WARNING: If incorrectly used, this machine can cause severe injury. Those who use and maintain this machine should be trained in its proper use, warned of its dangers, and should read the entire manual before attempting to set up, operate, adjust, or service the machine.
Foreword

General
This manual provides detailed information and procedures to safely repair and maintain the following:
Jacobsen Greens King™ IV riding greens mower and associated accessory attachments
This manual is intended to introduce and guide the user through the latest factory-approved troubleshooting and repair techniques and practices.
Before you attempt to troubleshoot or make repairs, you must be familiar with the operation of this machine. Refer to the operator’s manual and parts manual for specific information on these topics.
THE INFORMATION CONTAINED IN THIS MANUAL IS BASED ON MACHINES MANUFACTURED UP TO THE TIME OF PUBLICATION. JACOBSEN RESERVES THE RIGHT TO CHANGE ANY OF THIS INFORMATION WITHOUT NOTICE.

California Proposition 65 Warning

WARNING
Certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Trademark Acknowledgement
Jacobsen acknowledges the following trademarks for company names or products mentioned within this publication:
Lubriplate® is a trademark of Fiske Brothers Refining Co. Loctite® and Permatex® are trademarks of Henkel Corporation.
How to Use This Manual
This manual is designed to provide multiple ways to locate and access repair information.
Read each section in its entirety before beginning a procedure. Proper understanding of machine operation and components is the key to successful diagnostics and repair.
Make use of special information features within this manual in order to be better prepared to perform repairs. Always follow manual procedures and safety guidelines. Never take shortcuts.

Table of Contents
Major machine components or topics of interest are separated into specific chapters. Each manual lists these chapters in a main Table of Contents.

Chapter Table of Contents
Each chapter begins with a detailed table of contents related to the specific machine component or system. Use the chapter table of contents to find specific component or procedural information.

Index
An alphabetical Index is located at the back of the manual. Use the Index to find specific components and related procedures.

Required Tools and Materials
Some procedures will require the use of specific tools and/or materials. These tools and/or materials will be listed for reference, prior to beginning a procedure.

Specifications
Near the beginning of each chapter is a specifications listing. This listing contains any specifications contained within the chapter.

Quick Reference Specifications
A list of all machine specifications can be found in Chapter 2 Specifications and General Information. This is a list of all specifications from each chapter, combined and listed in one place for easy reference.

Warnings and Cautions
Warning and Caution indicators are located throughout the manual at specific points of interest. These notices are given to prevent personal injury, death, and/or equipment damage. Always heed these notices, and practice common sense when performing any maintenance or repair procedure.

Notes
Special notes are given in order to draw attention to detailed instructions. These notes are intended to give further important information regarding the machine and/or a step in a procedure.

Troubleshooting
Troubleshooting charts are provided in each chapter to aid in the diagnostic process. Use these suggestions to aid in identifying a potential mechanical or machine adjustment problem.
## Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>1</td>
</tr>
<tr>
<td>Specifications and General Information</td>
<td>2</td>
</tr>
<tr>
<td>Engine</td>
<td>3</td>
</tr>
<tr>
<td>Electrical</td>
<td>4</td>
</tr>
<tr>
<td>Power Train</td>
<td>5</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>6</td>
</tr>
<tr>
<td>Steering</td>
<td>7</td>
</tr>
<tr>
<td>Cutting Units</td>
<td>8</td>
</tr>
<tr>
<td>Accessories and Miscellaneous Repair</td>
<td>9</td>
</tr>
</tbody>
</table>
# Chapter 1

## Safety

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1-2</td>
</tr>
<tr>
<td>Prepare for the Job</td>
<td>1-2</td>
</tr>
<tr>
<td>Safety Notices</td>
<td>1-2</td>
</tr>
<tr>
<td>Safety Label Locations</td>
<td>1-2</td>
</tr>
<tr>
<td>Inspect Safety Labels</td>
<td>1-6</td>
</tr>
<tr>
<td>Keep Work Area Clean</td>
<td>1-6</td>
</tr>
<tr>
<td>Keep Work Area Well Ventilated</td>
<td>1-6</td>
</tr>
<tr>
<td>Use Proper Eye and Face Protection</td>
<td>1-6</td>
</tr>
<tr>
<td>Park Mower Safely</td>
<td>1-6</td>
</tr>
<tr>
<td>Use Lifting Equipment Safely</td>
<td>1-7</td>
</tr>
<tr>
<td>Support Machine Securely</td>
<td>1-7</td>
</tr>
<tr>
<td>Use Compressed Air and Air Tools Safely</td>
<td>1-7</td>
</tr>
<tr>
<td>Service Tires Safely</td>
<td>1-8</td>
</tr>
<tr>
<td>Handle Fuel Safely</td>
<td>1-8</td>
</tr>
<tr>
<td>Store Volatile and Hazardous Materials Safely</td>
<td>1-8</td>
</tr>
<tr>
<td>Handle Chemical Products Safely</td>
<td>1-9</td>
</tr>
<tr>
<td>Service Hydraulic System Safely</td>
<td>1-9</td>
</tr>
<tr>
<td>Service Cooling System Safely</td>
<td>1-9</td>
</tr>
<tr>
<td>Service Electrical Components Safely</td>
<td>1-10</td>
</tr>
<tr>
<td>Dispose of Waste Materials Safely</td>
<td>1-10</td>
</tr>
</tbody>
</table>
Introduction
Safety is the most important element of any repair procedure. Knowledge of the procedure to be performed and safe work habits are essential to preventing death, personal injury, or property damage. Use the following statements as a common-sense guide to proper work and tool-use habits.

Prepare for the Job
Preparation is essential to complete a procedure in a safe and efficient manner.

- Wear proper clothing. Loose or baggy clothing could become tangled in moving parts.
- Use eye/face protection. Always use proper eye/face protection to protect your eyes from flying debris or chemical splatters.
- Wear protective footwear. Wear safety shoes (steel-toe) to protect your feet from falling objects.
- Use gloves when handling parts. Parts may have sharp edges or may be hot.
- Remove jewelry prior to servicing electrical systems.
- Prepare proper tools and equipment. Always use the correct tool for the job. Improper or homemade tools can cause injury or machine damage.
- Prepare needed parts and materials. Gather the needed parts and materials before beginning the procedure.
- Allow machine to cool. Many components can get hot during operation. Be sure to allow enough time for components to cool before beginning service.
- Prepare proper work-space lighting. A well-lit work area can make the job easier.
- Follow procedures and safety warnings. Service procedures are written to be as safe and efficient as possible. Never take shortcuts.
- Be prepared for emergencies. Accidents can happen, even under the best conditions. Fire extinguishers and first aid kits should be well maintained and easily accessible.

Safety Notices
Throughout this manual, the following key safety words will be used to alert the reader of potential hazards. Become familiar with these words and their meaning. Take all precautions to avoid the hazards described.

This safety alert symbol is used to alert you to potential hazards.

<table>
<thead>
<tr>
<th>DANGER</th>
<th>Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING</td>
<td>Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.</td>
</tr>
<tr>
<td>CAUTION</td>
<td>Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury and property damage. It may also be used to alert against unsafe practices.</td>
</tr>
<tr>
<td>NOTICE</td>
<td>Indicates a potentially hazardous situation which, if not avoided, MAY result in property damage. It may also be used to alert against unsafe practices.</td>
</tr>
</tbody>
</table>

Safety Label Locations
Become familiar with machine safety labels and locations. The following illustrations show safety label locations on the machine.
See Figure 1-1.
Figure 1-1
SAFETY

7

8

9

10

WARNING

THIS STRUCTURE'S PROTECTIVE CAPABILITY MAY BE IMPAIRED BY STRUCTURAL DAMAGE, OVERTURN, OR ALTERATION. IF ANY OF THESE CONDITIONS OCCUR, THIS STRUCTURE MUST BE REPLACED.

WARNING

Use seat belt

105 dB
Inspection Safety Labels

Safety labels are critical to the safe operation of the mower. Inspect the mower for any damaged, missing, or unreadable labels. Replace labels as needed before placing the mower back in service.

Keep Work Area Clean

A clean, organized, well-lit work area is important to promote safe working conditions.

- Keep floor clean of debris and clear of parts and tools.
- Clean up any spilled fuel, oil, and/or chemicals immediately.
- Store all air hoses and electrical cords properly when not in use.

Keep Work Area Well Ventilated

**WARNING**

Certain test and adjustment procedures require the engine to be running. Be sure work area is well ventilated; never run the engine in an enclosed area.

Use Proper Eye and Face Protection

**WARNING**

Always use approved personal protection equipment. Avoid workplace hazards by wearing properly maintained, approved eye and face protection. Failure to use appropriate protection equipment may result in death or serious injury.

Always wear eye protection while in a shop environment.

- Safety Glasses: Safety glasses offer a minimum level of protection from flying debris.
- Face Shields: Face shields are often used along with safety glasses to offer a higher level of protection when sparks and flying debris are present.
- Vented Goggles: Goggles offer side protection not offered by safety glasses alone.
- Unvented Goggles: Unvented goggles offer protection from chemical splashes and vapors.

Park Mower Safely

See Figure 1-2.

**WARNING**

Before cleaning, adjusting, or repairing this equipment, disengage all drives, engage park brake, and stop engine to prevent injuries. When performing maintenance other than adjustments that require the engine to be running, disconnect the battery negative cables to prevent accidental starting and bodily injury.

