WSM

WORKSHOP MANUAL
TRACTOR

L3560,L4060,L4760,
L5060,L5460,L6060

Kubota

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KiSC issued 03, 2016 A

GENERAL

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1. SAFETY FIRST

⚠ SAFETY FIRST

- **This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels 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 try to repair or use this unit.**

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

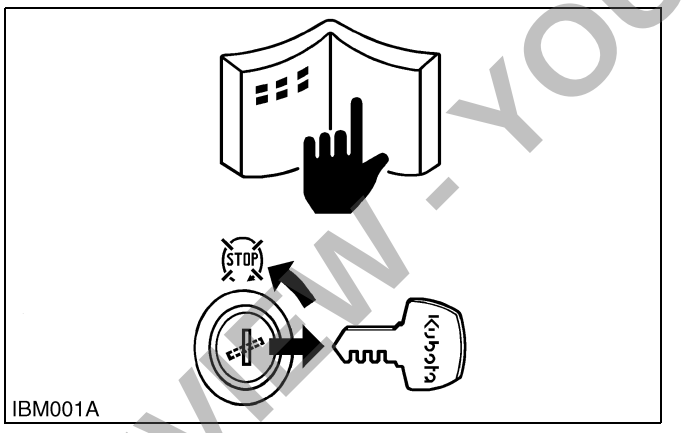
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

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

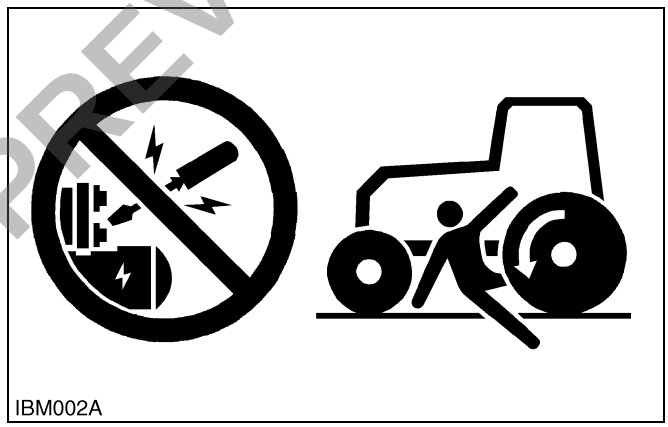
■ IMPORTANT
- **Indicates that equipment or property damage could result if instructions are not followed.**

■ NOTE
- **Gives helpful information.**

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IBM001A


IBM002A

BEFORE YOU START SERVICE

- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a stable and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, then remove the key.
- Disconnect the battery negative cable.
- Hang a **"DO NOT OPERATE"** tag in the operator station.

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START SAFELY

- Do not do the procedures below when you start the engine.
  - short across starter terminals
  - bypass the safety start switch
- Do not change or remove any part of machine safety system.
- Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Do not start the engine when you stay on the ground. Start the engine only from operator's seat.

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3. SPECIFICATIONS

[1] MANUAL TRANSMISSION

Model			L3560	L4060
			4WD	
Engine	Model		D1803-CR-E4	V2403-CR-E4
	Type		Direct injection vertical, water-cooled, 4-cycle diesel	
	Number of cylinders		3	4
	Total displacement		1.826 L (111.4 cu.in.)	2.434 L (148.5 cu.in.)
	Bore and stroke		87 × 102.4 mm (3.4 × 4.0 in.)	
	Rated revolution		2700 min^{-1} (rpm)	
	Low idling revolution		800 min^{-1} (rpm)	
	Net power*		26.1 kW (35.0 HP)	29.8 kW (40.0 HP)
	PTO power* (factory observed)		22.0 kW (29.5 HP) / 2700 min^{-1} (rpm)	25.4 kW (34.0 HP) / 2700 min^{-1} (rpm)
	Maximum torque		114.1 N·m (84.2 lbf·ft)	133.5 N·m (98.5 lbf·ft)
	Battery capacity		12 V, RC: 133 min, CCA: 582 A	
Capacities	Fuel tank		51 L (13.5 U.S.gals, 11.2 Imp.gals)	
	Engine crankcase (with filter)		6.7 L (7.1 U.S.qts, 5.9 Imp.qts)	8.2 L (8.7 U.S.qts, 7.2 Imp.qts)
	Engine coolant		7.5 L (7.9 U.S.qts, 6.6 Imp.qts)	
	Transmission case		42 L (11.1 U.S.gals, 9.24 Imp.gals)	43 L (11.4 U.S.gals, 9.46 Imp.gals)
Dimensions	Overall length (without 3p)		2920 mm (115.0 in.)	3085 mm (121.5 in.)
	Overall width (min. tread)		1520 mm (59.8 in.)	1690 mm (66.5 in.)
	Overall height (with ROPS)		2470 mm (97.2 in.)	2480 mm (97.6 in.)
	Wheel base		1805 mm (71.1 in.)	1895 mm (74.6 in.)
	Min. ground clearance		342 mm (13.5 in.)	360 mm (14.2 in.)
	Tread	Front	1155 mm (45.5 in.)	
		Rear	1200 mm (47.2 in.), 1300 mm (51.2 in.), 1385 mm (54.5 in.), 1480 mm (58.3 in.)	1285 mm (50.6 in.), 1435 mm (56.5 in.), 1530 mm (60.2 in.)
Weight (with ROPS)			1590 kg (3505 lbs)	1635 kg (3605 lbs)
Traveling system	Standard tire size	Front	7-16	8.3-16
		Rear	12.4-24	14.9-24
	Clutch		Dry type single stage	
	Steering		Hydrostatic power steering	
	Transmission		8 forward and 8 reverse fully synchronized main and shuttle transmission	
	Braking system		Wet disk type	
	Min. turning radius (with brake)		2.7 m (8.9 feet)	
Hydraulic unit	Hydraulic control system		Position control	
	Pump capacity		31.5 L (8.3 U.S.gals, 6.9 Imp.gals)	37.0 L (9.8 U.S.gals, 8.1 Imp.gals)
	Three point hitch		SAE category 1	
	Max. lift force	At lift points	1700 kg (3750 lbs)	1750 kg (3860 lbs)
		24 in. behind lift points	1200 kg (2650 lbs)	1250 kg (2760 lbs)
	System pressure		17.7 MPa (180 kgf/cm^2, 2560 psi)	
PTO	Rear PTO		SAE 1-3/8, 6 splines	
	PTO/Engine speed		540 min^{-1} (rpm) / 2550 min^{-1} (rpm)	

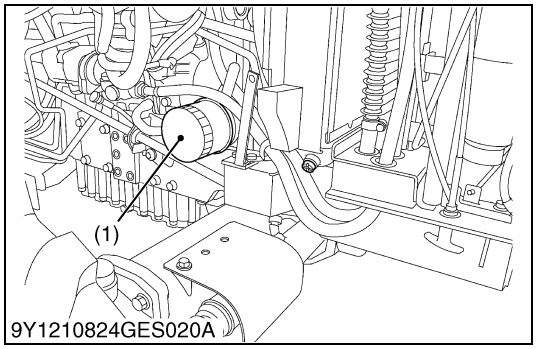
■ **NOTE**

- ***Manufacturer's estimate**
  The company reserve the right to change the specifications without notice.

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Replacing Engine Oil Filter

CAUTION

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

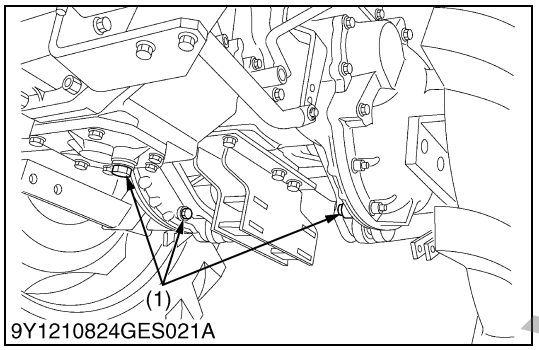
1. Remove the oil filter.
2. Put a film of clean engine oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
4. After the new filter has been replaced, the engine oil normally decreases a little. Make sure that the engine oil does not leak through the seal and be sure to check the oil level on the dipstick. Then, replenish the engine oil up to the prescribed level.

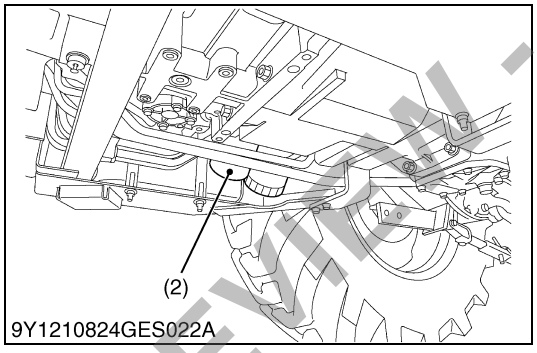
IMPORTANT

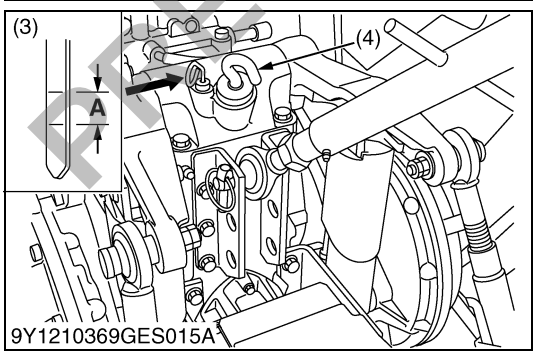
- **To prevent serious damage to the engine, use only a KUBOTA genuine filter.**

(1) Engine Oil Filter

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Replacing Transmission Oil Filter (HST)

CAUTION

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

1. Remove the drain plugs at the bottom of the transmission case and drain the oil completely into the oil pan.
2. After draining reinstall the drain plugs.
3. Remove the oil filter.
4. Put a film of clean transmission oil on the rubber seal of the new filter.
5. Quickly tighten the filter until it contacts the mounting surface, then, with a filter wrench, tighten it an additional 1 turn only.
6. After the new filters have been replaced, fill the transmission oil up to the upper notch on the dipstick.
7. After running the engine for a few minutes, stop the engine and check the oil level again, add oil to the prescribed level.
8. Make sure that the transmission fluid does not leak past the seal on the filter.

