TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of KUBOTA Lawn Tractors T1400 and T1400H. It is divided into two parts, "Mechanism" and "Disassembling and Servicing".

■ **Mechanism**

Information on the construction and function of each lawn tractor are included in this section. This part should be understood before proceeding with troubleshooting, disassembling and servicing.

■ **Disassembling and Servicing**

The heading "General" includes general precautions, troubleshooting, servicing specification lists, check and maintenance and special tools. For each lawn tractor section, there are checking and adjusting, disassembling and assembling, and servicing which cover procedures, precautions, factory specifications and allowable limits.

All information, illustrations and specifications contained in this manual are based on the latest production information available at the time of publication.

KUBOTA reserves the right to make changes in information at any time without notice.

July '87

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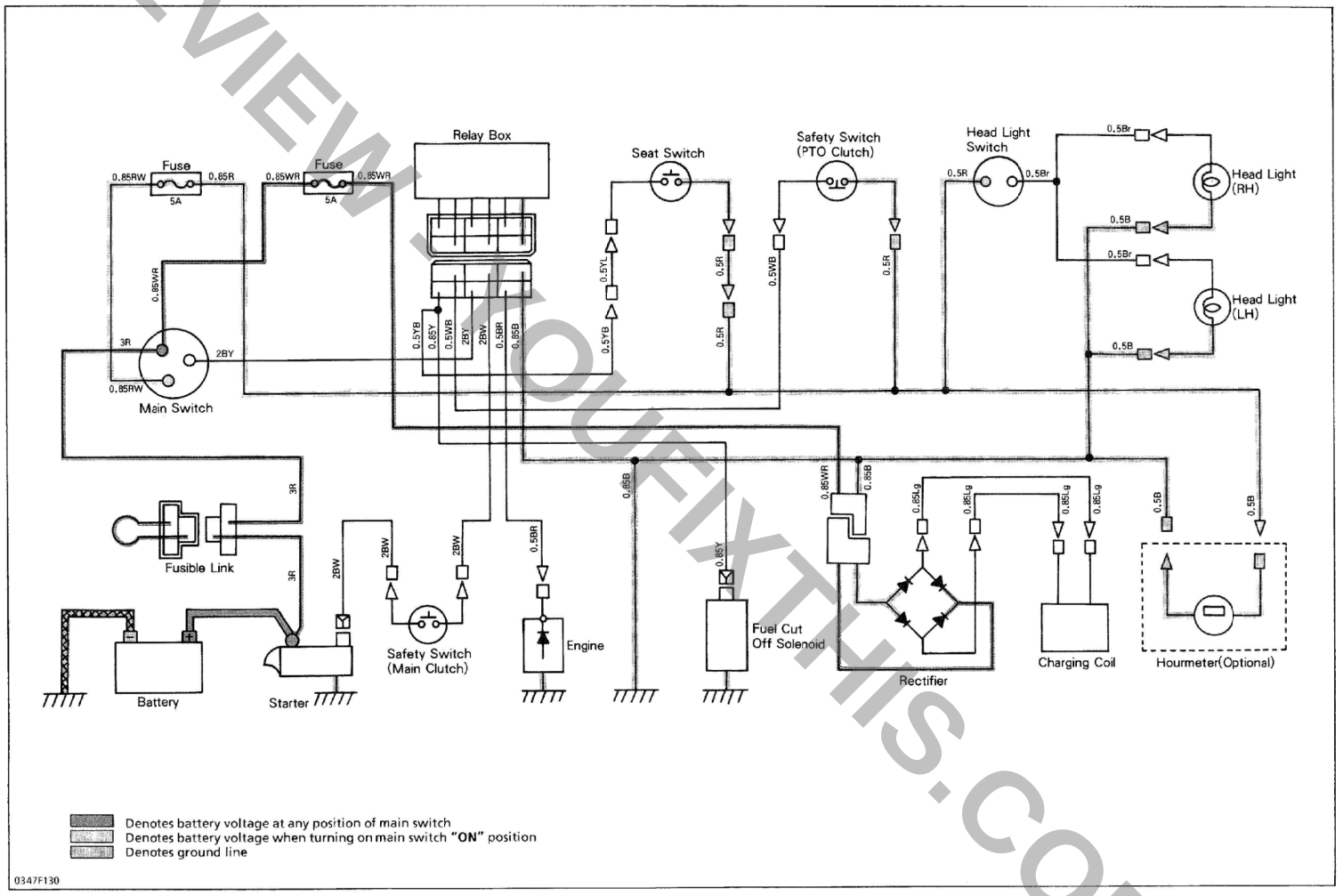
SPECIFICATIONS