1. Park the mower on a solid, level surface.

2. Disengage the cutting units by returning the reel control levers (1) to the neutral position.

3. Lower the cutting units by using the lower/lift pedal (4).

4. Engage park brake lever (2) and rotate key switch (3) fully counterclockwise to the off position.

5. Remove key from key switch.
Use Lifting Equipment Safely

**WARNING**

Always check the lifting capacity and condition of hoists, slings, cables, or chains before use. Using underrated or worn lifting components can result in death or serious injury.

- Always use a lifting device with a lifting capacity greater than the weight of the item being lifted.
- Secure the load to the lifting device using cables, chains, or slings rated to handle the load being lifted. Fasteners being used to connect lifting devices must be strong enough to handle the load. Also be sure the mounting point of load is strong enough to handle the load.
- When using a lifting device, always connect the load so it is balanced.
- Always use a lifting device on a hard, level surface.
- Lower the lifting device to the lowest point before moving. Move the load slowly.
- Always support the load as soon as possible; never leave a load suspended in mid-air.

Support Machine Securely

**WARNING**

- Support the machine using properly rated jackstands. Never work under a machine supported only by a jack.
- Do not use wood or concrete blocks to support the machine. Failure to properly support the machine may result in death or serious injury.

Use Compressed Air and Air Tools Safely

**WARNING**

Always wear approved eye and ear protection while using compressed air. Misuse of compressed air could result in death or serious injury.

- When using air nozzles, air pressure should not exceed 30 psi (206.8 kPa).
- Never direct air nozzles or tools at a person.
- Never point air nozzles directly at skin.

- Compressed air is a useful tool when used in a safe manner.
- Always use eye and ear protection while using compressed air and air tools.
- When using air tools, do not exceed the air pressure rating for the tool.
- When using an impact wrench, always use approved impact sockets. Never use standard sockets on an impact wrench.
- Disconnect the air supply before changing air tool attachments.
- Never point air nozzles or air tools at another person.
- Always maintain air tools properly.
Service Tires Safely

**WARNING**

An inflated tire contains explosive force. Use care when handling wheels and tires.

- Always wear safety glasses or goggles.
- Use proper lifting methods when working with wheels and tires.
- When working on an inflated tire, never position yourself directly over the work area.
- When dismounting or mounting tires, use a wheel holder or tire machine. Use proper tire mounting tools and equipment. Never use screwdrivers or makeshift tools to force a tire on or off a wheel.
- Be sure tire irons and mounting tools are free of grease and oil. Grip them firmly.
- Inspect wheel parts for rust, damage, or distortion. Never use wheels that are out-of-round, rusted, or cracked.
- Never hammer on wheels with a steel hammer. Use rubber-covered hammers.
- When inflating tires, always use an inflation cage. Always stand away from the valve stem.
- Use accurate, tested inflation gauges to set air pressures.

Handle Fuel Safely

**WARNING**

Handle fuel with care—it is highly flammable.

- Never remove the fuel cap from the fuel tank, or add fuel, when the engine is running or while the engine is hot.
- Do not smoke when handling fuel. Never fill or drain the fuel tank indoors.
- Do not spill fuel. Clean spilled fuel immediately.
- Never handle or store fuel containers near an open flame or any device that may create sparks and ignite the fuel or fuel vapors.
- Be sure to reinstall and tighten fuel cap securely.
- Use an approved container; the spout must fit inside the fuel filler neck. Avoid using cans and funnels to transfer fuel.

Store fuel according to local, state, or federal ordinances and recommendations from your fuel supplier.

Never overfill or allow the tank to become empty.

Use clean, fresh fuel.

Do not fill above the fuel filler neck.

Store Volatile and Hazardous Materials Safely

Store volatile materials (gasoline, diesel fuel, oil, etc.) in approved containers that are clearly marked. Containers should be stored in an approved safety cabinet away from possible sources of ignition. Storage areas and cabinets should be well ventilated to prevent the possible build-up of fumes.
Handle Chemical Products Safely

WARNING
Exposure to chemical products could result in serious injury. Handle chemical products with care. Refer to the chemical manufacturer’s Material Safety Data Sheet (MSDS) for information regarding health hazards, safe handling, and emergency response procedures.

Routine service often requires the use of various chemical products, including lubricants and cleaning solutions. Many of these chemicals are flammable and can pose health risks if not handled properly.
- Never mix chemicals. Mixing chemicals can produce toxic or explosive results.
- Follow the manufacturer’s recommendations for safe usage and handling of the product.
- Various materials may pose a health hazard if used incorrectly. A Material Safety Data Sheet (MSDS) contains important information regarding proper handling and health hazards, as well as emergency response procedures. Contact the chemical manufacturer to obtain an MSDS for the chemical product.

Service Hydraulic System Safely

WARNING
The hydraulic system is under pressure, and the oil may be hot!
- Always allow the machine to cool completely before performing service.
- Always relieve pressure in the hydraulic system before performing service.
- Always use appropriate safety equipment and clothing to protect exposed skin and eyes from high-pressure oil.
- Tighten all connections to proper specifications before applying pressure.
- Never use bare hands to check for leaks! Oil under pressure can penetrate the skin, and can cause gangrene within a few hours if not properly removed. Use a piece of cardboard to check for leaks.

Failure to follow appropriate safety precautions may result in death or serious injury.

Always dispose of used hydraulic oil properly. (See “Dispose of Waste Materials Safely” on page 1-10.)

Service Cooling System Safely

WARNING
Engine coolant is hot and under pressure! Allow the cooling system to cool completely before performing service.
Rotate the filler cap 1/2-turn counterclockwise and allow pressure to vent before removing filler cap.

Failure to follow appropriate safety precautions may result in death or serious injury.

Contact with anti-freeze can damage your skin. Use gloves when working with anti-freeze. If you come in contact with anti-freeze, wash it off immediately.

Always dispose of used engine coolant properly. (See “Dispose of Waste Materials Safely” on page 1-10.)
Service Electrical Components Safely

**WARNING**

Always disconnect the negative terminal first and positive terminal last. Connect positive terminal first and negative terminal last. Use care when testing live circuits to prevent arcing. Arcing could result in death or serious injury.

- Disconnect the battery negative (–) cable before removing or installing electrical components. Always connect the battery negative (–) cable last.
- Certain test and adjustment procedures must be performed with the battery connected. Use care to prevent arcing when working on live circuits or components. Arcing can cause component damage and could ignite flammable materials.

Dispose of Waste Materials Safely

Routine service can produce waste products such as used oil, coolant, grease, and used batteries. If not handled properly, these materials can pose a threat to the environment.

Collect fluids in well-marked, approved storage containers. Some waste fluids can react with certain types of plastics. Make sure the fluid to be stored is compatible with the storage container. Never use food or beverage containers to store waste fluids.

**IMPORTANT**

Never dispose of waste fluids by pouring on the ground, down sewer drains, or into any body of water.

- Dispose of waste fluids properly at approved local recycling centers. If recycling facilities are not available, contact your local community for the correct disposal procedure for waste fluids.
- Dispose of old batteries properly. Battery electrolyte contains sulfuric acid and other hazardous materials. Never place an old battery in the trash. Batteries must be disposed of in a manner consistent with EPA and/or local regulations.
Chapter 2

Specifications and General Information

Machine Identification ................................................. 2-2
  Machine Serial Number ............................................. 2-2
  Engine Serial Number (Diesel) ................................. 2-2
  Engine Identification Number (Gasoline) ....................... 2-3
  Optional Machine Accessories ................................. 2-3

Component Location .................................................. 2-4

Specifications ......................................................... 2-6
  Quick Reference Specifications .............................. 2-6

Standard Torque Values .............................................. 2-14
  Inch Fastener Torque Values .................................. 2-14
  Metric Fastener Torque Values ................................. 2-14

Hydraulic Hose, Tube, and Fitting General Instructions .......... 2-15
  O-Ring Installation .................................................. 2-15
  Hydraulic Hose Installation ................................. 2-15
Machine Identification

Machine Serial Number
See Figures 2-1 and 2-2.

A machine emission control information label (1) lists the engine model and family along with other specifications. The serial number plate (2), which includes the machine model number and weight, attaches to the rear frame of the mower near the steering yoke. Always provide the serial number of the machine when ordering replacement parts or requesting service information.

Engine Serial Number (Diesel)
See Figure 2-3.

The engine serial number plate (1) is attached to the top of the rocker arm cover (2). The plate also includes the engine model number and the engine code number.
Engine Identification Number (Gasoline)

See Figure 2-4.

The engine identification number plate (1) is located on the side of the engine. It identifies the engine model (2), type (3), and code number (4).

Optional Machine Accessories

This manual is structured to cover all basic machine components and repair. The addition of accessories can affect certain troubleshooting, adjustment, and repair procedures.
Component Location
See Figures 2-5 and 2-6.

![CAUTION]
Become familiar with operator controls, machine components, and correct operating procedures before beginning repair procedures.

