WSM

WORKSHOP MANUAL
TRACTOR

L3240,L3540,L4240,
L5240,L5740

Kubota

KiSC issued 08, 2011 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.

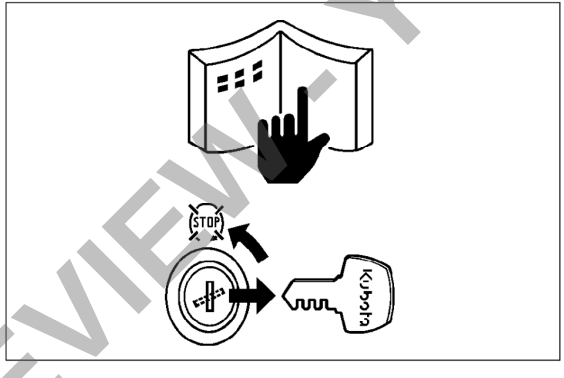
DANGER : **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

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

[Manual Transmission Model]

Model			L3240
			4WD
Engine	Model		D1703-M-E2-HST
	Type		Indirect injection vertical, water-cooled, 4-cycle diesel
	Number of cylinders		3
	Total displacement		1.647 L (100.5 cu.in.)
	Bore and stroke		87 × 92.4 mm (3.4 × 3.6 in.)
	Net power*		23.9 kW (32.5 HP)
	PTO power* (factory observe)		19.8 kW (26.9 HP)* / 2700 min^{-1} (rpm)
	Maximum torque		101.7 N·m (10.4 kgf·m, 75.0 lbf·ft)
	Battery capacity		12 V, RC : 123 min, CCA : 490 A
	Fuel		Diesel fuel No. 1 [below −10 °C (14 °F], Diesel fuel No. 2-D [above −10 °C (14 °F)]
Capacities	Fuel tank		44 L (11.6 U.S.gals, 9.68 Imp.gals)
	Engine crankcase (with filter)		5.7 L (6.0 U.S.qts, 5.0 Imp.qts)
	Engine coolant		6.0 L (6.3 U.S.qts, 5.3 Imp.qts)
	Transmission case		42 L (11.1 U.S.gals, 9.24 Imp.gals)
Dimensions	Overall length (without 3P)		3120 mm (119.3 in.)
	Overall width (min. tread)		1520 mm (59.8 in.)
	Overall height (with ROPS)		2460 mm (97.0 in.)
	Wheel base		1805 mm (71.3 in.)
	Min. ground clearance		350 mm (14.0 in.)
	Tread	Front	1150 mm (59.4 in.)
		Rear	1200 mm (47.2 in.), 1300 mm (51.2 in.), 1385 mm (54.5 in.), 1480 mm (58.3 in.)
Weight (with ROPS)			1475 kg (3155 lbs)
Travelling system	Standard tire size	Front	7-16
		Rear	12.4-24
	Clutch		Dry type single stage
	Steering		Hydrostatic power steering
	Transmission		8 forward and reverse fully synchronized main and shuttle transmission
	Braking system		Wet disk type
	Min. turning radius (with brake)		2.7 m (8.5 feet)
Hydraulic unit	Hydraulic control system		Position control
	Pump capacity		31.5 L (8.3 U.S.gals, 6.9 Imp.gals) / min.
	Three point hitch		SAE Category 1
	Max. lift force	At lift points	1700 kg (3750 lbs)
		24 in. behind lift points	1200 kg (2650 lbs)
	System pressure		17.7 MPa (180 kgf/cm^2, 2560 psi)
PTO	Rear PTO		SAE 1-3/8, 6 splines
	PTO / Engine speed		540 min^{-1} (rpm) / 2550 min^{-1} (rpm)
	Mid-PTO (if equipped)		USA No. 5 (KUBOTA 10-tooth) involute spline
	PTO / Engine speed		2000 min^{-1} (rpm) / 2580 min^{-1} (rpm)

Note : * Manufacture's estimate

The company reserves the right to change the specifications without notice.

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[HST Model]

