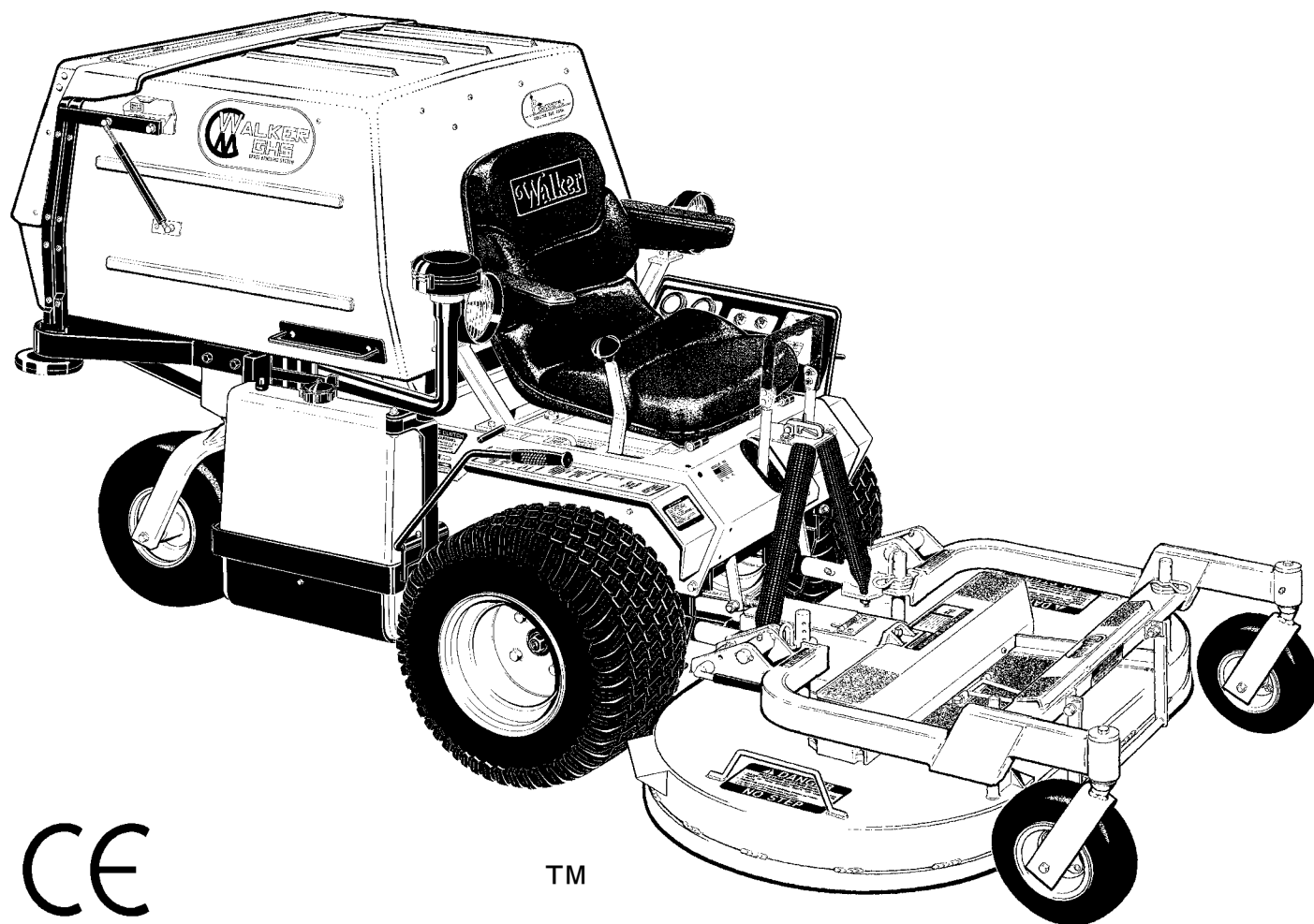


Walker Rider Lawnmowers

OWNER'S MANUAL

Safety, Assembly, Operating, and Maintenance Instructions

Model MDD (20.9 HP Diesel)
Model MDG (24.5 HP Gasoline)
(Covers Serial Numbers 97-29676 and on)



CE

TM

Please Read and Save These Instructions

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

Effective Date: 06-08-99

P/N 7000-4

Price \$5.00



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 us at (970) 221-5614. 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 call our service department, at (970) 221-5614, for clarification before operating or servicing this mower.

This manual covers Model MDD and Model MDG with the following engines, respectively: Kubota D722 20.9 HP diesel engine (liquid cooled) and Kubota WG750 24.5 HP gasoline 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.

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". The signature is written in a cursive, slightly slanted style.

Bob Walker, President

Table of Contents

General Information _____	1
HIGHLIGHTED INFORMATION _____	1
GLOSSARY _____	1
IDENTIFYING NUMBER LOCATIONS _____	1
ENGINE SERIAL NUMBER LOCATION _____	2
SERVICING OF ENGINE AND DRIVETRAIN COMPONENTS _____	2
Specifications _____	3
ENGINE _____	3
ELECTRICAL SYSTEM _____	3
TRANSMISSION _____	3
BLADE DRIVE _____	4
TIRE SIZE _____	4
TIRE PRESSURE _____	5
DIMENSIONS (Tractor and Mower) _____	5
MOWER DECK _____	5
CURB WEIGHT _____	5
DRIVE BELTS _____	6
GHS SYSTEM (Optional) _____	6
SEAT _____	6
FRAME/BODY CONSTRUCTION _____	6
Component Identification _____	7
Safety Instructions _____	13
BEFORE OPERATING _____	13
OPERATING _____	14
MAINTENANCE _____	15
SAFETY, CONTROL, AND INSTRUCTION DECALS _____	17
Assembly Instructions _____	19
SETUP INSTRUCTIONS _____	19
Tire Installation (Tractor) _____	19
Battery Service _____	19
<i>Wet Battery Service</i> _____	19
<i>Dry Battery Service</i> _____	19
<i>Battery Charging</i> _____	20
<i>Battery Installation</i> _____	20
Mower Deck Assembly _____	20
<i>Deck Caster Wheels Installation</i> _____	20
<i>Deck Discharge Chute Installation</i> _____	21
<i>Deck Discharge Shield Installation</i> _____	21
<i>PTO Shaft Guard Installation</i> _____	21
<i>Tilt-Up Roller Wheel Installation</i> _____	21
Mower Deck Installation on Tractor _____	21
<i>Deck Installation</i> _____	21
<i>Deck Leveling</i> _____	23
PREOPERATING CHECKLIST _____	24

Operating Instructions _____	27
CONTROL IDENTIFICATION, LOCATION, AND FUNCTION _____	27
Operating Controls _____	27
<i>Engine Choke</i> _____	27
<i>Engine Throttle</i> _____	28
<i>Forward Speed Control (FSC)</i> _____	28
<i>Steering Levers</i> _____	28
<i>Blade Clutch (PTO)</i> _____	28
<i>Parking Brake</i> _____	28
<i>Front Body Latch Release</i> _____	29
<i>Transmission Lockout Levers</i> _____	29
<i>Cold Start Lever (Jackshaft Drive Belt Release)</i> _____	29
Instrument Panel _____	32
<i>Voltmeter</i> _____	33
<i>Water Temperature Gauge</i> _____	33
<i>Oil Pressure Warning Light</i> _____	33
<i>Water Temperature Warning Light</i> _____	33
<i>Ignition Switch</i> _____	33
<i>Light Switch (For Optional Lights)</i> _____	33
<i>Hourmeter</i> _____	33
<i>Circuit Breakers</i> _____	34
<i>Warning Horn</i> _____	34
STARTING THE ENGINE - MODEL MDD (DIESEL) _____	34
STARTING THE ENGINE - MODEL MDG (GASOLINE) _____	35
ADJUSTING GROUND _____	36
SPEED AND STEERING _____	36
ENGAGING THE MOWER _____	37
STOPPING THE MACHINE _____	38
ADJUSTING CUTTING HEIGHT _____	38
TRANSMISSION LOCKOUT _____	39
RECOMMENDATIONS FOR MOWING _____	39
RECOMMENDATIONS FOR TILT-UP DECK OPERATION/TRANSPORT _____	40
GRASS HANDLING SYSTEM (GHS) _____	42
General Information _____	43
Clogging Checklist _____	44
Using the Tilt-Up Deck _____	45
Using the GHS Catcher _____	45
<i>Powerfil</i> ® _____	45
<i>"Full" Signal Horn</i> _____	45
Cleaning the GHS Exhaust Screen _____	45
Dumping the Catcher _____	45
<i>Tailgate Dumping</i> _____	45
<i>Using the Dump Bag</i> _____	46
<i>Power Dump Option</i> _____	47
Maintenance Instructions _____	49
MAINTENANCE SCHEDULE CHART - MODEL MDD _____	49

Table of Contents

MAINTENANCE SCHEDULE CHART - MODEL MDG _____	50	Radiator Hoses and Clamps _____	68
IMPORTANT TIPS		Engine Valve Clearance _____	68
FOR CARE OF THE KUBOTA ENGINE _____	51	Fuel Injection Nozzle Pressure - Model MDD _____	68
Fuel System _____	51	Fuel Valve Solenoid - Model MDD _____	68
Starting/Stopping _____	51	Blade Brake Action _____	69
Cooling System _____	51	REPLACING/REPAIRING _____	69
Air Cleaner System _____	51	Drive Belts _____	69
Oil _____	51	<i>Engine PTO Drive Belt</i> _____	71
LUBRICATION _____	52	<i>Jackshaft Drive Belt</i> _____	72
Engine Oil _____	52	<i>GHS Blower Drive Belt</i> _____	73
<i>Engine Break-In Oil</i> _____	52	<i>Hydrostatic Ground Drive Belt</i> _____	74
<i>Checking Engine Crankcase Oil Level</i> _____	52	<i>Engine Fan Belt</i> _____	75
<i>Changing Engine Crankcase Oil/Oil Filter</i> _____	52	Fuel Filter - Model MDD _____	76
Grease Fitting and Oil Point Lubrication _____	53	Fuel Filter - Model MDG _____	76
Mower Deck Gearbox Lubrication _____	56	Blade Overload Shear Bolts _____	76
DSD52 or DSD62 Mower		PTO Shear Pin _____	77
Deck Lubrication _____	56	Mower Blades _____	77
Tractor PTO Gearbox Lubrication _____	57	Mower Deck Gearbox Replacement _____	78
<i>Checking Gearbox Oil Level</i> _____	57	GHS Blower Assembly _____	79
<i>Changing Gearbox Oil</i> _____	57	<i>GHS Blower Assembly Removal</i> _____	79
Gear Axle Lubrication _____	57	<i>Blower Wheel Removal</i> _____	79
Hydrostatic Transmission Fluid _____	58	<i>Blower Wheel Installation</i> _____	80
<i>Checking Hydrostatic</i>		<i>GHS Blower Assembly Installation</i> _____	80
<i>Transmission Fluid Level</i> _____	58	Replacing Fuel Valve Solenoid _____	80
<i>Changing Hydrostatic Transmission Fluid</i> _____	58	ADJUSTMENTS _____	80
CLEANING _____	59	Safety Switches _____	80
Engine Air Cleaner System _____	59	<i>Seat Switch</i> _____	81
<i>Turbine Precleaner</i> _____	60	<i>FSC Neutral-Park Switch</i> _____	81
<i>Donaldson Radialseal™ Air Cleaner</i> _____	60	<i>PTO Switch</i> _____	81
Engine Cooling System _____	62	Tail Wheel Bearing Preload _____	81
<i>Radiator Screen and Cooling Fins</i> _____	62	Steering Levers _____	81
<i>Flushing Radiator and Changing Coolant</i> _____	62	Blade Clutch (PTO) _____	81
Grass Buildup in Mower Housing _____	62	<i>Clutch Disengagement/Brake Action</i> _____	81
GHS Blower _____	63	<i>Clutch Engagement/Belt Tension</i> _____	82
GHS Exhaust Screen _____	64	Transmission Control _____	83
Hydrostatic Transmission Cooling Fins _____	64	<i>Set Forward Travel Limit (Stop)</i> _____	83
CHECKING/SERVICING _____	64	<i>Steering Lever End Play Adjustment</i> _____	83
Engine Cooling System _____	64	<i>Neutral Function Adjustment</i> _____	83
<i>Coolant Level</i> _____	64	<i>Straight Ground Travel Adjustment</i> _____	84
<i>Fan Belt Tension</i> _____	65	Forward Speed Control Friction Lock _____	84
Security of Air Filtration Components _____	65	Tilt-Up Deck Adjustable Stop _____	85
Battery _____	65	Fuel Valve Solenoid Linkage - Model MDD _____	85
<i>Electrolyte Level</i> _____	65	Carburetor - Model MDG _____	85
<i>Cleaning the Terminals</i> _____	65	GHS "Full" Signal Horn with Grass-Pak® Switch _____	87
<i>Charging the Battery</i> _____	65	ELECTRICAL SYSTEM _____	88
Tire Pressure _____	66	Circuit Breakers _____	88
Sharpen Mower Blades _____	66	Wiring Diagram - Model MDD _____	89
Drive Belts _____	67	Wiring Diagram - Model MDG _____	90
Mower Deck Gearbox Oil Seals _____	67	Warranty _____	91
Spark Plugs - Model MDG _____	67		
Ignition Wires - Model MDG _____	67		
Breaker Points - Model MDG _____	68		
Fuel Lines and Clamps _____	68		

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** 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, blade drive gearboxes, 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)** mows but does not collect the mowed material.
- **STEERING LEVERS** steer the tractor by controlling the dual hydrostatic transmissions.
- **TRACTOR** is the prime mover, including the engine, drive train, operator seat, and controls to operate the mower.
- **TRANSMISSION LOCKOUT** releases the hydrostatic transmissions to permit freewheeling the tractor.

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 RH side of the RH 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.

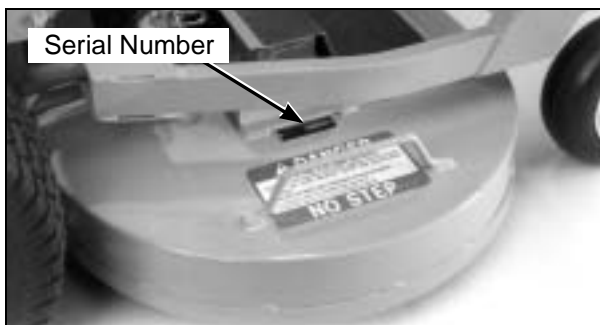
Tractor Model No.	_____
Tractor Serial No.	_____
Deck Serial No.	_____
Engine Model No.	_____
Engine Serial No.	_____
Date of Purchase	_____

Fill In By Purchaser

General Information



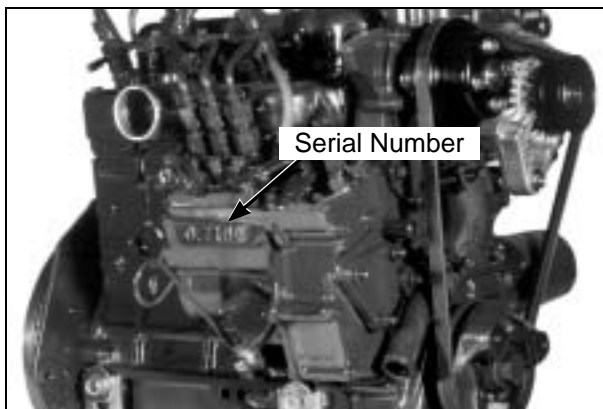
Tractor Serial Number Location



Mower Deck Serial Number Location

ENGINE SERIAL NUMBER LOCATION

Refer to the engine manual that accompanies this manual for the location of the engine serial number. For the mower model covered by this manual, an engine manual is available covering the Kubota D722 diesel engine (liquid cooled) and the Kubota WG750 gasoline engine (liquid cooled).



Engine Serial Number Location

SERVICING OF ENGINE AND DRIVETRAIN 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

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

Kubota Engines

Kubota Tractor Corp.

1300 Remington Road
Schaumburg, IL 60173

Hydrostatic
Transmissions

Eaton Corporation

15151 Highway 5
Eden Prairie, MN 55344

Gearboxes (Deck)

Tecumseh Products Co.

900 North Street
Grafton, WI 53024

Specifications

MODEL	MDD	MDG
ENGINE		
Manufacturer/Model	Kubota D722, 3 Cyl., Diesel (Liquid Cooled)	Kubota WG750-B, 3 Cyl., Gasoline (Liquid Cooled)
Displacement	44.0 cu. in. (722 cc)	36.61 cu. in. (600 cc)
HP (@ 3600 RPM)	20.9	24.5
Max. RPM (No Load)	3800	3850
Governed RPM	3600	3600
Max. Torque [ft-lb (N·m) @ RPM]	34 (46.1) @ 2600	30.5 (41.4) @ 2800
Idle RPM	1000 ± 50	1200 ± 50
Spark Plug Type	N/A	NGK BCP4ES-11
Spark Plug Gap	N/A	.043 in. (1.09 mm)
Crankcase Capacity	3.1 qts (2.9 liters)	3.1 qts (2.9 liters)
Crankcase Lubricant	API CC/CD/CE Grade Oil Only with 10W-30 Viscosity or 30W above 77° F (25° C) Only	API SF Grade Oil Only with 10W-30 Viscosity or 30W above 77° F (25° C) Only
Fuel Tank Capacity	4.3 Gallons (16.3 liters)	4.3 Gallons (16.3 liters)
Fuel	Diesel Fuel Oil 2-D	Regular Grade Unleaded Gasoline (87 Octane)
Cooling System Capacity (Approx.)	1.0 Gallon (3.8 liters)	1.0 Gallon (3.8 liters)
Coolant	50/50 Pre-Mix Antifreeze/ Water	50/50 Pre-Mix Antifreeze/ Water
ELECTRICAL SYSTEM		
Battery	12 Volt, 41AH, 340 CCA (Interstate U1-SP40)	12 Volt, 41AH, 340 CCA (Interstate U1-SP40)
Charging System	Automotive Type Alternator	Automotive Type Alternator
Charging Output	12.5 Amp DC (Regulated)	12.5 Amp DC (Regulated)
System Polarity	Negative Ground	Negative Ground
Ignition	Diesel with Glow Plugs	Transistorized (No Points)
Starter	12 Volt Electric Ring-Gear Type, Solenoid Shift	12 Volt Electric Ring-Gear Type, Solenoid Shift
Interlock Switch	Ignition Lockout by Seat Switch, Transmission Neutral and Blade Clutch	Ignition Lockout by Seat Switch, Transmission Neutral and Blade Clutch
Circuit Breaker	Manual Reset (40A)	Manual Reset (30A)
TRANSMISSION		
Manufacturer/Model	Dual Hydrostatic, Eaton Model 7, Each Wheel Independently Driven	Dual Hydrostatic, Eaton Model 7, Each Wheel Independently Driven
Steering	Hand Lever Control / Individual Wheel	Hand Lever Control / Individual Wheel

Specifications

MODEL	MDD	MDG
TRANSMISSION (continued)		
Forward Speed Control	Precision Friction Lock Lever, Cruise Control, with Neutral-Park Position	Precision Friction Lock Lever, Cruise Control, with Neutral-Park Position
Service Brake	Dynamic Braking through Hydrostatic Transmission	Dynamic Braking through Hydrostatic Transmission
Parking Brake	Mechanical Pin Lock in Transmission Gear	Mechanical Pin Lock in Transmission Gear
Neutral	Transmission Release by Manual Dump Valve	Transmission Release by Manual Dump Valve
Final Drive	Gear Drive Axle	Gear Drive Axle
Transmission Fluid		
Factory Service	SAE 30W Straight Viscosity Motor Oil (Mobil DTE 18M Hydraulic Oil Installed at Factory)	SAE 30W Straight Viscosity Motor Oil (Mobil DTE 18M Hydraulic Oil Installed at Factory)
Alternate Transmission Fluid	Mobil 1 Synthetic Motor Oil (5W30)	Mobil 1 Synthetic Motor Oil (5W30)
Transmission Fluid Capacity	1 qt (1 liter)	1 qt (1 liter)
Transmission Cooling	Cooling Fan Mounted on Drive Pulley	Cooling Fan Mounted on Drive Pulley
Ground Travel Speed		
Forward m.p.h. (km/h)	0-5 (0-8) Infinitely Variable	0-5 (0-8) Infinitely Variable
Reverse m.p.h. (km/h)	0-5 (0-8) Infinitely Variable	0-5 (0-8) Infinitely Variable
BLADE DRIVE		
PTO Shaft	Quick Disconnect Rectangular Shaft with Two High-Speed U-Joints	Quick Disconnect Rectangular Shaft with Two High-Speed U-Joints
Blade Spindle	Each Blade (2) Mounts Direct on Peerless Right Angle Gearbox with Tee Gearbox in Center Connected to PTO Shaft (Complete Geared Drive, Peerless Model 1000 Gearboxes)	Each Blade (2) Mounts Direct on Peerless Right Angle Gearbox with Tee Gearbox in Center Connected to PTO Shaft (Complete Geared Drive, Peerless Model 1000 Gearboxes)
Blade Drive Clutch and Brake	Manual Belt Tightener Clutch and Band Brake (Stops Blades within Five (5) Seconds of Disengagement)	Manual Belt Tightener Clutch and Band Brake (Stops Blades within Five (5) Seconds of Disengagement)
Max. Blade Speed [25 in. (64 cm) Blade] @ 3600 RPM Engine	2400 RPM [15700 FPM (4785 m/min)]	2400 RPM [15700 FPM (4785 m/min)]
TIRE SIZE		
Deck Caster Wheel	2.80/2.50-4 Pneumatic (4-Ply)	2.80/2.50-4 Pneumatic (4-Ply)
Deck Caster Wheel (Optional)	8.25 x 2.75 Semi-Pneumatic	8.25 x 2.75 Semi-Pneumatic
Drive	18 x 9.50-8 (4-Ply)	18 x 9.50-8 (4-Ply)
Rear (Dual)	13 x 5.00-6 (4-Ply)	13 x 5.00-6 (4-Ply)

Specifications

MODEL	MDD	MDG
TIRE PRESSURE		
Deck Caster Wheel	20 PSI (137 kPa)	20 PSI (137 kPa)
Drive	15 PSI (103 kPa)	15 PSI (103 kPa)
Rear	20 PSI (137 kPa)	20 PSI (137 kPa)
DIMENSIONS (Tractor and Mower)*		
Length	91 in. (231 cm)	91 in. (231 cm)
Width	49 in. (124 cm)	49 in. (124 cm)
Height	44 in. (112 cm)	44 in. (112 cm)
Wheel Base (Tractor)	42-1/4 in. (107 cm)	42-1/4 in. (107 cm)
Tread Width (Tractor)	29-3/4 in. (76 cm)	29-3/4 in. (76 cm)
MOWER DECK		
Width of Cut SD/GHS	42 or 48 in. (107 or 122 cm)	42 or 48 in. (107 or 122 cm)
Cutting Height	1 to 4 in. (3 to 10 cm)	1 to 4 in. (3 to 10 cm)
Height Adjustment	7 Positions - 1/2 in. (1 cm) Increment Hitch Pins Installed in Multi-Position Deck Support	7 Positions - 1/2 in. (1 cm) Increment Hitch Pins Installed in Multi-Position Deck Support
Blade Size (Typical)		
42 in. (107 cm) SD	22 in. (56 cm) 2 in. (5 cm) Center Overlap (Two Blades, CW Rotation)	22 in. (56 cm) 2 in. (5 cm) Center Overlap (Two Blades, CW Rotation)
48 in. (122 cm) GHS	25 in. (64 cm) 2 in. (5 cm) Center Overlap (Two Blades, Counter Rotate)	25 in. (64 cm) 2 in. (5 cm) Center Overlap (Two Blades, Counter Rotate)
Deck Suspension	Torsion-Flex Frame with Caster Wheels and Counterweight Springs	Torsion-Flex Frame with Caster Wheels and Counterweight Springs
CURB WEIGHT (Approximate)		
SD Tractor Only	760 lb (345 kg)	740 lb (336 kg)
GHS Tractor Only	850 lb (386 kg)	830 lb (376 kg)
Tractor and Mower*	1050 lb (476 kg)	1030 lb (467 kg)

*Dimensions and weight shown are for 48 in. (122 cm) GHS Model (typical).

Dimensions for Tractor and Mower with 42 in. (107 cm) deck are:

Length = 88 in. (224 cm)

Width = 43 in. (110 cm)

For SD Models, subtract 7 in. (18 cm) from the height.

Deck weight for 48 in. (122 cm) Tilt-Up deck = 205 lb (93 kg). Deck sizes range from 42 to 62 in.

(107 to 157 cm), with corresponding deck weights ranging from 170 to 300 lb (77 to 136 kg).

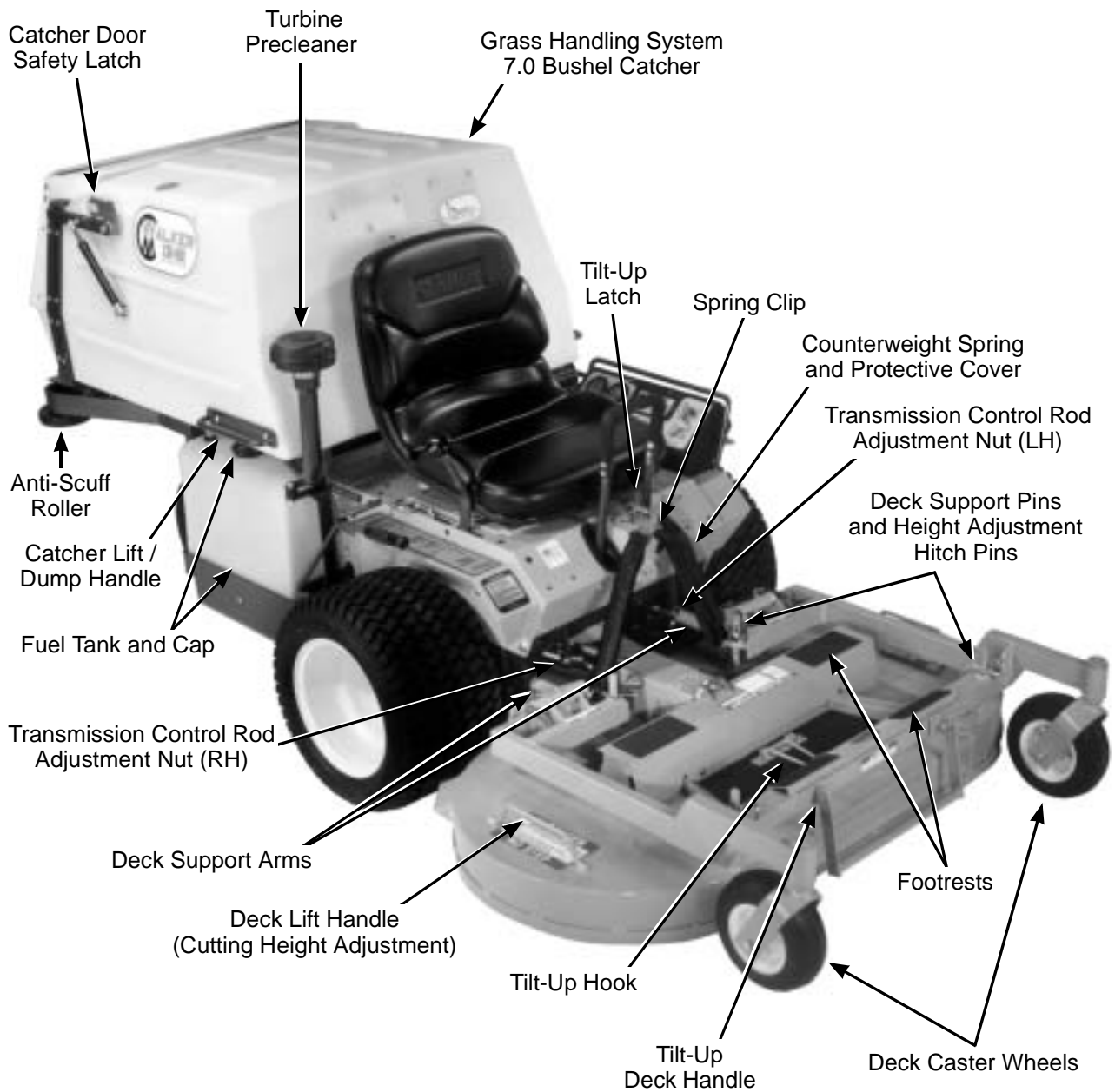
Optional (9.5 Bushel) Grass Catcher adds approx. 5 lb (2 kg) and 5 in. (13 cm) in Height

Specifications

MODEL	MDD	MDG
DRIVE BELTS		
Engine PTO	Walker P/N 7230 Special Gates Power Band	Walker P/N 7230 Special Gates Power Band
Jackshaft Drive	Gates 3VX335 (P/N 7231)	Gates 3VX335 (P/N 7231)
Ground Drive	Walker P/N 7235 or Gates A45	Walker P/N 7235 or Gates A45
Blower (GHS Model)	Gates 3VX280 (P/N 7234)	Gates 3VX280 (P/N 7234)
GHS SYSTEM (Optional)		
Blower	4 x 10 x 1/4 in. (10 x 25 x 1 cm) Three-Blade Paddle Wheel (Driven by Mower Engine)	4 x 10 x 1/4 in. (10 x 25 x 1 cm) Three-Blade Paddle Wheel (Driven by Mower Engine)
Blower Brake	Band Brake (Works in Combi- nation with PTO Clutch, Stops Blower within Five (5) Seconds of PTO Disengagement)	Band Brake (Works in Combi- nation with PTO Clutch, Stops Blower within Five (5) Seconds of PTO Disengagement)
Max. Blower Speed	3600 RPM	3600 RPM
Grass Catcher Capacity	65 Gallons (246 liters)/ 7.0 Bushels	65 Gallons (246 liters)/ 7.0 Bushels
Optional Grass Catcher Capacity	89 Gallons (335 liters)/ 9.5 Bushels	89 Gallons (335 liters)/ 9.5 Bushels
Full Signal	Oscillating Vane Switch Mounted on Grass Delivery Spout Triggers Horn Signal	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 @ 25 Cycles/Minute	Oscillating Delivery Spout Driven by 12 Volt Electric Gearmotor Spreads Material throughout Interior of Catcher @ 25 Cycles/Minute
SEAT		
	Contour-Molded, with Nylon Backed Vinyl Cover and Integral Foam Cushion	Contour-Molded, with Nylon Backed Vinyl Cover and Integral Foam Cushion
FRAME/BODY CONSTRUCTION		
Frame	All Welded Unitized Steel Chassis	All Welded Unitized Steel Chassis
Body	14 Gauge Steel	14 Gauge Steel
Deck	11 Gauge Steel	11 Gauge Steel
GHS Catcher and Chutes	Molded Cross-Linked Polyethylene (UV Stabilized)	Molded Cross-Linked Polyethylene (UV Stabilized)
NOTE: The manufacturer reserves the right to make changes in specifications shown herein at any time without notice or obligation.		

