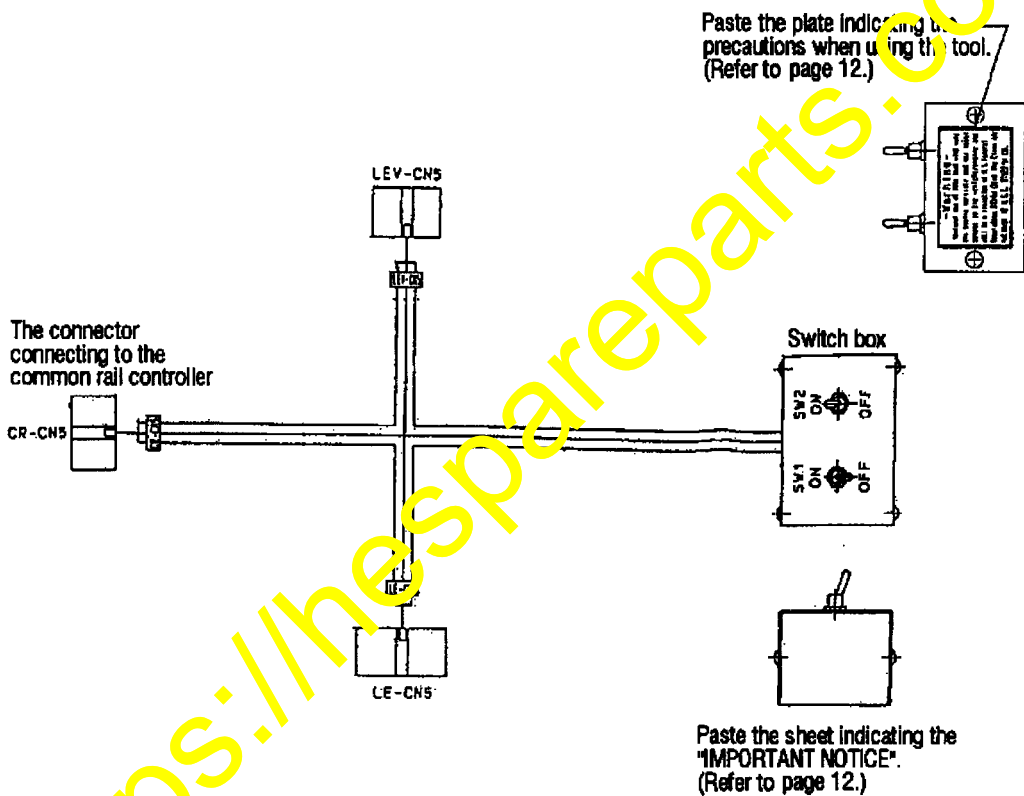
- 2) The following parts will become necessary to carry out this work.

- 7872-10-1500: SHEET

However, when using the newly prepared spare controller, this sheet is being pasted to the controller and it is not necessary to prepare it.

① Controller CRI-A

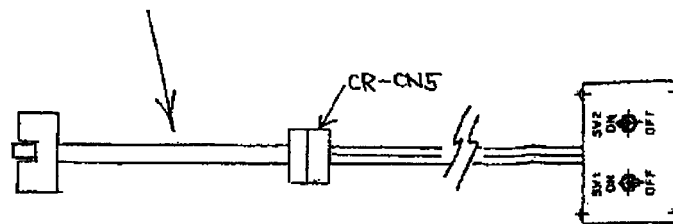
- "6162-85-9980: WIRING HARNESS" (Refer to the drawing below.)



- Watch repairing screwdriver: For adjustment of the rotary switch

② Controller CRI-D

In addition to "6162-85-9980: WIRING HARNESS", connect the "6162-85-9990: WIRING HARNESS" as per the drawing indicated below.



3.2 Q-adjustment adjusting procedure

(Explanations will be given on the CRI-A. Refer to pages 6 and 10 regarding the CRI-D.)

3.2.1-a Connection of the Q-adjustment adjusting wire harness

* Before starting the adjusting work:

- Turn "OFF" the power supply to the controller.
- Turn "OFF" the Q-adjustment adjusting wire harness switches 1 and 2 in advance.

Connect the 16-pin connector (040) of the above Q-adjustment adjusting wire harness to the connector CN 5 (16-pin connector) of the engine controller.

