⚠ SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and decals on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.

It is essential that you read the instructions and safety regulations before you attempt to repair or use this unit.

⚠ **DANGER : Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

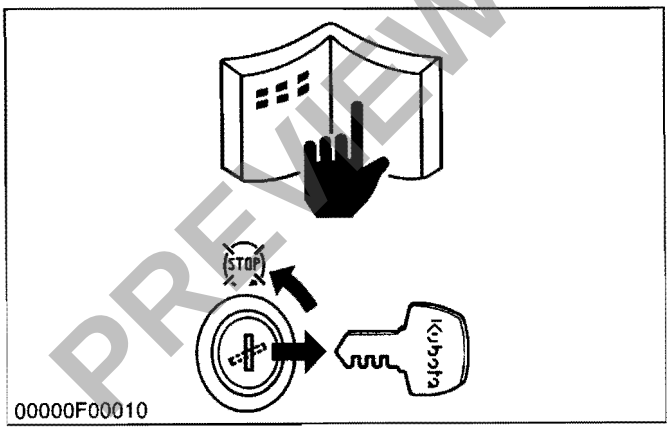
⚠ **WARNING : Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ **CAUTION : Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

■ **IMPORTANT : Indicates that equipment or property damage could result if instructions are not followed.**

■ **NOTE : Gives helpful information.**

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BEFORE SERVICING AND REPAIRING

(1) Read all instructions and safety instructions in this manual and on your machine safety decals.
(2) Clean the work area and machine.
(3) Park the machine on a firm and level ground, and set the parking brake.
(4) Lower the implement to the ground.
(5) Stop the engine, and remove the key.
(6) Disconnect the battery negative cable.
(7) Hang a **"DO NOT OPERATE"** tag in operator station.

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GENERAL

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SPECIFICATIONS

[ROPS TYPE]

Model			M4900		M5700	
			2WD	4WD	2WD	4WD
Engine	Model		F2803-ELA		F2803-EA	
	Type		Vertical, water-cooled, 4-cycle diesel engine			
	Number of cylinders		5			
	Total displacement		2746 cm^3 (167.6 cu.in.)			
	Bore and stroke		87 × 92.4 mm (3.4 × 3.6 in.)			
	Net power		37.7 kW (50.5 HP)*		42.5 kW (57 HP)*	
	PTO power (factory observed)		33.6 kw (45 HP)*/2600 min^{-1} (rpm)		38.8 kw (52 HP)*/2800 min^{-1} (rpm)	
	Maximum torque		171 N·m (17.4 kgf·m, 126.1 ft-lbs.)/ 1400 to 1600 (rpm)		183 N·m (18.7 kgf·m, 135 ft-lbs.)/ 1400 to 1600 (rpm)	
	Battery		12 V, CCA 700A			
	Fuel		Diesel fuel No.1 [below –10 °C (14 °F)] Diesel fuel No. 2 [above –10 °C (14 °F)]			
	Fuel tank capacity		65 L (17.2 U.S.gal., 14.4 imp.gal)			
	Engine crankcase capacity		8.0 L (8.5 U.S.qts., 14.4 imp.qts)			
	Engine coolant capacity		7.3 L (7.7 U.S.qts., 6.4 imp.qts)			
Dimensions	Overall length		3495 mm (137.6 in.)	3405 mm (1341 in.)	3495 mm (137.6 in.)	3405 mm (134.1 in.)
	Overall width (Minimum tread)		1706 mm (67.2 in.)		1850 mm (72.8 in.)	
	Overall height (with ROPS)		2357 mm (93.0 in.)		2375 mm (93.5 in.)	
	Wheel base		2000 mm (78.7 in.)			
	Tread	Front	1420 to 1820 mm (55.9 to 71.7 in.)	1330 mm (52.4 in.) 1430 mm (56.3 in.)	1420 to 1820 mm (55.9 to 71.7 in.)	1330 mm (52.4 in.) 1430 mm (56.3 in.)
		Rear	1320 to 1720 mm (52.0 to 67.7 in.)		1420 to 1720 mm (55.9 to 67.7 in.)	
	Minimum ground clearance		430 mm (16.9 in.) (BRACKET DRAWBAR)		460 mm (18.1 in.) (BRACKET DRAWBAR)	
Weight (with ROPS)			1700 kg (3748 lbs.)	1800 kg (3968 lbs.)	1750 kg (3858 lbs.)	1850 kg (4078 lbs.)
Travelling system	Standard tire size	Front	6.5-16	9.5-22	7.5-16	9.5-22
		Rear	14.9-28		16.9-28	
	Clutch		Dry, Single plate			
	Steering		Full hydrostatic power steering			
	Transmission		Shuttle synchromesh, 8F/8R (with creep speed 12F/12R)			
	Brake	Travelling	Wet type, multiple discs (mechanical)			
		Parking	Connected with the travelling brake			
	Differential		Bevel gears (with differential lock)			
Hydraulic system	Hydraulic control system		Position, draft and mix control			
	Pump-up capacity		41.6 L (44.0 U.S.gal. 36.6 Imp·gal)/min.			
	Three point hitch		Category I & II			
	Maximum lifting force		1900 kg (4200 lbs.) at lower link end 1500 kg (3307 lbs.) at 610 mm (24 in.) behind lifting point			
	System pressure		19.1 MPa (195 kgf/cm^2, 2773 psi)			
PTO	Independent clutch		Wet type, multiple discs			
	Live PTO	Direction of turning	Clockwise, viewed from tractor rear			
		PTO speed	540 min^{-1} (rpm) at 2295 engine min^{-1} (rpm)			
Traction system			Swinging drawbar, adjustabnle in direction			

NOTE : * Manufacturer's estimate The company reserves the right to change the specifications without notice.

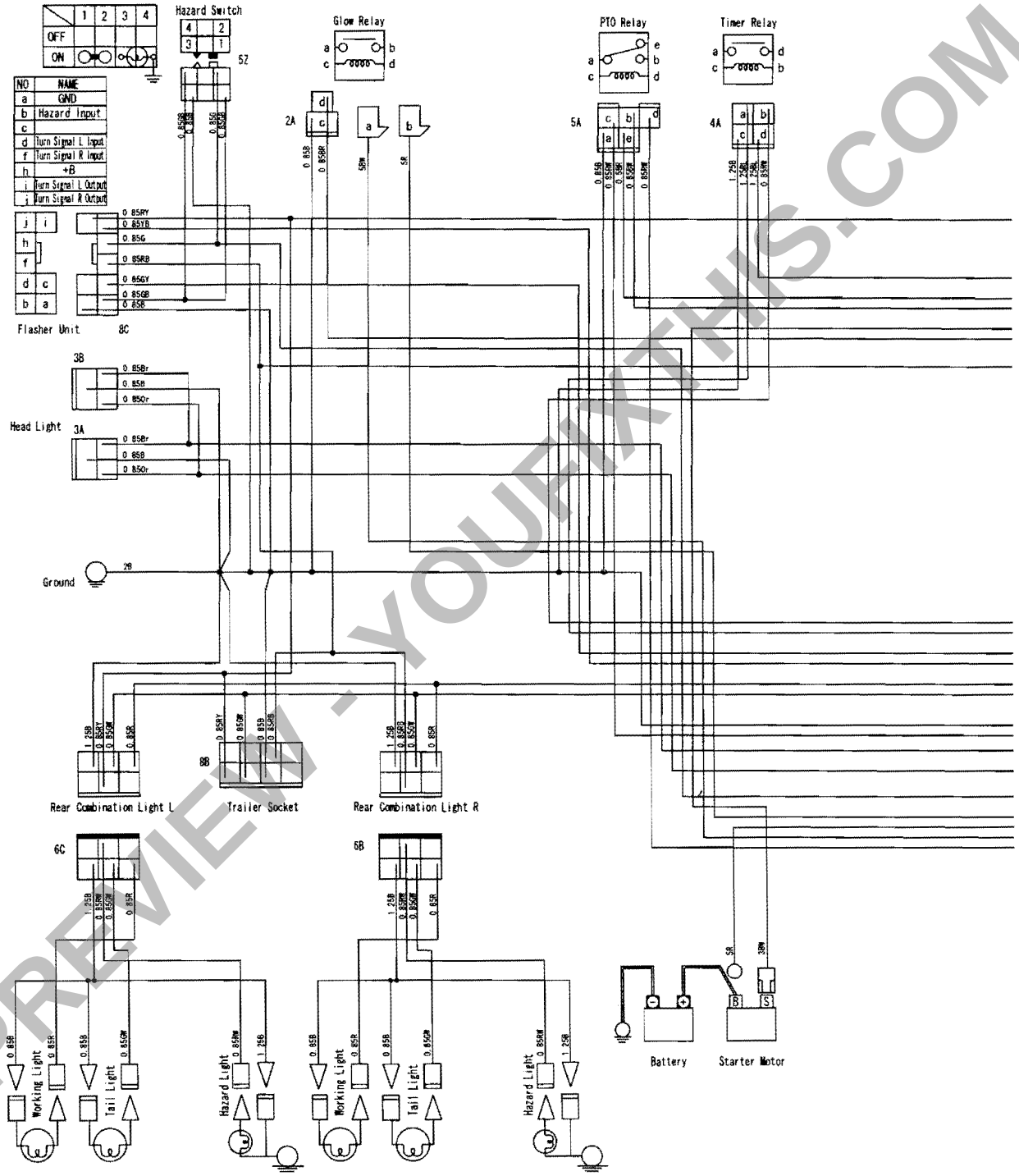
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[1] WIRING DIAGRAM

