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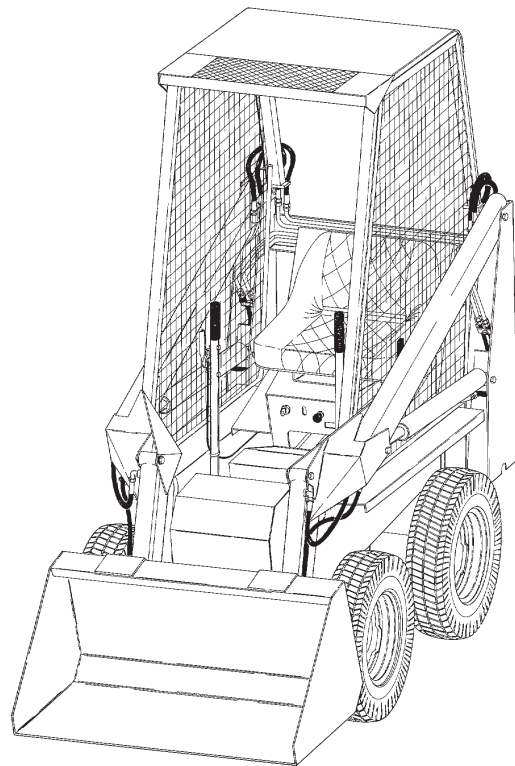
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Service Manual

(Gasoline & L.P. Gas)



MELROE
INGERSOLL-RAND

6545574(2-84)

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ENGINE

PROBLEM	CAUSE	CORRECTION	PAGE
Engine stops (cont'd)	Ignition cable off spark plug.	Replace cable.	
	Leaky fuel line.	Correct as required.	4, 5
	The engine air cleaner is dirty.	Service the air cleaner.	3
	Defective ignition.	Check the ignition system.	6
	Water, dirt or gum in fuel line due to excessive heat around engine (vapor lock).	Wait until the engine cools before attempting to restart. Check the condition of the engine cooling fins.	3
	Vapor lock due to excessive heat around engine.	Use the proper grade fuel for ambient temperatures.	
Engine overheats.	Engine is overloaded.	Operate at a 3/4 to full throttle setting.	
	Engine cooling fins are dirty.	Clean the cooling fins thoroughly.	3
	Engine has been operated with part of the shrouding removed.	Clean the cooling fins and replace the shrouding.	3
	Dirty engine oil.	Change engine oil.	3
	Using incorrect grade of engine oil.	Change to proper grade of oil for ambient temperatures.	3
	The crankcase is over-filled.	Drain to proper level.	3
	The crankcase oil level is low.	Replenish immediately.	3
	Restricted exhaust.	Clear and clean.	
	Ignition timing is wrong.	Re-time the engine.	6
	Carbon in the engine.	Clean the carbon from the cylinder head and piston.	7, 31
	Operating at a too lean fuel mixture.	Adjust the carburetor.	4

PROBLEM	CAUSE	CORRECTION	PAGE
	Air entering pickup tube in sump.	Install baffle on pickup tube. Check for pin hole in tube.	13
	Hydraulic pump is not delivering its rated capacity.	Check condition of pump and repair or replace if defective.	16
	Fluid leak past spool in lift control valve.	Replace spool seals. If valve body is cracked or scored, replace the valve.	— 16
	Lower tube line restrictor is blocked. (Located at rear up-right crossmember).	Remove and clean the restrictor.	—
Boom lowers extremely slow.	Lower tube line restrictor is blocked. (Located at rear up-right crossmember).	Remove and clean the restrictor.	—
	Pedal linkage adjusted improperly.	Re-adjust the pedal linkage.	
Sticky control valve action.	Control pedals are sticking due to lack of lubrication.	Re-lubricate.	—
	Spool centering device in valve is broken.	Repair as necessary.	46
	Warped valve body due uneven mounting surface.	Shim as necessary.	13
	Spool interference with valve body.	Rotate spool 180 degrees.	—
	Dirt in valve body.	Clean valve body.	
Loss of hydraulic fluid from system.	Fluid may have been used to fill the hydraulic system of an attachment.	Check fluid level and fill to full mark on dipstick or upper check plug.	16
	Fluid is leaking from a hole in the reservoir.	Pin holes may be peened with a punch. Larger holes may need to be welded shut.	— 16
	Loose connections in hydraulic system.	Tighten or replace connectors, as necessary.	16
	Fluid leaking past cylinder shaft seals.	Replace cylinder shaft seals and inspect cylinder shafts for damage.	16
	Fluid is leaking from a hole at the welded cylinder ports.	Remove the cylinder and weld the holes shut.	16, 17 45, 46

