3. SPECIFICATIONS

Model			B2301	B2601
PTO power *1			17.5 kW (13.0 HP)	19.5 kW (14.5 HP)
Engine	Maker		KUBOTA	
	Model		D1005-E4-D32	D1105-E4-D32
	Type		E-TVCS. Liquid-cooled, 3-cylinder diesel	
	Number of cylinders		3	
	Bore and stroke		76 × 73.6 mm (3.0 × 2.9 in.)	78 × 78.4 mm (3.1 × 3.1 in.)
	Total displacement		1001 cc (61.1 cu.in.)	1123 cc (68.5 cu.in.)
	Engine gross power *1		22 kW (16.4 HP)	25.5 kW (19.0 HP)
	Rated revolution		2800 min^{-1} (rpm)	
	Low idling revolution		1000 to 1100 min^{-1} (rpm)	
	Maximum torque		60 N·m (6.1 kgf·m, 44 lbf·ft)	71 N·m (7.2 kgf·m, 52 lbf·ft)
	Battery		12 V, RC: 80 min, CCD: 430 A	
Capacities	Fuel tank		23 L (6.1 U.S.gals, 5.1 Imp.gals)	
	Engine crankcase (with filter)		3.1 L (3.3 U.S.qts, 2.7 Imp.qts)	
	Engine coolant		3.8 L (4.0 U.S.qts, 3.3 Imp.qts)	
	Transmission case		15 L (4.0 U.S.gals, 3.3 Imp.gals)	
Dimensions	Overall length (without 3P)		2380 mm (93.7 in.)	2410 mm (94.9 in.)
	Overall width (min. tread)		1150 mm (45.3 in.)	1245 mm (49.0 in.)
	Overall height		2130 mm (83.9 in.)	2160 mm (85.0 in.)
	Wheel base		1560 mm (61.4 in.)	
	Minimum ground clearance		305 mm (12.0 in.)	325 mm (12.8 in.)
	Tread	Front	800 mm (31.5 in.)	815 mm (32.1 in.)
		Rear	900 mm (35.5 in.)	950 mm (37.4 in.)
Weight			710 kg (1566 lbs)	740 kg (1632 lbs)
Clutch			Not applicable	
Traveling system	Tires	Front	6-12	7-12
		Rear	9.5-16	11.2-16
	Steering		Hydraulic type power steering	
	Transmission		HST (3 range)	
	Brake		Wet disk type	
	Minimum turning radius (with brake)		2.1 m (6.9 feet)	
Hydraulic unit	Hydraulic control system		Position Control Valve	
	Pump capacity		31.4 L/min (8.3 gals/min)	
	3-point hitch		SAE Category 1	
	Max. lift force	At lift points	820 kg (1808 lbs)	
		24 in. behind lift point	640 kg (1411 lbs)	
PTO	Rear-PTO		SAE 1-3/8, 6 splines	
		PTO / Engine speed	540 min^{-1} (rpm) / 2768 min^{-1} (rpm)	
	Mid-PTO		USA No.5 (KUBOTA 10-tooth) involute spline	
		PTO / Engine speed	2500 min^{-1} (rpm) / 2753 min^{-1} (rpm)	

■ **NOTE**

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

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5. TIGHTENING TORQUES

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

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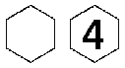
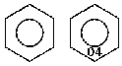
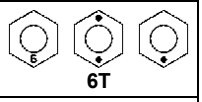
[1] GENERAL USE SCREWS, BOLTS AND NUTS

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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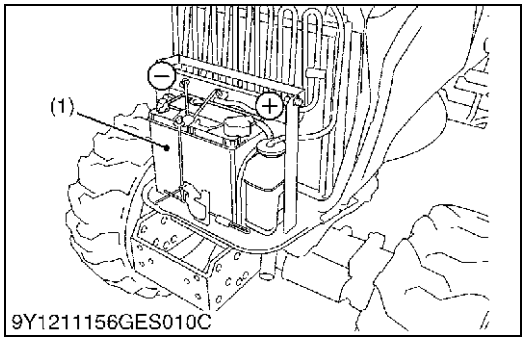

Battery Charging

WARNING

To avoid personal injury or death:

- **When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.**
- **When charging the battery, ensure the vent caps are securely in place. (if equipped)**
- **When disconnecting the cable from the battery, start with the negative terminal first.**
  When connecting the cable to the battery, start with the positive terminal first.
- **Never check battery charge by placing a metal object across the posts.**
  Use a voltmeter or hydrometer.

1. To slow charge the battery, connect the battery positive terminal to the charger positive terminal and the negative to the negative, then recharge in the standard fashion.
2. A boost charge is only for emergencies. It will partially charge the battery at a high rate and in a short time.
   When using a boost-charged battery, it is necessary to recharge the battery as early as possible.
   Failure to do this will shorten the battery's service life.
3. The battery is charged if the indicator display turns green from black.
4. When exchanging an old battery into new one, use battery of equal specification shown in table 1.

