

HOMELITE

A **textron** DIVISION

PORT CHESTER, N.Y. U.S.A.

MODEL COVERAGE

CHAIN SAW MODEL	DESIGN FEATURES
XL-12	A,D,F,G,J
XL-15	A,D,F,H,J
Super XL-12	B,D,F,G,J
Super XL-15	B,E,F,H,J
XL Automatic	B,E,F,G,K
XL Auto. Gear Drive	B,E,F,H,K
Super XL	B,E,F,G,J
Super XL Automatic	B,E,F,G,K
XL-500 Automatic	C,E,F,G,K

SERVICE MANUAL

Fig. HL31B for disassembly and reassembly guide. Adjust fuel diaphragm lever (25) by bending lever as necessary so that lever is flush with bosses cast on carburetor body at each side of lever. If necessary to remove plugs (28 and 29) for cleaning passages, carefully drill through plug with small diameter drill, insert pin in drilled hole and pry plug out. Take care not to drill any deeper than thickness of plug. NOTE: Do not blow compressed air through main nozzle check valve as this will damage the rubber valve. If valve has been removed or damaged, it will be necessary to install a check valve repair kit (Homelite part No. 65386) using a special installation tool (Homelite tool No. 24173).

MAGNETO. A Wico or Phelon flywheel type magneto with external armature and ignition coil is used. Units equipped with Phelon magneto will have a letter "P" stamped after the serial number. The Wico and Phelon magnetos are similarly constructed, so care should be taken to properly identify magneto before ordering service parts. Breaker points and condenser are located behind flywheel.

Armature core and stator plate are riveted together and are serviced only as a unit. Stator plate fits firmly on shoulder of crankcase; hence, armature air gap is non-adjustable.

Late production Wico magneto stator plates are built to retain a felt seal (43—Fig. HL34); the seal cannot be used with early production Wico stator plates. All Phelon stator plates are built to retain the felt seal (43).

Magneto stator plate has slotted mounting holes, and should be rotated as far clockwise as possible before tightening mounting screws to obtain correct ignition timing of 30 degrees BTDC. Set breaker point gap to 0.015. Condenser capacity should test 0.16-0.20 mfd. CAUTION: Be careful when installing breaker points not to bend tension spring any more than necessary; if spring is bent excessively, spring tension may be reduced causing improper breaker point operation. Late Wico units have a retaining clip (35—Fig. HL34) and flat washer to secure breaker arm on pivot post.

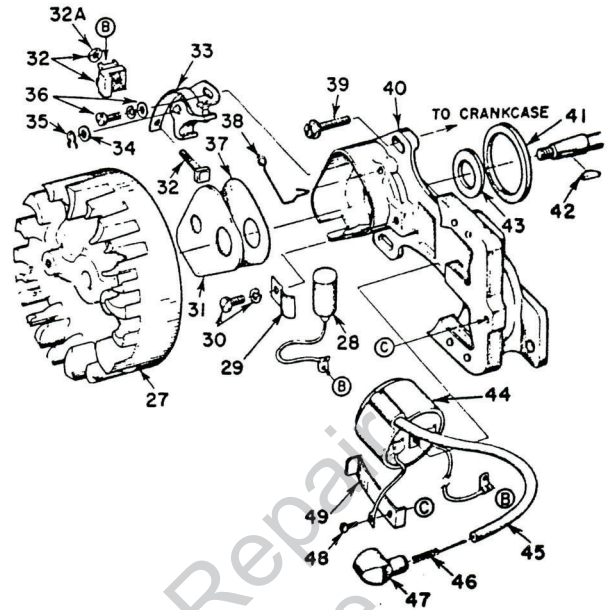
LUBRICATION. Engine is lubricated by oil mixed with fuel. Thoroughly mix oil and gasoline in separate container. Mix ½ pint of Homelite motor oil or good grade SAE 30 motor oil in each gallon of regular gasoline. (16:1 mixture).

Fill chain oiler reservoir with Homelite Bar and Chain oil or a light weight oil (no heavier than SAE 30). In cold weather, chain oil can be diluted with kerosene to allow easier flow of oil through pump and lines.

On early model XL-12, the clutch drum and sprocket assembly should be removed and a few drops of oil placed on the Oilite bushings occasionally. All other models (and converted early production XL-12) have needle bearing instead of Oilite bushing.

CARBON. Muffler and cylinder exhaust ports should be cleaned periodically to prevent loss of power due to carbon build up. Remove muffler and scrape free of carbon. With muffler removed, turn engine so that piston is at top dead center and carefully remove carbon from exhaust ports with a wooden scraper. Be careful not to damage chamfered edges of exhaust ports or to scratch piston. Do not run engine with muffler removed.

Fig. HL34 — Exploded view of Wico magneto used on some models. Phelon magneto used on other models is of similar construction. Felt seal (43) cannot be used on early Wico magnetos. Connect condenser and ignition coil low tension leads as indicated by letters "B" and "C".



- 27. Magneto rotor (flywheel)
- 28. Condenser
- 31. Breaker box cover
- 32. Terminal block
- 33. Point set
- 34. Washer
- 35. Clip
- 37. Gasket
- 38. Cover spring
- 40. Armature core & stator plate
- 41. Gasket
- 42. Woodruff key
- 43. Felt seal
- 44. Ignition coil
- 45. High tension lead
- 47. Spark plug boot
- 49. Coil clip

REPAIRS

TIGHTENING TORQUE VALUES. Tightening torque values for XL-12/XL-500 Automatic units are as follows: NOTE: All values are in inch-pounds; minimum torque value is given. To find maximum torque value, add 20% to value given.

4/40 Reed & stop to chamber	5
4/20 Oil line plate or shield to tank	5
8/32 Throttle handle cover	40
8/36 Connecting rod	55
10/32 Muffler cap	50
10/32 Bearing retainer	55
10/32 Screen to rotor	50
10/32 Drivecase cover	55
10/32 Pulley to fan housing	50
10/32 Flanged inner race for pulley	55
10/32 Carburetor to chamber	50
12/24 Handle bar to fuel tank	80
12/24 Bracket to drivecase	80
12/24 Stator to crankcase and cylinder	80
12/24 Drivecase to crankcase	80
12/24 Carburetor chamber to fuel tank	80
12/24 Muffler to cylinder	80
1/4-20 Fuel tank to crankcase	80
12/24 Fan housing to fuel tank	80
1/4-28 Cylinder nuts	100
12/24 Pawl studs to rotor	80
1/4-20 Handle bar to bracket	100
1/4-20 Bumper screws	80
3/8 24 Clutch nut	150
5/8-32 Clutch nut	150
5/16-24 Rotor nut	150
1/2-20 Clutch to crankshaft	150
14mm Spark plug	250
Clutch spider	180

HOMELITE SERVICE TOOLS. Listed below are Homelite tool numbers, tool description and model application of tools for servicing XL-12 through XL-500 series chain saws.

Tool No.	Description & Model Usage
22828	Pliers, piston pin snap ring, all models.
A-23949	Remover, piston pin with Spirol pin at exhaust side of piston.

