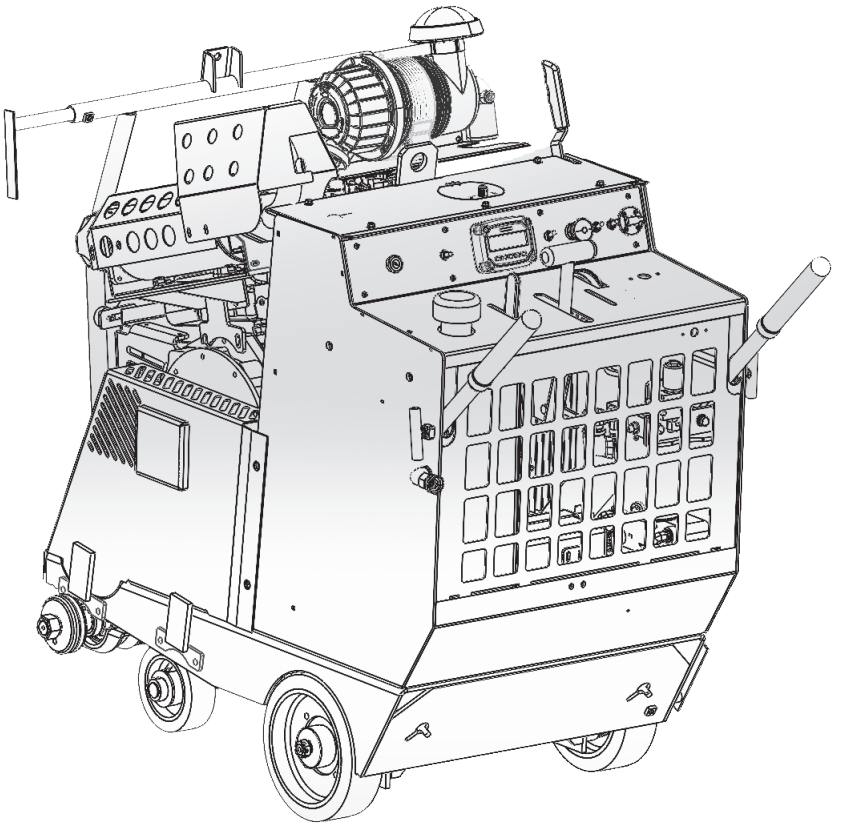
MERIT

AN ICS BRAND



# Merit M500 Flat Saw

## (Front Pivot Model)

# Operator Manual

## INTRODUCTION

***Introduction***

**Welcome to the ICS family and thank you for choosing ICS equipment.**

**At ICS we are driven to ensure you are completely satisfied with your product and continually strive to improve our product line so that we can offer you the best possible equipment in the industry.**

**This operator's manual is a critical document that provides pertinent information regarding the safety, operation, maintenance, and care of your new equipment. Be sure to read and fully understand this operator manual before operating machine. Keep this manual available at all times. Operate the equipment and all of its components according to this manual. Failure to comply with and understand the following safety, operation and maintenance instructions can result in serious injuries and/or death. All operators must be properly trained or supervised by experienced personnel prior to using this saw and should understand the risks and hazards involved. ICS discourages improper or unintended equipment usage and cannot be held liable for any resulting damages. Equipment modifications should be made by ICS to ensure safety and design. Any modifications made by the owner(s) are not the responsibility of ICS and void all equipment warranties if a problem arises as a result of the modification. Refer to the ICS Parts List for additional information and part diagrams. Refer to the engine manufacturer as the primary source for all safety, operations, and maintenance instructions regarding the engine. Prior to operating, record the saw's serial number, and the engine's model and serial numbers in Appendix D.**

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## *Product Specifications*

| Engine* | |
|---|---|
| Engine Mfg & Model | Kubota WG1605 |
| Engine HP[1] | 57 @ 3,600 rpm |
| Air Filter | Dry Radial Seal |
| Cylinders | 4 |
| Catalytic Converter | Standard |

| Dimensions | |
|---|---|
| Weight | 1280 lbs / 580 kg (M500) |
| Saw Height | 47 in / 119 cm |
| Saw Width | 28.75 in / 73 cm with outer collar removed* |
| Saw Length (pointer and handles extended) | 108 in / 274 cm |
| Saw Length (pointer and handles collapsed) | 51 in / 129.5 cm (M500) |

| Blade Specifications | |
|---|---|
| Blade Capacity | 36 inch / 91 cm (M500) |
| Max Cut Depth | 16 inch / 40 cm (M500) |
| Depth Control | Electric over hydraulic |
| Blade Mounting | Left & Right |
| Arbor Size | 1 inch / 2.5 cm |

| Fuel and Lubrication | |
|---|---|
| Fuel Type | Unleaded Gasoline, E0-E10 |
| Fuel Tank Capacity | 5.5 Gallons / 20.8 Liters |
| Engine Oil Capacity | 6 Quarts / 5.7 Liters |
| Engine Oil** | SAE 15W-40 API Class SL |
| Gearbox Oil | 85W-140 (Lucas Brand, recommended) |
| Gearbox Oil Capacity | 1.37 Quarts / 1.30 Liters |
| Hydraulic Drive Oil | 20W-50 |
| Hydraulic Drive Oil Capacity | 1.5 quarts / 1.4 Liters |
| Hydraulic Lift Pump Oil | ATF DEXRON II |
| Hydraulic Lift Pump Oil Capacity | 1.3 Quarts / 1.2 Liters |
| Coolant Fluid Capacity | 8 quarts/7.6 Liters |
| Cutting Water Requirements & Source Temp | 2 gpm / 8 lpm<br>Water temp of < 90˚ F/ 32˚ C |
| Grease | NLGI 2, Lithium-based grease |
| **Coolant Fluid** | |
| Coolant Fluid | Ethylene Glycol and Water a 50/50 mixture |
| **Note:** Use only ethylene glycol in this engine | |
| **NOTICE** | Do not make the mixture directly in the tank. It is easier to get the correct 50/50 mixture if you make the mixture in a container |

| Drive Specifications | |
|---|---|
| Drive Speed | 0 - 240 FPM |
| Blade Shaft Drive | 1 inch / 2.5 cm with 4 inch / 10 cm arbors |
| Gear Box | Four speed |

*For more engine technical information, refer to the Kubota engine operator's manual.
[1]Gross power rating as per SAE J1995, at specified rpm by engine manufacturer.
**Refer to the Kubota engine operator's manual for engine oil type according to the ambient temperature.

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## SPECIFICATIONS

| SAW CONFIGURATION | | | | |
|---|---|---|---|---|
| Blade Capacity | 12 in / 355 mm | 14-16 in / 508 mm | 18-24 in / 660 mm | 26 - 36 in / 762 mm |
| Max. Cutting Depth | 5 in / 127 mm | 6-7 in / 152-177 mm | 11 in / 279 mm | 13 in / 330 mm |
| Engine rpm | 2,800 | 3,200 | 3, 400 | 3,600* |
| Gearbox Output rpm After 300 rpm Cut Load | 3,600 | 2,500 | 1,800 | 1,200 |
| Blade Shaft Arbor | 1 in / 25.4 mm | | | |
| Blade Flange | 4 in / 101.6 mm | | | |
| Drive Speed | 170 feet/min  52 meters/min | | | |
| Engine Pulley | 4.1 in / 104.14 mm | | | |
| Gearbox Pulley | 4.75 in / 120.65 | | | |

**⚠ WARNING**

Only use fuses listed below. Fuses are designed to protect electrical circuits from overloading and prevent fires. Using the wrong type or rating of fuse can lead to electrical malfunctions, overheating, and potentially fire hazards.

| OEM Harness Fuses | | | |
|---|---|---|---|
| Location | Function | Fuse Size | Fuse Type |
| Positive Battery Terminal | Alternator fuse | 60 Amps | ZCASE |
| Positive Battery Terminal | Fan fuse | 60 Amps | ZCASE |
| Positive Battery Terminal | ECU power supply | 40 Amps | ZCASE |
| VIC inline | Night light fuse | 10 Amps | ATO |
| VIC inline | Main VIC power supply | 15 Amps | ATO |

**⚠ DANGER**

Always wear safety glasses and gloves when handling the battery. Charge the battery in a well-ventilated area to prevent exposure to harmful fumes.

