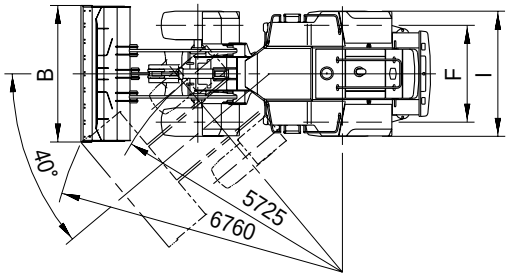
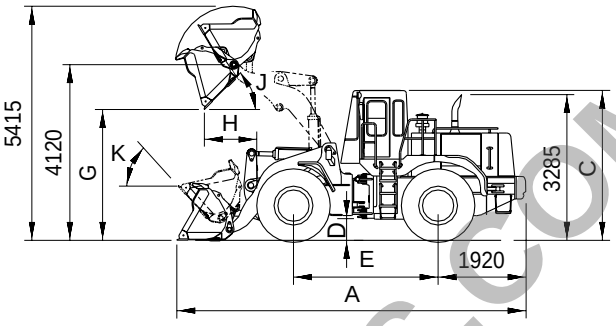
2. SPECIFICATIONS

1) WITHOUT TOOTH AND CUTTING EDGE TYPE BUCKET



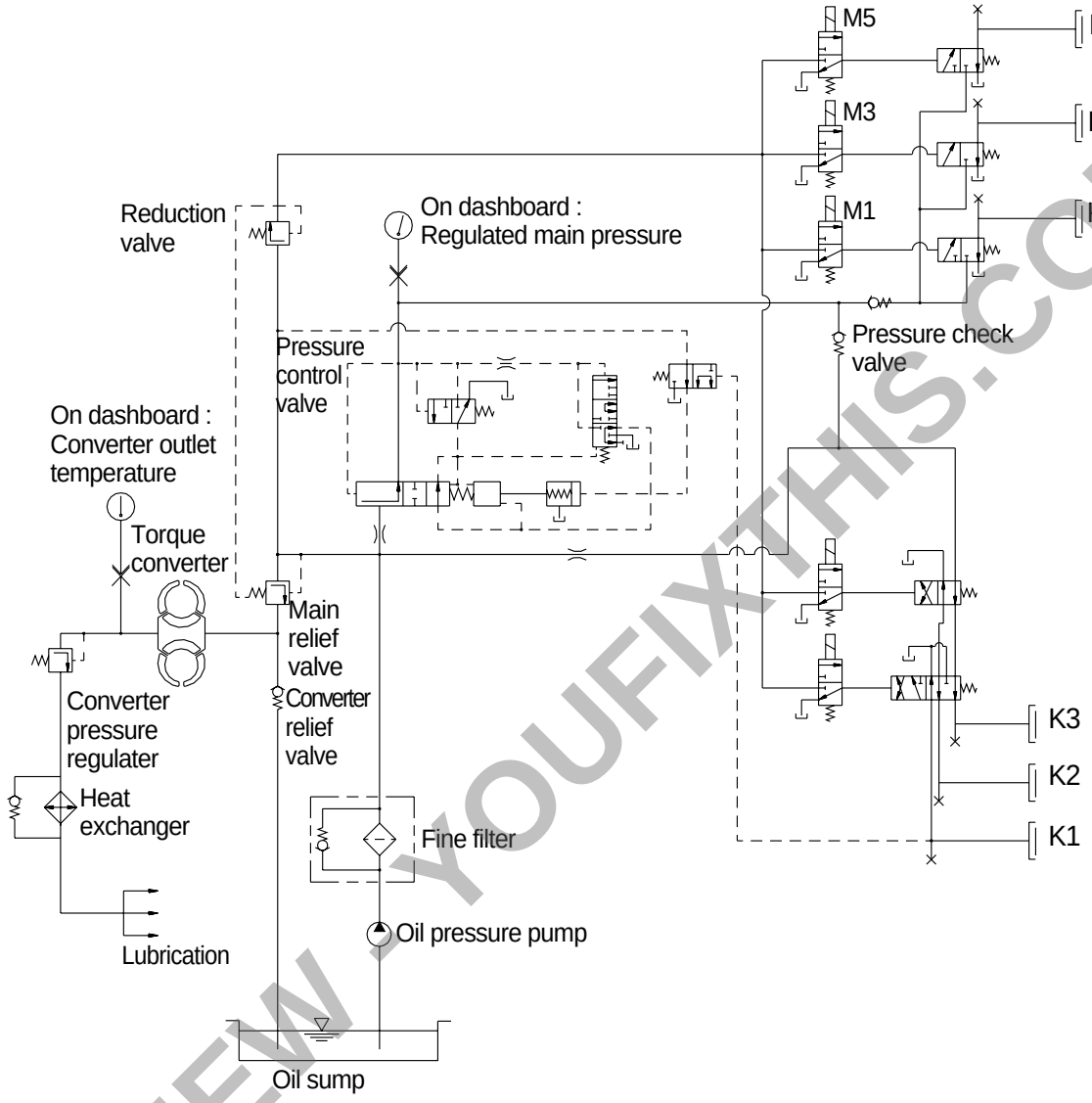


Description		Unit	Specification
Operating weight		kg(lb)	17660(38930)
Bucket capacity	Struck	$m^3(yd^3)$	2.6(3.4)
	Heaped		3.0(3.9)
Overall length	A	mm(ft-in)	7860(25' 9")
Overall width	B		3100(10' 2")
Overall height	C		3460(11' 4")
Ground clearance	D		420(1' 5")
Wheelbase	E		3300(10' 10")
Tread	F		2160(7' 1")
Dump clearance at 45°	G		3080(10' 1")
Dump reach	H		1130(3' 8")
Width over tires	I		2770(9' 1")
Dump angle	J	Degree (°)	45
Roll back angle(Carry position)	K		47.8
Cycle time	Lift(With load)	sec	6.6
	Dump(With load)		1.5
	Lower(Empty)		3.0
Maximum travel speed		km/hr(mph)	36(22)
Braking distance		m(ft-in)	11(36' 1")
Minimum turning radius(Outside bucket)			6.76(22' 2")
Gradability		Degree (°)	30
Travel speed	Forward - First gear	km/hr(mph)	7.4(4.6)
	Forward - Second gear		12.1(7.5)
	Forward - Third gear		23.9(14.9)
	Forward - Fourth gear		36.0(22.4)
	Reverse - First gear		7.4(4.6)
	Reverse - Second gear		12.1(7.5)
	Reverse - Third gear		23.9(14.9)