23756	Plug, connecting rod bearing removal and installation, all models.
A-23960	Remover and locking bracket, rotor (flywheel), all models.
23757	Plug, needle roller type main bearing installation, all models.
23758	Plug, crankcase seal installation, all models; drivecase seal installation, models XL-12, XL-15 & S/XL-12.
23759	Sleeve, crankcase seal protector, all models; drivecase seal protector, models XL-12, XL-15 & S/XL-12.
23800	Sleeve, crankcase seal installation; all models; drivecase seal installation, models XL-12, XL-15 & S/XL-12.
23843	Sleeve, drivecase seal installation, all models except XL-12, XL-15 & S/XL-12.
23844	Sleeve, drivecase seal protector, all models except XL-12, XL-15 & S/XL-12.
23845	Plug, drivecase seal installation, all models except XL-12, XL-15 & S/XL-12.
23846	Anvil, crankshaft installation, all models except XL 12, XL-15 & S/XL-12.
A-23858	Tool, crankcase to drivecase installation, model XL-500.
A-23137	Jackscrew, crankshaft assembly & installation, all models except XL-12, XL-15 & S/XL-12.
22820-1	Bearing collar for A-23137.
22136	Body for A-23137.
A-23841-A	Wrench, guide bar stud insert, all models except XL-12, XL-15 & S/XL-12.
A 23934	Wrench, clutch plate removal and installation, all late production.
A-23696	Wrench, clutch spider removal and installation, all early production; sun gear removal on gear drive models.

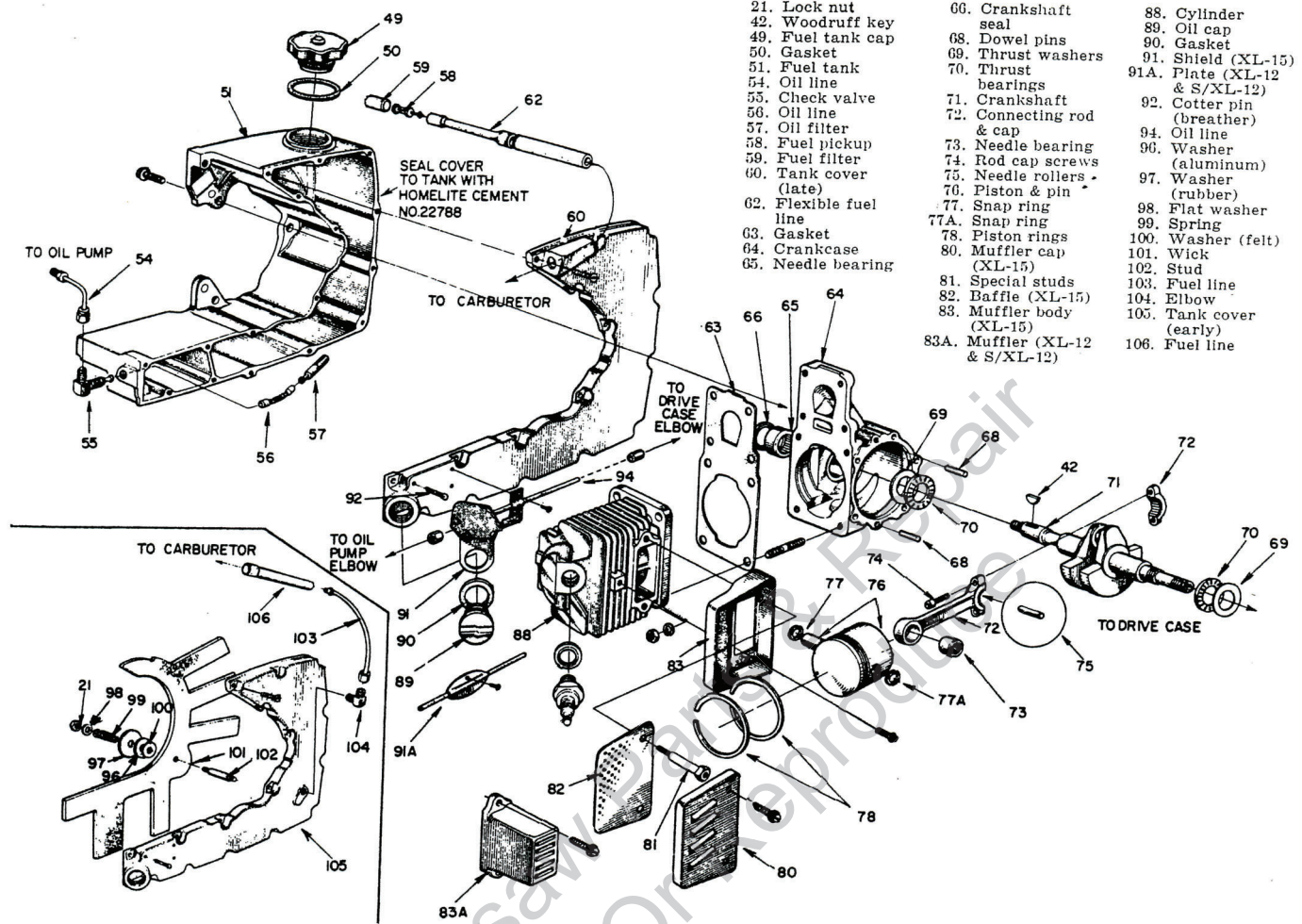


Fig. HL35—Exploded view showing powerhead and fuel tank construction of models XL-12, Super XL-12 and XL-15. refer to Fig. HL35A for other models. Early wick type fuel pickup and tank cover are shown in inset; beginning with serial No. 2188611, flexible hose (62) type pickup is used. Dowel pins (68) are used on later models; refer to text. Single piece muffler (83A) is used on XL-12 and Super XL-12; XL-15 is fitted with three piece muffler (80, 82 & 83).

- A-78 SNAP-ON tool, remover for clutch drum needle roller bearing on all models.
- 23819 Plug, clutch drum needle bearing installation, all direct drive models.
- 27773 Plug, clutch drum needle bearing installation, all gear drive models.
- 23665 Pliers, planetary gear drive snap ring, all gear drive models.
- 23772 Plug, planetary gear drive needle bearing, all gear drive models.
- A-23792 Sprocket holder, all gear drive models.

CONNECTING ROD. Connecting rod and piston assembly can be removed after removing cylinder from crankcase. Refer to Fig. HL37. Be careful to remove all of the loose needle rollers when detaching rod from crankpin. Early models have 28 loose needle rollers; starting with serial No. 207-1277, 31 needle rollers are used. Note: A different crankshaft and connecting rod are used on late models with 31 needle rollers.

Renew connecting rod if bent or twisted, or if crankpin bearing surface is scored,

burned or excessively worn. The caged needle roller piston pin bearing can be renewed by pressing old bearing out and pressing new bearing in with Homelite tool No. 23756. Press on lettered end of bearing cage only.

It is recommended that the crankpin needle rollers be renewed as a set whenever engine is disassembled for service. On early models with 28 needle rollers, stick 14 needle rollers in the rod and remaining 14 needle rollers in rod cap with light grease or beeswax. On late models with 31 needle rollers, stick 16 rollers in rod and 15 rollers in rod cap. Assemble rod to cap with match marks aligned, and with open end of piston pin towards flywheel side of engine. Wiggle the rod as cap retaining screws are being tightened to align the fractured mating surfaces of rod and cap.

PISTON, PIN AND RINGS. The piston is fitted with two pinned compression rings. Renew piston if scored, cracked or excessively worn, or if ring side clearance in top ring groove exceeds 0.0035.

Recommended piston ring end gap is 0.070-0.080; maximum allowable ring end gap is 0.085. Desired ring side clearance in groove is 0.002-0.003.

