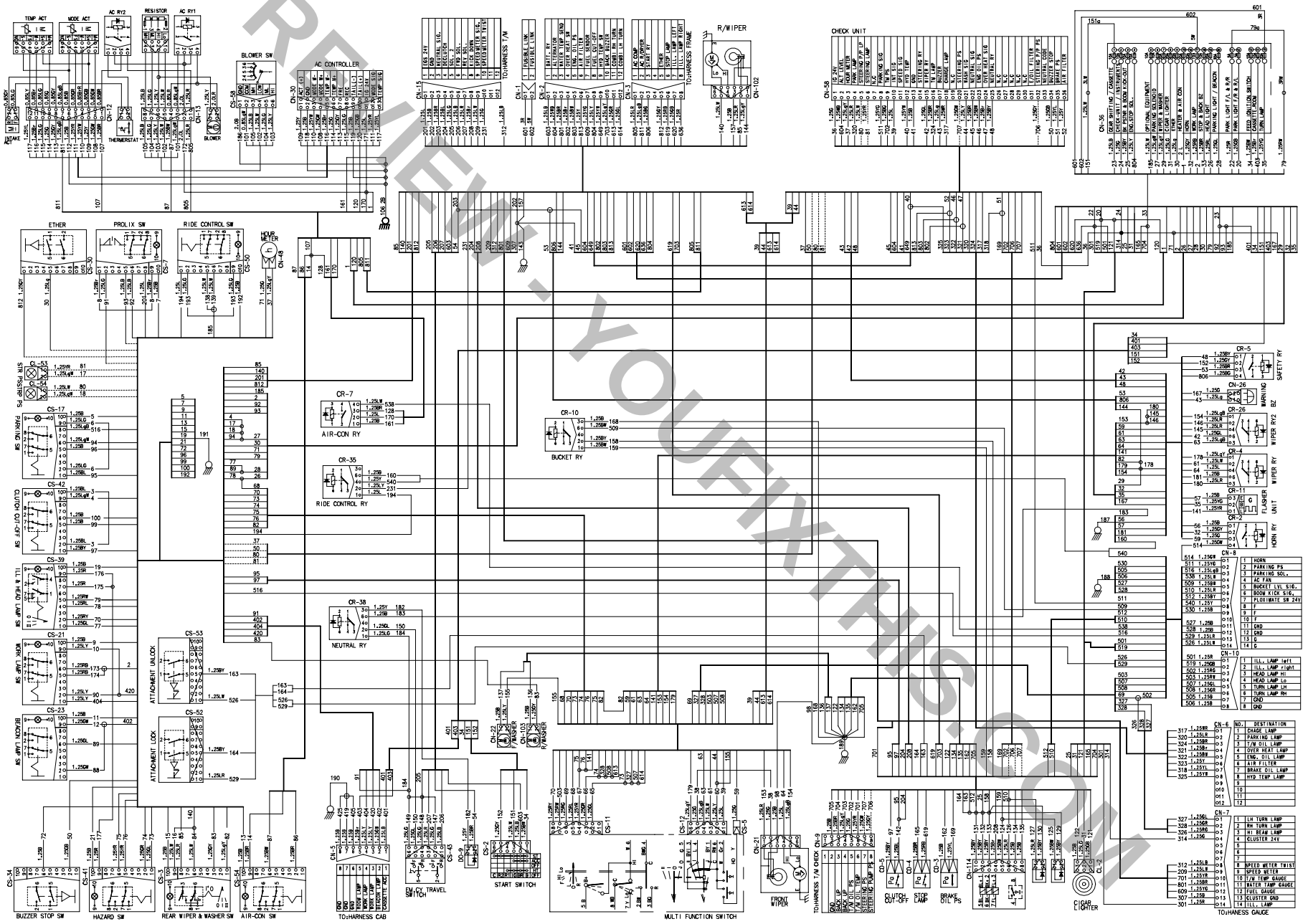
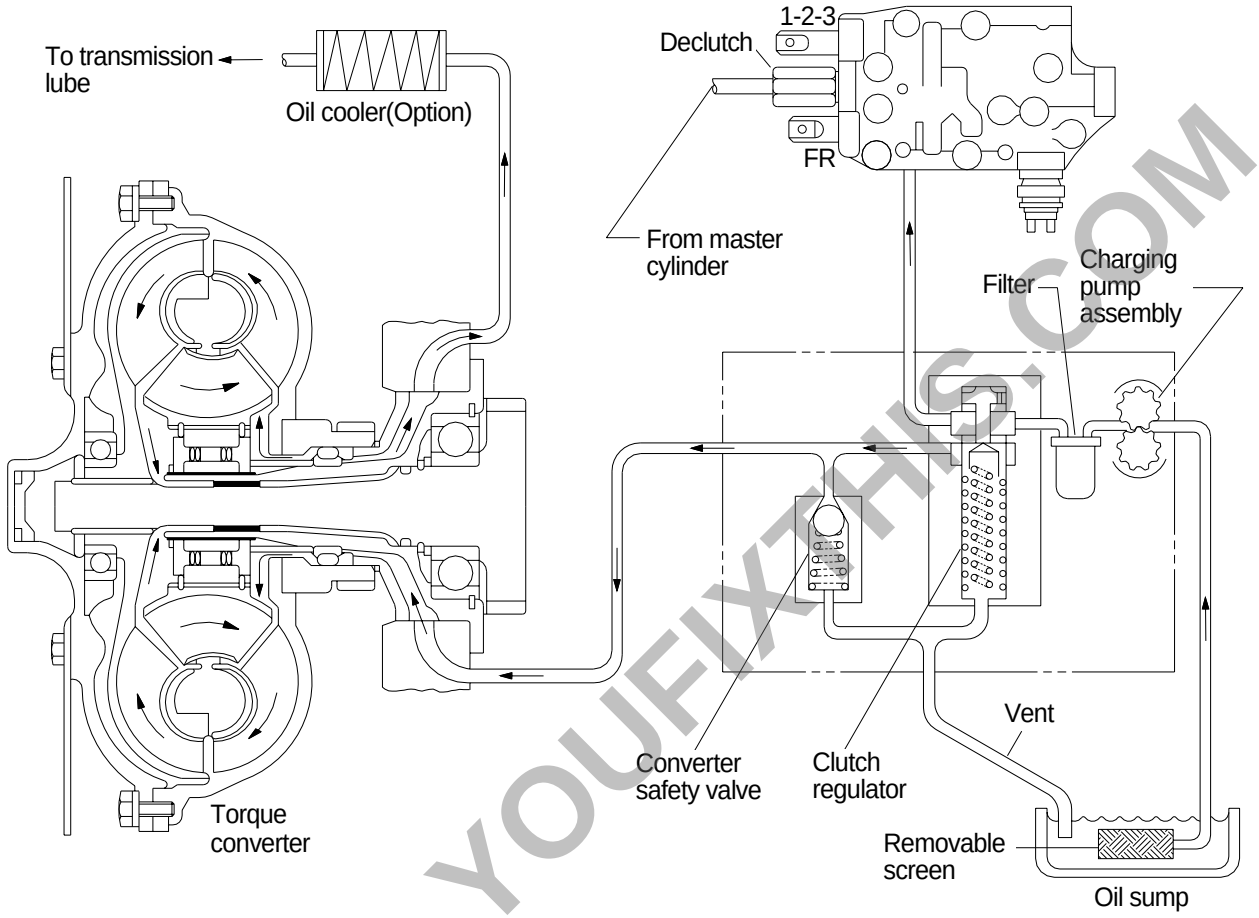


