



When Performance Matters.™

**Eclipse® 322
Riding Greens Mower
Technical/Repair Manual
62800, 62801, 62802, 62803,
62804, 62805, 62825, 62826**

Second Edition

CUSTOMERCARE

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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® Eclipse® 322 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.

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FOREWORD

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.

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Chapter 1

Safety

1

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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.

1

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.



DANGER

Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



WARNING

Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



CAUTION

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.

NOTICE

Indicates a potentially hazardous situation which, if not avoided, **MAY** result in property damage. It may also be used to alert against unsafe practices.

Safety Label Locations

Become familiar with machine safety labels and locations. The following illustrations show safety label locations on the machine.

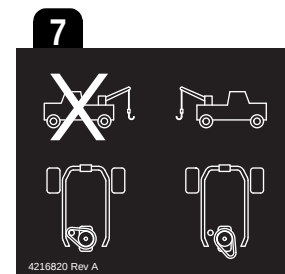
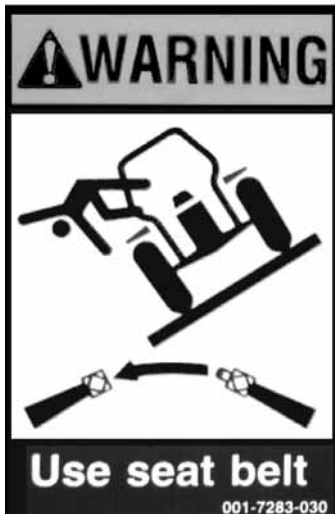
See Figure 1-1.



Figure 1-1

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1



8

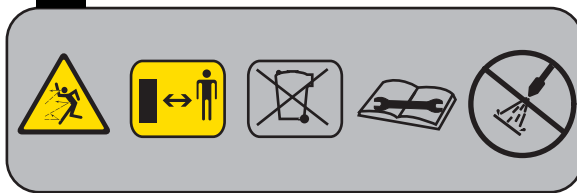


9



1

10



11



SAFETY

Inspect Safety Labels

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

1 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

Never operate the engine without proper ventilation; exhaust fumes can be fatal if inhaled.

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 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.

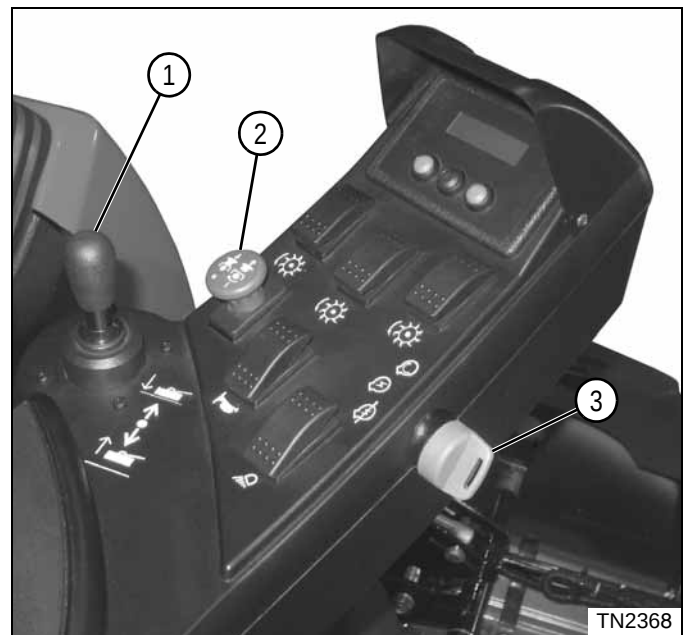


Figure 1-2

2. Disengage the cutting units by pushing the mow switch (2).
3. Lower the cutting units by moving the raise/lower switch (1) forward.
4. Rotate key switch (3) fully counterclockwise to OFF position.
5. Remove key from key switch.

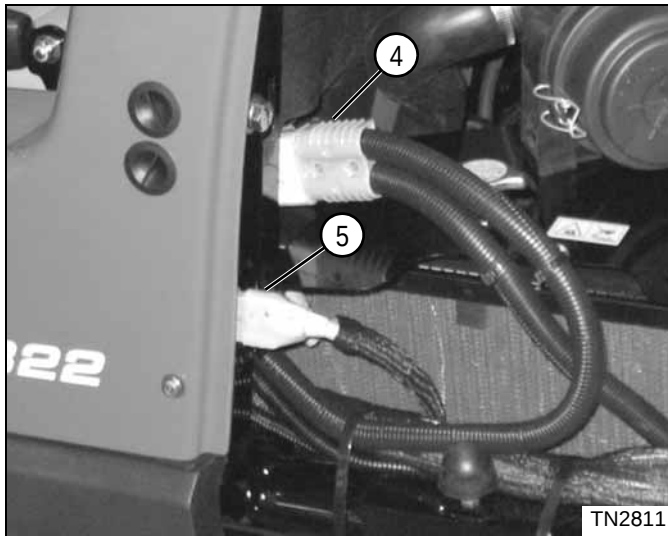


Figure 1-3

6. Disconnect the 48-volt connector (4).
7. Disconnect the 12-volt connector (5) [Gasoline and Diesel Models].

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 the 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

Handle fuel with care—it is highly flammable.



WARNING

- 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 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.



WARNING

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 1-11.)

SAFETY**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.

**WARNING**

Wrap wrenches with vinyl tape to prevent the possibility of a dropped wrench from “shorting out” a battery, which could result in an explosion and severe personal injury.

Electrolyte spills should be neutralized with a solution of 1/4 cup (59.1 ml) of sodium bicarbonate (baking soda) dissolved in 1-1/2 gallons (5.7 liters) of water and flushed with water.

Never disconnect a circuit under load at a battery terminal.

Wear appropriate protective clothing when working with batteries. Electrolyte can cause severe burns to the eyes, skin, and clothing.

Batteries, battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash your hands after handling.

**WARNING**

The electrolyte in a storage battery is a dilute acid which can cause severe burns to the skin and eyes. Treat all electrolyte spills to the body and eyes with extended flushing with clear water. Contact a physician immediately. Always wear a safety shield or approved safety goggles when charging batteries.

Hydrogen is explosive in concentrations as low as 4% and is generated in the charging cycle of electric mowers. Because it is lighter than air, it will collect in the ceiling of buildings necessitating proper ventilation. Air exchanges of 5 changes per hour is considered a minimum requirement.

Never smoke around batteries.

Never charge batteries in an area that has open flame or electrical equipment that could cause an electrical arc.

Be sure that the key switch is off, all electrical accessories are turned off and power connector is disconnected before starting work on vehicle.

Remove all jewelry (watches, rings, etc.).

**WARNING**

Chargers should be mounted on a platform above the ground, or in such a manner as to permit the maximum air flow underneath and around the charger. Serious damage to the charger, overheating, and potential for fire may result if the charger does not have sufficient air flow.

**WARNING**

Do not disconnect the DC connector from the battery pack when the charger is on. The resulting arcing and burning will damage the conductors and could cause the batteries to explode. Always disconnect the AC power cord before disconnecting the DC cord.

- 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.

1

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.

1

Chapter 2

Specifications and General Information

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2

Machine Identification

Machine Serial Number

See Figures 2-1 and 2-2.



Figure 2-1

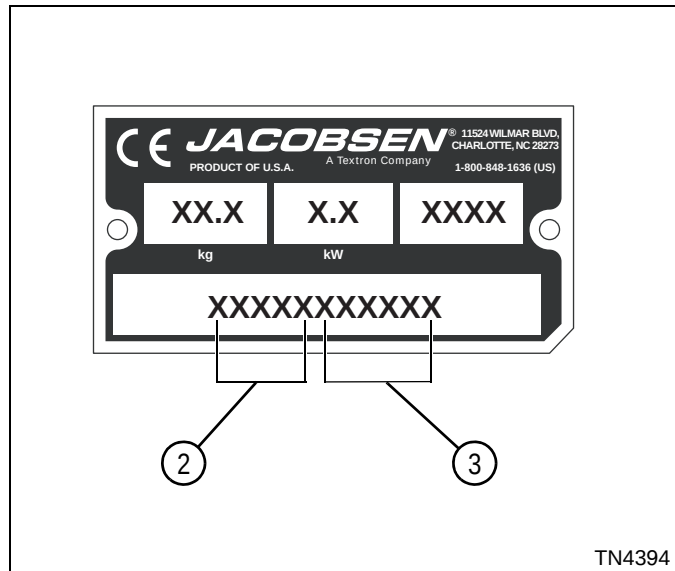


Figure 2-2

A machine identification plate (1) listing the model number (2) and serial number (3) is attached 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 Models)

See Figure 2-3.

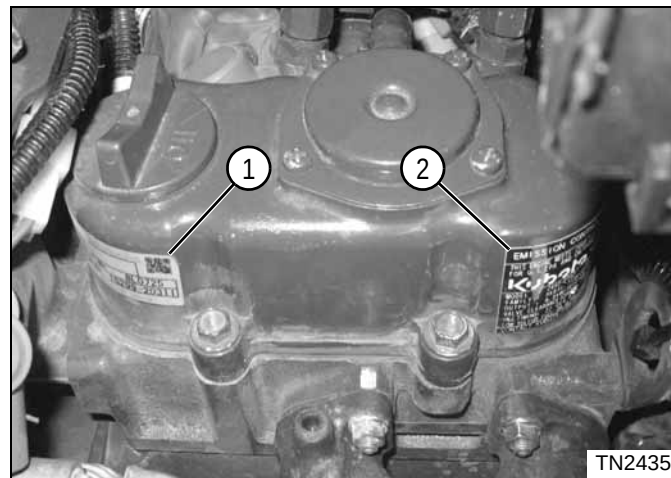


Figure 2-3

The engine serial number (1) is attached to the top of the rocker arm cover. The plate also includes the engine model number and the engine code number. An engine data tag (2) attached to the top of the rocker arm cover. The tag includes information on valve adjustment specifications, injector timing, engine idle speed, and engine displacement.

Engine Identification Number— (Gasoline Models)

See Figure 2-4.

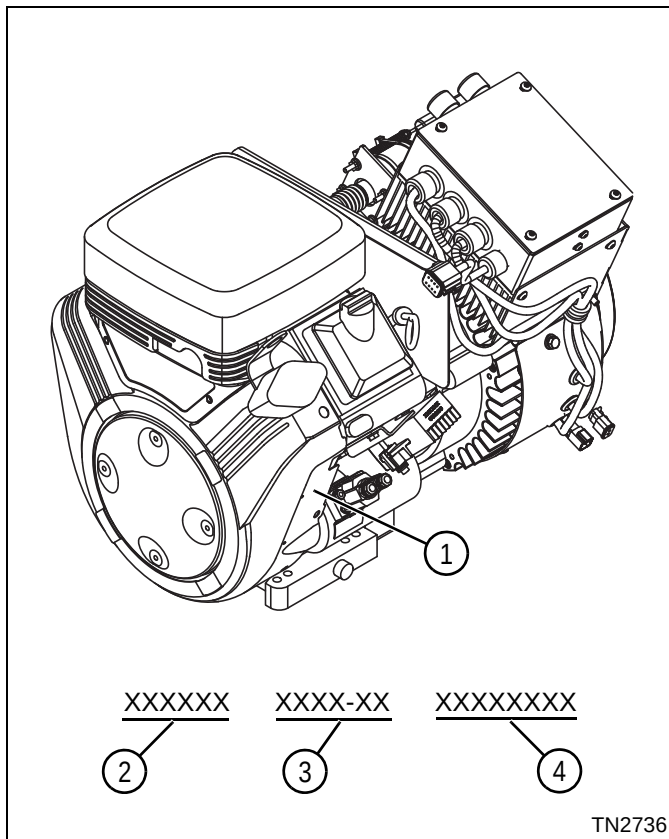


Figure 2-4

The engine identification number (1) is located on the side of the engine and 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 through 2-7.



CAUTION

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

All Models

2



TN2745

- | | | |
|--------------------|---------------------------|-----------------------------|
| 1 OPS | 5 Steering Tower | 9 Front Wheel (2) |
| 2 Seat | 6 Traction Pedal | 10 Center Cutting Unit |
| 3 Steering Wheel | 7 Right Reel Leveling Rod | 11 Center Reel Leveling Rod |
| 4 Armrest Assembly | 8 Right Cutting Unit | |

Figure 2-5: Component Location—Right Side



TN2746

- | | | | | | |
|---|-------------------------|---|---------------------|---|------------------------|
| 1 | Brake Pedal Assembly | 4 | Rear Axle Assembly | 7 | Front Axle Assembly |
| 2 | Steering Chain and Gear | 5 | Starter Battery | 8 | Left Cutting Unit |
| 3 | Rear Wheel | 6 | Buffer Battery Pack | 9 | Left Reel Leveling Rod |

Figure 2-6: Component Location—Left Side

SPECIFICATIONS AND GENERAL INFORMATION

Electric Models

2



TN2311

1 Battery Charger

2 Battery Filling System

3 Battery Pack

Figure 2-7: Component Location—Left Side

Specifications

Quick Reference Specifications

Fuel Tank Capacities

Diesel Models		
Fuel Tank Capacity	gal (L)	5.3 (20)

Gasoline Models		
Fuel Tank Capacity	gal (L)	5.3 (20)

2

General Engine/Motor Specifications

Diesel Models		
Manufacturer/Model		Kubota/Z482-E3B 2-Cylinder; Liquid Cooled
Engine Type		4-stroke, diesel
Fuel Requirement		No. 2-D diesel fuel (Minimum Cetane Rating 45)
Number of Cylinders		2, in-line
Displacement	cu in. (cc)	29.3 (480)
Bore x Stroke	in. (mm)	2.64 x 2.68 (67 x 68)
Power Output	hp (kW)	13.3 (9.9)@3600 rpm
Cooling System		liquid cooled
Cooling System Capacity	qt (L)	3 (2.8)
Speed Range		950–3600 rpm
Lubrication Capacity (With Filter)	qt (L)	3.4 (3.2)
Alternator		12 volt, 40 amp
Dry Weight	lb (kg)	117.1 (53.1)

Gasoline Models		
Manufacturer/Model		Briggs and Stratton/2954 Vanguard V-Twin OHV; Air Cooled
Engine Type		Gasoline
Fuel Requirement		Unleaded gasoline (Minimum Octane Rating 85)
Number of Cylinders/Configuration		2
Displacement	cu in. (cc)	29.3 (480)
Bore x Stroke	in. (mm)	2.68 x 2.6 (68 x 66)
Power Output	hp (kW)	12 (8.9)@3200 rpm
Cooling System		air cooled
Speed Range		1200–3600 rpm
Lubrication Capacity	pints (L)	3.5 (1.4)
Dry Weight	lb (kg)	71.4 (32.4)

SPECIFICATIONS AND GENERAL INFORMATION

Electric Models	
Battery Pack	48V (six 8-volt Trojan T890 deep cycle lead acid batteries) with single point watering system

Traction Drive System (All Models)	
Traction Drive Motor	48-volt AC
Traction Drive Motor Power Rating	hp (kW) 3 (2.2) continuous

2

Genset and Battery Pack

Repair Specifications	
Muffler Mounting Nut Torque (Diesel Models)	lb-ft (N·m) 7.2–8.3 (9.8–11.3)
Genset Carrier Mounting Screw Torque (Diesel Models)	lb-ft (N·m) 65.0 (88.0)
Coupling Shaft Mounting Screw Torque (Diesel Models)	lb-ft (N·m) 13.0 (17.6)
Generator Flange Mounting Screw Torque (Diesel Models)	lb-ft (N·m) 13.0 (17.6)
Generator Assembly Mounting Screw Torque (Diesel Models)	lb-ft (N·m) 13.0 (17.6)
Throttle Actuator Mounting Nut Torque (Diesel Models)	lb-in. (N·m) 40 (4.5)
Genset Carrier Mounting Screw Torque (Gasoline Models)	lb-ft (N·m) 65.0 (88.0)
Mounting Flange Screw Torque (Gasoline Models)	lb-ft (N·m) 24.0 (32.5)
Generator Assembly Mounting Screw Torque (Gasoline Models)	lb-ft (N·m) 13.0 (17.6)
Isolation Mount Screw Torque (Gasoline Models)	lb-ft (N·m) 19.0 (25.5)
Engine Mounting Screw Torque (Gasoline Models)	lb-ft (N·m) 19.0 (25.5)
Engine Plate Screw Torque (Gasoline Models)	lb-ft (N·m) 19.0 (25.5)
Engine Coupler Screw Torque (Gasoline Models)	lb-ft (N·m) 30.0 (40.6)

Electrical

Test and Adjustment Specifications		
120-Ohm Resistor Connector Resistance at 68° F (20° C)	ohms	120 ± 10%
Resistance Across Brake Coil at 68° F (20° C)	ohms	25.5 ± 10%
Resistance Across Fuel Shutoff Pull-In Coil at 68° F (20° C) (Diesel Models)	ohms	0.5 ± 10%
Resistance Across Fuel Shutoff Hold-In Coil at 68° F (20° C) (Diesel Models)	ohms	10 ± 10%
Resistance Across Fuel Shutoff Coil at 68° F (20° C) (Gasoline Models)	ohms	40 ± 10%
Resistance Across Throttle Actuator Coil at 68° F (20° C) (Diesel Models)	ohms	4.55 ± 10%
Resistance Across Throttle Actuator Coil at 68° F (20° C) (Gasoline Models)	ohms	4.55 ± 10%
Traction Pedal Adjustment Voltage	volts	4.2–4.7
Steering Sensor Position Adjustment (2WD)— Top of Sensor Bracket-to-Top of Steering Controller Bracket	in. (mm)	1.63 (41.5)
Steering Sensor Air Gap Adjustment (3WD)	in. (mm)	0.125–0.188 (3.2–5.8)

SPECIFICATIONS AND GENERAL INFORMATION

2

Repair Specifications		
PDU 12 Volt POS Connector Nut (5 and 7) Torque (See page 4-149.)	lb-ft (N·m)	12.5 (16.9)
PDU 48 VDC BAT POS Connector Nut (6) Torque (See page 4-149.)	lb-in. (N·m)	80 (9)
PDU 48 VDC BAT Generator Connector Nut (8) Torque (See page 4-149.)	lb-in. (N·m)	80 (9)
PDU Flange Nut (11) Torque (See page 4-150.)	lb-ft (N·m)	12.5 (16.9)
PDU Flange Nut (12) Torque (See page 4-150.)	lb-in. (N·m)	40 (4.5)
PDU Flange Nut (17) Torque (See page 4-150.)	lb-in. (N·m)	40 (4.5)
PDU Flange Nut (18) Torque (See page 4-150.)	lb-in. (N·m)	80 (9)
TCU Wire Connection Nut Torque	lb-ft (N·m)	11 (14.9)
SCU Wire Connection Screw Torque	lb-in. (N·m)	53 (6)
3WD Traction Controller Wire Connection Screw Torque	lb-in. (N·m)	53 (6)
Contacto Nut (4) Torque (See page 4-167.)	lb-in. (N·m)	35 (4)
Contacto Nut (5) Torque (See page 4-167.)	lb-in. (N·m)	15 (1.7)
Fuse Mounting Flange Nut (8) Torque (See page 4-167.)	lb-in. (N·m)	80 (9)
Flange Nut (18) Torque (See page 4-167.)	lb-in. (N·m)	40 (4.5)
Fuse Mounting Nut Torque	lb-in. (N·m)	80 (9)
Instrument Panel Mounting Screw Torque	lb-in. (N·m)	130 (14.7)
Rectifier Kit Screw (3 and 9) Torque (See page 4-180.)	lb-in. (N·m)	30 (3.9)
Rectifier Kit Nut (5) Torque (See page 4-180.)	lb-in. (N·m)	40 (4.5)
Front AC Traction Motor Mounting Screw Torque	lb-in. (N·m)	93 (10.5)
Front AC Traction Motor Wire Connector Nut Torque	lb-ft (N·m)	11 (14.9)
AC Traction Motor (3WD) Mounting Screw Torque	lb-ft (N·m)	35 (47.5)
3WD Traction Controller Wire Connection Screw Torque	lb-in. (N·m)	53 (6)
Brake Coil Mounting Screw Torque	lb-in. (N·m)	65 (7.3)

Chassis

Check and Adjustment Specifications		
Steering Chain Deflection	in. (mm)	0.0625–0.250 (1.6–6.4) [with 2–10 lb (9–45 N) push at mid-span of chain]

Repair Specifications		
Front Wheel Hub Castle Nut Torque	lb-ft (N·m)	95–115 (10.7–13.0)
Front Axle Assembly— Mounting Screw Torque	lb-ft (N·m)	65 (88)
Front Axle Assembly— Axle Housing Face-to-Axle Shaft Seal Outer Face Measurement	in. (mm)	1.125 (28.6)
Front Axle Assembly— Bearing Cap Screw Torque	lb-ft (N·m)	35–45 (3.4–5.1)
Front Axle Assembly— Axle Housing Cover Screw Torque	lb-ft (N·m)	16–25 (1.8–2.7)

SPECIFICATIONS AND GENERAL INFORMATION

Cutting Units

Check and Adjustment Specifications		
Reel-to-Bedknife Gap	in. (mm)	0.001–0.003 (0.025–0.075)
Reel Bearing Pre-Load	in. (mm)	0.040 (1.27)
Right/Left Reel Leveling Rod—Rod End-to-Nut Face Measurement (non-spring side)	in. (mm)	1.625 (41.3)
Center Reel Leveling Rod—Rod End-to-Nut Face Measurement (non-spring side)	in. (mm)	1.00 (25.4)
Reel Leveling Rod—Rod End-to-Collar Face Measurement (spring side)	in. (mm)	5.250 (133.4)
Reel Leveling Rod—Rod End-to-Nut Face Measurement (spring side)	in. (mm)	0.125 (3.2)

Repair Specifications		
Reel Motor Mounting Screw Torque	lb-in. (N·m)	75 (8.5)
Bedknife Mounting Screw Torque	lb-in. (N·m)	90–120 (10.2–13.6)
Bedknife Front Face Height (minimum)	in. (mm)	0.035 (0.9)
Bedknife Front Face Angle (all bedknives)	degrees	5
Bedknife Top Face Angle (rear relief) (all bedknives except Super Tournament)	degrees	8–10
Super Tournament Bedknife Top Face Angle (rear relief)	degrees	5–7
Reel Blade Relief Angle	degrees	45

Accessories and Miscellaneous

Check and Adjustment Specifications		
Turf Groomer Eccentric Mounting Screw Torque	lb-ft (N·m)	8–10 (10.8–13.6)
Turf Groomer Belt Tension Link Mounting Screw Torque	lb-ft (N·m)	20 (27.1)