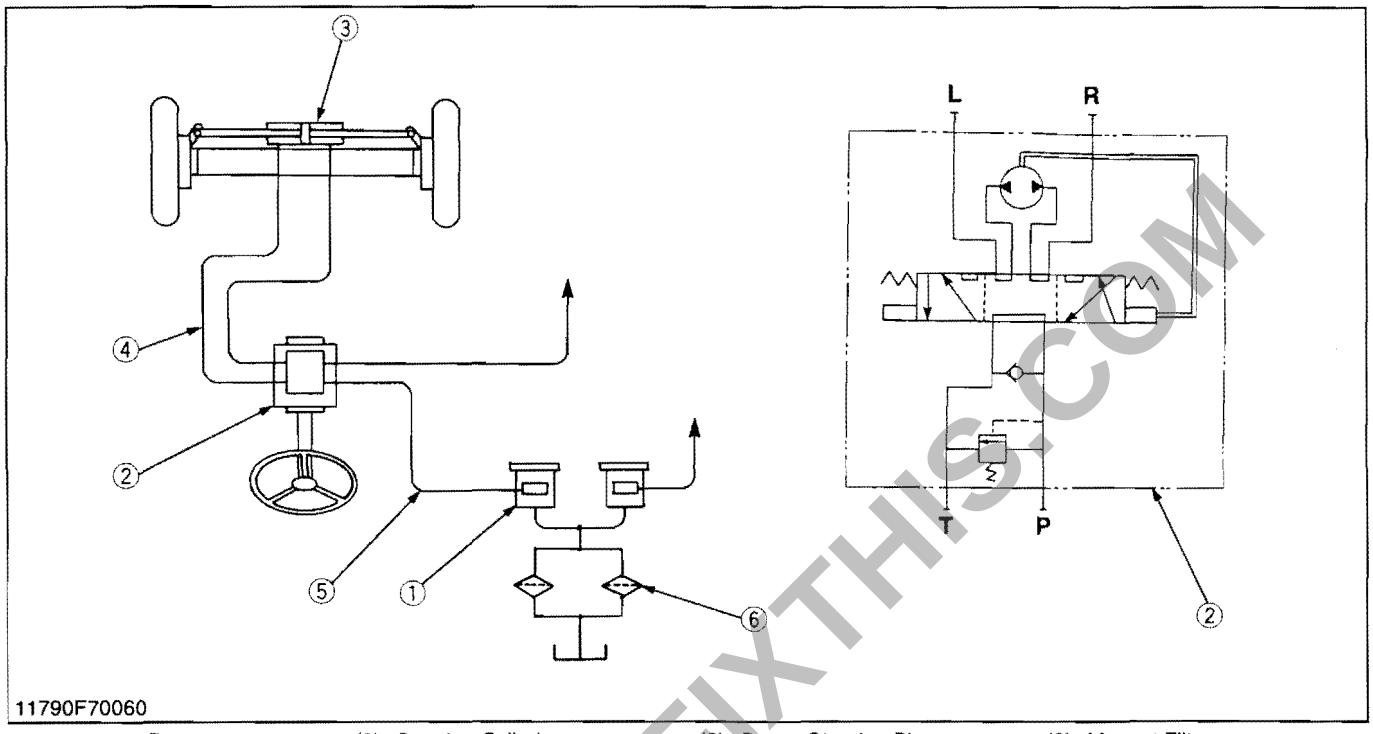
(1) ROPS Type



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[1] STEERING LINKAGE



11790F70060

(1) Hydraulic Pump
(2) Steering Controller
(3) Steering Cylinder
(4) Power Steering Hose
(5) Power Steering Pipe
(6) Magnet Filter

All models are provided with a full hydrostatic power steering. Generally power steerings are divided into 4 types: booster type, integral type, semi-integral type and full hydrostatic type.

In the full hydrostatic power steering, the steering controller is connected to the steering cylinder with only the hydraulic piping. This steering is actuated by oil pressure. Accordingly, it does not have mechanical transmitting parts such as steering gear, pitman arm, drag link, etc. Therefore, it is simple in construction.

This steering system consists of the hydraulic pump (1), steering controller (2), steering cylinder (3), magnet filter (6), etc.

The full hydrostatic power steering systems are divided into two types : non-load reaction type and load reaction type.

They are distinguished by wether the cylinder port is blocked or not with the controller in neutral. In these models, load reaction type is used.

With the load reaction type power steering, the steering wheel returns almost to the straight forward position as with an automobile when the operator releases his hands from the steering wheel.

(Reference)

With the non-load reaction type power steering, the steering wheel maintain their position when the operator releases his hands from the steering wheel.

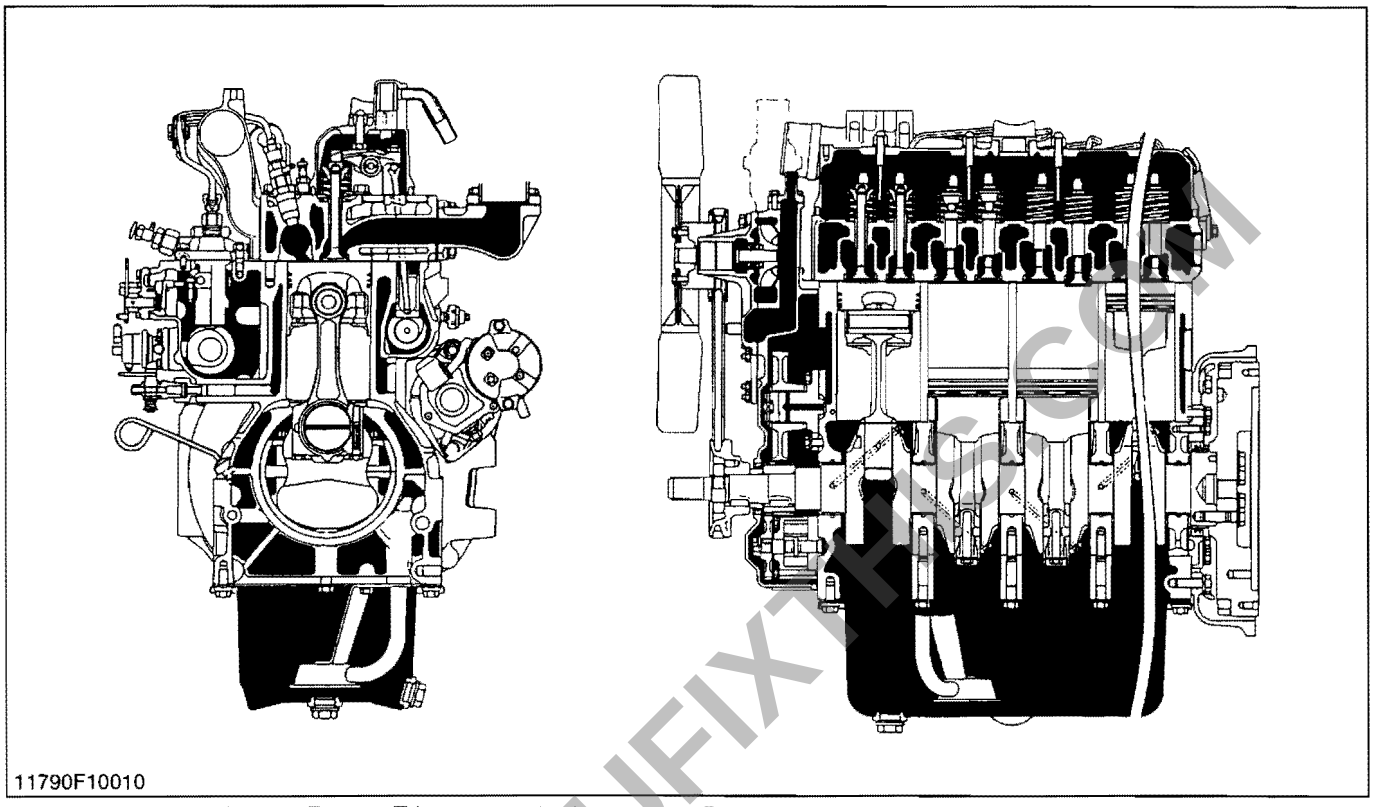
Vibration at the wheels is not transmitted to the steering wheel.

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[1] FEATURES

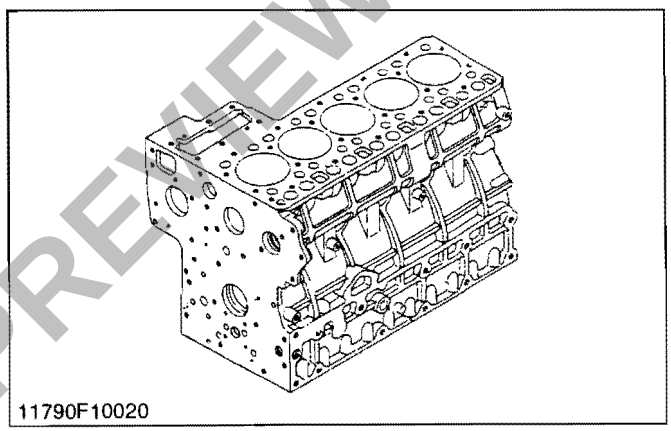

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The F2803-ELA and F2803-EA are vertical, water-cooled, 4 cycle diesel engines. They are incorporated KUBOTA's foremost technologies. With KUBOTA's E-TVCS (Three Vortex Combustion System), well-known Bosch type injection pump and the well-balanced designs, they give greater power, low fuel consumption, little vibration and quiet operation.