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1) HYDRAULIC SCHEMATIC



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5. TIGHTENING TORQUE OF MAJOR COMPONENT

No.	Items		Size	kgf · m	lbf · ft
1	Engine	Engine mounting bolt, nut	M20 × 2.5	57.9 ± 8.7	419± 63
2		Radiator mounting bolt, nut	M12 × 1.75	12.3 ± 2.5	89.0± 18
3	Hydraulic system	Main pump housing mounting bolt	1/2-13UNC	19.6 ± 2.9	142± 21
4		Main control valve mounting bolt	M12 × 1.75	12.8± 3	92.6± 22
5		Steering unit mounting bolt	3/8-16UNC	3.3± 0.8	23.9± 5.8
6		Priority valve mounting bolt	M 8 × 1.25	2.5 ± 0.5	18.1± 3.6
7		Brake valve mounting bolt	M 8 × 1.25	2.5 ± 0.5	18.1± 3.6
8		Fuel tank mounting bolt	M16 × 2.0	27.9 ± 4.5	202± 33
9		Hydraulic oil tank mounting bolt	M12 × 1.75	12.3 ± 2.5	89.0± 18
10	Power train system	Transmission mounting bolt	M20 × 2.5	57.9 ± 8.7	419± 63
11		Front axle mounting bolt	M20 × 2.0	100± 15	723±108
12		Rear axle support mounting bolt, nut	M24 × 2.0	100± 15	723±108
13		Tire mounting nut	M22 × 1.5	60± 2	434± 15
14		Drive shaft joint mounting bolt, nut	3/8-24UNF	6 ± 0.8	43.4± 5.8
15	Others	Counterweight mounting bolt	M30 × 2.0	199 ± 29.9	1439±216
16		Operator's seat mounting bolt	M 8 × 1.25	3.4 ± 0.8	24.6± 5.8
17		ROPS Cab mounting bolt(4EA)	M24 × 3.0	28± 2.6	203± 19

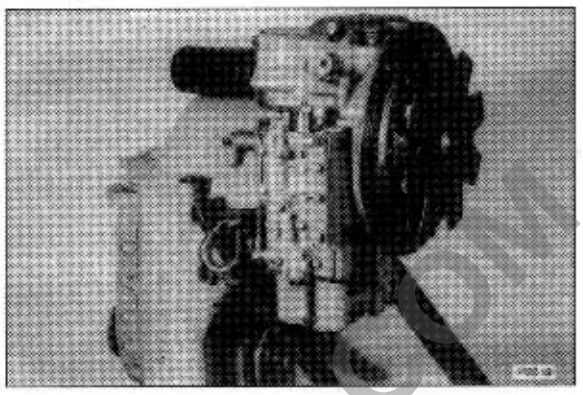
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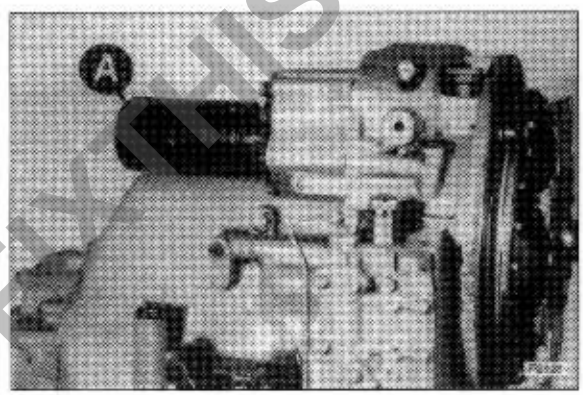
1. TRANSMISSION

1) 4 SPEED TRANSMISSION DISASSEMBLY

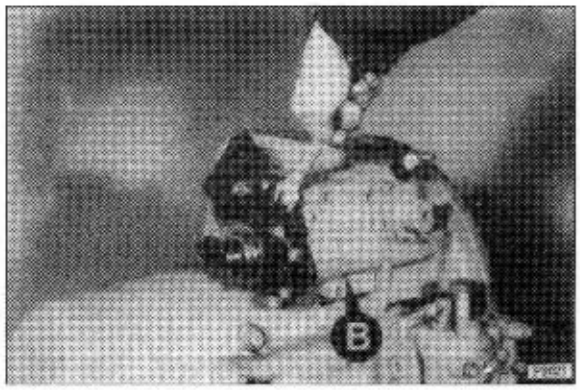
(1) It is recommended that a locally made stand is used to support the transmission as shown during disassembly.



