# PARTS & SERVICE

REF NO.	AT03044A		
DATE	May 30, 2003		
	Page 1 of 5		

This PARTS & SERVICE NEWS supersedes the previous issue No. AT03044 dated Mar. 14, 2003 which should be discarded.

SUBJECT: COUNTERMEASURE OF FRAME CRACK RELATION ON HM350-1,

HM400-1 (OUTLINE OF FC)

**PURPOSE:** To introduce modification procedure to prevent occurrence of cracks in the

front frame, rear frame, etc. on HM350-1 and HM400-1 articulated dump

trucks (Summary version)

HM350-1 Articulated Dump Trucks, **APPLICATION:** 

Serial Nos. are refer to page 3 HM400-1 Articulated Dump Trucks,

**FAILURE CODE:** 4700HA

#### **DESCRIPTION:**

#### 1-1. Introduction

Since there is a possibility of occurrence of cracks in the front frame, rear frame, etc. on the HM350-1 and HM400-1 articulated durn to the ks, make the modifications being introduced in this Service News to prevent oc arrence of the aforementioned cracks.

Carry out these modifications at the same time as making the general modifications of the transmission assembly as per the Service News "AT03035".

Also, this Service News is being ssued to summarize several Service News introducing modification procedures to prevent cracks occurring in various sections of the frames. Therefore, when carrying or actual modification work, refer to the respective Service News at the same time

#### 1-2. Revised places:

7 places 🛕	May 30, 2003	Corrected the check sheet errors.
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#### 2. List of Cru

Refer to the respective Service News regarding the necessary parts.

- 3. Details of modifications Refer to respective Service News.
- 4. Modification procedure
- 4-1. Preparations before starting the modification work Referring to each Service News, set the vehicle for the modification and prepare necessary parts and tools.
- 4-2. Modification procedure

  Make the modifications of the following modification items. In the meantime, refer to the respective related Service News when carrying out respective modifications.

		Modification (inspection) item	lification (inspection) item   Applicable model   Referring Service News (Draft No.)		Standard man hour (H)		Remarks		
		(Summary of works)	HM400	HM350	HM400	HM350	HM400	HM350	nemarks
Â		Preparation work	0	0	Removal and installa	ation of the tires, etc.	8	4	
(	[1)	Modification to prevent cracks in the rear frame  ① Reinforcement of the hitch section ② Reinforcement of the side member section ③ Reinforcement of the equalizer bar section	0	0	AT03052	AT03051	<u></u> 56 <del>24</del> <del>24</del>	<b>▲</b> 5. <del>½</del>	
(	(2)	Modification to prevent cracks in the front frame  ① Build-up welding for the vertical member section ② Front tank bracket	0	0	ATO:	3054	À.	5	
(	(3)	Modification to prevent cracks in the body protector section  (1) Reinforcement of the protector rib section	0	0	ATO:	3055	2	2	
(	(4)	Modification to prevent cracks in the drive shaft bracket connecting the engine and transmission  ① Change to reinforced bracket	0	0	A 33	3020	1	1	
(	(5)	Modification of the engine damper cover  ① Change to blind cover	0	Not neces- say	<i>F</i> T03\19	-	2	0	Make this modification with the HM400-1 only.
(	(6)	Modification of the air compressor bracket  ① Check for existence of cracks in the bracket ① If cracks exist, repair them as per this Service News. (A3)	O	0	AT03	3023	0.5	0.5	Inspection A-2
(	(7)	Inspection and adjustment of he rear suspension mud gua a  ① Installation, inspection and adjustment of the ud guer d	0	0	ATO:	3041	1.5	1.5	Inspection A-2
(	(8)	Inspection and adjuctment of all the suspendings  (1) Inspection and adjustment of the front and real suspension levels.	0	0	AT03	3042	0	0	Irregular maintenance item
						Total of the standard man hour	<u>∕A</u> 76 <del>37</del>	22	

- \* When replacing the transmission ass'y or when replacing the engine and transmission controller, carry out the replacement work separately referring to the Service News "AT03035".
- 4-3. Inspections of each section after finishing the modification work
  After finishing the modification work, perform inspections of the vehicle referring to the check sheets being indicated on pages 4 and 5 of this Service News.
  Inform the inspection results to the Manager of the Quality Assurance Section in Mooka Plant by FAX.

