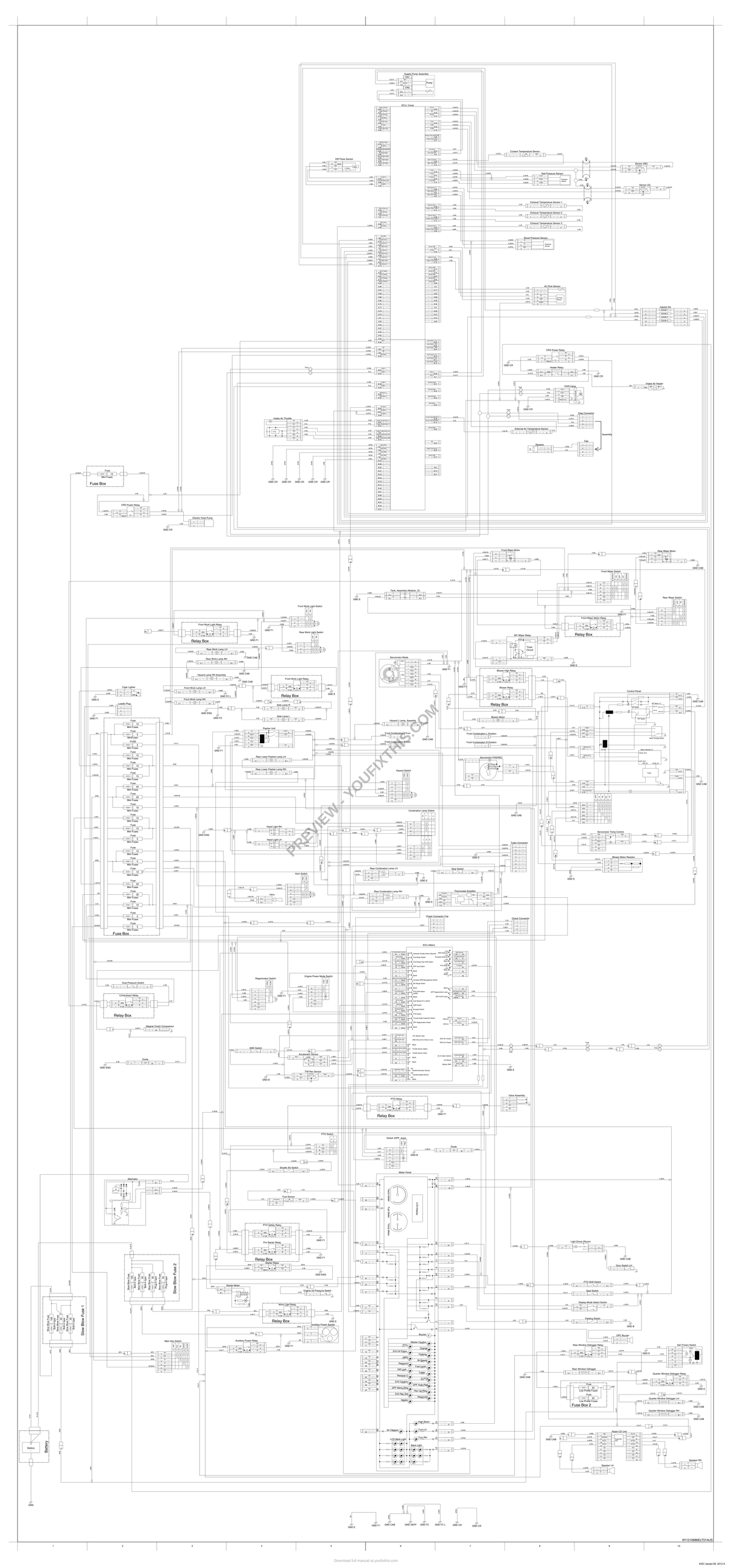
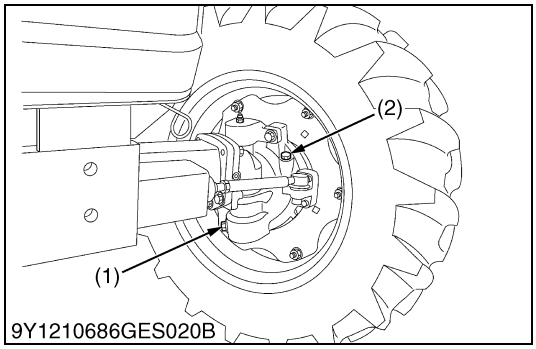


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Changing Front Axle Gear Case Oil

1. To drain the used oil, remove the right and left drain plugs (1) and filling plugs (2) at the front axle gear case and drain the oil completely into the oil pan.
2. After draining reinstall the drain plugs.
3. Fill with the new oil up to the filling plug port. (See page G-12.)
4. After filling reinstall the filling plugs (2).

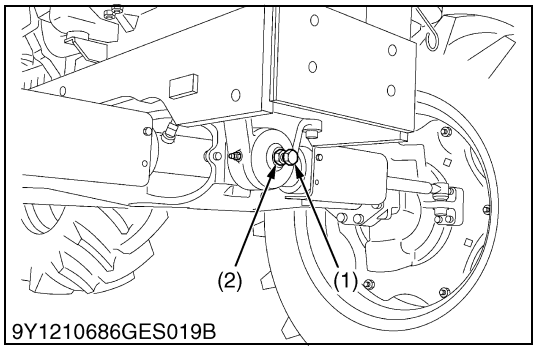
■ **NOTE**

- **Check plug is not available for front axle gear case, fill the specified amount of lubricant to the front axle gear case.**

Front axle gear case oil	Capacity	3.5 L 3.7 U.S.qts 3.1 Imp.qts

(1) Drain Plug (2) Filling Plug

9Y1210686GEG0088US0



Adjusting Front Axle Pivot

1. If the front axle pivot pin adjustment is not correct, front wheel vibration can occur causing vibration in the steering wheel.

■ **Adjusting Procedure**

1. Loosen the lock nut (2), screw in the adjusting screw (1) until seated, then tighten the screw (1) with an additional 1/6 turn. Retighten the lock nut (2).

Tightening torque	Lock nut	98.1 to 147.1 N·m 10.0 to 15.0 kgf·m 72.3 to 108.5 lbf·ft

(1) Adjusting Screw (2) Lock Nut

9Y1210686GEG0089US0

[9] CHECK POINT OF EVERY 800 HOURS

Adjusting Engine Valve Clearance

1. See page 1-S12.

9Y1210686GEG0090US0

[10] CHECK POINT OF EVERY 1500 HOURS

Checking Fuel Injection Nozzle Tip (Injection Pressure)

1. Refer to the Diagmaster Manual (9Y111-01920).
2. Use the Diagmaster Software.
3. Do the "Injection Stop" of active test on the Diagmaster Software.
4. If the each injector is normal condition, the engine noise level changes.

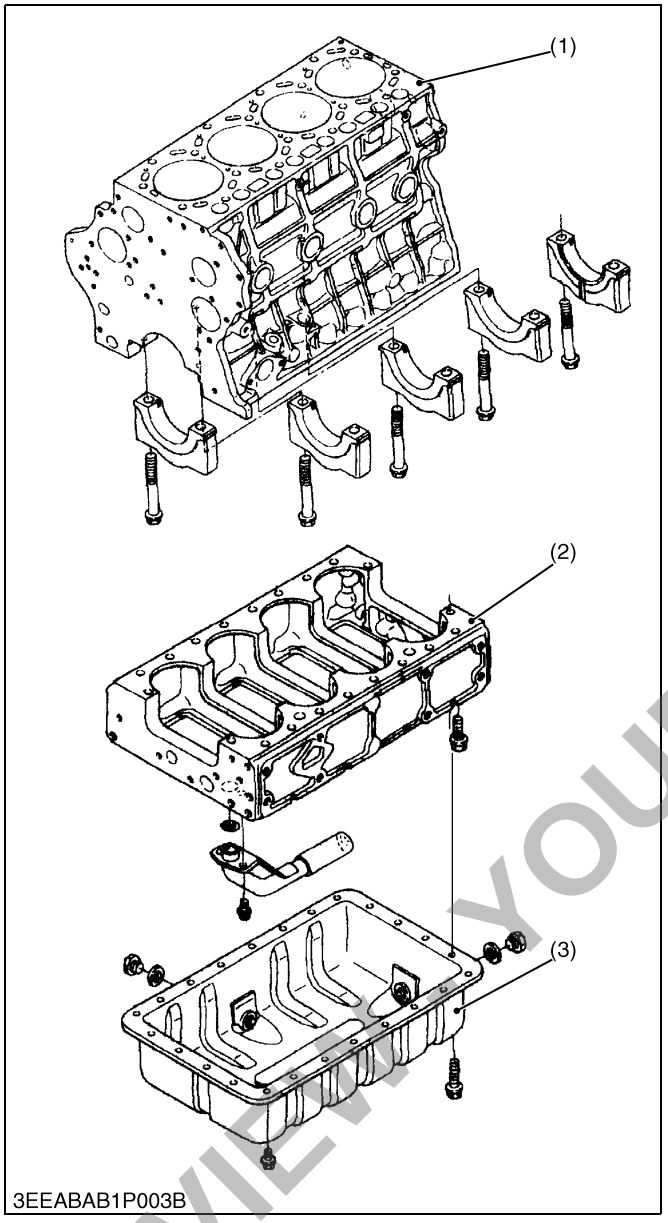
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1. ENGINE

[1] CYLINDER BLOCK



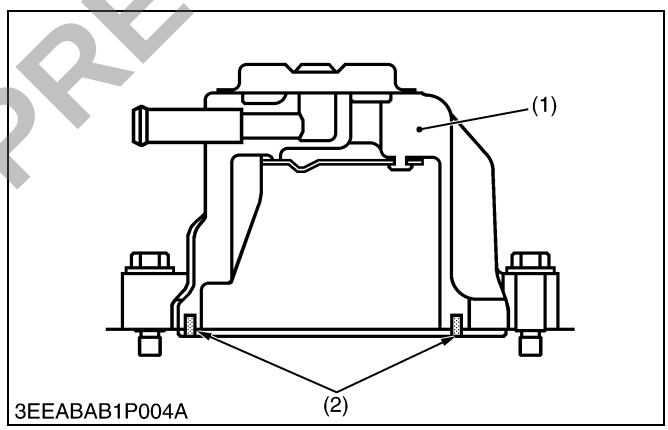
The engine utilizes a split crankcase to produce greater durability and operate more quietly; the crankcase is split into two parts, crankcase 1 (1), which houses the parts for combustion and crankcase 2 (2), which completes crankcase 1 and produces low-noise.

