



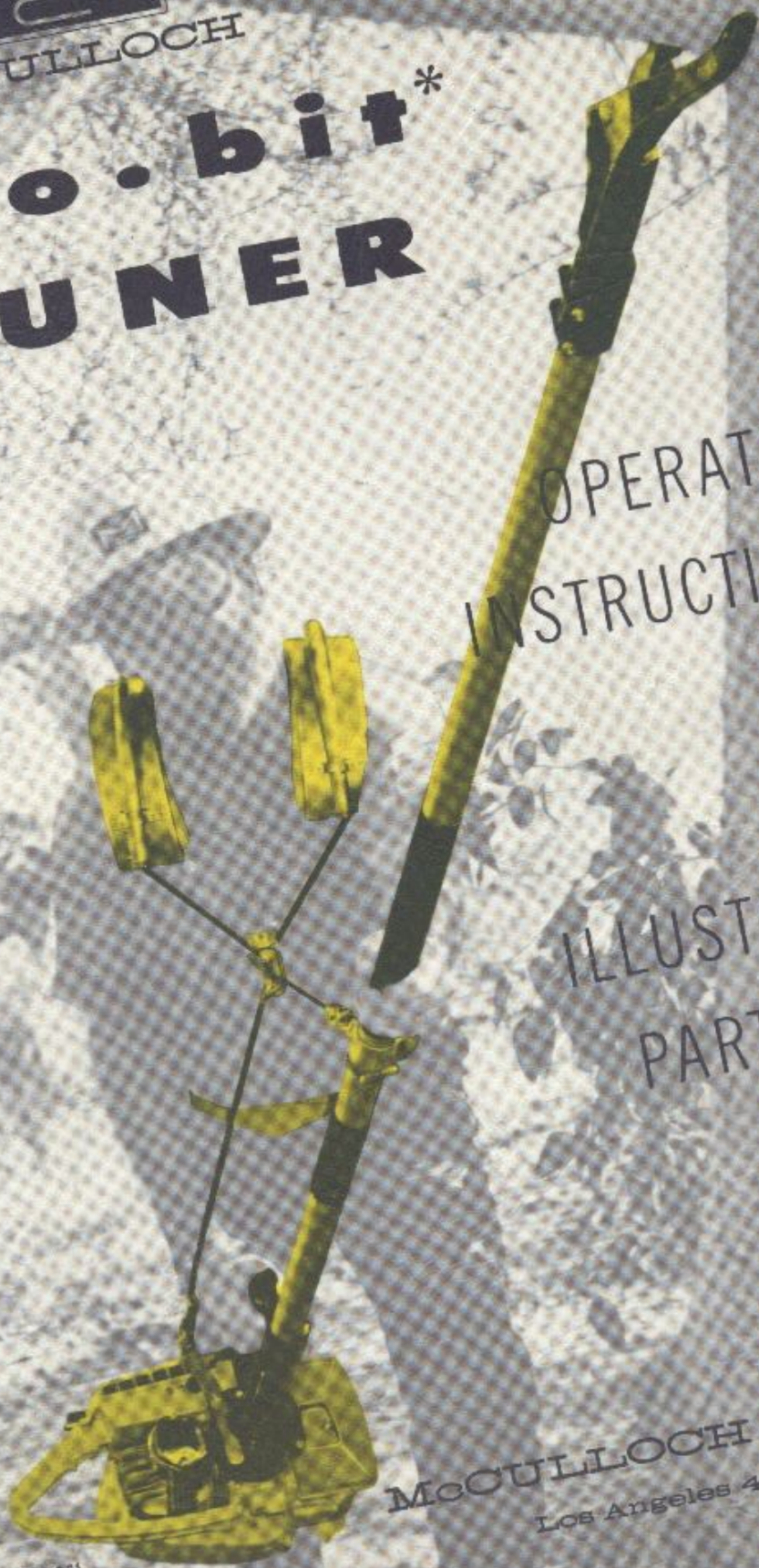
McCULLOCH

# roto-bit<sup>\*</sup> PRUNER

OPERATING  
INSTRUCTIONS

and

ILLUSTRATED  
PARTS LIST



McCULLOCH CORPORATION  
Los Angeles 45, California

No. 57392

FEBRUARY 1961

\*TRADEMARK



# McCULLOCH



## ROTO-BIT PRUNER

THE McCULLOCH ROTO-BIT PRUNER is a new cutting attachment designed for fast, safe tree pruning. The ROTO-BIT Pruner comes in two sizes: six and twelve feet long. The six-foot Pruner is used primarily for low-limb work. (See Figure 1.) It can precision prune limbs up to four inches in diameter and up to ten feet above the ground. The twelve-foot Pruner is used for high-limb work and can remove four-inch limbs up to sixteen feet above the ground.



Figure 1. Six Foot Pruner

The instructions in this book cover installation and operation of both six-foot and twelve-foot ROTO-BIT Pruner Attachments. The differences between the two Pruner Attachments are in the lengths of the drive shafts and extension tubes and the addition of a body protector pad for the twelve-foot Pruner.

Installation of the Pruner can be made on series 1-40 and 1-50 chain saw engines and series 1-40 power units. An Installation Kit is included with each Pruner and contains all the parts necessary for converting the engine to Pruner operation. An Illustrated Parts List of the Kit parts is shown on page 11. Carefully read all of the installation instructions before assembling the unit on your engine.