- Connect other connectors as usual.
- The Q-adjustment adjusting rotary switch is being installed behind the connector surface plate of the controller at 2 places and these rotary switches can be turned through the opening in the connector surface plate using the watch repairing screwdriver.
- The Q-adjustment seal is being held, using adhesive tape, on the connector surface plate of the controller to cover the opening through which the Q-adjustment adjusting rotary switch can be turned.

* Remove the wire harness after finishing the adjustment work.

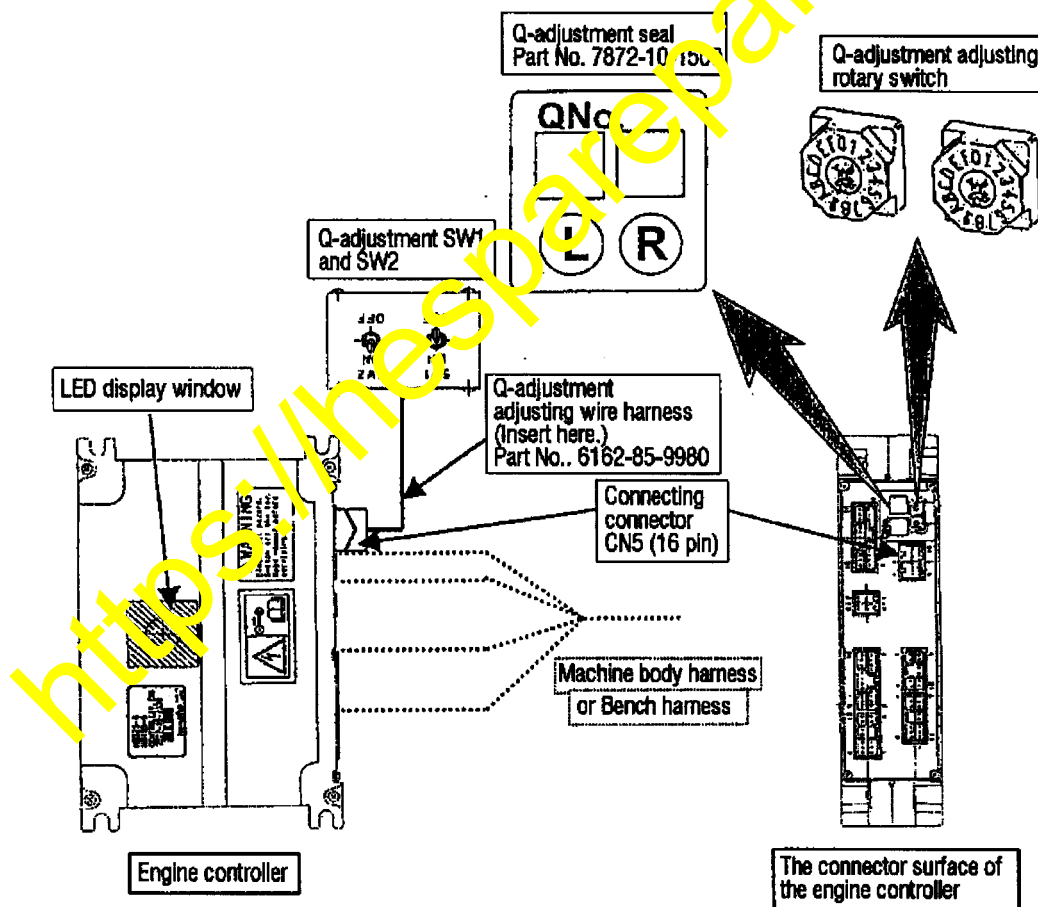


Fig. 1-1 Connections of the wire harness

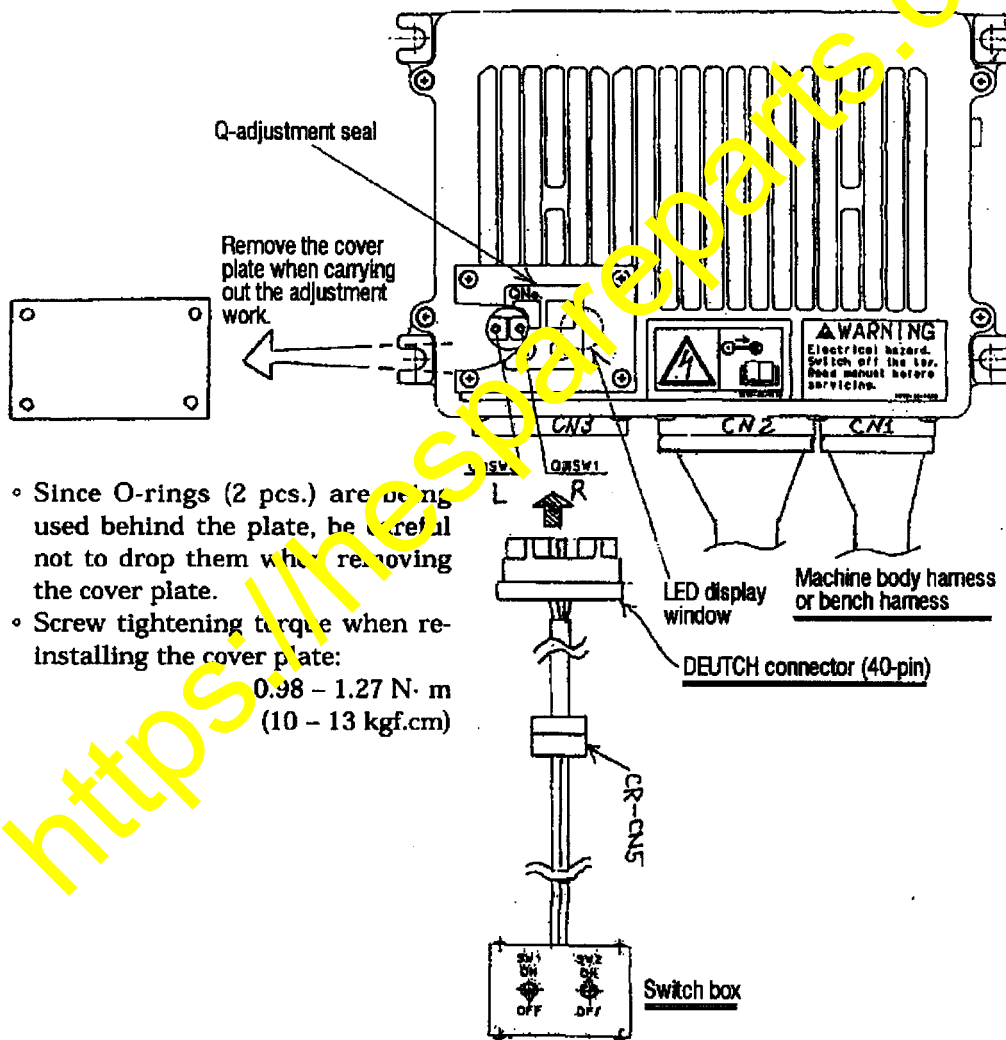
3.2.1-b Connection of the Q-adjustment adjusting wire harness (CRI-D)

* Before starting the adjusting work:

- Turn "OFF" the power supply to the controller.
- Turn "OFF" the Q-adjustment adjusting wire harness switches 1 and 2 in advance.

Connect the 40-pin connector (DEUTCH B) of the above Q-adjustment adjusting wire harness to the connector CN 3 (40-pin connector) of the engine controller.

- Connect other connectors as usual.
- The Q-adjustment adjusting rotary switch is being installed underneath the upper plate of the controller at 2 places and these rotary switches can be turned using the watch repairing screwdriver similar to the case of the CRI-A.
- The Q-adjustment seal is being held, using adhesive tape, on the upper plate of the controller.



