

**Our associates will ensure the tool works properly before you leave the store. If you experience issues with the tool while completing your project, simply bring it back to the Tool Rental Center to get a replacement. If you purchase Damage Protection at the time of your rental, you are not responsible for repair costs for tools that break due to normal use.**





# Customer Safety and Operation Guide

*Electric Eel*®

Electric Eel Model E  
50 Ft. Electric Snake

Email: [info@electriceel.com](mailto:info@electriceel.com)

Website: [www.electriceel.com](http://www.electriceel.com)

## **WARNING**

### Safety Topics



Read and understand all safety and operational guidelines before operating this machine. Failure to follow safety and operations guide could result in death or serious injury. Please visit [www.electriceel.com](http://www.electriceel.com) for the manufacturers operation and safety manual for the Model E.

### Safety Checklist



### **DANGER!!!**

#### **TO PREVENT SERIOUS BODILY INJURY:**

1. **ALWAYS** wear heavy leather gloves and safety glasses when operating equipment.
2. **DO NOT** wear loose clothing or jewelry while operating this machine.
3. Use foot switch to operate machine while keeping good footing and balance at all times. **DO NOT OVERREACH.**
4. Machine, foot switch and cable should be **operated by one person only.**
5. **ALWAYS** keep all guards in place during operation.
6. **ALWAYS** wear rubber-soled non-slip shoes.
7. **ALWAYS** avoid contact of skin, facial area and especially eyes with drain water.
8. **ALWAYS** keep clear of rotating cages/drums, shafts, pulleys, belts or other rotating parts.

WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



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### **WARNING**



### **DANGER!!!**

#### **TO PREVENT SERIOUS BODILY INJURY AND TO AVOID DANGER FROM ELECTRICAL SHOCK:**

To ensure protection against electric shock, test the GFCI before each use. When test button is pushed in, the indicator light should go off. Reactivate the device by pushing the reset button in. If the indicator light goes on, the device is ready for use. **DO NOT** use the device if the indicator light does not go on when reset or if the indicator light remains on, when the test button is pushed in. This device does not guard against electric shock resulting from defects or faults in any wiring supplying power to this device, or from contact with both circuit conductors.

1. **ALWAYS** use a Ground Fault Circuit Interrupter (GFCI) with a properly grounded outlet for all electrical cords, connections, and parts as installed by factory and **DO NOT** make any alterations.
2. **NEVER** use the machine in damp or wet conditions.
3. **NEVER** expose machine to rain.
4. **THE USER SHOULD NEVER ATTEMPT TO SERVICE THE ELECTRICAL COMPONENTS.** For safety reasons all electrical replacement components should be installed by a qualified electrician.
5. Before making adjustments or changes to power units, disconnect from electrical source.
6. If an extension cord is used, the power source **MUST** be equipped with a Ground Fault Circuit Interrupter (GFCI) and properly grounded.
7. Only use 14/3 or larger three-wire extension cords.
8. When using an extension cord outdoors, only use those intended for outdoor use. (Indicated on cord by suffix “W-A” after cord type.)



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### **WARNING**

#### GENERAL SAFETY – ROTATING CABLES AND EQUIPMENT



**DANGER!!!**

#### **TO PREVENT SERIOUS BODILY INJURY AND TO AVOID DANGER FROM ROTATING CABLES AND EQUIPMENT:**

1. **USE CAUTION AT ALL TIMES.** Cable can twist or kink and cause serious injury. Fingers or other body parts can be caught in rotating parts.
2. **NEVER** handle any cable under tension. Relieve all tension build up before attempting to handle cable.
3. **DO NOT** continue to operate machine when cleaning tool becomes stuck in an obstruction. **Excess torque on a cable could cause it to fracture.**
4. **NEVER** force a tool and cable into a pipeline blockage.
5. **ALWAYS** wear **HEAVY** leather gloves and safety glasses when operating machine.
6. Use correct tool for the job or application. Check the tool listing for the correct tool and line size.
7. To maintain safe and efficient operation, thoroughly clean all cables with water after use. Acids in the drain and sewer lines attack and deteriorate the metal of the cables and tools.



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**Tool Application:** Clears 1-1/4" through 3" diameter drain lines up to 50 Ft.  
Kitchen sinks and laundry tubs.



**Standard Tools Included with the Model E Kit:**

1. **DN-10** General purpose tool
2. **DN-11** Drill point tool
3. **DN-12** Finishing/Grease tool



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**Follow the steps below to operate the tool**

Step	Action
1	Place the machine within 3 ft. of the drain or sewer clean out.
2	Attach a small spear-type cleaning tool to the end of the cable. This tool will enable you to bore a starter hole in the obstruction, allowing backed-up water to drain.
3	Position foot actuator for easy operator accessibility.
4	Make sure FOR/REV switch is in the <b>FORWARD</b> position. Run the machine in forward at all times during cleaning operation, use reverse only to dislodge tool lodged in pipe line.
5	With the machine in the off position, hand feed the cleaning tool and cable into the sewer line clean out as far as can be easily done.
6	With gloved hands on cable, begin depressing the foot actuator to start the machine. <b>ALWAYS</b> keep two hands on the cable in order to guide and control the rotating cable.
7	Apply downward pressure with gloved hands on cable; rotating cable will slowly work its way into the line.
8	Repeat steps 6 and 7 until the obstruction is met. This will become apparent as operator can no longer feed additional cable into the line and/or cable slows or fails to rotate. <b>WARNING: DO NOT ALLOW</b> machine to run when cleaning tool becomes stuck in the obstruction and cable fails to rotate. This will cause <b>EXCESS CABLE TENSION</b> and allow the cable to kink, and/or break due to excess torque build-up. If tool becomes stuck, switch motor for Forward to Reverse operation, and slowly back tool out of obstruction.
9	To work tool through obstruction, place toggle switch in <b>FORWARD</b> direction and begin running cable into line. When the cable hits an obstruction and starts to load, the operator should pull on the cable in order to back tool away from obstruction. This procedure should continue until tool has fully worked its way through the obstruction. <b>NOTE:</b> For larger lines, it will be necessary to repeat steps 5 through 9 with a larger tool or blade after the obstruction has been penetrated.



