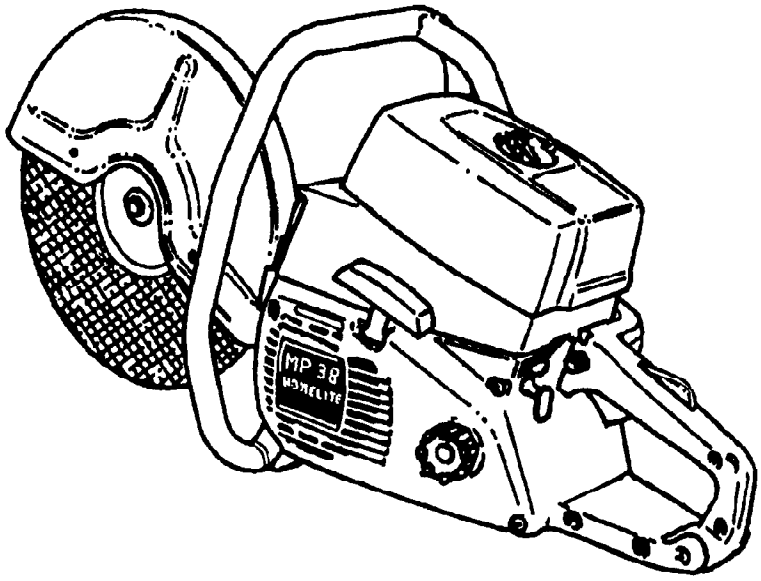
Homelite®

Dealer Service Guide



Multi-Purpose Saws

MP38	UT05057
MP38 w/12”	UT05071, UT05071 A
MP38 w/14”	UT05072, UT05072 A
MP38i	UT05061

ST01370

Contents

SAFETY PRECAUTIONS

PERSONAL SAFETY

To protect the eyes from loose objects that could be thrown from the unit, non-fogging, vented safety goggles or a face screen should be worn for eye protection.
Use only genuine product manufacturer's replacement parts. Failure to do so may cause poor fit and possible injury.
Scarfs, neckties, jewelry or loose pants and jackets should be avoided as they can be caught on obstacles or become entangled in the unit. To protect your legs, long pants should be worn.
To improve your grip and protect your hands, wear heavy-duty nonslip gloves.
The sound level exceeds 90 DbA. To prevent hearing damage, always wear sound barriers (ear plugs or ear mufflers).

WHEEL SAFETY

Clean the wheel and both wheel flanges when installing the wheel. Wheel blotters must be used between flanges and wheel to compensate for irregularities in the wheel.
Examine cutting wheels. Wheel should have no cracks, nicks or flaws. Center hole should be undamaged. Use only the wheels recommended for your model.
Handle abrasive type wheels carefully. They may break if nicked or scratched, subjected to heavy side pressure, or impregnated with moisture of certain fluids.
Store straight up or on a flat rigid and dry support surface.
The ignition governor is designed to limit the maximum engine speed to 10,500 RPM in a no-load condition. Speeds in excess of that may cause the wheel to exceed the maximum safe-allowable speed. Do not operate the unit if you suspect it of exceeding 10,500 RPM.
If a wheel shatters, carefully examine the wheel guard for damage. A damaged wheel guard must be replaced to protect the operator.
When setting the unit down after use, make sure the wheel does not make contact with the ground or any other surface.

CARBIDE-TIPPED BLADES

⚠ Caution

Use of carbide-tipped blades may be restricted by law. Carbide-tipped blades have carbide tips brazed to a steel blade. Material is cut away rather than worn away as with abrasive and diamond wheels.

⚠ WARNING

Never operate unit with a carbide-tipped blade unless you are a specially trained operator and using the saw under special circumstances, such as fire fighting or emergency rescue work.

Use only carbide-tipped blades approved by the manufacturer for hand-held cutoff saws.
Operators, assistants and anyone within 50 feet (15 m) must wear safety goggles, helmet with full face shield, all protective clothing noted in Personal Safety Section.
Keep bystanders a minimum of 50 feet (15 m) away from cutting operation.
Pay extra attention to kickback which is more likely with carbide-tipped blades if improperly used. See section on kickback under operation.

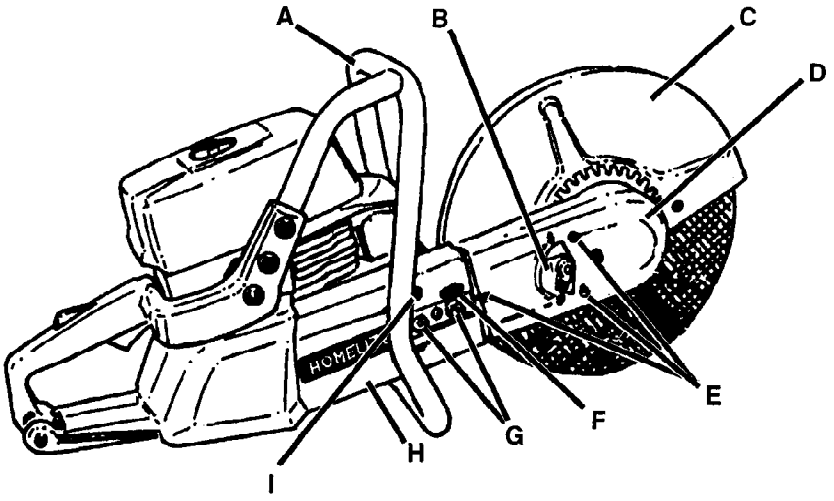
GENERAL SAW SAFETY

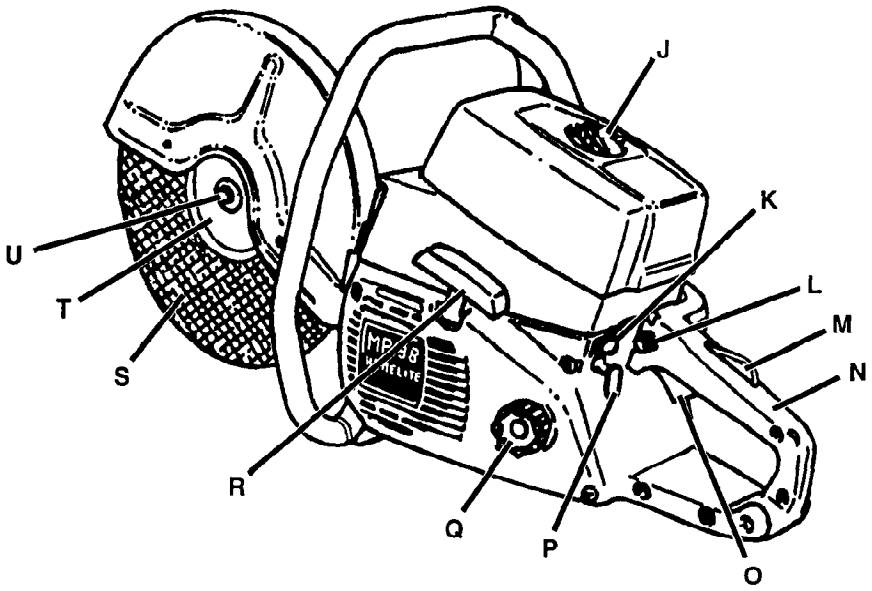
Be sure sparks from the cutting operation cannot reach flammable surroundings. When cutting metals, keep a fire extinguisher on hand.
Never operate unit without a wheel guard.
Avoid getting into direct line with the wheel.
Always remember to keep both hands on the control handles when the engine is running.
Do not operate the machine if there is a fuel leak. Have the fuel leak fixed first.
If you plan to store the unit longer than a few days, empty the fuel tank.
Make sure the control handles have not accumulated oil and fuel and are clean and dry.
See Operators Manual for additional safety precautions.

WORK AREA

Operate only in well ventilated areas.
Observe all safety regulations for the safe handling of fuel. Mix and handle fuel in safety containers. Wipe the saw dry if fuel is spilled on it. Always move away from the fueling area before starting the engine.
Fuel the saw at least 10 feet (3 m) from the place where you start the engine and operate the saw.

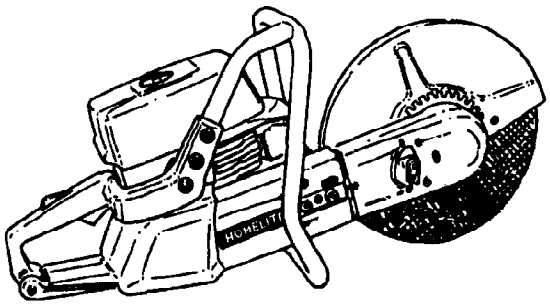
UNIT FEATURES





A. Handlebar
B. Wheel Guard Adjusting Lock
C. Wheel Guard
D. Belt Guard
E. Belt Guard Retaining Screws (3)
F. Belt Tension Indicator
G. Hex Nuts
H. Clutch Cover
I. Belt Adjuster Screw
J. Air Filter Cover Knob
K. "Run-Stop" Switch
L. Throttle Latch Button
M. Trigger Lockout Lever
N. Throttle Handle
O. Throttle Trigger
P. Choke
Q. Fuel Cap
R. Starter Grip
S. Wheel
T. Wheel Flange (2)
U. Wheel Mounting Bolt

UNIT SPECIFICATIONS



Model	MP-38
Capacity and Wheel Diameter	4" with 12" diameter wheel 5" with 14" diameter wheel
Wheel Drive	33.5" Standard "A" section V-cog.
Tools	Combination wrench (1/2" & 3/4") (T25) Torx Wrench

Engine

Make	Homelite®
Type	Air-cooled, 2-cycle, single cylinder, loop scavenged. Can be operated in any position.
Displacement	3.8 cu. in. (62 cc)
Lubrication	Pressure vapor oil system. Oil mixed with gasoline.
Fuel Tank Capacity	38 oz. (1.14 liter)
Governed Engine Speed (no load)	10,500 RPM
Wheel Speed (no load)	5100 RPM
Complies with OSHA standard and ANSI B7.7-1990	
Maximum Vibration Level	12" - Front 10 m/s^2; Rear 12 m/s^2 14" - Front 10 m/s^2; Rear 12 m/s^2
Sound Pressure Level (at operator's ear)	Idle - 80 Dba; Racing - 104 Dba
Sound Power Level	Idle - 96 Dba; Racing - 117 Dba
Speed Control	Governor carburetor. Throttle trigger in handle.
Air Cleaner	Replaceable paper cartridge filter restricts air flow when dirty and automatically reduces engine speed.
Starting	Automatic rewind. Capacitor discharge ignition.

