⚠ SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and decals 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.

SAFETY SERVICING AND REPAIRING

(1) Before working on the machine :
- Park the machine on a firm and level ground, and set the parking brake.
- Lower the implement or mower to the ground.
- Stop the engine, and remove the key.
- Disconnect the battery's ground cable.
- Clean the work area and machine.

(2) Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
(3) Do not wear a necktie, scarf, necklace, loose or bulky clothing when you work near machine tools or moving parts.
(4) Use tools appropriate to the work. Makeshift tools, parts, and procedures will not make good repairs.
(5) When servicing is performed together by two or more persons, take care to perform all work safely.
(6) Do not work under the machine that is supported solely by a jack. Always support the machine by safety stands.

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SPECIFICATIONS

Model			B1700 HSD	B2100 HSD	B2400 HSD
PTO power			9.7 kW (13.0 HP)*	12.0 kW (16.0 HP)*	13.4 kW (18.0 HP)*
Engine	Maker		KUBOTA		
	Model		D905-D10	D1005-D10	D1105-D10
	Type		Indirect Injection. Vertical, water-cooled, 4-cycle diesel		
	Number of cylinders		3		
	Bore and stroke		72 x 73.6 mm (2.83 x 2.90 in.)	76 x 73.6 mm (2.99 x 2.90 in.)	78 x 78.4 mm (3.07 x 3.09 in.)
	Total displacement		898 cm³ (54.8 cu.in.)	1001 cm³ (61.1 cu.in.)	1123 cm³ (68.5 cu.in.)
	Engine gross power		12.7 kW (17.0 HP)	15.7 kW (21.0 HP)	17.9 kW (24.0 HP)
	Rated revolution		43.3 r/s (2600 rpm)		
	Maximum torque		51 N·m (38 ft-lbs)	59 N·m (44 ft-lbs)	67 N·m (50 ft-lbs)
	Battery		12V, RC : 71 min, CCA : 390 A (12V, RC : 79 min, CCA : 433A)		
	Starting system		Electric starting with cell starter 12V, 1.0 kW		
	Lubricating system		Forced lubrication by trochoidal pump		
	Cooling system		Pressurized radiator, forced circulation with water pump		
	Fuel		Diesel fuel No.2-D [above-10°C (14°F)], Diesel fuel No. 1 [below-10°C (14°F)]		
Capacities	Fuel tank		24 ℓ (6.3 U.S.gals, 5.3 Imp.gal)		
	Engine crankcase (with filter)		3.0 ℓ (3.2 U.S.qts, 2.6 Imp.qts)		
	Engine coolant		3.4 ℓ (3.6 U.S.qts, 2.6 Imp.qts)		
	Transmission case		12.0 ℓ (3.17 U.S.gals, 12.4 Imp.gals)		
	Front axle case		3.7 ℓ (3.9 U.S.qts, 3.3 Imp.qts)		
Dimensions	Overall length (without 3P)		2280 mm (89.8 in.)	2300 mm (90.6 in.)	2330 mm (91.7 in.)
	Overall width (min. tread)		989 mm (38.9 in.)	1077 mm (42.4 in.)	1175 mm (46.3 in.)
	Overall height (with ROPS)		1915 mm (75.4 in.)	1940 mm (76.4 in.)	1965 mm (77.4 in.)
	Overall height (top of seat)		1293 mm (50.9 in.)	1318 mm (51.9 in.)	1343 mm (52.9 in.)
	Wheelbase		1500 mm (59.0 in.)		
	Min. ground clearance		295 mm (11.6 in.)	305 mm (12.0 in.)	325 mm (12.8 in.)
	Treads	Front	835 mm (32.9 in.)	835 mm (32.9 in.)	835 mm (32.9 in.)
		Rear	778 to 948 mm (30.6 to 37.3 in.)	836 to 1006 mm (32.9 to 39.6 in.)	890 to 1064 mm (35.0 to 41.9 in.)
Weight (with ROPS)			635 kg (1402 lbs)	647 kg (1428 lbs)	662 kg (1461 lbs)
Clutch			Dry single plate		
Traveling system	Tires	Front	6-12	6-12	7-12
		Rear	8.3-16	9.5-16	11.2-16
	Steering		Integral type power steering		
	Transmission		Main-hydrostatic transmission, High-Low gear shift (2 forward, 2 reverse)		
	Brake		Wet disk		
	Min. turning radius (with brake)		2.1 m (6.9 feet)		
Hydraulic system	Hydraulic control system		Position Control		
	Pump capacity		22 ℓ/min (5.8 gals/min)		
	Three point hitch		SAE Category I		
	Max. lift force	At lift points	580 kg (1280 lbs)		
		24 in. behind lift points	460 kg (1015 lbs)		
PTO shaft	Rear-PTO		SAE 1-3/8, 6 splines		
	Revolution		543 rpm at 2600 engine rpm		
	Mid-PTO		USA No. 5 (KUBOTA 10-tooth) involute spline		
	Revolution		2537 rpm at 2600 engine rpm		

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

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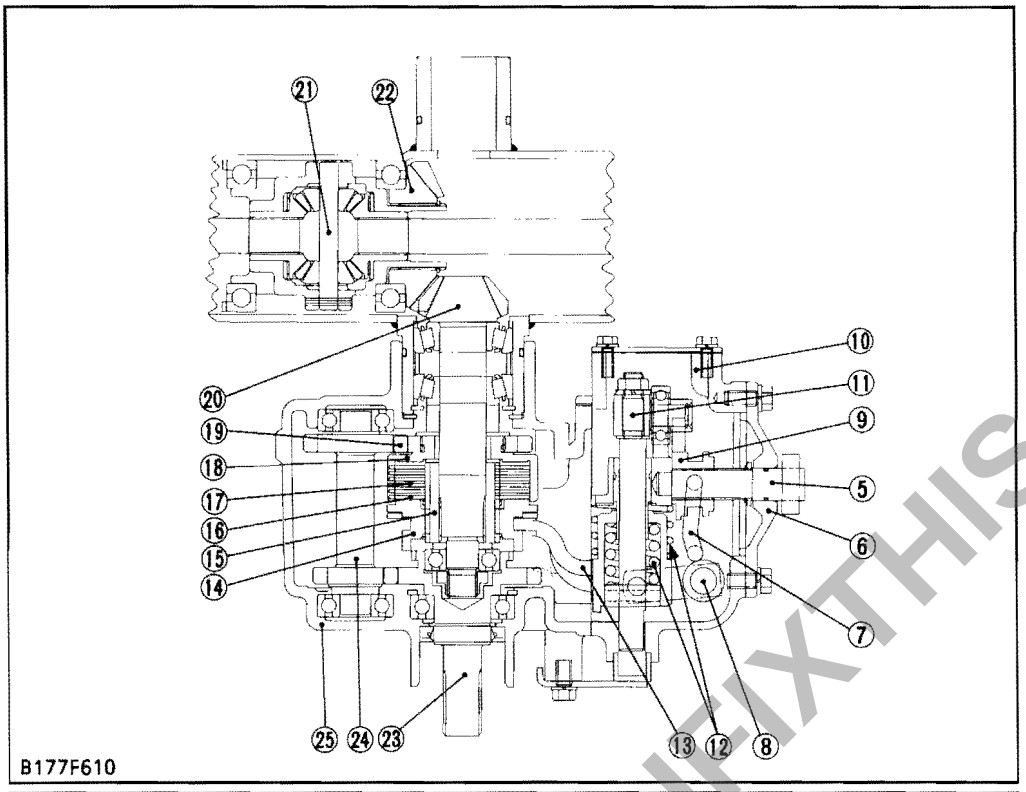
[7] MAINTENANCE CHECK LIST