### *Battery Charging Procedure*

Prepare the Battery:
- Turn off the machine.
- Clean any corrosion from the battery terminals using a wire brush or terminal cleaner.

Connect the Charger:
- Ensure the charger is turned off.
- Connect the positive (red) clamp to the positive terminal (+).
- Connect the negative (black) clamp to the negative terminal (–).

Charge the Battery:
- Set the charger to 12V.
- Use a slow charge (2–10 amps) for optimal battery performance.
- Turn on the charger and monitor the charging process.

Finish and Disconnect:
- When the battery is fully charged (12.6–12.8V), turn off the charger.
- Remove the clamps in the following order:
- Negative (black) clamp first.
- Positive (red) clamp second.
- Inspect the battery for damage or irregularities before reinstalling it.

If a charger is not available, refer to page 17 for detailed jump-starting instructions.


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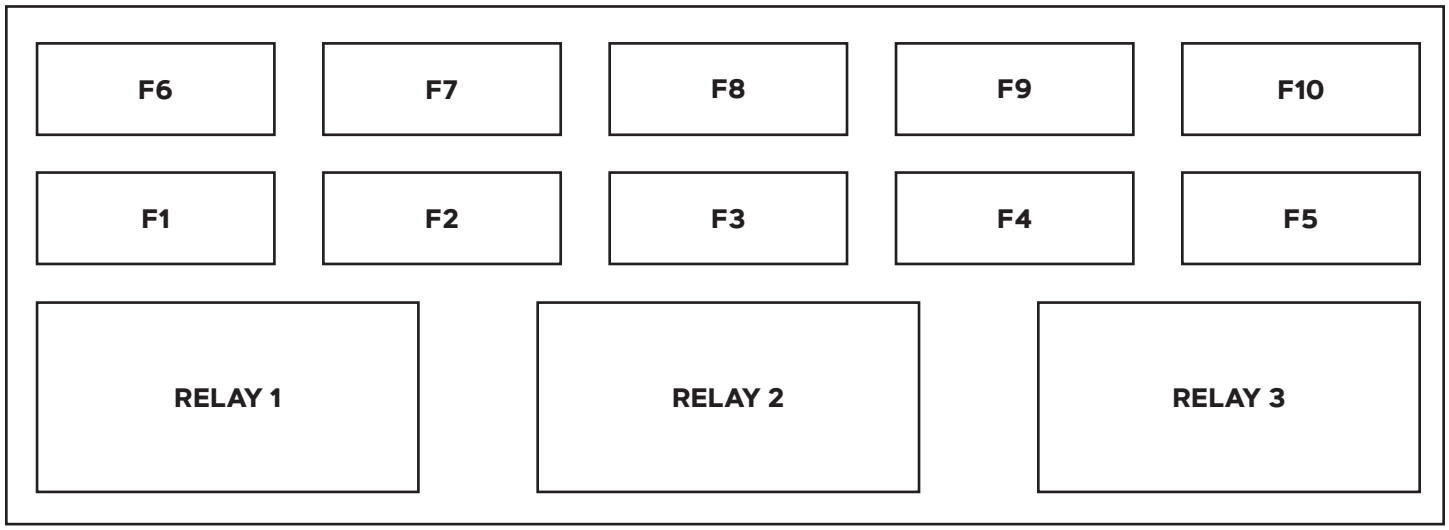
| Battery | |
|---|---|
| Group | SLI51 |
| CCA/CA | 450 |

**ENGINE FUSE BOX**




| ENGINE OE HARNESS FUSES AND RELAYS | | | | |
|---|---|---|---|---|
| **POSITION** | **ITEM** | **FUNCTION** | **AMPS/VOLTS** | **TYPE** |
| **RELAY 1** | **Relay** | **Fuel Pump** | **12V** | **CB1A-T-R-12V** |
| **RELAY 2** | **Relay** | **Power** | **12V** | **CB1A-T-R-12V** |
| **RELAY 3** | **Relay** | **Starter** | **12V** | **CB1A-T-R-12V** |
| **F1** | **Fuse** | **ECM** | **10 A** | **Mini** |
| **F2** | **Fuse** | **VSW** | **5 A** | **Mini** |
| **F3** | **Fuse** | **Starter** | **30 A** | **Mini** |
| **F4** | **Fuse** | **Fuel Pump** | **15 A** | **Mini** |
| **F5** | **Fuse** | **Empty** | **-** | **Mini** |
| **F6** | **Fuse** | **Ignition** | **15 A** | **Mini** |
| **F7** | **Fuse** | **Empty** | **-** | **Mini** |
| **F8** | **Fuse** | **Empty** | **-** | **Mini** |
| **F9** | **Fuse** | **Empty** | **-** | **Mini** |
| **F10** | **Fuse** | **Empty** | **-** | **Mini** |

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## QUICK REFERENCE GUIDE

**EQUIPMENT KEY INFORMATION TO SAVE**

| Information to have when ordering parts or calling Technical Services | | |
|---|---|---|
| MODEL | Equipment Serial Number | Engine Serial Number |
| M500-57G-F4 | | |

### *Quick Reference for Frequently Replaced Parts*

**Oil Filter Cartridge:** Kubota P/N: HH160-32093 (WIX Brand P/N: 33972)
**Air Filter:** WIX Brand P/N: 46438
**Fuel Filter:** Merit P/N: 625133 (WIX Brand P/N: 33972)
**Hydraulic Drive System Filter:** Merit P/N: 23239 (WIX Brand P/N 57253)
**Raise & Lower Solenoid:** Merit P/N: 490469
**Forward & Reverse Cable:** Merit P/N: 22121
**Raise & Lower Button Switch:** Merit P/N: 22220

*All Merit Part Numbers*
**Rear Wheels (10" x 3"):** 639195
**Front wheels (6"X2")** Red-Poly: 639563
**Arbor**
**Blade Collar Set for Quick Disconnect:** 630606
Right Hand Thread (RHT): 490390
Left Hand Thread (LHT) 490391

**M500 Front Pivot Main Belts:** 2/3VX425

**M500 Front Pivot Drive Pump Belt:** AX39

**Night Light Kit:** 647921


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**Arbor Shaft:**
Where the blade mounts to the saw
**Blade Bolt:**
Secures the blade flange to the saw
**Blade Depth Control:**
Allows to set a predetermined depth before cutting
**Blade Flange:**
Secures the blade to the saw
**Blade Guard:**
Covers blade to protect hands and feet of operator and bystanders
**Display controller:**
Saw display, displays the engine parameters.
**Emergency Stop Button:**
Located on front of saw, stops machinery quickly in case of emergency
**Gearbox:**
Rotates the blade at different speeds
**Handlebars & T-locks:**
Locks the handlebars in the four different angle positions depending on operator preference
**Hydro-Static Pump:**
Drives the rear saw wheels
**Ignition Switch:**
Turns the engine on and off
**Lift Pump:**
Lifts the blade out of the cut
**Nightlight Switch:**
Turns on the LED light for night cutting
**Pointer Frame:**
Used as a guide for a straight cut
**PTO:**
Transmits the engine rotational power to the gearbox via a set of belts
**Raise and Lower & forward and reverse button style handle:**
Raises and lowers the saw to allow blade to cut
**Rear Access Panel:**
Allows access to battery, fuel components and lift pump
**Speed Control:**
Regulates the speed and direction of the motor
**Throttle:**
Increases or decreases the engine speed
**Water Valve:**
Controls water and flow to the blade

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# LABELS & WARNINGS

**THE FOLLOWING SYMBOLS ARE FOUND THROUGHT THIS MANUAL AND/OR ON THE SAW AND ARE DESIGNED TO MAKE YOU AWARE OF POTENTIAL HAZARDS OR UNSAFE PRACTICES**

**SAFETY ALERT**
Indicates that the text that follows explains a danger, warning or caution.

**READ INSTRUCTIONS**
The original instruction manual contains important safety and operating information. Read and follow the instructions carefully.