Repair Specifications		
Solid Front Roller Assembly Maximum Rotational Resistance	lb-in. (N·m)	6 (0.68) Maximum with No End Play
Solid Tube Front Roller Lock Nut Torque	lb-ft (N·m)	10–30 (13.5–40.6)
Solid Tube Front Roller Shaft-to-Bearing Rotational Resistance	lb-in. (N·m)	0–1 (0–0.11) with No End Play
Solid Tube Front Roller Assembly Maximum Rotational Resistance	lb-in. (N·m)	6 (0.68) Maximum with No End Play
Grooved Front Roller Lock Nut Torque	lb-ft (N·m)	10–30 (13.5–40.6)
Grooved Front Roller Shaft-to-Bearing Rotational Resistance	lb-in. (N·m)	0–1 (0–0.11) with No End Play
Grooved Front Roller Assembly Rotational Resistance	lb-in. (N·m)	6 (0.68) Maximum with No End Play
Grooved Disc Roller Assembly Maximum Rotational Resistance	lb-in. (N·m)	6 (0.68) Maximum with No End Play
Grooved Segmented Front Roller Jam Nut Torque	lb-ft (N·m)	70 (95)
Grooved Segmented Front Roller Assembly Rotational Resistance	lb-in. (N·m)	6 (0.68) Maximum with No End Play
OPS Mounting Screw Torque	lb-ft (N·m)	25 (39)
Steering Wheel Nut Torque	lb-ft (N·m)	28–30 (38–41)
Rear Axle Assembly Mounting Nut Torque (2WD)	lb-ft (N·m)	150 (203)
Steering Tower Mounting Screw Torque	lb-ft (N·m)	38 (52)

Front Tires		
Size		18 x 10.5-8
Type		4-Ply
Air Pressure	psi (bar)	16 (1.1)
Front Wheel Lug Nut Torque	lb-ft (N·m)	80 (108.5)

Rear Tire		
Size—2WD		18 x 10.5-8
Size—3WD		18 x 10.5-10
Type		4-Ply
Air Pressure	psi (bar)	20 (1.38)
Rear Wheel Lug Nut Torque (2WD)	lb-ft (N·m)	80 (108.5)
Rear Wheel Mounting Screw Torque (3WD)	lb-ft (N·m)	80 (108.5)

SPECIFICATIONS AND GENERAL INFORMATION

Mower Speed		
Transport	mph (km/h)	0–9.0 (0–14.5)
Mowing	mph (km/h)	0–5.0 (0–8.9)
Reverse	mph (km/h)	0–4.0 (0–6.4)

Front Roller Weights		
22 Inch Grooved Assembly Steel Disc Roller (PN 068527)	lb (kg)	10 (4.54)
22 Inch Grooved Segmented Machined Aluminum Roller (PN 068673)	lb (kg)	8 (3.63)
22 Inch Light Smooth Roller (PN 068530)	lb (kg)	7 (3.18)
22 Inch Heavy Smooth Roller (PN 068641)	lb (kg)	18 (8.16)
22 Inch Grooved Machined Steel Roller (PN 068613)	lb (kg)	18 (8.16)
22 Inch Grooved Machined Aluminum Roller (PN 068614)	lb (kg)	8 (3.63)

Weights (Working Weight Less Operator)		
Model 62800 (3WD Electric)	lb (kg)	1697 (770)
Model 62801 (2WD Electric)	lb (kg)	1661 (753)
Model 62802 (3WD Gasoline)	lb (kg)	1577 (715)
Model 62803 (2WD Gasoline)	lb (kg)	1541 (699)
Model 62804 (3WD Diesel)	lb (kg)	1665 (755)
Model 62805 (2WD Diesel)	lb (kg)	1629 (739)
Model 62825 (2WD Diesel with Premium Seat)	lb (kg)	1629 (739)
Model 62826 (3WD Diesel with Premium Seat)	lb (kg)	1665 (755)

Dimensions—All Models		
Overall Width	in. (mm)	67.7 (1720)
Overall Height with OPS	in. (mm)	79.3 (2014)
Overall Length with Grass Catchers	in. (mm)	101 (2565)

Standard Torque Values

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.

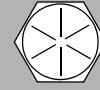
NOTE

Jacobsen uses Grade 5 plated bolts as standard, unless otherwise noted. When tightening plated bolts, use the value given for lubricated.

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Inch Fastener Torque Values

AMERICAN NATIONAL STANDARD FASTENERS

SIZE	UNITS					SIZE	UNITS				
		Lubricated	Dry	Lubricated	Dry			Lubricated	Dry	Lubricated	Dry
#6-32	in-lb (Nm)	–	20 (2.3)	–	–	7/16-14	ft-lb (Nm)	37 (50.1)	50 (67.8)	53 (71.8)	70 (94.9)
#8-32	in-lb (Nm)	–	24 (2.7)	–	30 (3.4)	7/16-20	ft-lb (Nm)	42 (56.9)	55 (74.6)	59 (80.0)	78 (105)
#10-24	in-lb (Nm)	–	35 (4.0)	–	45 (5.1)	1/2-13	ft-lb (Nm)	57 (77.2)	75 (101)	80 (108)	107 (145)
#10-32	in-lb (Nm)	–	40 (4.5)	–	50 (5.7)	1/2-20	ft-lb (Nm)	64 (86.7)	85 (115)	90 (122)	120 (162)
#12-24	in-lb (Nm)	–	50 (5.7)	–	65 (7.3)	9/16-12	ft-lb (Nm)	82 (111)	109 (148)	115 (156)	154 (209)
1/4-20	in-lb (Nm)	75 (8.4)	100 (11.3)	107 (12.1)	143 (16.1)	9/16-18	ft-lb (Nm)	92 (124)	122 (165)	129 (174)	172 (233)
1/4-28	in-lb (Nm)	85 (9.6)	115 (13.0)	120 (13.5)	163 (18.4)	5/8-11	ft-lb (Nm)	113 (153)	151 (204)	159 (215)	211 (286)
5/16-18	in-lb (Nm)	157 (17.7)	210 (23.7)	220 (24.8)	305 (34.4)	5/8-18	ft-lb (Nm)	128 (173)	170 (230)	180 (244)	240 (325)
5/16-24	in-lb (Nm)	173 (19.5)	230 (26.0)	245 (27.6)	325 (36.7)	3/4-10	ft-lb (Nm)	200 (271)	266 (360)	282 (382)	376 (509)
3/8-16	ft-lb (Nm)	23 (31.1)	31 (42.0)	32 (43.3)	44 (59.6)	3/4-16	ft-lb (Nm)	223 (302)	298 404	315 (427)	420 (569)
3/8-24	ft-lb (Nm)	26 (35.2)	35 (47.4)	37 (50.1)	50 (67.8)	7/8-14	ft-lb (Nm)	355 (481)	473 (641)	500 (678)	668 (905)

Metric Fastener Torque Values

METRIC FASTENERS

SIZE	UNITS									Non-Critical Fasteners into Aluminum
		Lubricated	Dry	Lubricated	Dry	Lubricated	Dry	Lubricated	Dry	
M4	Nm (in-lb)	–	–	–	–	–	–	3.83 (34)	5.11 (45)	2.0 (18)
M5	Nm (in-lb)	1.80 (16)	2.40 (21)	4.63 (41)	6.18 (54)	6.63 (59)	8.84 (78)	7.75 (68)	10.3 (910)	4.0 (35)
M6	Nm (in-lb)	3.05 (27)	4.07 (36)	7.87 (69)	10.5 (93)	11.3 (102)	15.0 (133)	13.2 (117)	17.6 (156)	6.8 (60)
M8	Nm (in-lb)	7.41 (65)	9.98 (88)	19.1 (69)	25.5 (226)	27.3 (241)	36.5 (323)	32.0 (283)	42.6 (377)	17.0 (150)
M10	Nm (ft-lb)	14.7 (11)	19.6 (14)	37.8 (29)	50.5 (37)	54.1 (40)	72.2 (53)	63.3 (46)	84.4 (62)	33.9 (25)
M12	Nm (ft-lb)	25.6 (19)	34.1 (25)	66.0 (48)	88.0 (65)	94.5 (70)	125 (92)	110 (81)	147 (108)	61.0 (45)
M14	Nm (ft-lb)	40.8 (30)	54.3 (40)	105 (77)	140 (103)	150 (110)	200 (147)	175 (129)	234 (172)	94.9 (70)

SPECIFICATIONS AND GENERAL INFORMATION

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Chapter 3

Genset and Battery Pack

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GENSET AND BATTERY PACK

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Specifications

Fuel Tank Capacities

Diesel Models		
Fuel Tank Capacity	gal (L)	5.3 (20)

Gasoline Models		
Fuel Tank Capacity	gal (L)	5.3 (20)

General Specifications

Diesel Models		
Manufacturer/Model		Kubota/Z482-E3B 2-Cylinder; Liquid Cooled
Engine Type		4-stroke, diesel
Fuel Requirement		No. 2-D diesel fuel (Minimum Cetane Rating 45)
Number of Cylinders		2, in-line
Displacement	cu in. (cc)	29.3 (480)
Bore x Stroke	in. (mm)	2.64 x 2.68 (67 x 68)
Power Output	hp (kW)	13.3 (9.9) @ 3600 rpm
Cooling System		liquid cooled
Cooling System Capacity	qt (L)	3 (2.8)
Speed Range		950–3600 rpm
Lubrication Capacity (With Filter)	qt (L)	3.4 (3.2)
Alternator		12 volt, 40 amp
Dry Weight	lb (kg)	117.1 (53.1)

Gasoline Models		
Manufacturer/Model		Briggs and Stratton/2954 Vanguard V-Twin OHV; Air Cooled
Engine Type		Gasoline
Fuel Requirement		Unleaded gasoline (Minimum Octane Rating 85)
Number of Cylinders/Configuration		2
Displacement	cu in. (cc)	29.3 (480)
Bore x Stroke	in. (mm)	2.68 x 2.6 (68 x 66)
Power Output	hp (kW)	12 (8.9) @ 3200 rpm
Cooling System		air cooled
Speed Range		1200–3600 rpm
Lubrication Capacity	pints (L)	3.5 (1.4)
Dry Weight	lb (kg)	71.4 (32.4)

Electric Models	
Battery Pack	48V (six 8-volt Trojan T890 deep cycle lead acid batteries) with single point watering system

Traction Drive System (All Models)	
Traction Drive Motor	48-volt, brushless, keyed shaft
Traction Drive Motor Power Rating	hp (kW) 3 (2.2) continuous

Repair Specifications

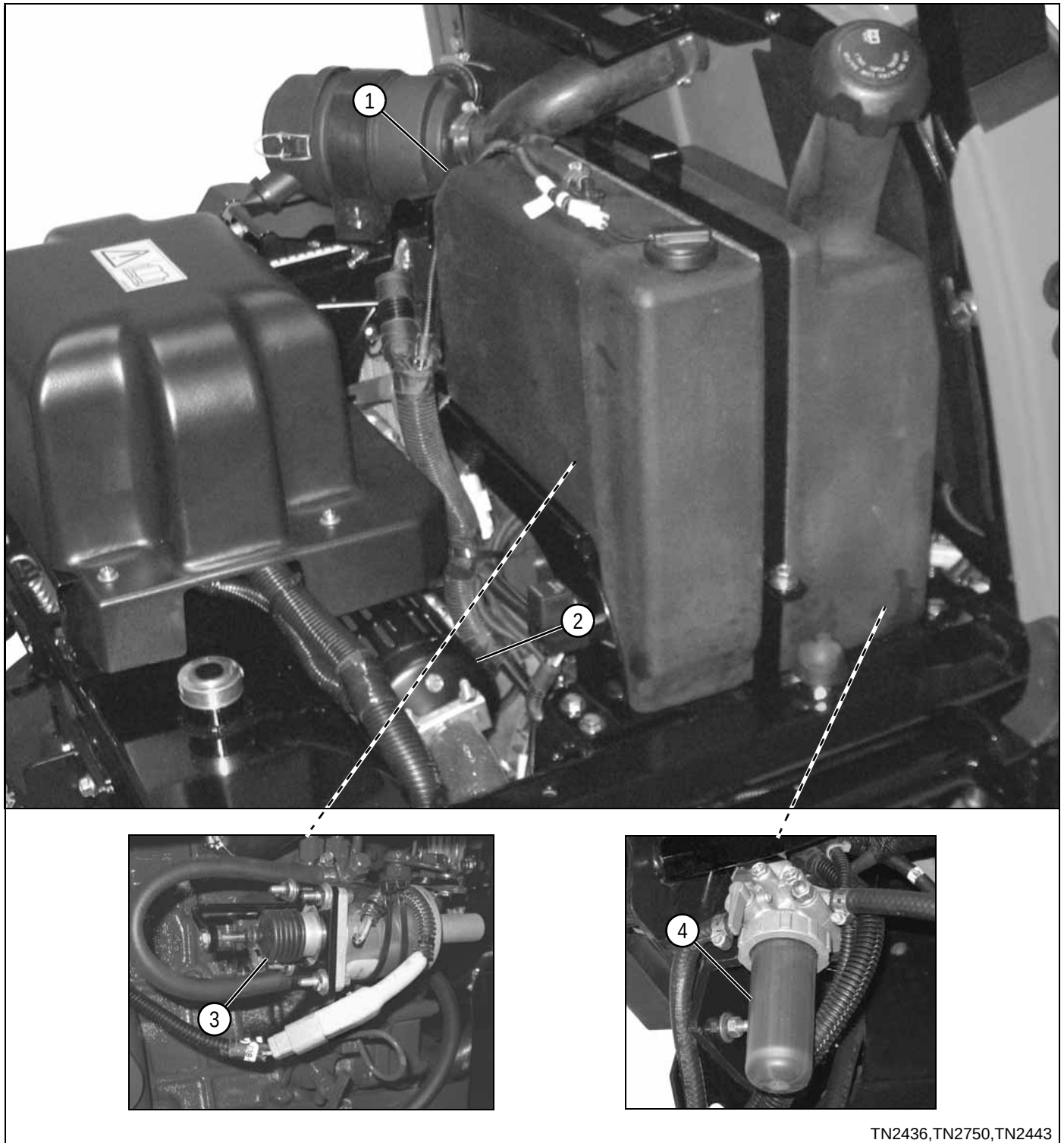
Specification		
Fan Belt Deflection with 22 lb (98 N·m) applied at the midpoint of pulleys	in. (mm)	0.28–0.35 (7–9)
Muffler Mounting Nut Torque (Diesel Models)	lb-ft (N·m)	7.2–8.3 (9.8–11.3)
Genset Carrier Mounting Screw Torque (Diesel Models)	lb-ft (N·m)	65.0 (88.0)
Coupling Shaft Mounting Screw Torque (Diesel Models)	lb-ft (N·m)	13.0 (17.6)
Generator Flange Mounting Screw Torque (Diesel Models)	lb-ft (N·m)	13.0 (17.6)
Generator Assembly Mounting Screw Torque (Diesel Models)	lb-ft (N·m)	13.0 (17.6)
Governor Linkage Arm Nut Torque (Diesel Models)	lb-in. (N·m)	40 (4.5)
Genset Carrier Mounting Screw Torque (Gasoline Models)	lb-ft (N·m)	65.0 (88.0)
Mounting Flange Screw Torque (Gasoline Models)	lb-ft (N·m)	32.0 (43.4)
Generator Assembly Mounting Screw Torque (Gasoline Models)	lb-ft (N·m)	20.0 (27.1)
Engine Mounting Screw Torque (Gasoline Models)	lb-ft (N·m)	19.0 (25.5)
Engine Coupler Screw Torque (Gasoline Models)	lb-ft (N·m)	32.0 (43.4)

3

Component Location

Diesel Models

See Figures 3-1 and 3-2.



TN2436, TN2750, TN2443

1 Fuel Tank 2 Muffler 3 Throttle Actuator 4 Fuel Filter

Figure 3-1: Component Location—Right Side

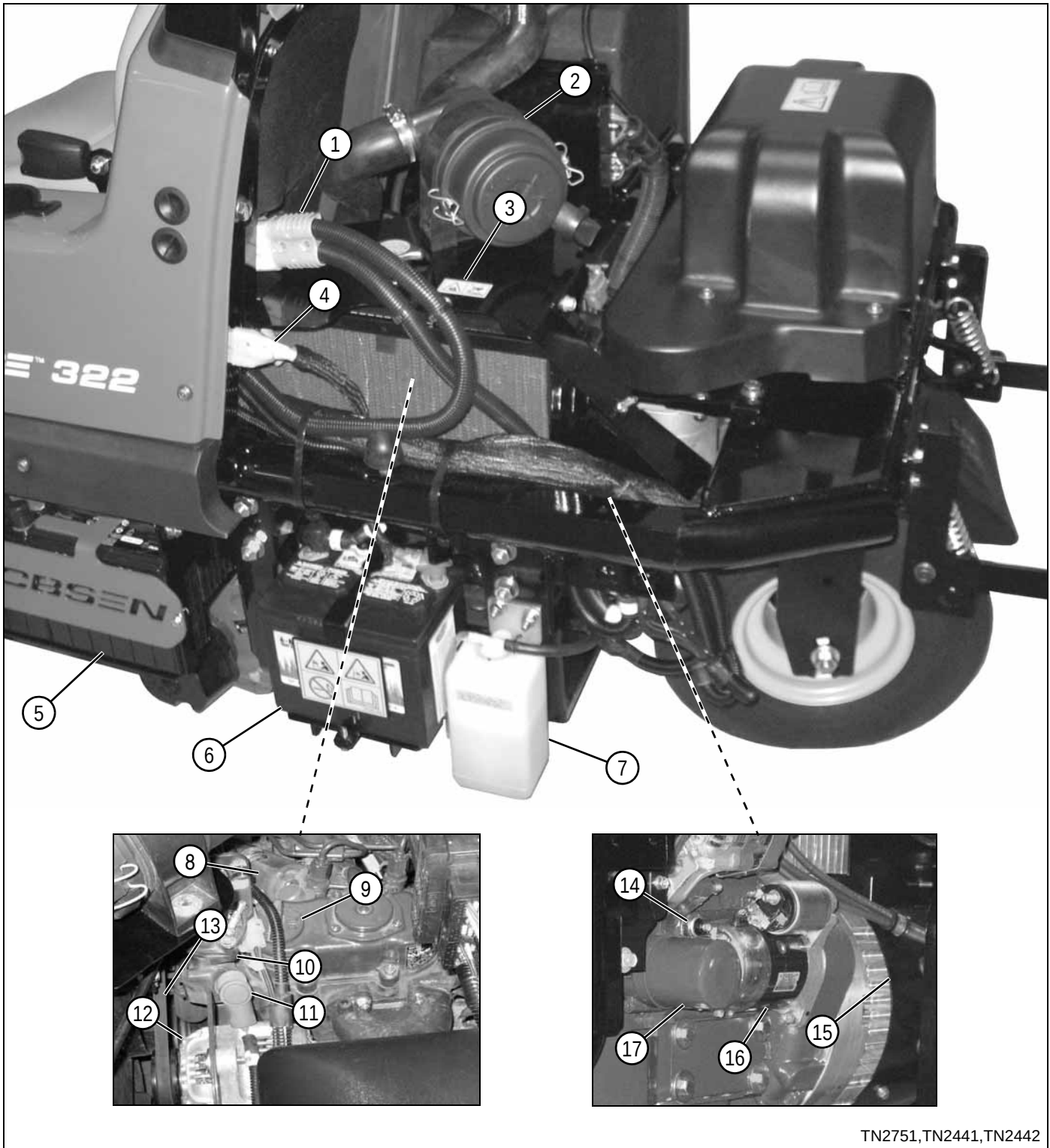
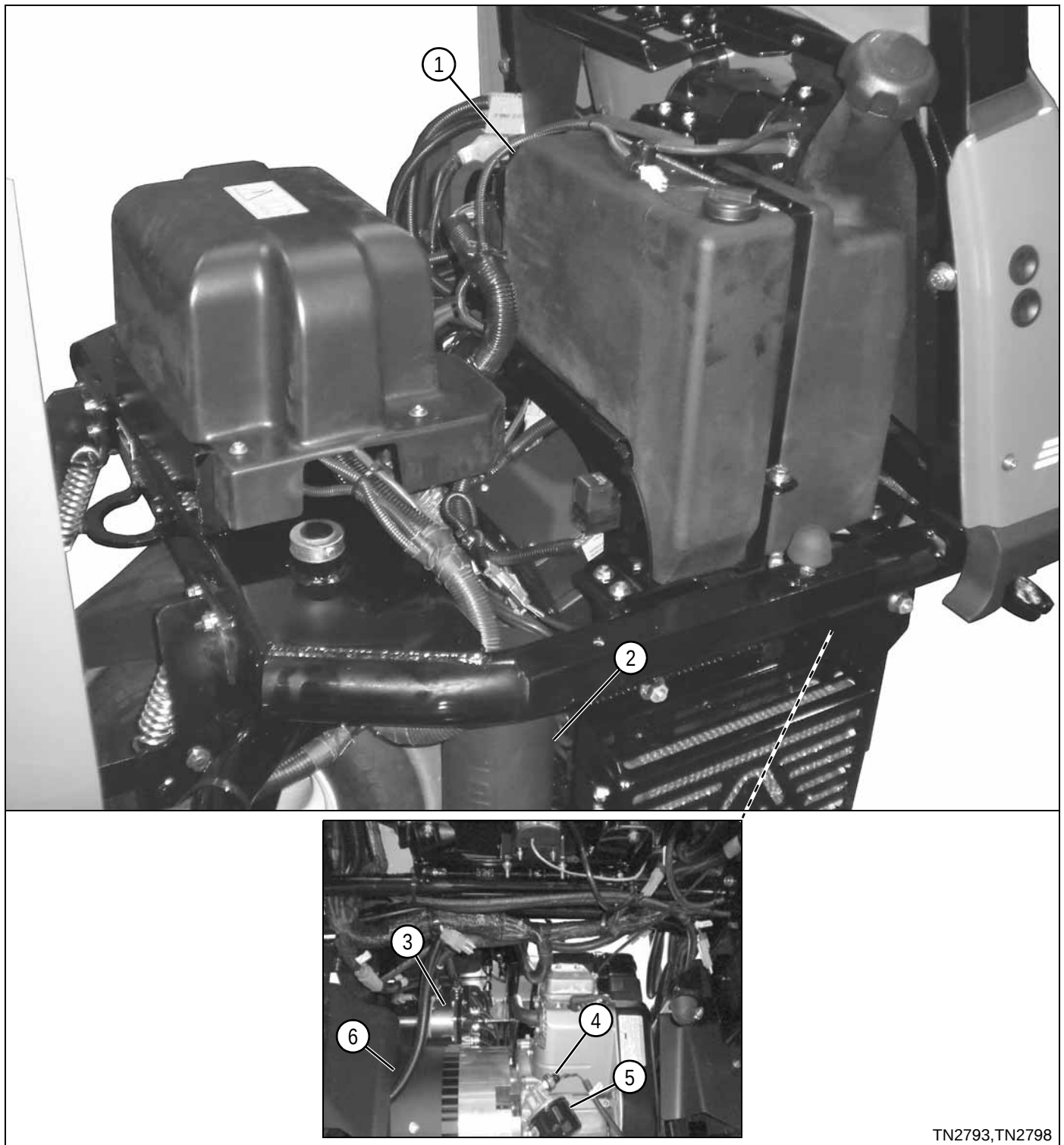


