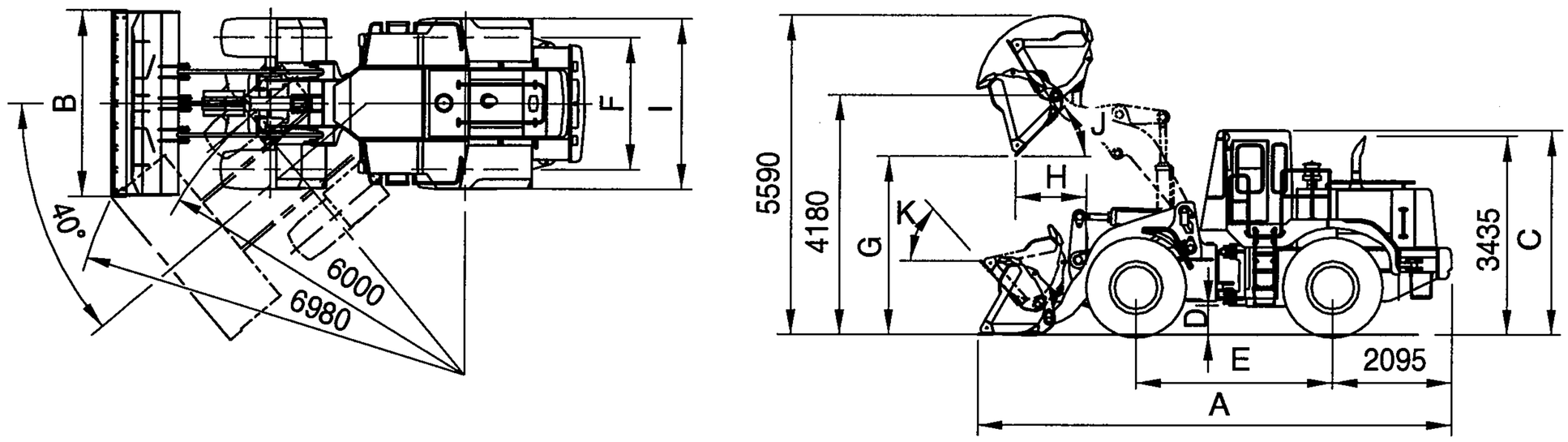
2. SPECIFICATIONS

1) WITHOUT TOOTH AND CUTTING EDGE TYPE BUCKET



77032SE02

Description		Unit	Specification
Operating weight		kg(lb)	22150(48830)
Bucket capacity	Struck	$m^3(yd^3)$	3.1(4.1)
	Heaped		3.6(4.7)
Overall length	A	mm(ft-in)	8310(27' 3")
Overall width	B		3250(10' 8")
Overall height	C		3500(11' 5")
Ground clearance	D		505(1' 8")
Wheelbase	E		3440(11' 3")
Tread	F		2300(7' 7")
Dump clearance at 45°	G		3112(10' 3")
Dump reach	H		1245(4' 1")
Width over tires	I		2975(9' 9")
Dump angle	J	Degree (°)	45
Roll back angle(carry position)	K		48
Cycle time	Lift(with load)	sec	5.9
	Dump(with load)		1.6
	Lower(empty)		3.0
Maximum travel speed		km/hr(mph)	37(23)
Braking distance		m(ft-in)	11.5(37' 9")
Minimum turning radius			7(23' 0")
Gradability		Degree (°)	30
Travel speed	Forward - First gear	km/hr(mph)	7.5(4.7)
	Forward - Second gear		12.5(7.8)
	Forward - Third gear		26.7(16.6)
	Forward - Fourth gear		37.0(23.0)
	Reverse - First gear		7.5(4.7)
	Reverse - Second gear		12.5(7.8)
	Reverse - Third gear		26.7(16.6)

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(6) Table of fault codes

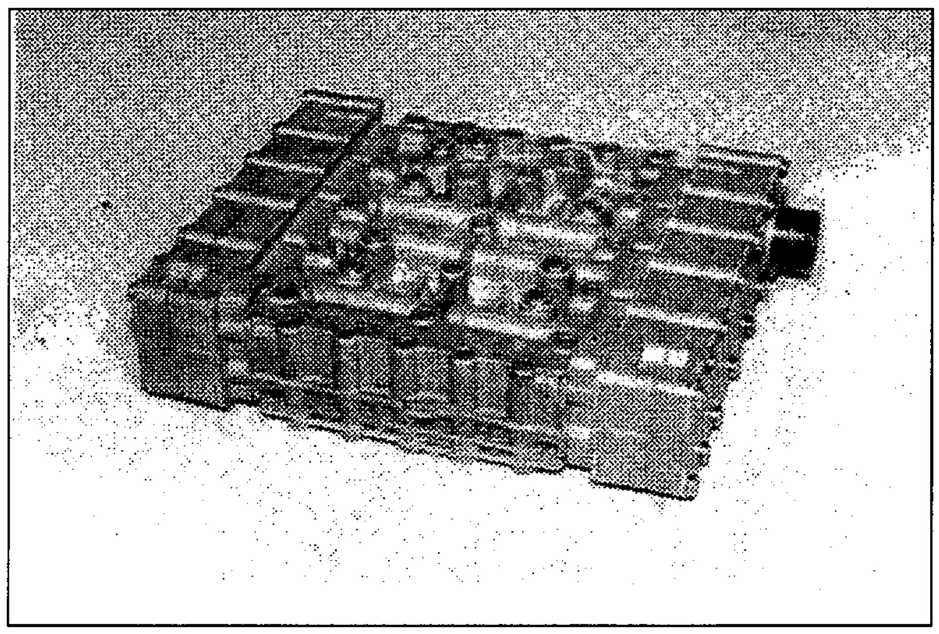
Fault code (Hex)	Int. code (Dec)	Meaning of the fault code possible reason for fault detection	Reaction of the TCU	Possible steps to repair	Remarks
11	48	**Logical error at gear range signal** TCU detected a wrong signal combination for the gear range • Cable from shift lever to TCU is broken • Cable is defective and is contacted to battery voltage or vehicle ground • Shift lever is defective	TCU shifts transmission to neutral OP-mode : Transmission shutdown	• Check the cables from TCU to shift lever • Check signal combinations of shift lever positions for gear range	Failure cannot be detected in systems with DW2/DW3 shift lever Fault is taken back if TCU detects a valid signal for the position
12	46	**Logical error at direction select signal** TCU detected a wrong signal combination for the direction • Cable from shift lever to TCU is broken • Cable is defective and is contacted to battery voltage or vehicle ground • Shift lever is defective	TCU shifts transmission to neutral OP-Mode : Transmission shutdown	• Check the cables from TCU to shift lever • Check signal combinations of shift lever positions F-N-R	Fault is taken back if TCU detects a valid signal for the direction at the shift lever
13	95	**Logical error at engine derating device** TCU detected no reaction of engine while derating device active	After selecting neutral, TCU change to OP mode limp home	• Check engine derating device	This fault is reset after power up of TCU
15	176	Logical error at direction select signal 2 shift lever TCU detected a wrong signal combination for the direction • Cable from shift lever 2 to TCU is broken • Cable is defective and is contacted to battery voltage or vehicle ground • Shift lever is defective	TCU shifts transmission to neutral if selector active OP mode : Transmission shutdown if selector active	• Check the cables from TCU to shift lever 2 • Check signal combinations of shift lever positions F-N-R	Fault is taken back if TCU detects a valid neutral signal for the direction at the shift lever
16	178	**Logical error at axle connection** Feedback axle connection measured by TCU and output signal axle connection don't fit • Axle can't be connected or disconnected due to mechanical problem • One of the cables from feedback axle connection switch to TCU is broken	OP mode : Normal	• Check the cables from TCU to feedback axle connection switch • Check signals of the feedback axle connection switch	

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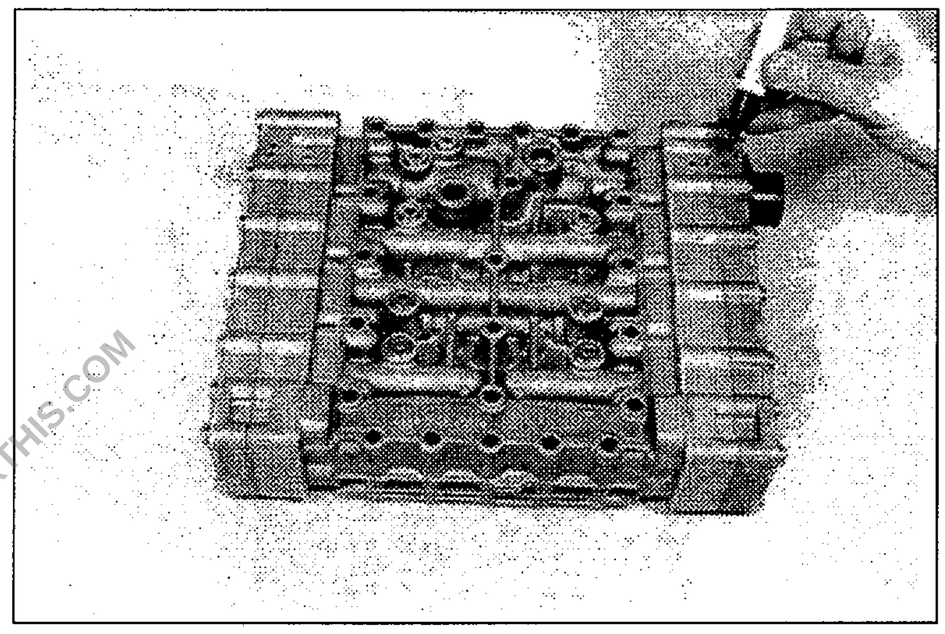
1. CONTROL VALVE

1) DISASSEMBLY

(1) Illustration on the right shows the complete control unit.



(2) Mark the installation position of the different covers, the housing and cable harness with the valve housing.

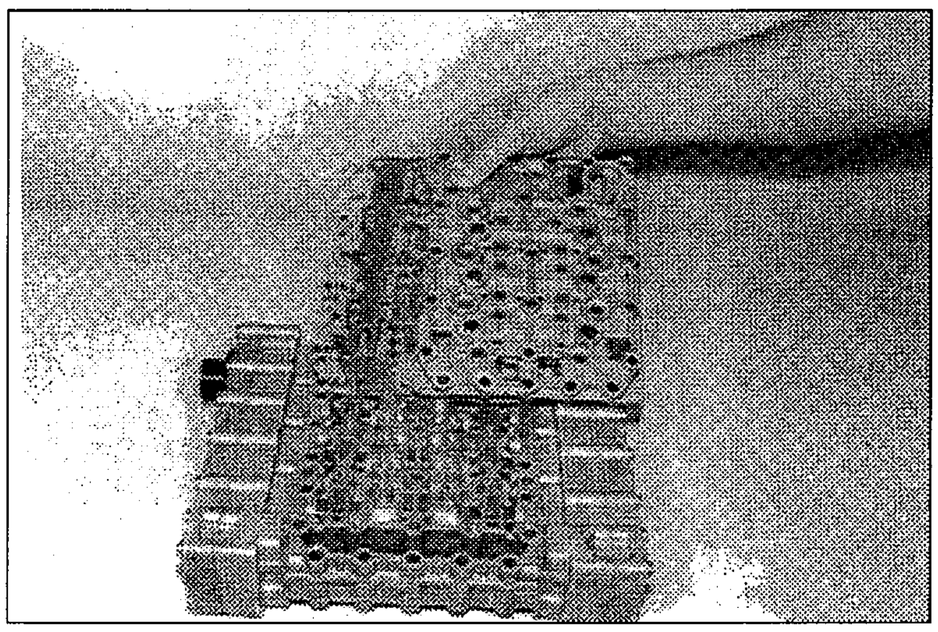


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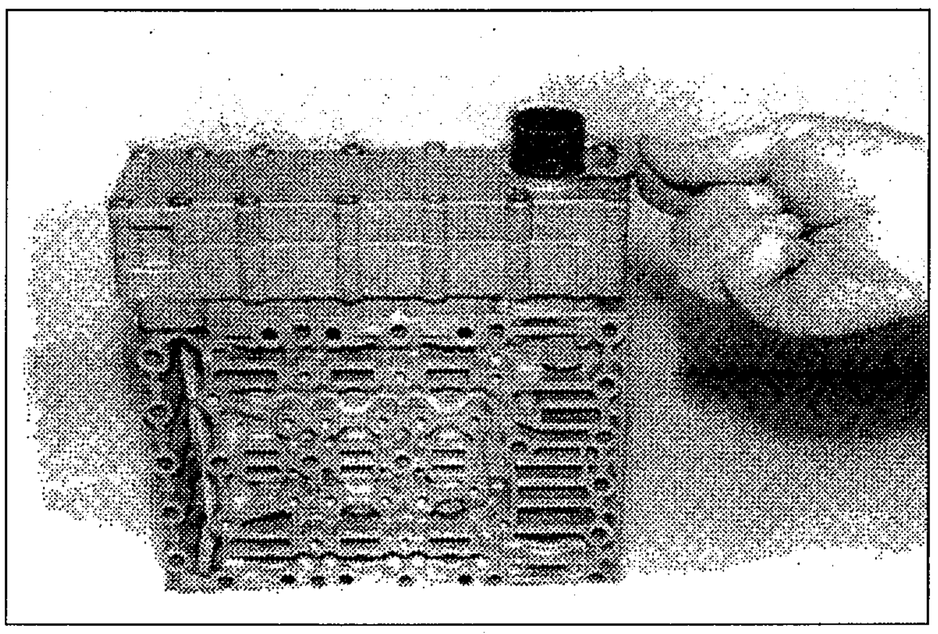
(3) Loosen socket head screws.
Separate duct plate, 1st gasket, intermediate plate and 2nd gasket from the valve housing.