General

Dimension	10" (25.4 cm) wide; 14.8" (37.6 cm) high 12" - 30.5" (76.3 cm) long 14" - 31.5" (78.7 cm) long
Weight	12" - 19.8 lbs. (9.0 kg) less fuel and wheel 14" - 20.4 lbs. (9.3 kg) less fuel and wheel
Safety	Complies with OSHA Standards

Ignition

Spark Plug Gap (RCJ6Y)	0.020 in. (0.5 mm)
Magneto Air Gap	0.010-0.012 in.
Engine Ignition Timing Angle	26 +/- 2 degrees

TORQUE SPECIFICATIONS

NOTE: TORQUE SPECIFICATIONS ARE GIVEN IN INCH POUNDS AND NEWTON METERS (N•M)

MP-38 MULTI-PURPOSE SAW

SIZE & TYPE	QTY	APPLICATION	TORQUE LIMITS (IN. LBS)	TORQUE LIMITS (N•m)
10-24 x .75 Torx Slotted Truss	3	Starter Housing to Crankcase	40-50	4.5-5.6
10-24 x 1.25 Torx Slotted Truss	1	Starter Housing to Crankcase	40-50	4.5-5.6
8-32 x .50 Pan Head, Machine	3	Exhaust Plate to Muffler	30-40	3.4-4.5
10-24 x .50 Torx Truss Head	2	Muffler to Crankcase	50-60	5.6-6.8
10-24 x 2.50 Torx Slotted Truss	2	Muffler to Cylinder	50-60	5.6-6.8
10-24 Stud	1	Cylinder	10-20	1.2-2.4
10-24 Stud, Offset	1	Crankcase	10	1.2
10-24 x .375 Nut, Hex Conical Washer	2	Cylinder Cover to Cylinder	35-45	4.0-5.1
10-24 x 1.25 Torx Slotted Truss	8	Rotor Side C/case to D/side C/case	50-60	5.6-6.8
12-24 x .75 T-27 Torx Pan Head	4	Cylinder to C/case Assembly	80-90	9.0-10.2
7/16-20 L.H. Spider, Clutch	1	Clutch Spider to Crankshaft	350-450	39.5-50.8
8-32 x .375 Slotted Pan Head	3	Clutch Cover Plate to Clutch Spider	50-60	5.6-6.8
8-32 x .625 Slotted Torx Pan Head Taptite	2	Module to Cylinder	30-40	3.4-4.5
RCJ-6Y Spark Plug	1	To Cylinder	120-180	13.6-20.3
3/8-24 Jam Nut (w/83102 1/washer)	1	Rotor to Crankshaft	200-250	22.6-28.2
10-24 x 1.00 Slotted Torx Pan Head	3	Intake Adapter to Cylinder	40-50	4.5-5.6
8-16 x 3.25 Plastite Torx Slotted Truss	2	Air Filter Adapter & Carburetor to Intake Adapter	40-50	4.5-5.6
10-24 x .375 Nut, Hex Conical Washer	1	Air Filter Element Cover to Air Filter	35-45	4.0-5.1
10-24 Knob & Insert	1	Air Filter Cover to Air Filter	Hand tighten	
10-24 x .50 Torx Truss Head (w/84003 washer)	1	Air Filter Adapter Bracket to Crankcase	50-60	5.6-6.8
Push Nut	1	Choke Rod to Choke Link		
6-19 x .50 Thread Forming (Hi-Lo Pan Head Cross Recess Type	1	Throttle Cable Bracket to Intake Adapter	10-15	1.2-1.8
8-16 x .62 Plastite Slotted Torx Truss Head	4	Handle Cover to Rear Handle	30-40	3.4-4.5
5/16-18 Isolator Pin	2	Crankcase to Rear Handle Isolator	50-70	5.6-7.9
10-24 x .50 Torx Truss Head	2	Isolator Springs to Crankcase	60-70	6.8-7.9
10-24 x .750 Torx Truss Head (w/95935 washer)	2	Rear Handle to Handle Bar Branch	50-60	5.6-6.8
10-24 x .750 Torx Truss Head (w/95935 washer and 02330 nut)	1	Rear Handle to Isolator Springs	50-60	5.6-6.8

TORQUE SPECIFICATIONS

NOTE: TORQUE SPECIFICATIONS ARE GIVEN IN INCH POUNDS AND NEWTON METERS (N•M)

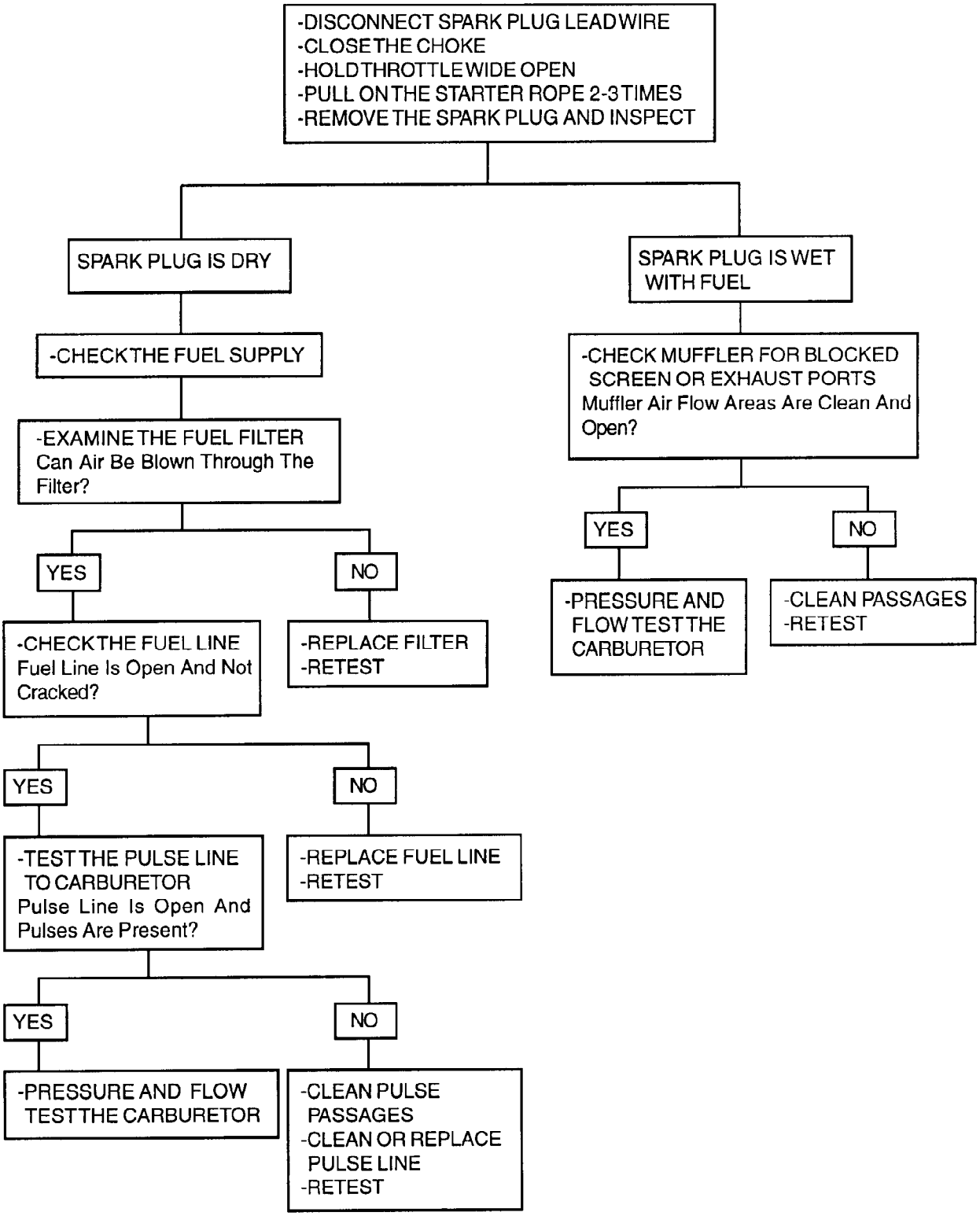
MP-38 MULTI-PURPOSE SAW

SIZE & TYPE	QTY	APPLICATION	TORQUE LIMITS (IN. LBS)	TORQUE LIMITS (N•m)
10-24 x .50 Torx Truss Head	2	Handlebar to Isolator Spacer	50-60	5.6-6.8
8-32 x .62 Slotted Torx Pan Head Taptite	2	Clutch Cover to Gear Plate	17-22	1.9-2.5
10-24 x .50 Torx Truss Head (w/81204 nut)	2	95935 Washer to Crankcase	50-60	5.6-6.8
10-24 x 1.25 Torx Slotted Truss Head	1	Choke Rod Bracket to Crankcase	50-60	5.6-6.8
10-24 x 1.25 Oval Countersink (w/81208 nut)	2	Wear Pad to Handlebar	30-40	3.4-4.5

ADDITIONAL TORQUE VALUES FOR THE WHEEL ARM

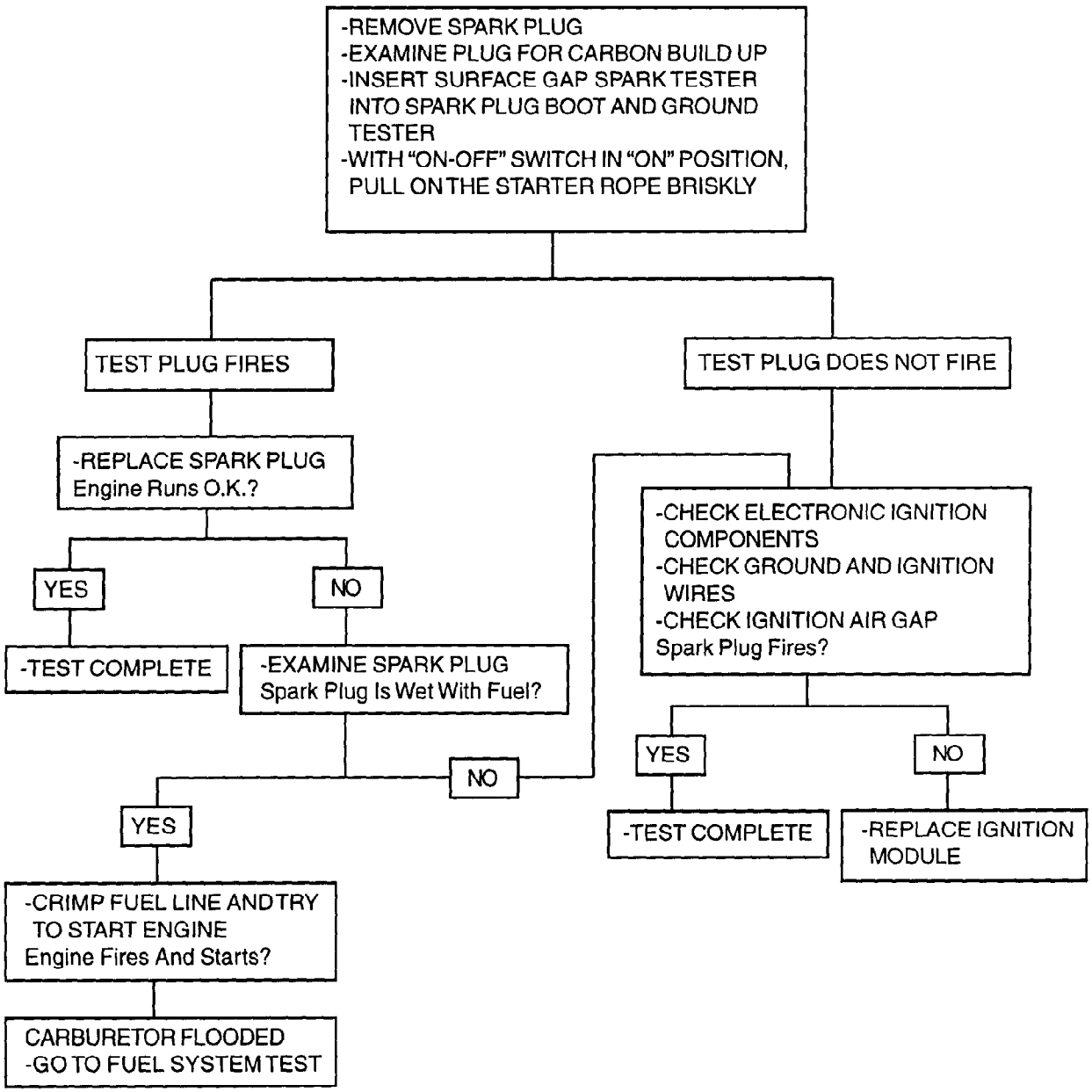
SIZE & TYPE	QTY	APPLICATION	TORQUE LIMITS (IN. LBS)	TORQUE LIMITS (N•m)
7/16-20 Heavy Jam Nut (w/JA-446148 1/washer)	1	Pulley and Hub to Wheel Shaft	480-600	54.2-67.8
Bolt and Washer	1	Wheel Flange to Shaft	Hand tighten	
10-24 x .50 Torx Truss Head	1	Adjusting Pin Plate to Wheel Arm	50-60	5.6-6.8
10-24 x .50 Torx Truss Head (w/95935 washer)	3	Spring Plate to Wheel Arm	50-60	5.6-6.8
10-24 x .71 Slotted Round Head	3	Belt Guard to Wheel Arm	40-50	4.5-5.6
5/16-18 Nut, Hex Flange	2	Wheel Arm & Clutch Cover to Crankcase	120-200	13.6-22.6

FUEL SYSTEM



TROUBLESHOOTING

IGNITION SYSTEM



PREPARATION

MOUNTING CUTTING WHEEL

SERVICE NOTE

Almost all cutting wheels have the blotters permanently attached. If these blotters become damaged, the wheel must be discarded and a new wheel installed. Wheels without attached blotters must be sandwiched between two blotters before installation.

