WSM

WORKSHOP MANUAL
TRACTOR

L4400

Kubota

KiSC issued 01, 2014 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.

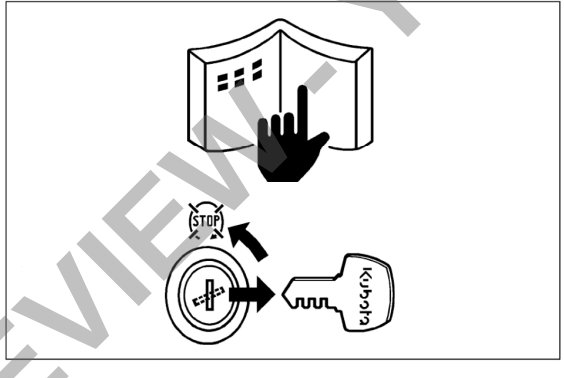
DANGER : **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

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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SPECIFICATIONS

Model			L4400 (4WD)
PTO power		kW (HP) / rpm	28.0 (37.5) / 2600
Engine	Maker		KUBOTA
	Model		V2203-M-E2A
	Type		Indirect injection, vertical, water-cooled 4 cycle diesel
	Number of cylinders		4
	Bore and stroke	mm (in.)	87 × 92.4 (3.4 × 3.6)
	Total displacement	L (cu.in.)	2.197 (134.1)
	Engine net power	kW (HP) / rpm	32.1 (43.0) / 2600
	Rated revolution	rps (rpm)	43.3 (2600)
	Maximum torque	N·m (lbf·ft)	139.5 (102.9)
	Battery		12 V, RC : 133 min, CCA : 582 A
	Fuel		Diesel fuel No.1 [below −10 °C (14 °F)] Diesel fuel No.2 [above −10 °C (14 °F)]
Capacities	Fuel tank	L (U.S.gals)	42 (11.1)
	Engine crankcase (with filter) L (U.S.qts)		7.6 (8.0)
	Engine coolant	L (U.S.qts)	6.5 (6.9)
	Transmission case	L (U.S.gals)	40 (10.6)
Dimensions	Overall length (without 3p)	mm (in.)	3005 (118.3)
	Overall width (min. tread)	mm (in.)	1585 (62.4)
	Overall height (with ROPS)	mm (in.)	2170 (85.4)
	Overall height (Top of steering wheel)	mm (in.)	1495 (58.9)
	Wheel base	mm (in.)	1845 (72.6)
	Min. ground clearance	mm (in.)	385 (15.2)
	Tread — Front	mm (in.)	1155 (45.5)
	Tread — Rear	mm (in.)	1180 (46.5), 1200 (47.2), 1300 (51.2), 1450 (57.1), 1545 (60.8)
Weight (with ROPS)		kg (lbs)	1430 (3153)
Clutch			Dry type single stage
Traveling system	Tires — AG Front		8.3 - 16
	Tires — AG Rear		14.9 - 24
	Indust. (option)	Front / Rear	10 - 16.5 / 17.5L - 24
	Steering		Hydrostatic power steering
	Transmission		Gear shift, 8 forward and 4 reverse
	Brake		Mechanical, wet disk type
	Min. turning radius (with brake)	m (feet)	2.6 (8.5)