※ Special tool

Box spanner	5873 042 002

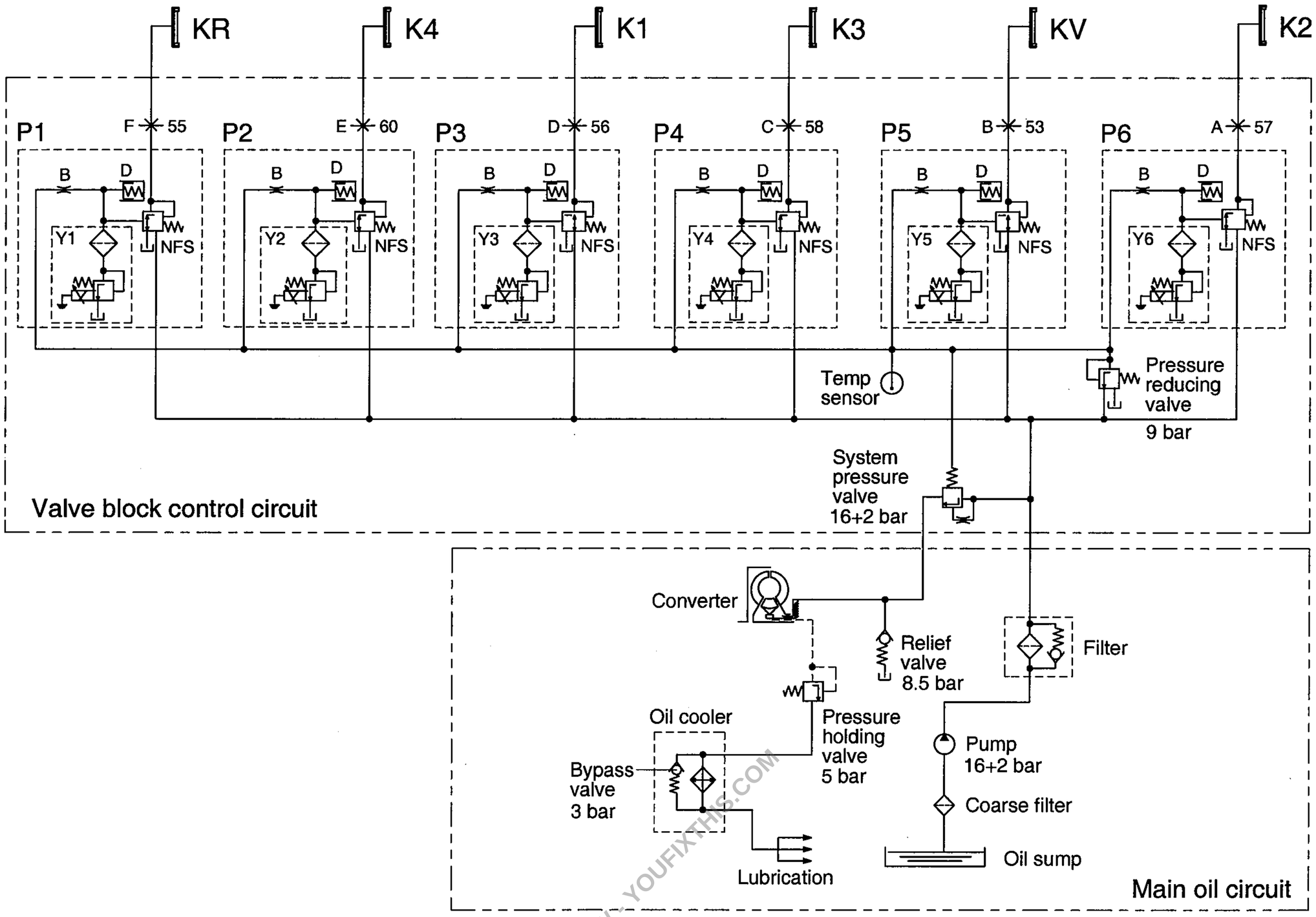


(4) Remove retaining clip.



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HYDRAULIC CIRCUIT



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NFS	Follow-on slide	P3	Proportional valve clutch K1
D	Oscillation damper	P4	Proportional valve clutch K3
B	Orifice	P5	Proportional valve clutch KV
P1	Proportional valve clutch KR	P6	Proportional valve clutch K2
P2	Proportional valve clutch K4	Y1~Y6	Pressure regulator valve with filter

Speed	Forward				Reverse			Neutral	Engaged clutch	Positions on the valve block	Current No. of the measuring points
	1	2	3	4	1	2	3				
Y1					X	X	X		KR	F	55
Y2			X	X					K4	E	60
Y3	X				X				K1	D	56
Y4				X			X		K3	C	58
Y5	X	X							KV	B	53
Y6		X	X			X			K2	A	57
Engaged clutch	K1,KV	KV,K2	K4,K2	K4,K3	KR,K1	KR,K2	KR, K3		-	-	-

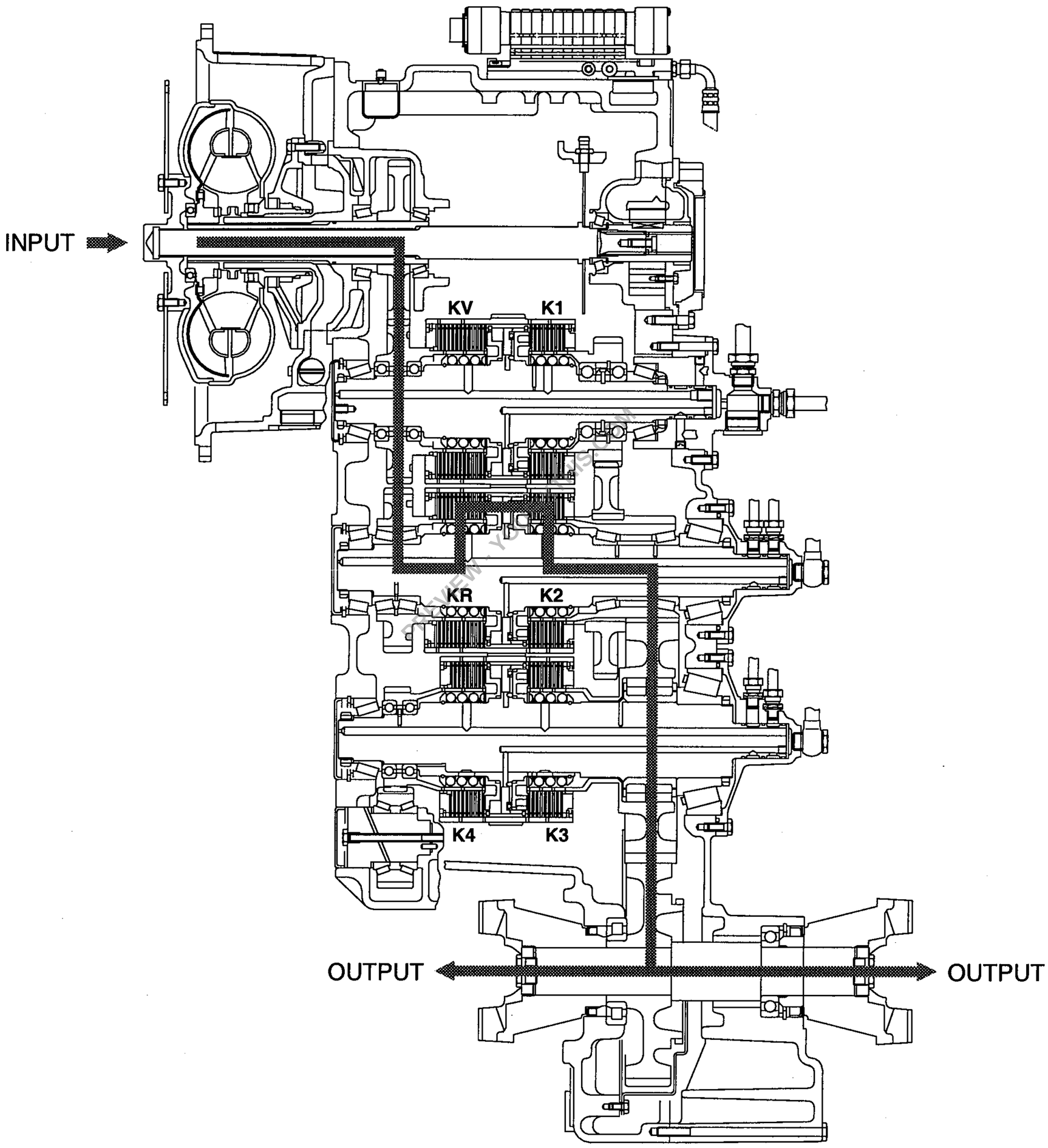
X : Pressure regulator under voltage

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② Reverse 2nd

In 2nd reverse, reverse clutch and 2nd clutch are engaged.

Reverse clutch and 2nd clutch are actuated by the hydraulic pressure applied to the clutch piston.



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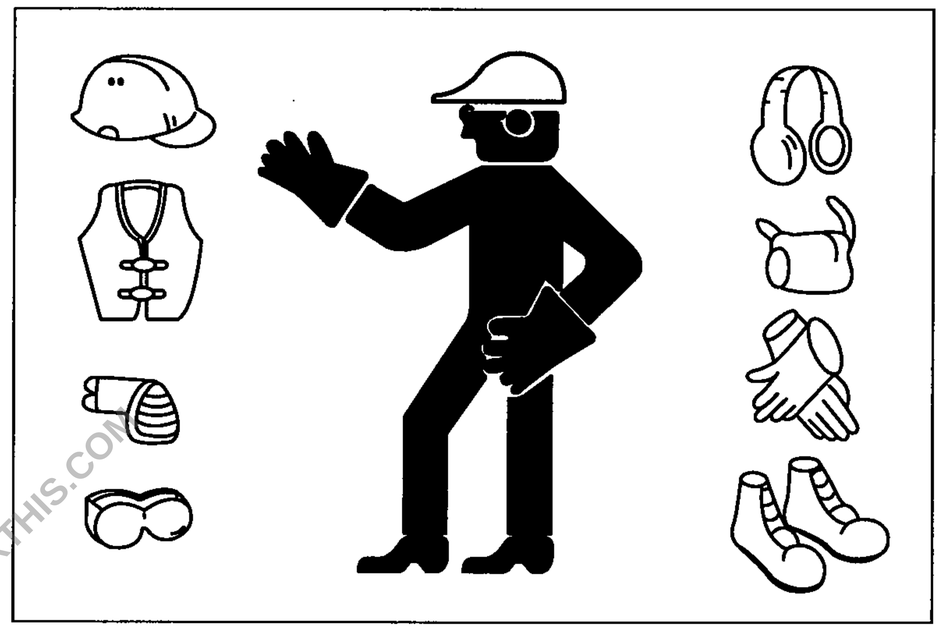
GROUP 1 SAFETY HINTS

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.

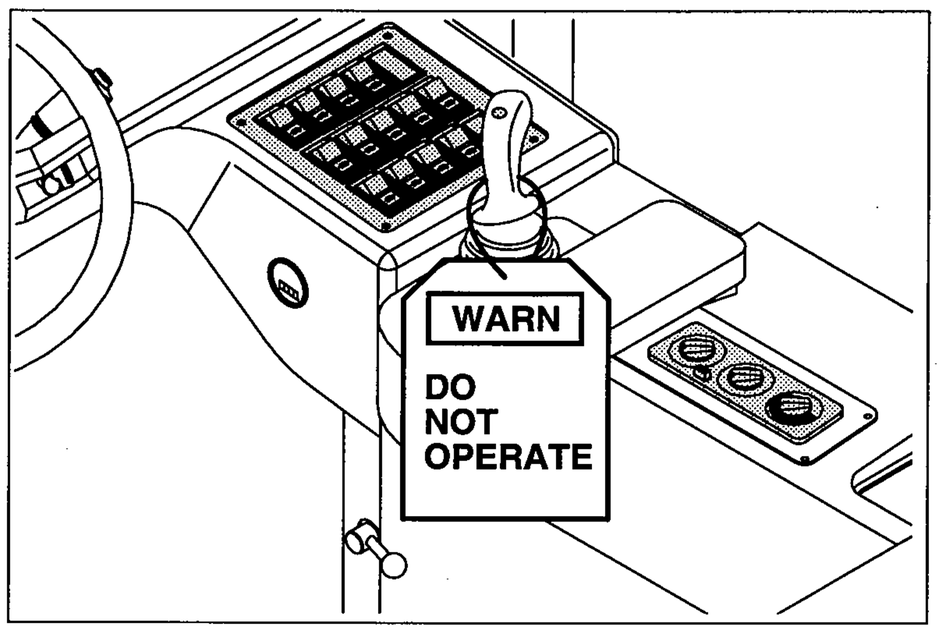


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WARN OTHERS OF SERVICE WORK

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.