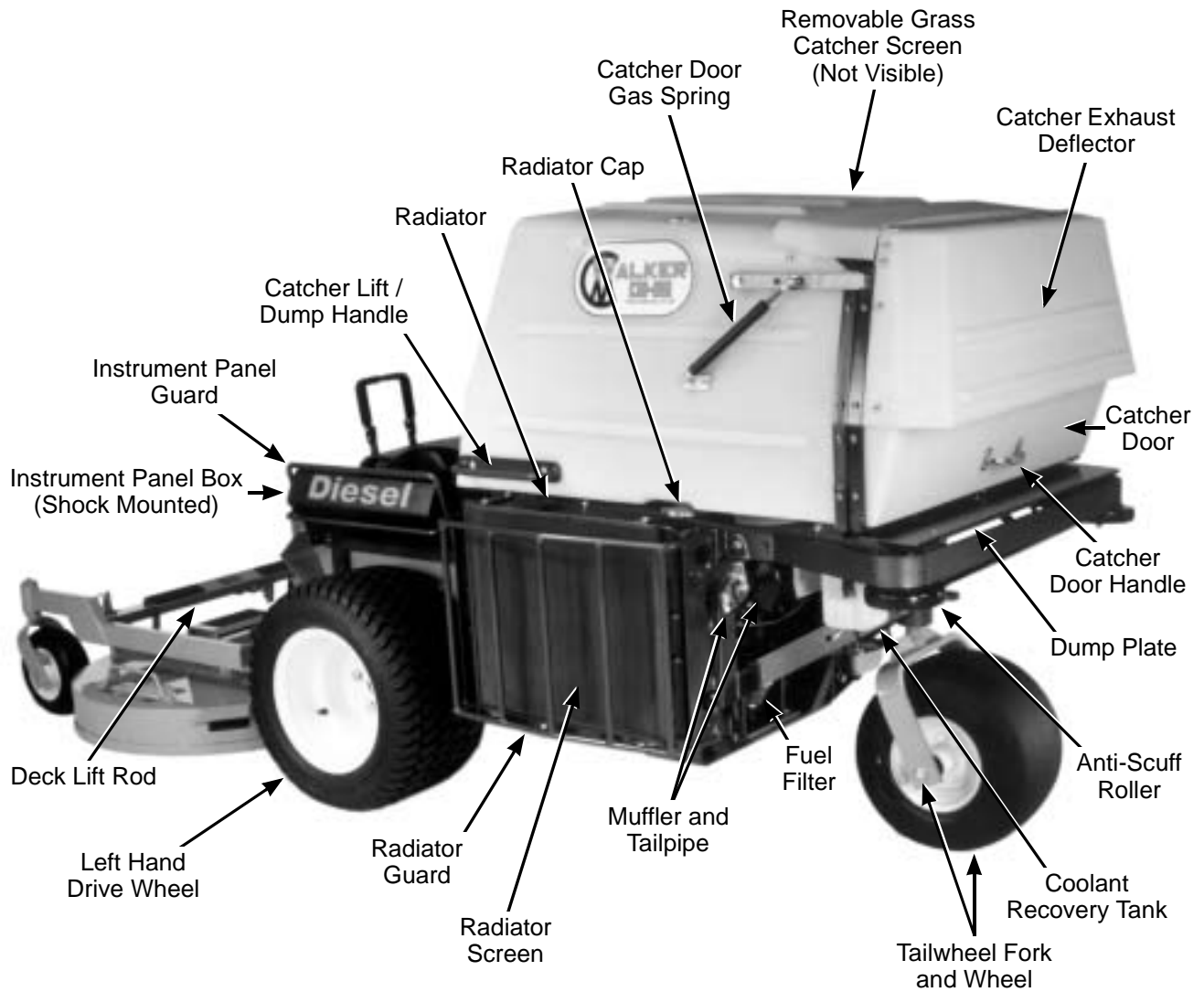
Component Identification

NOTE: Control Identification shown in **Operating Instructions** section.



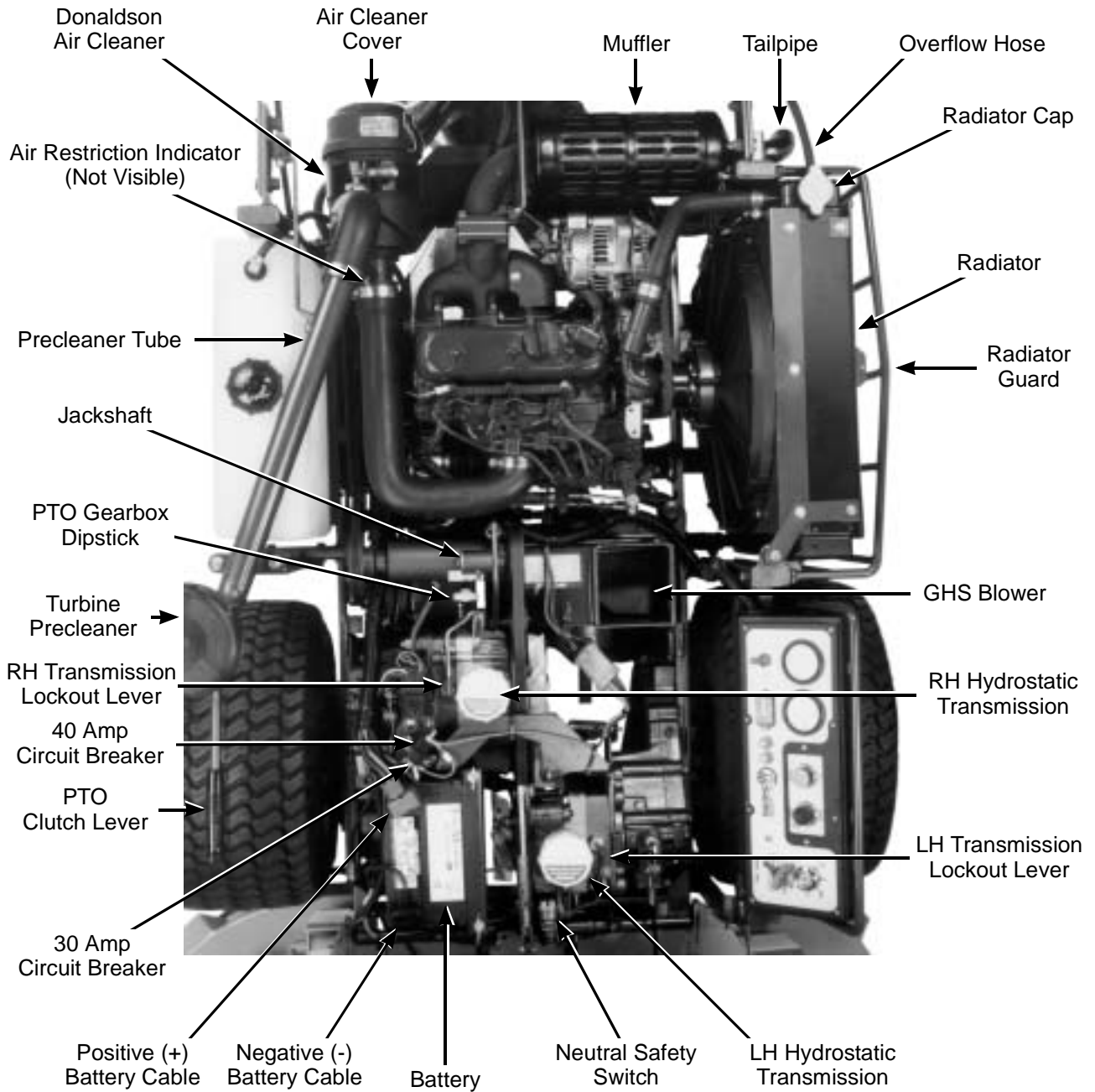
Front View and Right Side View

Component Identification



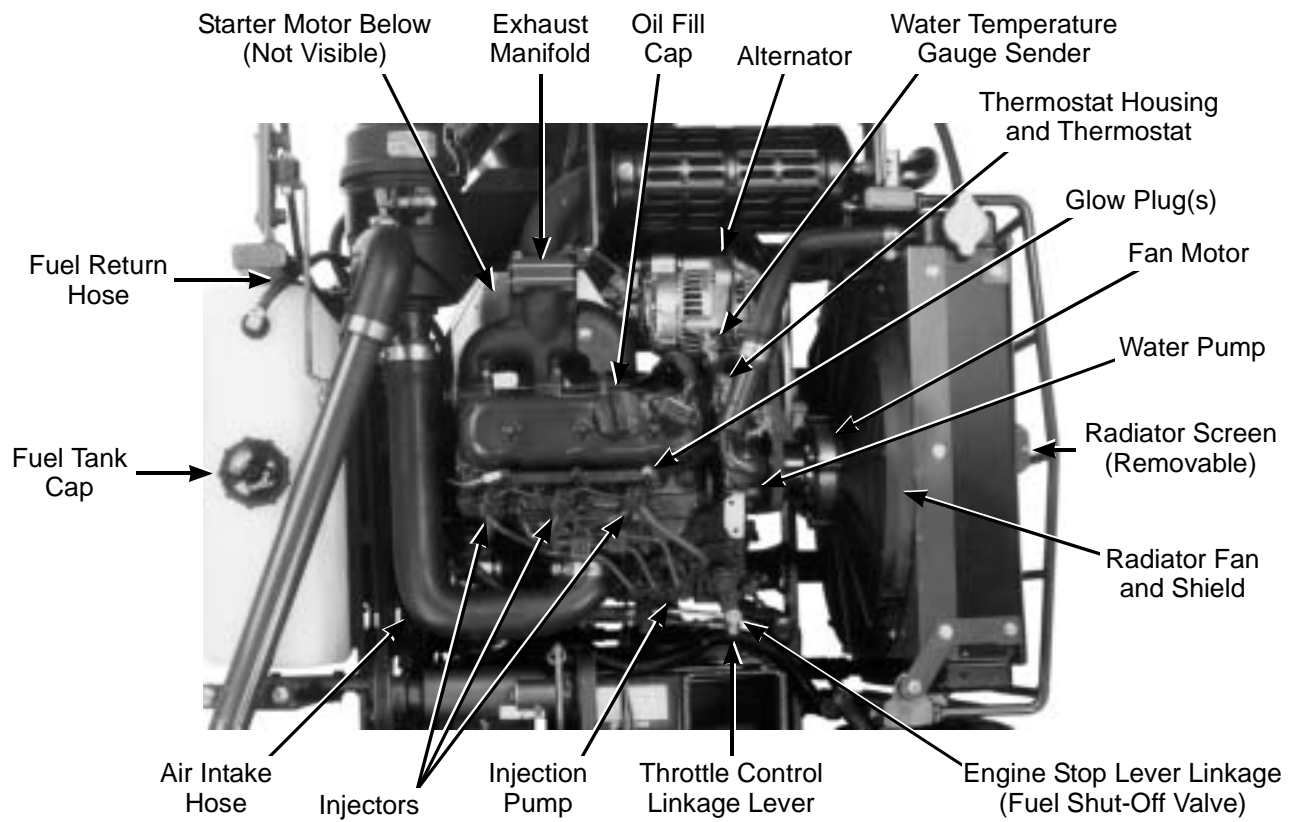
Rear View and Left Side View

Component Identification



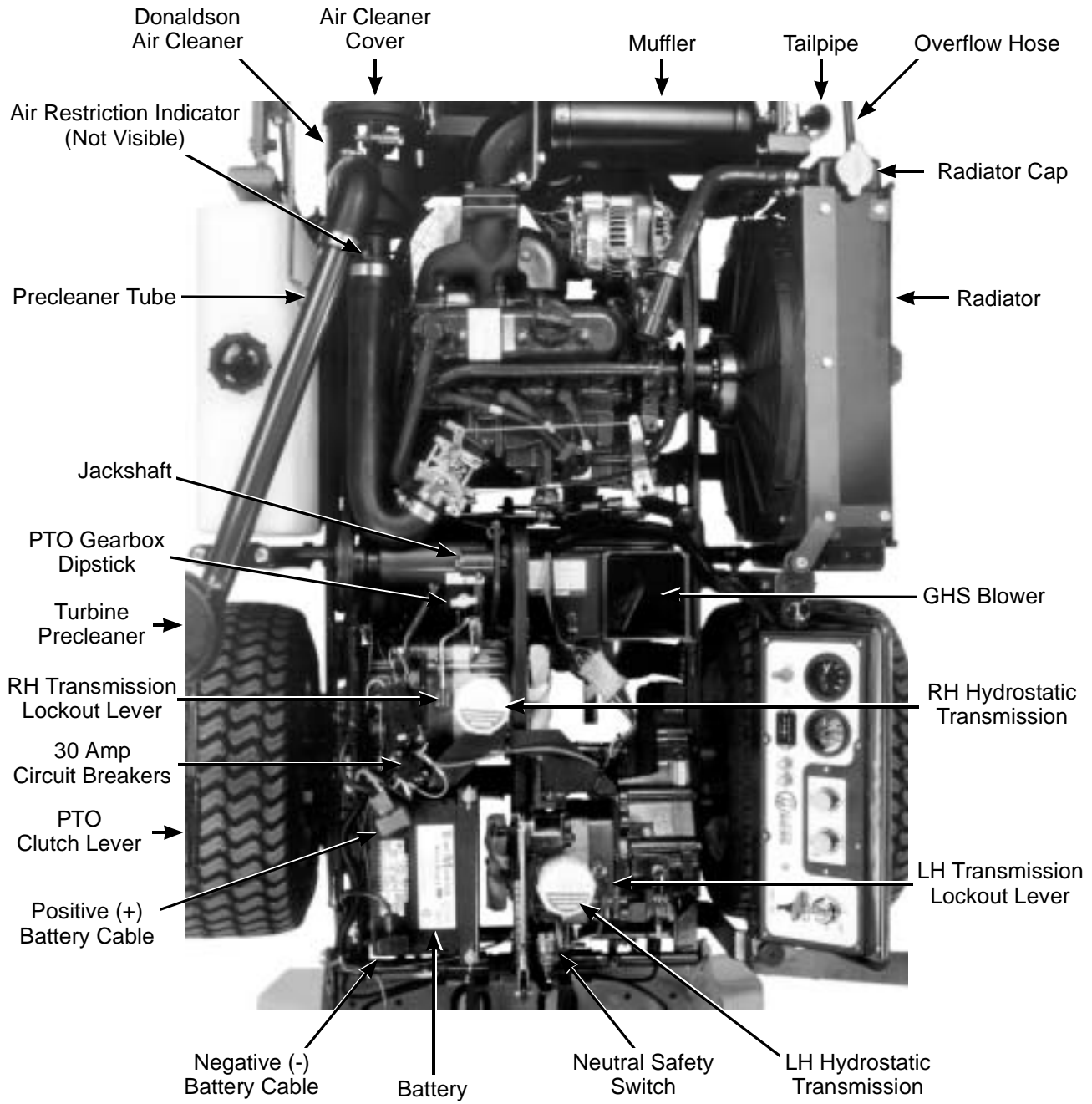
Top View (Engine Compartment) Model MDD

Component Identification



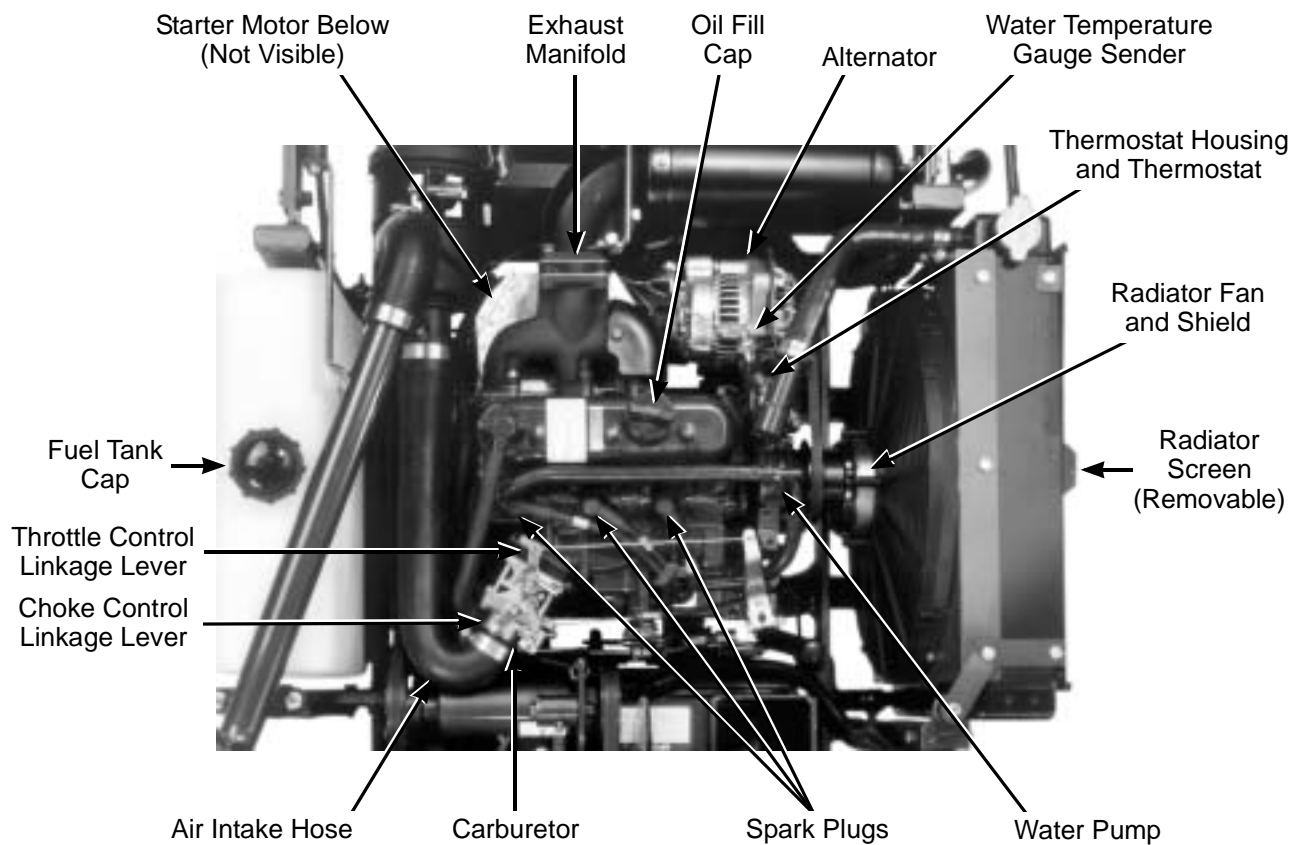
Top View (Engine Compartment) Model MDD

Component Identification



Top View (Engine Compartment) Model MDG


Component Identification



Top View (Engine Compartment) Model MDG

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 Owner'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 Owner'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 light-weight footwear. **Wear substantial protective footwear.**

Safety Instructions

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, and the PTO clutch is in the **DISENGAGED** position. Also, the engine should stop if the operator lifts off the seat with the PTO clutch in the **ENGAGED** position.
10. **Handle gasoline or diesel fuel with care.** Gasoline is highly flammable and its vapors are explosive:
 - 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.

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.
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.
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. Disengage the blade clutch and put the FSC in the **NEUTRAL-PARK** position before starting the engine (an ignition interlock switch normally prevents starting of the machine if these controls are in the **OPERATING** position).
6. **Do not run the engine in a confined area without adequate ventilation.** Exhaust fumes are hazardous and can be deadly.
7. **Do not carry passengers** - maximum seating capacity is one (1) person.
8. 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.
9. **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.

Safety Instructions

10. Disengage the blade drive when transporting the machine across drives, sidewalks, etc. **Never raise the mower deck while blades are rotating.**
11. **The maximum recommended side slope operating angle is 20 degrees or 33% 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.
12. **Never adjust cutting height with the engine running. Before** adjusting cutting height or servicing, disengage the blade clutch (PTO), 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.
13. For side discharge mower decks, **do not operate with the grass deflector chute removed.** Keep the deflector in the lowest possible position.
14. For tractors equipped with tilt-up deck, **observe the following recommendations:**
 - a. Do not move tractor with deck in tilt-up position.
 - b. Never tilt body forward with deck in tilt-up position.
15. 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.
16. 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 is held closed with springs and the door may slam shut with considerable force.

17. **In case of a clogged or plugged mower deck or GHS catching system:**
 - a. Disengage the blade clutch (PTO) and turn the engine off before leaving the seat.
 - b. **LOOK** to make sure blade drive shaft and blower drive pulley movement has stopped before trying to unclog the system.
 - c. Disconnect the electrical plug on the fuel shut-off solenoid (MDD) or the spark plug wires (MDG).
 - d. Never place hands under the deck or in the GHS blower - use a stick or similar tool to remove clogged material.
18. If the cutting blades strike a solid object or the machine begins to vibrate abnormally, **immediately disengage the blade clutch (PTO), stop the engine, and wait for all moving parts to stop.** To prevent accidental starting, disconnect the electrical plug on the fuel shut-off solenoid (MDD) or the spark plug wires (MDG). 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 ft-lb (81.3 N·m).
19. **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.
20. **Never remove the radiator pressure cap when the engine is hot** (hot water may spray and cause burns).
21. **Do not use ether or any starting fluid** to assist starting the engine in cold weather.
22. When leaving the machine unattended, **disengage the blade clutch (PTO), stop the engine, and remove the key.**

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 electrical plug on the fuel shut-off solenoid (MDD) or the spark plug wires (MDG).

Safety Instructions

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. For Model MDD (Diesel Engine), 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.
8. 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.
9. Never attempt to disconnect any safety devices or defeat the purpose of these safety devices.
10. Do not change the engine governor settings or overspeed the engine. The governor has been factory-set for maximum-safe engine operating speed.
11. **Use genuine factory replacement parts.** Substitute parts may result in product malfunction and possible injury to the operator and/or others.
12. **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, so gases produced while charging can dissipate. Make sure the battery vents in the caps are open.
 - 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.

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

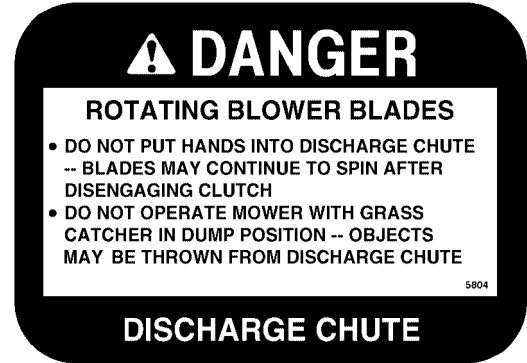
Safety Instructions

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.



Each End of Mower Deck (5808)



Adjacent to Blower Discharge Chute through Body (5804)



SD Deck Discharge Shield (5848)



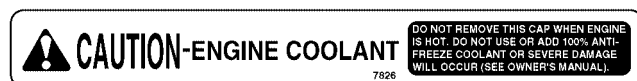
Front Body Adjacent to RH Steering Lever (7818)



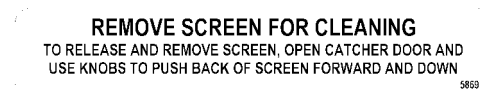
Hydrostat Oil Reservoir (5810-2)



On Body Adjacent to Clutch Control Lever (5806)



Radiator Screen Frame Near Radiator Fill Cap (7826)



Rear of Grass Catcher Exhaust Screen (5869)



Right Side of Front Body, Below Front Body Latch Release (7820)

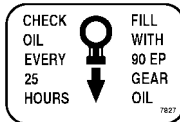


Rear Cross Member of Front Body (8825)

Safety Instructions

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.



Jackshaft Support Adjacent to Dipstick (7827)



Deck Carrier Frame (8647)



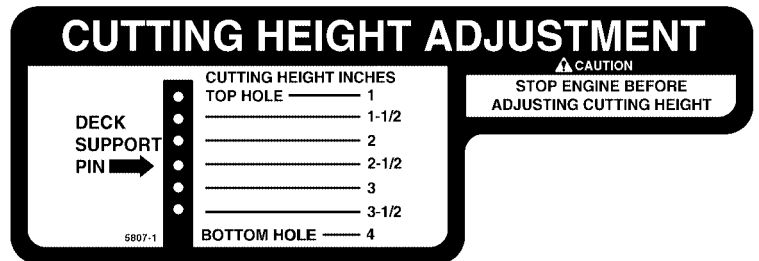
Deck Carrier Frame (5865)



Top of Blower Housing (5819)



Catcher Door Hinge Bar, LH and RH Sides (5868)



Deck Gearbox Cover (5807-1)



LH Side of Body, Above Muffler (5805)



Deck Carrier Frame (8653)



Gear Axle (5810-1)



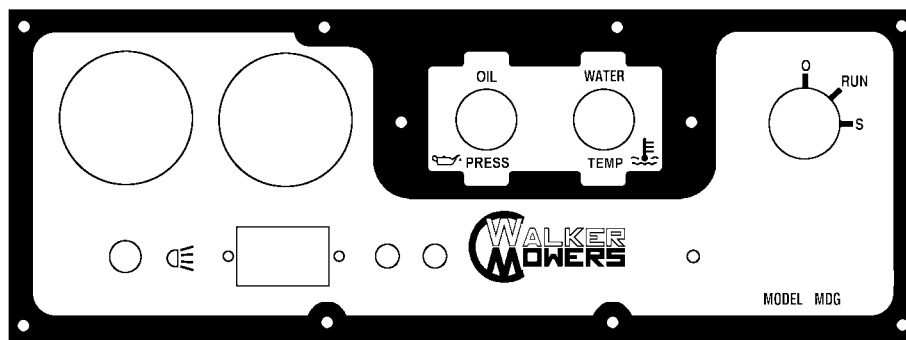
Catcher Safety Latch, RH Side (5874)



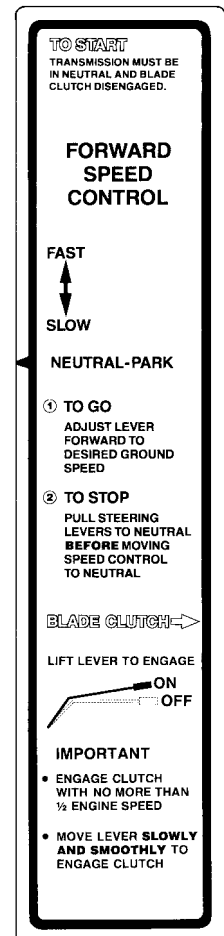
Right Side, Below Operator Seat (7809)



Left Side of Operator Seat (7819)



Instrument Panel: Model MDD (7823-2)
Model MDG (7823-3)



Fender, RH Side (7802)

Assembly Instructions

SETUP INSTRUCTIONS

Walker Mowers are shipped partially assembled. After uncrating the tractor and mower deck, initial setup is required.

NOTE: During the process of unpacking, any damaged or missing parts should be noted and reported to the delivering carrier immediately (put in writing within 15 days). The carrier will provide directions for proceeding with a claim to receive compensation for damage.

Tire Installation (Tractor)

- Install the drive tires using the eight (8) lug bolts that are supplied with the owner's packet of materials. Drive tires are 18 x 9.50-8, 4-ply; rear tires are 13 x 5.00-6, 4-ply.
- Check and adjust the inflation of the tires. The tire inflation recommendations are:

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

Battery Service

Raise front mower body up for battery access (refer to *Front Body Latch Release* in **Operating Instructions**). Check the battery for electrolyte level and charge. The electrolyte level should be at the bottom of the vent wells [1/4 to 1/2 in. (6 to 13 mm) above plates]. If the specific gravity is less than 1.225, the battery needs charging. If the battery has been shipped dry, or is wet but needs service, refer to the following instructions.

Wet Battery Service

If the battery has been shipped wet, but the electrolyte level is low or the battery needs to be charged then:

1. Fill each battery cell with drinking water to the bottom of the vent wells.
2. Charge battery. Refer to *Battery Charging* in this section.

Dry Battery Service



DANGER

Activating a battery can be dangerous. The battery should be taken to a reliable service station, battery store, or power equipment dealer where a trained technician can activate the battery safely. **DO NOT attempt to activate the battery unless you are experienced in battery service work.** The following activation and charging instructions are provided for use by a trained battery technician.



DANGER

Battery electrolyte is a poisonous and corrosive sulfuric acid solution.

- Avoid spillage and contact with skin, eyes, and clothing - causes severe burns.
- To prevent accidents, wear safety goggles and rubber gloves when working with electrolyte.
- Neutralize acid spills with baking soda and water solution.

To fill (activate) battery with electrolyte (if battery has been shipped dry):

1. Remove the battery hold down bar, disconnect the battery cables and lift the battery out of the tray.
IMPORTANT: Battery must be removed from the mower before filling with electrolyte.
IMPORTANT: Obtain and use only battery grade sulfuric acid electrolyte with a 1.265 specific gravity to activate the battery. **DO NOT** use water or any other liquid during initial activation.
2. Remove the filler caps and carefully fill each cell until the electrolyte is just above the plates.
3. After the battery is filled with electrolyte, replace the filler caps and charge the battery. Refer to *Battery Charging*.

Assembly Instructions

Battery Charging



BATTERIES PRODUCE EXPLOSIVE GASES

- Charge the battery in a well-ventilated area, so that gases produced while charging can dissipate.
- Keep sparks, flames, and smoking materials away from the battery at all times.
- Make sure the battery cap vents are open after the battery is filled with acid (check manifold vent on each cap).
- Make sure the battery charger is unplugged before connecting or disconnecting cables to the battery.

1. Charge the battery at 15 amps for 10 minutes. **DO NOT** exceed 20 amps maximum recommended charging rate. Charge until specific gravity is at least 1.250. Total charging time should not exceed one (1) hour.
2. After charging the battery, adjust the electrolyte level to the bottom of the vent wells [1/4 to 1/2 in. (6 to 13 mm) above the plates].

IMPORTANT: DO NOT overfill the battery. Electrolyte will overflow through the vented caps onto parts of the machine and **WILL** result in severe corrosion.

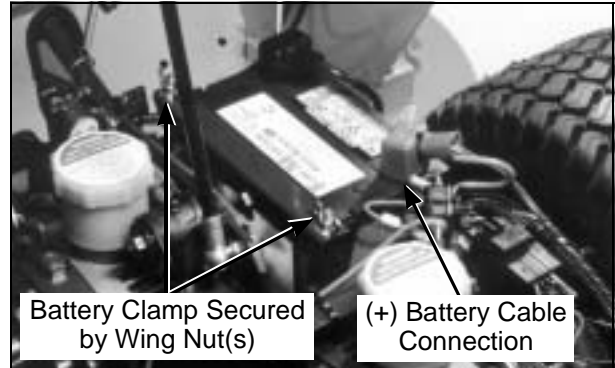
3. Install battery.

Battery Installation

Install the battery in the mower as shown in **Battery Installation** photo. Connect the positive and negative cables to the proper battery terminal [**red cable and boot connects 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**.



Make sure the battery cap vents are open. Improper venting of the battery COULD cause a battery explosion.



