McCULLOCH

Model	Bore	Stroke	Displ.	Drive Type
PM1000	2.36 in. (60 mm)	1.42 in. (36 mm)	6.1 cu. in. (100 cc)	Direct

NOTE: This McCulloch model is equipped with metric fasteners.

MAINTENANCE

SPARK PLUG. Recommended spark plug is Bosch WS5F. Spark plug electrode gap should be 0.020 in. (0.5 mm).

CARBURETOR. A Tillotson HS diaphragm type carburetor is used. Refer to Tillotson section of CARBURETOR SERVICE section for service and exploded view of carburetor.

Initial adjustment of both low and high speed mixture screws is one turn open from a lightly seated position. Make final adjustment with engine warm and running. Adjust idle speed screw so engine idles just below clutch engagement speed. Adjust low speed mixture screw so engine will accelerate cleanly without hesitation. Adjust high speed mixture screw to obtain optimum performance under cutting load.

IGNITION. A breakerless capacitor discharge ignition system is used. Ignition timing is not adjustable. Air gap between ignition coil legs (2–Fig. MC9-1) and flywheel should be 0.014-0.018 inch (0.35-0.45 mm).

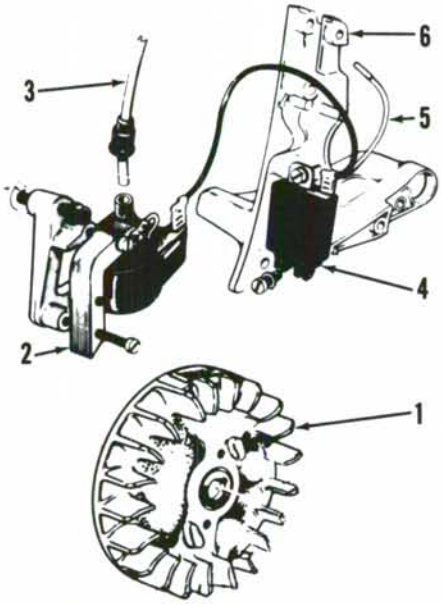


Fig. MC9-1—Illustrated view of ignition components.

1. Flywheel
2. Ignition coil
3. High tension wire
4. Ignition module
5. Ground lead
6. Right rear handle support

LUBRICATION. Engine is lubricated by mixing engine oil with gasoline. Recommended oil is McCulloch two-stroke oil mixed at ratio as designated on oil container. If McCulloch oil is not available, a good quality oil designed for two-stroke air-cooled engines may be used when mixed at a 25:1 ratio. Use a separate container when mixing the oil and gas.

An adjustable automatic chain oil pump is used. Adjustment screw is located on bottom of saw. Rotating screw clockwise decreases oil output. Refer to OIL PUMP section. Chain oil should be clean SAE 30 oil if ambient temperature is above 40°F (4°C) or SAE 10 at lower temperatures.

CARBON. If a noticeable lack of power or a decrease in the exhaust noise level is evident it is possible that the muffler and exhaust ports need cleaning. Use a wood scraper when cleaning exhaust ports to avoid damage to cylinder or piston.

REPAIRS

PISTON, PIN, RINGS AND CYLINDER. The piston is accessible after removing the cylinder assembly. The aluminum alloy piston is fitted with two pinned rings. Reject piston pin and piston if there is any visible up and down play of pin in the piston bosses. Piston and pin are not available separately. Piston pin rides in needle roller bearing in small end of connecting rod. Inspect and renew bearing if excessive wear or damage is evident. Install piston so arrow on piston crown points toward exhaust port.

Cylinder bore is chrome plated and no piston or piston ring oversizes are available. Maximum allowable ring end gap is 0.031 inch (0.8 mm). Renew rings or cylinder as required when service limit is exceeded. Make certain ring end gap is around locating pins when installing cylinder.

CONNECTING ROD, CRANKSHAFT AND CRANKCASE. The connecting rod and crankshaft are available only as a unit assembly. Crankshaft is supported by ball bearings at both ends.

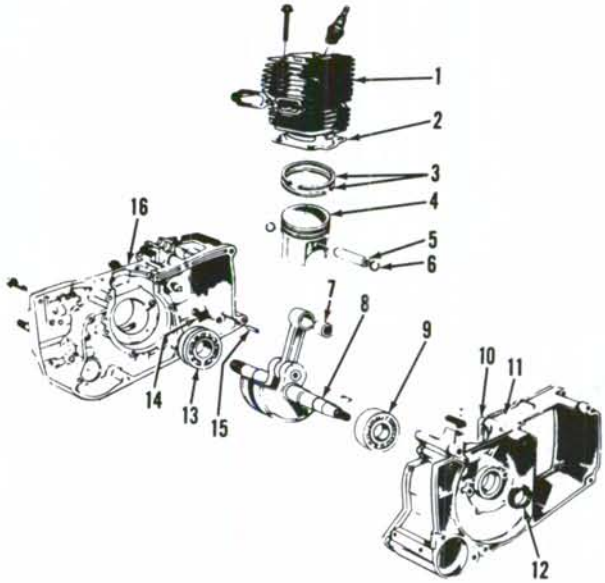


Fig. MC9-2—Exploded view of engine. Right crankshaft seal is shown in Fig. MC9-4.

