

# PARTS & SERVICE NEWS

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**SUBJECT:** INTRODUCTION OF IMPROVED AUTO EMERGENCY STEERING ON HD785-3, -5/HD985-3, -5

**PURPOSE:** To introduce an improved auto emergency steering system for use on HD785-3, -5 and HD985-3, -5 dump trucks with which occurrence of malfunctioning of the system can be prevented

**APPLICATION:** HD785-3 Dump Trucks, Serial Nos. 2001 thru 2574  
HD785-5 Dump Trucks, Serial Nos. 4001 thru 4190  
HD985-3 Dump Trucks, Serial Nos. 1001 thru 1020  
HD985-5 Dump Trucks, Serial Nos. 1021 thru 1051

**FAILURE CODE:** DDE550

**DESCRIPTION:**

1. Introduction

The auto emergency steering system on the HD785-3, -5 and HD985-3, -5 dump trucks may malfunction depending on the operating conditions such as when the vehicle is making dumping work running the engine at a Low Idling revolution. This Service News will introduce an improved auto emergency steering system with which occurrence of the aforesaid malfunctioning can be prevented.

Also, when the dump control cable is in contact with the emergency steering motor body and with the motor cables, the dump control cable will become heated unnecessarily by the heat generated while the emergency steering movements are being made. This Service News will also introduce a modification to keep the dump control cable from being heated and an improved emergency steering relay switch with enhanced durability.

## 2. List of parts

No.	Part No.	Part Name	Q'ty	Remarks
1	561-61-61161 (561-61-61160)	Tube (Tube)	2 (2)	
2	07000-F2075	O-ring	2	
3	02030-71225	Bolt	1	
4	07004-02034	Gasket	1	
5	07042-20108	Plug	2	
6	417-875-2670	Switch	1	
7	20D-62-17150	O-ring	1	
8	561-43-62333 (561-43-62332)	Bracket (Bracket)	1 (1)	
9	561-43-62410	Bracket	1	
10	01010-81235	Bolt	2	
11	08036-01414	Clip	1	
12	01010-81225	Bolt	1	
13	01643-31232	Washer	1	
14	560-43-15220	Washer	1	
15	01010-81030	Bolt	1	
16	561-06-61510 (08088-40000)	Relay (Relay)	2 (2)	
17	01220-40408	Screw	4	
18	01601-20410	Washer	4	
19	01010-80913	Bolt	4	
20	01643-50823	Washer	4	

### 3. Contents of the modification

- 1) The suction tube (of the pump) to which the auto emergency steering flow switch is being installed is to be modified so that the operating power of the flow switch can be maintained even when the suction flow rate of the pump drops when the revolution of the engine goes down.
- 2) A cable clamp is to be supplemented to the dump control cable and, at the same time, the layout of the power cable and the grounding cable for the emergency steering motor is to be changed to secure necessary clearance.
- 3) The specification of the coil for the emergency steering relay switch has been changed to improve the durability of the contact of the emergency steering relay switch.

### 4. Installation procedures

#### 4.1 Preparations

Park the vehicle on a level surface, apply the parking brake and raise the body before turning off the engine starting switch. (Lock the dump lever at the holding position.) Insert the body safety pin and apply tire wedges underneath respective tires.

#### 4.2 Modifying the piping

##### 4.2.1 Removing the parts which need to be removed when making this modification

Parts with their code names in circled borders in the schematic diagrams indicated below are to be reused after removal.

Parts with their code names in triangle borders in the schematic diagrams indicated below are not to be reused after removal.

- 1) Remove the suction line tubes from the steering pump and from the hoist pump. (Refer to Fig. 1.)