Model			L3240	L3540	L4240	L5240	L5740
			4WD				
Engine	Model		D1703-M-E2-HST	D1803-M-E2-HST	V2203-M-E2-HST	V2403-M-TE2-HST	
	Type		Indirect injection vertical, water-cooled, 4-cycle diesel				
	Number of cylinders		3		4		
	Total displacement		1.647 L (100.5 cu.in.)	1.826 L (111.4 cu.in.)	2.197 L (134.0 cu.in.)	2.434 L (148.5 cu.in.)	
	Bore and stroke		87 × 92.4 mm (3.4 × 3.6 in.)	87 × 102.4 mm (3.4 × 4.0 in.)	83 × 92.4 mm (3.3 × 3.6 in.)	87 × 102.4 mm (3.4 × 4.0 in.)	
	Net power*		23.9 kW (32.0 HP)	26.1 kW (35.0 HP)	31.3 kW (42.0 HP)	38.8 kW (52.0 HP)	42.5 kW (57.0 HP)
	PTO power* (factory observe)		18.7 kW (25.4 HP)* / 2700 min^{-1} (rpm)	20.9 kW (28.4 HP)* / 2700 min^{-1} (rpm)	26.1 kW (35.5 HP) / 2700 min^{-1} (rpm)	33.6 kW (45.7 HP) / 2600 min^{-1} (rpm)	37.3 kW (50.7 HP) / 2700 min^{-1} (rpm)
	Maximum torque		101.7 N·m (10.4 kgf·m, 75.0 lbf·ft)	112.8 N·m (11.5 kgf·m, 83.2 lbf·ft)	139.7 N·m (14.2 kgf·m, 103.0 lbf·ft)	180.6 N·m (18.4 kgf·m, 13.8 lbf·ft)	
	Battery capacity		12 V, RC : 123 min, CCA : 490 A	12 V, RC : 133 min, CCA : 582 A			
	Fuel		Diesel fuel No. 1 [below –10 °C (14 °F], Diesel fuel No. 2-D [above –10 °C (14 °F)]				
Capa-cities	Fuel tank		44 L (11.6 U.S.gals, 9.68 Imp.gals)		50 L (13.2 U.S.gals, 11.0 Imp.gals)	54 L (14.3U.S.gals, 11.9 Imp.gals)	
	Engine crankcase (with filter)		5.7 L (6.0 U.S.qts, 5.0 Imp.qts)	6.7 L (7.1 U.S.qts, 5.9 Imp.qts)	8.2L (8.7 U.S.qts, 7.2 Imp.qts)	9.4 L (9.9 U.S.qts, 8.3 Imp.qts)	
	Engine coolant		6.0 L (6.3 U.S.qts, 5.3 Imp.qts)	7.5 L (7.9 U.S.qts, 6.6 Imp.qts)		8.2L (8.7 U.S.qts, 7.2 Imp.qts)	
	Transmission case		42 L (11.1 U.S.gals, 9.24 Imp.gals)		43 L (11.4U.S.gals, 9.46 Imp.gals)	45 L (11.9 U.S.gals, 9.90 Imp.gals)	
Dimensions	Overall length (without 3P)		3120 mm (122.8 in.)		3285 mm(129.3 in.)	3410 mm (134.3 in.)	
	Overall width (min. tread)		1520 mm (59.8 in.)		1665 mm (65.55 in.)	1570 mm (61.81 in.)	
	Overall height (with ROPS)		2460 mm (96.85 in.)		2480 mm (97.64 in.)	2565 mm (101.0 in.)	
	Wheel base		1805 mm (71.1 in.)		1895 mm (74.6 in.)	1915 mm (75.4 in.)	
	Min. ground clearance		350 mm (13.8 in.)		375 mm (14.8 in.)	400 mm (15.7 in.)	
	Tread	Front	1150 mm (45.28 in.)		1145 mm (45.08 in.)	1340 mm (52.8 in.)	
		Rear	1200 mm (47.2 in.), 1300 mm (51.2 in.), 1385 mm (54.5 in.), 1480 mm (58.3 in.)		1285 mm (50.6 in.), 1435 mm (56.5 in.), 1530 mm (60.2 in.)	1225 mm (48.23 in.), 1325 mm (52.2 in.), 1425 mm (56.10 in.), 1525 mm (60.04 in.)	
Weight (with ROPS)			1540 kg (3395 lbs)		1665 kg (3671 lbs)	1745 kg (3847 lbs)	
Travelling system	Standard tire size	Front	7-16		8-16	9.5-16	
		Rear	12.4-24		14.9-24	13.6-28	
	Clutch		Dry type single stage				
	Steering		Hydrostatic power steering				
	Transmission		Hydrostatic transmission (3 speeds)				
	Braking system		Wet disk type				
	Min. turning radius (with brake)		2.7 m (8.9 feet)			2.8 m (9.2 feet)	

Note : * Manufacture's estimate
The company reserves the right to change the specifications without notice.

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4. LUBRICANTS, FUEL AND COOLANT

No.	Place	Capacity			Lubricants, fuel and coolant
		L3240	L3540	L4240	
1	Fuel tank	44 L 11.6 U.S.gals 9.68 Imp.gals		50 L 13.2 U.S.gals 11.0 Imp.gals	No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below –10 °C (14 °F)
2	Cooling system	6.0 L 6.3 U.S.qts 5.3 Imp.qts	7.5 L 7.9 U.S.qts 6.6 Imp.qts		Fresh clean water with anti-freeze
	Recovery tank	1.0 L 1.1 U.S.qts 0.88 Imp.qts			
3	Engine crankcase (with filter)	5.7 L 6.0 U.S.qts 5.0 Imp.qts	6.7 L 7.1 U.S.qts 5.9 Imp.qts	8.2 L 8.7 U.S.qts 7.2 Imp.qts	Engine oil : API service classification CF or better Above 25 °C (77 °F) : SAE30, 10W-30 or 15W-40 0 to 25 °C (32 to 77 °F) : SAE20, 10W-30 or 15W-40 Below 0 °C (32 °F) : SAE10W, 10W-30 or 15W-40
4	Transmission case	42 L 11.1 U.S.gals 9.2 Imp.gals		43 L 11.4 U.S.gals 9.5 Imp.gals	KUBOTA UDT or SUPER UDT fluid*
5	Front axle case (4WD)	6.5 L 6.9 U.S.qts 5.7 Imp.qts		9.0 L 9.5 U.S.qts 7.9 Imp.qts	KUBOTA UDT or SUPER UDT fluid* or SAE80, 90 gear oil

Greasing

	Place	No. of greasing point		Capacity	Type of grease
6	Front axle case support	–	2	Until grease overflows	Multipurpose type grease NLGI-2 or NLGI-1 (GC-LB)
	Front axle support (4WD)	2			
	Top link	2			
	Top link bracket	2 (with draft control) (if equipped)			
	Lift rod	1			
	Lift cylinder	4			
	Battery terminal	2		Moderate amount	
	Throttle cable	Oiling			Engine oil

■ **NOTE**

- ***KUBOTA UDT or SUPER UDT fluid : KUBOTA original transmission hydraulic fluid.**

