

PARTS & SERVICE NEWS

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SUBJECT: MODIFICATION PROCEDURE OF WINDOW MOTOR FAILURE ON HM300, 350, 400-1

PURPOSE: To introduce modification procedure to prevent occurrence of failures with the power window related parts on HM300-1, HM350-1 and HM400-1 dump trucks

APPLICATION:

HM300-1	Articulate Dump Trucks, Serial Nos. 1002 thru 1003, 1005
HM350-1	Articulate Dump Trucks, Serial Nos. 1001 thru 1003, 1005 thru 1008, 1010, 1012 thru 1014, 1017
HM400-1	Articulate Dump Trucks, Serial Nos. 1031 thru 1003, 1005 thru 1008, 1010 thru 1031, 1033

FAILURE CODE: D120MA

DESCRIPTION:

1. Introduction

Since there is a possibility of occurrence of contact point melting failure of the power window relays and fuse melting failure on the HM300, HM350 and HM400 articulated dump trucks, implement the modification being introduced in this Service News to prevent occurrence of the aforementioned failures.

2. List of parts

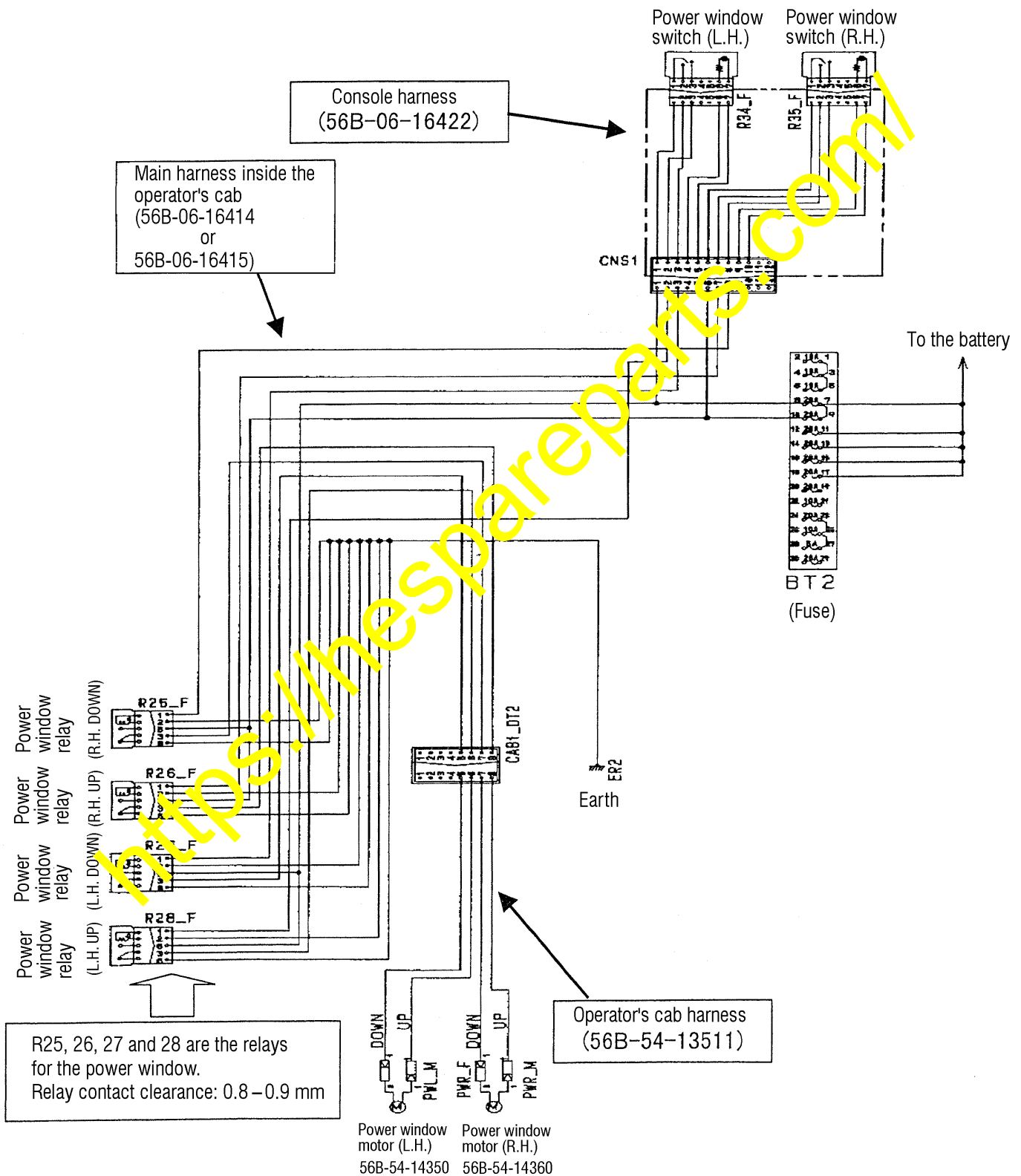
Part No.	Part Name	Purpose of part	Q'ty	Remarks
※56B-99-16130	Wiring harness	Addition	1	Adaptor harness
※08193-21012	Clip		1	Connector clip for the above harness
※01023-20612	Screw		1	Clip fastening screw for the above clips
※01643-30623	Washer		1	Clip fastening washer for the above clips
※08036-01214	Clip		2	Clips for the adaptor harness
※01435-01016	Bolt		1	Adaptor harness clamping bolt
56B-99-16150 (56B-06-16181)	Bracket (Bracket)	Replacement	1 (1)	Relay fastening plate
56B-06-16370	Clamp	Addition	1	Improved relay fastening clamp
01010-80612	Bolt		2	For installation of the 56B0616370
01643-30623	Washer		2	For installation of the 56B0616370
56B-06-16840 (569-06-61960)	Relay (Relay)	Replacement	1 (4)	Improved relay
56B-06-16520	Terminal	Addition	11	Parts necessary for additional processing of the harness
56B-06-16530	Connector		1	
08192-29812	Connector		1	For reworking of the harness
※08191-05520	Terminal		10	
08024-91920	Tape		1	
56B-06-16380	Sheet	Addition	2	
56B-06-16850	Sheet		1	
56B-06-16860	Sheet		1	
56B-93-11144 (56B-93-11142)	Plate (Plate)	Replacement	1 (1)	Relay label (In Japanese)
56B-93-12142 (56B-93-12140)	Plate (Plate)		1 (1)	Relay label (In English)
56B-93-18142 (56B-93-18140)	Plate (Plate)		1 (1)	Relay label (In Indonesian)

Parts marked ※ are not necessary for the vehicles with the following serial numbers.
(Since the parts marked ※ have been already installed to these vehicles before shipment from the factory.)
HM400 --- #1033, HM350 --- #1014 and #1017

3. Contents of the modification

- (1) Replacing the power window relays (4 pcs.), modifying the main harness inside the operator's cab.
- (2) Changing the relay label being applied inside the operator's cab.

<Electric circuit diagram for the power window, before the modification>



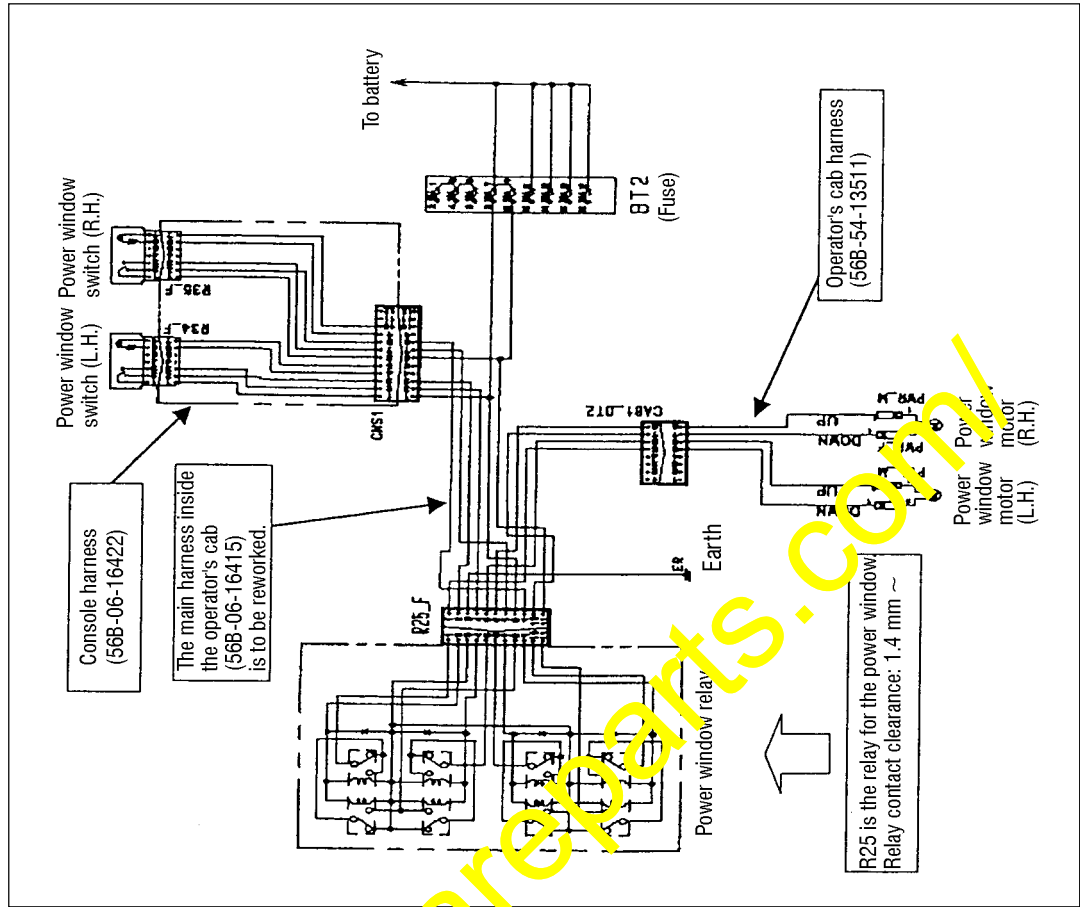
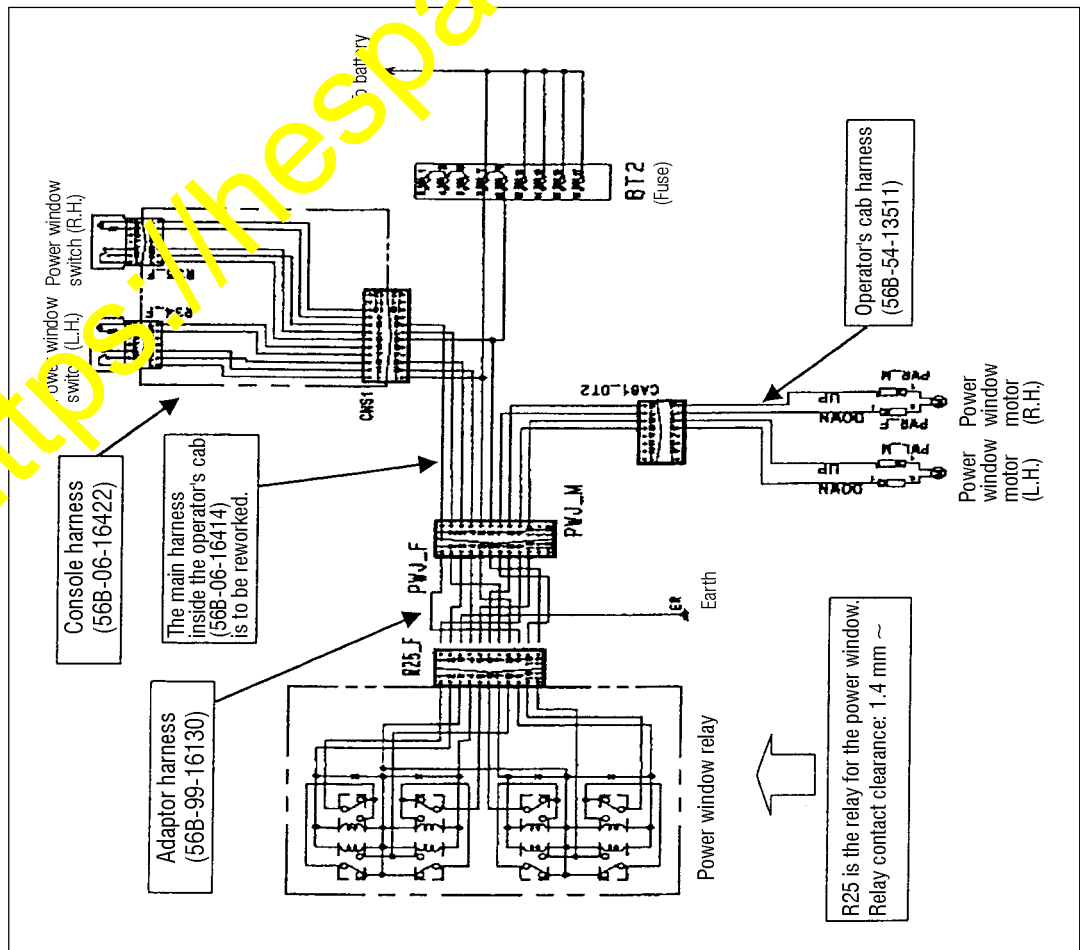
<Power window circuit diagram after the modification>

Serial numbers of the applicable vehicles

- HM300 ... #1002 - 1003, #1005
- HM350 ... #1001 - 1003, #1005 - 1008, #1010, #1012, #1013
- HM400 ... #1001 - 1003, #1005 - 1008, #1010 - 1031

