



Model 30 Pavement Router
Model 30 Pavement Router Non-Clutch
Self-Propelled Router
Dust Control Router

Operators Manual – 21321N
Revision C

Fill in appropriate fields that apply to this machine.

Machine S/N: _____

Engine S/N: _____



**MODEL 30 PAVEMENT ROUTER
PN 21300H**



**MODEL 30 SELF PROPELLED PAVEMENT ROUTER
PN 21340H**



**MODEL 30 DUST CONTROL ROUTER
PN 21350H**

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Chapter 1 Introduction

1.0 About This Manual

This manual is supplied with each new Crafcro Model 30 Pavement Router. The manual assists your machine operators in the proper use of the melter applicator and provides information about the machine's mechanical functions for trouble-free operation.

Your Crafcro Model 30 Pavement Router is specially made to give excellent service and save maintenance expense. However, as with all specially engineered equipment, you get best results at minimum cost if you:

Operate your machine as instructed in this manual.

Maintain your machine regularly as stated in this manual.

1.1 How to use this manual:

This manual is formatted to start each new chapter on the right page. There may be a blank page on the left page if the previous chapter ends on the right page.

If you are viewing this in a digital format (PDF) the following features are available:

1. The Table of Contents, List of Tables, and List of Figures are all hyperlinks, when left mouse clicked on section, table, or figure you will be sent to that page.
2. The blue highlighted text throughout the manual is a hyperlink, when left mouse clicked you will be sent to that page, table, or figure.
3. The panel to the left in the PDF is a bookmarks panel, if you left mouse click on any section/heading in the bookmarks panel you will be sent to that page.

Chapter 2 Safety

2.0 Safety Precautions

For more in-depth safety information, please see Safety Manual (PN 26221) which comes with the machine. Or contact your nearest authorized CrafcO Distributor at <https://crafco.com/where-to-purchase/>.

2.1 General Safety

- CrafcO, Inc. assumes no liability for an accident or injury incurred through improper use of the machine.
- Read this manual thoroughly before operating the machine.
- Obey all CAUTION and WARNING signs posted on the machine.
- Make sure an operator fully knows how to operate the machine before using the machine.

2.2 Personal Safety

- Eye and ear protection devices along with a dust mask are required when operating the machine.
- Wear long pants, work gloves and heavy leather boots or shoes with adequate traction for work surfaces with loose debris.
- Pay attention to the surfaces you walk and work on, and look out for hazards like uneven ground, spills, other equipment, and debris. Keep your vision clear and the working area clear of obstructions.
- When cutting cracks and joints near moving traffic, always move in a direction away from traffic to protect the operator.
- Never allow fatigued operators to run the machine. Due to the nature of running this machine, the crew leader should rotate operators as they see fit according to their performance.
- Keep hands, feet, and clothing away from all moving parts.
- The router can surge or jump quickly when cutting asphalt surfaces. Always be prepared and alert and push down on handle quickly to raise the cutter from the surface to stop all movement.
- Do not operate the machine when there is a chance of lightning discharge in the atmosphere.

Chapter 2 Safety


2.3 Equipment or Operational Safety for All Routers

- Do not operate the machine in buildings or work areas that do not have sufficient airflow.
- Always keep a correctly maintained fire extinguisher near the machine and know how to use it.
- Tighten all bolts and screws every 100 hours of machine operation.
- Check fuel system for leaks before operation.
- Make sure battery cover is secure and cables are not damaged before operation.
- Care should be taken when operating machine on grades. It is usually best to operate the machine going uphill, rather than downhill.
- To stop or slow machine, push down on handle and/or release the clutch handle.
- When cleaning cracks and joints near moving traffic, always move in a direction away from traffic to protect the operator.
- Tires should be inflated to 45 psi to allow machine to roll easily.
- Never operate the router without belt guard and debris guards in place.
- Never transport the router with the engine running.
- Never exceed maximum recommended engine RPM.
- Never leave router unattended while engine is running.
- Never stand on any part of the machine.
- The only operating position is behind the pavement cutter with both hands on the handle.


2.4 California Proposition 65

The state of California currently maintains a list of chemicals that can cause cancer, birth defects or other reproductive harm. Your Crafco, Inc. equipment comes with the following warnings:

2.4.1 All Crafco, Inc. Equipment

 **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov
26471N

2.4.2 All Crafco, Inc. Equipment using a gasoline engine.

 **WARNING:** Breathing engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel.






26157

Chapter 2 Safety

2.5 Safety Symbols and Notices







Important safety symbols and notices are marked on the machine and in this manual. Failure to comply could result in equipment damage, operational malfunction, severe injury, or death. Please read and comply with all symbols and notices. The table below includes the most commonly used symbols and notices.

Table 2-1 Safety Symbols and Notices

Symbol	Item	Remarks
WARNING	Warning	Refers to possible bodily injury or death.
CAUTION	Caution	Refers to possible equipment damage or operational malfunction.
	Severe Burn Hazard	Hot surfaces can cause severe burns.
	Protective Shoes	Wear hard-soled work shoes.
	Protective Gloves	Wear protecting and vibration absorbing gloves.
	Protective Face or Eye Wear	Wear face shield or safety glasses.
	Body Crush Hazard	Do not stand between trailer and hitch when hooking melter to truck.

Chapter 2 Safety

Table 2-2 Safety Symbols and Notices (continued)

Symbol	Item	Remark
	Crush Hazard	Keep feet and legs clear.
	Pinch Hazard	Keep hands and feet clear.
	Injury Hazard	Keep guards in place
	Exhaust Hazard	Avoid breathing engine exhaust.
	Noise Hazard	Ear protection is required
	Read Manual	Read and understand operator and safety manuals before operating machine.



Chapter 3 **Warranty Information**

3.0 Limited Warranty

Crafco, Inc. (Manufacturer), or one of its affiliated distributors, will replace for the original purchaser free of charge any parts found upon examination by the Manufacturer, to be defective in material or workmanship. This warranty is for a period **two years** from the invoice date, but excludes engine or components, tires, and battery as these items are subject to warranties issued by their manufacturers.

Crafco, Inc. shall not be liable for parts that have been damaged by accident, alteration, abuse, improper lubrication/maintenance, normal wear, or other cause beyond our control.

The warranty provided herein extends only to the repair and/or replacement of those components on the equipment covered above and does not cover labor costs. The warranty does not extend to incidental or consequential damages incurred as a result of any defect covered by this warranty.

All transportation and labor costs incurred by the purchaser in submitting or repairing covered components must be borne by the purchaser. Crafco, Inc. specifically disavows any other representation, warranty, or liability related to the condition or use of the product.

CAUTION

Use of replacement parts other than genuine Crafco parts may impair the safety or reliability of your equipment and nullifies any warranty.

Chapter 3 **Warranty Information**

3.1 Warranty Claim Instructions

Crafco, Inc. warrants parts and machinery purchased through Crafco or one of its affiliated distributors for two years from the invoice date. Wear items are not covered under the Crafco, Inc. limited warranty. A wear item is defined as, but not limited to; cutters, cutter pins, tires, etc.

If parts fail to function within two years of invoice date, a return authorization number (RA) must be obtained. If the part was purchased through Crafco, Inc., please contact Crafco returns department at [Returns@Crafco.com](mailto>Returns@Crafco.com) for an RA number or if purchased through a Crafco distributor please contact your distributor.

Note: if the part has a serial number associated with it, for example; a machine or electric hose or wand, this must be furnished when requesting the RA number. The customer will be emailed or faxed an RA form with all instructions to return the item to Crafco, Inc. See example. If the part is found to be within the two year warranty period and has not been abused or modified, a credit will be issued to the customer's account or credit card. The customer may request the part be replaced instead of a credit, if desired.

Note: All engine warranties are covered through the engine manufacturer. If you need information for a distributor in your area, please contact us and we will direct you to the closest engine distributor.

All parts returned are tested and evaluated. If the part has been modified in any way without prior consent from a Crafco, Inc. representative, warranty is void.

Please follow the instructions stated below when calling in a Warranty Claim. Failure to follow these procedures may be cause, to void the warranty.

Call your local Crafco Distributor. If you do not know who your local distributor is, call a Crafco Customer Service Representative, (Toll Free 1-800-528-8242) for name, location, and telephone number.

On contacting the distributor, be prepared to identify the serial number, model number, engine number, engine manufacturer, and the date of purchase if available.

Should the cause of the malfunction be a defective part, the Distributor will advise you of the procedure to follow for a replacement.

The warranty is valid only for parts, which have been supplied or recommended by Crafco, Inc.

If you have any additional questions regarding warranty repairs and parts, please do not hesitate to call toll free 1-800-528-8242.

For Warranty:
Crafco, Inc.
25527 South Arizona Avenue, Chandler, AZ
85248
Phone: (480) 655-8333 or (800) 528-8242
Fax: (480) 655-1712

For all other inquires:
Crafco, Inc.
6165 W Detroit St,
Chandler, AZ 85226
Phone: (602) 276-0406 or (800) 528-8242
Fax: (480) 961-0513
CustomerService@crafco.com

Chapter 4 Machine Specifications

4.0 Machine Specifications

Table 4-1 Machine Specifications

Specification	PN 21300H, ROUTER WITH CLUTCH	PN 21340H SELF PROPELLED ROUTER	PN 21350H DUST CONTROL ROUTER	PN 21360H SELF PROPELLED WITH DUST CONTROL ROUTER
Engine	2 Cylinder – Honda IGX800 (24.9HP) (18.57 Kw)			
Fuel	Unleaded Gasoline			
Fuel Tank Capacity	6 Gallons (22.7 Liters)			
Approximate Shipping Weight	570 Lbs. (258.55 Kg)	620 Lbs.		670 Lbs.
Maximum Depth of Cut	1-3/8" (34.9 mm)			
Safety Features	Braking system, Safety guards, Electric clutch (excluding PN 21330H non-clutch)			
Depth Control	Electric actuator for fingertip depth control, Depth gauge for precise depth control.			
Cutter Design	6 radially located sprocket shaped cutters on 11-3/4" (298.5 mm) diameter cutter head			
Cutter Style	Hardened steel with carbide cutter tips			
Crack Cleaning	Up to 1500 Liner Feet (457 Linear Meters) per hour			

Chapter 5 Operating Instructions

5.0 Operating Instructions

The CRAFCO Model 30 Pavement Router was designed specifically to widen and clean joints and cracks in asphalt and concrete surfaces. The Crafcro Model 30 Pavement Router is NOT intended to be used to clean old sealant from joints and cracks.

The CRAFCO Model 30 Pavement Dust Control Router is a self-contained unit; no external power source is needed to operate the dust collection system. It was designed to reduce the amount of fugitive dust particles being introduced into the air when widening and cleaning joints and cracks in asphalt surfaces. The CRAFCO Model 30 Pavement Dust Control Router was not intended to pick up all dirt and debris from the joint or crack after routing.

The CRAFCO Model 30 Pavement Self-Propelled Router is a self-contained unit; no external power source is needed to operate the drive system. It was designed to reduce worker fatigue from moving from one distressed area to another. The Crafcro Model 30 Pavement Self-Propelled Router was not intended to drive forwards and route cracks at the same time. The handlebar has two separate drive handles, standing at the operators position the drive handle on the left works the electric clutch and the drive handle on the right works the drive wheels.

CRAFCO, Inc. and its Distributors assume no liability for accident or injury incurred through improper use of this machine.


DO NOT operate machine without reading operator's manual and being thoroughly familiar with controls:

Note: DO NOT attempt to operate the machine without using these and all other instructions.

Chapter 5 Operating Instructions

5.1 Preparing the Machine for Start Up

Table 5-1 Preparing the Machine for Start Up


Step	Action
1	Check engine crankcase oil. Add oil if low. Refer to Engine Operators Manual.
2	Fill engine gas tank with clean, fresh, unleaded gasoline. See “Recommended Fuel” in Engine Operators Manual.
3	Check tire inflation. Proper tire inflation is 45 psi. Machine will be difficult to roll with under-inflated tires.
4	Check engine cooling air intake and external surfaces of engine. Clean if dirty or obstructed.
5	Check that the air cleaner components and all shrouds, equipment covers, and guards are in place and securely fastened.
6	Check and/or open the fuel valve on the bottom of the fuel tank so that the engine will get fuel.
	WARNING
	<p>The safe operation of this machine is the operator’s responsibility.</p> <p>Use extreme care when operating this machine; safety is the result of being careful and paying attention to details.</p> <p>Always put on protective clothing, long pants, gloves, hard-soled shoes, safety glasses, dust mask, and ear protection. Tighten all bolts, nuts, and screws every 100 hours.</p>

Chapter 5 Operating Instructions

5.2 Starting

It is recommended that you read the Engine Operators Manual before starting the engine.

Table 5-2 Engine Starting Instructions

Step	Action
1	<p>To start engine, place the throttle control in the “MIN” position.</p> <p>Note: With non-electric clutch you must pull and hold the engine stop switch at the operator’s position for the engine to start and run.</p>
2	<p>Turn the engine switch to the ON position, indicator (red) comes on, and off (lamp check). Turn the engine switch to the START position and hold it there until the engine starts. Release the switch as soon as the engine starts.</p> <p>Note: Do not crank the engine continuously for more than 5 seconds at a time. If the engine does not start, allow a 30 second cool down period between starting attempts. Failure to follow these guidelines can burn out the starter motor.</p> <p>Note: If the engine develops sufficient speed to disengage the starter but does not keep running (a false start), the engine rotation must be allowed to come to a complete stop before attempting to restart the engine. If the starter is engaged while the flywheel is rotating, the starter pinion and flywheel ring gear may clash, resulting in damage to the starter.</p>
	<p style="text-align: center;">CAUTION</p> <p>If the starter does not turn the engine over, shut off starter immediately. Do not make further attempts to start the engine until the condition is corrected. Do not start using another battery. See your Honda Engine Service Dealer for trouble analysis.</p>

Chapter 5 Operating Instructions

5.3 Cold Weather Starting

Table 5-3 Cold Weather Starting Hints

Step	Action
1	Be sure to use the proper engine oil for the temperature expected. See Engine Operators Manual for recommended SAE Viscosity Grades.
2	Set speed control at part throttle position.
3	A warm battery has much more starting capacity than a cold battery.
4	Use fresh winter grade fuel.
CAUTION	
	Winter grade gasoline has a higher volatility to improve starting. Do not use gasoline leftover from summer.

5.4 Battery

A 12 volt battery is used. If the battery charge is not sufficient to crank the engine, recharge the battery. See Section 6.3.1 for battery charging instructions.

5.5 Stopping the Engine

Table 5-4 Stopping the Engine

Step	Action
	Note: To stop the engine in an emergency, simply turn the engine switch to the OFF position. Under normal conditions, use the following procedure.
1	Place the throttle control in the slow or idle position.
2	Allow the engine to run a minimum of 15 seconds.
3	Stop the engine by turning off the key switch.
4	If not using the router for longer periods, turn off the fuel valve under the fuel tank.

5.6 Operation Guidelines


Follow these guidelines to ensure proper operation of your CRAFCO Model 30 Pavement Router.

5.6.1 Angle of Operation

The engine will operate continuously at angles up to 20 degrees. Check oil level to assure crankcase oil level is at the “F” mark on the dipstick. Do not operate the engine continuously at angles exceeding 20 degrees in any direction. Engine damage could result from insufficient lubrication.

Chapter 5 Operating Instructions


5.6.2 Cooling

	WARNING
	<p>Hot Parts!</p> <p>Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas when the engine is running or immediately after it is turned off. Never operate the engine with heat shields or guards removed.</p> <p>Note: If debris builds up on the screen or other cooling air intake areas, stop the engine immediately and clean. Operating the engine with blocked or dirty air intake and cooling areas can cause extensive damage due to overheating.</p> <p>Note: Use compressed air to clean dust from the engine. The use of water may not adequately remove dust from the engine and may cause the dust to “clump up” in certain areas and further restrict the engines cooling capabilities.</p>

5.6.3 Engine Speed

The high idle speed for this engine is 3600 RPM, no load.

CAUTION
<p>Do not tamper with the governor setting or increase the maximum engine speed. Over speed is hazardous, may hinder cutter action, and will void the warranty.</p>

	WARNING
	<p>Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.</p>

Chapter 5 Operating Instructions

5.7 Attaching Cutter Head Dust Shroud

For Model 30 Pavement Dust Control Router, follow these procedures to attach all dust control mechanisms before starting or operating the machine.

Table 5-5 Attaching Cutter Head and Dust Shroud

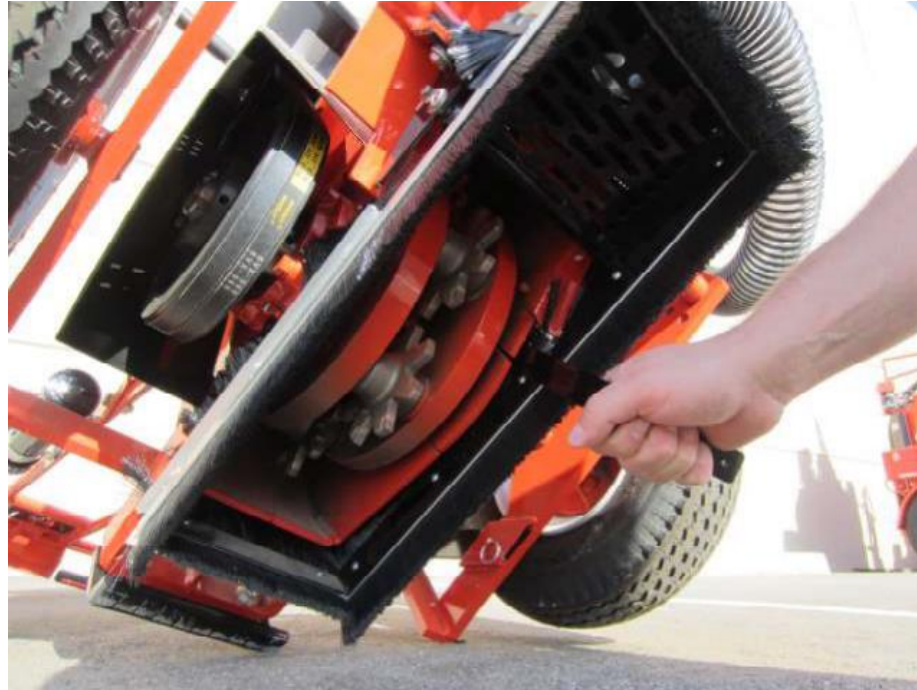
Step	Action
1	To make attaching the cutter head dust shroud more accessible, raise the front of the router. To raise the front of the router, push down on the handlebars until the router is resting on the handle and the corner of the frame assembly. See Figure 5-1
2	Remove cutter head dust shroud from the storage bracket and bring around to front of router.
3	Bring the shroud up from the bottom of the housing and align the pin hole with the slots in the mounting brackets.
4	Install the pin and secure with washer and 5/16" x 3/8" hairpin.
5	Use the Brush Manipulation Tool to push the Seal Brushes on both sides of shroud up above the cutter housing. The brushes should be in an upward position. See Figure 5-2
6	Lower the router back onto its wheels.
7	Make sure the large particle dust collection bin is empty and is securely attached to mounting bracket before beginning your routing operation.
8	Make sure the dust collection bag is clean and securely clamped to filter mounting bracket with adjustable quick release gear clamp. The quick release gear clamp is adjustable and should be adjusted so that it holds the dust collection bag securely in place. Do not over-tighten the clamp as this may damage the dust collection bag. The support rod was designed so it could be slid into a rearward position for transportation of router where space is limited. The support rod should be fully extended in its forward position before routing begins.
9	Raise the cutter mechanism by pushing the rocker switch to the up position.
10	Open fuel valve on bottom of fuel tank.

