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The Briggs & Stratton engine is made of the finest material in a state-of-the-art manufacturing facility. Please understand that Briggs & Stratton sells engines to original equipment manufacturers. It also sells to others in the distribution chain who may sell to the ultimate consumer, an equipment manufacturer, another distributor or a dealer. As a result, Briggs & Stratton does not necessarily know the application on which the engine will be placed. For that reason, carefully read and understand the operating instructions of the equipment before you repair or operate.

You should also understand that there are equipment applications for which Briggs & Stratton does not approve the use of its engines. Briggs & Stratton engines are not to be used on vehicles with less than 4 wheels. This includes motor bikes, aircraft products and All Terrain Vehicles. Moreover, Briggs & Stratton does not approve of its engines being used in competitive events. FOR THAT REASON, BRIGGS & STRATTON ENGINES ARE NOT AUTHORIZED FOR ANY OF THESE APPLICATIONS. Failure to follow this warning could result in death, serious injury (including paralysis) or property damage.

IN THE INTEREST OF SAFETY

The safety alert symbol (⚠️) is used to identify safety information about hazards that can result in personal injury.

A signal word (DANGER, WARNING or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.
DANGER indicates a hazard which, if not avoided, will result in death or serious injury.

WARNING indicates a hazard which, if not avoided, could result in death or serious injury.

CAUTION indicates a hazard which, if not avoided, might result in minor or moderate injury.

CAUTION, when used without the alert symbol, indicates a situation that could result in damage to the engine.

HAZARD SYMBOLS AND MEANINGS

- Fire
- Explosion
- Moving Parts
- Toxic Fumes
- Hot Surface
- Kickback
- Shock

WARNING: The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

WARNING

Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

WHEN ADDING FUEL

- Turn engine OFF and let engine cool at least 2 minutes before removing gas cap.
- Fill fuel tank outdoors or in well-ventilated area.
- Do not overfill fuel tank. Fill tank to approximately 1-1/2 inches below top of neck to allow for fuel expansion.
- Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

WHEN STARTING ENGINE

- Make sure spark plug, muffler, fuel cap and air cleaner are in place.
- Do not crank engine with spark plug removed.
- If fuel spills, wait until it evaporates before starting engine.
- If engine floods, set choke to OPEN/RUN position, place throttle in FAST and crank until engine starts.

WHEN OPERATING EQUIPMENT

- Do not tip engine or equipment at angle which causes gasoline to spill.
- Do not choke carburetor to stop engine.

WHEN STORING GASOLINE OR EQUIPMENT WITH FUEL IN TANK

- Store away from furnaces, stoves, water heaters or other appliances that have pilot light or other ignition source because they can ignite gasoline vapors.
WARNING

Unintentional sparking can result in fire or electric shock. Unintentional start-up can result in entanglement, traumatic amputation, or laceration.

BEFORE PERFORMING ADJUSTMENTS OR REPAIRS
• Disconnect spark plug wire and keep it away from spark plug.

WHEN TESTING FOR SPARK
• Use approved spark plug tester.
• Do not check for spark with spark plug removed.

WARNING

Starting engine creates sparking. Sparking can ignite nearby flammable gases. Explosion and fire could result.
• If there is natural or LP gas leakage in area, do not start engine.
• Do not use pressurized starting fluids because vapors are flammable.

WARNING

Engines give off carbon monoxide, an odorless, colorless, poison gas. Breathing carbon monoxide can cause nausea, fainting or death.
• Start and run engine outdoors.
• Do not start or run engine in enclosed area, even if doors or windows are open.

WARNING

Running engines produce heat. Engine parts, especially muffler, become extremely hot. Severe thermal burns can occur on contact. Combustible debris, such as leaves, grass, brush, etc. can catch fire.
• Allow muffler, engine cylinder and fins to cool before touching.
• Remove accumulated combustibles from muffler area and cylinder area.
• Install and maintain in working order a spark arrester before using equipment on forest-covered, grass-covered, brush-covered unimproved land. The state of California requires this (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal land.

WARNING

Rotating parts can contact or entangle hands, feet, hair, clothing, or accessories. Traumatic amputation or severe laceration can result.
• Operate equipment with guards in place.
• Keep hands and feet away from rotating parts.
• Tie up long hair and remove jewelry.
• Do not wear loose-fitting clothing, dangling drawstrings or items that could become caught.