IMPORTANT

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

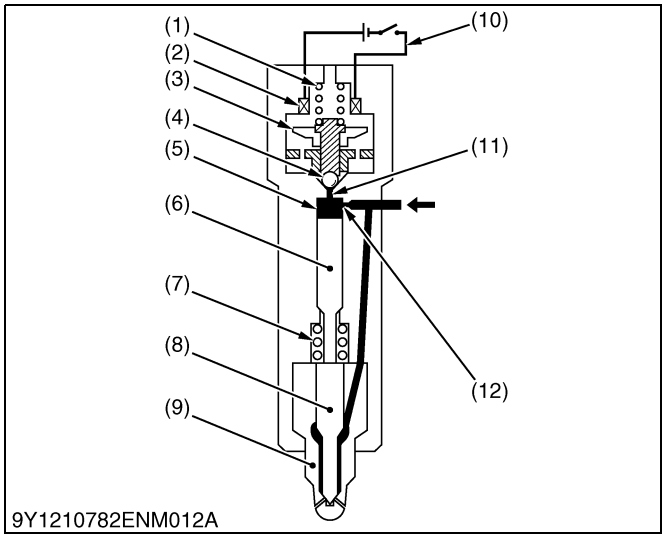
(1) Drain Plug
(2) Transmission Oil FIlter (HST)
(3) Gauge
(4) Oil Inlet

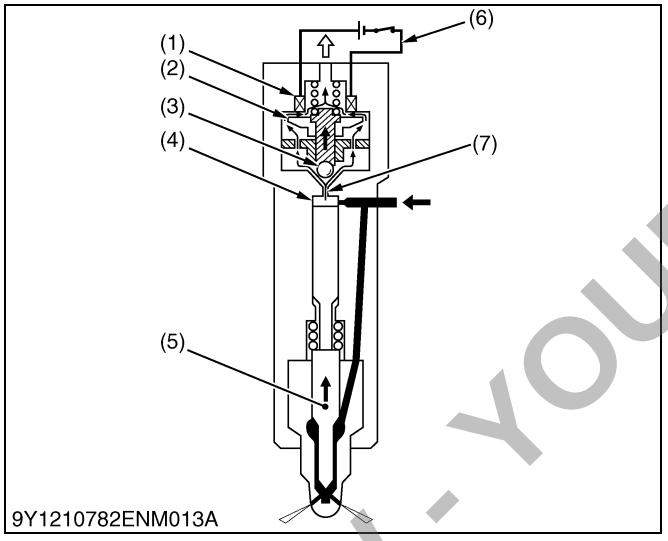
A: Oil level is acceptable within this range.

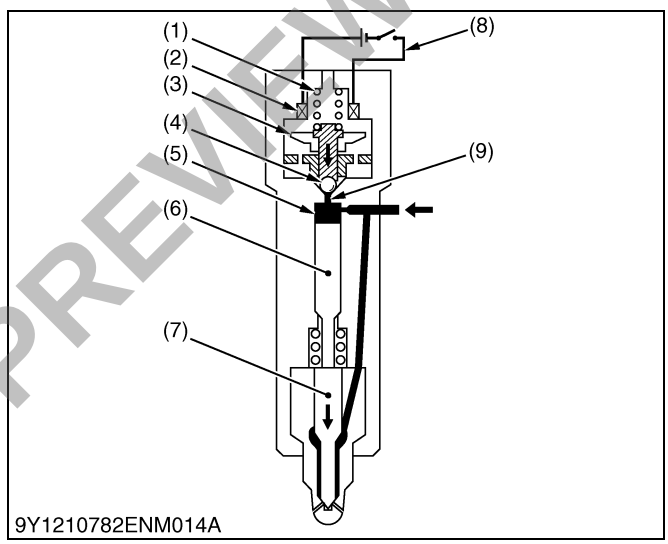
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Injector Operation

■ No Injection

While the solenoid (2) is not electrified, the two way electromagnetic valve (3) is pushed down by the valve spring (1) and the discharge orifice (11) path is closed by the valve ball (4). Here, fuel pressure is applied in the control chamber (5) and to the bottom of the needle valve (8) but based on the difference in projected net area and the force of the nozzle spring (7), the needle valve is pushed into the nozzle body (9) so fuel injection is not performed.

(1) Valve Spring
(2) Solenoid
(3) Two Way Electromagnetic Valve
(4) Valve Ball
(5) Control Chamber
(6) Valve Piston
(7) Nozzle Spring
(8) Needle Valve
(9) Nozzle Body
(10) Drive Circuit
(11) Discharge Orifice
(12) Suction Orifice

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■ Injection Start

When the solenoid (1) is electrified by the drive circuit (6) the two way electromagnetic valve (2) is lifted by an electromagnetic force and the valve ball (3) is lifted by fuel pressure opening the discharge orifice (7). Here, fuel inside the control chamber (4) passes through the discharge orifice and flows to the fuel tank. As a result, the needle valve (5) is pushed up based on fuel pressure and fuel injection starts.

■ NOTE

- **Longer electrification time of the solenoid leads to increased amount of fuel injected.**

(1) Solenoid
(2) Two Way Electromagnetic Valve
(3) Valve Ball
(4) Control Chamber
(5) Needle Valve
(6) Drive Circuit
(7) Discharge Orifice

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■ Injection Complete

When electrification of the solenoid (2) by the drive circuit (9) stops, the two way electromagnetic valve (3) is pushed closed by the force of the valve spring (1) and the discharge orifice (9) is closed by the valve ball (4). As a result, fuel pressure in the control chamber (5) rises and the needle valve (7) is pushed by the valve piston (6).

(1) Valve Spring
(2) Solenoid
(3) Two Way Electromagnetic Valve
(4) Valve Ball
(5) Control Chamber
(6) Valve Piston
(7) Needle Valve
(8) Drive Circuit
(9) Discharge Orifice

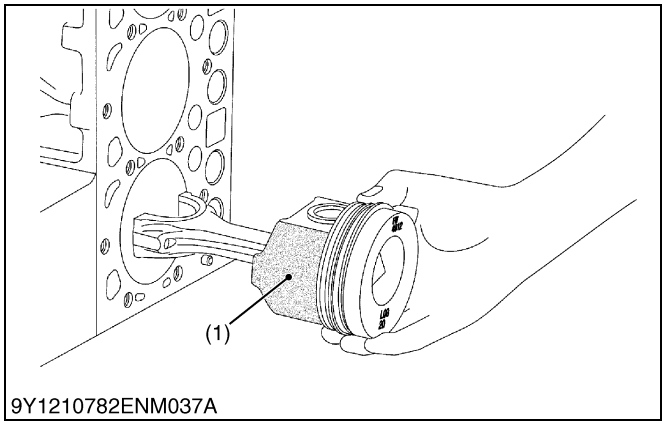
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2. ENGINE BODY

[1] PISTON



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The piston skirt has a layer of **molybdenum disulfide** ★, which decreases the piston slap noise and thus the all the engine noise.

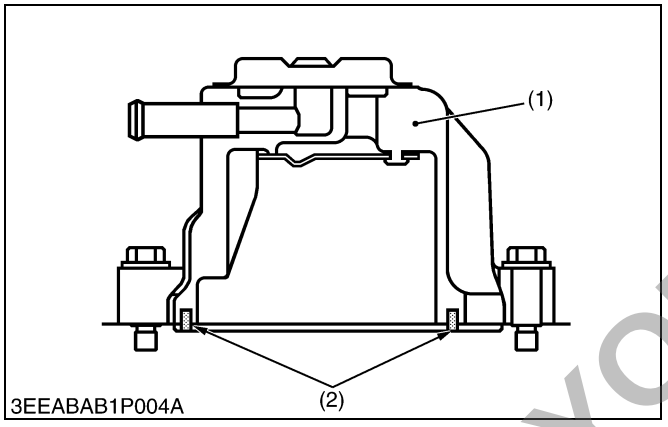
★ Molybdenum disulfide (MoS_2)

The molybdenum disulfide (1) is a solid lubricant, like Graphite or Teflon. This material helps not to wear the metal even with little lube oil.

(1) Molybdenum Disulfide

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[2] HALF-FLOATING HEAD COVER



3EEABAB1P004A

The rubber packing is attached to keep the cylinder head cover approximately 0.5 mm (0.02 in.) off the cylinder head. This decreases the noise from the cylinder head.

(1) Cylinder Head Cover (2) Rubber Packing

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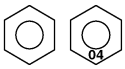
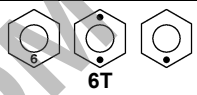
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5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

Tighten screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual according to the table below.

