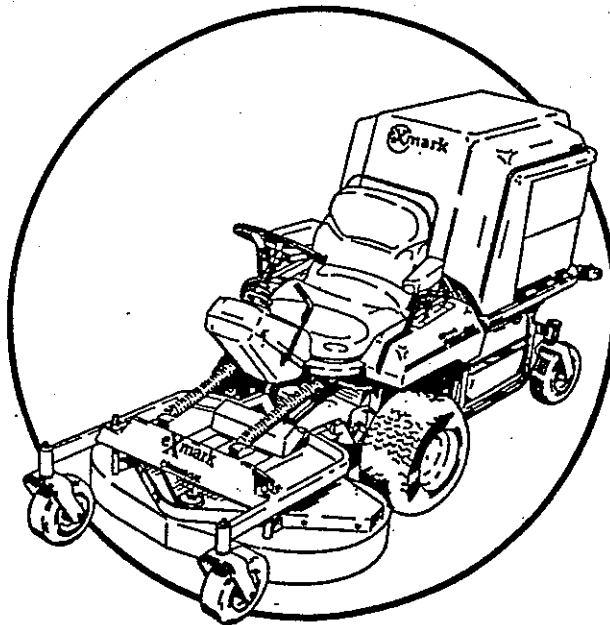




explorer 1800



Operator's Manual

This manual contains assembly, operating, maintenance, and adjustment instruction for your Exmark mower. Before you operate your mower, read this manual carefully in its entirety. By following the operating and maintenance instructions, you will prolong the life of your mower and maintain its maximum efficiency.

If additional information is needed, or should you require trained mechanic service, contact your authorized Exmark equipment distributor or dealer.

All Exmark equipment distributors are kept informed of the latest methods of servicing and are equipped to provide prompt and efficient service in the field or at their service stations. They carry ample stocks of service parts or can secure them promptly for you from the factory.

All Exmark parts are thoroughly tested and inspected before leaving the factory, however, some attention is required on your part. The amount of attention is slight, but important if you are to obtain the fullest measure of satisfaction and performance.

When ordering parts, always give the serial number and model of your mower as well as the quantity, part number and description of the part needed.

The serial number plate for the tractor unit is located on the rear frame gusset on the right hand side of the machine. The serial number plate for the deck is located on the front support pin gusset on the right hand side of the deck. We suggest you record numbers below for ready reference.

Tractor Unit Serial No. _____

Deck Serial No. _____



TABLE OF CONTENTS

1. Safety
 - 1.1 Safety Alert Symbol
 - 1.2 Training
 - 1.3 Preparation
 - 1.4 Operation
 - 1.5 Maintenance & Storage
 - 1.6 Safety Signs

2. Specifications
 - 2.1 Model Number
 - 2.2 Engine
 - 2.3 Fuel System
 - 2.4 Electrical System
 - 2.5 Operator Controls
 - 2.6 Seat
 - 2.7 Hydrostatic Ground Drive System
 - 2.8 Tires
 - 2.9 Deck
 - 2.10 Grass Catching System
 - 2.11 Dimensions

3. Assembly Instructions
 - 3.1 Uncrating
 - 3.2 Install Drive Wheels
 - 3.3 Install Rear Caster Wheels
 - 3.4 Prepare Deck for Installation
 - 3.5 Service Engine
 - 3.6 Service Battery
 - 3.7 Install PTO Shaft
 - 3.8 Install Deck to Tractor

4. Operation Instructions
 - 4.1 Pre-Start
 - 4.2 Controls
 - 4.3 Mowing
 - 4.4 Transporting

5. Maintenance & Adjustments
 - 5.1 Periodic Maintenance
 - 5.2 Adjustments

6. Warranty

1. SAFETY

1.1 Safety Alert Symbol



This safety alert symbol is used both in this manual and on the machine to identify important safety messages which must be followed to avoid accidents. This symbol means: **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

This signal word used in conjunction with the safety alert symbol indicates the relative degree of a hazard:

DANGER: Denotes that an extreme hazard exists which would result in high probability of death or irreparable injury if proper precautions are not taken.

WARNING: Denotes that a hazard exists which can result in injury or death if proper precautions are not taken.

CAUTION: Denotes a reminder of safety practices or directs attention to unsafe practices which could result in personal injury if proper precautions are not taken.

1.2 Training

1.2.1 Regard the Exmark mower as a piece of power equipment and teach this regard to all who operate this unit.

1.2.2 Read the instructions carefully. Be familiar with the controls and the proper use of the equipment.


1.2.3 Never allow children, young teenagers, or people unfamiliar with these instructions to use the mower.

1.2.4 Avoid mowing while people, especially children or pets, are nearby. Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.

1.3 Preparation

1.3.1 The use of personal protective equipment, such as (but not limited to) protection for the eyes, ears, feet and head is recommended.

1.3 Preparation (Con't.)

- 1.3.2 While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- 1.3.3 Thoroughly inspect the area where the equipment is to be used and remove all stones, sticks, wires, bones and other foreign objects.
- 1.3.4 Always set parking brake before starting the engine.
- 1.3.5  DANGER: Fuel is highly flammable.

- a) Store fuel in containers specifically designed for this purpose.
- b) Refuel outdoors only. Do not smoke while refueling.
- c) Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while engine is running or when engine is hot.
- d) If fuel is spilled, do not attempt to start the engine. Move away from the area of the spill and avoid creating any source of ignition until fuel vapors have dissipated.

1.4 Operation

- 1.4.1 Give complete, undivided attention to the job at hand.
- 1.4.2 Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
- 1.4.3 Mow only in daylight or good artificial light.
- 1.4.4 Avoid operating the equipment in wet grass, when feasible.
- 1.4.5 Mow across the face of slopes, never up and down. Exercise extreme caution when changing direction on slopes. Do not mow excessively steep slopes.
- 1.4.6 Use extreme caution when backing up.

