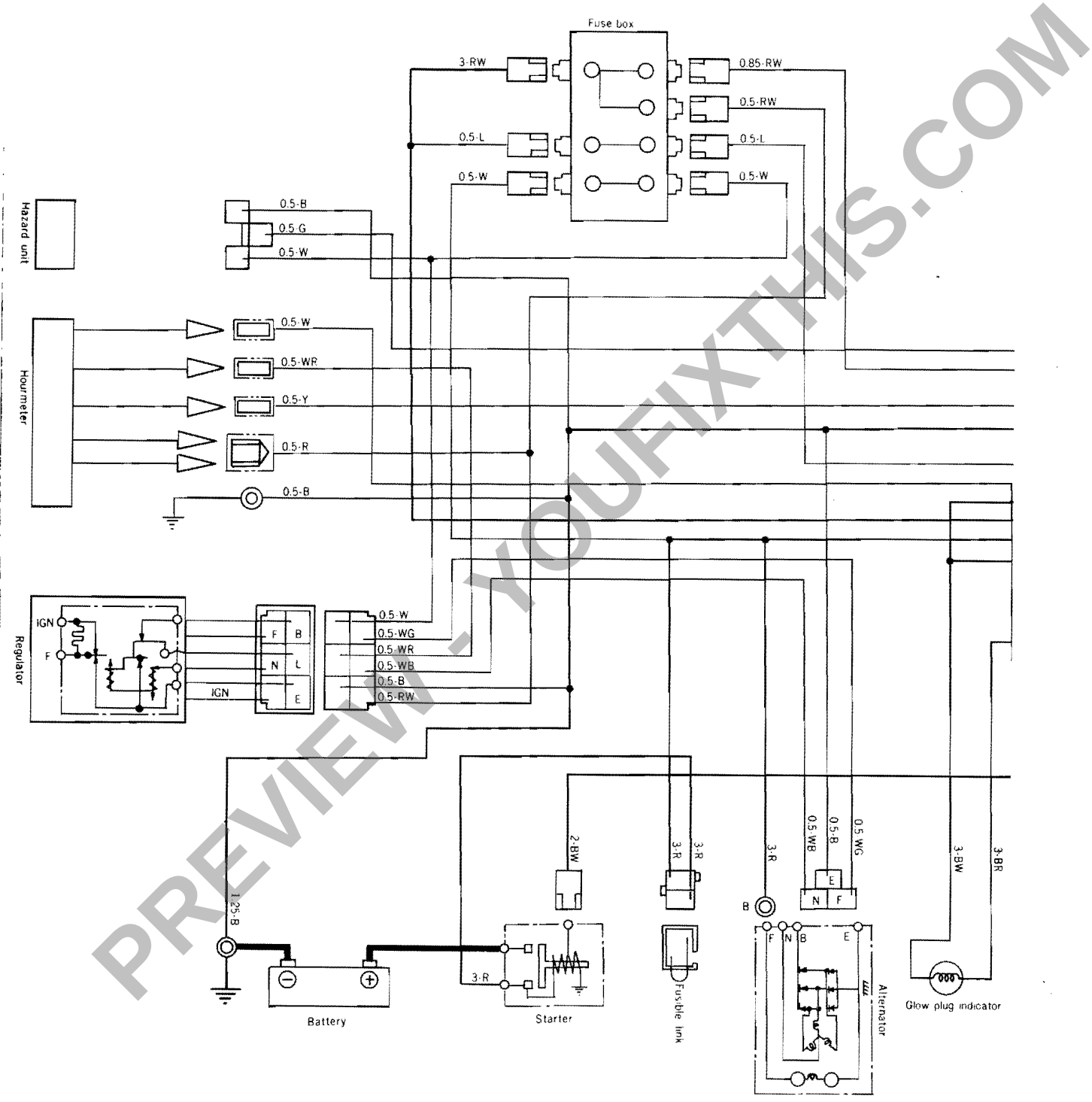
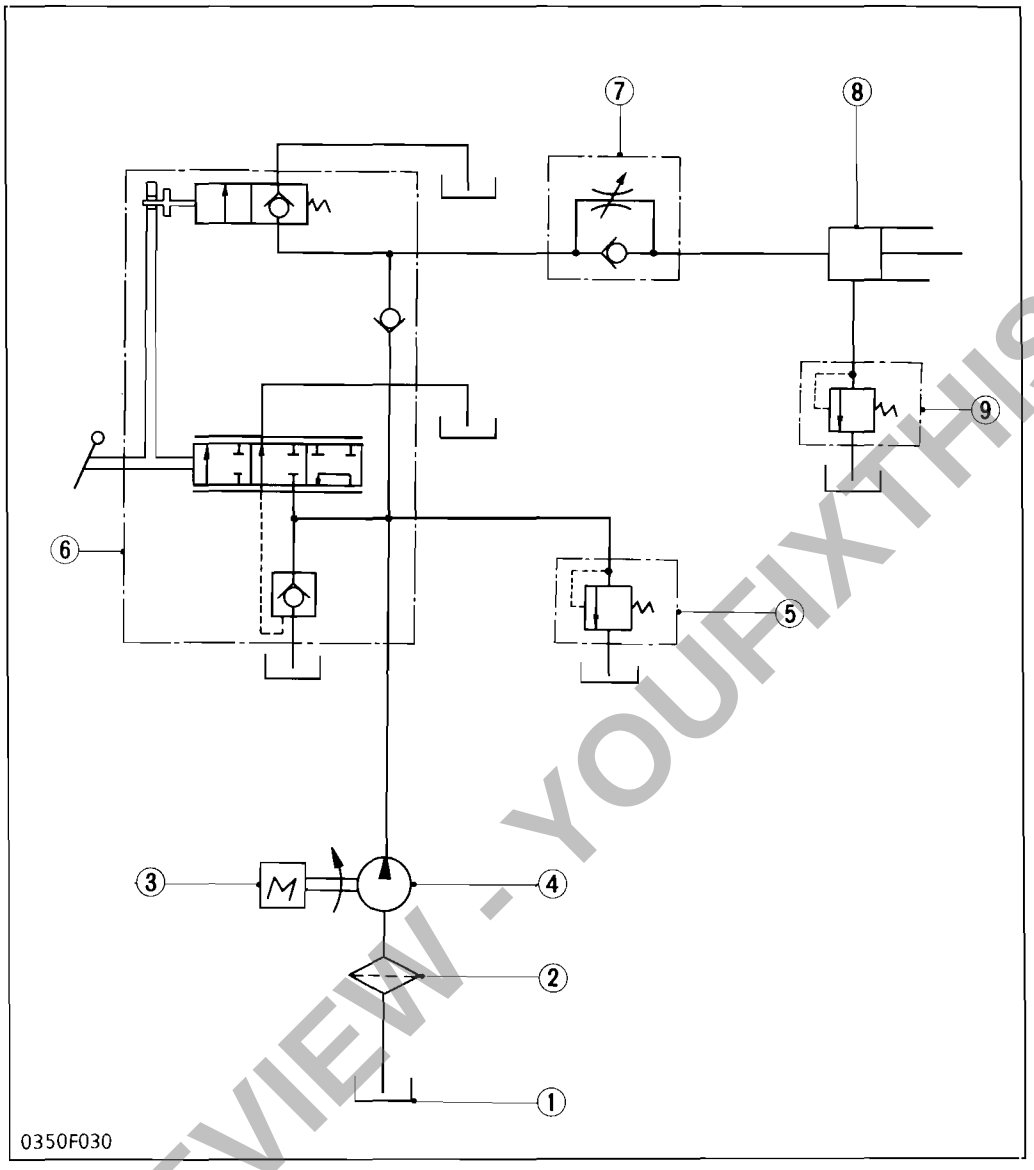