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6. MAINTENANCE

No.	Item			Indication on hour meter													Interval	Reference page	Important	
				50	100	150	200	250	300	350	400	450	500	550	600	650	700				
1	Engine oil		Change	★			☆				☆				☆			every 200 Hr	G-19		
2	Engine oil filter		Replace	★			☆				☆				☆			every 200 Hr	G-19		
3	Transmission oil filter (HST)		Replace	★			☆				☆				☆			every 200 Hr	G-20		
4	Hydraulic oil filter		Replace	★							☆							every 400 Hr	G-21		
5	Transmission fluid		Change								☆							every 400 Hr	G-35		
6	Front axle case oil		Change								☆							every 400 Hr	G-36		
7	Front axle pivot		Adjust												☆			every 600 Hr	G-36		
8	Greasing		–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-24		
9	Engine start system		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-22		
10	Wheel bolt torque		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-22		
11	Battery condition		Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-28	*4	
12	Air cleaner element [Double type]	Primary element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-26	*1	@
			Replace															every 1 year	G-37	*2	
		Secondary element	Replace															every 1 year	G-37		
13	Fuel filter element		Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-26		@
			Replace								☆							every 400 Hr	G-34		
14	Fan belt		Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-27		
15	Clutch		Adjust	★	☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25		
16	Brake		Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25		
17	Radiator hose and clamp		Check				☆				☆				☆			every 200 Hr	G-30		
			Replace															every 2 years	G-38		
18	Power steering oil line		Check				☆				☆				☆			every 200 Hr	G-31		
			Replace															every 2 years	G-38		
19	Fuel line		Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-27		@
			Replace															every 2 years	G-38		

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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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1. WIRING DIAGRAM

Color of Wiring

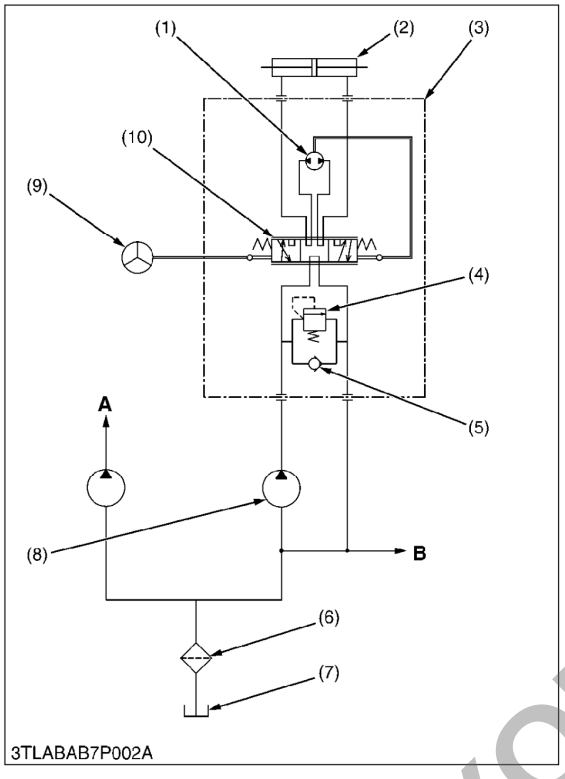
B ..... Black	Br/W ..... Brown / White	R/B ..... Red / Black
G ..... Green	Br/G ..... Brown / Green	R/G ..... Red / Green
L ..... Blue	Br/L ..... Brown / Blue	R/L ..... Red / Blue
P ..... Pink	Br/R ..... Brown / Red	R/W ..... Red / White
R ..... Red	G/B ..... Green / Black	R/Y ..... Red / Yellow
V ..... Violet	G/L ..... Green / Blue	W/B ..... White / Black
W ..... White	G/R ..... Green / Red	W/G ..... White / Green
Y ..... Yellow	G/W ..... Green / White	W/L ..... White / Blue
Br ..... Brown	L/R ..... Blue / Red	W/R ..... White / Red
Lg ..... Light Green	L/W ..... Blue / White	W/Y ..... White / Yellow
O ..... Orange	L/Y ..... Blue / Yellow	Y/B ..... Yellow / Black
B/L ..... Black / Blue	Lg/B ..... Light Green / Black	Y/G ..... Yellow / Green
B/R ..... Black / Red	Lg/L ..... Light Green / Blue	Y/L ..... Yellow / Blue
B/W ..... Black / White	O/B ..... Orange / Black	Y/R ..... Yellow / Red
B/Y ..... Black / Yellow	O/W ..... Orange / White	Y/O ..... Yellow / Orange
Br/B ..... Brown / Black	P/L ..... Pink / Blue	Y/W ..... Yellow / White
Br/Y ..... Brown / Yellow		

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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 wheel 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, HST, etc..

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, HST, etc.

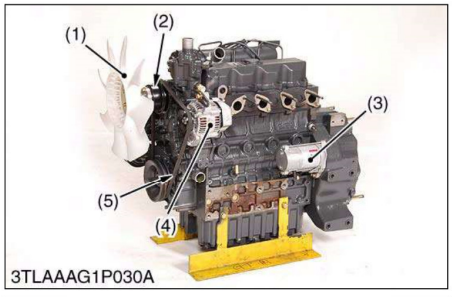
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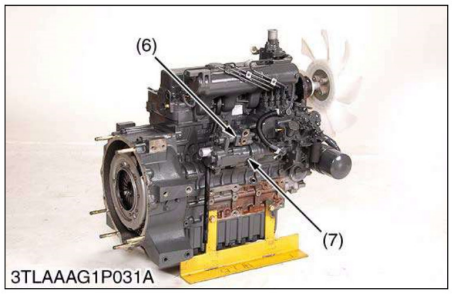
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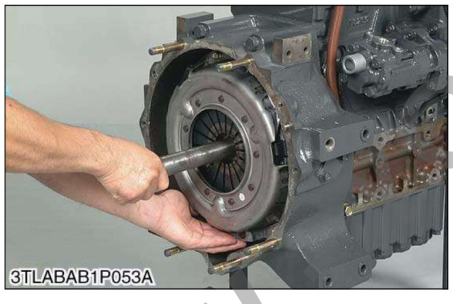
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6. DISASSEMBLING AND ASSEMBLING

[1] OUTER PARTS







Outer Parts of Engine

1. Remove the cooling fan (1), fan belt (5) and fan pulley (2).
2. Remove the alternator (4).
3. Remove the starter motor (3).
4. Remove the hydraulic pump (7) with pump holder and regulating valve (6). **[Manual Transmission Model]**
   Remove the hydraulic pump (7) with pump holder. **[HST Model]**

(When reassembling)

- Be sure to adjust the fan belt tension. (Refer to "**7. CHECK AND MAINTENANCE**" at "**G. GENERAL**" section.)

