

WALKER

Operator's Manual

Safety, Assembly, Operating, and Maintenance Instructions

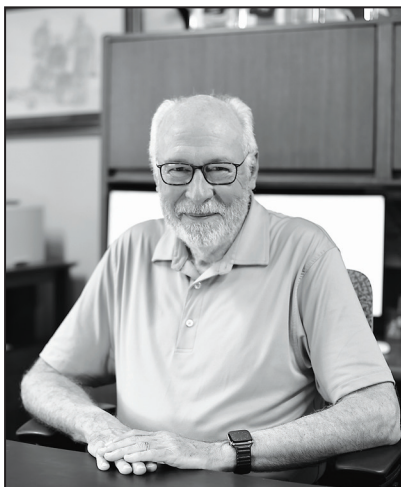


*D*21d

Please Read and Save These Instructions

For Safety, Read All Safety and Operation
Instructions Prior to Operating Machine

Beginning S/N: 189969
P/N 7000-27



Foreword

Thank you. . .for purchasing a Walker mower. Every effort has been made to provide you with the most reliable mower on the market, and we are sure you will be among our many satisfied customers. If for any reason this product does not perform to your expectations, please contact your local dealer. Every customer is important to us. Your satisfaction is our goal.

Please. . .read this manual thoroughly! This manual is to be used in conjunction with the engine manufacturer's manual for the specific engine on the mower model you have purchased. Before you operate your new mower, please read this entire manual. Some of the information is crucial for proper operation and maintenance of this mower - it will help protect your investment and ensure that the mower performs to your satisfaction. Some of the information is important to your safety and must be read and understood to help prevent possible injury to the operator or others. If anything in this manual is confusing or hard to understand, please contact your local authorized dealer or call our service department, at (970) 221-5614, for clarification before operating or servicing this mower.

This manual covers Model D21d with the Kubota D722 (20.9 HP) diesel engine (liquid cooled).

All shields and guards must be in place for the proper and safe operation of this machine. Where they are shown removed in this manual, it is for illustration purposes only. **Do not operate this machine unless all shields and guards are in place.**

Specifications given are based on the latest information available at the time this manual was produced for a tractor with standard equipment. Optional equipment is available and may affect the standard specifications listed.

Walker Mfg. Co. is continually striving to improve the design and performance of its products. We reserve the right to make changes in specifications and design without thereby incurring any obligation relative to previously manufactured products.

Sincerely,
WALKER MANUFACTURING COMPANY

A handwritten signature in black ink that reads "Bob Walker".

Bob Walker, Chairman

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General Information

HIGHLIGHTED INFORMATION

Walker Manufacturing recommends that any service requiring special training or tools be performed by an authorized Walker Mower dealer. There are several general practices to be aware of in the area of safety. Most accidents associated with the operation or maintenance of a Walker Mower are caused by disregarding basic safety precautions or specific warnings. Such accidents, in most cases, can be prevented by being aware of the dangers present.

Information of special importance has been highlighted in bold type in this manual. Refer to *Safety Instructions on page 11* for the meanings of **DANGER, WARNING, CAUTION, IMPORTANT,** and **NOTE.**

GLOSSARY

There are many terms that are either unique to this equipment or that are used as acronyms. The following terms and their definitions will help while using this manual:

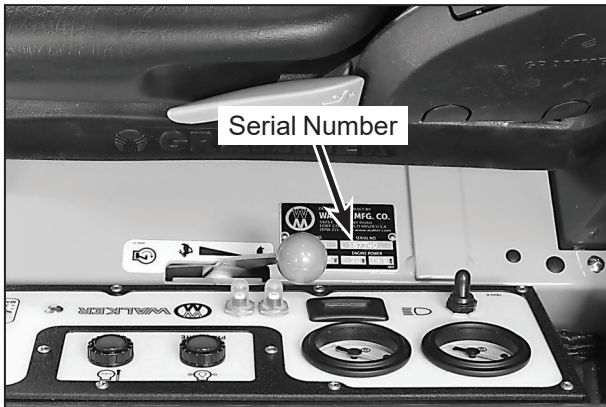
- **DECK** is the mowing attachment mounted on the front of the tractor which includes the carrier frame, deck housing, belt or gear drive components, and cutter blades.
- **FORWARD SPEED CONTROL (FSC)** controls the maximum forward speed of the tractor; functioning as a cruise control.
- **GRASS HANDLING SYSTEM (GHS®)** collects mowed material and deposits it in the catcher.
- **GRASS-PAK® SWITCH** is mounted on the grass delivery spout (in the catcher) and activates the "full" signal horn when the grass catcher is full.
- **GROUND DRIVE** refers to the dual hydrostatic transmissions which drive the main wheels.
- **HYDROSTATIC TRANSMISSION** transmits and controls power from the ground drive belt to the main drive wheel.
- **LEFT HAND (LH)** refers to the left-hand side of the tractor when the operator is seated facing forward in the tractor seat.
- **POWER TAKE-OFF (PTO)** transmits engine power to run the cutter blades and GHS blower.
- **POWERFIL®** spreads the mowed material throughout the interior of the grass catcher by an oscillating delivery spout.
- **RIGHT HAND (RH)** refers to the right-hand side of the tractor when the operator is seated facing forward in the tractor seat.
- **SIDE DISCHARGE (SD)** discharges mowed material from the right side of the mower deck.
- **STEERING LEVERS** steer the tractor by controlling the dual hydrostatic transmissions.
- **TRACTOR** is the prime mover, including the engine, drivetrain, operator seat, and controls to operate the mower.
- **TRANSMISSION LOCKOUT** releases the hydrostatic transmissions to permit freewheeling the tractor.
- **TRANSMISSION OIL PERFORMANCE SYSTEM (TOPS)** filters oil and maintains oil level in hydrostatic transmissions.

IDENTIFYING NUMBER LOCATIONS

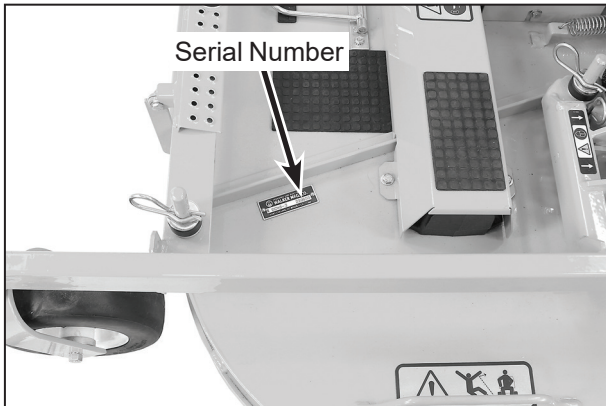
The tractor serial number plate is affixed to the tractor body just below the left rear corner of the seat. The mower deck serial number plate is affixed alongside the angle iron framing on the LH side of the LH mower blade drive. Model and serial numbers are helpful when obtaining replacement parts and maintenance assistance. For ready reference, please record these numbers in the space provided.

Tractor Model No.	_____
Tractor Serial No.	_____
Deck Serial No.	_____
Engine Model No.	_____
Engine Serial No.	_____
Date of Purchase	_____

Fill In By Purchaser



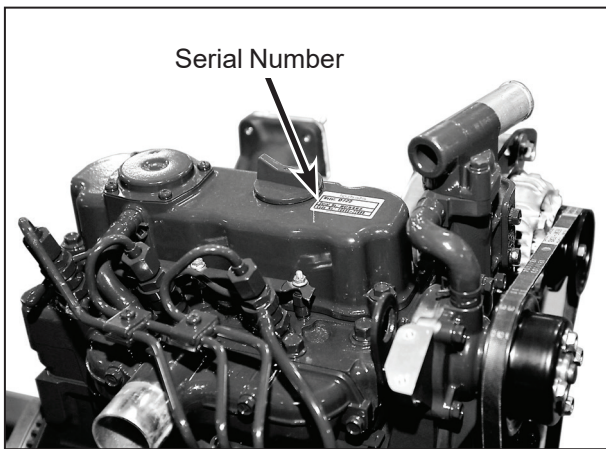
Tractor Serial Number Location



Mower Deck Serial Number Location

ENGINE SERIAL NUMBER LOCATION

Refer to the engine manual that accompanies this manual or photo below for the location of the engine serial number.



Engine Serial Number Location

SERVICING OF ENGINE AND DRIVE-TRAIN COMPONENTS

The detailed servicing and repair of the engine, hydrostatic transmission, and gearboxes are not covered in this manual. Only routine maintenance and general service instructions are provided. For the service of these components during the limited warranty period, it is important to find a local, authorized servicing agent of the component manufacturer. **Any unauthorized work done** on these components during the warranty period **may void the warranty**. If you have any difficulty finding an authorized outlet or obtaining warranty service, please contact our Service Department for assistance:

Walker Manufacturing Company

5925 E. Harmony Road
Fort Collins, CO 80528
1-970-221-5614
www.walker.com

Service manuals are available for each of these components from their respective manufacturers as follows:

Kubota Engines

**Kubota Engine
America Corp.**
505 Schelter Rd
Lincolnshire, IL 60069

Gearboxes (Deck)

Peerless Gear
1555 South Jackson St.
Salem, IN 47167 USA
812-675-4327
www.peerlessgear.com

SPECIFICATIONS

ENGINE

Manufacturer/Model	Kubota D722, 3 Cyl., Diesel (Liquid-Cooled)
Displacement cu. in. (cc)	43.9 (719)
Max. Power HP (kW)	20.9 (15.6) @ 3600 RPM
Governed RPM	3600
Max. Torque lb·ft (N·m)	34 (46.1)
Idle RPM	1000
Crankcase Capacity qt (L)	3.4 (3.2)
Crankcase Lubricant	API CF or Higher Grade Oil Only with 10W-30 or 15W-40 Viscosity Above 14° F (-10° C) or 10W-30 Below 14° F (-10° C)
Oil Filter	Kubota P/N HH150-32430
Cooling System Capacity gal (L) (Approx.)	1.25 (4.74)
Cooling Fan	Electric Radiator Cooling Fan with Reversible Self-Cleaning Action
Coolant	50/50 Pre-Mix Antifreeze/Water
Fuel Tank Capacity gal (L)	4.7 (17.8)
Fuel	Diesel Fuel 2-D
Air Cleaner	Remote Mounted Donaldson Radialseal™ (Walker P/N 5090-1 Primary/5090-3 Safety Filter)

ELECTRICAL SYSTEM

Battery	12 Volt, 350A (CCA) [Walker Fulbat]
Charging System	40 Amp Automotive Alternator
Charging Output	40 Amp DC (Regulated)
System Polarity	Negative Ground
Ignition	Diesel with Glow Plugs
Starter	12 Volt Electric, Key and Solenoid Operated
Interlock Switches	Ignition Lockout by Seat Switch, Transmission Neutral, Blade Clutch, and Parking Brake
Circuit Breakers	Two Auto Reset (40A) - Electric System, Radiator Fan Circuit Manual Reset (10A) - Instrument Panel Manual Reset (7A) - Instrument Panel

TRANSMISSION

Manufacturer/Model	Dual Hydrostatic, Walker Model 7, Each Wheel Independently Driven
Steering	Hand Lever Control / Individual Wheel
Forward Speed Control	Precision Friction Lock Lever, Cruise Control, with Neutral-Park Position

TRANSMISSION (CONTINUED)

Service Brake	Dynamic Braking through Hydrostatic Transmission(s)
Parking Brake	Mechanical Pin Lock in Transmission Gear
Neutral	Transmission Release by Manual Dump Valve

Hydrostatic Transmission Oil

Transmission Oil Filtration	Walker Transmission Oil Performance System (TOPS™)
Factory Service	Walker Model 7 Hydro Oil, Walker P/N 6450-21
Additional Approved Oil Option	Mobil SHC™ 630, Walker P/N 6450-20
Transmission Filter	Walker P/N 5024-13
Transmission Oil Capacity fl oz (L)	80 (2.4)
Transmission Cooling	Cooling Fan Mounted on Drive Pulley

Final Drive Oil (Gear Axle)

Final Drive	Gear Drive Axle
Factory Service	SAE E.P. 80W-90 (API GL-5) Gear Lube
Final Drive Oil Capacity fl oz (L)	24 (0.71)

Ground Travel Speed

Forward MPH (km/h)	0-7 (0-11) Infinitely Variable
Reverse MPH (km/h)	0-5 (0-8) Infinitely Variable

BLADE DRIVE

PTO Shaft	Quick Disconnect Sliding Spline Shaft with Two (2) High-Speed U-Joints
Blade Drive Clutch and Brake	Manual Belt Tightener Clutch and Band Brake [Stops Blades within Five (5) Seconds of Disengagement]

TIRE SIZE

Deck Caster Wheel	8 x 3.00-4 Semi-Pneumatic (Standard) 8 x 3.00-4 Pneumatic 4-Ply (Optional) 11 x 4.00-5 Pneumatic 6-Ply (DS52, DS60, DS74 Only)
Drive	18 x 9.50-8 Pneumatic 4-Ply (Standard) 18 x 10.50-10 Pneumatic 4-Ply (Optional Low-Profile)
Tailwheel	13 x 4.50-6 Pneumatic 6-Ply (Standard Dual) 13 x 8.00-6 Pneumatic 4-Ply (Optional Single)

TIRE PRESSURE PSI (KPA)

Deck Caster Wheel*	20 (137)
Drive	15 (103)
Tailwheel	20 (137)

* If equipped with optional pneumatic tires

DRIVE BELTS

Engine PTO	Walker P/N 7230
Jackshaft Drive	Walker P/N 6238
Ground Drive, Micro-V	Walker P/N 7248-1
Blower (GHS Model)	Walker P/N 7234-2

SEAT

Full Spring Suspension with Dampening and Adjustments for Back Angle, Lumbar Support, and Operator Weight. Standard with Adjustable/Retractable Armrests.

FRAME/BODY CONSTRUCTION

Frame	All Welded Unitized Steel Chassis
Body	14 Gauge Steel
Deck	11 Gauge Steel
GHS Catcher and Chutes	Molded Cross-Linked Polyethylene (High Impact Material, UV Stabilized) for Chutes and Linear Low-Density Polyethylene for Catcher

GHS SYSTEM (Optional)

Blower	10.5 in. Diameter, Three-Blade Paddle Wheel
Blower Brake	Band Brake [Works in Combination with PTO Clutch, Stops Blower within Five (5) Seconds of PTO Disengagement]
Max. Blower RPM	4000
Hi-Dump Option	200 (91)
Max. Lift Capacity lb (kg)	
Grass Catcher Capacity gal / bu / L	93 / 10 / 352
Full Signal (Grass-Pak® Switch)	Oscillating Vane Switch Mounted on Grass Delivery Spout Triggers Horn Signal
Powerfil®	Oscillating Delivery Spout Driven by 12 Volt Electric Gearmotor Spreads Material throughout Interior of Catcher @ 35 Cycles/Min

MOWER DECK

Recommended Cut Width	
Collection	42 to 52 in. (107 to 132 cm)
Side Discharge	42 to 74 in. (107 to 188 cm)
Mulch	42 to 52 in. (107 to 132 cm)
Cutting Height	1.5 to 4 in. (4 to 10 cm) or 1.5 to 4.5 in. (4 to 11.5 cm) (DS52 & DS60 Belt-Driven Decks Only)
Deck Suspension	Independent Torsion-Flex Frame with Caster Wheels and Counterweight Springs

TOWING

Towing Capacity lb (kg)	250 (113) if equipped with a factory installed or factory authorized tow hitch
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DIMENSIONS (Tractor and Mower)**Length in. (cm)**

Tractor Only	64.5 (164)
Tractor Wheel Base	41 (104)
Tractor with Tilted Deck (Approximate)	77 (196)
Tractor with 48" Collection Deck (DC48-1)	93 (236)

Width in. (cm)

Tractor Only (Outside Tire)	39 (99)
Tractor with 48" Collection Deck (DC48-1)	49.25 (125)

Height in. (cm)

Tractor	50 (127)
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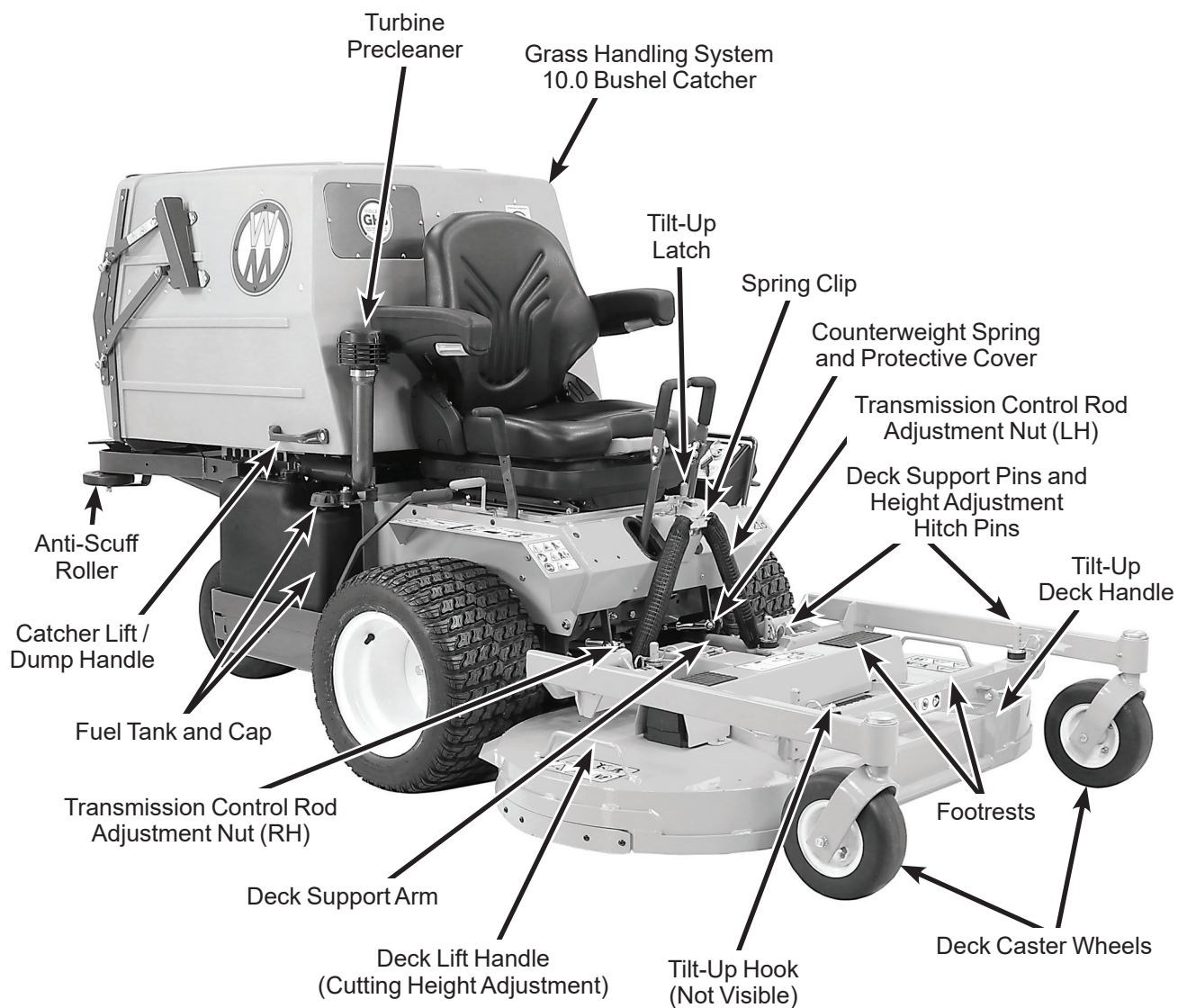
Weight lb (kg)

NC Tractor Only	860 (390)
GHS Tractor Only	1000 (454)
NC Tractor with 48" Side Discharge Deck (DS48-1)	1064 (483)
GHS Tractor with 48" Collection Deck (DC48-1)	1219 (553)

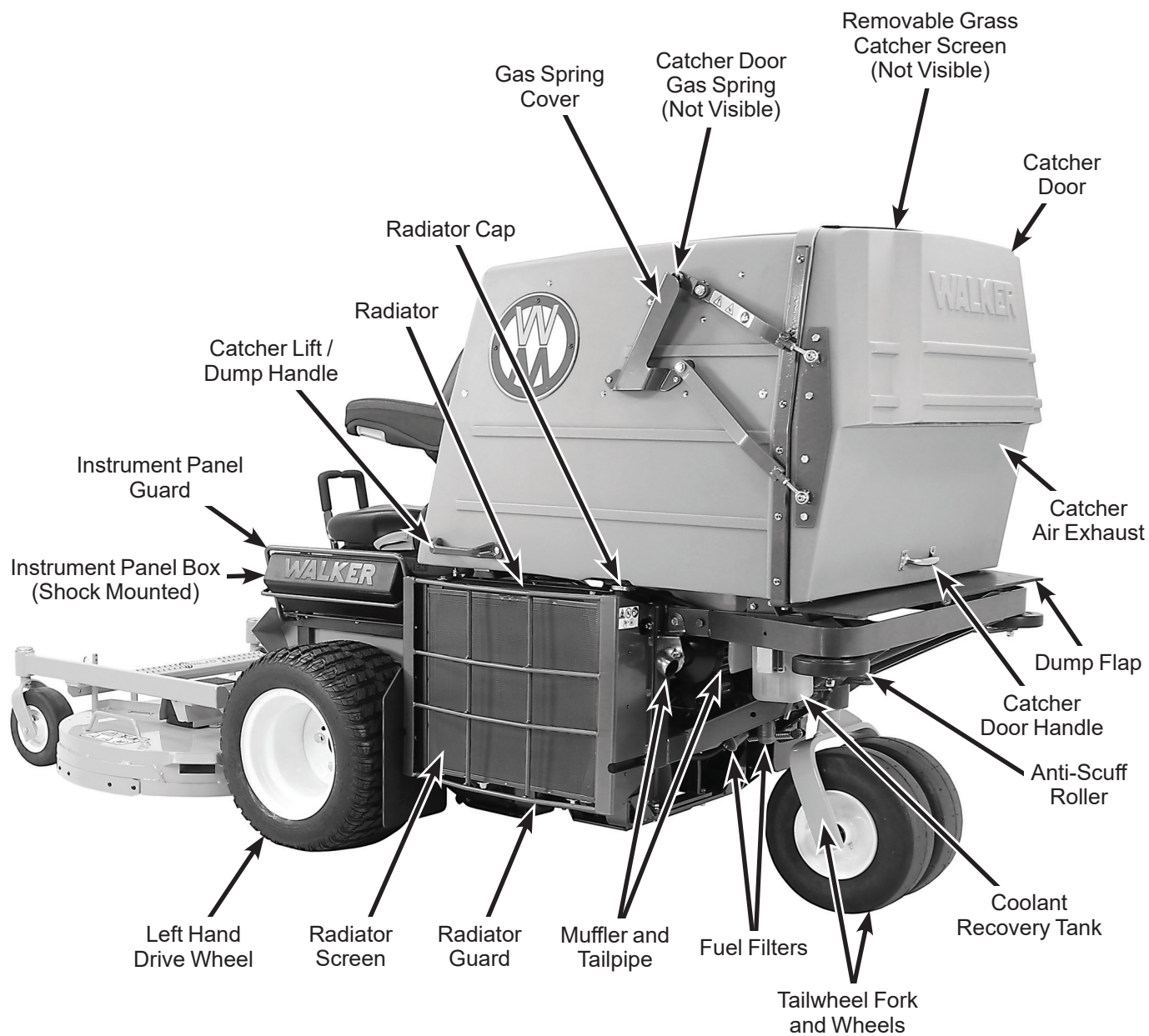
NOTE: The manufacturer reserves the right to make changes in specifications shown herein at any time without notice or obligation. The specifications listed are for a standard configuration tractor, and may change with the addition of optional equipment.

COMPONENT IDENTIFICATION

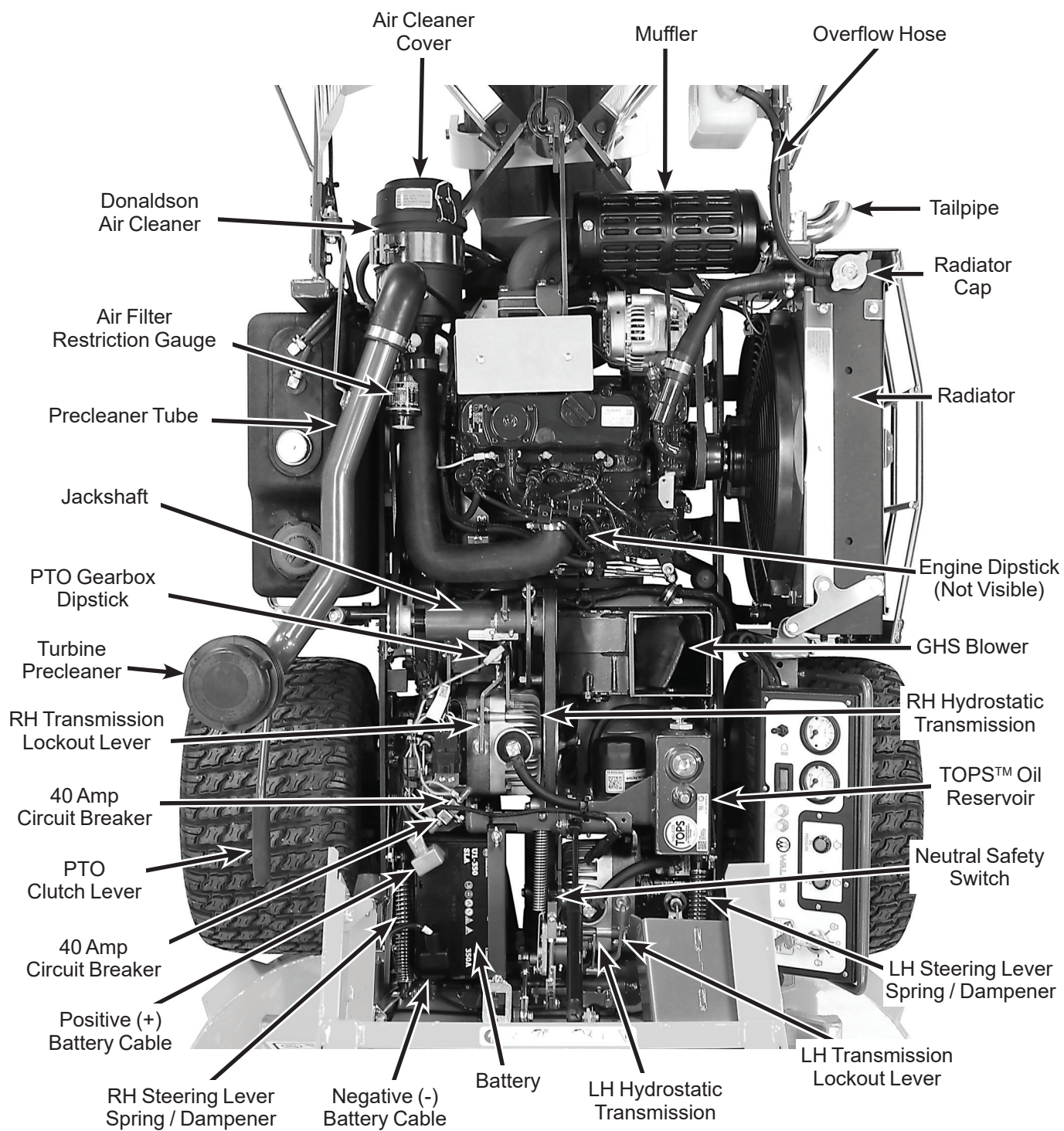
NOTE: Operator Controls are identified in the section *Operating Controls* on page 30.



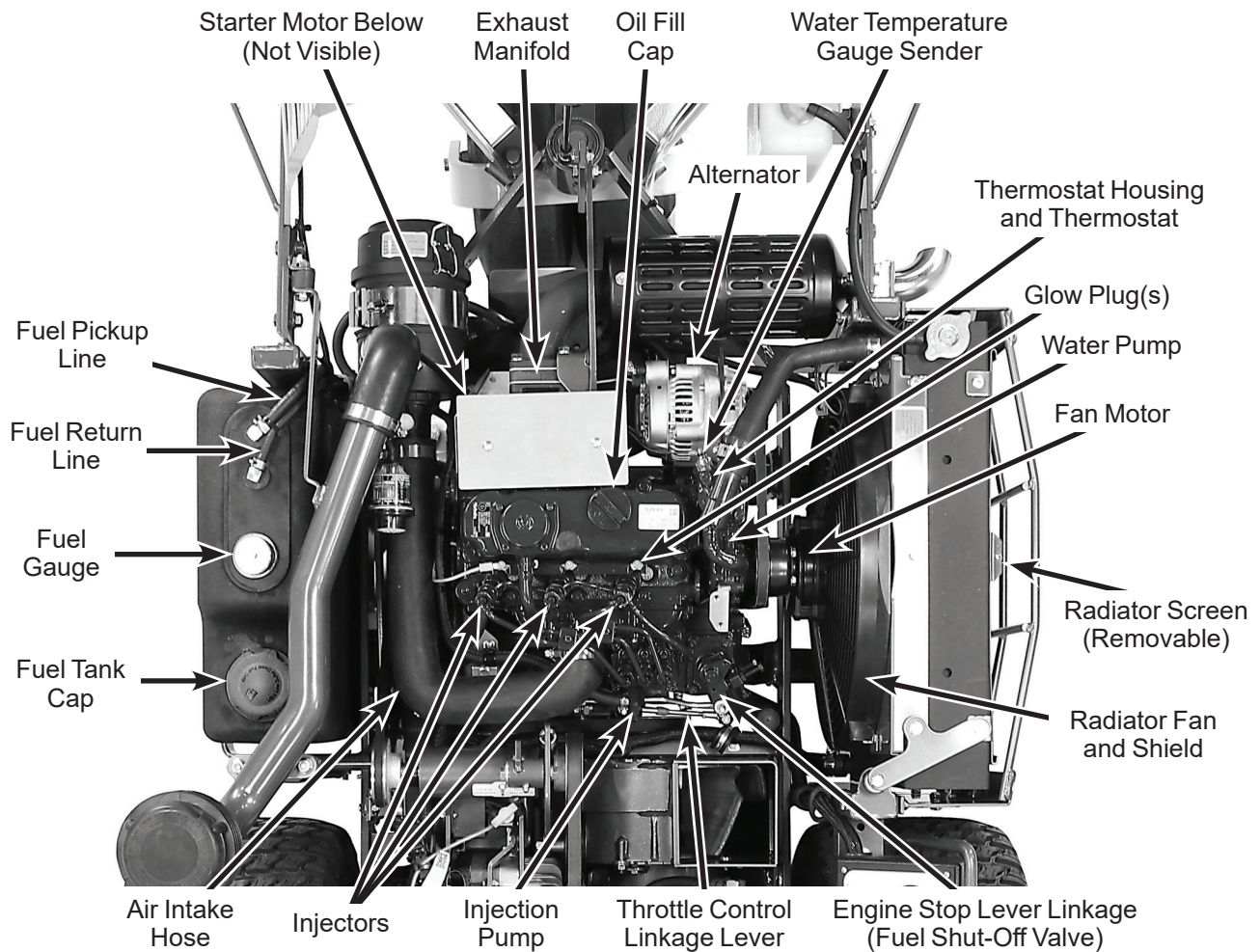
Front View and Right Side View



Rear View and Left Side View




Top View (Engine Compartment)



Top View (Engine Compartment)

Safety Instructions

Pay particular attention to any information labeled **DANGER, WARNING, CAUTION, IMPORTANT,** and **NOTE** in this manual.

When you see the Safety Alert Symbol (), read, understand, and follow the instructions. Failure to comply with safety instructions may result in personal injury.

The seriousness or degree of importance of each type of information is defined as follows:



DANGER

An **IMMEDIATE** hazard that **WILL** result in severe personal injury or **DEATH**, if warning is ignored and proper safety precautions are not taken.



WARNING

A **POTENTIAL** hazard that **COULD** result in severe personal injury or **DEATH**, if warning is ignored and proper safety precautions are not taken.



CAUTION

Possible hazards or unsafe practices that **MAY** result in **MODERATE** personal injury or property damage, or machine damage, if warning is ignored and proper safety precautions are not taken.

IMPORTANT: Identifies mechanical information demanding special attention, since it deals with the possibility of damaging a part or parts of the machine.

NOTE: Identifies information worthy of special attention.

Walker Manufacturing cannot predict every potentially dangerous situation. Therefore, items labeled as such in this manual do not cover all conceivable situations. Any person using procedures, tools, or control techniques not recommended by Walker Manufacturing must take full responsibility for safety.

The Walker Rider Lawnmower has been designed with many safety features to protect the operator from personal harm or injury. However, it is necessary for the operator to use safe operating procedures at all times. **Failure to follow safety instructions contained in this manual may result in personal injury or damage to equipment or property.**

If you have any questions concerning setup, operation, maintenance, or safety, please contact your authorized Walker Mower Dealer or call Walker Manufacturing Company at (970) 221-5614.

BEFORE OPERATING

1. **Read and understand the contents of this Operator's Manual before starting and operating the machine.** Become thoroughly familiar with all machine controls and how to stop the machine and disengage the controls quickly. Replacement Operator's Manuals are available by sending the Model and Serial Number to:

Walker Manufacturing Company
5925 East Harmony Road
Fort Collins, CO 80528
2. **Never allow children to operate rider mower.** Do not allow adults to operate without proper instruction.
3. **Clear the area to be mowed of any foreign objects** which may be picked up and thrown by cutter blades. Pick up all sticks, stones, wire, and any other debris.
4. Keep everyone, especially children and pets, a safe distance away from the area being mowed. **Do not mow with bystanders in the area.**
5. Do not operate the machine barefoot or wearing sandals, sneakers, tennis shoes, or similar lightweight footwear. **Wear substantial protective footwear.**

6. Do not wear loose fitting clothing that could get caught in moving parts. Do not operate this machine while wearing shorts; **always wear adequate protective clothing**, including long pants. Wearing safety glasses, safety shoes, and a helmet is advisable and required by some local ordinances and insurance regulations.
7. Prolonged exposure to loud noise can cause impairment or loss of hearing. **Operator hearing protection is recommended**; particularly for continuous operation of the GHS Model due to blower noise level. Wear a suitable hearing protective device, such as earmuffs or earplugs.
8. **Keep all protective shields and safety devices in place.** If a protective shield, safety device, or decal is damaged, unusable, or missing, repair or replace it **before** operating the machine.
9. **Be sure interlock switches are functioning correctly**, so the engine cannot be started unless the Forward Speed Control lever is in the **NEUTRAL-PARK** position, the PTO clutch is in the **DISENGAGED** position, and the Parking Brake is in the **ENGAGED** position. Also, the engine should stop if the operator lifts off the seat with any one or more of these controls in the operating position: (1) Forward Speed Control (FSC) out of **NEUTRAL-PARK**, (2) PTO Clutch **ENGAGED**, or (3) Parking Brake **DISENGAGED**.

NOTE: There is a 1/2 second time delay function on the seat switch to avoid engine power interruption when driving over bumps.

10. **Handle diesel fuel with care:**
 - a. Use an approved fuel container.
 - b. Never add fuel to a running engine or hot engine (allow hot engine to cool several minutes).
 - c. Keep matches, cigarettes, cigars, pipes, open flames, or sparks away from the fuel tank and fuel container.
 - d. Always fill the fuel tank outdoors using care. Fill to about one inch from the top of the tank. Use a funnel or spout to prevent spilling.

- e. Replace the machine fuel cap and container cap securely and clean up any spilled fuel before starting the engine.

11. **Never attempt to make any adjustments while the engine is running**, except where specifically instructed to do so.
12. The electrical system battery contains sulfuric acid. Avoid any contact with skin, eyes, and clothing. Keep the battery and acid out of reach of children.



WARNING

This product can expose you to chemicals including Di-(2-ethylhexyl) phthalate which is known to the State of California to cause cancer, and Di-(2-ethylhexyl) phthalate, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

OPERATING

1. **Operate the mower only in daylight** or in good artificial light with good visibility of the area being mowed.
2. Sit on the seat when starting the engine and operating the machine. Keep feet on the deck footrests at all times when the tractor is moving and/or mower blades are operating. **Never operate the tractor without a deck or implement installed.**
3. For a beginning operator, **learn to steer (maneuver) the tractor with a slow engine speed before attempting any mowing operation.** Be aware that, with the front mounted mower configuration, the back of the tractor swings to the outside during turns.



DANGER

Do not mow around overhanging tree branches or bushes at the same height as the operator's torso and head where inadvertent contact may cause injury.

4. Remember, for an emergency stop, the forward motion of the tractor can always be stopped by pulling the Forward Speed Control (FSC) into the **NEUTRAL-PARK** position.
5. In case either of the transmission drive belts break during operation, and if the machine is on a slope, the machine will freewheel down the slope. **To maintain control**, immediately (1) Release the steering levers and simultaneously (2) Move the FSC to the **NEUTRAL-PARK** position. When the machine is stopped or moving slowly, engage the parking brake.

NOTE: The emergency stop procedure is exactly the same procedure as used to normally stop and park this machine.
6. Disengage the blade clutch, put the FSC in the **NEUTRAL-PARK** position, and engage the Parking Brake before starting the engine (an ignition interlock switch normally prevents starting of the machine if these controls are in the **OPERATING** position).

7. **Do not operate machine if the operator presence safety switch system is not working.** Verify proper operation by having the operator lift off the seat with the engine running and moving three controls, one at a time; (1) Move the FSC lever out of the **NEUTRAL-PARK** position, (2) Engage the PTO Clutch, and (3) Disengage the Parking Brake. Moving any of these controls should stop the engine after a 1/2 second delay.
8. **Do not run the engine in a confined area without adequate ventilation.** Exhaust fumes are hazardous and can be deadly.
9. **Do not carry passengers** - maximum seating capacity is one (1) person.
10. Watch for holes, rocks, and roots in the terrain and for other hidden hazards. When mowing tall grass, mow higher than desired to expose any hidden obstacles. Then, clean the area and mow to the desired height.
11. **Avoid sudden starts or stops.** Before backing the machine up, look to the rear to be sure no one is behind the machine. Watch carefully for traffic when crossing or working near roadways.
12. When moving forward, **do not** suddenly put the tractor in reverse by rapidly pulling on the steering levers, especially when going downhill, as this can lift the tractor tail wheel off the ground and set up a bucking motion due to operator overcontrol. If bucking does occur, immediately stop the bucking action by pulling the Forward Speed Control (FSC) lever into the **NEUTRAL-PARK** position.
13. Disengage the blade drive when transporting the machine across drives, sidewalks, etc. **Never raise the mower deck while blades are rotating.**



DANGER

Do not mow or dump grass within 5 feet (1.5 meters) of an embankment or retaining wall with drop off.