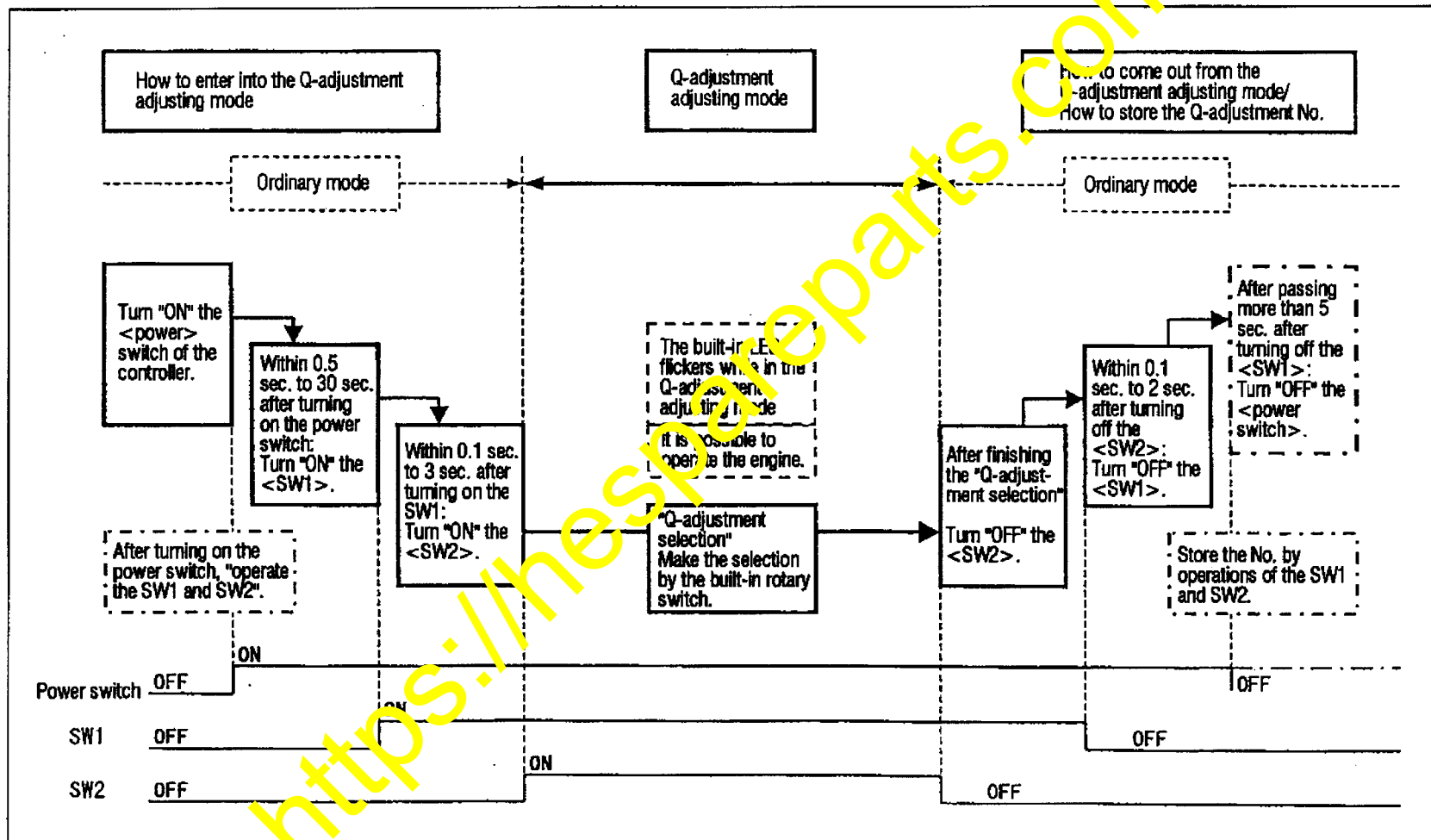
- Since O-rings (2 pcs.) are being used behind the plate, be careful not to drop them when removing the cover plate.
- Screw tightening torque when re-installing the cover plate:
0.98 – 1.27 N·m
(10 – 13 kgf.cm)

Fig. 2 Engine controller CRI-D

3.2.2 Setting method to the "Q-adjustment adjusting mode"


Set to the "Q-adjustment adjusting mode" following the procedures indicated below and change the Q-adjustment No.

If errors are made during these procedures, the Q-adjustment data will not be revised nor stored. Check and confirm the "Q-adjustment No." by the work procedure being indicated in the next Section.



3.2.3 How to check the Q-adjustment No. and how to identify the Q-adjustment adjusting mode"

The check of the Q-adjustment No. and the identification of the Q-adjustment adjusting mode can be made by the procedures indicated below.