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2) HYDRAULIC CIRCUIT



Speed	Forward				Reverse			Neutral
	1	2	3	4	1	2	3	
M1					×	×	×	
M2	×				×			
M3	×	×	×					
M4	×	×			×	×		
M5				×				

× : Solenoid engaged

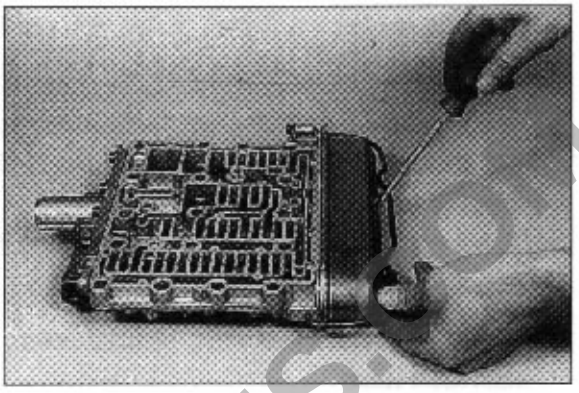
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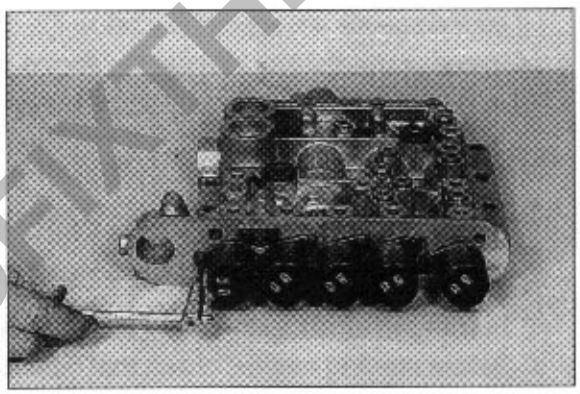
1. CONTROL VALVE

1) DISASSEMBLY

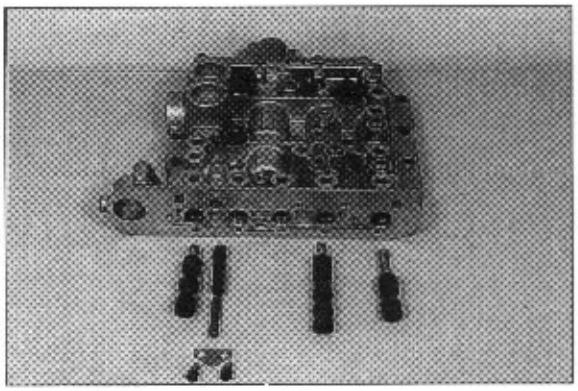
(1) Relax spring clip and remove cover.



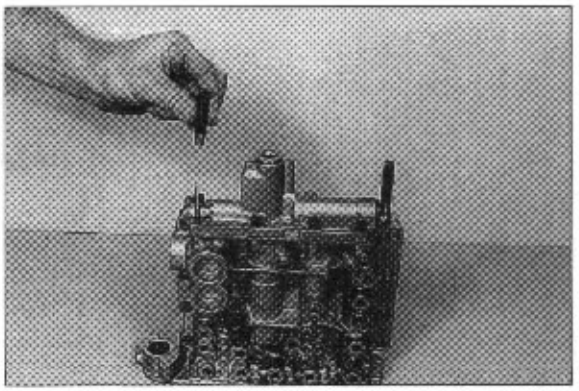
(2) Pull off cable shoes, loosen the socket head screws and demount solenoid valves.



(3) Remove components, see figure on the right.



(4) Loosen two socket head screws and fix shift-control housing provisionally, using a adjusting screws(M6) with nut.
Now, loosen the remaining socket head screws and separate shift-control housing (Is springloaded) from the valve body by uniform loosening of the nuts.



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2. TROUBLESHOOTING

1) TRANSMISSION

※ **Diagnose malfunction charts are arranged from most probable and simplest to verify, to least likely, more difficult to verify. Remember the following steps when troubleshooting a problem :**

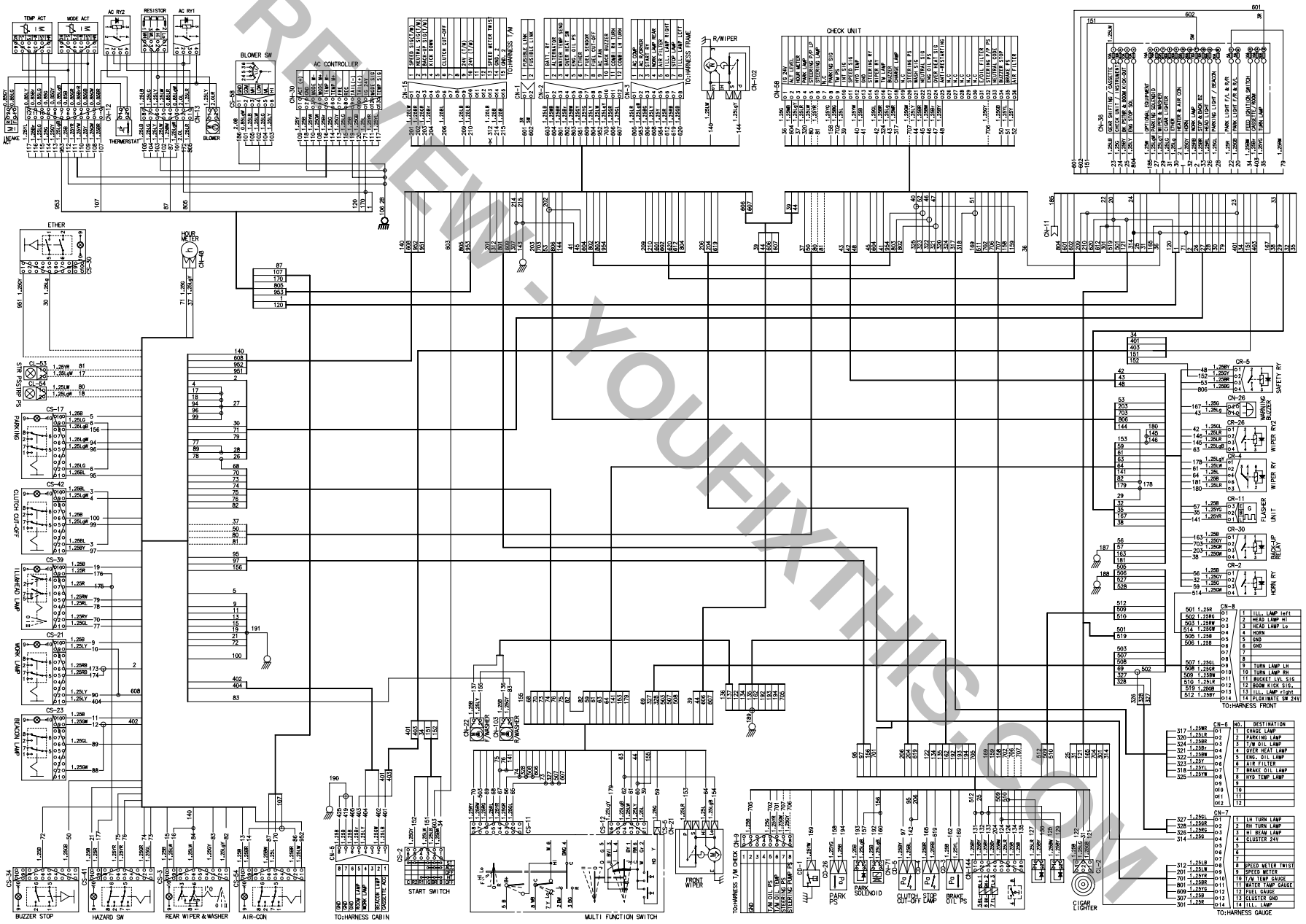
Step 1. Operational check out procedure(See group 3 in section 1.)
Step 2. Operational checks(In this group.)
Step 3. Troubleshooting
Step 4. Tests and/or adjustments(See group 3.)

