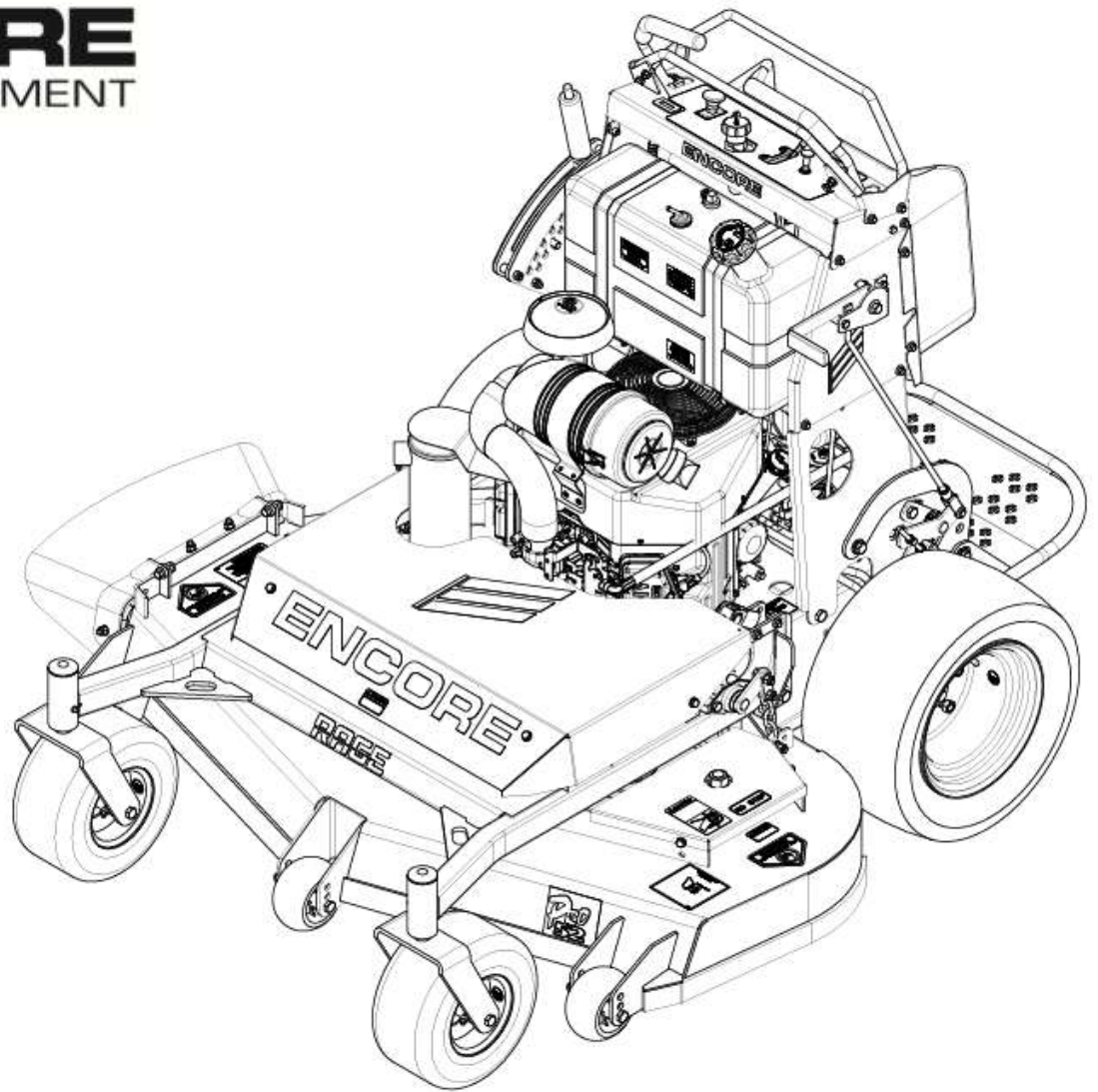




ER48FX730VL  
ER48FX730VLCA  
ER52FX730VL  
ER52FX730VLCA



# **RAGE**

OPERATORS MANUAL



**ENCORE MANUFACTURING**  
**A DIVISION OF WORL DLAWN POWER EQUIPMENT, INC.**

**ENCOREEQUIPMENT.COM**

**2415 ASHLAND AVE**  
**BEATRICE, NE 68310**  
**800-267-4255**  
**FAX – 402-223-4103**

## Contents

SAFETY .....	6
Safety Alert Symbol .....	6
TRAINING.....	6
PREPARATION .....	6
OPERATION.....	8
SLOPE OPERATION.....	9
MAINTENANCE AND STORAGE .....	10
SAFETY AND INSTRUCTIONAL DECALS.....	12
SPECIFICATIONS .....	14
MODEL NUMBER.....	14
ENGINE.....	14
FUEL SYSTEM.....	14
ELECTRICAL SYSTEM .....	14
TRANSMISSION.....	14
CUTTING DECK.....	14
OPERATION .....	15
OPERATOR CONTROLS .....	15
SAFETY INTERLOCK.....	15
CHOKE CONTROL.....	15
THROTTLE CONTROL.....	15
PARK BRAKE LEVER.....	15
IGNITION SWITCH .....	15
HOUR METER .....	15
DRIVE WHEEL RELEASE VALVES.....	16
BLADE ENGAGEMENT SWITCH .....	16
PRE-START .....	16
OPERATING INSTRUCTIONS .....	17
STARTING THE ENGINE.....	17
BLADE ENGAGEMENT .....	17
DISENGAGING THE BLADES .....	18
STOPPING THE ENGINE .....	18
DRIVING THE MACHINE.....	18
DRIVING FORWARD.....	18

---

DRIVING IN REVERSE .....	18
OPERATING THE PLATFORM .....	18
OPERATING THE MACHINE WITH THE PLATFORM UP .....	19
OPERATING THE MACHINE WITH THE PLATFORM DOWN.....	19
ADJUSTING THE CUTTING HEIGHT .....	19
TRANSPORTING .....	20
TRANSPORTING A UNIT .....	20
LOADING A UNIT.....	20
MAINTENANCE .....	21
RECOMMENDED MAINTENANCE SCHEDULE(S) .....	22
CHECK ENGINE OIL LEVEL .....	23
CHECK BATTERY CHARGE .....	23
RECOMMENDED JUMP STARTING PROCEDURE.....	23
RELEASE THE CUSHION FOR REAR ACCESS.....	24
CHECK MOWER BLADES.....	24
CHECK SAFETY INTERLOCK SYSTEM .....	25
CHECK FOR LOOSE HARDWARE .....	26
SERVICE AIR CLEANER.....	26
CHANGE ENGINE OIL.....	26
CHANGE ENGINE OIL FILTER.....	26
CHECK HYDRAULIC OIL LEVEL.....	27
CHECK TIRE PRESSURES.....	27
CHECK CONDITION OF BELTS.....	27
LUBRICATE GREASE FITTINGS .....	27
CHECK SPARK PLUGS.....	27
CHANGE HYDRAULIC SYSTEM FILTER AND FLUID .....	27
HYDRAULIC SYSTEM AIR PURGE.....	28
WHEEL HUB NUT TORQUE SPECIFICATION.....	29
THREAD LOCKING ADHESIVES .....	29
COPPER-BASED ANTI-SEIZE.....	29
ADJUSTMENTS .....	29
DECK LEVELING .....	29
PUMP DRIVE BELT TENSION.....	30
MOWER DECK DRIVE BELT TENSION .....	30

---

PARK BRAKE ADJUSTMENT .....	30
FORWARD TRACKING ADJUSTMENT .....	30
NEUTRAL ADJUSTMENT .....	30
CASTER PIVOT BEARINGS PRE-LOAD ADJUSTMENT .....	30
CLEANING .....	31
CLEAN ALL DEBRIS FROM ENGINE AND EXHAUST SYSTEM AREA.....	31
CLEAN DUST AND DIRT FROM CYLINDER HEAD FINS.....	31
CLEAN DEBRIS FROM MACHINE .....	31
CLEAN GRASS BUILD-UP UNDER DECK .....	31
TROUBLESHOOTING .....	32
WIRING SCHEMATICS.....	33
HYDRAULIC SCHEMATIC.....	34
EVAPORATIVE EMISSION CONTROL WARRANTY STATEMENT .....	35
LIMITED WARRANTY .....	37


# SAFETY

## Safety Alert Symbol


This symbol means: **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**




The safety alert symbol appears above information which alerts you to unsafe actions or situations and will be followed by the word **DANGER**, **WARNING**, or **CAUTION**.

 **DANGER:** White lettering/Red background.

Indicates failure to observe the safety instructions will result in death or serious injury.

 **WARNING:** Black letters on orange background.

Indicates failure to observe safety instructions could result in death or serious injury.

 **CAUTION:** Black letters on yellow background.

Indicates failure to observe the safety instructions may result in death or serious injury.

## TRAINING

- Read the instructions carefully. Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators need to be trained before operating this unit.
- Never let children or untrained people operate the equipment without proper instruction.
- Keep everyone, especially children and pets, away from the area of operation. Remember that the operator or user is responsible for accidents or hazards occurring to other people or their property.

## PREPARATION

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Use only accessories and attachments approved by **ENCORE**
- The use of personal protective equipment, such as (but not limited to) safety glasses, hearing protection, substantial footwear and long trousers is highly recommended.

