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 Hyundai distributor for the latest information.

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GROUP 1 SAFETY HINTS

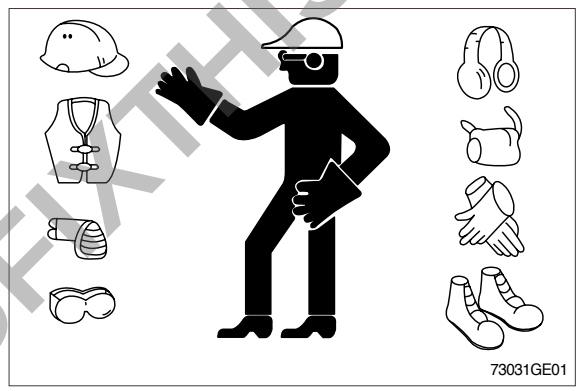
FOLLOW SAFE PROCEDURE

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



WEAR PROTECTIVE CLOTHING

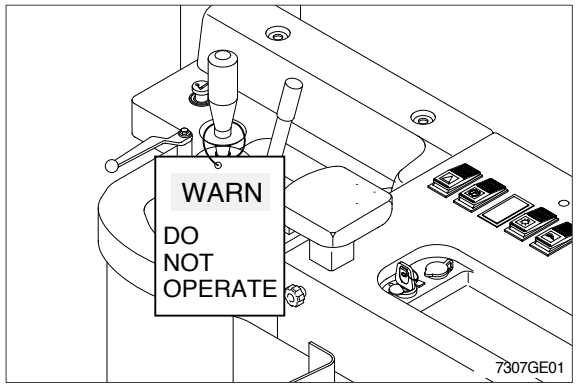
Wear close fitting clothing and safety equipment appropriate to the job.



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.

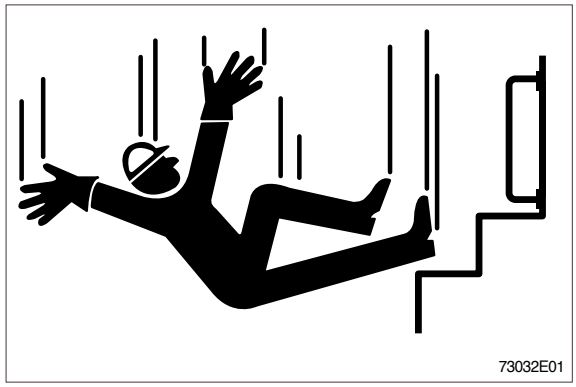


USE HANDHOLDS AND STEPS

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.

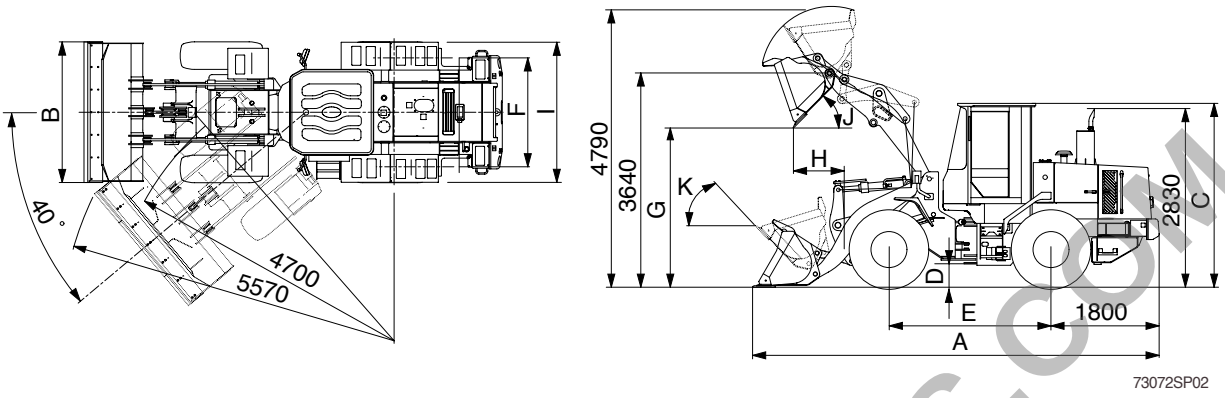
Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.



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2. SPECIFICATIONS

1) WITHOUT TOOTH AND CUTTING EDGE TYPE BUCKET(HL730-7)



Description			Unit	Specification
Operating weight			kg(lb)	9700(21380)
Bucket capacity		Struck	$m^3(yd^3)$	1.4(1.9)
		Heaped		1.7(2.2)
Overall length		A	mm(ft-in)	6770(22' 3")
Overall width		B		2450(8' 0")
Overall height		C		3120(10' 3")
Ground clearance		D		370(1' 3")
Wheelbase		E		2750(9' 0")
Tread		F		1850(6' 0")
Dump clearance at 45°		G		2780(9' 1")
Dump reach(Full lift)		H		970(3' 2")
Width over tires		I		2295(7' 6")
Dump angle		J	Degree (°)	48
Roll back angle(Carry position)		K		48
Cycle time		Lift(With load)	sec	5.2
		Dump(With load)		1.0
		Lower(Empty)		2.3
Maximum travel speed			km/hr(mph)	37.0(23.1)
Braking distance			m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)				4.70(15' 5")
Gradability			Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	6.9(4.3)
		Second gear		12.1(7.5)
		Third gear		22.1(13.8)
		Fourth gear		37.0(23.1)
	Reverse	First gear		7.3(4.5)
		Second gear		12.8(8.0)
		Third gear		23.3(14.5)