Battery Installation

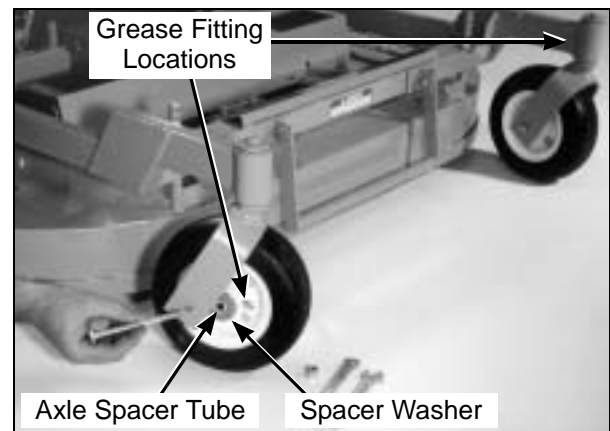
Mower Deck Assembly

Deck Caster Wheels Installation

1. Remove the bolt, nut, axle spacer tube, and spacer washers from each deck caster wheel fork.

NOTE: Spacer washers are used only when the optional semi-pneumatic deck wheels (8.25 x 2.75) are installed.

2. Fit the axle spacer tube through the wheel hub, position the spacer washer on each side of the hub (if used), and fit the 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 in. Keps nut.
4. Tighten the bolt and nut until the axle spacer tube bottoms against the inside of the wheel fork (will not turn) while the wheel and spacer washers (if used) spin freely without binding.



Deck Caster Wheel Installation

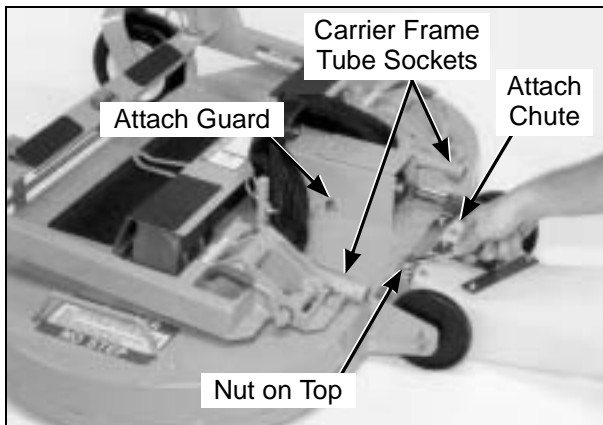
Assembly Instructions

NOTE: If semi-pneumatic wheels are installed, make sure the spacer washers fit over the spacer tube and are not caught between the fork and the end of the tube. The washers should move freely on the axle spacer tube.

- Grease the caster wheel bearings and caster pivot bearings - one grease fitting for each wheel and each pivot.

Deck Discharge Chute Installation (GHS Rear Discharge Models Only)

Mount the discharge chute hinge on top of the deck discharge opening using the 1/4-20 x 1/2 in. socket button head bolt and 1/4-20 ESNA nut. Position the bolt with the head inside of the chute and the nut on the outside. Attach spring for tilt-up action from chute to bracket on deck.



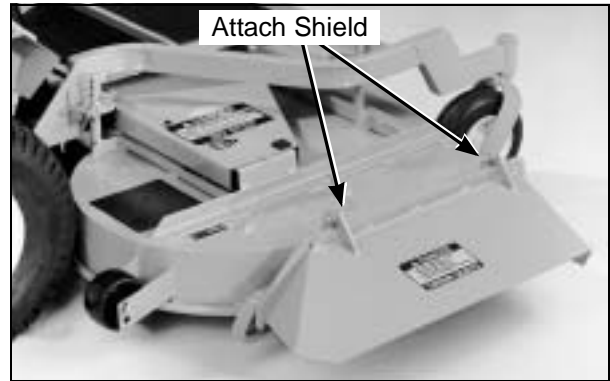
Discharge Chute and PTO Shaft Guard Installation on Rear Discharge Deck

Deck Discharge Shield Installation (Side Discharge Models Only)

Attach the deck side discharge shield by positioning the shield hinge lug in **front** of the deck mount and fastening with two 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 chute attached and in the lowest possible position.



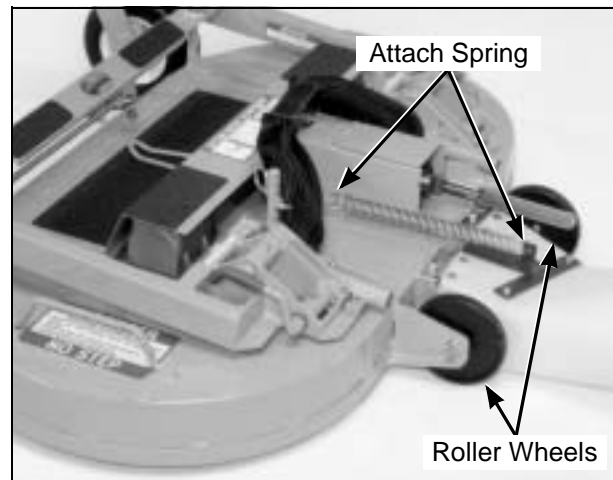
Discharge Shield Installation on Side Discharge Deck

PTO Shaft Guard Installation

Position the shaft guard as shown and mount with two 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. wave spring washer and 3/8-16 in. Whiz locknut. Tighten the axle bolt until the wheel rolls freely, but is not loose.



Tilt-Up Spring and Roller Wheel Installation on Rear Discharge Deck

Mower Deck Installation on Tractor

Deck Installation

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

Assembly Instructions

- Engage the deck carrier frame tube sockets on the tractor support arms (refer to **Discharge Chute and PTO Shaft Guard Installation** photo for socket location). Slide the deck onto the support arms: all the way if SD equipped model, approximately 3 in. (76 mm) if GHS equipped model.

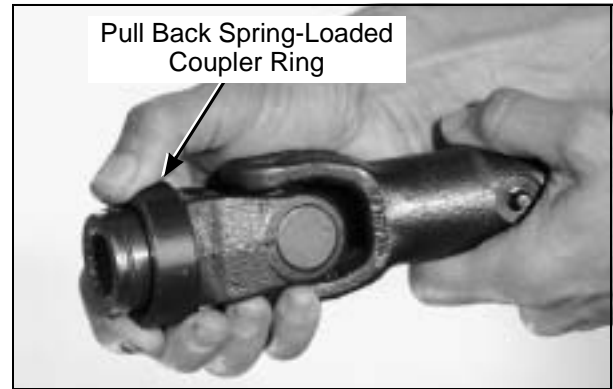
NOTE: When installing the DSD52 or DSD62 Mower deck, make sure to retract the dolly wheel after mounting the deck on the tractor.

- If the deck is rear discharge (GHS equipped model), the rear 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.

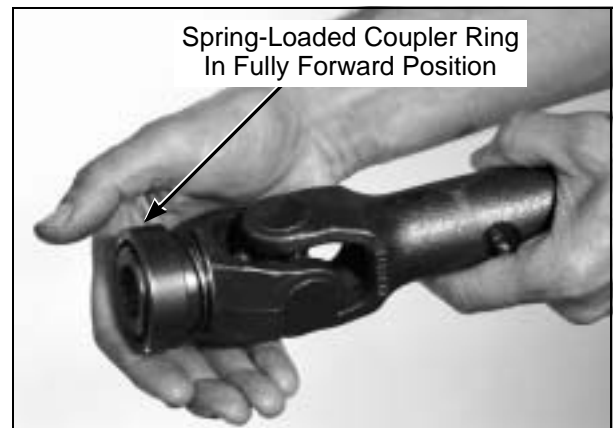
NOTE: Raising the mower body may be helpful in fitting and guiding the deck chute into the blower.

- Install the hitch pin through the hole on the end of each support arm to lock the deck in place (refer to **Deck Counterweight Spring Installation** photo). Two (2) hitch pins are included in the owner's packet of materials.
- Connect the mower deck PTO drive shaft assembly to the tractor with the splined quick disconnect coupler. This coupler simplifies shaft alignment and installation.
 - Use the arrows on the shaft and tube to align and slide the PTO quick coupler onto the deck splined shaft.
 - Reaching under the tractor, pull the ring back on the coupler, slide onto the spline shaft on the tractor, and release the ring.

IMPORTANT: To prevent damage to the mower, make sure the PTO shaft assembly is securely locked on the tractor, with the locking balls fully seated in the groove and the ring in the full forward position (refer to the **Coupler Ring "Locked" Position** photo). After installation, pull on the shaft to check for security.

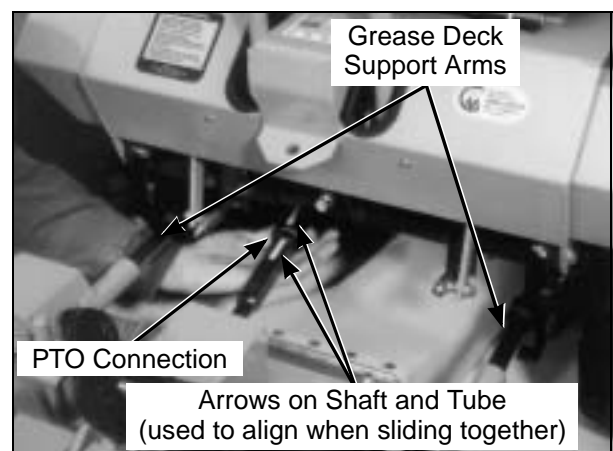


Installing PTO Quick Coupler



Coupler Ring "Locked" Position

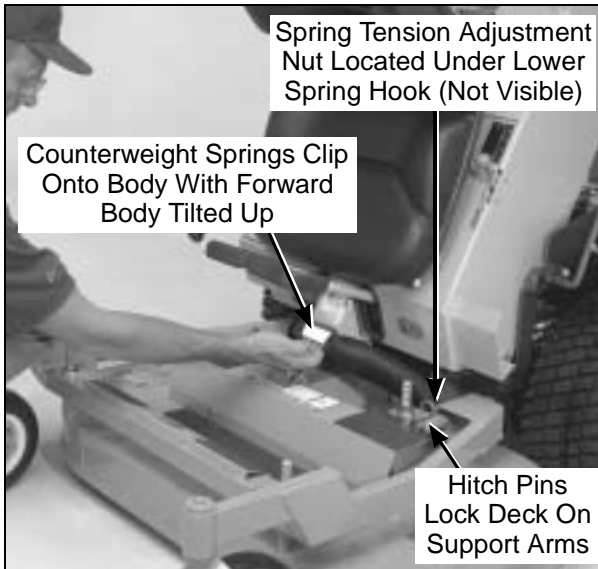
- Raise the front mower body (instead of lifting the front of deck) and clip the counterweight springs to the receptacle on front of body. Lower the front body to tension the springs. (Refer to **Deck Counterweight Spring Installation** photo.)



Mower Deck Installation (PTO Shaft Connection)

Assembly Instructions

7. With the counterweight springs connected, the weight on the deck caster wheels should be 15 to 25 lb (7 to 11 kg). Check this weight by lifting on the front of the deck carrier frame. If required, the spring tension can be adjusted by tightening or loosening the elastic stop nuts located underneath the lower spring hook. Refer to **Deck Counterweight Spring Installation** photo.



Deck Counterweight Spring Installation

Deck Leveling

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** in **Operating Instructions**.

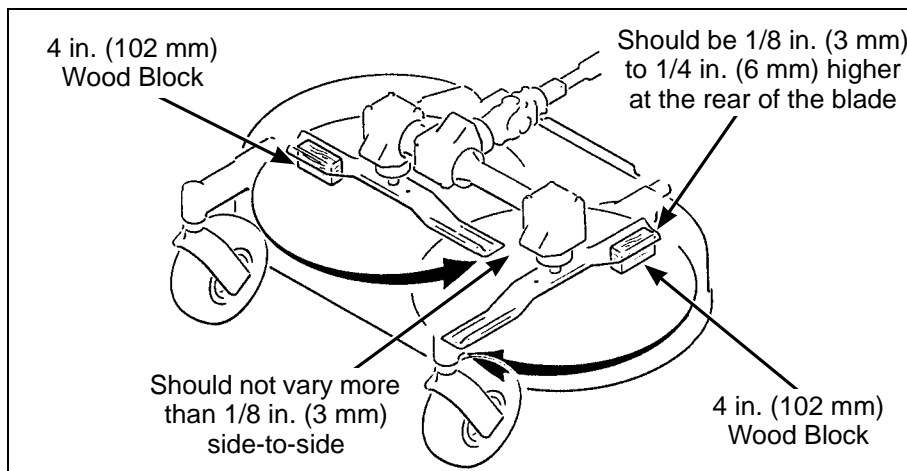
NOTE: A block of wood cut **4 in. (102 mm)** high is a convenient gauge to measure blade height above ground during the leveling process.

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: 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 as a possible cause of the deck not being level.



Deck Leveling

Assembly Instructions

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 fuels and lubricants refer to **Specifications**.

FILL FUEL TANK

Fill the fuel tank with clean, fresh fuel. Refer to **Specifications** for the proper fuel to be used in each model. For Model MDD, clean diesel fuel is particularly important since contaminated fuel will damage the fuel injectors and injection pump.

NOTE: For Model MDD, 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 gasoline or diesel fuel with care. Gasoline is highly flammable and its vapors are explosive. 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.

IMPORTANT: DO NOT mix oil with gasoline. For Model MDG, always use fresh, automotive grade gasoline. **DO NOT** use premium, white, or high-test gasoline. **DO NOT** use additives, such as carburetor cleaners, deicers, or moisture removing agents. **DO NOT** use gasoline blended with methyl alcohol.

CHECK ENGINE CRANKCASE OIL LEVEL

Check the engine crankcase oil level before use and **after each 5 hours** of continuous operation. Refer to **LUBRICATION** for *Checking Engine Crankcase Oil Level* in **Maintenance Instructions**.

CHECK AND SERVICE ENGINE AIR CLEANER SYSTEM

- Check air restriction gauge to make sure there is no red indication showing.
- Check condition, cleanliness, and security of the complete air cleaner system (clean air filter **every 100 hours**). For detailed procedures, refer to **CLEANING** the **Engine Air Cleaner System** in **Maintenance Instructions**.

ADJUST CARBURETOR (Initial Start-up Only)

For Model MDG, refer to **ADJUSTMENTS** of **Carburetor - Model MDG** in **Maintenance Instructions**.

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 **CHECKING/SERVICING** the **Engine Cooling System** in **Maintenance Instructions**.

Assembly Instructions

WARNING

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

- Check engine fan belt.

CHECK GEAR AXLE OIL LEVEL

Refer to **Gear Axle Lubrication** in **Maintenance Instructions**.

INSPECT FOUR (4) DRIVE BELTS

Engine PTO Drive, Jackshaft Drive, Hydrostatic Ground Drive, and GHS Blower Drive (if equipped).

CHECK HYDROSTATIC TRANSMISSION OIL LEVEL

Refer to **LUBRICATION** for *Checking Hydrostatic Transmission Fluid Level* in **Maintenance Instructions**.

CHECK BATTERY ELECTROLYTE LEVEL

Refer to **CHECKING/SERVICING** the **Battery** in **Maintenance Instructions**.

CHECK FUNCTIONS OF INSTRUMENT PANEL AND WARNING HORN

Turn the ignition key to the **RUN** position. Voltmeter, Oil Pressure Warning Light, and Warning Horn should all operate, indicating normal function.

CHECK TIRE PRESSURE

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

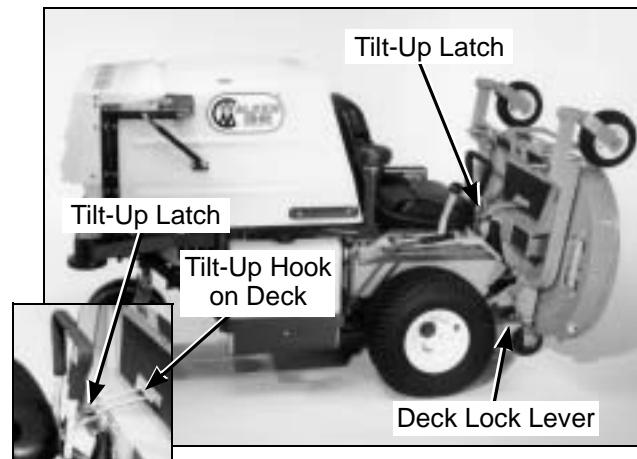
CHECK AND CLEAN GRASS BUILDUP UNDERNEATH MOWER DECK (and inside GHS blower, if equipped)

Refer to **CLEANING** the **GHS Blower** in **Maintenance Instructions** 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 tractor body. 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

NOTE: Mower deck may be secured in raised position by hooking the deck lift rod into the body bracket below the counterweight spring clip. The rod is hinged and is stowed along the footrest of the deck carrier frame. A hitch pin on the end of the rod is used to secure it in place with the deck raised.

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.

Assembly Instructions

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

The blade mounting nut should be tightened to 60 ft-lb (81.3 N-m). If blade sharpening is required, refer to **CHECKING/SERVICING** for **Sharpen Mower Blades** in **Maintenance Instructions**.

- 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.

- PERFORM ANY ADDITIONAL PROCEDURES called for on the **MAINTENANCE SCHEDULE CHART** in **Maintenance Instructions**.

Operating Instructions

CONTROL IDENTIFICATION, LOCATION, AND FUNCTION

Operating Controls

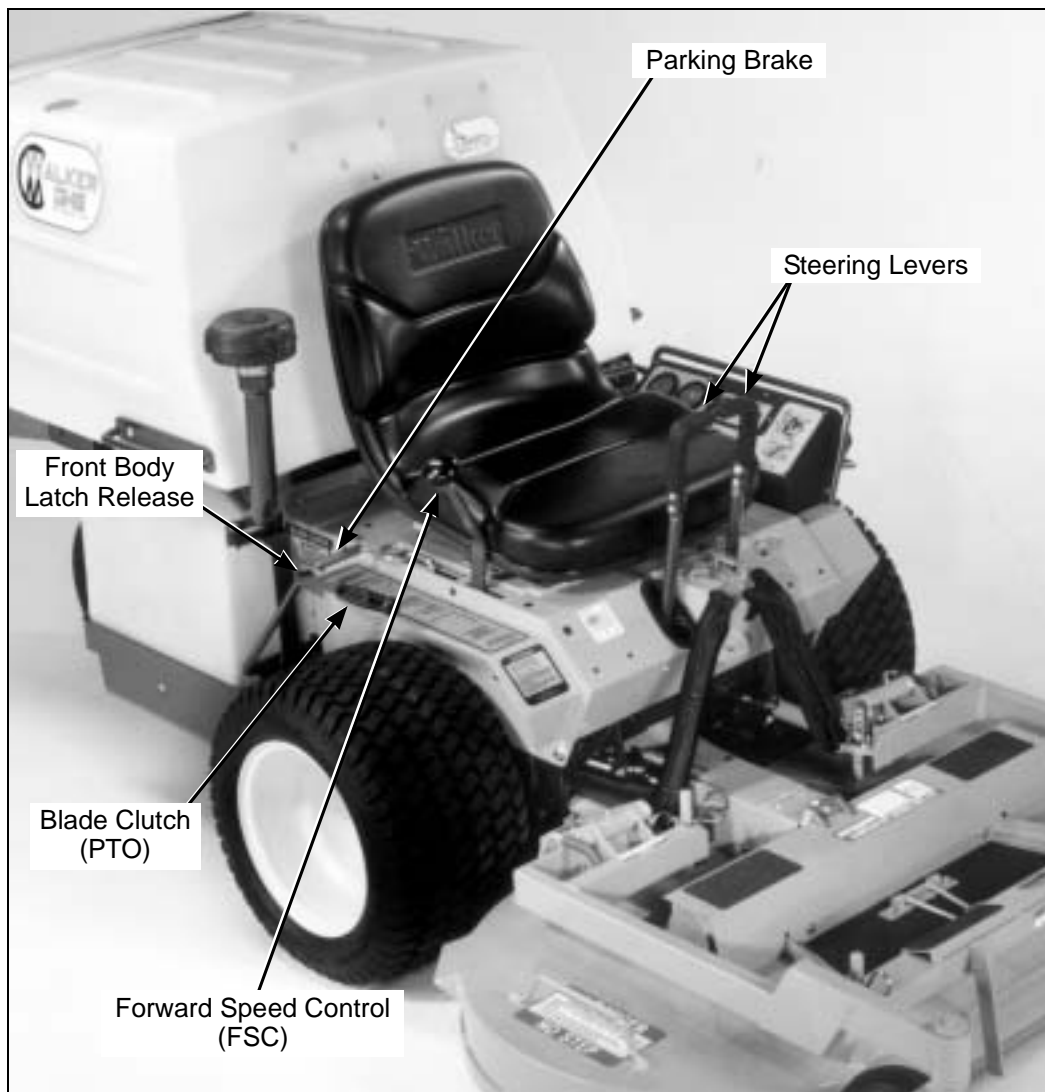
 **CAUTION**

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 Choke

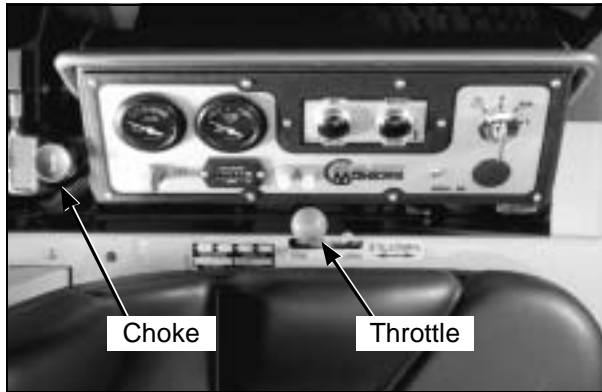
The choke control knob (Model MDG only) is located just to the rear of the instrument panel on the left hand side. To start a cold engine, pull the choke control to the **ON** position. After the engine starts, push the choke control in toward the **OFF** position, keeping enough choke to allow the engine to run smoothly as it warms up. As the engine warms up, move the choke to the **OFF** position. A warm engine requires little or no choke for starting.

IMPORTANT: Make sure the choke is in the **OFF** position during normal engine operation; running with the choke in the **ON** position **CAN** damage the engine.



Operating Controls

Operating Instructions



Choke and Throttle Location

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.

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 5 mph (0 to 8 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 Powerfil[®] motor and Grass-Pak[®] full signal switch are activated by engaging the blade clutch. Refer to **Using the GHS Catcher** in this section 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.

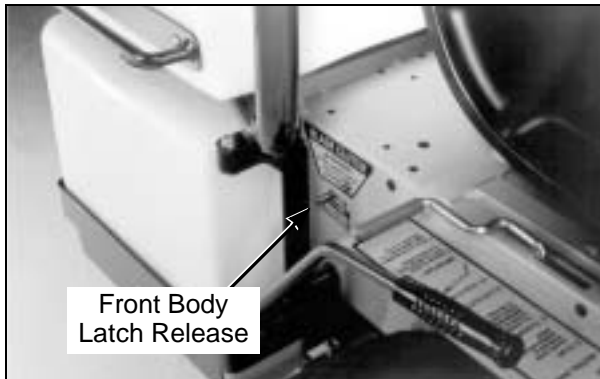
IMPORTANT: Stop the tractor completely before engaging the parking brake. The parking brake uses a positive mechanical lock similar to the **PARK** position on an automotive automatic transmission. If the tractor is moving when the brake is engaged, it will result in sudden stoppage and possible internal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

Operating Instructions

Front Body Latch Release

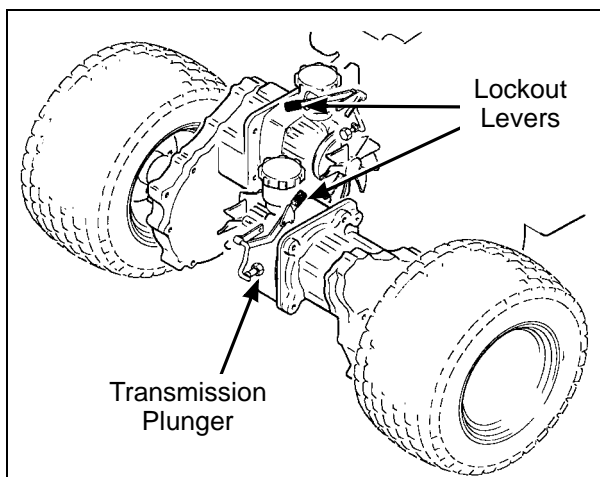
The front portion of the tractor body hinges forward for maintenance access and is latched down in the **OPERATING** position. To raise the body, move the latch release forward.



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** in this section for operating instructions.

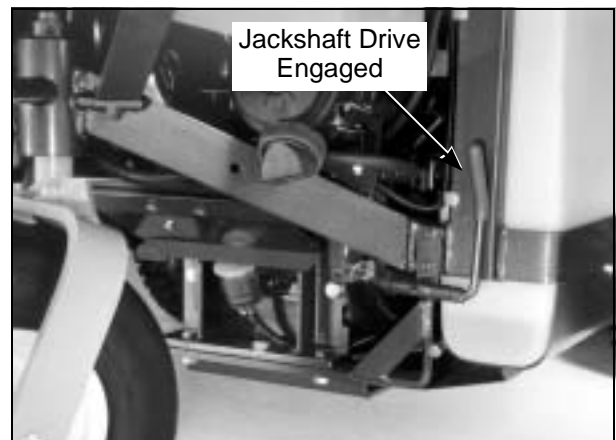


Lockout Lever Location

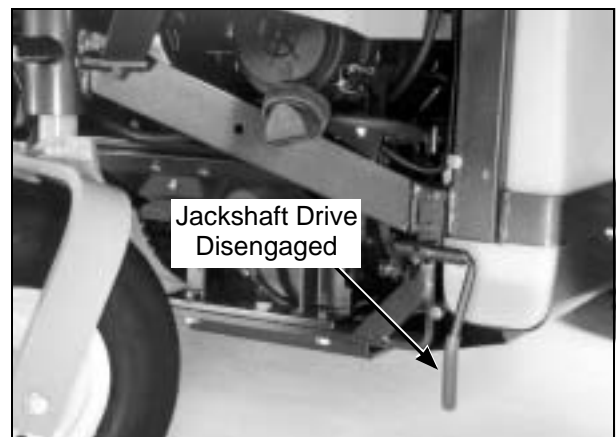
NOTE: The transmission plunger on the side of the transmission case (activated by the **LOCKOUT LEVER**) must be completely released during operation of the mower, otherwise operation of the transmission will be erratic.

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.

