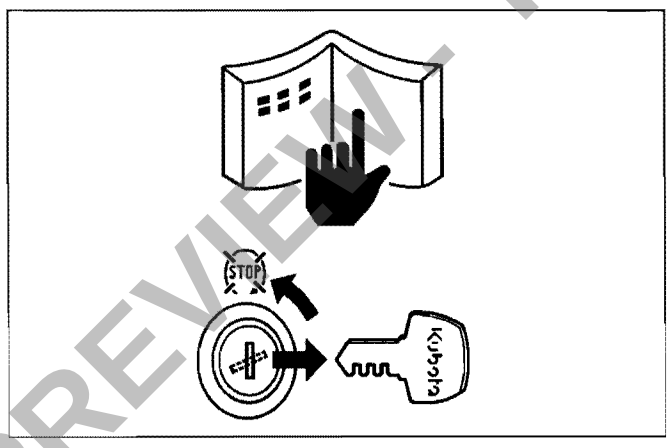
⚠ SAFETY FIRST

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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GENERAL

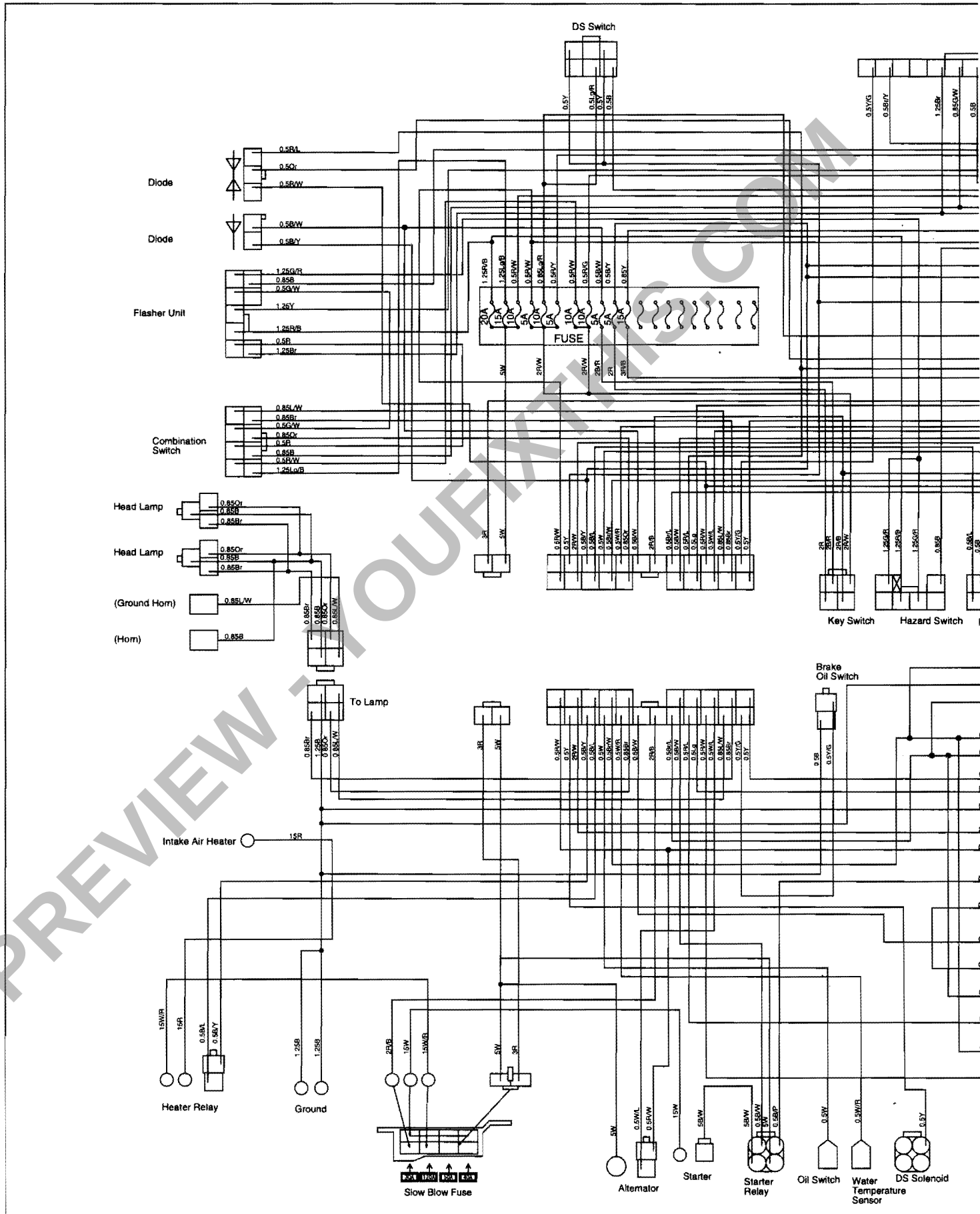
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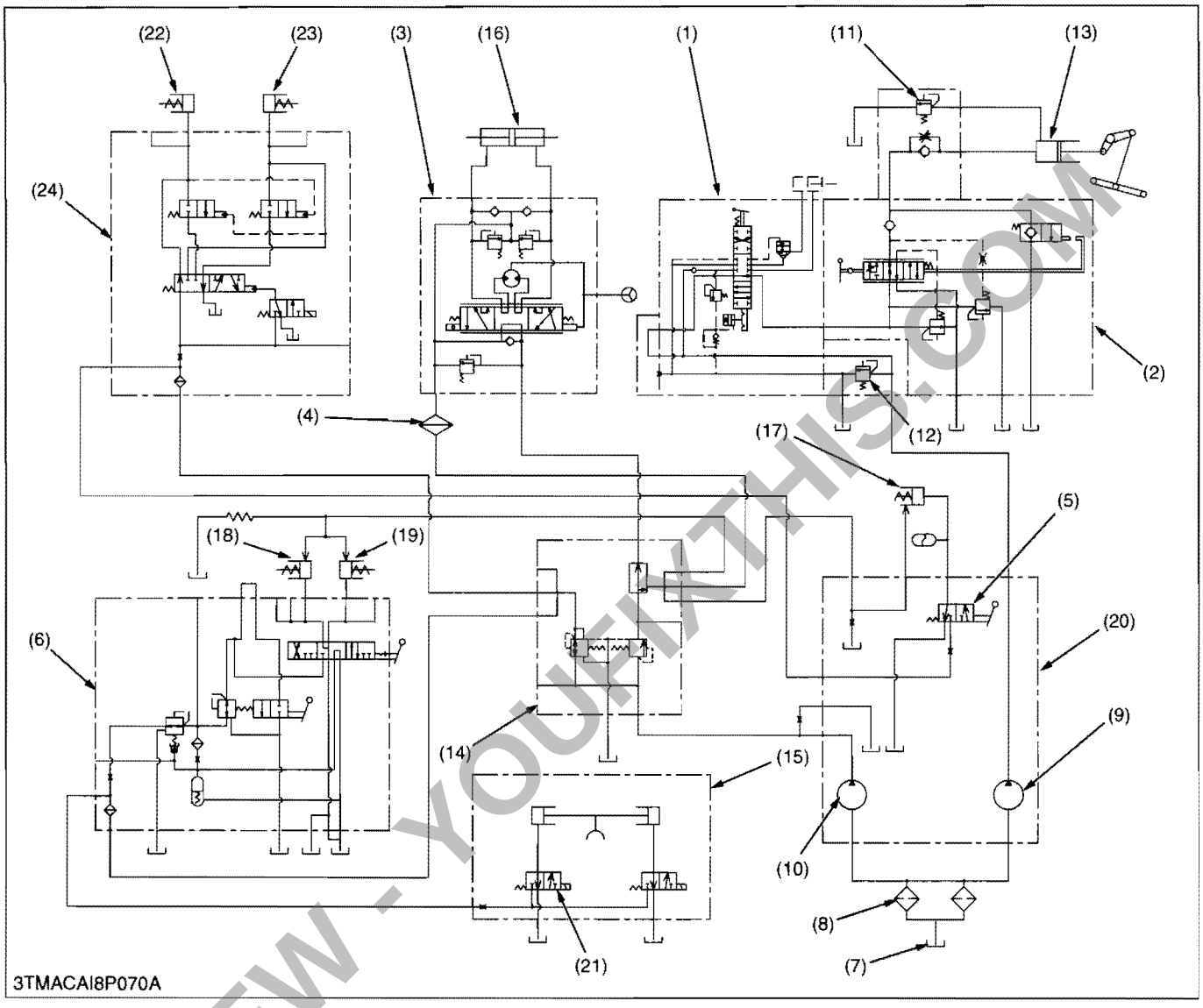
1. WIRING DIAGRAM