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[2] ENGINE BODY

(1) Cylinder Block


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The engine has a high durability tunnel-type cylinder block in which the crank bearing component is a constructed body.

Furthermore, liner less type, allow effective cooling, less distortion, and greater wear-resistance.

The noise level is reduced to a minimum because each cylinder had its own chamber.

11790M10020

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[6] TIGHTENING TORQUES (GENERAL USE SCREWS, BOLTS AND NUTS)

Screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual should be tightened according to the table below.

Indication on top of bolt	⟨4⟩ No-grade or 4T						⟨7⟩ 7T						⟨9⟩ 9T		
Material of bolt	SS400, S20C						S43C, S48C						SCr435, SCM435		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Diameter	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M6 (6 mm, 0.24 in.)	7.84 to 9.31	0.80 to 0.95	5.79 to 6.87	7.84 to 8.83	0.80 to 0.90	5.79 to 6.51	9.80 to 11.2	1.00 to 1.15	7.24 to 8.32	7.84 to 8.83	0.80 to 0.90	5.79 to 6.51	12.3 to 14.2	1.25 to 1.45	9.05 to 10.5
M8 (8 mm, 0.31 in.)	17.7 to 20.5	1.8 to 2.1	13.0 to 15.2	16.7 to 19.6	1.7 to 2.0	12.3 to 14.5	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2	29.4 to 34.3	3.0 to 3.5	21.7 to 25.3
M10 (10 mm, 0.39 in.)	39.2 to 45.0	4.0 to 4.6	29.0 to 33.2	31.4 to 34.3	3.2 to 3.5	23.1 to 25.3	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2	39.2 to 44.1	4.0 to 4.5	28.9 to 32.5	60.8 to 70.5	6.2 to 7.2	44.9 to 52.1
M12 (12 mm, 0.47 in.)	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5				77.5 to 90.1	7.9 to 9.2	57.2 to 66.5	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	103 to 117	10.5 to 12.0	76.0 to 86.8
M14 (14 mm, 0.55 in.)	108 to 125	11.0 to 12.8	79.6 to 92.5				124 to 147	12.6 to 15.0	91.2 to 108				167 to 196	17.0 to 20.0	123 to 144
M16 (16 mm, 0.63 in.)	167 to 191	17.0 to 19.5	123 to 141				196 to 225	20.0 to 23.0	145 to 166				260 to 303	26.5 to 31.0	192 to 224
M18 (18 mm, 0.71 in.)	245 to 284	25.0 to 29.0	181 to 210				275 to 318	28.0 to 32.5	203 to 235				343 to 401	35.0 to 41.0	254 to 297
M20 (20 mm, 0.79 in.)	334 to 392	34.0 to 40.0	246 to 289				368 to 431	37.5 to 44.0	272 to 318				490 to 568	50.0 to 58.0	362 to 420

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TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
Engine Does Not Start	• No fuel	Replenish fuel	–
	• Air in the fuel system	Bleed	G-29
	• Water in the fuel system	Change fuel and repair or replace fuel system	–
	• Fuel pipe clogged	Clean	–
	• Fuel filter clogged	Change	G-23
	• Excessively high viscosity of fuel or engine oil at low temperature	Use specified fuel or engine oil	G-9
	• Fuel with low cetane number	Use specified fuel	G-9
	• Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S20
	• Incorrect injection timing	Adjust	1-S54
	• Fuel camshaft worn	Replace	1-S33
	• Injection nozzle clogged	Clean	1-S56
	• Injection pump malfunctioning	Repair or replace	1-S29, S54
	• Seizure of crankshaft, camshaft, piston, cylinder or bearing	Repair or replace	–
	• Compression leak from cylinder	Replace head gasket, tighten cylinder head screw, glow plug and nozzle holder	1-S17
	• Improper valve timing	Correct or replace timing gear	1-S32
	• Piston ring and cylinder worn	Replace	1-S42, S49
	• Excessive valve clearance	Adjust	1-S19
(Starter Does Not Run)	• Battery discharged	Charge	–
	• Starter malfunctioning	Repair or replace	9-S11 to S14
	• Main switch malfunctioning	Repair or replace	9-S5 to S7
	• PTO safety switch improperly defective	Replace	–
	• Starter relay defective		
	• Wiring disconnected	Replace Connect	9-S7, S8 –
Engine Revolution Is Not Smooth	• Fuel filter clogged or dirty	Change	G-23
	• Air cleaner clogged	Clean or replace	G-18
	• Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S20
	• Injection pump malfunctioning	Repair or replace	1-S29, S54
	• Incorrect nozzle injection pressure	Adjust	1-S56
	• Injection nozzle stuck or clogged	Repair or replace	1-S20, S57
	• Governor malfunctioning	Repair	1-S30, S33
Either White or Blue Exhaust Gas Is Observed	• Excessive engine oil	Reduce to specified level	1-S11
	• Piston ring and cylinder worn or stuck	Repair or replace	1-S42, S49
	• Incorrect injection timing	Adjust	1-S54
	• Deficient compression	Adjust top clearance	1-S18

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[5] LUBRICANTS, FUEL AND COOLANT

	Place	Capacity		Lubricants, fuel and coolant
		M4900 M5700	M4900 (CAB) M5700 (CAB)	
1	Fuel	65 L 17.2 U.S.gals. 14.3 Imp.gals.	95 L 25.1 U.S.gals. 20.9 Imp.gals.	No. 2-D diesel fuel No. 1-D diesel fuel it temperature is below – 10 ˚C (14 ˚F)
2	Coolant (Radiator)	7.3 L 7.7 U.S.qts. 6.4 Imp.qts		Fresh clean water with anti-freeze
	Coolant (Recovery tank)	1.0 L 1.1 U.S.qts. 0.9 Imp.qts.		
3	Washer liquid	1.3 L 1.4 U.S.qts. 1.1 Imp.qts.		Automobile washer liquid
4	Engine crankcase	8.0 L 8.5 U.S.qts. 7.0 Imp.qts		Engine oil : API Service Classification CC or CD Below 0 ˚C (32 ˚F) ····· SAE10W, 10W-30 or 10W-40 0 to 25 ˚C (32 to 77 ˚F) ···· SAE20, 10W-30 or 10W-40 Above 25 ˚C (77 ˚F) ····· SAE30, 10W-30 or 10W-40
5	Transmission case	40.0 L 42.3 U.S.qts. 35.2 Imp.qts.	43.0 L 45.4 U.S.qts. 37.8 Imp.qts.	KUBOTA SUPER UDT fluid *
6	Front axle case [4WD]	8.0 L 8.5 U.S.qts. 7.0 Imp.qts		KUBOTA SUPER UDT fluid or SAE80, SAE90 gear oil

Greasing

	Place	No. of greasing point		Capacity	Type of grease
7	Front wheel hub [2WD]	2		Until grease overflows	Multipurpose type grease
	Knuckle shaft [2WD]	2			
	Front wheel case support [4WD]	2			
	Front axle support [4WD]	1			
	Top link	2			
	Top link bracket	2			
	Lift rod	1			
	Steering joint	–	1		
	Battery terminal	2		Moderate amount	

* KUBOTA original transmission hydraulic fluid.

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[7] MAINTENANCE

No.	Item		Period	Service Interval										After purchase		Important		Reference page
				50	50	100	200	300	400	600	800	1500	3000	1 year	2 years			
1	Engine oil		Change	★		☆												G-13
2	Engine oil filter		Replace	★			☆											G-13
3	Hydraulic oil filter		Replace	★				☆										G-14
4	Transmission fluid		Change	★						☆								G-14
5	Front axle case oil		Change	★						☆								G-15
6	Clutch		Adjust	★		☆												G-15
7	Water separator (CAB)		Clean	★					☆									G-15
8	Engine start system		Check		☆													G-16
9	Wheel bolt torque		Check		☆													G-16
10	Greasing		–			☆												G-17
11	Battery condition		Check			☆												G-17
12	Air cleaner element [Double type]	Primary element	Clean			☆										*	◎	G-18
			Replace											☆		**		G-18
		Secondary element	Replace											☆				G-18
13	Fuel filter element		Clean			☆												G-18
			Replace						☆								◎	G-23
14	Fan belt		Adjust			☆												G-19
15	Brake		Adjust			☆												G-19
16	Radiator hose and clamp		Check				☆											G-20
			Replace												☆			G-20
17	Power steering oil line		Check				☆											G-20
			Replace												☆			G-20
18	Fuel line		Check				☆										◎	G-20
			Replace												☆			G-20
19	Toe-in		Adjust				☆											G-21
20	Intake air line		Check				☆										◎	G-21
			Replace												☆	***		G-21
21	Inner air filter		Clean				☆											G-22
22	Fresh air filter		Clean				☆											G-22
23	Air conditioner condenser		Clean				☆											G-22
24	Air conditioner drive belt		Adjust				☆											G-23
25	Greasing (2WD front wheel hub)		–						☆									G-23
26	Fuel filter (CAB)		Replace						☆								◎	G-23
27	Front axle pivot		Adjust							☆								G-24
28	Engine valve clearance		Adjust								☆							1-S19
29	Fuel injection nozzle injection pressure		Check									☆					◎	1-S56
30	Injection pump		Check										☆				◎	1-S54
31	Air conditioner pipes and hoses		Check											☆				G-26
32	CAB isolation cushion		Check											☆				G-26
33	Cooling system		Flush												☆			G-28
34	Coolant		Change												☆			G-28