Abrasive wheels must be sandwiched between wheel blotters to take up any irregularities in thickness. Wheels must be rated for spindle speeds of 5100 RPM or higher.

Insert a screwdriver or similar tool through hole in belt cover. Rotate wheel until screwdriver goes through the hole in belt pulley and holds pulley in place.

Use the combination wrench to loosen and remove the wheel bolt and washer.

Remove the outer wheel flange; leave inner wheel flange and wheel spacer on shaft.

SERVICE NOTE

If the guard is not on the desired side of the arm:

a) Move wheel cover locking lever to the unlocked position.
b) Rotate wheel guard approximately 180° to a position that will protect the operator.
c) Move wheel cover locking lever to the locked position.

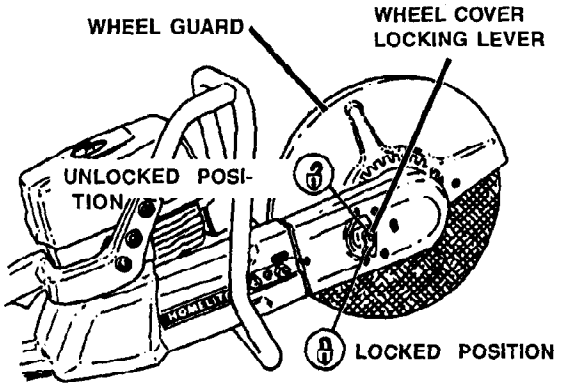


FIGURE 1

Install on shaft using outer wheel flange, wheel bolt and washer. Tighten securely.

⚠ Caution

When replacing a shattered wheel, examine the guard for damage. A damaged wheel guard must be replaced to protect the operator.

MOUNTING ARM

Remove the two hex nuts from the mounting studs and remove the drive case cover.

Angle arm onto mounting stud closest to the clutch drum.

Place belt over clutch drum and rotate drum until belt is completely onto pulley.

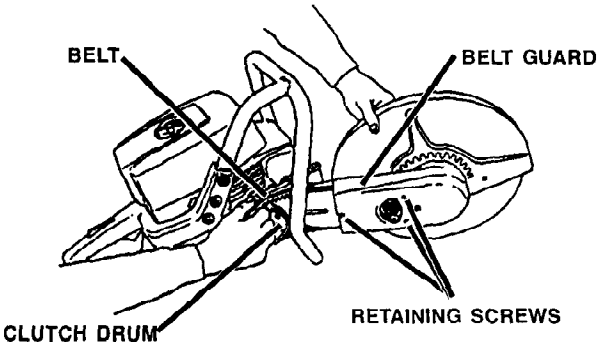


FIGURE 2

SERVICE NOTE

Do not force belt over drum. If belt cannot be installed over drum by hand:

a) Place wheel cover locking lever in the locked position. Loosen the three belt guard retaining screws and remove the belt guard from the wheel arm.
b) Remove the belt from the arm.
c) Install belt over clutch drum and onto pulley.
d) Place arm onto the two mounting studs and push back to clutch drum.
e) Fit belt around arm and onto wheel pulley.
f) Install belt guard and retaining screws.

After belt is in place, position arm on both mounting studs and pull forward.

Install drive case cover and hex nuts. Do not tighten hex nuts. *Arm must be free to slide while belt tension is*

being set.

SETTING BELT TENSION

Drive case cover nuts should be hand tight only; arm must be free to slide.

Use screwdriver to turn adjusting screw and align indicator under arrow.

Tighten drive case cover nuts securely.

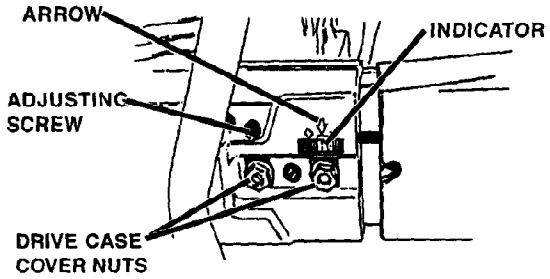


FIGURE 3

SERVICE NOTE

Belt should be tight enough so that it does not slip at full throttle if the wheel is bound in the work piece.

FUELING

⚠ WARNING

The fuel tank may be under pressure. Remove cap slowly.

⚠ Caution

Select bare ground for fueling. DO NOT SMOKE or bring any flame or sparks near fuel. Move at least 10 feet (3 m) from the fueling spot before starting the engine.

BREAK-IN PROCEDURE

To ensure long engine life and consistent high performance, it is important that a careful break-in procedure be followed. This engine is constructed with precision components which require a period of time to properly "run-in", thereby establishing proper running fits and surface finishes. Such a break-in period is necessary with any type of precision machinery. The old adage of "break it in the way you plan to run it" should be disregarded and attributed to impatience rather than good judgement. The following procedure is recommended by the factory and is a proven break-in method learned from many years of chain saw manufacture.

BREAK-IN FUEL MIXTURE

The first 1-1/2 gallons (6 tanks full) of fuel used in this engine should be mixed with twice as much oil as the standard mix with **Homelite 32:1** or **Homelite Premium Exact Mix.** The carburetor has been pre-adjusted at the factory for optimum performance during break-in, and no adjustments should be necessary. After the initial 1-1/2 gallons of fuel mixture have been consumed by the engine, the break-in period is considered complete.

Homelite 32:1 or **Homelite Premium Exact Mix** may be mixed according to the instructions on the container.

Recommended Fuel:

a) This engine will operate satisfactorily on any gasoline intended for automotive use. This includes gasolines blended with alcohols or ethers. You may prefer to use unleaded gasoline that does not contain alcohol if you are not satisfied with the performance of the product (running quality or ability to start) with these fuels.

b) We recommend the exclusive use of Homelite 2-cycle oils. Homelite 2-cycle engine oil, when mixed with gasoline according to the instructions on the oil package, will provide complete lubrication protection.

c) All Homelite 2-cycle engine oils contain an antioxidant fuel stabilizer. Under average conditions, fuel mixed with Homelite oils will stay fresh up to 12 months.

d) If Homelite oils are not used, we recommend stabilization of fuel with an antioxidant fuel stabilizer, such as STA-BIL, a product of Gold Eagle Co., Chicago, IL 60632. Unstabilized fuel will stay fresh for only up to three months and should not be

used after that time.

e) We urge you to use **Homelite 32:1** or **Homelite Premium Exact Mix** oil (mixed according to instructions on the container) for best performance and customer satisfaction. Oils formulated for air cooled 2-cycle engines at 40:1 or 50:1 ratios can be used at the Homelite specified 32:1 ratio (4 oz./ gal.). Oils formulated at less than 32:1 ratio or non 2-cycle oils should not be used. They can cause smoking, oily residues, spark plug fouling, combustion chamber deposits, hard starting, etc.

Do Not Use Automotive Motor Oil.

How to Mix Fuel Thoroughly:
a) Measure out the quantities of gasoline and oil to be used.
b) Put some of the gasoline into the mixing can.
c) Pour in all of the oil and agitate contents by stirring or shaking the can.
d) Pour in the remainder of the gasoline. Again stir or agitate - this time for at least one minute.

FUEL MIXING TABLE

Gallons of Recommended Gasoline	Amount of Homelite 32:1 Oil or other 2-Cycle Oil
1 Gallon	4 oz. (118 cm³)
2 Gallons	8 oz. (237 cm³)

STARTING AND STOPPING

Set saw down on a clear, level spot where the wheel will not be obstructed.

Move the **switch** to the run position (**I**).

Pull the **choke lever** outward.

Grasp **throttle handle** to depress **trigger lockout lever** and squeeze the **trigger.** (Note that trigger cannot be moved unless the trigger lockout lever is depressed.)

While squeezing the trigger, push and hold in the **throttle latch button** and let go of trigger. This latches the trigger for starting.

Keep your body to the left of the saw. Hold the saw down with the left hand on top of the front handlebar. (Note: You can also place the toe of your footwear in the throttle handle platform to hold down the rear.)

Grasp the **starter grip** with your right hand. Pull the starter grip straight up to spin the engine rapidly. Use the following sequence for starting:
a) Crank repeatedly with **full choke** (choke out). It may take a few cranks to prime the fuel system.
b) As soon as the engine coughs or fires a few times, go to **half-choke** and crank to start.
c) When engine runs, push in the choke (to open position). If you push too fast, the engine may die. If you wait too long, it will also die from lack of air.

Squeeze the trigger, this unlatches the throttle latch and gives you control of the throttle for cutting.

To stop, move the switch to the off position (**O**).

While the engine is still warm from recent operation, it can be started without the choke and without latching the throttle latch. When it has begun to cool, however, try starting at half-choke position with the trigger latched. If this does not work, crank to start at full choke.

Overcranking Remedy: The fuel system can flood and the spark plug can become "wet-fouled" if the unit was bumped and jostled during transport or if the saw was cranked a lot with the choke wrongly set. If you suspect this condition, do as follows:
a) Loosen wing knob and remove air filter cover.
b) Remove air filter retainer plate and air filter cartridge.
c) Remove two nuts holding cylinder cover in place. Lift cylinder cover off to expose spark plug.
d) Disconnect the spark plug boot from the plug and remove the plug.
e) Crank engine three or four pulls at open choke and open throttle. This purges the engine of excess fuel.
f) Install a dry spark plug or use the old plug after wiping it clean and dry.
g) Connect spark plug wire. Assemble cylinder cover, air filter, and air filter cover.
h) Follow starting instructions for starting a cold engine.

AIR FILTER

For double protection, the main filter cartridge is fitted with a felt prefilter element which acts as a precleaner. If a buildup of dust can be seen on the paper cartridge, it must be cleaned or replaced.

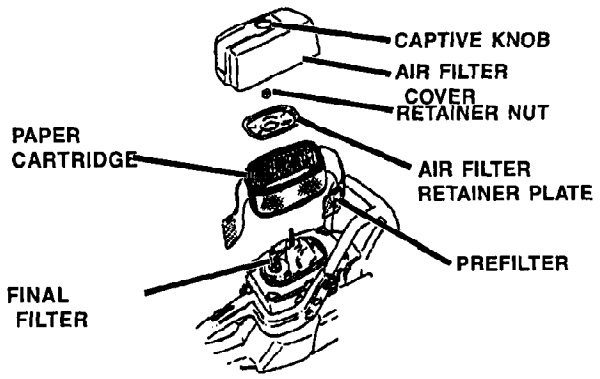


FIGURE 4

Removal and cleaning of the felt prefilter:
Remove the air filter cover. Remove as much loose dust from around the filter as possible.

