

INSTALLATION MANUAL

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SUBJECT: INSTALLATION PROCEDURE OF 3-SPOOL VALVE ON WA380-5

PURPOSE: To introduce local installation procedure for the 3-spool valve kit onto WA380-5 wheel loaders

APPLICATION: WA380-5 Wheel Loaders, Serial Nos. 60001 and up

FAILURE CODE: 6370Z9

DESCRIPTION:

1. Introduction

This Installation Manual will introduce local installation procedure for the 3-spool valve kit (including the additional 1-spool valve, pipings and work equipment control lever) which has been newly developed as an optional extra for installation onto the WA380-5 wheel loaders.

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2. List of parts

No.	Part No.	Part Name	Q'ty	Remarks
1	709-91-00120	Service valve	1	Additional valve (additional 1 V)
2	700-92-11780	Bolt	2	
3	700-92-11790	Bolt	2	
4	07000-13038	O-ring	8	
5	19M-61-35150	Elbow	2	
6	07042-30108	Plug	2	
7	07002-12034	O-ring	2	
8	02896-11009	O-ring	2	
9	423-877-2130	Plate	1	
10	07283-31537	Clip	2	
11	07283-51523	Clip	2	
12	01596-00807	Nut	4	
13	01643-30823	Washer	4	
14	419-43-17910	Spacer	2	
15	423-877-2540	Rubber	1	
16	421-62-12120	Plate	1	
17	01010-81060	Bolt	1	
18	01643-31032	Washer	1	
19	423-877-3311	Tube	1	
20	07000-13035	O-ring	1	
21	07372-21040	Bolt	4	
22	01643-51032	Washer	4	
23	423-877-2321	Tube (L.H.)	1	
24	07000-13035	O-ring	1	
25	07372-21040	Bolt	4	
26	01643-51032	Washer	4	
27	423-877-2310	Tube (L.H.)	1	
28	423-877-2210	Bracket	1	
29	01010-81050	Bolt	2	
30	01643-31032	Washer	2	

No.	Part No.	Part Name	Q'ty	Remarks
31	419-43-17930	Cushion	2	
32	417-54-13470	Spacer	2	
33	415-64-13130	Cushion	2	
34	419-43-17920	Washer	4	
35	01584-01008	Nut	2	
36	423-877-2231	Bracket	1	
37	423-877-2221	Bracket	1	
38	07283-33450	Clip	4	
39	07283-53444	Seat	4	
40	01597-01009	Nut	8	
41	01643-31032	Washer	8	
42	01010-D1025	Bolt	4	
43	01643-71032	Washer	4	
44	423-877-3340	Plate	1	
45	01571-01016	Seat	2	} Parts to be welded to the front frame
46	01573-10205	Seat	1	
47	01573-20207	Seat	2	
48	423-46-21D50	Plate	1	
49	4198771710	Seat	4	Parts to be welded to the boom
50	423-877-3190	Tube	2	
51	07378-11000	Head	2	
52	07000-13032	O-ring	2	
53	07371-31049	Flange	4	
54	07372-21035	Bolt	8	
55	01643-51032	Washer	8	
56	423-877-2430	Bracket	4	
57	01010-81025	Bolt	8	
58	07283-33450	Clip	4	
59	07283-53444	Seat	4	
60	01597-01009	Nut	8	
61	01643-31032	Washer	16	

No.	Part No.	Part Name	Q'ty	Remarks
62	07125-01014	Hose	2	
63	07000-13032	O-ring	4	
64	07371-31049	Flange	8	
65	07372-21035	Bolt	16	
66	01643-51032	Washer	16	
67	23S-43-51110	Lever	1	
68	23S-43-51240	Nut	1	
69	01546-10812	Nut	1	
70	01643-50823	Washer	1	
71	01010-81025	Bolt	2	
72	01643-31032	Washer	2	
73	421-877-3460	Bracket	1	
74	421-877-3450	Cover	1	
75	421-877-3410	Lever ass'y	1	
76	421-43-38720	Awning	3	
77	08034-20310	Band	1	
78	702-16-03370	Pilot valve	1	
79	421-877-3430	Elbow	1	
80	07000-12011	O-ring	4	
81	418-43-28281	Nipple	2	
82	07260-20998	Hose	1	
83	11N-09-11140	Clip	2	
84	02306-11008	O-ring	4	
85	02754-00204	Hose	1	
86	421-877-3440	Tee	1	
87	07260-20908	Hose	1	
88	421-09-31770	Tee	1	
89	11Y-62-12140	Nipple	2	
90	423-877-3520	Hose	2	
91	08210-01202	Spiral tube	2	
92	08210-01204	Spiral tube	2	

No.	Part No.	Part Name	Q'ty	Remarks
93	423-877-3320	Tube	1	
94	423-877-3330	Tube	1	
95	04434-51510	Clip	3	
96	01010-81020	Bolt	2	
97	01643-31032	Washer	2	
98	04435-51510	Clip	1	
99	01010-81020	Bolt	1	
100	01643-31032	Washer	1	

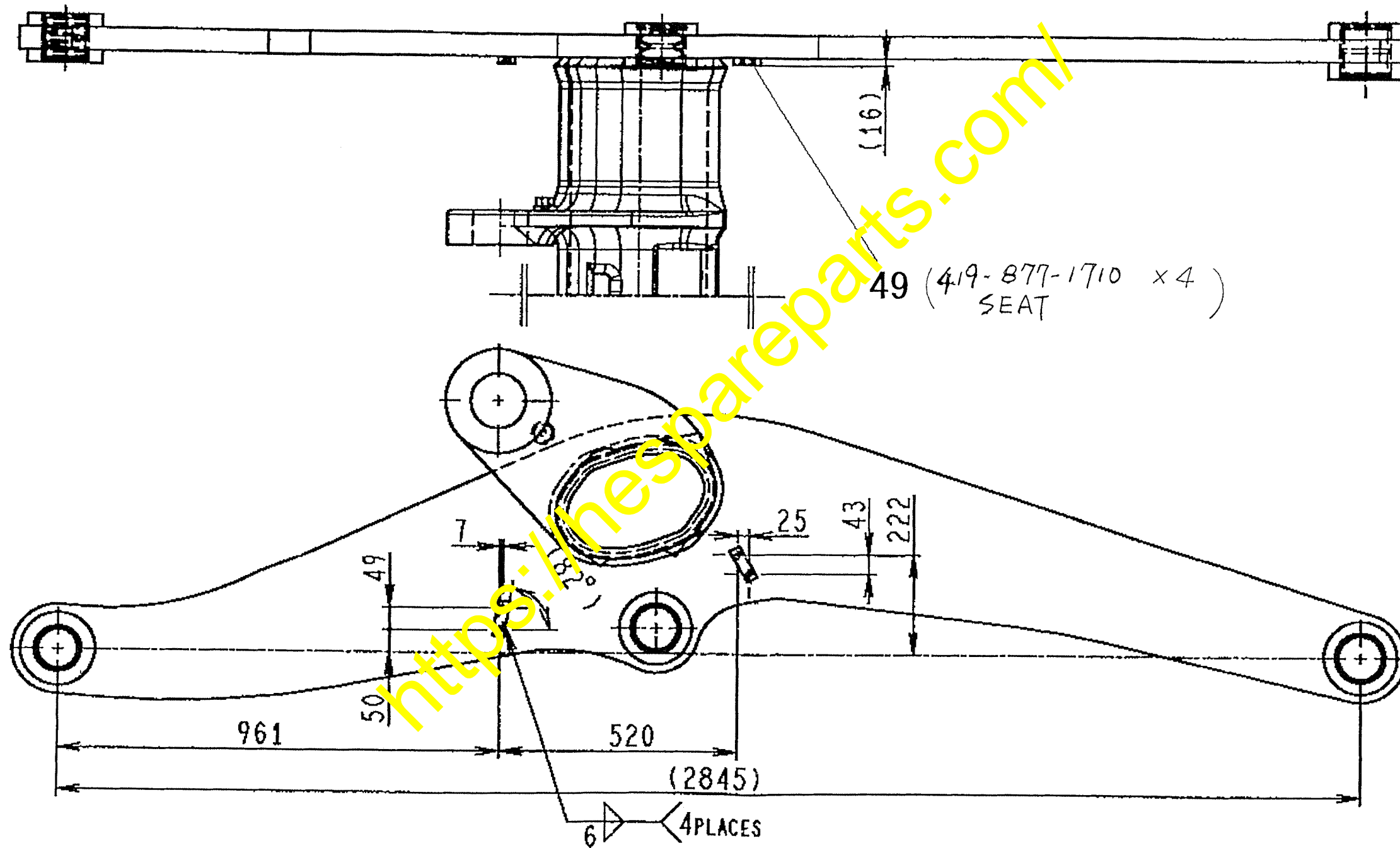
<https://hespareparts.com/>

3. Additional working procedure

3-1. Additional working for the boom

Weld the prepared seats (419-877-1710) to the inside surface of the boom plate at the positions being instructed in the drawing below, symmetrically on the L.H. and R.H. sides.