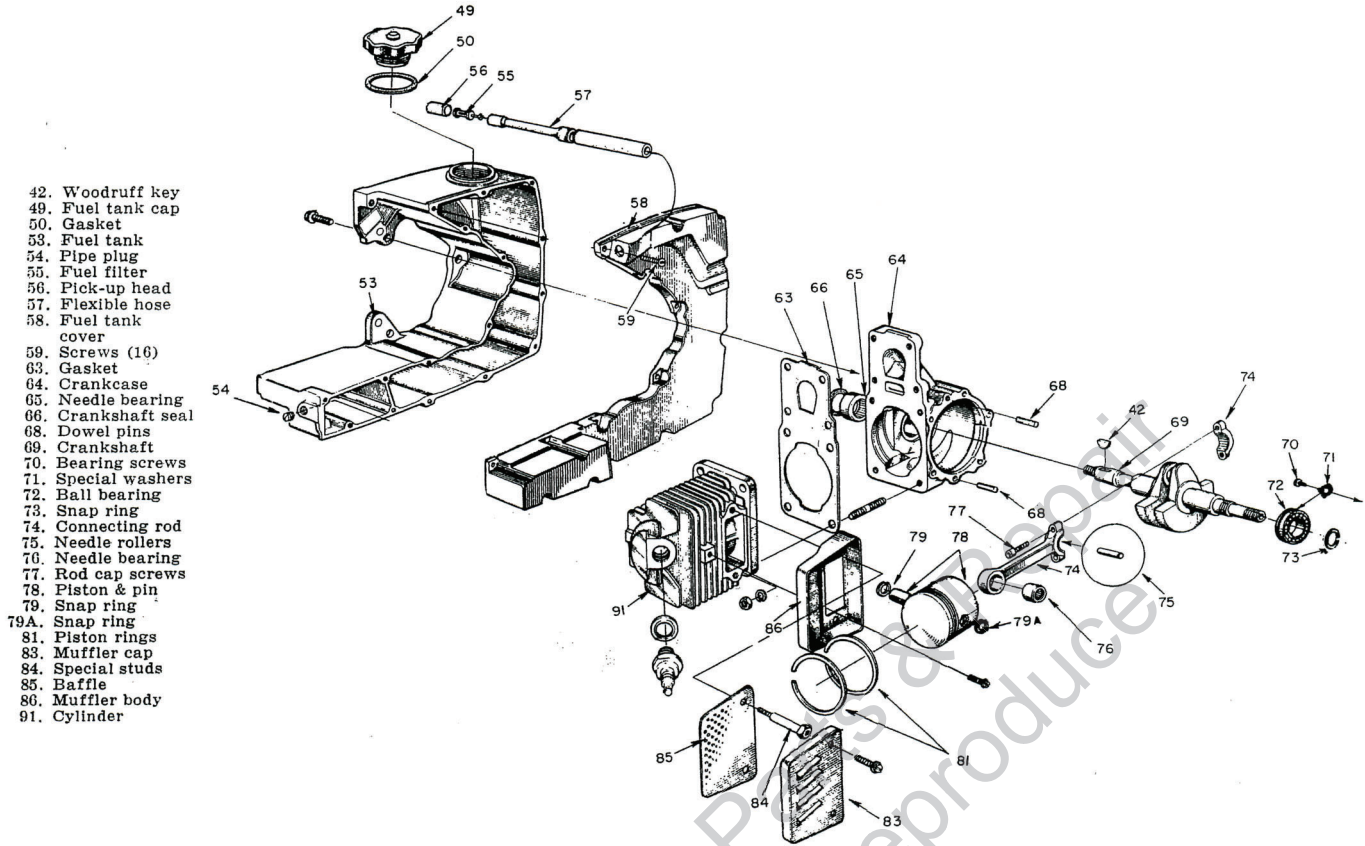
Piston, pin and rings are available in standard size only. Piston and pin are available in a matched set, and are not available separately.

On early production units, piston pin is retained in piston by two Waldes Truarc snap rings. Later production pistons have a Spirol pin through piston boss at exhaust side and a Waldes Truarc snap ring at intake side of piston. Latest type piston has a wire section snap ring (which should not be removed) at exhaust side of piston and a Waldes Truarc snap ring at intake side; exhaust end of piston pin is tapered to fit against the wire section ring.

To remove piston pin on all models, remove the snap ring at intake side of piston using snap ring pliers (Homelite tool No. 22828). On piston with Spirol pin at exhaust side, drive pin from piston and rod with slotted driver (Homelite tool No. A-23949). On all other models, insert a $\frac{3}{16}$ -inch pin through snap ring at exhaust side and drive piston pin out as shown in Fig. HL39.

When reassembling piston to connecting rod, be sure to install closed end of piston pin towards exhaust side of piston (away from piston ring locating pin). Fit the Waldes

- 21. Lock nut
- 42. Woodruff key
- 49. Fuel tank cap
- 50. Gasket
- 51. Fuel tank
- 54. Oil line
- 55. Check valve
- 56. Oil line
- 57. Oil filter
- 58. Fuel pickup
- 59. Fuel filter
- 60. Tank cover (late)
- 62. Flexible fuel line
- 63. Gasket
- 64. Crankcase
- 65. Needle bearing
- 66. Dowel pin
- 68. Dowel pins
- 69. Thrust washers
- 70. Thrust bearings
- 71. Crankshaft bearings
- 72. Connecting rod & cap
- 73. Needle bearing
- 74. Rod cap screws
- 75. Needle rollers
- 76. Piston & pin
- 77. Snap ring
- 77A. Snap ring (XL-15)
- 78. Piston rings
- 80. Muffler cap (XL-15)
- 81. Special studs
- 82. Baffle (XL-15)
- 83. Muffler body (XL-15)
- 83A. Muffler (XL-12 & S/XL-12)
- 88. Cylinder seal
- 89. Oil cap
- 90. Gasket
- 91. Shield (XL-15)
- 91A. Plate (XL-12 & S/XL-12)
- 92. Cotter pin (breather)
- 94. Oil line
- 96. Washer (aluminum)
- 97. Washer (rubber)
- 98. Flat washer
- 99. Spring
- 100. Washer (felt)
- 101. Wick
- 102. Stud
- 103. Fuel line
- 104. Elbow
- 105. Tank cover (early)
- 106. Fuel line



- 42. Woodruff key
- 49. Fuel tank cap
- 50. Gasket
- 53. Fuel tank
- 54. Pipe plug
- 55. Fuel filter
- 56. Pick-up head
- 57. Flexible hose
- 58. Fuel tank cover
- 59. Screws (10)
- 63. Gasket
- 64. Crankcase
- 65. Needle bearing
- 66. Crankshaft seal
- 68. Dowel pins
- 69. Crankshaft
- 70. Bearing screws
- 71. Special washers
- 72. Ball bearing
- 73. Snap ring
- 74. Connecting rod
- 75. Needle rollers
- 76. Needle bearing
- 77. Rod cap screws
- 78. Piston & pin
- 79. Snap ring
- 79A. Snap ring
- 81. Piston rings
- 83. Muffler cap
- 84. Special studs
- 85. Baffle
- 86. Muffler body
- 91. Cylinder

Fig. HL35A—Exploded view showing latest type fuel tank and later construction of power head; refer to Fig. HL35 for early units. Flexible hose (57) and pick-up head (55) with filter (56) are used instead of wick type pick-up. Ball bearing (72) is retained on crankshaft by snap ring (73) and in drivecase by two screws (70) and special washers (71); refer to Fig. HL35B. Latest models have 31 loose needle rollers (75) at crankpin; earlier models have 28 rollers. Tank cover (58) is sealed to tank (53) with cement (Homelite part No. 22788) and is retained with 16 screws (59).