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8 HYDRAULIC SYSTEM

[1] HYDRAULIC CIRCUIT



(1) Oil Tank (Transmission Case)
(2) Oil Filter
(3) Engine
(4) Hydraulic Pump
(5) Relief Valve
(6) Position Control Valve
(7) Lowering Speed Adjusting Valve
(8) Hydraulic Cylinder
(9) Cylinder Safety Valve

■ Hydraulic Oil Flow

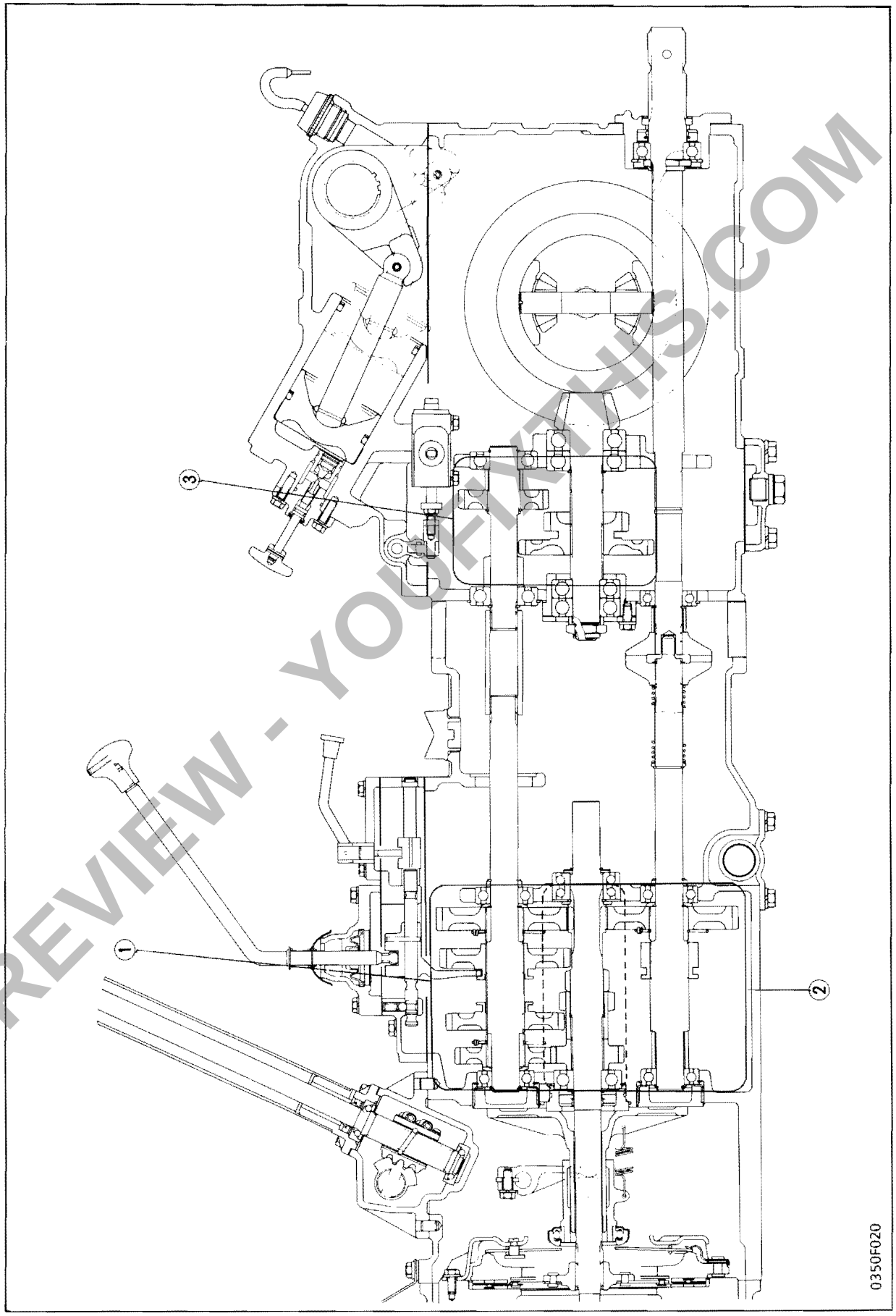
1. When the engine (3) is started, the hydraulic pump (4) is rotated to draw oil from the transmission case (1) through the suction pipe. Supplied oil is filtered by the oil filter (2).
2. Filtered oil is forced out by the hydraulic pump to the position control valve (6) through the delivery pipe.
3. The position control valve (6) switches the oil flow, and oil is channelled to the hydraulic cylinder (8) for the three-point hydraulic system or returned to the oil tank (transmission case).

- The hydraulic system has a relief valve (5) which restricts the maximum pressure in the circuit.
- The hydraulic cylinder (8) has a cylinder safety valve (9) to relieve shock pressure caused by heavy implement bounce.

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3 TRANSMISSION



(1) Main Gear Shift Section (2) Hi-Lo Range Shift Section (3) PTO Gear Shift Section

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[4] TIGHTENING TORQUES (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.

Grade / Nominal Diameter / Unit	* No-grade or 4T SS41, S20C			* 7T S43C, S48C (Quenched and Tempered)			* 9T SCr435, SCM435 (Quenched and Tempered)		
	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M 6 (6 mm, 0.24 in.)	7.84 to 9.31	0.80 to 0.95	5.79 to 6.87	9.80 to 11.2	1.00 to 1.15	7.24 to 8.32	12.3 to 14.2	1.25 to 1.45	9.05 to 10.5
M 8 (8 mm, 0.31 in.)	17.7 to 20.5	1.8 to 2.1	13.0 to 15.2	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2	29.4 to 34.3	3.0 to 3.5	21.7 to 25.3
M10 (10 mm, 0.39 in.)	39.2 to 45.0	4.0 to 4.6	29.0 to 33.2	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2	60.8 to 70.5	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	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 (16mm, 0.63 in.)	167 to 191	17.0 to 19.5	123 to 141	196 to 225	20.0 to 23.0	145 to 166	260 to 303	26.5 to 31.0	192 to 224
M18 (18 mm, 0.71 in.)	245 to 284	25.0 to 29.0	181 to 210	275 to 318	28.0 to 32.5	203 to 235	343 to 401	35.0 to 41.0	254 to 297
M20 (20mm, 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	490 to 568	50.0 to 58.0	362 to 420

* The figures on the table above are indicated on the top of screw or bolt.