It uses a hanger type of crankshaft support which allows for easy dis/assembly and the lining of the cylinder is a linerless type, which offers good cooling performance and excellent resistance to wear as it is little affected by distortion.

(1) Crankcase 1
(2) Crankcase 2
(3) Oil Pan

9Y1210686ENM0001US0

[2] HALF-FLOATING HEAD COVER



The rubber packing is fitted in to maintain the head cover 0.5 mm (0.02 in.) or so off the cylinder head. This arrangement helps to reduce noise coming from the top of cylinder head.

(1) Cylinder Head Cover
(2) Rubber Packing

9Y1210686ENM0002US0

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3. TIGHTENING TORQUES

Tightening torques of screws, bolts and nuts on the table below are especially specified.
(For general use screws, bolts and nuts: Refer to G-14.)

■ **NOTE**

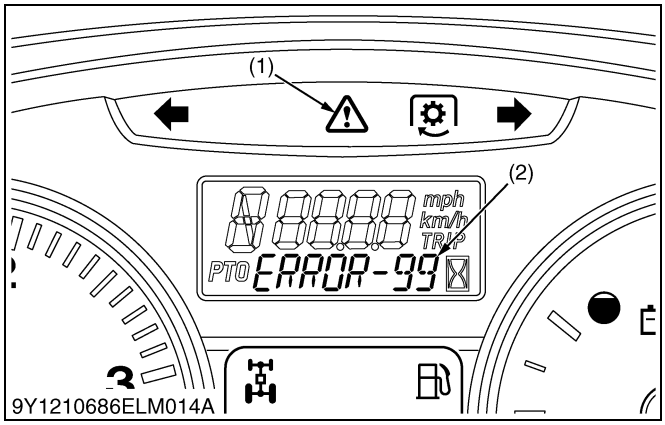
- **For the screws, bolts and nuts with the mark "*", apply engine oil to their threads and seats before you tighten.**
- **The alphabet "M" in Dimension × Pitch shows that the screw, bolt or nut dimensions are in the metric system. The dimension is the nominal external diameter in mm of the threads. The pitch is the nominal distance in mm between 2 threads.**

Item	Dimension × Pitch	N·m	kgf·m	lbf·ft
Injector clamp nut	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
Overflow pipe joint screw	M6 × 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
Cylinder head cover 1 screw	M6 × 1.0	6.87 to 11.2	0.700 to 1.15	5.07 to 8.31
Cylinder head cover 2 screw	M6 × 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
Injection pipe retaining nut	M12 × 1.5	23 to 36	2.3 to 3.7	17 to 26
Oil pressure switch taper screw	R 1/8	15 to 19	1.5 to 2.0	11 to 14
Supply pump mounting nut	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
Supply pump gear mounting nut	M14 × 1.5	59 to 68	6.0 to 7.0	44 to 50
Overflow pipe joint screw	M8	7.9 to 12	0.80 to 1.3	5.8 to 9.4
Overflow pipe joint screw	M10	16 to 19	1.6 to 2.0	12 to 14
Supply pump gear cover mounting screw	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
Common rail mounting screw	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
Coolant temperature sensor taper screw	–	16 to 23	1.6 to 2.4	12 to 17
Camshaft position sensor mounting screw	–	4 to 5	0.4 to 0.6	3 to 4
Crankshaft position sensor mounting screw	–	4 to 5	0.4 to 0.6	3 to 4
Intake air temperature sensor mounting screw	–	30 to 39	3.0 to 4.0	22 to 28
Injector terminal nut	–	1.6 to 2.2	0.16 to 0.23	1.2 to 1.6
Rocker arm bracket nut	M10 × 1.25	49 to 55	5.0 to 5.7	37 to 41
*Cylinder head mounting screw	M12 × 1.25	98.1 to 107	10.0 to 11.0	72.4 to 79.5
Oil cooler joint screw	M20 × 1.5	40 to 44	4.0 to 4.5	29 to 32
*Crankshaft screw	M16 × 1.5	255 to 274	26.0 to 28.0	188 to 202
Gear case cover mounting screw	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
Relief valve retaining screw	M22 × 1.5	69 to 78	7.0 to 8.0	51 to 57
Idle gear mounting screw	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
Camshaft set screw	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
Camshaft position pulsar gear mounting screw	M5	4.7 to 5.6	0.48 to 0.58	3.5 to 4.1
Plate mounting screw	M8 × 1.25	24 to 27	2.4 to 2.8	18 to 20
*Connecting rod screw	M10 × 1.25	79 to 83	8.0 to 8.5	58 to 61
*Flywheel screw	M12 × 1.25	98.1 to 107	10.0 to 11.0	72.4 to 79.5
Flywheel housing mounting screw	M12 × 1.25	78 to 90	7.9 to 9.2	58 to 66

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(1) ERROR Mode



When the tractor occurred the below troubles as shown as the table of next page, the meter panel of this tractor displays the displayed error codes.

■ **IMPORTANT**

- **This error codes are the error which corresponds to the Tractor ECU. DTC codes are not displayed on the meter panel.**

1. When the error code is displayed, do the decided procedures.
2. After doing the procedure, there is no error code on the meter panel.

(1) Master System Warning Indicator (2) Error Code

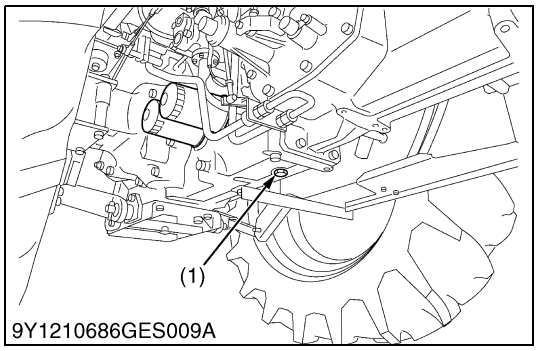
Displayed Error Code	Trouble	Remarks
ERROR-1	Acceleration sensor (main) trouble	
ERROR-2	Acceleration sensor (sub) trouble	
ERROR-3	Acceleration sensor main/sub phase shifting trouble	
ERROR-11	PTO relay trouble	
ERROR-12	4-wheel-drive solenoid trouble	
ERROR-13	Bi-speed turn solenoid trouble	
ERROR-21	Range gear shift (Hi) switch trouble	
ERROR-22	Range gear shift (6th) switch trouble (Main range gear shift switch)	
ERROR-23	Shuttle rotating sensor or switch trouble	Range gear shift (Hi) switch and Range gear shift (6th) switch (Main range gear shift switch)
ERROR-24	Machine speed sensor or switch trouble	
ERROR-60	Analog reference supply voltage +5 V trouble	5V power supply ERROR
ERROR-63	Acceleration and engine adjustment trouble	The tractor ECU memorizes a wrong data of the acceleration sensor and engine rev.
ERROR-99	Communication trouble	CAN Communication ERROR
Eng NG	Engine communication trouble	Engine trouble, etc. CAN Communication ERROR between Engine ECU and Tractor ECU
ECU NG	Tractor ECU communication trouble	Tractor or Meter ECU trouble, etc. CAN Communication ERROR between Tractor ECU and Meter ECU.

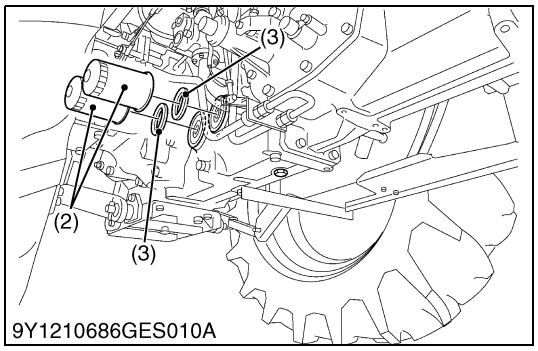
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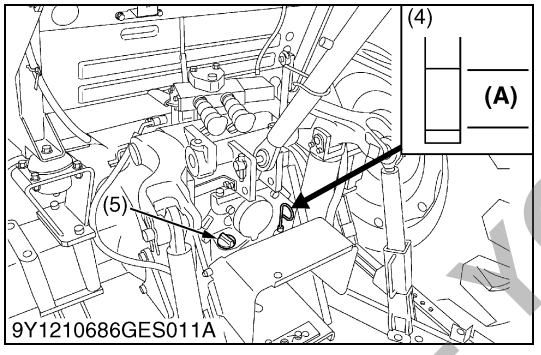
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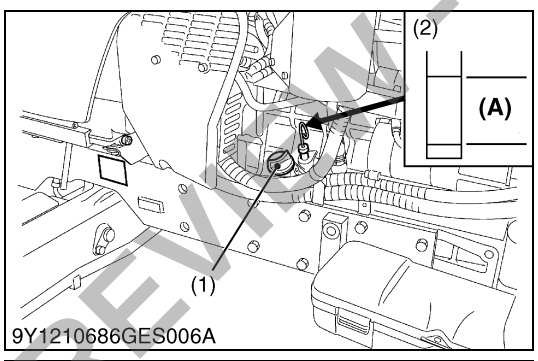
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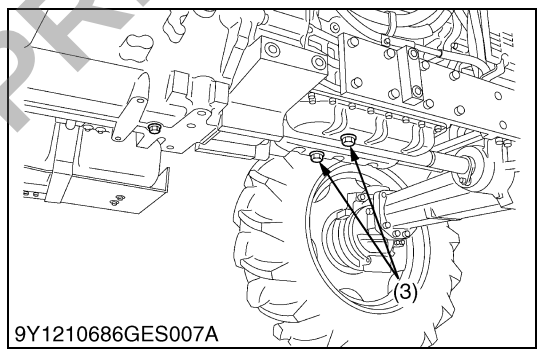
[2] CHECK POINTS OF INITIAL 50 HOURS











Replacing Hydraulic Oil FIlter

CAUTION

- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

1. Remove the drain plug (1) at the bottom of the transmission case and drain the oil completely into the oil pan.
2. After draining reinstall the drain plug (1).
3. Remove the two oil filters (2).
4. Wipe off metal fillings from the magnetic filters (3) with a clean rag.
5. Put a film of clean transmission fluid on rubber seal of new filters.
6. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand and additional 1/2 turn only.
7. After the new filter has been replaced, fill with the oil up to the upper notch on the dipstick (4).
8. After running the engine for a few minutes, stop it and check the oil level again, add oil to the prescribed level.
9. Make sure that the transmission fluid doesn't leak through the seal.