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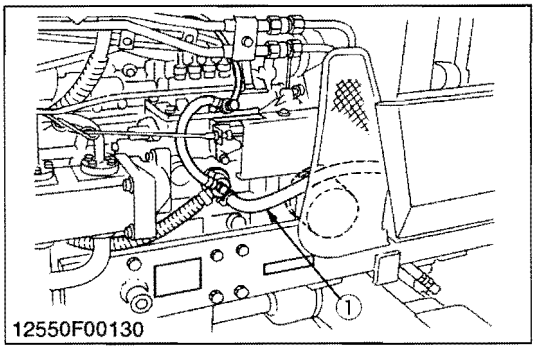
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CHECKING, DISASSEMBLING AND SERVICING

[1] SEPARATING ENGINE FROM TRACTOR DISASSEMBLING AND ASSEMBLING

(1) Draining Coolant, Engine Oil and Transmission Fluid



Draining Coolant

⚠ CAUTION

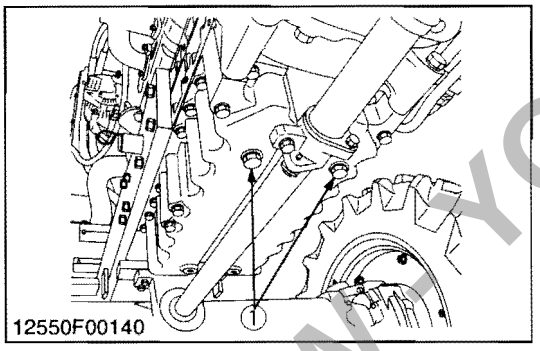
- **Never remove the radiator cap until coolant temperature is well below its boiling point. Then loosen cap slightly to the stop to relieve any excess pressure before removing cap completely.**

1. Stop the engine and let cool down.
2. Remove the radiator hose (1) from the engine side to drain the coolant.
3. Remove the radiator cap to completely drain the coolant.
4. After all coolant is drained, reinstall the radiator hose.

Draining coolant	Capacity	7.3 L 7.7 U.S.qts. 6.4 Imp.qts.

(1) Radiator Hose

12550S10090



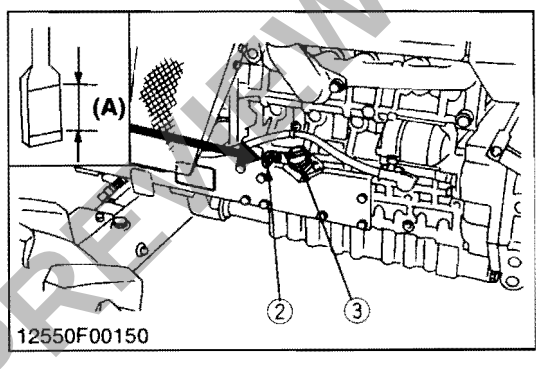
Changing Engine Oil

1. Start and warm up the engine for approx. 5 minutes.
2. Place an oil pan underneath the engine.
3. Remove the drain plug (1) to drain oil.
4. After draining, screw in the drain plugs (1).

(When refilling)

- Fill the engine oil up to the upper line on the dipstick (3).

Engine oil	Capacity	8.0 L 8.5 U.S.qts. 7.0 Imp.qts.



■ IMPORTANT

- **Never mix two different types of oil.**
- **Use the proper SAE Engine Oil according to ambient temperatures.**
  Refer to "LUBRICANTS, FUEL AND COOLANT". (See page G-9.)

(1) Drain Plug
(2) Dipstick
(3) Oil Inlet

(A) Oil level is acceptable within this range.

12550S10100

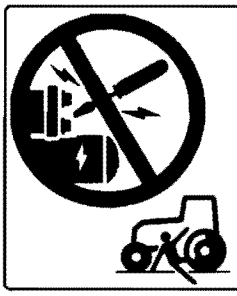
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SAFETY DECALS

- **The following safety decals are installed on the machine.**
  If a decal becomes damaged, illegible or is not on the machine, replace it. The decal part number is listed in the parts list.

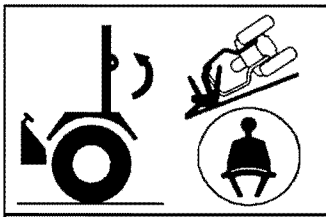
① Part No. TA040-4965-2



⚠ DANGER

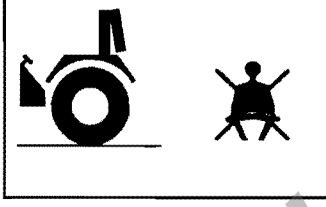
TO AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY.
1. Do not start engine by shorting across starter terminals or bypassing the safety start switch. Machine may start in gear and move if normal starting circuitry is bypassed.
2. Start engine only from operator's seat with transmission and PTO OFF. Never start engine while standing on the ground.

② Part No. 3A111-9848-2



⚠ WARNING

TO AVOID INJURY OR DEATH FROM ROLL-OVER:
- Keep Roll-Over Protective Structures (ROPS) in the upright and locked position.
- Fasten SEAT BELT before operating.



THERE IS NO OPERATOR PROTECTION WHEN THE ROPS IS IN THE FOLDED POSITION.
- Check the operating area and fold the ROPS only when absolutely necessary.
- Do not wear SEAT BELT if ROPS is folded.
- Raise and lock ROPS as soon as vertical clearance allows.
- Read ROPS related instructions and warnings.

⑤ Part No. 3A111-9554-1

⚠ WARNING

Never modify or repair a ROPS because welding, grinding, drilling or cutting any portion may weaken the structure.

⚠ CAUTION

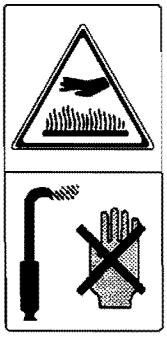
TO AVOID INJURY WHEN RAISING OR FOLDING ROPS:
- Set parking brake and stop engine.
- Remove any obstruction that may prevent raising or folding of the ROPS.
- Do not allow any bystanders.
- Always perform function from a stable position at the rear of the tractor.
- Hold the top of the ROPS securely when raising or folding.
- Make sure all pins are installed and locked.

③ Part No. TA040-4935-1

⚠ WARNING

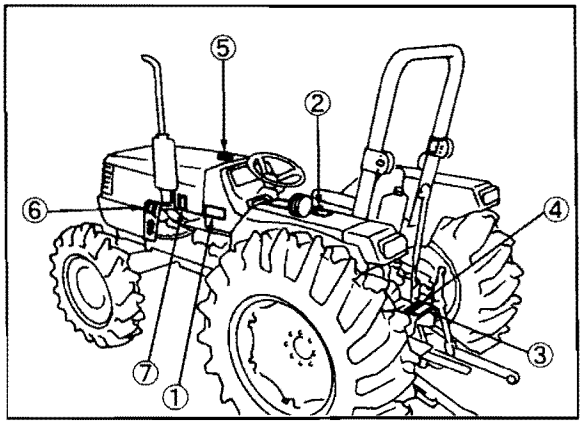
TO AVOID PERSONAL INJURY:
1. Attach pulled or towed loads to the drawbar only.
2. Use the 3-point hitch only with equipment designed for 3-point hitch usage.

④ Part No. 32310-4958-1



⑥ Part No. 6C040-4741-2
No fire





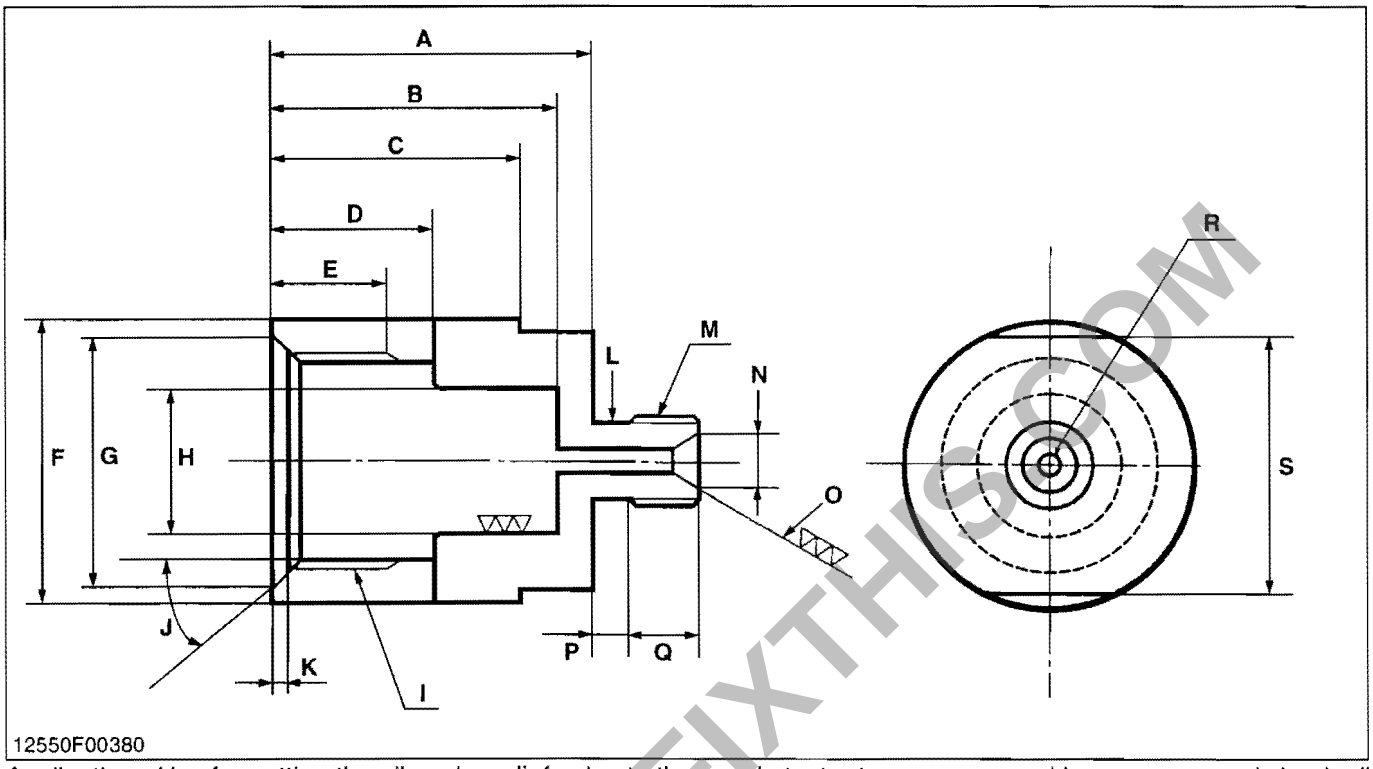
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Oil Cooler Relief Valve Setting Pressure Adaptor (For M5700DT)



