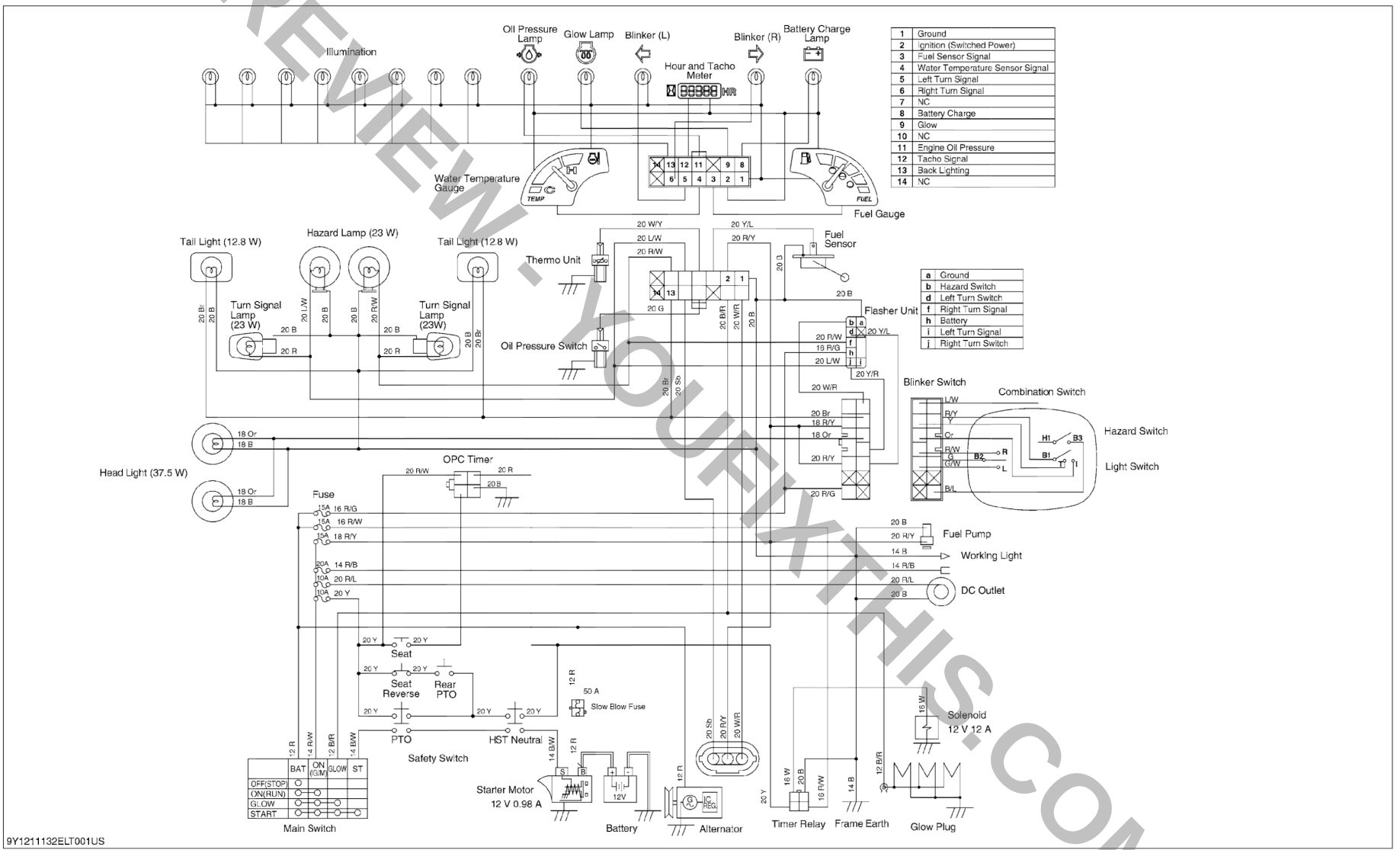
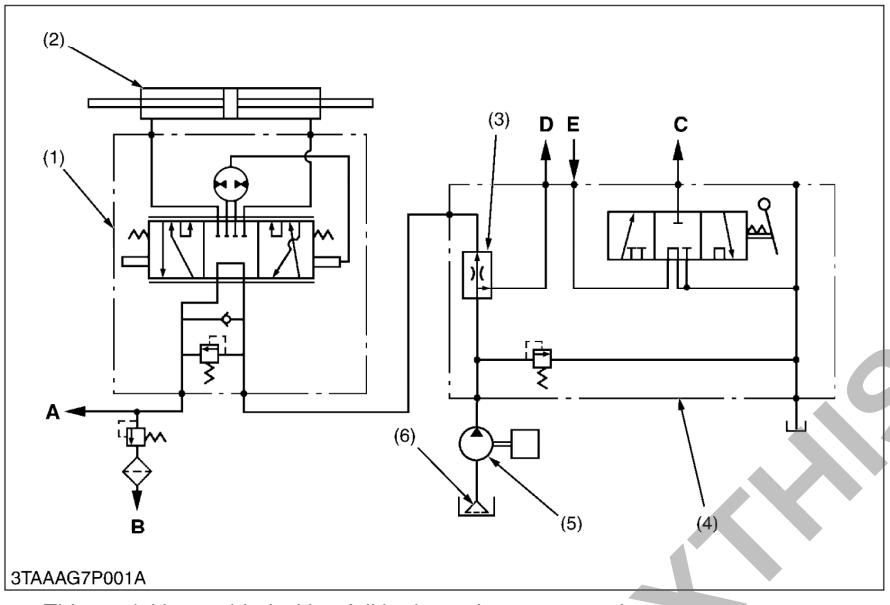
1. WIRING DIAGRAM