(Part No. after the additional working: 423-877-3180)

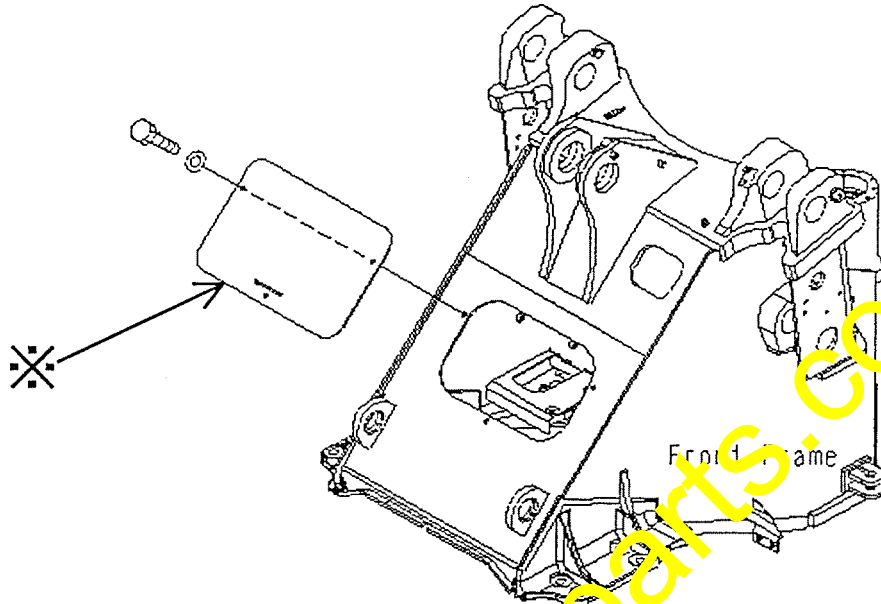


3-2. Additional working for the front cover

Remove the following parts.

Parts marked ※ are the parts to which additional working need to be made.

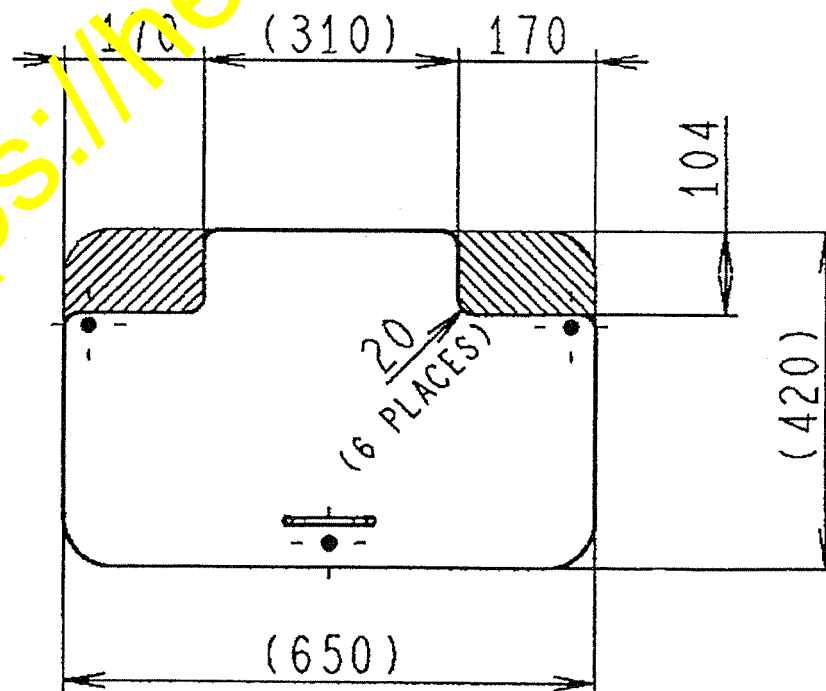
Since those parts which are not marked as above are being reused, be careful not to lose them after removal.



Additional working procedure

Cut the hatched sections of the front cover as shown below.

(Part No. after the additional working: 423-46-31190)

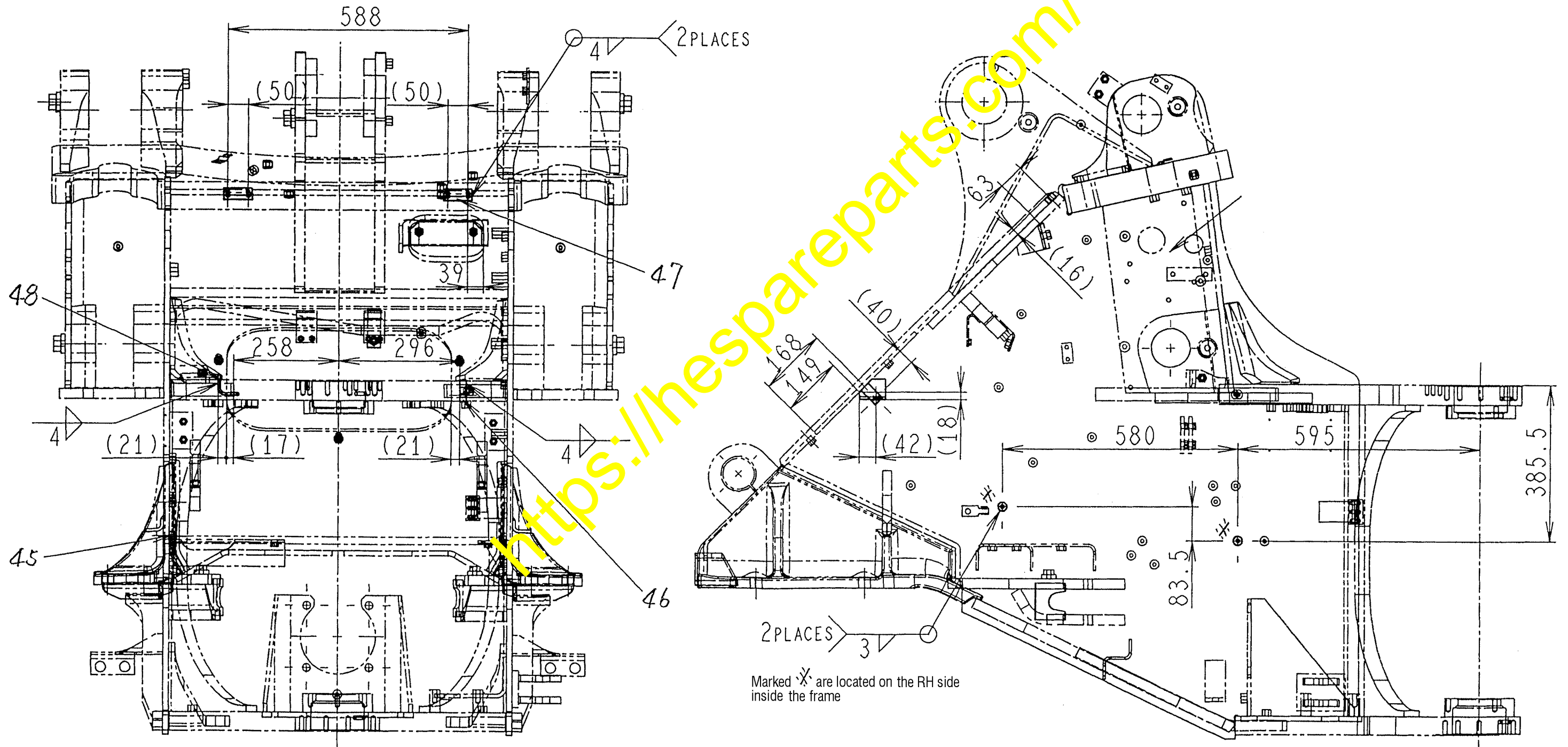


3-3. Additional working for the front frame

Weld the prepared seats (45, 46, 47 and 48) to the front frame at the positions being instructed in the drawing below.