WARNING

Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go. Broken bones, fractures, bruises or sprains could result.
• When starting engine, pull cord slowly until resistance is felt, then pull rapidly.
• Direct coupled equipment components such as, but not limited to, blades, impellers, pulleys, sprockets, etc., must be securely attached.
YOUR KEY TO THE WORLD’S FINEST ENGINES

This chart explains the unique Briggs & Stratton numerical model designation system. It is possible to determine most of the important mechanical features of the engine by merely knowing the model number. Here is how it works:

A. The first one or two digits indicate the approximate CUBIC INCH DISPLACEMENT.
B. The first digit after the displacement indicates the BASIC DESIGN SERIES, relating to cylinder construction, ignition, general configuration, etc.
C. The second digit after the displacement indicates ORIENTATION OF CRANKSHAFT.
D. The third digit after the displacement indicates TYPE OF BEARINGS, and whether or not the engine is equipped with REDUCTION GEAR or AUXILIARY DRIVE.
E. The last digit indicates the TYPE OF STARTER.

BRIGGS & STRATTON MODEL NUMBERING SYSTEM

<table>
<thead>
<tr>
<th>FIRST DIGIT</th>
<th>SECOND DIGIT</th>
<th>THIRD DIGIT</th>
<th>FOURTH DIGIT</th>
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<tr>
<td>DISPLACEMENT</td>
<td>BASIC DESIGN SERIES</td>
<td>CRANKSHAFT ORIENTATION</td>
<td>PTO BEARING, REDUCTION GEAR, AUXILIARY DRIVE, LUBRICATION</td>
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<td>0 - Plain Bearing/DU</td>
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<td>5 to 9 - Vertical Shaft</td>
<td>- Non-Flange Mount</td>
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<td>A to G - Horizontal Shaft</td>
<td>1 - Plain Bearing/ Flange Mounting</td>
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<td>H to Z - Vertical Shaft</td>
<td>2 - Sleeve Bearing/ Flange Mounting</td>
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<td>11</td>
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<td>Splash Lube</td>
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<tr>
<td>12</td>
<td>5</td>
<td></td>
<td>3 - Ball Bearing/ Flange Mounting</td>
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<td>6</td>
<td></td>
<td>Splash Lube</td>
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<td>7</td>
<td></td>
<td>4 - Ball Bearing/ Pressure Lubrification</td>
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<td>8</td>
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<td>5 - Plain Bearing/ Gear Reduction</td>
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<td>(6 to 1) CCW Rotation/ Flange Mounting</td>
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<td>9 - Plain Bearing/ Auxiliary Drive</td>
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<td>Parallel to Crankshaft</td>
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<td>A - Plain Bearing/ Pressure Lubrification</td>
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<td>Without Oil Filter</td>
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<td>58</td>
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EXAMPLE - To identify Model 30347:

<table>
<thead>
<tr>
<th>30</th>
<th>3</th>
<th>4</th>
<th>4</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Cubic Inch</td>
<td>Design Series 3</td>
<td>Horizontal Shaft</td>
<td>Ball Bearing/Flange Mounting</td>
<td>Pressure Lubrification</td>
</tr>
</tbody>
</table>

**TYPE 1234-01.** The type number identifies the engines mechanical parts, color of paint, decals, governed speed, and Original Equipment Manufacturer.

**CODE 01061201.** The code is the manufacturing date and is read as follows:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>MONTH</th>
<th>DAY</th>
<th>ASSEMBLY LINE AND MANUFACTURING PLANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>06</td>
<td>12</td>
<td>01</td>
</tr>
</tbody>
</table>

Revised 5/03
FUEL AND OIL RECOMMENDATIONS

Gasoline

These engines are certified to operate on unleaded gasoline. Use clean, fresh, regular unleaded gasoline with a minimum of 85 octane. Do not mix oil with gasoline. Fresh fuel prevents gum from forming in fuel system or on essential carburetor parts. Purchase fuel in quantity that can be used within 30 days to assure fuel freshness. We recommend the use of Briggs & Stratton Gasoline Additive. (See your Authorized Briggs & Stratton Service Dealer for Part No. 5041 or the single-use pouch.)

In countries other than U.S.A., leaded gasoline may be used if it is commercially available and unleaded is unavailable.

NOTE: Some fuels, called oxygenated or reformulated gasolines, are gasoline blended with alcohols or ethers. Excessive amounts of these blends can damage the fuel system or cause performance problems. Do not use gasoline containing Methanol. If any undesirable operating symptoms occur, use gasoline with a lower percentage of alcohol or ether.