Tightening torque	Alternator mounting screw (M10)	40 to 44 N·m 4.0 to 4.5 kgf·m 29 to 32 lbf·ft
	Tension adjusting Screw (M8)	18 to 20 N·m 1.8 to 2.1 kgf·m 13 to 15 lbf·ft

(1) Cooling Fan
(2) Fan Pulley
(3) Starter Motor
(4) Alternator
(5) Fan Belt
(6) Regulating Valve
(7) Hydraulic Pump

W1023189

Clutch Assembly

1. Remove the clutch from the flywheel.

(When reassembling)

- Direct the shorter end of the clutch disc boss toward the flywheel.
- Apply molybdenum disulphide (Three Bond 1901 or equivalent) to the splines of clutch disc boss.
- Install the pressure plate, noting the position of straight pins.

■ **IMPORTANT**

- **Align the center of disc and flywheel by inserting the clutch center tool. (Refer to "8. SPECIAL TOOLS" at "G. GENERAL" section.)**

■ **NOTE**

- **Do not allow grease and oil on the clutch disc facing.**

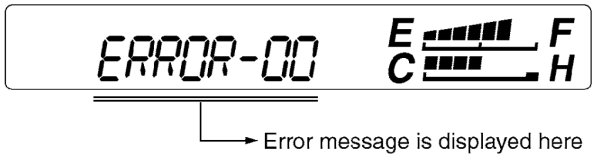
Tightening torque	Clutch mounting screws	24 to 27 N·m 2.4 to 2.8 kgf·m 18 to 20 lbf·ft

W10171850

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■ **Error Display for Manual Transmission Model**



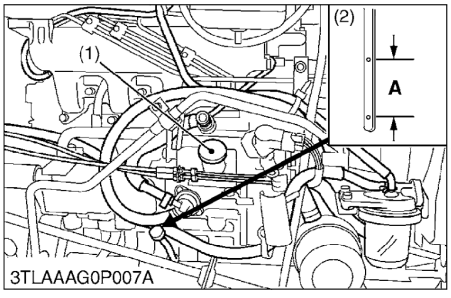
Display on LCD Screen	Trouble Item	Probable Cause	Solution	Reference Page
ERROR-00	Electronic instrument panel memory device has failed	• Electronic instrument panel memory device failure	• Replace the electronic instrument panel	9-S16
ERROR-20	Wrong setting of electric instrument panel	• HST specified electronic instrument panel installed wrong on Manual transmission model	• Input appropriate transmission model by Transmission model Input Mode (**Mode I**)	9-S22

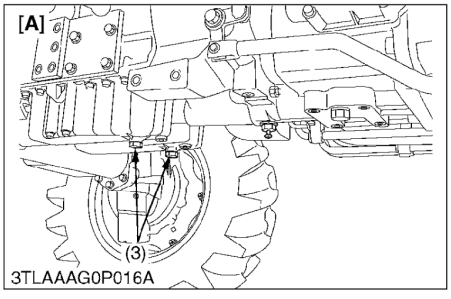
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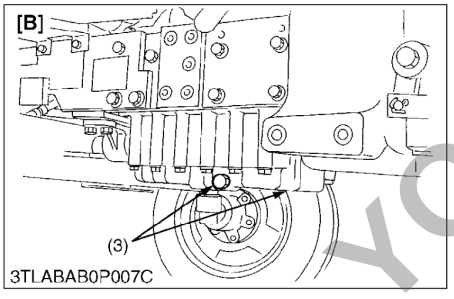
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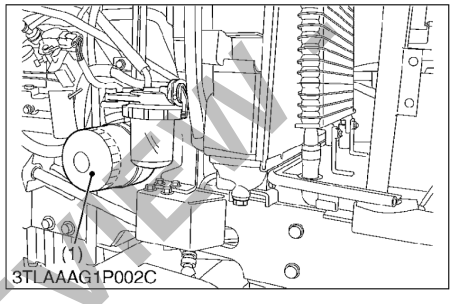
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[2] CHECK POINTS OF INITIAL 50 HOURS









Changing Engine Oil

CAUTION

- **Be sure to stop the engine 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.

■ IMPORTANT

- **Refer to "4. LUBRICANTS, FUEL AND COOLANT" at "G. GENERAL" section.**

Engine oil capacity (with filter)	L3240	5.7 L 6.0 U.S.qts 5.0 Imp.qts
	L3540	6.7 L 7.1 U.S.qts 5.9 Imp.qts
	L4240	8.2 L 8.7 U.S.qts 7.2 Imp.qts
	L5240 L5740	9.4 L 9.9 U.S.qts 8.3 Imp.qts

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

[A] L3240, L4240
[B] L3540, L5240, L5740
A : Oil level is acceptable within this range.