Engine

Model		GH400V-L
Type		Air-cooled, 4-cycle, OHV gasoline engine
Number of Cylinders		1
Bore x Stroke		84.2 x 70 mm (3.31 x 2.76 in.)
Total Displacement		389 cc (23.7 cu.in.)
Maximum Horsepower (SAE Gross)		10.1 kW, 13.5 HP
Maximum Torque		27.0 N·m / 2400 rpm (2.75 kgf·m / 2400 rpm, 19.9 ft·lbs / 2400 rpm)
Maximum Bare Speed		3350 rpm
Minimum Bare Idling Speed		1300 rpm
Compression Ratio		8.5
Cooling System		Forced air cooling
Ignition System		Non-contact magneto ignition (Transistor controlled)
Ignition Timing		0.40 rad. (23) B.T.D.C.
Spark Plug		NIPPON DENSO W14FPR-UL 10, NGK BPR4HS-10
Carburetor		Horizontal type, butterfly valves
Air Cleaner		Cyclone type
Governor		Centrifugal mechanical governor
Lubricating System		Forced lubrication with trochoid pump
Starting System		Electric starting with cell starter
Starting Motor		12 V, 0.6 kW
Recommended Battery Capacity		12 V, 30 Ah
Fuel	Type	Regular automobile gasoline
	Capacity	8.5 ℓ 9.0 U.S.qts. 7.48 Imp.qts.
Engine Oil	Type	Engine oil : API Service SC or SD Below 15°C (59°F) ..... SAE20 or 10W–30 Above 15°C (59°F) ..... SAE30 or 10W–30
	Capacity	1.4 ℓ 1.5 U.S.qts 1.23 Imp.qts.
Weight (Dry)		32 kg (71 lbs)

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[4] LUBRICANTS AND FUEL

<table>
<tr><th colspan="2">Place</th><th>Capacity</th><th>Lubricants or Fuel</th></tr>
<tr><td colspan="2">Engine crankcase</td><td>1.4 ℓ
1.5 U.S.qts.
1.23 Imp.qts.</td><td>• Engine oil : API Service SC or SD
Below 15°C (59°F).....SAE20 or 10W–30
Above 15°C (59°F).....SAE30 or 10W–30</td></tr>
<tr><td colspan="2">Hydrostatic transmission</td><td>0.57 ℓ
0.60 U.S.qts.
0.50 Imp.qts.</td><td>• Engine oil: API service CD
SAE 10W–30</td></tr>
<tr><td rowspan="2">Transmission case</td><td>T1400H</td><td>1.8 ℓ
1.9 U.S.qts.
1.58 Imp.qts.</td><td rowspan="2">• Multi-grade transmission fluid or gear oil SAE #90
The fluid listed below or equivalent are recommended.
<table><tr><th>Maker</th><th>Brand (Standard)</th></tr><tr><td>KUBOTA</td><td>UDT hydrostatic transmission fluid</td></tr><tr><td>SHELL</td><td>DONAX–TD, DONAX–TM</td></tr><tr><td>Mobil</td><td>Mobil Fluid 350, 423</td></tr><tr><td>Exxon</td><td>Torque Fluid 56</td></tr></table></td></tr>
<tr><td>T1400</td><td>2.6 ℓ
2.7 U.S.qts.
2.29 Imp.qts.</td></tr>
<tr><td colspan="2">Knuckle shaft (King pin)
Mower blade axles
Mower gauge wheel</td><td>Moderate amount</td><td>• SAE multi-purpose type grease</td></tr>
<tr><td colspan="2">Fuel tank</td><td>8.5 ℓ
9.0 U.S.qts.
7.48 Imp.qts.</td><td>• Regular automobile gasoline</td></tr>
</table>