Lubrication

Oil has four purposes. It cools, cleans, seals and lubricates. During normal operation, small particles of metal from the cylinder walls, pistons, bearings and combustion deposits will gradually contaminate the oil. Dust particles from the air also contaminate the oil forming an abrasive mixture which can cause wear to all of the internal moving parts of the engine, if the oil is not changed regularly. Fresh oil also assists in cooling. Old oil gradually becomes thick and loses its cooling ability as well as its lubricating qualities.

Oil Recommendations

Use a high quality detergent oil classified “For Service SF, SG, SH, SJ” or higher. Briggs & Stratton strongly recommends the use of synthetic oil such as Briggs & Stratton (#100030C) or equivalent. If synthetic oil is not available, Briggs & Stratton non-synthetic 30 weight oil is an acceptable substitute. No special additives should be used with recommended oils.

Do not mix oil with gasoline.
SAE VISCOSITY GRADES

* Air cooled engines run hotter than automotive engines. Use of non-synthetic multi-viscosity oils (10W-30, etc.) in ambient temperatures above 40° F (4° C) will result in high oil consumption. If multi-viscosity oil is used, check oil level more frequently to prevent engine damage due to lack of lubrication.

** SAE 30 oil, if used below 40° F (4° C), will result in hard starting and possible engine damage due to inadequate lubrication.

Note: Synthetic oil meeting ILSAC GF-2, API certification mark and API service symbol (shown at left) with “SJ/CF ENERGY CONSERVING” or higher, is an acceptable oil at all temperatures. Use of synthetic oil does not alter required oil change intervals.

MAINTENANCE

WARNING

If you perform any maintenance on the engine, first disconnect the spark plug wire from the spark plug to prevent unintentional sparking. Unintentional sparking can result in fire or electric shock. Unintentional start-up can result in entanglement, traumatic amputation or laceration. Use only correct tools.

Maintenance Schedule

<table>
<thead>
<tr>
<th>Daily</th>
<th>10 Hours or Every Season</th>
<th>25 Hours or Every Season</th>
<th>50 Hours or Every Season</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check oil level</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change oil</td>
<td></td>
<td>✓ *</td>
<td></td>
</tr>
<tr>
<td>Service air filter</td>
<td></td>
<td>✓ **</td>
<td></td>
</tr>
<tr>
<td>Replace spark plug</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

* Change oil after first 4 hours of use, then every 8 hours or every season. Change oil every 4 hours when operating the engine under heavy load or in high temperatures.

** Clean more often under dusty conditions or when airborne debris is present. Replace air cleaner parts, if very dirty.

Check Oil

1. Place the warm engine with the dipstick facing up. If necessary use a support (2) to level the engine, Fig. 1.

NOTE: The engine MUST be level to obtain an accurate oil level measurement.

2. Unscrew the dipstick (1) and wipe it with a rag.

3. Replace the dipstick, thread the dipstick in completely.

4. Unscrew the dipstick to check the oil.

Fig. 1
BE SURE OIL LEVEL IS PROPERLY MAINTAINED. Always fill to dipstick FULL mark (1), Fig. 2.

![Fig. 2](image)

**Change Oil**
1. Remove dipstick.
2. Invert the engine to drain oil while the engine is warm.
3. Fill engine with 3.0 oz. (88 ml.) of new oil.
4. Replace dipstick.

**Air Cleaner**
A properly serviced air cleaner protects internal parts of the engine from dust particles in the air. If air cleaner maintenance instructions are not carefully followed, dirt and dust that should be collected in the foam filter will be drawn into the engine.

1. Push cover tab to release air cleaner cover (1), Fig. 3.
2. Remove filter (2).
3. Wash filter in liquid detergent and water.
4. Squeeze it dry in a clean cloth.
5. Saturate foam air filter in clean engine oil, then squeeze out excess oil in clean cloth.
6. Install air filter.

**NOTE:** Make sure filter is on outside of locating bosses and flush with filter base.

7. Refer to Breather Check Valve, below.
8. Install air cleaner cover.

DO NOT use compressed air or solvents to clean filter. Compressed air can damage filter; solvents will dissolve filter.

**Breather Check Valve**
With the air cleaner removed inspect the breather check valve (1), Fig. 4. Remove any obstructions from the check valve. The check valve should be flexible and remain closed as shown.

