SPECIFICATION

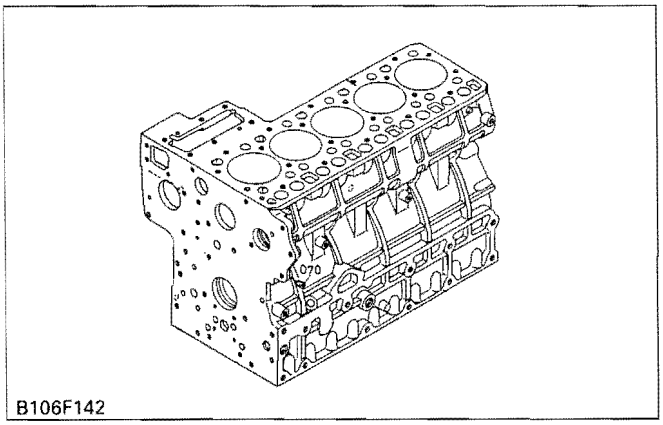
Model		L5450
Maximum P.T.O. power		36.6kW (49HP)*
Engine gross power		44.4 kW (59.5 HP)*
Engine	Model	F2803-DI
	Type	Vertical, water cooled, 4 cycle diesel engine
	Number of cylinders	5
	Total displacement	2746 cm^3 (167.6 cu. in.)
	Bore and stroke	87×92.4 mm (3.43×3.64 in.)
	Rated revolution	43.3 r/s (2600 rpm)
	Maximum torque (Net)	185 N·m (18.9 kgf·m, 137 ft·lbs)*
	Combustion system	Direct injection
	Fuel injection pump	Bosch K type mini pump (NP-PFR5KD75/2NP1)
	Governor	Centrifugal ball mechanical governor
	Direction of rotation	Counter-clockwise (Viewed from flywheel side)
	Injection nozzle	4 hole type (Stanadyne pencil nozzle)
	Injection timing	16.5° before TDC
	Injection order	1 — 3 — 5 — 4 — 2
	Injection pressure	22.75 Mpa (232 kgf/cm^2, 3300psi)
	Compression ratio	19 : 1
	Lubrication system	Forced lubrication by trochoidal pump
	Cooling system	Pressurized radiator, forced lubrication with water pump
	Starting system	Electric starter 12 V, 1.4 kW (or 12 V, 2.0 kW as Ever Clutch type)
	Battery	12 V 110 Ah (Heavy duty 160 Ah as optional)
	Alternator	12 V, 420 W
	Fuel	Diesel fuel No.1 [below −10°C (14°F)], Diesel fuel No.2 [above −10°C (14°F)]
	Lubrication oil	API service CC or CD
	Weight (Dry)	290 kg (640 lbs)
Capacities	Fuel tank	60 ℓ (15.9 U.S.gals)
	Engine crankcase	8 ℓ (8.5 U.S.qts.)
	Engine coolant	8 ℓ (8.5 U.S.qts.)
	Transmission case	43 ℓ (45.5 U.S.qts.)
	Front axle diff. case	6.3 ℓ (6.6 U.S.qts.)
	Front axle gear case	2.7 ℓ (2.9 U.S.qts.)
Dimensions	Overall length	3490 mm (137.4 in.)
	Overall width	1720 mm (67.7 in.)
	Height	1580 mm (62.2 in.) (Steering wheel height) 2260 mm (89.0 in.) (muffler height)
	Wheel base	1940 mm (76.4 in.)
	Min. ground clearance	365 mm (14.4 in.)
	Crop clearance	420 mm (16.5 in.)
	Tread Front	1370 mm (54 in.)
	Tread Rear	1320 to 1930 mm (52 to 76 in.), 7 positions
Weight		2000 kg (4410 lbs) with ROPS
Traveling system	Tire size (Std.) Front tires	9.5 — 20
	Tire size (Std.) Rear tires	14.9 — 28
	Clutch	Dry type, dual clutch (Hydraulically actuated Ever Clutch & dry single PTO clutch as optional)
	Steering	Full hydrostatic power steering
	Transmission	8 forward & 8 reverse speeds, partially synchronized (Hydraulic shuttle transmission as optional)
	Brake	Wet disc type
	Differential	Bevel gear
Hydraulic system	Hydraulic control system	Position control, Draft control and Mixed control
	Pump-up capacity (for three point hydraulic system)	49.2 ℓ/min
	Three point hitch	Category I (Standard) and II convertible
	Maximum lifting force	1500 kg (3300 lbs) at lower link end
P.T.O.	P.T.O. shaft	Transmission case rear, SAE 1-3/8, 6 splines
	P.T.O. speed	9.0 r/s (540 rpm) at 38.4 r/s (2305 rpm) engine speed
Min. turning radius		2.9 m (9.5 feet) with brake
Traction system		Swing draw bar

■ NOTE: * Manufacture's enstimate.

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[2] ENGINE BODY

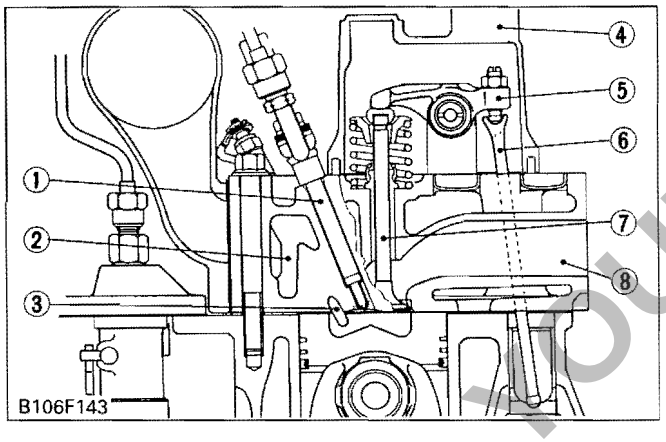

B106F142

(1) Crank Case

The crankcase is made of cast iron, containing dry liners.

The crankshaft is supported by the crankshaft bearings and bearings cases.

Furthermore, dry-type cylinder liners pressed into the cylinders allow effective cooling, less distortion and greater wear-resistance.



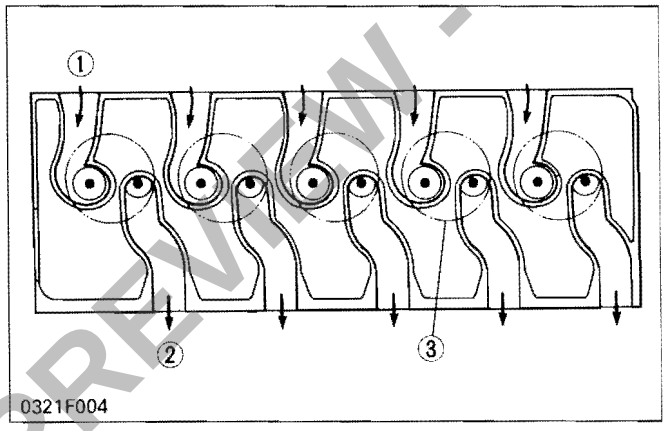
B106F143

(2) Cylinder Head

The cylinder head is made of high performance cast iron which can resist high temperature and pressure caused by combustion.