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1. HYDRAULIC CIRCUIT



(1) Steering Controller
(2) Steering Cylinder
(3) Flow Priority Valve
(4) Hydraulic Control Valve Assembly
(5) Hydraulic Pump
(6) Oil Strainer

A: To PTO Clutch Valve
B: To HST
C: To Hydraulic Cylinder
D: To Implement
E: From Implement

This model is provided with a full hydrostatic power steering.

In the full hydrostatic power steering, the steering controller is connected to the steering cylinder with only the hydraulic piping. Accordingly, it does not have mechanical transmitting parts such as steering gear, pitman arm, drag link, etc.. Therefore, it is simple in construction. This steering system consists of the oil strainer (6), hydraulic pump (5), flow priority valve (3), steering controller (1), steering cylinder (2), etc..

Flow priority valve (3) which located in the hydraulic control valve assembly (4) divides the oil into two direction.

One is the control flow to power steering (constantly 8.0 L/min., 2.1 U.S.gals./min., 1.8 Imp.gals./min.), and the other is excessive flow to control valve of implement lift control.

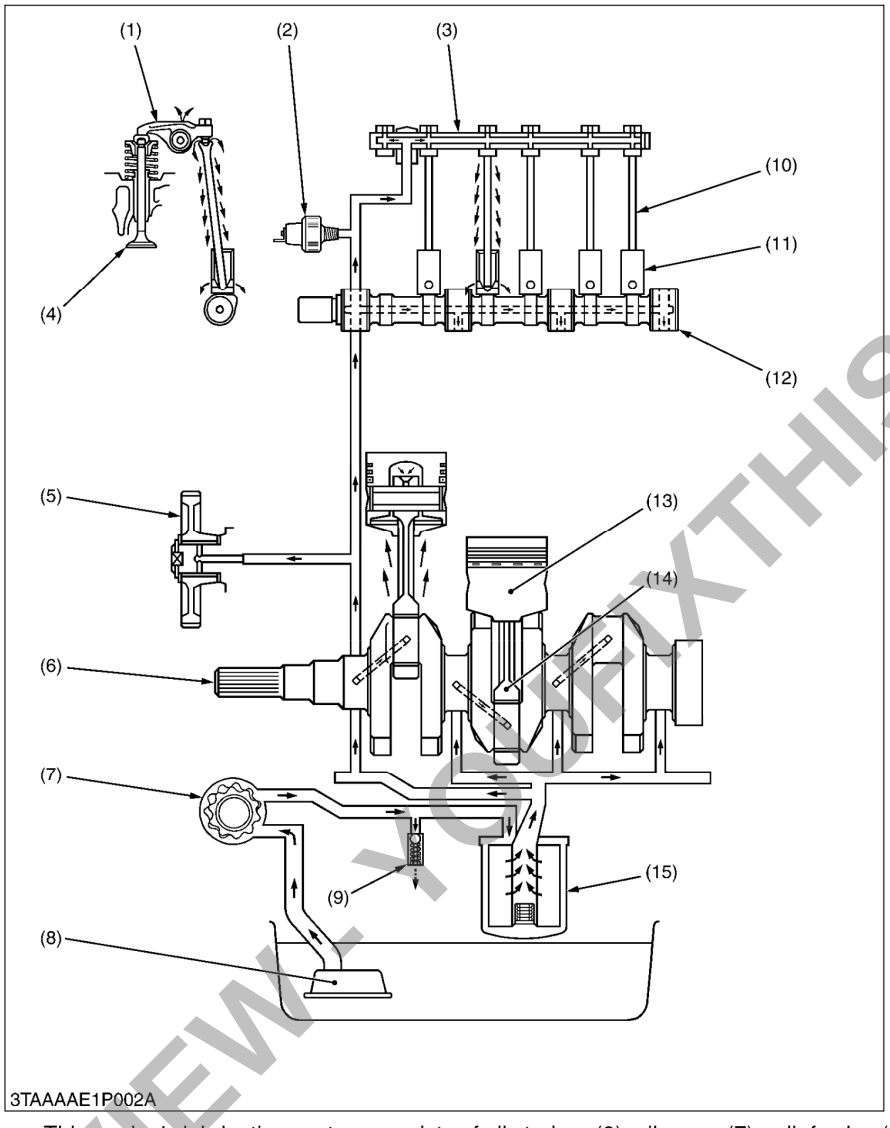
By operating the power steering body, the required amount of oil is fed to the steering cylinder (2).

