WSM

WORKSHOP MANUAL

TRACTOR,FRONT LOADER, BACKHOE,ROTARY MOWER

BX25,LA240,BT601,RCK54, RCK54P,RCK60B

Kubota

KiSC issued 09, 2009 A

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GENERAL

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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 attempt to repair or use this unit.

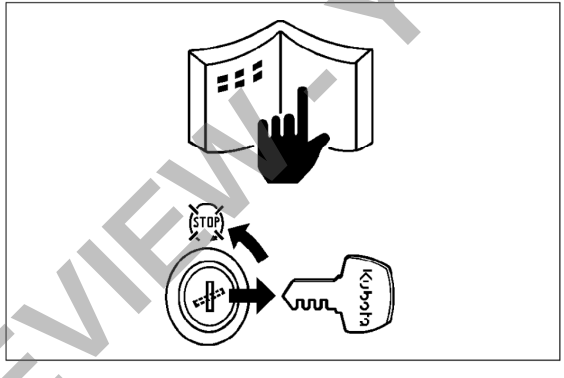
DANGER : **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

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

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

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

■ **NOTE** : **Gives helpful information.**



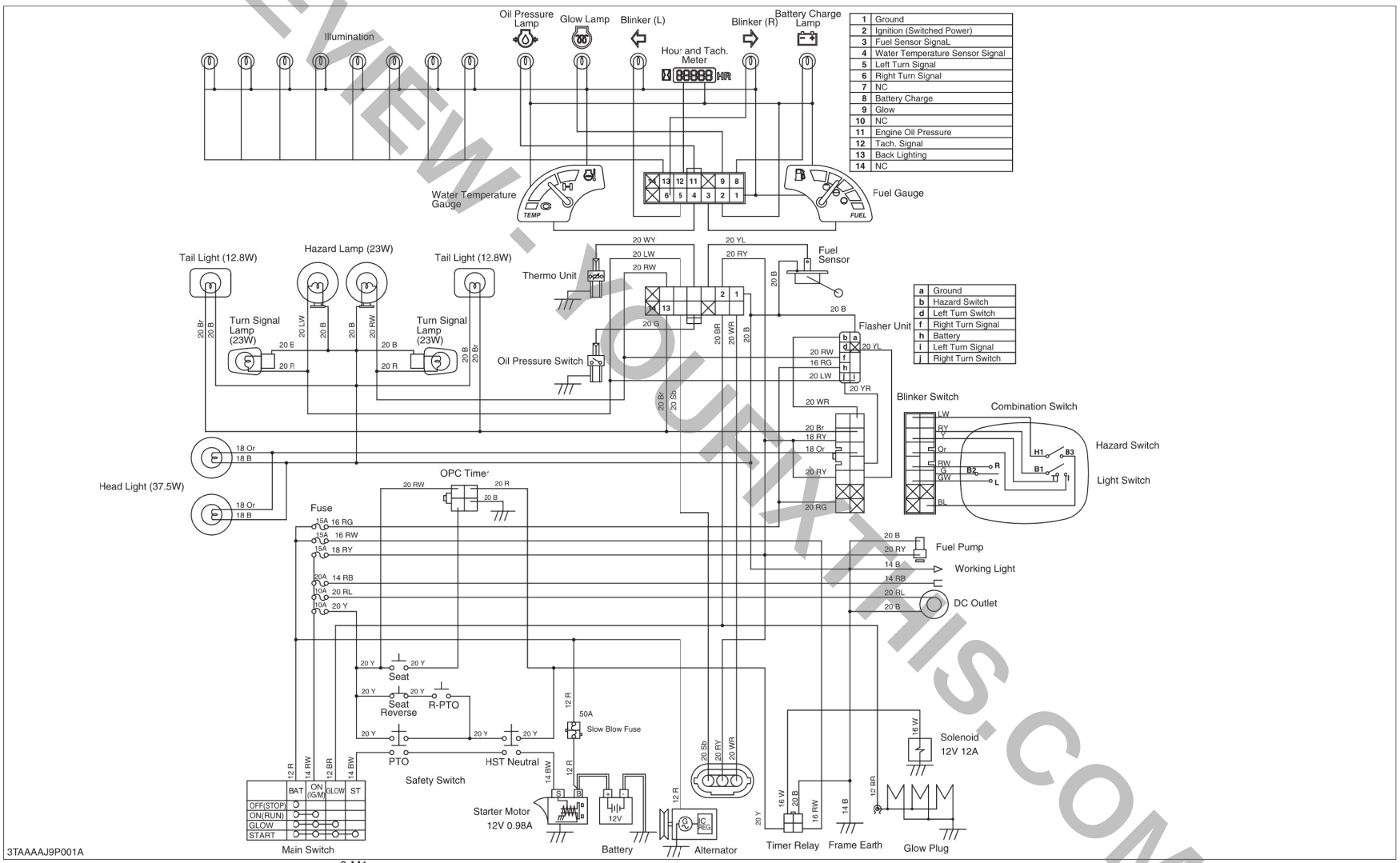
BEFORE SERVICING AND REPAIRING

- 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 firm and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, and remove the key.
- Disconnect the battery negative cable.
- Hang a "**DO NOT OPERATE**" tag in operator station.