 **CAUTION**

**This machine produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss through extended periods of exposure.**

**Wear hearing protection when operating this machine.**

- Thoroughly inspect the area where the equipment is to be used and remove all stones, sticks, wires, bones, and other foreign objects which may damage the equipment or cause personal injury to operator or bystanders.
- Check that the operator's presence controls, safety switches, and shields are attached and

functioning properly. Do Not operate unless they function properly.



## DANGER

**In certain conditions gasoline is extremely flammable and highly explosive.**

**A fire or explosion from gasoline can burn you, others and cause property damage.**

- Refuel outdoors, on level ground while engine is cold.
- Never remove fuel cap or add fuel when engine is running or when engine is hot.
- Never fill the fuel tank so that gasoline level rises above the bottom of the filler neck to allow for gasoline expansion and prevent fuel spillage.
- 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.
- Do not smoke while refueling and stay away from an open flame or where gasoline fumes may be ignited by spark.
- Do not operate without entire exhaust system in place and in proper working condition.
- Do not place any equipment that is leaking gasoline in an enclosed trailer.
- Be sure all fuel tanks and gasoline storage containers have proper caps installed to prevent spillage and minimize vapor escaping into the trailer.



## DANGER

**In certain conditions during fueling, static electricity can be released causing gasoline vapors to ignite.**

**A fire or explosion from gasoline can burn you, others, and cause property damage.**

- Purchase and store gasoline only in an approved container
- Always place gasoline containers on the ground away from your vehicle while filling.
- Do not fill gasoline containers inside a vehicle or on a truck or trailer bed because interior carpets or plastic truck bed liners may insulate the container and slow the loss of any static charge.
- When practical, remove gas powered equipment from the truck or trailer and refuel the equipment with its wheels on the ground.
- If this is not possible, then refuel such equipment on a truck or trailer from a portable container, rather than from a gasoline dispenser nozzle.
- If a gasoline dispenser nozzle must be used, keep the nozzle in contact with rim of the fuel tank or container opening at all times until fueling is complete.



## WARNING

**Gasoline is harmful or fatal if swallowed. Long-term exposure to vapors and failure to use caution may cause serious injury or illness.**

- **Avoid prolonged breathing of vapors.**
- **Keep face away from nozzle and gas tank/container opening.**
- **Keep away from eyes and skin.**
- **Never siphon by mouth.**

## OPERATION

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



### WARNING

**Operating engine parts, especially the muffler, become extremely hot. Severe burns can occur on contact and debris, such as leaves, grass, brush, etc. can catch fire.**

- Allow engine parts, especially the muffler, to cool before touching.
- Remove accumulated debris from muffler and engine area.



### WARNING

**Engine exhaust contains carbon monoxide, which is an odorless deadly poison that can kill you.**

**Do Not run engine indoors or in a small confined area where dangerous carbon monoxide fumes can collect.**

- Operate only in daylight or good artificial light, keeping away from holes and hidden hazards.
- Be sure all drives are in neutral and parking brake is engaged before starting engine.
- Never raise deck with blades running.
- Never operate the mower with damaged guards, shields, or covers. Always have safety shields, guards, switches and other devices in place and in proper working condition.
- Stop engine, wait for all moving parts to stop and engage parking brake:
  - Before refueling
  - Before dumping the grass catcher
  - Before making height adjustments
- Park machine on level ground. Stop engine, wait for all moving parts to stop, remove key and engage parking brake:
  - Before checking, cleaning or working on the mower.
  - After striking a foreign object or machine develops an abnormal vibration (inspect machine for damage and repair before resuming operation)
  - Before clearing blockages
  - Before leaving the operator position
- Never mow with the discharge deflector raised, removed or altered unless there is a grass collection system or mulch kit in place and working properly.
- Do Not change the engine governor setting or overspeed the engine.



## **WARNING**

Hands, feet, hair, clothing, or accessories can become entangled in rotating parts. Contact with rotating parts can cause traumatic amputation or severe lacerations.

**Do Not** operate the machine without guards, shields, and safety devices in place and working properly.

**Keep** hands, feet, hair, jewelry, or clothing away from rotating parts.

**DO NOT** operate the mower when people, especially children, or pets are in the area.

- Stop the blades, slow down, and use caution when transporting the mower to and from the area to be mowed or crossing surfaces other than grass.
- Do not operate the mower under the influence of alcohol or drugs.
- Be alert, slow down and use caution when making turns. Look behind and to the side before changing directions.
- Use extreme care when loading and unloading the machine into a trailer or truck.
- Be aware of the mower discharge path and direct discharge away from others.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

## **SLOPE OPERATION**

Use extreme caution when mowing and/or turning on slopes as loss of traction and/or tip-over could occur. The operator is responsible for the safe operation on slopes.

## **DANGER**

Mowing on wet grass or steep slopes can cause sliding and loss of control.

When mowing ditches or slopes recommended practice is to latch operator platform in the up position and continue to use mower in the true walk behind mode.

- **Mow across slopes, never up and down.**
- **Do Not** mow slopes when grass is wet.
- **Do Not** mow near drop-offs or near water.
- **Do Not** mow slopes greater than 15 degrees.
- **Reduce speed and use extreme caution on slopes.**
- **Avoid sudden turns or rapid speed changes.**
- Remove or mark obstacles such as rocks, tree limbs, etc. from the mowing area. Tall grass can hide obstacles.
- Be aware that operating on wet grass, across steep slopes or downhill may cause the mower to lose traction. Loss of traction to the drive wheels may result in sliding and a loss of braking and steering.
- Watch for ditches, holes, rocks, dips and rises that change the operating angle, as rough terrain could overturn the machine.
- Always avoid sudden starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly off the slope.
- Use extreme care with grass catchers or attachments. These can change the stability of the machine and cause loss of control.

## MAINTENANCE AND STORAGE

- Before any maintenance, disengage drives, lower implement, set parking brake, stop engine and remove key or disconnect spark plug wire. Wait for all moving parts to stop before adjusting, cleaning or repairing.
- Park machine on level ground. Never allow untrained personnel to service machine
- For engine maintenance, follow the engine manufacturer's recommendations as stated in the engine manual.
- Keep engine, engine area, free from accumulation of grass, leaves, excessive grease, or oil and other debris. These materials can become combustible and may result in a fire.
- Maximum mowing results and safety can only be achieved if the mower is properly maintained and operated correctly.
- Check all bolts frequently to maintain proper tightness.
- Keep all guards, shields and safety devices in place and in safe working condition.
- All replacement parts must be the same as, or equivalent to, the parts supplied on original equipment.
- Use care when checking blades. Wrap the blade(s) or wear gloves, and use caution when servicing them. Only REPLACE damaged blades, NEVER straighten or weld them.
- Disconnect the battery cable from the negative battery post when the unit will be allowed to sit for more than 30 days without use.
- Store fuel in a container specifically designed for this purpose in a cool, dry place.
- Gasoline powered equipment or fuel containers should not be stored in a basement or any enclosed area where open pilot lights or heat appliances are present.
- Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.



## DANGER

**Charging or jump starting the battery may produce explosive gasses. Battery gases can explode causing serious injury.**

- **Keep sparks, flames, or cigarettes away from battery.**
- **Ventilate when charging or using battery in an enclosed space.**
- **Make sure venting path of battery is always open once battery is filled with acid**
- **Always shield eyes and face from battery.**



## DANGER

**Battery electrolyte contains sulfuric acid, which is poisonous and can cause severe burns. Swallowing electrolyte can be fatal or if it touches skin can cause severe burns.**

- **Wear safety glasses to shield eyes, and rubber gloves to protect skin and clothing when handling electrolyte.**
- **Do Not swallow electrolyte.**
- **In the event of an accident, flush with water and seek medical attention immediately.**

 **CAUTION**

If the ignition is in the “ON” position there is potential for sparks and engagement of components. Sparks could cause an explosion or moving parts could engage causing personal injury.

Be sure ignition switch is in the “OFF” position before charging the battery.

 **WARNING**

Removing standard, original equipment parts and accessories may alter the warranty, traction, and safety of the machine. Unauthorized changes to the engine, fuel or venting system, may violate EPA and CARB regulations.

Hydraulic fluid escaping under pressure can penetrate skin and cause injury. Fluid accidentally injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

- Make sure all hydraulic fluid hoses and lines are in good condition and all hydraulic connections and fitting are tight before applying pressure to hydraulic system.
- Keep body and hands away from pinhole leaks or nozzles that high pressure hydraulic fluid.
- Use cardboard or paper, not your hands, to find hydraulic leaks.
- Safely relieve all pressure in the hydraulic system by placing the motion control levers in neutral and shutting off the engine before performing any work on the hydraulic system.

 **WARNING**

## SAFETY AND INSTRUCTIONAL DECALS

- Keep all safety signs legible. Remove all grease, dirt and debris from safety signs and instructional labels.
- Replace all worn, damaged, or missing safety signs.
- When replacement components are installed, be sure that current safety signs are affixed to the replaced components.
- If an attachment or accessory has been installed, make sure current safety signs are visible.
- New safety signs may be obtained from your authorized Encore equipment dealer.
- 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.
- Familiarize yourself with the following safety signs and instructional labels. They are critical to the safe operation of your machine.