(Part No. after the additional working: 423-877-3110)

48	423-46-21D50	Plate	SS400F	1	0.24	
47	01573-20207	Seat	STD	2	0.20	
46	01573-10205	Seat	STD	1	0.21	
45	01571-01016	Seat	STD	2	0.04	
No.	SYM.	Part name	Material	Q'ty/set	Mass (kg)	Remarks



4-1. Assembly procedure for the control valve

(1) Removal of the 2-spool control valve

A Preparations before removing the control valve from the machine body

① Measure the strokes to the ends of the control lever movements and the operating force referring to the Chapter "Testing and Adjusting" in the Shop Manual and record the measured values.

② Be sure to wash the outside of the control valve carefully so that foreign substances do not enter into the inside of the control valve when removing and reassembling the control valve.

(Especially, the concave sections at the contact surfaces should be carefully rubbed by use of a brush, etc.)

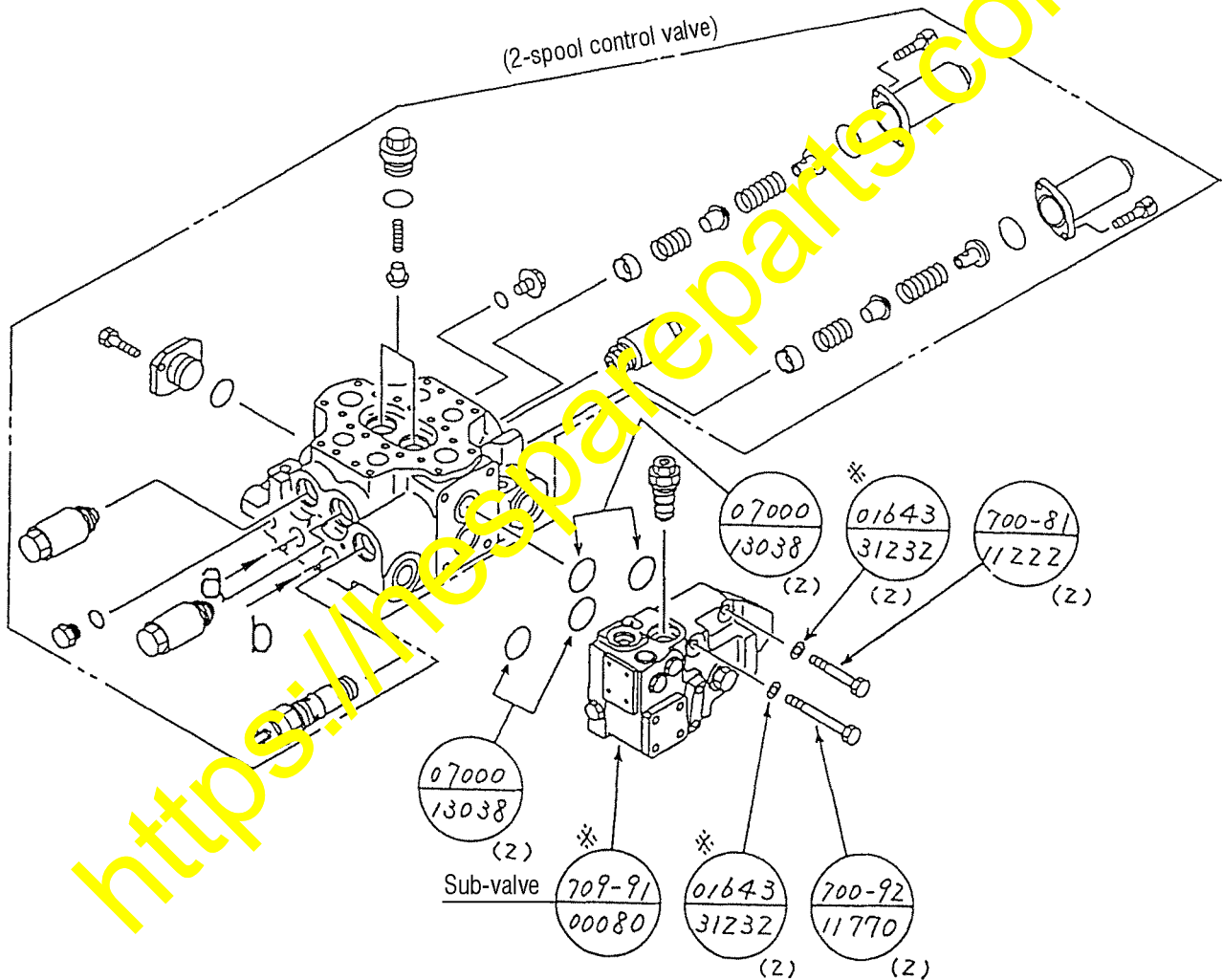
To make the disassembly work of the control valve easier and not to make piping errors when making the reassembly work, attach tags to all the ports and corresponding pipes for the identification purposes before removing the control valve from the machine body.

Also, before starting the disassembly work of the control valve, be sure to read the Shop Manual, Parts Book, etc., since they will be useful.

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B Disassembly of the control valve

- ① Prepare clean washing oil, tool and torque wrench.
- ② Refer to the Shop Manual regarding the tightening torque which are not described in this Installation Manual and refer to the Parts Book regarding the replacing parts (seals, etc.) which are not described in this Installation Manual.
- ③ Carry out the disassembly and assembly work of the control valve at an indoor site free from dust and dirt and be sure to wash the outside of the control valve cleanly before starting the disassembly work.
- ④ Remove the 4 bolts to separate the control valve (2-spool valve) and the sub-valve. Since those parts which are marked ※ as shown below are being reused, be careful not to lose them after removal.

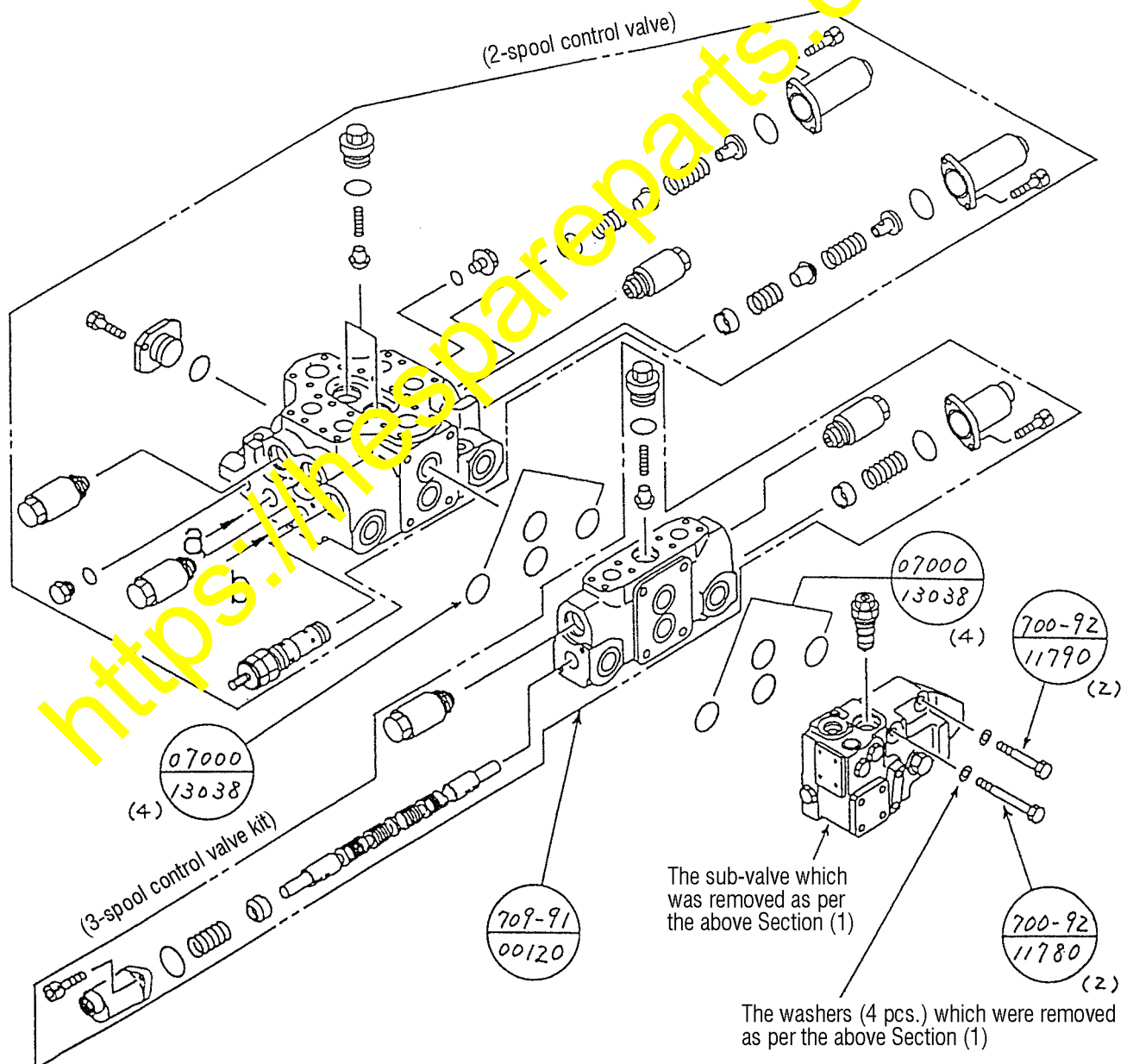


- ⑤ Pay utmost attention not to damage the machined contact surfaces (O-ring seal contact surfaces) of the disassembled sections.

