

CARDINAL

CSG12H
STUMP GRINDER

Operations Manual

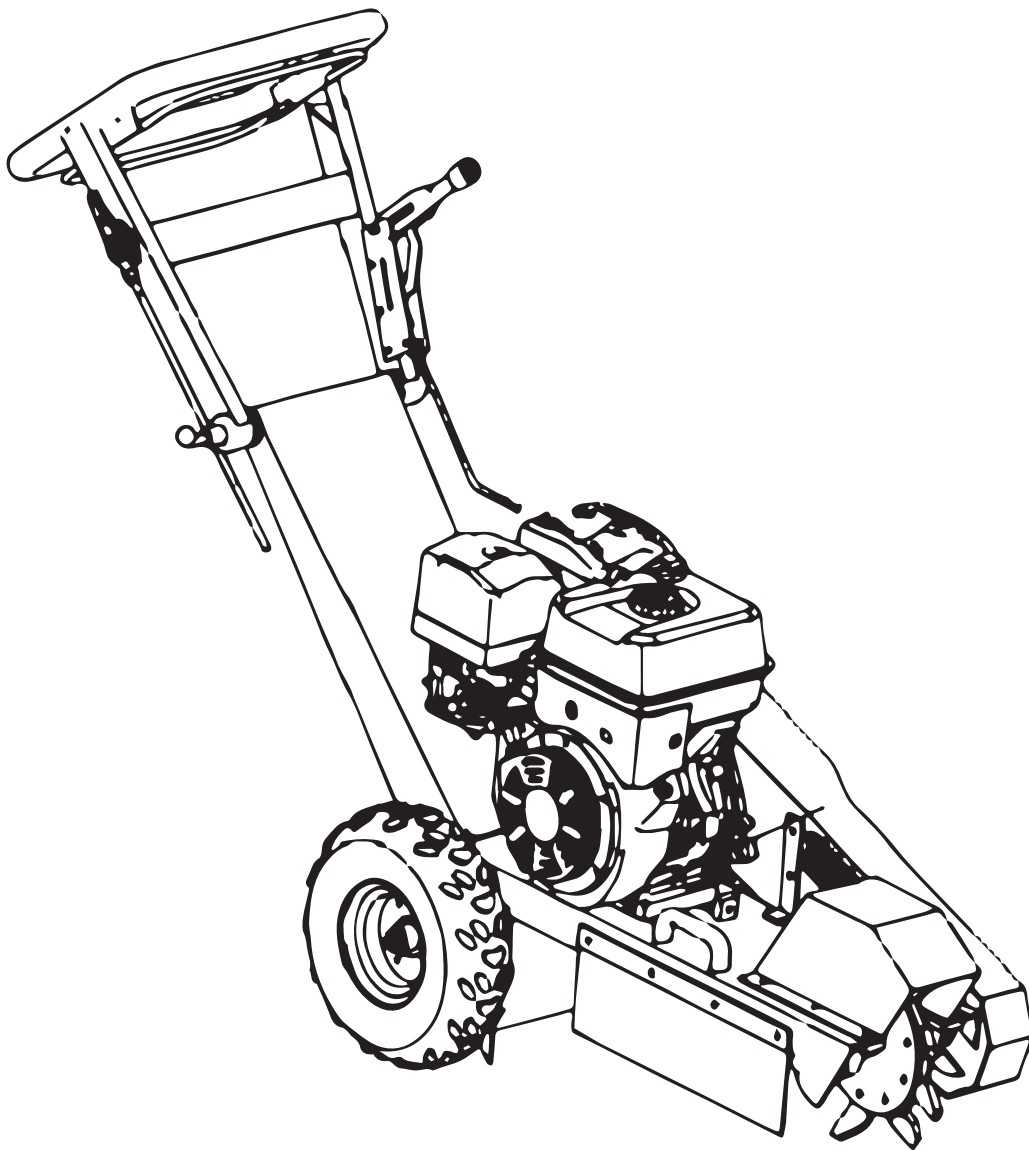


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Register Your Equipment

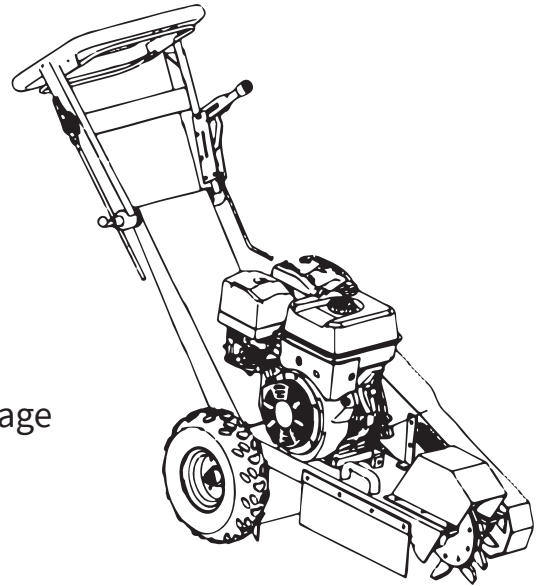
Thank you for purchasing CARDINAL® equipment! Your product is covered by the CARDINAL® Warranty policy, but in order to activate your warranty, we need you to register your product. In addition to activating your equipment warranty, product registration will grant you access to important product updates, streamlined customer service and more.

INCLUDED WITH YOUR REGISTRATION

- ✓ Equipment Warranty Activation
- ✓ Product Updates
- ✓ Streamlined Customer Service
- ✓ Exclusive Discounts and Sales

STEPS TO REGISTER YOUR EQUIPMENT

1. Visit www.cardinalsprayers.com
2. Choose “Product Registration” at the bottom of the page
3. Enter your equipment’s serial number to get started
4. Provide all required information
5. Submit Registration



Equipment Resources

CARDINAL® Customer Service doesn't stop at checkout. We understand to keep a job-site running smoothly - the proper equipment, spare parts, instruction manuals, and more are needed at the drop of a hat. Visit www.cardinalsprayer.com to gain access to the incredible resources below.

How To Video Library

More of a visual person? Visit our Video Library for equipment assembly instructions, troubleshooting tips, and more!

Found at the CARDINAL® Resource Center

Manual and Assembly Guide Library

Visit our Manual Library if you are looking for a lost operations manual or a particular spare part?

Found on the CARDINAL® Manuals Page

Service Requests

In need of a quick fix or a service center referral? Submit a Service Request and a CARDINAL® Technician will respond shortly to get you the help you need.

Choose “Service Request” at the bottom of www.cardinal-sprayers.com



