

PARTS & SERVICE NEWS

REF NO.	AT04185
DATE	July 2, 2004

(C)

SUBJECT: REPAIR PROCEDURE FOR OIL LEAKAGE OF ENGINE STARTING MOTOR AND OVERHEATING OF FLYWHEEL HOUSING

PURPOSE: To inform Field Personnel

APPLICATION GD555-3A Motor Grader S/N 10001 and up
 GD555-3C Motor Grader S/N 50001 and up
 GD655-3 Motor Grader S/N 1001 and up
 GD655-3A Motor Grader S/N 10001 and up
 GD655-3C Motor Grader S/N 50001 and up
 GD655-3Y Motor Grader S/N 4001 and up
 GD675-3A Motor Grader S/N 10001 and up
 GD675-3C Motor Grader S/N 50001 and up

FAILURE CODE: AB30AA

DESCRIPTION:

1. Introduction:

When user(s) of the above Motor Grader(s) make complaints of oil leakage around the engine starting motor or that the temperature of the flywheel housing oil rises abnormally, repair these failures following the modification procedure as outlined in this **PARTS & SERVICE NEWS**.

2. List of Parts:

Part No.	Part Name	Purpose of Part	Qty.	Remarks
23B-16-31780 (23B-16-31340)	Tube (Tube)	Replacement	1 (1)	FWH Return
02782-10422	Elbow	Addition	1	
07002-12034	O-Ring		1	
02896-11012	O-Ring		2	
02762-00412	Hose		1	
23B-16-31770 (6732-111920)	Elbow (Plug)	Replacement	1 (1)	
6151-51-5490	Spacer	Addition	1	
01011-81040	Bolt		1	
01010-81020	Bolt		1	
04434-52711	Clip		2	
07095-20418	Cushion		2	
23B-16-31562 (23B-16-31563)	Gauge (Gauge)	Replacement	1	

Part No.	Part Name	Purpose of Part	Qty.	Remarks
07000-13035 (07000-13035)	O-ring (O-ring)	Replacement	1 (1)	FWH Return/change to new parts
01011-81005 (07372-21035)	Bolt (Bolt)		2 (2)	FWH Return
01643-31032	Washer	Addition	2	
1240028H2 (1240028H2)	Gasket (Gasket)	Replacement	1 (1)	GD655and GD675 starting motor / change to new parts
6742-01-5026 (6742-01-5026)	Gasket (Gasket)		1 (1)	
6742-01-5534 (6742-01-5534)	Spacer (Spacer)		1 (1)	
6743-81-6310	Stud	Addition	2	GD655 and GD675 Starting Motor
01584-01210	Nut		2	
6735-81-6180 (6735-81-6180)	Gasket (Gasket)	Replacement	1 (1)	GD655and GD675 starting motor / change to new parts

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1. Details of the modification

1-1. Modification items

- (1) Applicable machine model and serial number

Table 1

Machine model	GD555/655/675-3 Series	
Engine specifications	Tier 1 Engine	Tier 2 Engine
(1) Modification to add an oil return piping inside the flywheel housing	○	○
(2) Modification to prevent oil leakage around the starting motor	○	-

○ : This modification is necessary. - : This modification is not necessary.

Tier 1 and Tier 2: Exhaust gas control regulation name

Table 2

Engine Spec.		Tier 1 Engine		Tier 2 Engine			
GD555	Model	GD555-3A	GD555-3C	GD555-3A	GD555-3C	-	-
	Serial No.	10001-	50001-	11001-	51001-	-	-
GD655	Model	GD655-3A	GD655-3C	GD655-3A	GD655-3C	GD655-3	GD655-3Y
	Serial No.	10001-	50001-	11001-	51001-	1001-	4001-
GD675	Model	GD675-3A	GD675-3C	GD675-3A	GD675-3C	-	-
	Serial No.	10001-	50001-	11001-	51001-	-	-

- (2) Modification to add an oil return piping inside the flywheel housing

Since there is a possibility that the temperature of the internal oil of the flywheel housing rises abnormally high when the machine makes continuous traveling or continuous operations with the torque converter being set to the lock up mode, carry out the modification following the modification procedure per Section 1-2 described in this Service News.