### SHARPENER ACCESSORY

To provide correct sharpening for the ROTO-BIT, a Pruner Sharpener Assembly, P/N 57570, is required. (See figure 2.) Improper sharpening will reduce the efficiency of your Pruner and could, in some cases, damage the ROTO-BIT beyond repair. Correct sharpening instructions for the sharpener assembly are given in the sharpener Kit.

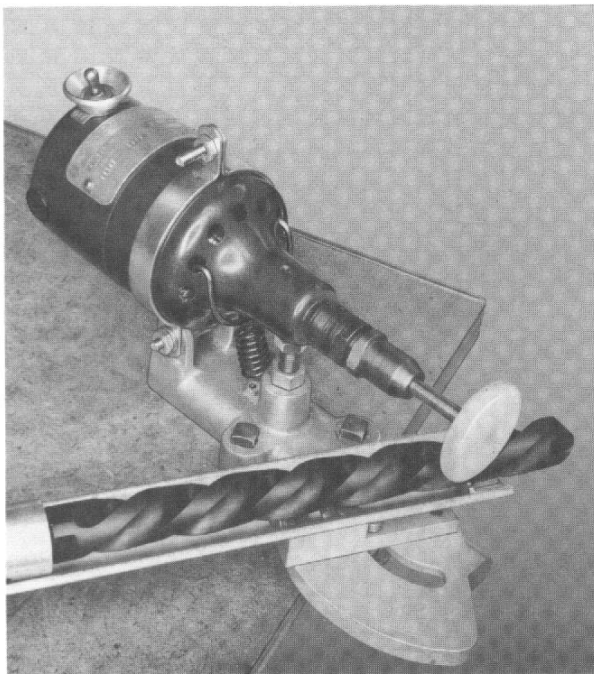


Figure 2. Pruner Sharpener Assembly

### PRUNER INSTALLATION INSTRUCTIONS

The instructions below include the removal of unnecessary chain saw parts prior to installing the Pruner Attachment. If you are installing the Pruner on a series 1-40 power unit, disregard any chain saw instructions which do not apply to your engine.

1. Remove the fuel cap, air cleaner cover, air cleaner screen, clutch guard, blade adjusting screw, and the muffler from the engine.
2. Install the new vented Fuel Cap Assembly and the Special Muffler. Make sure the Muffler discharges toward the handle brace on the engine.
3. Lock the flywheel by inserting a pin or screw through the hole in the exposed side of the crankcase cover and through the timing hole in the flywheel rim (see Figures 3 and 4.)
4. Turn the clutch rotor nut clockwise to loosen the clutch assembly. Remove the clutch assembly, sprocket and clutch drum assembly, and the sprocket washer.
5. Clean all dirt away from the bar mounting surface of the bar mounting pad. Remove the fuel vent orifice assembly from the bar mounting pad and install the new Fuel Tank Vent Plug (P/N 57595). Mount the Cover Plate Gasket (P/N 57437) and Bolt Guard (P/N 57371) on the bar mounting studs and secure with two 3/8-24 hex nuts (P/N 103729) as shown in Figure 5. Do not overtighten

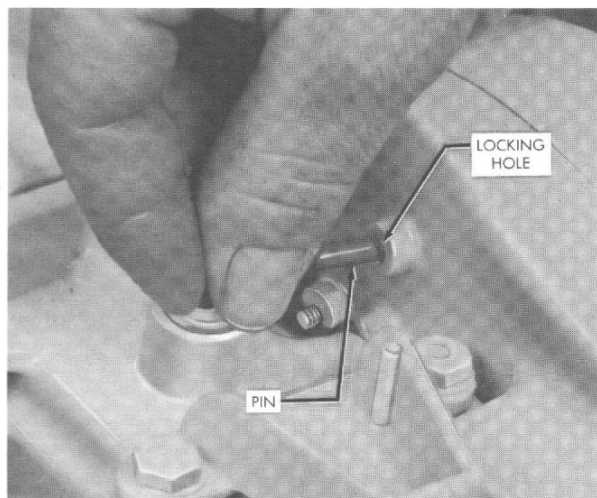


Figure 3. Locking Flywheel

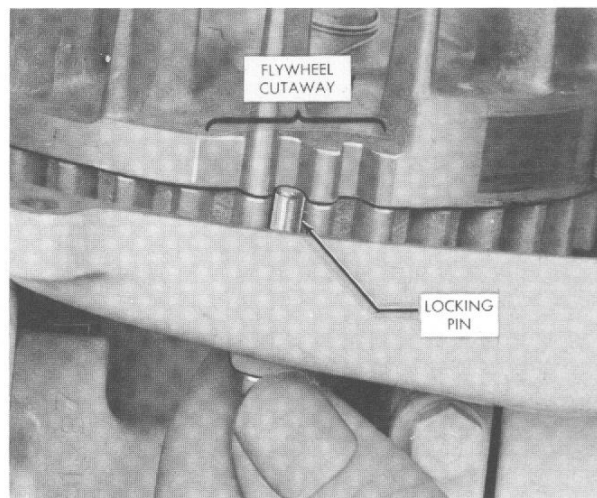


Figure 4. Locking Pin Cutout in Flywheel (Fan Housing Removed)

the hex nuts for too tight a pressure will cut the rubber Cover Plate Gasket apart.

#### NOTE

If you have a torque wrench, the Torque Value Chart on page 9 will give you the correct torque for all screws and nuts. If you do not use a torque wrench, make sure that all screws and nuts are tightened securely.