Pull the outer Velcro fastener strip on the prefilter to allow it to be removed from the paper cartridge.

Tap the prefilter firmly against a flat surface to loosen and remove dust. After several cleanings the prefilter may be washed in a non-oily solvent. Drain and dry before use.

Wrap the prefilter around the paper cartridge, pull ends together and press the Velcro strips together.

Removal and cleaning of the paper cartridge:
Remove the felt prefilter.

Remove the air filter retaining plate.

Lift paper cartridge off of unit.

Tap cartridge against a flat surface to loosen and remove dust. The cartridge should be replaced if the buildup cannot be removed, if the cartridge appears to be damaged, or after several cleanings.

Final Filter:
A final filter is provided to keep the carburetor chamber clean when the paper cartridge is removed. Cleaning of this filter should not be necessary unless the paper cartridge is damaged.

CARBURETOR ADJUSTMENT

The three carburetor adjustments are accessible through a hole in the chamber cover so that fine tuning can be done without disassembly.

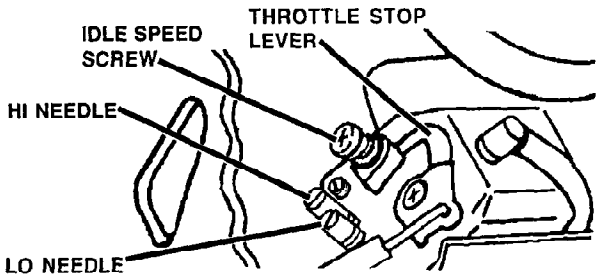


FIGURE 5

SERVICE NOTE

Be sure the throttle trigger is unlatched or you will not be able to make the **IDLE** speed adjustment with the **IDLE** speed screw.

PRELIMINARY SETTING TO GET ENGINE STARTED

(If the saw will start, there is no need for the Preliminary Adjustments. Proceed to Final Adjustments below.)

Remove the chamber cover so you can see the throttle stop lever and the cone-shaped section of the idle speed screw.

Back out the speed screw slowly until you can see a gap between the lever and the screw. Then turn screw back in slowly until it touches but does not move the lever. Now turn the screw in 1/2 to 3/4 turn more to move the lever (which will open the throttle valve slightly).

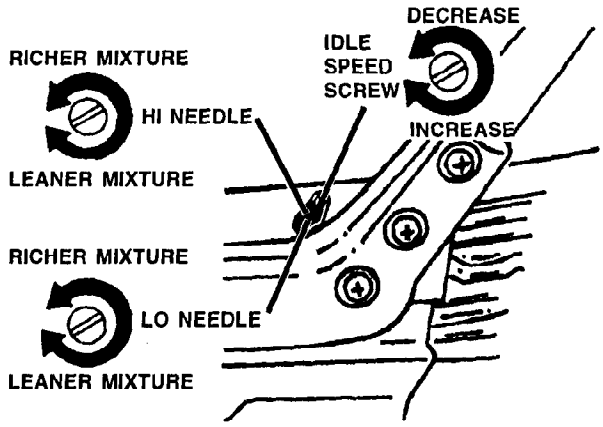


FIGURE 6

Put the cover back on the carburetor chamber.

Now close both mixture adjustment needles very slowly to the right, until each gently bears against its seat.

The idle mixture adjustment is called the LO NEEDLE. It meters the flow of fuel in the idle system. Open the LO NEEDLE one turn.

The main mixture adjustment is called the HI NEEDLE. It meters the fuel drawn through the main jet for full power operation. Open the HI NEEDLE 1/4 turn.

⚠ WARNING

When the above preliminary adjustments have been made, the wheel will almost always rotate at high speed when the saw is started. Keep the wheel in the clear and hold saw down properly.

FINAL ADJUSTMENTS

FOR IDLING: Start and run the saw until it is at full operating temperature. Then turn the LO NEEDLE slowly to the left and then back to the right while noting the effect on the idle speed. At this point, DO NOT adjust the IDLE SPEED SCREW to change the speed, but set the LO NEEDLE at the highest speed obtainable. That setting provides the best mixture.

Now you can adjust the proper idle speed with the IDLE SPEED SCREW. The proper speed is slightly below that which would cause clutch engagement and wheel rotation, but fast enough that the engine idle will be stable at any altitude.

HIGH ALTITUDE OPERATION: If the saw is used at high altitudes (above 5000 ft.) it may be necessary to change the carburetor setting slightly. If the idle speed is low, raise it by turning the idle speed screw to the right (clockwise). Turn the HI NEEDLE to the right (clockwise) 1/8 turn. The new basic settings should be:

HI NEEDLE: Closed.
LO NEEDLE: 1 turn open.
(No change from factory setting is necessary.)

FUEL SYSTEM

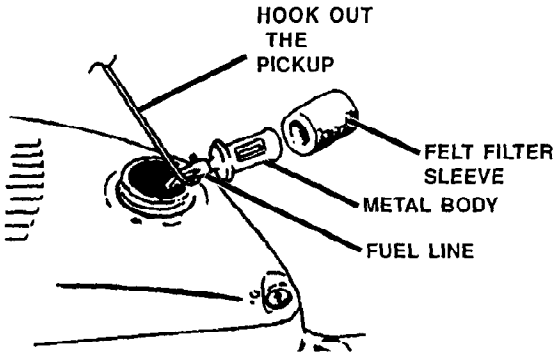


FIGURE 7

FUEL FILTER: Unless very dirty fuel is encountered, the felt filter will usually last at least a month before a new one is required. It can be examined by hooking the fuel line and pickup assembly out through the tank filler hole and pulling the felt sleeve off the metal body (see illustration). Roll and squeeze the felt in your fingers. If it feels hard and crusty, change it. If it feels soft, put it back onto the fuel line.

FUEL LINE: Deformation and cracking of the line, resulting in an air leak, will cause lean operation (excessive high speed but no power) which cannot be compensated for by carburetor adjustment. You can see all of the fuel line except the portion going through the chamber wall.

PULSE LINE: This is the first line you see on top of the carburetor. It comes from the engine and operates the fuel pump. If this line is either leaking or kinked, operation will be erratic.

FUEL TANK VENTING: Venting is done by a duckbill type valve. The filter covering this valve can be seen when the air filter cover is removed. A clogged filter or inoperative valve will result in a sequence where the engine will start and run at full power, then almost immediately run lean and quit.

After such a sequence, you can test by placing the fuel cap to the top and slowly loosening it until air is let into the tank. Then, if the engine again starts willingly but runs out lean, have both the filter and the valve replaced.

STATIC TESTS

REMOVE THE CYLINDER COVER

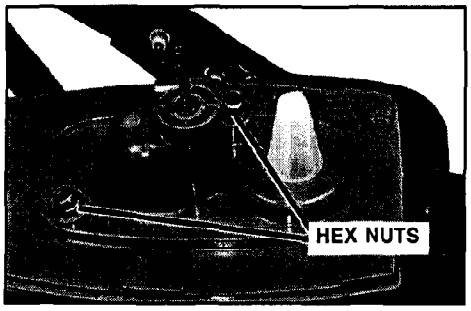


FIGURE 8

Remove the air filter cover, air filter plate and air filter from the cylinder cover. Remove the cylinder cover by removing the two 10-24 x .375 hex nuts and lifting the cylinder cover off the engine.

If testing has indicated the fuel system is causing the problem, perform the following tests to narrow the area of inspection.

FUEL PUMP AND FUEL LINE INTEGRITY

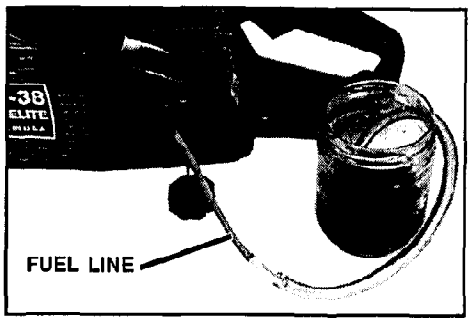


FIGURE 9

Disconnect the spark plug lead. Drain the fuel from the fuel tank. Hook the fuel line and pickup assembly out through the tank filler hole and remove the filter assembly from the fuel pickup line. Connect a length of clear plastic tubing to the fuel pick up line. Add some colored liquid (colored water, coffee, etc.) to a small open container. Place the end of the clear plastic line in the liquid. Close the choke on the carburetor. Pull the starter rope briskly.

Look for the colored liquid to travel up the clear tubing toward the carburetor. If the colored liquid moves up the tubing, STOP pulling the starter rope. This indicates that the crankcase is delivering the needed pulse/vacuum to the carburetor and the fuel pump side of the carburetor is working.

If the colored liquid does not move up the tubing the problem may be in the fuel line, carburetor fuel pump area, the inlet needle and seat area, leaking external pulse line, etc. and will require further testing to determine the cause of the problem.

PRESSURETESTINGTHE CARBURETOR

Pressure testing the carburetor prior to disassembly will test the fuel inlet line, fuel pump cover and gasket integrity, full pump inlet and outlet check valves, fuel inlet screen, and after the carburetor is removed, the inlet valve and seat.

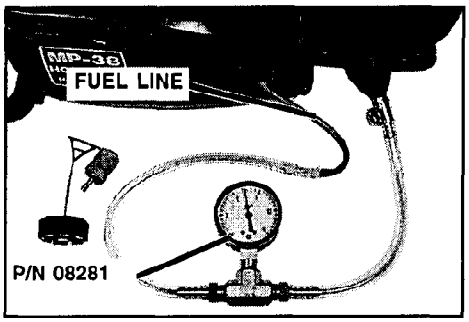


FIGURE 10

Drain the fuel from the fuel tank. Hook the fuel line and pickup assembly out through the tank filler hole and remove the filter assembly from the fuel pickup line. Push a straight fitting (P/N 08281) on the fuel pickup line and then connect a pressure tester (P/N 97194) line on the other end of the fitting.

Pressurize the carburetor to **5 - 6 PSIG** (pounds per square inch-gauge). The fuel pump side of the carburetor should hold pressure. If not, push the fuel inlet line of the carburetor off the carburetor fitting (at top of carburetor) and insert the pressure tester line on the carburetor fitting. Once again pressurize the carburetor.

If it now holds pressure, the fuel line has a pin hole or tear and must be replaced. The carburetor inlet fuel screen should also be inspected for dirt and/or debris as fuel entering the carburetor would have been bypassing the fuel filter.
If it does not hold pressure, the carburetor will have to be removed and submerged in solvent to find the leak.

FUEL SYSTEM DISASSEMBLY AND INSPECTION

Drain fuel tank if not already empty. Remove air filter cover, air filter, and cylinder cover.

Remove starter housing from crankcase by removing three 10-24 x .75 torx head screws and one 10-24 x 1.25 torx head screw, and fuel tank filler cap.

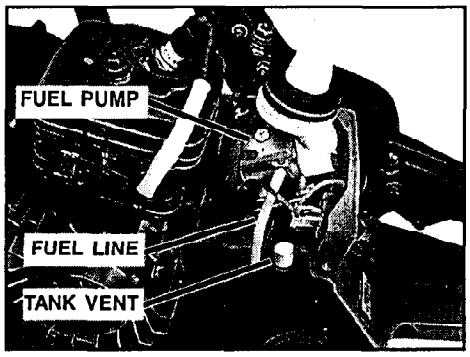


FIGURE 11

Remove intake fuel line from fuel pump. Remove fuel tank. Remove final air filter.