This manual provides information and procedures to safely operate and maintain this model. For your own safety and protection from injury, carefully read, understand and observe the safety instructions described in this manual.

Keep this manual or a copy of it with the machine. If you lose this manual or need an additional copy, please contact CARDINAL® or visit www.cardinalsprayer.com This machine is built with user safety in mind; however, it can present hazards if improperly operated and serviced. Follow operating instructions carefully. If you have questions about operating or servicing this equipment, please contact CARDINAL®.

The information contained in this manual is based on machines in production at the time of publication. CARDINAL® reserves the right to change any portion of this information without notice.

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1. Safety Information

This manual contains DANGER, WARNING, CAUTION, and NOTE callouts which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

1.1 Fire Safety

If your machine catches fire, turn off the electric supply. Using a dry powder or CO2 fire extinguisher, put out the fire. If the fire cannot be put out, keep away and call the fire department. If you are in any doubt about the safety condition of your machine, please consult CARDINAL®.

1.2 Operating Safety



Familiarity and proper training are required for the safe operation of equipment!

Equipment operated improperly or by untrained personnel can be dangerous! Read the operating instructions contained in both this manual and the engine manual and familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate the machine.

1.2.1 NEVER allow anyone to operate this equipment without proper training. People operating this equipment must be familiar with the risks and hazards associated with it.

1.2.2 NEVER use accessories or attachments for this equipment, which are not recommended by CARDINAL®. Damage to the rammer and/or injury to user may occur.