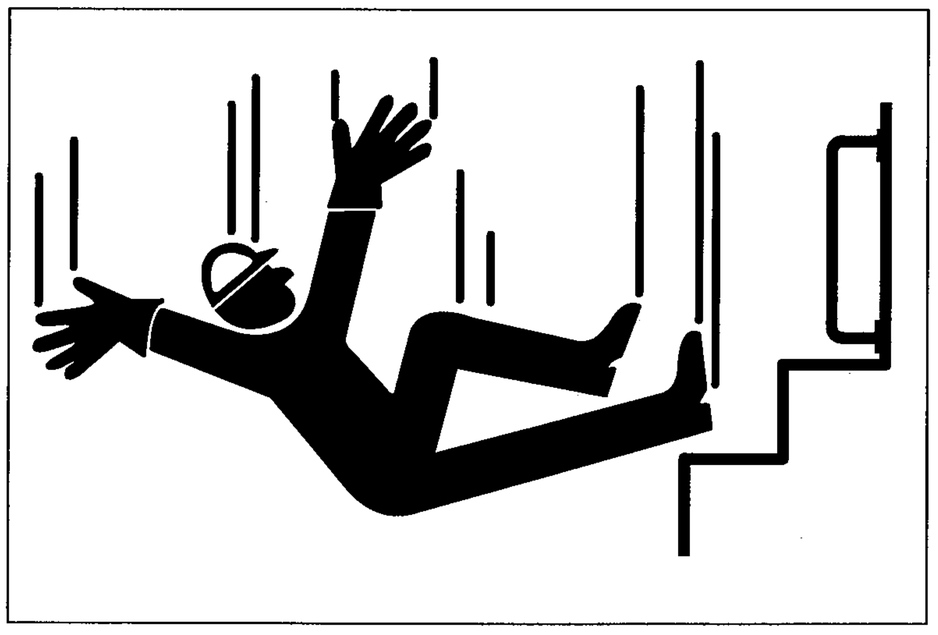
USE HANDHOLDS AND STEPS

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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Millimeters to Inches

1mm = 0.03937in

	0	1	2	3	4	5	6	7	8	9
0		0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354
10	0.394	0.433	0.472	0.512	0.551	0.591	0.630	0.669	0.709	0.748
20	0.787	0.827	0.866	0.906	0.945	0.984	1.024	1.063	1.102	1.142
30	1.181	1.220	1.260	1.299	1.339	1.378	1.417	1.457	1.496	1.536
40	1.575	1.614	1.654	1.693	1.732	1.772	1.811	1.850	1.890	1.929
50	1.969	2.008	2.047	2.087	2.126	2.165	2.205	2.244	2.283	2.323
60	2.362	2.402	2.441	2.480	2.520	2.559	2.598	2.638	2.677	2.717
70	2.756	2.795	2.835	2.874	2.913	2.953	2.992	3.032	3.071	3.110
80	3.150	3.189	3.228	3.268	3.307	3.346	3.386	3.425	3.465	3.504
90	3.543	3.583	3.622	3.661	3.701	3.740	3.780	3.819	3.858	3.898

Kilogram to Pound

1kg = 2.2046lb

	0	1	2	3	4	5	6	7	8	9
0		2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	51.91	55.12	57.32	59.5.	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.78	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26

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7. RECOMMENDED LUBRICANTS

Use only oils listed below or equivalent.
Do not mix different brand oil.

Service point	Kind of fluid	Capacity *l* (U.S. gal)	Ambient temperature ℃(°F)
			-20 (-4) / -10 (14) / 0 (32) / 10 (50) / 20 (68) / 30 (86) / 40 (104)
Engine oil pan	Engine oil	39(10.3)	SAE 30 SAE 10W SAE 10W-30 SAE 15W-40
Torque conventer Transmission	Oil	43(11.4)	SAE 10W-30 SAE 15W-40
Axle	Oil	Front : 70(18.5) Rear : 57(15.1)	SAE 80W-90LSD/APIGL-5
Hydraulic tank	Hydraulic oil	Tank: 210(55.5) System: 310(81.9)	ISO VG 32 ISO VG 46 ISO VG 68
Fuel tank	Diesel fuel	331(87.5)	ASTM D975 NO. 1 ASTM D975 NO. 2
Fitting (Grease nipple)	Grease	As required	NLGI NO. 1 NLGI NO. 2
Radiator	Mixture of antifreeze and water 50 : 50	52(13.7)	Ethylene glycol base permanent type

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Fault code (Hex)	Int. code (Dec)	Meaning of the fault code possible reason for fault detection	Reaction of the TCU	Possible steps to repair	Remarks
B7	87	**Overtemp sump** TCU measured a temperature in the oil sump that is over the allowed threshold.	No reaction OP mode : Normal	• Cool down machine • Check oil level • Check temperature sensor	
B8	88	**Overtemp retarder** TCU measured a temperature in the retarder oil that is over the allowed threshold	TCU disables retarder OP mode : Normal	• Cool down machine • Check oil level • Check temperature sensor	
B9	89	**Overspend engine**	Retarder applies OP mode : Normal	-	
BA	90	**Differential pressure oil filter** TCU measured a voltage at differential pressure switch out of the allowed range • Oil filter is polluted • Cable/connector is broken or cable/ connector is contacted to battery voltage or vehicle ground • Differential pressure switch is defective	No reaction OP mode : Normal	• Check oil filter • Check wiring from TCU to differential pressure switch • Check differential pressure switch(Measure resistance)	
BB	172	**Slippage at converter lockup clutch** TCU calculates a differential speed at closed converter lockup clutch. If this calculated value is out of range, TCU interprets this as slipping clutch • Low pressure at converter lockup clutch • Low main pressure • Wrong signal at engine speed sensor • Wrong signal at turbine speed sensor • Wrong size of the sensor gap • Clutch is defective		• Check pressure at converter lockup clutch • Check main pressure in the system • Check sensor gap at engine speed sensor • Check sensor gap at turbine speed sensor • Check signal at engine speed sensor • Check signal at turbine speed sensor • Replace clutch	

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Problem	Cause	Remedy
Excessive transmission noise(Under load or no load)	Too low engine low idle.	Check engine low idle speed.
	Worn parts or damaged in transmission.	Remove transmission suction screen. Inspect for metal particles. Repair as necessary.
	Warped drive line between engine and torque converter.	Inspect drive line.
	Low or no lube.	Do converter-out and lube pressure test. Do transmission pump flow test.
Foaming oil	Incorrect type of oil.	Change oil.
	High oil level.	Transmission overfilled or hydraulic pump seal leaking.
	Low oil level.	Add oil.
	Air leak on suction side of pump.	Check oil pickup tube on side of transmission.
Oil ejected from dipstick	Plugged breather.	Inspect breather on top of transmission. Replace.
Machine vibrates	Aerated oil.	Add oil.
	Low engine speed.	Check engine speed.
	Failed universal joints on transmission drive shaft or differential drive shafts.	Check universal joints.
Machine lacks power and acceleration	Engine high idle speed set too low.	Check high idle adjustment.
	Incorrect transmission oil.	Change oil.
	Aerated oil.	Add oil.
	Low transmission pressure.	Do transmission system pressure test.
	Warped transmission clutch.	Do transmission clutch drag checks.
	Torn transmission control valve gasket.	Inspect gasket.
	Brake drag.	Do brake drag check.
	Failed torque converter.	Do torque converter stall speed test.
	Low engine power.	Do engine power test.
Torque converter stall RPM too high	Aerated oil.	Put clear hose on thermal bypass outlet port. Run machine to check for bubbles in oil.
	Stuck open converter relief valve.	Do converter-out pressure test.
	Leakage in torque converter seal.	Do converter-out pressure test.
	Torque converter not transferring power(Bent fins, broken starter).	Replace torque converter.

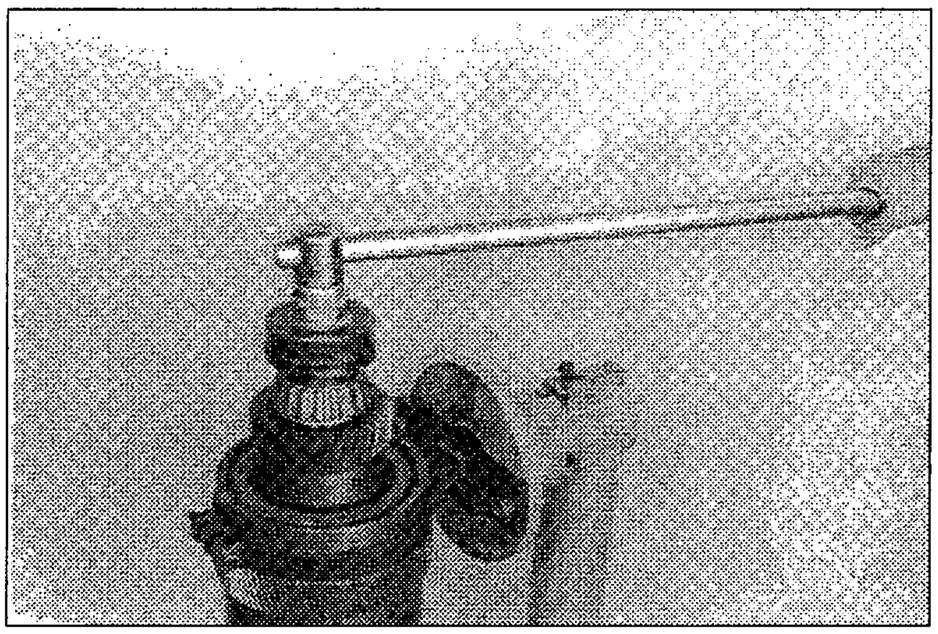
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⑩ Tilt clutch 180°.
Loosen slotted nut.

※ Slotted nut is secured with loctite.
To prevent the damage of the thread, heat slotted nut prior to loosen it(About 120℃).

※ Special tool

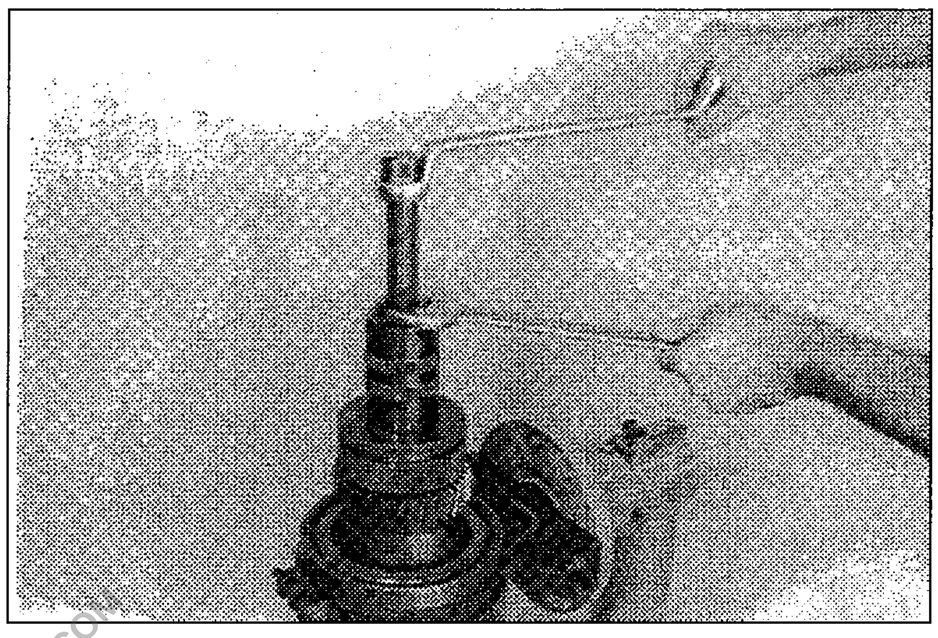
Hook spanner	5870 401 115
Hook spanner	5870 401 118



⑪ Pull off tapered roller bearing.

※ Special tool

Grab sleeve	5873 001 037
Basic set	5873 001 000

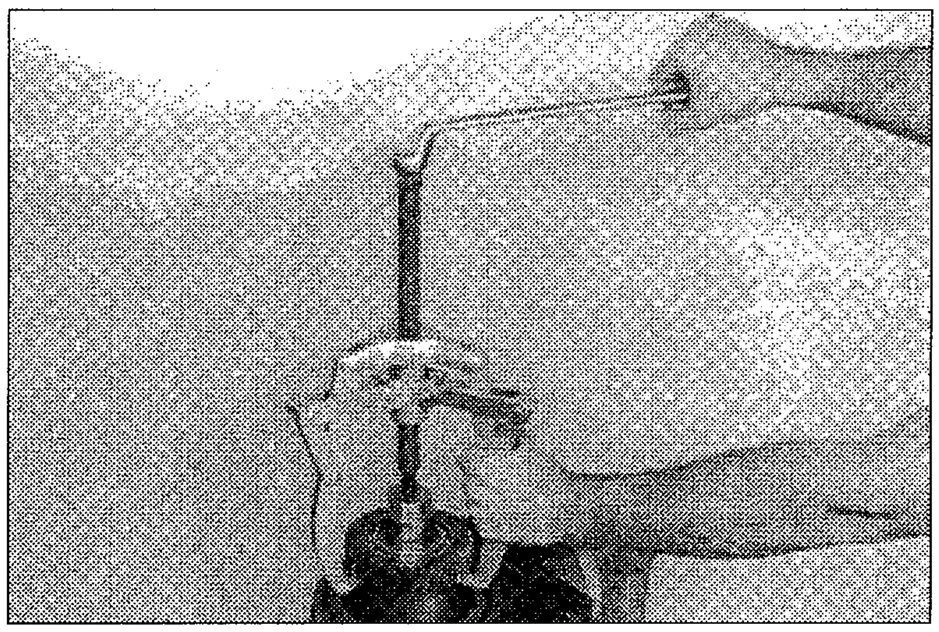


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⑫ Pull spur gear K4 from plate carrier.