Problem	Cause	Remedy
Transmission slippage	Low oil level.	Add oil.
	Wrong oil grade.	Change oil.
	Restricted transmission pump suction screen.	Remove and clean screen.
	Leak in transmission control valve or gasket.	Remove valve and inspect gaskets.
	Low transmission pump flow due to worn pump.	Do transmission pump flow test.
	Weak or broken pressure regulating valve spring.	Do transmission system pressure test.
	Malfunctioning reset valve.	Remove and inspect reset valve.
	Malfunctioning check valve.	Remove and inspect check valve.

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GROUP 2 ELECTRICAL CIRCUIT



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5. TIGHTENING TORQUE OF MAJOR COMPONENT

No.	Items		Size	kg · m	lb · ft
1	Engine	Engine mounting bolt, nut	M12 × 1.25	13.3 ± 2.7	96.2 ± 19.5
2		Radiator mounting bolt, nut	M12 × 1.75	12.3 ± 2.5	89 ± 18.1
3	Hydraulic system	Main pump housing mounting bolt	M12 × 1.75	12.8 ± 3	92.6 ± 21.7
4		Main control valve mounting socket bolt	M10 × 1.5	6.9 ± 1.4	50 ± 10
5		Obitrol valve mounting bolt	3/8-16UNC	3.3 ± 0.8	24 ± 5.8
6		Priority valve mounting bolt	M 8 × 1.25	2.5 ± 0.5	18 ± 3.6
7		Brake valve mounting bolt	M 8 × 1.25	2.5 ± 0.5	18 ± 3.6
8		Cut off valve mounting bolt	M 8 × 1.25	2.5 ± 0.5	18 ± 3.6
9		Cushion valve mounting bolt	M 8 × 1.25	2.5 ± 0.5	18 ± 3.6
10		Fuel tank mounting bolt	M20 × 2.5	57.9 ± 8.7	419 ± 63
11		Hydraulic oil tank mounting bolt	M20 × 2.5	21.9 ± 3.3	158 ± 23.9
12		Air tank mounting bolt	M20 × 2.5	29.7 ± 4.5	215 ± 33
13	Power train system	Transmission mounting bolt	M20 × 2.5	42.3 ± 6.4	306 ± 46.3
14		Front axle mounting bolt, nut	M24 × 2.0	100 ± 15	723 ± 106
15		Rear axle support mounting bolt, nut	M33 × 2.0	215	1555
16		Tire mounting nut	M20 × 1.5	60 ± 2	434 ± 15
17		Drive shaft joint mounting bolt, nut	1/2-20UNF	10.4 ± 0.7	75.2 ± 5.1
18	Others	Counterweight mounting bolt	M30 × 3.0	199 ± 29.9	1439 ± 216
19		Operator's seat mounting bolt	M 8 × 1.25	2.5 ± 0.5	18.1 ± 3.6
20		ROPS Cab mounting bolt(12EA)	1-14UNS	86	620
		ROPS Cab mounting bolt(4EA)	1 1/4-12UNF	126	911

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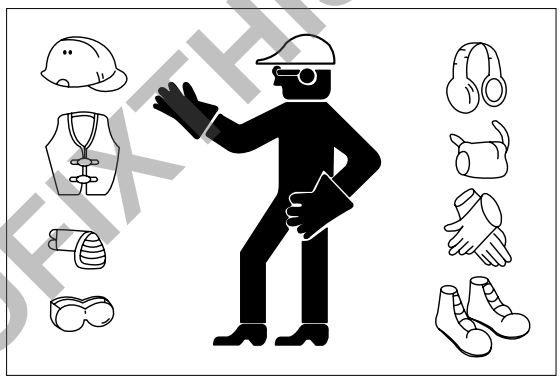
GROUP 1 SAFETY HINTS

FOLLOW SAFE PROCEDURE

Unsafe work practices are dangerous. Understand service procedure before doing work; Do not attempt shortcuts.

WEAR PROTECTIVE CLOTHING

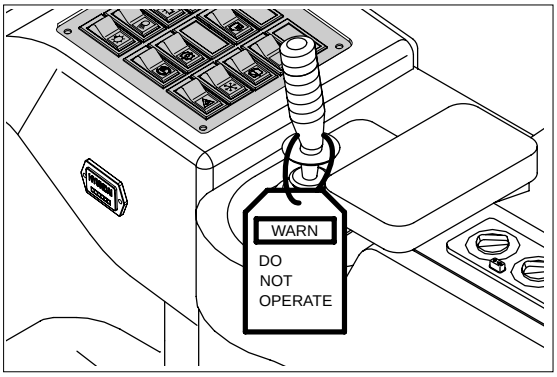
Wear close fitting clothing and safety equipment appropriate to the job.