The cylinder head, in which injection nozzle (1) and glow plug (3) are installed, has the air inlet ports, gas exhaust ports (8) and water jacket (2) surrounding the valve system (5), (6) and (7).

(1) Injection Nozzle
(2) Water Jacket
(3) Glow Plug
(4) Head Cover
(5) Rocket Arm
(6) Push Rod
(7) Valve
(8) Exhaust Port



0321F004

The cross-flow type inlet/exhaust ports, which are opposite and alternatively located, lower the heat conduction from the exhaust port to the inlet port.

(1) Inlet Port
(2) Outlet Port
(3) Piston

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9 ELECTRICAL SYSTEM

[1] WIRING DIAGRAM AND ELECTRICAL CIRCUITS

The electrical system includes these circuits written below.

The voltage applied to the each circuit is 12 Volts.

- Engine starting circuit (starter motor, glow plugs, etc.)
- Engine key switch shut-off circuit (timer relay, fuel cut-off solenoid, etc.)
- Power generating and charging circuit (alternator, regulator, etc.)
- Lighting circuit (head light, hazard light, etc.)
- Easy checker circuit (sensors, checker lamps, etc.)

To warn an operator of trouble if any, the conditions of devices requiring routine inspections are displayed by the lamps on the panel board.

(1) Wiring Diagram

- **Color of Wiring**

B .....Black	BG .....Black/Green
W.....White	BL .....Black/Blue
R .....Red	BW.....Black/White
G.....Green	BR.....Black/Red
Y .....Yellow	RL .....Red/Blue
Br.....Brown	RW.....Red/White
Lg .....Light Green	GB .....Green/Black
WB.....White/Black	GW.....Green/White
WR.....White/Red	GR .....Green/Red
WG .....White/Green	LR.....Blue/Red

- **Main Switch Table**

Terminal / Key Position	B	AC	G1	G2	ST	OFF
OFF	●					●
ON	●	●				
HEAT	●	●	●			
START	●	●			●	●

- **Light Switch Table**

Terminal / Knob Position	B	T	1	2
OFF				
LOW-BEAM	●	●	●	
HI-BEAM	●	●		●

- **Hazard Switch Table**

Terminal / Knob Position	B	R	L
R	●	●	
OFF			
L	●		●

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TROUBLE-SHOOTING

Symptom	Probable Cause	Solution	Reference page
Engine Does Not Start	● No fuel	Replenish fuel	S.G-15
	● Air in the fuel system	Vent air	S.G-15
	● Water in the fuel system	Change fuel and repair or flush fuel system	S.G-15
	● Fuel pipe clogged	Clean	S.G-13
	● Fuel filter clogged	Clean and replace	S.G-10,15
	● Excessively high viscosity of fuel or engine oil at low temperature	Use the specified fuel or engine oil	S.G-6
	● Fuel with low cetance number	Use the specified fuel	—
	● Fuel leak due to loose injection pipe retaining nut	Tighten nut	S.1-14
	● Incorrect injection timing	Adjust	S.1-44
	● Fuel camshaft worn	Replace	S.1-21
	● Injection nozzle clogged	Clean	S.1-44,45
	● Faulty injection nozzle	Replace or repair	S.1-44,45,46
	● Injection pump malfunctioning	Replace or repair	S.1-43,44
	● Fuel lift pump malfunctioning	Replace or repair	—
	● Faulty fuel stop solenoid	Replace the fuse and replase the solenoid	S.1-13
	● Seizure of crankshaft,camshaft, piston,cylinder or bearing	Replace or replace	—
	● Compression leak from cylinder	Replace head gasket, tighten cylinder head screw and nut,glow plug and nozzle holder	S.1-14
	● Improper valve seat alignmemt, valve spring broken,valve seized	Replace or replace	S.1-26,27, 28
	● Improper valve timing	Correct or replace timing gear	S.1-20
	● Piston ring and cylinder worm	Replace	S.1-33,39
	● Excessive valve clearance	Adjust	S.G-16 S.1-15
(Starter Does Not Run)	● Battery discharged	Charge	S.9-6,7,8
	● Starter malfunctioning	Replace or replace	S.9-13,14
	● Starter switch malfunctioning	Replaceor replace	S.9-11
	● Wiring disconnected	Connect	S.9-13

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SERVICING SPECIFICATIONS
[1] ENGINE BODY

Cylinder Head

Item		Factory Specification	Allowable Limit
Cylinder Head Surface	Flatness	—	0.05 mm 0.0019 in.
Top Clearance	Thickness	0.6 to 0.7 mm 0.0236 to 0.0276 in.	—
Cylinder Head Gasket	Thickness	Free (on gromnet) 1.28 to 1.45 mm 0.0504 to 0.0571 in. Tightened 1.15 to 1.25 mm 0.0453 to 0.0492 in.	— —
Compression Pressure		2.94 to 3.24 MPa 30 to 33 kgf/cm² 427 to 469 psi	2.35 MPa 24 kgf/cm² 341 psi
Tightness of Head Bolts and Nuts		88.3 to 93.2 N · m 9.0 to 9.5 kgf · m 65.1 to 68.7 ft-lbs	—

Valves

Valve Clearance (Cold)		0.18 to 0.22 mm 0.0071 to 0.0087 in.	—
Valve Seat	Width IN.	4.50 to 4.55 mm 0.1771 to 0.1791 in.	—
	EX.	4.0 to 4.075 mm. 0.1574 to 0.1604 in.	—
	Angle IN.	0.525 to 0.5463 rad. 30° to 31°30′	—
	EX.	0.525 to 0.5463 rad. 30° to 31°30′	—
Valve Face	Angle IN.	0.7894 to 0.7919 rad. 45°23′ to 45°37′	—
	EX.	0.7894 to 0.7919 rad. 45°23′ to 45°37′	—
Valve Recessing		0.65 to 0.85 mm 0.0256 to 0.0335 in.	—
Valve Stem to Valve Guide	Clearance	0.040 to 0.070 mm 0.00157 to 0.00276 in.	0.1 mm 0.004 in.
Valve Stem	O.D.	8.015 to 8.030 mm 0.31555 to 0.31614 in.	—
Valve Guide	I.D.	7.960 to 7.975 mm 0.31339 to 0.31398 in.	—
Valve Head	Thickness IN.	1.75 to 1.95 mm 0.0689 to 0.0768 in.	—
	EX.	1.75 to 1.95 mm 0.0689 to 0.0768 in.	—