[5] TROUBLESHOOTING

ENGINE

Symptom	Probable Cause	Solution	Reference Page
Excessive Vibration	• Loosen engine mounting nuts	Retighten mounting nuts	S-22
Engine Will Not Crank	• Battery discharged	Check battery specific gravity, and charge or replace battery	S-15
	• Battery cables loose, corroded or worn	Repair or replace cables	S-21
	• Wiring harness disconnected	Connect	–
	• Fuse or fusible ring blown	Replace fuse and fusible link	–
	• Starter faulty	Repair or replace starter	S-75
	• Main switch defective	Replace main switch	S-74
	• Engine jammed	Check engine to find trouble and repair	–
Engine Cranks Slowly but Does Not Start	• Battery charge low	Check battery specific gravity, and charge or replace battery	S-15
	• Battery cables loose, corroded or worn	Repair or replace cables	S-21
	• Starter faulty	Repair or replace starter	S-75
	• Increased resistance of moving parts	Repair or replace moving parts	–
	• Excessively high viscosity of fuel or engine oil at low temperature	Use specified fuel or engine oil	S-2

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[7] TIGHTENING TORQUES

(1) Tightening Torques for Important Screws, Bolts and Nuts

Section	Item	N·m	kgf·m	ft-lbs
Engine	Drain plug	19.6 to 29.4	2.0 to 3.0	14.5 to 21.7
	Starter **B** terminal nut	8.8 to 11.8	0.9 to 1.2	6.5 to 8.7
	Rotor mounting nut	98.1 to 117.7	10.0 to 12.0	72.3 to 86.8
	Governor lever mounting screw	17.7 to 23.5	1.8 to 2.4	13.0 to 17.4
	Spark plug	9.8 to 24.5	1.0 to 2.5	7.2 to 18.1
	Cylinder head screw 1,2,3	41.2 to 50.0	4.2 to 5.1	30.4 to 36.9
	Flange screw	17.7 to 23.5	1.8 to 2.4	13.0 to 17.4
	Crankcase cover mounting screw	13.7 to 19.6	1.4 to 2.0	10.1 to 14.5
	Connecting rod screw	23.5 to 29.4	2.4 to 3.0	17.4 to 21.7
	Plug (See page S-36)	9.8 to 15.7	1.0 to 1.6	7.2 to 11.6
	Drain screw (Carburetor) *A	1.96 to 2.94	0.20 to 0.30	1.45 to 2.17
	Drain screw (Carburetor) *B	1.47 to 2.45	0.15 to 0.25	1.08 to 1.81
	Fuel cut off solenoid (Carburetor) *A	3.92	0.40	2.89
	Fuel cut off solenoid (Carburetor) *B	11.8 to 24.5	1.2 to 2.5	8.7 to 18.1
	Jet holder (Carburetor) *A	7.85	0.80	5.79
	Jet holder (Carburetor) *B	3.92 to 7.84	0.4 to 0.8	2.89 to 5.78
	Main nozzle (Carburetor) *A	1.96	0.20	1.45
	Main nozzle (Carburetor) *B	0.98 to 2.45	0.1 to 0.25	0.72 to 1.81
Transmission and Rear Axle	Rear wheel mounting screw	48.1 to 55.9	4.9 to 5.7	35.4 to 41.2
	Transmission mounting bolt	48.1 to 55.9	4.9 to 5.7	35.4 to 41.2
	Hex socket cap screw	15.7 to 18.6	1.6 to 1.9	11.6 to 13.7
	Differential case mounting bolt	48.1 to 55.9	4.9 to 5.7	35.4 to 41.2
	Pitman arm mounting nut	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
	Sheave shaft mounting nut	78.5 to 90.2	8.0 to 9.2	57.9 to 66.5
Front Axle	Slotted nut	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
	Tie-rod mounting nut	39.2 to 45.1	4.0 to 4.6	28.9 to 33.2
	Knuckle arm mounting bolt	39.2 to 45.1	4.0 to 4.6	28.9 to 33.2
Steering	Drag link mounting nut	39.2 to 45.1	4.0 to 4.6	28.9 to 33.3
	Pitman arm mounting nut	77.5 to 90.2	7.9 to 9.2	57.1 to 66.5
Mower	Blade screw	118 to 147	12 to 15	87 to 108
	150 pulley mounting nut	118 to 177	12 to 18	87 to 130
	Pulley holder mounting nut	23.5 to 27.5	2.4 to 2.8	17.4 to 20.3