IMPORTANT

- **To prevent serious damage to the hydraulic system, use only a KUBOTA genuine filter.**

(1) Drain Plug
(2) Hydraulic Oil Filter
(3) Magnetic Filter (Wipe off Metal Fillings)
(4) Dipstick
(5) Oil Filling Plug

(A) Oil level is acceptable within this range.

9Y1210686GEG0057US0

Changing Engine Oil

CAUTION

- **Before changing oil, be sure to stop the engine.**
- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

1. To drain the used oil, remove the drain plugs (3) at the bottom of the engine and drain the oil completely into the oil pan. All the used oil can be drained out easily when the engine is still warm.
2. After draining reinstall the drain plugs (3).
3. Fill with the new oil up to the upper notch on the dipstick (2). (See page G-12.)

Engine oil (with filter)	Capacity	10.7 L 11.3 U.S.qts 9.41 Imp.qts

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

(A) Oil level is acceptable within this range.

9Y1210686GEG0055US0

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1. TROUBLESHOOTING

This troubleshooting shows only mechanical failures. The failures related to the common rail system (CRS), and DPF, refer to the diagnosis manual (DM) for common rail system engine (9Y120-01740).

Symptom	Probable Cause	Solution	Reference Page
The engine does not start	No fuel	Fill up the fuel	–
	Air in the fuel system	Bleed the air	–
	Water in the fuel system	Change the fuel and repair or replace the fuel system	G-31
	The fuel pump is defective	Replace	–
	The fuel hose is clogged	Clean or replace	G-31
	The fuel filter is clogged	Replace	G-36
	The viscosity of fuel at low temperature is too high	Replace the specified fuel	G-13
	The cetane number of fuel is low	Replace the specified fuel	G-13
	Fuel leakage because of loose injection pipe retaining nut	Tighten the retaining nut	1-S36
	The injector is clogged	Replace	1-S36
	The supply pump is defective	Replace	1-S47
	Seizure of the crankshaft, camshaft, piston or bearing	Repair or replace	–
	Compression leakage from the cylinder	Replace the head gasket Tighten the cylinder head screw	1-S44
	Incorrect valve timing	Examine the timing gear	1-S51
	Piston ring and cylinder are worn out	Replace	1-S54
	Incorrect valve clearance	Adjust valve clearance	1-S12
The starter does not operate	Discharged battery	Charge or replace	–
	Starter is defective	Repair or replace	
	The key switch is defective	Replace	–
	The connection of the wires is incorrect	Examine or correct	–

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3. SPECIFICATIONS

Model			M8560		M9960	
			2WD	4WD	2WD	4WD
Engine	Model		V3800-CR-TE4		V3800-CR-TIE4	
	Type		4 cylinder in-line, Common Rail System, direct injection		4 cylinder in-line, Common Rail System, direct injection with inter cooler	
	Number of cylinders		4			
	Total displacement		3769 cm^3 (230 cu.in.)			
	Bore and stroke		100 × 120 mm (3.9 × 4.7 in.)			
	Rated revolution	ROPS	2400 min^{-1} (rpm)			
		CABIN	2600 min^{-1} (rpm)			
	Low idling revolution		800 to 850 min^{-1} (rpm)			
	Net power *1		63.8 kW (85.5 HP)		74.6 kW (100 HP)	
	PTO power *1 (factory observed)		56.7 kW (76 HP)		66.4 kW (89 HP)	
	Maximum torque		293 N·m (29.9 kgf·m, 216 lbf·ft) / 1400 to 1600 min^{-1} (rpm)		342 N·m (34.9 kgf·m, 252 lbf·ft) / 1400 to 1600 min^{-1} (rpm)	
	Battery capacity		12V, RC: 160 min, CCA 900A			
	Fuel tank capacity	ROPS	90.0 L (23.8 U.S.gals, 19.8 Imp.gals)			
		CABIN	110 L (29.1 U.S.gals, 24.2 Imp.gals)			
	Engine oil capacity		10.7 L (11.3 U.S.qts, 9.41 Imp.qts)			
	Coolant capacity		9.0 L (9.5 U.S.qts, 7.9 Imp.qts)			
Dimensions	Overall length		3885 mm (153 in.)	3760 mm (148 in.)	3885 mm (153 in.)	3760 mm (148 in.)
	Overall width (minimum tread)	ROPS	1960 mm (77 in.)	1990 mm (78 in.)	1990 mm (78 in.)	2010 mm (79 in.)
		ROPS (Low Profile)	–	–	–	1970 mm (77.6 in.)
		CABIN	1960 mm (77 in.)	1990 mm (78 in.)	1990 mm (78 in.)	2010 mm (79 in.)
	Overall height	ROPS	2510 mm (99 in.)		2535 mm (100 in.)	
		ROPS (Low Profile)	–	–	–	2300 mm (90.6 in.)
		CABIN	2545 mm (100 in.)		2570 mm (101 in.)	
	Wheel base		2250 mm (88.6 in.)			
	Tread (Front)		1440 to 2040 mm (56.7 to 80.3 in.)	1520, 1620 mm (59.8, 63.8 in.)	1440 to 2040 mm(56.7 to 80.3 in.)	1520, 1620 mm (59.8, 63.8 in.)
	Tread (Rear)	ROPS	1520 to 1920 mm (59.8 to 75.6 in.)			
		ROPS (Low Profile)	–	–	–	1500 to 1900 mm (59.2 to 74.8 in.)
		CABIN	1520 to 1920 mm (59.8 to 75.6 in.)			
	Minimum ground clearance	ROPS	425 mm (16.7 in.) (Drawbar bracket)		450 mm (17.7 in.) (Drawbar bracket)	
		ROPS (Low Profile)	–	–	–	330 mm (13.0 in.) (Drawbar bracket)
		CABIN	425 mm (16.7 in.) (Drawbar bracket)		450 mm (17.7 in.) (Drawbar bracket)	
Weight	ROPS		2450 kg (5400 lbs)	2640 kg (5820 lbs)	2510 kg (5535 lbs)	2700 kg(5950 lbs)
	ROPS (Low Profile)		–	–	–	2610 kg (5750 lbs)
	CABIN		2840 kg (6260 lbs)	3030 kg (6680 lbs)	2900 kg (6395 lbs)	3090 kg (6810 lbs)
Traveling system	Standard tire size (Front)	ROPS	7.5-18	11.2-24	7.5-18	12.4-24
		ROPS (Low Profile)	–	–	–	9.5-20
		CABIN	7.5-18	11.2-24	7.5-18	12.4-24
	Standard tire size (Rear)	ROPS	16.9-30	16.9-30	18.4-30	18.4-30
		ROPS (Low Profile)	–	–	–	16.9-24
		CABIN	16.9-30	16.9-30	18.4-30	18.4-30
	Clutch		Multiple wet disk			
	Steering		Hydraulic Power Steering			
	Braking system		Hydraulic wet disk			
	Differential		Bevel gears with differential lock (Rear)			

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6. MAINTENANCE

No.	Item			Service Interval														After since	Reference page		
				50	100	150	200	250	300	350	400	450	500	550	600	650	700				
1	Engine start system		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-23		
2	Wheel bolt torque		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-24		
3	Tie-rod dust cover		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-24		
4	Battery condition		Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25	*4	
5	Greasing		–		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-27		
6	Fan belt		Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-29		
7	Alternator belt		Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-29		
8	Brake pedal		Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-30		
9	Air cleaner element	Primary element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-31	*1	
			Replace															every 1 year	G-40	*2	
		Secondary element	Replace															every 1 year	G-40		
10	Fuel line		Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-31		
			Replace															every 2 years	G-41		
11	Parking brake		Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-32		
12	Toe-in		Adjust				☆				☆				☆			every 200 Hr	G-32		
13	Fuel tank water		Drain				☆				☆				☆			every 200 Hr	G-33		
14	Power steering line		Check				☆				☆				☆			every 200 Hr	G-33		
			Replace															every 2 years	G-41		
15	Radiator hose and clamp		Check				☆				☆				☆			every 200 Hr	G-34		
			Replace															every 2 years	G-41		
16	Intake air line		Check				☆				☆				☆			every 200 Hr	G-34		
			Replace															every 2 years	G-41	*3	
17	Hydraulic oil filter		Replace	★					☆						☆			every 300 Hr	G-21		
18	Engine oil		Change	★							☆							every 400 Hr	G-21		
19	Engine oil filter		Replace	★							☆							every 400 Hr	G-22		
20	Fuel filter		Replace								☆							every 400 Hr	G-36		
21	Greasing (2WD front wheel hub)		–								☆							every 400 Hr	G-36		
22	Water separator		Clean								☆							every 400 Hr	G-37		
23	Transmission fluid		Change	★											☆			every 600 Hr	G-22		
24	Front differential case oil		Change												☆			every 600 Hr	G-37		

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4. LUBRICANT, FUEL AND COOLANT