(2) Assembly of the 3-spool control valve

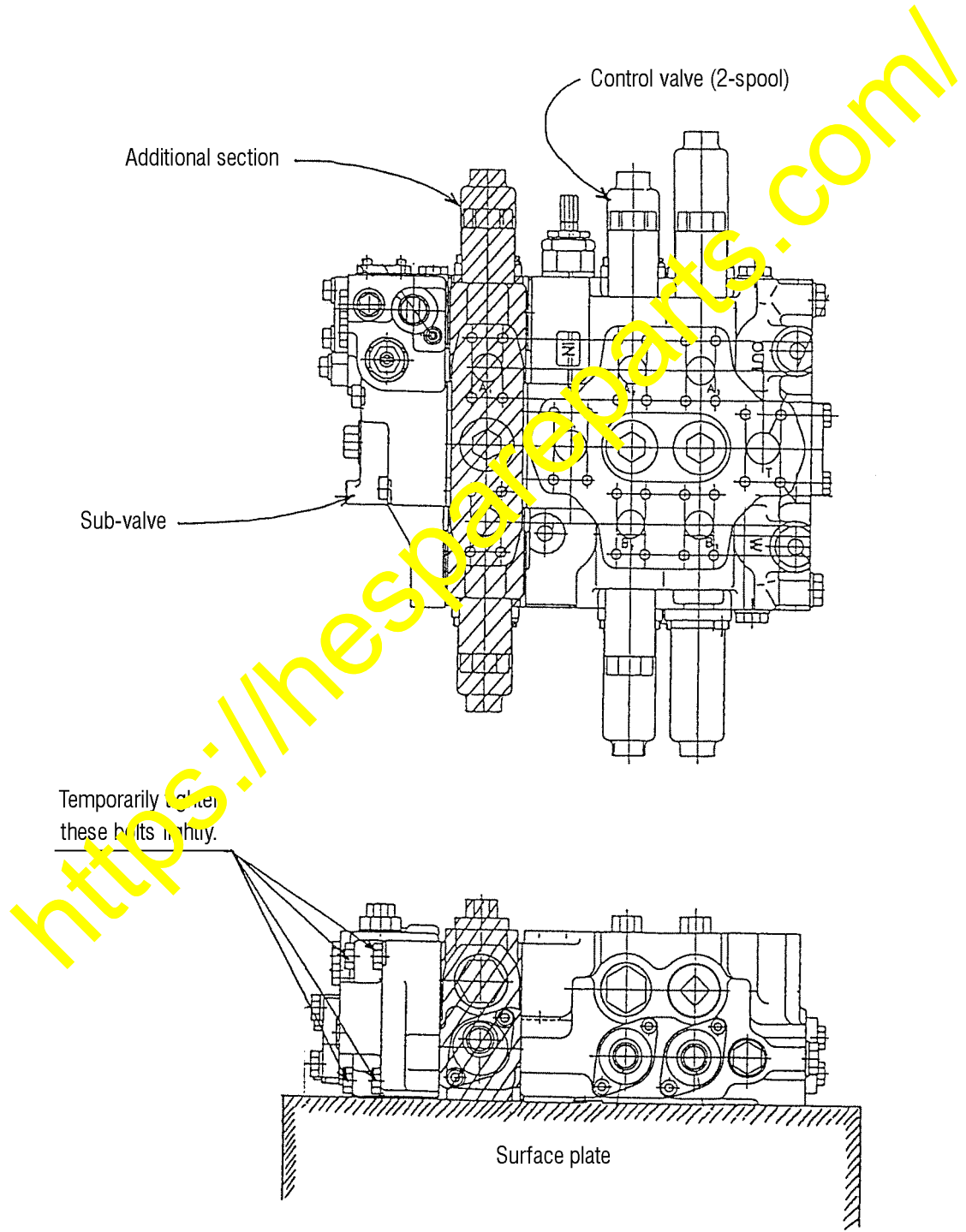
A Addition of the valve chest section and assembly of the control valve

- ① Before starting the assembly work
- Wash respective valve chest sections using clean washing oil and remove oil from the contact surfaces by use of compressed air, etc.
When washing the contact surfaces, be careful not to allow entry of dust, etc. into the valve body.
 - If there are burrs, etc. on the contact surfaces, remove them using an oil stone.
 - Check if the O-rings being installed to the contact surfaces are not damaged or if foreign substance is not being caught.
 - In case the contact surfaces are rusted, separate the O-rings and remove rust using an oil stone.



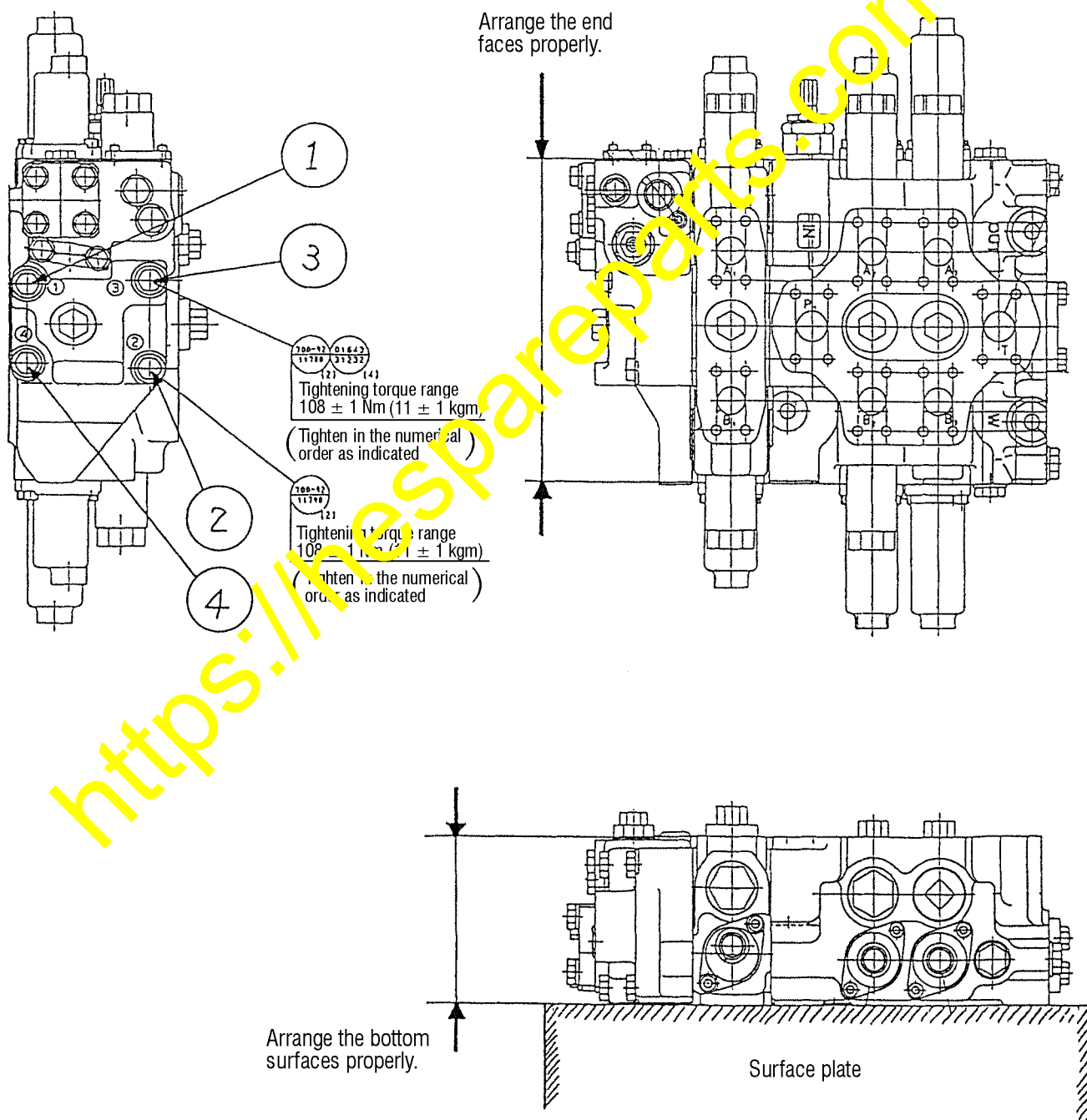
② Assembly

- (a) Be sure to place respective valve chest sections on a surface plate.
(If each valve chest section is not aligned on a surface plate, spool return failure, operating force failure, etc. may occur.)
- (b) Set the O-rings to the contact surface of the additional section, apply liquid seal (Seal End 222 or the equivalent), align the additional section to other sections in the specified order and temporarily fasten them lightly by use of the 4 bolts. (When assembling the additional section, pay attention to the contact surfaces of the O-ring ports.)



