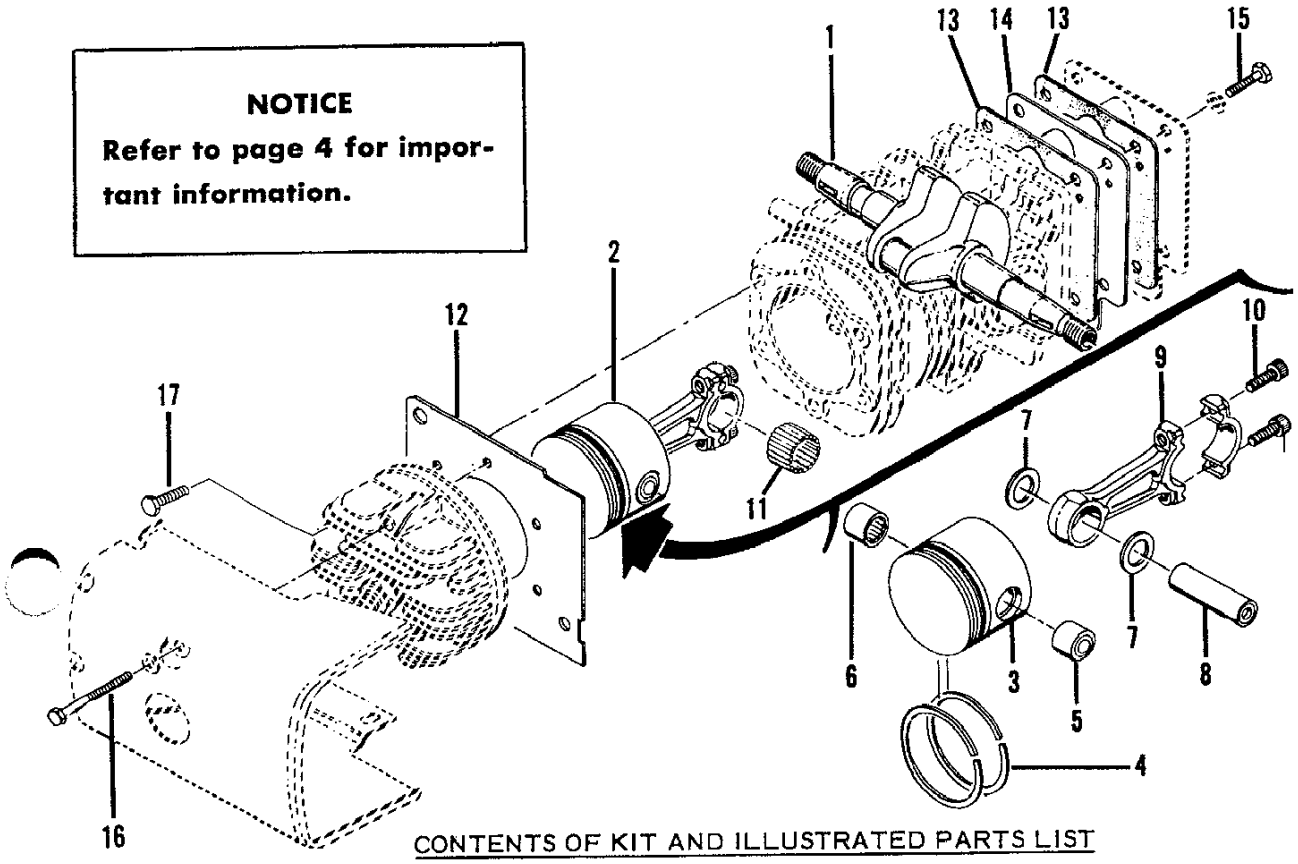
McCULLOCH

MC-10 POWER KIT

Installation of a power kit on an MC-10 engine increases both torque and horsepower output through an increase of engine displacement (5.3 cubic inches to 5.79 cubic inches). This is done by using a revised connecting rod and a crankshaft with a greater throw (1.5 to 1.635 inches). The longer stroke brings the piston higher in the cylinder making it necessary to use a thicker head gasket to prevent the piston from striking the cylinder head. A spacer installed between the crankcase and crankcase bottom provides necessary clearance to prevent the connecting rod from striking the crankcase bottom.