Serial numbers of the applicable vehicles

- HM350 ... #1014, #1017
- HM400 ... #1033



4. Modification procedure

4-1. Table for the vehicle models and modification items

Vehicle model Serial No. Modification item	HM300-1	HM350-1		HM400-1		
		#1002 #1003 #1005	#1001 – 1003 #1005 – 1008 #1010, #1012 #1013	#1014 #1017	#1001 – 1003 #1005 – 1008 #1010 – 1018 #1022 #1024 – 1031	#1019 #1020 #1021 #1023
Reworking of the main harness inside the operator's cab	Refer to 4-3A. (On pages 6 thru 10)		Refer to 4-3C. (On pages 16 thru 19)	Refer to 4-3A. (On pages 6 thru 10)	Refer to 4-3B. (On pages 11 thru 15)	Refer to 4-3C. (On pages 16 thru 19)
Instillation of the power window relay mounting section	Refer to 4-4A. (On pages 20 and 21)		Refer to 4-4B. (On pages 22 and 23)	Refer to 4-4A. (On pages 20 and 21)		Refer to 4-4B. (On pages 22 and 23)
Replacing the relay decal	Refer to 4-5. (On page 24)					

4-2. Preparations

- 1) Prepare wire cutting tools (cutting nipper or radio pliers), wire stripper and terminal caulking tool (Note 1 and Note 2).
- 2) Park the vehicle on a flat place, apply the parking brake, turn off the starting switch key and, after that, apply chocks. (Refer to Fig. 1)

Note 1) Applicable vehicles: HM400-1 #1033, HM350-1 #1014 & #1017

Terminal caulking tool: 799-A-222-2010 (being included in the connector crimping tool kit: 790-22-2100)

Note 2) Applicable vehicles: All the vehicles of the applicable serial numbers other than those described in Note 1)

Terminal caulking tool: 799-601-7810 or DEUTSCH Type: HDT-48-00

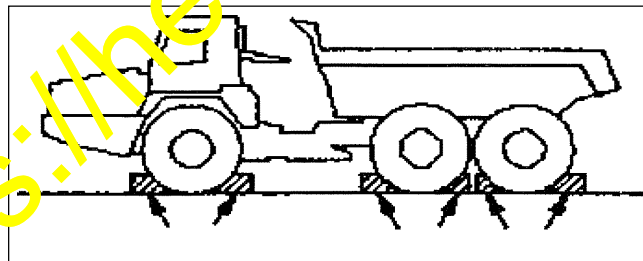


Fig. 1

4-3A. Reworking procedure for the main harness inside the operator's cab

Applicable vehicles

HM300-1: #1002, #1003 and #1005

HM350-1: #1001 thru #1003, #1005 thru #1008, #1010, #1012 and #1013

HM400-1: #1001 thru #1003, #1005 thru #1008, #1010 thru #1018, #1022 and #1024 thru #1031

(1) Preparations

- 1) Open the cover of the controller box being positioned behind the operator's seat inside the operator's cab, separate the grounding lead and remove the relay mounting plate. (Refer to Fig. 2.)
- 2) Remove all the relays and remove relay connectors from the relay mounting bracket A. (Refer to Fig. 2.)

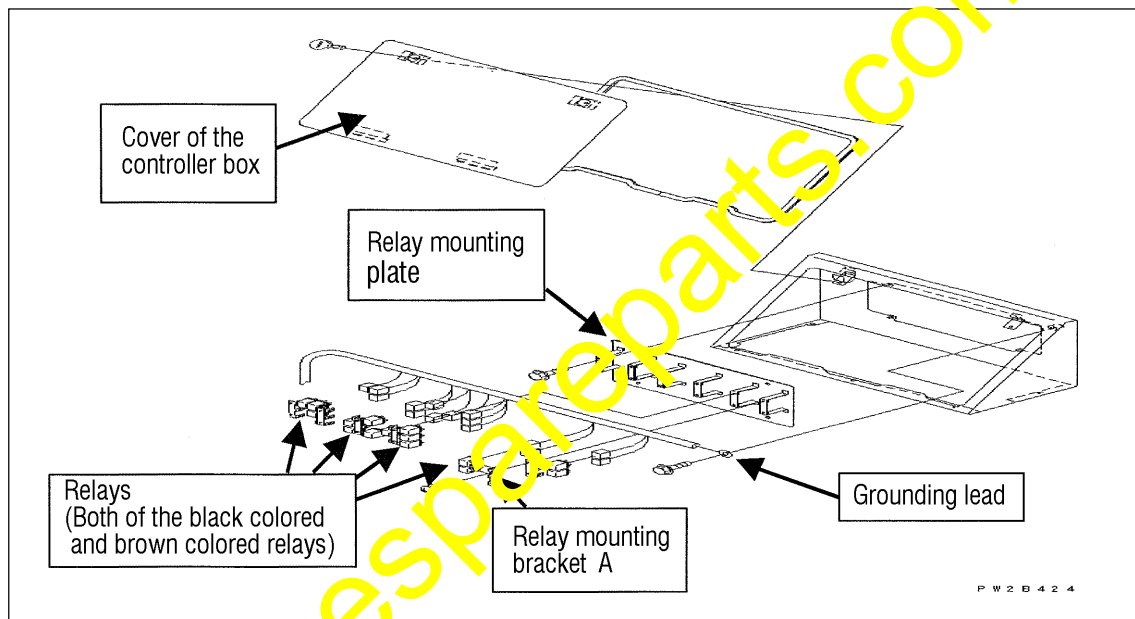


Fig. 2

(2) Modification procedure for the main harness inside the operator's cab

- (i) Remove the tapes from the main harness inside the operator's cab at the sections connecting to the relays. (Refer to Fig. 3 and Fig. 4.)

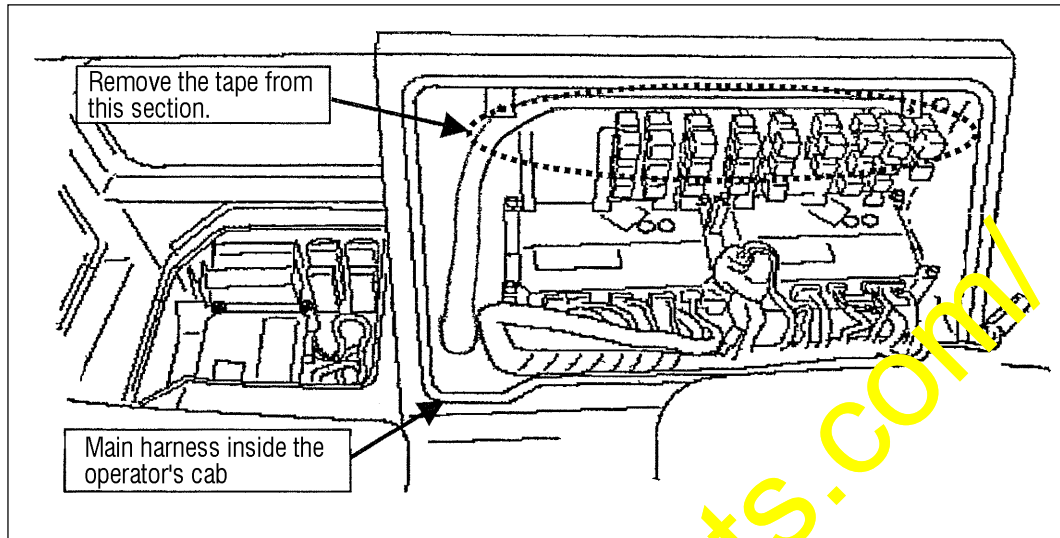


Fig. 3

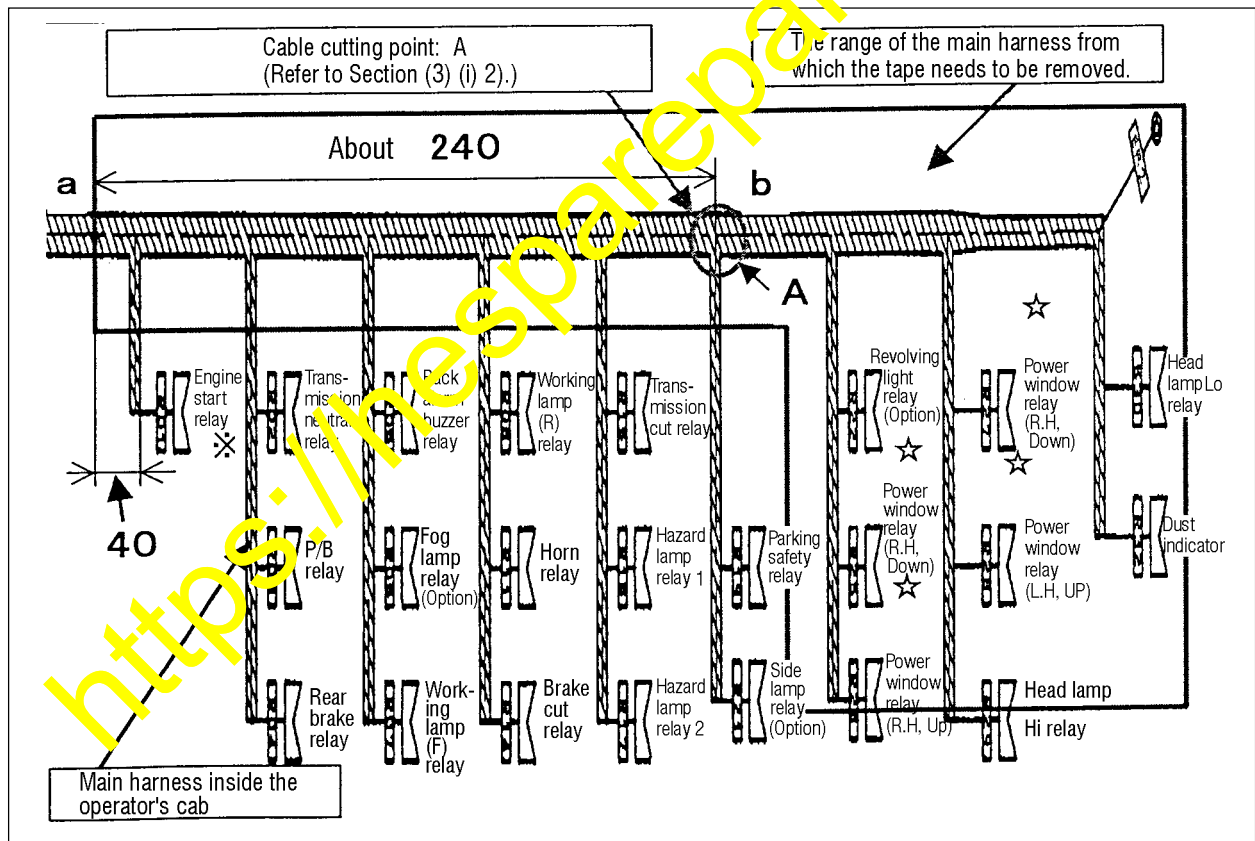


Fig. 4

(3) Combine the relay connectors

(R25, R26, R27 and R28 : sections marked ☆ in Fig. 4 to the new connector (PWJ)

(The section marked ★ in Fig. 7).

- (i) Connect the leads of the relay connectors (R25 through R28) (Refer to Fig. 6) to the centralized connector (PWJ). (Refer to Fig. 7.)
 - 1) Using the nipper or radio priers, cut to separate the leads at a distance 10 mm away from the relay connector end. (Note 3)
(Total 20 leads. Refer to Fig. 5.)
 - 2) Cut the separated leads at a point near the section "A" (Note 4) (Refer to Fig. 4.) once again at equal lengths (The distance a-b in Fig. 4: (240 mm)) (Note 3) and remove the insulation covering by 7 mm.
(Total 10 leads. Use the stripper or other generally marketed tools as the insulation covering removing tool.)
 - 3) Setting the terminal (08191-05520) to the caulking tool and inserting the lead to the terminal, caulk to fasten the terminal and the lead end.
(For details of the caulking method, refer to the Service Manual "SMP-557".)
 - 4) Install the terminal into the new connector (08192-29812) (PWJ).
(Refer to Fig. 7.)
 - 5) After installing all the terminals, insert the wedges (green colored wedges) being attached to the connector to fasten the terminals. (When the wedge is pushed in, the lock will be applied to fasten the terminal.)
 - 6) Handling of the remaining cables
 - i) As for the No. 5 cable of R25 and No. 1 cable of R27, cut them at their branching edges and tape the cut edges separately. (Since these are power cables) (Part number of the tape: 08024-91920)
 - ii) As for other cables than the above, cut them at their branching sections and bind them together to tape their ends.
(Since all of them are grounding cables) (Part number of the tape: 08024-91920)

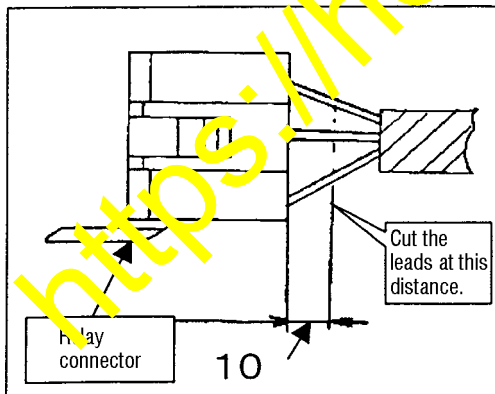


Fig. 5

Note 3) Since there are same colored cables, apply a tape indicating the cable number (Example: R25-1) to each cable so that the cut section can be identified.

Note 4) This cutting is to fit the length of the leads to connection to the new connector (PWJ).