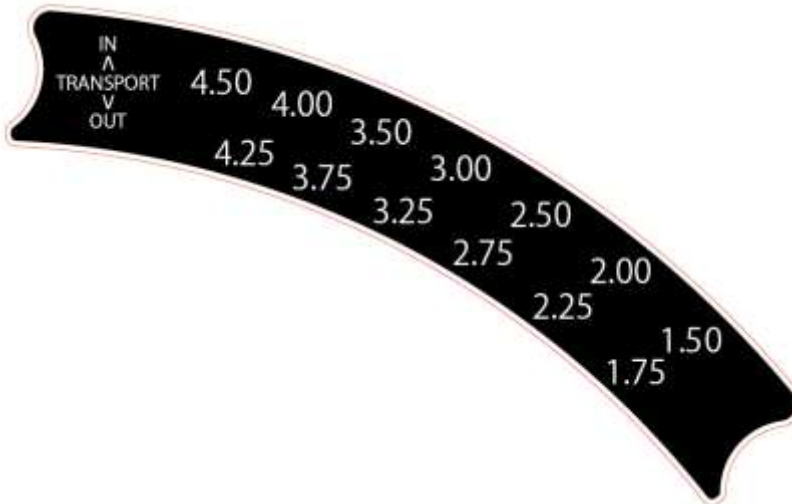
8304



363023



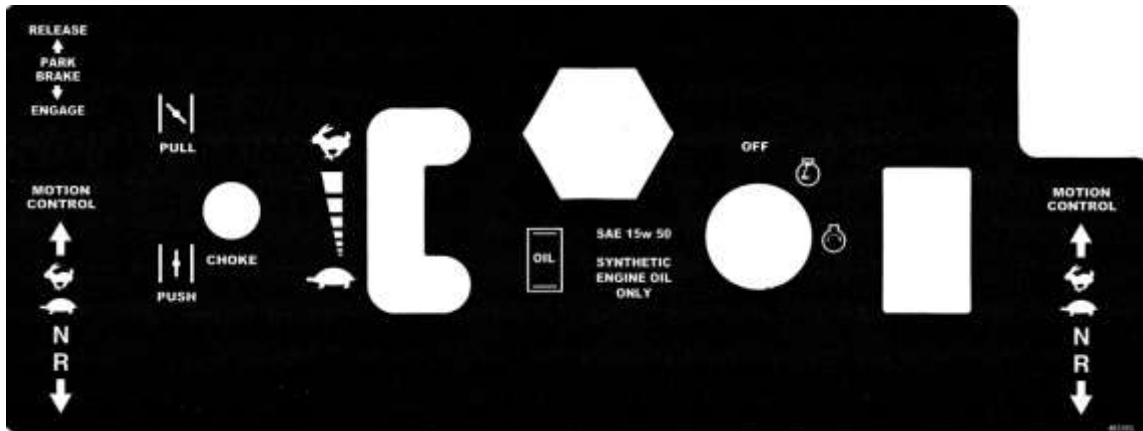
8308



463448



8008



CONSOLE DECAL – 463103

CONSOLE GRAPHICS



CLUTCH ON



CLUTCH OFF



FAST



SLOW



NEUTRAL



REVERSE



PARK BRAKE



CHOKE

## SPECIFICATIONS

### MODEL NUMBER

**ER48FX730VL**  
**ER48FX730VLCA**  
**ER52FX730VL**  
**ER52FX730VLCA**

### WEIGHT & DIMENSIONS

- Length: 72"  
62" w/Platform up
- Width: 72"  
65" w/Deflector up
- Wheel Base: 33"
- Wheel Track-Front: 36"
- Wheel Track-Rear: 44"
- Weight: 750 Lbs

### ENGINE

- Kawasaki FX730V
- See your Engine Owner's Manual
- RPM: High Idle: 3600  
Low Idle: 1550

### FUEL SYSTEM

- Capacity: 5 Gal
- Type of Fuel: Regular Unleaded Gasoline  
87 Octane or higher
- Fuel Filter: In-line

### ELECTRICAL SYSTEM

- Charging System: 12 Volt, 15 Amp @  
3600 RPM
- Battery Type: Group UI
- Battery Class: 350 CCA Minimum
- Battery Voltage: 12V DC
- Polarity: Neg. Ground
- Fuses: (1) 15A; (1) 20A

### TRANSMISSION

Two Hydro Gear® variable displacement pumps with two, Parker® Wheel Drive motors

- Hydraulic Oil: 15w-50 Synthetic
- Speed: 0-8.0 mph Fwd  
0-5.0 mph Reverse

### CUTTING DECK

- Cutting Width: 52"
- Discharge: Side
- Blade Size: 18" (3 ea)
- Deck Drive: Electric Clutch
- Deck: 7 ga Welded Steel Floating Deck
- Deck Depth: 5"
- Cutting Height 1.5" to 4.5" Adjustment:
- Mulching Kit: Optional

### TIRES

- Front: 11.00- 5.00-4 Smooth – 48"
  - 11.00-6.00 x 5 Smooth– 52"
  - Pressure 12-14 psi (83-97 kPa)
- Rear: 18 -10.50 x 10
  - Pressure 15 psi (103 kPa)

# OPERATION

## OPERATOR CONTROLS

- Steering and Motion Control:

The motion control levers control the forward and reverse rotation of the respective tire. Speed is proportional to amount the levers are moved; moving the levers to the center (neutral) position brakes the movement of the machine.

## SAFETY INTERLOCK

**TO START:** Control levers must be in **NEUTRAL** position, park brake must be **ON**, and blade switch must be **OFF IN ORDER TO START**.

**TO RUN:** One control lever must be in the **IN** position to remove park brake or engine will stop.

**TO LEAVE OPERATOR POSITION:** Park brake must be set to **ON** before both control handles are returned to **NEUTRAL**, **AND** the blade switch must be **OFF** in order to leave the operator position.

## CHOKE CONTROL

Located on the control console

The choke is used to aid in starting a cold engine. Pulling the choke knob up will move the choke into the “on” position, pushing the choke down will return the choke to the “off” position.

## THROTTLE CONTROL

Located on the control console

The throttle is used to control engine speed. Moving the throttle lever forward will increase engine speed and moving the throttle lever to the rear will decrease engine speed. Moving the throttle forward into the detent is full throttle.

## PARK BRAKE LEVER

Located on left side of unit

To engage the brake, pull the lever rearward.

To release, push the lever forward.

When parking on a steep slope, the wheels must be chocked or blocked in addition to the brake being engaged. The unit must be tied down and brake engaged when transporting.

Park brake must be disengaged before moving.

## IGNITION SWITCH

Located on the control console.

The ignition switch is used to start and stop the engine. The switch has three positions “OFF”, “ON” and “START”. Insert key into switch and rotate clockwise to the “ON” position. Rotate clockwise to the next position to engage the starter (key must be held against spring pressure in this position). Allow the key to return to the “ON” position immediately after the engine starts.

**NOTE:** To start the engine, the control levers must be in the neutral positions, park brake must be on, and blade switch must be off.

## HOUR METER

Located on the control console

The hour meter records the number of hours that the engine has run.

---

## DRIVE WHEEL RELEASE VALVES

Located on the right front corner of the hydrostatic pumps.

Drive wheel release valves are used to release the hydrostatic drive system to allow the machine to be moved by hand without the engine running.

With a 5/8 wrench, turn both valves one turn counterclockwise to release the drive system.

Turn clockwise to reset the drive system. **Do Not overtighten. Do Not tow machine.**

## BLADE ENGAGEMENT SWITCH

Located on console

Switch must be pulled out (up) to engage the blades. Switch is pushed in to disengage the blades.

## PRE-START

Fill fuel tank on level ground. For best results use only clean, fresh regular grade unleaded gasoline with an octane rating of 87 or higher.

**IMPORTANT: Never use methanol, gasoline containing methanol, gasohol containing more than 10% ethanol, premium gasoline, or white gas because the fuel system could be damaged.**

**Do Not** add oil to gasoline

**Do Not** over fill fuel tank. Fill the fuel tank to the bottom of the filler neck. The empty space in the tank allows gasoline to expand. Overfilling may result in fuel leakage or damage to the engine or emission system.

Make sure you understand the controls, their locations, their functions, and their safety requirements.

Refer to the Maintenance section and perform all the necessary inspection and maintenance steps.



# OPERATING INSTRUCTIONS

## STARTING THE ENGINE

1. Move both control levers to the neutral position.
2. Pull the parking brake lever rearward to engage the parking brake.
3. Push in (down) on the PTO switch to the “disengage” position.
4. Place the throttle midway between the “SLOW” and “FAST” positions.
5. On a cold engine, pull the choke lever up into the “ON” position.

On a warm engine, leave the choke in the “OFF” position.

6. Turn ignition switch to the “START” position. Release the switch as soon as the engine starts.

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

7. If the choke is in the “ON” position, gradually return choke to the “OFF” position as the engine warms up.

## BLADE ENGAGEMENT



### DANGER

The rotating blades under the mower deck are dangerous. Blade contact can cause serious injury or kill you.

**Do Not put hands or feet under the mower or mower deck when the blades are engaged.**



### DANGER

**An uncovered discharge opening will allow objects to be thrown in an operator’s or bystander’s direction. Also, contact with the blade could occur. Thrown objects or blade contact can cause serious injury or death.**

**Never operate the mower with the discharge deflector raised, removed, or altered unless there is a grass collection system or mulch kit in place and working properly.**

The PTO switch engages the cutting blades. Be sure all persons are clear of mower deck and discharge area before engaging the PTO.

