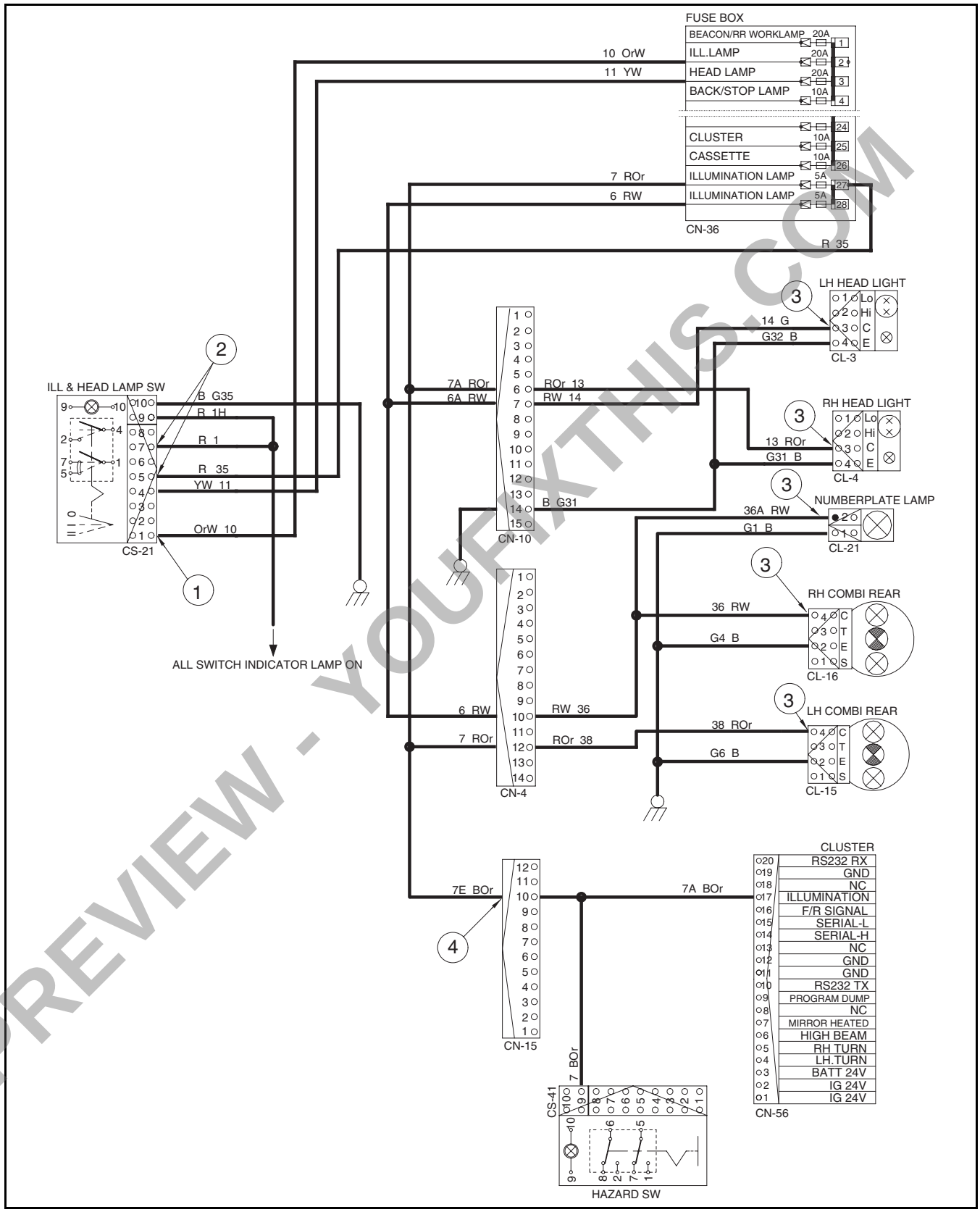
ILLUMINATION CIRCUIT

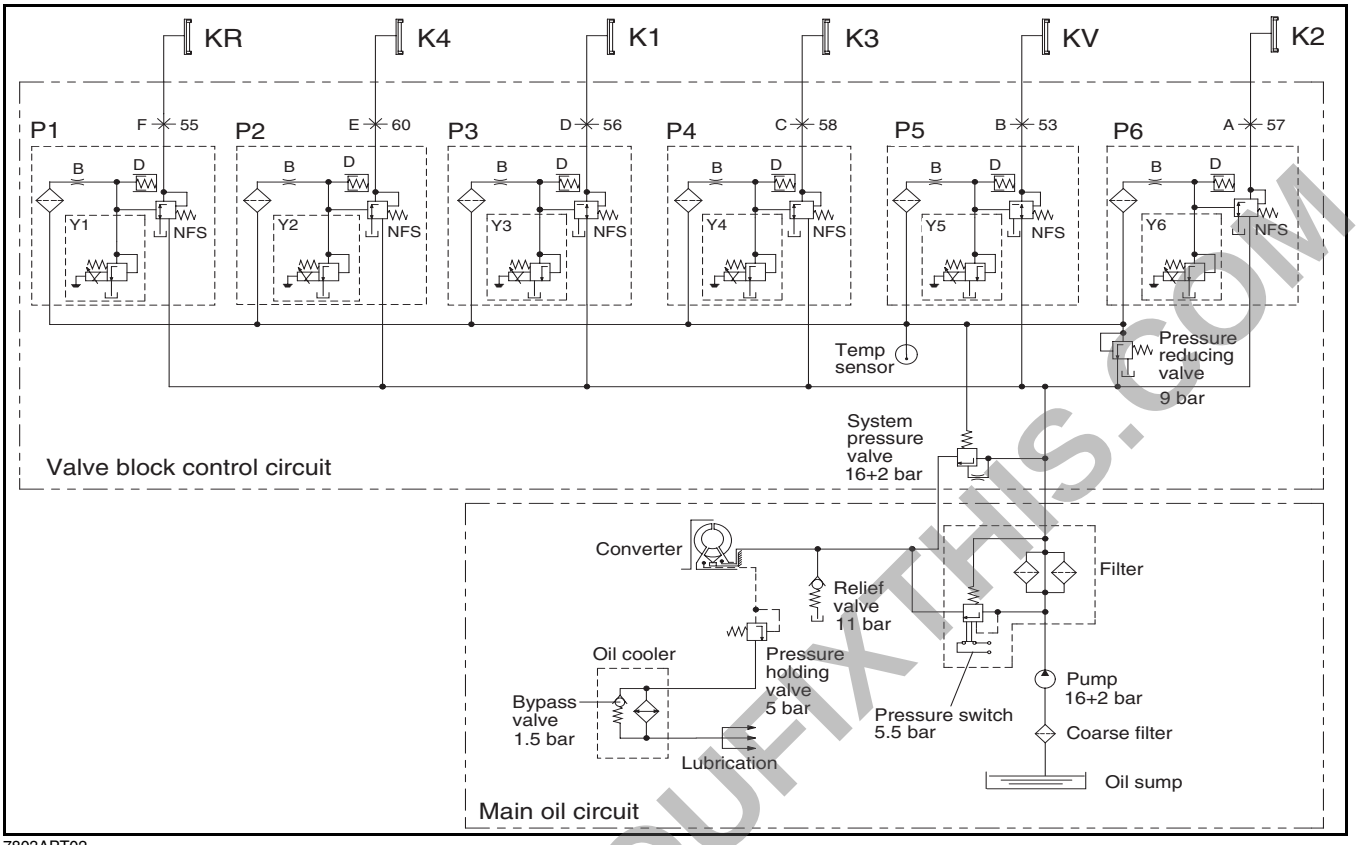


7807AEL03

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HYDRAULIC CIRCUIT



7803APT02

NFS	Follow-on slide	P3	Proportional valve-clutch K1
D	Vibration 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

Pressure regulator active	Speed							Neutral	Engaged clutchl	Positions on the valve blockl	No. of the measuring pointsl
	Forward				Reverse						
	1	2	3	4	1	2	3				
Y1									K4		60
Y2					X	X	X		KR		55
Y3	X				X				K1		56
Y4			X				X		K3		58
Y5	X	X	X						KV		53
Y6		X				X			K2		57
Engaged clutch	K1, KV	KV, K2	K3, KV	K4, K3	KR, K1	KR, K2	KR, K3		-	-	-

X : Pressure regulator under voltage

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5) TIGHTENING TORQUE

The torques given are standard figures. Any figures specifically described in this manual has priority.

