



McCULLOCH

LIGHTWEIGHT

EARTH DRILL

**OPERATING
INSTRUCTIONS**

and

ILLUSTRATED PARTS LIST

NO. 61569A APRIL 1964

MANUFACTURER'S SUGGESTED
LIST PRICE - 50 CENTS

McCULLOCH CORPORATION Los Angeles, California

McCULLOCH



LIGHTWEIGHT EARTH DRILL ATTACHMENT

The McCulloch Lightweight Earth Drill Attachment is designed for use with McCulloch power units of the general size and design of 1-40 or 1-50 Series engines, having a forward mounted fuel tank, left side starter, and a separate airbox. Optional six or nine-inch augers are available for the Earth Drill Attachment. For maximum stability and control of drilling pressure, the unit should be operated by two men.

When the engine is idling, the clutch is disengaged and the auger will not turn. Speeding up the engine with the throttle engages the clutch and rotates the auger. The faster the engine runs, the faster the auger turns. When the throttle trigger is released, the engine slows down, the clutch disengages, and the auger stops. The engine can be inverted quickly on the auger extension to reverse rotation of the auger. (See page 6)

Six and nine-inch diameter augers are available from your McCulloch Dealer. Repair parts for the earth drill and the augers are shown in figure 14. The augers can be mounted close to the gear housing when drilling shallower holes or in an extended position for digging deeper ones.

INSTALLATION OF THE EARTH DRILL ATTACHMENT

The earth drill attachment may be installed only on engines with an offset or "flush-cut" frame, and a vented fuel cap as shown in Figure 1. A full wrap-around frame will interfere with the attachment gear housing and must be replaced before installation of the earth drill attachment. Some of the early model engines in the 1-40 and 1-50 Series will require change to the offset frame.

Mounting the Offset Frame (if required)

Remove the wrap-around frame and fasten the offset frame in its place using three 1-inch long screws, saddles, rubber insulators and nuts. The saddles fit inside the frame (see figure 1). Insert one of the screws through the large screw hole in the frame.

Put a saddle into the frame. Push the screw through the saddle and frame and place a rubber insulator over the threaded end of the

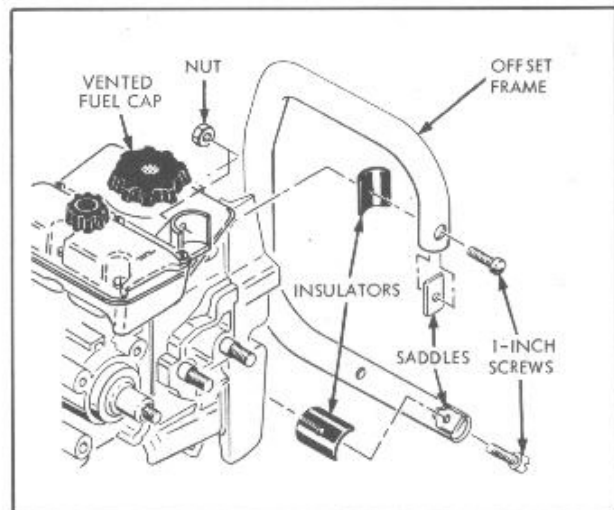


Figure 1. Installing Offset Frame

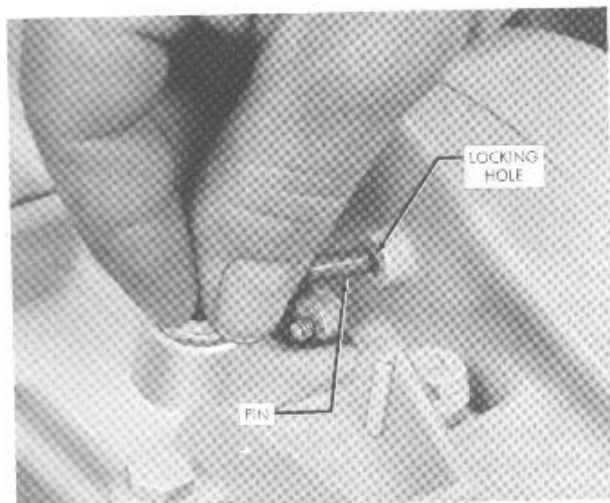


Figure 2. Locking Flywheel

screw. Place the frame in position on the engine. Push the screw through the screw hole in the engine and put a nut on the end of the screw. Do the same with the other two screws, saddles, insulators and nuts and tighten the screw securely.