1. Set throttle to “MIDWAY” position.
2. Move either motion control lever to the center, operate position
3. Continue holding the motion control lever in the center, operate position and pull up on the blade control switch (PTO). The clutch should engage and the mower blades begin rotating.
4. Place the throttle in the “FAST” position to begin mowing.
5. Disengage park brake before operating machine.

## **DISENGAGING THE BLADES**

1. Set the throttle midway between the “SLOW” and “FAST” positions.
2. Push down on the PTO switch to disengage the blades.

## **STOPPING THE ENGINE**

1. Bring the unit to a full stop.
2. Move the motion control levers to the neutral position; move the control levers out to the neutral position.
3. Engage the parking brake.
4. Push down on the PTO switch to disengage the blades.
5. Place the throttle midway between the “SLOW” and “FAST” positions.
6. Turn the ignition switch to the “OFF” position to stop the engine.
7. Remove the key to prevent children or other unauthorized persons from starting engine.

## **DRIVING THE MACHINE**



### **CAUTION**

**Erratic movement of the control levers may cause the Operator to lose control of the machine, which may cause damage to the machine or injury.**

- **Use slow and steady movement of the control levers.**
- **Use caution when making turns.**
- **Slow the machine down before making sharp turns.**

### **IMPORTANT:**

One operator control lever must be moved to the neutral operate position to establish operator presence before the park brake can be released.

## **DRIVING FORWARD**

1. Move one motion control lever into the neutral operate position.
2. Release the parking brake.
3. Move the other motion control lever to neutral operate position.
4. To move forward in a straight line, move both levers forward with equal pressure.

To turn left or right, pull the motion control lever back toward neutral in the desired turn direction.

The machine will move faster the farther the motion control levers are moved from the neutral position.

5. To stop, position both motion control levers in the neutral operate position.

## **DRIVING IN REVERSE**

1. Move the motion control levers to the neutral operate position.
2. To move rearward in a straight line, slowly move both levers rearward with equal pressure.

To turn left or right, release pressure on the motion control lever toward the desired turn direction.

3. To stop, position both motion control levers in the neutral operate position.

## **OPERATING THE PLATFORM**

The machine can be used with the platform in the up or down position. It is the operator's preference on which position to use.

## **WARNING**

The operator platform is heavy and may cause injury when lowering and raising the operator platform. The platform may suddenly drop if not supported when the latch pin is pulled out.

- **Do Not put your hands or fingers in the platform pivot area when lowering or raising the operator platform.**
- **Make sure the platform is supported when the latch pin is pulled out.**
- **Make sure the latch secures the platform when folding it in the up position. Push it tight against the cushion for the latch pin to lock into place.**

## **OPERATING THE MACHINE WITH THE PLATFORM UP**

Operating the machine with the platform up is recommended when:

- Mowing near drop-off's
- Mowing small areas where the machine is too long
- Areas with low over hanging branches or obstacles
- Loading the machine for transport
- Unloading the machine after transport
- Driving up or backing down slopes or ramps
- Turning in tight areas where platform may contact obstacles

To raise the platform, pull the bottom upward and push it tight against the cushion. The latch pin knob will snap inward to lock the platform into place.

## **OPERATING THE MACHINE WITH THE PLATFORM DOWN**

Operating the machine with the platform down is recommended when:

- Mowing most areas
- Driving down slopes

To lower the platform, push the platform forward against the cushion to release pressure on the latch pin, pull the knob outward, and lower the platform.

## **ADJUSTING THE CUTTING HEIGHT**

The cutting height of the mower deck is adjusted from 1.5 to 4.5 inches (3.8 cm to 11.4 cm) in 1/2 inch (6.4) increments.

1. Stop the machine and move one of the motion control levers to the neutral position.
2. Engage the park brake.
3. Disengage the PTO.
4. Raise the deck to the transport position using the deck height lever on the right side.

**NOTE: When changing the cutting height positions, always come to a complete stop and disengage the PTO.**

5. Insert the height adjustment pin into the holes corresponding to the desired cutting height.

See the decal on the side of the deck lift lever bracket for cut heights

6. Pull back and depress the transport latch button and lower the deck to the desired cutting height.

# TRANSPORTING

## TRANSPORTING A UNIT

Use a heavy-duty trailer or truck to transport the machine. Lock brake and block wheels.

Securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes. Be sure that the trailer or truck has all necessary lighting and marking as required by law.

Secure a trailer with a safety chain.



### CAUTION

**This unit does not have proper turn signals, lights, reflective markings, or a slow moving vehicle emblem. Driving on a street or roadway without such equipment is dangerous and can lead to accidents causing personal injury. Driving on a street or roadway without such equipment may also be a violation of State laws and the operator may be subject to traffic tickets and/or fines.**

**Do Not drive a unit on a public street or roadway.**



### WARNING

**Loading a unit on a trailer or truck increases the possibility of backward tip-over. Backward tip-over could cause serious injury or death.**

- **Lock operator platform into the up position when loading unit.**
- **Use extreme caution when operating a unit on a ramp**
- **Use only a single, full width ramp; Do Not use individual ramps for each side of the unit.**

- **If individual ramps must be used, use enough ramps to create an unbroken ramp surface wider than the unit.**
- **Do Not exceed a 20 degree angle between ramp and ground or between ramp and trailer or truck.**
- **Avoid sudden acceleration while driving unit up a ramp to avoid tipping backward.**
- **Avoid sudden deceleration while backing unit down a ramp to avoid tipping backward.**

## LOADING A UNIT

Use extreme caution when loading units on trailers or trucks. One full width ramp that is wide enough to extend beyond the rear tires is recommended instead of individual ramps for each side of the unit. With the platform up, a full width ramp provides a surface to walk on behind the unit. If it is not possible to use one full width ramp, use enough individual ramps to simulate a full width continuous ramp.

Ramp should be long enough so that the angles between the ramp and the ground and the ramp and the trailer or truck do not exceed 20 degrees. A steeper angle may cause mower deck components to get caught as the unit moves from ramp to trailer or truck. Steeper angles may also cause the unit to tip backward. If loading on or near a slope, position the trailer or truck so it is on the down side of the slope and the ramp extends up the slope. This will minimize the ramp angle. The trailer or truck should be as level as possible.

**IMPORTANT: Do Not attempt to turn the unit while on the ramp, you may lose control and drive off the side.**

Avoid sudden acceleration when driving up a ramp and sudden deceleration when backing down a ramp. Both maneuvers can cause the unit to tip backward.

## MAINTENANCE

Note: The *left* and *right* side of the machine is *determined* by standing in the *normal operator's position*.



### WARNING

Remove the key from the ignition switch, engage parking brake, and pull the wire(s) off the spark plug(s) before you do any maintenance. Also push the wire(s) aside so accidental contact with the spark plug does not occur.

While maintenance or adjustments are being made, someone could start the engine. Accidental starting of the engine could seriously injure you or other bystanders.



### WARNING

Allow the engine to cool completely before service or making repairs around the engine area.

The engine can become very hot. Touching a hot engine can cause severe burns.

## RECOMMENDED MAINTENANCE SCHEDULE(S)

Maintenance Service Interval	Maintenance Procedure
Before each use or daily	<ul style="list-style-type: none"> <li>• Check the engine oil level</li> <li>• Check the mower blades</li> <li>• Check the safety interlock system</li> <li>• Check for loose hardware</li> <li>• Check for belt obstructions</li> <li>• Check for fuel and oil leakage</li> <li>• Clean the engine and exhaust system area</li> <li>• Clean the grass and debris build-up from the machine and cutting deck, including under the deck</li> </ul>
After the first 8 hours	<ul style="list-style-type: none"> <li>• Change the engine oil</li> </ul>
After the first 100 hours	<ul style="list-style-type: none"> <li>• Check the wheel hub torque</li> <li>• Torque the wheel lug nuts</li> <li>• Clean dust and dirt from cylinder and cylinder head fins</li> <li>• Change engine oil</li> <li>• Clean and regap spark plugs</li> </ul>
After the first 250 hours	<ul style="list-style-type: none"> <li>• Change the hydraulic filter and replace the fluid in the reservoir</li> </ul>
Every 40 hours	<ul style="list-style-type: none"> <li>• Check the hydraulic oil level</li> <li>• Check the condition of the belts</li> <li>• Check the tire pressures</li> <li>• Lubricate the caster wheel bearings</li> </ul>
Every 100 hours	<ul style="list-style-type: none"> <li>• Change the engine oil.</li> </ul>
Every 200 hours	<ul style="list-style-type: none"> <li>• Grease the lift linkage pivots</li> <li>• Change engine oil filter</li> </ul>
Every 250 hours	<ul style="list-style-type: none"> <li>• Replace the primary air cleaner</li> <li>• Check secondary air cleaner – replace if dirty. See the Engine manual for additional information</li> </ul>
Every 500 hours	<ul style="list-style-type: none"> <li>• Change the hydraulic filter and fluid (Synthetic 15W50)</li> <li>• Check the wheel hub torque</li> <li>• Torque the wheel lug nuts</li> <li>• Replace the secondary air cleaner. See the engine manual for additional information.</li> </ul>
Monthly	<ul style="list-style-type: none"> <li>• Check the battery charge</li> </ul>
Yearly	<ul style="list-style-type: none"> <li>• Grease the front caster pivots</li> </ul>

## CHECK ENGINE OIL LEVEL

Check the engine oil daily before starting the engine otherwise shortage of the engine oil may cause serious damage to the engine such as seizure.