Figure 3-2: Component Location—Left Side

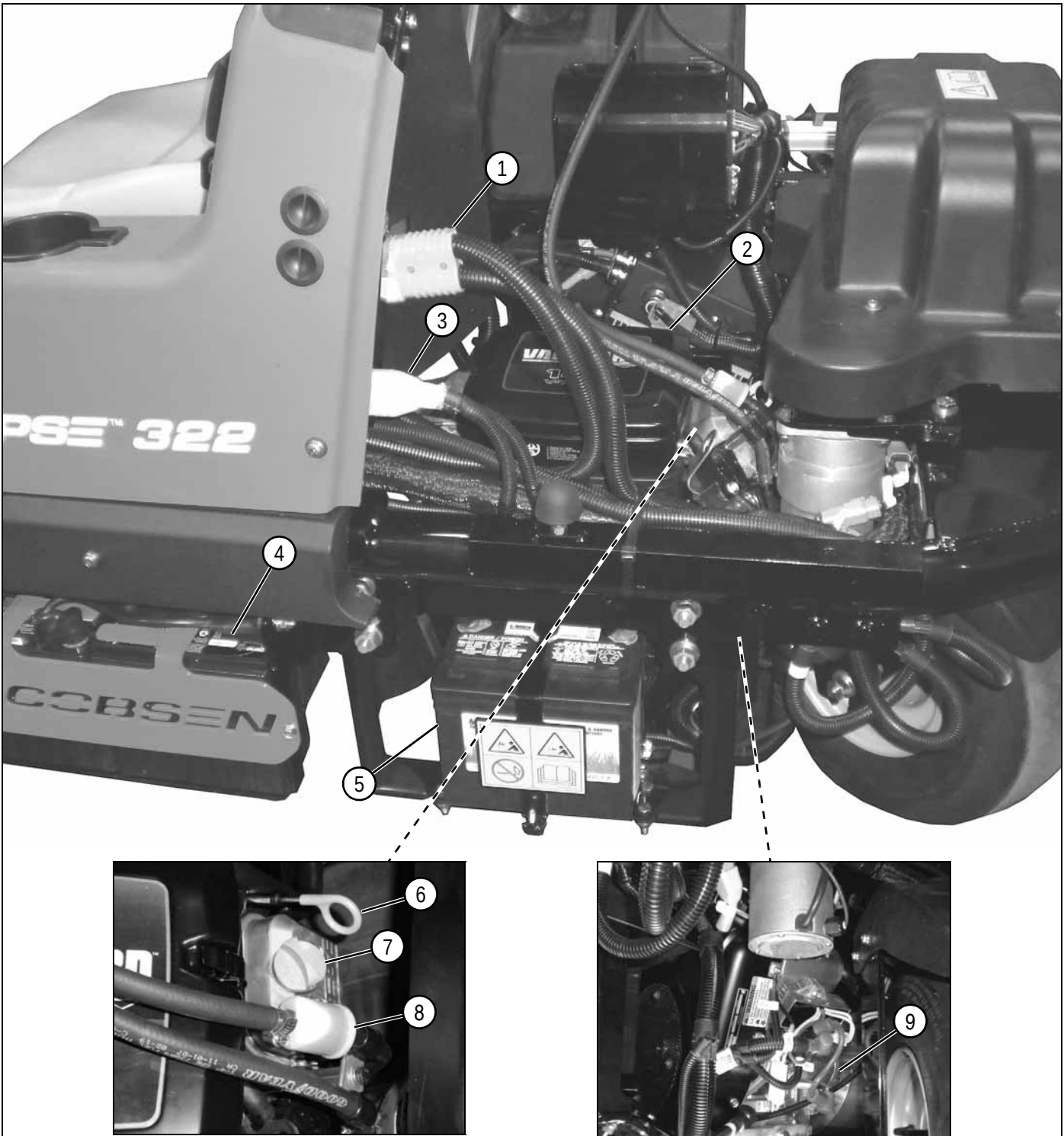
Gasoline Models

See Figures 3-3 and 3-4.



- | | | | | | |
|---|-----------|---|---------------------|---|------------|
| 1 | Fuel Tank | 3 | Throttle Actuator | 5 | Oil Filter |
| 2 | Muffler | 4 | Oil Pressure Switch | 6 | Genset |

Figure 3-3: Component Location—Right Side



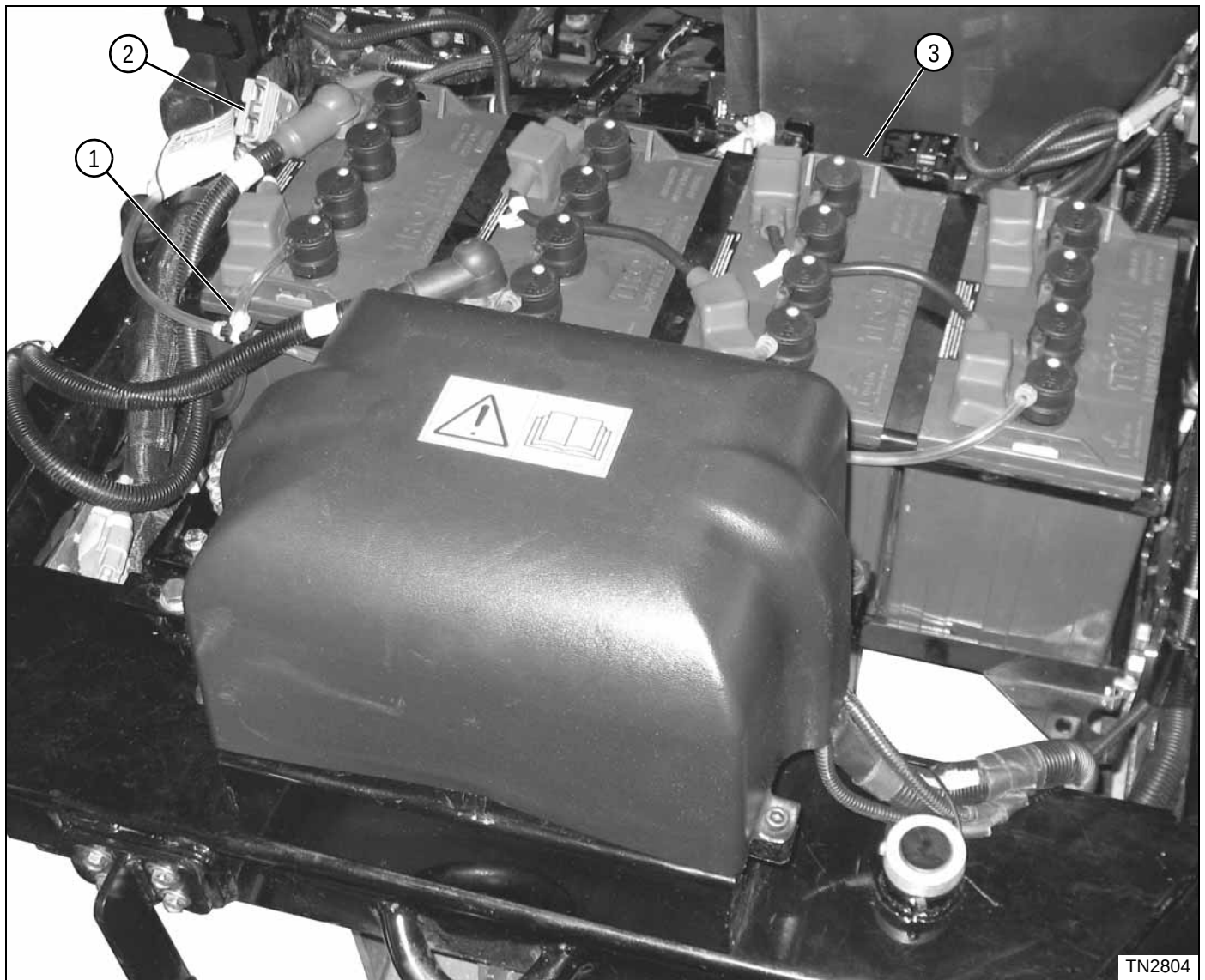
TN2794, TN2796, TN2797

- | | | | | | |
|---|----------------------|---|---------------------|---|---------------|
| 1 | 48-Volt Connector | 4 | Buffer Battery Pack | 7 | Oil Fill Cap |
| 2 | Air Cleaner Assembly | 5 | Starter Battery | 8 | Fuel Filter |
| 3 | 12-Volt Connector | 6 | Oil Dipstick | 9 | Starter Motor |

Figure 3-4: Component Location—Left Side

Electric Models

See Figure 3-5.



1 Battery Filling System

2 48-Volt Connector

3 Battery Pack

Figure 3-5: Component Location

Checks and Adjustments— Diesel Models

Purging the Fuel System (Diesel Models)

See Figures 3-6 through 3-8.



CAUTION

Do not purge fuel system when engine is hot.

NOTE

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, purge the system of air.

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

NOTE

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

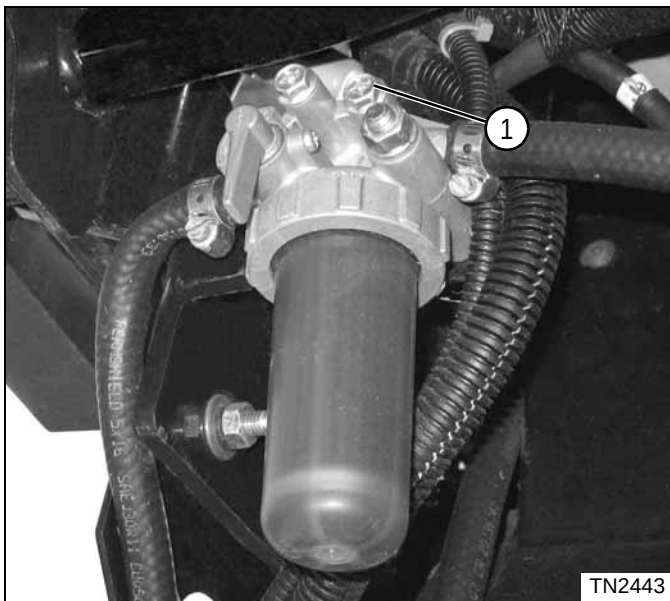


Figure 3-6

3. Loosen the 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 the fuel that will flow from the screw hole.
4. Turn the ignition switch to the on position to allow the fuel pump to operate.

5. When the bubbles disappear from fuel coming out of the air vent screw hole, tighten air vent screw and turn ignition switch to the off position.

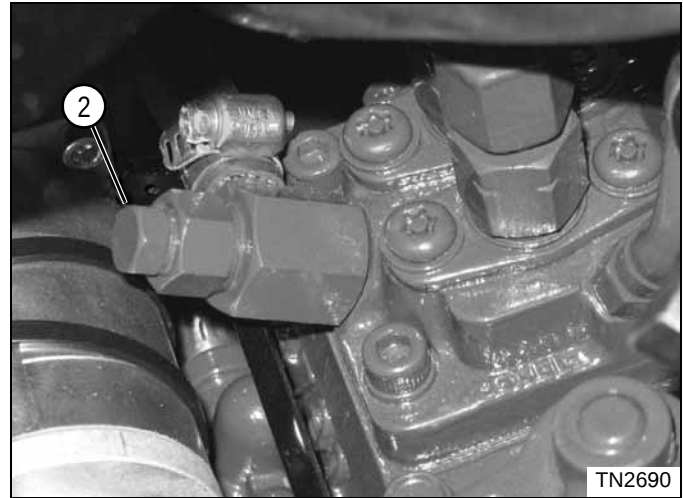


Figure 3-7



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.

6. Open air vent plug (2) at the top of the fuel injection pump.
7. Turn the ignition switch to the on position to allow the fuel pump to operate.
8. Close the air vent plug when bubbles disappear from the fuel flow and turn the ignition switch to the off position.

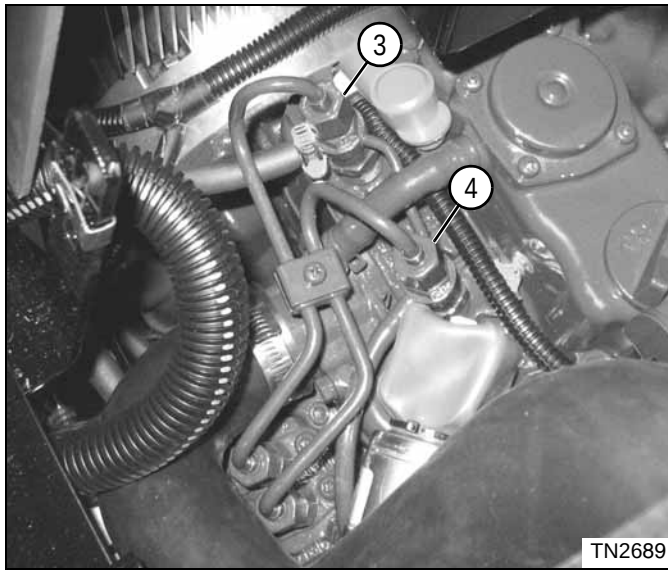


Figure 3-8

9. Loosen fuel injector line nut (3) and crank the engine.
10. When the bubbles disappear, tighten fuel injector line nut (3).
11. Repeat steps 9 and 10 for fuel injector line nut (4).
12. When both fuel injector lines have been purged and the engine is running, listen to the engine. If the engine is misfiring, repeat steps 9 and 10 for both fuel injector lines.

Throttle Actuator Adjustment (Diesel Models)

See Figure 3-9.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Raise the hood.

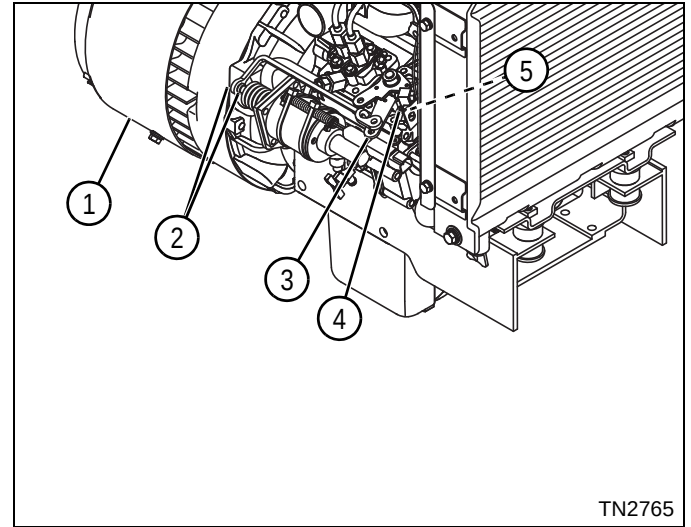


Figure 3-9

NOTES

- Manually retract and extend the actuator shaft, checking for smooth operation throughout the entire range of motion. If the actuator shaft sticks or binds, replace the actuator.
 - Cycle the key switch while observing actuator movement. Verify full stroke of the actuator. Replace actuator as necessary.
3. With engine off and throttle actuator fully retracted, adjust actuator hardware (2) as required so engine throttle lever (3) is resting against the low idle stop (4).
 4. Manually pull throttle actuator linkage toward generator (1). Engine throttle lever (3) should contact full throttle stop (5).

Checks and Adjustments— Gasoline Models

Throttle Actuator Adjustment (Gasoline Models)

See Figure 3-10.

Required Materials

Loctite® 242 (Blue)

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

3

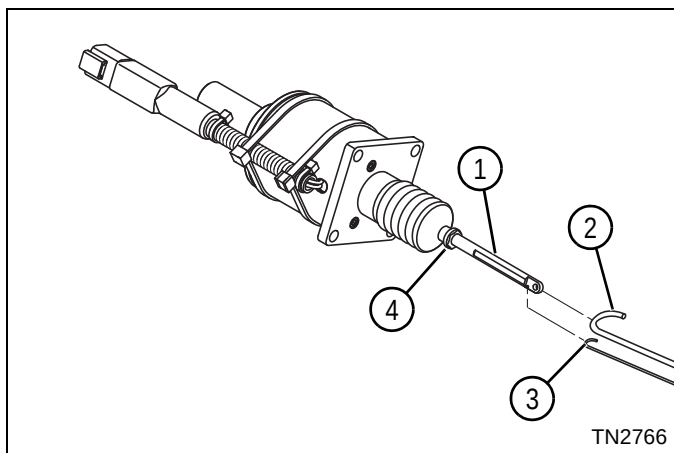


Figure 3-10

NOTES

- Manually retract and extend the actuator shaft, checking for smooth operation throughout the entire range of motion. If the actuator shaft sticks or binds, replace the actuator.
 - Cycle the key switch while observing actuator movement. Verify full stroke of the actuator. Replace actuator as necessary.
3. Disconnect engine throttle linkage (2) and spring (3) from throttle link (1). Pull engine throttle linkage (2) away from engine until at the low idle position.
 4. With engine throttle linkage in low idle position and actuator fully retracted, loosen jam nut (4) and turn throttle link (1) as required to engage engine throttle linkage (2).
 5. Connect engine throttle linkage (2) and spring (3).
 6. Manually pull throttle actuator linkage toward engine. Engine linkage should contact full throttle stop.
 7. Apply Loctite® 242 (Blue) to jam nut (4) and tighten jam nut.

Repair—Diesel Models

Fan Belt (Diesel Models)

Removal

See Figures 3-11 and 3-12.

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.)
2. Raise the hood.

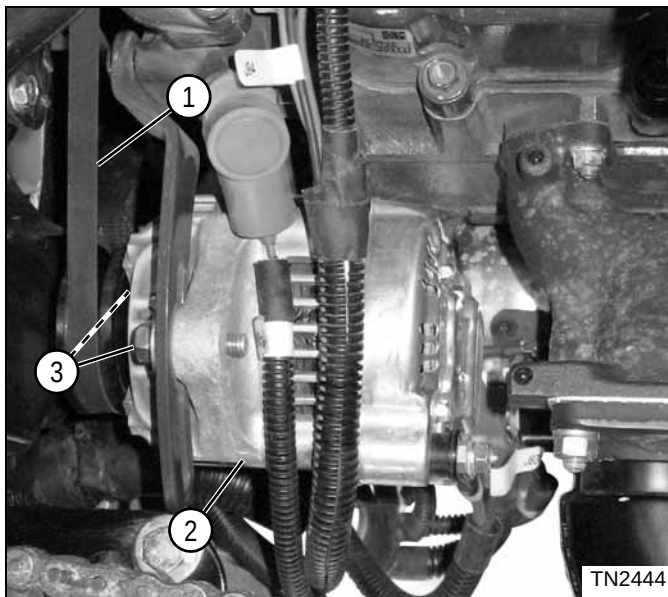


Figure 3-11

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

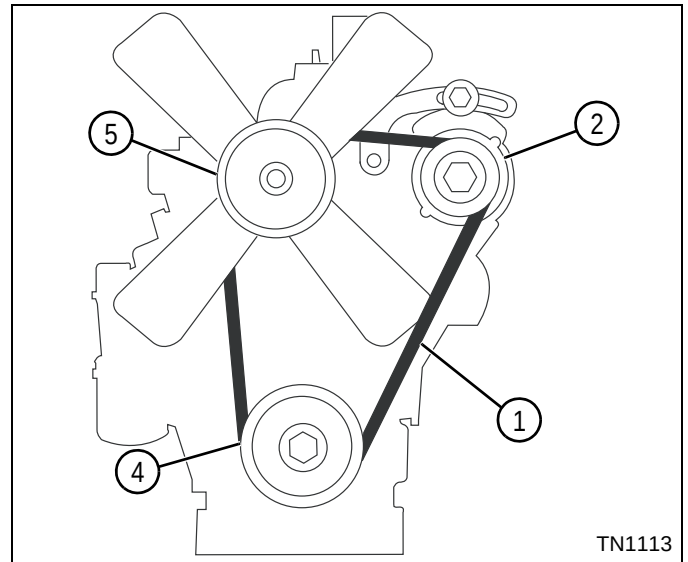


Figure 3-12

4. Remove fan belt (1) from the alternator (2), 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 (3) and pulling alternator (2) 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.

Air Filter Assembly (Diesel Models)

Removal and Installation

See Figures 3-13 and 3-14.



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

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
 2. Raise the hood.
- The air filter on this engine is a dry type; never apply oil to it.
 - It is recommended to remove and clean the dust cap daily (in dusty conditions).

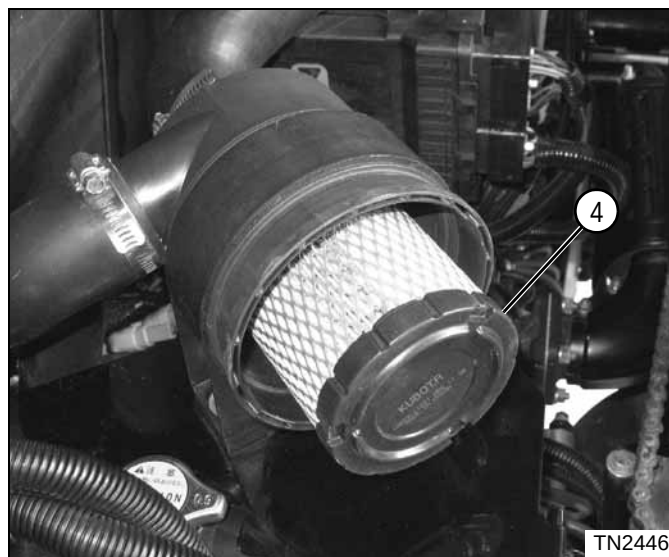


Figure 3-14

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

Installation Note

Install air filter assembly in the reverse order of removal.

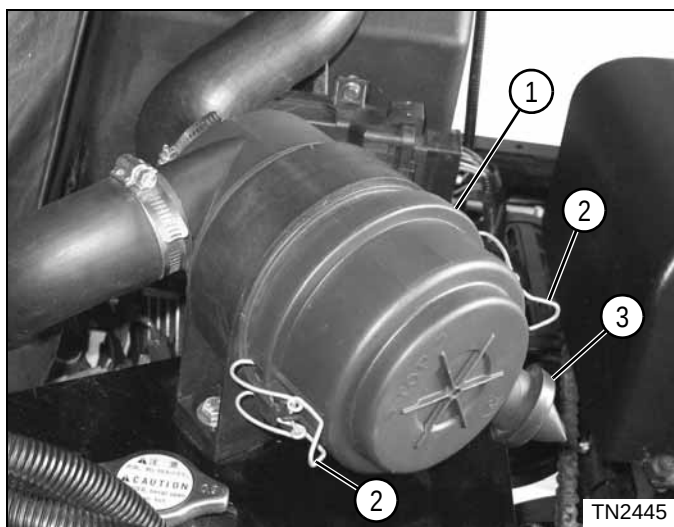


Figure 3-13

NOTE

For installation purposes, note orientation of air inlet (3) before removing the air filter dust cap (1).