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### Tool Operation (Continued):

Step	Action
10	To retrieve cable from sewer line, manually pull cable from sewer and hand feed back into the machine with it running in <b>FORWARD</b> rotation. <b>NOTE:</b> It is recommended that you use a continuous flush of water to clean tool, cable and sewer line as cable is retrieved.
11	As tool nears coming out of the drain or sewer opening, release foot actuator and allow machine to come to a complete stop.
12	Pull remaining cable and tool from drain/sewer line and hand feed cable back into machine.

**OPERATOR'S MANUAL and MORE INFORMATION AVAILABLE AT:**

Website: [www.electriceel.com](http://www.electriceel.com)

Toll-Free: 800-833-1212

# Electric Eel<sup>®</sup>

## MODEL E Drain Cleaning Machine

### Operator's Manual



**!! DANGER !!**

**FOR YOUR SAFETY**

Before you operate or maintenance this equipment, READ this manual carefully and completely!

Purchase Date: \_\_\_\_\_

Serial Number: \_\_\_\_\_



**ELECTRIC EEL MANUFACTURING CO., INC.**

501 West Leffel Lane, Springfield, Ohio 45506

Call Toll Free: (800) 833-1212 (937) 323-4644 FAX: (937) 323-3767

[www.electriceel.com](http://www.electriceel.com)

*Proudly Made in The USA Since 1939*

# Description, Specifications, and Equipment

## DESCRIPTION

The Electric Eel Model E Drain Cleaning machine is the newest of Electric Eel's complete line of quality sewer and drain cleaning equipment. This drum machine is specifically designed for the professional when cleaning 1 1/4" to 3" lines through 75 feet.

## STANDARD FEATURES

1. Power cord is wrapped around conveniently-placed brackets for safe, problem-free transport.
2. Additional rear bar shields motor and allows for more flexible two position operation.
3. Easy-to-use operated foot switch allows the use of both hands when working with cable.
4. Ground Fault Circuit Interrupter (GFI) safety features comes standard with 20 foot power cord.
5. Heavy duty, durable tubular frame provide stability and balance while in operation.
6. Epoxy powder-coated drum deters corrosion caused by caustic drain-cleaning elements.
7. Cast aluminum bracket with bearing supported guide tube.
8. Cable available in either 3/8" or 1/2" certified music wire with genuine galvanized aircraft wire inner core for longer life.
9. Unique inner drum design helps to prevent cable buckling.
10. Build-in drum-shaft slip clutch minimizes cable and tool breakage and provides overload protection.
11. Impact-resistant plastic belt-guard for additional operator safety.
12. Rugged 1/3 H.P. reversible motor delivers plenty of speed cleaning power.

## SPECIFICATIONS

Drum Capacity: ..... 75 ft. of either 3/8" or 1/2" certified music wire with genuine galvanized aircraft wire inner core cable.

Line Capacity: ..... 1 1/4" to 3" lines up to 75

Weight: ..... (machine only) 53 lbs.

Frame: ..... 1" open space framework

Clutch: ..... Dual disc drum shaft slip clutch.

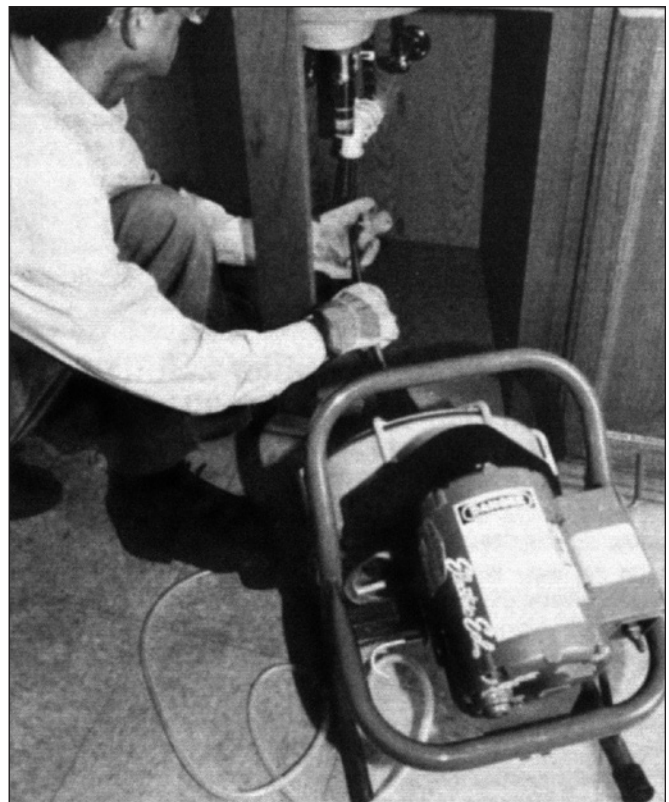
Motor: ..... 1/3 H.P. reversible

## STANDARD EQUIPMENT

Electric Eel Motor E come complete with: 50 ft. of either 3/8" or 1/2" certified music wire with genuine galvanized aircraft wire inner core cable.

3 Cleaning tools.

One pare of leather gloves.



# Safety Instructions

The following safety rules for operating Electric Eel Sewer and Drain Cleaning equipment **MUST** be read carefully before operating this machine.

 <b>DANGER</b> 		
		
<p>To prevent serious injuries including:</p> <ul style="list-style-type: none"><li>• Shock, electrocution or burns due to improper grounding.</li><li>• Serious injuries to body, limbs or hands and feet due to cables that twist, kink and break.</li><li>• Eye injuries caused by loose cable, thrown debris or splashed water.</li></ul>		
<b>READ SAFETY INFORMATION THOROUGHLY!</b>		

 **DANGER** 

## TO PREVENT SERIOUS BODILY INJURY:

### GENERAL SAFETY

1. **ALWAYS** wear reinforced leather gloves and safety glasses when operating equipment.
2. Place machine within 3 feet of inlet and keep both hands on rotating cable during operation.
3. Do not wear loose clothing or jewelry while operating this machine.
4. Use foot switch to operate machine while keeping good footing and balance at all times. **DO NOT OVERREACH!**
5. Keep belt guard in place during operation.
6. The Model "E" Drain Cleaning Machine should be operated by one person only. Additional personnel in the work area should observe all safety instructions.
7. Wear rubber-soled non-slip shoes.