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2. HYDRUALIC CIRCUIT



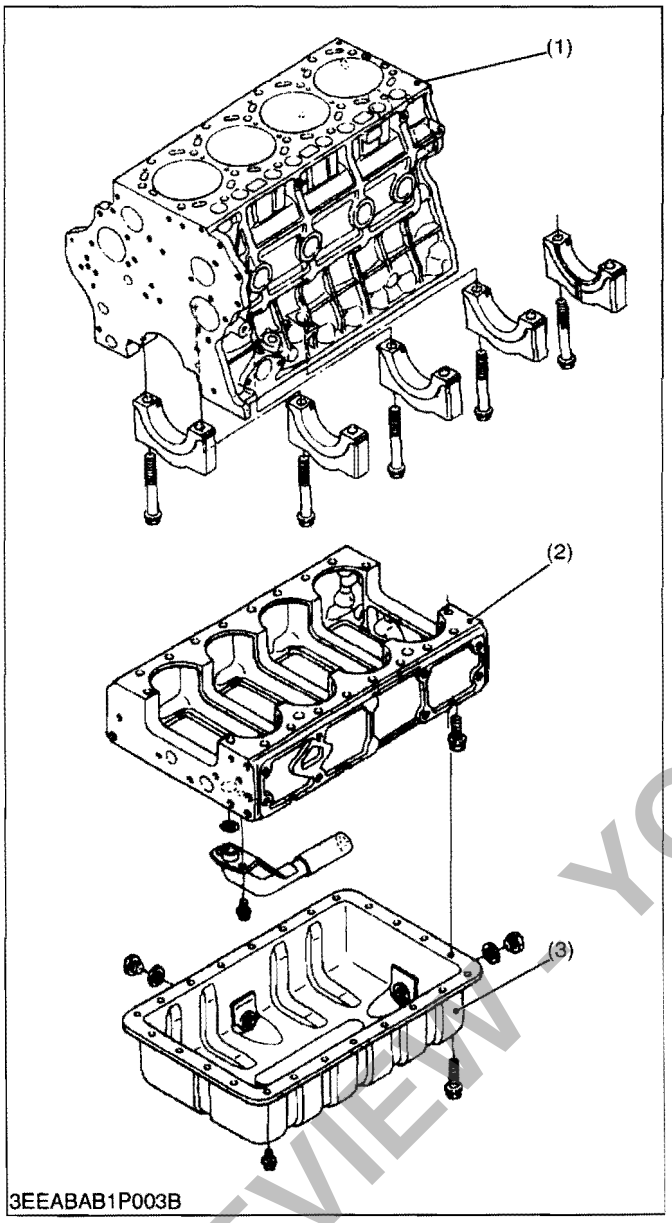
(1) Auxiliary Control Valve
(2) Control Valve for 3P
(3) Power Steering Controller
(4) Oil Cooler
(5) PTO Valve
(6) Shuttle Valve
(7) Oil Tank (Transmission Case)
(8) Hydraulic Oil Filter Cartridge
(9) Hydraulic Pump (for 3P)
(10) Hydraulic Pump (PTO Clutch, Shuttle Clutch, Swing Shift, Dual Speed)
(11) Cylinder Safety Valve
(12) Relief Valve for 3P
(13) Hydraulic Cylinder
(14) Regulator Valve
(15) Swing Shift
(16) Steering Cylinder
(17) PTO Clutch
(18) Shuttle Clutch **R**
(19) Shuttle Clutch **F**
(20) Pump Base
(21) Solenoid Valve
(22) Dual Speed Clutch **HI** (DS Model Only)
(23) Dual Speed Clutch **LO** (DS Model Only)
(24) Dual Speed Valve (DS Model Only)

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2. ENGINE BODY

[1] CYLINDER BLOCK



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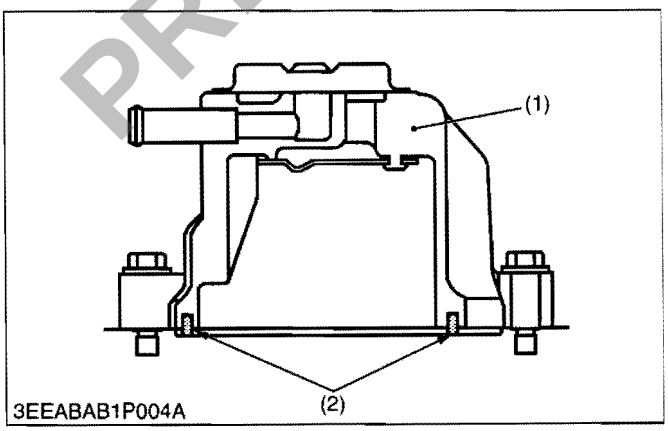
This engine employs separate type crankcases - the crankcase 1 (1) with combustion part and the crankcase 2 (2) which supports the crankcase 1 (1) and reduces noise.

Since it is a hanger type, you can easily assemble / disassemble it. The cylinder is a linerless type which enables good cooling operation, less strain and good abrasion resistance.

(1) Crankcase 1
(2) Crankcase 2
(3) Oil Pan

W1012734

[2] HALF-FLOATING HEAD COVER



3EEABAB1P004A

The rubber packing is fitting in to maintain the head cover 0.5 mm (0.02 in.) or so off the cylinder head. This arrangement helps reduce noise coming from the cylinder head.

(1) Cylinder Head Cover
(2) Cylinder Head Cover

W1012841

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5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLT AND NUTS

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			Aluminum		
Unit / Diameter	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
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 10.5
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 52.1
M12 (12 mm, 0.47 in.)	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	–	–	–	77.5 to 90.1	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 86.8
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 opponet part	Ordinariness			Aluminum		
Unit / Diameter	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M8 (8 mm, 0.31 in.)	11.8 to 15.6	1.2 to 1.6	8.68 to 11.5	8.82 to 11.8	0.90 to 1.2	6.51 to 8.67
M10 (10 mm, 0.39 in.)	24.6 to 31.3	2.5 to 3.2	18.1 to 23.1	19.7 to 25.4	2.0 to 2.6	14.5 to 18.8
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

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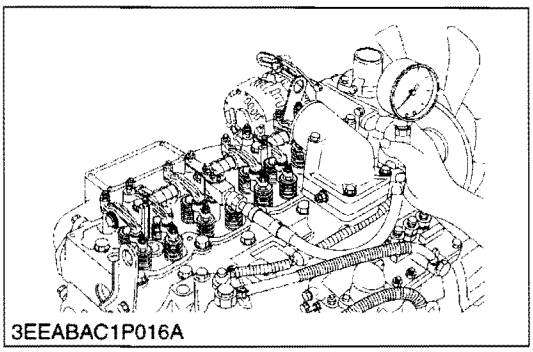
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4. CHECKING, DISASSEMBLING AND SERVICING

[1] CHECKING AND ADJUSTING

(1) Engine Body


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Compression Pressure

1. After warming up the engine, stop it and remove the air cleaner, the muffler, high pressure pipes, cylinder head cover, overflow pipe, all nozzle holders and all nozzle gaskets.
2. Install a compression tester (Code No: 07909-30207) and nozzle adaptor for diesel engines to nozzle holder hole.
3. After making sure that the speed control lever is set at the stop position (Non-injection), run the engine at 200 to 300 min^{-1} (rpm) with the starter.
4. Read the maximum pressure. Measure the pressure more than twice.
5. If the measurement is below the allowable limit, apply a small amount of oil to the cylinder wall through the nozzle hole and measure the compression pressure again.
6. If the compression pressure increase after applying oil, check the cylinder wall and piston rings.
7. If the compression pressure is still less than the allowable limit, check the top clearance, valve and cylinder head.

■ **NOTE**

- **Check the compression pressure with the specified valve clearance.**
- **Always use a fully charged battery for performing this test.**
- **Variances in cylinder compression values should be under 10 %.**

Compression pressure	Factory spec.	3.47 MPa / 250 min^{-1} (rpm) 35.4 kgf/cm^2 / 250 min^{-1} (rpm) 503 psi / 250 min^{-1} (rpm)
	Allowable limit	2.56 MPa / 250 min^{-1} (rpm) 26.1 kgf/cm^2 / 250 min^{-1} (rpm) 371 psi / 250 min^{-1} (rpm)

Tightening torque	Nozzle holder clamp nut	17.7 to 20.6 N·m 1.8 to 2.1 kgf·m 13.0 to 15.2 ft-lbs
	Overflow pipe assembly retaining screw	9.8 to 11.3 N·m 1.0 to 1.15 kgf·m 7.23 to 8.32 ft-lbs
	Cylinder head cover screw	6.9 to 11.3 N·m 0.7 to 1.15 kgf·m 5.1 to 8.32 ft-lbs
	Injection pipe retaining nut	19.6 to 24.5 N·m 2.0 to 2.5 kgf·m 14.5 to 18.1 ft-lbs