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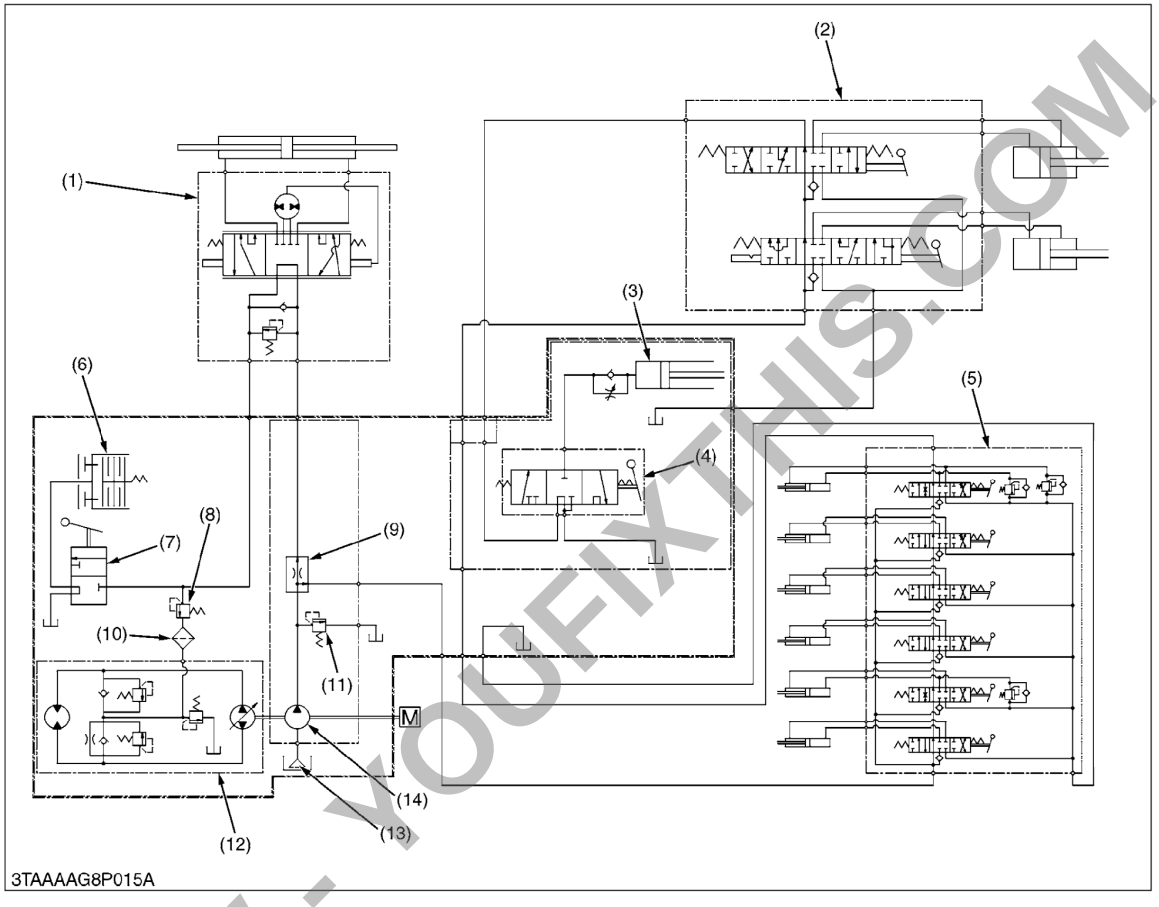
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1. WIRING DIAGRAM



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1. HYDRAULIC CIRCUIT



(1) Power Steering Controller
(2) Front Loader Control Valve
(3) Hydraulic Cylinder
(4) Control Valve
(5) Backhoe Control Valve
(6) PTO Clutch
(7) PTO Clutch Valve
(8) PTO Clutch Relief Valve
(9) Flow Priority Valve
(10) Oil Filter
(11) Relief Valve
(12) Hydraulic Transmission
(13) Oil Strainer
(14) Hydraulic Pump

The hydraulic system of this tractor is composed of a hydraulic pump, control valve, hydraulic cylinder and other components.

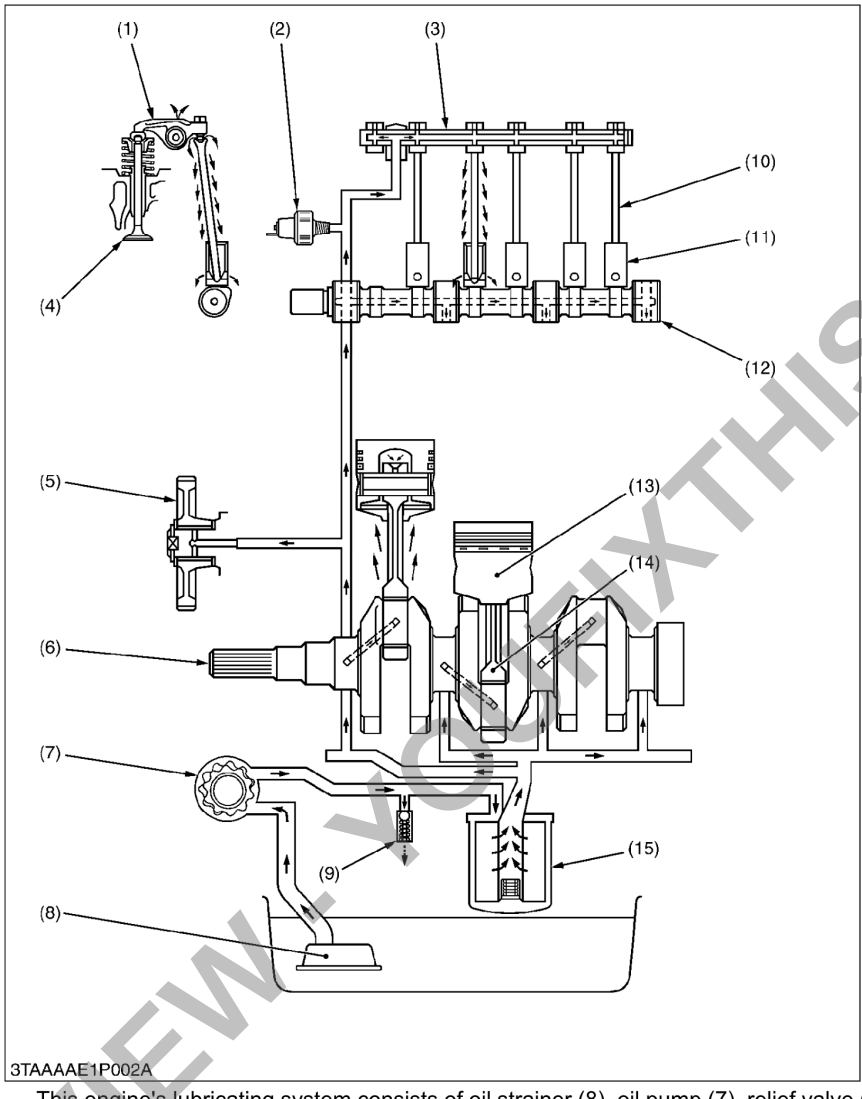
This system has the following functions.