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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 * 			7T 			9T 		
	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 9.30	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	12.2 to 14.2	1.25 to 1.45	9.15 to 10.5
M8 (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 (16 mm 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 (20 mm 0.79 in.)	334 to 392	34.0 to 40.0	246 to 289	368 to 431	37.5 to 44.0	2272 to 318	490 to 568	50.0 to 58.0	362 to 420

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

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[5] MAINTENANCE CHECK LIST

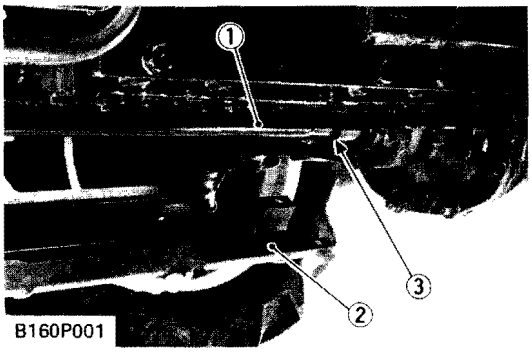
Frequency of Checks	Check Points	Reference Pages
Initial Operation (Initial 50 hours)	Magnetic filter cleaning Magnetic plug cleaning Engine oil change Engine oil filter cartridge change Transmission fluid change Hydraulic oil filter cartridge replacement Front differential case oil change Front wheel case (Right and left) oil change	
Every 50 hours	Greasing	
Every 100 hours	Clean air cleaner primary element Check clutch play (Clutch pedal play) Check brake play (Brake pedal play) Fuel filter cleaning	
Every 200 hours	Check radiator hose Magnetic plug cleaning Check power steering oil line Check fuel line Toe-in check Battery electrolyte level check Engine oil change Hydraulic oil filter cartridge replacement Magnetic filter cleaning Fan belt tension check	
Every 400 hours	Transmission fluid change Front differential case oil change Fuel filter element replacement Front differential case front—back play range check Engine oil filter cartridge replacement	
Every 800 hours	Valve clearance check Fuel injection nozzle injection pressure check Engine cooling system cleaning	
Every year	Air cleaner primary element and safety element replacement	
Every 2 years	Change radiator hose and clamps, if necessary Change fuel line and clamps, if necessary Power steering hose replacement, if necessary	

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DISASSEMBLING AND ASSEMBLING

[1] FRONT AXLE

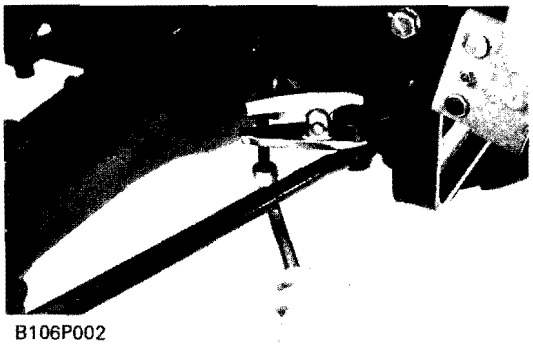


B160P001

Propeller Shaft

1. Remove the propeller shaft cover (2).
2. Remove the external snap rings (3) from the groove of the propeller shaft (1).
3. Remove the propeller shaft (1).

(1) Propeller Shaft
(2) Propeller Shaft Cover
(3) External Snap Ring


B106P002

Tie Rod

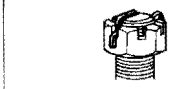
1. Remove the tie rods with tie rod end lifter (Code No: 07909-39021).

(When reassembling)

Tinghtening torque	Tie rod end nut	68.6 to 98.1 N·m 7 to 10 kgf·m 50.6 to 72.3 ft-lbs

■ IMPORTANT

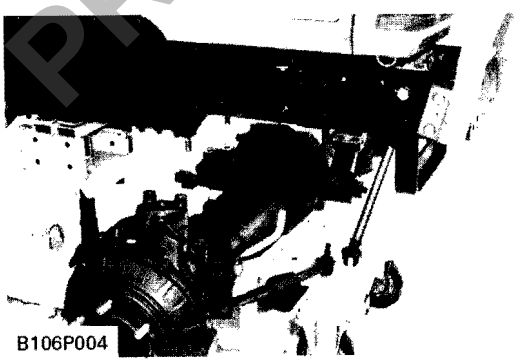
- **After tightening the tie rod end nut to the specified torque, install cotter pin as shown in the figure.**


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B106P003

Mounting Disassembly Stand

1. Place disassembly stand under the engine, and support it with a jack.
2. Place disassembly stand under the front axle case and support it with a jack.