**WEAR EYE, HEARING AND RESPIRATORY PROTECTION WEAR HEAD PROTECTION**
Wear eye , hearing and respiratory protection and a protective helmet when operating the saw.

**WEAR LONG PANTS**
Wear long pants when operating the saw.

**WEAR FOOT PROTECTION**
Wear appropriate closed-toe boots when operating the saw.

**WEAR HAND PROTECTION**
Wear hand protection when operating the saw.

**SLIPPERY SURFACE**
Unsure footing can lead to accidents.

**VENTILLATION REQUIRED**
Use tool in a well ventilated area

**FIRE DANGER**
Risk of fire if warnings not followed.


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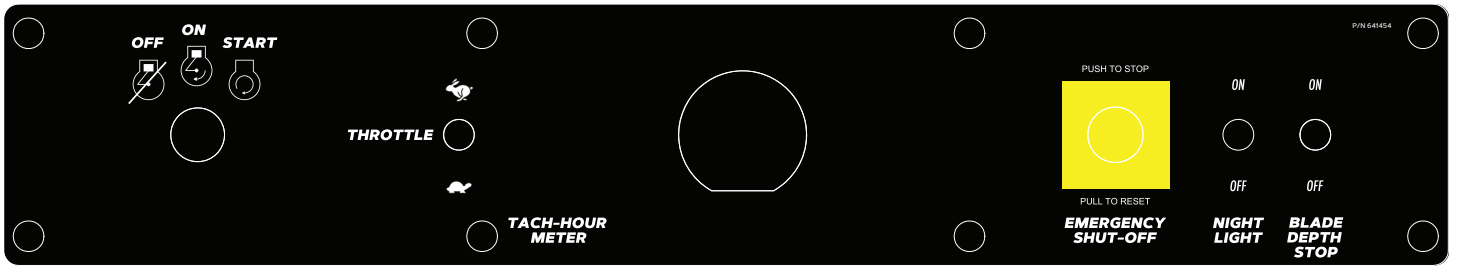
## PRODUCT IDENTIFICATION

MERIT AN ICS BRAND

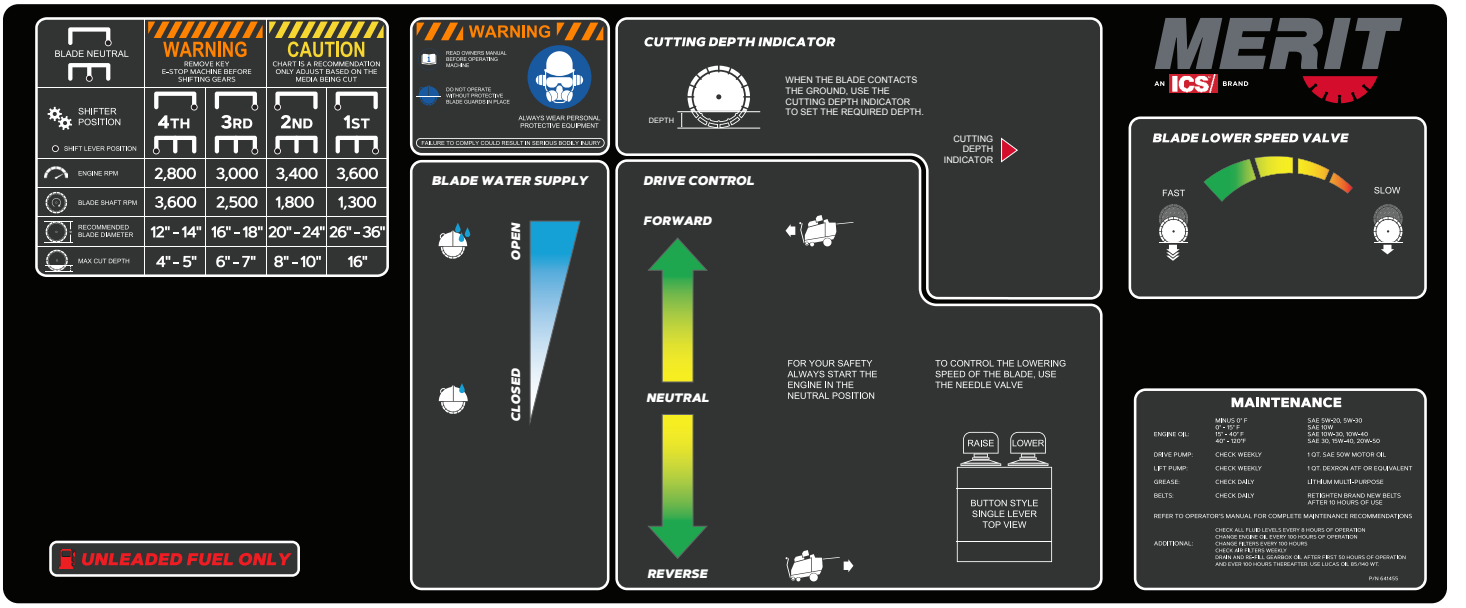
Prescott, AZ USA
icsdiamondtools.com

| | |
|---|---|
| MODEL NO. | M500-57G-F4 |
| SERIAL NO. | |
| DATE MFG. | |

## LABELS ON YOUR SAW




*Upper Front Label*




*Lower Front Label*

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## *Safety Information*

Failure to comply with and understand the following safety, operation, and maintenance instructions can result in serious injuries and/or death. All operators must be properly trained prior to using these saws and should understand the risk and hazards involved. Merit by ICS cannot be held liable for any damages resulting from improper use.

Saw modifications should be made only by Merit by ICS to ensure proper safety and cutting accuracy. Modifications made to these saws by the owner are not the responsibility of Merit by ICS and voids all saw warranties.

Prior to operating the saw, record the saw's serial number and the engine model and serial numbers for future reference.

It is recommended to scan the area with scanning equipment when possible before beginning each cut to ensure there are no power lines, fiber optic cables, coaxial cables, utilities, etc. which could cause serious injury or death. Verify depth at beginning of cut. Cut a short length at the beginning of job to verify depth. Once depth is verified, then proceed with the remainder of the cut. Verify system accuracy every six months for wear. Normal wear and tear can cause small variables in the accuracy of your machine (rubber wheels wear down, cables stretch, etc.)