Figure 2-5: Component Location—Right Side

1 Seat
2 Steering Wheel
3 Instrument Panel
4 Brake Pedal
5 Traction Pedal
6 Right Cutting Unit
7 Center Cutting Unit
8 Hydraulic Pump
9 Battery
10 Hydraulic Oil Tank
Figure 2-6: Component Location—Left Side

1. OPS
2. Air Filter Housing
3. Literature Pouch
4. Fuel Tank
5. Steering Axle
6. Muffler
7. Radiator
8. Front Wheel Motor (2)
9. Left Cutting Unit
10. Mow/Lift Pedal
SPECIFICATIONS AND GENERAL INFORMATION

Specifications

Quick Reference Specifications

Fuel Tank Capacities

<table>
<thead>
<tr>
<th>Model 62304 (Diesel)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Tank Capacity</td>
<td>gal (L)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Models 62305 and 62306 (Gasoline)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Tank Capacity</td>
<td>gal (L)</td>
</tr>
</tbody>
</table>

General Engine Specifications

<table>
<thead>
<tr>
<th>Model 62304 (Diesel)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer/Model</td>
<td>Kubota/D722-E3B</td>
</tr>
<tr>
<td>Engine Type</td>
<td>Vertical 4-Cycle Diesel</td>
</tr>
<tr>
<td>Fuel Requirement</td>
<td>No. 2 Low or Ultra Low Sulfur Diesel (Minimum Cetane Rating 45)</td>
</tr>
<tr>
<td>Number of Cylinders/Configuration</td>
<td>3, In-Line</td>
</tr>
<tr>
<td>Displacement</td>
<td>cu in. (cc)</td>
</tr>
<tr>
<td>Bore x Stroke</td>
<td>in. (mm)</td>
</tr>
<tr>
<td>Power Output</td>
<td>hp (kW)</td>
</tr>
<tr>
<td>Cooling System</td>
<td></td>
</tr>
<tr>
<td>Cooling System Capacity</td>
<td>qt (L)</td>
</tr>
<tr>
<td>Speed Range</td>
<td></td>
</tr>
<tr>
<td>Lubrication Capacity (With Filter)</td>
<td>qt (L)</td>
</tr>
<tr>
<td>Alternator</td>
<td></td>
</tr>
<tr>
<td>Dry Weight</td>
<td>lb (kg)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 62305 [16 hp (12 kW) Gasoline]</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer/Model</td>
<td>Briggs and Stratton/Vanguard V-Twin OHV</td>
</tr>
<tr>
<td>Engine Type</td>
<td>Gasoline</td>
</tr>
<tr>
<td>Fuel Requirement</td>
<td>Unleaded Gasoline (Minimum Octane Rating 85)</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>2</td>
</tr>
<tr>
<td>Displacement</td>
<td>cu in. (cc)</td>
</tr>
<tr>
<td>Bore x Stroke</td>
<td>in. (mm)</td>
</tr>
<tr>
<td>Power Output</td>
<td>hp (kW)</td>
</tr>
<tr>
<td>Cooling System</td>
<td></td>
</tr>
<tr>
<td>Speed Range</td>
<td></td>
</tr>
<tr>
<td>Lubrication Capacity</td>
<td>pt (L)</td>
</tr>
<tr>
<td>Alternator</td>
<td></td>
</tr>
<tr>
<td>Dry Weight</td>
<td>lb (kg)</td>
</tr>
</tbody>
</table>
# Model 62306 [18 hp (13.5 kW) Gasoline]

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer/Model</td>
<td>Briggs and Stratton/Vanguard V-Twin OHV</td>
</tr>
<tr>
<td>Engine Type</td>
<td>Gasoline</td>
</tr>
<tr>
<td>Fuel Requirement</td>
<td>Unleaded Gasoline (Minimum Octane Rating 85)</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>2</td>
</tr>
<tr>
<td>Displacement</td>
<td>cu in. (cc) 34.8 (570)</td>
</tr>
<tr>
<td>Bore x Stroke</td>
<td>in. (mm) 2.83 x 2.75 (72 x 70)</td>
</tr>
<tr>
<td>Power Output</td>
<td>hp (kW) 18 (13.4)@3600 rpm</td>
</tr>
<tr>
<td>Cooling System</td>
<td>Air Cooled</td>
</tr>
<tr>
<td>Speed Range</td>
<td>1200–3600 rpm</td>
</tr>
<tr>
<td>Lubrication Capacity</td>
<td>pt (L) 3.5 (1.6)</td>
</tr>
<tr>
<td>Alternator</td>
<td>12 volt, 16 amp; Key Start</td>
</tr>
<tr>
<td>Dry Weight</td>
<td>lb (kg) 84 (38)</td>
</tr>
</tbody>
</table>

## Engine

<table>
<thead>
<tr>
<th>Repair Specification</th>
<th>Specification Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muffler Mounting Nut Torque (Diesel Model)</td>
<td>lb-ft (N·m) 7.2–8.3 (9.8–11.3)</td>
</tr>
<tr>
<td>Engine Isolation Mount Torque (Gasoline)</td>
<td>lb-ft (N·m) 19.6–21.7 (27–29)</td>
</tr>
</tbody>
</table>
### Electrical

#### Test and Adjustment Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance Across Fuel Shutoff Pull-In Coil at 68° F</td>
<td>ohm</td>
<td>0.5 ± 10%</td>
</tr>
<tr>
<td>Resistance Across Fuel Shutoff Hold-In Coil at 68° F</td>
<td>ohms</td>
<td>13.5 ± 10%</td>
</tr>
<tr>
<td>Resistance Across Carb Solenoid Coil at 68° F</td>
<td>ohms</td>
<td>40 ± 10%</td>
</tr>
</tbody>
</table>

#### Repair Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter Mounting Screw Torque (Diesel)</td>
<td>lb-ft (N·m)</td>
<td>17–21 (23–28)</td>
</tr>
</tbody>
</table>
### Power Train

#### Test Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit(s)</th>
<th>Value(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear Pump Section 1 Flow</td>
<td>gpm (lpm)</td>
<td>8.7 (32.8) at 3400 rpm</td>
</tr>
<tr>
<td>Gear Pump Sections 2–5 Flow</td>
<td>gpm (lpm)</td>
<td>5.6 (21.2) at 3400 rpm</td>
</tr>
<tr>
<td>Traction Relief Valve Pressure Setting</td>
<td>psi (bar)</td>
<td>1500 ± 10% (103 ± 10%)</td>
</tr>
<tr>
<td>Left Reel Relief Valve Pressure Setting</td>
<td>psi (bar)</td>
<td>1500 ± 10% (103 ± 10%)</td>
</tr>
<tr>
<td>Hydraulic Leakage Percentage Ranges</td>
<td></td>
<td>0–10% = Good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11–20% = Marginal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21% and Beyond = Bad</td>
</tr>
</tbody>
</table>

#### Repair Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit(s)</th>
<th>Value(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear Pump—Mounting Screw Torque</td>
<td>lb-ft (N·m)</td>
<td>17–21 (23–28)</td>
</tr>
<tr>
<td>Gear Pump—Coupler Set Screw Torque</td>
<td>lb-in. (N·m)</td>
<td>130–160 (15–18)</td>
</tr>
<tr>
<td>Gear Pump—Inlet Port Fitting Torque</td>
<td>lb-ft (N·m)</td>
<td>37 (50)</td>
</tr>
<tr>
<td>Gear Pump—Sections 2–5 Outlet Port Fitting Torque</td>
<td>lb-ft (N·m)</td>
<td>25 (18)</td>
</tr>
<tr>
<td>Gear Pump—Section 1 Outlet Port Fitting Torque</td>
<td>lb-ft (N·m)</td>
<td>52 (70)</td>
</tr>
<tr>
<td>Gear Pump—Rear Cover-to-Pump Body Retaining Screw Torque</td>
<td>lb-ft (N·m)</td>
<td>52 (70)</td>
</tr>
<tr>
<td>Traction Metering Valve—Ports “A” and “C” Fitting Torque</td>
<td>lb-ft (N·m)</td>
<td>30 (41)</td>
</tr>
<tr>
<td>Traction Metering Valve—Port “B” Fitting Torque</td>
<td>lb-ft (N·m)</td>
<td>35 (47)</td>
</tr>
<tr>
<td>Front Wheel Motor—Inlet and Outlet Fitting Torque</td>
<td>lb-ft (N·m)</td>
<td>30 (41)</td>
</tr>
</tbody>
</table>
## Hydraulics

