PARTS & SERVICE NEWS

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(C)

SUBJECT: REPLACEMENT AND MODIFICATION OF THE VHMS CONTROLLER

PURPOSE: To inform Field Personnel

APPLICATION: HD465-5 Truck, S/N 4001 and up
HD605-5 Truck, S/N 1001 and up
HD785-5 Truck, S/N 4001 and up
HD985-5 Truck, S/N 1021 and up

FAILURE CODE: DBB0MA

DESCRIPTION:

1. Introduction:
   It was found that certain administration data (starting switch on/off history, etc.) that the VHMS controller has to obtain from the machine are not obtained sometimes. The VHMS controller must be replaced with or modified to a controller for which proper countermeasures have been taken.

2. List of Parts:

Part No.	Part Name	Purpose of Part	Qty	Remarks
HD985-5 and HD785-5				
7826-10-5002 (7826-10-5001	VHMS Controller (VHMS Controller)	Replacement	1 (1)	
HD605-5 and HD465-5				
7826-10-8002 (7826-10-8001)	VHMS Controller (VHMS Controller)	Replacement	1 (1)	

1. Precautions in replacement of the device

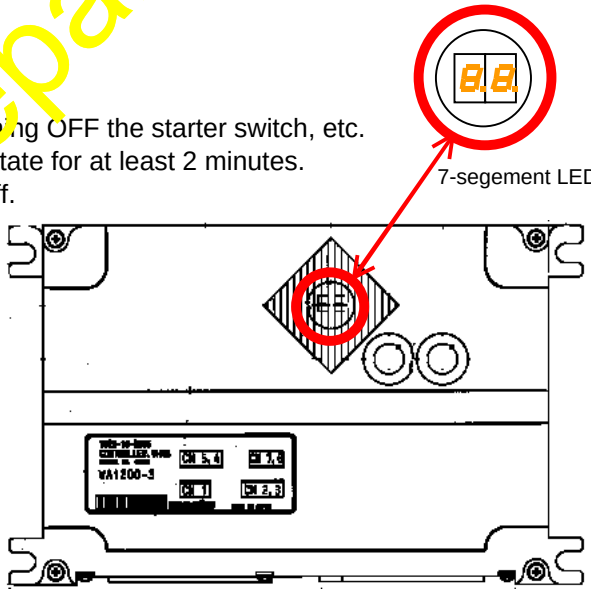
(1) Before starting replacement,

1) Download of VHMS data
The failure history data up to the replacement will be lost, therefore first download the accumulated data.
Since it is necessary to input the downloaded data into the WebCare (database), transmit the data to KOMATSU by email or FTP.
(The email address is provided at the bottom of the attached section II) VHMS setting procedure (After replacement).)
For information as to how to download and transmit data to WebCare, refer to the Instruction Manual for the VHMS technical analysis tool. If you have any question, contact the mailing address.

2) Checking and recording the contents of the VHMS settings
After replacing the VHMS controller, it becomes necessary to make resetting of the data.
In order to make proper setting, check the contents of the current settings and record them onto the attached check sheet.
Attachment
I) Checking procedures of contents of VHMS setting (before replacement)
II) Setting procedures of VHMS (after replacement)
III) VHMS work procedure check sheet (When replacing)
IV) VHMS initial setting procedures (Orbcomm initial setting) for vehicle equipped with Orbcomm
V) Orbcomm initial setting work check sheet for vehicle equipped with Orbcomm
Refer to the above for the implementation.

3) Properly shutting down the VHMS power supply

<1> Shut down the ordinary power supply by turning OFF the starter switch, etc.
<2> Hold the firm power supply at the specified state for at least 2 minutes.
Check that the “7 Segment LED” is turned off.
<3> Shut down the firm power supply.
(Disconnect the connector CN1 of the VHMS controller or remove the battery.)



(2) Replacement method, setting method and measures to be taken after finishing the replacement work

<1> Precautions when replacing the VHMS controller: Actual replacement procedure will be described on the next page and after. Be careful not to apply excessive force, shocks, etc. to the controller body, wire harnesses, etc.
Regarding the connectors to the VHMS controller body, first disconnect CN1 that contains the power line, when removing the existing VHMS controller, and connect it finally after installing the new VHMS controller.
<2> Setting after replacement
It is necessary to make data setting to the VHMS controller after it is replaced.
Set properly by referring to the relevant shop manual.
Setting items:
· Day, hour, and minute
· Settings of the vehicle model, serial number, etc.
· Settings of the component serial number, etc.
For the following vehicle with optional settings, set as follows:
Vehicle equipped with PLM: Setting of PLM
Vehicle equipped with Orbcomm: Orbcomm initial setting
<3> Handling of the old controller after replacement
Return the old controller to the following address:

<4> Mounting of replacement VHMS
Fix a new VHMS controller to the bracket with the bolt and washer <3>.
* Be careful to fix the controller in the correct direction.