1.2.3 NEVER leave machine running unattended.

1.2.4 ALWAYS be sure operator is familiar with proper safety precautions and operation techniques before using machine.

1.2.5 ALWAYS wear hearing protection when operating equipment.

1.2.6 ALWAYS wear protective clothing appropriate to the job site when operating equipment.

1.2.7 ALWAYS wear hearing protection when operating equipment.

1.2.8 ALWAYS store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.

1.2.9 ALWAYS operate machine with all safety devices and guards in place and in working order. **DO NOT** modify or remove safety devices. **DO NOT** operate machine if any safety devices or guards are missing or inoperative.

1.2.10 ALWAYS read, understand, and follow procedures in Operator's Manual before attempting to operate equipment.

1.3 Service Safety



For your own personal protection and for the safety of those around you, please read and ensure you fully understand the following safety information. It is the responsibility of the operator to ensure that he/she fully understands how to operate this equipment safely. If you are unsure about the safe and correct use of this equipment consult your supervisor.

1.3.1 DO NOT attempt to clean or service machine while it is running. Rotating parts can cause severe injury.

1.3.2 ALWAYS replace worn or damaged components with spare parts designed and recommended by CARDINAL®.

1.3.3 ALWAYS keep machine clean and labels legible. Replace all missing and hard-to-read labels. Labels provide important operating instructions and warn of dangers and hazards.

1.3.4 This equipment is heavy and must not be lifted single-handedly. Must be listed with two people or use suitable lifting equipment.

1.3.5 Cordon off the work area and keep members of the public and unauthorized personnel at a safe distance.

1.3.6 Personal Protective Equipment (PPE) must be worn by the operator whenever this equipment is being used.

1.3.7 Make sure you know how to safely switch this machine OFF before you switch it ON in case you get into difficulty.

1.3.8 Always switch OFF and unplug the motor before transporting, moving it around the site, or servicing it.

1.3.9 During use, the motor becomes very hot, allow the motor to cool before touching it. Never leave the motor running and/or unattended.

1.3.10 NEVER remove or tamper with any guards fitted, they are there for your protection. Always check that guards are in proper condition, if any are damaged or missing, **DO NOT USE THE MACHINE** until the guard has been replaced or repaired.

1.3.11 NEVER pull or guide the machine using the cable and never pull on the cable to disconnect the plug.

1.3.12 DO NOT operate the machine when you are ill, feeling tired, or when under the influence of alcohol or drugs.

1.3.13 Ensure that any trailing cable is protected against damage and not liable to be tripped over or trapped underneath the machine.

1.3.14 DO NOT use the Motor Guard as a Lifting Point.

1.3.15 DO NOT Jet Wash the machine as this could result in serious injury or even death!

1.3.16 DO NOT use this machine in wet conditions. The electrical components of the machine **NEVER** be exposed to water or liquid of any kind as this could result in serious injury or even death!

1.4 Fuel Safety

For your own personal protection and for the safety of those around you, please read and ensure you fully understand the following safety information. It is the responsibility of the operator to ensure that he/she fully understands how to operate this equipment safely. If you are unsure about the safe and correct use of this equipment consult your supervisor.

1.4.1 PAY ATTENTION while handling fuel. They are flammable and the vapours are highly explosive.

1.4.2 NEVER remove the fuel cap or add fuel with the fuel with the power running. Stop the engine

and allow engine and exhaust components to cool before refueling.

1.4.3 DO NOT smoke while adding fuel.

1.4.4 FILL your engine with 10w-30/ 10w-40/ 15w-30/ 15w-40 non-synthetic engine oil before use

or serious damage will occur.

1.4.5 USE extreme care when handling fuel. Fuel is extremely flammable and the vapors are explosive.

1.4.6 NEVER fuel machine indoors or while the engine is hot or running

1.4.7 NEVER refuel or store the machine in a place where there is open flame, sparks or other ignition objects.

1.4.8 DO NOT Attempt to start the engine if fuel is spilled. Wipe away the spillage and ensure all

fuel has dried before starting the machine.

