INSTALLATION MANUAL

REF NO.	BA01008
DATE	May 2, 2001

SUBJECT: INTRODUCTION OF IMPROVED ECSS (OPTION)

PURPOSE: To introduce new ECSS (an option) (Local Installation procedures)

APPLICATION: WA600-3A Wheel Loaders, S/N 50001-up
WA600-3D Wheel Loaders, S/N 50001-up
WA600-3L Wheel Loaders S/N A52000-A52192

FAILURE CODE: DW5050

DESCRIPTION:

1-1. Introduction

This **Installation Manual** will introduce the new Electronic Controlled Suspension System (ECSS) which is very effective to suppress vibration and shocks being applied to the chassis when traveling on bumpy surfaces for optional use on the WA600-3 wheel loaders.

When a customer carrying the WA600-3 wheel loaders which are not yet equipped with the ECSS wants to install the ECSS, install this new ECSS following the procedures outlined in this **Installation Manual.**

1-2. Revised places:

30 places Ⓐ	Feb. 23, 2001 Added measures to avoid installation troubles.

1 place, Ⓐ

List of parts

Part No.	Part Name	Q'ty	Remarks
1959797610	Seat	6	
4185413151	Cushion	12	
4185413161	Cushion	6	
4185413220	Washer	12	
4210612380	Clip	Ⓐ~~2~~ 3	
4286415110	Collar	6	
0101081035	Bolt	8	
0101081060	Bolt	4	
0101081230	Bolt	10	
0101181220	Bolt	1	
0143501220	Bolt	1	
0143501025	Bolt	4	
0143501045	Bolt	2	
0143501220	Bolt	1	
0143501270	Bolt	6	
0143501280	Bolt	2	
0157101218	Seat	2	
0157320205	Seat	2	
0157320207	Seat	1	
0158011210	Nut	6	
0158401210	Nut	1	
0159701003	Nut	8	
0164331032	Washer	12	
0164331232	Washer	33	
0164351032	Washer	44	
0443453412	Clip	1	
07000F2060	O-ring	2	
07000F3024	O-ring	2	
07000F3032	O-ring	10	
07000F3035	O-ring	4	

Part No.	Part Name	Q'ty	Remarks
07000F3038	O-ring	3	
07000F3045	O-ring	5	
07000F3048	O-ring	7	
0700212034	O-ring	2	
0700212434	O-ring	11	
0708801006	Hose	1	
0708801007	Hose	1	
0709410518	Clamp	2	
0709410620	Clamp	2	
0709500524	Cushion	1	
0709500627	Cushion	1	
0709500628	Cushion	1	
0723510522	Elbow	1	
0723510628	Elbow	2	
0723510630	Elbow	2	
0723610522	Elbow	2	Refer to page 19 when the three-spool valve is installed.
0723610628	Elbow	3	
0728333442	Clip	2	
0728334354	Clip	2	
07371310[illegible]	Flange	16	
07371[illegible]	Bolt	32	
07371[illegible]	Bolt	4	
07627005A5	Hose	1	
07627005A3	Hose	1	Refer to page 19 when the three-spool valve is installed.
0762700605	Hose	1	
0762700606	Hose	2	
07627006A5	Hose	1	
07629006A6	Hose	1	
0803420519	Band	10	

4 places, ⚠A

Part No.	Part Name	Q'ty	Remarks
0805301512	Clip	1	
22W6213110	Nipple	1	
421S992390	Valve	1	
425S992530	Valve	2	
426S992542	Tube	1	Refer to page 17 when the load meter is installed.
426S992552	Tube	1	
426S992560	Hose	1	
426S992573	Hose	1	
426S992621	Plate	2	
426S992632	Plate	1	
⚠A 426S992663 ~~426S992662~~	Tube	1	
426S992672	Hose	1	
426S992683	Wiring harness	1	
426S992811	Tube	1	
426S992831	Tube	1	
426S992840	Plate	1	
426S992850	Tee	1	
426S992423	Tube	1	
4156413120	Washer	4	
4156413130	Cushion	2	
4194317930	Cushion	2	
⚠A 0805301512	Clip	1	
⚠A 9143501016	Bolt	1	
⚠A 23B6014470	Seat	1	For reworking
4216218560	Spacer	2	
2080619170	Clip	1	
20R6214330	Nipple	1	
4266223492	Plate	1	
4266223552	Tube	1	
4266223562	Tube	1	
426S992290	Plate	1	

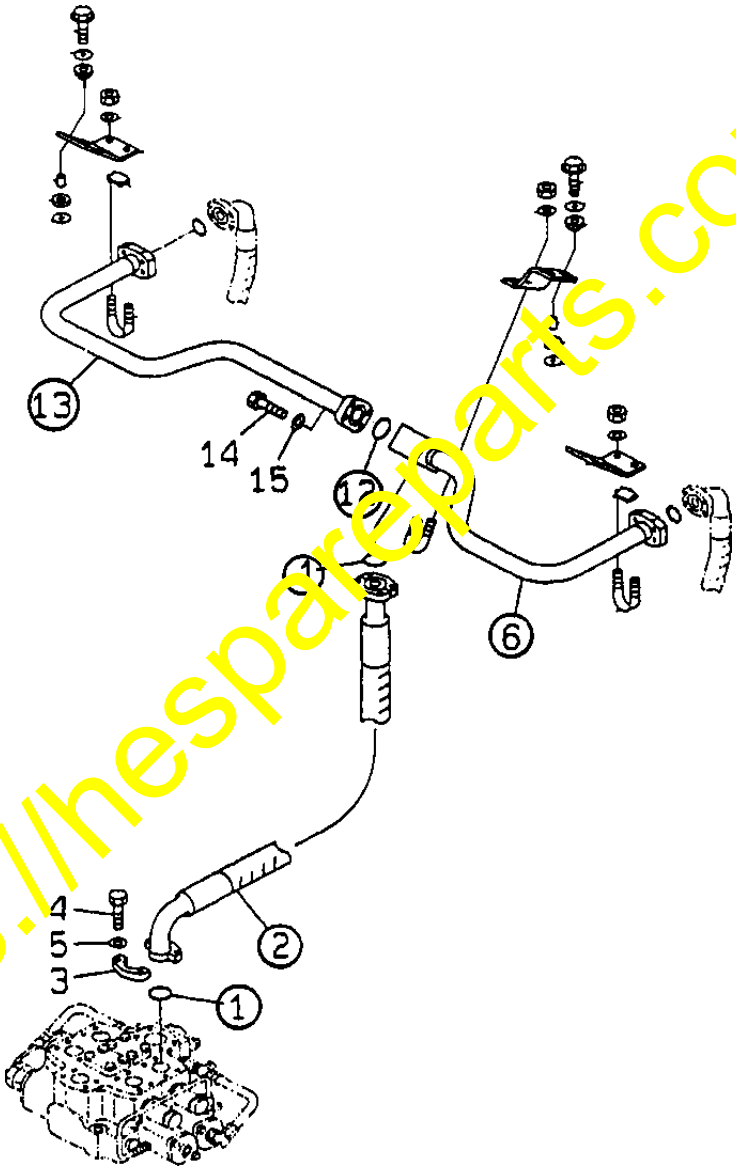
Part No.	Part Name	Q'ty	Remarks
426S992370	Plate	1	
426S992380	Hose	1	
426S992390	Hose	1	
426S992413	Tube	1	Refer to page 17 when the three-spool valve is installed.
426S992960	Tube	1	
426S992970	Tube	1	
426S992980	Elbow	1	
426S992990	Elbow	1	
0157322312	Seat	2	
426S992250	Bracket	2	
7213215140	Accumulator	1	
7213215150	Accumulator	1	
0965953000	Plate	2	
421S991351	U-bolt	2	
015901211	Nut	4	
426S992870	Bracket	2	
0101081235	Bolt	12	
426S992220	Bracket	1	
426S992230	Bracket	1	
7823431091	Controller	1	
426S992490	Controller	1	
0743500325	Bolt	4	
7823629063	Plate	1	
0704270108	Plug	2	

Remarks:

1) In case the three-spool valve is installed, order for 426-S99-2711 instead of 426-S99-2413 as instructed on page 17 of this document.
2) In case the three-spool valve is installed, order for 07230-20522 instead of 07236-10522 as instructed on page 19 of this document.
3) In case the three-spool valve is installed, order for 07629-00505 instead of 07627-005A3 as instructed on page 19 of this document.
4) In case the load meter is installed, order for 426-U94-2271 instead of 426-S99-2542 as instructed on page 17 of this document.

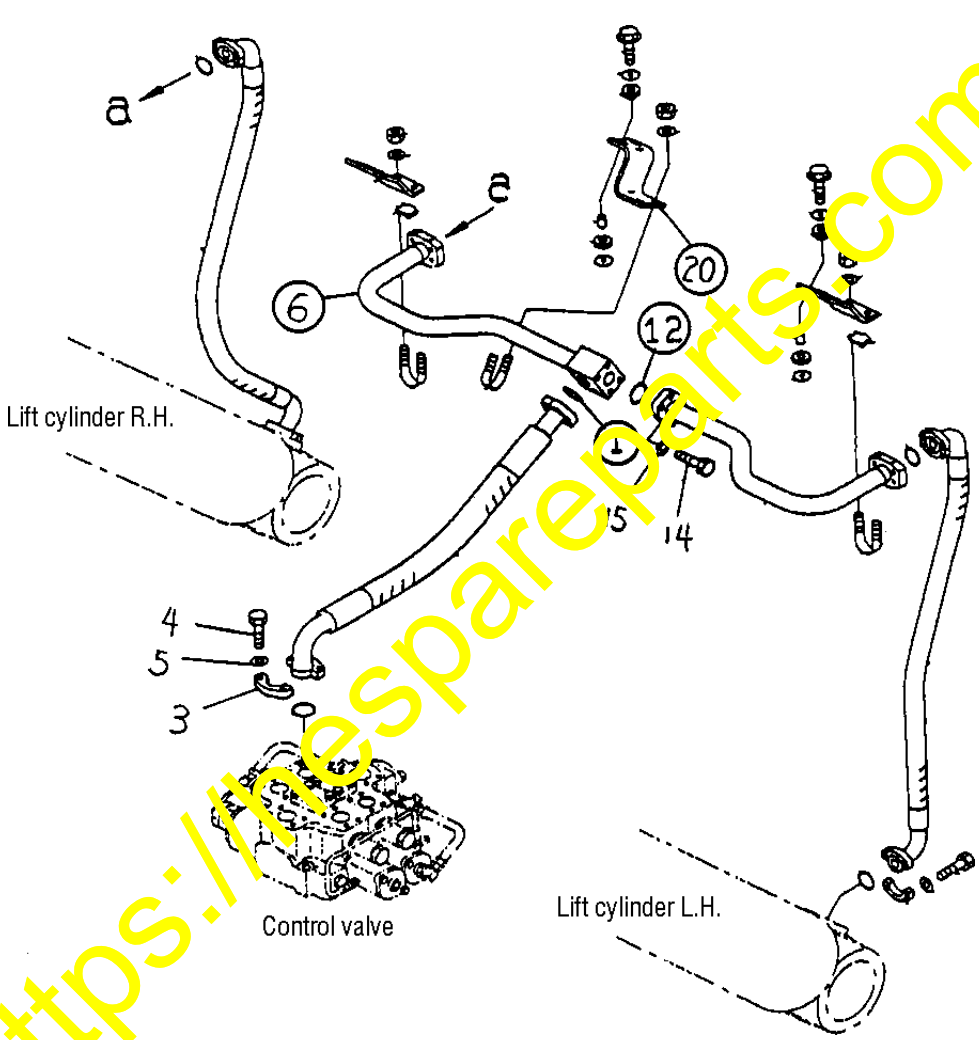
2. Disassembly procedures

1) Remove the parts with circled code numbers shown in the schematic diagram indicated below and dispose of them after removal. Other parts will be reused. Wash the parts to be reused and keep them free from dust and dirt.