14. **The maximum recommended slope operating angle is 15 degrees or 27% grade.** When operating the machine on a slope, reduce speed and use caution to start, stop, and maneuver. To prevent tipping or loss of control of the machine, avoid sharp turns or sudden changes in direction. **Do not operate the machine on a slope greater than 15 degrees.**

15. **Never adjust cutting height with the engine running.** Before adjusting cutting height or servicing, disengage the blade clutch (PTO), engage parking brake, stop the engine, and remove the ignition key. Wait for all movement to stop before getting off the seat.

NOTE: A blade/blower brake should normally stop drive line rotation within five (5) seconds of disengaging the PTO clutch.

16. For side discharge mower decks, **do not operate with the grass deflector shield removed.** Keep the deflector in the lowest possible position.
17. When using the tilt-up deck, **observe the following:**
- Do not move tractor with deck in tilt-up position.
 - Never tilt body forward with deck in tilt-up position.
18. For GHS equipped models, **do not operate the machine with the grass catcher in the DUMP position or with the back door OPEN.** Dangerous projectiles may be thrown out of the discharge chute or the back of the grass catcher.
19. For GHS equipped models, **use care when closing the grass catcher door.** Keep fingers and hands away from the hinge and pinch points when the door is being closed. Also, keep fingers and hands clear of the door frame. The door may slam shut with considerable force.



CAUTION

Use leg muscles and firm footing when lifting the catcher to dump; avoid bending at the waist and using back muscles in order to prevent back injury.

20. **In case of a clogged or plugged mower deck or GHS catching system:**
- Disengage the blade clutch (PTO), engage the parking brake, and turn the engine off before leaving the seat.
 - LOOK** to make sure blade drive shaft and blower drive pulley movement has stopped before trying to unclog the system.
 - Remove the key from the ignition switch and disconnect the negative battery cable.
 - Never place hands under the deck or in the GHS blower - use a stick or similar tool to remove clogged material.
21. If the cutting blades strike a solid object or the machine begins to vibrate abnormally, **immediately disengage the blade clutch (PTO), engage the parking brake, stop the engine, and wait for all moving parts to stop.** To prevent accidental starting, remove the key from the ignition switch and disconnect the negative battery cable. Thoroughly inspect the mower and repair any damage before restarting the engine and operating the mower. Make sure cutter blades are in good condition and blade nuts are torqued to 60 lb·ft (81 N·m) for gear-driven decks, and blade bolts torqued to 70 lb·ft (95 N·m) for belt-driven decks.
22. **Do not touch the engine or muffler while the engine is running** or immediately after stopping the engine. These areas may be hot enough to cause serious burns.
23. **Do not stop or park in or near dry grasses or bushes when operating the mower.** The heat from the engine or muffler could ignite the dry material.
24. **Never remove the radiator pressure cap when the engine is hot** (hot water may spray and cause burns).

25. **Do not use ether or any starting fluid** to assist starting the engine in cold weather.
26. When leaving the machine unattended, **disengage the blade clutch (PTO), engage the parking brake, stop the engine, and remove the key.**
27. When equipped with a factory installed hitch or factory authorized hitch kit, **do not exceed recommended tow capacities.** Do not tow with the PTO clutch or mower blades engaged, and **do not allow people to ride in or on towed trailers.**
28. Use caution when towing on slopes, rough terrain or when conditions limit traction. **Do not tow on slopes greater than 5 degrees (9%).**

MAINTENANCE

1. To prevent accidental starting of the engine when servicing or adjusting the machine, remove the key from the ignition switch and disconnect the negative battery cable.
2. **To reduce fire hazards,** keep the engine free of grass, leaves, excessive grease, and dirt.
3. Keep all nuts, bolts, and screws tight to ensure the machine is in a safe, working condition. Check the blade mounting nuts frequently, making sure they are tight.
4. **Perform only maintenance instructions described in this manual.** Unauthorized maintenance operations or machine modifications may result in unsafe operating conditions.
5. If the engine must be running to perform a maintenance adjustment, keep hands, feet, and clothing away from moving parts. **Do not wear jewelry or loose clothing.**
6. **Always use the proper engine service manual when working on the engine.** Unauthorized maintenance operations or modifications to the engine may result in unsafe operating conditions.
7. Altering the equipment or engine in any manner which adversely affects its operation, performance, durability, or use will **VOID the warranty** and may cause hazardous conditions.
8. Never attempt to disconnect any safety devices or defeat the purpose of these safety devices.
9. Do not change the engine governor settings or overspeed the engine. The governor has been factory-set for maximum-safe engine operating speed.
10. **Use genuine factory replacement parts.** Substitute parts may result in product malfunction and possible injury to the operator and/or others.
11. **Use care when charging the battery** or performing maintenance on the battery and electrical system:
 - a. Make sure the battery charger is unplugged before connecting or disconnecting cables to the battery.
 - b. Charge the battery in a well-ventilated space.
 - c. Keep sparks, flames, and smoking materials away from the battery at all times. To avoid sparks, use care when removing battery cables from posts.
 - d. Disconnect both battery cables before unplugging any wiring connectors or making repairs on the electrical system.
12. Do not attempt to service the engine fuel injection system, which contains high pressure fuel and may cause injury if mishandled. For service of the pressurized fuel system, including the fuel pump, fuel lines, and fuel injectors, contact your Walker dealer or authorized Kubota service dealer.

IMPORTANT: Keep all applicable manuals immediately accessible to anyone who may operate or service this machine.

SAFETY, CONTROL, AND INSTRUCTION DECALS

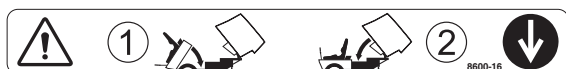
Safety, Control, and Instruction Decals are installed on the machine; if any are missing, illegible, or damaged, a replacement should be ordered and installed before putting the machine into operation. The Decal Part Number is listed below and in the Parts Manual.



Location: Adjacent to Blower Discharge Chute through Body

Part Number: 8600-4

1. Warning - rotating impeller is a cutting/dismemberment hazard to fingers and hands.
 - Never reach down into the blower discharge chute.
2. Warning - thrown object hazard.
 - Never engage the PTO with grass catcher raised.



Location: Rear Cross Member of Front Body

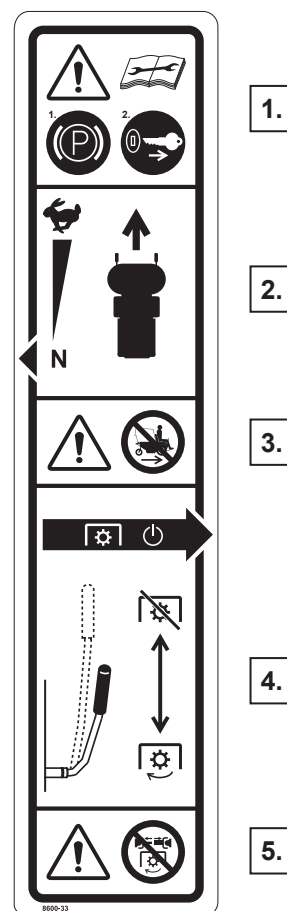
Part Number: 8600-16

Important - Lower front body before lowering catcher box.

REMOVE SCREEN FOR CLEANING
TO RELEASE AND REMOVE SCREEN, OPEN CATCHER DOOR AND USE KNOBS TO PUSH BACK OF SCREEN FORWARD AND DOWN

Location: Rear of Grass Catcher Exhaust Screen

Part Number: 5869



Location: RH Fender

Part Number: 8600-33

1. Warning – read Operator's Manual before servicing or performing maintenance.
 - Engage parking brake.
 - Remove ignition key.
2. Forward Speed Control
 - Move lever forward to increase speed; back to stop.
3. Warning – do not operate the machine without a deck or other implement attached.
4. PTO Clutch Lever
 - Move lever forward to disengage PTO clutch; back to engage.
5. Warning – do not engage PTO clutch with PTO shaft disconnected.

SAFETY, CONTROL, AND INSTRUCTION DECALS

Safety, Control, and Instruction Decals are installed on the machine; if any are missing, illegible, or damaged, a replacement should be ordered and installed before putting the machine into operation. The Decal Part Number is listed below and in the Parts Manual.



Location: Each End of Mower Deck
Part Number: 8600-28

1. Warning – thrown object hazard.
 - Keep bystanders away from the machine when operating.
 - Clear lawn of debris before operating.
 - Keep any discharge deflector in place and in the lowest position.
2. Warning – rotating mower blades are a cutting/dismemberment hazard to hands and feet.
 - Keep all body parts away from rotating mower blades.
 - Do not step on end of deck.



Location: Deck Carrier Frame
Part Number: 8600-14

Warning – do not operate the machine with the deck tilted up.



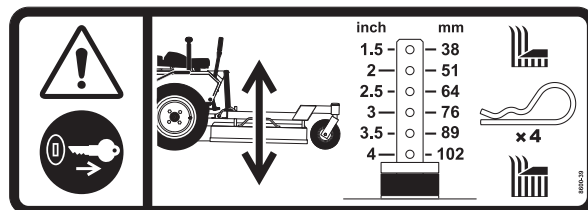
Location: Gear Axle
Part Number: 5810-1



Location: Deck Discharge Shield
(SD Decks Only)
Part Number: 5848-3

Warning – thrown object hazard.

- Always keep the discharge shield in the lowest position when operating.
- Do not remove the discharge shield.



Location: Deck Gearbox Cover
Part Number: 8600-39

Warning - stop engine and remove ignition key before adjusting deck cutting height.



Location: Deck Carrier Frame
Part Number: 8600-15

Warning – lock deck tilt-up hinge before operating the machine.

SAFETY, CONTROL, AND INSTRUCTION DECALS

Safety, Control, and Instruction Decals are installed on the machine; if any are missing, illegible, or damaged, a replacement should be ordered and installed before putting the machine into operation. The Decal Part Number is listed below and in the Parts Manual.



Location: Catcher Door Hinge Bar,
LH and RH Sides

Part Number: 8600-10

Caution - Pinch point.

- Keep all body parts clear when closing grass catcher door.



Location: LH Gear Axle

Part Number: 5810-3

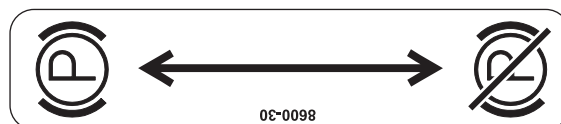


SCAN
FOR SERVICE
INFORMATION
WLK.CO/TOPS



Location: Oil Reservoir

Part Number: 5024-24

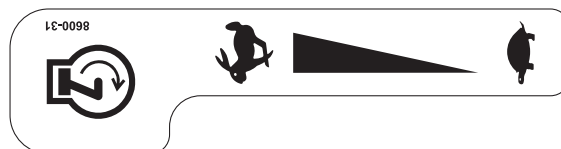


Location: Front Body, RH Side Adjacent to
Operator Seat

Part Number: 8600-30

Parking Brake

- Move lever forward to engage Parking Brake; back to disengage.

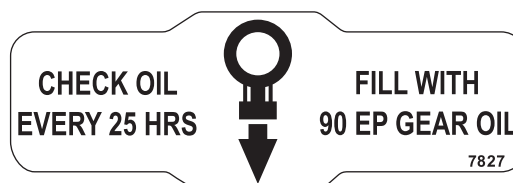


Location: Front Body, LH Side Adjacent to
Operator Seat

Part Number: 8600-31

Throttle

- Move lever forward to increase engine speed; back to idle.



Location: Jackshaft Support Adjacent
to Dipstick

Part Number: 7827

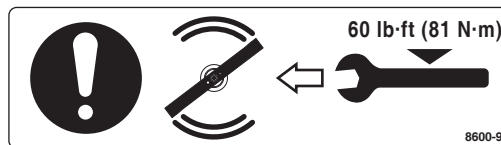
SAFETY, CONTROL, AND INSTRUCTION DECALS

Safety, Control, and Instruction Decals are installed on the machine; if any are missing, illegible, or damaged, a replacement should be ordered and installed before putting the machine into operation. The Decal Part Number is listed below and in the Parts Manual.



Location: Front Body Adjacent to RH Steering Lever
Part Number: 8600-34

1. Warning – read Operator's Manual before operating the machine.
 - Warning – wear eye and ear protection when operating the machine.
2. Warning – roll-over hazard.
 - Do not operate on slopes greater than 15 degrees.
3. Warning – thrown object hazard.
 - Keep bystanders away from the machine when operating.
4. Warning – entanglement hazard.
 - Keep all guards in place while engine is running.



Location: Gearbox Cover
(Gear-Driven Decks Only)
Part Number: 8600-9

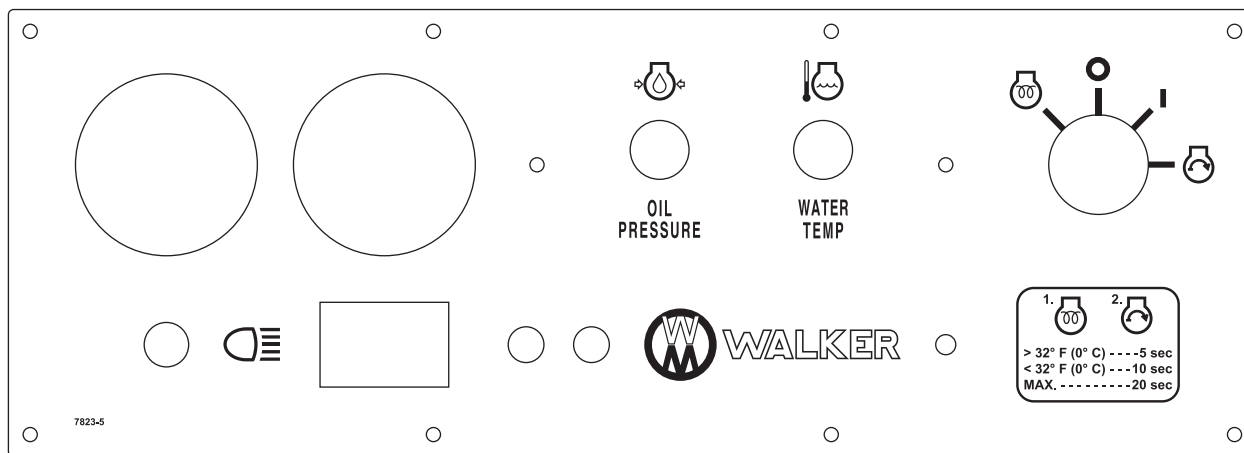
Tighten blade nuts on gear-driven decks to 60 lb·ft (81 N·m).



Location: Radiator Guard
Part Number: 8600-12

Warning – carbon monoxide (CO) poisoning hazard.

- CO emitted by a running engine can be deadly.
- Do not operate indoors or in other enclosed areas.



Location: Instrument Panel
Part Number: 7823-5

Assembly Instructions



WARNING

It is critical to follow the steps provided for setup and assembly of the tractor and deck to ensure the safety of the operator and performance of the equipment.

SETUP INSTRUCTIONS

Walker Mowers are shipped partially assembled to our distribution network, and are typically assembled by the selling dealer. For any additional assembly besides the following, contact your Walker dealer.

Tire Installation (Tractor)

- Install the drive tires using the eight (8) lug bolts supplied with the Owner's Packet of materials. Bolts are torqued to 75 to 85 lb·ft (102 to 115 N·m). Drive tires are 18 x 9.50-8, 4-ply; rear tires are 13 x 4.50-6, 6-ply.
- Check and adjust the inflation of the tires. The tire inflation recommendations are:

Drive	=	15 PSI (103 kPa)
Tailwheel	=	20 PSI (137 kPa)

Battery Service

The battery is fully sealed and activated at the factory, there is no maintenance by way of topping up fluid levels. **Never attempt to open this battery.**

IMPORTANT: Make sure battery is securely mounted in the frame. A loose battery may cause damage to the case resulting in acid leakage and severe damage to the machine. A hazard may be created by damage to critical working parts and safety systems.



CAUTION

Important Battery Service, Installation, and Charging Tips:

- Do not allow the battery cables to touch opposing terminals. When connecting battery cables attach the positive (+) cable to positive (+) battery terminal first, followed by negative (-) cable to negative (-) battery terminal.
- Never start the engine when the cables are loose or poorly connected to the battery terminals.
- Never disconnect battery while engine is running.
- Never use a quick battery charger to start the engine.

Battery Charging



CAUTION

BATTERIES PRODUCE EXPLOSIVE GASES

- Charge the battery in a well-ventilated area.
- Keep sparks, flames, and smoking materials away from the battery at all times.
- Make sure the battery charger is unplugged before connecting or disconnecting cables to the battery.

IMPORTANT: Charging too quickly or overcharging will damage the battery.

1. Disconnect the battery terminals—negative (-) first.
2. Charge the battery at 15 amps for 10 minutes. **DO NOT** exceed 18 amps (maximum recommended charging rate). Total charging time should not exceed one (1) hour.

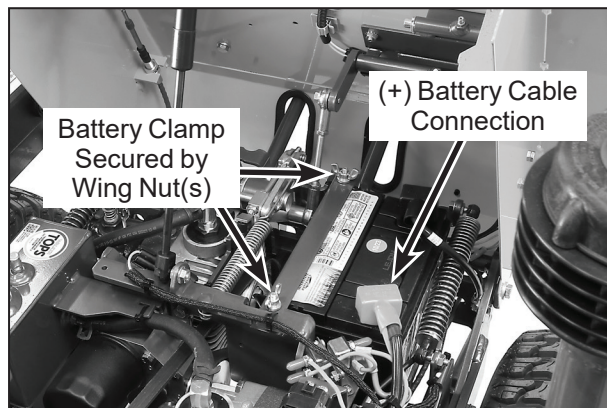
NOTE: If the battery becomes hot to the touch, stop the charging and allow it to cool down before recharging.

3. Reconnect the battery terminals starting with the positive (+) terminal.

Battery Installation

IMPORTANT: Make sure battery is securely mounted in the frame. A loose battery may cause damage to the case resulting in acid leakage and severe damage to the machine. A hazard may be created by damage to critical working parts and safety systems.

Install the battery in the mower as shown in **Battery Installation** photo. Connect the positive (+) first and then the negative (-) cable to the proper battery terminal **[black cable and red boot connect to the Positive (+) terminal]**. Slide the rubber boot up and over the battery post, making sure it covers the post completely **to prevent an electrical short**.



Battery Installation

Mower Deck Assembly



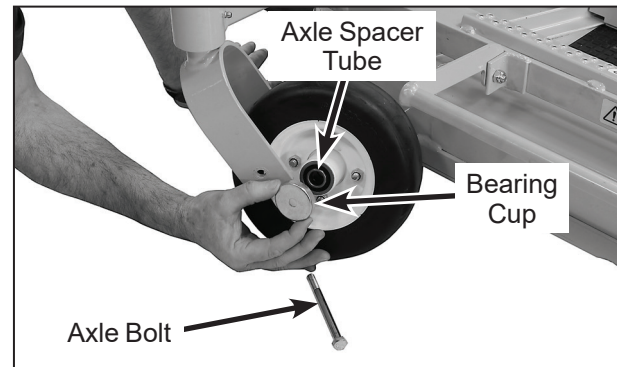
CAUTION

The engine must be off during the tractor assembly and deck installation.

Deck Caster Wheels Installation

1. Remove the bolt and nut from each deck caster wheel fork.
2. Fit a bearing cup on the outside of each wheel bearing and slide the wheel assembly into the wheel fork.
3. Insert the 3/8-16 x 4-1/2 in. bolt through the wheel fork with the bolt head to the outside and install the 3/8-16 Keps nut.

4. Tighten the bolt and nut until the axle spacer tube and inner bearing race bottom against the inside of the wheel fork (will not turn) while the wheel spins freely without binding.

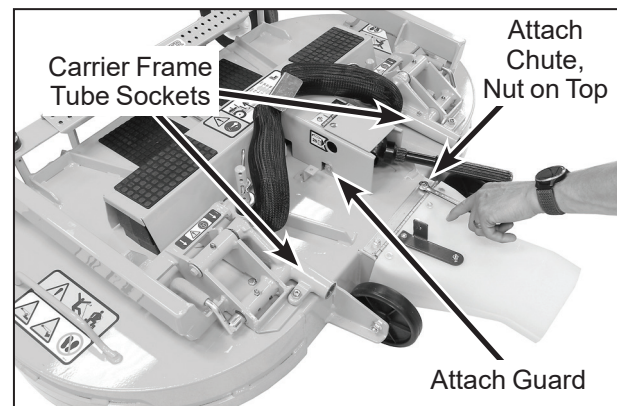


Deck Caster Wheel Installation

5. Grease the caster wheel bearings and caster pivot bearings—two (2) grease fittings for each wheel.

Deck Discharge Chute Installation (GHS Collection Models Only)

Mount the discharge chute hinge on top of the deck discharge opening using two (2) 1/4-20 x 1/2 in. carriage bolts and 1/4-20 ESNA nuts. Position the bolts with the heads inside the chute and the nuts on the outside.



Discharge Chute and PTO Shaft Guard Installation on Collection Deck

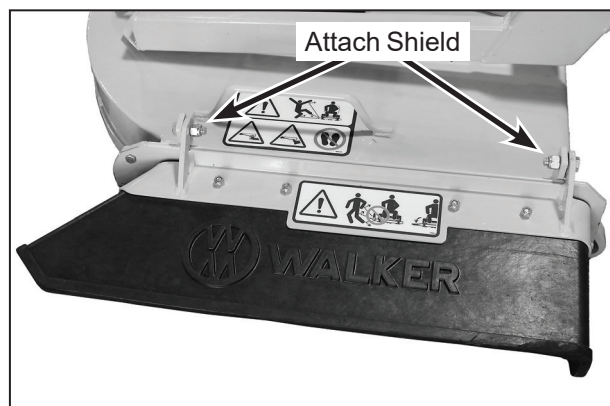
Deck Discharge Deflector Shield Installation (Side Discharge Models Only)

Attach the side discharge deflector shield using two (2) 3/8-16 x 1-1/4 in. bolts, 3/8-16 ESNA nuts, and 3/8 in. wave spring washers. The wave washers fit between the two hinging surfaces. Tighten the nuts until the shield moves freely but is not loose.



WARNING

DO NOT operate the machine without the grass deflector shield attached and in the lowest possible position.



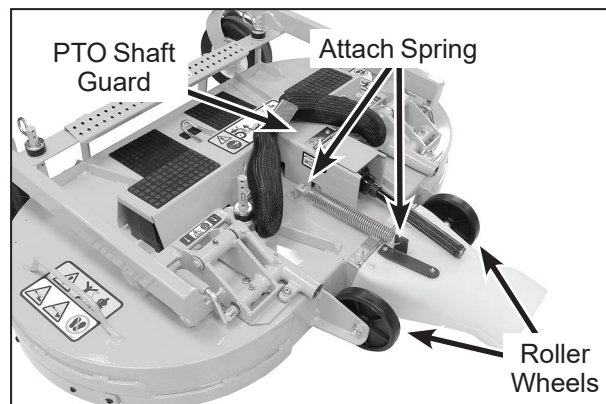
**Discharge Shield Installation
on Side Discharge Deck**

PTO Shaft Guard Installation

Position the shaft guard as shown and mount with two (2) 1/4-20 x 1/2 in. bolts.

Tilt-Up Roller Wheel Installation

Mount the two (2) tilt-up roller wheels on the brackets on the rear skirt of the deck housing using the P/N 8490 axle bolt, 3/8 in. plain washer, 3/8 in. wave spring washer (between bracket and wheel) and 3/8-16 in. Whiz locknut. Tighten the axle bolt until the wheel rolls freely, but is not loose. Attach spring for tilt-up action from chute to bracket on deck.

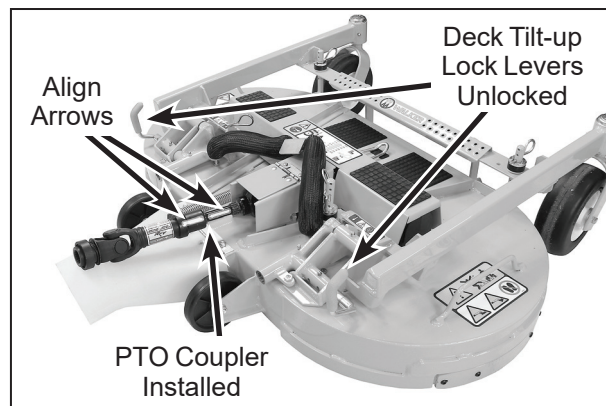


**Tilt-Up Spring and Roller Wheel
Installation on Collection Deck**

Mower Deck Installation on Tractor

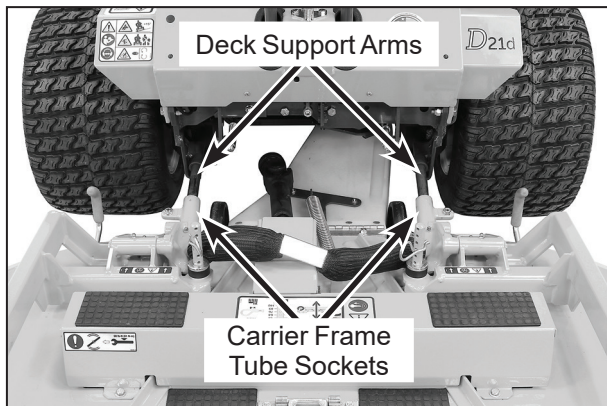
Deck Installation

1. Unlock the deck tilt-up lock lever on each side of the deck carrier frame. See the **Install PTO Coupler Tube** photo for details.
2. Slide the PTO coupler tube onto the deck's PTO drive shaft making sure the arrows align.



Install PTO Coupler Tube

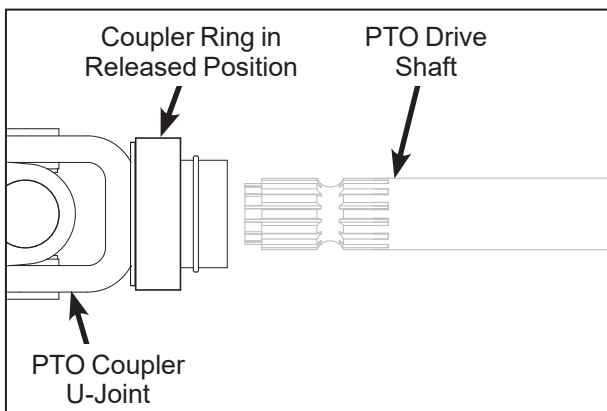
3. Lightly grease each deck support arm (2) on the tractor. Refer to **Mower Deck Installation** photo for location of deck support arm.



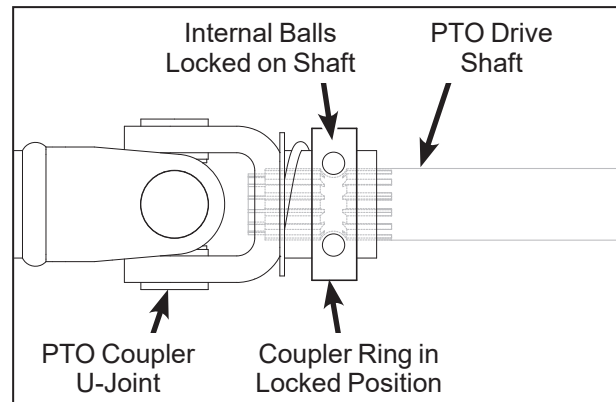
Mower Deck Installation

4. Engage the deck carrier frame tube sockets on the tractor support arms. Refer to **Mower Deck Installation** photo for socket location. Slide the deck onto the support arms approximately 3 in. (76 mm).
5. Reaching under the tractor, slide the PTO coupler tube onto the tractor's PTO drive shaft. Make sure the ring has "snapped" securely on the spline shaft.

IMPORTANT: To prevent damage to the mower, make sure the PTO quick disconnect is securely locked on the tractor, with the locking balls fully seated in the groove and the ring in the locked position (refer to the **Quick Disconnect Ring "Locked" Position** illustration). After installation, pull on the PTO coupler to check for security.



Quick Disconnect Ring "Released" Position

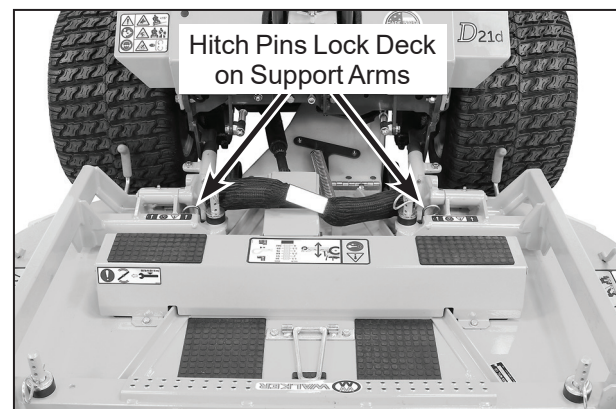


Quick Disconnect Ring "Locked" Position

6. Slide the deck the rest of the way on the deck arms. If the deck is collection style (GHS equipped model), the discharge chute will need to be **aligned** and connected to the blower inlet during the last 2 in. (51 mm) of slide action on the support arms.

NOTE: Raising the mower body may be helpful in fitting and guiding the deck chute into the blower.

7. Install the hitch pin through the hole on the end of each support arm to lock the deck in place. Two (2) hitch pins are included in the Owner's Packet of materials.

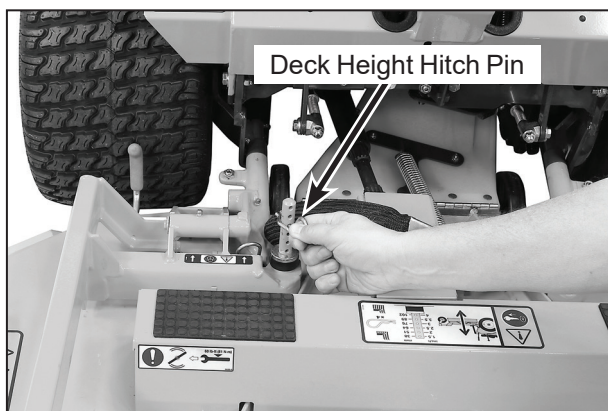


Use Hitch Pins to Lock Deck on Support Arms

WARNING

Failure to install the hitch pins will result in the deck disconnecting from the tractor during operation.

8. To reduce the weight of lifting the deck before the counterweight spring is installed, remove **one (1)** deck height hitch pin from a rear deck support pin or alternately lift and block one side of the deck. Decks with a deck height adjuster installed will need to use the lift and block technique.

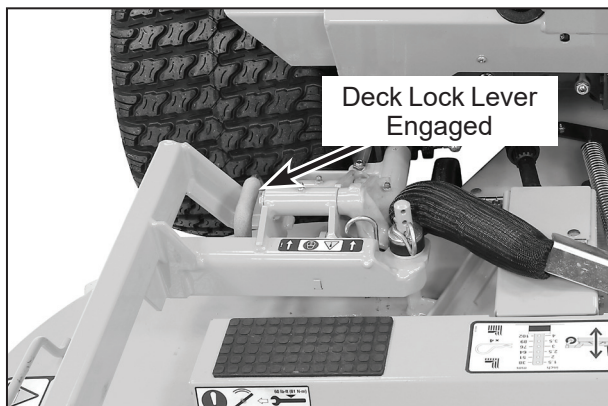


Remove One Deck Height Hitch Pin

9. Re-engage the deck lock lever on the side with the deck height hitch pin removed then re-engage the second deck lock lever. Reinstall the deck height hitch pin or remove the block.

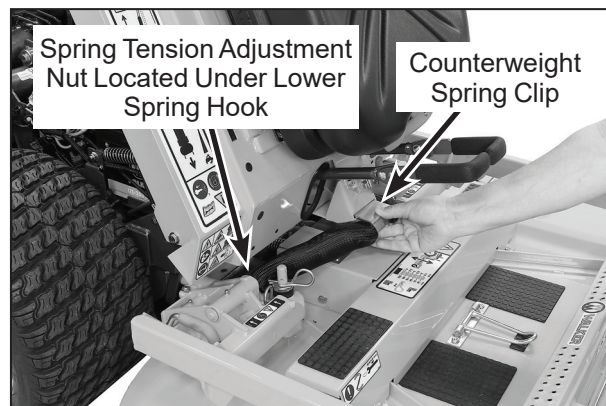
CAUTION

Do not operate the machine with the deck tilt-up pivot joint unlocked.



Deck Lock Levers Engaged

10. Raise the mower body and clip the counterweight springs to the receptacle on front of body as shown in the **Install Deck Counterweight Spring** photo. Lower the body to tension the springs.



Install Deck Counterweight Spring

11. With the counterweight springs connected, the weight on the deck caster wheels should be 15 to 25 lb (6.8 to 11.3 kg); this adjustment is preset at the factory. If required, the spring tension can be adjusted by tightening or loosening the elastic stop nuts located underneath the lower spring hook, or contact your local dealer if additional help is required. Refer to **Install Deck Counterweight Spring** photo.

Deck Leveling

The mower deck and support frame are jig welded; within normal tolerances, very little, if any, shimming should be required to level the deck. Tire pressure will influence the levelness of the deck. Check the tire pressure of all pneumatic tires as a possible cause of the deck not being level.

1. Position mower on a smooth, level surface. Set the cutting height to the highest position – 4 in. (102 mm) – for easy access under the deck to measure blade height. Refer to *Adjusting Cutting Height* on page 44.

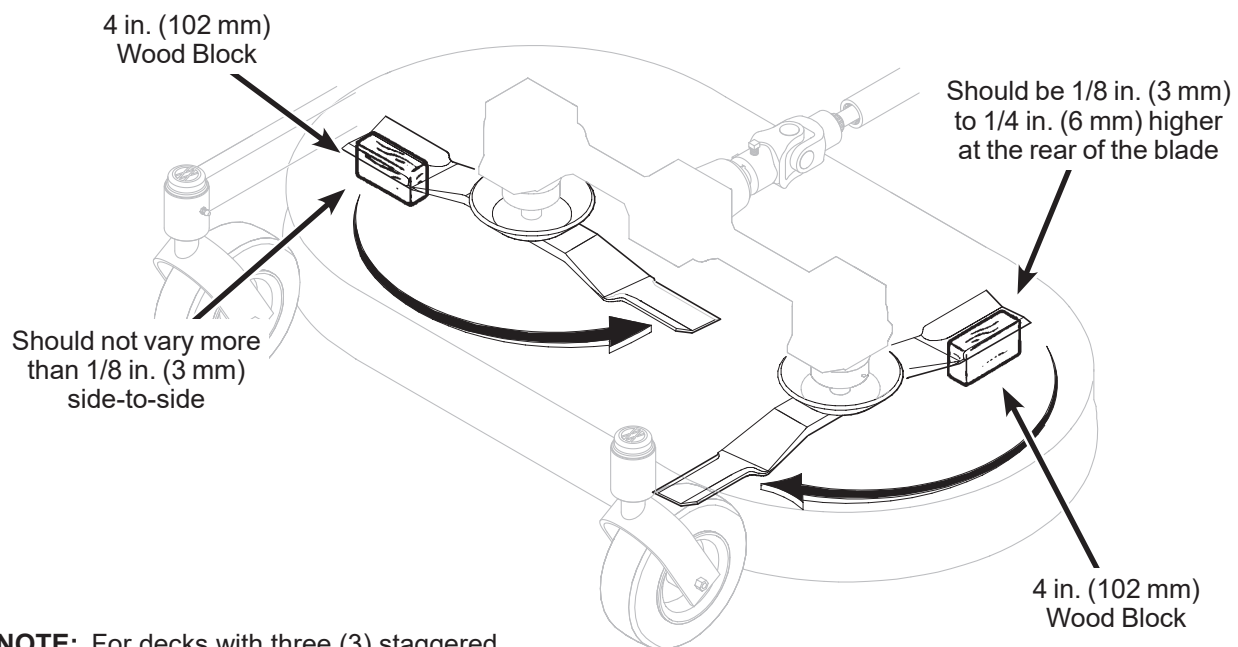
NOTE: A block of wood cut 4 in. (102 mm) high is a convenient gauge to measure blade height above ground during the leveling process.



WARNING

The machine must be shut off during this procedure.

2. Check the side-to-side level. **Rotate each blade sideways** and measure the distance from blade tip to ground on each side. If measurements vary more than 1/8 in. (3 mm), add a washer shim under the deck support pins on the low side to level the deck.
3. Check the front-to-rear level. **Rotate the blades to point forward.** Measure the distance from blade tip to ground on the front and rear. The rear of the blade should be 1/8 to 1/4 in. (3 to 6 mm) higher than the front of the blade; shim the rear (or front) deck support pins equally to achieve **at least** 1/8 in. (3 mm) difference.



NOTE: For decks with three (3) staggered blades, like the DS52, the front-to-rear level should be set using the middle blade pointing forward, and either outside blade pointing back.

Deck Leveling

DS52-3/DS60-3 Deck Leveling

The mower deck and support frame are jig welded and the deck support linkage is factory adjusted. Within normal tolerances, very little, if any, adjustment should be required to level the deck. Tire size and pressure will affect the levelness of the deck. **Assure that all tires (tractor and deck caster wheels) are properly inflated prior to checking deck levelness or performing the deck leveling procedure.**

Measuring Deck Levelness

1. Position the mower on a smooth, level surface, and set the deck height to the most common cutting position. Refer to *Adjusting Cutting Height* on page 44.
2. See the **Deck Leveling for DS52-3/DS60-3** illustration for side-to-side and front-to-back deck level measurement points. Side-to-side measurements should not vary more than 1/8 in. (3 mm). Front-to-rear measurements should have the rear 1/4 in. (6 mm) to 3/8 in.

(10 mm) higher than the front. If either set of measurements are not within tolerance, perform the **Deck Leveling Procedure**.