B106P004

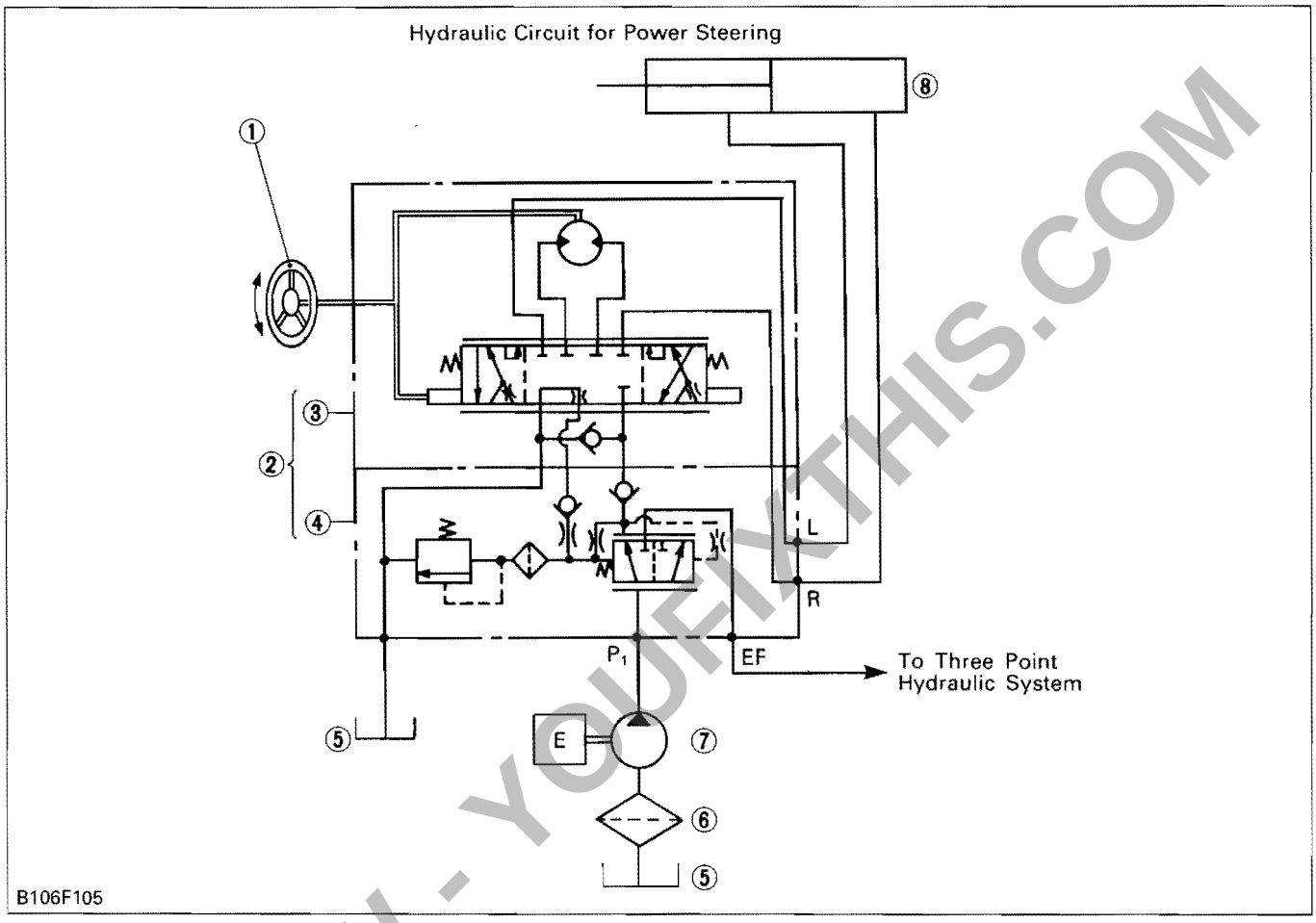
Separating Front Axle

1. Loosen the front wheel mounting nuts.
2. Lift the front axle and remove the front wheels.
3. Remove the front axle support mounting screws and nuts.
4. Carefully separate the front axle with the front axle supports.

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7 STEERING



(1) Steering Wheel
(2) Steering Controller
(3) Steering Unit
(4) Priority Valve
(5) Transmission Case
(6) Oil Filter
(7) Hydraulic Pump
(8) Steering Cylinder

This model is provided with a full hydrostatic power steering. Generally power steerings are divided into 4 types: booster type, integral type, semi-integral type and full hydrostatic type.

In the full hydrostatic power steering, the steering controller is connected to the steering cylinder with only the hydraulic piping. This steering is actuated by oil pressure. Accordingly, it does not have mechanical transmitting parts such as steering gear, pitman arm, drag link, etc. Therefore, it is simple in construction.

This steering system consists of the hydraulic pump (7), steering controller (2), steering cylinder (8), oil filter (6), etc.

The steering controller comprises a steering unit (3) and a priority valve (4).

The hydraulic pump pressure-feeds the oil, drawn in from the transmission case, to the steering controller.

By operating the steering controller, the required amount of oil is fed to the steering cylinder and any remaining oil is fed to the control valve of the lift cylinder. When the steering controller is not under operation, most of the oil is fed to the control valve of the lift cylinder.

The full hydrostatic power steering systems are divided into two types: non-road reaction type and road reaction type. They are distinguished by whether the cylinder port is blocked or not with the controller in neutral. In this models, the non-road reaction type is used. With this type, the wheels maintain their position when the operator releases his hands from the steering wheel. Vibration at the wheels is not transmitted to the steering wheel.

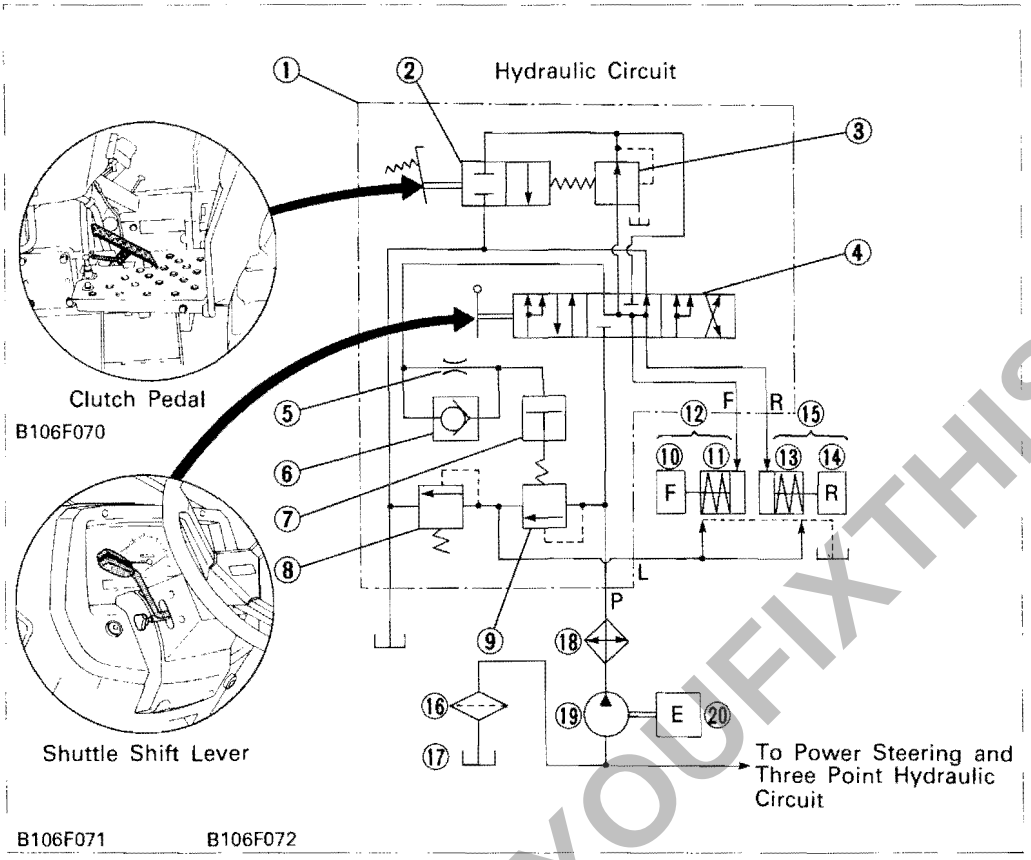
(Reference)

- With the road reaction type power steering, the steering wheel returns almost to the straight forward position as with an automobile when the operator releases his hands from the steering wheel.