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6. MAINTENANCE

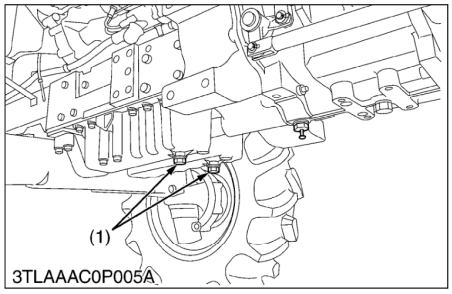
No.	Item	Period	Indication on hour meter													After since	Reference page		
			50	100	150	200	250	300	350	400	450	500	550	600	650	700				
1	Engine oil	Change	★			☆				☆				☆			every 200Hr	G-13		
2	Engine oil filter	Replace	★			☆				☆				☆			every 200Hr	G-14		
3	Hydraulic oil filter	Replace	★							☆							every 400Hr	G-15		
4	Transmission fluid	Change								☆							every 400Hr	G-27		
5	Front axle case oil	Change								☆							every 400Hr	G-15		
6	Front axle pivot	Adjust												☆			every 600Hr	G-27		
7	Greasing	-	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50Hr	G-16, 17		
8	Engine start system	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50Hr	G-18		
9	Wheel bolt torque	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50Hr	G-19		
10	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆	every 100Hr	G-23		*4
11	Air cleaner element [Double element type] Primary element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100Hr	G-20	@	*1
		Replace															every 1 year	G-20		*2
12	Air cleaner element [Double element type] Secondary element	Replace															every 1 year	G-20		
13	Fuel filter element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100Hr	G-20	@	
		Replace								☆							every 400Hr	G-20		
14	Fan belt	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100Hr	G-21		
15	Clutch	Adjust	★	☆		☆		☆		☆		☆		☆		☆	every 100Hr	G-16		
16	Brake	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100Hr	G-22		
17	Radiator hose and clamp	Check				☆				☆				☆			every 200Hr	G-25		
		Replace															every 2 years	G-25		

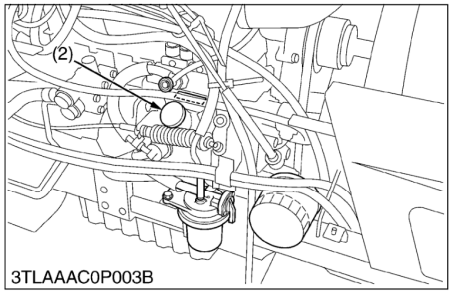
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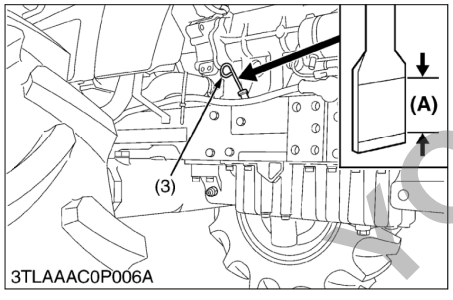
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[2] CHECK POINTS OF INITIAL 50 HOURS







Changing Engine Oil

CAUTION

- **Before changing oil, be sure to stop the engine.**

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-8.)**

Engine oil	Capacity (with filter)	7.6 L 8.0 U.S.qts 6.7 Imp.qts

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

A : Oil level is acceptable within this range.

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5. TIGHTENING TORQUES

Screws, bolt and nuts whose tightening torque 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.)	7.85 to 9.31	0.80 to 0.95	5.79 to 6.87	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8 (8 mm, 0.31 in.)	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	16.7 to 19.6	1.7 to 2.0	12.3 to 14.4	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	29.5 to 34.3	3.0 to 3.5	21.7 to 25.3
M10 (10 mm, 0.39 in.)	39.3 to 45.1	4.0 to 4.6	29.0 to 33.2	31.4 to 34.3	3.2 to 3.5	23.2 to 25.3	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2	39.3 to 44.1	4.0 to 4.5	29.0 to 32.5	60.9 to 70.6	6.2 to 7.2	44.9 to 52.0
M12 (12 mm, 0.47 in.)	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	–	–	–	77.5 to 90.2	7.9 to 9.2	57.2 to 66.5	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	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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1. TROUBLESHOOTING