※ Special tool

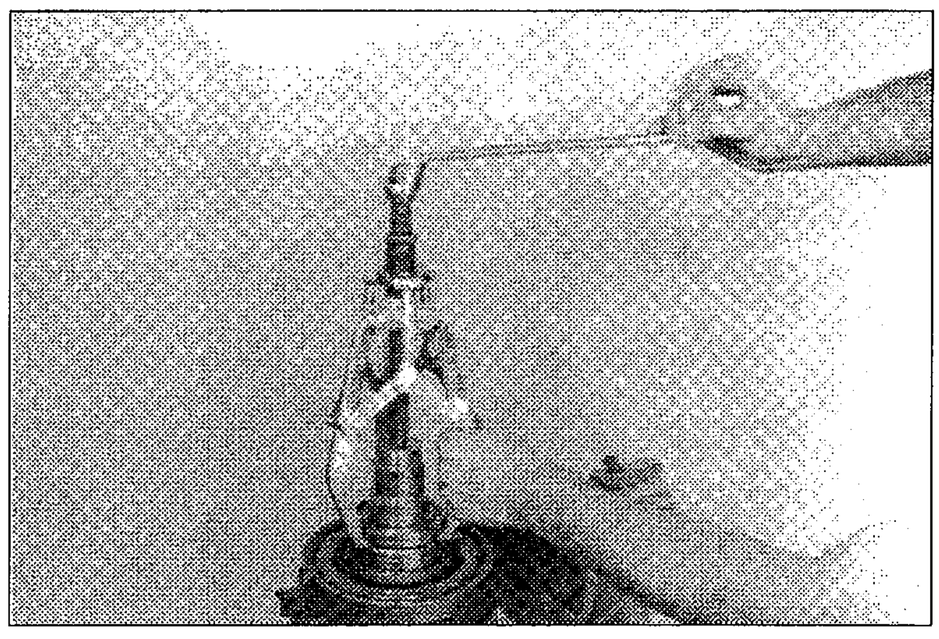
Three-leg puller	5870 971 003



⑬ Remove oil feed ring and pull ball bearing from plate carrier.

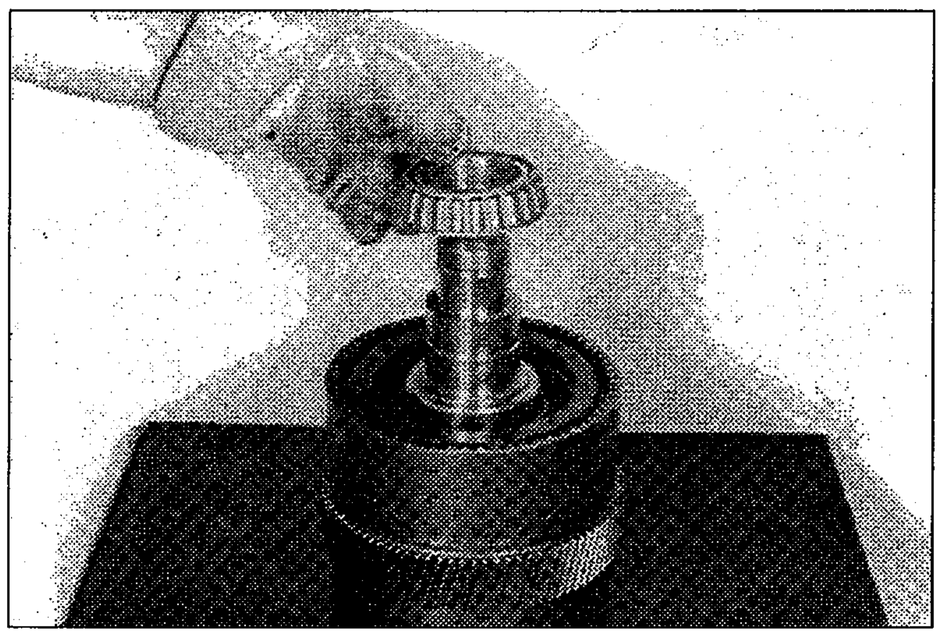
※ Special tool

Three-leg puller	5870 971 002

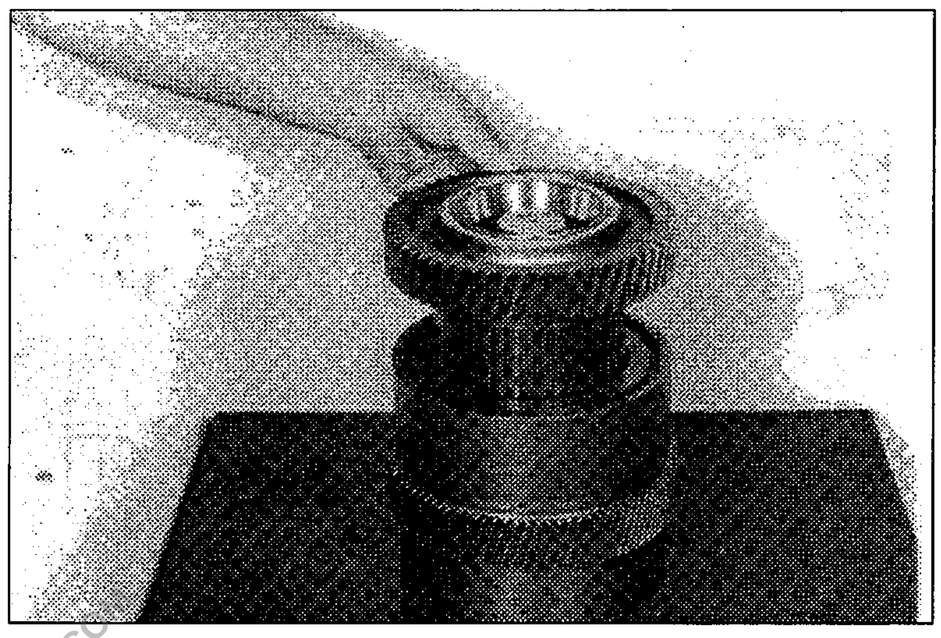


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(8) Heat lower bearing inner race and assemble it until contact is obtained.



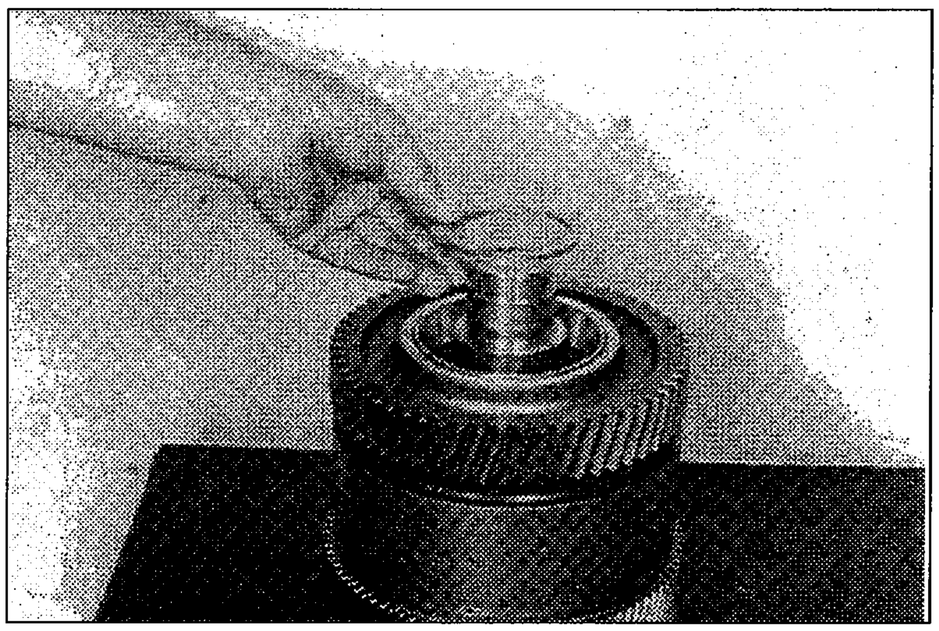
(9) Introduce spur gear KR into the preassembled plate carrier until all inner plates are accommodated.



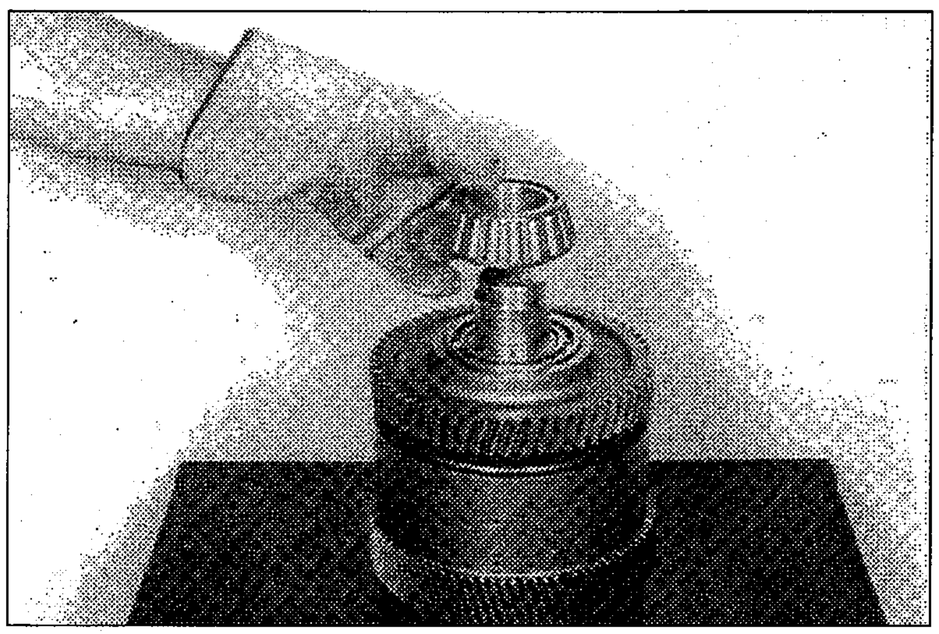
(10) Assemble adjusting ring e.g. s=4.30mm (See Example C).

※ Pay attention to the installation position oil feed grooves are showing upward.

Now, heat upper bearing inner race(Spur gear bearing) and assemble it until contact is obtained.



(11) Heat bearing inner race(Clutch bearing) and assemble it until contact is obtained.



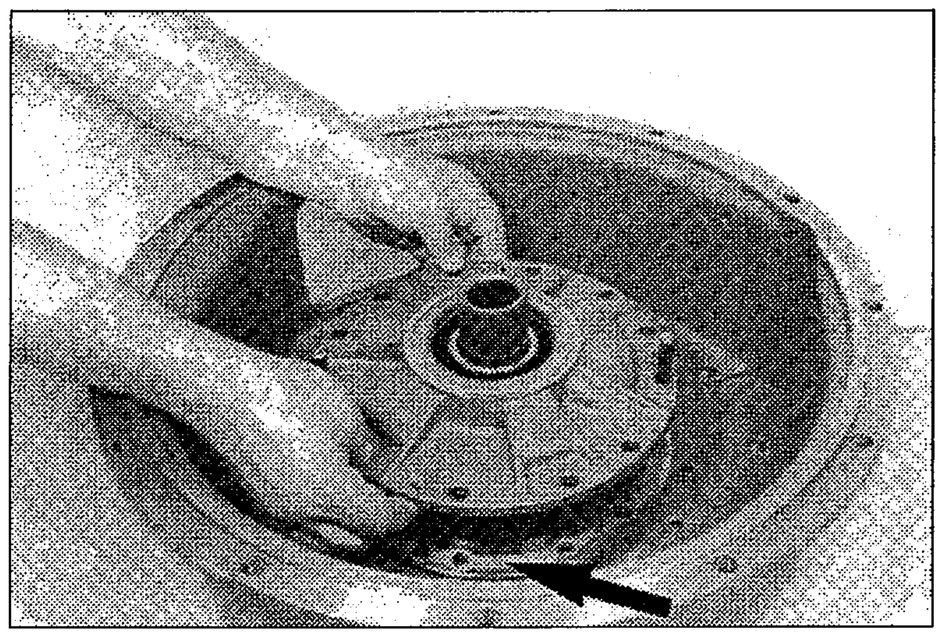
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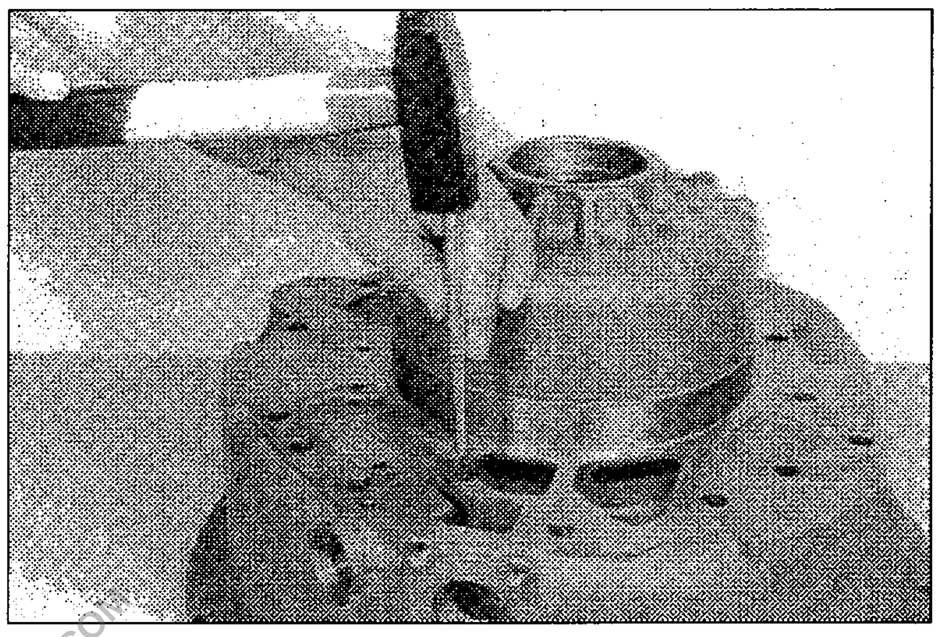
(14) Mount gasket(Arrow) and install bearing cover.