Deck Leveling Procedure

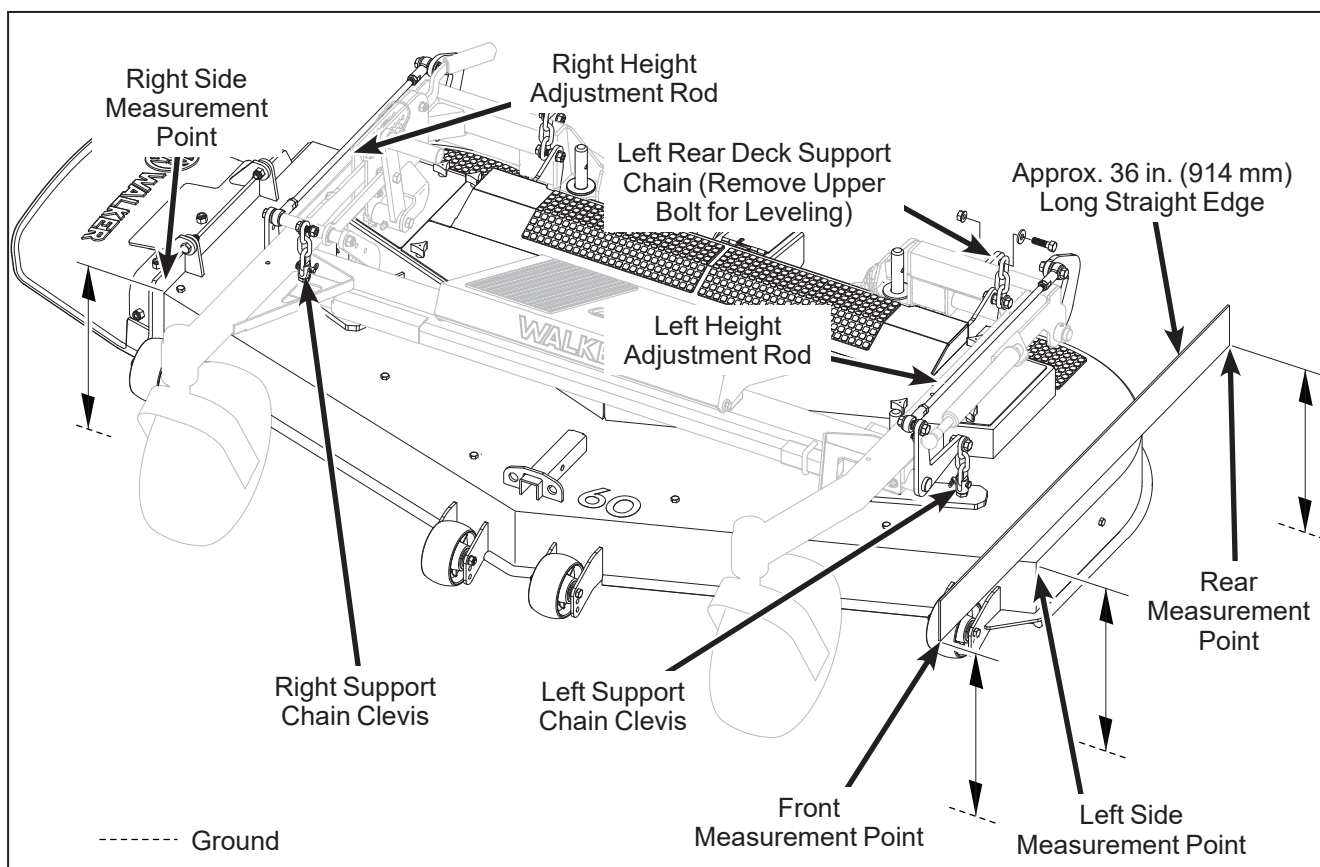
1. Position the mower on a smooth, level surface, and set the deck height to the most common cutting position. Refer to *Adjusting Cutting Height* on page 44.



WARNING

The machine must be shut off during this procedure.

2. Place a block of sufficient height under the left rear corner of the deck housing to remove tension from the left rear deck support chain. Detach the left rear deck support chain by removing the upper bolt from the height adjuster arm. Remove the block and let the deck hang from the remaining three support chains.



Deck Leveling for DS52-3/DS60-3

3. Measure the side-to-side level of the deck by measuring from the ground to the top of the deck housing at the front corners of the deck as shown in the **Deck Leveling for DS52-3/DS60-3** illustration. The side-to-side measurements should not vary by more than 1/8 in. (3 mm). If necessary, raise or lower the left and/or right front support chain clevises to level the deck.
4. Measure the front-to-rear level of the deck using a straight edge as shown in the **Deck Leveling for DS52-3/DS60-3** illustration. The rear measurement should be 1/4 in. (6 mm) to 3/8 in. (10 mm) higher than the front measurement. If necessary, adjust the right side height adjustment rod by lengthening it to lower the back of the deck, or shortening it to raise the back of the deck.
5. With the side-to-side and front-to-rear deck level correct, reattach the left rear support chain that was removed in step 2. Adjust the left side height adjustment rod to equalize the left rear and right rear support chain tension.
6. Assure that all fasteners are tight and replace any guards removed during the leveling procedure.

PREOPERATING CHECKLIST

Before operating the mower for the first time, and as a routine before daily operations, it is important to make sure the mower is properly prepared and ready for operation. The following is a list of items to be checked. (For a mower with frequent operation, some of these items will not need to be checked every day, but the operator should be aware of the condition of each.)

For proper fuel and lubricants, refer to *Specifications on page 3*.

☐ FILL FUEL TANK

Fill the fuel tank with clean, fresh fuel. Clean diesel fuel is particularly important since contaminated fuel will damage the fuel injectors and injection pump.

NOTE: An electric fuel pump makes it unnecessary to bleed (purge out air bubbles) the diesel fuel injection system when initially fueling an empty fuel tank.



DANGER

Handle diesel fuel with care. Use safe refueling procedures:

- **DO NOT** fill fuel tank with the engine running.
- If the engine is hot, allow to cool before refueling.
- Use an approved fuel container.
- Fuel the mower outdoors.
- **DO NOT** smoke while refueling.
- Avoid spilling fuel; use a funnel or spout.
- **DO NOT** overfill the fuel tank; fill up to about 1 in. (25 mm) below the top of tank.

IMPORTANT: DO NOT permit dirt or other foreign matter to enter the fuel tank. Wipe dirt from around the filler cap before removing. Use a clean fuel storage container and funnel.

☐ CHECK ENGINE CRANKCASE OIL LEVEL

Check the engine crankcase oil level before use and **after each 5 hours** of continuous operation. Refer to *Checking Engine Crankcase Oil Level on page 60*.

☐ CHECK AND SERVICE ENGINE AIR CLEANER SYSTEM

- Check air filter restriction gauge to make sure the yellow indicator disk is in the safe operating (green) range.
- Check condition, cleanliness, and security of the complete air cleaner system (inspect air filter paper element **every 100 hours**). For detailed procedures, refer to *Engine Air Cleaner System on page 68*.

☐ CHECK ENGINE COOLING SYSTEM

- Check the radiator air intake screen to make sure the screen is clean and free of obstruction. Also, the radiator cooling fins should be inspected and cleaned if there is any buildup of dirt or debris. (Remove the intake screen assembly to inspect and clean.)

- Check the coolant levels in the radiator and overflow tank. If additional coolant is needed, refer to *Engine Cooling System* on page 70.



WARNING

DO NOT remove the radiator pressure cap when engine is hot.

- Check operation of electric radiator fan by turning ignition key to the **ON (RUN)** position.
- ☐ CHECK GEAR AXLE OIL LEVEL
Refer to *Gear Axle Lubrication* on page 63.
- ☐ INSPECT FIVE (5) BELTS
Engine PTO Drive, Jackshaft Drive, Hydrostatic Ground Drive, Engine Alternator Belt, and GHS Blower Drive (if equipped).
- ☐ CHECK GRASS CATCHER EXHAUST SCREEN IS CLEAN (GHS MODEL)
- ☐ CHECK HYDROSTATIC TRANSMISSION OIL LEVEL
Refer to *Checking Hydrostatic Transmission Oil Level* on page 66.
- ☐ CHECK FUNCTIONS OF INSTRUMENT PANEL AND WARNING HORN
Turn the ignition key to the **ON (RUN)** position. Voltmeter, Oil Pressure Warning Light, and Warning Horn should all operate, indicating normal function.
- ☐ CHECK FUNCTION OF SAFETY INTERLOCK SWITCHES
Refer to *Safety Switch System* on page 78 to check for proper operation of safety switches, both during engine starting and with the operator leaving the seat with tractor moving forward or with the mower blades engaged.
- ☐ CHECK TIRE PRESSURE
Deck Caster Wheel* = 20 PSI (137 kPa)
Drive = 15 PSI (103 kPa)
Tailwheel = 20 PSI (137 kPa)
* If equipped with optional pneumatic tires

- ☐ CHECK SECURITY OF DRIVE WHEEL BOLTS
The eight (8) lug bolts mounting the drive tires should each be torqued to 75 to 85 lb·ft (102 to 115 N·m).

- ☐ CHECK DECK IS SECURELY ATTACHED
Check for correct deck attachment (hitch pins and counterweight springs).

- ☐ ADJUST MOWER CUTTING HEIGHT, IF REQUIRED
Position the hitch pins in the four deck support pins. Refer to the **Cutting Height Adjustment** decal on the deck gearbox cover.

NOTE: For DS52-3/DS60-3 decks, see *Cutting Height with Foot Operated Deck Height Adjuster* on page 44 for height adjustment.

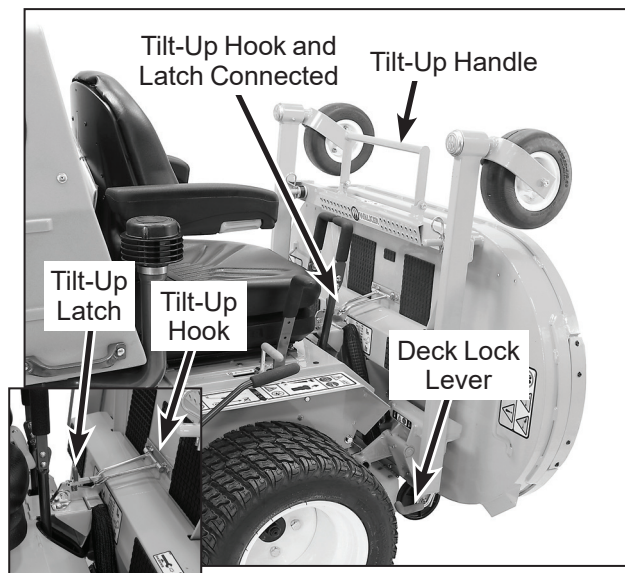
- ☐ CHECK AND CLEAN GRASS BUILDUP UNDERNEATH MOWER DECK (and inside GHS blower, if equipped)
Refer to *Cleaning GHS Blower* on page 72 for blower cleaning information.



DANGER

Never operate cutter blades with deck in raised position because it is hazardous.

The tilt-up deck can be secured in the raised position by unlocking the deck lock levers on each side of the carrier frame and inserting the deck hook into the tilt-up latch on the front of the tractor. Before operating the tractor, make sure to re-engage the deck lock levers after lowering the deck to the normal operating position.



Deck Secured in TILT-UP Position



CAUTION

Do not operate machine with deck tilt-up pivot joint unlocked.



DANGER

Do not operate the mower with deck in tilt-up position. Do not move the tractor with the deck in the tilt-up position.

- ☐ CHECK MOWER BLADE CONDITION, SHARPNESS, AND SECURITY OF MOUNTING

The blade mounting nuts on gear-driven decks should be torqued to 60 lb·ft (81 N·m), and the blade mounting bolts on belt-driven decks torqued to 70 lb·ft (95 N·m). If blade sharpening is required, refer to *Sharpen Mower Blades* on page 75.

- ☐ PERFORM ANY ADDITIONAL PROCEDURES called for in the *Maintenance Schedule Chart* on page 58.

Operating Instructions

CONTROL IDENTIFICATION, LOCATION, AND FUNCTION

Operating Controls

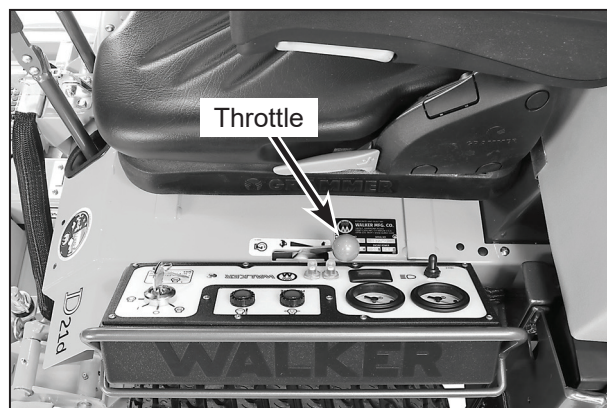


CAUTION

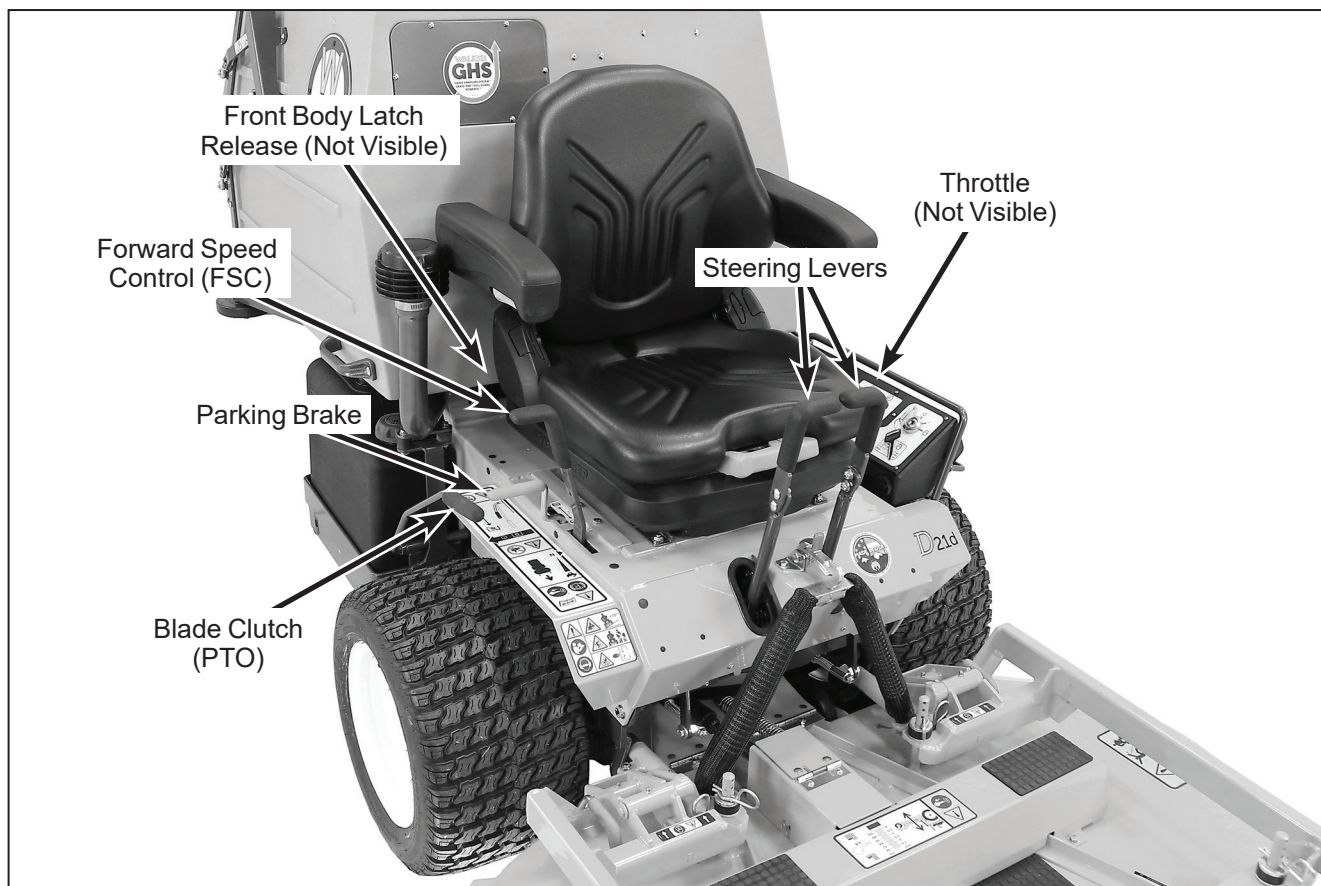
Before operating the mower, become familiar with the location and function of all operator controls. Knowing the location, function, and operation of these controls is important for safe and efficient operation of the mower.

Engine Throttle

The throttle control lever (red knob) is located on the left side of the seat and is used to control engine speed. Moving the lever **forward** toward the **FAST** position **increases** engine speed; moving it **backward** toward the **IDLE** position **decreases** engine speed.



Throttle Location



Operating Controls

Forward Speed Control (FSC)

Forward Speed Control (FSC) has two functions: One is to set forward travel speed, and the other is to establish the **NEUTRAL-PARK** position. When the FSC lever is moved into the **FORWARD** position, a friction lock holds any forward speed setting from 0 to 7 mph (0 to 11 km/h). The ground speed is proportional to the lever position; the further the lever is advanced forward, the faster the tractor moves. It is not necessary to hold the FSC in position since the friction lock maintains the selected lever position. Pulling back on the steering levers overrides the FSC setting and slows or stops forward travel. Releasing the steering levers allows the tractor to resume forward travel at the speed set by the FSC lever. To stop and park the machine, the FSC lever is moved backward to the **NEUTRAL-PARK** position.

Steering Levers

Each drive wheel is controlled by its own independent steering lever, for both steering function and **FORWARD/REVERSE** motion. The FSC lever sets the maximum forward speed, and also sets the forward position of the steering levers. The steering levers operate **only with a backward pulling** movement of the lever, which causes the drive wheel for that lever to first slow down, stop, and then reverse with a full backward lever stroke. The levers are released to the **FORWARD** position for "straight-ahead" ground travel.

NOTE: Pushing forward on the steering levers will not cause **any** change in tractor motion - there will be no steering lever reaction and there will be no machine damage.

Blade Clutch (PTO)

The blade clutch lever has two positions. Pulling the lever **UP engages** the PTO that drives the mower blades. Pushing the lever **DOWN disengages** the PTO and engages the blade brake.

NOTE: On GHS equipped models, the blower, Powerfil® motor, and Grass-Pak® full signal switch are activated by engaging the blade clutch. Refer to *Using the GHS Catcher on page 51* for a complete description of GHS operation.

Parking Brake

The parking brake functions by locking a pin into the hydrostatic transmission pinion gear teeth. Moving the lever **FORWARD engages** the parking brake; moving the lever **BACKWARD releases** the brake.

IMPORTANT: Stop the tractor completely before engaging the parking brake. The parking brake uses a positive mechanical lock similar to the **PARK** position on an automotive automatic transmission. If the tractor is moving when the brake is engaged, it will result in sudden stoppage and possible internal damage to the axle drive.

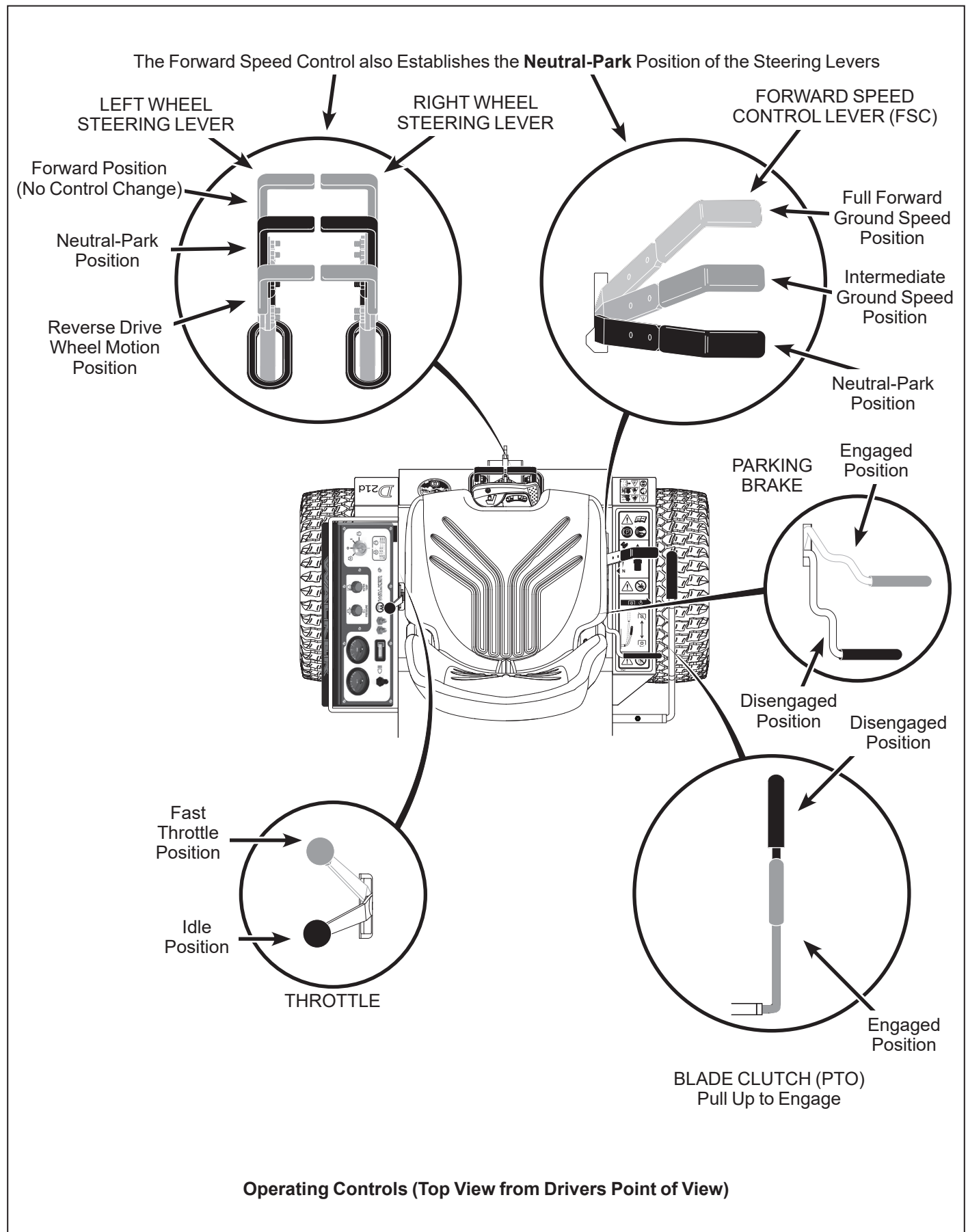
NOTE: If pressure on the parking brake pin (e.g., parked on a hill) makes it impossible to release the parking brake with the parking brake lever, move the mower gently forward or backward to release the pin.



Parking Brake Engaged



Parking Brake Disengaged



Front Body Latch Release

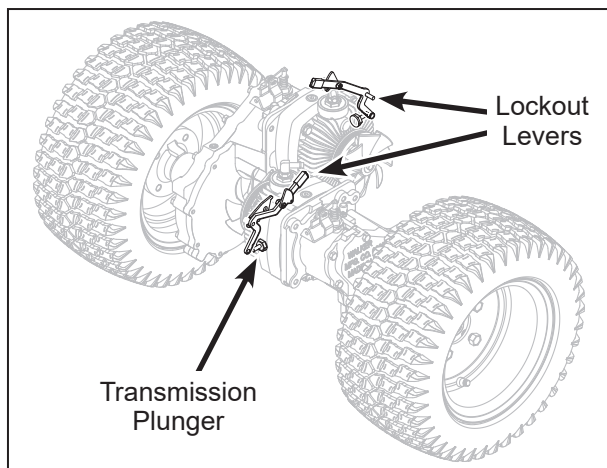
The front portion of the tractor body hinges forward for maintenance access and is latched down in the **OPERATING** position. To raise the body, pull the latch release up and forward.



Front Body Latch Release

Transmission Lockout Levers

The transmission lockout levers disengage the hydrostatic transmissions. By **lifting** the lever on top of the transmission and locking it into place with the lockout cam, the hydrostatic transmissions are released to permit freewheeling. By releasing the cam and **lowering** the lever, the transmissions are engaged for normal operation. The transmission lever in the **LOCKOUT** position is used to enable moving the machine without the engine running (e.g., for service). Refer to *Transmission Lockout on page 45* for operating instructions.

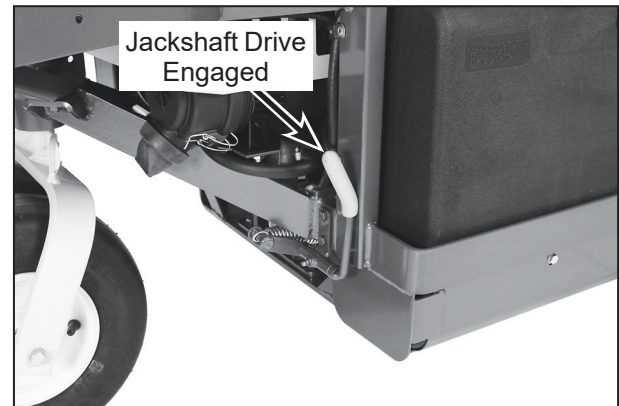


Lockout Lever Location

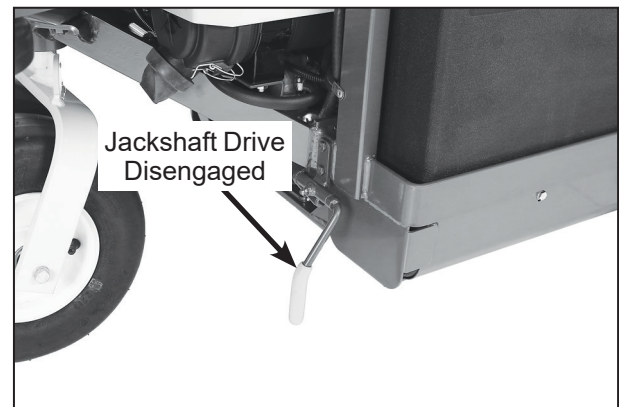
NOTE: The transmission plunger on the side of the transmission case (activated by the **LOCKOUT LEVER**) must be completely released during operation of the mower, otherwise operation of the transmission will be erratic.

Cold Start Lever (Jackshaft Drive Belt Release)

The cold start lever is used for starting the machine in cold weather [below 40° F (4° C)]. Pulling the lever **DOWN disengages** the jackshaft drive belt. When the jackshaft drive belt is released, the hydrostatic transmissions are removed from the engine starter cranking load.



Cold Start Lever - Normal Operating Position



Cold Start Lever - Cold Start Position

Suspension Seat

A fully adjustable suspension seat is standard on Model D21d. This seat is adjustable for back pitch, weight, lumbar support and armrest inclination. Proper adjustment for each operator is essential to safe operation and operator comfort.

Read operating instructions in full before you use the seat.

NOTE: Driver seats that have been adjusted incorrectly have little or no vertical travel with the operator in the seat. To prevent damage to the driver's back and to the seat, the seat must be adjusted for the driver's weight **before use** and **before every change of driver**. To prevent injury, **no objects should be placed within the moving area** of the driver seat.



CAUTION

To eliminate any risk of accident, the seat settings must be checked to ensure they are correctly engaged before the mower is driven.

Adjustments must **not** be made **while driving**.

If you make any changes to the suspension seat (for example fitting parts which are not original **GRAMMER** parts) it may no longer meet the safety standards to which it is tested. **Functions may be impaired**, threatening your **safety**. For this reason, **any change in design of the seat** must be approved by **GRAMMER (Seat Manufacturer)**.

IMPORTANT: Fasteners must be **checked regularly for tightness**. If the seat wobbles there may be loose bolts or other faults.

If you note that the seat does not function correctly (for example a defective seat suspension; improper curving of the lumbar support or damaged bellows), **contact your Walker dealer immediately** to arrange for repairs to be carried out. If you fail to do so, your health may be affected and the **risk of accident increased**.



CAUTION

Before the tractor is used, the safety switch must be checked for proper function. The operation of the switch is checked by having the operator lift off the seat with the tractor moving forward and/or the blades engaged—this action should cause the machine to stop. If a malfunction is detected, the tractor must not be driven; the safety switch system should be repaired or replaced before operating the mower.



CAUTION

Except for the driver's weight during normal use, no loads must be placed on seats with a built-in switch detecting seat occupation, as the vehicle may otherwise start to move by itself.

For armrest inclination adjustment, the inclination of the armrests can be modified by turning the adjustment knob. Refer to **Figure 1**.

Turning the knob to the right lifts the armrest in front, turning it to the left, lowers it in front.

For weight adjustment, the weight of the respective driver must be set while sitting on the seat. Fold out the weight adjustment handle completely, hold it at the front and move it upwards or downwards (10 movements from minimum to maximum).

Before every new movement, bring the handle back to the starting position (audible locking sound). The driver's weight has been set correctly, when the arrow is in the middle of the viewing window. Refer to **Figure 2**.

IMPORTANT: To prevent injury to the operator and/or damage to the seat, the setting for the driver's weight must be checked and adjusted as necessary before the mower is driven.

When the minimum/maximum weight adjustment has been reached, you will notice an empty movement in the handle.

When you have set the weight, fold the handle completely into the locking position.

For Backrest adjustment, moving the adjustment handle upwards loosens the notching of the backrest adjustment. Refer to **Figure 3**.

After the adjustment, the handle must lock in the desired position. It should not be possible to move the backrest into another position when it is locked.

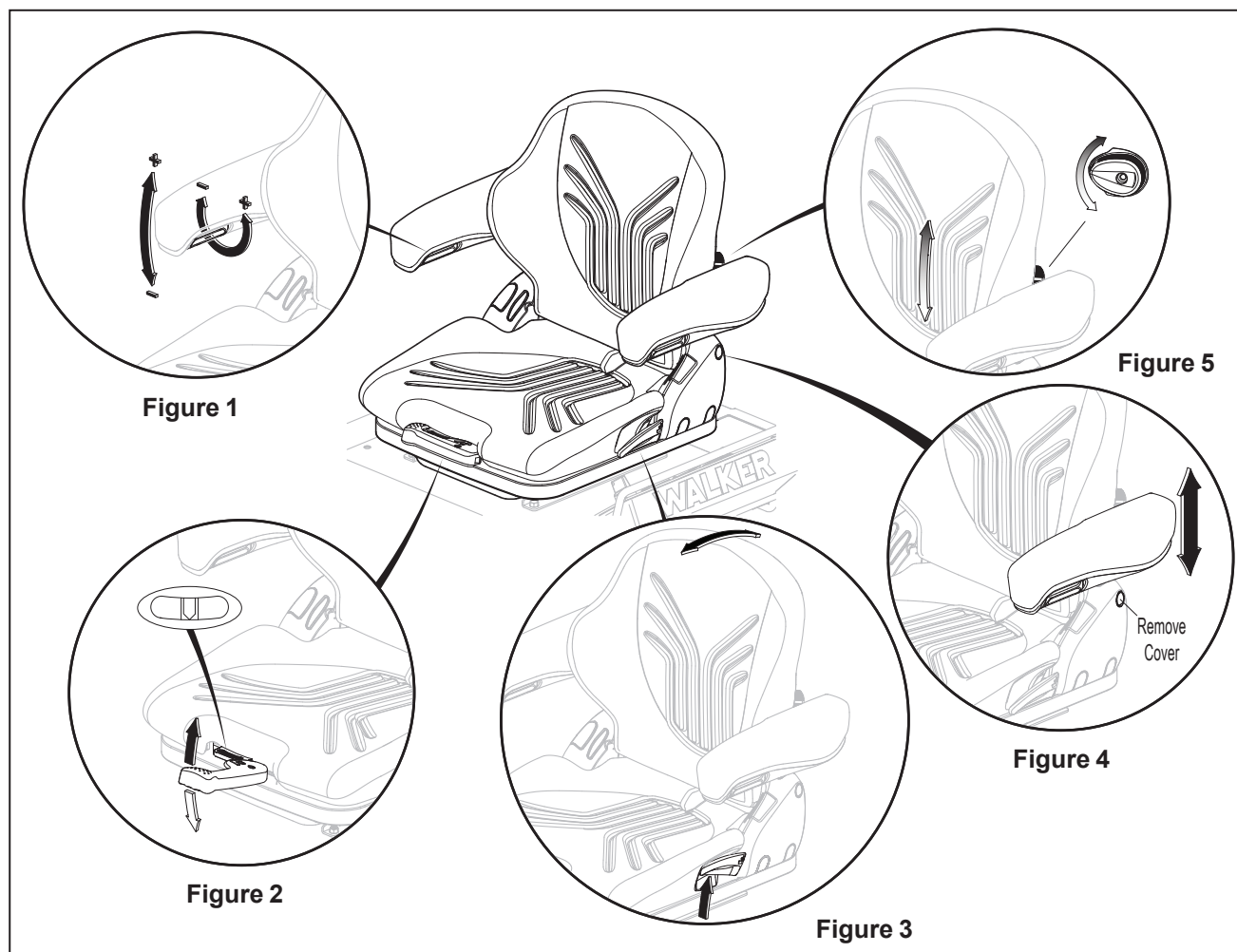
For Armrest height adjustment, the armrests can be folded back if required and the height individually adjusted.

For adjusting the height of the armrest, pry out the round cap (arrow) of the cover and loosen the hexagon nut (size 13 mm) situated behind it. Set the armrests in the desired position (5 steps) and tighten the hexagon nut. Replace the cap onto the nut. Refer to **Figure 4**.

For Lumbar Support adjustment, turning the knob upwards sets the curve in the upper part of the back upholstery. Turning the knob downwards sets the curve in the lower part of the upholstery. Refer to **Figure 5**.

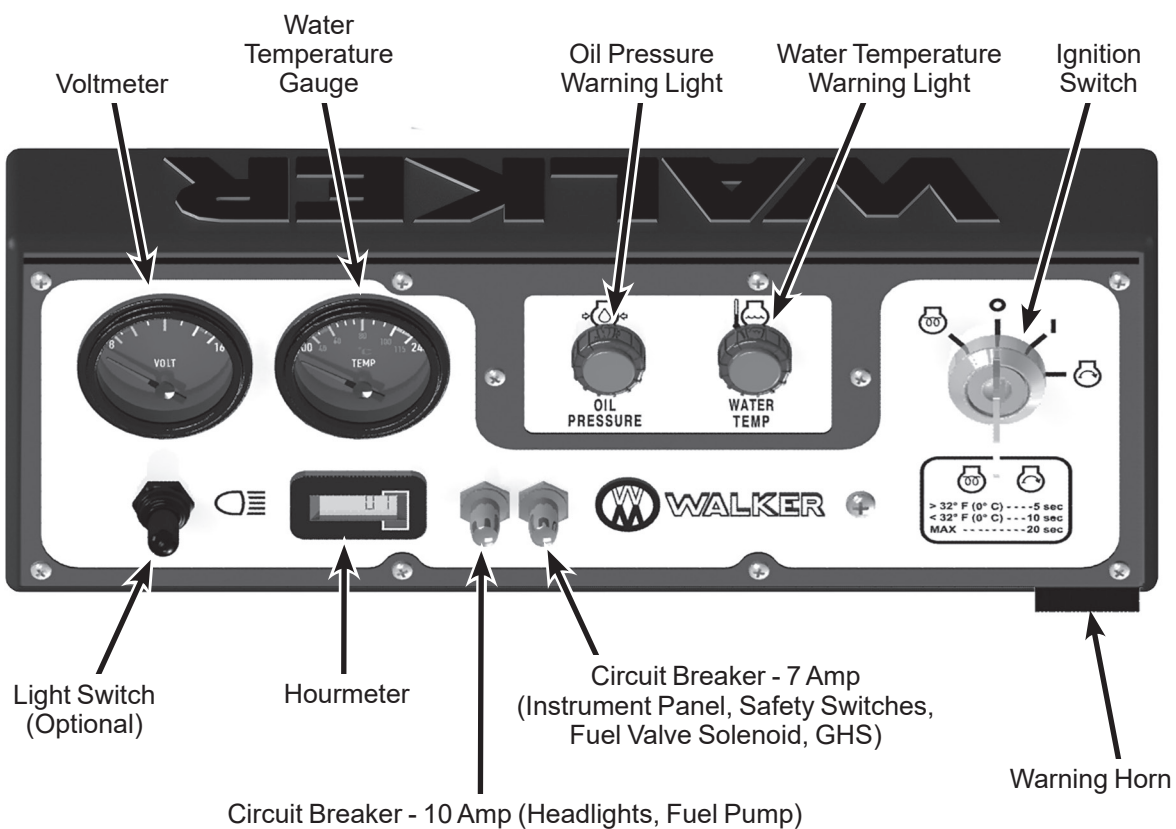
IMPORTANT: Dirt can impair the function of the seat, so make sure you keep your seat clean!

For cleaning, use a standard commercially available **upholstery or plastics cleaning agent**. **Test first for compatibility** on a small, concealed area.



Instrument Panel

This illustration shows the configuration of the **switches and indicators** located on the instrument panel.



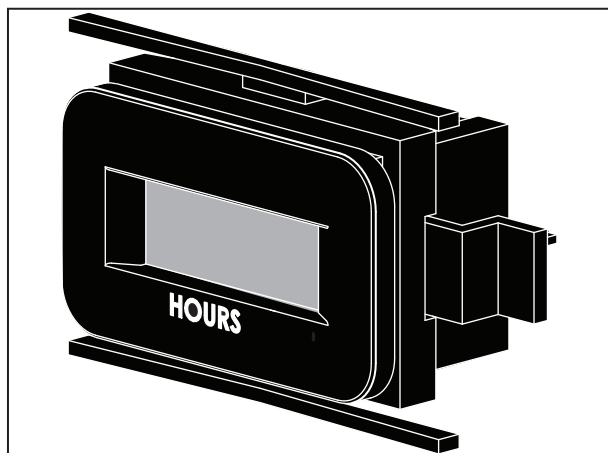
Instrument Panel

Hourmeter

The hourmeter, which is located on the instrument panel, displays **operating time** accumulated when the ignition switch is in the **ON (RUN)** position.

The hourmeter **does not have a manual reset function**.

NOTE: The blinking hour glass on the display means that the meter is operating properly.



Hourmeter

Voltmeter

The voltmeter displays battery and charging system voltage. An indication of low or high voltage (the red area) indicates an **electrical system failure**. The cause of the failure should be determined and corrected.

Water Temperature Gauge

The water temperature gauge monitors engine **cooling system temperature**. If engine coolant temperature exceeds 230° F (110° C), an overheat condition exists; the water temperature **light will come on** and the **warning horn will sound**.



WARNING

If engine cooling system overheating is indicated, continued operation of the engine, even for a short time, **COULD** result in fire, risk of personal injury, and severe damage to equipment.

Oil Pressure Warning Light/Horn

The oil pressure warning light and horn indicate that engine oil pressure is below the safe operating level [below 7 PSI (48 kPa)]. This **light (and warning horn)** will come on when the ignition is turned **ON**, but should go off after the engine is started. If the light fails to come on when the ignition switch is turned **ON**, it could indicate a burned out bulb. If the light comes on during engine operation, stop the engine immediately and correct the source of the problem before further engine operation.

IMPORTANT: Continued operation of the engine with an illuminated oil pressure warning light **MAY** cause severe engine damage (if a low oil pressure condition exists).

Water Temperature Warning Light/Horn



The water temperature warning light and horn indicate that engine coolant temperature is above the safe operating limit and the **engine is overheating**. If this light comes on, there may be a problem with:

- Radiator cooling air flow (material packed into radiator cooling fins, clogged air intake screen)
- Low coolant quantity in cooling system
- Engine alternator belt
- Thermostat function
- Cooling fan not operating

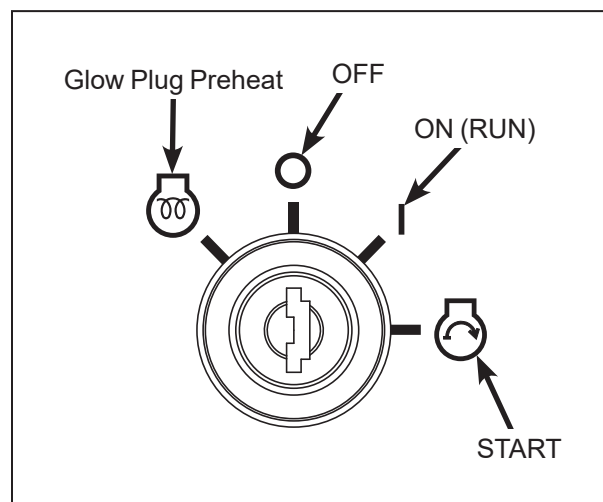
Stop the engine and correct the source of the problem before further operation.