### $\triangle$ 5. Table of the applicable vehicles to this modification

HM400-1: Table of Serial No. of the applicable vehicles

HM350-1: Table of Serial No. of the applicable vehicles

No.	Model	Serial No.
1	HM400-1	1001
	HM400-1	1002
3	HM400-1	1003
4	HM400-1	1007
5	HM400-1	1007
6	HM400-1	1010
7	HM400-1	1014
8	HM400-1	1014
9	HM400-1	1015
10	HM400-1	1017
11	HM400-1	1018
12	HM400-1	1019
13	HM400-1	1020
14	HM400-1	1021
15	HM400-1	1022
16	HM400-1	1023
17	HM400-1	1028
18	HM400-1	1029
19	HM400-1	1030
20	HM400-1	1031
21	HM400-1	1033
22	HM400-1	1034
23	HM400-1	1035
24	HM400-1	1036
25	HM400-1	1037
26	HM400-1	1038
27	HM400-1	1039
28	HM400-1	1040
		1040
29	HM400-1	
30	HM400-1	1042
31	HM400-1	1043
32	HM400-1	1044
33	HM400-1	1046
34	HM400-1	10/0
35	HM400-1	10.9
36	HM400-1	
37		1753
	HM400-	1054
38		
38 39	HM400-1 HM400-1 HM400-1	1054 7055 1056
38 39 40	HM400-1 HM400-1 HM400-1	1054 \055 1056 1057
38 39 40	HM400-1 HM400-1 HM400-1 /11/100-7 MM4-0-1	1054 7055 1056 1057 1058
38 39 40 11	HM400-1 HM400-1 HM400-1 /11/100-7 MM4-0-1	1054 \055 1056 1057
38 39 40 11 42 53	HM400-1 HM400-1 HM400-1	1054 7055 1056 1057 1058
38 39 40 11 42	HM400-1 HM400-1 HM400-1 HM400-1 VM400-1 HIV-400-1	1054 1055 1056 1057 1058 1059
38 39 40 11 42 53	HM400-1 HM400-1 HM400-1 'IIV-100-1 'IM4-0-1 HIV-400-1 mM400-1	1054 1055 1056 1057 1058 1059 1060
38 39 40 11 42 42 43	HM400-1 HM400-1 HM400-1 'IIVI'0C-1 'IM4 0-1 HIV-400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061
38 39 40 11 42 53 44 45 46	HM400-1 HM400-1 HM400-1 HW400-1 HW400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063
38 39 40 11 42 5 44 45 46 47	HM400-1 HM400-1 HM400-1 HW400-1 HW400-1 HM400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064
38 39 40 11 42 43 44 45 46 47 48	HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 IHM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026
38 39 40 11 42 43 44 45 46 47 48 49	HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071
38 39 40 11 42 3 44 45 46 47 48 49 50	HM400-1 HM400-1 HM400-1 HM400-1 HN400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072
38 39 40 11 42 53 44 45 46 47 48 49 50 51	HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073
38 39 40 11 42 3 44 45 46 47 48 49 50 51 52	HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073 1074
38 39 40 11 42 23 44 45 46 47 48 49 50 51 52 53	HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073 1074 1075
38 39 40 11 42 43 44 45 46 47 48 49 50 51 52 53 54	HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073 1074 1075 1076
38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55	HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073 1074 1075 1076 1024
38 39 40 11 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56	HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073 1074 1075 1076 1024 1025
38 39 40 11 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56	HM400-1 HM400-1 HM400-1 HW400-1 HW400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073 1074 1075 1076 1024 1025 1047
38 39 40 11 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56	HM400-1 HM400-1	1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1026 1071 1072 1073 1074 1075 1076 1024 1025