IGNITION

SPARK PLUG: It can be left in the engine unless the engine becomes hard to start. Then do as follows:

a) First check that the tank is full of fresh, properly prepared fuel. Stale gasoline, water or dirt in the fuel may be the trouble rather than poor spark.
b) Unscrew and remove the cylinder cover to expose the cylinder and spark plug. Pull the spark plug boot off the spark plug and remove the plug.
c) To get going right away, install a new Champion RCJ6Y Spark Plug (or its equivalent of the same heat (range).
d) Failed spark plugs can often be restored to dependable firing condition by careful regapping and cleaning.

⚠ WARNING

Spark plugs can be scraped clean by hand. Sandblasted or power-brushed plugs should not be used in this engine, no matter how thoroughly washed.

When cleaning the spark plugs, scrape the deposits from the insulation, and clean the space up inside of any debris, carbon or bridging. Then file or scrape the electrodes down to bare metal, and square up their edges to induce the spark to jump. Then restore the firing gap to **0.020 in. (0.5 mm).**

EXHAUST AND COOLING SYSTEM

THE MUFFLER is down drafting type. To remove the muffler, remove the four screws shown in diagram. Exhaust passages in the muffler should be cleaned periodically and worn or deteriorated parts should be replaced.

THE SPARK ARRESTOR: In some areas, maintenance of a spark arrestor in the exhaust system is required by law. To install a spark arrestor screen, remove the three muffler cap screws and the muffler cap. Place screen between muffler body and muffler cap. Install screws and tighten securely. Inspect screens regularly and replace as required.

CYLINDER COOLING FINS: These and the surrounding air space should be kept clean and open. Whenever you have the cylinder cover and muffler off the saw, give all exposed surfaces a thorough cleaning. Use a wire brush or compressed air to clean areas between cooling fins. Do not use a cleaning solvent because it may attack the insulation of the ignition components.

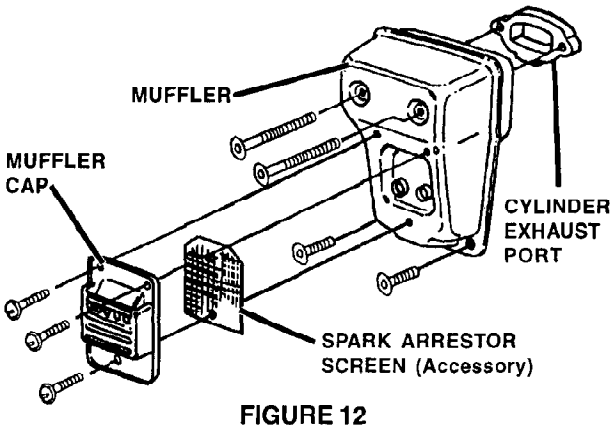


FIGURE 12

CYLINDER EXHAUST PORT: Any time the muffler is removed, the exhaust port area should be inspected for carbon buildup. If buildup is excessive, it should be removed.

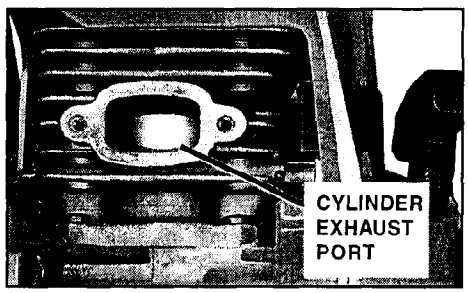


FIGURE 13

Examine the cylinder exhaust port, piston, and piston ring for carbon build up. If the exhaust port is clogged, rotate the piston until it fully covers the exhaust port, then carefully remove the carbon with a plastic or wooden scraper. Do not scratch the piston or damage the edges of the exhaust port.

REASSEMBLY: The four external muffler screws require a tightening torque of **50 - 60 in. lbs (5.6 - 6.8 N•m).** The three muffler cap screws must be torqued to **30 - 40 in. lbs (3.5 - 4.5 N•m).**

STARTER

Starter ropes are considered expendable, non-warranty items. Instructions are accordingly given for the owner to replace the starter rope as required.

No regular maintenance is required for this assembly beyond keeping the air intake openings in the starter housing clean and unobstructed. However, it may become necessary to add a turn of starter spring tension if the rope fails to rewind all the way to the housing.

TO REMOVE THE COMPLETE STARTER/FAN HOUSING: Take out the four screws. Lift housing carefully off the engine.

TO INCREASE SPRING TENSION: Hold the housing. Pull the grip out about one foot (30 cm) and hold pulley from rewinding. Pull grip further or let pulley slip until notch in pulley rim is opposite the rope insert in the fan housing. Pull up a loop of rope between insert and notch. Engage rope in notch. Carefully wind both pulley and rope clockwise by holding and pulling the rope clockwise around the pulley - one turn only. Hold pulley from rewinding. Pull grip to remove the loop in the rope. Let grip rewind. If the grip does not rewind into position against the housing, add another turn, using the above procedure. DO NOT add more than two turns totally.

The rope pulley must be able to be rotated by at least one-half of an extra turn with the rope fully extended or the rewind spring will probably break.

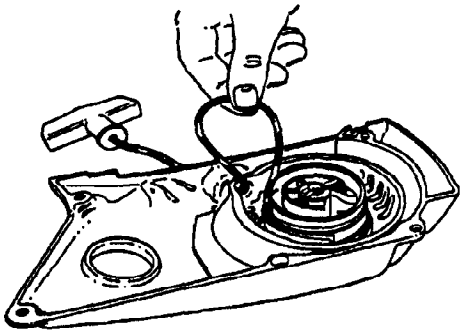


FIGURE 14

WIND LOOP CLOCKWISE, LETTING PULLEY TURN ALSO. HOLD PULLEY FROM REWINDING. PULL OUT THE LOOP. THEN LET PULLEY REWIND.

TO TEST RECOIL OPERATION: Pull the rope out a short distance. The starter pawl should swing out into the "engaged" position. With the starter fully assembled, pull the starter rope completely out of the starter housing. Grasp the pulley and turn it clockwise. If the pulley will not rotate, it is bottoming out. Release one prewind and recheck.

STARTER ROPE REPLACEMENT

⚠ Caution

You will see the spring retainer in the starter housing. If you plan to change the retainer and spring assembly, put on gloves and safety goggles first. Be careful not to dislodge or pull up the spring coils, or the spring will fly out. If it does fly out, it can inflict injuries. DO NOT let springs lie about where they can be handled by the unwary. DO NOT REMOVE replacement spring from retainer. BEFORE DISCARDING OLD SPRING, REMOVE IT ONE COIL AT A TIME FROM THE RETAINER.

TO INSTALL NEW ROPE:

a) If old rope did not break, hold pulley from turning and cut the rope. Let pulley turn until rewind tension is removed.

b) Lay housing down flat. Remove retainer pin, flat washer, and pawl. Jiggle the pulley free (from the spring) and lift it off the pulley post.

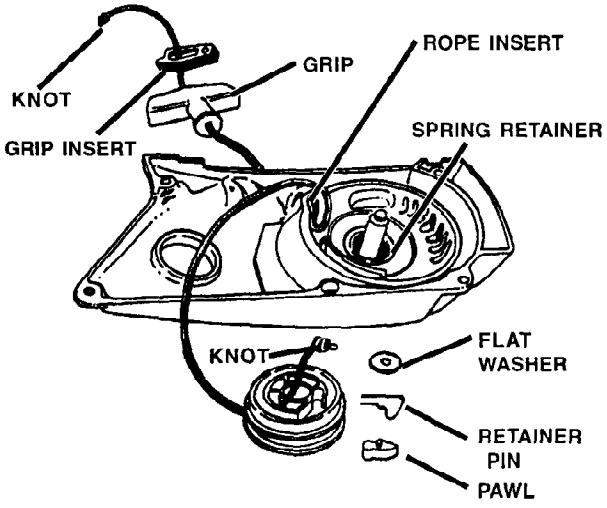


FIGURE 15

c) Pull old rope out of pulley. Thread new rope through

pulley and knot end of rope. Pull knot tight into pulley.

d) Hold pulley toward you and wind rope clockwise onto pulley. Put free end of rope through the eyelet in the housing and assemble the insert and starter grip to the rope. Knot this end of the rope tightly before pulling the insert into the grip.

e) Put pulley onto the post. Slightly rock pulley back and forth to achieve engagement of the spring loop so that the pulley drops into place inside the spring retainer. Install pawl, flat washer, and retainer.

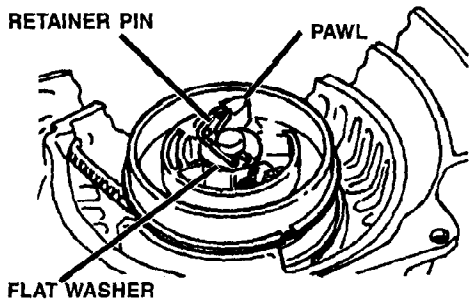


FIGURE 16

f) Follow procedure in spring tension section on previous page to add two "prewinds" of tension or enough turns that the grip stays in place against the housing. DO NOT add more turns of tension than necessary. Pull starter rope to full extension quickly and firmly several times to tighten knot on pulley hub.

IGNITION SYSTEM

SPARKTEST, ROTOR/MODULE AIR GAP SETTING

A solid state ignition system will not produce a spark unless the rotor is turned briskly (850-1,000 RPM).

To check for ignition spark, remove the cylinder cover and spark plug (3/4 inch - 19 mm deep set socket). The spark plug gap for the standard resistor plug (Champion RCJ6Y) is **0.020 inch (0.5 mm)**. If a non-resistor plug (Champion CJ6Y) is used, the spark plug gap should be set a **0.025 inch (0.64 mm)**. Inspect the electrodes for wear and deposits.

⚠ WARNING

The following ignition test may cause the unit to start. Always make this test in a safe place, free of any obstructions.

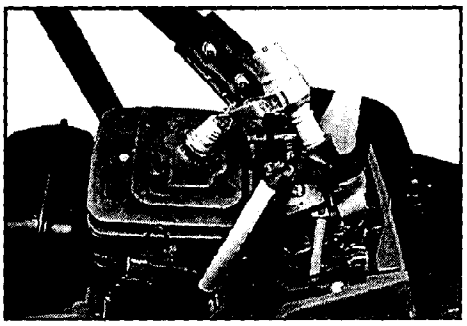


FIGURE 17

Screw the spark plug back into the cylinder and tighten it securely. Connect the spark plug terminal (boot) to a surface gap spark plug (Homelite Part Number JA-31316-4). Connect the test plug clamp to the terminal nut on the spark plug (as shown above). Pull the starter grip briskly. A spark should be seen at the surface gap test plug electrodes. If not, clamp the test plug clamp to the base of the spark plug and pull the starter grip again.

If sparking occurs at the test plug electrodes, the spark plug is breaking down under compression. Replace the spark plug and retest. If no spark is evident, inspect the high tension lead, spark plug terminal, ignition ground wires, wire connections and rotor magnet strength before replacing the module as defective.

A surface gap tester may be made by breaking off the ground electrode on a new Champion RCJ6Y spark plug.

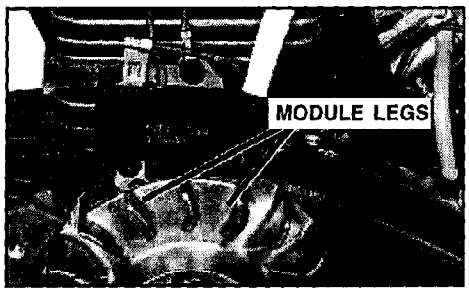


FIGURE 18

To set the air gap between the rotor and module, rotate the rotor magnet poles away from the module core legs. Then, loosen the two module mounting screws. Place a **0.015 inch (0.4 mm)** Shim (Homelite Part Number 22486) between the rotor and module core.