No.	Place	Capacity		Lubricants, fuel and coolant
		M8560 / M9960		
		ROPS	CABIN	
1	Fuel tank	90.0 L 23.8 U.S.gals 19.8 Imp.gals	110 L 29.1 U.S.gals 24.2 Imp.gals	• No. 2-D S15 diesel fuel • No. 1-D S15 diesel fuel if temperature is below –10 °C (14 °F)
2	Coolant	9.0 L 9.5 U.S.qts 7.9 Imp.qts		Fresh clean water with anti-freeze
	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 (with filter)	10.7 L 11.3 U.S.qts 9.41 Imp.qts		API Service Classification CJ-4 (DPF type engine) • Below 0 °C (32 °F) SAE10W, 10W-30 or 15W-40 • 0 to 25 °C (32 to 77 °F) SAE20, 10W-30 or 15W-40 • Above 25 °C (77 °F) SAE30, 10W-30 or 15W-40
5	Transmission case	60.0 L 63.4 U.S.qts 52.8 Imp.qts		KUBOTA SUPER UDT 2 fluid*
6	Front differential case oil (4WD)	6.0 L 6.3 U.S.qts 5.3 Imp.qts		KUBOTA SUPER UDT 2 fluid* or SAE80-SAE90 gear oil
7	Front axle gear case oil (4WD)	3.5 L 3.7 U.S.qts 3.1 Imp.qts		

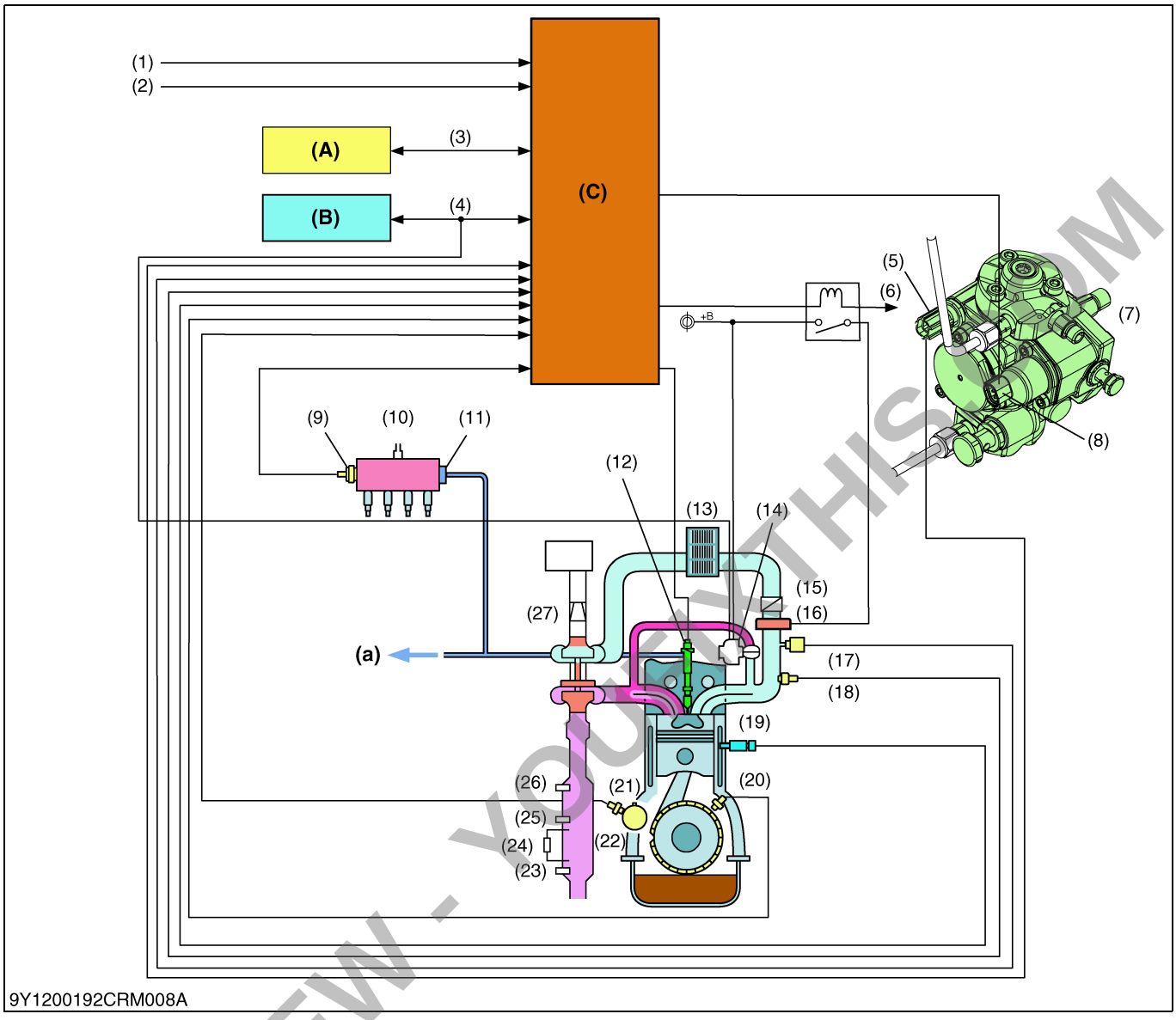
* KUBOTA original transmission hydraulic fluid.

(To be continued)

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[6] ENGINE CONTROL SYSTEM



9Y1200192CRM008A

(1) Key Switch ON Signal
(2) Starter Switch Signal
(3) CAN Communication for tractor (Accelerator Position Signal*, Neutral Switch*, Machine Travel Speed Signal*)
(4) CAN Communication for Service
(5) Fuel Temperature Sensor
(6) Air Heater Relay
(7) Supply Pump
(8) SCV (Suction Control Valve)
(9) Rail Pressure Sensor
(10) Rail
(11) Pressure Limiter
(12) Injector
(13) Inter Cooler
(14) EGR DC Motor
(15) Intake Throttle Valve
(16) Intake Air Heater
(17) Boost Pressure Sensor
(18) Intake Air Temperature Sensor
(19) Coolant Temperature Sensor
(20) Crankshaft Position Sensor
(21) Camshaft Position Sensor
(22) Diesel Particulate Filter (Hereinafter Referred To As The "DPF") Muffler
(23) Exhaust Gas Temperature Sensor2 (T2) (DPF Outlet Exhaust Gas Temperature)
(24) Differential Pressure Sensor (DPF Differential Pressure) (ΔP)
(25) Exhaust Gas Temperature Sensor1 (T1) (DPF Inlet Exhaust Gas Temperature)
(26) Exhaust Gas Temperature Sensor0 (T0) (DOC Inlet Exhaust Gas Temperature)
(27) Mass Air Flow Sensor

(A) CAN2 Connector (For Tractor)
(B) CAN1 Connector (For Service)
(C) Engine ECU
(a) To Fuel Tank

■ **NOTE**
- **The signals marked with * are CAN communication.**

9Y1210686ENM0047US0

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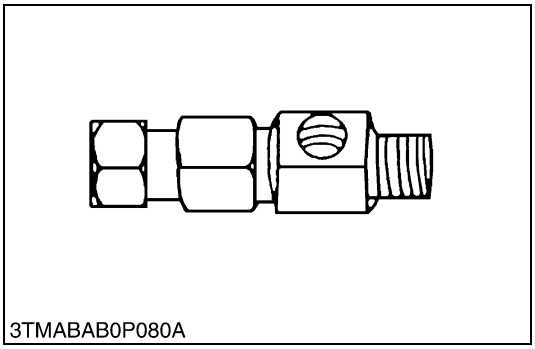
INFORMATION

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1. SAFETY FIRST I-1
2. SAFETY DECALS I-5
3. SPECIFICATIONS I-18
4. TRAVELING SPEEDS I-20
5. DIMENSIONS I-28

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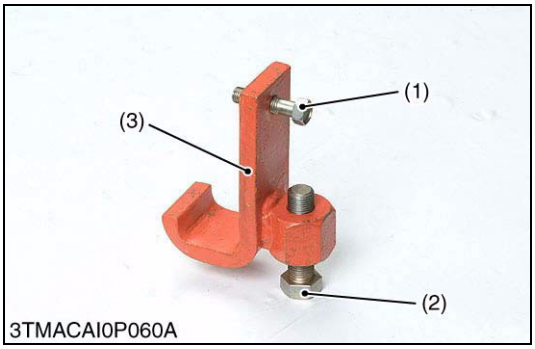

3TMABAB0P080A

Power Steering Adaptor

Code No.
- 07916-54021

Application
- Use to measure the relief valve setting pressure for power steering.

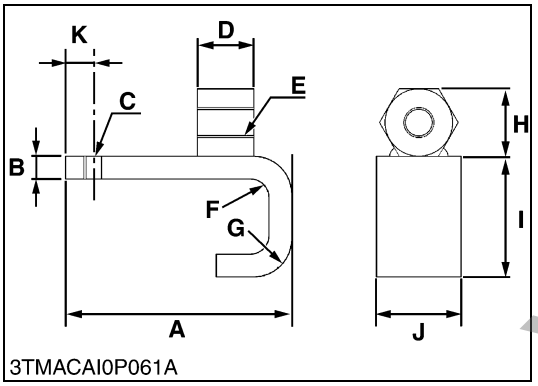
WSM000001GEG0038US0



3TMACAI0P060A

Front Axle Rocking Restrictor

■ **NOTE**
- **The following special tool is not provided, so make it referring to the figure.**



3TMACAI0P061A

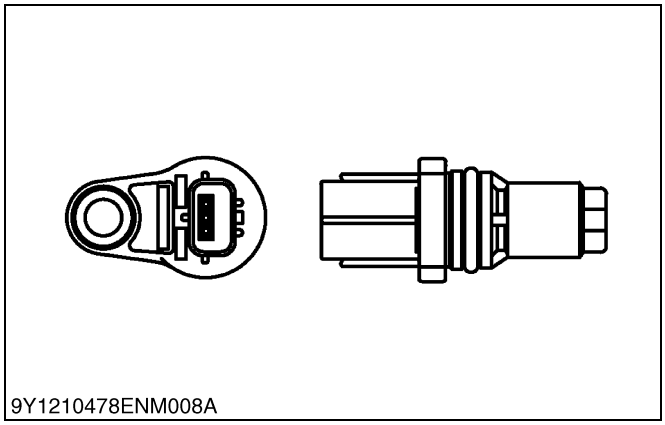
A	120 mm (4.72 in.)
B	12 mm (0.72 in.)
C	M10 × P1.25
D	30 mm (1.18 in.)
E	M16 × P1.5
F	10 mm (0.39 in.)
G	20 mm (0.79 in.)
H	36 mm (1.42 in.)
I	64 mm (2.52 in.)
J	45 mm (1.77 in.)
K	20 mm (0.79 in.)