NOTE

Table 1 on page 5 lists the correct torque values for tightening screws and nuts when making this installation. If you do not use a torque wrench, make sure that all screws and nuts are tightened securely.

Installing the Earth Drill Attachment

1. Remove the clutch guard by removing the nuts for the bar mounting bolts. Lock the flywheel by inserting a pin through the locking hole beneath the crankcase (figure 2). Turn the crankshaft until you can slide the pin into the locking recess on the flywheel. Figure 3 shows how the pin fits into the flywheel. Remove the clutch by turning the clutch rotor nut (clockwise), or the clutch retaining nut (counterclockwise). Remove the sprocket and drum assembly and the sprocket washer.

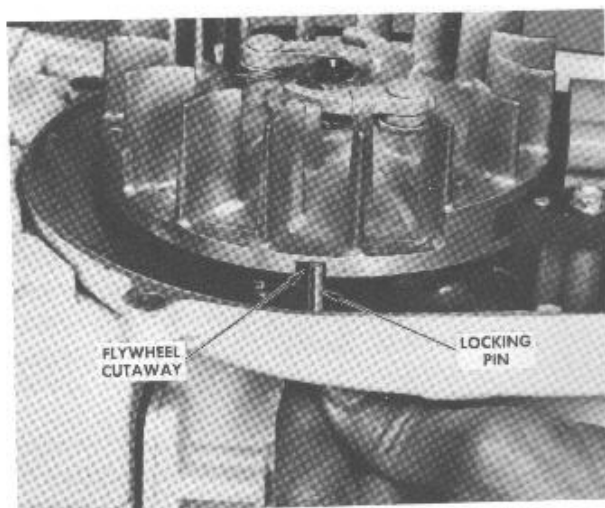


Figure 3. Locking Pin Cutout in Flywheel

2. Clean all dirt off the bar mounting surface of the bar mounting pad. Remove the fuel vent orifice assembly from the bar mounting pad and install the fuel tank vent plug in its place (figure 4). Put the cover plate gasket, cover plate and spacers from the kit on the bar mounting studs. Put the bar mounting nuts on the studs and tighten the nuts securely. Do not overtighten the nuts for you can cut the rubber cover plate gasket apart by putting too much pressure on it. Just make sure that the nuts are tight enough to prevent any leakage around the gasket. The gasket seals off the chain oiler passage.

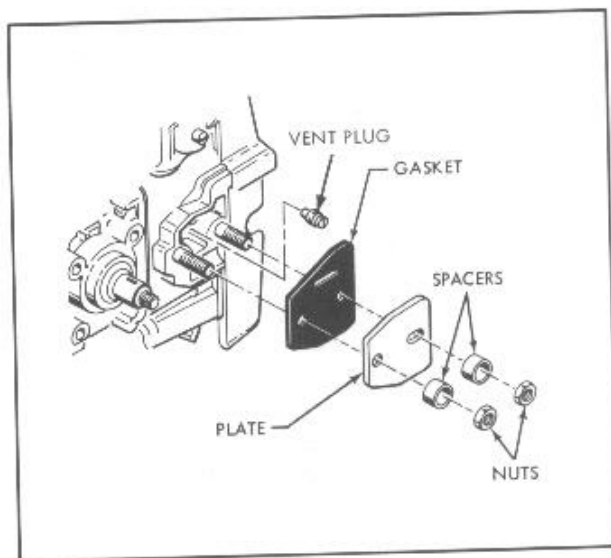


Figure 4. Install Cover Plate

3. Place the accessory adapter against the side of the crankcase with the three holes in the adapter lined up with the three screw holes in the side of the crankcase (figure 5).

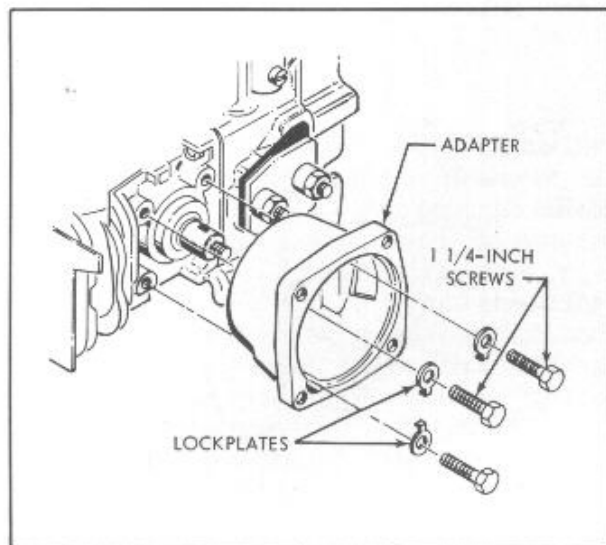


Figure 5. Install Accessory Adapter

Fasten the adapter to the crankcase with the three 1-1/4-inch long screws and three lockplates. The tab on each lockplate fits into the round hole next to each screw hole in the adapter. When the screws are tight, bend up one side of each lockplate with a screwdriver to hold the screws from turning.