Application: Use for setting the oil cooler relief valve to the nozzle tester to measure cracking pressure and check oil tightness of the oil cooler relief valve.

■ NOTE

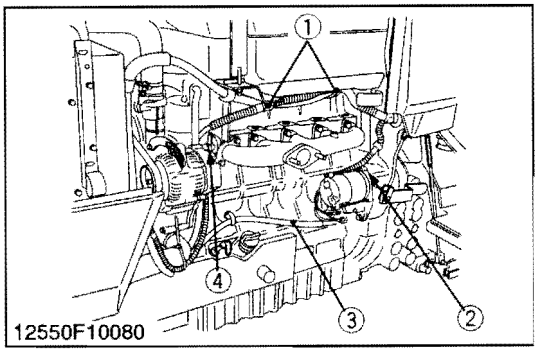
- **This special tool is not provided, so make it referring to the figure.**

A	45 mm (1.77 in.)	K	2 mm (0.079 in.)
B	40 mm (1.58 in.)	L	10 mm dia. (0.39 in. dia.)
C	28 mm (1.1 in.)	M	M12 × P1.5
D	18 mm (0.71 in.)	N	7.5 mm dia. (0.3 in. dia.)
E	15 mm (0.59 in.)	O	1.05 rad. (60°)
F	24 mm (0.94 in.)	P	5 mm (0.20 in.)
G	20 mm (0.79 in.)	Q	10 mm (0.39 in.)
H	15 mm (0.59 in.)	R	3 mm dia. (0.118 in. dia.)
I	M18 × P1.5	S	21 mm (0.83 in.)
J	0.79 rad. (45°)		

12550G00370

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Wire Harness L.H.

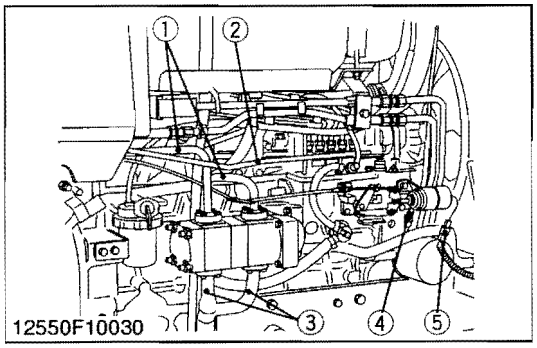
1. Remove the power steering delivery pipe clamps (1).
2. Disconnect the alternator **2P** connector (4) and **B** terminal.
3. Disconnect the starter motor **C** terminal and **B** terminal.
4. Disconnect the engine oil pressure switch **1P** connector (2).

(When reassembling)

Tightening torque	Starter's terminal **B** mounting nut	8.8 to11.8 N·m 0.9 to 1.2 kgf·m 6.5 to 8.7 ft-lbs

(1) Clamp
(2) **1P** Connector for Engine Oil Pressure Switch
(3) Jumper Lead for Starter
(4) **2P** Connector for Alternator

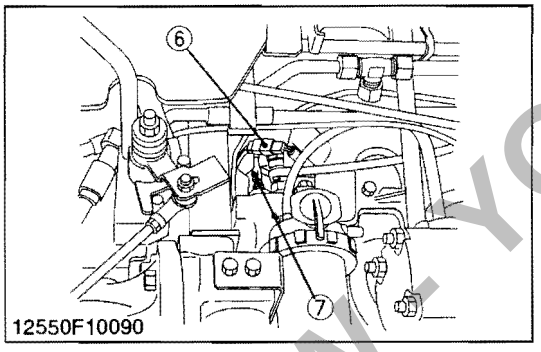
12550S10180



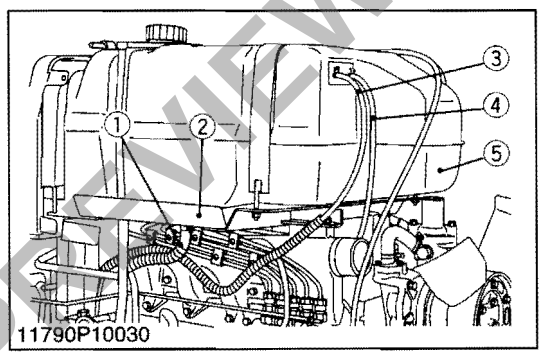
Wire Harness R.H. and Hydraulic Pipe

1. Remove the accelerator rod (2).
2. Remove the suction pipe (3) and delivery pipe (1).
3. Disconnect the glow plug **1P** connector (6) and coolant temperature sensor **1P** connector (7).
4. Remove the hourmeter cable (4) at engine side.
5. Disconnect the stop solenoid connector (5).

(1) Delivery Pipe
(2) Accelerator Rod
(3) Suction Pipe
(4) Hourmeter Cable
(5) Stop Solenoid Connector
(6) **1P** Connector for Glow Plug
(7) Coolant Tempurature Sensor **1P**



12550S10190



Fuel Tank (ROPS)

1. Disconnect the fuel delivery pipe (1) from the fuel filter, and then drain the fuel.
2. Disconnect the fuel return pipe (3) and (4).
3. Remove the fuel tank (5) with fuel tank support (2).

(1) Fuel Delivery Pipe
(2) Fuel Tank Support
(3) Fuel Return Pipe
(4) Fuel Return Pipe
(5) Fuel Tank

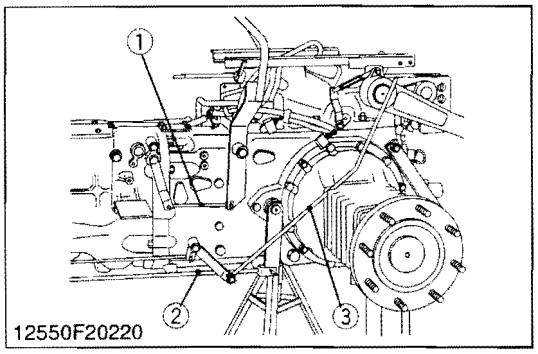
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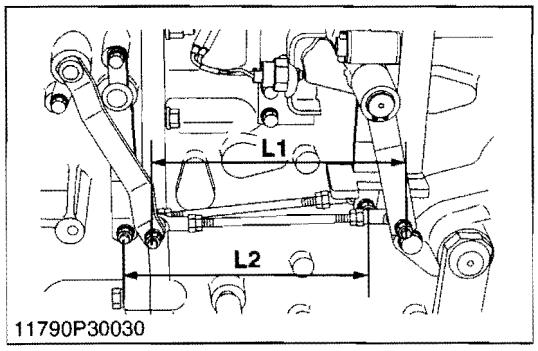
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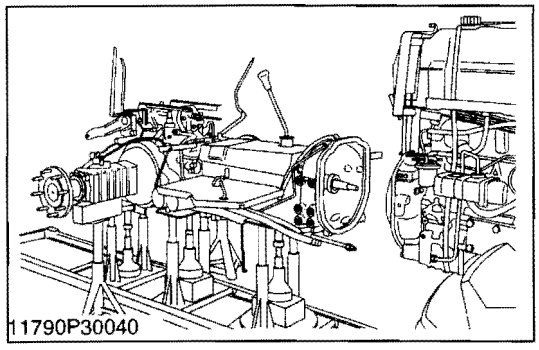
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12550F20220



11790P30030


11790P30040

Auxiliary Shift Lever and Brake Rod

1. Disconnect the shift rods (1).
2. Remove the shift lever assembly.
3. Remove the brake rods (2).
4. Remove the DT rod (3).

(When reassembling)

- Be sure to adjusting the shift rod.

Shift rod length **L1** and **L2**	Factory spec.	Approx. 209 mm 8.23 in.

(1) Shift Rod
(2) Brake Rod
(3) DT Rod

12550S20200

Separating Engine from Clutch Housing

1. Remove the engine mounting screws and nuts, and separate the engine from the clutch housing.

(When reassembling)

- Apply grease to the splines.
- Apply liquid gasket (Three Bond 1211,1141 or equivalent) to the seam of engine and clutch housing.
- When connecting the engine to the clutch housing, be sure to align the input shaft spline to the clutch hub center.

