# Hustler® Super S®
# General Service Manual


200 South Ridge Road
Hesston, Kansas
67062

## ⚠ WARNING

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

### NOTICE OF REQUIREMENT OF SPARK ARRESTER MUFFLER

This equipment may create sparks that can start fires around dry vegetation. California Public Resources Code Section 4442.6 provides that it is unlawful to use or operate an internal combustion engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester maintained in effective working order. A spark arrester is a device constructed of nonflammable materials specifically for the purpose of removing and retaining carbon and other flammable particles over 0.0232 of an inch in size from the exhaust flow of an internal combustion engine that uses hydrocarbon fuels or which is qualified and rated by the United States Forest Service. Other states or federal areas may have similar laws. The Operator Should Contact Local Fire Agencies For Laws or Regulations Relating to Fire Prevention Requirements. THIS EQUIPMENT DOES NOT HAVE A SPARK ARRESTER AND YOU SHOULD CONTACT YOUR AUTHORIZED DEALER FOR THE PURCHASE OF A SPARK ARRESTER.

**Inspect spark arrester daily; replace every 500 hours or as needed.**

**The Engine Owner's Manual provides information regarding the U.S. Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance and warranty.**

**Keep Engine Owner's Manual with your unit. Should the Engine Owner's Manual become damaged or illegible, replace immediately. Replacements may be ordered per the information found in the Product Information section of the owner's manual.**

**Federal law and California State law prohibit the following acts or the causing thereof:**

1. **The removal or rendering inoperative by any person other than for purposes of maintenance, repair, replacement, of any device or element of design incorporated into any equipment for the purposes of emissions control prior to or after its sales or delivery to the ultimate purchaser or while it is in use, or**
2. **The use of the equipment after such device or element of design has been removed or rendered inoperative by any person.**

# Table of Contents

# GENERAL INFORMATION

## Hustler® Service Program

This manual is part of a service package for the Hustler® Super S® mowers. Use of this manual in conjunction with other Hustler® mower and component manuals will provide the information necessary to service and maintain the Hustler® Super S® mower.

This General Service Manual is a service guide for use by Service Technicians. It provides the necessary information needed to perform normal maintenance requirements on these units.

The Parts Manual provides a complete parts listing for the unit. Use this manual when ordering parts.

The Operator's Manual provides fundamental operational information and operational safety that is needed when operating the mower.

The component manuals are furnished by the various manufacturers to be used for the troubleshooting and servicing of their components.

## Maintenance Introduction

Regular maintenance is the best prevention for downtime or premature failure. The following pages contain suggested maintenance information and schedules which the operator/mechanic should follow on a routine basis.

Remain alert for unusual noises, they could be signaling a problem. Visually inspect the machine for any abnormal wear or damage. A good time to detect potential problems is while performing scheduled maintenance service. Correcting the problem as quickly as possible is the best insurance.

Clear away heavy build-up of grease, oil and dirt, especially in the engine compartment and under the seat platform areas; minute dust particles are abrasive to close-tolerance engine and hydraulic assemblies.

**Daily inspect** mower for grass clippings and wire and string tangles. The underside of the mower deck will collect a build-up of grass clippings and dirt, especially when grass is wet or has high moisture content. This build-up will harden, restricting blade and air movement and will probably show a lesser quality of cut. Therefore it should be removed routinely.

To do this it will be necessary to raise and block the deck, using jack stands or blocks, in the full up position and scrape the build-up from underneath.

Some repairs require the assistance of a trained service mechanic and should not be attempted by unskilled personnel. Consult your Hustler® Turf Equipment service center when assistance is needed.

Information included in this manual was current at the time of printing, but subsequent production changes may cause your machine to vary slightly in detail. Hustler® Turf Equipment reserves the right to redesign and change the machine as deemed necessary, without notification. If a change has been made to your machine which is not reflected in this service manual contact the Customer Service Department at Hustler® Turf Equipment for additional information.

## Warranty

Warranty repair must be performed by a Hustler® Turf Equipment Authorized Dealer before warranty credit can be allowed.

# SAFETY

This safety alert symbol is used to call attention to a message intended to provide a reasonable degree of PERSONAL SAFETY for operators and other persons during the normal operation and servicing of this equipment.

**DANGER** – denotes immediate hazards which **WILL** result in severe personal injury or death.

**WARNING** – denotes a hazard or unsafe practice which **COULD** result in severe personal injury or death.

## Safe Servicing Practices

**Refer to the *Safety Precautions* section of this manual for more service safety information.**

### Understand correct service

- ▲ Be sure you understand a service procedure before you work on the machine.
- ▲ Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.
- ▲ If it is necessary to make checks with the engine running, always use two people—with the operator at the controls, able to see the person doing the checking.

## Pre-Operation Precautions

### Fuel Handling

- ▲ **To avoid personal injury or property damage, use extreme care when handling gasoline. Gasoline is extremely flammable and the vapors are explosive.**
  - A fire or explosion from gasoline can burn you and others and can damage property.
- ▲ Observe the usual gasoline handling precautions:
  - Do not smoke while refueling. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
  - **Do not remove fuel cap or fill tank with engine running or while engine is hot.** Clean up any gasoline spills.
  - If gasoline is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until gasoline vapors have dissipated.
  - Keep gasoline away from open flame or spark and store machine away from open flame or spark or pilot light such as on a water heater or appliances.
  - Refuel outdoors. Never refuel or drain the gasoline from the machine indoors, or while in an enclosed trailer or other enclosed area.
  - Never attempt to start the engine when there is a strong odor of gasoline fumes present. Locate and correct the cause.
  - Store gasoline in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of gasoline.
  - Do not fill fuel containers inside a vehicle or on a truck or trailer bed with interior carpets or plastic truck bed liners. Always place gasoline containers on the ground away from your vehicle before filling.
  - When practical, remove the machine from the truck or trailer and refuel the machine with its wheels on the ground. If this is not possible, then refuel such machine on the truck or trailer using a portable container and not a fuel dispenser nozzle. If a fuel dispenser nozzle must be used, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
  - Never use gasoline for cleaning parts.
  - Read and observe safety precautions elsewhere in this manual.
- ▲ Gasoline is harmful or fatal if swallowed.
- ▲ Avoid prolonged breathing of vapors.
  - Long-term exposure to vapors can cause serious injury and illness.
- ▲ Keep gasoline away from eyes and skin.
  - Keep face away from nozzle and fuel tank or fuel container opening.
  - If gasoline is spilled on clothing, change clothing immediately.

### Understand Machine Operation

- ▲ Only qualified and trained personnel should operate the equipment.
- ▲ Carefully read the operator's manual and all manuals furnished with the attachments. Learn the location and purpose of all controls, instruments, indicators and labels.

### Wear Protective Clothing

- ▲ Do not operate or service the equipment while wearing sandals, tennis shoes, sneakers, shorts or any type of loose fitting clothing. Long hair, loose clothing or jewelry may get tangled in moving parts. Always wear long pants, safety glasses, ear protection and safety shoes when operating or servicing this machine.
- ▲ Always wear adequate eye protection when servicing the hydraulic system and battery, or when grinding mower blades and removing accumulated debris.
- ▲ Prolonged exposure to loud noise can cause impairment or loss of hearing.
  - Always wear adequate ear protection, such as earplugs, when operating this equipment as prolonged exposure to uncomfortable or loud noises can cause impairment or loss of hearing.
  - Do not wear radios or music headphones while operating the machinery. Safe operation requires your full attention.

## Operation Precautions

### Avoid Fire Hazards

- ▲ **Clean flammable material from machine. Prevent fires by keeping engine compartment, top of deck, exhaust area, battery, hydraulic lines, fuel line, fuel tank and operator's station clean of accumulated trash, grass clippings, and other debris. Always clean up spilled fuel and oil.**

### Start Engine Safely

- ▲ Avoid possible injury or death from machine runaway.
- ▲ Do not start engine by shorting across starter terminals.
- ▲ Before you start the engine:
  - Stand on the operator's platform.
  - Move the park brake lever to the engaged park brake position.
  - Move the steering control levers to the neutral position.
  - Place the deck clutch switch in the down (deck blades disengaged) position.

## Operate Machine Safely

- ▲ Refer to the unit's operator's manual for complete safety information on safe machine operation.
- ▲ Always maintain a safe distance from people and pets when mowing.
- ▲ Always be aware of what is behind the machine before backing up.
- ▲ Never leave machine unattended with ignition key in switch, especially with children present.
- ▲ Follow daily and weekly checklists, making sure hoses are tightly secured and bolts are tightened.
- ▲ Always keep engine and machine clean, removing accumulated dirt, trash and other material from machine.
- ▲ Never put hands or feet under any part of the machine while it is running.
- ▲ Never attempt to start engine when there is a strong odor of gasoline fumes present. Locate and correct cause.
- ▲ Keep all safety shields and covers in place, except for servicing.
- ▲ Do not touch hot parts of the machine.

## General Maintenance Precautions

- ▲ **Repairs or maintenance requiring engine power should be performed by trained maintenance personnel only.**
- ▲ Never run the engine in an enclosed area unless exhaust is vented to the outside. Exhaust gases contain carbon monoxide which is an odorless and deadly poison.
- ▲ Unless specifically required, **DO NOT** have the engine running when servicing or making adjustments to the mower.
  - Park the mower on level ground.
  - Disengage the deck clutch.
  - Place the steering control levers in the neutral position.
  - Place the park brake lever in the engaged park brake position.
  - Lower the deck.
  - Stop the engine.
  - Remove the ignition key.
  - Wait for all movement to stop before adjusting, cleaning or repairing.
  - Disconnect the negative battery cable.
  - Repairs or maintenance requiring engine power should be performed by trained maintenance personnel only.
  - To prevent carbon monoxide poisoning, operate the engine in a well ventilated area only.
  - Read and observe all safety warnings in this manual.
- ▲ Before working on or under the deck, make certain the engine cannot be accidentally started.

- **Always** keep belt covers on mower deck for safety as well as for cleanliness except when changing or checking the belt.
- Use a stick or similar instrument to clean under the mower making sure that no part of the body, especially arms and hands are under mower.
- Keep your machine clean and remove any deposits of trash and clippings, which can cause engine fires and hydraulic overheating as well as excessive belt wear. Clean up oil or fuel spillage. Allow machine to cool before storing.
- Always wear adequate eye protection when:
  - servicing the hydraulic system.
  - servicing the battery.
  - grinding mower blades and removing accumulated debris.
- Never attempt to make any adjustments or repairs to the mower drive system, mower deck or any attachment while the engine is running or deck clutch is engaged.
- Exercise caution when releasing spring tension from any of the belt idlers or when working with any of the deck lift components.
- Never work under the machine or attachment unless it is safely supported with jack stands.
  - Make certain machine is secure when it is raised and placed on the jack stands.
  - The jack stands should not allow the machine to move when the engine is running and the drive wheels are rotating.
  - **Use only certified jack stands.** Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907 kg) to block the unit up.
  - Use in pairs only.
  - Follow the instructions supplied with the jack stands.
- Do not touch hot parts of machine.Keep nuts and bolts tight, especially the blade attachment bolts. Keep equipment in good working condition.
- Never tamper with safety devices. Check their proper operation regularly.
- Exercise caution when working under the deck as the mower blades are extremely sharp. Wrap the blade(s) or wear gloves and use extra caution when servicing them.
- Use original Hustler® replacement parts or parts that are equivalent in overall performance.
  - The mower may not comply with the appropriate safety standards if aftermarket parts, accessories, or attachments are used.

## Maintenance Precautions

### Avoid Fire Hazards

- Be prepared if an accident or fire should occur. Know where the first aid kit and the fire extinguishers are located and how to use them.
- Provide adequate ventilation when charging batteries.
- Do not smoke near battery.
- Never check fuel level with an open flame.
- Never use an open flame to look for leaks anywhere on the equipment.
- Never use an open flame as light anywhere on or around the equipment.
- When preparing engine for storage, remember that fuel stabilizer is volatile and therefore dangerous. Seal and tape openings after adding the inhibitor. Keep container tightly closed when not in use.
- Inspect electrical wiring for worn or frayed insulation. Install new wiring if wires are damaged.

### Prepare for Emergencies

- Be prepared if a fire starts.
- Keep a first aid kit and fire extinguishers available.
- Keep emergency numbers for doctor, ambulance service, hospital, and fire department near the telephone.

### Prevent Battery Explosions

- 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 hands after handling.
- Charge batteries in a well-ventilated open area, away from sparks and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.
- Avoid skin and clothing contact with battery acid.
  - Always wear eye protection when checking the battery. Acid can cause serious injury to skin and eyes. If contact occurs, flush area with clean water and call a physician immediately. Acid will also damage clothing.
  - Do not drink the battery electrolyte.
  - Do not allow open flame near the battery when charging.
  - Hydrogen gas forms inside the battery. This gas is both toxic and flammable and may cause an explosion if exposed to flame. Always **disconnect** the negative (black) battery cable(s) before disconnecting the positive (red) cable(s). Always **connect** the positive (red) battery cable(s) before connecting the negative (black) cable(s).

- Do not overfill the battery.
- Electrolyte may overflow and damage paint, wiring or structure. When cleaning the battery, use soap and water. Be careful not to get soap and water into the battery. Clean the battery terminals with a solution of four parts water and one part baking soda when they become corroded.

▲ Shorts caused by battery terminals or metal tools touching metal mower components can cause sparks. Sparks can cause a battery gas explosion which will result in personal injury.

- Prevent the battery terminals from touching any metal mower parts when removing or installing the battery.
- Do not allow metal tools to short between the battery terminals and metal mower parts.

▲ Incorrect battery cable routing could cause damage to the mower and battery cables. This can cause sparks which can cause a battery gas explosion which will result in personal injury.

- Always **disconnect** the negative (black) battery cable(s) before disconnecting the positive (red) cable(s).
- Always **connect** the positive (red) battery cable(s) before connecting the negative (black) cable(s).

### Avoid Acid Burns

▲ Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing and cause blindness if splashed in eyes.

**Avoid the hazard by:**

- Filling batteries in a well-ventilated area.
- Wearing eye protection and rubber gloves.
- Avoiding breathing fumes when electrolyte is added.
- Avoiding spilling or contacting dripped electrolyte.

**If you spill acid on yourself:**

- Flush your skin with water.
- Apply baking soda or lime to help neutralize the acid.
- Flush your eyes with water for 10–15 minutes. Get medical attention immediately.

**If acid is swallowed:**

- Drink large amounts of water or milk.
- Then drink milk of magnesia, beaten eggs or vegetable oil.
- Get medical attention immediately.

# TORQUE

## Standard Torques

The following chart lists the standard torque values for the threaded fasteners found in this manual. Torque all cap screws, nuts and set screws to these values unless a different torque is shown in the *Special Torques* section.

| Size | ft-lbs | N•m | | Size | ft-lbs | N•m |
|---|---|---|---|---|---|---|
| #10 | 32.4 IN.-LBS. | 3.6 | | M3 | 12 IN.-LBS. | 1.3 |
| .250 | 98.4 IN.-LBS. | 11.1 | | M4 | 26.4 IN.-LBS. | 3 |
| .312 | 204 IN.-LBS. | 23 | | M5 | 54 IN.-LBS. | 6.1 |
| .375 | 30 | 40 | | M6 | 92.4 IN.-LBS. | 10.4 |
| .438 | 48 | 65 | | M8 | 222 IN.-LBS. | 25 |
| .500 | 73 | 99 | | M10 | 37 | 50 |
| .562 | 105 | 143 | | M12 | 64 | 87 |
| .625 | 145 | 200 | | M14 | 103 | 140 |
| .750 | 260 | 350 | | M16 | 160 | 215 |
| .875 | 420 | 565 | | M20 | 320 | 435 |

## Special Torques

| Size | ft-lbs | N•m |
|---|---|---|
| Wheel (lug) nuts [1] | 70 | 95 |
| Blade spindle bolt top | 70 | 95 |
| Blade spindle bolt bottom | 118 | 160 |
| Electric clutch mounting bolt [3] | 45 – 48 | 61 – 65 |
| Engine pulley mounting bolt [3] | 45 – 48 | 61 – 65 |
| Front wheel axle bolt | Tighten the nut, then back it off until the wheel spins freely | |
| Wheel motor hub nut | 230 | 312 |
| Hydraulic pump pulley screw | 14 | 19 |

**NOTES:**

1. **Lug nuts only** – It is recommended that these be checked after the first 2 hours of operation and every 50 hours and following removal for repair or replacement.
2. **Engine torque values** – Refer to the respective engine owner's manual.
3. If mounting bolt is loosened or removed, **do not re-use.** Replace with a new bolt. Use only hand tools to install this fastener.

**WARNING**

Particular attention must be given to tightening the drive wheel lug nuts and blade spindle bolts. Failure to correctly torque these items may result in the loss of a wheel or blade, which can cause serious damage or personal injury.

## Steering Adjustments

### Steering control lever neutral adjustment

The mower's steering has been factory adjusted to eliminate creeping when the steering control levers are in the neutral position. However, should the mower begin to creep, the steering control lever linkage can be adjusted.

Fine adjustment to the unit's steering is made with the transmission's control rod.

Neutral is properly adjusted when the steering control levers are in the neutral position and the drive wheels do not rotate.

If this occurs, the steering control linkage may be adjusted as follows:

**WARNING**

This procedure will require that the unit be raised and blocked up off of the ground. It is necessary for the wheels to rotate without coming in contact with the floor or any object that would permit the unit to propel itself. Stay clear and exercise caution when rotating wheels to prevent injury. Use only appropriate vehicle stands, with a minimum weight rating of 2000 pounds to block the unit up. Use in pairs only. Follow the instructions supplied with the vehicle stands.

**WARNING**

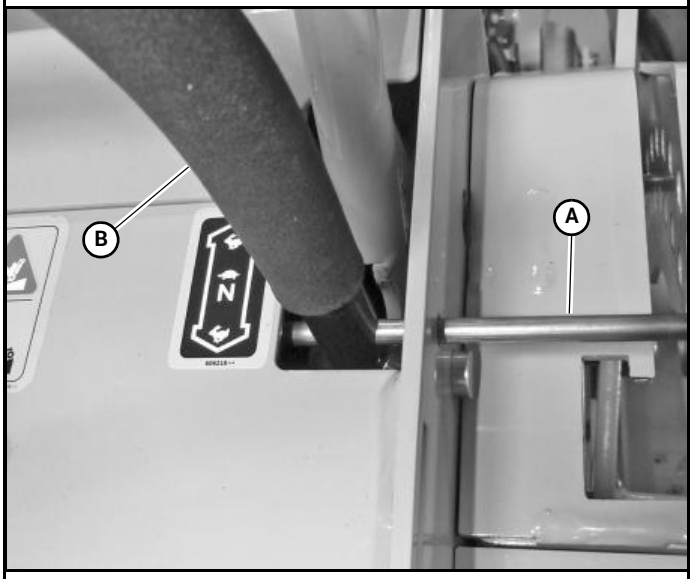
Keep hands, hair, clothing, etc., clear of the cooling fans on top of the transmissions. Exercise extreme caution.

**WARNING**

Untrained maintenance personnel should never attempt to make any adjustments or repairs to the mower's drive system while the engine is running. **The following procedures should be performed by trained maintenance personnel only.**

1. Raise the rear of the mower and block with certified jack stands. The rear wheels need to be able to rotate freely and clear of all obstructions.
2. Chock the front tires.
3. Insert a 1/4" pin through the opening in the mower frame and into the steering control lever. This ensures that the steering control lever is in the neutral position. Figure 4-1 & Figure 4-2
4. Start the engine and release the park brake.

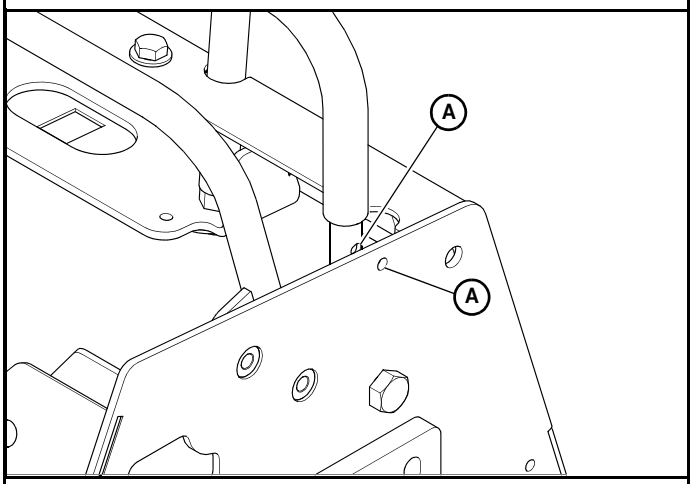
**36" Mowers**




**A.** 1/4" pin | **B.** Steering control lever

**Figure 4-1**

**48"/52"/60" Mowers**




**A.** Neutral alignment holes

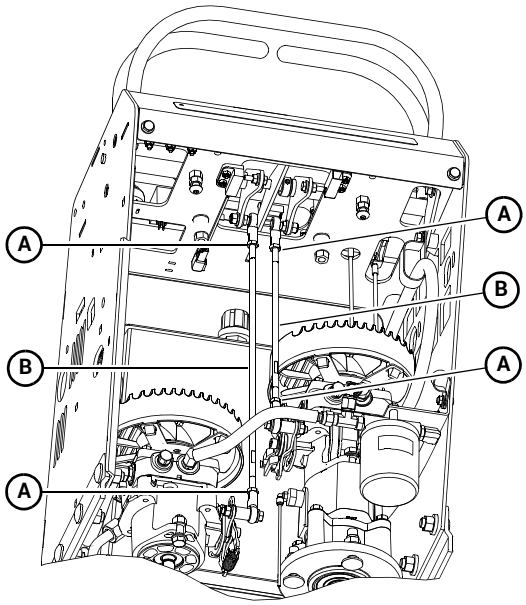
**Figure 4-2**

5. Observe which way the wheel(s) are rotating. If wheel(s) are rotating forward, loosen the jam nuts on the pump linkage rods and rotate the rod to lengthen the steering control linkage until the wheel(s) come to a stop. Figure 4-3 & Figure 4-4

   Repeat for the opposite side if necessary.
6. If wheel(s) are rotating in reverse then loosen the jam nuts on the pump linkage rods and rotate the rod to shorten the steering control linkage until the wheel(s) come to a stop. Figure 4-3

   Repeat for the opposite side if necessary.

**36" Mowers**




**A.** Jam nuts | **B.** Steering control lever

**Figure 4-3**

7. When both wheels remain in neutral, tighten the jam nuts to lock the turnbuckles in place.
8. Remove the 1/4" pin that is holding the steering control lever in the neutral position.
9. Check to make sure all tools or obstructions are removed from under the mower.
10. Raise the rear of the mower and remove the jack stands. Lower the mower.

## Steering Control Lever Stops

### 36" Steering control lever stops

The steering control lever stops (see Figure 4-5) are designed to keep the pumps from bottoming out internally.