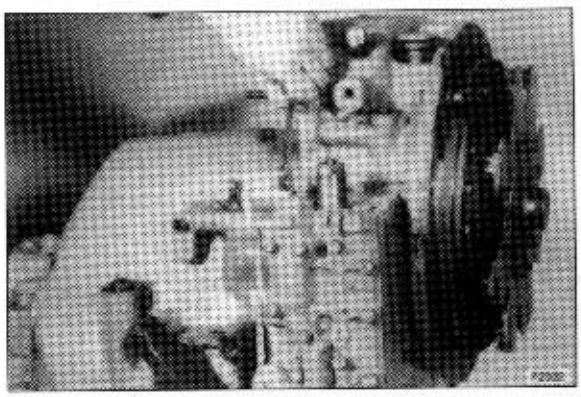
(2) Remove the filter cartridge **A** and dipstick/filler tube(Not shown).



(3) Remove the charge pump **B** and the main hydraulic pump(Not shown).



(4) Remove the cross-over pipe.



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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.)

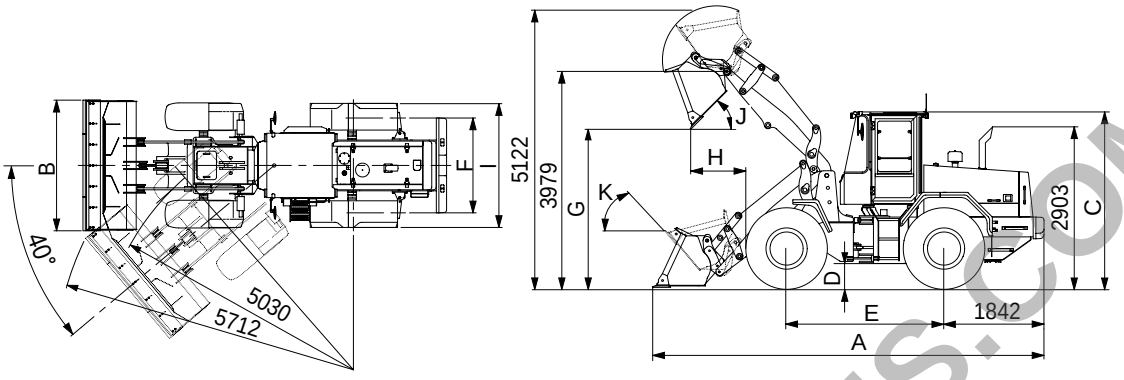
Problem	Cause	Remedy
Transmission slippage	Low oil level.	Add oil.
	Wrong oil grade.	Change oil.
	Restricted transmission pump suction screen.	Remove and clean screen.
	Leak in transmission control valve or gasket.	Remove valve and inspect gaskets.
	Low transmission pump flow due to worn pump.	Do transmission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

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2. SPECIFICATIONS

1) WITHOUT CUTTING EDGE TYPE BUCKET



Description			Unit	Specification
Operating weight			kg(lb)	11530(25410)
Bucket capacity		Struck	$m^3(yd^3)$	1.6(2.1)
		Heaped		1.9(2.5)
Overall length		A	mm(ft-in)	7125(23' 5")
Overall width		B		2550(8' 4")
Overall height		C		3237(10' 7")
Ground clearance		D		417(1' 4")
Wheelbase		E		2900(9' 6")
Tread		F		1900(6' 3")
Dump clearance at 45°		G		2972(9' 9")
Dump reach		H		991(3' 3")
Width over tires		I		2430(8' 0")
Dump angle		J	Degree (°)	45
Roll back angle(Carry position)		K		56
Cycle time		Lift(With load)	sec	5.6
		Dump(With load)		1.4
		Lower(Empty)		2.7
Maximum travel speed			km/hr(mph)	39(24.2)
Braking distance			m(ft-in)	13(42' 8")
Minimum turning radius(Center of outside tire)				5.03(16' 6")
Gradability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.5(4.0)
		Second gear		13.5(8.4)
		Third gear		27.1(16.8)
		Fourth gear		39(24.2)
	Reverse	First gear		6.5(4.0)
		Second gear		13.5(8.4)
		Third gear		27.1(16.8)

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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	16.4(4.3)	SAE 30 SAE 10W SAE 10W-30 SAE 15W-40
Torque converter Transmission	Oil	25(6.6)	DEXRON II
Axle	Gear oil	Front : 40(10.6) Rear : 40(10.6)	SAE 80W-90LSD/API GL-5
Hydraulic tank	Hydraulic oil	Tank: 75(19.8) System: 120(31.7)	ISO VG 32 ISO VG 46 ISO VG 68
Fuel tank	Diesel fuel	200(52.8)	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	35(9.2)	Ethylene glycol base permanent type

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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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The direction or speed clutch assembly consists of a drum with internal splines and a bore to receive a hydraulically actuated piston. The piston is "**oil tight**" by the use of sealing rings. A steel disc with external splines is inserted into the drum and rests against the piston. Next, a friction disc with splines at the inner diameter is inserted. Discs are alternated until the required total is achieved. A heavy back-up plate is then inserted and secured with a snap ring. A hub with outer diameter splines is inserted into the splines of discs with teeth on the inner diameter. The discs and hub are free to increase in speed or rotate in the opposite direction as long as no pressure is present in that specific clutch.