*A → Serial No. : A, *B → Serial No. : B (See page S-40.)

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[8] MAINTENANCE CHECK LIST

To keep the machine working in good condition as well as to avoid any accident and trouble, carry out periodic inspection and maintenance. Check the following points before use.

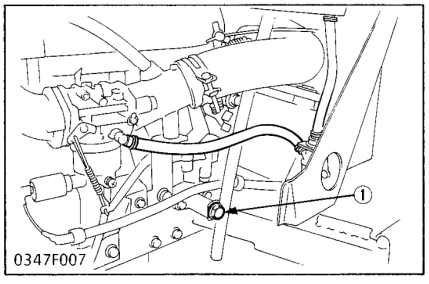
Service Interval	Check Points	Reference Page
Daily (Each use)	• Check the battery electrolyte level	S-13
	• Check and clean the grass catcher (Option parts)	–
	• Check the mower brake	S-13
First 3 months or 20 hours	• Check all belts	S-83
	• Check and readjust the mower deck belt tension	S-13
	• Check and readjust the drive belt tension	S-14
	• Check and readjust the brake pedal (T1400H type)	S-63, S-64
	• Check and readjust the clutch-brake pedal (T1400 type)	S-65, S-67
	• Check and readjust the parking brake (T1400H type)	S-63, S-64
	• Check and readjust the parking brake (T1400 type)	S-66
	• Grease all grease nipple	S-16
Every 6 months or 50 hours	• Change engine oil (Initial)	S-14
	• Clean the air cleaner element	S-14
	• Check gravity of battery electrolyte	S-15
	• Check all belts	S-83
	• Check and readjust the mower deck belt tension	S-13
	• Check and readjust the drive belt tension	S-14
	• Check and readjust the brake pedal (T1400H type)	S-63, S-64
	• Check and readjust the clutch-brake pedal (T1400 type)	S-65, S-67
	• Check and readjust the parking brake (T1400H type)	S-63, S-64
	• Check and readjust the parking brake (T1400 type)	S-66
	• Grease all grease nipple	S-16
Every year or 100 hours	• Change transmission oil (Initial)	S-16
	• Change engine oil	S-14
	• Clean the mower deck shroud	–
	• Check the seat switch operation	S-17
	• Clean the spark plug	S-17
	• Check the spark plug gap	S-17
	• Clean the fuel filter	S-18
	• Clean the fuel tank	–
	• Check and adjust all wires	–
Every 3 years or 300 hours	• Change transmission oil	S-16
	• Change the air cleaner element	–
	• Change fuel lines	S-18
	• Check and readjust valve clearance	S-18