<table>
<thead>
<tr>
<th>Test Specifications</th>
<th>gpm (lpm)</th>
<th>psi (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear Pump Section 1 Flow</td>
<td>8.7 (32.8) at 3400 rpm</td>
<td></td>
</tr>
<tr>
<td>Gear Pump Sections 2–5 Flow</td>
<td>5.6 (21.2) at 3400 rpm</td>
<td></td>
</tr>
<tr>
<td>Steering Relief Valve Pressure Setting</td>
<td>921 ± 10% (64 ± 10%)</td>
<td></td>
</tr>
<tr>
<td>Left Reel Relief Valve Pressure Setting</td>
<td>1500 ± 10% (103 ± 10%)</td>
<td></td>
</tr>
<tr>
<td>Center Reel Relief Valve Pressure Setting</td>
<td>1500 ± 10% (103 ± 10%)</td>
<td></td>
</tr>
<tr>
<td>Raise/Right Reel Relief Valve Pressure Setting</td>
<td>1700 ± 10% (117 ± 10%)</td>
<td></td>
</tr>
<tr>
<td>Lower Relief Valve Pressure Setting</td>
<td>1200 ± 10% (83 ± 10%)</td>
<td></td>
</tr>
<tr>
<td>Hydraulic Leakage Percentage Ranges</td>
<td>0–10% = Good 11–20% = Marginal 21% and Beyond = Bad</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Repair Specifications</th>
<th>lb-ft (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backlap Valve—Fitting Torque</td>
<td>25 (34)</td>
</tr>
<tr>
<td>Load Control Valve—Fitting Torque</td>
<td>17 (23)</td>
</tr>
<tr>
<td>Control Valve—Section 6 Ports “A” and “B” Fitting Torque</td>
<td>90 (122)</td>
</tr>
<tr>
<td>Control Valve—Section 6 Port “P1” Fitting Torque</td>
<td>55 (75)</td>
</tr>
<tr>
<td>Control Valve—Section 5 Port “P2” Fitting Torque</td>
<td>25 (34)</td>
</tr>
<tr>
<td>Control Valve—Section 4 Port “P3” Fitting Torque</td>
<td>25 (34)</td>
</tr>
<tr>
<td>Control Valve—Sections 3–5 Ports “A” and “B” Fitting Torque</td>
<td>48 (65)</td>
</tr>
<tr>
<td>Control Valve—Section 2 Ports “A” and “B” Fitting Torque</td>
<td>25 (34)</td>
</tr>
<tr>
<td>Control Valve—Section 1 Port “P4” Fitting Torque</td>
<td>25 (34)</td>
</tr>
<tr>
<td>Control Valve—Port “T1” Fitting Torque</td>
<td>33 (45)</td>
</tr>
<tr>
<td>Rear Lift Cylinder Hose and Fitting Torque</td>
<td>25 (34)</td>
</tr>
<tr>
<td>Front Lift Cylinder Hose and Fitting Torque</td>
<td>25 (34)</td>
</tr>
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## Steering

### Test and Adjustment Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Units</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering Cable Deflection</td>
<td>in. (mm)</td>
<td>0.500–0.625 (12.7–15.8) with 3–5 lb (13.3–22.2 N) of pull</td>
</tr>
</tbody>
</table>

### Repair Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Units</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering Wheel Nut Torque</td>
<td>lb-ft (N·m)</td>
<td>25–30 (34–41)</td>
</tr>
<tr>
<td>Steering Unit (PN 4196484) Special Screws Torque</td>
<td>lb-ft (N·m)</td>
<td>20–24 (27–33)</td>
</tr>
<tr>
<td>Steering Unit (PN 4136214) Special Bolt Nut Torque</td>
<td>lb-ft (N·m)</td>
<td>20–24 (27–33)</td>
</tr>
<tr>
<td>Steering Unit Hydraulic Hoses Torque</td>
<td>lb-ft (N·m)</td>
<td>25 (34)</td>
</tr>
<tr>
<td>Steering Cylinder Ball Joint Center-to-Center Distance</td>
<td>in. (mm)</td>
<td>15.875 ± 0.060 (403 ± 1.5)</td>
</tr>
<tr>
<td>Steering Fork Jam Nut (Manual Steering) Torque</td>
<td>lb-ft (N·m)</td>
<td>55 ± 5 (74.5 ± 6.8)</td>
</tr>
<tr>
<td>Steering Fork Jam Nut (Power Steering) End Play</td>
<td>in. (mm)</td>
<td>0.001–0.008 (0.025–0.203)</td>
</tr>
</tbody>
</table>
## Cutting Units

### Checks and Adjustments

<table>
<thead>
<tr>
<th>Spec</th>
<th>Unit</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Reel Control—Shoulder Bolt-to-Link Slot Measurement</td>
<td>in. (mm)</td>
<td>0.031–0.062 (0.8–1.6)</td>
</tr>
<tr>
<td>Front Lift Cylinder—Cam Roller-to-Lift Cam Measurement</td>
<td>in. (mm)</td>
<td>0.44–0.56 (11.1–14.2)</td>
</tr>
<tr>
<td>Reel-to Bedknife Gap</td>
<td>in. (mm)</td>
<td>0.001–0.003 (0.025–0.076)</td>
</tr>
<tr>
<td>Reel Bearing Pre-Load</td>
<td>in. (mm)</td>
<td>0.040 (1.27)</td>
</tr>
<tr>
<td>Bedknife Front Face Height</td>
<td>in. (mm)</td>
<td>0.060 (1.5)</td>
</tr>
<tr>
<td>Bedknife Front Face Angle</td>
<td>degrees</td>
<td>5</td>
</tr>
<tr>
<td>Bedknife Top Face Angle (rear relief)</td>
<td>degrees</td>
<td>8–10</td>
</tr>
<tr>
<td>Reel Blade Relief Angle</td>
<td>degrees</td>
<td>45</td>
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### Repair Specifications

<table>
<thead>
<tr>
<th>Spec</th>
<th>Unit</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reel Motor Port Fittings Torque</td>
<td>lb-ft (N·m)</td>
<td>60 (81)</td>
</tr>
<tr>
<td>Front Reel Motor Hose (5) Torque (See page 8-32)</td>
<td>lb-ft (N·m)</td>
<td>55 (75)</td>
</tr>
<tr>
<td>Front Reel Motor Hose (9) Torque (See page 8-32)</td>
<td>lb-ft (N·m)</td>
<td>35 (47)</td>
</tr>
<tr>
<td>Center Reel Motor Hose (5) Torque (See page 8-32)</td>
<td>lb-ft (N·m)</td>
<td>35 (47)</td>
</tr>
<tr>
<td>Center Reel Motor Hose (9) Torque (See page 8-32)</td>
<td>lb-ft (N·m)</td>
<td>55 (75)</td>
</tr>
<tr>
<td>Reel Motor—Rear Cover-to-Body Retaining Screw Torque</td>
<td>lb-ft (N·m)</td>
<td>18.5 (25)</td>
</tr>
<tr>
<td>Bedknife Backing Mounting Screw Torque</td>
<td>lb-ft (N·m)</td>
<td>25–37 (33.9–50.2)</td>
</tr>
<tr>
<td>Bedknife Mounting Screw Torque</td>
<td>lb-in. (N·m)</td>
<td>90–120 (10.2–13.6)</td>
</tr>
<tr>
<td>Reel Bearing Housing Assembly Mounting Screw Torque</td>
<td>lb-ft (N·m)</td>
<td>18–22 (24.4–29.8)</td>
</tr>
<tr>
<td>Rear Roller Mounting Screw Torque</td>
<td>lb-ft (N·m)</td>
<td>16–24 (21.7–32.5)</td>
</tr>
</tbody>
</table>
## Accessories and Miscellaneous

### Fuel Tank

| Capacity | gal (L) | 8 (30.3) |

### Front Tires

| Size          | 18 x 9.5-8 |
| Type          | 4-Ply      |
| Air Pressure (Gasoline) | psi (bar)   | 8–12 (0.55–0.83) |
| Air Pressure (Diesel)    | psi (bar)   | 10–12 (0.69–0.83) |
| Mounting Bolt Torque     | lb-ft (N·m) | 65–85 (88–115) |

### Rear Tires

| Size          | 18 x 9.5-8 |
| Type          | 4-Ply      |
| Air Pressure (Gasoline) | psi (bar)   | 8–12 (0.55–0.83) |
| Air Pressure (Diesel)    | psi (bar)   | 8–10 (0.55–0.69) |
| Mounting Bolt Torque     | lb-ft (N·m) | 65–85 (88–115) |

### Front Wheel Hub

| Wheel Nut Torque | lb-ft (N·m) | 90–100 (122–136) |

### Mower Speed

| Transport Speed | mph (km/h) | 0–6.6 (0–10.6) |
| Mowing Speed    | mph (km/h) | 0–3.7 (0–5.9)  |
| Reverse Speed   | mph (km/h) | 0–3.5 (0–5.6)  |

### Weights and Dimensions

| Overall Weight | lb (kg) | 62304 (Diesel): 1468 (666) |
|               |        | 62305 (16 HP Gasoline): 1234 (560) |
|               |        | 62306 (18 HP Gasoline): 1239 (562) |
| Overall Cutting Width | in. (mm) | 62 (1574) |
| Overall Width   | in. (mm) | Mow: 70 (1778) |
|                 |        | Transport: 68 (1727) |
| Overall Height with OPS | in. (mm) | 78 (1981) |
| Overall Length  | in. (mm) | 99.5 (2526) |
## Standard Torque Values