Indication on top of bolt	 No-grade or 4T						 7T						 9T		
Indication on top of nut	 No-grade or 4T												 6T		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M6	7.9 to 9.3	0.80 to 0.95	5.8 to 6.8	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8	18 to 20	1.8 to 2.1	13 to 15	17 to 19	1.7 to 2.0	13 to 14	24 to 27	2.4 to 2.8	18 to 20	18 to 20	1.8 to 2.1	13 to 15	30 to 34	3.0 to 3.5	22 to 25
M10	40 to 45	4.0 to 4.6	29 to 33	32 to 34	3.2 to 3.5	24 to 25	48 to 55	4.9 to 5.7	36 to 41	40 to 44	4.0 to 4.5	29 to 32	61 to 70	6.2 to 7.2	45 to 52
M12	63 to 72	6.4 to 7.4	47 to 53	–	–	–	78 to 90	7.9 to 9.2	58 to 66	63 to 72	6.4 to 7.4	47 to 53	103 to 117	10.5 to 12.0	76.0 to 86.7
M14	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	167 to 191	17.0 to 19.5	123 to 141	–	–	–	197 to 225	20.0 to 23.0	145 to 166	–	–	–	260 to 304	26.5 to 31.0	192 to 224
M18	246 to 284	25.0 to 29.0	181 to 209	–	–	–	275 to 318	28.0 to 32.5	203 to 235	–	–	–	344 to 402	35.0 to 41.0	254 to 296
M20	334 to 392	34.0 to 40.0	246 to 289	–	–	–	368 to 431	37.5 to 44.0	272 to 318	–	–	–	491 to 568	50.0 to 58.0	362 to 419

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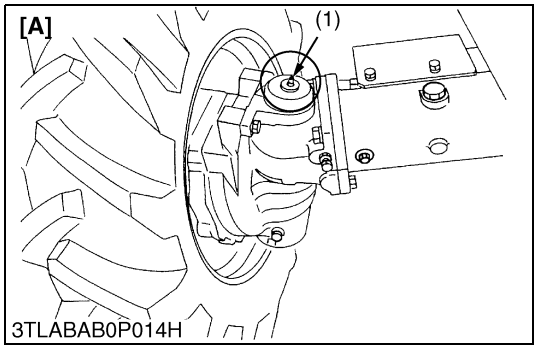
[2] STUD BOLTS

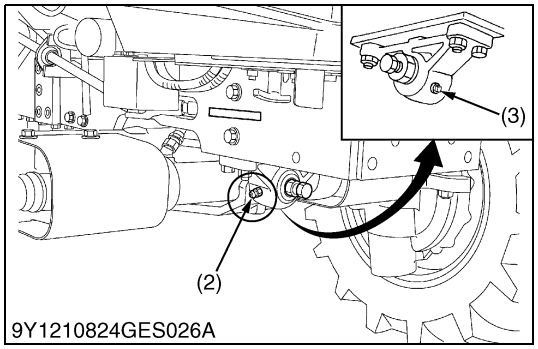
Material of opponent part	Ordinariness			Aluminum		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8	12 to 15	1.2 to 1.6	8.7 to 11	8.9 to 11	0.90 to 1.2	6.5 to 8.6
M10	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12	30 to 49	3.0 to 5.0	22 to 36	31	3.2	23
M14	62 to 73	6.3 to 7.5	46 to 54	–	–	–
M16	98.1 to 112	10.0 to 11.5	72.4 to 83.1	–	–	–
M18	172 to 201	17.5 to 20.5	127 to 148	–	–	–

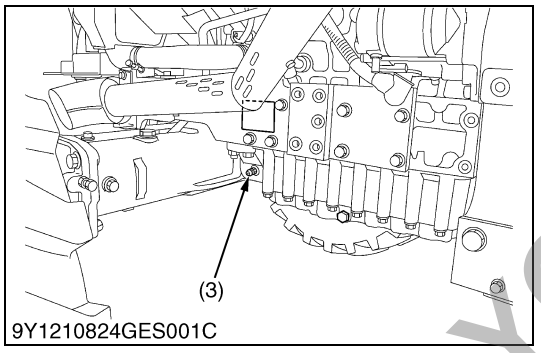
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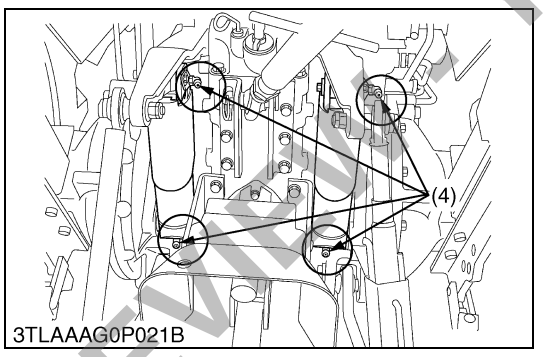
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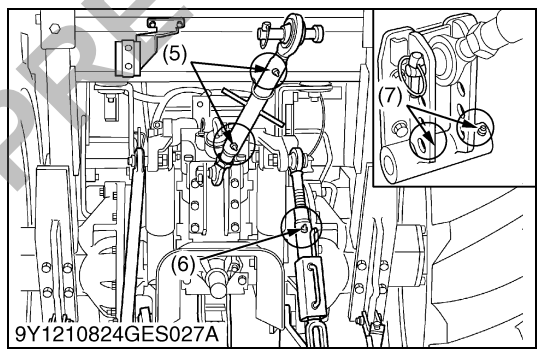
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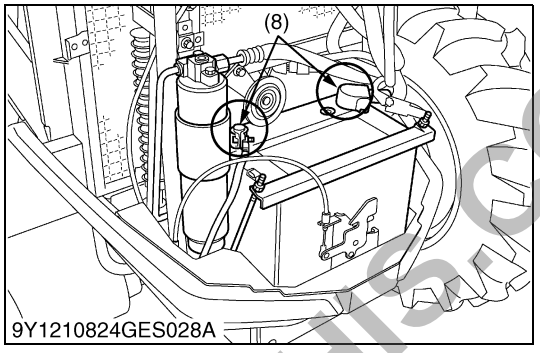


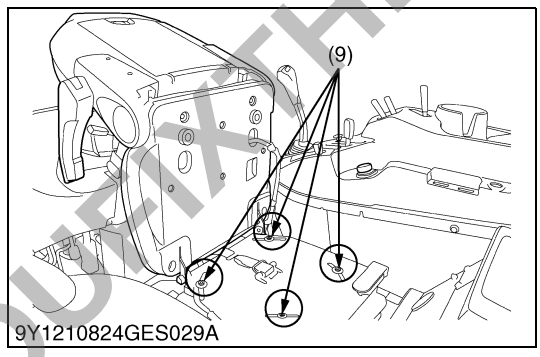




Lubricating Grease Fitting

1. Apply a small amount of multipurpose grease to the following points every 50 hours.
   If you operated the machine in extremely wet and muddy conditions, lubricate grease fittings more often.
2. When apply a grease to forward front axle support, remove the breather plug and apply a grease until grease overflows from breather plug port. After greasing reinstall the breather plug.





(1) Grease Fitting (Front Wheel Case Support RH, LH)
(2) Grease Fitting (Front Axle Support)
(3) Breather Plug
(4) Grease Fitting (Lift Cylinder)
(5) Grease Fitting (Top Link)
(6) Grease Fitting (Lifting Rod RH)
(7) Grease Fitting (Top Link Bracket)
(8) Battery Terminal
(9) Swivel Seat

[A] L4760, L5060, L5460, L6060

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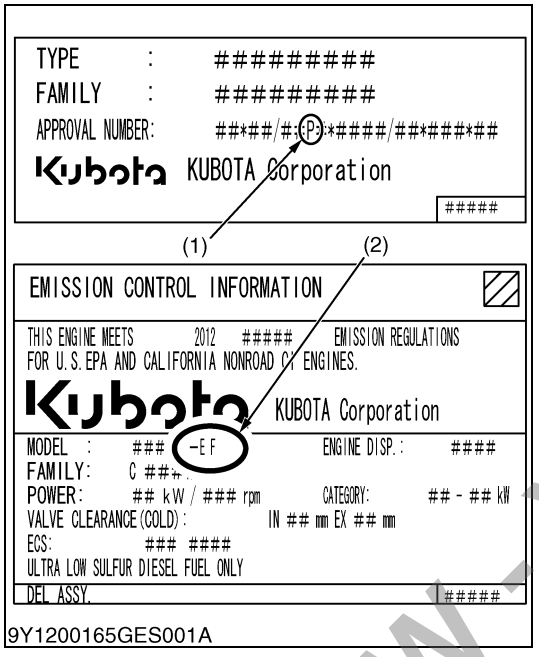
[2] E4B ENGINE

[Example: Engine Model Name V2403-CR-TE4]

The emission controls previously implemented in various countries to prevent air pollution will be stepped up as Nonroad Emission Standards continue to change. The timing or applicable date of the specific Nonroad Emission regulations depends on the engine output classification.

Over the past several years, KUBOTA has been supplying diesel engines that comply with regulations in the respective countries affected by Nonroad Emission regulations. For KUBOTA Engines, E4B will be the designation that identifies engine models affected by the next emission phase (See the table below).

When servicing or repairing ###-E4B series engines, use only replacement parts for that specific E4B engine, designated by the appropriate E4B KUBOTA Parts List and perform all maintenance services listed in the appropriate KUBOTA Operator's Manual or in the appropriate E4B KUBOTA Workshop Manual. Use of incorrect replacement parts or replacement parts from other emission level engines (for example: E3B engines), may result in emission levels out of compliance with the original E4B design and EPA or other applicable regulations.Please refer to the emission label located on the engine head cover to identify Output classification and Emission Control Information. E4B engines are identified with "EF" at the end of the Model designation, on the US EPA label. Please note: E4B is not marked on the engine.



9Y1200165GES001A

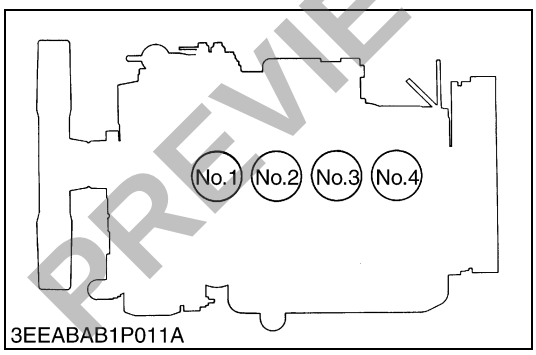
Category (1)	Engine output classification	EU regulation
K	From 19 to 37 kW	STAGE IIIB
P	From 37 to less than 56 kW	STAGE IIIB
N	From 56 to less than 75 kW	STAGE IIIB
M	From 75 to less than 130 kW	STAGE IIIB

Category (2)	Engine output classification	EPA regulation
EF	Less than 19 kW	Tier 4
	From 19 to less than 56 kW	Interim Tier 4
	From 56 to less than 75 kW	Interim Tier 4
	From 75 to less than 130 kW	Interim Tier 4

(1) EU regulation engine output classification category
(2) "E4B" engines are identified with "EF" at the end of the Model designation, on the US EPA label.
"E4B" designates some Interim Tier 4 / Tier 4 models, depending on engine output classification.