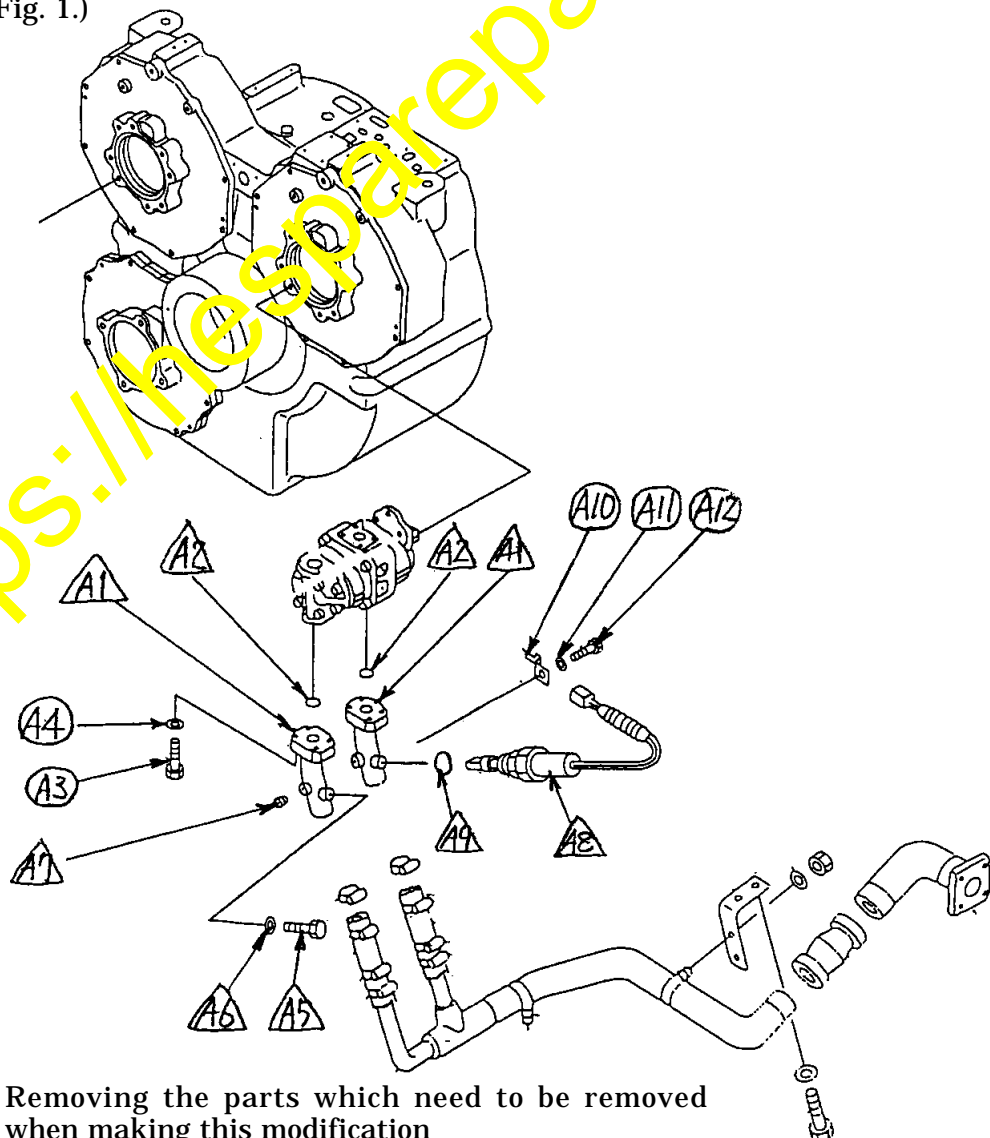


Fig. 1 Removing the parts which need to be removed when making this modification

#### 4.2.2 Reinstalling the parts

Parenthesized code numbers given immediately after respective part names in the descriptive sentences and code numbers given in the schematic diagrams indicated below correspond to the Item Numbers in the lists of necessary parts.

(1) Connecting the tubes (Refer to Fig. 2.)

1) Connect the tubes (1) to the pump. At this time, replace the O-rings (2) with new parts.

(2) Installing the auto emergency steering flow switch (Refer to Fig. 2 and Fig. 3.)

1) Inserting the O-ring (7), screw-in the flow switch (6) to the mounting boss being provided on the tube (1).

2) Loosen the cap and turn the switch to match the arrow mark being provided on the outer cylinder of the switch to the direction of the oil flow through the tube.

3) Tighten the cap to fasten the switch at the position.

Cap tightening torque: 19.6 – 24.5 Nm (2 – 2.5 kgm)

(3) Installing the plugs and other parts (Refer to Fig. 2.)

1) Install the bolt (3), gasket (4) and plugs (5) to the tubes.