· Torque limit(M10/8.8) : 4.7kgf · m(46Nm)

※ Pay attention to the radial installation position.



(15) Insert roll pin until contact is obtained.

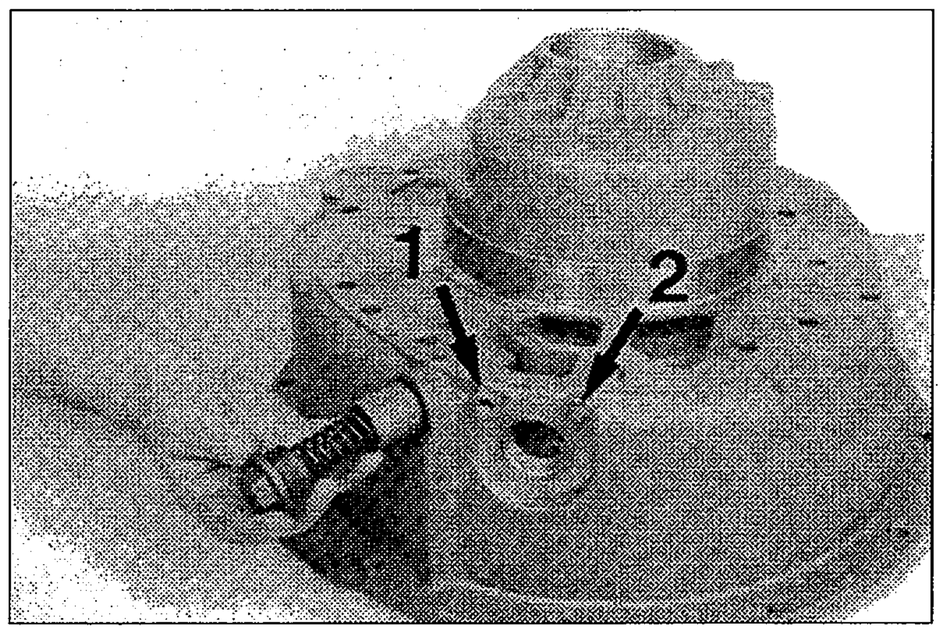


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(16) Install converter pressure valve.

Install temperature sensor(Arrow 1) and screw plug(Arrow 2).

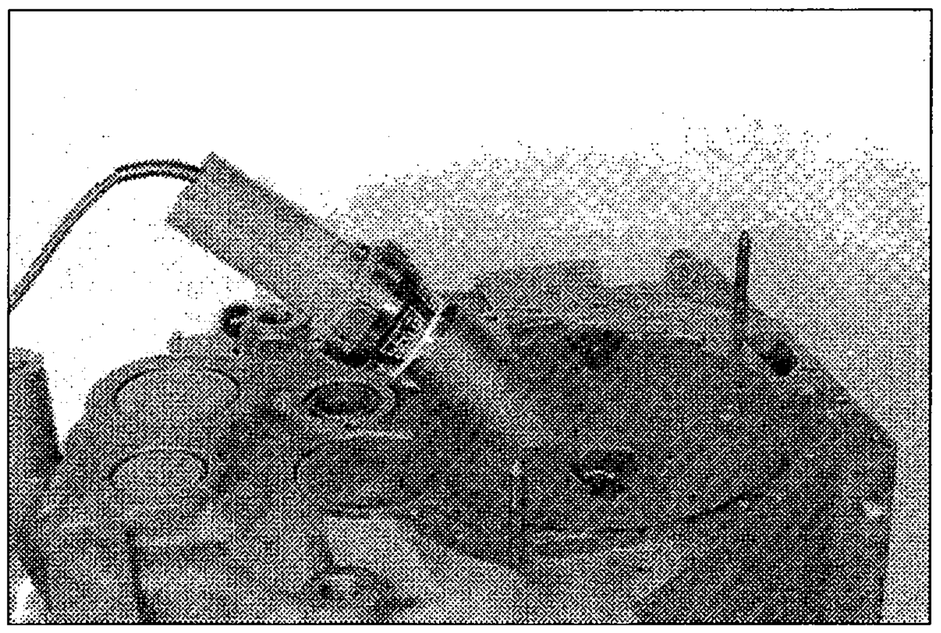
※ Install new O-rings each time.



(17) Heat housing bore(About 120℃).

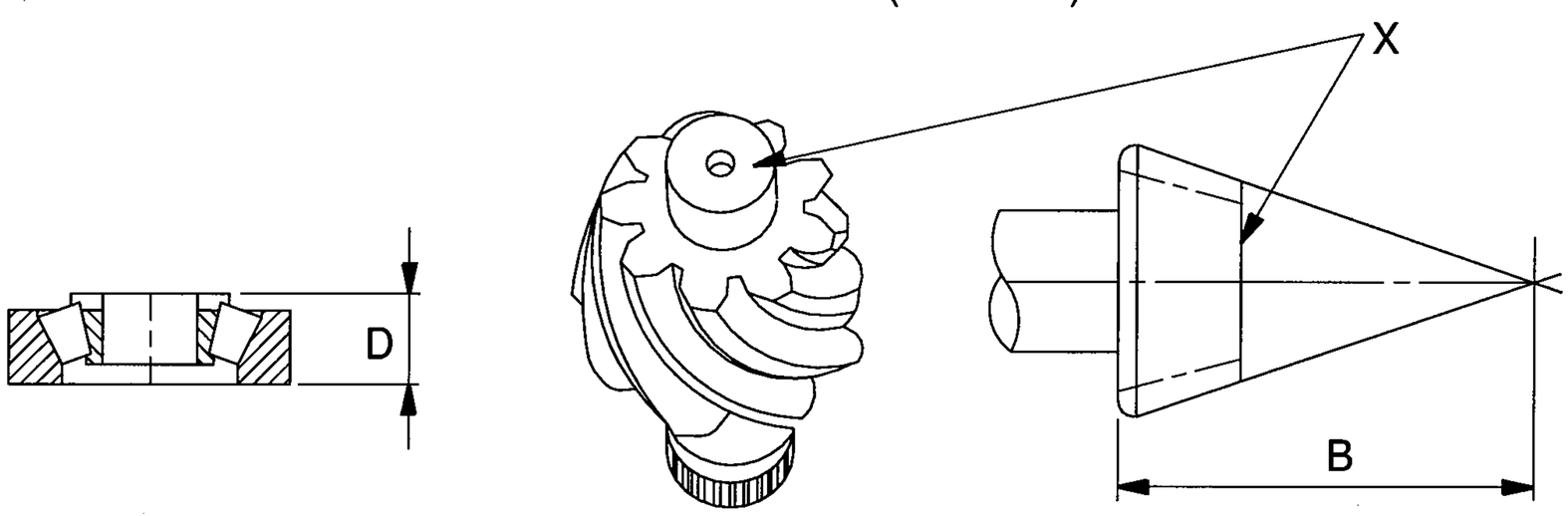
※ Special tool

Preheating sleeve	5870 801 003
Hot air blower(220V)	5870 221 500
Hot air blower(110V)	5870 221 501



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9) DETERMINING THICKNESS OF ADJUSTMENT SHIMS(Rear axle)



(1) Some dimensions should be recorded before starting reassembly of bevel pinion to determine thickness of spacer to be fitted between inner(Underhead) pinion bearing and backing of relevant seat in differential support.
Record dimension from ring gear axis to seat of inner(Underhead) pinion bearing(That will be identified as **A**).
Example : In our case **A** = 266.1mm

(2) A number **X** prefixed by symbol ± is marked on bevel pinion face.
Said value, expressed in tenth of millimeter, indicate the deviation from the theoretical distance from pinion underhead to ring gear axis :
i.e. : + 1 = 0.1mm
Consequently, the true distance(Identified as **B**) will be :
B = 208 ± Deviation
In our case : **B** = 208+ 0.1 = 208.1mm

(3) Measure thickness of pinion head bearing and identify as **D**.
Example : In our case **D** = 54.15mm

(4) Compute thickness of shim **S** for proper axial position of bevel pinion :
S = A - (B + D)
Example : In our case **S** = 266.1 - (208.1 + 54.15) = 3.85mm

(5) Increase by 0.05mm the computed thickness value to compensate subsequent bearing pre-load.
Round off to the nearest tenth of millimeter to the computed thickness value :
i.e. : 4.02 rounded off = 4mm
3.88 rounded off = 3.9mm

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2) SETTING OF THE CALIPER

(1) Brake pads fitting up

※ Brake pads are not interchangeable as they have a different thickness. The inside brake pad is thicker(25mm) and must be put on the thrust piston side.

① Insert the brake pads into the upper part of the caliper by sliding them downwards into their own seats. The side of the brake pad having an elliptic hole must stay toward the top.

② Insert the support pivot(16) into its seat on the caliper by using the 15mm hole on the plate and them make it pass into the pads elliptic holes. On the pivot(16) there is a hole made to allow the pin's passage(15). Pivot must be inserted on the part where distance between pin's hole/pivot's edge is larger.

③ Put the pin against the plate up to the hole made for the pin exceeds the disc pad backing plate. Pin must be then inserted and opened in order to avoid it can get unthreaded.

(2) Hydraulic connections

① Check thread's cleanliness.

② Connect the hydraulic oil pipe by inserting the copper washer.

③ Load the circuit and make the bleeding by acting on the valve(17).

④ Clasp the valve(17) without exceeding 0.6kgf · m(4.4lbf · ft).

※ A too much high locking couple should jeopardize the seat's valve or cause the valve's breakage.

(3) Brake pads adjustment

※ Make sure that caliper can slide without any problem on the pivots(16). Then raise pressure the circuit by checking that piston is drawn back. Springs are now compresses and brake pads can be adjusted to the following instructions.

① Turn the screw(3) clockwise by using a screwdriver. At the same time caliper must be moved ahead by sliding in on pivots in order to let brake pads to bed against the disc brake surface.

② Turn the screw(3) counter clock-wise just for a turn which means 1.5mm.

③ Keep the screw(3) steady and clasp the nut(6) by using a 35mm key.

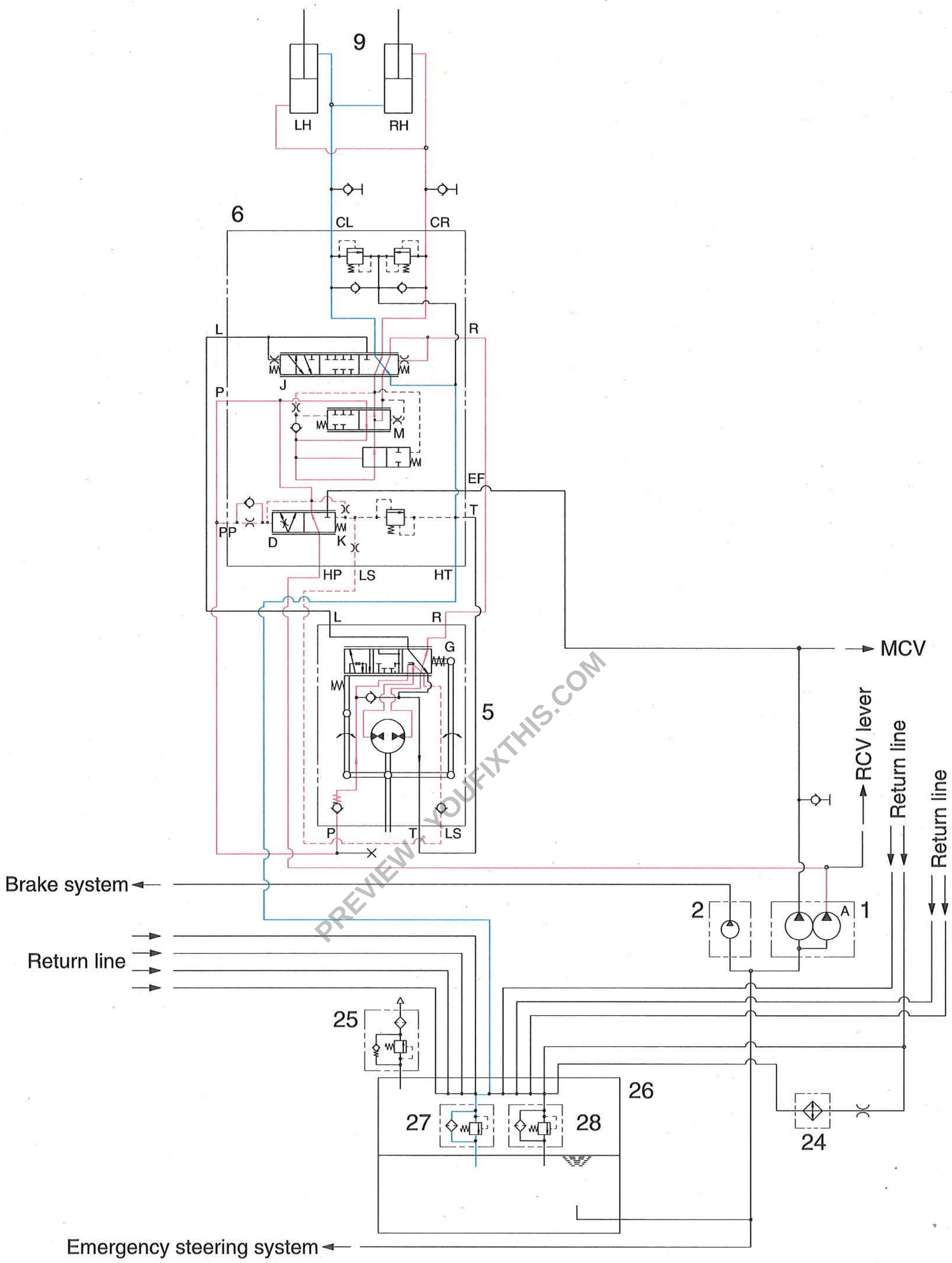
(4) Brake caliper fastening

Insert aluminium cap(14) by paying much attention in order to avoid to spoil the weather strip.
Screw tight the screws(21).