Outline of the modification (Fig. 1)

The bottom section of the flywheel housing and the transmission oil feeding tube are to be connected by an additional piping.

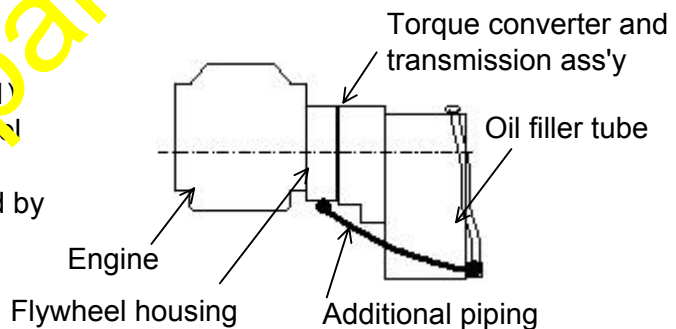


Fig. 1

- (3) Modification to prevent oil leakage around the starting motor

Since the sealing for the mounting section of the starting motor and for the pin section may be insufficient and as there is a possibility that oil leaks from these sections, carry out the modification following the modification procedure per Section 1-3 described in this Service News.

Outline of the modification (Fig. 2)

1. After screwing stud-bolts in each of the through threaded holes at 2 places on the starting motor mounting surface of the flywheel housing, each of the stud-bolt is to be tightened by the matching nut.
2. Liquid gasket is to be applied onto the gasket at the mounting section of the starting motor.

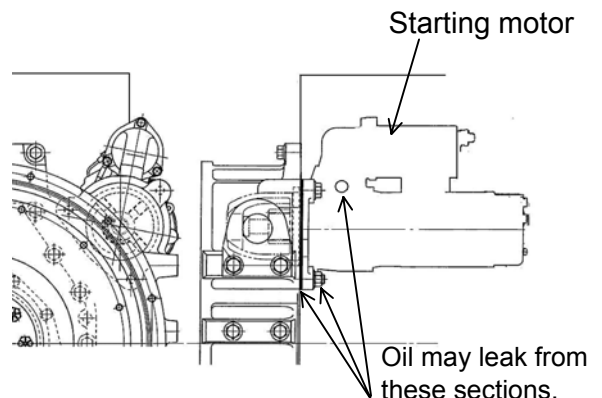


Fig. 2

1-2. Modification to add an oil return piping inside the flywheel housing of engine

(1) Preparations

- 1) Park the machine on a horizontal place, turn on the parking brake and set the articulated lock pins to the frame.
- 2) Lower the blade to touch the ground in the right angle to the machine.
- 3) Stop the engine and apply chocks to the tires.
- 4) Disconnect the (-) terminal of the battery.
- 5) Drain oil from the transmission case.



Transmission case: 45 Ltr.

(2) Removal of the oil filler tube (Fig. 3)

- 1) Remove the transmission oil feeding tube (1').

(3) Removal of the drain plug for the flywheel housing of engine (Fig 3)

- 1) Removal of the drain plug (6') of the flywheel housing of engine.