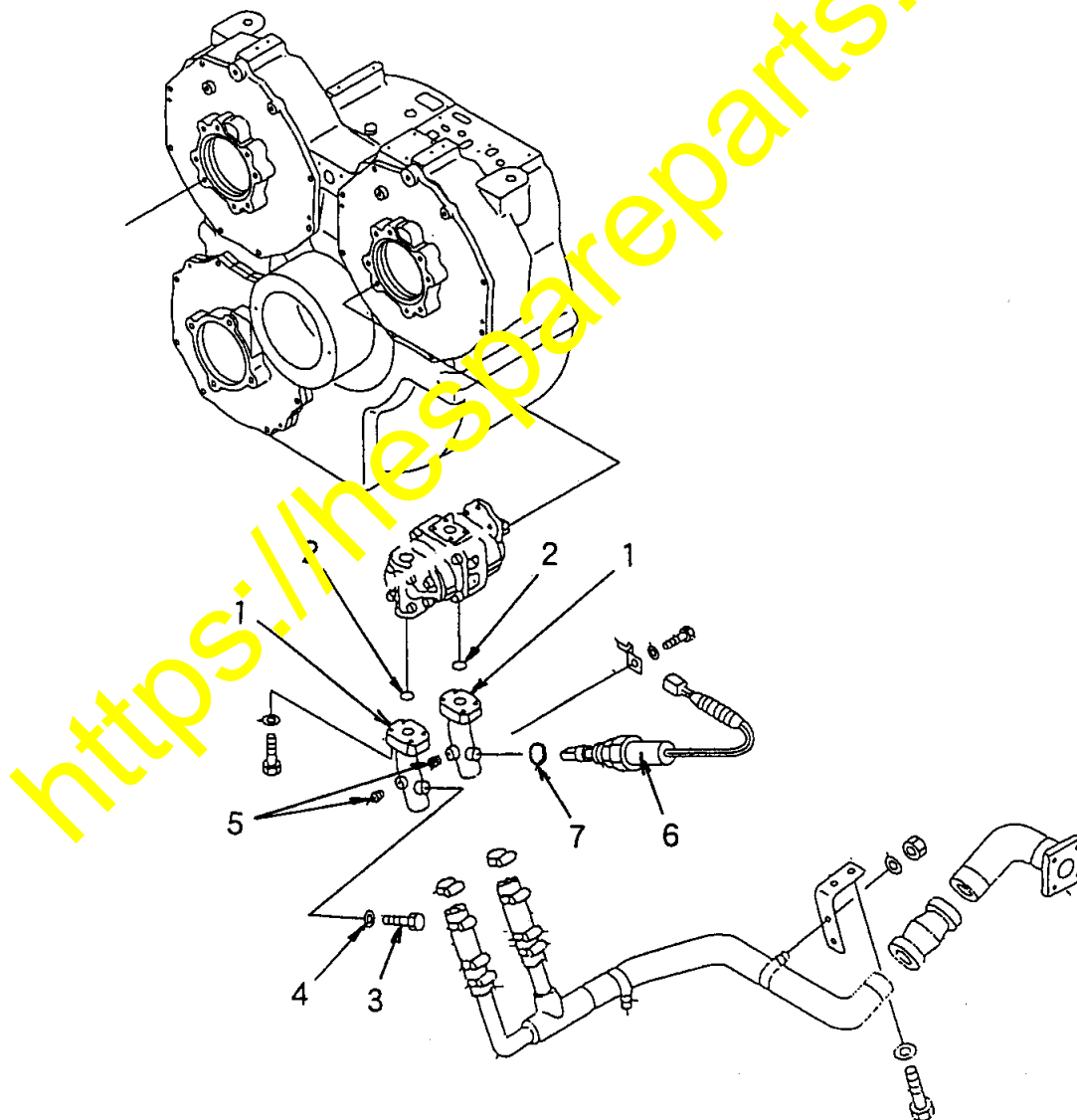


Fig. 2 Reinstalling the parts

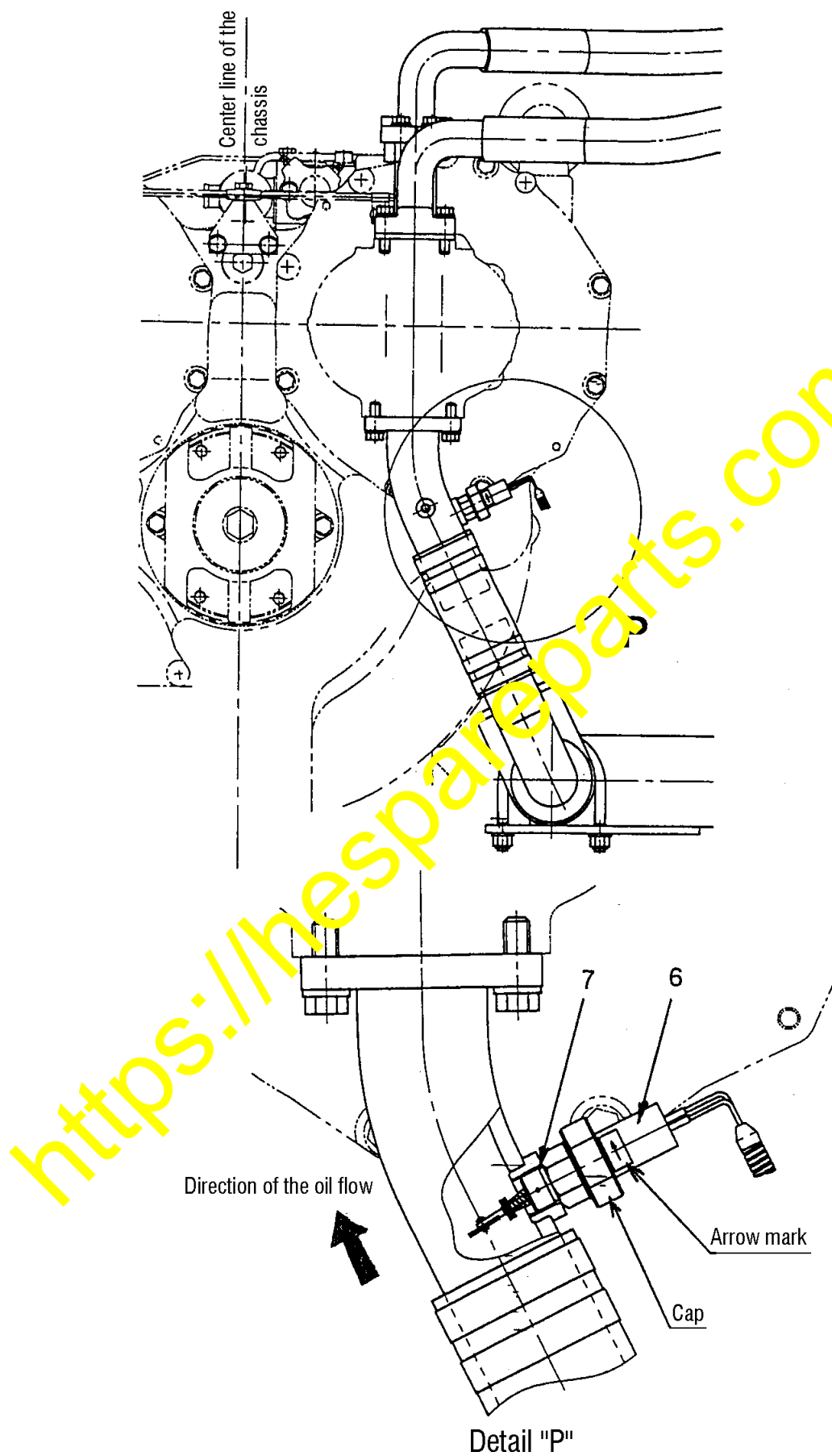


Fig. 3 Installing the flow switch

4.3 Changing the layouts of the dump control cable and of the grounding wire for the emergency steering motor. (Refer to Fig. 4, Fig. 5, Fig. 6, Fig. 7 and Fig. 8.)

4.3.1 Changing the layout of the grounding wire for the emergency steering motor. (Refer to Fig. 4.)

