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- › [Haynes Manuals](#) /
- › Small Engine Repair Haynes TECHBOOK for 5HP and Less - User Manual

## Haynes Manuals TECHBOOK for 5HP and Less

# Haynes TECHBOOK: Small Engine Repair Manual

Comprehensive Guide for Engines 5 HP and Less

## INTRODUCTION TO YOUR HAYNES TECHBOOK

This Haynes TECHBOOK is designed to provide specific and detailed instructions for performing a wide range of tasks on small engines up to 5 horsepower. It serves as an indispensable resource for both basic maintenance and complex repair procedures, offering a more comprehensive approach than many factory manuals.

The manual covers various engine types, including those from Briggs & Stratton, Honda, Sears Craftsman, and Tecumseh. Its content is structured to guide users through troubleshooting, maintenance, and complete overhaul processes.



**Figure 1.1:** Front cover of the Haynes TECHBOOK Small Engine Repair manual. This image displays the title, "Haynes TECHBOOK Small Engine Repair," and indicates its applicability to engines up to 5 HP. It also highlights coverage for brands like Briggs & Stratton, Honda, Sears Craftsman, and Tecumseh, emphasizing maintenance, repair, and troubleshooting.

## SECTION 1: GETTING STARTED AND MANUAL STRUCTURE

Before beginning any repair or maintenance, familiarize yourself with the manual's layout. Each chapter focuses on a specific system or component, providing step-by-step instructions accompanied by numerous illustrations and photographs.

### 1.1 Understanding the Manual's Approach

Haynes manuals are written from hands-on experience, based on a complete teardown and subsequent rebuilding of the machine. This methodology ensures that all instructions are practical and thoroughly tested.

- **Safety First:** Always review the safety precautions section at the beginning of the manual before starting any work.
- **Tools and Equipment:** A dedicated section outlines the necessary tools and equipment for various tasks.
- **Photographic Guidance:** Hundreds of photos accompany the step-by-step instructions to aid visual understanding.

1-20 Chapter 1 Tune-up and routine maintenance

**ACCEPTABLE**  
Cracks Running Across "V" Portions of Belt

**UNACCEPTABLE**  
Cracks Running Parallel to "V" Portions of Belt  
Missing Two or More Adjacent Ribs 1/2" or longer

12.4 Small cracks in the underside of a V-ribbed belt are acceptable - lengthwise cracks, or missing pieces that cause the belt to make noise, are cause for replacement

12.6a V6 engine accessory drivebelt tensioner details

- 1 Square drive
- 2 Rotate counterclockwise to release tension
- 3 Tensioner mounting bolt

12.6b V8 engine accessory drivebelt tensioner details

- 1 Square drive
- 2 Rotate counterclockwise to release tension
- 3 Tensioner mounting bolt

12.13 Install the belt installation tool and rotate the crankshaft pulley until the belt is lifted onto the pulley

glazing which gives the belt a shiny appearance. Check the pulleys for nicks, cracks, distortion and corrosion.

4 Note that it is not unusual for a ribbed belt to exhibit small cracks in the edges of the belt ribs, and unless these are extensive or very deep, belt replacement is not essential (see illustration).

**Replacement**  
**Accessory drivebelt (alternator, water pump and power steering pump, if equipped)**

- 5 Remove the air intake duct (see Chapter 4, Section 12).
- 6 Note how the drivebelt is routed, then insert a 1/2-inch square drive breaker bar into the tensioner pulley square hole. Rotate the tensioner counterclockwise (see illustrations) to release the drivebelt tension. Once tension has been released, remove the belt from the pulleys. Once the outer belt has been removed, the air conditioning belt and vacuum pump belt can be accessed.
- 7 Install the new drivebelt onto the crankshaft, idler, alternator, power steering pump and water pump pulleys, then turn the tensioner back and locate the drivebelt on the tensioner pulley. Make sure that the drivebelt is correctly seated in all of the pulley grooves, then release the tensioner. Reinstall the air filter duct.
- 8 Remove the accessory drivebelt (see Steps 5 and 6).
- 9 Remove the engine splash shield (see Section 8).
- 10 Using a pair of diagonal cutting pliers, cut the air conditioning belt to remove it. **Note:** Some tool manufacturers make air conditioning compressor belt removal tools that can remove the belt without cutting it off. We only recommend using this type of tool if the belt is relatively new. Always check the belt for damage after the removal process.
- 11 Place the new belt on the crankshaft pulley, making sure the belt is fully seated in the pulley grooves.
- 12 Place the installation tool on the compressor pulley, then loop the belt over the tool.
- 13 Rotate the crankshaft pulley and allow the tool to turn, which will lift the belt onto the pulley (see illustration).