1.4 Operation (Con't.)

- 1.4.7 Stop the blades when crossing surfaces other than grass and when transporting the mower to and from the area to be mowed.
- 1.4.8 Never operate the mower with defective guards, shields, or without safety devices in place.
- 1.4.9 Do not change the engine governor settings or overspeed the engine. Operating an engine at excessive speed may increase the hazard of personal injury.
- 1.4.10 Disengage blade drive before starting.
- 1.4.11 Start the engine carefully with feet well away from the blades.
- 1.4.12 Keep hands, feet and clothing away from rotating parts while the mower is being operated.
- 1.4.13 Stop the engine and remove the ignition key:
 - a) Before checking, cleaning or working on the mower.
 - b) After striking a foreign object (inspect the mower for damage and make repairs before restarting and operating the mower).
 - c) Before clearing blockages.
- 1.4.14 Stop the engine:
 - a) Whenever you leave the mower
 - b) Before dumping the grass catcher
 - c) Before refueling
 - d) Before making height adjustments
- 1.4.15 Reduce the throttle setting during engine run-out and, if the engine is provided with shut-off valve, turn the fuel off at the conclusion of mowing.
- 1.4.16 Keep others off mower.



CAUTION

Although hazard control and accident prevention partially are dependent upon the design and configuration of the equipment, these factors are also dependent upon the awareness, concern, prudence, and proper training of the personnel involved in the operation, transport, maintenance and storage of the equipment. It is essential that all operator safety mechanisms be connected and in operating condition prior to use for mowing.

1.5 Maintenance and Storage

- 1.5.1 Precisely follow the engine manufacturer's recommendations for maintenance.
- 1.5.2 If carburetor adjustment is necessary, stand to one side and keep feet and hands clear while making adjustments.
- 1.5.3 Keep engine free from accumulation of grass, leaves or excessive grease. An accumulation of these combustible materials may result in a fire.
- 1.5.4 Store gasoline in a safe container in a cool, dry place.
- 1.5.5 Keep the mower and fuel container in locked storage to prevent children from playing or tampering with them.
- 1.5.6 Maximum mowing results and safety can only be achieved if the mower is maintained and operated correctly.
- 1.5.7 Gasoline powered equipment or fuel containers should not be stored in a basement or any closed area, where heat appliances or open pilot lights are present, unless completely drained of fuel.
- 1.5.8 Check all bolts frequently to maintain proper tightness.
- 1.5.9 Keep all guards, shields and other safety devices in place and in safe working condition.
- 1.5.10 Check for worn or deteriorating components that could create a hazard.

- 1.5.11 All replacement parts must be the same as or equivalent to the parts supplied as original equipment.



CAUTION

Failure to follow cautious operating practices can result in serious operator injury.

1.6 Safety Signs

- 1.6.1 Keep all safety signs legible. Remove all grease, dirt and debris from safety signs.
- 1.6.2 Safety signs must be replaced if they are missing or illegible.
- 1.6.3 When new components are installed, insure that current safety signs are affixed to the replaced component.
- 1.6.4 New safety signs may be obtained from your authorized Exmark equipment distributor or dealer or from Exmark Mfg. Co. Inc.
- 1.6.5 Safety signs may be affixed by peeling off the backing to expose the adhesive surface. Apply only to a clean, dry surface. Smooth to remove any air bubbles.
- 1.6.6 Familiarize yourself with the following safety signs. They are critical to the safe operation of your Exmark commercial mower.

! WARNING	CUTTING HEIGHT ADJUSTMENT	! CAUTION
<p>DISENGAGE PTO, SHUT OFF ENGINE AND REMOVE KEY BEFORE MAKING ADJUSTMENTS, SERVICING OR CLEANING DECK.</p>	<p>DECK SUPPORT PIN</p> <p>ON REAR DECK SUPPORT PINS INSTALL CLIP UNDER SPRING 5 HOLES BELOW TOP HEIGHT ADJUSTMENT CLIP</p>	<p>KEEP ALL GUARDS AND SHIELDS IN PLACE.</p> <p>USE CAUTION WHEN DISCONNECTING DECK SUSPENSION SPRINGS. FIRST RAISE DECK AND INSTALL HOLD UP RODS TO LESSEN SPRING TENSION.</p>

LOCATION: Centered on Mower Deck Floor Pan

NO STEP



LOCATION: LH and RH Side Top of Mower Deck

LOCATION: LH and RH Front Top of Mower Deck

<p>→ PTO OFF</p> <p>← PTO ON</p>	<p>! CAUTION</p>	<p>READ MANUAL BEFORE OPERATING. CLEAR AREA OF PEOPLE, PETS & DEBRIS BEFORE MOWING. KEEP RIDERS OFF.</p> <p>BEFORE STARTING ENGINE: BRAKE MUST BE ENGAGED PTO MUST BE DISENGAGED CATCHER FRAME MUST BE DOWN OPERATOR MUST BE IN SEAT</p> <p>BEFORE LEAVING SEAT: ENGAGE BRAKE DISENGAGE PTO SHUT OFF ENGINE</p>	<p>KEEP ALL SHIELDS & GUARDS IN PLACE USE CAUTION ON SLOPES DO NOT PARK ON SLOPES UNLESS WHEELS ARE CHOCKED OR BLOCKED DO NOT ENGAGE PTO OR GROUND DRIVE WITH DECK RAISED OR WITH DECK REMOVED DO NOT ENGAGE PTO WITHOUT GRASS TUBS IN PLACE SHUT OFF ENGINE & REMOVE KEY BEFORE MAKING ADJUSTMENTS, SERVICING OR CLEANING</p>
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LOCATION: RH Fender

<p>MOTION CONTROL</p> <p>↑</p> <p>↓</p> <p>N</p> <p>R</p>	<p>! DANGER</p> <p>KEEP ALL PEOPLE OUT OF AREA WHEN MOWING. THROWN OBJECTS OR BLADE CONTACT CAN CAUSE SERIOUS INJURY OR DEATH.</p>	<p>MOTION CONTROL</p> <p>↑</p> <p>↓</p> <p>N</p> <p>R</p>
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<p>! CAUTION</p> <p>USE PROP ROD TO SECURE TIPPED SEAT</p>

LOCATION: Behind Operator's Seat

LOCATION: Top Center of Steering Console

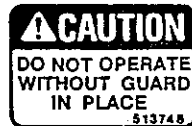
*ADD 543659
DISCHARGE WARNING DECAL*



LOCATION: LH Frame Rail Above Fuel Tank and LH Grass Catcher Lift Frame Rail Above Fuel Tank Fill Neck



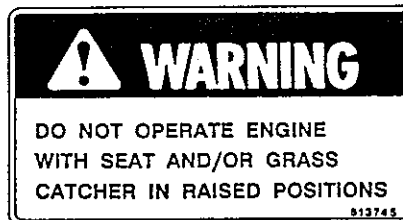
LOCATION: RH Frame Rail Above Muffler Shield and RH Grass Catcher Lift Frame Rail Above Muffler Shield