- Place the engine on a level surface. Clean area around the oil gauge before removing it.
- Remove the oil gauge and wipe it with a clean cloth.
- Reinsert the oil gauge to check the oil level. The level should be between “ADD” and “FULL” marks. Do not overfill.
- Install and tighten the oil gauge



### CAUTION

Do not fill above the “FULL” mark. Excess oil will cause a smoking condition, and may cause the engine to overheat.

## CHECK BATTERY CHARGE

Service Interval: Monthly



### WARNING

#### CALIFORNIA PROPOSITION 65

**BATTERY POSTS, TERMINALS, AND RELATED ACCESSORIES CONTAIN LEAD AND LEAD COMPOUNDS, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING.**

Allowing batteries to stand for an extended period of time without recharging them will result in reduced performance and service life. To preserve optimum battery performance and life, recharge batteries in storage when the open circuit voltage drops to 12.4 volts.

**NOTE:** To prevent damage due to freezing, battery should be fully charged before putting away for winter storage.

Check the voltage of the battery with a digital voltmeter. Locate the voltage reading of the battery in the table and charge the battery for the recommended time interval to bring the charge up to a full charge of 12.6 volts or greater.

**IMPORTANT:** Make sure the negative battery cable is disconnected and the battery charger used for charging the battery has an output of 16 volts and 7 amps or less to avoid damaging the battery (see chart for recommended charger settings).

Voltage Reading	Percent Charge	Maximum Charger Settings	Charging Interval
12.6 or greater	100%	16 volts/7 amps	No Charging Required
12.4 – 12.6	750-0100%	16 volts/7 amps	30 Minutes
12.2 – 12.4	50- 75%	16 volts/7 amps	1 Hour
12.0 – 12.2	25 – 50%	14.4 volts/4 amps	2 Hours
11.7 – 12.0	0 – 25%	14.4 volts/4 amps	3 Hours
11.7 or less	0%	14.4 volts/2 amps	6 Hours or More

## RECOMMENDED JUMP STARTING PROCEDURE

Service Interval: As required

1. Check the weak battery for terminal corrosion (white, green, or blue “snow”), it must be cleaned off prior to jump starting, Clean and tighten connections as necessary



### CAUTION

**Corrosion or loose connections can cause unwanted electrical voltage spikes at anytime during the jump starting procedure.**

**Do Not attempt to jump start with loose or corroded battery terminals or damage to the engine may occur.**



## DANGER

**Jump starting a weak battery that is cracked, frozen, has low electrolyte level, or an open/shorted battery cell, can cause an explosion resulting in serious personal injury.**

**Do Not jump start a weak battery if these conditions exist.**

2. Make sure the booster is a good and fully charged lead acid battery at 12.6 volts or greater. Use properly sized jumper cables (4 to 6 AWG) with short lengths to reduce voltage drop between systems. Make sure the cables are color coded or labeled for the correct polarity.



## CAUTION

**Connecting the jumper cables incorrectly (wrong polarity) can immediately damage the electrical system.**

**Be certain of battery terminal polarity and jumper cable polarity when hooking up batteries.**

**NOTE:** The following instructions are adapted from the SAE J1494 Rev. Dec. 2001 – Battery Booster Cables – Surface Vehicle Recommended Practice (SAE – Society of Automotive Engineers).



## WARNING

**Batteries contain acid and produce explosive gasses.**

- **Shield the eyes and face from the batteries at all times.**
- **Do Not lean over the batteries.**

**NOTE:** Be sure the vent caps are tight and level. Place a damp cloth, if available, over any vent caps on both batteries. Be sure the vehicles do not

touch and that both electrical systems are off and at the same rated system voltage. These instructions are for negative ground systems only.

3. Connect the positive (+) cable to the positive (+) terminal of the discharged battery.
4. Connect the other end of the positive cable to the positive terminal of the booster battery.
5. Connect the black negative (-) cable to the other terminal (negative) of the booster battery.
6. **MAKE THE FINAL CONNECTION ON THE ENGINE BLOCK OF THE STALLED VEHICLE (NOT TO THE NEGATIVE POST) AWAY FROM THE BATTERY. STAND BACK.**
7. Start the vehicle and remove the cables in the reverse order of connection (the engine block (black) connection is the first to disconnect).

## RELEASE THE CUSHION FOR REAR ACCESS

**Service Interval: As required**

The cushion can be released for rear access to the machine for maintenance or adjustment.

1. Lower the platform.
2. Loosen the 2 bolts on each side of the cushion mounting plate.
3. Remove the cushion.
4. Perform any maintenance or adjustment on the machine.
5. Replace the cushion and slide it onto the bolts on both sides of the machine.
6. Tighten the bolts on the cushion mounting plate.

## CHECK MOWER BLADES

**Service Interval: Before each use or daily**

Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.

1. Lift deck and secure in raised position as stated in the **Clean Grass Build-Up Under Deck** section.



2. Inspect blades and sharpen or replace as required.
3. Reinstall the blades (if they were removed) in the following order:
  - A. Install blade bolt through blade with washer on bottom (grass) side of blade.
  - B. Install blade spacers onto bolt.
  - C. Apply lubricant to threads of blade bolt as needed to prevent seizing. Copper-based anti-seize preferable. Grease acceptable substitute. Install blade bolt finger tight then torque the blade bolts to 50-60 ft-lb (68-81 N-m).



## **WARNING**

**Incorrect installation of the blade or components used to retain the blade can be dangerous. Failure to use all original components and assembled as shown could allow a blade or blade component to be thrown out from under the deck resulting in serious personal injury or death.**

**Always use original equipment, i.e. blades, blade bushings, and blade bolts as shown.**

## **CHECK SAFETY INTERLOCK SYSTEM**

**Service Interval: Before each use or daily**



## **CAUTION**

**It is essential that operator safety mechanisms be connected and in proper operating condition prior to use.**

- **Do not tamper with the interlock switched.**
- **Check the operation of the interlock switches daily and replace any damaged switches before operating the machine.**

## **Understanding the Safety Interlock System**

The safety interlock system is designed to prevent the mower blades from rotating by killing the engine unless:

- Operator presence is detected when either motion control lever is moved to the center operating position.
- The blade control switch (PTO) is pulled **on**.

The safety interlock system is designed to kill the engine if you move or release both control levers while the PTO switch is in the engage position.

## **Checking the Safety Interlock System**

1. Set control levers to neutral, push PTO switch to "OFF", Park Brake to "OFF".
2. Turn key switch to start, engine should not start.
3. Set Park Brake to "ON", pull PTO switch to "ON"
4. Turn key switch to start, engine should not start.
5. Push PTO switch to "OFF", bring left control lever out of neutral position.
6. Turn key switch to start, engine should not start
7. Return left control lever to neutral, bring right control lever out of neutral position
8. Turn key switch to start, engine should not start.
9. Return right control lever to neutral position, turn key switch to start, engine should start.

10. With control levers in neutral position, release park brake, engine should stop. Return park brake to “ON” position.
11. Restart engine. With control levers in neutral position, pull PTO switch to “ON” position. Engine should stop. Push PTO switch to “OFF” position.

### **CHECK FOR LOOSE HARDWARE**

**Service Interval: Before each use or daily**

1. Stop engine, wait for all moving parts to stop and remove key. Engage parking brake.
2. Visually inspect machine for any loose hardware or any other possible problem. Tighten hardware or correct problem before operating.

### **SERVICE AIR CLEANER**

**Service Interval: 250 Hours**

1. Stop engine, wait for all moving parts to stop and remove key. Engage parking brake.
2. See the Engine Owner’s Manual for maintenance instructions.

### **CHANGE ENGINE OIL**

**Service Interval: 100 hours**

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

1. Stop engine, wait for all moving parts to stop and remove key. Engage parking brake
2. Drain oil while engine is warm
3. The oil drain valve is located on the left side of the engine. Place the pan under the machine to catch the oil. Install the clear plastic tube, located in the literature pack, onto the oil drain valve. Loosen the oil drain valve and allow the oil to drain. Tighten the oil drain valve and remove and retain the clear plastic tube.
4. Clean around oil fill cap and remove cap. Fill to specified capacity and replace cap.
5. Use oil recommended in the Engine Owner’s Manual. DO NOT overfill. Wipe up any spilled oil from engine deck mounting surfaces.
6. Start the engine and check for leaks. Stop engine and recheck oil level.

### **CHANGE ENGINE OIL FILTER**

**Service Interval: 200 hours**

1. Follow steps 1 through 3 above for engine oil change
2. Replace the oil filter per the engine Owner’s Manual. Clean around the oil filter and carefully remove the filter by unscrewing it. Make sure no oil drains onto the belt drive or clutch through the holes in the engine deck. Before the new filter is installed, 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 and additional 2/3 to 3/4 turn.
3. Follow steps 4 through 6 above to refill engine oil.