Loosen the grounding wire terminal fastening bolt and change the direction of the grounding wire terminal before tightening the bolt back to its original state.

Bolt tightening torque: 3.9 – 5.1 Nm (0.4 – 0.52 kgm)

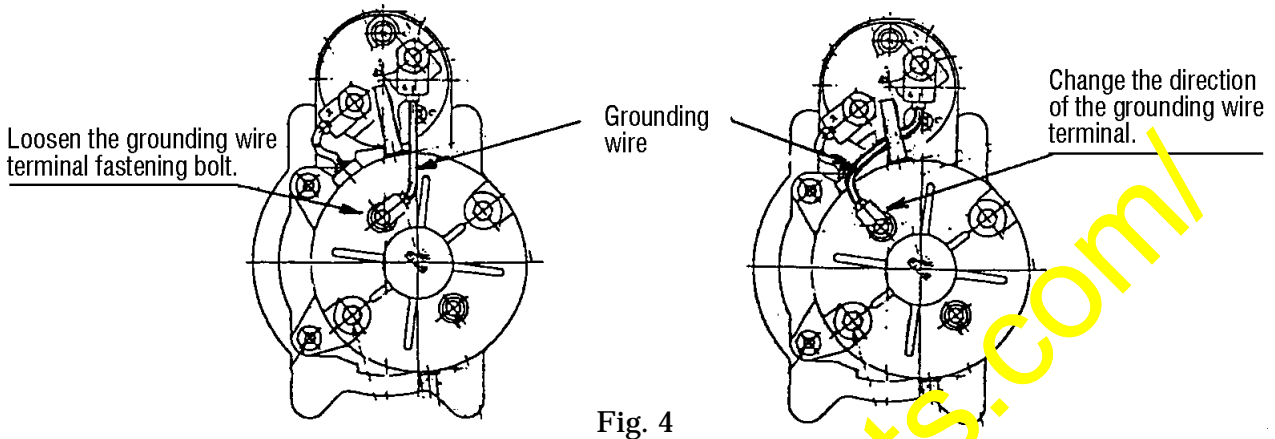


Fig. 4

4.3.2 Changing the bracket for the dump control cable. (Refer to Fig. 5.)

Remove the bracket  $\triangle B1$  to replace with the newly prepared bracket (8).