Chapter 5 Operating Instructions

Figure 5-1 Model 30 Router Raised for Dust Shroud Installation



Figure 5-2 Using the Brush Manipulation Tool



Chapter 5 Operating Instructions

5.8 Cleaning Joints and Cracks

Once your machine is ready to begin operation, start the engine as in [Table 5-2 Engine Starting Instructions](#), and then use these instructions to begin cleaning joints and cracks.

Table 5-6 Cleaning Joints and Cracks

Step	Action
1	Open throttle for maximum engine speed.
2	Position machine over joint and line up pointer with joint.
3	Engage electric clutch by pulling up on “Clutch” handle (Figure 5-4) (Electric clutch model only)
4	Machine is operated by manually guiding the machine while walking backwards . The stabilizer mechanism is designed to stabilize the machine and to act as a brake.
5	Always engage electric clutch before lowering cutter head into the joint.
	WARNING
	The CRAFCO Model 30 Pavement Router pushes toward the operator when routing. Tightly compacted surfaces, deep or wide cuts, or hard aggregate may cause sudden machine movement toward operator. This “kickback” could cause the operator to lose balance or control of the machine resulting in serious personal injury. When operating, keep wear plate in contact with pavement and hold handle with both hands. For Emergency Stop, push down firmly on machine handle or release safety “Clutch” handle, which disengages the electric clutch. Push machine handle away.
7	Lower cutter head, using Actuator switch (Figure 5-4), until cutters slightly touch the surface.
8	Notice shade and number on the depth indicator (Figure 5-3). Each shade represents approximately 1/4 inch (6.35 mm) depth variation.
	CAUTION
	Do not try to go too fast. Do not overload the engine. Overloading the engine will slow cutting action and cause damage to engine and drive components. A bouncing or hammering action usually indicates the machine is moving too fast or the cutters have worn out of round (refer to troubleshooting on page 8-1).
9	Let the machine thoroughly clean the joint. For deep cuts (deeper than 3/4 inch (19 mm)) it may be necessary to make two passes.
10	A stabilizer mechanism (Figure 5-5) is used on the Crafcro Pavement Router to improve the stability of the machine and to act as a brake.
11	TO SLOW OR STOP THE ROUTER , simply push down on the handle or release safety “clutch” handle which disengages the electric clutch.
12	For normal operation, let skid plate drag on paved surface while machine is in operation. Skid plate (Part No. 20919) should be replaced before wear reaches the vertical leg of the bent angle.
13	As cutters wear, depth of cut will change. To compensate for cutter wear, repeat step #7 as often as necessary to reset depth.

Chapter 5 Operating Instructions

Figure 5-3 Depth Indicator



Figure 5-4 Model 30 Router Handle



Chapter 5 Operating Instructions

Figure 5-5 Stabilizer Mechanism



Chapter 5 Operating Instructions

5.8.1 Routing with Dust Control

The following applies to Router's with the Dust Control option. As you begin to route, the dust that is sucked up from the cutter head shroud enters the cyclone where a majority of the debris is spun out of the air stream and deposited in the large particle dust collection bin. The amount of time or distance that can be routed before the large particle dust collection bin will need to be emptied will vary depending on the condition of the asphalt, approximately 500 to 1000 feet (150 to 300 meters). If you have ordered the Dust Control Retrofit Kit (PN 31550K) please see the separate installation instructions provided.

Table 5-7 Routing with Dust Control Router

Step	Action
	WARNING
	Never operate the unit without all the dust control components attached, in particular the cutter head dust shroud. This could cause injury or damage from flying debris.
1	When beginning a routing operation, check the large particle dust collection bin frequently to gauge the distance that can be routed before emptying the large particle dust collection bin. The large particle dust collection bin should be emptied at approximately 3/4 to 7/8 full.
	CAUTION
	If the large particle dust collection bin becomes overfilled the debris will be sucked up through the cyclone and deposited in the dust collection bag, reducing the run time of the dust collection bag.
2	To empty the large particle dust collection bin, reduce engine speed to idle.
3	Support the bottom of the large particle dust collection bin with one hand, keeping the bin pressed up firmly against the mounting bracket.
4	With your other hand, unlatch the rubber latches on the large particle dust collection bin.
	CAUTION
	The large particle dust collection bin weighs approximately 30 lbs. when full
5	Dump the large particle dust collection bin in a larger receptacle where it can be disposed of properly at a later time.
6	Reattach the large particle dust collection bin to the mounting bracket.
7	Lightly tap sides of the dust collection bag with your hands. Note: During router operation, what dust isn't spun out by the cyclone, enters the dust collection bag. This dust forms a "Dust Cake" on the inside wall of the dust collection bag and will restrict the amount of air that can escape through the dust collection bag, reducing the overall suction of the system. Tapping on the side of the dust collection bag will knock this dust cake loose from the sides of the dust collection bag, increasing the amount of time that can be routed before the dust collection bag will need to be serviced. (See Section 6.11)
8	Return engine to high speed and continue routing.

Chapter 5 Operating Instructions

Table 5-8 Routing with Dust Control Router (continued)

Step	Action
9	At the end of the day remove the cutter head dust shroud and store on the Shroud Storage Bracket located on top of the cyclone.
	CAUTION
	<u>DO NOT</u> leave the router resting on the seal brushes as they will deform. Excessive deformation of the seal brushes will hinder the shrouds' ability to trap dust behind the shroud, reducing the efficiency of the dust collector.

5.8.2 Moving the Self Propelled Router

Use the self-propelled function only for ease of moving the router from one distressed area to another.

Table 5-9 Moving the Self Propelled Router

Step	Action
1	Reduce engine speed to idle
2	Stand at the operator's position
3	Raise the handle slightly so the router is not resting on the skid plate.
4	Pull up on the right hand drive handle to engage the self-propelled drive system and walk behind the router towards the next distressed area.
5	Release the drive handle when you are ready to stop moving.

CAUTION

The function of the self-propelled mechanism is to drive the router from one distressed area to another. It is not to be used to drive the router forward when the cutter is engaged. Doing so can damage the drive mechanism or other parts of the router. To help prevent this, an electric switch is installed at the control handle that will prevent the electric clutch from engaging the cutter when the self-propelled drive handle is pulled. This switch must be in good working order and properly adjusted to prevent the cutter from engaging when the drive mechanism is engaged. Replace or adjust this switch if it is not functioning properly. DO NOT bypass this switch.

Note: If the Drive Mechanism isn't engaging and driving the router forward when the control handle is depressed, the tension on the control cable may need to be adjusted. Fine adjustments to the cable tension can be made by turning the thumb screw located near the control handle to increase or decrease cable tension. See section 6.12 for complete instructions on proper tensioning of the Self-Propelled drive mechanism and control cable.

Chapter 5 Operating Instructions

5.9 Storing the Machine

Follow these instructions when storing the CRAFCO Model 30 Pavement Router

5.9.1 CRAFCO Model 30 Dust Control Router

DO NOT leave the machine resting on the seal brushes or the brushes will become deformed, causing them not to function properly. The dust collection bag should be stored in a covered area out of direct sunlight and away from moisture. Store the dust collection bag in a place where it won't be inadvertently torn or damaged.

5.9.2 CRAFCO Model 30 Pavement Router

DO NOT rest the weight of the machine on the rubber rock deflector or rubber will become deformed, causing it not to function properly. Disconnect the battery cables from the battery. Store the machine with engine in a near level position.

Note: Refer to the engine owner's manual for engine storage procedures.

5.10 Transporting the Machine

To help prevent damage to the electric actuator while transporting the router, all routers are shipped using a "Router Transport Bracket" (PN 21315N) [Figure 5-8](#). This bracket is placed under the pivot tube of the frame and allows the router to be lowered (or wheels to be raised), without the router resting on the cutterhead or cutters. The router can then be strapped down for transport in a normal manner without pressure being transferred to the electric actuator.

CAUTION

Strapping the router down during transport with the electric actuator fully extended puts an extreme amount of pressure on the actuator and may load the actuator past its rated capacity. Doing this may also increase shock load on the actuator and may damage the actuator while transporting from one job to the next. Load on the actuator during transport should be avoided.

It is suggested that the Router Transport Bracket be retained and used everytime the router is strapped down for transport. See [Figure 5-6](#) and [Figure 5-7](#) for an illustration of how the router should be secured using this bracket.

Chapter 5 Operating Instructions

Figure 5-6 Router Transport Bracket Front View

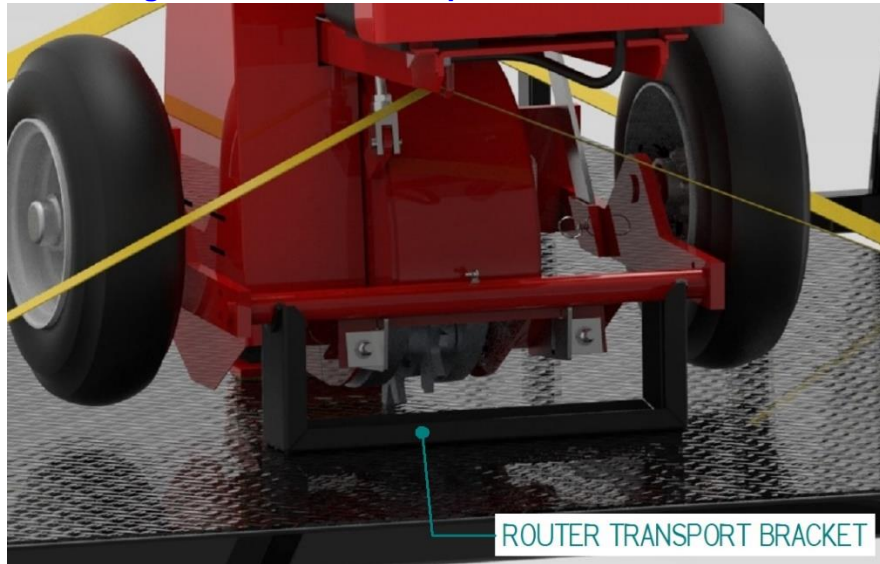


Figure 5-7 Router Transport Bracket Rear View

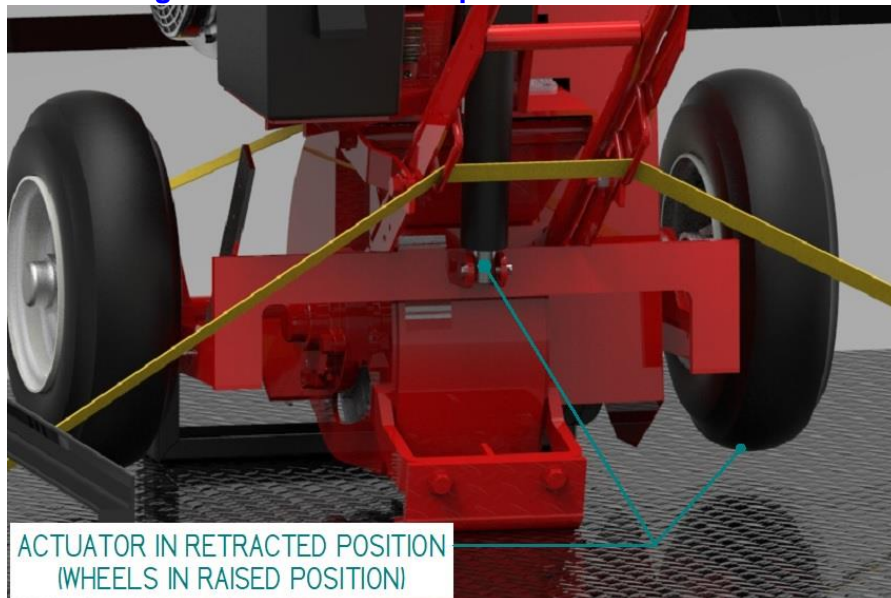
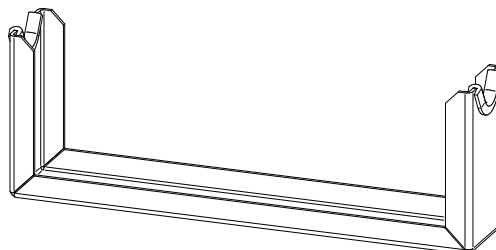


Figure 5-8 Router Transport Bracket (P/N 21315N)



Chapter 6 Maintenance Instructions

6.0 Maintenance Instructions

This chapter contains all normal maintenance instructions to properly maintain your machine.

6.1 Oil Recommendations

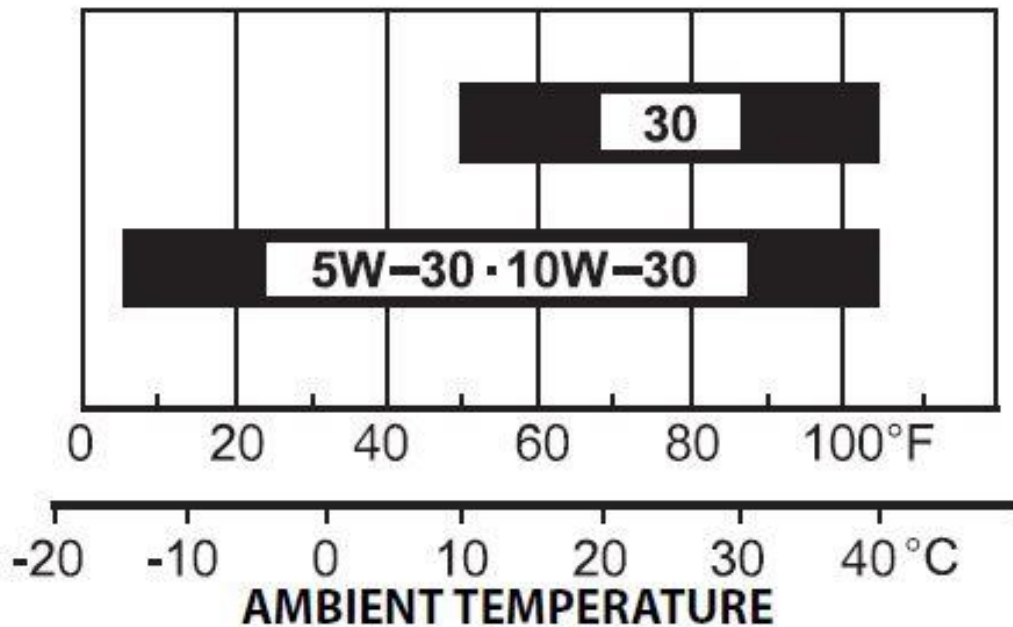
Using the proper type and weight of oil in the crankcase is extremely important. Failure to use the correct oil, or using dirty oil, causes premature engine wear and failure. Check engine oil daily. Change oil after every 100 hours of operation. Change oil filter every 200 hours. Use Crafcoc part number 20865N. Refer to engine owner’s manual for more information.

6.1.1 Oil type

Use high quality detergent oil of API (American Petroleum Institute) service class SJ or later (or equivalent). Select the viscosity based on the air temperature at the time of operation as shown in Figure 6-1.

Note: Using oil other than API service category SJ or later (or equivalent) or extending oil change intervals longer than recommended can cause engine damage. Refer to the engine owner’s manual for detailed oil check, oil change, and oil filter change procedures and intervals.

Figure 6-1 Recommended Engine Oil Viscosity



Chapter 6 Maintenance Instructions

6.2 Fuel Recommendations

WARNING

Explosive Fuel!

Gasoline is extremely flammable, and its vapors can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings away from sparks or flames. Do not fill the fuel tank while the engine is hot or running since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use gasoline as a cleaning agent.

6.2.1 General Recommendations

Purchase gasoline in small quantities and store in clean, approved containers. A container with a capacity of 2 gallons or less with a pouring spout is recommended. Such a container is easier to handle and helps eliminate spillage during refueling.

To minimize gum deposits in your fuel system and to ensure easy starting, do not use gasoline left over from the previous season.

Do not add oil to the gasoline.

Do not over-fill the fuel tank. Leave room for the fuel to expand.

6.2.2 Fuel Type

For best results use only clean, fresh, unleaded gasoline with a pump sticker octane rating of 86 or higher. In countries using the Research method, it should be 91 octane minimum.

Unleaded gasoline is recommended as it leaves less combustion chamber deposits. Leaded gasoline may be used in areas where unleaded is not available and exhaust emissions are not regulated. Be aware, however, that the cylinder heads may require more frequent service.

6.2.3 Gasoline/Alcohol Blends

Gasoline (up to 10% ethanol (E10) or 5% methanol by volume is approved as a fuel for Honda engines. In addition, methanol must contain cosolvents and corrosion inhibitors. Other gasoline/alcohol blends than shown above are not approved and are not covered under the Warranty.

6.3 Battery

Check charge condition. Keep battery connections tight and clean. Check the fluid level in battery regularly (where applicable).

Chapter 6 Maintenance Instructions

6.3.1 Battery Recharging

When recharging, do not use a battery charger rated for more than 8 AMP's. If the battery has fallen below 10.5 volts, a charger made specifically for charging AGM batteries is required. Do not overcharge the battery.

WARNING

Explosive Gas!

Batteries produce explosive hydrogen gas while being charged. To prevent a fire or explosion, charge batteries only in well ventilated areas. Keep sparks, open flames, and other sources of ignition away from the battery at all times. Keep batteries out of the reach of children. Remove all jewelry when servicing battery.

6.4 Periodic Maintenance

Follow a regular schedule of inspection and servicing, based on operating hours. Keep an accurate logbook of maintenance, servicing, and operating time. Use the factory recommended Periodic Maintenance Schedule (based on favorable operating conditions) to serve as a guide to get long and efficient engine life.

For severe duty, extreme temperature, etc., service more frequently. Neglecting routine maintenance can result in engine failure or permanent damage.

Remove excessive dust from the engine regularly. Dust on the engine can inhibit the engines cooling system and cause the engine to overheat and damage the engine.

For any abnormalities in operation, unusual noises from the engine or accessories, loss of power, overheating, etc., contact your nearest Honda Service Center.

Periodically inspect the in-line fuel filter and replace when dirty using Crafcoc part number 20867N.



WARNING

Inhalation of exhaust gases can result in serious personal injury or death. DO NOT use the air cleaner or exhaust elbow as a supporting step. Damage of these and connecting parts might cause an exhaust leak.

WARNING

Accidental Starts!

Before servicing the engine or equipment on the machine, always disconnect the spark plug leads to prevent the engine from starting accidentally. Ground the leads to prevent sparks that could cause fires.

Chapter 6 Maintenance Instructions

6.5 Maintenance Schedule

These required maintenance procedures should be performed at the recommended intervals. They should also be included as part of any seasonal tune-up. Refer to [Table 6-1](#) for regularly scheduled maintenance. The following guidelines should also be followed:

- Check fluid level in battery regularly.
- Tighten all bolts on machine frequently.
- Clean machine each day using compressed air or by wiping with rags, especially in area of engine cooling fins.

Table 6-1 Maintenance Chart

Frequency	Maintenance required
Daily or before starting engine	<ul style="list-style-type: none"> • Fill fuel tank • Check oil level • Check oil cooler, clean if necessary • Check air intake and cooling areas, clean as necessary * • Grease cutter shaft bearings. • Blow loose dust/dirt off engine
First Month or 20 Hours	<ul style="list-style-type: none"> • Change engine oil • Check air cleaner for dirty, loose, or damaged parts*
Every 50 Hours	<ul style="list-style-type: none"> • Clean out cooling fins on engine. If dust is allowed to accumulate, overheating may occur, causing damage to the engine * • Lubricate frame pivot using multi-purpose grease
Every 6 Months or 100 Hours	<ul style="list-style-type: none"> • Change Oil • Remove cooling shrouds, and clean as necessary * • Check oil cooler fins • Lubricate cutter shaft bearings • Check -adjust spark plug
Every 200 Hours	<ul style="list-style-type: none"> • Change oil filter
Every Year or 300 Hours	<ul style="list-style-type: none"> • Replace heavy-duty air cleaner element * • Replace spark plug • Check-adjust valve clearance ** • Replace fuel filter
Annually or every 500 hours	<ul style="list-style-type: none"> • Repack wheel bearings.
Every 1000 Hours	<ul style="list-style-type: none"> • Clean engine combustion chamber **

* Perform these maintenance procedures more frequently under extremely dusty, dirty conditions.

