

INSTALLATION MANUAL

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DATE	Jul. 18, 2002

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This INSTALLATION MANUAL supersedes the previous issue No. BT01034 dated Aug. 23, 2001 which should be discarded.

SUBJECT: MODIFICATION PROCEDURE OF EXHAUST BRAKE DEVICE ON HD785/985-3

PURPOSE: To introduce modification procedures to modify the HD785-3 and HD985-3 equipped with gate valve type exhaust brakes into those equipped with butterfly valve type exhaust brakes

APPLICATION: HD785-3 Dump Trucks, Serial Nos. 2001 thru 2574
HD985-3 Dump Trucks, Serial Nos. 1001 thru 1020

FAILURE CODE: A1Z0Z9


DESCRIPTION:

1-1. Introduction

The exhaust brakes are being prepared as "standard parts" for the Japanese market and as "optional parts" for the overseas markets.

For the HD785-3 and HD985-3 dump trucks, although the gate valve type (guillotine type) exhaust brakes have thus been used, production of these gate valve type (guillotine type) exhaust brakes has been discontinued for the convenience of the manufacturer. Consequently, when ordering for the exhaust brakes as spare parts for repair or for optional installation purposes, use the butterfly valve type exhaust brakes, which have been employed on the HD785-5 and HD985-5, making the necessary modification being introduced in this Service News.


1-2. Revised places:

6 places 	Jul. 18, 2002	Added the specs. for the exhaust switch box and corrected errors.
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2. List of parts

No.	Part No.	Part Name	Q'ty	Remarks
1	6212-11-8102 (6212-11-5700)	Exh. brake (Exh. brake)	2 (2)	
2	6215-91-1120 (6215-91-1140)	Bracket (Bracket)	2 (2)	
3	6215-91-1210 (6215-91-1151)	Bracket (Bracket)	1 (1)	
4	6215-91-1220 (6215-91-1161)	Bracket (Bracket)	1 (1)	
5	6631-11-5630 (6631-11-5630)	Spacer (Spacer)	8 (8)	
6	01010-E1035 (01010-81035)	Bolt (Bolt)	4 (4)	
7	01010-E1040 (01010-81040)	Bolt (Bolt)	8 (8)	
8	01010-E1025 (02010-70644)	Bolt (Bolt)	4 (4)	
9	01580-01008 (01580-01008)	Nut (Nut)	4 (4)	} Spares kept in reserve for possible loss
10	01643-31032 (01643-31032)	Washer (Washer)	12 (12)	
11	6215-91-1110 (6215-91-1130)	Connector (Connector)	2 (2)	
12	6151-11-5751 (6215-91-1180)	Gasket (Gasket)	4 (4)	
13	07042-00103 (07042-00108)	Plug (Plug)	2 (2)	Spares kept in reserve for possible loss
14	6218-11-5110	Connector	2	
15	6210-11-1245	Bolt	8	
16	01643-31232	Washer	8	
17	6213-11-5350 (6213-11-5350)	Clamp (Clamp)	2 (2)	
18	(6215-91-1170)	(Clamp)	(2)	
<Chassis side parts>				
21	561-02-62460 (561-02-62190)	Bracket (Bracket)	1 (1)	For the junction block of the air piping
22	07836-00617 (285-35-12560)	Connector (Connector)	1 (1)	Cab outlet
23	07831-00612 (07831-00612)	Sleeve (Sleeve)	1 (1)	Consumable part

No.	Part No.	Part Name	Q'ty	Remarks
24	07832-00614 (07832-00614)	Nut (Nut)	1 (1)	
25	07822-00616 (07822-00619)	Tube (Tube)	1 (1)	
26	(07822-00602)	(Tube)	(1)	
27	08036-01014 (08036-01014)	Clip (Clip)	3 (3)	} Spares kept in reserve for possible loss
28	01010-81016 (01010-81016)	Bolt (Bolt)	3 (3)	
29	01643-31032 (01643-31032)	Washer (Washer)	3 (3)	
30	07836-00613 (285-35-12550)	Connector (Connector)	1 (1)	
31	07831-00612 (07831-00612)	Sleeve (Sleeve)	1 (1)	Consumable part
32	07832-00614 (07832-00614)	Nut (Nut)	1 (1)	
33	07214-70813 (175-45-21320)	Connector (Connector)	2 (2)	
34	561-02-62470	Plate	1	
35	01010-81020	Bolt	4	
\triangle 36	01603-31032 01643-31032	Washer Washer	4 4	
37	6211-51-8150	Hose	1	
38	6211-51-8180	Hose	1	
39	6212-11-5230 (509-35-62970)	Elbow (Elbow)	2 (2)	
40	6213-11-5350 (6215-91-1170)	Clamp (Clamp)	2 (2)	
\triangle 41	(6151-11-5361) 561-02-61112 (561-02-61111)	 Tube (Tube)	 1 (1)	} \triangle For the body heating, muffler spec.
42	561-02-61122 (561-02-61121)	Tube (Tube)	1 (1)	
43	07042-20108	Plug	2	
44	(561-02-61230)	(Tube)	(2)	
45	(561-02-61240)	(Band)	(2)	
46	08036-01214	Clip	2	

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No.	Part No.	Part Name	Q'ty	Remarks
47	561-84-64120 (561-84-64121)	Tube (Tube)	1 (1)	} For the exhaust switch box spec.
48	561-84-64130 (561-84-64131)	Tube (Tube)	1 (1)	

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3. Installation procedures

The parenthesized numbers being used in the text of this document and code numbers given to respective parts in the drawings herein correspond to the Item Nos. in the lists of necessary parts.

3-1. Installation of the engine related parts (Refer to Fig. 1, Fig. 2 and Fig. 3.)

(1) Removing parts which need to be removed for this modification (Refer to Fig. 1.)

Remove the gate valve type exhaust brake and its neighboring parts as are being shown in the schematic diagram indicated below.

Parts with circled code numbers can be reused. Therefore, be careful not to lose them when reusing these parts.

Gate valve type exhaust brake

Parts with circled code numbers: Parts which can be reused.