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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	Vent air	G-34
	Water in the fuel system	Change fuel and repair or replace fuel system	G-7, 26
	Fuel pipe clogged	Clean	G-19
	Fuel filter clogged	Replace	G-27
	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-S27
	Incorrect injection timing	Adjust	1-S18
	Injection nozzle clogged	Repair or replace	1-S19, 30
	Injection pump malfunctioning	Repair or replace	1-S18, 34
	Seizure of crankshaft, camshaft, piston, cylinder or bearing	Repair or replace	–
	Compression leak from cylinder	Replace head gasket, tighten cylinder head screw and nozzle holder	1-S30, 31, 32, 33
	Improper valve timing	Correct or replace timing gear	1-S49
	Piston ring and cylinder worn	Replace	1-S65, 71
	Excessive valve clearance	Adjust	1-S14
	Stop solenoid malfunctioning	Replace	9-S18
(Starter Does Not Run)	Battery discharged	Charge	9-S9
	Starter malfunctioning	Repair or replace	9-S16, 40
	Key switch malfunctioning	Replace	–
	Wiring disconnected	Connect	–

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SPECIFICATIONS

Model			M95S		M105S	
			2WD	4WD	2WD	4WD
Engine	Model		V3800-DI-T		V3800-DI-TI	
	Type		Vertical, water-cooled, 4-cycle diesel engine			
	No. of cylinder		4			
	Total displacement		3769 cm^3 (230.0 cu.in.)			
	Bore and stroke		100 × 120 mm (3.9 x 4.7 in.)			
	Net power		70.9 kW (95 HP)* / 2600 min^{-1} (rpm)		78.3 kW (105 HP)* / 2600 min^{-1} (rpm)	
	PTO power *1 (factory observed)		62.7 kW (84 HP)*1 / 2600 min^{-1} (rpm)		69.4 kW (93 HP)*1 / 2600 min^{-1} (rpm)	
	Maximum torque		314.8 N·m (32.1 kgf·m, 232.2 ft-lbs) / 1400 to 1600 min^{-1} (rpm)		355 N·m (36.2 kgf·m, 261.8 ft-lbs) / 1400 to 1600 min^{-1} (rpm)	
	Battery		12 V, RC, 160 min, CCA 900 A			
	Fuel		Diesel fuel No.1 [below –10 °C (14 °F), Diesel fuel No.2-D [above –10 °C (14 °F)]			
	Fuel tank		175 L (46.2 U.S.gals, 38.5 Imp.gals)			
	Engine crankcase		10.7 L (11.3 U.S.qts, 9.4 Imp.qts)			
	Engine coolant		9.1 L (9.6 U.S.qts, 8.0 Imp.qts)			
Dimensions	Overall length		4120 mm (162.2 in.)			
	Overall width (Minimum tread)		2200 mm (86.4 in.)		2195 mm (86 in.)	2220 mm (87.4 in.)
	Overall height		2620 mm (103.1 in.)		2670 mm (105.1 in.)	
	Wheel base		2435 mm (95.9 in.)			
	Tread	Front	1540 to 2040 mm (60.6 to 80.3 in.)	1520 to 1620 mm (59.8 to 63.8 in.)	1540 to 2040 mm (60.6 to 80.3 in.)	1530 to 1660 mm (60.2 to 65.4 in.)
		Rear	1700 to 2010 mm (66.9 to 79.1 in.)	1705 to 2060 mm (67.1 to 81.1 in.)	1705 to 2005 mm (67.1 to 78.9 in.)	1730 to 2035 mm (68.1 to 80.1 in.)
	Minimum ground clearance		385 mm (15.2 in.)		435 mm (17.1 in.) (drawbar bracket)	
Weight *2			2840 kg (6261 lbs)	3370 kg (7401 lbs)	2860 kg (6305 lbs)	3600 kg (7937 lbs)
Traveling system	Standard tire size *3	Front	10.00-16	12.4-24	10.00-16	13.6-24
		Rear	18.4-30	18.4-30 cast	18.4-34	18.4-34 cast
	Clutch		Multiple wet disc hydraulic			
	Steering		Full hydraulic power steering			
	Transmission		Hydraulic shuttle shift, fully synchronized main shift, 32F / 32R, If equip creep gear 48F / 48R			
	Brake	Travelling	Wet type multiple discs (hydraulic)			
		Parking	Wet type multiple discs (mechanical)			
	Differential		Bevel gears with differential lock (Rear)		Bevel gears with differential lock (Front, Rear)	
Hydraulic system	Hydraulic control system		Position, draft and mix control			
	Pump capacity		65.0 L/min. (17.2 U.S.gals./min., 14.3 Imp.gals./min.)			
	Three point hitch		Category II			
	Max. lifting force	At lifting point *4	2500 kg (5512 lbs) at lower link end with link horizontal 3900 kg (8600 lbs) with 2 assist cylinder (option)			
		24 in. behind lifting point *4	2100 kg (4630 lbs) at 610 mm (24 in.) behind lifting point 3400 kg (7490 lbs) with 2 assist sylinder (option)			
	System pressure		19.6 MPa (200 kgf/cm^2, 2847 psi)			
PTO system	Independent clutch		Wet type, multiple discs			
	Live PTO	Direction of turning	Clockwise, viewed from tractor rear			
		PTO speed	540 min^{-1} (rpm) at 2205 engine min^{-1}(rpm)			
Traction system			Swing drawbar, adjustable in direction			

NOTE : * Manufacture's estimate.

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

*2 W/O cast iron disks for rear wheels.

*3 Cast iron disks available for wheels.

*4 At lower link end with links horizontal.

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4. LUBRICANTS, FUEL AND COOLANT

	Place		Capacity	Lubricants, fuel and coolant
			M95S, M105S	
1	Fuel tank		175 L 46.2 U.S.gals 38.5 Imp.gals	No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below –10 °C (14 °F)
2	Coolant	Engine block radiator	9.1 L 9.6 U.S.qts 8.0 Imp.qts	Fresh clean water with anti-freeze
		Recovery tank	1.1 L 1.2 U.S.qts 1.0 Imp.qts	
3	Engine crankcase		10.7 L 11.3 U.S.qts 9.4 Imp.qts	Engine oil: API service classification CD, CE or CF Below 0 °C (32 °F) : SAE10W, 10W-30 or 10W-40 0 to 25 °C (32 to 77 °F): SAE20, 10W-30 or 10W-40 Above 25 °C (77 °F): SAE30, 10W-30 or 10W-40
4	Transmission case		60 L 63.4 U.S.qts 52.8 Imp.qts	KUBOTA UDT or KUBOTA SUPER UDT fluid*
5	Front differential case oil (4WD)		7.0 L 7.4 U.S.qts 6.2 Imp.qts	KUBOTA UDT or KUBOTA SUPER UDT fluid or SAE80, 90 gear oil
6	Front axle gear case oil (4WD)		3.5 L 3.7 U.S.qts 3.1 Imp.qts	
7	Brake system (Reservoir and lines)		0.3 L 0.32 U.S.qts 0.26 Imp.qts	KUBOTA UDT or SUPER UDT fluid* or Turbine oil 32 (see below) [regular type, multipurpose straight mineral oil Mobile DTE Oil #32 TEXACO Regal Oil #32 CHEVRON-GST Oil #32 TERESSO Oil #32] Never use automotive brake oil.

* KUBOTA original transmission hydraulic fluid.

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6. MAINTENANCE

No.	Item		Period	Indication on hour meter												Since then every	Important		Reference page
				50	100	150	200	250	300	350	400	450	500	550	600				
1	Engine start system		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	50 hrs			G-17
2	Wheel bolt torque		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	50 hrs			G-18
3	Battery condition		Check		☆		☆		☆		☆		☆		☆	100 hrs	*4		G-18
4	Greasing				☆		☆		☆		☆		☆		☆	100 hrs			G-23
5	Fan belt		Adjust		☆		☆		☆		☆		☆		☆	100 hrs			G-20
6	Brake pedal		Adjust		☆		☆		☆		☆		☆		☆	100 hrs			G-20
7	Parking brake lever		Adjust		☆		☆		☆		☆		☆		☆	100 hrs			G-22
8	Air cleaner element [Double type]	Primary element	Clean		☆		☆		☆		☆		☆		☆	100 hrs	*1		G-19
			Replace													1 year	*2	@	G-29
		Secondary element	Replace													1 year			G-29
9	Fuel line		Check		☆		☆		☆		☆		☆		☆	100 hrs		@	G-19
			Replace													2 years	*3	@	G-32
10	Hydraulic oil filter		Replace	★			☆				☆				☆	200 hrs			G-15
11	Toe-in		Adjust				☆				☆				☆	200 hrs			G-25
12	Fuel tank water		Drain				☆				☆				☆	200 hrs			G-24
13	Oil cooler line		Check				☆				☆				☆	200 hrs			G-25
			Replace													2 years	*3		G-32
14	Power steering oil line		Check				☆				☆				☆	200 hrs			G-24
			Replace													2 years	*3		G-32
15	Radiator hose and clamp		Check				☆				☆				☆	200 hrs			G-24
			Replace													2 years			G-32
16	Intake air line		Check				☆				☆				☆	200 hrs		@	G-26
			Replace													2 years	*3	@	G-32
17	Engine oil		Check	★					☆						☆	300 hrs			G-14
18	Greasing (2WD front wheel hub)		–								☆					400 hrs			G-27
19	Water separator		Clean								☆					400 hrs			G-26
20	Fuel filter		Replace								☆					400 hrs		@	G-27
21	Engine oil filter		Replace	★											☆	600 hrs			G-14
22	Transmission fluid		Change	★											☆	600 hrs			G-15
23	Front differential case oil		Change	★											☆	600 hrs			G-16
24	Front axle gear case		Change	★											☆	600 hrs			G-16
25	King-pin pivot		Adjust												☆	600 hrs			G-28
26	Brake oil		Change												☆	600 hrs			G-27
27	Front axle pivot		Adjust												☆	600 hrs			G-28
28	Engine valve clearance		Adjust													800 hrs			1-S14