1. Cylinder
2. Gasket
3. Piston rings
4. Piston
5. Piston pin
6. Pin retainer
7. Needle bearing
8. Crankshaft & rod assy.
9. Main bearing
10. Gasket
11. Left crankcase half
12. Seal
13. Main bearing
14. Bearing retainer
15. Guide pin
16. Right crankcase half

Illustrations courtesy McCulloch Corp.

Clutch side main bearing is located by retainer (14 – Fig. MC9-2) while flywheel side main bearing is located by a shoulder in crankcase. Care should be taken not to damage mating surfaces of crankcase halves. Check rotation of connecting rod around crankpin and renew crankshaft unit if roughness or other damage is found.

When reassembling, be sure flywheel side main bearing is flush against its seat in left crankcase half and that retainer (14) engages groove in clutch side main bearing. Heat may be applied to crankcase bearing bores to ease reassembly. Make certain crankshaft is centered in crankcase and will rotate freely. Clutch side crankshaft seal should be installed flush with crankcase face. Flywheel side crankshaft seal should protrude 0.04 inch (1 mm) from crankcase face when installed.

CLUTCH. To remove clutch, detach clutch guard, bar and chain. The flywheel may be locked by inserting a suitable tool through hole in left crankcase half and into drilling in flywheel. Clutch hub (1 – Fig. MC9-3) has left-hand threads. Inspect clutch shoes and drum for excessive wear or damage due to overheating. Inspect clutch drum, bearing and crankshaft for damage. Tighten clutch hub to 29 ft.-lbs. (40 N·m) torque.

OIL PUMP. A manual and an automatic oil pump is used. The manual oil pump (8 – Fig. MC9-4) is attached to the right crankcase half behind the guide bar mounting studs. The manual pump may be removed for cleaning or renewal of components after removal of guide bar, chain and two retaining screws.

The automatic chain oil pump is located in right crankcase half and is driven by gear (13) on crankshaft. Oil pump operation is accomplished when plunger (7 – Fig. MC9-5) is rotated by gear (13) and reciprocates as the oblique end of plunger bears against adjuster ball (10) thereby pumping oil. Oil output is changed by turning adjuster (10).

Automatic oil pump may be withdrawn from crankcase for repair or renewal of individual components after removing retainer (1). Drive gear (13) may be pulled off crankshaft after removing clutch assembly (12 – Fig. MC9-4), seal (10) and spacer (9). Drive gear must be heated before installation on crankshaft to prevent crankshaft displacement.

REWIND STARTER. Rewind starter is shown in Fig. MC9-6. To disassemble starter, remove rope handle and allow rope to wind around rope pulley. Disengage pulley retaining clip (8) and carefully remove rope pulley. Rewind spring is now accessible and may be removed.

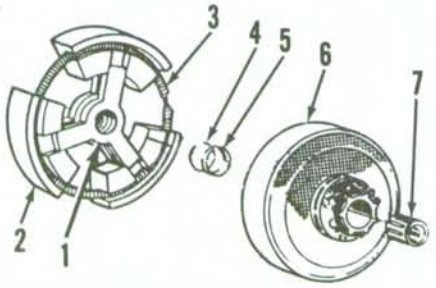


Fig. MC9-3 – Exploded view of clutch assembly.

1. Clutch hub
2. Clutch shoes
3. Garter spring
4. Clip
5. Sleeve
6. Drum
7. Needle bearing

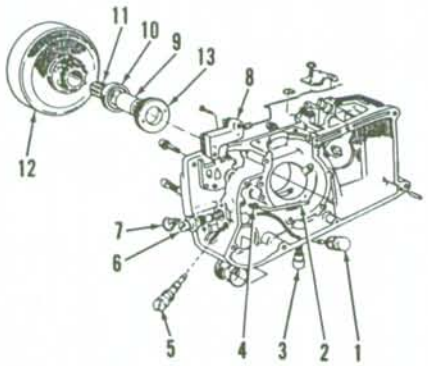


Fig. MC9-4 – View of right crankcase half showing location of automatic and manual oil pumps and related components. Refer to Fig. MC9-5 for exploded view of automatic oil pump.