LOCATION: Top of Gearbox Guard and PTO Gearbox Mount on Mower Deck

<p>POISON CAUSES SEVERE BURNS</p> 	<p>CONTAINS SULFURIC ACID. AVOID CONTACT WITH SKIN, EYES OR CLOTHING. IN EVENT OF ACCIDENT FLUSH WITH WATER AND CALL A PHYSICIAN IMMEDIATELY. KEEP OUT OF REACH OF CHILDREN</p>	<p>DANGER EXPLOSIVE GASES</p> 	<p>CIGARETTES, FLAMES OR SPARKS COULD CAUSE BATTERY TO EXPLODE. ALWAYS SHIELD EYES AND FACE FROM BATTERY. DO NOT CHARGE OR USE BOOSTER CABLES OR ADJUST POST CONNECTIONS WITHOUT PROPER INSTRUCTION AND TRAINING. KEEP VENT CAPS TIGHT AND LEVEL</p>
513747			

LOCATION: On Top of LH Frame Rail Beside Battery at LH Rear of Tractor Unit



LOCATION: Centered on Top of Hyd. Steering Pump Belt Shield and on Top of RH Side of Engine Compartment Cover

2. SPECIFICATIONS

2.1 Model Number: EX1800

2.2 Engine

- 2.2.1 Manufacturer: Kohler
- 2.2.2 Model Number: M18S
- 2.2.3 Power: 18 HP (13.4 kw) @ 3600 RPM
- 2.2.4 Cooling: Air
- 2.2.5 Cylinders: Two
- 2.2.6 Strokes/Cycle: Four
- 2.2.7 Crankshaft Alignment: Horizontal
- 2.2.8 Bore: 3.12 in. (79.2 mm)
- 2.2.9 Stroke: 2.75 in. (69.8 mm)
- 2.2.10 Displacement: 42.18 cu. in. (691.3 cc)
- 2.2.11 Compression Ratio: 6.0:1
- 2.2.12 Oil Type: SAE 30 weight. API-service class SF for temperatures above 32° F (0° C).
- 2.2.13 Oil Capacity: 1.75 qt. (1.7 L.) with filter; 1.5 qt. (1.4 L.) without filter.
- 2.2.14 Oil Filter: Replaceable cartridge type
- 2.2.15 Air Filter: Dry cartridge type with foam precleaner
- 2.2.16 No Load RPM: 3200
- 2.2.17 Idle RPM: 1200

2.3 Fuel System

- 2.3.1 Capacity: 3.8 gal. (14.4 L.)
- 2.3.2 Type of Fuel: Regular unleaded gasoline, 87 octane or higher
- 2.3.3 Fuel Filter: Replaceable in-line
- 2.3.4 Fuel Shut-Off Valve: 1/4 turn

2.4 Electrical System

- 2.4.1 Charging System: Flywheel Alternator
- 2.4.2 Charging Capacity: 15 amp
- 2.4.3 Battery Type: BCI Group U1
- 2.4.4 Battery Voltage: 12 Volt
- 2.4.5 Polarity: Negative Ground
- 2.4.6 Fuses: Two 20 amp blade type
- 2.4.7 Safety Interlock System: Operator must be in seat with PTO disengaged and brake engaged to start engine. Operator must be in seat when PTO is engaged or brake is disengaged or engine will stop. Engine will stop when grass catcher is tipped up.

2.5 Operator Controls

- 2.5.1 Steering Control: Steering Wheel
- 2.5.2 Motion Control: Levers on each side of steering column control direction of travel and speed. Tension control knob sets amount of drag on lever for hands-free operation.
- 2.5.3 PTO Engagement Lever: Engages deck drive and blower
- 2.5.4 Parking Brake Lever: Sets brake and locks drive system in neutral

2.6 Seat

- 2.6.1 Type: Contoured, molded nylon backed vinyl. Self draining.
- 2.6.2 Mounting: Hinged to tilt up for access to hydraulic pumps and other components. Held in tilted position with prop rod. Lift bar to aid in tilting.
- 2.6.3 Armrests: Optional

2.7 Hydrostatic Ground Drive System

- 2.7.1 Hydrostatic Pumps: Two Sundstrand BDP-10L variable displacement piston pumps
- 2.7.2 Wheel Motors: Two Nichols Division, Parker Hannifin 114-6 hydraulic motors
- 2.7.3 Oil Type: Mobil 1 15W-50
- 2.7.4 Oil Capacity: 2.1 qt. (2.0 L.)
- 2.7.5 Filter: Replaceable cartridge type
- 2.7.6 Speeds: 0 - 6 mph (9.7 km/hr) forward.
0 - 3 mph (4.8 km/hr) reverse.
- 2.7.7 Drive wheel release levers allow machine to be moved when engine is not running.

2.8 Tires

	<u>Rear Caster</u>	<u>Drive</u>	<u>Front Cstr.</u>
2.8.1 Size:	11 x 4.00-5	18 x 8.50-8	9 x 3.50-4
2.8.2 Quantity:	2	2	2
2.8.3 Tread:	Smooth	"Turfmate"	Smooth
2.8.4 Ply Rating:	4	4	4
2.8.5 Pressure:	22 psi (152 kPa)	13 psi (90 kPa)	22 psi (152 kPa)

2.9 Deck

- 2.9.1 Cutting Width: 44 in. (111.8 cm.)
- 2.9.2 Discharge : Rear
- 2.9.3 Blade Size: (2) 22 in. (55.9 cm.) and
(1) 7 in. (17.8 cm.)
- 2.9.4 Blade Spindles: 1-3/16 in. (30.2 mm)diameter
spindles with 25 mm I.D. bearings.
- 2.9.5 Type of Drive: PTO Shaft to right angle
gearbox on deck. Blades driven by one
belt with self tensioning idler.
- 2.9.6 Gearbox: Peerless 1000-026
- 2.9.7 Gearbox Oil: SAE 90 Weight Extreme Pressure
- 2.9.8 Gearbox Oil Capacity: 6 oz. (177 cc)
- 2.9.9 Deck Mounting: Full floating deck is attached
to out-front support frame. Removable for
servicing. Can be manually lifted and held
up with support rods for servicing and cleaning.
Counter-balance springs transfer weight from
casters and also aid in lifting.
- 2.9.10 Cutting Height Adjustment: Adjusts from
1.5 in. (3.8 cm.) to 4 in. (10.2 cm.) cutting
height in .5 inch (1.3 cm.) increments