9Y1210824GEG0002US0

[3] CYLINDER NUMBER



3EEABAB1P011A

The cylinder numbers of KUBOTA diesel engine are designated as shown in the figure.

The sequence of cylinder numbers is given as No.1, No.2, No.3 and No.4 starting from the gear case side.

9Y1210824GEG0003US0

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(1) Part No. TD170-4933-1

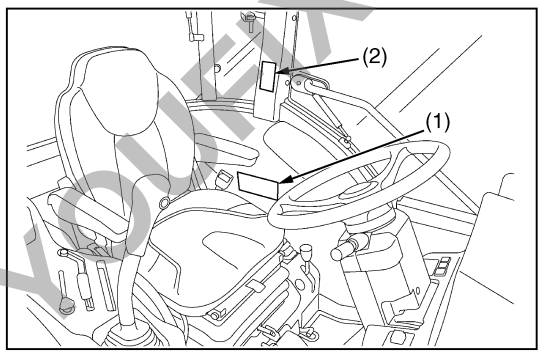


1AGAMAOAP079E

(2) Part No. TA040-4902-1



1AGAMAOAP0780



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[2] GLIDE SHIFT TRANSMISSION (GST)

(1) Electrical Adjusting [GST Fine-adjustment with Electronic Instrument Panel (Intellipanel)]

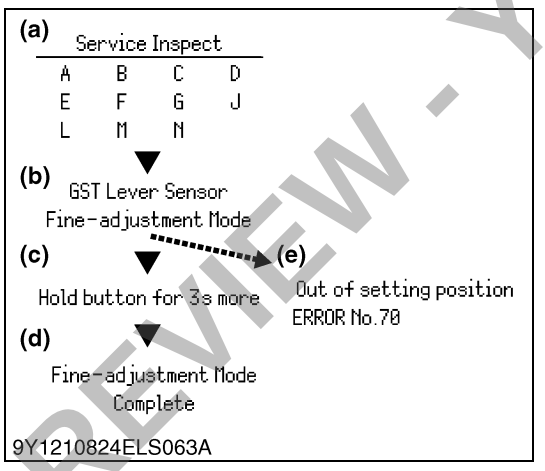
■ **NOTE**

- **The fine-adjustment function is a function to update the data of the memory device in the main ECU when a sensor, a valve, and an electronic instrument panel which relates to the GST system are repaired or are re-installed. There are three kinds of fine-adjustment functions in the GST system.**

9Y1210824TRS0178US0







GST Lever Sensor Fine-adjustment (Setting the GST lever's neutral position with its sensor)

■ **IMPORTANT**

- **As for the fine-adjustment, make sure to set it correctly to have the standard control thereafter.**

■ **NOTE**

- **When the GST lever sensor, the main ECU or the electronic instrument panel is replaced, this adjustment is required.**

1. Set the GST shift lever to **Neutral** position.
2. While holding down the display mode switch (2), turn on the main switch.
3. Mode selection display **(a)** is indicated on the LCD (1).
4. Press the display mode switch (2). The buzzer rings and the marked display moves.
5. Select the Mode **"E"**.
6. Hold down the display mode switch (2) for more than 2 seconds.
7. When **"GST Lever Sensor Fine-adjustment Mode"** is displayed **(b)**, release the display mode switch (2).
8. **"Hold button for 3s more"** is displayed **(c)**.
9. Hold down the display mode switch (2) for more than 3 seconds to preserves the adjustment value to the main ECU. **"Fine-adjustment Mode Complete"** is displayed **(d)**.
10. Fine-adjustment preserves to main ECU has been input correctly. Turn off the main switch.
11. If **"Out of setting position Error No. 70"** shows up **(e)**, the GST lever sensor voltage is out of specifications.
    - Make sure that GST lever is in the **Neutral** position.
    - Check the GST lever sensor voltage in the Test Mode (Mode **A**). If out of specifications, replace the sensor.
12. If **"Not Complete"** is displayed : Incorrect input. Repeat the procedure.
13. Turn off the main switch.

(1) LCD (Liquid Crystal Display)
(2) Display Mode Switch

(a) Mode Selection Display
(b) Information Display
(c) Adjusting Display
(d) Correct Preserving Display
(e) Error Display

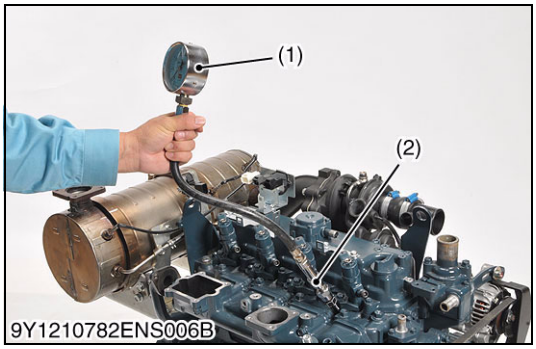
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4. CHECKING AND ADJUSTING

[1] ENGINE BODY



Compression Pressure

1. After warming-up the engine, remove the air cleaner, muffler, glow lead, and glow plugs.
2. Set a compression tester (1) (Code No.: 07909-39081) with the adaptor (2) to the glow plug hole.
3. Crank the engine with the starter to operate the engine approx. 200 to 300 min^{-1} (rpm).
4. Measure a maximum value of the compression pressure. Do the same steps twice for each cylinder.

■ **NOTE**

- **Examine the compression pressure with the specified valve clearance.**
- **Always use a fully charged battery for you do this test.**
- **Variances in cylinder compression values must be less than 10 %.**

Compression pressure	Factory specification	2.95 to 3.23 MPa 30.0 to 33.0 kgf/cm^2 427 to 469 psi
	Allowable limit	2.35 MPa 24.0 kgf/cm^2 341 psi

Tightening torque	Injector clamp screw	24 to 27 N·m 2.4 to 2.8 kgf·m 18 to 20 lbf·ft
	Cylinder head cover screw	6.86 to 11.3 N·m 0.700 to 1.15 kgf·m 5.06 to 8.33 lbf·ft
	Injection pipe retaining nut	24.5 to 29.4 N·m 2.50 to 2.99 kgf·m 18.1 to 21.6 lbf·ft

(1) Compression Tester (2) Glow Plug Adaptor

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2. SERVICING SPECIFICATIONS

ENGINE BODY

Item		Factory Specification	Allowable Limit
Valve Clearance (When Cold)		0.18 to 0.22 mm 0.0071 to 0.0086 in.	–
Compression Pressure (When You Crank the Engine with the Starter)		2.95 to 3.23 MPa / 290 min^{-1} (rpm) 30.0 to 33.0 kgf/cm^2 / 290 min^{-1} (rpm) 427 to 469 psi / 290 min^{-1} (rpm)	2.35 MPa / 290 min^{-1} (rpm) 24.0 kgf/cm^2 / 290 min^{-1} (rpm) 341 psi / 290 min^{-1} (rpm)
Difference among Cylinders		–	10 % or less
Top Clearance		0.60 to 0.70 mm 0.024 to 0.027 in.	–
Cylinder Head Surface	Flatness	–	0.05 mm / 500 mm 0.002 in. / 19.7 in.
Valve Recessing	Recessing	0.65 to 0.85 mm 0.026 to 0.033 in.	1.20 mm 0.0472 in.
Valve Stem to Valve Guide	Clearance	0.040 to 0.070 mm 0.0016 to 0.0027 in.	0.10 mm 0.0039 in.
• Valve Stem	O.D.	7.960 to 7.975 mm 0.3134 to 0.3139 in.	–
• Valve Guide	I.D.	8.015 to 8.030 mm 0.3156 to 0.3161 in.	–
Valve Face	Angle (Intake)	0.79 rad 45 °	–
	Angle (Exhaust)	0.79 rad 45 °	–
Valve Seat	Width (Intake)	2.12 mm 0.0835 in.	–
	Width (Exhaust)	2.12 mm 0.0835 in.	–
Valve Seat	Angle (Intake)	0.79 rad 45 °	–
	Angle (Exhaust)	0.79 rad 45 °	–
Valve Timing (Intake Valve)	Open	0.2 rad (9 °) before T.D.C.	–
	Close	0.68 rad (39 °) after B.D.C.	–
Valve Timing (Exhaust Valve)	Open	0.72 rad (41 °) before B.D.C.	–
	Close	0.2 rad (9 °) after T.D.C.	–

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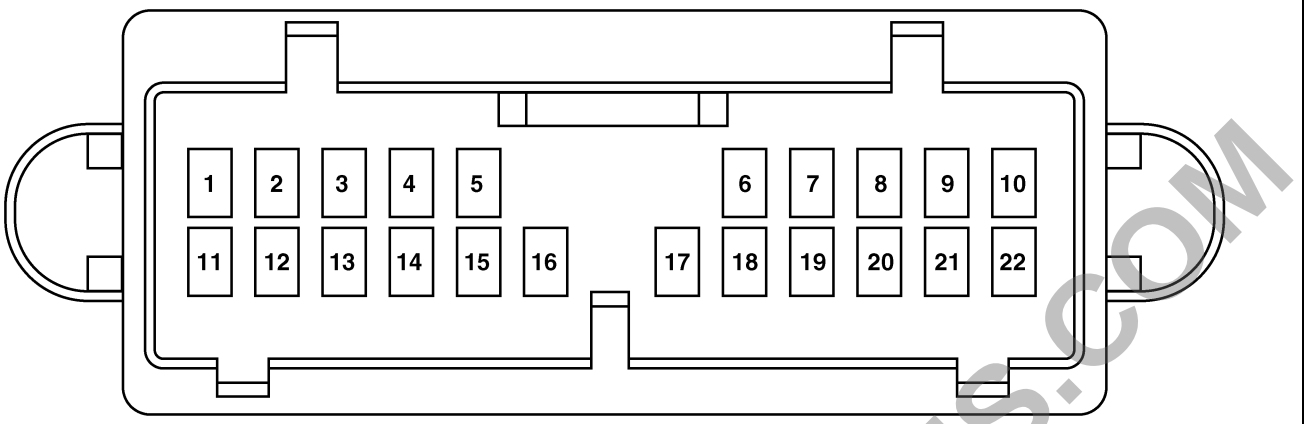
6. MAINTENANCE