### Inch Fastener Torque Values

**AMERICAN NATIONAL STANDARD FASTENERS**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>UNITS</th>
<th>GRADE 5</th>
<th>GRADE 8</th>
<th>SIZE</th>
<th>UNITS</th>
<th>GRADE 5</th>
<th>GRADE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td> </td>
<td> </td>
<td>Lubricated</td>
<td>Dry</td>
<td>Lubricated</td>
<td>Dry</td>
<td>Lubricated</td>
<td>Dry</td>
</tr>
<tr>
<td>#6-32</td>
<td>in-lb (Nm)</td>
<td>–</td>
<td>20 (2.3)</td>
<td>–</td>
<td>–</td>
<td>7/16-14</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>#8-32</td>
<td>in-lb (Nm)</td>
<td>–</td>
<td>24 (2.7)</td>
<td>–</td>
<td>30 (3.4)</td>
<td>7/16-20</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td> </td>
<td> </td>
<td>–</td>
<td>45 (5.1)</td>
<td>1/2-13</td>
<td>ft-lb (Nm)</td>
<td>57 (77.2)</td>
<td>75 (101)</td>
</tr>
<tr>
<td>#10-32</td>
<td>in-lb (Nm)</td>
<td>–</td>
<td>40 (4.5)</td>
<td>–</td>
<td>50 (5.7)</td>
<td>1/2-20</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>#12-24</td>
<td>in-lb (Nm)</td>
<td>–</td>
<td>50 (5.7)</td>
<td>–</td>
<td>65 (7.3)</td>
<td>9/16-12</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>1/4-20</td>
<td>in-lb (Nm)</td>
<td>75 (8.4)</td>
<td>100 (11.3)</td>
<td>107 (12.1)</td>
<td>143 (16.1)</td>
<td>9/16-18</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>1/4-28</td>
<td>in-lb (Nm)</td>
<td>85 (9.6)</td>
<td>115 (13.0)</td>
<td>120 (13.5)</td>
<td>163 (18.4)</td>
<td>5/8-11</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>5/16-18</td>
<td>in-lb (Nm)</td>
<td>157 (17.7)</td>
<td>210 (23.7)</td>
<td>220 (24.8)</td>
<td>305 (34.4)</td>
<td>5/8-18</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>5/16-24</td>
<td>in-lb (Nm)</td>
<td>173 (19.5)</td>
<td>230 (26.0)</td>
<td>245 (27.6)</td>
<td>325 (36.7)</td>
<td>3/4-10</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>3/8-16</td>
<td>ft-lb (Nm)</td>
<td>23 (31.1)</td>
<td>31 (42.0)</td>
<td>32 (43.3)</td>
<td>44 (59.6)</td>
<td>3/4-16</td>
<td>ft-lb (Nm)</td>
</tr>
<tr>
<td>3/8-24</td>
<td>ft-lb (Nm)</td>
<td>26 (35.2)</td>
<td>35 (47.4)</td>
<td>37 (50.1)</td>
<td>50 (67.8)</td>
<td>7/8-14</td>
<td>ft-lb (Nm)</td>
</tr>
</tbody>
</table>

### Metric Fastener Torque Values

**METRIC FASTENERS**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>UNITS</th>
<th>4.6</th>
<th>8.8</th>
<th>10.9</th>
<th>12.9</th>
<th>Non-Critical Fasteners into Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td> </td>
<td> </td>
<td>Lubricated</td>
<td>Dry</td>
<td>Lubricated</td>
<td>Dry</td>
<td>Lubricated</td>
</tr>
<tr>
<td>M4</td>
<td>Nm (in-lb)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>3.83 (34)</td>
</tr>
<tr>
<td>M5</td>
<td>Nm (in-lb)</td>
<td>1.80 (16)</td>
<td>2.40 (21)</td>
<td>4.63 (41)</td>
<td>6.18 (54)</td>
<td>6.63 (59)</td>
</tr>
<tr>
<td>M6</td>
<td>Nm (in-lb)</td>
<td>3.05 (27)</td>
<td>4.07 (36)</td>
<td>7.87 (69)</td>
<td>10.5 (93)</td>
<td>11.3 (102)</td>
</tr>
<tr>
<td>M8</td>
<td>Nm (in-lb)</td>
<td>7.41 (65)</td>
<td>9.98 (88)</td>
<td>19.1 (69)</td>
<td>25.5 (226)</td>
<td>27.3 (241)</td>
</tr>
<tr>
<td>M10</td>
<td>Nm (ft-lb)</td>
<td>14.7 (11)</td>
<td>19.6 (14)</td>
<td>37.8 (29)</td>
<td>50.5 (37)</td>
<td>54.1 (40)</td>
</tr>
<tr>
<td>M12</td>
<td>Nm (ft-lb)</td>
<td>25.6 (19)</td>
<td>34.1 (25)</td>
<td>66.0 (48)</td>
<td>88.0 (65)</td>
<td>94.5 (70)</td>
</tr>
<tr>
<td>M14</td>
<td>Nm (ft-lb)</td>
<td>40.8 (30)</td>
<td>54.3 (40)</td>
<td>105 (77)</td>
<td>140 (103)</td>
<td>150 (110)</td>
</tr>
</tbody>
</table>

**NOTICE**

All torque values included in these charts are approximate and are for reference only. Use of these torque values is at your sole risk. Jacobsen is not responsible for any loss, claim, or damage arising from the use of these charts. Extreme caution should always be used when using any torque value.

**NOTE**

Jacobsen uses Grade 5 plated bolts as standard, unless otherwise noted. When tightening plated bolts, use the value given for lubricated.
Hydraulic Hose, Tube, and Fitting General Instructions

O-Ring Installation

- Always install new O-rings.
- On hoses with O-ring fittings, make sure O-rings are properly seated before tightening.
- O-rings should be lubricated with the fluid to be used in the system prior to assembly.

Boss Fitting O-Ring Installation

![boss_fitting](image)

O-Ring Seal Kits

- SAE Boss O-Ring Kit Jacobsen PN 5002452
- O-Ring Face Seal (ORS) O-Ring Kit PN 5002454
- Common O-Ring Sizes Kit PN 5002453

Replacement O-Rings for ORS (Face Seal) Fittings

<table>
<thead>
<tr>
<th>ORS (Face Seal) Tube Size</th>
<th>ORS (Face Seal) O-Ring Size</th>
<th>Jacobsen Part Number</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>11</td>
<td>339908</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>339909</td>
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<td>10</td>
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<td>18</td>
<td>339912</td>
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<td>25</td>
<td>339914</td>
</tr>
<tr>
<td>24</td>
<td>29</td>
<td>339915</td>
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</table>

Replacement O-Rings for O-Ring Boss Fittings

<table>
<thead>
<tr>
<th>Tubing O.D. or Hose I.D.</th>
<th>Thread Size</th>
<th>Jacobsen Part Number</th>
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<tbody>
<tr>
<td>1/8</td>
<td>5/16-24</td>
<td>459290</td>
</tr>
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<td>3/16</td>
<td>3/8-24</td>
<td>459291</td>
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<td>7/16-20</td>
<td>339896</td>
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<td>5/16</td>
<td>1/2-20</td>
<td>459293</td>
</tr>
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<td>3/8</td>
<td>9/16-18</td>
<td>339897</td>
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<td>1/2</td>
<td>3/4-16</td>
<td>339898</td>
</tr>
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<td>5/8</td>
<td>7/8-14</td>
<td>339899</td>
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<td>1 1/16-12</td>
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<td>1-3/16-12</td>
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<td>1-5/8-12</td>
<td>339902</td>
</tr>
<tr>
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<td>2</td>
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<td>459300</td>
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</table>

Hydraulic Hose Installation

Hold the fixed portion of the hose coupling with one wrench; use a second wrench to tighten or loosen the hose nut. This will avoid damaging the fitting seal. When tightening a hose, do not permit the hose to twist; hold the hose in a normal straight position.

When installing hoses, place fittings at angles to avoid contact with fixed parts when turning. Make sure hoses are assembled to proper “A” and “B” ports on components.

Hydraulic Hose and Tube Torque Values

<table>
<thead>
<tr>
<th>Size</th>
<th>lb-ft</th>
<th>N·m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dash Fractional</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-4 1/4</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>-6 3/8</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>-8 1/2</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>-10 5/8</td>
<td>46</td>
<td>56</td>
</tr>
<tr>
<td>-12 3/4</td>
<td>65</td>
<td>80</td>
</tr>
<tr>
<td>-16 1</td>
<td>92</td>
<td>105</td>
</tr>
<tr>
<td>-20 1-1/4</td>
<td>125</td>
<td>140</td>
</tr>
<tr>
<td>-24 1-1/2</td>
<td>150</td>
<td>180</td>
</tr>
</tbody>
</table>
Chapter 3
Engine

Specifications ................................................................. 3-2
Fuel Tank Capacities .................................................... 3-2
General Engine Specifications ........................................ 3-2
Component Location ...................................................... 3-4
Model 62304 (Diesel) ................................................... 3-4
Models 62305 and 62306 (Gasoline) .................................. 3-6
Checks and Adjustments ................................................ 3-8
Throttle Cable Adjustment ............................................. 3-8
Purging the Fuel System (Diesel) .................................... 3-8
Repair—Model 62304 (Diesel) .......................................... 3-10
Fan Belt (Diesel) .......................................................... 3-10
Air Filter Assembly (Diesel) .......................................... 3-11
Throttle Cable (Diesel) .................................................. 3-11
Oil Fill Assembly (Diesel) ............................................. 3-12
Muffler (Diesel) .......................................................... 3-13
Coolant Recovery Bottle (Diesel) .................................... 3-14
Thermostat (Diesel) ...................................................... 3-14
Radiator (Diesel) ........................................................ 3-15
Fuel Filter (Diesel) ....................................................... 3-17
Fuel Pump (Diesel) ...................................................... 3-18
Engine (Diesel) .......................................................... 3-18
Engine Service (Diesel) ................................................ 3-20
Repair—Models 62305 and 62306 (Gasoline) ..................... 3-20
Air Filter Assembly (Gasoline) ...................................... 3-20
Canister (Gasoline) .................................................... 3-21
Muffler (Gasoline) ....................................................... 3-21
Throttle Cable (Gasoline) ............................................. 3-22
Choke (Gasoline) ........................................................ 3-23
Fuel Filter (Gasoline) ................................................... 3-23
Engine (Gasoline) ....................................................... 3-24
Engine Service (Gasoline) ............................................. 3-25
## Specifications