NOTICE

Refer to page 4 for important information.



CONTENTS OF KIT AND ILLUSTRATED PARTS LIST

ITEM	PART NO.	NOMENCLATURE	QUANTITY
	48749	Power Kit – MC-10	1
1.	*48696	. Crankshaft	1
2.	*No number	. Piston and Rod Assembly	1
3.	48832	. . Piston Assembly	1
4.	48691	. . . Ring Set – Piston	1
5.	104378	. . . Needle Bearing – Piston Pin (closed end)	1
6.	101206	. . . Needle Bearing	1
7.	51209	. . Washer – Thrust	2
8.	57198	. . Piston Pin	1
9.	48753	. . Rod Assembly – Connecting	1
10.	101356	. . . Screw – Socket hd 10-32 x 5/8 in. lg.	2
11.	*102742	. . . Roller – Needle	24
12.	*48698	. Gasket – Cylinder head	1
13.	*50141B	. Gasket – Bottom	2
14.	*48678	. Spacer – Crankcase bottom	1
15.	*102121	. Screw – Heat treated 1/4-20 x 7/8 in. lg.	4
16.	*103356	. Screw – Heat treated 10-24 x 2-1/8 in. lg.	1
17.	*48828	. Screw – Socket head 10-24 x 1-3/8 in. lg.	5

* Indicates items and assemblies that come in your MC-10 power kit. The other part numbers are listed for your convenience when ordering repair parts. Oversize pistons and rings are available.

INSTALLATION INSTRUCTIONS

1. Remove the fan housing, cylinder shroud and drive sprocket.

2. Remove the cylinder head and crankcase bottom.

3. Remove rod cap and rollers.

4. Remove the piston and rod assembly from cylinder. Examine the cylinder bore for scoring, scuff marks or excessive wear caused by dirt or lack of lubrication. Check the cylinder for taper or out of round and if either exceeds 0.005 inch, the cylinder will have to be honed to the next oversize and oversize piston and rings used. These are available from your McCulloch Dealer.

5. Insert a 1/4-inch cap screw in the timing hole (crankcase end cover) and lock the flywheel. Remove the flywheel retaining nut and, using a puller, remove the flywheel. Remove Woodruff key, dirt shield and felt washer.

6. Remove breaker box cover, points, condenser and the breaker point push rod.

7. Remove the crankcase end cover attaching screws. Two attaching screw holes in the crankcase end cover, located 180 degrees apart, are oversize and tapped 1/4-20. A puller, with 1/4-20 bolts bottomed in these holes, is used to remove the crankcase end cover from the crankcase, and at the same time pull the crankcase end cover from the crankshaft bearing.

8. Press the crankshaft out of the crankcase and remove crankshaft bearings.

9. The crankshaft bearings should turn freely and smoothly. Dirt or wear will cause binding of the bearings and affect engine operation. Bearings that are worn should be replaced.

10. Press the bearings on the new crankshaft (item 1 in the list of kit parts) until they seat against the shoulders on each side of the flyweights.

11. Use a heat lamp or a heat oven to heat the crankcase end cover to 180-200 degrees F.

CAUTION

Don't try to install the crankshaft without pre-heating the crankcase end cover; never use an open flame to heat the crankcase end cover. Either method will damage the cover.

12. When the crankcase end cover has reached the proper temperature, put a seal protector over the end of the crankshaft and press the crankshaft and bearings in place.

13. Pre-heat the crankcase from 180 to 200 degrees F. Using a new gasket, install the crankcase end cover and the crankshaft in the crankcase.