- (c) After fastening the control valve ass'y temporarily, correct the positional dispersions in the vertical direction of respective valve chest sections and in the axial direction of the spool by hitting them lightly with a plastic hammer, etc.
- (d) Tighten the four bolts in the order of ①, ② ③ and ④ as designated in the drawing below, with four tightening processes.

Bolt	Tightening torque for the 1st process	Tightening torque for the 2nd process	Tightening torque for the 3rd process	Tightening torque for the final process
φ12	18 N·m {1.8 kg·m}	54 N·m {5.5 kg·m}	86 N·m {8.6 kg·m}	108 ± 1 N·m {11 ± 1.0 kg·m}

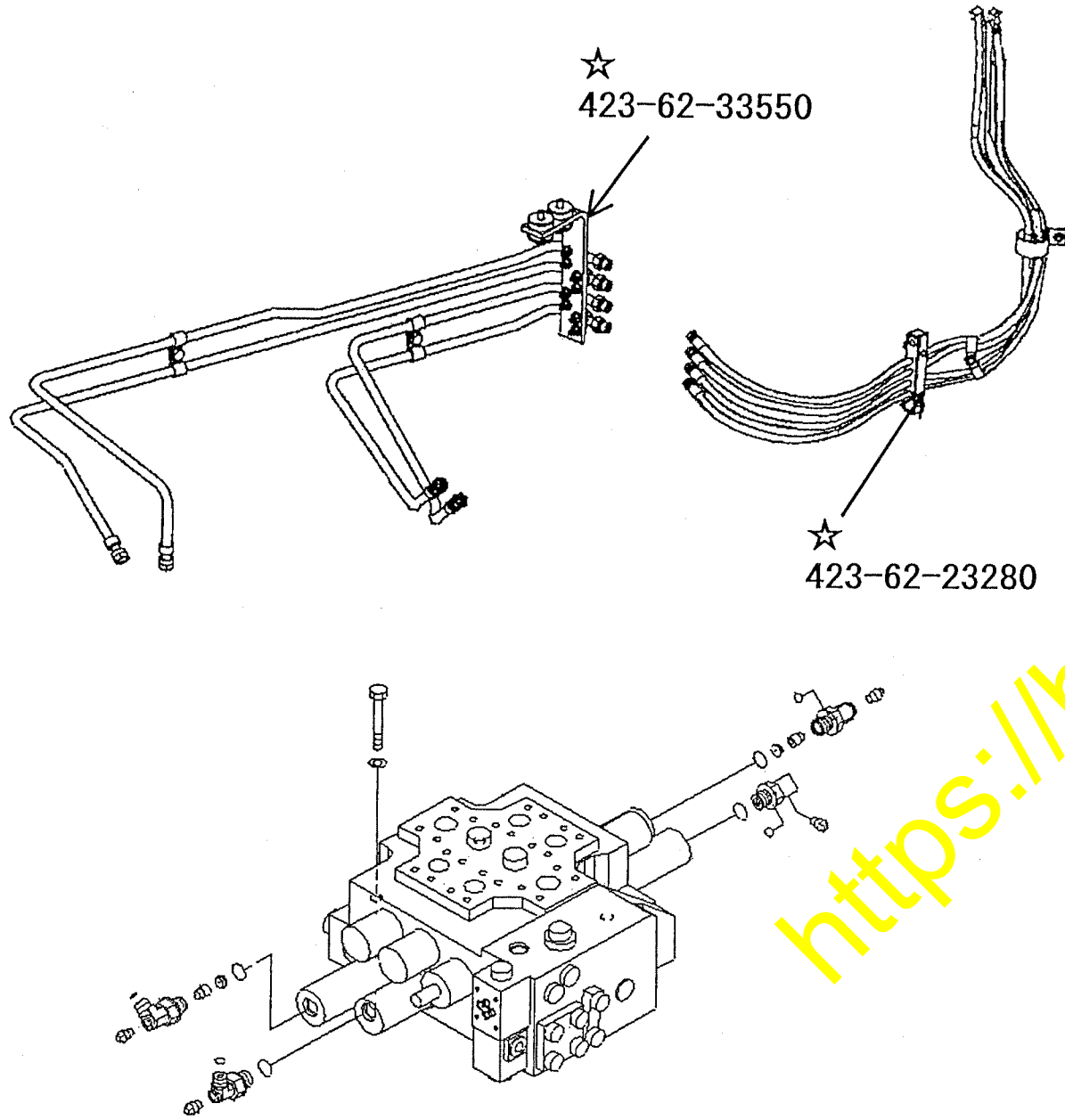


4-2. Installation procedure for the PPC pipings

1. Remove the following parts.

Parts marked ☆ are the replacing parts.

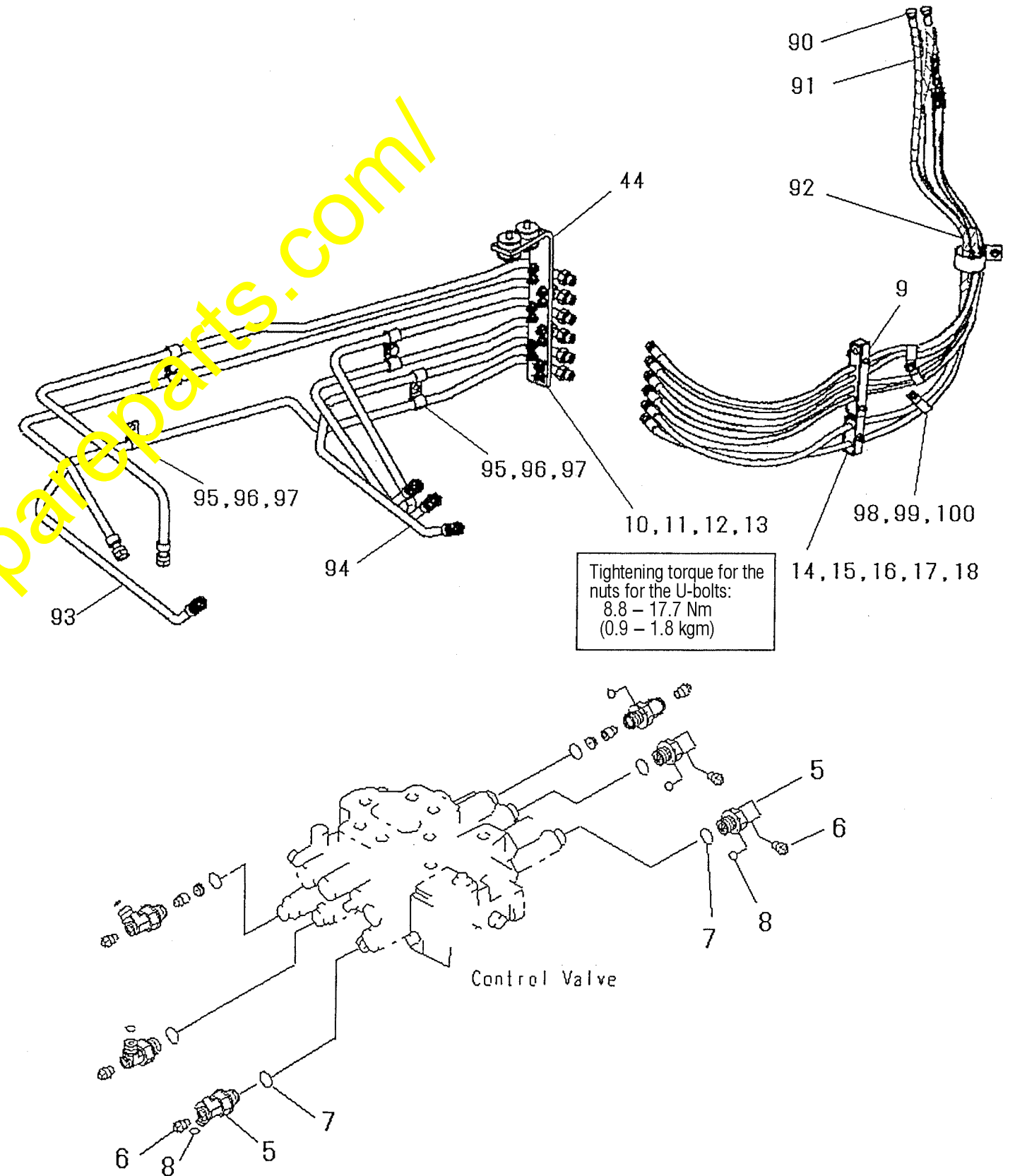
Since those parts which are not marked as above are being reused, be careful not to lose them after removal.