4. Reinstall the clutch on the crankshaft. Turn the clutch rotor nut (counterclockwise), or the clutch retaining nut (clockwise), and make sure it is tight. Remove the pin from the crankshaft locking hole beneath the crankcase when the nut is tight.

5. Mount the gear housing on the adapter with the four 1-inch long screws (figure 6). Make sure the screws are tight.

6. Mount the handles in the channels on the cover, using the screws, nuts and washers fastening the channels to the cover (figure 6).

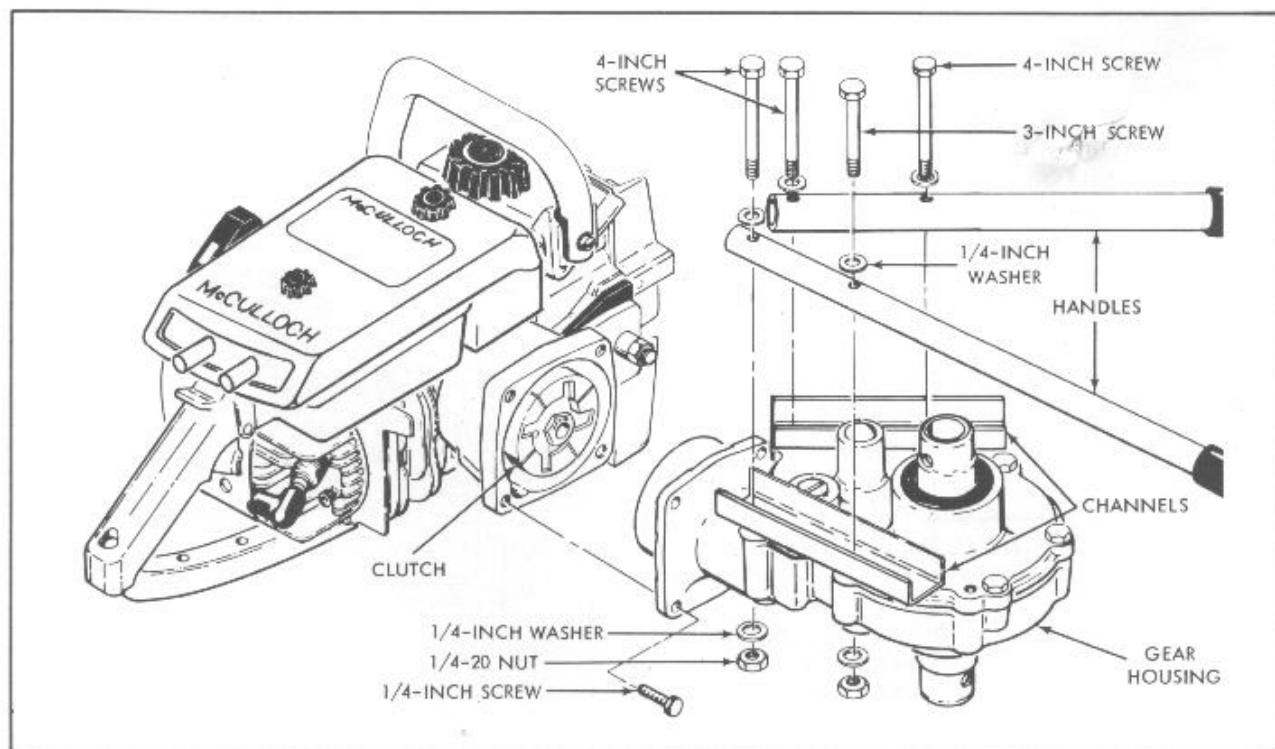


Figure 6. Install Gear Housing and Handles

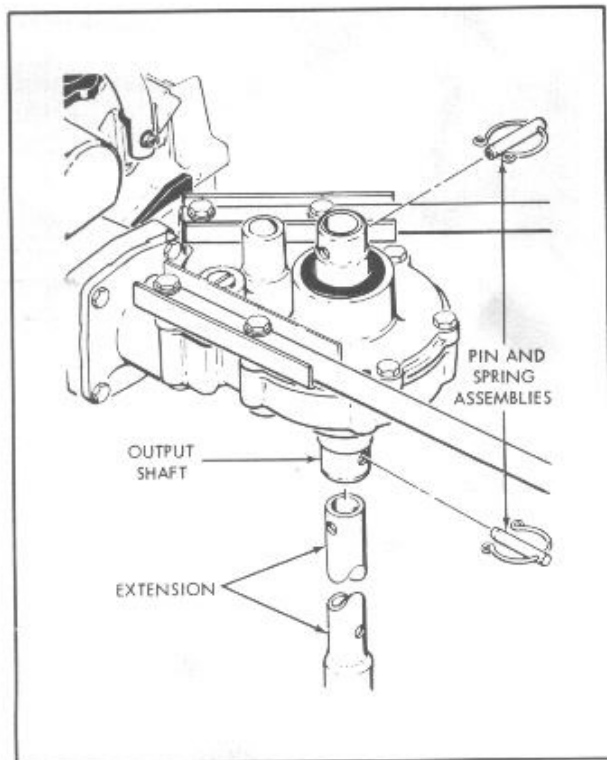


Figure 7. Install Auger Extension

7. Insert the auger extension up through the drive shaft in the gear housing. Line up the pin holes at the top and bottom of the drive shaft with the pin holes in the extension, and fasten the shaft and extension together with the pin and spring assemblies (figure 7).