2.10 Grass Catching System

- 2.10.1 Fill System: Center discharge deck.
10 in. (25.4 cm) diameter blower.
- 2.10.2 Grass Containers: Two high strength molded
three bushel polyethylene tubs which slide
out for dumping
- 2.10.3 Grass catcher system tips up for access to
engine and drive belt compartments

2.11 Dimensions

- 2.11.1 Overall Width: 45 in. (114.3 cm.) with deck;
37.5 (95.3 cm.) without deck
- 2.11.2 Overall Length: 95.5 in. (242.6 cm.) with
deck; 78 in. (198.1 cm.) without deck
- 2.11.3 Overall Height: 50.25 in. (127.6 cm.)
- 2.11.4 Wheel Base: 46.5 in. (118.1 cm.)
- 2.11.5 Tread Width: 29.5 in. (74.9 cm.) drive wheels;
23.6 in. (59.9 cm.) rear casters
- 2.11.6 Curb Weight: 705 lb. (320 kg) Tractor Unit
235 lb. (106 kg) Deck
940 lb. (426 kg) Total

3. ASSEMBLY

- 3.1 Uncrate tractor and deck.
- 3.2 Install drive wheels with 1/2-20 wheel nuts. Inflate tires to 13 psi (90 kPa).
- 3.3 Install rear caster wheels with 1/2-13 x 6-1/2 hex head capscrews, lockwashers and nuts. Inflate tires to 22 psi (152 kPa).
- 3.4 Prepare deck for installation.
 - 3.4.1 Install discharge tube assembly to deck with #10-24 x 5/8 pan head machine screws and nylock nuts provided in bolt bag. Install with nut to top.
 - 3.4.2 Install large washers and large hairpin clips to front support pins on top side of deck support assembly.
- 3.5 Service engine. If engine is shipped without oil, fill with SAE 30W, AP1 service class SF for operating in temperatures above 30° F (0° C). See Engine Operator's Manual.
- 3.6 Service battery. Machine is shipped with battery dry.
 - 3.6.1 Remove battery from machine. Tilt grass catcher frame up to gain access to battery. Disconnect battery cables - negative (black) cable first. Remove hold down plate and lift battery out.
 - 3.6.2 Place battery on a level surface and remove vent caps.
 - 3.6.3 Fill cells with battery grade sulfuric acid (1.625 specific gravity) to halfway between top of separators and bottom of vent well. **KEEP SPARKS AND FLAMES AWAY FROM BATTERY AT ALL TIMES.**
 - 3.6.4 Check acid temperature and state of charge:
 - A. Acid temperature must be at least 80° F (26.7° C). (Put battery thermometer in center cell.)
 - B. State of charge must be good.
 1. Check with electrical battery tester according to instructions on the tester, OR
 2. Use a battery hydrometer - specific gravity must be at least 1.250.

- 3.6.5 If acid temperature is not 80° F (26.7° C) or state of charge is not good, charge at 15 amps (20 amp maximum). ACID TEMPERATURE MUST NEVER EXCEED 125° F (51.7° C) WHILE CHARGING. Slow charging is permissible.
- 3.6.6 After charging, add battery acid to bottom of vent wells and install vent caps. Prior to installation, check battery with a hi-rate load tester following the printed instructions on the tester - "State of Charge" and "Condition" must be indicated as "good" or "OK".
- 3.6.7 Install battery in machine. Secure with hold down. Connect cables - positive (red) cable first, then negative (black) cable. Slip insulator boots over terminals.



- 3.7 Install PTO shaft to tractor and secure with two 3/8 setscrews. Apply Loctite "Threadlocker 242" or equivalent to threads of setscrews. Insure that wood-ruff key is in place.
- 3.8 Install Deck to Tractor
- 3.8.1 Align sleeves on rear of deck support with pivot pins on front of tractor and begin to slide in place. NOTE: An easy way to do this is to place deck on 4" x 4" blocks and to release drive wheel release levers on hydro-static pumps (see Controls in Operation Instructions Section) and roll tractor to deck. Chute must be aligned with ring on blower panel and rectangular PTO shaft halves must be aligned to slide together. Install two hairpin cotters (provided in deck bolt bag) into pivot pints to secure deck.
- 3.8.2 Install deck support springs. First raise deck and secure with hold up rods, then attach spring to hook on underside of front side of tractor frame and stretch to hook over hooks on deck support.
- 3.8.3 Adjust cutting height of deck (see Operation Instructions Section).

4. OPERATION INSTRUCTIONS

4.1 Pre-Start

- 4.2.2 Fill fuel tank. For best results use only clean, fresh regular grade unleaded gasoline with an octane rating of 87 or higher. Regular grade leaded gasoline may also be used; however, combustion chamber and cylinder head will require more frequent service. See engine Owner's Manual.

Do not add oil to gasoline.

Do not overfill fuel tank. Leave room for fuel to expand.

- 4.1.2 Refer to maintenance section and perform all of the necessary inspection and maintenance steps.
- 4.1.3 Familiarize yourself with controls. See Controls Section.

4.2 Controls

- 4.2.1 Steering Wheel - Located in center of steering console in front of operators seat. During forward operation of the machine, a movement of the steering wheel to the right will cause the machine to turn to the right and vice versa. The steering system controls the flow of hydraulic oil from the hydrostatic pumps to the individual drive wheel motors. A zero turn radius can be accomplished at slower forward speeds. At higher speeds, turn radius will be larger. During reverse operation the steering will be reverse of an automobile steering system. IN REVERSE, A MOVEMENT OF THE WHEEL TO THE RIGHT WILL TURN THE REAR OF THE MACHINE TO THE LEFT AND VICE VERSA.

- 4.2.2 Motion Control Levers - Located on both sides of steering console. The left lever is for operation with the left hand, and the right lever is for operation with the right hand. Both levers move together and perform the same function. Movement of the levers ahead will cause the machine to go forward. To stop forward travel, pull levers back until a resistance is felt -- this is the neutral position. To back machine, pull lever back from the neutral position - a spring resistance will be felt. When parking brake is engaged motion control levers can be moved but will not function.