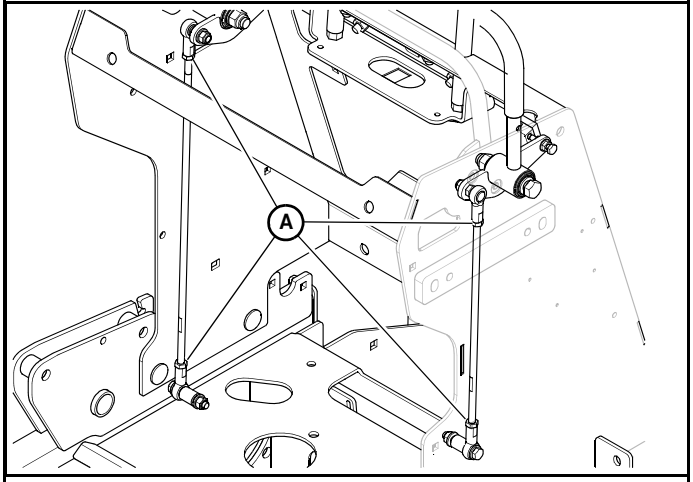
### To keep the pumps from bottoming out internally use the following procedure:

This adjustment is only required if the hydraulic pump(s) or pump linkage rod(s) have been replaced.

**WARNING**

Pump damage will occur if these stops are set incorrectly.

**48"/52"/60" Mowers**




**A.** Rod end jam nuts

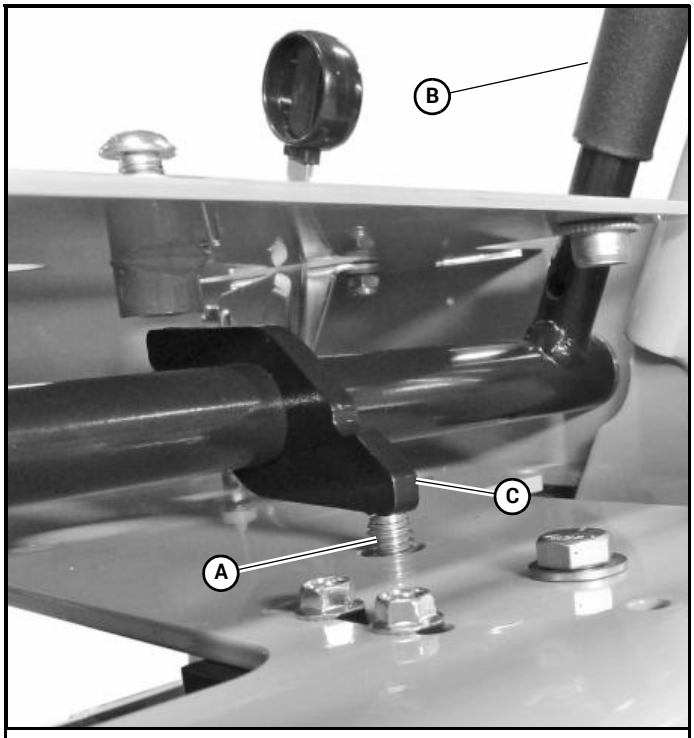
**Figure 4-4**

**NOTE:** To make this adjustment the mower engine must **not** be running.

**NOTE:** Neutral adjustment **must** be done before proceeding.

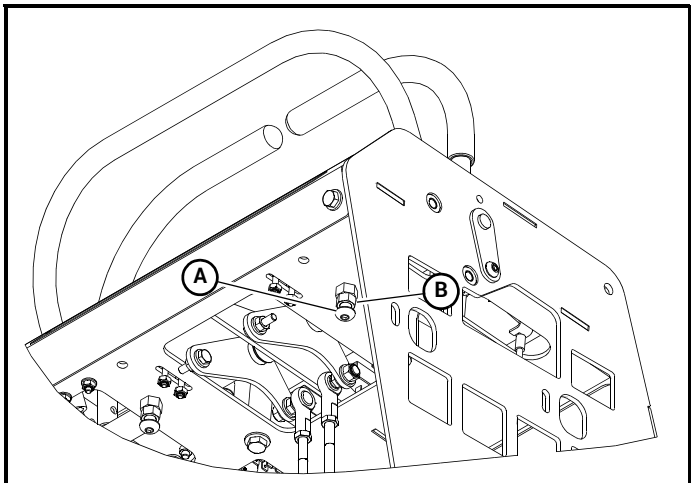
1. Slowly move the steering control levers forward and feel if there is some resistance on the pump control lever before the steering handle stop contacts the steering control lever stop screw.
2. Check one side at a time. If you sense that the pump control lever is stopping the forward motion of the steering control lever, then the steering control lever stop screw needs adjusted.
3. Move the steering control lever forward until the pump lever bottoms out.
4. Loosen the jam nut on the steering control lever stop screw. Figure 4-6
5. Turn the steering control lever stop screw until it makes contact with the steering handle stop. Then, turn it an additional 1/4 turn. Tighten the jam nut. Figure 4-6

6. Repeat for the other side.




**A.** Steering control lever stop screw
**B.** Steering control lever
**C.** Steering handle stop

**Figure 4-5**



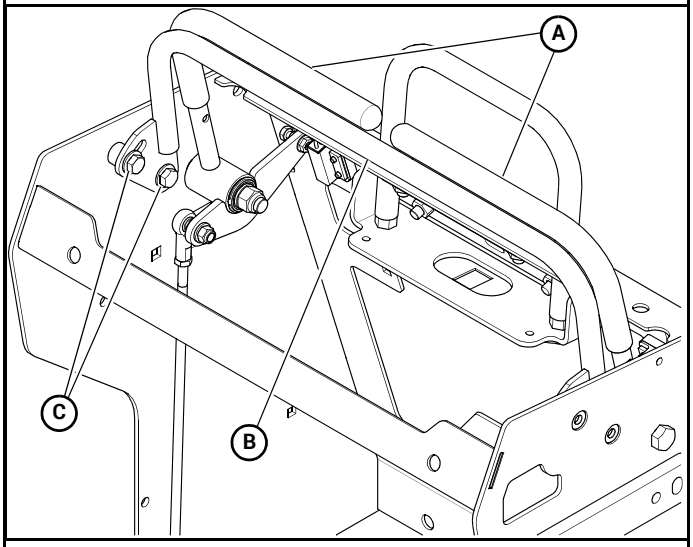

**A.** Steering control lever stop screw
**B.** Jam nut

**Figure 4-6**

### 48"/52"/60" Steering control lever stops

1. Move the steering handles forward so the pump is fully activated.
2. Pivot the forward stop back until it contacts both steering handles. Tighten the cap screws on the forward stop. Figure 4-7

**48"/52"/60" Mowers**




**A.** Steering handles
**B.** Forward stop
**C.** Cap screws

**Figure 4-7**

### To adjust the stops for driving straight when steering control levers are against the stops during operation:

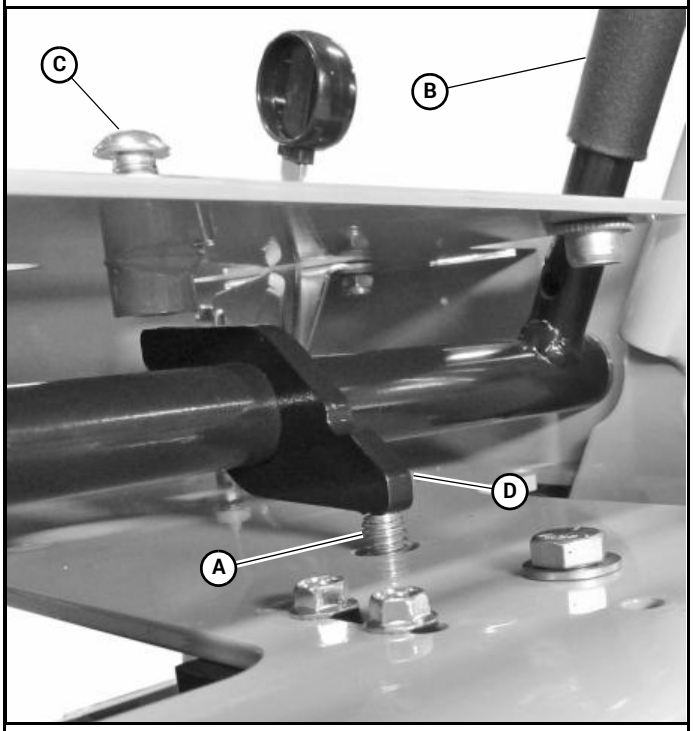
Before considering any adjustment, check the tire air pressure. Unequal tire pressure will cause the mower to drift to one side. Refer to tire pressure information in the *Tires* section for detailed information.

1. Remove the front cover.
2. Push forward on the steering control lever until it contacts the steering control lever stop. Repeat for other side.
3. Loosen the lock nut and back the speed adjusting screw out until it does not contact the steering handle stop. Repeat for other side. Figure 4-8
4. To determine which of the drive wheels is turning the slowest it will be necessary to drive the machine.
   - Test drive the mower on a smooth level surface.
   - Start the engine.
   - Release the park brake.
   - Set the throttle to the full open position.
   - Slowly push the steering control levers to the full forward position.
   - Determine which drive wheel is rotating faster.
   - Pull the steering control levers to the neutral position.
   - Set the throttle to the slow position.
   - Turn engine off.

5. Move the steering control lever on the slower speed side forward until it makes contact with the steering control lever stop. Turn the speed adjusting screw down until it makes contact with the steering handle stop (finger tight). Tighten lock nut. Figure 4-8
6. Move the steering control lever on the faster speed side forward until it makes contact with the steering control lever stop. Turn the speed adjusting screw down until it makes contact with the steering handle stop (finger tight). Using a wrench turn the adjusting screw an additional 1/4 turn. Tighten lock nut. Figure 4-8
7. Test drive the mower to determine if the wheels are rotating at the same speed. If not, repeat this procedure until unit drives straight.

**NOTE:** Since this is a hydrostatic drive, variables such as temperature of oil, efficiency of pumps and motors, tire pressure etc. may effect the consistency of the ability to rely on the stops to drive straight without the operator making minor steering adjustments with the control arms.

**48"/52"/60" Mowers**




**A.** Steering control lever stop screw
**B.** Steering control lever
**C.** Speed adjusting screw
**D.** Steering handle stop

**Figure 4-8**

## Neutral Switch Adjustment

If the engine **does not** start unless one or both of the steering control levers is moved, then one or both of the neutral switches will need to be adjusted.

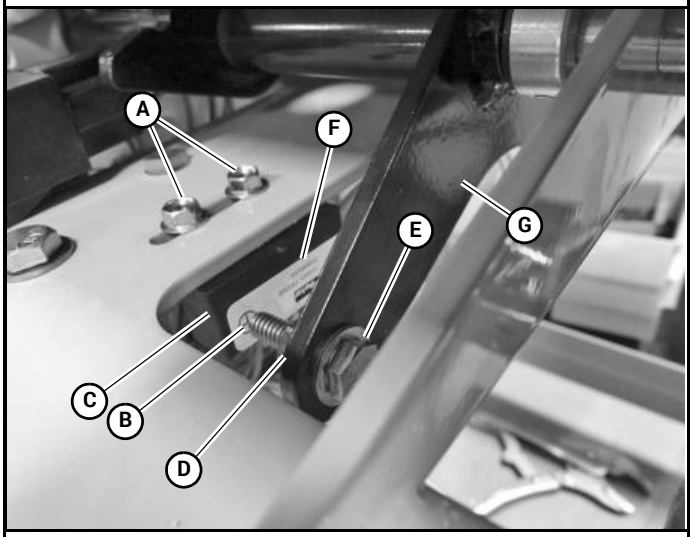
When the steering control lever is in the neutral position, the cap screw on the steering control lever should align with the target circle on the neutral switch. If it does not, then the neutral switch will need to be adjusted.

1. Place the steering control lever in the neutral position.
2. Loosen the two cap screws that hold the switch. Slide the switch in the slot to move it. Figure 4-9, Figure 4-10, & Figure 4-11
3. Loosen the nut on the steering control lever and slide the cap screw up and down to align the end of it with the target circle as shown. Tighten nut. Figure 4-1, Figure 4-10, & Figure 4-11

   **NOTE:** The gap between the end of the cap screw and the target circle surface should be between .120" and .150". **The end of the cap screw and the target surface should not touch.**
4. After the cap screw and target circle are aligned tighten all the hardware.
5. Repeat the procedure, if necessary, for the opposite switch.

**NOTE:** If the neutral switch is replaced use the .20" spacer that is supplied with the switch.

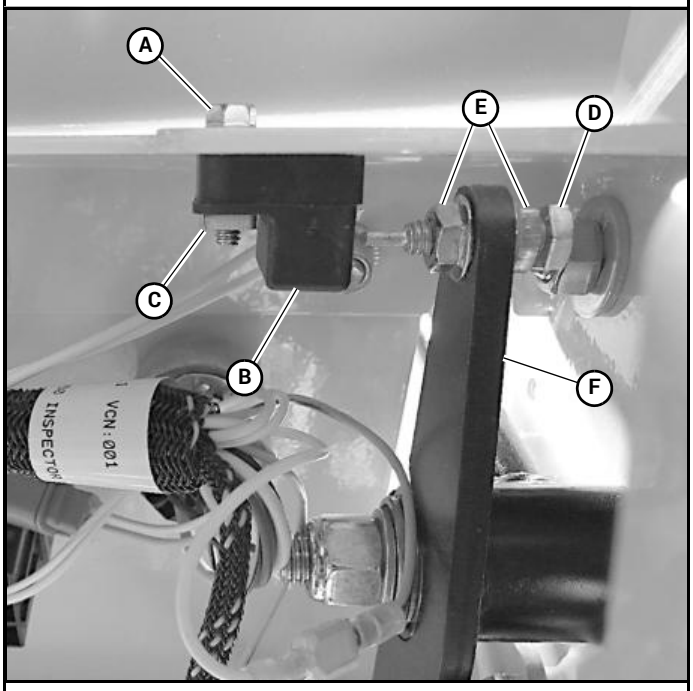
**36" Mowers**




**A.** Cap screws
**B.** Target circle
**C.** Switch
**D.** Nut
**E.** Cap screw sensor
**F.** .20" Spacer
**G.** Steering control lever

**Figure 4-9**

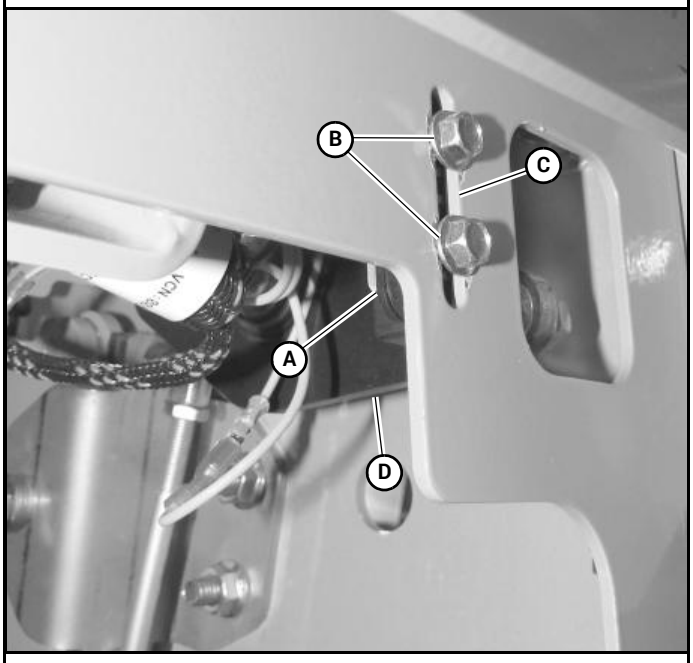
48"/52"/60" Mowers




| | |
|---|---|
| **A.** Cap screws | **D.** Cap screw sensor |
| **B.** Switch | **E.** Sensor nuts |
| **C.** Nut | **F.** Steering control lever |

**Figure 4-10**

48"/52"/60" Mowers




| | |
|---|---|
| **A.** Switch | **C.** Slot |
| **B.** Cap screws | **D.** Steering control lever |

**Figure 4-11**

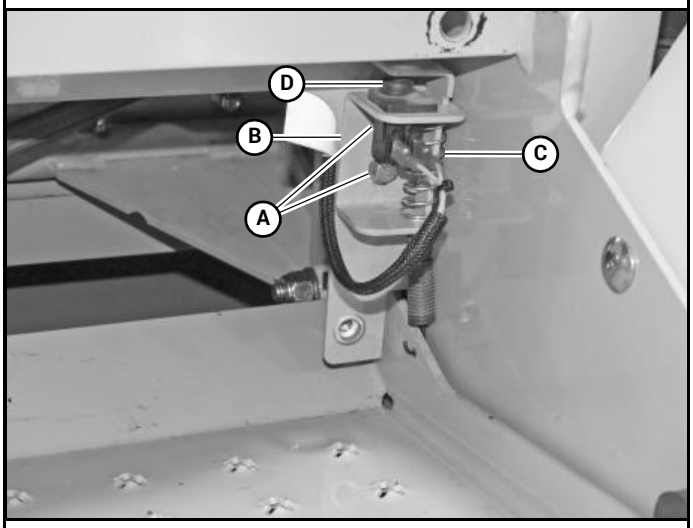
## Operator Presence Switch Adjustment

The operator presence switch will need to be adjusted if the engine dies when the deck clutch is engaged and while the park brake is disengaged:

### For 36" mowers

1. Loosen the hardware that attach the plunger bracket to the mower frame. Figure 4-12
2. Adjust the plunger bracket so that the spring is not loose but it is not engaging the operator presence switch. Figure 4-12
3. Tighten the plunger bracket hardware.

36" Mowers



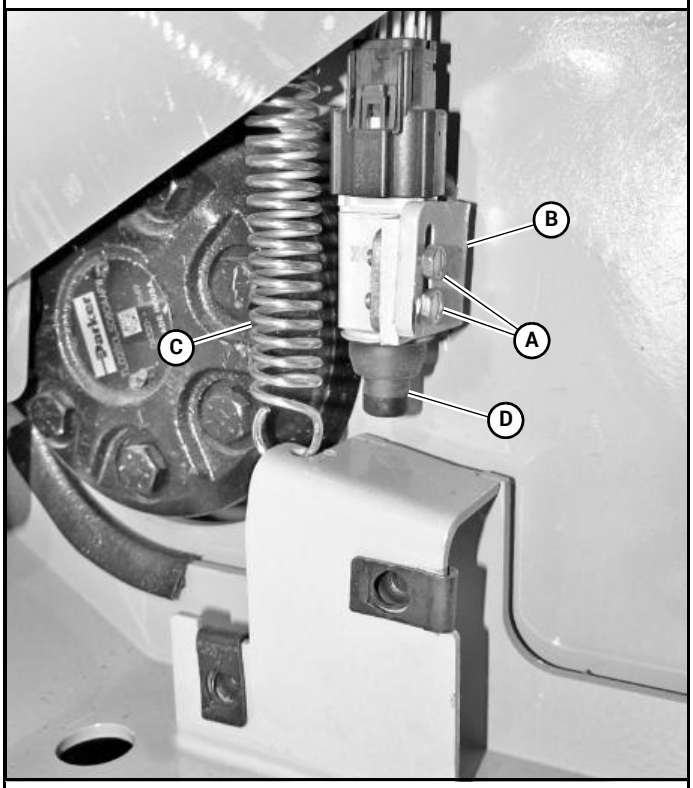

| | |
|---|---|
| **A.** Hardware | **D.** Operator presence switch |
| **B.** Plunger bracket | |
| **C.** Spring | |

**Figure 4-12**

### For 48"/52"/60" mowers

1. Loosen the hardware holding the operator presence switch in place. Figure 4-13
2. Adjust the operator presence switch up or down as necessary. Figure 4-13
3. Tighten the operator presence switch hardware.

**48"/52"/60" Mowers**




| | |
|---|---|
| **A.** Hardware<br>**B.** Switch bracket<br>**C.** Spring | **D.** Operator presence switch |

**Figure 4-13**

## Park Brake

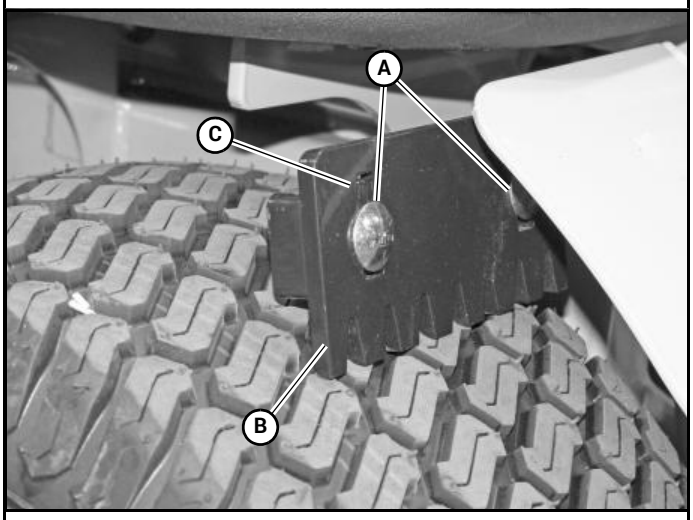
### Park Brake Adjustment 36"

Before adjustmenting, check the tire air pressure. Refer to tire pressure information in the *Tires* section for detailed information.

1. Release the park brake.
2. Treadlock plate (left side) – Loosen both the carriage bolts that hold the treadlock plate in place. Figure 4-14

   Treadlock plate (right side) – Loosen both the carriage bolts and adjust the treadlock plate until the carriage bolts are in the middle of the slots. Tighten the carriage bolts. Figure 4-15
3. Loosen the hardware that attaches the brake link to the treadlock mounting bar. Adjust the brake link so that the gap between the tire and the right treadlock plate is .75". Tighten the hardware. Figure 4-15
4. Adjust the left treadlock plate so that the gap between it and the tire is .75". Figure 4-14
5. Engage park brake lever. The park brake plate should push in on the tire to prevent it from rotating.
6. If one of the treadlock plates does not fully engage the tire then it may be necessary to readjust the treadlock plate until it fully engages the tire.