W1036028

Replacing Engine Oil Filter

CAUTION

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

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

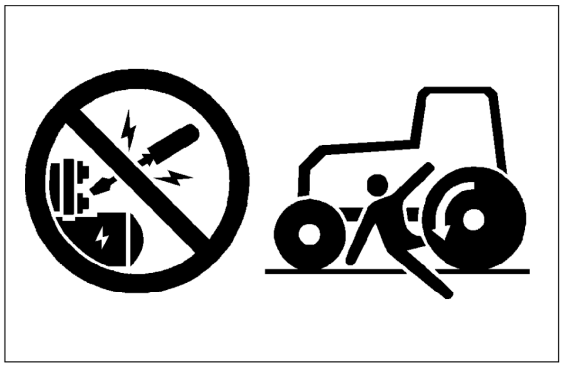
■ IMPORTANT

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

(1) Engine Oil Filter

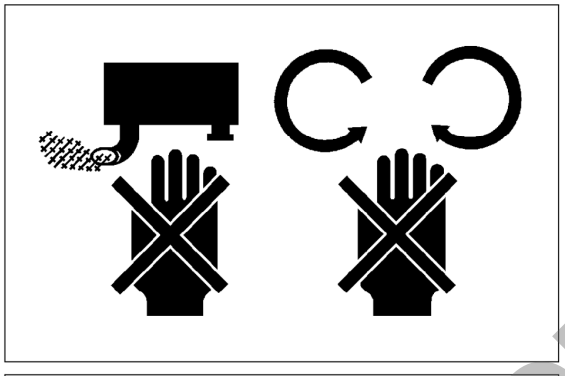
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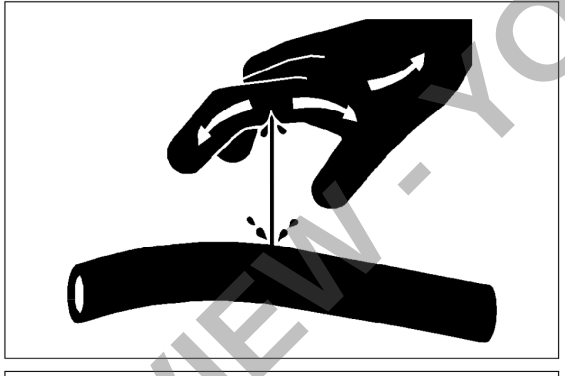
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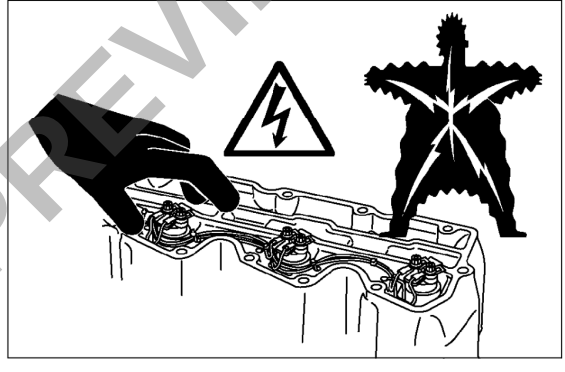


SAFETY STARTING

- 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 or 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 injector.
  Pay sufficient caution to electric shock when performing work activities.

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[12] CHECK POINTS OF EVERY 2 YEARS

Replacing Fuel Hose

1. Replace the fuel hoses and clamps, if necessary.
   Refer to **"Checking Fuel Line"**. (See page G-27.)

W1037148

Replacing Air Intake Line

1. Replace the intake hoses and clamps, if necessary.
   Refer to **"Checking Intake Air Line"**. (See page G-32.)

W1037203

Replacing HST Oil Line

1. Replace the hoses and clamps.
   Refer to **"Checking HST Oil Line and Power Steering Line"**. (See page G-31.)

W1037296

Replacing Power Steering Hose

1. Replace the hoses and clamps.
   Refer to **"Checking HST Oil Line and Power Steering Line"**. (See page G-31.)

W1037361

Replacing Radiator Hose (Water Pipes)

1. Replace the hoses and clamps.
   Refer to **"Checking Radiator Hose and Hose Clamp"**. (See page G-30.)

W1037429

Replacing Lift Cylinder Hose

1. Replace the lift cylinder hose.
   Refer to "**8. HYDRAULIC SYSTEM**" servicing section.

W1045670

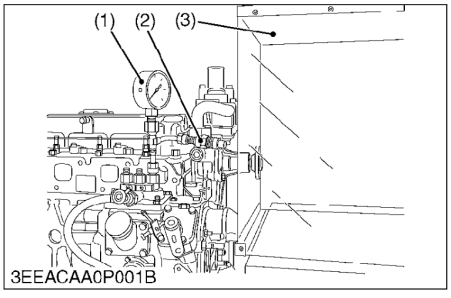
Replacing Air Conditioner Pipes and Hoses

1. Replace the air conditioner pipes and hoses.
   Refer to "**10. CABIN**" servicing section.

W1070227

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Fuel Tightness of Pump Element

1. Remove the engine stop solenoid.
2. Remove the injection pipes and glow plugs.
3. Install the injection pump pressure tester to the injection pump.
4. Install the injection nozzle (2) jetted with the proper injection pressure to the injection pump pressure tester (1). (Refer to the figure.)
5. Set the speed control lever to the maximum speed position.
6. Run the starter to increase the pressure.
7. If the pressure can not reach the allowable limit, replace the pump with new one or repair with a Kubota-authorized pump service shop.