## CHECK HYDRAULIC OIL LEVEL

**Service Interval: Every 40 hours**

1. Stop engine, wait for all moving parts to stop and remove key. Engage parking brake.
2. The oil fill is located in the center of the console. Add oil slowly to allow air to escape. Oil level should be visible in the oil eye on the left side of the oil tank. If not, add oil. Use only SAE 15w-50 synthetic motor oil. Replace hydraulic reservoir cap and tighten until snug. Do not over tighten.

## CHECK TIRE PRESSURES

**Service Interval: Every 40 hours**

1. Stop engine, wait for all moving parts to stop and remove key. Engage parking brake.
2. Check tire pressure in drive tires.
3. Inflate drive tires to 12-14 psi (83-97 kPa).
4. Inflate caster tires to 15psi.

## CHECK CONDITION OF BELTS

**Service Interval: Every 40 hours**

1. Stop engine, wait for all moving parts to stop and remove key. Engage parking brake.
2. Look on the top side of the cutting deck to check the mower blade drive belt condition.
3. Look under the engine deck to check the pump drive belt condition.
4. Check all idler arms to be sure they pivot freely.

## LUBRICATE GREASE FITTINGS

**Note: See chart for service intervals.**

1. Stop engine, wait for all moving parts to stop and remove key. Engage parking brake.
2. Lubricate fittings with NGLI #2 multi-purpose grease.

## Lubrication Chart

FITTING LOCATIONS	INITIAL PUMPS	NUMBER OF PLACES	SERVICE INTERVAL
1. Motion Control Levers	1	2	Yearly
2. Front Caster Wheel Hubs	0	2	Weekly
3. Front Caster Pivots	0	2	Yearly

## CHECK SPARK PLUGS

**Service Interval: As required**

Remove spark plugs, check condition and reset gaps, or replace with new plugs. See Engine Owner's Manual.

## CHANGE HYDRAULIC SYSTEM FILTER AND FLUID

**Service Interval: Every 500 Hours**

**NOTE:** Oil Filter: 25um. Use only OEM approved filter to avoid system damage

1. Stop engine, wait for all moving parts to stop and remove key or spark plug wire(s). Engage parking brake.
2. Remove leg pad and lower vented cover to gain access to the hydraulic oil filter.
3. Loosen the two bolts securing the oil filter bracket to the side of the battery tray.
4. Swing the oil filter out to gain access to the filter and tighten the lower bolt.
5. Carefully clean area around filter. It is important that no dirt or contamination enter hydraulic system. Place pan under filter.
6. Unscrew filter to remove and allow oil to drain from reservoir.
7. Turn new filter clockwise until rubber seal contacts the filter adapter, then tighten the filter an additional 2/3 to 3/4 turn.

8. Fill reservoir as stated in **Check Hydraulic Oil Level**.
9. Raise the rear of machine up and support with jack stands (or equivalent support) just high enough to allow drive wheels to turn freely.
10. Check for leaks, move the oil filter back into place, making sure hoses are not kinked.



## CAUTION

**Raising the mower for service or maintenance relying solely on mechanical or hydraulic jacks could be dangerous. The mechanical or hydraulic jacks may not be enough support or may malfunction allowing the unit to fall, which could cause injury.**

**Do not rely solely on mechanical or hydraulic jacks for support. Use adequate jack stands or equivalent support.**

11. If either drive wheel does not rotate, one or both of the charge pumps (located on the top of the main pump) may have lost their “prime”. Refer to **Hydraulic System Purge** section.

**NOTE:** Do not change hydraulic system oil (except for what can be drained when changing filter), except in the case of possible contamination or oil has been extremely hot.

## HYDRAULIC SYSTEM AIR PURGE

### Service Interval: As Required

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

These purge procedures must be preformed anytime a hydrostatic system has been opened for maintenance or repair, or if any additional oil has been added to the system.

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

Air trapped in the oil may cause the following symptoms:

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

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

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



## WARNING

### POTENTIAL FOR SERIOUS INJURY

**Certain procedures required the vehicle engine to be operated and the vehicle to be raised off of the ground. To prevent possible injury to the servicing technician and/or bystanders, insure the vehicle is properly secured.**

1. With the bypass valve open, (see Drive Wheel Release on pg 16) and the engine running, slowly move the directional control in both forward and reverse directions (5 to 6 times). As air is purged from the unit, the oil level in the reservoir will drop.
2. With the bypass valve closed and the engine running, slowly move the directional control in both forward and reverse directions (5 to 6 times). Check the oil level, and add oil as required after stopping engine.
3. It may be necessary to repeat steps 1 and 2 until all the air is completely purged from the system. When the drive wheels rotate forward and reverse at normal speed and the reservoir oil remains at a constant level, purging is complete.

## WHEEL HUB NUT TORQUE SPECIFICATION

**Service Interval: Every 500 hours thereafter**

Torque the nut on the wheel motor tapered shaft to 175-225 ft-lb (237-305 N-m)

**NOTE:** Do **NOT** use anti-seize compound on the wheel hub.

## THREAD LOCKING ADHESIVES

Thread locking adhesives such as “Loctite 242” or “Fel-Pro, Pro-lock nut type” are used on the following fasteners:

- Pump sheave setscrews.
- Sheave retaining bolt in end of engine crankshaft.
- Platform spring pin.

## COPPER-BASED ANTI-SEIZE

Copper-based anti-seize is used in the following locations:

- On threads of Blade Bolts. See **Check Mower Blades section**.
- Between engine crankshaft, pump drive sheave, and clutch.
- Between pump shafts and sheaves.

## DIELECTRIC GREASE

**Dielectric grease can be used on all blade type electrical connections to prevent corrosion and loss of contact.**

## ADJUSTMENTS

**Note:** Disengage PTO, shut off engine, wait for all moving parts to stop, engage parking brake, and remove key before servicing, cleaning, or making any adjustments to the unit.



### CAUTION

**Raising the mower for service or maintenance relying solely on mechanical or hydraulic jacks could be dangerous. The mechanical or hydraulic jacks may not be enough support or may malfunction allowing the unit to fall, which could cause injury.**

**Do Not rely solely on mechanical or hydraulic jacks for support. Use adequate jack stands or equivalent support.**

## DECK LEVELING

**Note:** Small adjustments can be accomplished by increasing the tire pressure in the tire on the low side.

1. Park the machine on a level surface and disengage the blade control switch.
2. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.
3. Check the air pressure in the drive tires. If needed, adjust to the recommended inflation; refer to **Checking the Tire Pressure** in the Drive System Maintenance section.
4. Set the height of cut to the desired position.
5. Raise the discharge deflector.
6. Carefully rotate the blades front to rear. Measure from the top of the front blade to the level surface.

**NOTE:** In most conditions, the back tips should be adjusted 1/8 inch (6.4 mm) higher than the fronts.

7. Use the threaded adjustment on the front deck rod end to adjust the front blade tip up or down to achieve desired height.
8. Lower the discharge deflector.

### **PUMP DRIVE BELT TENSION**

Self-tensioning – No adjustment necessary.

### **MOWER DECK DRIVE BELT TENSION**

Self-tensioning – No adjustment necessary.

### **PARK BRAKE ADJUSTMENT**

If the parking brake does not hold securely, and adjustment is required:

1. Park the machine on a level surface.
2. Shut off engine and wait for all moving parts to stop.
3. With the park brake disengaged the spring loaded link on each wheel should be elevated to allow the cam to rotate and release the brake shoes.
4. With the park brake engaged, the spring loaded link will move down and there should be a 1/8" gap between the swivel and the inside of the spring strap. To make this adjustment use the adjuster nut at the end of the spring link assembly..

### **FORWARD TRACKING ADJUSTMENT**

If the machine travels or pulls to one side when the motion control levers are in the full forward position, adjust the tracking.

1. Check tire pressure to ensure equal pressure between drive tires.
2. Push both control levers forward the same distance.
3. Check if the machine pulls to one side. If it does, stop the machine and set the parking brake.
4. Adjust the tracking stop bolts to increase or decrease forward speed on each side. Loosen the jam nuts and turn the stop bolt clockwise (in) to reduce forward speed, counterclockwise (out) to increase speed. Tighten jam nuts.
5. Drive the machine and check the full forward tracking.
6. Repeat steps 3 and 4 until desired tracking is obtained.

### **NEUTRAL ADJUSTMENT**

The hydraulic pumps contain a return to neutral mechanism (RTN) which returns the hydraulic pump to the neutral position when the operator releases the control handles. The control handles are connected to the pump RTN by a threaded control rod. The pump RTN mechanism should not normally require adjustment. If the control handles require adjustment to align with the neutral slot when the pump has returned to neutral,

1. Remove the leg cushion mounting plate by removing 4 bolts.
2. Remove rear cover plate by removing 8 bolts.
3. Lengthen or shorten the control rod(s) by turning the rod until control lever aligns with neutral slot.
4. Re-install cover and leg cushion.

If the pump RTN requires adjustment, please refer to Hydro Gear P-Series service manual for adjustment procedure. Forward tracking adjustment may be required after adjustment of control rod(s).

### **CASTER PIVOT BEARINGS PRE-LOAD ADJUSTMENT**

Tighten the nut until it is snug then back it off 1/8-1/4 turn. This will set the preload on the bearing. You should feel a slight drag as you rotate the caster fork clockwise and counterclockwise. Lubricate front caster pivots once a year. Remove the protective cap from the top. Pump grease into the fitting until grease is seen coming up through the bearing. Do not over fill. Do not fill the housing. Reinstall the protective cap and tap into place.