No.	Check point	Indication on hour meter (Change or check every interval shown below)															After purchase		Reference page
		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	1 year	2 years	
1	Greasing	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			G-14
2	Engine starting system checking	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			G-15
3	Wheel bolt torque checking	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			G-16
4	Battery condition checking	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			G-17
5	Engine oil changing	◎	○		○		○		○		○		○		○		○			G-18
6	Air cleaner element cleaning ★		○		○		○		○		○		○		○		○			G-18
7	Air cleaner element replacement																	○		G-18
8	Fuel filter element cleaning		○		○		○		○		○		○		○		○			G-18
9	Fuel filter element replacement								○								○			G-18
10	Fan belt tension adjustment		○		○		○		○		○		○		○		○			G-19
11	Clutch pedal free travel adjustment		○		○		○		○		○		○		○		○			G-19
12	Brake pedal free travel adjustment		○		○		○		○		○		○		○		○			G-20
13	Engine oil filter cartridge replacement	◎			○				○				○				○			G-12
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15	Transmission fluid changing	◎					○						○							G-13
16	Transmission strainer cleaning (HST type)	◎					○						○							G-13
17	Front axle case oil changing						○						○							G-22
18	Front axle pivot adjustment								○								○			G-22
19	Radiator hose and clamp checking				○				○				○				○			G-20
20	Radiator hose and clamp replacement																		○	G-24
21	Fuel line checking				○				○				○				○			G-21
22	Fuel line replacement																		○	G-24
23	Toe-in adjustment				○				○				○				○			G-21
24	Engine valve clearance adjustment																○			1-S18
25	Engine cooling system cleaning																		○	G-23
26	Coolant changing																		○	G-24
27	Fuel system bleeding ☆																			G-25

Note : The jobs indicated by ◎ must be done by all means 50 hours after the break-in respectively.
The jobs indicated by ☆ service as required.
★ Air cleaner should be cleaned more often in dusty conditions than in normal conditions.

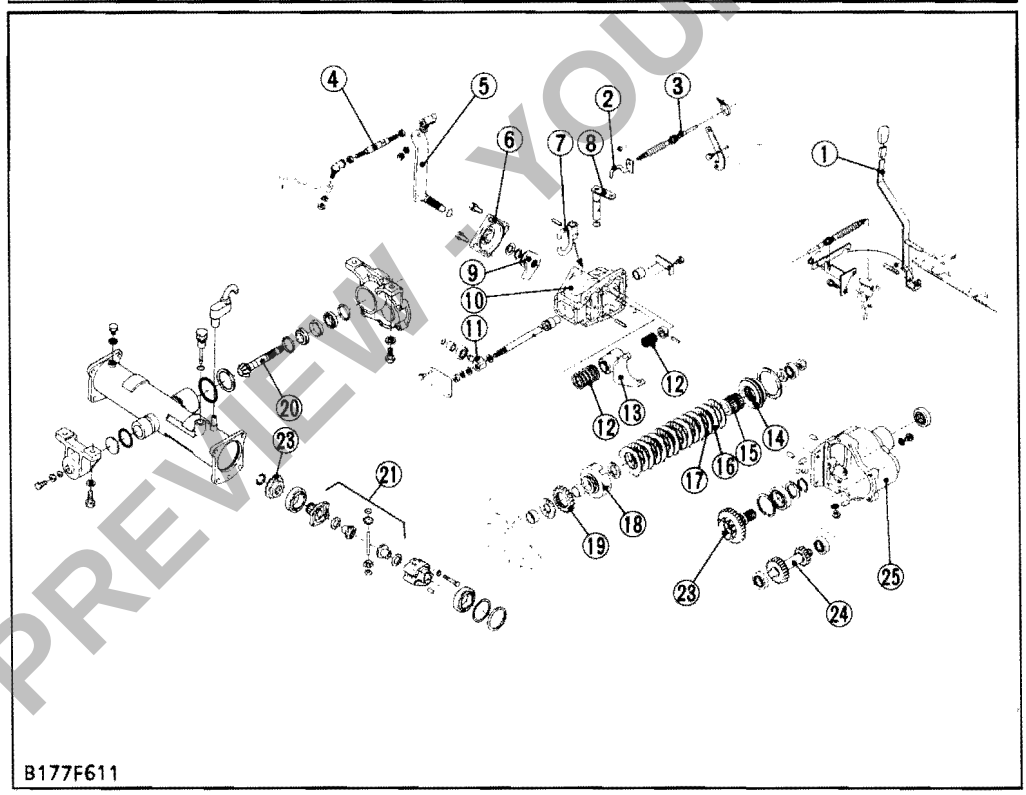
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(2) Bi-speed Turn Type



B177F610

(1) Bi-speed Turn Lever
(2) Bi-speed Turn Rod
(3) Bi-speed Turn Change Cable
(4) Shift Rod
(5) Shift Lever
(6) Shift Lever Fulcrum
(7) Change Fork
(8) Change Lever
(9) Shift Cam
(10) Bi-speed Turn Case
(11) Shift Roller Shaft
(12) Spring
(13) Bi-speed Turn Shift Fork
(14) Shifter
(15) Coupling
(16) Clutch Disc
(17) Friction Plate
(18) Clutch Drum
(19) 18T Gear
(20) Spiral Bevel Pinion Shaft
(21) Front Differential Assembly
(22) Bevel Gear
(23) Gear Shaft
(24) Gear Shaft
(25) Bi-speed Turn Gear Case



B177F611

The front axle with bi-speed turn is constructed as shown above. Front wheel speed change mechanism, which is located in the bi-speed turn gear case (25) and bi-speed turn case (10), consists of the bi-speed turn lever (1), shift rod (4), shift cam (9), shift fork (13), bi-speed turn clutch assembly (14 to 18), gears (19) (23) (24) and so on.

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Symptom	Probable Cause	Solution	Reference Page
Either Black or Dark Gray Exhaust Gas Is Observed	• Overload	Lessen the load	–
	• Low grade fuel used	Use the specified fuel	–
	• Fuel filter clogged	Clean or replace	G-18, G-22
	• Air cleaner clogged	Clean or replace	G-18
Deficient Output	• Incorrect injection timing	Adjust	1-S47
	• Engine's moving parts seem to be seizing	Repair or replace	–
	• Uneven fuel injection	Repair or replace injection pump	1-S24, 1-S49
	• Deficient nozzle injection	Repair or replace nozzle	1-S20, 1-S50
	• Compression leak	Check comp-ression pressure	1-S17
Excessive Lubricant Oil Consumption	• Piston ring's gap facing the same direction	Shift ring gap direction	1-S28
	• Oil ring worn or stuck	Replace	1-S28, 1-S38
	• Piston ring groove worn	Replace piston	1-S38
	• Valve stem and guide worn	Replace	1-S22, 1-S32
Fuel Mixed into Lubricant Oil	• Injection pump's plunger worn	Replace pump element or pump	1-S24, 1-S49
	• Fuel lift pump broken	Replace	1-S23
Water Mixed into Lubricant Oil	• Head gasket defective	Replace	1-S21
	• Cylinder block or cylinder head flawed	Replace or repair	1-S21, 1-S30 1-S43
Low Oil Pressure	• Engine oil insufficient	Replenish	1-S11
	• Oil strainer clogged	Clean	1-S26
	• Oil filter cartridge clogged	Replace	G-12
	• Relief valve stuck with dirt	Clean	1-M8
	• Relief valve spring weaken or broken	Replace	1-M8
	• Excessive oil clearance of crankshaft bearing	Replace	1-S40
	• Excessive oil clearance of crank pin bearing	Replace	1-S40
	• Oil passage clogged	Clean	–
	• Different type of oil	Use the specified type of oil	
	• Oil pump defective	Repair or replace	1-S23,1-S44
High Oil Pressure	• Different type of oil	Use the specified type of oil	
	• Relief valve defective	Replace	1-M8

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TIGHTENING TORQUES

Screws, bolts and nuts must be tightened to the specified torque using a torque wrench. Several screws, bolts and nuts such as those used on the cylinder head must be tightened in proper sequence and at the proper torque.
(For general use screws and nuts: See page G-8)