Rotate the rotor so the magnets are in line with the shim and module core legs. Retighten the two module mounting screws. Recheck the air gap. If a smaller shim **0.0125 inch (0.3 mm)** (Homelite Part Number 24306) is used, firmly push the rotor towards the module before retightening the module mounting screws.

IGNITION SWITCH TEST

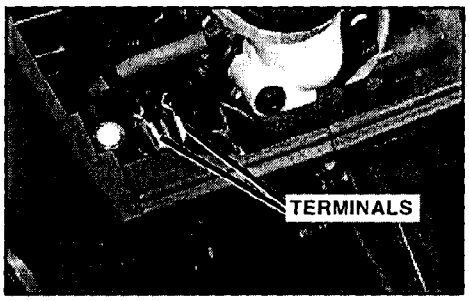


FIGURE 19

Place the ignition switch ("on"-"off") in the ON (**I**) position. Attach a volt-ohm-milliampere (VOM) meter probes on the two switch terminals. Turn the meter dial to the lowest OHM's scale (R x 1 or equivalent). There should be no continuity.

Flip the ignition switch to the OFF (**O**) position. There should be continuity. Replace the switch if any other readings are obtained.

EXHAUST SYSTEM

MUFFLER/SPARK ARRESTOR SERVICE

The cylinder fins and housings should be checked periodically and cleaned to help prevent the engine from overheating. The unit should never be operated without the muffler in place. If local regulations require the use of Spark Arrestor Screen (Homelite Part Number 98827), check its condition frequently and clean or replace it if it is clogged or deteriorated. A clogged spark arrestor will cause hard or no starting, loss of power, and lack of high speed operation.

SERVICE NOTE:
The muffler is supplied as a one-piece assembly. The only service parts available are the muffler cap, spark arrestor, and fasteners.

WHEEL ARBOR

The unit comes equipped with a 1 inch arbor spacer installed. Two additional arbor spacers (7/8 inch and 20 mm) are supplied in the owner's kit.

To change arbor spacers:
a) Remove wheel.
b) Use a large screwdriver or the combination wrench to pry arbor spacer off shaft.

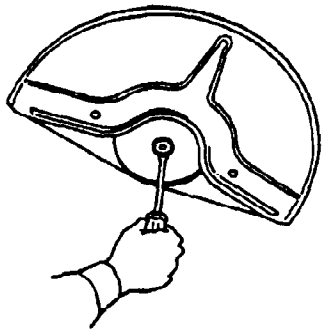


FIGURE 20

c) Place desired arbor spacer on shaft as shown (with relief or counterbore toward inside flange).

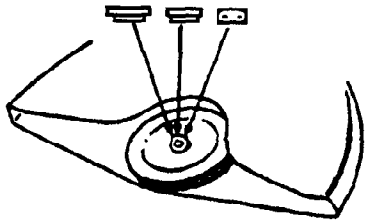


FIGURE 21

d) Screw wheel bolt and washer onto shaft. Tighten securely to seat arbor spacer onto shaft.
e) Remove wheel bolt and washer and install wheel.

WHEEL ARM REMOVAL AND DISASSEMBLY

Remove cutting wheel before wheel arm removal and disassembly. Loosen drive case cover nuts and release belt tension until indicator is to far right (–) side.

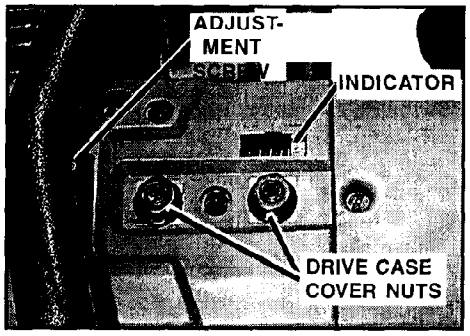


FIGURE 22

Remove drive case cover nuts. Remove clutch cover.

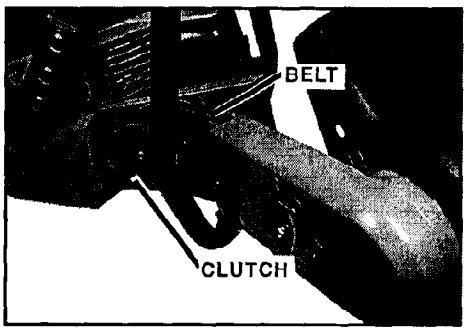


FIGURE 23

Rotate the wheel arm away from the saw to provide as much slack in the drive belt as possible. Remove the belt from the clutch and remove the wheel arm from the saw.

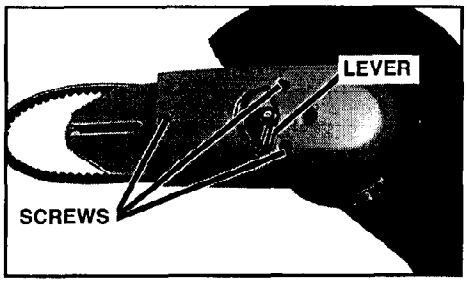


FIGURE 24

Place the wheel guard lock lever in the LOCKED position. Remove the three screws securing the belt guard. Remove the belt guard.

Remove the belt and examine it for nicks and cuts. If the belt is stretched (run out of adjustment), replace the belt.

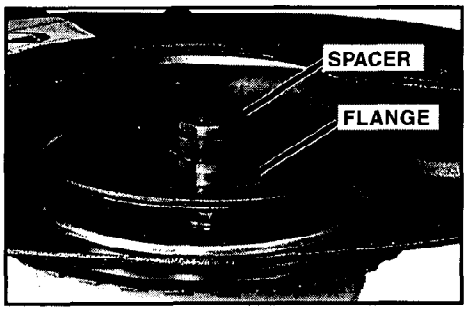


FIGURE 25

Remove the bolt, washer and outer wheel flange. Remove the spacer and second wheel flange from the wheel shaft.

SERVICE NOTE

If necessary use two large flat blade screwdrivers to remove the arbor spacer and inner wheel flange from the wheel shaft.

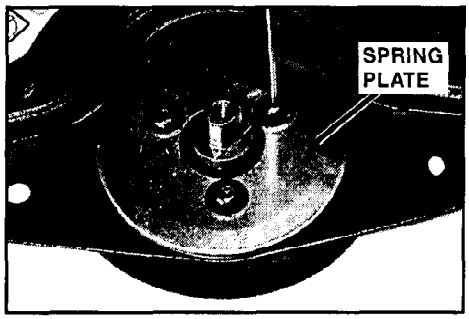


FIGURE 26

Remove the three T-25 torx head screws and washers securing the spring plate, shim, rubber washer and wheel guard to the wheel arm. Remove the collar, wheel guard, rubber pad and detent plate.

Align one of the holes in the pulley with the cavity in the wheel arm. Next, place a 1/4 inch round stock or hex wrench through the pulley and into the cavity to keep the pulley and wheel shaft from turning. Remove the nut and lock washer securing the belt pulley.

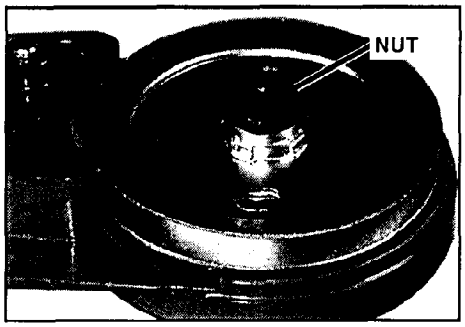


FIGURE 27

Place the nut back onto the wheel shaft ensuring the shaft does not extend beyond the nut. Tap on the nut and shaft with a soft faced hammer to start driving the shaft out of the bearings.

Remove the nut and remove the wheel shaft.

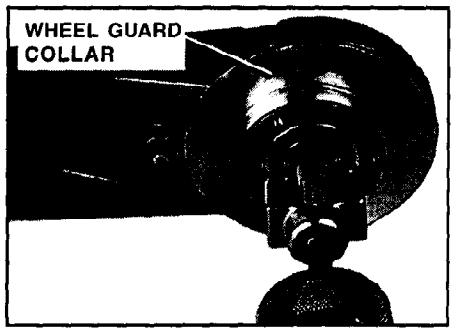


FIGURE 28

Using a bearing finger puller or other appropriate tool, remove the bearing from the wheel side of the arm.

SERVICE NOTE

The spacer between the bearings will slide out of the way to insert a finger puller. DO NOT attempt to press the bearings through the wheel arm, an internal snap ring is placed between the bearings (see figure below) and extensive damage will occur.

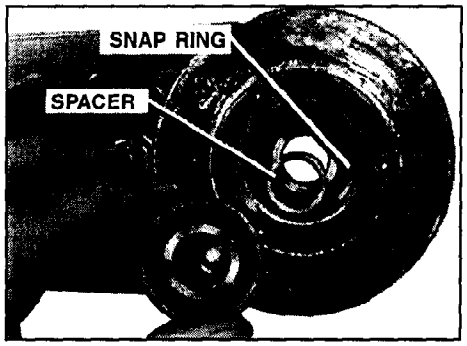


FIGURE 29

Remove the second bearing. Inspect bearings and replace as needed.

WHEEL ARM ASSEMBLY

Reassembly and installation of the wheel arm is done in the reverse order of removal and disassembly.

Ensure snap ring is in place and fully seated before installing bearings and bearing spacer. Support pulley slots (belt pulley side of arm) of the wheel arm with a **2 inch (5.1mm) pipe**. Insert one bearing into the bearing bore.

Place a **1-1/2 inch (38 mm)** piece of round stock or pipe on top of the bearing. Align the bearing and round stock so they are parallel with the bearing bore. Press the bearing in until it is flush with face of the wheel arm or until it seats against the snap ring.

Turn the wheel arm over and support the wheel arm casting with a **3 inch (76 mm)** pipe. Insert the bearing spacer, wheel shaft bearing and **1-1/2 inch (38 mm)** round stop or pipe. Press the bearing in until it is flush with the bearing bore frame.

Insert the wheel shaft through the bearings and bearing spacer. Apply low grade thread compound (Homelite Part Number 24388-C) to the splined part of the wheel shaft, then install the pulley (flange side towards arm), lock washer and nut.

Align one of the holes in the pulley with the cavity in the wheel arm. Next, place a 1/4 inch round stock or hex wrench through the pulley and into the cavity to keep the pulley and wheel shaft from turning. Tighten nut to **480 - 600 in. lbs. (54.2 - 67.8 N•m)**.

Lubricate the wheel guard collar with a liberal amount of multi-purpose grease. Place the adjuster detent plate on the wheel arm. Assemble the adjuster pad so it matches the detent plate. Mount the wheel guard.

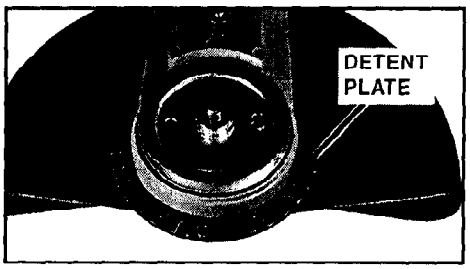


FIGURE 30

SERVICE NOTE

Center the detent plate on the wheel guard with the curved edges 180 degrees apart for proper alignment of the wheel guard for a full range of adjustments during operation.

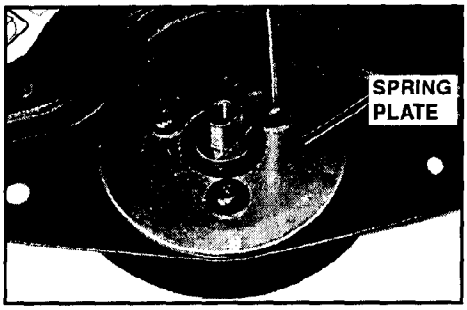


FIGURE 31

Place the shim, then the adjuster pad into the spring plate. Install the spring plate on the wheel guard. Apply thread locking compound (Homelite Part Number 23488-C) to the three mounting screws. Install the three screws and washers Tighten screws to **30 - 40 in. lbs (3.4 - 4.5 N•m)**.