## CLEANING

**Service Interval: Before each use or daily (May be required more often in dry or dirty conditions.)**



### CAUTION

**Excessive debris around engine cooling air intake and exhaust system area can cause engine exhaust area and hydraulic system to overheat which can create a fire hazard.**

### CLEAN ALL DEBRIS FROM ENGINE AND EXHAUST SYSTEM AREA.

1. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.
2. Clean all debris from rotating engine air intake screen around engine shrouding, and exhaust system area.
3. Wipe up any excessive grease or oil around the engine and exhaust system area.

### CLEAN DUST AND DIRT FROM CYLINDER HEAD FINS.

**Service Interval: Every 100 hours**

1. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.
2. 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.
3. Make sure cooling shrouds are properly reinstalled. Operating the engine without cooling shrouds will cause engine damage due to overheating.

### CLEAN DEBRIS FROM MACHINE

**Service Interval: Before each use or daily**

1. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.
2. Clean off any oil, debris, or grass build-up on the machine and cutting deck, especially under deck belt shields, around the fuel tank, around engine and exhaust area.

### CLEAN GRASS BUILD-UP UNDER DECK

**Service Interval: Before each use or daily**

1. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.
2. Raise deck to the transport (maximum cutting height) position. Lift the front of unit and support unit using jack stands or equivalent support.



### CAUTION

**Raising the mower for service or maintenance relying solely on mechanical or hydraulic jacks could be dangerous. The mechanical or hydraulic jacks may not be enough support or may malfunction allowing the unit to fall, which could cause injury.**

**Do not rely solely on mechanical or hydraulic jacks for support. Use adequate jack stands or equivalent support.**

3. Clean out any grass build-up from underside of deck and in discharge deflector.

## TROUBLESHOOTING

**IMPORTANT:** It is essential that all operator safety mechanisms be connected and in proper operating condition prior to mower use.

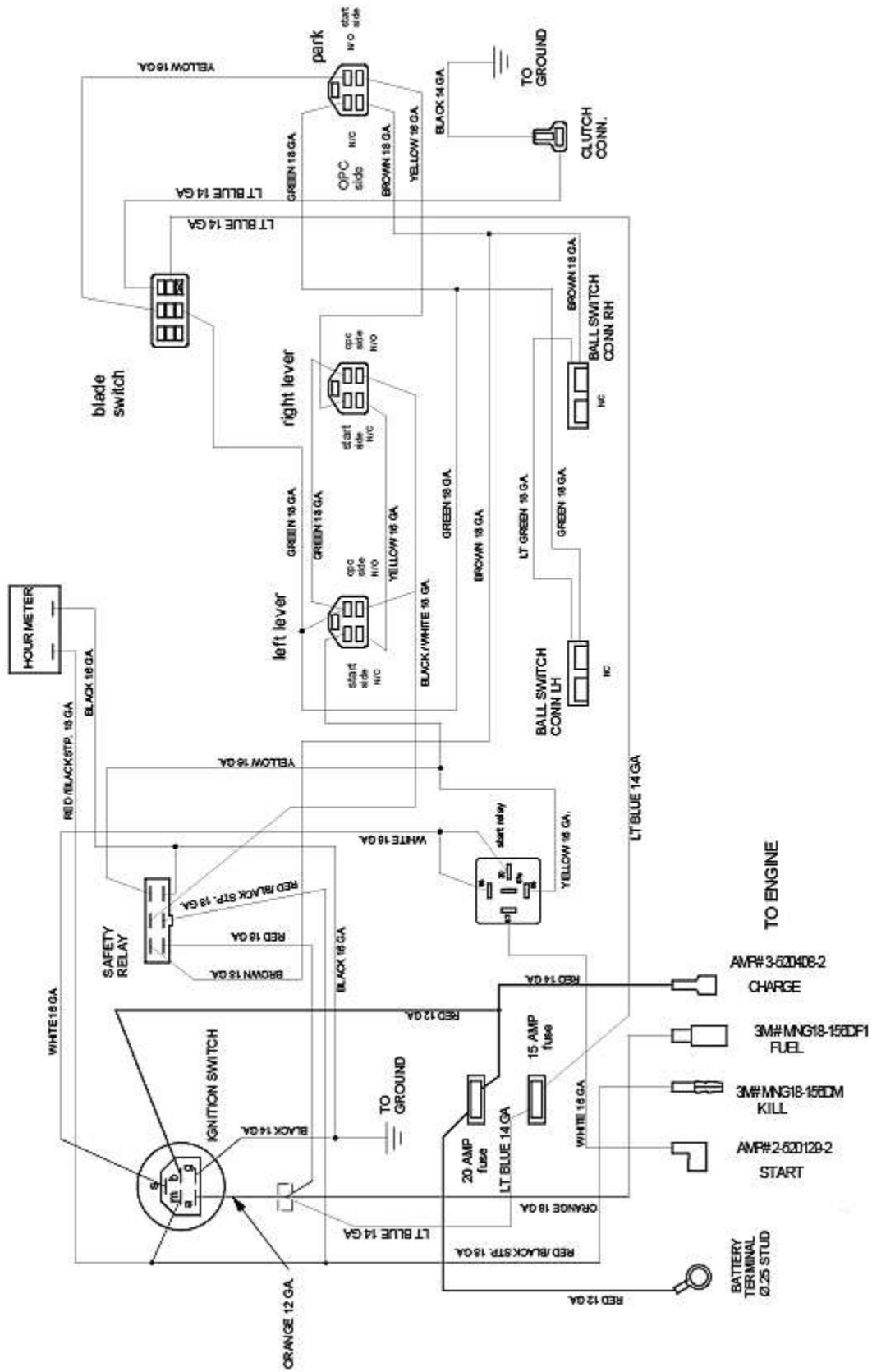
When a problem occurs, do not overlook the simple causes. For example, starting problems could be caused by an empty fuel tank.

The following table lists some of the common causes of trouble. Do not attempt to service or replace major items or any items that call for special timing of adjustments procedures. Have this work done by your Service Dealer.

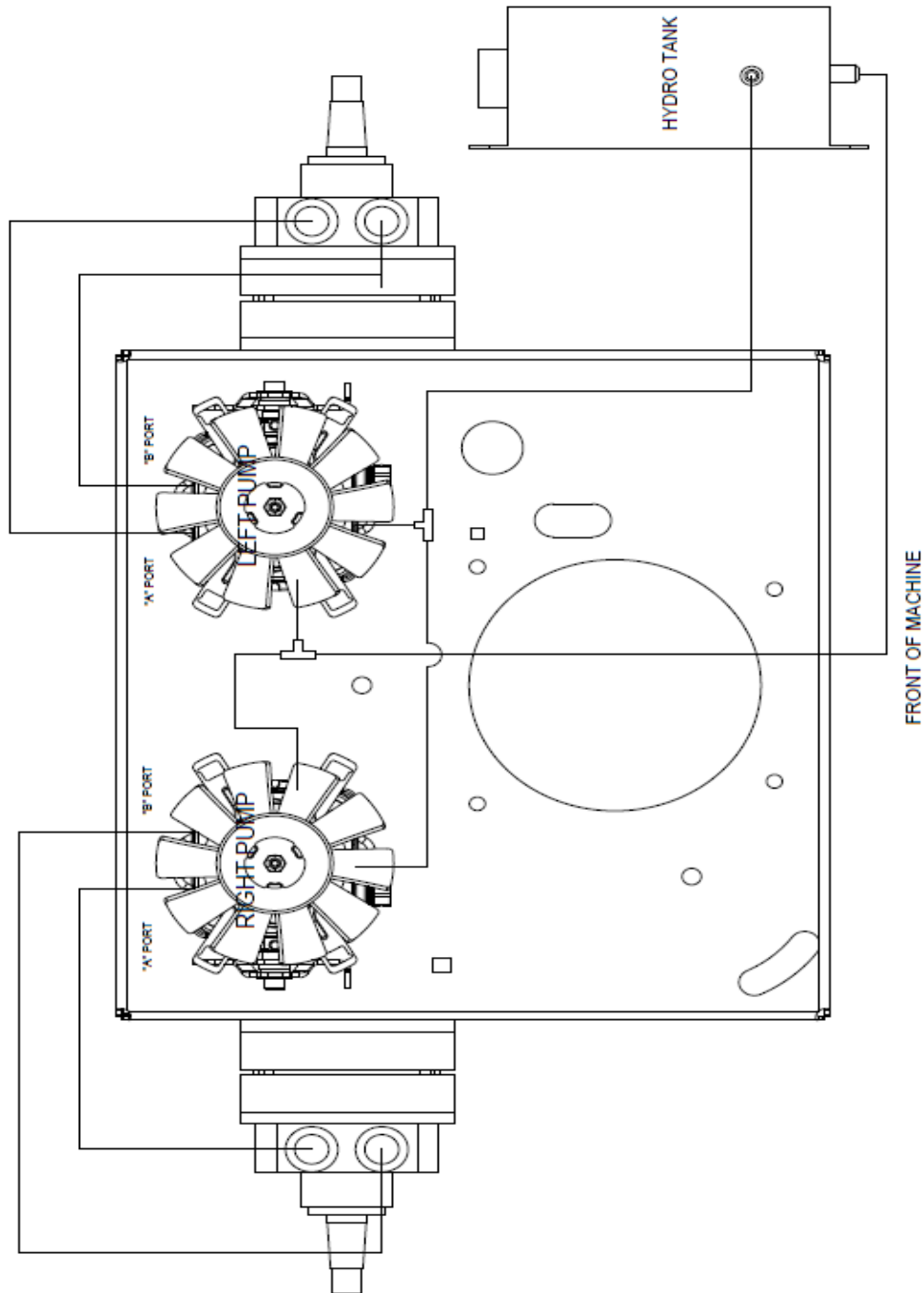
<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>
Engine will not start or is Hard To Start	No Fuel Controls are not positioned properly for start Air Filter or Air Screen is Dirty Faulty Spark Plug Improper Fuel
Stops Suddenly or Lacks Power	No Fuel or improper Fuel Engine Overloaded Dirt in Fuel Line Air Filter or Air Screen is Dirty Incorrect Oil Level Blocked Fuel Filter
Engine Overheats	Engine Overloaded Dirty Air Filter or Air Screen Dirt in Fuel Line Incorrect Oil Level
Mower Pulls Left or Right	Unequal Tire Pressure Tracking Adjustment Incorrect
Mower Cuts Unevenly	Unequal Tire Pressure Deck leveling Incorrect Blades Dull or Damaged
Mower Deck Not Engaging	Belt is damaged or has slipped
Mower Vibrates	Blades Dull or Damaged Engine Bolts are Loose
Mower moves slowly or not at all	Drive belt for Hydraulic is loose or has slipped Air in Hydraulics Bypass valve on pump is open
Hydraulic Oil Leakage	Damaged Seals or gaskets Air in Hydraulics