3. Release retaining clips (2) and remove the air filter dust cap.
4. Using damp, lint-free cloths, thoroughly clean the inside of the dust cap.

Muffler (Diesel Models)

Removal and Installation

See Figures 3-15 and 3-16.



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. Raise the hood.

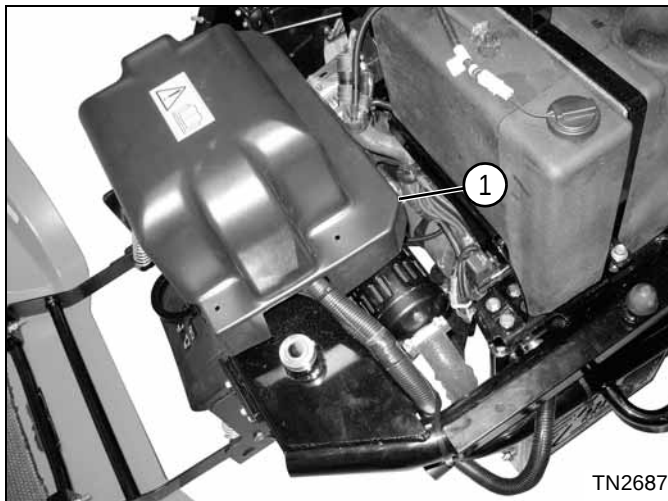


Figure 3-15

4. Remove rear controller cover (1).

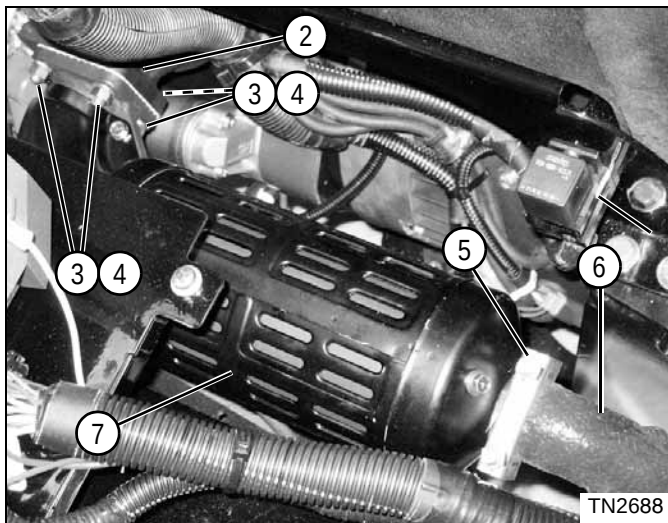


Figure 3-16

5. Remove muffler clamp and hardware (5) from exhaust pipe (6).

6. Remove four nuts (3) and lock washers (4).
7. Remove muffler (7) from exhaust manifold (2).
8. Inspect the exhaust system for cracks, holes, and distortion. Replace exhaust gaskets and exhaust clamps.

Installation Notes

- Install muffler in the reverse order of removal.
- Install new gaskets during installation.
- Tighten nuts (3) to 7.2–8.3 lb-ft (9.8–11.3 N·m).

Alternator (Diesel Models)

Removal and Installation

See Figures 3-17 and 3-18.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Raise the hood.

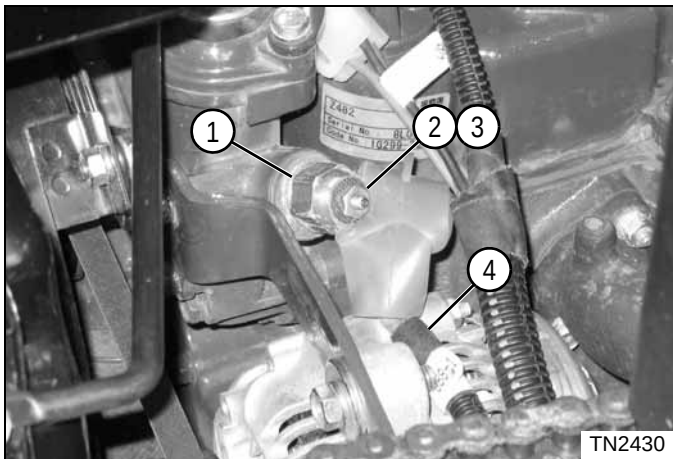


Figure 3-17

NOTE

Label all wires before disconnecting to ensure correct installation.

3. Remove nut (2), washer (3), and wire connector (4) from the engine temperature switch (1).

NOTE

Move engine temperature switch wire harness aside to provide clearance for alternator removal.

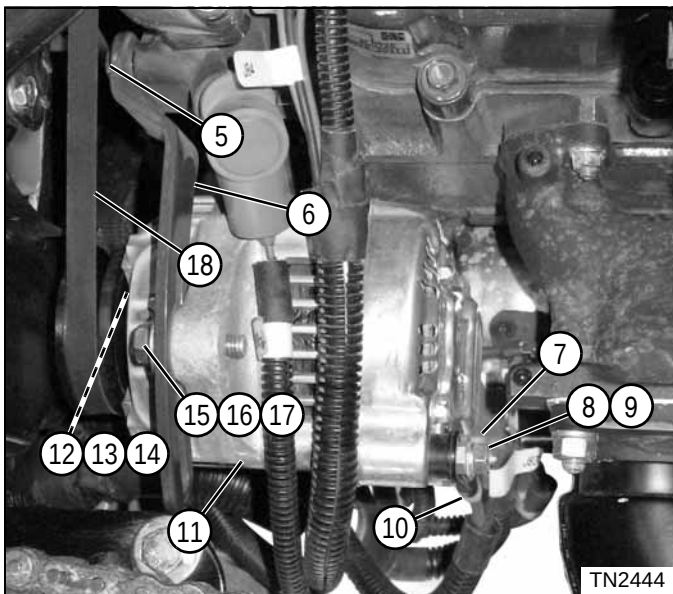


Figure 3-18

4. Disconnect wire connector (7).
5. Remove nut (8), lock washer (9), and wire connector (10).
6. Loosen screws (12 and 15), push the alternator (11) toward the engine, and disengage the fan belt (18) from the alternator.
7. Support the alternator (11) with a suitable lifting device.
8. Remove two screws (5).
9. Remove screw (15), lock washer (16), flat washer (17), and bracket (6).
10. Remove screw (12), lock washer (13), and flat washer (14).
11. Remove alternator.

Installation Note

Install alternator in the reverse order of removal.

Radiator (Diesel Models)

Removal

See Figures 3-19 through 3-22.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Allow the engine to cool completely.
3. Raise the hood.
4. Remove cowlings. (See "Cowlings" on page 7-33.)
5. Remove starter battery. (See "Starter Battery" on page 3-43.)



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.

6. Drain cooling system, 3 qt (2.8 L). Open petcock located on bottom of radiator, remove radiator cap, and drain coolant into a clean container.

NOTE

Label all hoses before removing to ensure correct installation.

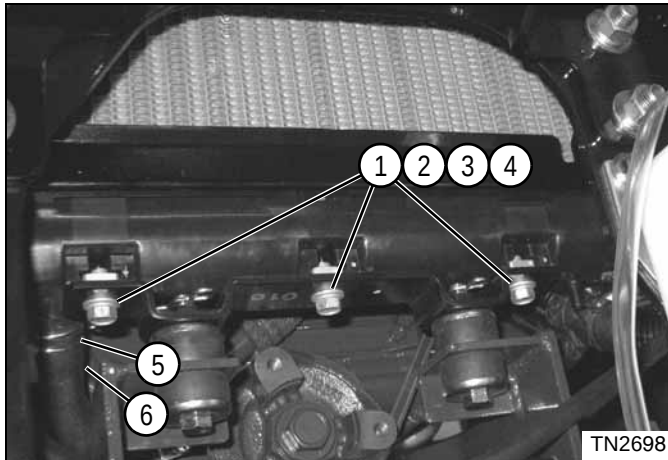


Figure 3-19

7. Loosen hose clamp (5) and remove lower radiator hose (6) from radiator.
8. Remove screws (1), lock washers (2), flat washers (3), and nuts (4).

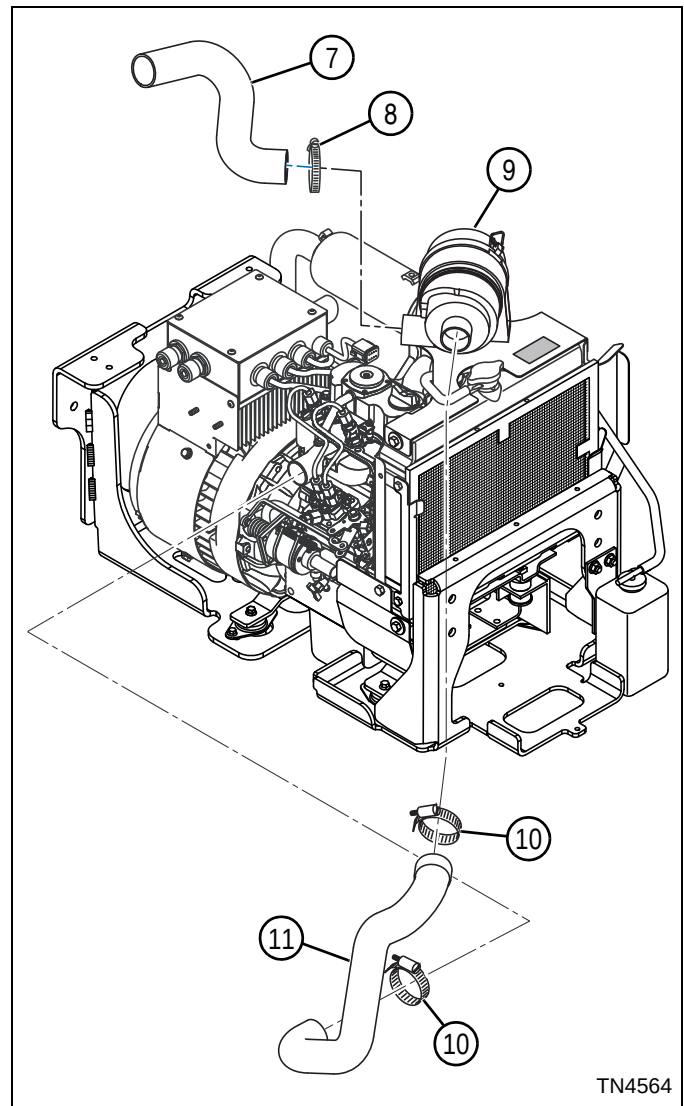


Figure 3-20

9. Loosen hose clamp (8), and remove air intake hose (7) from air cleaner (9).
10. Loosen hose clamps (10), and remove the air cleaner-to-air intake hose (11).

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GENSET AND BATTERY PACK

3

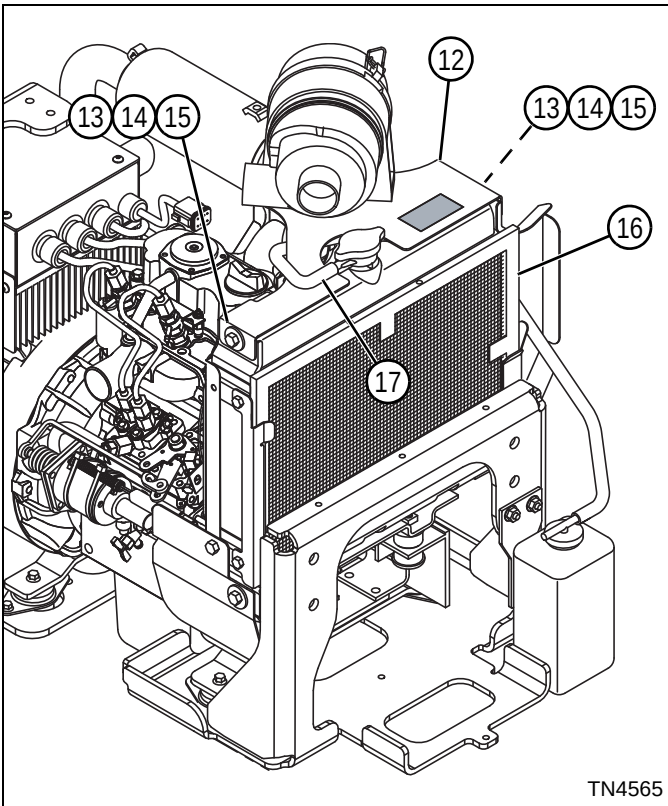


Figure 3-21

11. Disconnect overflow hose (17) and secure out of the way.
12. Remove two screws (13), lock washers (14), and flat washers (15).
13. Remove air cleaner bracket assembly (12).
14. Remove radiator screen (16).

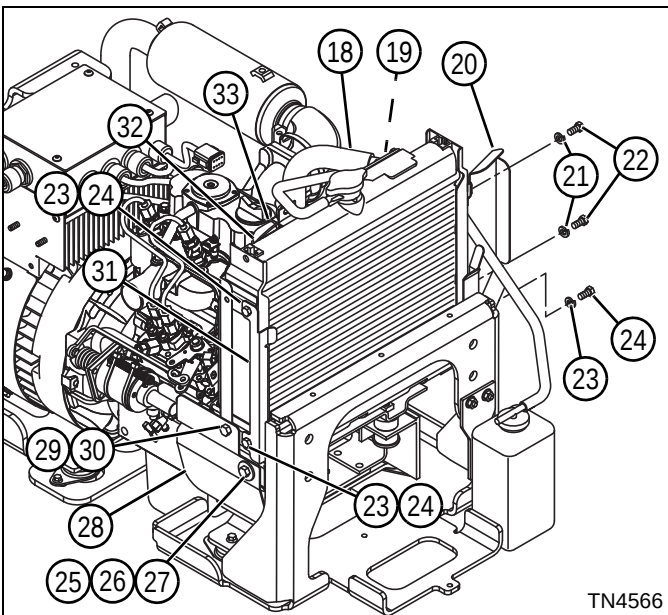


Figure 3-22

15. Loosen hose clamp (19), and disconnect upper radiator hose (18) from radiator.
16. Remove two screws (22) and lock washers (21), and remove baffle (20).
17. Remove screw (29) and lock washer (30).
18. Remove screw (25), lock washer (26), and flat washer (27), and remove air deflector (28).
19. Remove three screws (24) and lock washers (23), and remove the screen holder (31).
20. Move fan shroud (33) toward engine enough to clear the radiator (32).
21. Remove radiator (32).

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.



CAUTION

Always use a mixture of antifreeze and fresh water in the engine cooling system. Normally a 50/50 coolant mixture will provide freeze protection to -37° F (-38° C) and boil-over protection in an efficient cooling system.

3. Fill radiator with a 50/50 mixture of good quality ethylene glycol-base antifreeze and clean, fresh water.
4. Install radiator cap and start the engine following the instructions in the "Safety and Operation Manual."



CAUTION

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

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

Thermostat (Diesel Models)

Removal and Installation

See Figures 3-23 and 3-24.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Allow the engine to cool completely.
3. Raise the hood.



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.

4. Drain cooling system, 3 qt (2.8 L). Open petcock located on bottom of radiator, remove radiator cap, and drain coolant into a clean container.

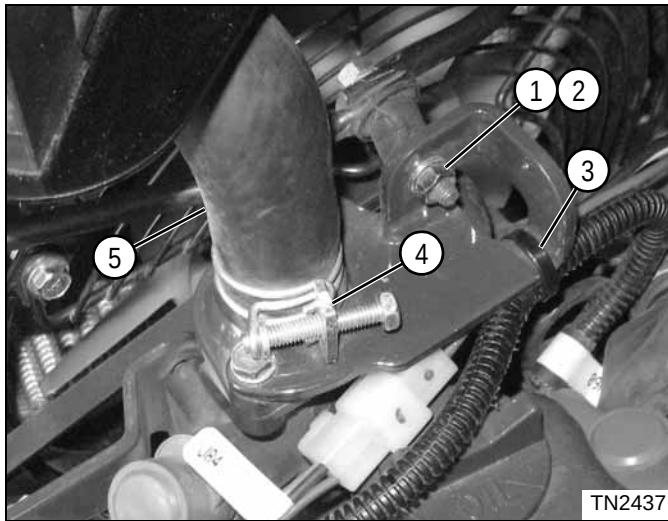


Figure 3-23

5. Cut cable tie (3).
6. Loosen hose clamp (4) and remove hose (5).
7. Remove nut (1) and washer (2).

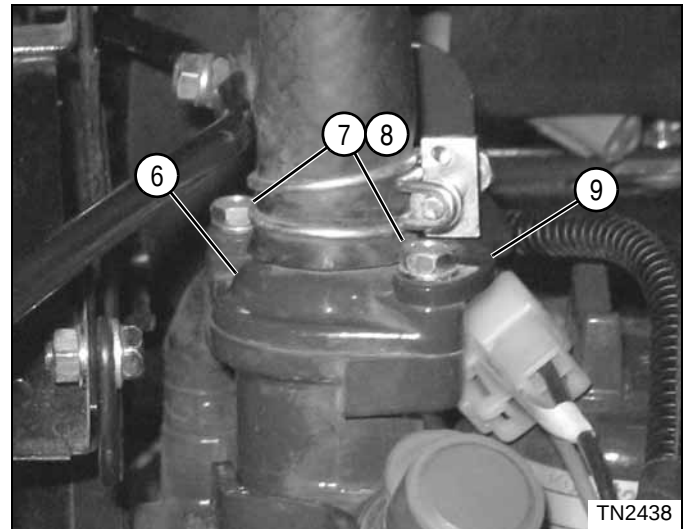


Figure 3-24

8. Remove two screws (7), two lock washers (8), and bracket (9).
9. Remove thermostat housing (6), gasket, and thermostat.

Installation Notes

- Install thermostat by reversing the order of removal.
- Clean gasket surface.
- Use a new gasket during installation.
- Use a new cable tie to secure wire harness.
- Fill the radiator with a 50/50 mixture of good quality ethylene glycol-base antifreeze and clean, fresh water.

GENSET AND BATTERY PACK

Throttle Actuator (Diesel Models)

Removal and Installation

See Figure 3-25.

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

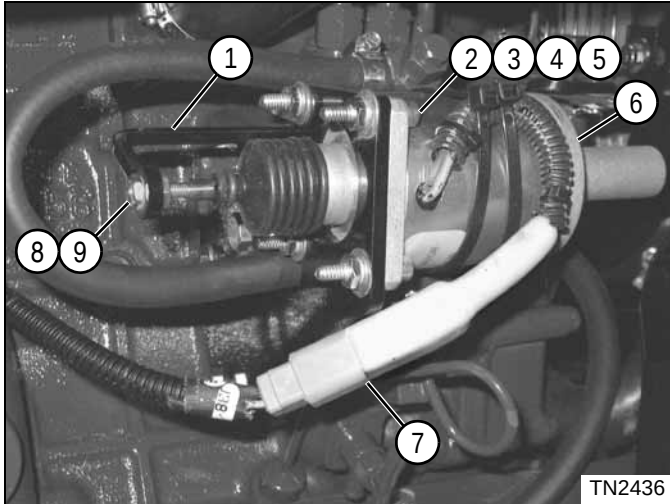


Figure 3-25

2. Tag and disconnect throttle actuator connector (7).
3. Remove governor linkage arm nut (8) and two washers (9), and disengage governor linkage arm (1) from throttle actuator (6).
4. Remove four nuts (2), lock washers (3), flat washers (4), and screws (5).
5. Remove throttle actuator (6).

Installation Notes

Required Materials

Loctite® 242 (Blue)

- Install throttle actuator by reversing the order of removal.
- Apply Loctite® 242 (Blue) to two governor linkage arm nuts (8) prior to assembly.
- Tighten governor linkage arm nuts (32) to 40 lb-in. (4.5 N·m).
- Adjust throttle actuator linkage. (See "Throttle Actuator Adjustment (Diesel Models)" on page 3-11.)

Fuel Tank (Diesel Models)

Removal and Installation

See Figures 3-26 through 3-28.



CAUTION

Diesel fuel is highly flammable. Do not drain fuel indoors. Heaters can ignite fuel vapors. Use extreme caution when draining fuel.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Allow the engine to cool completely.
3. Raise the hood.

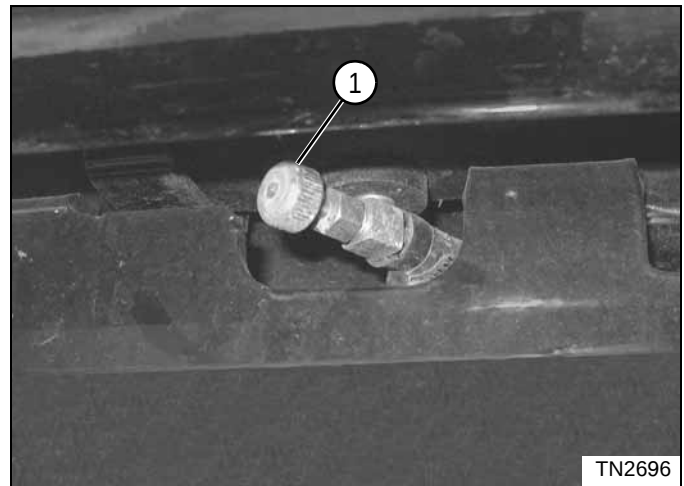


Figure 3-26

4. Close fuel shutoff valve (1). (Turn clockwise until valve bottoms lightly.)

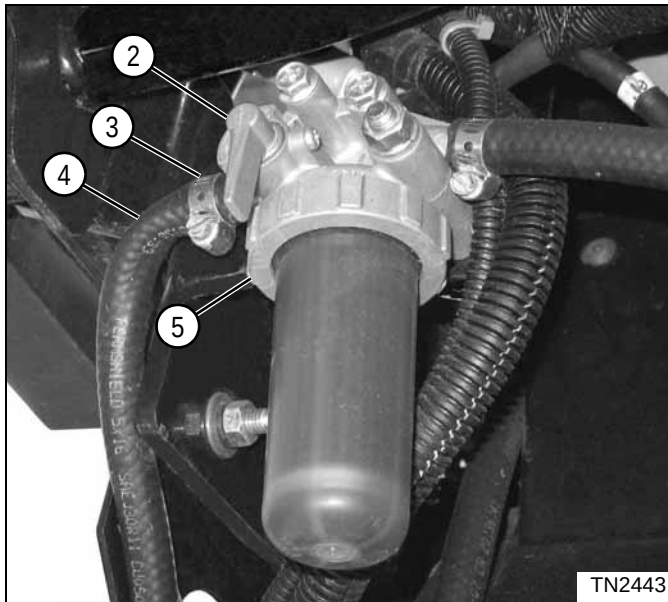


Figure 3-27

5. Turn the fuel filter shutoff lever (2) to the horizontal (OFF) position.

NOTE

Fuel tank capacity is 5.3 gal (20 L). Have suitable container(s) available that can hold up to 6 gal (23 L) of fuel.