1. Oil is supplied by hydraulic pump which is driven by pump drive shaft in the transmission case. As the pump drive shaft is connected to the propeller shaft, hydraulic pump starts running when engine is started.
2. The hydraulic pump supplies the high pressured oil to control valve for 3 point hitch system, power steering controller, PTO clutch valve and hydrostatic transmission after dividing oil flow by flow priority valve.
3. Hydraulic power take off from the hydraulic block type outlet to operate the implements such as a front loader and so on.

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1. LUBRICATING SYSTEM



(1) Rocker Arm
(2) Oil Pressure Switch
(3) Rocker Arm Shaft
(4) Valve
(5) Idle Gear
(6) Crankshaft
(7) Oil Pump
(8) Oil Strainer
(9) Relief Valve
(10) Push Rod
(11) Tappet
(12) Camshaft
(13) Piston
(14) Connecting Rod
(15) Oil Filter Cartridge

W1014160

This engine's lubricating system consists of oil strainer (8), oil pump (7), relief valve (9), oil filter cartridge (15) and oil pressure switch (2).

The oil pump sucks lubricating oil from the oil pan through the oil strainer and the oil flows down to the filter cartridge, where it is further filtered. Then the oil is forced to crankshaft (6), connecting rods (14), idle gear (5), camshaft (12) and rocker arm shaft (3) to lubricate each part.

Some part of oil, splashed by the crankshaft or leaking and dropping from gaps of each part, lubricates these parts: piston (13), cylinders, small ends or connecting rods, tappets (11), push rods (10), inlet and exhaust valves (4) and timing gears.

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5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

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

Indication on top of bolt	⬡ 4 No-grade or 4T						⬡ 7 7T						⬡ 9 9T		
Material of bolt	SS400, S20C						S43C, S48C						SCr435, SCM435		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit / Diameter	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 (6 mm, 0.24 in.)	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 (8 mm, 0.31 in.)	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 (10 mm, 0.39 in.)	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 (12 mm, 0.47 in.)	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 (14 mm, 0.55 in.)	108 to 125	11.0 to 12.8	79.6 to 92.5	–	–	–	124 to 147	12.6 to 15.0	91.2 to 108	–	–	–	167 to 196	17.0 to 20.0	123 to 144
M16 (16 mm, 0.63 in.)	167 to 191	17.0 to 19.5	123 to 141	–	–	–	197 to 225	20.0 to 23.0	145 to 166	–	–	–	260 to 304	26.5 to 31.0	192 to 224
M18 (18 mm, 0.71 in.)	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 (20 mm, 0.79 in.)	334 to 392	34.0 to 40.0	246 to 289	–	–	–	368 to 431	37.5 to 44.0	272 to 318	–	–	–	491 to 568	50.0 to 58.0	362 to 419

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[2] STUD BOLTS

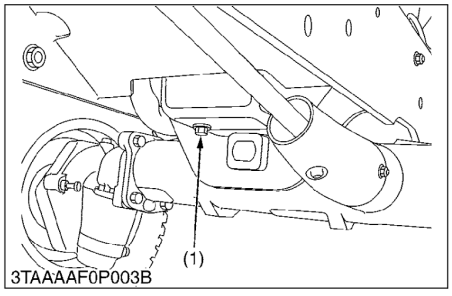
Material of opponent part	Ordinariness			Aluminum		
Unit / Diameter	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8 (8 mm, 0.31 in.)	12 to 15	1.2 to 1.6	8.7 to 11	8.9 to 11	0.90 to 1.2	6.5 to 8.6
M10 (10 mm, 0.39 in.)	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12 (12 mm, 0.47 in.)	29.5 to 49.0	3.0 to 5.0	21.7 to 36.1	31.4	3.2	23.1
M14 (14 mm, 0.55 in.)	62 to 73	6.3 to 7.5	46 to 54	–	–	–
M16 (16 mm, 0.63 in.)	98.1 to 112	10.0 to 11.5	72.4 to 83.1	–	–	–
M18 (18 mm, 0.71 in.)	172 to 201	17.5 to 20.5	127 to 148	–	–	–

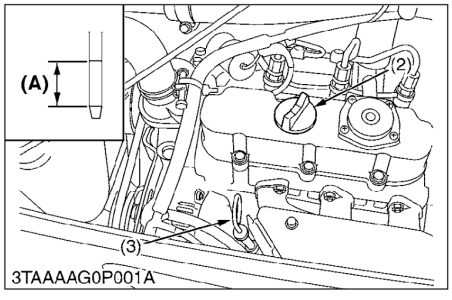
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[2] CHECK POINTS OF INITIAL 50 HOURS





Changing Engine Oil

CAUTION

- **Be sure to stop the engine before changing engine oil.**

1. Start and warm up the engine for approx. 5 minutes.
2. Place an oil pan underneath the engine.
3. To drain the used oil, remove the drain plug (1) at the bottom of the engine and drain the oil completely.
4. Screw in the drain plug (1).
5. Fill new oil up to upper line on the dipstick (3).