<p><How to check the Q-adjustment memory No.></p>	<p><How to check the Q-adjustment No. in the Q-adjustment adjusting mode></p>	<p><How to check that the setting was correct after finishing the Q-adjustment No. setting work></p>
<p>Indications will be made by the built-in LED after turning "ON" the C/U power.</p>	<p>Make setting of the built-in rotary SW</p>	<p>Turn on the power switch of the controller once again to check that the setting was correct.</p>
<p><Indication pattern: The following indication is an example for reference></p>	 <p>The white dot indicates the "Q-adjustment No."</p>	<p>(The LED indications should be as shown on the L.H. side.)</p>
<p>[88]-[78]-[5E]-[13]-[15]-[8A]-[]-[MM]-[E]-[EE]</p> <p>① ② ③ ④ ⑤</p>		
<p>①: For confirmation of the proper operation of the LED / ②: Indications of the machine model versions</p>	<p>③: Q-adjustment memory No. [L.H. side / R.H. side] (For example: [8A] → L.H. side Q-adjustment No. = 8 / R.H. side Q-adjustment No. = A)</p>	<p>!!! How to identify the Q-adjustment adjusting mode !!! Built-in LED: Flickering indication (at 0.5 sec. cycles)</p>
<p>④: (Indication change) / ⑤: Error code indications (Memory - Occurrence)</p>		

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3.3 How to adjust the Q-adjustment rotary switches

3.3.1 Adjusting method and work procedure

- ① Remove the Q-adjustment seal from the connector surface plate of the replacing controller. Discard the removed seal.
 - When using the spare controller for replacement, it is not necessary to remove the Q-adjustment seal since it is a new part. Since the Q-adjustment seal is being pasted to the connector plate by its upper half only, pull the Q-adjustment seal up lightly when turning the Q-adjustment adjusting rotary switch.
- ②-1 Check and confirm the Q-adjustment memory No. in the controller.
- ②-2 *** After setting to the Q-adjustment adjusting mode ***
- ③ Turn the built-in "Q-adjustment adjusting rotary switch" by a screwdriver and set the "Q-adjustment No." to the memorized Q-adjustment No. in the controller to be removed. (Refer to Section 3.2 regarding the checking method.)
- ④ *** After finishing the Q-adjustment setting work ***
- ⑤ *** Turn on the power switch of the controller once again and check and confirm that the setting has been made to the desired Q-adjustment No. ***
- ⑥ Remove the peeling paper from the rear surface of the new "Q-adjustment No. seal" and put it onto the opening for the Q-adjustment adjusting rotary switch on the connector plate of the engine controller. <Part No. of the seal: 7812-10-1500>
 - When using the spare controller, remove the peeling paper from the lower half of the rear surface of the "Q-adjustment No. seal" and put the whole portions of the "Q-adjustment No. seal" over the opening for the Q-adjustment adjusting rotary switch so that the "Q-adjustment No. seal" may totally cover the opening.
- ⑦ Write the Q-adjustment No. which has been set as above onto the "Q-adjustment No. seal". Use an oil ink pen so that it may not fade away.

When writing the Q-adjustment No. onto the "Q-adjustment No. seal", write the setting No. to the LH side (L) rotary switch in the □ box on the LH side of the seal and write the setting No. to the RH side (R) rotary switch in the □ box on the RH side of the seal.

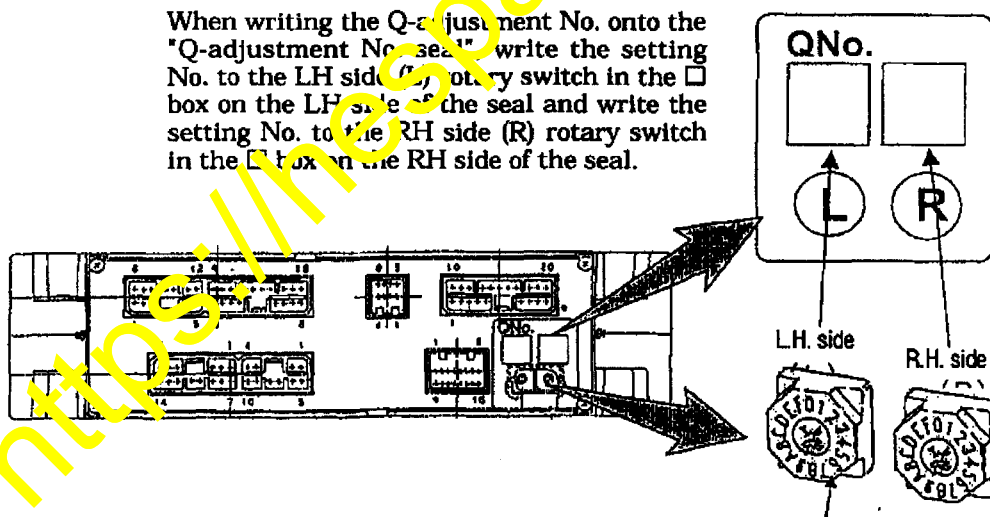


Fig. 3 Connector surface of the controller

The white dot indicates the "Q-adjustment No."
<Q-adjustment adjusting rotary switch>