<Before the modification>

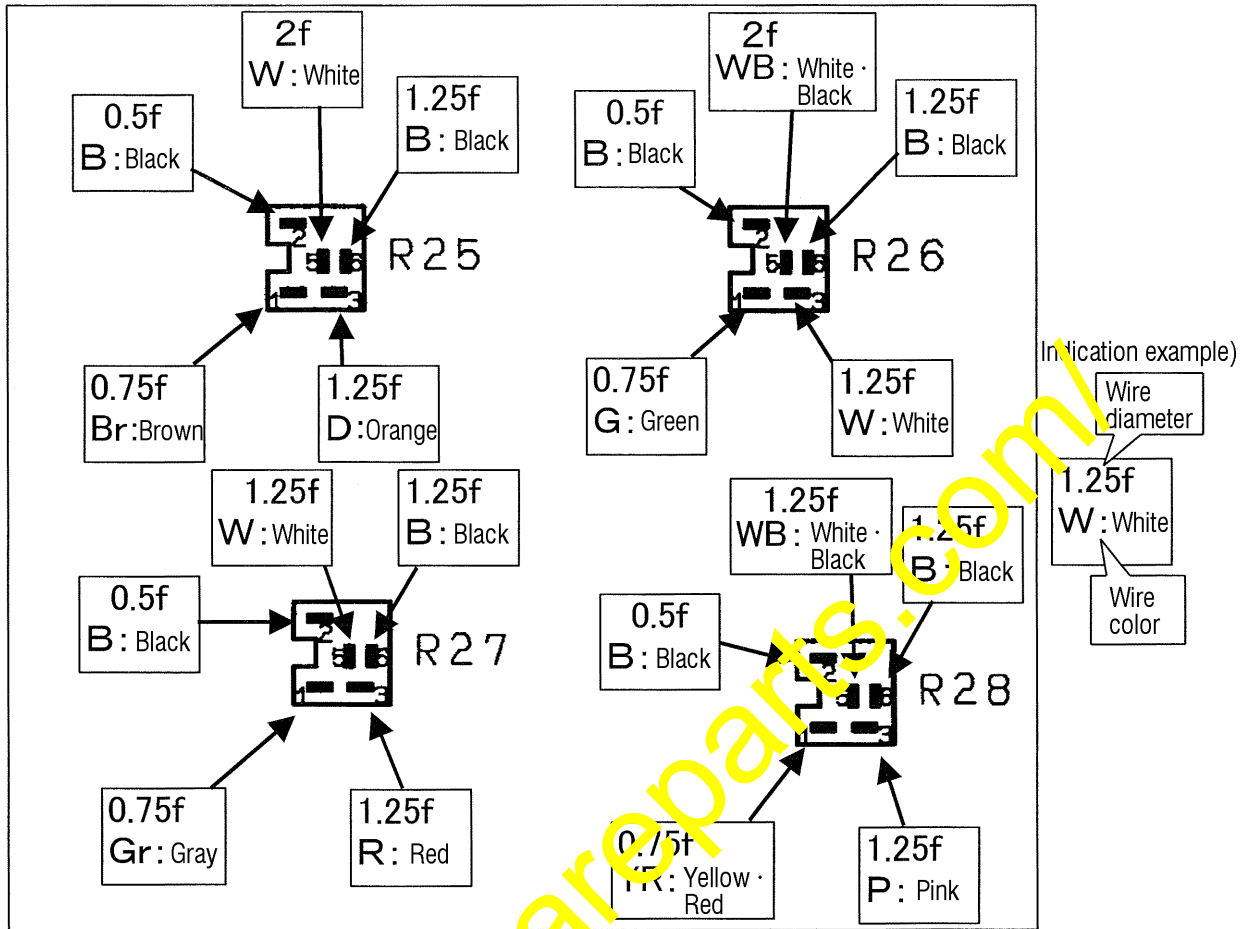


Fig. 6

<After the modification>

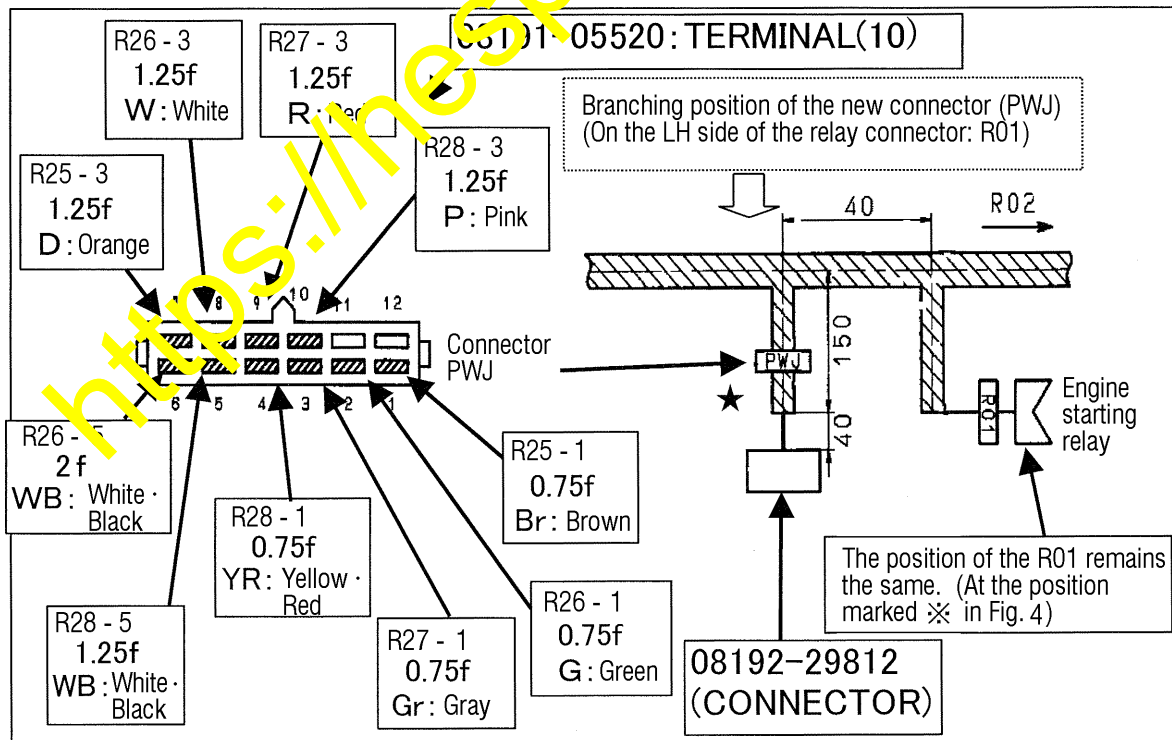


Fig. 7

- (4) Changing the layout of the relay connectors (R22, R29, R30 and R32)
- (i) Change the layout of the relay connectors (R22, R29, R30 and R32) as shown below. (Refer to Fig. 8)

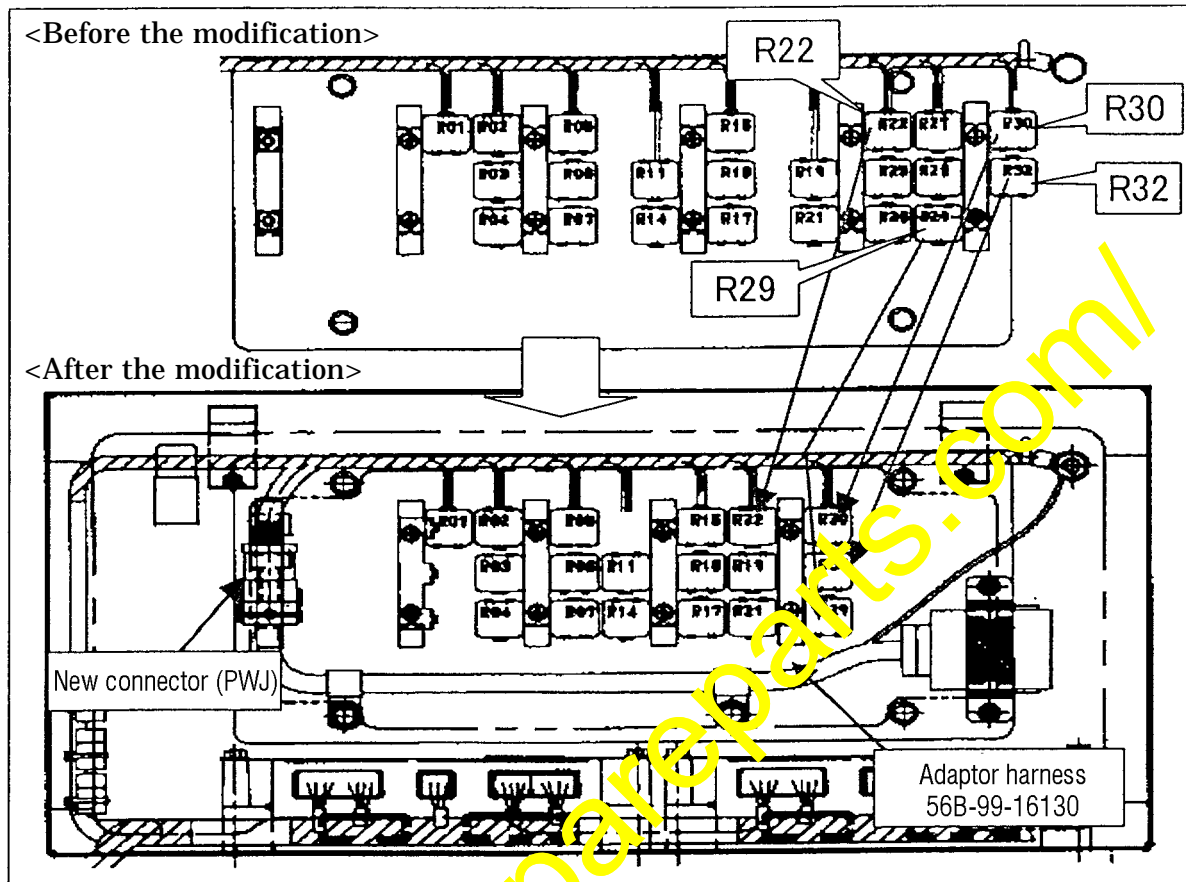


Fig. 8

- (ii) Apply insulation taping to the excess leads which became excessive by the above change of the relay layout and to the leads separated as per the above Section 4-3A(2). (Tape No. 60024-91920) (Refer to Fig. 9)

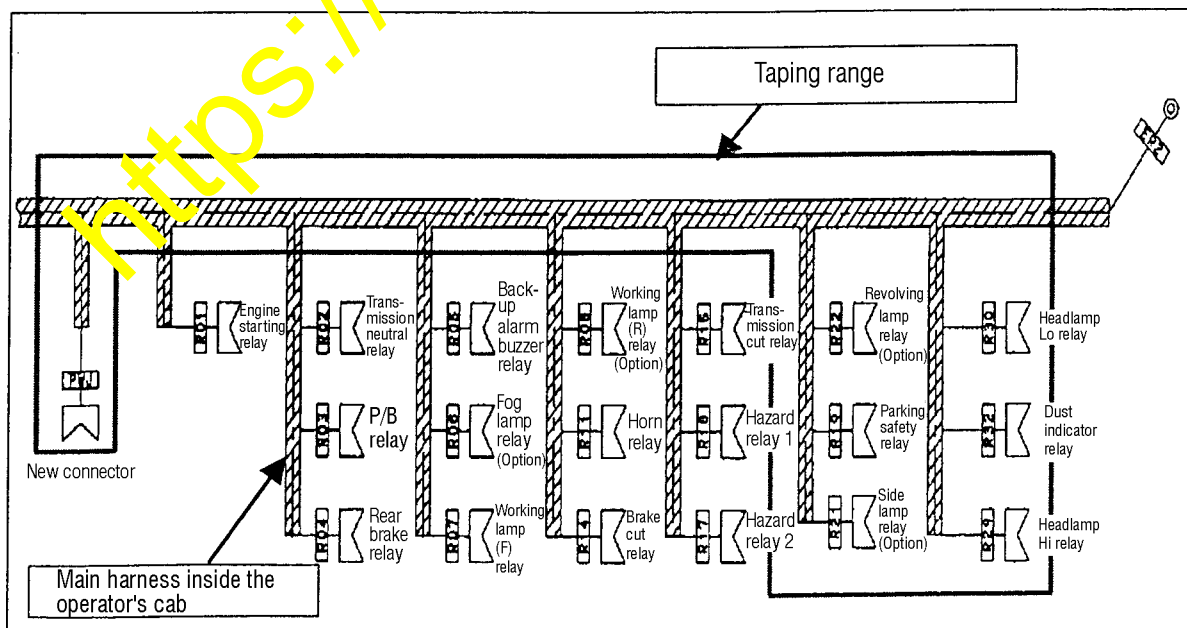


Fig. 9

4-3B. Reworking procedure for the main harness inside the operator's cab

Applicable vehicles

HM400-1: #1019 thru #1021 & #1023

(1) Preparations

- 1) Open the cover of the controller box being positioned behind the operator's seat inside the operator's cab, separate the grounding lead and remove the relay mounting plate. (Refer to Fig. 10.)
- 2) Remove all the relays except for ones for the power window and remove the relay connectors from the relay mounting bracket A. (Refer to Fig. 10.)
- 3) Remove the power window relay mounting bracket B and remove the relays. (Refer to Fig. 11.)