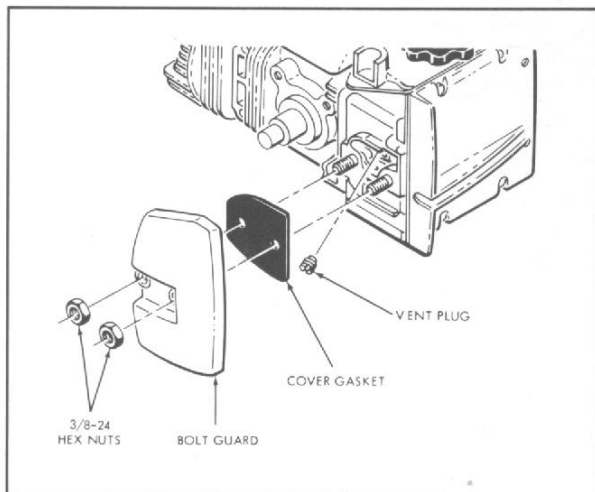


Figure 5. Installing New Fuel Tank Vent Plug

6. Install the Accessory Adapter (P/N 50256) on the crankcase with three 1/4-20 x 1-1/4-inch long screws (P/N 103258) and three 1/4-inch lockplates (P/N 36306). The tab on each lockplate fits into the round hole next to each screw hole in the Adapter. Bend up one edge of each lockplate to hold the screws in place (see Figure 6).

#### 7. Airbox Modification:

- a. Cut out the Airbox Template, P/N 50448A (included in the Installation

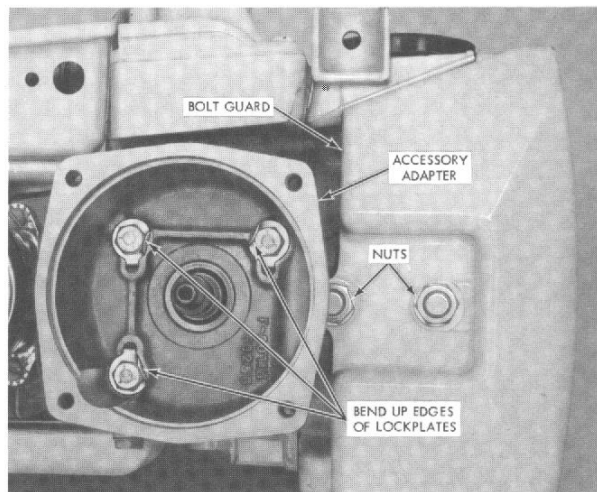


Figure 6. Installation of Adapter



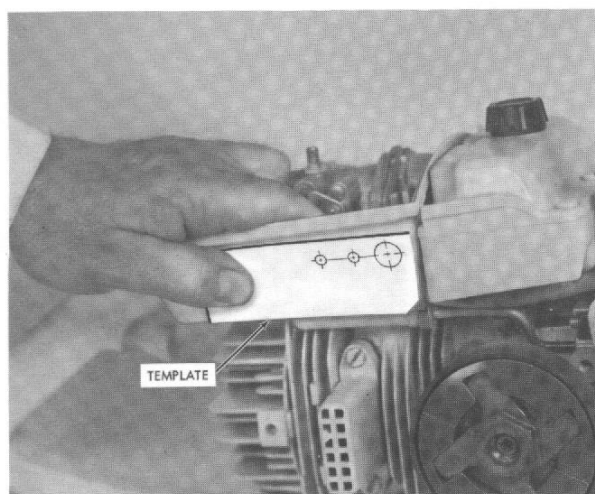


Figure 7. Airbox Modification

- Kit), and place it on the right side of the airbox as shown in Figure 7. Center-punch the three holes and remove the Template.
- b. Place a small block of wood between the right side of the airbox and the carburetor and a grease-coated cloth between the block of wood and the right side of the carburetor. The cloth will catch the metal drillings and the wood will protect the carburetor when the drill pushes through the airbox wall.
  - c. Drill the large hole with a 1/2-inch diameter drill and the two smaller holes with a No. 4 drill (0.209-inch diameter). After drilling, file off the sharp edges around the drilled holes and remove the cloth and block of wood.

8. Reinstall the clutch assembly (rotor, spring, and shoes) in the Accessory Adapter as shown in Figure 8. Tighten the rotor nut to 25 foot-pounds torque (240-300 inch-pounds). Remove the flywheel locking pin.

9. Mount the Pruner on the Accessory Adapter with four 1/4-20 x 7/8-inch long screws (P/N 100374) and four No. 4 lockwashers (P/N 100153). Before attaching the two screws on the muffler side of the Pruner, add the Harness Bracket (P/N 57221A). See Figure 9.

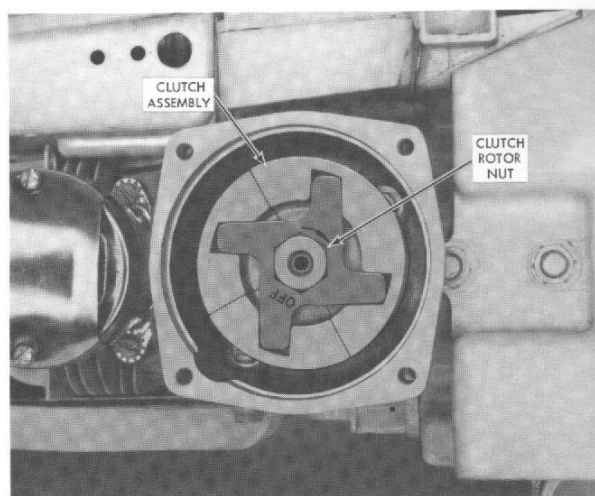


Figure 8. Installation of Clutch

10. Assemble the Bellcrank (P/N 57404) on the Bellcrank Bracket (P/N 57405) with the Cotter Pin (P/N 105573). Spread the ends of the cotter pin apart to hold the Bellcrank in place on the Bracket (see Figure 10).