3.3.2 Precautions when carrying out the adjusting work (Supplement when adjusting the CRI-D)

- ① Separate the connectors of the machine body side harness and install the Q-adjustment adjusting wire harness to start the Q-setting work leaving the machine body side harness connectors separated.
- ② After finishing the adjustment work, re-connect the connectors of the machine body side harness back to their original connections.
- ③ In case of the CRI-D, since error code will be indicated (by the LED on the controller and on the machine body monitor), turn on the starting switch key once again after restoring the machine body harness connector connections to clear the error code surely.

3.4 Regarding the Q-adjustment setting values in the spare controller

In case of the subject engine controller, the "Q-adjustment No." of the spare controller is set to the specified values before being shipped from the factory. The settings are as per the Table indicated below.

Refer to the above "Section 3.3.1", regarding the replacement procedure when replacing the controller.

No.	Machine/vehicle model and type	Q-adjustment settings of the spare controllers when shipped out		Part No.	LED indication made when the power switch is turned on (Refer to "Section 3.3.3" regarding the LED indications.)
		L.H. side	R.H. side		
1	HD325-6	8	8	7872-10-230X	88
2	WA500-3	8	8	7872-10-520X	88
3	PC600-6	8	8	7872-10-410X	88
4	D155AX-5	8	8	7872-10-310X	88
5	HM400-1	8	8	7872-10-210X	88
6	PC1800-6	8	8	7872-20-420X	88
7	PC600 Extreme cold weather spec.	8	8	7872-11-410X	88
8	D275-5	8	8	7872-20-320X	88
9	HM300-1	8	8	7872-10-220X	88
10	WA470/480-5	8	8	7872-20-510X	88

* Although the Q-adjustment settings for each controller are as per the table below, the positions of the Q-adjustment adjusting rotary switches are "0" for both R.H. side and L.H.

Check table for the applicable serial numbers.

From the initial serial number with all the models.

NO	Applicable machine/ vehicle model	Serial Number of the applicable engines		Serial Number of applicable machines	
		Already shipped machines	Factory shipment machines	Already shipped machines	Factory shipment machines
1	PC600-6		110002 up		110001 up
2	PC650-6		110008 up		310001 up
3	D155AX-5		110012 up		75001 up
4	HD325-6		110003 up		6001 up
5	HD405-6		110042 up		2001 up
6	HM400-1		110014 up		1001 up
7	WA500-3LK		110001 up		A71001 up
8	WA500-3H		110004 up		H20001 up
9	PC1800-6		110134		10011 up
10	PC600-6 Extreme cold weather spec		From next shipment		From next shipment
11	D275-5		110078 up		20001 up
12	HM300-1		310352 up		1001 up
13	WA470-5		310001 up		70001 up
14	WA480-5		310005 up		80001 up
15	WA450-5L				A36001 UP
16	WA480-5L				A37001 UP

° Precautions when using the tools

-Warning-

Improper use of this tool will void the engine warranty and may cause damage to the vehicle/engine and will be a violation of U. S. Federal Regulation 203(a) (3) of the Clean Air Act (Act) 42 U. S. C. S7522 (a) (3).

° "IMPORTANT NOTICE"

**IMPORTANT NOTICE
TO USERS OF Q NUMBER
ADJUSTMENT SERVICE TOOL**

This notice provides important information and directions regarding approved use of the Q number adjustment service tool for Komatsu engine controllers.

WARNING: Failure to follow these directions could constitute tampering with the engine's emissions controls, a violation of the federal Clean Air Act, 42 U. S. C. S7522 (a) (3). The Clean Air Act provides for fines for tampering by dealers of up to \$27,500.00 per violation, and by other persons of up to \$2,500.00 per violation.

Komatsu approves usage of the Q number adjustment service tool only to (1) adjust engine output power on a dynamometer in case of overhaul; and (2) set the Q number for the new controller to match the original setting, in cases where an engine controller needs to be replaced.

Komatsu factory, distributor, dealer and OEM authorized personnel are allowed to purchase and use this tool only for these service purposes. Such authorized personnel may not sell or otherwise provide the tool to any other person. Use of the tool except as authorized will void the engine and emissions warranty and may cause damage to the equipment/engine.