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1 ENGINE

TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
Engine Does Not Start	• No fuel	Replenish fuel	–
	• Air in the fuel system	Vent air	–
	• Water in the fuel system	Replace fuel and repair or replace fuel system	–
	• Fuel pipe clogged	Clean	–
	• Fuel filter clogged	Clean or replace	S.G-12
	• Excessive high viscosity of fuel or engine oil at low temperature	Use the specified fuel or engine oil	–
	• Fuel with low cetane number	Use the specified fuel	–
	• Fuel leak due to loose injection pipe retaining nut	Tighten nut	S.1-11
	• Incorrect injection timing	Adjust	S.1-29
	• Fuel camshaft worn	Replace	S.1-18
	• Injection nozzle clogged	Clean	–
	• Injection pump malfunctioning	Repair or replace	S.1-28,29
	• Seizure of crankshaft, camshaft, piston, cylinder liner or bearing	Repair or replace	S.1-17,19, 21
	• Compression leak from cylinder	Check compression pressure	S.1-23
	• Improper valve seat alignment, valve spring broken, valve seized	Repair or replace	S.1-24
	• Improper valve timing	Correct or replace timing gear	S.1-17
	• Piston ring and liner worn	Replace	S.1-33,37
	• Excessive valve clearance	Adjust	S.1-26
	• Battery discharged	Charge	S.9-6
[Starter Does Not Run]	• Starter malfunctioning	Repair or replace	S.9-10
	• Starter switch malfunctioning	Replace	M.9-8
	• Wiring disconnected	Connect	M.9-8,9
	• Safety switch malfunctioning	Replace	S.9-9
Engine Revolution Is Not Smooth	• Fuel filter clogged or dirt	Clean or replace	S.G-12
	• Air cleaner clogged	Clean or replace	S.G-10
	• Fuel leak due to loose injection pipe retaining nut	Tighten nut	S.1-11
	• Injection pump malfunctioning	Repair or replace	S.1-28,29
	• Incorrect nozzle opening pressure	Adjust	S.1-27
	• Injection nozzle stuck or clogged	Repair or replace	S.1-27
	• Fuel over flow pipe clogged	Clean	–
	• Governor malfunctioning	Repair	S.1-18

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SPECIFICATIONS

Model			L2050 (2WD)
Engine gross power			18.7 kW (25 HP)*
PTO power			14.9 kW (20 HP)*
Engine	Model		KUBOTA D 1102-AE
	Type		Vertical, Water-cooled, 4-cycle diesel
	Number of cylinders		3
	Bore and stroke		76 x 82 mm (3.0 x 3.2 in.)
	Total displacement		1115 cm³ (68.0 cu.in.)
	Rated revolution		46.7 r/s (2800 rpm)
	Fuel		Diesel fuel No.1 [below −10°C (14°F)] Diesel fuel No.2 [above −10°C (14°F)]
	Starter		Electric starter 12V, 1.0 kW (1.3 HP)
	Lubricating system		Forced lubrication by trochoidal pump
	Cooling		Water with pressurized radiator
	Battery		12 V (65 Ah)
Capacities	Fuel tank		29 ℓ (7.7 U.S. gals.)
	Engine crankcase		6.3 ℓ (6.7 U.S. qts.)
	Engine coolant		6 ℓ (6.3 U.S. qts.)
	Transmission case		28 ℓ (7.4 U.S. gals.)
	Steering gear case		0.21 ℓ (0.22 U.S. qts.)
Tires	Front		4.00−15
	Rear		9.5−24
Traveling speed (At rated engine rpm)	Forward km/h (mph)	1st	1.2 (0.7)
		2nd	1.6 (1.0)
		3rd	2.2 (1.4)
		4th	3.9 (2.4)
		5th	5.1 (3.2)
		6th	6.7 (4.2)
		7th	9.6 (6.0)
		8th	16.6 (10.0)
	Reverse km/h (mph)	1st	2.0 (1.2)
		2nd	8.7 (5.4)
Dimensions	Overall length		2640 mm (103.9 in.)
	Overall width		1270 mm (50.0 in.)
	Overall height		1935 mm (76.2 in.)
	Wheel base		1555 mm (61.2 in.)
	Minimum ground clearance		345 mm (13.6 in.)
	Treads	Front	1010 mm (39.8 in.)
		Rear	1030 mm (40.6 in.)
Weight			808 kg (1781 lbs)
Rear PTO			SAE 1−3/8 6-splines (with overrunning clutch)
Revolution			1 speed 9 r/s (540 rpm) / engine 40.5 r/s (2430 rpm)
Clutch			Dry single plate
Steering			Recirculating ball type manual steering
Transmission			Gear shift, 8 forward and 2 reverse
Min. turning radius			2.3 m (7.5 feet)
Brake			Wet disk type
Differential			Bevel gear

Note: * Manufacturer's estimate

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[5] MAINTENANCE CHECK LIST

No.	Check point	Indication on hour meter (Change or check every interval shown below)																(After purchase)		Reference page
		35	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	1 year	2 year	
1	Engine oil change	◎		O		O		O		O		O		O		O		O			S.G-6
2	Engine oil filter cartridge replacement					O				O				O				O			S.G-11
3	Transmission fluid change and strainer cleaning		◎					O						O							S.G-7
4	Greasing			O		O		O		O		O		O		O		O			S.G-8
5	Clutch pedal play range check			O		O		O		O		O		O		O		O			S.G-8
6	Brake pedal play range check			O		O		O		O		O		O		O		O			S.G-9
7	Toe-in check			O		O		O		O		O		O		O		O			S.G-9
8	Battery electrolyte level check			O		O		O		O		O		O		O		O			S.G-9
9	Air cleaner element cleaning			O		O		O		O		O		O		O		O			S.G-10
10	Radiator hose clamp check				O			O			O			O			O				S.G-10
11	Fan belt tension check				O			O			O			O			O				S.G-10
12	Front axle front-back play range adjustment					O				O				O				O			S.G-11
13	Front wheel hub bearing greasing							O						O							S.G-11
14	Fuel filter cartridge replacement							O						O							S.G-12
15	Steering gear box oil check							O						O							S.G-12
16	Valve clearance check	Ask your Kubota dealer to perform this service																O			S.G-13
17	Fuel injection nozzle injection pressure check																	O			S.G-13
18	Engine cooling system cleaning									O								O			S.G-12
19	Air cleaner element replacement																		O *		S.G-14
20	Fuel line replacement																			O **	S.G-14
21	Radiator hose replacement																			O **	S.G-14