To engage the clutch, as previously stated, the control valve is placed in the desired position. This allows oil under pressure to flow from the control valve, through a passageway, to a chosen clutch shaft. This shaft has a drilled passageway for oil under pressure to enter the shaft. Oil pressure sealing rings are located on the clutch shaft. These rings direct oil under pressure to a desired clutch. Pressure of the oil forces the piston and discs against the heavy back-up plate. The discs, with teeth on the outer diameter, clamping against discs with teeth on the inner diameter, enables the hub and clutch shaft to be locked together and allows them to drive as a unit.

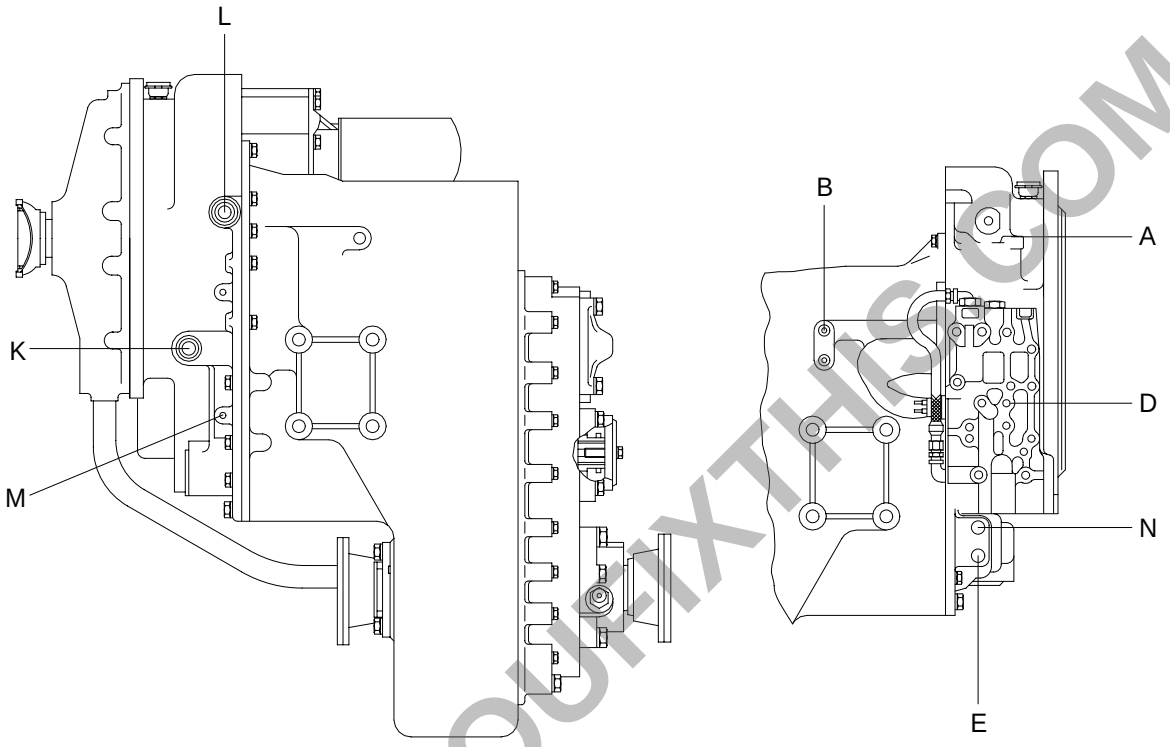
There are bleed balls or bleed orifices, in the clutch piston which allow quick escape for oil when the pressure to the piston is released.

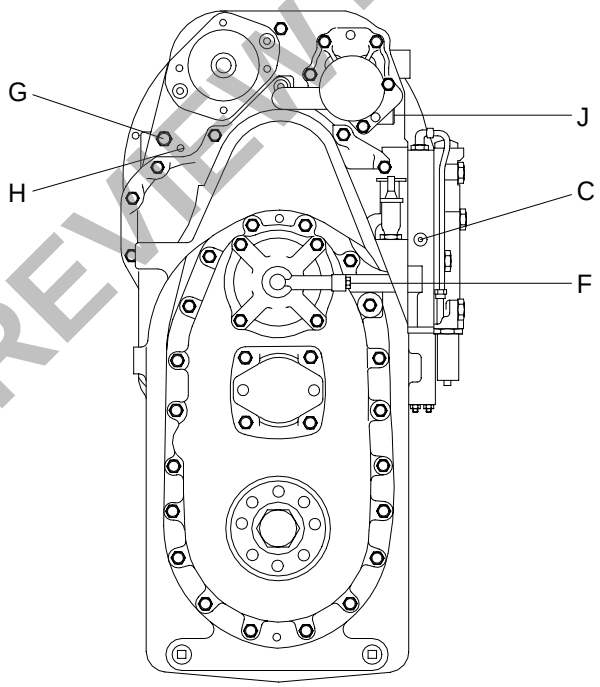
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2. TRANSMISSION PUMP PRESSURE AND FLOW TESTING