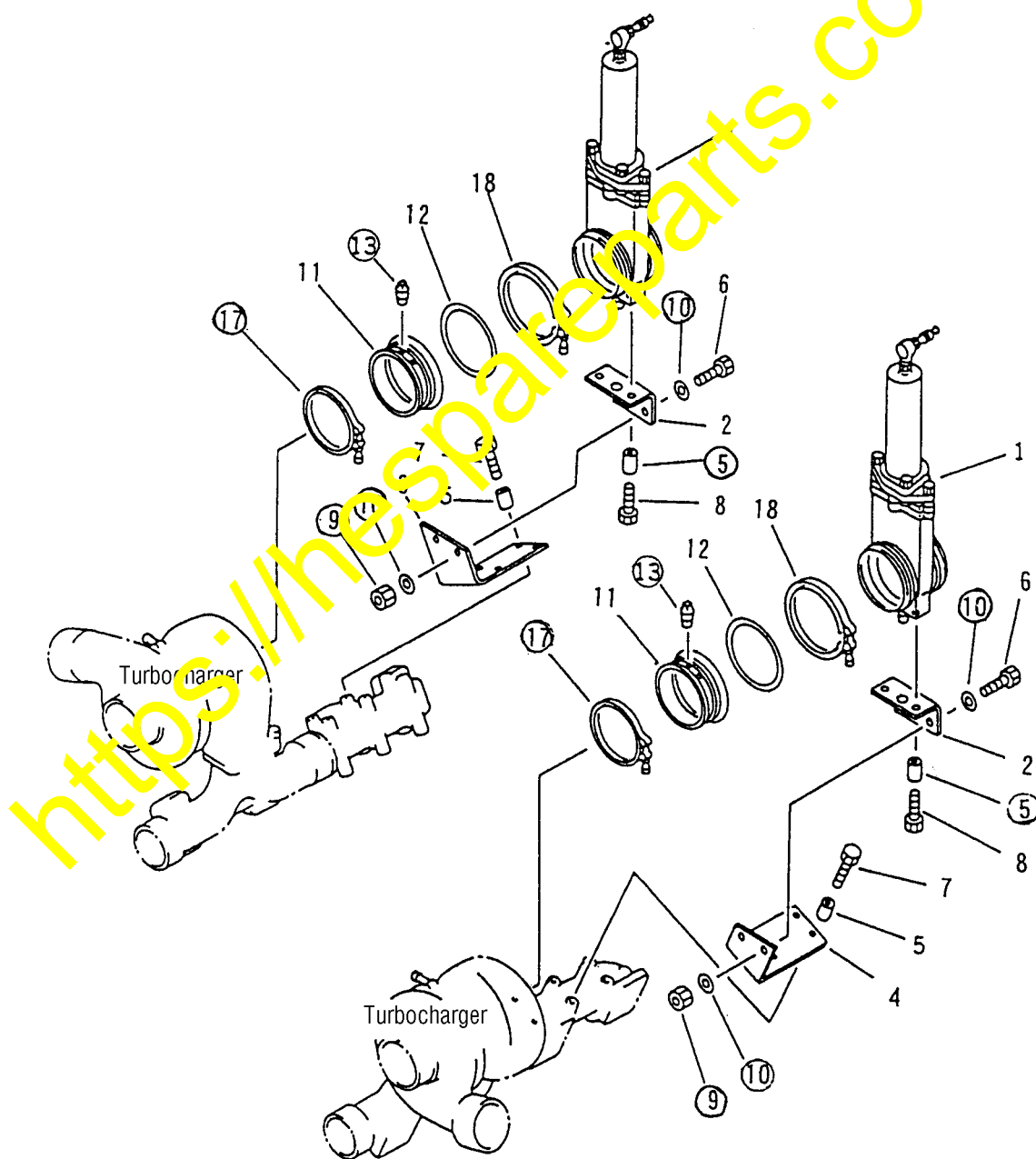


Fig. 1 Schematic diagrams for the engine parts which need to be removed for this modification

- (2) Installing parts which need to be installed for this modification (Refer to Fig. 2 and Fig. 3.)
(Refer to Fig. 2. The parts with circled code numbers are those which can be re-used. Tightening torque for bolts and nuts are shown in the drawing.)

Installation sequence

- ① Installing the exhaust brake supporting bracket
Install the exhaust brake supporting brackets (3, for the R.H bank) and (4, for the L.H bank) to the exhaust manifold using the spacers (5) and bolts (7). Meanwhile, tighten the bolts (7) temporarily at this stage as yet.
- ② Assembling the exhaust brake assemblies
Install the gaskets and connectors (code numbers 11 + 12 and 13 + 14) to the front and rear sections of each exhaust brake ass'y (1) using the bolts (6) and washers (10). At this time, pay attention the control cylinder section of the exhaust brake (1) comes toward the LH side with the RH bank exhaust brake and toward the RH side with the LH bank exhaust brake, facing them.
Install the plug (13) to the connector (11).
Install the bracket (2) to the connector (14) using the bolts (8) and washers (10). Meanwhile, tighten the bolts (8) temporarily at this stage as yet.
- ③ Installing the exhaust brake assemblies to the engine
Placing each exhaust brake ass'y on the exhaust manifold aligning the connector (11) and the turbocharger, fasten the bracket (2) and the brackets (3 & 4) using the bolts (6), washers (10) and nuts (9). Meanwhile, tighten the bolts (6) temporarily at this stage as yet.
- ④ Connecting the turbocharger to exhaust brake ass'y
Check and make sure that the mating surfaces of the turbocharger and the connector (11) are matching.
When deemed necessary, move the position of the brackets (2, 3 or 4) for which the fastening bolts are still in temporarily tightened state to match the mating surfaces.
Engaging the clamp (17) around the mating surfaces, tighten the fastening bolt for the clamp.
Make final tightening of the bolts (6, 7 and 8) fastening the brackets (2, 3 and 4) which have still been in temporarily tightened state.

Butterfly valve type exhaust brake (Refer to Table 1 regarding the tightening torque for the bolts.)

Parts with circled code numbers: Parts which can be reused.