Table 1

Battery Type	Volt (V)	Capacity at 5 H.R.	Reserve at (min.)	Cold Cranking Amps (A)	Normal Charging Rate (A)
55B24L (S)-MF	12	36	80	430	4.5

■ Direction for Storage

1. When storing the tractor for long periods of time, remove the battery from tractor, adjust the electrolyte to the proper level and store in a dry place out of direct sunlight.
2. The battery self-discharges while it is stored.
   Recharge it once every three months in hot seasons and once every six months in cold seasons.

(1) Battery

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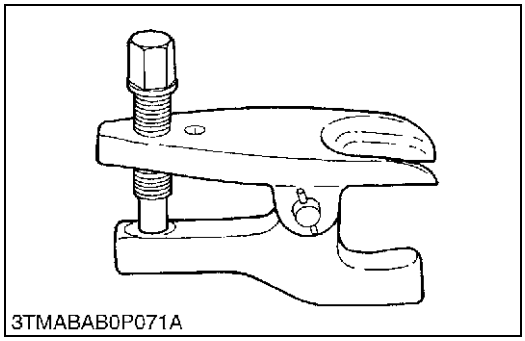
[2] SPECIAL TOOLS FOR TRACTOR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Tie-rod End Lifter

Code No.
- 07909-39051

Application
- Use to remove the tie-rod end with ease.

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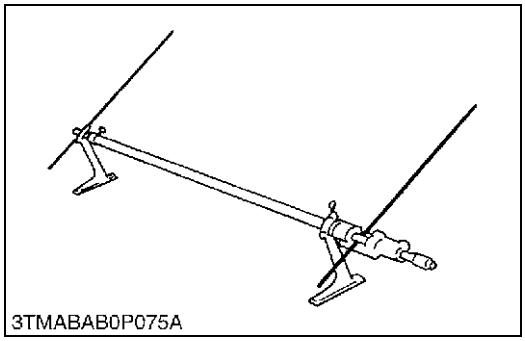
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Toe-in Gauge

Code No.
- 07909-31681

Application
- This allows easy measurement of toe-in for all machine models.

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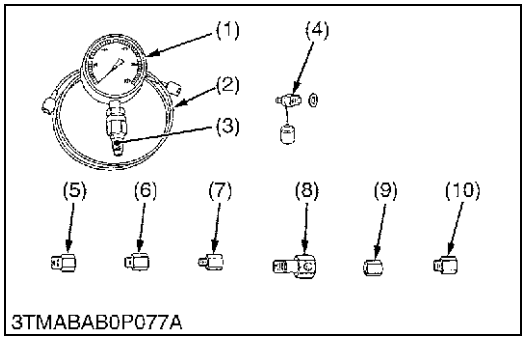

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Relief Valve Pressure Tester

Code No.
- 07916-50045

Application
- This allows easy measurement of relief set pressure.

(1) Gauge (07916-50322)
(2) Cable (07916-50331)
(3) Threaded Joint (07916-50401)
(4) Threaded Joint (07916-50341)
(5) Adaptor **B** (M18 × P1.5) (07916-50361)
(6) Adaptor **C** (PS3/8) (07916-50371)
(7) Adaptor **D** (PT1/8) (07916-50381)
(8) Adaptor **E** (PS3/8) (07916-50392)
(9) Adaptor **F** (PF1/2) (07916-62601)
(10) Adaptor **58** (PT1/4) (07916-52391)

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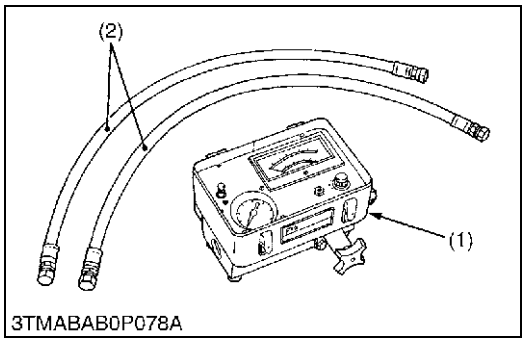

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Flow Meter

Code No.
- 07916-52791 (Flow Meter)
- 07916-52651 (Hydraulic Test Hose)

Application
- This allows easy testing of hydraulic system.

(1) Flow Meter
(2) Hydraulic Test Hose

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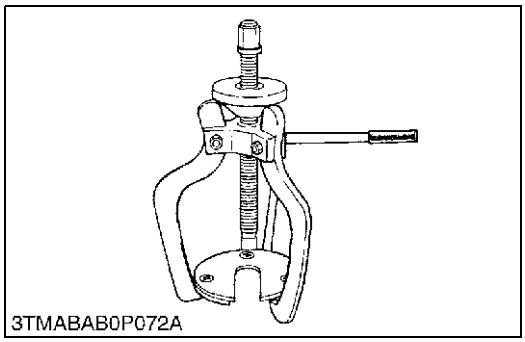
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Steering Wheel Puller

Code No.
- 07916-51090

Application
- Use to remove the steering wheel without damage to the steering shaft.