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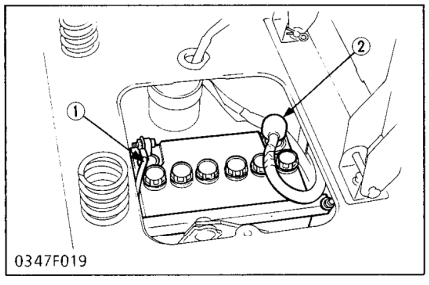
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1 ENGINE

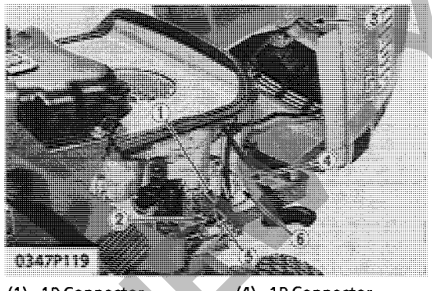
[1] SEPARATING ENGINE DISASSEMBLING AND ASSEMBLING



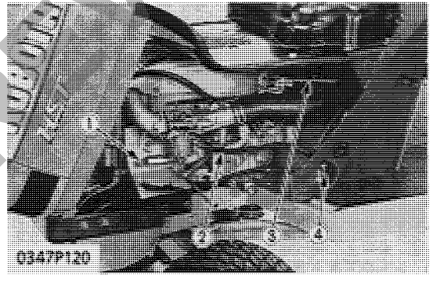
(1) Drain Plug



(1) Ground Cable (2) Positive Cable



(1) 1P Connector
(2) Positive Cable
(3) 1P Connector
(4) 1P Connector
(5) Fusible Link Wiring
(6) 1P Connector



Draining Engine Oil

1. Place an oil pan underneath the drain plug.
2. Unscrew the drain plug (1), and drain engine oil.

(When reassembling)

Tightening torque	Drain plug	19.6 to 29.4 N·m 2.0 to 3.0 kgf·m 14.5 to 21.7 ft-lbs

■ IMPORTANT

- **Use the specified engine oil.**
  Refer to "LUBRICANTS AND FUEL". (See page S-2)

Battery

⚠ CAUTION

- **When disconnecting the battery cables, disconnect the ground cable from the battery first.**
  When connecting, connect the positive cable to the battery first.

1. Unscrew the knob screw, and remove the battery cover.
2. Disconnect the ground cable (1) from the battery.
3. Disconnect the positive cable (2) from the battery.

Wiring

1. Disconnect four 1P connectors (3) from the head lights.
2. Disconnect the 1P connector (4) between main switch and ignition unit.
3. Disconnect two 1P connectors (6) between charging coil and rectifier.
4. Disconnect the 1P connector (1) from the starter **ST** terminal.
5. Disconnect the positive cable (2) and fusible link wiring (5) from the starter **B** terminal.

(When reassembling)

Tightening torque	Starter **B** terminal nut	8.8 to 11.8 N·m 0.9 to 1.2 kgf·m 6.5 to 8.7 ft-lbs

Fuel Cut Off Solenoid 1P Connector, Throttle Wire and Fuel Pipe

1. Disconnect the 1P connector (1) from the fuel cut off solenoid.
2. Loosen the retaining screw, and remove the throttle wire (3).
3. Close the fuel filter cock (4), and disconnect the fuel pipe (2) from the carburetor.