WARN OTHERS OF SERVICE WORK

Unexpected machine movement can cause serious injury.

Before performing any work on the wheel loader, attach a 「**Do Not Operate**」 tag on the right side controller lever.

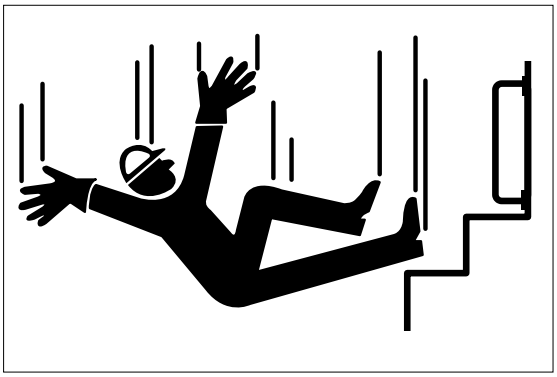


USE HANDHOLDS AND STEPS

Falling is one of the major causes of personal injury. When you get on and off the machine, always maintain a three point contact with the steps and handrails and face the machine. Do not use any controls as handholds.

Never jump on or off the machine. Never mount or dismount a moving machine.

Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.



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Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

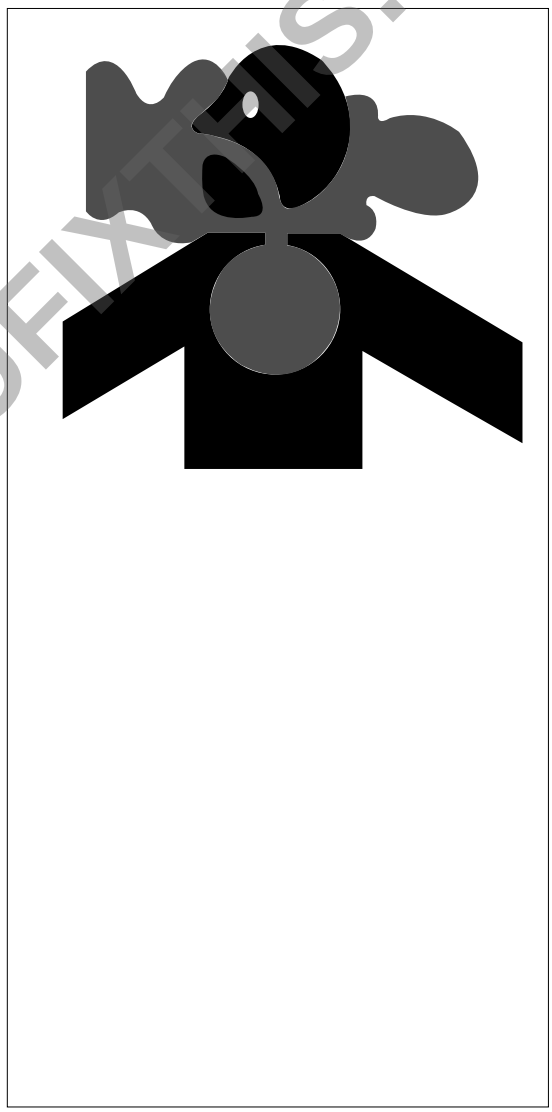
Do not store oily rags ; They can ignite and burn spontaneously.



BEWARE OF EXHAUST FUMES

Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.

If you must operate in a building, be positive there is adequate ventilation. Either use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring enough outside air into the area.



REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

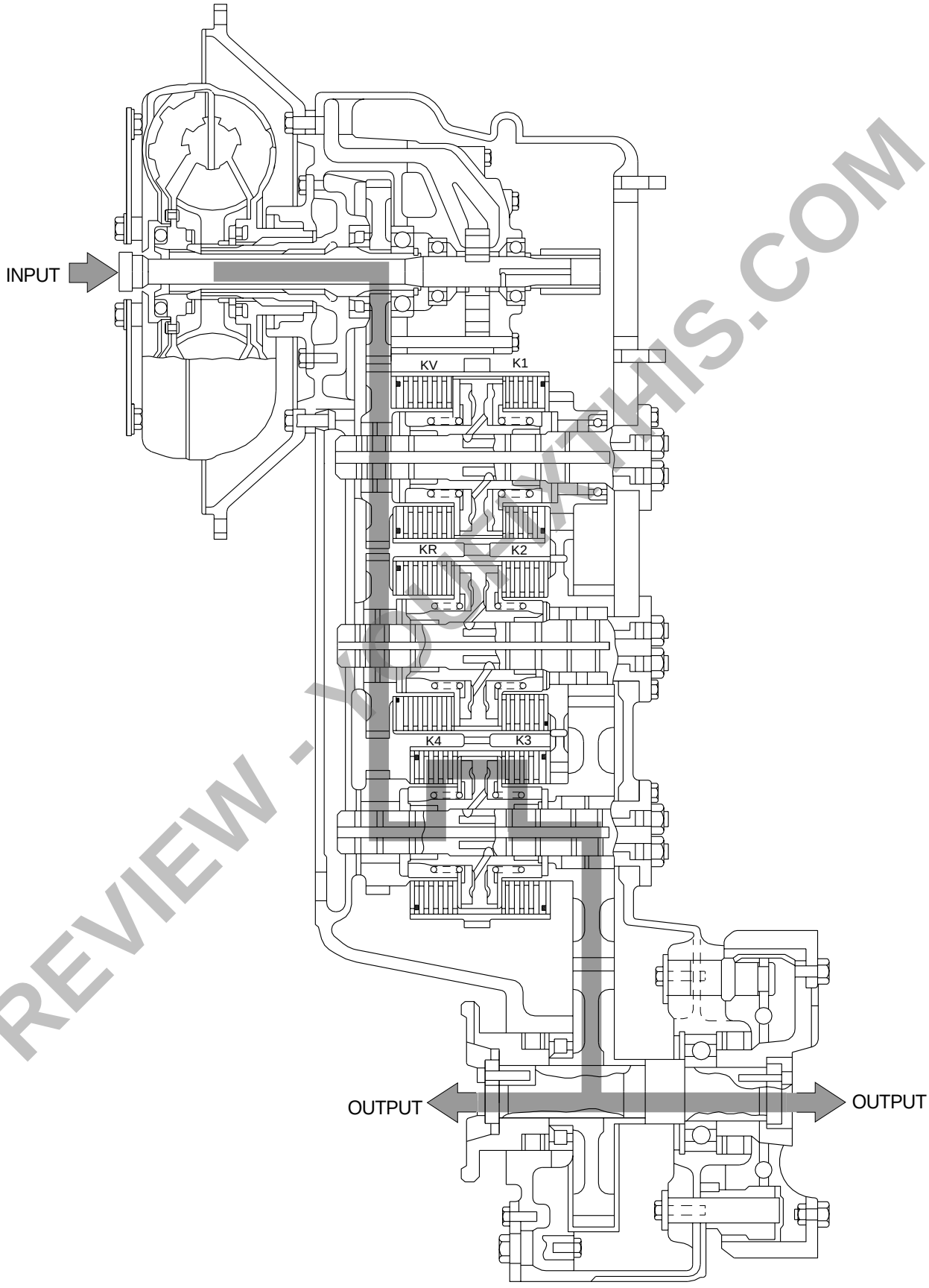
Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