No.	Item		Indication on hour meter														Interval	Reference page	Important	
			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	Greasing	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-25		
4	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-26	*4	
5	Fan belt	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-28		
6	Brake	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-20		
7	Clutch [GST/MT]	Adjust	★	☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-20	*4	
8	Air cleaner primary element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-28	*1	@
		Replace															every 1000 Hr or 1 year	G-35	*2	
	Secondary element	Replace																G-35	*2	
9	Transmission oil filter (HST)	Replace	★			☆				☆				☆			every 200 Hr	G-22		
10	Toe-in	Adjust				☆				☆				☆			every 200 Hr	G-29		
11	Engine oil	Change	★							☆							every 400 Hr	G-21		
12	Engine oil filter	Replace	★							☆							every 400 Hr	G-22		
13	Hydraulic oil filter	Replace								☆							every 400 Hr	G-31		
14	Transmission fluid	Change								☆							every 400 Hr	G-31		
15	Fuel filter	Replace								☆							every 400 Hr	G-32		@
16	Water separator	Replace								☆							every 400 Hr	G-33		
17	Front axle case oil	Change								☆							every 400 Hr	G-32		
18	Front axle pivot	Adjust												☆			every 600 Hr	G-33		
19	Engine valve clearance	Adjust															every 800 Hr	G-33		
20	Exhaust manifold	Check															every 1000 Hr or 1 year	G-35	*2	
21	Fuel injection nozzle tip	Clean															every 1500 Hr	G-34		@
22	Oil separator element	Replace															every 1500 Hr	G-34		@
23	PCV (Positive Crankcase Ventilation) valve (Oil separator)	Check															every 1500 Hr	G-34		@
24	EGR cooler	Check Clean															every 1500 Hr	G-34		@
25	Cooling system	Flush															every 2000 Hr or 2 years	G-40	*3	
26	Coolant	Change															every 2000 Hr or 2 years	G-40	*3	

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(2) Checking by Electronic Instrument Panel Connector



9Y1210824ELS033A

Connector of Wire Harness Side

No.	Color of wiring	Terminal Name
1	G	CAN (L)
2	Y	CAN (H)
3	–	–
4	–	–
5	–	–
6	–	–
7	–	–
8	B/W	Turn Signal Switch RH
9	G/L	Turn Signal Switch LH
10	B	GND
11	Br/Y	High-Beam Indicator
12	L	Engine Oil Pressure Switch
13	W/R	Alternator **L** Terminal
14	–	–
15	–	–
16	G/R	Parking Brake Switch
17	G/R	Illumintaion
18	Y/L	Fuel Level Sensor
19	–	–
20	Lg/B	Display Mode Switch
21	R/L	IGN
22	R	+12V (Power Souse from Battery)

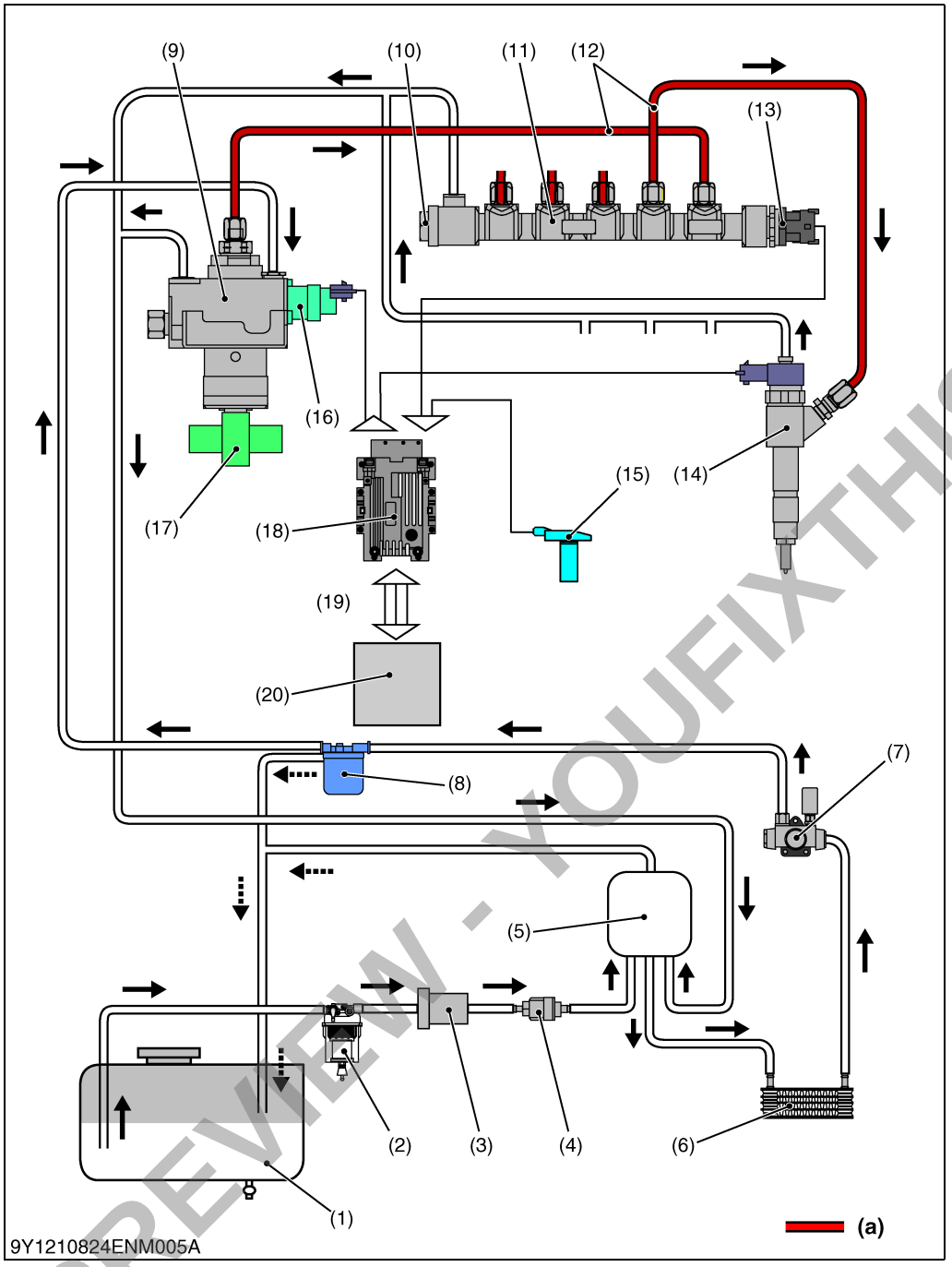
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5. FUEL SYSTEM

[1] OVERVIEW OF COMMON RAIL SYSTEM



(1) Fuel Tank
(2) Water Separator
(3) Electromagnetic Pump
(4) Check Valve
(5) Fuel Sub Tank
(6) Fuel Cooler
(7) Feed Pump
(8) Fuel Filter
(9) Supply Pump
(10) Pressure Limiter
(11) Rail
(12) Injection Pipe
(13) Rail Pressure Sensor
(14) Injector
(15) Sensor
(16) SCV (Suction Control Valve)
(17) Fuel Cam Shaft
(18) Engine ECU
(19) CAN Communication
(20) Main ECU

(a) High Pressure Circuit

The common rail system is an electronically controlled fuel injection device, with a supply pump (9) that pressurizes the fuel, a rail (11) that stores the high-pressure fuel, injectors (14) that inject the fuel under high-pressure based on solenoid operation into each cylinder and an engine ECU that controls all of these components.

The injection amount and injection timing by the injectors (14) and pressure of fuel stored in the rail are controlled by the engine ECU (18) based on signals from each sensor (15) and instructions sent by CAN communication (19) from the main ECU (20) on the tractor.

Therefore, fuel is injected under optimal conditions at all times enabling suppressing of that which is a characteristic of diesel engines, generation of black smoke on start up and under acceleration achieving reduction in exhaust gas and higher output power.