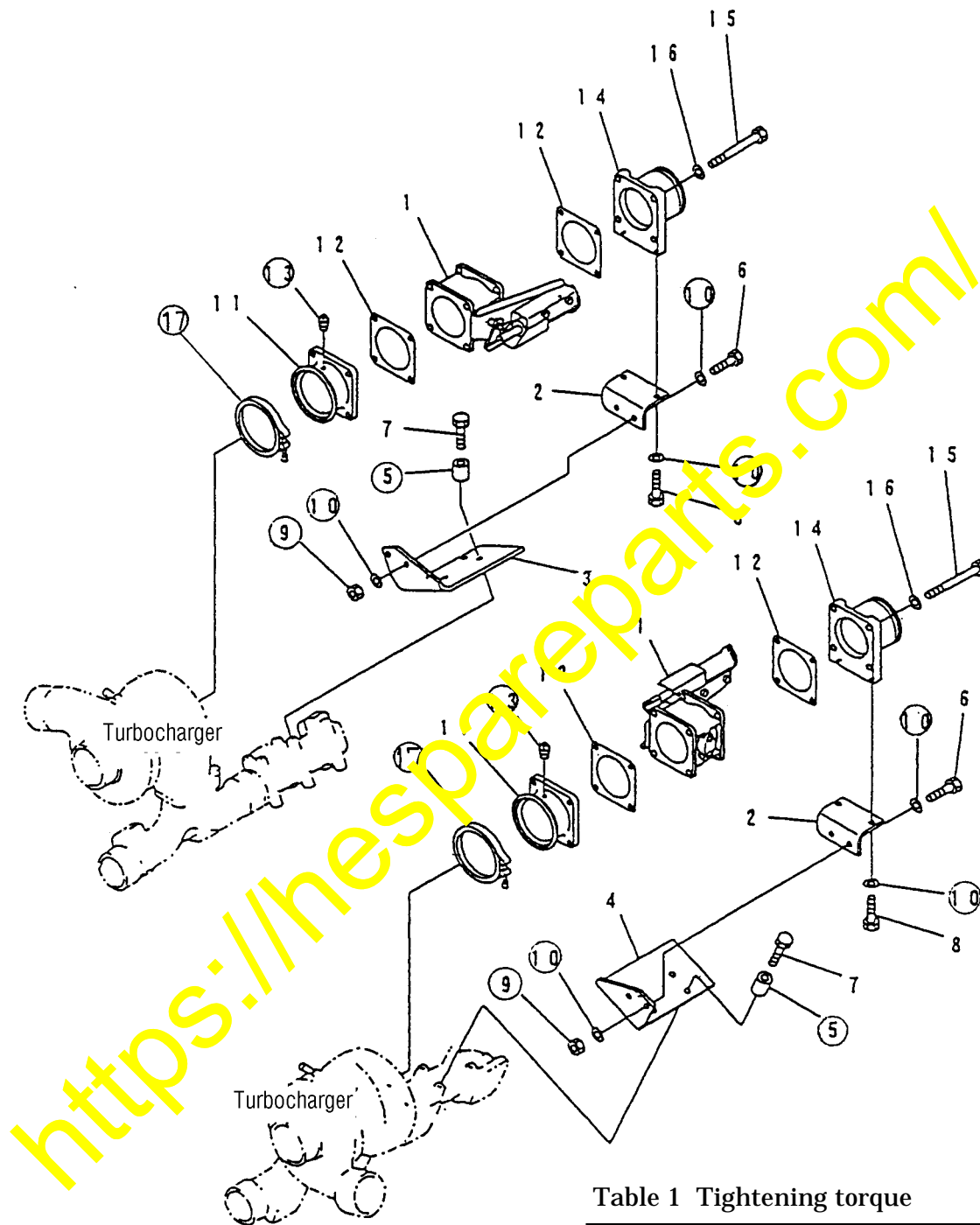


Table 1 Tightening torque

No.	N·m	kg·m
6	59 – 74	6 – 7.5
7	59 – 74	6 – 7.5
8	59 – 74	6 – 7.5
15	98 – 123	10 – 12.5
⑰	4.51 – 6.76	0.46 – 0.69

Fig. 2 Schematic diagrams for the engine parts which need to be installed for this modification

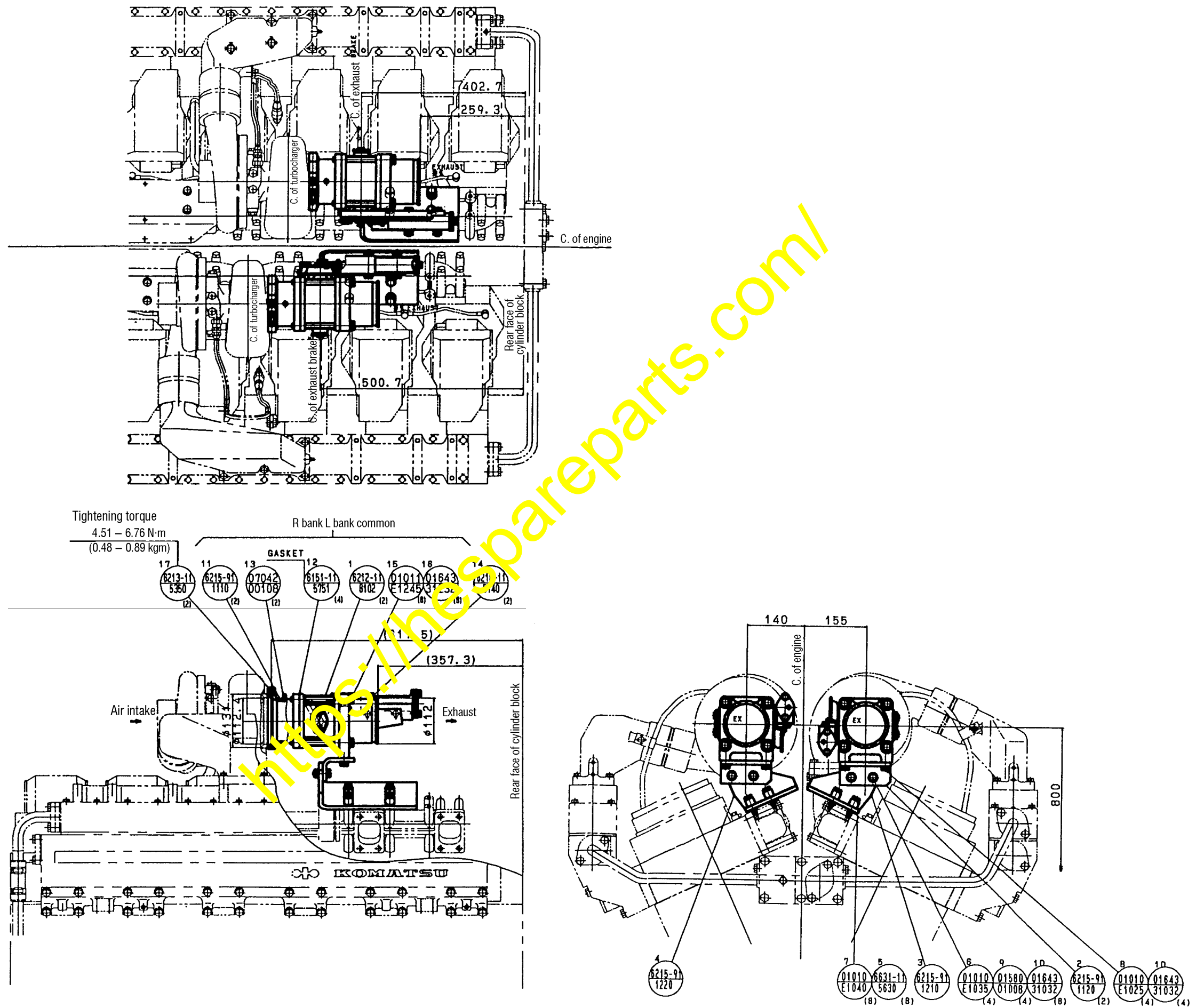


Fig. 3 Schematic diagrams for the engine parts which need to be installed for this modification

3-2. Installing the chassis related parts (Refer to Fig. 4 thru Fig. 9.)