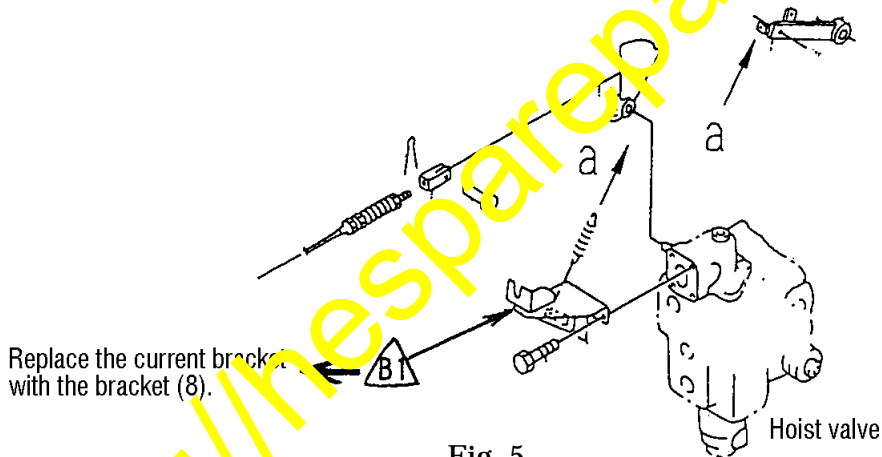


Fig. 5

4.3.3 Supplementing the cable clamp to the dump control cable (Refer to Fig. 6.)

1) Remove two of the emergency steering motor mounting bracket (the two bolts located on the frame side among the four mounting bolts) before tightening them back, fastening the newly prepared clamp bracket (9) altogether.

At this time change these bolts to the newly prepared bolts (10).

2) Clamp the dump control cable using the clip (11), bolt (12) and washer (13).

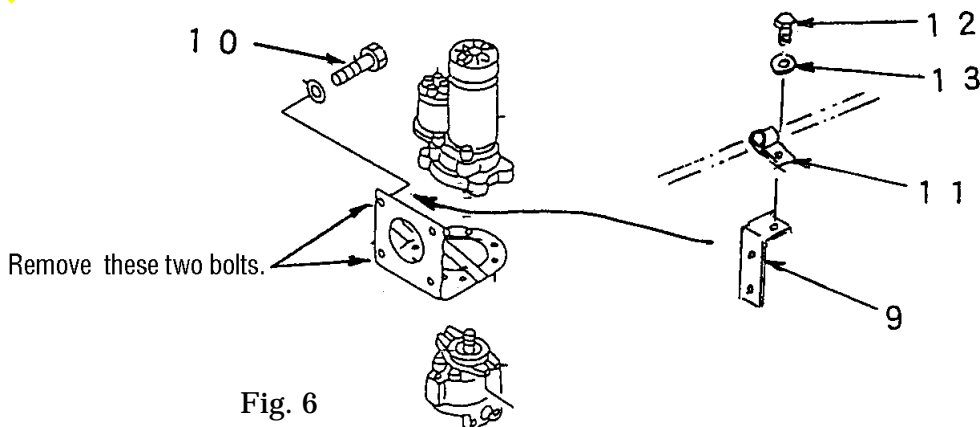


Fig. 6

#### 4.3.4 Supplementing the washer to motor power cable clamp (Refer to Fig. 7.)

Remove the bolt fastening the clamps for the motor power cable and for the dump control cable and insert the washer (14) between the two clamps before fastening the two clamps in order not to let the motor power cable and the dump control cable come in contact with each other.

At this time, replace the bolt with the newly prepared bolt (15).