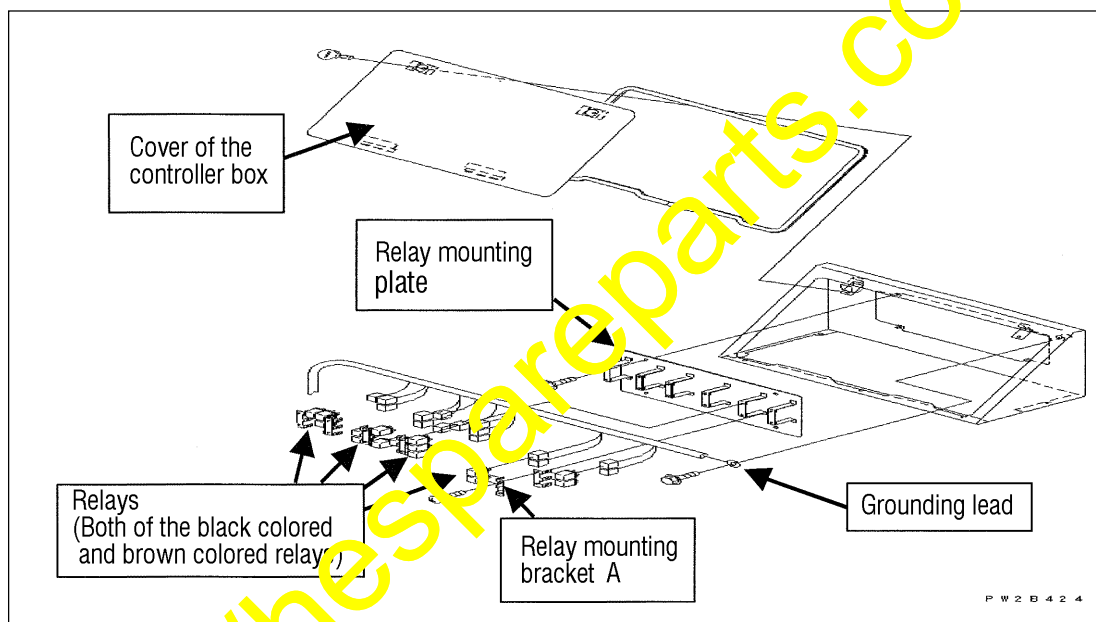


Fig. 10

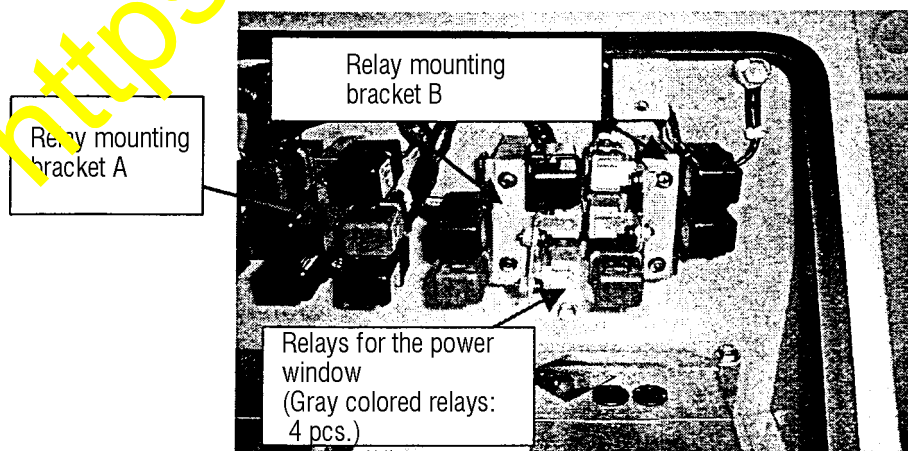


Fig. 11

(2) Modification procedure for the main harness inside the operator's cab

- (i) Remove the tapes from the main harness inside the operator's cab at the sections connecting to the relays. (Refer to Fig. 12 and Fig. 13.)

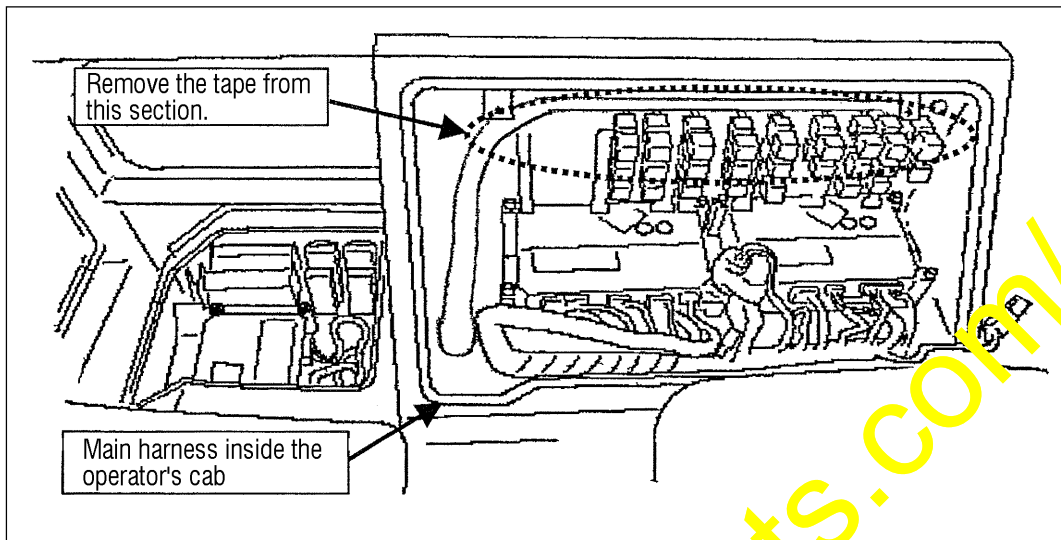


Fig. 12

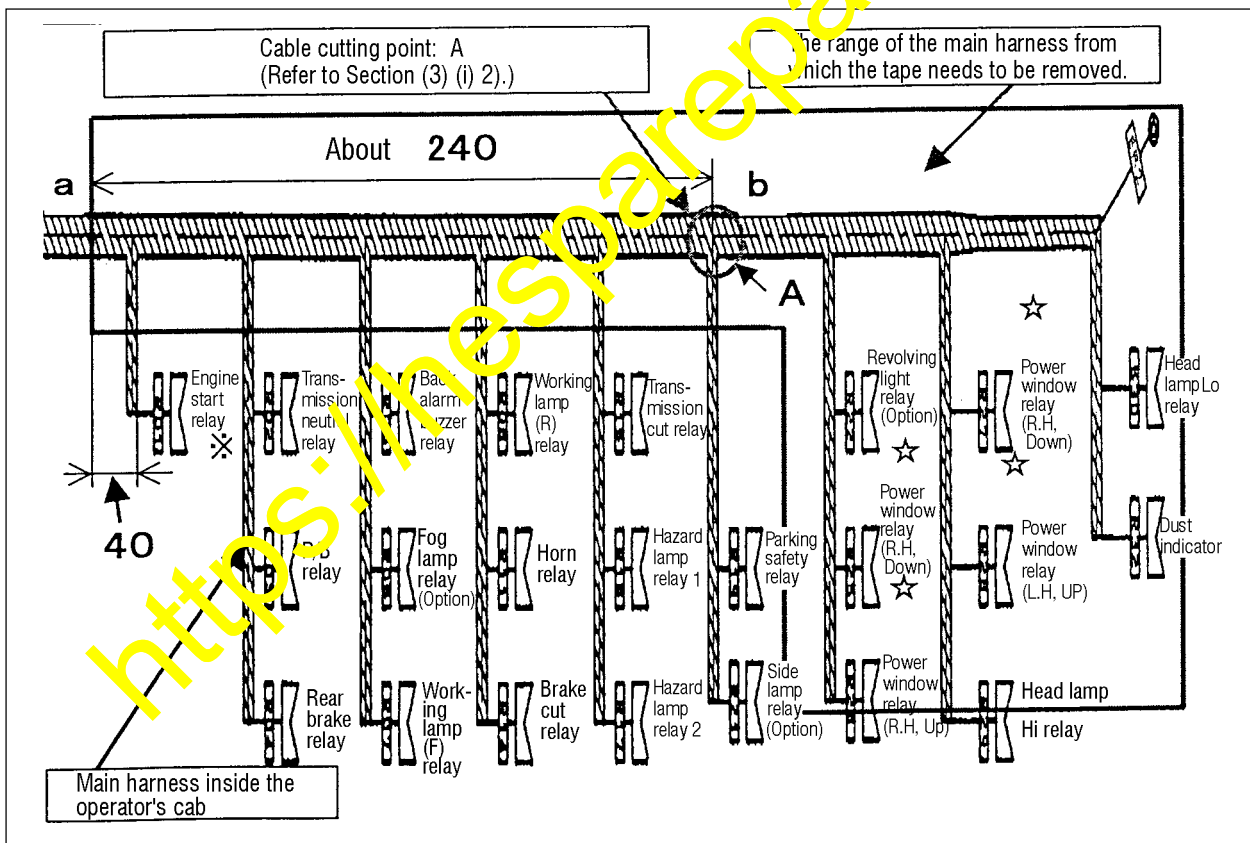


Fig. 13

(3) Combine the relay connectors

(R25, R26, R27 and R28 : sections marked ☆ in Fig. 13 to the new connector (PWJ)

(The section marked ★ in Fig. 16).

- (i) Connect the leads of the relay connectors (R25 through R28) (Refer to Fig. 15) to the centralized connector (PWJ). (Refer to Fig. 16.)
 - 1) Using the nipper or radio pliers, cut to separate the leads at a distance 10 mm away from the relay connector end. (Note 5)
(Total 20 leads. Refer to Fig. 14.)
 - 2) Cut the separated leads at a point near the section "A" (Note 6) (Refer to Fig. 13.) once again at equal lengths (The distance a-b in Fig. 13: (240 mm)) (Note 5) and remove the insulation covering by 7 mm.
(Total 10 leads. Use the stripper or other generally marketed tools as the insulation covering removing tool.)
 - 3) Setting the terminal (08191-05520) to the caulking tool and inserting the lead to the terminal, caulk to fasten the terminal and the lead end.
(For details of the caulking method, refer to the Service Manual "SMP-557".)
 - 4) Install the terminal into the new connector (08192-29812) (PWJ).
(Refer to Fig. 16.)
 - 5) After installing all the terminals, insert the wedges (green colored wedges) being attached to the connector to fasten the terminals. (When the wedge is pushed in, the lock will be applied to fasten the terminal.)
 - 6) Handling of the remaining cables
 - i) As for the No. 5 cable of R25 and No. 5 cable of R27, cut them at their branching edges and tape the cut edges separately. (Since these are power cables) (Part number of the tape: 08024-91920)
 - ii) As for other cables than the above, cut them at their branching sections and bind them together to tape their ends.
(Since all of them are grounding cables) (Part number of the tape: 08024-91920)

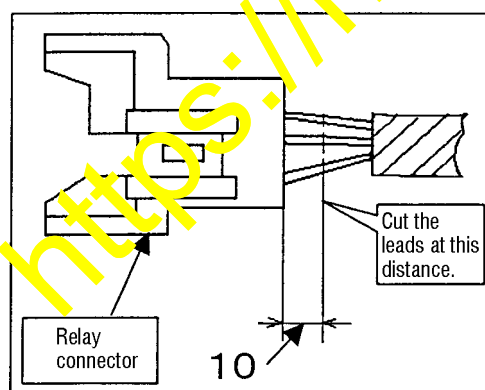


Fig. 14

Note 5) Since there are same colored cables, apply a tape indicating the cable number (Example: R25-1) to each cable so that the cut section can be identified.

Note 6) This cutting is to fit the length of the leads to connection to the new connector (PWJ).