- 4.2.3 Motion Control Tension Knob - Located on right side of steering console just behind motion control lever. Knob adjusts the drag on the motion control levers. Tightening the knob will increase the drag and loosening will decrease drag. More drag may be desired where mowing is mainly straight ahead. Less drag may be desired for trimming.
- 4.2.4 PTO Engagement Lever - Located on front of right fender. Lever engages both the cutting blades and the grass catcher blower. Moving the lever ahead will engage the PTO and moving to the rear will disengage the PTO. Operator must be in the seat when PTO is engaged or engine will stop.
- 4.2.5 Choke Control - Located at rear of left fender. Choke is used to aid in starting a cold engine. "Off" position is to the rear and "on" position to the front. Do not run a warm engine with choke in the "on" position.
- 4.2.6 Throttle Control - Located on left fender just ahead of the choke control. Throttle is used to control engine speed. Moving throttle ahead will increase engine speed and moving to the rear will decrease engine speed.
- 4.2.7 Brake Lever - Located on the front of the left fender. Brake lever engages a parking brake on the drive wheels and also locks the hydrostatic drive system in neutral. Moving the lever rearward will engage the brake. To disengage brake, lift finger latch and move brake ahead. Operator must be in the seat when brake is disengaged or engine will stop. When parking on a steep slope, the wheels must be chocked or blocked in addition to the brake being engaged.
- 4.2.8 Ignition Switch - Located on the steering console just below the steering wheel. The ignition switch is used to start and stop the engine. The ignition switch has three positions - off, on and start. Insert key into switch and rotate to the right to the "on" position. Rotate to the right to the next position to engage the starter (key must be held against spring pressure in this position). Operator must be in seat with brake engaged and PTO disengaged to start engine.

- 4.2.9 Hour Meter - Located on the steering console just below the steering wheel. The hour meter records the number of hours that the engine has run.
- 4.2.10 Fuel Shut-Off Valve - Located on front lower inside corner of fuel tank. The fuel shut-off valve is used to shut off the fuel when machine will not be used for a few days or when parking inside a building. Rotate valve 1/4 turn clockwise to shut fuel off. Rotate valve 1/4 turn counterclockwise to turn fuel on.
- 4.2.11 Drive Wheel Release Levers - Located on top left front corner of hydrostatic pumps. Tilt seat up to gain access to levers. Drive wheel release levers are used to release the hydrostatic drive system to allow machine to be pushed. Rotate levers on both pumps 1/4 turn counterclockwise to release drive system. Rotate 1/4 turn clockwise to reset drive system.

Do not tow machine.

4.3 Mowing

- 4.3.1 Starting Engine - Operator must be in seat with the brake engaged, the PTO disengaged and the grass catcher frame down to start machine.

Open fuel shut-off valve.

On a cold engine, place the throttle midway between "slow" and "fast" positions and place the choke in the "on" position. On a warm engine, place the throttle midway between "slow" and "fast" positions and place the choke in the "off" position.

Turn ignition switch to "start" position. Release the switch as soon as the engine starts.

On a cold engine, gradually return choke to "off" position after engine starts and warms up.

IMPORTANT: Do not crank the engine continuously for more than ten (10) seconds at a time. If the engine does not start, allow a 60 second cool-down period between starting attempts. Failure to follow these guide lines can burn out the starter motor.

4.3.2 Stopping Engine - Disengage PTO and set parking brake. Move throttle to "slow" position. Rotate ignition switch to "off" position. Remove key to prevent children or other unauthorized persons from starting engine. Close fuel shut-off valve when machine will not be used for a few days or when parking inside a building.

4.3.3 Engaging PTO - PTO lever engages both cutting blades and grass catcher blower. Be sure that all persons are clear of these areas before engaging PTO lever.

Set throttle to "fast" position. Move PTO lever ahead with a quick positive motion. Do not slip belts. If belts do slip, it may indicate that either the deck or blower is plugged. Shut off engine, remove key and set brake before unplugging.

4.3.4 Stopping PTO - Move PTO lever to the rear to stop PTO.

4.3.5 Dumping Grass Catcher - When grass catcher becomes full, disengage PTO and move to the dumping area. Shut off engine and set brake. Lift grass catcher hood and slide out filled tubs and dump into truck, dumpsters or other dumping location.



CAUTION: Keep hands away from hinge area when opening or closing grass catcher lid. Use caution when closing lid to avoid pinching fingers between lid and tubs. Hold lid open when cleaning grass from top of chute.

Replace tubs and close hood to hold them in place.

One method which can be used to tell when the grass catcher tubs are full is to listen to the sound of the blower. When tubs are nearly full, air flow is restricted and blower pitch changes. With experience, an operator will be able to easily tell when grass catcher tubs are full.

4.4 Transporting

Use a heavy duty trailer to transport the machine. Lock brake and block wheels. Securely fasten the machine to the trailer with straps, chains, cable or ropes. Be sure that the trailer has all necessary lighting and marking as required by law and use a safety chain.

5. MAINTENANCE & ADJUSTMENTS

5.1 Periodic Maintenance

5.1.1 Check engine oil level. Service Interval: Daily

- a. Make sure engine is stopped and on a level surface.
- b. Check with engine cold.
- c. Raise grass catcher and engine compartment cover.
- d. Clean area around dipstick. Remove dipstick and wipe oil off. Reinsert the dipstick and push it all the way down into the tube. Remove the dipstick and read the oil level.
- e. If the oil level is low, wipe off the area around the oil fill cap, then remove cap and fill to the "F" mark on the dipstick. Use oil as specified in Specifications Section and in engine owners manual. Do not over-fill.
- f. IMPORTANT: Do not operate the engine with the oil lever below the "L" mark on the dipstick, or over the "F" mark.

5.1.2 Clean engine air cooling system. Service Interval: Daily

- a. Stop engine and remove key.
- b. Clean all debris from rotating engine air intake screen and from around engine shrouding.
- c. Inspect rubber engine baffles for proper fit. Replace if necessary. Baffles are necessary to prevent cooling air recirculation and prolong engine life.

5.1.3 Inspect belt compartment fan. Service Interval: Daily

- a. Stop engine and remove key.
- b. Clean all debris from around belt compartment fan which is attached to engine pulley. Proper operation of this fan is necessary to insure maximum belt lift.

5.1.4 Clean grass build-up under deck. Service Interval: Daily

- a. Stop engine and remove key.

5.1.4 (Con't.)

- b. Lift deck and secure in raised position with hold-up rods. First remove hold-up rods from storage position on gearbox cover. Hook one rod into one of the two slots in the top of the deck support frame crossmember. Raise that side of the deck by lifting on the support frame near the caster wheel. Hook other end of rod into slot on side of steering console. Repeat procedure for the other side of the deck.
- c. Clean out any grass build-up from underside of deck and in deck discharge chute.
- d. Lower deck to the ground one side at a time as in Step "b" and store hold-up rods.