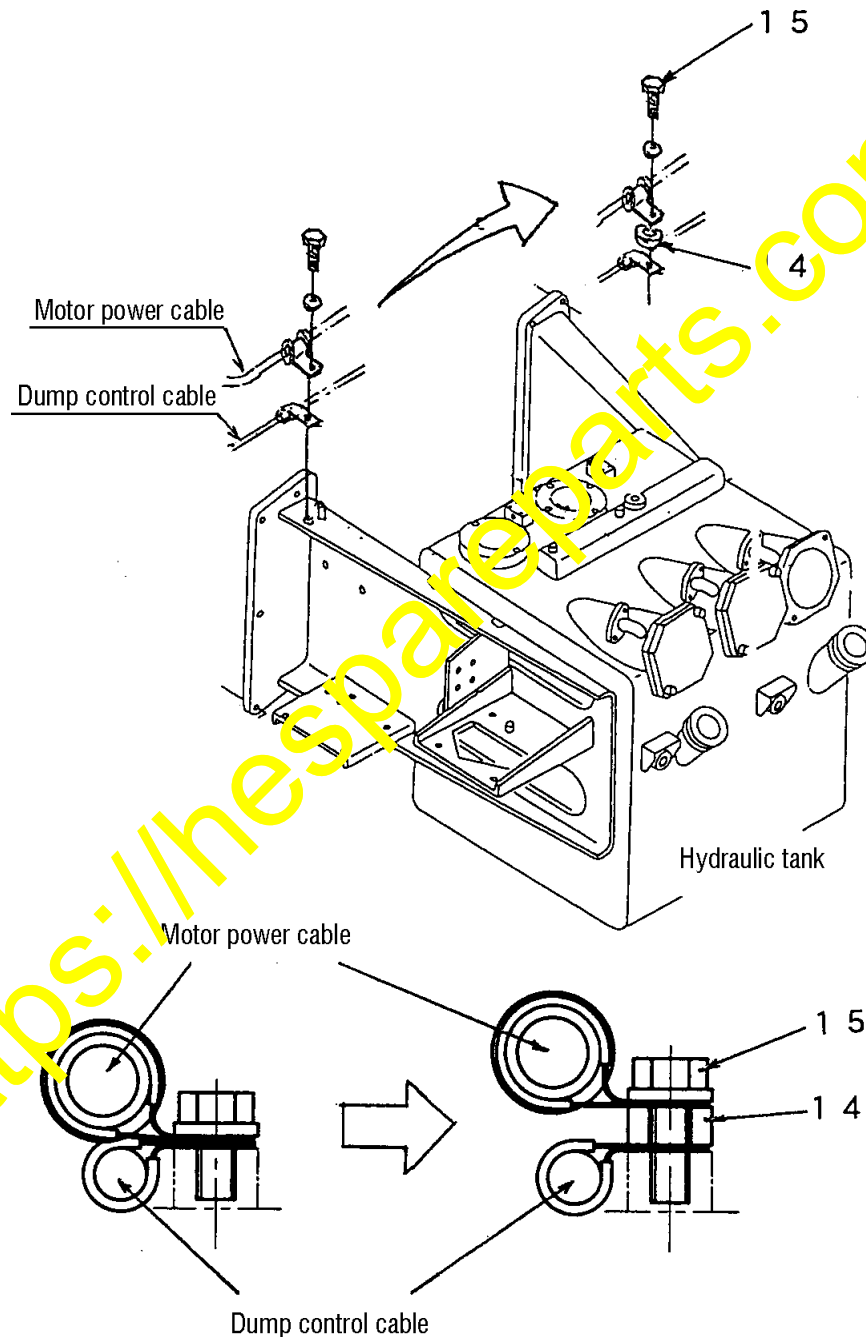


Fig. 7

Changing the layout of the dump control cable, the motor power cable and the motor grounding cable