(1) Replacing the bracket for the collective air intake box (Refer to Fig. 4.)

Remove the current bracket (21) with the current part number of 561-02-62190 supporting the collective air intake box to replace with the new bracket equipped with the junction block for the piping with the new part number of 561-02-62460.

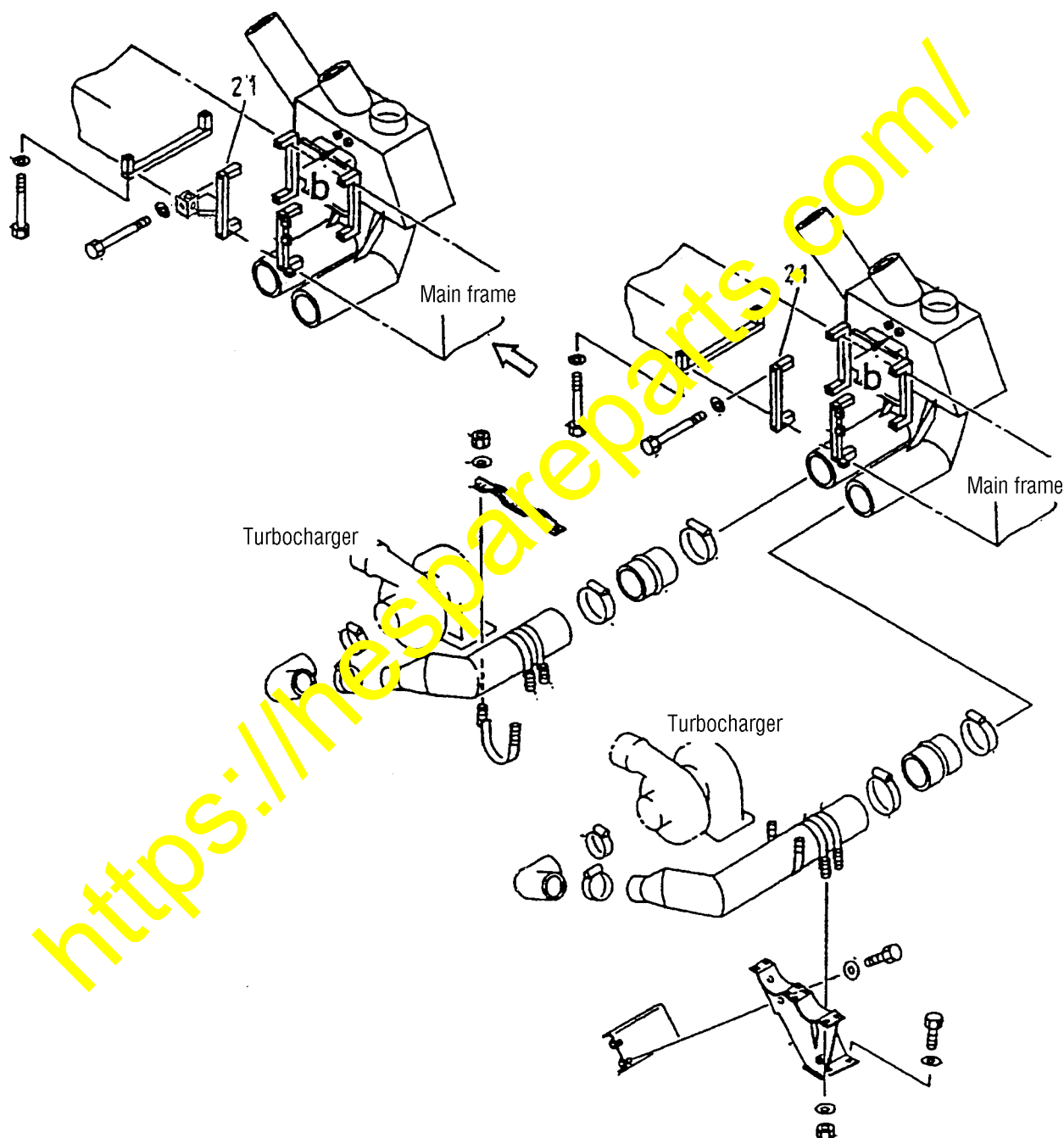


Fig. 4 Schematic diagram instructing replacement of the bracket for the collective air intake box.

- (2) Removing the air pipings and the exhaust pipings for the exhaust brake (Refer to Fig. 5 and Fig. 6.)

Remove the related parts for the current gate valve type exhaust brake being shown in the schematic diagram indicated below.

Parts with circled code numbers being shown in the schematic diagram can be re-used. Therefore, be careful not to lose them when reusing these parts.