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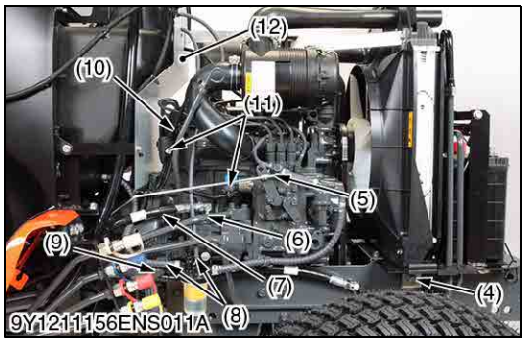
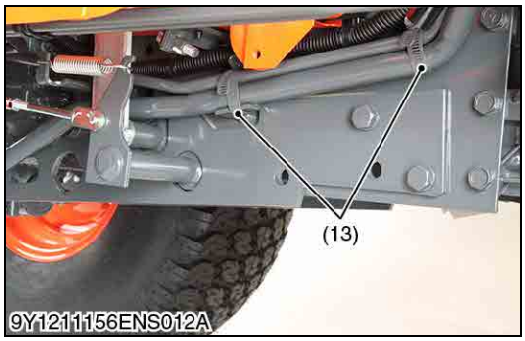
Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
Either Black or Dark Gray Exhaust Gas Is Observed	1. Low grade fuel used	Check fuel	G-8
	2. Fuel filter clogged	Solution order 1. Replace fuel filter	G-24
		2. Check or change fuel	G-8
	3. Air cleaner clogged	Clean or change air cleaner	G-23
	4. Deficient nozzle injection	Solution order 1. Inspect injection nozzle	1-S27
		2. Replace or clean injection nozzle	
Deficient Output	1. Incorrect injection timing	Solution order 1. Check injection timing	1-S17
		2. Adjust injection timing	
	2. Injection pump malfunctioning	Replace injection pump	1-S30
	3. Uneven fuel injection	Replace injection pump	1-S30
	4. Deficient nozzle injection	Solution order 1. Inspect injection nozzle	1-S17
		2. Replace or clean injection nozzle	
	5. Compression leak	Solution order 1. Check compression pressure	1-S12
		2. Check or replace head gasket	1-S27
		3. Inspect or replace piston or piston ring	1-S34, 1-S46
		4. Inspect or replace cylinder	1-S51
	6. Gas leak from exhaust system	Repair or replace exhaust system	1-S25
	7. Air cleaner dirty or clogged	Clean or change air cleaner	G-23
Excessive Lubricant Oil Consumption	1. Piston ring's gap facing the same direction	Repair piston ring gap	1-S46
	2. Oil ring worn or stuck	Solution order 1. Inspect piston ring and cylinder	1-S46, 1-S51
		2. Replace piston ring or cylinder	1-S34, 1-S51
	3. Piston ring groove worn	Replace piston	1-S44
	4. Valve stem and valve guide worn	Inspect or replace valve stem and valve guide	1-S38
	5. Crankshaft bearing and crank pin bearing worn	Inspect or replace crankshaft and crank pin	1-S47
Fuel Mixed into Lubricant Oil	1. Injection pump's plunger worn	Repair or replace injection pump	1-S30
	2. Deficient nozzle injection	Repair or replace nozzle	1-S20
	3. Injection pump broken	Replace injection pump	1-S30
Water Mixed into Lubricant Oil	1. Head gasket damaged	Replace head gasket	1-S27
	2. Cylinder block or cylinder head flawed	Replace cylinder head	1-S27





Accelerator Rod, Power Steering Hose, Fuel Hoses, Connectors and Others (Right Side)

1. Remove the spring plates (1), oil cooler mounting bolts (2) and oil cooler (3).
2. Remove the clamp (4) and the accelerator rod (5).
3. Disconnect the power steering hose (7), hydraulic delivery pipe (6) and hydraulic inlet hose (9).
4. Disconnect the fuel hoses (8).
5. Disconnect the connectors (11) and glow plug harness (10).
6. Remove the shuttle plate (12).
7. Disconnect the clamp (13).

Tightening torque	Power steering hose 2	24 to 28 N·m 2.5 to 2.8 kgf·m 18 to 20 lbf·ft

(1) Spring Plate
(2) Bolt
(3) Oil Cooler
(4) Clamp
(5) Accelerator Rod
(6) Hydraulic Delivery Pipe
(7) Power Steering Hose
(8) Fuel Hose
(9) Hydraulic Inlet Hose
(10) Glow Plug Harness
(11) Connector
(12) Shuttle Plate
(13) Clamp

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Separating Clutch Housing

1. Support the transmission with a disassembling stand.
2. Hook the engine with a hoist.
3. Remove the docking bolts and nuts between the engine and the front case.

(When reassembling)

- Align the spline between the front wheel drive shaft and the coupling securely.
- Tighten the docking bolts between the engine and the front case securely.
- Apply liquid gasket (Three Bond 1206D or equivalent) to the joint face of the engine and the front case.