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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

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.

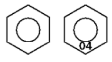
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5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS (TRACTOR AND MOWER)

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	 4 No-grade or 4T						7 7T						9 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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7. CHECK AND MAINTENANCE

[1] BX TRACTOR

WARNING
To avoid personal injury or death:
Take the following precautions when checking the tractor.
- **Park the machine on firm and level ground.**
- **Set the parking brake.**
- **Lower the implement to the ground.**
- **All residual pressure of the hydraulic system released.**
- **Stop the engine and remove the key.**

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(1) Daily Check

For your own safety and maximum service life of the machine, make a thorough daily inspection before operating the machine to start the engine.

■ **Walk Around Inspection**

Look around the under the tractor for such items as loose bolts, trash build-up, oil or coolant leaks, broken or worn parts.

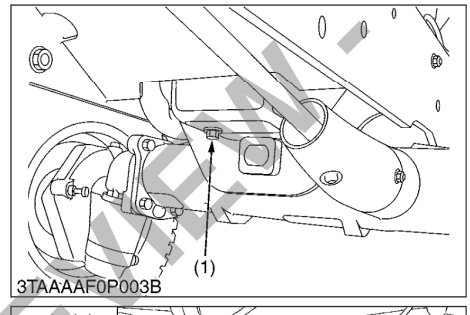
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Checking

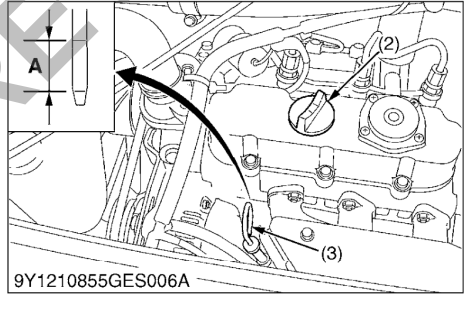
1. Check and refueling.
2. Check the engine oil level.
3. Check the transmission fluid level.
4. Check the coolant level.
5. Clean panel and radiator screen.
6. Check the brake pedal.
7. Check the gauge, the meters and Easy Checker™.
8. Check the head light, the hazard lamp etc..
9. Check and clean the electrical wiring and the battery cables.
10. Check the seat belt and ROPS.
11. Check the movable parts.

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(2) Check Points of Initial 50 Hours



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Changing Engine Oil

CAUTION
To avoid personal injury:
- **Be sure to stop the engine and remove the key before changing the oil.**
- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

1. To drain the used oil, remove the drain plug at the bottom of the engine and drain the oil completely into the oil pan.
   All the used oil can be drained out easily when the engine is still warm.
2. After draining reinstall the drain plug.
3. Fill with the new oil up to the upper notch on the dipstick.
4. Properly dispose of used oil.

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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1. TROUBLESHOOTING

Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
Engine Does Not Start	1. No fuel	Check fuel	G-8
	2. Air in the fuel system	Bleed air	G-37
	3. Water in the fuel system	Solution order 1. Repair or replace fuel system	1-S18
		2. Change fuel	G-8
	4. Fuel line clogged	Clean or replace fuel line	G-35
	5. Fuel filter clogged	Solution order 1. Replace fuel filter	G-30
		2. Check or change fuel	G-8
	6. Excessively high viscosity of fuel or engine oil at low temperature	Check fuel or engine oil	G-8
	7. Fuel with low cetane number	Check fuel	G-8
	8. Fuel leak due to loose injection pipe retaining nut	Repair retaining nut	1-S24
	9. Incorrect injection timing	Solution order 1. Check injection timing	1-S18
		2. Adjust injection timing	
	10. Fuel camshaft worn	Solution order 1. Inspect cam shaft	1-S30
		2. Replace camshaft	
	11. Injection nozzle clogged	Solution order 1. Inspect injection nozzle	1-S24
		2. Replace or clean injection nozzle	
	12. Injection pump malfunctioning	Repair or replace injection pump	1-S29
	13. Seizure of crankshaft, camshaft, piston, cylinder or bearing	Solution order 1. Inspect crankshaft, camshaft, piston, cylinder or bearing	1-S31 to 1-S34
		2. Replace crankshaft, camshaft, piston, cylinder or bearing	