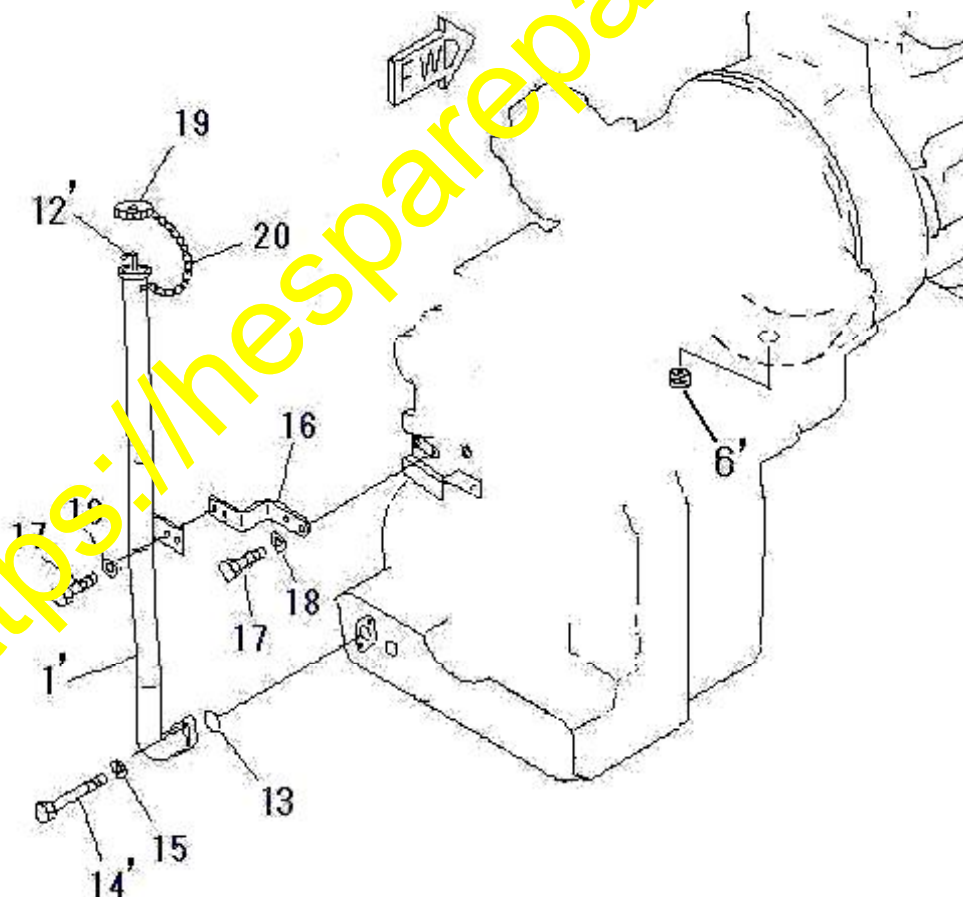


Fig. 3

(4) Modification to add an oil return piping inside the flywheel housing (Fig. 4 & Table 3)

- 1) Install the transmission oil filler tube (1).
- 2) Install the elbow (6) to the drain plug of the flywheel housing.
- 3) Install the hose (5) and hose fixing clips and their related parts.

Parts marked ★ in the drawing are the reusing parts.

- 4) Replace the oil level gauge (12).
- 5) Refill the transmission case with oil and inspect the oil level.

When inspecting the oil level, refer to the Operation and Maintenance Manual.