(1) Screw
M10 × P1.25 × L50 mm (2 in.)
(2) Screw
M16 × P1.5 × L50 mm (2 in.)
(3) Rocking Restrictor

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9Y1210478ENM008A

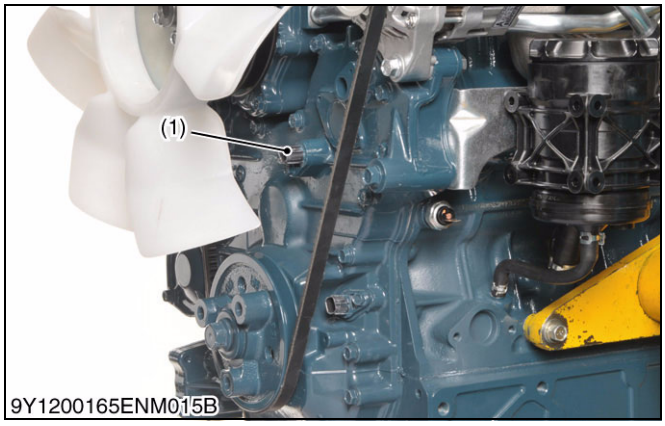
Camshaft Position Sensor

The camshaft position sensor (1) is mounted near the camshaft gear and the sensor functions in the same way as the crankshaft position sensor.

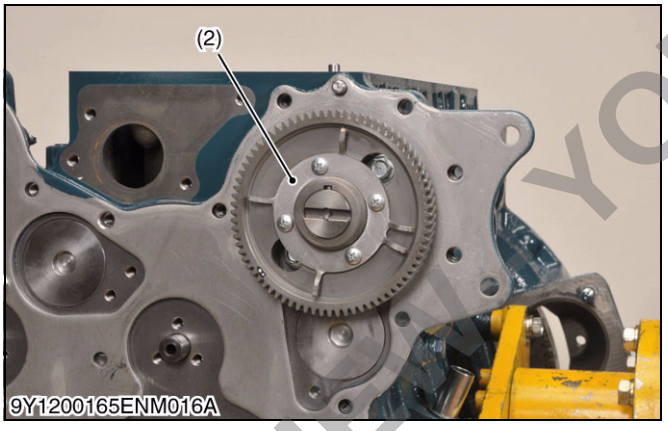
This sensor detects the extra teeth (two teeth) of the camshaft pulsar gear (2) and the engine ECU uses the signal to calculate the piston position.

(1) Camshaft Position Sensor (2) Camshaft Pulsar Gear

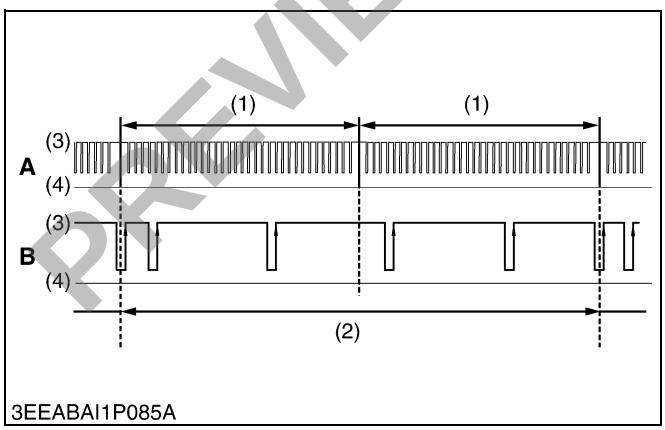
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9Y1200165ENM015B



9Y1200165ENM016A



3EEABAI1P085A

This figure shows the pulse chart of the crankshaft position sensor output signal and camshaft position sensor output signal.

The camshaft pulsar gear rotates once when the crankshaft pulsar gear rotates twice (12.6 rad (720 °) crank angle).

there is a gearless section in the crankshaft pulsar gear. The ECU determines whether it is TDC if the camshaft position sensor signal is detected while the crankshaft position sensor is passing this gearless section.

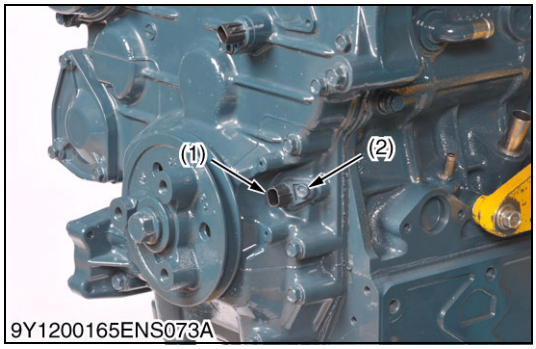
(1) 56 pulses (6.28 rad (360 °) crank angle)
(2) 5 pulses (12.6 rad (720 °) crank angle)
(3) 5 V
(4) 0 V

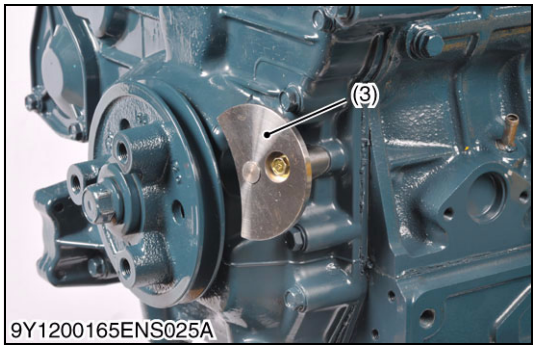
A: Crankshaft Position Sensor Output Voltage
B: Camshaft Position Sensor Output Voltage

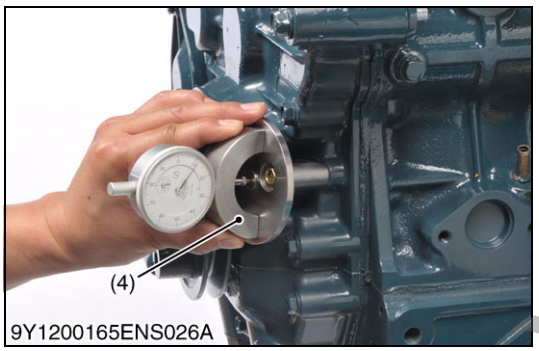
9Y1210686ENM0029US0

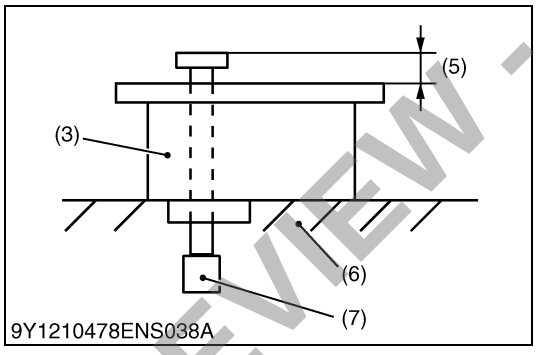
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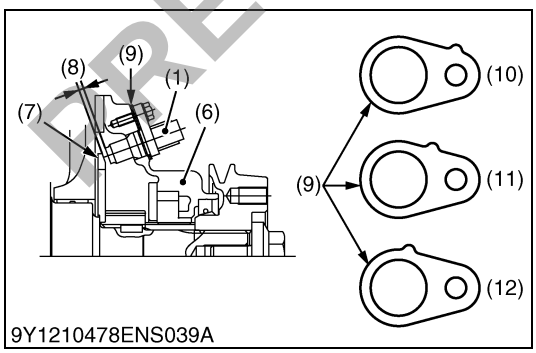
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Crankshaft Position Sensor

1. Remove the crankshaft position sensor mounting screw (2).
2. Remove the crankshaft position sensor (1).

(When reassembling)

- Replace the O-ring with a new one.

■ **IMPORTANT**

- **If you drop the sensor, do not reuse it.**
- **If the sensor (1), gear case (6) and/or pulsar gear (7) are replaced, use a combination of shims (9) to adjust the sensor's air gap.**

Selecting adjustment shims

1. Align the TC mark of flywheel with the flywheel housing timing window.
2. Install the measurement jig 1 (3) to the sensor mounting position.
3. Set the dial gauge at the measurement jig 2 (4), then measure the protrusion (5) of the jig 1 (3).
4. Refer to the protrusion (5) you measured, and select the number of adjusting shims (9) from the following table.

Combination of Shims

Protrusion (5)	Thickness & Number of Shims		
	0.25 mm (0.0098 in.) (10)	0.50 mm (0.020 in.) (11)	1.00 mm (0.0394 in.) (12)
	1G381-04420	1G381-04430	1G381-04440
2.25 to 2.50 mm 0.0886 to 0.0984 in.	1		2
2.00 to 2.25 mm 0.0788 to 0.0885 in.			2
1.75 to 2.00 mm 0.0689 to 0.0787 in.	1	1	1
1.50 to 1.75 mm 0.0591 to 0.0688 in.		1	1
1.25 to 1.50 mm 0.0493 to 0.0590 in.	1		1
1.00 to 1.25 mm 0.0394 to 0.0492 in.			1
0.750 to 1.00 mm 0.0296 to 0.0393 in.	1	1	
0.500 to 0.750 mm 0.0197 to 0.0295 in.		1	
0.250 to 0.500 mm 0.00985 to 0.0196 in.	1		
0 to 0.250 mm 0 to 0.00984 in.			

Air Gap (8)	Factory specification	0.25 to 1.4 mm 0.0099 to 0.055 in.

Tightening torque	Crankshaft position sensor mounting screw	4 to 6 N·m 0.4 to 0.6 kgf·m 3 to 4 lbf·ft

(1) Crankshaft Position Sensor
(2) Crankshaft Position Sensor Mounting Screw
(3) Jig 1
(4) Jig 2
(5) Protrusion
(6) Gear Case
(7) Pulsar Gear
(8) Air Gap
(9) Shim
(10) Shim (0.25 mm (0.0098 in.))
(11) Shim (0.50 mm (0.020 in.))
(12) Shim (1.00 mm (0.0394 in.))