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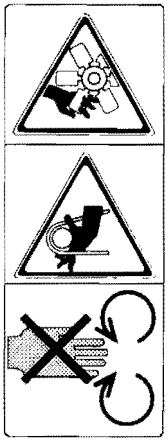
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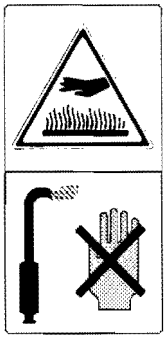
SAFETY DECALS

The following safety decals are installed on the machine. If a decal becomes damaged, illegible or is not on the machine, replace it. The decal part number is listed in the parts list.

(1) Part No. 32751-4958-1
Stay clear or engine fan and fanbelt



(2) Part No. 3N300-4958-1
Stay clear or engine fan and fanbelt



(3) Part No. 6C150-4743-1



(4) Part No. TA040-4965-2

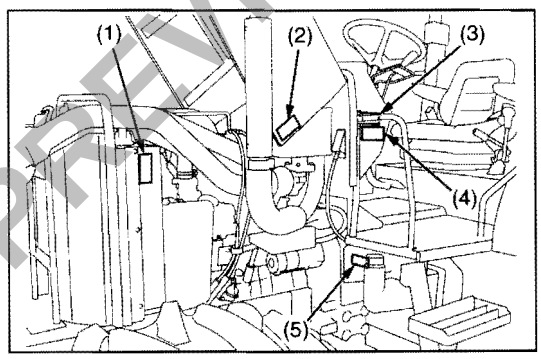


(5) Part No. TA040-4956-2
Diesel fuel only



No fire

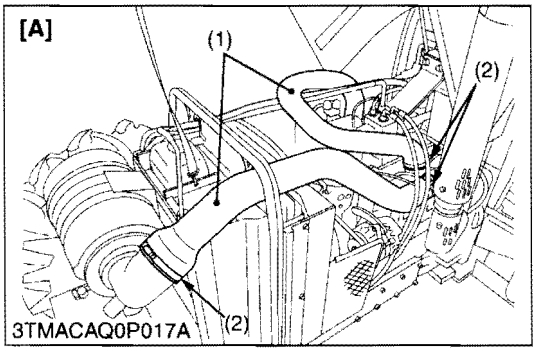


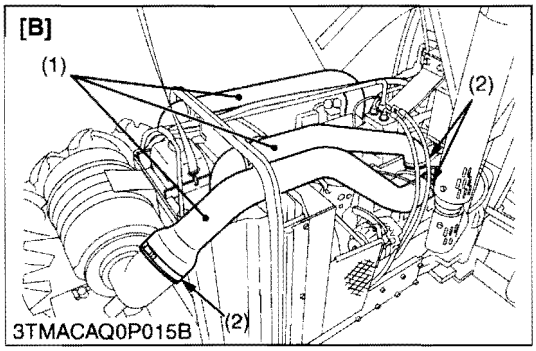


3TMACAQCP001A

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Checking Intake Air Line

1. Check to see that hoses and hose clamps are tight and not damaged.
2. If hoses and clamps are found worn or damaged, replace or repair them at once.

(1) Hose
(2) Hose Clamp

[A] M95S
[B] M105S

W1054886

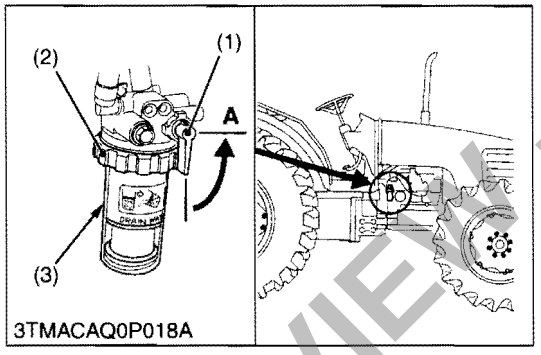
[6] CHECK POINT OF EVERY 300 HOURS

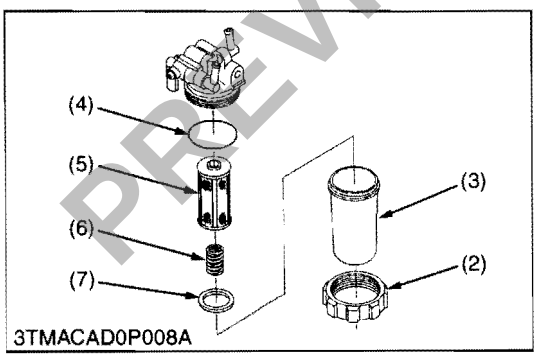
Changing Engine Oil

1. See page G-14.

W1049642

[7] CHECK POINTS OF EVERY 400 HOURS





Cleaning Water Separator

1. Close the fuel cock (1).
2. Unscrew the retainer ring (2) and remove the cup (3), and rinse the inside with kerosene.
3. Take out the element and dip it in the kerosene to rinse.
4. After cleaning, reassemble the water separator, keeping out dust and dirt.
5. Bleed the fuel system. (See page G-34.)

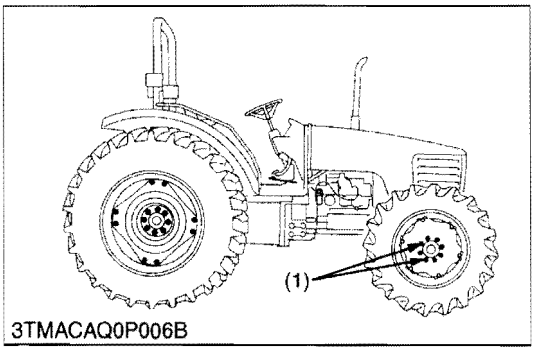
(1) Fuel Cock
(2) Retainer Ring
(3) Cup
(4) O-ring
(5) Element
(6) Spring
(7) Red Float

A : CLOSE

W1049718

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3TMACAQ0P006B

Adjusting Front Tread (with Four Wheel Drive)

Front tread width can be adjusted as shown with the standard equipped tires.

To change the tread width.

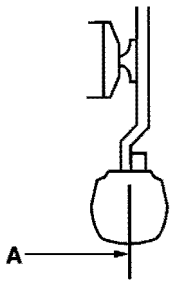
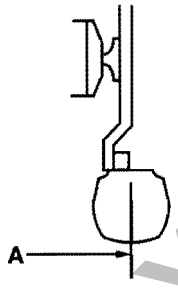
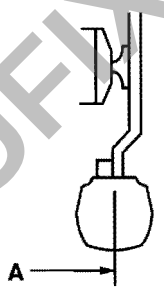
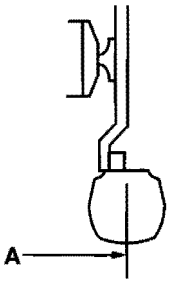
1. Remove the wheel rim and disk mounting bolts.
2. Change the position of the rim and disk (right and left) to the desired position, and tighten the bolts.
3. Adjust the toe-in. (See page G-29.)

■ **IMPORTANT**

- **Always attach wheel as shown in the drawing.**
- **If not attached as illustrated, transmission parts may be damaged.**
- **When re-fitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor 200 m (200 yards) and thereafter according to service interval. Refer to "Check Wheel Mounting Nuts Tightening Torques". (See page G-18.)**

(1) Nut

W1056420

13.6 - 24 13.6R24		12.4 - 24	
			
1530 mm (60.25 in.)	1660 mm (65.5 in.)	1520 mm (59.8 in.)	1620 mm (63.8 in.)