Tightening torque	Engine and clutch housing mounting screw, nut	77.5 to 90.2 N·m 7.9 to 9.2 kgf·m 57.1 to 66.5 ft-lbs
	Engine and clutch housing mounting stud bolt	38.2 to 45.1 N·m 3.9 to 4.6 kgf·m 28.2 to 33.3 ft-lbs

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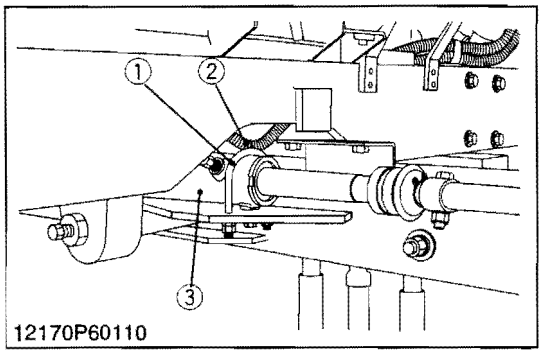
MECHANISM

CONTENTS

[1] **STRUCTURE** 6-M1
(1) 2 Wheel Drive Type 6-M1
(2) 4 Wheel Drive Type 6-M2
[2] **FRONT WHEEL ALIGNMENT** 6-M2

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Steering Cylinder

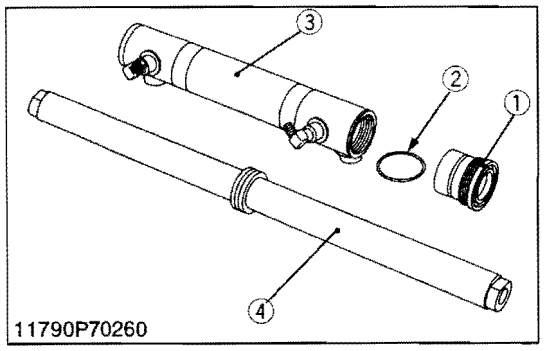
1. Remove the cylinder cover.
2. Disconnect the power steering hoses (2).
3. Remove the cylinder clamps (1).
4. Take out the steering cylinder (3).

(When reassembling)

Tightening torque	Steering cylinder mounting nut	34.3 to 39.2 N·m 3.5 to 4.0 kgf·m 25.3 to 28.9 ft-lbs
	Steering cylinder mounting lock nut	39.2 to 45.1 N·m 4.0 to 4.6 kgf·m 28.9 to 33.3 ft-lbs
	Cylinder cover mounting screw	48.1 to 55.8 N·m 4.9 to 5.7 kgf·m 35.5 to 41.2 ft-lbs

(1) Cylinder Clamp
(2) Power Steering Hose
(3) Steering Cylinder

12550S60140



Disassembling Steering Cylinder

1. Carefully clamp the cylinder in a vise.
2. Remove the guide assembly (1) and draw out the piston rod (4).

(When reassembling)

- Apply transmission fluid to the oil seal and O-ring.
- Apply molybdenum disulfide (Three Bond 1901 or equivalent) on the screw of guide when tighten it.
- After tightening the guide assembly to the specified torque, stake the cylinder firmly.

Tightening torque	Guide assembly	142.2 to 152.0 N·m 14.5 to 15.5 kgf·m 104.9 to 112.1 ft-lbs

(1) Guide Assembly
(2) O-ring
(3) Cylinder
(4) Piston Rod

12170S70110

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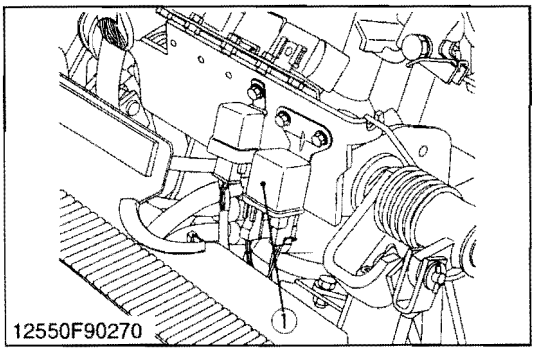
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MEMO

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(4) Glow Relay

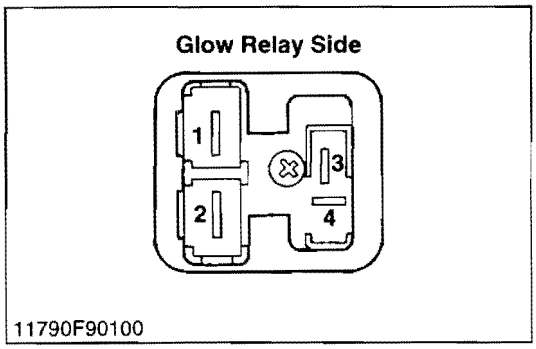


Connector Voltage

1. Turn the main switch **OFF** position.
2. Disconnect the **1P** connectors and connector **2A** from glow relay (1).
3. Measure the voltage with a voltmeter across the **1P** connector **R** terminal (Positive) and chassis (Negative).
4. If the voltage differs from the battery voltage, check the wiring harness.
5. Turn the main switch **ON** position.
6. Measure the voltage with a voltmeter across the connector **2A BW** terminal (Positive) and chassis (Negative).
7. If the voltage differs from the battery voltage, check the wiring harness.

(1) Glow Relay

12550S90170

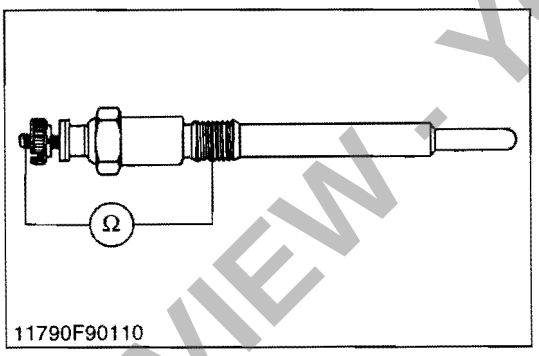


Glow Relay Test

1. Remove the glow relay.
2. Apply battery voltage across **3** and **4** terminals, and check for continuity across **1** and **2** terminals.
3. If continuity is not established across **1** and **2** terminals, renew the glow relay.

12550S90180

(5) Glow Plug



Check the Glow Plug

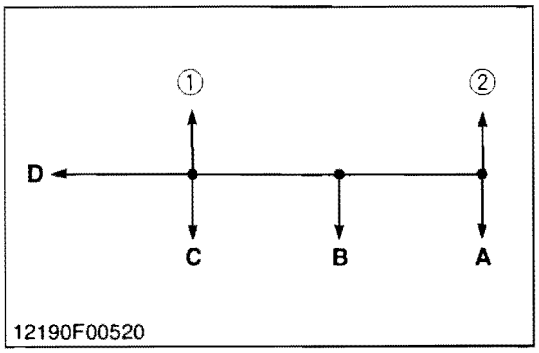
1. Disconnect the leads from the glow plugs.
2. Measure the resistance with an ohmmeter across the glow plug terminal and chassis.
3. If 0 ohm is indicated, the screw at the tip of the glow plug and the housing are short-circuited.
4. If the factory specification is not indicated, renew the glow plug.

Glow plug resistance	Factory spec.	Approx. 0.5 ohms

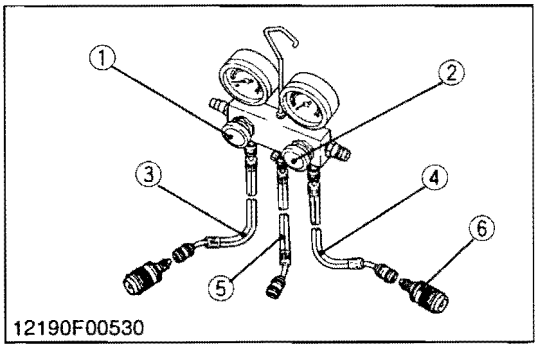
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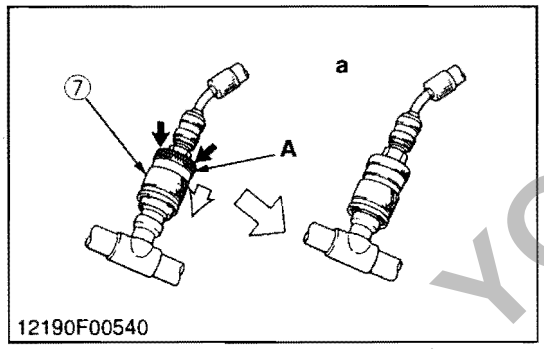
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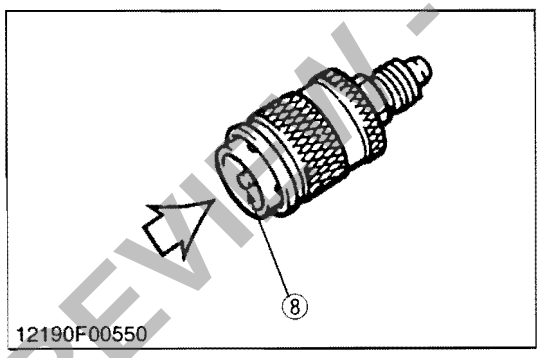
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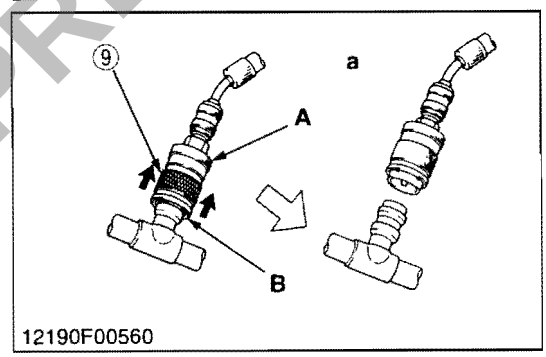
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12190F00550



12190F00560

When LO and HI Valves are Opened

Circuits are established.

