

INSTALLATION MANUAL

REF NO.	BT03063
DATE	Mar. 12, 2004

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SUBJECT: LOCAL INSTALLATION PROCEDURE FOR OVERSEAS KOMTRAX
(FOR CHILE)

PURPOSE: To introduce local installation procedure for the KOMTRAX kit. (for Chile)

APPLICATION: WA380-5 Wheel Loaders, Serial Nos. 60001 and up
WA430-5 Wheel Loaders, Serial Nos. 60001 and up
WA470-5 Wheel Loaders, Serial Nos. 70001 and up
WA480-5 Wheel Loaders, Serial Nos. 80001 and up

FAILURE CODE: D800Z9

DESCRIPTION:

1. Introduction

Follow the procedure described in this service news when locally installing the overseas KOMTRAX (ORBCOMM communication system) kit.

Sales unit code: 6WP02A-A

Product component unit No.: X250575270

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2. List of parts

No.	Part No.	Part Name	Q'ty	Remarks
1	421-54-33461	Bracket ope seat	1	
2	421-54-33470	Plate	1	
3	01010-80616	Bolt	4	
4	01643-30623	Washer	4	
5	09415-05016	Cap	1	
6	7826-20-7010	Controller	1	(For Chile)
7	01010-80825	Bolt	4	
8	01643-30823	Washer	4	
9	421-54-33481	Bracket	1	
10	01010-80825	Bolt	4	
11	01643-30823	Washer	4	
12	418-54-22190	Cushion	1	
13	421-06-31391	Wiring harness	1	
14	569-06-61960	Replay	1	
15	287-06-16420	Bracket	1	
16	01010-80610	Bolt	1	
17	01643-30623	Washer	1	
18	04434-51408	Clip	1	
19	01010-80820	Bolt	1	
20	01643-30823	Washer	1	
21	04434-51410	Clip	2	
22	01010-81075	Bolt	1	
23	01010-81065	Bolt	1	
24	01643-31032	Washer	2	
25	431-07-12540	Spacer	2	
26	08034-40521	Band	10	
27	8A13-10-141A	Cable	1	
28	08017-30710	Conduit	1	
29	8A13-10-2100	Antenna. sat	1	
30	421-925-3180	Cover	1	


No.	Part No.	Part Name	Q'ty	Remarks
31	01435-01020	Bolt	2	
32	01643-31032	Washer	2	
33	363-54-31450	Cap bolt	2	
34	7826-20-9310	Cable, Sat	1	
35	8A13-10-2310	Antenna, GPS	1	
36	421-925-3470	Sheet	2	
37	421-925-3480	Sheet	1	


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Safety cautions


Precautions which need to be observed without fail to prevent occurrence of accidents causing injuries to the operating person or other persons and occurrence of damages or losses to the assets are being explained as follows.

- The degrees of injuries and damages or losses of the assets when erroneous operations are made ignoring the contents of the precautions are being defined and explained using the following symbols and descriptions.


	WARNING Description in the columns with this symbol explains matters with which "there are possibility of occurrence of accidents resulting in death or serious injuries".
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	CAUTION Description in the columns with this symbol explains matters with which "there are possibility of occurrence of accidents resulting in injuries or damages or losses of the assets only".
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- The types of the precaution are defined and explained using the following symbols.


	This symbol indicates "cautions" to take.
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	This symbol indicates "prohibitions".
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	This symbol indicates "compulsory" matters to be observed without fail.
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	WARNING
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	Do not install to the place where the visibility or machine operation is hindered.
Prohibition	Installation to the place where the visibility or machine operation is hindered, may result in accidents.

	Do not install to the place where the temperature may get extremely high or low and/or to the place where severe vibrations or shocks may occur.
Prohibition	It may result in burns or malfunctioning or fire accidents.

	Never disassemble, repair nor modify.
Prohibition	Disassembly, repair or modification may result in malfunctioning, fire accidents or other accidents.

	Install the body securely.
	Incomplete installation may result in injuries or accidents by its possible drop.

	Be sure to use rated DC12V batteries, rated DC24V batteries or a DC supply source as its power supply.
	This equipment requires a DC power supply exclusively. Also, do not use this equipment on a plus-grounded machine. The use on a plus-grounded machine may result in fire accidents or malfunctioning.

**CAUTION****Prohibition**

Do not pinch the cable and cord between other things and do not pull them forcefully to damage them.

Or it may result in, malfunctioning or fire accident by short circuiting or breakage.



Use the specified communication antenna.

Use the specified antenna.

Precautions before starting the installation work

- (1) In this Installation Manual, the KOMTRAX terminal is indicated as "controller".
The controller being installed is not usable before the KOMTRAX service starting operation is carried out on a client's personal computer.
If you have any question, contact your responsible person for the KOMTRAX operation.
- (2) The test to check if the terminal set has been installed properly, that is performed immediately after the completion of the installation work is called "Inauguration test for machine".
(Regarding the test method, refer to the Section "Inauguration test check sheet for machine" indicated on page 14 of this Installation Manual.)
When carrying out this "Inauguration test for machine", it is necessary to carry it out at an outdoor place where the sky is open (where communications can be made without obstacles).
- (3) The "Inauguration test for machine" is an essential procedure to start operation of the KOMTRAX communications after completion of the installation of the KOMTRAX terminal.
(When the terminal is repaired by Komatsu, it is also necessary to carry out the "Inauguration test for machine" similar to the case after the installation of the new KOMTRAX terminal.)
- (4) Once the "Inauguration test for machine" is carried out, it is not possible to perform the same test again. Therefore, contact Komatsu if you will change the installation of the controller to other machine or if you will replace the existing controller with a new controller.