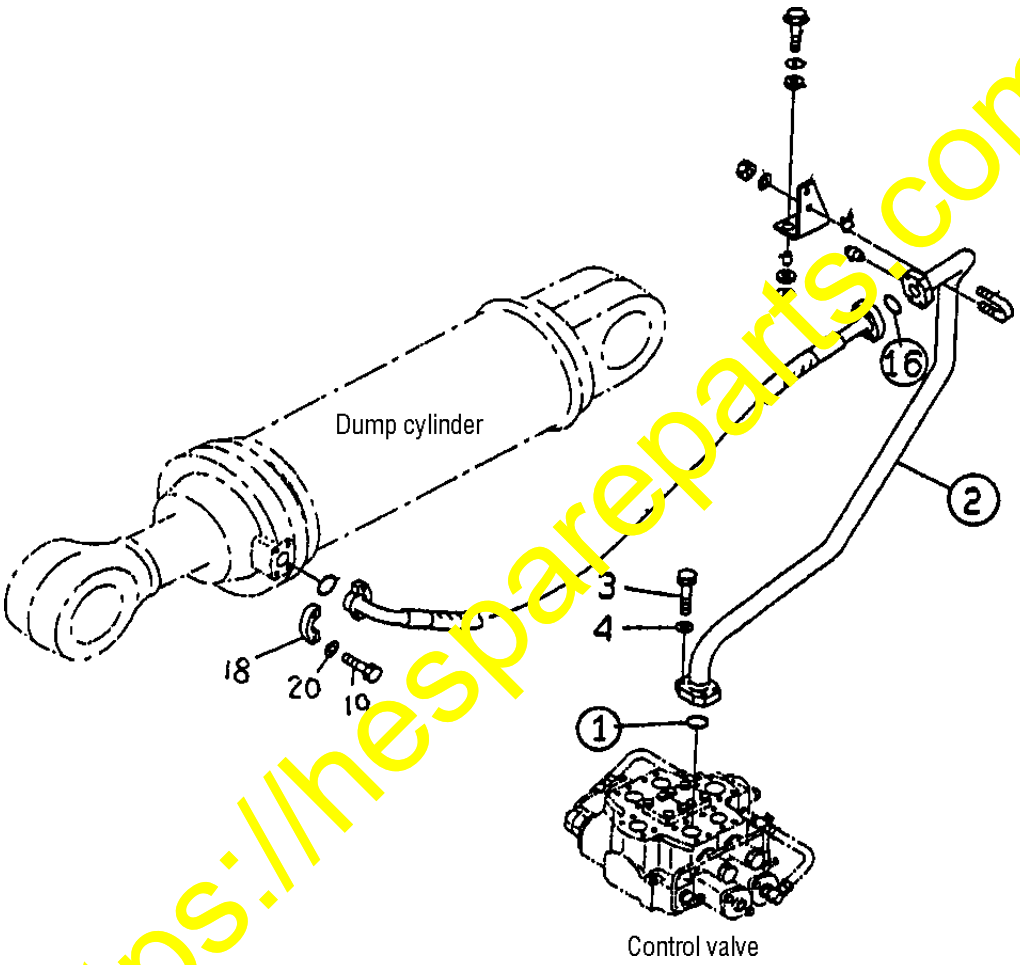
3	07371-31465 Flange (2)	14	01010-81240 Bolt (4)
4	07372-21240 Bolt (4)	15	01643-31232 Washer (4)
5	01643-51232 Washer (4)		

2) Remove the parts with circled code numbers shown in the schematic diagram indicated below and dispose of them after removal. Other parts will be reused. Wash the parts to be reused and keep them free from dust and dirt.



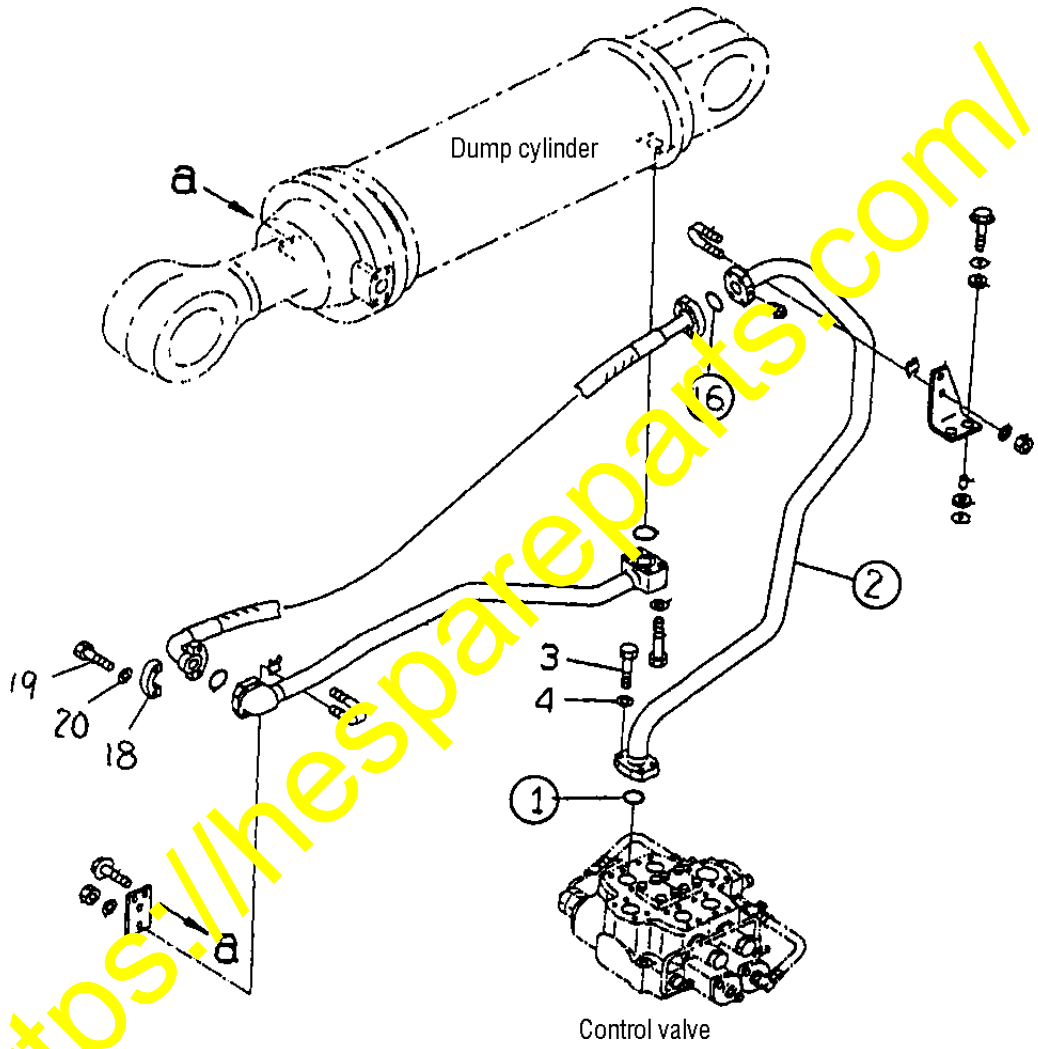
3	07371-31465 Flange (2)	14	01010-81240 Bolt (4)
4	07372-21240 Bolt (4)	15	01643-31232 Washer (4)
5	01643-51232 Washer (4)		

3) Remove the parts with circled code numbers shown in the schematic diagram indicated below and dispose of them after removal. Other parts will be reused. Wash the parts to be reused and keep them free from dust and dirt.



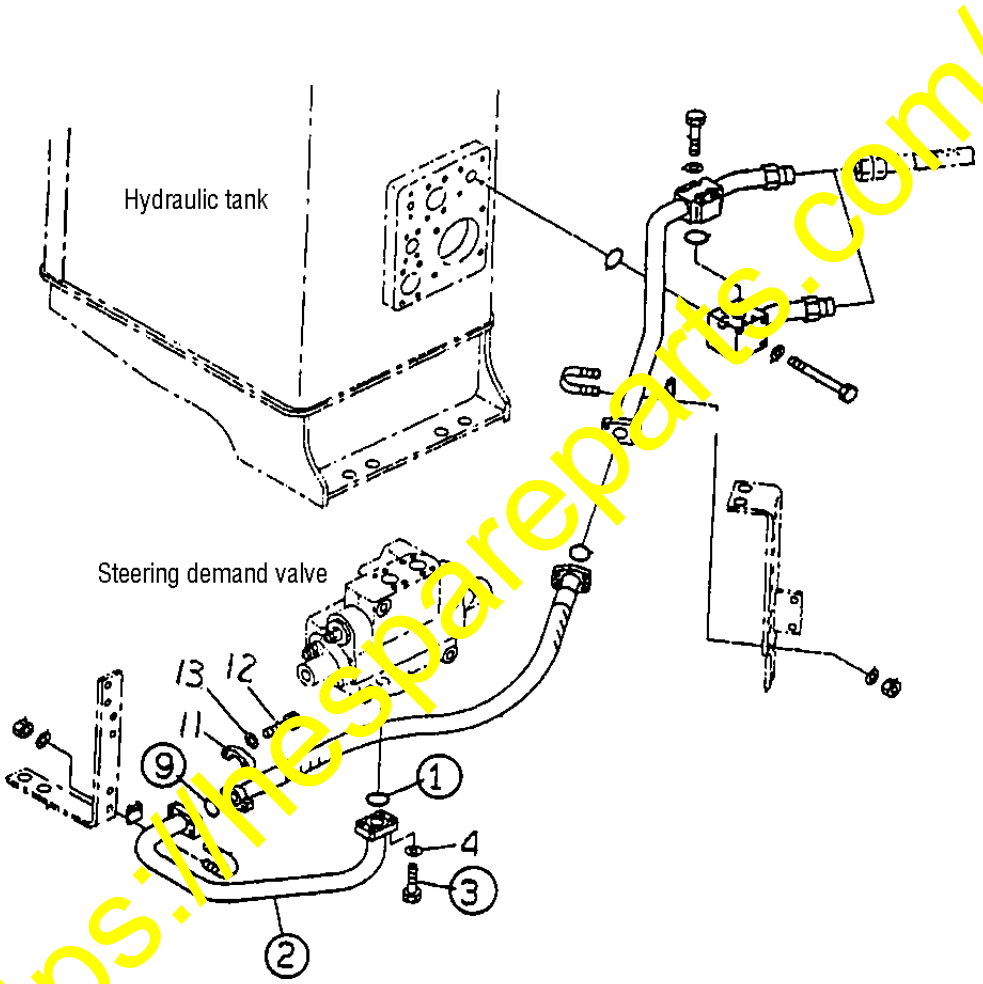
3	01010-81245 Bolt (4)	19	07372-21240 Bolt (2)
4	01643-51232 Washer (4)	20	01643-31232 Washer (2)
18	07371-31465 Flange (2)		

4) Remove the parts with circled code numbers shown in the schematic diagram indicated below and dispose of them after removal. Other parts will be reused. Wash the parts to be reused and keep them free from dust and dirt.