# WIRING SCHEMATICS



# HYDRAULIC SCHEMATIC



---

## EVAPORATIVE EMISSION CONTROL WARRANTY STATEMENT

### CALIFORNIA EVAPORATIVE EMISSION CONTROL WARRANTY STATEMENT

#### YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Worldlawn Power Equipment is pleased to explain the evaporative emission control system's warranty on your 2014 model year lawn mower. In California, new equipment that use small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. Worldlawn Power Equipment must warrant the evaporative emission control system on your lawn mower for the period listed below provided there has been no abuse, neglect or improper maintenance of your equipment.

Your evaporative emission control system may include parts such as: fuel tanks, fuel lines, fuel caps, valves, canisters, vapor hoses, clamps, connectors, and other associated components. **For engines less than or equal to 80 cc, only the fuel tank is subject to the evaporative emission control warranty requirements of this section.**

#### MANUFACTURER'S WARRANTY COVERAGE:

This evaporative emission control system is warranted for two years. If any evaporative emission-related part on your equipment is defective, the part will be repaired or replaced by Worldlawn Power Equipment.

#### OWNER'S WARRANTY RESPONSIBILITIES:

- As the lawn mower owner, you are responsible for performance of the required maintenance listed in your owner's manual. Worldlawn Power Equipment recommends that you retain all receipts covering maintenance on your lawn mower, but Worldlawn Power Equipment cannot deny warranty solely for the lack of receipts.
- As the lawn mower owner, you should however be aware that Worldlawn Power Equipment may deny you warranty coverage if your fuel tank has failed due to abuse, neglect, or improper maintenance or unapproved modifications.
- You are responsible for presenting your lawn mower to a Worldlawn Power Equipment distribution center or service center as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If you have a question regarding your warranty coverage, you should contact Worldlawn Power Equipment service at (402) 228-4255.

#### DEFECTS WARRANTY REQUIREMENTS:

- (a) The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser.
- (b) General Evaporative Emissions Warranty Coverage. The fuel tank must be warranted to the ultimate purchaser and any subsequent owner that the evaporative emission control system when installed was:
  - (1) Designed, built, and equipped so as to conform with all applicable regulations; and
  - (2) Free from defects in materials and workmanship that causes the failure of a warranted part for a period of two years.
- (c) The warranty on evaporative emissions-related parts will be interpreted as follows:
  - (1) Any warranted part that is not scheduled for replacement as required maintenance in the written instructions must be warranted for the warranty period defined in subsection (b)-(2). If any

such part fails during the period of warranty coverage, it must be repaired or replaced by Worldlawn Power Equipment. Any such part repaired or replaced under the warranty must be warranted for a time not less than the remaining warranty period.

(2) Any warranted part that is scheduled only for regular inspection in the written instructions must be warranted for the warranty period defined in subsection (b)-(2). A statement in such written instructions to the effect of "repair or replace as necessary" will not reduce the period of warranty coverage. Any such part repaired or replaced under warranty must be warranted for a time not less than the remaining warranty period.

(3) Any warranted part that is scheduled for replacement as required maintenance in the written instructions must be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part must be repaired or replaced by Worldlawn Power Equipment. Any such part repaired or replaced under warranty must be warranted for a time not less than the remainder of the period prior to the first scheduled replacement point for the part.

(4) Repair or replacement of any warranted part under the warranty provisions of this article must be performed at no charge to the owner at a warranty station.

(5) Notwithstanding the provisions of subsection (4) above, warranty services or repairs must be provided at distribution centers that are franchised to service the subject engines or equipment.

(6) The owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

(7) Throughout the evaporative emission control system's warranty period set out in subsection (b)(2), Worldlawn Power Equipment must maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

(8) Manufacturer approved replacement parts must be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of the manufacturer issuing the warranty.

(9) The use of any add-on or modified parts will be grounds for disallowing a warranty claim made in accordance with this article. Worldlawn Power Equipment will not be liable under this Article to warrant failures of warranted parts caused by the use of an add-on or modified part.

(10) Worldlawn Power Equipment shall provide any documents that describe the warranty procedures or policies within five working days of request by the Air Resources Board.

#### EMISSION WARRANTY PARTS LIST:

1) Fuel Tank, 2) Fuel line, 3) Fuel cap, 4) remote vent, 5) Carbon canister

Written instructions for the maintenance and use of the evaporative emissions control system by the owner shall be furnished with each new engine or equipment.

## LIMITED WARRANTY

**GENERAL PROVISIONS** The product warranty described in this document is provided by Encore Manufacturing, a Division of Worldlawn Power Equipment, Inc, (“Encore”) and is a limited warranty. Encore will warrant on the terms and conditions herein and applies to the original purchasers of new product from Encore Power Equipment or an authorized Encore dealer/retailer. Encore’s sole responsibility with any claim made under this warranty is limited to repair or replacement of any part in the excise of our reasonable discretion, to be defective in materials or workmanship from the original date of purchase (see warranty period below for details) and no claim of breach of warranty shall be cause for rescission, cancellation, or voiding the contract of sale of the mower.

**EXCLUSIONS, CONDITIONS, and EXCEPTIONS** This limited warranty extends only to those mowers purchased for private residential and commercial use. A mower purchase for any other reason, for example as a rental unit, shall have a (90) ninety day limited warranty under the same terms and conditions as set forth herein. Any work done on or to the mower by anyone other than an authorized Encore dealer/retailer, including the original purchaser, voids all provisions of the warranty except those provisions which limit Encore’s liability (as set forth below). This limited warranty specifically excludes normal wear items, included but not limited to belts, blades, and tires. This limited warranty does not extend to any mower or part thereof which has been misused, neglected, damaged, abused, altered, not properly serviced or maintained, or which has been operated in any way contrary to the operating instructions as specified in the owners/operator manual. This limited warranty does not extend to any repair or replacement made necessary by the effects of the weather, environment, transportation, or accidents. The warranty herein is in lieu of other warranties, express or implied, including , without limitation, any implied warranty of merchantability or fitness for a particular use, and is in lieu of any and all other obligations or liability on Encore’s part. Under any and all circumstances, Encore’s total liability to the owner for any and all claims, losses or damages, including loss of profits, arising out of any cause whatsoever, whether based in contact, negligence or other tort, strict liability breach of warranty or otherwise, shall in no event exceed the purchase price of the mower. In no event shall Encore be responsible for special, incidental, consequential or exemplary damages. This limited warranty specifically excludes parts covered under another manufacturer’s warranty.

**OBTAINING WARRANTY SERVICE** Upon purchase the authorized dealer/retailer must submit the completed warranty registration documentation to Encore to validate the warranty. The owner should retain, and upon request provide, the original bill of sale or proof of purchase. The mower must be returned to an authorized Encore dealer/retailer within the warranty period. The cost of delivering the mower to the authorized dealer and the return delivery shall be the responsibility of the owner. Only authorized Encore dealers/retailer are allowed to perform warranty service.

**WARRANTY PERIOD 3 YEARS** Models represented for this warranty are as follows.

**ER52FX730V, ER48FX730VL, ER52FX730VL**

COMPONENT or SYSTEM	WARRANTY SERVICE THROUGH	WARRANTY PROVIDED BY	PERIOD
Engines	Engine Manufacture	Engine Manufacture	2 Years
Electric PTO Clutches	Encore	Clutch Manufacture	2 Years
Hydraulic Pumps & Motors	Encore	Hydraulic Manufacture	2 Years
Batteries	Encore	Encore	1 Year
Mower Cutting Deck Shells	Encore	Encore Part & Labor	0-5 Years
Mower Cutting Deck Shells	Encore	Encore Part Only	5-10 Years







ALL RIGHTS RESERVED

CONTENTS SUBJECT TO CHANGE

RAGE OPERATORS MANUAL

STANDON

201601