![Fig. 3](image)

![Fig. 4](image)

**Replace Spark Plug**
Replace spark plug yearly or if electrodes show signs of wear, or the porcelain is cracked. Set spark plug gap at .025 inch (.65 mm). Torque spark plug to 20 Nm (180 in. lbs.).

Briggs & Stratton recommends spark plug number 696876 for the Micro Engine.
Cooling System
Grass particles, chaff or dirt can clog the air cooling system. Continued operation with a clogged cooling system can cause severe overheating and possible engine damage. This should be a regular maintenance operation, performed yearly. Clean more often if necessary.

TROUBLESHOOTING
Most complaints concerning engine operation can be classified as one or a combination of the following:
1. Will not start
2. Hard Starting
3. Lack of power
4. Runs Rough
5. Vibration
6. Overheating
7. High Oil Consumption

NOTE: What appears to be an engine malfunction may be a fault of the powered equipment rather than the engine. If equipment is suspect, see Equipment Affecting Engine Operation.

Systematic Check
If the engine is hard starting or will not start and the cause of malfunction is not readily apparent, perform a systematic check in the following order:
1. Ignition
2. Carburetion
3. Compression
This check-up, performed in a systematic manner, can usually be done in a matter of minutes. It is the quickest and surest method of determining the cause of failure.

Check Ignition (With Engine Starter)
With stop switch in ON/RUN position and spark plug installed, attach a #19368 ignition tester to the spark plug lead and ground the other end of the tester as shown in Fig. 5. Operate the starter a minimum of six times in rapid succession. If a strong, steady spark is observed at the tester gap, you may assume the ignition system is functioning satisfactorily.

NOTE: If spark initially appears at tester, but stops on subsequent pulls and the stop switch is in the ON/RUN position, check for a defective equipment stop switch or shorted wires.

NOTE: Engines equipped with Magnetron® ignition system will still display spark at tester with a partially or fully sheared flywheel key. A partially sheared flywheel key will affect ignition timing and engine performance.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON MAGNETRON® EQUIPPED ENGINES, SPARK CAN STILL OCCUR WITH A SHEARED FLYWHEEL KEY. A SEVERE SHOCK OR KICKBACK HAZARD MAY EXIST.</td>
</tr>
</tbody>
</table>
If spark does not occur look for:
1. Shorted stop switch
2. Shorted ground wire
3. Incorrect armature air gap
4. Armature failure

**Check Ignition (Engine Running)**

If engine runs but misses during operation, a quick check to determine if ignition is or is not at fault can be made by installing Tool #19368 tester between the spark plug lead and spark plug, Fig. 6. A spark miss will be readily apparent when the engine is running. If spark is good but engine misses, try a new spark plug.

![Fig. 6](image)

**Check Carburetion**

Before checking carburetion, be sure the fuel tank has an ample supply of fresh, clean gasoline.

Make sure throttle and choke controls are properly adjusted.

If engine cranks but will not start, remove and inspect the spark plug.

If plug is wet, look for:
1. Over choking
2. Water in fuel
3. Float needle valve stuck open
4. Plugged air cleaner
5. Fouled spark plug

If plug is dry, look for:
1. Leaking carburetor mounting gaskets
2. Gummy or dirty carburetor, fuel filter, fuel lines or fuel tank
3. Float needle valve stuck shut
4. Inoperative fuel pump

A simple check to determine if the fuel is getting to the combustion chamber through the carburetor is to remove the spark plug and pour a small quantity of gasoline (1 teaspoon or 10 ml.) through the spark plug hole. Replace the plug. If the engine fires a few times and then stops, look for the same conditions as for a dry plug.

**Check Compression**

Connect spark plug wire to long terminal of tester, Tool #19368 and ground tester to engine with alligator clip.

To check compression, use a compression tester. Remove the spark plug and install the tester. Crank the engine using the rewind starter. Continue cranking until meter reading stabilizes. The meter reading should be approximately 50 to 60 P.S.I. (3.5-4 bar). If compression is below 40 P.S.I. (2.8 bar), look for:
1. Loose cylinder head bolts
2. Blown head gasket
3. Burned valves, valve seats
4. Insufficient tappet clearance
5. Warped cylinder head
6. Warped valve stems
7. Worn bore and/or rings
8. Broken connecting rod

**Equipment Affecting Engine Operation**

Frequently, what appears to be a problem with engine operation, such as hard starting, vibration, etc., can be caused by the equipment being powered rather than the engine itself. Since many varied types of equipment are powered by Briggs & Stratton engines, it is not possible to list all of the various conditions that may exist. Listed are the most common effects of equipment problems, and what to look for as the most common cause.