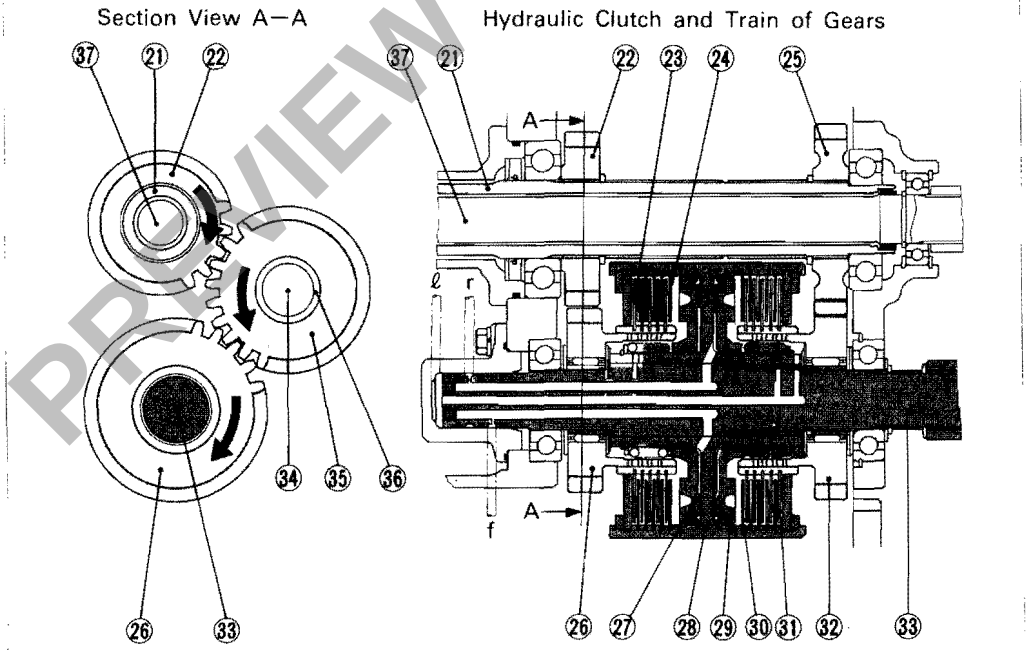
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[1]-2 HYDRAULIC SHUTTLE SHIFT (EVER CLUTCH TYPE)



(1) Clutch and Shuttle Control Valve
(2) Inching Rod
(3) Pressure Reducing Valve
(4) Selector
(5) Variable Orifice
(6) Check Valve
(7) Valve Piston
(8) Relief Valve 2
(9) Relief Valve 1
(10) Clutch
(11) Piston
(12) Hydraulic Clutch (for Forward)
(13) Piston
(14) Clutch
(15) Hydraulic Clutch (for Reverse)
(16) Oil Filter
(17) Transmission Case
(18) Oil Cooler
(19) Hydraulic Pump
(20) Engine
(21) 1st Shaft
(22) 23T Gear
(23) Clutch Disc
(24) Steel Plate
(25) 25T Gear
(26) 24T—41T Gear
(27) Piston (for Reverse)
(28) Clutch Case
(29) Piston (for Forward)
(30) Steel Plate
(31) Clutch Disc
(32) 26T—41T Gear
(33) 2nd Shaft
(34) Reverse Shaft
(35) 22T Gear
(36) Ball Bearing
(37) PTO 1st Shaft
F : Port "F" (for Forward)
R : Port "R" (for Reverse)
L : Port "L" (for Lubrication)
P : Port "P"
f : Passage "f" (for Forward)
r : Passage "r" (for Reverse)
ℓ : Passage "ℓ" (for Lubrication)



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F FEATURES

- Conveniently located speed change levers
  The main speed change lever .....Right side
  The auxiliary speed change lever .....Left side
  The shuttle lever

- Tilt steering wheel
- Full hydrostatic power steering
- Wide semi flat type deck



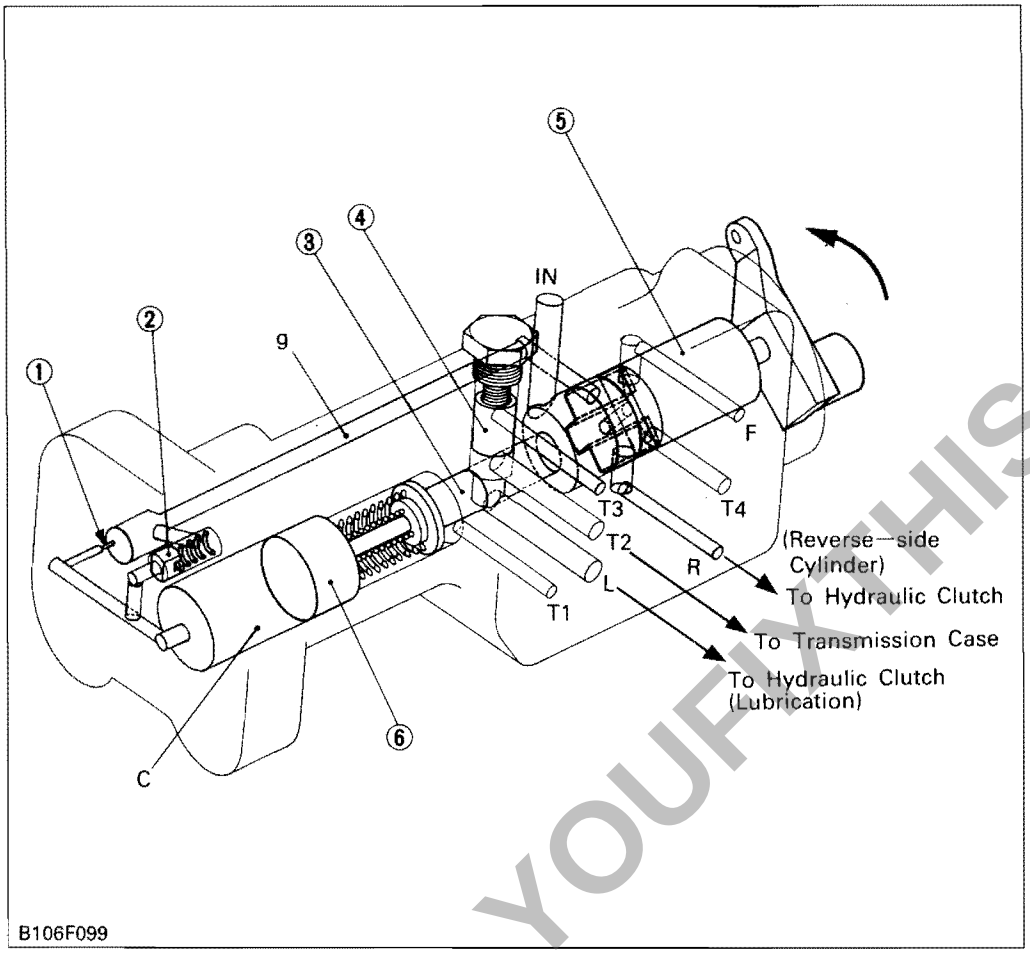
- Cartridge type hydraulic oil filter
- 8 forward, 8 reverse convenient transmission (Mannal shuttle transmission and Hydraulic shuttle transmission (Optional))
- Main speed change with partial synchronized gear