<Before the modification>

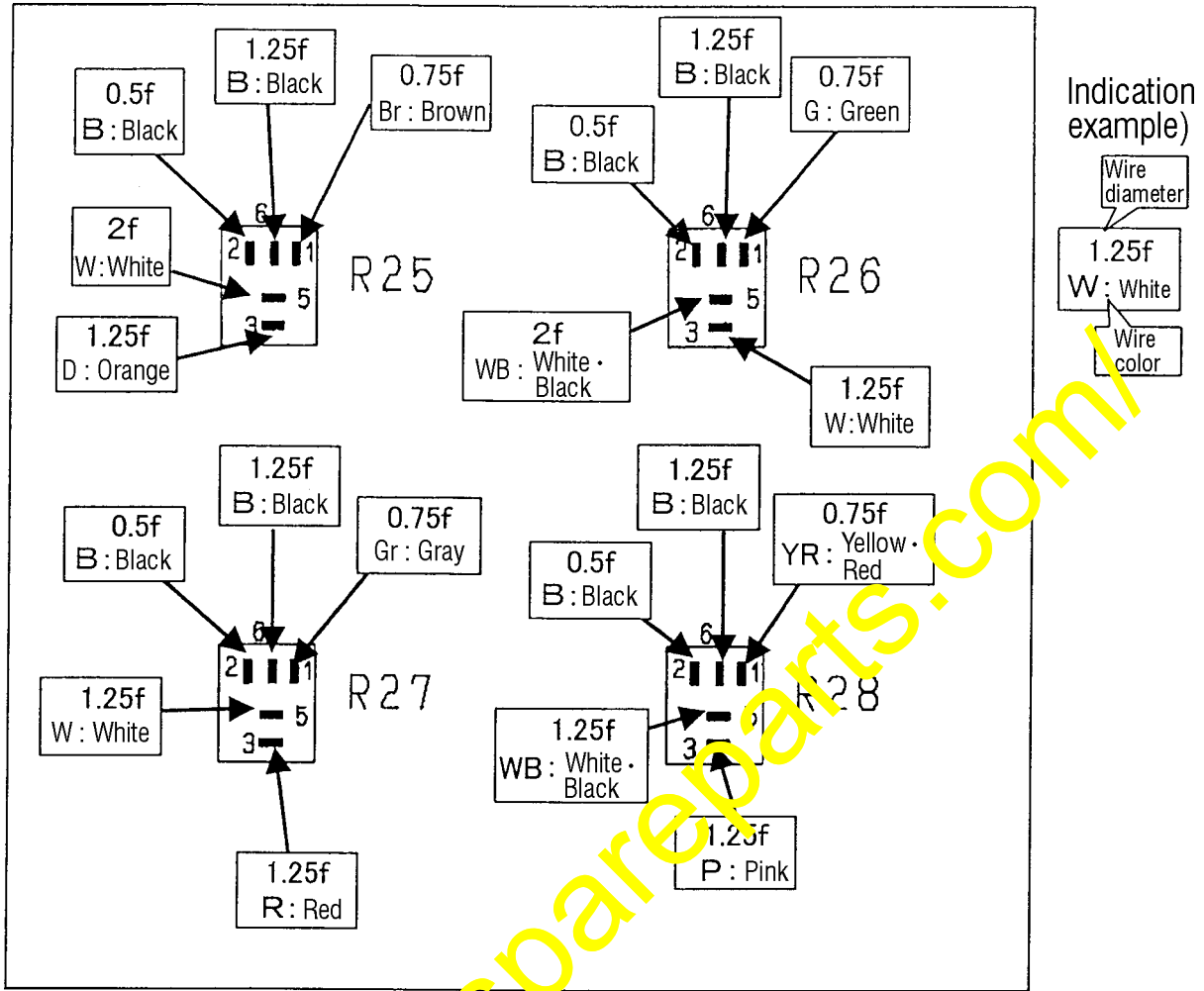


Fig. 15

<After the modification>

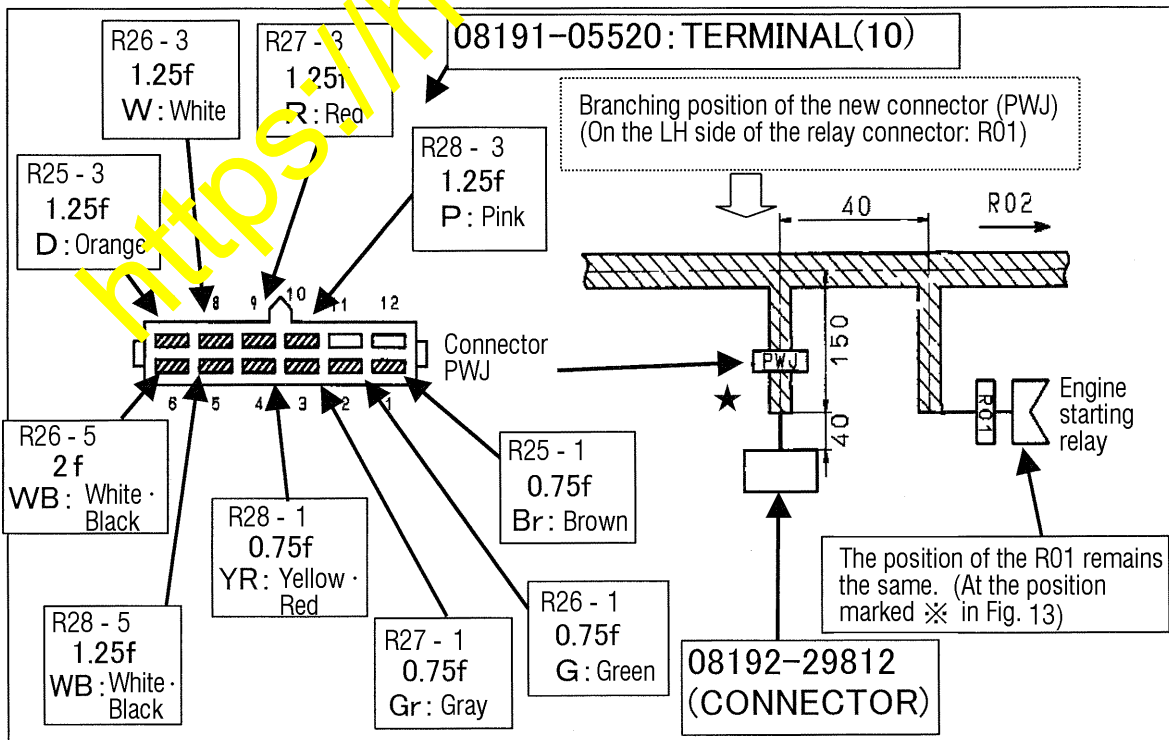


Fig. 16

- (4) Changing the layout of the relay connectors (R22, R29, R30 and R32)
 (i) Change the layout of the relay connectors (R22, R29, R30 and R32) as shown below. (Refer to Fig. 17)

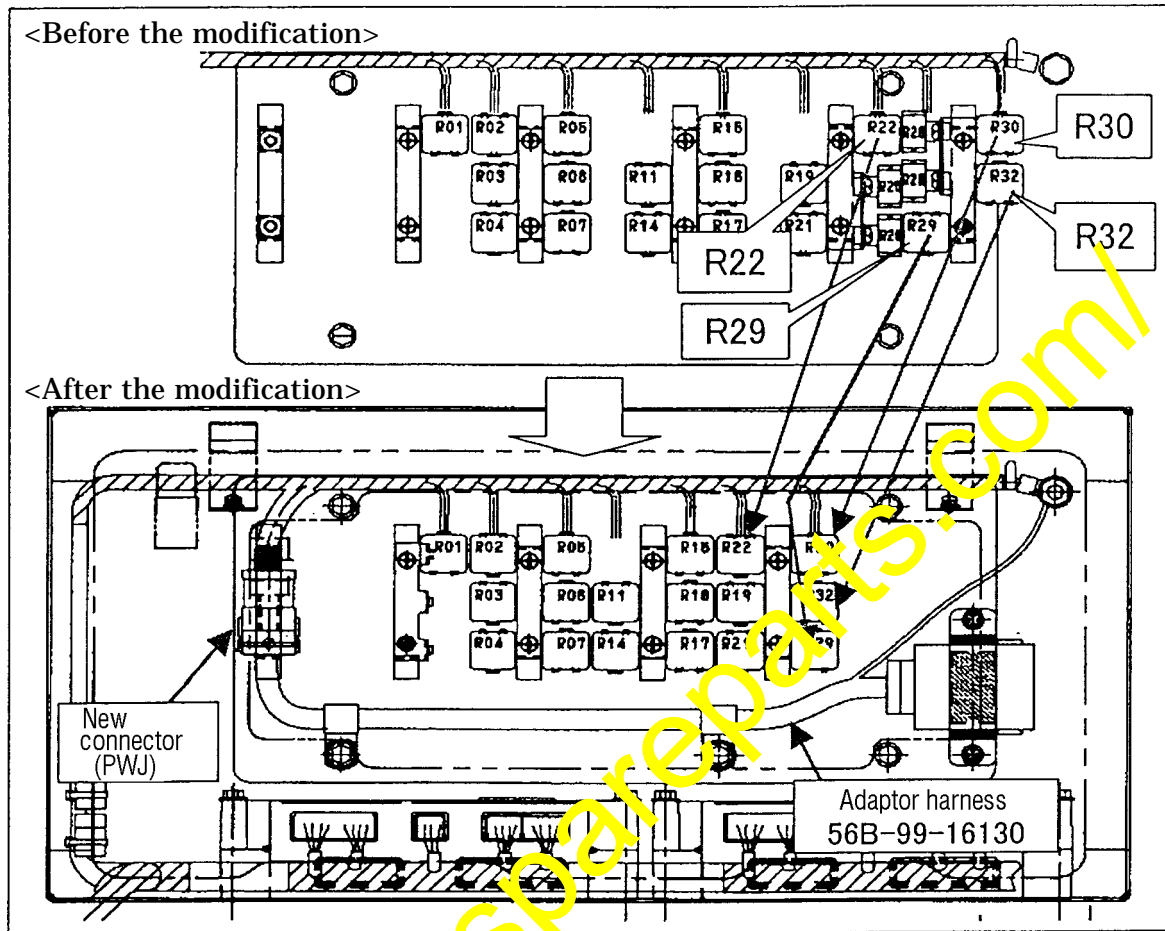


Fig. 17

- (ii) Apply insulation taping to the excess leads which became excessive by the above change of the relay layout and to the leads separated as per the above Section 4-3B(2). (Tape No.: 08024-91920) (Refer to Fig. 18)

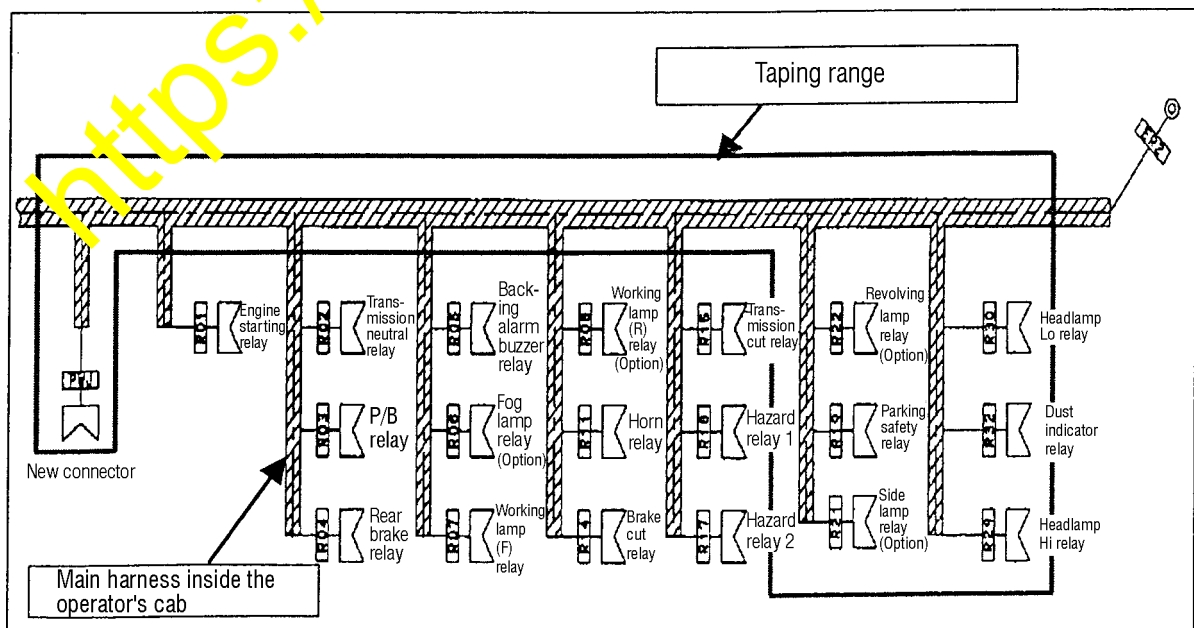


Fig. 18

4-3C. Reworking procedure for the main harness inside the operator's cab

Applicable vehicles

HM350-1: #1014 and #1017

HM400-1: #1033

(1) Preparations

- 1) Open the cover of the controller box being positioned behind the operator's seat inside the operator's cab, separate the grounding lead and remove the relay mounting plate. (Refer to Fig. 19.)
- 2) Remove all the relays except for ones for the power window and remove the relay connectors from the relay mounting bracket A. (Refer to Fig. 19.)
- 3) Remove the power window relay mounting bracket C and remove the relay. (Refer to Fig. 20.)

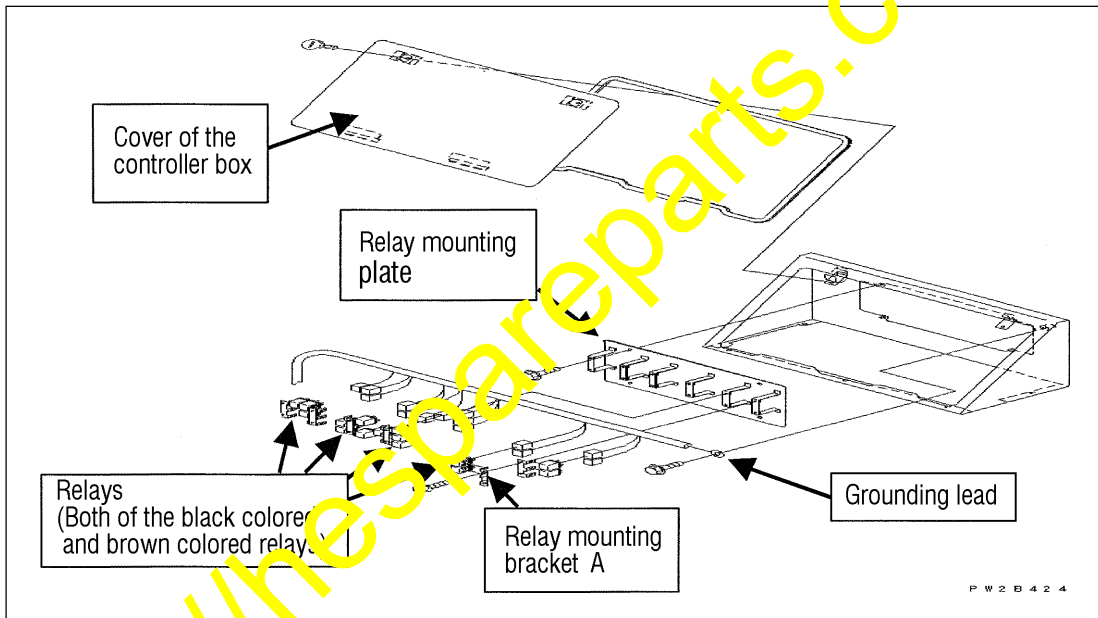


Fig. 19

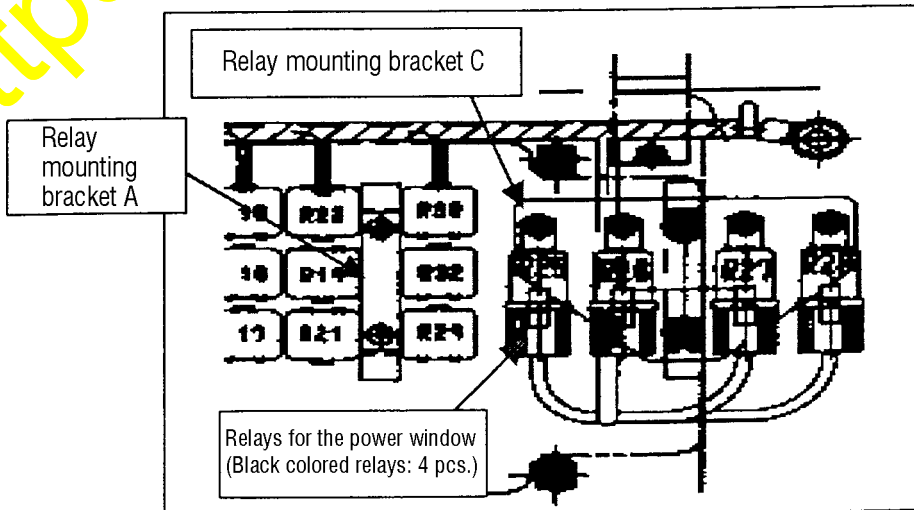


Fig. 20

(2) Modification procedure for the main harness inside the operator's cab

- (i) Remove the tapes from the main harness inside the operator's cab at the sections connecting to the relays. (Refer to Fig. 21 and Fig. 22.)