**Hard Starting, Kickback, or Will Not Start**

1. Loose blade – blade must be tight to shaft or adaptor. Check for partially sheared flywheel key, or damaged blade and hub.
2. Starting under load – see that the unit is not engaged when engine is started; if the unit is engaged, that it does not have a heavy parasitic load.
3. Check choke or speed control assembly for proper adjustment.

4. Check interlock system (if equipped) for shorted wires, loose or corroded connections, or defective modules or switches.

**Vibration**

1. Cutter blade bent or out of balance – remove and balance.

2. Worn blade coupling – replace if coupling allows blade to shift.


4. Check for partially sheared flywheel key.

**Power Loss**

Bind or drag in unit – if possible, disengage engine and operate unit manually to check for any binding action.
# Section 2
Disassembly and Repair

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<td>Install Coil</td>
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<td>Adjust Air Gap</td>
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GENERAL INFORMATION

The extent of service to the Micro Engine is limited to the replacement of the major external components of the engine. The Section Contents lists the serviceable components in the required sequence of disassembly. For example, to replace the ignition coil it would be necessary to remove the blower housing. Therefore the rewind removal procedure is listed first. With the blower housing removed the ignition coil, flywheel and fuel tank are accessible. To replace the muffler the blower housing and cylinder shield must be removed.

NOTE: When removing screws from the engine, the screw threads will loosen aluminum particles which can get into the engine:
Clean thoroughly whenever removing screws from the engine.
Do not use impact tools to remove or install screws.
Use lubricant liberally whenever removing screws.

NOTE: There is no provision to bore or hone the engine block. If the piston bore is worn or damaged, replace the engine.

REWIND ASSEMBLY

Inspect Starter Rope

1. Pull starter rope out and hold.
2. Inspect starter rope. Replace the rope if any strands are frayed or broken.

To service the blower housing/rewind assembly the engine must be removed from the piece of equipment.

The starter rewind pulley and spring are not serviceable. If pulley is damaged or spring is broken the blower housing/rewind assembly must be replaced.

Remove Blower Housing – Direct Drive Engine

Remove screws with the T-25 bit from Briggs & Stratton Tool #19442 Torqux Star Bit Set.

1. Remove 2 screws (1) from blower housing Fig. 1.
2. Remove 4 screws (2) from cylinder shield side, Fig. 2.
3. Remove blower housing.
Replace Starter Rope

1. Pull rope out part way and tie a temporary knot.
2. Remove rope from rope handle and untie knot, Fig. 3.
3. Remove starter handle.

4. Pull rope out as far as it will go and untie temporary knot.
5. While holding rewind pulley, grasp knot in pulley with a pair of needle nose pliers and pull rope out of pulley.
6. Slowly release spring tension on pulley until pulley stops turning.

**NOTE:** Replacement rope has handle attached.

7. Rotate pulley CLOCKWISE, SEVEN (7) complete turns.
8. Then rotate pulley counterclockwise until rope hole in pulley is in line with starter housing eyelet. Hold pulley in this position.
9. Insert rope through eyelet in housing and then through hole in pulley (1), Fig. 4.
10. Tie a figure eight knot in end of rope (2), as shown.

11. Pull rope until knot is seated in pulley.
12. Then let rope rewind into starter.
13. Operate starter to check for smooth operation.

Install Blower Housing – Direct Drive Engine

Assemble blower housing to engine.

**NOTE:** Be sure stop switch is installed in its notch in blower housing.

1. Install 4 screws (2) from cylinder shield side, Fig. 5.
   Torque screws to 25 in. lbs. (3 Nm).
2. Install 2 screws in blower housing, Fig. 6.
Torque screws to 40 in. lbs. (5 Nm).

Fig. 6

Remove Blower Housing – Clutch Drive Engine
Before the blower housing can be removed it is necessary to remove the clutch assembly.

1. Remove 6 screws (1) and clutch housing cover, Fig. 7.

Fig. 7

2. Remove clutch drum (1) using T 15 bit from Briggs & Stratton Tool #19442 Torqux Star Bit Set, Fig. 8.

NOTE: Clutch drum mounting screw remains captive in clutch drum.