Basic precautions



WARNING

- Never disassemble, repair, modify nor move the position of the controller, communication antenna, GPS antenna and cables. If you do so it may result in malfunctioning of the machine, malfunctioning of this equipment or a fire accident.
(Removal and reinstallation of this equipment should be made by your Komatsu distributor.)
- Do not pinch the cable and cord between other things and do not pull them forcefully to damage them.
Or it may result in malfunctioning of the machine, malfunctioning of this equipment or fire accident.
- In case the operating person is using an implanted type heart pace maker, keep the section where the heart pace maker is being implanted away from the communication antenna (with the transmission output of 0.8 W) by at least 22 cm.
The radio wave may influence the operation of the heart pace maker.

IMPORTANT

- The KOMTRAX system consumes very small electric power even while the starting switch key is being set to the "OFF" position. Therefore, when storing the machine for a long period of time, charge the battery as per the instructions for the long term storage.
- When installing an attachment like the overhead guard which covers the GPS antenna, contact your Komatsu distributor.
- Do not pour water over the controller and its harnesses.
- It is necessary to obtain approval of an authority of each country for the radio wave to be used by the KOMTRAX system.
- Therefore, when exporting a machine equipped with the KOMTRAX controller, be sure to remove the KOMTRAX controller before exporting the machine.
(Contact your Komatsu distributor if the KOMTRAX system is usable in the country or not. Removal of the KOMTRAX controller is carried out by a Komatsu distributor.)

Supplement:

- Since the KOMTRAX system is using wireless communications, it is not usable in places where radio waves cannot reach like in a tunnel, in an underground site, inside a building, in a mountain area, or in places where radio waves are weak even in outdoor sites or outside the servicing area of the wireless communications.

Check before starting (inspections to carry out before starting the operation)

There is no need at all to make inspections and special operation of the KOMTRAX controller. Although the LED lamps and the numeric indicator of the KOMTRAX controller may light or flicker regardless of the position of the starting switch key, it is not an unusual phenomenon.

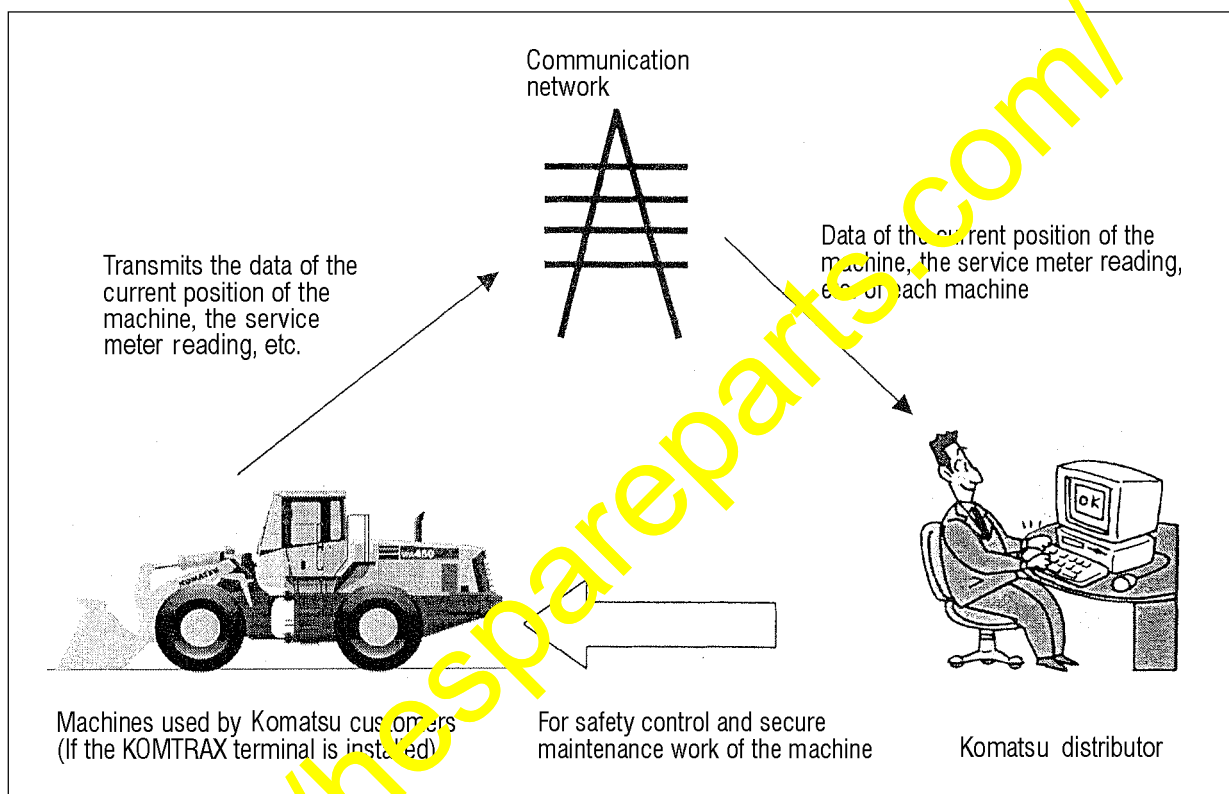
When using the KOMTRAX controller, although it is not necessary to make special operation of the controller, make the following daily check up in order to secure the necessary communication performance, and if any abnormality exists, contact your Komatsu distributor.

