



Figure 8 – Proper Drum Rotation (FOR Switch Position)

Machine and Work Area Set-Up

⚠ WARNING



Set up the drain cleaning machine and work area according to these procedures to reduce the risk of injury from electric shock, fire, machine tipping, twisted or broken cables, chemical burns, infections and other causes, and prevent drain cleaner damage.

Always wear safety glasses, and other appropriate protective equipment when setting up your drain cleaner.

1. Check work area for:
 - Adequate lighting.
 - Flammable liquids, vapors or dust that may ignite. If present, do not work in area until sources have been identified and corrected. The drain cleaner is not explosion proof and can cause sparks.
 - Clear, level, stable dry place for machine and operator. Do not use the machine while standing in water. If needed, remove the water from the work area.
 - Properly grounded electrical outlet of the correct voltage. Check machine serial plate for required voltage. A three-prong or GFCI outlet may not be prop-

erly grounded. If in doubt, have outlet inspected by a licensed electrician.

- Clear path to electrical outlet that does not contain any potential sources of damage for the power cord.
 - Clear path to transport the drain cleaner to the work area.
2. Inspect the drain to be cleaned. If possible, determine the access point(s) to the drain, the size(s) and length(s) of the drain, distance to tanks or mainlines, the nature of the blockage, presence of drain cleaning chemicals or other chemicals, etc. If chemicals are present in the drain, it is important to understand the specific safety measures required to work around those chemicals. Contact the chemical manufacturer for required information.

If needed, remove fixture (water closet, etc.) to allow access to the drain. Do not feed the cable through a fixture. This could damage the drain cleaner and the fixture.

3. Determine the correct equipment for the application. *See Specifications.*

Drain cleaners for other applications can be found by consulting the RIDGID Catalog, on line at www.RIDGID.com

4. Make sure machine has been properly inspected.
5. If needed, place protective covers in the work area. The drain cleaning process can be messy.



Figure 9 – Handle Operation

6. Take the drain cleaning machine to the work area along the clear path. Before moving the machine, make sure that the handle is locked into the up position for transport (see Figure 9). If the machine needs to be lifted, use proper lifting techniques. Use care moving equipment up and down stairs, and be aware of possible slip hazards. Wear appropriate footwear to help prevent slips.
7. Position the drain cleaning machine so that the K-400 cable outlet is within 2 feet (0.6m) of the drain access. Greater distances from the drain access increases the risk of the cable twisting or kinking. If the machine cannot be placed with the drum opening within 2' (0.6m) of the drain access, extend the drain access back to within 2' (0.6m) of the cable outlet with similar sized pipe and fittings. Improper cable support can allow the cable to kink and twist and can damage the cable or injure the operator. (See Figure 10.) If using front guide hose, place machine so that at least 6" (150mm) of guide hose can be placed in drain opening.



Figure 10 – Example of Extending Drain to within 2' (0.6m) of Cable Outlet

8. Evaluate the work area and determine if any barriers are needed to keep bystanders away from the drain cleaner and work area. The drain cleaning process can be messy and bystanders can distract the operator.
 9. Select proper tool for the conditions. If the nature of the obstruction is unknown, it is good practice to use a straight or bulb auger to explore the obstruction and retrieve a piece of the obstruction for inspection.
- Once the nature of the obstruction is

known, an appropriate tool can be selected for the application. A good rule of thumb is to start by running the smallest available tool through the blockage to allow the backed up water to start flowing and carry away the debris and cuttings as the drain is cleaned. Once the drain is open and flowing, other tools appropriate for the blockage can be used. Generally, the largest tool used should be no bigger than the inside diameter of the drain minus one inch.



Figure 11 – Tools Supplied With K-400

The K-400 is supplied with these tools (Figure 11).

- A. Cable Pin Key
- B. The T-202 Bulb Auger – for exploration of the clog and pulling out stoppages such as hair, etc.
- C. The T-205 “C” Cutter – for use in grease blockages and cleaning the walls of the pipe.
- D. The T-211 Spade Cutter – for use after an auger and to open up floor drains.

Proper tool selection depends on the specific circumstances of each job and is left to the users' judgement.