(1) 1P Connector
(2) Fuel Pipe
(3) Throttle Wire
(4) Fuel Filter Cock

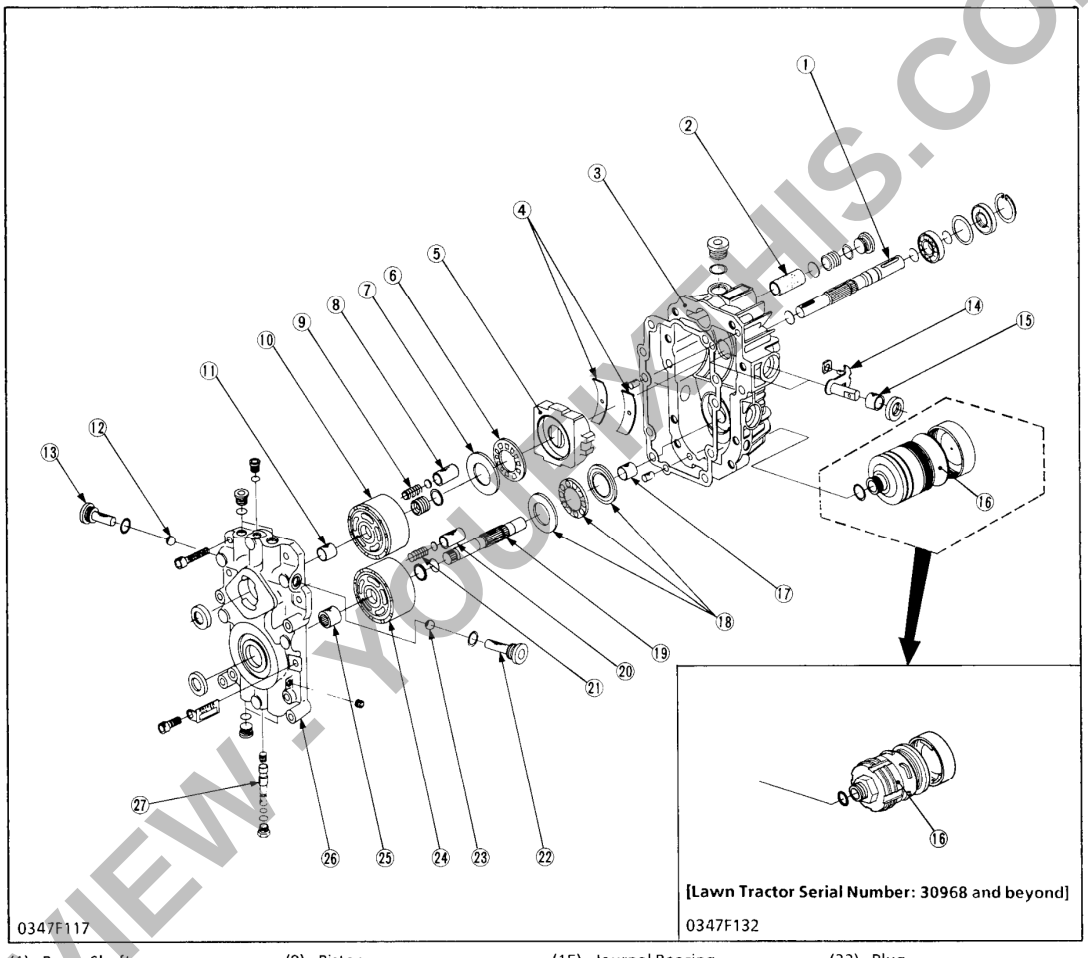
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2 CLUTCH AND TRANSMISSION

[T1400H TYPE]

[1] HYDROSTATIC TRANSMISSION



(1) Pump Shaft
(2) Oil Filter
(3) Housing
(4) Cradle Bearing
(5) Swashplate
(6) Thrust Roller Bearing
(7) Thrust Plate
(8) Piston
(9) Piston Spring
(10) Cylinder Block (Pump)
(11) Journal Bearing
(12) Check Valve
(13) Plug
(14) Trunnion Arm
(15) Journal Bearing
(16) Oil Tank
(17) Journal Bearing
(18) Thrust Ball Bearing
(19) Motor Shaft
(20) Piston
(21) Piston Spring
(22) Plug
(23) Check Valve
(24) Cylinder Block (Motor)
(25) Needle Bearing
(26) Center Section
(27) By-pass Valve

The Bantam Duty Hydrostatic Transmission consists of a 10 cc/rev. variable displacement piston pump and a 10 cc/rev. fixed displacement piston motor.