- (1) If the communication antenna is not being disconnected or damaged.
- (2) If the GPS antenna is not being disconnected or damaged.
- (3) If the antenna cable is not being disconnected or damaged.

Handling of the KOMTRAX system (outline of the system)

The KOMTRAX system is a machine control system making use of wireless communications, and with this system, the data of the current position of the machine, the service meter reading, etc. are transmitted through the terminal being installed to the machine and these data can be checked by use of a personal computer terminal via a ground antenna.

※ To check the data, it is necessary to adopt a separate system.



Introduction

This installation manual describes the guide line when installing the KOMTRAX controller, harnesses and antennas to the machine.

Be sure to read this installation manual carefully before starting the installation work.

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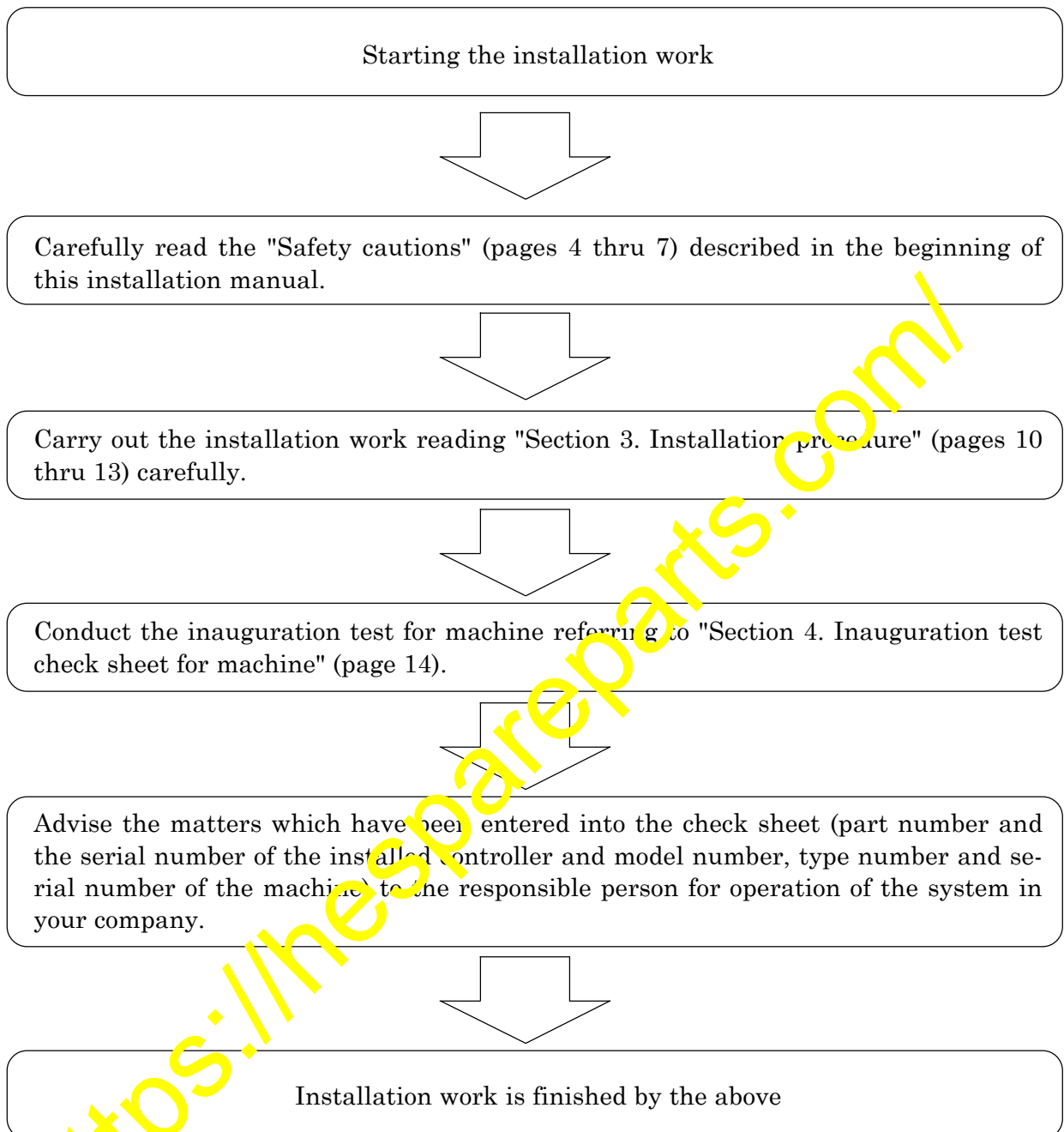
1. Machine models covered by this installation manual

WA380-5	} Only machines shipped to Chile and equipped with the multi-color monitor panel are applicable.
WA430-5	
WA470-5	
WA480-5	

(Note 1) When installing the KOMTRAX controller, etc. to machines equipped with options like the overhead guard which is to be installed above the GPS antenna on the operator's cab or to machines equipped with options hindering installation of the communication antenna, contact your Komatsu distributor.

(Note 2) When installing the KOMTRAX terminal set together with an electric equipment which is operated by the starting switch, contact your Komatsu distributor.