MAJOR OVERHAUL

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**MAJOR
OVERHAUL**

ENGINE

**HYDR
SYSTEM**

**MAIN
FRAME**

SPECS

**DRIVE
SYSTEM**

REASSEMBLY

1. Rear Main Bearing
 - a. Install rear main bearing by pressing it into cylinder block with shielded side facing toward inside of block—if using unshielded type bearing, either side can face inside.
2. To Install Governor (Fig. 48)
 - a. Place cylinder block on its side. Slide governor shaft into place from inside of block. Place speed control disc on governor bushing nut and thread bushing nut into block, clamping throttle bracket into place.
 - b. The governor shaft can be adjusted for end clearance by moving needle bearing in block. Set bearing to allow a slight back-and-forth movement of the shaft.
 - c. Place space washer on stub shaft and slide governor gear assembly into place.
 - d. Tighten holding screw from outside of cylinder block. Screw prevents governor gear from sliding off stub shaft during assembly.
 - e. Rotate governor gear assembly to be sure holding screw does not contact weight section of gear.
3. Camshaft Installation (Fig. 49)
 - a. Turn cylinder block upside down.
 - b. Tappets must be installed before camshaft is placed. Lubricate and insert tappets in valve guides. Intake and exhaust tappets are interchangeable.
 - c. Position camshaft inside block.
 - d. Lubricate rod then insert into block (bearing plate side). Before pushing rod through camshaft, slip one .005" washer (end play) between end of camshaft (opposite gear end) and block. Push rod through camshaft and tap lightly until rod just starts into bore at P.T.O. end of block. Check end play with feeler gauge (Fig. 50) if within tolerance press rod into final position or remove rod and add (or subtract) .005 and .010" thick washers as necessary to attain proper end play (See Fits and Clearance Section).
 - e. While rod is a tight press fit at P.T.O. end of block, a light to loose fit is necessary at the bearing plate end. New bearing plate gaskets have notch to allow any oil that may leak past to drain back into block. If gasket is not notched, apply gasket sealer around end of rod (outside block) to seal when bearing plate and gaskets are installed.
4. Crankshaft Installation
 - a. Place block on base of arbor press and carefully insert tapered end of crankshaft through inner race of antifriction bearing.
 - b. Turn crankshaft and camshaft until timing mark on shoulder of crankshaft lines up with mark (dot) on cam-gear as shown in Fig. 51.
 - c. When marks are aligned, press crankshaft into bearing—make sure gears mesh as shaft is pressed into bearing. After shoulder bottoms against inner race, recheck timing mark to make sure they are still aligned (Fig. 51).
 - d. Crankshaft end play is controlled by the thickness of gaskets used between the bearing plate and block. End play must be checked after bearing plate is installed—directions stated in Step 6.
5. Bearing Plate
 - a. Press front main bearing into bearing plate (Fig. 52). Make sure bearing is straight and true in bore and bottomed properly. If cocked, crankshaft end play will be adversely affected.
 - b. Crankshaft end play is determined by thickness of gaskets used between block and bearing plate. Initial use of one .020" and one .010" gasket should bring end play within limits—this must be checked after bearing plate is installed.