Truarc snap ring in groove of pin bore with sharp edge out and turn ring gap towards closed end of piston.

CRANKSHAFT AND BEARINGS. On models XL-12, Super XL-12 and XL-15, the crankshaft is supported in two caged needle roller bearings and crankshaft end play is controlled by a roller bearing and hardened steel thrust washer on each end of the shaft. Refer to Fig. HL36. On all other models, flywheel end of crankshaft is supported in a needle bearing in crankcase and drive end is supported in a ball bearing located in drive case; end play is controlled by the ball bearing.

Maximum allowable crankshaft end play on models with thrust bearings (Fig. HL36) is 0.0202; renew thrust bearings if end play is excessive. Normal end play is approximately 0.010.

Renew the crankshaft if any of the main bearing, crankpin bearing or thrust bearing surfaces or sealing surfaces are scored, burned or excessively worn. Renew the drivecase ball bearing if excessively loose or rough (lumpy). Also, reject crankshaft if flywheel keyway is beat out or if threads are badly damaged.

CYLINDER. The cylinder bore is chrome plated. Renew the cylinder if chrome plating is worn away exposing the softer base metal.

CRANKCASE, DRIVECASE AND SEALS. On all models, crankshaft seals can be renewed without disassembling crankcase,

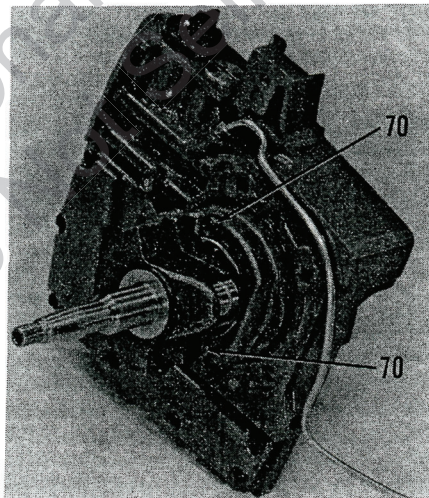


Fig. HL35B—View showing crankcase removed from drive case and crankshaft on models equipped with ball bearing at drive end of crankshaft. To remove crankshaft from drive case, bearing retaining screws (70) must first be removed

drive case and crankshaft unit. With magneto armature and core assembly removed, pry seal from crankcase. Install new seal over crankshaft with lip of seal inward, then using driver sleeve, drive seal into

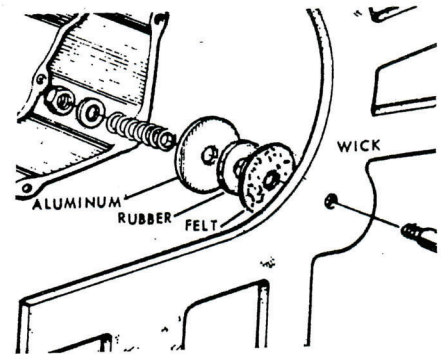


Fig. HL35C—View showing proper assembly of wick, felt washer, rubber washer an aluminum washer on pickup stud.

crankcase. Seal in drivecase can be pried out after removing clutch assembly and, on models so equipped, the automatic chain oiler pump. Install seal with lip inward and drive into position with sleeve. Note: Use of seal protectors is recommended; if protectors are not available, wrap threads on crankshaft with thin plastic tape to prevent damage to seal lips.

Crankcase can be removed from crankshaft and drivecase after removing cylinder, piston and connecting rod and removing retaining screws. On models XL-12, XL-15 and Super XL-12, crankshaft can be withdrawn from drivecase. On all other models,

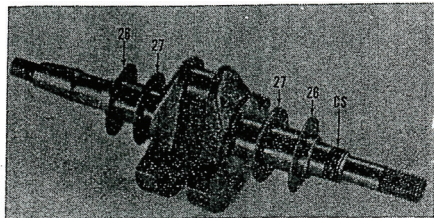


Fig. HL36—Be sure the steel thrust washers (26) are to outside of thrust bearings (27) when installing crankshaft on models XL-12, Super XL-12 and XL-15. Other models do not use thrust washers or thrust bearings.

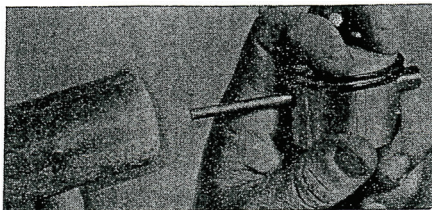


Fig. HL39 — After removing snap rings, the piston pin can be tapped out using a 3/16-inch rod as shown or, on pistons with Spirol pin at exhaust side, by driving piston pin out with slotted driver (Homelite tool No. 23949).

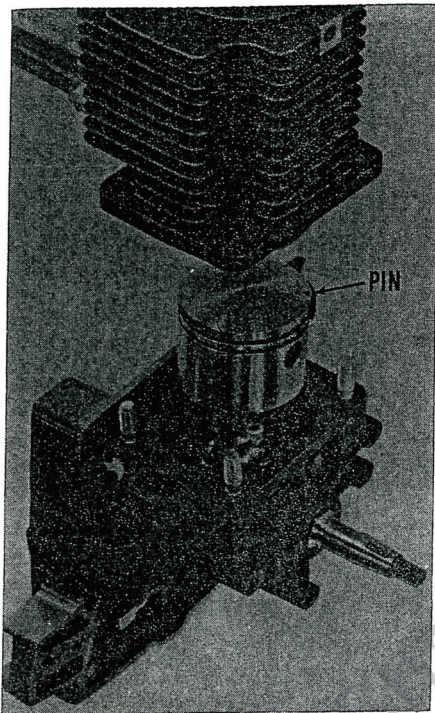


Fig. HL37—Piston and connecting rod assembly can be removed from crankpin after removing cylinder from crankcase. Note piston ring locating pin on intake side of piston.

remove the two bearing retaining screws (70—Fig. HL35A) and special washers (71), then press crankshaft and ball bearing (72) from drivecase. Remove snap ring (73), then press crankshaft out of the ball bearing.

Inspect the needle roller bearing in crankcase, and on models XL-12, XL-15 and Super XL-12, the needle roller bearing in drivecase. Bearings should be renewed if any needle roller has flat spot or is otherwise damaged, or if rollers are worn so that two rollers may be separated a width equal to thickness of one roller. Always press against lettered end of bearing cage when removing and installing needle roller bearings. Needle roller bearings should be installed using appropriate installation plug.

Install new ball bearing on crankshaft using jackscrew or by supporting crankshaft at crank throw and installing bearing in a press. Groove in outer race of bearing must be towards crankpin.

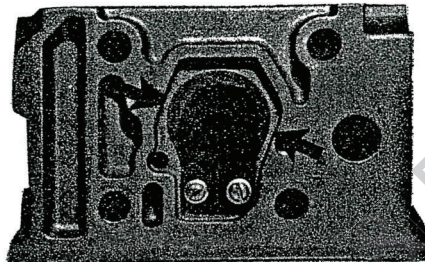


Fig. HL39B — When installing reed valve on air box (models with flat reed intake valve only), be sure reed is centered between the two points indicated by arrows.