2. Installation work processes and precautions when carrying out the installation work



Precautions when carrying out the installation work

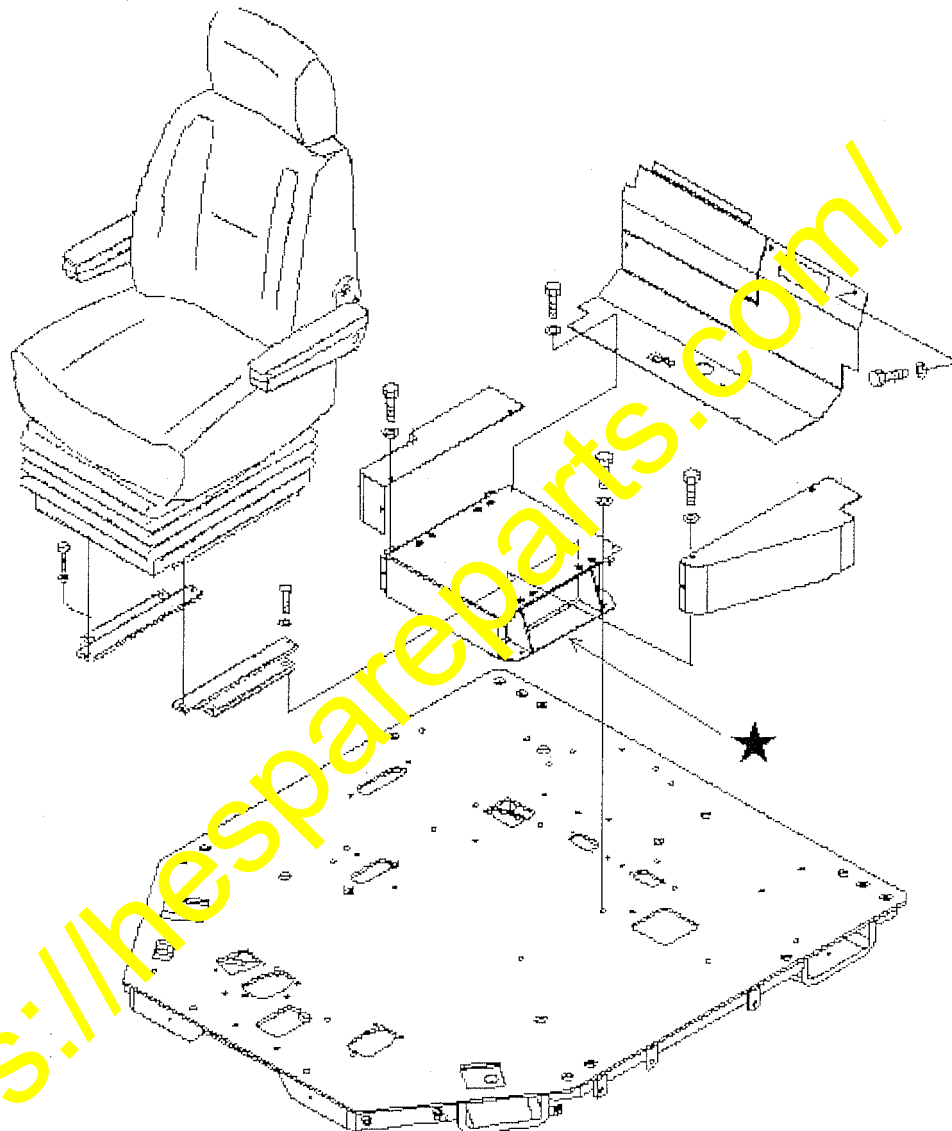
- (1) Until the "Inauguration test for machine" is finished, do not move the machine into such a place as a factory building where radio wave will not reach.
- (2) When disconnecting connectors, hold their bodies. Also, do not pull the harness wire forcefully.
- (3) When connecting the connector, be sure to connect it securely.
- (4) When arranging the cables, do not bend them exceeding the permissible bending radius. The permissible bending radius is 20 mm in case of the GPS antenna cable and 60 mm in case of the communication antenna cable.

3. Installation procedure

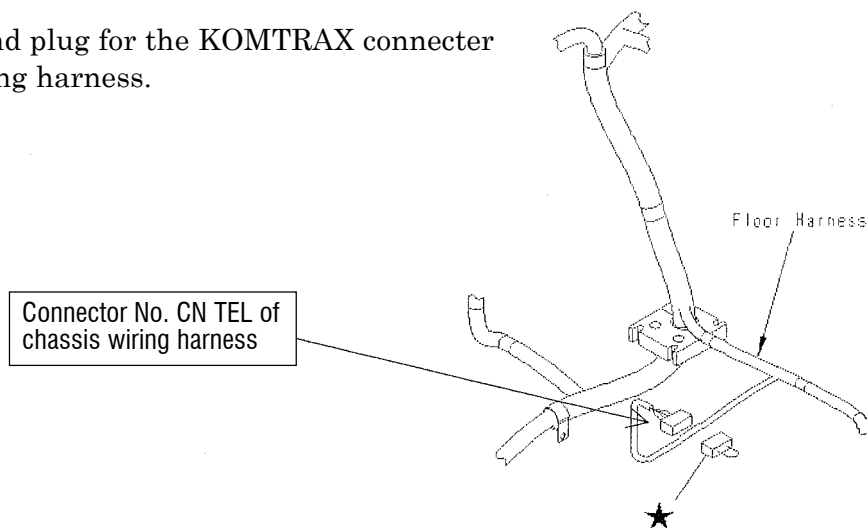
3-1. Remove the parts shown below.

The sign (★) indicates a part to be replaced.
The parts without the sign will be reused. Be careful not to lose them.