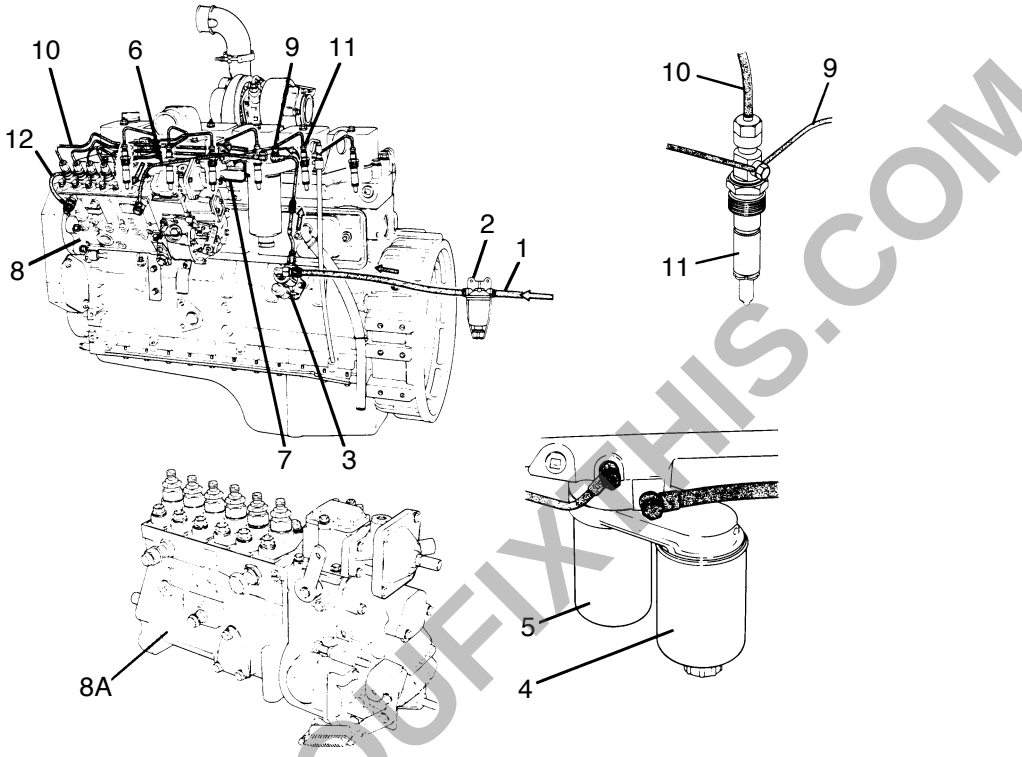
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2. SYSTEM DIAGRAMS

The following drawings show the flow through the engine systems.

