

PARTS & SERVICE NEWS

REF NO.	AT00089B
DATE	Jun. 27, 2001
(C)	Page 1 of 15

This PARTS & SERVICE NEWS supersedes the previous issue No. AT00089A dated Apr. 16, 2001 which should be discarded.

SUBJECT: REPAIR PROCEDURE FOR T/M FILL SWITCH ON DUMP TRUCKS AND BULLDOZERS

PURPOSE: To introduce repair procedures for the fill switch of the ECMV for the transmission on dump trucks and bulldozers

\triangle APPLICATION:	HD325-6	Dump Trucks, Serial Nos. 5001 thru 5938 (T/M Nos. up to 3418)
	HD325-6 4WD	Dump Trucks, Serial Nos. 5001 thru 5938 (T/M Nos. up to 5418)
	HD405-6	Dump Trucks, Serial Nos. 1001 thru 1171 (T/M Nos. up to 5418)
	HD465-5	Dump Trucks, Serial Nos. 4001 thru 4827 (T/M Nos. up to 3987)
	HD605-5	Dump Trucks, Serial Nos. 1001 and up thru 1108 (T/M Nos. up to 3987)
	HD785-3	Dump Trucks, Serial Nos. 2001 and up thru 2351
	HD785-5	Dump Trucks, Serial Nos. 4001 thru 4149 (T/M Nos. up to 1257)
	HD985-3	Dump Trucks, Serial Nos. 1001 and up thru 1020
	HD985-5	Dump Trucks, Serial Nos. 1021 thru 1048 (T/M Nos. up to 1047)
	D375AR-2	Bulldozers, Serial Nos. 16001 and up
	D575AR-2	Bulldozers, Serial Nos. 10001 thru 10033 (T/M Nos. up to 10048)

\triangle FAILURE CODE: MA 15S050

DESCRIPTION:

1-1. Introduction

With the fill switch of the ECMV (Electronic Control Modulation Valve) for the transmission on dump trucks and bulldozers of the model names listed above, depending on the dispersion in the strength of the internal parts of the fill switch, open circuitry detection error may occur making speed shifts unworkable. When the aforementioned failure has occurred, make the modification according to this Service News following the procedures outlined herein.

Follow the modification steps shown in this Service News, disregarding the modification procedures indicated in previously issued Service News No. AT99037.

1-2. Revised places:

3 places \triangle	Apr. 16, 2001	Introducing the masking seal to use when modifying the ECMV
31 places \triangle	Jun. 27, 2001	Added part number to clarify the instruction content.

2. Modification

Applies to the low clutch ECMV of the following relevant models:

HD325-6, HD325-6 4WD, HD465-5, HD605-5, HD785-3, -5, HD985-3, -5, 330M

1) Changes of low clutch ECMV

- a) An orifice has been supplemented for the purpose of suppressing the peak pressure occurring when the filling is completed. (Refer to Fig. 1-1.)

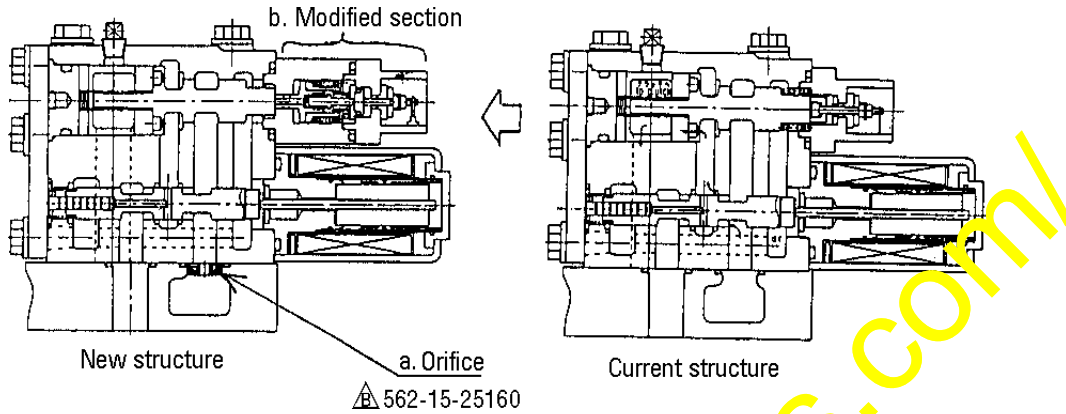


Fig. 1-1

- b) The operation structure of the low clutch fill switch has been changed. (See Fig. 1-2).
- c) The reliability in electrical continuity of the fill switch has been improved. Changes of fill switch
 - c-1) The terminal has been modified into an integral structure to improve the reliability in electrical continuity.

	New ←	Old
Terminal structure	Terminal changed into an integral structure	Collar/terminal separate structure

- c-2) The insulating spacer material has been changed to cotton cloth, which provides excellent bondage with resin.

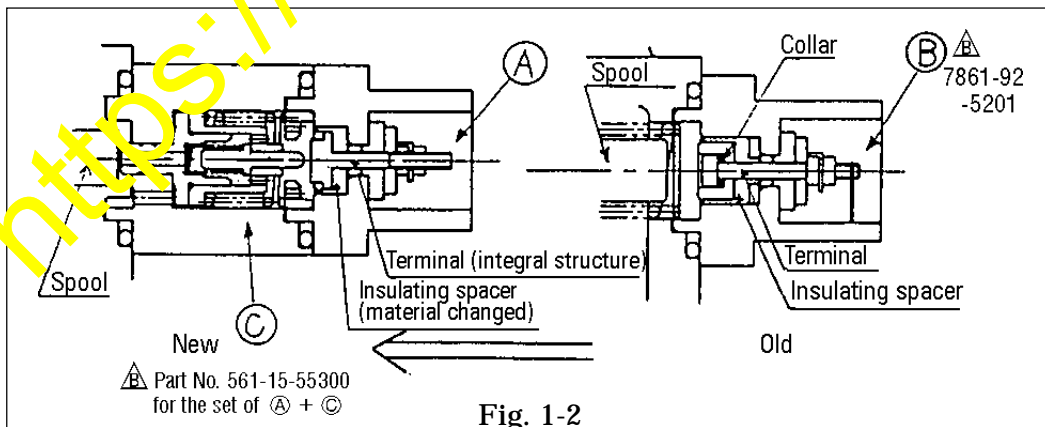



Fig. 1-2

Impact load upon completion of filling is reduced by addition of the impact absorbing structure  .	←	Impact load upon completion of filling was applied directly from the spool to the collar.
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- 2) Changes of the ECMV assembly except for the low clutch (See Fig.1-3).
The fill switch has been changed to have an improved reliability in electrical continuity.