6. Loosen hose clamp (3).
7. Tag and disconnect fuel hose (4) from fuel filter assembly (5). Cap fitting to prevent leakage and contamination.
8. Place fuel hose (4) into a suitable container at a level lower than the bottom of the fuel tank. Loosen the fuel cap to provide a vent for draining fuel.
9. Open the fuel shutoff valve at the bottom of the fuel tank.
10. When fuel tank is completely empty, tighten fuel cap.
11. Close fuel shutoff valve (1). (Turn clockwise until valve bottoms lightly.)
12. Plug fuel hose (4) to prevent leakage and contamination.

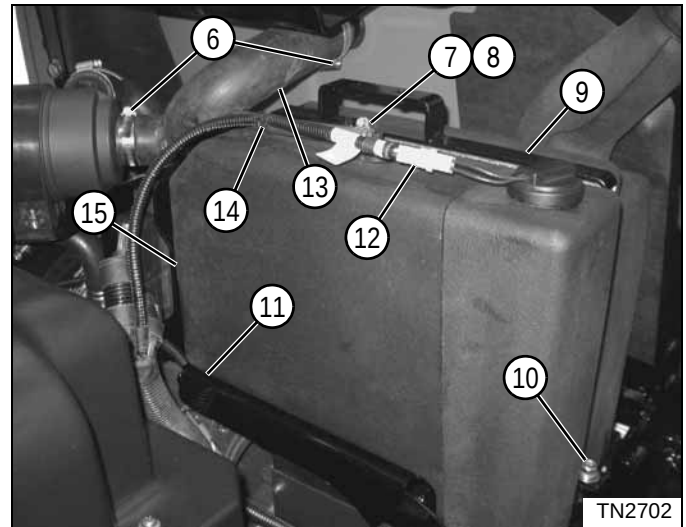


Figure 3-28

13. Loosen hose clamps (6) and remove air intake hose (15).
14. Cut cable tie (14).
15. Tag and disconnect wire connector (12).
16. Loosen hose clamp (7).
17. Tag and disconnect fuel hose (8). Cap fitting and plug fuel hose to prevent leakage and contamination.
18. Remove screw (10).
19. Lift and disengage strap (9) from fuel tank bracket (11) and secure out of the way.
20. Remove fuel tank (15) from machine.
21. Tag and disconnect fuel hose (4) from bottom of fuel tank.

Installation Notes

- Install fuel tank by reversing the order of removal.
- Use only clean diesel fuel of the correct type (#2 diesel) from a clean, sealed container.
- If fuel was contaminated, install a new fuel filter at this time. (See "Fuel Filter (Diesel Models)" on page 3-22.)
- Purge the fuel system. (See "Purging the Fuel System (Diesel Models)" on page 3-10.)

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Fuel Filter (Diesel Models)

Removal and Installation

See Figure 3-29.



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 before servicing.

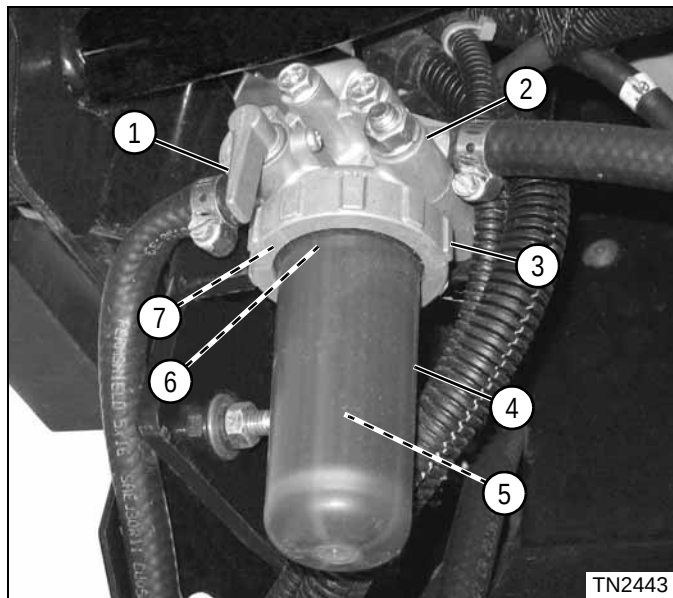


Figure 3-29

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

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 Models)" on page 3-10.) See the engine manufacturer's manual for further instructions.

Fuel Pump (Diesel Models)

Removal and Installation

See Figure 3-30.



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. Raise the hood.
4. Turn the fuel shutoff valve clockwise until valve bottoms lightly. Valve is located on fuel filter.

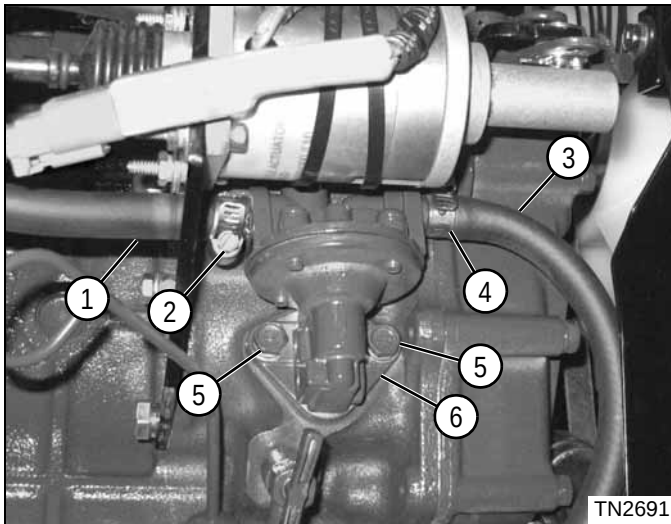


Figure 3-30

5. Loosen fuel hose clamps (2 and 4).
6. 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.
7. Remove screws (5).
8. 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.

Fuel Shutoff Solenoid (Diesel Models)

Removal and Installation

See Figures 3-31 and 3-32.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Allow the engine to cool completely.
3. Raise the hood.

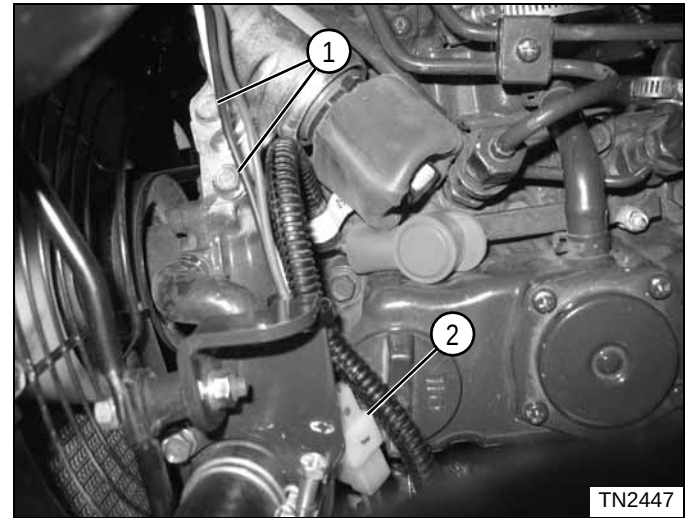


Figure 3-31

4. Tag and disconnect wire connector (2).
5. Remove screws (1).

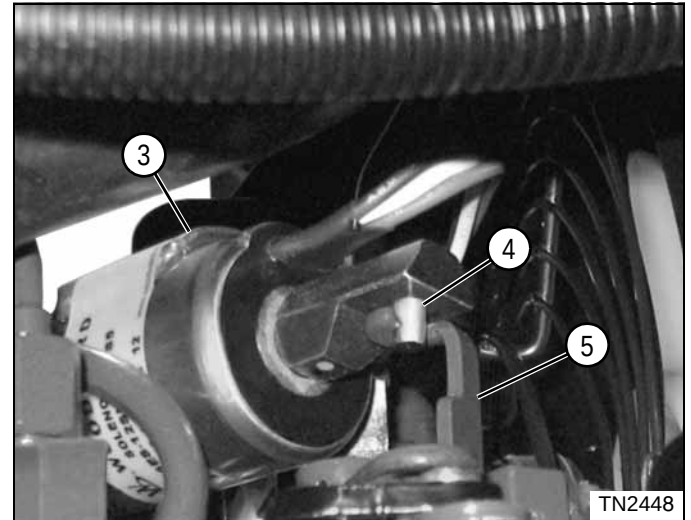


Figure 3-32

6. Disengage fuel shutoff solenoid pin (4) from throttle lever (5) and remove fuel shutoff solenoid (3).

Installation Note

Install fuel shutoff solenoid by reversing the order of removal.

GENSET AND BATTERY PACK

Genset (Diesel Models)

Removal and Installation

See Figures 3-33 through 3-44.



WARNING

Be sure that the key switch is off, all electrical accessories are turned off, and the 12-volt and 48-volt power connectors are disconnected before starting work on vehicle.

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. Swing center cutting unit from beneath the machine.
4. Raise the hood.
5. Remove cowlings. (See "Cowlings" on page 7-33.)
6. Remove starter battery. (See "Starter Battery" on page 3-43.)

NOTE

Label all wires before disconnecting to ensure correct installation.

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

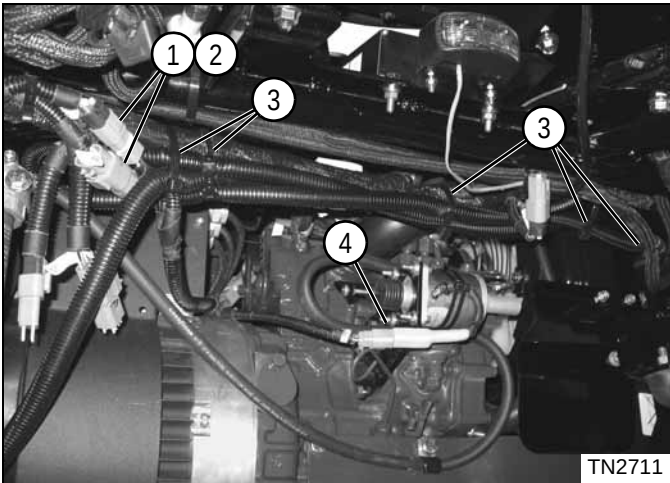


Figure 3-33

8. Tag and disconnect genset-to-main harness connectors (1 and 2).
9. Tag and disconnect throttle actuator connector (4).
10. Cut cable ties (3).

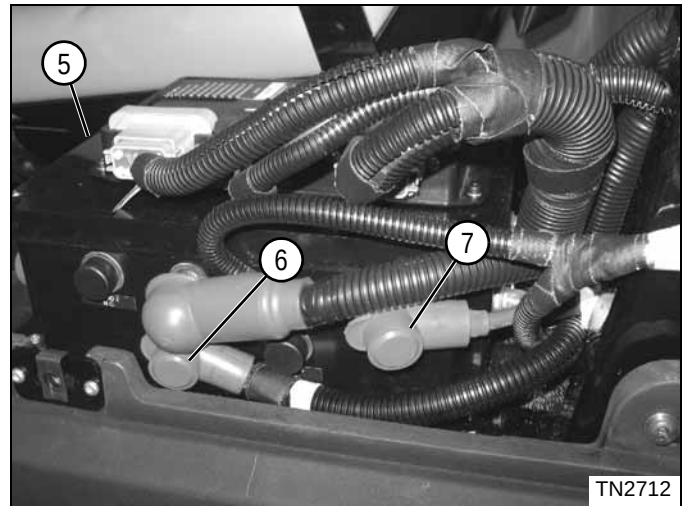


Figure 3-34

11. Tag and disconnect the generator positive (+) output cable (6) and 12 VOLT POS connector (7) from PDU (5). Carefully guide the cables away from the PDU and position the cables to be unrestricted during genset removal.

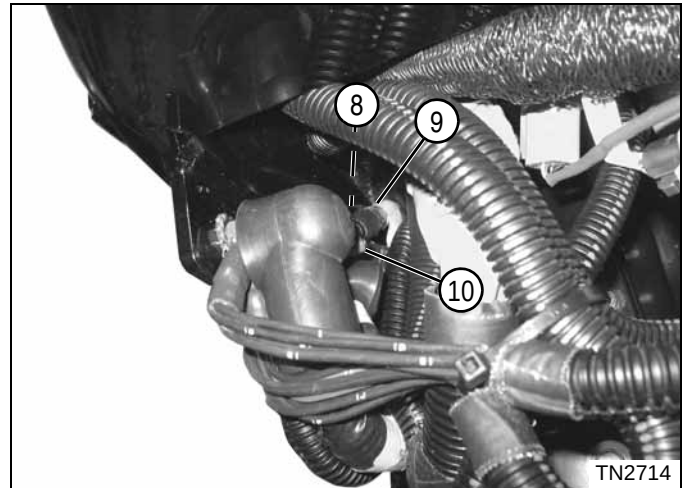
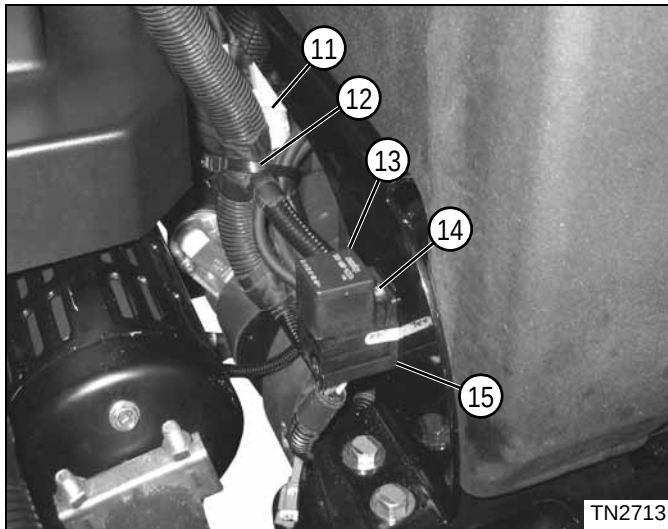
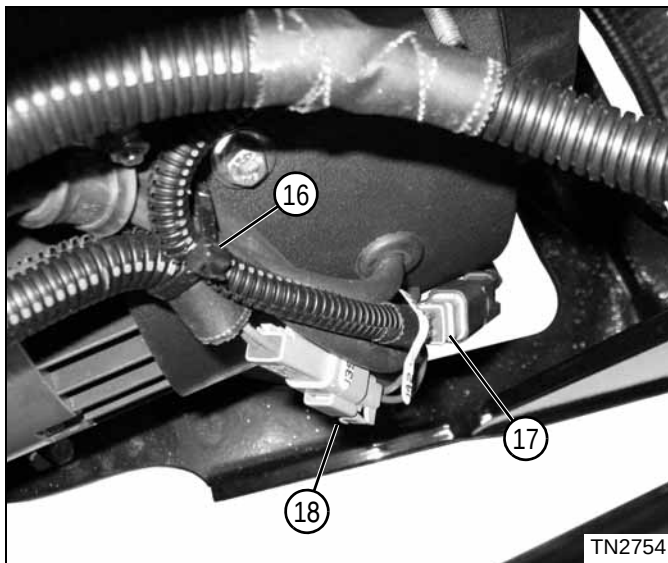


Figure 3-35

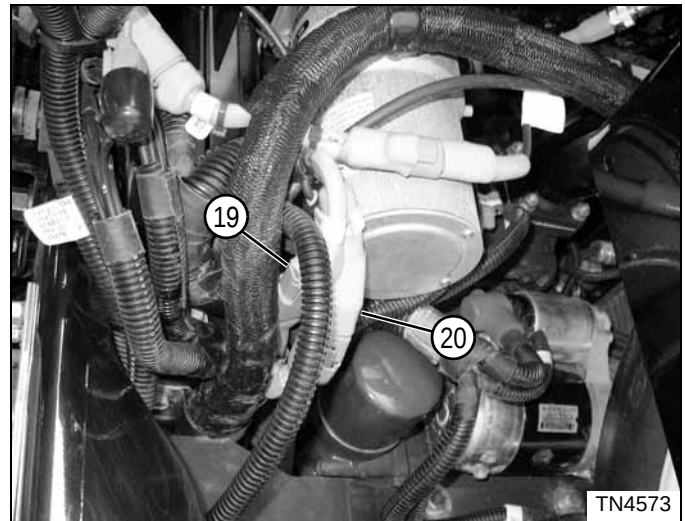
12. Tag and disconnect the generator negative (-) output cable (9) and engine harness ground wire (8) from ground stud (10). Carefully guide the cable away from the frame and position the cable to be unrestricted during genset removal.

**Figure 3-36**

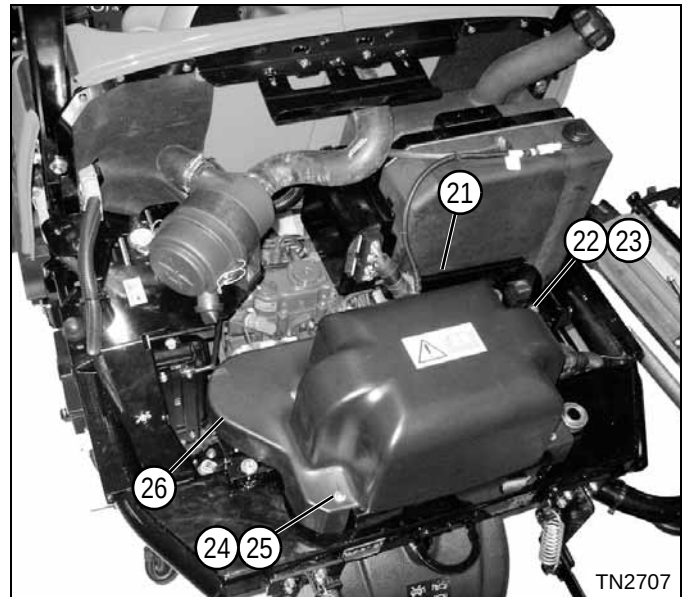
- 13. Tag and disconnect rectifier connector (11).
- 14. Cut cable tie (12).
- 15. Remove fan relay (13).
- 16. Remove screw (14) and fan relay base (15).
- 17. Remove GCU. (See "GCU" on page 4-155.)

**Figure 3-37**

- 18. Tag and disconnect genset connector (18) and genset fan connector (17).
- 19. Cut cable tie (16).
- 20. Move the wiring harness away from the genset.

**Figure 3-38**

- 21. Tag and disconnect engine harness-to-main harness connectors (19 and 20).

**Figure 3-39**

- 22. Turn the fuel outlet hose shutoff valve clockwise until valve bottoms lightly. Valve is located on the bottom of the fuel tank.
- 23. Remove fuel tank. (See "Fuel Tank (Diesel Models)" on page 3-20.)
- 24. Remove fuel filter. (See "Fuel Filter (Diesel Models)" on page 3-22.)
- 25. Remove four screws (22) and nuts (23), and remove fuel tank bracket (21).
- 26. Remove four screws (24) and flat washers (25), and remove rear controller cover (26).
- 27. Remove muffler and exhaust assembly. (See "Muffler (Diesel Models)" on page 3-15.)

GENSET AND BATTERY PACK

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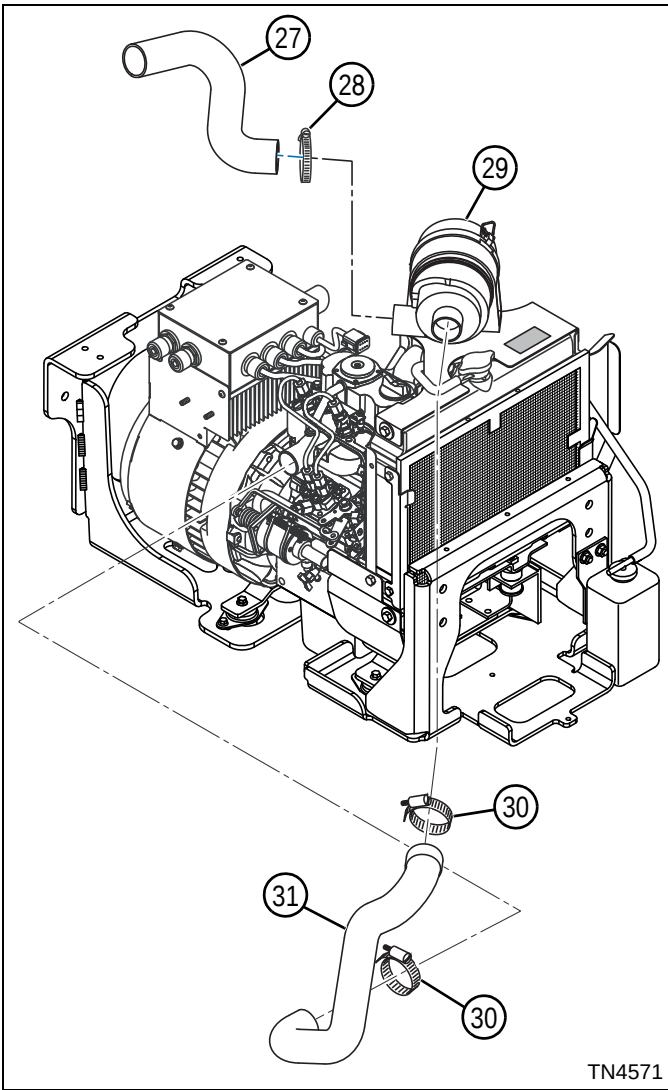


Figure 3-40

28. Loosen hose clamp (28), and remove air intake hose (27) from air cleaner (29).
29. Loosen hose clamps (30), and remove the air cleaner-to-air intake hose (31).

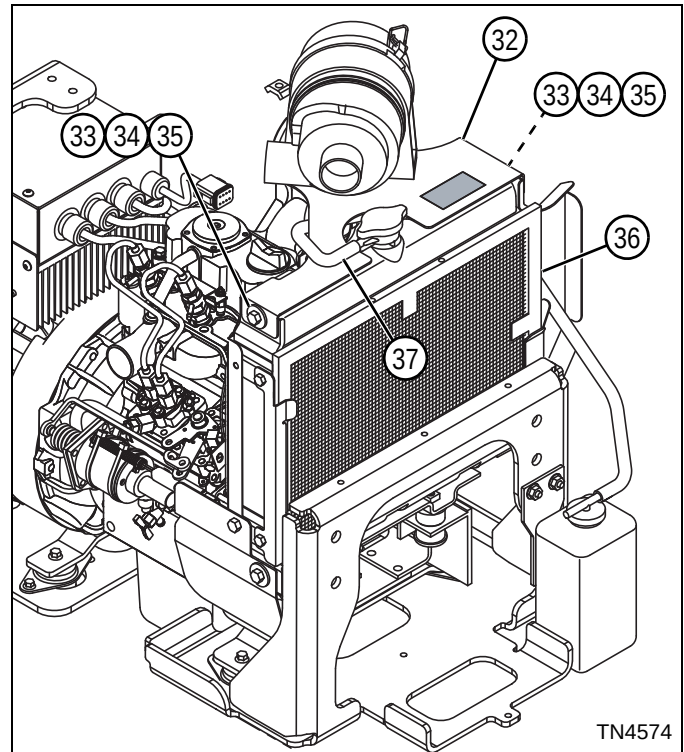


Figure 3-41

30. Disconnect overflow hose (37) and secure out of the way.
31. Remove two screws (33), lock washers (34), and flat washers (35).
32. Remove air cleaner bracket assembly (32).
33. Remove radiator screen (36).