9Y1211156ENS0030US0

(3) Separating Engine from Front Axle Frame

Separating Engine from Front Axle Frame

■ **NOTE**

- **When you replace the engine with new one, please record the serial number of new engine and the parts number which is incorporate with its new engine.**

1. Remove the engine and front axle frame mounting screw and separate the engine from the front axle frame.

Tightening torque	Engine mounting screw	59 to 69 N·m 6.1 to 7.0 kgf·m 44 to 50 lbf·ft

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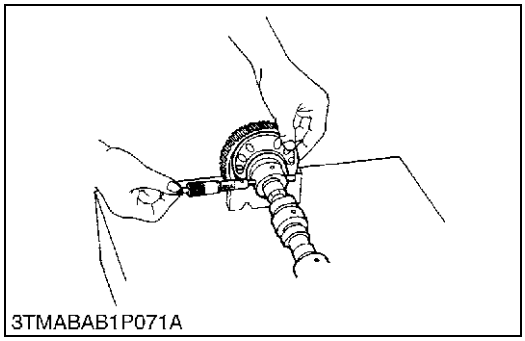
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Oil Clearance of Camshaft Journal

1. Measure the camshaft journal O.D. with an outside micrometer.
2. Measure the cylinder block bore I.D. for camshaft with a cylinder gauge, and calculate the oil clearance.
3. If the oil clearance exceeds the allowable limit, replace the camshaft.

Oil clearance of camshaft journal	Factory specification	0.050 to 0.091 mm 0.0020 to 0.0035 in.
	Allowable limit	0.15 mm 0.0059 in.

Camshaft journal O.D.	Factory specification	35.934 to 35.950 mm 1.4147 to 1.4153 in.
Camshaft bearing I.D. (Cylinder block bore I.D.)	Factory specification	36.000 to 36.025 mm 1.4173 to 1.4183 in.

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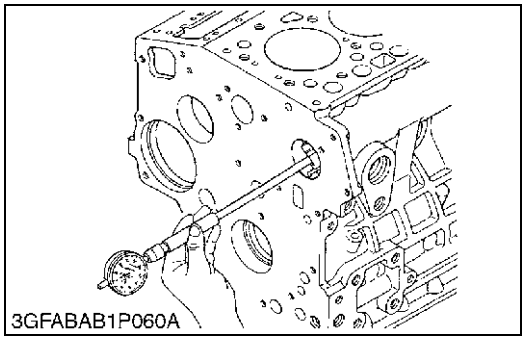
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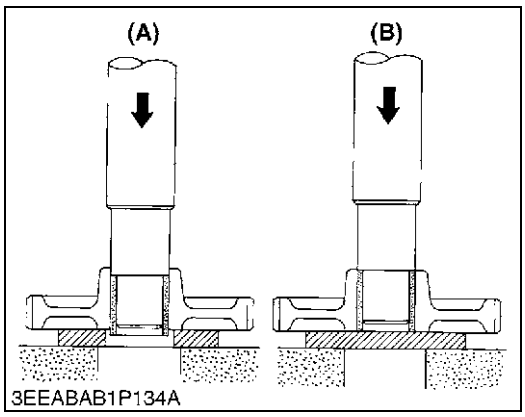

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Replacing Idle Gear Bushing

(When removing)

1. Press out the used idle gear bushing using an idle gear bushing replacing tool. (See page "SPECIAL TOOLS".)

(When installing)

1. Clean a new idle gear bushing and idle gear bore, and apply engine oil to them.
2. Press in a new bushing using an idle gear bushing replacing tool, until it is flush with the end of the idle gear.

(A) When Removing **(B) When Installing**

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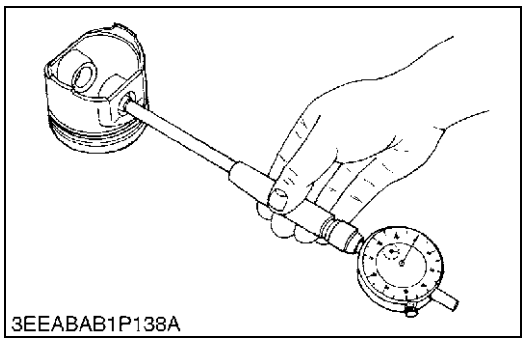
(3) Piston and Connecting Rod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Piston Pin Bore I.D.

1. Measure the piston pin bore I.D. in both the horizontal and vertical directions with a cylinder gauge.
2. If the measurement exceeds the allowable limit, replace the piston.

Piston pin bore I.D.	Factory specification	22.000 to 22.013 mm 0.86615 to 0.86665 in.
	Allowable limit	22.03 mm 0.8673 in.