8. Slide the auger on the end of the auger extension and fasten together with the two 2-inch long screws and nuts from the kit (figure 8). You can mount the auger in either of two positions: close to the gear housing or toward the end of the extension.

CAUTION

Do not attempt to drill holes deeper than the earth drill is designed to drill by mounting the extension with its upper pin hole at the lower pin hole in the drive shaft or by mounting the auger with its top screw hole at the bottom screw hole of the extension.

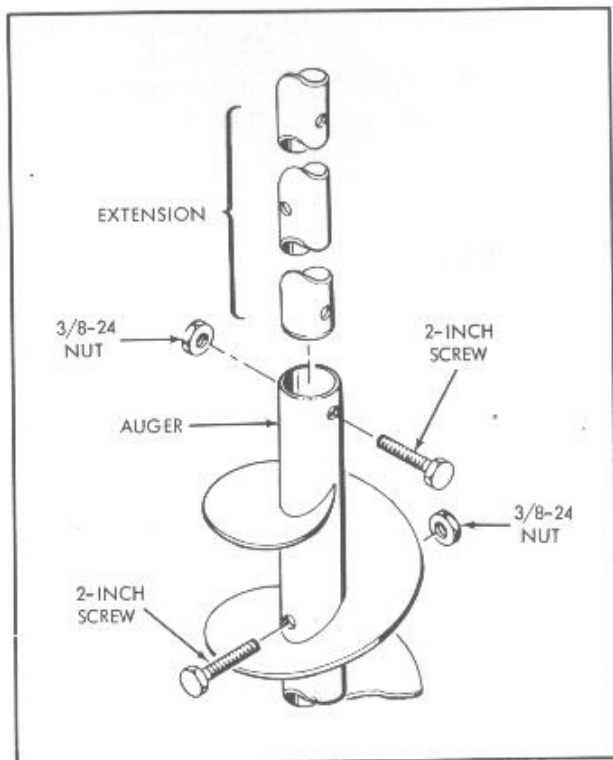


Figure 8. Install Auger

If you do this, the auger, extension or drive shaft will be damaged as soon as you begin to use the unit. Always use both sets of mounting holes in the extension (see figure 9).

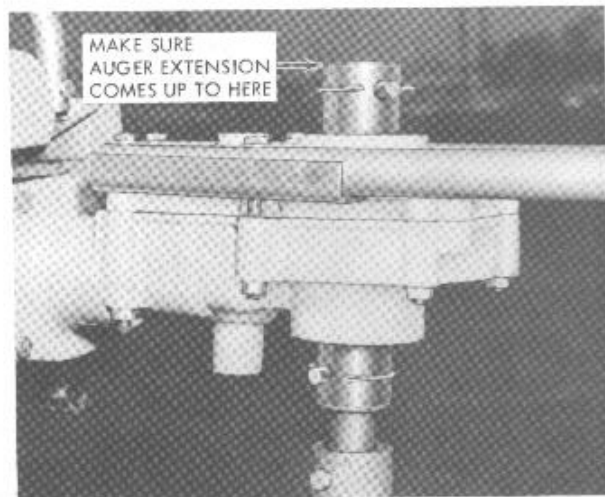


Figure 9. Auger Extension

9. Remove the chain saw spark arrester and install the attachment kit spark arrester in its place. The spark arrester should exhaust toward the rear of the engine (toward the operator).