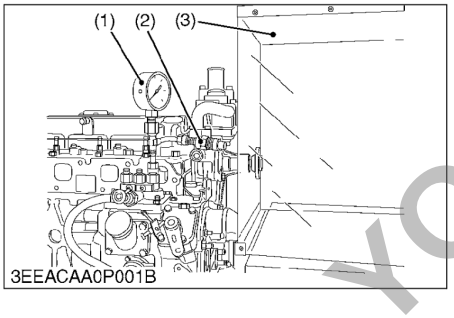
Fuel tightness of pump element	Allowable limit	13.7 MPa 140 kgf/cm^2 1991 psi

■ **NOTE**

- **Never try to disassemble the injection pump assembly. For repairs, you are strongly requested to contact a Kubota-authorized pump service shop.**

(1) Injection Pump Pressure Tester (3) Protection Cover for Jetted Fuel
(2) Injection Nozzle

W1017430



Fuel Tightness of Delivery Valve

1. Remove the engine stop solenoid.
2. Remove the injection pipes and glow plugs.
3. Set a pressure tester to the fuel injection pump.
4. Install the injection nozzle (2) jetted with the proper injection pressure to the injection pump pressure tester (1).
5. Run the starter to increase the pressure.
6. Stop the starter when the fuel jets from the injection nozzle. After that, turn the flywheel by the hand and raise the pressure to approx. 13.7 MPa (140 kgf/cm^2, 1991 psi).
7. Now turn the flywheel back about half a turn (to keep the plunger free). Maintain the flywheel at this position and clock the time taken for the pressure to drop from 13.7 to 12.8 MPa (from 140 to 130 kgf/cm^2, from 1990 to 1850 psi).
8. Measure the time needed to decrease the pressure from 13.7 to 12.8 MPa (140 to 130 kgf/cm^2, 1990 to 1850 psi).
9. If the measurement is less than allowable limit, replace the pump with new one or repair with a Kubota-authorized pump service shop.

Fuel tightness of delivery valve	Factory spec.	10 seconds 13.7 → 12.8 MPa 140 → 130 kgf/cm^2 1990 → 1850 psi
	Allowable limit	5 seconds 13.7 → 12.8 MPa 140 → 130 kgf/cm^2 1990 → 1850 psi

■ **NOTE**

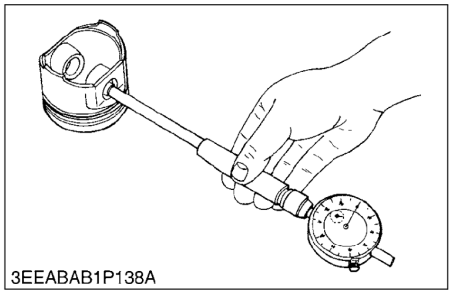
- **Never try to disassemble the injection pump assembly. For repairs, you are strongly requested to contact a Kubota-authorized pump service shop.**

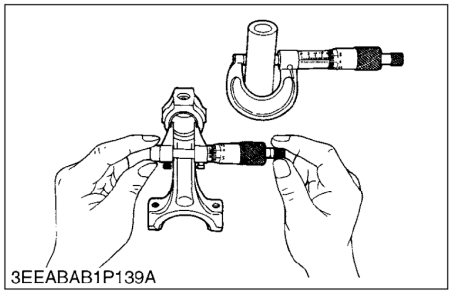
(1) Injection Pump Pressure Tester (3) Protection Cover for Jetted Fuel
(2) Injection Nozzle

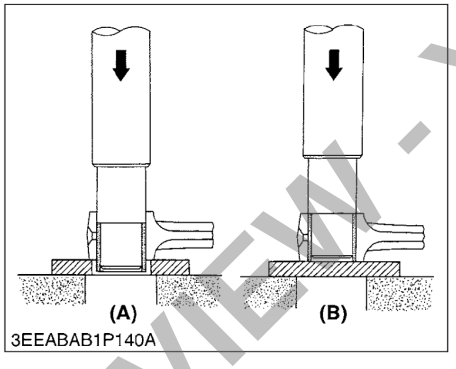
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[3] PISTON AND CONNECTING ROD


3EEABAB1P138A


3EEABAB1P139A



3EEABAB1P140A

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 spec.	25.000 to 25.013 mm 0.98426 to 0.98476 in.
	Allowable limit	25.050 mm 0.98622 in.

W1031817

Oil Clearance between Piston Pin and Small End Bushing

1. Measure the piston pin O.D. where it contacts the bushing with an outside micrometer.
2. Measure the small end bushing I.D. with an inside micrometer, and calculate the oil clearance.
3. If the oil clearance exceeds the allowable limit, replace the bushing. If it still exceeds the allowable limit, replace the piston pin.

Oil clearance between piston pin and small end bushing	Factory spec.	0.014 to 0.038 mm 0.00056 to 0.0014 in.
	Allowable limit	0.15 mm 0.0059 in.

Piston pin O.D.	Factory spec.	25.002 to 25.011 mm 0.98433 to 0.98468 in.
Small end bushing I.D.	Factory spec.	25.025 to 25.040 mm 0.98524 to 0.98582 in.

W1031982

Replacing Connecting Rod Small End Bushing

(When removing)

1. Press out the small end bushing with a connecting rod small end bushing replacing tool.

(When installing)

1. Clean a new small end bushing and bore, and apply engine oil to them.
2. Press fit a new bushing, taking due care to see that the connecting rod hole matches the bushing hole.

(A) When Removing **(B) When installing**

W1032140

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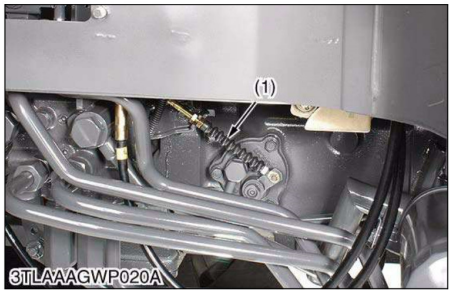
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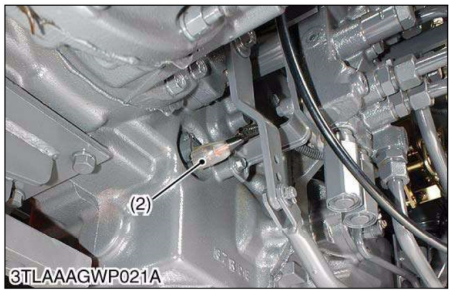
Signals are sent from the Hi-Lo change lever switch to the ECU. Then the signals are sent from the ECU to the Hi-Lo change valve. As a result, the Hi-Lo solenoid valve is closed and the two-speed change spool is changed by the force of the spring to the position shown in the drawing. Then oil between **A** and **C** (Forward and high pressure side) is guided through the two-speed change spool to the piston on the Lo side and the angle of the swashplate on the motor side is changed as shown in the drawing (The inclination angle becomes larger). As a result, the revolving speed of the motor shaft is decreased.