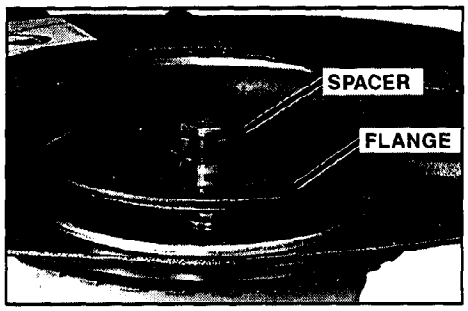


FIGURE 32

Place the inner wheel flange on the wheel shaft concave side up. Slide the spacer (relief or counterbore side down) onto the shaft. Place a discard spacer and wheel bolt on the spacer on the shaft. Tighten the wheel bolt until the discard spacer presses the spacer until it contacts the inner side of the flange. Remove the wheel bolt and the discard spacer.

Install the belt over the wheel pulley. Install the belt cover and secure with three round head screws. Tighten screws to **40 - 50 in. lbs (4.5 - 5.6 N•m)**.

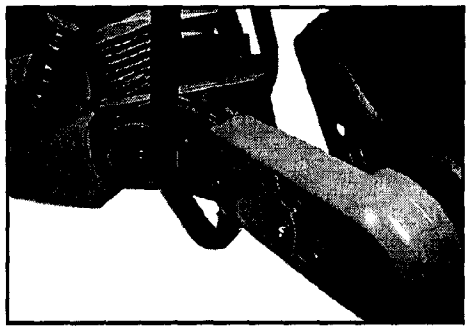


FIGURE 33

Insert the end of the arm behind the clutch, align the arm adjustment slot over the belt cover studs and rotate the wheel arm into operating position.

Install the clutch cover. Secure the clutch cover with two nuts. Adjust the belt tension and then tighten nuts to **120 - 200 in. lbs (13.6 - 22.6 N•m)**.

CLUTCH DRUM AND DRIVE PULLEY

⚠ WARNING

Proper disassembly and repair of the clutch is so important to the life of the engine and the safety of the operator that all clutch service should be done by an experienced repairman equipped with the required special tools. DO NOT disassemble the clutch unless you are a competent small engine mechanic and have the proper clutch service tools.

The clutch drum and pulley and the surrounding area should be cleaned and inspected daily. While cleaning, a check should be made to see that the clutch drum turns freely and smoothly. If not, the clutch bearing should be checked (see below) and either replaced or repacked with grease.

The clutch requires full inspection and service at 50 hour intervals.

Clutch trouble symptoms are: a) failure to disengage (wheel rotates at high speed during idling and the idle cannot be adjusted low enough to stop the wheel rotation); b) slipping so much that the saw cannot cut; and c) chattering during a load.

Causes of clutch trouble may include: a) overheated, stretched springs; b) worn or cracked spider or clutch plate; c) worn or broken clutch shoes; d) oil, dirt or grease on the clutching surfaces; e) worn, bent, cracked or scored clutch drum; f) dry or worn bearing; and g) worn pulley.

CLUTCH REMOVAL AND INSPECTION

Ensure engine is cool. Remove wheel arm and drive belt. Prevent the piston from moving by removing the spark plug, rotating the piston until it just covers the exhaust port. Push a length of the starter rope into the spark plug hole as a piston stop.

Remove the three screws securing the clutch cover plate. Secure Clutch Removal Tool (Homelite Part Number A17146) to the clutch spider with the three screws removed from cover plate.

FIGURE 34

SERVICE NOTE

The threads that secure the clutch to the crankshaft are LEFT HAND threads. Use a **3/4 inch (5.7 mm)** wrench or socket to turn clutch clockwise to remove.

Unscrew the clutch from the crankshaft. Remove Clutch Removal Tool from the clutch. Remove the clutch shoe assembly and second clutch plate from the clutch drum.

Remove the inner race from the clutch and inspect the needle bearings.

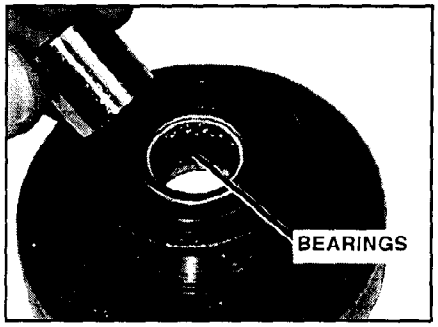


FIGURE 35

Change the entire bearing component if: a) any of the bearing needles are missing, have developed flat spots or are burnt or bent; and b) the bearing cage or inner race is worn or scored. If the bearing seems to be in good shape, repack it with Homelite All-Temp Multi-Purpose Grease (Part Number 17193).

Examine the clutch drum and pulley for wear. If the bottom of the pulley groove shows signs of wear, the pulley and drum should be replaced. Inspect the inside rim of the drum for wear marks. If an engagement wear ring is evident, replace the drum and pulley.

Examine the clutch shoes for wear, as worn clutch shoes will cause slippage and loss of power in the cut. Inspect the clutch springs for wear, distortion or breakage, especially if the wheel will not stop turning at idle.

Flex the clutch shoes on the spider to ensure that they are not binding.

SERVICE NOTE

Worn out clutch springs and/or clutch shoes should always be replaced in sets of three.

CLUTCH ASSEMBLY

SERVICE NOTE

Prior to assembly, grease the needle bearings in the pulley and drum with All-Temp Multi-Purpose Grease (Part Number 17193).

Place thrust washer over crankshaft if it was removed. Insert inner race into clutch drum needle bearings and slide clutch drum and pulley assembly onto crankshaft. Place clutch cover plate onto crankshaft.

Prevent the piston from moving by removing the spark plug and rotating the piston until it just covers the exhaust port. Push a length of the starter rope into the spark plug hole as a piston stop.

Install Clutch Removal Tool onto clutch spider and screw clutch assembly onto crankshaft. Torque assembly to **350 - 450 in. lbs (39.5 - 50.8 N•m).**

Remove Clutch Removal Tool from clutch spider and secure second clutch cover plate to clutch spider with three screws. Torque screws to **17 - 20 in. lbs (1.9 - 2.5 N•m).**

ENGINE

ENGINE DISASSEMBLY AND INSPECTION

CYLINDER AND PISTON REMOVAL

Use a T-27 Torx bit (Homelite Part Number 18566-01) to remove the four cylinder retaining screws. With a back and forth rocking motion, break the cylinder free from the crankcase. Slowly lift the cylinder head up until you can support the piston/rod with one hand, then pull the cylinder head off the piston.

Use an awl or other sharp tool in the cutout provided to remove the piston pin retaining ring. Push the wrist pin out of the piston and connecting rod.

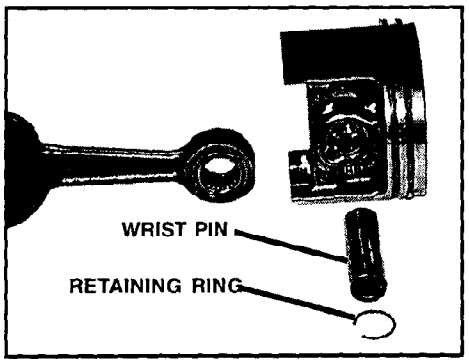


FIGURE 36

CRANKSHAFT/CRANKCASE DISASSEMBLY

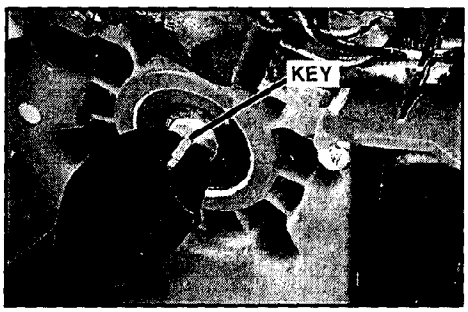


FIGURE 37

Use a pair of side cutters (Dykes) to remove the Woodruff key from the crankshaft (ignition side).

Use a T-25 Torx bit to remove the eight screws that hold the crankcase halves together.

Support the crankcase half with four pieces of round stock, approximately **1-1/8 inch (28.5 mm)** in diameter and **3 inch (76 mm)** long. Center the arbor press bar on the crankshaft and push the crankshaft out of the crankcase.

The two ball bearings can be removed by installing a guillotine type bearing puller. Support the bearing puller and press the bearing off the crankshaft.

SERVICE NOTE

If the bearing remains in the crankcase housing, use a **5/8 inch (16 mm)** piece of round stock and a **1-1/2 inch (38 mm)** inside diameter piece of pipe to support the crankcase. Work the **5/8 inch (16 mm)** round stock through the seal until it rests on the ball bearing. Use an arbor or hydraulic press to push the bearing out of the housing.

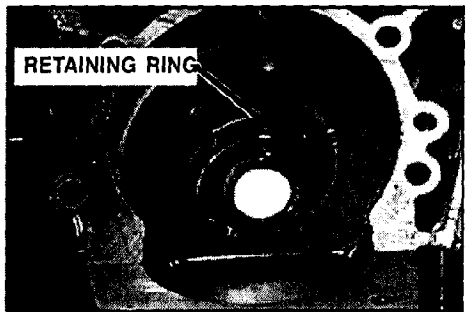


FIGURE 38

Use a pair of inside Tru-Arc pliers to remove the bearing retaining ring. Support the crankcase with a **1-1/2 inch (38 mm)** piece of pipe. Then, use a **1-1/8 inch (28.5 mm)** round stock to press out the crankshaft seal.

ENGINE ASSEMBLY

CRANKSHAFT/CRANKCASE ASSEMBLY

Before assembly begins, inspect the internal engine components for excessive wear, stress cracks, or overheating. Examine roller and main bearings for roughness (spin the bearing) or blueing from overheating, or lack of lubrication.

If the crankshaft has been removed, replace both main ball bearings and crankshaft seals. Renew all gaskets on reassembly. Clean all mating surfaces (bearing bore, crankcase halves, cylinder, etc.) of oil, gasket material, or sealant.

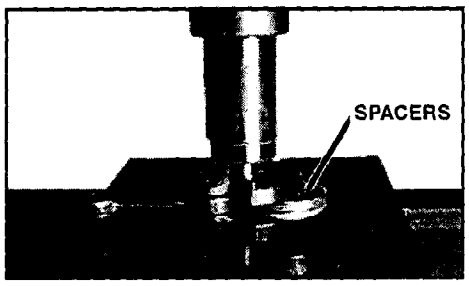


FIGURE 39

If the crankshaft was removed, discard the old bearings. Place a new bearing (letter side out) on the clutch side of the crankshaft. Insert the bearing and crankshaft into an anvil (Homelite Part Number 23846-1) with the bearing positioned next to the anvil. Place a spacer between the crankshaft counterweights. Use an arbor press to push the bearing until it seats against the crankshaft counterweight. Perform this same procedure on the ignition (keyed) side of the crankshaft.

Lay the clutch side crankcase half on a **1-1/2 inch (38 mm)** piece of pipe or 23846-1 anvil. Install the bearing retainer into the crankcase housing with Tru-Arc pliers. Mount the crankshaft/bearing assembly on the crankcase. Make sure the shaft and bearing are perpendicular with the face of the crankcase.

Press the crankshaft until the bearing seats against the retaining ring. Spin the crankshaft in the housing. It should be free turning and not bind. If not, turn the crankcase over and "bump" the crankshaft with the arbor press.