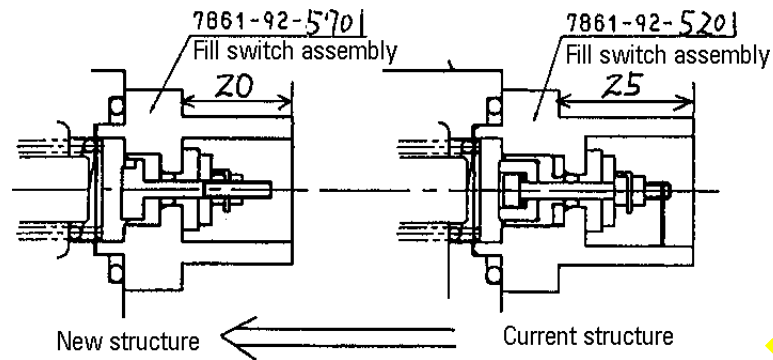


Fig. 1-3

3. Modification procedures

- 1) Procedures to supplement the orifice in the low clutch ECMV: Pages 4 thru 5

Applicable vehicle models

The low clutch on HD325-6, HD325-6 4WD, HD405-6, HD465-5, HD605-5, HD785-3, HD785-5, HD985-3, HD985-5 and 330M

- 2) Replacement procedures for the fill switch for the low clutch ECMV: Pages 6 thru 8

Applicable vehicle models

The low clutch on HD325-6, HD325-6 4WD, HD405-6, HD465-5, HD605-5, HD785-3, HD785-5, HD985-3, HD985-5 and 330M

- 3) Replacement procedures for the fill switch for the ECMV

Applicable to the ECMV of other clutches than the low clutch: Pages 9 thru 10

- 4) Location to install the low clutch ECMV: Page 11

- 5) History of modification made with the ECMV (Reference): Page 12 thru 13

- 1) Procedures to supplement the orifice in the low clutch ECMV:
(Applicable to the low clutch ECMV on vehicles of the following applicable vehicle models.)

Applicable vehicle models : HD325-6, HD325-6 4WD, HD405-6, HD465-5, HD605-5, HD785-3, HD785-5, HD985-3, HD985-5 and 330M

- a) Remove the valve cover.
- b) Remove the low clutch ECMV.

<Precaution>

Before removing the ECMV, totally remove mud and sand from the neighborhood of the ECMV to prevent entry of foreign substance into the valve.

<An example of the valve assembly on HD785-3, HD785-5, HD985-3, HD985-5 and 330M>

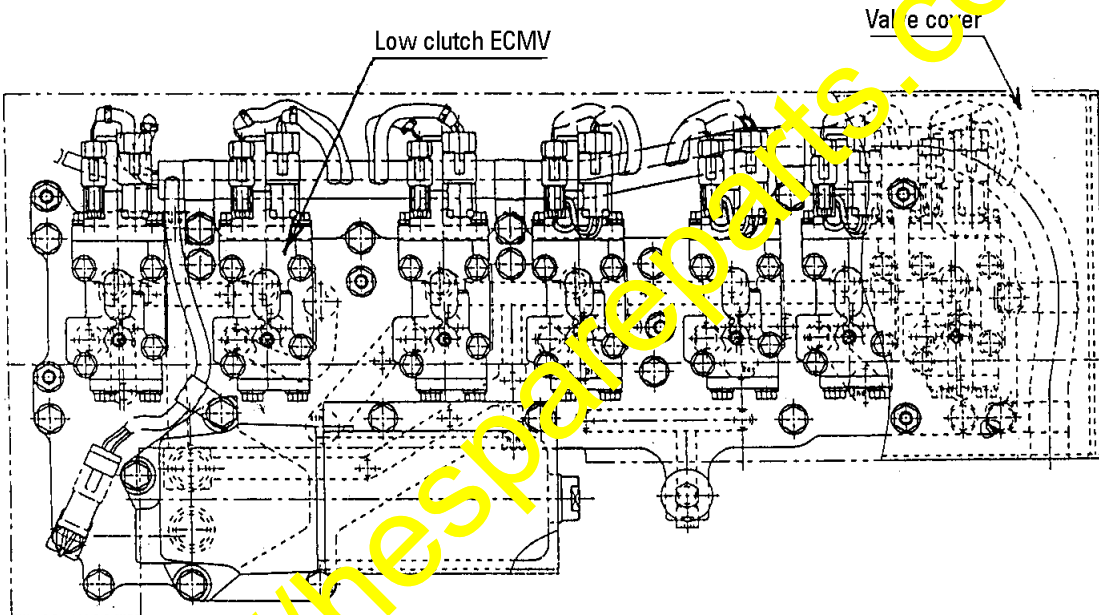


Fig. 2-1

- c) Replace the three O-rings ② with new parts. (Refer to Fig. 2-2.)
- d) Install the orifice ① to the main port in the valve seat.

<Precaution>

Refer to Fig. 2-2 regarding the installation location.
 Be careful not to install the orifice at a wrong place.

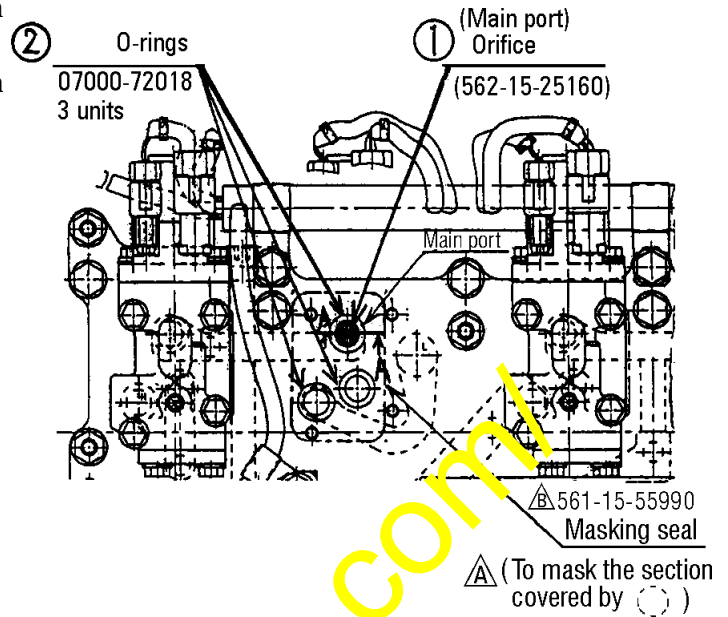
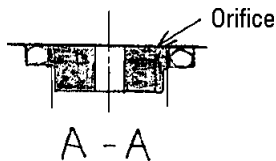


Fig. 2-2

- e) Since paint should be bordering the mounting surface of the ECMV, scrape off the paint using a scraper or the sort along the border of the mounting surface of the ECMV, before installing the ECMV. <Spare Part No.>

\triangle When modifying the valve, apply the masking seal (561-15-55990) onto the ECMV mounting surface to cover all the oil ports. (Refer to the schematic diagram indicated above.)