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3. SPECIFICATIONS

[1] BX TRACTOR

Model			BX25DLB-AU
PTO power			13.2 kW (17.7 HP)*1
Engine	Maker		KUBOTA
	Model		D902-E4-BX-1
	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		3200 min^{-1} (rpm)
	Maximum torque		56.1 N·m (5.7 kgf·m, 41.4 lbf·ft)
	Battery		12 V, RC: 80 min., CCA: 540 A
	Fuel		Diesel fuel No. 1 [below −10 °C (14 °F)], Diesel fuel No. 2 [above −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, 2.7 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 (3.06 U.S.gals, 2.55 Imp.gals)
Dimensions	Overall length (without 3P)		2120 mm (83.5 in.)
	Overall length (with 3P)		2425 mm (95.5 in.)
	Overall width (min. tread)		1145 mm (45.1 in.)
	Overall height (with ROPS)		2215 mm (87.2 in.)
	Overall height (Top of seat)		1255 mm (49.4 in.)
	Wheel base		1400 mm (55.1 in.)
	Minimum ground clearance		175 mm (6.9 in.)
	Tread	Front	930 mm (36.3 in.)
		Rear	820 mm (32.2 in.)
Weight (with ROPS)			720 kg (1587 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 type 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)

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WSM

WORKSHOP MANUAL
TRACTOR,
FRONT LOADER,BACKHOE

BX25DLB-AU,
LA240A AU-SG,BT602

Kubota

KiSC issued 08, 2019 A

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INFORMATION

CONTENTS

1. SAFETY FIRST I-1
2. SAFETY DECALS I-4
   [1] BX25DLB-AU I-4
   [2] LA240A AU-SG I-8
   [3] BT602 ..... I-9
   [4] ATTACHMENTS I-10
3. SPECIFICATIONS I-12
   [1] BX TRACTOR I-12
   [2] LA240A AU-SG I-14
   [3] BT602 ..... I-16
4. TRAVELING SPEEDS I-19
5. DIMENSIONS I-20

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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.**