IMPORTANT: Continued operation of the engine with an illuminated water temperature warning light **MAY** result in severe engine damage.

Ignition Switch

The ignition switch is used to start and stop the engine (and preheat the diesel engine). The switch has four positions:  is the glow plug preheat position, "O" is the **OFF** position, "I" is the **ON (RUN)** position that the key returns to after starting, and  is the **START** position. When starting the engine, turn the key clockwise to the **START** position. Do not hold the key in the **START** position longer than 10 seconds. If the engine does not start, return the key to the "O" position for at least 60 seconds before making a restart attempt. Prolonged cranking can damage the starter motor and shorten battery life. Release the key when the engine starts, and it will return to the **ON (RUN)** position. To stop the engine, rotate the key counterclockwise to the "O" position.

NOTE: When starting the engine, turn and hold the ignition key in the glow plug preheat position. The time required is approximately 10 to 30 seconds, depending on engine temperature. Refer to *Starting the Engine* on page 39.



Ignition Switch

Light Switch (For Optional Lights)

Operates headlights (when installed).

Warning Horn

The warning horn sounds to alert the operator that an **unsafe engine condition** is being indicated—when engine coolant temperature is too high or engine oil pressure is too low. If the horn sounds, check the indicator lights and correct the problem before further operation.

Circuit Breakers

Two manual reset circuit breakers are located on the instrument panel. Each has a button that pops out if the circuit breaker trips. The 10 amp circuit breaker protects the circuits to the (optional) headlights and fuel pump. The 7 amp circuit breaker protects the instrument panel circuits to the meters, warning lights and warning horn, plus the safety switch circuits, fuel valve solenoid, and the GHS. In addition, an auto-reset 40 amp circuit breaker protecting the radiator cooling fan system and an auto-reset 40 amp master circuit breaker are mounted near the battery.

STARTING THE ENGINE

CAUTION

Before operating the mower, read and understand all Safety Instructions and Operating Instructions.

WARNING

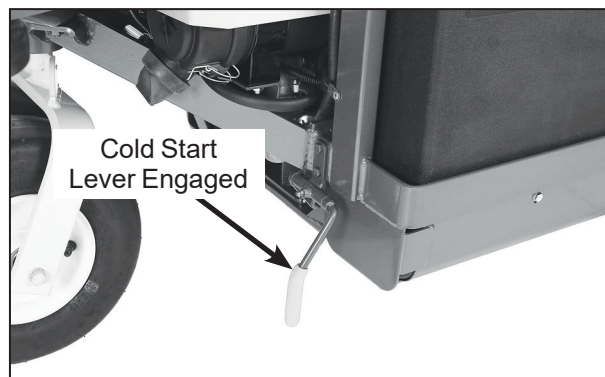
NEVER run the engine in an enclosed or poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless and deadly gas.

- Before attempting to start the engine, make sure the operator is in the seat, the Forward Speed Control is in **NEUTRAL-PARK** position, the parking brake is **ENGAGED**, and the blade clutch is **DISENGAGED**.

CAUTION

A safety interlock switch system **PREVENTS CRANKING** the engine with any one of these three controls in the **OPERATING** position: (1) Forward Speed Control out of neutral, (2) blade clutch (PTO) engaged, or (3) parking brake disengaged. If the engine cranks otherwise, the safety system is not working and should be repaired or adjusted before operating the mower. **DO NOT** disconnect safety switches; they are for the operator's protection.

NOTE: For starting in cold weather [below 40° F (4° C)], use the cold start lever to release the jackshaft drive belt and remove the hydrostatic transmission from the starter cranking load. After the engine has been started and warmed up, raise the lever to re-engage the jackshaft drive belt.



Jackshaft Drive Belt Release

- Turn and hold the ignition key in the **PRE-HEAT** position to preheat the engine glow plugs. For temperatures below 35° F (2° C), the time required is approximately 10 seconds. For temperatures 35° F (2° C) or higher, the time required is approximately 5 seconds.
- Move the throttle 1/4 to 1/2 open (toward **FAST**). Turn the ignition switch to the **START** position to start the engine. Release the key to **ON (RUN)** position as soon as the engine starts.

IMPORTANT: If the engine fails to start after approximately 10 seconds of cranking, the engine should be checked before further cranking. Turn the key to the **OFF** position and allow a 60 second cool-down period between starting attempts. Failure to follow these guidelines can damage the starter motor and shorten battery life. Consult your Walker dealer or authorized Kubota dealer for additional help.

TROUBLESHOOTING NOTE: If the engine cranks but does not start, check the following:

- Is the fuel valve solenoid operating? Look at the exhaust pipe when cranking the engine - no smoke indicates no fuel is reaching the cylinder. If the solenoid is not operating, contact your Walker dealer.
- Are the glow plugs operating? Look at the exhaust pipe when cranking the engine - white smoke indicates improper glow plug operation and inadequate preheat. If the glow plugs are not operating, consult the Kubota Engine Workshop Manual or an authorized Kubota Engine Dealer to check the glow plug function.

4. After the engine starts, make sure the oil pressure light goes off. If not, stop the engine immediately and find the cause of the problem. Make sure the oil pressure light is off prior to engaging the mower blades and beginning operation.

ADJUSTING GROUND SPEED AND STEERING

CAUTION

Learn to **START, STOP, and MANEUVER** the mower in a large, open area.

If the operator has not operated a machine with **LEVER STEERING OR DUAL HYDRO-STATIC TRANSMISSIONS**, steering and ground operation should be learned and practiced until the operator is completely comfortable handling the machine **BEFORE ATTEMPTING TO MOW**.

DANGER

Keep feet on footrests at all times when the machine is moving. Never operate the tractor without a deck or implement installed.

1. Move the FSC out of **NEUTRAL-PARK** position to the desired forward speed. **DO NOT** hold forward on steering levers. It is not necessary to hold the FSC lever in position since a friction lock maintains the selected lever position (and forward travel speed).

CAUTION

An operator presence switch (seat switch) will cause the engine to stop if the parking brake is in the **DISENGAGED** position and/or the FSC is out of the **NEUTRAL-PARK** position (tractor stationary or moving forward) and the operator is not in the seat. The function of this switch should be checked by the operator raising off the seat, first with the parking brake **DISENGAGED**, and then with the tractor moving forward (allow 1/2 second "off the seat" for the time delay function); the engine should stop. In each case, if the safety system is not working, it should be repaired or replaced before operating the mower. **DO NOT** disconnect the safety switches; they are for the operator's protection.

NOTE: If the FSC lever will not stay in the selected position, the friction lock needs to be adjusted. Refer to *Forward Speed Control Friction Lock* on page 91 or contact your Walker dealer.

2. Steer by pulling the lever on the side of desired direction of turn, e.g., pull the **LH** lever to **turn left**. To minimize the possibility of over-control, use only one hand on both steering levers.

GETTING STARTED RECOMMENDATIONS:

- ♦ Learn operation of the mower in an open area away from buildings, fences, and obstructions. Learn operation on flat ground **BEFORE** operating on slopes.
- ♦ Start maneuvering the mower with **SLOW** engine speed and **SLOW** Forward Speed Control setting until familiar with all operating characteristics.
- ♦ Remember it is not necessary to hold the steering levers forward (a unique Walker feature); always **PULL** on the levers for steering or for reverse motion of the mower.
- ♦ Learn to operate the mower with your left hand on the steering levers and right hand on Forward Speed Control. The use of two hands on the steering levers tends to cause over-control.
- ♦ Learn to operate the steering levers with smooth action. Jerky movements are hard on the transmission and lawn. For sharp turns, do not allow the inside wheel to stop and twist on the grass. Pull the steering lever controlling the inside wheel into reverse for a smooth “rolling” turn (one wheel rolling forward while the other rolls backward).
- ♦ Practice maneuvering the mower until you can make it go exactly where you are aiming.
- ♦ Remember, for an emergency stop, or in case of loss of control, machine movement can always be stopped quickly by pulling the Forward Speed Control into the **NEUTRAL-PARK** position.



**Correct Operator Hand Position
on the Controls**

3. Reverse direction of the mower by pulling both levers backward.

NOTE: Smooth action on the steering levers will produce smooth mower operation. Remember to keep the engine and ground speed slow until learning the control response.

⚠ WARNING

When moving forward, **DO NOT** suddenly put the tractor in reverse by rapidly pulling on the steering levers, especially when going downhill, as this can lift the tractor tail wheel off the ground and set up a bucking motion due to operator overcontrol. If bucking does occur, immediately stop the bucking action by pulling the Forward Speed Control (FSC) lever into the **NEUTRAL-PARK** position.

4. The FSC may be adjusted forward for faster ground speed and backward for slower ground speed. When mowing, ground speed should be adjusted to match the load on the cutter blades, i.e., as the engine pulls down in heavy cutting, pull back on the FSC lever to reduce ground speed. Adjusting ground speed helps maintain a balance between engine power and blade speed for high-quality cutting action.

- Stop ground travel by pulling both steering levers backward to the **NEUTRAL** position (tractor not moving) and then moving the FSC lever to the **NEUTRAL-PARK** position.

NOTE: If the tractor creeps forward or backward with the FSC lever in the **NEUTRAL-PARK** position, the transmission control needs to be adjusted. Refer to *Adjustments for Transmission Control in Neutral Function Adjustment - Step 4 on page 88* or contact your Walker dealer.



WARNING

In case either of the transmission drive belts break during operation, and if the machine is on a slope, the machine will free-wheel down the slope. To maintain control, immediately (1) Release the steering levers and simultaneously (2) Move the FSC to the **NEUTRAL-PARK** position. When the machine is stopped or moving slowly, engage the parking brake.

NOTE: This is exactly the same procedure as used to normally stop and park the machine.

ENGAGING THE BLADE DRIVE

- Set the engine throttle at about 1/3 speed. **Do not attempt to engage the blade clutch at high engine speeds.** This will drastically shorten drive belt life. Use only moderate engine speed when engaging the blade clutch.
- Engage the blade clutch by pulling the blade clutch lever **SLOWLY** up. For disengagement, push the blade clutch lever down **SLOWLY**.



Blade Clutch Engaged



Blade Clutch Disengaged



CAUTION

An operator presence switch (seat switch) will cause the engine to stop if the blade clutch is engaged and the operator is not in the seat. The function of this switch should be checked by the operator raising off the seat and engaging the blade clutch; the engine should stop. If the switch is not working, it should be repaired or replaced before operating the mower. **DO NOT** disconnect the safety switches; they are for the operator's protection.

IMPORTANT: **DO NOT** engage the blade clutch when transporting the mower across drives, sidewalks, loose materials, etc. **DO NOT** engage the blade clutch with the PTO shaft disconnected (the mower deck removed from tractor).

**CAUTION**

If the cutting blades strike a stationary object while mowing, stop the mower immediately, remove the key from the ignition switch and disconnect the negative battery cable, lift the deck, and inspect the deck and blades thoroughly for damage. Make sure that the blade timing has not been disturbed (the blades should be at 90 degrees to each other). Refer to *Blade Overload Shear Bolts on page 85* if blades are out of time. Also, make sure the blade retaining nuts are torqued to 60 lb·ft (81 N·m).

STOPPING THE MACHINE

1. Pull the steering levers to the **NEUTRAL** position and then move the FSC lever backward to the **NEUTRAL-PARK** position.
2. Slow the engine to a fast idle; put the throttle in the 1/2 throttle position.
3. Disengage the blade clutch.

IMPORTANT: DO NOT disengage the blade clutch with high engine speed (above 1/2 throttle) since the brake action on the blade drive will cause premature wear of the brake band.

**WARNING**

A brake stops the cutter blades (and blower on GHS equipped models) from freewheeling within five (5) seconds after disengaging the clutch. If the brake system malfunctions and the blades do not stop within five (5) seconds, the brake should be adjusted or repaired before further operation of the mower. Contact your Walker dealer, or refer to *Clutch Disengagement/ Brake Action on page 90*.

4. Slow the engine to Idle, put throttle in **IDLE** position; turn the ignition switch **OFF**.

**WARNING**

Remove the key from the ignition switch when leaving the mower unattended. This will prevent children and inexperienced operators from starting the engine.

5. Engage the parking brake.

IMPORTANT: The hydrostatic transmissions lock to prevent the mower from rolling freely with the engine stopped. However, if the mower is parked on a slope, it is necessary to **ENGAGE** the parking **BRAKE** to prevent the mower from creeping. This is due to a small amount of slippage in the hydrostatic transmissions, especially when transmission fluid is warm. Also, engaging the parking brake is recommended when stopping or parking the machine in a confined space with little tolerance for movement.

**CAUTION**

An operator presence switch (seat switch) will cause the engine to stop if the parking brake is in the **DISENGAGED** position and the operator is not in the seat. The function of this switch should be checked by the operator raising off the seat with the parking brake lever in the **DISENGAGED** position (tractor not moving and blade clutch disengaged); the engine should stop. **NOTE:** Allow 1/2 second "off the seat" for the time delay function. If the safety system is not working, it should be repaired or replaced before operating the mower. **DO NOT** disconnect the safety switches; they are for the operator's protection.

**WARNING**

In case either of the transmission drive belts break during operation, and if the machine is on a slope, the machine will free-wheel down the slope. To maintain control, immediately (1) Release the steering levers and simultaneously (2) Move the FSC to the **NEUTRAL-PARK** position. When the machine is stopped or moving slowly, engage the parking brake.

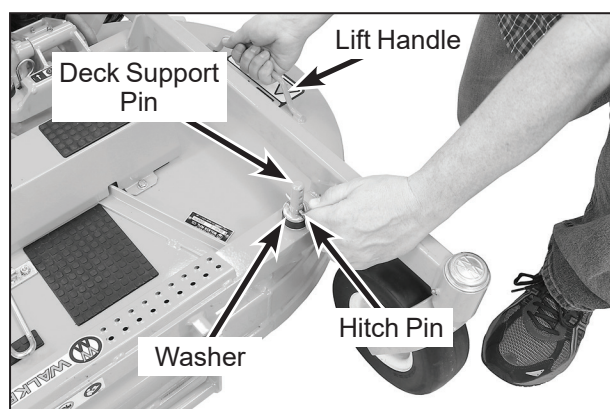
NOTE: The emergency stop procedure is exactly the same procedure as used to normally stop and park the machine.

ADJUSTING CUTTING HEIGHT

WARNING

The engine must be stopped before adjusting cutting height. Disengage the blade clutch (PTO), engage the parking brake, stop the engine, and remove the ignition key. Wait for all movement to stop before getting off the seat.

Cutting height is adjusted by positioning the four (4) retainer hitch pins in a series of six vertical holes on the deck support pins. Lift handles have been provided on each end of the deck to assist in raising the deck while positioning the hitch pins. Cutting heights range from 1.5 in. (38 mm) [top holes] to 4 in. (102 mm) [bottom holes] in 1/2 in. (13 mm) increments.



Cutting Height Adjustment

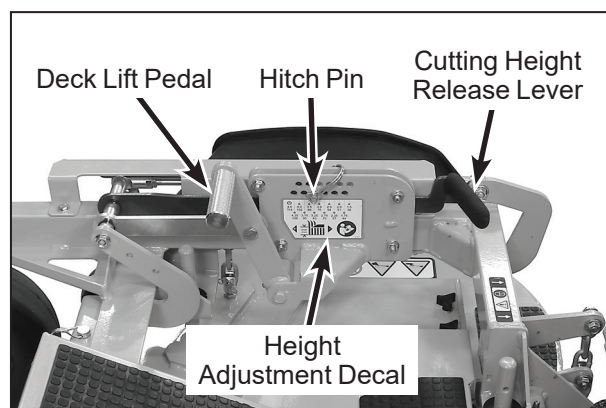
Cutting Height with Foot Operated Deck Height Adjuster

WARNING

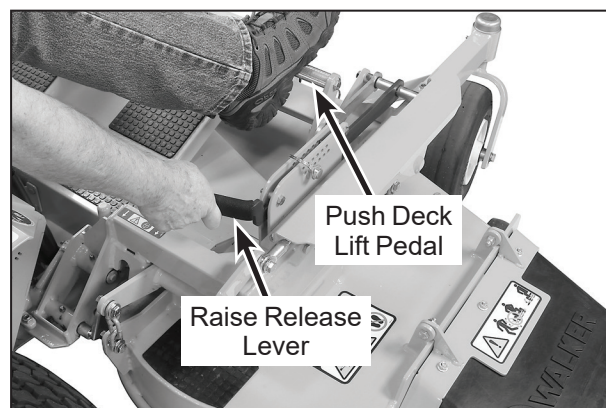
Never adjust cutting height while the mower is moving. Before adjusting cutting height or servicing, move the Forward Speed Control (FSC) into the NEUTRAL-PARK position, engage the parking brake, and disengage the blade clutch (PTO). Tractor should not be moving while adjusting cutting height.

Cutting height is adjusted from operator's seat using the deck lift pedal to assist in raising the deck while adjusting the cutting height hitch pin.

1. Disengage PTO and stop tractor.
2. Push down on deck lift pedal until it latches in the full up (transport) position.
3. Select the desired cutting height by moving the hitch pin to the location shown on the cutting height decal.
4. Push down on the lift pedal and lift up on the cutting height release lever. Slowly release the pedal while lifting the lever until the deck is in the selected cutting height position.



Cutting Height Adjustment (DS60-3 Shown)



Lowering Deck to Selected Cutting Height (DS60-3 Shown)

Transport Position for Foot Operated Deck Height Adjuster

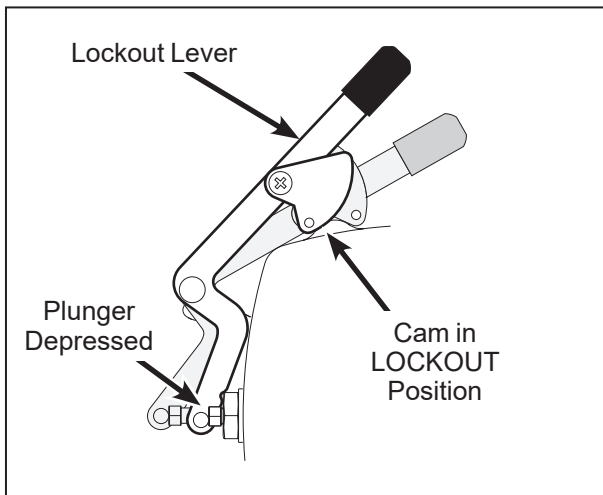
1. Disengage the PTO.
2. Push down on deck lift pedal until it latches in the full up (transport) position.

TRANSMISSION LOCKOUT

IMPORTANT: DO NOT TOW this mower with the transmission lockout engaged. Towing can produce excessive internal pressure and damage the transmission.

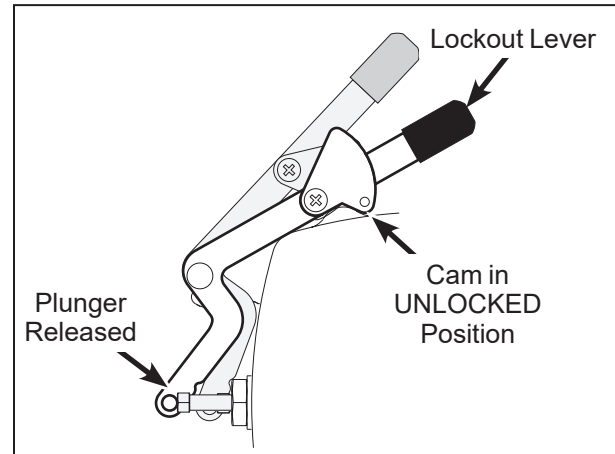
To move the mower with the engine **NOT** running (dead battery, maintenance, etc.), the hydrostatic transmissions are unlocked (released).

1. Raise the body.
2. Lift the transmission lockout lever on both the RH and LH transmissions and secure into place with the locking cam.
3. The mower will "freewheel" with the levers in the **LOCKOUT** position. The levers must be in the highest position to completely unlock the transmissions.



Lockout Lever - Freewheel Position

4. After moving the mower, release the locking cam, placing the lever **DOWN** in the normal **OPERATING** position. Make sure the transmission lockout plunger on the side of the transmission case (activated by the lockout lever) is **completely released**, otherwise the transmission operation will be erratic.

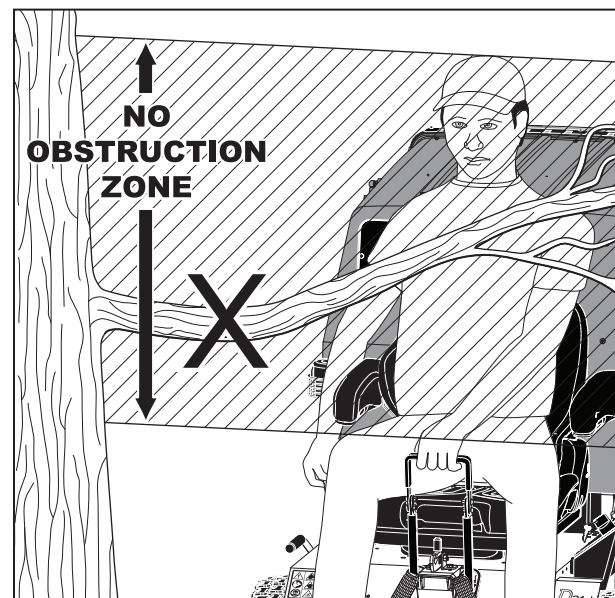


Lockout Lever - Normal Operating Position

RECOMMENDATIONS FOR MOWING

DANGER

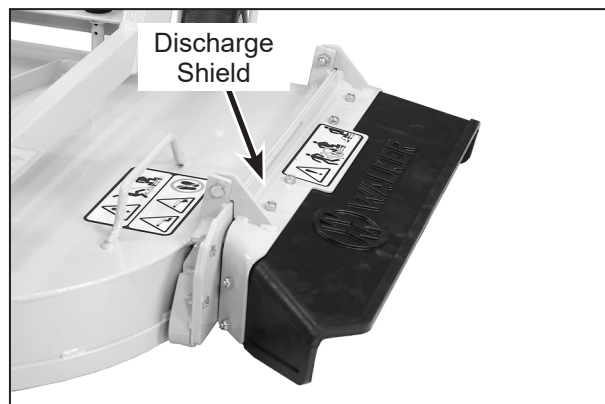
Do not mow around overhanging tree branches or bushes at the same height as the operator's torso and head where inadvertent contact may cause injury.



Avoid Low Hanging Branches

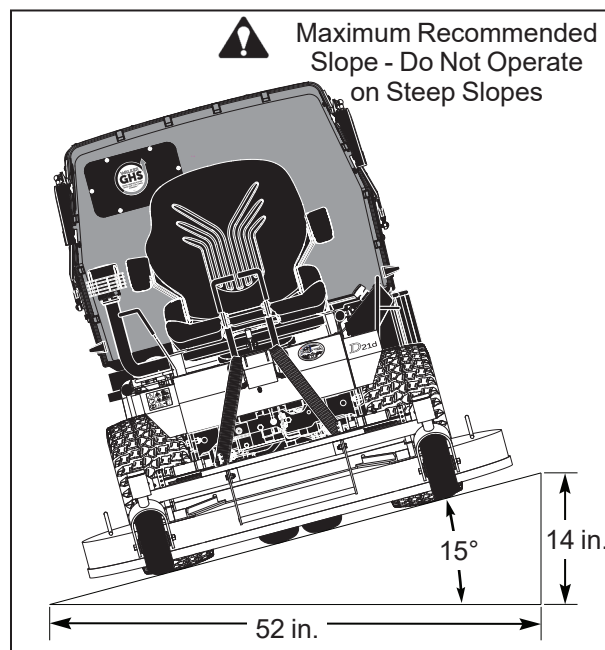
IMPORTANT: Operate the engine at **full throttle** when mowing, to allow the engine to produce full horsepower and to increase efficiency of the engine cooling system.

- Keep the mower deck and discharge chute clean.
- Mow with **sharp blades**. A dull blade tears the grass (resulting in poor lawn appearance) and uses extra power (slowing the mowing speed).
- It is preferable to cut grass when it is **dry** and **not too tall**. Mow frequently and do not cut grass too short. (For best appearance, cut off 1/3 or less of existing grass height.)
- When mowing, operate the engine at **full throttle** for the best cutting action and performance of the grass handling system (GHS). Mowing with a lower engine RPM causes the mowing blade to not cut clean and tear the grass. The engine is **designed to be operated at full speed**.
- When mowing in adverse conditions (tall and/or wet grass), mow the grass twice. Raise the mower to the highest setting – 4 in. (102 mm) – for the first pass and then make a second pass cutting to the desired height.
- Use a **slow** setting on the FSC for **trimming** operations.
- Make sure the mower is **leveled properly** for a smooth cut. Refer to *Deck Leveling* on page 25.
- Use an alternating **stripe mowing pattern** for **best appearance** and vary the direction of the stripe each time the grass is mowed to avoid wear patterns in the grass.
- Avoid damage to the grass by slipping and skidding of the drive tires. Use **smooth control movements** of the steering levers since the hydrostatic transmissions are “power boosted controls” and jerking the levers can easily slip the tires. For sharp turns, do not allow the inside wheel to stop and twist on grass; pull inside steering lever into reverse for a smooth “rolling” turn (one wheel rolling forward while the other rolls backward).
- When using a side discharge mower deck, the side discharge deflector shield **must not be removed** and must be kept in the lowest possible position to deflect grass clippings and thrown objects downward. Orient the side discharge away from sidewalks or streets to minimize cleanup of clippings. When mowing close to obstacles, orient the side discharge away from obstacles to reduce the chance of damage to property by thrown objects.



Side Discharge Deflector Shield in Lowest Position

- When operating on a slope, **reduce speed and use caution** to start, stop, and maneuver. Avoid sharp turns or sudden changes in direction. The **maximum recommended slope operating angle is 15 degrees or 27% grade**.



Maximum Recommended Slope

DANGER

Do not mow or dump grass within 5 feet (1.5 meters) of an embankment or retaining wall with drop off.



No Driving Zone

RECOMMENDATIONS FOR TOWING

When equipped with a factory installed hitch or factory authorized hitch kit, the maximum towing capacity on flat ground is 250 lbs (113 kg) gross trailer weight. The maximum tongue weight is 50 lbs (23 kg). **Use caution when towing on slopes, rough terrain or when conditions limit traction.**

- Do not operate on slopes greater than 5 degrees (9%).
- Do not tow with PTO clutch or mower blades engaged.
- Do not allow people to ride in or on towed trailers.

RECOMMENDATIONS FOR TILT-UP DECK OPERATION/TRANSPORT

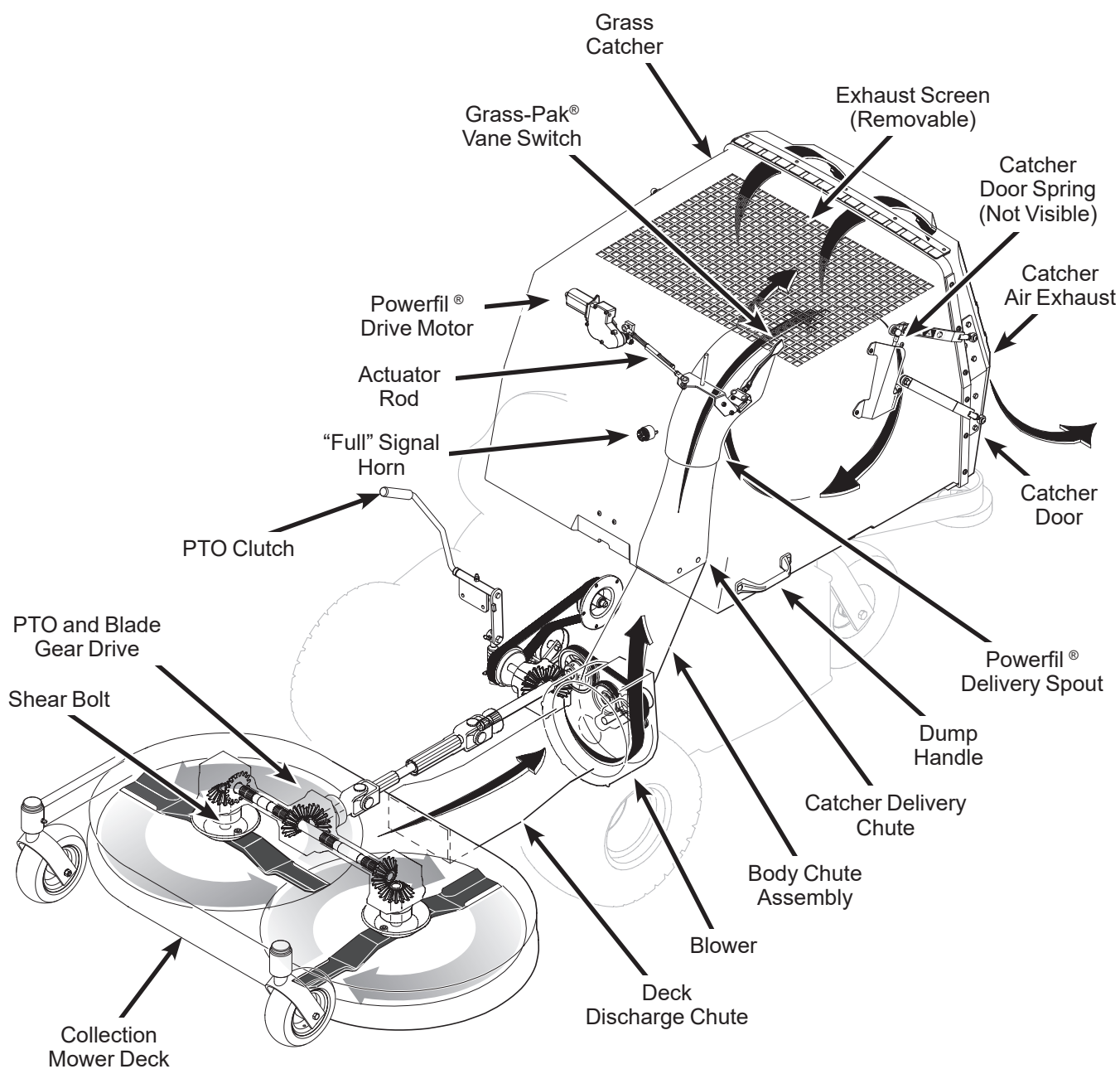
To avoid potential deck and/or tractor damage while using the tilt-up deck, the following recommendations are offered:

- **Do not move the tractor** with the deck in the tilt-up position since both the roller wheels (on the back of the deck) and the GHS discharge chute may be damaged by moving the tractor. The tilt-up configuration should only be used when the tractor is parked.

- The tractor **body should never be tilted forward** with the deck in the tilt-up position. This can cause the deck to unhook from the tractor and fall with considerable force, potentially causing deck or tractor damage and/or bodily injury.
- When transporting a tractor with the deck in the tilt-up position (on a truck or trailer), the **deck should be secured** to the vehicle with a strap or rope (stop vertical movement). This will prevent the deck from bouncing on the rear roller wheels (causing breakage). This will also prevent the deck from unhooking from the tractor and falling, potentially causing deck or tractor damage. Damage to other items parked in front of the deck may also occur.

GRASS HANDLING SYSTEM (GHS)

GHS Model Only



GHS Flow and Components

General Information

The Grass Handling System (GHS) consists of a rear discharge mower deck connected to a 10.5 in. (27 cm) blower and a rear mounted grass catcher with 10.0 bushel (352 liters) capacity. The GHS blower operates any time the mower blade clutch is engaged and moves grass through the rear discharge deck chute into the grass catcher. Blower airflow is exhausted out the back of the grass catcher, through a filtering screen. When the grass catcher is full and needs to be emptied, a **“full” signal horn alerts the operator**. When the “full” signal horn sounds, it is important to stop mowing to prevent overfilling and clogging of the blower system.

IMPORTANT: Normally, the GHS blower operates with no maintenance or cleaning required. However, under certain operating conditions, the inside of the blower housing may accumulate a deposit of dirt, causing wear and binding of the blower wheel. Normally, dirt buildup occurs when mowing a **combination of dirty and damp grass**, especially in the springtime. When operating in these conditions, **check the blower wheel frequently** for binding and clean the blower housing as required. Refer to *GHS Blower* on page 72.

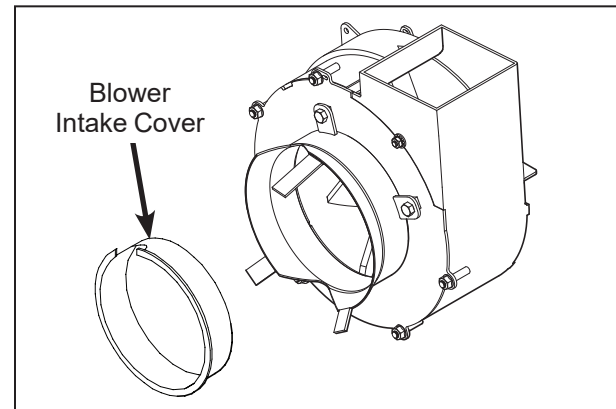
NOTE: In Autumn, when using the GHS mower to vacuum leaves, it is recommended to raise the **front** of the mower deck 2 to 3 notches [1 to 1-1/2 in. (25 to 38 mm)] **higher than the rear**. This will avoid “bulldozing” leaves, particularly when the leaves are piled in a thick layer. To make this adjustment, the hitch pins in the **two (2) front** deck support pins are repositioned 2 to 3 notches higher while leaving the rear pins in their original position.



DANGER

NEVER operate the GHS catcher with the back door open. Objects may be thrown out the back of the catcher with sufficient force to cause serious injury to bystanders or property damage. **NOTE:** For non-catching operation, the “No-Catch” Deflector is an available accessory item.

NOTE: When a side discharge or mulching mower deck is installed on the GHS model, a blower intake cover should be installed in the blower intake tube. This cover “unloads” the blower and seals the intake to effectively eliminate power loss and blower noise when the blower is not being used.



Blower Intake Cover

NOTE: An alternative to using the blower intake cover when a side discharge or mulching deck is installed on a GHS model is the blower lockout kit (P/N 7541-1). The blower lockout kit releases tension on the blower drive belt and does not require the blower intake cover.



DANGER

ROTATING BLOWER BLADES

NEVER operate the GHS blower with the blower discharge chute uncovered (grass catcher in the dump position) since dangerous projectiles may be thrown. **NEVER** put hands into the blower discharge chute for any reason. Use a stick or similar instrument to remove any material if clogging has occurred.



CAUTION

NEVER leave grass clippings in the grass catcher after mowing. Damp clippings generate heat as they decompose. This **MAY** cause spontaneous combustion.

Clogging Checklist

In case of clogging, there will be a **distinct change in the sound** of the blower, i.e., the blower sound will stop. Also, the mower deck will begin to leave a trail of grass clippings. When this occurs, stop the engine, remove the key from the ignition switch and disconnect the negative battery cable, and make **sure all movement has stopped before attempting to unclog**.

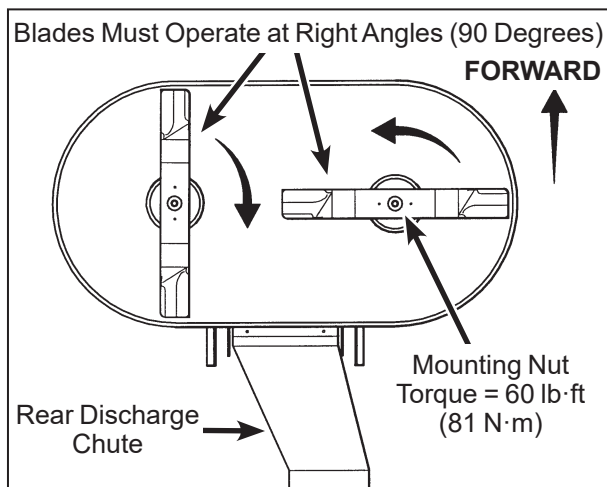


DANGER

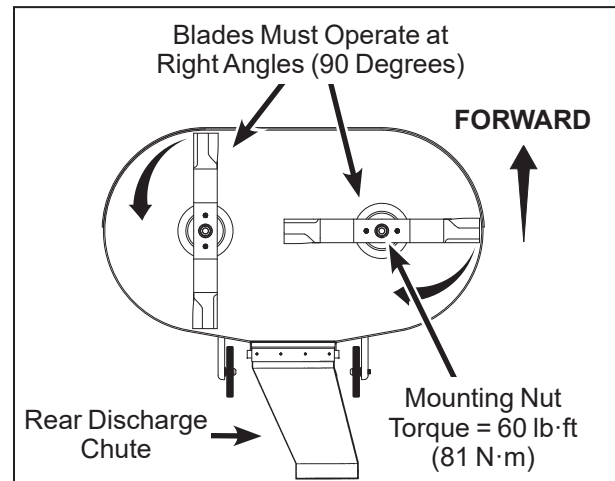
NEVER place hands under the mower deck or in the GHS blower discharge chute. Use a stick or similar tool to remove any clogged material.

Normally, any clogging will first develop at the back of the mower deck in the discharge opening into the blower chute. Clogging at this point **does not indicate a particular problem in this part of the system, but is a symptom of something restricting the flow of material** throughout the entire system. The following list of items should be checked if a pattern of clogging begins to develop. All of these items are capable of causing clogging at the back of the deck.

- Check to see if the mower blades are installed **for the correct rotation**. The blade cutting edges should move towards each other at the front of the deck on standard rotation decks (e.g., DC48), and towards each other at the back of the deck on reverse rotation decks (e.g., DC52R).



**Blade Rotation for Standard Rotation
GHS Mower Deck (Bottom View)**



**Blade Rotation for Reverse Rotation
GHS Mower Deck (Bottom View)**

- Check the amount of **flat section** remaining at blade tip. This is the area that is ground away (removed) when the blades are sharpened. If too much of the flat section is removed, the “air lift” performance or “shovel” effect of the blade deteriorates to the point that discharge of grass clippings into the blower chute is marginal. Replace cutter blades if less than 3/4 in. (19 mm) flat section remains at the blade tip.
- Check that the interior of the deck housing and baffling is reasonably **clean and free of grass and dirt buildup**. While some degree of material buildup can be tolerated, a point is finally reached where the flow of air and grass clippings is restricted.

NOTE: One condition that quickly causes a buildup of material in the deck housing is mowing grass and/or weeds which are “juicy.” The material collects under the deck with sticky, green juice. Clover and weeds are especially a problem. The mower deck will need to be cleaned frequently when operating in these conditions.