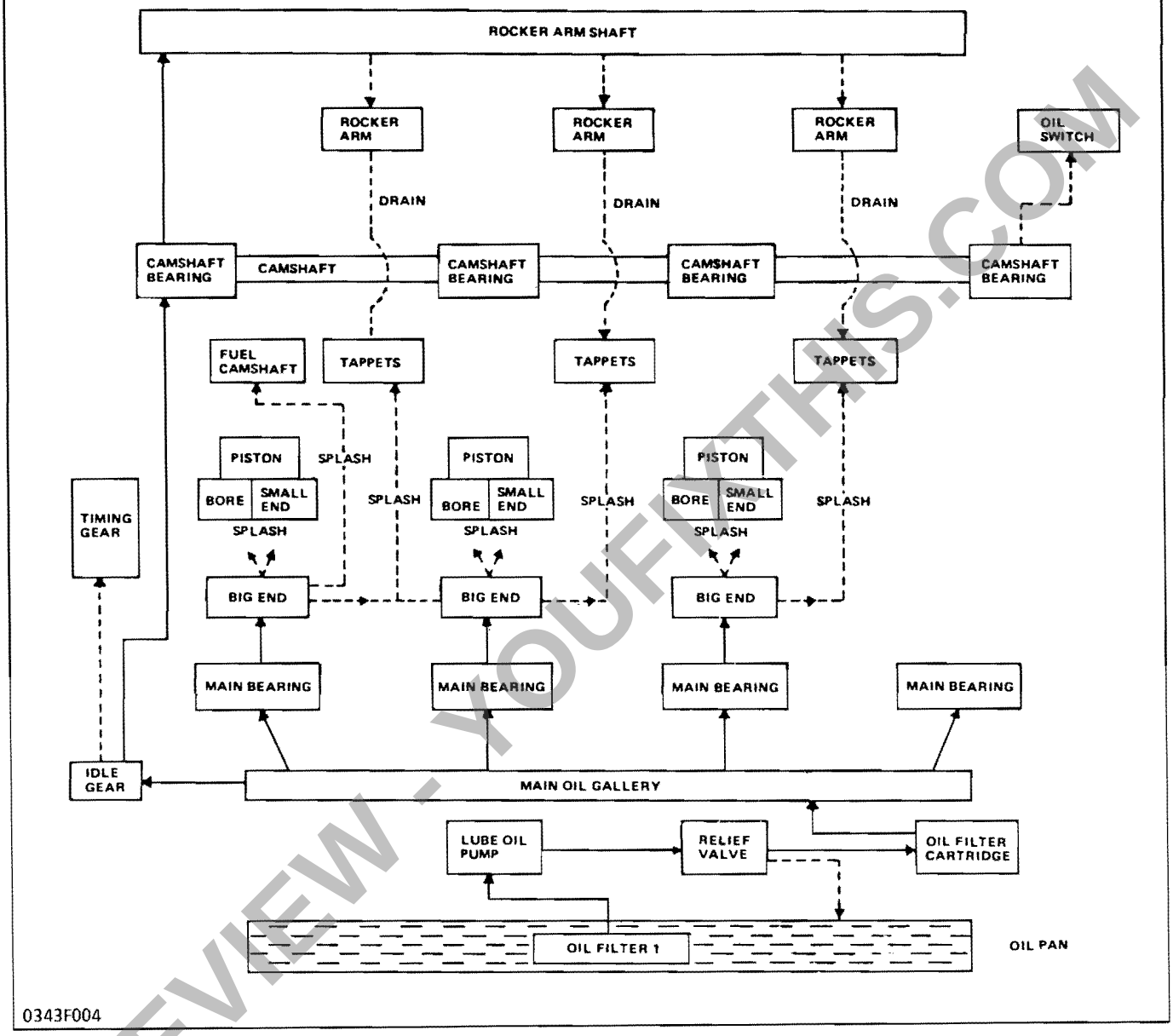
Note: The jobs indicated by ◎ must be done at 35 or 50 hours respectively
* Every year or every 6 times of cleaning.
** Replace only if necessary

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■ Engine Oil Flow

[A] Engine Oil Flow



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F FEATURES



0350F001

■ **Vertical, Water-cooled, 3-Cylinder Diesel Engine**
The quiet Kubota water-cooled 3-cylinder diesel engine produces high torque rise, maximum work efficiency, and reduced fuel costs.

■ **8-Forward, 2-Reverse Speed Transmission**
The L2050's rugged 8-forward/2-reverse speed transmission gives you a wide choice for matching speed to work and load.

■ **Front PTO**
Power take-off flexibility is great with the variable speed front PTO shaft.

■ **Rear PTO**
The 20 PTO HP (14.9 kW) at 2800 rpm rear PTO has a 540 rpm speed, so moving and similar work can really be speeded up.

■ **Wet Disc Brakes**
With the brake constantly immersed in oil, heat dissipation is very efficient and disc wear is greatly reduced. It takes very light pressure to operate these disc brakes, yet braking power is high and response is quick for positive operator control.

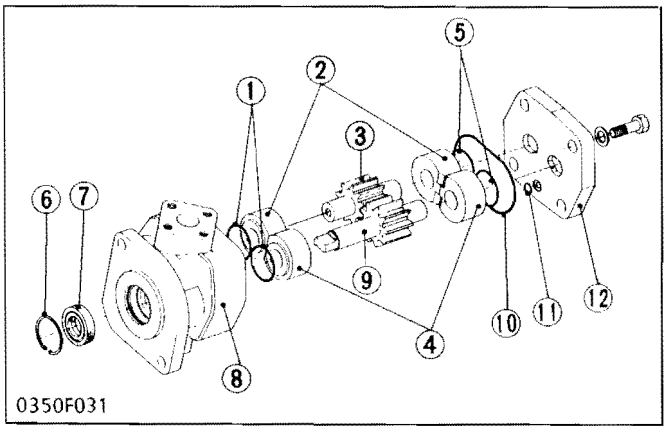
■ **Implement Control**
Position control lets you select the vertical height or depth of the implement in use. The control lever is convenient to your right hand for easy one-handed operation.

■ **Category I 3-point hitch**
Quick attachment of rear-mounted implements is enhanced by the L2050's 3-point hitch, a rugged mount that meets or exceeds all industry standard in its class.

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[2] HYDRAULIC PUMP



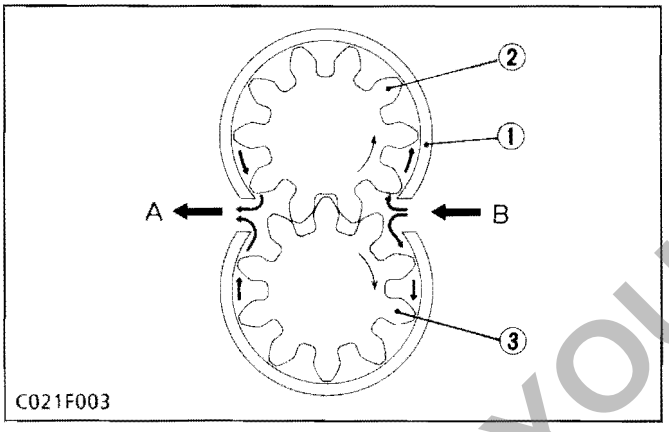
The hydraulic pump pressure-feeds the oil drawn from the transmission case through the oil filter to the control valve. The three point hydraulic system pump is driven by the engine fuel camshaft.

(Reference)

- Pump discharge per revolution.
  12.87 cc/rev. (0.785 cu.in./rev.)