11. Put the assembled Bellcrank and Bracket in the airbox and align the two Bracket holes with the two small holes drilled in the side of the airbox. Secure the Bracket to the airbox with two 10-24 x 3/8-inch long screws (P/N 100415) and two 10-24 hex nuts (P/N 101191).

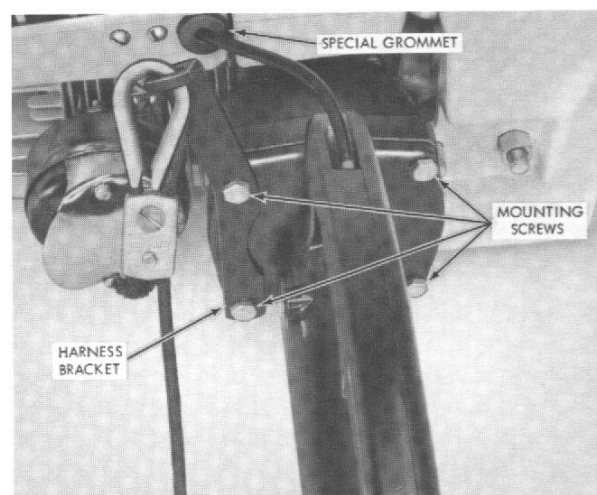


Figure 9. Installation of Pruner

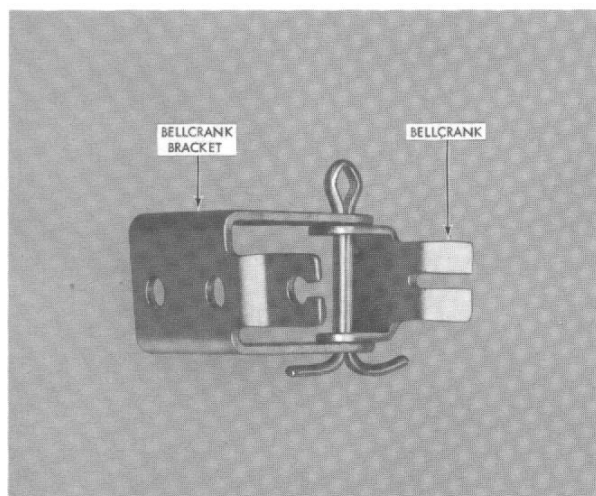


Figure 10. Assembling Bellcrank on Bracket

12. Feed the end of the Throttle Cable (leading from the Pruner handle) through the Special Grommet (P/N 57436). Insert the end of the Throttle Cable through the 1/2-inch hole in the airbox and hook the Cable between the two prongs on the Bellcrank. Slide the Special Grommet toward the end of the Cable and mount it in the 1/2-inch hole as shown in Figure 11.

13. Remove the carburetor throttle lever from the carburetor and install new Throttle Lever (P/N 51718). See Figure 12.

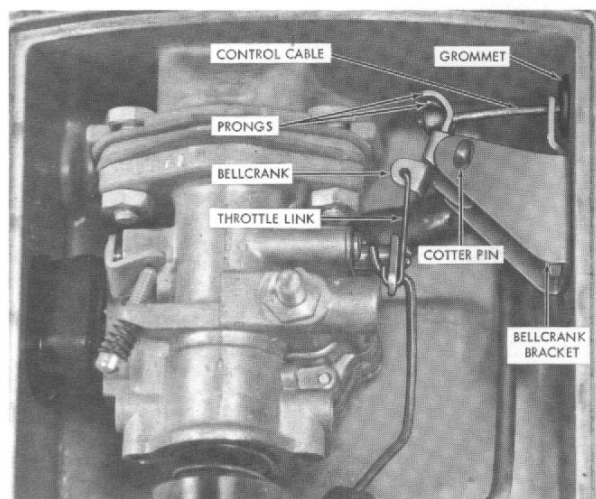


Figure 11. Bellcrank Assembly

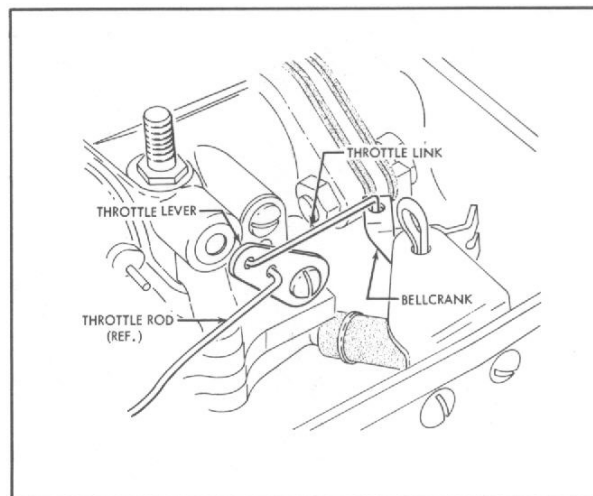


Figure 12. Installing Throttle Lever

#### NOTE

If Pruner installation is being made on a Model 1-40 Series Power Unit, disregard Instruction 13 because the new Throttle Lever has already been installed at the factory.