1) FUEL SYSTEM



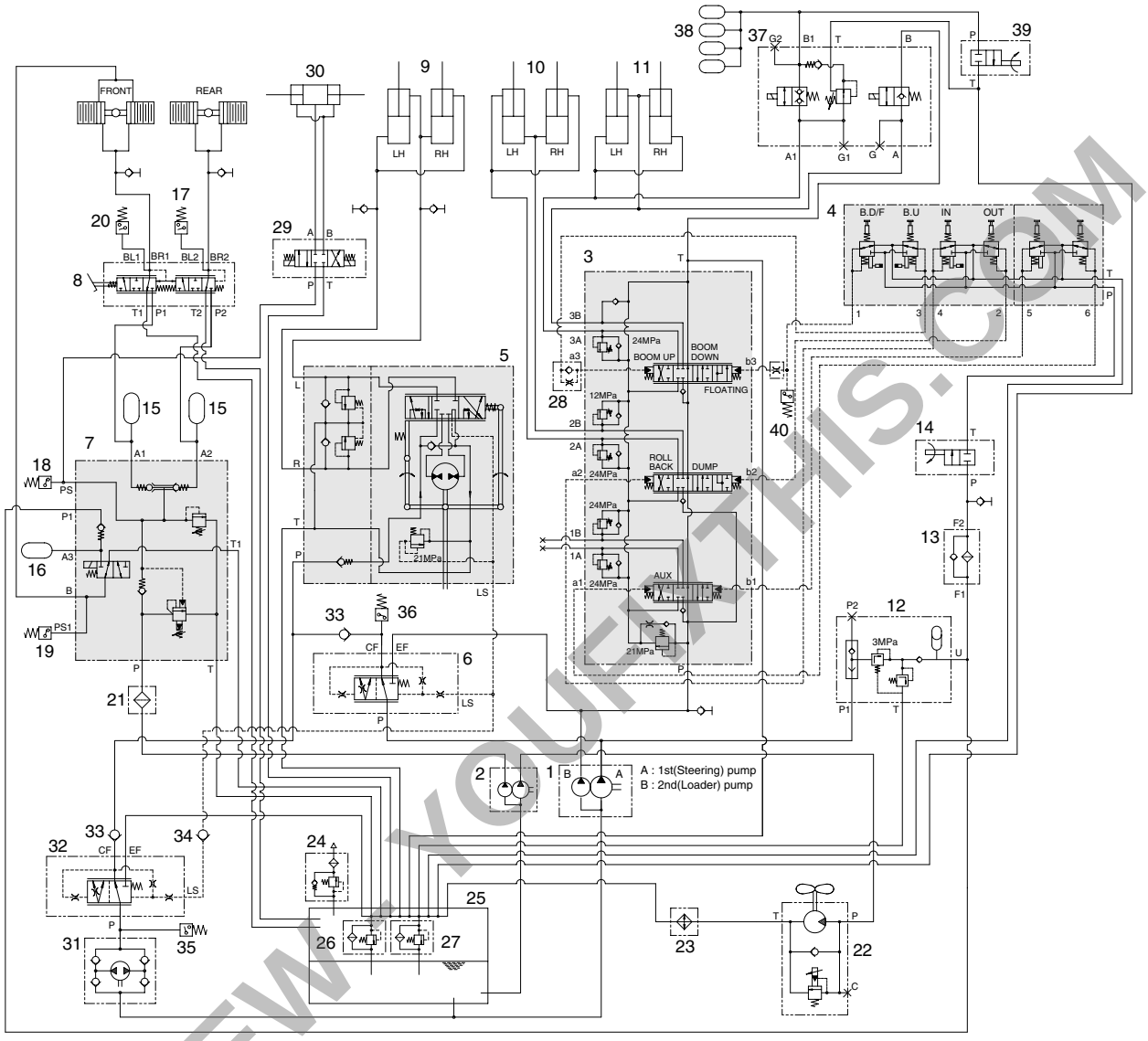
7307EG02

1	Fuel from supply tank	8	Injection pump(Bosch)
2	Pre-filter	8A	Injection pump(Nippondenso)
3	Lift pump	9	Fuel drain manifold
4	Fuel/Water separator	10	High pressure manifold
5	Fuel filter	11	Injectors
6	Low pressure supply line	12	Fuel return to supply tank
7	Turbo boost control line		

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HYDRAULIC CIRCUIT(HL730TM-7)



1	Main pump	15	Accumulator	28	Shockless valve
2	Fan+Brake pump	16	Accumulator	29	Solenoid valve
3	Main control valve	17	Pressure switch	30	Quick coupler cylinder
4	Remote control valve	18	Pressure switch	31	Emergency pump kit(Option)
5	Steering unit	19	Pressure switch	32	Priority valve(Option)
6	Priority valve	20	Pressure switch	33	Check valve(Option)
7	Cut off valve	21	Line filter	34	Check valve(Option)
8	Brake valve	22	Fan motor	35	Pressure switch(Option)
9	Steering cylinder	23	Oil cooler	36	Pressure switch(Option)
10	Bucket cylinder	24	Air breather	37	Ride control valve(Option)
11	Boom cylinder	25	Hydraulic tank	38	Accumulator(Option)
12	Pilot supply unit	26	Return filter	39	Safety valve(Option)
13	Line filter	27	By pass valve	40	Pressure switch(Option)
14	Safety valve				