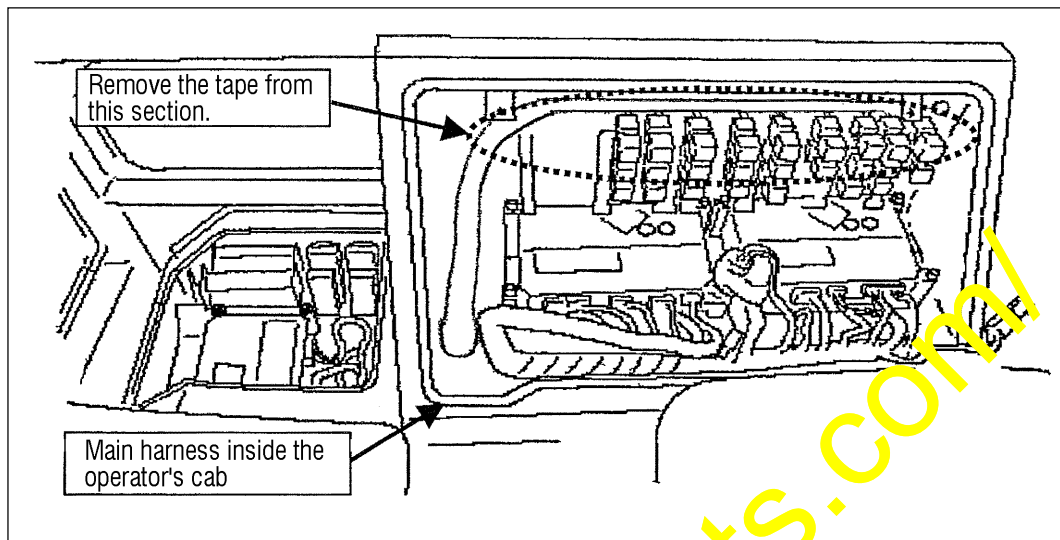


Fig. 21

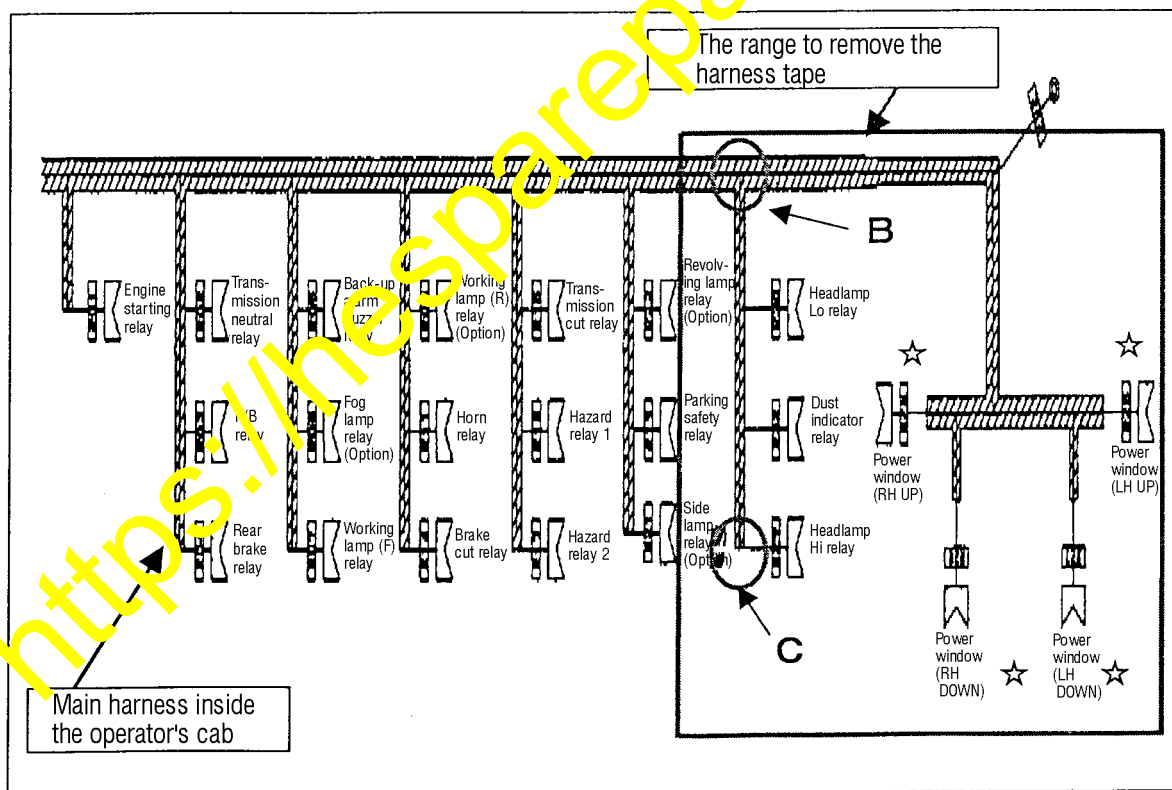


Fig. 22

(3) Combine the relay connectors

(R25, R26, R27 and R28 : sections marked ☆ in Fig. 22 to the new connector (New R25)

(The section marked ★ in Fig. 25).

(i) Connect the leads of the relay connectors (R25 through R28) (Refer to Fig. 24) to the centralized connector (New R25). (Refer to Fig. 25.)

1) Using the nipper or radio pliers, cut to separate the leads at a distance 10 mm away from the relay connector end. (Note 7)

(Total 20 leads. Refer to Fig. 23.)

2) Cut the separated leads at the point 150 mm away from the point C, after passing through the section B and section C (Refer to Fig. 22 and Fig. 25) once again at equal lengths (Note 7) and remove the insulation covering by 7 mm.

(Total 11 leads. As the tool, use a stripper or a generally sold tool.)

3) Setting the terminal (56B-06-16520) to the caulking tool and inserting the lead to the terminal, caulk to fasten the terminal and the lead end.

(For details of the caulking method, refer to the Service Manual "SMP-557".)

4) Install the terminal into the new connector (56B-06-16530) (New R25). (Refer to Fig. 25.)

5) Handling of the remaining cables

i) As for the No. 5 cable of R25 and No. 6 cable of R27, cut them at their branching edges and tape the cut edges separately. (Since these are power cables) (Part number of the tape: 03024-91920)

ii) As for other cables than the above, cut them at their branching sections and bind them together to tape their ends.

(Since all of them are grounding cables) (Part number of the tape: 08024-91920)

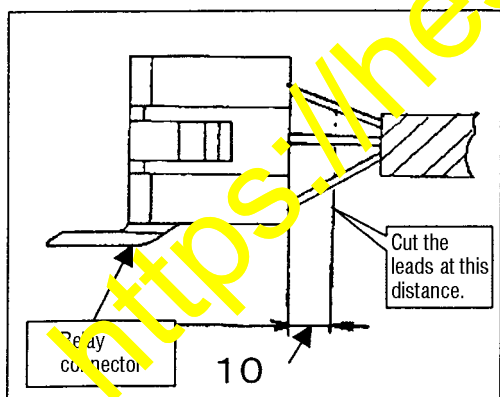


Fig. 23

Note 7) Since there are same colored cables, apply a tape indicating the cable number (Example: R25-1) to each cable so that the cut section can be identified.

Note 8) The cutting is to fit the length of the leads to connection to the new connector (New R25).