LUBRICATION

The gear housing was filled with oil to the correct level at the factory. However, it is possible for the oil to leak past the filler plug if the plug becomes loosened. So, before using the earth drill for the first time, remove the filler plug (figure 10) and check the oil level. When the attachment is upright and the gear housing level, the oil should come just below the top of the worm teeth. If the oil is not at the correct level, add Pennzoil SAE 140 No. 420 Gear Lubricant until the oil is at the proper height. Do not let the oil come above the worm gear, or the oil seals in the gear housing may become damaged when the earth drill is used, allowing the gear housing oil to leak out of the housing onto the clutch rotor or onto the drive shaft, extension and auger.

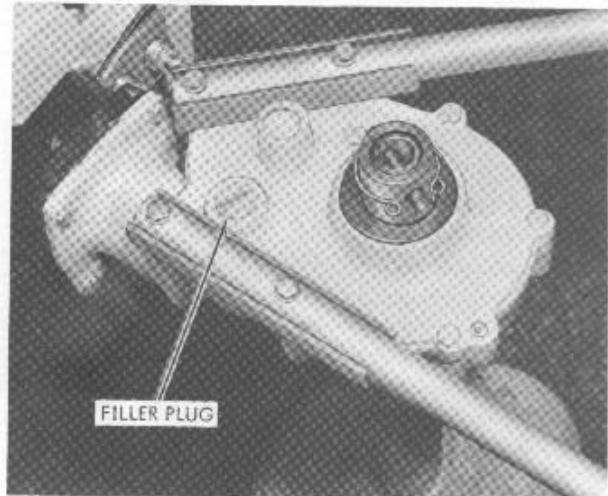


Figure 10. Filler Plug

After each 500 hours of operation or at least every six months, remove the filler plug and drain the oil from the housing. Refill the housing to the proper level with Pennzoil SAE 140 No. 420 Gear Lubricant. If there is any sign of leaking oil, check the level of oil in the gear housing before you use the earth drill. If the oil leaks around the oil seals, take the earth drill to your McCulloch dealer and have the damaged seal or seals replaced.

TABLE 1. TORQUE VALUES

	inch - pounds	foot - pounds
Adapter mounting screws	40 to 50	3-1/2 to 4
Auger mounting screws	160 to 190	13-1/2 to 16
Bar mounting nuts	65 to 75	5-1/2 to 6
Clutch rotor nut	300 to 350	25 to 29
Clutch retaining nut	300 to 350	25 to 29
Frame mounting screws	40 to 50	3-1/2 to 4
Gear housing mounting screws	40 to 50	3-1/2 to 4
Gear housing cover screws	40 to 50	3-1/2 to 4
Handle mounting screws	40 to 50	3-1/2 to 4
Spark arrester screws	20 to 25	approx. 2

REVERSING AUGER ROTATION

If the auger becomes stuck in the ground and you cannot lift it out of the hole, the turning direction of the auger can be reversed so that the engine turns the auger out of the hole.

1. Remove the pin and spring assemblies fastening the auger extension to the drive shaft.
2. Lift the engine and gear housing off the auger extension and turn them upside down. Replace them on the auger extension.
3. Reinstall the pin and spring assemblies in the drive shaft and auger extension holes.
4. Start and run the engine. When the engine is upside down, the auger will turn counter-clockwise and pull itself out of the hole. Lift the unit free as the auger comes out of the ground.

5. Remove the engine and the gear housing and reinstall them right side up.

GEAR ADJUSTMENT

After each 500 hours of operation, remove the gear housing cover and lift the output shaft out of the gear housing. Check the position of the worm gear in relation to the worm. They should mesh as shown in figure 11. If they do not, raise or lower the worm gear by adding or removing shims (item 50, figure 14) between the worm gear and the bushing in the bottom of the gear housing.

After adjusting the worm gear to mesh properly with the worm, lay a straight edge across the upper surface of the pinion gear (figure 12) and measure the clearance between the straight edge and the sides of the gear housing. Write down this clearance. Then lay the straight edge across the cover (figure 13) and measure the clearance between the sides of the cover and the cover bushing. Add this clearance to the first clearance and install the shim or shims on top of the pinion gear which come to within 0.004 to 0.008 of an inch of the total of the two clearances.