<5> Attaching of wiring harness
Mate the connectors in the reverse procedures to <2> so that HM-CN1 is placed to the end.
* Recheck if the connection is correct, the connectors are mated properly and excessive force is not applied to the wiring harness.

<6> Attaching of cover

(3) Setting of vehicle information

Turn on power to the vehicle and set the following items properly by referring to the relevant shop manual.
To check the settings, complete III) Work check sheet.

1) Setting of calendar
-- Current date, hour, and minute

[Check the following against the value confirmed/recorded before replacing the controller or set to the value.]
2) Setting the time zone
3) Checking/setting vehicle model name, etc.
-- Vehicle model name, type and serial number
4) Setting the engine serial number
5) Setting of transmission serial number
-- Setting the transmission serial number to engine serial No. 2.
Implement the following to the vehicle equipped with Orbcomm by referring to IV) VHMS initial setting procedures (Orbcomm initial setting).
6) Enter the set value of the S.Fault History.
7) Enter the set value of S.Trend Analysis.
8) Enter the set value of Shot payload data (when the PLM is mounted).
9) Setting GCC code

(4) Sending downloaded data/returning VHMS controller

· Send data downloaded in 4-(1) by email to the WebCARE Support Center.
(The email address is provided at the bottom of the attached section II) VHMS Setting Procedure (After Replacement).)

· Also, send III) Work check sheet completed in 4-(4) by fax to the above address.

· Return the VHMS controller removed in 4-(3)-<3>.

2. Replacement procedures

(1) Downloading data and checking and recording the contents (data)

Park the vehicle on a level and hard ground and download data accumulated internally using the PC tool. Send the downloaded data to the address provided in the attached II) VHMS setting procedure (After Replacement) by email.
Then, check the settings of VHMS and record them on the III) Work check sheet. (For the vehicle equipped with Orbcomm, record them on the Orbcomm initial setting work check sheet as well.)

(2) Shutoff of vehicle power supply

Turn off the starter key to shut off power to the vehicle.

(3) Replacement of the VHMS controller

After a lapse of at least 2 minutes from (2) above, replace the VHMS controller installed in the rear box inside the operator's cab following the procedure described below.
<1> Open the cover of the rear box in the cab. (Fig. 1)
<2> Removal of wiring harness (Fig. 2)
Remove the connector in the order starting with HM-CN1.
<3> Removal of VHMS Control (Fig. 1)
Remove the bolt (0101-80885) and the washer (01643-30823) from the VHMS controller (See the table below.) on the left side behind the cab and then remove the controller from the bracket.

Part number of VHMS controller to be replaced

Model	Part number
HD785-5	7826-10-5001
HD985-5	7826-10-5001
HD465-5	7826-10-8001
HD605-5	7826-10-8001