14. Install the "two-way bend" end of the Throttle Link (P/N 57403) into the hole in the top of the Bellcrank and install the "90° bend" end into the top hole on the Throttle Lever. Crimp the "90°" end with a pair of pliers to lock it securely on the Lever.

15. Reinstall the air cleaner screen and the air cleaner cover on the airbox.

16. 12-foot Pruner only:

- a. Remove the two starter cover screws from the starter assembly and two of the fuel tank cover screws from the fuel tank.
- b. Unsnap the Protector Pad from the Protector Body and mount the Body against the starter assembly, aligning the starter cover holes with the two holes in the Body. Install two new 10-24 x 1-1/4-inch long screws (P/N 104400). Align the two screw holes on the side of the Protector Body with the two fuel tank cover



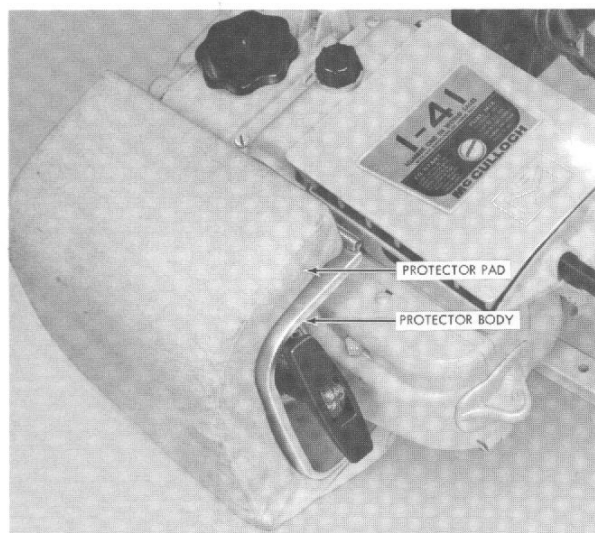


Figure 13. Protector Pad Assembly

screw holes and reinstall the two fuel tank cover screws.

- c. Re-fasten the Protector Pad on the Protector Body.

#### NOTE

Save all the chain saw parts removed from the engine as these parts will be required later for normal chain saw operation. An Airbox Hole Cover (to cover the three holes drilled in the airbox) P/N 50263A, is included in the Kit and can be quickly installed when chain saw operation is resumed.

#### LUBRICATION

The two ROTO-BIT Pruner lubrication points are shown in Figure 14. The cutter head is lubricated with #310 Lubriplate when shipped from the factory. However, the drive shaft is not pre-lubed. Before putting the Pruner into operation, remove the oil filler plug and add one and one-half ounces of 140 gear oil to the drive shaft assembly. After 300 hours of operation, disassemble the cutter

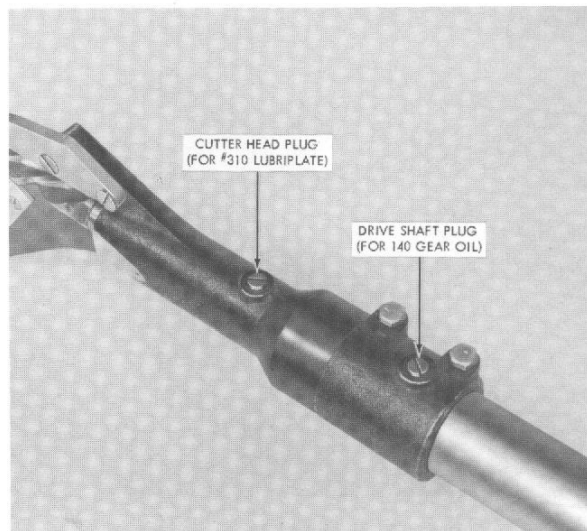


Figure 14. Pruner Lubrication

head and clean the interior. After reassembling the cutter head, put one and one-half ounces of #310 Lubriplate in the cutter head and one and one-half ounces of 140 gear oil into the drive shaft assembly. Clean and re-lubricate after each additional 300 hours of operation.

After every 50 hours of operation (or once each week if the Pruner is used daily), clean and re-lubricate the Handle end of the Extension Tube. Follow the instructions below:

1. Remove the ROTO-BIT from the shaft and the retaining pin, washer, and cotter pin from the Handle. See Figure 15.
2. Pull the Extension Tube out of the Handle and clean the Tube surface.
3. Apply a light coating of Lubriplate or a similar lubricant over the Tube surface. The lubricant prevents galling of the Tube and Handle surfaces.
4. Reinstall the Tube in the Handle and secure with the retaining pin, washer, and cotter pin. Make sure the retaining pin fits into the groove in the end of the Extension Tube. Reinstall the ROTO-BIT.