Since a hydraulic reservoir may be mounted on the housing, hydraulic plumbing is not necessary.

A fan is used to cool the hydrostatic transmission, eliminating the need for an oil cooler.

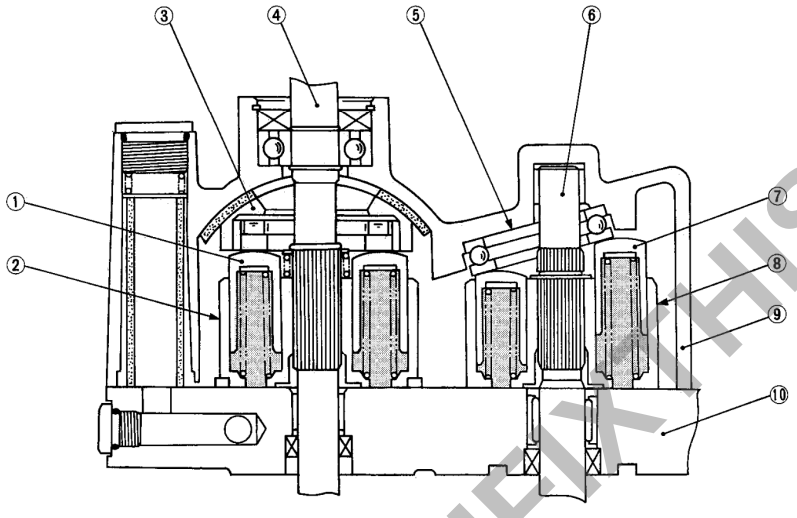
Convenient single lever control permits simple operation of the lawn tractor, starting, stopping, increasing or decreasing speeds, changing direction of travel, and even going up or down hills.

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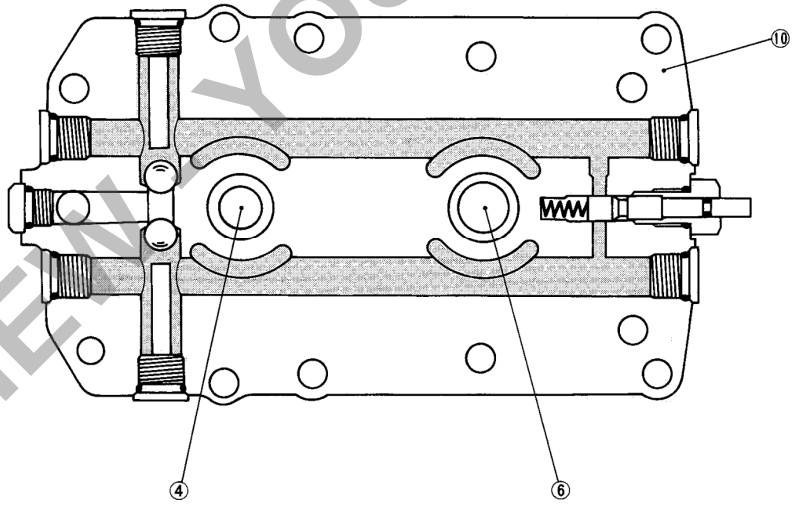
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(5) Oil Flow

■ **Neutral**



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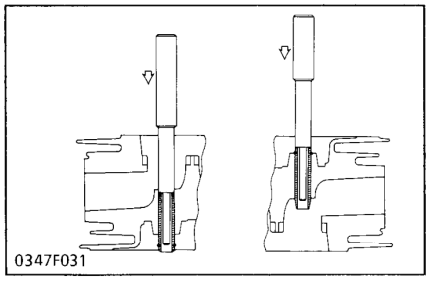
(1) Pump Piston
(2) Cylinder Block (Pump)
(3) Variable Swashplate
(4) Pump Shaft
(5) Fixed Swashplate
(6) Motor Shaft
(7) Motor Piston
(8) Cylinder Block (Motor)
(9) Housing
(10) Center Section

When the speed control pedal is in neutral, the variable swashplate (3) is at right angles to the pump pistons (1) and they only rotate with cylinder block (Pump) (2) without reciprocating.