- Dura
- Doub
- Oil c
- Front
- Large
- Versa
- Grea
  Hydr
  Large

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■ Shuttle Shift Lever at Reverse Position



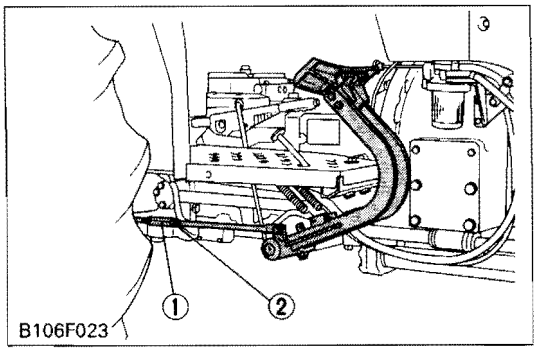
1. As the shuttle shift lever is moved to the reverse position, the selector (5) is rotated in the direction of arrow to form the oil passages between the "IN" and "R" ports and between the "IN" port and passage "g".
2. The oil flowing to the "R" port from the "IN" port enters the reverse-side cylinder of the hydraulic clutch, then the reverse-side clutch is engaged.
   The oil which has flowed to the passage "g" from the "IN" port, the valve piston (6) and the relief valve 1 (3) operate in the same way as described for "Shuttle Lever at Forward Position".
3. The oil which has flowed through the relief valve 1 (3) flows to the hydraulic clutch through the "L" port to lubricate the clutch discs and bearings.
   The oil in the lubricating circuit pushes open the relief valve 2 (4) (Setting pressure:294KPa, 3.0gf/cm^2, 42.7psi), and flows to the transmission case through the "T2" port.

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(1) Turnbuckle (2) Lock Nut

Checking Brake Pedal Play

CAUTION

- **When checking, park the tractor on a flat ground, and stop the engine.**
- **The difference between the right and left brake pedal play must be less than 5 mm (0.20 in.).**

1. Press the center of the brake pedal with the force of approx. 49N (5 kgf, 11 lbs), and measure the play of the pedal edge.
2. If the measurement is not within the factory specifications, turn the turnbuckle to adjust.

Blake pedal play	Factory spec.	25 to 35 mm 1.0 to 1.4 in.

(4) CHECK POINTS OF EVERY 200 HOURS

Changing Engine Oil

See Page S.G-6.

Cleaning Magnetic Plug

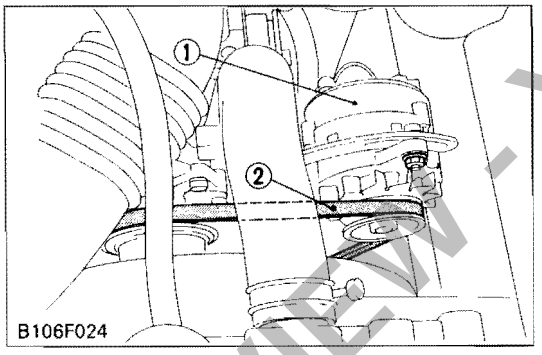
See Page S.G-7.

Replacing Hydraulic Oil Filter Cartrige

See Page S.G-7.

Cleaning Magnetic Filter

See Page SG-8.



(1) Alternator (2) Fan Belt

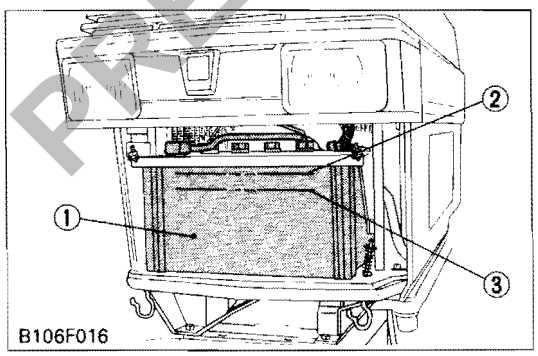
Checking Fan Belt Tension

CAUTION

- **Stop the engine before attempting check.**

1. Press the fan belt in the middle of the span with a force approx. 98 N (10 kgf, 22 lbs) and measure the deflection.
2. If the measurement is not within the factory specifications, loosen the alternator mounting nuts, using a lever placed between the alternator and the engine block, pull the alternator out until the deflection falls within factory specification.

Fan belt tension	Factory spec.	7 mm 0.3 in.



(1) Battery (3) Lowest Level
(2) Highest Level

Checking Battery Electrolyte Level

CAUTION

- **Never remove the battery cap while the engine is running. Keep electrolyte away from eyes, hands and clothes. If you are spattered with it, wash it away completely with water immediately, and see your doctor.**

1. Check that the battery electrolyte level is between the lowest and highest levels.
2. If insufficient, add distilled water.

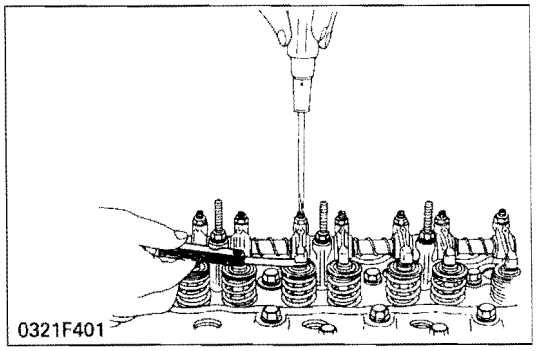
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■ **NOTE**

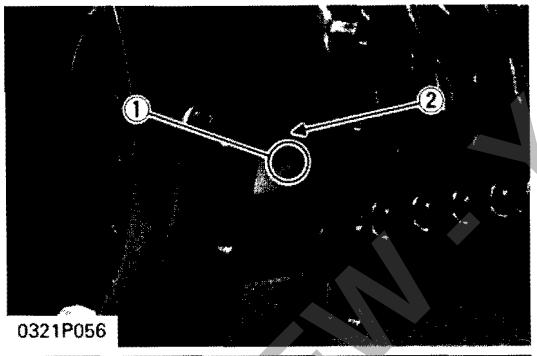
- **For the test, use a fully charged battery and the specified valve clearance.**
- **Check the compression pressure with the specified valve clearance.**
- **Variances in cylinder compression values should be under 10.**

Compression pressure	Factory spec.	2.94 to 3.24 MPa 30 to 33 kgf/cm^2 427 to 469 psi
	Allowable limit	2.35 MPa 24 kgf/cm^2 341 psi