Fig. 8

3. Remove clutch (1) and thrust washer (2), Fig. 9.

Fig. 9

4. Remove 2 screws (1) from blower housing, Fig. 10.

Fig. 10
5. Remove 4 screws (2) from cylinder shield side, Fig. 11.
6. Remove blower housing.

7. Check ball bearing for rough spots or excessive looseness (wear).
   a. If bearing is bad the blower housing must be replaced.

Starter rope inspection and replacement procedure is the same as direct drive engine.

**Install Blower Housing – Clutch Drive Engine**

Place a drop of engine oil on ball bearing journal on flywheel nut/crank adapter.
Assemble blower housing to engine.

**NOTE:** Be sure stop switch wires are routed through blower housing.

1. Install 4 screws (2) from cylinder shield side, Fig. 12.
   Torque screws to 25 in. lbs. (3 Nm).

2. Install 2 screws in blower housing, Fig. 13.
   Torque screws to 40 in. lbs. (5 Nm).

3. Install thrust washer (1), Fig. 14.
4. Assemble clutch to shaft with writing up (2). Hand tighten clutch.
5. Assemble clutch drum to engine, Fig. 15.
   Torque screw to 20 in. lbs. (2.0 Nm).
6. Assemble clutch housing cover to blower housing.

**NOTE:** Raised boss (1) on clutch housing cover must fit in recessed boss (2) on blower housing, Fig. 16.

Torque screws to 20 in. lbs. (5.0 Nm).

2. Install coil. Install stop switch wires.

**NOTE:** Route stop switch wires behind spark plug wire and then over spark plug as shown, Fig. 18.

3. Pull coil up as far as it will go and temporarily tighten screws.

---

**IGNITION COIL**

**Remove Coil**

Use the T-25 driver.

1. Disconnect stop switch wire (1).

2. Remove 2 screws (2) and ignition coil with ground wire, Fig. 17.

**Install Coil**

1. Rotate flywheel so that magnets are away from coil.

---

**Adjust Air Gap**

1. Rotate flywheel so that magnets are under armature.

2. Insert feeler gage .010” – .014” (.25 – .35 mm) between flywheel magnets and armature, Fig. 19.

3. Loosen coil mounting screws so magnet pulls coil down to feeler gage.

4. Torque screws to 60 in. lbs.

5. Remove feeler gage.
FLYWHEEL

Remove Flywheel – Direct Drive Engine

Remove the ignition coil.

1. Install flywheel puller Tool #19538 (1) with the concave side down.

2. Rotate puller so that it is under the starter pawls (2).

3. Insert the driver in to flywheel nut/crank adapter (3).

4. Secure flywheel with strap wrench Tool #19433.

5. Turn driver counterclockwise to loosen flywheel nut/crank adapter, Fig. 20.

6. Continue turning until flywheel loosens.

NOTE: The flywheel key is part of the flywheel casting.

Check the key (1) for damage. If key is damaged or sheared the flywheel must be replaced, Fig. 21.

Install Flywheel – Direct Drive Engine

Align flywheel key with keyway in crankshaft and install flywheel.

1. Secure flywheel with strap wrench Tool #19433.

2. Install flywheel nut/crank adapter and insert driver into flywheel nut/crank adapter.

3. Torque to 170 in. lbs. (19 Nm), Fig. 22.

4. Install ignition coil.

Remove Flywheel – Clutch Drive Engine

Remove the ignition coil.

1. Secure flywheel with strap wrench Tool #19433.

2. Loosen flywheel nut/crank adapter (1) with 9/16" wrench, Fig. 23. Then remove.
3. Thread flywheel nut/tool (1) from Tool #19538 on to crankshaft, Fig. 24.

4. Install flywheel puller Tool #19538 with the concave side down.
5. Rotate puller so that it is under the starter pawls.
6. Insert the driver in to flywheel nut.
7. Secure flywheel with strap wrench Tool #19433.
8. Turn driver until flywheel loosens.

Check the key for damage. If key is damaged or sheared the flywheel must be replaced.

**Install Flywheel – Clutch Drive Engine**

Align flywheel key with keyway in crankshaft and install flywheel.

1. Secure flywheel with strap wrench Tool #19433.
2. Install flywheel nut/crank adapter and torque to 170 in. lbs. (19 Nm).

**FUEL TANK**

The fuel tank and fuel lines are serviced as an assembly.

**Remove Fuel Tank**

Drain fuel tank.