1.4.9 ALWAYS make sure the fuel cap is securely tightened and replace before starting.

1.4.10 IF the fuel tank needs to be drained, it should be done outdoors.

2. OPERATION

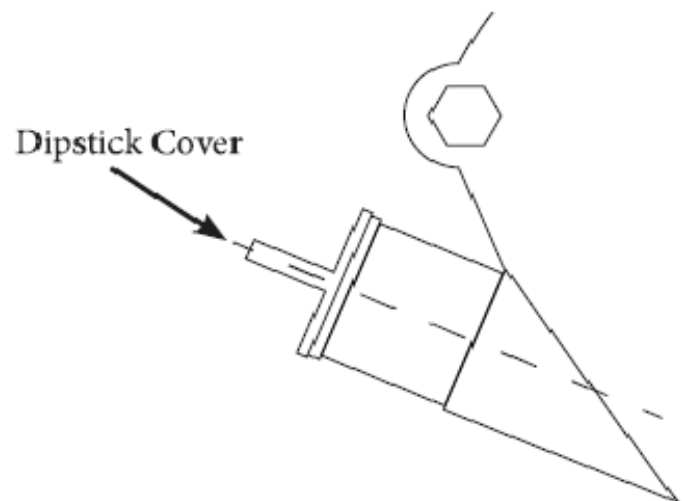
2.1 Adding Oil to the Engine

2.1.1 Only fill the fuel tank to a level 15mm lower than the top of the fuel tank. Do not overfill.

2.1.2 Use the dipstick to check the fuel level.

USE: 10w-30/ 10w-340/ 15w-30/ 15w-40 non-synthetic oil

2.1.3 The engine is shipped without oil. Fill to the correct level before use. Operating the engine with no oil or oil at a low rate will destroy the engine - this is NOT covered under warranty.



2.2 STARTING THE ENGINE

2.2.1 Lock the wheel by pulling brake lever fully back

2.2.2 Make sure the throttle is in slow position.

DO NOT ALLOW the rope to snap back, return it by hand to prevent damage to the starter.

2.2.3 If the engine is cold move the choke lever to the closed position.

2.2.4 Raise the cutter wheel 4 to 5 inches off the ground by pushing downwards on the handle bar, hold it in that position.



The next step may cause the cutter wheel to rotate, maintain a safe distance.

2.2.5 Pull the starter rope lightly until resistance is felt then pull briskly

2.2.6 Move the choke lever to the open position.



The next step may cause the cutter wheel to rotate, maintain a safe distance.

2.2.7 Move the throttle to fast. If the engine is cold, allow the engine to idle. Throttle set to slow for a few minutes.

2.3 REMOVING STUMPS

2.3.1 Remove all loose pieces of wood, stones, wire and other debris from the area before beginning stump removal.

2.3.2 Wind direction should be considered, as it will influence the direction the debris and dust are directed.

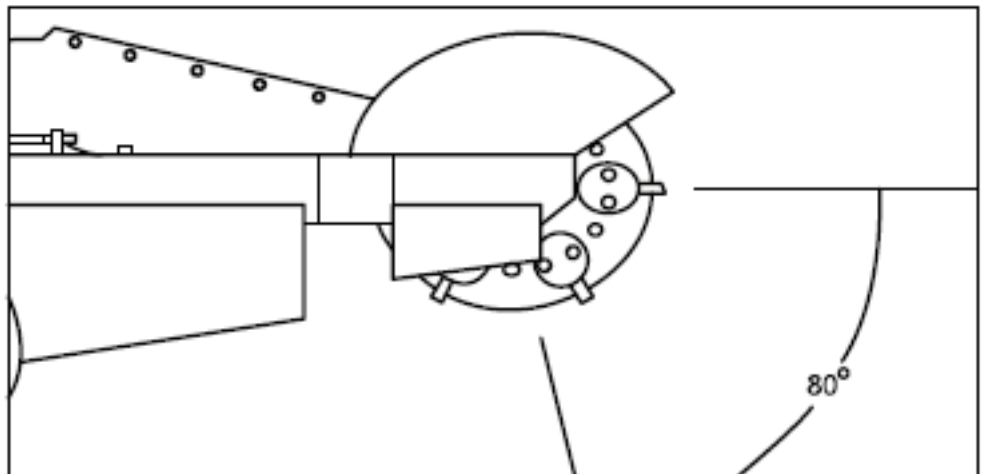
2.3.3 Never operate the grinder after dark. The operator needs adequate lighting to use the grinder safely.