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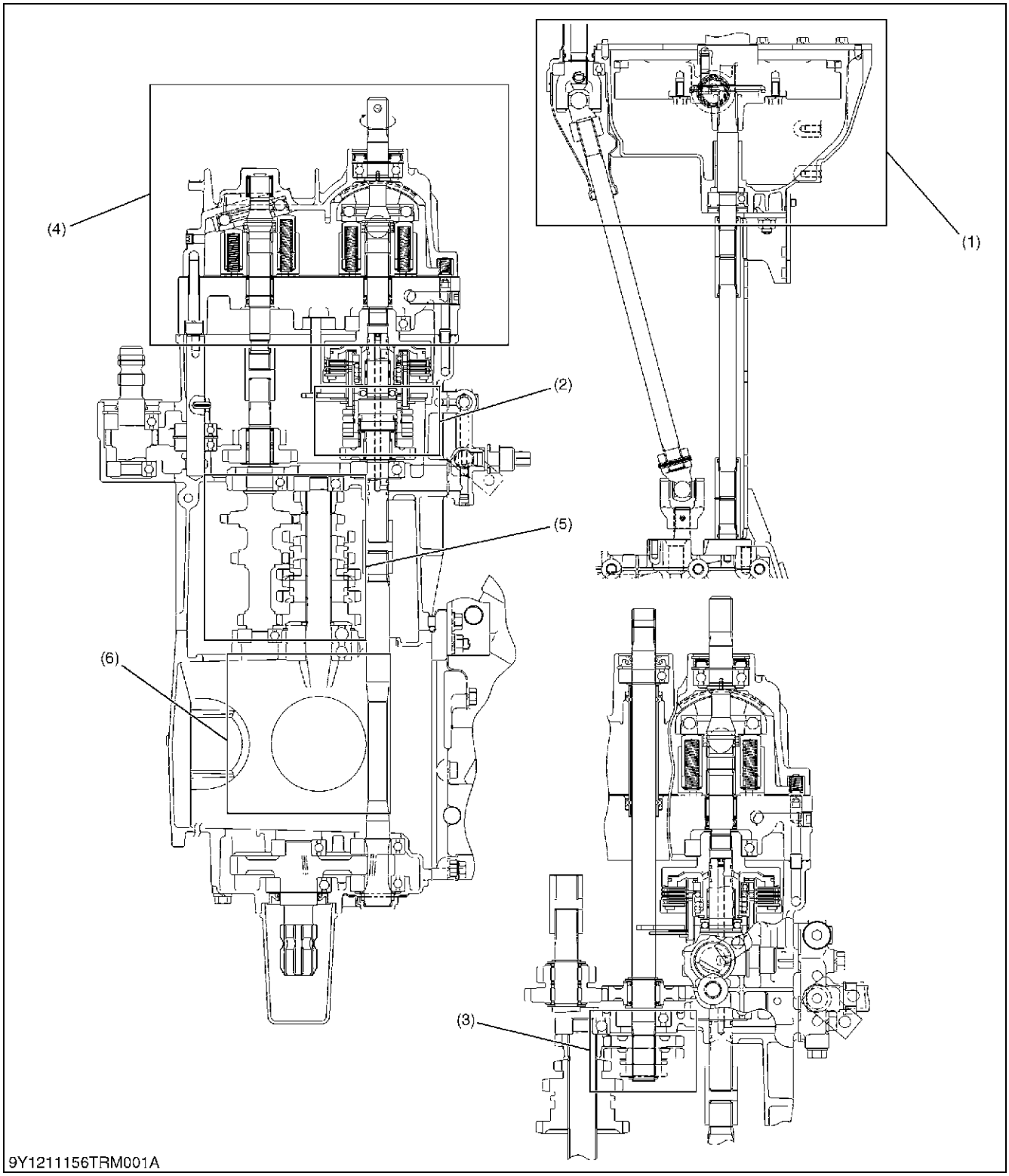
1. STRUCTURE



(1) Front Case Section
(2) Rear PTO and Mid PTO Shift Section
(3) Front Wheel Drive Section
(4) Hydrostatic Transmission Section
(5) Range Gear Shift Section
(6) Differential Gear Section