### Fuel Tank Capacities

<table>
<thead>
<tr>
<th>Model 62304 (Diesel)</th>
<th>Models 62305 and 62306 (Gasoline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Tank Capacity</td>
<td>Fuel Tank Capacity</td>
</tr>
<tr>
<td>gal (L)</td>
<td>gal (L)</td>
</tr>
<tr>
<td>8 (30)</td>
<td>8 (30)</td>
</tr>
</tbody>
</table>

### General Engine Specifications

<table>
<thead>
<tr>
<th>Model 62304 (Diesel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer/Model</td>
</tr>
<tr>
<td>Engine Type</td>
</tr>
<tr>
<td>Fuel Requirement</td>
</tr>
<tr>
<td>Number of Cylinders/Configuration</td>
</tr>
<tr>
<td>Displacement</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Bore x Stroke</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Power Output</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cooling System</td>
</tr>
<tr>
<td>Cooling System Capacity</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Speed Range</td>
</tr>
<tr>
<td>Lubrication Capacity (With Filter)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Alternator</td>
</tr>
<tr>
<td>Dry Weight</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

### Model 62305 [16 hp (12 kW) Gasoline]

<table>
<thead>
<tr>
<th>Manufacturer/Model</th>
<th>Briggs and Stratton/Vanguard V-Twin OHV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Type</td>
<td>Gasoline</td>
</tr>
<tr>
<td>Fuel Requirement</td>
<td>Unleaded Gasoline (Minimum Octane Rating 85)</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>2</td>
</tr>
<tr>
<td>Displacement</td>
<td>cu in. (cc)</td>
</tr>
<tr>
<td></td>
<td>29.3 (480)</td>
</tr>
<tr>
<td>Bore x Stroke</td>
<td>in. (mm)</td>
</tr>
<tr>
<td></td>
<td>2.68 x 2.6 (68 x 66)</td>
</tr>
<tr>
<td>Power Output</td>
<td>hp (kW)</td>
</tr>
<tr>
<td></td>
<td>16 (11.9) @ 3600 rpm</td>
</tr>
<tr>
<td>Cooling System</td>
<td>Air Cooled</td>
</tr>
<tr>
<td>Speed Range</td>
<td>1200–3600 rpm</td>
</tr>
<tr>
<td>Lubrication Capacity</td>
<td>pt (L)</td>
</tr>
<tr>
<td></td>
<td>3.5 (1.6)</td>
</tr>
<tr>
<td>Alternator</td>
<td>12 volt, 16 amp; Key Start</td>
</tr>
<tr>
<td>Dry Weight</td>
<td>lb (kg)</td>
</tr>
<tr>
<td></td>
<td>84 (38)</td>
</tr>
<tr>
<td>Model 62306 [18 hp (13.5 kW) Gasoline]</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Manufacturer/Model</td>
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</tr>
<tr>
<td>Fuel Requirement</td>
<td>Unleaded Gasoline (Minimum Octane Rating 85)</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>2</td>
</tr>
<tr>
<td>Displacement</td>
<td>cu in. (cc) 34.8 (570)</td>
</tr>
<tr>
<td>Bore x Stroke</td>
<td>in. (mm) 2.83 x 2.75 (72 x 70)</td>
</tr>
<tr>
<td>Power Output</td>
<td>hp (kW) 18 (13.4)@3600 rpm</td>
</tr>
<tr>
<td>Cooling System</td>
<td>Air Cooled</td>
</tr>
<tr>
<td>Speed Range</td>
<td>1200–3600 rpm</td>
</tr>
<tr>
<td>Lubrication Capacity</td>
<td>pt (L) 3.5 (1.6)</td>
</tr>
<tr>
<td>Alternator</td>
<td>12 volt, 16 amp; Key Start</td>
</tr>
<tr>
<td>Dry Weight</td>
<td>lb (kg) 84 (38)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Repair Specification</th>
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<tbody>
<tr>
<td>Muffler Mounting Nut Torque (Diesel Model)</td>
<td>lb-ft (N·m) 7.2–8.3 (9.8–11.3)</td>
</tr>
<tr>
<td>Engine Isolation Mount Torque (Gasoline)</td>
<td>lb-ft (N·m) 19.6–21.7 (27–29)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Engine Isolation Mount Torque (Gasoline)</td>
<td>lb-ft (N·m) 19.6–21.7 (27–29)</td>
</tr>
</tbody>
</table>
Component Location

Model 62304 (Diesel)

See Figures 3-1 and 3-2.

Figure 3-1: Component Location—Left Side

1. Fuel Tank
2. Engine Oil Fill Cap
3. Muffler
4. Alternator
5. Starter
6. Engine Oil Pressure Switch
7. Engine Oil Filter
8. Fan Belt
9. Engine Temperature Sensor
10. Radiator Fill Cap
11. Radiator
12. Speed Control Plate
13. Thermostat
14. Coolant Recovery Bottle
15. Air Cleaner Assembly
Figure 3-2: Component Location—Right Side

1. Hydraulic Tank
2. Throttle Control Lever
3. Glow Plug Switch
4. Hydraulic Oil Filter
5. Fuel Filter
6. Fuel Pump
7. Engine Coolant Drain Valve
8. Fuel Shutoff Solenoid
9. Gear Pump
10. Battery

TN3465, TN3395
Models 62305 and 62306 (Gasoline)
See Figures 3-3 and 3-4. (Model 62306 is shown.)

Figure 3-3: Component Location—Right Side

1. Fuel Tank
2. Hydraulic Tank
3. Throttle Control Lever
4. Throttle Cable
5. Choke Cable
6. Gear Pump
7. Engine Oil Filter
8. Canister
9. Battery

Figure 3-3: Component Location—Right Side
Figure 3-4: Component Location—Left Side

1. Air Filter Assembly
2. Fuel Filter
3. Engine Oil Fill Cap
4. Engine Oil Dipstick
5. Muffler
Checks and Adjustments

Throttle Cable Adjustment
See Figures 3-5 and 3-6.

**NOTE**

Diesel engine is shown; procedure for gasoline engine is similar.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

2. Fully loosen throttle cable clamp nut (3).

3. Move engine throttle lever (2) until it just reaches the fully closed position.

4. With engine throttle lever in the fully closed position, place throttle control lever (4) fully in the slowest position against throttle bracket (5). Relocate throttle control wire (6) to alternate mounting hole (7) if necessary to maintain lever positions.

5. With throttle lever in the slowest position and engine throttle lever in the fully closed position, tighten throttle cable clamp nut (3).

6. Operate the throttle control lever fully in both directions and ensure that the throttle control wire does not buckle, kink, or stretch when the engine throttle lever hits the stops in the low idle and full throttle positions. Readjust throttle cable if necessary.

**Purging the Fuel System (Diesel)**
See Figures 3-7 through 3-9.

**CAUTION**

Do not purge fuel system when engine is hot.

**NOTE**

The fuel system will need to be purged of air whenever the fuel filter or fuel lines are removed, the fuel tank is completely emptied, or the engine has not been used for an extended time.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

**NOTE**

Be sure the fuel tank is filled with clean, fresh diesel fuel before performing a purge of the fuel system.

2. Open fuel valve (2) and loosen air vent screw (1) at the top of the filter by turning it counterclockwise two turns. Place a suitable container under the filter to catch fuel that will flow from the screw hole.
3. When bubbles no longer appear in fuel coming out of the air vent screw hole, tighten the air vent screw.

4. Open air vent plug (3) at the top of the fuel injection pump.

![Figure 3-8](image)

**Figure 3-8**

5. Place throttle control lever (4) in the slowest position, and crank engine over for approximately 10 seconds.

6. Close air vent plug when bubbles no longer appear in the fuel flow and turn the ignition switch to the off position.

7. When the fuel system has been purged and the engine is running, listen to the engine. If the engine is misfiring, repeat steps 4 through 6.

![Figure 3-9](image)

**Figure 3-9**

**WARNING**

The engine may start during this process. Be careful of injury due to moving components. If the engine starts, continue purging the fuel system.
Repair—Model 62304 (Diesel)

Fan Belt (Diesel)

Removal
See Figures 3-10 and 3-11.

![Figure 3-10](TN3325)

2. Loosen screws (2) and push the alternator (3) toward the engine to loosen the fan belt (1).

**NOTE**
Inspect and adjust the new engine belt after the first 50 hours of operation. Check and adjust annually thereafter.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

![Figure 3-11](TN1113)

3. Remove fan belt (1) from the alternator (3), coolant pump (5), and crankshaft pulley (4).

**Installation**

1. Install fan belt by reversing the order of removal.
2. Adjust belt tension by loosening alternator mounting screws (2) and pulling the alternator (3) against the belt (1) until proper tension is achieved.
3. Measure belt tension at the midpoint between pulleys. Adjust fan belt to 0.28–0.35 in. (7–9 mm) deflection with a tension of 22 lb (98 N).

**NOTE**
See the engine manufacturer’s manual for further information.

Use extreme care when working near the muffler. Do not attempt to service when the engine is hot. Serious personal injury can occur.
Air Filter Assembly (Diesel)

Removal and Installation
See Figures 3-12 and 3-13.