2.3.4 Always allow a cold engine time to warm up before starting the cutting of the stump.

2.3.5 Only the portion of cutting wheel within the 80 degree area shown should engage the stump.

Never undercut the stump or use the bottom of the cutting wheel for cutting purposes.

2.3.7 Never leave controls when the cutting wheel is rotating.

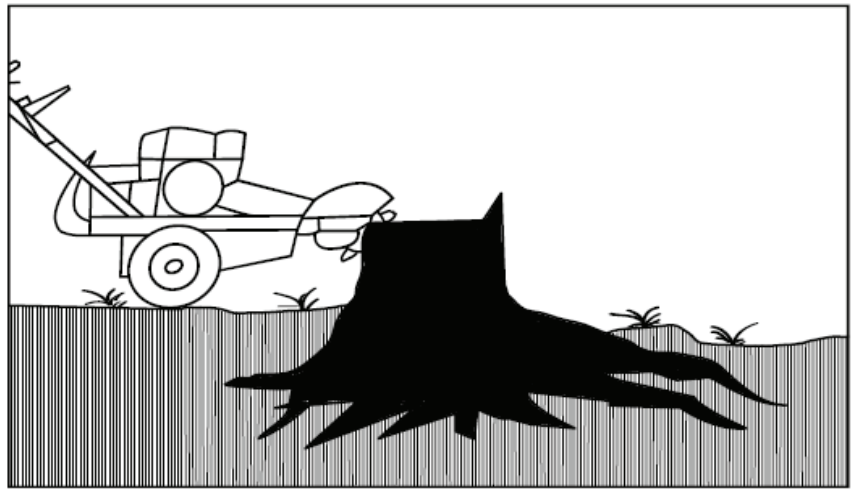


2.4 PREPARE THE GRINDER AT THE STUMP

2.4.1 Removing Roots

1. Make sure the throttle is set to fast, the cutter will accelerate to cutting speed.

2. Swing the cutting wheel to one side, then lower it into the nearest roots that are buried at the foot of the stump.



3. Swing the cutting wheel before each sweep, until the roots are sufficiently removed.

4. Raise the cutting wheel until the center of the cutting wheel is just above the top of the stump.

5. Allow the cutter wheel to stop, release the brake and reposition the machine.

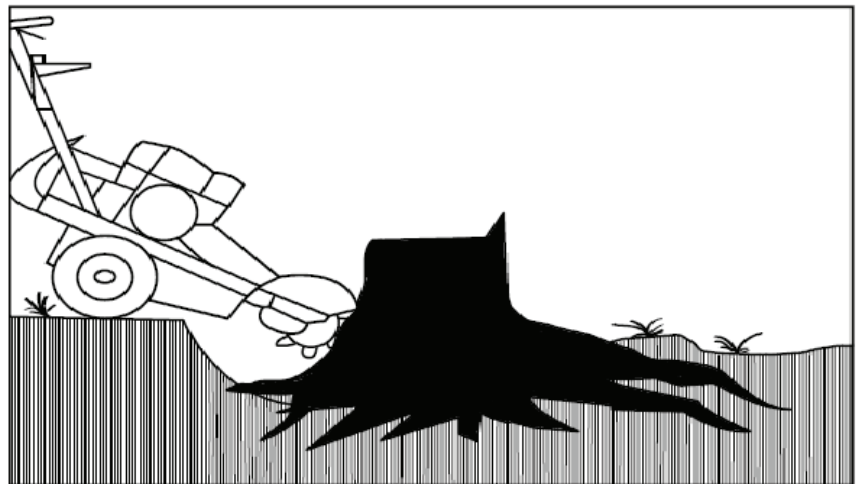
6. Lock the brake again.