Figure 1.2: Example internal page from the Haynes TECHBOOK. This illustration shows a typical layout with detailed diagrams and numbered instructions, specifically demonstrating belt inspection and replacement procedures for an engine. The clarity of these visuals is crucial for accurate repair work.

## SECTION 2: OPERATING AND INTERPRETING PROCEDURES

This section guides you on how to effectively use the manual for specific repair and maintenance operations.

## 2.1 Navigating Repair Chapters

Each chapter is typically divided into sections covering specific components or systems (e.g., ignition, fuel, lubrication). Locate the relevant chapter for the task you intend to perform.

- **Step-by-Step Instructions:** Follow the numbered steps precisely. Pay attention to any warnings or notes provided.
- **Torque Specifications:** Critical fasteners will have specified torque values. Always use a torque wrench where indicated.
- **Special Tools:** If a special tool is required, the manual will typically mention it. Alternatives or fabrication tips may also be provided.

## 2.2 Understanding Diagrams and Illustrations

The manual extensively uses diagrams and exploded views to show component relationships and assembly sequences. Refer to these visuals frequently to ensure correct part identification and placement.

## SECTION 3: MAINTENANCE AND SERVICE SCHEDULES

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Regular maintenance is crucial for the longevity and performance of small engines. This manual provides detailed schedules and procedures for routine service.

### 3.1 Routine Maintenance Procedures

Key maintenance tasks covered include:

- Oil changes and filter replacement.
- Spark plug inspection and replacement.
- Air filter cleaning and replacement.
- Fuel system checks and carburetor adjustments.
- Valve clearance adjustments (where applicable).

Adhering to these schedules, as detailed in the manual, will help prevent common engine issues and ensure optimal operation.

## SECTION 4: TROUBLESHOOTING COMMON ENGINE ISSUES

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A dedicated troubleshooting section is included to help diagnose problems based on symptoms. This section is invaluable for identifying the root cause of engine malfunctions.

### 4.1 Diagnostic Flowcharts and Tables

The troubleshooting guide often utilizes flowcharts or tables that link specific symptoms (e.g., "Engine won't start," "Engine runs rough") to potential causes and recommended corrective actions. Follow these systematically to narrow down the problem.

Typical issues addressed include:

- Starting problems.
- Poor performance or power loss.
- Excessive smoke or unusual noises.
- Fuel delivery issues.
- Ignition system failures.

## SECTION 5: TECHNICAL SPECIFICATIONS AND DATA

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The manual contains comprehensive specifications for various engine components, crucial for accurate repair and assembly.

## 5.1 Key Data Points

Look for sections detailing:

- Engine dimensions and clearances.
- Torque specifications for all fasteners.
- Fluid capacities and types (oil, fuel).
- Ignition timing and spark plug gap.
- Carburetor settings and adjustments.