1. Oil filter
2. Vent tube
3. Grommet
4. Oil pump adjuster
5. Oil pickup fitting
6. Automatic oil pump
7. Pump retainer
8. Manual oil pump
9. Spacer
10. Crankshaft seal
11. Needle bearing
12. Clutch assy.
13. Pump drive gear

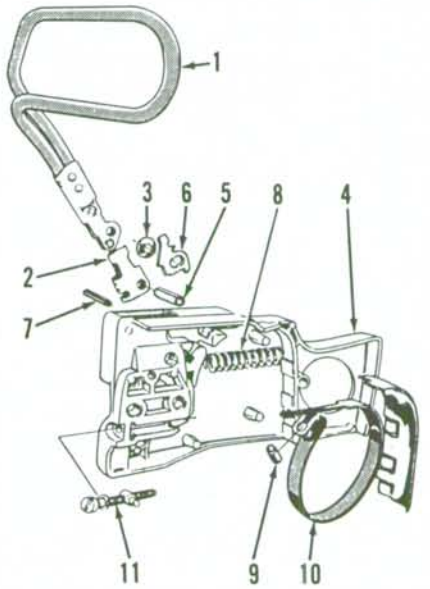


Fig. MC9-7 – Exploded view of chain brake assembly.

1. Chain brake lever
2. Sleeve
3. Washer
4. Housing
5. Pin
6. Trigger
7. Pin
8. Spring
9. Pin
10. Brake band
11. Chain tensioner

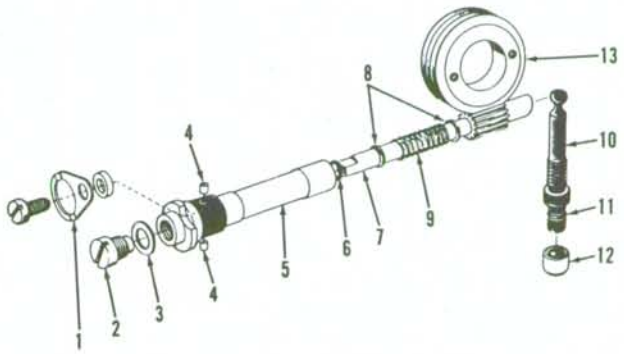


Fig. MC9-5 – Exploded view of automatic oil pump.

1. Pump retainer
2. Plug
3. Washer
4. Orifice
5. Pump housing
6. "O" ring
7. Plunger
8. "O" ring
9. Spring
10. Adjuster
11. "O" ring
12. Cap
13. Drive gear

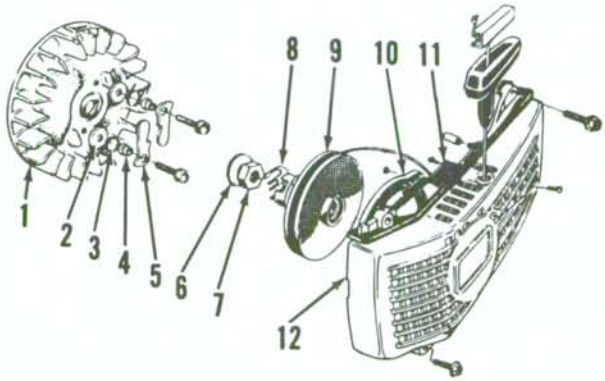


Fig. MC9-6 – Exploded view of starter.

1. Flywheel
2. Washer
3. Spring
4. Bushing
5. Pawl
6. Washer
7. Nut
8. Clip
9. Rope pulley
10. Rewind spring
11. Shield
12. Starter housing

Illustrations courtesy McCulloch Corp.

Install rewind spring in a clockwise direction viewed with spring installed in housing. Rope must be wrapped around rope pulley in a clockwise direction viewed with rope pulley in housing. Tension should be placed on starter rope by rotating rope pulley two turns clockwise.

CHAIN BRAKE. A chain brake system designed to stop chain movement should kickback occur is used. Refer to Fig. MC9-7 for an exploded view of chain brake. Chain brake is activated when the operator's hand strikes the chain brake lever thereby allowing trigger (6) to release spring (8). Spring then draws brake band tight around clutch drum to stop chain. Pull back chain brake lever to reset mechanism. No adjustment of brake mechanism is required.

Disassembly for repair or renewal of individual components is evident after inspection of unit and referral to the appropriate exploded view. It is recommended that a clutch drum be inserted in brake band and brake engaged, to facilitate removal of brake lever. When reassembling, make certain spring (8) is screwed completely on brake band and roll pins (5 and 7) are installed with split side towards front of saw.

Illustrations courtesy McCulloch Corp.

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