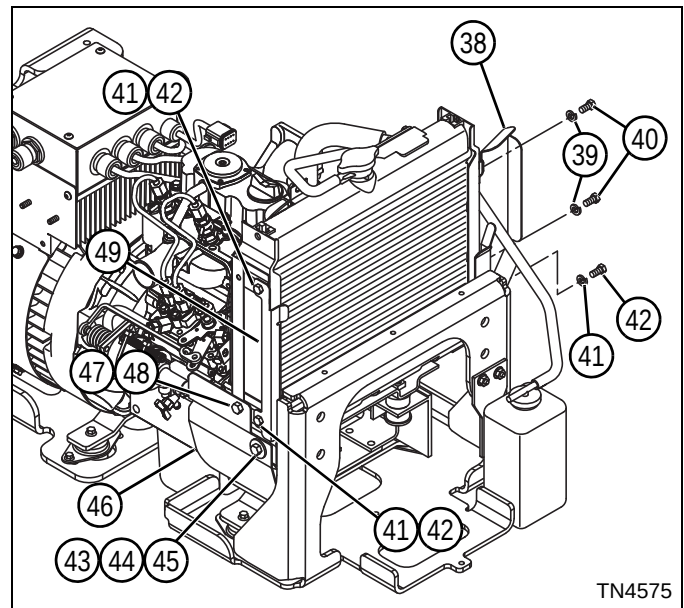
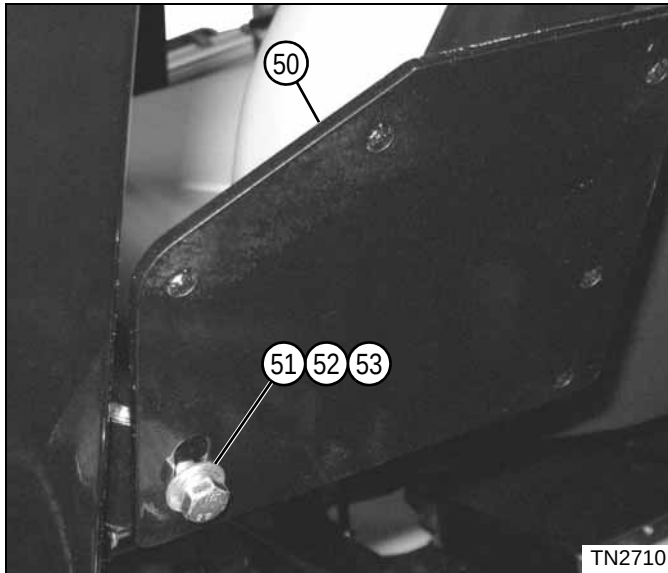


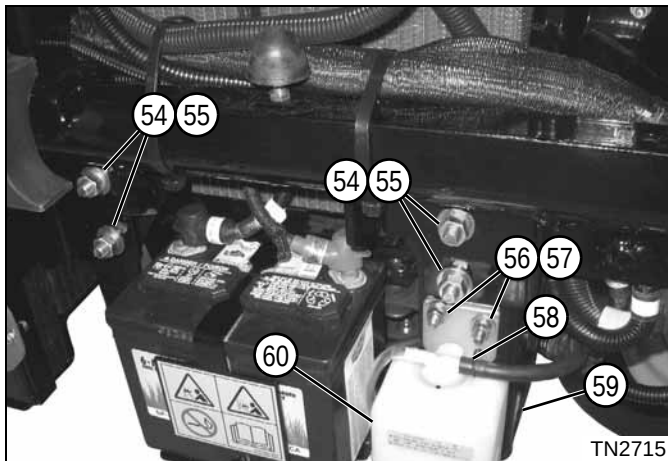
Figure 3-42

34. Remove two screws (40) and lock washers (39), and remove baffle (38).

35. Remove screw (47) and lock washer (48).
36. Remove screw (43), lock washer (44), and flat washer (45), and remove air deflector (46).
37. Remove three screws (41) and lock washers (42), and remove the screen holder (49).

**Figure 3-43**

38. Remove screw (51), lock washer (52), and flat washer (53).
39. Repeat step 38 for other side of machine, and remove crossmember (50).
40. Remove throttle actuator. (See "Throttle Actuator (Diesel Models)" on page 3-20.)
41. Remove fuel pump. (See "Fuel Pump (Diesel Models)" on page 3-23.)
42. Remove fuel shutoff solenoid. (See "Fuel Shutoff Solenoid (Diesel Models)" on page 3-23.)
43. Remove alternator. (See "Alternator (Diesel Models)" on page 3-16.)

**Figure 3-44**

44. Tag and disconnect hose (58) from radiator overflow bottle (60). Cap fitting and plug hose to prevent leakage and contamination.
45. Remove nuts (56), screws (57), and radiator overflow bottle (60).

**WARNING**

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

46. Using an engine hoist, support the genset (59), and remove nuts (54) and genset carrier mounting screws (55).
47. Remove the resistor bank assembly and jumper harness. (See "Resistor Bank Assembly and Jumper Harness" on page 4-165.)
48. Repeat step 46 for other side of machine.
49. Check for any connected wires and components, and carefully remove the genset from the machine.
50. Place the genset on a suitable stand or workbench that will support the full weight in a safe manner while preventing damage to the genset.

NOTE

If the engine is being replaced, some components must be removed and installed on the new engine. See the "Parts and Maintenance Manual" for additional information and illustrations.

GENSET AND BATTERY PACK

Installation Notes

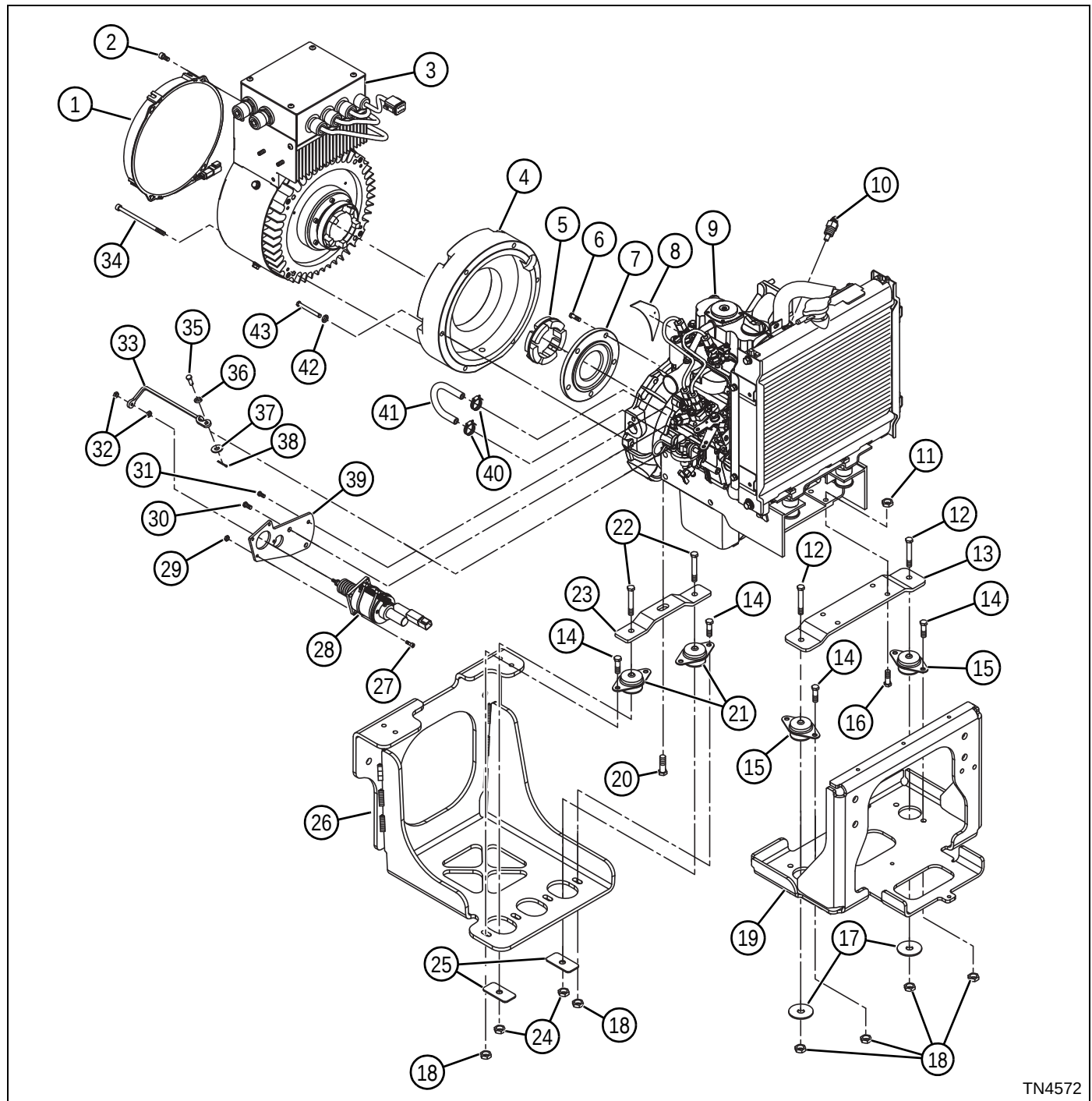
Required Materials
Loctite® 242 (Blue)

- *Inspect engine mounts and replace if necessary.*
- *Install the genset by reversing the order of removal.*
- *If necessary, remove components from the engine and install the components on the new engine.*
- *Apply Loctite® 242 (Blue) to eight carrier mounting screws (54) prior to installation.*
- *Tighten genset carrier mounting screws (55) to 65.0 lb-ft (88 N·m).*
- *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 connectors removed.*
- *Fill the radiator with a 50/50 mixture of ethylene glycol-base antifreeze and clean, fresh water.*
- *Replace the engine oil filter and fill engine with oil.*
- *Purge air from the fuel system. (See "Purging the Fuel System (Diesel Models)" on page 3-10.)*

3

Disassembly and Assembly

See Figure 3-45.



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|-----------------------------|-------------------------|-------------------------|-----------------------------|---------------------|
| 1 Fan | 10 Temperature Sender | 19 L.S. Engine Carrier | 28 Diesel Throttle Actuator | 37 Flat Washer |
| 2 Screw (4) | 11 Nut (4) | 20 Screw | 29 Nut (4) | 38 Cotter Pin |
| 3 Diesel Generator Assembly | 12 Screw (2) | 21 Isolation Mount (2) | 30 Screw (2) | 39 Actuator Bracket |
| 4 Generator Flange | 13 L.S. Engine Mount | 22 Screw (2) | 31 Screw | 40 Hose Clamp (2) |
| 5 Blind Coupling | 14 Screw (8) | 23 R.S. Engine Mount | 32 Nut (2) | 41 Hose |
| 6 Screw (5) | 15 Isolation Mount (2) | 24 Nut (2) | 33 Governor Linkage Arm | 42 Lock Washer (4) |
| 7 Coupling Shaft | 16 Screw | 25 Isolation Washer (2) | 34 Screw (4) | 43 Screw (4) |
| 8 Bell Housing Cover Plate | 17 Isolation Washer (2) | 26 R.S. Engine Carrier | 35 Clevis Pin | |
| 9 Engine | 18 Screw (10) | 27 Screw (4) | 36 Nylon Washer | |

Figure 3-45

GENSET AND BATTERY PACK

Assembly Notes

Required Materials

- Loctite® 242 (Blue)
- 3M™ VHB™ Double-Sided Tape

- Apply Loctite® 242 (Blue) to two screws (12) prior to assembly.
- Apply Loctite® 242 (Blue) to eight screws (14) prior to assembly.
- Apply Loctite® 242 (Blue) to four screws (16) prior to assembly.
- Apply Loctite® 242 (Blue) to screw (20) prior to assembly.
- Apply Loctite® 242 (Blue) to two screws (22) prior to assembly.
- Apply Loctite® 242 (Blue) to four throttle actuator mounting screws (27) prior to assembly.
- Apply Loctite® 242 (Blue) to two governor linkage arm nuts (32) prior to assembly.
- Tighten governor linkage arm nuts (32) to 40 lb-in. (4.5 N·m).
- Apply Loctite® 242 (Blue) to three throttle actuator mounting bracket screws (30 and 31) prior to assembly.
- Apply Loctite® 242 (Blue) to five coupling shaft mounting screws (6) prior to assembly.
- Tighten five coupling shaft mounting screws (6) to 13.0 lb-ft (17.6 N·m).
- Apply Loctite® 242 (Blue) to six generator flange mounting screws (43) prior to assembly.
- Tighten six generator flange mounting screws (43) to 13.0 lb-ft (17.6 N·m).
- Apply Loctite® 242 (Blue) to four generator assembly mounting screws (34) prior to assembly.
- Tighten four generator assembly mounting screws (34) to 13.0 lb-ft (17.6 N·m).
- Secure bell housing cover plate (8) to engine bell housing using 3M™ VHB™ double-sided tape—trim excess.

Engine Service (Diesel Models)

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.

Genset Fan (Diesel and Gasoline Models)

Removal and Installation

See Figure 3-46.

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

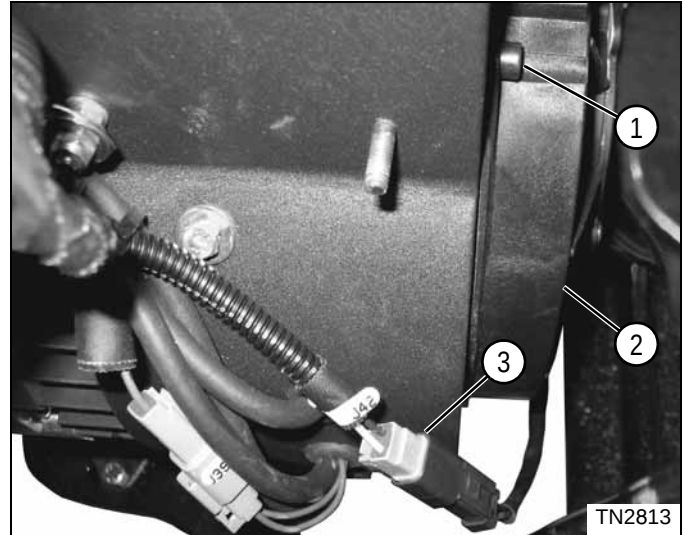


Figure 3-46

2. Tag and disconnect wire connector (3).
3. Remove four screws (1) and genset fan (2).

Installation Notes

- Install genset fan by reversing the order of removal.
- Apply dielectric grease (Jacobsen PN 365422) to wire connector (3).

Repair—Gasoline Models

Air Filter Assembly (Gasoline Models)

Removal and Installation

See Figure 3-47.



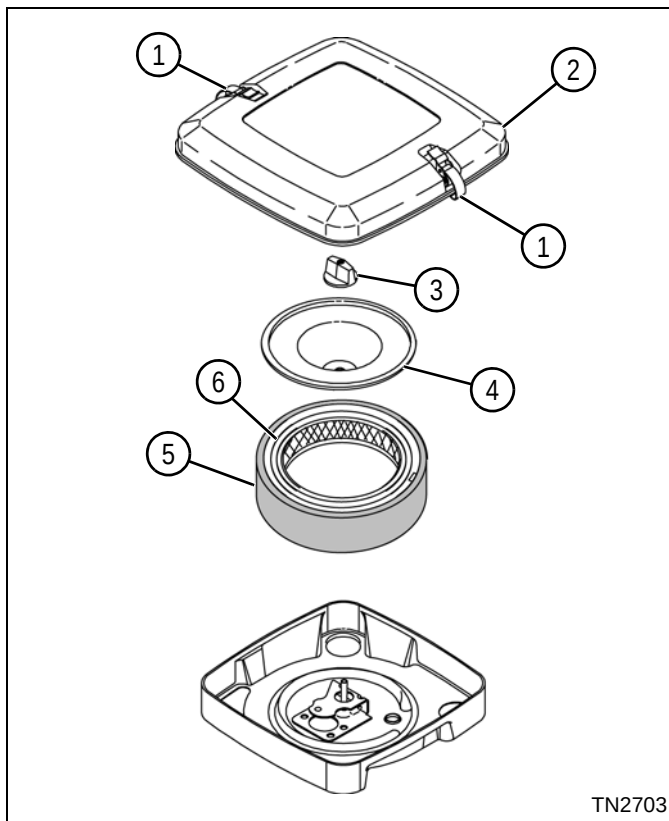
CAUTION

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.
3. Raise the hood.



TN2703

Figure 3-47

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

Installation Notes

- Wash air filter pre-cleaner in a liquid detergent and water. Squeeze dry in a clean cloth. 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 in the reverse order of removal.

Muffler (Gasoline Models)

Removal and Installation

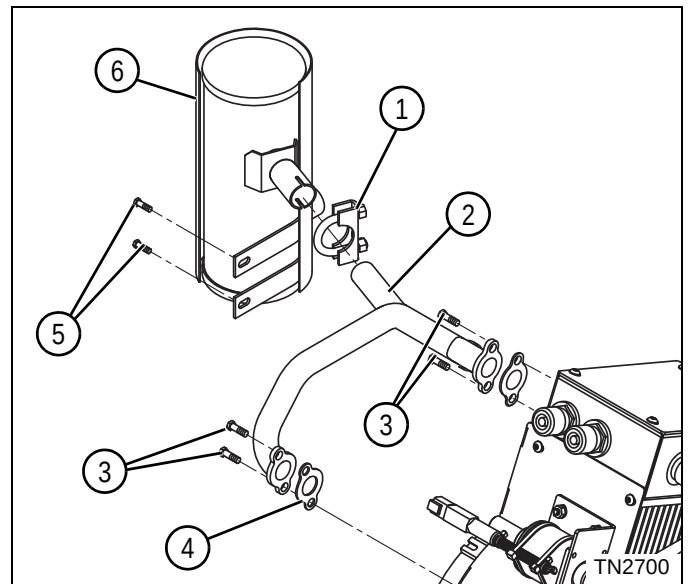
See Figure 3-48.



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. Raise the hood.



TN2700

Figure 3-48

4. Remove screws (5) from the muffler brackets.
5. Remove screws (3) and two exhaust gaskets (4) from the intake manifold, and remove muffler assembly.
6. Remove muffler clamp and hardware (1) from exhaust pipe (2).

GENSET AND BATTERY PACK

7. Separate the muffler (6) from the exhaust pipe (2).
8. Inspect the exhaust system for cracks, holes, and distortion. Replace exhaust gaskets and exhaust clamps.

Installation Notes

- Install muffler in the reverse order of removal.
- Install new gaskets during installation.

Throttle Actuator (Gasoline Models)

Removal and Installation

See Figures 3-49 and 3-50.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Allow the engine to cool completely.
3. Raise the hood.

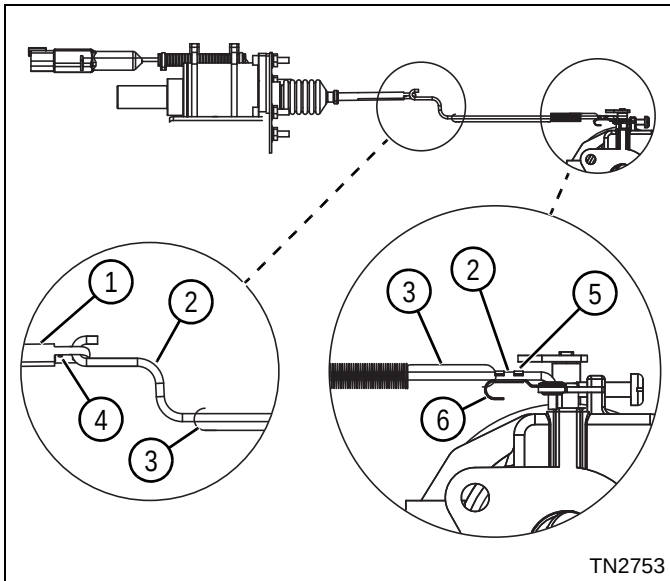


Figure 3-49

4. Rotate clip (5) on throttle plate and disengage engine throttle linkage (2).
5. Disengage engine throttle linkage (2) from throttle link (1).
6. Disengage spring (3) from hook (6) on throttle plate.
7. Remove spring (3) from small hole (4) in throttle link (1).
8. Remove engine throttle linkage (2).

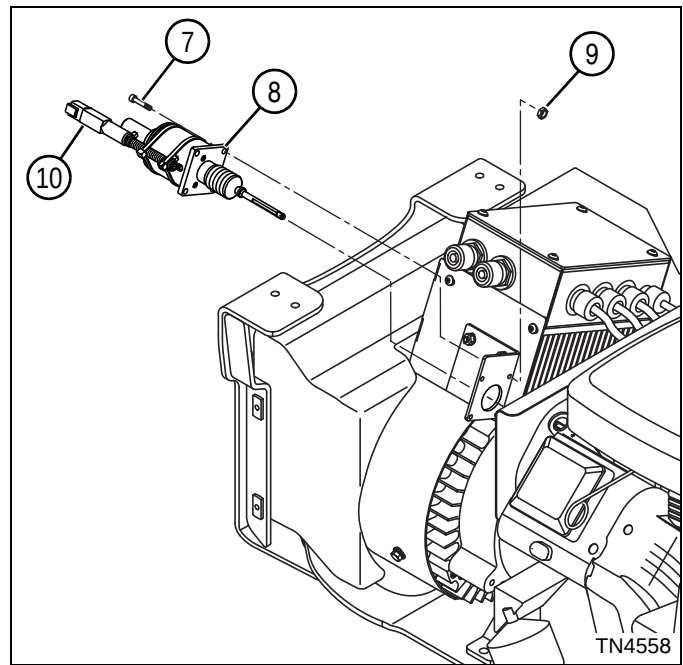


Figure 3-50

9. Tag and disconnect throttle actuator connector (10).
10. Remove four nuts (9) and screws (7).
11. Remove throttle actuator (8).

Installation Notes

Required Materials

Loctite® 242 (Blue)

- Install throttle actuator by reversing the order of removal.
- Apply Loctite® 242 (Blue) to four screws (7) prior to installation.
- Adjust throttle actuator linkage. (See "Throttle Actuator Adjustment (Gasoline Models)" on page 3-12.)