1) BOLT AND NUT

(1) Coarse thread

Bolt size	8T		10T	
	kgf • m	lbf • ft	kgf • m	lbf • ft
M 6 × 1.0	0.85 ~ 1.25	6.15 ~ 9.04	1.14 ~ 1.74	8.2 ~ 12.6
M 8 × 1.25	2.0 ~ 3.0	14.5 ~ 21.7	2.73 ~ 4.12	19.7 ~ 29.8
M10 × 1.5	4.0 ~ 6.0	28.9 ~ 43.4	5.5 ~ 8.3	39.8 ~ 60
M12 × 1.75	7.4 ~ 11.2	53.5 ~ 79.5	9.8 ~ 15.8	71 ~ 114
M14 × 2.0	12.2 ~ 16.6	88.2 ~ 120	16.7 ~ 22.5	121 ~ 167
M16 × 2.0	18.6 ~ 25.2	135 ~ 182	25.2 ~ 34.2	182 ~ 247
M18 × 2.5	25.8 ~ 35.0	187 ~ 253	35.1 ~ 47.5	254 ~ 343
M20 × 2.5	36.2 ~ 49.0	262 ~ 354	49.2 ~ 66.6	356 ~ 482
M22 × 2.5	48.3 ~ 63.3	350 ~ 457	65.8 ~ 98.0	476 ~ 709
M24 × 3.0	62.5 ~ 84.5	452 ~ 611	85.0 ~ 115	615 ~ 832
M30 × 3.5	124 ~ 168	898 ~ 1214	169 ~ 229	1223 ~ 1655
M36 × 4.0	174 ~ 236	1261 ~ 1703	250 ~ 310	1808 ~ 2242

(2) Fine thread

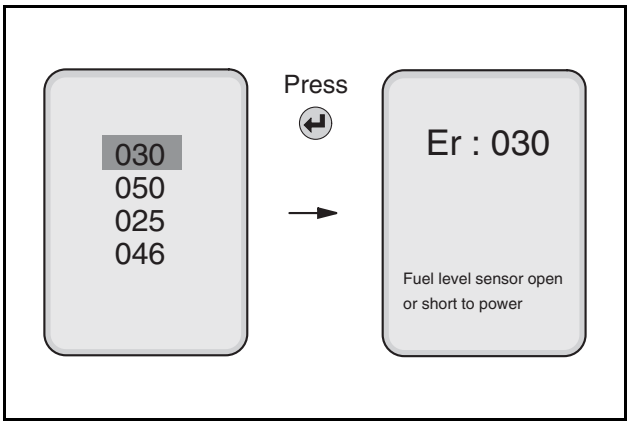
Bolt size	8T		10T	
	kgf • m	lbf • ft	kgf • m	lbf • ft
M 8 × 1.0	2.17 ~ 3.37	15.7 ~ 24.3	3.04 ~ 4.44	22.0 ~ 32.0
M10 × 1.25	4.46 ~ 6.66	32.3 ~ 48.2	5.93 ~ 8.93	42.9 ~ 64.6
M12 × 1.25	7.78 ~ 11.58	76.3 ~ 83.7	10.6 ~ 16.0	76.6 ~ 115
M14 × 1.5	13.3 ~ 18.1	96.2 ~ 130	17.9 ~ 24.1	130 ~ 174
M16 × 1.5	19.9 ~ 26.9	144 ~ 194	26.6 ~ 36.0	193 ~ 260
M18 × 1.5	28.6 ~ 43.6	207 ~ 315	38.4 ~ 52.0	278 ~ 376
M20 × 1.5	40.0 ~ 54.0	289 ~ 390	53.4 ~ 72.2	386 ~ 522
M22 × 1.5	52.7 ~ 71.3	381 ~ 515	70.7 ~ 95.7	512 ~ 692
M24 × 2.0	67.9 ~ 91.9	491 ~ 664	90.9 ~ 123	658 ~ 890
M30 × 2.0	137 ~ 185	990 ~ 1338	182 ~ 248	1314 ~ 1795
M36 × 3.0	192 ~ 260	1389 ~ 1879	262 ~ 354	1893 ~ 2561

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(3) Machine fault code

When selecting the fault code menu, it shows all of the fault codes which mean abnormal conditions of present time.



77073CD60

- To go out from fault explanation window, press ▲ button.
  (Press ↵ , M to go out to first menu.)
- No error will be indicated in case that there's no fault.

Description	Code	Meaning	Remark
Electrical system	010	Power input voltage low	Below 18V
	011	Power input voltage high	Above 38V
	012	Alternator voltage low	Below 5V
	013	Alternator voltage high	Above 36V
	014	Buzzer circuit open or short to ground	
	015	Buzzer circuit short to power	
Hydraulic system	020	Hydraulic oil temperature sensor open or short to power	
	021	Hydraulic oil temperature sensor short to ground	
Engine system	030	Fuel level sensor open or short to power	
	031	Fuel level sensor short to ground	
	034	Cooling fan driving valve open or short to ground	
	035	Cooling fan driving valve short to power	
T/M system	050	Auto select switch supply power open or short to power	
	051	Auto select switch supply power short to ground	
	052	Clutch cutoff supply power open or short to power	
	053	Clutch cutoff supply power short to ground	
Steering system	060	Emergency steering relay open or short to ground	Option
	061	Emergency steering relay short to power	Option
Communication	070	MCU communication error	
	071	TCU communication error	
	072	ECM communication error	

MCU : Machine control unitTCU : Transmission control unitECM : Engine control module

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4. DISASSEMBLY AND ASSEMBLY

1) ELECTRO-HYDRAULIC CONTROL UNIT

(1) DISASSEMBLY

1) Loosen socket head screws and remove selector housing.

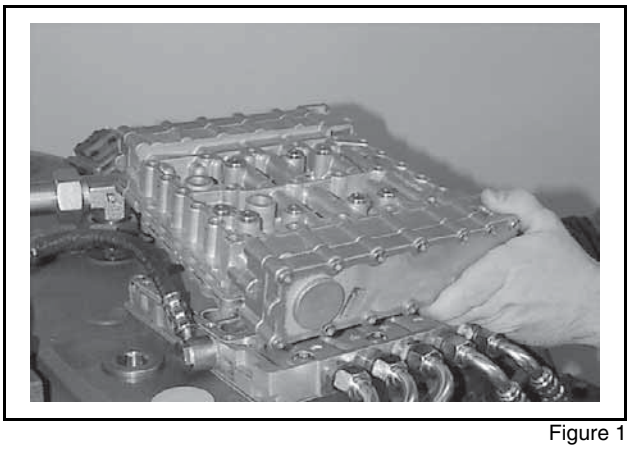


Figure 1

2) Separate hose lines from the intermediate plate. Loosen socket head screws and separate intermediate plate as well as gaskets and intermediate sheet from gearbox housing.

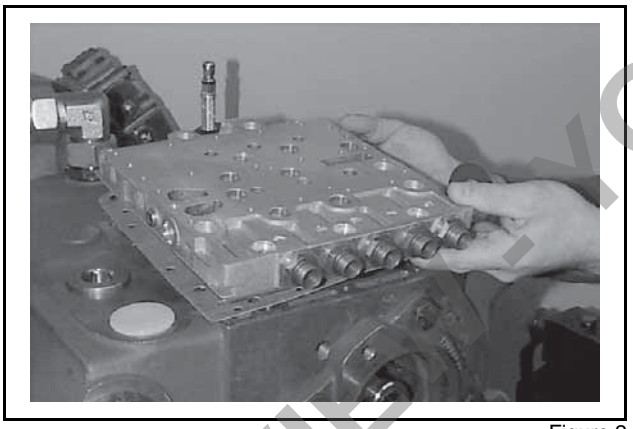


Figure 2

3) Mark installation position of the cable harness to the valve block.

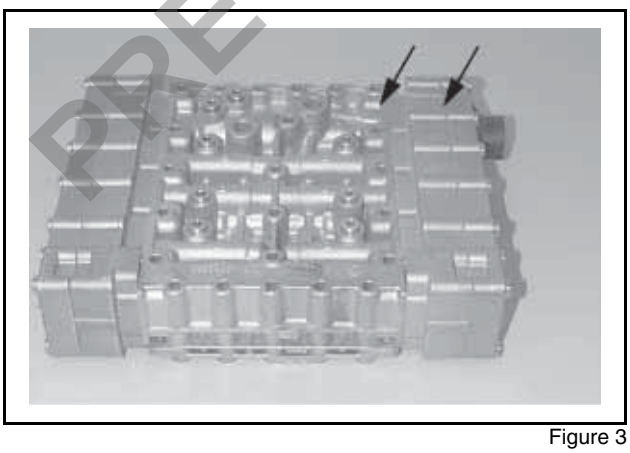


Figure 3

4) Loosen socket head screws. Separate duct plate, gaskets and intermediate sheet from the valve block.

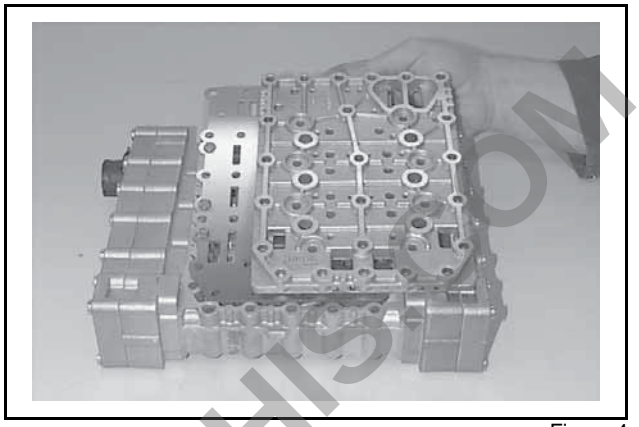


Figure 4

5) Remove retaining clip.

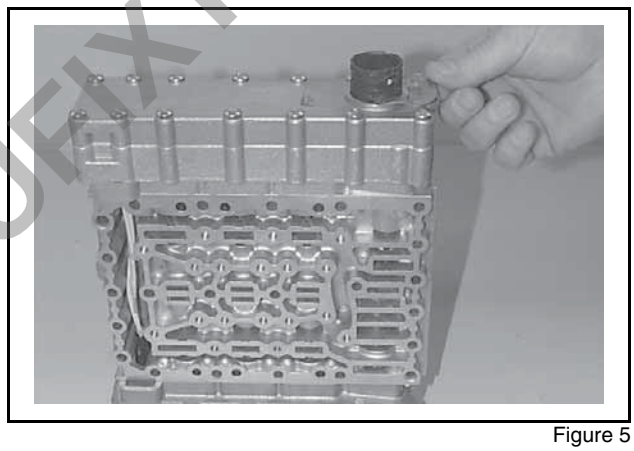


Figure 5

6) Loosen socket head screws and remove cover. Demount opposite cover.