1) TEST PORT



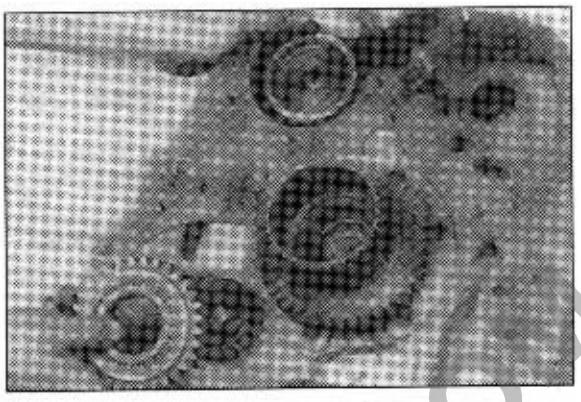


Port	Description
A	Regulated clutch pressure snap connector(Pressure switch)
B	Modulated forward clutch pressure
C	Reverse clutch pressure
D	2nd clutch pressure
E	3rd clutch pressure
F	1st clutch pressure
G	Converter outlet temperature
H	Converter outlet pressure
J	Converter inlet pressure
K	Port for lube oil from cooler
L	Port for converter out oil to cooler
M	Lube in pressure check point
N	Forward high(4th) clutch pressure

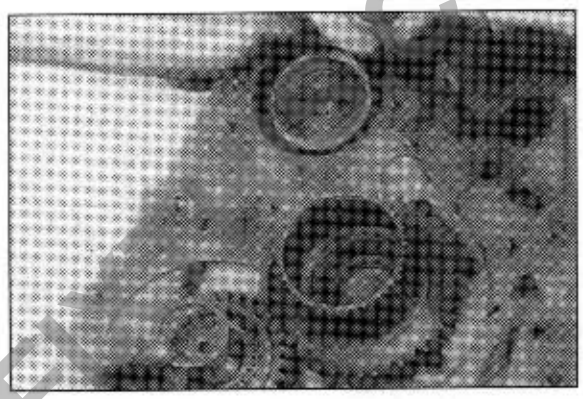
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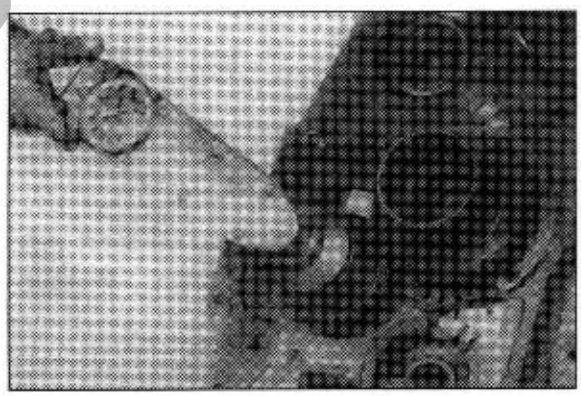
(41) Position reverse idler gear on shaft with hub of gear up. Install outer taper bearing in gear with large diameter of taper up.



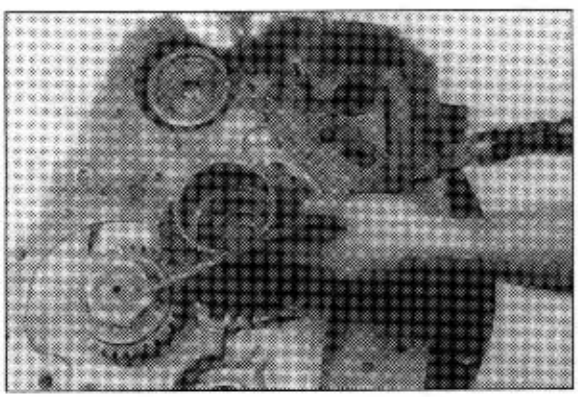
(42) Position outer spacer on shaft.



(43) Install shaft retainer nut. Tighten nut to 27.6-34.5kgf · m(200-250lbf · ft) torque.



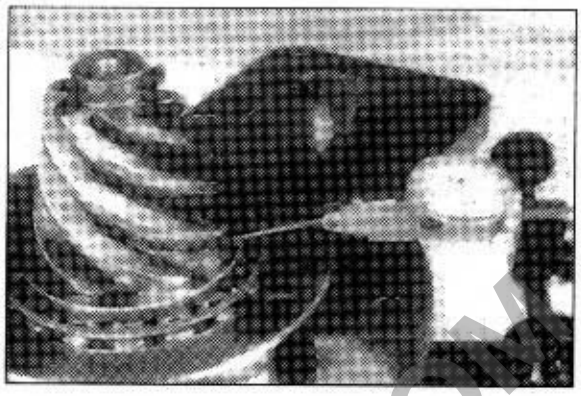
(44) Stake nut securely in shaft notch.



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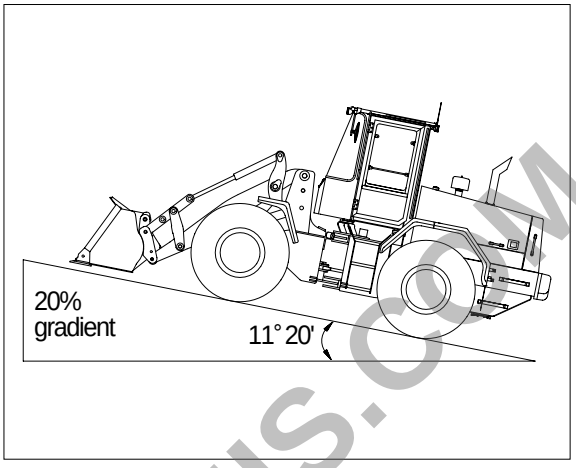
(6) Check the final center distance and stamp it on the cover.