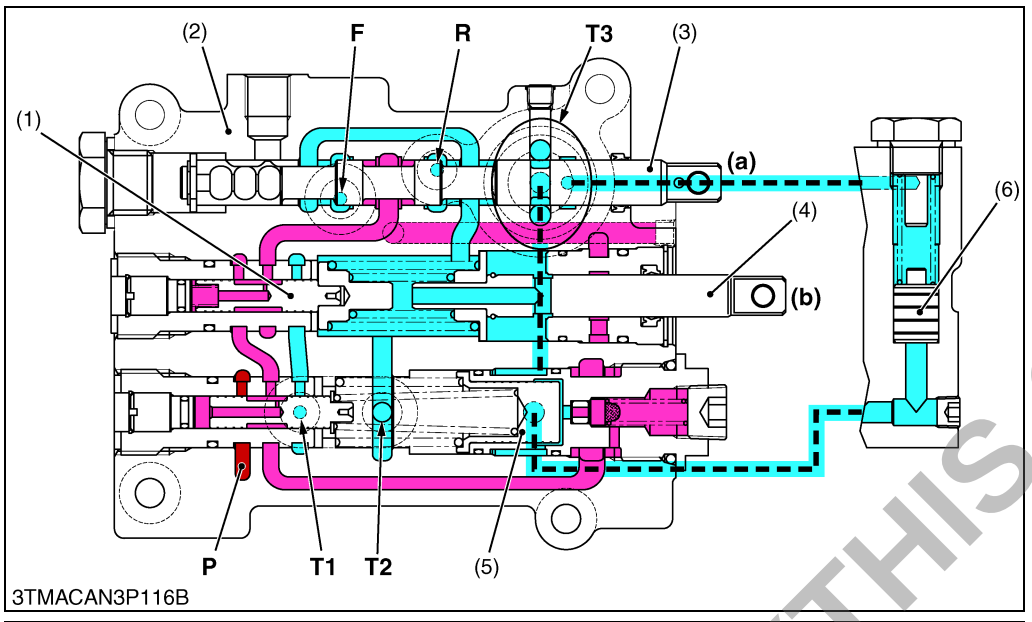
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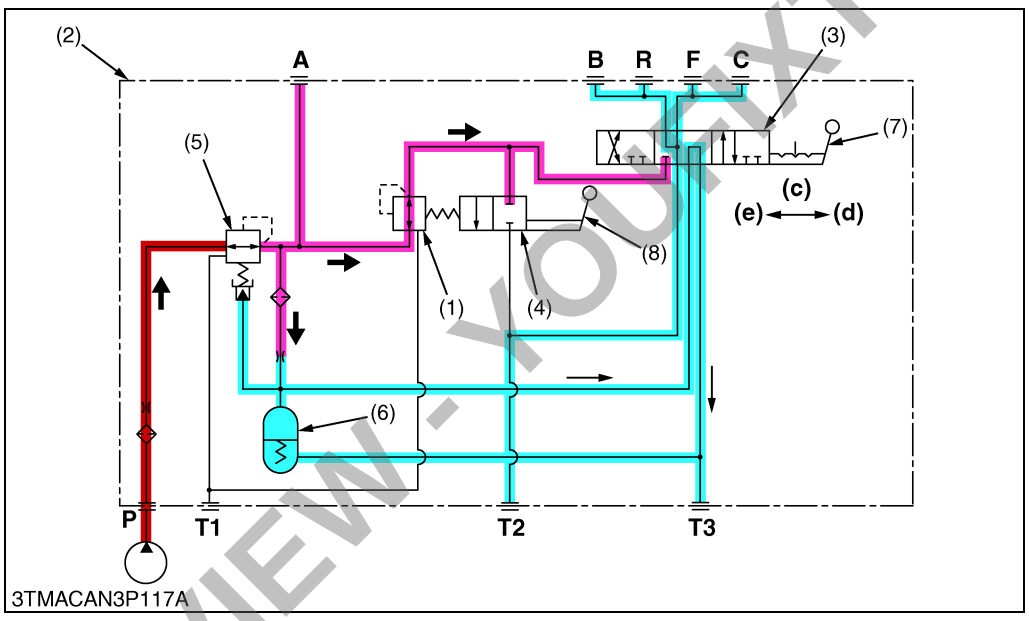
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(2) Operation

Shuttle Lever at Neutral Position



3TMACAN3P116B



3TMACAN3P117A

(1) Proportionally Reducing Valve
(2) Shuttle Valve
(3) Shuttle Shift Spool (Forward, Reverse)
(4) Inching Valve
(5) Modulating Valve
(6) Accumulate Valve
(7) Shuttle Lever
(8) Clutch Pedal

A: Check Port (Modulation)
B: Check Port (Reverse)
C: Check Port (Forward)
F: To Clutch Body (Forward)
P: P Port (Pump)
R: To Clutch Body (Reverse)
T1 to T3: To Transmission Case
(a) Connect to Shuttle Lever
(b) Connect to Clutch Pedal
(c) Neutral
(d) Forward
(e) Reverse

When the shuttle lever at **"Neutral"** position, as the oil passage between **P** port to **F** or **R** port is closed by shuttle shift spool (3), pressure-fed oil from **P** port flows to the **T3** port. Thus the shuttle clutch is not engaged.

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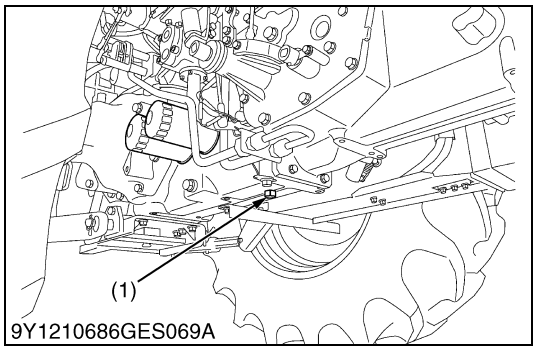
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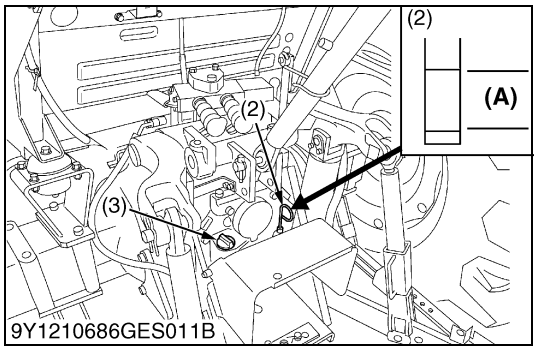
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5. DISASSEMBLING AND ASSEMBLING

[1] HYDRAULIC SHUTTLE VALVE AND SOLENOID VALVE

(1) Preparation for Disassembling and Assembling Valve





Draining Transmission Fluid

1. Place oil pan underneath the transmission case.
2. Remove the drain plugs (1).
3. Drain the transmission fluid.
4. Reinstall the drain plugs (1).

(When reassembling)

- Fill up from filling port (2) after removing the filling plug up to the upper notch on the dipstick (3).
- After running the engine for a few minutes, stop it and check the fluid level again, add the fluid to prescribed level if it is not correct level.

Transmission fluid	Capacity	60.0 L 63.4 U.S.qts 52.7 Imp.qts

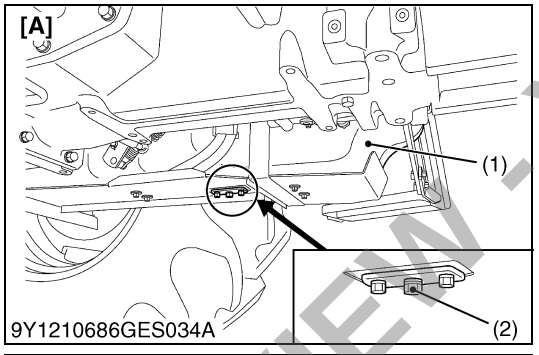
■ **IMPORTANT**

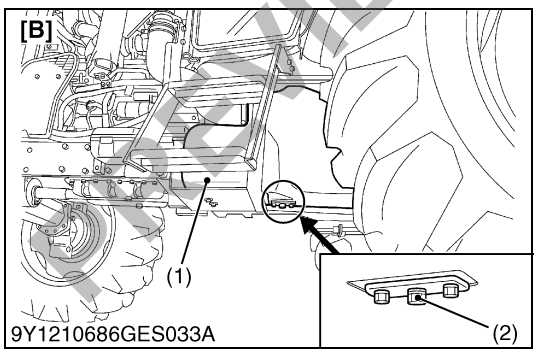
- **Use only KUBOTA SUPER UDT fluid. Use of other oil may damage the transmission or hydraulic system. (Refer to G-12.)**
- **Do not mix different brands fluid together.**

(1) Drain Plug
(2) Dipstick
(3) Filling Port

(A) Oil level is acceptable with this range.

9Y1210686TRS0014US0





Draining Fuel

1. Place oil pans under the right side fuel tank.
2. Remove the drain cover (2) at the bottom of side fuel tank (1).
3. Drain the fuel.
4. Reinstall the drain cover (2) on the fuel tank (1).

(When reassembling)

- Be sure to fix the O-ring is in position on the drain cover (2).