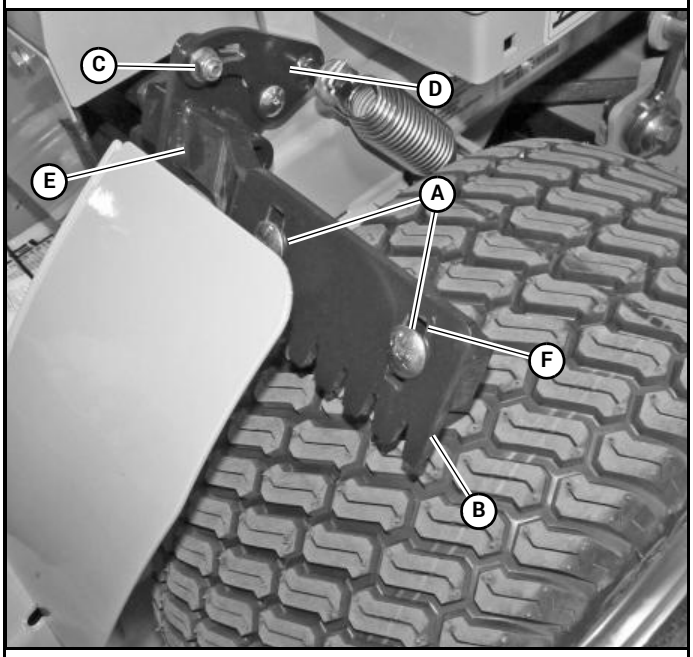
**36" mower, left side shown**




| | |
|---|---|
| **A.** Carriage bolts<br>**B.** Treadlock plate | **C.** Slot |

**Figure 4-14**

**36"mower, right side shown**




| | |
|---|---|
| **A.** Carriage bolts<br>**B.** Treadlock plate<br>**C.** Hardware | **D.** Brake link<br>**E.** Treadlock mounting bar<br>**F.** Slot |

**Figure 4-15**

### Park Brake Adjustment 48"/52"/60"

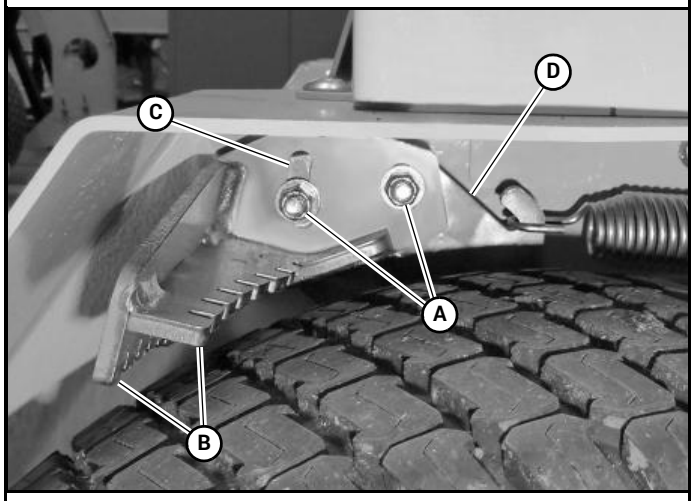
Before adjustmenting, check the tire air pressure. Refer to tire pressure information in the *Tires* section for detailed information.

1. Release the park brake.
2. Brake cleat (right side) – Loosen both the carriage bolts that hold the brake cleat in place.

3. Adjust the right brake cleat so that the gap between it and the tire is .25". Repeat for the left side. Figure 4-16 & Figure 4-17
4. Engage park brake lever. The park brake plate should push in on the tire to prevent it from rotating.

   If one of the brake cleats does not fully engage the tire then it may be necessary to adjust the brake cleat until it fully engages the tire.

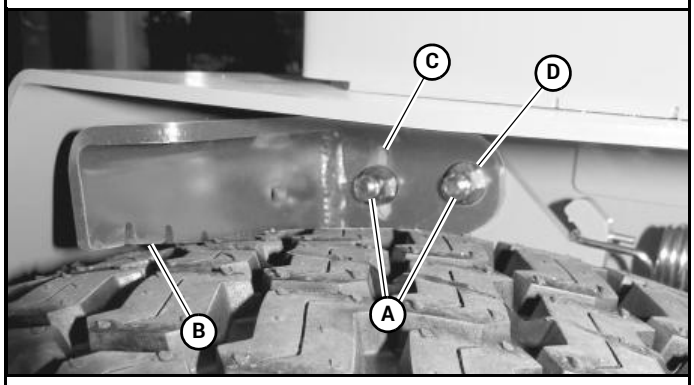
**48"/52"/60" mower, right side shown**




| | |
|---|---|
| **A.** Carriage bolts | **C.** Slot |
| **B.** Brake cleat | **D.** Brake pivot |

**Figure 4-16**

**60" mower, right side shown**




| | |
|---|---|
| **A.** Carriage bolts | **C.** Slot |
| **B.** Brake cleat | **D.** Brake pivot |

**Figure 4-17**

## Belts

Inspect belts frequently for wear and serviceability. Replace a belt that shows signs of:

- severe cuts
- tears
- separation
- weather checking
- cracking
- burns caused by slipping.

Slight raveling of belt covering does not indicate failure, trim ravelings with a sharp knife.

Inspect the belt pulley grooves and flanges for wear. A new belt, or one in good condition, should never run against the bottom of the groove. Replace the pulley when this is the case, otherwise, the belt will lose power and slip excessively.

Never pry a belt to get it on a pulley as this will cut or damage the fibers of the belt covering.

Keep oil and grease away from belts, and never use belt dressings. Any of these will destroy the belt composition in a very short time.

## Hydraulic Pump Belt Adjustment

The transmission drive belt tension remains constant by means of a tension idler and spring. The spring tension should be such that the belt does not slip under normal operating load conditions, assuming the belt is not excessively worn or damaged. As the belt stretches and wears in, adjustment may become necessary.

The proper belt tension is achieved when the tension spring is stretched to the appropriate dimension when measured from the outside of one hook to the outside of the other hook. Figure 4-18

| MOWER SIZE | SPRING LENGTH |
|---|---|
| 36" | 8.25" ± .125"<br>(209.55 mm ± 3.18 mm) |
| 48"/52"/60" | 7.80" ± .125"<br>(198.12 mm ± 3.18 mm) |

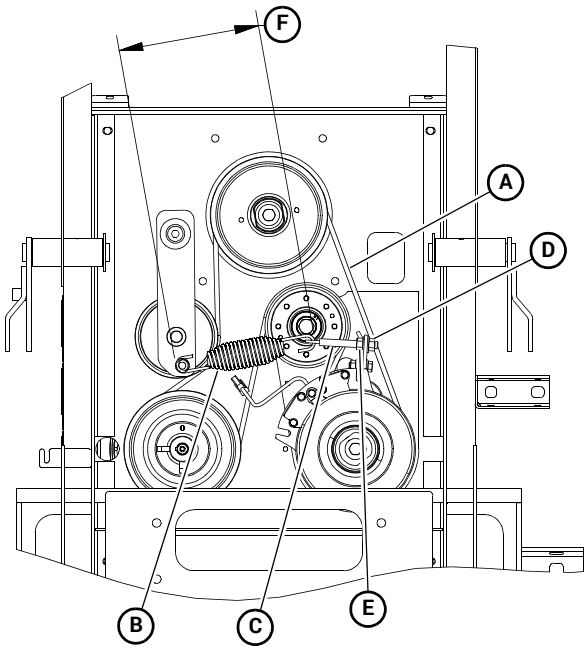
To increase belt tension, loosen the jam nut on the eye bolt. Then, tighten the nut on the eyebolt until the appropriate dimension is attained. Lock the eyebolt in place by tightening the jam nut. Figure 4-18

**IMPORTANT:** Do not over tension the spring to compensate for a badly worn belt or pulley.

Inspect the belt every 100 hours and replace as needed. Replace the belt every 400 hours or every two (2) years whichever comes first.

**WARNING**

If the pump belt fails, loss of steering control will occur especially when operating on a slope. **If you lose steering control while operating the mower, turn the engine off and, if on a slope, step off of the operator's platform to the uphill side. Inspect the machine and involve your Hustler® Dealer to resolve the problem before continuing to operate.**




| | |
|---|---|
| **A.** Transmission drive belt | **D.** Nut |
| **B.** Tension spring | **E.** Jam nut |
| **C.** Eyebolt | **F.** Spring length (see table) |

**Figure 4-18**

## Hydraulic System

**IMPORTANT:** Never use hydraulic or automatic transmission fluid in this system; use only synthetic motor oil as specified. Remember, dirt is the primary enemy of any hydraulic system.

**⚠ WARNING**

Hydraulic fluid escaping under pressure may have sufficient force to penetrate skin and cause serious injury. Foreign fluid injected into the skin must be surgically removed within a few hours by a doctor, familiar with this form of injury, or gangrene may result.

Before applying pressure to hydraulic system, make sure all connections are tight and all hoses and lines are in good condition. To find a leak under pressure, use a piece of cardboard or wood — never use your hands. Relieve all pressure in the system before disconnecting or working on hydraulic lines. To relieve pressure, lower all attachments and shut off engine.

Check oil level in hydraulic system after every 50 hours of operation or weekly, whichever occurs first. The hydraulic system must be cool when checking the oil level and the mower should be on level ground. Check more often if system appears to be leaking or otherwise malfunctioning.

Use the hydraulic reservoir's sight glass to check the reservoir fluid level. The oil level should be approximately in the middle of the sight glass. Figure 4-19 & Figure 4-20

Use 15W50 or 20W50 synthetic oil when changing the system oil and filter. For maximum transmission life, use Hustler® 100% Synthetic 20W50 Hydrostatic Transmission Oil.

**NOTE:** The reservoir (Figure 4-21 & Figure 4-22) will require approximately 1.0 U.S. gallons (3.78 liters) of full synthetic **15W50 or 20W50** oil when replacing the oil after an oil and filter change. **Do not** overfill the reservoir.

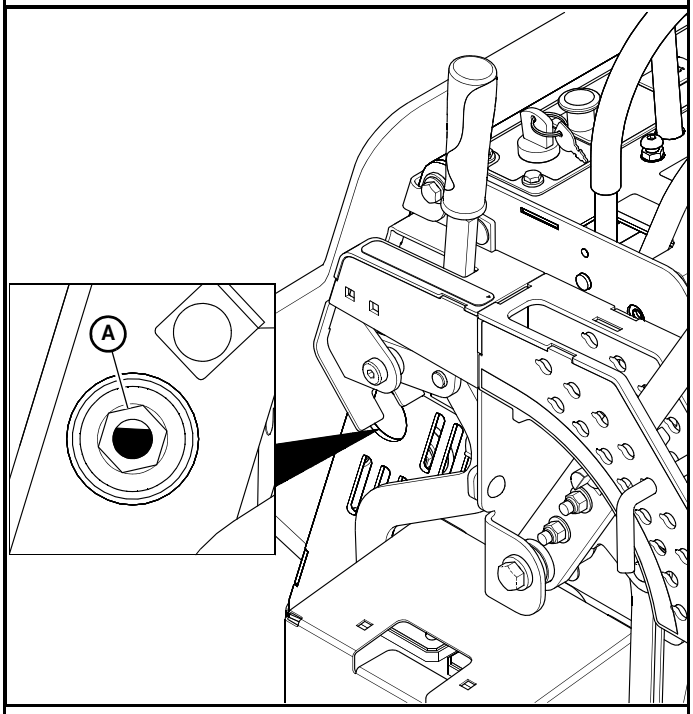
Initial system oil and filter change **must** be after the first 50 hours of mower operation. Thereafter, replace filter and oil in the reservoir annually or every 500 hours, whichever comes first.

**IMPORTANT:** It is necessary to drain the system oil from the hydraulic reservoir, using the reservoir drain plug, before removing the hydraulic filter. Replace the drain plug before adding system oil.

The system filter is located at the left rear of the engine. **Use a Hustler® approved filter element only.** When changing the filter use a standard oil filter wrench. The threads are right hand. Figure 4-21 & Figure 4-22

**IMPORTANT:** Pre-fill the filter element with clean oil before installing, to prevent drawing air into the system pump.

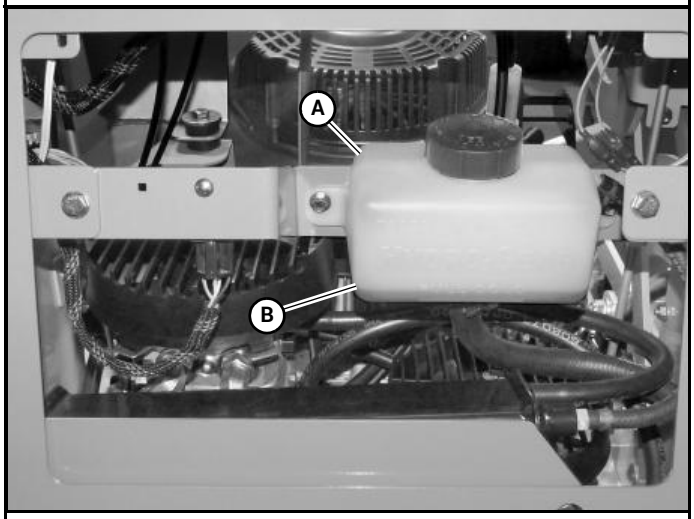
**36" Mower shown**




**A.** Sight glass

**Figure 4-19**

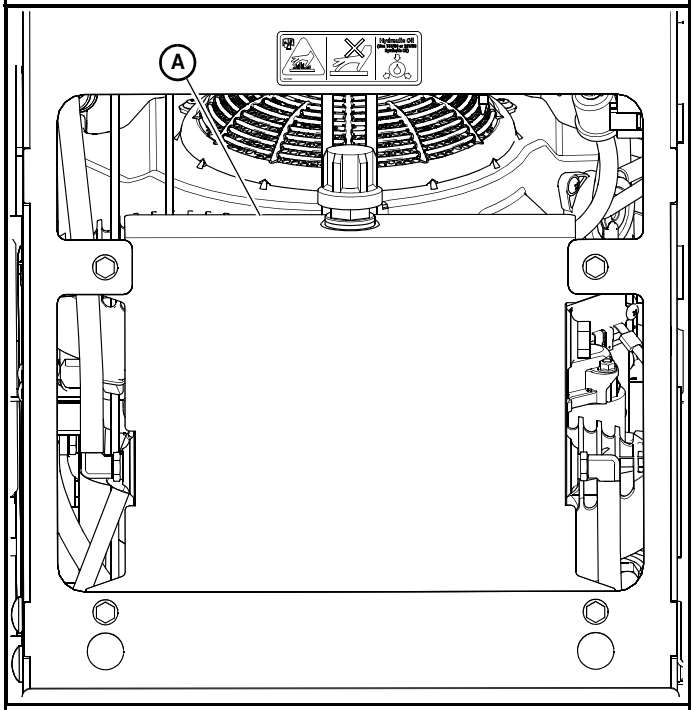
48"/52"/60" Mower shown




**A.** Hydraulic fill reservoir | **B.** | **C.** Full cold line

**Figure 4-20**

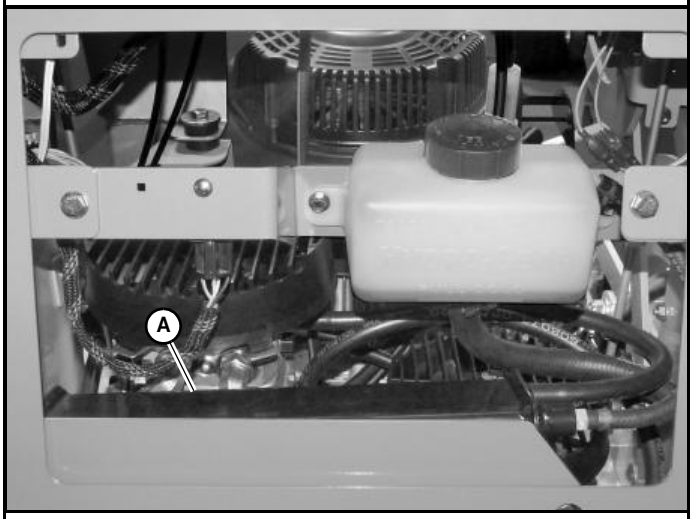
36" Mower shown




**A.** Hydraulic reservoir

**Figure 4-21**

48"/52"/60" Mower shown




**A.** Hydraulic reservoir

**Figure 4-22**

## Hydraulic Pump Flow Test

The design purpose of the Bi-Directional Flow Test Kit is to allow the technician to isolate the pump from the wheel motor and determine if the pump is acceptable. The following information can be used to install and test the pump by simulating a wheel motor load.

**WARNING**

Potential for serious injury! Never work under the machine or attachment unless it is safely supported with jack stands. To prevent possible injury to the servicing technician and/or bystanders, make suremake sure the vehicle is properly secured.

- Make certain machine is secure when it is raised and placed on the jack stands.
- **Use only certified jack stands.** Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907 kg) to block the unit up.
- Use in pairs only.
- Follow the instructions supplied with the jack stands.

**WARNING**

**Do not attempt any adjustments with the engine running. Use extreme caution while working in or around all vehicle linkage! High temperatures can be generated. Follow all safety procedures outlined in the mower's operator's manual!**

## Bi-Directional Flow Test Kit Installation

Disconnect the system hoses at the wheel motor, or system hoses from the pump and connect the Bi-Directional

Flow Test Kit. (Special care should be taken to prevent contamination debris from entering pump or wheel motor system ports).

**NOTE:** Using the Bi-Directional Flow Test Kit, determination of directional flow is not necessary. The flow meter may be connected in either direction into the forward and reverse high pressure system lines.

**NOTE:** The following adapter fittings will be required when connecting the Bi-Directional Test Kit (Excel P/N 783886 or Hydro-Gear P/N 70661):

PG/PL Series Pumps require two 771311 adapter fittings
PJ Series Pumps require two 771311 adapter fittings

**CAUTION:** Make sure all fittings and hoses are attached securely. This test is being completed on the vehicle's high pressure system lines. Failure to perform this properly could result in bodily injury.

### Bi-Directional Flow Testing Procedures

1. Use approved jack stands to raise the drive wheels off the floor.

**WARNING**

Never work under the machine or attachment unless it is safely supported with jack stands. To prevent possible injury to the servicing technician and/or bystanders, make sure the vehicle is properly secured.

- Make certain machine is secure when it is raised and placed on the jack stands.
- **Use only certified jack stands.** Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907 kg) to block the unit up.
- Use in pairs only.
- Follow the instructions supplied with the jack stands.

2. Open the restriction valve all the way.
3. For the pump being tested, move the steering control levers in full forward motion. (It will be necessary to lock the steering control levers into full forward position to prevent false readings).
4. Increase the engine rpms until the maximum engine rpm is achieved.

   **CAUTION:** Damage to the flow meter and/or re-calibration may result from testing at input speeds that exceed the above recommendations.
5. Operate without any load for approximately 30 seconds to 1 minute. This allows the system oil temperature to rise.

   **NOTE:** Raising the system oil temperature will make a difference in the readings you receive. It has been determined that to complete this test accurately, the oil temperature must be near system operating temperatures. Suggested temperature range 160°–210°F (71.1°–98.9° C).
6. Tighten the flow meter restriction valve until the gauge reads 300 psi (21 bar).

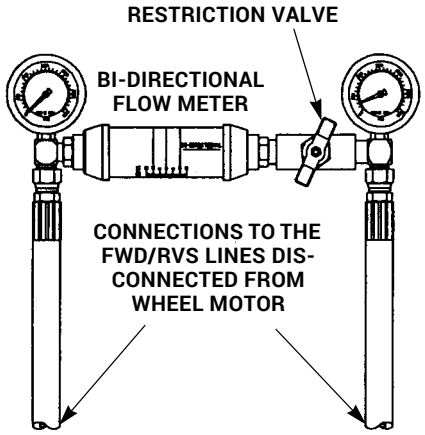
   Record the flow reading on the Bi-Directional Flow Meter.
7. Increase the pressure to 1100 PSI (76 bar).

   Record the flow reading on the Bi-Directional Flow Meter.
8. **The acceptable gpm "flow droop" or "difference" is:**

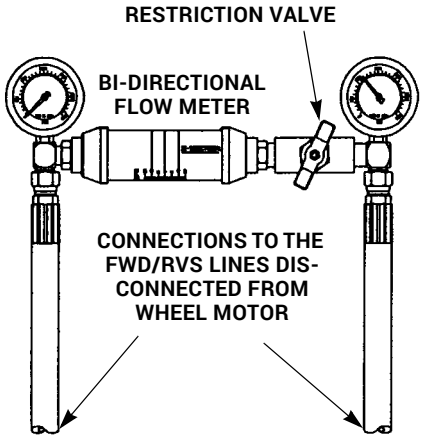
| | |
|---|---|
| **PG/PL (36" mowers)** | **1.5 gpm (5.6 l/min)** |
| **PJ (48"/52"/60" mowers)** | **2.0 gpm (7.6 l/min)** |

If the difference exceeds these values the pump would not be operating efficiently and should be replaced or repaired. See the following example.

**Test Example: PG/PL or PJ Pump**




| | | |
|---|---|---|
| **300 psi (21 bar) reading** | **7 gpm (26 l/min)** | **(1st reading)** |




| | | |
|---|---|---|
| **1100 psi (76 bar) reading** | **3 gpm (11 l/min)** | **(2nd reading)** |
| **PG/PL or PJ** | | |
| **300 psi (21 bar) reading** | **7 gpm (26 l/min)** | **(1st reading)** |
| **1100 psi (76 bar) reading** | **-3 gpm (11 l/min)** | **(2nd reading)** |
| | **4 gpm (15 l/min)** | **(the difference)** |

**Subtract the 1st reading from the 2nd.**

**(In this example, 4 gpm difference would indicate further pump examination).**

## Purging Procedures

Due to the effects air has on efficiency in hydrostatic drive applications, it is critical that air is purged from the system.

These purge procedures should be implemented any time a hydrostatic system has been opened to facilitate maintenance or additional oil has been added to the system.

Air creates inefficiency because its compression and expansion rates are higher than that of oil.

Entrained air in the oil may cause the following symptoms:

1. Noisy operation.
2. Lack of power or drive after short term operation.
3. High operation temperature and excessive expansion of oil.

Before starting, make sure the reservoir is at the proper oil level. If it is not, fill to the vehicle manufacturer's specifications.

The following procedures should be performed with the vehicle drive wheels off the ground, then repeated under normal operating conditions.

**⚠ WARNING**

Potential for serious injury! Never work under the machine or attachment unless it is safely supported with jack stands. To prevent possible injury to the servicing technician and/or bystanders, insure the vehicle is properly secured.

- Make certain machine is secure when it is raised and placed on the jack stands.
- **Use only certified jack stands.** Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907 kg) to block the unit up.
- Use in pairs only.
- Follow the instructions supplied with the jack stands.
- The jack stands should not allow the machine to move when the engine is running and the drive wheels are rotating.
- Do not allow the wheels to come in contact with the floor or any object that would permit the unit to propel itself.
- To prevent injury stay clear and exercise caution when rotating the wheels.

1. With the bypass valve open and the engine running, slowly move the directional control in both forward and reverse directions (5 or 6 times), as air is purged from the unit, the oil level will drop.
2. With the bypass valve closed and the engine running, slowly move the directional control in both forward and reverse directions (5 or 6 times). Check the oil level and add oil as required after stopping the engine.
3. It may be necessary to repeat Steps 1 and 2 until all the air is completely purged from the system. When the pumps operate smoothly forward and reverse at normal speeds, purging is complete.

