

MITSUBISHI

ENGINE SERVICE

Model	Bore	Stroke	Displacement
T110	30 mm (1.18 in.)	30 mm (1.18 in.)	21.2 cc (1.29 cu. in.)
TMX-21	30 mm (1.18 in.)	30 mm (1.18 in.)	21.2 cc (1.29 cu. in.)
T140	32 mm (1.26 in.)	30 mm (1.18 in.)	24.1 cc (1.47 cu. in.)
TM-24	32 mm (1.26 in.)	30 mm (1.18 in.)	24.1 cc (1.47 cu. in.)
T180	36 mm (1.42 in.)	32 mm (1.26 in.)	32.5 cc (1.98 cu. in.)
T200	39 mm (1.54 in.)	34 mm (1.34 in.)	40.6 cc (2.48 cu. in.)

ENGINE INFORMATION

Mitsubishi two-stroke, air-cooled gasoline engines are used by several manufacturers of string trimmers, brush cutters and blowers.

MAINTENANCE

LUBRICATION. Engine lubrication is obtained by mixing gasoline with an oil designed for two-stroke, air-cooled engines. Refer to equipment service section for manufacturer's recommended fuel:oil mixture ratio.

SPARK PLUG. Recommended spark plug is a NGK BM6A or equivalent. Specified electrode gap for all models is 0.6 mm (0.024 in.).

CARBURETOR. Various types of carburetors have been used. Refer to the appropriate following section for carburetor service.

Walbro WY and WYJ. Some engines may be equipped with a Walbro WY or WYJ carburetor. This is a diaphragm-type carburetor that uses a barrel-type throttle rather than a throttle plate.

Idle fuel for the carburetor flows up into the throttle barrel where it is fed into the air stream. On some models, the idle fuel flow can be adjusted by turning an idle mixture limiter plate (P—Fig. MI51). Initial setting is in center notch. Rotating the plate clockwise will lean the idle mixture. Inside the limiter plate is an idle mixture needle (N—Fig. MI52) that is preset at the factory. If removed, use the following procedure to determine correct position. Back out needle (N) until unscrewed. Screw in needle 5

turns on Model WY or 15 turns on Model WYJ. Rotate idle mixture plate (P—Fig. MI51) to center notch. Run engine until normal operating temperature is attained. Adjust idle speed screw (I) so trimmer head or blade does not rotate. Rotate idle mixture needle (N—Fig. MI52) and obtain highest rpm (turning needle clockwise leans the mixture), then turn needle 1/4 turn counterclockwise. Readjust idle speed screw. Note that idle mixture plate and needle are available only as an assembly with throttle barrel.

The high-speed mixture is controlled by a removable fixed jet (16—Fig. MI53).

To overhaul carburetor, refer to exploded view in Fig. MI53 and note the following: On models with a plastic body, clean only with solvents approved for use with plastic. Do not disassemble throttle barrel assembly. Examine fuel inlet valve and seat. Inlet valve (9) is renewable, but fuel pump body (11) must be renewed if seat is excessively worn or damaged. Clean fuel screen (18). Inspect diaphragms for tears and other damage. When installing plates and gaskets (12 through 15) note that tabs (T) on ends will "stairstep" when correctly installed. Adjust metering lever height to obtain 1.5 mm (0.059 in.) between carburetor body surface and lever as shown in Fig. MI54.

Throttle Slide-Type Carburetor. Some models are equipped with the diaphragm carburetor shown in Fig. MI55. A throttle slide (11—Fig. MI56) is used in place of a throttle plate.

Initial adjustment of high-speed mixture screw (4—Fig. MI55) is 2 1/2 turns out from a lightly seated position. Final adjustment is performed with trimmer line fully extended or blade assembly in-

stalled. Engine should be at operating temperature and running. Operate trimmer at full throttle and adjust high-speed mixture screw to obtain maximum engine output with smooth acceleration. Turning mixture screw counterclockwise enriches mixture.