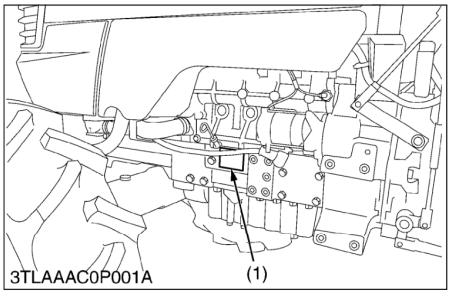
Symptom	Probable Cause	Solution	Reference Page
Engine Does Not Start	No fuel	Replenish fuel	G-8
	Air in the fuel system	Bleed	G-32
	Water in the fuel system	Change fuel and repair or replace fuel system	–
	Fuel pipe clogged	Clean	–
	Fuel filter clogged	Change	G-20
	Excessively high viscosity of fuel or engine oil at low temperature	Use specified fuel or engine oil	G-8
	Fuel with low cetane number	Use the specified fuel	G-8
	Fuel leak due to loose injection pipe retaining nut	Tighten nut	1-S30
	Incorrect injection timing	Adjust	1-S18, S19
	Fuel camshaft worn	Replace	–
	Injection nozzle clogged	Clean	1-S19, S20
	Injection pump malfunctioning	Repair or replace	1-S18, S19
	Seizure of crankshaft, camshaft, piston, cylinder or bearing	Repair or replace	–
	Compression leak from cylinder	Replace head gasket, tighten cylinder head screw, glow plug and nozzle holder	1-S30, S31
	Improper valve timing	Correct or Replace timing gear	1-S53
	Piston and cylinder worn	Replace	1-S40, S41, S62
	Excessive valve clearance	Adjust	1-S13
	OPC system defective	Refer to “Operator Presence Control” section	9-S13
Starter Does Not Run	Battery discharged	Charge	G-23, 24
	Starter malfunctioning	Repair or replace	9-S28, S31 to S33
	Main switch malfunctioning	Repair or replace	9-S10, S11
	Safety switches defective	Replace	9-S12
	Starter relay defective	Replace	9-S16
	Wiring disconnected	Connect	–

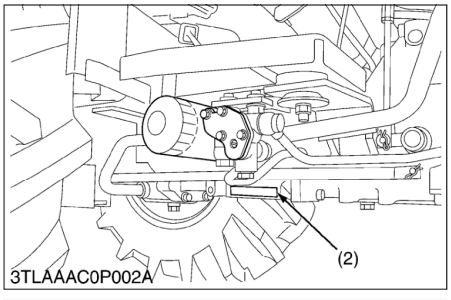
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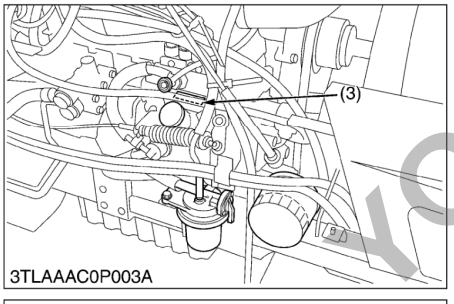
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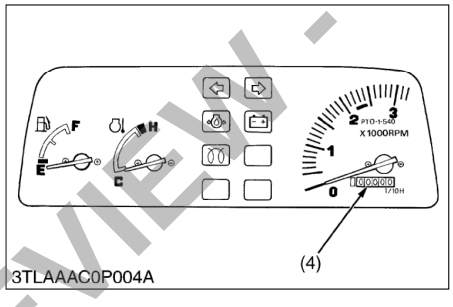
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1. TRACTOR IDENTIFICATION









(1) Tractor Identification Plate
(2) Tractor Serial Number
(3) Engine Serial Number
(4) Hour Meter