A : Tread

■ **NOTE**

- **Need to limit turning angle at 1530 mm (60.25 in.) width setting to 42 degrees. Refer to the chart provided for additional instructions.**

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3. TIGHTENING TORQUES

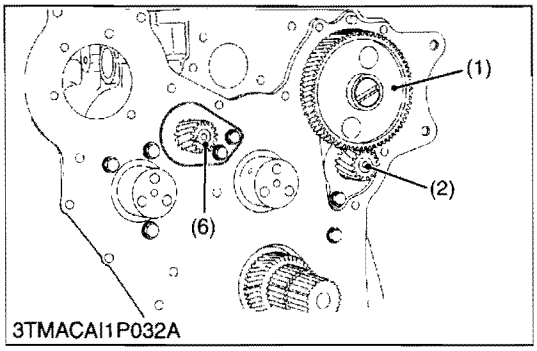
Tightening torque of screws, bolts and nuts on the table below are especially specified.
(For general screws, bolts and nuts : See page G-9.)

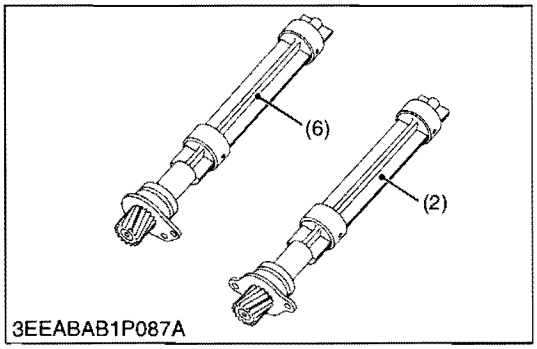
Item	N·m	kgf·m	ft-lbs
Starter's terminal **B** mounting nut	9.8 to 11.8	1.0 to 1.2	7.2 to 8.7
Power steering turning hose retaining nut	22.6 to 27.0	2.2 to 2.8	16.2 to 19.9
Oil cooler pipe nut	49.0 to 68.6	5.0 to 7.0	36.1 to 50.6
Oil cooler hose retaining nut	45.1 to 53.0	4.6 to 5.4	33.3 to 39.0
Front axle support mounting screw (M14, UBS)	166.7 to 196.1	17.0 to 20.0	123.0 to 144.7
Delivery hose retaining nut	22.6 to 27.6	2.2 to 2.8	16.2 to 19.9
Engine and clutch housing mounting screw, nut (standard type)	124 to 147	12.6 to 15.0	91.2 to 108
Engine and clutch housing mounting nut (wide type)	167 to 196	17.0 to 20.0	123 to 144
Engine and clutch housing mounting stud bolt	38.2 to 45.1	3.9 to 4.6	28.2 to 33.3
Damper disc mounting screw	48.1 to 55.9	4.9 to 5.7	35.4 to 41.2
Cylinder head cover screw	6.9 to 11.3	0.7 to 1.15	5.1 to 8.32
*Cylinder head screw	98.1 to 107.9	10.0 to 11.0	72.3 to 79.6
*Connecting rod screw	78.5 to 83.4	8.0 to 8.5	57.9 to 61.5
*Flywheel screw	98.1 to 107.9	10.0 to 11.0	72.3 to 79.6
*Crankshaft screw	255.1 to 274.7	26.0 to 28.0	188.1 to 202.5
*Main bearing case screw	137.3 to 147.1	14.0 to 15.0	101.3 to 108.5
Rocker arm bracket screw	49.0 to 55.9	5.0 to 5.7	36.2 to 41.2
Nozzle holder clamp nut	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2
Injection pipe retaining nut	19.6 to 24.5	2.0 to 2.5	14.5 to 18.1
Overflow pipe assembly retaining screw	9.8 to 11.3	1.0 to 1.15	7.23 to 8.32
Oil switch taper screw	14.7 to 19.6	1.5 to 2.0	10.8 to 14.5
Oil cooler joint screw	39.2 to 44.1	4.0 to 4.5	28.9 to 32.5
Oil pump cover screw	7.9 to 9.3	0.80 to 0.95	5.8 to 6.9
Intake air heater terminal nut	3.4 to 5.4	0.35 to 0.55	2.53 to 3.98
Injection pump gear mounting nut	73.6 to 83.4	7.5 to 8.5	54.2 to 61.5
Injection pump unit mounting nut	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2
Gear case cover	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Relief valve retaining screw	68.6 to 78.4	7.0 to 8.0	50.6 to 57.9
Idle gear mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Plate mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Camshaft set screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Flywheel housing mounting screw	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
Crankcase 2 mounting screw	49.0 to 55.9	5.0 to 5.7	36.2 to 41.2
Injection pump mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Injection pump mounting nut	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2
Governor weight mounting nut	62.8 to 72.6	6.4 to 7.4	46.3 to 53.5
Fuel camshaft stopper mounting screw	7.9 to 9.3	0.80 to 0.95	5.8 to 6.9

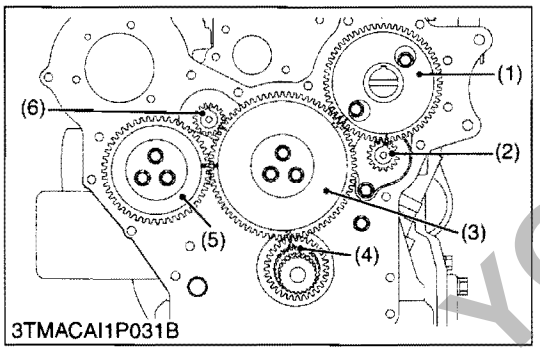
W1012736

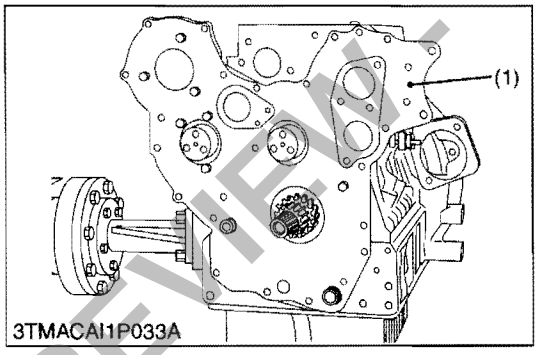
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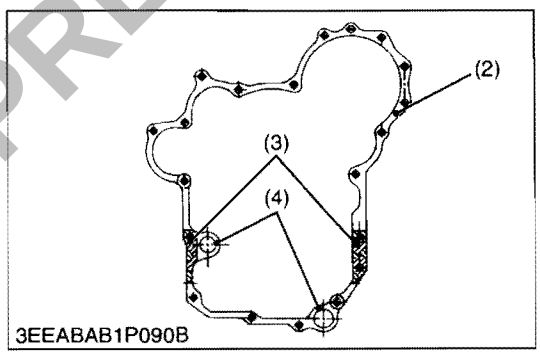
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Camshaft and Balancer Shaft

1. Remove the camshaft set screws and draw out the camshaft (1).
2. Remove the balancer shaft 1 set screws and draw out the balancer shaft 1 (2).
3. Remove the balancer shaft 2 set screws and draw out the balancer shaft 2 (6).

(When reassembling)

- When install the balancer shaft 1 and 2, be sure to place the 4th cylinder piston at the top dead center in compression then, align all mating marks on each gear to assemble the timing gears, set the idle gear last.

Tightening torque	Camshaft set screw	23.5 to 27.5 N·m 2.4 to 2.8 kgf·m 17.4 to 20.3 ft-lbs
	Balancer shaft set screw	23.5 to 27.5 N·m 2.4 to 2.8 kgf·m 17.4 to 20.3 ft-lbs

(1) Camshaft
(2) Balancer Shaft 1
(3) Idle Gear 1
(4) Crank Gear
(5) Idle Gear 2
(6) Balancer Shaft 2

W1053305

Plate (Gear Case)

1. Remove the three plate mounting screws. Detach the plate (1).

(When reassembling)

- Apply Three Bond 1217D adhesive or equivalent over the shaded zones on both sides of the gasket that will be sandwiched between the crankcase and plate.
- Be sure to fix the O-rings (4).

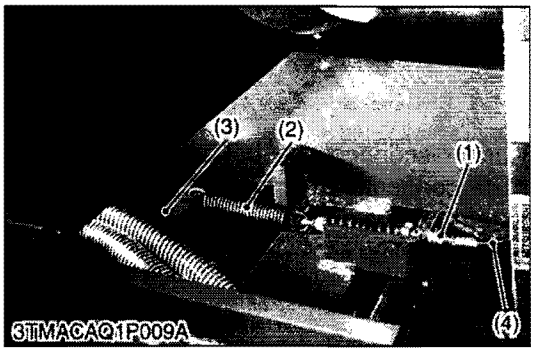
Tightening torque	Plate mounting screw	23.5 to 27.5 N·m 2.4 to 2.8 kgf·m 17.4 to 20.3 ft-lbs

(1) Plate
(2) Gasket
(3) Liquid Gasket
(4) O-ring

W1053809

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Differential Lock Spring

1. Loosen the lock nut (1) and disconnect spring (2) from differential lock lever (3).

(When reassembling)

- Be sure to fix the front edge of differential lock cable at the center of thread.

(1) Lock Nut
(2) Spring
(3) Differential Lock Lever
(4) Differential Lock Cable

W1020099

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3. TIGHTENING TORQUES

Tightening torques of screws, bolts and nuts on the table below are especially specified.
(For general use screws, bolts and nuts : See page G-9.)