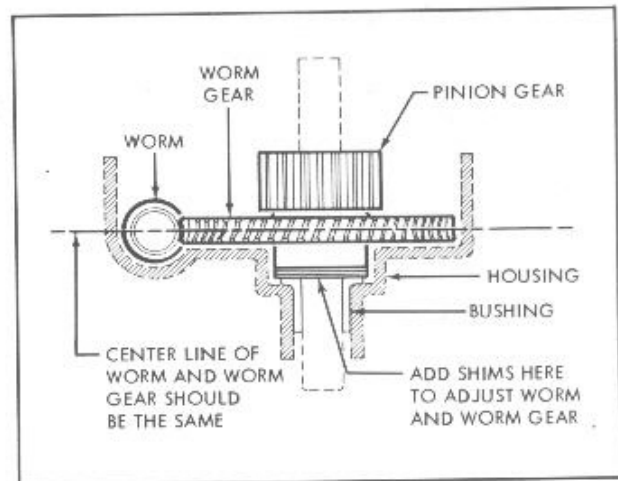


Figure 11. Gear Alignment

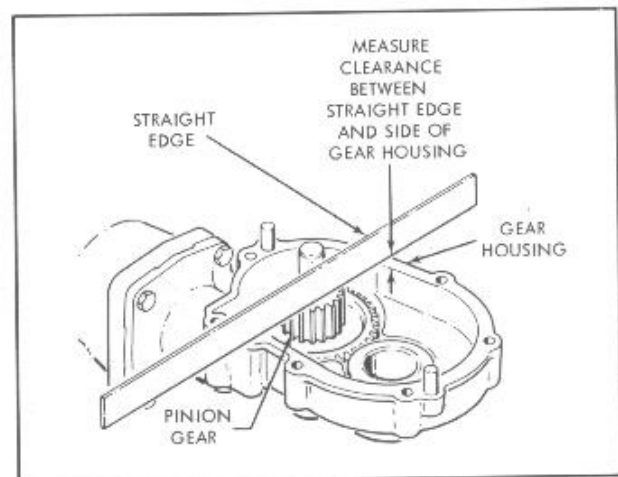


Figure 12. Gear Clearance

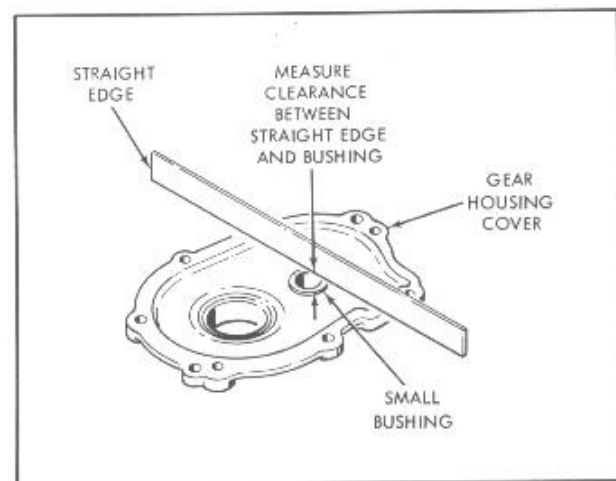


Figure 13. Bushing Clearance

MAINTENANCE OF THE AUGER POINT AND CUTTER BLADE

The auger point and cutter blade are subject to constant abrasive wear when in use. Both the auger point and cutter blade can be removed for repair or replacement.

Do not let either unit wear excessively. If the blade is worn or blunted it will not cut as easily nor will it cut as large a diameter

hole as when new. This will tend to cause binding and wear on the sides of the conveyer and result in holes of smaller and smaller diameter.

Replace the auger point and cutter blade when they become blunt or dull. You can have the blades rebuilt by a good welding shop to proper shape using Stellite No. 6 welding rod. Use this material to build up the edge as well as the end of the blade.