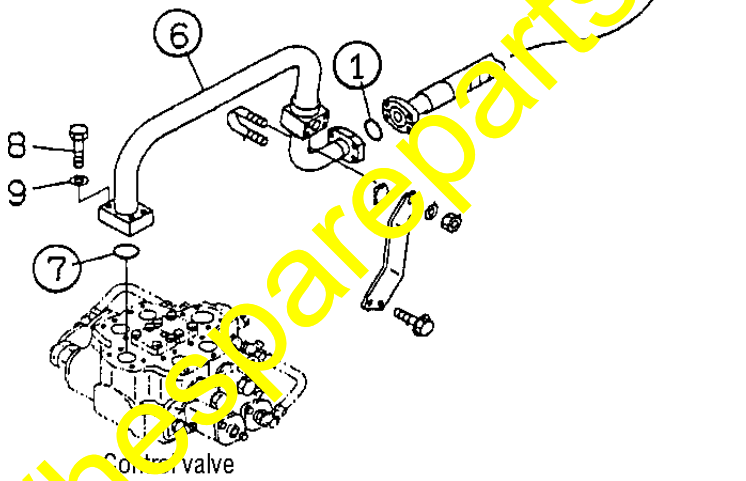
3	01010-81245 Bolt (4)	19	07372-21240 Bolt (2)
4	01643-51232 Washer (4)	20	01643-31232 Washer (2)
18	07371-31465 Flange (2)		

5) Remove the parts with circled code numbers shown in the schematic diagram indicated below and dispose of them after removal. Other parts will be reused. Wash the parts to be reused and keep them free from dust and dirt.



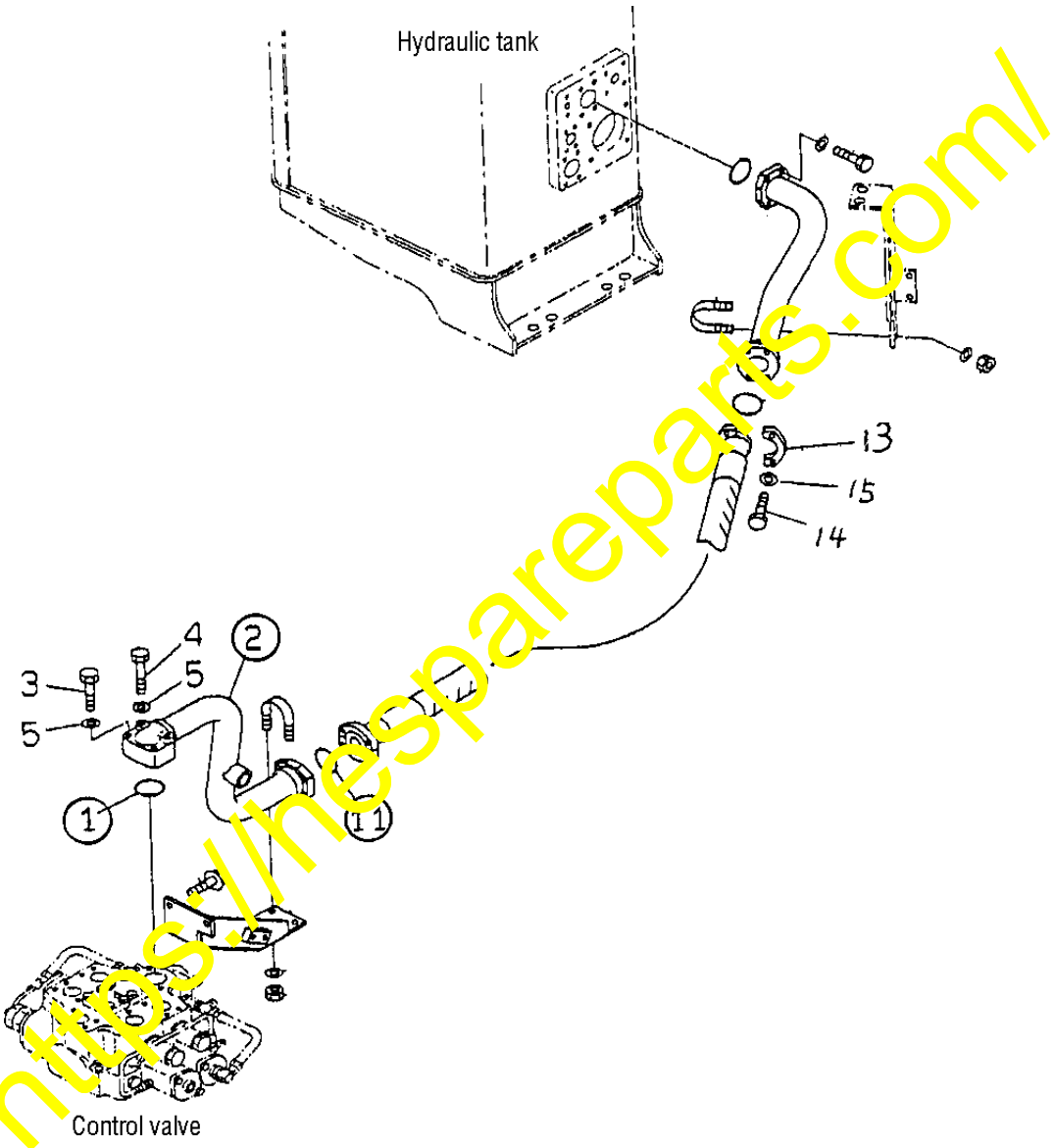
11	07371-31049 Flange (2)	13	01643-31032 Washer (2)
12	07372-21035 Bolt (2)	4	01643-31032 Washer (4)

6) Remove the parts with circled code numbers shown in the schematic diagram indicated below and dispose of them after removal. Other parts will be reused. Wash the parts to be reused and keep them free from dust and dirt.



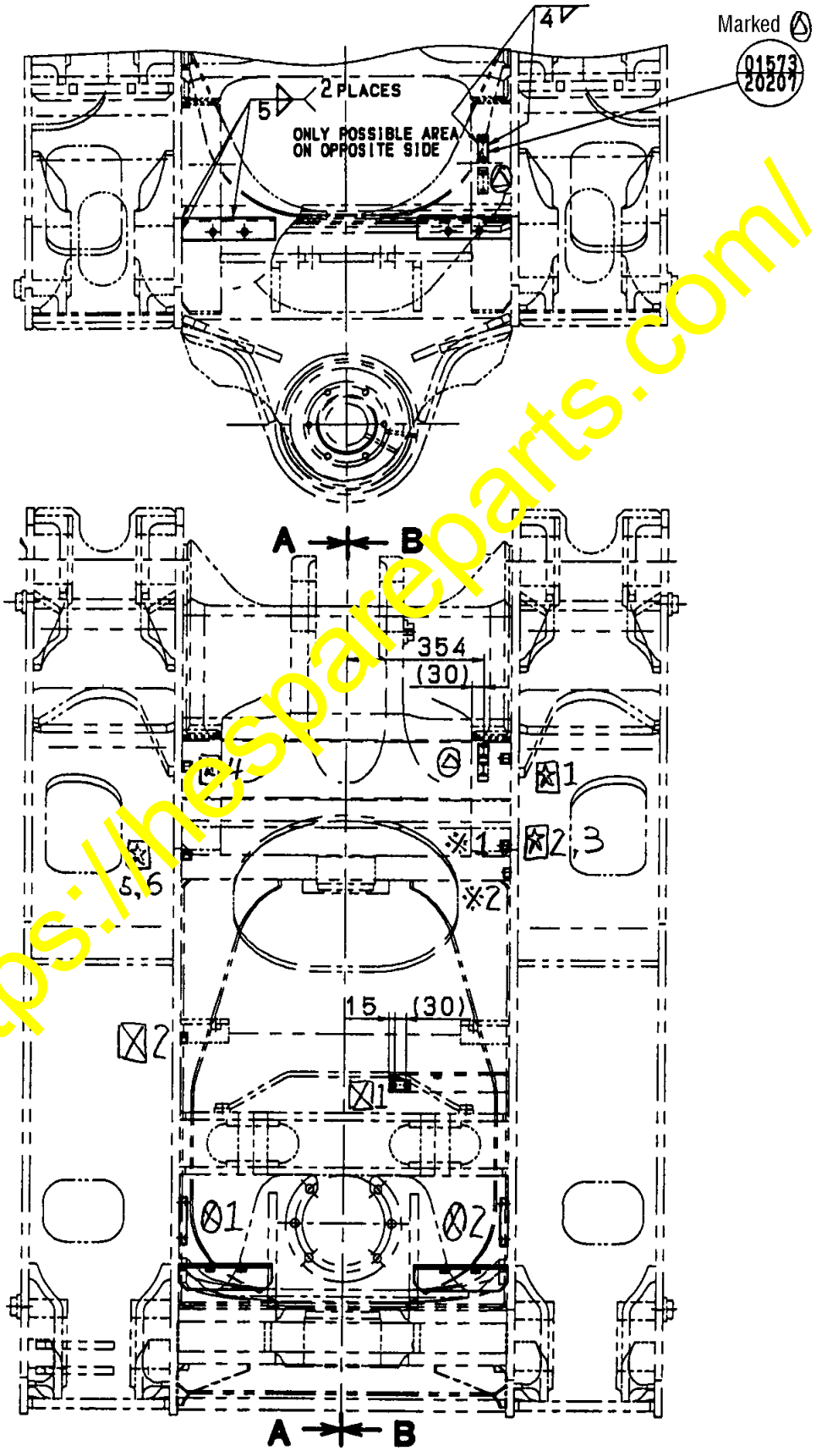
8	07372-21255 Bolt (4)	9	01643-51232 Washer (4)

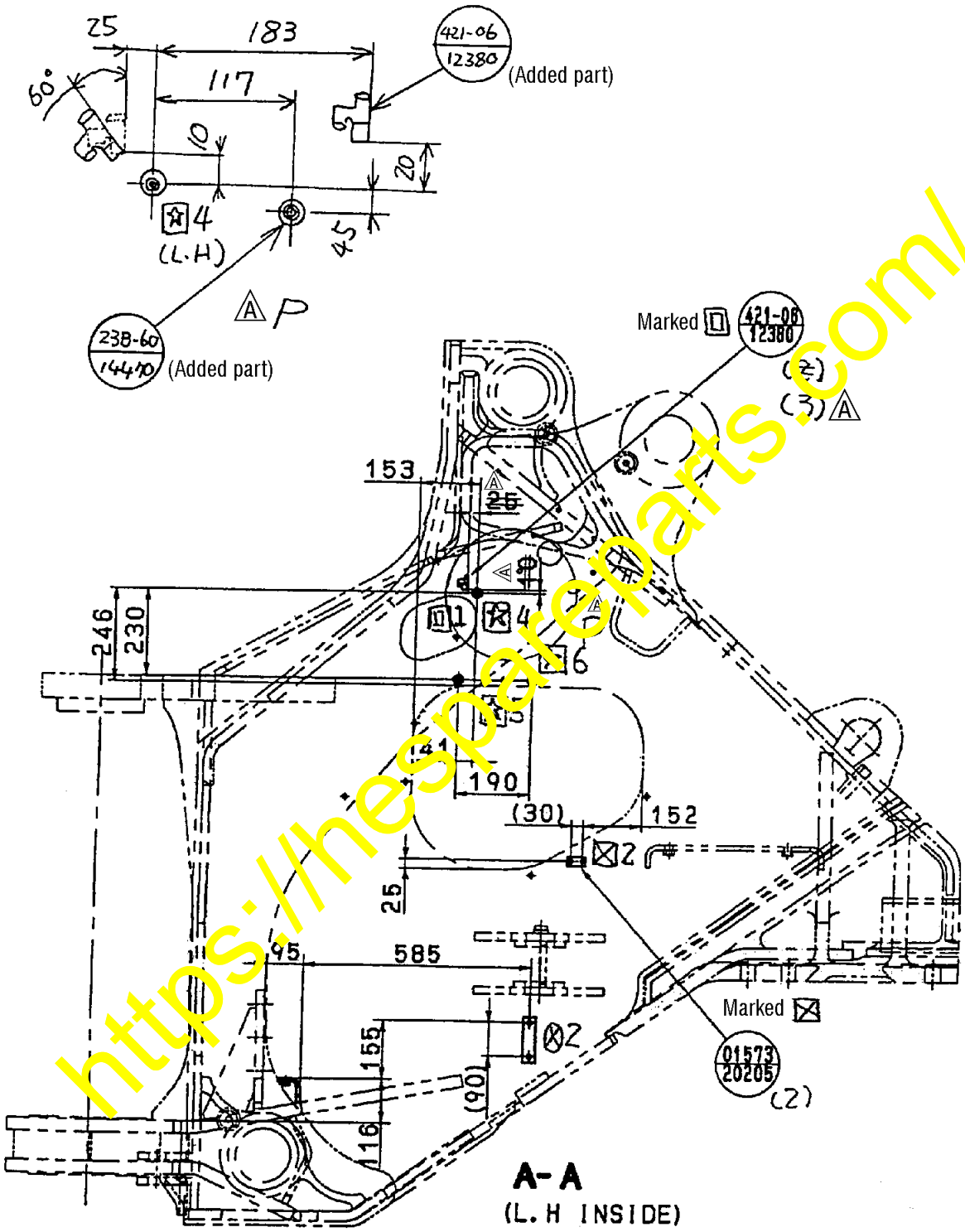
7) Remove the parts with circled code numbers shown in the schematic diagram indicated below and dispose of them after removal. Other parts will be reused. Wash the parts to be reused and keep them free from dust and dirt.