Normal position of jet needle clip (6—Fig. MI56) is in the center groove on jet needle (7). When installing metering diaphragm lever, adjust metering lever height to obtain 0.5 mm (0.020 in.) be-

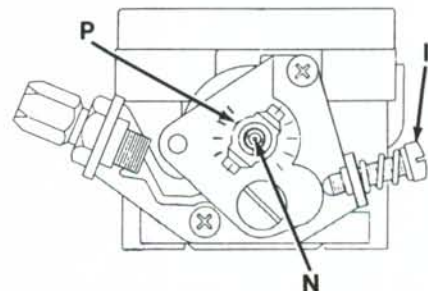


Fig. MI51—On Walbro WY or WYJ carburetor, idle speed screw is located at (I), idle mixture limiter plate is located at (P) and idle mixture needle is located at (N). A plug covers the idle mixture needle.

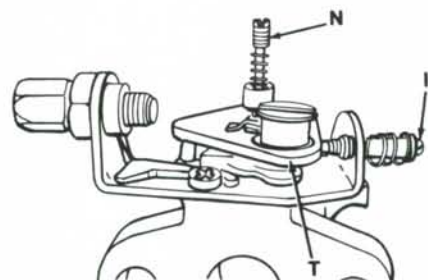


Fig. MI52—View of idle mixture needle (N) used on Walbro WY and WYJ carburetors.

tween carburetor body surface and lever as shown in Fig. MI54.

IGNITION SYSTEM. Models T110, T140, T180, TMX-21, TM-24 and later Model T200 are equipped with an electronic ignition system. Early Model T200 is equipped with a breaker-point-type ignition system.

Ignition system performance is considered satisfactory if a spark will jump across a 3 mm (1/8 in.) electrode gap on a test spark plug. If no spark is produced, check on/off switch, wiring and ignition module air gap. Air gap on models with an ignition module should be 0.3-0.4 mm (0.012-0.016 in.). If switch, wiring and module air gap are satisfactory, but spark is not present, renew ignition module.

Breaker points and condenser on early Model T200 are located behind flywheel. Breaker point gap should be 0.28-0.38 mm (0.011-0.015 in.). Air gap between ignition coil and flywheel should be 0.41-0.50 mm (0.016-0.020 in.). Points should be adjusted so points begin to open as match mark on flywheel aligns with "M" or "P" mark cast on crankcase.

REPAIRS

CYLINDER, PISTON, PIN AND RINGS. The piston is accessible after

removing cylinder. Remove piston pin retainers and use a suitable puller to extract pin from piston.

The piston is equipped with two piston rings. Ring rotation is prevented by a locating pin in each piston ring groove. Piston is available in standard size only.

Standard piston ring end gap is 0.1-0.3 mm (0.004-0.012 in.) for all models. If ring end gap exceeds 0.7 mm (0.028 in.), renew rings and/or cylinder.

CRANKSHAFT, CONNECTING ROD AND CRANKCASE. See Fig. MI57 for an exploded view of the T200 engine. Crankshaft, connecting rod and rod bearing are a unit assembly; individual components are not available. The crankshaft is supported by ball bearings at both ends. A renewable needle bearing is located in the small end of the connecting rod.

To remove crankshaft, separate the engine from trimmer drive shaft or blower housing. Remove all cooling shrouds and rewind starter assembly. Remove muffler and carburetor. Remove ignition module or coil. Remove flywheel and clutch (if used) from crankshaft. Remove all cylinder retaining bolts, then carefully separate cylinder from crankcase. Cylinder should be pulled straight off piston with no twisting motion. Remove all crankcase retaining bolts, separate crankcase halves

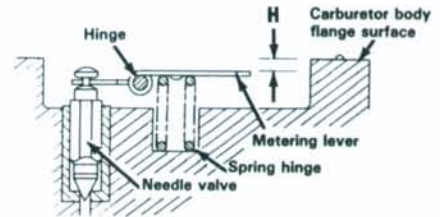


Fig. MI54—Metering lever height (H) must be set on diaphragm-type carburetors. Refer to text for specified height.

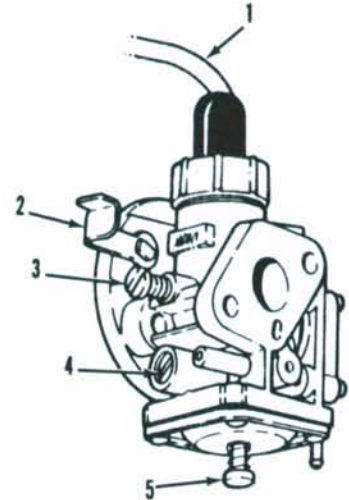


Fig. MI55—View of slide-valve-type diaphragm carburetor used on some models.