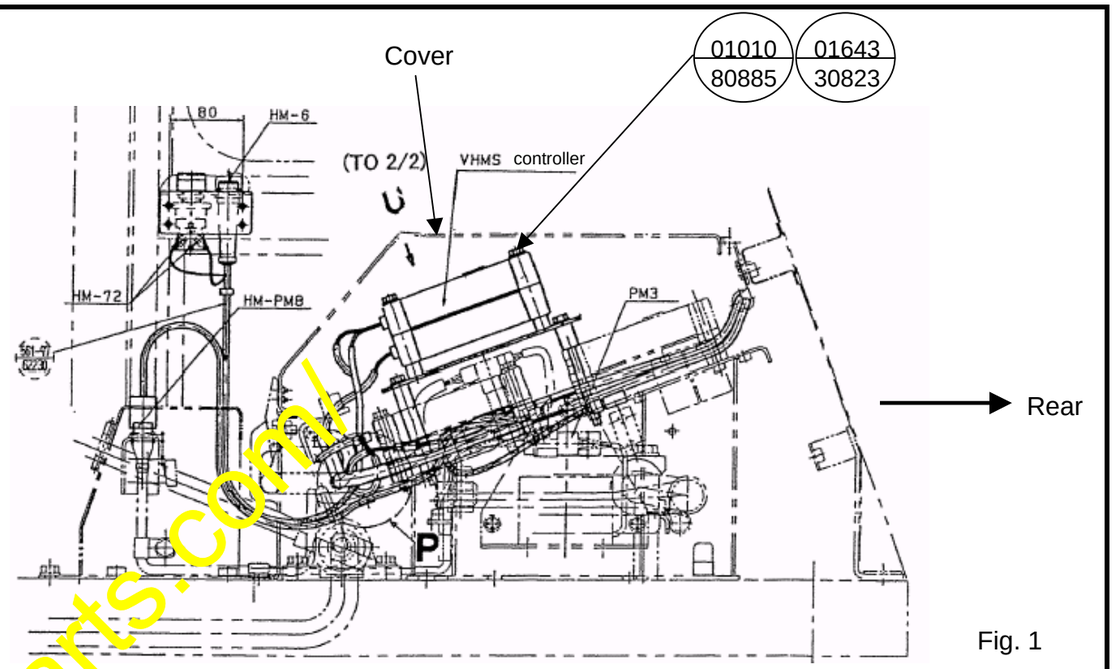


Fig. 1

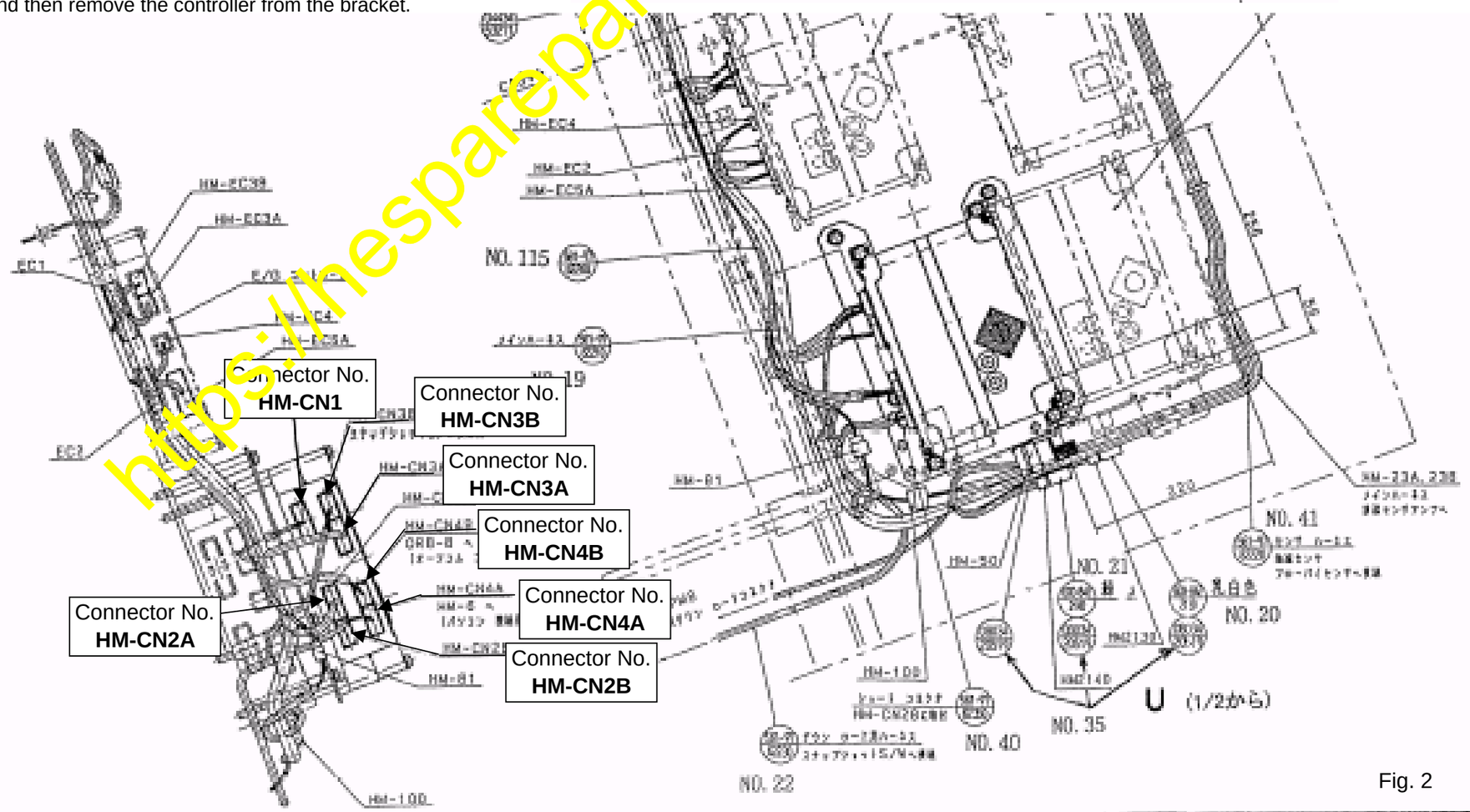
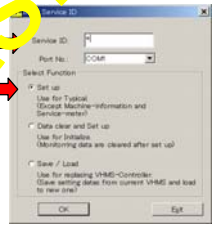
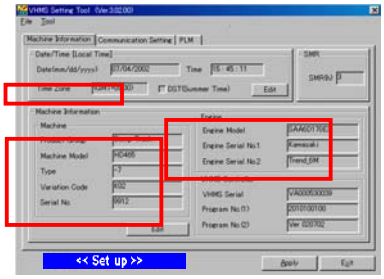
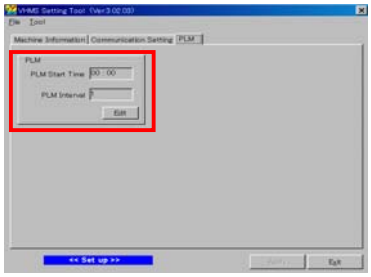
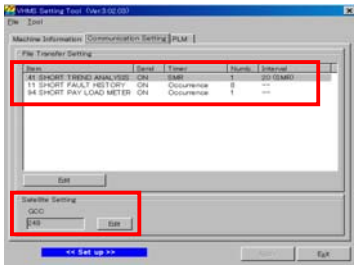