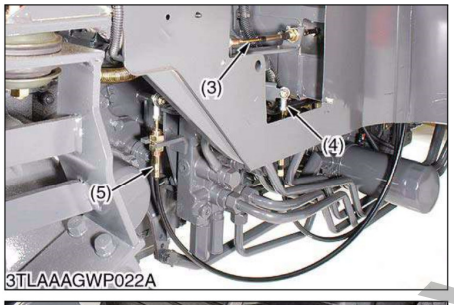
* When, the angle of the swashplate on the motor side is changed, the swashplate on the pump side is tilted toward the forward side to achieve smooth shift transmission when speed is changed (from Hi to Lo). Almost at the same time that the angle of the swashplate on the motor side is changed, the swashplate on the pump side is inclined toward its original position.

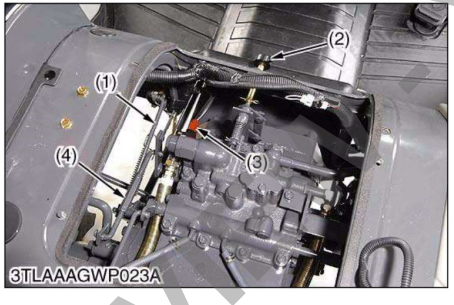
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Cables and Wiring Harness

1. Disconnect the PTO wire (1).
2. Disconnect the speed sensor connector (2).
3. Disconnect the position control cable (3).
4. Disconnect the front loader control cables (4) (5).

(When reassembling)

- When connecting the PTO wire (1) to the clutch valve lever, be sure to adjust the length of wire as follows.

1. Set the PTO shift lever to OFF (Neutral) position.
2. Loosen the lock nut of wire, and connect wire to the clutch valve lever, and then place the wire to the hook.
3. Tighten the lock nut clockwise (pull the wire), and lock the nut just before the lever moves.

- Lock each cable at the center of the screw.

(1) PTO Wire
(2) Speed Sensor Connector
(3) Position Control Cable
(4) Front Loader Control Cable
(5) Front Loader Control Cable

W1028099

Differential Lock Rod and Lowering Speed Adjusting Knob

1. Remove the lowering speed adjusting knob (2).
2. Remove the differential lock rod (1) and range gear shift rod (4).
3. Disconnect the range gear sensor connector (3).

(1) Differential Lock Rod
(2) Lowering Speed Adjusting Knob
(3) Range Gear Sensor Connector
(4) Range Gear Shift Rod

W1028322

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2. TIGHTENING TORQUES

Tightening torques of screws and nuts on the table below are especially specified.
(For general use screws and nuts : Refer to "**5. TIGHTENING TORQUES**" at "**G. GENERAL**" section.)

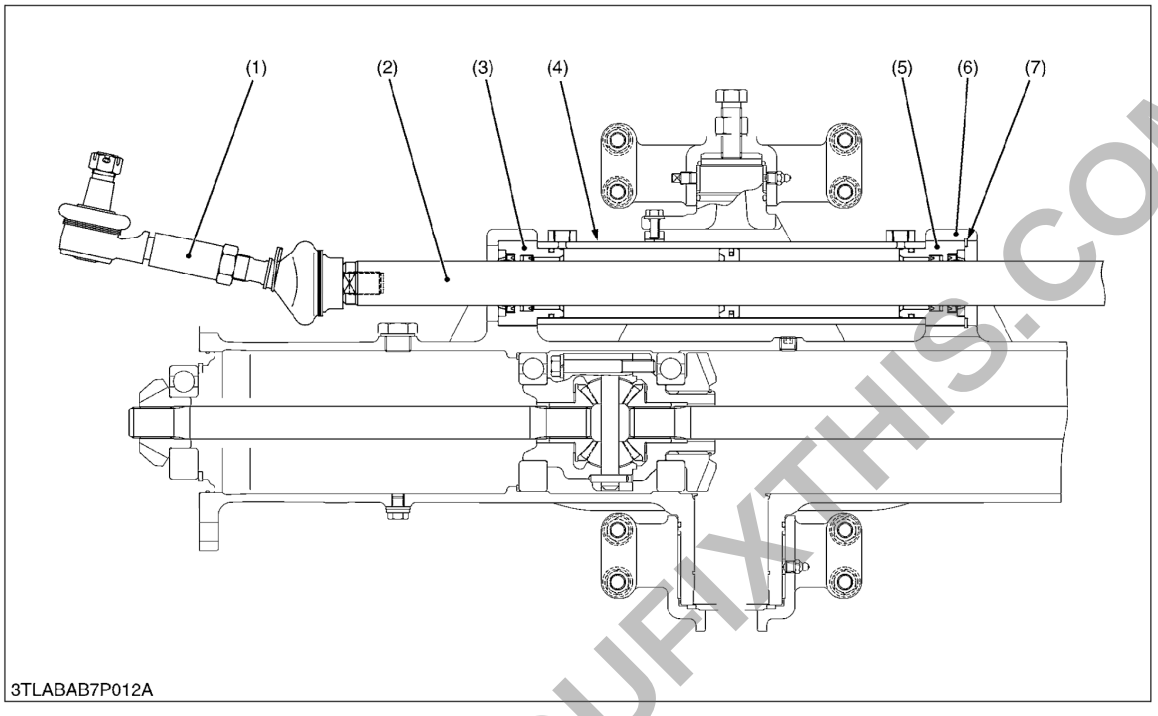
Item	N·m	kgf·m	lbf·ft
Rear wheel mounting screw and nut	197 to 225	20.0 to 23.0	145 to 166
ROPS lower frame mounting screw	167 to 196	17.0 to 20.0	123 to 144
Cabin mounting bolt and nut	123 to 147	13.0 to 15.0	94.1 to 108
Cabin mount bracket mounting screw	167 to 196	17.0 to 20.0	123 to 144
Rear axle case mounting screw (M10)	48 to 55	4.9 to 5.7	36 to 41
Rear axle case mounting nut (M10, 9T)	61 to 70	6.2 to 7.2	45 to 52
Rear axle case mounting screw (M12)	79 to 90	7.9 to 9.2	58 to 66
Rear axle lock nut	197 to 245	20.0 to 25.0	145 to 180