9Y1210824ENM0007US0

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Last digit of the Code No.	Issue month	Main Revised Point and Corrective Measures {Search word}	Reference Page
1	2015.11	Overheating Warning	9-M37
		2. SERVICING SPECIFICATIONS	9-S9
		(3) Mode "B" (Traveling Speed Coefficient Input Mode) Input the 4 Digit Tire Code for Correct Travel Speed to the Electronic Instrument Panel Memory Panel	9-S20
		(10) Mode "K" (HST Pedal and Range Shift Lever Fine-adjustment Mode)	9-S27
		(11) Mode "L" (Throttle Sensor Fine-adjustment Mode)	9-S29
		(13) Mode "N" (Tractor Model Select Mode)	9-S30
		(2) SCV (Suction Control Valve)	9-S76
		(7) Crankshaft Position Sensor	9-S81
		(11) Exhaust Temperature Sensor	9-S85
2	2016.03	Maintenance interval was improved.	G-13 to G-49
		CCV heater equipped model was introduced. Assembling and disassembling process in ENGINE was revised and some wiring diagram, electrical circuit and components are added in ELECTRICAL SYSTEM.	1-S1, 1-S17, 1-S29, 1-S46, 1-S47, 2-S9, 9-M2, 9-M4, 9-M6, 9-M8, 9-M10, 9-M12, 9-M14, 9-M16, 9-S34, 9-S35, 9-S89 to 9-S90, 10-S42, 10-S43

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[2] WHEEL ADJUSTMENT

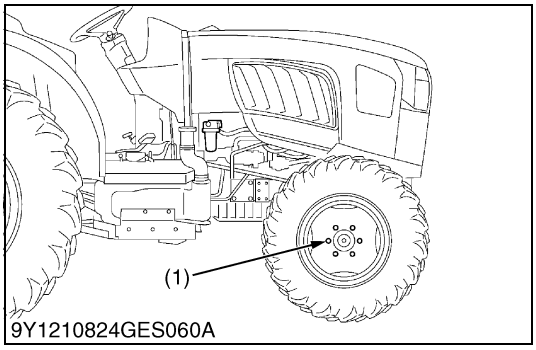
CAUTION

To avoid personal injury:

- **When working on slopes or when working with trailer, set the wheel tread as wide as practical for maximum stability.**
- **Support tractor securely on stands before removing a wheel.**
- **Do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered. If necessary to work under tractor or any machine elements for servicing or adjustment, securely support them with stands or suitable blocking beforehand.**
- **Never operate tractor with a loose rim, wheel, or axle.**

9Y1210824GEG0119US0

(1) Front Wheel



9Y1210824GES060A

Front Wheels (with Four Wheel Drive)

Front tread can not be adjusted.

■ **IMPORTANT**

- **Do not turn front discs to obtain wider tread.**
- **When re-fitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor 200 m (200 yards) and 10 times of shuttle movement by 5 m (5 yards), and thereafter according to service interval. (See page G-24.)**

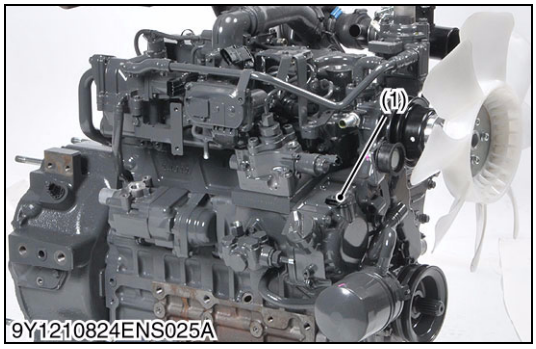
Tightening torque	Front wheel mounting nut (L3560, L4060, L4760)	137 N·m 14 kgf·m 100 lbf·ft
	Front wheel mounting nut (L5060, L5460, L6060)	185 N·m 19 kgf·m 136 lbf·ft

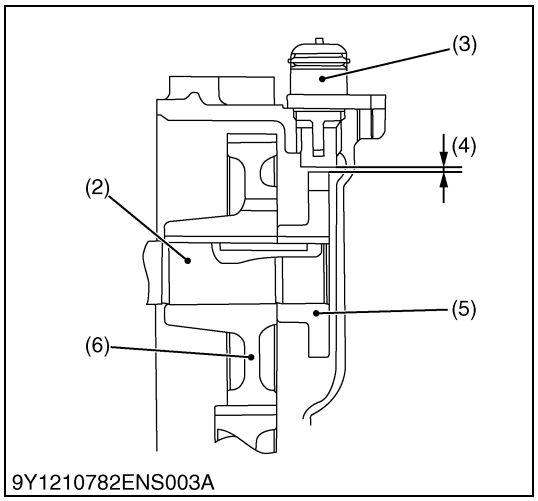
(1) Front Wheel Mounting Nut

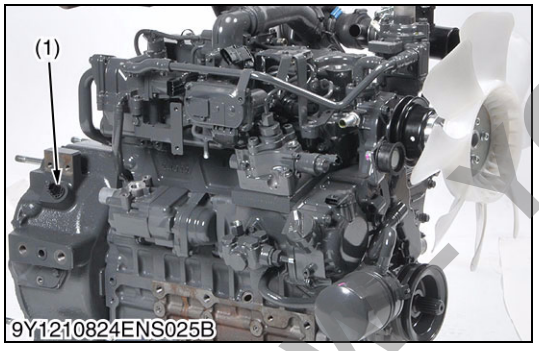
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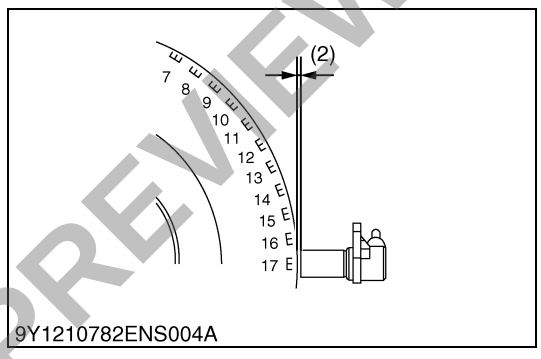
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Camshaft Position Sensor

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

(When reassembling)

- Replace the O-ring with a new one.

Air Gap	Factory specification	0.2 to 1.3 mm 0.008 to 0.059 in.

Tightening torque	Camshaft position sensor mounting screw	4 to 5 N·m 0.4 to 0.6 kgf·m 3 to 4 lbf·ft

■ **IMPORTANT**

- **If you drop the sensor, do not reuse it.**

(1) Camshaft Position Sensor
(2) Fuel Camshaft
(3) Sensor
(4) Air Gap
(5) Pulsa Cam
(6) Supply Pump Gear

9Y1210824ENS0035US0

Crankshaft Position Sensor

1. Remove the crankshaft position sensor mounting screw.
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.**

Air Gap	Factory specification	0.3 to 1.5 mm 0.002 to 0.059 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) Air Gap

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(4) Operation

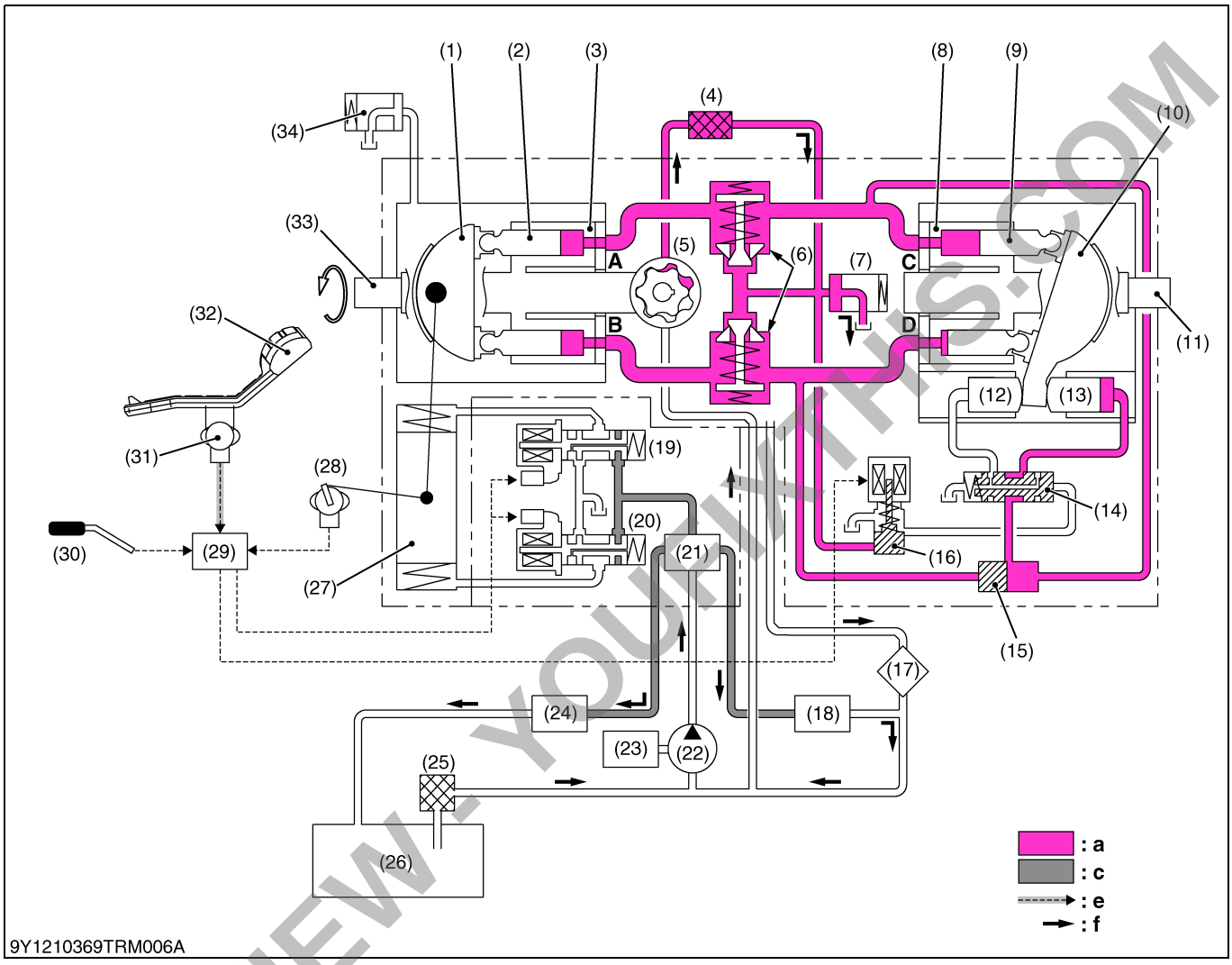
[A] Stage 1

■ When the HST pedal is in the neutral position

[Tractor Condition]

HST pedal: **Neutral** Position

Hi-Lo select lever: **Lo**



(1) Pump Swashplate
(2) Pump Piston
(3) Pump Cylinder Block
(4) HST Filter
(5) Charge Pump
(6) Check and High Pressure Relief Valve
(7) Charge Relief Valve
(8) Motor Cylinder Block
(9) Motor Piston
(10) Motor Swashplate
(11) Out Put Shaft (Motor Shaft)
(12) Piston H
(13) Piston L
(14) Hi-Lo Spool
(15) Spool (Pressure Selector)
(16) Hi-Lo Solenoid Valve
(17) Oil Cooler
(18) Power Steering Controller
(19) Proportional Valve (Reverse)
(20) Proportional Valve (Forward)
(21) Regulator Valve
(22) Hydraulic Pump
(23) Engine
(24) PTO Valve
(25) Filter
(26) Transmission Case
(27) Servo Piston
(28) Servo Position
(29) ECU
(30) Hi-Lo Selector Lever
(31) HST Pedal Sensor
(32) HST Pedal
(33) Input Shaft (Pump Shaft)
(34) Case Relief Valve

A: A Port
B: B Port
C: C Port
D: D Port

a: Charge Pressure
c: Return Oil
e: Signal
f: Oil Flow

When the HST pedal is in the neutral position, the HST pedal sensor continues to send signals to the ECU that the HST pedal is in the neutral position. The ECU does not send a signal to the proportional control valve when it receives a signal from the HST pedal sensor. As a result, the servo piston is kept in the neutral position.