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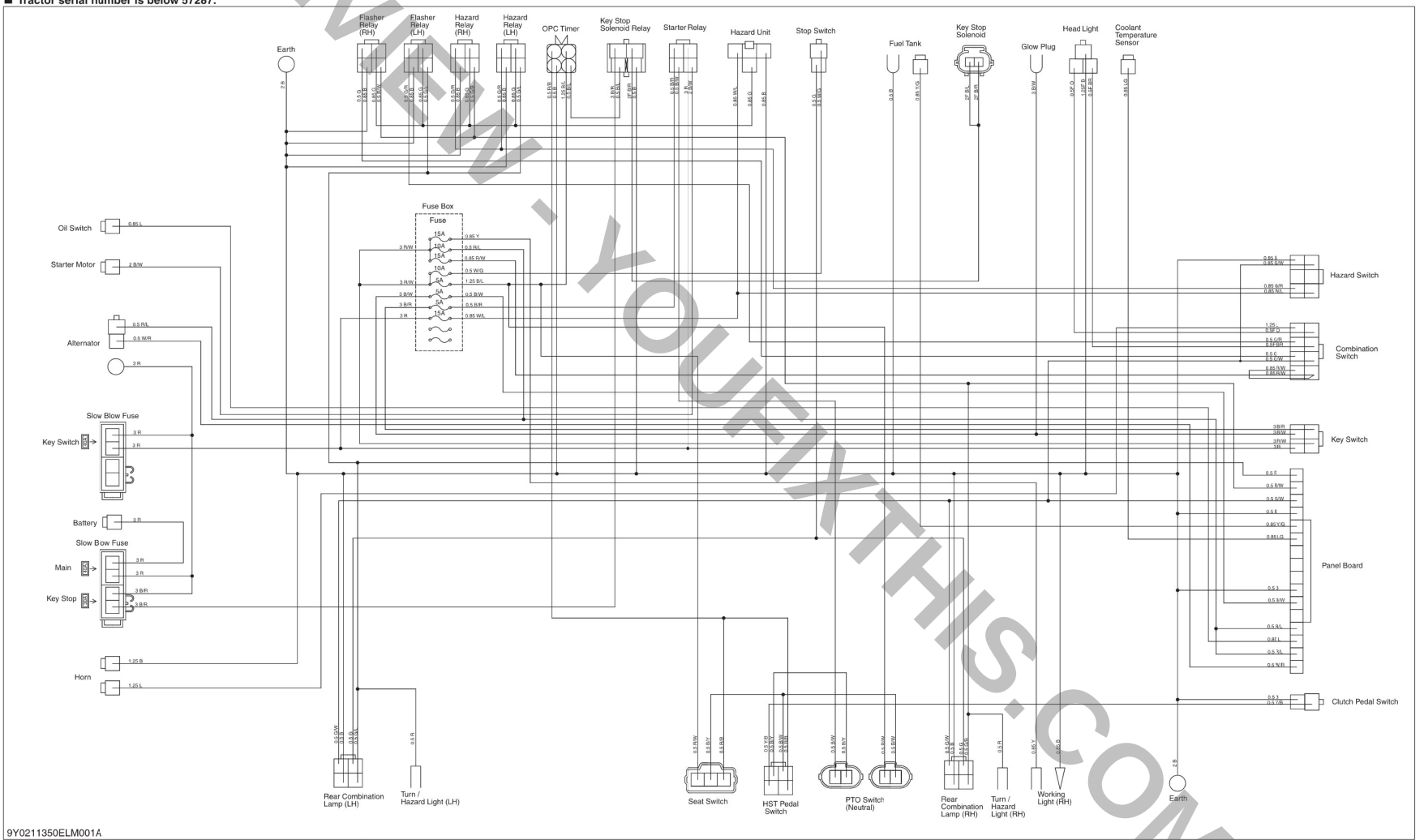
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1. WIRING DIAGRAM