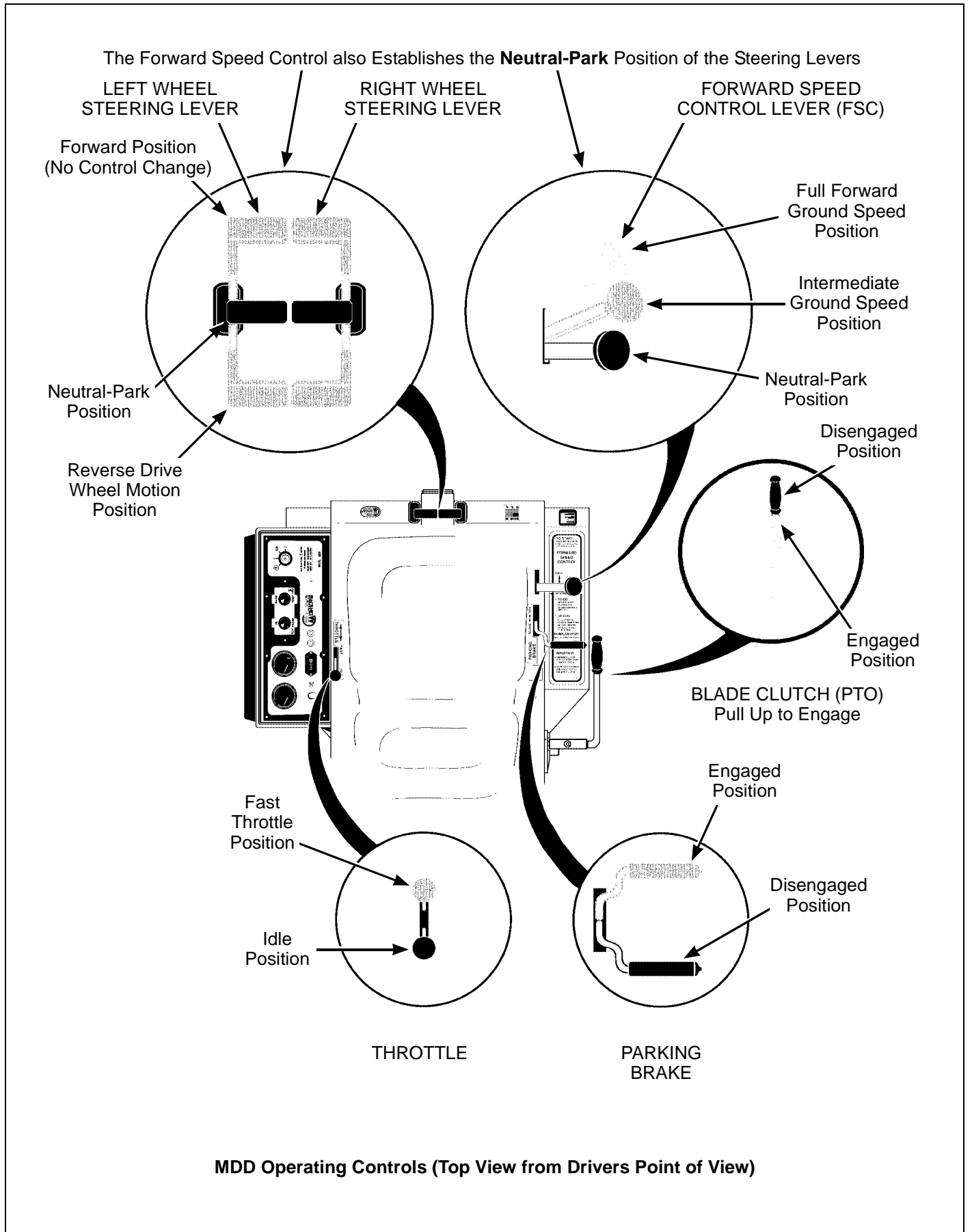


Cold Start Lever - Normal Operating Position

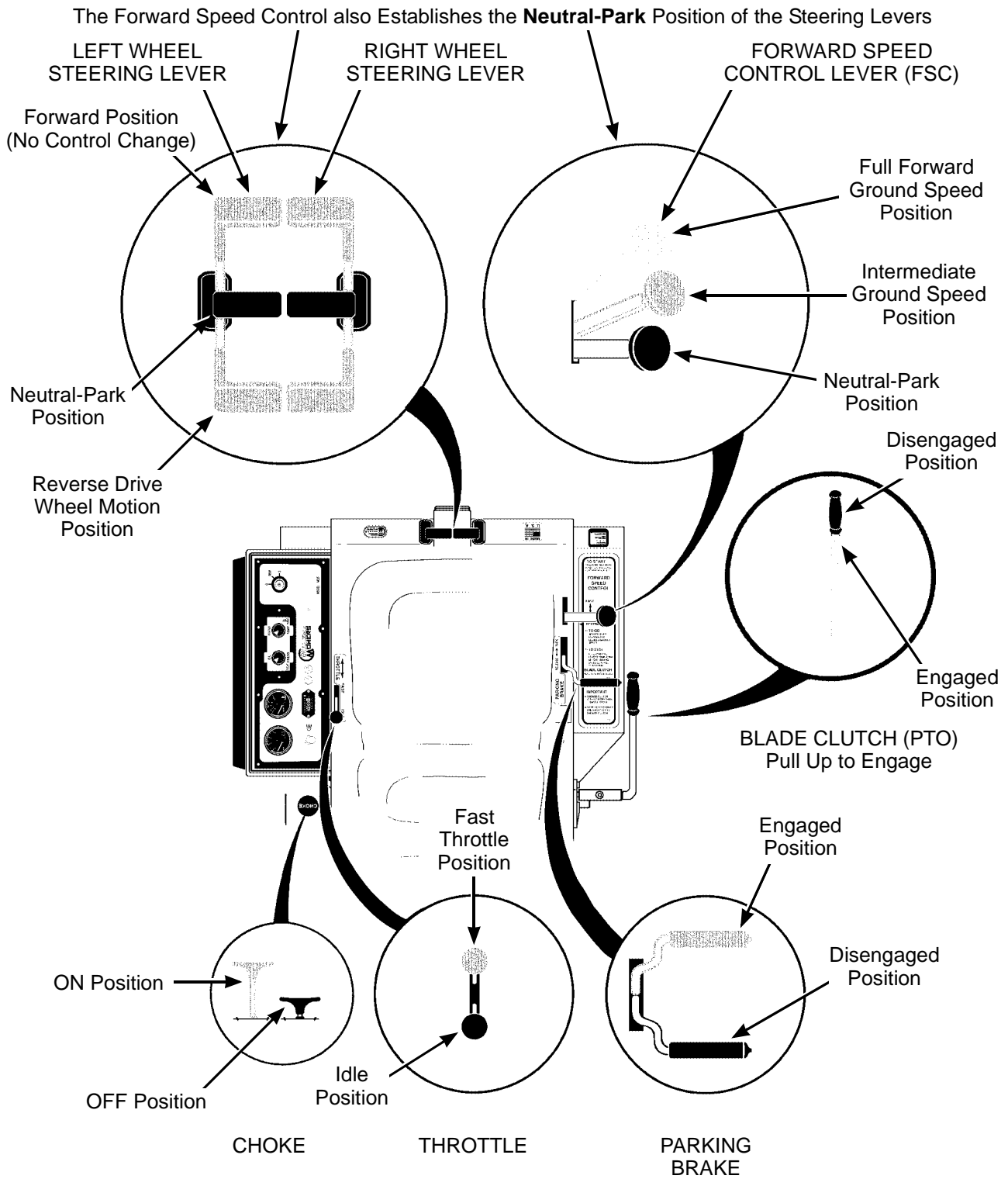


Cold Start Lever - Cold Start Position

Operating Instructions



Operating Instructions

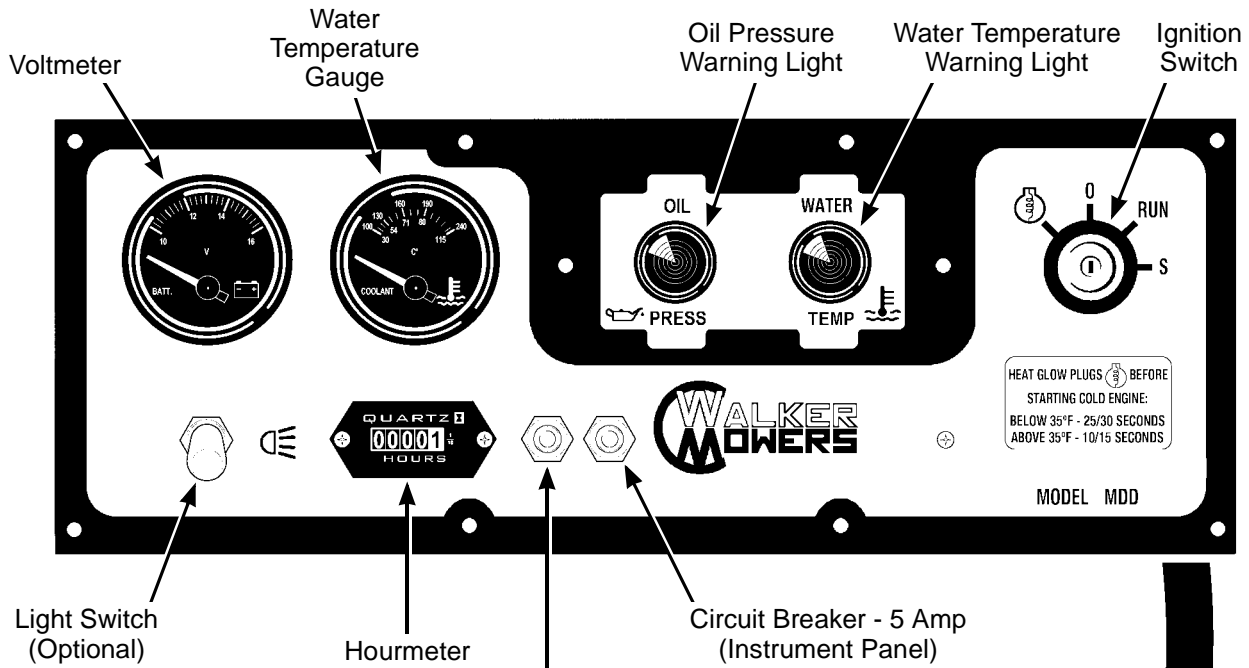


MDG Operating Controls (Top View from Drivers Point of View)

Operating Instructions

Instrument Panel

This illustration shows the configuration of the **switches and indicators** located on the instrument panel. For Model MDG, there is no glow plug position on the ignition switch.



Circuit Breaker - 10 Amp (Headlights, Safety Interlock Switch System, Fuel Solenoid Hold - MDD Only, Powerfil® Motor - GHS Only, "Full" Signal Horn - GHS Only)

Warning Horn

Instrument Panel

Operating Instructions

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

The oil pressure warning light indicates 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

The water temperature warning light indicates 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 fan belt
- Thermostat function

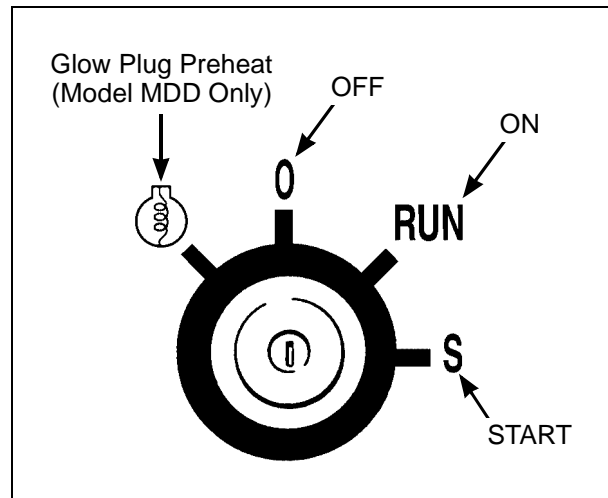
Stop the engine and correct the problem before further operation.

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 on Model MDD). The switch has four positions:  is the glow plug preheat position (Model MDD only); "O" is the **OFF** position; **RUN** is the position the key returns to after starting; "S" is the **START** position. When starting the engine, turn the key clockwise to the "S" position. Do not hold the key in the "S" 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 **RUN** position. To stop the engine, rotate the key counterclockwise to the "O" position.

NOTE: When starting the engine on Model MDD, 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 - MODEL MDD (DIESEL)**.



Ignition Switch

Operating Instructions

Light Switch (For Optional Lights)

Operates headlights (when installed).

Hourmeter

The hourmeter displays **operating time** accumulated while the ignition switch is in the **ON** position.

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 headlights, fuel valve solenoid (Model MDD), safety switch relays and time delay module, and GHS. The 5 amp circuit breaker protects the instrument panel circuits to the meters, warning lights, and warning horn.

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 water temperature gauge and correct the problem before further operation.

STARTING THE ENGINE - MODEL MDD (DIESEL)

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.

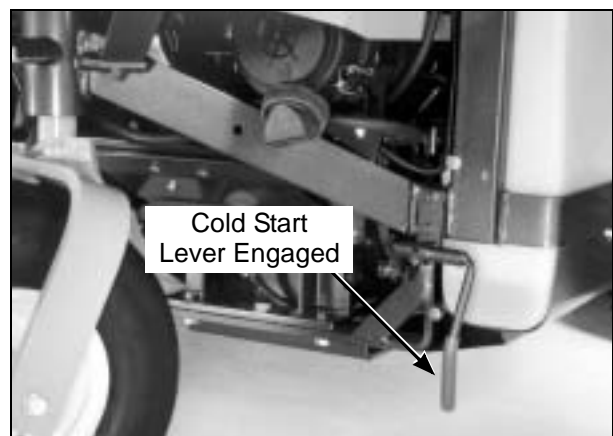
1. Before attempting to start the engine, make sure the operator is in the seat, the Forward Speed Control is in **NEUTRAL-PARK** position, and the blade clutch and parking brake are **DISENGAGED**.

NOTE: Release parking brake to prevent extra load on the starter if the transmission neutral is slightly out of adjustment.

CAUTION

A safety interlock switch system **PREVENTS CRANKING** the engine with either the Forward Speed Control or the blade clutch (PTO) out of neutral. 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

2. Turn and hold the ignition key in the **PREHEAT** position to preheat the engine glow plugs. For temperatures below 35° F (2° C), the time required is approximately 25 to 30 seconds. For temperatures 35° F (2° C) or higher, the time required is approximately 10 to 15 seconds.

Operating Instructions

3. Move the throttle 1/4 to 1/2 open (toward **FAST**) and turn the ignition switch to the **START** position to start the engine. Release the key to the **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.

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

- The fuel valve solenoid is 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, refer to **CHECKING/SERVICING the Fuel Valve Solenoid-Model MDD** in **Maintenance Instructions**.
 - The glow plugs are operating. Look at the exhaust pipe when cranking the engine - white smoke indicates improper glow plug operation and inadequate preheat. Consult the Kubota Workshop Manual to check 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.

STARTING THE ENGINE - MODEL MDG (GASOLINE)

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.

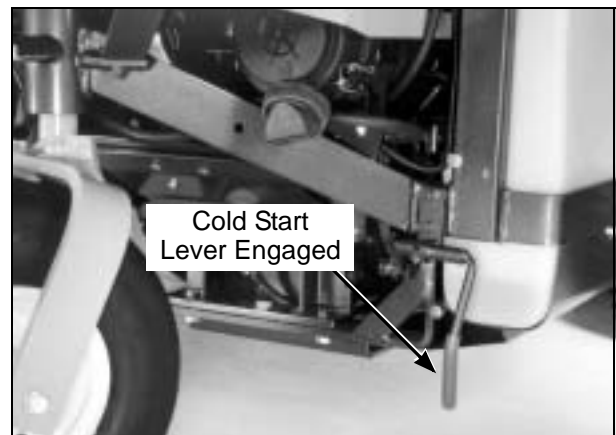
1. Before attempting to start the engine, make sure the operator is in the seat, the Forward Speed Control is in **NEUTRAL-PARK** position, and the blade clutch and parking brake are **DISENGAGED**.

NOTE: Release parking brake to prevent extra load on the starter if the transmission neutral is slightly out of adjustment.

CAUTION

A safety interlock switch system **PREVENTS CRANKING** the engine with either the Forward Speed Control or the blade clutch (PTO) out of neutral. 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

2. Move the choke lever to the **ON** position and 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 **RUN** position as soon as the engine starts.

Operating Instructions

NOTE: The choke may not be required if the engine is warm.

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.

3. 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.
4. Gradually move the choke to the **OFF** position, keeping enough choke on to allow the engine to run smoothly as it warms up. As soon as possible, move the choke to the **OFF** position.

IMPORTANT: Make sure the choke is in the **OFF** position during normal engine operation; running with the choke in the **ON** position **CAN** damage the engine.

ADJUSTING GROUND SPEED AND STEERING

IMPORTANT: If the DSD52 or DSD62 Mower deck is installed on the tractor, make sure the dolly wheel is retracted **BEFORE** moving.



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 HYDROSTATIC 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 all times when the machine is moving.

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).

NOTE: If the FSC lever will not stay in the selected position, the friction lock needs to be adjusted. Refer to **ADJUSTMENTS of Forward Speed Control Friction Lock** in **Maintenance Instructions**.

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 overcontrol, use only one hand on both steering levers.

Beginning Recommendations are:

◆ 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 overcontrol.

◆ 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.

Operating Instructions



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.

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.
5. 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 of Transmission Control** in **Maintenance Instructions**.

ENGAGING THE MOWER

1. 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.
2. Pull the blade clutch lever **SLOWLY** up to engage the mower blades.

CAUTION

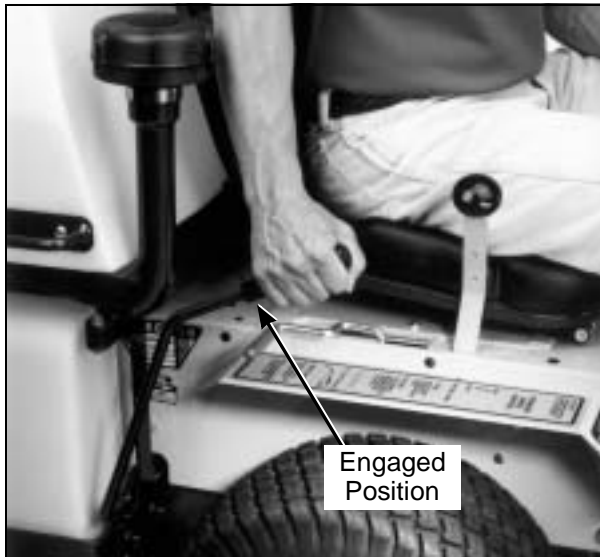
A safety interlock switch (seat switch) will cause the engine to stop if the blade clutch is engaged and the operator is not in the seat. The function of this switch should be checked by the operator raising off the seat and engaging the blade clutch; the engine should stop. If the switch is not working, 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).

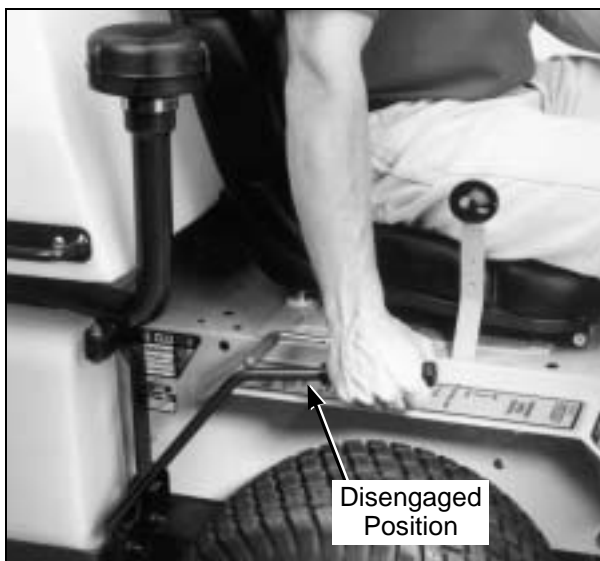
CAUTION

If the cutting blades strike a stationary object while mowing, stop the mower immediately, disconnect the electrical plug on the fuel shut-off solenoid (MDD) or the spark plug wires (MDG), 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 **REPLACING/REPAIRING the Blade Overload Shear Bolts** in **Maintenance Instructions** if blades are out of time. Also, make sure the blade retaining nuts are torqued to 60 ft-lb (81.3 N-m).

Operating Instructions



Blade Clutch Engaged



Blade Clutch Disengaged

STOPPING THE MACHINE

1. Slow the engine to a fast idle; put the throttle in the 1/2 throttle position.
2. Pull the steering levers to the **NEUTRAL** position and then move the FSC lever backward to the **NEUTRAL-PARK** 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 free-wheeling 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 operating the mower. Refer to **ADJUSTMENTS of Blade Clutch (PTO)** in Maintenance Instructions.

4. Slow the engine to idle, put throttle in **IDLE** position; and 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.

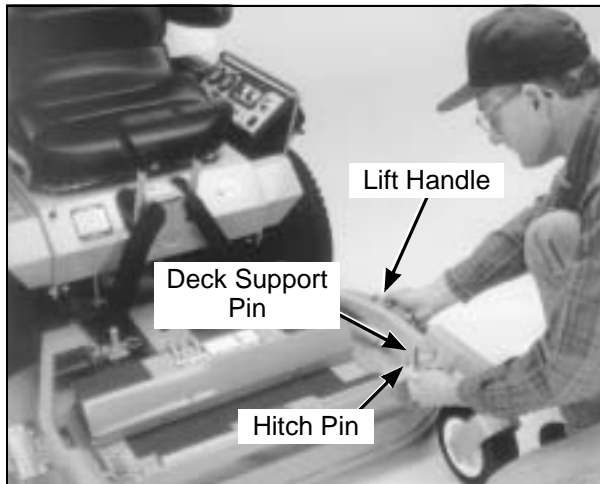
ADJUSTING CUTTING HEIGHT

WARNING

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

Operating Instructions

Cutting height is adjusted by positioning the four retainor hitch pins in a series of seven 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 in. (25 mm) [top holes] to 4 in. (102 mm) [bottom holes] in 1/2 in. (13 mm) increments.



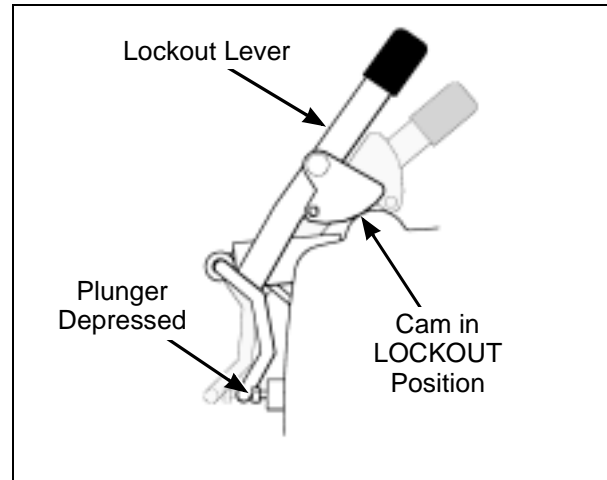
Cutting Height Adjustment

TRANSMISSION LOCKOUT

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

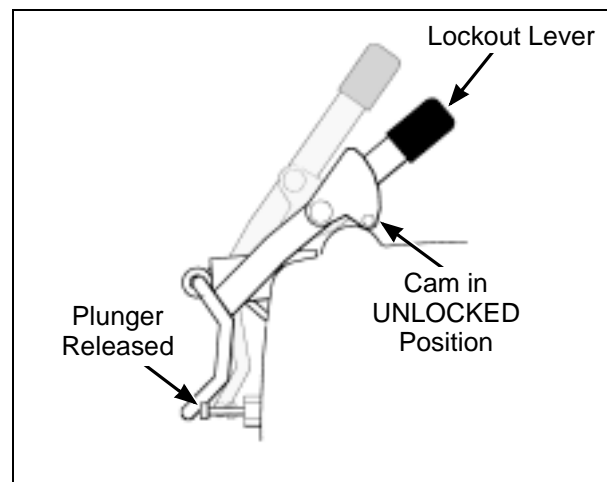
To move the mower with the engine **NOT** running (dead battery, maintenance, etc.), the hydrostatic transmissions are unlocked (released).

1. Raise the front 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

IMPORTANT: Operate the engine at **full speed** 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.

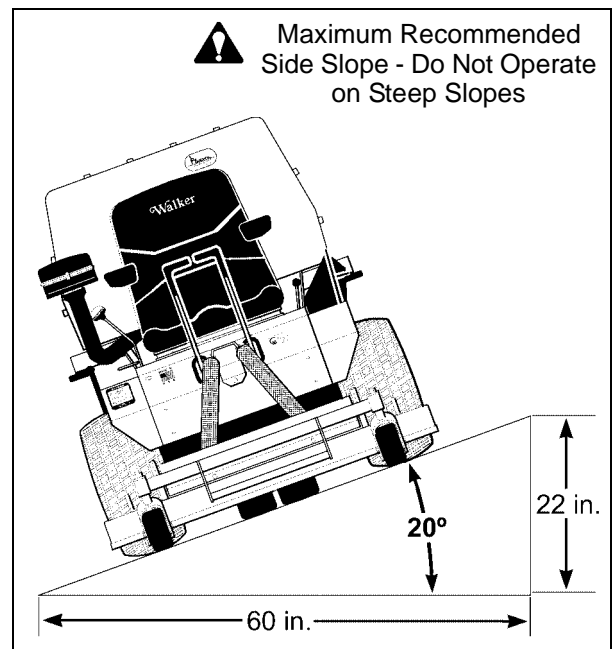
Operating Instructions

- 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 or near **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* in **Assembly Instructions**.
- 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 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 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 side slope operating angle is 20 degrees or 33% grade**.



Maximum Recommended Side Slope

RECOMMENDATIONS FOR TILT-UP DECK OPERATION/TRANSPORT

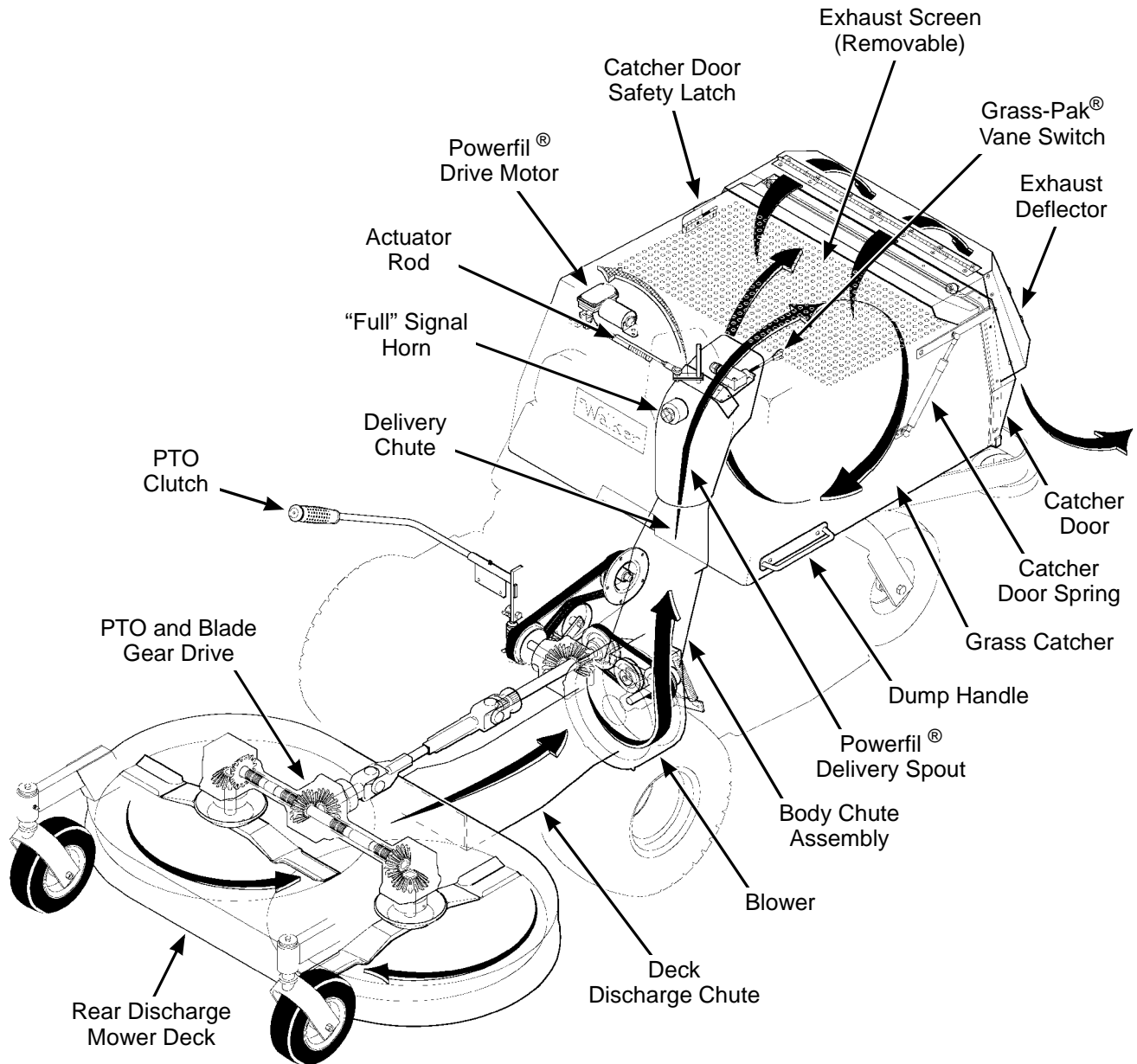
To avoid potential deck and/or tractor damage while using the tilt-up deck, the following recommendations are offered:

Operating Instructions

- **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.

Operating Instructions

GRASS HANDLING SYSTEM (GHS) GHS Model Only



GHS Flow and Components

Operating Instructions

General Information

The Grass Handling System (GHS) consists of a rear discharge mower deck connected to a 10 in. (25 cm) blower and a rear mounted grass catcher with 7.0 bushel (246 liters) capacity or optional 9.5 bushel (335 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.

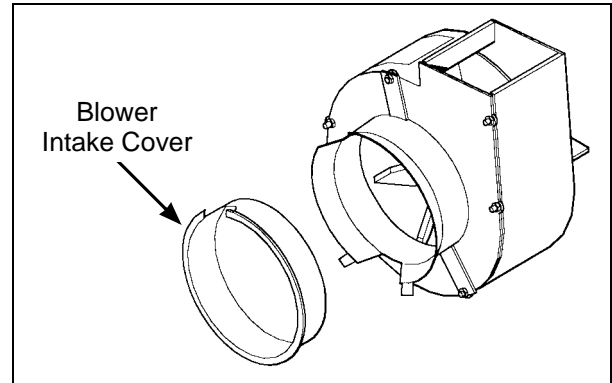
IMPORTANT: Normally, the GHS blower operates with no maintenance or cleaning required. However, under certain operating conditions, the inside of the blower housing may accumulate a deposit of dirt, causing wear and binding of the blower wheel. Normally, dirt buildup occurs when mowing a **combination 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 **CLEANING the GHS Blower** in **Maintenance Instructions**.

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: 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

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.

Operating Instructions

Clogging Checklist

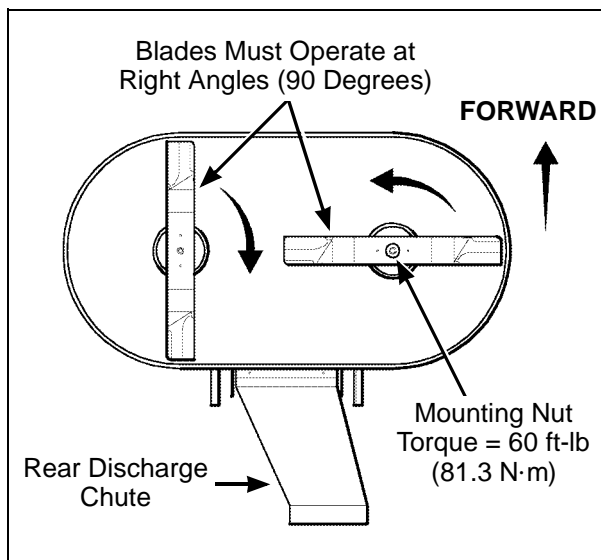
In case of clogging, there will be a **distinct change in the sound** of the blower, i.e., the blower sound will stop. Also, the mower deck will begin to leave a trail of grass clippings. When this occurs, stop the engine, disconnect the spark plug wires, and make **sure all movement has stopped before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



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 RH and LH mower blades are installed **for the correct rotation** - install blades so the cutting edges move toward each other.



**Blade Rotation for GHS Mower Deck
(view from underneath)**

- 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.

Operating Instructions

- 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** in this section.

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 of Grass Buildup in Mower Housing** in **Maintenance Instructions**.

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** position and moving the blade clutch to the **ENGAGED** position. The spout should oscillate approximately 25 cycles per minute.

NOTE: If the grass spout fails to oscillate, the clutch switch should be checked for function (the switch closure is adjustable).

“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**, 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 both directions.

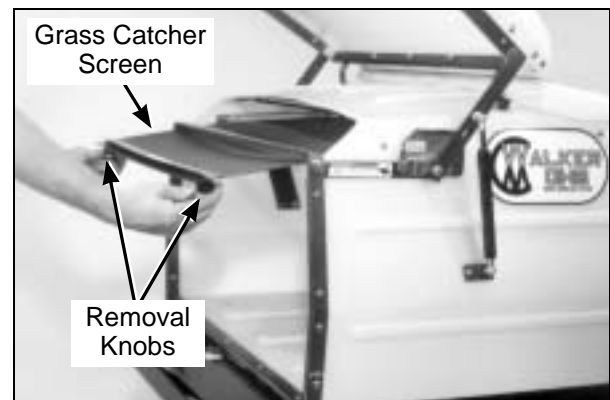
WARNING

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

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

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.

Tailgate Dumping

1. Open the back door by lifting on the door handle.

Operating Instructions

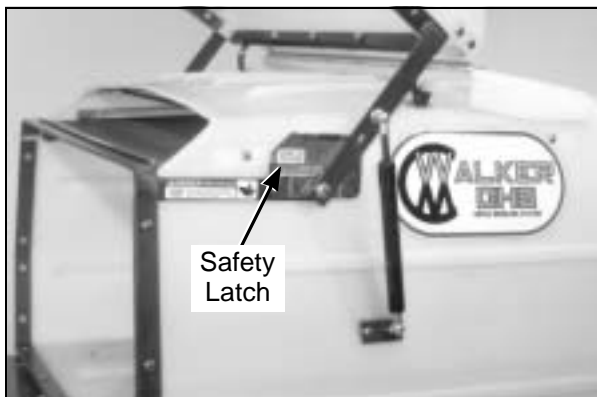
NOTE: To prevent accidental door closure, a **safety latch locks the door open** in the fully opened position while the catcher is being dumped.

2. Tilt the catcher back to dump by lifting on the catcher lift 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.**
4. Close the door by holding the door handle with the left hand and releasing the safety latch on the door hinge mechanism with the right hand. The safety latch is released by pressing in on the top of the latch. Then, smoothly close the door, working against the spring pressure that holds the door closed. **DO NOT let the door slam shut** by releasing the door before it is closed.

 **DANGER**

PINCH POINT - SPRING LOADED DOOR

When lowering the door on the GHS catcher, depress the safety latch on the side of the 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.



Catcher Door Safety Latch

Using the Dump Bag (7.0 Bushel Catcher)

1. Open the back door by lifting on the door handle.

NOTE: To prevent accidental door closure, a **safety latch locks the door open** in the fully opened position while the catcher is being dumped.

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.
4. Tilt the catcher back to dump into the bag by **lifting on the catcher lift 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.

Operating Instructions



Dumping Catcher into Dump Bag

5. Lower the catcher smoothly down to the normal operating position. **DO NOT allow the catcher to drop down.**
6. Close the door by holding the door handle with the left hand and releasing the safety latch on the door hinge mechanism with the right hand. The safety latch is released by pressing in on the top of the latch. Then, smoothly close the door, working against the spring pressure that holds the door closed. **DO NOT let the door slam shut** by releasing the door before it is closed.