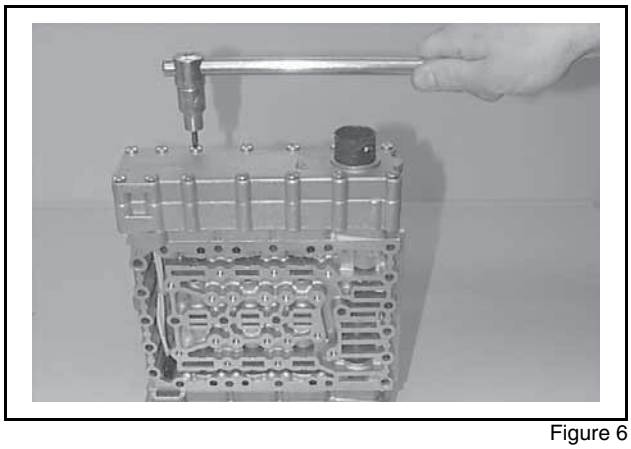


Figure 6

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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.)

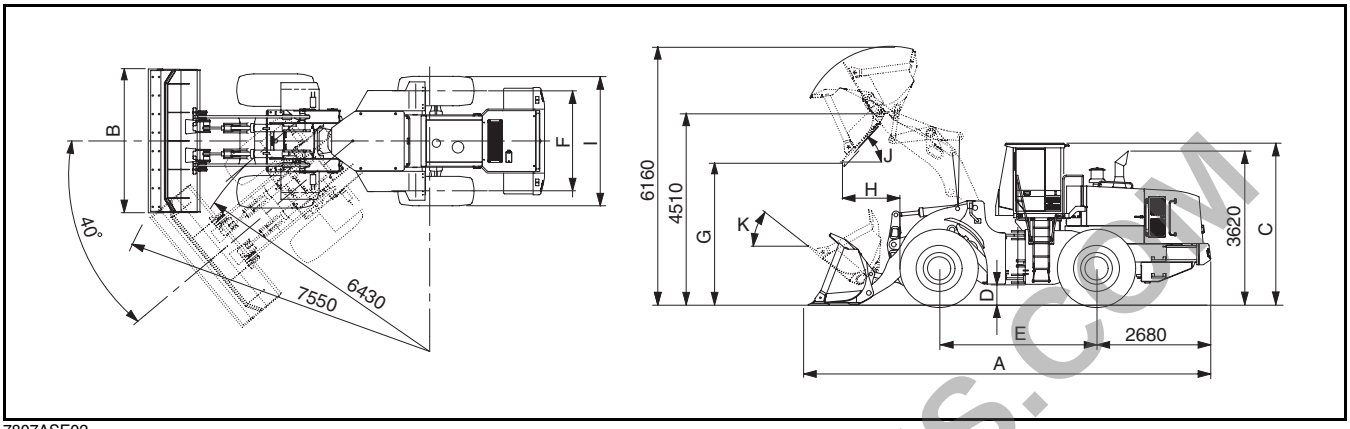
Problem	Cause	Remedy
Transmission slippage	Low oil level.	Add oil.
	Wrong oil grade.	Change oil.
	Restricted transmission pump suction screen.	Remove and clean screen.
	Leak in transmission control valve or gasket.	Remove valve and inspect gaskets.
	Low transmission pump flow due to worn pump.	Do transmission pump flow test.
	Weak or broken pressure regulating valve spring.	Do transmission system pressure test.
Error code on display	Something wrong in transmission.	Go to transmission error code group at page 3-26~3-54.

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2) SPECIFICATIONS

(1) WITHOUT TOOTH AND CUTTING EDGE TYPE BUCKET



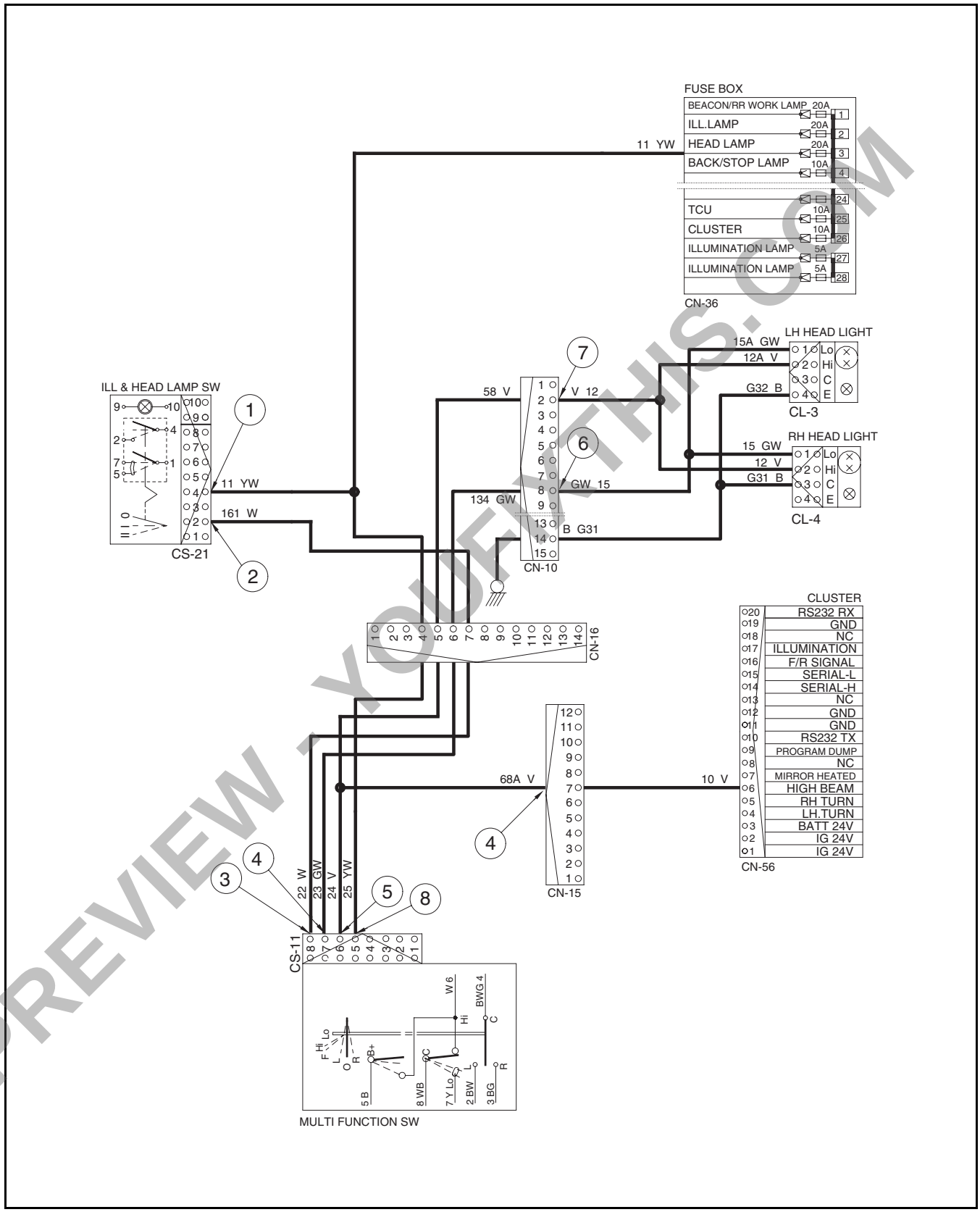
7807ASE02

Description			Unit	Specification
Operating weight			kg(lb)	29300(64600)
Bucket capacity		Struck	$m^3(yd^3)$	4.1(5.4)
		Heaped		4.8(6.3)
Overall length		A	mm(ft-in)	9325(30' 7")
Overall width		B		3450(11' 4")
Overall height		C		3805(12' 6")
Ground clearance		D		475(1' 7")
Wheelbase		E		3700(12' 2")
Tread		F		2440(8' 0")
Dump clearance at 45°		G		3385(11' 1")
Dump reach at 45°		H		1330(4' 4")
Width over tires		I		3220(10' 7")
Dump angle		J	Degree (°)	47
Roll back angle(Carry position)		K		48
Cycle time		Lift(With load)	sec	6.4
		Dump(With load)		1.4
		Lower(Empty)		3
Maximum travel speed			km/hr(mph)	33.9(21.1)
Braking distance			m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)				6.43(21' 1")
Gradeability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		17.5(10.9)
		Fourth gear		33.9(21.1)
	Reverse	First gear		6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		23.6(14.7)