- 1. Throttle cable
- 2. Choke lever
- 3. Idle speed screw
- 4. High-speed mixture screw
- 5. Primer button

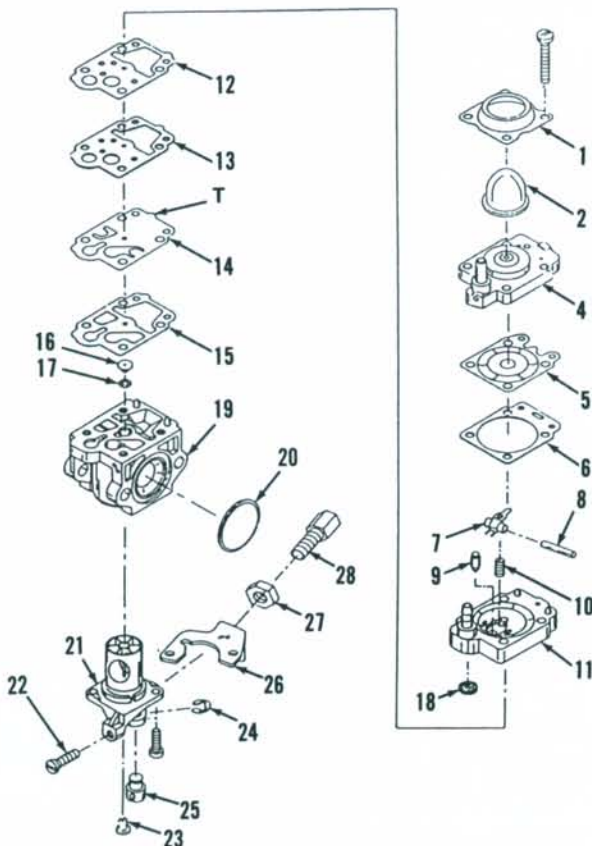


Fig. MI53—Exploded view of Walbro WYJ. Model WY is similar.

- 1. Cover
- 2. Primer bulb
- 4. Plate
- 5. Metering diaphragm
- 6. Gasket
- 7. Metering lever
- 8. Pin
- 9. Fuel inlet valve
- 10. Spring
- 11. Fuel pump body
- 12. Gasket
- 13. Fuel pump plate
- 14. Fuel pump diaphragm
- 15. Gasket
- 16. Main jet
- 17. "O" ring
- 18. Fuel screen
- 19. Body
- 20. "O" ring
- 21. Throttle barrel assy.
- 22. Idle speed screw
- 23. Plug
- 24. "E" ring
- 25. Swivel
- 26. Bracket
- 27. Nut
- 28. Adjuster

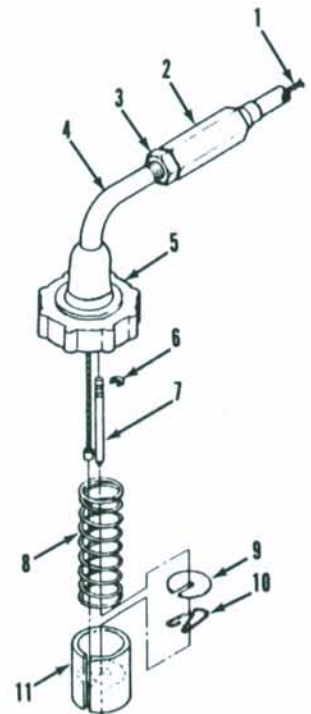


Fig. MI56—Exploded view of throttle slide assembly.

- 1. Inner throttle cable
- 2. Cable adjusting nut
- 3. Jam nut
- 4. Housing
- 5. Cap
- 6. Clip
- 7. Jet needle
- 8. Spring
- 9. Spring seat
- 10. Spring seat retainer
- 11. Throttle slide

and remove crankshaft. Heat crankcase if necessary to aid removal of main bearings.