■ IMPORTANT

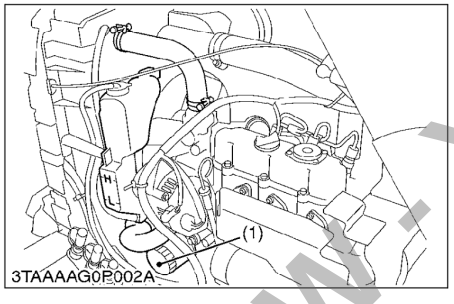
- **When using an oil of different manufacture or viscosity from the previous one, remove all of the old oil.**
- **Never mix two different types of oil.**
- **Use the proper SAE Engine Oil according to ambient temperatures.**
- **Refer to "LUBRICANTS, FUEL AND COOLANT". (See page G-7.)**

Engine oil capacity	3.1 L 3.3 U.S.qts 2.7 Imp.qts

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

(A) Oil level is acceptable within this range.

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Replacing Engine Oil Filter

CAUTION

- **Be sure to stop the engine before changing oil filter cartridge.**

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 decrease 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 specified level.
5. Properly dispose of used oil.

■ IMPORTANT

- **To prevent serious damage to the engine, replacement element must be highly efficient. Use only a KUBOTA genuine filter or its equivalent.**

(1) Engine Oil Filter Cartridge

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1. TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
Engine Does Not Start	No fuel	Replenish fuel	G-7
	Air in the fuel system	Bleed	G-30
	Water in the fuel system	Change fuel and repair or replace fuel system	–
	Fuel pipe clogged	Clean	G-25
	Fuel filter clogged	Change	G-25
	Excessively high viscosity of fuel or engine oil at low temperature	Use specified fuel or engine oil	G-7
	Fuel with low cetane number	Use specified fuel	G-7
	Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S25
	Incorrect injection timing	Adjust	1-S17
	Fuel camshaft worn	Replace	1-S35
	Injection nozzle clogged	Clean or replace	1-S26
	Injection pump malfunctioning	Replace	1-S30
	Seizure of crankshaft, camshaft, piston, cylinder or bearing	Repair or replace	1-S34
	Compression leak from cylinder	Replace head gasket, tighten cylinder head screw, glow plug and nozzle holder	1-S26, S27
	Improper valve timing	Correct or replace timing gear	1-S34
	Piston ring and cylinder worn	Replace	1-S35 to S37
	Excessive valve clearance	Adjust	1-S13
Starter Does Not Run	Battery discharged	Charge	G-17
	Starter malfunctioning	Repair or replace	6-S27
	Main switch malfunctioning	Repair or replace	6-S9
	Safety switches malfunctioning	Adjust or replace	6-S8, S9
	Wiring disconnected	Connect	–
Engine Revolution Is Not Smooth	Fuel filter clogged or dirty	Replace	G-19
	Air cleaner clogged	Clean or replace	G-18
	Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S26
	Injection pump malfunctioning	Replace	1-S30
	Incorrect nozzle injection pressure	Adjust	1-S20
	Injection nozzle stuck or clogged	Repair or replace	1-S26
	Governor malfunctioning	Repair	1-S30

W1014322

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SPECIFICATIONS

Model			BX25
PTO power			13.2 kW (17.7 HP)*
Engine	Maker		KUBOTA
	Model		D902-E3-BX-2
	Type		Indirect Injection, vertical, water-cooled, 4-cycle diesel
	Number of cylinders		3
	Bore and stroke		72 × 73.6 mm (2.83 × 2.90 in.)
	Total displacement		898 cm^3 (54.8 cu.in.)
	Engine gross power		17.1 kW (23.0 HP)
	Rated revolution		3200min^{-1} (rpm)
	Maximum torque		56.1 N·m (5.7 kgf·m, 41.4 ft-lbs)
	Battery		12 V, CCA : 535 A, RC : 80 min.
	Fuel		Diesel fuel No. 2-D [above −10 °C (14 °F)], Diesel fuel No. 1 [below −10 °C (14 °F)]
Capacities	Fuel tank		25 L (6.6 U.S.gals, 5.5 Imp.gals)
	Engine crankcase (with filter)		3.1 L (3.3 U.S.qts., 2.73 Imp.qts)
	Engine coolant		2.7 L (2.8 U.S.qts., 2.4 Imp.qts)
	Recovery tank		0.4 L (0.4 U.S.qts, 0.4 Imp.qts)
	Transmission case		11.6 L (3.1 U.S.gals, 2.6 Imp.gals)
Dimensions	Overall length (without 3P)		2170 mm (85.4 in.)
	Overall length (with 3P)		2490 mm (98.0 in.)
	Overall width		1145 mm (45.1 in.)
	Overall height	(with ROPS)	2140 mm (84.3 in.)
		(with Folded ROPS)	1610 mm (63.4 in.)
		(Top of steering wheel)	1255 mm (49.4 in.)
	Wheel base		1400 mm (55.1 in.)
	Min. ground clearance		175 mm (6.9 in.)
	Tread	Front	910 mm (35.8 in.)
		Rear	820 mm (32.2 in.)
Weight (with ROPS)			690 kg (1520 lbs)
Clutch			N / A
Travelling system	Tires	Front	18 × 8.50 – 10 (Turf, Bar, Ind.)
		Rear	26 × 12.00 – 12 (Turf, Bar, Ind.)
	Steering		Hydrostatic power steering
	Transmission		Main : Hydrostatic transmission, High-Low gear shift (2 forward and 2 reverse)
	Brake		Wet disk type
	Min. turning radius (without brake)		2.3 m (7.5 feet)
Hydraulic unit	Hydraulic control system		Directional control, auto-return lever system
	Pump capacity		23.5 L/min. (6.2 U.S.gals./min., 5.2 Imp.gals./min.)
	Three point hitch		SAE Category I
	Max. lift force	At lift points	5390 N (550 kg, 1210 lbs)
		24 in. behind points	3040 N (310 kg, 680 lbs)
PTO	Rear	PTO Shaft	SAE 1-3/8, 6 splines
		Revolution	1 speed (540 min^{-1} (rpm) at 3142 engine min^{-1} (rpm))
	Mid	PTO Shaft	USA No.5 (KUBOTA 10-tooth) involute spline
		Revolution	1 speed (2500 min^{-1} (rpm) at 3043 engine min^{-1} (rpm))