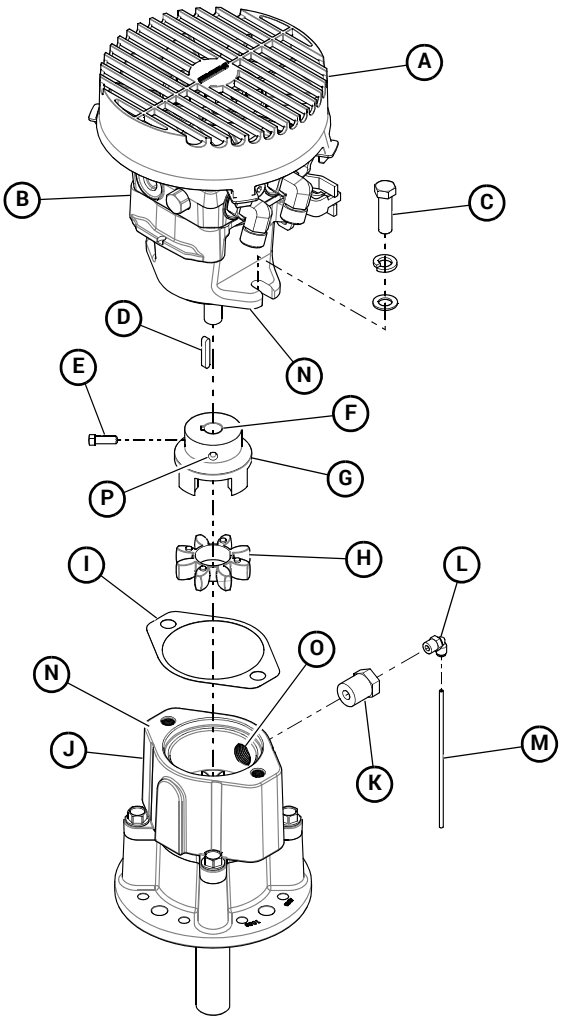
## Jackshaft Replacement

The following procedures should be performed when replacing the jackshaft assembly or the attached hydraulic pump. Refer to Figure 4-23.

1. Place the yellow spider gear (H) in the cavity of the jackshaft assembly (J) so that it lies flat on the bottom of the cavity. Make sure the gear teeth are between the lugs in the jackshaft assembly (J).
2. Coat the inside diameter (F) of the pumpside coupling (G) with a minimal amount of anti-seize. Place the pumpside coupling (G) over the spider gear (H) so that the lugs engage with the lugs inside the jackshaft assembly (J).

   **NOTE:** Before assembling the hydraulic pump (B) to the jackshaft assembly (J), make sure both the pump and jackshaft assembly contacting surfaces (N) are free of debris.
3. Place the jackshaft gasket (I) in position making sure it is aligned and seated correctly.
4. Leaving the pumpside coupling (G) as placed, insert the hydraulic pump shaft, with the key (D) in the shaft keyway, into the pumpside coupling (G). Make sure to align the key (D) with the keyway in the coupling.
5. Attach the hydraulic pump (B) and jackshaft assembly (J) together as shown. Torque the cap screws (C) to 30–32 ft-lbs (40.67–43.38 N•m).
6. Rotate the pump shaft, using the pump's fan blades (A), until a set screw hole (P) in the pumpside coupling (G), is visible through the hole (O) in the side of the jackshaft assembly (J). Install a set screw (E) in the hole, and tighten it to 96–108 in-lbs (10.84–12.20 N•m).

   Rotate the pump shaft again until the other set screw hole (P) is visible. Install and tighten the set screw (E) to 96–108 in-lbs (10.84–12.20 N•m).
7. Install the vent fittings (K & L) as shown and tighten.
8. Insert the nylon tube (M) into the fitting (L) as shown. Make sure it goes through the hole in the engine plate.




| | |
|---|---|
| **A.** Pump fan blades | **J.** Jackshaft assembly |
| **B.** Hydraulic pump | **K.** Fitting |
| **C.** Cap screw (2) | **L.** Fitting |
| **D.** Key | **M.** Nylon tube |
| **E.** Set screw (2) | **N.** Contacting surface |
| **F.** Place anti-seize here | **O.** Locate set screw hole through this hole. |
| **G.** Pumpside coupling | **P.** Set screw hole |
| **H.** Spider gear | |
| **I.** Gasket | |

**Figure 4-23**

## Caster Fork with Tapered Bearings Replacement

**NOTE:** A 1/4"–28 straight thread zerk fitting (not provided) is required for replacing the grease.

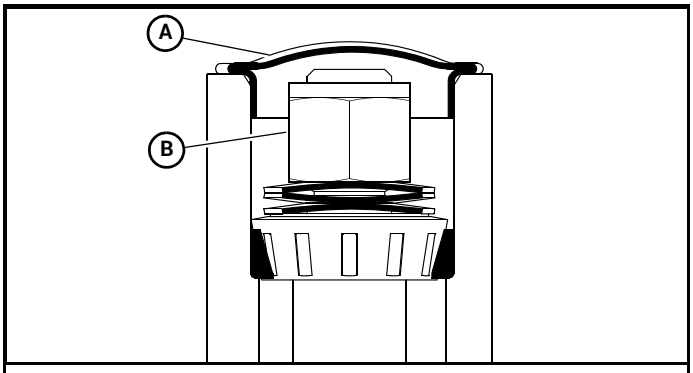
### Disassembly:

1. Raise the front of the mower enough to remove the caster wheel assembly.
2. Place mower securely on jack stands and do not allow mower to move. Chock the drive wheels.

**WARNING**

- **Use only certified jack stands.**
- Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907 kg) to block the unit up.
- Use in pairs only.
- Follow the instructions supplied with the jack stands.

3. Remove the top cap and the top lock nut. Figure 4-24
4. Remove the caster fork from the machine.
5. Remove and retain the cup washers.
6. Remove and discard the seal.
7. Remove and discard the tapered roller bearings and outer races.
8. Remove and retain the grease port plug.




| | |
|---|---|
| **A.** Top cap | **B.** Top lock nut |

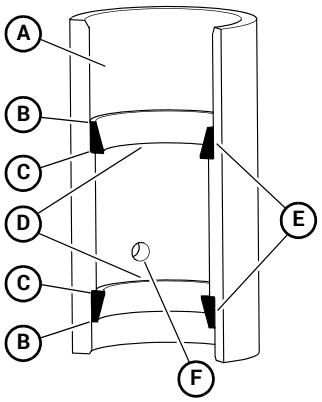
**Figure 4-24**

### Assembly:

1. Insert the 1/4"–28 straight thread zerk fitting into the grease port and tighten.
2. Apply a light coating of grease to the caster pocket before installing the outer bearing races.
3. Use the Hustler® Bearing Race Installation Kit (p/n 124351) to install the outer races into the caster pocket bore.
4. Insert the Bearing Race Installation tool through the backing plate and the caster arm housing.
5. Align a bearing outer race over the Bearing Race Installation tool and into the caster arm housing. Make sure that the race's thick edge is the leading edge going into the caster arm housing.

   **IMPORTANT:** Do not use the bearings to press the races into place.
6. Install the pressing tool, washers and the nut, then slowly start to draw the race into the caster arm housing.

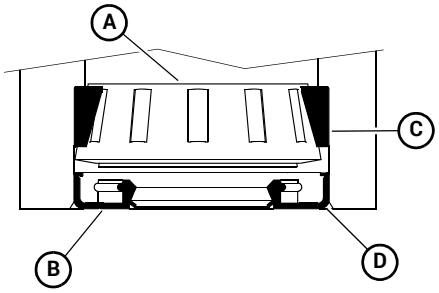
7. Make sure the bearings outer race is correctly aligned before pressing the outer race into the fully-seated position against the caster pocket shoulder. Figure 4-25




**A.** Caster pocket
**B.** Thin
**C.** Thick
**D.** Shoulder
**E.** Tapered roller bearing races
**F.** Grease port

**Figure 4-25**

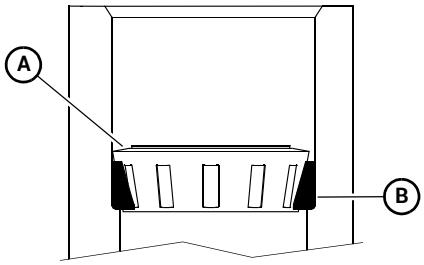
8. Disassemble and invert the Bearing Race Installation tool to install the other outer race.
9. Install the bottom bearing and lower seal. Make sure that the lower seal lip is facing out and driven flush with the caster pocket. Figure 4-26




**A.** Bottom bearing
**B.** Lower seal lip
**C.** Tapered roller bearing race
**D.** Flush

**Figure 4-26**

10. Install the upper bearing. Figure 4-27

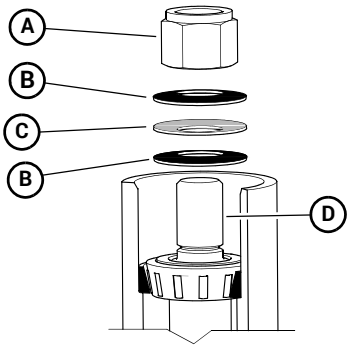



**A.** Upper bearing
**B.** Tapered roller bearing race

**Figure 4-27**

11. Install the caster fork assembly, taking care not to damage the lower seal lip. Figure 4-26

    **IMPORTANT:** Stack the cup washers as shown in Figure 4-28.




**A.** Top nut
**B.** Cup down
**C.** Cup up
**D.** Caster fork

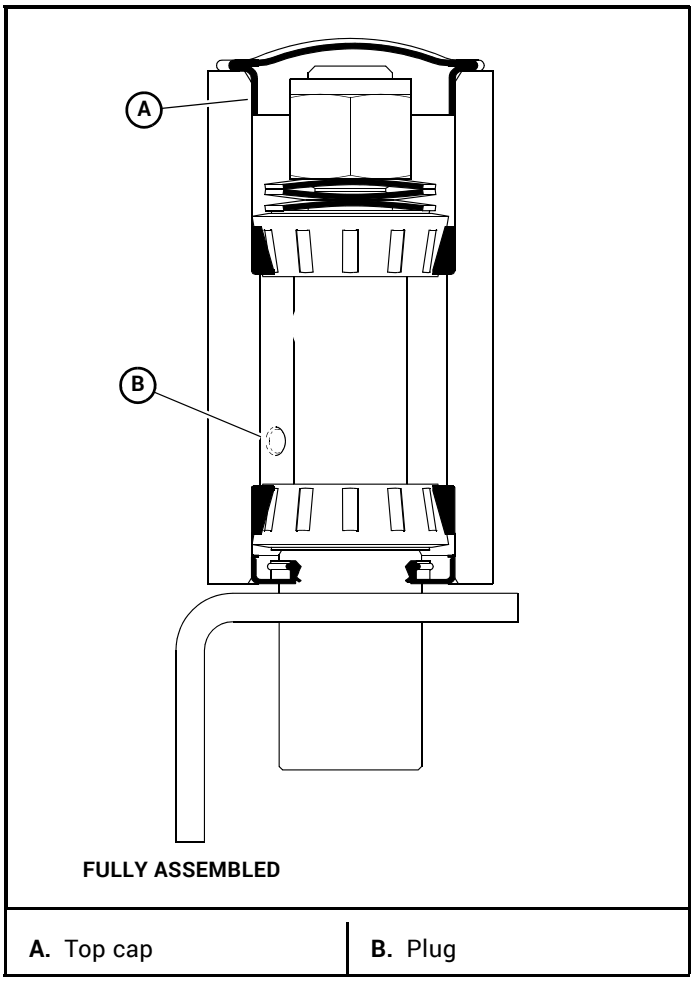
**Figure 4-28**

12. Torque the top nut to 40 ft-lbs (55 N•m), then back off ¼ turn. Figure 4-28
13. Apply grease to the grease zerk until it is visible at the top bearing. Fill the top cavity with grease.
14. Make sure that the caster fork is free to rotate by spinning the fork one full revolution.
15. Remove the grease zerk, insert the plug into the grease port and tighten.
16. Install the top cap.
17. Remove the jack stands and wheel chocks.

## Tapered Wheel Bearing Replacement

### Disassembly:

1. Raise the front of the mower enough to remove the wheel assembly.




| | |
|---|---|
| **A.** Top cap | **B.** Plug |

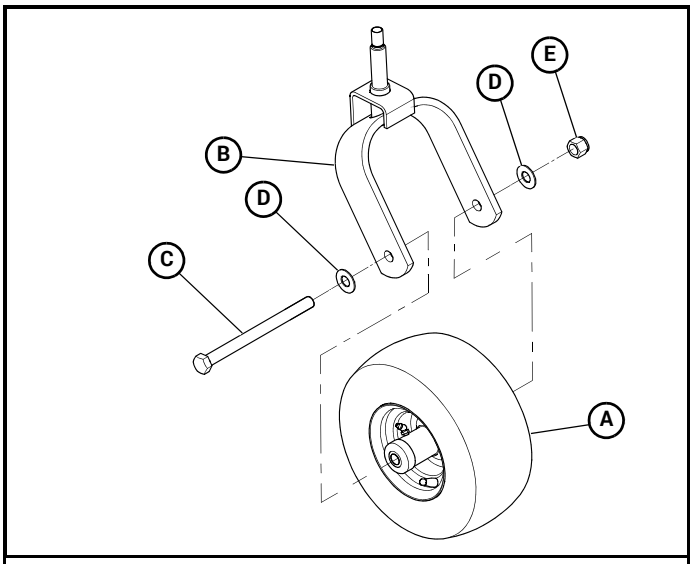
**Figure 4-29**

2. Place mower securely on jack stands and do not allow the mower to move. Chock the drive wheels.

**WARNING**

- **Use only certified jack stands.** Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907 kg) to block the unit up.
- Use in pairs only.
- Follow the instructions supplied with the jack stands.

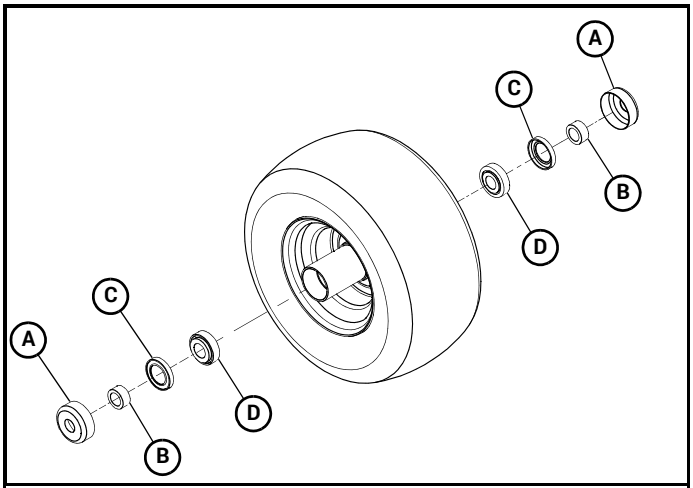
3. Remove the wheel from the fork by removing the axle bolt, flat washers, and lock nut. Figure 4-30
4. Remove the dust caps and bushings from the wheel housing. Retain these parts. Figure 4-31
5. Remove and discard the seals. Figure 4-31




| | |
|---|---|
| **A.** Wheel<br>**B.** Fork<br>**C.** Axle bolt | **D.** Flat washer<br>**E.** Lock nut |

**Figure 4-30**

6. Remove and discard the tapered roller bearings and outer bearing races. Figure 4-31



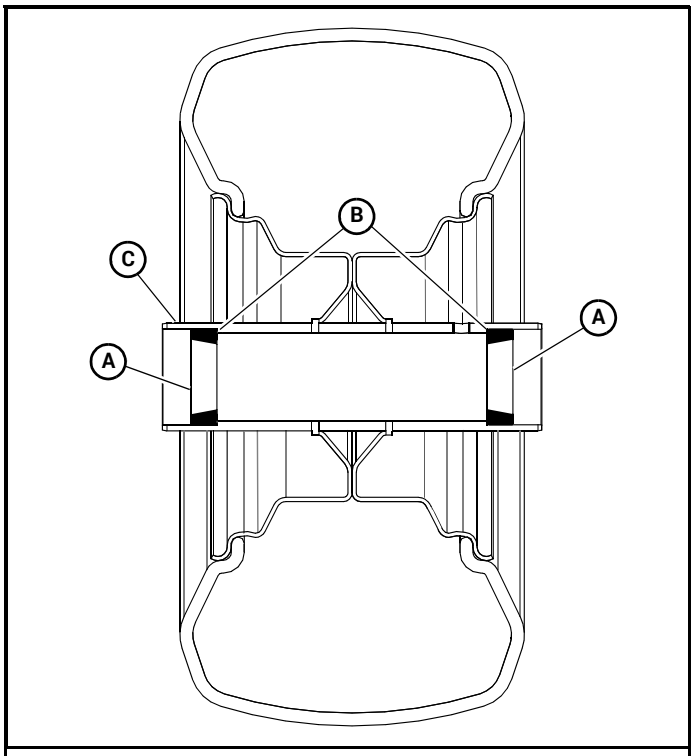

| | |
|---|---|
| **A.** Dust cap<br>**B.** Bushing | **C.** Seal<br>**D.** Bearing & outer race |

**Figure 4-31**

7. To prevent contamination of the new tapered roller bearings remove the existing grease from the wheel housing.

### Assembly

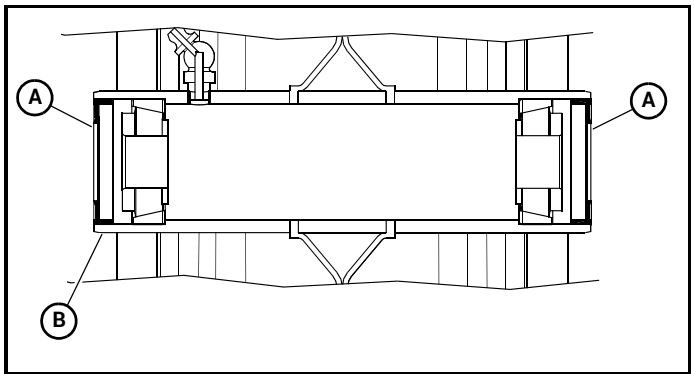
1. Press the new outer bearing races into the wheel housing until they are fully seated against the housing shoulder. Figure 4-32




| | |
|---|---|
| **A.** Outer bearing race<br>**B.** Housing shoulder | **C.** Wheel housing |

**Figure 4-32**

2. Thoroughly pack the tapered roller bearings with multi-purpose grease.
3. Insert the new tapered roller bearings into the outer bearing race. Figure 4-33
4. Insert the new seals into the wheel housing. Make sure that the flat side of the seal is flush with the outside edge of the wheel housing. Figure 4-33

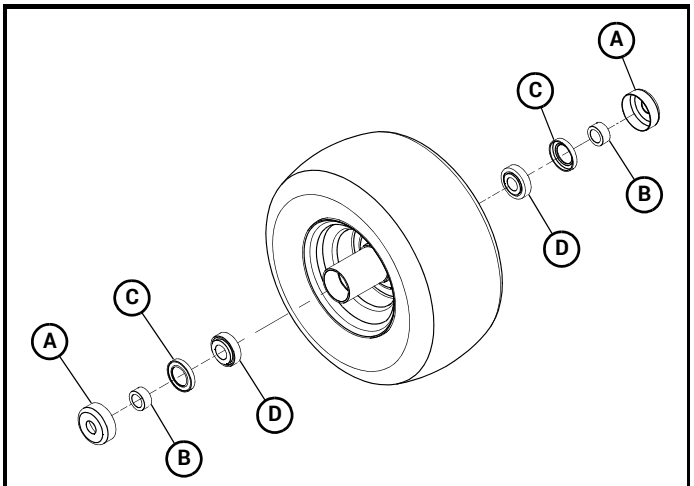



| | |
|---|---|
| **A.** Seal | **B.** Wheel housing |

**Figure 4-33**

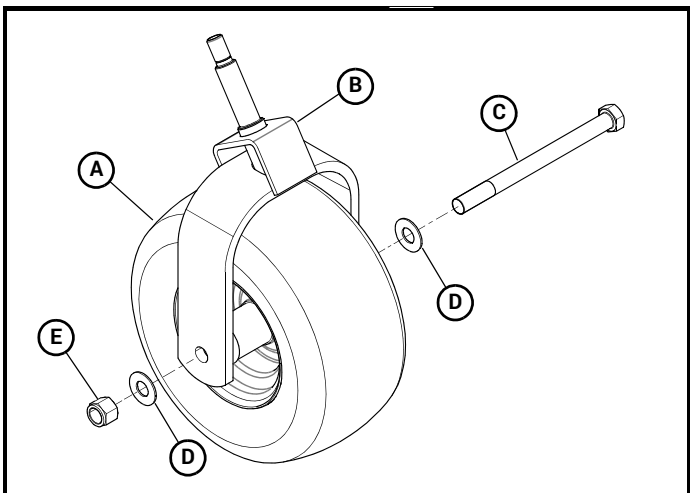
5. Insert the bushings through the seal openings and push them in until they contact the tapered roller bearings. Figure 4-34
6. Push the dust caps onto the wheel housing. Figure 4-34
7. Slide the wheel assembly between the caster fork legs and assemble to the fork using the axle bolt, flat washers, and lock nut. Figure 4-35

   **NOTE:** Make sure the head of the axle bolt is on the same side as the valve stem.
8. Screw the lock nut onto the axle bolt and tighten. Then, back the nut off until the wheel rotates freely.
9. Using a grease gun, insert multi-purpose grease into the wheel housing until grease begins to seep from the dust caps.




| | |
|---|---|
| **A.** Dust cap<br>**B.** Bushing | **C.** Seal<br>**D.** Bearing & outer race |

**Figure 4-34**




| | |
|---|---|
| **A.** Wheel assembly<br>**B.** Front fork<br>**C.** Axle bolt | **D.** Flat washer<br>**E.** Lock nut |

**Figure 4-35**

## Tires

It is important for level mowing that the tires have the same amount of air pressure. The recommended pressures are:

Drive wheels . . . . . .8–12 psi (55–83 KPa)

**Only pneumatic tires are approved for the drive tires on this mower.** Warranty claims will be denied on any mower equipped with non-pneumatic tires.

# ENGINE MAINTENANCE

## General Engine Maintenance

Detailed instructions and recommendations for break-in and regular maintenance are specified in the *Engine Owner's Manual*. Please refer to this manual for engine servicing, lubricating oil levels with quality and viscosity recommendations, bolt torques, etc. The engine warranty is backed by the engine manufacturer. Special attention should be paid to applicable data which will not be duplicated here.

## Engine Oil and Filter

**WARNING**

Allow the engine to cool before changing the engine oil. If the engine has been running, use caution when changing the engine oil as it will be very hot. You should wear the appropriate protective gear to avoid being burned or exposed to engine oil.

Check engine oil daily and after every 4 hours of operation. The machine must be sitting level when checking oil. Refer to engine manual and maintenance schedule for oil recommendation and capacities. Hustler® Motor Oil is recommended.

Change the engine oil and filter after the first 5 hours of operation and per the engine manufacturer's recommendations after that. If mower is being operated in extremely dirty conditions, then it is recommended oil be changed more frequently.

**IMPORTANT:** After the new oil filter has been installed, clean up any oil which may have spilled onto the engine plate, engine exhaust system, and muffler guard.