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3) RIGHT TURN



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- When the steering wheel is turned to the right, the spool(G) within steering unit(5) connected with steering column shaft is pushed to the right direction.
- The oil discharged from the pump(A) flows into HP port of flow amplifier(6).
- The delivered oil passes through the main orifice of steering unit(5), through the priority valve spool (D) of flow amplifier(6). The position of priority spool(D) is determined when the pressure difference between front and rear of main orifice is balanced with control spring(K) force.
- The oil supplied through the directional spool(J) from the steering unit(5) is combined with the direct oil from the priority valve spool(D) in the amplifier spool(M). The amplified oil flows into the small chamber of the right steering cylinder and large chamber of the left steering cylinder respectively.
- Oil returned from left and right cylinder returns to hydraulic tank through directional spool(J) of flow amplifier(6).
- When the above operation is completed, the machine turns to the right.

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5. FLOW AMPLIFIER PRESSURE TEST

- **SPECIFICATION**

  Oil temperature 65±6°C(150±10°F)
  Engine speed High idle
  Oil pressure 20.1~21.1MPa
  (205~215bar, 2900~3100psi)

- **GAUGE AND TOOL**

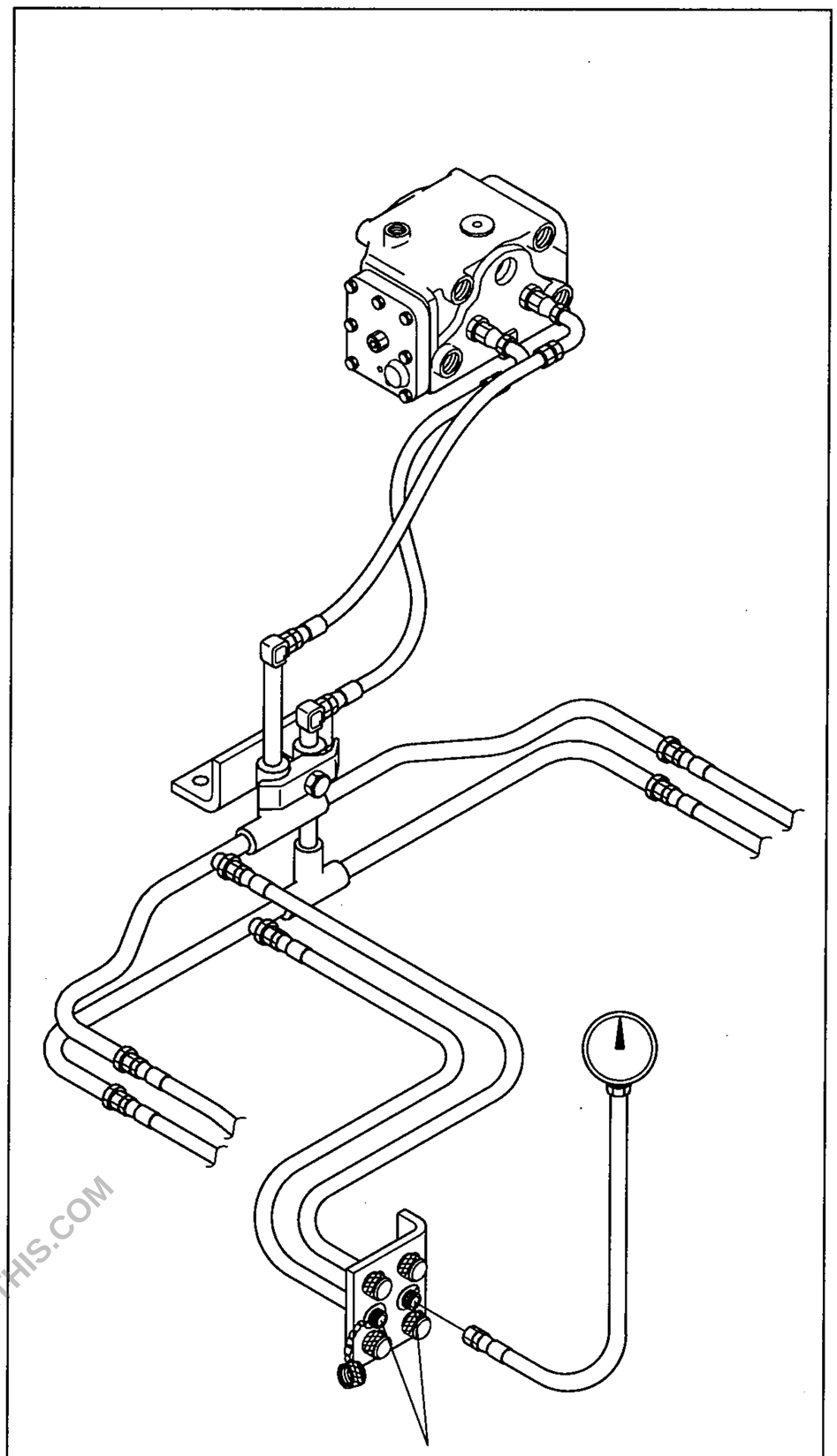
  Gauge 0~35MPa(0~350bar, 0~5000psi)
  Temperature reader

1) Connect gauge to test port.
2) Install temperature reader(See installation procedure in this group).
3) Install frame locking bar.
4) Heat hydraulic oil to specifications(See hydraulic oil warm up procedure at page 6-50).
5) Run engine at specifications and turn steering wheel rapidly hold approximately 22N(5lb force) pressure on wheel with frames locked.

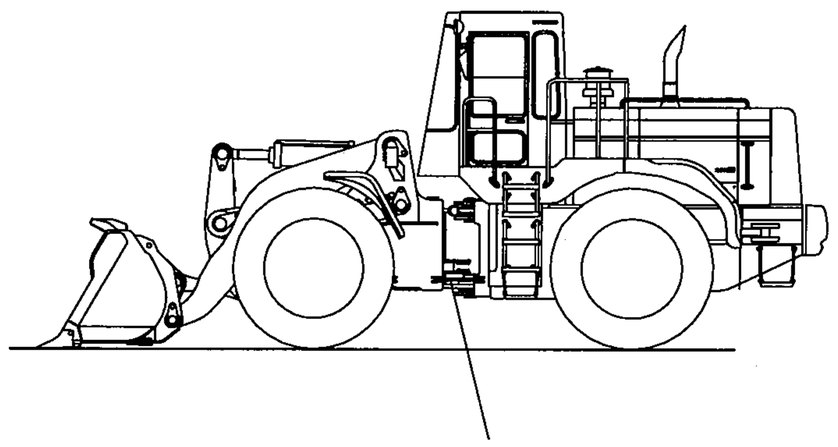
※ **If steering wheel is turned slowly, it will continue to with the frames locked.**
This will give an incorrect pressure reading.
If steering wheel continues to turn rapidly with the frames locked, steering system leakage is indicated.

6) Read pressure gauge. This is the flow amplifier relief pressure.
7) If pressure in not to specification, turn adjusting screw in relief cartridge using a hex head wrench to adjust pressure.

   If pressure cannot be adjusted to specification, disassemble and inspect flow amplifier.



Gauge port for steering system



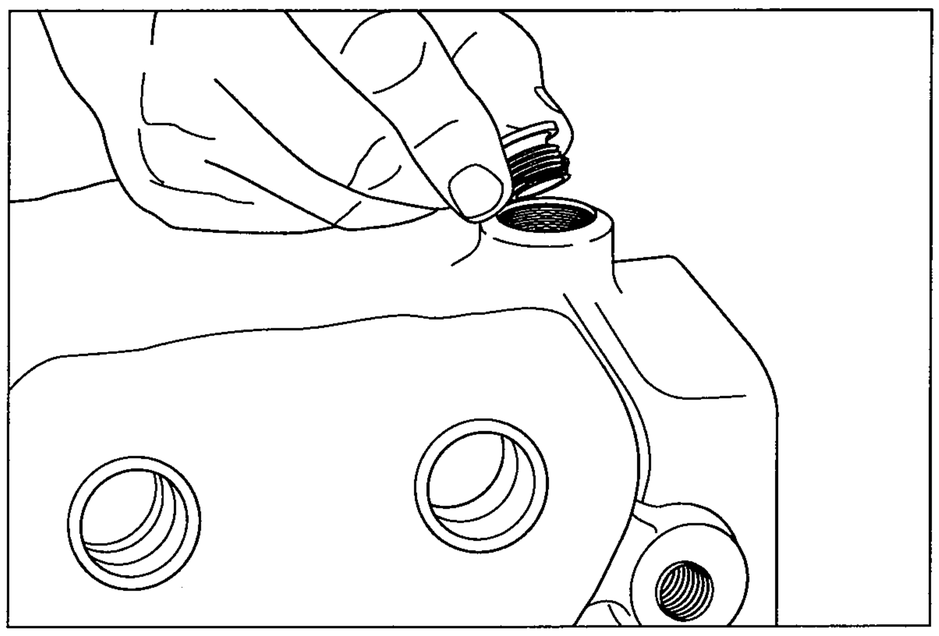
Frame locking bar

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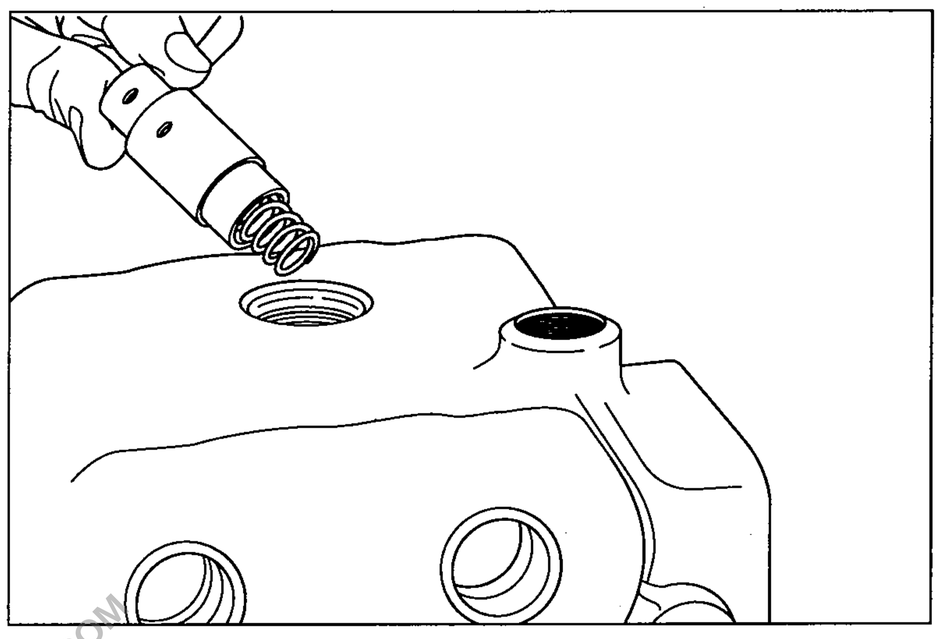
③ Fit plug with washer.