(1) Seal Ring
(2) Bushing
(3) Driven Gear
(4) Bushing
(5) Seal Ring
(6) Internal Snap Ring
(7) Oil Seal
(8) Pump Body
(9) Drive Gear
(10) O-ring
(11) O-ring
(12) Cover

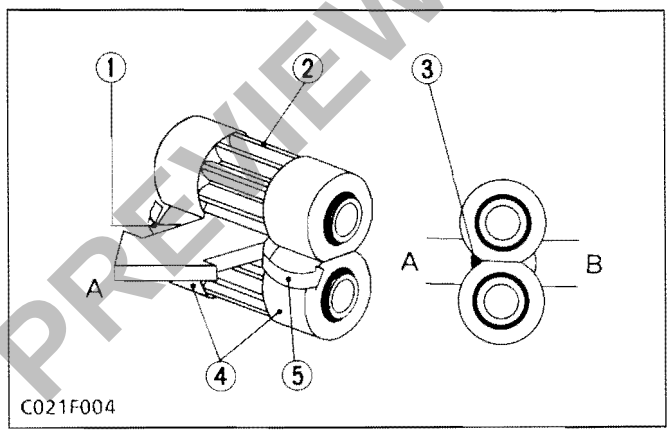
(1) Operation of Hydraulic Pump



The hydraulic pump has two meshing gears (2), (3) whose teeth run close to the casing (1). One gear is a drive gear which drives the driven gear. When the drive gear is driven in the direction of the arrow by the fuel camshaft, the gear traps oil between the gear teeth and the casing. The trapped oil is carried around to the outlet. The higher the engine speed, the more the pump discharge.

(1) Casing
(2) Gear
(3) Gear
A: Outlet
B: Inlet

■ Pressure Loading System



The pressure loading system automatically decreases the clearance between the gear and the bushing. A small amount of pressurized oil is fed behind the bushings, pressing them against the gears and forming a tighter seal against leakage. Therefore, leakage from the delivery side (high pressure) to the inlet side (low pressure) does not increase even if the pressure on the delivery side increases.

(1) Loading Pressure
(2) Gear
(3) Pressure Introducing Port
(4) Bushing
(5) Loading Pressure
A: Outlet
B: Inlet

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[2] SPECIFICATION OF IMPLEMENT LIMITATIONS

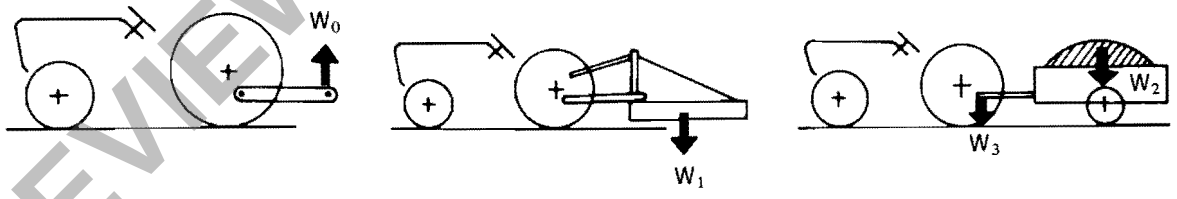
The Kubota Tractor has been thoroughly tested for proper performance with implements sold or approved by KUBOTA.

Use with implements which exceed the maximum specifications listed below, or which are otherwise unfit for use with the Kubota Tractor may result in malfunctions or failures of the tractor, damage to other properly and injury to the operator or others. [Any malfunctions or failures of the tractor resulting from use with improper implements are not covered by the warranty.]

	Tread (Max. width) with farm tires		Lift capacity Lower link end W_0
	Front	Rear	
L2050	1010 mm (40 in.)	1030 mm (41 in.)	850 kg (1875 lbs.)

	Actual figures		
	Trailer loading weight W_2 Max. capacity	Max. Drawbar Load W_3 2WD	Lift capacity 24 inch behind lower link end W_1
L2050	1000 kg (2200 lbs.)	330 kg (730 lbs.)	650 kg (1435 lbs.)

Lower link end lift capacity ..... W_0
Implement weight ..... The implement's weight which can be put on the links: W_1
Trailer loading weight ..... The max. loading weight for trailer (without trailer's weight): W_2



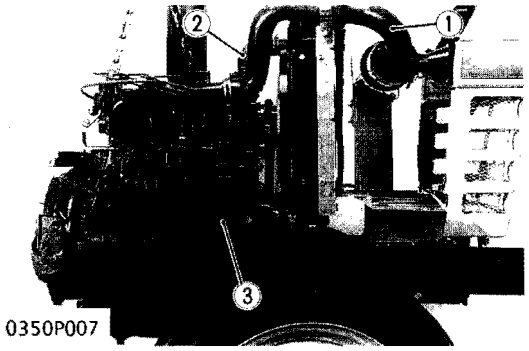
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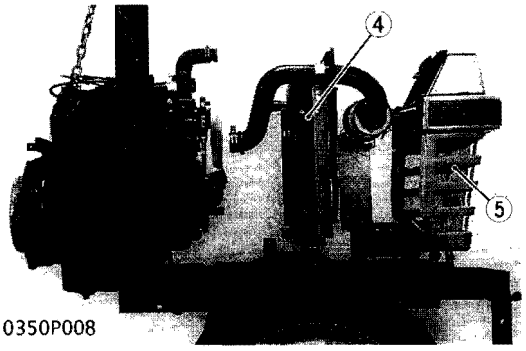
[4] SEPARATING ENGINE

Refer to [3] SEPARATING ENGINE FROM CLUTCH HOUSING to separate the engine from the clutch housing.



0350P007

(1) Air Cleaner Pipe
(2) Upper Radiator Pipe
(3) Support



0350P008

(4) Radiator
(5) Front Grille

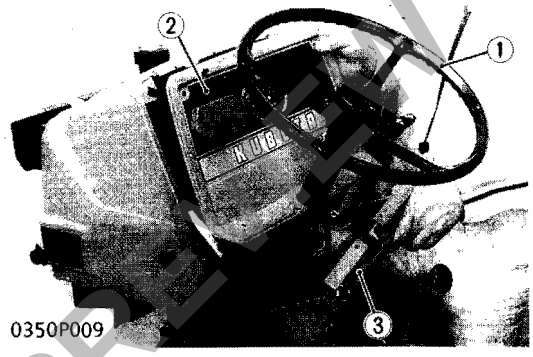
Front Axle Frame

1. Disconnect air cleaner pipe (1).
2. Disconnect radiator pipe upper (2)
3. Remove support (3).
4. Disconnect the lower radiator pipe.
5. Remove the dipstick.
6. Remove the front axle frame mounting screws.
7. Separate the front axle frame with radiator (4) and front grille (5).

Tightening torque	Front axle frame mounting screw to engine	Screw size: 10 mm, 0.39 in. DIA 60.8 to 70.5 N·m 6.2 to 7.2 kgf·m 44.9 to 52.1 ft-lbs
		Screw size: 12 mm, 0.47 in. DIA. 103 to 117 N·m 10.5 to 12.0 kgf·m 76.0 to 86.8 ft-lbs

[5] SEPARATING CLUTCH HOUSING

Separate the engine from the clutch housing as described in [3] SEPARATING ENGINE FROM CLUTCH HOUSING.



0350P009

(1) Steering Wheel
(2) Panel
(3) Switch Board

Preparation 1

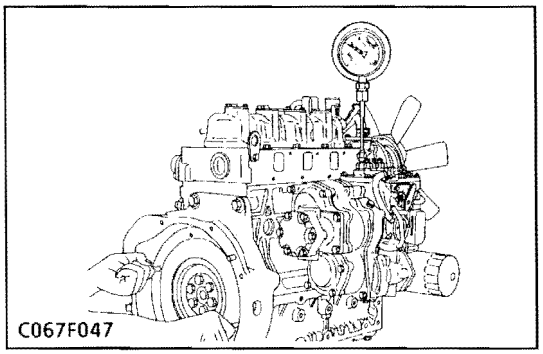
1. Remove the panel (2) mounting screws.
2. Remove the switch board (3) mounting screws.
3. Disconnect the wiring harness for the hazard lights.
4. Remove the wiring harness retainer on the left step.
5. Remove panel (2) and switch board (3) together.
6. Remove steering wheel (1).