8. **ALWAYS** avoid direct contact of skin, facial area and especially the eyes with drain water. Chemical compounds used in drains can result in serious burns and other injuries.
9. Replace fittings, cables and any rotating parts as soon as they become visibly worn. Replace any cables which become fractured, bent, kinked, or any other damage occurs.
10. **NEVER** attempt to service equipment beyond the recommendations of the operating instructions. All other servicing should be referred to qualified service personnel.
11. To maintain safe operation, use only identical replacement parts and cables from Electric Eel.
12. **ALWAYS** keep clear of rotating drums, cages, shafts, pulleys, belts, or other rotating parts.

 **DANGER** 

## TO AVOID SERIOUS BODILY INJURY AND TO AVOID DANGER FROM ELECTRICAL SHOCK:

1. **ALWAYS** use a ground fault interrupted circuit with a properly grounded outlet for all electrical cords, connections, and parts as installed by factory and **DO NOT** make any alterations.
2. **NEVER** use machine in damp or wet conditions.
3. **NEVER** expose machine to rain.
4. **THE USER SHOULD NEVER ATTEMPT TO SERVICE THE ELECTRICAL COMPONENTS.** For safety reasons all electrical replacement components should be installed by a qualified electrician.
5. Before making adjustments or changes to power units, disconnect from electrical source.
6. If an extension cord is used, the power source must be equipped with a ground fault interrupter circuit and properly grounded.
7. Only use 14/3 or larger three-wire extension cords with three-prong grounding plugs and three-pole receptacles.
8. When using extension cord outdoors, only use those intended for outdoor use. (Indicated on cord by suffix "W-A" after the cord type.)

## THE GROUND FAULT CIRCUIT INTERRUPTER

This machine is equipped with a Ground Fault Circuit Interrupter which is designed to prevent a serious electrical shock. This device should be tested on the job site before putting the machine into operation, as follows:

1. To ensure protection against electric shock, test the device before each use. When test button is pushed in, the indicator light should go off. Reactivate the device by pushing the reset button in. If the indicator light goes on, the device is ready for use. Do not use the device, if the indicator light does not go on when reset or if the indicator light remains on, when the test button is pushed in.
2. This device does not guard against electric shock resulting from defects or faults in any wiring supplying power to this device, or from contact with both circuit conductors.



### TO PREVENT SERIOUS BODILY INJURY AND AVOID DANGER FROM ROTATING CABLES AND EQUIPMENT:

1. **DO NOT** operate machine in reverse except to free cleaning tool from an obstruction.
2. **DO NOT** continue to operate machine when cleaning tool becomes stuck in obstruction. **EXCESS TORQUE ON A CABLE COULD CAUSE IT TO FRACTURE.** (Refer to operating instructions, to free cleaning tool.)
3. **NEVER** handle any cable under tension.\*
4. **NEVER** force a tool and cable into a pipeline blockage. This may overload the cable or tool and cause it to fracture.
5. **ALWAYS** wear reinforced leather gloves and safety glasses when operating machine.
6. Keep both hands on rotating cable when machine is running.
7. Use correct tool for the job or application. Check the tool listing for the correct tool and line size.
8. To maintain safe and efficient operation clean thoroughly all cables with water after use. Acids in the drain and sewer lines can attack and deteriorate the metal of the cables and tools. Deterioration will cause weakness in cable and tools and result in fracture or breakage.
9. Replace all cables and tools that become deteriorated, worn, kinked, bent, or any other damage that occurs.

\*Relieve all tension build-up before attempting to handle cable.

## Machine Set-up



### TO PREVENT SERIOUS BODILY INJURY:

**THIS MACHINE IS EQUIPPED WITH A DRUM/DISC CLUTCH. THE MAXIMUM TORQUE OF THE CLUTCH SETTING MUST NEVER EXCEED 35 inch/lbs.**

**NEVER USE ANY CABLE IN THIS MACHINE OTHER THAN ELECTRIC EEL GALVANIZED AIRCRAFT WIRE REINFORCED MUSIC WIRE CABLE 3/8" OR 1/2" DIAMETER.**

The machine comes completely assembled except for cable.

### DRUM REMOVAL

- Disconnected power cord before any set up or maintenance is attempted.
- Remove pulley guard by flexing bottom edges outward and pulling upward.
- Push down on motor to compress spring. This will allow the belt to be removed.
- Pull spring loaded pin on rear of drum axle.
- Slide drum unit with clutch assembly forward.
- Use reverse procedure for reinstalling drum assembly.
- Reinstall pulley guard.

### CABLE INSTALLATION

- Loosen cable anchor from rear of drum.
- Completely uncoil cable to be installed. This will help avoid unnecessary kinking.
- Attach cable anchor to end of cable.
- Insert approximately 12" of cable through the guide tube into the drum. The cable should coil in the drum in the same direction as the decal indicates on the rear of drum.
- Grasp cable inside the drum near the end and position cable anchor on end so that the 1/4-20 screw can be inserted through the hole in the rear of the drum into the cable anchor.
- Insert remaining cable into the drum.

### MAINTENANCE

- Maintenance on the Model "E" machine should be minimal for the life expectancy of the machine.
- The drum/clutch should be exercised daily.

Exercise as follows:

- Plug in machine
- Grasp drum with two gloved hands firmly
- Depress foot pedal switch
- The machine will run but the clutch will slip as you hold the drum firmly. A few revolutions of slippage is all that is necessary

## CLUTCH ADJUSTMENT

- The clutch setting of 35 inches/lbs. must never be exceeded
- The clutch setting in most cases will not need to be adjusted for the life of the machine
- If the clutch needs to be reset, the following procedure should be used:
  1. Obtain an inch/lbs. torque wrench and E-20 adapter from Electric Eel.
  2. Fit the adapter to the nose cone of the Model "E" machine as per included instructions with the adaptor.
  3. Check the setting of the clutch with the torque wrench. If adjustment is needed, proceed as follows:
    - Remove 4 drum bolts from aluminum backing plate. This will allow drum removal and expose clutch mechanism.
    - Move clutch adjustment bolt  $\frac{1}{8}$  of a turn tighter or looser as needed and recheck setting after reassembly of drum. Repeat the procedure as needed to obtain 35 inch/lbs. maximum.
    - Reassemble and check all 4 bolts for tightness.