Fig. 2

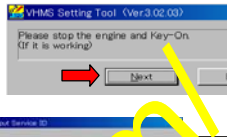
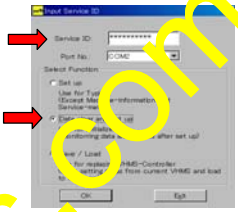
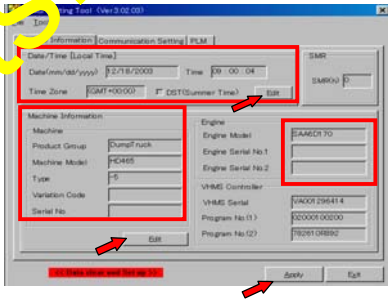
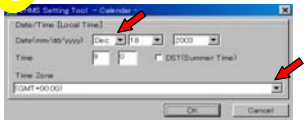
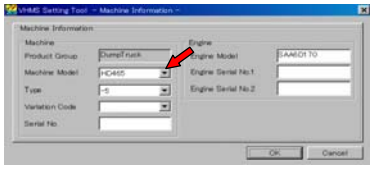
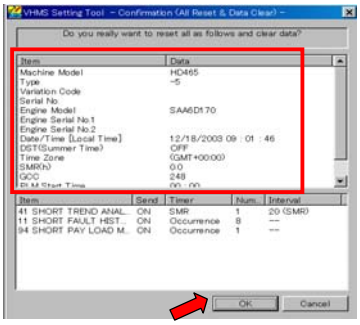
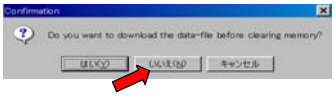
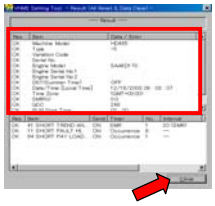
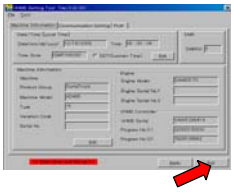
I) Checking procedures of contents of VHMS setting (before replacement)

(Applicable vehicle model: HD785/985-5, HD465/605-5 dump trucks)

Timing	Work steps	Description
		*** The setting work is carried out inside the cab.**
Before starting the work,		**799-608-3220** Cable **799-608-3211** setting program (VHMS technical analysis tool box) **Portable personal computer**
Turn OFF the starter switch	**<1> Connection of personal computer and VHMS Controller**	Connect the cable (799-608-3220) to the download connector (VHMS) of the VHMS controller. And connect the other end to the RS232C terminal of the portable personal computer. 
Turn ON the starter switch	**<2> Checking normal operation of the VHMS controller**	Check the *normal operation in the 7-segment display window of the VHMS controller. * The normal operation of the LED means that, after the starting switch is turned on, the LED blinks when the 7-segment is rotating and displays hexadecimal count-up. For the detail, refer to the Shop Manual.
	<3> Starting VHMS initial setting tool (VHMS technical tool box) (Automatic updating of defined information)	For the installing method of the VHMS initialization program, refer to the attached Program Handling Procedures. Start the personal computer and click the icon of "VHMS initial setting tool." **Icon**  The message "Please stop the engine and Key-On." appears on the screen, and then click "Next" 
	<4> VHMS controller Checking and recording setting contents Check the machine basic information set to the VHMS controller and record them in the Attachment III) Work check sheet (the column of present setting confirmation value). (The contents in the red frame shown on the right side)	After starting it, enter the ID (Service ID). Select "**Set up**" and click "OK"  Note that this program does not start unless the VHMS controller and the personal computer are connected. The ID is the part number of the VHMS controller. Note that the ID changes depending on model. Click the machine info tag which is always shown as the default and check the following contents:  1) Checking machine model name, type and serial number. 2) Checking the engine type and its serial number. 3) Checking transmission serial number - - Setting the transmission serial number to Engine Serial No. 2. 4) Checking time zone.
	When PLM is mounted, **<4>-2 PLM (Payloadmeter) Checking and recording setting contents**	<In case of vehicle equipped with PLM> Click the PLM tag and check the following contents:  1) Setting counting start time and counting unit (day). - - For the right example, it is set to start counting at 0:00 AM and to transmit the counted result of a day by satellite communication.
	When Orbcomm is mounted, **<4>-3 Sent data (Orbcomm transmission) Checking and recording setting contents**	<In case of vehicle equipped with Orbcomm> 1) Checking sent data  Check data that can be sent. (The figure shows three data.) Short fault history (error code) Short trend analysis (trend data) Shot payload data (for PLM device) 2) Checking GCC code
Turn OFF the starter switch		After checking and recording, click "Exit" to end the operation. Checking 7-segment display in the VHMS controller inspection window. - - After the starter switch is turned off, the display remains for several seconds. Make sure that the (saving) display disappears certainly. **1) It is normal that, after the starter switch is turned off, the VHMS LED indicates SF or SH (the memory processing time) and goes out (the VHMS power supply is turned off).** **2) When the power is turned off immediately after the starter switch is turned off, the firm power is not supplied.**