(When reassembling)

Tightening torque	Steering wheel mounting nut	29.9 to 49.0 N·m 3.0 to 5.0 kgf·m 21.7 to 36.2 ft-lbs

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C067F047

Fuel Tightness of Delivery Valve of Fuel Injection Pump

1. Remove the injection pipes, glow plugs and the inlet manifold, and install the pressure tester (See page S.G-21).
2. With the speed control lever at the fuel injection position, turn the crankshaft counterclockwise (facing the flywheel) until the pressure build up to 9.8 MPa (100kgf/cm^2, 1422 psi).
3. Release the pressure in the delivery chamber by moving down the plunger to bottom dead center (turn the crankshaft clockwise approx. 1.57 rad (90°) from the FI timing).
4. Measure the time needed to decrease the initial pressure from 9.81 to 9.32 MPa (100 to 95 kgf/cm^2, 1422 to 1351 psi).
5. If measurement is less than allowable limit, replace the delivery valve.
6. If the pressure does not build up, replace the pump element with new one and test again.

Fuel tightness of delivery valve of fuel injection pump	Allowable limit	5 seconds

Timing Window

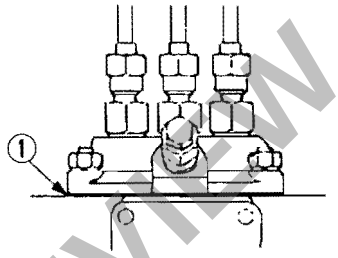


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Injection Timing

1. Disconnect the injection pipe from the fuel injection pump.
2. Set the acceleration lever for maximum fuel discharge.
3. Turn the flywheel until fuel jets out from the delivery valve holder of the fuel injection pump.
4. Continue to turn the flywheel slowly, and stop it as soon as the fuel level at the tip of the valve holder begins to increase.
5. Check to see if the FI mark on the flywheel is aligned in the timing window.
6. If the timing is out of adjustment, readjust with shims.

Adjustment of injection timing



C019F039

■ NOTE

- **Adding or removing one shim (0.15 mm, 0.0059 in.) varies the crank angle by approx. 0.026 rad. (1.5°).**
- **Approx. 3.5 mm (0.138 in.) of turn at outer rim of flywheel equals 0.026 rad.(1.5°) of crank angle.**
- **After adjustment, apply a thin film of non-drying adhesive to both sides of the shims.**

Injection timing	Factory spec.	0.401 to 0.436 rad. (23° to 25°) before TDC

(1) Injection Timing Adjusting Shims

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SERVICING SPECIFICATIONS

DIFFERENTIAL GEAR

Item		Factory Specification	Allowable Limit
Differential Case Bore to Differential Side Gear Boss	Clearance	0.050 to 0.151 mm 0.00197 to 0.00594 in.	0.40 mm 0.0157 in.
Differential Case Bore	I.D.	38.000 to 38.062 mm 1.49606 to 1.49850 in.	–
Differential Side Gear Boss	O.D.	37.911 to 37.950 mm 1.49256 to 1.49410 in.	–
Differential Pinion Shaft to Differential Pinion	Clearance	0.100 to 0.142 mm 0.00394 to 0.00559 in.	0.30 mm 0.0118 in.
Differential Pinion Shaft	O.D.	19.939 to 19.960 mm 0.78500 to 0.78583 in.	–
Differential Pinion	I.D.	20.060 to 20.081 mm 0.78976 to 0.79059 in.	–
Differential Pinion to Differential Side Gear	Backlash	0.15 to 0.30 mm 0.0059 to 0.0118 in.	–
Differential Side Gear Washer 1	Thickness	1.5 (1.46 to 1.54) mm 0.059 (0.0575 to 0.0606) in.	–
Differential Side Gear Washer 2	Thickness	1.6 (1.56 to 1.64) mm 0.063 (0.0614 to 0.0646) in.	–
Differential Side Gear Washer 3	Thickness	1.7 (1.66 to 1.74) mm 0.067 (0.0654 to 0.0685) in.	–

TIGHTENING TORQUES

Tightening torques of screws and nuts on the table below are especially specified.
(For general use screws and nuts: See page S.G-4)

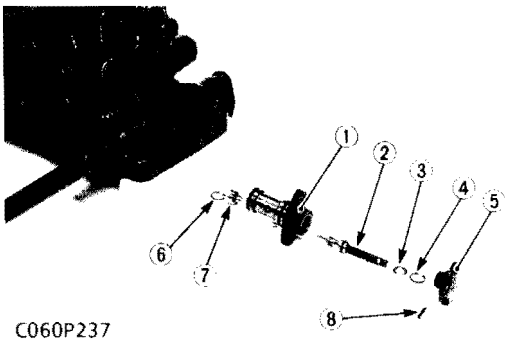
Item	N·m	kgf·m	ft-lbs
Spiral Bevel Gear Mounting Screw	68.6 to 88.3	7.0 to 9.0	50.6 to 65.1
Rear Axle Case Mounting Screw	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2
Rear Axle Nut	196 to 245	20 to 25	145 to 181

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[5] HYDRAULIC CYLINDER

DISASSEMBLING AND ASSEMBLING



C060P237

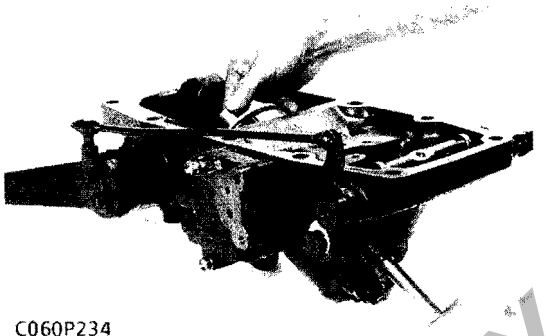
Lowering Speed Adjusting Valve

1. Remove the lowering speed adjusting valve from hydraulic cylinder block.
2. Tap out the spring pin (8), and remove the grip (5).
3. Remove the internal snap ring (4), and remove the hydraulic adjusting shaft (2).
4. Remove the internal snap ring (6) and draw out the adjusting collar (7).

(When reassembling)

- Install the hydraulic adjusting shaft and valve body, noting O-ring.