<Before the modification>

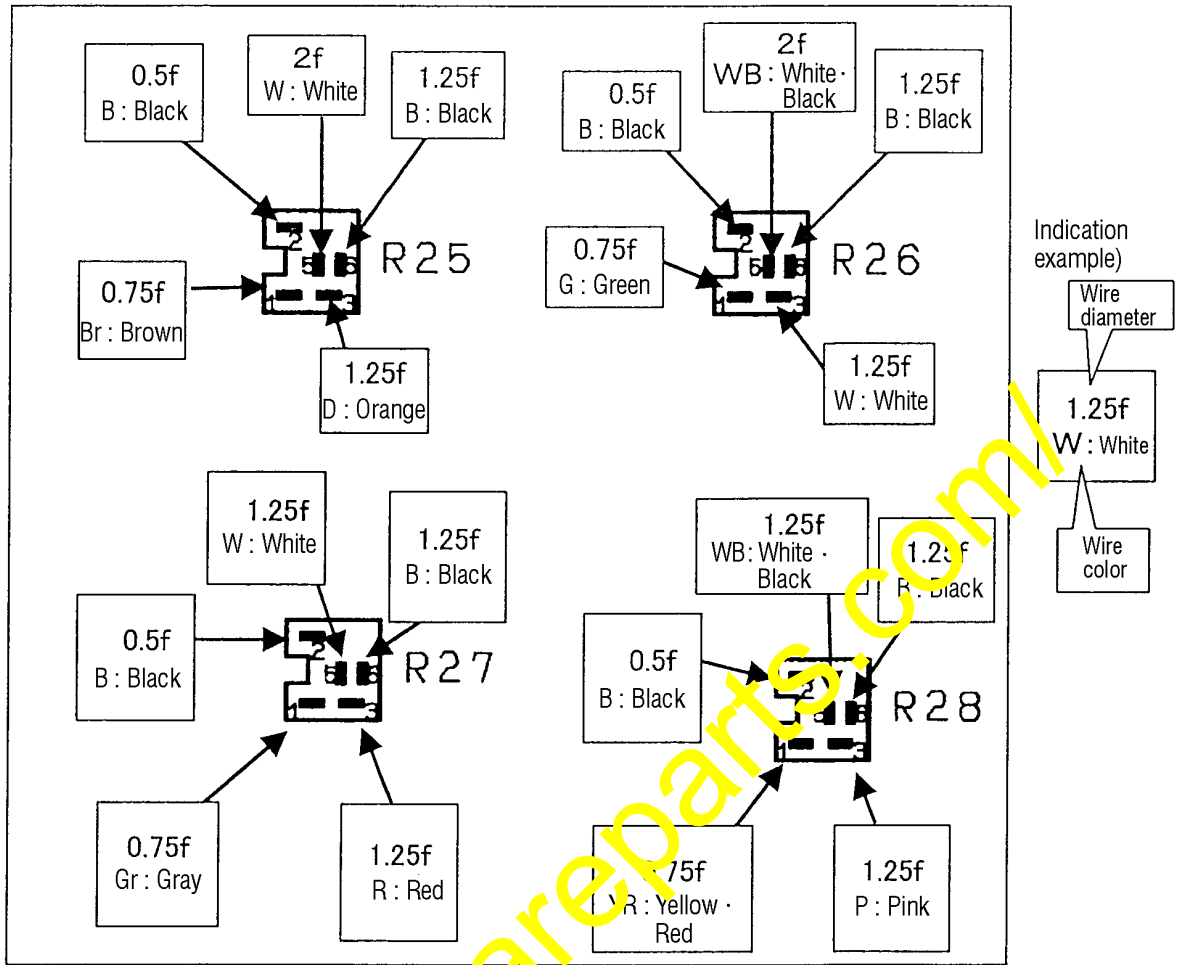


Fig. 24

<After the modification>

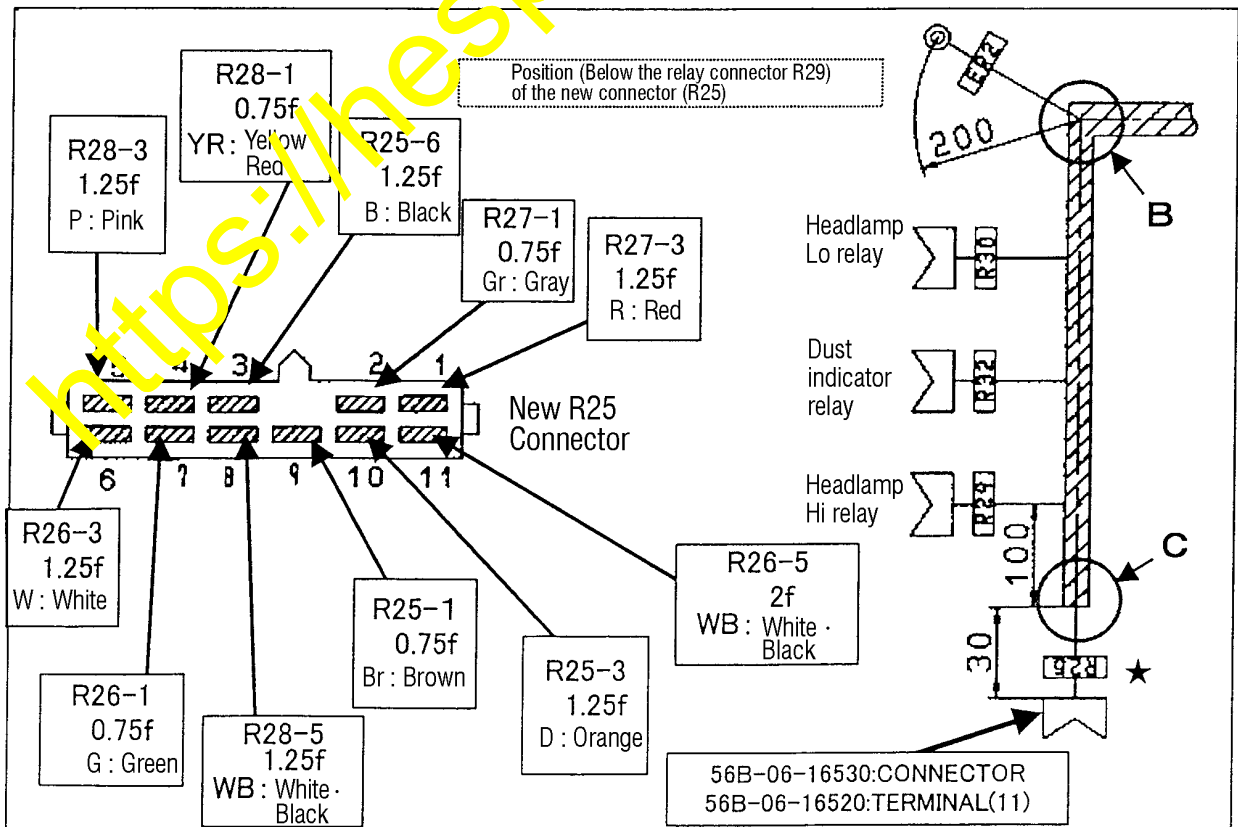


Fig. 25

4-4A. Installation procedure for the power window relay mounting section

Applicable vehicles

HM300-1: #1002, #1003 and #1005

HM350-1: #1001 thru #1003, #1005 thru #1008, #1010, #1012 and #1013

HM400-1: #1001 thru #1003, #1005 thru #1008, #1010 thru #1031

- (1) Paste the cushion sheet (56B-06-16850) for the improved relay (56B-06-16840) to the new relay mounting plate (56B-99-16150). (Refer to Fig. 27.)
- (2) Install the new relay mounting plate (56B-99-16150). Hereafter, refer to Fig. 26.
- (3) Inserting the relay connectors to the relay mounting bracket A, install the relays. (As the mounting parts, reuse the current parts.) (Excluding R25, R26, R27 and R28)
- (4) Fasten the connector (PWJ) which has been added as per 4-3A, B (3) using the clips (08193-21012), screws (01023-20612) and washers (01643-30623).
- (5) Paste the cushion sheets (56B-06-16380 (2) and 56B-06-16860) to the mounting clamp (56B-06-16370) for the improved relay (56B-06-16840). (Refer to Fig. 28.)
- (6) Fasten the improved relay (56B-06-16840) using the clamp (56B-06-16370) described in the above Section (5) and using the bolts (01010-80612(2)) and washers (01643-30623(2)).
- (7) Connect the relay connector (New R25) of the adaptor harness (56B-99-16130) and the improved relay (56B-06-16840).
- (8) Connect the connector (PWJ) of the adaptor harness and the new connector (PWJ).
- (9) Clamp the adaptor harness with the clips (08036-01214 (2)) and bolt (01435-01016). (One of the clips should be fastened by common use of the fastening bolt for the new relay mounting plate (56B-99-16150).)
- (10) Install the grounding leads. (2 leads - main harness inside the operator's cab and the adaptor harness)

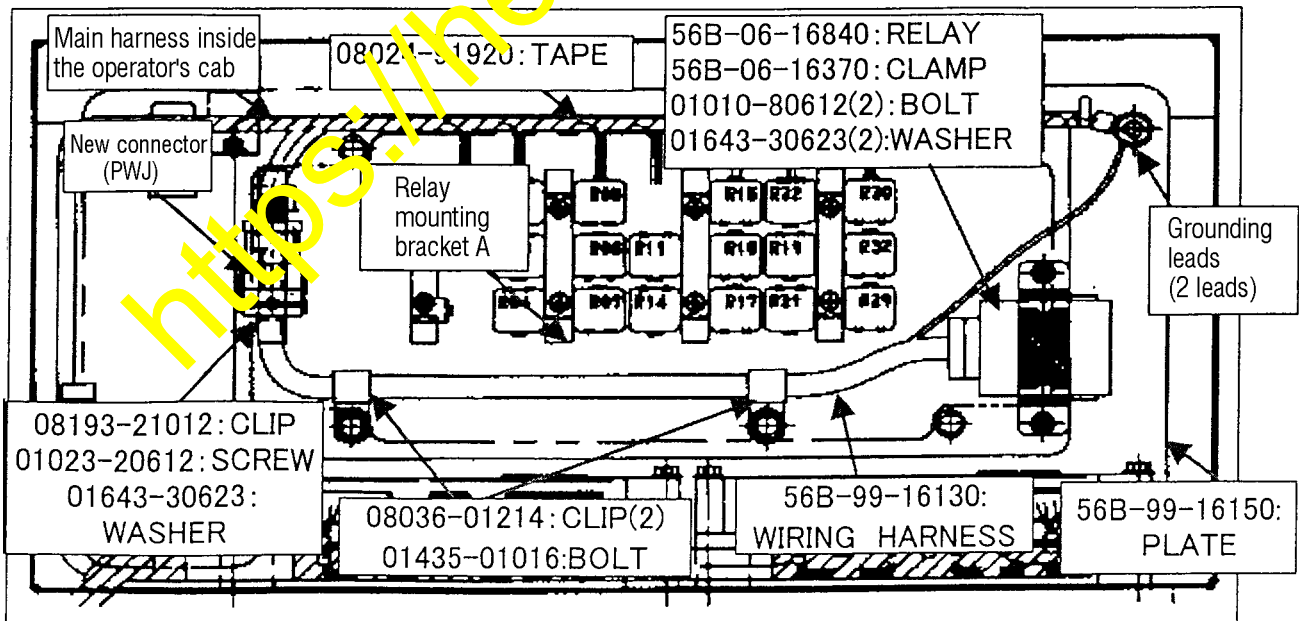


Fig. 26

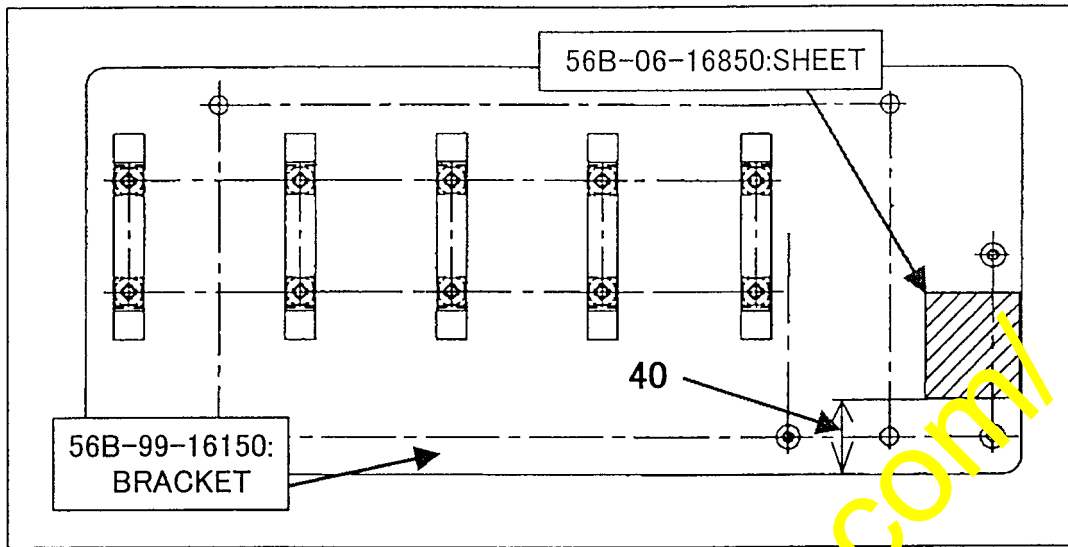


Fig. 27

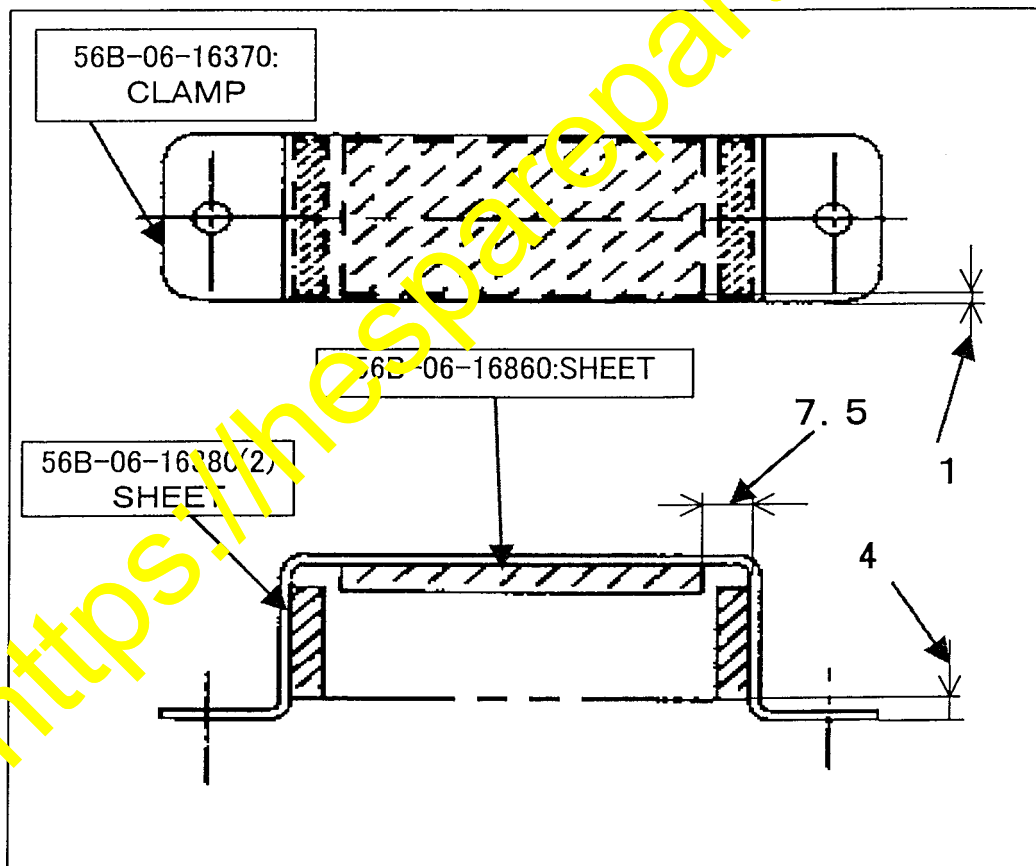


Fig. 28

4-4B. Installation procedure for the power window relay mounting section

Applicable vehicles

HM350-1: #1014 and #1017

HM400-1: #1033

- (1) Paste the cushion sheet (56B-06-16850) for the improved relay (56B-06-16840) to the new relay mounting plate (56B-99-16150). (Refer to Fig. 30.)
- (2) Install the new relay mounting plate (56B-99-16150). Hereafter, refer to Fig. 29.
- (3) Inserting the relay connectors to the relay mounting bracket A, install the relays. (As the mounting parts, reuse the current parts.) (Excluding R25, R26, R27 and R28)
- (4) Paste the cushion sheets (56B-06-16380 (2) and 56B-06-16860) to the mounting clamp (56B-06-16370) for the improved relay (56B-06-16840). (Refer to Fig. 31.)
- (5) Fasten the improved relay (56B-06-16840) using the clamp (56B-06-16370) described in the above Section (4) and using the bolts (01010-80612(2)) and washers (01643-30623(2)).
- (6) Connect the connector (New R25) which has been prepared as per Section 4-3C. (3) and the improved relay (56B-06-16840).
- (7) Install the grounding leads.