## Operating Instructions



**OPERATOR MUST BE THOROUGHLY FAMILIAR WITH ALL SAFETY INSTRUCTIONS BEFORE OPERATING THIS EQUIPMENT**

### FOR MANUAL FEED:

1. Place the drum machine within 3 feet of the sewer clean out.
2. Attach a small spear-type cleaning tool to the end of the cable. This tool will enable you to bore a starter hole in the obstruction, allowing backed-up water to drain.
3. Position foot actuator for easy operator accessibility.
4. Make sure **FOR/REV** switch is in the Forward position. Run machine in forward at all times during cleaning operation, use reverse only to dislodge tool lodged in pipe line.

5. Hand feed the cleaning tool and approximately one (1) foot of cable into sewer clean out.
6. With gloved hands on cable, begin depressing the foot actuator to start the machine. **ALWAYS** keep two hands on the cable in order to guide and control rotating cable.
7. Apply downward pressure with gloved hands on cable; rotating cable will slowly work its way into the line.
8. Repeat steps 6 and 7 until the obstruction is met. This will become apparent as operator can no longer feed additional cable into the line and/or cable slows or fails to rotate. **WARNING: DO NOT** allow machine to run when cleaning tool becomes hung up in obstruction and cable fails to rotate. This will cause cable to kink and/or break due to excess torque build-up. The clutch will also slip at this point further indicating the above condition. Switch the motor from forward to reverse and slowly back tool from obstruction.
9. To work tool through obstruction, place toggle switch in Forward direction and begin running cable into line. When the cable hits an obstruction and starts to load, the operator should pull on cable in order to back tool away from obstruction. This procedure should continue until tool has fully worked its way through the obstruction. **NOTE:** For larger lines, it will be necessary to repeat steps 5 through 9 with a larger tool or blade after obstruction has been penetrated.
10. To retrieve cable from sewer line, manually pull cable from sewer and hand feed back into the machine, while continuing to run machine in forward rotation. **NOTE:** It is recommended to use a continuous flush of water to clean tool, cable and sewer line as cable is retrieved.
11. When tool is close to clean out opening release foot actuator and allow machine to come to complete stop.
12. Pull remaining cable and tool from sewer line and hand-feed cable back into machine.

**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**Our associates will ensure the tool works properly before you leave the store. If you experience issues with the tool while completing your project, simply bring it back to the Tool Rental Center to get a replacement. If you purchase Damage Protection at the time of your rental, you are not responsible for repair costs for tools that break due to normal use.**



### **GENERAL MINI ROOTER 50'**



# **Mini-Rooter®**

## ***Operating Instructions***

**For 1-1/4" through 4" lines  
(30mm—100mm)**

**Read, understand and follow all safety warnings and instructions provided with the product. Failure to follow the warnings and instructions may result in electric shock and/or serious injury. Save all warnings and instructions for future reference.**

***SAVE THESE INSTRUCTIONS!***



***PIPE CLEANERS***



**WARNING**

Read and understand operator's manual before using this machine. Failure to follow operating instructions could result in death or serious injury.

**WARNING!** Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious personal injury. Replacement manuals are available upon request at no charge, or may be downloaded from our website, [www.drainbrain.com](http://www.drainbrain.com). Instructional videos are available for download on our website, and may be ordered. If you have any questions or problems, please call General's customer service department at 412-771-6300.

**SAVE THESE INSTRUCTIONS!**

These instructions are intended to familiarize all personnel with the safe operation and maintenance procedures for the Mini-Router.

**SAFETY SYMBOLS**



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**

DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

**WARNING**

WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

**CAUTION**

CAUTION indicates a hazard with a low level of risk which, if not avoided, will result in minor or moderate injury.

**WARNING**



Electric shock resulting in death can occur if you plug this machine into an improperly wired outlet. If the ground wire is electrified, you can be electrocuted by just touching the machine, even when the power switch is off. A ground fault circuit interrupter will not protect you in this situation. Use a UL approved tester to determine if the outlet is safe.



Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Power tools create sparks which may ignite dust or fumes.



Only wear leather gloves. Never use any other type of glove, such as cloth, rubber, or coated gloves. Never grasp a rotating cable with a rag. These items could become wrapped around the cable and cause serious injury.



Always wear safety glasses and rubber soled, non-slip shoes. Use of this safety equipment may prevent serious injury.



Never operate machine with belt guard removed. Fingers can get caught between belt and pulley.



Do not overstress cables. Overstressing cables may cause twisting, kinking, or breaking of the cable and may result in serious injury.

**WARNING**

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## GENERAL SAFETY RULES



### WARNING

Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

### SAVE THESE INSTRUCTIONS!

#### Work Area

1. **Keep work area clean and well lit.** Cluttered benches and dark areas invite accidents.
2. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
3. **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control.

#### Electrical Safety

1. **Grounded tools must be plugged into an outlet, properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.** If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
2. **Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is grounded.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately.** Damaged cords increase the risk of electric shock.
5. **When operating a power tool outside use an outdoor extension cord marked "W-A" or "W".** These cords are rated for outdoor use and reduce the risk of electric shock.
6. **Test the Ground Fault Circuit Interrupter (GFCI) provided with the power cord to insure it is operating correctly before operating machine.** Machine must have a properly functioning ground fault circuit interrupter on the power cord. GFCI reduces the risk of electric shock.
7. **Extension cords are not recommended unless they are plugged into a Ground Fault Circuit Interrupter (GFCI) found in circuit boxes or outlet receptacles.** The GFCI on the machine power cord will not prevent electric shock from the extension cords.
8. **Only use proper three-wire extension cords in good condition which have three-prong grounding plugs and three-pole receptacles which accept the tool's plug.** Use of damaged, inferior, or other extension cords will not ground the tool. Increases the risk of electric shock and bodily injury or death.
9. **Keep all electric connections dry and off the ground.** Reduces the risk of electric shock.
10. **DO NOT touch plugs or tools with wet hands.** Reduces the risk of electric shock.