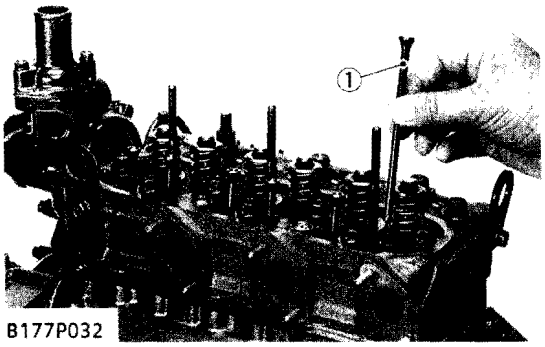
Item	N·m	kgf·m	ft-lbs
Drag link slotted nut	17.7 to 34.5	1.8 to 3.5	13.0 to 25.3
Front axle frame mounting screw	39.2 to 64.7	4.0 to 6.6	28.9 to 47.7
Steering wheel mounting nut	29.4 to 49.0	3.0 to 5.0	21.7 to 36.2
Flare nut (P.S. pipes and 3-point hitch delivery pipe)	29.4 to 39.2	3.0 to 4.0	21.7 to 28.9
Joint bolt of 3-point hitch delivery pipe	34.3 to 44.1	3.5 to 4.5	25.3 to 32.5
Fuel filter bracket mounting screw	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2
Clutch housing and engine mounting screw and nut			
M8 screw	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2
M10 nut	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2
Clutch cover mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Flow priority valve mounting screw	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2

Item	Size x Pitch	N·m	kgf·m	ft-lbs
* Cylinder head cover cap nuts	M7 x 1.0	6.9 to 8.8	0.7 to 0.9	5.1 to 6.5
Cylinder head bolt	M10 x 1.25	63.7 to 68.6	6.5 to 7.0	47.0 to 50.6
* Bearing case bolt **1**	M8 x 1.25	29.4 to 34.3	3.0 to 3.5	21.7 to 25.3
* Bearing case bolt **2**	M9 x 1.25	49.0 to 53.9	5.0 to 5.5	36.2 to 39.8
* Flywheel bolt	M10 x 1.25	53.9 to 58.8	5.5 to 6.0	39.8 to 43.4
* Connecting rod bolt	M8 x 1.0	41.2 to 46.1	4.2 to 4.7	30.4 to 34.0
* Rocker arm bracket nuts	M7 x 1.0	21.6 to 26.5	2.2 to 2.7	15.9 to 19.5
* Idle gear shaft 1 bolt	M6 x 1.0	9.8 to 11.3	1.00 to 1.15	7.2 to 8.3
* Crankshaft bolt	M14 x 1.5	235.4 to 245.2	24.0 to 25.0	173.6 to 180.8
Glow plugs	M8 x 1.0	7.8 to 14.7	0.8 to 1.5	5.8 to 10.8
Nozzle holder assembly	M20 x 1.5	49.0 to 68.6	5.0 to 7.0	36.2 to 50.6
Overflow pipe retaining nut (nozzle)	M12 x 1.5	19.6 to 24.5	2.0 to 2.5	14.5 to 18.1
Oil switch	PT 1/8	14.7 to 19.6	1.5 to 2.0	10.8 to 14.5
Idle adjust screw cap nut	M6 x 1.0	7.8 to 9.8	0.8 to 1.0	5.8 to 7.2
Fuel limit cap nut	M6 x 1.0	7.8 to 9.8	0.8 to 1.0	5.8 to 7.2
Injection pipe cap nuts	M12 x 1.5	24.5 to 34.3	2.5 to 3.5	18.1 to 25.3

■ **NOTE**
- **For * marked screws, bolts and nuts on the table, apply engine oil to their threads and seats before tightening.**
- **The letter "M" in Size x Pitch means that the screw, bolt or nut dimension stands for metric. The size is the nominal outside diameter in mm of the threads. The pitch is the nominal distance in mm between two threads.**

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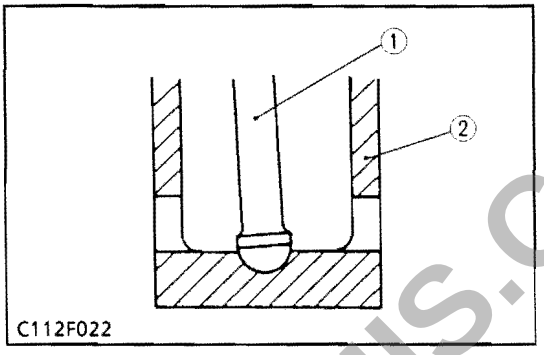
B177P032

Push Rods

1. Remove the push rods (1).

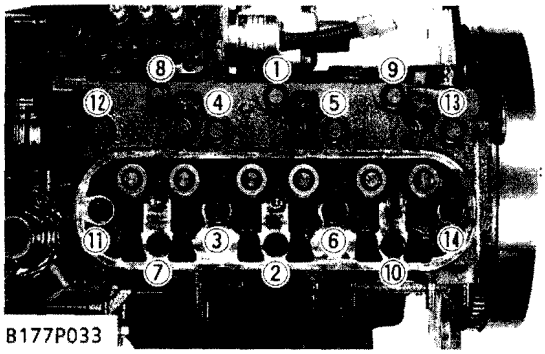
(When reassembling)

- When putting the push rods onto the tappets, check to see if their ends are properly engaged with the grooves.



C112F022

(1) Push Rods
(2) Tappet



B177P033

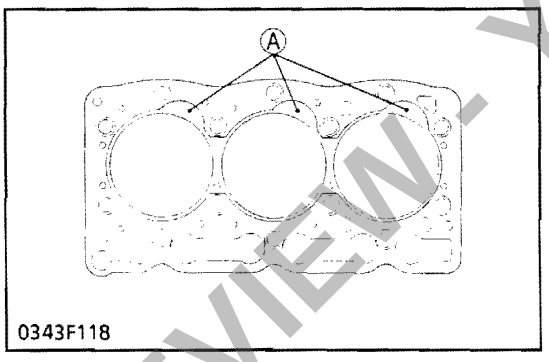
(1) → (14) Head Bolt Fastening Procedure

Cylinder Head

1. Remove the cylinder head. Reverse the fastening procedure shown in the photograph to loosen the head bolts.
2. Remove the head gasket.

(When reassembling)

- Completely remove gaskets left in the cylinder head and crank case.
- Replace the head gasket by a new one and fit it with the grommets for the combustion chambers on the side of the cylinder heads.
- Tighten the cylinder head screws after applying sufficient oil.
- Tighten the cylinder head screws in diagonal sequence starting from the center. (Refer to fighre left.) Tighten them uniformly, or the head may deform in the long run.



0343F118

[A] Grommet

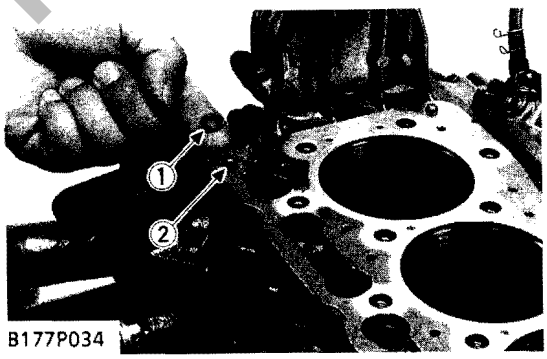
■ IMPORTANT

- **Securely fit the O-ring to the pipe pin.**
- **Head bolt fastening procedure: Tighten the bolt according to the order show in the photograph, and repeat this procedure 2 or 3 times to the specified torque.**
  Using new bolts: Clean the threads and the undercut surface of the bolts, and fit the bolts without applying engine oil to the parts.
  Re-using the same bolts: Clean the threads and the undercut surface of the bolts, apply engine oil to the parts and fit the bolts.
- **After assembling the engine and operating it for about 30 minutes, further fasten the bolts (loosen the bolts, then fasten them again with a specified torque) to adjust the valve clearance.**

Tightening torque	Head bolt	63.7 to 68.6 N·m 6.5 to 7.0 kgf·m 47.0 to 50.6 ft-lbs