NOTE: * Manufacture's estimate. The company reserves the right to change the specifications without notice.
**See and check IMPLEMENT LIMITATIONS.

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6. MAINTENANCE CHECK LIST

No.	Item	Period	Service Interval																		After purchase		Important		Reference page
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	1500	3000	1 year	2 years			
1	Engine oil	Change	★	☆		☆				☆				☆				☆							G-12
2	Engine oil filter	Replace	★			☆				☆				☆				☆							G-12
3	Transmission oil filter	Replace	★			☆				☆				☆				☆							G-13
4	Transmission fluid	Change								☆				☆				☆							G-13
5	Transmission strainer	Clean	★							☆				☆				☆							G-24
6	Front axle case oil	Change								☆				☆				☆							G-24
7	Front axle pivot	Adjust								☆								☆							G-25
8	Engine start system	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆							G-14
9	Greasing	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆							G-15
10	Wheel bolt torque	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆							G-15
11	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆		☆					*4		G-16
12	Air cleaner element	Clean		☆		☆		☆		☆		☆		☆		☆		☆					*1	@	G-18
		Replace																			☆		*2		G-18
13	Fuel filter element	Check		☆		☆		☆		☆		☆		☆		☆		☆						@	G-19
		Replace										☆													G-19
14	Fan belt	Adjust		☆		☆		☆		☆		☆		☆		☆		☆							G-20
15	HST neutral spring	Adjust		☆		☆		☆		☆		☆		☆		☆		☆							G-21
16	Brake Pedal	Adjust		☆		☆		☆		☆		☆		☆		☆		☆							G-22
17	Radiator hose and clamp	Check				☆				☆				☆				☆							G-22
		Replace																				☆			G-22
18	Power steering oil line	Check				☆				☆				☆				☆							G-23
		Replace																				☆			G-23
19	Fuel line	Check		☆		☆		☆		☆		☆		☆		☆		☆						@	G-19
		Replace																				☆			G-19
20	Intake air line	Check				☆				☆				☆				☆						@	G-23
		Replace																				☆	*3		G-23
21	Toe-in	Adjust				☆				☆				☆				☆							G-23
22	Engine valve clearance	Adjust																☆							1-S13
23	Fuel injection nozzle injection pressure	Check																	☆	☆				@	1-S20
24	Injection pump	Check																		☆				@	1-S19
25	Cooling system	Flush																				☆			G-27
26	Coolant	Change																				☆			G-27
27	Fuel system	Bleed																			Service as required				G-30
28	Fuse	Replace																							G-31
29	Light bulb	Replace																							G-31

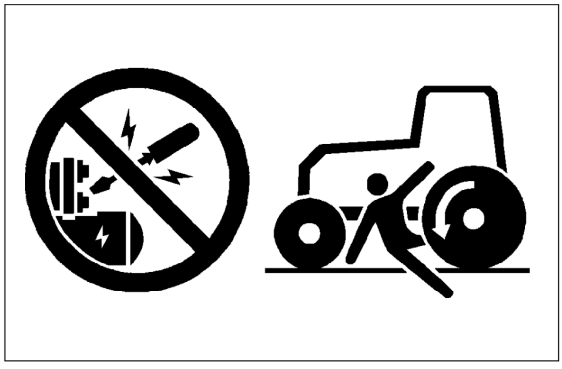
■ IMPORTANT

- **The jobs indicated by ★ must be done after the first 50 hours of operation.**
- ***1 : Air cleaner should be cleaned more often in dusty conditions than in normal conditions.**
- ***2 : Every year or every 6 times of cleaning.**
- ***3 : Replace only if necessary.**
- ***4 : When the battery is used for less than 100 hours per year, check the fluid level annually.**
- **The items listed above (@ marked) are registered as emission related critical parts by KUBOTA in the U.S.EPA non-road emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction.**
  Please see the Warranty Statement in detail.