[1] TRACTOR WITHOUT THIRD FUNCTION VALVE

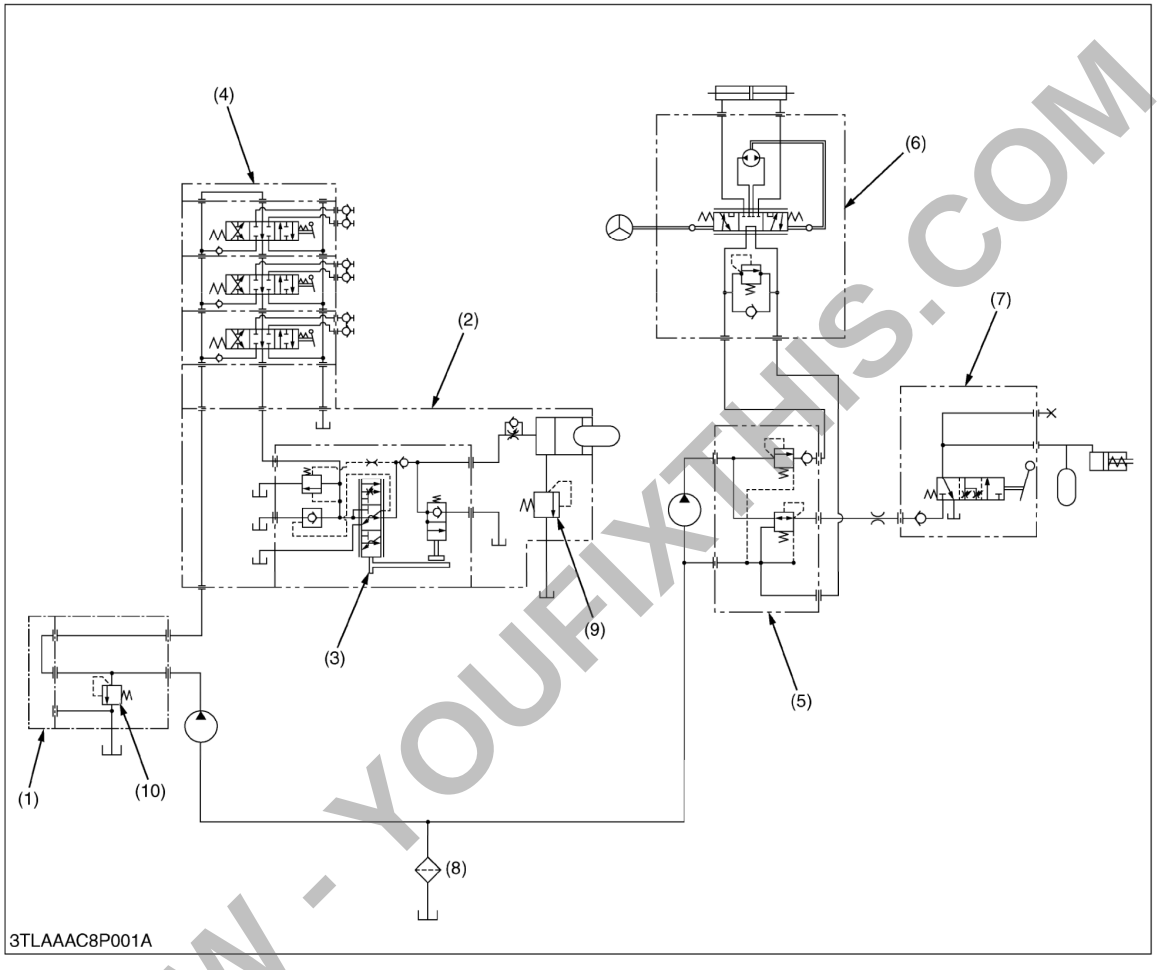
■ **Tractor serial number is below 57287.**



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1. HYDRAULIC CIRCUIT



(1) Front Hydraulic Block
(2) Hydraulic Cylinder Block
(3) Position Control Valve
(4) Auxiliary Control Valve (Option)
(5) Regulator Valve (Refer to CLUTCH Section)
(6) Power Steering Controller (Refer to STEERING Section)
(7) PTO Clutch Valve (Refer to CLUTCH Section)
(8) Oil Filter
(9) Cylinder Safety Valve
(10) Relief Valve

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■ **NOTE**
- **When using, attach with following parts.**
  O-ring : 04811-00180
- **This adaptor is modified from Adaptor 61 of flowmeter adaptor set. (See page G-43.)**