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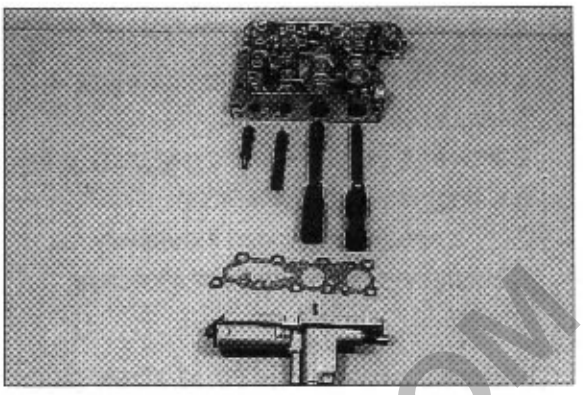
④ Forward 4th



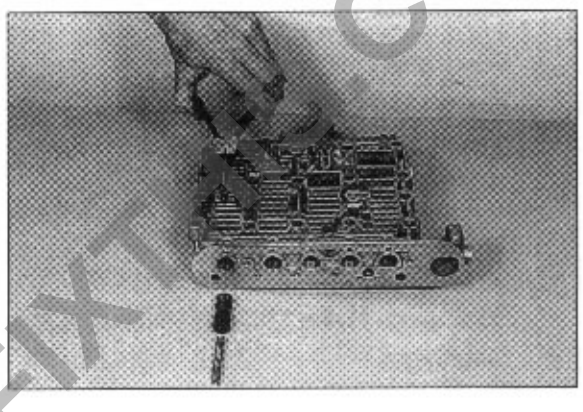
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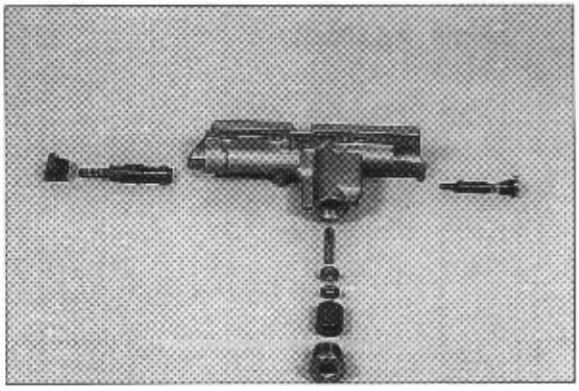
(5) Remove components.



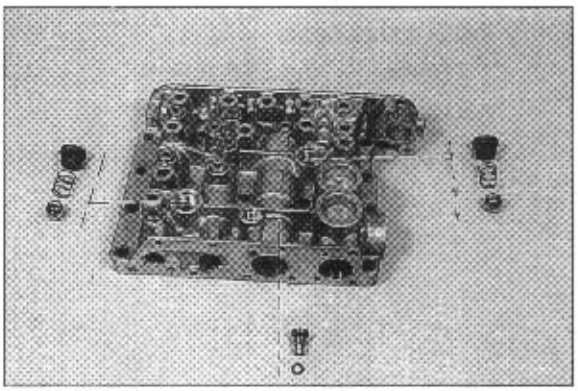
(6) Remove stop plate and demount spool as well as spring.



(7) Disassemble pressure control valve, see figure on the right.



(8) Remove diaphragm and check valves.

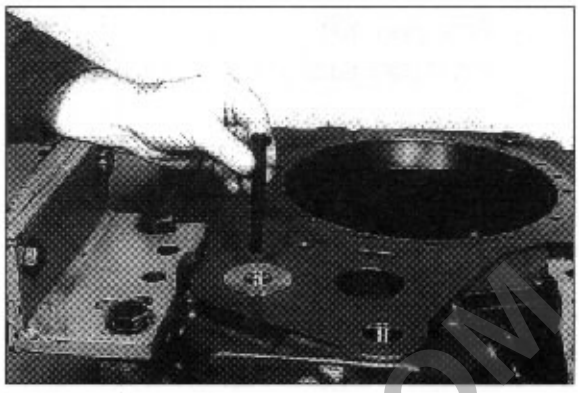


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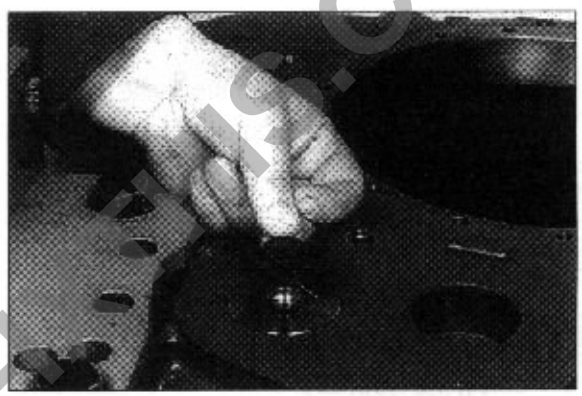
⑤ Fix the axle by means of socket head screw.
Torque limit(M12/10.9, DIN 7984)
8.2kg · m(59.7lb · ft)

※ Secure socket head screw with loctite.