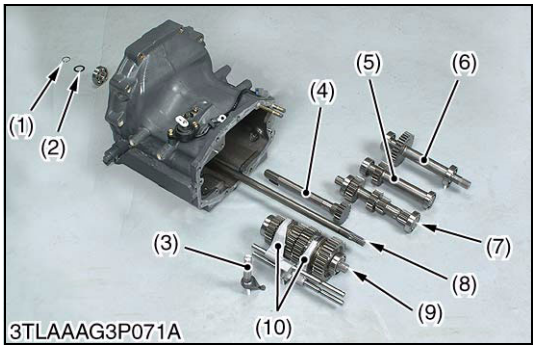
In this state, oil from the charge pump fills the HST housing and then is drained to the transmission case via the case relief valve.

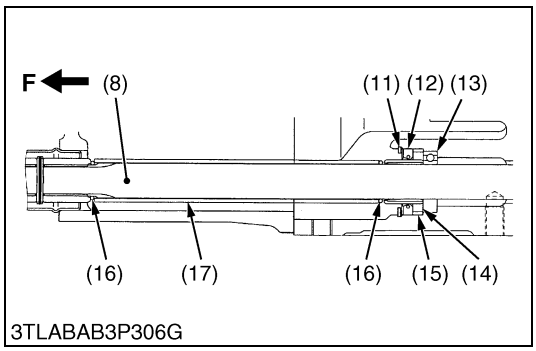
Oil from the hydraulic pump is depressurized by the regulator valve and sent to the PTO valve, power-steering controller, and proportional control valve, respectively.

9Y1210824TRM0032US0

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Shaft Assemblies

1. Remove the external snap ring (1) and thrust collar (2).
2. Draw out the shaft assemblies (4), (5), (6), (7), (9) and shift forks (10) and rods.
3. Pull out the front axle drive shaft (8) to the rear side.

(When reassembling)

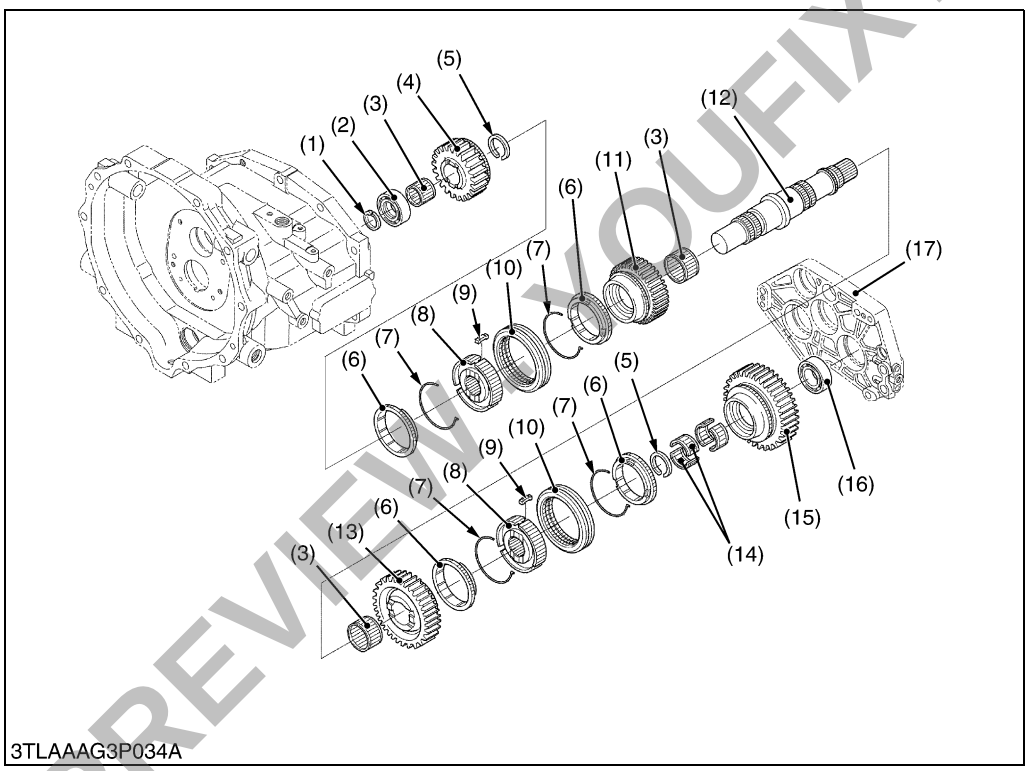
- Install the front axle drive shaft (8) from front side after assembling the clutch housing and mid case. Then install the bearing (13), sleeve (14), collar (15), oil seal (12), internal snap ring (11), O-ring (16) and spacer (17) in order.

(1) External Snap Ring
(2) Collar
(3) Shuttle Shift Arm
(4) 18T Gear Shaft Assembly
(5) Idle Shaft Assembly
(6) PTO Counter Shaft Assembly
(7) Main Gear Shaft Assembly
(8) Front Axle Drive Shaft
(9) Counter Shaft Assembly
(10) Shift Fork
(11) Internal Snap Ring
(12) Oil Seal
(13) Bearing
(14) Sleeve
(15) Collar
(16) O-ring
(17) Spacer

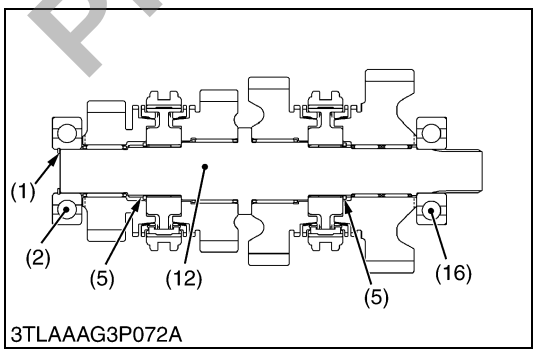
F: Front Side

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Counter Shaft



(1) Internal Snap Ring
(2) Bearing
(3) Needle Bearing
(4) 24T Gear (4th)
(5) External Snap Ring
(6) Synchronizer Ring
(7) Synchronizer Spring
(8) Hub
(9) Synchronizer Key
(10) Shifter
(11) 29T Gear (3rd)
(12) Counter Shaft
(13) 34T Gear (2nd)
(14) Needle Bearing
(15) 37T Gear (1st)
(16) Bearing
(17) Bearing Holder



1. Remove the internal snap ring (1) and remove both side of the bearings (2), (16).
2. Remove the gears on the counter shaft (12) and external snap rings (5).

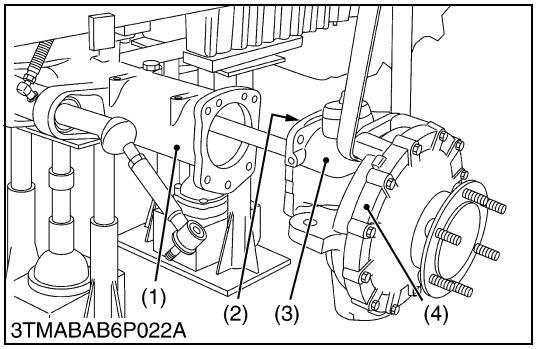
(When reassembling)

- Reinstall the synchronizer keys (9) in the key grooves of the synchronizer rings (6) firmly.

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Bevel Gear Case and Front Gear Case (L4760, L5060, L5460 and L6060)

1. Remove the bevel gear case mounting screws.
2. Remove the bevel gear case (3) and front gear case (4) as a unit from the front axle case (1).

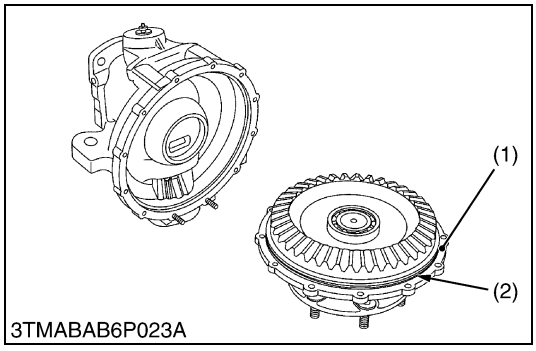
(When reassembling)

- Apply grease to the O-ring (2) and be careful not to damage it.
- Do not interchange right and left bevel gear case assemblies.