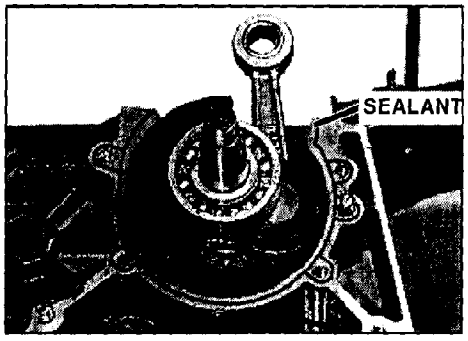


FIGURE 40

Apply RTV silicone sealant (Homelite Part Number 24823) to the clutch side crankcase half. It should only be applied sparingly and to the area shown by the lines in the figure above.

Install the bearing retaining ring into the rotor side crankcase. Slide the crankcase half on the crankshaft until it bottoms on the main bearing. Install a **5/8 inch (16 mm)** Flat Washer, 23136-A Sleeve and A23137 Jackscrew on the rotor side crankshaft/crankcase. Use a **3/4 inch (19 mm)** wrench and an adjustable wrench to pull the crankshaft and clutch side crankcase into the rotor side crankcase.

SERVICE NOTE:
For easy alignment of the two crankcase halves, install two or three crankcase mounting screws.

CRANKSHAFT SEAL INSTALLATION

Slip the seal protector (Homelite Part Number 23759) on the clutch side of the crankshaft. Lubricate the seal inside diameter with oil or multipurpose grease. Slide the seal over the seal protector and into position on the crankcase.

Use a **1 inch (25 mm)** I.D. piece of pipe or 23864-1 Anvil to press the crankshaft seal in place. The crankshaft seal should be flush with the top of the crankcase. Turn the crankcase over, lubricate the remaining seal I.D., and press it into place.

SERVICE NOTE:
The rotor side seal does not require the use of a seal protector for installation.

PISTON/CYLINDER ASSEMBLY

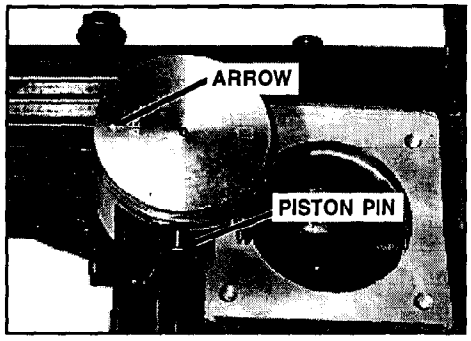


FIGURE 41

Assemble the piston on the connecting rod with the arrow on top of the piston pointing towards the front of the unit. Slide the piston pin into the piston and connecting rod until it bottoms on the clutch side retaining ring.

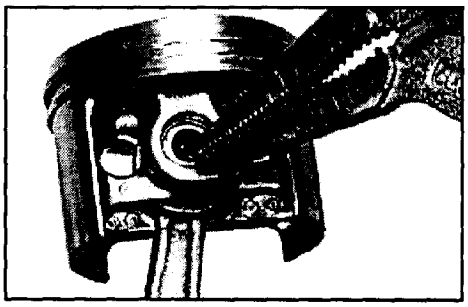


FIGURE 42

Use a pair of needle nose pliers to insert the piston pin retaining ring into the piston pin bore. Make sure the retaining ring is fully seated in the groove in the piston.

Lubricate the piston and piston rings with SAE 30 oil. If the cylinder and piston are reused, make sure that they are de-glazed if varnish build up is present. Use crocus cloth to clean the piston and use a ball type flex hone with a 50% oil and 50% solvent to clean the cylinder.

Use an oiled cloth to clean and lubricate the cylinder walls, even if the cylinder is new.

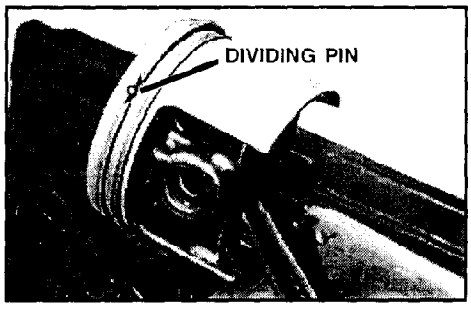


FIGURE 43

Place the cylinder gasket on the crankcase. Rotate the piston rings so the piston ring dividing pins are located in the piston ring end gaps.

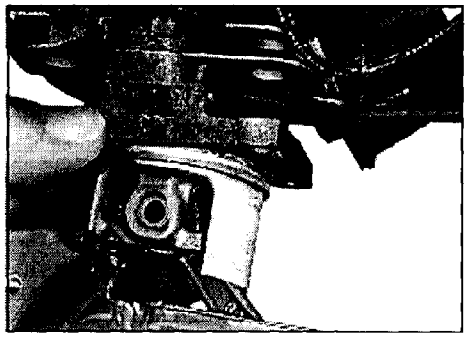


FIGURE 44

Use your fingers to compress each piston ring in turn as you apply downward pressure on the cylinder. This will allow the cylinder to slide down over the piston. Install and torque the four cylinder screws to **80 - 90 in. lbs (9.0 - 10.2 N•m)**.

IGNITION SYSTEM ASSEMBLY

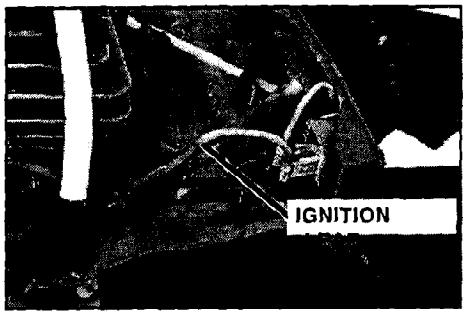


FIGURE 45

The ignition lead and ignition ground lead must be routed as shown above. The ignition lead is routed through the carburetor intake adapter and looped over the fuel pickup line. The flag terminal should be mounted on the ignition switch terminal as shown. The ring terminal end of the ground lead should be placed in the three o'clock position before tightening. The ground lead should form a loop alongside the ignition switch. The flag terminal end of the ground lead should be pushed on the ignition switch terminal as shown above.

FUEL SYSTEM ASSEMBLY

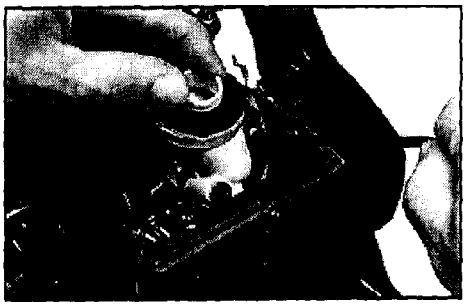


FIGURE 46

After assembly of the carburetor, gaskets, and air filter adaptor is completed, connect choke linkage rod to carburetor and set carburetor in place.

Push down lightly on the air filter adaptor while tightening the two carburetor mounting screws. This will insure that the cylinder cover will slide over the final (screen) filter with clearance around the entire perimeter.

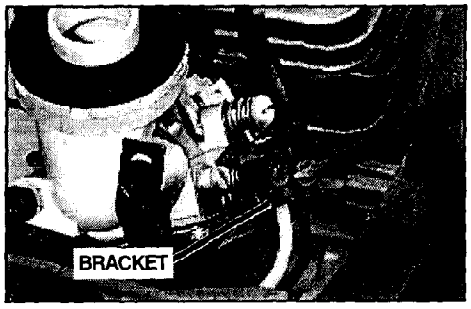


FIGURE 47

The throttle cable must be adjusted so that the unit will idle, reach full throttle, and achieve the proper speed when the throttle lock is engaged for starting.

To adjust the throttle cable, loosen the Phillips head fastener holding the cable bracket to the intake adaptor Slide the adjusting bracket down until all slack is removed from the cable. Then, tighten the Phillips head screw. The throttle lever must contact the idle adjusting screw. If not, adjust the bracket upwards until the throttle lever contacts the idle screw.

SERVICE NOTE:

The throttle lock must be in the disengaged position.

Depress the throttle trigger to the wide open position. The throttle rod must touch the throttle stop (on the carburetor) or be within **0.030 inch (0.75 mm)**. If the throttle lever is not within the above specifications, slide the adjusting bracket downwards.

With the throttle lock engaged, the engine speed must be **4,500 RPM** minimum.* If not, slide the adjusting bracket downwards to increase the speed. Remember, the cable must be adjusted to meet all of the above specifications.

HANDLE ASSEMBLY

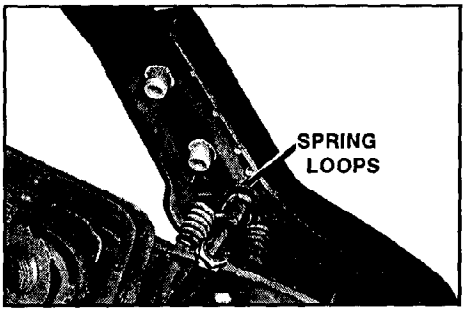


FIGURE 48

When assembling the isolator springs to the unit, the spring with the large loop should be installed toward the rear of the saw, and the spring with the small loop toward the front. The small loop should be placed so it nests inside the large loop.

Insert a screw through a washer, the lower handle bar, handle bar bracket, and spring loops. Secure screw with a hex nut. Insert two screws through washers, the lower handle, handlebar bracket, and upper handle bar. Tighten the screws to **50 - 60 in. lbs (5.6 - 6.8 N•m)**.

DIAGNOSTIC TESTING

ENGINE COMPRESSION

Low compression will cause hard starting, erratic idling, low power, and hard starting when hot.

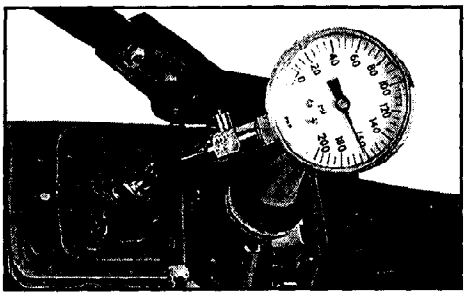


FIGURE 49

Remove the spark plug. Place the choke lever in the "off" position. With the throttle in the wide open position, pull the starter grip rapidly several times to purge any excess fuel in the crankcase and cylinder. Insert a Compression Gauge (Homelite Part Number 94194) into the spark plug hole. Pull the starter grip rapidly until the gauge needle reaches its peak (stops moving). Engine compression should be:

Hot: **140 PSIG (9.5 bars) - 170 PSIG (11.5 bars)**
Cold: **147 PSIG (10.0 bars) - 179 PSIG (12.0 bars)**

The above specifications are for a new engine. Readings below **90 PSIG (6.0 bars)** or less indicates an engine problem. Compression testing should not be used as the sole criteria for rebuilding an engine. Performance and visual inspection are necessary.

CRANKCASE/CYLINDER PRESSURETESTING

Pressure testing the crankcase and cylinder is an important procedure that is often overlooked. All air going into the engine must pass through the carburetor. Air bypassing the carburetor because of leaking seals or gaskets will cause hard starting, erratic idling, poor acceleration, and overheating. Pressure testing is the best way to determine where a leak is occurring.

Close off both intake and exhaust ports with sealing plates and rubber gaskets. Use a Pressure Tester (Homelite Part Number 94197) to introduce **5 - 6 PSIG (0.34 - 0.41 bars)** of pressure into the crankcase and cylinder. The crankcase should hold pressure or leak at a rate not to exceed **1 PSIG (0.7 bars)** per minute. A drop in pressure above specified levels indicates an air leak. To find out where an air leak is occurring, paint or spray a soap and water solution on suspected areas (gaskets, seals, etc.).

Index