<Precaution>

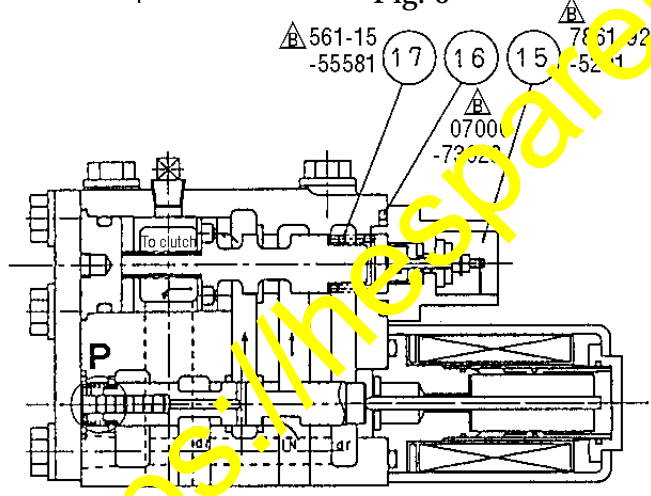
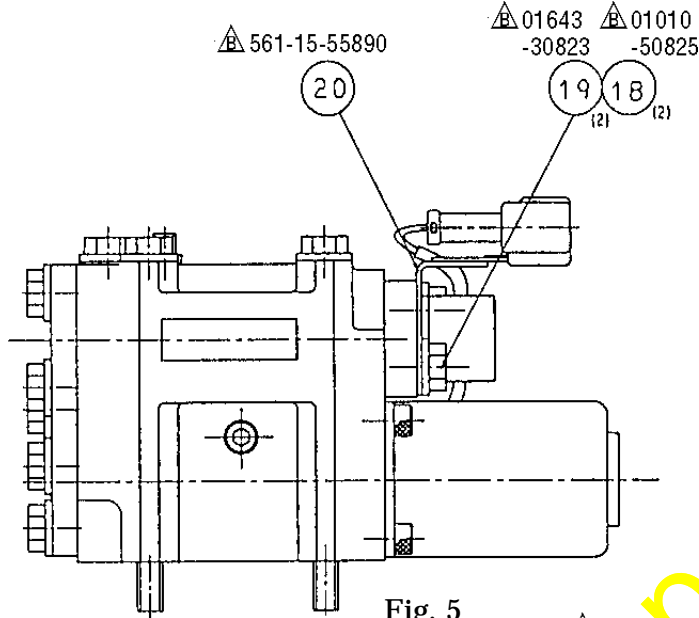
Be careful not to allow entry of dust into inside the valve.

- f) After replacing the fill switch according to the modification procedures in Section 2), reinstall the ECMV back to its original position.
 Mounting bolt tightening torque: 2.8 – 3.5 kgm

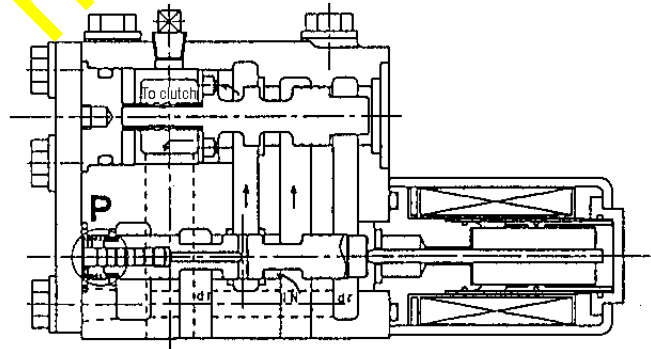
2) Fill switch replacement procedure

[Applies to the low clutch ECMV of the following relevant models: HD325-6, HD325-6 4WD, HD405-6, HD465-5, HD605-5, HD785-3, -5, HD985-3, -5, 330M]

Note: Before replacing the fill switch, totally remove mud and sand from the surfaces of the ECMV and from its neighborhood to prevent entry of foreign substance into the ECMV.



- a) Remove the fill switch ⑮, O-ring ⑯ and spring ⑰ to acquire the state shown as Fig. 7.



- b) Make preparations so that the replacement fill switch (part number 561-15-55300) can be mounted. Replacement parts are assembled as shown in Fig. 8. Nuts ② are jig parts to constitute the assembly, so remove them as shown in Fig. 9 before you mount the fill switch.

Note: It should be noted that the body and fill switch will come apart by the internal spring force when the nuts are removed.