5.1.5 Clean grass build-up in blower.
Service Interval: Daily

- a. Stop engine and remove key.
- b. Lift grass catcher.
- c. Inspect blower and remove any grass build-up.

5.1.6 Check mower blades. Service Interval: Daily

- a. Stop engine and remove key.
- b. Lift deck and secure in raised position as in 5.1.4, Step "b".
- c. Inspect blades and sharpen or replace as required.
- d. Keep blade bolts tight. NOTE: Left and center blades use a right hand thread bolt. Right blade uses a left hand bolt.

5.1.7 Check safety interlock system.
Service Interval: Daily

- a. Check starting circuit. Starter should crank with operator in seat, parking brake engaged and PTO disengaged. Try to start with operator out of seat, parking brake engaged and PTO disengaged - starter must not crank. Try to start with operator in seat, parking brake disengaged and PTO disengaged - starter must not crank. Try to start with operator in seat, parking brake engaged and PTO engaged - starter must not crank.

5.1.7 (Con't.)

- b. Check kill circuits. Run engine at one-third throttle, then disengage parking brake and raise off of seat but do not get off of machine - engine must stop. Again, run engine at one-third throttle then engage PTO and raise off of seat but do not get off of machine - engine must stop. Again, run engine and tip grass catcher - engine must stop whether operator is on seat or not.
- c. If machine does not pass any of these tests, do not operate.

5.1.8 Check for loose hardware.
Service Interval: Daily

- a. Stop engine and remove key.
- b. Visually inspect machine for any loose hardware or any other possible problem. Tighten hardware or correct the problem before operating.

5.1.9 Service air cleaner. Service Interval: 25 hrs.

- a. Stop engine and remove key.
- b. Raise grass catcher and engine compartment cover.
- c. Remove wing nuts and remove air cleaner cover.
- d. Remove foam pre-cleaner element and wash in warm water with detergent, then rinse until all traces and detergent are eliminated. Squeeze out excess water (do not wring). Air dry.
- e. Check paper element. Gently tap the flat side of the paper element to dislodge any dirt. Do not wash. Replace if dirty, bent or damaged.
- g. Reinstall foam pre-cleaner to paper element, then reinstall paper element and cover.

5.1.10 Change engine oil.
Service Interval: 50 hrs.

NOTE: Change oil and filter after first five (5) hrs. of operation

- a. Stop engine and remove key.

5.1.10 (Con't.)

- b. Raise grass catcher and engine compartment cover.
- c. Drain oil while engine is warm from operation.
- d. Remove the oil drain plug from the underside of the engine. Allow oil to drain then replace drain plug.
- e. Replace the oil filter every other oil change. Clean around oil filter and unscrew filter to remove. Before reinstalling new filter, apply a thin coating of oil on the surface of the rubber seal. Turn filter clockwise until rubber seal contacts the filter adapter then tighten filter an additional $2/3$ to $3/4$ turn.
- f. Clean around oil fill cap and remove cap. Fill to specified capacity and replace cap. Use oil as specified in Specifications Section and in Engine Owners Manual. Do not overfill.
- g. Start the engine and check for leaks.

5.1.11 Check hydraulic oil level.
Service Interval: 25 hr.

- a. Stop engine and remove key.
- b. Tilt seat up and secure with prop rod.
- c. Clean area around hydraulic reservoir cap and remove cap. Oil level should be within .5 inch of top of reservoir. If not, add oil as specified in Specifications Section. Replace cap.



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



CAUTION: Keep body and hands away from pin holes or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard and not hands to search for leaks.





CAUTION: Safely relieve all pressure in the system before disconnecting the lines or performing work on the system.



CAUTION: Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.

- 5.1.12 Check tire pressures.
Service Interval: 25 hrs.
- Stop engine and remove key.
 - Inflate tires to pressures specified in Specifications Section.
- 5.1.13 Check battery electrolyte level.
Service Interval: 25 hrs.
- Stop engine and remove key.
 - Raise grass catcher.
 - Remove vent caps from battery. Fill with drinking water to bottom of vent wells and replace vent caps.
 - See Assembly Section for servicing a new battery.

<p>POISON CAUSES SEVERE BURNS</p> 	<p>CONTAINS SULFURIC ACID. AVOID CONTACT WITH SKIN, EYES OR CLOTHING. IN EVENT OF ACCIDENT FLUSH WITH WATER AND CALL A PHYSICIAN IMMEDIATELY. KEEP OUT OF REACH OF CHILDREN</p>	<p>DANGER EXPLOSIVE GASES</p> 	<p>CIGARETTES, FLAMES OR SPARKS COULD CAUSE BATTERY TO EXPLODE. ALWAYS SHIELD EYES AND FACE FROM BATTERY. DO NOT CHARGE OR USE BOOSTER CABLES OR ADJUST POST CONNECTIONS WITHOUT PROPER INSTRUCTION AND TRAINING. KEEP VENT CAPS TIGHT AND LEVEL</p>
513747			

- 5.1.14 Check condition of belts.
Service Interval: 25 hrs.
- Shut off engine and remove key.
 - Raise grass catcher and engine compartment cover to inspect primary and secondary drive belts.
 - Tilt seat and secure with prop rod to inspect pump positive drive belt.
 - Disconnect deck support springs and lift up floor pan to inspect deck drive belt.
 - See Adjustments Section for adjustment of belts.
- 5.1.15 Lubricate grease fittings.
Service Interval: 25 hrs.
- Stop engine and remove key.
 - Lubricate fittings with one to two pumps of SAE No. 2 multi-purpose gun grease.
 - | <u>Fitting Locations</u> | <u>No. of Places</u> |
|--------------------------|----------------------|
| Front Casters | 2 |
| Front Caster Pivots | 2 |
| Deck Pivots | 4 |
| Cutter Housing Spindles | 3 |
| PTO Shaft | 3 |
| Brake Brackets | 4 |
| Brake Handle | 1 |

5.1.16 Lubricate throttle and choke cables.
Service Interval: 25 hrs.

- a. Stop engine and remove key.
- b. Lubricate throttle and choke cable ends with a spray type lubricant or light oil.