II) Setting procedures of VHMS (after replacement)

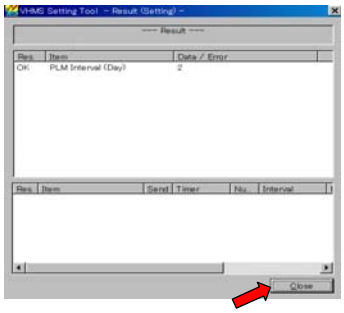
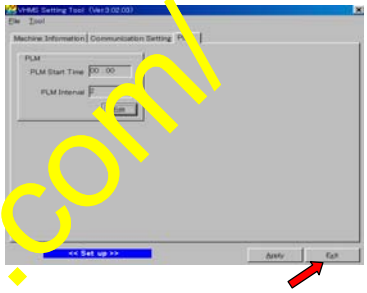
(Applicable vehicle model: HD785/985-5, HD465/605-5 dump trucks)

Timing	Work steps	Description
Turn OFF the starter switch		
	<1> Connection of personal computer and VHMS controller	Connect the cable (799-608-3220) to the download connector (VHMS) of the VHMS controller. And connect the other end to the RS232C terminal of the portable personal computer. 
Turn ON the starter switch	**<2> Checking normal operation of the VHMS controller**	Check the *normal operation in the 7-segment display window of the VHMS controller. * The normal operation of the LED means that, after the starting switch is turned on, the LED blinks when the 7-segment is rotating and displays hexadecimal count-up. For the detail, refer to the Shop Manual.
	<3> Starting the VHMS initial setting tool (VHMS technical tool box)  (Automatic updating of defined information)	For the installing method of the VHMS initialization program, refer to the attached Program Handling Procedures.  Icon Start the personal computer and click the icon of "VHMS initial setting tool."  The message "Please stop the engine and Key-On." appears on the screen, and then click "Next"
	<4> Setting VHMS controller and checking the setting contents Set what was recorded before replacing the old VHMS controller in the new VHMS controller. (Setting the contents in the red frame shown on the right side.)	After starting it, enter the ID (Service ID). Select "**Data clear and set up**" and click "OK"  The ID is the part number of the VHMS controller. Note that the ID changes depending on model. Note that this program does not start unless the VHMS controller and the personal computer are connected. The "Machine Info" screen (that is always shown as the default) appears, and the "Edit" button is clicked to set respective items.  1) Setting of Calendar -- Setting Current date, hour, minute and time zone 2) Setting model name, etc. -- Setting Vehicle model name, type and serial number 3) Setting of engine serial number 4) Setting of transmission serial number - - Setting the transmission serial number to Engine Serial No.1. Click "▼" to show the pull-down for selection.   At the end click "OK" and click "Apply" to register the setting. When you click "**Apply**," the setting contents list will appear. If the contents are correct, click "OK"  Refer to the (Attachment III) Work check sheet to check if the contents in the red frame shown on the right side are correct. The screen asking you if you download the data will appear. Click "No"  "Data setting" will end, and the result will be displayed. When the data is correct, click "Close" and then click "Exit" to end the operation.  