**Safety Alerts**

**⚠ DANGER**

**Serious injuries and/or death will occur if these instructions are not followed.**

**⚠ WARNING**

**Serious injuries and/or death could occur if these instructions are not followed.**

**⚠ CAUTION**

**Mild and/or moderate injuries could occur if these instructions are not followed.**

## *Proposition 65*

**WARNING:** This product produces gasoline or diesel engine exhaust, which is known to the state of California to cause cancer, birth defects or other reproductive harm. For more information go to: **WWW.P65WARNINGS.CA.GOV**

**Spark Arrester Law**

In the State of California, "No person shall use, operate, or allow to be used or operated, any off-highway motor vehicle, as defined in Section 38006, on any forest-covered land, brush-covered land, or grass-covered land unless the vehicle is equipped with a spark arrester maintained in effective working order.

**Respiratory Hazards**

Concrete cutting produces dusts and fumes known to cause illness, death, cancer, respiratory disease, birth defects, and/or other reproductive harm. Safety precautions include, but are not limited to:

- Wearing gloves
- Wearing safety goggles
- Using approved and properly fitted respirators
- Washing work clothes daily
- Use water when cutting to minimize dust
- Washing hands and face prior to eating/drinking. or placing anything near your face, eyes and mouth
- For additional safety and self-protection information, contact your employer, the Occupational Safety and Health Administration (OSHA), or The National Institute for Occupational Safety and Health (NIOSH). In Canada, Health Canada: https://www.canada.ca/en/health-canada.html


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### *Owner & Operator Responsibility*

It is the responsibility of the owner/employer of this product to make sure the operator has read and has knowledge about this product and its safe operation.

The supervisor or persons in charge of training for this product must make sure that the operators read and understand the operator manual:

- Product safety.
- Product set up for different applications.
- Product proper maintenance.

Failure to comply with and understand the following safety, operation, and maintenance instructions can result in serious injuries and/or death. All operators must be properly trained prior to using these saws and should understand the risks and hazards involved. Merit cannot be held liable for any damages resulting from improper use.

**NOTE:** Any equipment modifications made without permission or approved in writing by Merit will immediately void all warranties of this product.

## ⚠ DANGER

### *Respiratory Hazards*

Cutting, especially when DRY cutting generates dust that comes. from the material being cut, which frequently contains silica. Silica is a basic component of sand, quartz, brick clay, granite, and numerous other minerals and rocks. Exposure to excessive amounts of such dust can cause:

- Respiratory disease (affecting your ability to breathe), including chronic bronchitis, silicosis, and pulmonary fibrosis from exposure to silica. These diseases can be fatal.
- Skin irritation and rash.
- Cancer according to NTP* and IARC* */National Toxicology Program, International Agency for Research on Cancer.

**Take precautionary steps:**

- Avoid inhalation of and skin contact with dust, mist, and fumes.
- Wear and ensure that all bystanders. wear appropriate respiratory protection such as dust masks designed to filter out microscopic particles. (See OSHA 29 CFR Part 1926.1153)

### *Personal Protective Equipment*

- Always use properly fitted and approved personal protective equipment (PPE) when using the product.
- PPE cannot fully prevent injury, it only decreases the degree of the injury if an accident does occur. This list may not be all inclusive, be sure to consult your company's safety director to ensure you are adhering to all local/regional and company requirements.
- Check and verify that your personal protective equipment is in good working condition.
- Use an approved protective helmet.
- Use approved respiratory protection.
- Use approved hearing protection.
- Use approved eye protection.
- Use protective gloves.
- Use steel toe-cap boots and anti-slip soles.
- Use approved clothing.

### *Fire Extinguisher*

- Always keep a fire extinguisher near when using this equipment.

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## SAFETY INFORMATION

### *General Safety Instructions*

**⚠ WARNING** Serious injuries and/or death could occur if these instructions are not followed.

Merit, by ICS, requires all operators follow the safety precaution below for optimal safety and performance of all equipment.

- This equipment is dangerous if you are not qualified or have been adequately trained to use the product correctly. This product can cause severe injury or death to the operator or others. Before you use the product, you must read and understand the contents of this operator's manual.
- **DO NOT** operate this saw near or near flammable material, gases or environments as explosions or flashovers can occur
- **DO NOT** operate the equipment without using the appropriate PPE (personal protection equipment)
- **DO NOT** operate or service the equipment with any clothing, hair, or accessories that can snag in the machinery.
- Replace all equipment warning and safety instruction decals if unreadable.
- Do not let anyone under the age of 18 use this equipment.
- Always operate the saw with all panels and guards in place.
- Do not operate this equipment under the influence of drugs or alcohol.
- Do not leave equipment unattended.
- Raise the saw to a proper height for access when working underneath the saw. Use chocks to block the wheels, and fit blocks or jacks under the frame edges at the front and back for additional support.
- When using a jack to raise the saw, ensure saw is on level ground, then place the jack against a solid part of the frame to properly support the saw while lifting.
- Keep all body parts away from hot surfaces and rotating machinery, do not wear loose clothing.
- Avoid contact with hot exhaust components to avoid burns
- When cutting, **DO NOT** exceed an incline or decline slope of 15°.
- All non-routine maintenance tasks should be performed by an authorized service center or following the manufacturing specification.
- Use extreme caution when unloading equipment from truck or transport. Equipment must only be offloaded on level ground. Injury or death may occur from falling equipment due to offloading on slope or unleveled ground.
- Ensure both blade flange nuts are properly torqued to a minimum of 125ft-lbs before cutting.
- Never allow the machine to roll down an incline in the neutral position.
- Keep components clean and free of slurry, concrete dust, and debris.
- Inspect, clean, and replace damaged water hoses and fittings.
- Dispose of hazardous waste as per city, state, and federal regulations.
- Always have a phone nearby for emergencies. Locate a fire extinguisher and first aid kit prior to operating.
- Repair the equipment immediately when a problem arises
- Ensure nut that tightens the blade down is properly tight. See blade safety section for details.
- Blade guard is a safety device and should be installed while the saw is turned off and before operating the saw. Do not operate without blade guard in place.
- Over-exposure to vibration can lead to circulatory and/or nerve damage to the extremities, especially in cold temperatures (Reynaud's Disease). If you experience tingling, numbness, pain or changes in skin color, particularly in your fingers, hands or wrists, stop using the saw immediately. If the problem persists, seek medical attention.
- Always use in well ventilated area. Working near exhaust fumes exposes you to poisonous carbon monoxide (CO) gas. Overexposure to this odorless and colorless gas can cause death. Even mild exposure to CO can cause headaches, dizziness, nausea and fatigue.
- Be aware of location for power lines, gas lines, all utility lines, etc. and ensure they are powered off and isolated before cutting. In the USA, call 811 before cutting. In Canada, local numbers vary.
- Always operate saw with 2 hands and position body between handles when saw is running.
- Remove or control slurry to prevent slippery conditions while cutting.
- **DO NOT** assume the equipment will remain still when in neutral or when parking/stopping the equipment on a slope. Engage the parking brake to help prevent unnecessary movement.
- **DO NOT** operate the equipment using attachments not associated with or recommended for the equipment.
- **DO NOT** operate the equipment around combustible materials.
- Do not attempt to shift gear box while engine is running - damage to gear box and exposure to entanglement and laceration from blade and belts


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### *General Safety Instructions Continued*

- **DO NOT** operate the equipment with anyone near the work area or within the direct line of the blade.
- **DO NOT** operate the equipment until all unnecessary materials have been removed from the work area.
- **DO NOT** operate the equipment with loose nuts, screws, and bolts.
- **DO NOT** operate the equipment when ill or fatigued.
- **DO NOT** operate the equipment under the influence of drugs and/or alcohol.
- **DO NOT** operate the equipment on steep slopes.
- **DO NOT** cut concrete with guards and access panels removed.
- **DO NOT** grease the equipment with the engine running.
- **DO NOT** touch hot components when operating the equipment.
- **DO NOT** leave the equipment unattended until the engine is off and the blade has stopped.
- **DO NOT** place the equipment into storage until it has cooled down.
- **DO NOT** service the equipment until it has cooled down.
- **DO NOT** service the equipment with the engine running.