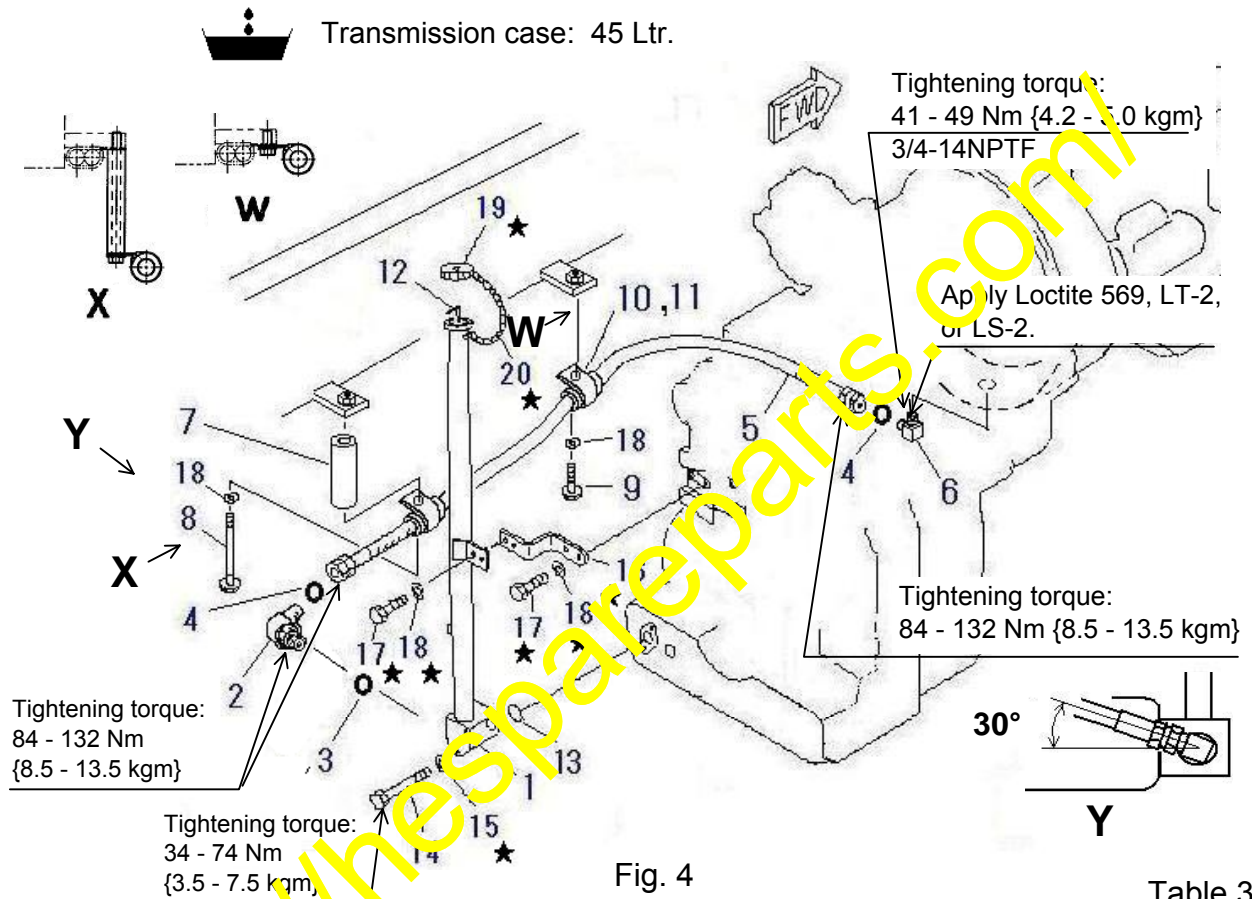


Fig. 4

Table 3

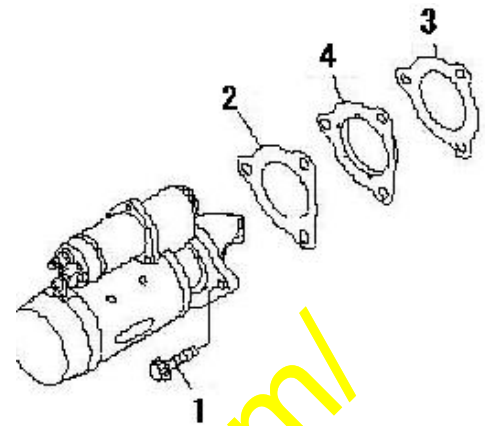
No.	New parts			Current parts			Remarks
	Part No.	Part Name	Q'/set	Part No.	Part Name	Q'/set	
1	23B-16-31780	TUBE	1	23B-16-31340	TUBE	1	Oil filler tube
				23B-16-31374	TUBE	1	Upto an intermediate point of the Tier 1
2	02782-10412	ELBOW	1	-	-	-	
3	07002-13035	O-RING	1	-	-	-	
4	02811-11012	O-RING	2	-	-	-	
5	02762-10412	HOSE	1	-	-	-	
6	23B-16-31770	ELBOW	1	6732-11-1920	PLUG	1	
7	6151-51-5490	SPACER	1	-	-	-	
8	01011-81040	BOLT	1	-	-	-	
9	01010-81020	BOLT	1	-	-	-	
10	04434-52711	CLIP	2	-	-	-	
11	07095-20418	CUSHION	2	-	-	-	
12	23B-16-31562	GAUGE	1	23B-16-31563	GAUGE	1	
				23B-16-31562	GAUGE	1	Upto an intermediate point of the Tier 1
13	07000-13035	O-RING	1	07000-13035	O-RING	1	Replace it with a new part.
14	01011-81005	BOLT	2	07372-21035	BOLT	2	
				01011-81005	BOLT	2	Upto an intermediate point of the Tier 1
15	01643-31032	WASHER	2	01643-31032	WASHER	2	Reusing parts
16	23B-16-31462	BRACKET	1	23B-16-31462	BRACKET	1	Reusing parts
17	01010-81025	BOLT	4	01010-81025	BOLT	4	Reusing parts
18	01643-31032	WASHER	6	01643-31032	WASHER	4	Reusing part but order additional 2 pcs.
19	6136-21-7120	CAP ASS'Y	1	6136-21-7120	CAP ASS'Y	1	Reusing parts
	6136-21-7180	GASKET	1	6136-21-7180	GASKET	1	Reusing parts
20	6136-21-7190	CHAIN	1	6136-21-7190	CHAIN	1	Reusing parts