### Kawasaki engines — Draining the engine oil:

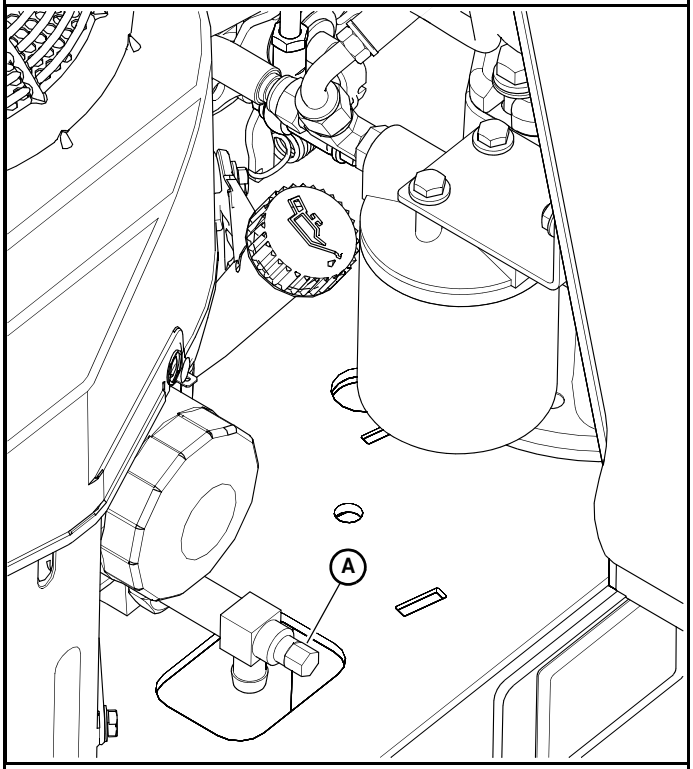
1. Locate the oil drain valve on the engine. Figure 5-1
2. Position a suitable oil drain container under the machine below the oil drain valve.
3. Twist the valve counterclockwise to open the valve. Allow 10 minutes for engine oil to adequately drain.
4. After the oil is drained, close the valve by turning it clockwise.
5. Once the valve is closed, clean up any spilled oil.

   **IMPORTANT:** All oil drips or spills **must** be cleaned off of the engine plate, engine exhaust system, and muffler guard before operating the machine.

### Vanguard EFI Engine with Oil Guard™ — Draining the engine oil:

1. Locate the oil drain valve on the bottom of the oil tank. Figure 5-2

**Kawasaki engine shown**




**A.** Oil drain valve

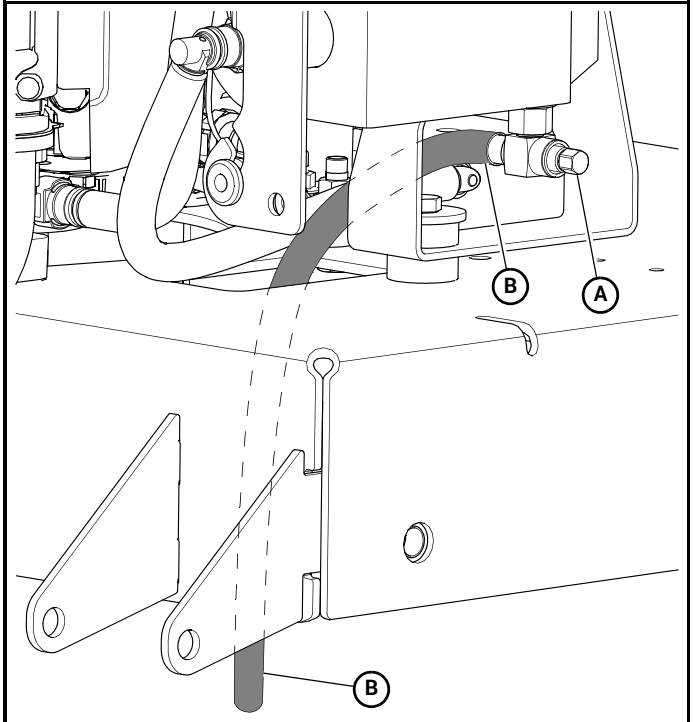
**Figure 5-1**

2. Locate the oil drain hose that was supplied with the machine. Be sure to clean and clear it of debris that might block the flow of the engine oil.
3. Attach one end of the hose onto the oil drain valve nipple. Make sure the hose is pushed all the way onto the valve. Figure 5-2
4. Position the loose end of the hose through the opening in the engine plate, so that it can drain into a suitable oil drain container.

   **IMPORTANT:** Make sure the oil does not come in contact with the belts or clutch.
5. Position a suitable oil drain container under the machine below the end of the hose.
6. Use a 10 mm wrench or socket and open the valve approximately 4 turns in the counterclockwise direction. Allow 10 minutes for engine oil to adequately drain.
7. After the oil is drained, close the valve by twisting clockwise.
8. Once the valve is closed, carefully remove the oil drain hose and clean up any spilled oil.

   **IMPORTANT:** All oil drips or spills **must** be cleaned off of the engine plate, engine exhaust system, and muffler guard before operating the machine.
9. Clean the oil drain hose and store it appropriately.

**Vanguard engine (EFI) shown**




**A.** Oil drain valve

**B.** Drain hose

**Figure 5-2**

## Engine Air Filter

These mowers come equipped with two different styles of air filters; integrated or canister. The required servicing for these two filter types is different from one to the other. Refer to the following for the one appropriate for your mower.

### Integrated Type

Perform engine air filter maintenance per the *Maintenance Schedule* shown elsewhere in this manual. Figure 5-3

### Canister Type

Perform engine air filter maintenance per the *Maintenance Schedule* shown elsewhere in this manual.

A specially designed dry filter is standard equipment on these mowers and supplies clean combustion air to the engine. Figure 5-4

These mowers are equipped with a safety filter. The filter element slides over the safety filter. Figure 5-5

The safety filter does not require servicing unless it becomes contaminated with dirt or moisture.

### Recommended Service Procedure

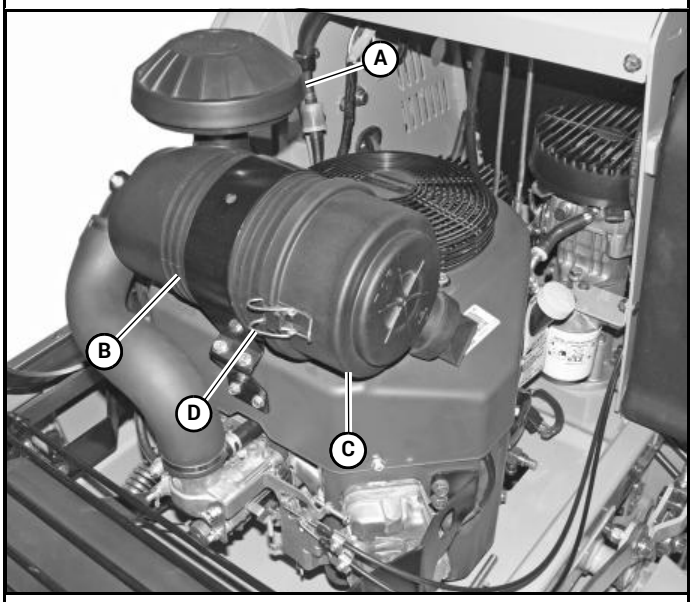
1. Release clamps and remove element. Clean the air cleaner canister with a damp cloth.
2. Before installing a new element, inspect it by placing a bright light inside and rotating the element slowly, looking for any holes or tears in the paper. Also check gaskets for cuts or tears. Do not attempt to use a damaged element which will allow abrasive particles to enter the engine.
3. Reinstall the dust cap. Make sure it seals all the way around the air cleaner canister, then tighten the clamps. Figure 5-4
4. Check all fittings and clamps periodically for tightness and inspect hoses for holes or cracks.
5. Periodically check the intake hose for signs of ingested dust. Locate and repair the source of ingested dirt.

**Kawasaki FS541V engine**


**A.** Air filter cover

**Figure 5-3**

**Kawasaki FX600V/FX691V/FX850V/FX850V EFI engine**




**A.** Pre-cleaner

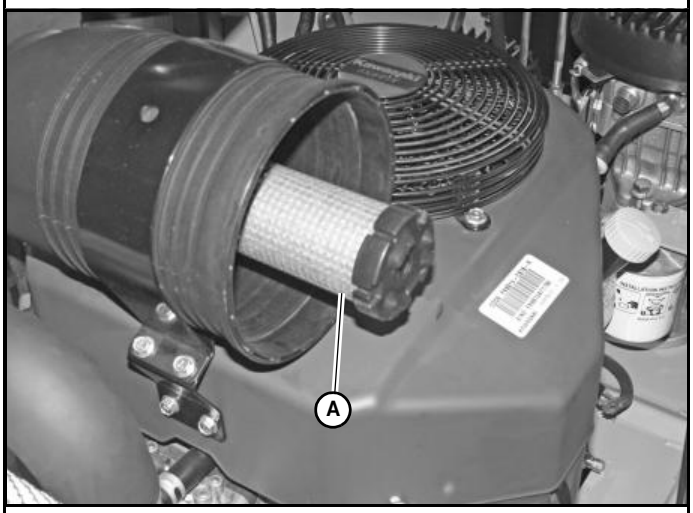
**B.** Air cleaner canister

**C.** Dust cap

**D.** Clamp

**Figure 5-4**

**Kawasaki FX691V/FX850V engine**




**A.** Safety filter

**Figure 5-5**

6. Never operate the machine without an air filter installed.

### Overservicing

Overservicing occurs when an air filter element is removed for cleaning or replacement before it is necessary. Each time the filter is removed a small amount of dirt and dust could fall in the intake system. This accumulated dirt can cause a dusted engine. It only takes a few grams of ingested dirt over the normal service life of an engine to cause a dusted engine.

**Do not clean the element, but replace with a new element only.** Cleaning used air filter elements, through improper cleaning procedures, can get dust on the inside of the filter causing dirt ingestion and engine failure.

It is important to note that whenever an air filter element is cleaned by **any method,** the person or company performing the cleaning assumes responsibility for the integrity of the filter from then on. **The warranty for air filters expires upon cleaning or servicing in any manner because the condition of the filter after servicing is completely out of the filter manufacturer's control. Therefore, on a dust ingested engine failure, there will be no warranty consideration if the air filter element has been cleaned or serviced in any manner.**

A partially dirty air filter element works better than a new element. Therefore, a dirty filter element is not bad for the engine unless it is excessively restricting the air flow and engine performance is affected. The reason is simple. The media in the filter must be porous to allow air to pass through it. When dirty air passes through the filter, the dirt plugs some of the holes in the media and actually acts as part of the filter media. When the next round of dirt enters, the first dirt helps filter out even smaller particles making the filter more efficient at stopping dirt from entering the engine. This is referred to as barrier filtration.

Of course, at some point the filter media becomes too clogged to allow air to pass.

The mowing conditions will determine the frequency of air filter element changing.

## Fuel Evaporation System Filter

These mowers have a fuel evaporation system filter. This filter must be checked and replaced every 500 hours or annually whichever comes first. Figure 5-6


**A.** Fuel evaporation system filter

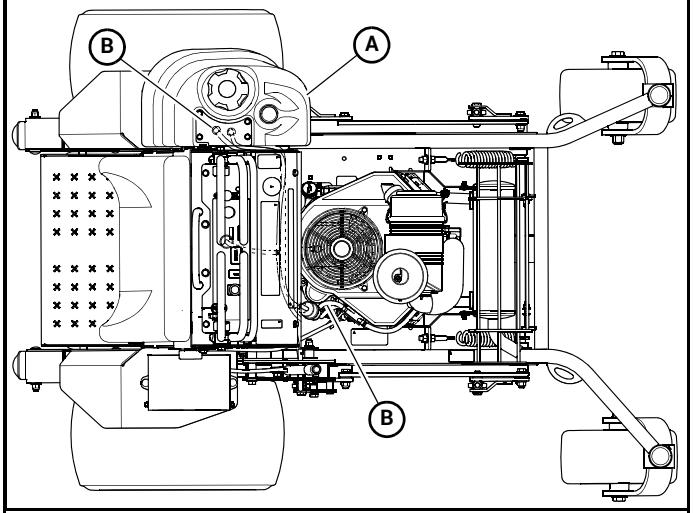
**Figure 5-6**

## Fuel & Evaporative System Line Routings

These mowers have a fuel evaporative system installed. There are two different types of rubber hoses that are connected to the fuel tank. One is the fuel hose that is part of the fuel system. The other is the vapor line that is part of the fuel evaporative system.

The fuel hose is connected to the fuel tank as shown. It connects the fuel tank to the engine's fuel pump. Figure 5-7, Figure 5-8, Figure 5-9, & Figure 5-10

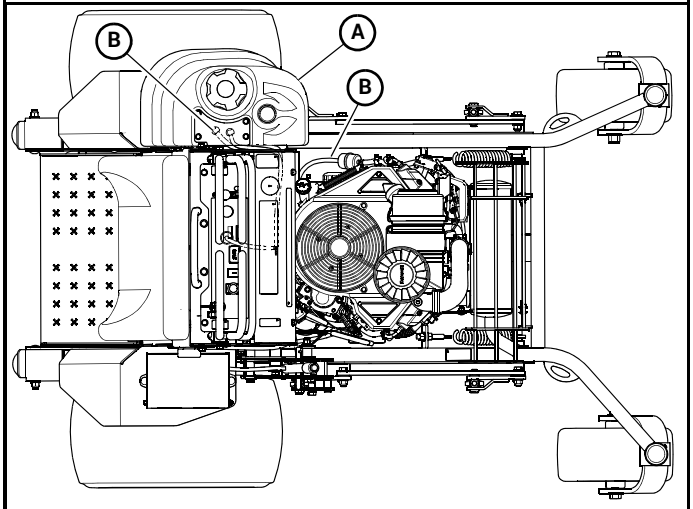
**48"/52"/60" Mowers with Kawasaki engines**




| | |
|---|---|
| **A.** Fuel tank | **B.** Fuel line |

**Figure 5-7**

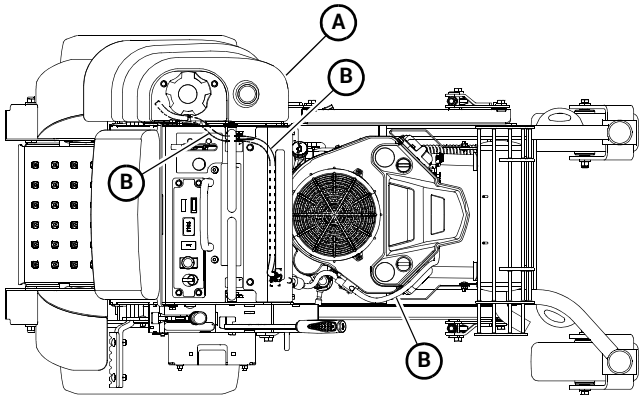
**52"/60" Mowers with Kawasaki EFI engines**




| | |
|---|---|
| **A.** Fuel tank | **B.** Fuel line |

**Figure 5-8**

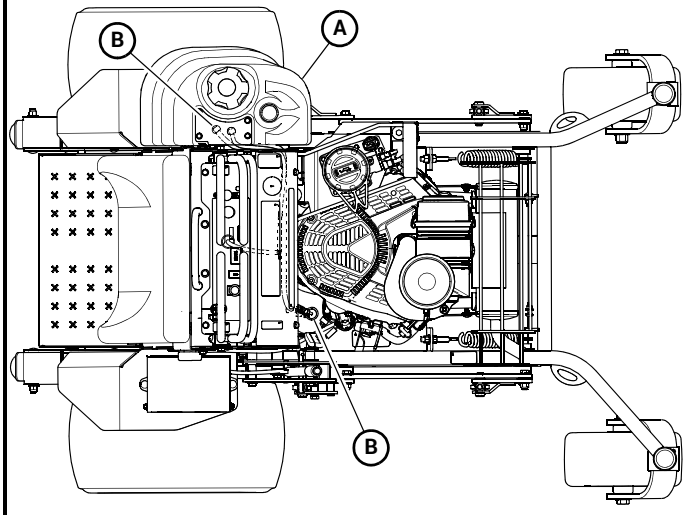
**36" Mowers with Kawasaki engines**




| | |
|---|---|
| **A.** Fuel tank | **B.** Fuel line |

**Figure 5-9**

**60" Mowers with Vanguard/Oil Guard™ engines**

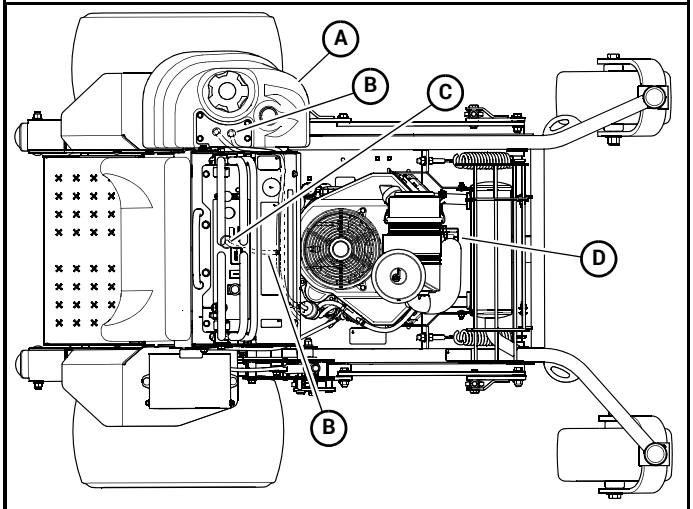



| | |
|---|---|
| **A.** Fuel tank | **B.** Fuel line |

**Figure 5-10**

The vapor lines are connected to the fuel tank as shown. They connect the fuel tank to the engine's vapor port. Figure 5-11, Figure 5-12, Figure 5-13, & Figure 5-14

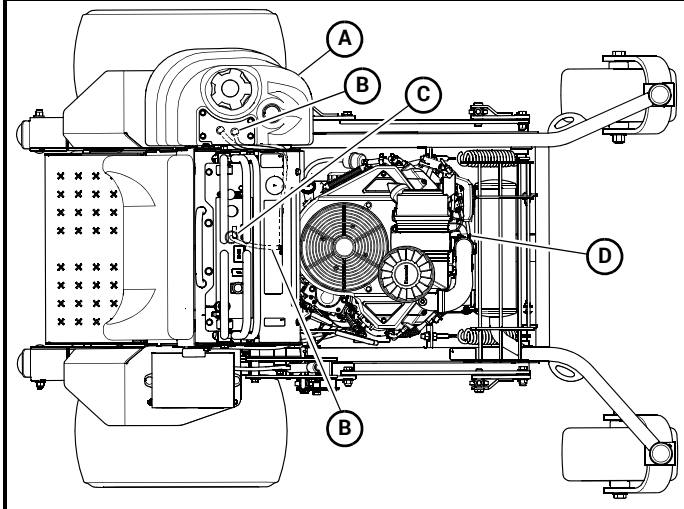
**48"/52"/60" Mowers with Kawasaki engines**




| | |
|---|---|
| **A.** Fuel tank<br>**B.** Vapor lines | **C.** Fuel evaporation system filter<br>**D.** Engine vapor port |

**Figure 5-11**

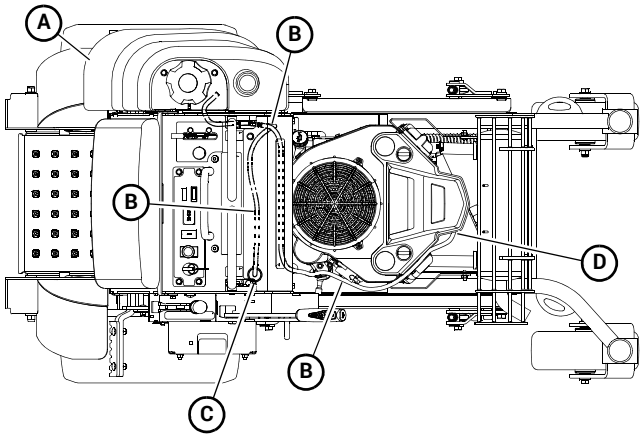
**52"/60" Mowers with Kawasaki EFI engines**




| | |
|---|---|
| **A.** Fuel tank<br>**B.** Vapor lines | **C.** Fuel evaporation system filter<br>**D.** Engine vapor port |

**Figure 5-12**

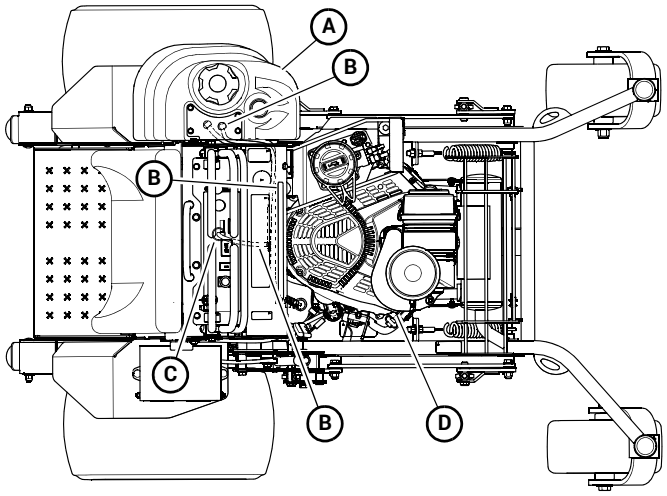
**36" Mowers with Kawasaki engines**




| | |
|---|---|
| **A.** Fuel tank<br>**B.** Vapor lines | **C.** Fuel evaporation system filter<br>**D.** Engine vapor port |

**Figure 5-13**

**60" Mowers with Vanguard/Oil Guard™ engines**




| | |
|---|---|
| **A.** Fuel tank<br>**B.** Vapor lines | **C.** Fuel evaporation system filter<br>**D.** Engine vapor port |

**Figure 5-14**

## Engine RPM Settings

The engine rpm's are set at the factory for maximum mowing efficiency. Occasionally it may be necessary to check and adjust the settings. The idle speeds should be set as follows:

| **Kawasaki FS541V** | |
|---|---|
| **ENGINE SPEEDS** | |
| **Model No. ending with:** | **high idle** |
| Model NO. without extension<br>Model NO. with **EX** extension<br>Model NO. with **US** extension | 3600 ± 50 rpm |
| **Kawasaki FX600V / FX691V / FX730V / FX850V** | |
| **ENGINE SPEEDS** | |
| **Model No. ending with:** | **high idle** |
| Model NO. without extension<br>Model NO. with **EX** extension<br>Model NO. with **US** extension | 3600 ± 50 rpm |
| **VANGUARD M61/ Oil Guard™** | |
| **ENGINE SPEEDS** | |
| **Model No. ending with:** | **high idle** |
| Model NO. without extension<br>Model NO. with **EX** extension<br>Model NO. with **US** extension | 3600 ± 50 rpm |

**NOTE:** Model numbers may or may not end with an extension after the number. There are several different extensions that may be shown; i.e. EX, AU or CE.