- Check the deck cutting height setting. When working in thick, tall grass, **lower deck settings [1 to 2 in. (25 to 51 mm) cutting heights] tend to restrict airflow** from moving into and under the deck. Raising the deck cutting height will significantly increase airflow and reduce clogging when working in thick, tall grass.

- Check the interior of the chute connecting the mower deck to the blower for **smoothness and freedom from obstruction**.
- Check the blower wheel for **bent blades and excessive clearance** between the blade tip and the blower housing. A clearance greater than 1/8 in. (3 mm) will cause a significant loss of blower performance.
- Check the blower discharge chute into the grass catcher for **smoothness and freedom from obstruction**.
- Check the elbow inside the grass catcher for a **buildup of material in the radius** of the elbow. In certain conditions (damp/dirty grass) a considerable "clump" of material can accumulate at this point, greatly restricting material and airflow.
- Check that the **openings in the removable air exhaust screen** in the grass catcher are not plugged. If the screen is clogged, refer to *Cleaning the GHS Exhaust Screen on page 52*.

NOTE: An optional exhaust screen with larger holes (3/4") is available for use when mowing in wet grass; the screen provides less airflow restriction and more clog resistance (use standard screen in dry conditions to avoid excessive material blowing out of the catcher).

Remember, anything that restricts airflow or material flow along the entire path from the mower deck to the grass catcher can cause clogging.

Using the Tilt-Up Deck

Refer to *Cleaning Grass Buildup in Mower Deck Housing on page 71*.

Using the GHS Catcher

Powerfil®

The GHS catcher has an oscillating grass delivery spout (**POWERFIL®**) which is designed to spread grass clippings throughout the interior of the grass catcher (even when mowing wet, heavy grass). The oscillating action may be checked by turning the ignition switch to the **ON (RUN)** position and moving the blade clutch to the **ENGAGED** position (engine not running), and opening the catcher back door. The spout should oscillate approximately 35 cycles per minute.

NOTE: If the grass spout fails to oscillate, the clutch switch should be checked for function.

"Full" Signal Horn

The GHS catcher has a **"full" signal horn** to alert the operator to **dump the catcher when it is full** (to prevent overfilling and clogging). The "full" signal horn is activated by a vane switch (Grass-Pak® switch) mounted on the grass delivery spout. Oscillating action of the spout triggers the vane switch as grass begins to fill in around the spout when the catcher is almost full.

The "full" signal function may be checked by turning the ignition switch **ON (RUN)**, engaging the blade clutch (engine not running), opening the catcher back door, and triggering the Grass-Pak® vane by hand as it oscillates. The horn should sound as the switch is moved in one direction.



WARNING

DO NOT test the Powerfil® oscillation or Grass-Pak® switch with the engine running. Projectiles may be thrown out of the grass delivery spout, and COULD cause serious injury.

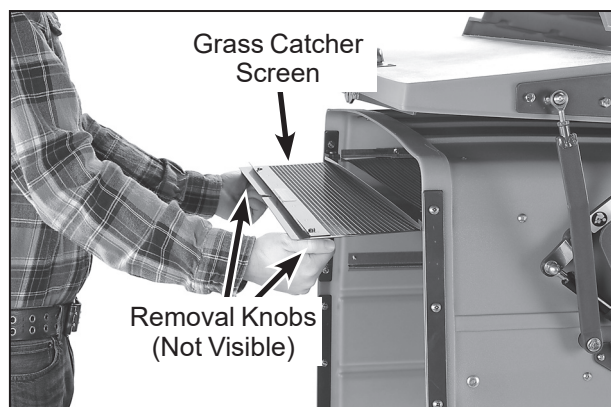
The "full" signal horn is designed to operate (sound) when the grass catcher is **almost full**. The timing of the signal is adjustable by changing the position of the vane on the Grass-Pak® switch. If the signal is coming on too soon (catcher not completely full) or too late (grass clogging in catcher spout and delivery chute), refer to *GHS "Full" Signal Horn Adjustment on page 94*.

NOTE: The horn signal should be adjusted to sound **BEFORE the catcher is completely full** to give the operator time to react and stop mowing. An indication the horn signal is coming on too late (delayed too much) is if grass clippings are falling out of the grass catcher delivery chute when the catcher is dumped.

Cleaning the GHS Exhaust Screen

To remove the grass catcher screen for cleaning, open the catcher door, push forward and pull down on the grass catcher screen knobs (on either side of the screen), and slide the screen out. Use a high pressure washer or water spray and brush to clean the screen.

Keeping the catcher exhaust screen clean and open is essential to good performance of the catching system. In some mowing conditions, e.g., wet and dirty, it will be necessary to clean the screen frequently to avoid clogging the mower deck, blower, and chutes due to airflow restriction.



Grass Catcher Screen Removal for Cleaning

Dumping the Catcher



DANGER

Do not mow or dump grass within 5 feet (1.5 meters) of an embankment or retaining wall with drop off.

For dumping, the catcher either tailgate dumps into a disposal area or dumps into the optional dump bag. The dump bag is a **reusable** nylon fabric bag designed to conveniently move grass clippings from the catcher to a remote disposal area or container.



CAUTION

Use leg muscles and firm footing when lifting the catcher to dump; avoid bending at the waist and using back muscles in order to prevent back injury.

Tailgate Dumping

1. Open the back door by lifting on the door handle.
2. Tilt the catcher back to dump by lifting on the catcher lift/dump handle on the lower front corner of the catcher.
3. Lower the catcher smoothly down to the normal operating position. **DO NOT allow the catcher to drop down—the gas spring, that holds the catcher in the raised position, is not a shock absorber for lowering the catcher.**
4. Close the door by pulling down on the door handle. The door should close smoothly with the assistance of the gas springs. If the dampening springs are not functioning properly, they should be replaced to prevent the door from slamming closed and possibly causing a pinch point.

Using the Dump Bag

1. Open the back door by lifting on the door handle.
2. Orient the dump bag with one of the handle straps on the bag opening facing up.



Positioning Dump Bag on Catcher

3. Hook the bottom of the bag over the rear bumper while lifting on the handle strap on bag opening.
4. Tilt the catcher back to dump into the bag by **lifting on the catcher lift/dump handle** on the lower front corner of the catcher **with the one hand** while continuing to **hold up on the bag strap with the other hand**. Refer to photos for positioning the bag and dumping.



Dumping Catcher into Dump Bag

5. Lower the catcher smoothly down to the normal operating position. **DO NOT allow the catcher to drop down—the gas spring, that holds the catcher in the raised position, is not a shock absorber for lowering the catcher.**
6. Close the door by pulling down on the door handle. The door should close smoothly with the assistance of the gas springs. If the dampening springs are not functioning properly, they should be replaced to prevent the door from slamming closed and possibly causing a pinch point.

Power Dump Option

When equipped with the optional power dump system, the operator dumps the catcher while sitting in the seat. A toggle switch operating a power ram is used to raise and lower the catcher. The back door automatically opens and closes during the dump cycle.

Hold the toggle switch **UP** or **DOWN** to **RAISE** or **LOWER** the catcher. When the catcher reaches the full raised or lowered position, the power ram clutch will make a ratcheting sound. Release the toggle switch as soon as this sound is heard. **DO NOT operate the ram with the clutch ratcheting for an extended time** as this will cause extra wear on the clutch mechanism.

CAUTION

The operator should be in the seat and bystanders stay clear when the power dump is operating. The power dump is used **ONLY** for tailgate dumping. Do not attempt to use the optional dump bag or any other bag with the power dump.

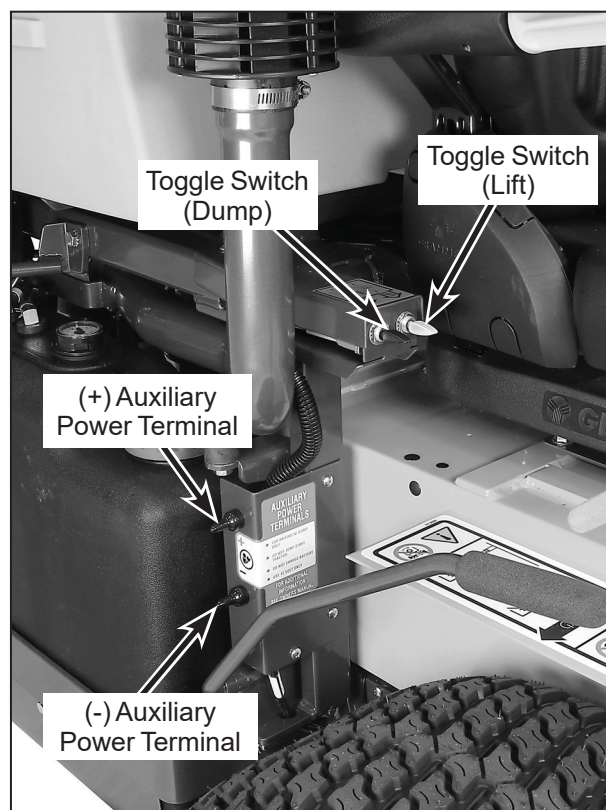
NOTE: If grass tends to hang up in the catcher after raising the catcher with the power dump, “jiggle” the steering levers and make the tractor bounce a little to unstick the grass and make it slide out of the catcher.

NOTE: With the power dump mechanism in the normal operating position (catcher down), the catcher can be **manually raised** for access to the engine and the catcher can be **manually dumped**.

Hi-Dump® Option

When equipped with the optional Hi-Dump® system, the operator raises and dumps the catcher while sitting in the seat. Two toggle switches operate independent hydraulic cylinders to raise and lower and dump the catcher. The back door automatically opens and closes during the dump cycle.

NOTE: The ignition switch must be in the **ON (RUN)** position for the Hi-Dump® system to operate.



Lift/Dump Control Switches and Auxiliary Power Terminals

Hold the Lift toggle switch **UP** or **DOWN** to **RAISE** or **LOWER** the catcher. Hold the Dump toggle switch **UP** to **DUMP** the catcher and **DOWN** to return to the normal operating position. The catcher may be dumped at any raised position (Normal Operating - Intermediate - Fully Raised).

NOTE: If grass tends to hang up in the catcher after raising the catcher with the Hi-Dump®, “jiggle” the steering levers and make the tractor bounce a little to unstick the grass and make it slide out of the catcher.

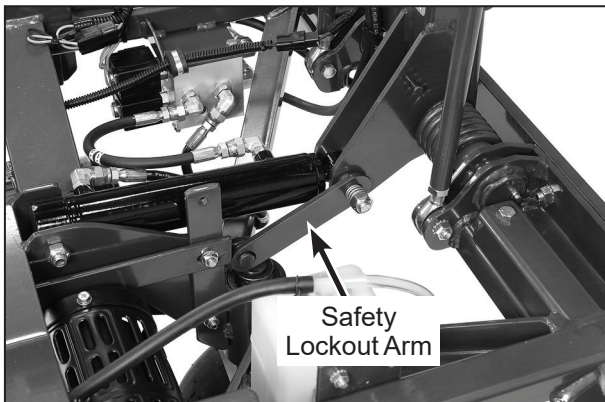
NOTE: With the Hi-Dump® mechanism in the normal operating position (catcher down), the catcher cannot be **manually raised**. In the case of a dead battery, use the auxiliary power terminals to charge/boost the battery to operate the Hi-Dump®.

⚠ CAUTION

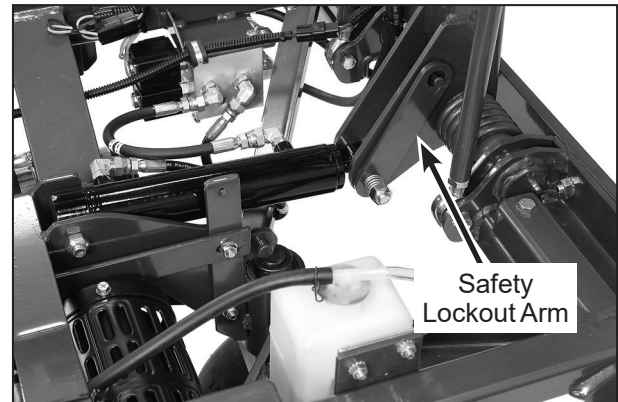
The operator should be in the seat with the machine in the **NEUTRAL-PARK** Position and the parking brake engaged and bystanders stay clear when the Hi-Dump® is operating. To avoid tipping over, the machine should be parked on **LEVEL GROUND** when raising/dumping the catcher with Hi-Dump®. Do not attempt to use the optional dump bag or any other bag with the Hi-Dump®.

⚠ WARNING

When the Hi-Dump® is in the **RAISED** position for access to the engine and drivetrain, always **ENGAGE** the safety lock before service or repair work. Remember to **DISEN-GAGE** the lock before resuming operation of the Hi-Dump® (to avoid damaging the lock mechanism).



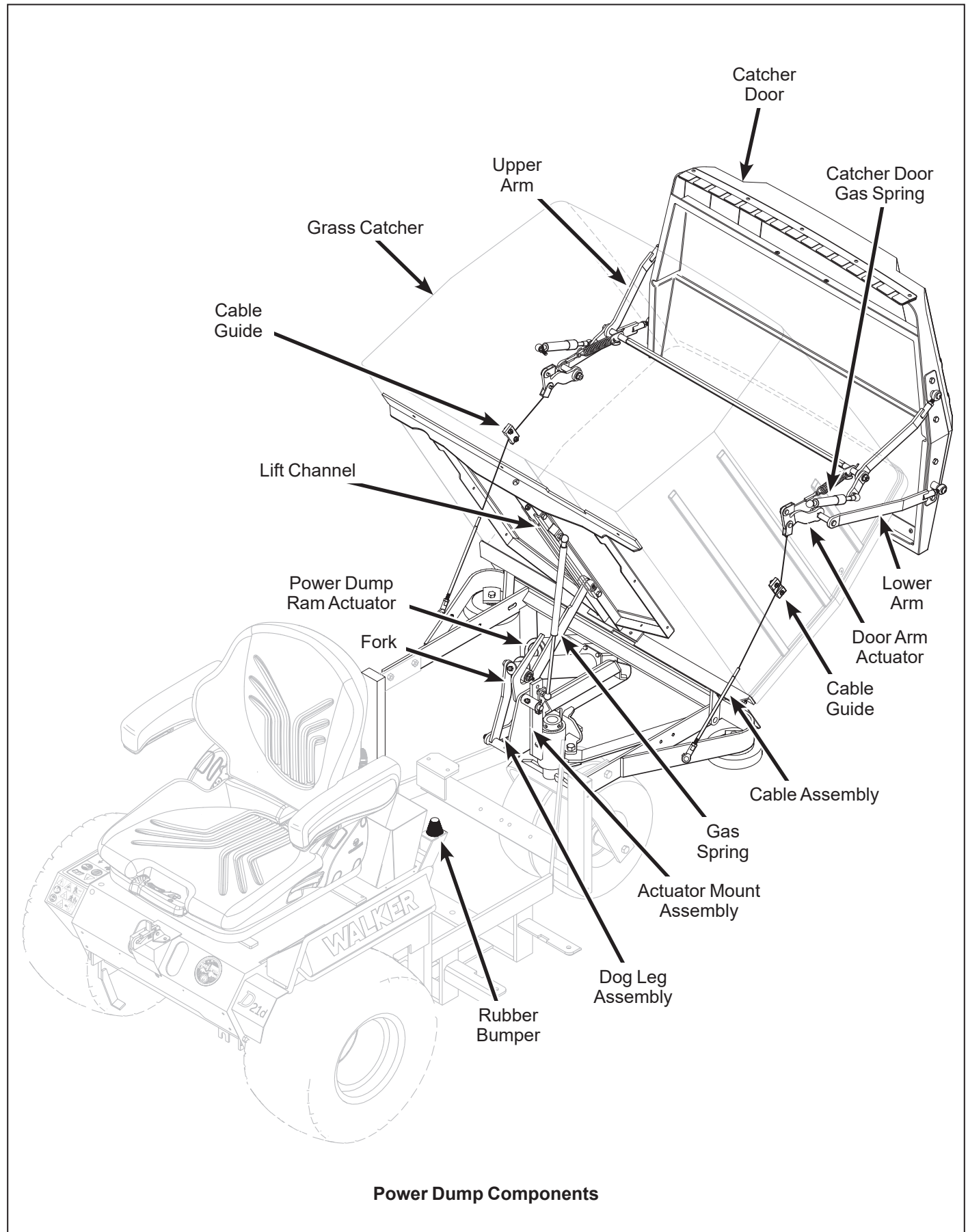
Safety Lockout Arm Engaged Position

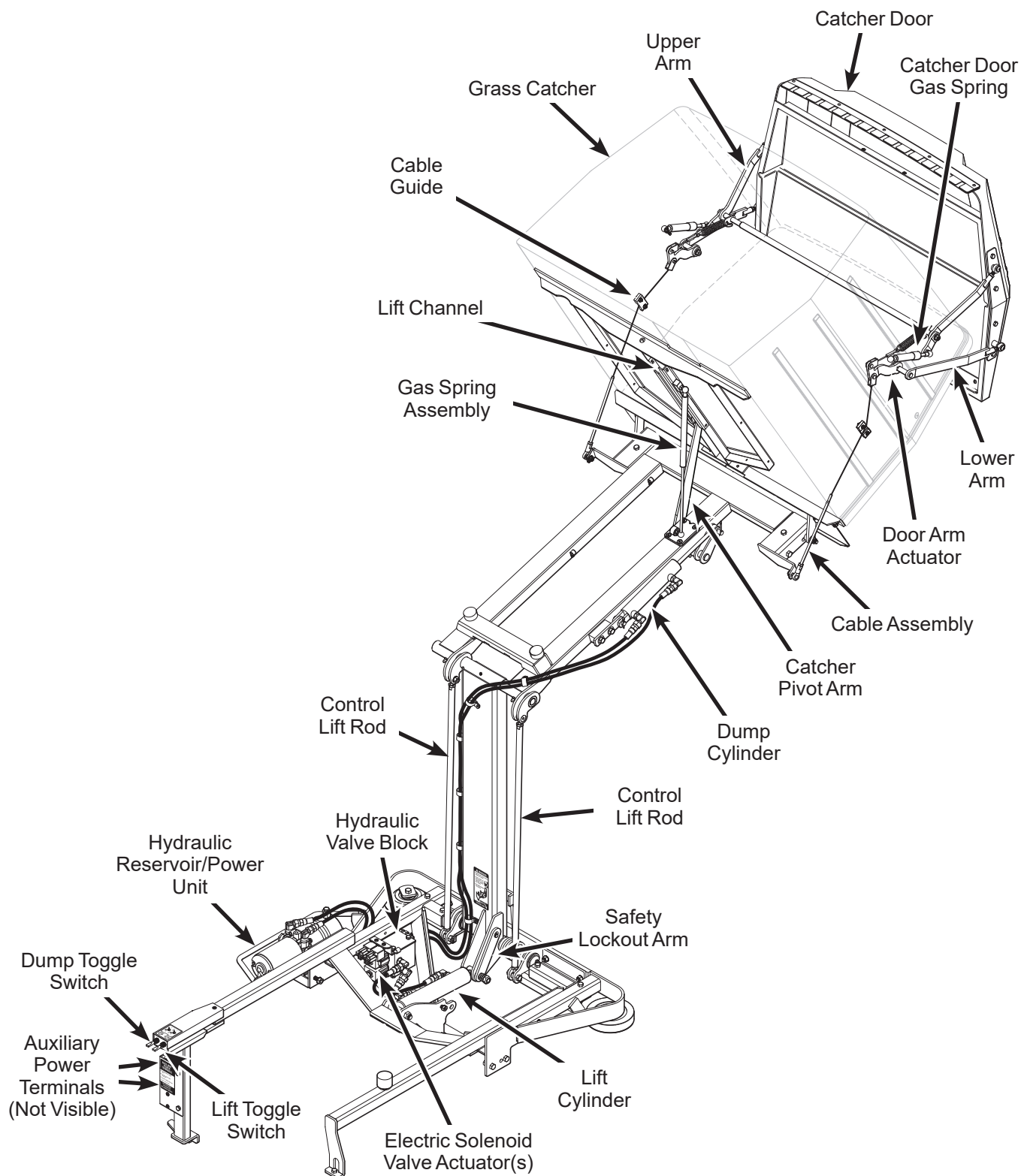


Safety Lockout Arm Disengaged Position



**Decal, Safety Lockout Arm
(Location: Lower Lift Arm)**





Hi-Dump® Components

Maintenance Instructions

MAINTENANCE SCHEDULE CHART



CAUTION

Maintenance procedures requiring special training or tools should be performed by a trained technician.

RECOMMENDED SERVICE INTERVALS - MODEL D21d								
Service Item	Daily	25 Hours	100 Hours	200 Hours	500 Hours	Yearly	Every 2 Years	Ref. Page
Check Engine Crankcase Oil Level	x							60
Check Coolant Level in Radiator and Overflow Tank	x							73
Clean Radiator Screen and Cooling Fins*	x							70
Check Security of Air Filtration Components	x							74
Check Air Filter Restriction Gauge	x							69
Clean Grass Buildup Under Deck	x							71
Clean GHS Exhaust Screen*	x							72
Clean GHS Blower*	x							72
Service Mower Blades	x							75
Check Functions of Instrument Panel and Warning Horn	x							28
Lubricate Grease Fittings and Oil Points*		x						63
Check PTO Gearbox Oil Level**		x						63
Check Hydrostatic Transmission Oil		x						66
Check Tire Pressure		x						75
Check Drive Belts (Jackshaft, Engine PTO, GHS Blower, Ground Drive, Engine Alternator Belt)		x						76
Check Deck Gearbox Oil Seals		x						77
Check Safety Switch System		x						78
Check Turbine Precleaner*			x					68
Check/Clean Air Filter Element***			x					69
Change Engine Crankcase Oil Δ			x					60
Check Wheel Bolt Torque (75 to 85 lb-ft)			x					75
Check Alternator Belt Tension			x					74
Check Blade Brake Action			x					78
Check Oil Level in Gear Axle			x					63
Clean Hydrostatic Transmission Cooling Fins			x					73
Change Engine Oil Filter				x				60
Check Radiator Hoses and Clamps				x				77
Change Hydrostatic Transmission Oil and Filter $\Delta\Delta\Delta$					x			66
Replace Fuel Filters						x		85
Check Fuel Lines and Clamps						x		77
Replace Air Filter Element, Safety Filter, Dust Ejection Valve***						x		69
Flush Radiator and Change Coolant						x		71
Service Battery						x		74
Check Transmission Control Settings						x		77
Check Fuel Injection Nozzle Pressure						x		77
Check FSC Friction Lock						x		78
Check PTO U-Joints for Wear/Looseness						x		78
Check Engine Valve Clearance						x		77
Check/Adjust Vertical Position of Grass-Pak [®] Switch						x		94
Change Gear Axle Oil $\Delta\Delta$							x	63
Replace Radiator Hoses and Clamps							x	77
Replace Fuel Lines and Clamps							x	77
<p>* More often in extremely dusty or dirty conditions (refer to notes about air cleaner element in IMPORTANT TIPS FOR CARE OF THE KUBOTA ENGINE)</p> <p>** Change PTO gearbox oil after first 100 hours of operation (break-in period)</p> <p>*** Air cleaner is remote mounted Donaldson Radialseal[™] unit, replace filters every year and dust ejection valve every year or when worn or damaged</p> <p>Δ Change engine oil and filter after first 35 hours of operation of a new engine (break-in period)</p> <p>$\Delta\Delta$ Change every 2 years or 1000 hours</p> <p>$\Delta\Delta\Delta$ Oil and filter must be changed after the first 100 hours, at 500 hours, and every 500 hours thereafter</p>								

IMPORTANT TIPS FOR CARE OF THE KUBOTA ENGINE

Fuel System

- Fuel must be clean—free from water, dirt, and organic material. Fuel contamination will greatly shorten the life of the fuel injection pump and injectors.
- Change the fuel filters on a regular basis and when contamination is suspected or found in the fuel.
- Model D21d is equipped with an electric fuel pump; therefore it is normally not necessary to bleed air out of the fuel system (after running out of fuel or fuel system maintenance).
- When checking and bleeding the fuel system use the air vent plug on the fuel filter and the injector pump. **DO NOT** attempt to bleed the fuel system by loosening fuel lines on the fuel injection pump as this could **damage the pump**.

Starting/Stopping

- **DO NOT use ether or any starting fluid** in the air intake. This will **damage the engine**.
- For starting in cold weather [below 40° F (4° C)], use the cold start lever to release the hydrostatic transmissions from the starter cranking load.
- Start engine with the throttle advanced off idle (1/4 to 1/2 throttle). This will aid starting, especially in cold weather.
- Keep the battery fully charged.
- Match crankcase oil viscosity to the ambient temperature, allowing the engine to crank faster and start easier.
- Allow engine to run at idle for a few seconds before stopping engine to avoid run-on or backfiring.

Cooling System

- Fill the cooling system with a **pre-mixed** solution of 50/50 antifreeze (ethylene glycol) and distilled water.
IMPORTANT: Solution must be pre-mixed before putting it in the engine (adding pure antifreeze into the radiator may cause damage to the engine by causing overheating).

- **Maintain proper fluid levels** in the radiator and overflow tank.
- Operate the engine at full speed when mowing. This allows the engine to produce full horsepower and move more cooling air through the radiator.

Air Cleaner System

- Use **only** Donaldson® air cleaner elements. Aftermarket elements may not seal in the air cleaner housing, allowing dirt to enter the engine. Also, aftermarket filters often skimp on the filtration media and require more frequent replacement (see following instructions).
- Use the air filter restriction gauge to indicate the need to service the air filter.
- Do frequently check the **Turbine Precleaner** for free movement of the internal fan.
- **DO NOT overservice or frequently “disturb” the air filter.** A dirty air filter actually cleans better than a new one. Changing and cleaning the air filter too often can actually reduce filter efficiency and increase the opportunity for traces of dust to enter the engine. Wait until the element really needs servicing as indicated by the air filter restriction gauge.
- When the air filter element is removed or replaced, make sure all **dust is cleaned out of the air cleaner housing and hose**. Use a damp cloth and wipe the interior of the canister and hose clean (a little dirt left here will be sucked into the engine and reduce engine life). When the filter is reinstalled, make sure the **element is held tight and straight** in the canister for proper seating and sealing.
- Periodically check the air intake hose for cuts, nicks, etc., and the hose clamps for tightness.

Oil

- Use any top quality oil with an API classification of CF or higher. **DO NOT** use oil that is rated for gasoline engines only (API SE/SF) as this will cause problems in a diesel engine.
- Single viscosity or multi-viscosity oils may be used with the viscosity matching ambient temperatures for the engine operating conditions. This will **aid starting** in cold weather and assure proper lubrication in hot weather.

- Use only Kubota oil filters. **Aftermarket filters may not seal properly** and/or have the incorrect pressure relief valve for proper lubrication.

LUBRICATION



WARNING

DO NOT attempt to lubricate the machine with the engine running. Disengage the PTO clutch, shut off the machine, and remove the ignition key.

Proper lubrication is an important maintenance procedure. It reduces wear and makes the machine quieter and easier to operate.

Engine Oil

Engine Break-In Oil

No special break-in oil is required. The engine is serviced with 10W-30, Service Class SJ oil from the factory. Change the oil after the initial engine **break-in period of 35 hours**. Thereafter, change oil **after every 100 hours** of operation.

Checking Engine Crankcase Oil Level

Check the engine crankcase oil level before use and **after each 5 hours** of continuous operation.

IMPORTANT: The importance of checking and maintaining the proper crankcase oil level cannot be overemphasized. Check the oil level **BEFORE EACH USE**.

1. Park the mower on a **level surface with the engine stopped**. Also, make sure the engine is cool and oil has had time to drain into the sump [allow **at least five (5) minutes** after stopping the engine].

IMPORTANT: NEVER check or add oil with the engine running.

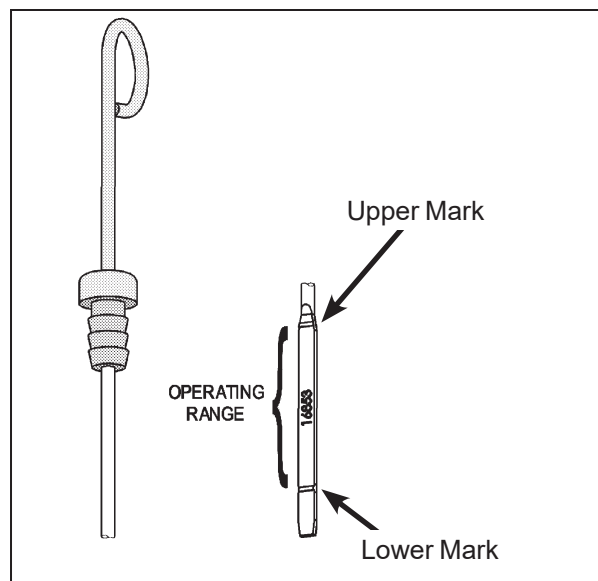
2. Before removing the dipstick, clean the area around the dipstick to keep any dirt or debris out of the engine.
3. Remove the dipstick, wipe off with a clean rag, then reinsert the dipstick into the tube and press all the way down.

4. Remove the dipstick again and check the oil level on the dipstick. The oil level should be within the "Operating Range" on the dipstick (between the lower mark and the upper mark).

IMPORTANT: DO NOT operate engine without a sufficient oil supply in the crankcase. **DO NOT** operate with the oil level below the lower mark or above the upper mark on the dipstick.

5. If additional oil is needed, refer to *Specifications on page 3* for proper crankcase lubricant. **Fill up to, but not above, the upper mark on the dipstick.**

IMPORTANT: DO NOT overfill the crankcase (oil above upper mark) as this **CAN** result in engine overheating, loss of power, and possible engine damage.



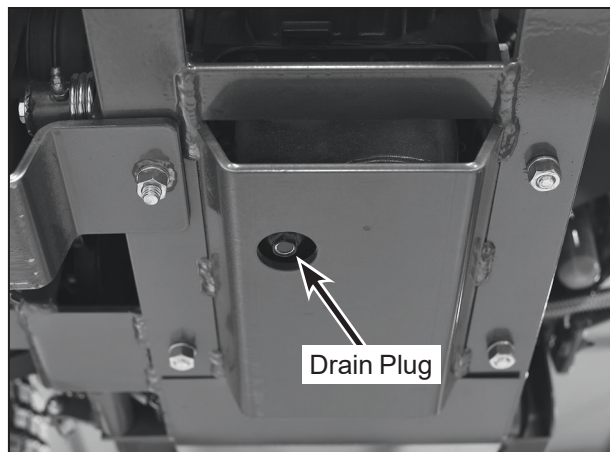
Dipstick Operating Range

Changing Engine Crankcase Oil/Oil Filter

Change the engine crankcase oil **after every 100 hours** of operation and replace the oil filter every other oil change (**every 200 hours** of operation).

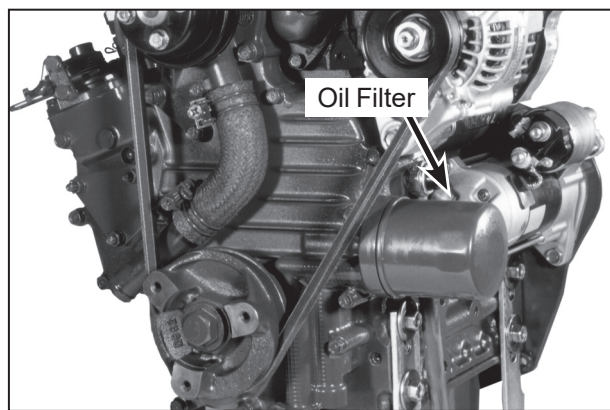
1. Park the mower on a **level surface with the engine stopped**. The engine oil should be warm before draining. If not warm from operation, start the engine and run a few minutes to warm the oil.

2. Before removing the dipstick and oil fill cap, clean the area around them to keep any dirt or debris out of the engine.
3. Remove the dipstick, oil fill cap, and oil drain plug and drain the oil into a suitable container. Be sure to allow ample time for complete drainage.



Oil Drain Location
(View from Left Side of Tractor)

4. Before removing the oil filter, clean the area around the filter to keep dirt and debris out of the engine.



Oil Filter Location

5. Remove the old oil filter and wipe off the filter mounting surface on the engine.
6. Apply a thin coating of clean oil to the rubber gasket on the replacement oil filter.

IMPORTANT: Use **ONLY** oil filters from the engine manufacturer (Kubota HH150-32430). Aftermarket oil filters may not seal properly and/or may not have the correct pressure relief valve for proper lubrication.

7. Install the new oil filter on the engine. Turn the filter clockwise until the rubber gasket contacts the sealing surface, then tighten an additional **1/2 to 3/4 turn**.
8. Reinstall the drain plug. Make sure it is tightened to 10 lb·ft (14 N·m).
9. Fill the crankcase with new, clean oil. Use only crankcase lubricants recommended by the engine manufacturer. Refer to *Crankcase Lubricant on page 3* in the *Specifications* section of this manual or the engine owner's manual. Use the recommended oil viscosity for the expected ambient temperature. Oil with the correct viscosity will aid starting in cold weather and assure proper lubrication in hot weather. **Fill up to, but not above, the upper mark** on the dipstick. Crankcase capacity is 3.4 quarts (3.2 liters) plus 1/2 pint (0.24 liters) for the new oil filter.

IMPORTANT: DO NOT use oil that is rated for gasoline engines only (API SE/SF). This will cause problems with a diesel engine.

IMPORTANT: Check the dipstick reading before adding the last 1/2 pint of oil and **fill only to the upper mark**. **DO NOT** overfill the crankcase (oil above upper mark) as this **CAN** result in engine overheating, loss of power, and possible engine damage.

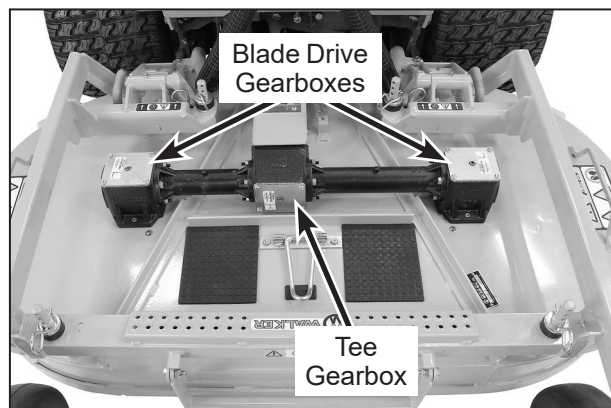
10. Start the engine and check for oil leaks around the oil filter. Stop the engine, recheck the oil level, and add oil if necessary. (When the engine is first operated with a new oil filter, the oil level drops slightly as the filter is filled with oil.)

Mower Deck Gearbox Lubrication

NOTE: These instructions apply to all mower decks with gear-driven blades. Refer to *Mower Deck Spindle Lubrication* on page 63 for all mower decks with belt-driven blades.

On gear-driven decks, the mower deck gearboxes (tee gearbox and blade drive gearboxes) are connected as a unitized assembly, and oil flows freely between them. The gearboxes are permanently lubricated (oil filled) and sealed requiring no scheduled lubrication. However, the gearbox oil seals should be checked **every 25 hours** for indication of an oil leak; **particularly the lower seals** on the blade drive gearboxes should be inspected, since they operate in a dirty environment. If an oil leak is noted, replace the oil seal and relubricate the gearbox assembly as follows:

1. Remove gearbox cover (footrest). Deck orientation should be the normal operating position.



**Mower Deck Gearboxes
(Shown with Gearbox Cover
Removed for Clarity)**

2. Clean the area around the individual gearbox cover plates to prevent contaminants from entering the gearcase.
3. Remove the screws securing the cover plates on the blade drive gearboxes.
4. Check the level of lubricant in the gearboxes. If the lubricant is low, add SAE E.P. (Extreme Pressure) 80W-90 (API GL-5) gear lube until the oil level is up to (submerges) the horizontal shaft in the gearbox (shaft parallel to cover plate).

NOTE: In case the gearboxes are completely drained of oil, approximately 5 fl. oz. (15 cl) of oil per gearbox is required to refill the gear drive assembly.

NOTE: Since the gearboxes are connected as a unit by connector tubes, it is necessary to add oil slowly. Allow a few minutes after adding oil for the oil to flow throughout the assembly and the oil level to stabilize before reassembly.

IMPORTANT: DO NOT overfill the deck gearboxes. The gearbox assembly is not vented, and overfilling with oil will cause excessive pressure and result in oil leaks.

5. Check condition of the cover gasket and replace if worn or damaged. Reinstall gearbox cover plates; torque screws to 24 lb·in. (3 N·m).

Mower Deck Spindle Lubrication

For mower decks with belt-driven blades, lubricate each deck spindle grease fitting **every 25 hours**. Use SAE general purpose lithium or molybdenum base grease for grease fittings.

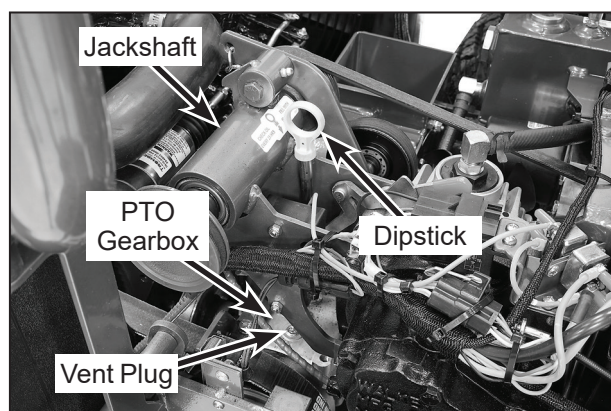
Tractor PTO Gearbox Lubrication

Checking Gearbox Oil Level

Check the gearbox oil level **every 25 hours**, and if necessary, add oil [SAE E.P. (Extreme Pressure) 80W-90 (API GL-5) gear lube] to maintain oil level to the **FULL** mark on the dipstick.

IMPORTANT: DO NOT overfill the PTO gearbox to avoid oil leakage out of the dipstick standpipe.

If the oil level is low, check the gearbox for any indication of an oil leak. If an oil leak is noted, the gearbox will need to be removed and rebuilt.



Dipstick Location, Tractor PTO Gearbox

Changing Gearbox Oil

The tractor PTO gearbox is oil filled. No scheduled oil change is required. However, changing the oil **after the first 100 hour break-in period** will extend gearbox life and is recommended.

1. Remove the drain plug in the bottom of the gearcase, drain the oil, and reinstall the plug.
2. Refill the gearbox through the dipstick standpipe using 7 to 8 fl. oz. (21 to 24 cl) of SAE E.P. (Extreme Pressure) 80W-90 (API GL-5) gear lube. Remove plug in top of gearcase to vent air when refilling.
3. Check that the oil level is at the **FULL** mark on the dipstick. **DO NOT** overfill.