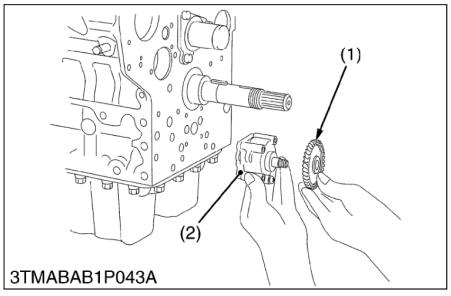
A	22 mm (0.872 in.)	**H**	10 mm dia. (0.39 in. dia.)	**O**	61.5 mm (2.42 in.)
B	11 mm (0.437 in.)	**I**	G 3/8	**P**	24 mm (0.94 in.)
C	24 mm dia. (0.94 in. dia.)	**J**	89 mm (3.50 in.)	**Q**	27.7 mm (1.09 in.)
D	18 mm dia. (0.71 in. dia.)	**K**	135 mm (5.31 in.)	**R**	0.244 rad (14 °)
E	12 mm dia. (0.47 in. dia.)	**L**	7 mm dia. (0.28 in. dia.)	**S**	40 mm (1.57 in.)
F	1.7 to 1.9 mm (0.067 to 0.075 in.)	**M**	8.5 mm dia. (0.33 in. dia.)	**T**	60 mm dia. (2.36 in. dia.)
G	30 mm Round (1.18 in. Round)	**N**	37 mm (1.46 in.)		

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(Reference)
- Compared with adaptor 61, the followings are different.
  1) Dimensions S, T and number of holes M.
  2) Direction of pipe I.

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3TMABAB1P043A

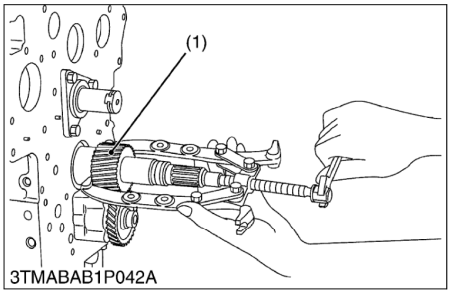
Oil Pump

1. Remove the oil pump drive gear mounting nut, and draw out the oil pump drive gear (1) with a puller.
2. Remove the four oil pump mounting screws.
3. Detach the oil pump (2).

(When reassembling)

(1) Pump Drive Gear (2) Oil Pump

W1045598



3TMABAB1P042A

Crank Gear

1. Loosen the oil pump drive gear mounting nut.
2. Draw out the crank gear (1) with a puller.
3. Remove the feather key on the crankshaft.

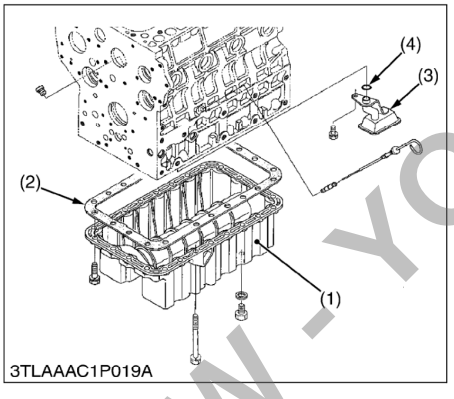
(When reassembling)

- Check to see that the feather key on the crankshaft. Heat the crank gear to approx. 80 °C (176 °F), and fit on the crankshaft.

(1) Crank Gear

W1045779

(3) Piston and Connecting Rod



3TLAAAC1P019A

Oil Pan and Oil Strainer

1. Remove the oil pan mounting screws.
2. Remove the oil pan (1) by lightly tapping the rim of the pan with a wooden hammer.
3. Remove the oil pan gasket (2).
4. Remove the oil strainer (3) and O-ring (4).

(When reassembling)

- After cleaning the oil strainer (3), check to see that the filter mesh in clean, and install it.
- Visually check the O-ring (4), apply engine oil, and install it.
- Securely fit the O-ring (4) to the oil strainer (3).
- Apply a liquid gasket (Three Bond 1215 or equivalent) to the oil pan side of the oil pan gasket (2).
- To avoid uneven tightening, tighten oil pan mounting screws in diagonal order from the center.