O-ring

1. Remove the O-ring from the periphery of the oil pipe on the crankcase.



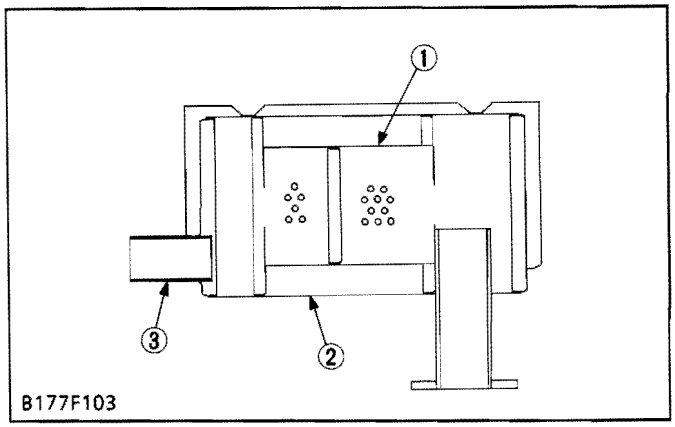
B177P034

(1) O-ring (2) Pipe Pin

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(12) Muffler



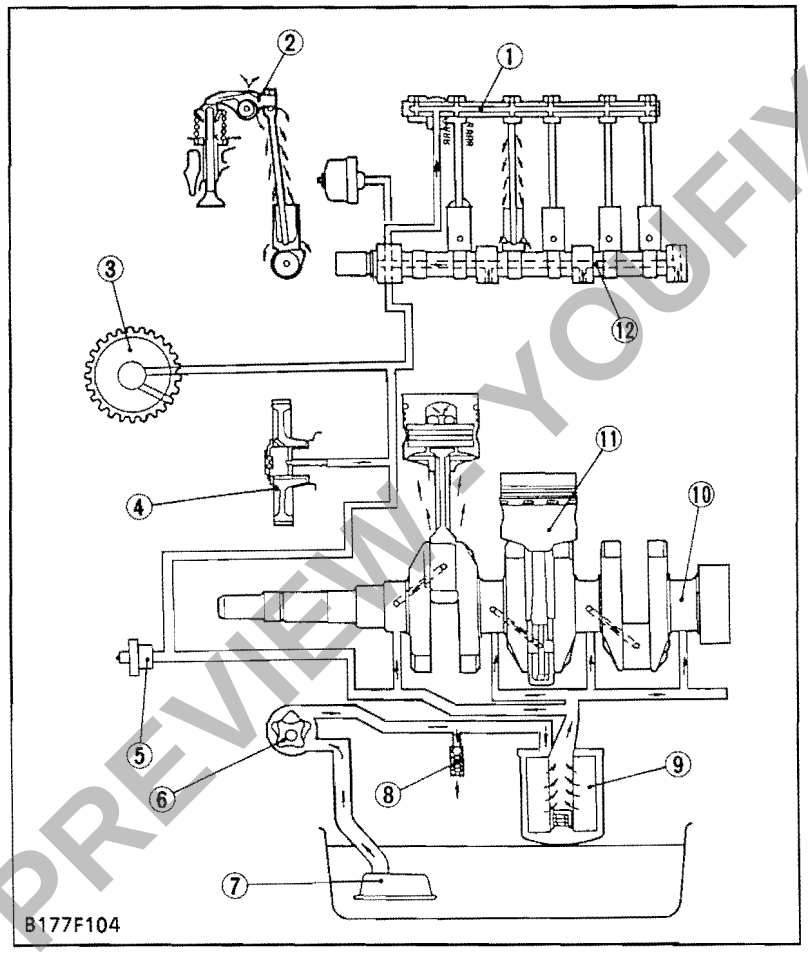
The muffler consists of an inner tube (1) with a series of holes and outer tube (2).

The exhaust noises are absorbed and dumped, while the gas pass through a series of holes on the inner tube (1).

(1) Inner Tube
(2) Outer Tube
(3) Exhaust Tube

[3] LUBRICATING SYSTEM

(1) General



The lubricating system within this engine consists of an oil strainer, oil pump, relief valve, oil filter cartridge and oil switch.

The oil pump draws in lubricating oil from the oil pan through the oil strainer. The oil flows down to the filter cartridge, where it is further filtered.

Then the oil is force-fed to the crankshaft, connecting rods, idle gear, camshaft and rocker arm shaft and lubricates each part.

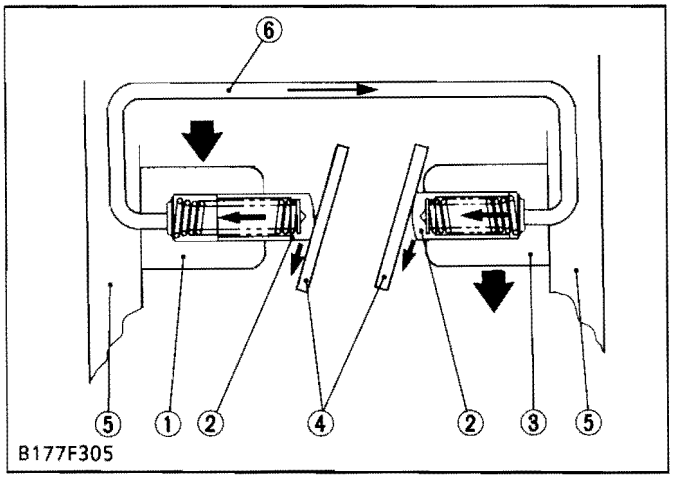
Some part of oil, splashed by the crankshaft or leaking and dropping from gaps of each part, lubricates these parts: pistons, cylinders, small ends of connecting rods, tappets, push rods, inlet and exhaust valves.

(1) Rocker Arm Shaft
(2) Rocker Arm
(3) Governor Gear
(4) Idle Gear 1
(5) Oil Pressure Switch
(6) Oil Pump
(7) Oil Strainer
(8) Relief Valve
(9) Oil Filter Cartridge
(10) Crankshaft
(11) Piston
(12) Camshaft

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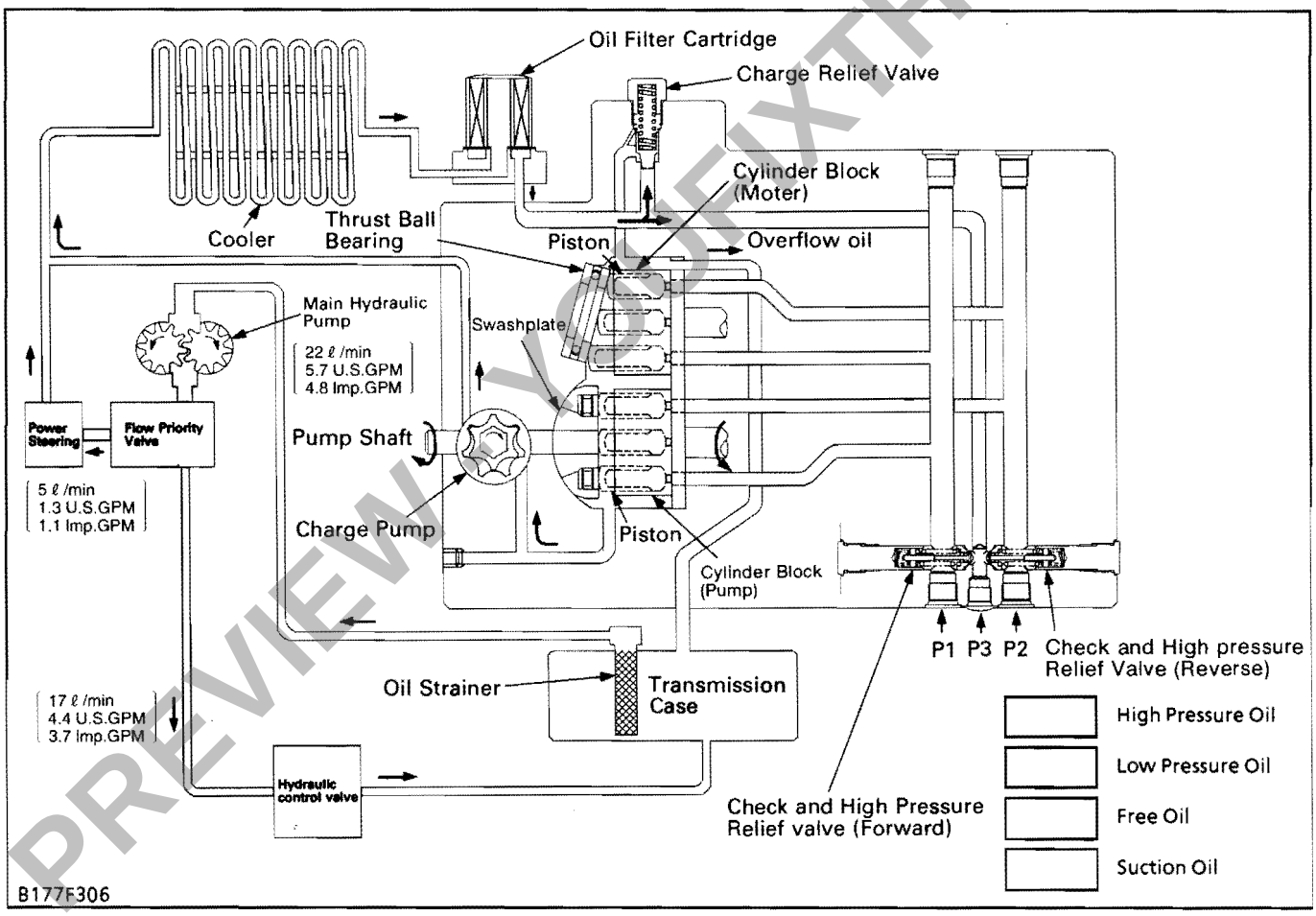
(2)-2. Pump and Motor