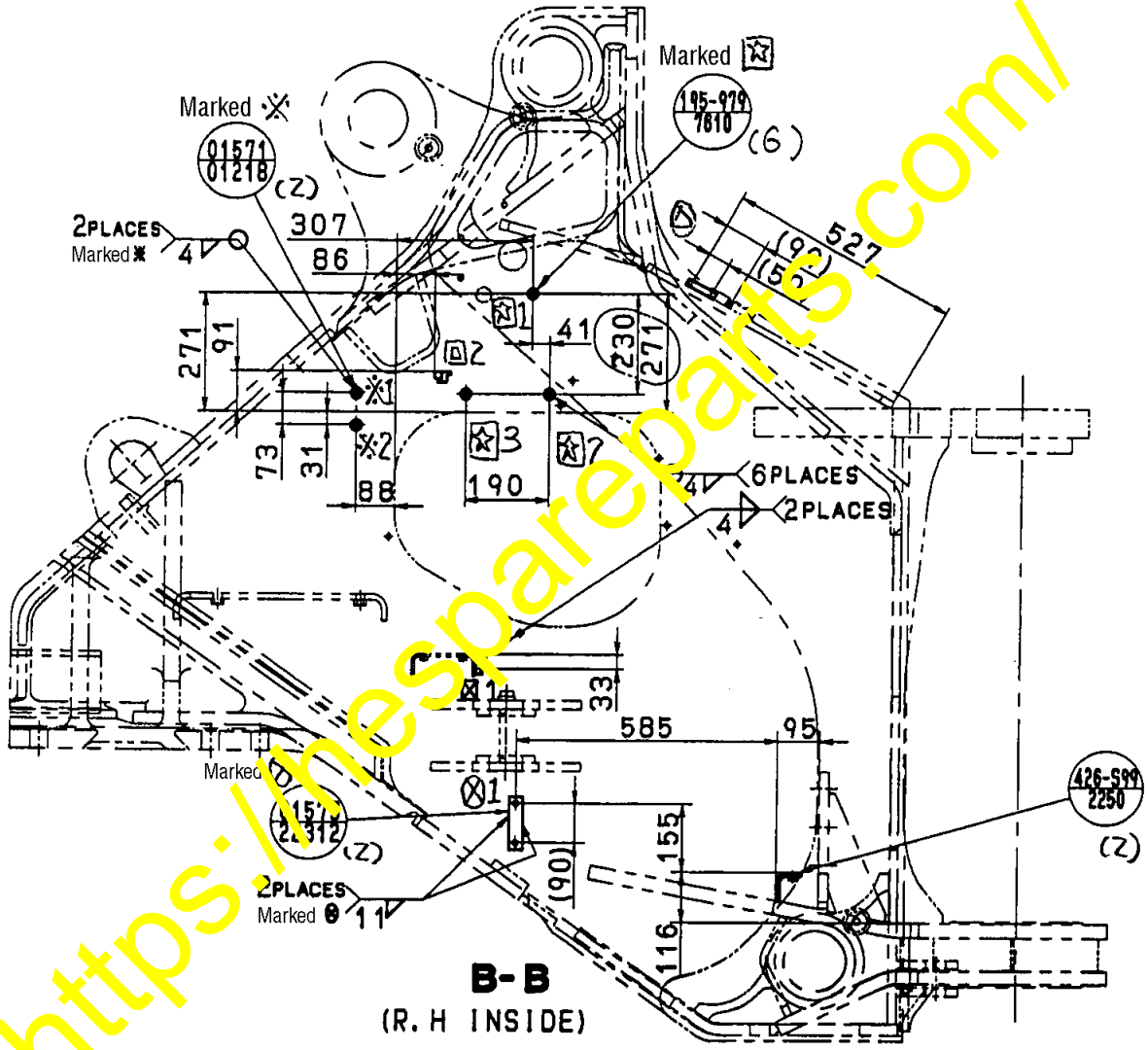


3	01010-81270 Bolt (4)	13	07371-32076 Flange (2)
4	01010-81285 Bolt (4)	14	07372-21240 Bolt (4)
5	01643-51232 Washer (4)	15	01643-51232 Washer (4)

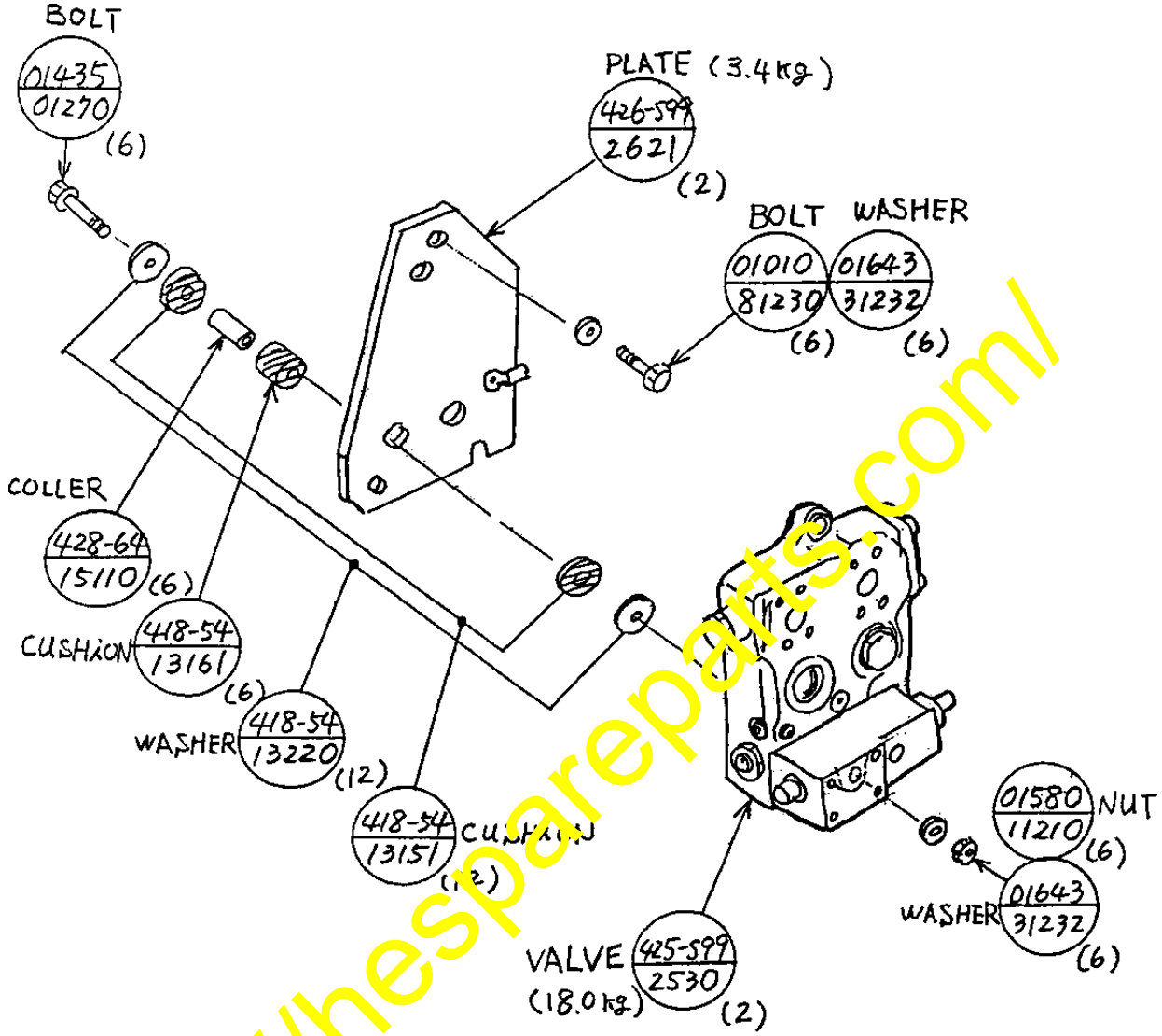
3. Reworking with the frame
   1) Weld the seat and plate to the front frame.
   2) Paint the reworked section. (Paint color: Komatsu Yellow)