2. Install the numbered parts (item numbers in the list of parts) being shown in the drawing below.

Tightening torque for the bolts and nuts without designations should be as per the "Standard Tightening Torque" in the Shop Manual.

Tightening torque for the fittings of the taper seal hoses without designations should be as per the "Standard Tightening Torque" in the Shop Manual.



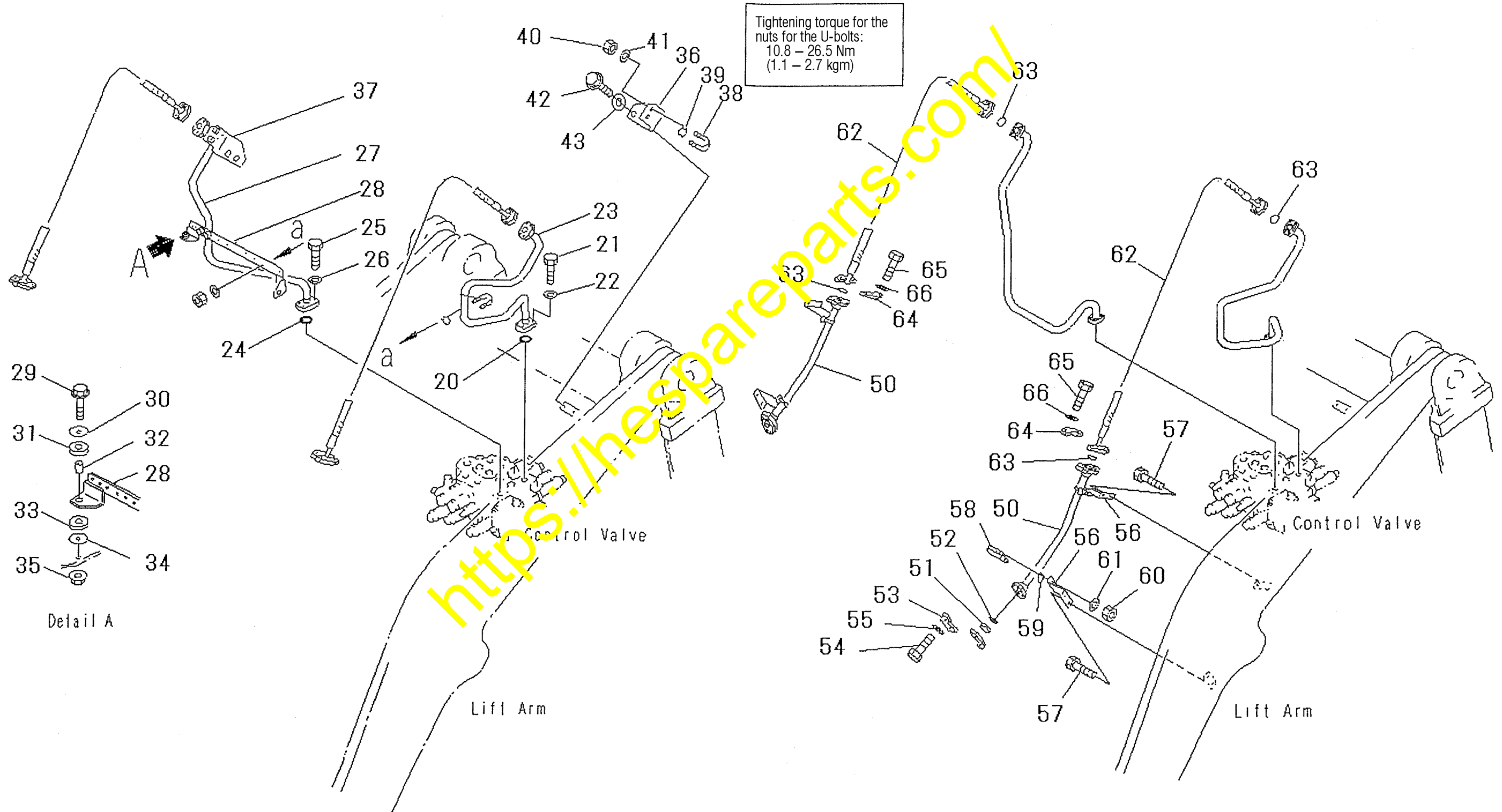
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4-3. Installation procedure for the boom pipings

1. Install the numbered parts (item numbers in the list of parts) being shown in the drawing below.

Tightening torque for the bolts and nuts without designations should be as per the "Standard Tightening Torque" in the Shop Manual.

Tightening torque for the fittings of the taper seal hoses without designations should be as per the "Standard Tightening Torque" in the Shop Manual.