** Have a Honda Engine Service Dealer perform this service.

Chapter 6 Maintenance Instructions

6.6 Air Cleaner

For longer engine life, the Model 30 Pavement Router has been fitted with a High Capacity Air Cleaner. Due to the dusty conditions created during operation, it is necessary to service the air cleaner when it becomes clogged with dirt. Follow the steps in [Table 6-2](#) to service the air cleaner.

Table 6-2 Changing Air Cleaner Element

Step	Action
1	Service element every 20 hours as instructed in Table 6-1 . When element replacement is needed use CrafcO part number 20866N.
2	Do not attempt to clean the dirty element. Rapping or pounding dirt out is dangerous and could cause damage to the element.
3	Carefully check new element for damage before installing.
4	Reinstall new element, replace air cleaner cap and fasten retaining clips.

Chapter 6 Maintenance Instructions

6.7 Changing Cutters

Always use genuine Crafco cutters and other replacement parts. Failure to do so will void warranty and possibly cause damage to machine or injury to operator. The procedure outlined in [Table 6-3](#) will greatly simplify cutter changing. Call Crafco or your local Crafco Distributor for any additional questions you may have.

WARNING

Engine must not be running when changing cutters or working on any part of machine. Serious injury or death could result. Do not allow anyone to pull on handle, start engine, or do any other maintenance while working on cutter head.

Table 6-3 Cutter Changing

Step	Action
1	Raise cutter mechanism to maximum height. Push machine forward while holding handle up. This will allow rock deflector to fold up and machine to tilt forward exposing cutters for easy accessibility. Make sure front stand is supporting machine before releasing handle. (Figure 6-2)
2	Remove click pin on rear stand, lower support strip, and reinstall click pin to lock strip in place. (Figure 6-3)
3	Place wrench supplied with machine on exposed bolt in cutter window. (Figure 6-4). Turn clockwise to rotate cutter head to end of cutter window. This will rotate cutter head for proper indexing.
	WARNING
	Do not attempt to turn cutter head with hands.
4	Remove wrench and place on bolt just exposed. Loosen bolt at least one full turn. Slide retainer back exposing pin.
5	Using pin removal tool (also supplied with machine) push pin all the way out, except when changing pins. (Figure 6-5). Remove worn cutters and/or worn pins. Pins should be replaced when worn in any area to a diameter less than 3/4 inch. Use pin as a pilot to mount spacers and cutters. Make sure carbide tips are positioned per Cutter Installation Warning page 39.
6	Slide retainer back into position and tighten bolt.
	CAUTION
	It is most important that retainer is always put back in the locked position. As the bolt is tightened, the cutter head will rotate clockwise exposing next cutter.
7	Repeat steps 3 through 6 for other five cutter positions.
8	Remove click pin from rear stand, move support strip to upper position and reinstall click pin.
9	Lower machine to operating position. See section 9.11 for cutter configurations.

Chapter 6 Maintenance Instructions

Figure 6-2 Router on Front Stand



Figure 6-3 Raised Rear Support Strip



Chapter 6 Maintenance Instructions

Figure 6-4 Wrench in Cutter Window



Figure 6-5 Pin Removal Tool



Chapter 6 Maintenance Instructions

6.8 Changing Cutter Heads

It is recommended that the cutter head be changed when holes for pins are worn to 1.000 in diameter or larger. Follow the steps in [Table 6-4](#) to remove the cutter head and main shaft, and [Table 6-5](#) to install the new cutter head and main shaft. The cutter head and main shaft are sold in matched sets and must be installed together.

Table 6-4 Removing Old Cutter Head and Main Shaft

Step	Action
1	Remove belt guard. (Figure 6-7)
2	Back off belt tension, adjusting bolt jam nuts all the way and remove the V-belts. (Figure 6-6).
3	Tip the router back, lowering handle all the way to the ground.
4	Remove wheels.
5	Remove lower sheave. The sheave has a built in puller. Loosen and remove the three mounting cap screws. Insert these same cap screws in the threaded jack-screw holes. Starting with the screw farthest from the bushing saw slot; tighten all screws alternately and progressively to separate sheave from bushing.
6	Drive a wedge into the slot of bushing, barely enough to free the bushing and slide bushing off shaft.
7	Lift handle to set machine flat on ground, and then remove top three cap screws in each of the two main shaft bearings. It is not necessary to remove bottom cap screw in each bearing but leave it intact.
8	Push handle down all the way to the ground again, this will lift the front of the router, freeing the cutter head assembly from the cutter housing. Then roll the cutter head from under the router.

Figure 6-6 Belt Tensioner



Chapter 6 Maintenance Instructions

Figure 6-7 Belt Guard



Chapter 6 Maintenance Instructions

Table 6-5 Installing New Cutter Head and Main Shaft

Step	Action
1	Slip the bearings on to the main shaft in the new cutter head.
2	Push the handle down all the way to the ground to raise the front of machine.
3	Roll new cutter head assembly under machine and into position.
4	Line up bearings with cutout sections in the flywheel housing, fitting each into its slot as machine is lowered over flywheel.
5	Reinstall three cap screws that attach bearings to flywheel housing.
6	Center cutter head in housing and move main shaft so that it is flush with bearing on side opposite sheaves.
7	Replace locking ring mechanism on each bearing (if equipped).
8	If bearings do not use a locking ring, follow this procedure: Using 1/4" electric drill and 13/64" drill bit, make dimple in shaft under one or more set screws. Remove two set screws on each bearing and coat with a thread adhesive such as Loctite. Replace set screws and tighten until snug.
9	Reinstall hub and lower sheave. Be sure the sheaves are in alignment using straight edge.
10	Tighten cap screws that pull the sheave onto bushing alternately and progressively until tapers are seated. Check alignment and sheave run out or wobble and correct as necessary before tightening cap screws to recommended torque value of 15 ft. - lbs. each.
11	Reinstall wheel and tire assemblies.
12	Install V-belts and tighten tension using the jam nuts underneath motor mount. Correct belt tension is 1/4" deflection per belt when 10 lbs. pressure is applied.
13	Install belt guard.
14	Install cutters, shafts and spacers as outlined in changing cutters, Table 6-3 Cutter Changing .

Chapter 6 Maintenance Instructions

6.9 V-Belts

Check and tighten the V-belts as required after 2 hours of operation. To tighten V-belts, adjust jam nuts under engine mount. (Figure 6-6). The V-belts should be changed once they can no longer be tightened to the correct tension, or when showing signs of excessive wear. Follow the steps in Table 6-6 to change the V-Belts. Recheck belt tension after 8 hours and every 40 hours thereafter. Always replace both belts and inspect sheaves for wear.

CAUTION

Do not over-tighten belts as damage will occur to belts and bearings. Belts that are too loose will shorten the life of the belts and sheaves. When installing new belts do not attempt to stretch over sheaves.

Table 6-6 Changing V-Belts

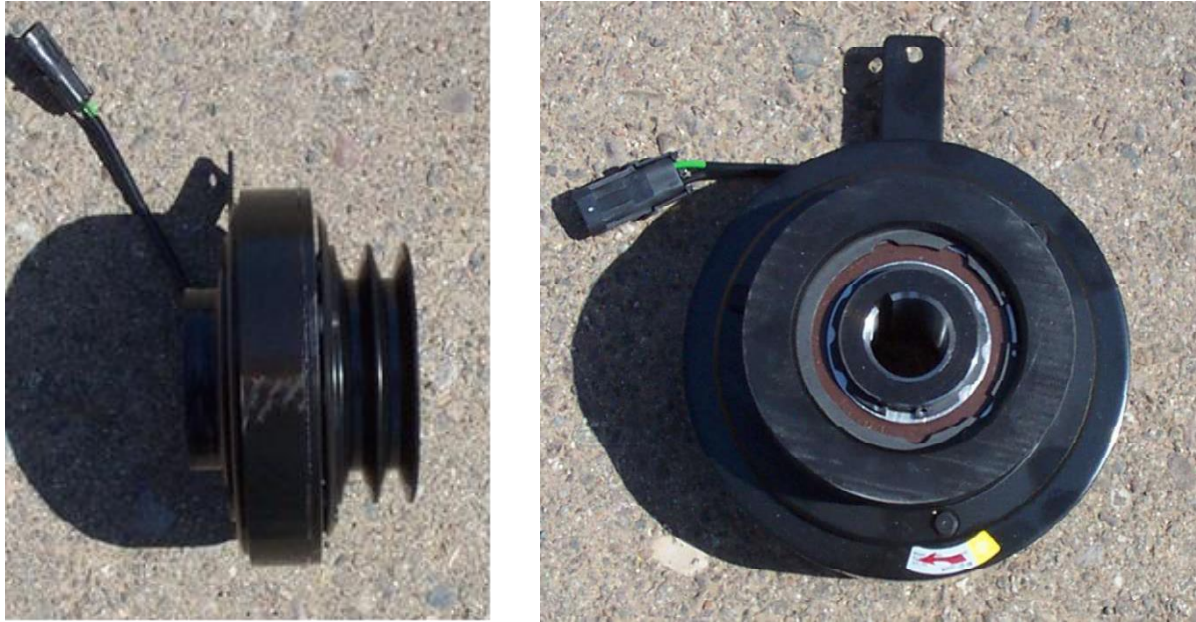
Step	Action
1	Remove belt guard by removing 4 bolts. (Figure 6-7).
2	Loosen belt tensioner until bottomed out. (Figure 6-6).
3	Remove old belts. Install new belts.
4	Tighten belt tensioner. Correct tension is 1/4" deflection per belt when 10 lbs. pressure is applied. Incorrect belt tension will cause poor belt life, damage to bearings, and engine crankshaft bearing failure.
5	Install belt guard.

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6.10 Electric Clutch

The CRAFCO Model 30 Router is equipped with an electric clutch which can be engaged independently of engine operation. Under normal operation, no service of this clutch is required. If the V-grooves should become worn, a completely new clutch assembly (CrafcO part number 31289) must be installed (Figure 6-8).

Figure 6-8 Electric Clutch



6.11 Dust Control Router Specific Maintenance

The following maintenance instructions are for parts used on dust control equipped Model 30 Pavement Routers.

6.11.1 Dust Collection Bag Maintenance

The dust collection bag should be cleaned on a daily basis or more frequently depending on asphalt conditions to ensure maximum dust collector efficiency. To clean the dust collection bag, remove the dust collection bag from the router. Open the zipper on the dust collection bag to access the inside of the dust collection bag.

CAUTION

Dust may collect between the elements or “teeth” of the zipper, making it difficult to open. **DO NOT** try to forcibly open the zipper or damage to the dust collection bag may occur. Gently work the slider of the zipper back and forth to work the dust out of the elements until the zipper is completely opened.

Use a Shop Vac to vacuum the entire inside of the dust collection bag. If shop air is to be used to blow dust off of the dust collection bag, use a nozzle that restricts air pressure to no more than 30 psi. Higher pressure than 30 psi. may damage the dust collection bag.

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Do Not try to clean the dust collection bag with water. Keep the dust collection bag dry at all times, whether when in use or during transport and storage. Water, rain, or significant moisture may cause the bag to shrink and not function appropriately.

6.11.2 Cutter Head Dust Shroud

When seal brushes become worn and stop trapping dust behind the shroud, they should be replaced. If brushes become deformed they can be soaked in hot water for approximately 20 min. This will aid in the brushes regaining their shape. Allow brushes to dry before using. If the shroud is showing wear or damage beyond the extent of brush wear, the entire shroud should be replaced.

6.11.3 Replacing Seal Brushes

Follow the steps in [Table 6-7](#) to replace the seal brushes on the dust shroud.

Table 6-7 Changing Seal Brushes

Step	Action
1	Remove the long aluminum brush holders from the sides of the shroud.
2	After their removal you will be able to slide the short brushes out of their holders and slide new brushes in.
3	The ends of the aluminum holders for the long brushes have been crimped at the ends. Use a screwdriver or a pair of pliers to spread the ends of the holders apart,
4	Then slide the brushes out of the holder.
5	After installing new brushes in the holder, re-crimp the ends in a vice to keep the brushes from sliding out.
6	Reinstall the holders on the shroud.
7	To replace the flexible brush on top of shroud, drill out the rivets with a #30 drill bit.
8	Replace the flexible brush and secure with new 1/8" wide domed blind rivets. (PN 28549)

Chapter 6 Maintenance Instructions

6.12 Self-Propelled Router Control Cable

The control cable on the Self-Propelled Router must be properly tensioned and properly aligned to ensure a long service life and proper operation of the cable. The control cable is properly adjusted when the control lever is bottomed out on the handlebar and the self-propelled drive mechanism is fully engaged. It should not take a great deal of pressure or force to fully engage the drive mechanism.

CAUTION

The control cable is improperly adjusted if the control handle does not touch the router handle as the drive mechanism becomes fully engaged. If the drive mechanism is fully engaged and the control handle is not against the router handle, forcing the control handle past this point puts an extreme amount of pressure on the control cable. Doing so can damage, break, or wear out the cable prematurely. Ensure that the cable is always properly adjusted.

Over time, the friction disks on the drive mechanism will become worn and will require an adjustment to the tension on the cable. See [Table 6-8](#) for the proper adjustment of the cable if adjustments made by the thumb screw are no longer adequate.

6.12.1 Control Cable Adjustment

There are 3 places on the control cable where adjustments can be made. On the underside of the handlebar, in front of the control handle, there is a thumb screw and lock nut that can be used to make fine adjustments when needed without the need of any tools. A slight amount of adjustment can be made at the upper and lower cable attachment points by loosening and adjusting the two nuts that hold the cable in place. There are 5 attachment points for the control cable on the drive mechanism, move the cable clevis and clevis pin to a new hole if the thumb screw has been adjusted to its maximum usable range or to maintain correct alignment of the push-pull cable.

Reference [Figure 6-9](#)

6.12.2 Control Cable Alignment

The alignment of the push-pull cable as it exits the conduit to the final attachment point must be as straight as possible. The control handle attachment point was designed to keep the push/pull cable in as straight of a line as possible and should not require any adjustment. The cable holder on the drive mechanism side of the cable was made to swivel to accommodate adjustments of the router handlebar height. If adjustments are to be made to the handlebar height, it is suggested that the push/pull cable be disconnected from the self-propelled drive mechanism before making the adjustments to prevent damage to the push pull cable. Reference [Figure 6-10](#) for an example of the damage that may occur. Once the handlebar has been positioned to the desired height, swivel the cable holder to the correct position to keep the cable in as straight of a line as possible and then reattach the cable to the drive mechanism. Periodically check the alignment of the cable and adjust as necessary. Reference [Figure 6-11](#) for correct alignment.

Table 6-8 Adjusting the Self-Propelled Control Cable

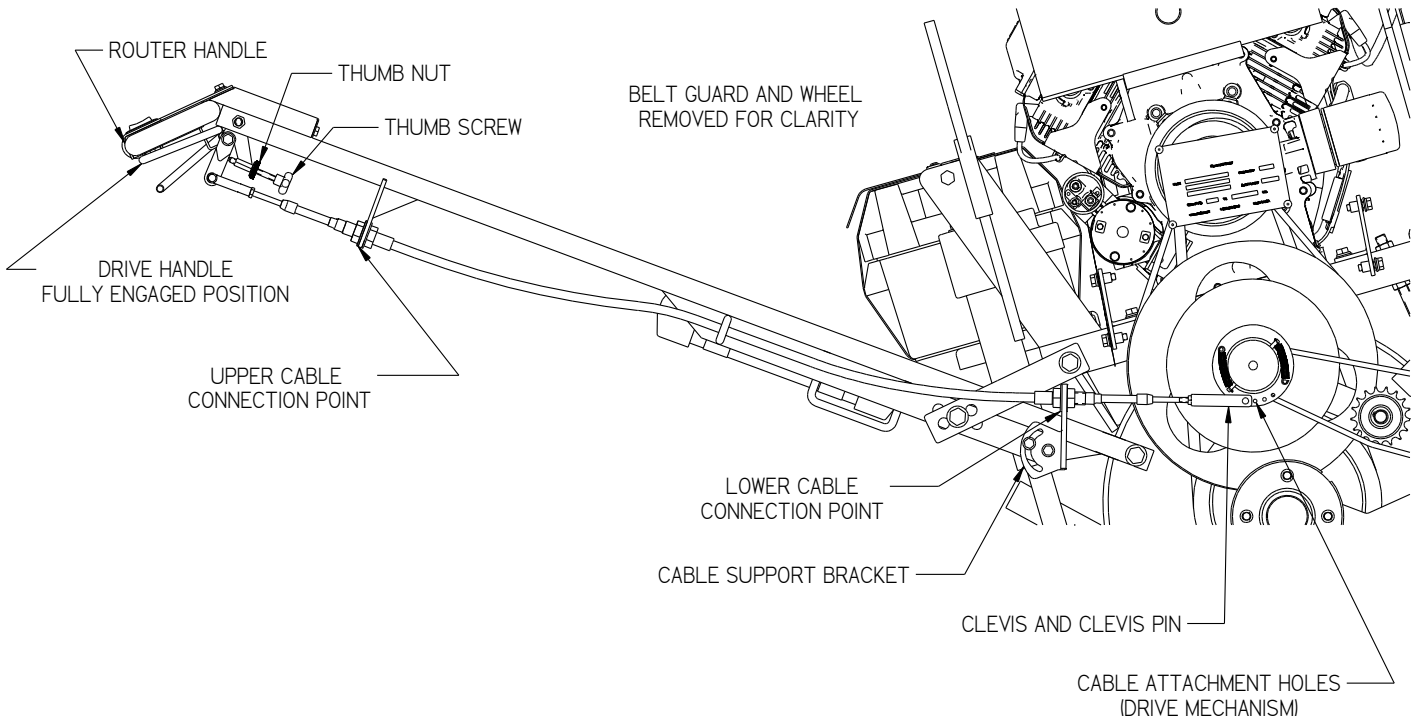
Step	Action
1	Remove the belt guard to access the cable attachment point to the drive mechanism.
2	Turn the thumb screw to its minimum adjustable position (turn counterclockwise when facing the head of the thumb screw).

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Table 6-9 Adjusting the Self-Propelled Control Cable (continued)

Step	Action
3	Move the cable clevis on the drive mechanism to the next available hole on the drive assembly, adjust the threaded conduit holder and the clevis if needed.
4	Give the control handle a test pull, it should easily go all the way to the router handle.
5	Start the router engine and give the control handle another test pull. Make sure there is enough open space in front of the router to allow it to be driven forward. The drive mechanism should become fully engaged as the control handle touches the router handle. If the router does not drive forward in a solid, steady manner, release the handle and screw in the thumb screw (turn clockwise when facing the head of the thumb screw) one turn. Make small adjustments at a time while testing the control handle. Continue adjusting until the router drives forward in a solid, steady manner and the control arm is touching the handlebar. Lock the thumb screw in place with the lock nut on the thumb screw once the proper setting is achieved.
6	Reinstall the belt guard.
7	Make any necessary adjustments to the safety cutoff switch near the control handle to make sure it will not allow the cutter head to function when the self-propelled mechanism is engaged. See Figure 6-12 for location of the switch.