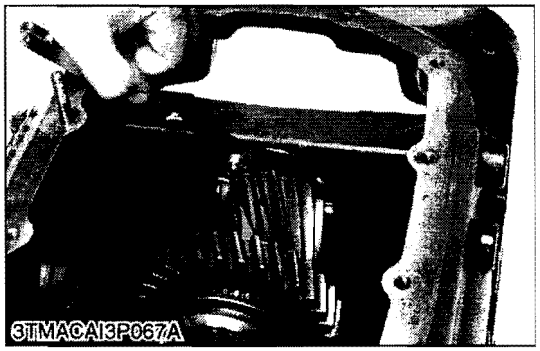
Item	N·m	kgf·m	ft-lbs
Tank stay mounting screw	196.1 to 225.6	20.0 to 23.0	144.7 to 166.4
Engine and clutch housing mounting screw, nut (standard type)	124 to 147	12.6 to 15.0	91.2 to 108
Engine and clutch housing mounting nut (wide type)	167 to 196	17.0 to 20.0	123 to 144
Engine and clutch housing mounting stud bolt	38.2 to 45.1	3.9 to 4.6	28.2 to 33.3
Delivery pipe retaining nut	107.9 to 117.7	11.0 to 12.0	79.6 to 86.8
Lubricating pipe and HI-LO pipe retaining nut	49.0 to 65.6	5.0 to 7.0	36.1 to 50.6
Pump base mounting nut	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
Mid case and transmission case mounting screw and nut	103.0 to 117.7	10.5 to 12.0	76.0 to 86.8
Bearing support mounting screw	77.5 to 90.2	7.9 to 9.2	57.0 to 66.5
Mid case mounting screw and nut	103.0 to 117.7	10.5 to 12.0	76.0 to 86.8
Hydraulic cylinder assembly mounting screw and nut	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
Rear axle case mounting screw	124 to 147	12.0 to 15.0	91.2 to 108.5
Rear cover (PTO cover) mounting screw	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
Shuttle case mounting screw and nut	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Shuttle valve mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Speed change cover mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Bearing retainer mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Rear bearing support mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
HI-LO shift case mounting screw	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2
PTO shaft staking nut	225.5 to 264.8	23 to 27	166.4 to 195.3
PTO case cover mounting screws and reamer bolt	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
Differential bearing support mounting screw	48.1 to 55.8	4.9 to 5.7	35.4 to 41.2
Spiral bevel gear mounting screw	142.2 to 161.8	14.5 to 16.5	104.9 to 119.3
Spiral bevel pinion shaft staking nut	275 to 343	28 to 35	202.8 to 253.0
Parking brake case mounting screw	77.5 to 90.1	7.9 to 9.2	57.1 to 66.5

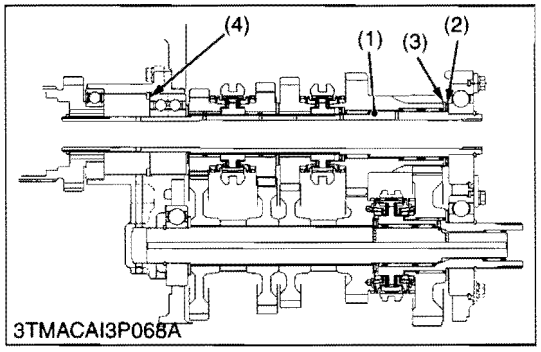
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(3) Thrust Clearance on Shaft





Checking side clearance on Main Shaft Gear

1. Measure the side clearance between thrust bearing and bearing washer.
2. If the measurement is not within the factory specifications, adjust the clearance with shim on the front end of main shaft.

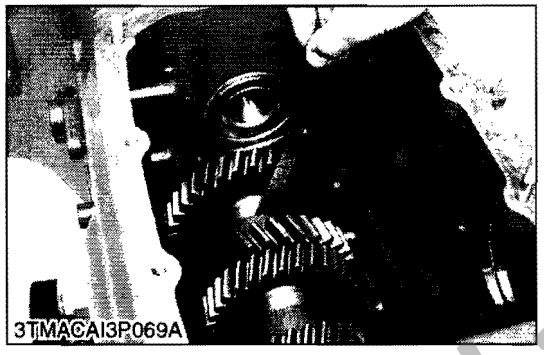
(Reference)

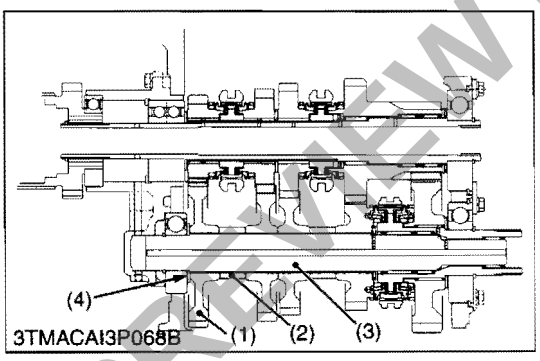
- Thickness of shim (4)
  0.2 mm (0.0079 in.) [Code No. 3F740-28420]
  0.3 mm (0.0118 in.) [Code No. 3F740-28410]
  0.5 mm (0.0197 in.) [Code No. 3F740-28440]

Side clearance between thrust bearing and bearing washer	Factory spec.	0.1 to 0.3 mm 0.0039 to 0.0118 in.

(1) Main Shaft
(2) Thrust Bearing
(3) Bearing Washer
(4) Shim

W1043048





Checking side clearance on Counter Shaft

1. Measure the side clearance between 33T gear (1) and collar (2).
2. If the measurement is not within the factory specifications, adjust the clearance with shim on the front end of counter shaft.

(Reference)

- Thickness of shims
  0.2 mm (0.0079 in.) [Code No. 3F740-28420]
  0.3 mm (0.0118 in.) [Code No. 3F740-28410]
  0.5 mm (0.0197 in.) [Code No. 3F740-28430]

Side clearance between 33T gear and collar	Factory spec.	0.1 to 0.3 mm 0.0039 to 0.0118 in.

(1) 33T Gear
(2) Collar
(3) Counter Shaft
(4) Shim

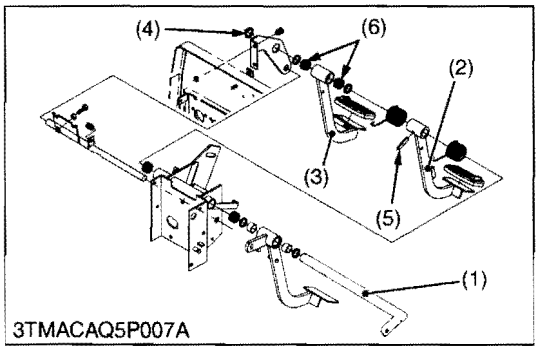
W1044496

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[2] DISASSEMBLING AND ASSEMBLING

(1) Removing Brake Pedal



Brake Pedal

1. Remove the meter panel.
2. Remove the bonnet rear.
3. Remove the brake pedal return spring and clevis pin from the turnbuckle of master cylinder.
4. Remove the circlip (4) and spring pin (5) and draw out the brake pedal shaft (1), then remove the left and right brake pedal (2), (3).

(When reassembling)

- Apply small amount grease to the brake pedal bearings (6).

■ **IMPORTANT**

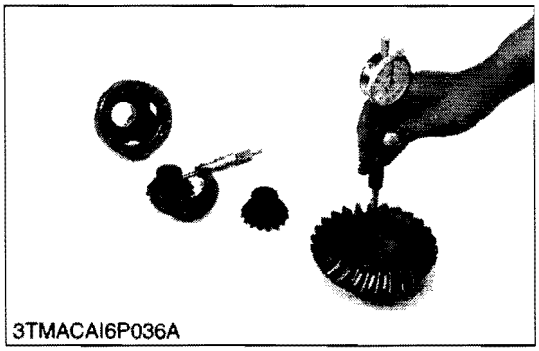
- **After reassembling the brake pedals, be sure to adjust the brake pedal free travel.**

(1) Brake Shaft
(2) Brake Pedal (LH)
(3) Brake Pedal (RH)
(4) Circlip
(5) Spring Pin
(6) Brake Pedal Bearing

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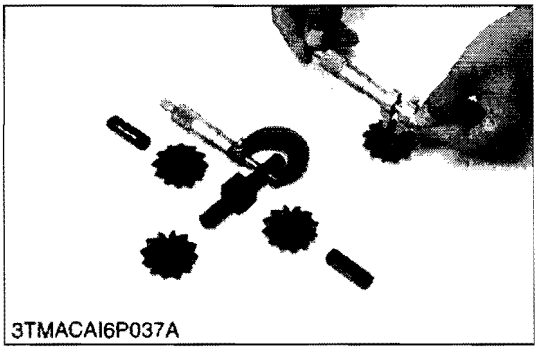
Clearance between Differential Case and Differential Side Gear

1. Measure the differential side gear boss O.D..
2. Measure the differential case bore I.D., and calculate the clearance.
3. If the clearance exceeds the allowable limit, replace it.

