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Briggs & Stratton 394959

Briggs & Stratton 394959 Standard Piston Ring Set: Installation and Maintenance Manual

For 17HP Vertical, L-Head Twin Opposed Engines and 20HP Vertical, L-Head Cast Iron Bore Engines

1. Introduction

This manual provides essential information for the proper handling, installation, and maintenance of the Briggs & Stratton 394959 Standard Piston Ring Set. This set is specifically designed for use in 17HP vertical, L-Head Twin Opposed engines and 20HP vertical, L-Head Cast Iron Bore engines. Adhering to these instructions will help ensure optimal engine performance and longevity.

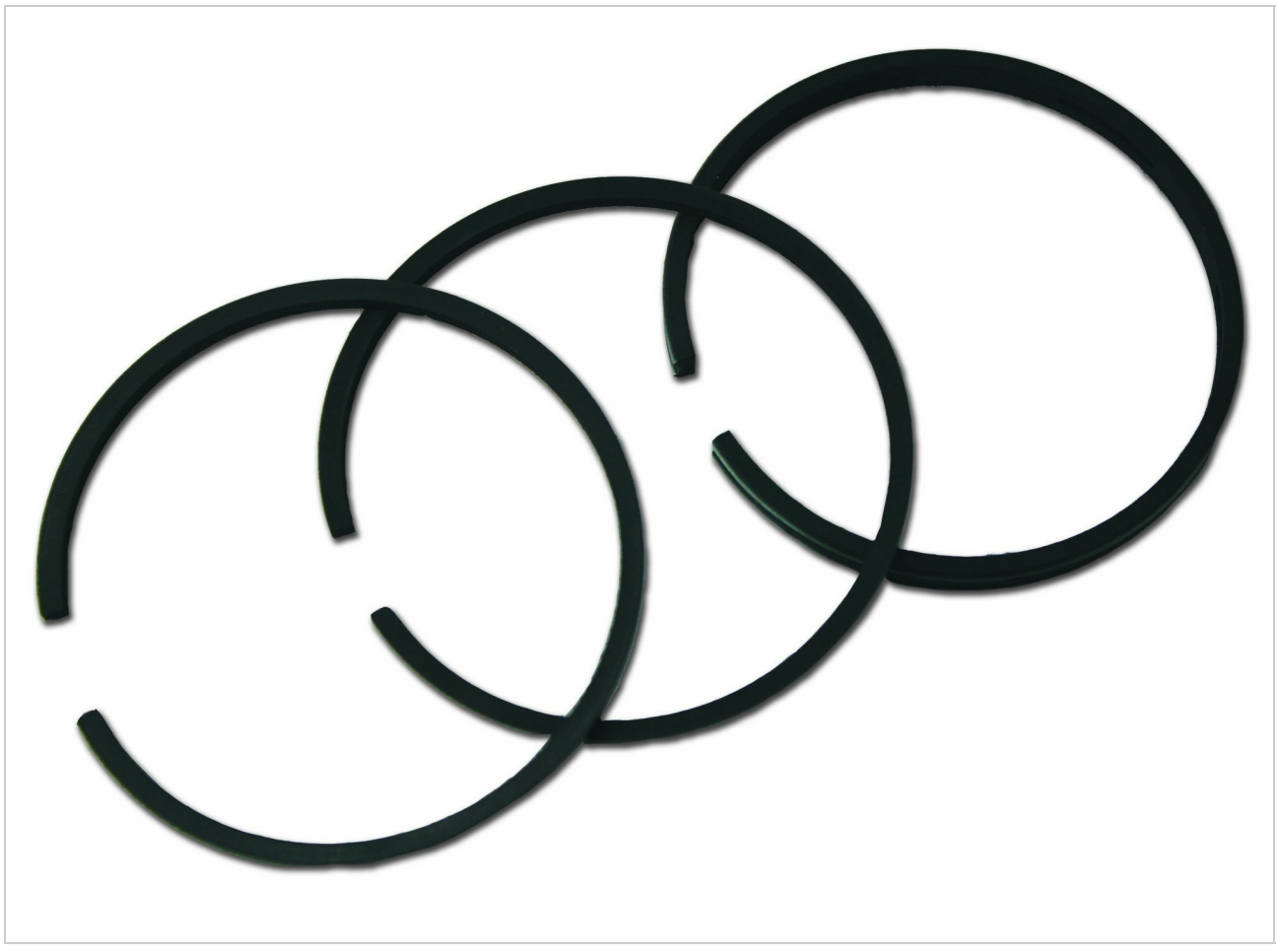


Image 1.1: Three standard piston rings. These components are crucial for maintaining proper engine compression and oil control in compatible Briggs & Stratton L-Head engines.

2. Safety Information

Always prioritize safety when working with engine components. Improper installation or handling can lead to engine damage or personal injury.

- Always wear appropriate personal protective equipment (PPE), including safety glasses and gloves.
- Ensure the engine is completely cool and disconnected from its power source (e.g., spark plug wire removed) before beginning any work.
- Work in a well-ventilated area.
- Refer to your specific engine's service manual for detailed disassembly and reassembly procedures. This manual provides general guidance for the piston ring set.
- Keep small parts away from children.