A variety of other cable attachments are available and are listed in the Optional Equipment section of this manual. Other information on cable attachments can be found in the RIDGID Catalog and on line at www.RIDGID.com or www.RIDGID.eu.

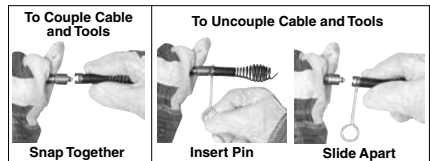


Figure 12 – Connecting/Disconnecting Tools

10. Securely install the tool to the end of the cable. The T-slot coupler allows the cutting tool to be slid onto the cable coupler. Make sure that the spring-loaded plunger in the cable coupler moves freely and retains the tool. If the pin sticks in the re-

tracted position, the cutting tool may fall off in use. To remove cutting tool, insert the pin key into the hole in the coupling to depress the plunger and slide the coupling apart (see Figure 12).

- Position the foot switch for easy accessibility. You must be able to hold and control the cable, control the foot switch, and reach the FOR/OFF/REV switch.
- Confirm that the FOR/OFF/REV switch is in the OFF position.
- Run the cord along the clear path. With dry hands plug the drain cleaner into a properly grounded outlet. Keep all connections dry and off the ground. If the power cord is not long enough, use an extension cord that:
 - Is in good condition
 - Has a three prong plug like on the Drain Cleaner.
 - Is rated for outdoor use and contains a W or W-A in the cord designation (i.e. SOW).
 - Has sufficient wire size. For extension cords up to 50' (15,2 m) long use 16 AWG (1,5 mm²) or heavier. For extension cords 50'-100' (15,2 m – 30,5 m) long use 14 AWG (2,5 mm²) or heavier.

When using an extension cord, the GFCI on the drain cleaner does not protect the extension cord. If the outlet is not GFCI protected, it is advisable to use a plug in type GFCI between the outlet and the extension cord to reduce the risk of shock if there is a fault in the extension cord.

Operating Instructions

⚠ WARNING



Always wear eye protection to protect your eyes against dirt and other foreign objects.

Only wear RIDGID drain cleaning gloves or mitts (“gloves”). Never grasp the rotating cable with anything else, including a glove or a rag. They can become wrapped around the cable, causing hand injuries. Only wear latex or rubber gloves under RIDGID drain cleaner gloves. Do not use damaged drain cleaning gloves.

Always use appropriate personal protective equipment while handling and using drain cleaning equipment. Drains may contain chemicals, bacteria and other substances that may be toxic, infectious, cause burns or other issues. Appropriate personal protective equipment always includes safety glasses and RIDGID drain cleaning gloves, and may include equipment such as latex or rubber gloves, face shields, goggles, protective clothing, respirators and steel-toed footwear.

Do not allow the cutter to stop turning while the machine is running. This can overstress the cable and may cause twisting, kinking or breaking of the cable. Twisting, kinking or breaking cable may cause striking or crushing injuries.

Keep gloved hand on the cable whenever the machine is running. This provides better control of the cable and helps prevent twisting, kinking and breaking of the cable. Twisting, kinking or breaking cable may cause striking or crushing injuries.

Position machine within two feet (0.6m) of the drain inlet or properly support exposed cable when the distance exceeds two feet. Greater distances can cause control problems leading to twisting, kinking or breaking of the cable. Twisting, kinking or breaking cable may cause striking or crushing injuries.

One person must control both the cable and the foot switch. If the cutter stops rotating, the operator must be able to turn the machine motor off to prevent twisting, kinking and breaking of the cable. Twisting, kinking or breaking cable may cause striking or crushing injuries.

Follow operating instructions to reduce the risk of injury from twisted or broken cables, cable ends whipping around, machine tipping, chemical burns, infections and other causes.

- Make sure that the machine and work area is properly set up and the work area is free of bystanders and other distractions.
- Pull cable out of drum and feed into drain. Push cable as far into drain as it will go. At least one foot (.3 m) of cable must be in drain so that the end of the cable will not come out of the drain and whip around when the machine is started.