1. Disconnect fuel lines at carburetor.
2. Remove fuel tank, Fig. 25.
3. Remove rubber tank supports (1).
4. Remove heat shield (2).

**Install Fuel Tank**

1. Install heat shield and rubber tank supports.
2. Insert tank in to pocket in cylinder shield.
3. Install fuel supply line (1) and fuel return line (2), Fig. 26.

**NOTE:** Fuel line is colored. Fuel return line is clear.

**Fig. 23**

**Fig. 24**

**Fig. 25**

**Fig. 26**
**CYLINDER HEAD**

**NOTE:** Valves and seats are not serviceable.

**Remove Cylinder Head**
Remove the flywheel and ignition coil.
1. Remove 2 screws (1) and cylinder shield, Fig. 27.
   Use the T-25 driver.

2. Remove 7 cylinder head bolts (2), Fig. 28.
3. Remove cylinder head and discard gasket.

**NOTE:** With the cylinder head removed, check the cylinder bore. If the bore is worn or scored the engine must be replaced.

**Install Cylinder Head**
1. Install cylinder head with new gasket.
2. Torque head bolts in sequence shown to 75 in. lbs. (8.5 Nm), Fig. 29.

**MUFFLER**

**Replace Muffler**
Use the T-25 driver.
1. Remove the top 3 muffler bolts (1), Fig. 30. Remove muffler. Discard gasket.

2. Install muffler with new gasket. Torque screws to 60 in. lbs.
3. Install cylinder shield. Torque screws (1) to 40 in. lbs. (5 Nm), Fig. 31.

6. Remove and discard the old mounting gasket.

**Install Carburetor**

1. Install new mounting gasket.

Make sure pulse hole in gasket (1) is aligned with pulse channel (2) in carburetor spacer, Fig. 33.

---

**CARBURETOR**

The carburetor is serviced as an assembly.

**Remove Carburetor**

Drain fuel tank.

1. Disconnect fuel lines at carburetor.
2. Remove air cleaner cover and filter.
3. Remove 2 nuts (1), Fig. 32.
4. Remove air cleaner base.
5. Slide carburetor from studs.

2. Slide carburetor on to studs, Fig. 34.

**NOTE:** Make sure O-ring (1) is assembled to carburetor.
3. Install air cleaner base.

4. Insert breather check valve (1) through air cleaner base. Make sure slot in breather valve is in a vertical position as shown, Fig. 35.

5. Install nuts (2).
   a. Torque nuts to 25 in. lbs. (3 Nm).

6. Install fuel supply line (1) and fuel return line (2), Fig. 36.

7. Assemble throttle cable to carburetor.

8. Assemble air cleaner.

---

Idle Speed Adjustment

**NOTE:** Correct adjustment is necessary to obtain proper acceleration and clutch disengagement on clutch drive engines

1. Start engine and warm up approximately 5 minutes before adjusting.
2. Make sure throttle lever is contacting idle adjustment screw (1), Fig. 37.
3. Adjust idle speed to:
   - **3600 RPM** – Clutch Drive Engine
   - **4000 RPM** – Direct Drive Engine
### SPECIFICATIONS

#### Micro Engine Dimensions

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<tr>
<td>Piston Ring End Gap – Top Ring</td>
<td>.004 – .011 in. (.10 – .28 mm)</td>
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<tr>
<td>Piston Ring End Gap – Second Ring</td>
<td>.004 – .011 in. (.10 – .28 mm)</td>
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<tr>
<td>Piston Ring End Gap – Oil Control Rings</td>
<td>.008 – .027 in. (.20 – .69 mm)</td>
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<tr>
<td>Spark Plug Gap</td>
<td>.022 – .028 in. (.56 – .71 mm)</td>
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#### Micro Engine Torque Specifications

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<tr>
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<th>Quantity Used</th>
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<th>Torque Newton Meters</th>
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<tr>
<td>Camshaft Cover</td>
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<tr>
<td>Carb Adapter</td>
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<tr>
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<tr>
<td>Valve Cover</td>
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Repair Manuals for other Briggs & Stratton Engines, order:
CE8069 – Out of Production Engines (From 1919-1981)
270962 – Single Cylinder “L” Head (Built after 1981)
271172 – Twin Cylinder “L” Head
272144 – Vanguard™ V-Twin OHV
272147 – Single Cylinder OHV
273521 – Intek™ V-Twin Cylinder OHV
275110 – Outboard
MS-0729 – 3 Cylinder Liquid Cooled