**Example:** 922222 (no extension)

922222 EX

922222 CE

922222 US

922222 AU

# DECK ADJUSTMENTS

## Deck Leveling

Leveling the deck must be done in the following manner and order:

1. Check tire pressures to make certain they are properly inflated before starting to level deck. The recommended pressures are as follows:

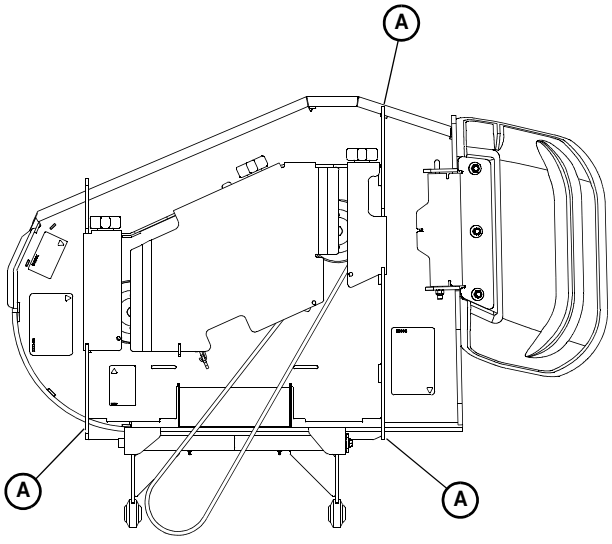
   Drive wheels tire pressure. . . . . 8–12 psi
   Gauge wheels tire pressure. . . . . 8–12 psi

**WARNING**

Stop engine. Make sure the deck clutch switch is **in the down (OFF) position**. Place the steering control levers in the neutral position. Place the park brake lever in the park brake position before leaving the machine.

2. Park the unit on a hard flat surface. Place 3" blocks under the points shown in Figure 6-1 or Figure 6-2.
3. Place the deck height pin in the 3.25" position.
4. Lower the deck onto the blocks.
5. Adjust the nut on each deck level rod end over the three (3) blocks so that the deck is sitting on the block and the nut is on the deck level spacer. Figure 6-3
6. **48"/52"/60" Decks –** Adjust the last nut on the right rear corner so that the deck level rod end is not loose. **36" Decks –** Adjust the last nut on the front left corner so that the deck level rod end is not loose.

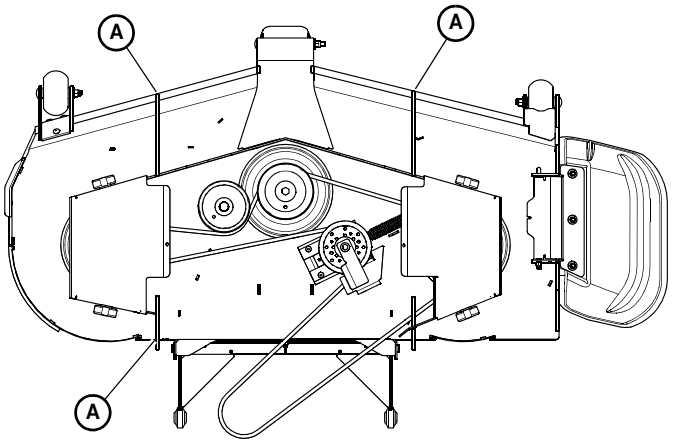
**36" Decks**




**A.** 3" Block

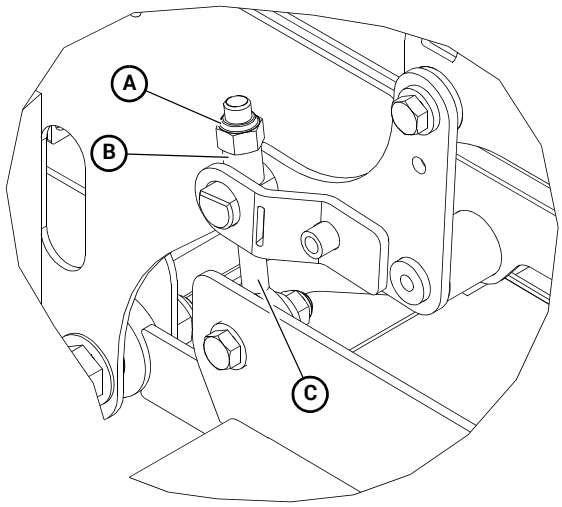
**Figure 6-1**

**48"/52"/60" Decks**




**A.** 3" Block

**Figure 6-2**




**A.** Nut
**B.** Deck level spacer
**C.** Rod end

**Figure 6-3**

## Deck Lift Tension Spring Adjustment

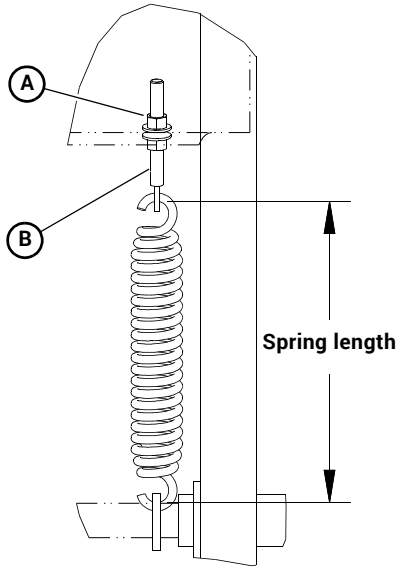
Occasionally it may be necessary to re-adjust the deck lift spring tension.

Place the deck height pin in the 3.25" position before adjusting the spring.

To adjust the spring tension, loosen the jam nut on the eyebolt. Then, tighten the eyebolt until the spring is the appropriate length as shown in the table.

| DECK SIZE | SPRING LENGTH |
|---|---|
| 36" | 8.4" ± .12" (213.36 mm ± 3 mm) |
| 48" | 7.5" ± .12" (190.5 mm ± 3 mm) |
| 52" | 7.7" ± .12" (195.6 mm ± 3 mm) |
| 60" | 8" ± .12" (203.2 mm ± 3 mm) |

Measure the length from the inside of one hook to the inside of the other hook. Tighten the jam nut on the other side once the distance is set. Figure 6-4




| | |
|---|---|
| **A.** Nut | **B.** Eyebolt |

**Figure 6-4**

## Blades

### Mower blade maintenance

Refer to the *Mower Blade Replacement* section for blade removal and installation.

Check the mower blades daily as they are the key to power efficiency and well groomed turf. Keep the blades sharp. A dull blade will tear rather than cut the grass, leaving a brown ragged top on the grass within a few hours. A dull blade also requires more power from the engine.

Replace any blade which is bent, cracked or broken.

**WARNING**

Never attempt to straighten a bent blade by heating, or weld a cracked or broken blade as the blade may break and cause serious injury. Replace worn or damaged blades.

**WARNING**

**Repairs or maintenance requiring engine power should be performed by trained maintenance personnel only.**

Unless specifically required, **DO NOT** have the engine running when servicing or making adjustments to the mower.

- Park the mower on level ground
- Disengage the deck clutch.
- Place the steering control levers in the park brake position.
- Lower the deck.
- Stop the engine.
- Remove the ignition key.
- Disconnect the negative battery cable.
- Block up mower when you **must** work under it.

**Always check for blade damage** if mower strikes a rock, branch or other foreign object during mowing!

**WARNING**

Always wear adequate eye protection when grinding mower blades.

**WARNING**

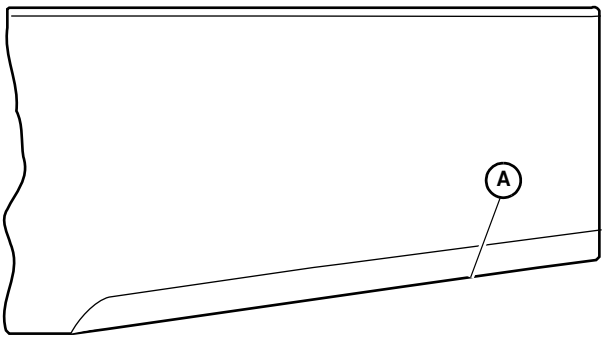
Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves and use extra caution when servicing them.

Sharpen the blades on a grinder following pattern as shown (Figure 6-5). Touch-up sharpening can be done with a file.

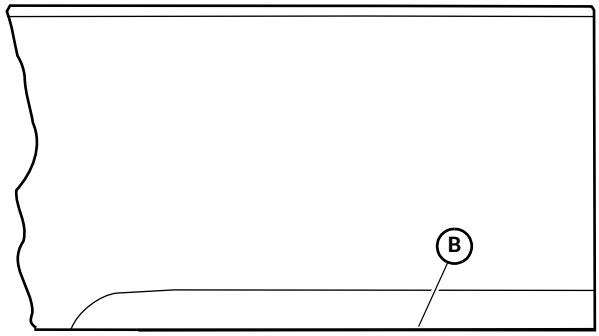
After grinding the blades, check for balance. Blade balancing can be done by placing the blade on an inverted line punch or 5/8" bolt. A commercial balancing tool is also available through most hardware supply stores.

The blade should not lean or tilt. When spinning the blade slowly it should not wobble. Balance the blade before reinstalling.

Lay the blade on a flat surface and check for distortion (Figure 6-6 & Figure 6-7). Replace any distorted blade.



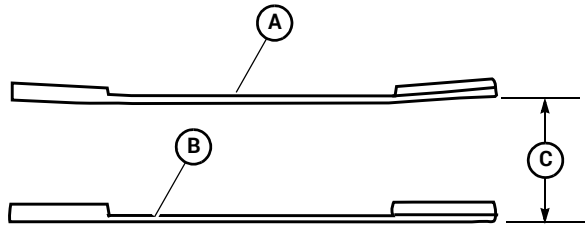

**Do not sharpen to original pattern (below). It is easier to get a straight cutting edge following the re-sharpening pattern shown above.**




**A.** Re-sharpening pattern
**B.** Original edge

**Figure 6-5**

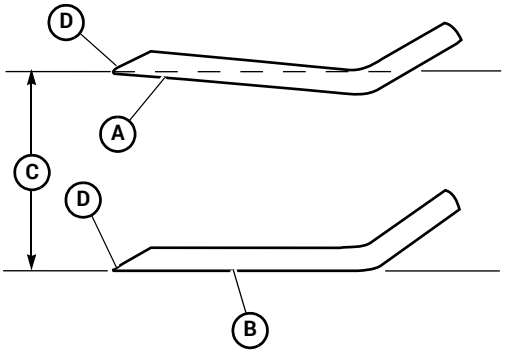
**Comparison of Warped and Straight Blades**




**A.** Warped blade — replace
**B.** Straight blade
**C.** Cutting plane

**Figure 6-6**

**End view of blades, comparing twisted and straightened blades.**




**A.** Twisted blade edge — replace blade
**B.** Straight blade edge
**C.** Cutting plane
**D.** Cutting edge

**Figure 6-7**

## Mower blade removal

**IMPORTANT: Refer to the *Safety* section of this manual for blade handling safety information.**

**WARNING**

Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves and use extra caution when servicing them.

A 15/16" wrench is required to remove the 5/8" cap screw holding the blade to the spindle shaft. **NOTE:** A blade holding tool (P/N 381442) is available from Hustler® Turf Equipment. It is designed to prevent the blades from rotating when they are being removed or installed on the spindle. Contact your Hustler® Dealer for more information.

Do not re-use spindle bolts which have stripped, worn or undercut threads. Torque bolts on spindles to 118 ft-lbs (160.0 N•m) when reinstalling blades.

**WARNING**

Failure to correctly torque the bolt may result in the loss of the blade which can cause serious injury.

Properly compressed cup washers maintain the correct compression load on the blades. Replace the cup washers if they are cracked or flattened.

**IMPORTANT:** The blade sail (curved part) must be pointing upward toward the inside of the deck to make sure of proper cutting.

When mounting blades, rotate them after installation to make sure blade tips do not touch each other or sides of the mower.

## Belts

Inspect belts frequently for wear and serviceability. Replace a belt that shows signs of:

- severe cuts
- tears
- separation
- weather checking
- cracking
- burns caused by slipping.

Slight raveling of belt covering does not indicate failure, trim ravelings with a sharp knife.

Inspect the belt pulley grooves and flanges for wear. A new belt, or one in good condition, should never run against the bottom of the groove. Replace the pulley when this is the case, otherwise, the belt will lose power and slip excessively.

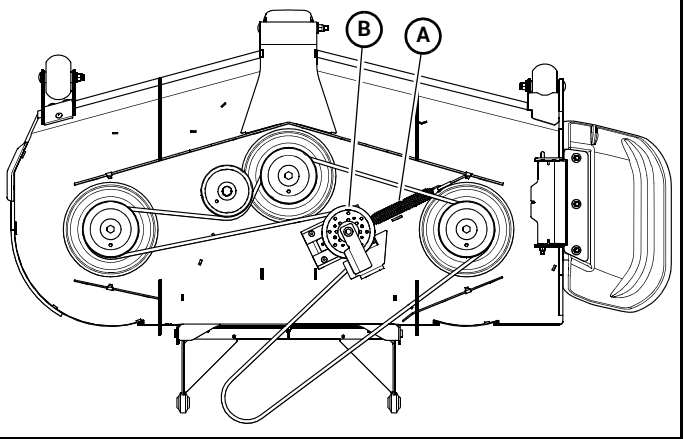
Never pry a belt to get it on a pulley as this will cut or damage the fibers of the belt covering.

Keep oil and grease away from belts, and never use belt dressings. Any of these will destroy the belt composition in a very short time.

## Deck Belt Adjustment

The deck belt tension remains constant by means of a tension idler and spring. There is no tension adjustment of this belt. Figure 6-8 & Figure 6-9

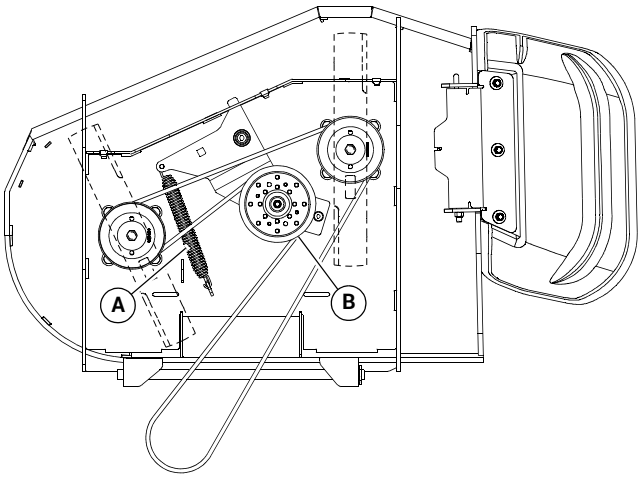
**48"/52"/60" Deck shown**




| | |
|---|---|
| **A.** Idler Spring | **B.** Tension idler |

**Figure 6-8**

**36" Deck shown**




| | |
|---|---|
| **A.** Idler Spring | **B.** Tension idler |

**Figure 6-9**

## Deck Belt Replacement

### 36" Deck Belt Replacement

**WARNING**

Allow the engine and muffler to cool before proceeding with the following procedure.

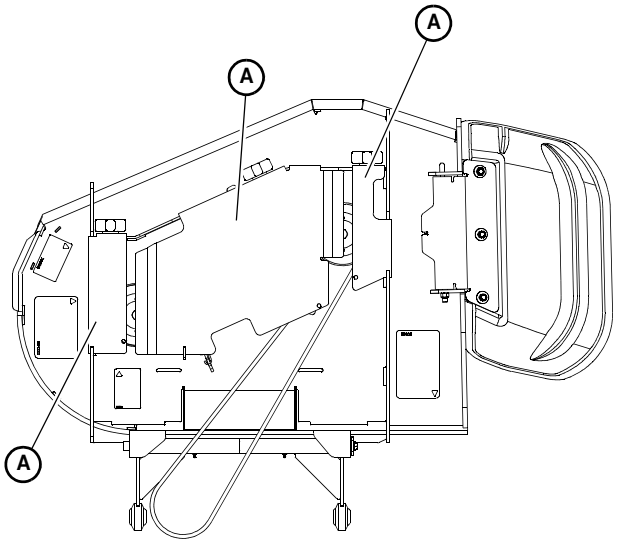
**WARNING**

Exercise caution when releasing spring tension from the belt idler.

1. Before proceeding perform the following sequence:
   - Always stop on level ground.
   - Disengage the deck clutch.
   - Place the steering control levers in the neutral position.
   - Place the park brake lever in the engaged park brake position.
   - Stop the engine.
   - Remove the ignition key.
   - Wait for the engine and all moving parts to come to a complete stop.
   - Disconnect the negative battery cable.
2. Lower the deck to the lowest setting.

3. Remove the deck covers. Figure 6-10

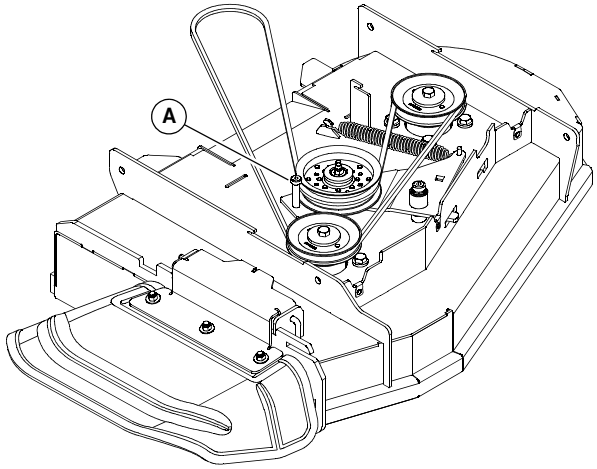
**36" Deck shown**




**A.** Deck covers

**Figure 6-10**

4. Locate and remove the belt guide shoulder bolt. Figure 6-11

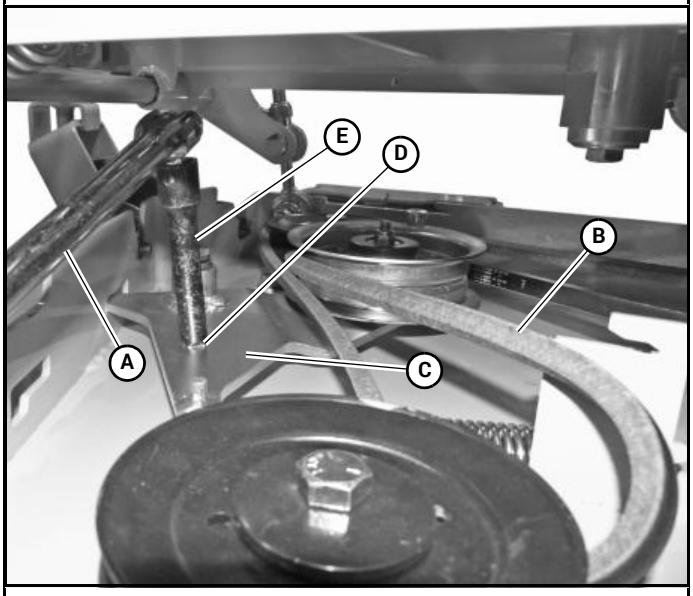



**A.** Belt guide shoulder bolt

**Figure 6-11**

5. Go to the left side of the deck and insert a 1/2" drive breakover bar with an extension into the 1/2" square hole in the deck idler arm plate. Rotate the breakover bar towards the front of the mower to release the belt tension. Figure 6-12 & Figure 6-13
6. Remove the deck drive belt from the deck spindle pulleys and idler pulley. Figure 6-14
7. Remove the deck drive belt from the electric clutch pulley located on the hydraulic pump jack shaft. Figure 6-15

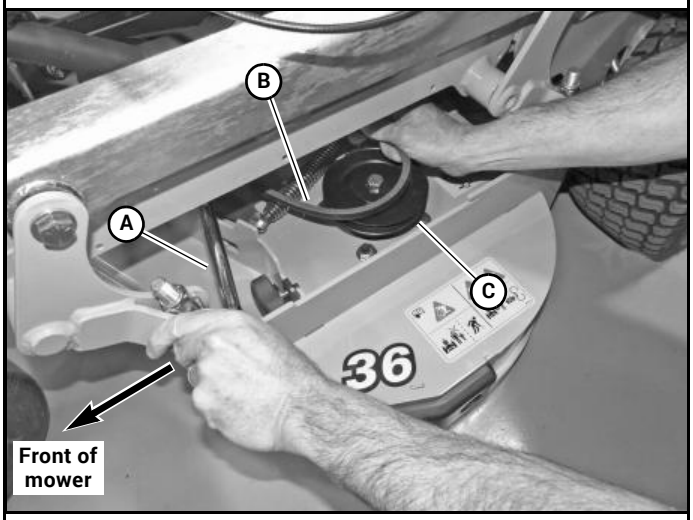
**36" Deck shown**




**A.** 1/2" drive breakover bar
**B.** Deck drive belt
**C.** Idler arm plate
**D.** 1/2" square hole
**E.** 1/2" drive extension

**Figure 6-12**

**Rotate the 1/2" breakover bar towards the front of the mower.**




**A.** 1/2" drive breakover bar
**B.** Deck drive belt
**C.** Left side spindle pulley

**Figure 6-13**

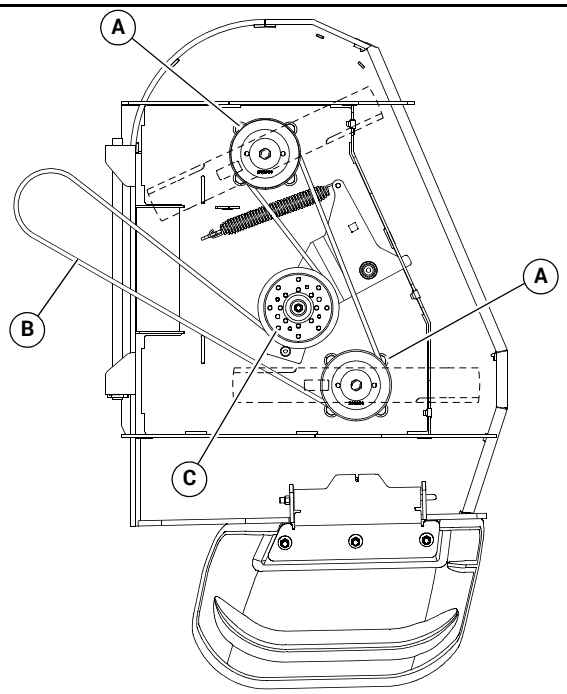
8. Route the new deck drive belt around the clutch pulley, spindle pulleys and idler pulley. Make certain the belt is routed properly. Figure 6-14 & Figure 6-15
9. Use the 1/2" breakover bar and extension to ease the idler pulley tension, slide the belt over the left side spindle pulley. Slowly allow the idler pulley to engage the deck belt. Remove the 1/2" breakover bar and extension. Figure 6-13

10. Install the belt guide shoulder bolt. Make sure the belt is routed between the shoulder bolt and the pulley. Figure 6-11
11. Install the deck covers. Figure 6-10
12. Attach the negative battery cable.