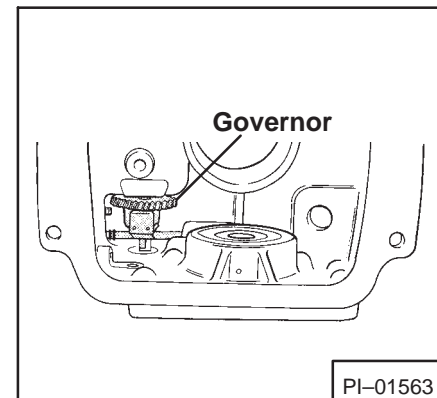


Fig. 48 Installing Governor

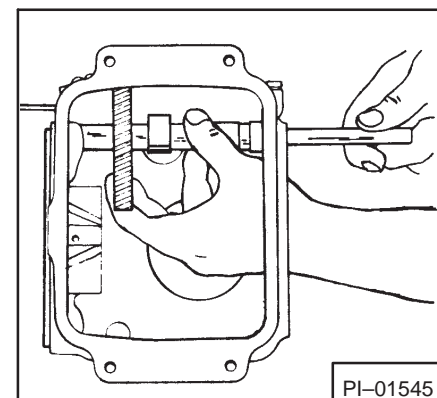


Fig. 49 Installing Camshaft

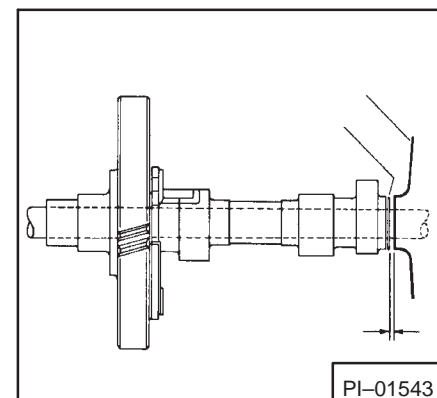


Fig. 50 Checking End Play

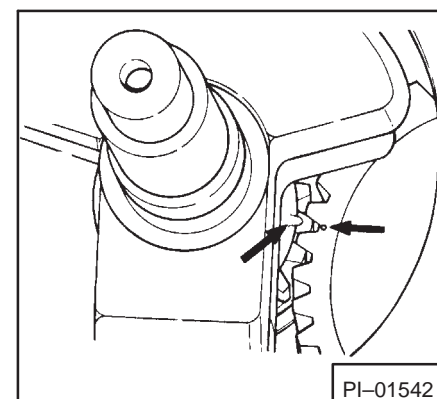


Fig. 51 Timing Marks

Test No. 2 (Fig. 72)

Generator Stator Test

Remove connector at rectifier/regulator. Connect voltmeter to stator wires. Connect all other wires. Also test the stator for circuit to ground. Stop the engine for this test. Use the ohmmeter scale on the tester. The ohmmeter should read infinity.

Use tester with AC voltage scale.

Disconnect the AC wire from the rectifier/regulator. Connect an AC voltmeter to the AC terminal and the AC wire. Run the engine at full throttle with no load. Check the voltage.

1. 28 volts or more—the stator is correct. The rectifier/regulator has a defect. Replace the rectifier/regulator.
2. Less than 28 volts—the stator has a defect. Replace the stator.