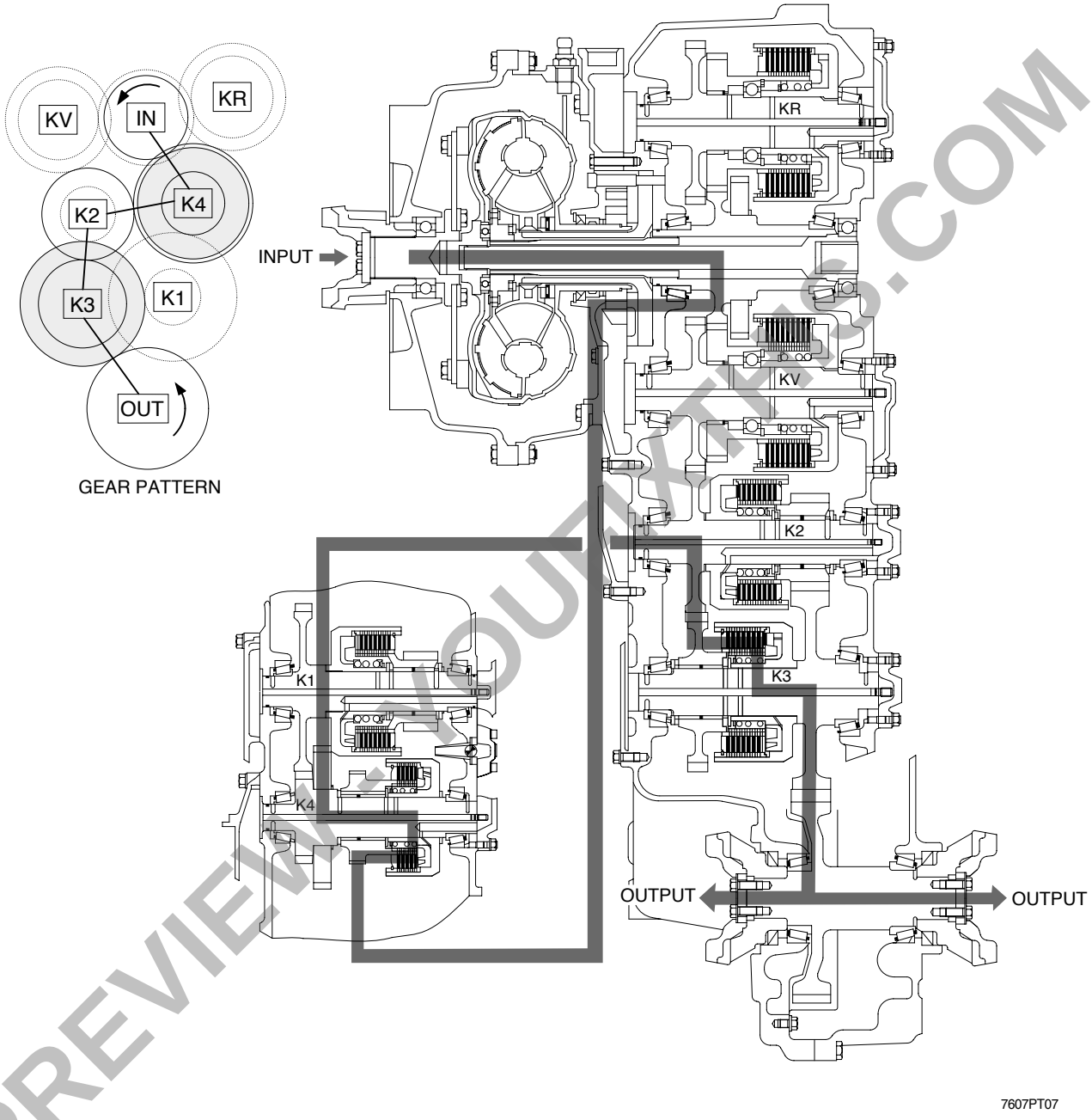
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④ **Forward 4th**

In 4th forward, 4th clutch and 3rd clutch are engaged.

4th clutch and 3rd clutch are actuated by the hydraulic pressure applied to the clutch piston.