Port (A) → **LO** pressure gauge (1)
→ **HI** pressure gauge (2)
→ Port (B)
→ Port (C)
→ Port (D) (Schrader valve must be opened)

NOTE

- **Schrader valve must be opened.**

12190S00130

The charging hoses are classified into three colors. Each charging hose must be handled as follows :

- The air conditioner manufacture recommends that the blue hose (3) is used for the **LO** pressure side (suction side), the green hose (5) for refrigeration side (center connecting port) and the red hose (4) for **HI** pressure side (discharged side).

(When connecting)

- Push the quick disconnect adaptor (6) into the charging valve, and push on part **A** until a click is heard.

NOTE

- **When connecting, push carefully so the pipe doesn't bend.**
- **When connecting the quick disconnect connector, should the sleeve (7) move before the quick link connector can be connected to the charging valve, move the quick sleeve to its original position and try again.**
- **When some refrigerant remains in the charging hose at the time of connections, it may be difficult to connect the quick link connector. In this case, perform the operation after removing any residual pressure in the hose. (Remove the residual pressure by pushing the pusher (8).)**

(When reassembling)

- While holding on to part **A** of the quick disconnect adaptor, slide part **B** up.

NOTE

- **After removing the adaptor, ensure to cap the quick disconnect adaptor service valve.**

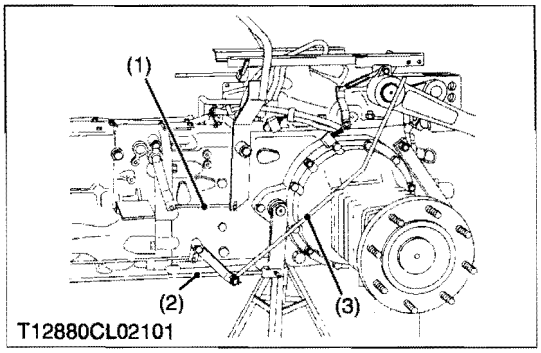
(1) **LO** Pressure Side Valve
(2) **HI** Pressure Side Valve
(3) Blue Hose
(4) Red Hose
(5) Green Hose
(6) Quick Disconnect Adaptor
(7) Sleeve
(8) Pusher
(9) Sleeve

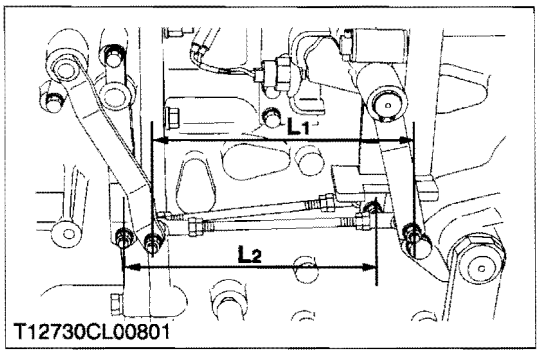
(a) CLICK

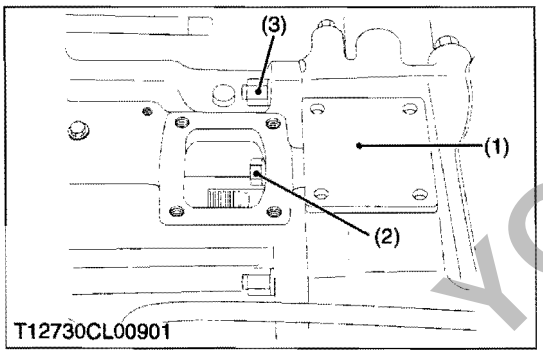
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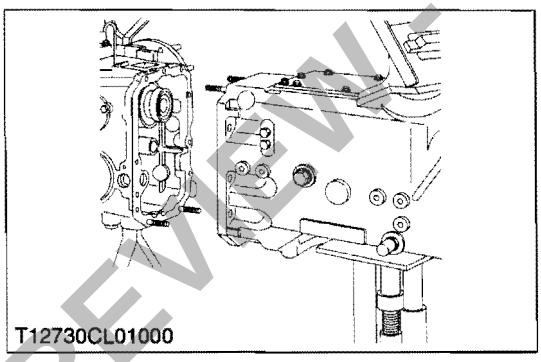
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Auxiliary Shift Lever and Brake Rod

1. Disconnect the shift rods (1).
2. Remove the shift lever assembly.
3. Remove the brake rods (2).
4. Remove the DT rod (3).

(When reassembling)

- Be sure to adjusting the shift rod.

Shift rod length L_1 and L_2	Factory spec.	Approx. 209mm 8.23 in.

(1) Shift Rod
(2) Brake Rod
(3) DT Rod

W1014731

Separating Transmission Case

1. Remove the transmission upper cover (1).
2. Remove the transmission case mounting screws and nut, and separate the transmission case from the clutch housing.

(When reassembling)

- Apply liquid gasket (Three Bond 1216 or equivalent) to joint face of the transmission case and clutch housing, transmission upper cover and transmission case.

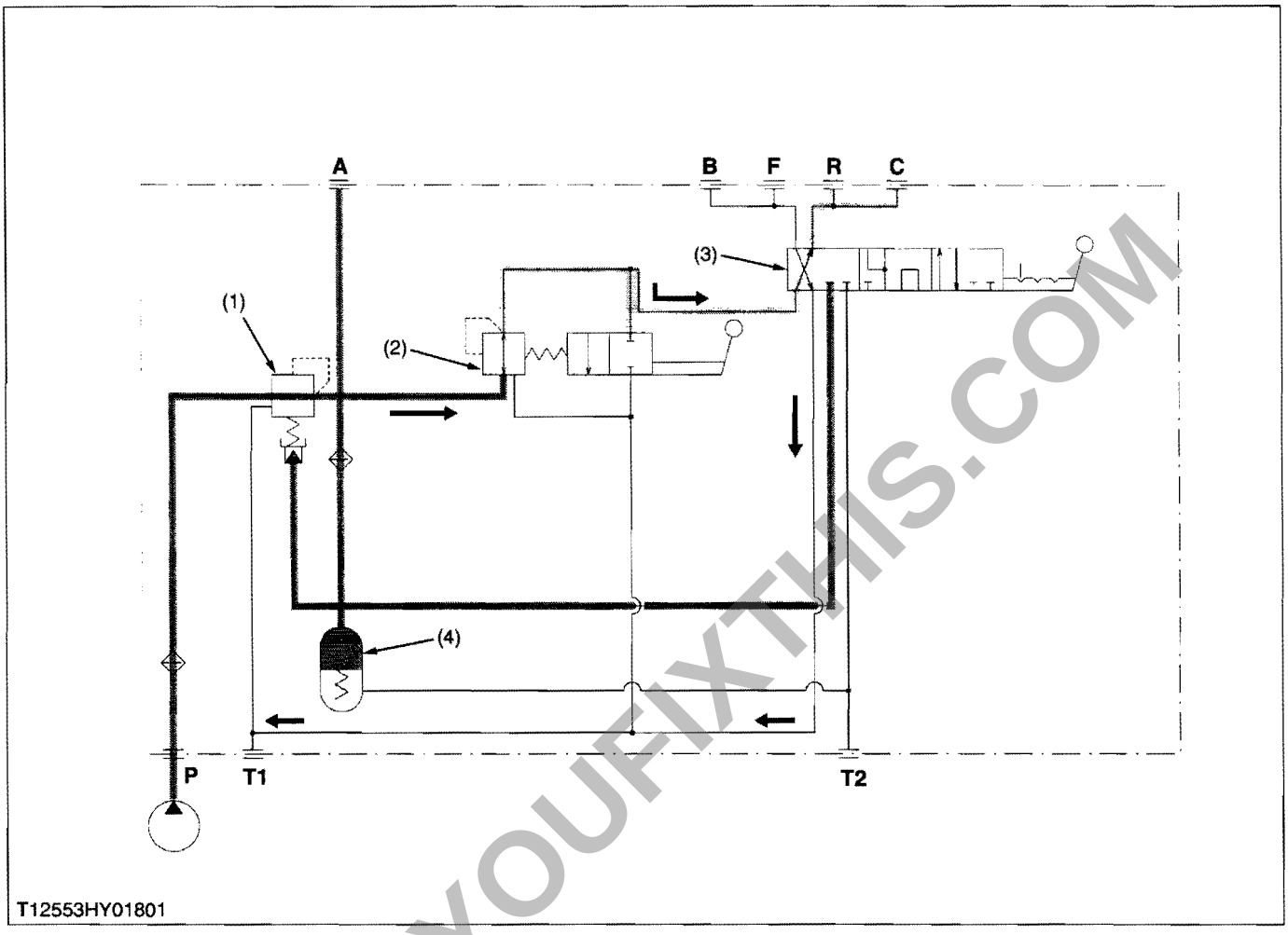
Tightening torque	Transmission case and clutch housing mounting screw, nut	M12, grade 11 nut (3)	103.0 to 117.7 N·m 10.5 to 12.0 kgf·m 75.9 to 86.8 ft-lbs
		M12, grade 7 screw, nut	77.5 to 90.2 N·m 7.9 to 9.2 kgf·m 57.1 to 66.5 ft-lbs
		M10, grade 9 screw (2)	60.8 to 70.6 N·m 6.2 to 7.2 kgf·m 44.8 to 52.1 ft-lbs
	Transmission upper cover mounting screw		23.5 to 27.5 N·m 2.4 to 2.8 kgf·m 17.4 to 20.3 ft-lbs