No.	Model	Serial No.
1	HM350-1	1001
2	HM350-1	1002
3	HM350-1	1003
4	HM350-1	1005
5	HM350-1	1007
6	HM350-1	1008
7	HM350-1	1010
8	HM350-1	1012
9	HM350-1	1013
10	HM350-1	1014
11	HM350-1	107°o
12	HM350-1	1075 1015
13	HM350-1	10.7
14	HM350 🛧	1078
15	HM35(-1	1019
16	HM350-1	1020
17	ัสเ <mark>ปร5</mark> 0 1	1021 1022
7	0-1ر 3Min	1022
19	Hw350-1	1023
50	HM350-1	1024
21	HM350-1	1025
22	HM350-1	1026
23	HM350-1	1027 1028
24	HM350-1	1028
25	HM350-1	1029
26	HM350-1	1030
27	HM350-1	1031
28	HM350-1	1032
29	HM350-1	1033
30	HM350-1	1034
31	HM350-1	1035
32	HM350-1	1036
33	HM350-1	1037
34	HM350-1	1038
35	HM350-1	1039
36	HM350-1	1040
37	HM350-1	1042

To: Manager of the Quality Assurance Section in Mooka Plant, Komatsu, Ltd.

FAX: +81-285-83-9808

\* After filling the inspection results, fax this check sheet to the above fax number.

## Vehicle inspection check sheet after finishing the general modifications of the HM350-1 or HM400-1

• Inspected vehicle model: HM350-1 HM400-1

(Circle either one of the inspected vehicle model.)