2.4.2 Cutting The Full Stump Removing Roots

1. Make sure the throttle is set to fast. The cutter wheel will accelerate to cutting speed.

2. Direct the cutter wheel against the stump, beginning with the nearest top corner of the stump.

3. Steadily sweep it across the stump left and right, cutting away 1/2 inch of wood on each sweep.

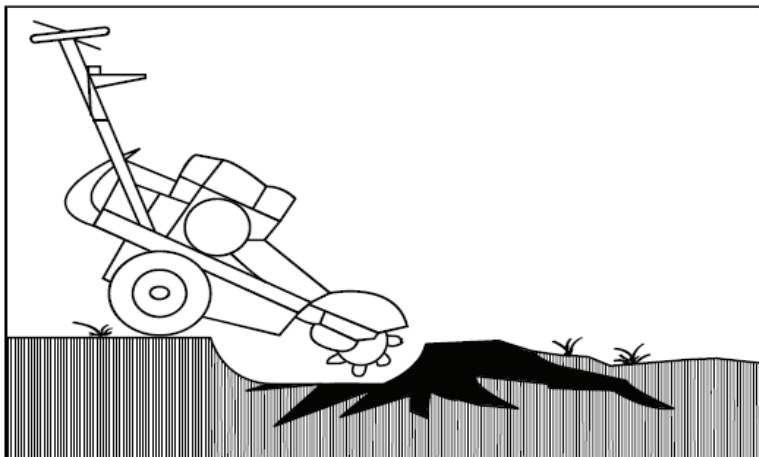


4. Raise the machine forward and back, by pushing and pulling on the control.

5. Roll the machine forward and back, by pushing and pulling the control handle. To do this release the brake. Relock it when the machine has been repositioned and continue cutting.

2.4.2 Cutting The Full Stump Removing Roots Continued

Cut the remaining roots as described in STEP 2 until satisfactorily removed.



3. SHUTTING DOWN MACHINE

3.1 Shutting Off the Grinder

1. When stopping the machine after normal operation, lower the engine speed to slow, and push the emergency switch.
2. Set the park brake before leaving the controls.
3. Shut off the engine by pushing the on/off switch.

3.2 Normal Shutdown Procedure

Considering your own safety and that of others, you should always use the following normal shutdown procedures before departing from the controls for any reason including cleaning, servicing, transporting or inspecting the stump grinder. Never deviate from this procedure unless so instructed in this manual or in an emergency that requires it.

A rotating cutting wheel is very dangerous. Stand at controls and ensure that the cutting wheel comes to a complete stop before doing anything else.

1. Move the engine throttle to slow position
2. Push the emergency (on/off) switch to stop the engine.
3. Set park brake before leaving controls

3.3 Emergency Cutoff Procedure

1. Immediately push the emergency switch for the engine to shut off.
2. Be sure to allow all moving parts to come to a complete stop.
3. Pull the brake lever to engage brake.
4. Rectify the emergency station and return to normal operation

4. MACHINE MAINTENANCE

4.1.1 Make sure all nuts, bolts and screws are tightened

4.1.2 Never store the equipment with fuel in the tank inside a building where fumes can reach an open flame or spark. Allow the engine to cool before moving the grinder.

4.1.3 To reduce fire hazards, keep the engine and fuel storage area free of grass, grease, and dirt.

4.1.4 Replace worn or damaged parts for safety. If the fuel tank has to be drained, this should take place outdoors.

4.1.5 Regularly check the grinder and ensure that all bark and dirt deposits are removed from beneath the deck.

4.1.6 Frequently check the grinder and ensure that all bark and dirt deposits are removed from beneath the deck.

4.1.7 Lubricate the wheel axle and the bearings with grease regularly.

4.1.8 Check the cutting wheel often. In order to achieve clean work the blade should always be sharp and well balanced.

4.1.9 Check the tightening of all bolts and screws at regularly intervals. Nuts and bolts that are worn out or badly tightened can damage the engine or the frame.

5. TRANSPORTATION

The stump grinder is designed to be transported via a large van, truck, or small trailer. The machine is equipped with grab bars that are able to be used for both lifting the machine, and strapping it down. This machine weighs approximately 243 lbs and should only be lifted using correct apparatus or an adequate number of people working as a team.

The legal road requirement for towing equipment and trailers. It is the owners responsibility to be aware of these laws and to adhere to them.

6. SPECIFICATIONS

MODEL	
Engine	15HP FOUR STROKES
Belt	2PCS v BELT
Clutch	Centrifugal Clutch
Blade	9 Blades w Tungsten (3x left, 3x right, 3x middle)
Cutting Depth	12 inches
Brake	Drum brake
Gross Weight	243 lbs.