#### Personal Safety

1. **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
2. **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
3. **Avoid accidental starting. Be sure switch is off before plugging in.** Carrying tools with your finger on the switch or plugging in tools that have the switch on invites accidents.
4. **Remove adjusting keys or switches before turning the tool on.** A wrench or key that is left attached to a rotating part of the tool may result in personal injury.
5. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.
6. **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

#### Tool Use and Care

1. **Use clamps or other practical way to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
2. **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
3. **Do not use tool if switch does not turn it on or off.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
4. **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventative safety measures reduce the risk of starting the tool accidentally.
5. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
6. **Maintain tools with care. Keep cutting tools sharp and clean.** Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.
7. **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
8. **Only use accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

#### Service

1. **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified repair personnel could result in risk of injury.
2. **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

## SPECIFIC SAFETY RULES



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.



Electric shock resulting in death can occur if you plug this machine into an improperly wired outlet. If the ground wire is electrified, you can be electrocuted by just touching the machine, even when the power switch is off. A ground fault circuit interrupter will not protect you in this situation. Use a UL approved tester to determine if the outlet is safe.



Do not overstress cables. Overstressing cables may cause twisting, kinking, or breaking of the cable and may result in serious injury.

1. **Only wear leather gloves.** Never use any other type of glove, such as cloth, rubber, or coated gloves. Never grasp a rotating cable with a rag. These items could become wrapped around the cable and cause serious injury.
2. **Never operate machine with belt guard removed.** Fingers can get caught between belt and pulley.
3. **Do not overstress cables.** Keep leather-gloved hand on the cable for control when machine is running. Overstressing cables because of an obstruction may cause twisting, kinking, or breaking of the cable and may result in serious injury.
4. **Place the machine at a distance not greater than two feet from the opening.** Greater distances can result in cable twisting or kinking.
5. **Machine is designed for ONE-PERSON operation.** Operator must control foot switch and cable.
6. **Do not operate machine in reverse (REV).** Operating machine in reverse can result in cable damage and is used only to back cutting tool out of an obstruction.
7. **Keep hands away from rotating drum.** Do not reach into drum unless machine is unplugged. Hand may be caught in the moving parts resulting in serious injury.
8. **Be careful when cleaning drains where cleaning chemicals have been used.** Avoid direct contact with skin and eyes. Drain cleaning chemicals can cause serious burns as well as damage the cable.
9. **Do not operate machine if operator or machine is standing in water.** Will increase risk of electrical shock.
10. **Wear safety glasses and rubber soled, non-slip shoes.** Use of this safety equipment may prevent serious injury.
11. **Before starting each job, check that the cable in the drum is not broken or kinked, by pulling the cable out and checking for wear or breakage.** Always replace worn out (kinked or broken) cables with genuine GENERAL replacement cables.
12. **Only use this tool in the application for which it was designed. Follow the instructions on the proper use of the machine.** Other uses or modifying the drain cleaner for other applications may increase risk of injury.

## Ground Fault Circuit Interrupter (GFCI)

Your machine is equipped with a ground fault circuit interrupter, which protects you against shock if a short circuit should occur. Check that receptacle is properly grounded. Test the GFCI before each use.

1. Plug into 120-volt receptacle.
2. Push test button. Indicator light will go out and power to machine should cut off.
3. If light does not go out when test button is pushed, **DO NOT USE THE MACHINE** until proper repairs can be made.
4. To restore power after test, push reset button. With the reset button depressed, if the machine doesn't start, stops while running, or if the operator experiences a mild shock, **DO NOT USE THE MACHINE!** Tag the machine out of service and take it to a motor repair center or return it to the factory for repairs.



**THE SECTION OF CORD BETWEEN THE WALL PLUG AND THE GFCI IS NOT IN THE PROTECTED CIRCUIT.**

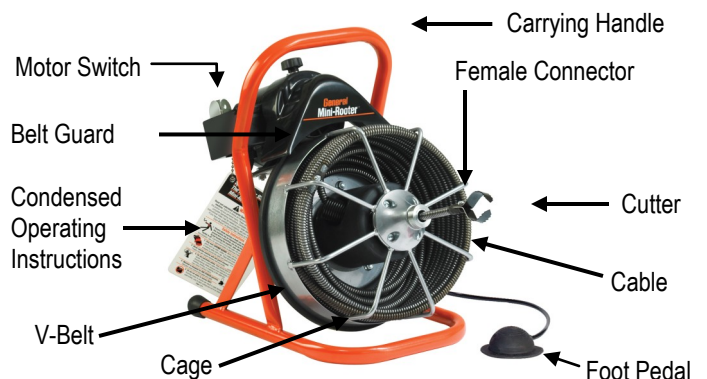
## FEATURES

### Mini-Router Closed Drum



**NOTE:** Do not operate machine if warning labels on the switch box and power cord are missing or illegible.

### Mini-Router Open Drum







**NOTE:** Do not operate machine if warning labels on the switch box and power cord are missing or illegible.

Cable Application Chart (Table 1)

Cable Size	Pipe Size	Typical Applications	Max. Capacity
1/2"	3" to 4"	Roof Stacks and Small Floor Drains (No roots)	75 ft.
3/8"	2" to 3"	Roof Stacks, Laundry Lines & Small Drains	75 ft.
*5/16"	1-1/2" to 2"	Sinks, Basins & Small Drains	50 ft.
*1/4"	1-1/4" to 2"	Small Lines, Tubs & Shower Drains	50 ft.

\*The 1/4" and 5/16" diameter cables are for use with the J-Drum and Dual Drum.

Cutter Application Chart (Table 2)

Cutter	Cat. #	Typical Applications
<b>Cutters for 3/8" and 1/2" Cables</b>		
Arrow Head	 AH	Starting tool, ideal for cutting and scraping.
Boring Gimlet	 BG	Starting tool, to remove loose objects.
1-1/2" U-Cutter	 1-1/2UC	Finishing tool, works well in grease stoppages.
2" Side Cutter Blade	 2SCB	Finishing tool, for scraping inside edges of pipe.

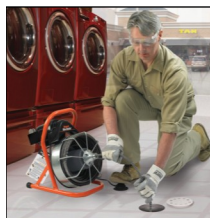
Note: There are no fixed rules for what cutter to use. If one tool does not take care of a stoppage, simply try another.