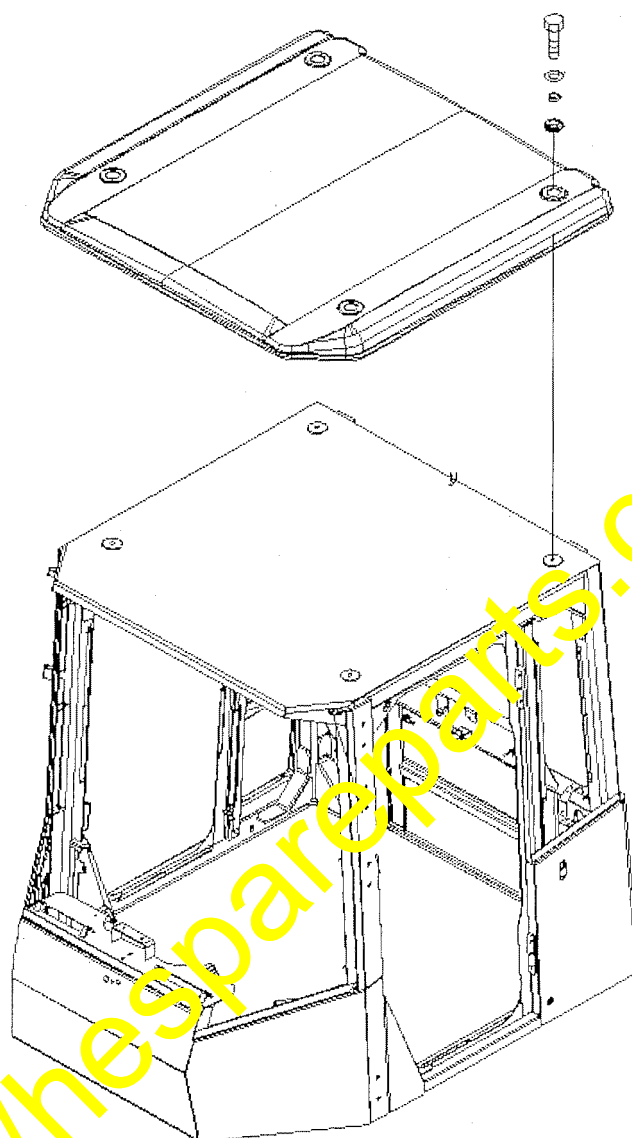
- ① Remove the operator seat box.



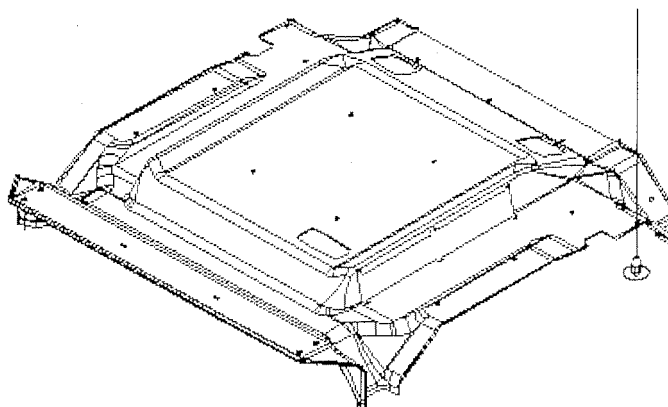
- ② Remove the blind plug for the KOMTRAX connector of the floor wiring harness.



- ③ Remove the outer roof of the cab.



- ④ Remove the inner roof of the cab.