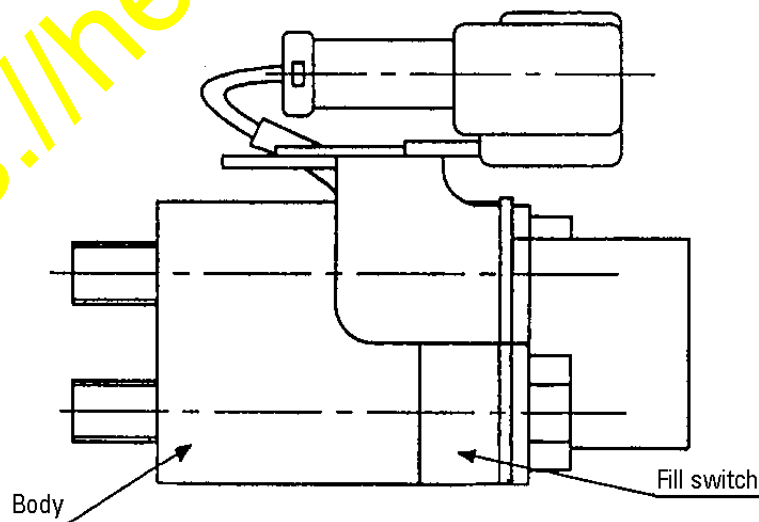
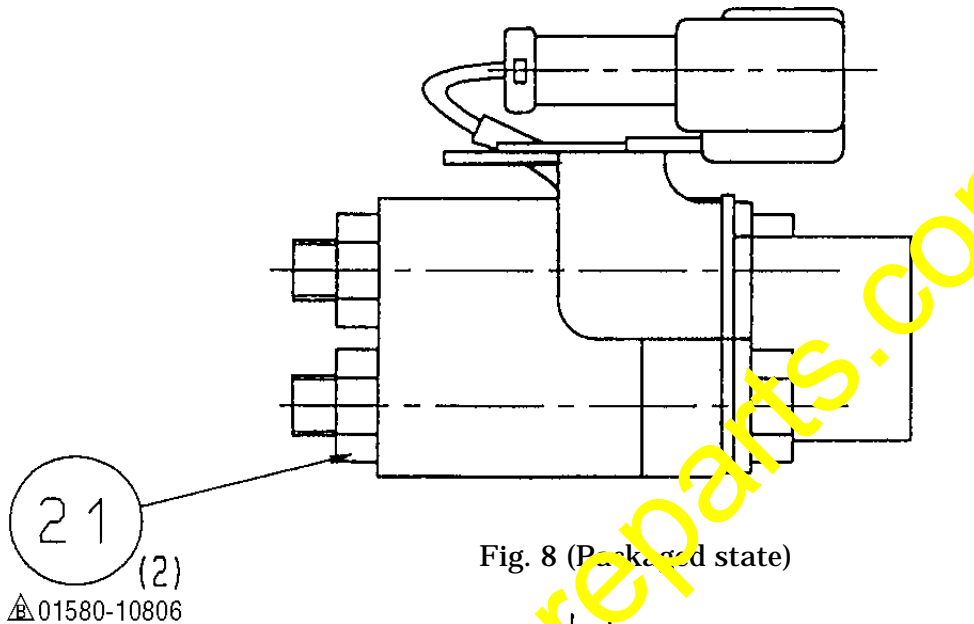


Fig. 9 (Ready-to-install state)

c) Mount the replacement fill switch (part number 561-15-55300).

(See Figs. 10, 11 and 12).

- Mount the fill switch (③ through ⑭).
- Mount a new O-ring (⑯).
- Tightening torque range of the mounting bolt (⑭) : 2.8 to 3.5 kgm.
- Solenoid wiring (A) and fill switch wiring (B) should be routed outside, as shown in Fig. 11.

<Precaution>

When replacing the fill switch, be careful not to allow entry of foreign substance into the valve.

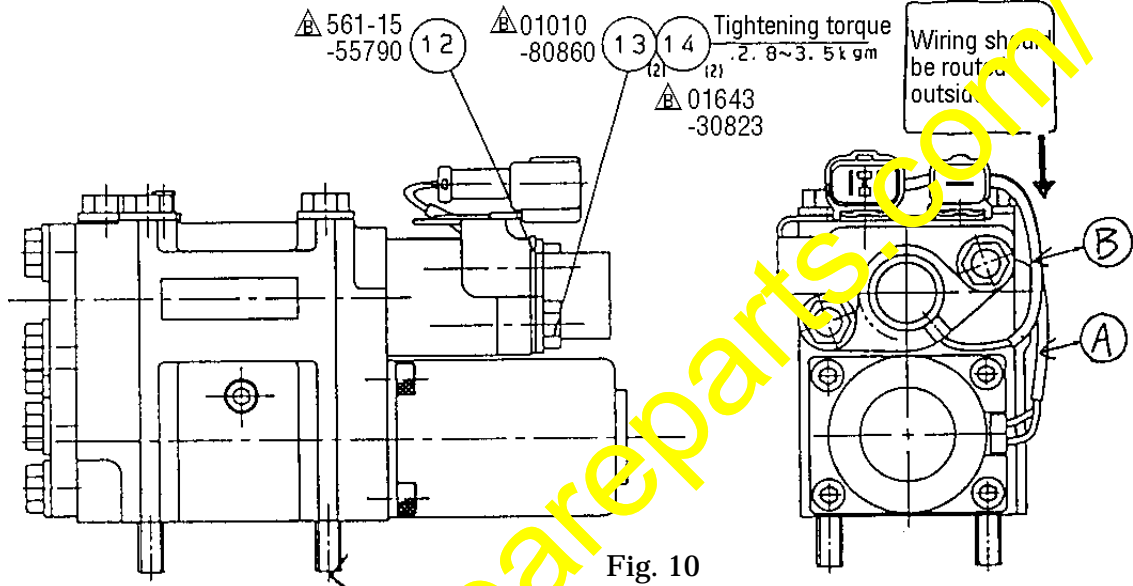
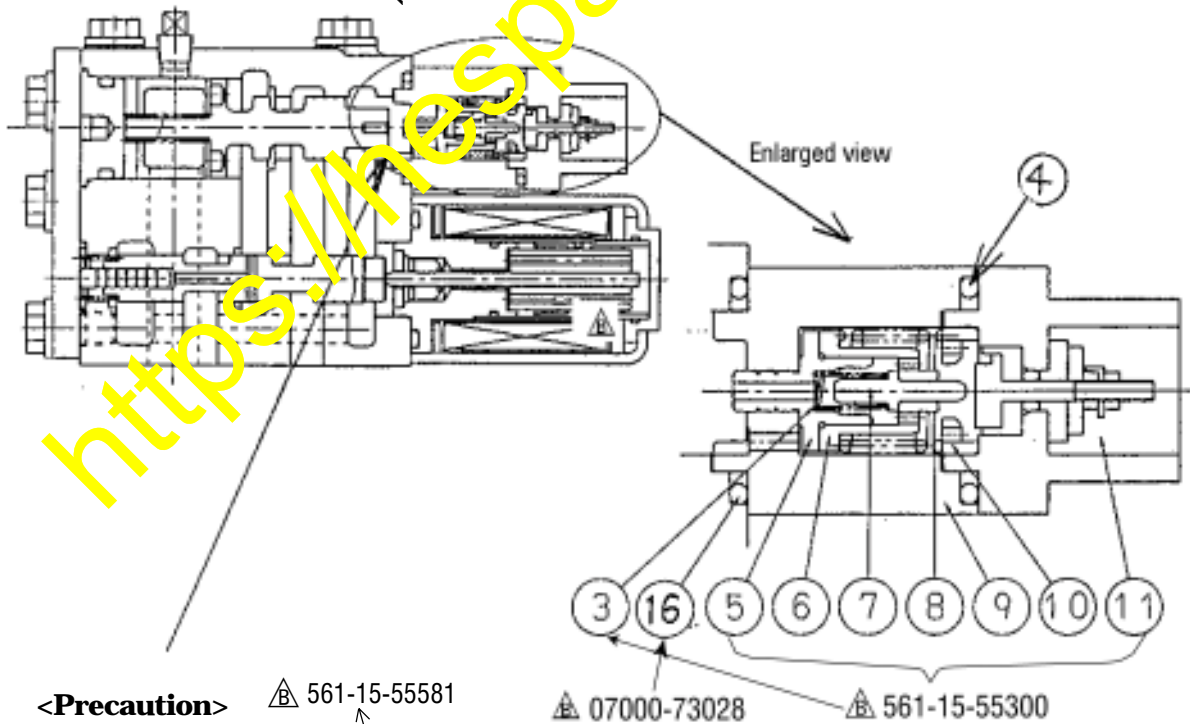