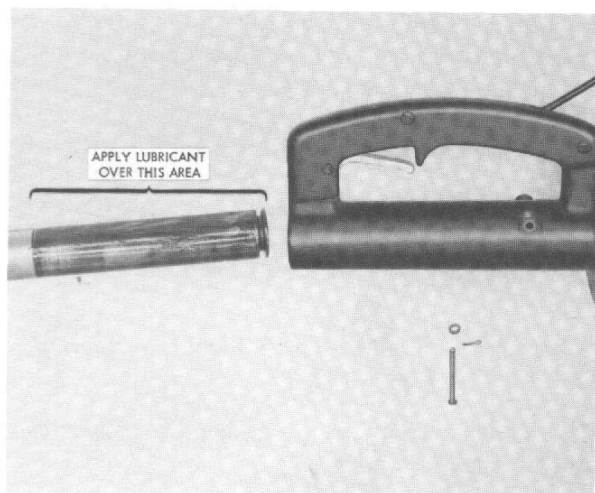


Figure 15. Lubing Extension Tube

### HARNESS ASSEMBLY

1. Remove one of the two cord-retaining screws from the aluminum tube on the Harness Assembly and pull out the harness

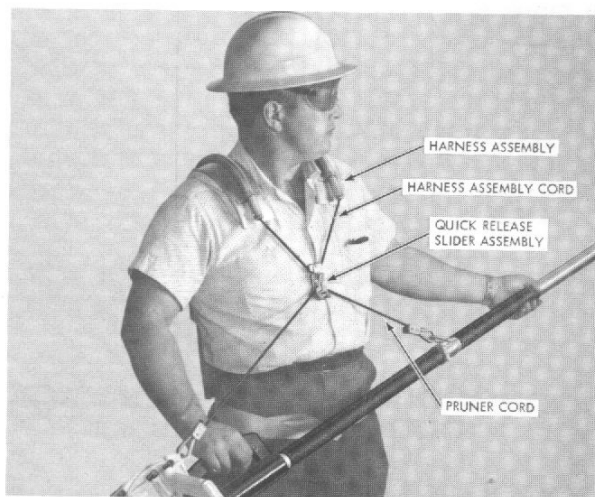


Figure 16. Wearing Harness Assembly

cord. Install the Slider Assembly (P/N 57307) on the cord and reinstall the cord in the aluminum tube. Reinstall the harness cord-retaining screw.

2. Wear the Harness Assembly in the same way as shown in Figure 16. Tighten the Harness belt until it feels comfortable.
3. Put the Pruner Cord in the Slider Body (P/N 57454).

### OPERATING INSTRUCTIONS

To start the engine, follow instructions given in the Owner's Manual which you received with your chain saw or power unit.

At engine idle speed, the ROTO-BIT will remain stationary. To start the ROTO-BIT spinning, squeeze the Throttle Lever on the Pruner Handle, opening the throttle. To stop the ROTO-BIT, release the Throttle Lever and the engine will return to idle speed.

### CUTTING INSTRUCTIONS

The ROTO-BIT Pruner uses two types of cuts to perform all pruning operations: An upward pruning cut and a downward pruning cut.

1. The upward pruning cut is made with the ROTO-BIT positioned under the limb (see Figure 17) with the polished face of the



Figure 17. Upward Pruning Cut





Figure 18. Downward Pruning Cut

Guide and Shim toward the trunk of the tree. An upward precision cut should only be made on the left side of the tree.

2. The downward pruning cut is made with the ROTO-BIT set above the limb on the right side of the tree. Make sure the polished face of the Guide and Shim are toward the trunk of the tree. See Figure 18. To eliminate any "hat racks" or "stubs" from being left after the pruning cut, apply side pressure toward the tree trunk and make a smooth "follow through".

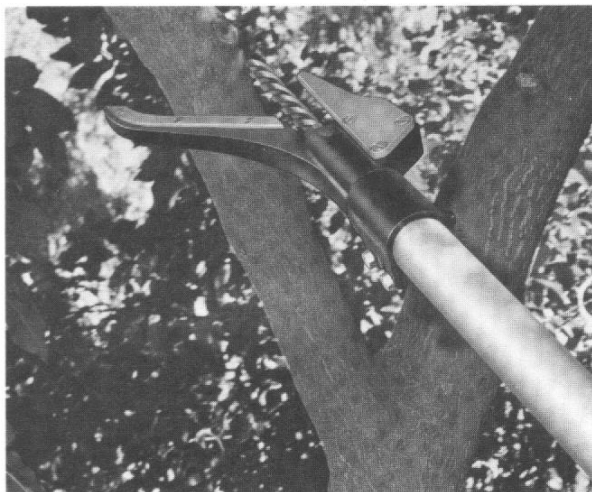


Figure 19. Downward Pre-Cut

3. Larger limbs on the left side of the trunk should always be "pre-cut" a foot or so away from the trunk using a downward cut (see Figure 19). This will relieve the crotch of the weight of the limb and prevent pinching of the ROTO-BIT by the falling limb. After the "pre-cut" has been made, make the precision cut (upward cut) with the ROTO-BIT beneath the limb and tight against the tree trunk.

#### **ALWAYS FOLLOW THESE RULES WHEN USING THE ROTO-BIT PRUNER:**

1. Wear safety goggles and a protective hat.
2. Make sure your footing is secure.
3. Place the Cutter Head against the limb to be removed with the polished surface of the Guide and Shim toward the trunk of the tree.
4. Accelerate the engine so the ROTO-BIT spins and then force the limb between the ROTO-BIT and Spine.
5. Take full advantage of the Harness Assembly. Don't just use your arms. Allow the Harness to support the full weight of the pruner. Use your arms for positioning the cutter head and when you make your cut, lean into the Harness to help feed the ROTO-BIT through the limb.
6. Should it be desirable to make a deeper or a more shallow cut in the tree when pruning, additional shims can be placed under the Shim on the Spine or the Shim on the Spine can be removed. Adding shims will make the cut more shallow; removing the Shim from the Spine will make the cut deeper. Additional shims can be made from cardboard or metal stock.

Do not cut too deeply into the tree. The Shim(s) should be adjusted so that the cut is made just to the cambium layer.

#### **A HIGH QUALITY CUT CAN ONLY BE MADE WITH A SHARP ROTO-BIT.**

When the ROTO-BIT becomes dull and does not cut through limbs quickly, remove it and sharpen.