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1. PARKING BRAKE PERFORMANCE



1) MEASUREMENT CONDITION

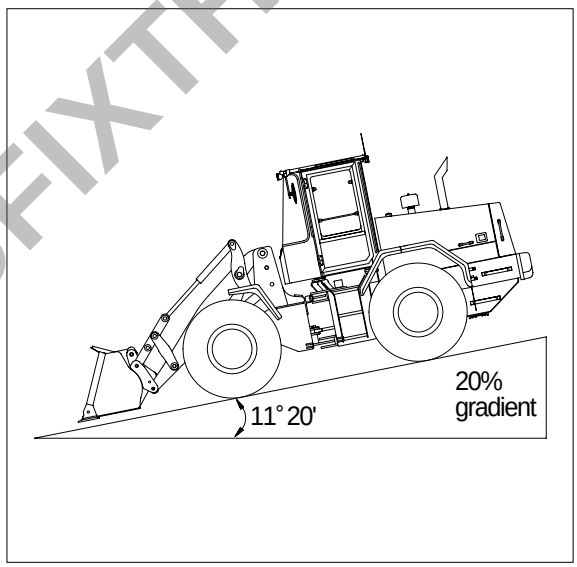
(1) Tire inflation pressure : Specified pressure

(2) Road surface : Flat, dry, paved surface with 1/5(11° 20') gradient.

(3) Machine : In operating condition

Item	Standard valve
Parking brake performance	Keep machine on 20% (11° 20') gradient

2) MEASURING PROCEDURE



(1) Start the engine and drive the machine straight up a 1/5 gradient with the bucket unloaded.

(2) Depress the service brake, place the gear selector lever in neutral, then stop the engine.

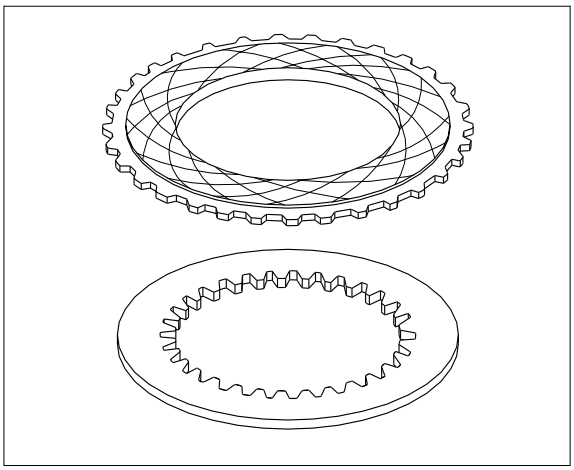
(3) Turn the parking brake switch ON, then slowly release the service brake pedal and the machine must be kept stopped.

※ **The measurement must be made with the machine facing either up or down the slope.**

2. EXTERNAL BRAKE INSPECTION

Remove axle housing and inspect for wear of brake disks.

Replace brake disks if oil grooves of facing material are no longer visible.



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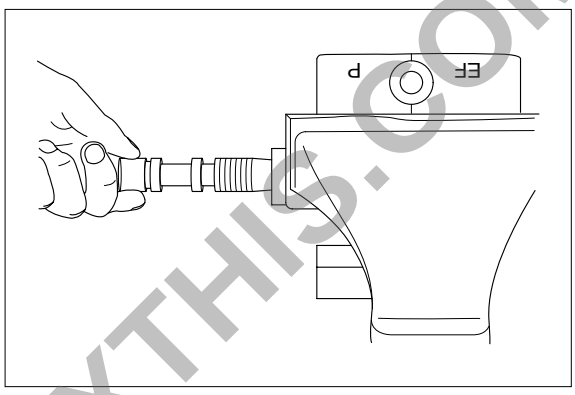
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4) ASSEMBLY

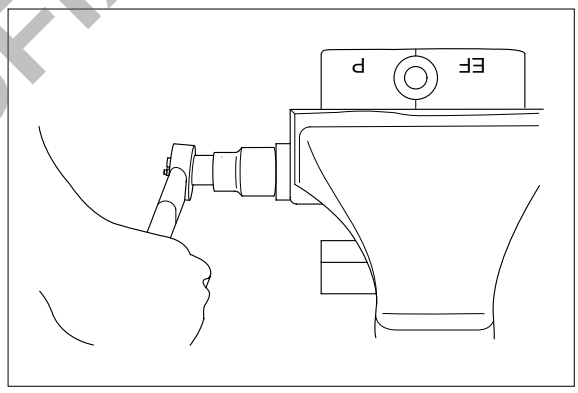
- Ŏ Clean all metal parts in clean solvent and blow dry with air and correct any damage, burrs and rust.
- Ŏ Do not wipe dry with cloth or paper towel.
- Ŏ Replace seals such as O-ring with new ones as a rule and coat with grease.

(1) Fix the housing(4) in a vise.
- Ŏ Do not over tighten jaws.

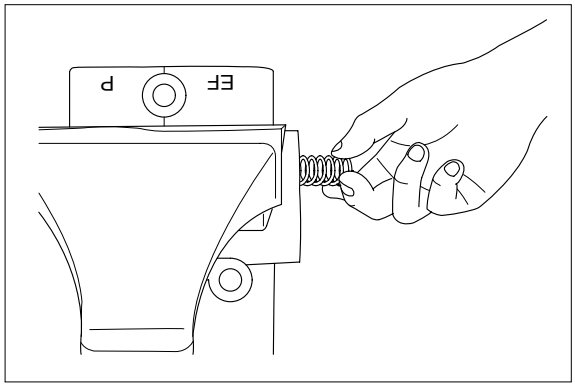
(2) Insert the spool(3) in the housing(4).
- Ŏ Secure the spool(3) remain in their correct direction as the illustration.
- Ŏ Secure the spool(3) to move smoothly by finger.