11. WARRANTY

Your new CARDINAL® equipment is warranted to the original purchaser for a period of one-year.

(12 months) from the original date of purchase. The CARDINAL® warranty is against defects in design, materials and workmanship.

The following are not covered under the warranty:

1. Damage caused by abuse, misuse, dropping or other similar damage caused by or as a result of failure to follow assembly, operation or user maintenance instructions.
2. Alterations, additions or repairs carried out by persons other than CARDINAL® or their recognised agents.
3. Transportation or shipment costs to and from CARDINAL® or their recognised agents, for repair or assessment against a warranty claim, on any machine.
4. Materials and/or labor costs to renew, repair or replace components due to fair wear and tear.

CARDINAL® and/or their recognised agents, directors, employees or insurers will not be held liable for consequential or other damages, losses or expenses in connection with or by reason of or the inability to use the machine for any purpose.

Warranty Claims

Before submitting any warranty claim, your new CARDINAL® equipment should be registered through www.cardinalsprayers.com. Follow the steps on page 3 to complete the equipment registration. After registration is complete, all warranty claims should firstly be directed to CARDINAL® through the online Service Request form found at www.cardinalsprayers.com

TOMAHAWK

PRODUCT CATALOG

COMPACTION



HONDA
ENGINES

3,550 lbs/ft Vibratory Rammer
Part#: TR68H

3.6 HP Honda GXR120 Engine
Easily achieve a 100% compaction rating
3-in-One Fuel System with carburetor protection
13" x 11" plate for narrow trenches and corners
3 Year Engine Warranty & 1 Year Product Warranty



HONDA
ENGINES

3,400 lbs/ft Plate Compactor
Part#: TPC90H

5.5 HP Honda GX160 Engine
Easily achieve a 100% compaction rating
22" x 20" cold, rolled steel beveled base plate
Includes 3.5 gallon water tank for asphalt compaction
3 Year Engine Warranty & 1 Year Product Warranty



HONDA
ENGINES

KOHLER
ENGINES

3,000 lbs/ft Plate Compactor
Part#: TPC80 & TPC80H

6 HP Kohler CH260 & 5.5 HP Honda GX160 Engines
Easily achieve a 100% compaction rating
16.5" x 21.5" plate for narrow trenches and corners
Optional Honda Engine model: TPC80H
3 Year Engine Warranty & 1 Year Product Warranty

FINISHING



6.5 Gal Backpack Concrete Sprayer
Part#: TCS6.5

Maintain constant, adjustable pressure up to 450 PSI
Achieve superior concrete finishes with even spraying
Spray 15,000 sq ft in less than 10 minutes
Compatible with major manufacturer wands
1 Year Product Warranty



HONDA
ENGINES

1.6 HP Vibratory Concrete Screed
Part#: TVSA-H

1.6 HP Honda GX35 Engine
Aluminum Magnesium blades available from 8ft - 14ft
Finish concrete 4X faster than other screed methods
360° adjustable handle placement
3 Year Engine Warranty & 1 Year Product Warranty



HONDA
ENGINES

6" Early Entry Green Concrete Saw
Part#: TFS6H

5.5 HP Honda GX160 Engine
Maximum cutting depth of 1 3/16 inches
OSHA compliant vacuum port for dust collection
Includes 6" early entry concrete blade
3 Year Engine Warranty & 1 Year Product Warranty

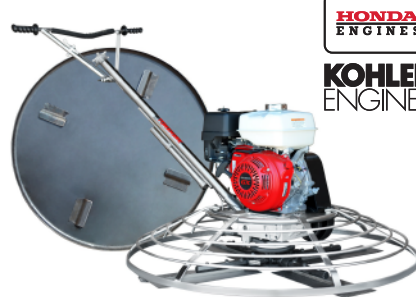
FINISHING



HONDA
ENGINES

1.6HP Backpack Concrete Vibrator
Part#: TVIBH + TVW10-P

1.6 HP Honda GX35 engine
Consolidation with speeds of 10,000-12,000 VPM
Quick Connect centrifugal clutch vibrator
1" and 2" Diameter Whips Available in 10ft Length
3 Year Engine Warranty & 1 Year Product Warranty