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HEAD LIGHT CIRCUIT

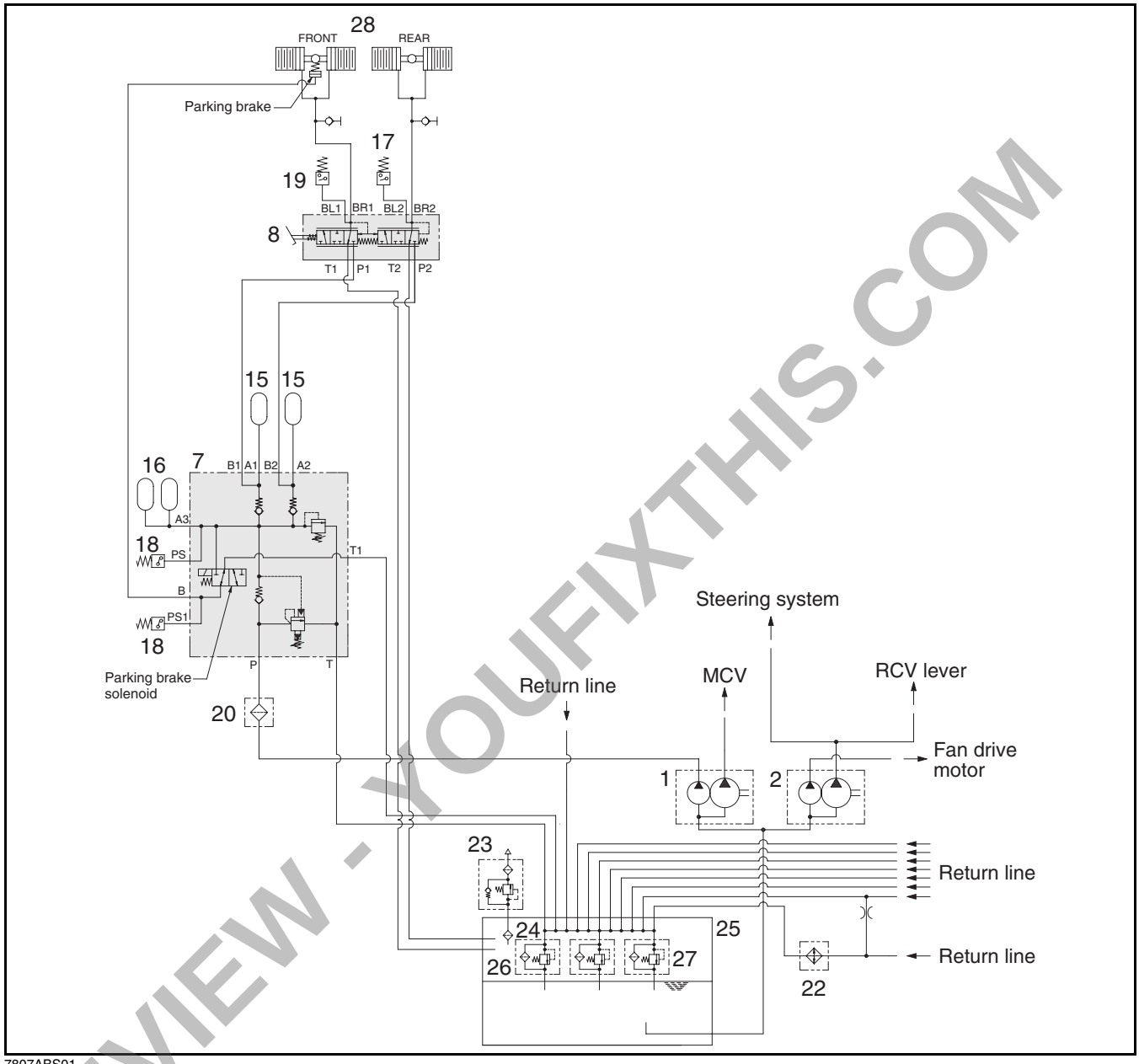


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2. HYDRAULIC CIRCUIT



7807ABS01

1	Main pump (+Brake pump)	17	Pressure switch	24	Strainer
2	Steering pump (+Fan pump)	18	Pressure switch	25	Hydraulic tank
7	Cut off valve	19	Pressure switch	26	Return filter
8	Brake valve	20	Line filter	27	Bypass valve
15	Accumulator	22	Oil cooler	28	Axle
16	Accumulator	23	Air breather		

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2) PIPE AND HOSE (FLARE TYPE)

Thread size	Width across flat (mm)	kgf • m	lbf • ft
1/4"	19	4	28.9
3/8"	22	5	36.2
1/2"	27	6	43.4
3/4"	36	12	86.8
1"	41	14	101

3) PIPE AND HOSE (ORFS TYPE)

Thread size	Width across flat (mm)	kgf • m	lbf • ft
13/16-16"	24	4.4	32.5
1-3/16-12"	36	9.3	67.3
1-7/16-12"	41	13.2	95.5
1-11/16-12"	50	18.3	132
2-12"	55	22.6	164

4) FITTING

Thread size	Width across flat (mm)	kgf • m	lbf • ft
1/4"	19	4	28.9
3/8"	22	5	36.2
1/2"	27	6	43.4
3/4"	36	13	94.0
1"	41	15	109

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(5) Engine fault code (For QSM11)

Fault code No.	Reason	Effect(only when fault code is active)
111	Error internal to the ECM related to memory hardware failures or internal ECM voltage supply circuits.	Engine will not start.
115	No engine speed signal detected at both engine position sensor circuits.	Engine will die and will not start.
121	No engine speed signal detected from one of the engine position sensor circuits.	None on performance.
122	High voltage detected on the intake manifold pressure circuit.	Derate in power output of the engine.
123	Low voltage detected on the intake manifold pressure circuit.	Derate in power output of the engine.
131	High voltage detected at the throttle position signal circuit.	Severe derate(power and speed). Limp home power only.
132	Low voltage detected at the throttle position signal circuit.	Severe derate(power and speed). Limp home power only.
133	High voltage detected at the remote throttle position signal circuit.	None on performance if remote throttle is not used.
134	Low voltage detected at the remote throttle position signal circuit.	None on performance if remote throttle is not used.
135	High voltage detected at the oil pressure circuit.	No engine protection for oil pressure.
141	Low voltage detected at the oil pressure circuit.	No engine protection for oil pressure.
143	Oil pressure signal indicates oil pressure below the low oil pressure engine protection limit.	Progressive power and speed derate with increasing time after alert. If engine protection shutdown feature is enable, engine will shut down 30 seconds after red lamp starts flashing.
144	High voltage detected at the coolant temperature circuit.	Possible white smoke. Fan will stay on if controlled by the electronic control module (ECM). No engine protection for coolant temperature.
145	Low voltage detected at the coolant temperature circuit.	Possible white smoke. Fan will stay on if controlled by electronic control module (ECM). No engine protection for coolant temperature.
147	A frequency of less then 100Hz was detected at the frequency throttle signal pin of the actuator harness connector at the ECM.	Calibration dependent power and speed derate.
148	A frequency of more than 100Hz was detected at the frequency throttle signal pin of the actuator harness connector at the ECM.	Calibration dependent power and speed derate.
151	Coolant temperature signal indicates coolant temperature above 104ÁC(220ÁF).	Progressive power derate with increasing time after alert. If engine protection shutdown feature is enabled, engine will shut down 30 seconds after red lamp starts flashing.

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7) Demount pressure regulator and remove cable harness.

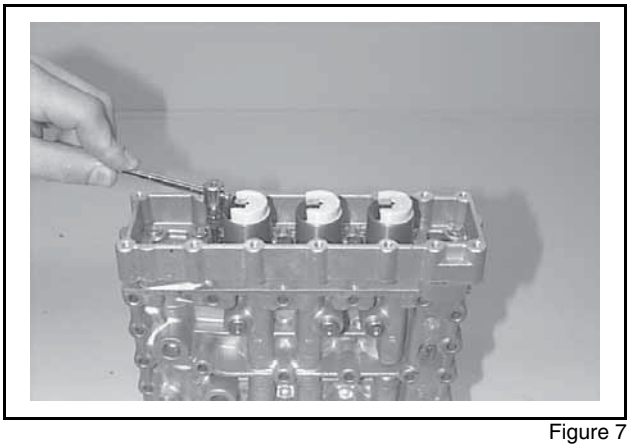


Figure 7

8) Loosen socket head screws, remove retaining plates and demount pressure regulator.

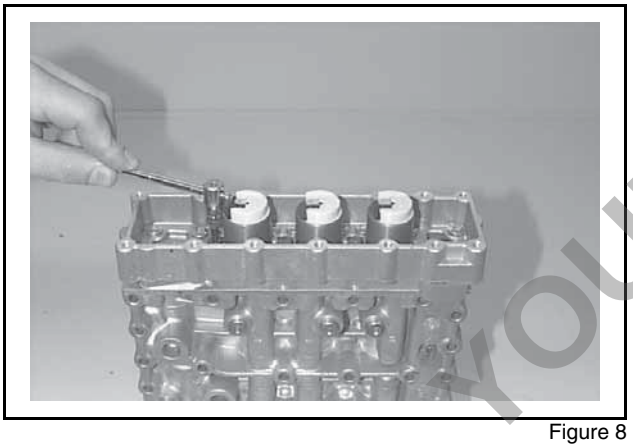


Figure 8

9) Loosen two socket head screws and locate the housing provisionally by means of adjusting screws.
(Housing is spring-loaded)
Now, loosen the remaining socket head screws.

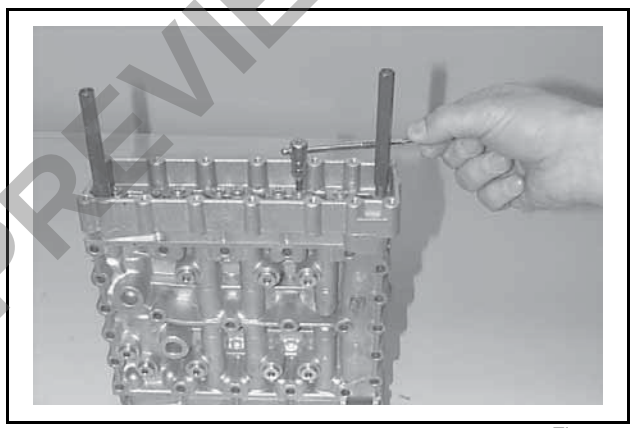


Figure 9

10) Separate housing from valve body by uniform loosening of the adjusting screws.

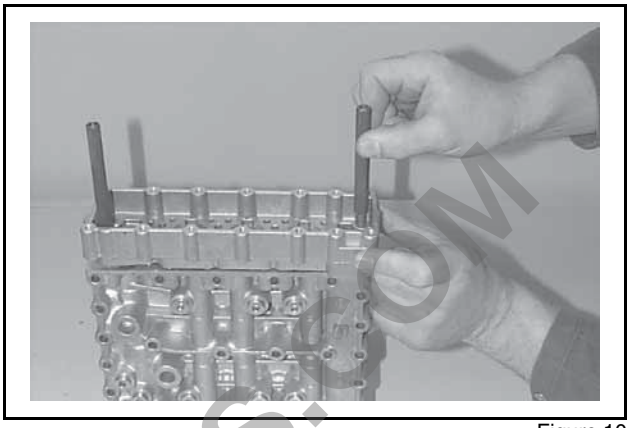


Figure 10

11) Remove components.