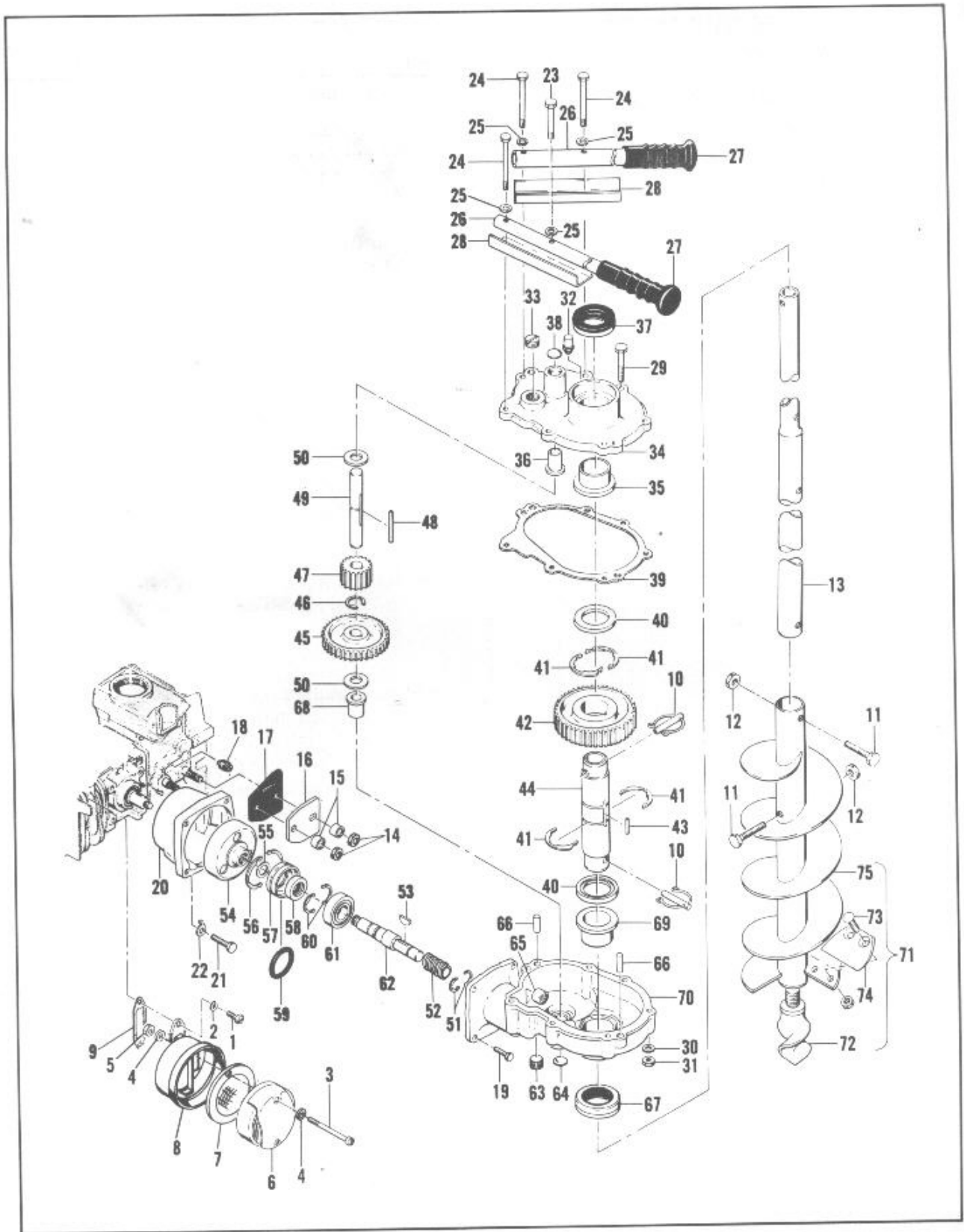


Figure 14. Earthdrill Attachment and Auger Assemblies

Index No.	Part Number	Nomenclature	Units Per Assy
EARTHDRILL ATTACHMENT AND AUGER ASSEMBLIES			
	50275A	Earthdrill Assembly (Does not include an auger assembly)	1
1	102388	. Screw - Hex hd 10-24 x 5/8 in. lg.	2
2	103100	. Lockwasher	2
	50444C	. Spark arrester Assembly.	1
3	102135	. . Screw - Hex hd 10-24 x 2 in. lg	2
4	110264	. . Washer - No. 10	4
5	101191	. . Nut - Hex 10-24	2
6	50447C	. . Top Assembly - Spark arrester	1
7	61545A	. . Baffle - Spark arrester.	1
8	51975A	. . Bottom Assembly - Spark arrester	1
9	53652	. Gasket - Spark arrester	1
	50322	. Drill Fastner Kit	1
10	50323	. . Pin and Spring Assembly.	2
11	60209	. . Screw - Hex hd 3/8-24 x 2 in. lg	2
12	101141	. . Nut - Hex 3/8-24	2
13	50706	. Extension - Auger	1
14	103729	. Nut - Hex 3/8-24	2
15	50484	. Spacer - Plate	2
16	50485	. Plate - Cover	1
17	57437	. Gasket	1
18	57595	. Plug - Vent.	1
19	101971	. Screw - Hex hd 1/4-20 x 1 in. lg	4
20	61478	. Adapter - Accessory	1
21	103258	. Screw - Hex hd 1/4-20 x 1-1/4 in. lg	3
22	36306	. Plate - Lock	3
23	102150	. Screw - Hex hd 1/4-20 x 3 in. lg	1
24	102172	. Screw - Hex hd 1/4-20 x 4 in. lg	3
25	104410	. Washer - 1/4 in.	4
	25046A	. Handle Assembly	2
26	25027A	. . Handle	2
27	18207A	. . Grip - Handle	2
28	50320	. Channel - Handle	2
29	100660	. Screw - Hex hd 1/4-20 x 2 in. lg	3
30	100005	. Washer - Plain 1/4 in.	7
31	101143	. Nut - Hex 1/4-20	7
32	104385	. Vent - Alemite 131000.	1
33	100658	. Plug - Pipe 1/2 NPT.	1
34	50318	. Cover Assembly - Gear housing	1
35	104207	. . Bushing - Oilite	1
36	104208	. . Bushing	1
37	104372	. . Oil Seal	1
38	100169	. . Plug - Expansion	1
39	50317	. Gasket - Cover	1
40	50316	. Spacer - Output shaft	2
41	104212	. Ring - Retaining.	2
42	50312	. Gear - 54 tooth	1
43	50315	. Key - Output shaft	1