(1) Transmission Upper Cover
(2) Transmission Case Mounting Nut
(3) Transmission Case Mounting Nut

W1014867

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(1) Modulating Valve
(2) Proportionally Reducing Valve
(3) Spool (Forward, Reverse)
(4) Accumulate Valve
(5) Shuttle Valve Case 1
(6) Shuttle Valve Case 2

A : Check Port (Modulation)
B : Check Port (Forward)
C : Check Port (Reverse)
P : From Pump
F : To Clutch Body (Forward)
R : To Clutch Body (Reverse)
T1 : To Transmission Case
T2 : To Transmission Case

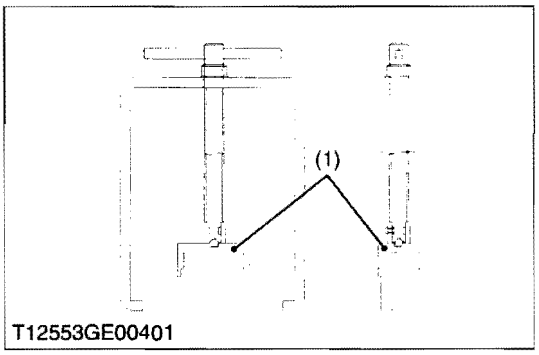
When the shuttle lever have been setting on the **R** side, the oil pressure on **R** port is constantly controlled by proportionally reducing valve (2).

On the other hand, the oil in the **F** side of shuttle clutch returns to **T1** port through **F** port and spool (3).

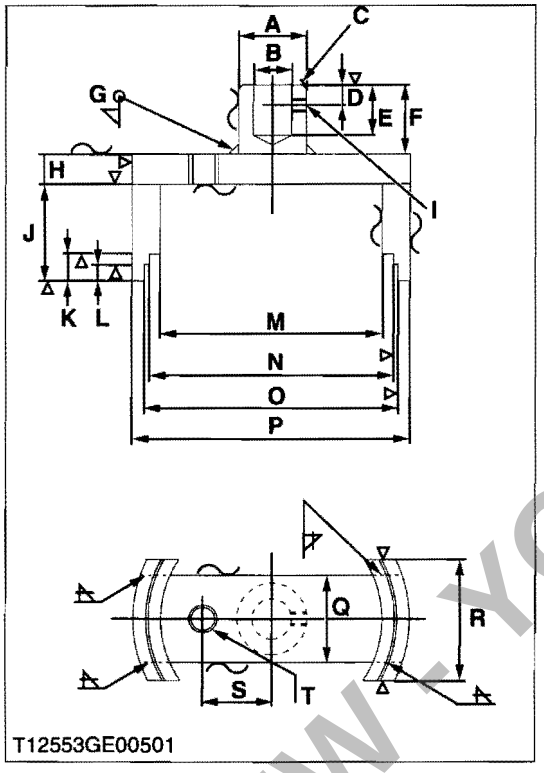
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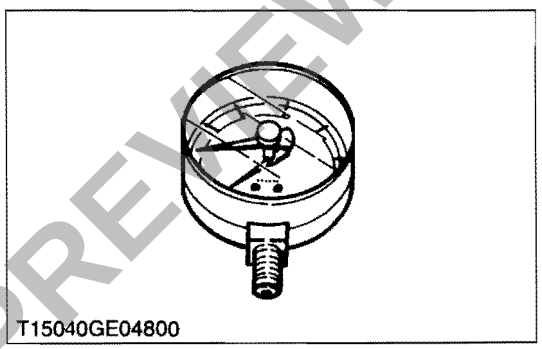
[4] SPECIAL TOOL



T12553GE00401



T12553GE00501


T15040GE04800

Shuttle Clutch Compression Tool

Code No: 07916-55031

Application: Use exclusively for pushing the thrust cooler, remove the external snap ring.

■ **NOTE**

- **Replace the center guide (1) for shown the figure.**

A	20 mm dia. (0.79 in dia.)
B	11.5 mm dia. (0.45 in dia.)
C	Chamfer 1 mm (0.04 in.)
D	6 mm (0.24 in.)
E	15 mm (0.59 in.)
F	20 mm (0.79 in.)
G	Weld all around
H	6 mm (0.24 in.)
I	M4 × P0.7
J	28 mm (1.1 in.)
K	8 mm (0.31 in.)
L	5 mm (0.2 in.)
M	64 mm dia. (2.52 in dia.)
N	70.5 mm dia. (2.78 in dia.)
O	73 mm dia. (2.87 in dia.)
P	80 mm dia. (3.15 in dia.)
Q	25 mm (0.98 in.)
R	35 mm (1.38 in.)
S	20 mm (0.79 in.)
T	M8 × 1.25

(1) Center Guide

W1020107

Pressure Gauge 50

Code No: 07916-52961

Application: This pressure gauge is used to measure the low oil pressure.

W1020614

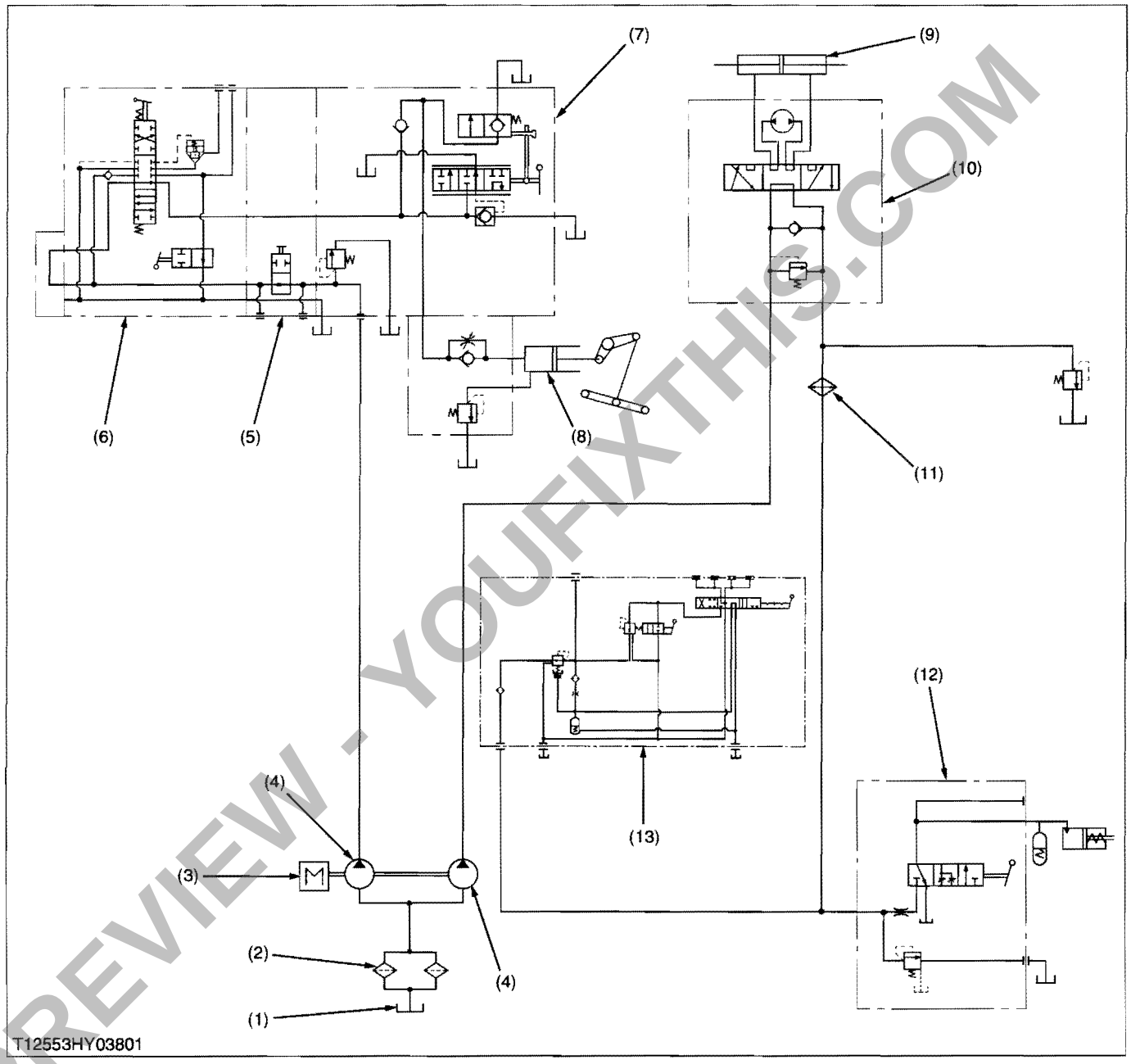
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8. HYDRAULIC SYSTEM

[1] MECHANISM

(1) Hydraulic Circuit



(1) Oil Tank (Transmission Case)
(2) Hydraulic Oil Filter Cartridge
(3) Engine
(4) Hydraulic Pump
(5) Auxiliary Control Holder
(6) Auxiliary Control Valve
(7) Control Valve (3 Point Linkage)
(8) Hydraulic Cylinder (3 Point Linkage)
(9) Power Steering Cylinder
(10) Power Steering Controller
(11) Oil Cooler
(12) PTO Clutch Valve
(13) Shuttle Valve

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