Since the oil is not being pumped to the piston motor, the cylinder block (Motor) (8) in the piston motor is stationary and the motor shaft (6) does not move.

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Replacing Valve Guide

(When removing)

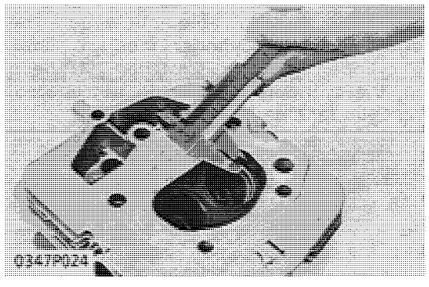
1. Press out the used valve guide using a valve guide replacing tool. (See page S-20)

(When installing)

1. Clean a new valve guide, and apply engine oil to it.
2. Install the stopper ring to the valve guide.
3. Press in a new valve guide [Service parts: Code No. 12181-13951 (Intake valve guide), Code No. 12181-13961 (Exhaust valve guide)] until the stopper ring contacts the cylinder head.

■ IMPORTANT

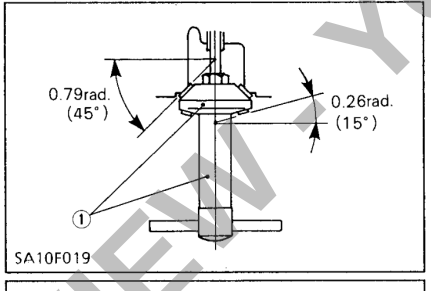
- **Do not hit the valve guide with a hammer during replacement.**

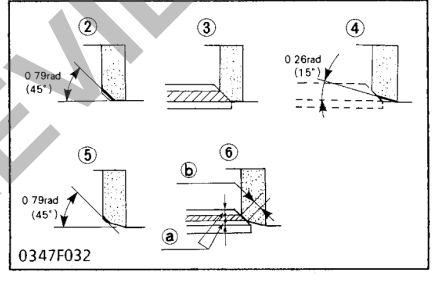


Valve Seat Width

1. Clean the valve seat surface.
2. Measure the valve seat width with vernier calipers.
3. Apply red lead to the valve surface to check for scratches and unevenness.
4. When the measurement is within the allowable limit, check the seating ratio. If the ratio is less than 70%, it needs to be refit.
5. If the measurement exceeds the allowable limit, replace the cylinder head and the valve, and refit or repair the valve seat.

Valve seat width	Factory spec.	1.1 mm 0.044 in
	Allowable limit	1.7 mm 0.067 in





Correcting Procedure for Valve Seat

1. Correct the valve seat surface with a 0.79 rad. (45°) valve seat cutter (Valve seat cutter set: Code No. 07909-33102).
2. Replace the valve and visually check the contact position between the valve face and valve seat with red lead.
   (If the valve has been used for a long period, the seat tends to come in contact with the upper side of the valve face.)
3. Cut the upper surface of the valve seat with a 0.26 rad. (15°) valve seat cutter until the valve seat touches to the center of the valve face (so that **a** equals **b** as shown in the figure).
4. Cut the seat with a 0.79 rad. (45°) valve seat cutter again, and visually recheck the contact between the valve and seat.
5. Repeat steps 3 and 4 until the correct contact is achieved.
6. Continue lapping until the seated rate becomes more than 70% of the total contact area.

(1) Valve Seat Cutter
(2) 0.79 rad. (45°) Valve Seat Cutter
(3) Contact Check
(4) 0.26 rad. (15°) Valve Seat Cutter
(5) 0.79 rad. (45°) Valve Seat Cutter
(6) Contact Check

(a) Identical Dimensions
(b) Seat Surface Width

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