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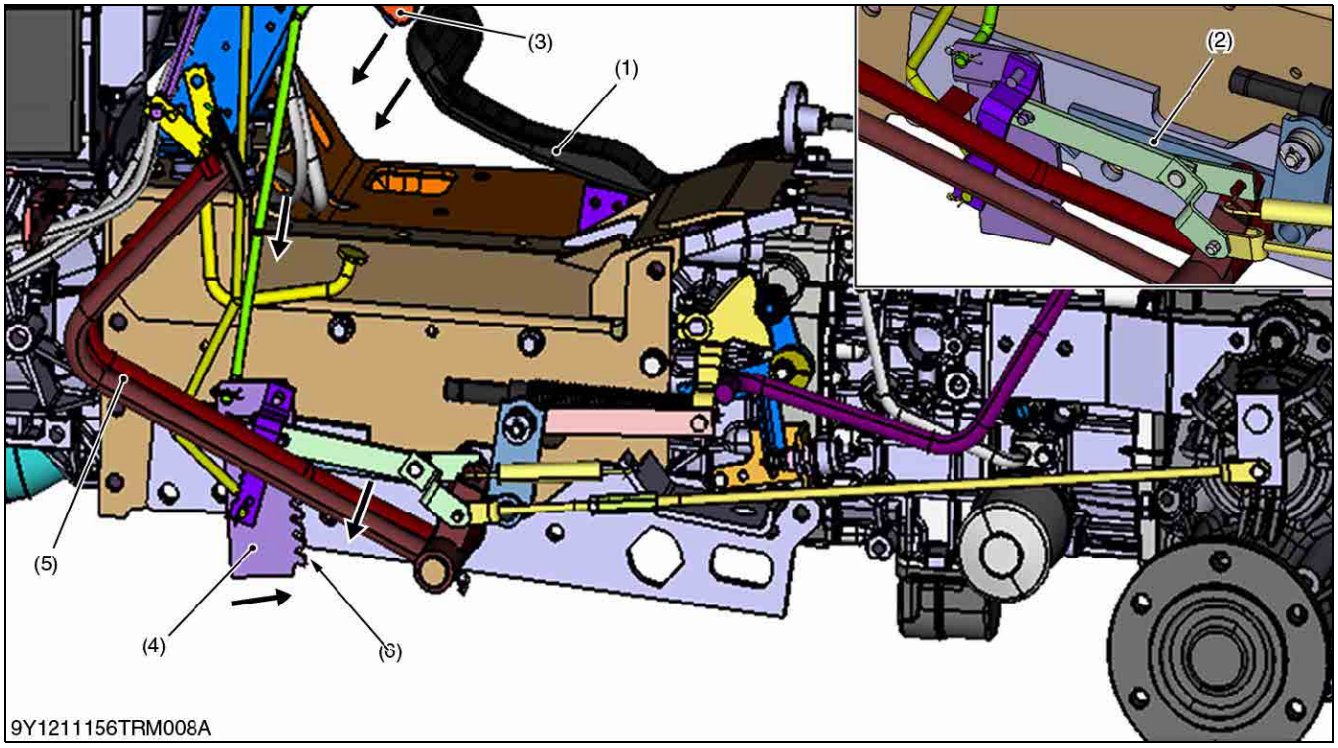
4. SPEED SET DEVICE

[1] SPEED SET LINKAGE

(1) Speed Set



(1) HST pedal
(2) Lever
(3) Speed Set Lever
(4) Speed Set Holder
(5) Brake Pedal
(6) Tooth

The speed set device mainly consists of HST pedal holding section and HST pedal releasing section.
When the HST pedal (1) is see to the desired position, the lever (2) turns counter clockwise.
The speed set lever (3) to the **"ON"** position.
The speed set holder (4) turns counter clockwise.
On the other hand, sine lever engage with tooth (6) of speed set holder (4), the HST pedal (1) is held at the desired set position until the brake pedals (5) will be depressed by an operator.

9Y1211156TRM0011US0

DIFFERENTIAL CASE SECTION

Symptom	Probable Cause	Solution	Reference Page
Excessive or Unusual Noise at All Time	1. Insufficient or improper type of transmission fluid used	Check transmission oil	G-8
	2. Improper backlash between spiral bevel pinion and bevel gear	Inspect or adjust backlash	2-S44
	3. Improper backlash between differential pinion and differential side gear	Inspect or adjust backlash	2-S43
	4. Bearing worn	Inspect or replace bearing	2-S41
Noise while Turning	1. Differential pinions or differential side gears worn or damaged	Inspect or replace differential pinion or differential side gear	2-S38
	2. Differential lock binding (does not disengage)	Repair or replace differential lock shifter	3-S4
	3. Bearing worn	Inspect or replace bearing	2-S21
Differential Lock Can Not Be Set	1. Differential lock shift fork damaged	Replace differential shift fork	3-S4
	2. Differential lock shifter mounting pin damaged	Replace differential lock shifter	3-S4
Differential Lock Pedal Does Not Return	1. Differential lock fork shaft rusted	Repair or replace differential lock fork shaft	3-S4
	2. Differential lock pedal return spring weakened or damaged	Replace return spring	2-S41

9Y1211156TRS0001US0

[3] DISASSEMBLING AND ASSEMBLING

(1) Separating Engine and Clutch Housing

• See page 1-S23.

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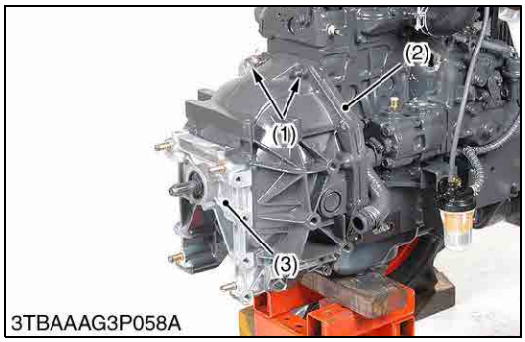
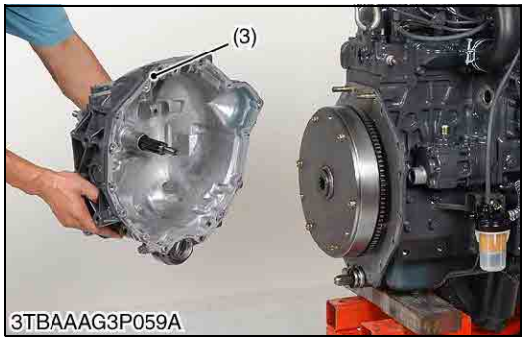
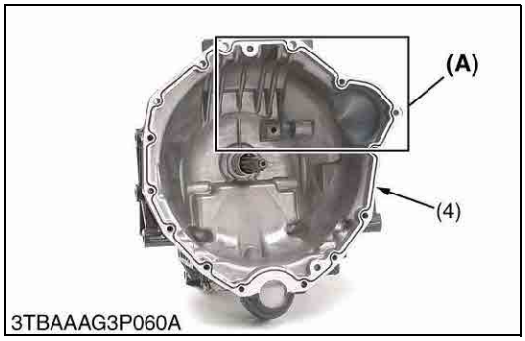
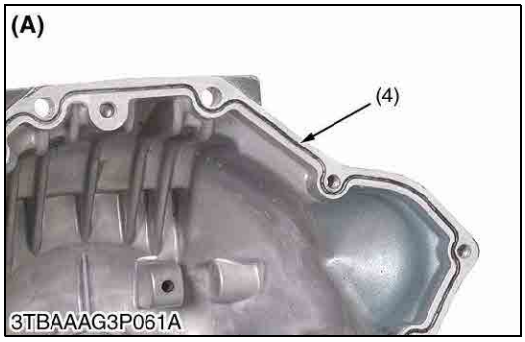
(2) Front Case