DANGER

PINCH POINT - SPRING LOADED DOOR

When lowering the door on the GHS catcher, depress the safety latch on the side of the 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.

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.

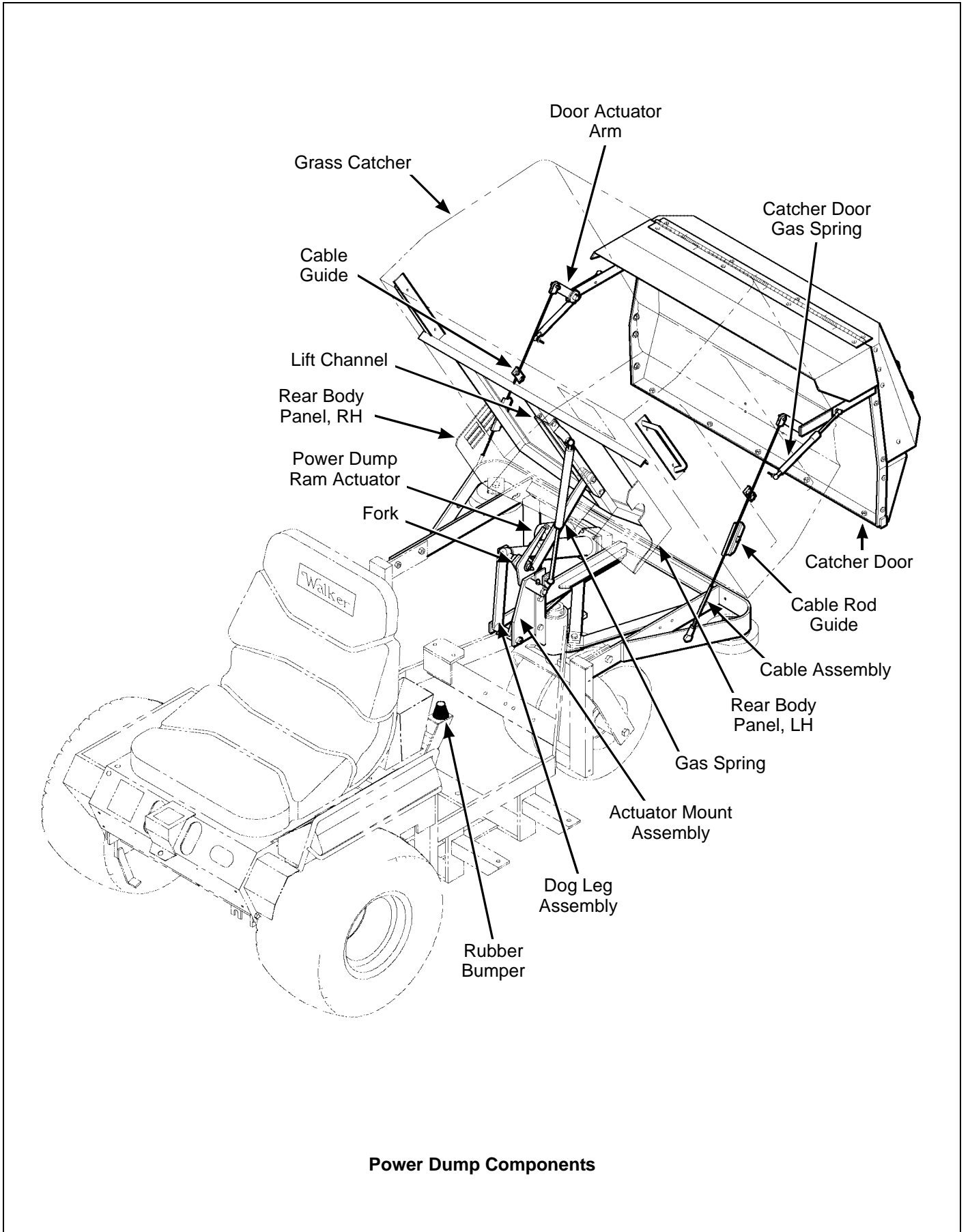
CAUTION

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**.

Operating Instructions



Power Dump Components

Maintenance Instructions



CAUTION

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

MAINTENANCE SCHEDULE CHART - RECOMMENDED SERVICE INTERVALS - MODEL MDD

Service Item	Daily	25 Hours	100 Hours	200 Hours	Yearly	Every 2Years	Ref. Page
Check Engine Crankcase Oil Level	x						52
Check Coolant Level in Radiator and Overflow Tank	x						64
Clean Radiator Screen and Cooling Fins*	x						62
Check Security of Air Filtration Components	x						65
Check Air Filter Restriction Gauge	x						60
Clean Grass Buildup Under Deck	x						62
Clean GHS Exhaust Screen*	x						45
Clean GHS Blower*	x						63
Service Mower Blades	x						66
Check Functions of Instrument Panel and Warning Horn	x						25
Lubricate Grease Fittings and Oil Points*		x					53
Check PTO Gearbox Oil Level**		x					57
Check Battery Electrolyte Level		x					65
Check Hydrostatic Transmission Fluid		x					58
Check Tire Pressure		x					66
Check Drive Belts (Jackshaft, Engine PTO, GHS Blower, Ground Drive and Engine Fan Belt)		x					67
Check Gearbox Oil Seals		x					67
Check Turbine Precleaner*			x				60
Check/Clean Air Filter Element***			x				60
Change Engine Crankcase Oil ^Δ			x				52
Check Fan Belt Tension			x				65
Check/Adjust Blade Clutch (PTO) / Brake Action			x				81
Check Oil Level in Gear Axle			x				57
Clean Hydrostatic Transmission Cooling Fins			x				64
Change Engine Oil Filter			x				52
Check Radiator Hoses and Clamps				x			68
Check Fuel Lines and Clamps				x			68
Replace Air Filter Element and Vacuator™ Valve***					x		60
Replace Fuel Filters					x		76
Flush Radiator and Change Coolant					x		62
Service Battery					x		65
Check Fuel Injection Nozzle Pressure					x		68
Check/Adjust FSC Friction Lock					x		84
Check Engine Valve Clearance ^{ΔΔ}					x		68
Change Gear Axle Oil ^{ΔΔΔ}						x	57
Change Hydrostatic Transmission Fluid ^{ΔΔΔ}						x	58
Replace Radiator Hoses and Clamps						x	68
Replace Fuel Lines and Clamps						x	68

- * More often in extremely dusty or dirty conditions (refer to notes about air cleaner element in **IMPORTANT TIPS FOR CARE OF KUBOTA ENGINE**)
- ** Change PTO gearbox oil after first 100 hours of operation (break-in period)
- *** Air cleaner is remote mounted Donaldson Radialseal™ unit, replace filter every year or after 6 cleanings
- Δ Change engine oil and filter after first 35 hours of operation of a new engine (break-in period)
- ΔΔ Check every year or 800 hours
- ΔΔΔ Change every 2 years or 1000 hours

Maintenance Instructions



CAUTION

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

MAINTENANCE SCHEDULE CHART - RECOMMENDED SERVICE INTERVALS - MODEL MDG

Service Item	Daily	25 Hours	100 Hours	200 Hours	Yearly	Every 2Years	Ref. Page
Check Engine Crankcase Oil Level	x						52
Check Coolant Level in Radiator and Overflow Tank	x						64
Clean Radiator Screen and Cooling Fins*	x						62
Check Security of Air Filtration Components	x						65
Check Air Filter Restriction Gauge	x						60
Clean Grass Buildup Under Deck	x						62
Clean GHS Exhaust Screen*	x						45
Clean GHS Blower*	x						63
Service Mower Blades	x						66
Check Functions of Instrument Panel and Warning Horn	x						25
Lubricate Grease Fittings and Oil Points*		x					53
Check PTO Gearbox Oil Level**		x					57
Check Battery Electrolyte Level		x					65
Check Hydrostatic Transmission Fluid		x					58
Check Tire Pressure		x					66
Check Drive Belts (Jackshaft, Engine PTO, GHS Blower, Ground Drive and Engine Fan Belt)		x					67
Check Gearbox Oil Seals		x					67
Check Turbine Precleaner*			x				60
Check/Clean Air Filter Element***			x				60
Change Engine Crankcase Oil ^Δ			x				52
Check Fan Belt Tension			x				65
Check/Adjust Blade Clutch (PTO)/Brake Action			x				81
Check Oil Level in Gear Axle			x				57
Clean Hydrostatic Transmission Cooling Fins			x				64
Change Engine Oil Filter			x				52
Check Radiator Hoses and Clamps				x			68
Check Fuel Lines and Clamps				x			68
Check/Regap Spark Plugs				x			67
Replace Air Filter Element and Vacuator™ Valve***					x		60
Replace Fuel Filter					x		76
Flush Radiator and Change Coolant					x		62
Service Battery					x		65
Check/Adjust FSC Friction Lock					x		84
Check Engine Valve Clearance ^{ΔΔ}					x		68
Change Gear Axle Oil ^{ΔΔΔ}						x	57
Change Hydrostatic Transmission Fluid ^{ΔΔΔ}						x	58
Replace Radiator Hoses and Clamps						x	68
Replace Fuel Lines and Clamps						x	68
Replace Ignition Wires						x	67

* More often in extremely dusty or dirty conditions (refer to notes about air cleaner element in **IMPORTANT TIPS FOR CARE OF KUBOTA ENGINE**)

** Change PTO gearbox oil after first 100 hours of operation (break-in period)

*** Air cleaner is remote mounted Donaldson Radialseal™ unit, replace filter every year or after 6 cleanings

Δ Change engine oil and filter after first 35 hours of operation of a new engine (break-in period)

ΔΔ Check every year or 800 hours

ΔΔΔ Change every 2 years or 1000 hours

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 (Model MDD).
- Change fuel filters (2 on Model MDD) on a regular basis and when contamination is suspected or found in the fuel.
- Model MDD 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 on Model MDD, 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 will allow 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 cleaning and replacement (see following instructions).

- Use the air flow restriction gauge to indicate the need to service the air filter.

- **DO NOT overservice** or frequently “disturb” the **air filter**. A dirty air filter actually cleans better than a new one. Changing and cleaning the 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 flow restriction gauge.

- Do frequently check the **Turbine Precleaner** for free movement of the internal fan.

- 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

- For Model MDD, use any top quality oil with an API classification of CD or greater. **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 SG 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].

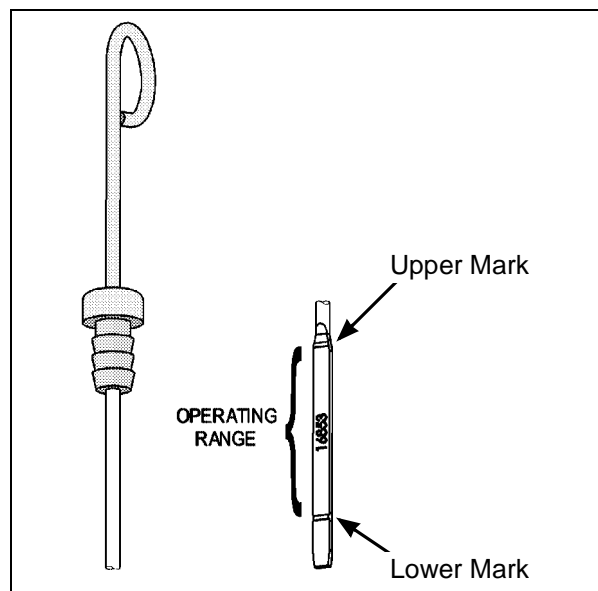
IMPORTANT: NEVER check or add oil with the engine running.

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** 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.

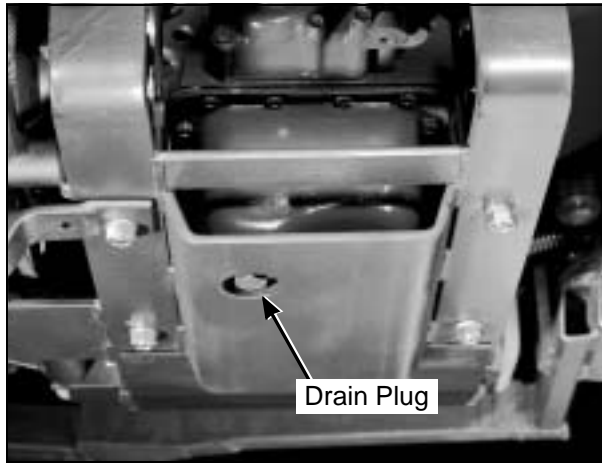


Dipstick Operating Range

Changing Engine Crankcase Oil/Oil Filter

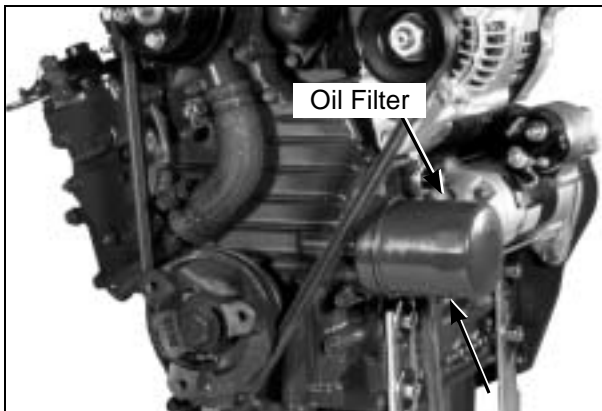
Change the engine crankcase oil **after every 100 hours** of operation and replace the oil filter every other oil change (**every 200 hours** of operation).

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 15841-32439). Aftermarket oil filters may not seal properly and/or may not have the correct pressure relief valve for proper lubrication. Also, the filter length dimension is critical for tailwheel clearance on Model MDD and Model MDG.

7. Install the new oil filter on the engine. Turn the filter clockwise until the rubber gasket contacts the sealing surface, then tighten the filter an additional **1/2 turn**.
8. Reinstall the drain plug. Make sure it is tightened to 10 ft-lb (13.6 N-m).
9. Fill the crankcase with new, clean oil. Use only crankcase lubricants recommended by the engine manufacturer. Refer to **Specifications** in 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 3.1 quarts (2.9 liters) plus 1/2 pint (.24 liters) for the new oil filter.

IMPORTANT: For Model MDD, **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.)

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.**

NOTE: PTO universal joints (on the deck and tractor) require routine lubrication **after every 8 hours** of running time.

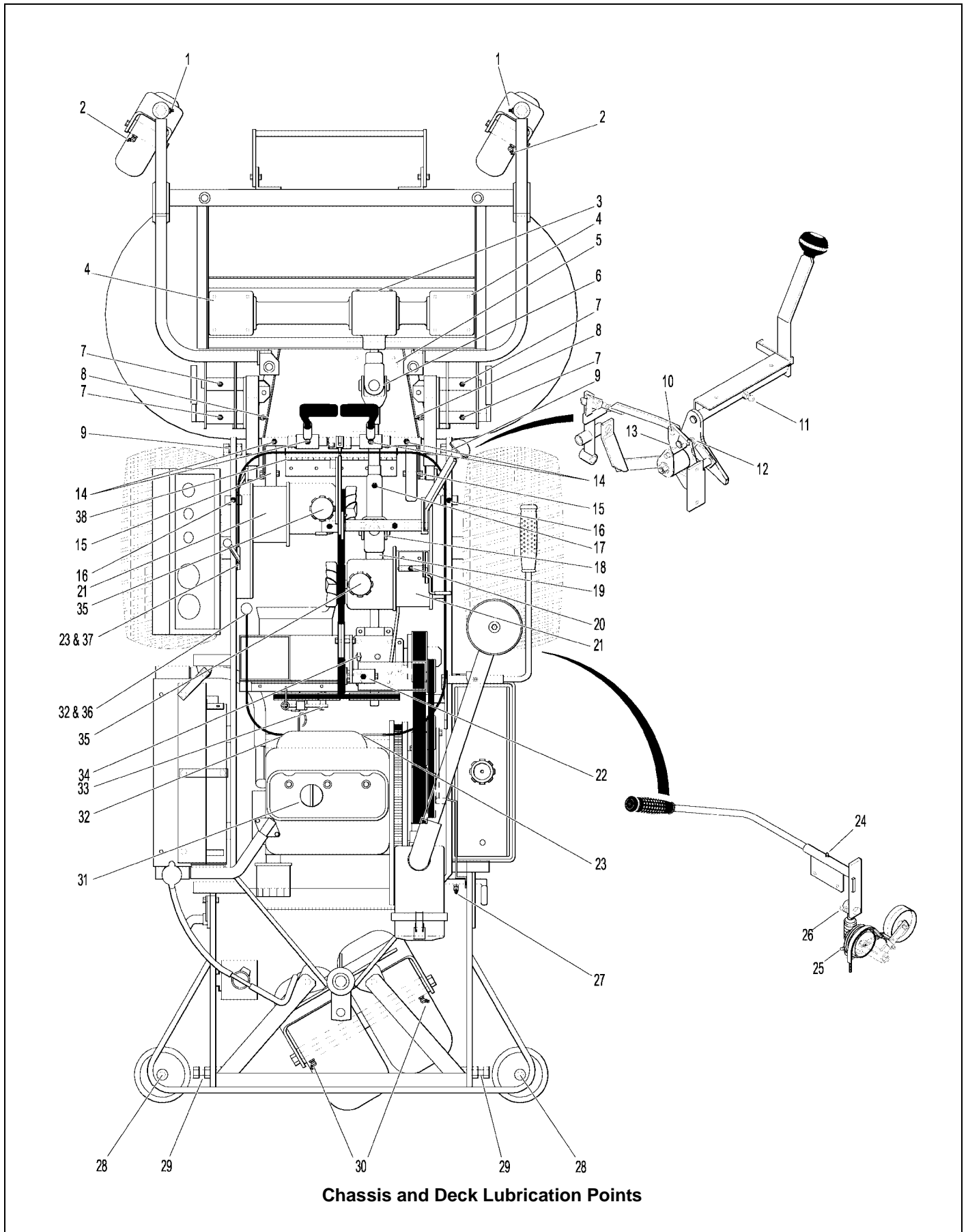
Ident No.	Location	Lubrication Type	No. Places	Ident No.	Location	Lubrication Type	No. Places
1	Deck Caster Wheel Fork Pivot	Grease	2	27	Cold Start Lever	Grease	1
2	Deck Caster Wheel Bearing	Grease	2	28	Anti-Scuff Roller Wheel	Oil	2
3	Tee Gearbox, Deck	Oil*	1	29	Catcher Hinge Point	Oil	2
4	Blade Drive Gearbox	Oil*	2	30	Rear Wheel Bearings	Grease	2
5	PTO Shaft Guard Hinge	Oil	1	31	Engine Oil	Oil***	1
6	Universal Joint Shaft Assembly	Grease**	1	32	Choke Control Cable Ends (MDG Models Only)	Oil	2
7	Pivot Assembly, Tilt-Up Deck	Grease	4	33	Belt Tightener Pivot, Blower Drive (GHS Model Only)	Grease	1
8	Deck Support Arm Socket	Grease	2	34	PTO Gearbox Dipstick	Oil***	1
9	Body Hinge Point	Oil	2	35	Hydrostatic Drive	Oil***	2
10	FSC Actuator Rod Pivot Pins	Oil	2	36	Choke Control Pivot (MDG Models Only)	Oil	1
11	FSC Lever Pivot	Grease	1	37	Throttle Control Pivot	Oil	1
12	FSC Lever Fork (Grease Slide Area)	Grease	1	38	Discharge Chute Hinge	Oil	1
13	(FSC) Friction Body Pivot	Grease	1				
14	Steering Lever Pivot	Grease	4				
15	Deck Roller Wheel	Oil	2				
16	Deck Support Arm Pivot	Grease	2				
17	Deck-to-PTO Coupling (Grease Slide Area)	Grease	1				
18	Universal Joint Tube Assembly	Grease**	1				
19	Universal Joint Quick Connect Spline (Grease Slide Area)	Grease	1				
20	Parking Brake Lever	Grease	1				
21	Gear Axle	Oil***	2				
22	Belt Tightener Pivot, Jackshaft Drive	Grease	1				
23	Throttle Control Cable Ends	Oil	2				
24	PTO Clutch Lever Pivot	Grease	1				
25	Clutch Actuator Block	Grease	1				
26	Clutch Actuator Knuckle Joint	Grease	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** in this section.

** Grease every eight (8) hours.

*** Refer to **Gear Axle Lubrication, Engine Oil, Tractor PTO Gearbox Lubrication, and Hydrostatic Transmission Fluid** in this section.

NOTE: DGHS42 Tilt-Up Deck is shown for reference. For other Deck Lubrication Points, Refer to Deck and Carrier Frame **Illustrated Parts Manual**.

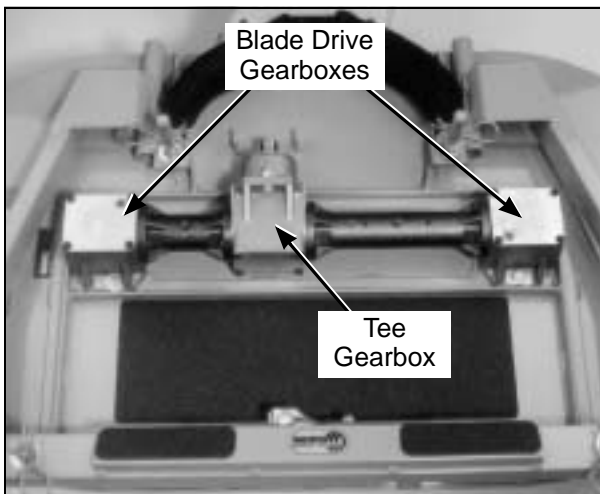


Mower Deck Gearbox Lubrication

NOTE: These instructions apply to all mower decks with gear-driven blades. Refer to **DSD52 or DSD62 Mower Deck Lubrication** in this section for the DSD52 or DSD62 deck with belt-driven blades.

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) 90W oil 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.

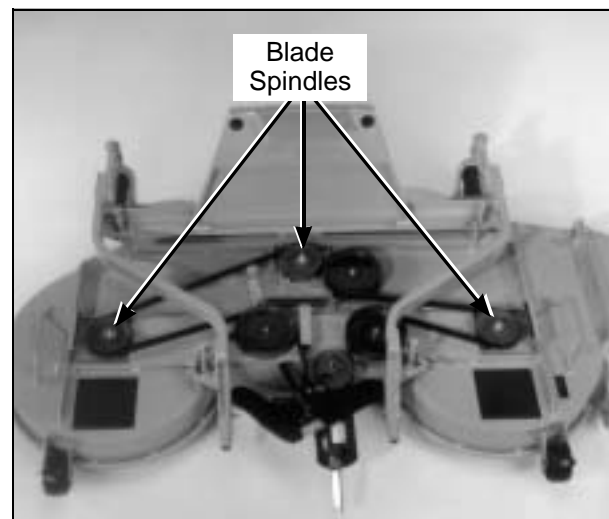
IMPORTANT: DO NOT overfill the deck gearboxes. The gearbox assembly is not vented, and overfilling with oil will cause excessive pressure and result in oil leaks.

5. Check condition of the cover gasket and replace if worn or damaged. Reinstall gearbox cover plates; torque screws to 24 in-lb (2.7 N-m).

DSD52 or DSD62 Mower Deck Lubrication

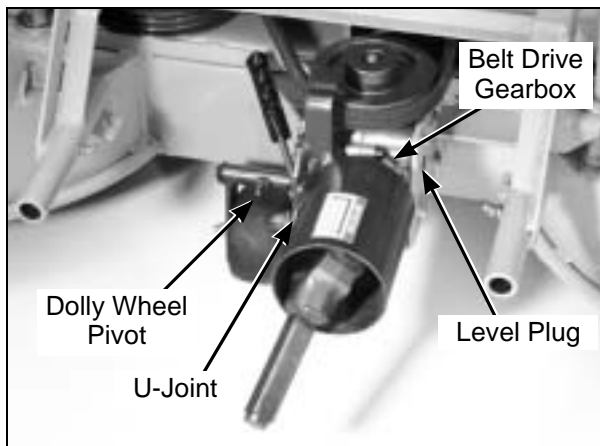
There are several special lubrication requirements for the DSD52 or DSD62 mower deck in addition to the requirements detailed in the **Chassis and Deck Lubrication** illustration. Lubricate the locations shown in the **Blade Spindle Lubrication** and **Gearbox, Dolly Wheel, and U-Joint Lubrication** photos and check and maintain oil in the belt drive gearbox.

1. Lubricate the blade spindles **every 25 hours** with two (2) shots of SAE general purpose lithium or molybdenum base grease.



Blade Spindle Lubrication

2. Check the oil level in the belt drive gearbox **every 100 hours** (or sooner if a visible oil leak has developed). With the deck in the normal operating position, remove the level plug in the side of the gearcase. Add SAE E.P. (Extreme Pressure) 90W oil to maintain the oil level to the plug. 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.
3. Lubricate the dolly wheel pivot **every 25 hours** with general purpose grease.
4. Lubricate the U-Joint in the drive shaft **every 8 hours** with SAE general purpose lithium or molybdenum base grease.



Gearbox, Dolly Wheel, and U-Joint Lubrication

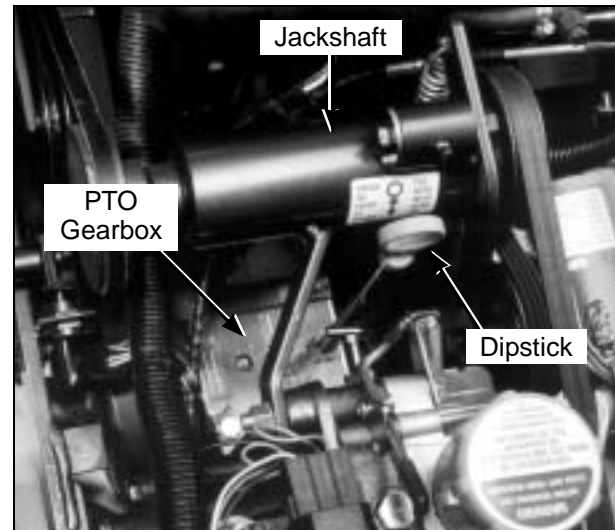
Tractor PTO Gearbox Lubrication

Checking Gearbox Oil Level

Check the gearbox oil level **every 25 hours**, and if necessary, add oil [SAE E.P. (Extreme Pressure) 90W 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 and vented. 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) 90W gear lube.
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 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**.

Hydrostatic Transmission Fluid

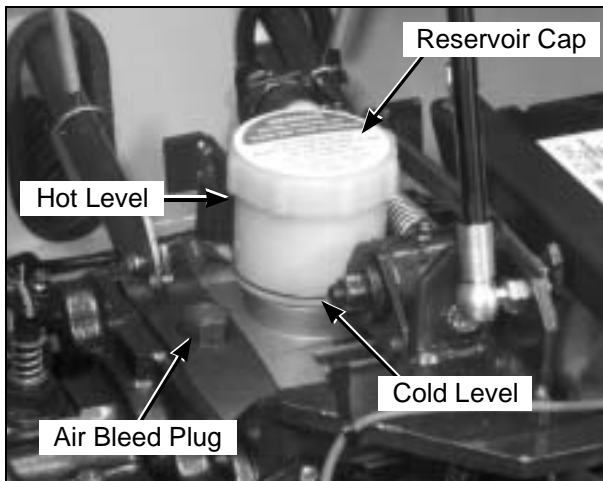
Checking Hydrostatic Transmission Fluid Level

Hydrostatic transmission fluid level should be checked **every 25 hours** of machine operation. It is preferable to **check the fluid level when fluid is cold**. Check fluid level as follows:

1. Park the mower on a **level surface**. Stop the engine and wipe dirt and contaminants from around the reservoir cap and air bleed plug.

IMPORTANT: Before removing the reservoir cap, clean any dirt from around it. Any dirt or contaminants entering the transmission will accelerate wear and eventually cause loss of power to the drive wheels.

2. Remove the reservoir cap and check the level of the fluid. The reservoir has a fluid level **COLD** mark and **HOT** mark. The reservoir **oil level should ALWAYS be at or above the COLD mark and NEVER above the HOT mark**.



Transmission Reservoir and Air Bleed Plug Location

3. If the fluid is below the **COLD** mark (or the transmission is not performing properly), **loosen the air bleed plug** (located on the top of transmission case next to the plastic reservoir).
 - a. If a small amount of fluid leaks from around the air bleed plug:
 - * The transmission is full of fluid.
 - * Tighten the plug and fill the reservoir to the **COLD** level mark.

- b. If no fluid leaks from around the air bleed plug:

- * Slowly add fluid into the reservoir until fluid starts to leak from around the plug. (When it is necessary to add fluid, use only the factory service fluid noted in **TRANSMISSION Specifications** in this manual.)
- * As soon as there is fluid leaking from around the air bleed plug, tighten the plug and fill the reservoir to the **COLD** level mark. Wipe any excess oil off of the transmission housing.

IMPORTANT: DO NOT overfill the transmission reservoir. This will result in oil leaking out of the reservoir cap vent when the transmission warms up. It is preferable to add fluid to the transmission when it is cold and **make sure the oil is not above or below the COLD level mark**.

IMPORTANT: The transmission reservoir has a fine mesh screen in the bottom to trap dirt and foreign particles from entering the transmission. When filling the reservoir, fluid will **flow quite slowly** through this screen; so it is essential that there is fluid at the bleed plug before the transmission is considered full.

IMPORTANT: Any attempt to remove or in any way alter the filtering screen in the transmission reservoir could cause damage to the transmission and will **VOID** any transmission warranty.

Changing Hydrostatic Transmission Fluid

The hydrostatic fluid should be changed **every 1000 hours or two (2) years**. Also, the fluid should be changed if the natural **color** of the fluid has become **black or milky** (indicating possible overheating or water contamination of fluid). The transmission is refilled using the factory service fluid noted in **TRANSMISSION Specifications**. The fluid is changed as follows:

1. Park the mower on a **level surface** and stop the engine.
2. Remove the lower drain plug and the air bleed plug. Allow the fluid to drain out.

IMPORTANT: Clean any dirt from around the plugs and reservoir cap **before** removing them.

3. Reinstall the lower drain plug, making sure the rubber O-ring on the plug is in place and in **good condition**.
4. Refill the transmission through the air bleed plug hole until it is as full as possible.

IMPORTANT: Avoid fluid contamination when filling the reservoir. Use clean container, spout, funnel, etc. when pouring the fluid into the reservoir.