Fig. 10



<Precaution>

Do not use the spring (⑰) having been used for the current fill switch. (Refer to Fig. 6.)

If this spring is installed again by an error, malfunctioning will occur with the new fill switch to cause the open circuitry detection error "b05.3" making vehicle travels unworkable.

3) Fill switch replacement procedure (Applies to the ECMV's other than those in Article 3.2)

- a) Remove the fill switch. (See Figs. 13, 14 and 15).
(Applies to the fill switches other than those for the low clutch)
Remove the parts ⑮, ⑯, ⑰ through ⑳.

Note: To prevent foreign substances from entering, completely remove all dust and sand from the ECMV before removing the fill switch.

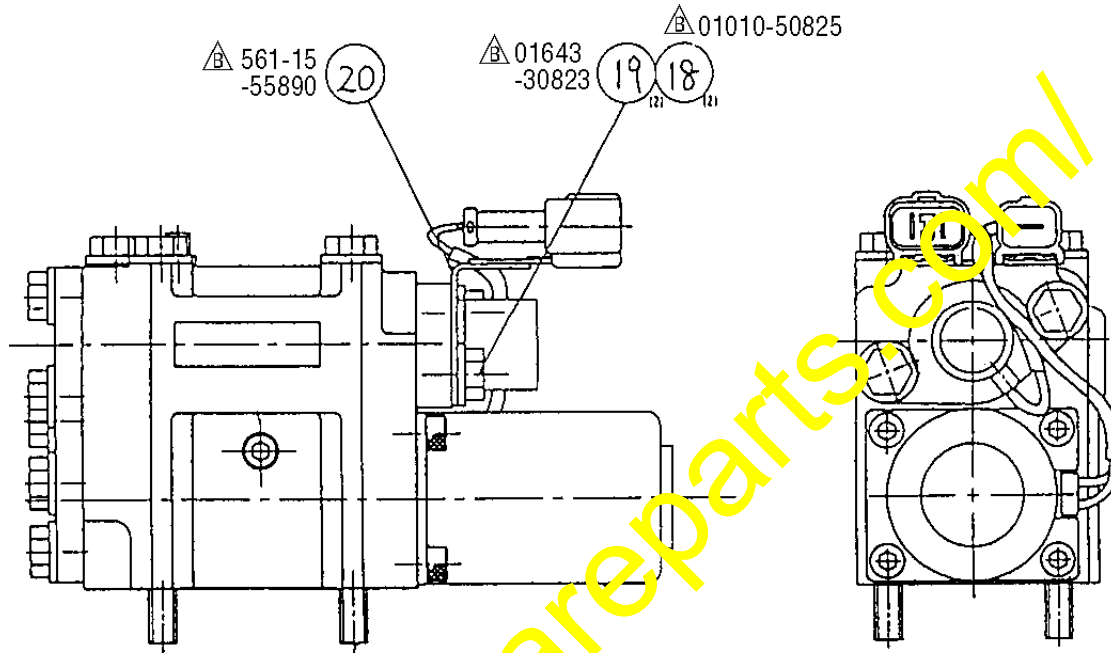


Fig. 13

Fig. 14

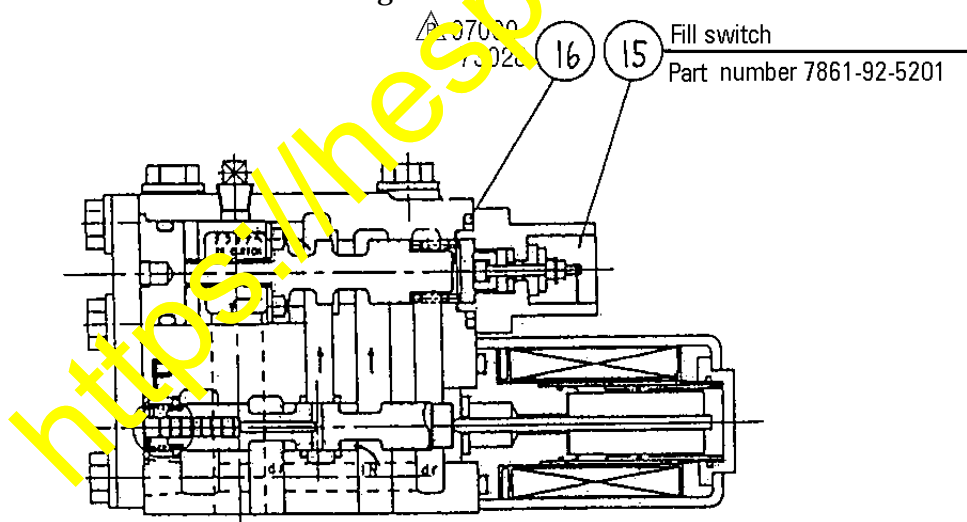


Fig. 15

- b) Mount the replacement fill switch (part number 7861-92-5701). (See Fig. 16.)
- Mount a new O-ring $\textcircled{16}$.
 - Tightening torque range of the mounting bolt $\textcircled{19}$: 2.8 to 3.5 kgm.

