

STIHL

Model	Bore mm (in.)	Stroke mm (in.)	Displacement cc (cu. in.)	Drive Type
015, 015AV, 015AVE, 015L, 015LE	38 (1.496)	28 (1.102)	32 (1.95)	Direct

MAINTENANCE

SPARK PLUG. Recommended spark plug is Bosch WSR6F or Champion RCJ6Y. Electrode gap should be 0.5 mm (0.020 in.). Tighten spark plug to 25 N·m (18 ft.-lbs.).

CARBURETOR. A Walbro HDC diaphragm carburetor is used on all models. Refer to Walbro section of CARBURETOR SERVICE section for repair procedure and an exploded view of carburetor.

Initial adjustment of low speed mixture screw (L—Fig. ST1) and high speed mixture screw (H) is $\frac{3}{4}$ turn open from a lightly seated position. Final adjustment should be made with engine warm and running. Make certain engine air filter is clean before adjusting carburetor.

Adjust low speed mixture screw to obtain highest idle speed, then turn screw counterclockwise approximately $\frac{1}{8}$ turn. Engine should accelerate smoothly without hesitation. If engine stumbles or seems sluggish when accelerating, adjust low speed mixture screw until en-

gine accelerates without hesitation. Adjust idle speed screw (LA) so engine idles just below clutch engagement speed. Adjust high speed mixture screw to obtain optimum full throttle performance under cutting load. Do not operate saw with high speed mixture setting too lean (needle turned too far clockwise) as engine damage could result from lack of lubrication and overheating.

IGNITION. Models 015, 015AV and 015L are equipped with a conventional breaker point controlled flywheel magneto ignition system (Fig. ST2). Models 015VE and 015LE are equipped with a breakerless transistor ignition system (Fig. ST3).

Trouble-shooting a faulty ignition system is similar for either type system. Check for fouled, worn or damaged

spark plug. Check for faulty ignition switch (there is no spark when switch wire is grounded). Check primary and secondary wires for poor insulation, poor connections or broken wires. Check for poor ground connections. Check for burned, pitted or worn breaker contact points on magneto ignition system. On all ignition systems, ignition coil may be tested with an ignition coil tester or an ohmmeter may be used to measure resistance of primary and secondary windings. To test primary winding, remove flywheel and disconnect primary lead from contact set or trigger plate. Connect one lead of tester to primary wire and the other test lead to ground. Resistance should be 0.8-1.3 ohms for magneto ignition system and 1.5-1.9 ohms for transistor ignition system. To test secondary winding, connect one lead of tester to spark plug termi-

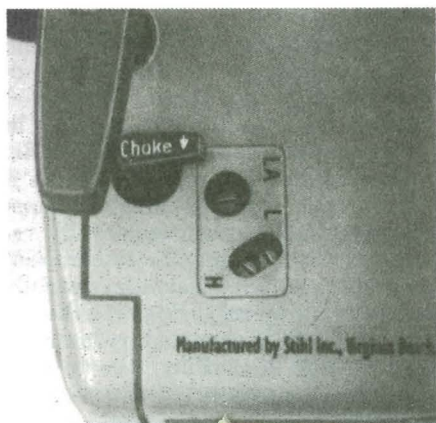


Fig. ST1—View showing carburetor adjustment points: idle speed screw (LA), low speed mixture screw (L) and high speed mixture screw (H).

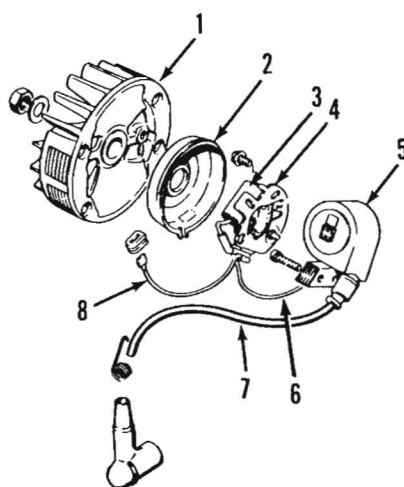


Fig. ST2—Exploded view of magneto ignition system used on Models 015, 015AV and 015L.