• Serial No. of the inspected vehicle: (#

• Inspection performed by: Company name ( ) Inspector's name (

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No.	Inspection item	Determination procedure and criterion	Inspection result	Remarks
1	Engine No.	Enter the number. (No. )  ※ Stamping should be clear enough.		
2	Transmission ass'y No. (After replacement)	Enter the number. (No. )  ** Stamping should be clear enough.		
3	Service meter reading and travel distance	Service meter ( H) Travel distance ( Km/Mile)		
4	Transmission oil level	The oil level should be between "H level" and "center point of H level and Leve.". ** Check the oil level running the engine at Lo-Idling revolution.		
5	Function of the horn	The sound should be loud enough without distortion. (Hearing tst)		
6	Function of the backup alarm buzzer	The sound should be loud enough without distortion. (Hearing test,		
7	Safety function ①	The engine should not start while the transmission staff lever is being set to other positions than the "N" position. At this time, the centra "zed warning lamp and the warning buzzer should be turned on.		
8	Safety function ②	The centralized warning lamp and the warning button should be turned on when the transmission shift lever is set to other positions than the "N" position while the parking brake is being turned on.		
9	Safety function ③ ※ Make this inspection with engine running retarder brake on and parking brake off.	The centralized warning lamp and the westing buzzer should be turned on when the transmission shift lever is set to ther ositions than the "N" position while the dump lever is being set to care not wons than the "FLOAT" position.		
10	Function of the backing lamp	The backing lamp chould be turned on when the transmission shift lever is being set to the "F" position.		
11	Function of the brake lamp	The brake lang smuld be turned on when the brake pedal is depressed.		
12	Engine revolution	The broke lamp should be turned on when the retarder lever is pulled.		
	Engine water temp.: Within the green range k Engine oil temp.:	Lowing revolution Actual measurement value: ( ) rpm Structure: 725 ± 25 rpm		
	70 – 80 °C  ※ Transmission oil tego.:	His dung revolution Actual measurement value: ( ) rpm Standard value: 2,200 ± 50 rpm		
	70 – 80 °C ** Power mode AISS. ^UTu	Turque converter stall revolution Actual measurement value: ( ) rpm Standard value: 1,809 ± 100 rpm (HM400), 1,755 ± 100 rpm (HM350)		
13	Conducting the P compensation and initial learning	The IP compensation and initial learning should be made without errors.		
14	Speed changing function of the transmission	While the shift lever is being set to the "D" range, automatic speed change should be made starting from F2.		
		While the shift lever is being set to "5 – L" range, automatic speed change should be made starting from F1.		
		While the shift lever is being set to the "R1" range, automatic speed change should be made to R1.		
		While the shift lever is being set to the "R2" range, automatic speed change should be made to R2.		
15	Service brake pull	The vehicle should not turn when an abrupt braking is made by use of the service brake. Also, the steering wheel should not be turned by force.		
16	Retarder brake pull	The vehicle should not turn when an abrupt braking is made by use of the retarder brake. Also, the steering wheel should not be turned by force.		
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No.	Inspection item	Determination procedure and criterion	Inspection result	Remarks
17	Function of the parking brake	The vehicle should not start traveling at the "F2" stall state (1,400 rpm or more). Actual measurement value (F : rpm)		
18	Function of the service brake	The vehicle should not start traveling at the "F2" stall state (1,510 rpm or more <hm400> or 1,300 rpm or more <hm350>).  Actual measurement value (F : rpm)</hm350></hm400>		
19	Function of the retarder brake	The vehicle should not start traveling at the "F2" stall state (1,090 rpm or more). Actual measurement value (F $:$ rpm)		
20	Smoothness of the steering operation	The steering operation should be smooth without interruption and without change in the steering efforts. (Feeling check)		
21	Steering efforts (unloaded state)	The steering efforts should not be high. (Feeling check) Standard value: 3 kg or less (unloaded state)		
22	Function of the auto emergency steering	The emergency steering should be turned on when the starting switch is turned "ON" and when the parking brake is turned "OFF".  ** Do not operate the emergency steering pump continuously exceeding 90 seconds.		
23	Steering efforts for the auto emergency steering operation	The steering efforts should not be high. (Feeling check) Reference value: 3 kg or less		
24	Length of the suspension cylinder (front)  ※ Unloaded state	The length should be within the dimension "A".  Dimension "A": 168 ± 10mm < Common with the HM400 and HM350 > Actual measurement value: LH ( ) mm, RH ( ) m ()		
25	Length of the suspension cylinder (rear) ※ Unloaded state	The length should be within the dimension "A".  Dimension "A": 111 ± 5 mm < Common with the HM4 J0 a. 1 11M350 A 119 ± 5 mm < HM350 Actual measurement value: LH ( ) mm, RH4 mm		
26	Installed state of the propeller shaft (Engine → Torque converter)	The mounting bolts should not be loose and the association as social not be abnormal backlash.		
27	Installed state of the propeller shaft (Transmission $\rightarrow$ HITCH)	The mounting bolts should not be loos and here should not be abnormal backlash.		
28	Mounted state of the transmission ass'y	The mounting bolts should not by 2008e.		
29	Mounted state of the operator's cab	The mounting bolts should not be loose.		
30	Inspections of each section of the transmission ass'y	Oil leakage should not be occurring.		
31	Oil leakage from the transmis- sion line hydraulic piping	Oil leakinguishicula not be occurring.		
32	Oil leakage from the torque converter line hydraulic piping	Cil leckage should not be occurring.		
33	Oil leakage from the transmicsion differential	Oilleakage should not be occurring.		
_	Oil leakage from the trake ine	Oil leakage should not be occurring.		
	Tightening of the Lattery terminal connections	The battery terminal connections should not move when moved by hands.		
36	Rubber (a) on the pattery terminals and rubber cap for the (+) terminal of the battery wire	The rubber caps should be installed securely. (The terminal section should not be coming out of the cap.)		
37	Tightening of the tire wheels nuts	Re-tightening should be made securely. (all the 6 tires)		
38	Checking the function of the air conditioner	① The air flow should be changed into 4 stage by operation of the blower switch.		
		2 The cooling function and dehumidification function should be started when the air conditioner switch is turned "ON" after turning "ON" the blower switch.		
		③ By operation of the temperature adjust switch, changes between the "Green colored side": "Cold wind" and "Red colored side": "Warm wind" should be effected.		
		4 By operation of the inside-air/outside-air selector switch, shifting between the inside air and the outside air should be effected.		
		⑤ By operation of the blowout port selector switch, 5 stage shiftings should be made among "vent", "vent and foot", "foot", "dif and foot" and "dif".		