Clutch Housing

1. Support the engine securely.
2. Remove the front case mounting bolts (1).
3. Remove the front case (3) from the engine.

(When reassembling)

- Apply liquid gasket (Three Bond 1206D or equivalent) to the joint face of the engine and the front case.

Tightening torque	Front case mounting nut for aluminum material (M8)	17.7 to 20.5 N·m 1.8 to 2.1 kgf·m 13.1 to 15.1 lbf·ft
	Front case mounting bolt for aluminum material (M10)	39.3 to 44.1 N·m 4.0 to 4.5 kgf·m 29.0 to 32.5 lbf·ft

(1) Bolt
(2) Engine Rear-End Plate
(3) Front Case
(4) Groove (for liquid gasket)

(A) Front Case Corner

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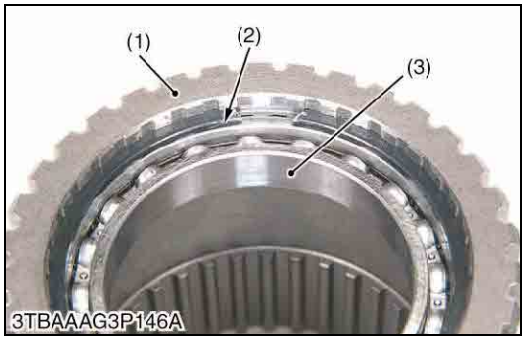

Spline Boss Circlip

1. Push the circlip with a small screw driver through the small hole of the spline boss (1).
2. Lift the circlip (2) with a screw driver not to damage it.

(When reassembling)

- Install the circlip (2) holding it by hands.

(1) Spline Boss
(2) Circlip
(3) Ball Bearing

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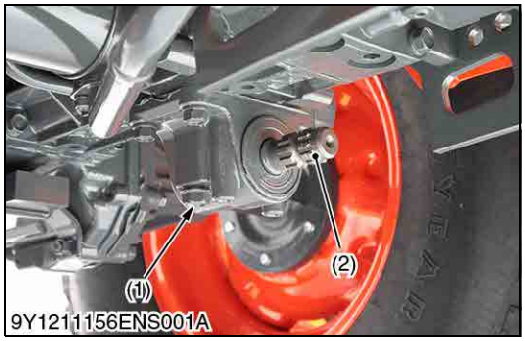
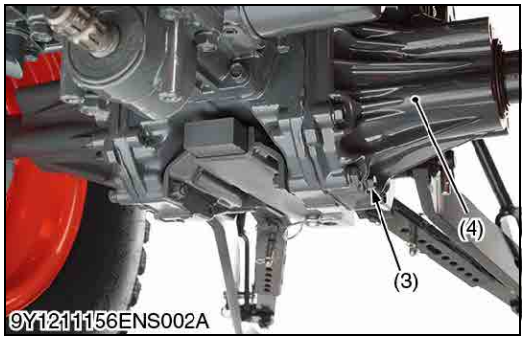
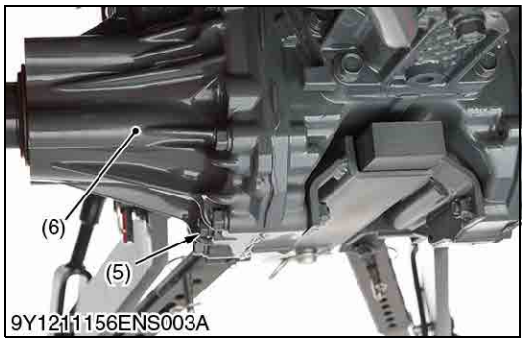
3. DIASSEMBLING AND SERVICING

[1] DIASSEMBLING AND ASSEMBLING

(1) Separating Rear Axle Case







Draining Transmission Fluid

CAUTION

- **Stop the engine before checking and changing the transmission fluid.**

1. Place the oil pan under the tractor.
2. Remove the drain plugs (1), (3), (5) at the mid-PTO shaft and at the bottom of the rear axle cases (4), (6).
3. Drain the transmission fluid.
4. After draining the transmission fluid, reinstall the drain plugs (1), (3), (5).