Directly route the cable from the outlet of the machine to the drain opening, minimizing exposed cable and changes in direction. Do not tightly bend the cable –

this can increase the risk of twisting or breaking.

3. Assume a proper operating position.
 - Be sure you can control the ON/OFF action of the foot switch and can quickly release the foot switch if needed. Do not step on foot switch yet.
 - Be sure that you have good balance, do not have to over reach, and cannot fall on the foot switch, drain cleaning machine, the drain or other hazards.
 - You must be able to place at least one hand on the cable at all times to control and support the cable.
 - You must be able to reach the FOR/OFF/REV switch.

This operating position will help to maintain control of the cable and machine. (See Figure 13.)

4. Move the FOR/OFF/REV switch to the FOR (FORWARD) position. **Do not depress the foot switch yet.** FOR/OFF/REV refers to the drum/cable rotation and not to the direction of cable movement. Do not rotate the cable in reverse except as specifically described in these instructions. Running the drain cleaner in REV (REVERSE) can damage the cable.



Figure 13 – In Operating Position, Manually Feeding Cable

Operation

The K-400 Drain Cleaning Machine is available in two different feed configurations, either manual feed or AUTOFEED. A K-400 supplied with the AUTOFEED can either feed the cable with the AUTOFEED or by manually pulling the cable from the drum and feeding it into the drain. With the AUTOFEED you can switch back and forth between operating methods

as needed. If an AUTOFEED is not available, the K-400 can only be used manually.

Feeding the Cable into the Drain

Manual Operation

1. Confirm that at least one foot (0,3 m) of cable is in the drain.
2. Grasp the exposed cable with both gloved hands equally spaced and pull 6"-12" (150mm - 300mm) of cable out of the drum so that there is a slight bow in the cable. Gloved hands must be on the cable to control and support the cable. Improper cable support can allow the cable to kink or twist and can damage the cable or injure the operator. Make sure that the cable outlet of the drain cleaner is within 2' (0.6m) of the drain opening (Figure 13.).
3. Depress the foot switch to start the machine. The person controlling the cable must also control the foot switch. Do not operate the drain cleaner with one person controlling the cable and another person controlling the foot switch. This can lead to twisting, kinking and breaking of the cable.
4. Feed the rotating cable into the drain. The rotating cable will work its way into the drain as you push on the cable with gloved hands. Do not allow the cable to build up outside the drain, bow or curve. This can allow the cable to twist, kink or break.
5. When the cable has been fed into the drain opening, pull 6"-12" (0.15 - 0.3m) more cable from the drum and continue feeding the rotating cable into the drain.

AUTOFEED Operation

1. Confirm that at least one foot (0.3m) of cable is in the drain.
2. Grasp near the center of the exposed length of cable with a gloved hand. Gloved hand must be on the cable to control and support the cable. Improper cable support can allow the cable to kink or twist and can damage the cable or injure the operator. Make sure that the cable outlet of the drain cleaner is within 2' (0.6m) of the drain opening. Place the other hand on the AUTOFEED lever. AUTOFEED lever should be in neutral (Vertical) position (see Figure 14).

See "Using Machine with a Front Guide Hose" if using a guide hose.

- Depress the foot switch to start the machine. The person controlling the cable must also control the foot switch. Do not operate the drain cleaner with one person controlling the cable and another person controlling the foot switch. This can lead to twisting, kinking and breaking of the cable.
- With the cable rotating in the FOR (FORWARD) direction, move the AUTOFEED control handle toward the drain, to the ADVANCE position (*Figure 14 & 15*). This will cause the cable to feed out of the machine. The rotating cable will work into the drain as you control the cable with your gloved hand. Do not allow the cable to build up outside the drain, bow or curve. This can allow the cable to twist, kink or break.

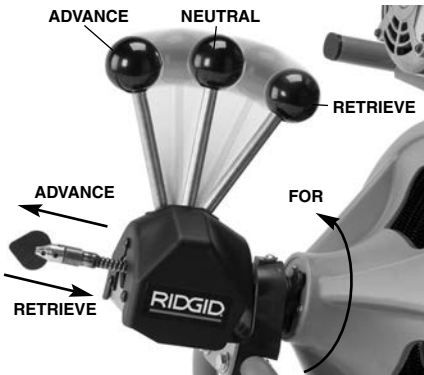


Figure 14 – AUTOFEED Directions (with Machine in FOR) When in Reverse, Feed Direction Will Be Opposite.