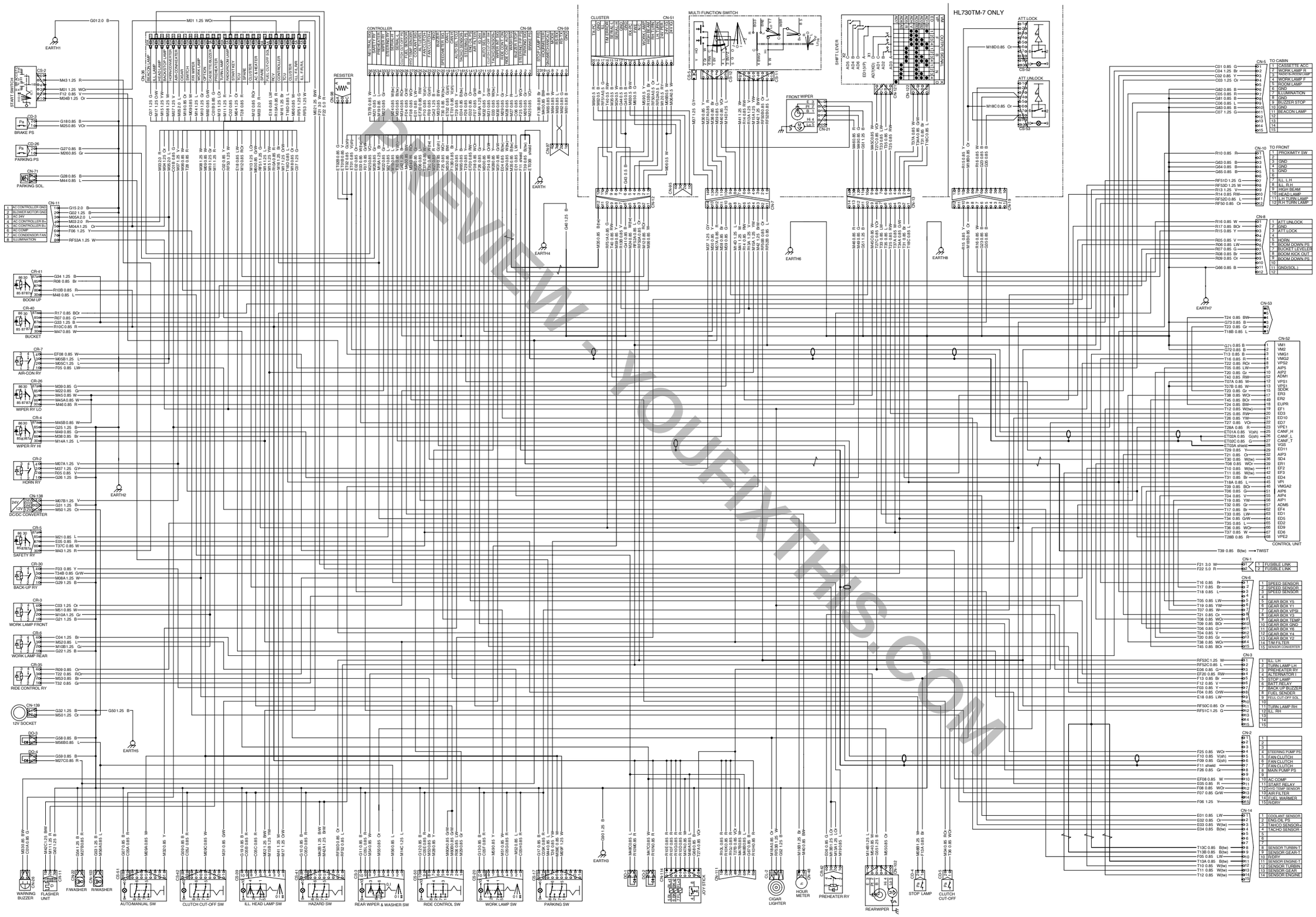
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Fault code (Hex)	Int. code (Dec)	Meaning of the fault code possible reason for fault detection	Reaction of the TCU	Possible steps to repair	Remarks
71	22	**S.C. to battery voltage at clutch K1** The measured resistance value of the valve is out of limit, the voltage at K1 valve is too high • Cable/connector is defective and has contact to battery voltage • Cable/connector is defective and has contact to another regulator output of the TCU • Regulator has an internal defect	TCU shifts to neutral OP mode : Limp home If failure at another clutch is pending TCU shifts to neutral OP mode : TCU shutdown	• Check the cable from TCU to the gearbox • Check the connectors from TCU to the gearbox • Check the regulator resistance* • Check internal wire harness of the gearbox	* See Chapter (8)
72	10	**S.C. to ground at clutch K1** The measured resistance value of the valve is out of limit, the voltage at K1 valve is too low • Cable/connector is defective and has contact to vehicle ground • Regulator has an internal defect	TCU shifts to neutral OP mode : Limp home If failure at another clutch is pending TCU shifts to neutral OP mode : TCU shutdown	• Check the cable from TCU to the gearbox • Check the connectors from gearbox to TCU • Check the regulator resistance* • Check internal wire harness of the gearbox	* See Chapter (8)
73	16	**O.C. at clutch K1** The measured resistance value of the valve is out of limit • Cable/connector is defective and has no contact to TCU • Regulator has an internal defect	TCU shifts to neutral OP mode : Limp home If failure at another clutch is pending TCU shifts to neutral OP mode : TCU shutdown	• Check the cable from TCU to the gearbox • Check the connectors from gearbox to TCU • Check the regulator resistance* • Check internal wire harness of the gearbox	* See Chapter (8)
74	23	**S.C. to battery voltage at clutch K2** The measured resistance value of the valve is out of limit, the voltage at K2 valve is too high • Cable/connector is defective and has contact to battery voltage • Cable/connector is defective and has contact to another regulator output of the TCU • Regulator has an internal defect	TCU shifts to neutral OP mode : Limp home If failure at another clutch is pending TCU shifts to neutral OP mode : TCU shutdown	• Check the cable from TCU to the gearbox • Check the connectors from gearbox to TCU • Check the regulator resistance* • Check internal wire harness of the gearbox	* See Chapter (8)

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5. TIGHTENING TORQUE OF MAJOR COMPONENT