(1) Oil Pan (3) Oil Strainer
(2) Oil Pan Gasket (4) O-ring

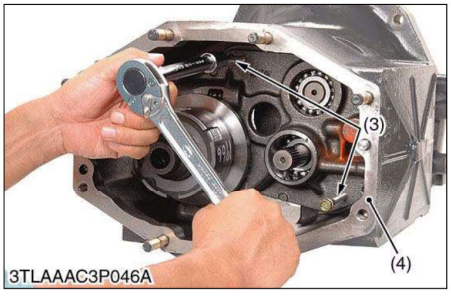
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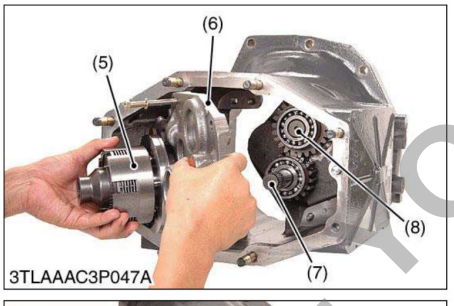
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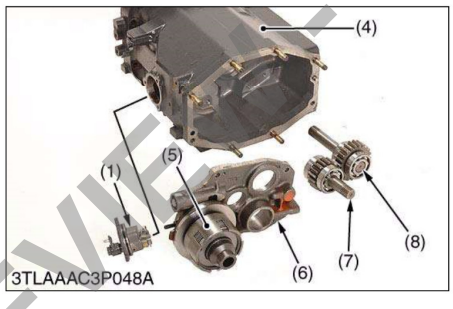
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[3] DISASSEMBLING AND ASSEMBLING









PTO Clutch Valve, PTO Clutch Holder

1. Remove PTO clutch valve (1).
2. Remove PTO clutch holder (6) together with PTO clutch pack (5) by using two jack screw M8 (3).
3. Tap out 18T gear shaft (7).
4. Tap out 23T gear shaft (8).

(When reassembling)

- Apply a small amount of transmission fluid to the O-ring.
- Install oil pipe (2) to the side hole of PTO clutch holder (6) firmly.

Tightening torque	PTO clutch valve mounting screw	23.5 to 27.4 N·m 2.4 to 2.8 kgf·m 17.4 to 20.2 lbf·ft
	PTO clutch holder mounting screw	77.5 to 90.2 N·m 7.9 to 9.2 kgf·m 57.1 to 66.5 lbf·ft

(1) PTO Clutch Valve
(2) Oil Pipe
(3) Jack Screw M8
(4) Mid Case
(5) PTO Clutch Pack
(6) PTO Clutch Holder
(7) 18T Gear Shaft
(8) 23T Gear Shaft