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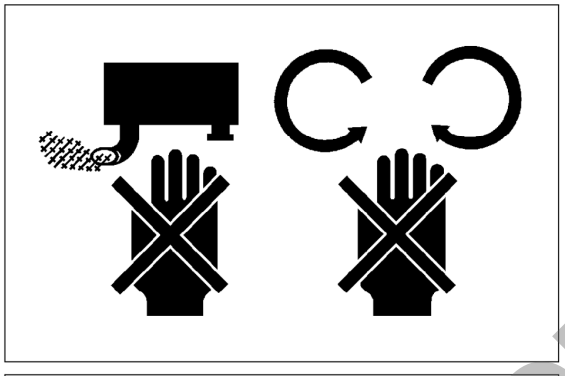
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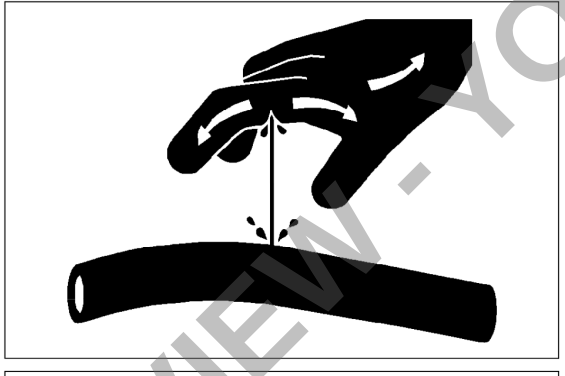
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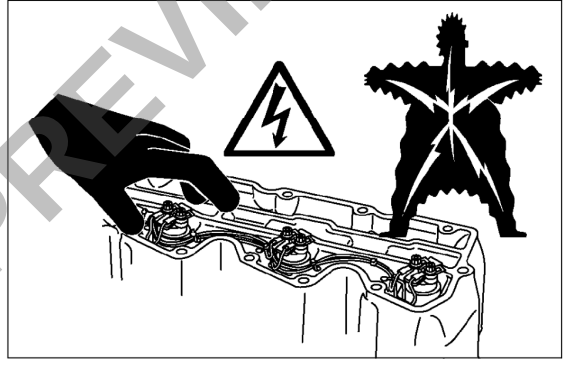


SAFETY STARTING

- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Do not alter or remove any part of machine safety system.
- Before starting the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Never start the engine while standing on ground. Start the engine only from operator's seat.







SAFETY WORKING

- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Do not work under the machine that is supported solely by a jack. Always support the machine by safety stands.
- Do not touch the rotating or hot parts while the engine is running.
- Never remove the radiator cap while the engine is running, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.
- Do not open high-pressure fuel system.
  High-pressure fluid remaining in fuel lines can cause serious injury. Do not disconnect or attempt repair fuel lines, sensors, or any other components between the high-pressure fuel pump and injectors on engines with high pressure common rail fuel system.
- High voltage exceeding 100 V is generated in the ECU, and is applied to the injector.
  Pay sufficient caution to electric shock when performing work activities.

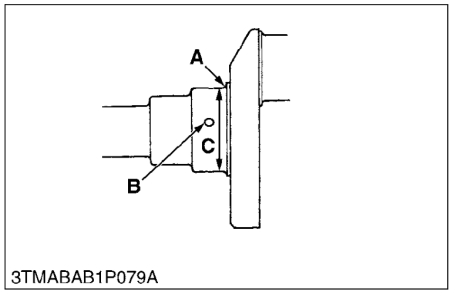
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1 ENGINE

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Oil Clearance between Crankshaft Journal and Crankshaft Bearing 1 (Continued)

(Reference)

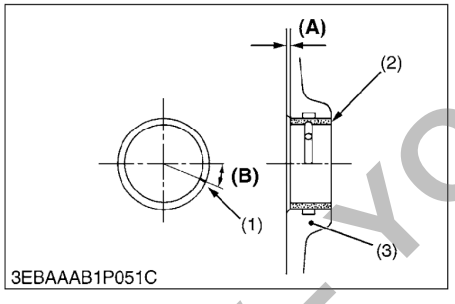
- Undersize crankshaft bearing 1

Undersize	Bearing	Code Number	Marking
0.2 mm 0.008 in.	Crankshaft bearing 1 02	1G460-23910	020 US
0.4 mm 0.016 in.	Crankshaft bearing 1 04	1G460-23920	040 US

- Undersize dimensions of crankshaft journal

Undersize	0.2 mm 0.008 in.	0.4 mm 0.016 in.
Dimension **A**	1.8 to 2.2 mm radius 0.071 to 0.087 in.radius	1.8 to 2.2 mm radius 0.071 to 0.087 in.radius
*Dimension **B**	1.0 to 1.5 mm relief 0.0394 to 0.0591 in. relief	1.0 to 1.5 mm relief 0.0394 to 0.0591 in. relief
Dimension **C**	43.734 to 43.750 mm dia. 1.72181 to 1.72244 in. dia.	43.534 to 43.550 mm dia. 1.71394 to 1.71457 in. dia.
(0.8S) The crankshaft journal must be fine-finished to higher than ∇∇∇∇. *Holes to be de-burred and edges rounded with 1.0 to 1.5 mm (0.0394 to 0.0591 in.) relief.		

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Replacing Crankshaft Bearing 1

(When removing)

1. Press out the used crankshaft bearing 1 using a crankshaft bearing 1 replacing tool. (Refer to "**SPECIAL TOOLS**".)

(When installing)

1. Clean a new crankshaft bearing 1 and crankshaft journal bore, and apply engine oil to them.
2. Using a crankshaft bearing 1 replacing tool, press in a new bearing 1 (2) so that its seam (1) directs toward the exhaust manifold side. (See figure.)

Dimension (**A**)	Factory spec.	0.0 to 0.3 mm 0.0 to 0.0118 in.