· Tightening torque : 6 ± 0.5kgf · m
(44.1 ± 3.6lbf · ft)



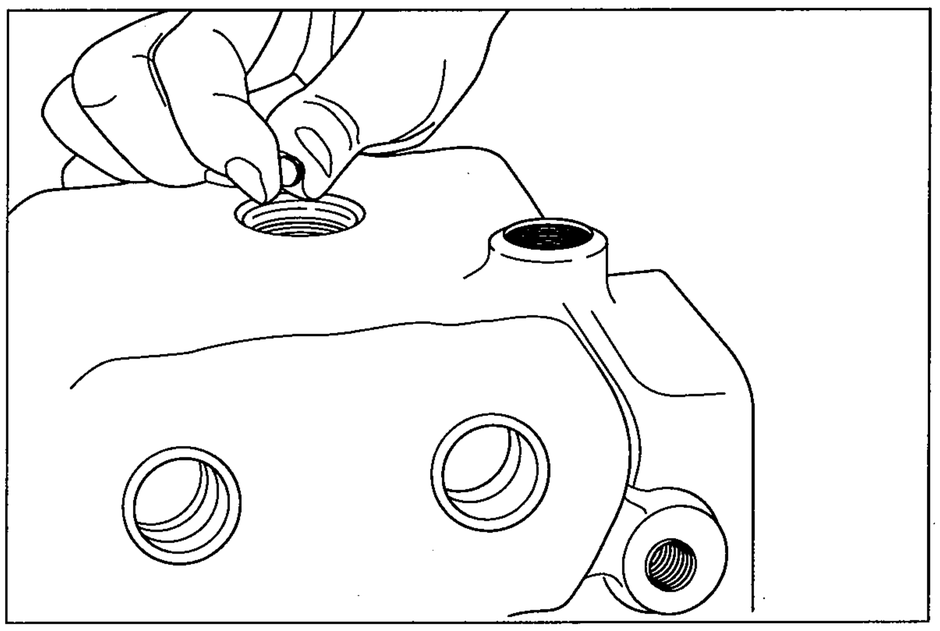
(10) Installation of back pressure valve

① First fit spring in piston with vaseline.
Fit assembled piston and spring.



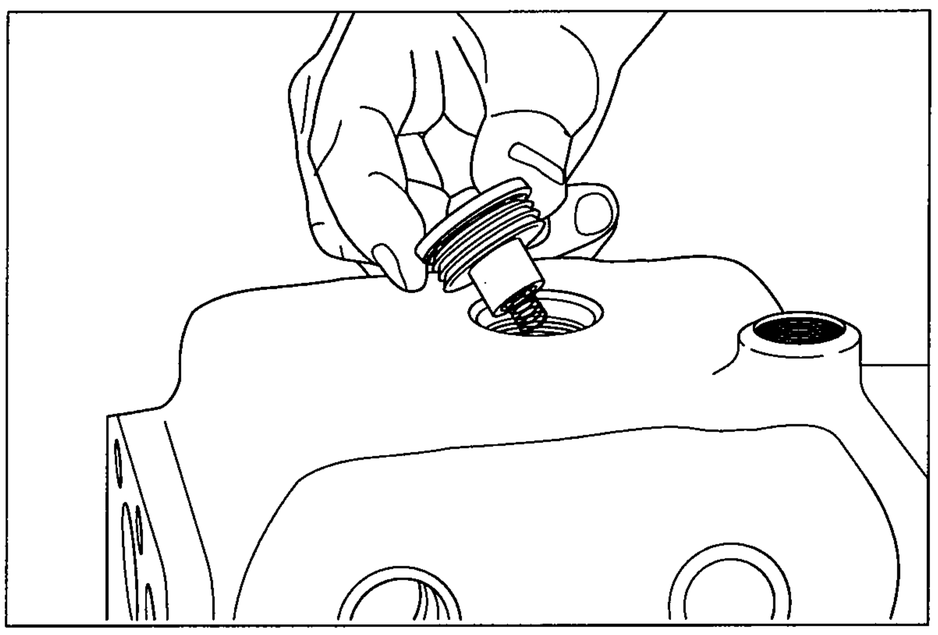
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② Let the ball drop down.



③ Fit spring in plug with vaseline.
Fit assembled plug and spring.
Remember O-ring.

· Tightening torque : 2.6 ± 0.3kgf · m
(18.8 ± 2.2lbf · ft)

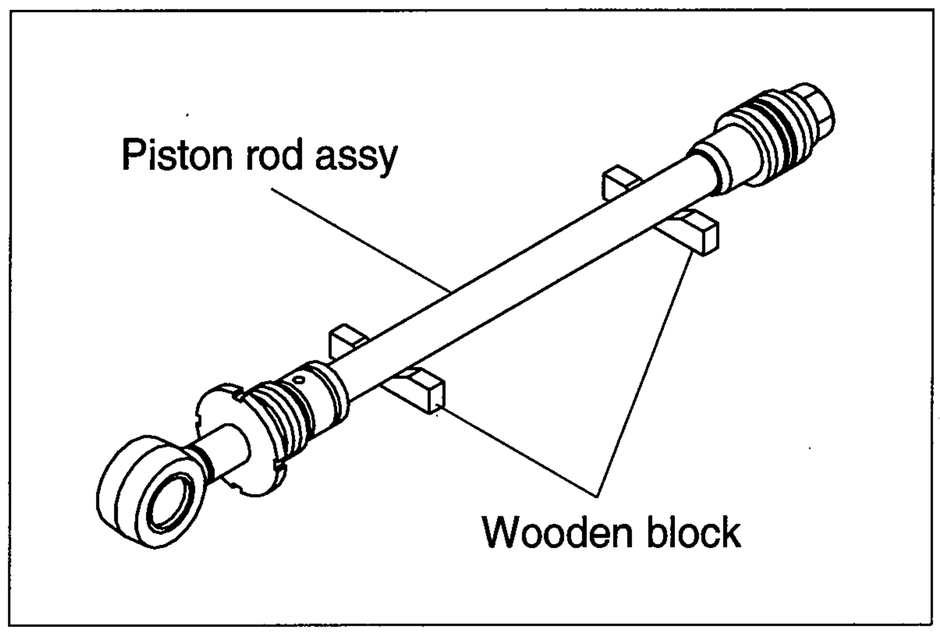


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Note that the plated surface of piston rod(2) is to be lifted. For this reason, do not use a wire sling and others that may damage it, but use a strong cloth belt or a rope.

⑤ Place the removed piston rod assembly on a wooden V-block that is set level.

※ Cover a V-block with soft rag.

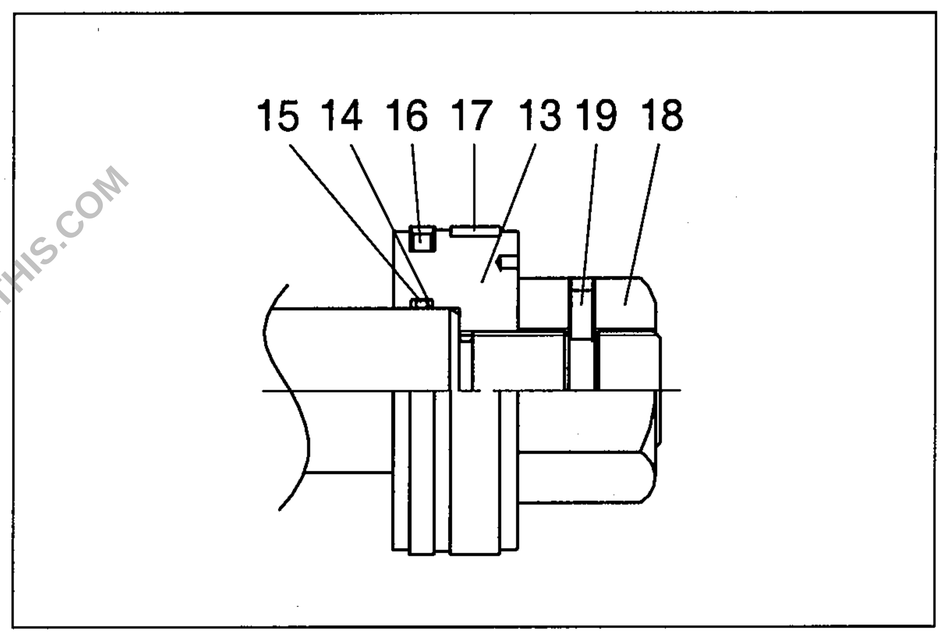


(2) Remove piston and gland assembly

① Remove the set screw(19).

② Remove the piston nut(18).

③ Remove piston assembly(13), back up ring(15) and O-ring(14).



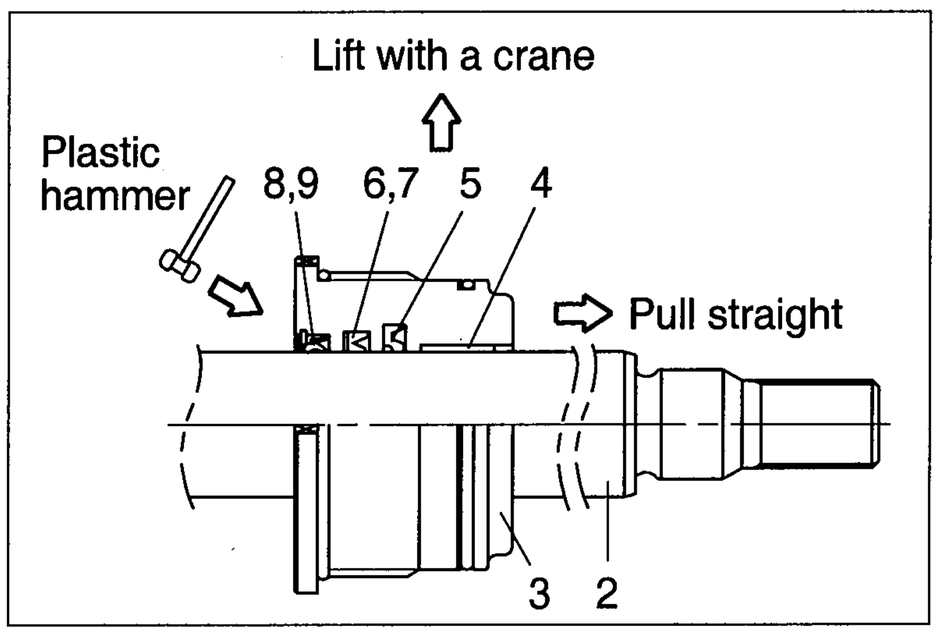
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③ Remove the gland(3) assembly from piston rod(2).

※ If it is too heavy to move, move it by striking the flanged part of gland(3) with a plastic hammer.

※ Pull it straight with gland assembly lifted with a crane.

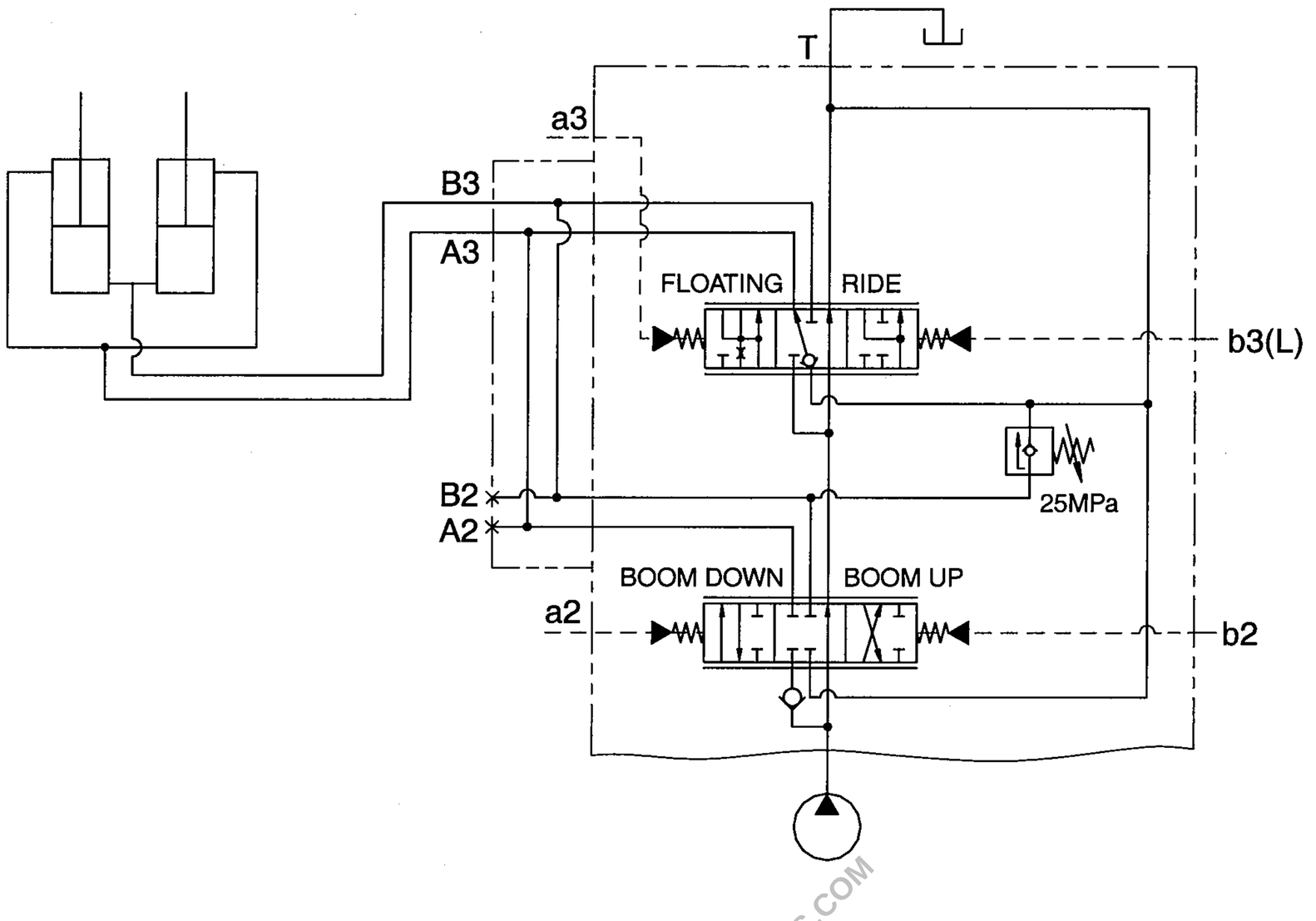
Exercise care so as not to damage the lip of rod bushing(4) and packing(5,6,7,8,9) by the threads of piston rod(2).