Pump and motor cylinder, each containing pistons, are connected by lines. Cylinders and lines are filled with oil. Pistons ride against swashplates located in pump and motor. In the pump, as the cylinder rotates, pistons move across the sloping face of swashplate and slide in or out of their cylinder bores. The oil, forced out by the pump pistons, causes the motor pistons to slide out of their cylinder bores. In the motor, sliding out of the cylinder and moving across the sloping face of swashplate, the pistons rotate the cylinder.

(1) Cylinder Block (Pump)
(2) Piston
(3) Cylinder Block (Motor)
(4) Swashplate
(5) Center Section
(6) Connecting

(2)-3. Oil Flow and Valves



P1 : Port for checking high pressure (forward) P2 : Port for checking high pressure (reverse) P3 : Port for checking charge pressure

The pump and motor are joined in a closed hydraulic loop and most of oil circulates within the main oil circuit. A little oil lubricates and oozes out from the clearance between the moving parts of the case. Then oil in the main oil circuit of the HST needs to be supplied a want.

The combined oil flow from the power steering circuit and HST charge pump are flows into the HST for charging.

The charge oil aids smooth operation of piston pump and motor. The charge oil passes through the oil cooler and transmission oil filter to charge relief valve port. The rest of oil passes through the charge relief valve into the HST housing. Oil from the hydraulic cylinder and overflow oil from HST housing return to the transmission case.

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Alternator

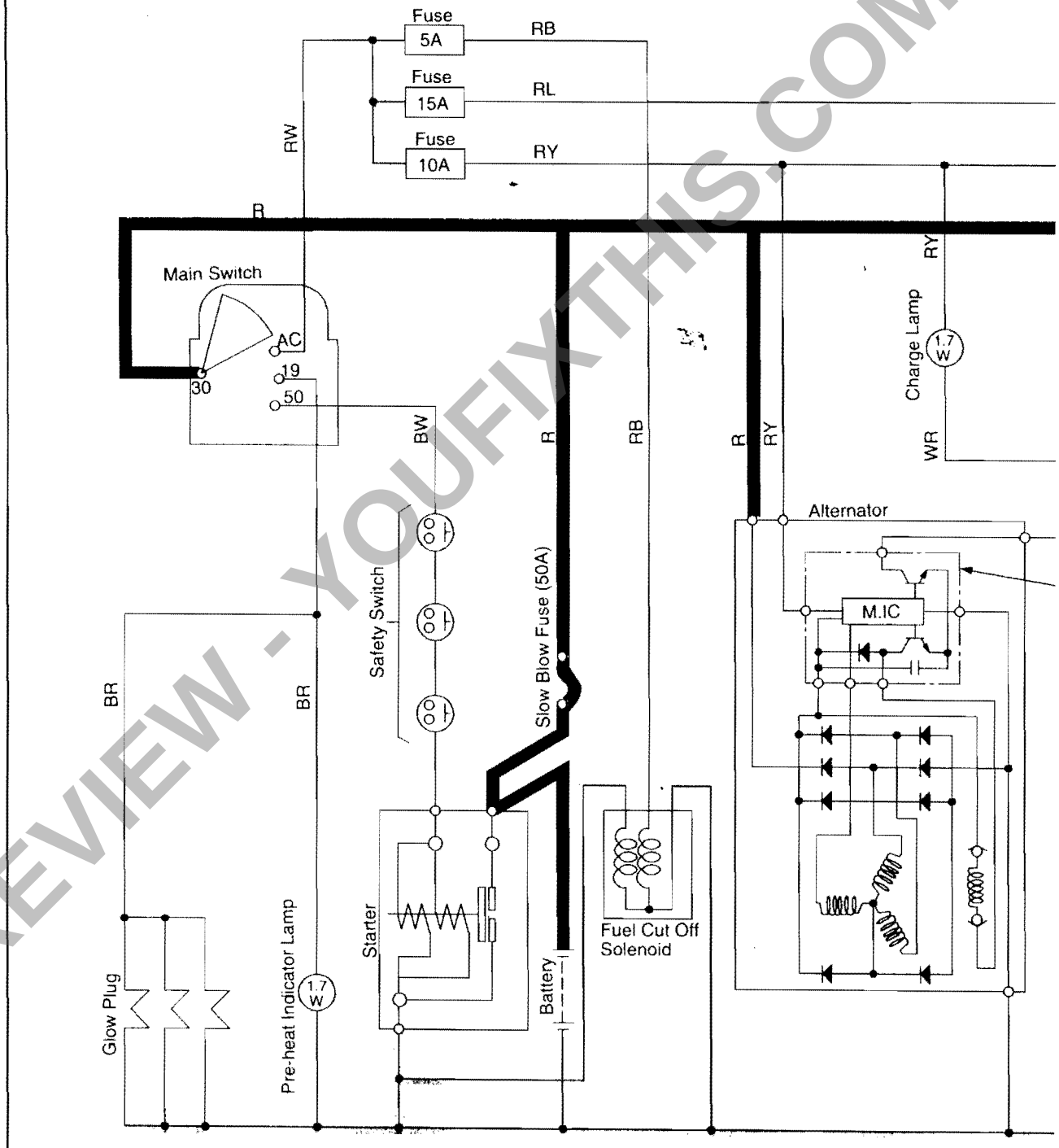
n Switch

Terminal / sition	3
OFF	(
ON	(
REHEAT	(
START	(

■ With Alternator

• Color of Wiring

W	White	Y	Yellow	Or	Orange	RB	Red / Black
R	Red	B	Black	WR	White / Red	RW	Red / Whit
L	Blue	G	Green	WY	White / Yellow	RL	Red / Blue



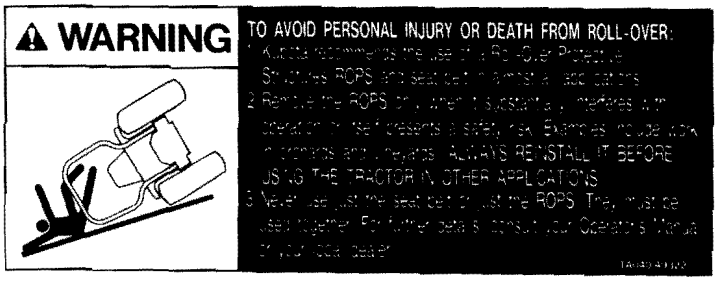
Denotes battery voltage at any position of main switch.
Denotes battery voltage when turning on the main switch.
Denotes ground line.