Renew crankshaft seals before assembling crankshaft, crankcase and drivecase. Using installation plug, press seal into position with lip to inside of crankcase. On models XL 12, XL-15 and Super XL-15, install thrust bearings on crankshaft next to crankpin throw, then install the hardened steel thrust washers at outer side of each thrust bearing. On all other models, first assemble crankshaft and drivecase by placing seal protector on crankshaft, then pulling crankshaft and ball bearing into drivecase with jackscrew and adapters. Install two NEW bearing retaining screws and lockwashers. On models XL-12, XL-15 and Super XL-12, place seal protector on crankshaft and insert crankshaft in crankcase. Then, on all models, assemble crankcase to drivecase using new gasket. Note: On early production, crankcase was sealed to drivecase with an "O" ring; however, use of "O" ring has been discontinued and a gasket, rather than an "O" ring, should be used on all models.

On all late production models, crankcase is fitted with two dowel pins to provide a more positive alignment of crankcase and drivecase. Service crankcases are drilled for dowel pins, but dowel pins are not installed so that crankcase can be used with early type drivecase not drilled for dowels. If renewing late type crankcase fitted with dowel pins, two new dowel pins must be obtained and installed in new crankcase; install dowel pins so they protrude 0.165-0.180 from crankcase.

FLAT REED VALVE. The reed valve is attached to the carburetor air box as shown in Fig. HL30, and is accessible after removing air box from crankcase.

Check the reed seating surface on air box to be sure it is free of nicks, chips or burrs. Renew valve reed if rusted, pitted or

cracked, or if it does not seat flatly against its seat.

The reed stop is curved so that measurement of reed lift distance is not practical. However, be sure that reed is centered over opening in air box and reed stop is aligned with reed as shown in Fig. HL39B. Clean the screw threads and apply Loctite to threads before installing screws.

NOTE: If air box has been removed to service reed valve, inspect gasket (63—Fig. HL35) between air box and crankcase. If gasket is damaged and cylinder is not being removed for other purposes, it is suggested that the exposed part of the old gasket be carefully removed and the new gasket be cut to fit between the air box and crankcase. Also, refer to note in CARBURETOR paragraph in MAINTENANCE section.

PYRAMID REED VALVE. All models except XL-12, XL-15 and Super XL-12 are equipped with a pyramid reed type intake valve with four reeds. Early production reed seat was made of aluminum and reeds were retained to seat by spring plates and screws.

Late production reed seat (see Fig. HL-30B) is made of Delrin plastic. The reeds fit onto pins protruding from the plastic seat and are held in place by a moulded retainer, eliminating the retaining spring plates and screws.

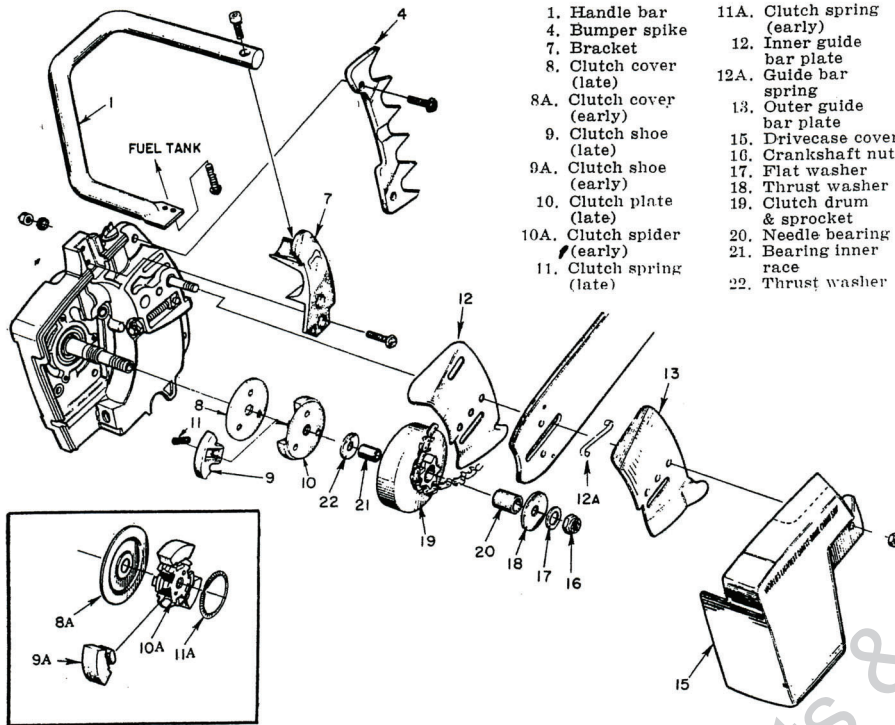
Reeds, spring plates and retaining screws are available for servicing the early type aluminum reed seat. However, if the seat is worn or damaged beyond further use, the Delrin seat and moulded retainer is used as replacement.

When assembling reeds to aluminum seat, apply Loctite to retaining screws to keep them from working loose. Renew the spacer gaskets and carburetor gasket and install the spacer, reed seat assembly and carburetor as in Fig. HL30A.

To assemble and install Delrin reed seat and reeds, proceed as follows: Fit the reed retainer (3—Fig. HL30B) into spacer (2) so that the pin on retainer clears cut-out in spacer. Using a drop of oil under each reed, stick the reeds to pyramid seat so that holes in reeds fit over the pins moulded into seat. Place the retainer and spacer over the reeds and seat so that all parts are locked together, then install the valve assembly and carburetor with new gaskets (1 & 9).

CLUTCH. Refer to Fig. HL40 for exploded view of typical direct drive clutch assembly and to Fig. HL41A for planetary gear drive models. Both illustrations show late type clutch assembly using three compression springs (11) to hold shoes retracted in plate (10) and in insets at lower left corner, the early type clutch using garter type springs (11A) to hold shoes to spider (10A). The early type clutch (inset) and late type clutch are interchangeable as an assembly. Clutch plate (10) or spider (10A) is threaded to crankshaft.

If clutch will not disengage (chain continues to turn) with engine at idle speed, check for broken, weak or improperly installed clutch springs. If clutch slips under load and engine continues to run at high speed, excessive wear of clutch shoes is indicated.



- 1. Handle bar
- 4. Bumper spike
- 7. Bracket
- 8. Clutch cover (late)
- 8A. Clutch cover (early)
- 9. Clutch shoe (late)
- 9A. Clutch shoe (early)
- 10. Clutch plate (late)
- 10A. Clutch spider (early)
- 11. Clutch spring (late)
- 11A. Clutch spring (early)
- 12. Inner guide bar plate
- 12A. Guide bar spring
- 13. Outer guide bar plate
- 15. Drivecase cover
- 16. Crankshaft nut
- 17. Flat washer
- 18. Thrust washer
- 19. Clutch drum & sprocket
- 20. Needle bearing
- 21. Bearing inner race
- 22. Thrust washer

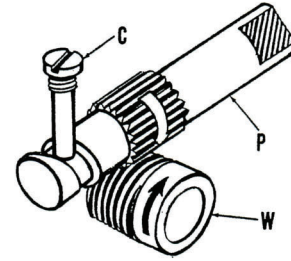


Fig. HL40B—Automatic oil pump worm gear (W) driven by crankshaft turns plunger (P) at 1/20 engine speed. As plunger turns, cam on end of plunger engages cam screw (C) causing the plunger to go back and forth. Flat end of plunger acts as inlet and outlet valve.