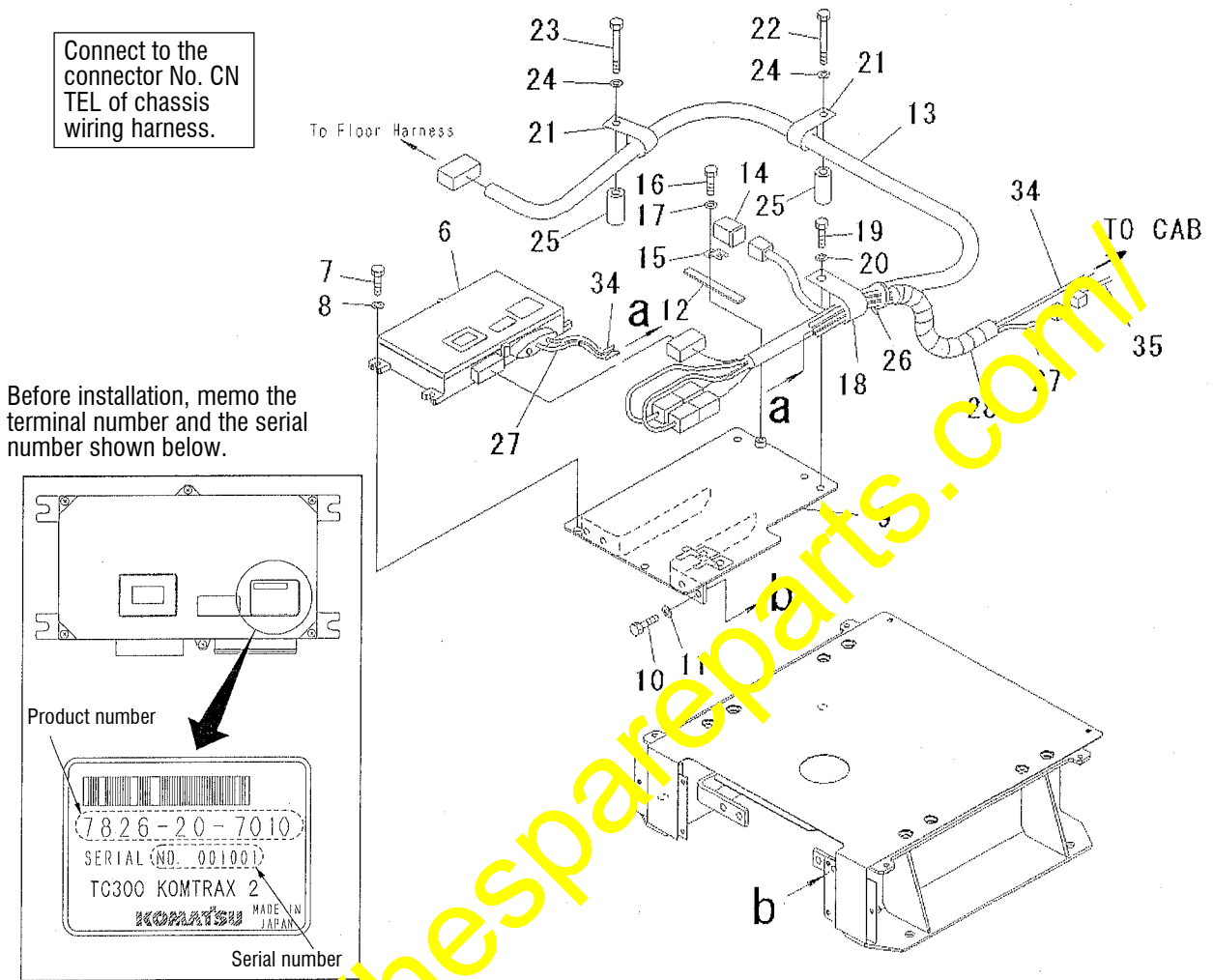


3-2. Install the numbered (item number of "List of parts") parts shown below.

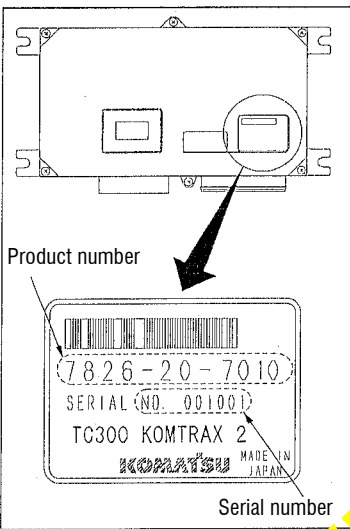
The tightening torque for the unspecified bolts is that of KES 04.123.1.

① Install the controller and the wiring harness.

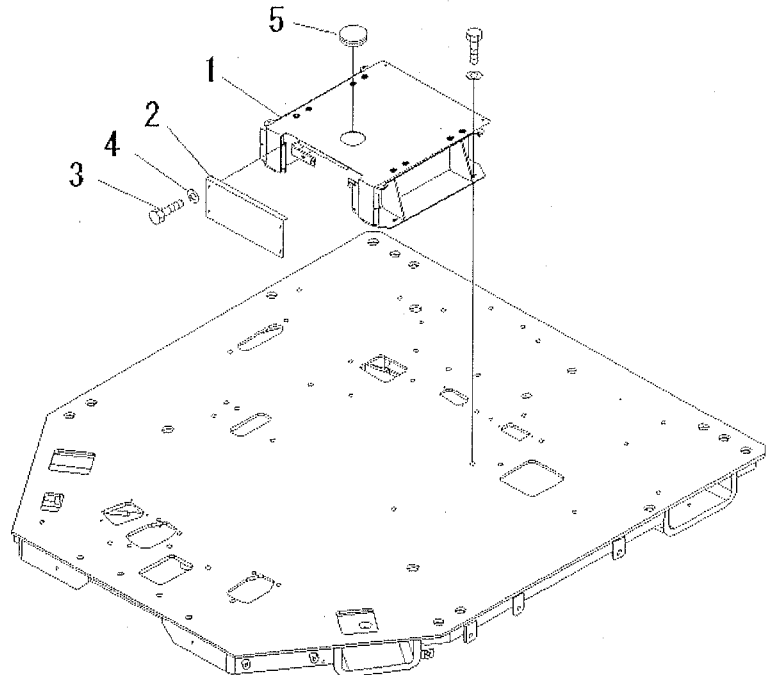
Connect to the connector No. CN TEL of chassis wiring harness.