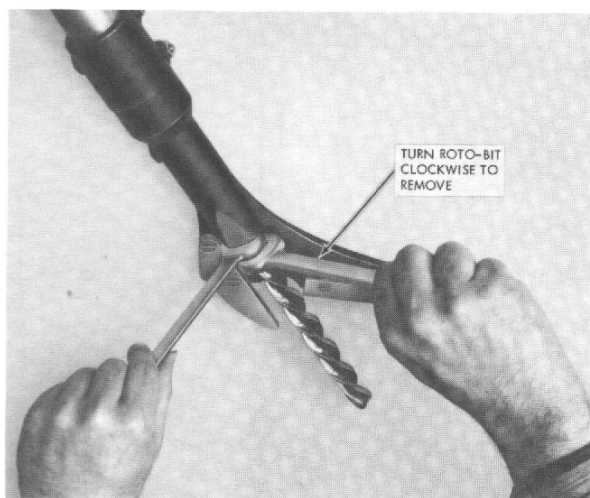


Figure 20. Removing the ROTO-BIT

## REMOVING AND REINSTALLING THE ROTO-BIT

Remove or install the ROTO-BIT with two 5/8-inch open-end wrenches (Figure 20). One wrench goes on the end of the shaft and the other on the ROTO-BIT.

### CAUTION

The ROTO-BIT has a left-hand thread and must be turned clockwise to remove it. When reinstalling the ROTO-BIT, turn it counter-clockwise and make sure it is tight.

## TORQUE VALUES

	inch-pounds	foot-pounds
Adapter mounting screws	40-50	3-1/2 - 4
Bolt guard nuts	65-75	5-1/2 - 6
Clutch rotor nut	300-350	25 - 29
Muffler mounting screws	20-25	approx 2
Protector assembly screws	35-40	3- 3-1/2
Pruner mounting screws	40-50	3-1/2 - 4