Timing	Work steps	Description
Turn OFF the starter switch	**<5> Saving setting contents** Turning OFF the starter switch completes the saving operation to the VHMS controller.	Checking 7-segment display in the VHMS controller inspection window. - - After the starter switch is turned off, the display remains for several seconds. (saving operation) Make sure that the display disappears certainly. **1) It is normal that, after the starter switch is turned off, the VHMS LED indicates SF or SH (the memory processing time) and goes out (the VHMS power supply is turned off).** **2) When the power is turned off immediately after the starter switch is turned off, the firm power is not supplied.**
<Implementation in case of vehicle equipped with PLM>		
Turn ON the starter switch	**<6> Checking normal operation of the VHMS controller**	Check the normal operation on the LED (7-segment) display of the VHMS controller. * The normal operation of the LED means that, after "the starting switch is turned on," the LED blinks when the 7-segment is rotating and displays hexadecimal count-up. For the detail, refer to the Shop Manual.
	<7> Starting the VHMS initial setting tool (VHMS technical tool box) (Automatic updating of defined information)	For the installing method of the VHMS initialization program, refer to the attached Program Handling Procedures. Start the personal computer and click the icon of "VHMS Initial Setting Tool." **Icon** The message "Please stop the engine and Key-On." appears on the screen, and then click "Next"
	<8> PLM (Payload meter) Setting and confirming setting contents	After starting it, enter the ID (Service ID). Select "Set up" and click "OK" The ID is the part number of the VHMS controller. Note that the ID changes depending on model. Note that this program does not start unless the VHMS controller and the personal computer are connected. Click the "PLM" tag and then click the "Edit" button. Click "▼" to show the pull-down for selection. 1) Setting counting start time and counting unit (day). - - For the right example, it is set to start counting at 0:00 AM and to transmit the counted result of 2 days by satellite communication. After completing the setting, make sure that the time display on the payload meter matches the one set on the VHMS. At the end click "**OK**" and click "**Apply**" to register the setting. When you click "Apply," the setting contents list will appear. If the contents are correct, click "OK" Refer to the (Attachment III) Work check sheet to check if the contents in the red frame shown on the right side are correct.

II) Setting procedures of VHMS (after replacement)

(Applicable vehicle model: HD785/985-5, HD465/605-5 dump trucks)

Timing	Work steps	Description
		The "Result" of the setting will appear. Check the "OK" mark, and if it is correct, clock "Close" 
		Also, click "Exit" to end the operation. 
Turn OFF the starter switch	**<9> Saving setting contents** Turning OFF the starter switch completes the saving operation to the VHMS controller.	Checking 7-segment display in the VHMS controller inspection window. - After the starter switch is turned off, the display remains for several seconds. Make sure that the (saving) display disappears certainly. **1) It is normal that, after the starter switch is turned off, the VHMS LED indicates SF or SH (the memory processing time) and goes out (the VHMS power supply is turned off).** **2) When the power is turned off immediately after the starter switch is turned off, the firm power is not supplied.**
	Completion of VHMS replacement work and contact to KOMATSU	Now, the setting of VHMS has come to the end. In addition to the notification of the work completion, dispatch the following data to the address below: 1) Fax the VHMS (Replacement) work check sheet. 2) Send the downloaded VHMS data by Notes or email. **VHMS WebCARE Support Center** **(Service Product Development Group, Parts and Service Control Section, KOMATSU Head Office)** Telephone: 81-3-5561-2765 Fax: 81-3-5561-4766 Email address: webcare@komatsu.co.jp

III) VHMS work procedure check sheet (When replacing)

(HD785/985-5, HD465/605-5 dump trucks)

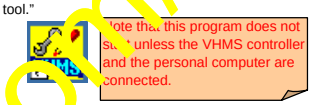
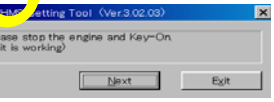
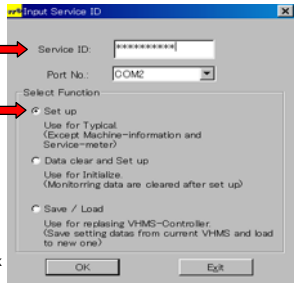
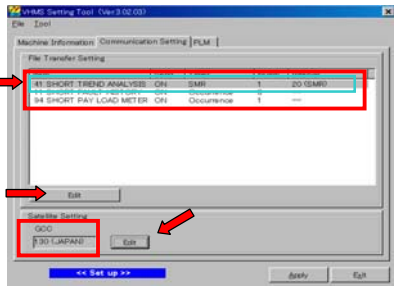
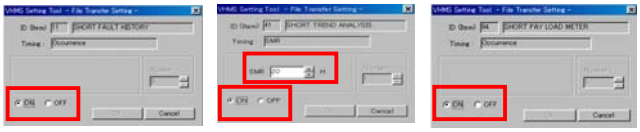
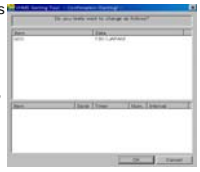
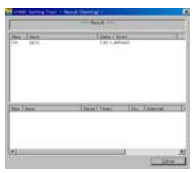
Setting date:	Date:
Date of fax transmission:	Date:
DB/branch name:	
Name of person in charge:	