**WARNING**

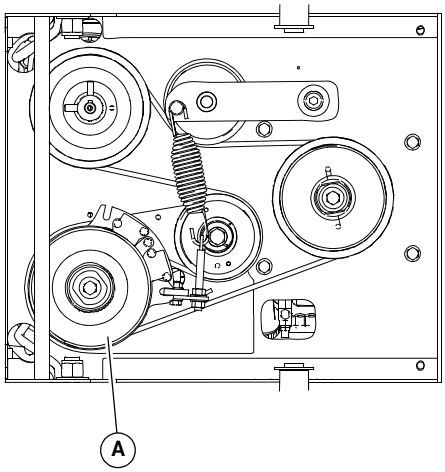
Never operate the mower without the deck covers in place.

**36" Deck shown**




**A.** Spindle pulleys
**B.** Deck drive belt
**C.** Idler pulleys

**Figure 6-14**




**A.** Electric clutch pulley

**Figure 6-15**

### 48"/52"/60" Deck Belt Replacement

**WARNING**

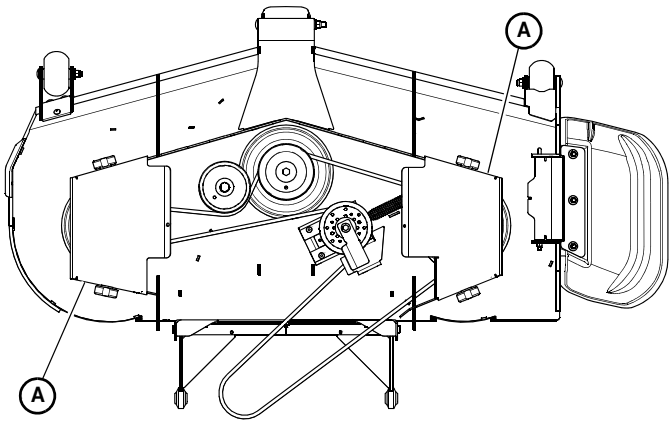
Allow the engine and muffler to cool before proceeding with the following procedure.

**WARNING**

Exercise caution when releasing spring tension from the belt idler.

1. Before proceeding perform the following sequence:
   - Always stop on level ground.
   - Disengage the deck clutch.
   - Place the steering control levers in the neutral position.
   - Place the park brake lever in the engaged park brake position.
   - Stop the engine.
   - Remove the ignition key.
   - Wait for the engine and all moving parts to come to a complete stop.
   - Disconnect the negative battery cable.
2. Lower the deck to the lowest setting.
3. Remove the deck covers. Figure 6-16

**48”/52”/60” Decks**




**A.** Deck covers

**Figure 6-16**

4. Release the deck drive belt tension by pulling on the deck drive belt at the locations shown in Figure 6-17 and pulling it off of the left spindle pulley.

**WARNING**

Keep hands clear when pulling belt over the pulley to prevent pinching. **Do not** get hand or fingers between pulley and belt.

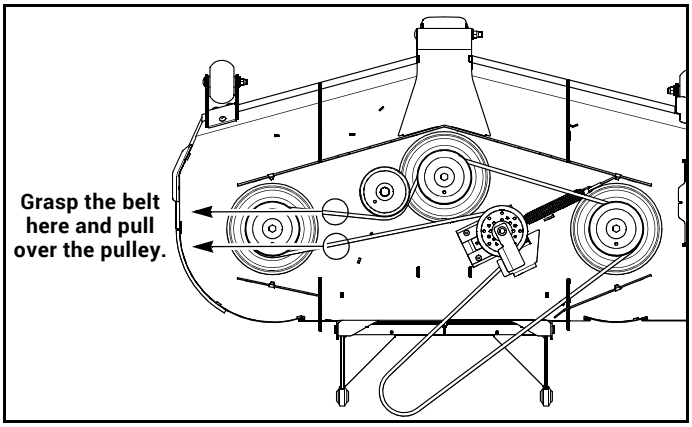


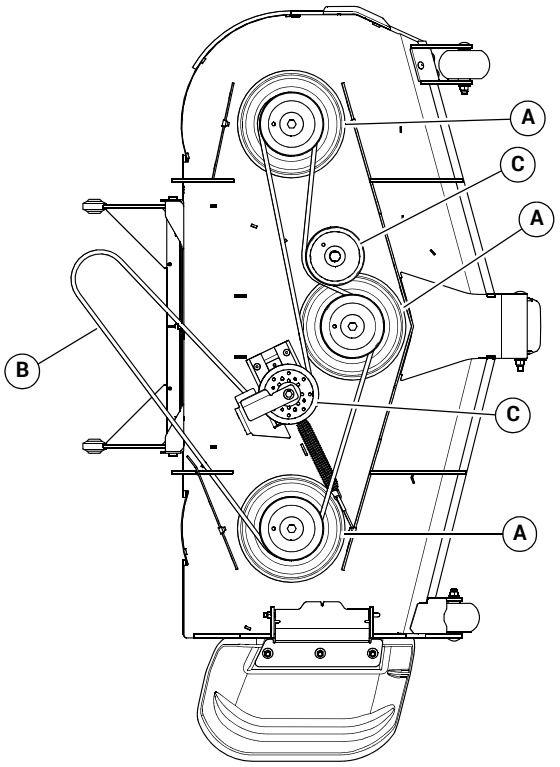

**Figure 6-17**

5. Remove the deck drive belt from the deck spindle pulleys and idler pulleys. Figure 6-18
6. Remove the deck drive belt from the electric clutch pulley located on the hydraulic pump jack shaft. Figure 6-19
7. Route the new deck drive belt around the clutch pulley, right and center spindle pulleys and idler pulleys. Make certain the belt is routed properly. Figure 6-18 & Figure 6-19
8. Grasp the belt at the two locations shown in Figure 6-17 and pull the belt over the left spindle pulley.
9. Release the belt.
10. Install the deck covers. Figure 6-16
11. Attach the negative battery cable.

**WARNING**

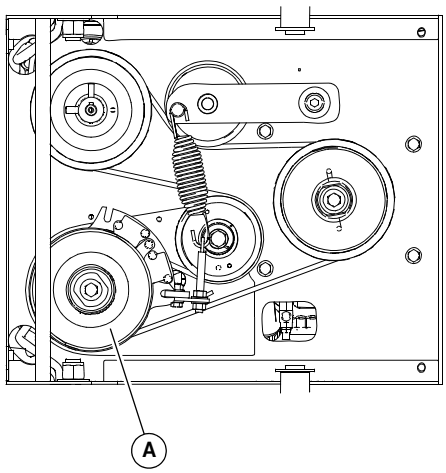
Never operate the mower without the deck covers in place.

**48”/52”/60” Decks**




**A.** Spindle pulleys
**B.** Deck drive belt
**C.** Idler pulleys

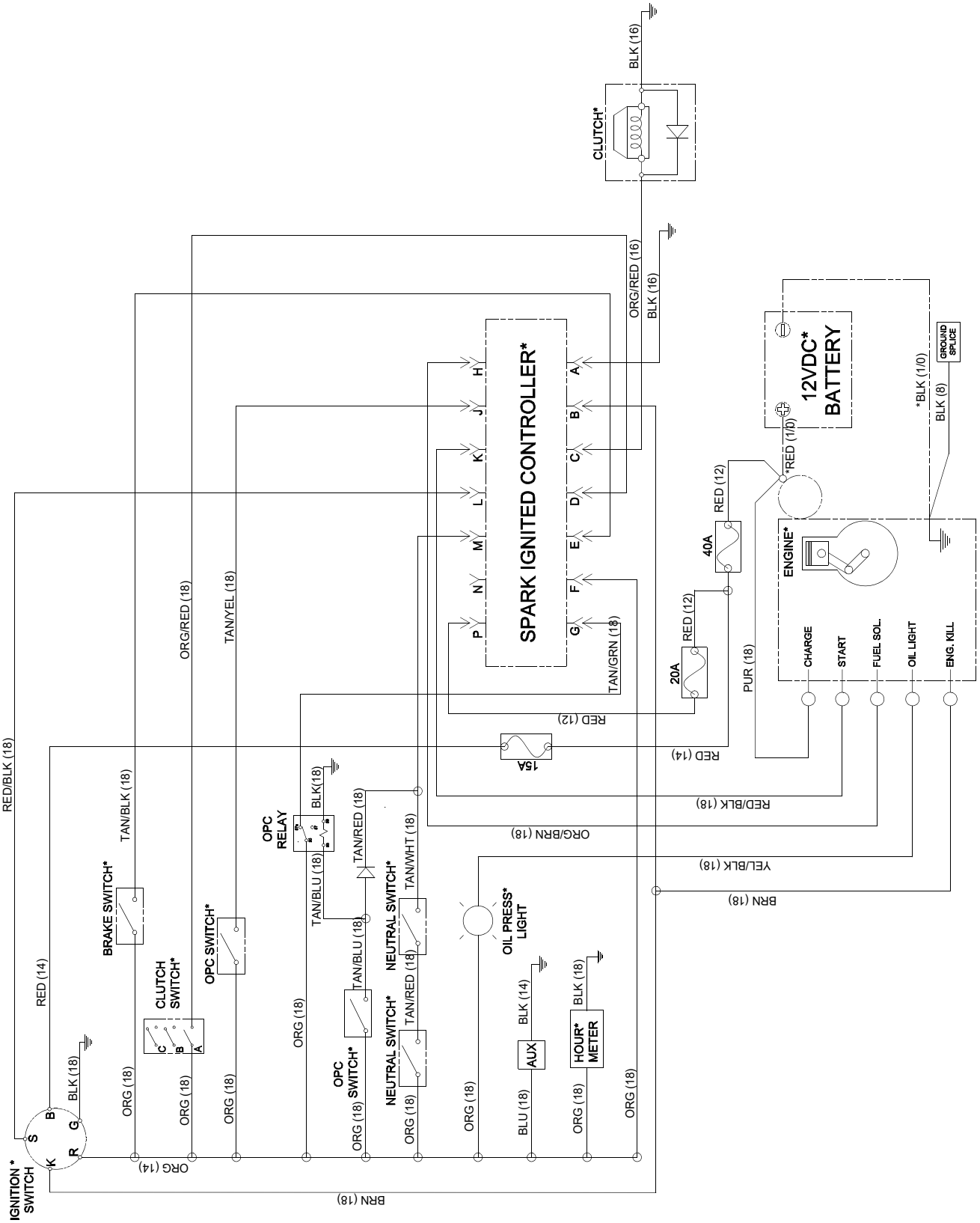
**Figure 6-18**



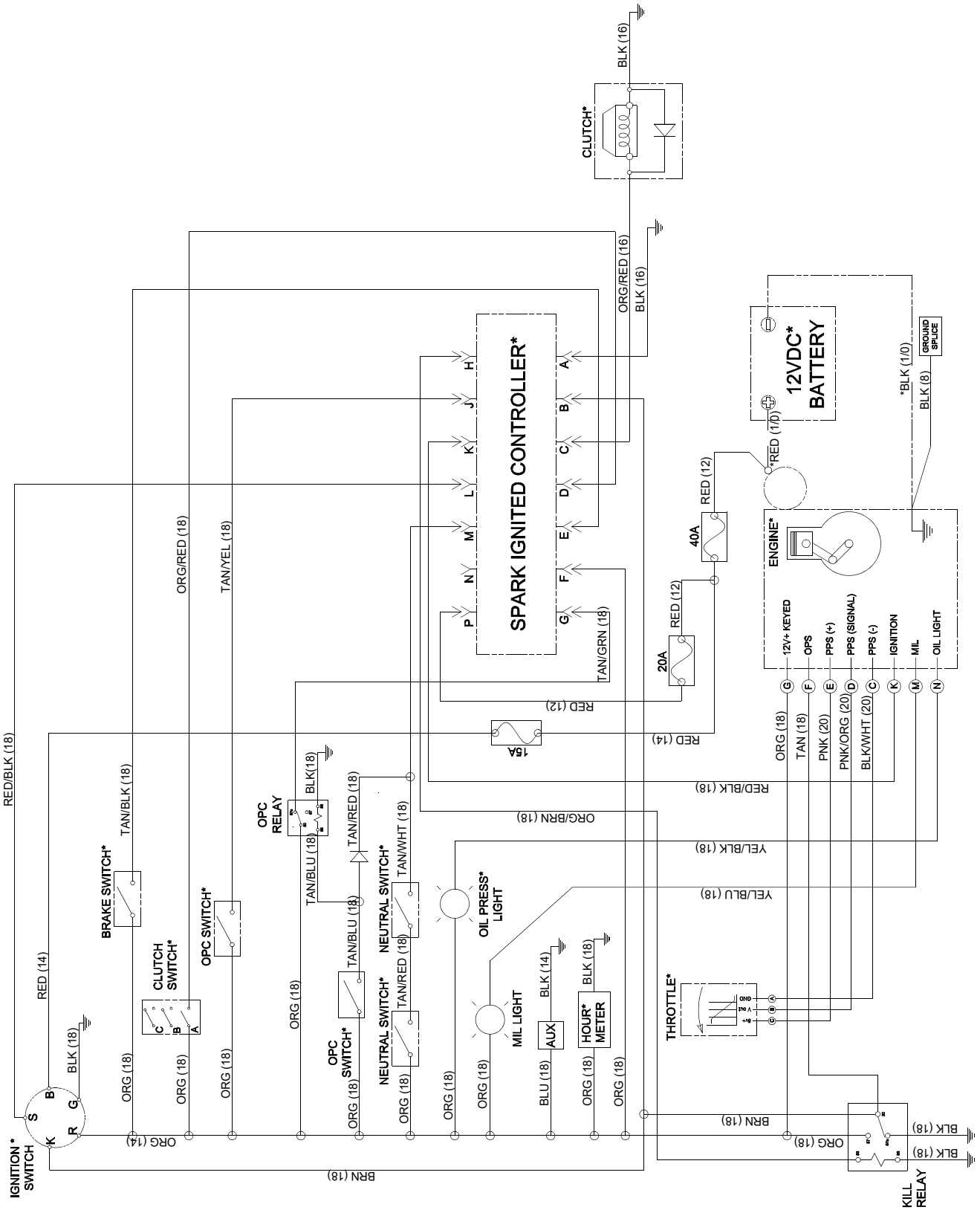

**A.** Electric clutch pulley

**Figure 6-19**

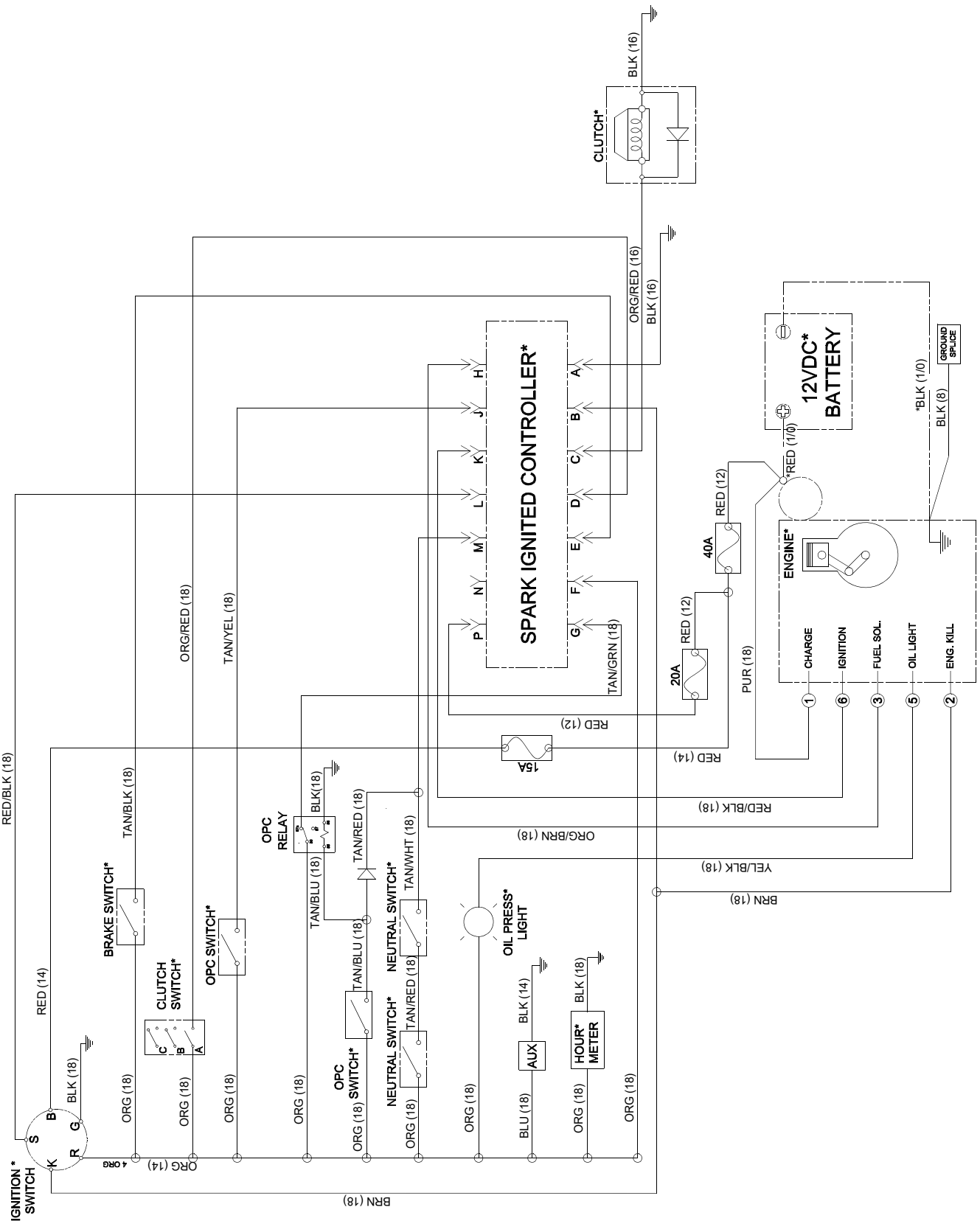
## Electrical Schematic – Kawasaki 48"/52"/60"



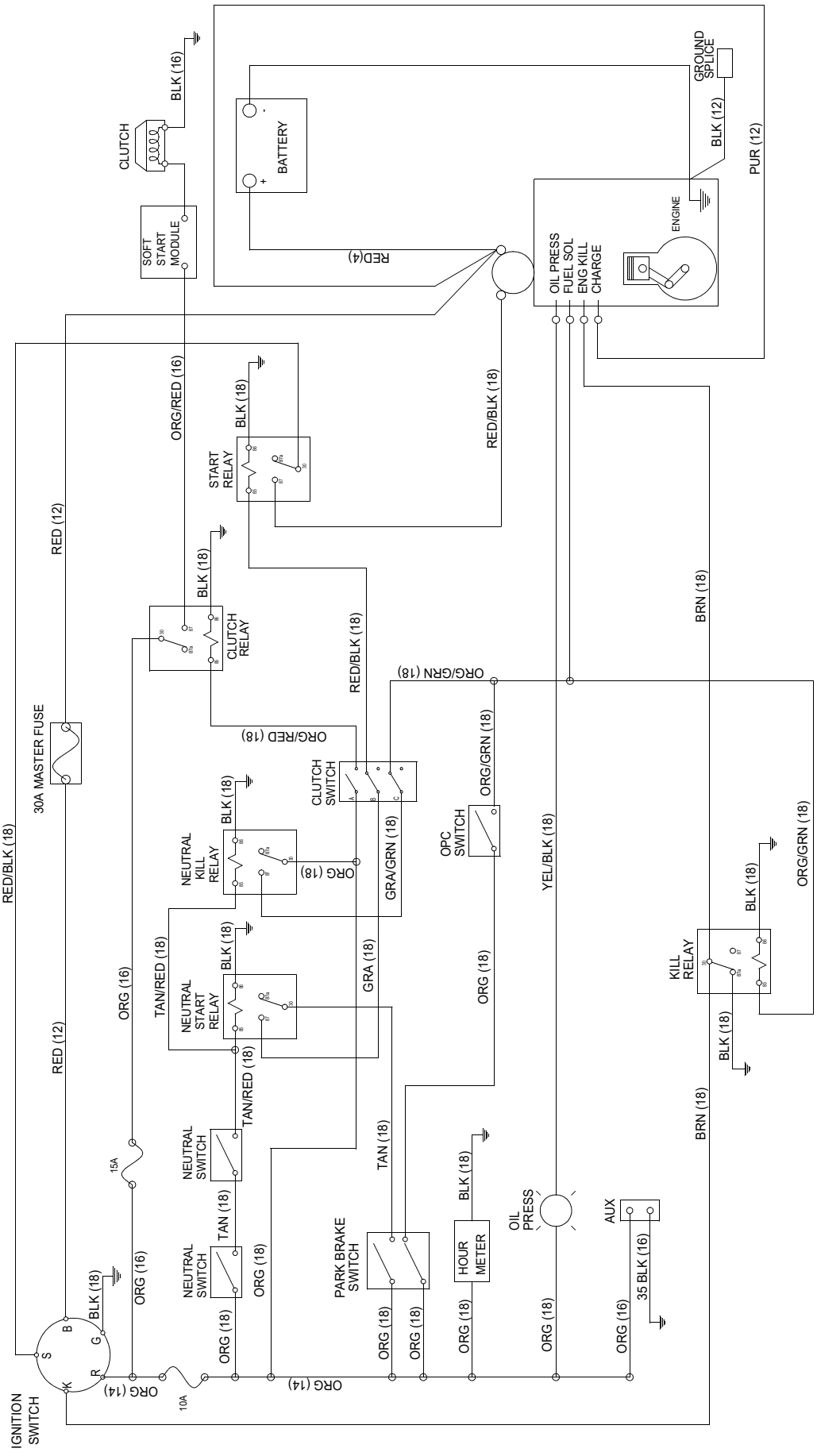
## Electrical Schematic – Kawasaki EFI 52"/60"



## Electrical Schematic – Vanguard 60"



## Electrical Schematic – Kawasaki 36"



# MAINTENANCE SCHEDULE

| Maintenance Schedule<br>Figure 8-1, Figure 8-2, Figure 8-3 Figure 8-4, Figure 8-5,<br>Figure 8-6, Figure 8-7, & Figure 8-8 | | | |
|---|---|---|---|
| **SERVICE AT INTERVALS INDICATED** | **WEEKLY OR 50 HOURS** | **MONTHLY OR 100 HOURS** | *** ANNUALLY OR 500 HOURS** |
| Verify safety start interlock system | Prior to each use | | |
| Visually inspect unit for loose hardware and/or damaged parts | Prior to each use | | |
| Visually inspect tires | Prior to each use | | |
| Check oil level, engine (1) | Prior to each use or every 4 hours | | |
| Clean air intake screen (8) | Prior to each use or every 4 hours | | |
| Check fuel level | Prior to each use | | |
| Blades - sharpen & securely fastened | Prior to each use | | |
| Discharge chute - securely in place & in lowest position | Prior to each use | | |
| Caster fork tapered bearings (11) | Regular maintenance not required | | |
| Clean engine and pump compartment | Daily | | |
| Replace engine air cleaner element (5) (10) | X | | |
| Change engine oil and filter (1) (4) | X | | |
| Clean cylinder and head fins (10) | X | | |
| Check battery connections | X | | |
| Check tire pressure with a gauge | X | | |
| Check hydraulic oil level (3) | X | | |
| Clean engine exterior (10) | X | | |
| Grease deck pusher arms (8) | | X | |
| Grease deck height pivots (8) | | X | |
| Grease front wheel bearings (8) (12) | | X | |
| Clean & regap spark plugs (10) | | X | |
| Check pump and deck belt tension and condition (6) | | X | |
| Check fuel system (7) | | X | |
| Check hydraulic lines | | X | |
| Check fuel tank grommets (7) | | X | |
| Check fuel valve (7) | | X | |
| Tighten lug nuts on wheels (2) | | X | |
| Adjust park brake (9) | | X | |
| Change fuel filter (7) | | | X |
| Clean or replace hydraulic fill cap | | | X |
| Change hydraulic filter & oil (3) | | | X |
| Grease deck spindle housings | | | X |
| Replace spark plugs | | | X |
| Replace fuel evaporation system filter (8) | | | X |

**NOTES:**

1. Initial oil change is after 5 hours of operation. Thereafter, change oil after every 40 hours operation. Change more often under dusty or dirty conditions and during hot weather periods. Hustler® Motor Oil is recommended.
2. Torque initially and after first 2 hours of operation.
3. Perform initial hydraulic system oil and filter change **must** be after the first 50 hours (one week) of mower operation. Thereafter, replace filter and oil in the reservoir annually or every 500 hours, whichever comes first. Hustler® Full Synthetic 20W50 Hydrostatic Transmission Oil is recommended.