5. Rotate the transmission input shaft about five (5) revolutions to allow any trapped air to escape.

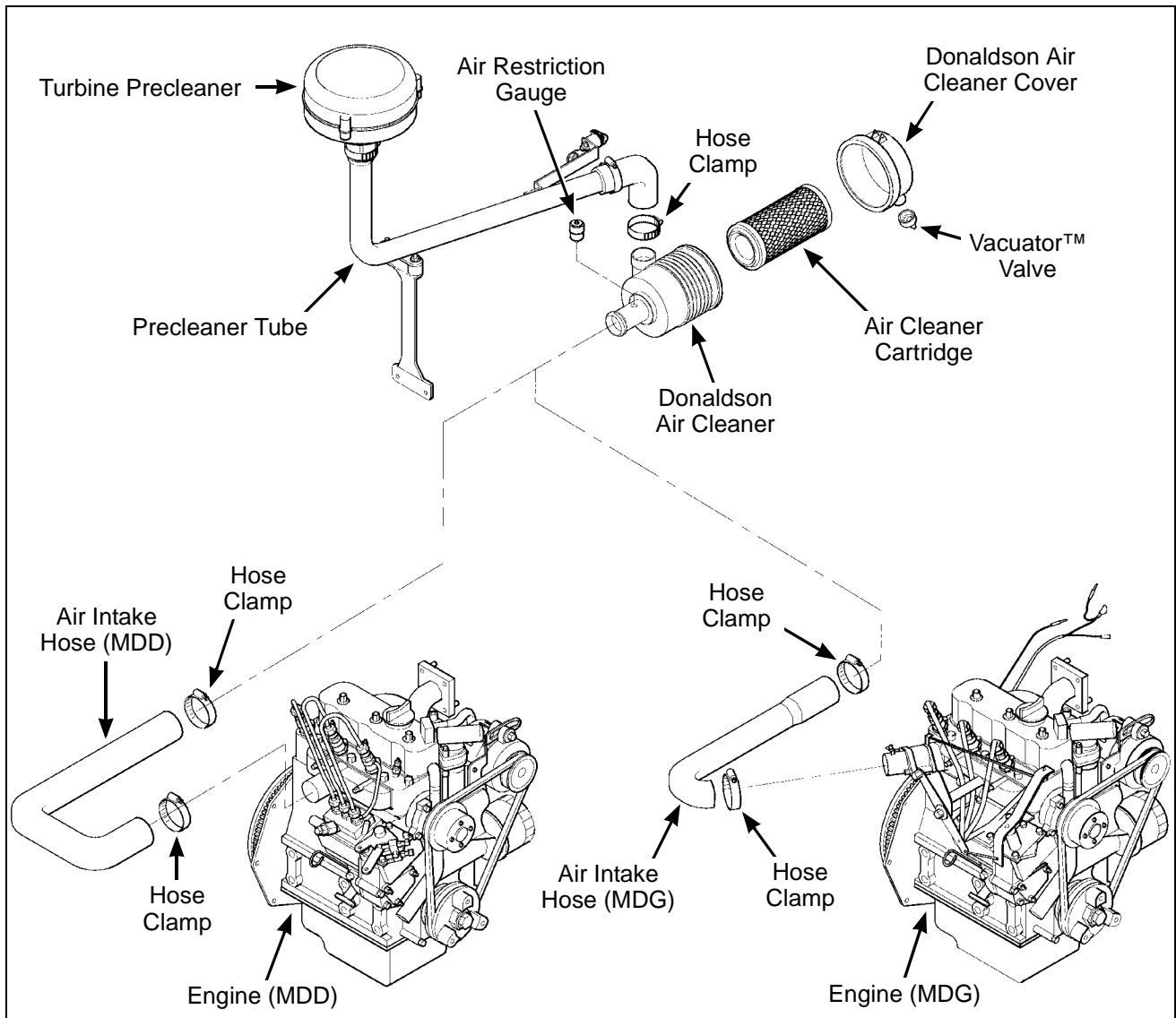
6. Before installing the air bleed plug, fill the reservoir with fluid allowing a small amount to leak out of the air bleed plug hole.

7. Install the air bleed plug and fill the **reservoir** to the **COLD** level line.

CLEANING

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:



Engine Air Cleaner System Components

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:

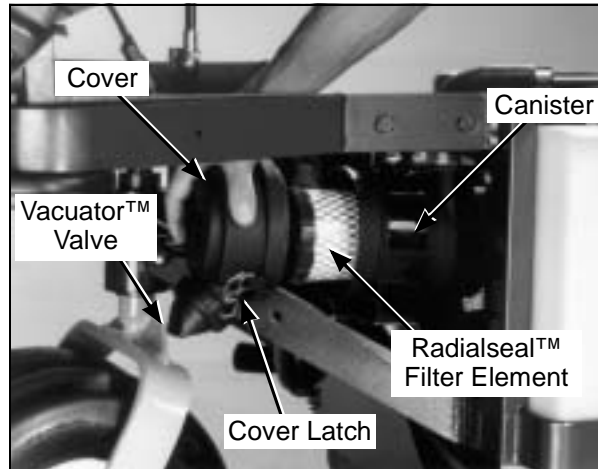
1. Look into the exhaust vent while shining a light into the intake.
2. Start the engine and watch the fan begin to spin as the throttle is advanced.

If the fan is not spinning, service or replace the pre-cleaner as required.

Donaldson Radialseal™ Air Cleaner

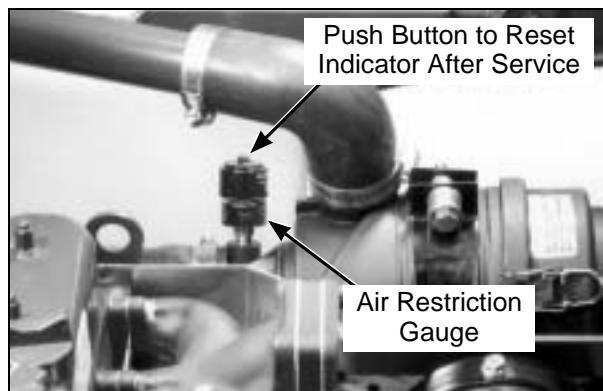
A remote mounted Donaldson Radialseal™ air cleaner provides the air filtering function. The paper filter element slides over and outlet tube inside the air cleaner canister with **radial** sealing action, eliminating the possibility of dust leaks due to improper filter installation. Intake design, internal baffling, and a Vacuator™ valve provide dust separation and automatic precleaning action. Daily or frequent servicing of the air cleaner **is not required**. Use the air restriction gauge on the air cleaner outlet to indicate when the air filter needs servicing -- a red flag will appear 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 filter element. **NEVER** apply oil to the paper element.



Air Restriction Gauge Location

Clean and inspect the paper element **after every 100 hours** of service and **replace** the element **yearly** or **after six (6) cleanings** (or when dirty or damaged). More frequent cleaning may be required when operating in extremely dusty conditions as indicated by the air 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 Vacuator™ valve. Check that these components are in good condition. The Vacuator™ valve is subject to wear and deterioration and should be 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. Clean the filter element using **low pressure** compressed air [less than 100 PSI (689 kPa)]. Blow out the filter from the interior of the element while turning the element.

NOTE: Washing the element in water or cleaning solution is not recommended. Replace the element if it does not clean up with compressed air.

4. Use a bright light inside the 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 element if necessary.

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. 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.

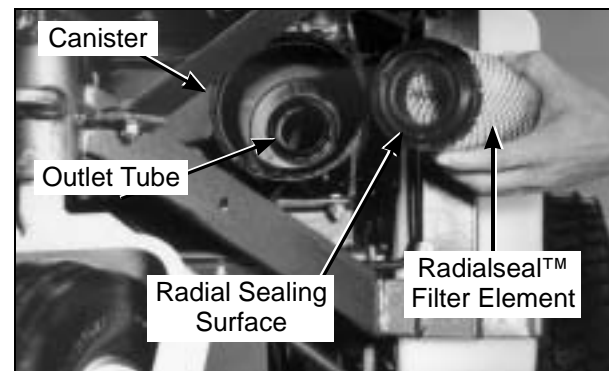
IMPORTANT: Any dust left on the inside of the outlet tube will go into the engine and cause wear.

7. Check the outside surface of the outlet tube for smoothness and cleanness (this is the sealing surface).

8. Insert and seat the 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.

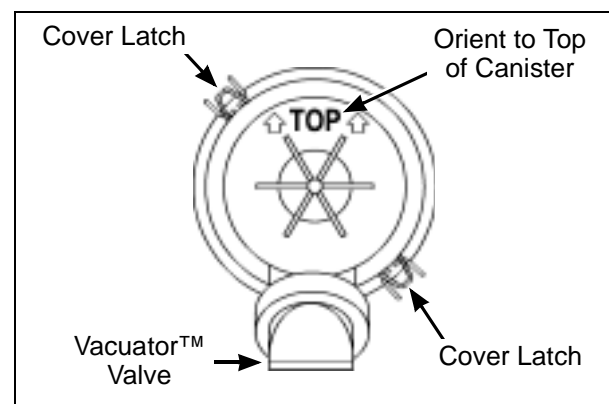
IMPORTANT: DO NOT use the cover latches to force the filter into the canister -- the cover should fit on with **no extra force**.

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



Air Filter Element Replacement

9. 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

10. Check the air intake hose for cuts, nicks, etc., and the hose clamps for tightness.
11. Reset the air restriction indicator (press button on bottom).

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. Unlatch and 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).

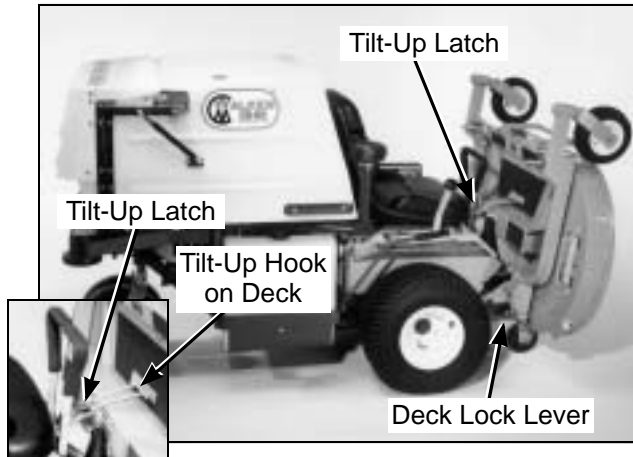
Grass Buildup in Mower Housing



DANGER

Before raising or removing the mower deck for cleaning, stop the engine, remove the ignition key, and disconnect the spark plug wires.

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, raise deck to the **TILT-UP** position and insert the deck hook into the tilt-up latch on the tractor body.



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: While some degree of material buildup 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 springtime mowing), 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

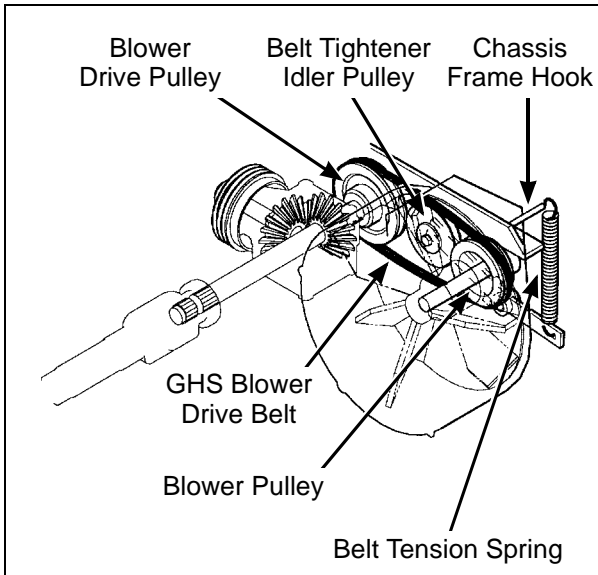
Before attempting to wash the blower, stop the engine, remove the ignition key, and disconnect the spark plug wires.

1. Remove the GHS blower drive belt by unhooking the belt tension spring from the hook on the chassis frame (located above the blower pulley). Lift the belt tightener idler pulley up and roll the belt off of the blower pulley. The belt should be clear of the blower pulley, allowing **free movement** of the blower wheel.

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.

- Reinstall the GHS blower drive belt by reversing the removal procedure.



Collapse Blower Belt Tightener to Remove GHS Blower Drive Belt

GHS Exhaust Screen

Refer to **Cleaning the GHS Exhaust Screen** in **Operating Instructions**.

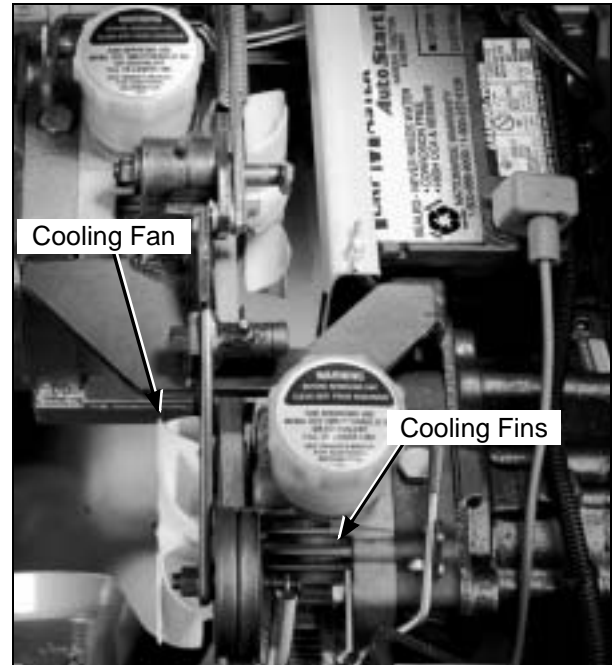
Hydrostatic Transmission Cooling Fins

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 electric plug on the fuel shut-off solenoid (MDD) or the spark plug wires (MDG).

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.

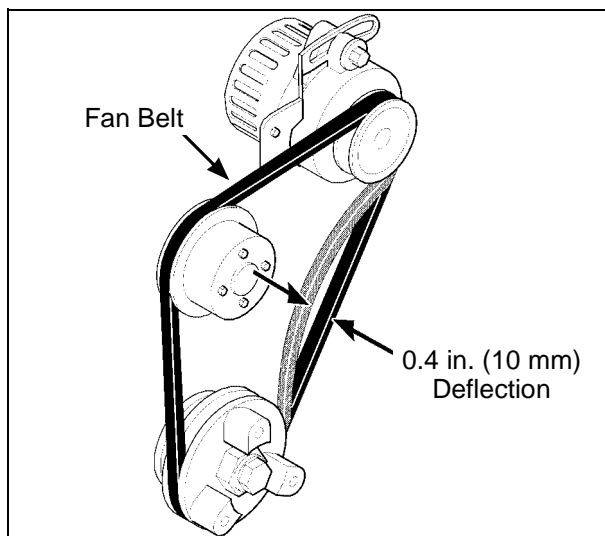
Check the coolant level in the coolant recovery tank and **maintain the coolant level between the FULL and LOW marks on the recovery tank**. When the engine is cold, the coolant level should be at or slightly above the **LOW** mark on the recovery tank.

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).

Fan Belt Tension

Check and adjust the fan 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.



Fan 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.

Battery

NOTE: For initial battery service during setup, refer to **Battery Service** in **Assembly Instructions**.

Electrolyte Level

The battery electrolyte level should be checked **after every 25 hours** of operation. To check electrolyte level:

1. Remove battery cell filler caps.
2. Check the electrolyte level. If the level is below the bottom of the vent well, fill with drinking water to the bottom of the vent wells [1/4 to 1/2 in. (6 to 13 mm) above the plates].
3. Replace filler caps.

IMPORTANT: DO NOT overfill the battery. Electrolyte will overflow through the vented caps onto parts of the machine and **WILL** result in severe corrosion.

Cleaning the Terminals

If battery terminals are corroded, **remove 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

Check the battery charge by measuring the specific gravity of electrolyte; if specific gravity is less than 1.225, the battery will need to be charged as follows:

1. Charge the battery at 15 amps for 10 minutes. **DO NOT** exceed 20 amps maximum recommended charging rate. Charge until specific gravity is at least 1.250. Total charging time should not exceed one (1) hour.
2. After charging the battery, use drinking water to adjust the electrolyte level to the bottom of the vent wells [1/4 to 1/2 in. (6 to 13 mm) above the plates].

 **DANGER**

BATTERIES PRODUCE EXPLOSIVE GASES

- Charge the battery in a well-ventilated area, so that gases produced while charging can dissipate.
- Keep sparks, flames, and smoking materials away from the battery at all times.
- Make sure the battery cap vents are open (check manifold vent on each cap).
- Make sure the battery charger is unplugged before connecting or disconnecting cables to the battery.

Tire Pressure

Inflate tires to pressures shown below:

Deck Caster Wheel = 20 PSI (137 kPa)

Drive = 15 PSI (103 kPa)

Rear = 20 PSI (137 kPa)

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 **REPLACING/REPAIRING the Mower Blades** in this section). 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 ignition key, and disconnect the electrical plug on the fuel shut-off solenoid (MDD) or the spark plug wires (MDG) **before** raising the mower deck to service blades.
2. Raise the deck and secure it in the **TILT-UP** position. Refer to **CLEANING the Grass Buildup in Mower Housing** in this section for deck raising instructions.

 **DANGER**

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

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**

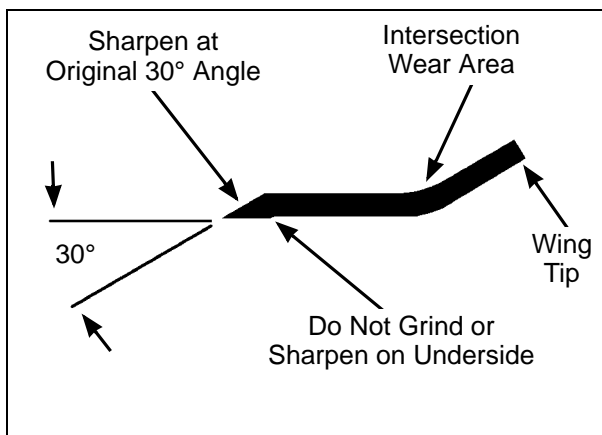
DO NOT try to straighten a blade that is bent. NEVER weld a broken or cracked blade. ALWAYS replace with a new blade to assure safety.

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 mounts 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.

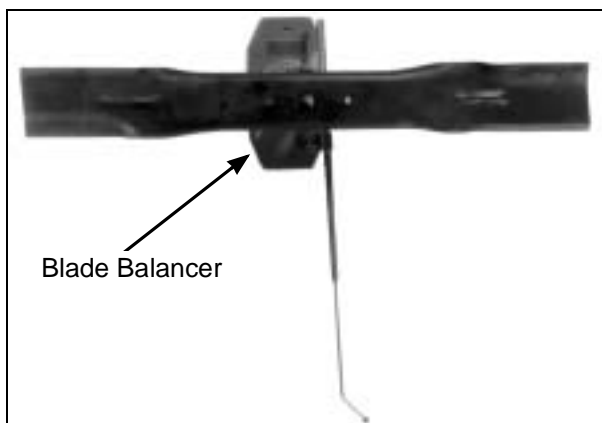
CAUTION

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. Reinstall the blade, washer, lock washer, and nut. **Tighten the nut to 60 ft-lb (81.3 N-m).**

NOTE: When reinstalling blades on **GHS** models, remember, the **blades turn toward each other** (counter-rotate) and the RH and LH blade cannot be switched. Check for proper blade rotation before installing blades on the deck. Refer to **Blade Rotation for GHS Mower Deck** illustration shown in **Clogging Checklist** in **Operating Instructions** 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 fan belt. If the belts show **signs of cracking or deteriorating**, the belts should be **replaced**. Refer to **REPLACING/REPAIRING the Drive Belts** in this section.

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 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** in this section.

Spark Plugs - Model MDG

Every 400 hours, remove the spark plugs, inspect, clean, and reset the gap (or replace with **new plugs**). Clean spark plugs with a wire brush. If the electrodes are burned short or pitted, replace the plug (refer to **Specifications** for the proper type of replacement plug). Check the spark plug gap with a wire-type feeler gauge and set the gap to 0.043 in. (1.09 mm). Reinstall and tighten to 17 ft-lb (23 N-m).

Ignition Wires - Model MDG

Good preventive maintenance calls for complete **replacement** of spark plug wires **every two (2) years**.

Breaker Points - Model MDG

The Kubota engine is equipped with electronic ignition. No breaker points, maintenance, or adjustments are necessary with this system. Contact an authorized Kubota engine dealer in case of ignition failure.

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 (Model MDD) 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 - Model MDD

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.

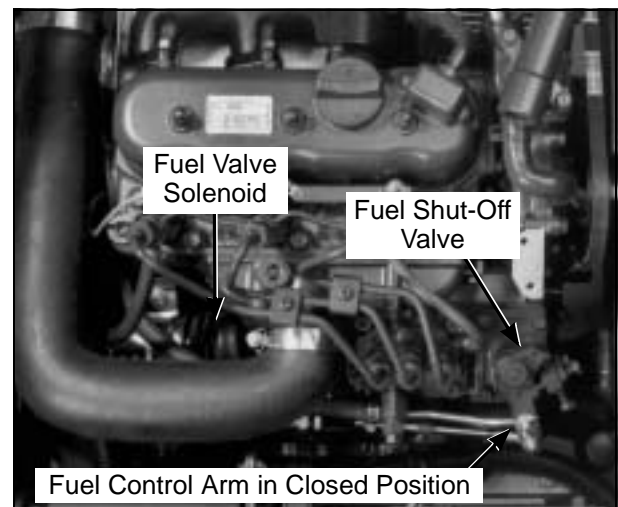
WARNING

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.

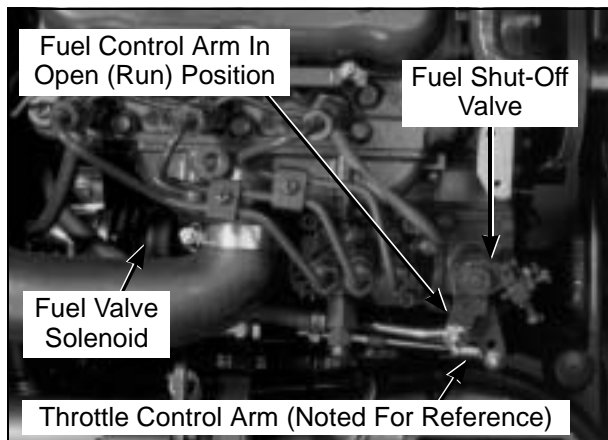
Fuel Valve Solenoid - Model MDD

The starting and stopping of the diesel engine is controlled by the fuel shut-off valve. If the engine cranks, but does not start or the engine does not stop when the ignition switch is turned **OFF**, check operation of the fuel valve.

Raise the mower body and locate the fuel valve on the engine. The valve is operated by an electric solenoid which is **controlled by the ignition switch**. The valve is open when the ignition key is moved to the **START** or **RUN** position, and the valve is closed when the ignition key is moved to the **OFF** position.



Fuel Valve Closed (Engine OFF Position)



Fuel Valve Open (Engine START and RUN Position)

If the fuel valve solenoid is not operating properly, the problem may be isolated by **first** checking the operation of the solenoid as follows:

1. Disconnect the fuel valve solenoid wire plug from the wire harness.
2. Make jumper wire connections from the solenoid to the battery:
 - a. Red wire to positive terminal (+), black wire to ground (-).
 - b. Touch white wire to the positive terminal (+) and the solenoid should pull closed (open the fuel valve).
 - c. Remove the white wire and the solenoid should **hold** the fuel valve open.
 - d. Remove the red wire and the solenoid should open (close the fuel valve).

Replace the solenoid if it does not operate properly by the above test. If it does operate, the problem is in the electrical system and can be checked using the wiring diagram. Refer to **ELECTRICAL SYSTEM** for **Wiring Diagram - Model MDD** or **Model MDG** in this section.

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. Refer to **ADJUSTMENTS of Blade Clutch (PTO)** in this section.

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 electrical plug on the fuel shut-off solenoid (MDD) or the spark plug wires (MDG).

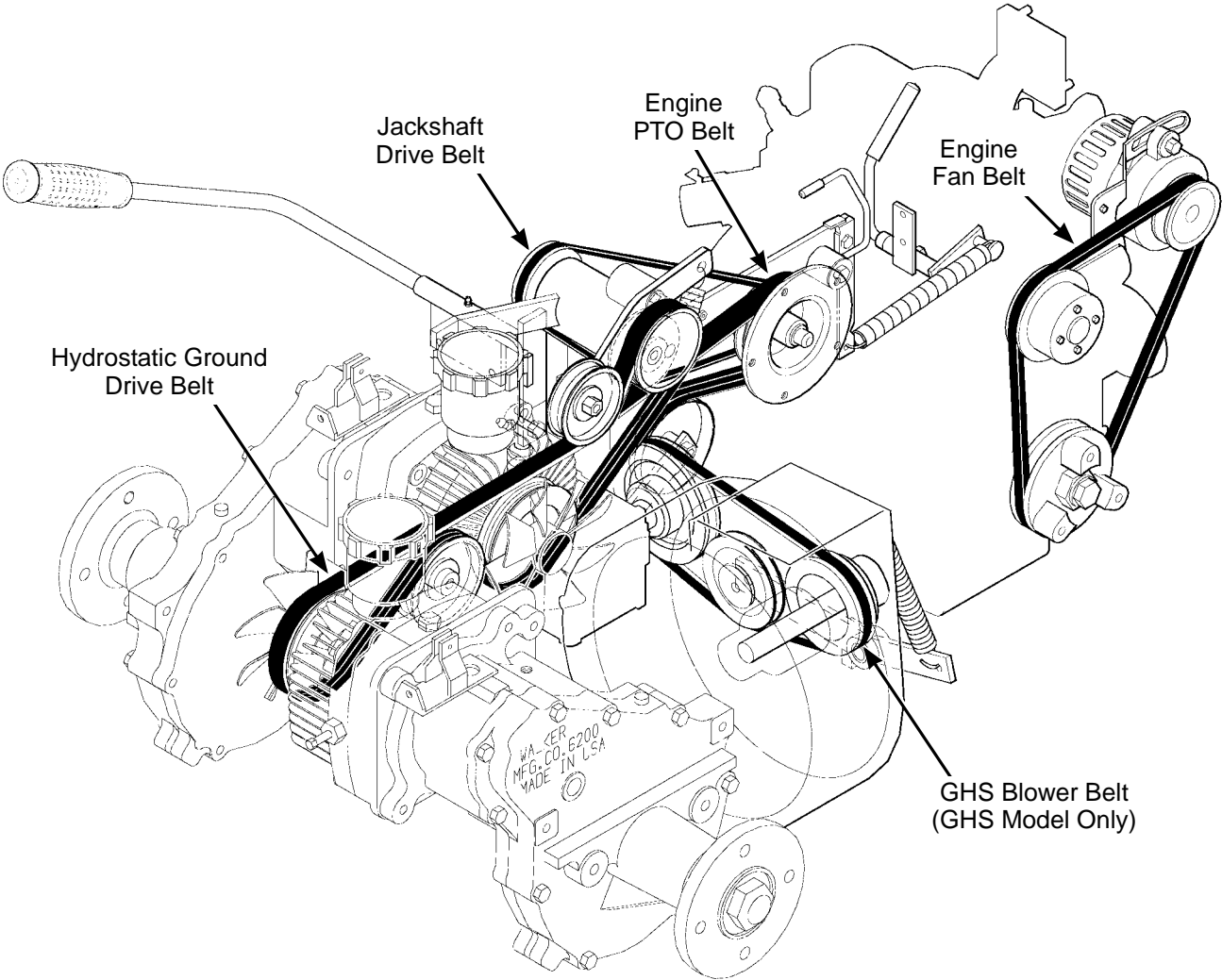
IMPORTANT: ALWAYS use genuine factory replacement parts. Substitute parts **CAN** result in product malfunction and possible injury to the operator and/or others.

Drive Belts

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

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

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



Belt Locations

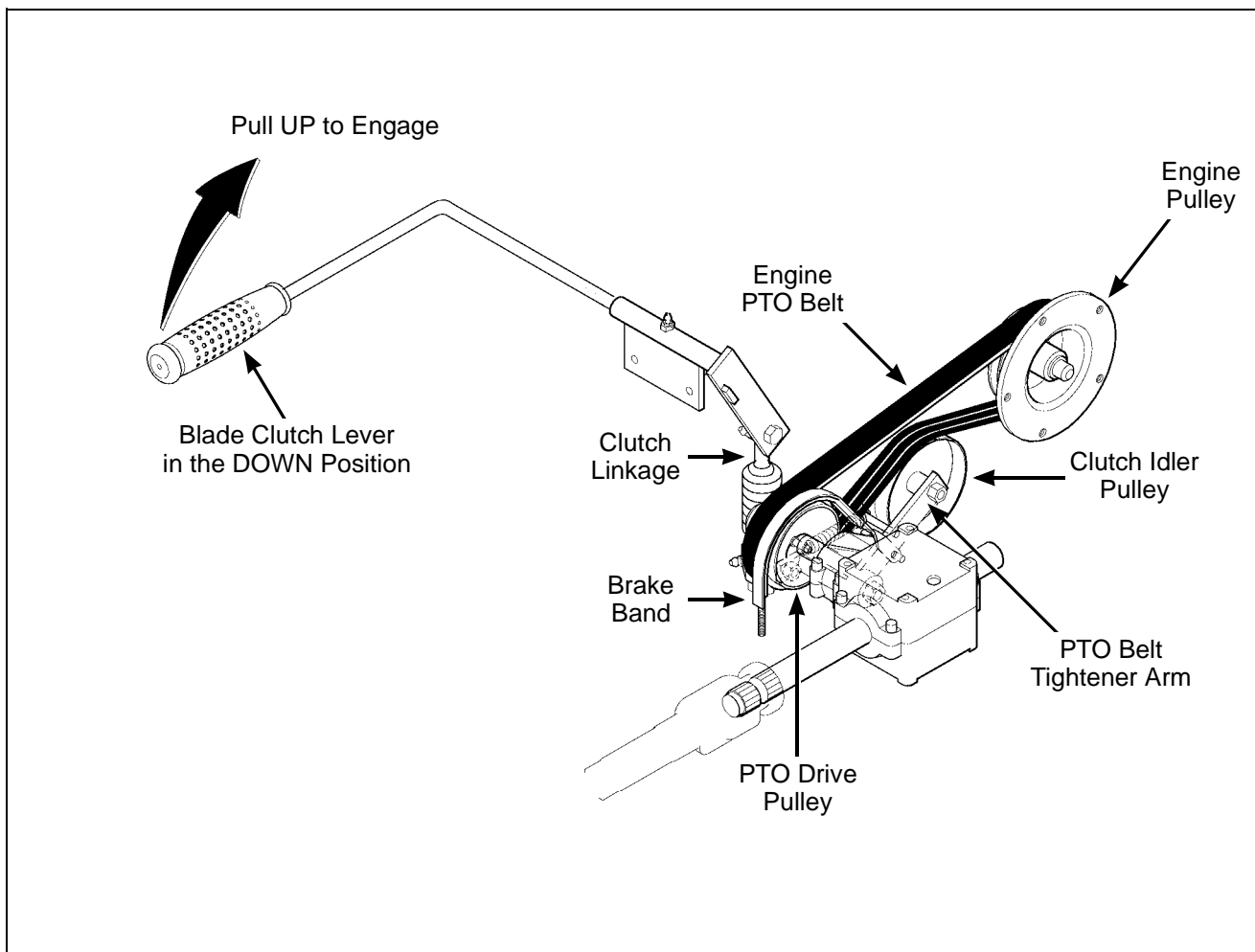
Engine PTO Drive Belt (3 Groove Power Band)

1. To remove the engine PTO drive belt:
 - a. Remove the jackshaft drive belt from its idler pulley (by pushing down on cold start lever) and let the belt drop down out of the way.