No	Items		Size	kgf · m	lbf · ft
1	Engine	Engine mounting bolt, nut(4EA)	M16×2.0	29.7±4.5	215±32.5
2		Engine mounting bolt(Bracket)	M12×1.75	10.7±1.6	77.4±11.6
3		Radiator mounting bolt	M16×2.0	29.7±4.5	215±32.5
4		Fuel tank mounting bolt	M16×2.0	29.7±4.5	215±32.5
5		Air cleaner mounting bolt(4EA)	M 8×1.25	2.5±0.5	18.1±3.6
6	Hydraulic system	Main pump housing mounting bolt	M14×2.0	19.6±2.9	142±20.9
7		Main control valve mounting bolt	M12×1.75	12.8±3.0	92.6±21.7
8		Steering unit mounting bolt	M10×1.5	6.9±1.4	49.9±10.1
9		Priority valve	M 8×1.25	2.5±0.5	18.1±3.6
10		Brake valve mounting bolt	M 8×1.25	2.5±0.5	18.1±3.6
11		Fan and brake pump mounting bolt	M10×1.5	6.9±1.4	49.9±10.1
12		Cut-off valve mounting bolt	M12×1.75	12.8±3.0	92.6±21.7
13		Remote control lever mounting bolt	M 6×1.0	1.1±0.2	8.0±1.4
14		Pilot supply unit mounting bolt	M 8×1.25	2.5±0.5	18.1±3.6
15		Safety valve	M 8×1.25	2.5±0.5	18.1±3.6
16		Hydraulic oil tank mounting bolt	M16×2.0	29.7±4.5	215±32.5
17	Power train system	Transmission mounting bolt(Bracket, front)	M20×2.5	57.9±8.7	419±62.9
18		Transmission mounting bolt(Bracket, rear)	M16×2.0	18.4±2.0	133±14.5
19		Front axle mounting bolt, nut	M24×2.5	100±15	723±109
20		Rear axle support mounting bolt, nut	M24×2.0	100±15	723±109
21		Tire mounting nut(17.5-25, 12PR, L3)	M22×1.5	70±2.0	506±15
22		Drive shaft joint mounting bolt	3/8-24UNF	6.0±0.8	43.4±5.8
23	Others	Counterweight mounting bolt, nut	M24×2.0	107±16	773±116
24		Operator's seat mounting bolt	M 8×1.25	3.4±0.8	24.6±5
25		ROPS Cab mounting bolt(4EA)	M24×3.0	27.5±2.5	199±18.1

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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 3-22~3-48.

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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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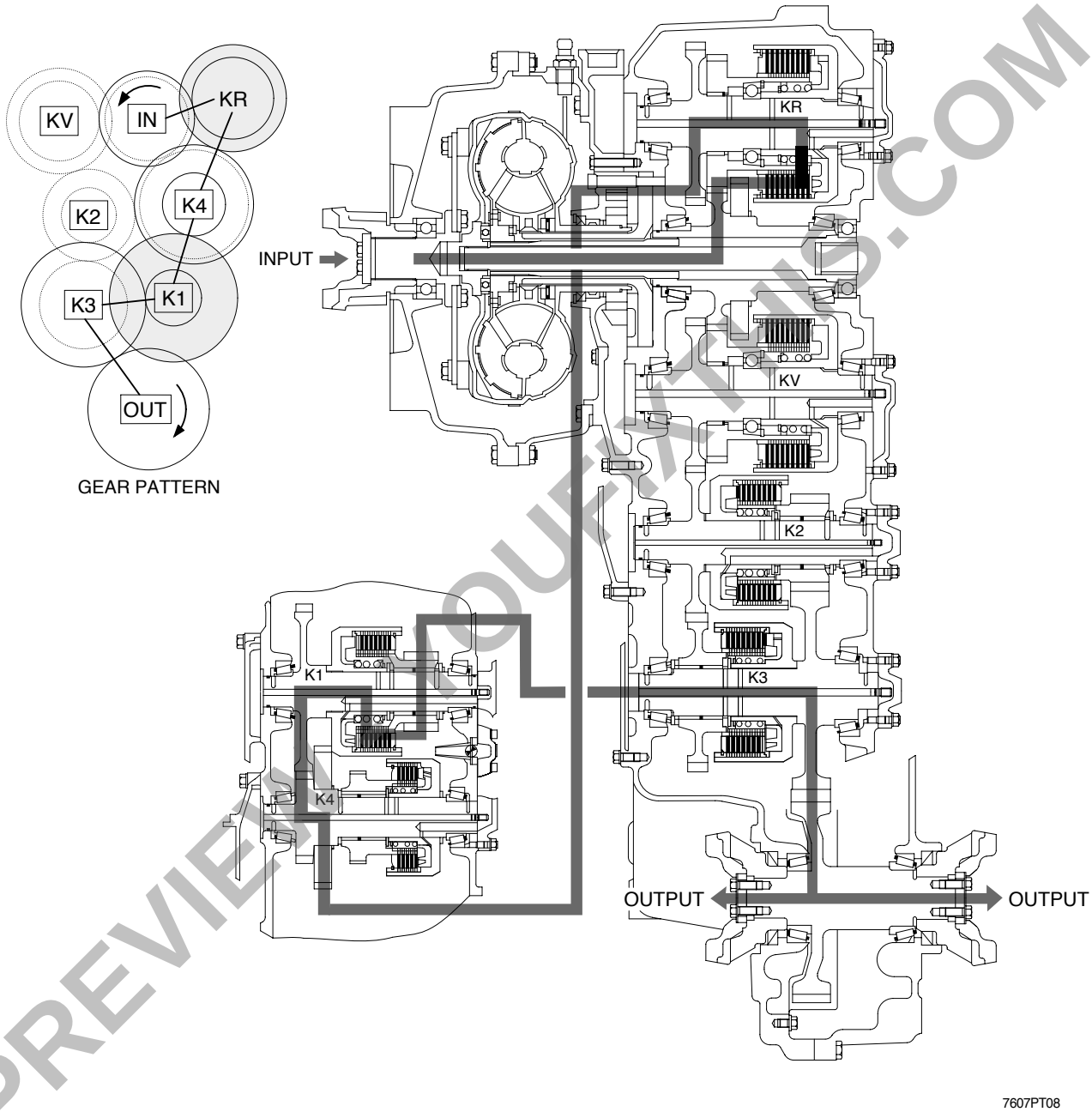
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(2) Reverse

① Reverse 1st

In 1st reverse, reverse clutch and 1st clutch are engaged.