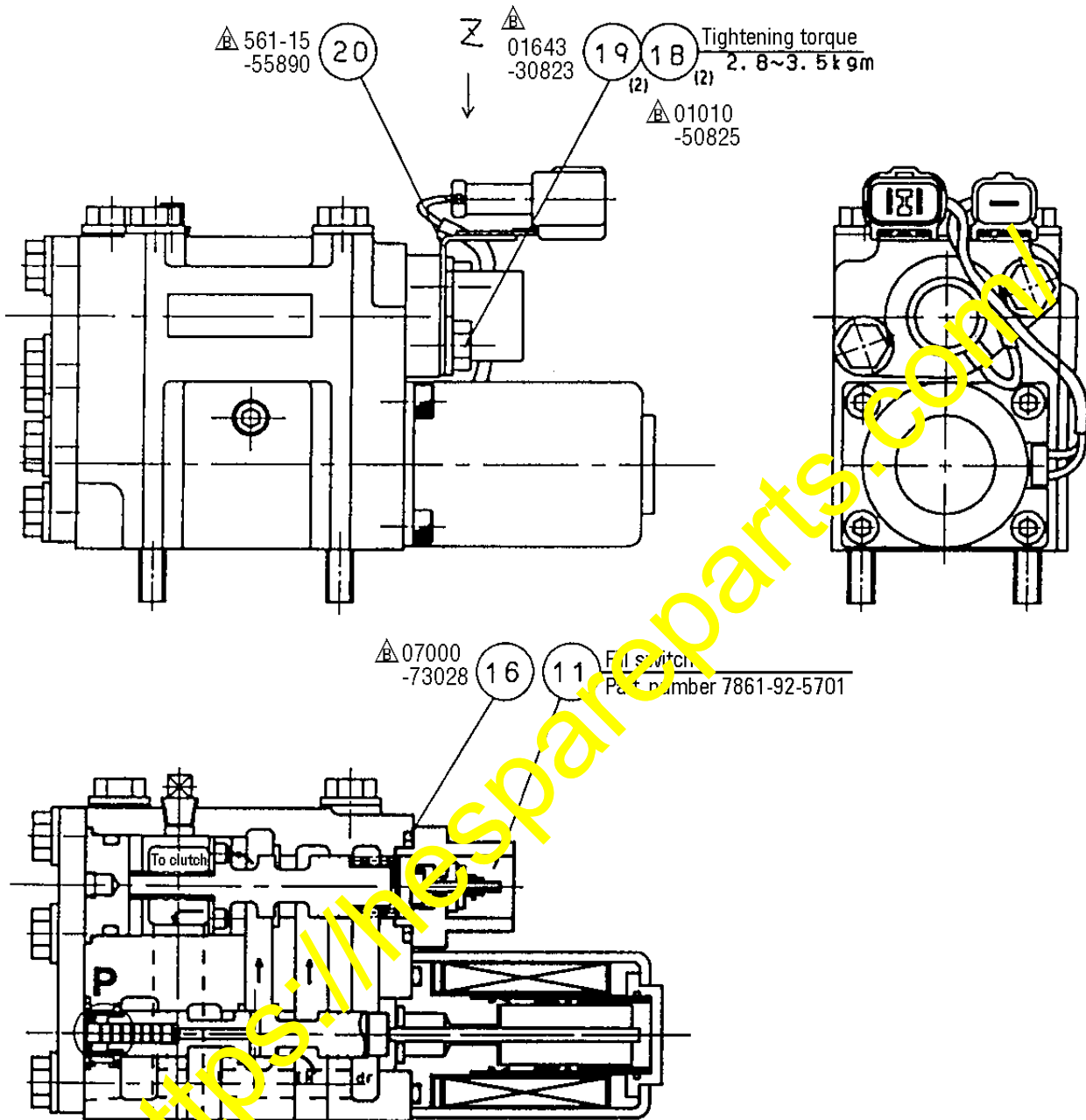


Fig. 16

4. How to identify between old and new switches

Part number 7861-92-5701 is stamped on the flange section (hatched section) of the fill switch as shown in Fig. 17.