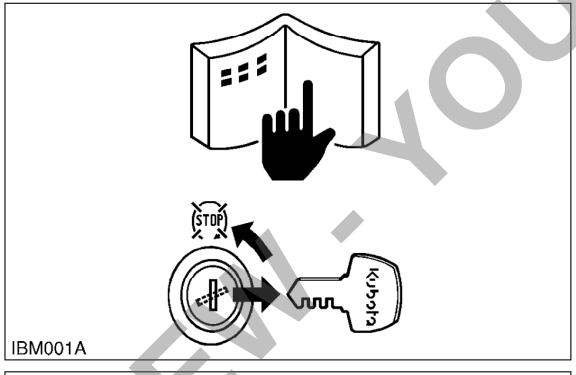
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ 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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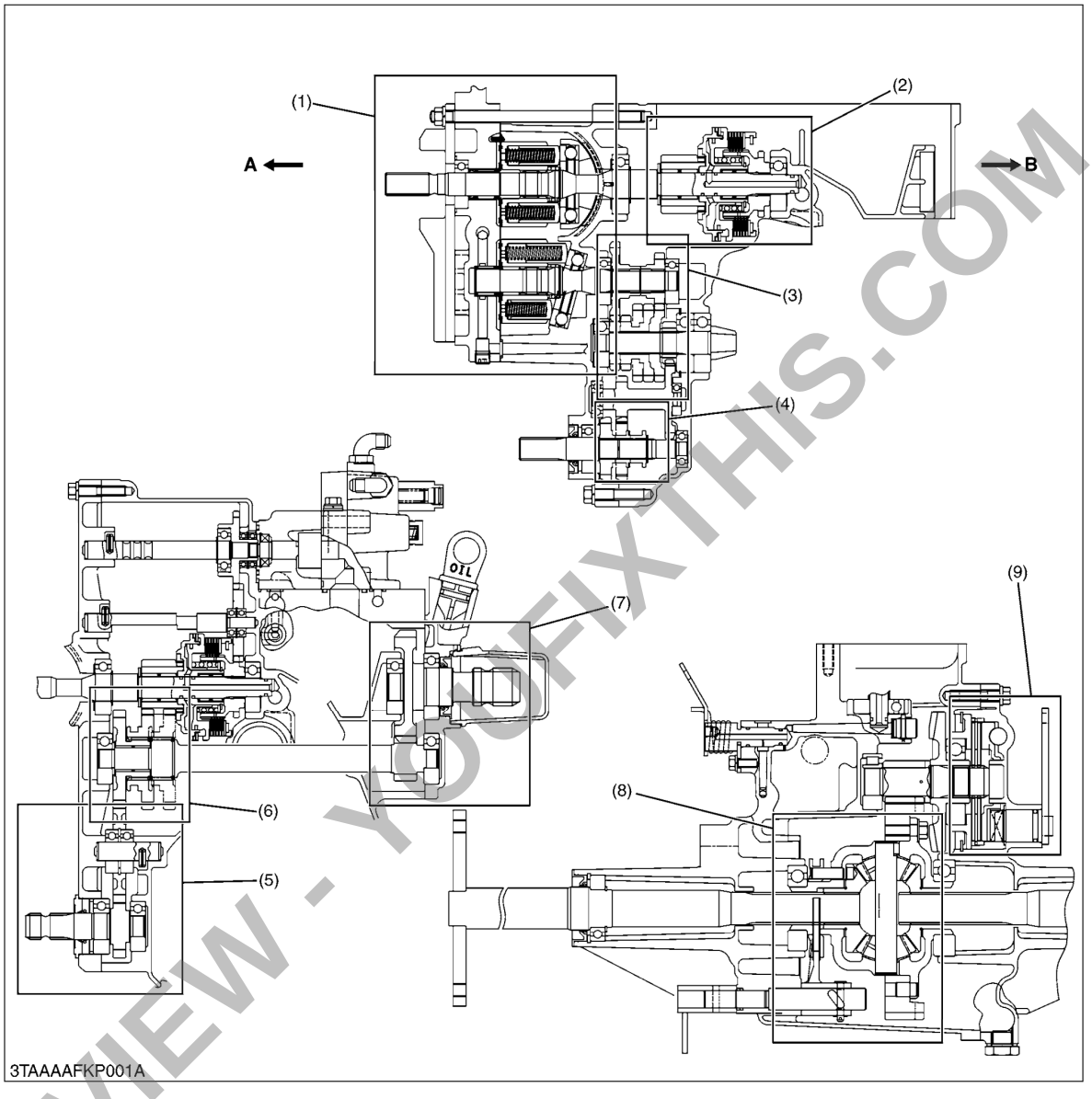
START SAFELY

- Do not do the procedures below when you start the engine.
  - short across starter terminals
  - bypass the safety start switch
- Do not alter 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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1. STRUCTURE



(1) Hydrostatic Transmission
(2) PTO Clutch Section
(3) Range Gear Shift Section
(4) Front Wheel Drive Gear Section
(5) Mid-PTO Section
(6) PTO Gear Shift Section
(7) Rear PTO Section
(8) Differential Gear Section
(9) Brake Section

A: Front Side
B: Rear Side

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(Continued)

5. Adding the LLC.
   - Add only water if the mixture reduces in amount by evaporation.
   - If there is a mixture leak, add the LLC of the same manufacture and type in the same mixture percentage.
     * Never add any long-life coolant of different manufacture.

   (Different brands may have different additive components, and the engine may fail to perform as specified.)
6. When the LLC is mixed, do not employ any radiator cleaning agent. The LLC contains anticorrosive agent. If mixed with the cleaning agent, sludge may build up, adversely affecting the engine parts.
7. Kubota's genuine long-life coolant has a service life of 2 years. Be sure to change the coolant every 2 years.

■ **NOTE**
- **The above data represent industry standards that necessitate a minimum glycol content in the concentrated antifreeze.**
- **When the coolant level drops due to evaporation, add water only to keep the antifreeze mixing ratio less than 50 %. In case of leakage, add antifreeze and water in the specified mixing ratio before filling in to the radiator.**
- **Anti-freeze absorbs moisture. Keep unused antifreeze in a tightly sealed container.**
- **Do not use radiator cleaning agents when anti-freeze has been added to the coolant. (Anti-freeze contains an anti-corrosive agent, which will react with the radiator cleaning agent forming sludge which will affect the engine parts.)**

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(12) Check Point of Every 3000 Hours

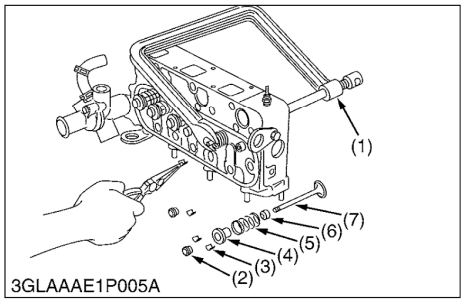
Checking Injection Pump

- See page 1-S19.