B177F904

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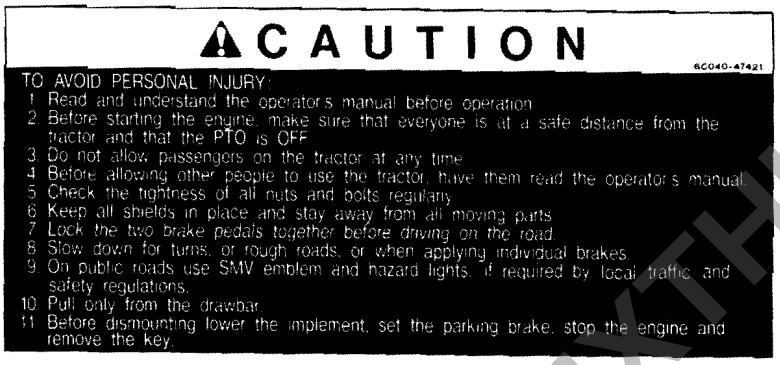
(7) Part No. TA040-4932-2



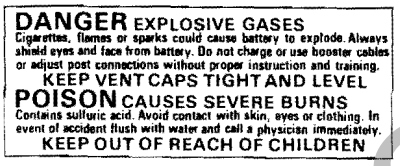
(8) Part No. 32751-4958-1
Stay clear of engine fan and fanbelt.

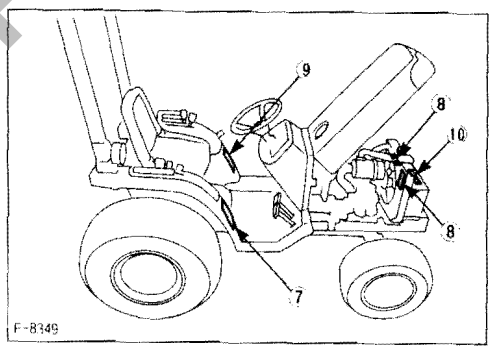


(9) Part No. 6C040-4742-1



(10) Part No. 6C040-5559-1





CARE OF DANGER, WARNING AND CAUTION LABELS

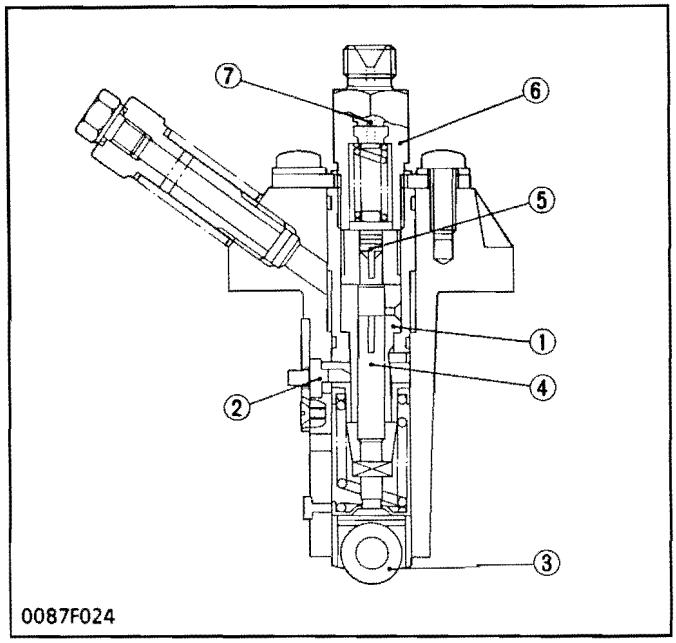
1. Keep danger, warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels from your local KUBOTA dealer.
4. If a component with danger, warning and caution label (s) affixed is replaced with new part, make sure new label (s) is (are) attached in the same location (s) as the replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

B177F002

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(4) Injection Pump

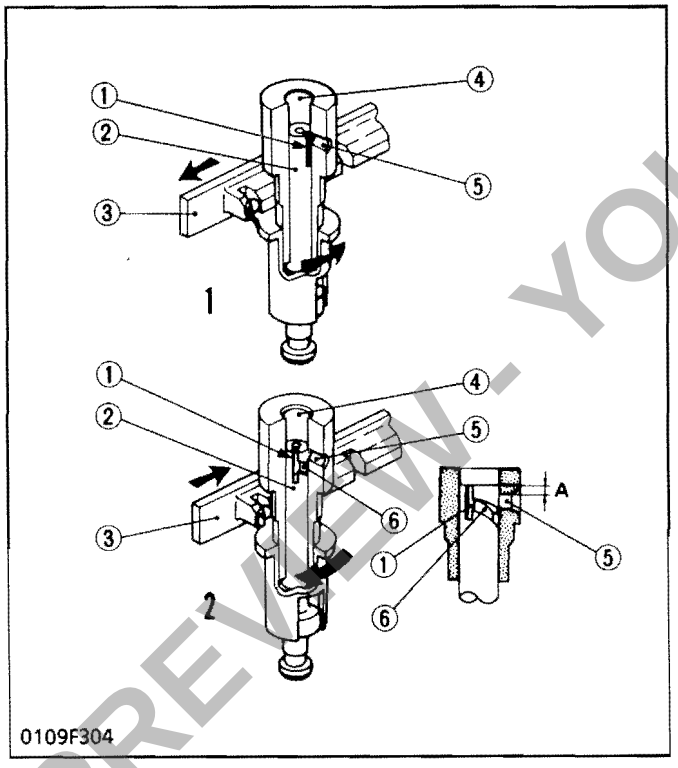


0087F024

A Bosch MD type mini pump is used for the injection pump. It is small, lightweight and easy to handle.

The plunger (4) with a left-hand lead recipro-cates via the tappet roller (3) by means of the camshaft fuel cam, causing the fuel to be delivered into the injection nozzle.

(1) Cylinder
(2) Control Rack
(3) Tappet Roller
(4) Plunger
(5) Delivery Valve
(6) Delivery Valve Holder
(7) Dumping Valve



0109F304

1. No fuel delivery

At the engine stop position of the control rack (3), the lengthwise slot (1) on the plunger (2) aligns with the feed hole (5). And the delivery chamber (4) is led to the feed hole during the entire stroke of the plunger.

The pressure in the delivery chamber does not build up and no fuel can be forced to the injection nozzle.

2. Fuel delivery

The plunger (2) is rotated (See figure) by the control rack (3). When the plunger is pushed up, the hole (5) is closed. The pressure in the delivery chamber (4) builds up and forcefeeds the fuel to the injection nozzle until the control groove (6) meets the feed hole (5).

The amount of the fuel corresponds to the distance "A".

(1) Slot
(2) Plunger
(3) Control Rack
(4) Delivery Chamber
(5) Feed Hole
(6) Control Groove

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SERVICING SPECIFICATIONS

Item		Factory Specification	Allowable Limit
Clutch Pedal	Free play	20 to 30 mm 0.8 to 1.2 in.	–
Clutch Pedal Stopper Bolt	Height	18 to 22 mm 0.70 to 0.87 in.	–
Clutch Disc	Disc Surface to Rivet Top (Depth)	–	0.3 mm 0.012 in.
Clutch Disc Boss to Gear Shaft	Backlash (Displacement Around Disc Edge)	–	2.0 mm 0.079 in.
Pressure Plate	Flatness	–	0.2 mm 0.008 in.
Diaphragm Spring	Mutual Difference	–	0.5 mm 0.020 in.

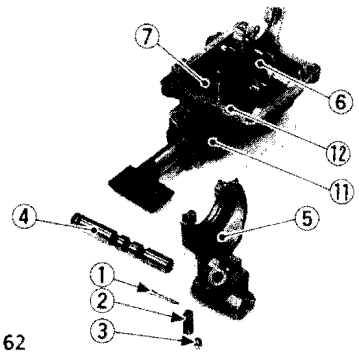
TIGHTENING TORQUES

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

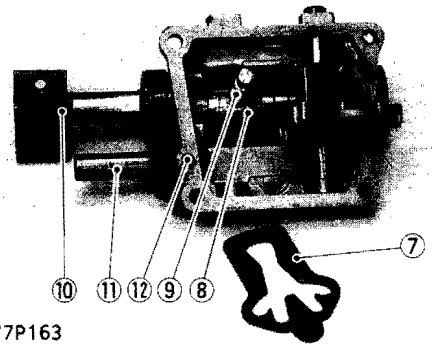
Item	N·m	kgf·m	ft-lbs
Clutch mounting screw	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3
Engine and clutch housing mounting screw and nut			
M8 screw	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2
M10 nut	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2
Steering wheel mounting nut	29.4 to 49.0	3.0 to 5.0	21.7 to 36.2
Joint bolt for delivery pipe of three point	58.8 to 78.5	6.0 to 8.0	43.4 to 57.9
Drag link slotted nut	17.7 to 34.3	1.8 to 3.5	13.0 to 25.3
Flare nut for delivery pipe and power steering pipes	29.4 to 39.2	3.0 to 4.0	21.7 to 28.9