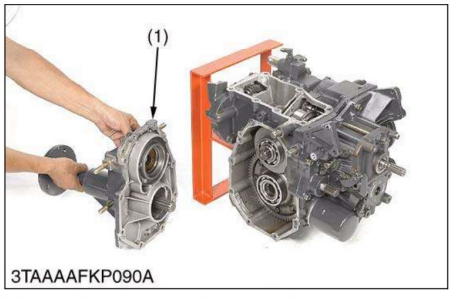
(1) Seam
(2) Crankshaft Bearing 1
(3) Cylinder Block

(A) Dimension
(B) 0.366 rad (21 °)

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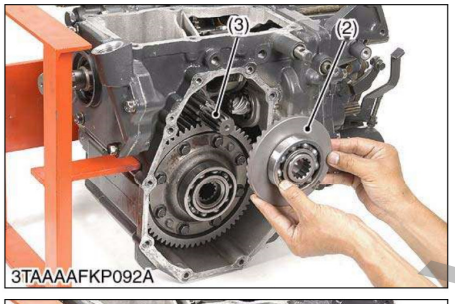
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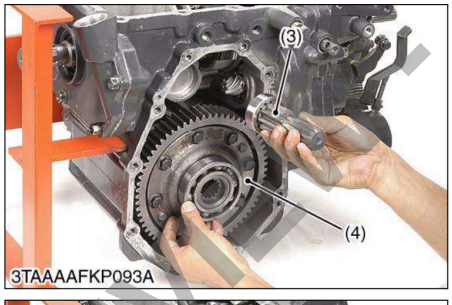
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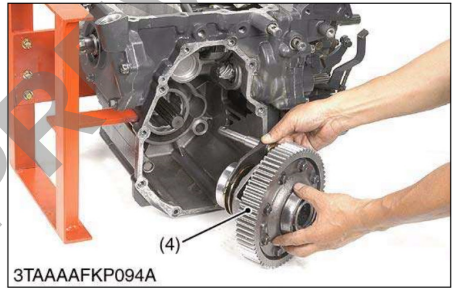
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Rear Axle Case (RH)

1. Remove the rear axle case (RH) mounting bolts.
2. Remove the rear axle case (RH) (1) as an assembly from the transaxle case.

■ **NOTE**

- **Since the adjusting shims are installed behind the 37T spiral bevel gear, check the shims.**

3. Remove the 37T spiral bevel gear (2).
4. Remove the 10T final gear shaft (3).
5. Remove the 66T final gear with the differential lock shift fork.

(When reassembling)

- Apply liquid gasket (Three Bond 1208D or equivalent) to the joint surface of transaxle case to the rear axle (RH) case.

Tightening torque	Rear axle case (RH) mounting bolt (M8)	18.0 to 21.0 N·m 1.8 to 2.1 kgf·m 13.3 to 15.5 ft-lbs

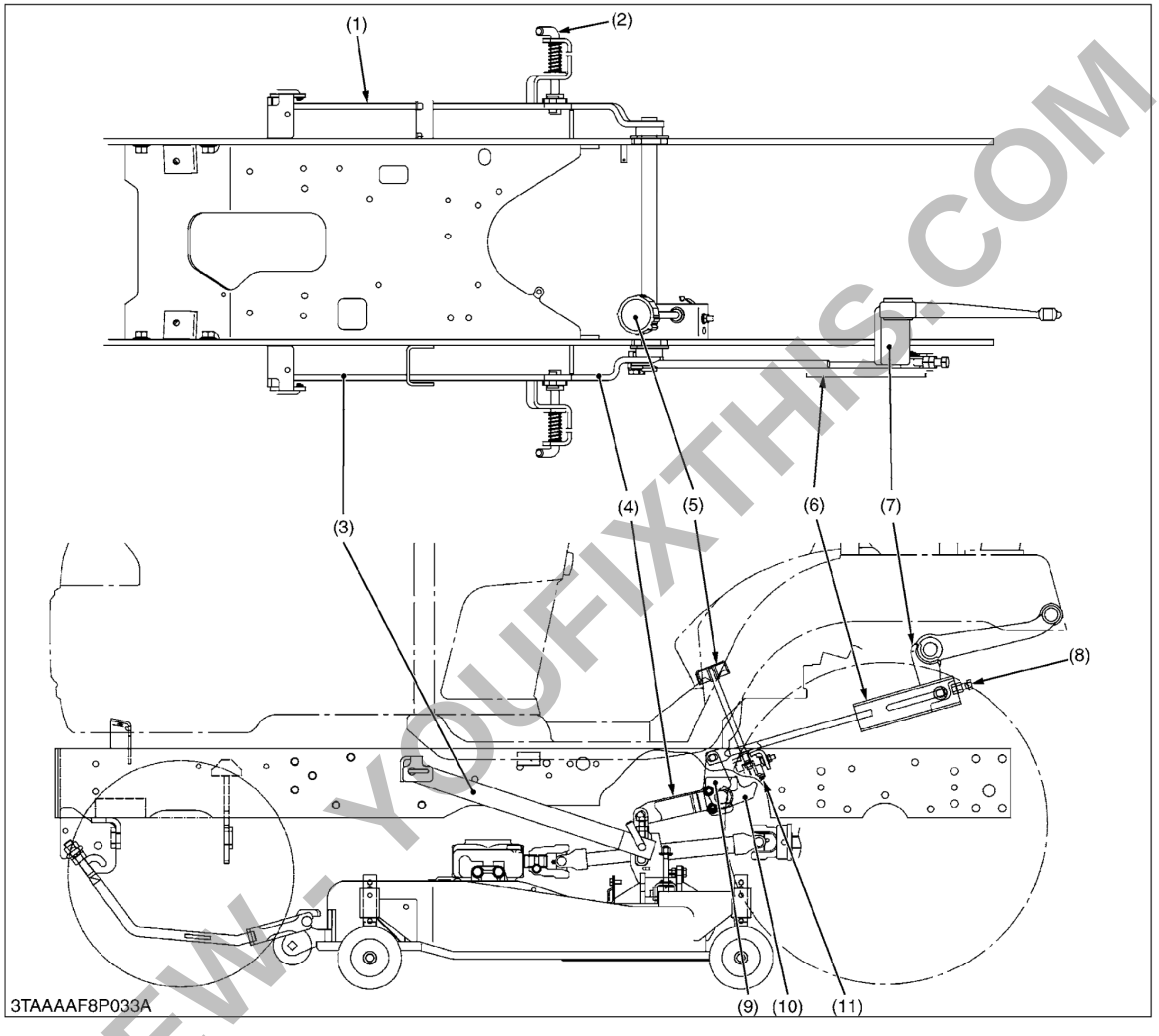
(1) Rear Axle Case (RH)
(2) 37T Spiral Bevel Gear
(3) 10T Final Gear Shaft (Brake Shaft)
(4) 66T Final Gear