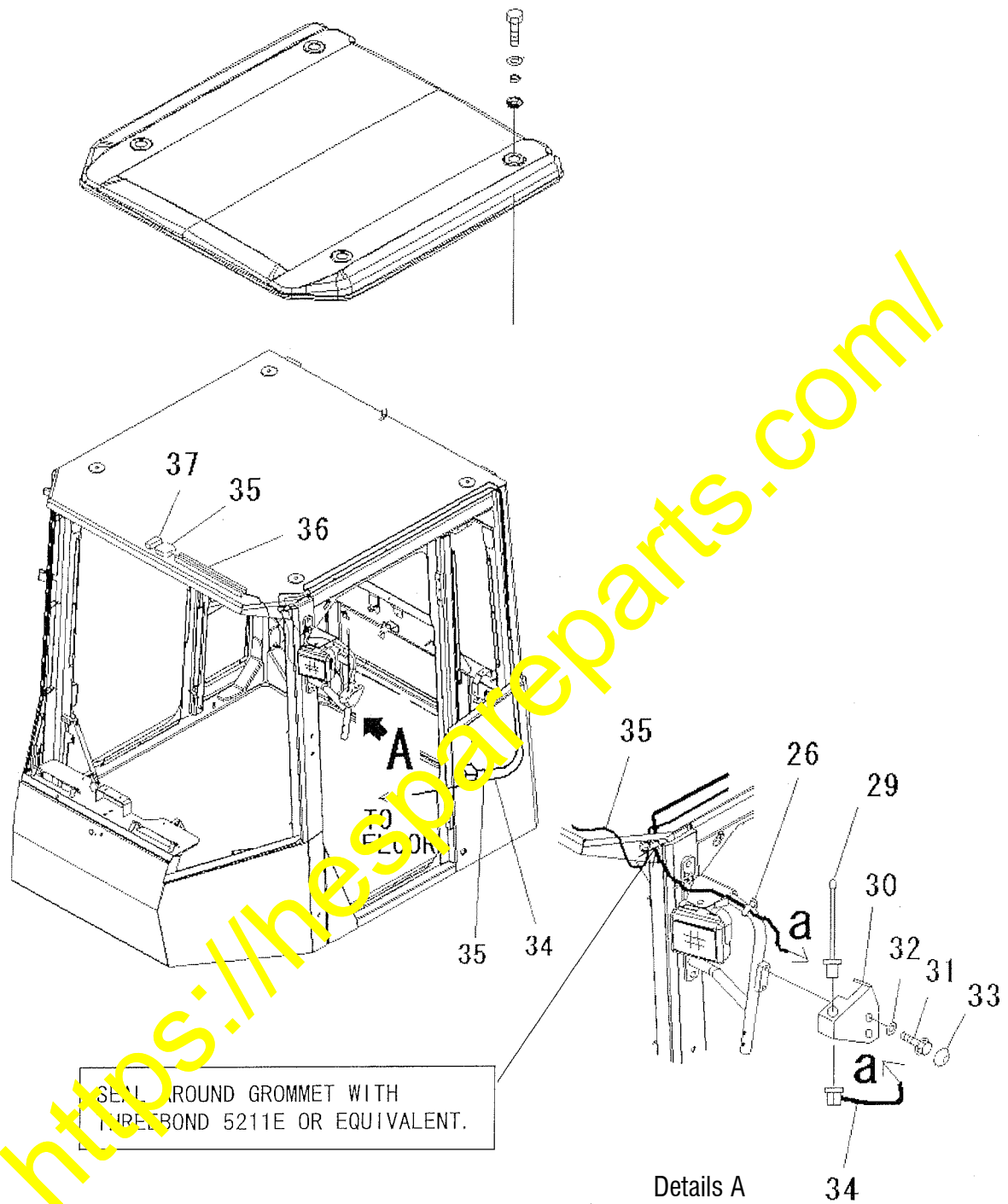
Before installation, memo the terminal number and the serial number shown below.



② Following the installation of the controller and the wiring harness, install the operator seat box.



③ Install the antenna.



3-3. Following the installation described above, reinstall the parts removed in 3-1, step ① to ④.

4. Inauguration test check sheet for machine

(For WA380-5 thru WA480-5)

※ Komatsu Distributor should perform this test without fail before delivering the machine equipped with the KOMTRAX to a customer.

1. Inauguration test for machine

Before performing the test, check the following matters and fill the corresponding columns.

Part No. of the KOMTRAX Terminal:

Serial No.

Machine model	Type	Serial No.
Service meter reading when the test is performed		h

Perform the test as per the processes indicated below. Connectors must be disconnected totally.

Test Connector No.1 CN-K01, K03



- ① Proceed to the process ② after at least 5 seconds have elapsed after turning off the starting switch.
- ② Make visual check to confirm that the Test Connector 1 is being connected.

- ③ Turn "ON" the starting switch and wait for about 3 to 5 seconds.

[The dot will flicker.]

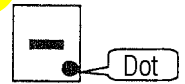
- ④ Disconnect the Test Connector 1 and wait for about 3 to 5 seconds.

[The dot will flicker.]

- ⑤ Reconnect the Test Connector 1 and wait for about 3 to 5 seconds.

[The dot will flicker.]

[The dot will flicker.]: The dot will flicker for 2 to 3 times when the KOMTRAX terminal detects disconnection or reconnection of the connector.



Carry out the operations ③ thru ⑤ within 60 seconds.

- ⑥ Check that the 7-segment indication lamp of the controller (KOMTRAX Terminal) is indicating as per description given below.

(a: In case the test is acceptable, the 7 segment indication lamp will repeat the following indications for 30 seconds.)



[-] If this indication does not change, repeat the processes ① thru ⑤.

(b: Even when repetition of the above indications occurs properly, note that the indications will change after 30 seconds elapsed.)

- ⑦ Turn the starting switch key to the "START" position for about 3 to 5 seconds and make sure that the engine will "not" start.

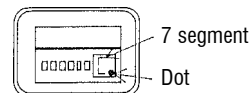
(If the engine starts by the above, repeat the processes from the above ① once again. ※ At this time, if the starting switch is turned "OFF", it becomes necessary to repeat the processes from the above ① once again.)

- ⑧ Keeping the starting switch to the "ON" position, then turn it to the "START" position again to make sure the engine starts.

- ⑨ Check that the 7-segment indication lamp will make the following indications.