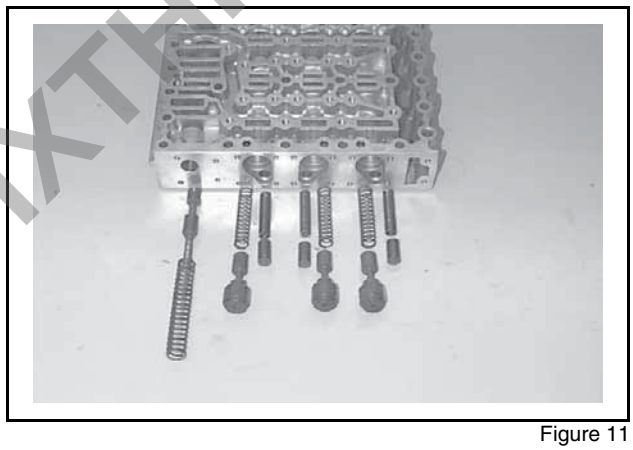


Figure 11

12) Remove opposite pressure regulators, housing as well as components accordingly.

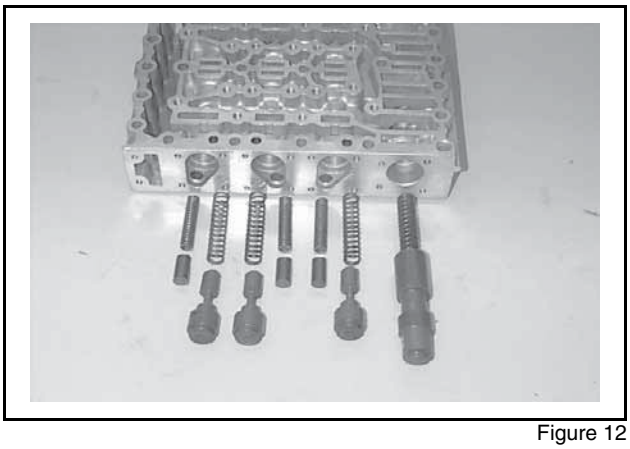


Figure 12

(2) ASSEMBLY

NOTE: *Check all components for damage and renew if necessary. Prior to the installation, check the free travel of the moving parts in the housing. Spools can be exchanged individually. Prior to the assembly, oil the components.*

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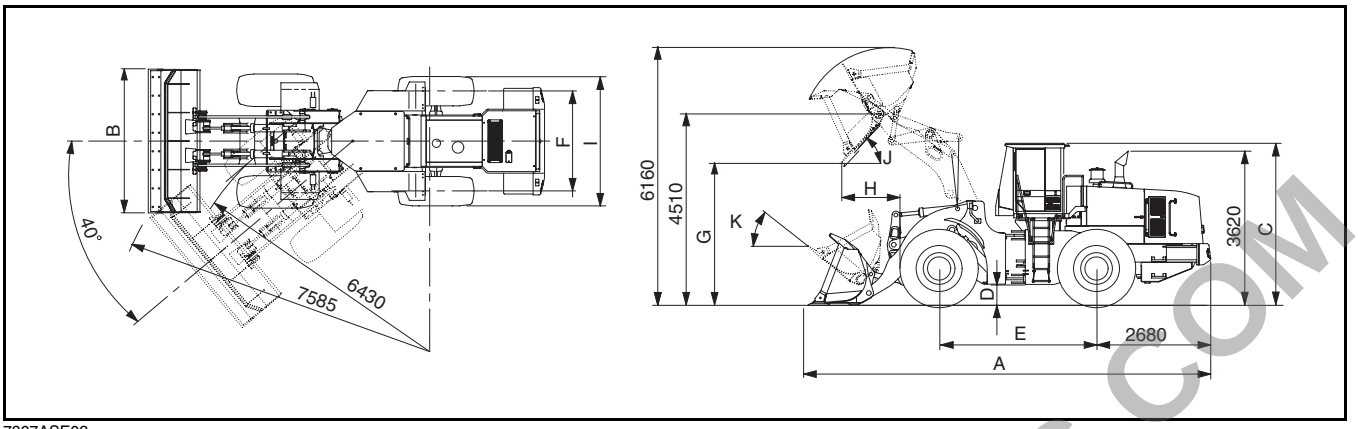
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Problem	Cause	Remedy
Machine will not move	Low oil level.	Add oil.
	Applied park brake.	Check parking brake fuse. Check continuity to parking brake switch.
	No power to transmission controller.	Check transmission controller fuse.
	Malfunctioning parking brake solenoid valve.	Remove and inspect parking brake solenoid valve. Check for power to solenoid valve.
	Restricted orifice of PPC valve.	Remove orifice and check for contamination and/or plugging. (Do not remove valve housing for this purpose.)
	Excessive leakage in transmission element.	Do transmission element leakage test using system pressure.
	Worn clutch disks.	Repair transmission.
	Low or no transmission pressure.	See transmission pressure is low in this group.
	Service brake will not release.	Do brake pedal operational check. Do service and park system drag checks.
	Failed torque converter.	Do torque converter stall test. If engine pulldown in normal, torque converter is good.
	Broken shafts or gears.	Drain transmission to determine if large pieces of metal contamination are present.
	Broken drive shafts.	Inspect drive shafts and universal joints for external damage. Repair.
	Broken ring or pinion gear.	If drive shaft rotate with transmission in gear but machine does not move, a differential failure is indicated. Repair.
Machine does not engage in low gear	Malfunctioning transmission control solenoid valve.	Check solenoid valve.
	Stuck spool in transmission control valve.	Remove and inspect transmission control valve spools.
	Stuck PPC valve.	Remove end cover to inspect PPC valve. Replace if necessary.
	Malfunctioning transmission speed sensor.	Check speed sensor.

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(2) WITH BOLT-ON CUTTING EDGE TYPE BUCKET



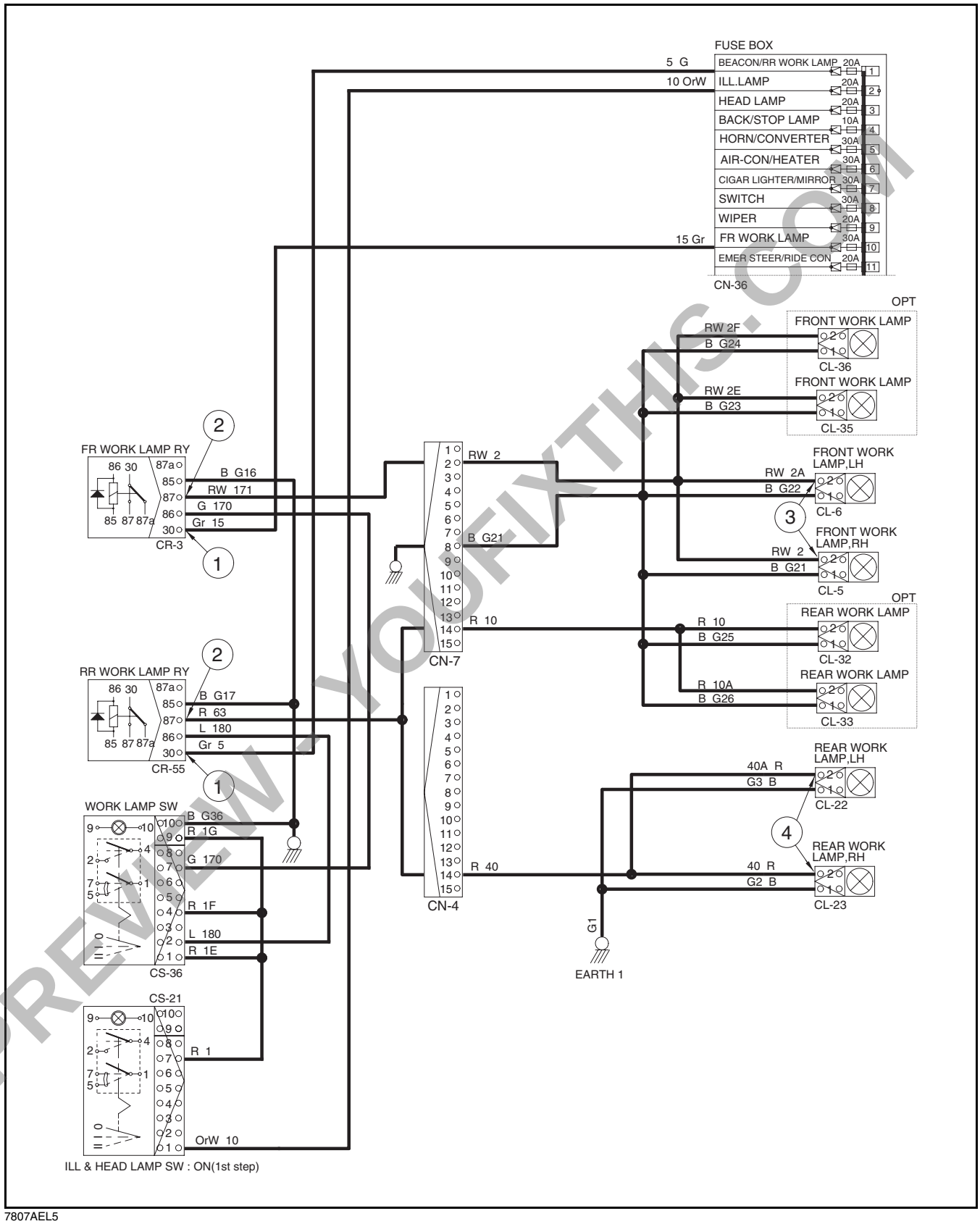
7807ASE03

Description			Unit	Specification
Operating weight			kg(lb)	29300(64600)
Bucket capacity		Struck	$m^3(yd^3)$	4.3(5.6)
		Heaped		5.1(6.7)
Overall length		A	mm(ft-in)	9440(31' 0")
Overall width		B		3450(11' 4")
Overall height		C		3805(12' 6")
Ground clearance		D		475(1' 7")
Wheelbase		E		3700(12' 2")
Tread		F		2440(8' 0")
Dump clearance at 45°		G		3300(10' 10")
Dump reach at 45°		H		1365(4' 6")
Width over tires		I		3220(10' 7")
Dump angle		J	Degree (°)	47
Roll back angle(Carry position)		K		48
Cycle time		Lift(With load)	sec	6.4
		Dump(With load)		1.4
		Lower(Empty)		3
Maximum travel speed			km/hr(mph)	33.9(21.1)
Braking distance			m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)				6.43(21' 1")
Gradeability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		17.5(10.9)
		Fourth gear		33.9(21.1)
	Reverse	First gear		6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		23.6(14.7)