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8. MOWER LINKAGE



(1) Mower Rear Link RH
(2) Lift Pin
(3) Mower Rear Link LH
(4) Rear Lift Link LH
(5) Cutting Height Adjusting Dial
(6) Rear Lift Link LH
(7) Lift Arm
(8) Adjusting Bolt
(9) Lift Upper Boss
(10) Lift Lower Boss
(11) Cam

The mower rear link (1), (3) and the lift arm (7) are linked with the rear lift link LH (4), the lift upper boss (9) and the lift lower boss (10).

As the hydraulic control lever moves to lift position, lift arm (7) is raised and the rear lift link LH (6) is pulled to pull the lift links to the rearward. As a result, mower rear link (1), (3) are lifted.

The cutting height adjusting dial (5) adjusts cutting height of mower by rotating the adjusting cam (11). The position of mower rear link (1), (3) are adjusted by changing the length of the adjusting bolt (8).

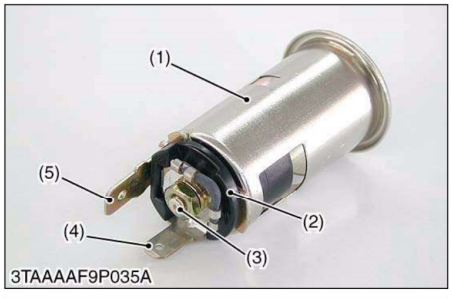
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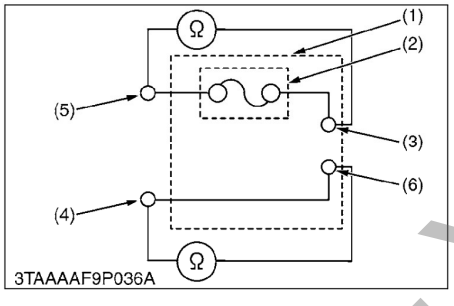
(14) DC Outlet



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DC Outlet Connector Voltage and DC Outlet Continuity

1. Disconnect the connector from the DC outlet. And turn the main switch "**ON**".
2. Measure the voltage with a voltmeter across the connector red / blue lead and the chassis.
   If the voltage differs from the battery voltage the wiring harness is faulty.
3. Disconnect the connector from the DC outlet. Since the DC outlet can not be removed easily, measure the continuity with a ohm meter across the plus terminal (3) and the nut (5), and across the earth terminal (3) and the DC outlet case (6).
4. If the resistance differs from 0 ohm, the DC outlet body (1) is faulty.

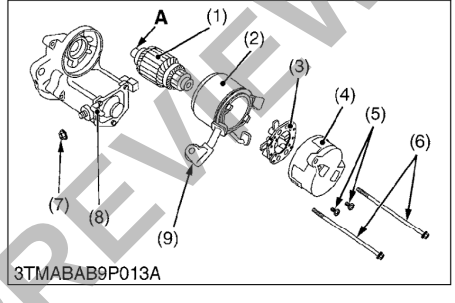
DC outlet connector voltage	Red / Blue lead – Chassis	Battery voltage
DC outlet continuity	Plus terminal – Nut	0 Ω
	Earth terminal – DC outlet case	

(1) DC Outlet Body
(2) Fuse
(3) Earth Terminal (for Chassis)
(4) Plus Terminal (for Battery)
(5) Nut
(6) DC Outlet Case

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[2] DISASSEMBLING AND ASSEMBLING

(1) Starter



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Motor

1. Disconnect the connecting lead (9) from the magnet switch (8).
2. Remove the screws (6), and then separate the end frame (4), yoke (2) and armature (1).
3. Remove the two screws (5), and then take out the brush holder (3) from the end frame (4).

(When reassembling)

- Apply grease to the spline teeth (**A**) of the armature (1).

Tightening torque	Nut (7)	5.9 to 11.8 N·m 0.6 to 1.2 kgf·m 4.3 to 8.7 ft-lbs

(1) Armature
(2) Yoke
(3) Brush Holder
(4) End Frame
(5) Screw
(6) Screw
(7) Nut
(8) Magnet Switch
(9) Connecting Lead

A : Spline Teeth

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3. SERVICING SPECIFICATIONS

Item		Factory Specification	Allowable Limit
Piston Rod	Bend	–	0.25 mm 0.0098 in.

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