(3) Install the O-ring(2) onto plug(1) and istall the plug(1) into the housing(4).
ȷ Tighten torque : 6.1kgfȷm(44.3lbȷft)



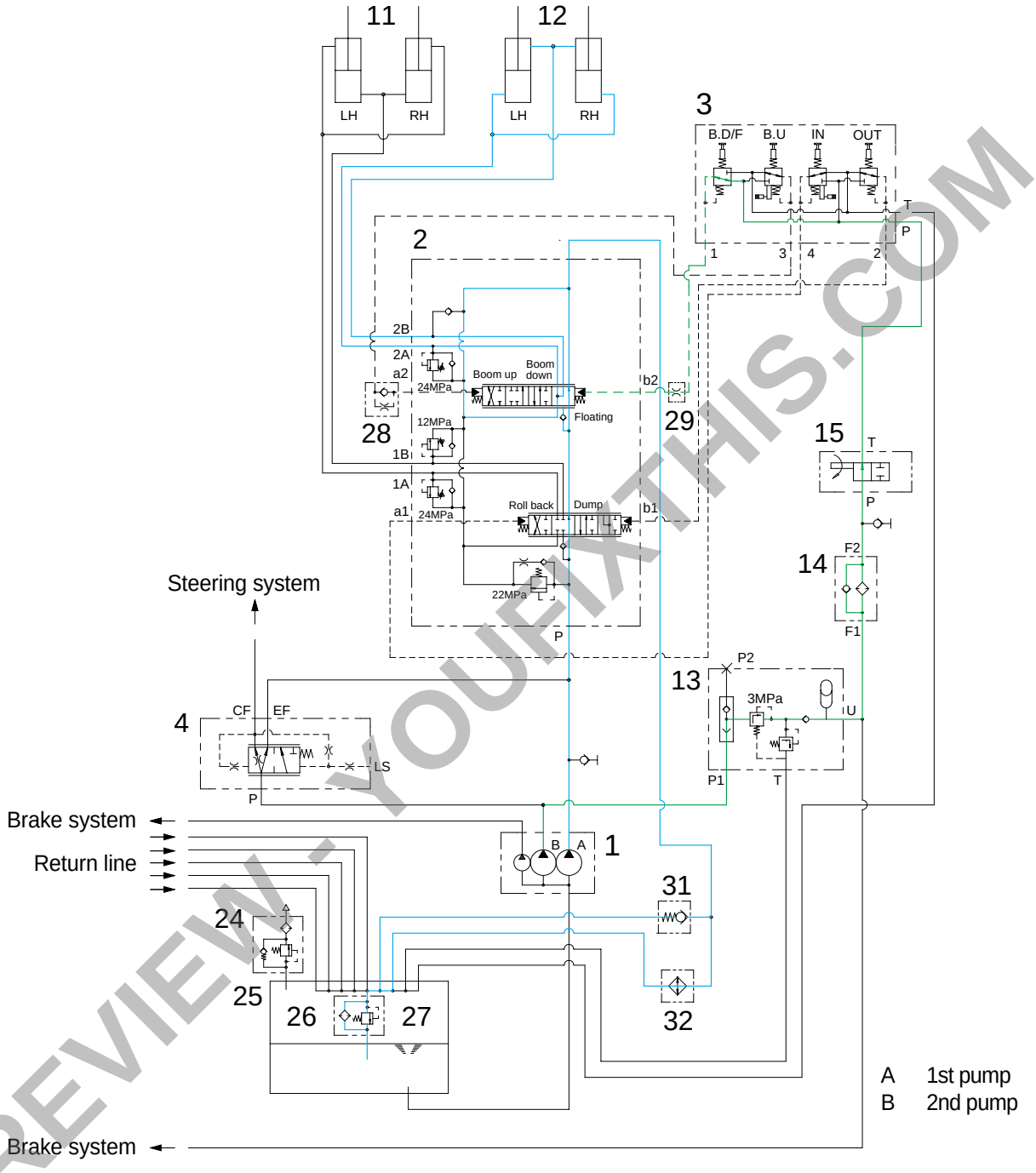
(4) Insert the spring(5) into the housing(4).



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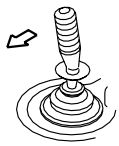
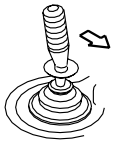
3) WHEN THE RCV LEVER IS IN THE FLOAT POSITION



- When the RCV lever(3) is pushed further forward from the lower position, the pilot pressure reaches to 13-15 bar, then the boom spool on the second block is moved to floating position.
- The work ports(2A), (2B) and the small chamber and the large chamber are connected to the return passage, so the boom will be lowered due to it's own weight.
- In this condition, when the bucket is in contact with the ground, it can be move up and down in accordance with the shape of the ground.

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Item	Description		Service action
Bucket leveler (Positioner) check Run engine at low idle.		Position bucket fully dumped just above ground level. Move control lever to bucket leveler detent position and release. **LOOK** : Bucket must rollback to the level position and control lever must return to neutral. If bucket is in a rolled back position when key is turned ON, control lever must be returned to neutral manually if placed in the bucket leveler detent position. After bucket is dumped once, bucket leveler will work normally.	**OK** Check complete. **NOT OK** Do bucket leveler checks in group 3.
Boom height kickout check Run engine at low idle.		Position bucket flat on ground. Move control lever to boom raise detent position and release. **LOOK** : Boom must raise to the set height and stop. Control lever must return to neutral.	**OK** Check complete. **NOT OK** Do boom height kickout check in group 3.
Cycle time check Heat hydraulic oil to operating temperature. Run engine at high idle.	Function Boom raise Boom lower(Float) Bucket dump Bucket rollback Steering(No. of turns)	Operating condition. Bucket flat on ground to full height. Full height to level ground. Boom at full height. Boom at full height. Frame stop to frame stop.	Maximum cycle time 5.6sec 2.7sec 1.4sec 2.2sec 1.5sec(4.3 turns) **OK** Check complete. **NOT OK** Go to slow hydraulic functions in group 3.