14. Use new lockplates (P/N 51297) and tighten the crankcase end cover attaching screws to a torque value of 60 to 65 inch-pounds (5 to 5-1/2 foot-pounds). Use a punch, screw driver and hammer to bend the ends of the lockplates up and against the crankcase end cover attaching screw heads. This will lock them in place so they can not come loose and cause damage to the engine (see figure 2).

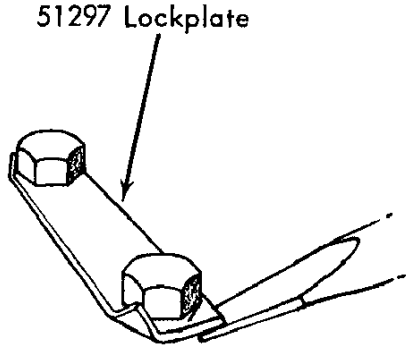


FIGURE 2

NOTE

Before installing the piston assembly in the cylinder, check the ring gap for a minimum of 0.007 inch.

15. Before installing the needle rollers in the rod, coat the bearing surface with a non fiber grease (water pump lube or even vaseline) to hold the the bearings in place during rod installation. Install 12 rollers in the rod and 12 in the cap. Fit the cap to the rod so the identifying pips on the connecting rod and cap match and tighten the cap screws to a snug fit. Rotate the crankshaft several times to align the cap to the rod.

CAUTION

Make sure that all 24 needle rollers are in place and in alignment in the connecting rod. A loose roller in the crankcase can ruin the engine.

Tighten the cap screws to a torque value of 65 to 70 inch-pounds (5-1/2 to 6 foot-pounds).

16. Coat both sides of each bottom gasket (item 13) with Pliobond (or a similar sealer). If this is not done, crankcase leakage may develop due to increased crankcase compression.

17. Using the 1/4-20 x 7/8-inch long screws (item 15), install the crankcase bottom spacer (item 14) with one bottom gasket (item 13) between the crankcase and the spacer and the second bottom gasket between the spacer and the crankcase bottom. Tighten the screws to a torque value of 90 to 100 inch-pounds (7-1/2 to 8 foot-pounds).

18. Install the cylinder head, using the 0.125-inch thick gasket (item 12). Tighten the head screws to a torque value of 55 to 60 inch-pounds [redacted] (4-1/2 to 5 foot-pounds).
The five 10-24 x 1-3/8 - inch screws (item 17) are installed with a washer under each screw head and the longest screw, 10-24 x 2-1/8 - inch, (item 16) also holds the cylinder head shroud in place.

CAUTION

The new crankshaft has a greater throw and will bring the piston higher in the cylinder. To give the piston clearance and to prevent it striking the head, the head gasket must have a minimum thickness of 0.125 - inch.

19. Replace the dirt shield, felt washer and the key on the crankshaft. Install the flywheel and tighten the flywheel attaching nut to a torque value of 400 to 500 inch-pounds (33 to 38 foot-pounds). while the flywheel is locked by a 1/4 - inch bolt inserted in the flywheel locking hole.

20. Measure the lamination. to. flywheel gap. The gap should be a minimum of 0.010 inch with a maximum gap of 0.012 inch.

21. Install the breaker pushrod, points and condenser. Use a degree wheel and a timing light to set the breaker point gap (see your Owner's Manual for the correct method).

22. Install the breaker box cover, cylinder shroud, fan housing and drive sprocket.

IMPORTANT

A. Before reassembling new piston or rings, the cylinder wall should be lightly honed or rubbed down with a fine emery cloth. This cuts the glaze on the wall and aids in seating of the rings. If this step is overlooked, the rings possibly will not seat and loss of power will result.

B. (Reference Step #4) Cylinder bore, factory standard: 2.126/2.125. Oversize should be computed in even steps, 0.010, 0.020, or 0.030-inch. Thus, a cylinder that is honed 0.020-inch over should measure 2.146/2.145-inch. (Oversize piston assemblies: 0.010, #48833; 0.020 #48834; 0.030, #48835.)

C. For best engine service life, make certain that the engine mount is flat and sturdy. A warped mount can cause crankcase failure.