NOTE: Step (a) is not essential to removing the PTO belt, but it makes more room to work with the PTO belt.

 - 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. Refer to **ADJUSTMENTS of Blade Clutch (PTO)** in this section to check and make the following adjustments:
 - a. Adjust clutch disengagement (brake band adjustment) and check brake action.
 - b. Adjust clutch engagement for proper belt tension.



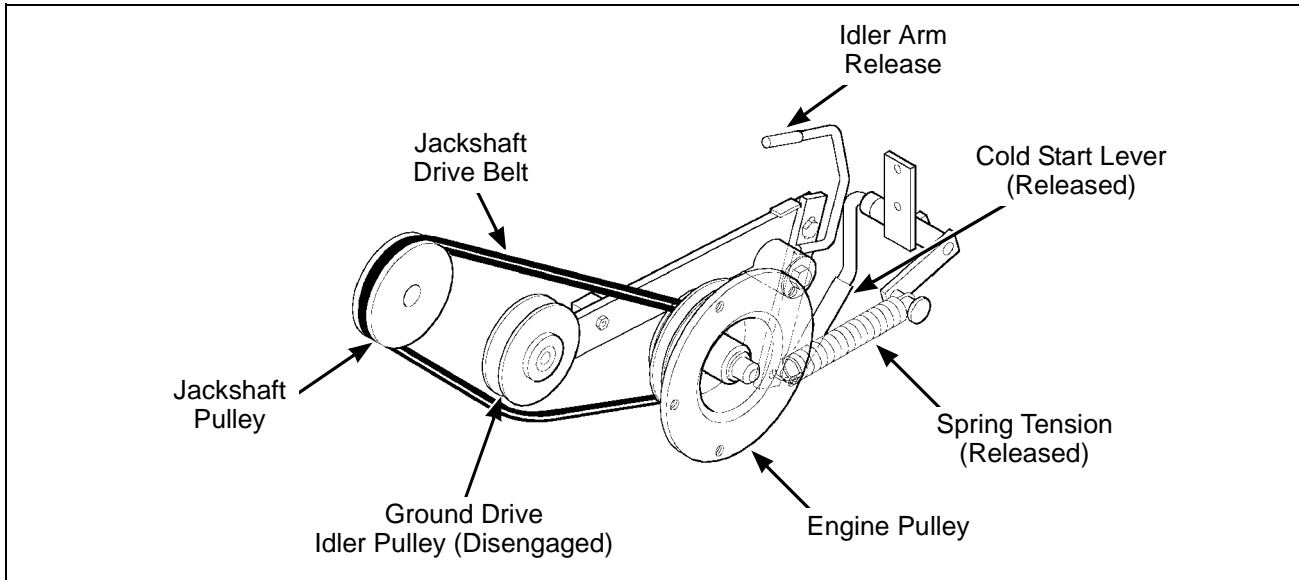
Engine PTO Drive Belt Removal

Jackshaft Drive Belt

1. To remove the jackshaft drive belt:

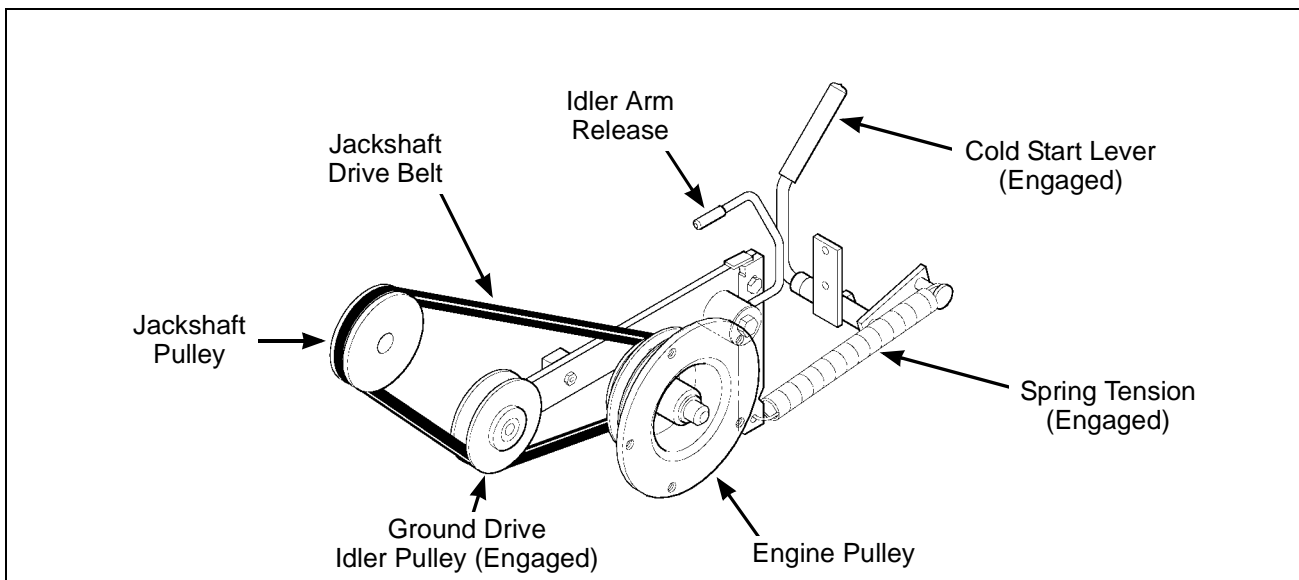
- a. Relax the belt by releasing spring tension from the jackshaft drive idler arm using the **cold start lever**.

- 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)

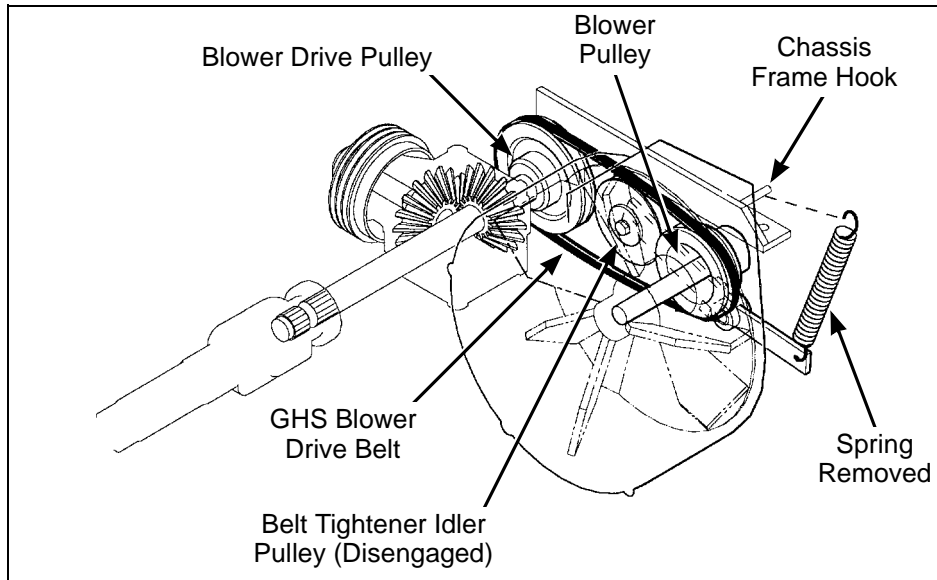
2. Reverse the removal procedure to replace the jackshaft drive belt.



Jackshaft Drive Belt (Engaged)

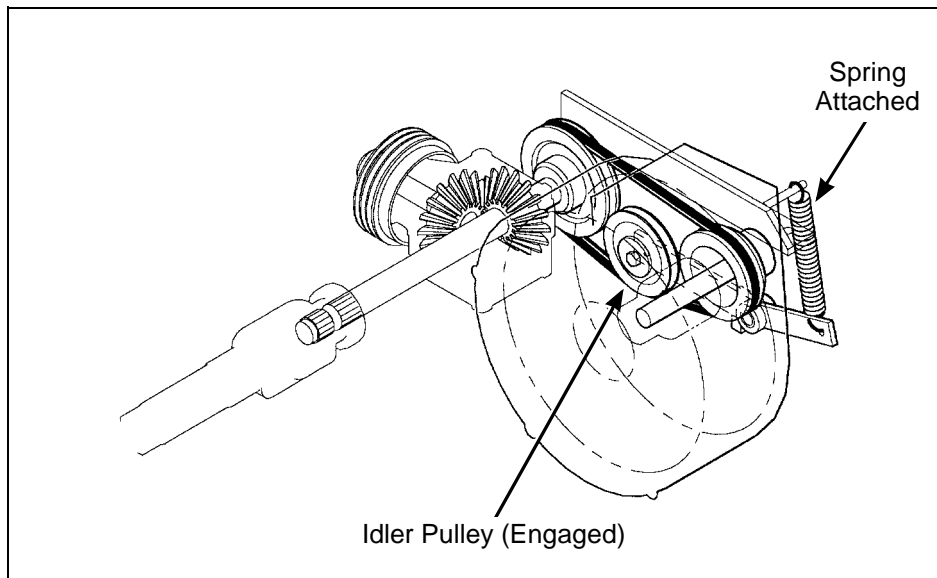
GHS Blower Drive Belt

1. Remove the GHS blower drive belt by unhooking the belt tension spring from the hook on the chassis frame (located above the blower pulley). Lift the belt tightener idler pulley up and roll belt off the pulleys.



GHS Blower Drive Belt Assembly (Disengaged) Blower Drive Belt Spring Removal

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



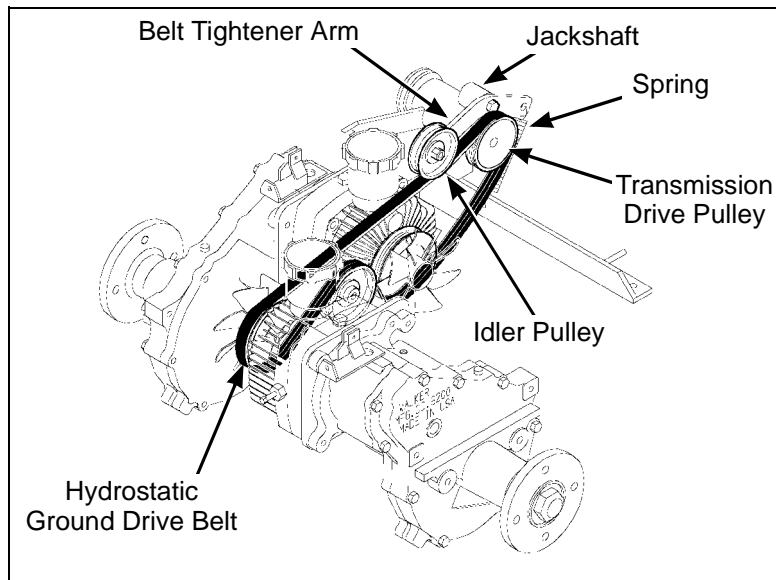
GHS Blower Drive Belt Assembly (Engaged)

Hydrostatic Ground Drive Belt

1. To remove the hydrostatic ground drive belt:

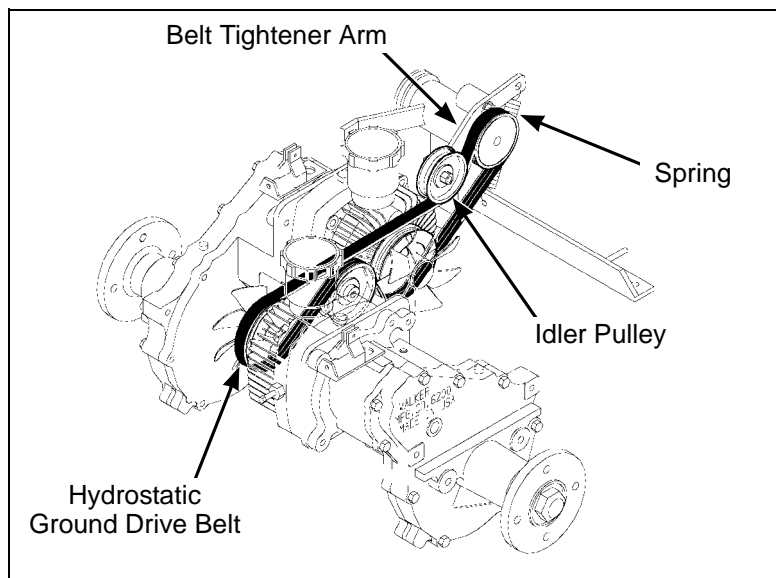
- a. Raise the spring-loaded belt tightener arm and idler pulley to relax belt.

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



Hydrostatic Ground Drive Belt Assembly (Disengaged)

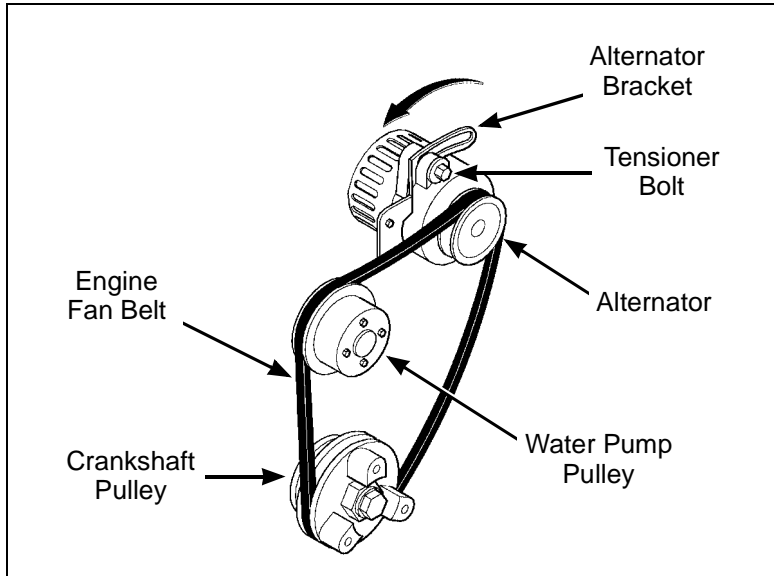
2. Reverse the procedure to install the hydrostatic ground drive belt.



Hydrostatic Ground Drive Belt Assembly (Engaged)

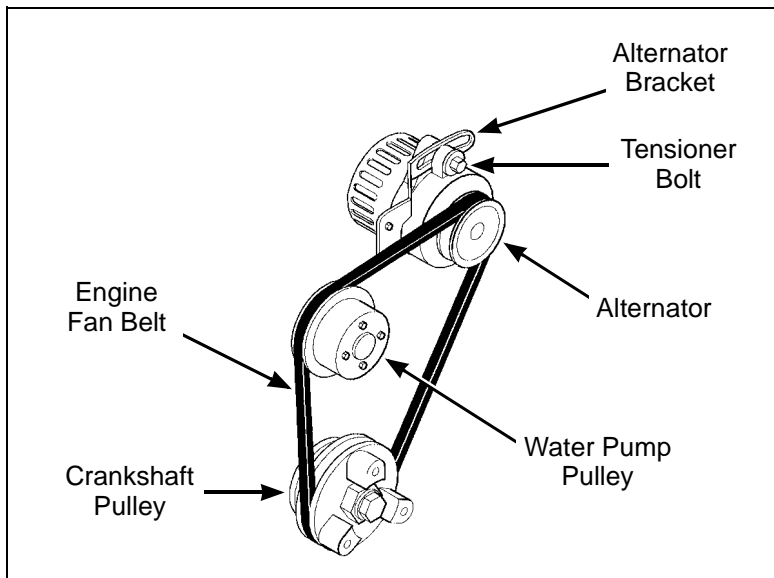
Engine Fan Belt

1. To remove the fan 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 Fan Belt (Loose)

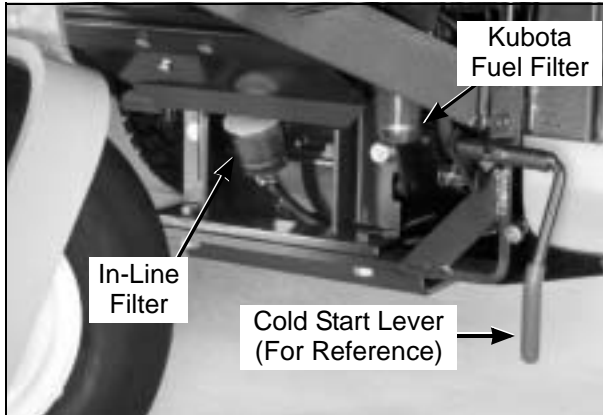
2. Reverse the procedure to install the belt. Adjust and check the belt tension by referring to **CHECKING/SERVICING** the *Fan Belt Tension* in this section.



Engine Fan Belt (Tight)

Fuel Filter - Model MDD

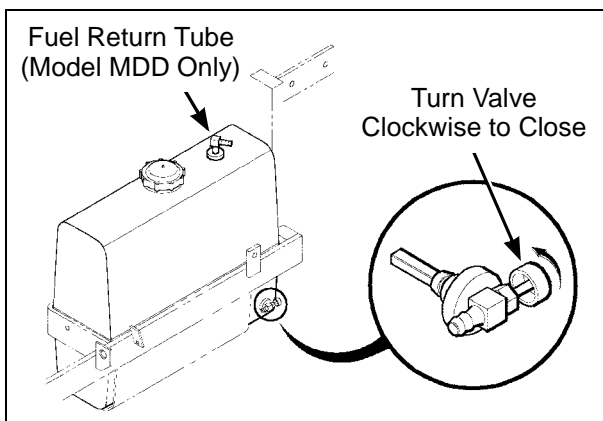
Model MDD has **two (2) fuel filters**. Replace both the in-line filter and the Kubota filter element **every 400 hours** of operation.



Fuel Filter Location (Model MDD)

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

1. Close the fuel tank shut-off valve and 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 and fuel tank shut-off valve.



Fuel Shut-Off Valve and Filter

Fuel Filter - Model MDG

Model MDG is equipped with an in-line fuel filter. (Same location as shown for Model MDD.) Replace the filter **yearly**.

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

DANGER

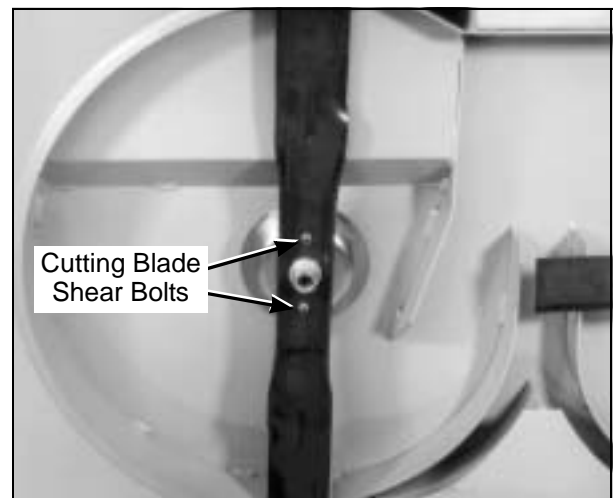
Gasoline is extremely flammable and can be highly explosive. To minimize danger:

- Use only an approved fuel container for gasoline.
- **DO NOT** allow open flames or sparks near the machine while performing maintenance or refueling; **DO NOT** smoke while working with fuel.
- **Wipe up spilled gasoline immediately and completely.**

Blade Overload Shear Bolts

NOTE: Shear bolts are not used on the DSD62 mower deck.

The 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 ft-lb (81.3 N-m)** is also important for proper shock load protection. It is important to **not over-tighten** the mounting nut since this defeats (over-rides) the function of the shear bolts.

If these bolts shear, remove the blade and install new bolts. Refer to **CHECKING/SERVICING** in this section for **Sharpen Mower Blades** which describes the blade removal and installation procedure.

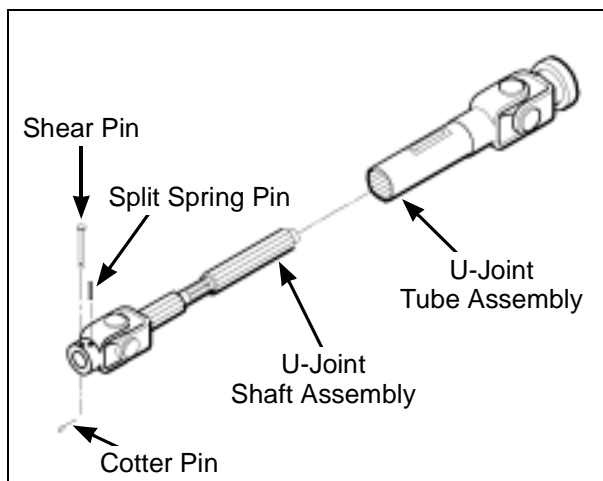
After reinstalling the blade, check blade timing by moving blades through **one (1) complete revolution**. Make sure blade tips pass clear of each other. If timing is incorrect, refer to **Mower Deck Gearbox Replacement** in this section.

PTO Shear Pin (After S/N 99-37748)

The PTO drive shaft connection to the deck gearbox has a shear pin to provide shock load protection to the mower deck drive. This system provides **primary shock protection** in case of blade impact and will normally shear before the individual shear bolts on the blade hub.

When the PTO pin has sheared, use the following procedure to replace it:

1. Loosen the two bolts securing the PTO shaft guard on the deck; lift the guard off. (Holes in guard are slotted for easy removal.)
2. Rotate U-joint on shaft to align the shear pin hole with the hole (and shear pin fragment) in the shaft. Use a punch to drive the remaining portion of the old shear pin out.
3. Install new shear pin and secure with cotter pin.



PTO Shear Pin

IMPORTANT: Use only Walker P/N 8067-10 shear pins for replacement to provide proper shock protection -- these pins are hardened to shear under a specific amount of load.

4. Reinstall the PTO shaft guard.

Before operating the deck, inspect the blade over-load shear bolts and also 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, refer to **Mower Deck Gearbox Replacement** in this section.

Mower Blades

Mower blades are removed and remounted as described in **Sharpen Mower Blades** instructions. 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 **Mower Blade Profile for Sharpening** illustration in **Sharpen Mower Blades** instructions). 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** instructions. 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.

Mower Deck Gearbox Replacement

NOTE: Deck gearbox(es) may be changed with the deck mounted on the tractor. However, the deck may be removed from the tractor making the overall job of removing the gearbox assembly easier. Refer to *Deck Installation* in **Assembly Instructions** and reverse the procedure to remove the deck.

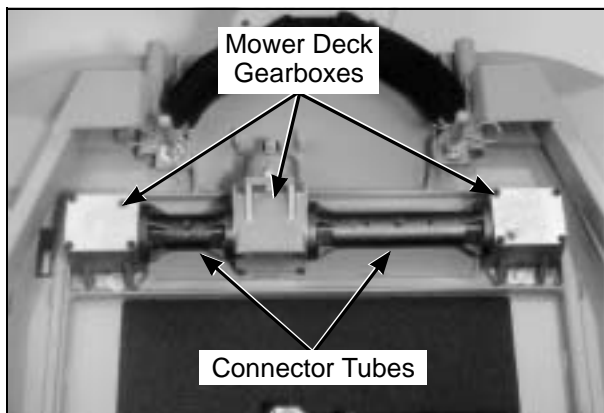
To replace the mower deck gearbox(es), use the following procedure:

1. Remove mower blades. Refer to procedure in **Sharpen Mower Blade** instructions.
2. Remove gearbox cover (two machine screws) and PTO shaft guard (two 1/4-20 bolts).
3. Remove two (2) 3/8-16 mounting bolts from each blade drive gearbox and lift the entire gearbox assembly from the deck (including PTO drive shaft).
4. Remove the screws securing the cover plates on the gearboxes and remove the covers. Remove all covers to be sure oil is completely drained from all gearboxes.

NOTE: With oil flow throughout the unitized gear drive assembly; if one gearbox has internal damage or excessive wear, the remaining gearboxes and connector tubes should be completely disassembled and thoroughly flushed out with solvent before reassembly.
5. Drain and properly dispose of oil.
6. Remove the four (4) bolts mounting the gearbox to the connector tube and slide the gearbox off the splined drive shaft coupling.
7. Install the new gearbox on the spline coupling of the drive shaft. Establish correct timing of the blade drive gearboxes by setting flats on the output shaft at 90 degrees when connecting the gearbox(es) to the spline coupling. Make sure the timing is correct before proceeding with assembly.
8. Reinstall the four (4) bolts mounting the gearbox to the connector tube but **do not tighten** them at this time; leave connector tube bolts finger-tight.
9. Position the gear drive assembly on the deck and install the 3/8-16 bolts mounting the entire assembly. Leave the mount bolts finger-tight.
10. Torque all the connector tube bolts to 80 in-lb (9 N·m); then tighten the deck mount bolts.

NOTE: This fastener tightening sequence aligns the gearbox assembly with the deck housing and eliminates the possibility of mounting the unitized assembly in a bind.
11. Fill gearbox assembly with oil. Refer to **Mower Deck Gearbox Lubrication** in this section for instructions.

12. Reassemble remaining items onto deck to complete installation. After installing blades, check that the blade timing is correct by moving the blades through **one (1) complete revolution**. Make sure blade tips pass clear of each other.

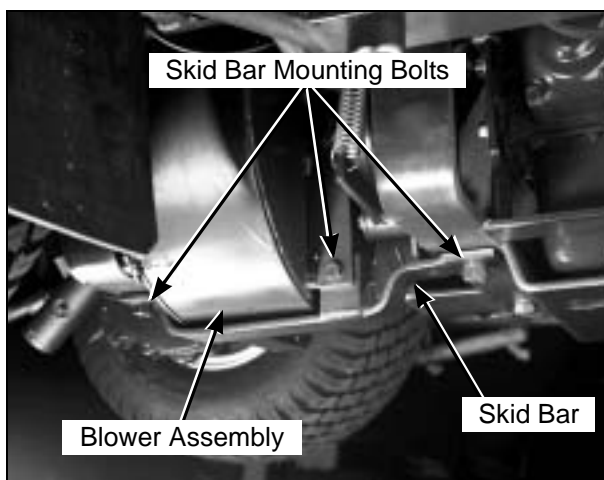


Mower Deck Gearboxes
(Shown with Gearbox Cover Removed for Clarity)

GHS Blower Assembly (and/or Blower Wheel)

GHS Blower Assembly Removal

1. Remove the mower deck. Refer to *Deck Installation* in **Assembly Instructions** and reverse the procedure to remove the deck.



Remove Skid Bar for GHS Blower Removal

2. Remove the blower faceplate by removing six (6) 1/4-20 nuts.

3. Remove the GHS blower drive belt. Refer to **REPLACING/REPAIRING the Drive Belts** in this section for instructions.
4. Remove the blower assembly from the chassis as follows:
 - a. Remove the blower skid bar by removing front and rear mounting bolts from the skid bar (underneath the blower) and removing the bolt connecting the blower housing to the skid bar.
 - b. Remove the blower belt tightener idler arm assembly by removing the pivot bolt.
 - c. Remove two (2) bolts mounting the blower housing to the frame.
 - d. Lower the blower assembly **straight down** out of the chassis frame and remove.

Blower Wheel Removal

When required, replace the blower wheel using the following procedure:

1. Loosen blower pulley set screws and remove the pulley using a wheel puller.
2. Remove the **locking collar** from the back bearing (closest to the pulley) by loosening the **set screw** and rotating the collar counterclockwise (use punch to drive).
3. Press blower wheel out of the housing using a wheel puller hooked to lugs on the bearing housing. The bearings have been secured in the housing with a retaining compound - Loctite® RC/680, and **considerable force** will be required to break this bond. After the bearings have "broken loose" from the housing, only light pressure should be required to remove the wheel assembly out of the housing.

NOTE: It may or may not be possible to remove the front bearing from the blower wheel without damaging it. If the bearing is damaged, it will need to be replaced along with the wheel.



Pressing Blower Wheel Out of Housing

Blower Wheel Installation

1. To install the blower wheel, **reverse the removal procedures**. The front bearing is mounted on the blower wheel shaft, secured by a locking collar. Drive the locking collar clockwise with a punch, and tighten the set screw.
2. Press blower wheel and front bearing into the blower housing. Use Loctite[®] RC/680 retaining compound on the outer bearing race and inside the bearing housing.
3. Press the rear bearing into place, using Loctite[®] on both the outer bearing race and the housing.
4. Install the locking collar on the rear bearing and install the blower pulley to complete the blower assembly. Torque the blower pulley set screws to 250 in-lb (28.3 N·m).

GHS Blower Assembly Installation

Reinstall the blower assembly into the mower using the reverse procedures of *GHS Blower Assembly Removal*.

Replacing Fuel Valve Solenoid

For checking operation of the solenoid, refer to **CHECKING/SERVICING the Fuel Valve Solenoid - Model MDD** in this section. To replace the solenoid:

1. Remove the engine air intake hose for access to the solenoid.
2. Disconnect the electrical plug, remove the two (2) mounting bolts and the cotter pin on the linkage, then remove the solenoid.
3. Unscrew the linkage rod out of the old solenoid and reinstall in the new solenoid. Leave the jam nut on the linkage rod loose.
4. Reinstall the solenoid. At this point, move the solenoid linkage by hand and check for any binding or dragging of the solenoid plunger and linkage. If the solenoid does not move freely, adjust the solenoid mounting position by bending the mount and/or loosening the mounting bolts. The solenoid must move freely for proper operation.
5. Refer to **ADJUSTMENTS of Fuel Valve Solenoid Linkage - Model MDD** in this section and make the fuel valve linkage adjustment for the 1/16 in. (1.6 mm) air gap with injector pump stop.
6. Reinstall the engine air intake hose. Make sure the hose clamps are tight and the hose is secure.

ADJUSTMENTS



If the engine must be running to perform a maintenance adjustment, keep hands, feet, and clothing from moving parts. DO NOT wear jewelry or loose clothing.

Safety Switches

There are three (3) safety interlock switches on the tractor. Use the panel nuts on the switch body to position the switch for proper activation of the switch. The adjustment procedure for each switch is:

Seat Switch

Adjust switch position in body panel to achieve a 1/32 to 1/16 in. (.8 to 1.6 mm) air gap between the switch plunger and seat frame with no weight on the seat. Test for proper operation.

FSC Neutral-Park Switch

1. Place the FSC in **NEUTRAL-PARK** position.
2. Adjust switch to the point where the starter engages when the ignition switch is turned to the start position.
3. Adjust switch position forward an additional 1/2 to 1 turn of the panel nuts.

NOTE: If the switch cannot be adjusted forward enough to achieve proper function, it may be necessary to bend the switch mounting bracket slightly.