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WORK LIGHT SWITCH

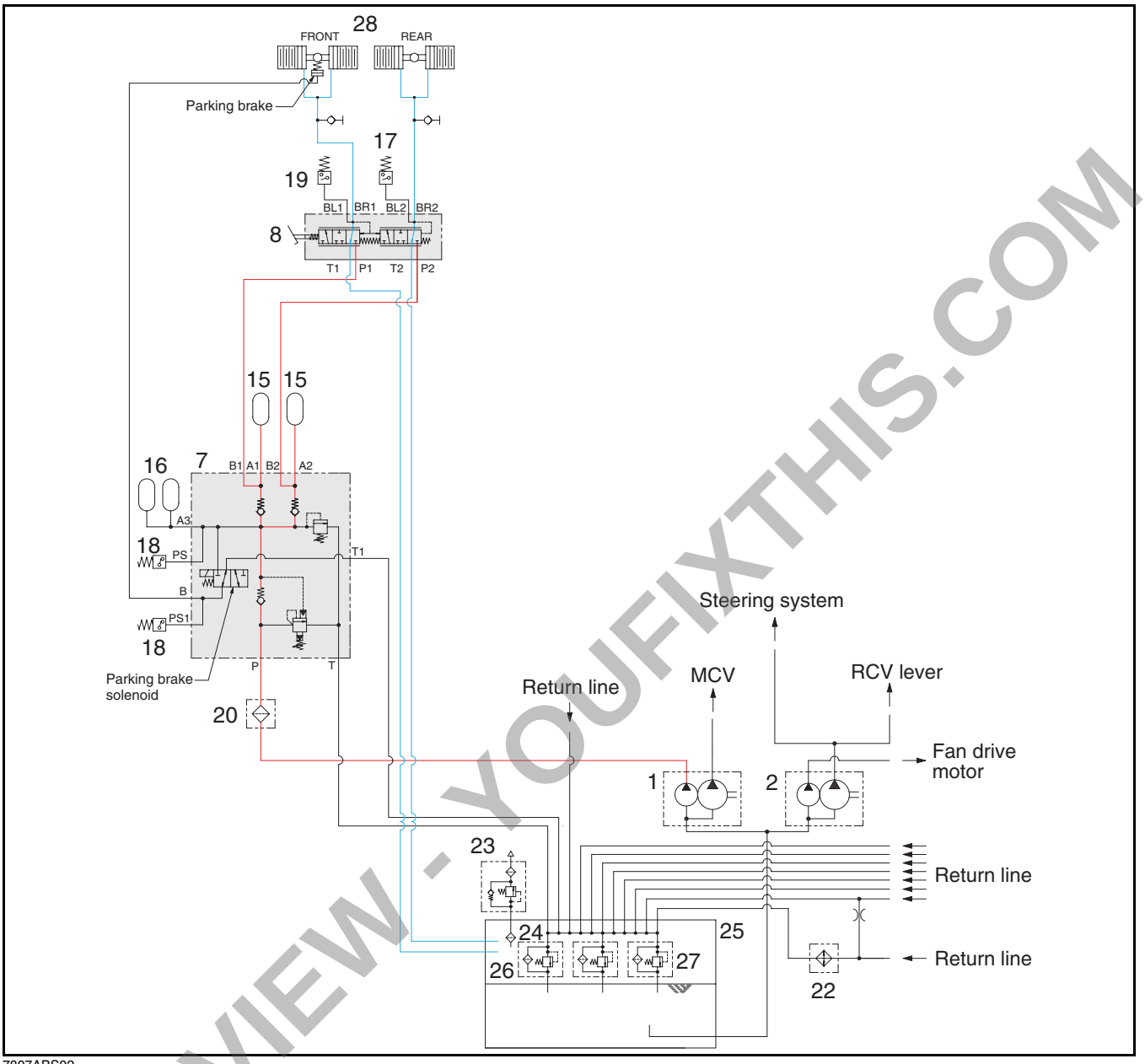


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1) SERVICE BRAKE RELEASED



7807ABS02

When the pedal of brake valve(8) is released, the operating force is eliminated by the force of the spring, and the spool is returned.
When the spool removes up, the drain port is opened and the hydraulic oil in the piston of axles return to the tank(25).
Therefore, the service brake is kept released.

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5) TIGHTENING TORQUE OF MAJOR COMPONENT

No.	Items		Size	kgf • m	lbf • ft
1	Engine	Engine mounting bolt, nut(Rubber, 4EA)	M24 x 3.0	100 ± 15.0	723 ± 108
2		Engine mounling bolt(Fly wheel housing, 8EA)	M16 x 2.0	19.4 ± 3.0	140 ± 21.7
3		Engine mounting bolt(Gear housing, 6EA)	M10 x 1.5	4.6 ± 0.7	33.3 ± 5.1
4		Radiator mounting bolt	M20 x 2.5	57.9 ± 8.7	419 ± 62.9
5		Fuel tank mounting bolt, nut	M16 x 2.0	29.7 ± 4.5	215 ± 32.5
6	Hydraulic system	Main pump housing mounting bolt	M16 x 2.0	29.7 ± 4.5	215 ± 32.5
7		Steering pump housing mounting bolt	M10 x 1.5	6.9 ± 1.4	49.9 ± 10.1
8		Main control valve mounting bolt	M12 x 1.75	12.8 ± 3.0	92.6 ± 21.7
9		Steering unit mounting bolt	M10 x 1.5	6.9 ± 1.4	49.9 ± 10.1
10		Flow amplifier mounting bolt	M10 x 1.5	6.9 ± 1.4	49.9 ± 10.1
11		Brake valve mounting bolt	M8 x 1.25	2.5 ± 0.5	18.1 ± 3.6
12		Cut-off valve mounting bolt	M12 x 1.75	12.3 ± 2	89.0 ± 14
13		Remote control lever mounting bolt	M6 x 1.0	1.1 ± 0.2	8.0 ± 1.4
14		Pilot supply unit mounting bolt	M8 x 1.25	2.5 ± 0.5	18.1 ± 3.6
15		Safety valve	M8 x 1.25	2.5 ± 0.5	8.1 ± 3.6
16		Hydraulic oil tank mounting bolt	M20 x 2.5	57.9 ± 8.7	419 ± 62.9
17	Power train system	Transmission bolt, nut(Rubber, 4EA)	M24 x 3.0	100 ±15.0	723 ± 108
18		Transmission bolt(Converter cover, 4EA)	M16 x 2.0	18.4 ± 2.0	133 ± 14.5
19		Front axle mounting bolt, nut	M33 x 2.0	225 ± 25.0	1627 ± 181
20		Rear axle support mounting bolt, nut	M33 x 2.0	225 ± 25.0	1627 ± 181
21		Tire mounting nut	M22 x 1.5	48.5 ± 2.5	351 ± 18
22		Drive shaft joint mounting bolt, nut	M20 x 2.5	57.9 ± 8.7	419± 62.9
23	Others	Counterweight mounting bolt	M30 x 2.0	199 ± 29.9	1439 ± 216
24		Operator's seat mounting bolt	M8 x 1.25	3.4 ± 0.8	24.6± 5
25		ROPS Cab mounting bolt(4EA)	M27 x 2.0	124	900

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Fault code No.	Reason	Effect(only when fault code is active)
153	High voltage detected at the intake manifold temperature circuit.	Possible white smoke. Fan will stay on if controlled by electronic control module (ECM). No engine protection for coolant temperature.
154	Low voltage detected at the intake manifold temperature circuit.	Possible white smoke. Fan will stay on if controlled by electronic control module (ECM). No engine protection for coolant temperature.
155	Intake manifold temperature signal indicates temperature above 87.8ÁC(190ÁF).	Progressive power derate with increasing time after alert. If engine protection shutdown feature is enabled, engine will shut down 30 seconds after red lamp starts flashing.
187	Low voltage detected on the ECM voltage supply line to some sensors(VSEN2 supply).	Engine will run derated. No engine protection for oil pressure and coolant level.
211	Additional machine diagnostic codes have been logged. Check other ECM's for diagnotic codes	None on engine performance.
212	High voltage detected at the oil temperature circuit.	No engine protection for oil temperature.
213	Low voltage detected at the oil temperature circuit.	No engine protection for oil temperature.
214	Oil temperature signal indicates oil temperate above 123.9ÁC(225ÁF).	Progressive power derate with increasing time after alert. If engine protection shutdown feature is enabled, engine will shut down 30sec after the red lamp starts flashing.
219	Low oil level was detected in the Centinel™ makeup oil tank.	None on performance. Centinel™ deactivated.
221	High voltage detected at the ambient air pressure circuit.	Derate in power output of the engine.
222	Low voltage detected at the ambient air pressure circuit.	Derate in power output of the engine.
223	Incorrect voltage detected at the Centinal™ actuator circuit by the ECM.	None on performance. Centinel™ deactivated.
227	High voltage detected on the ECM voltage supply line to some sensors(VSEN2 supply).	Engine will run derated. No engine protection for oil pressure and coolant level.
234	Engine speed signal indicates engine speed is greater than 2730 rpm.	Fuel shutoff valve closes until engine speed falls to 2184 rpm.
235	Coolant level signal indicates coolant level is below the normal range.	Progressive power derate with increasing time after alert. If engine protection shutdown feature is enabled, engine will shut down 30 seconds after red lamp starts flashing.
237	Duty cycle of the throttle input signal to the primary or secondary engine for multiple unit synchronization is less than 3 percent or more than 97 percent.	All engines(primary and secondary) are shut down with increasing time after alert if hard-coupled. Only secondary engines are shut down with increasing time after alert if soft-coupled.