Clearance between differential case and differential side gear	Factory spec.	0.050 to 0.091 mm 0.00197 to 0.00358 in.
	Allowable limit	0.35 mm 0.0138 in.

Differential case bore I.D.	Factory spec.	32.025 to 32.050 mm 1.26083 to 1.26181 in.
Bevel gear bore I.D.	Factory spec.	32.025 to 32.050 mm 1.26083 to 1.26181 in.
Differential side gear O.D.	Factory spec.	31.959 to 31.975 mm 1.25823 to 1.25886 in.

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3TMACAI6P037A

Clearance between Differential Pinion Shaft and Pinion Gear

1. Measure the differential pinion shaft O.D..
2. Measure the differential pinion gear I.D., and calculate the clearance.
3. If the clearance exceeds the allowable limit, replace.

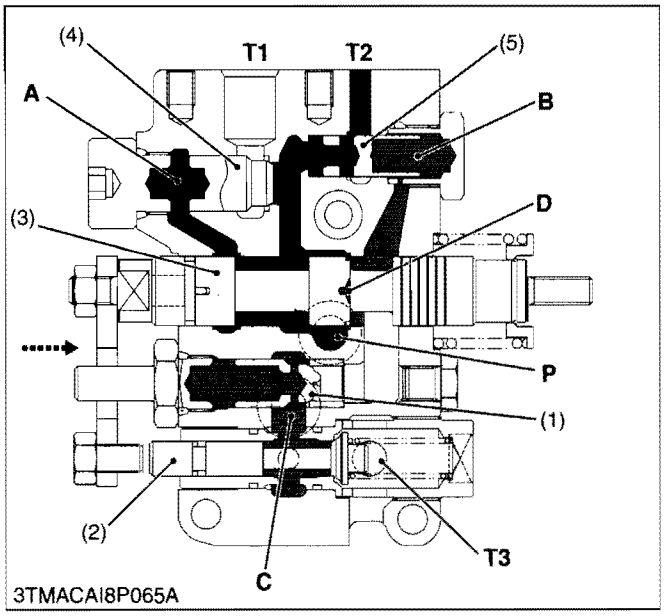
Clearance between differential pinion shaft and pinion gear	Factory spec.	0.048 to 0.084 mm 0.00189 to 0.00331 in.
	Allowable limit	0.25 mm 0.0096 in.

Differential pinion shaft O.D.	Factory spec.	12.966 to 12.984 mm 0.51047 to 0.51118 in.
Differential pinion gear I.D.	Factory spec.	13.032 to 13.050 mm 0.51307 to 0.51378 in.

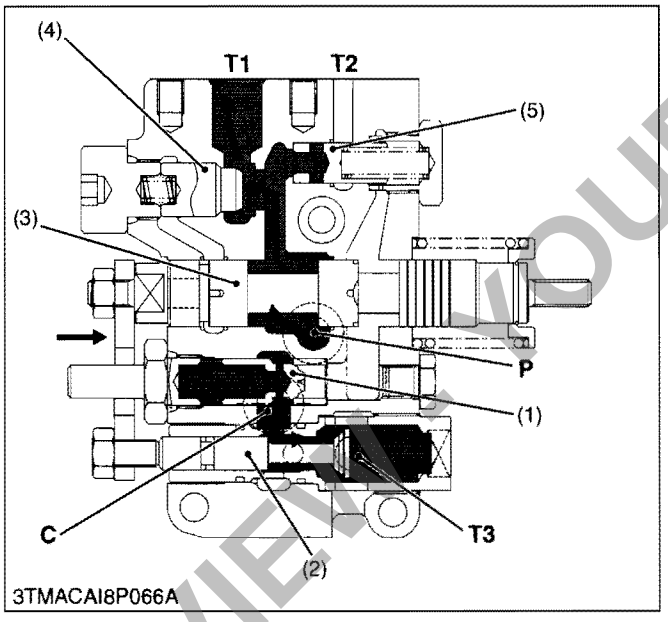
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3TMACAI8P065A



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■ Lifting to Neutral (Acting the shockless mechanism)

In returning from **Lifting** to **Neutral**, the spool (3) is pushed back to the arrow-mark direction. When the **Neutral** position comes near, the groove part **D** of the spool (3) makes the pressure difference at the **P** port and **C** port. Therefore, the poppet 1 (1) gradually closes, and absorbs any shock at lifting stop. In that case, since oil is remained in the chamber **A** of the unload poppet (4) and closes. However, the unload poppet 2 (5) opens because of low pressure in chamber **B**, and then the oil from the pump returns to the transmission case through **T2** port until unload poppet 1 (4) opens.

(1) Poppet 1
(2) Poppet 2
(3) Spool
(4) Unload Poppet 1
(5) Unload Poppet 2

P : Pump Port
C : Cylinder Port
A : Chamber A
B : Chamber B
D : Groove
T1 : Tank Port 1
T2 : Tank Port 2
T3 : Tank Port 3

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■ Lowering

When the control lever is moved to **"DOWN"** position, spool (3) moves to arrow-mark direction, and pushes the poppet 2 (2). If forms a circuit with the **C** port and **T3** port.

The oil in the hydraulic cylinder is forced out by the weight of the implement, and returns to the tank through the **C** port and **T3** port, lowering the implement. The pressurized oil pushes open unload poppet (4) and returns to the tank from **T1** port.

■ Floating

When the control lever is kept at lowest position, spool (3) and poppet 2 (2) keeps same as lowering position. The hydraulic cylinder is unloading condition. Therefore pressurized oil pushes open unload poppet (4) and returns to tank.

(1) Poppet 1
(2) Poppet 2
(3) Spool
(4) Unload Poppet 1
(5) Unload Poppet 2

P : Pump Port
C : Cylinder Port
T1 : Tank Port 1
T2 : Tank Port 2
T3 : Tank Port 3

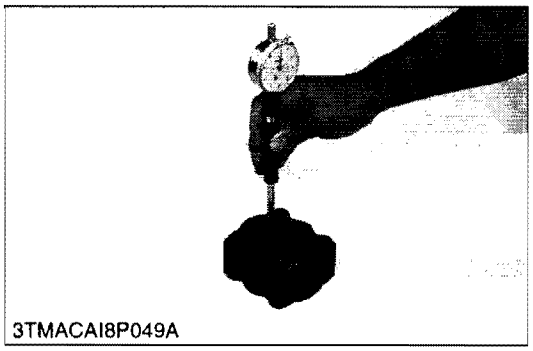
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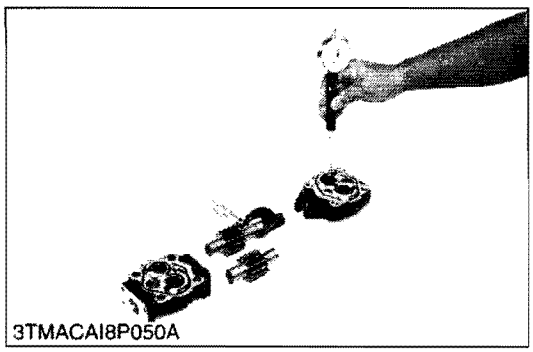
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[3] SERVICING

(1) Hydraulic Pump


3TMACAI8P049A


3TMACAI8P050A

Housing Bore

1. Measure the housing I.D. where the interior surface is not scratched, and measure the housing I.D. where the interior surface is scratched.
2. If the values obtained in the two determinations differ by more than the allowable limit, replace the hydraulic pump as a unit.

(Reference)

- Use a cylinder gauge to measure the housing I.D..

Depth of scratch	Allowable limit	0.09 mm 0.0035 in.

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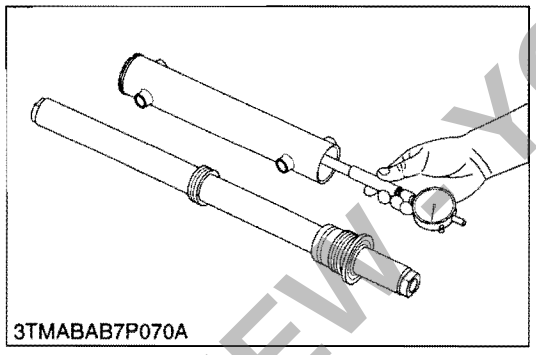
Clearance between Bushing and Gear Shaft

1. Measure the gear shaft O.D. with an outside micrometer.
2. Measure the bushing I.D. with an inside micrometer, and calculate the clearance.
3. If the clearance exceeds the allowable limit, replace the gear shaft and the bushing as a unit.

Clearance between bushing and gear shaft	Allowable limit	0.15 mm 0.0059 in.