![Figure 3-12](image_url1)

**CAUTION**
- Do not open the air filter assembly for inspection or cleaning. Unnecessary removal of the air filter increases the risk of injecting dust and other impurities into the engine.
- Do not remove air filter with engine running.

**NOTES**
- The air filter on this engine is a dry type; never apply oil to it.
- The dust cap should be removed and cleaned daily in dusty conditions.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

**Figure 3-13**

4. Slide air filter (4) out of the assembly.

**Installation Note**
Install air filter assembly by reversing the order of removal.

**Throttle Cable (Diesel)**

Removal and Installation
See Figures 3-14 and 3-15.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

**Figure 3-14**

2. Remove nut (3) from throttle linkage screw (2).
3. Remove nut (4), lock washer (5), flat washer (6), and screw (7) from linkage bracket (8).
4. Remove throttle cable (1) from throttle linkage screw (2).
5. Remove other end of throttle cable (1) from throttle lever bracket (9).

**Installation Notes**

- **Install throttle cable by reversing the order of removal.**
- **Adjust throttle cable as needed.** (See “Throttle Cable Adjustment” on page 3-8.)

**Oil Fill Assembly (Diesel)**

**Removal and Installation**

See Figures 3-16 and 3-17.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

**CAUTION**

Care must be taken not to drop anything into the oil fill opening. Always cover the oil fill opening. Leaving an opening uncovered may allow foreign matter to fall into the engine; and cause severe damage to the engine.

2. Remove oil fill cap (1) from the oil fill assembly.
3. Loosen hose clamp (2) from the oil fill hose (4).
4. Remove two nuts (5) and remove the oil fill bracket (6).
5. Remove hose clamp (3) and remove oil fill hose (4).

6. Unscrew and remove oil fill adapter (7) from the engine.

**Installation Note**

Install oil fill assembly by reversing the order of removal.
Muffler (Diesel)

Removal and Installation
See Figures 3-18 through 3-20.

**CAUTION**
Do not attempt to service the exhaust system when the engine is hot. Serious personal injury can occur.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely.

3. Remove nut (1), flat washer (2), and screw (3) from the muffler bracket (12).
4. Remove screw (9), lock washer (10), and flat washer (11) from the muffler.
5. Remove two screws (5), two lock washers (6), and two flat washers (7), and remove heat shields (4 and 8).
6. Remove two nuts (13), lock nuts (14), flat washers (15), and screws (16) from heat shield (17).
7. Remove screw (19), lock washer (20), and flat washer (21), and remove heat shields (17 and 18).
8. Remove four nuts (23) and four lock nuts (24), and remove muffler (25) from exhaust manifold (22).
9. Inspect the exhaust system for cracks, holes, and distortion. Replace exhaust gasket.

**Installation Notes**
- Install muffler by reversing the order of removal.
- Install new gasket during installation.
- Tighten nuts (23) to 7.2–8.3 lb-ft (9.8–11.3 N·m).
Coolant Recovery Bottle (Diesel)

Removal and Installation
See Figures 3-21 and 3-22.

![Coolant Recovery Bottle Image](https://example.com/image1)

**CAUTION**
Do not attempt to service any part of the coolant system when the engine is hot. Serious personal injury can occur.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

2. Remove the radiator cover (1).

3. Remove hose clamp (2) from recovery hose (3).

4. Disconnect hoses (3 and 6) from coolant recovery bottle (7).

5. Remove two nuts (4) and two lock washers (5), and remove the coolant recovery bottle (7).

**Installation Note**
Install coolant recovery bottle by reversing the order of removal.

Thermostat (Diesel)

Removal and Installation
See Figures 3-23 through 3-25.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

2. Allow the engine to cool completely.

![Thermostat Image](https://example.com/image2)

**WARNING**
Never remove the radiator cap when the coolant is hot. The engine must be shut down and cooled before the radiator cap is removed. Very hot coolant will be sprayed from the radiator if the cap is loosened before the engine has cooled. Serious personal injury can occur.

3. Place a suitable clean container, at least 1 gal (3.8 L) capacity, under the radiator.

4. Open petcock (1) located on bottom of radiator, remove radiator cap, and drain coolant.
5. Loosen hose clamp (2) and remove hose (3).
6. Remove two screws (4) and lock washers (5).

7. Remove thermostat housing (6), gasket (8), and thermostat (7).

Installation Notes
- Install thermostat by reversing the order of removal.
- Clean the gasket surface prior to assembly.
- Use a new gasket during installation.
- Use a new cable tie to secure wire harness.
- Fill the radiator with clean water and ethylene glycol based antifreeze mixed for the coldest ambient temperature.

**Radiator (Diesel)**

**Removal**
See Figures 3-26 through 3-29.
1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely.

**WARNING**
Never remove the radiator cap when the coolant is hot. The engine must be shut down and cooled before the radiator cap is removed. Very hot coolant will be sprayed from the radiator if the cap is loosened before the engine has cooled. Serious personal injury can occur.

3. Place a suitable clean container, at least 1 gal (3.8 L) capacity, under the radiator.
4. Open petcock located on bottom of radiator, remove radiator cap, and drain coolant.

**NOTE**
Label all hoses before removing to ensure correct installation.

5. Remove the radiator cover (1).
6. Remove two screws (2), two lock washers (3), and two flat washers (4), and remove top radiator cover bracket (9).

7. Remove two screws (5), two lock washers (6), and two flat washers (7), and remove lower radiator cover bracket (8).

8. Remove hose clamp (11) and recovery hose (10).

9. Remove hose clamp (18) and upper radiator hose (12).

10. Remove hose clamp (24) and lower radiator hose (25).

11. Remove two screws (19), lock washers (20), flat washers (21), and nuts (22), and remove bracket (23).

12. Remove two screws (13), lock washers (14), flat washers (15), and nuts (16), and remove bracket (17).

13. Remove four screws (26), lock washers (27), and flat washers (18), and move fan shroud (29) toward engine enough to clear the radiator (5).

14. Remove radiator (5).

**Installation**

1. With the lower radiator hose removed from radiator, flush the inside of the radiator with fresh water.

2. Install radiator by reversing the order of removal.

3. Fill the radiator with clean water and ethylene glycol based antifreeze mixed for the coldest ambient temperature.

4. Install radiator cap and start the engine following the instructions in the “Safety and Operation Manual.”

5. When the engine reaches normal operating temperature, check and fill the coolant reservoir to the hot full level.

**CAUTION**

Allow the engine coolant to completely cool before removing the radiator cap. Hot coolant sprayed from the cap can cause serious personal injury.
Fuel Filter (Diesel)

Removal and Installation
See Figure 3-30.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely before servicing.

![Figure 3-30](TN3317)

3. Turn the fuel shutoff lever (1) to the horizontal (off) position.
4. Thoroughly clean cup (4) and area surrounding the fuel filter.
5. Turn cup retaining nut (3) counterclockwise to remove it.
6. Remove cup (4) and filter element (5). Drain excess fuel into an appropriate container.
7. Remove O-rings (6 and 7).

**CAUTION**
Diesel fuel is highly flammable. Handle with care. Use an approved container with a spout that will fit inside the fuel filler neck. Avoid using unapproved containers to transport fuel. Keep all fuel containers clean and closed when not in use.

**CAUTION**
Dispose of fuel properly. Contact the local environmental department for instructions on disposing of unwanted fuel products.

Installation Notes
- Clean the inside and outside of filter head (2).
- Lightly lubricate O-rings (6 and 7) with clean oil.
- Install fuel filter by reversing the order of removal.
- Tighten cup retaining nut (3) hand tight.
- Open fuel shutoff valve (1).
- Purge air from the fuel system after installing the new filter. (See “Purging the Fuel System (Diesel)” on page 3-8.) See the engine manufacturer’s manual for further instructions.

Diesel fuel is highly flammable. Handle with care. Use an approved container with a spout that will fit inside the fuel filler neck. Avoid using unapproved containers to transport fuel. Keep all fuel containers clean and closed when not in use.

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- Install fuel filter by reversing the order of removal.
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- Install fuel filter by reversing the order of removal.
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Installation Notes
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- Lightly lubricate O-rings (6 and 7) with clean oil.
- Install fuel filter by reversing the order of removal.
- Tighten cup retaining nut (3) hand tight.
- Open fuel shutoff valve (1).
- Purge air from the fuel system after installing the new filter. (See “Purging the Fuel System (Diesel)” on page 3-8.) See the engine manufacturer’s manual for further instructions.

Diesel fuel is highly flammable. Handle with care. Use an approved container with a spout that will fit inside the fuel filler neck. Avoid using unapproved containers to transport fuel. Keep all fuel containers clean and closed when not in use.

Dispose of fuel properly. Contact the local environmental department for instructions on disposing of unwanted fuel products.

Installation Notes
- Clean the inside and outside of filter head (2).
- Lightly lubricate O-rings (6 and 7) with clean oil.
- Install fuel filter by reversing the order of removal.
- Tighten cup retaining nut (3) hand tight.
- Open fuel shutoff valve (1).
- Purge air from the fuel system after installing the new filter. (See “Purging the Fuel System (Diesel)” on page 3-8.) See the engine manufacturer’s manual for further instructions.

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Installation Notes
- Clean the inside and outside of filter head (2).
- Lightly lubricate O-rings (6 and 7) with clean oil.
- Install fuel filter by reversing the order of removal.
- Tighten cup retaining nut (3) hand tight.
- Open fuel shutoff valve (1).
- Purge air from the fuel system after installing the new filter. (See “Purging the Fuel System (Diesel)” on page 3-8.) See the engine manufacturer’s manual for further instructions.
Fuel Pump (Diesel)

Removal and Installation
See Figure 3-31.