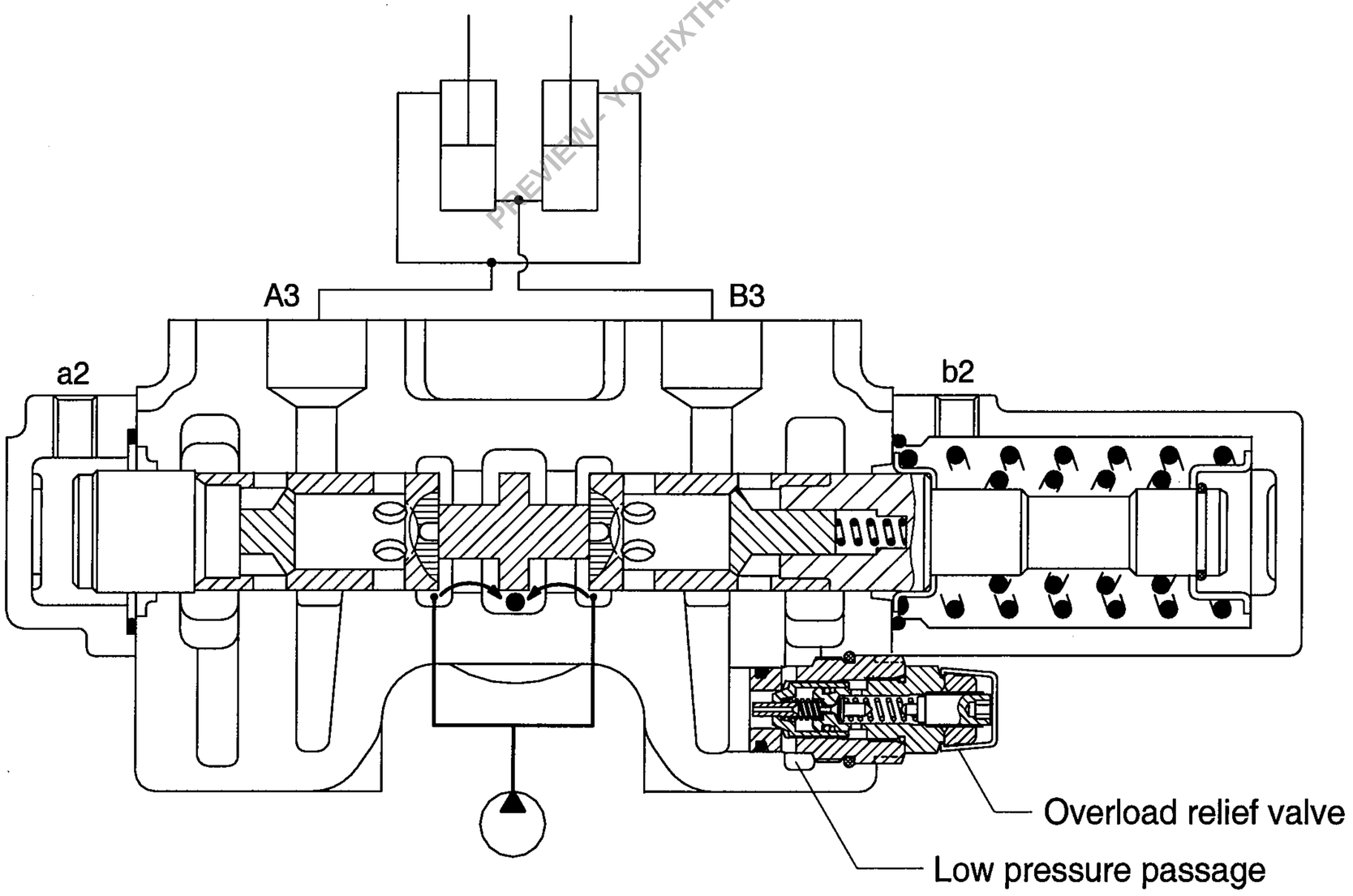


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2) BOOM SECTION OPERATION

(1) Spool in neutral





If the remote control valve is not operated, the oil supplied from the pump port passes through the neutral passage to the low pressure passage at the outlet section, and then returns to the tank port.

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9) Disassemble and/or assemble the hydraulic equipment only in a clean place free of dust. When disassembling, be careful about the interchangeability of parts, and clean the disassembled parts with pure and clean mineral cleansing oil. Clean the internal passages as well. After the parts have dried, wipe them off with a clean lint-free cloth.

10) When overhauling the hydraulic equipment replace all O-rings, backup rings, etc. with new ones. Assemble O-rings with grease or vaseline applied.

11) After installing the equipment, add more hydraulic oil to make up for that lost during disassembly.

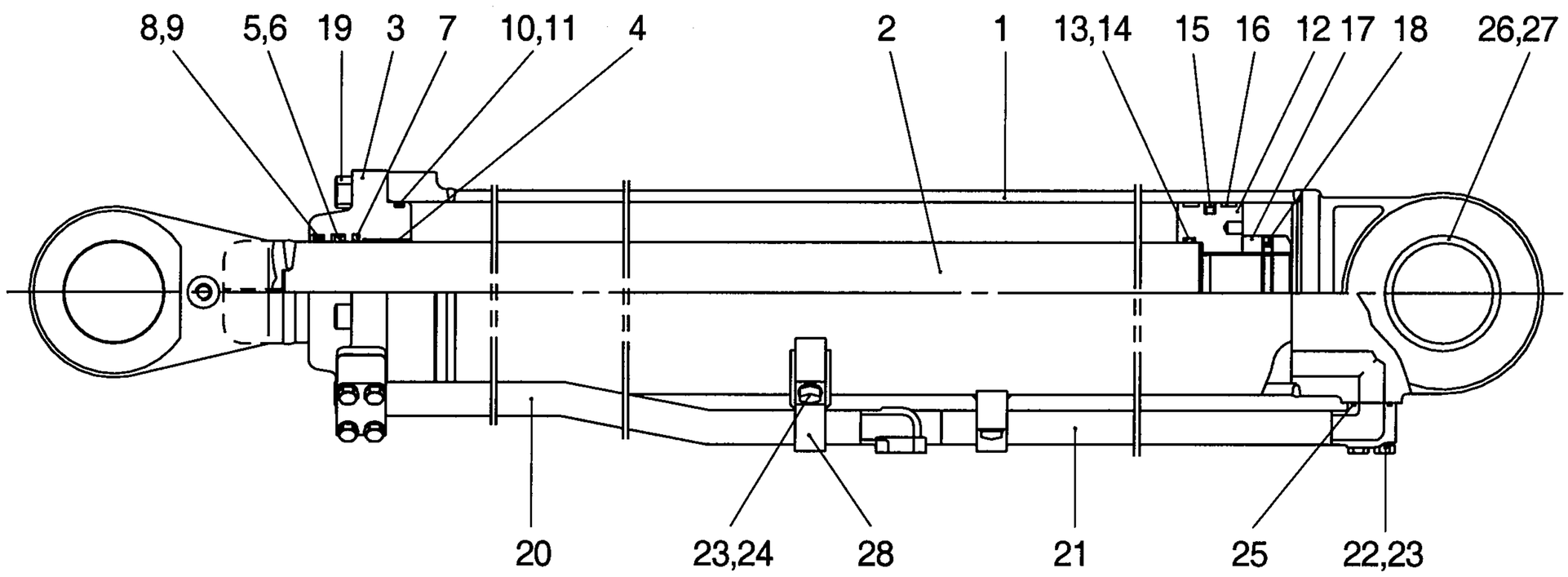
12) Tighten joints correctly. Loose joints will cause the hydraulic oil to leak. If the oil leaks, the tank oil level drops and air gets sucked in, so the pump will break down. Also loose joints in suction lines will take air in and might cause abnormal noise, malfunction or damage to pumps.

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2. BOOM AND BUCKET CYLINDER

1) BOOM CYLINDER



1	Tube assy	11	Back up ring	21	Pipe assy
2	Rod assy	12	Piston	22	Bolt
3	Gland	13	O-ring	23	Spring washer
4	Bushing	14	Back up ring	24	Bolt
5	Rod seal	15	Piston seal	25	O-ring
6	Back up ring	16	Wear ring	26	Bushing
7	Buffer ring	17	Piston nut	27	Dust seal
8	Dust wiper	18	Screw	28	Clamp
9	Snap ring	19	Bolt		
10	O-ring	20	pipe assy		

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38. WIPER AND WASHER CIRCUIT

1) OPERATING FLOW

Fuse box (No.11) → Wiper relay [CR-4(30)→(87a)] → Front wiper motor [CN-21(1)]
Wiper relay 2 [CR-26(86), (87)]
Multi function switch [CS-12(6)]
Rear wiper & washer switch [CS-3(1)]
Rear wiper motor [CN-102(1)]

(1) Front washer switch ON

① Washer switch ON [CS-12(6)→(2)] → Washer tank [CN-22(2)] → Washer operating
Check unit [CN-58(21)→(15)] → Wiper relay 2 [CR-26(87)→(30)] → Wiper motor [CN-21(5)] → Wiper motor operating(Low)

(2) Front wiper switch ON

① INT position

Wiper switch ON [CS-12(6)→(1)] → Check unit [CN-58(10)→(15)] → Wiper relay 2 [CR-26(87)→(30)] → Wiper motor [CN-21(5)] →Wiper motor intermittently operating

② Lo position

Wiper switch ON [CS-12(6)→(4)] → Wiper relay 2 [CR-26(87a)→(30)] → Wiper2 motor [CN-21(5)] → Wiper motor operating (Low)

③ Hi position

Wiper switch ON [CS-12(6)→(3)] → Wiper relay [CR-4(30)→(87)] → Wiper motor [CN-21(4)] → Wiper motor operating(High)

(3) Auto-parking(When switch OFF)

Switch OFF → Fuse box (No.11) → Wiper relay [CR-4(30)→(87a)] → Wiper motor [CN-21(1)→(2)] → Multi function switch [CS-12(5)→(4)] → Wiper relay 2 [CR-26(87a)→(30)] → Front wiper motor [CN-21(5)] → Wiper motor stop

(4) Rear wiper and washer switch

① Wiper switch ON(1st step)

Wiper switch ON [CS-3(1)→(6)] → Wiper motor [CN-102(5)] → Wiper motor operating
Rear wiper and washer switch indicator lamp ON

② Washer switch ON(2nd step)

Washer switch ON [CS-3(1)→(3)] → Rear washer tank [CN-103(2)] → Washer operating

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Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CS-30	SWF	10	Ether	593757	-
CS-34	SWF	10	Buzzer stop switch	593757	-
CS-39	SWF	10	Illumination and head lamp switch	593757	-
CS-41	SWF	10	Hazard switch	593757	-
CS-42	SWF	10	Clutch cut off switch	593757	-
CS-50	SWF	10	Ride control switch	593757	-
CS-51	SWF	10	Auto/manual switch	593757	-
CS-54	SWF	10	Aircon switch	593757	-
CS-58	Fasten	6	Blower switch	S810-006202	-
Light					
CL-1	-	2	Room lamp	MG610392	-
CL-2	Faten	3	Cigar lighter	S810-003202	-
CL-3	SWP	4	Head light(LH)	S814-004000	-
CL-4	SWP	4	Head light(RH)	S814-004000	-
CL-5	SWP	2	Work light(LH)	S814-002000	-
CL-6	SWP	2	Work light(RH)	S814-002000	-
CL-7	Fasten	1	Beacon lamp	S810-001202	-
CL-15	SWP	4	Combi lamp(RR, LH)	S814-004000	-
CL-16	SWP	4	Combi lamp(RR, RH)	S814-004000	-
CL-21	SWP	2	Numberplate lamp	S814-002000	-
CL-22	SWP	2	Work light(LH)	S814-002000	-
CL-23	SWP	2	Work light(RH)	S814-002000	-
CL-24	SWP	2	Turn lamp(LH)	S814-002000	-
CL-25	SWP	2	Turn lamp(RH)	S814-002000	-
CL-41	SWF	2	Hi beam lamp(Dash board)	913328	-
CL-42	SWF	2	Turn lamp(LH, Dash board)	913328	-
CL-43	SWF	2	Turn lamp(RH, Dash board)	913328	-
CL-44	SWF	2	Parking lamp(Dash board)	913328	-
CL-45	SWF	2	Brake fail lamp(Dash board)	913328	-
CL-46	SWF	2	Charge lamp(Dash board)	913328	-
CL-47	SWF	2	Hydraulic oil lamp(Dash board)	913328	-
CL-48	SWF	2	Over heat lamp(Dash board)	913328	-
CL-49	SWF	2	Engine oil lamp(Dash board)	913328	-
CL-50	SWF	2	Air cleaner lamp(Dash board)	913328	-
CL-51	SWF	2	Transmission oil lamp(Dash board)	913328	-
CL-52	SWF	2	Transmission error lamp(Dash board)	913328	-
CL-53	SWF	2	Steering pressure lamp	913328	-
CL-54	SWF	2	Steering pump pressure lamp	913328	-

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