Figure 15 – Operating K-400 with AUTOFEED

Passing Through Traps or Other Transitions

If it is difficult to get the cable through a trap or other fitting, the following methods or combinations of methods can be used.

- Sharp thrusts of the cable, both with and without the cable rotating, can help the cable through a trap.
- In some cases with the switch in the OFF position, rotating the drum by hand can change the orientation of the cutter to allow it to more easily negotiate the fitting.
- Run the drain cleaner in REV rotation for several seconds while pushing on the cable. Only do this long enough to get the cable started through the trap. Running the cable in reverse can damage the cable.
- Attach a single section (only one section) of C-9 cable as a flexible leader between the end of the cable and the tool.

If these options do not work, consider using a smaller diameter or more flexible cable, or a different drain cleaner.

Cleaning the Drain

As you feed the cable into the drain, you may see the cable slow down or build up outside the drain. Always keep your hands on the cable. You may feel the cable start to wind or load up (this may feel like the cable is starting to twist or squirm). This may be a transition in the drain (trap, elbow, etc.), build up in the drain (grease, etc.) or the actual blockage. Feed the cable slowly and carefully. Do not let cable build up outside the drain. This can cause the cable to twist, kink or break.

Pay attention to the amount of cable that has been fed into the drain. Feeding cable into a larger drain, septic tank or similar transition may cause the cable to kink or knot and prevent removal from the drain. Minimize the amount of cable fed into the transition to prevent problems. Each wrap of the cable in the drum is approximately 3.5' (1.1 m).

Working the Blockage

If the end of the cable stops turning, it is no longer cleaning the drain. If the end of the cable becomes lodged in the blockage and power is maintained to the drain cleaner, the cable will start to wind up (this may feel like the cable is starting to twist or squirm). Having a hand on the cable allows you to feel this wind up and control the cable.

If the cable end stops turning or if the cable starts to wind up, immediately pull the cable back from the obstruction.

- Manual Operation – Pull back on the cable to free the cable end from the blockage.

- AUTOFEED operation – Move the AUTOFEED handle towards the machine to the retrieve position to free the cable end from the blockage.

Do not keep the cable rotating if the cable is stuck in a blockage. If the cable end stops turning and the drum keeps rotating, the cable can twist, kink or break.

Once the cable end is free of the blockage and turning again, you can slowly feed the cable end back into the blockage. Do not try to force the cable end through the blockage. Let the spinning end “dwell” in the blockage to completely break it up. Manual operation may give the best control in these instances. Work the tool in this manner until you have moved completely past the blockage (or blockages) and the drain is flowing.

While working the blockage, the tool and cable may become clogged with debris and cuttings from the blockage. This can prevent further progress. The cable and tool need to be retrieved from the drain and the debris removed. See section on “Retrieving the Cable.”

Handling a Stuck Tool

If the tool stops turning and the cable cannot be pulled back from the blockage, release the foot switch while firmly holding the cable. If installed, release the AUTOFEED lever to come back to the neutral (straight up) position. Do not remove hands from cable or cable may kink, twist and break. The motor will stop and the cable and drum may turn backwards until the energy stored in the cable is relieved. Do not remove hands from cable until the tension is released. Place FOR/OFF/REV switch in OFF position.

The torque limiter helps to prevent cable damage from cable flip over in the drum by stopping drum and cable rotation when the torque exceeds the setting. The motor will continue to rotate as long as the foot switch is pressed, but the drum and cable will stop rotating when the torque limiter setting is exceeded. The torque limiter cannot prevent all cable damage in the drum, and cannot prevent cable flip over outside the drum. If the drum stops turning, the cable and tool also are not turning.