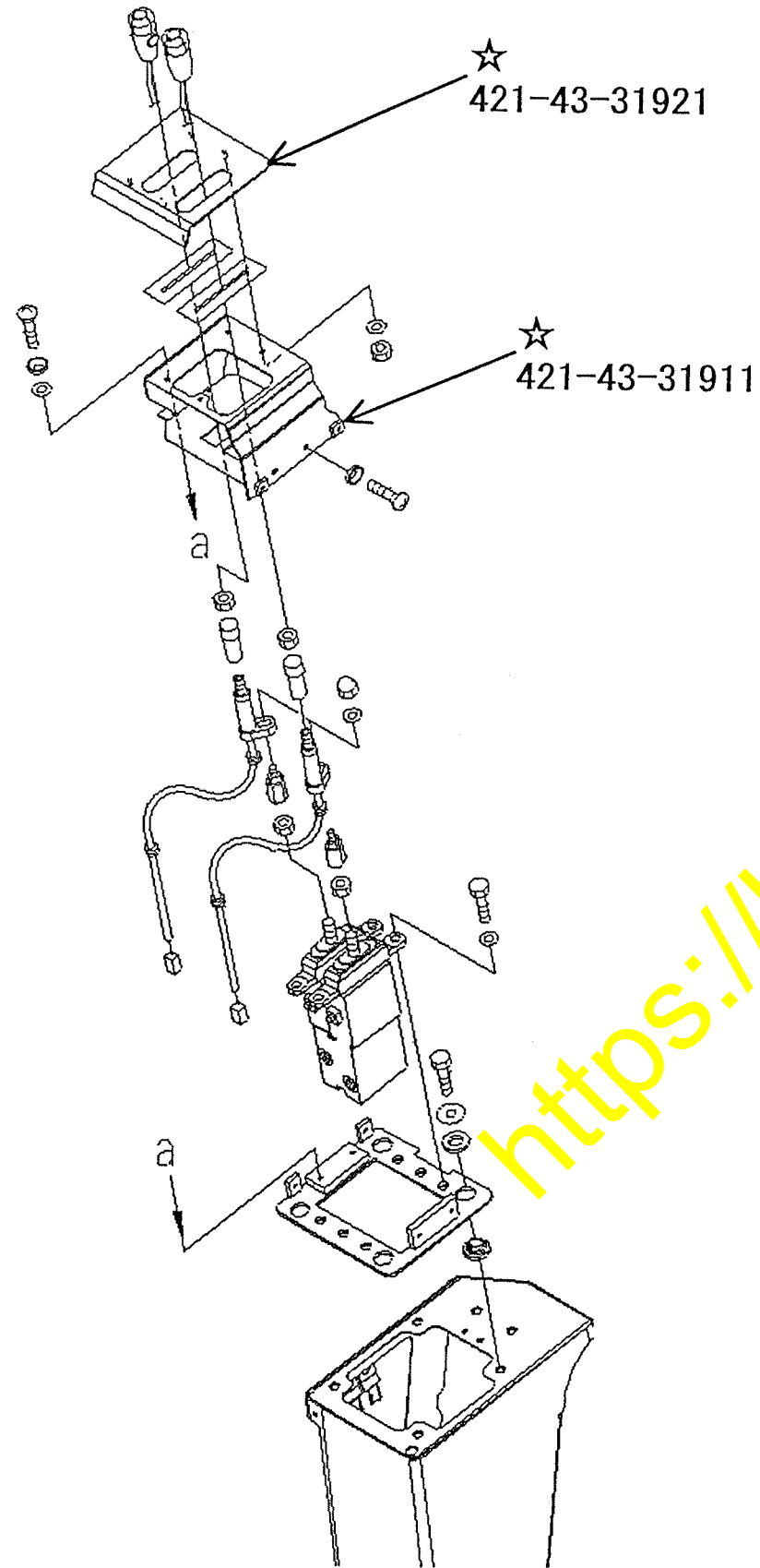


4-4. Installation procedure for the work equipment control levers

1. Remove the following parts.

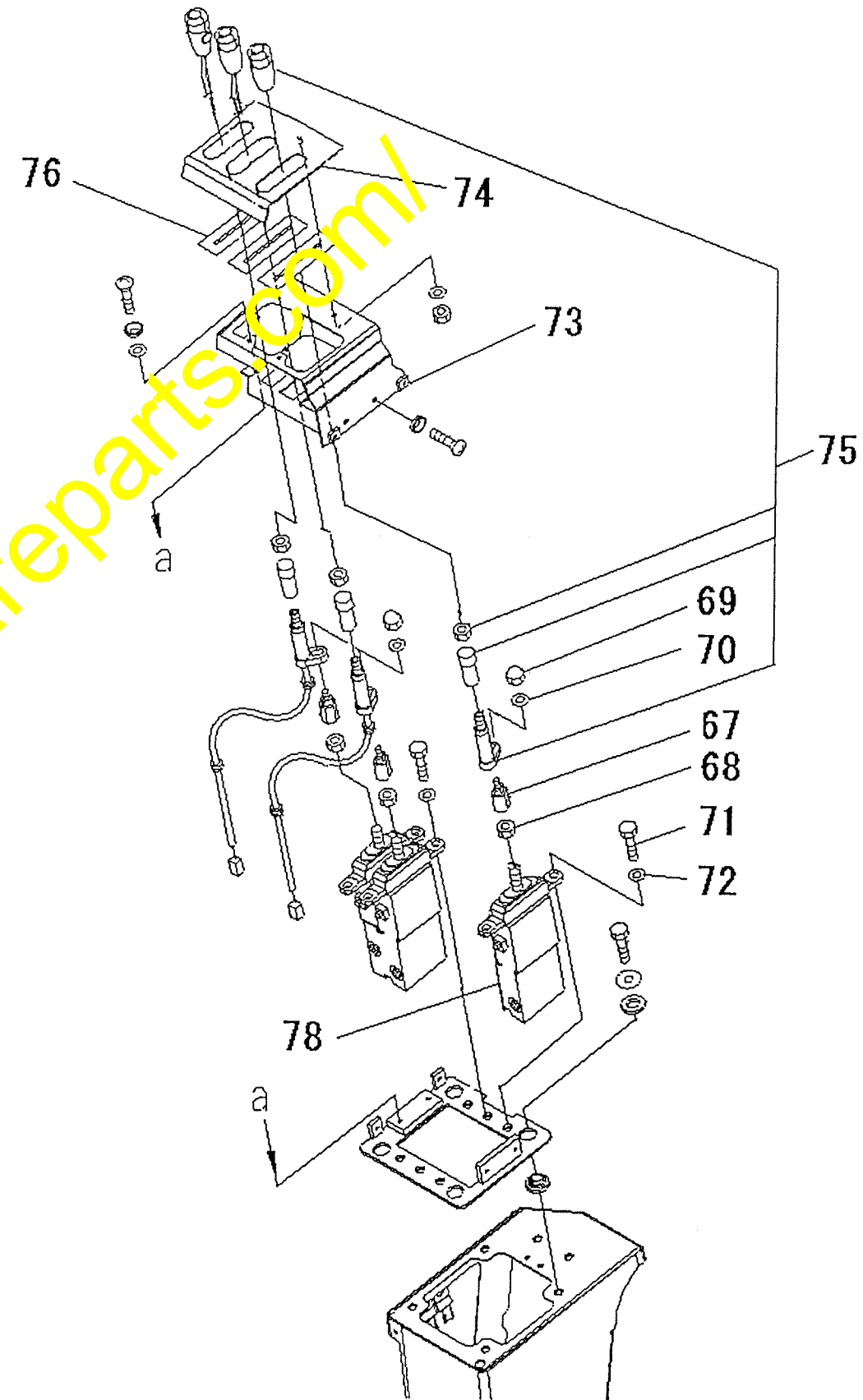
Parts marked ☆ are the replacing parts.

Since those parts which are not marked as above are being reused, be careful not to lose them after removal.



2. Install the numbered parts (item numbers in the list of parts) being shown in the drawing below.

Tightening torque for the bolts and nuts without designations should be as per the "Standard Tightening Torque" in the Shop Manual.

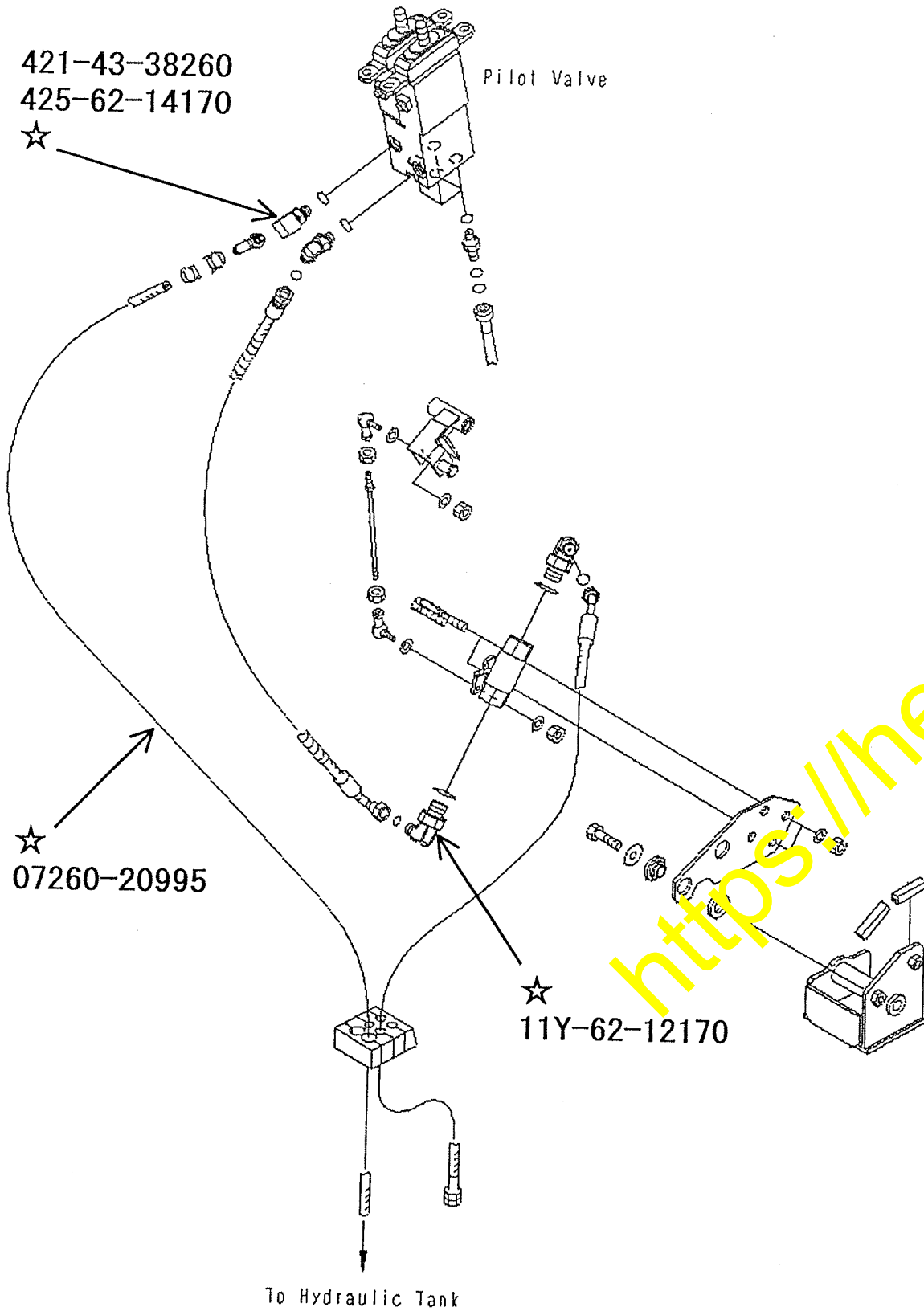


4-5. Installation procedure for the work equipment PPC pipings

1. Remove the following parts.

Parts marked ☆ are the replacing parts.