44	50310	. Shaft - Output	1
45	50299	. Gear - Worm	1
46	104304	. Ring - Retaining	1
47	50302	. Pinion - 18 tooth	1
48	50828	. Key - Worm gear shaft	1
49	50300A	. Shaft - Worm gear	1
50	57553	. Shim - Worm gear (0.015 in. thick)	As Reqd
	57554	. Shim - Worm gear (0.030 in. thick)	As Reqd
	57555	. Shim - Worm gear (0.042 in. thick)	As Reqd
	57314	. Shim - Worm gear (0.058 in. thick)	As Reqd
	57315	. Shim - Worm gear (0.062 in. thick)	As Reqd
	57316	. Shim - Worm gear (0.066 in. thick)	As Reqd

This list is continued on page 10

Index No.	Part Number	Nomenclature	Units Per Assy
	57317	Shim - Worm gear (0.070 in. thick)	As Reqd
	57318	Shim - Worm gear (0.074 in. thick)	As Reqd
51	104201	Ring - Retaining	1
52	50290	Worm	1
53	103886	Key - Woodruff #406	1
54	61476	Drum Assembly - Clutch	1
55	57708	Spacer	1
56	104211	Ring - Retaining	1
57	50292	Adapter Assembly - Seal	1
58	101304	Seal - Oil	1
59	104282	"O" Ring	1
60	104206	Ring - Retaining	1
61	100683	Bearing - #204	1
62	50288	Shaft - Worm	1
63	101003	Plug - Pipe 1/8 NPT	1
	50282	Housing Assembly - Gear	1
64	100169	Plug - Expansion	1
65	104299	Bearing - Needle	1
66	104307	Dowel - 0.375 dia x 1 in. lg	2
67	104372	Oil Seal	1
68	104208	Bushing	1
69	104207	Bushing - Oilite	1
70		Housing - Gear (Order Gear Housing Assembly #50282)	1

AUGER ASSEMBLIES

71	25074B	Auger Assembly - Six inch	1
72	25055	Point Assembly - Auger	1
11	60209	Screw - Hex hd 3/8-24 x 2 in. lg	2
12	101141	Nut - 3/8-16	2
73	104291	Bolt - 3/8-16 x 1 in. lg (with nut)	2
74	25124A	Blade - Cutter (six inch)	1
75	25062	Conveyer - Six inch	1
71	25075B	Auger Assembly - Nine inch	1
72	25055	Point Assembly - Auger	1
11	60209	Screw - Hex hd 3/8-24 x 2 in. lg	2
12	101141	Nut - 3/8-16	2
73	104291	Bolt - 3/8-16 x 1 in. lg (with nut)	2
74	25125A	Blade - Cutter (nine inch)	1
75	25066	Conveyer - Nine inch	1