Reverse clutch and 1st clutch are actuated by the hydraulic pressure applied to the clutch piston.



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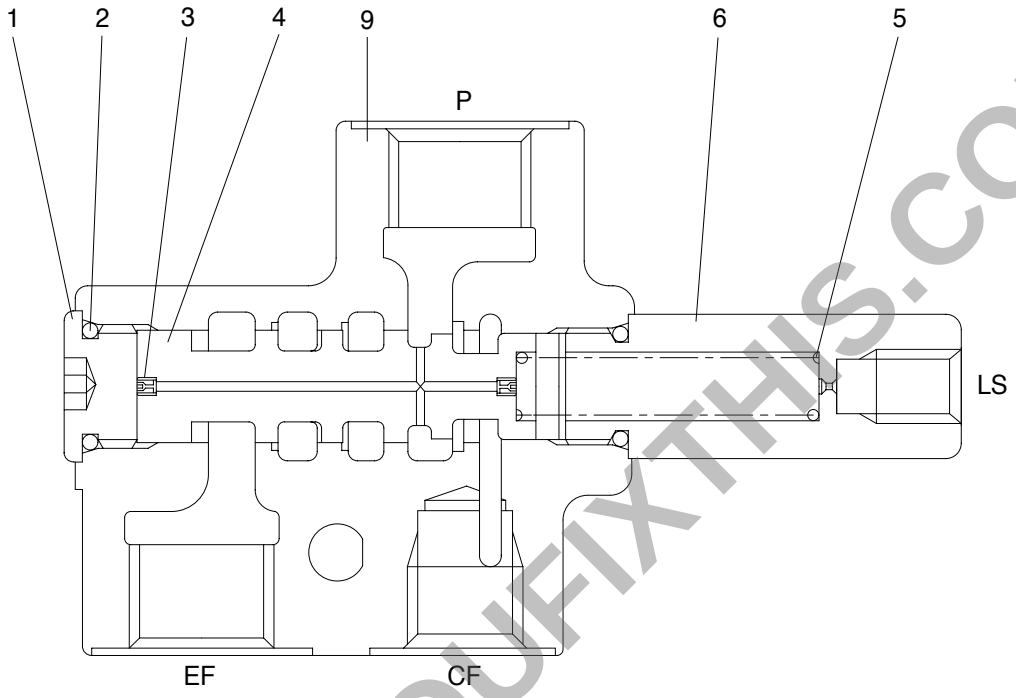
Problem	Cause	Remedy
Transmission pressure is low(All gears)	Low oil level.	Check transmission oil level and refill if necessary.
	Failed transmission pressure switch.	Verify transmission system pressure. Do transmission system pressure test.
	Plugged suction strainer.	Transmission pump may be noisy 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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4. PRIORITY VALVE

1) STRUCTURE



73035PR06

1	Plug	4	Spool	6	Plug
2	Seal ring	5	Spring	9	Housing
3	Orifice				

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(4) Overall assemble

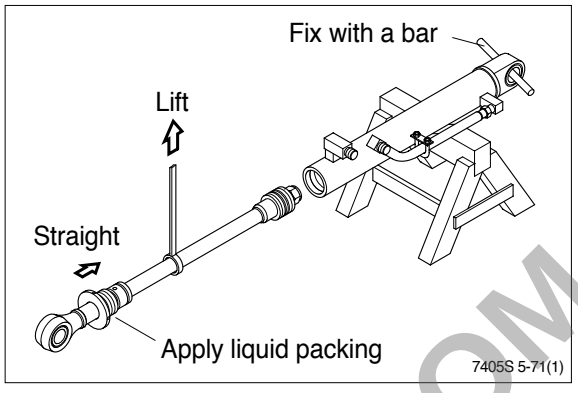
① Place a V-block on a rigid work bench. Mount the cylinder tube assembly(1) on it and fix the assembly by passing a bar through the clevis pin hole to lock the assembly.

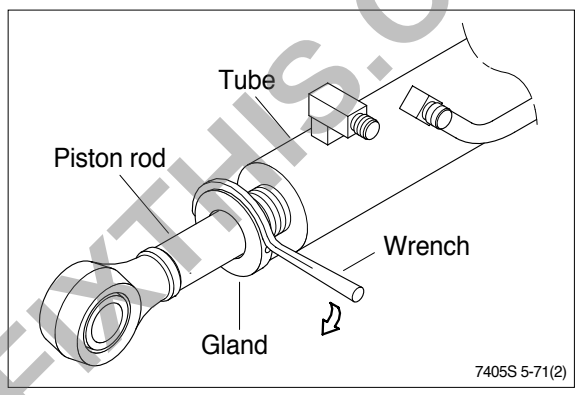
② Insert the piston rod assembly in to the cylinder tube assembly, while lifting and moving the piston rod assembly with a crane.