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MECHANISM

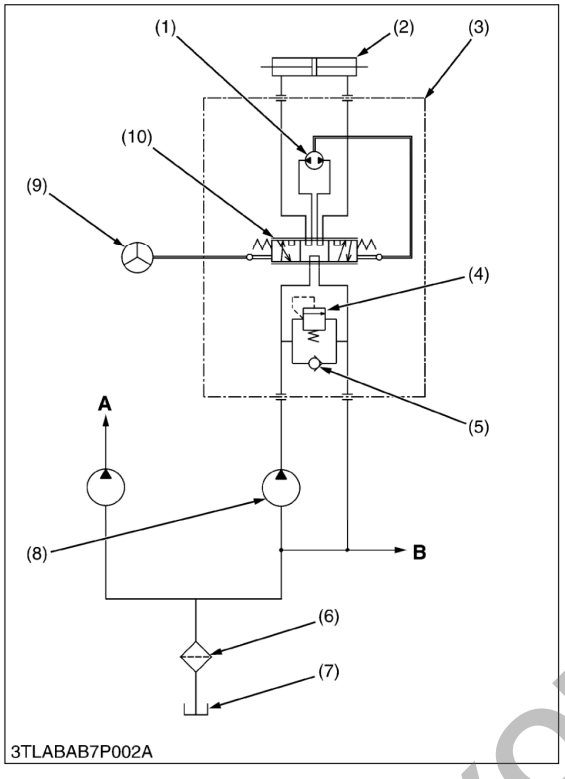
CONTENTS

1. STRUCTURE 4-M1

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[2] HYDRAULIC CIRCUIT



When the engine starts, the hydraulic pump (8) pressure-feeds the oil, drawn from the transmission case (7) through the oil filter (6), to the steering controller (3).

The oil which has entered steering controller (3) is directed to control valve (10).

As the steering wheels is turned, control valve (10) operates and the oil passes through gerotor (1) and into steering cylinder (2). The cylinder rod then moves to control the directional movement of the front wheels.

Return oil from steering cylinder (2) passes through control valve (10) is sent to the PTO clutch valve.

When the engine is not operating, and the steering wheel is turned, gerotor (1) rotates to supply oil to steering cylinder (2). Thus the machine can be steered manually.

(1) Gerotor
(2) Steering Cylinder
(3) Steering Controller
(4) Relief Valve
(5) Check Valve
(6) Oil Filter
(7) Transmission Case
(8) Hydraulic Pump
(9) Steering Wheel
(10) Control Valve

A : To Three Point Hydraulic System and Others
B : To PTO Clutch Valve

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Hydraulic Cylinder

1. Loosen and remove the hydraulic cylinder assembly mounting screws and nuts.
2. Support the hydraulic cylinder assembly with nylon lift strap and hoist, and then take out it.

(When reassembling)

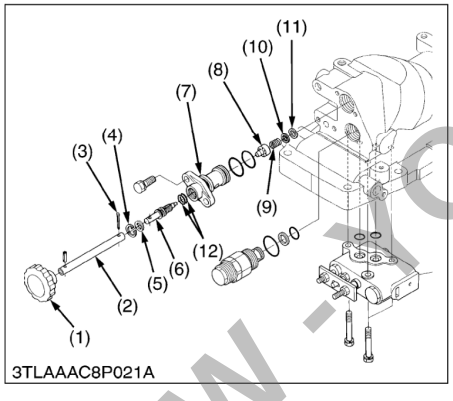
- Apply liquid gasket (Three Bond 1208D or equivalent) to joint face of the hydraulic cylinder assembly and transmission case after eliminate the water, oil and stuck liquid gasket.
- When replacing the hydraulic cylinder assembly mounting stud bolts, apply liquid lock (Three Bond 1372 or equivalent) to **"A"** portion of the stud bolt.

Tightening torque	Hydraulic cylinder assembly mounting stud bolts	34.3 to 49.0 N·m 3.5 to 5.0 kgf·m 25.3 to 36.2 lbf·ft
	Hydraulic cylinder assembly mounting screws and nuts	77.4 to 90.2 N·m 7.9 to 9.2 kgf·m 57.1 to 66.5 lbf·ft

■ **NOTE**

- **Reassemble the hydraulic cylinder assembly to the tractor, be sure to adjust the position control feedback rod and draft control rod (if equipped). (See page 8-S12, S13.)**

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Lowering Speed Adjusting valve

1. Remove the lowering speed adjusting valve assembly from hydraulic cylinder block.
2. Remove the internal snap ring (4), and remove the hydraulic adjusting shaft (6).
3. Remove the internal snap ring (11), and draw out the spring (9) and adjusting collar (8).

(When reassembling)

- Install the hydraulic adjusting shaft (6) to valve body (7), noting two O-rings (12).

(1) Grip
(2) Extension Shaft
(3) Cotter Pin
(4) Internal Snap Ring
(5) Washer
(6) Hydraulic Adjusting Shaft
(7) Valve Body
(8) Adjusting Collar
(9) Spring
(10) Washer
(11) Internal Snap Ring
(12) O-rings

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