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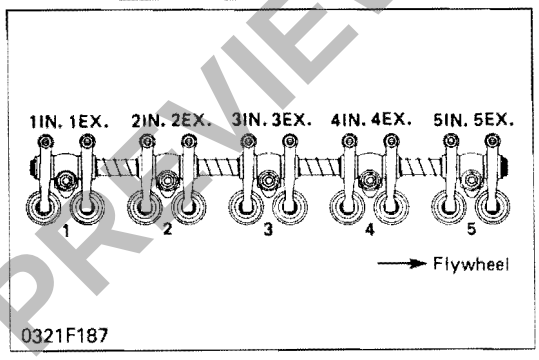
Valve Clearance

1. Remove the cylinder head cover.
2. Turn the flywheel and a align the **1 TC** mark with the window top on flywheel housing to position the 1st cylinder valves at the top dead center during compression.
3. Measure the clearance at the valves marked with in the table below with a feeler gauge.
4. If the clearance is not within the factory spec., turn the adjusting screw to adjust.
5. Turn the flywheel just one turn to position the 1st cylinder valves at the top dead center during overlap.
6. Measure the clearance at the valves marked ● in the table below with a feeler gauge.
7. If the clearance is not within the factory spec., adjust.



0321P056

Cylinder No.	1		2		3		4		5	
Valve	IN.	EX.	IN.	EX.	IN.	EX.	IN.	EX.	IN.	EX.
Checking	○	○	○	●	●	○	○	●	●	○

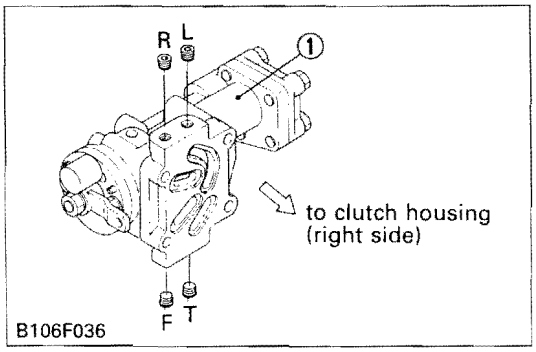


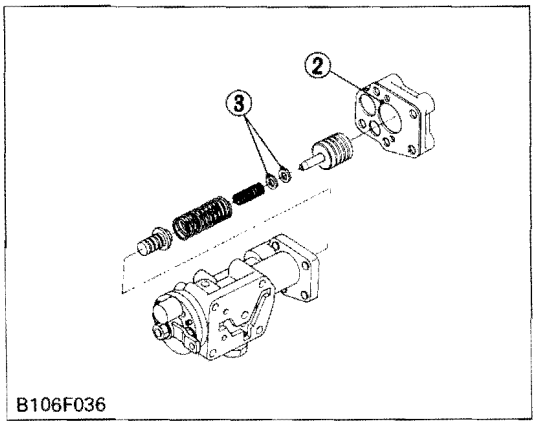
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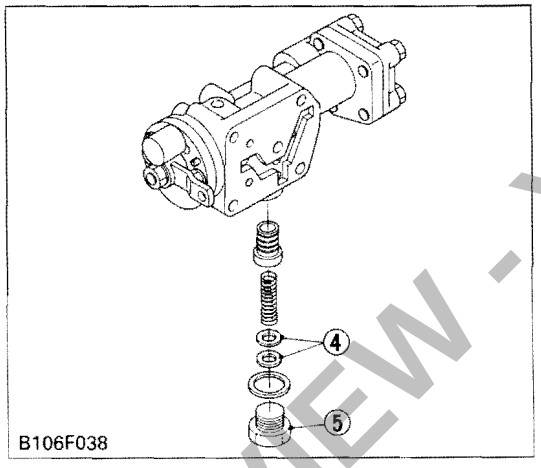
Valve Clearance IN. and EX.	Factory spec.	0.18 to 0.22 mm 0.0071 to 0.0087 in.

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Plug F: Operating oil pressure (for forward)
Plug R: Operating oil pressure (for reverse)
Plug L: Lubricating oil pressure
Plug T: Draining oil pressure
(1) Shuttle Valve (4) Shim
(2) Valve Cover (5) Plug
(3) Shim

Hydraulic Oil Pressure [Hydraulic Shuttle Type]

1. Remove the plug and set a pressure gauge. (Use the oil pressure tester for diesel engines (Code No:07916-32032). Adaptor screw size: PT 1/8 (Adaptor4)).
2. Set the main gear shift lever and shuttle shift lever at neutral position, and start the engine.
3. After warming up, set the engin speed at specified rpm shown in the table below.
4. Select the shuttle lever position according to the table below.
5. Measure the oil pressure.
6. If the operating oil pressure in both F and R port are not within the factory specifications, remove the valve cover (2) of shuttle control valve (1) and adjust with shims (3).

(Reference)

- Thickness of shim (3): 0.5mm, 1.0mm (0.0197 in., 0.0394 in.)
- Pressure change per 1.0mm (0.0394 in.) shim: Approx. 182.4 kPa (1.86 kgf/cm^2, 26.5 psi)

7. If the operating oil pressure either in F or R port is not within the factory specifications, check the seal ring on 2 nd shaft and O-rings on seal case and piston seal.
8. If the lubricating oil pressure is not within the factory specifications, remove the plug (5) of shuttle control valve and adjust with shims (4).

(Reference)

- Thickness of shim (4): 0.5mm, 1.0mm (0.0197 in., 0.0394 in.)
- Pressure change per 1.0mm (0.0394 in.) shim: Approx. 10.8 kPa (0.11 kgf/cm^2, 1.6 psi)

9. If the draining oil pressure exceeds the factory specification, check the clogging of draining circuit.

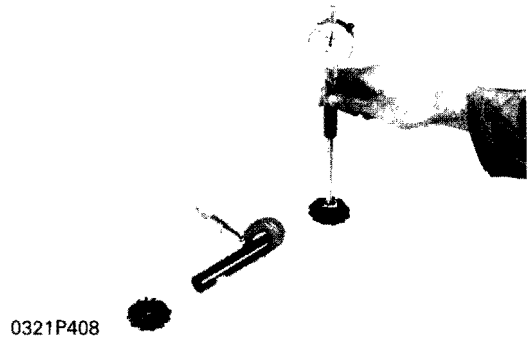
Shuttle Lever	F port pressure	R port pressure	L port pressure	T port pressure
Forward	1.57 to 1.77 MPa 16 to 18 kgf/cm^2 228 to 256 psi	0	—	—
Reverse	0	1.57 to 1.77 MPa 16 to 18 kgf/cm^2 228 to 256 psi	—	—
Neutral	0	0	98 to 294 kPa 1.0 to 3.0 kgf/cm^2 14 to 43 psi	0 to 49 kPa 0.0 to 0.5 kgf/cm^2 0 to 7 psi

1) Oil temperature: 40 to 60°C (104 to 140°F)
2) Engine revolution: more than 900 rpm.