Fuel Tank (Gasoline Models)

Removal and Installation

See Figures 3-51 through 3-53.



CAUTION

Diesel fuel is highly flammable. Do not drain fuel indoors. Heaters can ignite fuel vapors. Use extreme caution when draining fuel.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Allow the engine to cool completely.
3. Raise the hood.

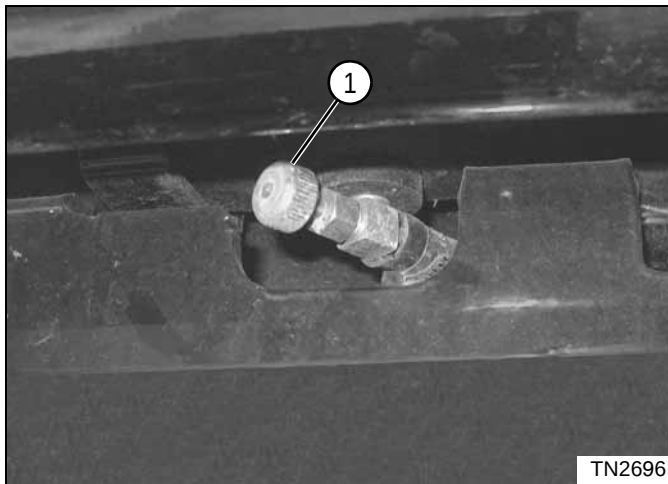


Figure 3-51

4. Close fuel shutoff valve (1). (Turn clockwise until valve bottoms lightly.)

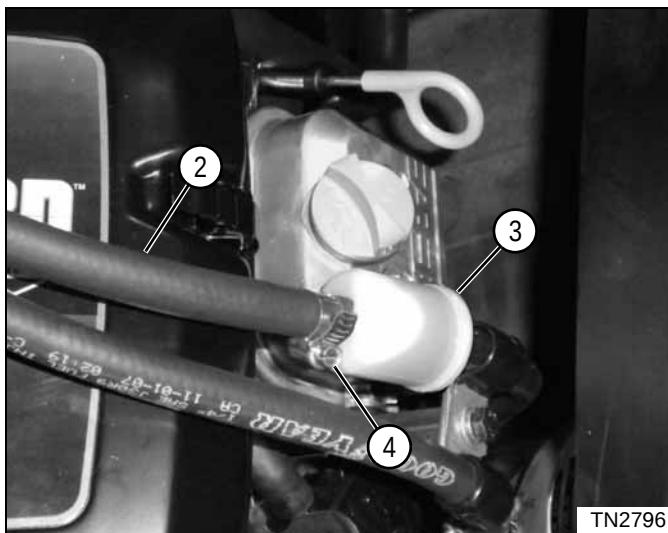


Figure 3-52

NOTE

Fuel tank capacity is 5.3 gal (20 L). Have suitable container(s) available that can hold up to 6 gal (23 L) of fuel.

5. Loosen hose clamp (4).
6. Tag and disconnect fuel hose (2) from fuel filter (3). Cap fuel filter fitting to prevent leakage and contamination.
7. Place fuel hose (2) into a suitable container at a level lower than the bottom of the fuel tank. Loosen the fuel cap to provide a vent for draining fuel.
8. Open the fuel shutoff valve (1) at the bottom of the fuel tank.
9. When fuel tank is completely empty, tighten fuel cap.
10. Close fuel shutoff valve (1). (Turn clockwise until valve bottoms lightly.)
11. Plug fuel hose (2) to prevent leakage and contamination.

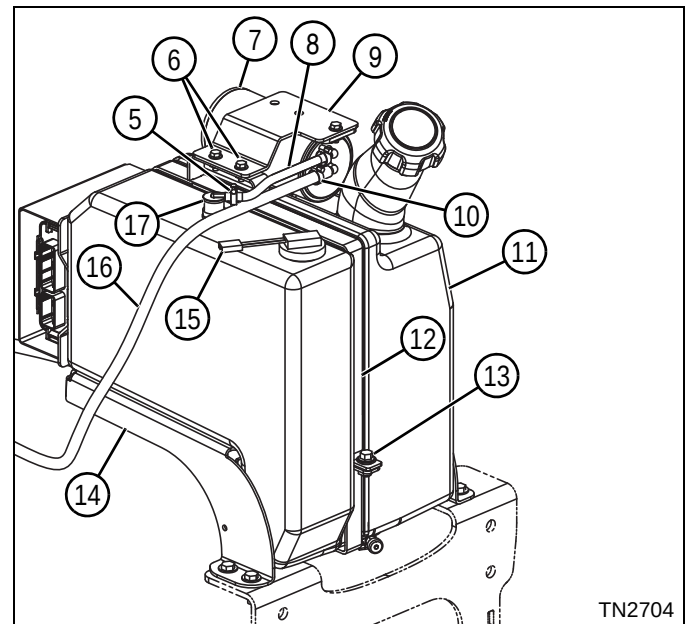


Figure 3-53

12. Tag and disconnect wire connector (15).
13. Loosen hose clamps (5 and 10).
14. Tag and disconnect tank-to-canister hose (8) from the rollover valve (17). Cap fitting and plug hose to prevent leakage and contamination.
15. Tag and disconnect canister-to-manifold hose (16) from the canister (7). Cap fitting and plug hose to prevent leakage and contamination.
16. Remove screws (6) and canister assembly (9) and secure out of the way.
17. Remove screw (13).

GENSET AND BATTERY PACK

18. Lift and disengage strap (12) from fuel tank bracket (14) and secure out of the way.
19. Remove fuel tank (11) from machine.
20. Tag and disconnect fuel hose (2) from bottom of fuel tank.

Installation Notes

- Install fuel tank by reversing the order of removal.
- Use only clean gasoline of the correct type (unleaded gasoline with minimum 85 octane rating) from a clean, sealed container.
- If fuel was contaminated, install a new fuel filter at this time. (See "Fuel Filter (Gasoline Models)" on page 3-34.)

3 Fuel Filter (Gasoline Models)

Removal and Installation

See Figure 3-54.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Allow the engine to cool completely.
3. Raise the hood.

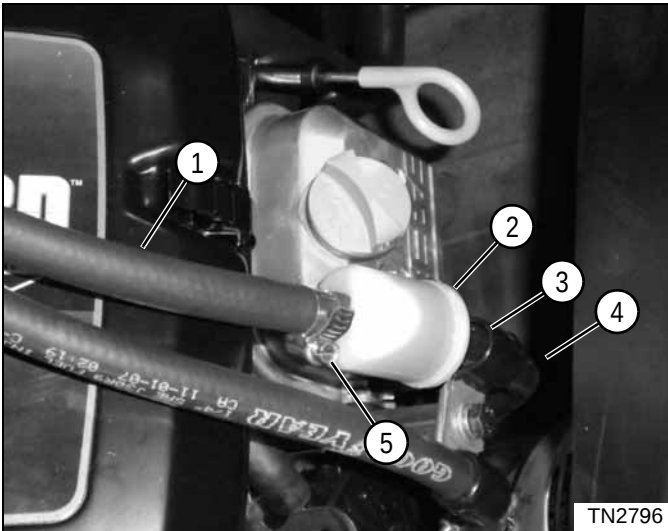


Figure 3-54

4. Loosen hose clamps (3 and 5).
5. Tag and disconnect fuel tank-to-fuel filter hose (1) from the fuel filter (2). Cap fitting and plug hose to prevent leakage and contamination.
6. 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.

Genset (Gasoline Models)

Removal and Installation

See Figures 3-55 through 3-63.



WARNING

Be sure that the key switch is off, all electrical accessories are turned off, and the 12-volt and 48-volt power connectors are disconnected before starting work on vehicle.

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. Swing center cutting unit from beneath the machine.
4. Raise the hood.
5. Remove cowlings. (See "Cowlings" on page 7-33.)
6. Remove starter battery. (See "Starter Battery" on page 3-43.)
7. Remove starter battery tray. (See "Battery Charger" on page 3-44.)
8. Remove muffler and exhaust assembly. (See "Muffler (Gasoline Models)" on page 3-31.)
9. Remove throttle actuator. (See "Throttle Actuator (Gasoline Models)" on page 3-32.)
10. Remove GCU. (See "GCU" on page 4-155.)
11. Remove fuel tank. (See "Fuel Tank (Gasoline Models)" on page 3-33.)
12. Disconnect choke cable from engine.

NOTE

Label all wires before disconnecting to ensure correct installation.

13. Tag and disconnect the wiring harness at the voltage regulator, ignition modules, fuel shutoff solenoid, starter motor, and starter solenoid.

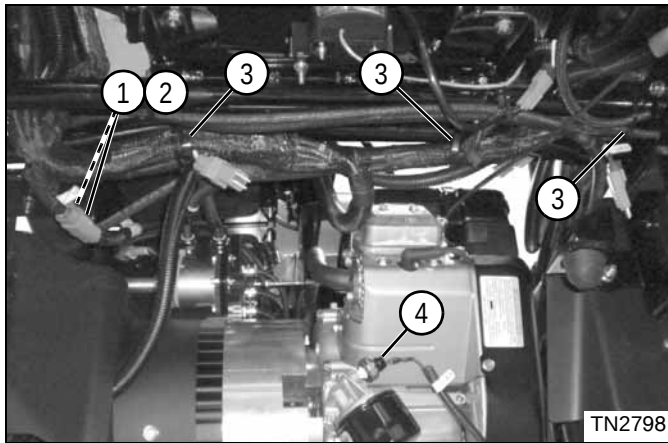


Figure 3-55

14. Tag and disconnect genset-to-main harness connectors (1 and 2).
15. Cut cable ties (3).
16. Tag and disconnect oil pressure switch connector (4).

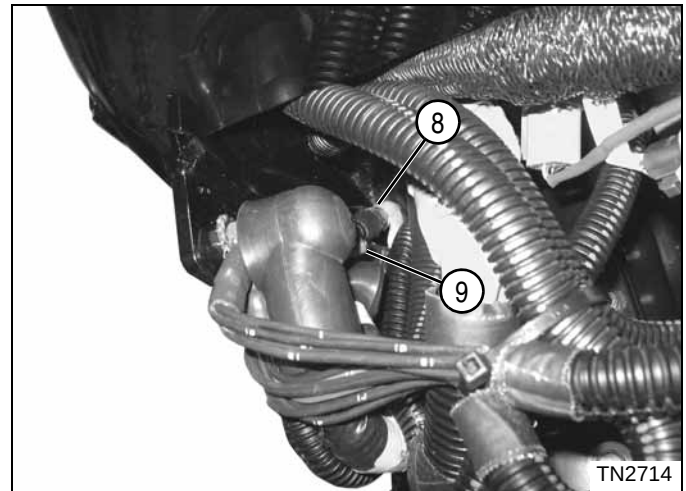


Figure 3-57

18. Tag and disconnect the generator negative (-) output cable (8) from ground stud (9). Carefully guide the cable away from the frame and position the cable to be unrestricted during genset removal.

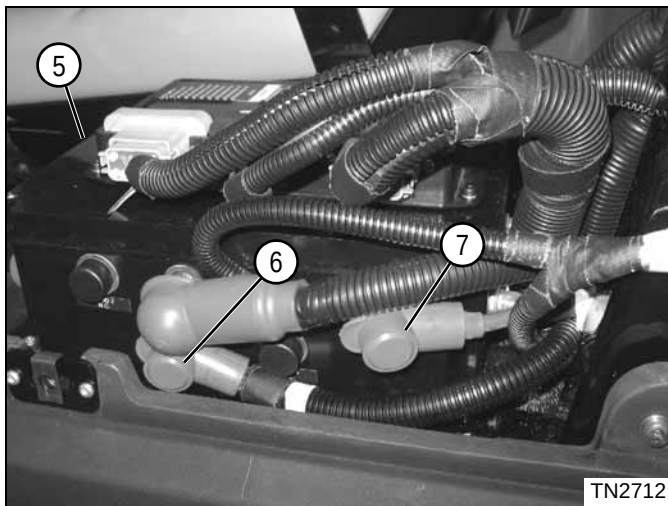


Figure 3-56

17. Tag and disconnect the generator positive (+) output cable (6) and 12 VOLT POS connector (7) from PDU (5). Carefully guide the cables away from the PDU and position the cables to be unrestricted during genset removal.

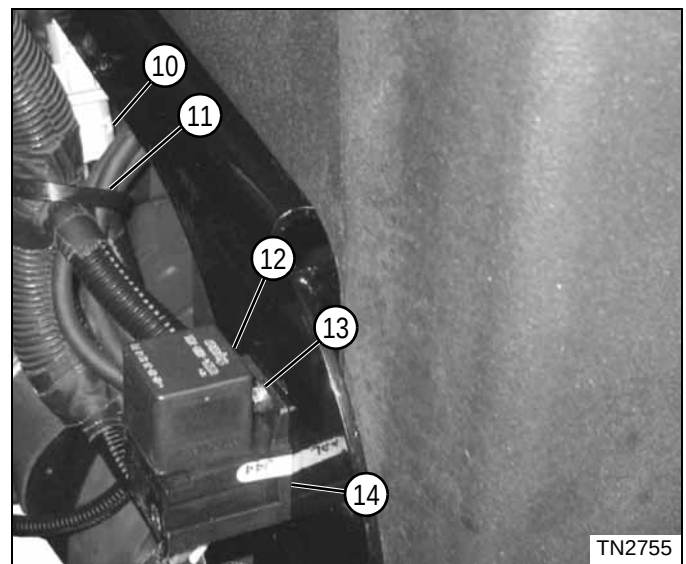


Figure 3-58

19. Tag and disconnect rectifier connector (10).
20. Cut cable tie (11).
21. Remove fan relay (12).
22. Remove screw (13) and fan relay base (14).

GENSET AND BATTERY PACK

3

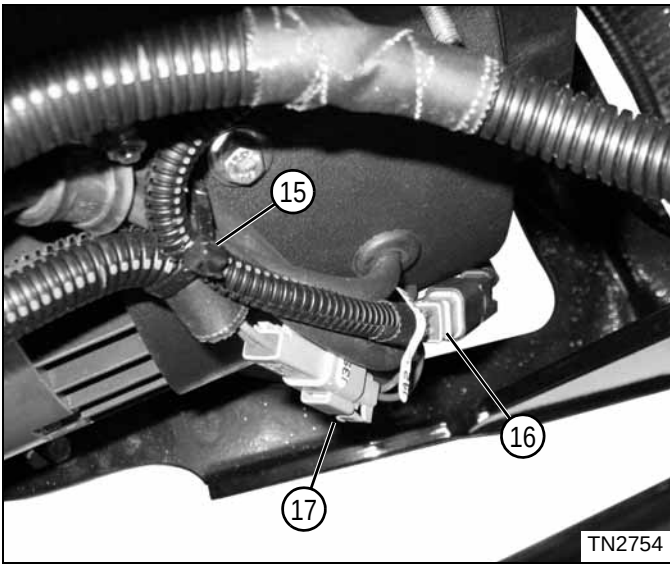


Figure 3-59

23. Tag and disconnect genset connector (17) and genset fan connector (16).
24. Cut cable tie (15).
25. Move the wiring harness away from the genset.

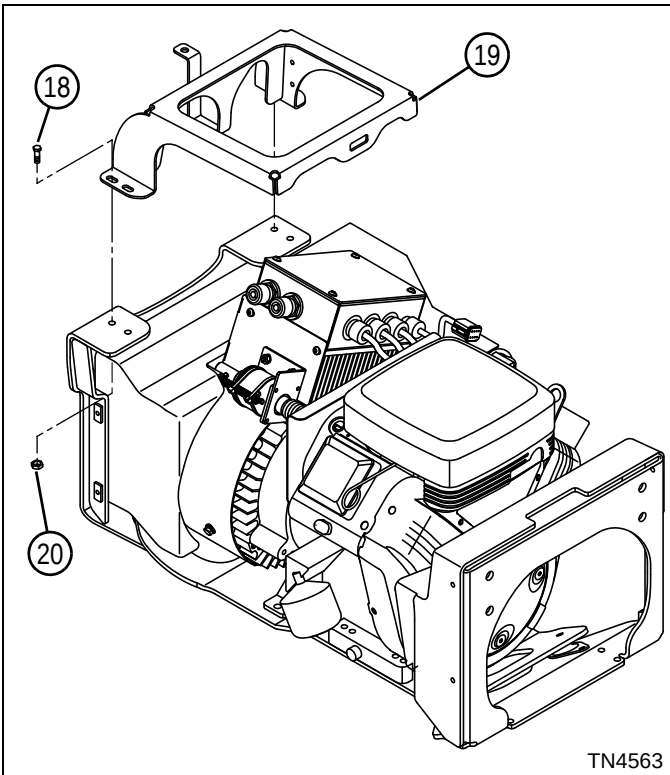


Figure 3-60

26. Remove four screws (18) and nuts (20), and remove fuel tank bracket (19).



Figure 3-61

27. Remove four screws (21) and flat washers (22), and remove rear controller cover (23).

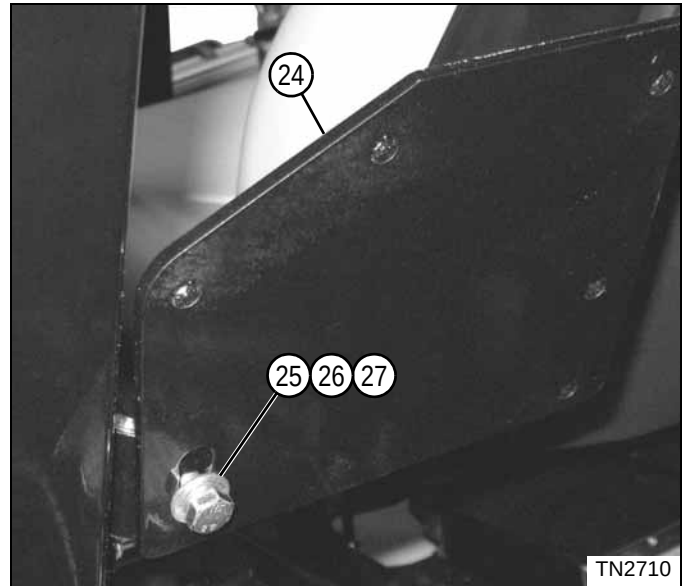


Figure 3-62

28. Remove screw (25), lock washer (26), and flat washer (27).
29. Repeat step 28 for other side of machine, and remove crossmember (24).

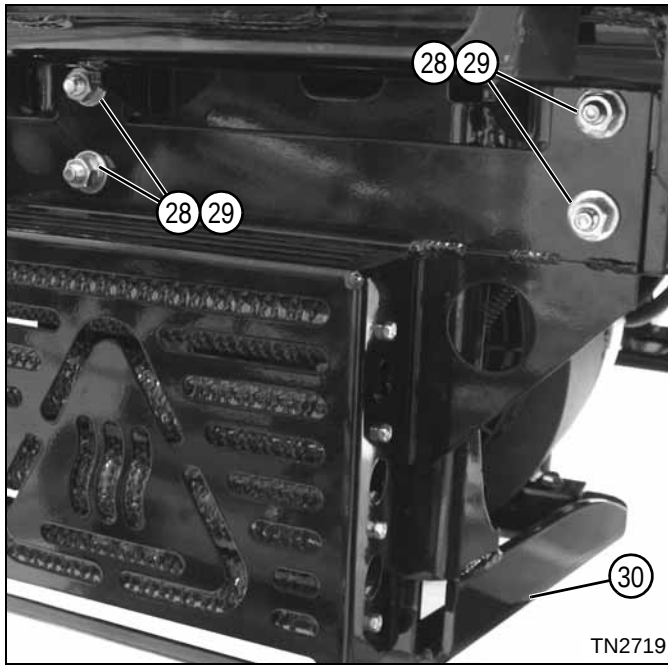


Figure 3-63

**WARNING**

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

30. Using an engine hoist, support the genset (30), and remove nuts (28) and screws (29).
31. Remove the resistor bank assembly and jumper harness. (See "Resistor Bank Assembly and Jumper Harness" on page 4-165.)
32. Repeat step 30 for other side of machine.
33. Check for any connected wires and components and carefully remove the genset from the machine.
34. Place the genset on a suitable stand or workbench that will support the full weight in a safe manner while preventing damage to the genset.

NOTE

If the engine is being replaced, some components must be removed and installed on the new engine. See the "Parts and Maintenance Manual" for additional information and illustrations.

Installation Notes**Required Materials**

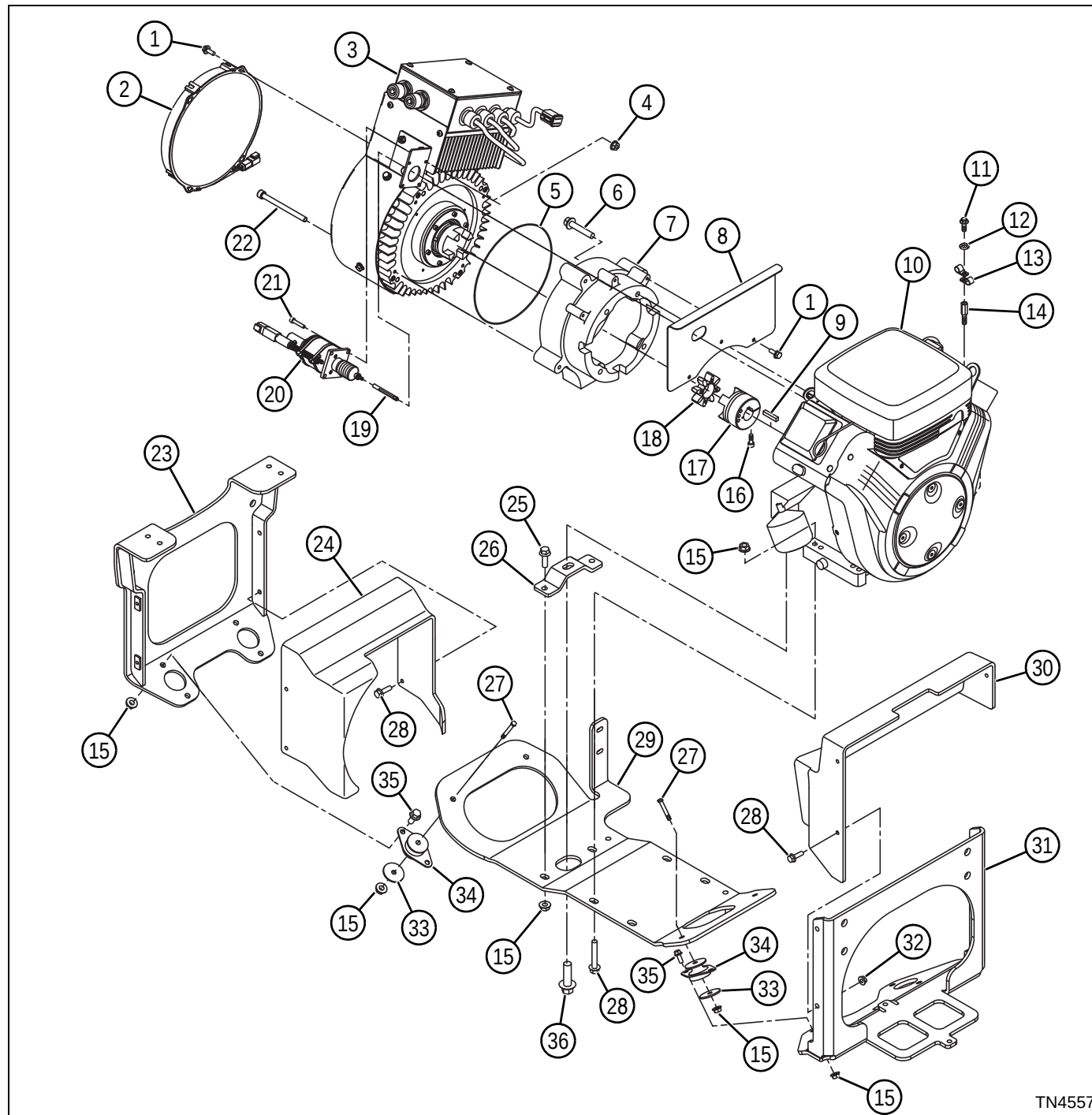
Loctite® 242 (Blue)

- *Inspect engine mounts and replace if necessary.*
- *Install the genset by reversing the order of removal.*
- *If necessary, remove components from the engine and install the components on the new engine.*
- *Apply Loctite® 242 (Blue) to eight genset carrier mounting screws (29) prior to installation.*
- *Tighten genset carrier mounting screws (29) to 65.0 lb-ft (88 N·m).*
- *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 connectors removed.*
- *Replace the engine oil filter and fill engine with oil.*

GENSET AND BATTERY PACK

Disassembly and Assembly

See Figure 3-64.