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|------------------------|-------------------------|
| 1. Flywheel | 5. Ignition coil |
| 2. Cover | 6. Primary wire |
| 3. Condenser | 7. High tension wire |
| 4. Breaker-point assy. | 8. Ignition switch wire |

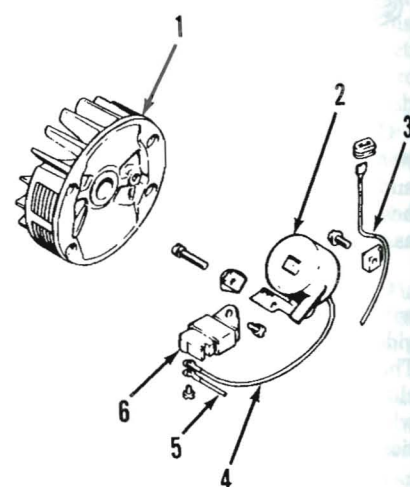


Fig. ST3—Exploded view of transistor ignition system used on Models 015AVE and 015LE.

- | | |
|------------------|-----------------------------|
| 1. Flywheel | 5. Ignition switch wire |
| 2. Ignition coil | 6. Electronic trigger assy. |
| 3. Ground wire | |
| 4. Primary wire | |

nal of high tension wire and other test lead to ground. Resistance should be 6500-9000 ohms for all models. Renew coil assembly if readings vary greatly from specifications. To check electronic trigger switch (6—Fig. ST3), install a known good switch and check for spark.

Refer to the appropriate following paragraphs for service.

Flywheel Magneto Ignition. Flywheel must be removed to service breaker points. Ignition breaker point gap should be 0.35-0.40 mm (0.014-0.016 in.). Ignition timing is not adjustable except by adjusting breaker point gap. Ignition timing should occur at 2.3 mm (0.090 in.) BTDC. Air gap between magneto coil legs and flywheel magnets should be 0.2-0.3 mm (0.008-0.012 in.). To adjust air gap, loosen coil mounting screws and move coil as necessary. Magneto edge gap (E—Fig. ST4) should be 3.0-7.3 mm (0.12-0.29 in.). Magneto edge gap should be measured at the point when breaker contact points just begin to open. Magneto edge gap may be adjusted slightly by adjusting breaker point gap and by loosening flywheel nut and rotating flywheel on crankshaft as there is a small clearance between flywheel groove and crankshaft key.

Transistor Ignition. Models 015VE and 015LE are equipped with a Bosch breakerless transistor ignition (Fig. ST3). The transistor circuit is designed to take the place of breaker points in a conventional ignition system. The system is triggered magnetically by a magnet in the flywheel (1). The ignition coil (2) is mounted outside the flywheel and the electronic trigger plate (6) is mounted behind the flywheel.

Because the electronic trigger plate is not subject to any mechanical wear, ignition timing will remain constant as long as trigger plate is operating proper-

ly. To check ignition timing, install Stihl timing tool 0000 850 4000 on chain bar studs. Using a piston locating tool, set piston at 2.2 mm (0.087 in.) BTDC. At this point, scribe a line on clutch hub in line with arrow of timing tool. Reinstall spark plug and connect timing light to spark plug wire. Start engine and set engine speed at 6000 rpm. When timing light is directed at the clutch, scribe mark on hub should appear to be in alignment with arrow of timing tool if timing is correct. Ignition timing may be adjusted slightly by loosening flywheel nut and rotating flywheel on crankshaft as there is a small clearance between flywheel groove and crankshaft key.

Recommended air gap between ignition coil armature legs and flywheel magnet is 0.2-0.3 mm (0.008-0.012 in.). Loosen ignition coil mounting screws and move ignition coil to adjust air gap.

LUBRICATION. The engine is lubricated by mixing oil with the fuel. Fuel:oil ratio is 40:1 when using Stihl two-stroke engine oil. If Stihl two-stroke engine oil is not available, a good quality oil designed for two-stroke air-cooled engines may be used when mixed at a 25:1 ratio. Use a separate container when mixing the oil and gasoline.

All models are equipped with an automatic chain oiler system. Manufacturer recommends using oil designed specifically for saw chain lubrication. If necessary, clean automotive oil may be used to lubricate saw chain. Use SAE 30 oil in warm weather and SAE 10 oil in cold weather.