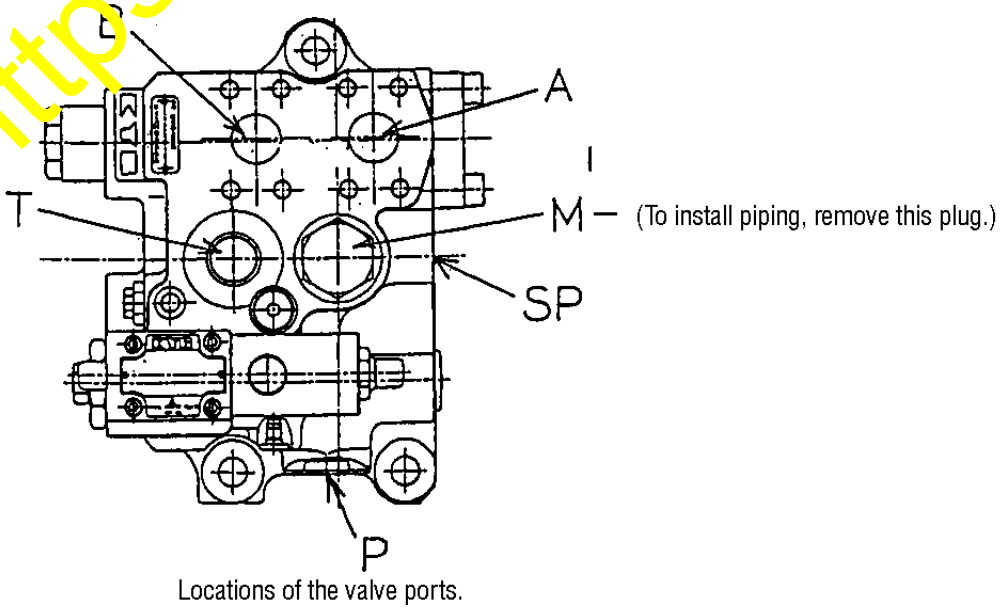




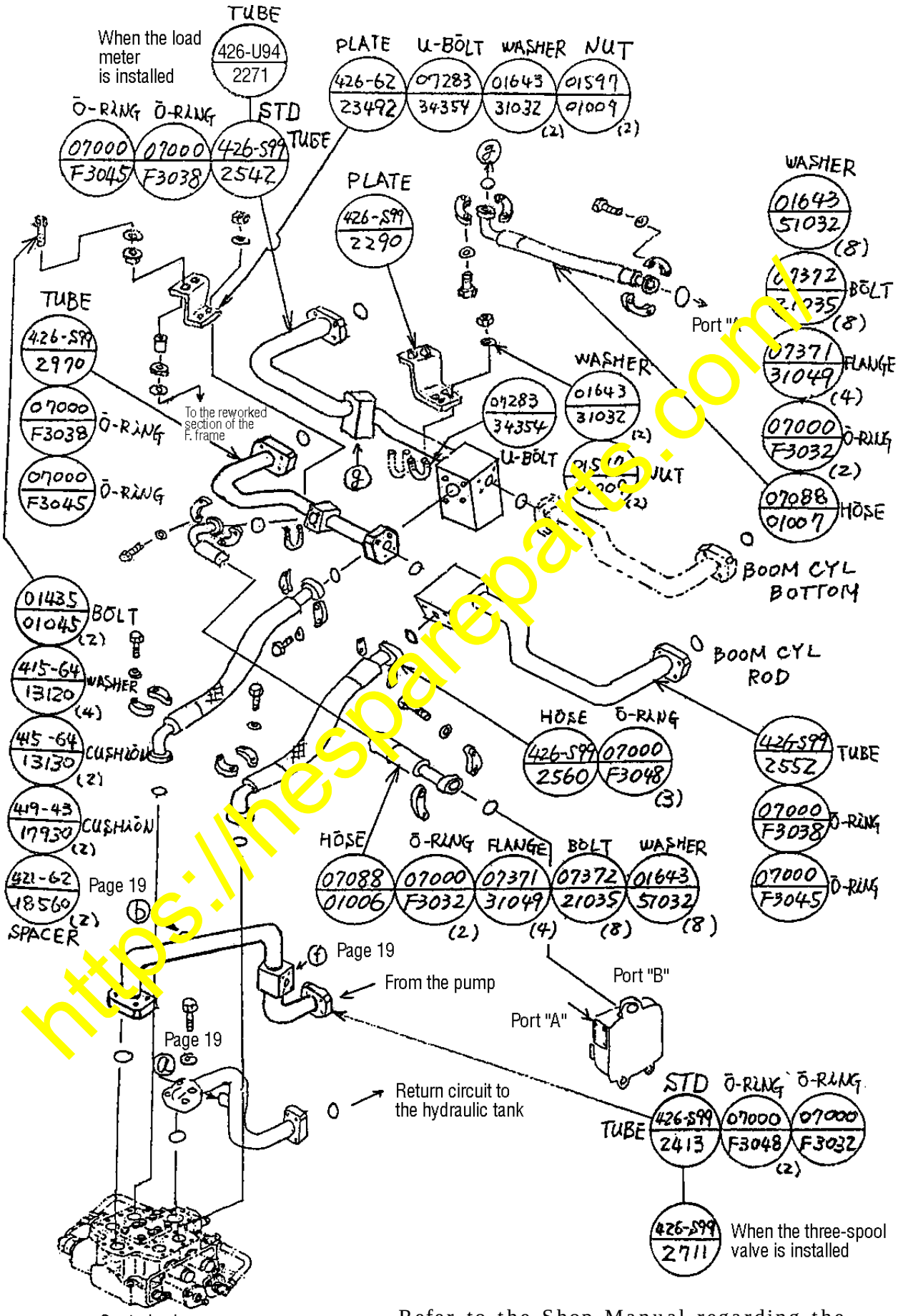


4. Installing the valve pipings
   Refer to the Shop Manual regarding the specified tightening torque ranges.

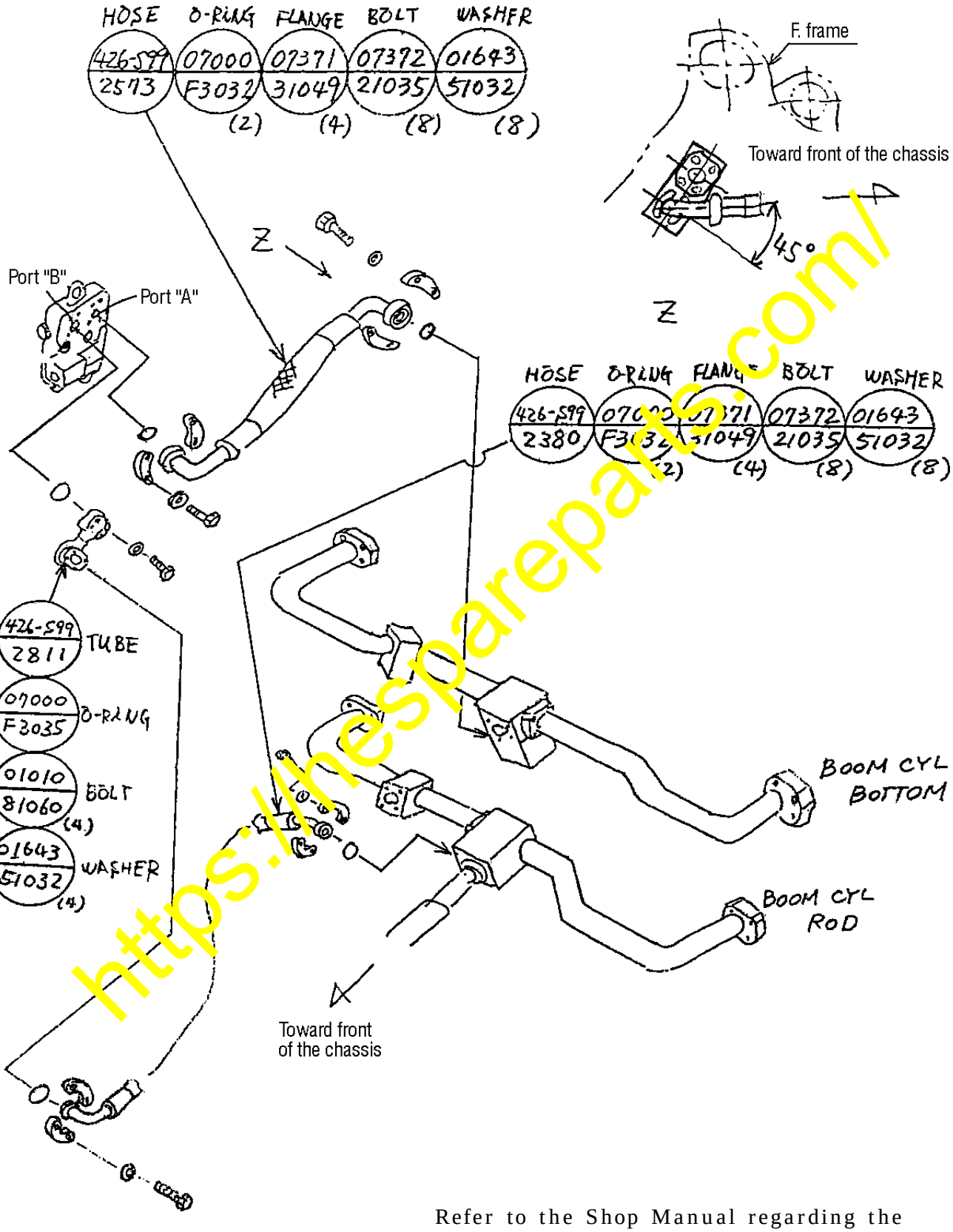




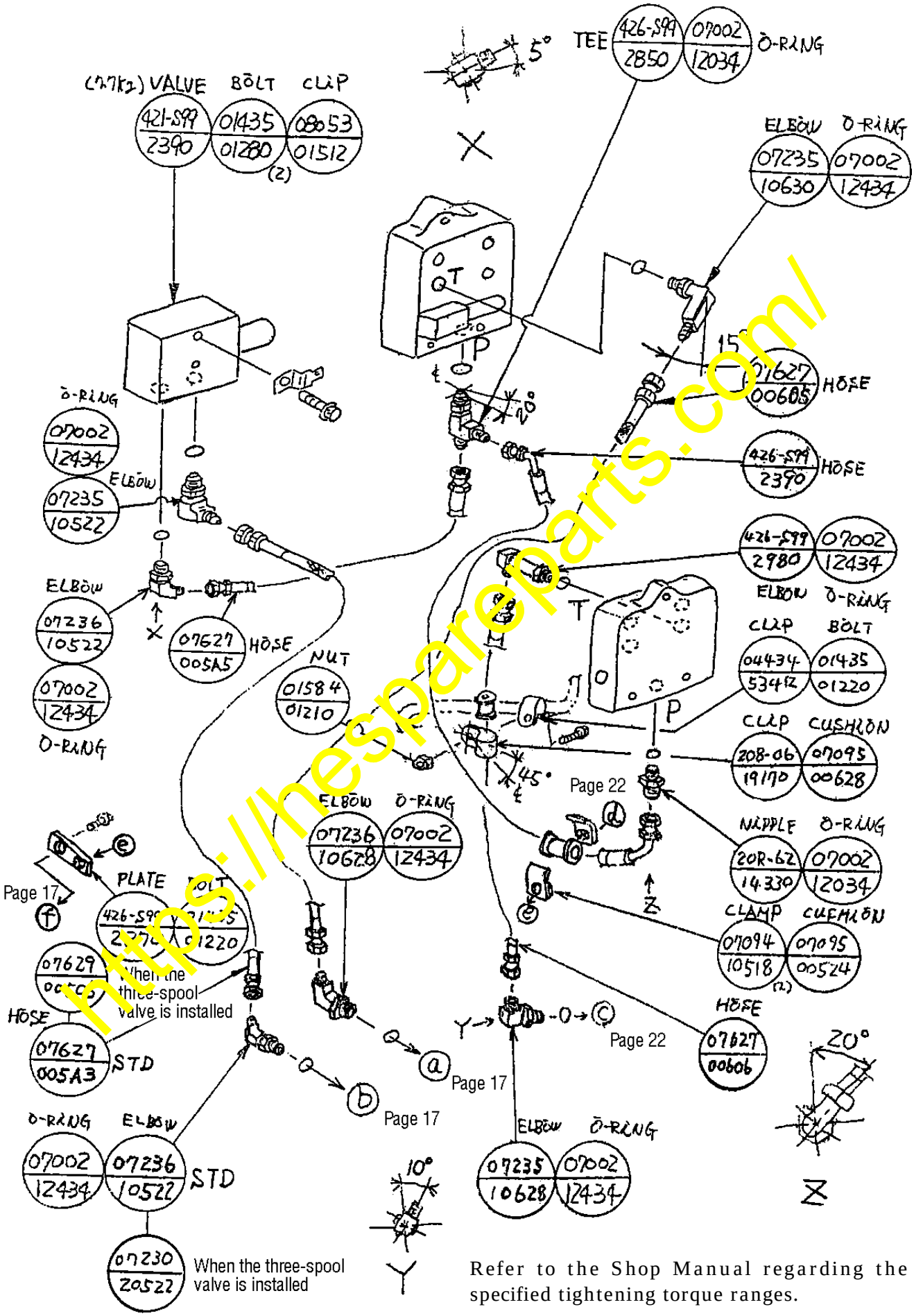
Locations of the valve ports.