Tightening torque	Bevel gear case mounting screw	167 to 196 N·m 17.0 to 20.0 kgf·m 123 to 144 lbf·ft

(1) Front Axle Case
(2) O-ring
(3) Bevel Gear Case
(4) Front Gear Case

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Axle Flange and Front Gear Case

1. Remove the axle flange mounting screws.
2. Remove the axle flange (1).

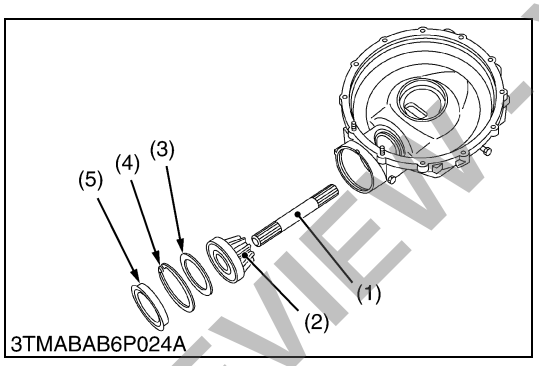
(When reassembling)

- Apply grease to the O-ring (2) of axle flange.
- Tighten the axle flange mounting screws and nuts diagonally in several steps.

Tightening torque	Axle flange mounting screw and nut	L3560 L4060	24 to 27 N·m 2.4 to 2.8 kgf·m 18 to 20 lbf·ft
		L4760 L5060 L5460 L6060	30 to 34 N·m 3.0 to 3.5 kgf·m 22 to 25 lbf·ft

(1) Axle Flange
(2) O-ring

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Bevel Gear and Bevel Gear Shaft

1. Remove the plug (5).
2. Remove the internal snap ring (4) and shim (3).
3. Tap out the bevel gear (2) with ball bearing.
4. Draw out the bevel gear shaft (1).

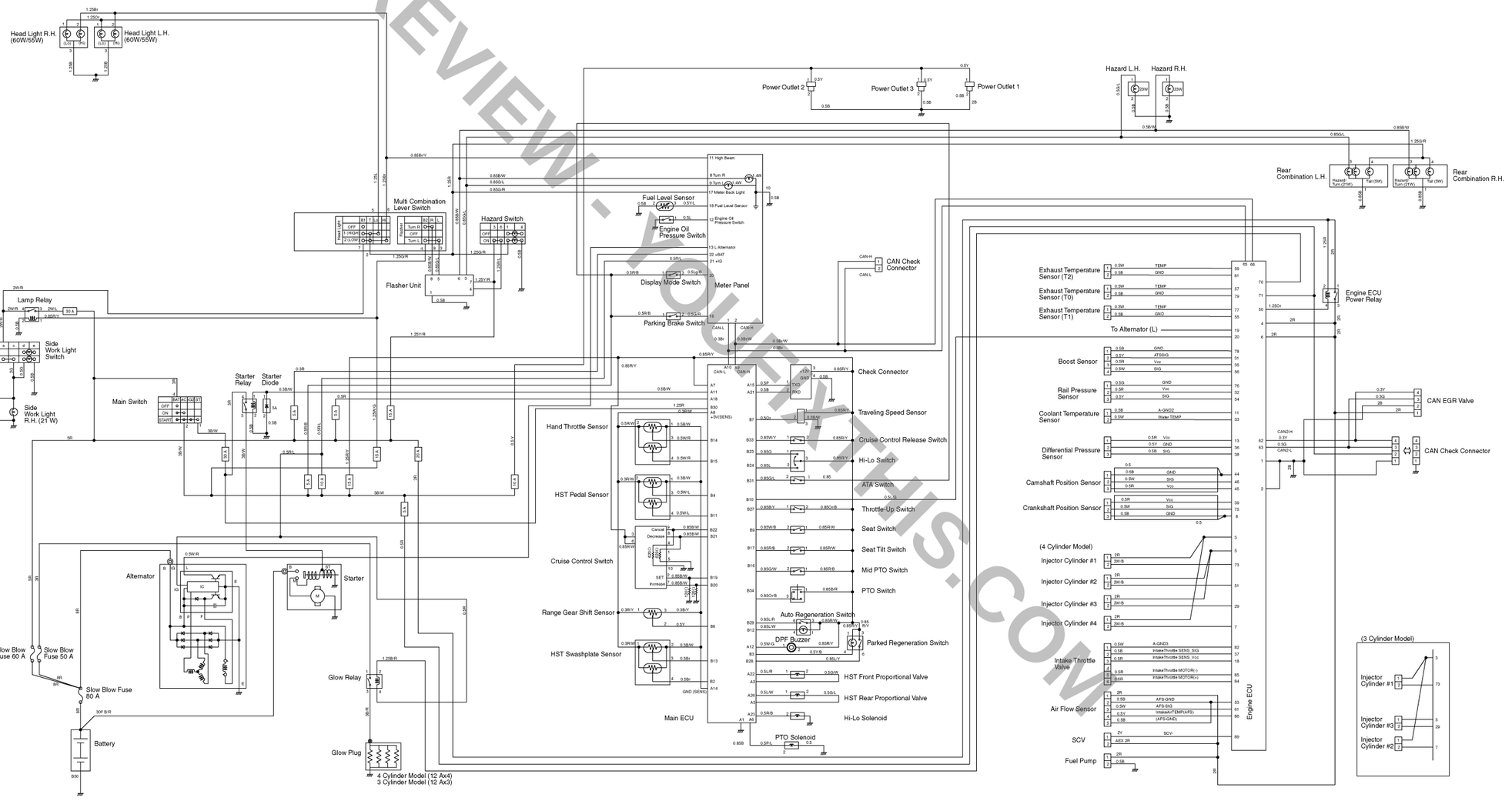
(1) Bevel Gear Shaft
(2) Bevel Gear
(3) Shim
(4) Internal Snap Ring
(5) Plug

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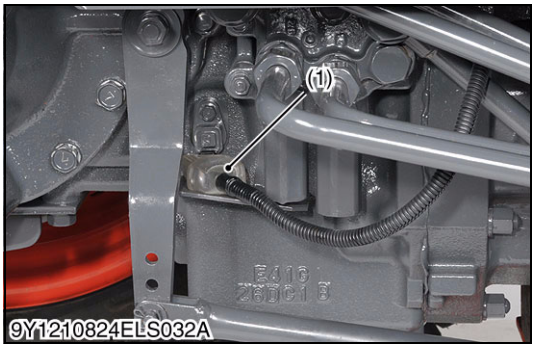
[5] HST ROPS TYPE (WITHOUT CCV HEATER)

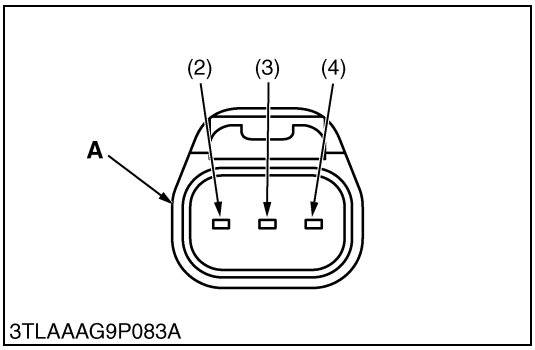


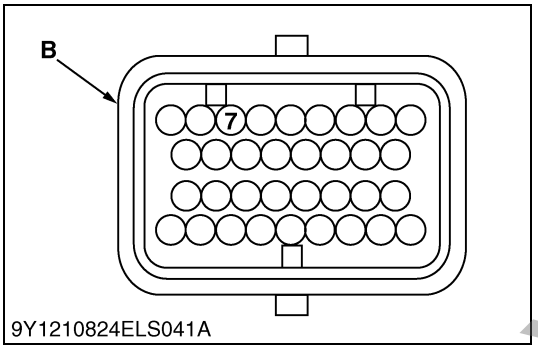
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Traveling Speed Sensor

1. Measure the resistance between terminal **7** of main ECU connector **B** and terminal **2** of sensor connector.
2. If 0 ohm is not indicated, the wiring harness is faulty.

■ **NOTE**
- **It is not necessary to adjust any kind of mode.**

Resistance	Terminal **2** of sensor connector – Terminal **7** of main ECU connector **B**	0 Ω
	Terminal **3** of sensor connector – Chassis	

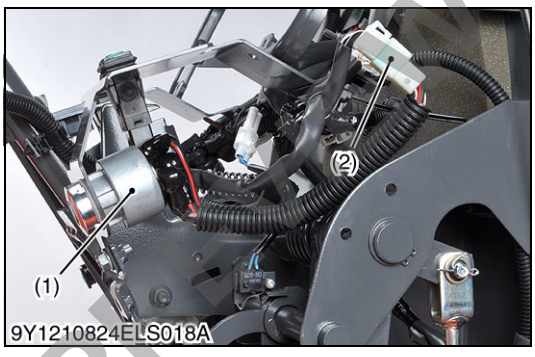
(1) Traveling Speed Sensor
(2) Terminal **1**
(3) Terminal **2**
(4) Terminal **3**

A : Connector of Wire Harness Side
B : Main ECU Connector B (34P) of Wire Harness Side

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[6] STARTING SYSTEM

(1) Main Switch (ROPS Type)

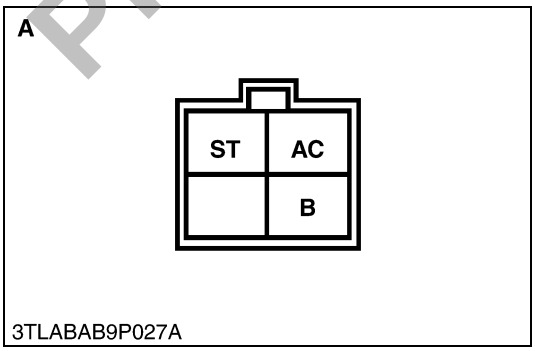


Main Switch

1. Remove the panel cover.
2. Disconnect the main switch connector (2).
3. Perform the following checking.

(1) Main Switch
(2) Main Switch Connector

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Connector Voltage

1. Measure the voltage across the connector **B** terminal and chassis.
2. If the voltage differs from the battery voltage (11 to 14 V), the wiring harness is faulty.

Voltage	Connector **B** terminal – Chassis	Approx. battery voltage

A: Wire Harness Side Connector 4C

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