Fuel tank	Capacity	ROPS	90.0 L 23.8 U.S.gals 19.8 Imp.gals
		CABIN	110 L 29.1 U.S.gals 24.2 Imp.gals

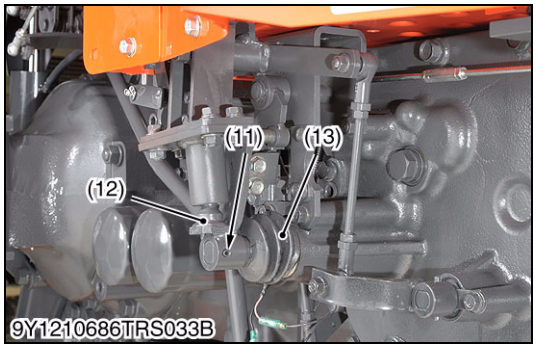
(1) Fuel Tank
(2) Drain Cover

[A] ROPS Model
[B] CABIN Model

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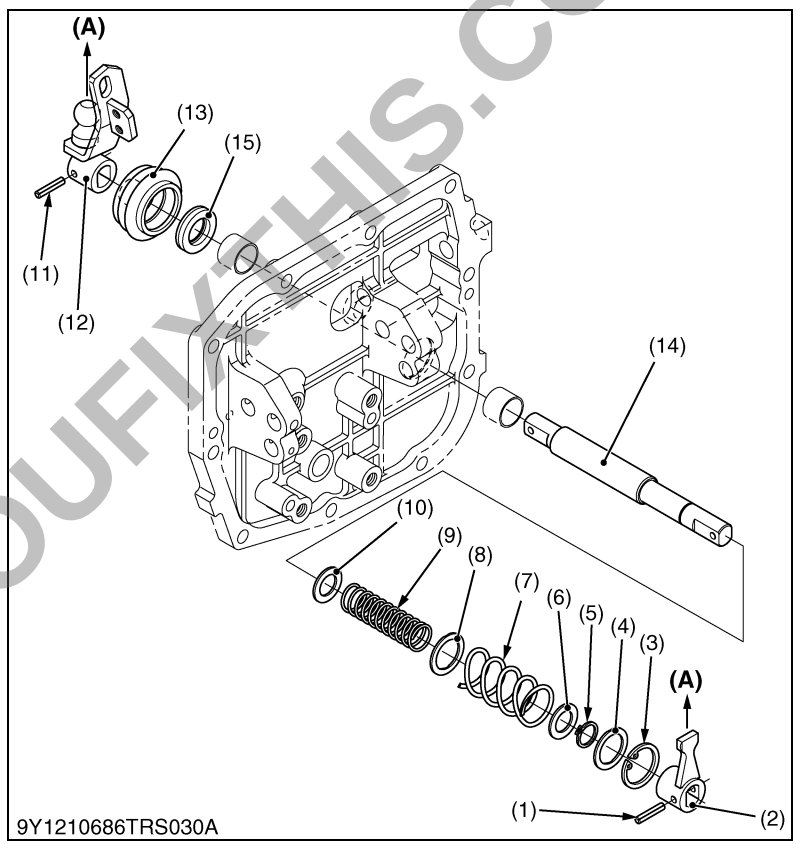


Main Shift Arm

1. Remove the roll pin (1) and main shift arm (2).
2. Remove the internal circlip (3) and collar (4) then remove the spring 1 (7).
3. Remove the external circlip (5) and collar (8) then remove the spring 2 (9) and collar (10).
4. Remove the roll pin (11), main shift lever (12) and rubber boots (13) then slide the main shift shaft (14).

(When reassembling)

- If oil seal (15) is damaged, replace the oil seal with new one.
- Assemble the main shift arm (2) and main shift lever (12) with align the both levers are the same direction as shown in the figure.



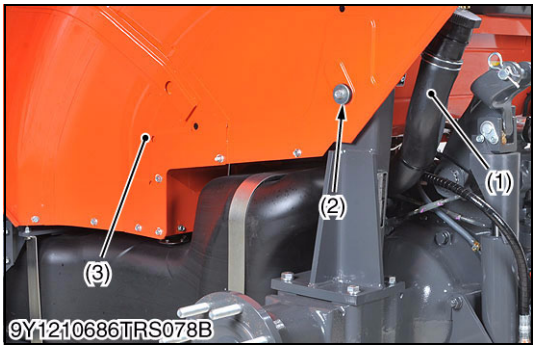
(1) Roll Pin
(2) Main Shift Arm
(3) Internal Circlip
(4) Collar
(5) External Circlip
(6) Collar
(7) Spring 1
(8) Collar
(9) Spring 2
(10) Collar
(11) Roll Pin
(12) Main Shift Lever
(13) Rubber Boots
(14) Main Shift Shaft
(15) Oil Seal

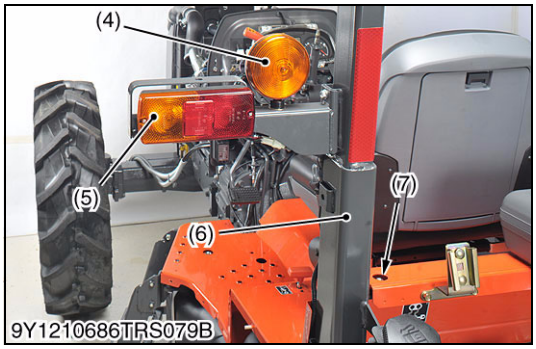
(A) Align the Same Direction

9Y1210686TRS0084US0

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Fender (L.H.) and ROPS Under (L.H.)

1. Remove the fuel filling port (1) fixing screw.
2. Unscrew the fender mounting screws (2) and then remove the fender (3).
3. Disconnect the **4P** connector and two **1P** connectors for combination lamp (5) and hazard lamp (4).
4. Remove the screw (7) and the ROPS under (6).

(When reassembling)

- Tighten the screw (2) with the cushion rubber.
- Be sure to connect the connectors.
- Be sure to fix the breather hose.

(1) Fuel Filling Port
(2) Screw
(3) Fender (L.H.)
(4) Hazard Lamp
(5) Combination Lamp
(6) ROPS Under (L.H.)
(7) Screw

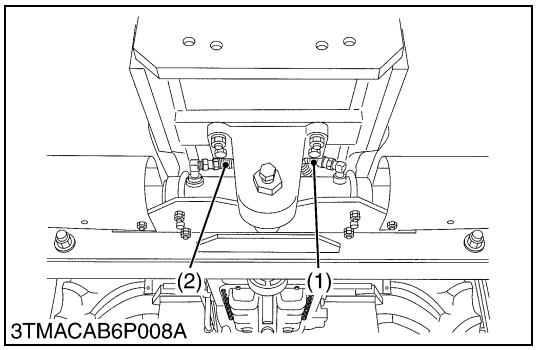
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[2] DISASSEMBLING AND ASSEMBLING

(1) Separating Front Axle [2WD Model]



Front Wheel and Power Steering Hoses

1. Check the front axle and engine are securely mounted on the disassembly stand.
2. Loosen the front wheel mounting nuts.
3. Lift the front axle and remove the front wheels.
4. Disconnect the power steering hoses (1), (2).

(When reassembling)

Tightening torque	Power steering hose retaining nut	23 to 27 N·m 2.3 to 2.8 kgf·m 17 to 20 lbf·ft
	Front wheel mounting nut (M14)	167 to 196 N·m 17.0 to 20.0 kgf·m 123 to 144 lbf·ft

(1) Power Steering Hose 1 (2) Power Steering Hose 2

9Y1210686FAS0008US0



Front Axle

1. Place a disassembly stand under the front axle case and support it with a jack.
2. Remove the bracket (front) (1) mounting screws and nuts.
3. Remove the bracket (rear) mounting screws and nuts.
4. Separating the front axle from front axle bracket.

(When reassembling)

Tightening torque	Bracket mounting nut	124 to 147 N·m 12.6 to 15.0 kgf·m 91.2 to 108 lbf·ft
	Bracket mounting screw	167 to 196 N·m 17.0 to 20.0 kgf·m 123 to 144 lbf·ft

■ **IMPORTANT**

- **Be sure to adjust the front axle pivot.**

(1) Front Bracket

9Y1210686FAS0009US0

(2) Separating Front Axle [4WD Model]

Draining Front Axle Gear Case (Right and Left) and Front Differential Case Oil

- See page G-37, G-38.

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[4] LINKAGE MECHANISM

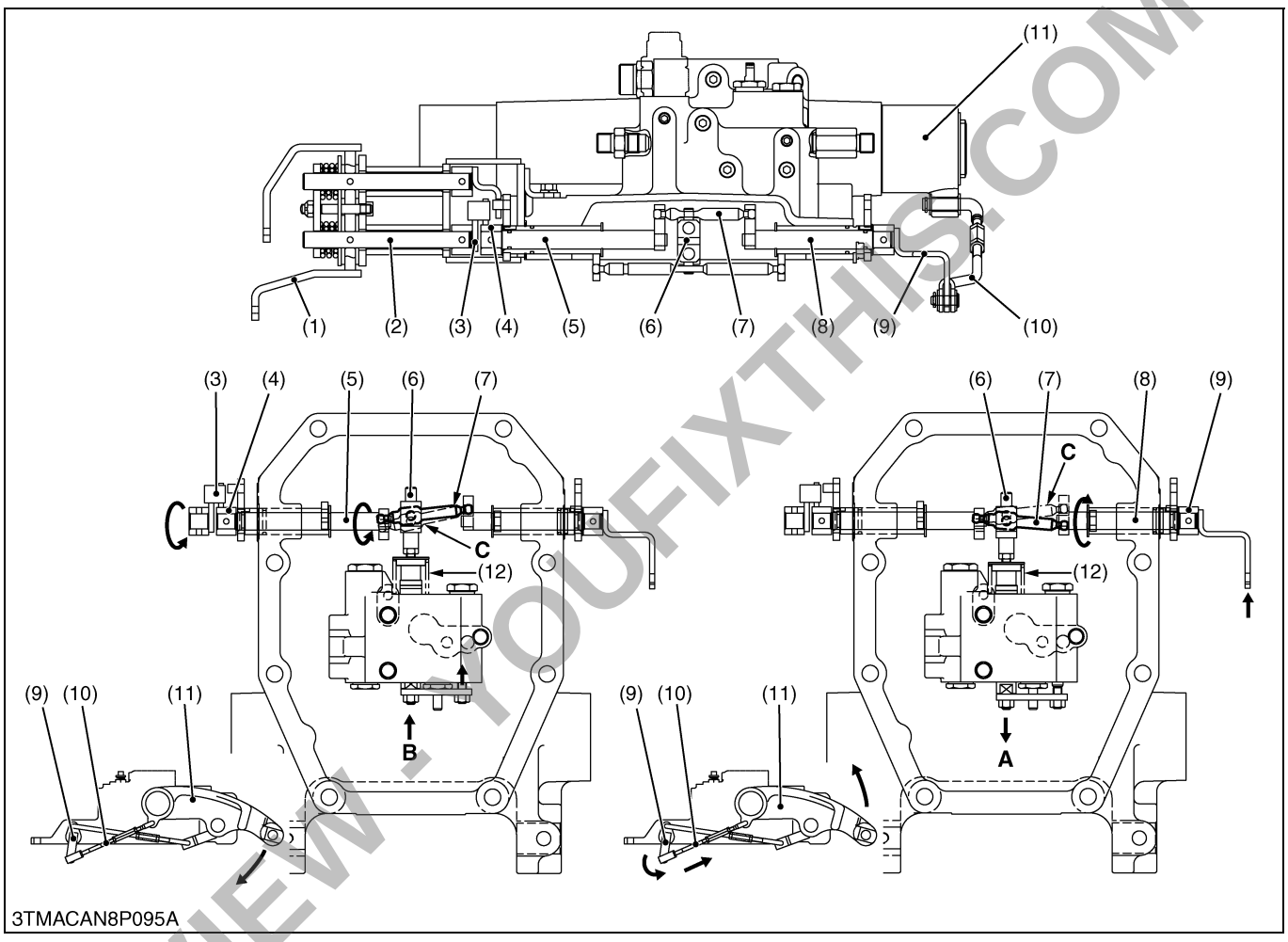
(1) Position Control

Position control is a linkage mechanism to raise or lower the implement attached to the tractor in proportion to the movement of the position control lever.