Side clearance at rod big end should be 0.16-0.35 mm (0.006-0.014 in.) for all models. Standard crankshaft main bearing journal diameter is 12 mm (0.472 in.) for Models T110, T140, T180, TMX-21 and TM-24 and 15 mm (0.591 in.) for Model T200. If diameter is 0.05 mm (0.002 in.) less than standard diameter, renew crankshaft.

CLUTCH. Refer to Fig. MI58 for an exploded view of centrifugal clutch used

on most models. All models are equipped with two clutch shoes and one clutch spring. The clutch drum is connected to the drive shaft. On some models the drive shaft is threaded into the clutch drum.

Clutch shoes are available only as a set. Install clutch shoes so side marked "M" is visible.

Refer to Figs. MI59 and MI60 for exploded view of typical clutch drum assemblies. Reach through slot in clutch drum to detach snap ring (4—Fig. MI59 or 8—Fig. MI60) and remove drum and

bearing from housing. Inside diameter of clutch drum is 54-56 mm (2.13-2.20 in.) for Models T110, T140, TMX-21 and TM-24, and 76-78 mm (2.99-3.07 in.) for Models T180 and T200.

REWIND STARTER. Refer to Figs. MI61 or MI62 for an exploded view of starter. To disassemble starter, detach starter housing from engine. Remove rope handle and allow rope to wind into starter. Unscrew center screw and remove rope pulley. Wear appropriate safety eyewear and gloves before

Fig. MI57—Exploded view of T200 engine. Other models are similar. Snap ring (10) is not used on all models. Points and condenser (7) are used on early models.

1. Air cleaner Assy.
2. Carburetor
3. Clutch Assy.
4. Ignition coil
5. Nut
6. Flywheel
7. Points & condenser
8. Crankcase
9. Seal
10. Snap ring
11. Bearing
12. Key
13. Retainer
14. Cylinder
15. Gasket
16. Piston rings
17. Piston
18. Piston pin
19. Bearing
20. Crankshaft Assy.
21. Gasket
22. Bearing
23. Shim
24. Crankcase
25. Seal
26. Pulley
27. Nut
28. Housing
29. Screw
30. Friction plate
31. Pawl
32. Brake spring
33. Pulley
34. Rewind spring

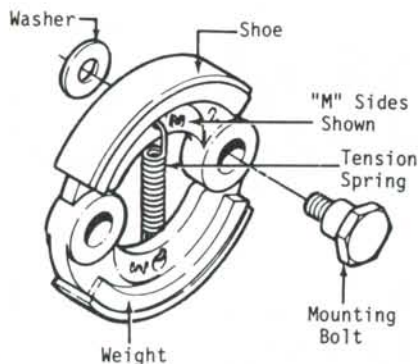
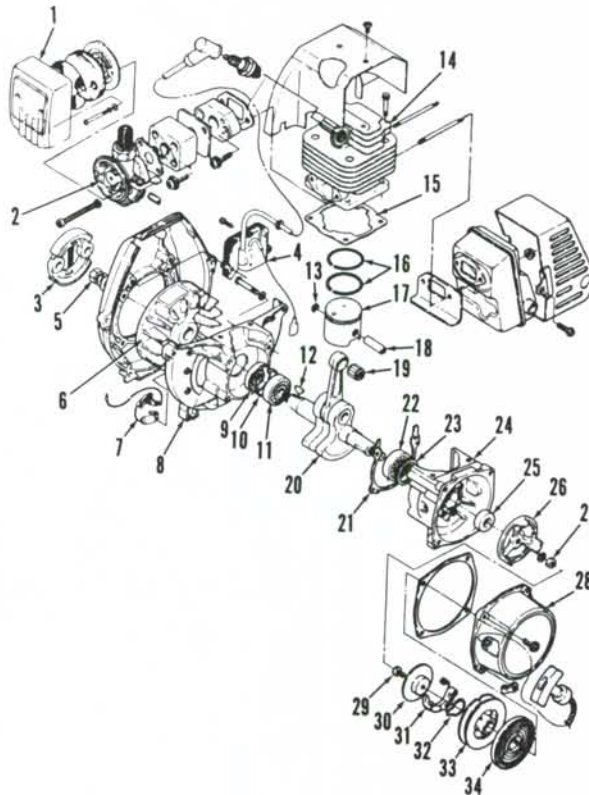


Fig. MI58—Exploded view of clutch shoe assembly used on some models.