REPAIR

CRANKCASE PRESSURE TEST. An improperly sealed crankcase can cause the engine to be hard to start, run rough, have low power and overheat. Refer to ENGINE SERVICE section of

this manual for crankcase pressure test procedure. If crankcase leakage is indicated, pressurize crankcase and use a soap and water solution to check gaskets, seals, pulse line and castings for leakage.

CYLINDER, PISTON PIN AND RINGS. To disassemble, first drain oil and fuel tanks. Remove clutch cover, bar and chain. Remove air filter cover, air filter, choke lever, handle housing and fan housing. Remove spark plug and install a piston stop tool in spark plug hole or use some other means to prevent crankshaft from rotating. Unscrew clutch hub (left-hand threads) and remove clutch assembly, oil pump cover and oil pump assembly. Remove flywheel nut (right-hand threads) and use suitable puller to remove flywheel from crankshaft. Remove carburetor and muffler. On models equipped with breaker points, remove breaker box dust cover and contact point set. On all models, remove four screws from bottom of crankcase and pull cylinder (1—Fig. ST5) off lower part of crankcase (15). Remove piston pin retainer clips (4) and push piston pin (3) out of piston (5).

Cylinder and front crankcase are one-piece and matched to lower crankcase half. Therefore, replacement cylinders are supplied only with other half of crankcase. Piston, piston ring, piston pin and pin retainers are available separately. Inspect all parts for damage or excessive wear and renew as necessary.

Piston must be installed with "A" arrow (Fig. ST6) pointing toward exhaust port (clutch end of crankshaft). Install piston pin with closed end toward "A" arrow side of piston and secure with new retainer clips. A locating pin is positioned in piston ring groove to prevent ring rotation. Be sure piston ring end gap is properly positioned around pin when installing cylinder. Lubricate pis-

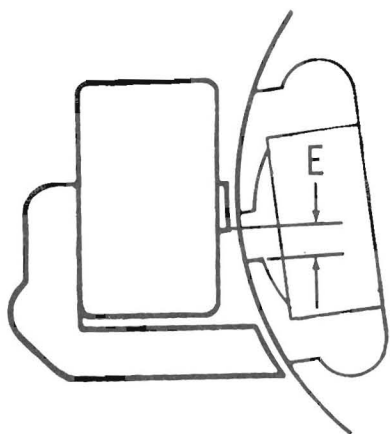
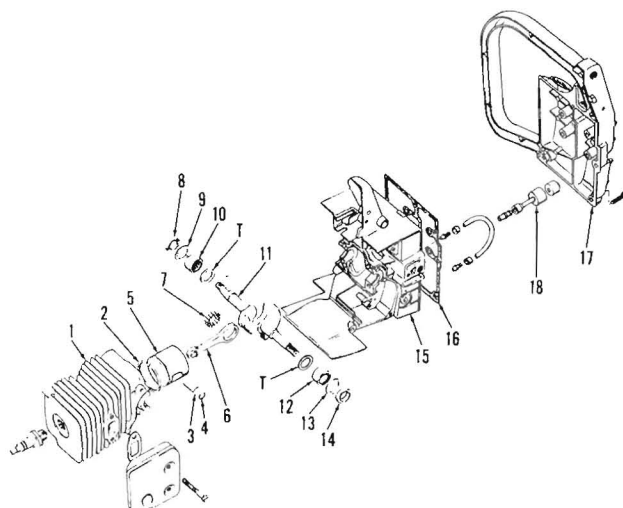


Fig. ST4—Magneto coil edge gap (E) on Models 015, 015AV and 015L should be 3.0-7.3 mm (0.12-0.29 in.).

Fig. ST5—Exploded view of engine used on all models. Thrust washers (T) are used on models produced after 1978.

1. Cylinder
2. Piston ring
3. Piston pin
4. Pin retainer
5. Piston
6. Connecting rod
7. Bearing rollers (12)
8. Oil seal
9. Retaining ring
10. Needle bearing
11. Crankshaft
12. Needle bearing
13. Retaining ring
14. Oil seal
15. Crankcase
16. Gasket
17. Handle Assy.
18. Oil pickup



ton ring and cylinder bore with oil prior to reassembly. Apply a light coat of nonhardening sealant to mating surface of crankcase halves, then place crankcase on cylinder and tighten mounting screws to 7.0 N·m (62 in.-lbs.). Complete reassembly by reversing disassembly procedure.