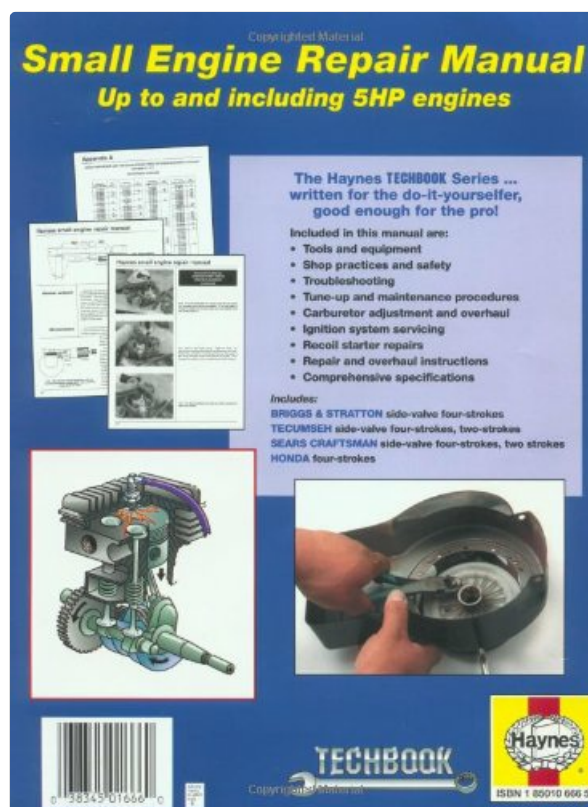
These specifications are vital for ensuring components are within operational tolerances after repair or maintenance.

## SECTION 6: ADDITIONAL INFORMATION

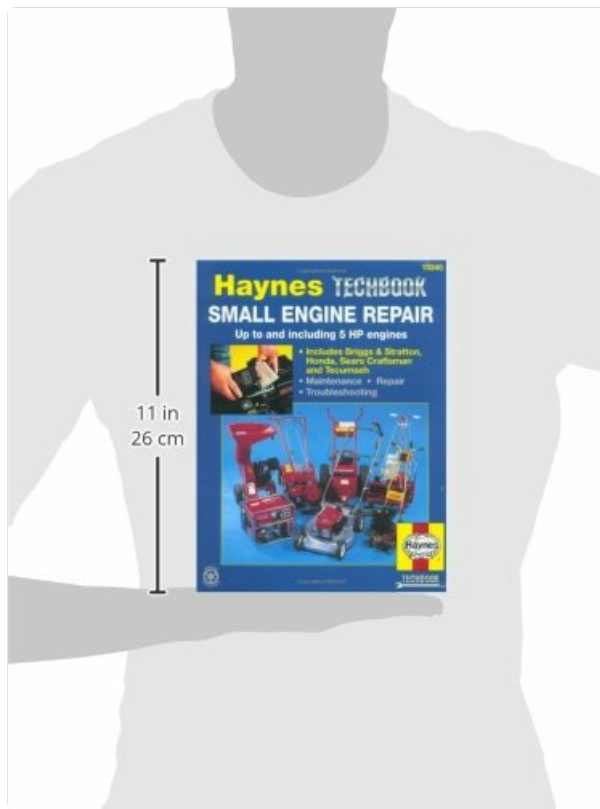
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### 6.1 Publisher Information and Physical Characteristics

This Haynes TECHBOOK is published by Haynes Manuals N. America, Inc. It was first published on May 1, 2018, and has a print length of 296 pages. The manual's ISBN-10 is 1850106665 and ISBN-13 is 978-1850106661.



**Figure 6.1:** Back cover of the Haynes Small Engine Repair Manual. This image provides a summary of the manual's contents, including tools, shop practices, troubleshooting, tune-up, carburetor adjustment, ignition system servicing, and repair/overhaul instructions. It also lists the covered engine brands and includes an exploded view diagram of an engine.



**Figure 6.2:** Physical dimensions of the Haynes TECHBOOK. The manual measures approximately 8.25 x 0.63 x 10.75 inches (21 x 1.6 x 27.3 cm) and weighs 1.5 pounds, making it a substantial reference book.

## 6.2 Support and Resources

For further assistance or inquiries regarding Haynes manuals, please refer to the official Haynes Publishing website or contact their customer support. While this manual provides extensive guidance, complex repairs may require professional assistance.

For general information about Haynes manuals and their comprehensive approach to vehicle and engine repair, you can visit their [official website](#).