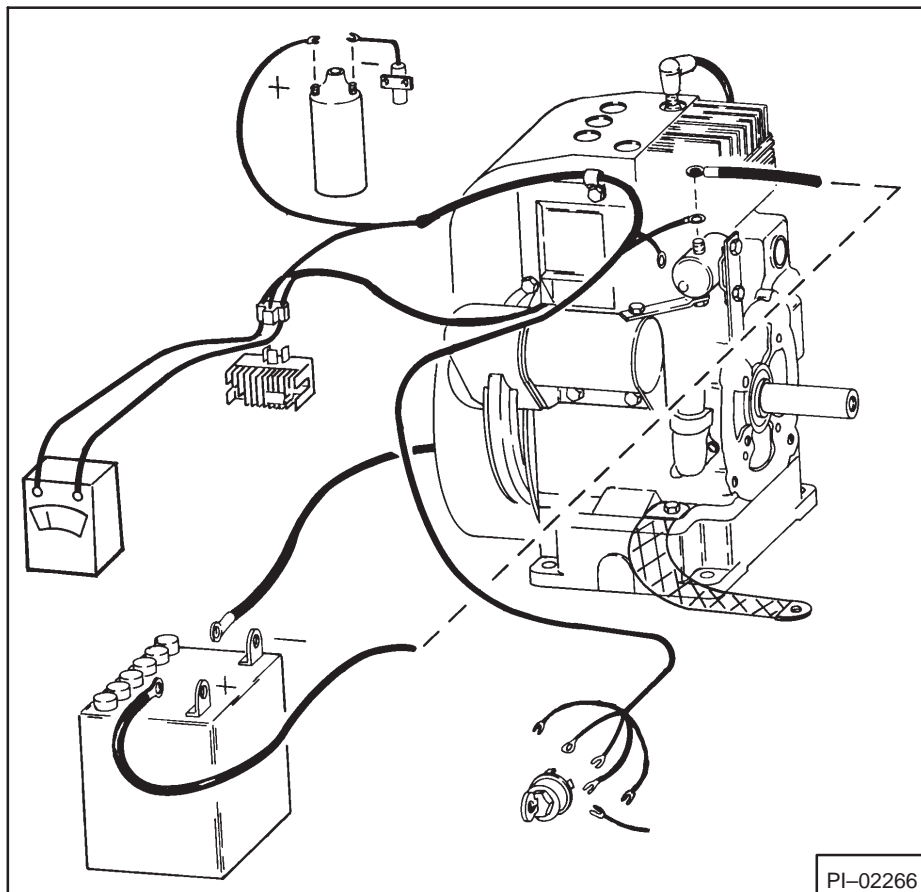


Fig. 72 Test No. 2

Test No. 3 (Fig. 73)

Overcharge Test

Connect all wires and cables as in normal operation. Connect the red wire from a DC voltmeter to the common terminal of the starter solenoid. Connect the black wire from the voltmeter to the engine. Run the engine at full throttle with no load. Check the voltage.

1. Less than 14.7 volts—the alternator is correct. The battery has a defect and will not hold charge. Test the specific gravity of the battery. Replace the battery if necessary.
2. 14.7 volts or more—the rectifier/regulator has a defect. Replace the rectifier/regulator.

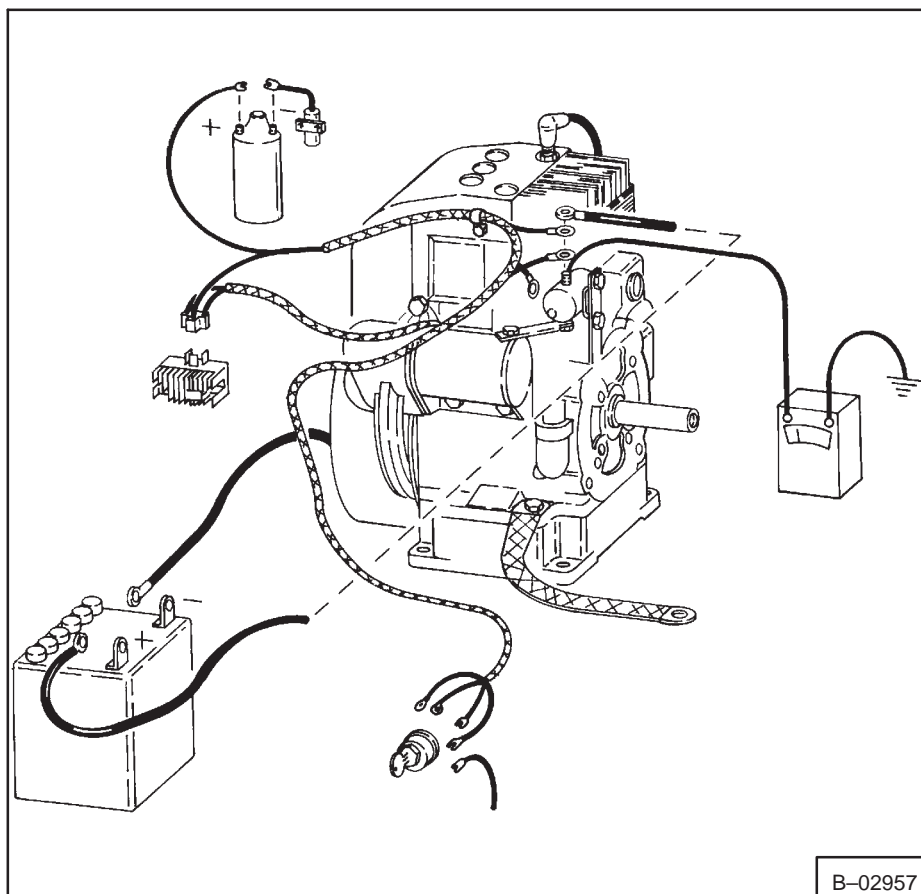


Fig. 73 Test No. 3

TRACTION DRIVE SYSTEM OVERHAUL

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**DRIVE
SYSTEM**

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