Refer to the Shop Manual regarding the specified tightening torque ranges.



Refer to the Shop Manual regarding the specified tightening torque ranges.



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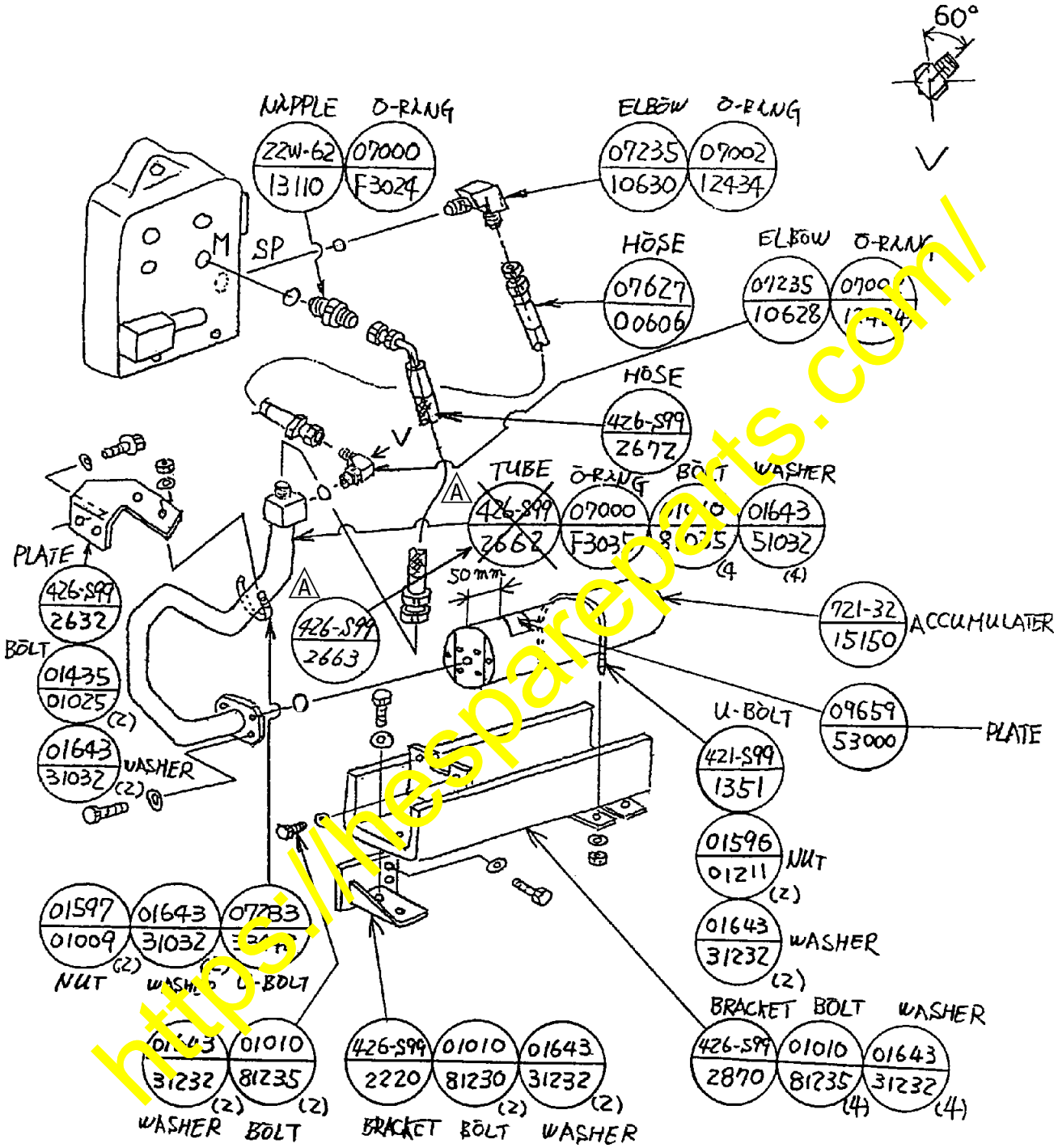
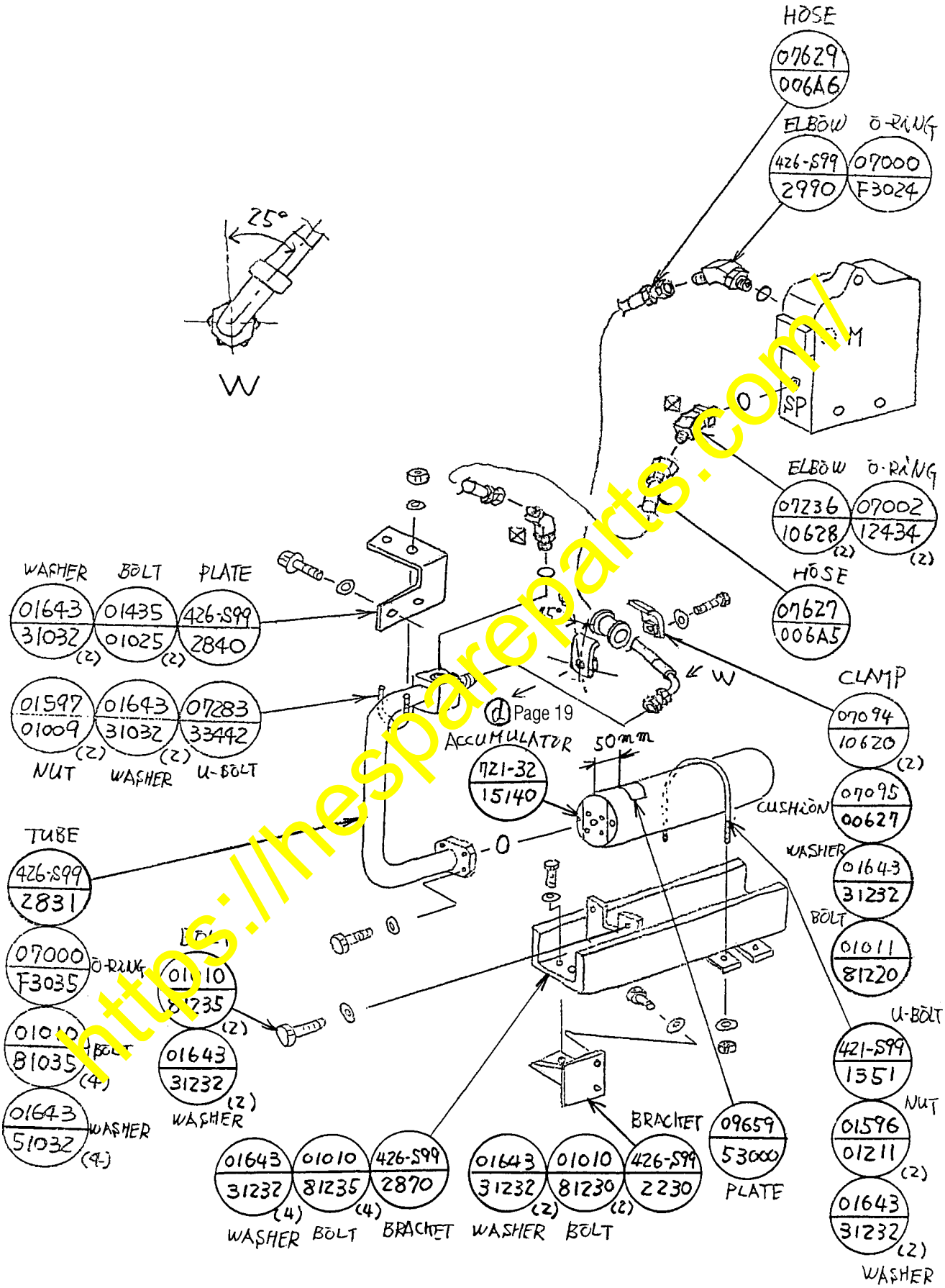
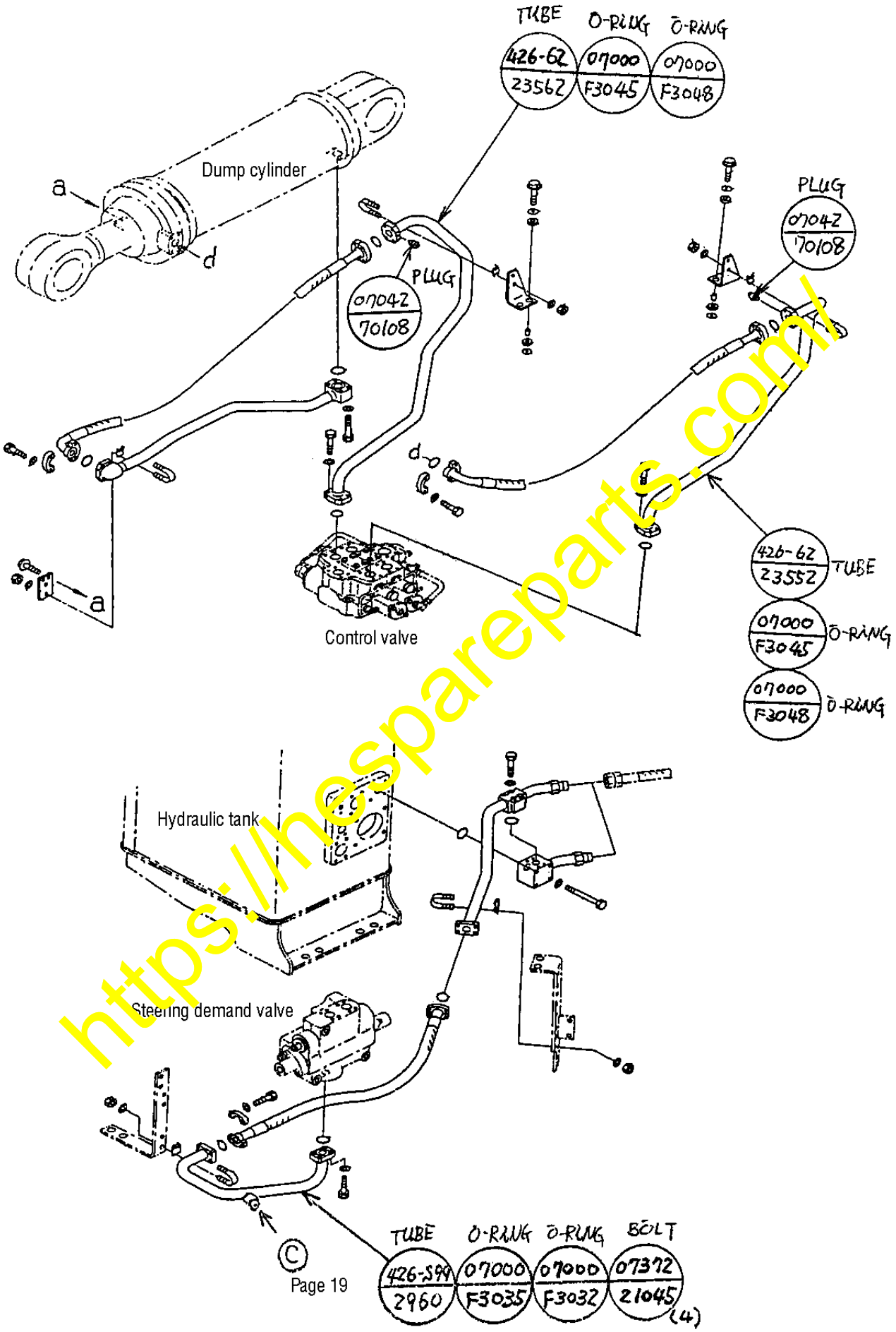


Refer to the Shop Manual regarding the specified tightening torque ranges.