5.1.17 Lubricate seat switch actuator.
Service Interval: 25 hrs.

- a. Stop engine and remove key.
- b. Tilt seat up and secure with prop rod.
- c. Apply grease to top portion of seat switch actuator rod by working grease in between spring. Apply grease to bottom end of switch actuator rod by depressing rod and smearing bottom end of rod with grease.

5.1.18 Lubricate grass catcher lid hinges.
Service Interval: 25 hrs.

- a. Stop engine and remove key.
- b. Lift grass catcher lid and remove tubs.
- c. Lubricate hinge links and bushings with a spray type lubricant or light oil.



CAUTION: Use caution when lubricating hinges to avoid pinching fingers. Hold lid open with one hand when reaching into hinge area.

5.1.19 Lubricate brake handle trigger.
Service Interval: 25 hrs.

- a. Stop engine and remove key.
- b. Lubricate sliding surfaces of brake handle with a spray type lubricant or light oil.

5.1.²¹~~20~~ Remove engine shrouds and clean cooling fins.
Service Interval: 50 hrs.

- a. Stop engine and remove key.
- b. Raise grass catcher and engine compartment cover.
- c. Remove cooling shrouds from engine and clean cooling fins. Also clean dust, dirt and oil from external surfaces of engine which can cause improper cooling.
- d. Make sure cooling shrouds are reinstalled. Operating the engine without cooling shrouds will cause engine damage due to overheating.

Lubricate neutral lockout rod bushings.
Service Interval: 25 hrs

- a. Stop engine and remove key
- b. Tilt seat up and secure with prop rod.
- c. Lubricate bronze bushings on each end of neutral lockout rod with a spray type lubricant or light oil

5.1.20

ADD- 5.1.20 →

- 5.1.²¹~~21~~ Check deck gearbox lubricant.
Service Interval: 50 hrs.
- a. Deck gearbox is permanently sealed and should require no additional lubrication. If there is evidence of seal leakage, repair the leak and fill with lubricant as specified under Specifications Section.
- 5.1.²²~~22~~ Check spark plugs. Service Interval: 100 hrs.
- a. Remove spark plugs, check condition and reset gaps, or replace with new plugs. See Engine Owners Manual.
- 5.1.²³~~23~~ Change fuel filter.
Service Interval: As Required
- a. A fuel filter is installed in the fuel line between the fuel tank and the engine. Replace when necessary.
- 5.1.²⁴~~24~~ Change hydraulic system filter.
Service Interval: After First 150 hrs. Then
Each 250 hrs. Thereafter
- a. Shut off engine and remove key.
- b. Raise seat and secure with prop rod.
- c. Carefully clean area around filter. It is important that no dirt or contamination enter hydraulic system.
- d. Unscrew filter to remove. Before re-installing new filter, fill it with oil specified in Specifications Section and apply a thin coat of oil on the surface of the rubber seal. Turn filter clockwise until rubber seal contacts the filter adapter then tighten the filter an additional 2/3 to 3/4 turn. Use only Exmark Part No. 513211, filter element.
- e. Fill reservoir to within .5 inch of top. Run machine to allow any air to work its way out of system and recheck oil level.
- f. Do not change hydraulic system oil unless it is felt that oil has been contaminated or gotten hot. Changing oil unnecessarily could damage hydraulic system by introducing contaminants into the system.

Adjustments

- 5.2.1 Cutting height adjustment.
- a. Shut off engine and remove key.

5.2.1 (Con't.)

- b. Install hairpin clip in the four deck supports pin in the proper hole to give the desired cutting height:

<u>Hole</u>	<u>Cutting Height</u>
Top	1.5 in. (3.8 cm)
Second From Top	2.0 in. (5.1 cm)
Third From Top	2.5 in. (6.4 cm)
Fourth From Top	3.0 in. (7.6 cm)
Fifth From Top	3.5 in. (8.9 cm)
Sixth From Top	4.0 in. (10.2 cm)

Install one washer under each of the hairpin clips.

- c. Install hairpin in rear deck support pins under spring and five holes below top hairpin clip.

5.2.2 Primary drive belt tension adjustment.

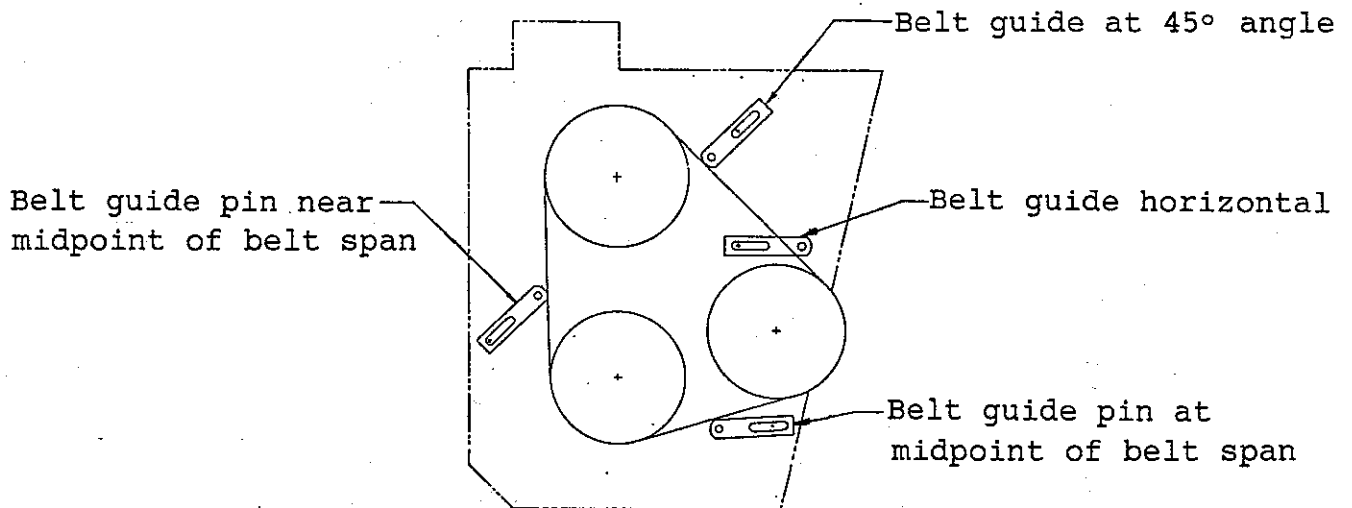
- a. Shut off engine and remove key.
b. Disengage PTO lever.
c. The primary drive belt is the belt that runs from the engine pulley to the transfer pulley to the pump drive shaft pulley. Adjustment is by the 3/8 bolt on the left hand side of the frame just forward of the top fuel tank attaching strap. Begin with bolt just tight enough to take the slack out of the spring and linkage. Spring should not be extending yet. Tighten bolt 7-1/4 turns to obtain proper primary belt tension.