Fig. HL40—Exploded view of typical direct drive clutch assembly; refer to Fig. HL41A for gear drive models. Late type clutch assembly (items 8, 9, 10 & 11) is interchangeable as a unit with early production clutch shown in inset at lower left corner.

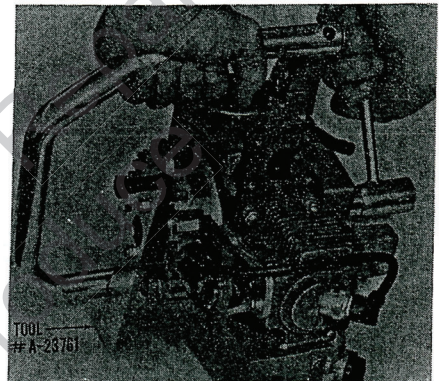


Fig. HL41 — Using Homelite tool No. A-23761 to keep crankshaft from turning while removing clutch retaining nut and clutch rotor. Homelite tool No. A-23696 is used to remove or install clutch rotor.

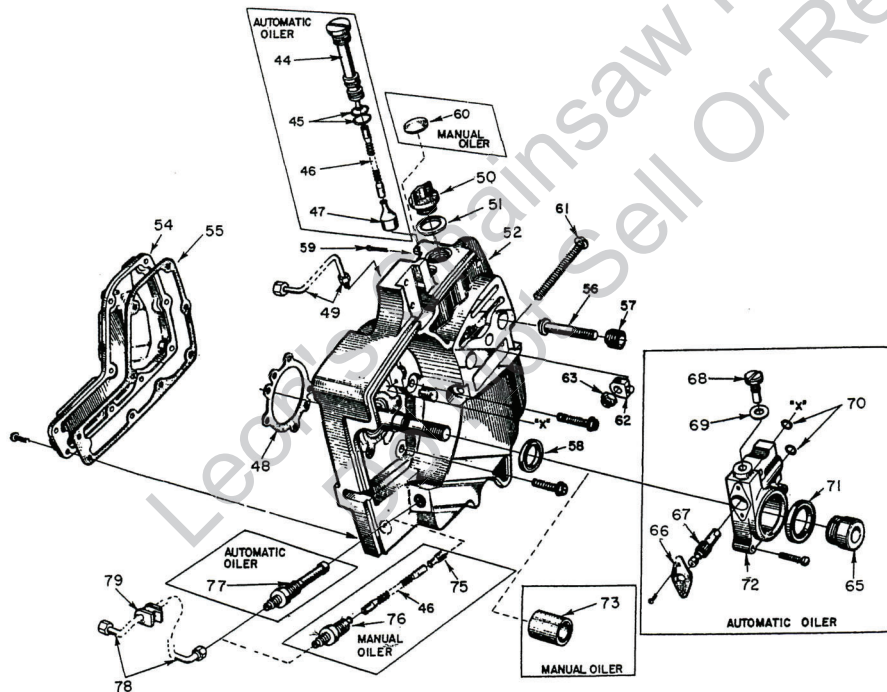


Fig. HL40A—Exploded view showing drive case with automatic chain oiler pump, oil pickups and late type removable oil reservoir cover (54). On all models except XL-12, XL-15 and Super XL-12, guide bar studs (56) are retained in drivecase by threaded inserts (57). Spacer sleeve (73) is used on model Super XL which is not equipped with automatic oiler pump.

- 44. Oil line tube
- 45. "O" rings
- 46. Flexible line
- 47. Oil filter
- 48. Crankcase gasket
- 49. Oil line
- 50. Oil filler cap
- 51. Gasket
- 52. Drivecase
- 54. Oil reservoir cover
- 55. Cover gasket
- 56. Guide bar studs
- 57. Threaded inserts
- 58. Crankshaft seal
- 59. Cotter pin breather
- 60. Expansion plug
- 61. Bar adjusting bolt
- 62. Bar adjusting pin
- 63. Lock nut
- 65. Worm gear
- 66. Flange
- 67. Plunger
- 68. Cam screw
- 69. Gasket
- 70. "O" rings
- 71. Felt seal
- 72. Pump body
- 73. Spacer sleeve
- 75. Oil filter
- 76. Connector
- 77. Oil filter & connector
- 78. Oil line
- 79. Grommet

On early production model XL-12, clutch drum was equipped with an Oilite bushing. All later clutch drums, including service clutch drum for early XL-12, are fitted with caged needle roller bearings. When renewing early bushing type clutch drum, a new needle bearing inner race must also be installed.

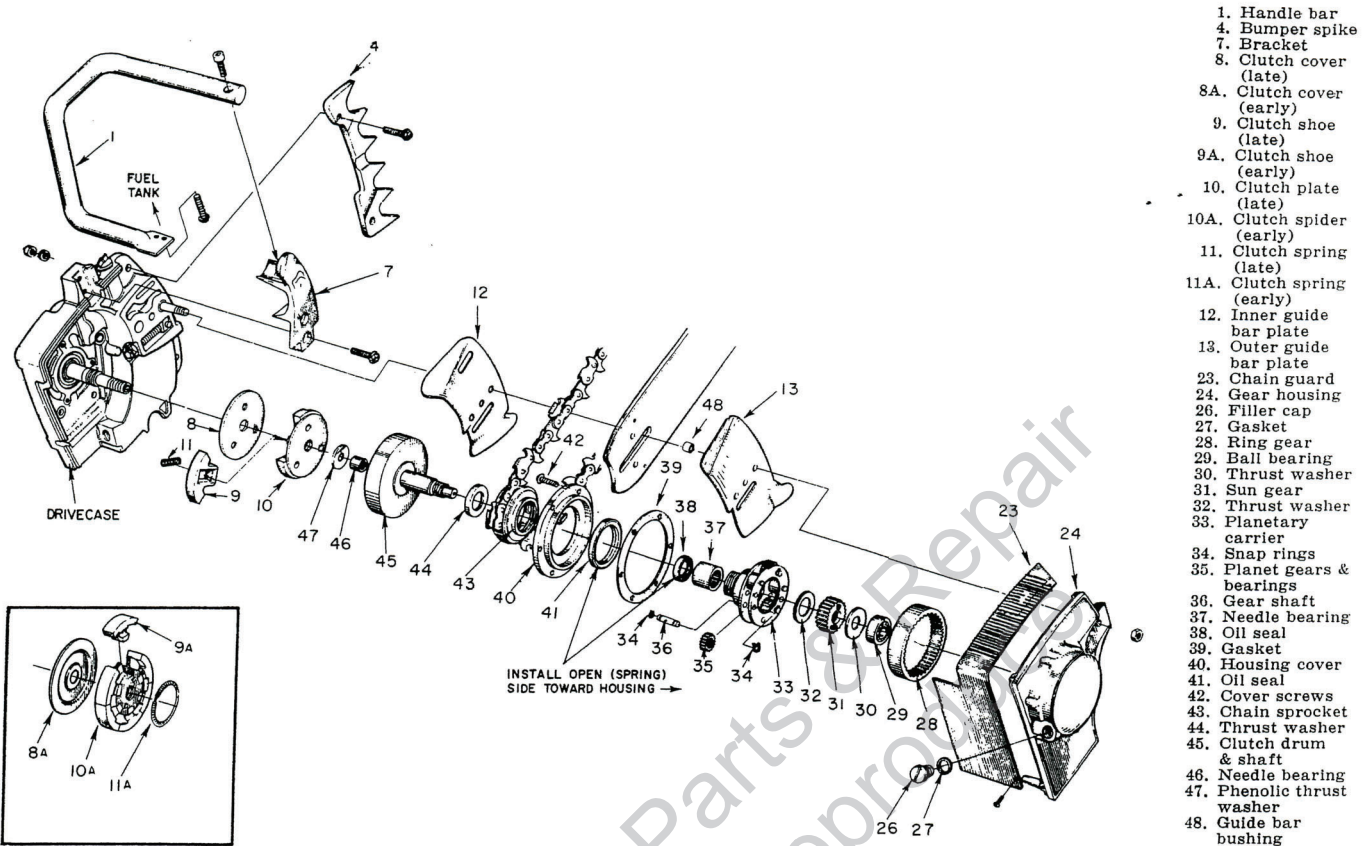
Renew needle roller bearing inner race if wear marks are visible. Renew bearing in clutch drum if any roller has flat spot or is damaged, or if worn to extent that two rollers can be separated the width equal to thickness of one roller. Using installer plug, press against lettered side of needle bearing cage when installing bearing.