## OPERATING INSTRUCTIONS

### Set-Up



- Place machine within approximately two feet (.6m) of drain opening. If you can't place the machine this close to the drain opening, run the cable through a metal guide tube to prevent cable whipping.
- Position the foot pedal for easy accessibility. The machine is designed for one-person operation. Be sure you can quickly remove your foot from the pedal in an emergency.
- Be sure the motor switch is in the **off** position.
- Select the proper cutting tool (See Cutter Application Chart—Table 2). A good tool to start with is the Arrow Head or Boring Gimlet. After the line is opened, follow with larger blades, which scrape the inside edges of the pipe, assuring a real cleaning job.
- Insert the cutter into the female connector at the end of the 3/8" or 1/2" cable and tighten the connecting screw and lock washer *firmly* in place.

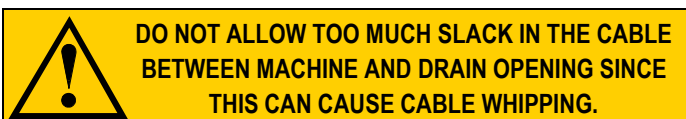


## Operation

- Begin by pulling the cable from the drum/cage and sliding it into the drain as far as it will go.
- Move the motor switch to the **forward** position.
- With both hands (wearing *leather* gloves) on the cable, depress the air foot pedal to start machine.
- Feed the cable into the line and against the obstruction with a firm, even pressure. Adjust the feeding rate to the resistance met. Do not force the cable – let the cutter do the work. The job won't get done any faster and you could damage the cable.

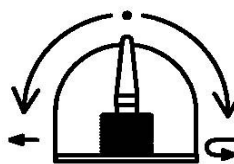
**DO NOT USE TOO MUCH FORCE –  
LET THE CUTTER DO THE WORK.**

- Don't leave too much slack in the cable since this will cause whipping. If the cable starts to bend or build up too much twist, release pressure on the foot pedal and rotate the drum in the opposite direction to relieve the twist on the cable. Push any excess cable back into the drum and then continue.



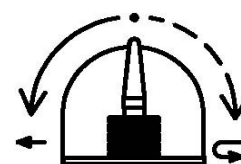
- If you're having trouble getting around tight bends, try putting the machine in reverse while applying steady pressure. (If using Power Cable Feed, putting motor in reverse will cause the feed control lever to operate opposite of normal.) Note: If your machine is equipped with a momentary contact reverse switch, you must hold the switch in position when operating the machine in reverse.

MOTOR SWITCH



FORWARD - OFF - REVERSE

MOMENTARY CONTACT SWITCH



FORWARD - OFF - HOLD to REVERSE

**Don't run motor in reverse for more than a few seconds at a time as this could cause tangling in the drum or kinking.**

- If you still can't get around the bend, you're probably using too large a cable. Switch to a 3/8" diameter cable, or even a smaller one if necessary. (See Cable Application Chart—Table 1)
- When the cable reaches the stoppage, allow the cable to progress forward slowly, chewing into the stoppage as it goes. This slow forward movement will reduce stress on the cable while doing a more thorough cleaning job. A back and forth action often works best.

**Hint:** It's often helpful to have a small stream of water running in the line to wash the cuttings away while the machine is in operation and after.

- 9. Be careful not to let the cutter get caught in the stoppage as you work through it. This can cause kinking and breaking of the cable. When you feel the cable starting to twist in your hands, stop the machine and pull back on the cable. This will free the cutter from the obstruction. Then allow the cable to move forward slowly into the stoppage. Remember, no cutting takes place when the blades stop turning.
- 10. After the line has been opened, retract the cable. Make sure the motor switch is in the **forward** position. This is important to prevent the cable from tangling in the drum or in the line.

- 5. Tighten the knob at the top of the Power Cable Feed so that the feed roller presses against the cable. Be sure not to over tighten since this could cause excess cable wear. Note: The Power Cable Feed is designed for use with 3/8" and 1/2" cables only.

**Note:** In operation, use the least pressure possible to get the job done in order to minimize wear on the feed and cable.

- 6. The feed lever controls the feeding rate and direction of the cable. Move the lever down to feed the cable out of the drum. The further the lever is moved downward, the faster the cable will feed out. Move the lever up to retract the cable into the drum. When the lever is in the middle (neutral) position, the cable will spin in place.
- 7. Move the motor switch to the **forward** position. Then, with a gloved hand on the guide tube, depress the air foot pedal to start machine.
- 8. Feed the cable into the line and against the obstruction with a firm, even pressure. Adjust the feeding rate to the resistance met. Do not force the cable – let the cutter do the work. The job won't get done any faster and you could damage the cable.

**DO NOT USE REVERSE TO PULL THE CABLE OUT OF THE DRAIN. RUNNING MACHINE IN REVERSE CAN CAUSE THE CABLE TO TANGLE IN THE DRUM.**

- 11. When the cutter is near the drain opening, take your foot off the pedal to stop drum rotation. Never retract the cutter from drain while cable is rotating. The cable could whip and cause serious injury.

**DO NOT USE TOO MUCH FORCE – LET THE CUTTER DO THE WORK.**

**POWER CABLE FEED**

(Optional. Cat. # PO-MR)

The variable speed Power Cable Feed is designed for use with 3/8" and 1/2" cables. If the feed was purchased separately, see "How to Install Power Cable Feed."

- 1. Be sure you have read and understand the instructions for manual feed before using the Power Cable Feed. Misuse of the feed can result in severe damage to the cable.
- 2. Put the feed control handle in the neutral position. Then, loosen the feed pressure knob and pull three feet of cable from the drum/cage.
- 3. Slide the guide tube (Cat. # MR-GT) over the cable and snap the tube into place on the feed spout. (Be sure to remove the cutter and connecting screw from the female connector first. Reattach desired cutter to cable after guide tube is attached to feed.)
- 4. Place machine within approximately two feet of drain opening. Be sure the Mini-Router Guide Tube (MR-GT) is in place. If you can't place the machine this close to the drain opening, run the cable through the optional Guide Tube Extension (GTE) or a metal guide tube to prevent cable whipping.