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Valves

1. Remove the valve caps (2).
2. Remove the valve spring collet (3), pushing the valve spring retainer (4) by valve spring replacer (1).
3. Remove the valve spring retainer (4), valve spring (5) and valve stem seal (6).
4. Remove the valve (7).

(When reassembling)

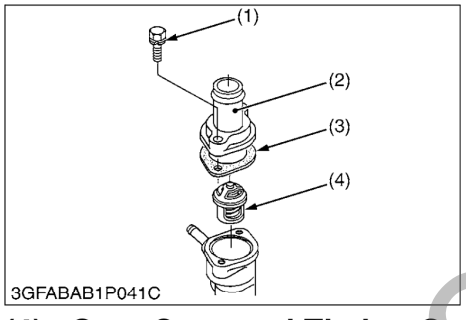
- Wash the valve stem and valve guide hole, and apply engine oil sufficiently.
- After installing the valve spring collets, lightly tap the stem to assure proper fit with a plastic hammer.

■ **IMPORTANT**

- **Do not change the combination of valve and valve guide.**

(1) Valve Spring Replacer
(2) Valve Cap
(3) Valve Spring Collet
(4) Valve Spring Retainer
(5) Valve Spring
(6) Valve Stem Seal
(7) Valve

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Thermostat Assembly

1. Remove the thermostat cover mounting screws (1), and remove the thermostat cover (2).
2. Remove the thermostat assembly (4).

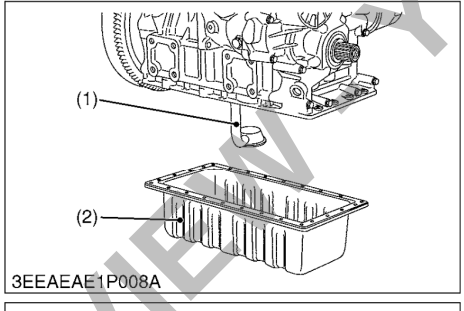
(When reassembling)

- Apply a liquid gasket (Three Bond 1215 or equivalent) only at the thermostat cover side of the gasket (3).

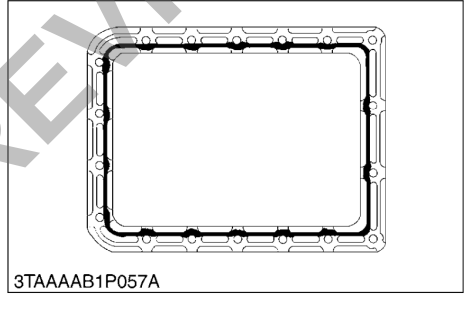
(1) Thermostat Cover Mounting Screw
(2) Thermostat Cover
(3) Thermostat Cover Gasket
(4) Thermostat Assembly

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(4) Gear Case and Timing Gears



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Oil Pan and Oil Strainer

1. Remove the oil pan mounting screws.
2. Remove the oil pan (2).
3. Remove the oil strainer (1).

(When reassembling)

- After cleaning the oil strainer, check to see that the filter mesh in clean, and install it.
- Visually check the O-ring, apply engine oil, and install it.
- Securely fit the O-ring to the oil strainer.
- To avoid uneven tightening, tighten oil pan mounting screws in diagonal order form the center.

■ **IMPORTANT**

- **Scrape off the old adhesive completely. Wipe the sealing surface clean using waste cloth soaked with gasoline. Now apply new adhesive 3.0 to 5.0 mm (0.12 to 0.19 in.) thick all over the contact surface. Apply the adhesive also on the center of the flange as well as on the inner wall of each screw hole.**
- **Cut the nozzle of the "liquid gasket" container at its second notch. Apply "liquid gasket" about 5.0 mm (0.19 in.) thick. Within 20 minutes after the application of fluid sealant, reassemble the components. Wait then for about 30 minutes, and pour oil in the crankcase.**

(1) Oil Strainer
(2) Oil Pan

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Charge Relief Pressure

CAUTION

- **When checking, park the tractor on flat ground, and apply the parking brake.**

1. Remove the plug (R 1/4) (1) from the front cover, then install the adaptor (R 1/4) and pressure gauge.
2. Set the range gear shift lever to **"Neutral"** position.
3. Start the engine and operate it at the maximum speed.
4. Read the pressure gauge to measure the charge relief pressure.
5. If the measurement is not within the factory specifications, check the charge relief valve and related hydraulic components.