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B177P162

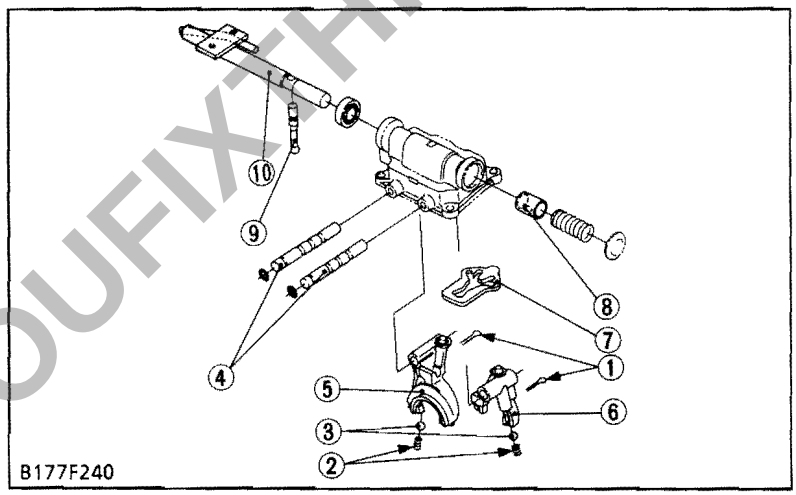


B177P163

Main Gear Shift Fork

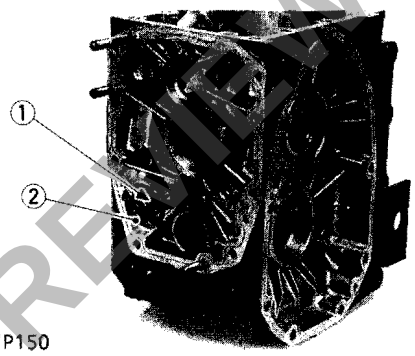
1. Remove the cotter pin (1) and remove the spring (2) and ball (3).
2. Draw out the shift rod (4) and remove the 1st-reverse gear shift fork (5).
3. Remove the 2nd-3rd gear shift fork (6), in the same way as the 1st-reverse shift fork removing procedure.
4. Take out the interlocker (7) and slide the shift arm stopper (8) and then remove the shift arm (9).
5. Remove the shift shaft (10).
6. When remove the differential lock pedal shaft (11) draw out the dowel pin (12) first.

(1) Cotter Pin
(2) Spring
(3) Ball
(4) Shift Rod
(5) 1st-Reverse Gear Shift Fork
(6) 2nd-3rd Gear Shift Fork
(7) Interlocker
(8) Shift Arm Stopper
(9) Shift Arm
(10) Shift Shaft
(11) Differential Lock Pedal Shaft
(12) Dowel Pin

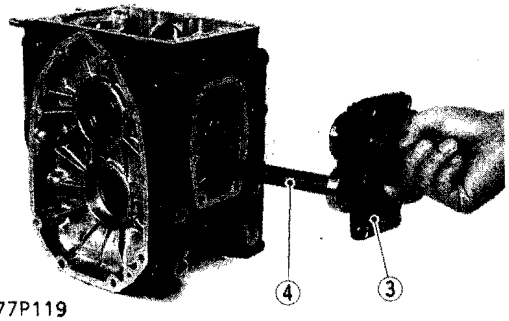


B177F240

[5] DIFFERENTIAL GEAR CASE



B177P150



B177P119

5th Gear Shaft and Rear-PTO Shaft

1. Remove the external snap ring (1) and one-way clutch cam (2) (Manual Transmission Type).
2. Remove the rear-PTO cover mounting screw and remove the rear-PTO cover (3) assembly.

(When reassembling)

- Apply liquid gasket (Three Bond 1208D or equivalent) to joint face of differential case and rear-PTO cover.

■ NOTE

- **Do not tighten the rear-PTO cover mounting screws before reassembling the differential case and transmission case.**

Tightening torque	Rear-PTO cover mounting screw	39.2 to 44.1 N·m 4.0 to 4.5 kgf·m 28.9 to 32.5 ft-lbs

(1) External Snap Ring
(2) One-way Clutch Cam
(3) Rear-PTO Cover Assembly
(4) 5th Gear Shaft

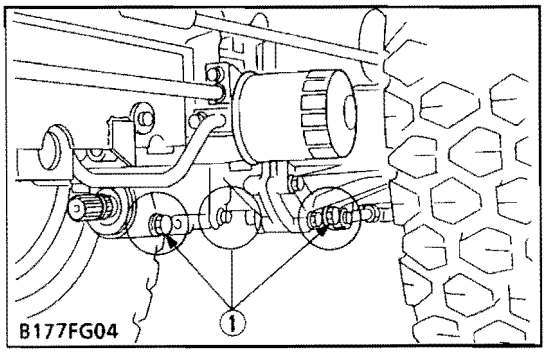
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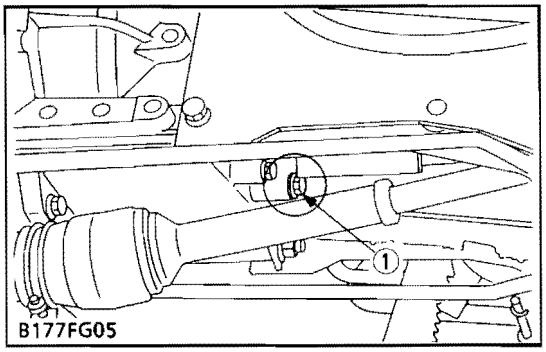
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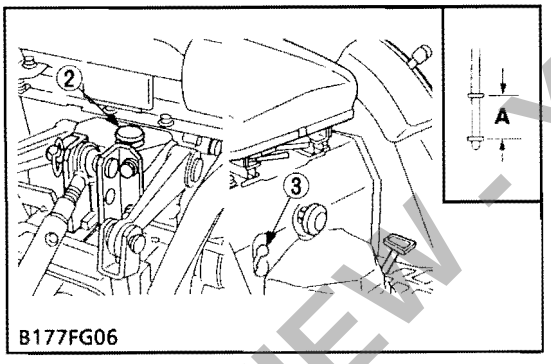
[2] BRAKE ASSEMBLY

DISASSEMBLING AND ASSEMBLING

(1) Separating Rear Axle Case with Brake Assembly







Drain the Transmission Fluid

1. Place oil pans underneath the transmission case.
2. Remove the four drain plugs (1).
3. Drain the transmission oil.
4. Reinstall the four drain plugs (1).

(When refilling)

- Fill up from filling port after removing plug (2) until reaching the gauge (3).
- After running the engine for few minutes, stop it and check the oil level again. Add the oil to prescribed level if it is not correct level.

Transmission oil capacity	HST type	12 ℓ 3.17 U.S.gals 2.6 Imp.gals
	Manual transmission type	11 ℓ 2.9 U.S.gals 2.4 Imp.gals

■ IMPORTANT

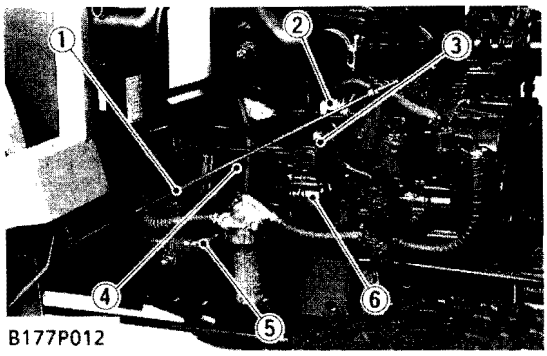
- **Use only multi-grade transmission oil. Use of other oils may damage the transmission or hydraulic system. Refer to "LUBRICANTS AND FLUID" (See page G-8).**
- **Never work the tractor immediately after changing the transmission oil. Keeping the engine at medium speed for a few minutes to prevents damage to the transmission.**
- **Do not mix different blands oil together.**

(A) Oil level acceptable within this range.