Setting steps	Check items	Present setting confirmation value	Result (after replacement)	
<1> Connection of personal computer and VHMS controller	Are they connected securely?		yes	no
<2> Checking normal operation of the VHMS controller	Is it operating normally? (Display of hexadecimal count-up after rotation)		yes	no
<3> Starting the VHMS initial setting tool	Setting tool mode			
	Is "Set up" selected at the time of confirmation?	yes / no		
	Is the mode "Data Clear and Set up" selected at the time of setting?		yes	no
<4> Setting of the VHMS controller <4>-1 Checking machine information <4>-2 Setting machine information Here, machine basic information for the VHMS controller is checked and set to the controller.	Is the today's date set to Date (mm/dd/yy) [month/day/year]?		yes	no
	Is the present time set to Time [Watch]?		yes	no
	Is Time Zone (GMT+(****)) input correctly?		yes	no
	Is Product Group correct?		yes	no
	Is Machine Model the same as the body?		yes	no
	Is Type the same as the body?		yes	no
	Is Serial No. input correctly?		yes	no
	Is Engine Model correct?		yes	no
	Did you input Engine Serial No. 1 correctly?		yes	no
	Did you input Engine Serial No. 2 (Transmission Serial No.) correctly?		yes	no
When PLM is mounted, →	Did you set PLM correctly? (Start time, Interval)		yes	no
<5> Checking of setting contents	Are Setting Contents correct?		yes	no
<6> Saving setting contents	Did LED (7-segment) disappear after the saving operation?		yes	no
<7> Checking VHMS function (operation)	Did LED operate normally?		yes	no

Mailing address **VHMS WebCARE Support Center**
(Service Product Development Group, Parts and Service Control Section, KOMATSU Head Office)
Telephone: 81-3-5561-2765
Fax: 81-3-5561-4766
Email address: webcare@komatsu.co.jp

IV) VHMS initial setting procedures (Orbcomm initial setting)

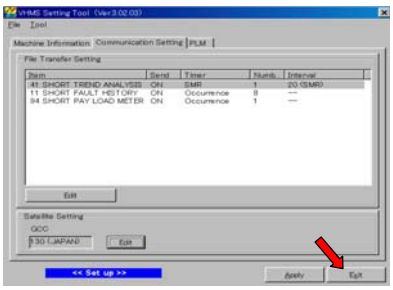
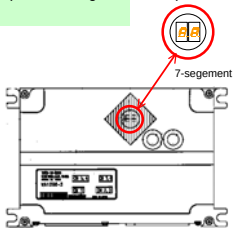
Vehicle equipped with Orbcomm (Applicable vehicle model: HD785/985-5, HD465/605-5 dump trucks)

Timing	Work steps	Description
Before starting the work, **Turn OFF the starter switch**	· **Prepare necessary tools and check sheets.**	**799-608-3220** Cable **799-608-3211** Setting program (VHMS technical analysis tool box) **Portable personal computer** (Install the "VHMS technical analysis tool box" to the personal computer in advance.)
	<1> Connection of personal computer and VHMS controller	Connect the cable (799-608-3220) to the download connector of the VHMS controller. And connect the other end to the RS232C terminal of the portable personal computer. 
Turn ON the starter switch	**<2> Checking normal operation of the VHMS controller**	Check the *normal operation in the 7-segment display window of the VHMS controller. * The normal operation of the LED means that, after the starting switch is turned on, the LED blinks when the 7-segment is rotating and displays hexadecimal count-up. For the detail, refer to the Shop Manual.
	<3> Starting VHMS initial setting tool (VHMS technical tool box) **Automatic updating of defined information**	For the installing method of the VHMS initialization program, refer to the attached program handling procedures. Start the personal computer and click the icon of "VHMS initial setting tool."  Note that this program does not start unless the VHMS controller and the personal computer are connected. The message "Please stop the engine and Key-On." appears on the screen, and then click "Next" 
	<4> Initial setting of the VHMS controller	After starting it, enter the ID (Service ID). Select "**Set up**" and click "OK"  The ID is the part number of the VHMS controller (hyphen is not required). Note that the ID changes depending on model. Click the "Communication setting" tag. Click the data that can be sent and is displayed on the screen, and click the "Edit" button.
	<4>-1 Setting for communication Here, VHMS data to be sent by satellite communication is selected and the communication frequency is set.	1) Selecting data to be sent There are three kinds of data that can be sent. Here, necessity of satellite communication and change of frequency are set.  Short fault history (error code) Short trend analysis (trend data) Shot payload data (for PLM device)  2) GCC code Click "Edit" and select the relevant GCC code. (In case of Japan: 130) Click "▼" to show the pull-down and select a relevant area (nation).  **To register the setting, click "Apply"** The change confirmation screen will appear. When it is correct, click "OK"  The "Result" of the setting will appear. Check the "OK" mark, and if it is correct, clock "Close" 