NOTE

- **When reinstalling the hexagon socket head plug, apply liquid lock (Three Bond 1324 or its equivalent) to the plug.**

Charge relief pressure (Oil temperature at 50 °C, 122 °F)	Factory specification	0.55 to 0.75 MPa 5.6 to 7.7 kgf/cm^2 80 to 100 psi

Tightening torque	Charge relief valve checking plug (R 1/4)	30 to 44 N·m 3.0 to 4.5 kgf·m 22 to 32 lbf·ft

(1) Plug

9Y1211132TXS0008US0







High Relief Pressure (Forward)

CAUTION

- **When checking, park the tractor on flat ground, and apply the parking brake.**

1. Remove the hexagon socket head plug (R 1/4) from **P2** (2), then install the adaptor, cable and pressure gauge.
2. Start the engine and operate it at maximum speed.
3. Set the range gear shift lever to **"Hi"** position.
4. Depress the speed control pedal to **"Forward"**, and read the pressure gauge to measure the high relief pressure.
5. If the measurement is not same as factory specification, check the high pressure relief valve and related hydraulic components.

High relief pressure (Forward) (Oil temperature at 50 °C, 122 °F)	Factory specification	20.1 to 21.1 MPa 205 to 215 kgf/cm^2 2920 to 3060 psi

Tightening torque	Hexagon socket head plug (**P1** and **P2** port)	30 to 44 N·m 3.0 to 4.5 kgf·m 22 to 32 lbf·ft

IMPORTANT

- **Measure quickly the high relief pressure within about 10 seconds.**

NOTE

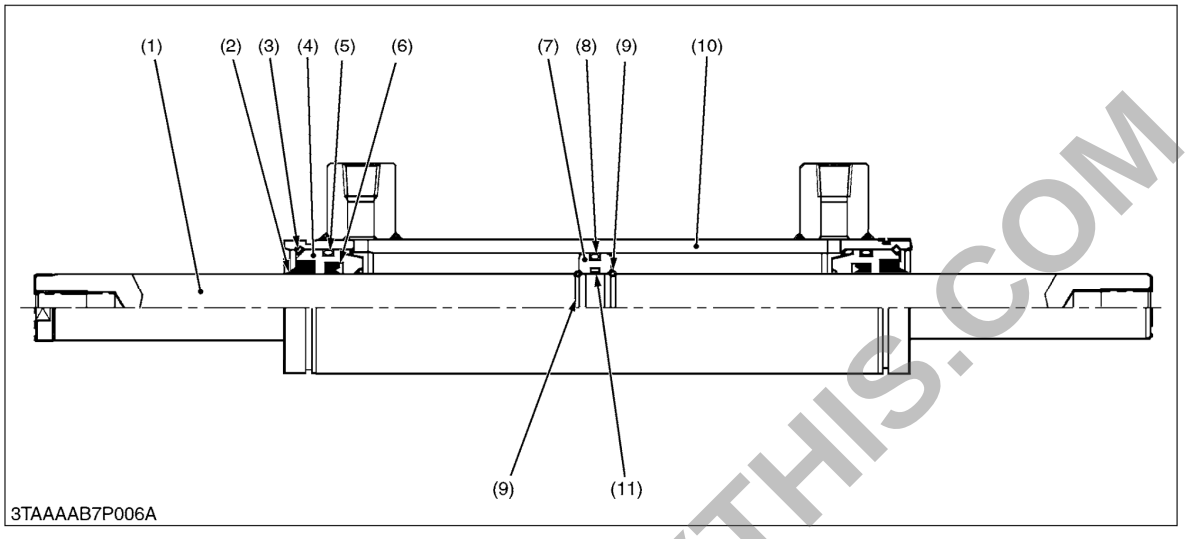
- **When reinstalling the hexagon socket head plug, apply liquid lock (Three Bond 1324 or its equivalent) to the plug.**

(1) **P1** Port (Reverse) (2) **P2** Port (Forward)

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3. STEERING CYLINDER



(1) Rod
(2) Wiper Seal
(3) Internal Snap Ring
(4) Guide
(5) O-ring
(6) Seal Ring
(7) Center Piston
(8) Piston O-ring
(9) External Snap Ring
(10) Cylinder Tube
(11) Rod O-ring

The steering cylinder is single piston both rod double-acting type. This steering cylinder is installed parallel to the front axle and connected to tie-rods.