(1) Drain Plug
(2) Filling Plug
(3) Gauge

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B177P012

Removing Hydraulic Pump

1. Disconnect the accelerator rod (1).
2. Remove the fuel cut off solenoid (2).
3. Remove the fuel filter bracket (4) mounting screws.
4. Remove the flow priority valve (3).
5. Disconnect the suction hose (5) and remove the hydraulic pump (6).

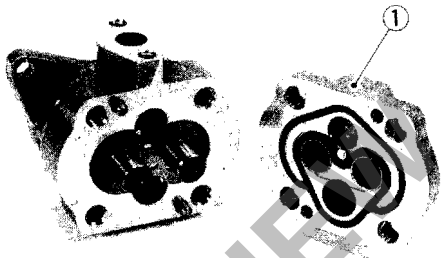
(When reassembling)

- Apply grease to O-ring and take care not to damage it.
- Apply liquid gasket (Three Bond 1208D or equivalent) to the engine stop solenoid gasket.

Tightening torque	Fuel cut off solenoid mounting screws	9.80 to 11.2 N·m 1.00 to 1.15 kgf·m 7.24 to 8.32 ft-lbs
	Fuel filter bracket mounting screws	23.6 to 27.4 N·m 2.4 to 2.8 kgf·m 17.4 to 20.2 ft-lbs
	Flow priority valve mounting screws	17.7 to 20.6 N·m 1.8 to 2.1 kgf·m 13.0 to 15.2 ft-lbs
	Delivery pipe flare nuts	29.4 to 39.2 N·m 3.0 to 4.0 kgf·m 21.7 to 28.9 ft-lbs
	Hydraulic pump mounting screw and nut	23.6 to 27.4 N·m 2.4 to 2.8 kgf·m 17.4 to 20.2 ft-lbs

(1) Accelerator Rod
(2) Fuel Cut Off Solenoid
(3) Flow Priority Valve
(4) Fuel Fitter Bracket
(5) Suction Pipe
(6) Hydraulic Pump

Cover



B177P222

1. Secure the hydraulic pump with a vise, and remove the cover (1).

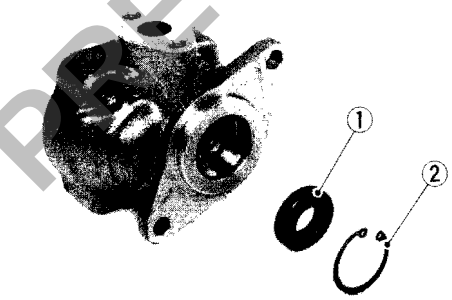
(When reassembling)

- Use care not to damage the O-ring.
- Align the holes of the cover and casing.

Tightening torque	Cover mounting screw	34.3 to 39.2 N·m 3.5 to 4.0 kgf·m 25.3 to 28.9 ft-lbs

(1) Cover

Oil Seal



B177P223

1. Remove the internal snap ring (2), and remove the oil seal (1).

(When reassembling)

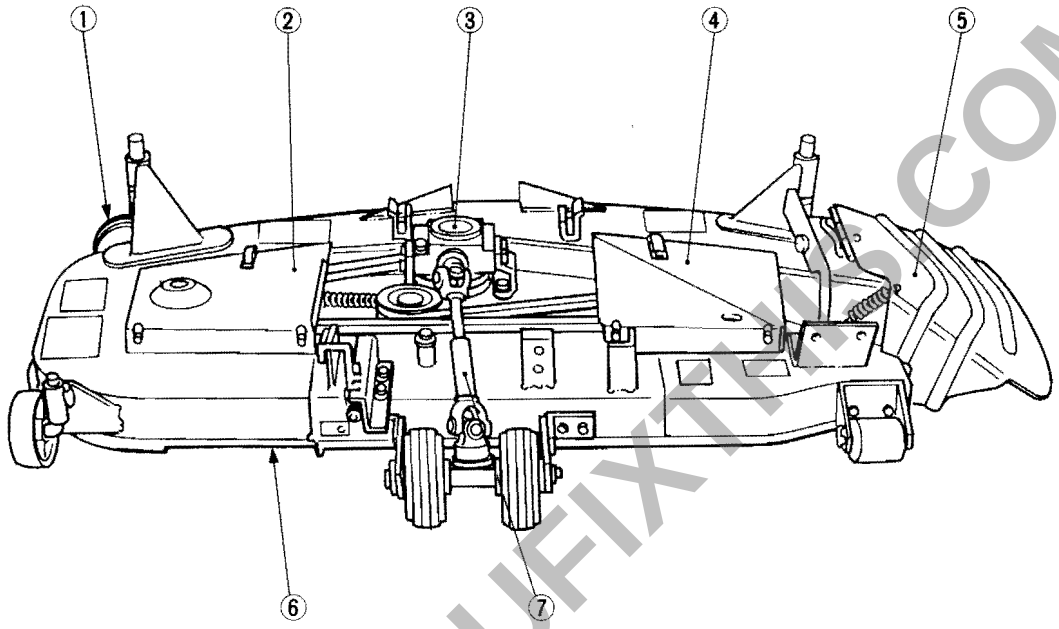
- If the oil seal is defective, worn or scratched, replace it.

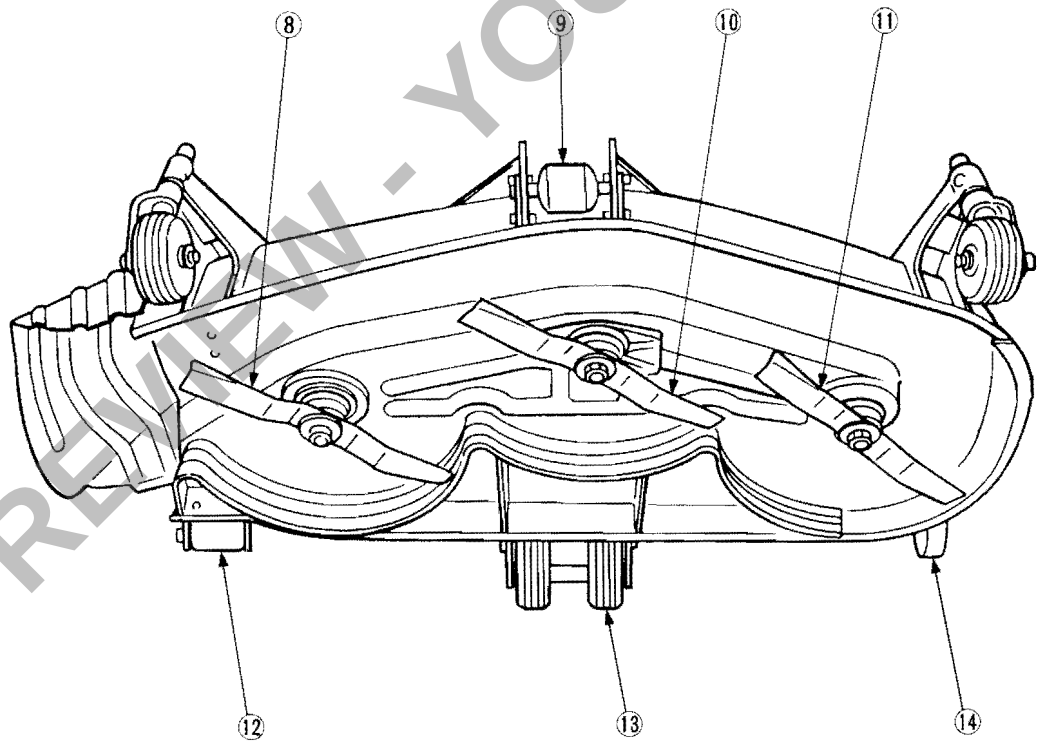
(1) Oil Seal
(2) Internal Snap Ring

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EXTERIOR VIEW AND APPELLATION





B177FM02

(1) Front Gauge Wheel
(2) Belt Cover (Left)
(3) Gear Box
(4) Belt Cover (Right)
(5) Discharge Deflector
(6) Deck
(7) Universal Joint
(8) Outer Blade
(9) Front Anti-scalp Roller
(10) Center Blade
(11) Outer Blade
(12) Rear Anti-scalp Roller
(13) Rear Gauge Wheel
(14) Anti-scalp Wheel

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