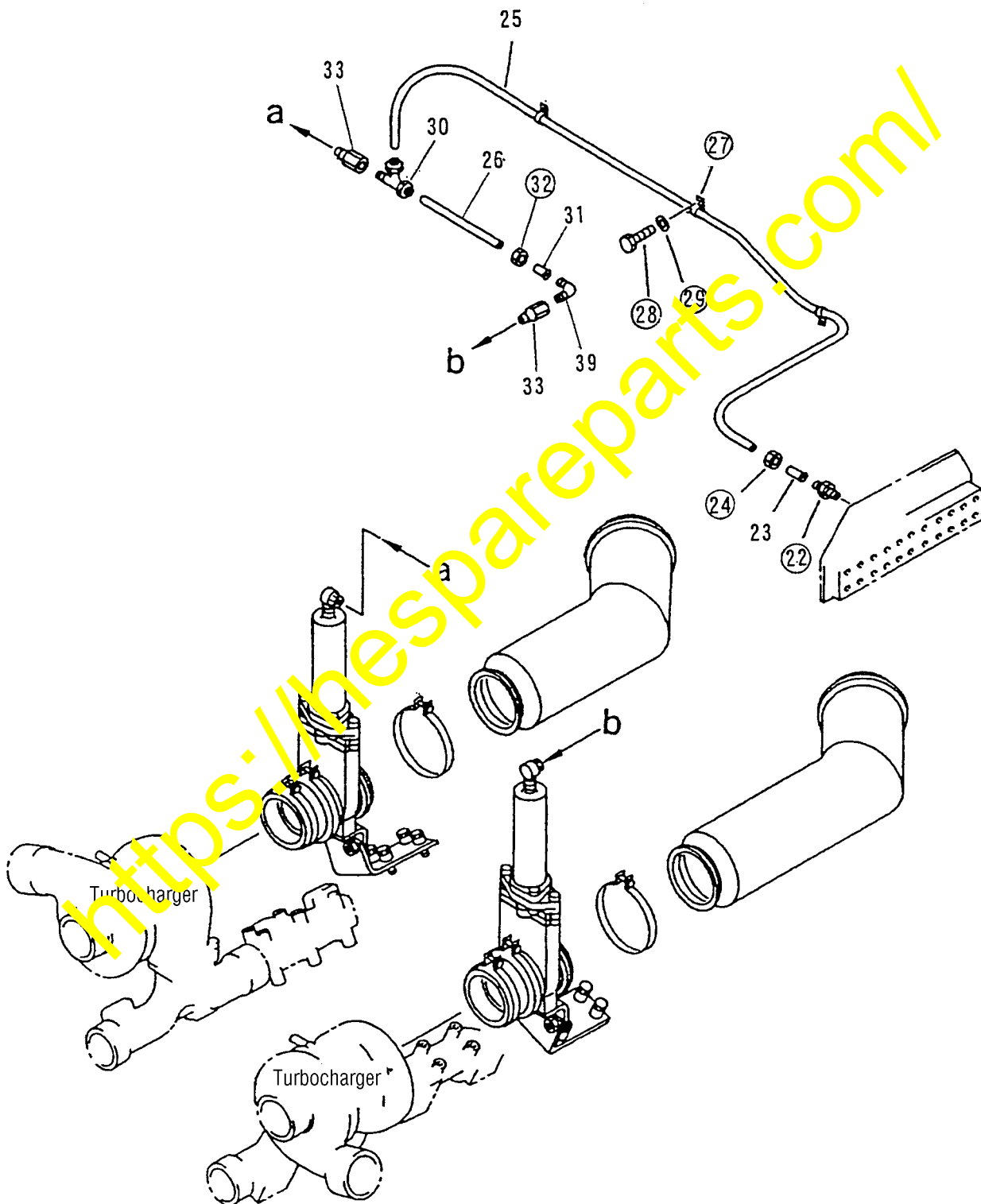


Fig. 5 Schematic diagram for the piping parts which need to be removed for this modification (Air pipings)

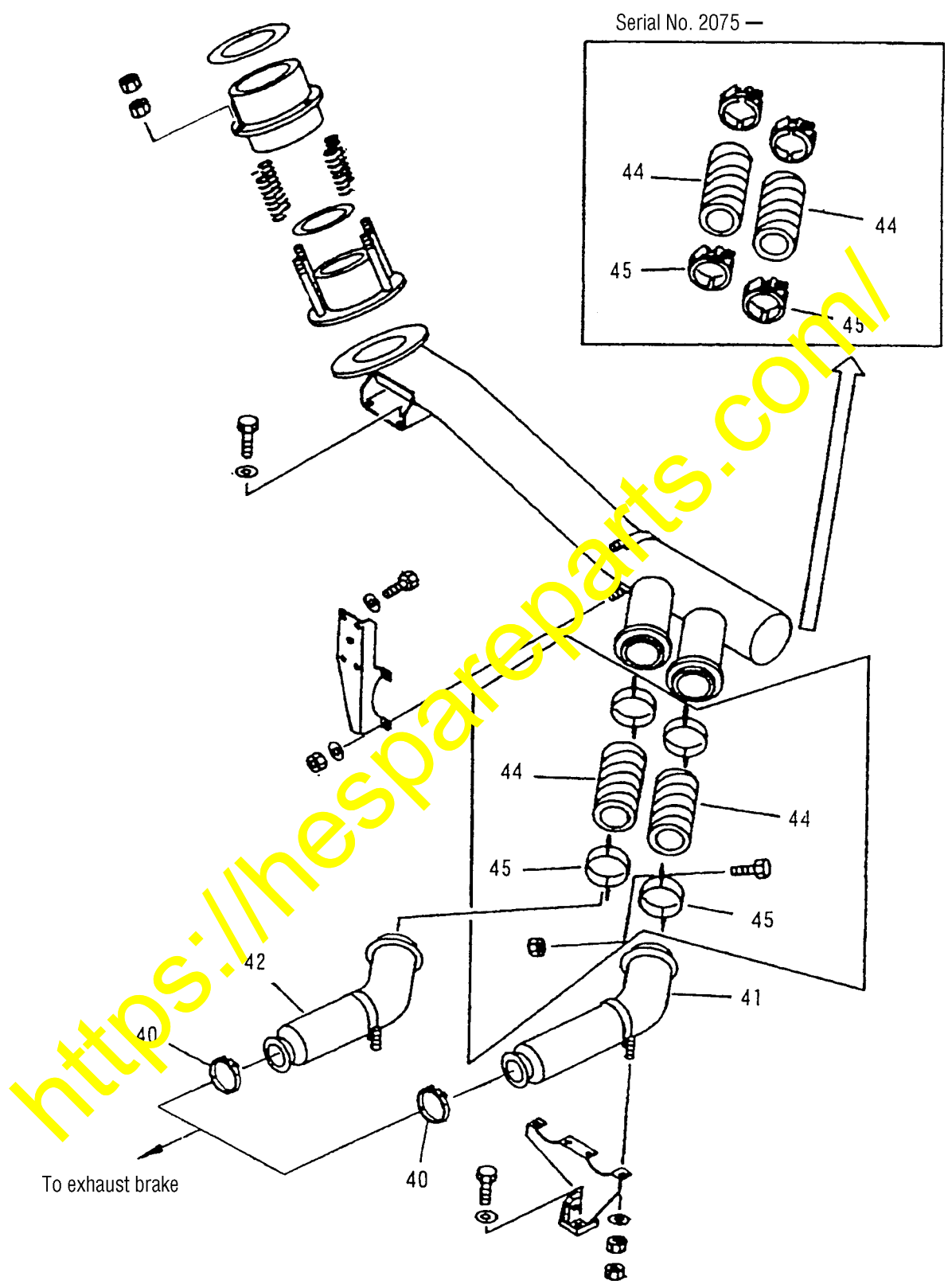



Fig. 6 Schematic diagram for the piping parts which need to be removed for this modification (Exhaust pipings)

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Refer to the drawing shown below in case of the exhaust switch box spec.