The tie-rods connected to both knuckle arm guarantees equal steering movement to both front wheels.

The steering cylinder provide force in both directions. Depending upon direction the steering wheel is turned pressure oil enters at one end of the cylinder to extend, or the other end to retract it, thereby turning front wheel of the tractor.

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[2] SAFETY SWITCH

There is one type of safety switch, normally closed type.
Normally closed type switch is electrically closed in normal condition.
Safety switches adopted in BX25 tractor operates as sensor detecting and transmitting the position of HST pedal, PTO lever, independent PTO lever, and seat to engine stop solenoid.

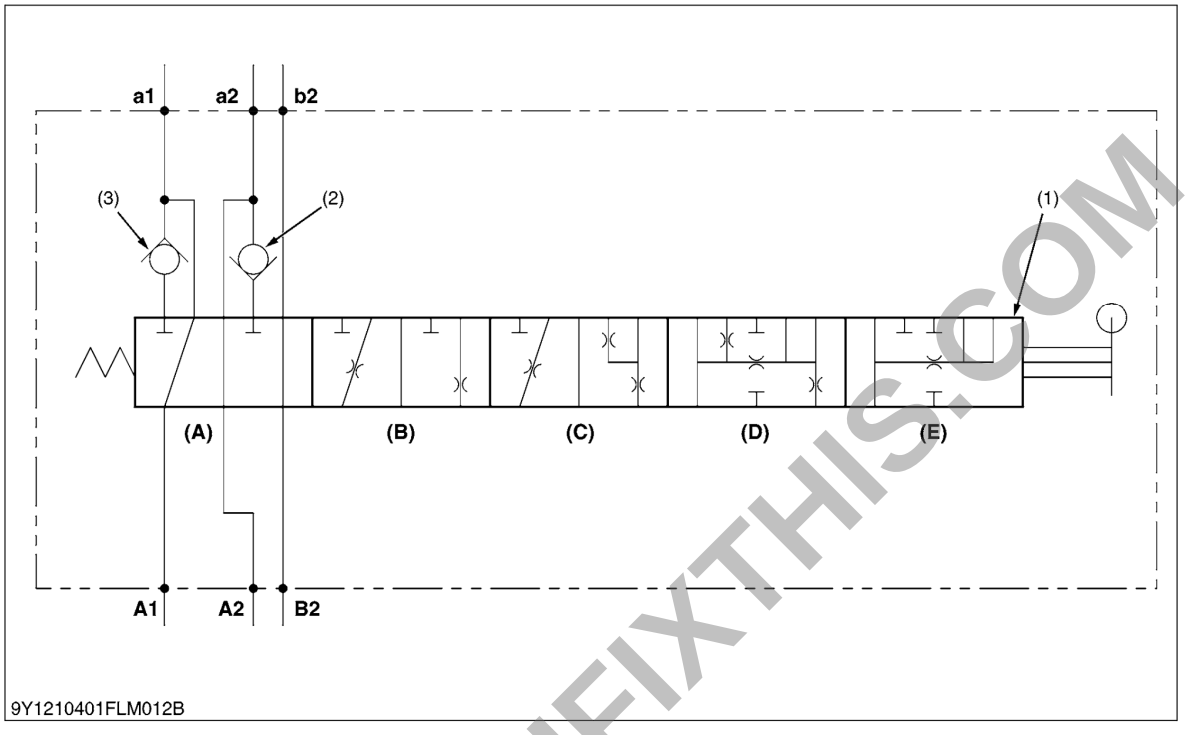
Type of Switch	Safety Switch Name	Number of Switch Contact
Normal open type	Seat switch	1
	PTO shift lever switch	1
	Independent PTO Lever Switch (Rear PTO Switch)	2
	HST pedal neutral switch	2
Normal close type	Seat reverse switch	1

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(2) Hydraulic Circuit



9Y1210401FLM012B

(1) Spill Guard Valve Spool
(2) Load Check Valve
(3) Load Check Valve

(A) Neutral
(B) Step 1
(C) Step 2
(D) Step 3
(E) Stroke End

a1: To Boom Cylinder Bottom Side
a2: To Bucket Cylinder Rod Side
b2: To Bucket Cylinder Bottom Side

A1: From Boom Control Valve
A2: From Bucket Control Valve
B2: From Bucket Control Valve

The spill guard spool has five positions.
The position changes in accordance with the movement of spill guard linkage.

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