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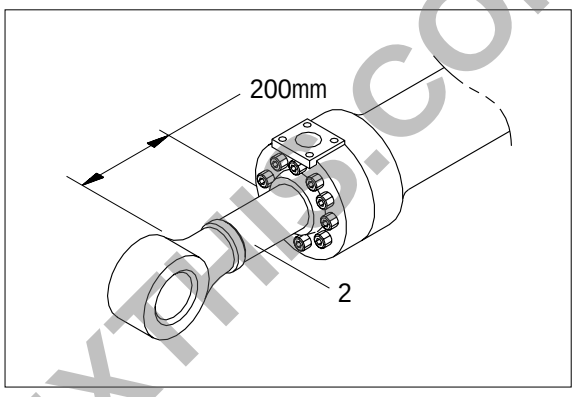
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5) DISASSEMBLY

(1) **Remove gland and piston rod**

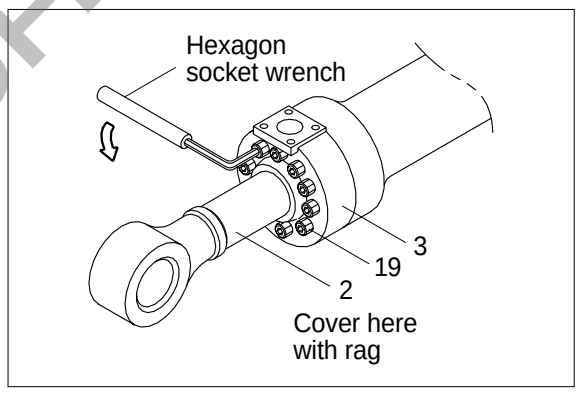
① Hold the clevis section of the tube in a vise. Use mouth pieces so as not to damage the machined surface of the cylinder tube. Do not make use of the outside piping as a locking means.

② Pull out piston rod(2) about 200㎜ (7.8 in). Because the piston rod is rather heavy, finish extending it with air pressure after the oil draining operation.



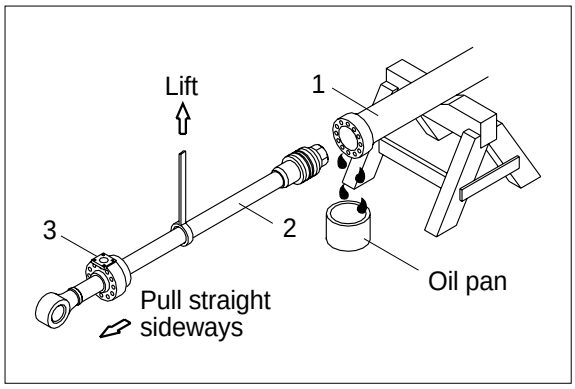
③ Loosen and remove socket bolts(19) of the gland(3) in sequence.

※ Cover the extracted piston rod(2) with rag to prevent it from being accidentally damaged during operation.



④ Draw out gland(3) and piston rod (2) assembly together from cylinder tube(1).

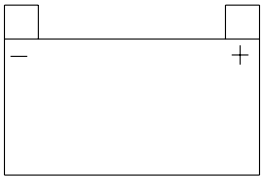
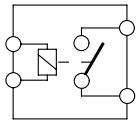
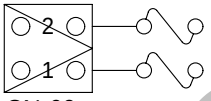
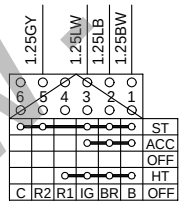
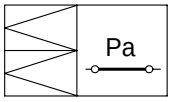
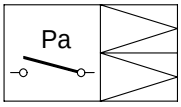
※ Since the piston rod assembly is heavy in this case, lift the tip of the piston rod(2) with a crane or some means and draw it out. However, when piston rod(2) has been drawn out to approximately two thirds of its length, lift it in its center to draw it completely.



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GROUP 4 ELECTRICAL COMPONENT SPECIFICATION

Part name	Symbol	Specifications	Check
Battery		12V × 80Ah (2EA)	※ Check specific gravity 1.280 Over : Over charged 1.280 ~ 1.250 : Normal 1.250 Below : Recharging
Battery relay	 CR-1	Rated load : 24V 100A(Continuity) 1000A (30 Seconds)	※ Check coil resistance Normal : About 50 Ω ※ Check contact Normal : ∞ Ω
Fusible link	 CN-60	24V 60A	※ Check disconnection Normal : 0 Ω (Connect ring terminal and check resistance between terminal 1 and 2)
Start key	 CS-2	-	※ Check contact OFF : ∞ Ω (For each terminal) ON : 0 Ω (For terminal 1-3) ∞ Ω (For terminal 1-5) START : 0 Ω (For terminal 1-3 and 1-5)
Pressure switch	 CD-3 CD-26 CD-25 CD-39	N.C TYPE	※ Check contact Normal : 0 Ω (Close)
Pressure switch	 CD-4 CD-11 CD-5 CD-40	N.O TYPE	※ Check contact Normal : ∞ Ω (Open)

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