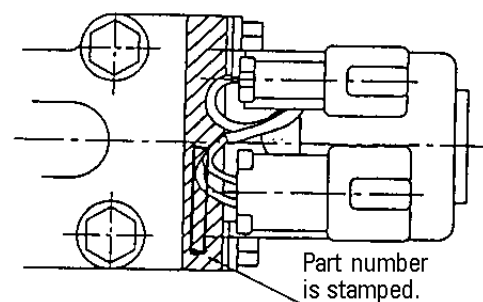
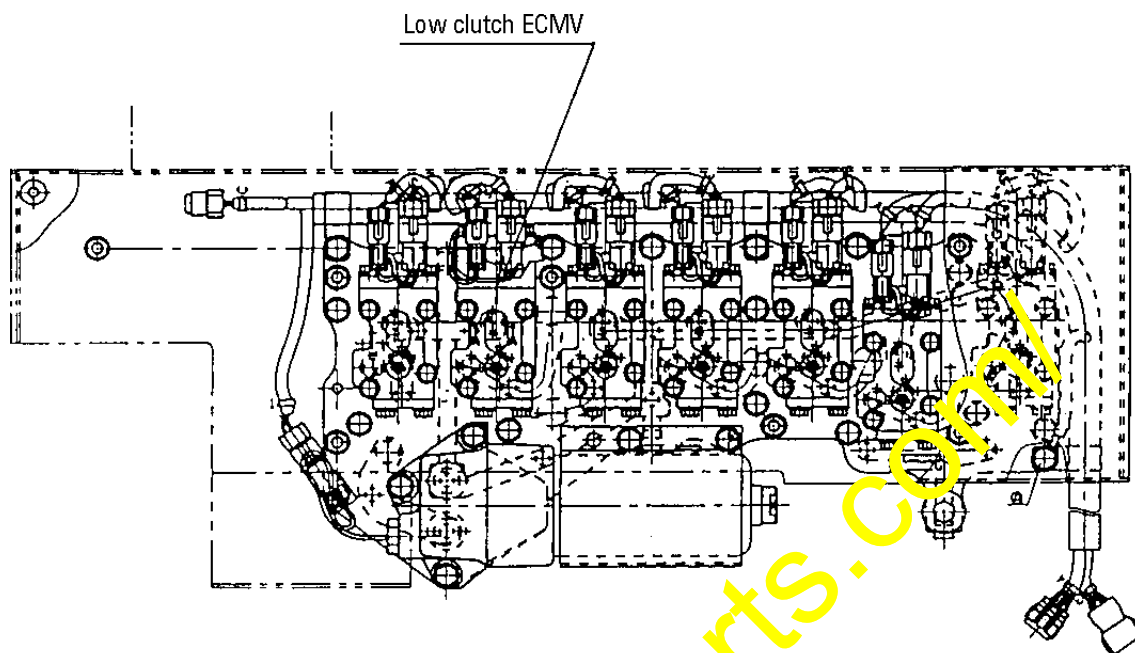
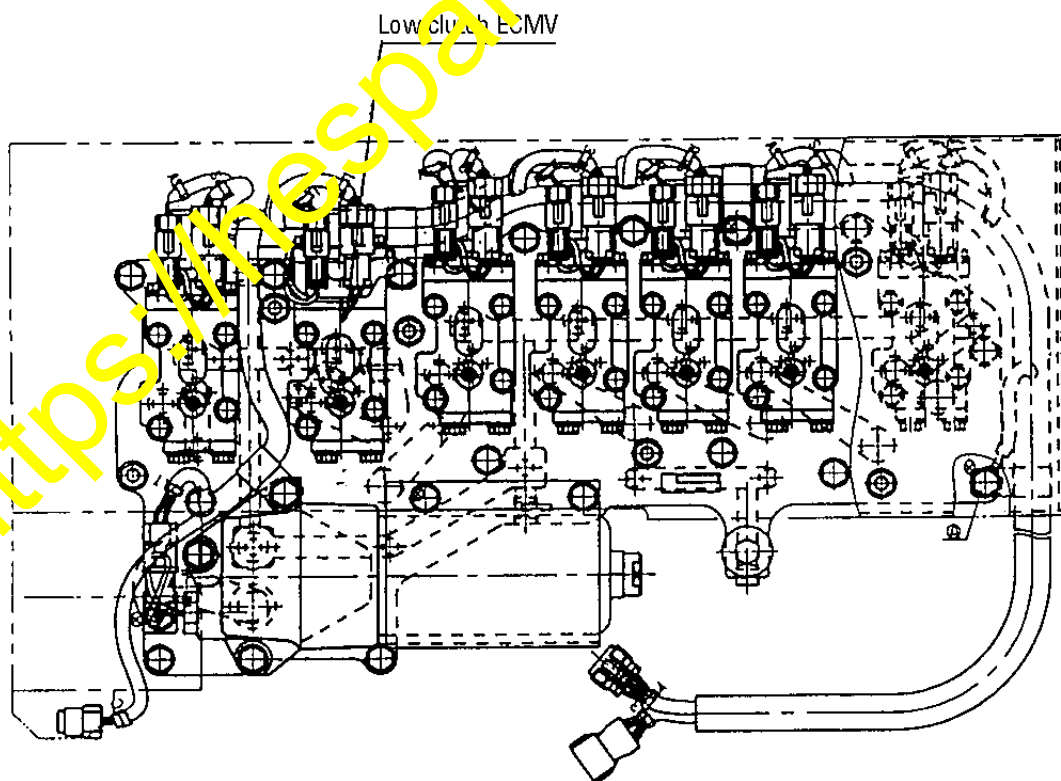


Fig. 17 (View Z)

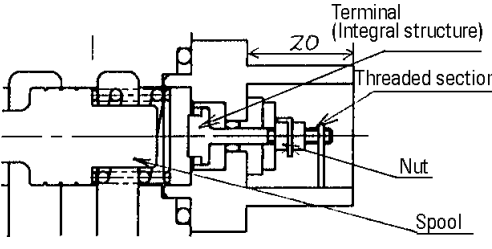

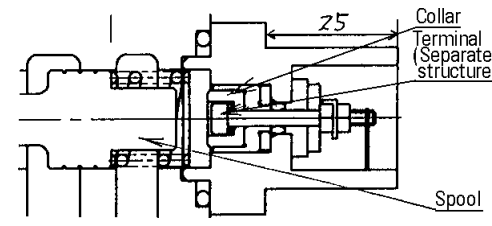


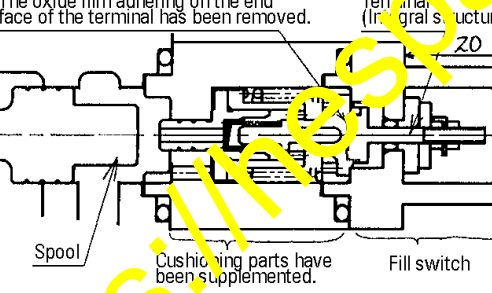
- HD325-6, HD325-6W, HD405-5



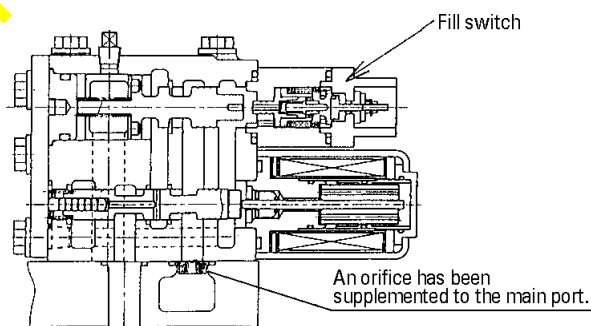
- HD465-5, HD605-5



History of ECMV fill switch changes

Time of production	For the L clutches of Models HD325-6, HD405-6, HD465-5, HD605-5, HD325-6 4WD HD785-3, HD785-5, HD985-3, HD985-5 and 330M		
	Fill switch structure	Characteristics/issues	Main port orifice
Start of mass production thru 1999/1	 <p style="text-align: center;"> 7861-92-5200</p>	<p>Characteristics:</p> <ul style="list-style-type: none"> Integral structure of the terminal <p>Issues:</p> <ul style="list-style-type: none"> Since the peak pressure at time of filling of the L clutch is high, the terminal is made to rotate in the direction of the thread by the impact load caused when the spool collides with the fill switch at time of clutch filling, and this breaks the terminal. 	None
1999/2 thru 2000/3	 <p style="text-align: center;"> 7861-92-5201</p>	<p>Characteristics:</p> <ul style="list-style-type: none"> To eliminate the above problems, the terminal was made to have a separate structure. <p>Issues:</p> <ul style="list-style-type: none"> Adoption of a separate structure results in reduced reliability of electrical continuity, and the fill switch wire disconnection may be detected. 	None
2000/4 and after	<p style="text-align: center;"> 561-15-55300</p> 	<p>An orifice was added to the main port for reduced peak pressure.</p> <ul style="list-style-type: none"> A buffer part was added in order to completely keep down the impact load when the spool collides with the fill switch. The fill switch is integral with the terminal. To improve reliability in electrical continuity, machining process was added to remove oxide film on the end surface of the terminal. 	φ4.5