Gear Axle Lubrication

- The gear axle oil lubrication is SAE E.P. 80W-90 (API GL-5) gear lube.
- Check the axle oil level **after every 100 hours** of operation by removing the oil level plug. If additional oil is needed, remove the breather vent on top of axle and fill until oil is at the level plug.
- Change axle oil **every 1000 hours** or **two (2) years**.

Grease Fitting and Oil Point Lubrication

Lubricate the grease fittings and oil points **after every 25 hours** of operation. Lubricate **more often** when operating in **dusty or dirty conditions**. Use SAE general purpose lithium or molybdenum base grease for grease fittings and light machine oil (SAE 10) to lubricate oil points. Lubricate the locations shown in the **Chassis and Deck Lubrication Points** illustration on page 65.

NOTE: PTO universal joints (on the deck and tractor) require routine lubrication **after every 25 hours** of running time. Remove tractor PTO quick disconnect tube assembly for easy access to grease fittings.

NOTE: The best way to lubricate the PTO tube half of the universal joint assembly is to remove it from the tractor. See instructions for removing and installing PTO quick coupler, refer to *Mower Deck Installation on Tractor* on page 22.

Ident No.	Location	Lubrication Type	No. Places
1	Deck Caster Wheel Fork Pivot	Grease	2
2	Deck Caster Wheel Bearing	Grease	2
3	Front Deck Lift Pivot	Grease ^Δ	2
4	Deck Lift Pivot	Grease ^Δ	1
5	Rear Deck Lift Pivot	Grease ^Δ	2
6	Pivot Assembly, Tilt-Up Deck	Grease	4
7	Deck Support Arm Socket	Grease	2
8	Universal Joint Shaft Assembly	Grease ^{**}	1
9	Idler Arm Pivot	Grease ^Δ	1
10	Blade Spindle	Grease ^Δ	3
11	Blade Drive Gearbox	Oil*	2
12	Tee Gearbox, Deck	Oil*	1
13	Body Hinge Point	Oil	2
14	Steering Lever Pivot	Grease	4
15	FSC Actuator Rod Pivot Pins	Oil	2
16	(FSC) Friction Body Pivot	Grease	1
17	FSC Lever Pivot	Grease	1
18	Deck-to-PTO Coupling (Grease Spline Slide Area)	Grease	1
19	Deck Support Arm Pivot	Grease	2
20	Gear Axle	Oil ^{***}	2
21	Universal Joint Tube Assembly	Grease ^{**}	1
22	Parking Brake Lever Pivot	Grease	1
23	Universal Joint Quick Connect Spline (Grease Slide Area)	Grease	1
24	Belt Tightener Pivot, Ground Drive	Grease	1
25	PTO Clutch Lever Pivot	Grease	1
26	Clutch Actuator Push Rod	Grease	2
27	Brake Band Pivot Pin (Clevis)	Oil	1

Ident No.	Location	Lubrication Type	No. Places
28	Belt Tightener Pivot, PTO Clutch	Grease	1
29	Throttle Control Cable Ends	Oil	2
30	Belt Tightener Pivot, Jackshaft Drive	Grease	1
31	Cold Start Lever	Grease	1
32	Catcher Hinge Point	Oil	2
33	Rear Wheel Bearing	Grease	2
34	Engine Dipstick / Oil Fill	Oil ^{***}	1
35	Belt Tightener Pivot, Blower Drive (GHS Model Only)	Grease	1
36	PTO Gearbox Dipstick	Oil ^{***}	1
37	Hydrostatic Drive / Oil Reservoir	Oil ^{***}	3
38	Throttle Control Pivot	Oil	1

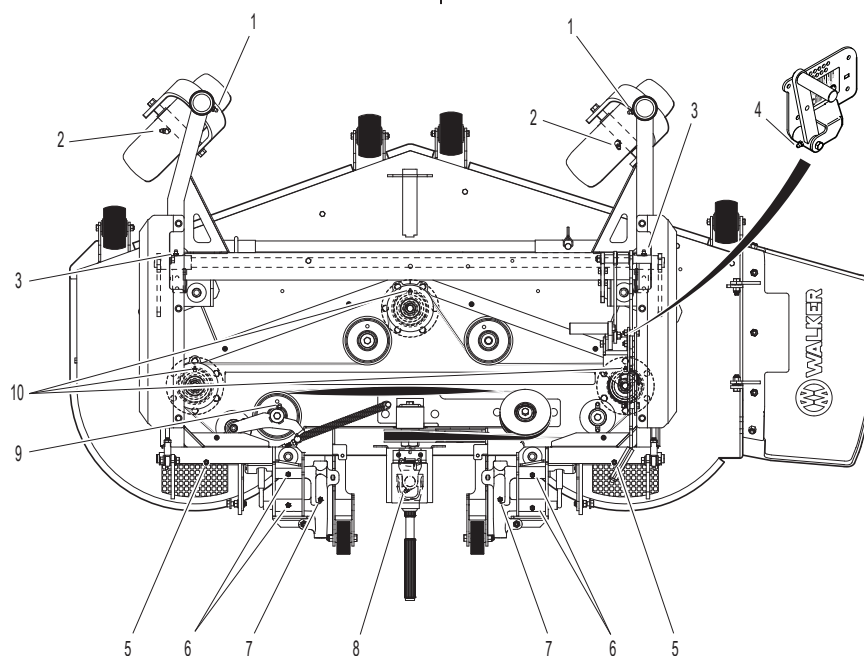
* Gearboxes are permanently lubricated and sealed requiring no scheduled lubrication. Oil level should be checked only when an oil leak is noted. Refer to *Mower Deck Gearbox Lubrication* on page 62.

** Grease every twenty-five (25) hours.

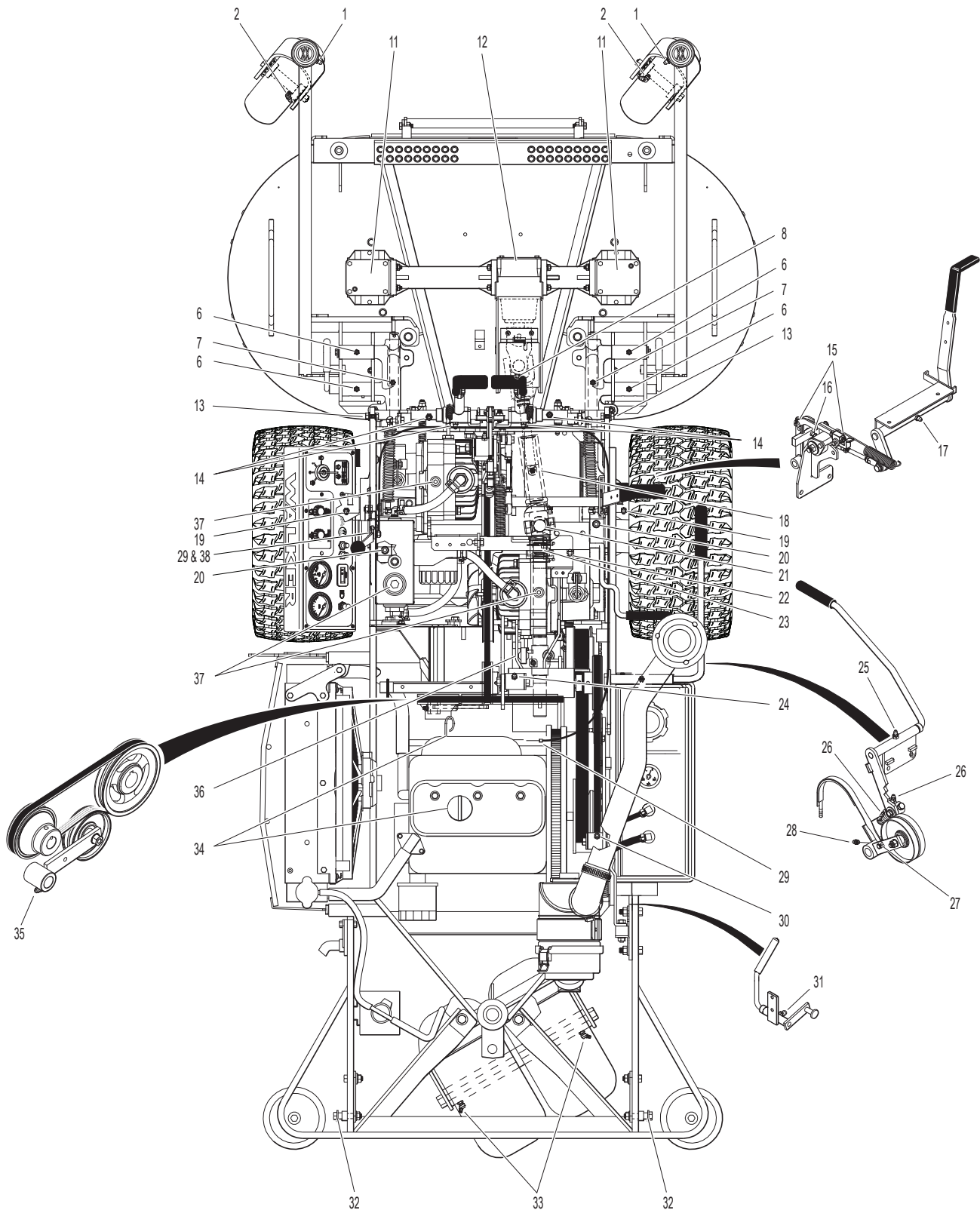
*** Refer to *Gear Axle Lubrication* on page 63, *Engine Oil* on page 60, *Tractor PTO Gearbox Lubrication* on page 63, and *Hydrostatic Transmission Oil* on page 66.

Δ DS52 and DS60 Belt-Driven Decks Only

NOTE: DC42 and DS60 Tilt-Up Decks are shown for reference. For other deck lubrication points, refer to the applicable **Deck and Carrier Frame Illustrated Parts Manual**.



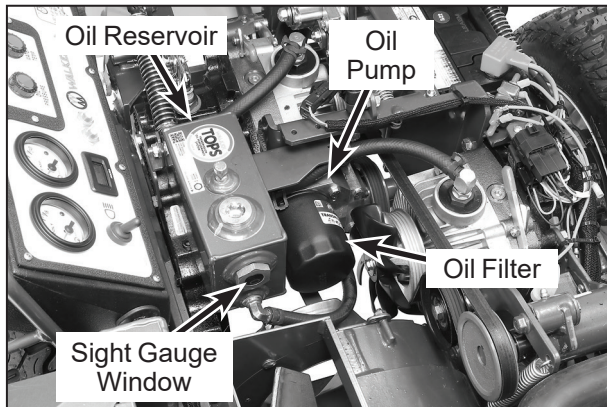
Lubrication Points for Optional Belt-Driven Decks (DS60-3 Shown)



Chassis and Deck Lubrication Points (DC42 Shown)

Hydrostatic Transmission Oil

This tractor is equipped with Walker Transmission Oil Performance System (TOPS™) which consists of a reservoir and pump system that maintains the oil levels in the transmissions while filtering out contaminants.



TOPS™ Components

Extending the Warranty

The transmissions are covered by a standard 3 year/3000 hour (prorated after the first 1,000 hours of use) warranty to the original owner. Walker will extend the transmission warranty to **3 years, full replacement coverage, unlimited hours** if the transmissions are serviced by an authorized Walker Dealer at the recommended intervals using only Walker approved oil and filters. Proof of meeting these service requirements must be submitted prior to approval for any extended warranty claims.

Checking Hydrostatic Transmission Oil Level

The hydrostatic transmission oil level should be checked **after every 25 hours** of machine operation. Always perform this check when the machine is cold.

1. Park the mower on a **level surface**.
2. The level of the oil can be seen through the sight gauge window on the rear of the reservoir. The oil fill line should be around the mid-way point of the sight gauge window.
3. If the oil is below the mid-way point, add oil. The Walker approved oils for the transmissions are Walker Model 7 Hydro Oil (Walker P/N 6450-21) or Mobil SHC™ 630 oil (Walker P/N 6450-20). Thoroughly clean around the

reservoir fill cap before removing the cap. Add oil until it is at the mid-way point on the sight gauge. Reinstall the cap and tighten until secure.

NOTE: If oil tends to run a bit low and is being added regularly, it is likely there is a leak. Contact your authorized Walker Dealer for inspection and repair.

Changing Hydrostatic Transmission Oil and Filter

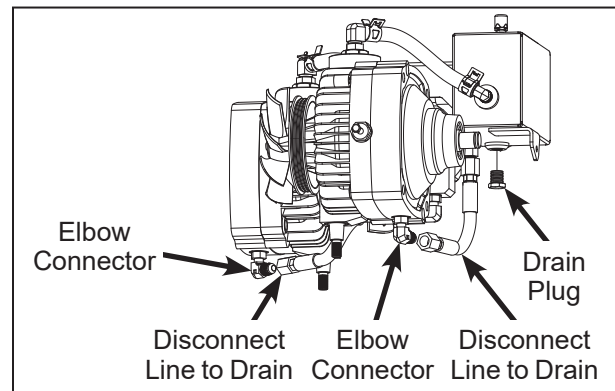
The oil and filter must be changed **after the first 100 hours**, at 500 hours, and every 500 hours thereafter. The transmissions ship from the factory with Walker Model 7 Hydro Oil. Walker Model 7 Hydro Oil or Mobil SHC™ 630 oil are the only factory approved oils for servicing the transmissions in this tractor.

NOTE: The transmissions should be warm before draining.

1. Remove the mower deck from the tractor.

IMPORTANT: Thoroughly clean around each cap, connector, and plug on the reservoir and the transmissions. Do not allow contaminants to enter the system during this process which could lead to damage and premature failure.

2. Drain the oil from the reservoir through the bottom plug on the rear of the reservoir.
3. Drain the oil from each transmission through the elbow connector on the bottom of the transmission by disconnecting the line that runs from the oil pump to the transmission using a 17mm wrench. See **Drain Transmission Oil** illustration for details.



Drain Transmission Oil

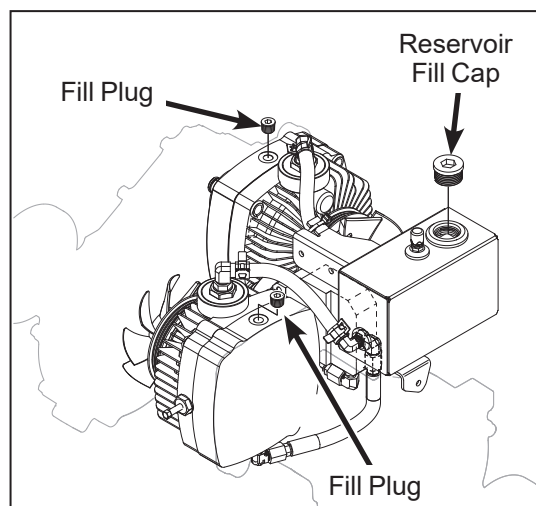
4. Remove the old filter and wipe off the filter mounting surface.
5. Install the new filter. Lubricate the filter gasket with a drop of fresh oil. Turn the filter clockwise until the rubber gasket contacts the sealing surface, then turn an additional **3/4 turn**. Do not over-tighten.

NOTE: Use **ONLY** a Walker filter (P/N 5024-13).

6. Reconnect the lines between the oil pump and the transmissions at the elbow connectors. Use a 12mm and a 17mm wrench to prevent the hose from rotating while tightening the connection.
7. Apply a thread sealer to the reservoir drain plug, then reinstall.
8. Thoroughly clean the area around each fill plug on the top of each transmission. Remove the fill plugs, and use a small funnel to fill to the bottom of the threads—approximately 16 oz. Reinstall the fill plugs. See **Fill Transmission Oil** illustration for location of fill plugs.

NOTE: Use **ONLY** Walker Model 7 Hydro Oil (Walker P/N 6450-21) or Mobil SHC™ 630 oil (P/N 6450-20).

9. Thoroughly clean around the reservoir fill cap, and remove the cap. Fill the reservoir to the bottom of the threads.
10. Keep the cap off, start the engine, and let the engine run for a few minutes while watching the oil through the fill opening for the air (foam) to dissipate. Add additional oil to reach the cold fill line (about half-way up the sight gauge window) if necessary.



Fill Transmission Oil

11. Reinstall the reservoir fill cap. Drive the tractor for 5 minutes. Let the engine cool and check the cold fill level again. Add additional oil to reach the cold fill line (about half-way up the sight gauge window) if necessary.
12. Check all connections for leaks and tighten if necessary.

CLEANING

CAUTION

If a pressure washer is used on the exposed working parts, avoid water on the electrical parts and the engine cooling system.

Engine Air Cleaner System

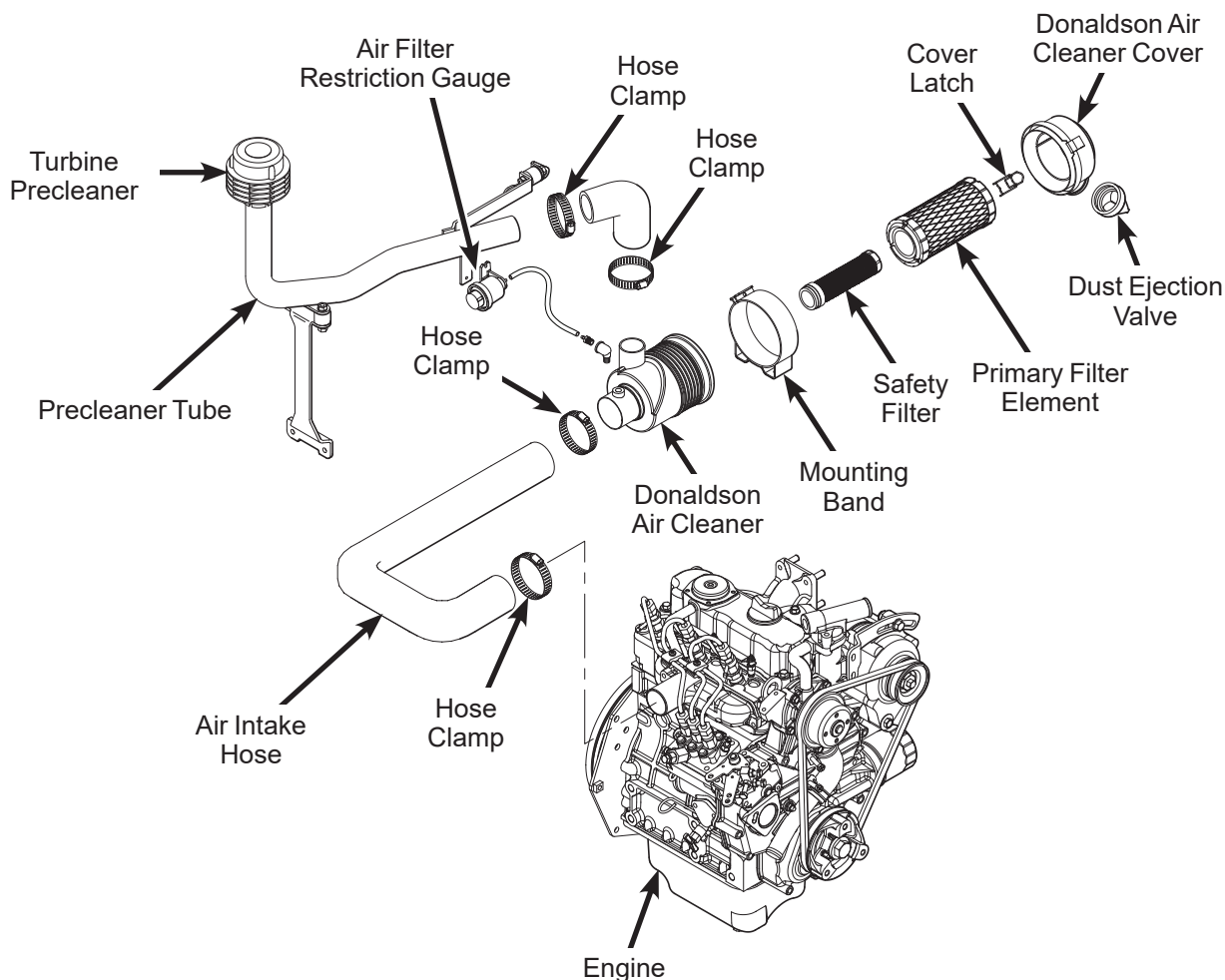
There are two main components in the engine air cleaner system: a turbine precleaner and a Donaldson Radialseal™ air cleaner. Each component is checked, cleaned and maintained on a different schedule based on the filtering action required. Each component is serviced as follows:

Turbine Precleaner

The turbine precleaner is mounted on a remote air intake tube connected to the Donaldson air cleaner. A spinning fan driven by the intake airflow separates dust from the air, giving the initial stage of air cleaning. Dust particles are exhausted through a single small vent in the side of the housing. Since no dust is trapped, the precleaner operates without cleaning. The only maintenance required is to check the operation of the internal fan **every 100 hours**. Verify operation:

1. Loosen the hose clamp and remove the turbine precleaner.
2. Reach into the intake and check that the fan is spinning freely. Reinstall the precleaner.

If the fan is not spinning, service or replace the precleaner as required.

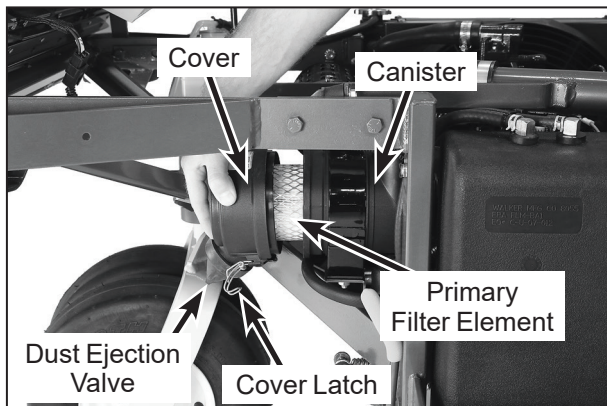


Engine Air Cleaner System Components

Donaldson Radialseal™ Air Cleaner

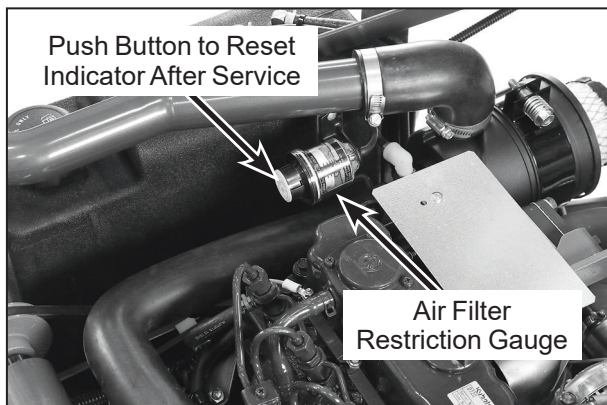
A remote mounted Donaldson Radialseal™ air cleaner provides the air filtering function. The paper filter element slides over an outlet tube inside the air cleaner canister with **radial** sealing action, reducing the possibility of dust leaks due to improper filter installation. Intake design, internal baffling, and a dust ejection valve provide dust separation and automatic precleaning action. Daily or frequent servicing of the air cleaner **is not required**. Use the air filter restriction gauge on the air cleaner outlet to indicate when the air filter needs servicing—a yellow indicator will show when the filter is overly restricting airflow into the engine.

IMPORTANT: Use **only** Donaldson air filter elements for replacement (Donaldson P822686 or Walker 5090-1). Aftermarket filters may not seal properly or filter efficiently.



Air Cleaner Components
(Shown with Cover Being Removed)

IMPORTANT: The Donaldson air cleaner uses a dry paper-type air filter element. **NEVER** apply oil to the paper element.



Air Filter Restriction Gauge Location

Inspect the primary filter element **after every 100 hours** of service and **replace** the element and safety filter **yearly** (or when dirty or damaged). More frequent replacement may be required when operating in extremely dusty conditions as indicated by the air filter restriction gauge. Service the air cleaner as follows:

1. Release the top and bottom cover latches and remove the air cleaner cover. Wash the cover and dust ejection valve. Check that these components are in good condition. The dust ejection valve is subject to wear and deterioration and should be inspected carefully and replaced **yearly** or when damaged. The lips of the valve should close and fit together; any cracks, deformation, or wear in the valve is cause for replacement.
2. Remove the filter element by pulling it out of the canister. There will be some initial resistance as the filter seal breaks loose and slides off of the outlet tube. **Gently** move the end of the filter up and down and side to side or twist to loosen the seal. Use gentle action to minimize the amount of dust dislodged as the filter is removed.
3. Discard the filter element if excessive air flow restriction has been indicated by the air filter restriction gauge and proceed to Step 6. Clean the filter element by **gently tapping** on a **flat, hard surface**. If excessive restriction still exists after cleaning the element, it should be replaced.

NOTE: Use care when cleaning the filter element. The filter element and/or seal surface may be damaged by tapping too hard or hitting on an uneven surface or sharp edge. Washing the paper element in water or cleaning solution is **not recommended**. Do not try to clean the element with compressed air. Do not oil the paper element. Remember, replacing a filter is less expensive than replacing a dusted engine.

4. Use a bright light inside the filter element to inspect for damage. Check the element very carefully for **pin holes or other damage** that will allow dirt to leak through the paper media. Replace filter element if dirty or damaged.

Cleaning

5. Check the condition and resilience of the radial sealing surface (inside of the open end) of the filter. Replace the filter if any cracks, tears, or other damage to the sealing surface are noted.
6. Without removing, visually inspect the condition of the safety filter for damage or holes. The safety filter should only be removed for **yearly replacement** (or when dirty or damaged).

IMPORTANT: Prior to removing the safety filter, make sure the inside surface of the air cleaner canister is clean. This will minimize the risk of dirt entering the outlet tube which can cause premature engine wear.

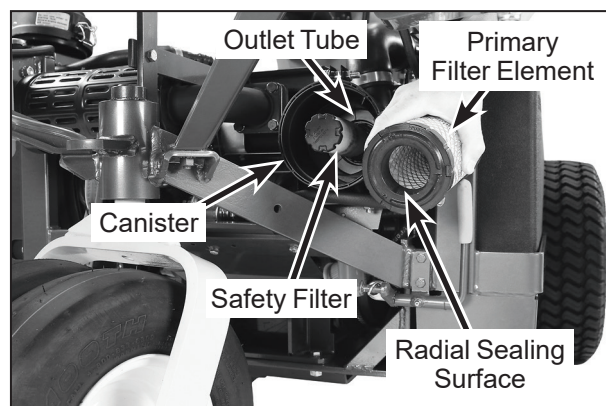
7. After removing the safety filter, use a clean, damp cloth and wipe the interior of the air cleaner canister clean. Use special care to clean **both the inside and outside** surfaces of the outlet tube.

IMPORTANT: Any dust left on the inside of the outlet tube will go into the engine and cause wear.

8. Check the outside surface of the outlet tube for smoothness and cleanness (this is the sealing surface).
9. Insert and seat the safety filter and primary filter element carefully into the canister, applying pressure at the outer rim of the filter; not at the flexible center. Make sure the filter element is completely in place before installing the cover.

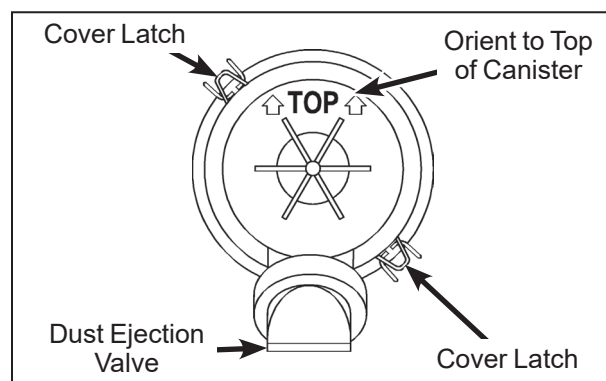
IMPORTANT: DO NOT use the cover latches to force the filter into the canister—the cover should fit on with **no extra force**.

NOTE: DO NOT use petroleum based lubricants on the sealing surfaces of the filter; use talcum powder or dry silicone lubricants if required for filter installation.



Air Filter Element Replacement

10. Install the cover with the word "TOP" properly oriented to the top of the canister. Give the cover a slight twist as it reaches the canister to make sure the tab inside the cover goes into a slot, otherwise the cover will not fit properly. Make sure both the top and bottom cover latches are securing the cover in place.



Proper Orientation of Air Cleaner Cover

11. Check the air intake hose for cuts, nicks, cracks, etc., and the hose clamps for tightness.
12. Reset the air filter restriction gauge (press button on the end of the indicator).

Engine Cooling System

Radiator Screen and Cooling Fins

To prevent the engine from overheating and possible engine damage, clean grass clippings, chaff, and dirt from the fine mesh radiator intake screen **daily**. In certain mowing conditions (dry grass, leaves, tree "cotton", etc.), it may be necessary to check and clean the screen several times during use to prevent engine overheating.

1. Lift to remove the screen. To clean the screen, wash with soapy water or blow out with compressed air.
2. Inspect the radiator cooling fins for material lodged in this area which would restrict cooling airflow. Use pressurized air or water to clean. **DO NOT use any tool, like a screwdriver or knife**, to clean material out of the fins as this may damage the cooling fins. **DO NOT** use cold water on a hot radiator.

NOTE: Directing pressurized air or water from the fan side of the radiator outward is recommended to dislodge material packed on the outside of the cooling fins. **DO NOT** use cold water on a hot radiator.

WARNING

Radiator and engine parts can become extremely hot during operation. Wear gloves and avoid touching hot parts while cleaning the radiator screen and cleaning debris away from the engine and cooling system.

Flushing Radiator and Changing Coolant

Change engine coolant **every year**. Drain the coolant from the engine and radiator:

1. Remove the radiator cap.
2. Open the drain cocks on the engine block and radiator (see the Kubota Owner's Manual for location of the drain cocks). Also, drain the coolant recovery tank.
3. If there is any **indication of deposits** or scaling inside the radiator, use a commercial scale remover and **flush the cooling system** thoroughly before adding fresh coolant.

Use a pre-mixed 50/50 solution of antifreeze (ethylene glycol) and distilled water to refill the cooling system.

IMPORTANT: The solution of antifreeze and water must be thoroughly pre-mixed before putting it in the engine. Adding pure antifreeze into the radiator may cause damage to the engine from overheating.

IMPORTANT: Maintain **proper coolant level** in the radiator and coolant recovery tank. The coolant level should be maintained between **FULL** and **LOW** marks on the coolant recovery tank.

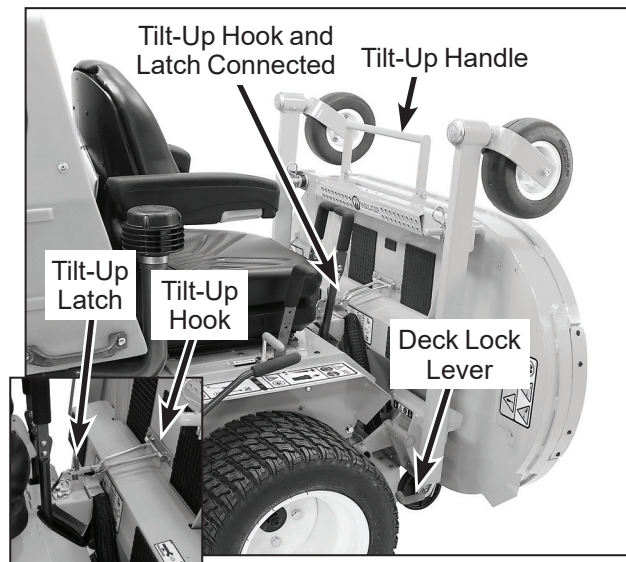
Recheck the coolant level after the first time the engine has been operated after filling the coolant system (it would be normal to add a little coolant after initial operation).

Grass Buildup in Mower Deck Housing

DANGER

Before raising or removing the mower deck for cleaning, stop the engine, remove the key from the ignition switch, and disconnect the negative battery cable.

1. **Raise** the deck lock lever handle on each side of the carrier frame **and pull out** to release carrier frame for tilting action.
2. Using the carrier frame lift handle (or tilt bar), raise deck to the **TILT-UP** position and insert the deck hook into the tilt-up latch on the front of the tractor.



Deck Secured in TILT-UP Position

DANGER

Do not operate the mower with deck in tilt-up position. Do not move the tractor with the deck in the tilt-up position.

3. Clean grass buildup underneath the deck using a pressure washer (and scraper if required).

NOTE: If the buildup is severe, it may be easier to clean the deck by removing the deck assembly from the tractor and standing the deck assembly on its “nose”.

NOTE: While some degree of material build-up in the mower deck housing can be tolerated, a point is finally reached **where cutting quality deteriorates and clogging begins to occur** because of too much buildup on the baffling and housing.

4. Lower the deck to the normal operating position and re-engage the deck lock levers.



CAUTION

Do not operate machine with deck tilt-up pivot joint unlocked.

GHS Blower

Normally, the GHS blower operates with no maintenance or cleaning. However, when mowing **grass that is dirty and damp** (especially certain springtime mowing conditions), a deposit of dirt may accumulate inside the blower housing, causing wear and binding of the blower wheel. When operating in these conditions, **inspect the blower frequently for dirt buildup**.

NOTE: A visual clue of binding of the blower wheel is the blower **blade tips are polished** from rubbing on dirt.

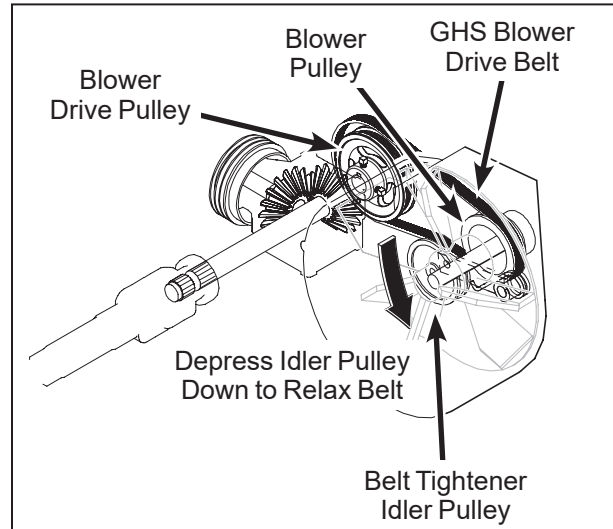
When a dirt deposit is found, use a high pressure washer or water spray to clean the inside of the housing as follows:



DANGER

Before attempting to wash the blower, stop the engine, remove the key from the ignition switch, and disconnect the negative battery cable. Wear goggles or face shield.

1. Remove the GHS blower drive belt tension by depressing the idler pulley on the tightener arm. Roll the belt off the blower pulley. The belt should be clear of the blower pulley, allowing **free movement** of the blower wheel.



Collapse Blower Belt Tightener to Remove GHS Blower Drive Belt

IMPORTANT: With the belt removed, the blower wheel **must spin freely**. Any binding or dragging of the wheel is an indication of dirt buildup. This **buildup must be cleaned** to avoid abrasive wear of the blower blades, excessive power loss and eventual loss of blower performance (clogging).

2. Use a pressure washer or water spray, and direct the spray inside the blower housing against the blower blades. Water pressure will cause the blower wheel to begin to spin and the combination of spinning action and water will effectively wash the inside of the housing. Spray may be directed against the blower blades vertically and horizontally to cause rotation in both directions for thorough washing action. **Wash blower until the blower wheel spins freely** in both directions.
3. Reinstall the GHS blower drive belt by reversing the removal procedure.

GHS Exhaust Screen

Refer to *Cleaning the GHS Exhaust Screen* on page 52.

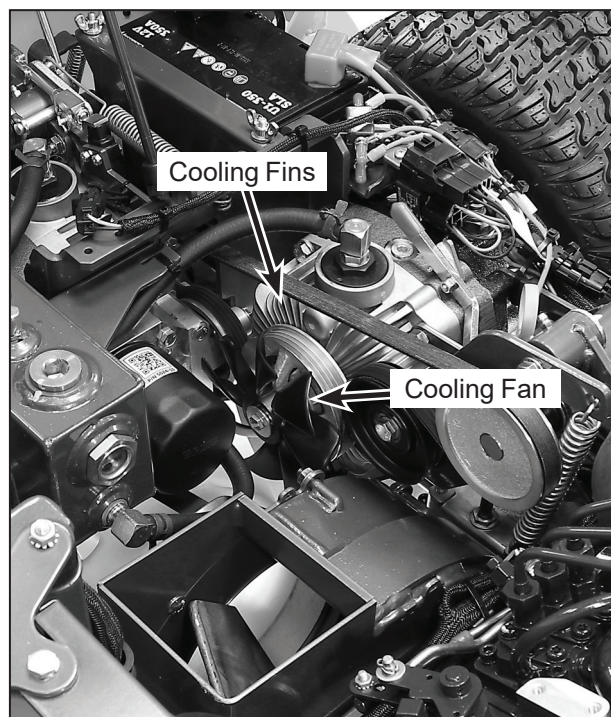
Hydrostatic Transmission Cooling Fins

Keeping the cooling fins on the hydrostatic transmissions clean and free of obstruction is **essential to avoid overheating** the transmission fluid and shortening transmission life. The cooling fins should be checked **every 100 hours** and cleaned if necessary.

To clean the fins, use compressed air and/or a pressure washer. The cooling fins extend all the way around the housing—the fins underneath need to be clean as well as the more visible fins above. Also, pay close attention to the area under the drive pulley.

IMPORTANT: In case an oil leak develops on the input shaft, the cooling fan blowing dusty air and oil on the transmission will **quickly** pack the cooling fins with **oily dirt**. If this condition occurs, replace the seal immediately to avoid overheating and damaging the transmission. The input shaft assembly and seal are easily replaced without removing the transmission from the machine.

An additional procedure in maintaining transmission cooling is to inspect the cooling fans. Replace the fan(s) if blades are missing or damaged.



Hydrostatic Transmission Cooling Fins

CHECKING/SERVICING



DANGER

To prevent accidental starting of the engine when servicing or adjusting the machine, remove the key from the ignition switch and disconnect the negative battery cable.

Engine Cooling System

Coolant Level



WARNING

NEVER remove the radiator pressure cap when the engine is hot—hot water could spray and cause a burn if the cap is taken off too soon.

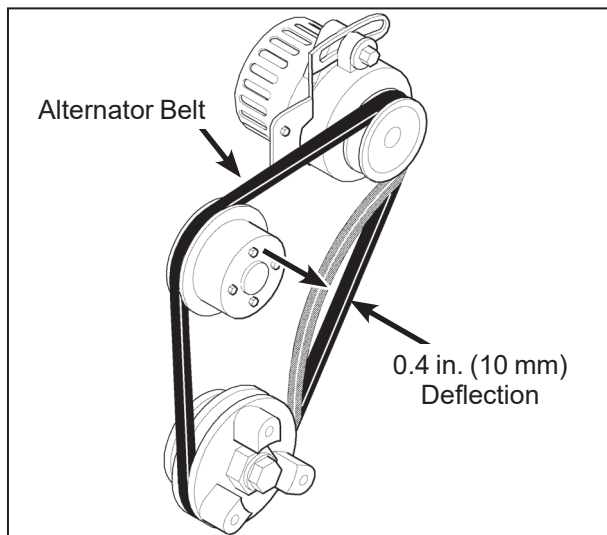
Check the coolant level in the coolant recovery tank and **maintain the coolant level between the FULL and LOW marks on the recovery tank**. When the engine is cold, the coolant level should be at or slightly above the **LOW** mark on the recovery tank.