CRANKSHAFT, CONNECTING ROD AND SEALS. The crankshaft rides on needle bearings (10 and 12—Fig. ST5) held between the cylinder (1) and lower crankcase (15). The connecting rod (6) is one-piece and supported on crankpin by 12 loose bearing rollers (7). Refer to CYLINDER, PISTON, PIN AND RINGS section for removal of crankshaft and connecting rod. When removing connecting rod from crankshaft, be careful not to lose the bearing rollers, which may fall out during disassembly.

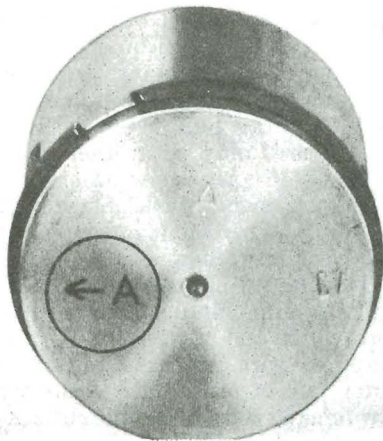


Fig. ST6—Install piston on connecting rod with "A" arrow on piston crown pointing toward exhaust port in cylinder.

Inspect connecting rod, crankshaft and bearings for excessive wear or damage. Renew oil seals (8 and 14).

When reassembling, use grease to hold bearing rollers (7) in place on crankshaft, then slip connecting rod over the bearing rollers. Assemble thrust washers, needle bearings and retaining rings on crankshaft.

NOTE: Large diameter needle bearing (10), retaining ring (9) and seal (8) on later models must be installed on flywheel end of crankshaft, and smaller diameter bearing (12), retaining ring (13) and seal (14) must be installed on clutch end. Bearings, retaining rings and seals on early models have the same outer diameter and may be installed on either end of crankshaft.

Install piston and crankshaft assembly in cylinder making sure clutch end of crankshaft is toward exhaust port. Apply a light coat of nonhardening sealant to mating surface of crankcase halves. Assemble crankcase half (15) to cylinder half making certain retaining rings (9 and 13) fit in ring grooves of crankcase and cylinder. Tighten crankcase mounting screws to 7.0 N·m (62 in.-lbs.). Install new oil seals (8 and 14) with seal lips facing inward.

CLUTCH. Models without chain brake are equipped with the two-shoe centrifugal type clutch shown in Fig. ST7. Models with chain brake are equipped with the three-shoe type clutch shown in Fig. ST8.

To remove clutch assembly, first remove spark plug and install piston stop tool in spark plug hole or use other suitable means to prevent crankshaft rotation. Remove clutch cover, bar and chain. On both types of clutch, clutch hub has left-hand threads (turn clockwise to remove).

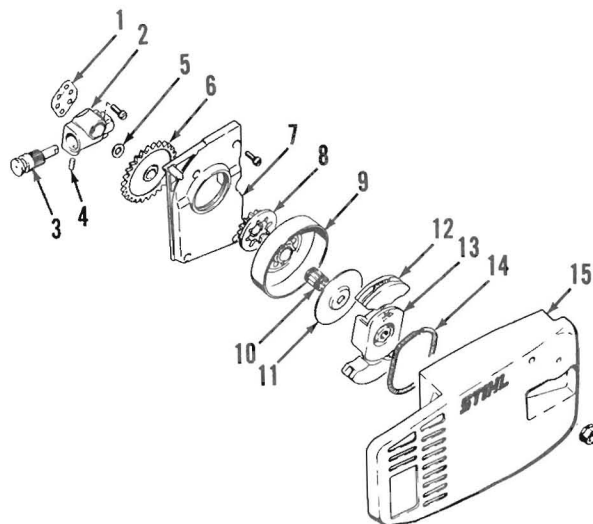


Fig. ST7—Exploded view of clutch assembly and chain oiler pump.