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(2) Power Steering Cylinder


3TMABAB7P070A

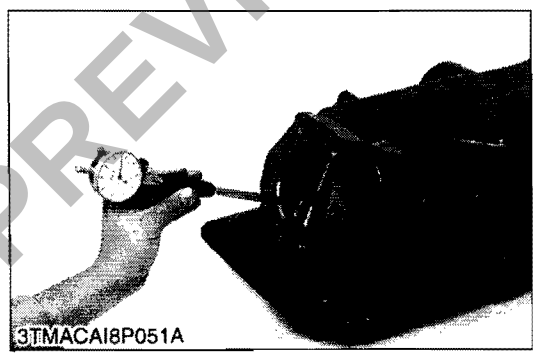
Steering Cylinder I.D.

1. Measure the steering cylinder I.D. with a cylinder gauge.
2. If the cylinder I.D. exceeds the allowable limit, replace the cylinder barrel.

Steering cylinder I.D.	Factory spec.	60.000 to 60.074 mm 2.36220 to 2.36512 in.
	Allowable limit	60.100 mm 2.36614 in.

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(3) Three-Point Hitch Cylinder


3TMACAI8P051A

Hydraulic Cylinder Bore

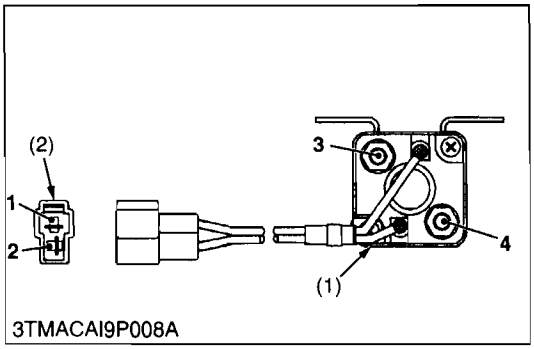
1. Check the cylinder internal surface for scoring or damage.
2. Measure the cylinder I.D. with a cylinder gauge.
3. If the measurement exceeds the allowable limit, replace it.

Cylinder I.D.	Factory spec.	100.036 to 100.071 mm 3.93843 to 3.93980 in.
	Allowable limit	100.15 mm 3.94291 in.

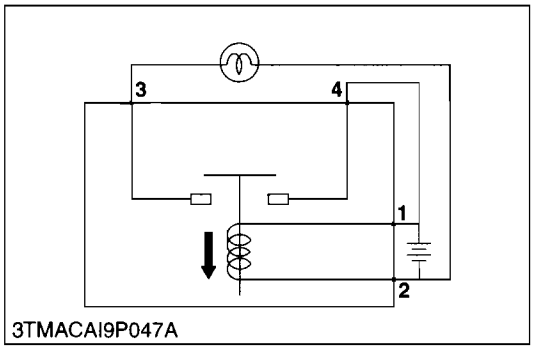
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3TMACAI9P008A



3TMACAI9P047A

Functional Check

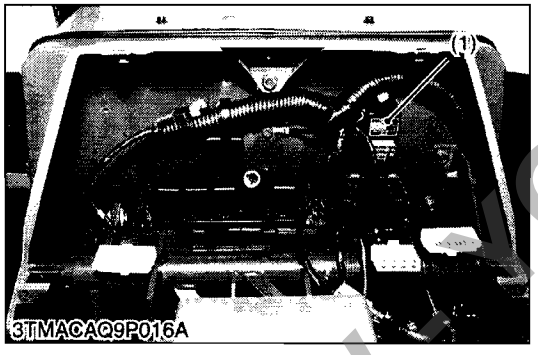
1. Remove the air heater relay.
2. Apply battery voltage across the **1** and **2** terminals, check continuity across **3** terminal and **4** terminal as shown in figure.
3. If continuity is not established across **3** terminal and **4** terminal, air heater relay is faulty.

(1) Air Heater Relay
(2) Relay Connector

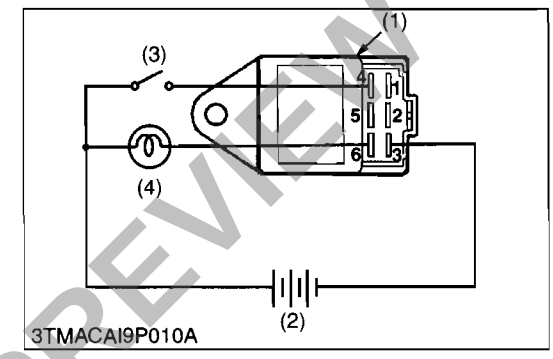
1 to 4 : Terminal

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(4) Air Heater Timer



3TMACAQ9P016A



3TMACAI9P010A

Function Check

1. Remove the air heater timer (1).
2. Connect the jumper leads with switch (3) across the battery.
3. Connect the jumper leads across the battery negative terminal and **3** terminal.
4. Connect the jumper leads across the **6** terminal and bulb (4) as shown in figure.
5. The bulb (4) lights up when switch (3) goes on and bulb goes off between 12 to 18 seconds late, air heater timer is proper.

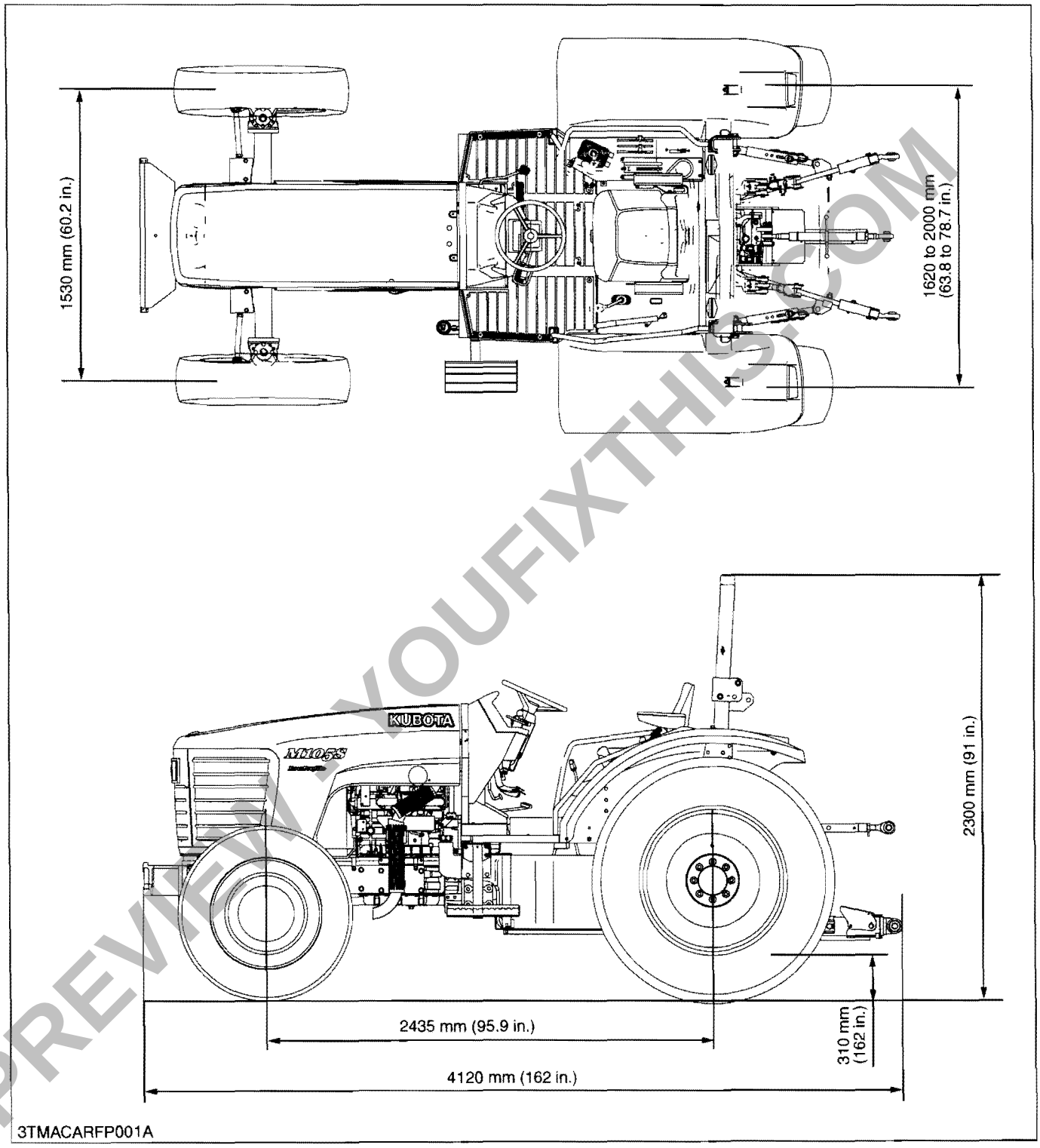
(1) Air Heater Timer
(2) Battery
(3) Switch
(4) Bulb

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DIMENSIONS



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