In case GPS position detection is failed, "d" → "b" → "2" will be displayed. (The dot will be turned off.)
 In case communication/receiving is failed, "d" → "7" → "2" will be displayed. (The LED-A2 will be turned off.)
 In case communication type signal is failed, "d" → "F" → "E" will be displayed.



- ⑩ Turn "OFF" the starting switch and if the 7-segment indications becomes as follows, the inauguration test for machine has been finished properly.

[C] When "C" is displayed continuously, the test has been finished properly. This display will be made when the above processes ① thru ⑩ have been made properly.

[-] When "-" is displayed continuously, it is necessary to repeat the processes from the above ① once again.

(※ On the display of the client's personal computer, it shows that the test has been completed properly when the indication "C" changes into the indication of the "number of pending mails".)

5. Regarding replacement of the controller, changing the machine to install the controller and scrapping of the controller

Since the following descriptions include important matters for the system, follow the instructions of the responsible person for operation of the system in your company.

(A) When replacing a controller already installed to a machine with other controller

- ① Remove the already installed controller.
- ② Install the new controller in the same processes as the one taken when normally installing a new controller.
(Carry out the "Inauguration test for machine" without fail.)
- ③ Advise the serial number of the old controller and the serial number of the new controller to Komatsu.
(Komatsu will see the data base.)
- ④ The responsible person for the operation of the system in your company is requested to make the controller replacement procedure on the client's personal computer.

(B) When transferring the possession of, selling or scrapping the machine to which the controller is being installed

Please contact Komatsu since it is necessary to close the communication of the controller after restoring the harness connections on the machine.

(C) When scrapping the controller

Please contact Komatsu since it is necessary to close the communication of the controller after restoring the harness connections on the machine.

(D) When scrapping the machine to which the controller is being installed

Please contact Komatsu since it is necessary to close the communication of the controller after restoring the harness connections on the machine.

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6. Trouble shooting

Note) Although the LED lamps and the numeric indicator of the KOMTRAX controller may light or may flicker regardless of the position of the starting switch key, it is not an unusual phenomenon.

Unusual phenomenon	Check item (Assumed cause)	Countermeasure
The engine does not start.	Disconnection of the battery terminal	Connect properly.
	Discharged battery	Charge the battery.
	Imperfect contact of the fusible link	Repair so that proper connection can be obtained.
	Molten fuse	Replace the fuse.
	Defective harness connection	After asking the responsible person for operation of the system in your company, disconnect the inserted harness connectors and reconnect them to the original positions.
	Others	If the trouble cannot be solved even when the inserted harness connectors are disconnected and reconnected, carry out the trouble shooting described in the Shop Manual for the model.
The current position indication of the machine on the display of the personal computer and the actual position of the machine deviate greatly. Or, even though the machine is traveling, the current position indication of the machine on the display of the personal computer does not move.	The machine is inside a tunnel or inside a building.	This is not an unusual phenomenon. Proper indications will be restored when the machine moves outside.
	The top of GPS antenna is being covered by foreign substance (including accumulated snow).	Remove the foreign substance so that open sky can be restored.
	Disconnection of the GPS antenna	Re-install the GPS antenna to the position being described in this Installation Manual once again.
	Breaking of wire of the GPS antenna cable	Check the outer appearance of the cable and if the cable is damaged, replace the cable.
Return transmission does not come even when machine data are demanded through the display of the personal computer. Or, daily operation map does not come.	The machine is inside a tunnel or inside a building.	This is not an unusual phenomenon. Proper indications will be restored when the machine moves outside.
	Broken or disconnected communication antenna	Replace or repair the communication antenna.
	Mixture of foreign substance into the connector of the communication antenna	Remove the foreign substance and check if the communications can be restored.
	Breaking of wire of the communication antenna cable	Check the outer appearance of the cable and if the cable is damaged, replace the cable.

If the problem cannot be solved by the above trouble shooting and countermeasure, contact the KOMTRAX Call Center at the following address:

Komatsu KOMTRAX Call Center
 No. 2597 Shinomiya, Hiratsuka City, Kanagawa Prefecture, 254-8555 Japan.
 Tel: 81-463-22-8780

Important

<p>TO: Customer Support Gr Construction Equipment Electronics Div. Komatsu Ltd. (KOMTRAX Service Hotline) Phone : +81-463-22-8780 Fax : +81-463-22-8448 E-mail : cs_kom@komatsu.co.jp Address : 3-25-1 Shinomiya Hiratsuka-shi kanagawa 254-8555 Japan</p>

Request for KOMTRAX Terminal Activation

Please fill in the form below and fax or send by mail to Customer Support Gr., Klttd. to activate KOMTRAX terminal.

Terminal Information	
Terminal Parts Number :	(Please fill in terminal P/N & S/N or put on enclosed sticker here)
Terminal S/N :	P/N _____ S/N : _____
Terminal Activation Date :	(YY/MM/DD) ____ / ____ / ____
Country to use :	_____
Machine info.	Model-Type-#S/N _____ - _____ # _____
Contact Address	
Company(or Plant) :	_____ (_____) _____
Phone number :	(Country -Area -Local-Local) ____ - ____ - ____ - ____
Fax number :	(Country -Area -Local-Local) ____ - ____ - ____ - ____
e-mail address :	_____
Name(Please print) :	First Middle Family _____
Signature :	_____

Notes)

- It will take two weeks to activate after being received this sheet.
- KOMTRAX terminal is unable to communicate before activation being completed.

(Note) The communication starting date requested for the area outside Japan will be set at the LLC (USA) local time. Therefore the time must be reset to your local time.