(1) Valve Body
(2) Hydraulic Adjusting Shaft
(3) Washer
(4) Internal Snap Ring
(5) Grip
(6) Internal Snap Ring
(7) Adjusting Collar
(8) Spring Pin



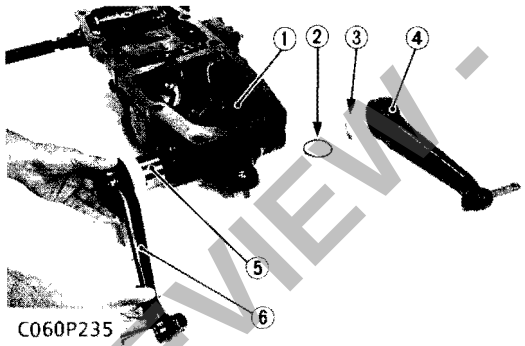
C060P234

Hydraulic Rod and Hydraulic Piston

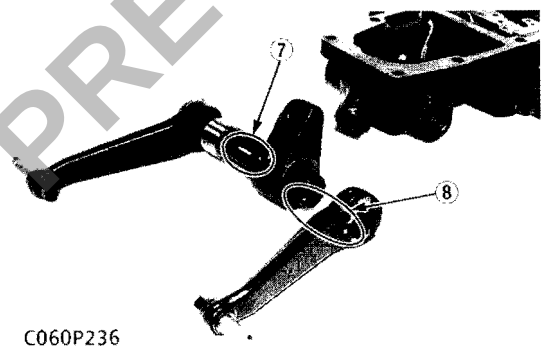
1. Tap out the spring pin.
2. Remove the hydraulic rod.
3. Push out the hydraulic piston.

(When reassembling)

- Install the piston, noting O-ring and back-up ring.
- Apply grease to the piston bottom contacts with hydraulic rod.



C060P235



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Lift Arm, Hydraulic Arm and Hydraulic Arm Shaft

1. Disconnect the feedback rod from feedback lever.
2. Remove the lift arm setting screws.
3. Draw out the hydraulic arm shaft (5) and right lift arm (6) as a unit.
4. Take out the hydraulic arm (1).
5. Remove the collar (3) and O-ring (2).

(When reassembling)

- Align the alignment marks of the hydraulic arm and hydraulic arm shaft.
- Align the alignment marks of the lift arm and hydraulic arm shaft.
- Apply grease to the right and left bushings of hydraulic cylinder block and O-rings.
- Take care not to damage the O-rings.

(1) Hydraulic Arm
(2) O-ring
(3) Collar
(4) Lift Arm (Left)
(5) Hydraulic Arm Shaft
(6) Lift Arm (Right)

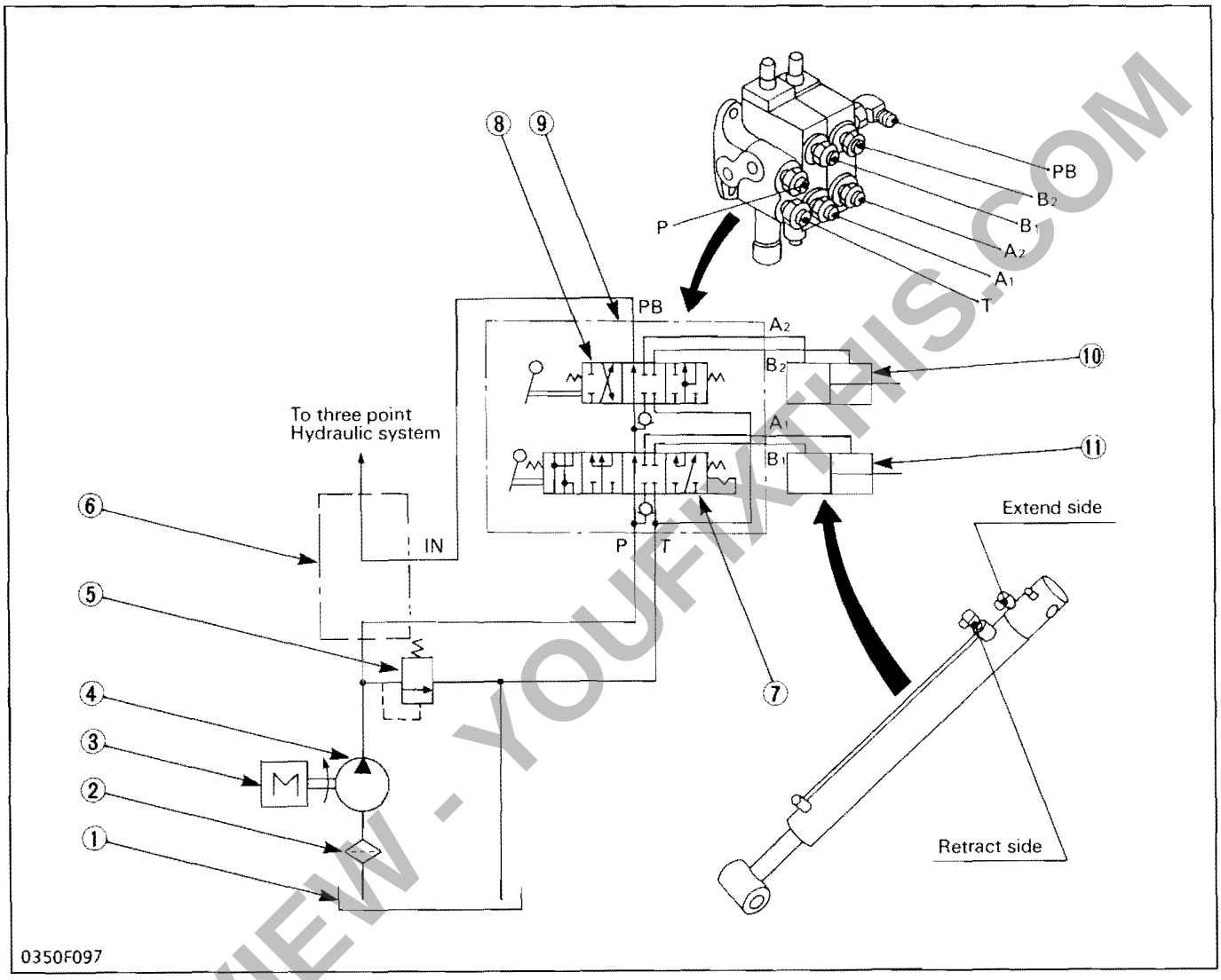
(7) Alignment Mark (Hydraulic Arm Shaft and Hydraulic Arm)
(8) Alignment Mark (Hydraulic Arm Shaft and Lift Arm)

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MECHANISM

[1] OIL FLOW



(1) Transmission Case
(2) Oil Filter
(3) Engine
(4) Hydraulic Pump
(5) Relief Valve
(6) Hydraulic Block
(7) Boom Control Valve
(8) Bucket Control Valve
(9) Control Valve
(10) Bucket Cylinder
(11) Boom Cylinder

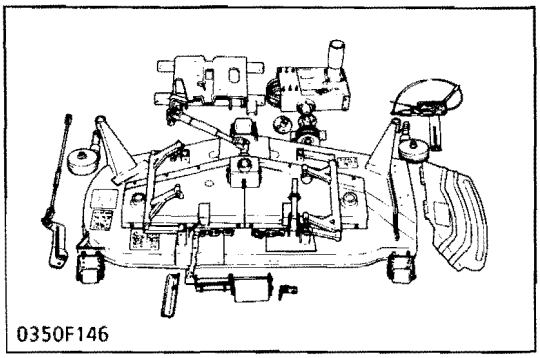
1. When the engine (3) is started, the hydraulic pump (4) is rotated to suck oil from the transmission case (1) through the suction pipe. Supplied oil is filtered by the hydraulic oil filter (2).
2. Filtered oil is forced out by the hydraulic pump to the control valve (9) of front loader through the hydraulic block (6) on the tractor.
3. The control valve (9) consists of a boom control valve (7) and bucket control valve (8). The boom control valve (7) switches the direction of oil flow to feed oil to **Extend** or **Retract** side of the boom cylinder (11).
4. Oil returning from the boom cylinder (11) flows into the bucket control valve (8) when the boom control valve is in any position other than the floating position.
5. The bucket control valve (8) switches the direction of oil flow to feed oil to **Extend** or **Retract** side of the bucket cylinder (10).
6. Oil returning from the bucket cylinder (10) flows back to the transmission case through the return hose.
7. When the bucket control valve is in the neutral position, oil is fed to the three point hydraulic system.
8. Meanwhile the maximum pressure in the front loader hydraulic circuits is restricted by the relief valve (5).