- Apply Three Bond TB2401 or equivalent to the plugs, L, R, F and T, when install them.

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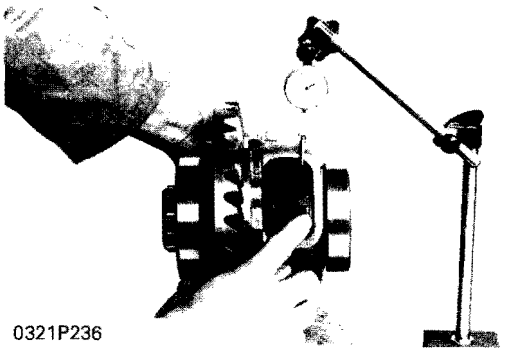
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0321P408

Clearance between Differential Pinion Shaft and Pinion

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

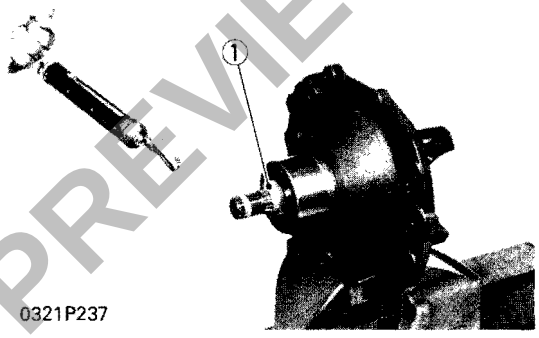
Clearance between differential pinion shaft and pinion	Factory spec.	0.040 to 0.113 mm 0.00157 to 0.00445 in.
	Allowable limit	0.25 mm 0.0098 in.
Differential pinion shaft O.D.	Factory spec.	22.908 to 22.960 mm 0.9019 to 0.9039 in.
Differential pinion I.D.	Factory spec.	23.000 to 23.021 mm 0.9055 to 0.9063in.


0321P236

Backlash between Differential Pinion and Differential Side Gear

1. Set a dial indicator (lever type) on the tooth of the differential side gear.
2. Hold the differential pinion and move the side gear to measure the backlash.
3. If the measurement exceeds the allowable limit, adjust it with the differential side gear washer.

Backlash between differential pinion and differential side gear	Factory spec.	0.15 to 0.25 mm 0.0059 to 0.0098 in.
	Allowable limit	0.4 mm 0.016 in.
Differential side gear washer 1 thickness	Factory spec.	1.5 mm 0.059 in.
Differential side gear washer 2 thickness	Factory spec.	1.6 mm 0.063 in.
Differential side gear washer 3 thickness	Factory spec.	1.7 mm 0.067 in.



0321P237

(1) Staking Nut

Turning Torque of Bevel Pinion Shaft Only

1. Wind a string around the bevel pinion shaft and set a spring balance to the tip of the string.
2. Apply gear oil to the taper roller bearing, and then slowly pull the spring balance vertically to measure the turning force.
3. If the measurement is not within the factory specifications adjust it with the staking nut (1).

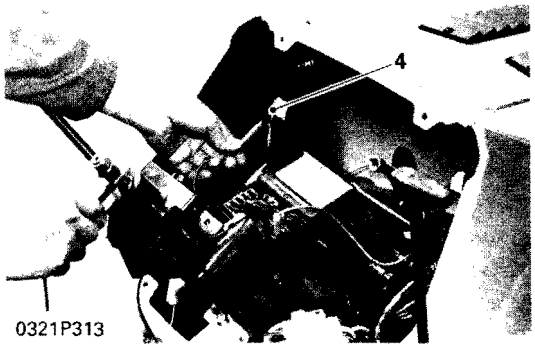
Turning force	Factory spec.	100 to 133 N 10.4 to 13.6 kgf 22.8 to 30.lbs
Turning torque	Factory spec.	1.27 to 1.66 N·m 0.13 to 0.17 kgf·m 0.94 to 1.23 ft-lbs

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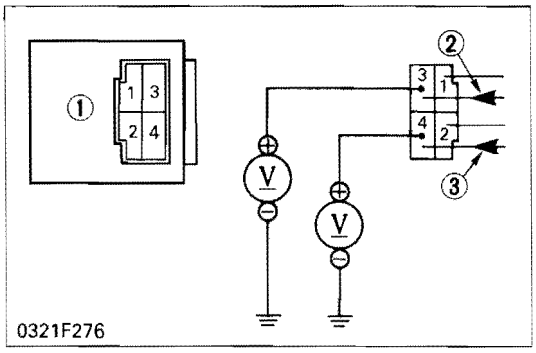
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[3] ENGINE KEY SWITCH SHUT-OFF SYSTEM

CHECKING



0321P313



0321F276

Timer Relay

1) Connector Voltage

1. Disconnect the connector from the timer relay after turning the main switch off.
2. Measure the voltage with a voltmeter across the connector 4 terminal and chassis.
3. Turn the main switch on, and measure the voltage across the connector 3 terminal and chassis.
4. If these voltages differ from the battery voltage, the wiring harness or main switch is faulty.

Voltage	Connector 4 terminal - chassis	Approx. battery Voltage
	Connector 3 terminal - chassis	

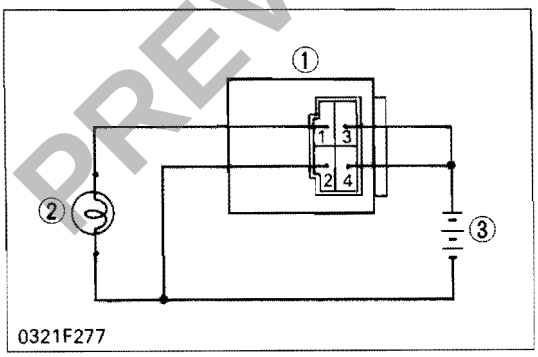
(1) Timer Relay
(2) From Main Switch AC Terminal
(3) From Battery Positive Terminal



0321P314

2) Test of Timer Relay

1. Remove the timer relay from the tractor.
2. Connect jumper leads across the battery positive terminal and the timer relay 3 terminal, and across the battery positive terminal and the timer relay 4 terminal.
3. Connect jumper leads across the battery negative terminal and the timer relay 2 terminal, and across the battery negative terminal and the bulb terminal.
4. Connect jumper lead across the timer relay 1 terminal and the bulb terminal.
5. The bulb lights up when disconnecting a jumper lead from the 3 terminal and goes off 6 to 13 seconds late, the timer relay is proper.



0321F277

(1) Timer Relay
(2) Bulb
(3) Battery (12V)

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