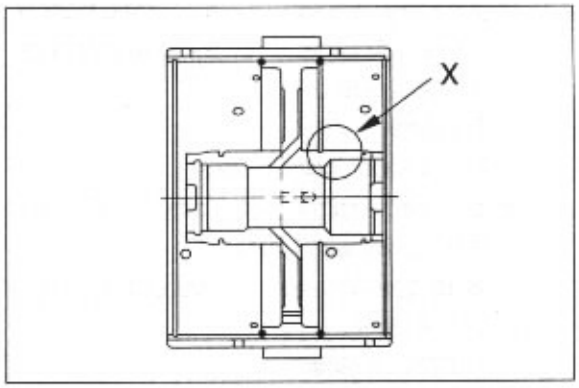
⑥ Install closing cover.

※ Wet contact areas with loctite.

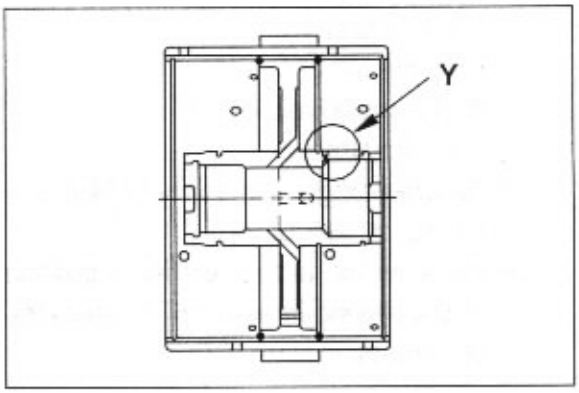


(5) Clutch KR/K2

※ The pre-assembly of the plate carrier KR /K2 has to be carried out accordingly like that of the plate carrier K4/K3.

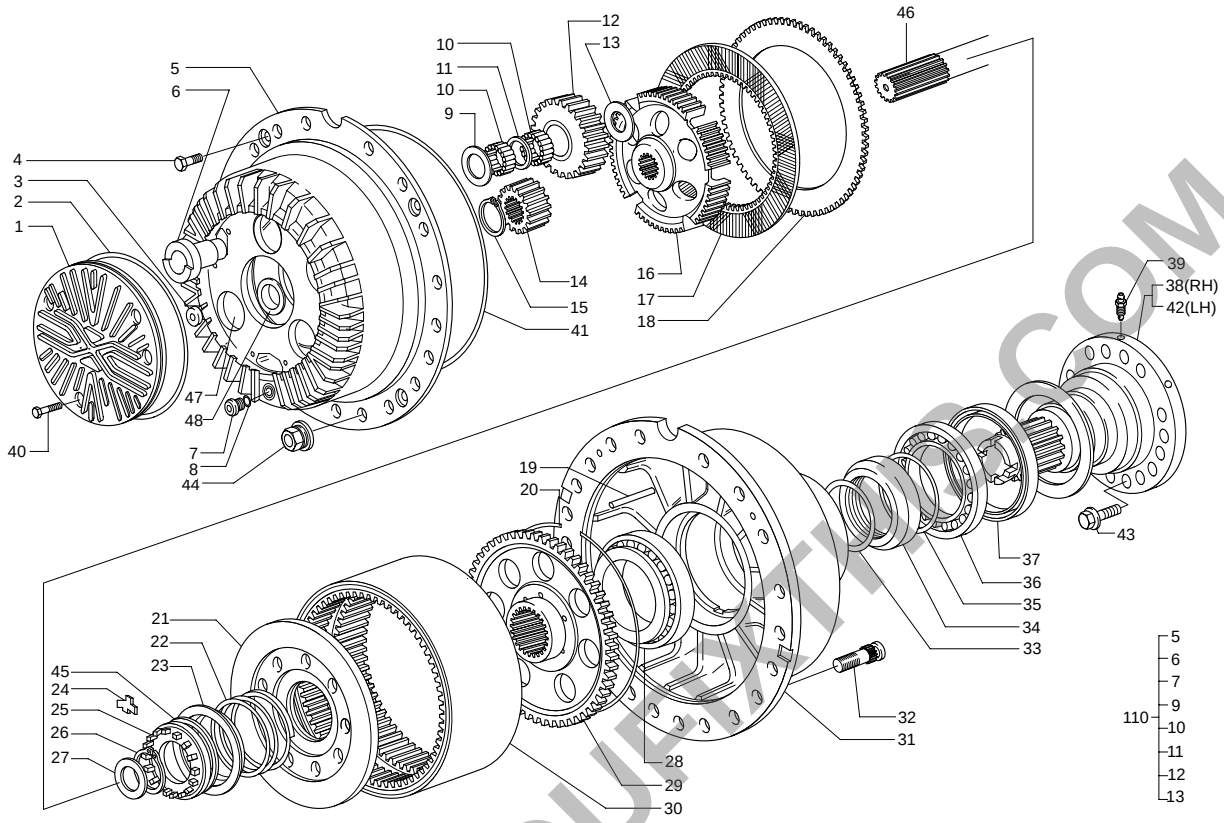


※ Pay attention to the different plate carriers.
Plate carrier KR/K2 in the zone X without oil hole.
Plate carrier KV/K1 in the zone Y with oil hole.



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DISASSEMBLING SIDE FINAL DRIVES



(27) Pry off from wheel hub(31), seal(37) and remove inner race with roller cage of inner wheel bearing (36).

(28) Push out, by a proper remover, outer races of outer and inner wheel bearings(28 and 37) from hub(31).

(29) Should sleeve(38) be damaged, it can be removed by undoing relevant fixing screws(43). At reassembly, smear proper sealing compound on axle case joining flange and tighten screws with a torque of : See tightening torque No.1

(30) Mark side gear pins(6), various components and seats(47) for identification of original position at reassembly.

(31) Arrange side gear carrier(5) on wooden blocks and push out pins(6) with a proper remover.

(32) Pick up all needle rollers(10,11).

(33) It is important to keep matched needle rollers and thrust washers(9) with relevant pin(6), this is consequent to predetermined assembly tolerance limits.

(34) Remove side gears(12) and relevant thrust washers(13) no gear can be removed prior having released all of them.