ECMV sectional view



For other clutches than the left ones		Main port orifice	Remarks
Fill switch structure	Characteristics/issues		
	<p>Characteristics:</p> <ul style="list-style-type: none"> Integral structure of the terminal <p>Issues:</p> <ul style="list-style-type: none"> None in particular 	Different for each clutch	
	<p>Characteristics:</p> <ul style="list-style-type: none"> To eliminate the above problems, the terminal was made to have a separate structure. <p>Issues:</p> <ul style="list-style-type: none"> Adoption of a separate structure results in reduced reliability of electrical continuity, and the fill switch wire disconnection may be detected. 	Different for each clutch (No change)	Although the modification procedure was introduced in Service News "AT99037", do not perform modification hereafter according to this Service News.
<p> <ul style="list-style-type: none"> The fill switch is common to that for the L clutch. The buffer part is applicable only to the L clutch. </p>	<ul style="list-style-type: none"> The fill switch is integral with the terminal. To improve reliability in electrical continuity, machining process was added to remove oxide film on the end surface of the terminal. 	Different for each clutch (No change)	Perform modification according to this Service News this time onward.

History of fill switch part number changes


Time of production	Fill switch part number for L clutch	Fill switch part number for other clutches
Start of mass production thru 1999/1	7861-92-5200	7861-92-5200
1999/2 thru 2000/3	7861-92-5201	7861-92-5201
2000/4 and after	561-15-55300 *1)	7861-92-5701

*1) Part number 561-15-55300 is the supply assembly part number including the fill switch (7861-92-5701) and the buffer parts.

5. List of parts

Part No.	Part Name	Purpose of part	Q'ty	Remarks
566-15-01173 (566-15-01171)	Control valve G. (Control valve G.)	} Reworked	1 (1)	} HD325-6 HD325-6 4WD HD405-5
.561-15-00863 (.561-15-00861)	ECMV A. (ECMV A.)		6 (7)	
.561-15-55400	ECMV A.	Additional	1	Used for low clutch
569-15-01173 (569-15-01171)	Control valve G. (Control valve G.)	} Reworked	1 (1)	} HD465-5 HD605-5
.561-15-00863 (.561-15-00861)	ECMV A. (ECMV A.)		6 (7)	
.561-15-55400	ECMV A.	Additional	1	Used for low clutch
561-15-00854 (561-15-00852)	Control valve G. (Control valve G.)	} Reworked	1 (1)	} HD785-3, -5 HD985-3, -5 530M
.561-15-00863 (.561-15-00861)	ECMV A. (ECMV A.)		6 (7)	
.561-15-55400	ECMV A.	Additional	1	Used for low clutch
562-15-25003 (562-15-25002)	Control valve G. (Control valve G.)		1 (1)	530M
.561-15-00863 (.561-15-00861)	ECMV A. (ECMV A.)		5 (5)	
.562-13-46802 (.562-13-46801)	ECMV A. (ECMV A.)		3 (3)	Used specifically for L/C
195-15-01722 (195-15-01721)	Control valve G. (Control valve G.)	} Reworked	1 (1)	} D375AR-2
.561-15-00863 (.561-15-00861)	ECMV A. (ECMV A.)		5 (5)	
19M-15-15062 (19M-15-15061)	Control valve G. (Control valve G.)		1 (1)	} D575AR-2
.19M-15-15102 (.19M-15-15101)	ECMV A. (ECMV A.)		2 (2)	
.561-15-00863 (.561-15-00861)	ECMV A. (ECMV A.)		3 (3)	
561-15-55300 (7861-92-5201)	Fill switch G. (Switch A.)	Replacement	1 (1)	HD325-6, HD325-6 4WD HD405-6, HD465-5 HD605-5, HD785-3, -5 HD985-3, -5 For exclusive use to supply parts (for low clutch)

※ The FILL SWITCH G. 561-15-55300 is made up of items ③ through ⑭ on page 15.

Index No.	Part No.	Part Name	Purpose of part	Q'ty	Remarks	
①	562-15-25160	Orifice	Additional	1		
②	07000-72018 (07000-72018)	O-ring (O-ring)	} Replacement	3 (3)	} Consumable parts	
⑯	07000-73028 (07000-73028)	O-ring (O-ring)		1 (1)		
④	07000-73028	O-ring	} Additional	1	} Component of 561-15-55300	
③	561-15-55770	Spring		1		
⑤	561-15-55720	Sleeve		1		
⑥	561-15-55730	Spring seat		1		
⑦	561-15-55750	Pin		1		
⑧	561-15-55760	Spring		1		
⑨	561-15-55710	Body		1		
⑩	561-15-55740	Spacer		1		
⑪	7861-92-5701	Switch A.		1		} Component of 561-15-55300, corresponding to ECMV of this Service News
⑮	(7861-92-5201)	(Switch A.)		(1)		
⑫	561-15-55790	Bracket	} Replacement	1	} Component of 561-15-55300	
⑳	(561-15-55890)	(Bracket)		(1)		
⑬	01010-80860	Bolt		2		
⑱	(01010-50825)	(Bolt)		(2)		
⑭	01643-30323	Washer	} Additional	2	} Component of 561-15-55300	
⑲	(01643-30323)	(Washer)		(2)		
㉑	01680-10806	Nut	Additional	2		
⑰	(561-15-55581)	(Spring)	Not used	(1)	*1) See page 13 "History of fill switch part number changes" table.	
 ⑱	561-15-55990	Sheet		1	1 sheet for a unit of ECMV	

Remarks:

Circled index numbers correspond to those appearing on preceding pages.

Modification with parts ① through ⑰ applies only to the low clutch ECMV of HD325-6, HD325-6 4WD, HD405-6, HD465-5, HD605-5, HD785-3, HD785-5, HD985-3, HD985-5 and 330M.