1. Gasket
2. Oil pump housing
3. Pump plunger
4. Pin
5. Washer
6. Driven gear & worm
7. Cover
8. Drive gear
9. Clutch drum
10. Needle bearing
11. Plate
12. Clutch shoe
13. Clutch hub
14. Spring
15. Housing

Inspect clutch shoes, drum and needle bearing for wear or signs of damage due to excessive heat and renew as necessary. Lubricate needle bearing with grease when reassembling.

On models without chain brake, be sure rear guide washer (11—Fig. ST7) is installed with raised inner diameter facing away from clutch drum. Tighten clutch hub to 25 N·m (18 ft.-lbs.).

On models with chain brake, flanged edge of rear guide washer (16—Fig. ST8) should face the crankcase. One side of threaded hole in clutch hub (13) is counterbored to a depth of approximately 2 mm (0.080 in.) and this side must face the crankcase. Tighten clutch hub to 25 N·m (18 ft.-lbs.). Install front guide washer (12) so raised inner diameter faces clutch hub. Tighten locking nut (11) to 30 N·m (22 ft.-lbs.).

OIL PUMP. All models are equipped with a plunger type automatic chain oil pump. Oil pump is driven by the clutch through gear (8—Fig. ST7) that engages with the clutch drum. The oil pump operates only when clutch drum is turning. A worm attached to driven gear (6) turns pump plunger (3). The plunger reciprocates in pump housing as the cam groove in end of plunger rides against pin (4).

Remove chain bar, clutch and cover plate (7) for access to oil pump. Pin (4) must be removed before plunger (3) can be withdrawn from pump housing (2). Use a magnet to remove pin, then withdraw pump plunger out of housing. Renew any worn or damaged parts.

Coat helical end and teeth of plunger with grease before reassembling. Be sure spacer washer (5) is installed on worm gear bearing shaft before installing spur gear (6).

CHAIN BRAKE. Some models may be equipped with a chain brake system de-

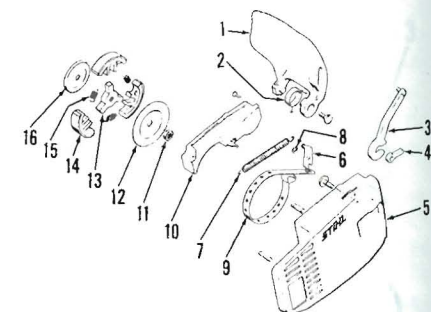


Fig. ST8—Exploded view of chain brake and clutch assembly used on some models.

1. Hand guard
2. Spring
3. Brake lever
4. Actuating lever
5. Housing
6. Pivot
7. Spring
8. "E" ring
9. Brake band
10. Shield
11. Nut
12. Washer
13. Clutch hub
14. Clutch shoe
15. Clutch spring
16. Washer

signed to stop chain movement should kickback occur. The chain brake is activated when the operator's hand strikes hand guard (1—Fig. ST8), thereby allowing brake lever (3) to release spring (7) that draws brake band (9) tight around clutch drum to stop chain. Pull back hand guard to reset brake mechanism. No adjustment of chain brake is required.

To disassemble, remove cover (10) and detach brake spring (7). Remove "E" ring (8) and lift out pivot lever (6) and brake band (9). To remove brake lever (3) and actuating lever (4), drive out lever pivot pin toward inside of housing (5).

Lubricate all pivot points before reassembly. Reassembly is reverse of disassembly.

REWIND STARTER. Two types of rewind starter assemblies are used. On Models 015AV and 015AVE equipped with anti-vibration handle, starter assembly shown in Fig. ST9 is used. On all other models, starter assembly shown in Fig. ST10 is used.

Models With Anti-Vibration Handle. To service starter on models with anti-vibration handle, remove mounting screw from lower end of handlebar and swing handlebar to the side to provide access to starter cover (1—Fig. ST9). Remove cover mounting screws and pry cover out of fan shroud (7). Remove "E" ring (10) and withdraw rope pulley (9) from cover (1). Lift rewind spring assembly (3) from cover being careful not to allow spring to unwind uncontrolled.