If the coolant level is low, remove the radiator cap and fill to the overflow port level and then fill the recovery tank above the **LOW** mark. Use a pre-mixed 50/50 solution of antifreeze (ethylene glycol) and distilled water to fill the cooling system.

IMPORTANT: The coolant solution of antifreeze and distilled water must be thoroughly pre-mixed before putting it in the engine (adding pure antifreeze into the radiator may cause damage to the engine by causing overheating).

Alternator Belt Tension

Check and adjust the alternator belt tension to **avoid engine overheating and insufficient battery charging**. Push on the belt in the middle of the span between the alternator and crankshaft. If properly tensioned, it should deflect about **0.4 in. (10 mm)**. Also check the belt for cracks or deterioration.



Alternator Belt Tension

Security of Air Filtration Components

NOTE: The following inspection is **only an external inspection** and should be done without “**disturbing**” the filtration components.

On a daily basis, visually inspect the external condition of the complete air cleaner system. The following items should be inspected:

1. Check the Donaldson Radialseal™ air cleaner canister for damage. Make sure the cover is in place and the cover latches are secure—do not run the engine without the air cleaner cover in place and secure.
2. Inspect the air intake hose for cracks, nicks, cuts, etc., and check the hose clamps for tightness.
3. Check to make sure the air filter restriction gauge is in place and hose connections are secure.

Battery

The battery is fully sealed and activated at the factory, there is no maintenance by way of topping up fluid levels. **Never attempt to open this battery.**

IMPORTANT: Make sure battery is securely mounted in the frame. A loose battery may cause damage to the case resulting in acid leakage and severe damage to the machine. A hazard may be created by damage to critical working parts and safety systems.

CAUTION

Important Battery Service, Installation, and Charging Tips:

- Do not allow the battery cables to touch opposing terminals. When connecting battery cables attach the positive (+) cable to positive (+) battery terminal first, followed by negative (-) cable to negative (-) battery terminal.
- Never start the engine when the cables are loose or poorly connected to the battery terminals.
- Never disconnect battery while engine is running.
- Never use a quick battery charger to start the engine.

Cleaning the Terminals

If battery terminals are corroded, **remove the battery** from the mower. Using a wire brush, remove corrosion with a solution of **one part baking soda and four parts water**. Rinse with clean water. Coat the terminals with petroleum jelly or terminal protector spray to retard further corrosion.

Charging the Battery**CAUTION****BATTERIES PRODUCE EXPLOSIVE GASES**

- Charge the battery in a well-ventilated area.
- Keep sparks, flames, and smoking materials away from the battery at all times.
- Make sure the battery charger is unplugged before connecting or disconnecting cables to the battery.

IMPORTANT: Charging too quickly or overcharging will damage the battery.

1. Disconnect the battery terminals—negative (-) first.
2. Charge the battery at 15 amps for 10 minutes. **DO NOT** exceed 18 amps (maximum recommended charging rate). Total charging time should not exceed one (1) hour.

NOTE: If the battery becomes hot to the touch, stop the charging and allow it to cool down before recharging.

3. Reconnect the battery terminals starting with the positive (+) terminal.

Storing the Battery

Store the batteries in a cool, dry location, protected from the elements. AGM (absorbed glass mat) batteries have a lower self-discharge rate, but they will still lose between 1% and 15% per month depending on storage temperature. Monitor the voltage every 2-3 months. If the battery gets to 75% state of charge or less it should be given a boost charge. If a battery has been in storage, it is important to **fully charge the battery before use**.

Tire Pressure

Inflate tires to pressures shown below:

Deck Caster Wheel*	=	20 PSI (137 kPa)
Drive	=	15 PSI (103 kPa)
Tailwheel	=	20 PSI (137 kPa)

* If equipped with optional pneumatic tires

Wheel Bolt Torque

Check the eight (8) lug bolts that mount the drive tires. **Every 100 hours** they should be torqued to 75 to 85 lb·ft (102 to 115 N·m).

Sharpen Mower Blades

Check mower blade(s) for **straightness, sharpness, condition of the cutting edge, and balance every 10 hours** of operation (or more often when mowing abrasive type grass or operating on sandy soils). **Replace blades if worn, bent, cracked, or otherwise damaged** (refer to *Mower Blades on page 86*). Use the following procedure to check and sharpen blades:

NOTE: Keep blades sharp—cutting with dull blades not only yields a poor mowing job but slows the cutting speed of the mower and causes extra wear on the engine and blade drive by pulling hard.

1. Stop the engine, remove the key from the ignition switch, and disconnect the negative battery cable **before** raising the mower deck to service blades.
2. Raise the deck and **secure** it in the **TILT-UP** position. Refer to *Cleaning Grass Buildup in Mower Deck Housing on page 71* for deck raising instructions.

**DANGER**

NEVER operate cutter blades with the deck in the raised position.

NOTE: PTO shaft must be **disconnected** before checking blades for straightness.

3. Check the blades for **straightness** by marking the blade tip position inside the deck housing, and then rotating the opposite end of the blade to the same position and comparing. If the difference in blade tip track is **more than 1/8 in. (3 mm)**, the blade is bent and **should be replaced**.



WARNING

DO NOT try to straighten a blade that is bent. **NEVER** weld a broken or cracked blade. **ALWAYS** replace with a new blade to assure safety.

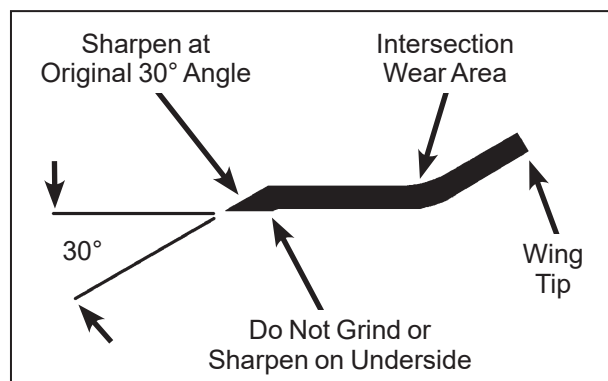
4. If the blade cutting edge is **dull or nicked**, it should be sharpened. Remove blades for sharpening by grasping the end of the blade using a rag or a thick, padded glove, while loosening and removing the nut, lock washer, and flat washer that mount the blade.
5. Grind cutting edge at the same bevel as the original. Sharpen only the top of the cutting edge to maintain sharpness.

NOTE: Blades can be sharpened with an electric blade sharpener, conventional electric grinder, or a hand file.



CAUTION

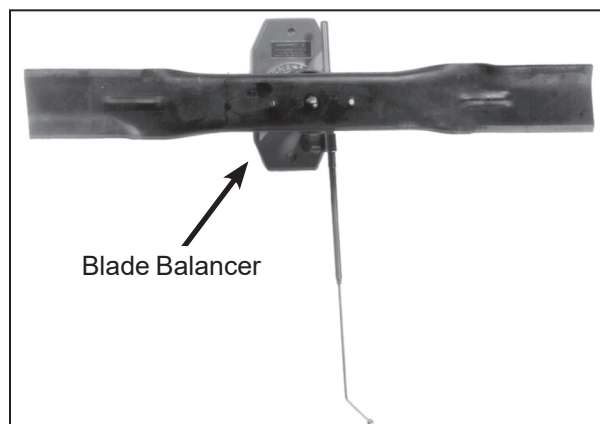
ALWAYS wear eye protection and gloves when sharpening a blade.



Mower Blade Profile for Sharpening

6. Check blade balance by positioning the blade **horizontally** on a blade balancer or use a nail or shaft through the center hole. If either end

of the blade rotates downward, grind (remove) metal on that end until the blade will balance. The blade is properly balanced when neither end drops. Balance of a blade is generally maintained by removing an equal amount of material from each end of the blade when sharpening.



Blade Balanced on Magnetic Wall-Mounted Balancer

7. Mount the blade with wing tips pointing up into the housing. **For gear-driven decks** reinstall the blade, washer, lock washer, and nut. **Tighten the nut to 60 lb·ft (81 N·m)**. **For belt-driven decks** reinstall the spacer (if applicable), blade, washer, and bolt. **Tighten the bolt to 70 lb·ft (95 N·m)**.

NOTE: When reinstalling blades on collection (GHS) decks, remember, the blades counter-rotate and the LH and RH blades must not be switched. Check for proper blade rotation before installing blades on the deck. Refer to **Blade Rotation** illustrations shown in *Clogging Checklist* on page 50 for correct blade rotation.

Drive Belts

Raise the body and inspect the condition of the five (5) belts (4 belts on SD models) **every 25 hours** of operation—engine PTO drive, jackshaft drive, hydrostatic ground drive, GHS blower drive, and engine alternator belt. If the belts show **signs of cracking or deteriorating**, the belts should be **replaced**. Refer to *Drive Belts* on page 79.

Mower Deck Gearbox Oil Seals

The mower deck gearbox seals should be inspected **every 25 hours** for evidence of oil leaking; **particularly the lower oil seal on the blade drive gearbox**. This seal is protected by the trash guard on the blade hub and seal protector plate on the housing, but is still vulnerable to seal damage due to operating in an adverse environment. The mower blade must be removed for inspection of the seal, so it is recommended to **inspect the gearbox seals when blades are removed for sharpening**. If an oil leak is noted, the seal should be replaced and the gearbox assembly relubricated. Refer to *Mower Deck Gearbox Lubrication* on page 62.

Fuel Lines and Clamps

Every year, inspect the fuel supply line from the tank to engine for deterioration or damage. Also, inspect the fuel line **clamps for tightness**. Good preventive maintenance calls for complete **replacement** of fuel lines and clamps **every two (2) years**.

NOTE: This procedure is of special importance for the diesel engine due to poor performance when air is injected with the fuel.

Radiator Hoses and Clamps

Inspect the radiator hoses **every 200 hours** for deterioration or damage. Also check the tightness of the hose clamps. Good preventive maintenance calls for complete **replacement** of the radiator hoses and clamps **every two (2) years**.

Engine Valve Clearance

Check and adjust the Kubota engine valve clearance **every 800 hours**. Refer to the Kubota Engine Owner's Manual and Workshop Manual for specifications and procedure to check the valve clearance. For engine servicing, contact an authorized Kubota engine dealer or a trained engine technician.

IMPORTANT: Always use the proper engine service manual when working on the engine. Improper engine maintenance or adjustments will adversely affect engine operation, performance, and durability and may **VOID** the warranty.

Fuel Injection Nozzle Pressure

Check and adjust the Kubota diesel engine fuel injection nozzle pressure **yearly** or **every 1000 hours** (or in case of low power). Refer to the Kubota Workshop Manual for specifications and procedures to check nozzle pressure. For engine servicing, contact an authorized Kubota engine dealer or a trained engine technician.

IMPORTANT: Always use the proper engine service manual when working on the engine. Improper engine maintenance or adjustments will adversely affect engine operation, performance, durability, and may **VOID** the warranty.



WARNING

The fuel oil injection system operates under high pressure and can penetrate the skin and result in serious injury. Unqualified persons should not remove or attempt to adjust a pump injector, nozzle, or any part of the fuel injection system.

Transmission Control Setting

On a **yearly** interval or when an out-of-adjustment condition is observed, check the transmission control for proper function as follows:

Neutral-Park

With the mower parked on level ground, start and run the engine, first at idle and then normal operating speeds. With the FSC in the **NEUTRAL-PARK** position, there should be no movement of either drive tire. If the tire(s) are "creeping" forward or reverse, refer to *Adjustments for Transmission Control in Neutral Function Adjustment - Step 4* on page 88.

Straight Ground Tracking

Check for straight ground track by driving on a smooth, level surface with hands off the steering levers. Set the FSC at different speeds and observe if the mower moves in a straight line (use a cement joint or other line on the ground for reference). If the machine is drifting to the right or left, refer to *Adjustments for Transmission Control in Straight Ground Travel Adjustment - Step 5* on page 89.

Blade Brake Action



WARNING

It is important to check and maintain blade brake action for safe operation of the machine.

Check the function of the cutter blade brake (and blower brake on GHS models) by engaging the blade clutch (PTO), operating the engine at full throttle, then disengaging the clutch and measuring how quickly the blades stop. Watch the rotation of the blade drive shaft and blower pulley as a visual indication that movement has stopped. If the brake is **working properly, all rotation will stop five (5) seconds after disengagement** of the clutch. If the brake system malfunctions—blades do not stop in five (5) seconds—adjust or repair the brake before operating the mower. Contact your Walker dealer for this service or refer to *Adjustments for Clutch Disengagement/Brake Action* on page 90.

PTO U-Joints

The PTO U-joints should be inspected **yearly** for looseness and wear. If either is noticed, the respective shaft or tube should be replaced. A worn U-joint can cause vibration and extensive damage to the PTO and the whole machine.

Safety Switch System



WARNING

It is important to check and maintain the safety switch system for safe operation of the machine.

There are four (4) safety interlock switches on the tractor: Seat Switch, FSC Neutral-Park Switch, PTO Switch, and Parking Brake Switch.

NOTE: There is a 1/2 second time delay function on the seat switch to avoid engine power interruption when driving over bumps.

If any of the following conditions occur during starting or operating, a safety interlock switch may be malfunctioning. Contact your Walker dealer for troubleshooting and/or replacement.

- With or without an operator in the seat, the **engine starts** with the Forward Speed Control (FSC) and/or the PTO engaged, or the parking brake disengaged.
- With an operator in the seat and the parking brake engaged, the **engine starts but dies** soon after the parking brake is disengaged and the Forward Speed Control (FSC) or PTO is engaged.
- **Without** an operator in the seat, the engine starts and **continues to run** with the Forward Speed Control (FSC) and/or PTO engaged, or the parking brake disengaged.
- With an operator in the seat, the Forward Speed Control (FSC) and PTO disengaged, the parking brake engaged, and Oil Pressure Warning Horn sounding, but the **starter will not engage**.

Forward Speed Control Friction Lock

The FSC friction lock is designed to **hold the selected forward travel speed** when the steering levers are moved and yet the friction is not too heavy to make **moving the FSC control** difficult (too much friction). The procedure for checking the FSC friction lock is as follows:

1. With the engine off, place the FSC in the full **FORWARD** position and pull both steering levers back; the FSC lever should not move. If the FSC lever moves back when the steering levers are pulled back, the **friction needs to be increased**.
2. With the steering levers held back, move the FSC lever back from the **FORWARD** position. With a proper amount of friction adjusted, the FSC lever should move back with a slight amount of resistance (friction). If the FSC lever movement is "stiff", the **friction needs to be decreased**.

If the FSC friction lock needs to be adjusted, refer to *Forward Speed Control Friction Lock* on page 91.

REPLACING/REPAIRING

**DANGER**

To prevent accidental starting of the engine when replacing parts or repairing the machine, remove the key from the ignition switch and disconnect the negative battery cable.

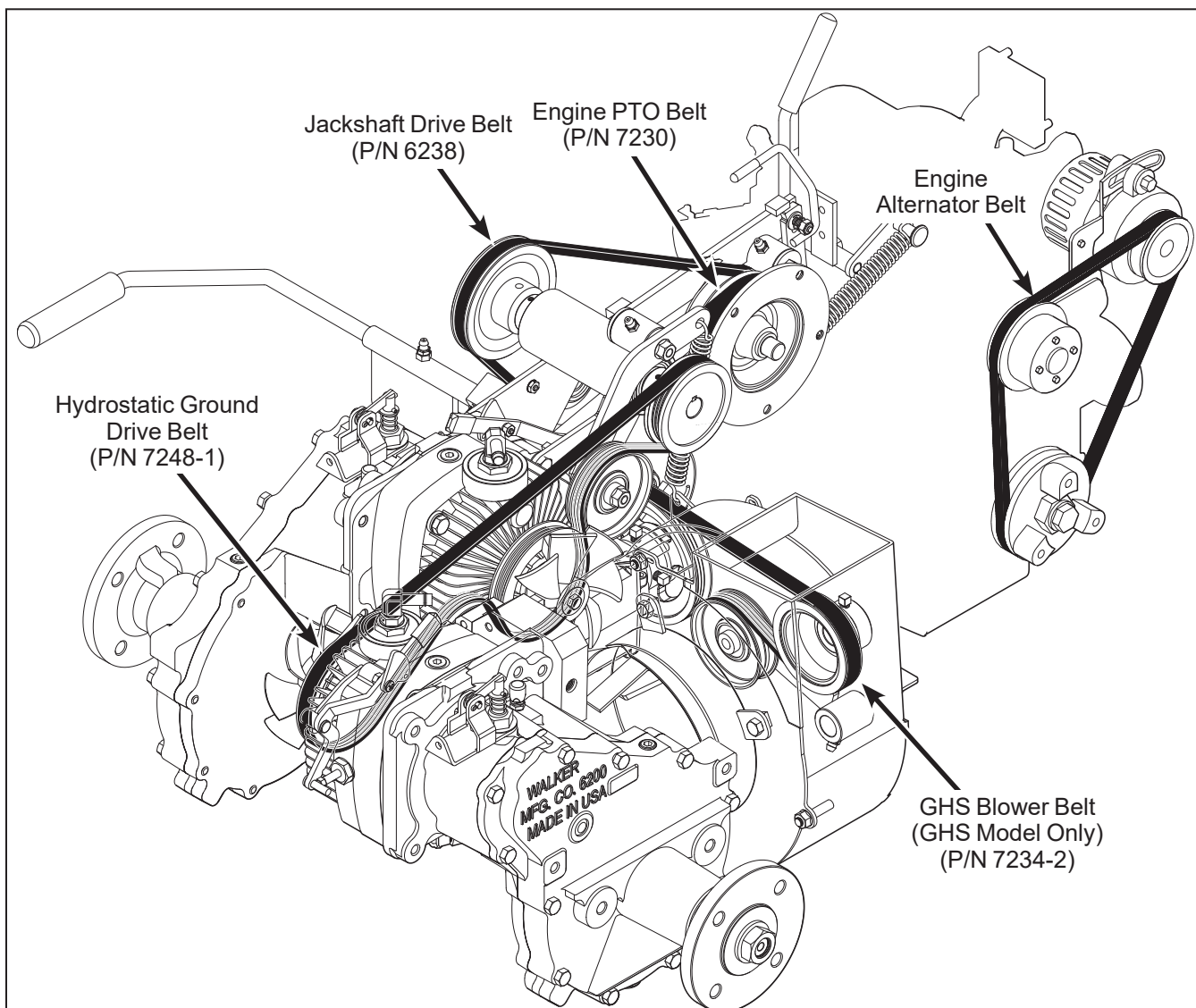
IMPORTANT: ALWAYS use genuine factory replacement parts. Substitute parts **CAN** result in product malfunction and possible injury to the operator and/or others.

Drive Belts

There are **five (5) individual belts** on GHS models or **four (4)** belts on SD models:

- Jackshaft Drive Belt
- Engine PTO Drive Belt (3 Groove Power Band)
- GHS Blower Drive Belt (GHS Model Only)
- Hydrostatic Ground Drive Belt
- Engine Alternator Belt

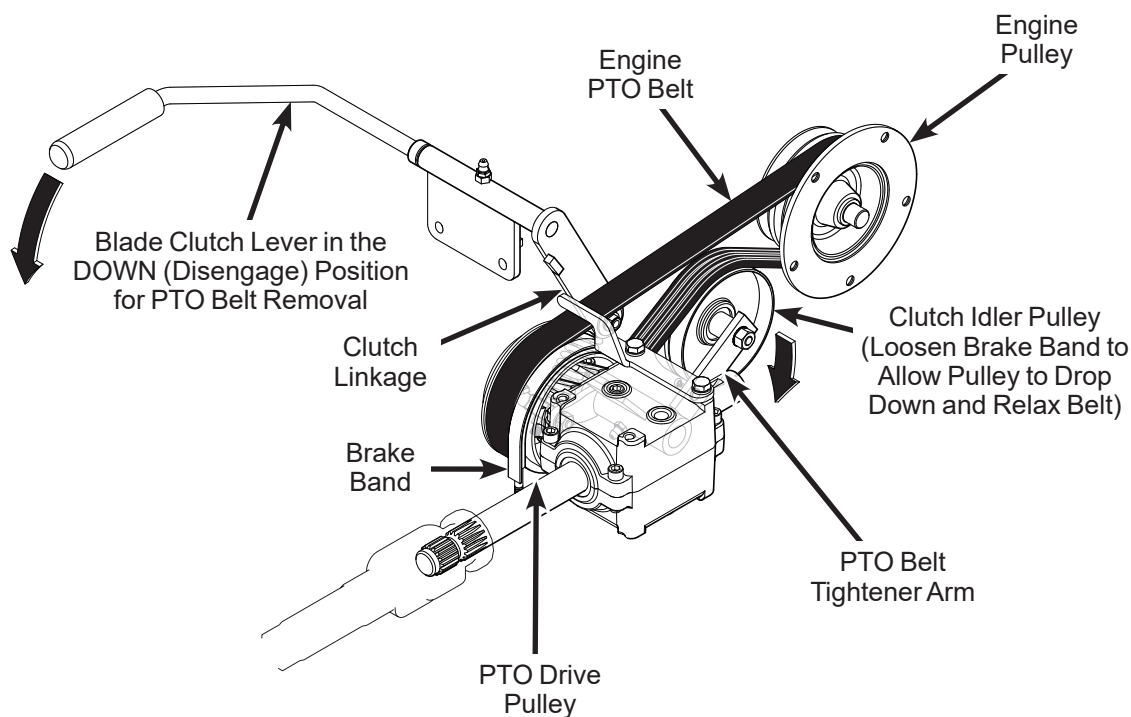
The belts may be removed and replaced using the **procedures described on the following pages.**



Belt Locations

Engine PTO Drive Belt (3 Groove Power Band)

1. To remove the engine PTO drive belt:
 - a. Remove the jackshaft drive belt as described in next section.
 - b. Loosen the brake band adjustment nut to allow the clutch idler pulley to drop down against the frame. This provides maximum looseness of the belt to assist removal.
 - c. Remove the PTO drive belt by “walking” the belt off of the engine and PTO pulleys one groove at a time until the belt is completely removed.
2. Install the PTO drive belt by reversing the removal procedure.
3. Refer to *Blade Clutch (PTO)* on page 90 to check and make the following adjustments:
 - a. Clutch disengagement (brake band adjustment) and brake action.
 - b. Clutch engagement for proper belt tension.



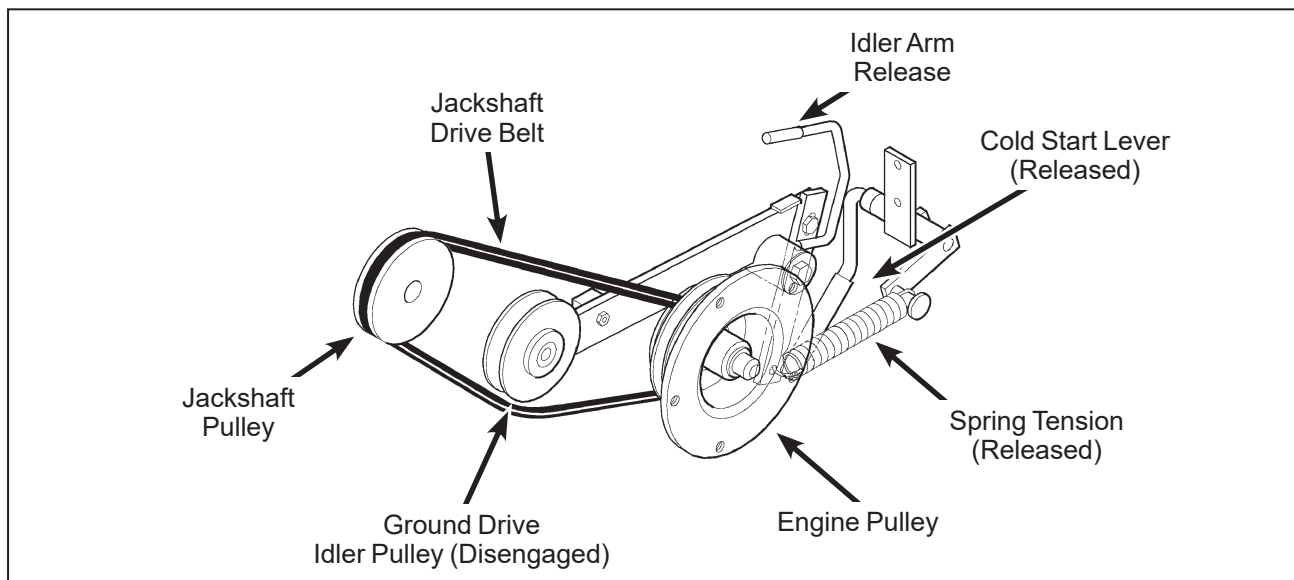
Engine PTO Drive Belt Removal

Jackshaft Drive Belt

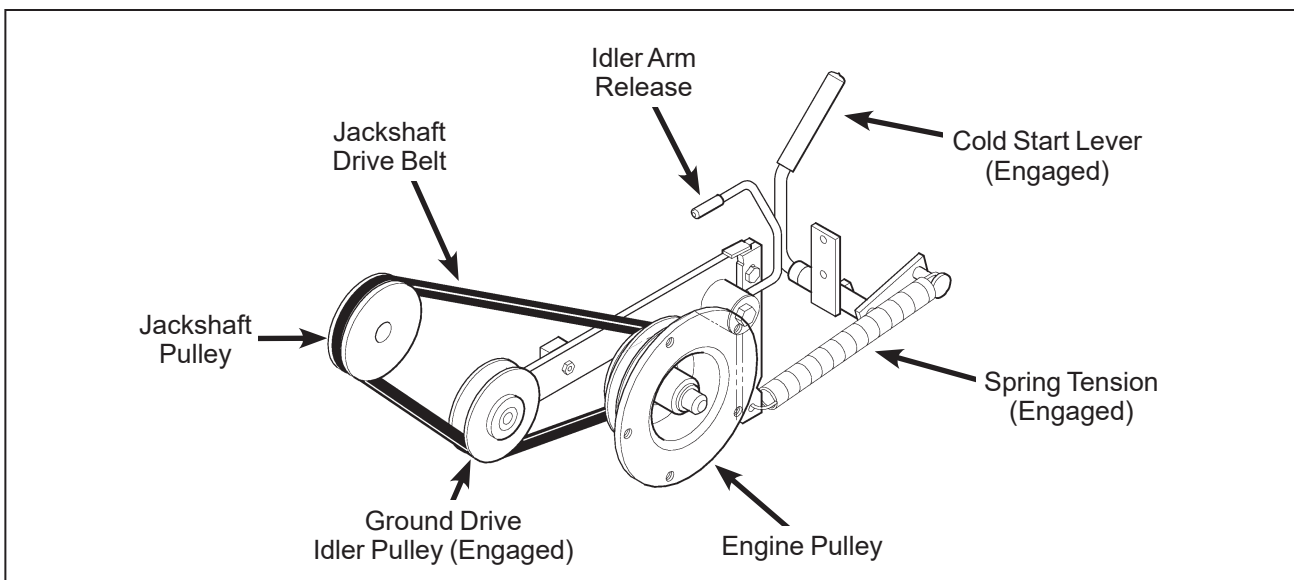
1. To remove the jackshaft drive belt:

- a. Relax the belt by releasing spring tension from the jackshaft drive idler arm using the **cold start lever**.

- b. Slide the idler arm release down to unlock the idler arm from the spring lever. Then pivot the arm up and away from the belt.
- c. Roll the belt off the jackshaft pulley and remove.

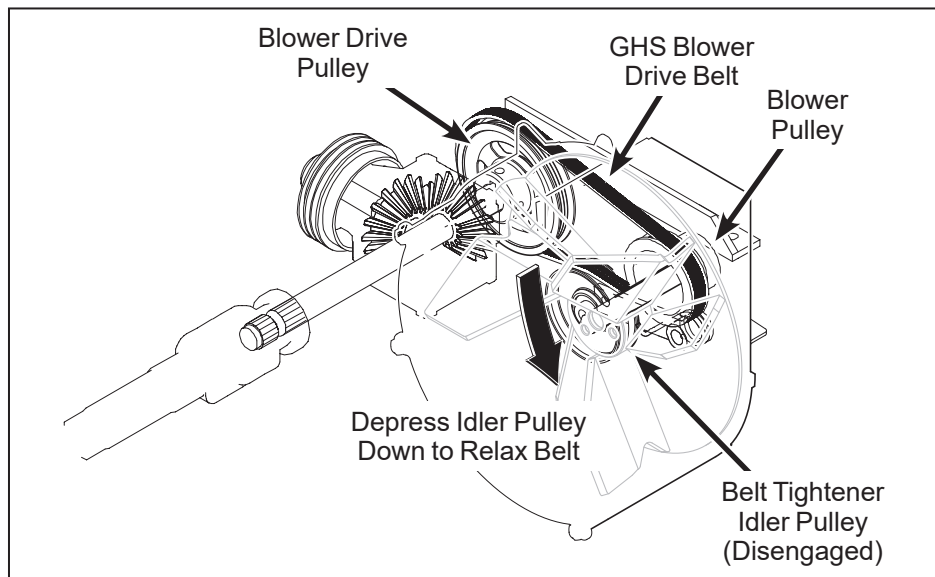
**Jackshaft Drive Belt (Disengaged)**

2. Reverse the removal procedure to replace the jackshaft drive belt.

**Jackshaft Drive Belt (Engaged)**

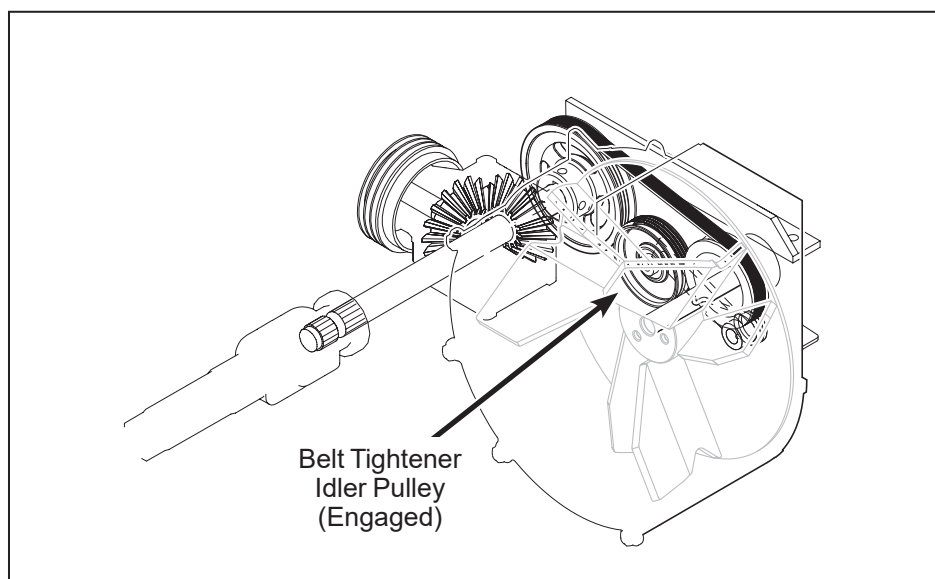
GHS Blower Drive Belt

1. Remove the GHS blower drive belt tension by depressing the idler pulley on the tightener arm. Roll the belt off the blower pulley.



GHS Blower Drive Belt Assembly (Disengaged)

2. Reverse the procedure to install the GHS blower drive belt.



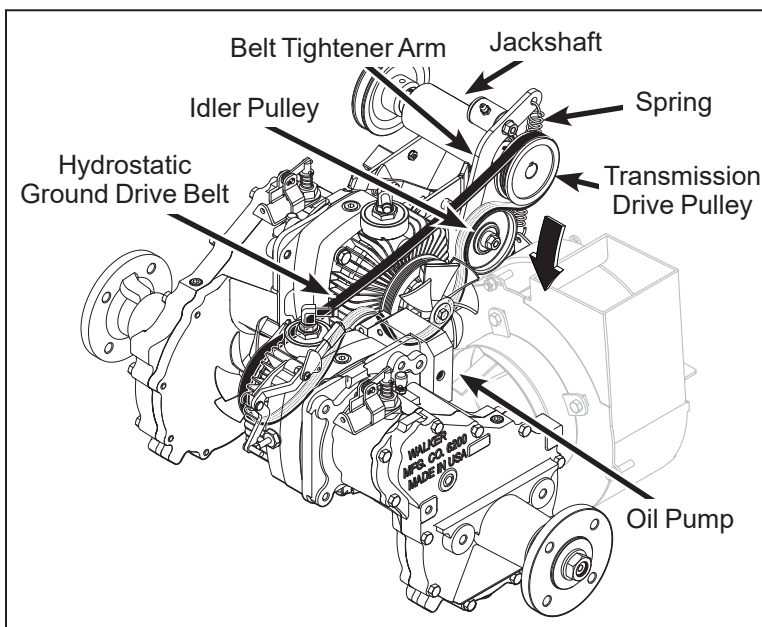
GHS Blower Drive Belt Assembly (Engaged)

Hydrostatic Ground Drive Belt

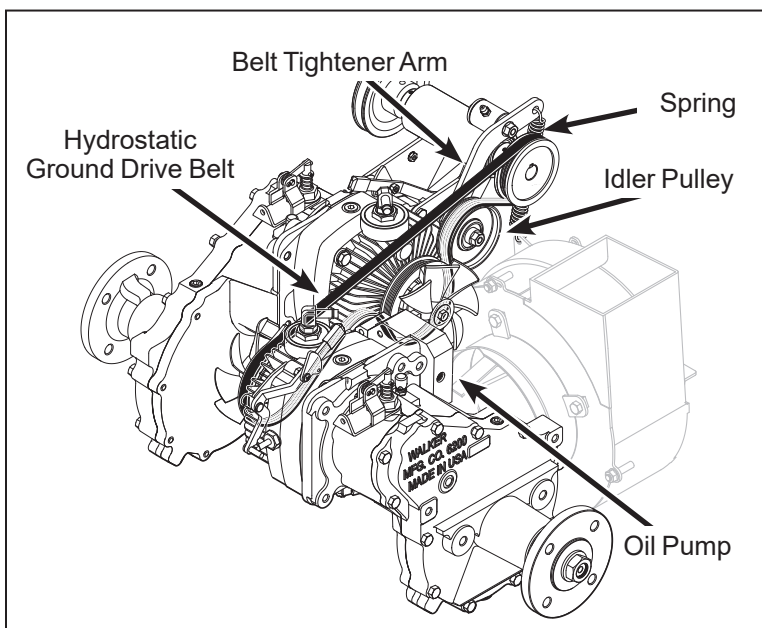
1. To remove the hydrostatic ground drive belt:

- a. Push down on the spring-loaded belt tightener arm and idler pulley to relax belt.

- b. Slide belt off pulleys, then release the idler.

**Hydrostatic Ground Drive Belt Assembly (Disengaged)**

2. Reverse the procedure to install the hydrostatic ground drive belt.

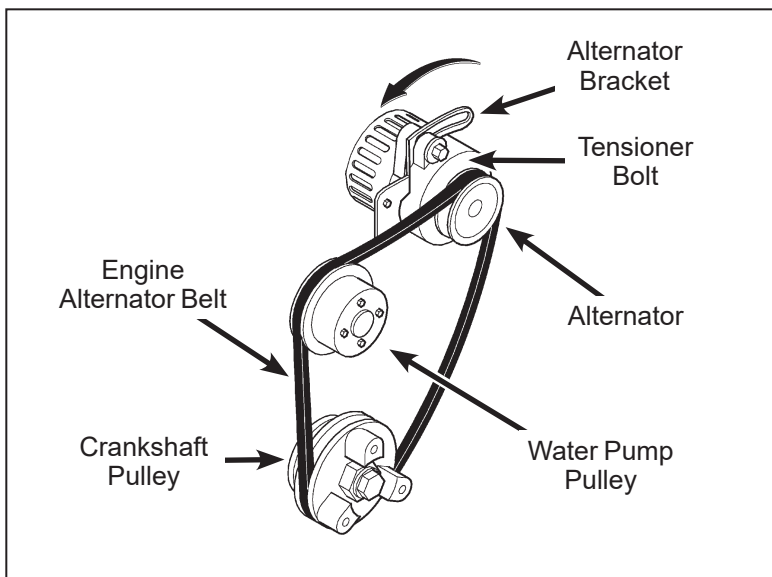
**Hydrostatic Ground Drive Belt Assembly (Engaged)**

Engine Alternator Belt

1. To remove the alternator belt:

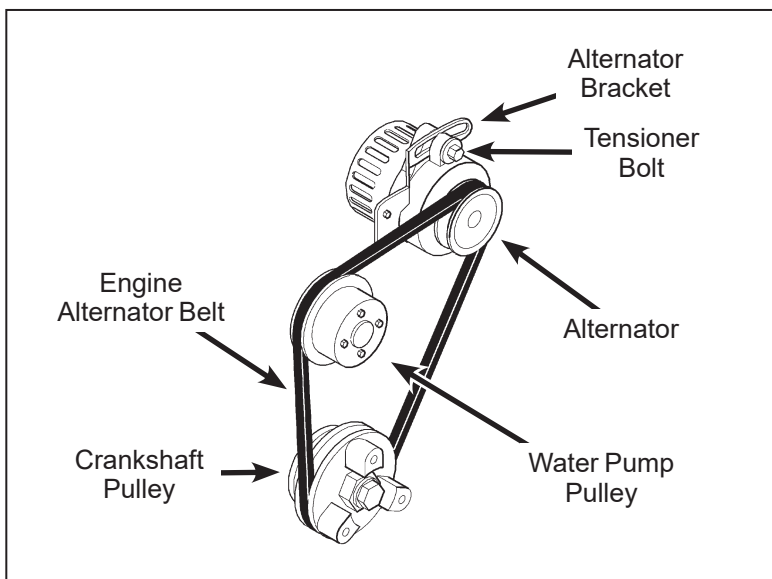
- a. Loosen the alternator mounting pivot bolt and the alternator bracket tensioner bolt.

b. Pivot the alternator as shown to relax and remove belt.



Engine Alternator Belt (Loose)

2. Reverse the procedure to install the belt. Adjust and check the belt tension by referring to *Alternator Belt Tension* on page 74.