1-3. Modification procedure to repair oil leakage around the starting motor

1-3-1. Applicable machine model: GD655-3 and GD675-3

(1) Preparations

- 1) Park the machine on a horizontal place, turn on the parking brake and set the articulated lock pins to the frame.
- 2) Lower the blade to touch the ground in the right angle to the machine.
- 3) Stop the engine and apply chocks to the tires.
- 4) Disconnect the (-) terminal of the battery.



(2) Removal of the starting motor (Fig. 5)

- 1) Remove the bolts (1), gaskets (2 and 3) and the spacer (4).
- 2) Remove the starting motor.

(3) Modification of the mounting section of the starting motor and reinstallation of the modified starting motor (Fig. 6, Fig. 7, Fig. 8 and Table 4)

- 1) Screw the stud-bolts (5) in each of the through threaded holes at 2 places, among the starting motor mounting bolt holes on the flywheel housing.

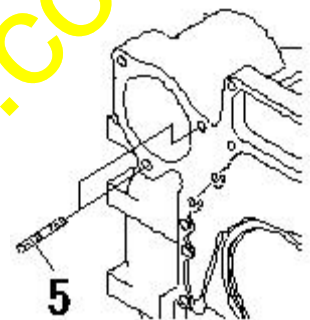


Fig. 6

Note) Screw the threaded side with 13-2 applied of the stud-bolt (5), into the flywheel housing side.

- 2) Apply liquid gasket onto both surface of the new gaskets (2) and (3) as per Fig. 7.

Apply liquid gasket onto both surface of these new gaskets along the instructed circumference at a thickness of $\Phi 1$ mm.

- 3) Install the starting motor using the bolt (1) and nuts (6) as it has been.

Bolt (1): 1 pc.
Nut (6): 2 pcs.

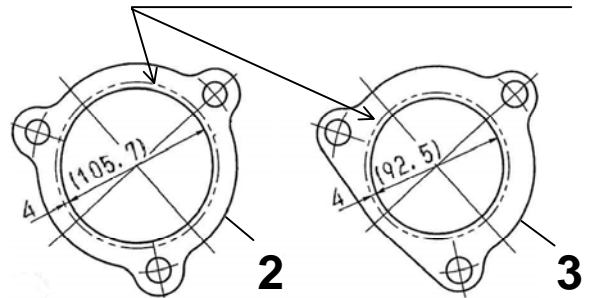
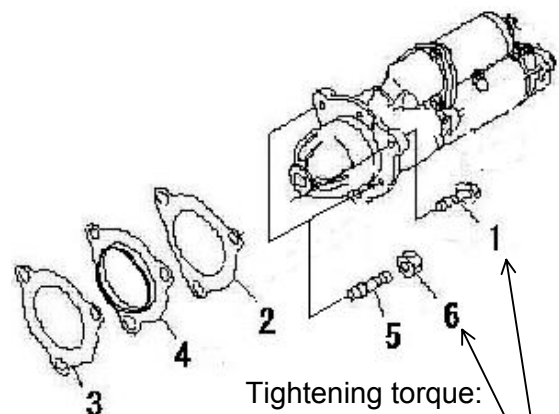


Fig. 7

- 4) In case oil has penetrated inside the starting motor, replace the starting motor also with a new one.