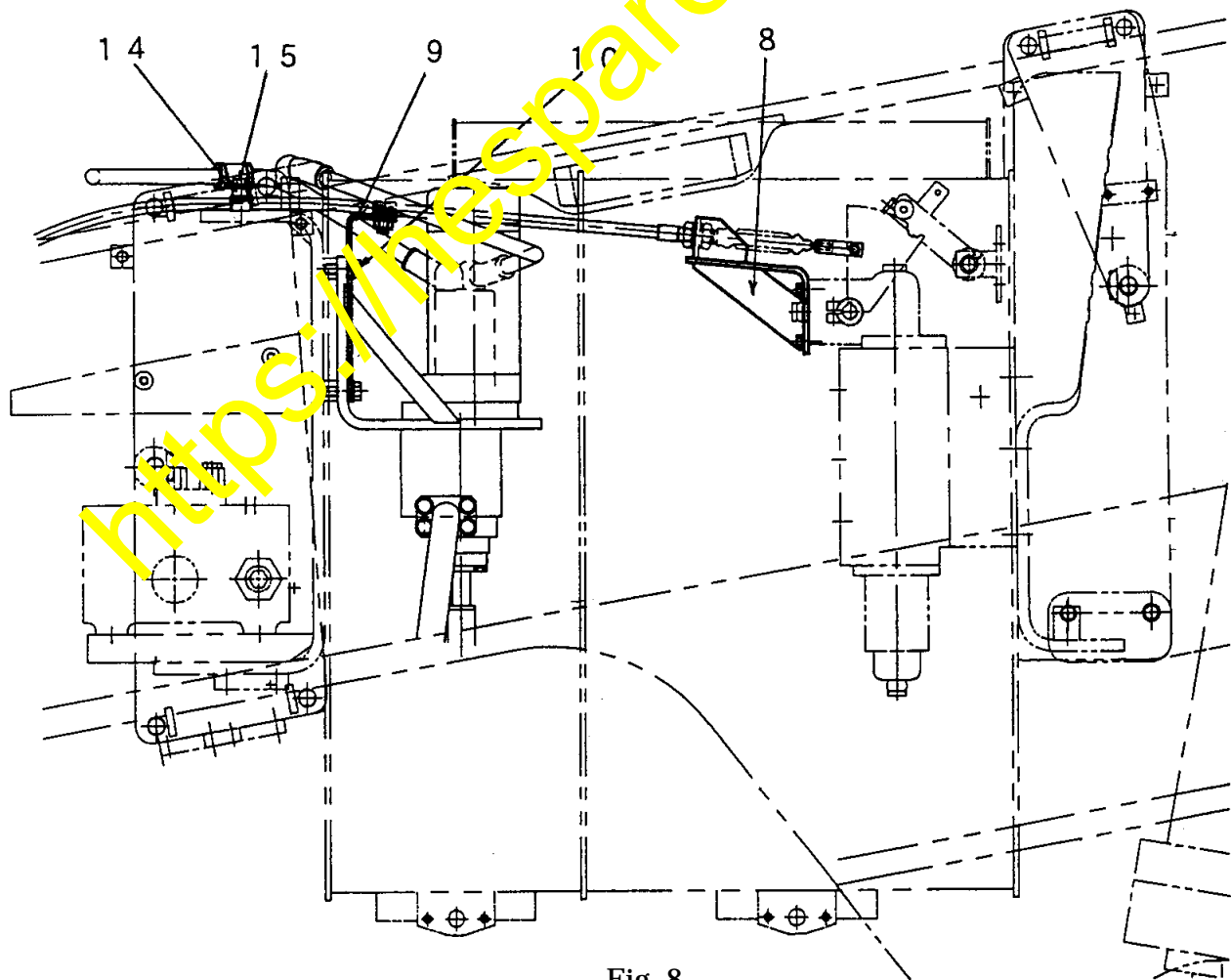
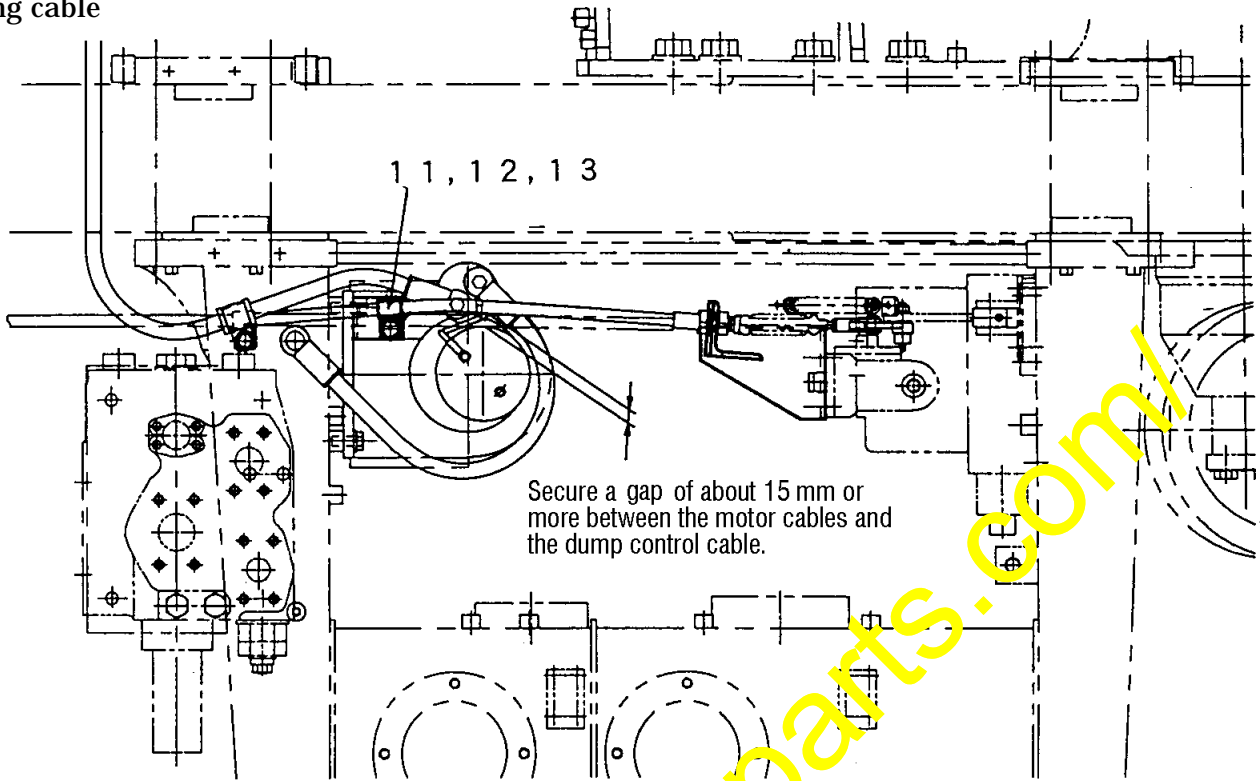