W10127360

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5. STEERING CYLINDER



(1) Tie-rod
(2) Piston Rod
(3) Head Cover
(4) Cylinder Tube
(5) Head Cover
(6) Front Axle Case
(7) Internal Snap 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 above figure is shown for 4 wheel drive model. Regarding 2 wheel drive model, please refer to TRACTOR MECHANISM workshop manual.)

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

The steering cylinder provides 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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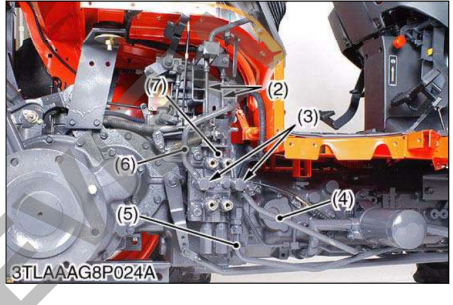
[5] FRONT LOADER CONTROL VALVE AND RELIEF VALVE

(1) Removing Front Loader Control Valve Assembly (ROPS Model)









Rear Wheel and Fender

1. Place the disassembling stand under the transmission case.
2. Remove the rear wheel mounting screws and nuts.
3. Remove the rear wheel RH (1).
4. Disconnect the **1P** connectors (2).
5. Remove the fender RH (3).

(1) Rear Wheel RH
(2) **1P** Connector
(3) Fender RH

W1030451

Front Loader Control Valve

1. Remove the front loader pipes (1).
2. Remove the delivery pipe 1 (4), return pipe (5) and delivery pipe 2 (6).
3. Disconnect the front loader control rods (2).
4. Remove the front loader control valve assembly (7).

(When reassembling)

Tightening torque	Joint bolt	49 to 58 N·m 5.0 to 6.0 kgf·m 37 to 43 lbf·ft

(1) Front Loader Pipe
(2) Front Loader Control Rod
(3) Joint Bolt
(4) Delivery Pipe 1
(5) Return Pipe
(6) Delivery Pipe 2
(7) Front Loader Control Valve Assembly

W1030703

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4. CHECKING AND ADJUSTING

CAUTION

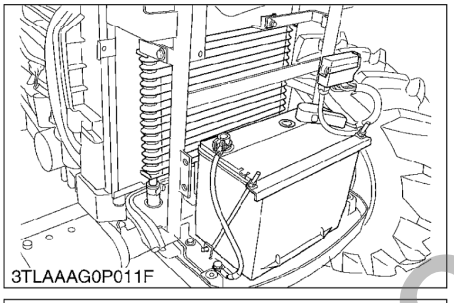
- **To avoid accidental short circuit, be sure to attach the positive cable to the positive terminal before the negative cable is attached to the negative terminal.**
- **Never remove the battery cap while the engine is running.**
- **Keep electrolyte away from eyes, hands and clothes. If you are spattered with it, wash it away completely with water immediately.**
- **Keep open sparks and flames away from the battery at all times. Hydrogen gas mixed with oxygen becomes very explosive.**

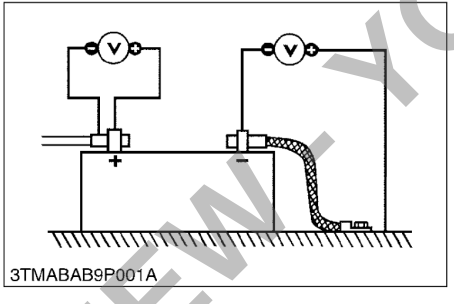
■ **IMPORTANT**

- **If the machine is to be operated for a short time without battery (using a slave battery for starting), use additional current (lights) while engine is running and insulate terminal of battery. If this advice is disregarded, damage to alternator and regulator may result.**

[1] BATTERY

(1) Checking


3TLAAAG0P011F



3TMABAB9P001A

Battery Voltage

1. Stop the engine and turn the main switch off.
2. Connect the COM (–) lead of the voltmeter to the battery's negative terminal post and the (+) lead to the positive terminal post, and measure the battery voltage.
3. If the battery voltage is less than the factory specification, check the battery specific gravity and recharge the battery.

Battery voltage	Reference value	More than 12 V

W10125620

Battery Terminal Connection

1. Turn the main switch on, and turn on the head light.
2. Measure the voltage across the battery's positive terminal post and the cable terminal, and the voltage across the battery's negative terminal post and the chassis.
3. If the measurement exceeds the factory specification, clean the battery terminal posts and cable clamps, and tighten them firmly.

Potential difference	Reference value	Less than 0.1 V

W10126630

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10 CABIN

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