**⚠ WARNING** Ignitable explosive gases are emitted from the battery.
**DO NOT** expose the battery to sparks or open flames.

### *Battery and Electrical Safety*

- Keep the area around the battery well-ventilated.
- Before charging battery, completely disconnect cables from battery. Failure to disconnect could cause a power surge and damage the electrical components
- Keep the battery level when handling it.
- Use protective eyewear and avoid contact with the skin when handling/servicing the battery.
- Always be sure to connect the battery cables to the proper terminal when reconnecting the cables.
- Disconnect the battery prior to servicing all saw components and keep the battery cable clamps away from the battery terminals when the battery is disconnected to avoid accidental connections while servicing.
- Remove the battery when storing the saw for long periods.
- Always use the correct size (amps) fuses to prevent fires.
- Use a proper battery tester when testing the battery strength.
- Regularly inspect the battery, cables, clamps, and terminals for damages. Clean, replace, tighten, and grease components as necessary

**NOTE:** Immediately rinse your clothing, skin, or eyes with water if exposed to battery acid and seek medical attention!

**⚠ DANGER** Make sure the saw is turned to the off position. Remove the key or disconnect the power supply to avoid an unexpected engine/motor start up.

### *Blade Safety*

The blade can be installed on the right or left side of the saw. Install the blade on the side preferred or most appropriate for the cutting task. Select a blade size and type. Remember to check the blade for damages and discard as necessary.

**NOTE:**
If changing the blade size, adjust and/or change all necessary saw setup, like engine RPM and gearbox position (if applicable) according to the blade manufacturer's specification. Do not exceed the recommended RPM. Always read the warning instructions that are supplied with the cutting blade by the blade manufacturer.

**NOTE:**
Inspect the blade for damage before installation. Never use a blade if it contains core cracks, if the core is excessively worn, warped or out of round, if segments are missing, or if the arbor hole is out of round.

- Always use blade manufacturer-recommended blade RPM.
- **DO NOT** use the equipment without the blade guard or damaged blade guards.
- Never use a wet cutting blade without an adequate water supply to properly lubricate & cool the blade

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## *Blade Safety cont.*

- Always use blade manufacturer-recommended blade RPM.
- **DO NOT** use the equipment without the blade guard or damaged blade guards.
- Never use a wet cutting blade without an adequate water supply to properly lubricate & cool the blade (2 gpm/8 lpm - minimum is recommended).
- **DO NOT** dry cut - this equipment is intended to be used with wet cutting blades only. Dry cutting may lead to excessive dust and sparks or damage to the machine.
- Inspect all blades prior to usage and discard damaged blades.
- **DO NOT** install or remove a blade with the engine/motor running.
- Incorrect use or setup of the equipment can cause the blade to break and cause equipment damage and operator injury.
- When maneuvering the saw between cuts, ensure gear box is in neutral before moving.
- Always use ANSI recommended, high-quality, steel-centered diamond blades.
- Keep all body parts away from rotating blades.
- Always use the correct blade size, thickness, and diamond segment for the application.
- Wear gloves and be alert to the surrounding environment when handling blades.
- Inspect the blade mounting flanges for damage, wear, and cleanliness. Replace damaged components immediately. Inner and outer blade flange should be replaced as a set.
- The blade must always fit snugly on the blade shaft and/or outer flange.
- Once blade is mounted and inner and outer flange are snug and blade is secured, but prior to tightening, rotate the blade against the blade locating pin, and then tighten blade flanges together.
- Tighten the blade shaft screw/nut as directed to properly secure the outer flange and blade. Failure to properly secure the outer flange and blade may cause parts to loosen or come off the saw.
- Use a torque wrench when installing or removing a blade. Apply force to the opposite end of the wrench and tighten the blade shaft nut or bolt, depending on the application to 125 ft-lb (170 Nm) minimum to secure the outer flange and blade.
  **NOTE:** 125 ft-lb is equivalent to applying 125 pounds at the end of a 12" wrench.
- Refer to the RPM chart posted on the saw for additional information.
- If equipped with a gearbox, configure speeds based on the blade manufacturer's recommended RPM
- **DO NOT** exceed the blade's maximum recommended speed when cutting. Excessive blade speeds can cause blade breakage, resulting in serious injuries and/or death!
- **DO NOT** use damaged blades when cutting to avoid harming yourself, others, or the saw.
- **DO NOT** use a blade for cutting that requires a lower speed than the blade shaft speed.

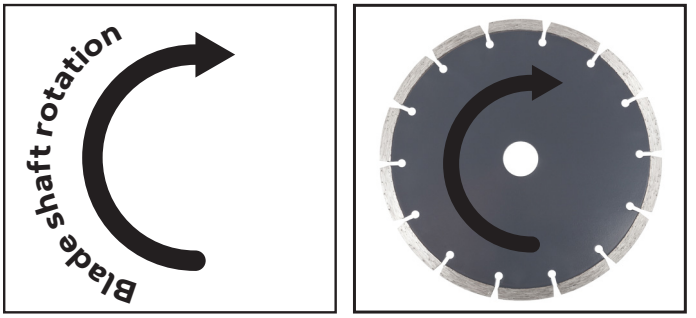


**Figure: Blade Rotation**

*Blade shown for reference only*

When installing the blade, always point the arrow printed on the blade in the direction of the blade shaft's rotation. Contact the blade manufacturer if an arrow is not present on the blade and ask for assistance.

**Figure: Gearbox RPM Chart**


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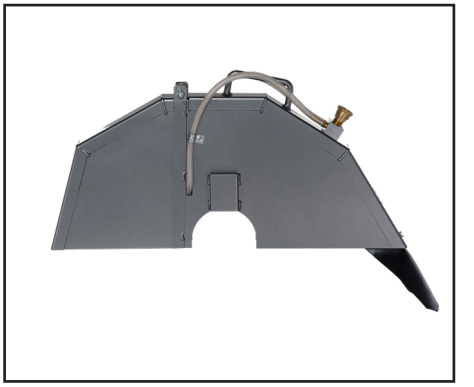
## *Blade Guard Safety*

**WARNING**

Make sure the saw is turned to the off position. Remove the key or disconnect the power supply to avoid an unexpected engine/motor start up.

- **DO NOT** operate the saw with the blade guard raised or removed.
- For smaller blade guards, remove the guard from the saw.
- For larger guards and those fastened to the saw, lift and rotate the front portion of the guard. Make sure the front portion of the guard is secured to prevent it from swinging down unexpectedly, causing injuries.

- **DO NOT** install or remove the blade guard with the engine running.
- Always use a blade guard that corresponds with the blade size.
- Inspect the blade guard and water hoses prior to starting the saw.
- Clean or replace dirty/damaged components immediately.
- When lowering the front part of the blade guard, pivot it cautiously and slowly to avoid serious injuries. NOTE: Ensure motor is off before lowering the blade guard.



**Blade Guard**

## *Fuel Safety*

- Use a hose clamping tool when changing the fuel filter if the saw has fuel in it
- Always use caution when refueling.
- Store all fuel in appropriate safety containers
- **DO NOT** operate the saw with a fuel leak
- Let the engine cool prior to adding fuel.
- **DO NOT** fuel the saw with the engine running.
- Refer to the engine manual for recommended fuels.
- Always use appropriate fuels in cold weather
- **DO NOT** smoke or expose fuel to open flames when filling the fuel tank or working with fuel
- Drain the fuel tank and fuel lines when storing the saw for long periods of time. Refer to the engine manual for additional recommendations.
- Clean up any spilled fuel into an approved EPA container, prior to starting the engine.
- Move the saw away from the refueling area prior to starting the engine.
- Fuel may seep out from the fuel cap vent when raising the saw if the fuel tank has been overfilled

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## *Battery Charging Safety*

**⚠ DANGER** Always follow proper battery charging steps. Incorrect connections or contact with fuses can cause electrical damage and/or serious injury.