Fig. 8



#### 4.4 Replacing the emergency steering relay switch (Refer to Fig. 9.)

##### 4.4.1 Replacing the emergency steering relay switch

Remove the emergency steering relay switch and install the newly prepared relay (16) before connecting the cables using the screws (17), washers (18), bolts (19) and washers (20).

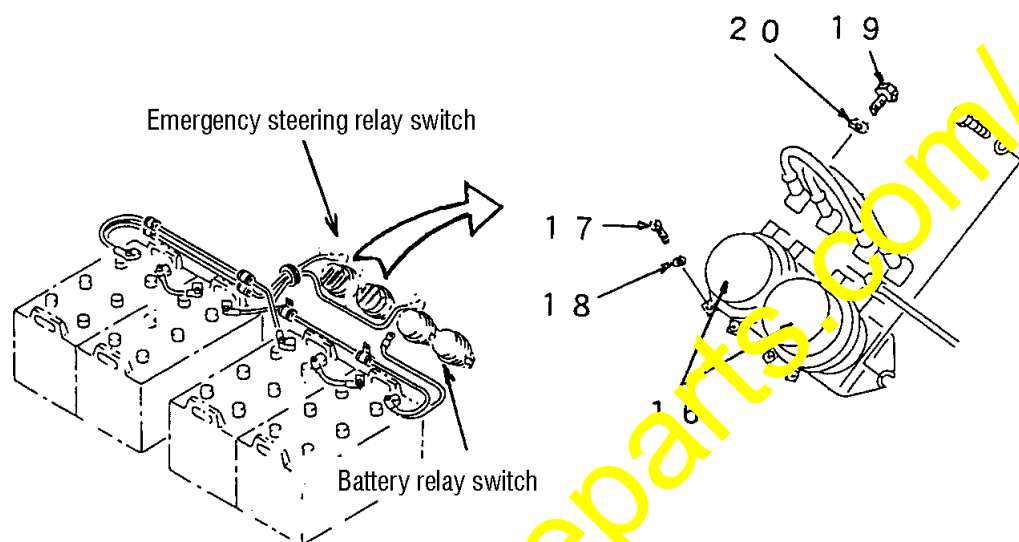


Fig. 9

## 5. Operation checks

When the installation work has been completed, pull out the body safety pin to lower the body before conducting the operation checks of the emergency steering system.

- (1) Turn the starting switch key to the "START" position to start the engine.
- (2) Check and make sure that the air pressure gauge indication is within the green range before pulling the retarder lever all the way to its full stroke to stop the engine.
- (3) Turn the starting switch key to the "ON" position
- (4) Check and make sure if the emergency steering motor is activated to make steering 1.5 second after the parking brake is set to the traveling state (released state). At this time, the emergency steering caution lamp located on the dashboard will turn on.
- (5) When the above checks have been made, promptly apply the parking brake to the parking state (working state) (then, the emergency steering motor will stop revolution) before turning "OFF" the starting switch.
- (6) Start the engine and pull the retarder brake lever before setting the parking brake to the traveling state (released state).

Running the engine at Low-Idling revolution, set the speed shift lever to the "D" position before turning the steering wheel rightward or leftward as far as it goes to relieve pressure and, at the same time, set the dump control lever to the "DOWN" position to relieve pressure to apply load thereby to bring down the engine revolution.

At this time, check and make sure that the emergency steering motor will not be activated.

(When the motor is activated, the flow switch may be installed in an inclined state. Check the installed direction of the flow switch according to Paragraph (2) in Section 4.2.2.)

## 6. Precautions when moving the body positions

When moving the body positions, guide the operators of your customers to always set the speed shift lever to the "N" (neutral) position and to set the parking brake lever to the parking state (working state) according to the instructions given in the Operation and Maintenance Manual of the vehicle model.

The auto emergency steering will not be activated when the parking brake lever is being set to the parking state (working state).