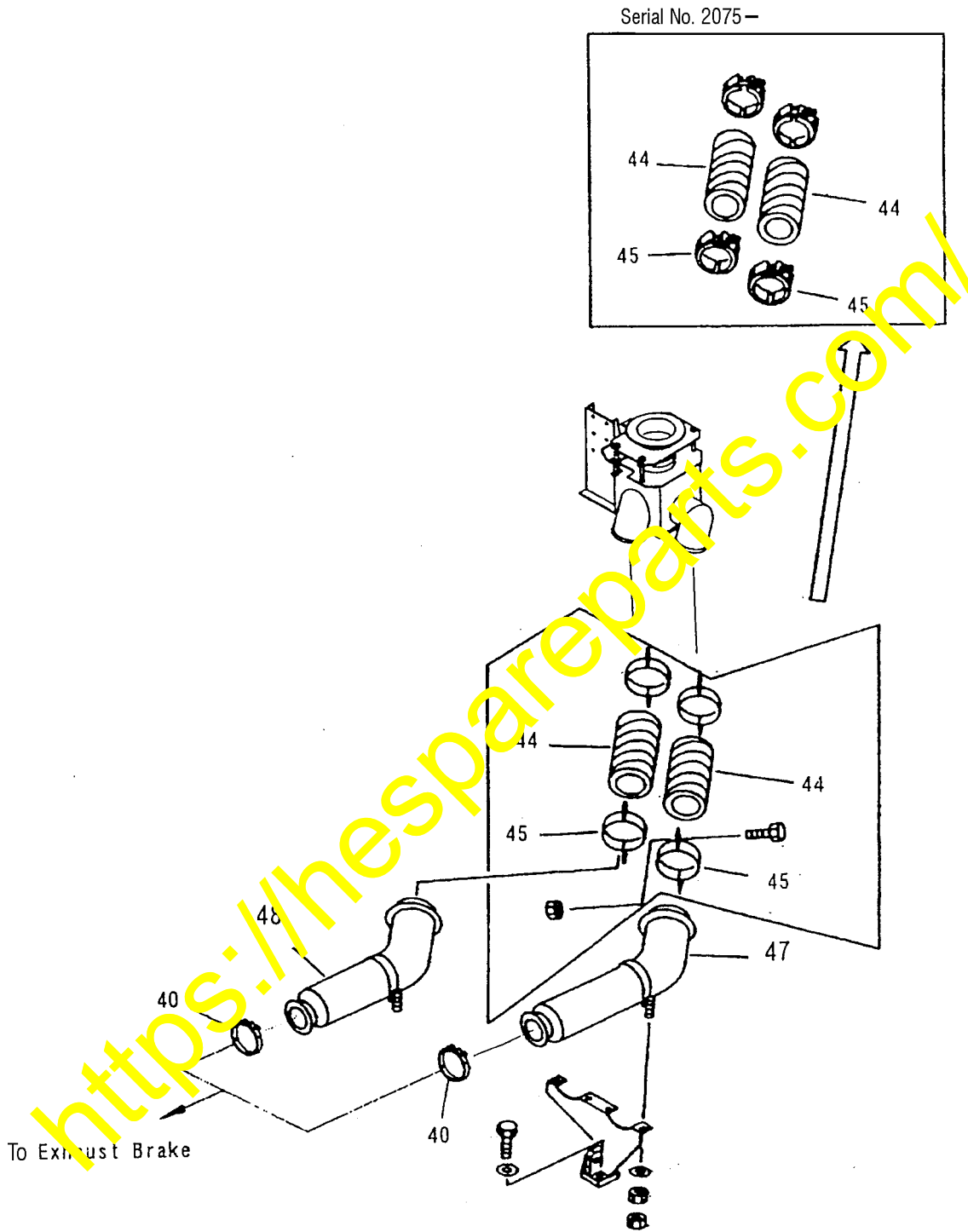


Fig. 6-1 Drawing for removal of the piping parts
(Exhaust piping: Exhaust switch box spec.)

- (3) Installing the air pipings and the exhaust pipings for the exhaust brake (Refer to Fig. 7, Fig. 8 and Fig. 9.)

Install the related parts for the butterfly valve type exhaust brake being shown in the schematic diagram indicated below.

Parts with circled code numbers being shown in the schematic diagram are reusable parts