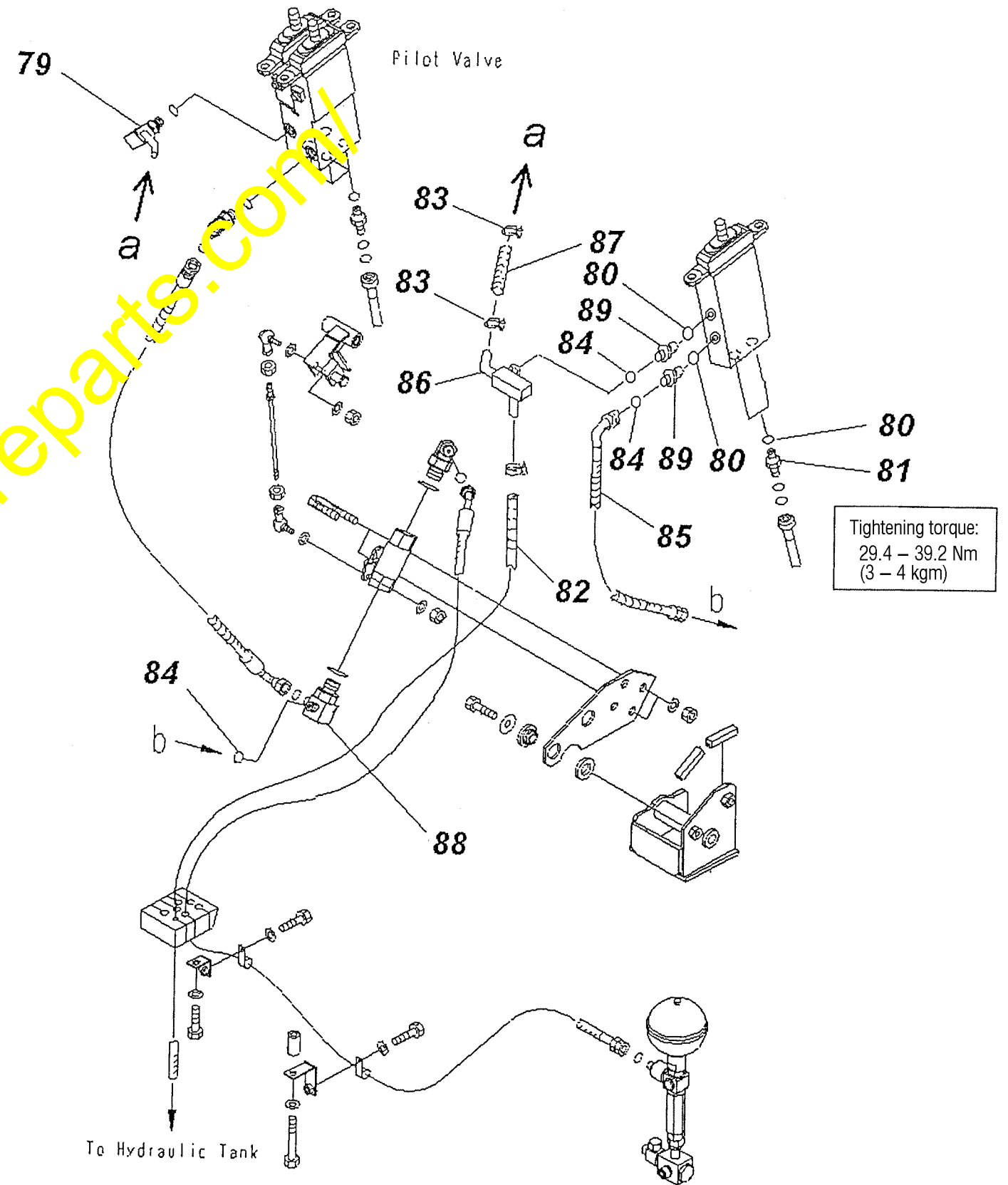
Since those parts which are not marked as above are being reused, be careful not to lose them after removal.



2. Install the numbered parts (item numbers in the list of parts) being shown in the drawing below.

Tightening torque for the bolts and nuts without designations should be as per the "Standard Tightening Torque" in the Shop Manual.

Tightening torque for the fittings of the taper seal hoses without designations should be as per the "Standard Tightening Torque" in the Shop Manual.

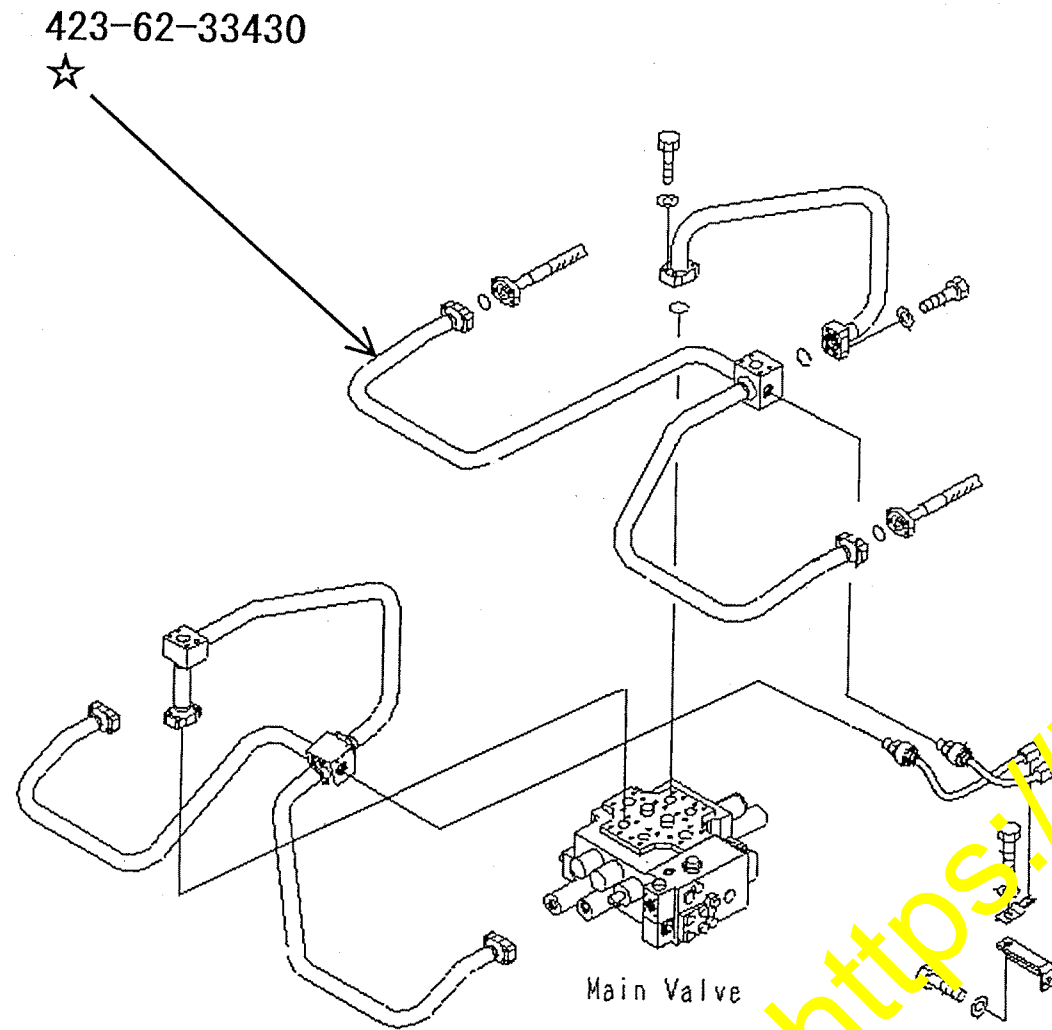


4-6. Installation procedure for the boom cylinder tubes

1. Remove the following parts.

Parts marked ☆ are the replacing parts.

Since those parts which are not marked as above are being reused, be careful not to lose them after removal.



2. Install the numbered part (item number in the list of parts) being shown in the drawing below.
Tightening torque for the bolts and nuts without designations should be as per the "Standard Tightening Torque" in the Shop Manual.