Figure 6-9 Self-Propelled Control Cable

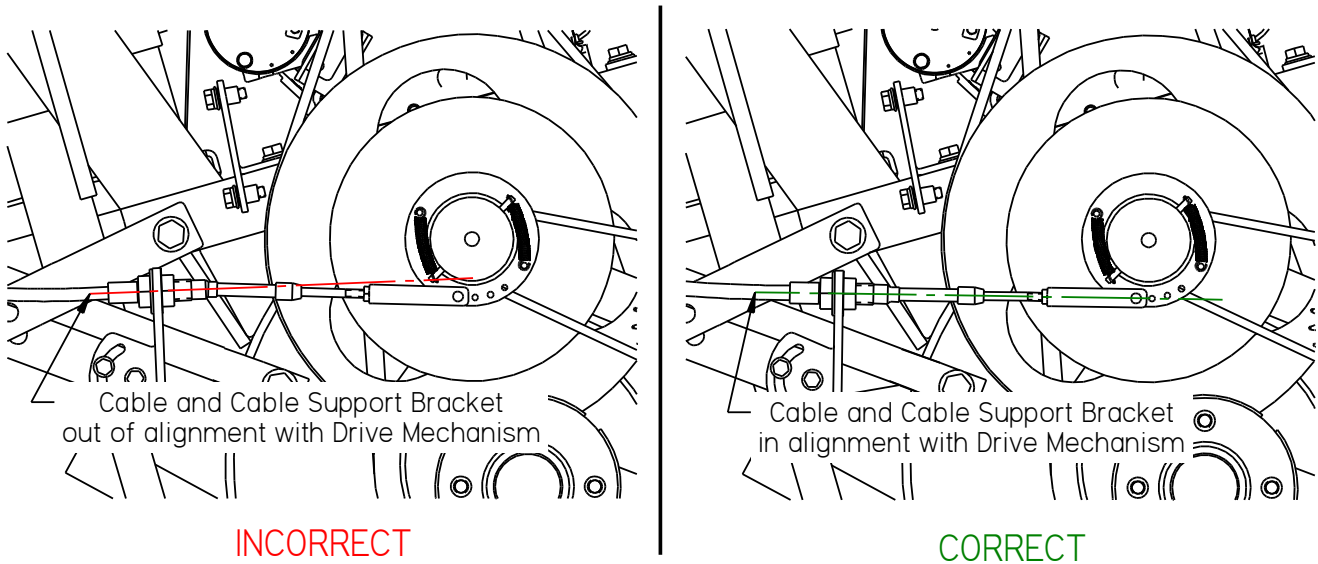


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Figure 6-10 Broken Cable Reference



Figure 6-11 Self-Propelled Cable Alignment



Chapter 6 Maintenance Instructions

Figure 6-12 Self-Propelled Safety Cutoff Switch



ELECTRIC CLUTCH SWITCH

SAFETY CUTOFF SWITCH

CAUTION

The function of the self-propelled mechanism is to drive the router from one distressed area to another. It is not to be used to drive the router forward when the cutter is engaged. Doing so can damage the drive mechanism or other parts of the router. To help prevent this, an electric switch is installed at the control handle that will prevent the electric clutch from engaging the cutter when the self-propelled drive handle is pulled. This switch must be in good working order and properly adjusted to prevent the cutter from engaging when the drive mechanism is engaged. Replace or adjust this switch if it is not functioning properly. **DO NOT** bypass this switch.

Chapter 6 Maintenance Instructions

6.13 Common Maintenance Parts and Kits

Table 6-10 contains some parts and kits for the Model 30 Pavement Router that has been put together for your convenience as add on, or maintenance parts.

Table 6-10 Common Maintenance Parts

PART NO.	DESCRIPTION
31442	FUEL TANK KIT
31326	FUEL TANK PETCOCK
31327	FUEL TANK GROMMET FOR 31326
31334	FUEL TANK CAP
31478	SELF-PROPELLED BELT, A-43
31480	SELF-PROPELLED MECHANISM
20919	CARBIDE SKID PLATE
VARIOUS	CUTTER, SEE Table 9-12 Cutter Options and Selection Guide
31114	CUTTER PIN
32093	HARDENED SPACER
31443	CARBON FILTER CANISTER, FOR EVAP. EMISSIONS
20866N	AIR FILTER / ELEMENT FOR ENGINE
20865N	ENGINE OIL FILTER
20867N	ENGINE FUEL FILTER
32078	V-BELT 5VX-560 (2 REQ'D)
31289	ELECTRIC CLUTCH
31414	DUST COLLECTION BAG, 12 SQ. FT.
31575	LARGE PARTICLE DUST COLLECTION BIN
31591 31592 31593 31594 31595	DUST CONTROL SHROUD BRUSHES

Chapter 7 How to use a Multimeter

7.0 How to Use a Multimeter

The Model 30 Pavement Router uses 12-volt direct current (DC) to power the engine, and actuator motor. The DC power is from a 12-volt battery.

12-volt DC power has little danger of electrical shock. Care must still be taken when dealing with DC power systems because it is capable of producing large amounts of current.

7.1 Checking DC Voltage with a Multimeter

Connect the probes to the meter.

Set the range to a position that includes 12-volts or higher.

Touch the red probe to the positive side of accessory and black probe to ground. If the item you are checking has a ground wire attached then use that ground or you can use the grounding stud on the engine channel assembly.

7.2 Checking Resistance (Ohms)

Connect probes to the meter (See [Figure 7-1 Standard Multimeter](#)).

Note: When checking Ohms, the circuit cannot be completed. This means one end of the wire will need to be disconnected.

7.3 Checking Wire Continuity

Set the meter to “Audible Continuity.”

Now touch the probe to each end of the wire in question. The meter will read “0” on the screen and make an audible beep if the wire has continuity from end to end.

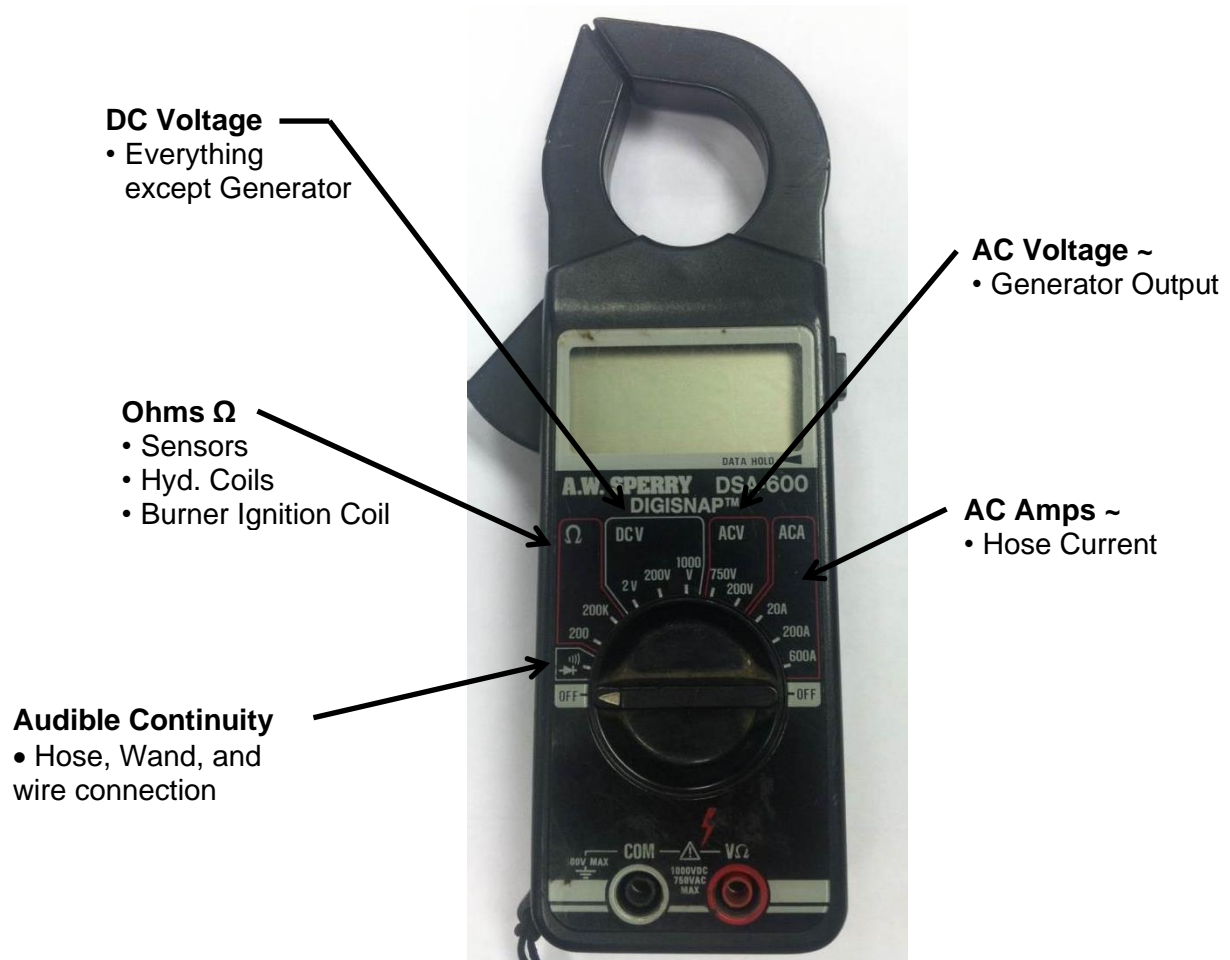
Chapter 7 How to use a Multimeter

Figure 7-1 Standard Multimeter



Chapter 7 How to use a Multimeter

Figure 7-2 Clamp – On Amp Meter/Multimeter



Chapter 8 Troubleshooting

8.0 Model 30 Pavement Router Troubleshooting

Use the guides in [Table 8-1](#) to help you troubleshoot problems you may encounter with the Model 30 Pavement Router. Also see the Engine Operators Manual for further engine troubleshooting.

Table 8-1 Trouble Shooting Guide Model 30 Pavement Router

Problem	Possible Cause	Remedy
Cutters wear out of round	Cutters not spinning on pins thereby creating uneven wear.	<ul style="list-style-type: none"> • Do not cut so deep. Take two passes to get to the required depth. • Check to see if washer count is correct. Refer to Section 9.11 Cutter Positioning
Engine Stalls.	No Spark	<ul style="list-style-type: none"> • Check electric system for defective wires, switches, etc. See Engine Operators Manual.
	Inadequate supply of fuel	<ul style="list-style-type: none"> • Check fuel valve and lines. See Engine Operators Manual.
Machine fails to raise or lower.	Defective or worn linear actuator.	<ul style="list-style-type: none"> • Check for 12Vdc to the actuator in the red and yellow wires. Flipping the rocker switch one way, will cause voltage in the red wire, while flipping it the opposite direction will cause voltage in the yellow wire. • If the voltage is good, replace the linear actuator. • If the voltage is bad, check voltage going to the rocker switch.
	Damaged rocker switch, wiring, or fuse.	<ul style="list-style-type: none"> • Check for 12Vdc going to rocker switch from the brown wire. • If voltage is good, check switch connections. Replace bad connection or switch. • If voltage to the switch is bad, replace wiring.

Chapter 8 Troubleshooting

Table 8-2 Trouble Shooting Guide Model 30 Pavement Router (Continued)

Engine doesn't spin properly when cranking.	Starter problems.	<ul style="list-style-type: none"> • Repair or replace starter. See Engine Operators Manual.
	Low battery.	<ul style="list-style-type: none"> • Charge or replace battery. See 6.3.1 Battery Recharging
Engine missing or loss of power.	Filter elements restricted	<ul style="list-style-type: none"> • Clean or replace filter element
	Stale fuel, fuel filter restricted.	<ul style="list-style-type: none"> • Drain fuel tank. Refuel with fresh gasoline. Replace fuel filter
	FI System malfunction, ignition malfunction, valve stuck	<ul style="list-style-type: none"> • Take engine to your servicing dealer, or refer to shop manual
Engage drive system pulling up on the handle and nothing happens.	Pulling the wrong handle.	<ul style="list-style-type: none"> • The drive system is controlled by the right handle.
	Drive cable has too much slack.	<ul style="list-style-type: none"> • Adjust the cable so that the drive system is fully engaged as the control lever contacts the handlebar.
	Both tires are not at the correct tire pressure.	<ul style="list-style-type: none"> • Make sure both tires are at the recommended PSI rating.
The Dust Control System is not controlling the dust as well as it once did.	Hoses and guards not properly positioned.	<ul style="list-style-type: none"> • Review the operating procedures and make sure everything is properly positioned.
	Either the dust collection bag or the large particle dust collection bin needs to be cleaned.	<ul style="list-style-type: none"> • Clean the dust collection bag and/or dump out the large particle dust collection bin.
	Worn or misshaped brushes on the cutterhead dust shroud.	<ul style="list-style-type: none"> • Replace all the brushes on the cutterhead dust shroud.

Chapter 9 Illustrated Parts List

9.0 About the Illustrated Parts List

The Illustrated Parts List (IPL) is designed to help technical service or maintenance personnel correctly identify orderable replacement parts.

The figure and table titles reference the part number (PN) to which they apply. The PNs for each of the Model 30 Pavement Router machine models are as follows:

- Model 30 Pavement Router with electric clutch PN 21300H
- Model 30 Pavement Router non-clutch PN 21330H
- Model 30 Self-Propelled Router PN 21340H
- Model 30 Pavement Router with Dust Control PN 21350H
- Model 30 Self-Propelled with Dust Control PN 21360H

Illustrations are designed to show general shape and size of a part and the relationship that part has to other parts. Actual size and shape of parts or components may differ or vary from the actual part or component.

9.1 Ordering CrafcO Parts

Crafco distributors and CrafcO Pavement Preservation Supply Centers are strategically located throughout the United States. Parts can be ordered from your local CrafcO distributor or directly from CrafcO, Inc. if a distributor is not available in your area.

When ordering parts, give the following information:

- Part Number
- Machine Model
- Serial Number

Write, call, or Fax CrafcO, Inc. at the following:

Crafco, Inc. Headquarters

6165 W Detroit St.

Chandler, AZ 85226

Phone: (602) 276-0406

Toll Free: (800) 528-8242

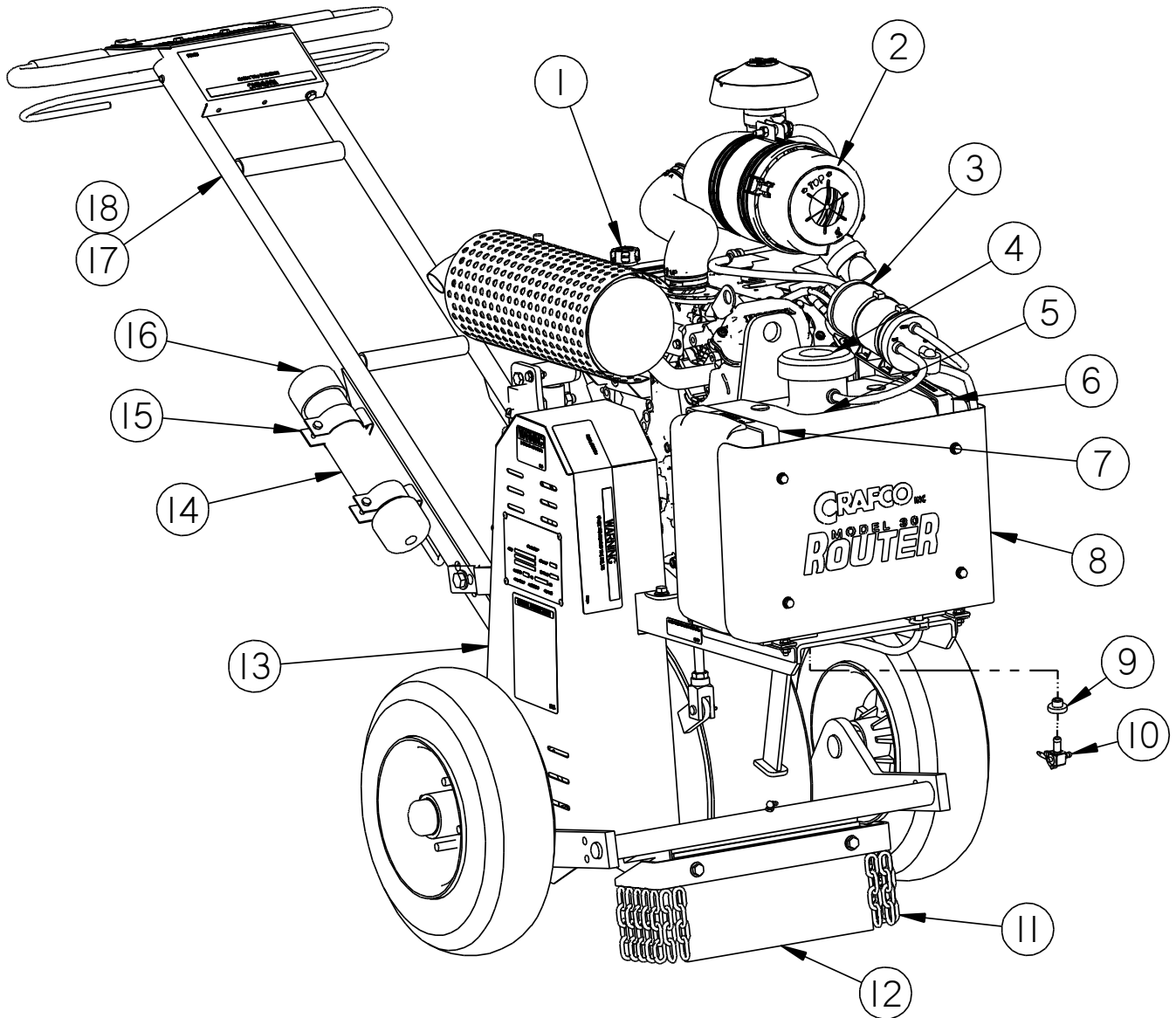
Fax: (480) 961-0513

Visit our website at www.crafco.com

Chapter 9 Illustrated Parts List

9.2 Model 30 Pavement Router

Figure 9-1 Model 30 Pavement Router:
PN 21300H, 21330H Non Clutch



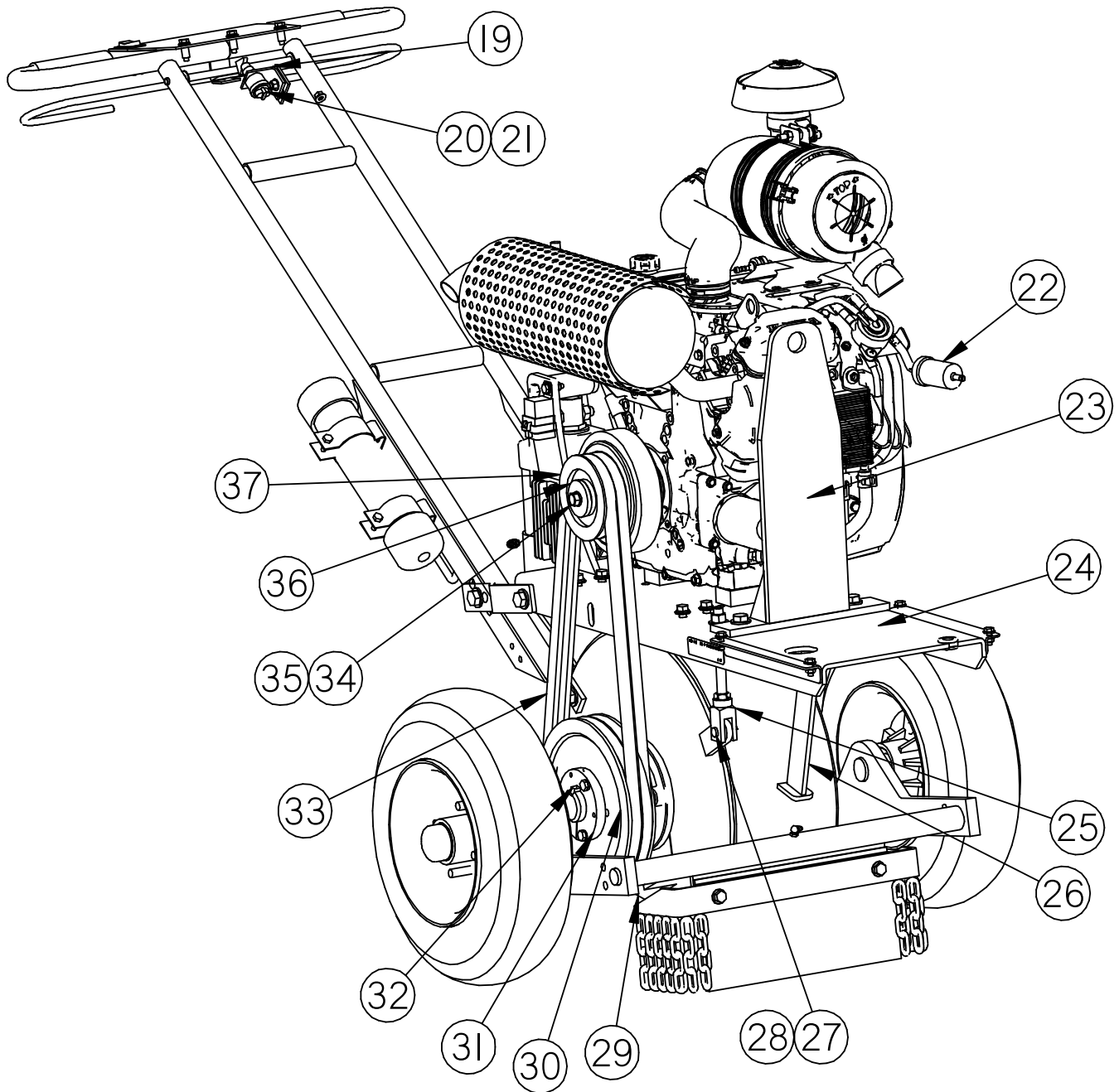
Chapter 9 Illustrated Parts List

Table 9-1 Model 30 Pavement Router: PN 21300H, 21330H

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-1	1	20953N	ENGINE: HONDA GX800IRH (24.9HP) (18.57 Kw)	1
	2	20954N	ENGINE AIR CLEANER ASSEMBLY	1
	3	31443	CARBON FILTER CANISTER	1
	4	31334	FUEL TANK CAP with TETHER	1
	5	31442	FUEL TANK	1
	6	20959N	GAS TANK STRAP ASSY CANISTER BRACKET	1
	7	20946	GAS TANK STRAP ASSEMBLY	1
	8	20945	GAS TANK GUARD	1
	9	31327	RUBBER GROMMET, PETCOCK VALVE	1
	10	31326	PETCOCK VALVE	1
	11	31104	DEFLECTOR CHAIN ASSEMBLY	1
	12	31102	RUBBER ROCK DEFLECTOR	1
	13	20940	BELT GUARD ASSEMBLY	1
	14	31186	MANUAL HOLDER PIPE	1
	15	31188	MANUAL HOLDER PIPE CLAMP	1
	16	31187	MANUAL HOLDER PIPE CAP 2"	2
	17	20920	HANDLEBAR ASSEMBLY, with HARNESS	1
	18	20903	ROCKER SWITCH WIRING HARNESS	1

Chapter 9 Illustrated Parts List

Figure 9-2 Model 30 Pavement Router:
PN 21300H, 21330H



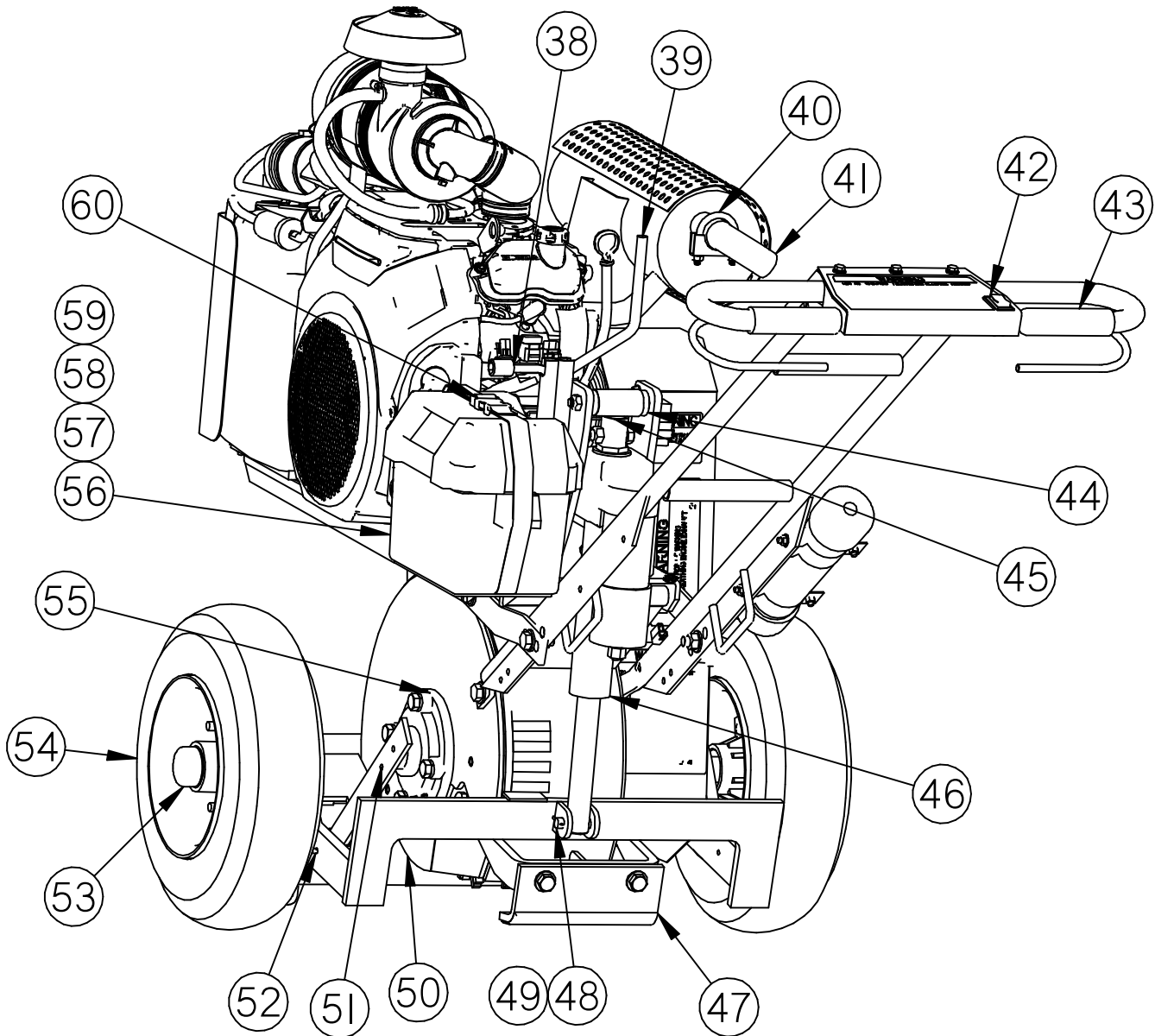
Chapter 9 Illustrated Parts List

Table 9-2 Model 30 Pavement Router: PN 21300H, 21330H

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-2	19	20926	CLUTCH SWITCH HOLDER	1
	20	31338	SWITCH	1
	21	28685	STAR WASHER	1
	22	20867N	FUEL FILTER	1
	23	32119	LIFTING BRACKET ASSEMBLY	1
	24	20962N	ENGINE MOUNTING CHANNEL	1
	25	31052	CLEVIS ASSEMBLY	1
	26	31255	STRIP ASSEMBLY	1
	27	29480	CLEVIS PIN 3/8 X 1 1/4"	1
	28	29638	COTTER PIN 1/8 X 1"	2
	29	31031	FILLER PLATE - RH	1
	30	32072	SHEAVE 2G5V DIA. 9.25" O.D.	1
	31	32071	SK BUSHING 1-3/4"	1
	32	31071	KEYWAY	1
	33	32078	V-BELT 5VX-560	2
	34	28899N	BOLT 7/16-20 X 1-3/4" HEX HEAD	1
	35	28648	7/16" LOCK WASHES	1
	36	28689	CLUTCH OUTER RETAINING WASHER	1
37	31289	ELECTRIC CLUTCH	1	

Chapter 9 Illustrated Parts List

Figure 9-3 Model 30 Pavement Router Back Side: PN 21300H, 21330H



Chapter 9 Illustrated Parts List

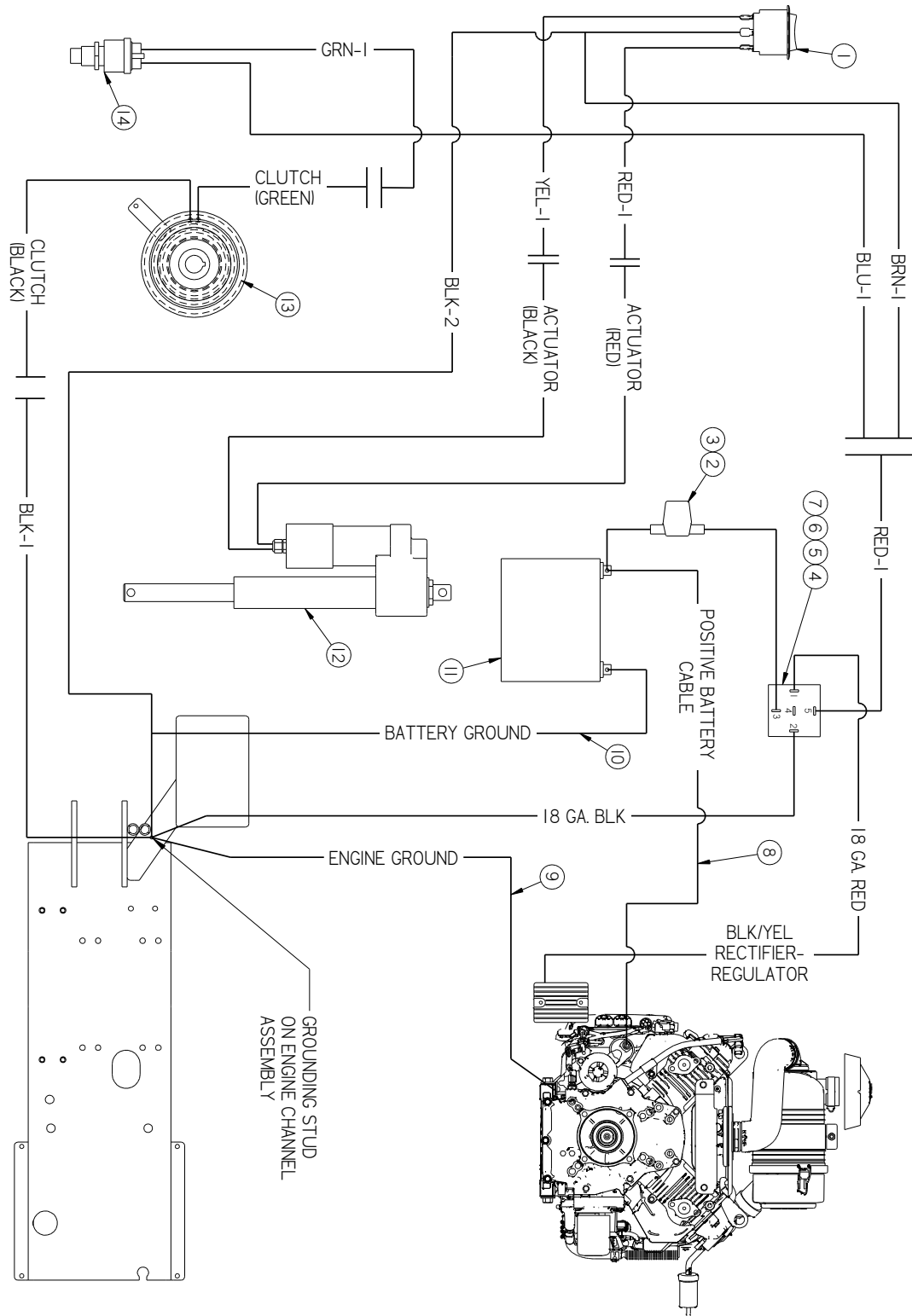
Table 9-3 Model 30 Pavement Router: PN 21300H, 21330H

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-3	38	31101	WRENCH-PIN RETAINER RELEASING TOOL	1
	39	31100	PIN REMOVAL TOOL	1
	40	60398N	1-9/16" I.D. CLAMPING U-BOLT	1
	41	20967N	EXHAUST DEFLECTOR 90° 1.376 I.D.	1
	42	20915	ROCKER SWITCH	1
	43	20916	FOAM HAND GRIP	2
	44	32109	RUBBER BUSHING	2
	45	31068	SHOCK ABSORBER ASSEMBLY	1
	46	32001	ACTUATOR	1
	47	20919	CARBIDE SKID PLATE	1
	48	29345	½ X 2" CLEVIS PIN	1
	49	29638	1/8 X 1" COTTER PIN	2
	50	31033	FILLER PLATE – LH	1
	51	31342	SUPPORT STRIP	1
	52	28693	1/4 X 1.2 GRIP RANGE QUICK RELEASE PIN	1
	53	31259	HUB ASSEMBLY, COMPLETE W/BEARINGS	2
	54	31288	TIRE AND WHEEL ASSEMBLY	2
	55	32043	BEARING 1-3/4"	2
	56	37620	BATTERY – 12V	1
	57	24003	BATTERY BOX	1
58	20949	BATTERY CABLE GROUND	2	
59	20948	BATTERY CABLE POSITIVE	1	
60	24037	BATTERY STRAP WITH BUCKLE	1	

Chapter 9 Illustrated Parts List

9.3 Electrical Schematic Model 30 Pavement Router with Clutch 21300H

Figure 9-4 Electrical Diagram Model 30 with Electric Clutch

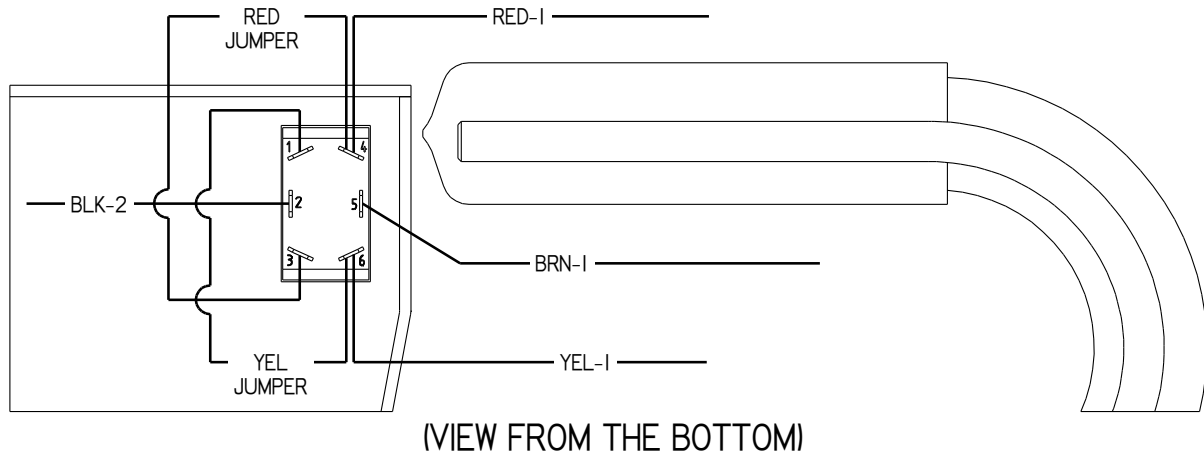


Chapter 9 Illustrated Parts List

Table 9-4 Electrical Diagram Model 30 Router with Clutch

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-4	1	20915	ROCKER SWITCH	1
	2	31515N	IN-LINE FUSE HOLDER	1
	3	32511N	FUSE, 30 AMP (NOT SHOWN)	1
	4	60932N	RELAY	1
	5	60933N	RELAY CONNECTOR (NOT SHOWN)	1
	6	60085N	TERMINAL 16-14 GA (NOT SHOWN)	2
	7	60086N	TERMINAL 16-14 GA. (NOT SHOWN)	2
	8	20948	BATTERY CABLE POSITIVE	1
	9	20949	ENGINE GROUND (BATTERY CABLE GROUND)	1
	10	20949	BATTERY CABLE GROUND	1
	11	37620	BATTERY 12V	1
	12	32001	ACTUATOR	1
	13	31289	ELECTRIC CLUTCH	1
	14	31338	CLUTCH SWITCH	1

Figure 9-5 Rocker Switch Wiring Detail

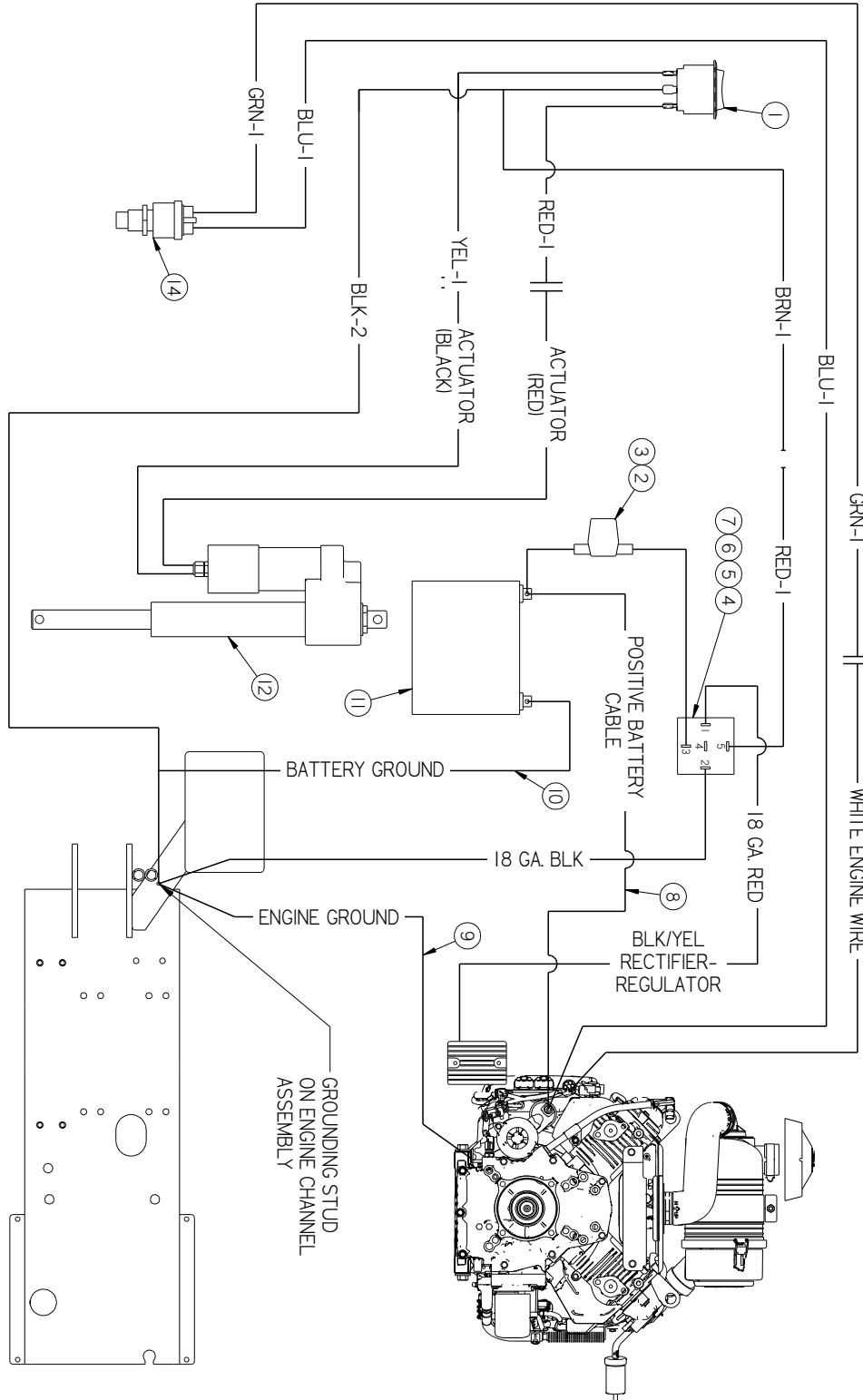


Chapter 9 Illustrated Parts List

9.4 Electrical Schematic Model 30 Pavement Router Non-Clutch

The following wiring diagram applies to the Model 30 Pavement Router non-clutch PN 31330H.