Tightening torque:
54 - 123 Nm
{5.5 - 12.5 kgm}

Fig. 8

Part numbers of the starting motor and its related parts for the GD655-3 and GD675-3 equipped with the Tier 1 engines

Table 4

No.	New parts			Current parts			Remarks
	Part No.	Part Name	Q'/set	Part No.	Part Name	Q'/set	
1	6742-01-3290	BOLT	1	6742-01-3290	BOLT	3	Reuse them.
2	1240028H2	GASKET	1	1240028H2	GASKET	1	Replace it with a new part.
3	6742-01-5026	GASKET	1	6742-01-5026	GASKET	1	Replace it with a new part.
4	6742-01-5534	SPACER	1	6742-01-5534	SPACER	1	Replace it with a new part.
5	6743-81-6310	STUD	2	-	-	-	*1
6	01584-01210	NUT	2	-	-	-	
-	6742-01-3330	STARTING MOTOR ASS'Y	1	6742-01-3330	STARTING MOTOR ASS'Y	1	7.5 kW Delco Remy

*1: LS-2 (liquid sealant) has been already applied to the part 6743-81-6310 (STUD) per the Item No. 6.

The 1240028H2 is a part number of CUMMINS.

1-3-2. Applicable machine model: GD555-3

(1) Preparations

Same as the Section 1-3-1.

(2) Removal of the starting motor (Fig. 9)

1) Remove 3 pcs. of the bolts (2).

(3) Modification of the mounting section of the starting motor and reinstallation of the modified starting motor (Fig. 9 and Table 4)

1) Apply liquid gasket to both surfaces of the new gaskets (1).
Refer to the item 2) of the Section 1-3-1 (3).

2) Install the starting motor using 3 pcs. of the bolts (2) as it has been.

3) In case oil has penetrated inside the starting motor, replace the starting motor also with a new starting motor.

(Since starting motor mounting holes, at all the 3 places, on the flywheel housing on the GD555-3 are not through holes, it is not necessary to install the stud-bolts like in case of the GD655-3 and GD675-3.)

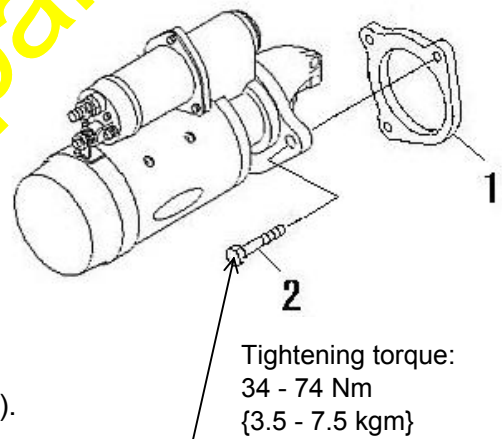


Fig. 9

Part numbers of the starting motor and its related parts for the GD555-3 equipped with the Tier 1 engines

Table 5

No.	New parts			Current parts			Remarks
	Part No.	Part Name	Q'/set	Part No.	Part Name	Q'/set	
1	6735-81-6180	GASKET	1	6735-81-6180	GASKET	1	Replace it with a new part.
2	6732-81-6820	BOLT	3	6732-81-6820	BOLT	3	Reuse them.
-	6732-81-6510	STARTING MOTOR ASS'Y	1	6732-81-6510	STARTING MOTOR ASS'Y	1	Delco Remy