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1) Insert orifices with the concave side showing upward, until contact is obtained.

NOTE: *Installation position, see Arrows.*

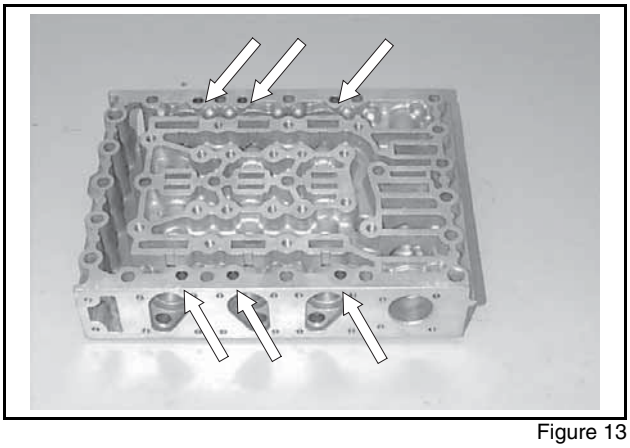


Figure 13

2) The figure below shows the following components :

(1)Vibration damper(3x spool and compression spring)

(2)Follow-on slide(3x spool and compression spring)

(3)Pressure reducing valve(1x spool and compression spring)

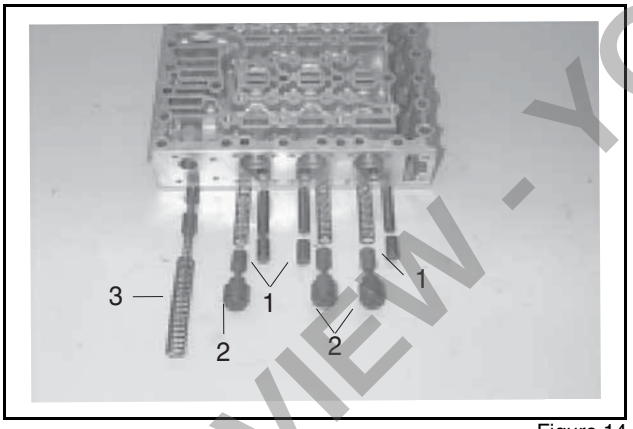


Figure 14

3) Install components according to Figure 14.

NOTE: *Preload the compression springs of the follow-on slides and locate the spools provisionally by means of cylindrical pins Ø 5.0mm (assembly aid), see Arrows/ Figure 15.*

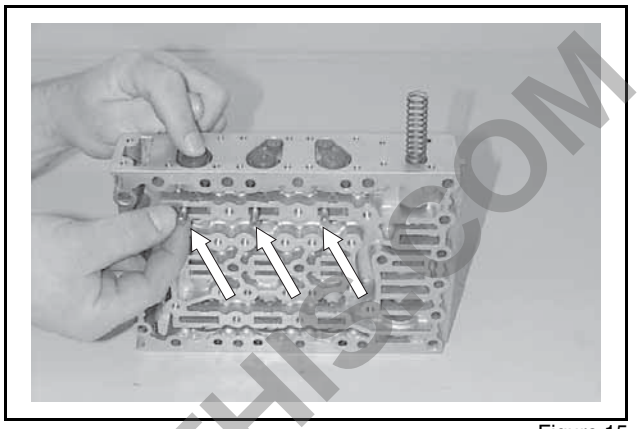


Figure 15

4) Install two adjusting screws.

NOTE: *Line up flat gasket(Arrow) and housing cover(see Figure16).*
Now, bring housing cover by means of adjusting screws uniformly against shoulder (Figure 17).

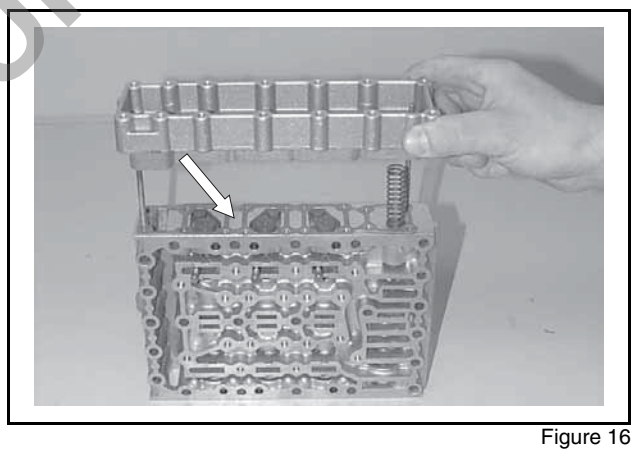


Figure 16

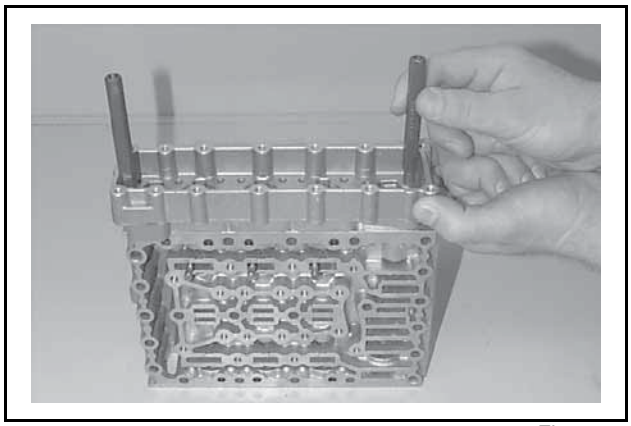


Figure 17

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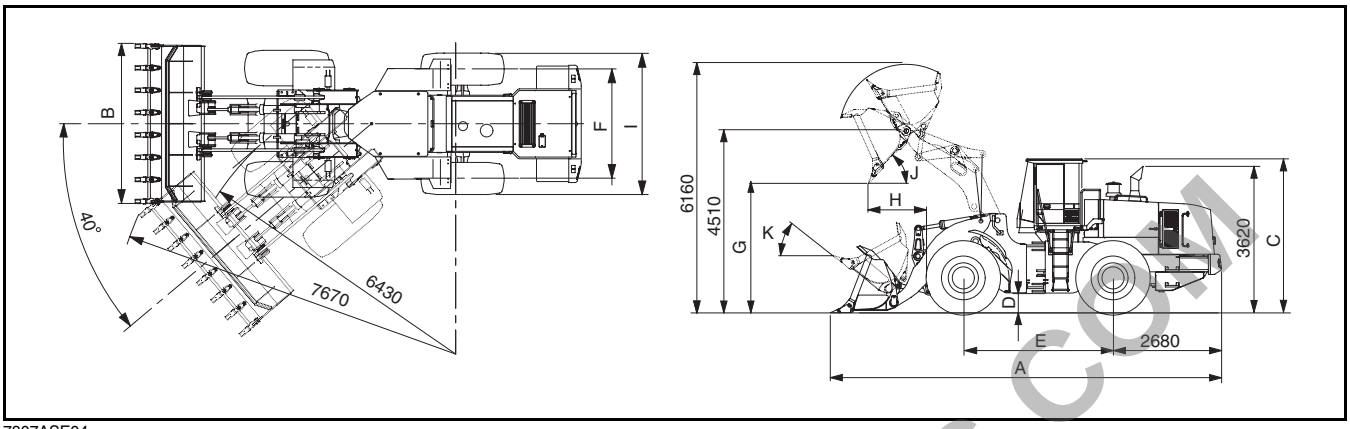
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Problem	Cause	Remedy
Transmission pressure is low(All gears)	Low oil level.	Check transmission oil level and refill if necessary.
	Failed transmission pressure switch.	Verify transmission system pressure. Do transmission system pressure test.
	Plugged suction strainer.	Transmission pump may be noisy if transmission suction screen is clogged. Drain transmission. Remove and clean suction screen. Also, check condition of transmission filter.
	Stuck transmission pressure regulating valve or broken spring.	Remove transmission pressure regulating valve. Inspect for damage(See transmission control valve).
	Failed control valve gasket.	Inspect transmission control valve for external leakage. Remove control valve. Inspect or replace gasket.
	Stuck PPC valve.	Remove end cover to inspect modulation spool and check torque on cap screws retaining control valve to transmission.
Transmission system pressure is low (One or two gears)	Failed transmission pump.	Do pump flow test.
	Failed transmission control valve gasket.	Inspect transmission control valve for external leakage. Remove control valve. Inspect or replace gasket.
	Leakage in clutch piston or seal ring.	Disassemble and repair.
Transmission shifts too low	Low oil level(Aeration of oil).	Add oil.
	Low transmission pressure.	Do transmission system pressure test.
	Restricted transmission pump suction screen.	Remove and clean screen.
	Low transmission pump flow.	Do transmission pump flow test.
	Excessive transmission element leakage.	Do transmission element leakage test using system pressure.
	Stuck PPC valve.	Remove end cover to inspect modulation spool. Replace if necessary.
	Restricted PPC valve orifice.	Remove orifice and inspect for contamination and / or plugging.
	Restricted oil passages between control valve and transmission elements.	Remove control valve and inspect oil passage.
	Incorrect transmission oil.	Change oil(SAE 10W-30/15W-40)