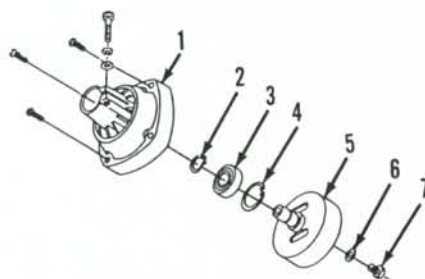


Fig. MI59—Exploded view of clutch drum assembly used on some models.

1. Housing
2. Snap ring
3. Bearing
4. Snap ring
5. Clutch drum
6. Washer
7. Screw

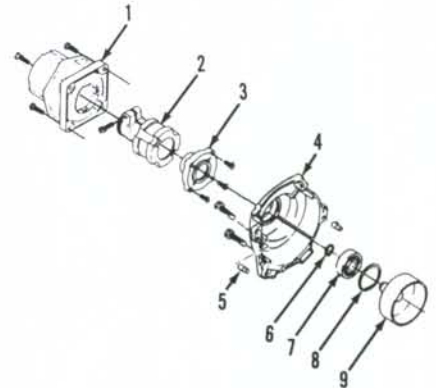


Fig. MI60—Exploded view of clutch drum assembly used on some models.

1. Housing
2. Vibration isolator
3. Support
4. Housing
5. Dowel pin
6. Snap ring
7. Bearing
8. Snap ring
9. Clutch drum

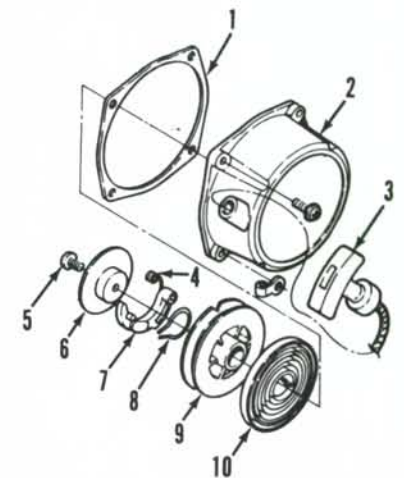


Fig. MI61—Exploded view of rewind starter used on some models.

1. Gasket
2. Housing
3. Rope handle
4. Spring
5. Screw
6. Friction plate
7. Pawl
8. Brake spring
9. Pulley
10. Rewind spring

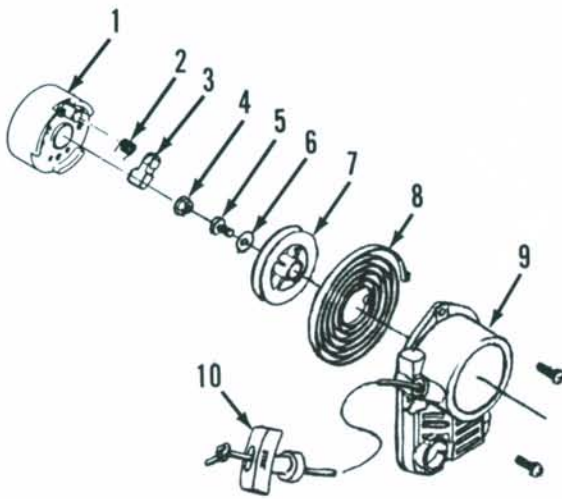


Fig. M162—Exploded view of rewind starter used on some models.

1. Flywheel
2. Spring
3. Pawl
4. Nut
5. Screw
6. Washer
7. Pulley
8. Rewind spring
9. Housing
10. Rope handle

detaching rewind spring from housing as spring may uncoil uncontrolled.

To assemble starter, lubricate center post of housing and spring side with light grease. Install rewind spring so coil windings are counterclockwise from outer end. Assemble starter while passing rope through housing rope outlet and attach rope handle to rope. To place tension on starter rope, pull rope out of housing. Engage rope in notch on pulley and turn pulley counterclockwise. Hold pulley and disengage rope from pulley notch. Release pulley and allow rope to wind on pulley. Check starter operation. Rope handle should be held against housing by spring tension, but it must be possible to rotate pulley at least $\frac{1}{4}$ turn counterclockwise when rope is pulled out fully.

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