※ Be careful not to damage piston seal by thread of cylinder tube.

③ Match the bolts holes in the cylinder head flange to the tapped holes in the cylinder tube assembly and tighten socket bolts to a specified torque.

※ Refer to the table of tightening torque.





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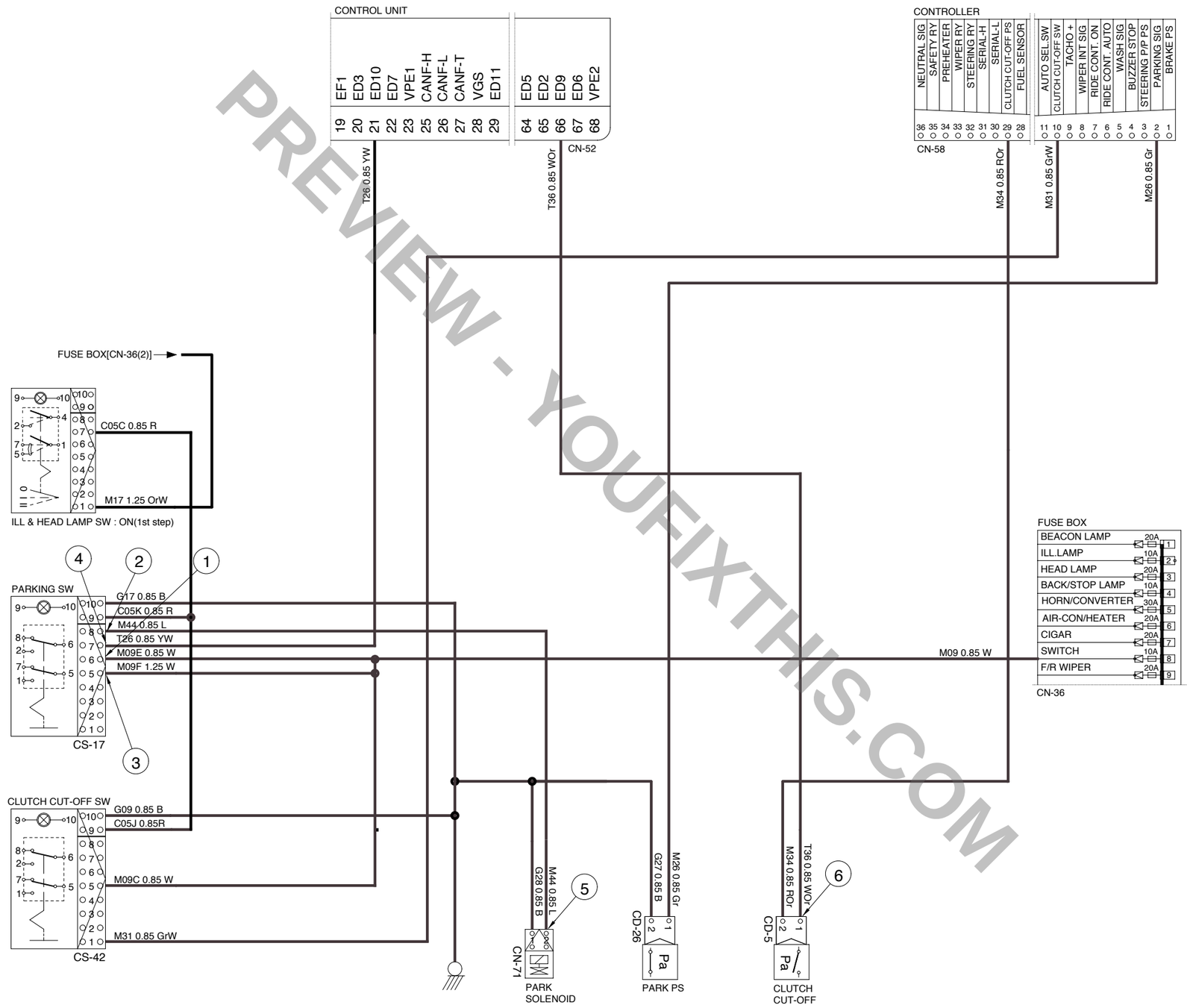
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Problem	Cause	Remedy
Hydraulic oil foams	Low oil level. Wrong oil. Water in oil. Loose or faulty suction lines(Air leak in system).	Add recommended oil. Change to recommended oil. Change oil. Tighten or install new lines.
Remote control valve (RCV) **leaking**	Leaking plunger seals.	Remove, inspect and replace plunger seals.

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ELECTRIC PARKING, DECLUTCH CIRCUIT



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