4. Change engine oil filter per the engine manufacturer's recommendations. Refer to Engine Owner's Manual for recommendations and other maintenance items.
5. Service more often under dusty or dirty conditions. Use caution when servicing to prevent dust contamination in the engine. **Do not** clean filter element. Replace with a new one.
6. **Pump drive belt only - Inspect belt every 100 hours** and replace if worn or cracking is noticed. Check spring tension adjustment. Otherwise, **replace belt every 400 hours or 2 years** whichever comes first. Check and adjust spring tension after 50 hours of use as outlined in the *Hydraulic Pump Belt Adjustment* section of the General Service Manual (P/N 127180).
7. Check fuel system for any crack or leaks including, but not limited to, fuel line hoses, fuel valve, vent line hoses, vent valve, vapor valve, carbon canister, and grommets. Replace as needed.
8. More often under dusty or dirty conditions and during hot weather.
9. Check and adjust the park brake per the General Service Manual (P/N 127180).
10. Refer to engine owner's manual for engine service information.
11. If caster fork tapered bearing seals leak, refer to the General Service Manual (P/N 127180) for repair procedures.
12. Refer to the General Service Manual (P/N 127180) to service or repair the tapered wheel bearings.

*** After completing maintenance cycle (500 hours), repeat cycle.**

## Maintenance Locator Chart

**36"/48"/52"/60" with Kawasaki Engine FX600V/FX691V/FX850V**

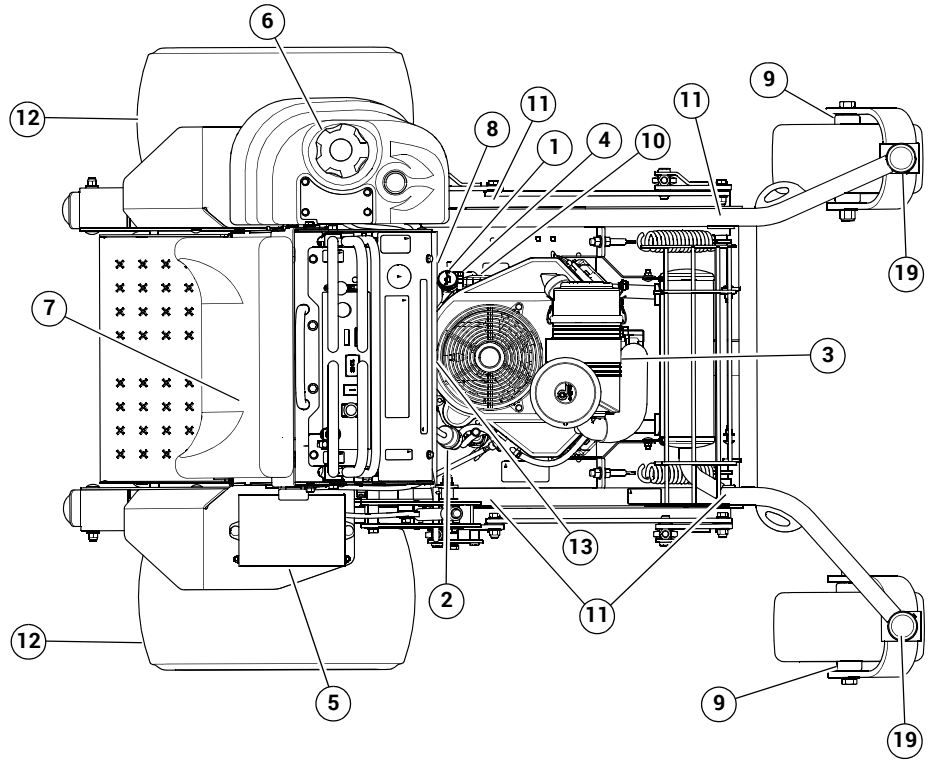



**Figure 8-1**

**52"/60" with Kawasaki Engine 850V EFI**

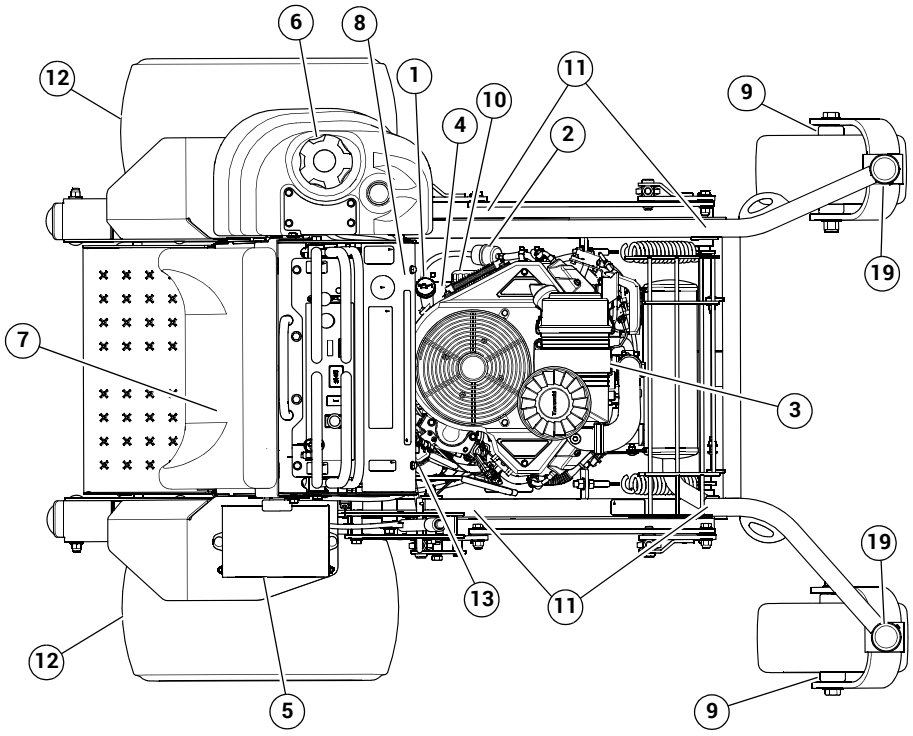
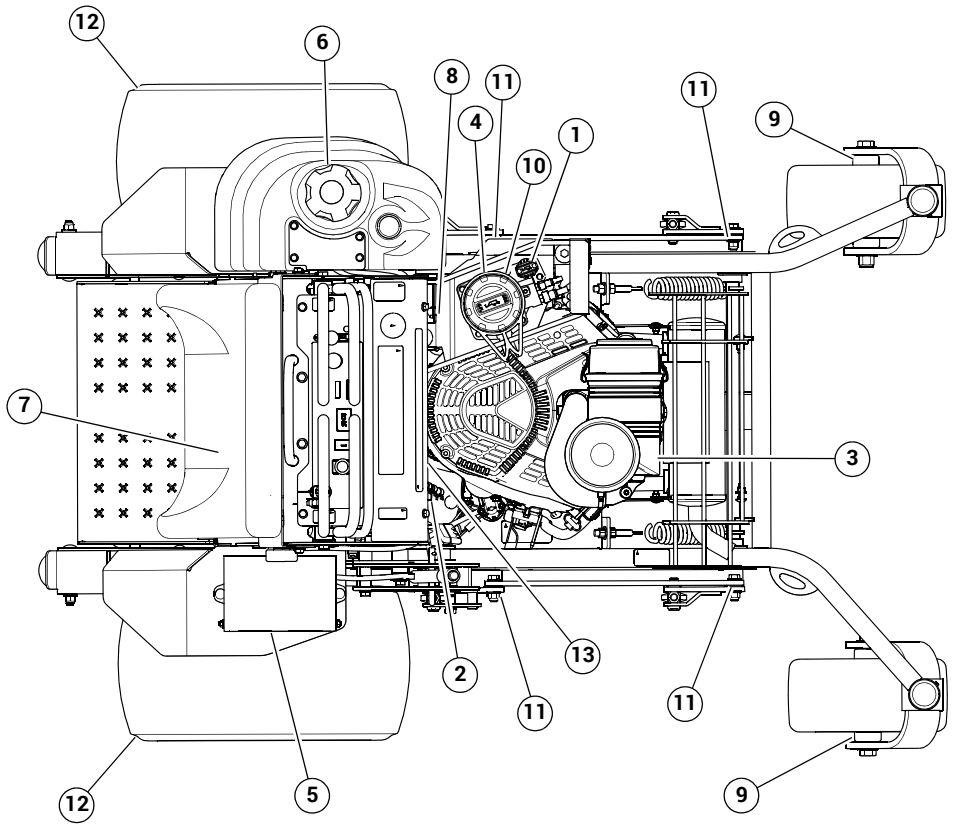



**Figure 8-2**

1. Engine Oil Fill & Dipstick
2. Fuel Filter
3. Engine Air Cleaner
4. Engine Oil Drain Valve
5. Battery
6. Fuel Tank
7. Hydraulic Oil Reservoir
8. Hydraulic Oil Filter
9. Front Wheel Bearing Zerks (2)
10. Engine Oil Filter
11. Deck Height Pivot Zerks (4)
12. Drive Tire
13. Fuel Evaporation System Filter
14. Pump Belt
15. Deck Pusher Arm Zerks (2)
16. Deck Belt
17. Spindle Housing Zerk (3)
18. Blades
19. Caster Fork Tapered Bearings

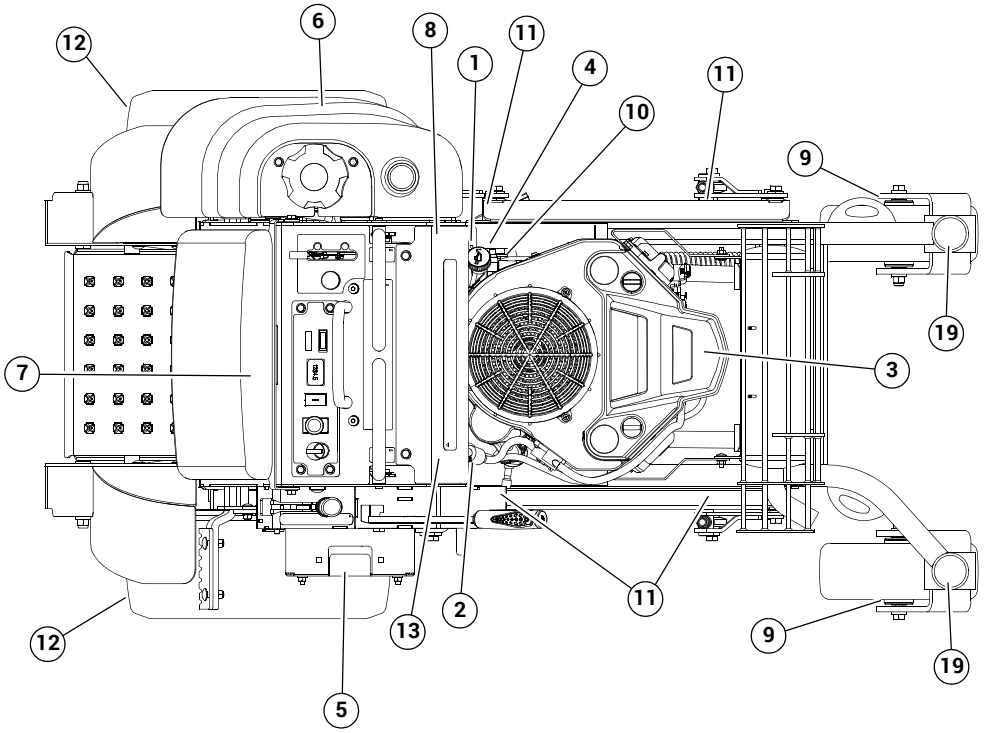
**Vanguard engine with Oil Guard™**




1. Engine Oil Dipstick
2. Fuel Filter
3. Engine Air Cleaner
4. Engine Oil Filter and Fill
5. Battery
6. Fuel Tank
7. Hydraulic Oil Reservoir
8. Hydraulic Oil Filter
9. Front Wheel Bearing Zerks (2)
10. Engine Oil Filter
11. Deck Height Pivot Zerks (4)
12. Drive Tire
13. Fuel Evaporation System Filter
14. Pump Belt
15. Deck Pusher Arm Zerks (2)
16. Deck Belt
17. Spindle Housing Zerk (3)
18. Blades
19. Caster Fork Tapered Bearings

**Figure 8-3**

**36" with Kawasaki Engine FS541V**




1. Engine Oil Fill & Dipstick
2. Fuel Filter
3. Engine Air Cleaner
4. Engine Oil Drain Valve
5. Battery
6. Fuel Tank
7. Hydraulic Oil Reservoir
8. Hydraulic Oil Filter
9. Front Wheel Bearing Zerks (2)
10. Engine Oil Filter
11. Deck Height Pivot Zerks (4)
12. Drive Tire
13. Fuel Evaporation System Filter
14. Pump Belt
15. Deck Pusher Arm Zerks (2)
16. Deck Belt
17. Spindle Housing Zerk (3)
18. Blades
19. Caster Fork Tapered Bearings

**Figure 8-4**

**48"/52"/60" Mowers**

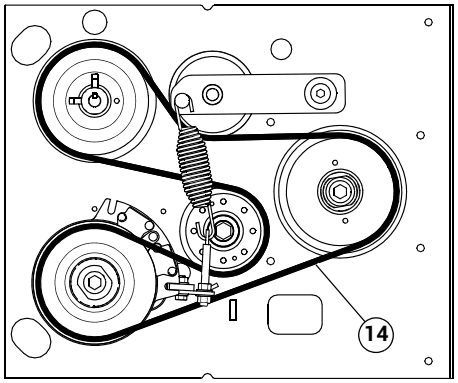



**Figure 8-5**

**36" Mowers**

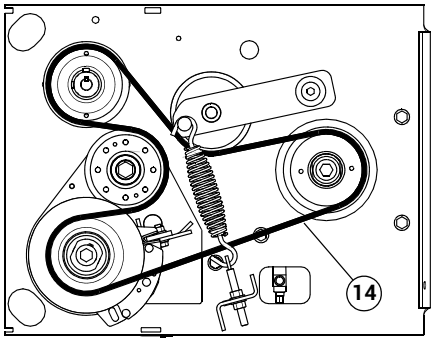
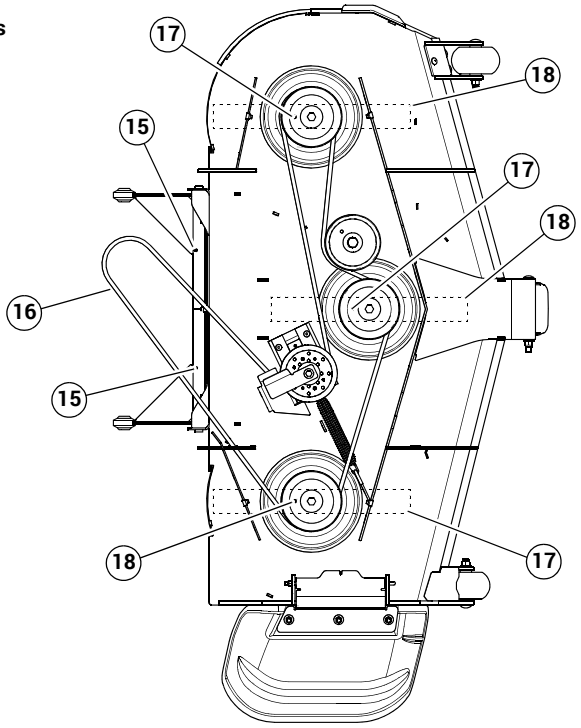



**Figure 8-6**

**Figure 8-7**

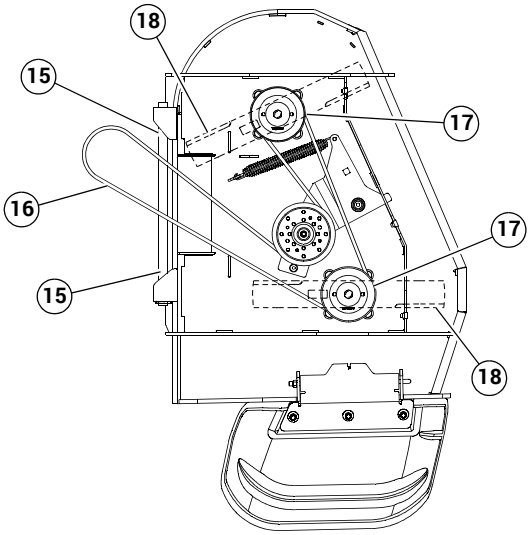
**48"/52"/60" Decks**




1. Engine Oil Fill & Dipstick
2. Fuel Filter
3. Engine Air Cleaner
4. Engine Oil Drain Valve
5. Battery
6. Fuel Tank
7. Hydraulic Oil Reservoir
8. Hydraulic Oil Filter
9. Front Wheel Bearing Zerks (2)
10. Engine Oil Filter
11. Deck Height Pivot Zerks (4)
12. Drive Tire
13. Fuel Evaporation System Filter
14. Pump Belt
15. Deck Pusher Arm Zerks (2)
16. Deck Belt
17. Spindle Housing Zerk (3)
18. Blades
19. Caster Fork Tapered Bearings

**Figure 8-8**

**36" Deck**



# TROUBLESHOOTING

| SYMPTOMS | PROBABLE CAUSES | SUGGESTED REMEDIES |
|---|---|---|
| Starting motor does not crank | Park brake lever not in park brake position | Place park brake lever in park brake position |
| | Deck clutch switch engaged | Disengage clutch switch |
| | Weak or dead battery | Recharge or replace |
| | Electrical connections are corroded or loose | Check the electrical connections |
| | Fuse is blown | Check fuses – replace blown fuse |
| | Neutral switches not engaging | Move steering control lever to neutral position or adjust switches if necessary |
| | For additional causes | See engine manual |
| The engine will not start, starts hard or fails to keep running | No fuel or line plugged | Fill tank or replace line (See *Fuel System* section for more details) |
| | Fuel valve is turned off | Open the fuel valve |
| | There is incorrect fuel in the fuel system | Drain the tank and replace the fuel with the proper type |
| | There is dirt in the fuel filter | Replace the fuel filter |
| | Dirt, water or stale fuel in the fuel system | Contact your Dealer |
| | The choke is not on (if equipped) | Move the choke lever to ON |
| | Numerous | See engine manual |
| Engine: Runs with continuous misfiring or engine runs unevenly or erratically | Numerous | See engine manual |
| Loss of power or system will not operate in either direction | Restrictions in air cleaner | Service air cleaner |
| | Poor compression | Contact your Dealer |
| | Steering linkage needs adjustment | Adjust linkage |
| | Tow valve open | Close tow valve |
| | The traction drive belt is worn, loose or broken | Install a new traction drive belt |
| | Air in system | Check filter and fittings |
| | For additional causes | See engine manual |
| Air cooled engine overheating | Air intake screen or cleaning fins clogged | Clean screen and fin |
| | For additional causes | See engine manual |
| Low engine oil pressure | Low oil level | Add oil |
| | Oil diluted or too light | Change oil and check for source of contamination |
| | Failed oil pump | Contact your Dealer |
| High oil consumption | Numerous | Contact your Dealer |

| SYMPTOMS | PROBABLE CAUSES | SUGGESTED REMEDIES |
|---|---|---|
| Mower jerky when starting or operates in one direction only | Steering control linkage needs adjustment | Adjust linkage |
| | Loose steering linkage | Tighten linkage |
| | Tow valves not closed completely | Close tow valves |
| | Pump or wheel motors faulty | Contact your Dealer |
| Mower circles or veers in one direction | Steering linkage needs adjustment | Adjust linkage |
| | Loose steering linkage | Tighten linkage |
| | Tires improperly inflated | Adjust air pressure to 8–12 psi (55–83 KPa) |
| | Wheel motor faulty | Contact your Dealer |
| | Hydraulic pump faulty | Contact your Dealer |
| There is abnormal vibration | The engine mounting bolts are loose | Tighten the engine mounting bolts |
| | The engine pulley, idler pulley or blade pulley is loose | Tighten the appropriate pulley |
| | The engine pulley is damaged | Contact your Dealer |
| | The cutting blade(s) is/are bent or unbalanced | Install new cutting blade(s) |
| | A blade mounting bolt is loose | Tighten the blade mounting bolt |
| | Spindle bearing is worn or loose | Replace or tighten spindle bearing |
| | A blade spindle mount is bent | Contact your Dealer |
| Blades do not rotate | The deck drive belt is worn, loose or broken | Install a new deck drive belt |
| | The deck drive belt is off the pulley | Install the deck drive belt and check for a reason |
| | Electric clutch is not engaging | Check and/or replace 15 amp fuse. Contact your Dealer |
| Uneven cutting height | The blade(s) are not sharp | Sharpen the blades |
| | A cutting blade(s) is/are bent | Install new cutting blade(s) |
| | The deck is not level | Level the deck per the *Deck leveling and height adjustment* section of the General Service Manual |
| | An anti-scalp wheel is not set correctly | Adjust the height of the anti-scalp wheel |
| | The underside of the deck is dirty | Clean the underside of the deck |
| | Tires improperly inflated | Adjust air pressure to 8–12 psi (55–83 KPa) |
| | A blade spindle mount is bent | Contact your Dealer |

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