TN4557

1 Screw (7)	9 Key	17 Engine Coupler	25 Screw (2)	33 Snubber Washer (4)
2 Fan	10 Gasoline Engine	18 Engine Coupler Element	26 Gas Genset Support Bracket	34 Isolation Mount (4)
3 Gas Generator Assembly	11 Screw	19 Gas Throttle Link	27 Screw (8)	35 Screw (8)
4 Nut (4)	12 Flat Washer	20 Gas Throttle Actuator	28 Screw (9)	36 Screw
5 O-Ring	13 Hose Clamp (2)	21 Screw (4)	29 Engine Plate	
6 Screw (4)	14 Air Cleaner Stud	22 Screw (7)	30 Engine Intake Duct	
7 Mounting Flange	15 Nut (18)	23 Right Side Gas Cradle	31 Left Side Gas Cradle	
8 Heat Shield	16 Screw	24 Generator Intake Duct	32 Nut (4)	

Figure 3-64

Assembly Notes

Required Materials

Loctite® 242 (Blue)

- Apply Loctite® 242 (Blue) to screw (36) prior to assembly.
- Apply Loctite® 242 (Blue) to two screws (25) prior to assembly.
- Apply Loctite® 242 (Blue) to four mounting flange screws (6) prior to assembly.
- Tighten four mounting flange screws (6) to 32 lb-ft (43.4 N·m).
- Apply Loctite® 242 (Blue) to four generator assembly mounting screws (22) prior to assembly.
- Tighten four generator assembly mounting screws (22) to 20 lb-ft (27.1 N·m).
- Apply Loctite® 242 (Blue) to eight isolation mount screws (35) prior to assembly.
- Apply Loctite® 242 (Blue) to four engine mounting screws (28) prior to assembly.
- Tighten four engine mounting screws (28) to 19 lb-ft (25.5 N·m).
- Apply Loctite® 242 (Blue) to four engine plate screws (27) prior to assembly.
- Install key (9) flush with face of crankshaft.
- Install engine coupler (17) flush with face of crankshaft.
- Apply Loctite® 242 (Blue) to engine coupling screw (16) prior to assembly.
- Tighten engine coupler screw (16) to 32 lb-ft (43.4 N·m).

Engine Service (Gasoline Models)

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.

Repair—Batteries

Battery Pack, Battery Pack Tray, and Battery Filling System

Removal and Installation

See Figures 3-65 through 3-69.



WARNING

Be sure that the key switch is off, all electrical accessories are turned off, and the 48-volt power connector is disconnected before starting work on machine.



WARNING

- Battery posts, terminals, and related accessories contain lead and lead compounds. Wash your hands after handling.
- Always wear eye protection when servicing battery.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Raise the hood.

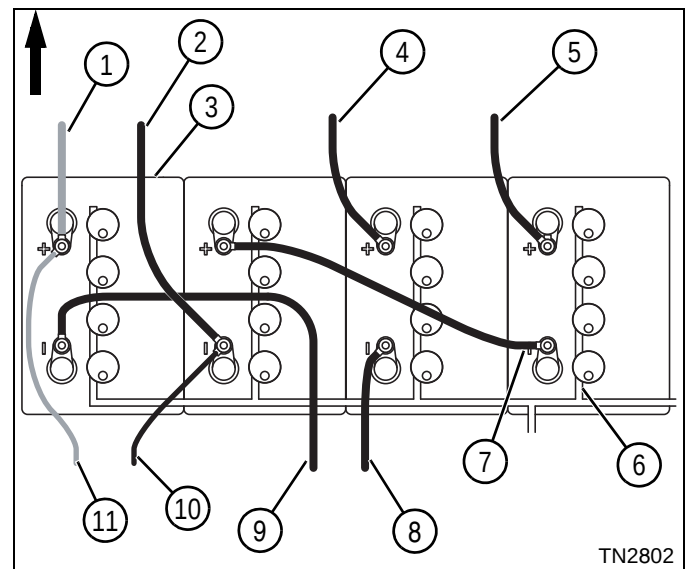


Figure 3-65

NOTE

Direction of arrow indicates front of machine.

3. Disconnect four filling hoses (6) from the four upper 8-volt batteries (3).

GENSET AND BATTERY PACK

NOTE

Label all wires before disconnecting to ensure correct installation.



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.

4. Disconnect the negative (–) 48-volt connector cable (2) and negative (–) battery charger cable (10).
5. Disconnect the positive (+) 48-volt connector cable (1) and positive (+) battery charger cable (11).
6. Disconnect battery cables (7, 8, and 9) from each upper battery negative (–) battery post.
7. Disconnect battery cables (4, 5, and 7) from each upper battery positive (+) battery post.

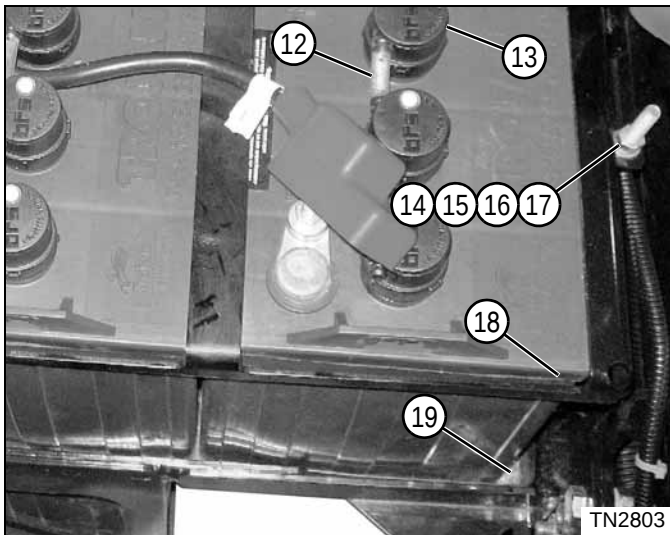


Figure 3-66

8. Remove four nuts (14), lock washers (15), bushings (16), and J-bolts (17).
9. Remove battery hold-down carrier (18).
10. Remove the four upper batteries.
11. Remove twelve hoses (12) and sixteen battery filling system plugs (13) from the upper batteries. Cap batteries to prevent leakage and contamination.
12. Remove upper tray mat (19).

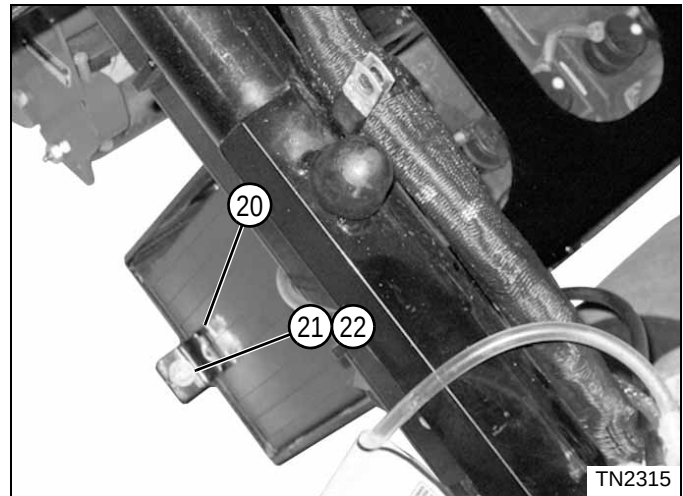


Figure 3-67

13. Remove screw (21), nut (22), and battery bracket (20).

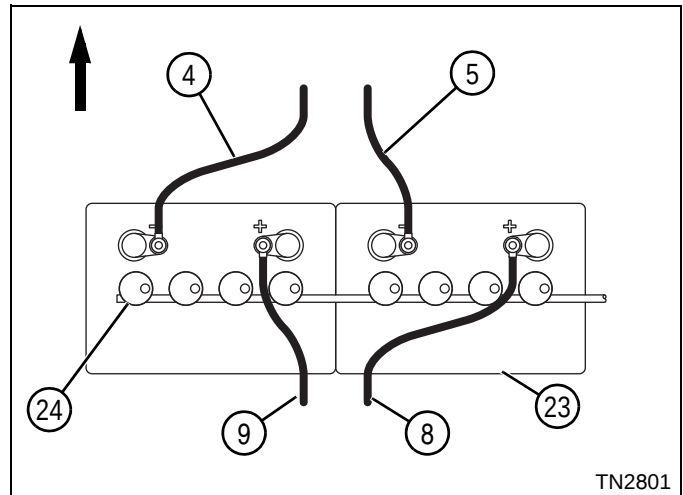


Figure 3-68

NOTE

Direction of arrow indicates front of machine.

14. Disconnect battery cables (4 and 5) from the two 8-volt lower batteries (23).
15. Remove boots from battery cables (4 and 5) and route cables through grommet at front of battery tray.
16. Disconnect battery cables (8 and 9) from lower batteries.
17. Remove boots from battery cables (8 and 9) and route cables through grommet at rear of battery tray.
18. Remove the two lower batteries.
19. Remove battery filling system (24) from lower batteries. Cap batteries to prevent leakage and contamination.

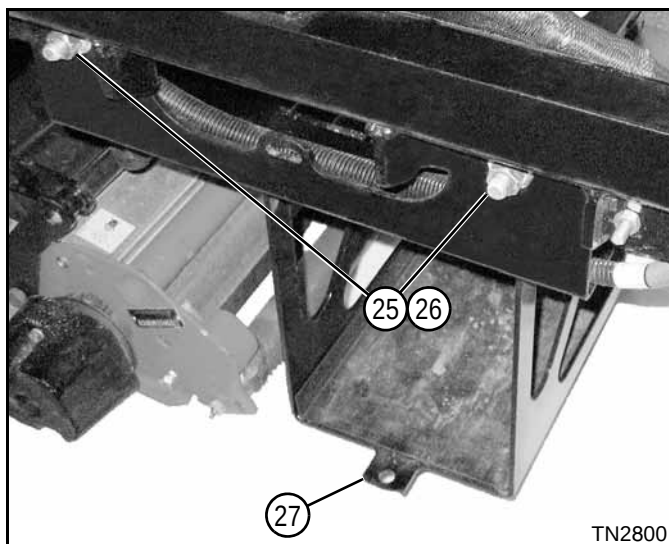


Figure 3-69

20. Support battery pack tray (27) with a suitable lifting device.
21. Remove two nuts (25) and screws (26).
22. Repeat step 21 for other side of machine.
23. Remove battery pack tray (27).

NOTICE

**Never place used batteries in the garbage.
Dispose of used batteries in accordance with all
applicable regulations.**

Installation Note

Install battery pack, battery pack tray, and battery filling system by reversing the order of removal.

GENSET AND BATTERY PACK

Buffer Battery Pack and Buffer Battery Pack Tray

Removal and Installation

See Figures 3-70 and 3-71.



WARNING

Be sure that the key switch is off, all electrical accessories are turned off, and the 12-volt and 48-volt power connectors are disconnected before starting work on vehicle.



WARNING

- Battery posts, terminals, and related accessories contain lead and lead compounds. Wash your hands after handling.
- Always wear eye protection when servicing battery.

1. Park the mower safely. (See "Park Mower Safely" on page 1-6.)
2. Swing the center cutting unit out from the machine and lock into position.

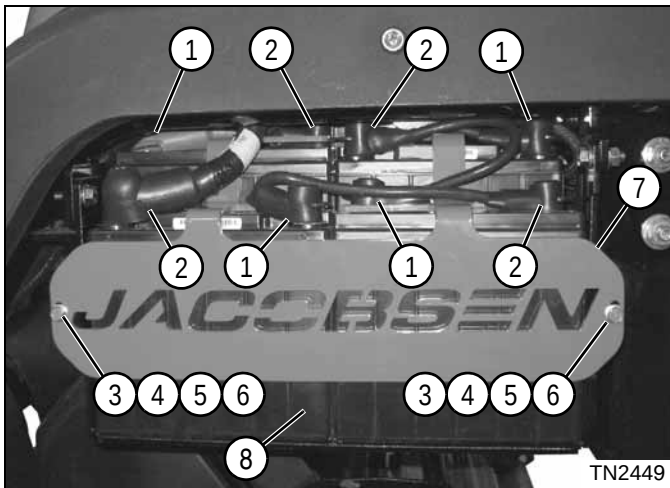


Figure 3-70

NOTE

Label all wires before disconnecting to ensure correct installation.



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.

3. Disconnect the negative (–) battery cable (2) from each battery.
4. Disconnect the positive (+) battery cable (1) from each battery.
5. Remove screws (3), washers (4), lock washers (5), nuts (6), and buffer battery pack cover (7).
6. Remove four 12-volt buffer batteries (8).

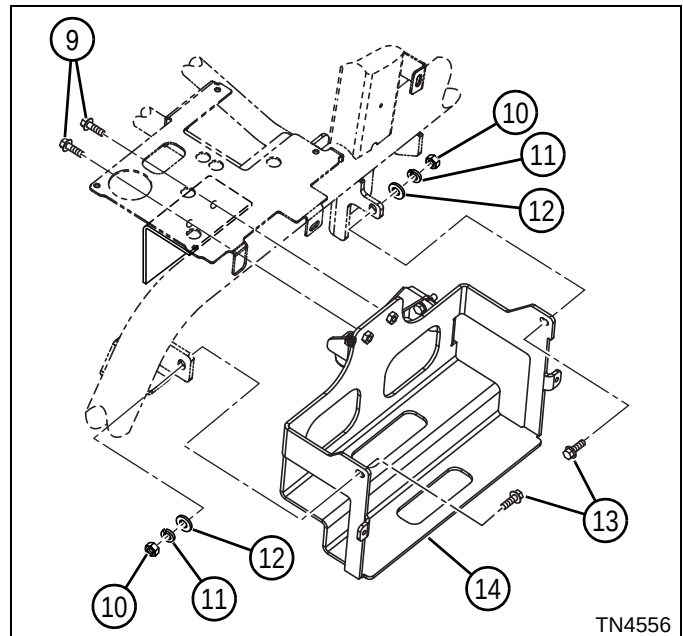


Figure 3-71

7. Support battery pack tray (14) with a suitable lifting device.
8. Remove two screws (9).
9. Remove two screws (13), flat washers (12), lock washers (11), and nuts (110).
10. Remove buffer battery pack tray (14).

Installation Notes

- Install buffer battery pack and buffer battery pack tray by reversing the order of removal.
- Route battery cables between the buffer battery pack and the machine, avoiding pinch points.

Starter Battery

Removal and Installation

See Figure 3-72.

NOTE

Diesel model is shown; gasoline model is similar.



WARNING

Be sure that the key switch is off, all electrical accessories are turned off, and the 12-volt and 48-volt power connectors are disconnected before starting work on vehicle.



WARNING

- **Battery posts, terminals, and related accessories contain lead and lead compounds. Wash your hands after handling.**
- **Always wear eye protection when servicing battery.**

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

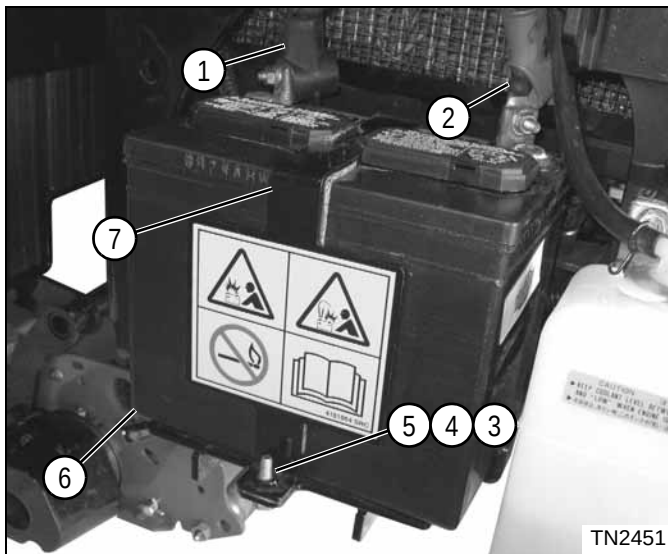


Figure 3-72

NOTE

Label all wires before disconnecting to ensure correct installation.



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.

2. Disconnect the negative (–) battery cable (1).
3. Disconnect the positive (+) battery cable (2).
4. Remove two screws (3), lock washers (4), flat washers (5), and starter battery cover (7).
5. Remove 12V starter battery (6).

Installation Notes

- *Install starter battery by reversing the order of removal.*
- *Route battery cables between the starter battery and the machine, avoiding pinch points.*

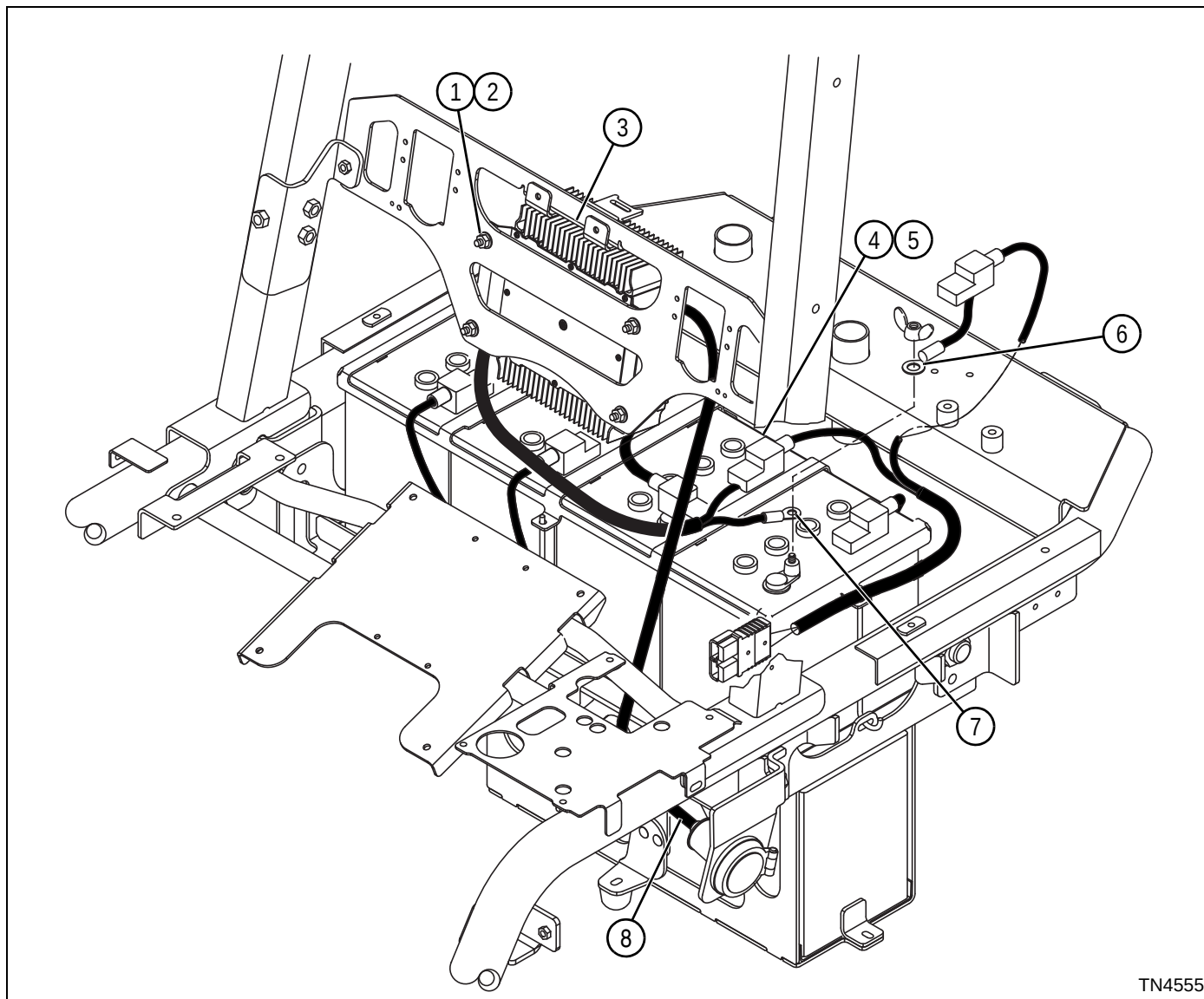
3

Battery Charger

Removal and Installation

See Figure 3-73.

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



TN4555

Figure 3-73

NOTE

Label all wires before disconnecting to ensure correct installation.



WARNING

Be sure that the key switch is off, all electrical accessories are turned off, and the 48-volt power connector is disconnected before starting work on vehicle.



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.

3. Remove the negative (–) 48-volt connector cable (4) and battery charger negative (–) cable (5).
4. Remove the positive (+) 48-volt connector cable (6) and battery charger positive (+) cable (7).
5. Disconnect charger connector cable (8).
6. Support battery charger (3) and remove four screws (1) and nuts (2).
7. Remove battery charger (3).

Installation Notes

- *Install battery charger by reversing the order of removal.*
- *Route battery charger cables between the battery pack and the machine, avoiding pinch points.*