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(7) Repair work

△ **When working on the braking system, always make sure that there is absolutely no pressure in the system. Even when the engine in switched off there will be some residual pressure in the system.**

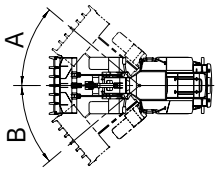
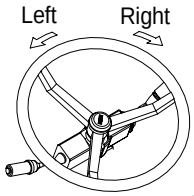
※ **When doing repair work, make sure your environment is very clean.**
Immediately close all open ports on the components and on pipes using plugs.

△ **For safety reasons the accumulators need to be replaced as a whole if damaged.**

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※ **Hydraulic oil must be at operating temperature for these checks**(Refer to page 6-51).

Item	Description	Service action
Steering valve check	 Run engine at low idle. Turn steering wheel until frames are at maximum right(A) and then left(B) positions. **LOOK** : Frames must move smoothly in both directions. When steering wheel is stopped, frames must stop. **FEEL** : Excessive effort must not be required to turn steering wheel. **NOTE** : It is normal for steering to drift from stops when steering wheel is released.	**OK** Check completed. **NOT OK** Go to next check.
Steering system leakage check Heat hydraulic oil to operating temperature.	 Turn steering wheel rapidly until frames are against stops. Hold approximately 2kg on steering wheel. Count steering wheel revolutions for 1 minute. Repeat test in opposite direction. **LOOK** : Steering wheel should rotate less than 6rpm. **NOTE** : Use good judgment; Excessive steering wheel rpm does not mean steering will be affected.	**OK** Check completed. **NOT OK** Do steering system leakage test in group 3 to isolate the leakage.
Priority valve low pressure check	Park machine on a hard surface. Hold brake pedal down. Run engine at high idle. Steer machine to the right and left as far as possible. **LOOK** : Machine must turn at least half way to the right and left stops.	**OK** Check completed. **NOT OK** Do priority valve pressure test in group 3.

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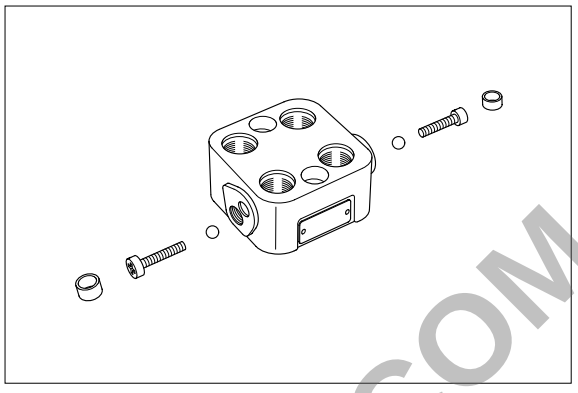
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4) ASSEMBLY

※ Clean all metal parts in clean solvent and blow dry with air and correct any damage, burrs and rust.

※ Do not wipe dry with cloth or paper towel.

※ Replace seal such as O-ring with new ones as a rule and coat with grease.

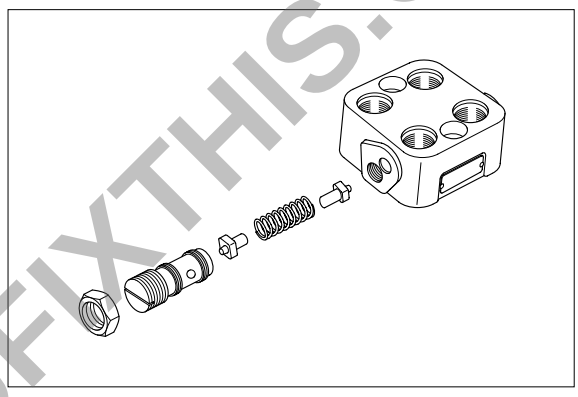


(1) Anti-cavitation check valve part

① Insert ball(16) and retainer ball sub assy (17) into housing(2).

② Apply seal tape to thread of plug(20) and tighten using a socket wrench.

· Tighten torque : 1kgf · m(7.2lb · ft)



(2) Overload valve part

① Insert valve cone(11), spring(12) and valve cone(11) into housing(2) in that order.

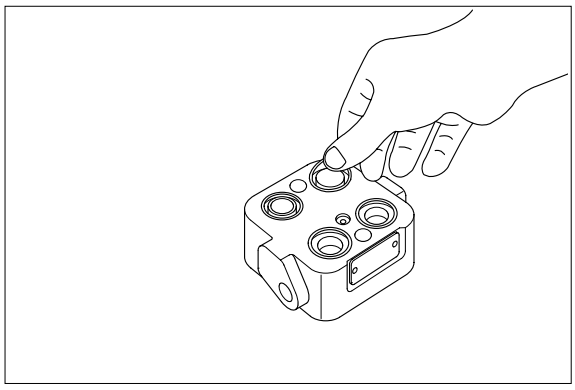
② Install O-ring(14, 15) onto adjusting screw(10) and fit into housing(2) using a screw driver.

③ Tighten the lock nut(13) as specified torque.

· Tighten torque : 4kgf · m(28.9lb · ft)

※ Relief pressure of overload valve is adjusted by adjusting screw(10).