**Ensure Safety Precautions:**
- Wear safety glasses and gloves.
- Work in a well-ventilated area to prevent exposure to harmful gases.
- Turn off the vehicle and remove the key from the ignition.

**Inspect the Battery:**
- Check for corrosion or damage on the terminals.
- Clean the terminals with a wire brush if necessary.
- Ensure the battery is not cracked or leaking.

**⚠ DANGER** Charging batteries can release flammable gases. Charge in a well-ventilated area and keep away from sparks or flames. Avoid shorting the battery posts or connecting the positive post to the ground.

**Connect the Battery Charger:**
- Turn off the charger before connecting it.
- Attach the positive (red) clamp to the positive terminal (+) of the battery.
- Attach the negative (black) clamp to the negative terminal (–) of the battery.
- Double-check the connections to ensure they are secure.

**Set the Charger:**
- Select the appropriate voltage (12V) and charging mode.
- For standard charging, use a slow charge (2-10 amps) to extend battery life.
- For a quicker charge, use a medium setting (10-20 amps), but avoid overcharging.

**Begin Charging:**
- Turn on the charger.
- Monitor the charging process and check the battery periodically.
- Avoid leaving the battery unattended for long periods.

**Check the Charge Level:**
- Use a multimeter or the charger's display to monitor the voltage.
- A fully charged battery should read around 12.6 to 12.8 volts.

**Turn Off and Disconnect:**
- Once fully charged, turn off the charger.
- Remove the negative clamp first, then the positive clamp.

**Final Inspection:**
- Inspect the battery for any signs of overheating or leaks.
- Reinstall the battery in the saw if it was removed.
- Ensure all connections are secure.

If a charger is not available, refer to page 17 for detailed jump-starting instructions.


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## *Jump Starting Safety*

**⚠ DANGER**

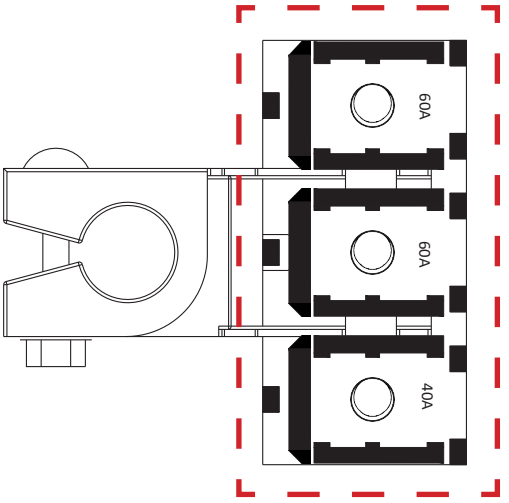
Always follow proper jump-starting steps. Incorrect connections or contact with fuses can cause electrical damage and/or serious injury.

**Connect the Jumper Cables:**
- Connect the red clamp to the positive (+) terminal of the dead battery.
- Connect the other red clamp to the positive (+) terminal of the working battery.
- Connect the black clamp to the negative (–) terminal of the working battery.
- Connect the other black clamp to an unpainted metal surface on the saw with the dead battery, away from the battery.

**Start the Engines:**
- Start the engine with the working battery.
- Let it run for a few minutes.
- Start the engine with the dead battery.

**Disconnect the Jumper Cables:**
Remove the cables in reverse order:
- Black clamp from the metal surface.
- Black clamp from the working battery.
- Red clamp from the working battery.
- Red clamp from the dead battery.

**Run the Flat Saw:**
- Let the jump-started engine run for 15-30 minutes to recharge the battery.




**Note:** Follow the jump-starting steps carefully to ensure proper connection and safe operation. Avoid contact with the fuses located inside the dashed area to prevent electrical damage or safety hazards.

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**⚠ DANGER** Always operate saw in well ventilated area. Concentrated engine exhaust can cause loss of consciousness and/or death.

## *Engine Safety*

**Refer to the engine manual as the primary source for engine safety.**

- Refer to the engine manual for recommended oil.
- Make sure the speed control lever is at Neutral when starting the engine
- Fill the fuel tank and check the oil levels prior to starting the engine.
- Keep all body parts away from rotating parts with the engine running.
- In case of an emergency, immediately stop the saw using the red shut-off switch.
- **DO NOT** start the engine without the air filter installed.
- Immediately replace damaged saw components that may allow dust to enter the engine.
- **DO NOT** allow dust to enter the air intake tube when cleaning/replacing air filters
- **DO NOT** touch the engine/muffler assembly with the engine running.
- Handle hot oil carefully when changing the oil. Wipe down the engine/motor exterior and guards daily or regularly to prevent high operating temperatures.
- **DO NOT** spray the engine/motor with water to prevent engine/motor damage when hot.
- **DO NOT** leave the saw unattended until the engine is off and the blade has stopped spinning.
- Let the engine cool prior to removing pressurized caps (applicable models.)
- Clean the engine cooling system regularly to prevent high operating temperatures.
- **DO NOT** use any starter substances or starter fluids (e.g. starter fluid sprayed into the air filter) when starting the engine.

## *Cutting Area Safety*

- The direct work area shall not contain buried or embedded electrical, gas or water lines that could be damaged and or cause personal injury while cutting.
- Turn off all electricity, gas, and water around the direct work area prior to cutting.
- **DO NOT** expose yourself or anyone else to direct line of the blade when operating the saw.
- **DO NOT** allow any person, animal, and/or object in and around the work area while cutting.
- **DO NOT** cut in explosive enviroments or near flamable material or gases.

## *Exhaust Fumes Safety*

- Long-term inhalation or exposure to exhaust fumes can cause health problems
- Exhaust fumes from the engine contain carbon monoxide, which is an odorless, poisonous, and very dangerous gas. Breathing carbon monoxide can cause death. Because carbon monoxide is odorless and cannot be seen, it is not possible to sense it. A symptom of carbon monoxide poisoning is dizziness, but it is possible that a person becomes unconscious without warning if the quantity or concentration of carbon monoxide is sufficient.
- Exhaust fumes that are visible also contain carbon monoxide.
- Do not use combustion engine equipment indoors and/or inside buildings that do not have sufficient ventilation.

## *Hydraulic Safety*

- Turn off the engine prior to servicing and/or disconnecting hydraulic components.
- When working on the hydraulic lifting system, always secure or support the weight of the saw prior to disconnecting the hoses
- Lower the saw completely to relieve some hydraulic fluid pressure prior to servicing the saw.
- Always place a piece of cardboard or paper up against hydraulic components, or use leak detection fluid to check for hydraulic fluid leaks. Keep all body parts away from leaks and or areas that may eject hydraulic fluid. Pressurized hydraulic fluid can penetrate the skin, causing serious injuries. Oil injected into the skin can cause gangrene or death if not treated by a medical professional. Seek medical attention immediately.