Figure 9-6 Electrical Diagram Model 30 Router Non Clutch



Chapter 9 Illustrated Parts List

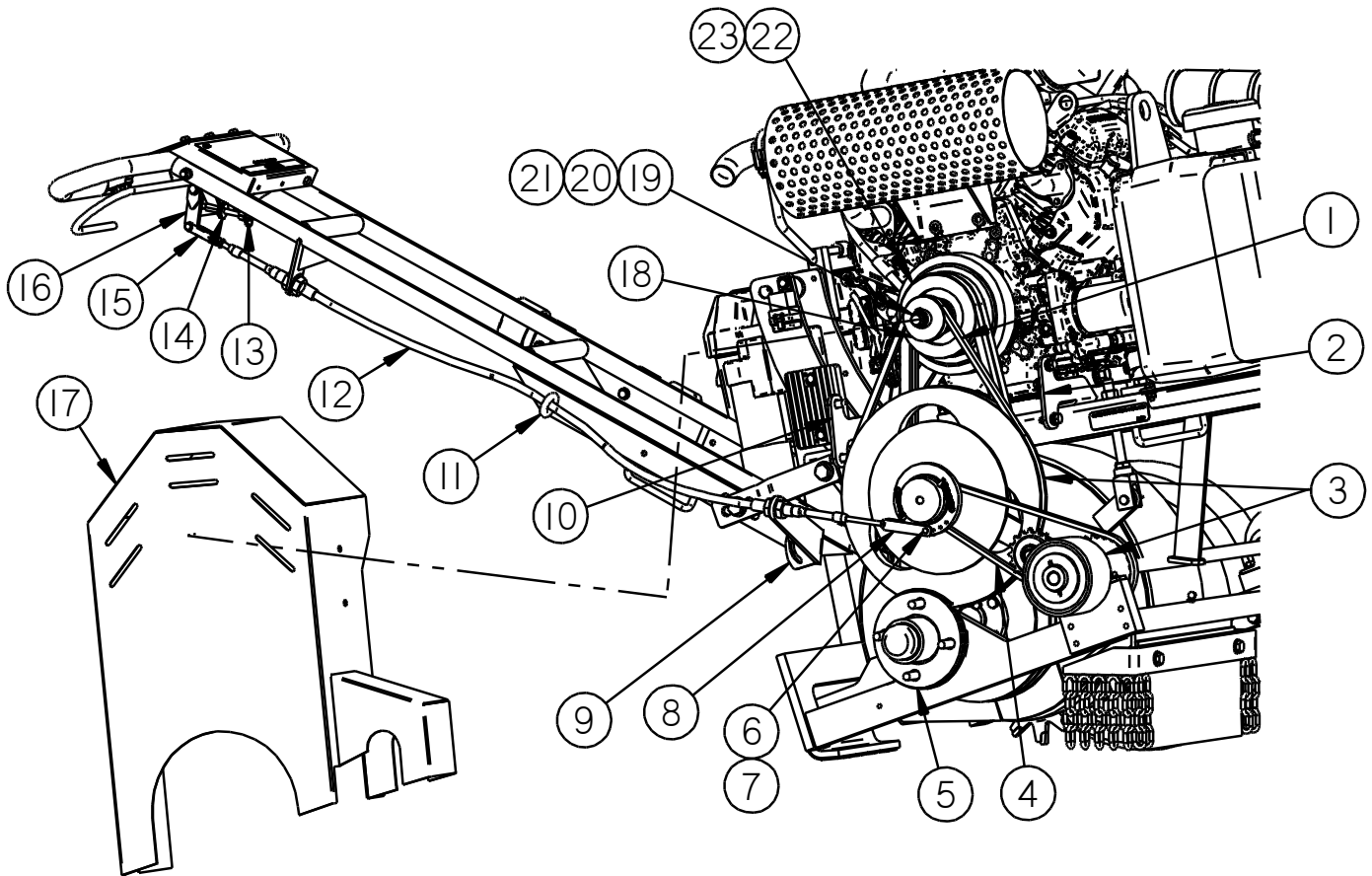
FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-6	1	20915	ROCKER SWITCH	1
	2	31515N	IN-LINE FUSE HOLDER	1
	3	32511N	FUSE, 30 AMP (NOT SHOWN)	1
	4	60932N	RELAY	1
	5	60933N	RELAY CONNECTOR (NOT SHOWN)	1
	6	60085N	TERMINAL 16-14 GA (NOT SHOWN)	2
	7	60086N	TERMINAL 16-14 GA. (NOT SHOWN)	2
	8	20948	BATTERY CABLE POSITIVE	1
	9	20949	ENGINE GROUND (BATTERY CABLE GROUND)	1
	10	20949	BATTERY CABLE GROUND	1
	11	37620	BATTERY 12V	1
	12	32001	ACTUATOR	1
	14	31338	CLUTCH SWITCH	1

Chapter 9 Illustrated Parts List

9.5 Model 30 Self Propelled Router Mechanism (P/N 31480)

This section illustrates the unique parts of the self-propelled system.

Figure 9-7 Self-Propelled Router Mechanism



See pages 9-14, 9-15 & 9-16 for parts break down of the Self-Propelled Router Mechanism

Chapter 9 Illustrated Parts List

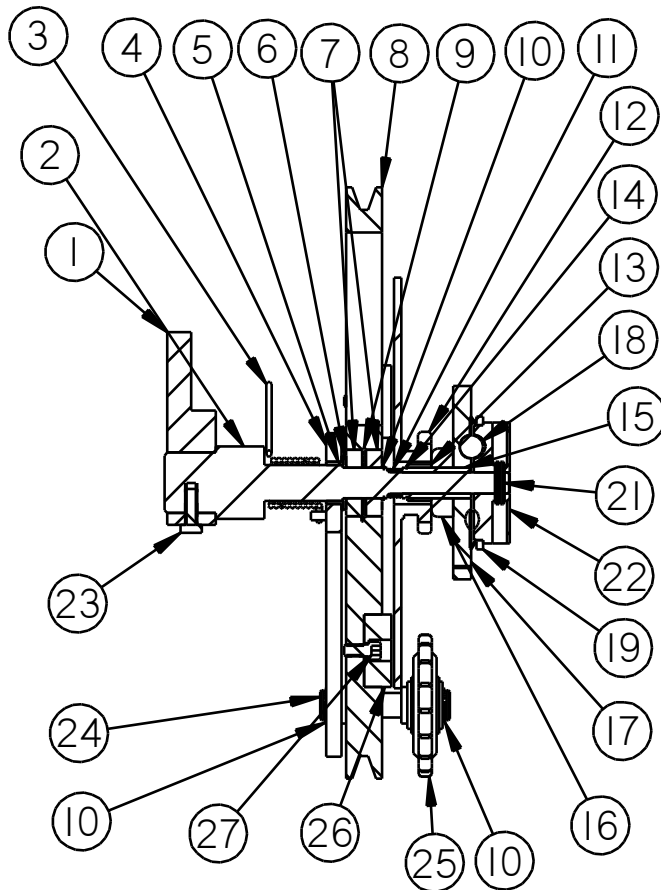
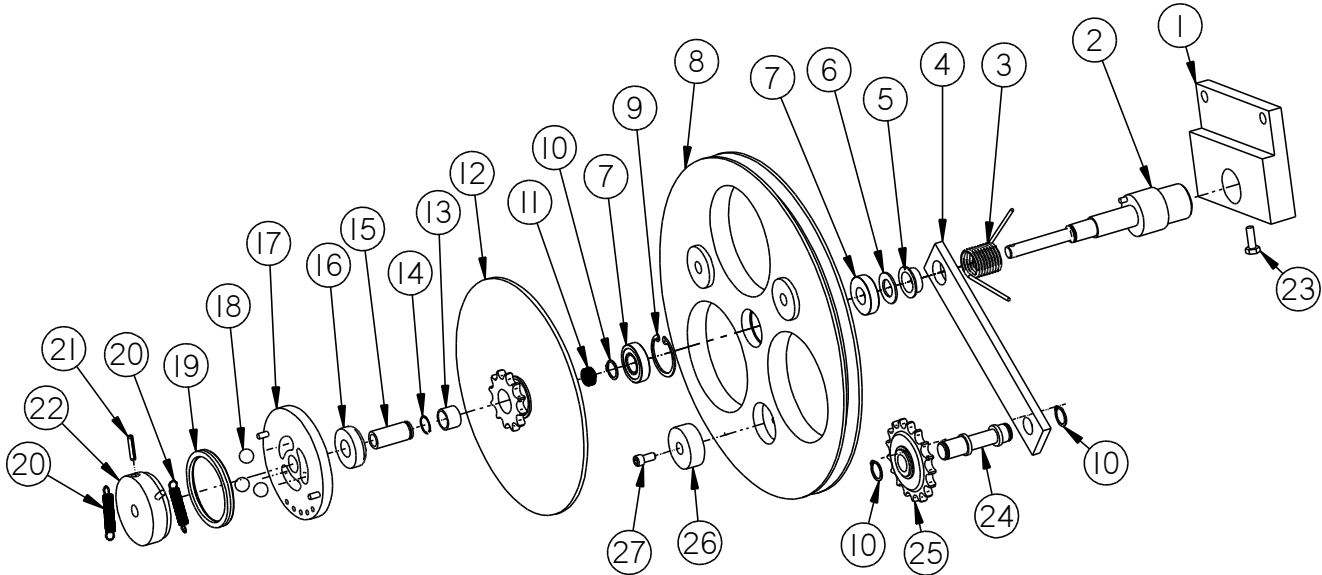
Table 9-5 Self-Propelled Router Mechanisms

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-7	1	31478	BELT A-43	1
	2	20882	SP GUARD RIGHT MOUNTING BRACKET (REQUIRES (2) 28607, THREADED INSERTS)	1
	3	31480	SELF-PROPELLED MECHANISM COMPLETE ASSEMBLY (INCLUDES FLYWHEEL & DRIVE SHAFT ASSEMBLIES)	1
	4	31479	DRIVE CHAIN	1
	5	31483	WHEEL SPACER SELF-PROPELLED ROUTER	1
	6	31471	STANDARD CLEVIS PIN	1
	7	31472	COTTER PIN, 3/32 X .75 LONG	1
	8	20786N	CLEVIS, DRIVE END	1
	9	20878	LOWER CABLE HOLDER	1
	10	20883	SP GUARD LEFT MOUNTING BRACKET (REQUIRES (2) 28607, THREADED INSERTS)	1
	11	20894	EYEBOLT W/NUT, LIGHT DUTY	1
	12	31488	CONTROL CABLE, SP ROUTER	1
	13	20779N	THUMB SCREW, 1/4-20 X 2.5" LONG	1
	14	20782N	THUMB NUT, 1/4-20 LOW PROFILE	1
	15	20783N	CLEVIS ROD END, SP ROUTER	1
	16	20775N	PIVOT ASSEMBLY CONTROL CABLE	1
	17	20895N	BELT GUARD, SP ROUTER HONDA	1
	18	31482	CAST IRON FINISHED BORE V-BELT PULLEY	1
	19	28906	7/16 – 20 X 3 1/2" GRADE 8 BOLT	1
	20	28648	7/16 LOCK WASHER	1
	21	28673	7/16 FLAT WASHER	1
	22	20860	CLUTCH ASSEMBLY W/ STUB SHAFT	1
	23	37032	BRUSH SHAFT KEY 1/4" X 1 1/8"	1

Chapter 9 Illustrated Parts List

9.5.1 Self-Propelled Router Flywheel Drive (P/N 31480-20)

Figure 9-8 Model 30 Self-Propelled Router Drive Flywheel Assembly (P/N 31480-20)



Chapter 9 Illustrated Parts List

Table 9-6 Model 30 Self-Propelled Router Drive Flywheel Assembly (P/N 31480-20)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-8	1	31480-09	FRAME MOUNT	1
	2	31480-10	SHAFT, FRAME	1
	3	31480-13	SPRING, TORSION	1
	4	31480-11	ARM, IDLER	1
	5	31480-40	BUSHING, FLANGED	1
	6	31480-32	WASHER, THRUST	1
	7	31480-23	BEARING, SHEAVE/DISC	2
	8	31480-12	SHEAVE/DISC	1
	9	31480-33	RETAINING RING	1
	10	31480-31	RETAINING RING	3
	11	31480-34	COMPRESSION SPRING	1
	12	31480-16	SPROCKET/DRIVE PLATE	1
	13	31480-24	BUSHING/SPROCKET DRIVE PLATE	1
	14	31480-35	RETAINING RING	1
	15	31480-25	SLEEVE, DETENT	1
	16	31480-18	BEARING, THRUST	1
	17	31480-17	DETENT, RELEASE	1
	18	31480-29	BALL, DETENT	3
	19	31480-27	SEAL, V-RING	1
	20	31480-28	SPRING, DETENT	2
	21	31480-36	SLOTTED SPRING PIN	1
	22	31480-26	DETENT, DRIVE	1
	23	28701	BOLT, 1/4"-20 X 3/4" HEX HEAD	1
	24	31480-14	STUB SHAFT, IDLER	1
	25	31480-15	SPROCKET, IDLER	1
	26	31480-22	FRICTION DISK	3
	27	31480-30	1/4"-20 X 1/2" SOCKET CAP SCREW	3

Chapter 9 Illustrated Parts List

9.5.2 Self-Propelled Router Drive Shaft Assembly (P/N 31480-21)

Figure 9-9 Model 30 Self-Propelled Router Drive Shaft Assembly (P/N 31480-21)

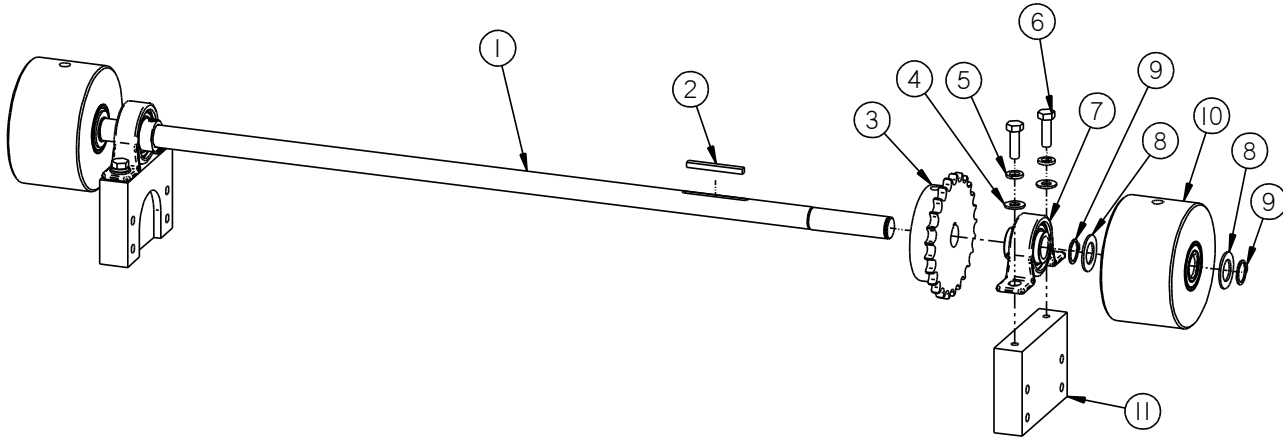


Table 9-7 Model 30 Self-Propelled Router Drive Shaft Assembly (P/N 31480-21)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-9	1	31480-03	SHAFT, WHEEL DRIVE	1
	2	31480-07	KEYWAY	1
	3	31480-06	ROLLER CHAIN SPROCKET, 25T	1
	4	28671	5/16" FLAT WASHER	4
	5	28646	5/16" LOCK WASHER	4
	6	28716	5/16"-18 X 1" HEX HEAD BOLT	4
	7	31480-04	BEARING, PILLOW BLOCK	2
	8	31480-05	WASHER	4
	9	31480-08	EXTERNAL RETAINING RING	4
	10	31480-02	CLUTCH SUB ASSEMBLY	2
	11	31480-01	PILLOW BLOCK MOUNT	2

Note: Flywheel and Drive Shaft Complete Assemblies are available as a kit, P/N 31480. See [Table 9-5 Self-Propelled Router Mechanisms](#).