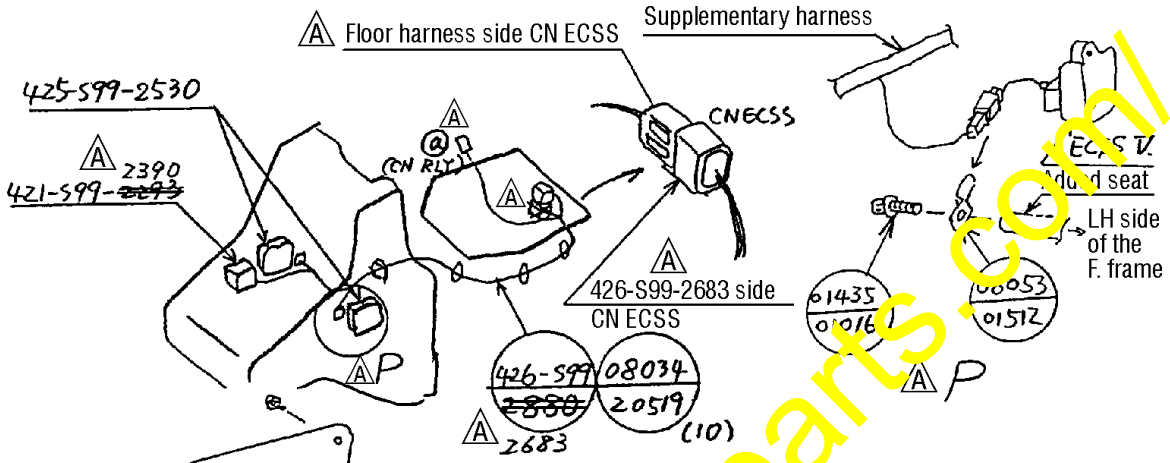


Refer to the Shop Manual regarding the specified tightening torque ranges.



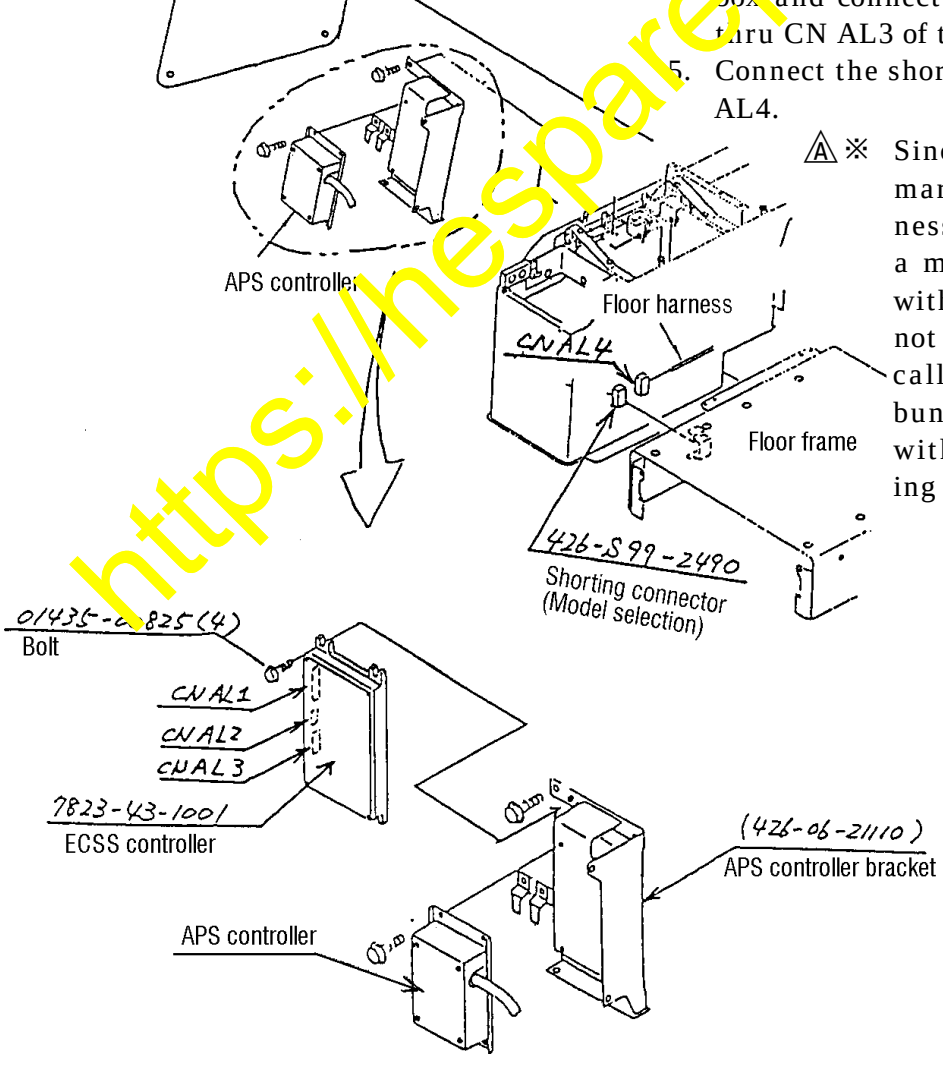
Refer to the Shop Manual regarding the specified tightening torque ranges.

5. Connecting the ECSS harness Ⓐ2683
   1. Connect the connectors CN SOL1 and CN SOL2 of the wire harness 426-S99-~~2880~~ to the main valve of the ECSS and to the charge valve of the ECSS.
      SOL1 ..... ECSS Main control valve (425-S99-2530)
      SOL2 ..... ECSS Charge control valve (421-S99-2390)
   2. Lead the new wire harness 426-S99-~~2880~~Ⓐ2683 along the existing front frame harness and bundle them together using the straps 08034-20519.Ⓐ2683
   3. Connect the connector CN ECSS of the wire harness 426-S99-~~2880~~ to the connector of the same "CN number" located underneath the cab floor.



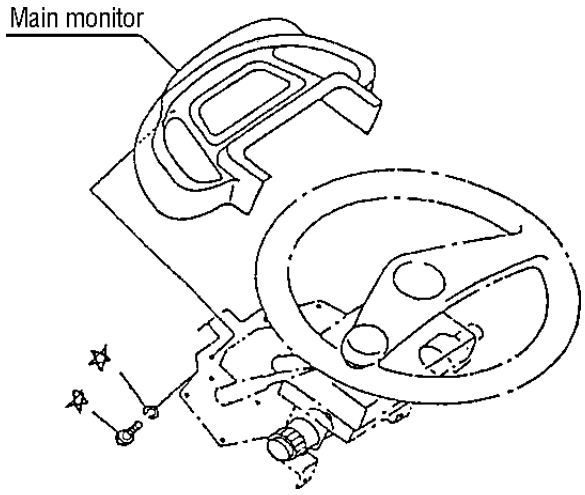
4. Install the controller into the RH console box and connect the connectors CN AL1 thru CN AL3 of the floor harness.
5. Connect the shorting connector to the CN AL4.

Ⓐ※ Since the branched harness marked a is ⓐ branched harness to use when modifying a machine already equipped with the ECSS and as it will not be used for machines locally installing the ECSS, bundle the branched harness with the trunk harness using straps.



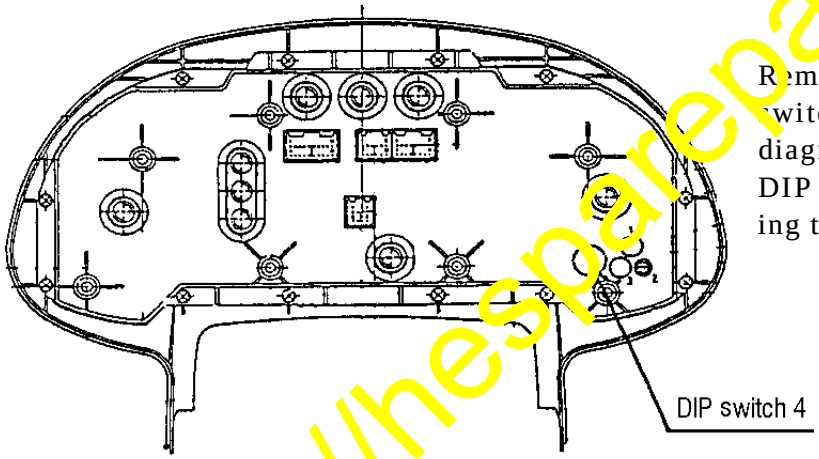
6. Main monitor adjustment procedures

1) Remove the main monitor from the chassis.



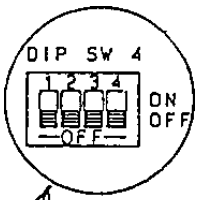
Remove the cover of the steering support and loosen the set screws marked ☆ shown in the illustration given at left to remove the main monitor.

2) Adjusting the DIP switch



Remove the rubber cap for the DIP switch 4 shown in the schematic diagram given at left to adjust the DIP switch located inside according to the instruction given below.

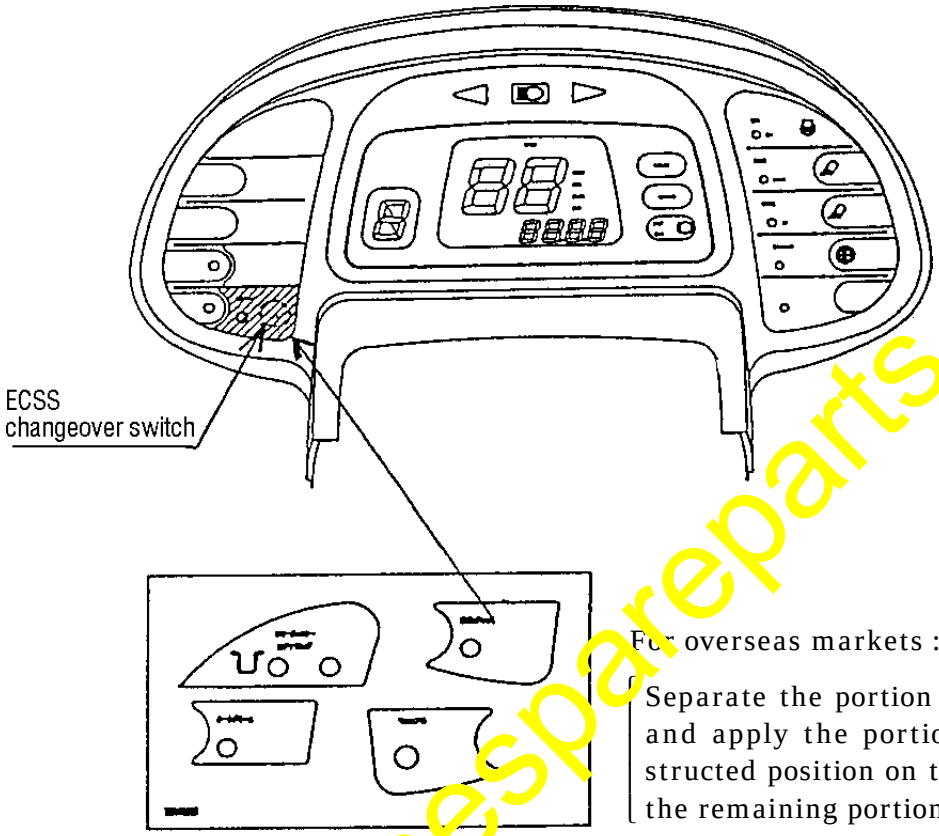
SW No. / SW status	DIP SW 4			
	1	2	3	4
OFF	Work mode SW: valid	Tire slip SW: valid	SAS SW: valid	Low idle SW: valid
ON	Work mode SW: invalid	Tire slip SW: invalid	SAS SW: invalid	Low idle SW: invalid



When the cap is removed, you will see a switch as shown above. Set the unit switch "3" to the "OFF" position.