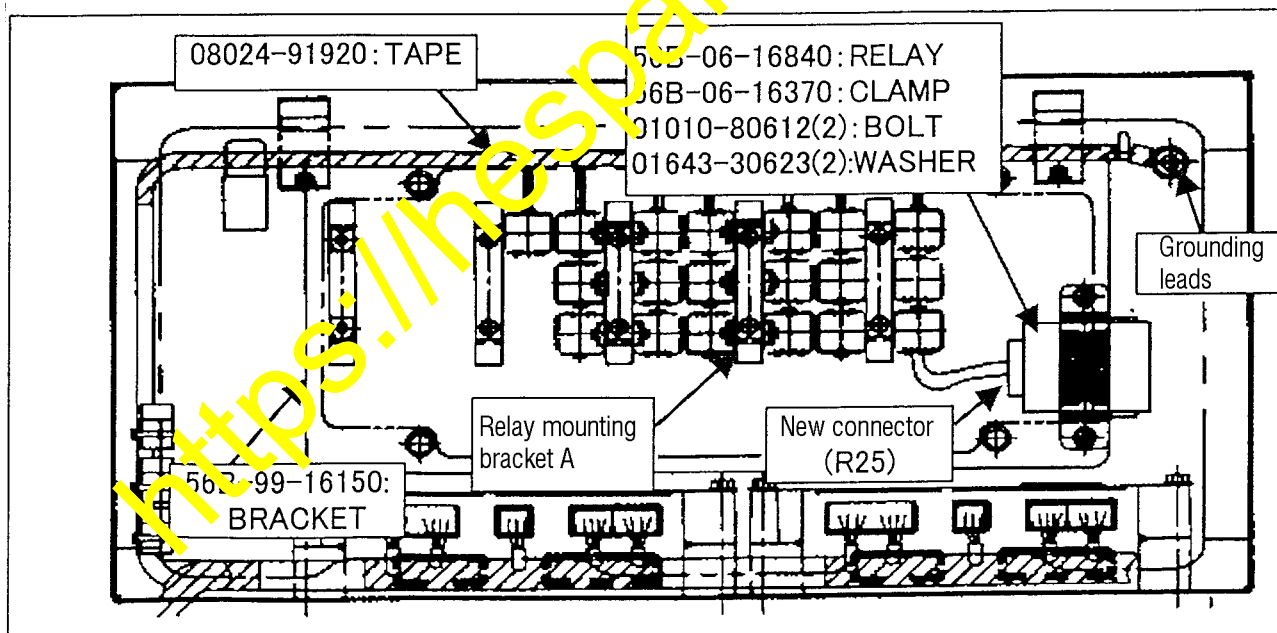


Fig. 29

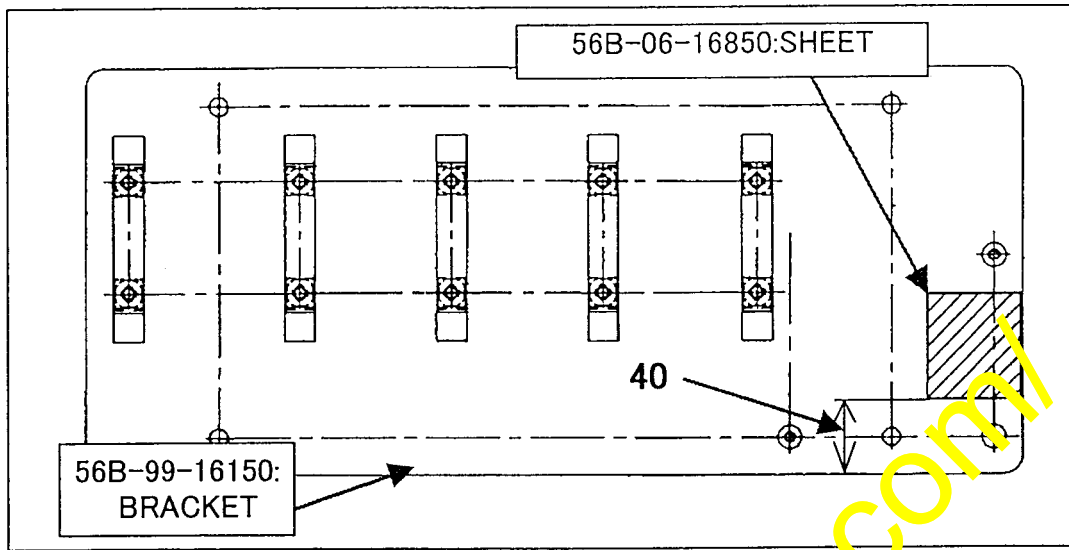


Fig. 30

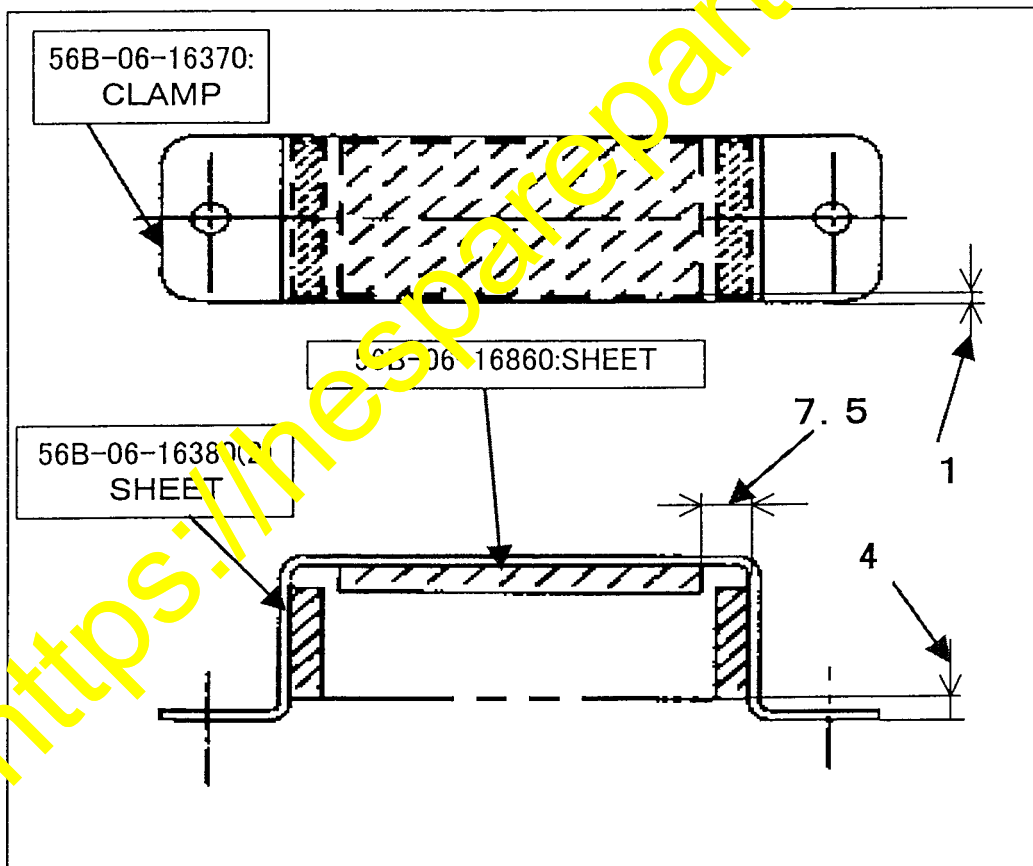


Fig. 31

4-5F. Changing the relay decal

- (1) Remove the current relay decal being applied to the rear surface of the controller box cover and apply the new relay decal to the same position. Refer to Fig. 32 and Fig. 33 regarding the part number and the applying position.

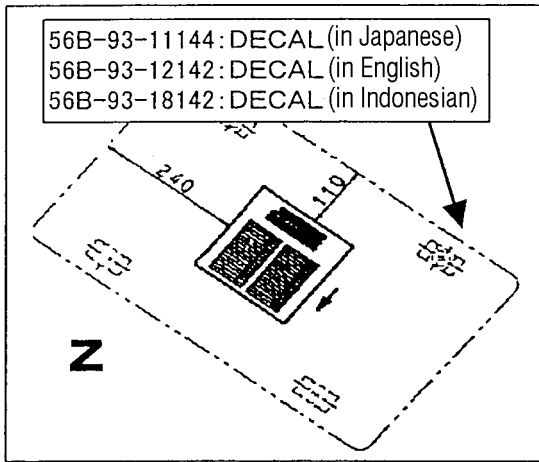


Fig. 32

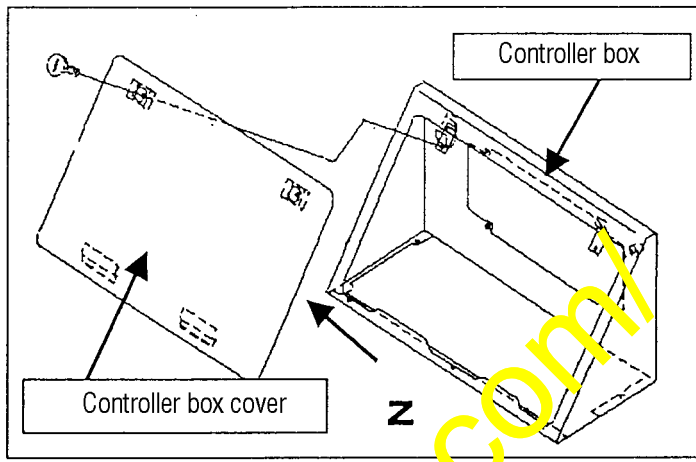


Fig. 33

<Contents of the changes of the relay decal print>

Relay layout change (relays R22, R29, R30, R32, R25, R26, R27 and R28) (Refer to Fig. 34, Fig. 35 and Fig. 36.)

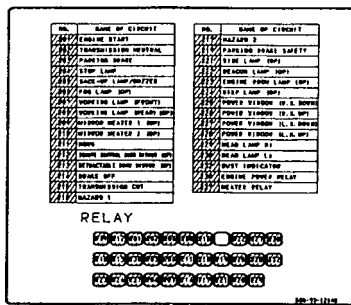


Fig. 34 Relay decal before the print change
(56B-93-11142 --- in Japanese)
(56B-93-12140 --- in English)
(For other vehicles than #1033 of the HM400-1 and #1014 & #1017 of the HM350-1)
(56B-93-18140 --- in Indonesian)

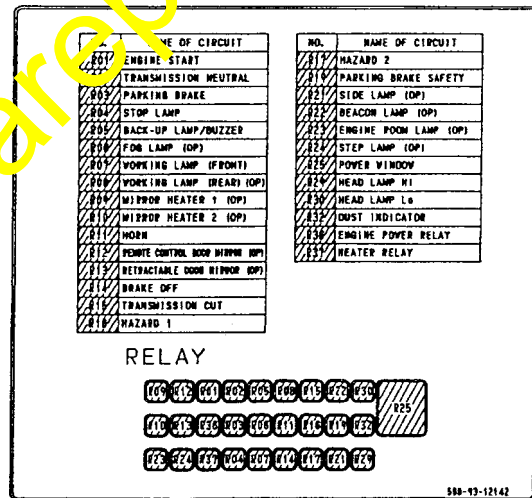


Fig. 36 Relay decal after the print change
(56B-93-11144 --- in Japanese)
(56B-93-12142 --- in English)
(56B-93-18142 --- in Indonesian)

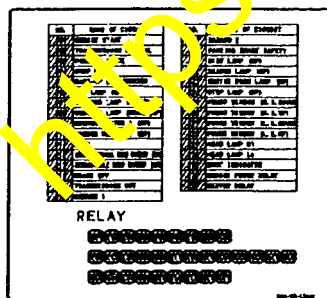


Fig. 35 Relay decal before the print change
(56B-93-12141 --- in English)
(Applicable to #1033 of the HM400-1, #1014 and #1017 of the HM350-1 only.)

- (2) Close the controller box cover.

4-6. Inspections to be made after finishing the modification work

After finishing the modification work, inspect the operations of the power windows (LH and RH windows).

(Make sure that the windows can be opened and closed properly.)

5. Applicable vehicles
HM400-1 (24 vehicles)

	Vehicle model	Serial No.	Destination	Customer's name	Shipment
1	HM400-1	1001	U.S.A.		01/3/27
2	HM400-1	1002	U.S.A.		01/1/25
3	HM400-1	1003	U.S.A.		01/1/26
4	HM400-1	1007	U.S.A.	Longhorn Excavator	01/6/24
5	HM400-1	1008	U.S.A.		01/6/25
6	HM400-1	1010	U.S.A.	Longhorn Excavator	01/7/27
7	HM400-1	1014	U.S.A.	Longhorn Excavator	01/7/28
8	HM400-1	1015	U.S.A.		01/3/7
9	HM400-1	1016	U.S.A.	Martin Marietta	01/8/3
10	HM400-1	1017	U.S.A.		01/11/15
11	HM400-1	1018	U.S.A.		01/11/16
12	HM400-1	1019	U.S.A.		01/11/16
13	HM400-1	1020	U.S.A.		01/11/27
14	HM400-1	1021	U.S.A.		01/11/27
15	HM400-1	1022	U.S.A.		01/11/28
16	HM400-1	1023	U.S.A.		01/11/28
17	HM400-1	1024	South Africa		02/1/30
18	HM400-1	1025	South Africa		02/1/31
19	HM400-1	1026	Indonesia		02/2/22
20	HM400-1	1028	U.S.A.		02/3/4
21	HM400-1	1029	U.S.A.		02/3/5
22	HM400-1	1030	U.S.A.		02/3/6
23	HM400-1	1031	U.S.A.		02/3/7
24	HM400-1	1033	U.S.A.		02/4/26

HM350-1 (11 vehicles)

	Vehicle model	Serial No.	Destination	Customer's name	Shipment
1	HM350-1	1001	U.S.A.		02/1/24
2	HM350-1	1002	U.S.A.		02/2/19
3	HM350-1	1003	U.S.A.		02/2/20
4	HM350-1	1005	U.S.A.		02/2/26
5	HM350-1	1007	U.S.A.		02/3/13
6	HM350-1	1008	U.S.A.		02/3/18
7	HM350-1	1010	U.S.A.		02/3/27
8	HM350-1	1012	U.S.A.		02/4/17
9	HM350-1	1013	U.S.A.		02/4/18
10	HM350-1	1014	U.S.A.		02/4/8
11	HM350-1	1017	U.S.A.		02/4/24

HM300-1 (3 vehicles)

	Vehicle model	Serial No.	Destination	Customer's name	Shipment
1	HM300-1	1002	U.S.A.		02/3/28
2	HM300-1	1003	U.S.A.		02/3/28
3	HM300-1	1005	U.S.A.		02/3/28