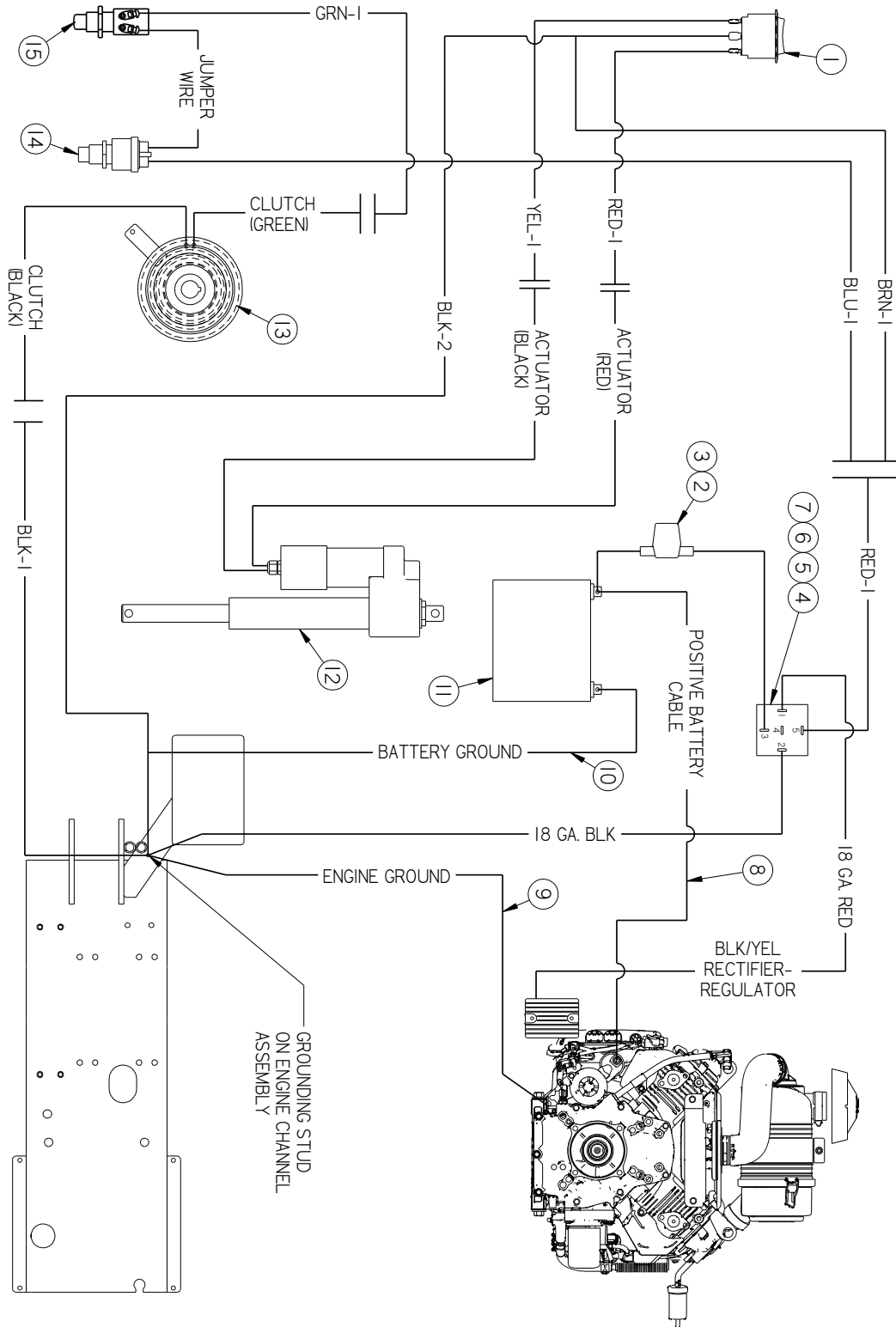
Chapter 9 Illustrated Parts List

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Chapter 9 Illustrated Parts List

9.6 Electrical Schematic Model 30 Self Propelled Router

Figure 9-10 Electrical Schematic Self-Propelled Router



Chapter 9 Illustrated Parts List

Table 9-8 Electrical Diagram Self-Propelled Router

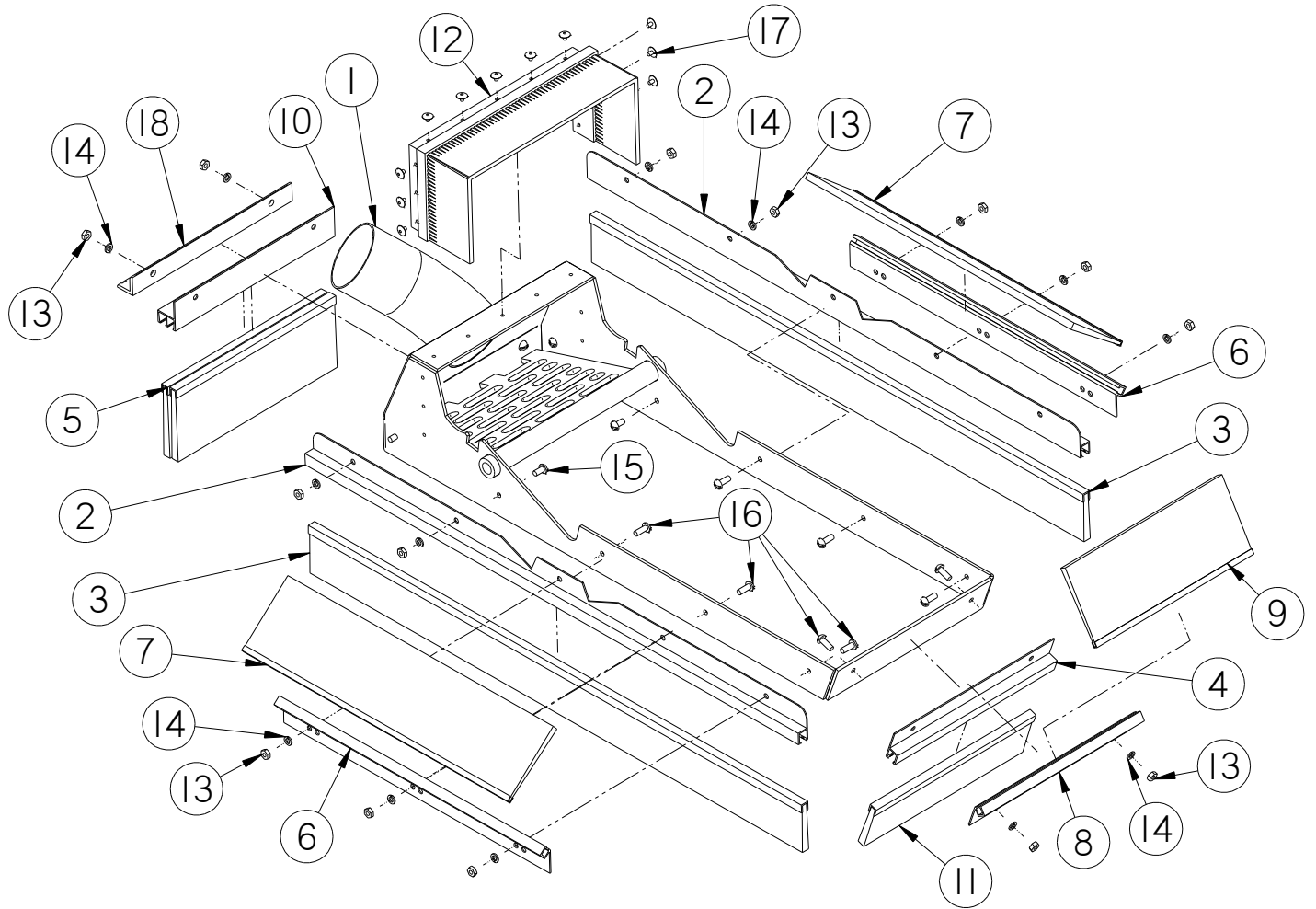
FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-10	1	20915	ROCKER SWITCH	1
	2	31515N	IN-LINE FUSE HOLDER	1
	3	32511N	FUSE, 30 AMP (NOT SHOWN)	1
	4	60932N	RELAY	1
	5	60933N	RELAY CONNECTOR (NOT SHOWN)	1
	6	60085N	TERMINAL 16-14 GA (NOT SHOWN)	2
	7	60086N	TERMINAL 16-14 GA. (NOT SHOWN)	2
	8	20948	BATTERY CABLE POSITIVE	1
	9	20949	ENGINE GROUND (BATTERY CABLE GROUND)	1
	10	20949	BATTERY CABLE GROUND	1
	11	37620	BATTERY 12V	1
	12	32001	ACTUATOR	1
	13	31289	ELECTRIC CLUTCH	1
	14	31338	CLUTCH SWITCH	1
	15	31339	SWITCH ROUTER, NON CLUTCH	1

Chapter 9 Illustrated Parts List

9.7 Model 30 Pavement Router with Dust Control

This section illustrates the unique parts for the dust control system. Self-Propelled with dust control machines will also contain the parts from sections 9.5 and 9.6.

Figure 9-11 Dust Shroud Assembly



Chapter 9 Illustrated Parts List

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-11	1	31730N	DUST SHROUD WELD ASSEMBLY	1
	2	31586	BRUSH HOLDER A	2
	3	31591	STRIP BRUSH A	2
	4	31587	BRUSH HOLDER B	1
	5	31592	STRIP BRUSH B	2
	6	31588	BRUSH HOLDER C	2
	7	31593	STRIP BRUSH C	2
	8	31589	BRUSH HOLDER D	1
	9	31594	STRIP BRUSH D	1
	10	31599	BRUSH HOLDER E	1
	11	31595	STRIP BRUSH E	1
	12	31596	FLEX BRUSH SEAL	1
	13	28554	10/32 HEX NUT	14
	14	28644	#10 SPRING LOCK WASHER	14
	15	28819	10/32 X 3/8" ROUND HEAD SCREW	6
	16	28893	10/32 X 1/2" ROUND HEAD SCREW	8
	17	28549	1/8 WIDE DOME BLIND RIVET	11
	18	31538	REINFORCEMENT ANGLE	1

Chapter 9 Illustrated Parts List

Figure 9-12 Dust Control Router

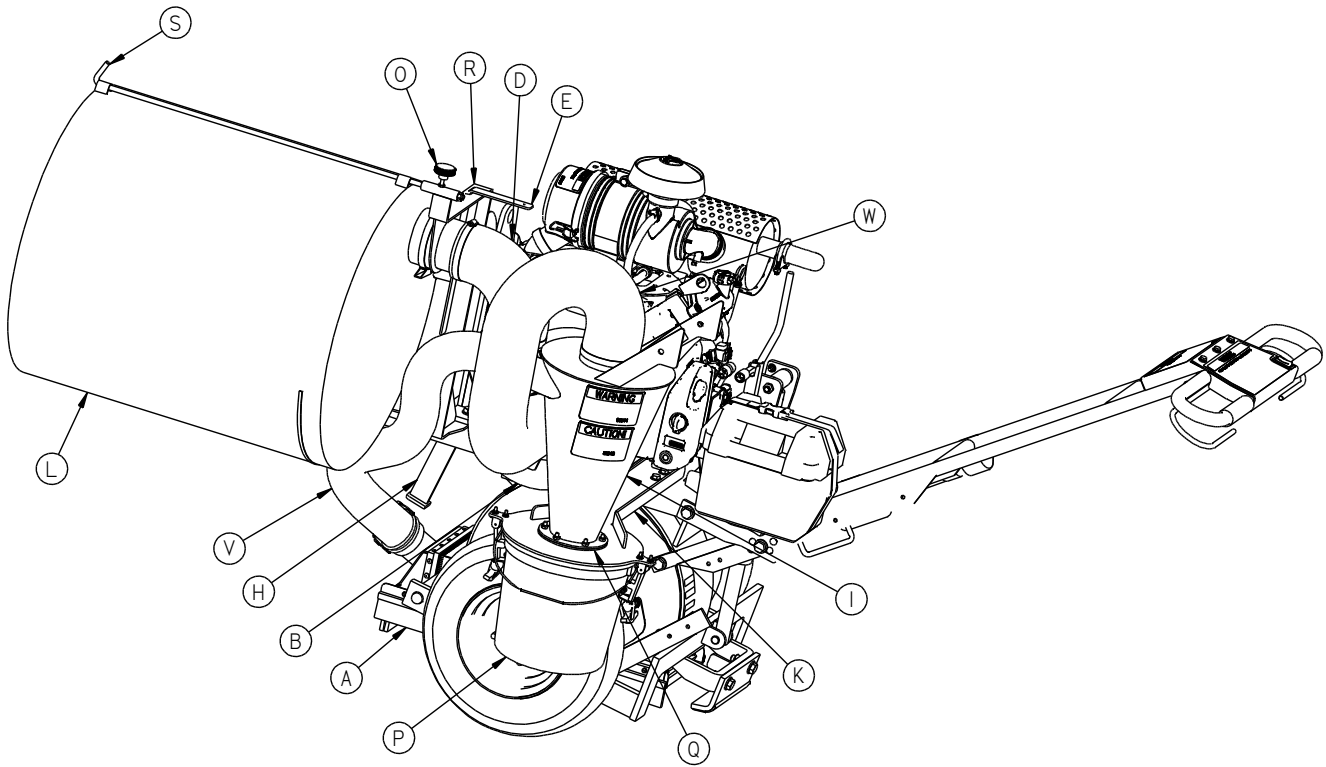
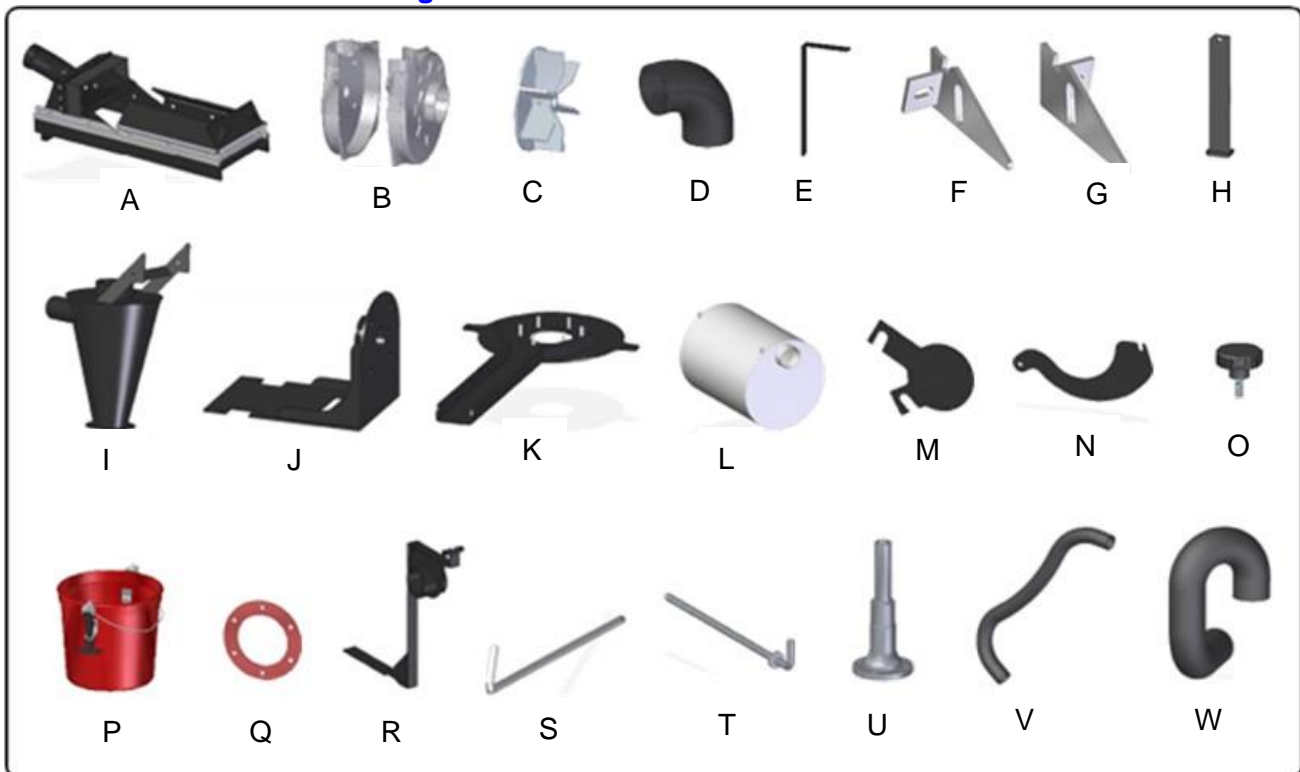


Figure 9-13 Dust Control Router Parts



Chapter 9 Illustrated Parts List

Table 9-9 Dust Control Router Parts

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-12 Figure 9-13	A	31735N	CUTTER HEAD DUST SHROUD	1
	B	31411	BLOWER HOUSING ASSEMBLY	1
	C	31412	BLOWER FAN	1
	D	31415	90° X 4" ID RUBBER ELBOW	1
	E	31410	BRUSH MANIPULATION TOOL	1
	F	31726N	DUST SHROUD MOUNTING BRACKET LEFT SIDE	1
	G	31727N	DUST SHROUD MOUNTING BRACKET RIGHT	1
	H	31535	SUPPORT STRIP ASSEMBLY	1
	I	31555	CYCLONE	1
	J	20855N	BLOWER MOUNTING BRACKET ASSEMBLY	1
	K	31560	CYCLONE MOUNTING BRACKET ASSEMBLY	1
	L	31414	DUST COLLECTION BAG, 12 SQ. FT.	2
	M	31417	PIN REMOVAL HOLE COVER	1
	N	31416	PIN RETAINING HOLE COVER	1
	O	31409	LOCKING KNOB	1
	P	31575	LARGE PARTICLE DUST COLLECTION BIN	1
	Q	31433	RUBBER GASKET, CYCLONE	1
	R	20856N	FILTER BAG SUPPORT ASSEMBLY	1
	S	31567	FILTER SUPPORT ROD	1
	T	31545	DUST SHROUD RETAINING PIN	1
U	20898N	PTO SHAFT, HONDA	1	
V	31437	1 1/2" SUCTION HOSE	1	
W	31438	4" SUCTION HOSE	1	

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Figure 9-14 Dust Control Router (continued)

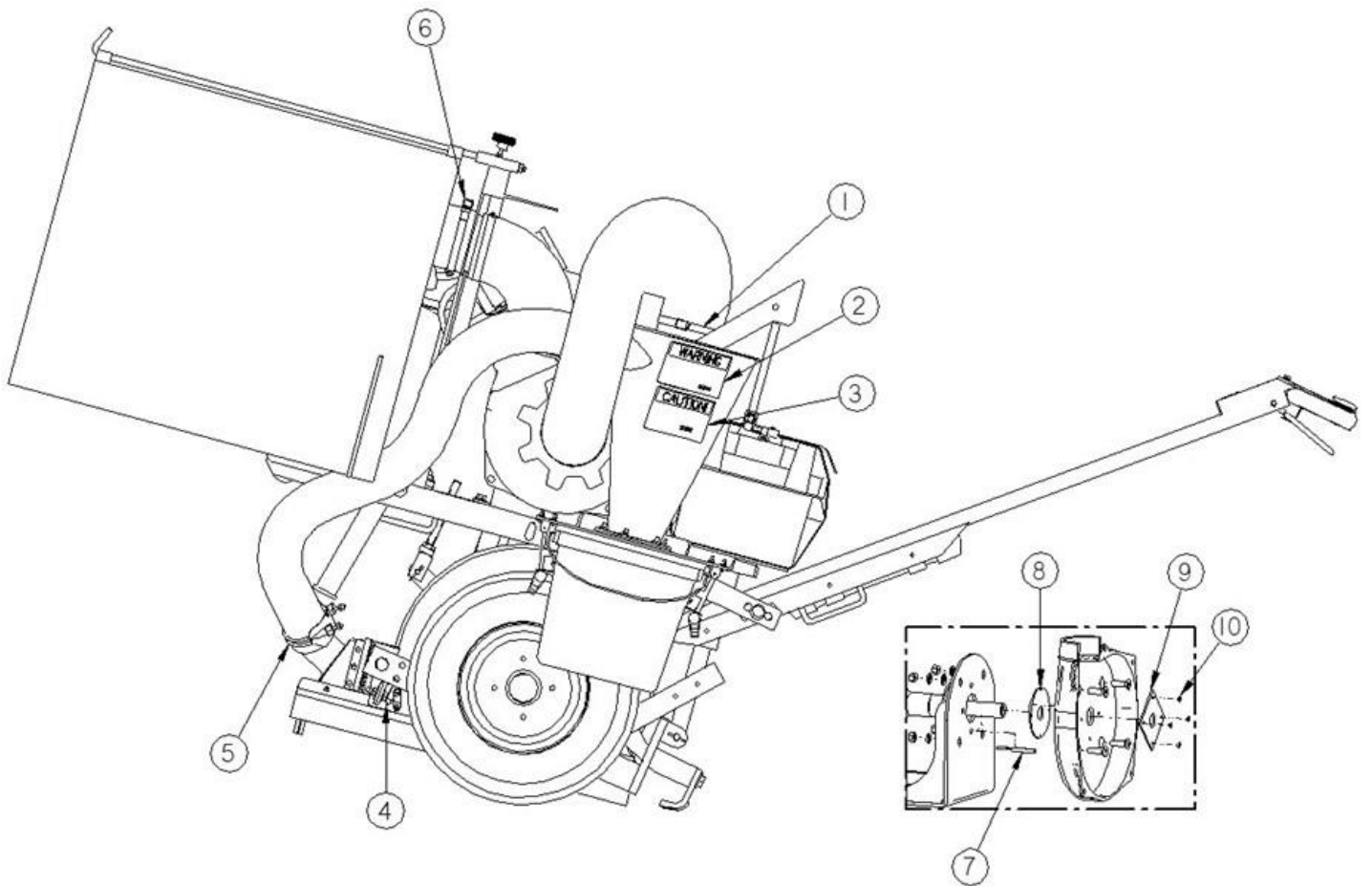


Table 9-10 Dust Control Router (continued)

FIG	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-14	1	26092	GEAR CLAMP, SAE # 64	4
	2	31544	DECAL, DUST SHROUD ATTACHMENT	1
	3	31543	DECAL, DUST SHROUD STORAGE	1
	4	29657N	COILED BENT - WIRE LOCKING PIN	1
	5	31739N	CLAMP, 2-1/2" SDBC	2
	6	31418	ADJUSTABLE QUICK RELEASE GEAR CLAMP	1
	7	31738N	MODIFIED KEYWAY, BLOWER SHAFT SEAL	1
	8	31736N	BLOWER SHAFT, INNER SEAL	1
	9	31737N	BLOWER SHAFT, OUTER SEAL	1
	10	28992	3/16 BLIND RIVET, 7/8" LENGTH	4