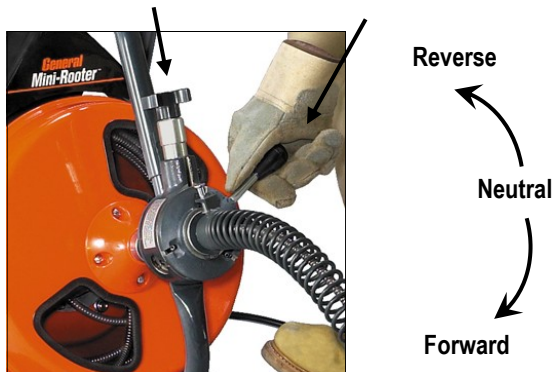


- 9. Don't leave too much slack in the cable since this will cause whipping. If the cable starts to bend or build up too much twist, release pressure on the foot pedal and rotate the drum in the opposite direction to relieve the twist on the cable. Push any excess cable back into the drum and then continue.

**DO NOT ALLOW TOO MUCH SLACK IN THE CABLE BETWEEN MACHINE AND DRAIN OPENING SINCE THIS CAN CAUSE CABLE WHIPPING.**

- 10. When the cable reaches stoppage, put the feed in neutral. Then allow the cable to progress forward slowly, chewing into stoppage as it goes. This slow movement will reduce stress on cable while doing a more thorough cleaning job. A back and forth motion often works best.
- 11. Move the feed lever to the reverse position (upward) to retract the cable. If more pulling power is required, the motor may be put in reverse and the feed lever moved downward to forward position.
- 12. After the line has been opened, retract the cable by moving the feed lever up. Make sure the motor switch is in the **forward** position. This is important to prevent the cable from tangling in the drum or in the line.

Feed Pressure Knob      Feed Control Lever



**DO NOT RUN MOTOR IN REVERSE FOR MORE THAN A FEW SECONDS AT A TIME SINCE THIS COULD CAUSE THE CABLE TO KINK OR TANGLE IN THE DRUM.**

- 13. When the cutter is near the drain opening, take your foot off the pedal to stop drum rotation. Never retract the cutter from drain while cable is rotating. The cable could whip and cause serious injury.

## SPECIAL OPERATIONS

### IF CABLE GETS CAUGHT IN LINE

The motor can be reversed to free cable if it gets caught in the line. Use the following procedure:

1. Move toggle switch on motor to reverse position.
2. Wearing leather gloves, pull on cable while the drum is turning in reverse.



**DO NOT RUN MOTOR IN REVERSE FOR MORE THAN A FEW SECONDS AT A TIME SINCE THIS COULD CAUSE THE CABLE TO KINK OR TANGLE IN THE DRUM.**

3. When the cable is freed, slide excess cable back into drum.
4. Move the toggle switch to the forward position again, and continue at Step 3 of the Operating Instructions.

### IF CABLE TANGLES IN DRUM

This is almost always caused by using too much pressure when feeding the cable, or by feeding the cable while running the machine in reverse. To untangle, rotate drum in opposite direction. This will usually get the cable to lie in the drum properly.

If cable has become badly tangled, which shouldn't happen when machine is used properly, it can be straightened out by removing the distributor tube from the drum. To do this:



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE INSTALLING CABLES OR DRUMS!**

1. Loosen the four bolts that hold the distributor tube cone on the front of the drum.
2. Pull the cone and distributor tube forward, then pull the tangled portion of the cable out of the drum.
3. After the cable has been straightened out, slide the distributor tube and cone back along the cable until it can be repositioned and bolted to the front of the drum.
4. Then, push the excess cable back into the drum.

### HOW TO REMOVE DRUM FROM MACHINE



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE INSTALLING CABLES OR DRUMS!**

1. Push down on the spring-loaded motor and slide the V-Belt off the back of the drum.
2. Reach behind the drum and locate the drum-retaining latch. Pull the latch to release the drum shaft, then pull the drum forward off of the machine.
3. To install the drum, simply slide drum onto machine. The latch will lock automatically.



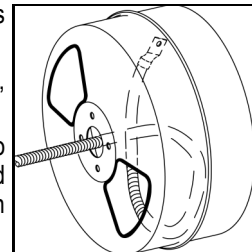
4. Remove the belt guard by loosening retaining knob on top. Position the V-Belt around the drum, then press down on the motor and slip V-belt onto the pulley. Be sure to reattach the belt guard.

### HOW TO INSTALL 3/8" AND 1/2" CABLES IN DRUM



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE INSTALLING CABLES OR DRUMS!**

1. There is a socket inside the drum for the back end of the cable. Rotate the drum so that the socket is at the bottom.
2. Position the distributor tube so that it is pointing downward.
3. Push the cable into the drum until there is a full loop in the drum.
4. Reach into the drum, grasp the cable, and bend it into the socket.
5. Remove V-Belt and rotate the drum to the right, or clockwise, with one hand while pushing cable into the drum with the other hand.



**Note:** The cable should lay in the drum in a clockwise direction.



### HOW TO USE J-DRUM

(Optional. Cat. No. MR-250)

The J-Drum holds 50 feet of 1/4" or 5/16" cable to be used when you need to clear smaller 1-1/4" to 2" lines. These cables have a basin plug head that can be spun through most strainers. (See Cable Application Chart—Table 1)



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE INSTALLING CABLES OR DRUMS!**

1. To install cable, open chuck jaws fully so that cable will pass through easily.
2. Slide the back end of the cable (opposite to the end with basin head) through spout and into the drum. The cable will be easier to install if you bend the last inch of cable at a 45 degree angle.
3. When working through difficult stoppages or tight bends, tighten the chuck to provide more torque and to prevent the cable from tangling in the drum.
4. Clean and lubricate chuck regularly to prevent corrosion.

### HOW TO USE DUAL-DRUM

(Optional—Cat #MR-280)

The Dual-Drum holds two different diameter cables at the same time. Inner and outer drum compartments protect the cable from tangling. You can easily switch from 1/4" to 5/16" or 3/8" cables without removing either one from the drum.



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE INSTALLING CABLES OR DRUMS!**

1. Install 1/4" cable into the Dual-Drum by sliding the back end of the cable (opposite to end with basin head) through spout and into the inner drum. The cable will be easier to install if you bend the last inch of cable at a 45-degree angle.