HONDA
ENGINES

KOHLER
ENGINES

36" & 46" Concrete Power Trowel
Part#: TPT36H/K & TPT46H/K

6 HP/14HP Kohler & 5.5HP/8.5HP Honda Engines
Adjust trowel blade pitch from 0-28°
60-115 RPM rotor speed for superior concrete finishes
Includes float pan and trowel blades
3 Year Engine Warranty & 1 Year Product Warranty



HONDA
ENGINES

8" Gas Powered Concrete Scarifier
Part#: TSCAR8H

5.5 HP Honda GX160 Engine
Remove traffic lines at 800 - 1,000 linear ft/hr
Tungsten Carbide Blade Kit Available
OSHA approved dust port for silica vacuum removal
3 Year Engine Warranty & 1 Year Product Warranty

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POWER / WELDING

INVERTER SERIES



2000 Watt Inverter Generator
Part#: TG2000i

2000 Max Watts, 1600 Rated Watts
Run Time of 8 hours on 1 gallon of gas
OSHA and GFCI Compliant
Parallel technology capable for double the power
2 Year Product Warranty

INVERTER SERIES



210 Amp Portable Welder Generator
Part#: TWG135Ai

Steady 50 - 135 Amp DC welding output
3300 Watt Inverter Generator
60% Duty Cycle for extended use
Suitable for welding rods from 6010 to 7024
2 Year Product Warranty



210 Amp Portable Welder Generator
Part#: TWG210A

Steady 50 - 210 Amp DC welding output
2000 Watt Inverter Generator
60% Duty Cycle for extended use
Suitable for welding rods from 6010 to 7024
2 Year Product Warranty

PEST CONTROL



3.7 Gallon 3HP Backpack Fogger
Part#: TMD14

Turbo Boosted Pump with 40ft+ Horizontal Reach
Sprays 1 acre in 30 minutes
10X Faster than Manual Pump Sprayers
Converts to Leaf Blower with 200 MPH Air Velocity
1 Year Product Warranty



4.75 Gallon Battery Power Sprayer
Part#: eTPS18

Reach Up to 30ft Horizontal Reach
Sprays 6000 sq ft in 10 minutes
10X Faster than Manual Pump Sprayers
70 PSI Commercial Grade Pump
1 Year Product Warranty



5 Gallon Backpack Power Sprayer
Part#: TPS25

Reach Up to 30ft Horizontal Reach
Sprays acres in 10 minutes
10X Faster than Manual Pump Sprayers
50-435 Adjustable PSI Commercial Grade Pump
1 Year Product Warranty

AND MORE



4 Gal. Motorized Fertilizer Spreader
Part#: TGS30

Reach up to 30ft Horizontally
Sprays 1 acre in 30 minutes
20X Faster than push spreaders
Converts to Leaf Blower with 200 MPH Air Velocity
1 Year Product Warranty



3" Full Trash Water Pump
Part#: TW3H

Moves liquids at a rate up to 375 gal/min
Handle solids up to 1.5"
Silicone carbide seals and a chrome plated volute
8 HP engine protected by rugged all purpose frame
3 Year Engine Warranty & 1 Year Product Warranty



Commercial 38" Push Sweeper
Part#: TOS38

Collect up to 14.5 gallons of dust and debris
Can be used indoors & outdoors on wet or dry surfaces
Includes integrated airflow control and fine dust filter
Lightweight design, capable of fitting through doorways
1 Year Product Warranty

ASSEMBLED IN THE
USA
PARTS SOURCED GLOBALLY

* All coupons in this manual are valid only for orders placed on www.tomahawk-power.com, unless otherwise noted. Coupon codes may only be used once per customer and may not be combined with any other offer. Coupons may expire at any time without notice.

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Power Your World

Cardinal understands to keep a job-site running smoothly the proper equipment and spare parts are needed at the drop of a hat. With same day shipping and faster delivery times, count on Cardinal to keep you powered throughout the day! With long lasting parts and engines, Cardinal equipment will be the star of your tool shed for years to come.

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