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(3) WITH TOOTH TYPE BUCKET



7807ASE04

Description			Unit	Specification
Operating weight			kg(lb)	29300(64600)
Bucket capacity		Struck	$m^3(yd^3)$	4.1(5.4)
		Heaped		4.8(6.3)
Overall length		A	mm(ft-in)	9600(31' 6")
Overall width		B		3500(11' 6")
Overall height		C		3805(12' 6")
Ground clearance		D		475(1' 7")
Wheelbase		E		3700(12' 2")
Tread		F		2440(8' 0")
Dump clearance at 45°		G		3140(10' 4")
Dump reach at 45°		H		1485(4' 10")
Width over tires		I		3220(10' 7")
Dump angle		J	Degree (°)	47
Roll back angle(Carry position)		K		48
Cycle time		Lift(With load)	sec	6.4
		Dump(With load)		1.4
		Lower(Empty)		3
Maximum travel speed			km/hr(mph)	33.9(21.1)
Braking distance			m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)				6.43(21' 1")
Gradeability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		17.5(10.9)
		Fourth gear		33.9(21.1)
	Reverse	First gear		6.2(3.9)
		Second gear		11.4(7.1)
		Third gear		23.6(14.7)

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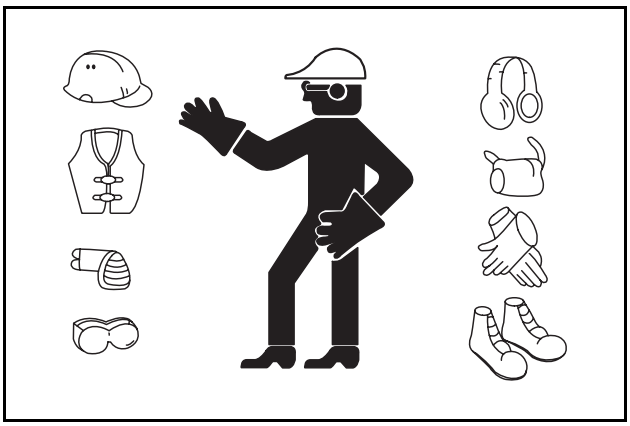
1. SAFETY HINTS

FOLLOW SAFE PROCEDURE

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

WEAR PROTECTIVE CLOTHING

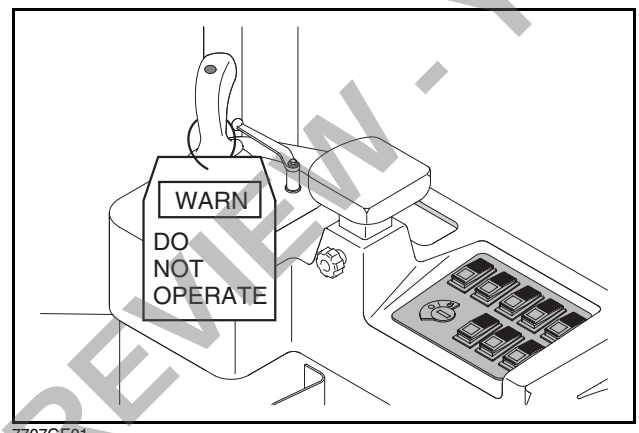
Wear close fitting clothing and safety equipment appropriate to the job.



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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.



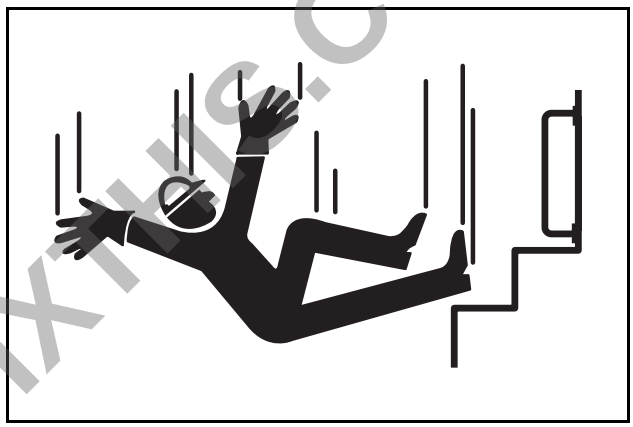
7707GE01

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.

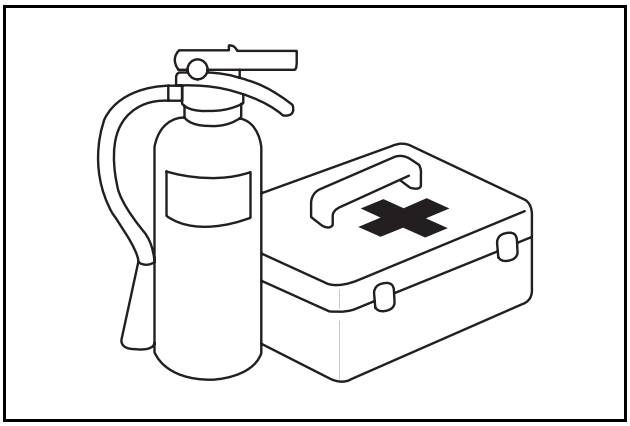
Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.



73032E01

PREPARE FOR EMERGENCIES

Be prepared if a fire starts. Keep a first aid kit and fire extinguisher handy. Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



73031GE03

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1. STRUCTURE

This service manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.
This service manual mainly contains the necessary technical information for operations performed in a service workshop.
For ease of understanding, the manual is divided into the following sections.

Structure and function

This group explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

Operational checks and troubleshooting

This group explains the system operational checks and troubleshooting charts correlating problem to remedy.

Tests and adjustments

This group explains checks to be amide before and after performing repairs, as well as adjustments to be made at completion of the checks and repairs.

Disassembly and assembly

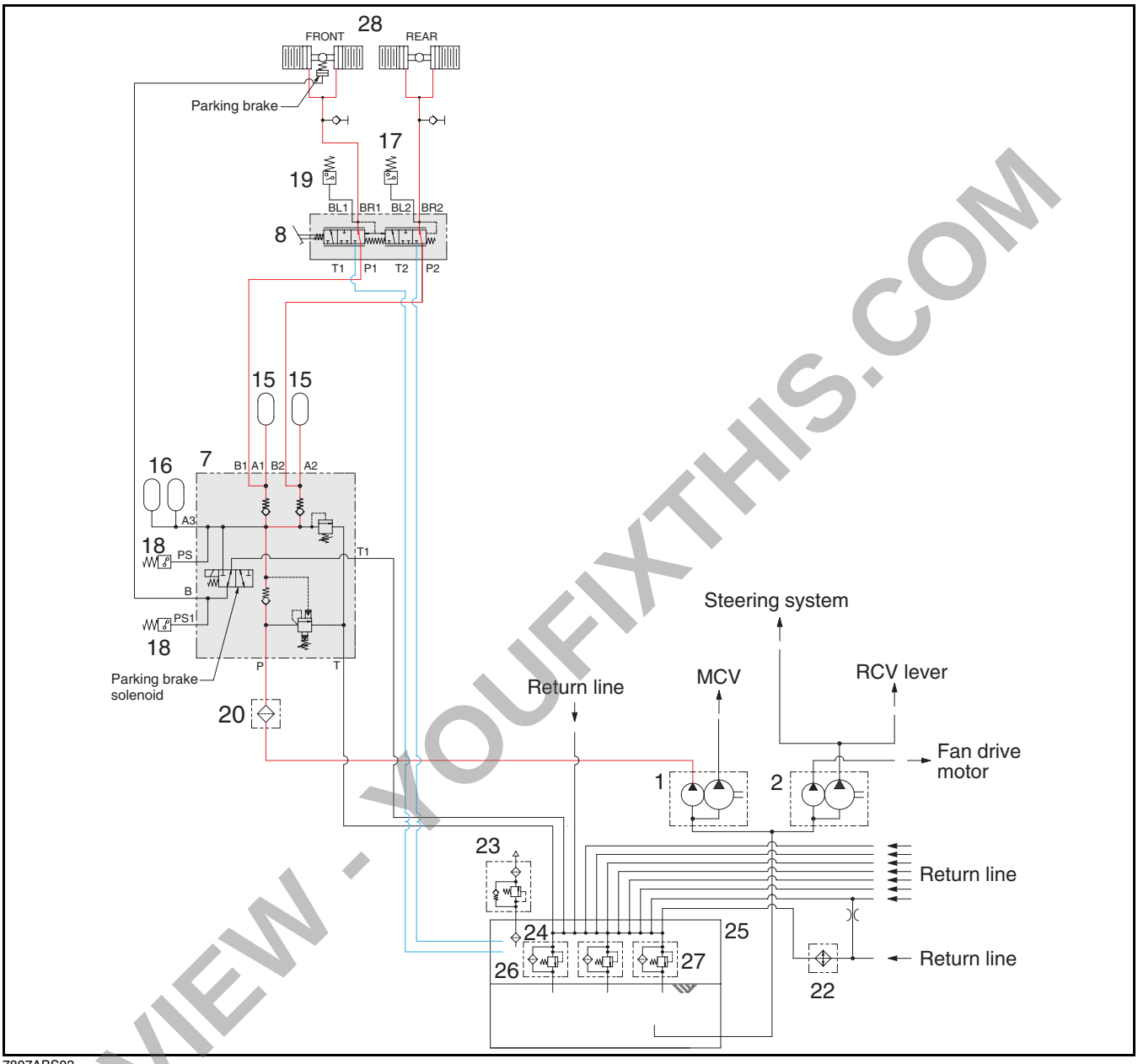
This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your CASE distributor for the latest information.

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2) SERVICE BRAKE OPERATED



7807ABS03

When the pedal of brake valve (8) is depressed, the operating force overcomes the force of the spring, and is transmitted to the spool. When the spool moves down, the inlet port is opened, and at the same time the hydraulic oil controlled the pressure level by the cut-off valve (7) enters the piston in the front and rear axles. Therefore, the service brake is applied.

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