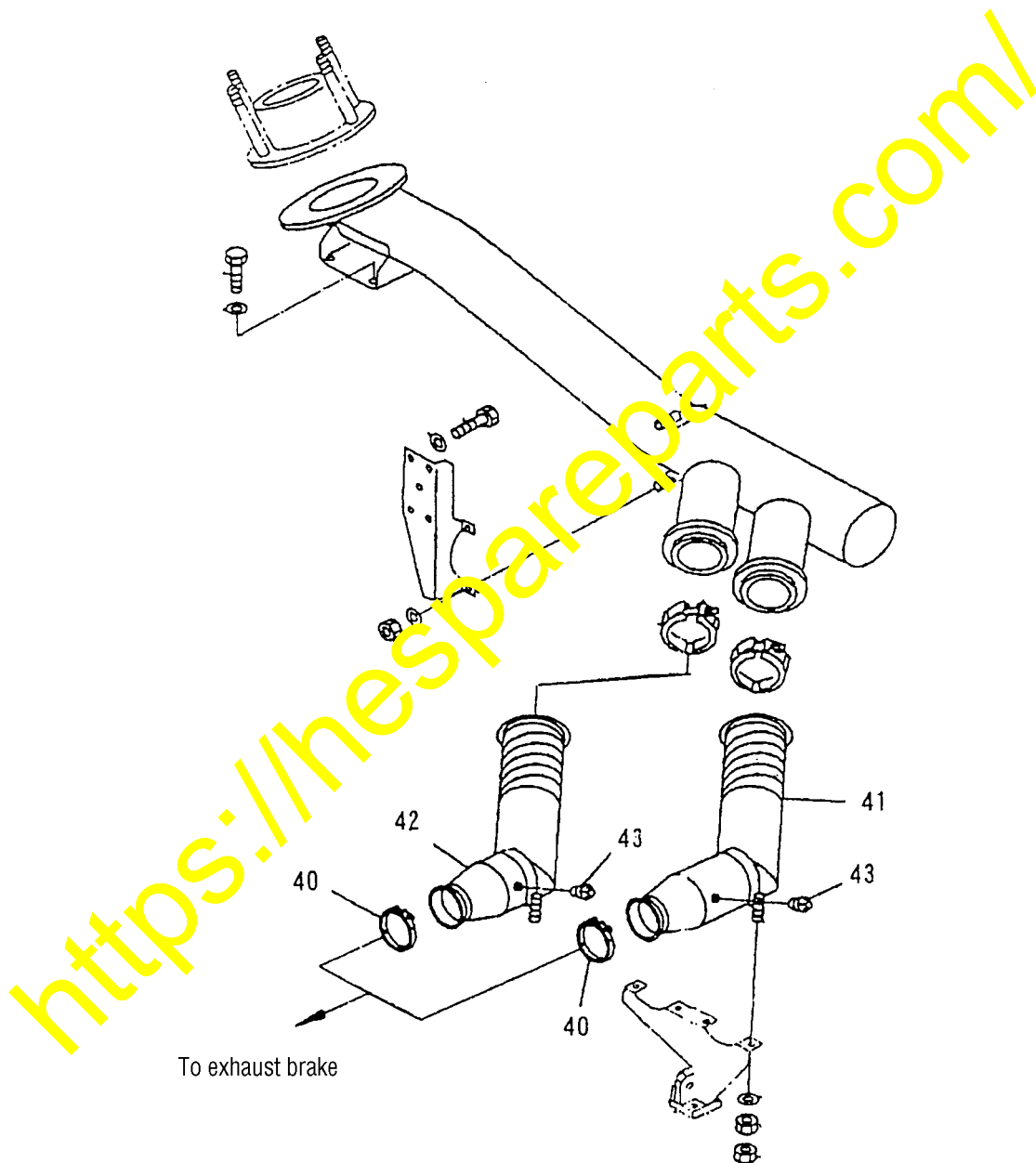



Fig. 7 Schematic diagram for the piping parts which need to be installed for this modification (Exhaust pipings)

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Refer to the drawing shown below in case of the exhaust switch box spec.

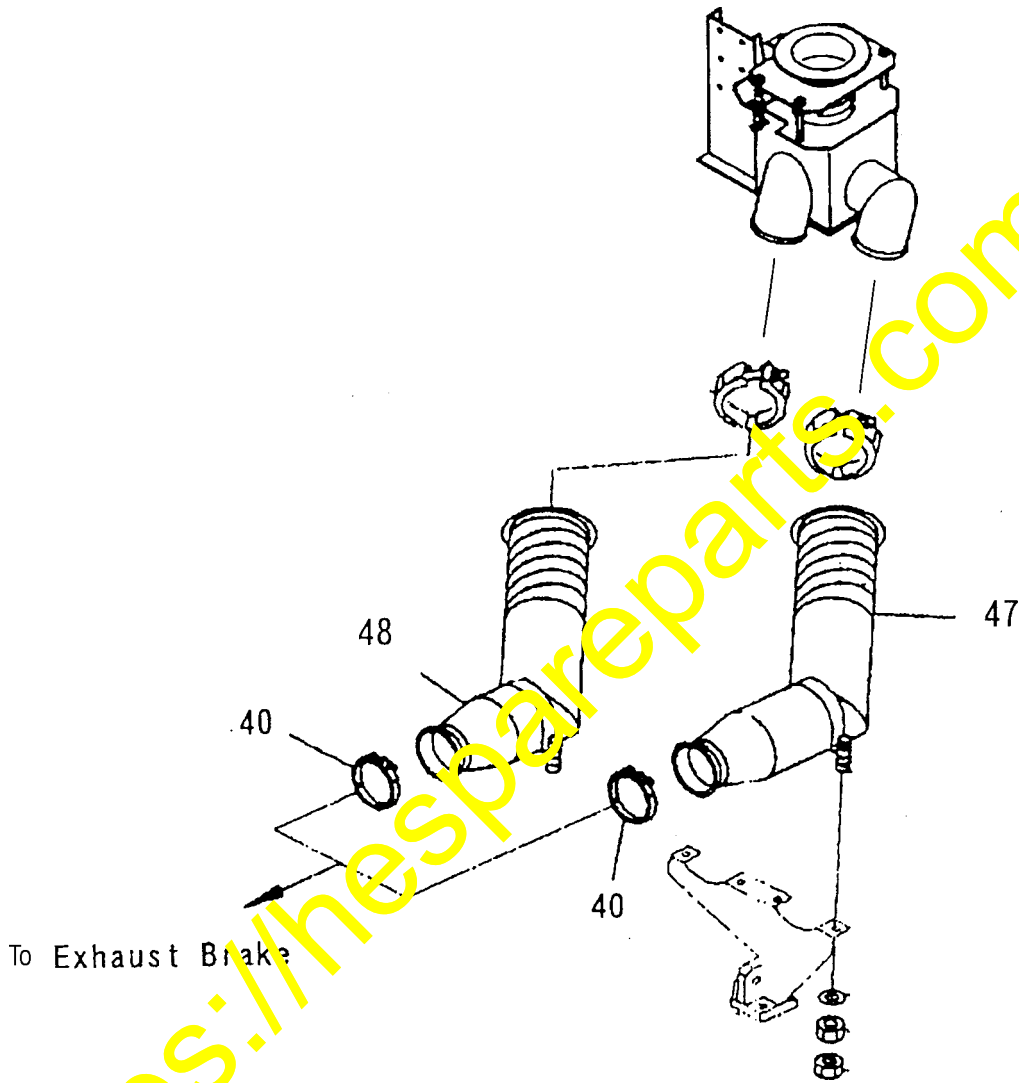


Fig. 7-1 Drawing for installation of the piping parts
(Exhaust piping: Exhaust switch box spec.)