2. Install the 5/16" or 3/8" cable into the outer drum by sliding the back end of the cable (opposite to the end with the Female connector) through the spout. Reach one hand into the drum through one of the two ports in the face of the drum and pull the cable end to the left side of the outer drum. Then push another two feet of cable into the drum while pulling the cable downward to form a loop. The cable should lay in the drum in a clockwise direction.
3. Select the appropriate cable for the line you are working on. (See Cable Application Chart—Table 1) If a 1/4" cable is required, reach into the Dual-Drum and pull the cable out of the inner drum and through the spout. If a larger cable is required, slide the 1/4" cable back through the spout, then reach into the drum and pull the 5/16" or 3/8" cable from the outer drum through the spout.
4. Each of the cables can be "chucked" in place to provide more torque by pressing the knurled knob against the spring and tightening it against the cable

**Note:** Use HE cables only in Dual-Drum—not EM cables.

## HOW TO INSTALL DOLLY

(Optional. Cat. No. MR-W)

The dolly makes it easy to transport the Mini-Router to and from the job. Designed especially for the Mini-Router, it snaps on and off in seconds and holds the machine securely.

To install:



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE INSTALLING DOLLY!**

1. Hold the dolly horizontally above the Mini-Router with the wheels toward the back of the machine.
2. Tilt the top of the dolly down so the hooks on the mid-point of the dolly slip under the top crossbar of the machine. Then, lower the wheels to the ground.
3. Step behind the machine. With one foot on the axle, tilt the machine back.
4. Swing the locking brackets over the rear gussets and tighten the knobs on either side to hold the dolly securely in place.



## HOW TO INSTALL POWER CABLE FEED

(Optional. Cat. No. PO-MR)



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE INSTALLING POWER CABLE FEED!**

1. Put the feed control lever in the neutral (middle) position, then loosen the feed tension adjustment knob until the top feed roller lifts out of the way.
2. Pull three feet of cable from drum/cage. Remove cutter and connecting screw from cable.



3. Fully loosen upper clamp knob on the feed support bracket and snap the clamp over the Mini-Router's upper frame. Center the feed over the drum spout and slide the cable through the feed rollers. Then moderately tighten the knob.
4. Loosen the two lower clamp cap screws to allow the clamps to fit over the lower frame. Note that the "short" clamp half should be closest to the floor.
5. It may be necessary to loosen and re-adjust the upper tube length to get the correct fit. Loosen the two set screws in the upper tube and slide the assembly to get the best fit.
6. When alignment is correct, tighten the lower clamp set screws. Screws should **not** be fully tightened. Make snug only so that the bracket is able to pivot.
7. Fully tighten the upper tube set screws.
8. Test the bracket by loosening the knob and swinging the feed assembly outward. It should disengage and swing smoothly.
9. Swing the feed assembly back and the clamp should snap into the locked position. Tighten the knob to secure the feed for operation. Do not attempt to use or transport the unit unless the upper clamp knob is tightened.

## MAINTENANCE



**DISCONNECT MACHINE FROM POWER SOURCE BEFORE PERFORMING MAINTENANCE!**

To keep your machine operating smoothly, it is essential that all bearings and distributor tube bushings be lubricated. Oiling moving parts is particularly important where machine comes in contact with sand, grit and other abrasive material.

### CABLE MAINTENANCE

To get maximum service from your cables, be sure that they are clean and well oiled. This not only provides running lubrication but greatly extends the life of the cables as well. Some users periodically pour oil directly into the drum. Then, as the drum turns, the cables get complete lubrication. Our SNAKE OIL is ideally suited for this purpose, since it not only lubricates the cables, it deodorizes them as well.



### POWER FEED MAINTENANCE

Keep feed free of excessive soil and grit. It is recommended that the feed be flushed with fresh water followed by a light oiling of the moving parts. No disassembly is normally required. Failure to feed can usually be traced to the following possibilities:

### DIRT ACCUMULATION

Over time, dirt can harden enough to stop roller rotation. Flushing with water followed by liberal oiling can usually restore function. If disassembly is required, proceed as follows:

1. Remove the feed pressure knob, springs and spring plunger. Note the positioning of these parts to ease re-assembly. The top roller can now be removed.
2. Remove the snap rings and thrust washers from the bottom housing cylinders. The bottom rollers can now be removed.
3. Re-assembly is done in reverse order.

**TANGLED CABLE**

If a cable loops over itself in the drum/cage, it will not feed properly. Remove and reload the cable to restore function. If the cable kinks, it is evidence of abuse and results from the use of too much pressure or use of the wrong size cable for the line. Do not force the cable — let the cutter do the work.

<b>TROUBLE SHOOTING GUIDE (Table 3)</b>		
<b>Problem</b>	<b>Probable Cause</b>	<b>Solution</b>
Cable kinks or breaks.	Operator forcing the cable.	Do not force the cable. Let the cutter do the work.
	Too much slack between machine and drain.	Allow no more than two feet between machine and drain.
	Cable used in wrong size drain line.	A cable that is too large or too small in diameter for a line is more likely to kink. (Consult Table 1—Cable Applications.)
	Cable exposed to acid.	Clean and oil cables regularly.
Cable tangles in drum/cage.	Operator forcing the cable.	Do not force the cable. Let the cutter do the work.
	Machine running in reverse.	Do not run the machine in reverse to retract the cable from the drain.
	Distributor tube frozen.	Lubricate distributor tube bushings.
Drum/cage stops while foot pedal depressed.	Hole in pedal or hose.	Replace as required.
	Hole in diaphragm switch.	If no hole found in pedal or hose, replace diaphragm switch.
Drum/cage turns in one direction but not other.	Reverse switch or momentary contact switch failure.	Replace switch. Note: Momentary contact switch must be held in place when using reverse.
Ground fault circuit interrupter trips and will not reset.	Damaged power cord or extension cord.	Replace cords.
	Short circuit in motor.	Take motor to authorized repair center.
	Faulty ground fault circuit interrupter.	Replace ground fault circuit interrupter.
Motor turns but drum/cage does not.	Safety Slip Clutch (optional) engaged.	Do not force cable.
Failure to feed.	Cable tangled in drum.	Do not run machine in reverse. Use proper cable size. (Consult Cable Application Chart—Table 1).
	Feed misadjusted.	If feed pressure knob is too loose the cable will slip. If it is too tight the feed rollers will wear prematurely.
	Feed roller frozen.	Clean and lubricate feed rollers regularly. Replace worn rollers.
	Worn cable.	When cable coils wear flat, cable should be replaced.