IMPORTANT

- **Use only KUBOTA UDT oil. Use of other oils may damage the transmission or hydraulic system.**
  Refer to "4. LUBRICANTS, FUEL AND COOLANT" on page G-8.
- **Never work the tractor immediately after changing the transmission oil. Keep the engine at medium speed for a few minutes to prevents damage to the transmission.**
- **Do not mix different brands oil together.**

Transmission fluid capacity	15 L 4.0 U.S.gals 3.3 Imp.gals

(1) Drain Plug
(2) Mid-PTO Shaft
(3) Drain Plug
(4) Rear Axle Case (L.H.)
(5) Drain Plug
(6) Rear Axle Case (R.H.)

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Battery Cable

1. Open the bonnet and remove the side cover.
2. Disconnect the battery negative cable (1).

NOTE

- **When disconnecting the battery cables, disconnect the grounding cable first. When connecting, the positive cable first.**

(1) Battery Negative Cable

9Y1211156RAS0003US0

Rear Wheel

1. Place the disassembling stand under the transmission case.
2. Remove the rear wheel (1).

Tightening torque	Rear wheel mounting nut and screw	145 to 150 N·m 14.8 to 15.2 kgf·m 107 to 110 lbf·ft

(1) Rear Wheel

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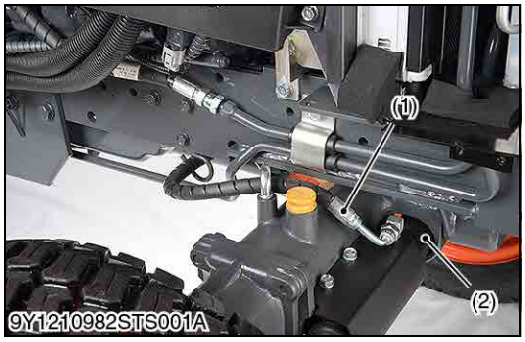
4. CHECKING, DISASSEMBLING AND SERVICING

[1] CHECKING

(1) Relief Valve



Relief Valve Operating Pressure

1. Disconnect the power steering hose L.H. (or R.H.) from steering the power steering cylinder, and set a pressure gauge and cable.

(Reference)

- Hose and adaptor size: 9/16-18UNF, 37 ° flare.

2. Start the engine and set at maximum speed.
3. Fully turn the steering wheel to the left (or right) to check the feeling which the steering wheel lightly locks. Read the relief valve operating pressure when the steering wheel to the above-mentioned lock position by operation force at approximately 9.8 N (1 kgf, 2.2 lbf) of outer.

■ **NOTE**

- **After set a pressure gauge, be sure to bleed air.**
- **Note that the pressure value changes by the pump action of the power steering controller when the steering operation is continued after the steering wheel is lightly locked and accurate relief valve pressure cannot be measured.**

(Bleeding air in power steering circuit)

- Start the engine.
- Turn the steering wheel slowly in both directions all the way alternately several times, and stop the engine.

Relief valve operating pressure	Factory specification	11.5 to 12.5 MPa 118 to 127 kgf/cm^2 1670 to 1810 psi

Tightening torque	Power steering hose for power steering cylinder	24 to 28 N·m 2.5 to 2.9 kgf·m 18 to 20 lbf·ft

(1) Power Steering Hose (R.H.)
(2) Power Steering Cylinder
(3) Power Steering Hose (L.H.)

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(2) Hydraulic Pump for Power Steering

• See page 7-S6.

9Y1211156STS0005US0

Battery Negative Cable

1. Disconnect the battery negative cable (2).

(1) Battery
(2) Battery Negative Cable

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Seat

1. Remove the seat (1) and lever grips (2).
2. Remove the both side lever guides (3).
3. Remove the seat under cover (4).
4. Disconnect the seat switch connector (5).
5. Remove the seat support (6).

(1) Seat
(2) Lever Grip
(3) Lever Guide
(4) Seat Under Cover
(5) Seat Switch Connector
(6) Seat Support

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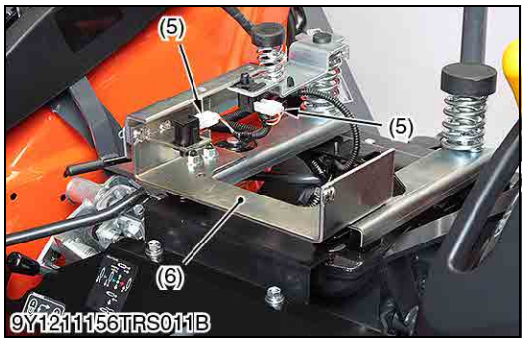

Separating Hydraulic Cylinder from Tractor Body

1. Disconnect lever linkage from hydraulic cylinder.
2. Disconnect the hydraulic delivery pipe from hydraulic cylinder.
3. Disconnect the wiring harness from switches and pull the wiring harness to the front side.
4. Remove the hydraulic cylinder.

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