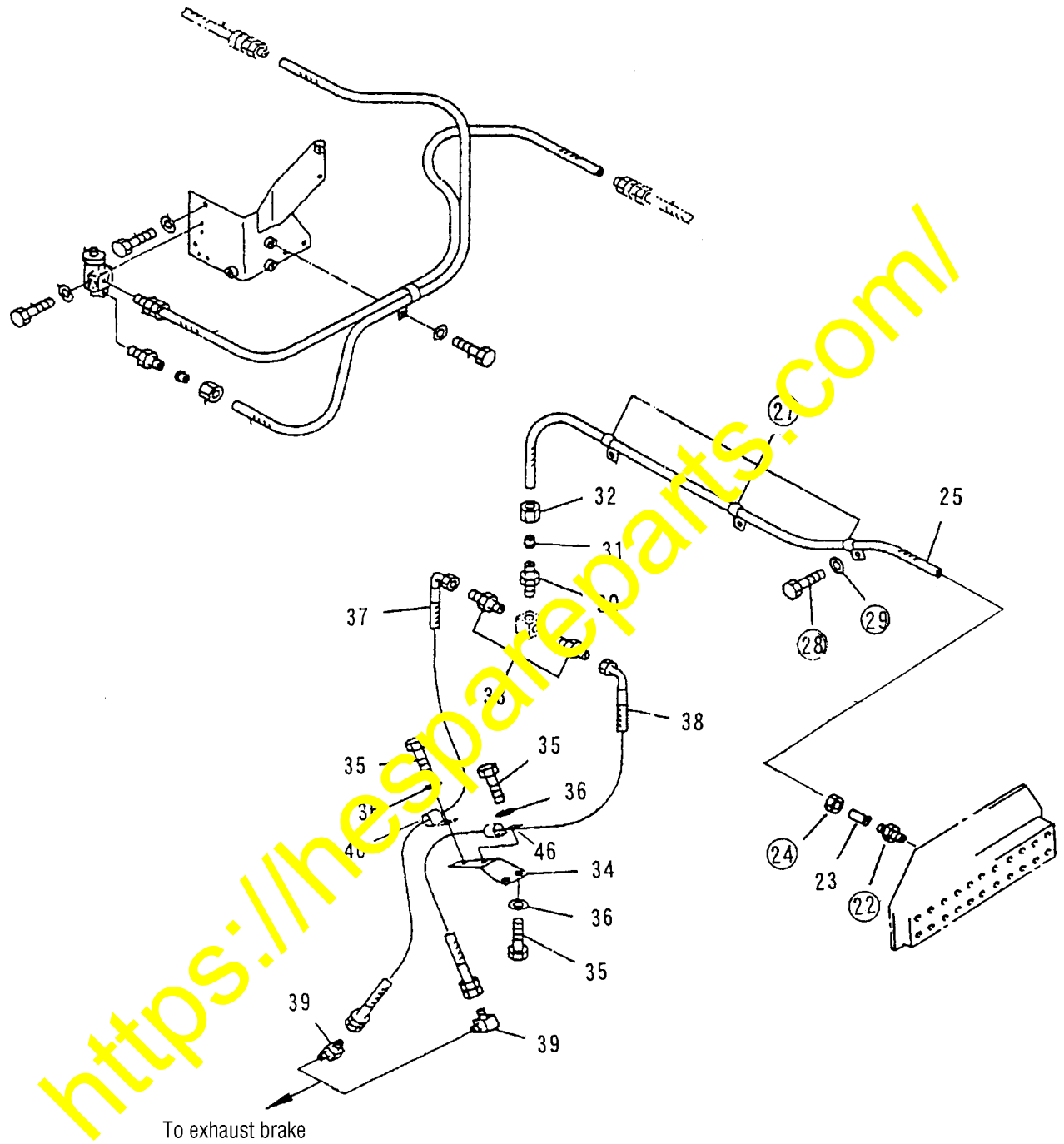


Fig. 8 Schematic diagram for the piping parts which need to be installed for this modification (Air pipings)

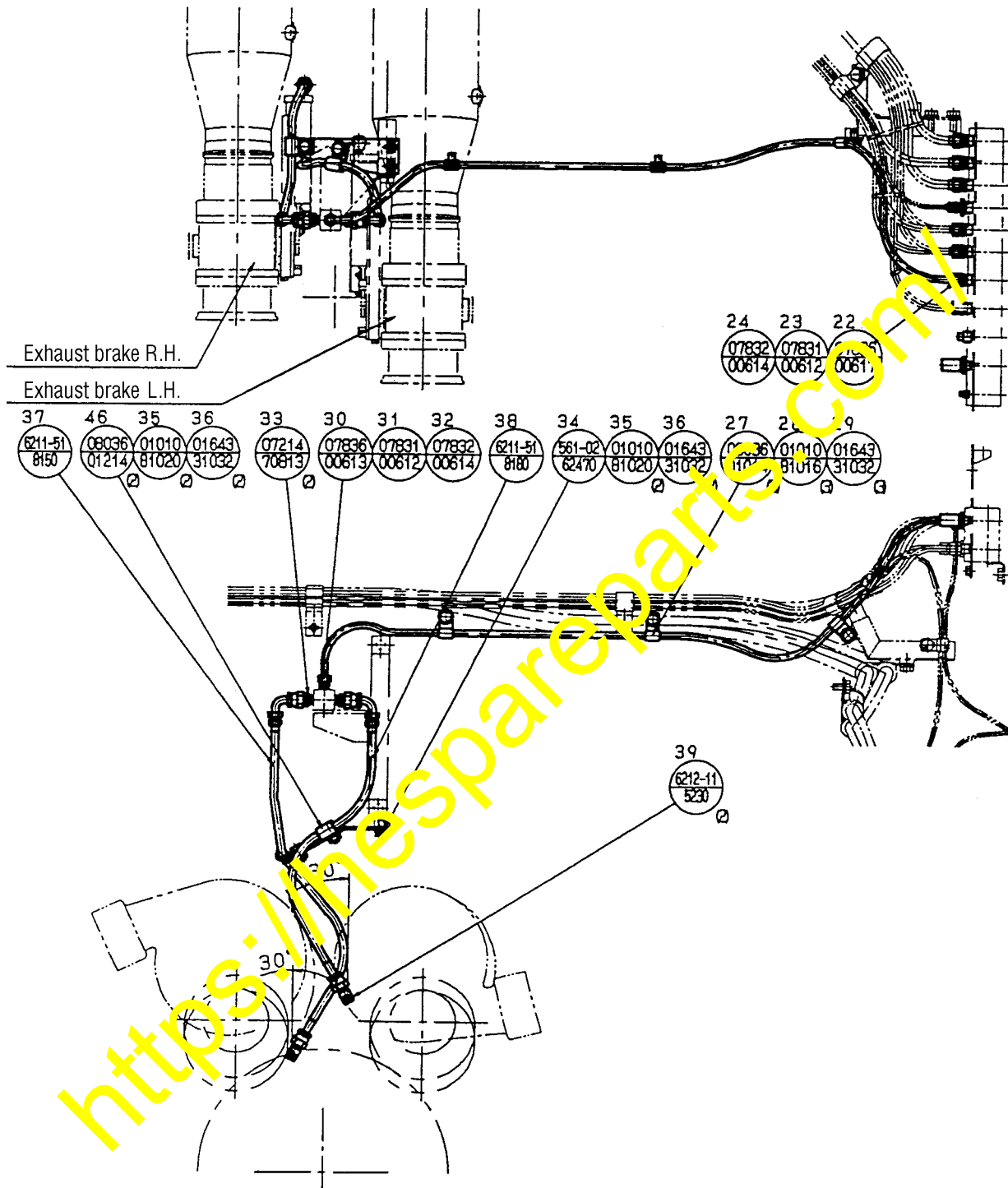


Fig. 9 Schematic diagram for the piping parts which need to be installed for this modification (Air pipings)

4. Function checks

After finishing the aforementioned assembly and installation works, conduct the following function checks.

- (1) With the exhaust brake switch being turned off, check that the exhaust brake will be activated and the lamp will turn on when the foot brake is depressed or when the retarder control lever is operated while the torque converter is being locked up.
- (2) With the exhaust brake switch being turned on, check that the exhaust brake will be activated and the lamp will turn on when the accel pedal is released while the torque converter is being locked up.

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