Refer to Fig. HL41B for assembly of late type clutch.

TRANSMISSION. Gear drive models are equipped with a planetary gear drive as shown in exploded view in Fig. HL41A.

To disassemble gear drive unit, drain oil from housing and remove screws (42); then, pull unit from housing (24). Hold drum (45) from turning by hand or in a three-jaw chuck and turn sun gear (31) in a clockwise direction with Homelite tool No. A-23696. Insert two 1/4 x 2 inch dowel pins in carrier (33), hold chain sprocket in sprocket locking fixture (Homelite tool No. A-23792) and turn planet carrier in a counter-clockwise direction with pry-bar against the dowel pins.

Planet gears (35) and shafts (36) can be removed from carrier after removing snap rings (34).



1. Handle bar
4. Bumper spike
7. Bracket
8. Clutch cover (late)
- 8A. Clutch cover (early)
9. Clutch shoe (late)
- 9A. Clutch shoe (early)
10. Clutch plate (late)
- 10A. Clutch spider (early)
11. Clutch spring (late)
- 11A. Clutch spring (early)
12. Inner guide bar plate
13. Outer guide bar plate
23. Chain guard
24. Gear housing
26. Filler cap
27. Gasket
28. Ring gear
29. Ball bearing
30. Thrust washer
31. Sun gear
32. Thrust washer
33. Planetary carrier
34. Snap rings
35. Planet gears & bearings
36. Gear shaft
37. Needle bearing
38. Oil seal
39. Gasket
40. Housing cover
41. Oil seal
42. Cover screws
43. Chain sprocket
44. Thrust washer
45. Clutch drum & shaft
46. Needle bearing
47. Phenolic thrust washer
48. Guide bar bushing

Fig. HL41A—Exploded view showing planetary gear drive transmission, clutch and drivecase. Late type clutch assembly (Items 8, 9, 10 & 11) is interchangeable with early type clutch assembly (inset, lower right). To remove transmission assembly (including clutch drum), remove bar stud retaining nuts and withdraw housing (24) and bar and chain from studs. Clutch plate (10), or spider (10A) is threaded to crankshaft.

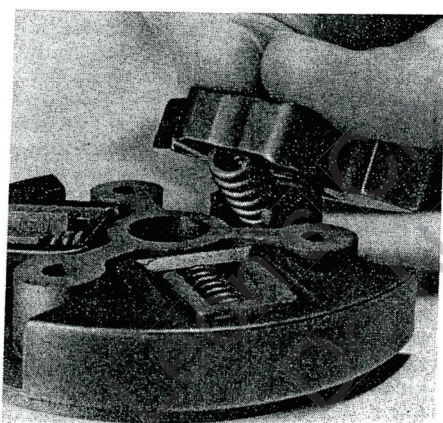


Fig. HL41B—View showing easy method for installing late type clutch shoes and springs on clutch plate.

Needle bearing (46) can be removed from blind hole in clutch drum with Snap-On puller A-78 or equivalent tool. Press on lettered end of bearing cage with Homelite tool No. 23726-A or other suitable bearing tool to install new bearing in drum. Needle bearing (37) and seal (38) in planet gear carrier (33) can be pressed out using Homelite tool No. 23725-A; press new bearing in from threaded side of carrier with short end of tool No. 23725-A and press new seal in with lip towards needle bearing with Homelite tool No. 23726-A.

To remove ball bearing (29) and ring gear (28) from housing (24), heat finned area of

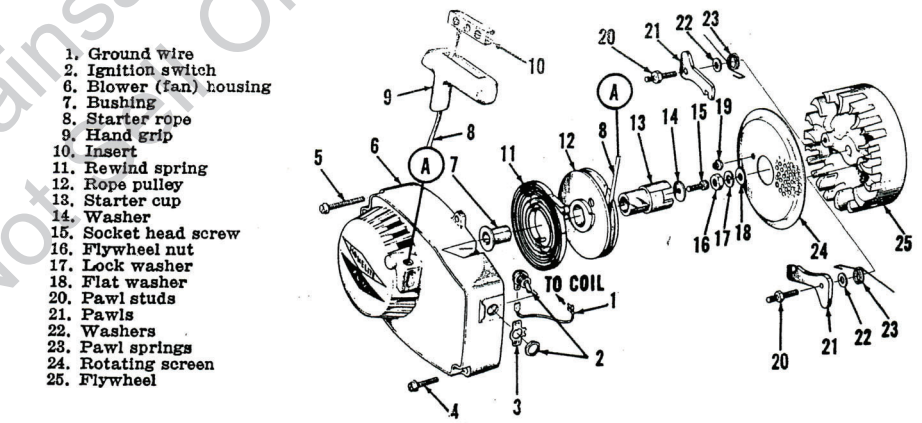


Fig. HL42 — Exploded view of early rewind starter components and related parts. Starter unit is mounted on shaft (starter post) which is an integral part of the blower housing. Refer to Fig. HL42A for late starter assembly.

housing until bearing can be removed by tapping housing against bench. Then, heat housing until ring gear can be removed. Always be sure to remove bearing first and install last with as little heat as possible.

Reassemble by reversing disassembly sequence using new gasket (39). Refill gear housing with SAE 90 gear oil.

AUTOMATIC CHAIN OILER PUMP. Refer to Fig. HL40A for exploded view of typical automatic oiler pump installation, and to Fig. HL40B for schematic view showing pump operation.

The automatic oiler pump is accessible

after removing the clutch assembly from crankshaft and disconnecting oil lines. Pump plunger (67) and body (72) are available as a complete assembly only which includes flange (66), cam screw (68), gasket (69), "O" rings (70), sealing felt (71) and flange retaining screws; however, all parts except plunger and body are available separately.

Inspect tip of cam screw (68) and cam groove on plunger (67) for wear and plunger bore in body and piston portion of plunger for scoring or wear. Renew pump assembly if body and/or piston is worn or damaged beyond further use.