3. Package Contents

The Briggs & Stratton 394959 Standard Piston Ring Set typically includes the following components:

- One (1) Top Compression Ring
- One (1) Second Compression Ring
- One (1) Oil Control Ring Assembly (consisting of two rails and an expander)

Note: The exact number and type of rings may vary slightly based on specific engine requirements. Always verify against your engine's service manual.

4. Installation Guide

Installing piston rings requires precision and adherence to manufacturer specifications. It is highly recommended that this procedure be performed by a qualified technician or an individual with experience in engine repair. Always consult your specific Briggs & Stratton engine service manual for detailed, model-specific instructions.

General Installation Steps:

1. **Piston Preparation:** Ensure the piston and ring grooves are thoroughly cleaned and free of carbon deposits. Inspect the piston for any damage or wear.
2. **Ring Orientation:** Identify the top and second compression rings. Many rings are marked with a 'TOP' or a dot to indicate the side that faces upwards (towards the cylinder head). The oil control ring assembly typically does not have a specific orientation for its rails, but the expander must be correctly seated.
3. **Oil Control Ring Installation:** Install the oil control ring expander first into the lowest groove. Then, carefully install the two thin oil control ring rails, one above and one below the expander. Ensure the ends of the expander and rails do not overlap.
4. **Second Compression Ring Installation:** Install the second compression ring into the middle groove. Use a piston ring expander tool to prevent distortion or breakage. Ensure the 'TOP' mark or dot faces upwards.
5. **Top Compression Ring Installation:** Install the top compression ring into the uppermost groove, again using a piston ring expander tool. Ensure the 'TOP' mark or dot faces upwards.
6. **Ring Gap Spacing:** Once all rings are installed, rotate them so that their end gaps are staggered, typically 120 degrees apart from each other. This prevents blow-by and ensures proper sealing.

7. **Lubrication:** Lightly lubricate the piston rings and cylinder bore with clean engine oil before inserting the piston into the cylinder.
8. **Piston Insertion:** Use a piston ring compressor tool to carefully guide the piston assembly into the cylinder bore, ensuring the rings are compressed evenly and do not catch on the cylinder wall.

Important: *Never force piston rings into place. Excessive force can cause damage to the rings or piston.*

5. Post-Installation Checks

After installing the piston ring set and reassembling the engine, perform the following checks before attempting to start the engine:

- Verify all fasteners are tightened to the manufacturer's specified torque values.
- Ensure all fluid levels (oil, fuel) are correct.
- Check for any leaks around gaskets or seals.
- Confirm all electrical connections are secure.
- Perform a break-in procedure as recommended by the engine manufacturer, if applicable.

6. Maintenance

Proper engine maintenance is crucial for the longevity and performance of your piston rings and engine. While piston rings themselves do not require specific maintenance, their performance is directly affected by overall engine health.

- **Regular Oil Changes:** Follow the engine manufacturer's recommendations for oil type and change intervals. Clean oil prevents sludge buildup and reduces wear on rings and cylinder walls.
- **Air Filter Maintenance:** A clean air filter prevents abrasive particles from entering the engine, which can cause premature wear on piston rings and cylinder bores.
- **Fuel System Maintenance:** Use clean, fresh fuel and maintain the fuel system to prevent carbon deposits that can foul piston rings.
- **Engine Operating Conditions:** Avoid prolonged idling or operating the engine under extreme conditions that can lead to excessive heat or carbon buildup.

7. Troubleshooting

If you experience engine performance issues after installing new piston rings, consider the following common problems and potential causes:

Symptom	Possible Cause	Action
Excessive Smoke (Blue/Gray)	Improper oil ring installation, damaged oil rings, worn valve guides/seals.	Re-inspect oil rings, check valve components.
Low Compression	Incorrect ring gap spacing, broken rings, improperly seated rings, cylinder bore damage, valve issues.	Perform a compression test, re-inspect ring installation and cylinder bore.
Engine Knocking/Tapping	Incorrect piston-to-cylinder clearance, connecting rod issues, crankshaft issues.	Consult a professional mechanic immediately.

Symptom	Possible Cause	Action
Oil Consumption	Similar to excessive smoke, also worn cylinder walls or valve seals.	Check oil rings, cylinder bore, and valve seals.

For persistent issues, it is recommended to consult a certified Briggs & Stratton service center or a qualified engine repair professional.

8. Product Specifications

Specification	Detail
Model Number	394959
Part Type	Standard Piston Ring Set
Compatibility	17HP Vertical, L-Head Twin Opposed Engines; 20HP Vertical, L-Head Cast Iron Bore Engines
Manufacturer	Briggs & Stratton
Product Dimensions	1 x 7 x 8 inches (packaging)
Item Weight	2.56 ounces
National Stock Number	2805-01-205-4379

9. Warranty and Support

For information regarding product warranty, technical support, or to locate an authorized service dealer, please visit the official Briggs & Stratton website or contact their customer service department directly. Always provide your product model number (394959) and engine serial number when seeking support.
Briggs & Stratton Official Website: www.briggsandstratton.com

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