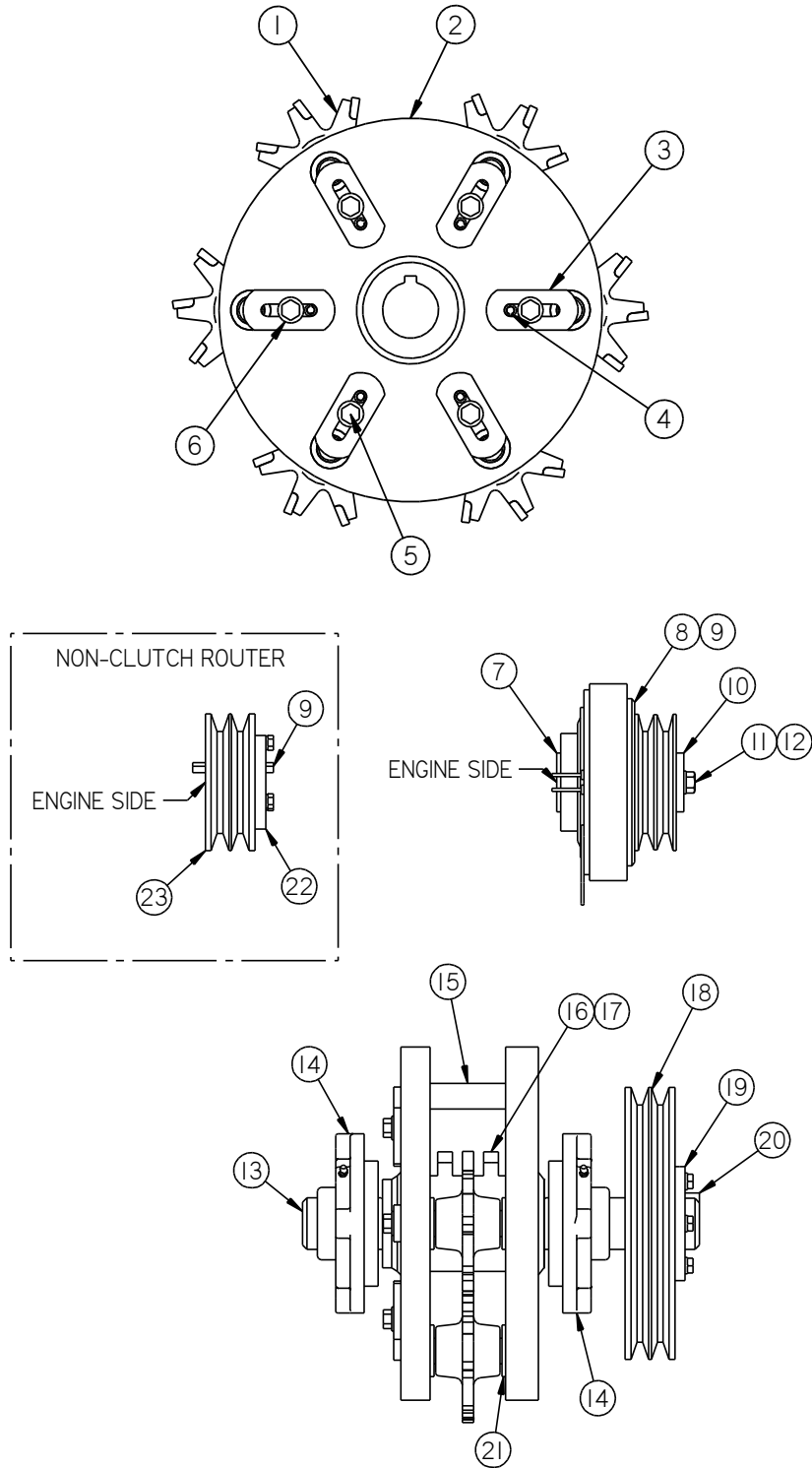
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9.8 Cutter Head and Drive Components

Figure 9-15 Cutter Head and Drive Assembly



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Table 9-11 Cutter Head and Drive Assembly

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9-15	1	31145	WIDE HUB CARBIDE TIPPED CUTTER	6
	2	31032	CUTTER HEAD	1
	3	31120	RETAINING TAB	6
	4	32061	3/8 X 3/4 ROLL PIN	6
	5	32039	3/8" – 16 X 3/4" BOLT	6
	6	28672	3/8" FLAT WASHER	6
	7	28688	CLUTCH INNER WASHER (NEXT TO ENGINE)	1
	8	31289	ELECTRIC CLUTCH (INCLUDES PULLEY)	1
	9	31004	KEY, 1/4 X 2 3/4	1
	10	28689	RETAINING WASHER (NEXT TO CLUTCH)	1
	11	28897	BOLT, 7/16 X 1 1/4	1
	12	28684	WASHER	1
	13	31073	MAIN SHAFT	1
	14	32043	BEARING	2
	15	31114	CUTTER PIN	6
	16	28847	1/2 - 13 X 1 SQUARE HEAD SETSCREW	2
	17	31072	KEY – 3/8 X 4	1
	18	32072	SHEAVE	1
	19	32071	1 3/4 BUSHING	1
	20	31071	3/8 X 1 5/8 SQUARE KEY	1
	21	32093	7/8" HARDENED WASHER/SPACER	VARIABLE
	22	32079	BUSHING (1-1/8" SDS)	1
	23	32068	SHEAVE 2G5V 4.65 DIAMETER	1

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9.9 Pavement Cutter Selection

Table 9-12 Cutter Options and Selection Guide

<p>31134 Standard Steel Standard Hub</p>		<p>PCC Pavement AC Pavement</p>	<p>Cast steel cutter for use with 11 hardened steel spacers. Able to be configured to cut ½” wide to 1 ½” wide. (See Figure 9-17)</p>
<p>31136, 31137 Carbide Tip Standard Hub</p>		<p>AC Pavement</p>	<p>Cast Steel Cutter with a Carbide insert cutting surface. For use with 11 hardened steel spacers. Able to configure to cut ½” to 1 ½” wide. (See Figure 9-17).</p>
<p>31149 Carbide Tip Standard Hub Extended Life</p>		<p>AC Pavement</p>	<p>Hardened Cast Steel Cutter with a Carbide insert cutting surface for extended cutting life. For use with 11 hardened steel spacers. Able to configure to cut ½” to 1 ½” wide. (See Figure 9-17)</p>
<p>31135 Carbide Tip Wide Cut</p>		<p>AC Pavement</p>	<p>Cast Steel Cutter with a Carbide insert cutting surface. Hub removed to allow the cutter to be stacked for wider cuts. For use with up to 15 hardened steel spacers. Able to be configured to cut ½” to 2” wide. (See Figure 9-18)</p>
<p>31145 Carbide Tip Wide Hub</p>		<p>AC Pavement</p>	<p>Cast Steel cutter with a Carbide insert cutting surface. For use with 2 hardened steel spacers (cutters come with 2 spacers). Able to be configured to cut ½” to ¾” wide. Designed to provide a cleaner cut. (See Figure 9-19)</p>
<p>31138 Carbide Tip Extra Long</p>		<p>AC Pavement</p>	<p>Cast Steel Cutter with a Carbide insert cutting surface. Longer teeth for cutting depth up to 2”. For use with 12 hardened steel spacers. Able to be configured to cut ½” to 1 ½” wide. (See Figure 9-20).</p>

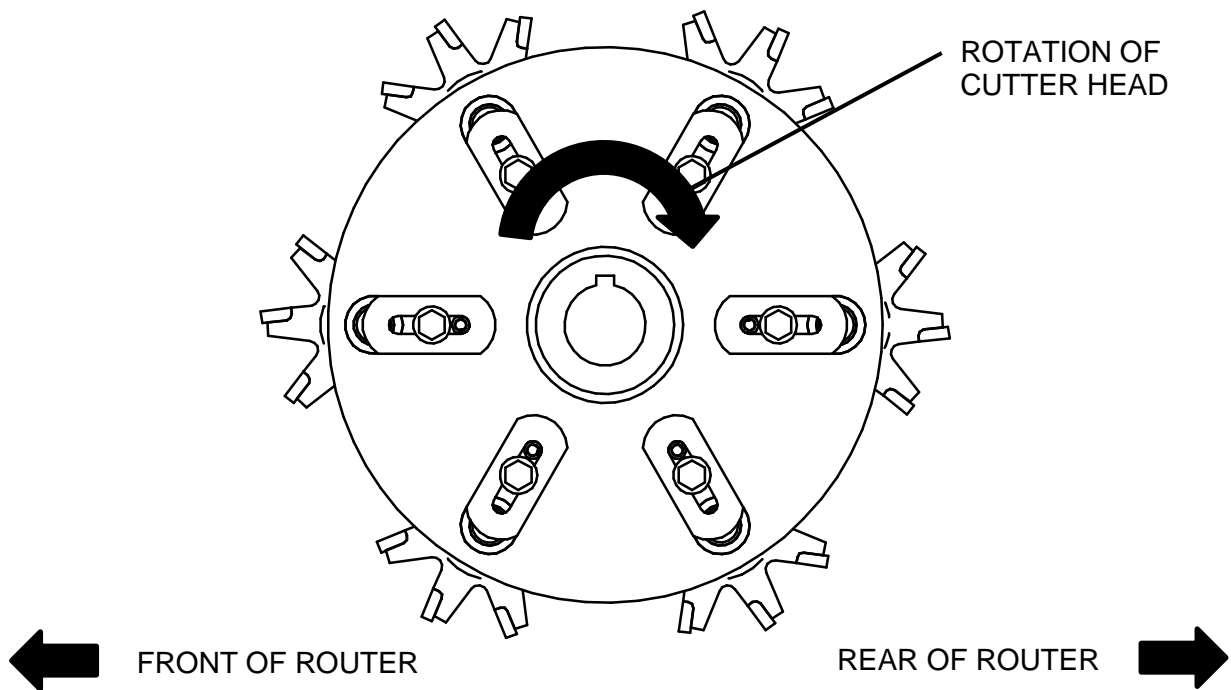
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9.10 Cutter Positioning

WARNING

Install replacement cutters as shown. Failure to install correctly will result in rapid deterioration of carbide tip.

Figure 9-16 Cutter Direction



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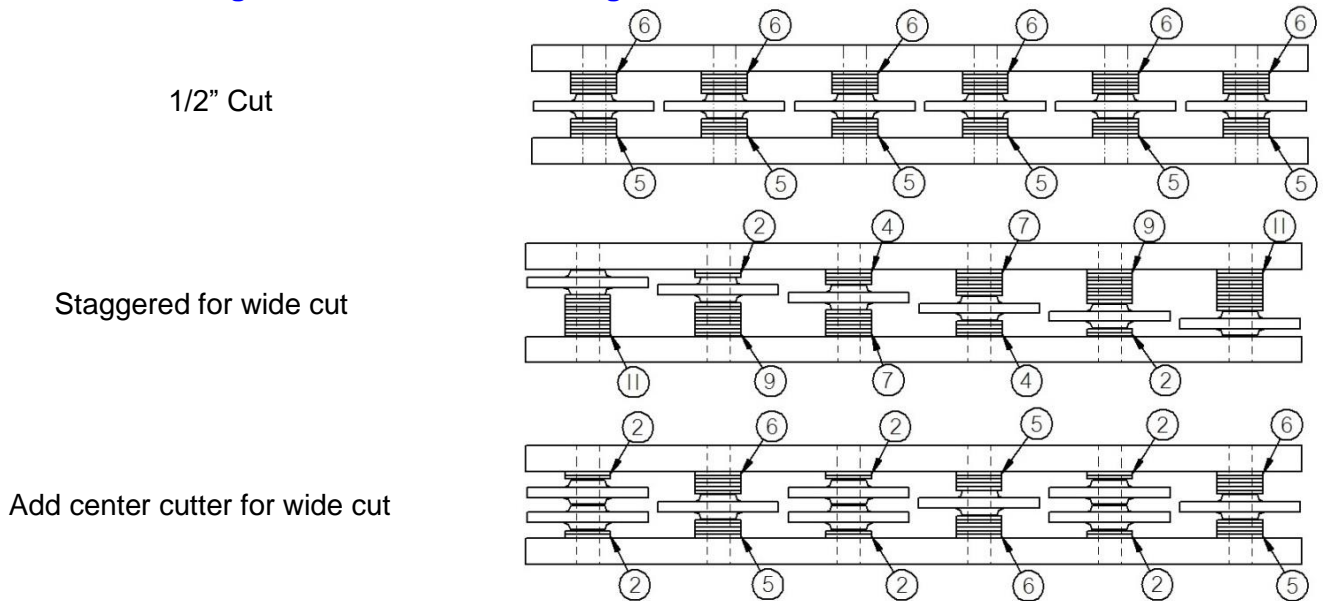
9.11 Cutter Positioning

The following sections illustrate the spacing options for the different types of cutter heads available.

9.11.1 Cutter Positioning for Cutter Part Numbers 31134, 31136, 31137, 31149

Cutters can be aligned or staggered to configure the desired cut width. For wider cutting additional cutter can be added to a single pin to achieve a smoother finished cut. Always use enough Hardened Spacers to keep cutters appropriately positioned on the pin while still allowing the cutter to turn completely free.

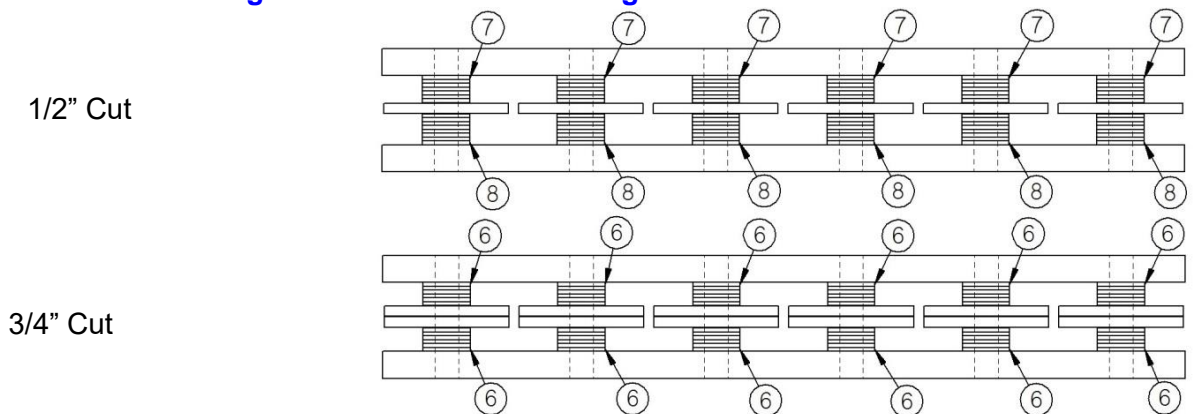
Figure 9-17 Cutter Positioning for 31134, 31136, 31137, 31149



9.11.2 Cutter Position for Cutter Part Number 31135 Shaved Cutter

Cutters can be aligned to configure the desired cut width. For wider cutting additional cutters can be added to a single pin to achieve a smoother finished cut. Always use enough Hardened Spacers to keep cutters appropriately positioned on the pin while still allowing the cutter to turn completely free. The main consideration is placing equal number of cutters and spacers on opposite pins to maintain balance. Failure to do so could result in permanent damage to the machine and possibly injury to the operator.

Figure 9-18 Cutter Positioning for 31135

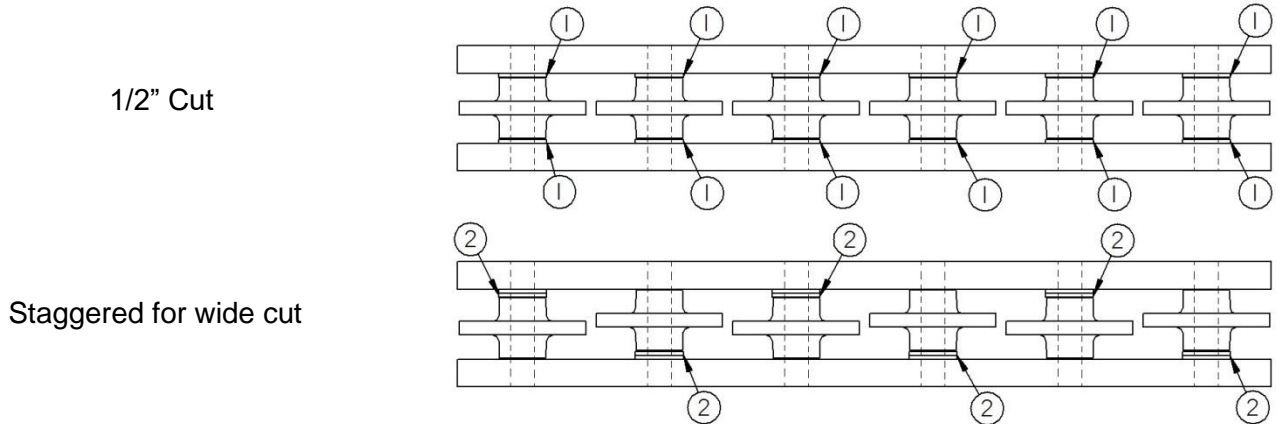


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9.11.3 Cutter Positioning for Part Number 31145

Cutters can be aligned or staggered to configure the desired cut width. Two Hardened Spacers are used with this cutter. Cutter produces a cleaner cut and causes less cutter bore wear.

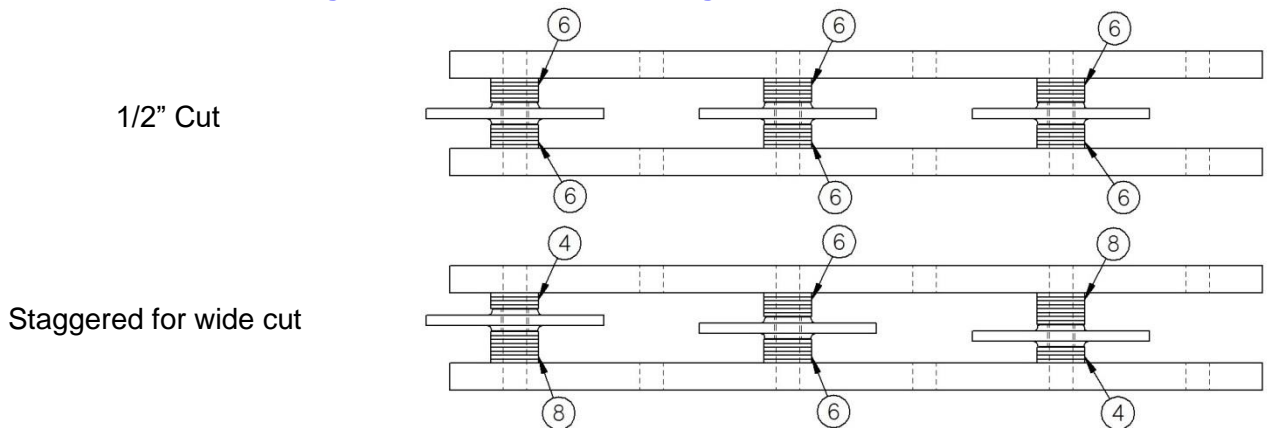
Figure 9-19 Cutter Positioning for 31145



9.11.4 Cutter Positioning for Part Number 31138, 6 1/2" Cutter

Cutters can be aligned or staggered to configure the desired cut width. For wider cutting additional cutters can be added to a single pin to achieve a smoother finished cut. Always use enough Hardened Spacers to keep cutters appropriately positioned on the pin while still allowing the cutter to turn completely free.

Figure 9-20 Cutter Positioning for 31138



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