5.2.3 Secondary drive belt tension adjustment.

- a. Shut off engine and remove key.
b. The secondary drive belt is the belt that runs from the transfer pulley to the PTO drive shaft pulley to the blower pulley. It is just to the front of the primary drive belt. Adjustment is by the turnbuckle on the linkage underneath the belt. First loosen the locknut. Measure length of spring connecting the link from the PTO handle to the top bellcrank with PTO disengaged. (This spring is located under the right fender.) Adjust the turnbuckle until spring extension with PTO engaged is one inch (2.5 cm) longer. Tighten locknut.

5.2.4 Belt guide adjustment.

- a. Shut off engine and remove key.
- b. Raise grass catcher and engine compartment cover.
- c. Engage PTO lever.
- d. Four belt guides are used on the secondary drive belt. Adjust belt guides with the PTO lever engaged. Adjust so that belt guides are in the positions shown in the diagram below and the pins are 1/4" (.6 cm) from the belt.



5.2.5 Positive drive belt tension.

- a. Shut off engine and remove key.
- b. Tilt seat and secure with prop rod.
- c. Remove the cover over the positive pump drive belt.
- d. Adjust belt tension by loosening two 3/8 whizlock bolts and nuts mounting left pump to panel. Slide pump in slots to obtain proper belt tension and retighten bolts. When tensioned properly, belt should deflect 1/8 inch when a two pound force is applied at the midspan of the belt. Do not over-tension belt.
- e. Replace cover.

5.2.6 Deck belt tension.

- a. The deck belt is tensioned by a self-tensioning idler. No adjustment is necessary.

5.2.7 Steering and motion control linkage and neutral lock adjustment.

- a. This adjustment must be made with the drive wheels turning. First raise the frame and block up so that drive wheels can rotate freely.
- b. Tilt the seat and secure with prop rod.
- c. Remove the electrical connection from the brake safety switch located on the left frame rail just behind the pump mount panel. Temporarily install a jumper wire across the terminals in the connector of the wiring harness.
- d. Release brake lever.
- e. Loosen locknut from two ball joints which connect the override assemblies to the pump control arms. Loosen four locknuts securing 1/4 x 1 carriage bolts to pump control arms and screw the carriage bolts in several turns. Refer to drawing in Parts Manual for parts identification.
- f. Start engine. Operator must be in seat to crank engine. Open to 1/2 throttle.
- g. With steering wheel in centered position and motion control handle pulled back to neutral position (against neutral indicator spring), adjust override assembly length by rotating the overrides until wheels stop turning. Open to full throttle and check that wheels remain stopped. Tighten locknut.



CAUTION: Keep clear of wheels and other moving parts when making these adjustments.

- h. Engage parking brake and adjust four carriage bolts in pump control arms until they contact plates on lockout rod then go one-half turn and tighten locknuts.
- g. Restart engine and release brake and insure that wheels remain stopped. Readjust as required.
- h. Reconnect electrical connection to brake safety switch.

5.2.8 Brake link adjustment.

- a. Shut off engine and remove key.
- b. Adjust length of the adjustable link connecting the brake lever to the arm on the lockout rod until left brake engagement arm depresses brake safety switch by approximately 1/4 inch.

5.2.9 Adjust seat switch.

- a. Adjust the seat actuator rod length to where the machine will shut off when the operator raises off the seat (with brake disengaged or PTO engaged) but will continue to run with operator in seat (a slight shift in weight should not shut machine off).
- b. To adjust, loosen locknut on bottom of actuator rod (5/16 bolt) and by adjusting nuts move switch actuator plate up or down on rod.

5.2.10 Adjust throttle and choke lever tension.

- a. Shut off engine and remove key.
- b. Tension in throttle and choke levers can be adjusted by adjusting the tightness of the lever pivot bolts.

LUBRICATE LOCKOUT
ROD BUSHINGS

ADD WIRING DIAGRAMS

Limited Warranty Exmark Commercial Turf Equipment

This warranty extends to the original retail purchaser only and commences on the date of original retail purchase.

Any part of the Exmark commercial power mower manufactured by Exmark Mfg. Co. Inc. ("Exmark") and found in the reasonable judgement of Exmark to be defective in material or workmanship, will be repaired or replaced by an authorized Exmark dealer without charge for parts and labor.

The Exmark mower, including any defective part, must be returned to an authorized Exmark service dealer within the warranty period. The expense of delivering the mower to the dealer for warranty work and the expense of returning it back to the owner after repair or replacement will be paid for by the owner. Exmark's responsibility in respect to claims is limited to making the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Exmark mower. Proof of purchase will be required by the dealer to substantiate any warranty claim. All warranty work must be performed by an authorized Exmark service dealer.

This warranty is limited to two years from the date of original retail purchase for any Exmark mower.

This warranty does not cover any Exmark mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual. The warranty does not apply to any damage to a Exmark mower that has been altered or modified so as to adversely affect the product's operation, performance or durability or that has been altered or modified so as to change the intended use of the product. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which, in the reasonable judgement of Exmark, are either incompatible with the mower or adversely affect its operation, performance or durability, or by repair or service by anyone other than an

authorized Exmark service dealer. This warranty does not cover the engine, which is warranted separately by the engine manufacturer and for a different period of time.

Exmark reserves the right to change or improve the design of any mower without assuming any obligation to modify any mower previously manufactured. Exmark's obligation under this warranty is strictly and exclusively limited to the repair or replacement of defective parts. Exmark does not assume or authorize anyone to assume for them any other obligation. In no event shall any implied warranty of merchantability or of fitness for a particular purpose exceed the two-year warranty period. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

Exmark assumes no responsibility for incidental, consequential or other damages including, but not limited to, expense for gasoline, expense of delivering the mower to an authorized Exmark service dealer and expense of returning it back to the owner, mechanic's travel time, telephone or telegram charges, rental of a like product during the time warranty repairs are being performed, travel, loss or damage to personal property, damage to the mower in transit, loss of revenue, loss of use of the mower, loss of time or inconvenience. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty applies to all Exmark mowers sold in the United States and Canada, whether the mowers are used for commercial, rental or other purposes.

EXMARK MFG. CO., INC.
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