3) Installing the main monitor
When the adjustment according to the above Paragraph 2) has been finished, install the main monitor back to its original position on the chassis in the reversed procedures to the removal procedures according to the above Paragraph 1).

4) Apply decal to the main monitor.

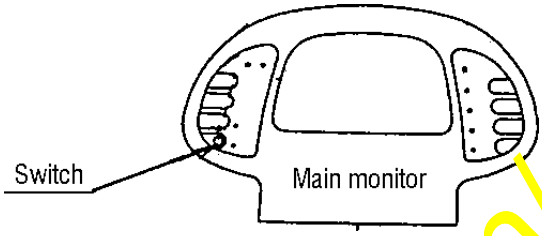


For overseas markets : 7823-62-9063 (ECSS)

Separate the portion shown at left of the decal and apply the portion of the decal to the instructed position on the main monitor. Discard the remaining portions of the decal.

7. Operation and adjustment

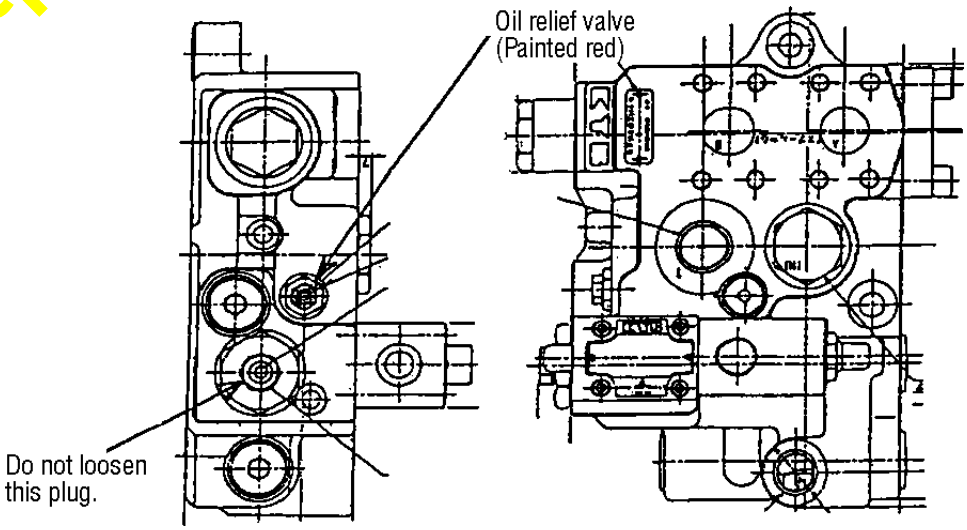
1) The ECSS switch is located at the lower left section of the main monitor.
When the lamp beside the switch is not lit, the ECSS is not working.
The ECSS is activated when the pilot lamp is lit, when the travel speed is 5 km/h or more and, at the same time, when the current speed stage is at the 2nd speed or higher.



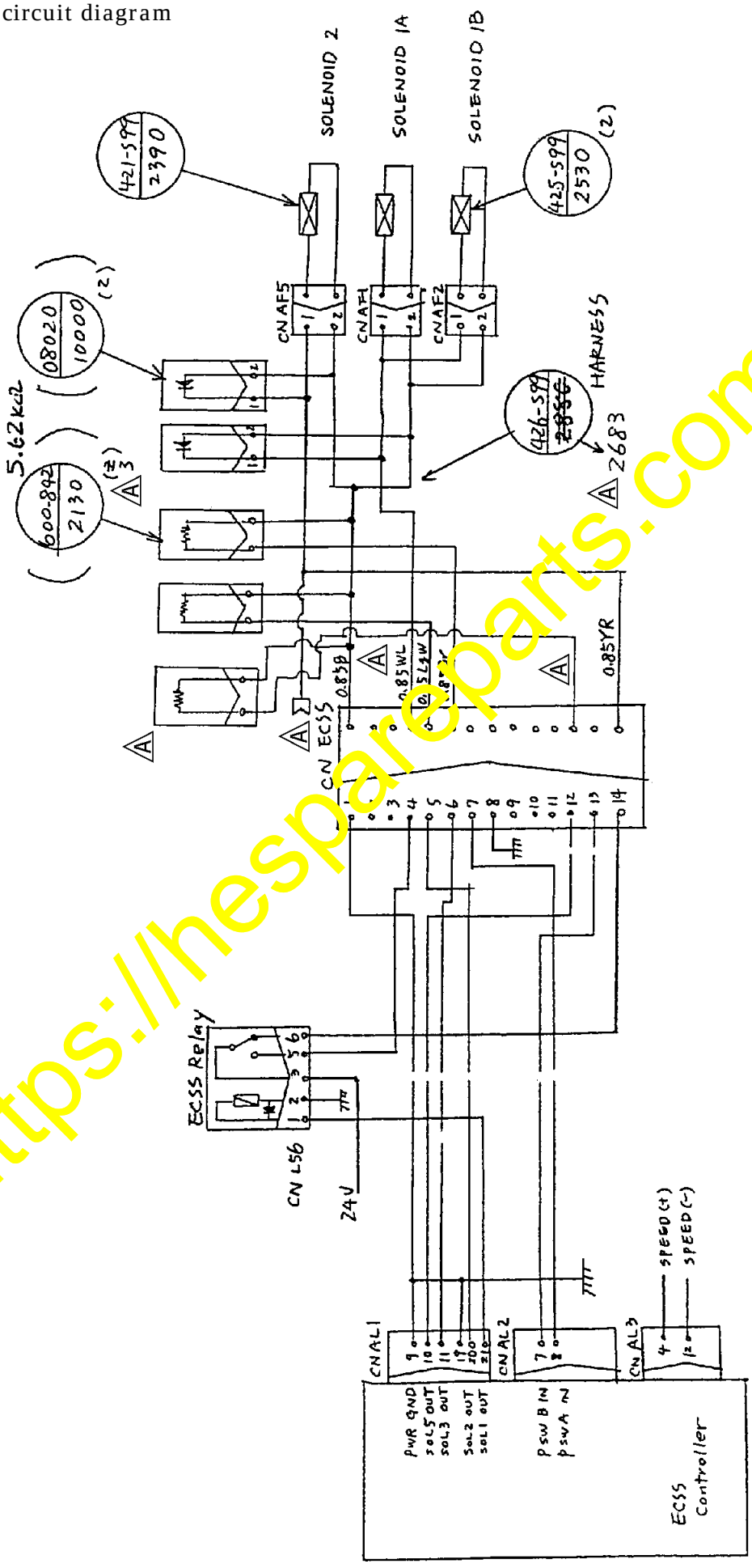
Precautions
The ECSS valve is activated by the oil pressure accumulated inside the accumulator.
If a machine is left unused for a long period of time and when the residual pressure inside the accumulator has dropped to "0" MPa, hydraulic pressure will not be fed to the ECSS valve and the ECSS will not be activated.
In this case, operate the work equipment for 5 seconds keeping the machine in a stopped state before starting traveling.

2) Releasing the hydraulic pressure from inside the accumulator
The main valve of the ECSS is equipped with a drain valve.
Release the oil pressure from inside the accumulator under the following circumstances.
* When disconnecting the piping connecting between the ECSS valve and the accumulator.
* When checking the N2 gas pressure inside the accumulator.
* When charging the N2 gas into the accumulator.

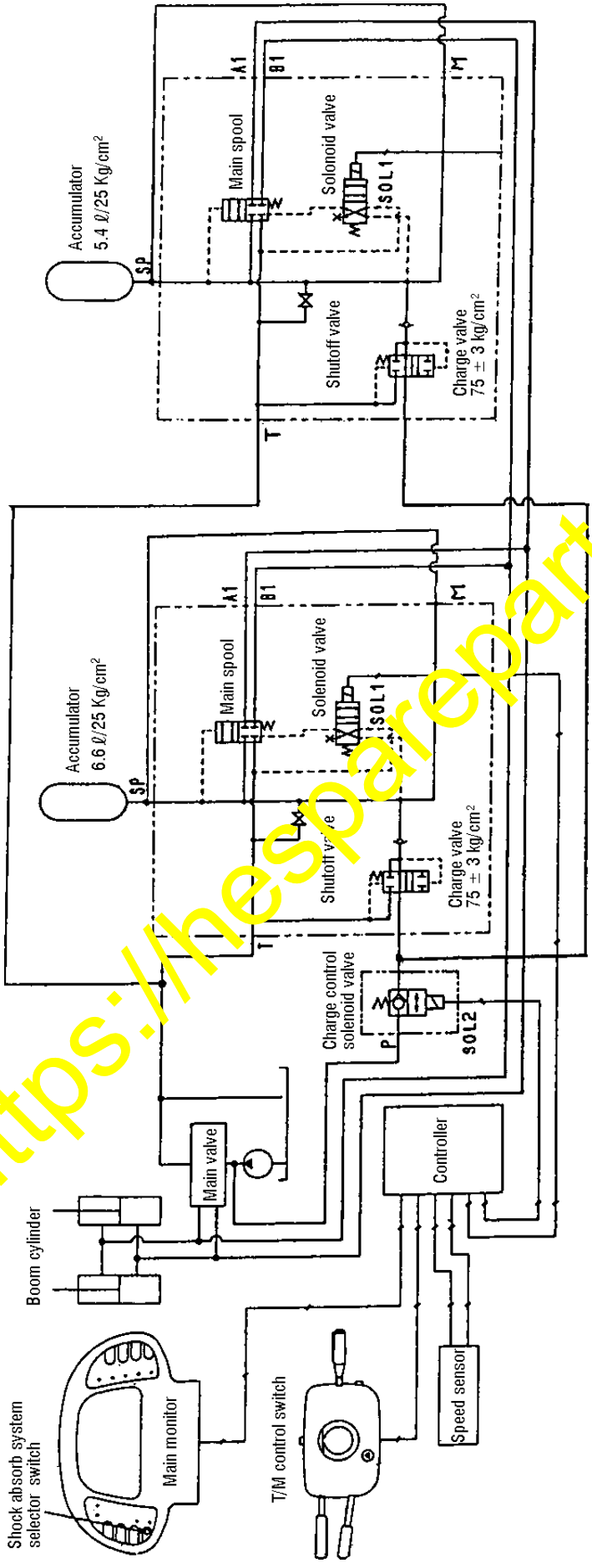
a) Remove the LH front fender and the front frame LH side cover.
b) Loosen the locknut of the red plug of the ECSS valve.
c) Loosen the hexagon socket head plug (Size 4).
(If the oil pressure remains accumulated inside the accumulator, you will hear an oil flowing sound.)
d) When the oil flowing sound has disappeared, tighten the hexagon socket head plug.
e) Tighten the locknut at a tightening torque of 13 ± 0.06 Nm.
f) Install the frame cover and the fender.



8. Electric circuit diagram



9. Hydraulic circuit diagram



Speed gear	Travel speed (km/h)	SOL1	SOL2	Remark
1	0 – max.	OFF	ON	Not function
2 – 4	0 – 5	OFF	ON	Not function
	5 – max.	ON	OFF	Acc function