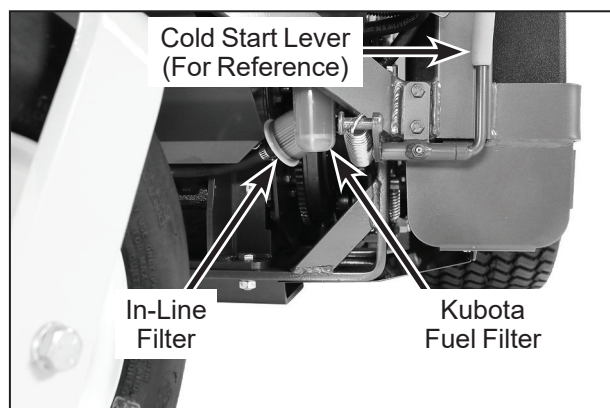
Engine Alternator Belt (Tight)

Deck Drive Belt

For information on removing and reinstalling belts on a belt-driven deck, see the appropriate parts manual.

Fuel Filter

Model D21d has **two (2) fuel filters**. Replace both the in-line filter and the Kubota filter element **yearly or every 400 hours** of operation.



Fuel Filter Location

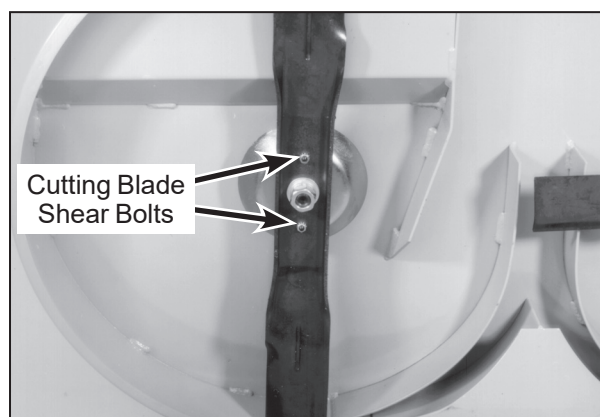
IMPORTANT: Replace the fuel filters only in a clean area where the fuel line and connections will not be contaminated by dust and dirt.

1. Close the Kubota fuel filter cock.
2. Remove and replace the in-line filter; expand and slide clamps on either side of the filter away from filter and pull fuel lines off filter.
3. Loosen the ring screw on the Kubota filter assembly, remove the filter pot and filter element.
4. Clean the filter pot and reassemble the filter assembly with a new filter element (use only a Kubota replacement filter #15231-43560).
5. Open the fuel filter cock.

Blade Overload Shear Bolts

NOTE: Blade shear bolts are not used on belt-driven decks.

On gear-driven decks, each cutting blade is keyed to the blade hub by **two (2) shear bolts** (10-24 x 5/8 in. stainless steel machine screws). These bolts are designed to shear and protect the blade drive gearbox from damage if the blade encounters a shock load.



Cutting Blade Shear Bolts

NOTE: Tightening the **5/8-18 blade mounting nut to 60 lb·ft (81 N·m)** is also important for proper shock load protection. It is important to **not over-tighten** the mounting nut since this defeats (overrides) the function of the shear bolts.

If these bolts shear, remove the blade and install new bolts. Refer to *Sharpen Mower Blades on page 75* which describes the blade removal and installation procedure.

After reinstalling the blade, check blade timing (on gear-driven decks) by moving blades through **one (1) complete revolution**. Make sure blade tips pass clear of each other. If timing is incorrect, contact your Walker dealer.

Mower Blades

Mower blades are removed and remounted as described in *Sharpen Mower Blades on page 75*. During the course of sharpening and inspecting mower blades, if there are **any of the following conditions of wear or damage, blades should be replaced** for reasons of safety and performance of the machine:

- An excessive amount of the **flat section** of the blade has been **ground away** (removed) when the blade is sharpened. Replace the blade **when less than a 3/4 in. (19 mm) flat section remains** at the blade tip.
- Examine ends of the blade carefully, especially the intersection where the flat section of the blade turns up to form the “wing tip” (refer to the illustration **Mower Blade Profile for Sharpening** on page 76 for location of the wing tip and wear area). Since sand and abrasive material can wear metal away in this area, the blade should be **replaced when metal thickness has worn to 1/16 in. (1.6 mm) or less**.



DANGER

When blades are operated over sandy soil, and if blades are allowed to wear, a “slot” may be worn into the wing tip of blade. Eventually a piece of the blade may break off creating a serious potential for injury or damage.

- Check the blades for **straightness** by marking blade tip position inside the deck housing and then rotating the opposite end of the blade to the same position and comparing. If the difference in blade tip track is **more than 1/8 in. (3 mm)**, the blade is bent and **should be replaced**.
- Inspect the blade surface, especially in formed areas, for **cracks**. Replace the blade if any cracks are found.



WARNING

DO NOT try to straighten a blade that is bent. **NEVER** weld a broken or cracked blade. **ALWAYS** replace with a new blade to assure safety.

Reinstall the blades following procedure from *Sharpen Mower Blades on page 75*. If blades are replaced, always use **Walker original equipment blades** to ensure safety and optimum performance. The quality and performance of **replacement blades offered by other manufacturers** cannot be guaranteed, they **could be dangerous**.



CAUTION

ALWAYS use genuine factory replacement parts. Substitute parts **CAN** result in product malfunction and possible injury to the operator.

ADJUSTMENTS

Transmission Control

The following instructions reflect the most current transmission linkage configuration with a spring/dampener connected to the steering lever (starting S/N 11-109716) and the FSC using direct linkage instead of a sliding fork disconnect (starting S/N 15-134121). Earlier units will need to use the transmission control adjustment instructions from the P/N 9000-30 Service Manual.

IMPORTANT: The proper adjustment of the transmission control stops is **essential** for efficient operation and life of the transmission. These stops are properly adjusted at the factory and should only require readjustment if the transmission or related control linkage is removed or changed.

NOTE: It would not be unusual for a new machine, after the initial 5 or 10 hours of operation, to begin to not travel straight (this is due to the break-in of the transmissions). In this case, proceed to *Straight Ground Travel Adjustment - Step 5 on page 89*.

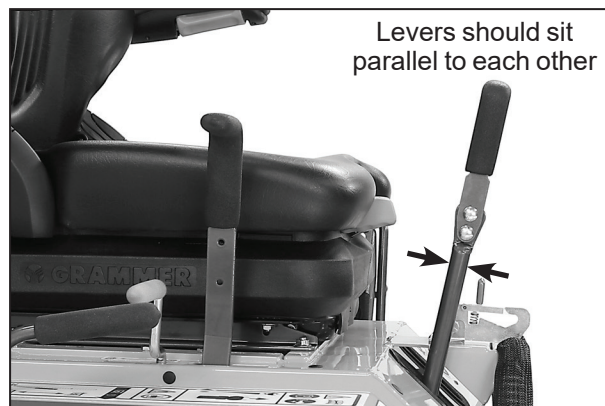
IMPORTANT: The following adjustment procedures are sequential. Check and adjust each function in the order given.

Steering Lever Position Adjustment - Step 1

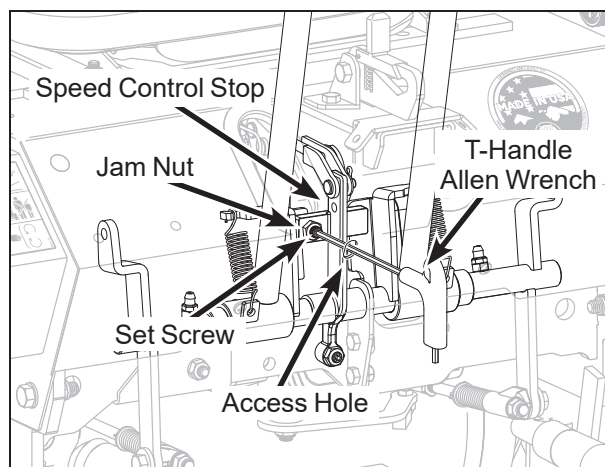
NOTE: For proper operation, the steering levers should be adjusted to sit evenly using the following procedure.

1. Examine the steering levers to make sure they are **parallel front to back** in relation to one another. If they are not equal, adjust accordingly. (The handles may or may not be even at this point, see *Steering Handles on page 92*.)

NOTE: The **LH steering lever is non-adjustable**. This procedure will require adjustment of the RH lever to make it even with the LH lever.



Lever Alignment

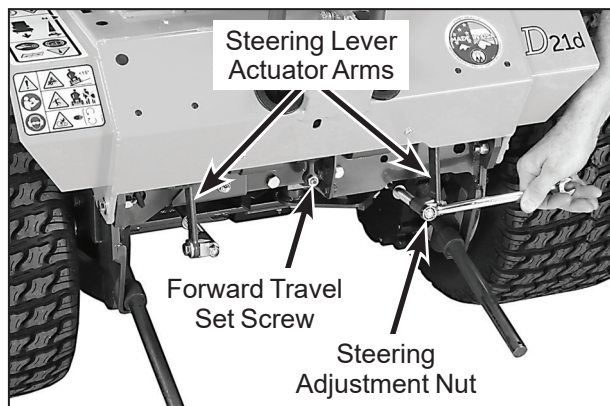


Lever Position Adjustment

2. Adjust the position of the RH Steering lever using the adjustment screw on the Speed Control Stop as shown in the **Lever Position Adjustment** illustration. The screw is adjusted with the tractor body in the normal operating position (not raised) using an access hole in the front panel. Loosen the jam nut and adjust the lever position to match the LH lever position. Tighten jam nut after the adjustment.

Set FSC Travel Limits (Stop) - Step 2

1. Move the Forward Speed Control (FSC) lever to the most **FORWARD** position.
2. Check clearance of the RH and LH steering lever actuator arms with the frame and **adjust forward travel set screw** so each lever clears the frame by at least 1/16 in. (1.6 mm). Clearance of the arm to the frame should be checked while **applying pressure back** on the arm to remove any slack in the linkage.



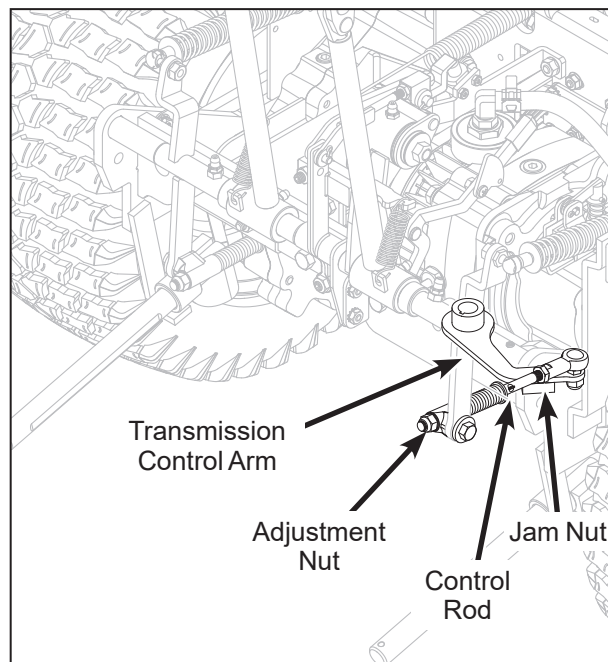
Forward Speed Control Stop and Steering Lever Adjustment

3. Tighten the jam nut on the forward travel stop adjusting set screw.

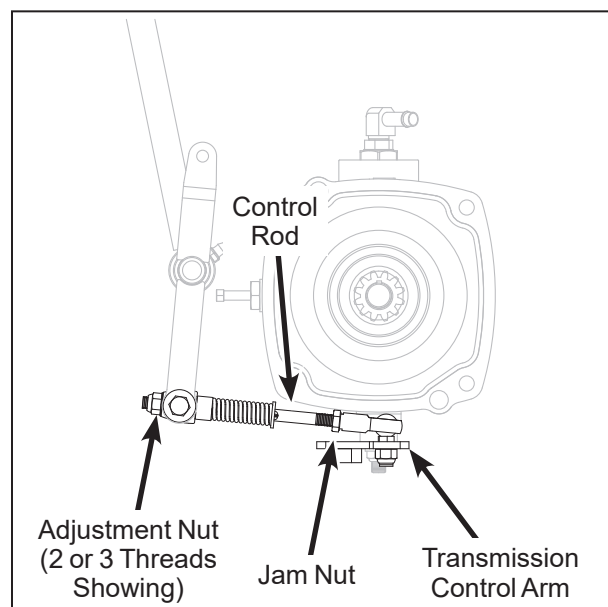
Set Maximum Forward Travel Speed (Stop) - Step 3

1. Position the FSC lever to the most **FORWARD** position.
2. Turn the steering lever adjustment nut(s) until 2 or 3 threads are showing past the end of the nut.
3. Loosen the jam nut at the other end of the control rod (where it connects to the transmission control arm).
4. For each steering lever, use a wrench on the adjustment nut, turn the control rod counter-clockwise (CCW) until the steering lever begins to move backward, then make two additional turns. Next, reverse and turn the control rod clockwise (CW) until the **steering lever stops moving forward** and then **make one additional turn**. Tighten the jam nut.

NOTE: Failure to make at **least one extra turn** on the control rod can place excessive loads on the transmission internal control stops and cause internal wear and damage to the transmission. Making additional turns beyond one turn reduces the maximum forward travel speed.



Transmission Control Rod and Arm Location (Front Body Hidden for Clarity)



Adjustment Components

Neutral Function Adjustment - Step 4

1. Securely block the tractor up so the drive tires are off the ground.
2. Move the FSC lever to the **NEUTRAL-PARK** position (rear travel limit).

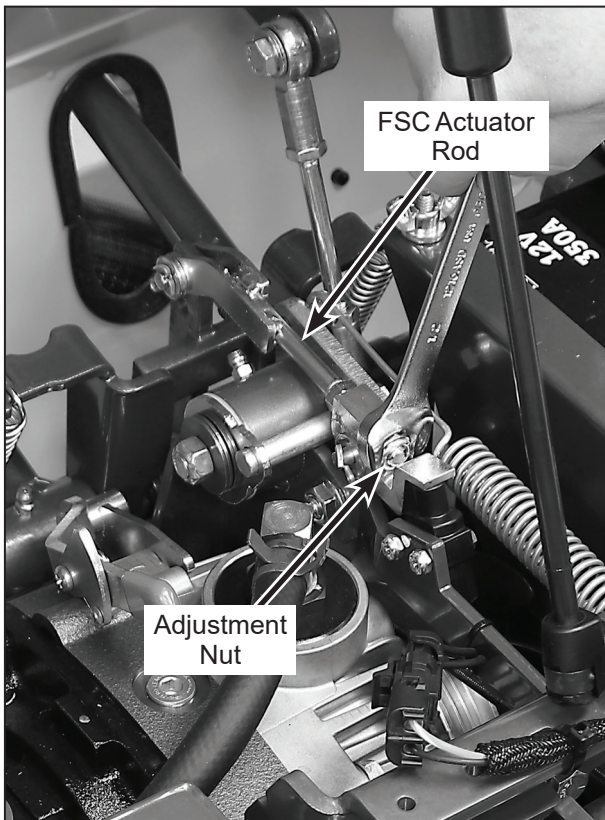
- While seated on the tractor, start the engine. Set the throttle to idle and release the parking brake. **Slowly** stroke the FSC **slightly forward** and return to **NEUTRAL-PARK** position. Then **slowly** pull **back slightly** on the steering levers. These two movements will release tension on the parking brake pins that could keep the tires from rotating freely during the adjustment.

NOTE: If the engine will not start, check the operation of the neutral safety switch.



CAUTION

NEVER attempt to disconnect any safety devices or defeat the purpose of these safety devices.



Neutral Function Adjustment

- While still seated on the tractor with the parking brake released and with the FSC in the **NEUTRAL-PARK** position, set the throttle to a normal operating speed. **Check for movement of the drive wheels.**
 - If both drive wheels are stationary**, no adjustment is needed.
 - If both drive wheels are moving backward**, loosen the FSC actuator rod jam nut and lengthen the FSC actuator rod by turning the adjustment nut counterclockwise (CCW).
 - If both drive wheels are moving forward**, loosen the FSC actuator rod jam nut and shorten the FSC actuator rod by turning the adjustment nut clockwise (CW).
- At this point it may **not be possible** to adjust **both** wheels stationary since the differential adjust has not been made. (This is covered by the *Straight Ground Travel Adjustment - Step 5 on this page.*) In this case, the neutral adjustment should be made for one wheel stationary and the other moving **forward** slightly.

Straight Ground Travel Adjustment - Step 5

- Sit in the seat, start the engine (operate at normal speed), and with the FSC in the **NEUTRAL-PARK** position, check for **forward movement** of either drive wheel (if either wheel moves **backward**, refer back to *Neutral Function Adjustment - Step 4 on page 88* and readjust). **Tighten the steering lever adjustment nut on the side of the mower with the wheel moving forward** until wheel movement stops.
- Check for straight ground track on a **level surface** (with **hands off** the steering levers). Set the FSC at several different speeds and observe if the mower moves in a straight line (use cement joint or other line on the ground for reference).
- If travel is not straight, **tighten the adjustment nut that is on the same side of the mower as the wheel that is moving too fast**, e.g., the mower tracks to the right, indicating the LH wheel is moving too fast, tighten the LH adjustment nut.



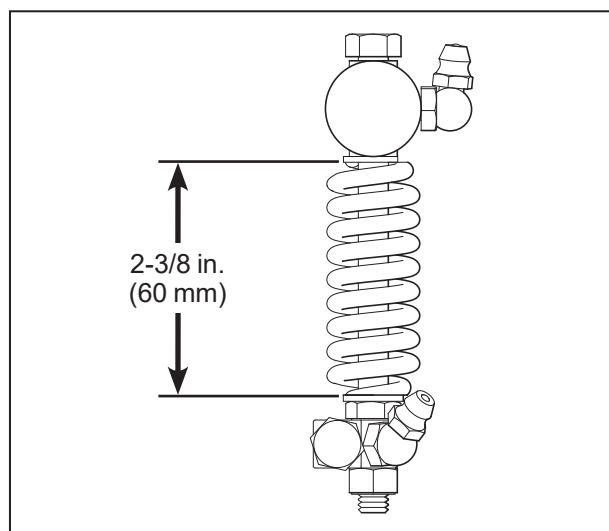
Straight Ground Travel Adjustment

Blade Clutch (PTO)

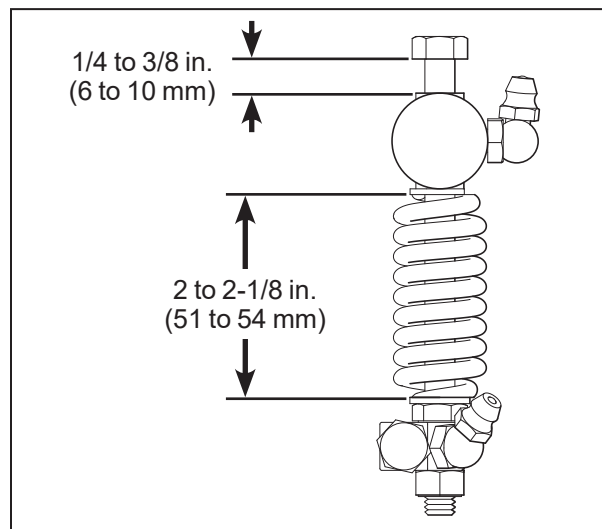
Clutch Engagement/Belt Tension

The clutch engagement and PTO belt tension are adjusted using the clutch actuator rod. Initially, after installing a new PTO belt, **after 10 hours and every 100 hours** thereafter, check and adjust for the three dimensions in the clutch linkage as shown.

Adjust the bolt head clearance [$1/4$ to $3/8$ in. (6 to 10 mm)] first, then adjust spring length. If adjustments are needed more frequently than 100 hours to maintain the linkage dimensions, it may suggest problems with pulley wear or belt misalignment.



Clutch Linkage Adjustment - Disengaged



Clutch Linkage Adjustment - Engaged

Clutch Disengagement/Brake Action



WARNING

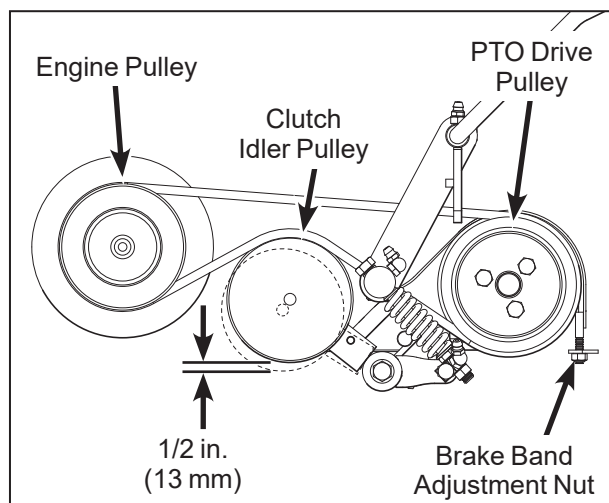
It is important to check and maintain blade brake action for safe operation of the machine.

The **declutched or disengaged** position of the blade clutch idler pulley is adjustable and is set to give belt release **without excessive slack** and to apply the blade brake. The blade brake is activated by linkage to the clutch idler pulley mechanism. The brake is designed to stop the blades within five (5) seconds after disengaging the clutch.

Use the following procedure to check and adjust clutch disengagement and brake action:

1. Use the adjustment nut on the brake band (refer to **PTO Clutch Disengagement Adjustment** illustration) to set the position of the clutch idler pulley in the **declutched** position. Adjust the declutched pulley position to give **$1/2$ in. (13 mm) pulley travel** from "clutch engaged" to "clutch disengaged." To check and adjust the pulley travel, first engage the clutch, then measure the distance the pulley moves down as the clutch is disengaged.
2. After the pulley travel is set, **check blade brake** action as described in *Blade Brake Action* on page 78. If the brake does not stop the blades within five (5) seconds, check the following:

- a. Check clearance between the clutch idler pulley and the motor mount when the pulley is in the declutched position. If there is no clearance and the idler pulley rests on the frame, the blade brake will not be applied when the clutch is disengaged. Normally, this problem would be caused by a short engine PTO drive belt. Change the belt (refer to *Drive Belts* on page 79), and readjust pulley travel as described by step 1 (above).

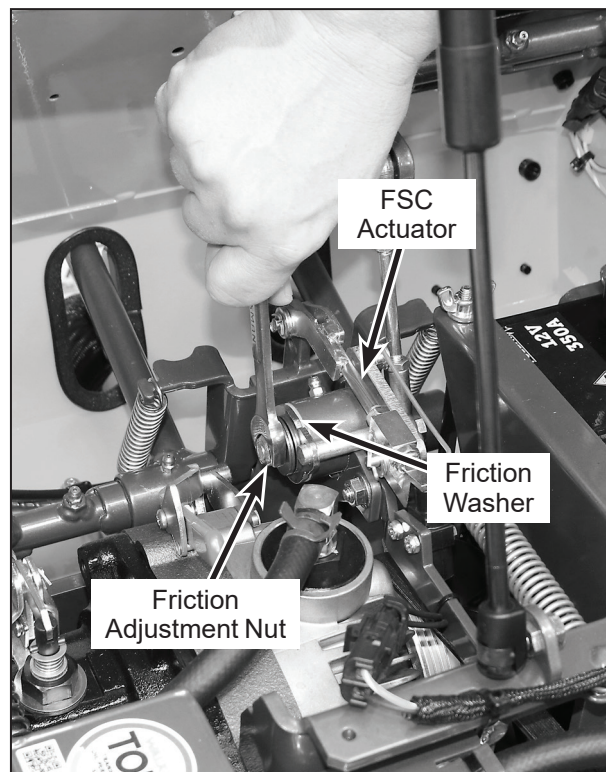


PTO Clutch Disengagement Adjustment

- b. Check both the brake band and brake drum on the drive pulley for wear. Replace worn brake parts and readjust pulley travel as described by step 1 (above).

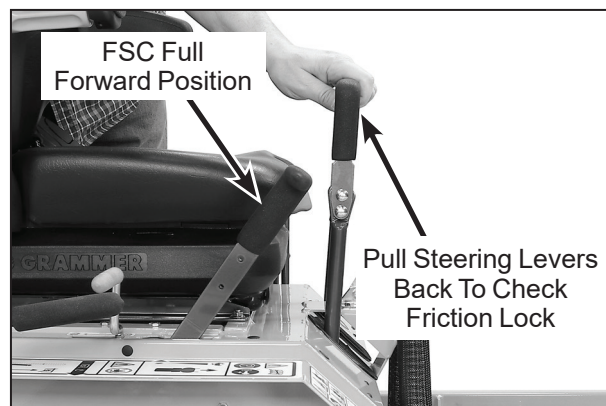
Forward Speed Control Friction Lock

The FSC friction lock is adjusted to **hold the selected forward speed** when the steering levers are moved. The friction should not be so heavy as to make **moving the FSC difficult** (too much friction). The procedure for checking and adjusting the FSC friction lock is as follows:



Forward Speed Control Friction Lock

1. Place the FSC in the full **FORWARD** position and pull both steering levers back; the FSC lever should not move. If the FSC lever moves back when the steering levers are pulled back, the **friction needs to be increased**.



Forward Speed Control Position (Checking Friction Lock)

2. With the steering levers held back, move the FSC lever back from the **FORWARD** position. With a proper amount of friction adjusted, the FSC lever should move back with a slight amount of resistance (friction). If the FSC lever movement is “stiff”, the **friction needs to be decreased**.
3. The FSC friction is **increased** or **decreased** by **tightening** or **loosening** the **friction adjustment nut**. Loosen or tighten the nut and check the control function until conditions of both steps 1 and 2 (above) are met.

Ground Drive Belt Alignment Adjustment

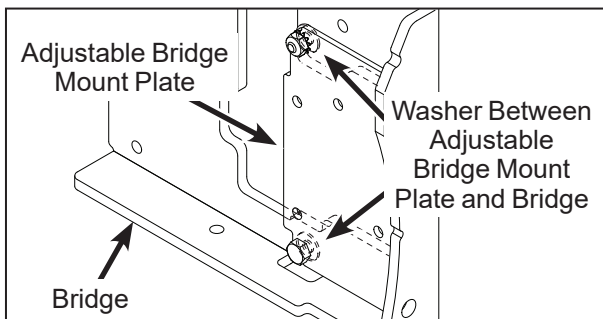
If the ground drive belt squeals, it indicates a TOPS drive pulley alignment issue. The bridge ships with the .060” washers (P/N F120) installed between the adjustable bridge mount plate and the bridge. The washer thickness can be increased or decreased as needed.



CAUTION

Make sure the parking brake is engaged during this adjustment.

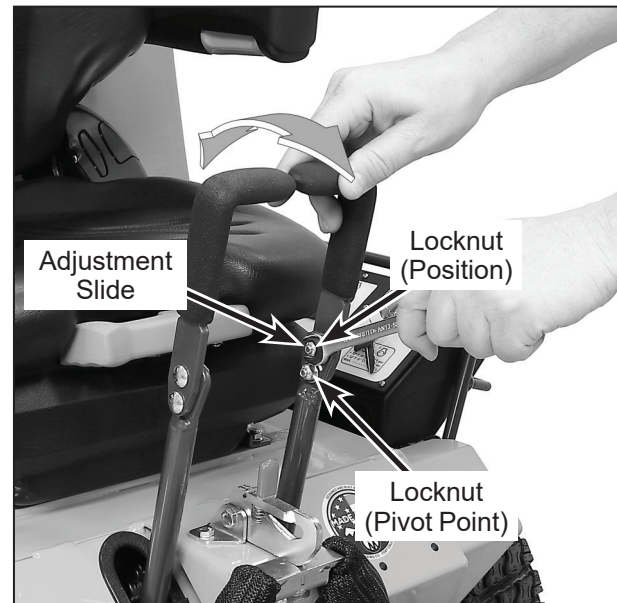
1. Engage the parking brake.
2. Lift the seat, and start the engine.
3. Watch to see which direction the belt shifts.
 - If the ground drive belt shifts to the **left** (towards the throttle control lever), replace the washers with thinner .040” washers (P/N F689).
 - If the ground drive belt shifts to the **right**, replace the washers with thicker .075” washers (P/N F690).



Adjustable Bridge for Belt Alignment

Steering Handles

An adjustment range of approximately 3 in. (76 mm) is available on the steering handles—the handles can be adjusted forward or aft depending on the arm length of the operator. The handles can be adjusted by loosening the locknut at the pivot point and the locknut holding the handle in position in the adjustment slide. Adjust handles into most comfortable position and tighten both locknuts.

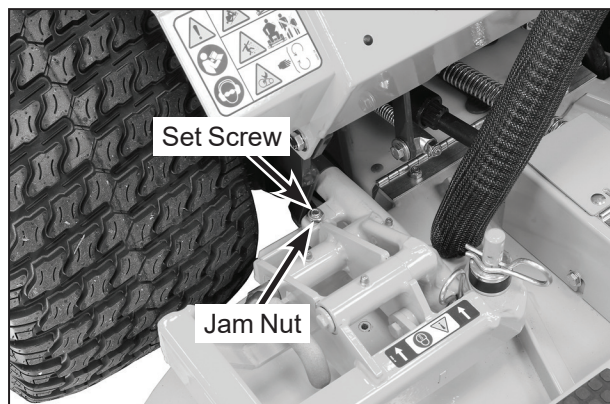


Steering Handle Adjustment

Tilt-Up Deck Adjustable Stop*

When the carrier frame hinge joint is properly adjusted, the deck lock levers should move in and out of the engaged and disengaged positions freely. All four (4) hitch pins used for height adjustment should sit flush on the washers above the deck pin bushing. On a level surface, if any pin is sticking up (likely the front pins), tighten the opposite side or loosen the same side to lower the pin. Adjustments are made by loosening the jam nut and tightening or loosening the set screws on the Deck Mount Pivot Brackets. Retighten the jam nut when the adjustment is complete.

* Does not apply to DS52-3/DS60-3 Decks



Tilt-Up Deck Adjustable Stop

Fuel Valve Solenoid Linkage

IMPORTANT: The solenoid linkage should be checked and adjusted any time the solenoid is removed and replaced (either reinstalling an existing solenoid or installing a new replacement).

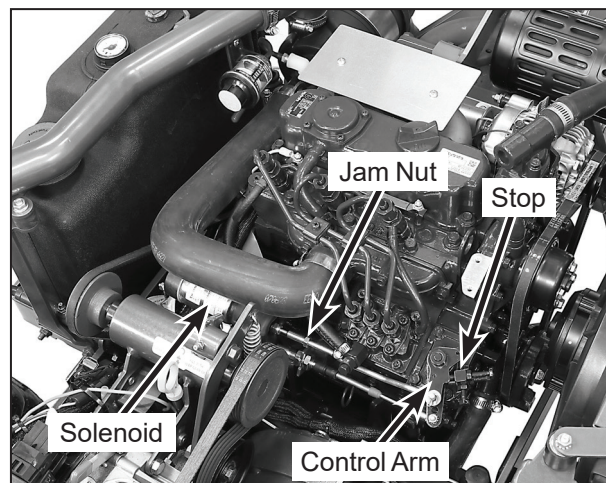
Check and adjust the solenoid linkage as follows:

IMPORTANT: To prevent damage to the fuel valve solenoid, the linkage to the engine must be adjusted so the solenoid bottoms out before the control arm on the engine contacts its stop (when the engine is running).

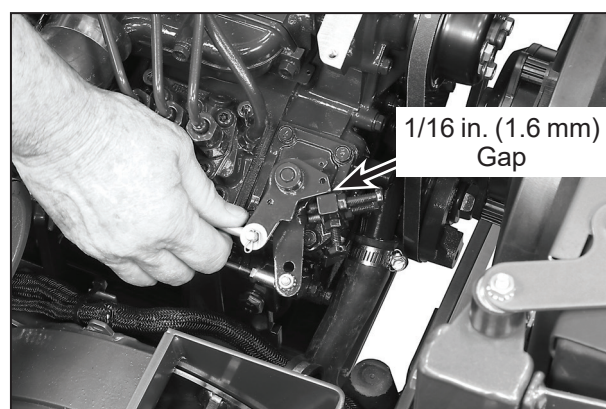
A solenoid that does not bottom out when the engine is running will become overloaded and burn out.

Adjustment Procedure:

1. Manually pull the fuel valve open and check the gap between the control arm on the injector pump and the stop. The required gap is approximately 1/16 in. (1.6 mm).



Fuel Valve Solenoid Linkage Adjustment



Control Arm and Stop Gap Location

2. If the gap is **incorrect**, adjust the linkage by **loosening** the jam nut and turning the collar on the ball joint to create the correct gap between the control arm and the stop.
3. After adjusting the linkage for the proper gap, tighten the jam nut and turn the ignition key **ON** to verify the adjustment.

GHS “Full” Signal Horn Adjustment

The vertical position of the Grass-Pak® switch is critical to make sure the catcher box does not overflow causing the delivery chute to clog. The vertical position can be adjusted by moving the vane on the Grass-Pak® switch.

1. Position the discharge chute so that it is pointing straight back.
 - a. Turn the ignition switch to **ON (RUN)** and move the blade clutch to the **ENGAGED** position (engine not running).
 - b. Open the catcher back door and monitor the spout position (as it oscillates) and move the blade clutch to the **DISENGAGED** position and turn the ignition switch to the **OFF** position.



DANGER

PINCH POINT - SPRING LOADED DOOR

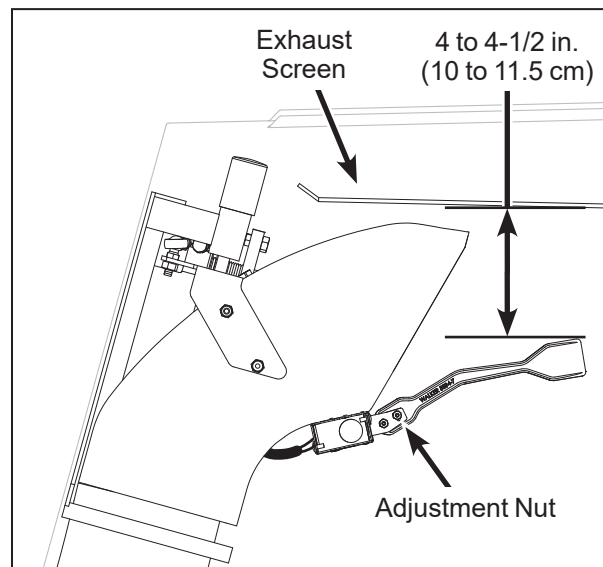
When lowering the door on the GHS catcher, **BE VERY CAREFUL** to keep hands, fingers, etc. out of the hinging mechanism and away from the door frame as the door closes. The springs that hold the door closed during operation are very powerful, and the door can slam shut with considerable force.



WARNING

DO NOT test the Grass-Pak® switch with the engine running. Projectiles **CAN** be thrown out of the grass delivery spout and **CAN** cause serious injury to bystanders or property damage.

2. Measure from the exhaust screen (top of catcher) to the top of the Grass-Pak® switch actuator vane, refer to **Adjusting the Grass-Pak® Switch** illustration. The proper measurement should be between 4 and 4-1/2 inches (10 and 11.5 cm).



**Adjusting the Grass-Pak® Switch
(Side View of Catcher Box)**

3. If adjustment is required, loosen front adjustment nut then move vane to the recommended measurement. Adjustments should be done in very small increments checking the measurement each time until the recommended measurement is achieved.

NOTE: It will not be possible to adjust the switch to give a signal at the precise instant the catcher is full for a wide variety of mowing conditions. For example, wet heavy grass will fill the catcher differently than dry fluffy grass, causing the signal to come on a little sooner or later than usual. Primarily, the switch should be adjusted to give the “full” signal with a **little advance warning before overflowing and clogging** of the grass delivery chute begins (regardless of mowing conditions).

LIMITED WARRANTY FOR WALKER COMMERCIAL RIDER MOWER

1. WHAT THIS WARRANTY COVERS, AND FOR HOW LONG:

Walker Manufacturing company will, at its option, repair or replace, without charge, any part covered by this warranty which is found to be defective in material and/or workmanship within two (2) years* after date of sale to the original retail purchaser unless the product is used for rental purposes, in which case this warranty is limited to ninety (90) days. At Walker's request, customer will make the defective part available for inspection by Walker and/or return the defective part to Walker, transportation charges prepaid. All parts and components of the Walker Mower are covered by this warranty **except** the following components which are warranted separately by their respective manufacturers:

Kubota Engine

The available warranties covering these items are furnished with each mower. Walker does not assume any warranty obligation, liability or modification for these items, which are covered exclusively by the stated warranty of the respective manufacturers noted above.

The Fulbat battery comes with a one (1) year warranty from the date of sale to the original retail purchaser. Warranty claims for the battery are administered through Walker Manufacturing.

★ Extended warranties are offered for the following powertrain components:

- A three (3) year unlimited hour warranty is offered for the Walker P/N 6200-9 Gear Axle Assembly.
- A three (3) year or 3000 hour (whichever comes first) warranty is offered for Model 7 Hydrostatic transmissions; covers full cost of replacement up to 1000 hours of use, and after 1000 hours warranty coverage is prorated against 3000 hours. If the transmissions are serviced at the recommended intervals by an authorized Walker Dealer using only Walker Model 7 Hydro Oil (P/N 6450-21) or Mobil SHC™ 630 oil (P/N 6450-20) and Walker filters (P/N 5024-13), the warranty will be extended to three (3) years, full replacement coverage, and unlimited hours.

2. WHAT THIS WARRANTY DOES NOT COVER:

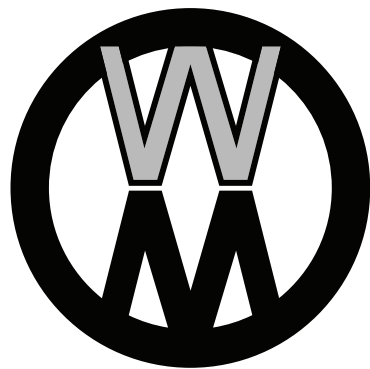
- A. This warranty does not cover defects caused by depreciation or damage caused by normal wear, accidents, improper maintenance, improper use or abuse of the product, alterations, or failure to follow the instructions contained in the Owner's Manual for operation and maintenance.
- B. The customer shall pay any charges for making service calls and/or for transporting the mower to and from the place where the inspection and/or warranty work is performed.

3. HOW TO OBTAIN SERVICE UNDER THIS WARRANTY:

Warranty service can be arranged by contacting the dealer where you purchased the mower or by contacting Walker Manufacturing Company, 5925 East Harmony Road, Ft. Collins, CO 80528. Proof of the date of purchase may be required to verify warranty coverage.

4. WARRANTY LIMITATION:

- A. **THERE IS NO OTHER EXPRESS WARRANTY. ANY WARRANTY THAT MAY BE IMPLIED FROM THIS PURCHASE INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IS HEREBY LIMITED TO THE DURATION OF THIS WARRANTY AND TO THE EXTENT PERMITTED BY LAW ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED.** Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.
- B. **WALKER WILL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES AND/OR EXPENSES IN CONNECTION WITH THE PURCHASE OR USE OF THE MOWER.** Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you.
- C. Only the warranty expressed in this limited warranty shall apply and no dealer, distributor, or individual is authorized to amend, modify, or extend this warranty in any way. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by Walker, and should not be relied upon.
- D. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



WALKER

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