To reassemble, lubricate rewind spring with a few drops of oil. Install spring and housing in starter cover making sure spring outer loop engages lug on cover. If spring becomes disengaged from spring housing during installation, wind spring in housing in a counter-clockwise direction, starting with outer end and working inward. Rope length should be 960 mm (38 in.) long and 3.5 mm ($\frac{1}{8}$ in.) in diameter. Lubricate starter cover pivot shaft with oil, then install rope pulley, bushing and "E" ring. Insert end of rope through starter hous-

ing and install rope handle. Wind rope on pulley in clockwise direction as viewed from flywheel side of pulley. To preload rewind spring, turn pulley three turns clockwise, then position starter cover in shroud. Pull out starter rope until resistance is felt, then release rope so flywheel pawls can engage rope pulley. Rope handle (4) should rest snugly against shroud when spring is correctly tensioned.

Models Without Anti-Vibration Handle. To service starter used on models without anti-vibration handle, remove choke lever, spark plug, air filter cover and air filter. Unbolt and remove starter housing/fan shroud (2—Fig. ST10) from engine. If rope is not broken, remove rope handle (1) and allow rope pulley to slowly unwind to relieve tension on rewind spring. Remove "E" ring (7) and lift rope pulley (6) upward only far enough so that a screwdriver or other suitable tool can be inserted through rope guide bore in housing and pushed between pulley and rewind spring (4) to ensure spring does not become disengaged as pulley is removed. Remove rope pulley being careful not to allow rewind spring (4) to unwind uncontrolled. If it is necessary to remove rewind spring, carefully grasp spring with large pliers and remove from housing or

position starter housing on a flat surface with spring side facing downward and tap on housing to dislodge spring from housing.

A new rewind spring comes ready to install with a wire strap holding it in the coiled position. The wire strap is pushed off spring as it is installed. Spring must be wound in clockwise direction in housing, starting with outer end. Be sure outer loop of spring engages lug on starter housing. Rope length should be 960 mm (38 in.) long and 3.5 mm ($\frac{1}{8}$ in.) in diameter. Wind rope on pulley in clockwise direction as viewed from flywheel side of pulley. Insert end of rope through starter housing and install rope handle. Lubricate starter pivot shaft with oil, then install rope pulley, bushing and "E" ring. Be sure inner loop of rewind spring engages gap in rib of pulley. To preload rewind spring, pull rope about 40 cm (16 in.) out of housing and hold pulley in this position. Pull loop of rope through notch in pulley, then rotate pulley three turns clockwise. While holding pulley, pull rope back through notch in pulley and out opening in housing. Release pulley slowly and allow rope to wind onto pulley. Rope handle (1) should rest snugly against shroud when spring is correctly tensioned.

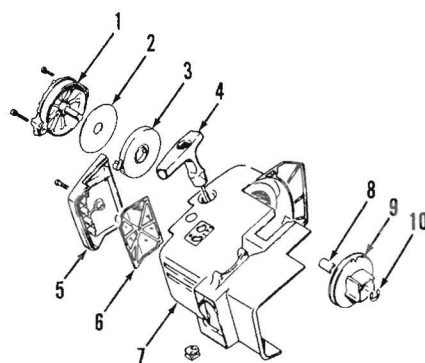


Fig. ST9—Exploded view of rewind starter assembly used on Models 015AV and 015AVE.

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|---------------------|----------------|
| 1. Starter cover | 6. Air filter |
| 2. Washer | 7. Shroud |
| 3. Rewind spring | 8. Bushing |
| 4. Rope handle | 9. Rope pulley |
| 5. Air filter cover | 10. "E" ring |

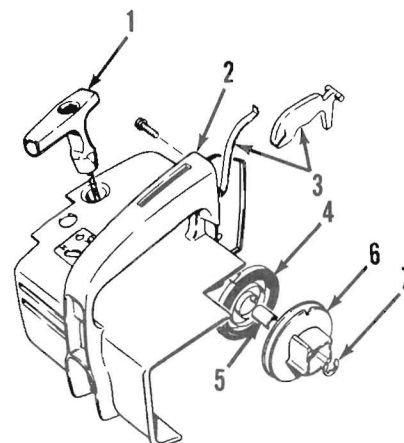


Fig. ST10—Exploded view of rewind starter assembly used on Models 015, 015L and 015LE.

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|----------------------|----------------|
| 1. Rope handle | 5. Bushing |
| 2. Starter housing | 6. Rope pulley |
| 3. Trigger interlock | 7. "E" ring |
| 4. Rewind spring | |