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MOUNTING AND DISMOUNTING

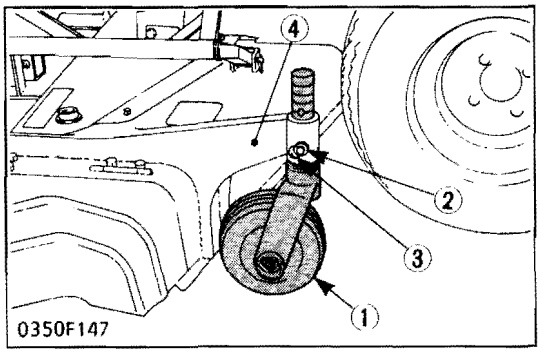
[1] PRE-ASSEMBLY


0350F146

Mower Components

1. Take out all mower components from the case and check the parts by the illustration.

[2] SETTING UP THE MOWER



0350F147

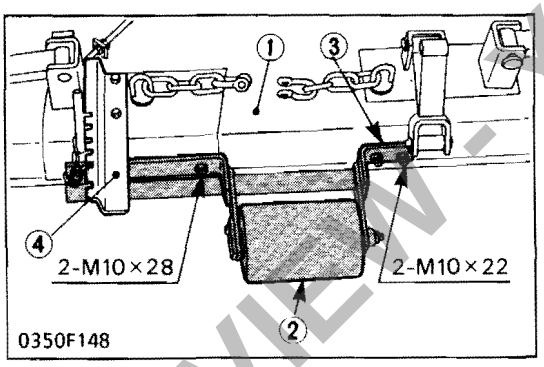
Front Gauge Wheel

1. Attach the front gauge wheel (1) to the arm (4) with clevis pin (2) and snap ring (3).

■ **NOTE**

- **To mount the mower to the tractor easily, attach only the right gauge wheel at this time.**

(1) Front Gauge Wheel
(2) Clevis Pin
(3) Snap Ring
(4) Arm

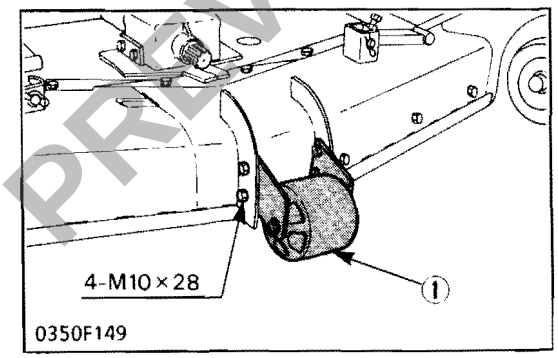


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Rear Gauge Wheel

1. Install the adjusting plate (4) to the mower deck (1).
2. Install the bracket (3) to the mower deck (1).
3. Install the rear gauge wheel assembly (2).

(1) Deck
(2) Rear Gauge Wheel
(3) Bracket
(4) Adjusting Plate



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Anti-scalp Roller

1. Install the anti-scalp roller (1) to the mower deck.

(1) Anti-scalp Roller

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SERVICING SPECIFICATIONS (Continued)

Item		Factory Specification	Allowable Limit
Differential Pinion Shaft to Differential Pinion Gear	Clearance	0.064 to 0.100 mm 0.0025 to 0.0039 in.	0.25 mm 0.0098 in.
Differential Pinion Gear	I.D.	14.032 to 14.050 mm 0.5524 to 0.5532 in.	–
Differential Pinion Shaft	O.D.	13.950 to 13.968 mm 0.5492 to 0.5499 in.	–
Differential Pinion to Differential Side Gear	Backlash	0.15 to 0.30 mm 0.0059 to 0.0118 in.	0.40 mm 0.016 in.
Differential Bevel Pinion Shaft to Bevel Gear	Backlash	0.15 to 0.30 mm 0.0059 to 0.0118 in.	0.40 mm 0.016 in.
Bevel Gears in Bevel Gear Case (13T Bevel Gear to 15T Bevel Gear)	Backlash	0.15 to 0.30 mm 0.0059 to 0.0118 in.	0.40 mm 0.016 in.
Bevel Gears in Front Axle Case (12T Bevel Gear to 40T Bevel Gear)	Backlash	0.15 to 0.30 mm 0.0059 to 0.0118 in.	0.40 mm 0.016 in.
Bevel Pinion Shaft (Pinion Shaft Only)	Turning Torque	1.118 to 1.373 N·m 0.114 to 0.140 kgf·m 0.825 to 1.013 ft-lbs	–
Pinion Bearing Case to Front Axle Bracket Bushing (Rear)	Clearance	0.060 to 0.220 mm 0.0024 to 0.0087 in.	0.4 mm 0.016 in.
Pinion Bearing Case	O.D.	64.970 to 65.000 mm 2.5579 to 2.5591 in.	–
Bushing	I.D.	65.060 to 65.190 mm 2.5614 to 2.5665 in.	–
Front Axle Middle Boss to Front Axle Bracket Bushing (Front)	Clearance	0.000 to 0.147 mm 0.0000 to 0.0058 in.	0.3 mm 0.012 in.
Front Axle Middle Boss	O.D.	34.938 to 35.000 mm 1.3755 to 1.3780 in.	–
Bushing	I.D.	35.000 to 35.085 mm 1.3780 to 1.3813 in.	–

TIGHTENING TORQUES

Tightening torques of screws and nuts on the table below are especially specified.
(For general use screws and nuts: See page S.G-8)

Item	N·m	kgf·m	ft-lbs
Front axle bracket mounting screw			
Front (Thread size: 14 mm, 0.55 in. DIA.)	123.6 to 147.1	12.6 to 15.0	91.1 to 108.5
Rear (Thread size: 12 mm, 0.47 in. DIA.)	103.0 to 117.7	10.5 to 12.0	75.9 to 86.8
Tie rod end slotted nut	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
Front wheel mounting screw	123.6 to 147.1	12.6 to 15.0	91.1 to 108.5
Bevel gear case mounting screw	166.7 to 196.1	17.0 to 20.0	123.0 to 144.7
Pinion bearing case mounting nut and screw	48.1 to 55.9	4.9 to 5.7	35.4 to 41.2
Differential adjusting screw	9.8 to 29.4	1.0 to 3.0	7.2 to 21.7
Differential support (left,right) mounting screw	48.1 to 55.9	4.9 to 5.7	35.4 to 41.2
Spiral bevel gear mounting UBS screw	122.6 to 130.4	12.5 to 13.3	90.4 to 96.2

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