GCC code	Area (Nation)
1	USA
120	ITALY
121	MALAYSIA
122	KOREA
123	BRAZIL
130	JAPAN

IV) VHMS initial setting procedures (Orbcomm initial setting)

Vehicle equipped with Orbcomm (Applicable vehicle model: HD785/985-5, HD465/605-5 dump trucks)

Timing	Work steps	Description
		Also, click "Exit" to end the operation. 
Turn OFF the starter switch	**<5> Saving setting contents** Turning OFF the starter switch completes the saving operation to the VHMS controller.	Checking 7-segment display in the VHMS controller inspection window. - - After the starter switch is turned off, the display remains for several seconds. (saving operation) Make sure that the display disappears certainly. **1) It is normal that, after the starter switch is turned off, the VHMS LED indicates SF or SH (the memory processing time) and goes out (the VHMS power supply is turned off).** **2) When the power is turned off immediately after the starter switch is turned off, the firm power is not supplied.**
Turn ON the starter switch		
Turn OFF the starter switch	**<6> Checking Orbcomm controller**	After replacing the VHMS controller, check the dot (decimal point) lighting status on the right lower part of the VHMS controller LED shown in the figure below: · OFF Communication with Orbcomm terminal is not possible. · ON Orbcomm terminal and communication satellite have not be caught . (No transmission is possible.) · Short blinks Send data is not available at the terminal but the satellite is caught. (Transmission is possible but no data is available.) · Long blinks Send data is available at the terminal but the satellite is caught. (Data is being transmitted.) Also, the confirmation is possible with the lighting status of the LED on the right side of the Orbcomm terminal (Part No. 7826-12-1100 in Japan or 7826-12-2000 overseas). (Since it is difficult to check the Orbcomm LED, be careful to check it.) * The Orbcomm controller receives firm power supply from battery. · Off No power is supplied to the Orbcomm terminal. · ON The satellite is not caught yet. (Transmission is not possible.) · Short blinks Send data is not available at the terminal but the satellite is caught. (Transmission is possible but no data is available.) · Long blinks Send data is available at the terminal but the satellite is caught. (Data is being transmitted.) 
After returning to the office,	**Completion of Orbcomm setting work and contact to KOMTSU**	Now, you have completed the setting to Orbcomm (satellite communication). Send the check sheet to the following address: After the setting starts, data is periodically transmitted to WebCARE. To check transmission status, Check 1. the first trend data after 20 hours (SMR) or 2. the time of error occurrence (any time) at WebCARE.
	WebCARE **Now, you have completed the work.** **Check the data at WebCARE.** **http//webcare.komatsu.co.jp**	**VHMS/WebCARE Support Team** **(in KOMATSU Parts and Service Control Section)** Telephone: 81-3-5561-2765 Fax: 81-3-5561-4766 Email address: webcare@komatsu.co.jp

If you have any question, refer to the Instruction Manual (Operation Procedures) of VHMS setting tools (Part No. 799-608-3211).

Setting date:	Date:
Date of fax transmission:	Date:
DB/branch name:	
Name of person in charge:	

V) Orbcomm initial setting work check sheet

Vehicle equipped with Orbcomm

(Applicable vehicle model: HD785/985-5, HD465/605-5 dump trucks)

Setting steps	Check items	Result	
Checking machine and component name plates	Model Name		
	Serial number		
	Service meter reading		
	Engine serial number		
	Transmission serial number		
	VHMS Controller S/No.		
	Orbcomm Controller S/No.		
<1> Connection of personal computer and VHMS controller	Are they connected securely?	yes	no
<2> Checking normal operation of the VHMS controller	Is it operating normally? (Display of hexadecimal count-up after rotation)	yes	no
<3> Starting the VHMS initial setting tool	Is "Set up" selected for the setting tool mode?	yes	no
<4> Initial setting of the VHMS controller **<4>-2 Setting for communication** Here, VHMS data to be sent by satellite communication is selected and the communication frequency is set.	Enter the set value of the S.Fault History.		
	Existence of communication	On	Off
	Number (8 is set as the default.)	Number	
	Enter the set value of S.Trend Analysis.		
	Existence of communication	On	Off
	Interval (2 h is set as the default.)	Hrs	
	Enter the set value of Shot Payload Data (When the PLM is mounted).		
	Existence of communication	On	Off
	Counting start time		
	Counting interval (days)	day	
	Did you set the GCC code? (130 in Japan)	yes	no
<5> VHMS Saving Operation	Did LED (7-segment) disappear?	yes	no
<6> Checking Orbcomm controller	Is the (green) LED on?	yes	no

Mailing address: VHMS/WebCARE Support Team
(in KOMATSU Parts and Service Control Section)
Telephone: 81-3-5561-2765
Fax: 81-3-5561-4766
Email address: webcare@komatsu.co.jp