1 turn≒ 55kgf/cm^2



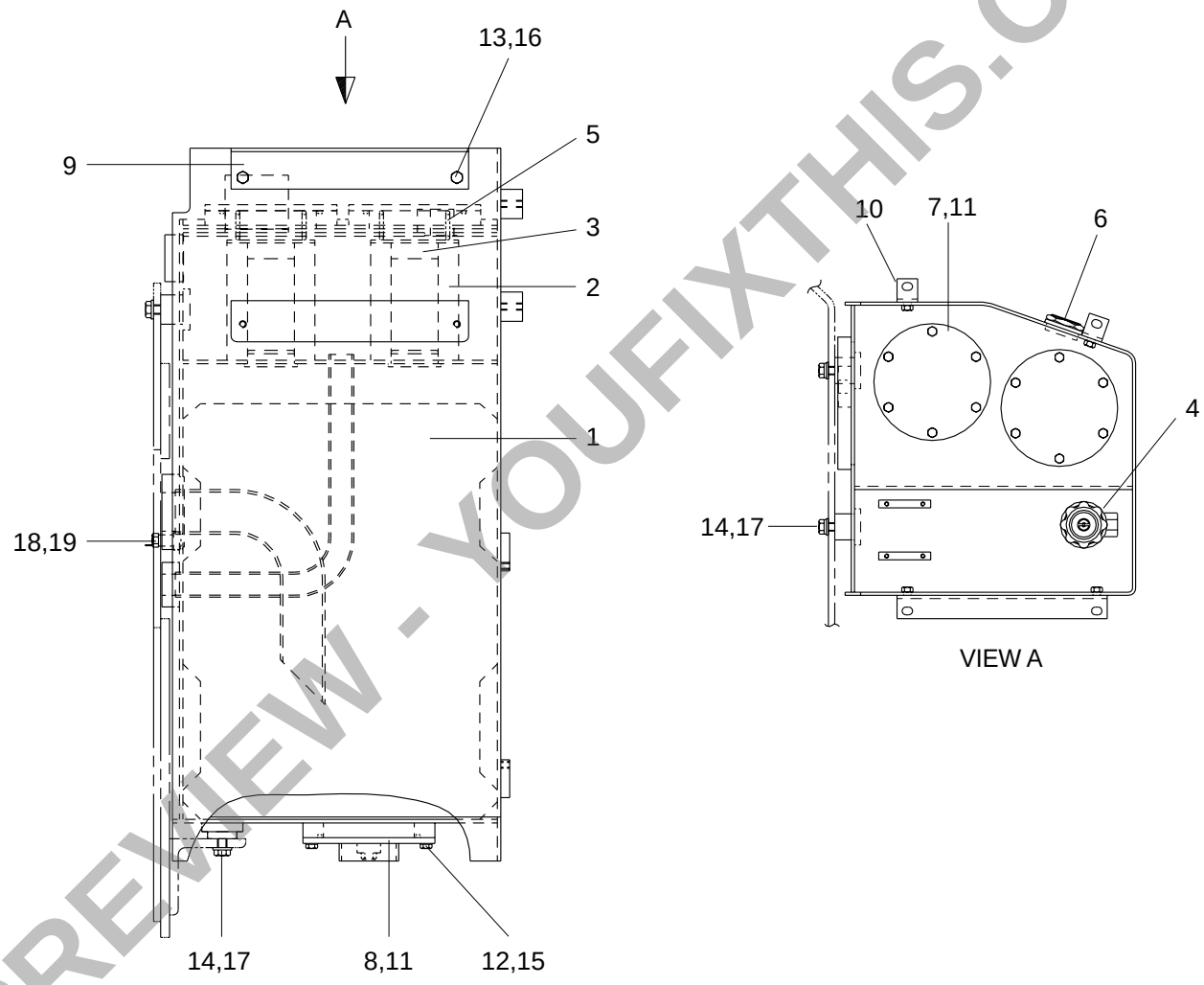
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9. HYDRAULIC OIL TANK

1) STRUCTURE

- The oil from the hydraulic tank is sent from the pump through control valve to the cylinders. In the return circuit, the oil from various parts merges.
- A part of oil is cooled in the oil cooler, passes through the hydraulic filter and returns to the hydraulic tank(1).
- If the hydraulic return oil filter becomes clogged, return filter bypass valve(3) acts to allow the oil to return directly to the hydraulic tank(1). This prevents damage to the hydraulic filter(2). The bypass valve(3) is also actuated when negative pressure is generated in the circuit.



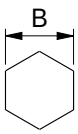
1	Hydraulic tank	8	Cover	15	Spring washer
2	Element	9	Plate	16	Hardened washer
3	Bypass valve	10	Plate	17	Hardened washer
4	Air breather	11	O-ring	18	Overheat switch
5	Spring	12	Bolt	19	O-ring
6	Sight gauge	13	Bolt		
7	Cover	14	Bolt		

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2) TOOLS AND TIGHTENING TORQUE

(1) Tools

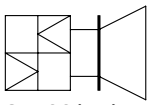
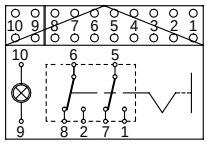
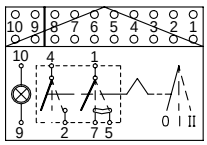
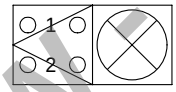
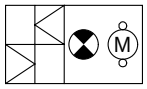
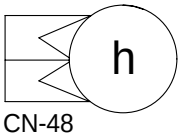
Tool name	Remark	
Allen wrench	8	
	14	
Spanner	17	
(-) Driver	Small and large sizes	
Torque wrench	Capable of tightening with the specified torques	

(2) Tightening torque

Part name		Item	Size	Torque	
				kgf · m	lbf · ft
Socket head bolt	Bucket cylinder	18	M18×2.5×65	32±3	231±22
	Boom cylinder	18	M16×2.0×65	23±2	166±14.5
Set screw	Bucket cylinder	17	M10×1.5×12	5.4±0.5	39±3.6
	Boom cylinder	17	M10×1.5×12	5.4±0.5	39±3.6
Piston nut	Bucket cylinder	16	M75×3×48	150±10	1085±72
	Boom cylinder	16	M75×3×55	150±10	1085±72
Piston	Bucket cylinder	12	D180×65	100±15	723±108
	Boom cylinder	12	D160×63	100±15	723±108
Hex head bolt	Bucket cylinder	24	M10×1.5×60	5.4±0.5	39±3.6
	Boom cylinder	22	M10×1.5×60	5.4±0.5	39±3.6

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Part name	Symbol	Specifications	Check
Speaker	 CN-23(LH) CN-24(RH)	4Ω 20W	※ Check resistance Normal : 50Ω
Switch (Locking type)	 CS-17 CS-23 CS-42 CS-21 CS-41 CS-54	24V 8A	※ Check contact OFF : ∞Ω (For terminal 1-5, 2-6) : 0Ω (For terminal 5-7, 6-8)
Switch (Non-locking type)	 CS-3 CS-34 CS-39	24V 8A	※ Check contact OFF : ∞Ω (For terminal 2-4, 1-7)
Work lamp, Room lamp, Number plate lamp	 CL-1 CL-6 CL-22 CL-5 CL-21 CL-23	Work lamp 24V 70W Number plate lamp Room lamp 24V 10W	※ Check disconnection Normal : A few Ω
Beacon lamp	 CL-7	24V 70W (H1 TYPE)	※ Check disconnection Normal : A few Ω
Hour meter	 CN-48	-	※ Check operation Supply power(24V) to terminal No.2 and contact terminal No.1 and ground

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