PTO Switch

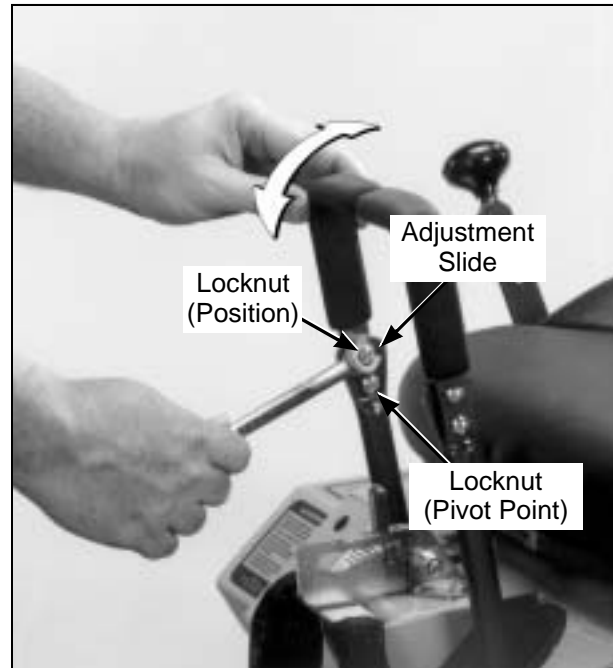
With the PTO engaged, adjust switch to achieve a 1/64 to 1/32 in. (.4 to .8 mm) gap (plunger extension) between the switch body and the actuator plate.

Tail Wheel Bearing Preload

Preload the tail wheel bearings by tightening the axle nut until the wheel begins to tighten as it turns (not spin freely), then loosen the nut 1/2 to 1 turn. The wheel should spin freely without excessive end play. Lock the axle nut with the set screw in the nut.

Steering Levers

An adjustment range of approximately 3 inches is available on the steering levers - the levers can be adjusted forward or aft depending on the arm length of the operator. The levers can be adjusted by loosening the locknut at the pivot point and the locknut holding the lever in position in the adjustment slide. Adjust levers into most comfortable position and tighten both locknuts.



Steering Lever Adjustment

Blade Clutch (PTO)

Clutch Disengagement/Brake Action

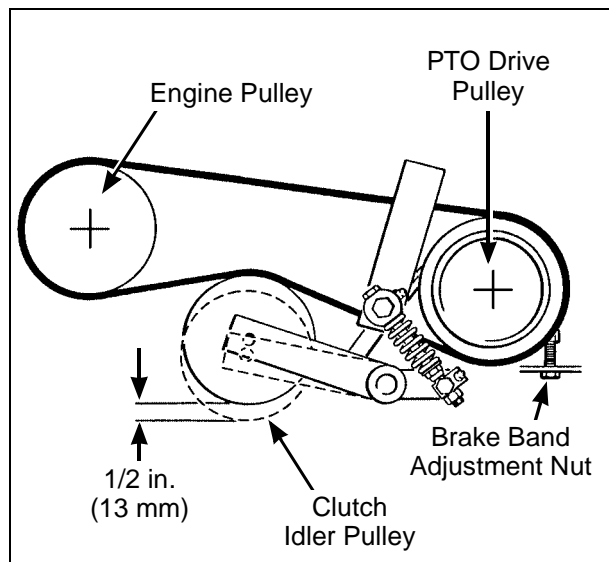


It is important to check and maintain blade brake action for safe operation of the machine.

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 **CHECKING/SERVICING the Blade Brake Action** in this section. 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 **REPLACING/REPAIRING the Drive Belts** in this section), and readjust pulley travel as described by step 1 (above).



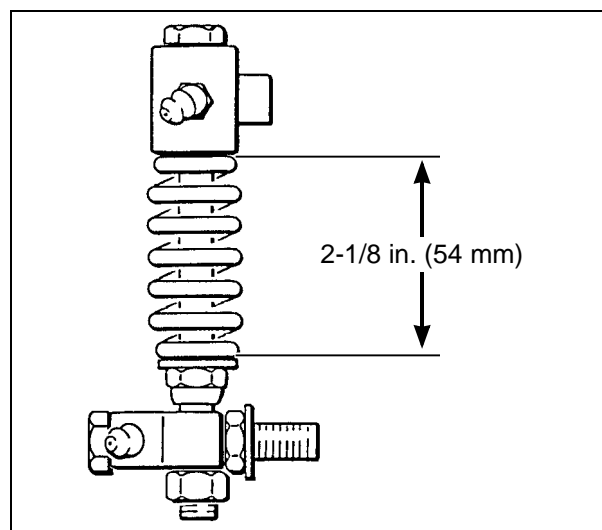
PTO Clutch Disengagement Adjustment

- 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).

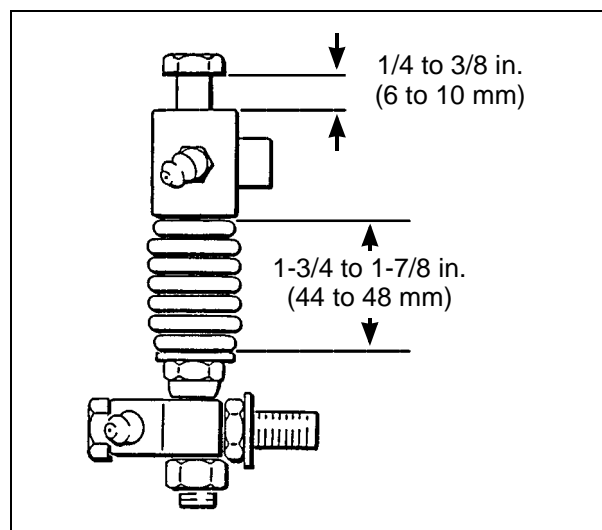
Clutch Engagement/Belt Tension

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

Transmission Control

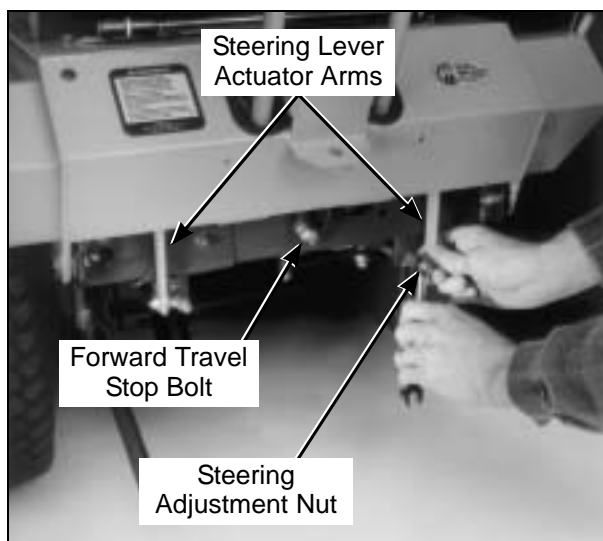
IMPORTANT: The proper adjustment of the transmission control stops is **essential** for efficient operation and life of the transmission. These stops are properly adjusted at the factory and should only require readjustment if the transmission or related control linkage is removed or changed.

NOTE: It would not be unusual for a new machine, after 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 4*.

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

Set Forward Travel Limit (Stop) - Step 1

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 stop bolt** 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.
3. Tighten the jam nut on the forward travel stop adjusting bolt.



Forward Speed Control Stop and Steering Lever Adjustment

Steering Lever End Play Adjustment - Step 2

1. Position the FSC lever to the most **FORWARD** position.
2. Loosen the adjustment nut on each steering lever actuator until end play develops between the lever actuator and the adjustment nut (sliding on transmission control rod).
3. Hold the actuator back as shown (against the spring pressure) and tighten the nut to the point where the end play is removed and **then tighten two additional turns**.

IMPORTANT: If the **adjustment nut is too loose** (end play exists) excessive loads are placed on transmission internal control stops. If the **adjustment nut is too tight** (preferred condition), the maximum forward travel speed is reduced.

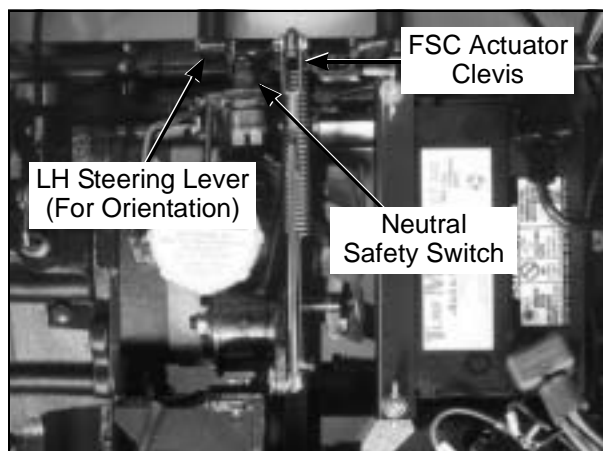
Neutral Function Adjustment - Step 3

1. Move the FSC lever to the **NEUTRAL-PARK** position (rear travel limit).
2. Start the engine (operate first at idle and then normal operating speeds) and **check for movement of the drive wheels**.

NOTE: If the engine will not start, check and adjust the neutral safety switch (see item 4 below).

CAUTION

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



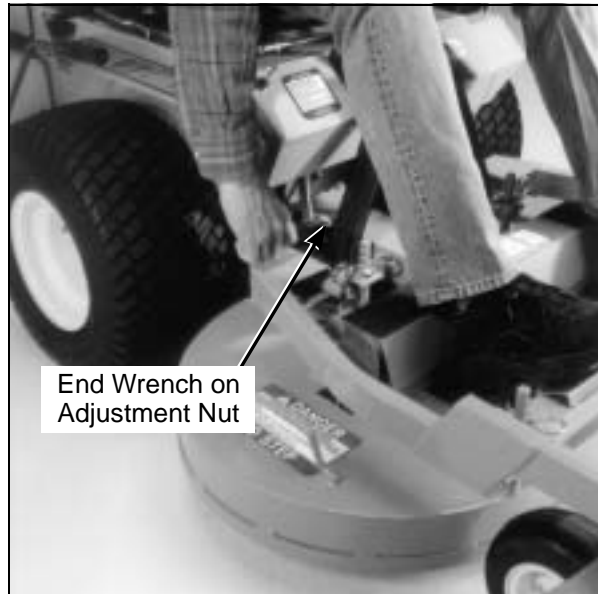
Neutral Function Adjustment

3. If drive wheels are moving, stop the engine and **adjust the FSC neutral stop** by adjusting the FSC actuator clevis (see **Neutral Function Adjustment** photo for clevis location). If the drive wheels are moving backward, remove the cotter pin and clevis pin and screw the clevis forward. If the drive wheels are moving forward, screw the clevis backward. Restart the engine and check for wheel movement (several “trial and error” adjustments may be required). At this point it may **not be possible** to adjust **both** wheels stationary since the differential adjustment has not been made. (This is covered by the *Straight Ground Travel Adjustment - Step 4.*) In this case, the neutral adjustment should be made for one wheel stationary and the other moving **forward** slightly.
4. Check and **adjust the neutral safety switch** for closure and function with the FSC in neutral (the engine will not start when the switch is open). Use panel nuts on the switch body to adjust switch position for closure in neutral. Refer to adjustment description for **Safety Switches** in this section.

Straight Ground Travel Adjustment - Step 4

1. 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 3* and readjust). **Tighten the steering lever adjustment nut on the side of the mower with the wheel moving forward** until wheel movement stops.
2. 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).

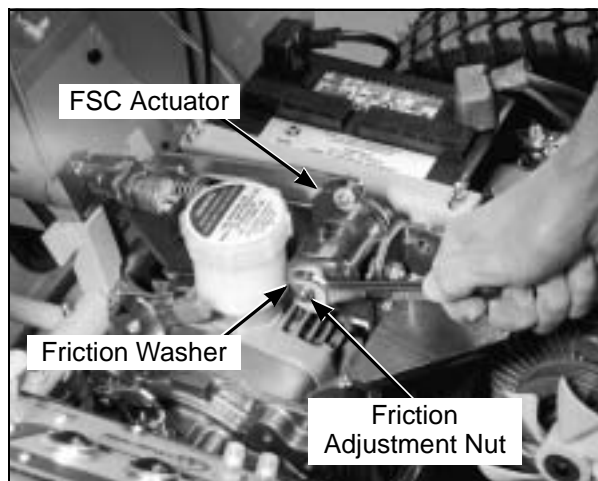
NOTE: The final tracking adjustment is made with the mower moving, since the adjustment is quite sensitive and is more easily “fine tuned” when moving.
3. If travel is not straight, **tighten the adjustment nut that is on the same side of the mower as the wheel that is moving too fast**, e.g., the mower tracks to the right, indicating the LH wheel is moving too fast, tighten the LH adjustment nut.



Straight Ground Travel Adjustment

Forward Speed Control Friction Lock

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



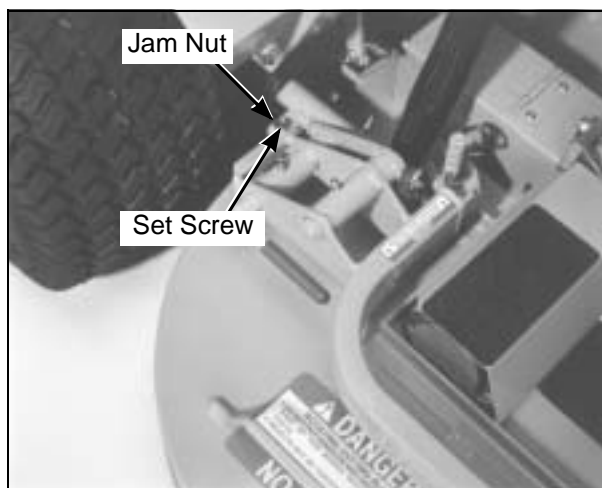
Forward Speed Control Friction Lock

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**.

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.

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 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 existing 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.



Tilt-Up Deck Adjustable Stop

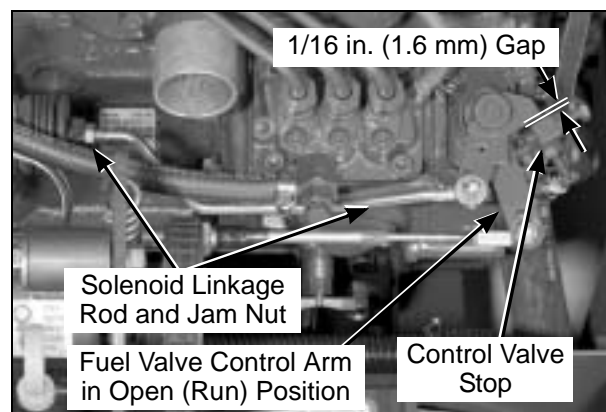
Fuel Valve Solenoid Linkage - Model MDD

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.

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:

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 - (MDD)

2. If the gap is **incorrect**, adjust the linkage by **loosening** the jam nut at the solenoid, removing the cotter pin and washer from the connection to the fuel valve control arm, and screwing the linkage rod in or out of the solenoid as required.
3. After adjusting the linkage for the proper gap, turn the ignition key **ON**, and check the gap by operating the solenoid.

Carburetor - Model MDG

CAUTION

DO NOT change the engine governor settings or overspeed the engine. The governor has been factory-set for maximum-safe engine operating speed.

Carburetor adjustments are required to compensate for differences in altitude, temperature, and fuel. Once the carburetor has been set, no further adjustments should be required. However, if the engine exhibits any of the following symptoms, the carburetor adjustment should be checked: black, sooty exhaust smoke, lack of power, engine miss or backfire, hard to start, rough running or idle.

NOTE: Also refer to the Kubota Workshop Manual for detailed carburetor adjustment information.

CAUTION

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.**

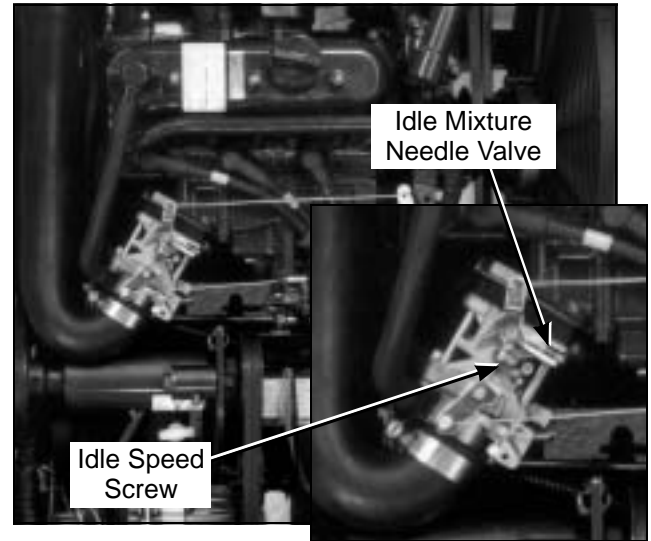
NOTE: The air cleaner and air intake hose must be connected to the carburetor when adjusting the carburetion.

The carburetor main jet on Model MDG is **fixed** (non-adjustable). For operation above 5000 ft (1,524 m) above sea level, the carburetor main jet should be changed for best fuel economy and power. Contact an authorized Kubota engine dealer to change the carburetor main jet.

To adjust the carburetor for engine idle, use the following procedure:

1. Gently close the idle mixture needle valve screw by turning it **clockwise** until it bottoms lightly.

IMPORTANT: The needle valve and carburetor seat may be **damaged** by turning the adjustment screw **too tight**.



Carburetor Adjustment - (MDG)

2. Preliminary Setting: Turn the idle mixture needle valve out (counterclockwise) 1-1/2 turns from the closed position. This **initial adjustment** will allow the engine to be started and warmed up prior to the final adjustment.

DANGER

The engine must be running to adjust the carburetor for engine idle. To guard against injury, keep hands, feet, face, and other parts of body away from the muffler/exhaust pipe, other hot parts of the engine, and moving or rotating parts of the engine.

3. Start the engine and allow it to warm up for approximately five (5) minutes.
4. Move throttle to the **IDLE** position. Adjust idle speed for 1200 RPM by adjusting the idle speed screw on the carburetor butterfly valve (throttle). Check the idle speed using a tachometer.

5. With the engine idling, adjust the idle mixture by turning the needle valve in until the engine slows (clockwise - lean mixture). Then turn the needle valve out past the smooth operating point until the engine slows again (counterclockwise - rich mixture). Now turn the needle valve to midpoint between rich and lean mixture. Check engine acceleration from the idle. If the engine will not accelerate properly, readjust the idle mixture, usually to a slightly richer mixture (open the valve).
6. Recheck idle speed after the final idle mixture adjustment.

GHS "Full" Signal Horn with Grass-Pak® Switch

If the GHS "full" signal horn is not sounding, the following troubleshooting and adjustment instructions apply:

1. Check the horn.
 - a. Disconnect the two wires from the Grass-Pak® switch electric connector plug and make a jumper wire connection between these wires (bypassing switch).
 - b. Turn the ignition switch **ON** and move the blade clutch to the **ENGAGED** position (engine not running) to make the horn sound.
 - c. If the horn does not sound, the horn is bad and needs to be replaced.
 - d. If the horn does sound, proceed to step 2.
2. Check the Grass-Pak® switch.
 - a. Reconnect the wires to the Grass-Pak® switch electric connector plug.
 - b. Turn the ignition switch **ON** and move the blade clutch to the **ENGAGED** position (engine not running).
 - c. Open the catcher back door and trigger the Grass-Pak® vane by hand as it oscillates.

⚠ WARNING

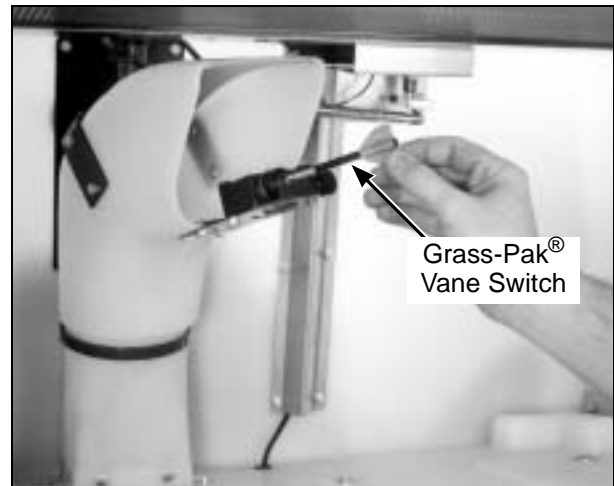
PINCH POINT - SPRING LOADED DOOR

When lowering the door on the GHS catcher, depress the safety latch on the side of the catcher 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.

- d. The horn should sound as the switch is moved in both directions. If the horn does not sound, the switch is bad and needs to be replaced.

⚠ 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.



Checking the Grass-Pak® Switch

ELECTRICAL SYSTEM

For troubleshooting, refer to **Wiring Diagram** for either Model MDD or Model MDG.

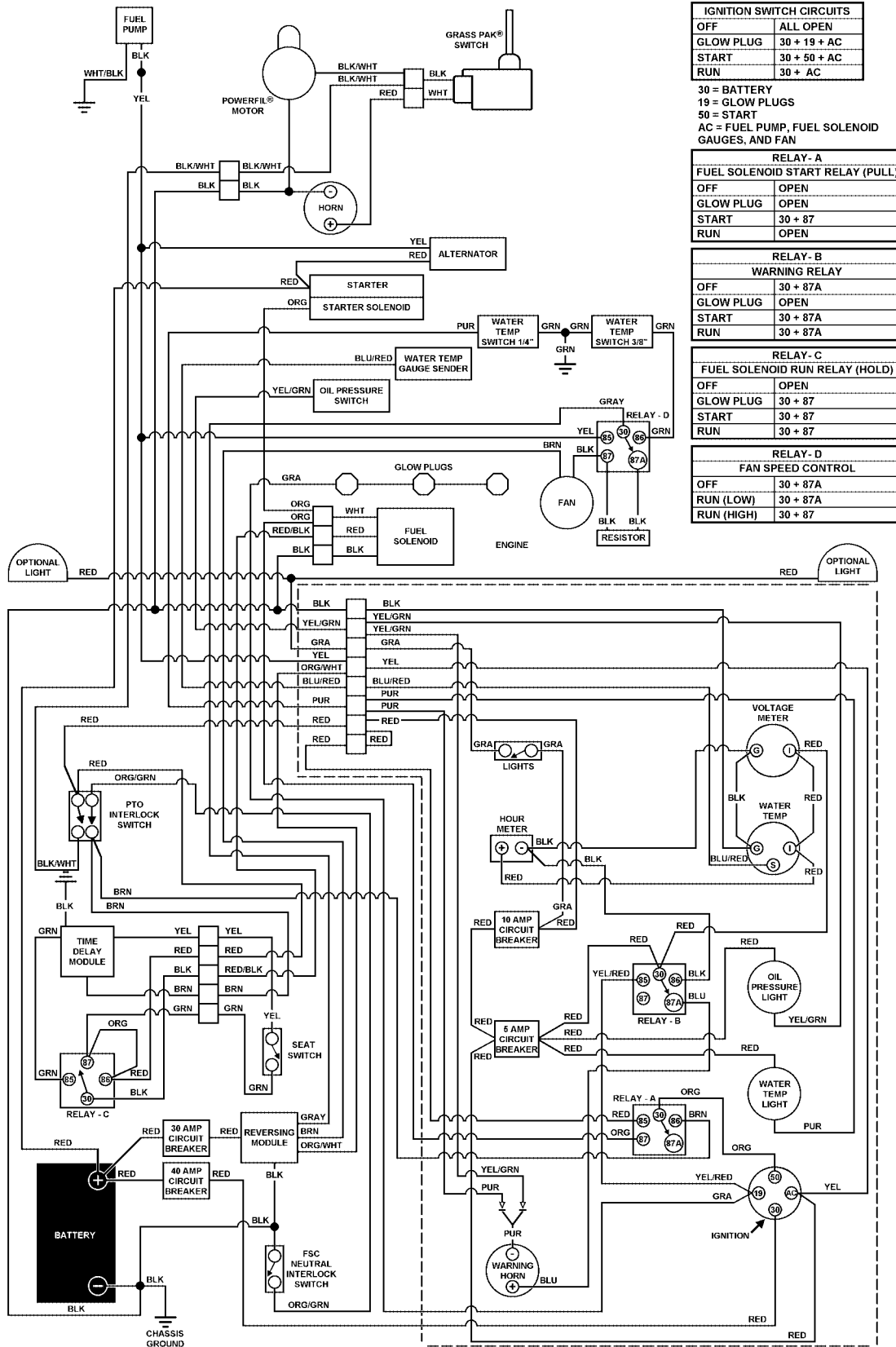
IMPORTANT: Disconnect both battery cables before unplugging any wiring connectors or making repairs on the electrical system.

IMPORTANT: Disconnect the battery cables before unplugging and removing the instrument panel.

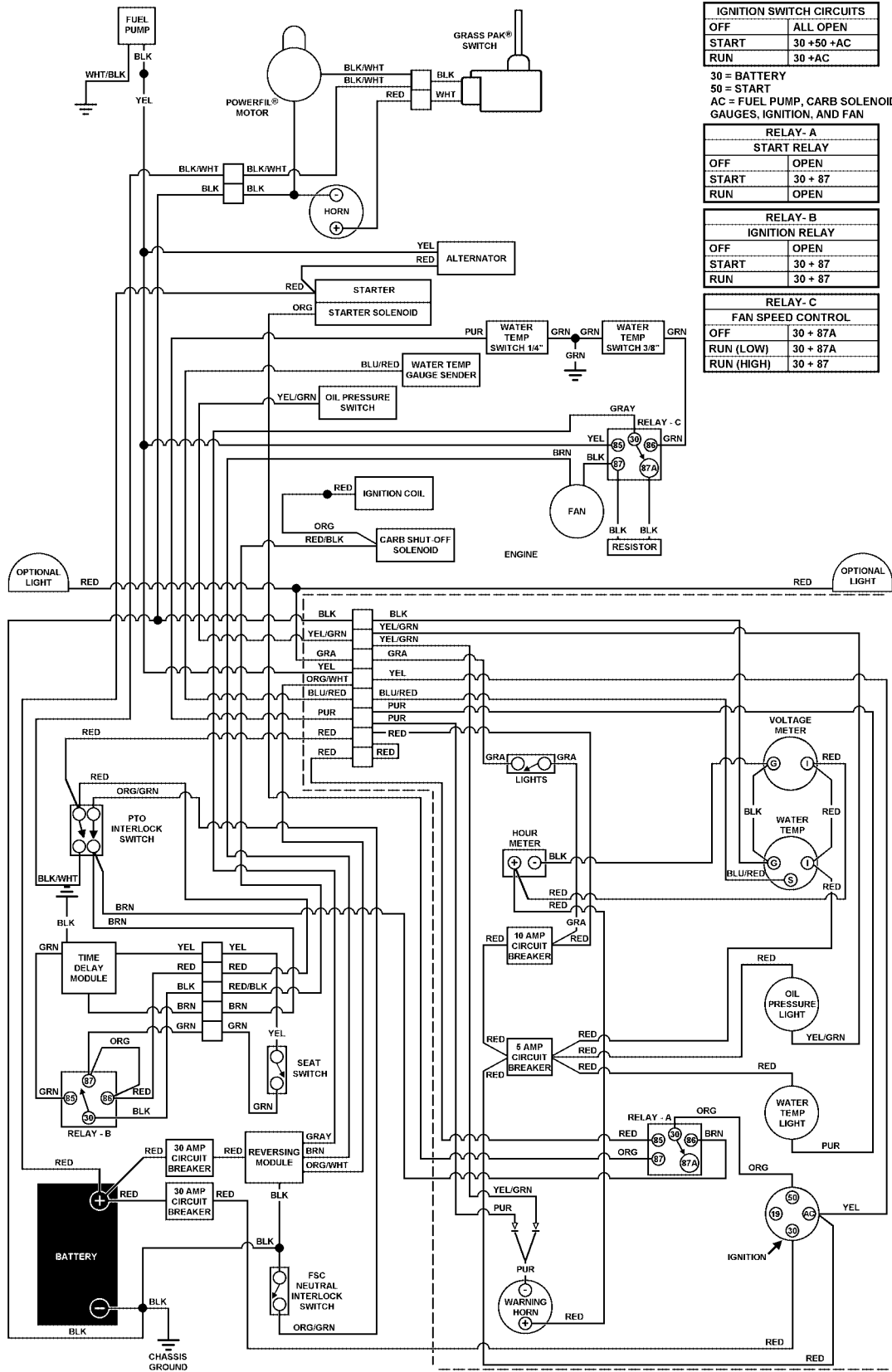
Circuit Breakers

Location	Reset Amperage	Circuits (Electrical Load)
Master Circuit Breaker Mounted on Bracket Behind Battery	40 AMP - MDD 30 AMP - MDG	<ul style="list-style-type: none"> - Instrument Panel - Starter Solenoid - Fuel Pump - Glow Plugs (MDD Only) - Pull Circuit, Fuel Valve Solenoid (MDD Only)
Radiator Fan Circuit Breaker Mounted Adjacent to Master Circuit Breaker	30 AMP	<ul style="list-style-type: none"> - Cooling Fan - Cooling Fan Module
Instrument Panel	5 AMP	<ul style="list-style-type: none"> - Panel Gauges - Warning Lights/Horn
Instrument Panel	10 AMP	<ul style="list-style-type: none"> - Headlights - Safety Switch Relays and Time Delay Module - Hold Circuit, Fuel Valve Solenoid (MDD Only) - Powerfil Motor (GHS Only) - "Full" Signal Horn (GHS Only)

Wiring Diagram - Model MDD



Wiring Diagram - Model MDG



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 one (1) year* 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:

Kohler Engine
Kubota Engine
Kawasaki Engine
Eaton Hydraulic Transmission
Peerless Gearboxes
Battery
Tires

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.

* An extended three (3) year warranty is offered on the Walker P/N 6200 Gear Axle Assembly.

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.

Sound - Model MDD

Sound Test

Lwa
105

Sound test conducted was in accordance with 79/113/EEC and was performed on 28 January 98 under the conditions listed:

LpA
93

OPERATOR

General Condition: Cloudy
Temperature: 32 (F)° 0 (C)°
Wind Speed: < 5 mph (< 8 kmh)
Humidity: 58%
Barometric Pressure: 25.0" HG (636mmHg)

Sound - Model MDG

Sound Test

Lwa
105

Sound test conducted was in accordance with 79/113/EEC and was performed on 28 January 98 under the conditions listed:

LpA
92

OPERATOR

General Condition: Cloudy
Temperature: 32 (F)° 0 (C)°
Wind Speed: < 5 mph (< 8 kmh)
Humidity: 58%
Barometric Pressure: 25.0" HG (636mmHg)

Vibration - Model MDD

Vibration Level

0.8g

Vibration levels at the operators handles were measured in the vertical, lateral, and longitudinal directions using calibrated vibration test equipment.

Tests were performed on 28 January 98 under the conditions listed:

General Condition: Cloudy
Temperature: 32 (F)° 0 (C)°
Wind Speed: < 5 mph (< 8 kmh)
Humidity: 58%
Barometric Pressure: 25.0" HG (636 mm Hg)

Vibration - Model MDG

Vibration Level

0.7g

Vibration levels at the operators handles were measured in the vertical, lateral, and longitudinal directions using calibrated vibration test equipment.

Tests were performed on 28 January 98 under the conditions listed:

General Condition: Cloudy
Temperature: 32 (F)° 0 (C)°
Wind Speed: < 5 mph (< 8 kmh)
Humidity: 58%
Barometric Pressure: 25.0" HG (636 mm Hg)

WALKER MOWERS™

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