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### *Transportation Safety*

- Remove the blade prior to transporting the saw.
- Make sure the truck/trailer is in good, working condition and weight rated to transport the load.
- **DO NOT** tow the saw behind a vehicle.
- Disconnect the battery when transporting long distances.
- Drain the fuel tank when transporting long distances.
- When transporting, ensure equipment is not in neutral to prevent machine from rolling.
- Use heavy-duty straps to secure the equipment during transportation
- When strapping, do not use engine components as securing points.
- Use heavy duty ramps that will support the weight of the saw and yourself when loading or unloading.
- Raise the saw to avoid damaging components while moving up and down ramps.
- Lower the front of the saw all the way down during transport to depressurize the hydraulic system
- Use extreme caution when guiding the saw up and down ramps. Slowly drive/push the saw forward down the ramp. Slowly back/pull the saw in reverse up the ramp. Avoid standing directly downhill from the saw to avoid serious injuries.
- **DO NOT** transport the saw on the liftgate of the truck.
- Chock the wheels and secure the saw in a truck/trailer prior to transporting
- Turn off the engine/motor once the saw is loaded into the truck/trailer. For self-propelled models, place the speed control lever at neutral position prior to turning off the engine.
- Refer to the Department of Transportation (DOT) for additional information on proper transportation techniques and truck/trailer requirements.

**⚠ DANGER** Exercise extreme caution when lifting the saw. Injuries can be fatal.

### *Lifting Safety*

- Move yourself and all others away from the lifting area when hoisting the saw to prevent injury.
- Always use the lifting eye highlighted in the following image.
- Make sure the lifting equipment (harness, chain, etc.) is rated for the weight of the saw.
- Make sure the saw is off and the level with the ground before lifting.

### *Unloading Equipment*

Equipment must be offloaded from the truck or trailer while on level ground. No person under the age of 18 years shall be allowed to offload the flat saw

### *Belt Safety*

- Turn off the engine and let belts cool down prior to servicing them.
- Regularly inspect belts for fraying, stress cracks, and/or breakage and replace immediately when damaged.
- Always check belt alignment prior to operating the saw.
- Over-tensioning belts may damage the power take-off (PTO). Under-tensioning belts may cause slippage, shorter belt life, and/or poor saw performance.
- Squealing belts indicate looseness.
- **DO NOT** use old and new belts on the same pulley together.

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**WARNING**

An emergency supersedes the steps below; use the emergency stop button to stop the engine in case of an emergency.

### *Throttle Operation*

1. To increase engine/blade speed, push the throttle switch in the upwards direction.
2. To decrease the engine/blade speed, push the throttle switch in the downward direction.

**NOTE:** Always operate the engine RPM as directed by the saw set up chart or gearbox shifting chart

### *Starting the Saw*

To start the saw, first, make sure the forward and reverse handles are in the neutral position and the blade is not in or contacting the surface. Now, turn the ignition key to the ON position and wait for 5 seconds while the lights turn on and the fuel pump pressurizes the fuel system. After five seconds turn the key all the way to the right to engage the starter and let go of the key when the engine starts.

### *Stopping the Saw*

First, allow the saw to come to a complete stop or position the forward and reverse handle in the neutral position, then raise the blade out of the cut (when applicable). Now turn the ignition key to the left until the engine stops.

**NEVER** leave the saw unattended.


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### *PRIOR TO CUTTING*

**WARNING** Do not use this product unless you have been trained in the safety and operations

**WARNING** We recommend always having a ground penetrating radar inspection done prior to cutting to avoid cutting power cables and/or utilities.

- Ensure the flat saw maintenance is current and the saw operator is wearing all appropriate PPE (Personal protective equipment). Be sure that everyone in the vicinity of the cutting area is also wearing the proper PPE.
- 
- Follow all the safety guidelines for mounting the diamond blade correctly
- Be sure to use the right size blade guard for the corresponding diamond blade size.

- Use a straight metal bar to align the pointer frame cutting guide, diamond blade, and rear frame guide to ensure a better cutting experience. Retract or extend the pointer frame as needed.

**WARNING** Do not use cutting blades that have not been made for their intended material and application

**WARNING** Only use diamond blades for wet cutting. The diamond blade must be applicable to the same speed or a higher speed than the value given on the product. Only use diamond blades that are in compliance with national or regional. standards, for example, EN13236 or ANSI B7.1

Follow the blade manufacturer's recommendation for blade speed and maintenance.  Always follow warnings and recommendations from the blade manufacturer.

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## *CONTROL PANEL*

**(1) Ignition Key**
To turn the display on, turn the key to ON
To turn the engine on, turn the key to START

**(2) Throttle**
Use the toggle switch up to increase the engine speed until the RPM on the display matches the desired speed that corresponds to the gear selection.
*(4-Speed only) For more details on gear selection and blade diameters see the saw configuration page or reference the gear chart or the saw panel.*
**Note**: Failure to match engine speed per gear selected and blade diameter can introduce harmful vibrations into the saw that can damage the blade and equipment as well as jeopardize cutting quality.

**(3) Display Controller**
Displays engine data

**(4) Emergency Stop Button**
Used to stop the engine in case of emergency. Not to be used for normal on-and-off operations.
Only for emergencies.


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## *CONTROL PANEL continued*

**(5) Nightlight Switch**
Used to turn the work light on and off. *(Light not included: ordered as an accessory)*

**(6) Blade Depth Control**
The toggle switch turns on and off the (11) Blade Depth Control/Indicator.

**(7) Fuel Filler Cap**
Remove when refueling the saw. Always ensure that the cap is working properly and there is no damage. Refer to the Refueling Safety page for more details.

**(8) Water Valve**
Open and close the water valve to direct cooling water to the blade and gearbox. This valve should always be open when the saw is in operation to avoid overheating critical parts.

**⚠ WARNING** Make sure the forward and reverse handle is in the neutral position before starting the engine. Failure to do so may cause the saw to move unexpectedly.

**(9) Speed Control**
To travel or move the saw in forward motion, the handle must be pushed away from the operator. To reverse, the handle must be pulled toward the operator. The further the lever is moved past neutral, the greater the speed will be in the corresponding direction. When moving the saw around we recommend increasing the engines RPM to a minimum of 1,600 RPM for better results. To lift the blade out of the cut, press the left button. To lower the blade into the cut, press the right button on the handle.

**⚠ WARNING** We recommend always having a ground penetrating radar inspection done prior to cutting to avoid cutting power cables and/or utilities.

**(10) Blade Lower Speed Valve**
The blade lower speed valve is to increase or decrease the speed of the blade when lowering into the cut. Adjust the valve by turning it clockwise to slow down and counter clockwise to increase speed.

**(11) Blade Depth Control/Indicator**
To operate the depth control system, refer to the following steps:
1. Lower the saw until the blade touches the cutting surface, then set the depth wheel to the desired cutting depth.
2. Flip the the (6) Blade Depth Control toggle switch to ON when the depth is set.
3. Lower the blade into the cut until the depth wheel moves back to zero and the saw stops lowering.
4. To turn the (6) Blade Depth Control toggle switch off, flip to OFF.

**(12) Handlebars and T-Locks**
The handlebars are used to control and maneuver the saw when being moved or during cutting operation. There are 4 preset angle positions to meet varying operator needs. The t-lock allows securing the handlebar in desired positions and prevents unwanted movement. Always ensure t-locks are securely tightened.

**(13) Rear Access Panel**
To remove the rear panel and gain access to the battery and other components, turn the panel latches counterclockwise 180 degrees, then pull and lift the panel away from the saw.

**(14) Radiator Cap Access Lid**
Used to gain access to the radiator cap and check coolant as per maintenance requirements.

**⚠ WARNING** Never leave the saw unattended on a steep grade. Never stand below the machine. Stand only beside or behind.

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## *CUTTING RECOMMENDATIONS*

**⚠ WARNING** Gear box only to be shifted when engine is off to avoid contact with the blade

**NOTICE** Gear box to be shifted only when saw stopped and engine off to prevent damage to gear box.

- Make sure the engine is up to the correct RPM, and the gearbox is in the right gear corresponding to the blade being used.