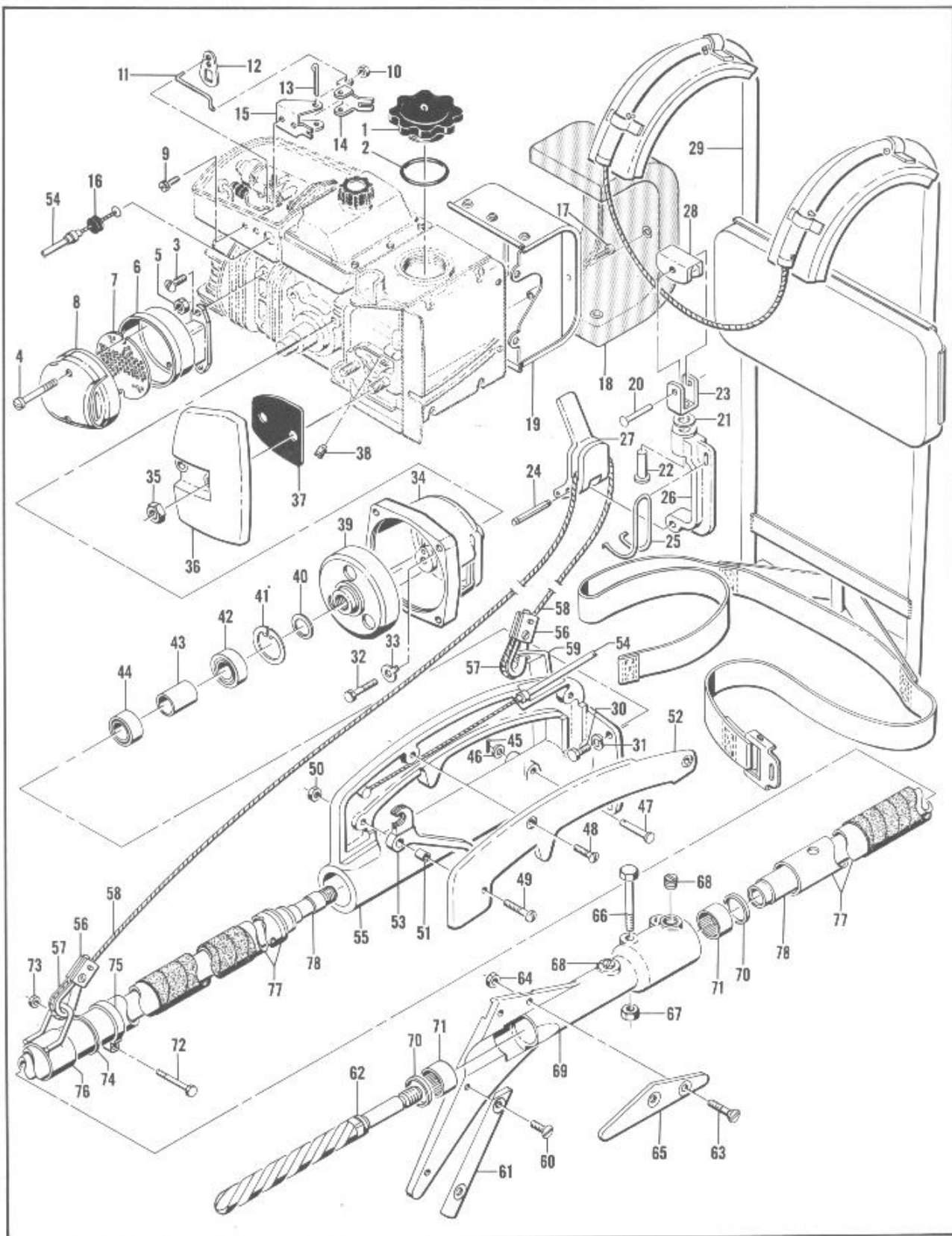


Figure 21. Exploded View - 6 and 12 Foot ROTO-BIT Pruner

Index No.	Part Number	Nomenclature	Units Per Assy
EXPLODED VIEW - 6 AND 12 FOOT ROTO-BIT PRUNER			
1	*55175A	Fuel Cap Assy .....	1
2	*101348	O Ring - Fuel cap .....	1
3	*102388	Screw - Hex hd 10-24 x 5/8 in. lg .....	2
	*50444A	Muffler Assy .....	1
4	*102135	. Screw - Fil hd 10-24 x 2 in. lg .....	2
5	*101191	. Nut - Hex 10-24 .....	2
6	*51975	. Bottom Assy - Muffler .....	1
7	*51968	. Baffle - Muffler .....	1
8	*50447A	. Top Assy - Muffler .....	1
9	*100415	Screw - Rd hd 10-24 x 3/8 in. lg .....	2
10	*101191	Nut - Hex 10-24 .....	2
11	*57403	Link - Throttle .....	1
12	*51718	Lever - Throttle .....	1
13	*105573	Pin - Cotter 1/8 x 1-1/4 in. lg .....	1
14	*57404	Bellcrank - Throttle .....	1
15	*57405	Bracket - Bellcrank .....	1
16	*57436	Grommet - Special .....	1
17	**104400	Screw - Pan hd 10-24 x 1-1/4 in. lg .....	2
	**57626	Protector Assy - Pruner (12 foot Pruner only) .....	1
18	**57623	. Pad - Protector .....	1
19	**57659	. Body Assy - Protector .....	1
	*57307	Slider Assy - Harness .....	1
20	*100699	. Rivet - Flat 3/16 x 3/4 in. lg .....	1
21	*101070	. Washer - Plain .....	1
22	*57453	. Rivet - Pruner .....	1
23	*57456	. Clip - Pruner .....	1
24	*104425	. Pin - Roll .....	1
25	*57320	. Spring - Latch .....	1
26	*57454	. Body - Slider .....	1
27	*57309	. Latch - Harness .....	1
28	*57308	. Slider - Harness .....	1
29	*57199	Harness Assy - Pruner .....	1
30	100374	Screw - Hex hd 1/4-20 x 7/8 in. lg .....	4
31	100153	Washer - Lock .....	4
32	*103258	Screw - Hex hd 1/4-20 x 1-1/4 in. lg .....	3
33	*36306	Plate - Lock .....	3
34	*50256	Adapter - Accessory .....	1
35	*103729	Nut - Hex 3/8-24 .....	2
36	*57371	Guard - Bolt .....	1
37	*57437	Gasket - Cover .....	1
38	*57595	Plug - Vent .....	1
39	50243B	Clutch Drum Assy .....	1
40	57708	Spacer - Clutch drum .....	1
41	103794	Ring - Snap .....	1
42	104422	Bearing - Ball .....	1
43	57351	Spacer - Drive shaft .....	1
44	103497	Bearing - Ball .....	1
45	101901	Pin - Cotter .....	1
46	100002	Washer - Plain .....	2
47	104537	Pin - Retaining .....	1
48	101386	Screw - Oval hd 10-24 x 5/8 in. lg .....	2
49	103360	Screw - Fil hd 10-24 x 1-1/8 in. lg .....	1
50	101191	Nut - Hex 10-24 .....	1
51	50986	Spacer - Handle .....	1
52	57538	Handle - Pruner .....	1
53	50985	Lever - Throttle pruner .....	1
54	57539	Cable Assy - Throttle pruner .....	1
55	57540	Housing - Pruner bearing .....	1
56	104429	Clamp .....	2

\*In 6-foot and 12-foot Pruner Installation Kits.

\*\*In 12-foot Pruner Installation Kit only.



Index No.	Part Number	Nomenclature	Units Per Assy
57	104428	Thimble .....	2
58	57355	Cord - Suspension .....	1
59	57221A	Bracket - Pruner harness .....	1
60	103816	Screw - Flat hd 10-24 x 1/2 in. lg .....	2
61	57589	Shim - Cutter head .....	1
62	57378	ROTO-BIT .....	1
63	102088	Screw - Flat hd 1/4-20 x 3/4 in. lg .....	2
64	103242	Nut - Hex 1/4-20 .....	2
65	57635	Guide - Cutter head .....	1
66	100660	Screw - Hex hd 1/4-20 x 2 in. lg .....	2
67	101143	Nut - Hex 1/4-20 .....	2
68	101003	Plug - Pipe .....	2
69	57627	Cutter Head Assy .....	1
70	104406	Seal - Oil .....	2
71	104405	Bearing - Needle .....	2
72	104426	Screw - Hex hd 10-24 x 1-1/2 in. lg .....	1
73	101191	Nut - Hex 10-24 .....	1
74	57354	Washer - Thrust .....	1
75	57107	Clamp - Swivel .....	1
76	57321	Swivel Assy - Harness .....	1
77	57524	Tube Assy - 12 foot extension .....	1
	57704	Tube Assy - 6 foot extension .....	1
78	57255	Shaft Assy - 12 foot drive .....	1
	57702	Shaft Assy - 6 foot drive .....	1
	*50448A	Template - Air box .....	1
	*50263A	Cover - Air box hole .....	1

\*In 6-foot and 12-foot Pruner Installation Kits.

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