**CAUTION**
Diesel fuel is highly flammable. Handle with care. Use an approved container with a spout that will fit inside the fuel filler neck. Avoid using unapproved containers to transport fuel. Keep all fuel containers clean and closed when not in use.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely.
3. Turn the fuel shutoff valve clockwise until valve bottoms lightly. Valve is located on the fuel filter.
4. Loosen fuel hose clamps (2 and 4).
5. Disconnect fuel hoses (1 and 3) from fuel pump (6). Use a suitable container to catch the fuel that will flow from the fuel hoses. Cap the hoses.
6. Remove screws (5).
7. Remove fuel pump (6).

**Installation Notes**
- **Install fuel pump by reversing the order of removal.**
- **Inspect the fuel pump gasket for any damage and replace if necessary.**

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Engine (Diesel)

Removal and Installation
See Figures 3-32 through 3-36.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely before attempting to service the engine.
3. Tag and disconnect the negative (−) battery cable.
4. Remove fuel tank. (See “Fuel Tank (Diesel)” on page 9-7.)
5. Remove fuel tank support pan. (See “Fuel Tank Support Pan” on page 9-8.)
6. Remove muffler. (See “Muffler (Diesel)” on page 3-13.)
7. Remove radiator. (See “Radiator (Diesel)” on page 3-15.)
8. Remove air filter assembly. (See “Air Filter Assembly (Diesel)” on page 3-11.)

**NOTE**
Label all wires before disconnecting to ensure correct installation.

9. Tag and disconnect the wiring harness at the engine, engine temperature sensor, alternator, fuel shutoff solenoid, starter, engine oil pressure switch, and glow plug.

10. Disconnect the fuel shut-off solenoid (4) and throttle cable (3) at the speed control plate (2), located next to the fuel injection pump (1).
11. Loosen hose clamp (6) and remove fuel line (5).

12. Remove gear pump (12). (See “Gear Pump” on page 5-31.)

13. Remove anti-sway spring (11) from the center cutting unit.

14. Remove nut (7), lock washer (8), screw (9), and plate (10) from engine isolation mount (13).

15. Remove two screws (16) and washers (17), and remove fuel shutoff (14) and fuel shutoff bracket (15).

**WARNING**

Prevent personal injury. Use a properly rated lifting device. Always be sure the load is balanced before lifting.

16. Using a suitable engine hoist, support the engine and remove nut (20), lock washer (21), and screw (22) from engine isolation mount (23).

17. Remove two screws (18) and flat washers (19) securing the engine mount to the frame.

18. Check for any connected wires and components, and carefully remove the engine and engine mounts from the machine.
19. Place the engine on a suitable stand or workbench that will support the full weight in a safe manner while preventing damage to the engine.

**NOTE**

*If the engine is being replaced, some components must be removed and installed on the new engine. Refer to “Parts and Maintenance Manual” for additional information and illustrations.*

**Installation Notes**

- Inspect engine isolation mounts and replace if necessary.
- Install the engine by reversing the order of removal.
- If necessary, remove components from the engine and install the components on the new engine.
- Use new gaskets when installing the exhaust system.
- Use new cable ties to secure wire connectors and wire harnesses.
- Apply dielectric grease (Jacobsen PN 365422) to any wire connectors disconnected.
- Fill the radiator with clean water and ethylene glycol based antifreeze mixed for the coldest ambient temperature.
- Replace the engine oil filter and fill engine with oil.
- Purge air from the fuel system. (See “Purging the Fuel System (Diesel)” on page 3-8.)

**Engine Service (Diesel)**

A separate engine manual, prepared by the engine manufacturer, is supplied with this machine. Refer to the engine manufacturer’s manual for all engine-related service. Proper attention to the engine manufacturer’s manual directions will ensure maximum service life of the engine.

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**Repair—Models 62305 and 62306 (Gasoline)**

**Air Filter Assembly (Gasoline)**

**Removal and Installation**

See Figure 3-37.

**CAUTION**

Do not remove air filter with engine running.

**NOTE**

The air filter cartridge on this engine is a dry type; never apply oil to it.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely.

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**Figure 3-37**

3. Disengage retaining clips (1) and remove cover (2).
4. Remove knob (3) and air filter retainer (4).
5. Remove air filter pre-cleaner (5) and air filter cartridge (6).
Installation Notes

• Wash air filter pre-cleaner in liquid detergent and water. Saturate in clean engine oil and squeeze out excess oil in a clean, absorbent cloth. Replace air filter pre-cleaner if it remains dirty or is damaged.
• Do not use petroleum solvents such as kerosene to clean air filter cartridge.
• Do not use pressurized air to clean air filter cartridge.
• Install air filter assembly by reversing the order of removal.

Canister (Gasoline)

Removal and Installation

See Figure 3-38.
1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)

![Figure 3-38](TN3550)

2. Loosen hose clamps (5 and 6) and disconnect hoses (2 and 3).
3. Remove screw (1) and canister (4).

Installation Note

*Install canister by reversing the order of removal.*

Muffler (Gasoline)

Removal and Installation

See Figures 3-39 and 3-40.

**CAUTION**

Do not attempt to service the exhaust system when the engine is hot. Serious personal injury can occur.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely.

![Figure 3-39](TN3477)

3. Remove nut (2), lock washer (3), two washers (4), and screw (5) from the muffler (1) and muffler bracket (6).
ENGINE

Figure 3-40

4. Remove nut (13), lock washer (8), washer (14), and muffler clamp (7).
5. Disengage muffler (1) from exhaust pipe (9).
6. Remove screw (12), lock washer (11), and muffler support (10).

Installation Note

Install muffler by reversing the order of removal.

Figure 3-41

3. Remove two nuts (3), lock washers (4), and screws (1), and remove throttle cable (2) from bracket (5).
4. Disengage throttle cable at the engine.

Installation Notes

- Install throttle cable by reversing the order of removal.
- Adjust throttle cable as needed. (See “Throttle Cable Adjustment” on page 3-8.)
**Choke (Gasoline)**

**Removal and Installation**

See Figure 3-42.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely.

3. Disengage choke at the engine.
4. Remove nut (3) and lock washer (2).
5. Remove choke (1) from bracket (4).

**Installation Note**

*Install choke by reversing the order of removal.*

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**Fuel Filter (Gasoline)**

**Removal and Installation**

See Figure 3-43.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely.

3. Loosen hose clamps (1 and 3).
4. Tag and disconnect fuel tank-to-fuel filter hose (2) from the fuel filter (5). Cap fitting and plug hose to prevent leakage and contamination.
5. Tag and disconnect fuel filter-to-fuel pump hose (4) from the fuel filter (5). Cap fitting and plug hose to prevent leakage and contamination.

**Installation Notes**

- *Install fuel filter by reversing the order of removal.*
- *Make sure the flow arrow on the side of the fuel filter is aligned with the fuel tank-to-fuel pump flow direction.*
ENGINE

Engine (Gasoline)

Removal and Installation

See Figure 3-44.

1. Park the mower safely. (See “Park Mower Safely” on page 1-6.)
2. Allow the engine to cool completely before attempting to service the engine.
3. Tag and disconnect the negative (−) battery cable.
4. Remove fuel tank. (See “Fuel Tank (Gasoline)” on page 9-8.)
5. Remove fuel tank support pan. (See “Fuel Tank Support Pan” on page 9-8.)
6. Remove muffler. (See “Muffler (Gasoline)” on page 3-21.)
7. Remove gear pump. (See “Gear Pump” on page 5-31.)
8. Disconnect the throttle cable and choke from the engine.

NOTE

Label all wires before disconnecting to ensure correct installation.

9. Tag and disconnect the wiring harness at the engine, ignition modules, carb solenoid, starter motor, starter solenoid, and engine oil pressure switch.

![Figure 3-44]

**WARNING**

Prevent personal injury. Use a properly rated lifting device. Always be sure the load is balanced before lifting.

10. Using the proper engine hoist, support the engine and remove four nuts (5), lock washers (6), and screws (2) securing the engine (1) to the engine mount (4).

11. Move ground cable (3) aside.

12. Check for any connected wires and components, and carefully remove the engine from the machine.

13. Place the engine on a suitable stand or workbench that will support the full weight in a safe manner while preventing damage to the engine.

**NOTE**

If the engine is being replaced, some components must be removed and installed on the new engine. Refer to “Parts and Maintenance Manual” for additional information and illustrations.
Installation Notes

- Inspect engine isolation mounts and replace if necessary. Tighten engine isolation mounts to 19.6–21.7 lb-ft (27–29 N·m).
- Install the engine by reversing the order of removal.
- If necessary, remove components from the engine and install the components on the new engine.
- Use new cable ties to secure wire connectors and wire harnesses.
- Apply dielectric grease (Jacobsen PN 365422) to any wire connectors disconnected.
- Replace the engine oil filter and fill engine with oil.

Engine Service (Gasoline)

A separate engine manual, prepared by the engine manufacturer, is supplied with this machine. Refer to the engine manufacturer’s manual for all engine-related service.

Proper attention to the engine manufacturer’s manual directions will ensure maximum service life of the engine.