- Make sure the ground or surface has been correctly marked, align the blade, and guide over the mark to ensure a straight cut.

- Open the water valve and ensure the correct amount of water flows to the blade.
  A. Thick slurry means insufficient water and thin slurry means too much water.

- When a specific cutting depth is required. Use the cutting depth system by
  A. Lower the blade just above the cutting surface and stop.
  B. Turn the depth gauge wheel to the required depth and turn ON the depth stop system switch.
  C. Slowly begin lowering the blade. NOTE: As a safety check, monitor the depth wheel to ensure that it stops at zero before proceeding with the cutting.

**NOTE:** Step cutting is recommended. Cut in increments of 2" per pass for maximum efficiency.

D. For best cutting results, travel across the entire cutting surface at an adequate speed to ensure a straight cut, and do not force the saw or the blade to prevent the saw from riding out of the cut. Decrease your travel speed or cutting depth if the blade starts to ride out of the cut.

**NOTE:** At the end of each cut, raise the blade out of the cut and travel back slowly; avoid traveling back while the blade is in the cut.

E. After returning to the beginning of the cut, re-position the saw and align the blade against the cutting line; begin the second pass, repeating the prior step cutting instructions.

- Avoid contact with the ground from the blade mounting flanges to prevent premature wear.

- Pay attention to the engine sound and avoid excessive load to avoid stalling the engine, reducing cutting speed or depth.

- To avoid belt failure, pay special attention to belt squealing when cutting; if this occurs, stop cutting, stop the engine completely, and re-tension the belts for better cutting performance.

**NOTE:** Loose belts can cause excessive heat that may damage other components.
(See reference for belt tensioning steps)

- Don't use oversized blades for shallow cuts. Start with a small blade and change to larger blades and blade guards as the cut gets deeper. Remember to change gear according to the blade size being used.

- Remember to let the engine cool off for at least 3 - 5 minutes after cutting for a period in which the engine gets up to full operating temperature. Doing so will help prevent unwanted heat soaking especially in extreme heat environment areas.


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## *Daily Maintenance Task Chart*

| Task | | Check | | | | |
|---|---|---|---|---|---|---|
| | | Daily | Every 50h | Every 100h | Every 250h | Every 500h |
| 1 | Check for fuel and oil leakage | √ | | | | |
| 2 | Check radiator coolant level | √ | | | | |
| 3 | Check engine oil level | √ | | | | |
| 4 | Check all hoses and hose clamps. Tighten clamps and replace hoses if needed | √ | | | | |
| 5 | Check the air filter and clean or replace it if necessary | √ | | | | |
| 6 | Check all safety covers, belt guards, and blade guards | √ | | | | |
| 7 | Drain water from the gearbox when the ambient temperature is below 32°F/0°C | √ | | | | |
| 8 | Check all water hoses for the blade cooling | √ | | | | |
| 9 | Clean the product before storing or putting it away | √ | | | | |
| 10 | Check the engine's main belts. Adjust tension or replace belts if needed | | √ | | | |
| 11 | Lubricate hydraulic cylinder pins | | √ | | | |
| 12 | Lubricate front wheels | | √ | | | |
| 13 | Lubricate front wheels subframe bearings | | √ | | | |
| 14 | Do a check for all bolts and nuts. Make sure there is no loose hardware | | √ | | | |
| 15 | Check the blade mounting inner and outer flange are clean and the blade locking pin is in place. Change flanges if showing signs of wear | | √ | | | |
| 16 | Change engine oil and oil filter | | | √ | | |
| 17 | Check the drive pump belt. Adjust tension or replace belts if needed | | | √ | | |
| 18 | Check the alternator belt. Adjust tension or replace belts if needed | | | √ | | |
| 19 | Change fuel filter | | | √ | | |
| 20 | Check the hydraulic oil level on the lift pump system | | | √ | | |
| 21 | Check the hydraulic oil level on the drive system. | | | √ | | |
| 22 | Change the oil on the gearbox. (If equipped with a gearbox) | | | √ | | |
| 23 | Check the hydraulic oil hoses and fittings for the drive system | | | √ | | |
| 24 | Check front wheel bearings for wear or damage | | | √ | | |
| 25 | Check the air filter and replace it if necessary | | | √ | | |
| 26 | Change the oil filter for the hydraulic drive system | | | | √ | |
| 27 | Change the hydraulic oil on the drive system | | | | | √ |
| 28 | Change the hydraulic oil on the lift pump system | | | | | √ |
| 29 | Change the radiator coolant | | | | | √ |

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## TROUBLESHOOTING

### *Troubleshooting the Merit M500*

| Symptom | Problem | Solution |
|---|---|---|
| Engine will not start. | Out of Fuel | Fill fuel tank. |
| | Fuel lines clogged | Unclog or replace fuel lines. |
| | Air in fuel lines | Bleed fuel lines. |
| | Worn out battery | Charge or replace battery. |
| | Faulty battery connection | Inspect, clean, and tighten battery cables |
| | Engine malfunction | Refer to engine manual. |
| | Bad fuse | Check and replace bad fuses. |
| | E-stop is active | Pull up emergency stop button. |
| Saw will not raise. | Defective solenoid switch | Replace solenoid on hydraulic pump unit. |
| | Worn out battery | Charge or replace battery |
| | Defective raise button | Replace raise button. |
| | Low hydraulic fluid | Check hydraulic fluid level and fill as necessary |
| Saw blade slowly lowers unexpectedly | Raise/lower valve needs adjustment | Locate adjustment lever under the dash directly under operator controls. Adjust the lever until the bleeding stops. |
| | Raise & lower valve has failed | Replace raise & lower assembly |
| Saw will not lower. | Worn out battery | Charge or replace battery |
| Saw will not lower completely. | Depth stop set | Reset depth stop |
| | Maximum cutting depth set incorrectly | Adjust maximum cutting depth bolt |
| Blade does not cut straight. | Drive alignment off | Check wheel alignment |
| | Excessive force used when sawing | Reduce forward speed. **DO NOT** twist blade from side to side |
| | Wrong blade | Contact dealer/manufacturer of blade. |
| Short belt life. | Loose belts causing slippage | Check and adjust belt tension |
| | Pulleys misaligned | Use straightedge to check blade shaft pulley alignment. Adjust as necessary. |
| | Worn pulley grooves | Check for groove wear and replace sheaves when necessary. |
| | Mismatched belts | Replace with matched set of belts. **DO NOT** use old and new belts together. |
| Saw idles down unexpectedly | Throttle switch short circuits | To test if switch is bad, disconnect the black, yellow and blue wires from the throttle switch. Attempt to make another cutting pass. If the RPM's stay consistent, replace throttle switch. |
| | Faulty display controller | to test if the controller is bad, disconnect the throttle switch if RPM's continue to drop to idle, replace display controller |


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## *Additional References*

1. Kubota (www.kubotaengine.com) - Engine model: WG1605
2. ICS (www.icsdiamondtools.com)
3. Concrete Sawing and Drilling Association (www.csda.org)
   The CSDA has many helpful concrete cutting publications available to members and nonmembers.
4. Association of Equipment Manufacturers (www.aem.org)
   The AEM has a variety of safety and technical manuals available for various types of equipment, along with a list of industry-standardized safety symbols.
5. Occupational Safety & Health Administration (OSHA) (www.osha.gov/)
   OSHA provides information on work-related safety and health practices.
6. The National Institute for Occupational Safety and Health (NIOSH) (www.cdc.gov/NIOSH/)
   NIOSH provides information on work-related safety and health practices.

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