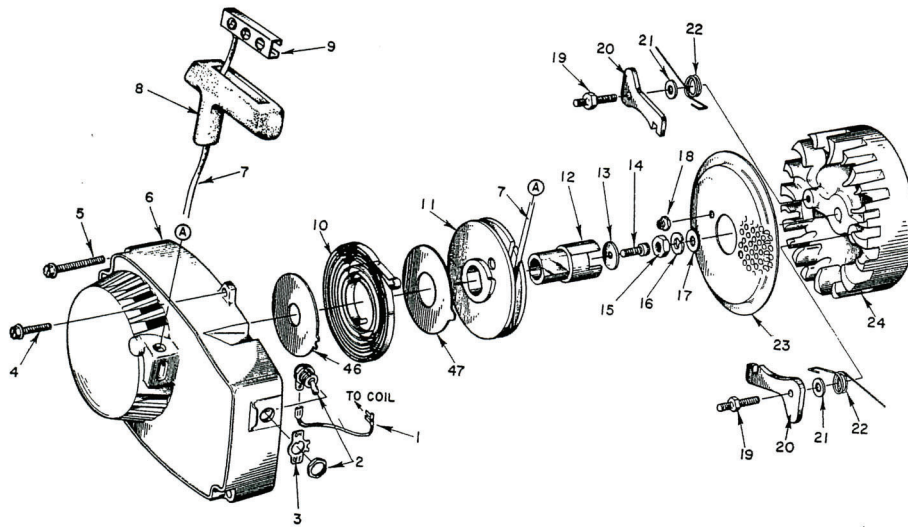


Fig. HL42A — Exploded view of late rewind starter and related parts. Plastic shields (46 and 47) keep sawdust out of rewind spring (10) and dampen noise.

- | | | | |
|-------------------------|-----------------------|-----------------|---------------------|
| 1. Ground wire | 11. Rope pulley | 16. Lock washer | 21. Washers |
| 2. Ignition switch | 12. Starter cup | 17. Flat washer | 22. Pawl springs |
| 6. Blower (fan) housing | 13. Washer | 18. Lock nut | 23. Rotating screen |
| 7. Starter rope | 14. Socket head screw | 19. Pawl studs | 24. Flywheel |
| 10. Rewind spring | 15. Flywheel nut | 20. Pawls | |

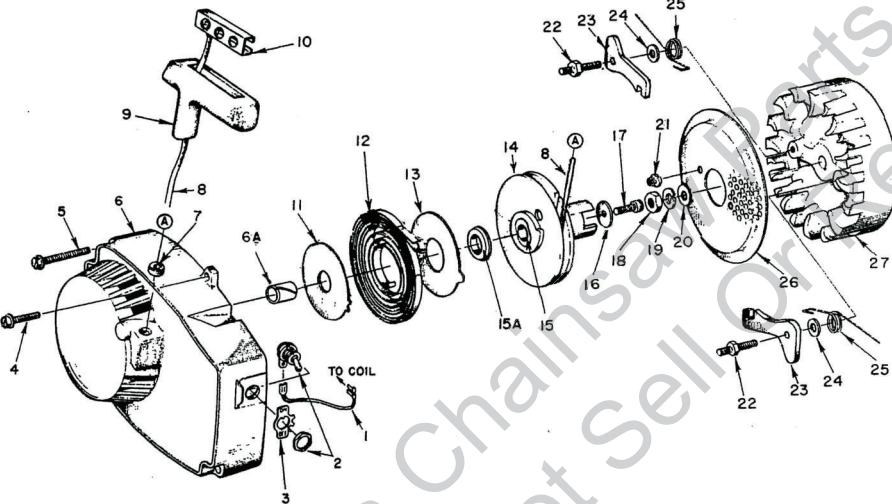


Fig. HL42B—Exploded view of latest production rewind starter assembly. Pulley (14) and integral starter cup (see item 12, Fig. HL42A), together with spring lock (15) and spring lock bushing (15A), can be used to renew early starter pulley (11—Fig. HL42A) and separate starter cup. Ignition cut-off switch and wiring are also shown.

- | | | | | |
|--------------------|-------------------------|--------------------------|---------------------------|----------------------|
| 1. Ground lead | 8. Starter rope | 13. Outer spring shield | 17. Hex head screw | 22. Pawl studs |
| 2. "ON-OFF" switch | 9. Starter handle | 14. Starter pulley | 18. Crankshaft nut | 23. Starter pawls |
| 3. Switch plate | 10. Insert | 15. Spring lock | 19. Lock washer | 24. Washers |
| 6. Fan housing | 11. Inner spring shield | 15A. Spring lock bushing | 20. Flat washer | 25. Pawl springs |
| 6A. Bushing | 12. Rewind spring | 16. Retaining washer | 21. Screen retaining nuts | 26. Air screen |
| 7. Rope bushing | | | | 27. Rotor (flywheel) |

REWIND STARTER. Although several design changes have been made, later production parts may be installed on earlier production starter and fan housing assemblies and service procedures are the same for all units.

Early production starter and fan housing assembly is shown in Fig. HL42. The starter post in fan housing (6) requires a flanged bushing (7) for starter pulley (12). The flanged bushing remains available for service, but if renewing fan housing, latest type fan housing (6—Fig. HL42B) with starter pulley bushing (6A), inner spring shield (11) and outer spring shield (13) are used.

Later production starter and fan housing are shown in exploded view in Fig. HL42A. The starter post in fan housing (6) fits directly into hub of starter pulley (11) and no bushing is used. Inner spring shield (46) and outer spring shield (47) have been added to dampen noise and keep sawdust out of rewind spring. Latest type fan housing (6—Fig. HL42B) and bushing (6A) are required to renew fan housing not using bushing.

Latest production starter and fan housing are shown in Fig. HL42B. In addition to starter pulley bushing (6A), starter pulley and starter cup are an integral unit (14) and a spring lock (15) and spring lock bushing (15A) have been added.



Fig. HL43 — When installing starter pawls (21), be sure that pawl return springs (23) are located in flywheel vanes so that they are parallel to the pawls as shown.

To renew early type starter pulley (12—Fig. HL42 or 11—Fig. HL42A) and/or starter cup (13—Fig. HL42 or 12—Fig. HL42A), use latest type pulley and integral starter cup (14—Fig. HL42B), spring lock (15) and spring lock bushing (15A).

To disassemble starter, pull starter rope fully out, hold starter pulley from turning, pull all slack in rope out inner side of fan housing and allow pulley to unwind slowly until spring tension is relieved. Remove the slotted hex head screw retaining pulley to post and remove starter pulley and cup with flat retaining washer. Remove the rewind spring and, if so equipped, the spring shields, from fan housing. Remove rope from pulley and handle.

Starter pulley post in fan housing is not renewable; a new fan housing must be installed if post is broken loose, or on mid-range production models without starter post bushing, if post is worn so that pulley is not held in proper position. Renew flanged bushing on early production models if bushing is worn excessively and fan housing is serviceable. Renew rope bushing if worn.

To reassemble, proceed as follows: Do not lubricate starter spring, but apply light oil sparingly to starter post, bushing (if used) and bore of starter pulley. Place outer shield (if used) in fan housing, then install rewind spring with loop in outer end over spring post in fan housing and install inner spring shield (if used). Attach starter cord to pulley, insert rope through rope bore or bushing in fan housing and attach handle and insert to outer end of rope. Wind rope onto starter pulley. Place pulley and starter cup (with spring lock and spring lock bushing if integral pulley and lock are used) on starter post and be sure spring lock or pulley is properly engaged with rewind spring. Install retaining washer and hex head screw and tighten screw to a torque of 50 inch-pounds. Pull rope out about two feet and hold pulley from turning. Locate notch in pulley at cord insert in housing and pull up loop of cord between notch and housing. Holding onto pulley, wind cord three more turns onto pulley by turning pulley, then let spring rewind pulley until handle is pulled against fan housing.

Leon's Chainsaw Parts & Repair
Do Not Sell Or Reproduce