The implement can be positioned at any height by moving the position control lever. Fine position adjustment is also easy.

9Y1210686HYM0009US0

Lift



3TMACAN8P095A

(1) Position Control Lever
(2) Position Lever Shaft 1
(3) Position Link 1
(4) Position Link 2
(5) Position Lever Shaft 2
(6) Spool
(7) Spool Drive Lever (Position)
(8) Position Feedback Shaft
(9) Position Feedback Lever
(10) Position Feedback Rod
(11) Lift Arm

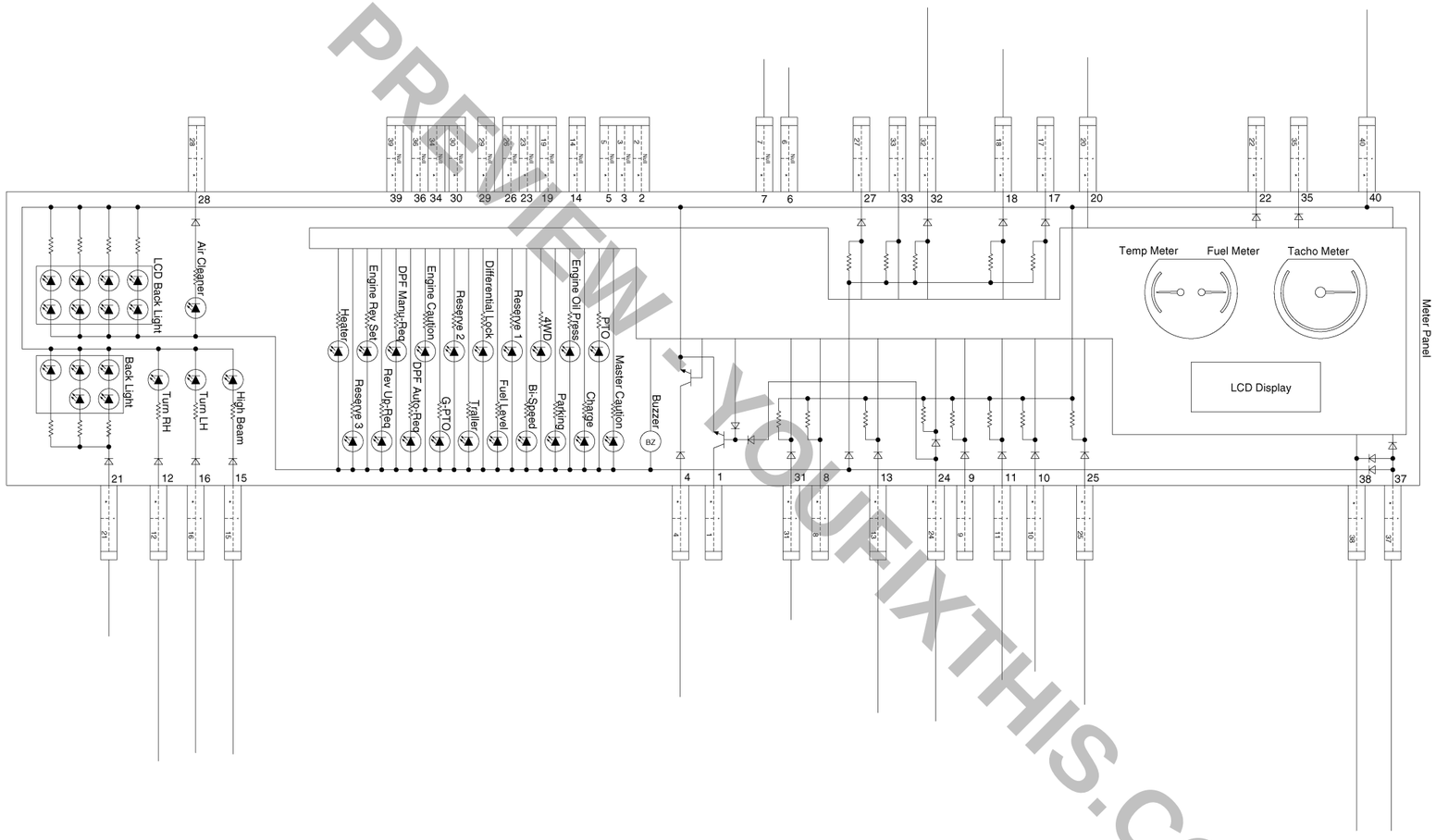
A: LIFT
B: DOWN
C: Neutral Position

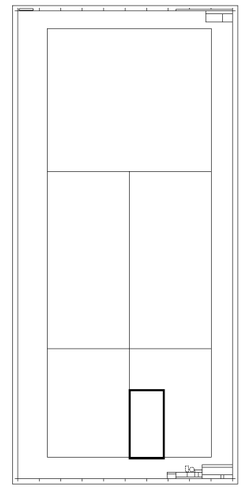
1. When the position control lever (1) is moved to the **"LIFT"** position, the position lever shaft 1 (2) and position link 1 (3) rotates and press down the position link 2 (4).
   The position lever shaft 2 (5) rotates and pushes the spool (6) by the spool drive lever (7), opening the **"LIFT"** circuit.
2. When the lift arm (11) moves upward, position feedback shaft (8) rotates via position feedback rod (10) and pulls the spool (6) by the spool drive lever (7).
   The lift arm stops when the spool (6) returns to the neutral position **"C"**.

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(4) Testing Mode

Testing the Each Sensor Value

1. Select the **"TST-1"**
2. Make sure that the mode item **"TST-1"** blinks on the display with press and hold the traveling speed select switch until **"T1"** appears on the display.
3. Make sure that the **"T1"** appears on the display, and then release the traveling speed select switch.

■ **NOTE**
- **The mode "TST -1" consists of 11 checking items.**
- **Every time pressing the PTO/Hour meter select switch, the menu item changes.**

No.	Contents	Normal Condition	Unit	Remark
1	Accelerator sensor (main)	0.05 to 4.9	Voltage	Main (1) + sub (2) 3.85 V to 6.15 V (Normal condition)
2	Accelerator sensor (sub)	0.05 to 4.9	Voltage	
3	Engine revolution	0 to 2800	n/min	
4	Shuttle revolution	0 to 2450	n/min	
5	Engine coolant temperature	−30 to 120 °C (−4 to 248 °F)	Celsius	
6	Fuel empty sensor voltage	Empty to Full	Voltage	Fuel tank sensor
7	Battery voltage	8.0 to 16.0	Voltage	
8	PTO revolution	0 to 1000	n/min	
9	PM sedimentation quantity 1	4 to 38	Gram	DPF regeneration request trigger 1
10	PM sedimentation quantity 2	4 to 38	Gram	DPF regeneration request trigger 2
11	Fuel quantity after regeneration	MAX 80	L	DPF regeneration request trigger 3

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3. TIGHTENING TORQUES

Tightening torques of screws, bolts and nuts on the table below are especially specified.
(For general use screws, bolts and nuts: Refer to G-14.)

Item	N·m	kgf·m	lbf·ft
Rear wheel mounting nut	344 to 402	35.0 to 41.0	254 to 296
Compressor bracket mounting screw (M8) to aluminum parts	18 to 20	1.8 to 2.1	13 to 15
Compressor bracket mounting screw (M8) to ordinariness parts	24 to 27	2.4 to 2.8	18 to 20
Compressor bracket mounting screw (M10) to ordinariness parts	48 to 55	4.9 to 5.7	36 to 41
High pressure hose mounting screw (compressor side)	7.9 to 11	0.80 to 1.2	5.8 to 8.6
Low pressure hose mounting screw (compressor side)	7.9 to 11	0.80 to 1.2	5.8 to 8.6
Master cylinder hose retaining nut	24 to 27	2.4 to 2.8	18 to 20
Power steering joint shaft mounting screw	24 to 27	2.4 to 2.8	18 to 20
Brake hose retaining nut	24 to 27	2.4 to 2.8	18 to 20
Cabin mounting screw and nut	124 to 147	12.6 to 15.0	91.2 to 108
Compressor mounting screw	25 to 29	2.5 to 3.0	18 to 21
Magnetic clutch mounting screw	15 to 21	1.5 to 2.1	11 to 15
A/C unit mounting screw (M8)	9.8 to 15	1.0 to 1.6	7.3 to 11
Pressure hose joint mounting screw (cooler unit side)	7.9 to 11	0.80 to 1.2	5.8 to 8.6
High pressure pipe mounting screw (condenser side)	7.9 to 11	0.80 to 1.2	5.8 to 8.6
High pressure pipe retaining nut (receiver side)	12 to 14	1.2 to 1.5	8.7 to 10
Wiper arm mounting nut (front wiper)	6.9 to 9.8	0.70 to 1.0	5.1 to 7.2
Wiper arm mounting nut (rear wiper)	7.9 to 9.8	0.80 to 1.0	5.8 to 7.2
Wiper motor mounting screw	7.9 to 9.8	0.80 to 1.0	5.8 to 7.2

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