Freeing a Stuck Tool

If the tool is stuck in the blockage, with the FOR/OFF/REV switch in the OFF position and the foot switch released, try pulling the cable loose from the blockage. If the tool will not come free from the blockage, place the

FOR/OFF/REV switch in the REV position. Grasp the cable with both gloved hands, press the foot switch for several seconds and pull on the cable until it is free of the blockage. Do not operate the machine in the REV position any longer than required to free the cutting tool from the blockage or cable damage can occur. Place the FOR/OFF/REV switch in the FOR position and continue cleaning the drain.

Retrieving the Cable

1. Once the drain is open, if possible start a flow of water down the drain to flush the debris out of the line and help clean the cable as it is retrieved. This can be done by running a hose down the drain opening, turning on a faucet in the system or other methods. Pay attention to the water level, as the drain could plug again.
2. The FOR/OFF/REV switch should be in the FOR position – do not retrieve the cable with the switch in the REV position, this can damage the cable. As with feeding the cable into the drain, cables can be caught while being retrieved.
 - Manual Operation – With both gloved hands equally spaced on the exposed cable for control, pull 6"-12" (0.15 - 0.3m) lengths of cable from the drain at a time and feed it into the drum. Continue retrieving cable until the cable end is just inside the drain opening.
 - AUTOFEED Operation – With one hand near the center of the exposed length of cable, move the feed lever towards the machine to retrieve the cable. The rotating cable will work its way out of the drain and back into the drum. Continue retrieving cable until the cable end is just inside the drain opening. Release the AUTOFEED lever to come back to the neutral position.
3. Release the foot switch, allowing the drum to come to a complete stop. Do not pull the end of the cable from the drain while the cable is rotating. The cable can whip around and cause serious injury. Pay attention to the cable during retrieval as the cable end can still become stuck.
4. Place the FOR/OFF/REV in the OFF position. Pull the remaining cable from the drain with gloved hands and feed into the drain cleaner. If needed, change the tool and continue cleaning following the above process. Several passes through a line are recommended for complete cleaning.

Using Machine with a Front Guide Hose

The front guide hose is an optional accessory to help protect fixtures and contain the liquid and debris thrown off of the cable. It can only be used with an AUTOFEED. Using the Front Guide hose can decrease feedback from the cable, making it harder to tell what conditions the cable is encountering. This may increase the possibility of damage to the cable. Using the front guide hose makes it more difficult to switch back and forth between manual and AUTOFEED operation.

Using a machine with the front guide hose is similar to using a machine with the AUTOFEED. Follow instructions with the following exceptions:

- When setting up the machine, insert the guide hose at least 6" into the drain.
- Instead of holding the cable, hold the guide hose. See *Figure 16*. Always control the guide hose and properly support the cable to prevent the cable from twisting, kinking or breaking.



Figure 16 – Using Machine with Guide Hose

When using a front guide hose, pay attention how the guide hose feels in your hand and watch the drum rotation. Because the guide hose is over the cable, there is less sensitivity to the loading of the cable, and it is harder to tell if the tool is rotating or not. If the tool is not rotating, the drain is not being cleaned.

If the tool continues to get hung up in the blockage, stop using the AUTOFEED (leave the feed lever in the neutral position) and work the cable manually. To do this, the cable must be retrieved from the drain and the guide hose removed to allow proper positioning of the machine to the drain and access to the

cable. Do not try to work the cable by hand with the front guide hose in place.

When retrieving the cable, be sure to stop the cable before the tool is pulled into the end of the guide hose to prevent damage.

Maintenance Instructions

⚠ WARNING

FOR/OFF/REV switch should be OFF and machine unplugged before performing any maintenance.

Always wear safety glasses and other appropriate protective equipment when performing any maintenance.

Cleaning

The machine should be cleaned as needed with hot, soapy water and/or disinfectants. Do not allow water to enter motor or other electrical components. Make sure unit is completely dry before plugging in and using.

Cables

Cables should be thoroughly flushed with water after every use to prevent damaging effects of sediment and drain cleaning compounds. Flush cable with water and drain debris from drum by tipping machine forward after every use to remove sediment, etc. which can corrode cable.

Cable connector plunger pin can be lubricated with light machine oil.

AUTOFEED

After each use, hose out AUTOFEED assembly with water and lubricate with lightweight machine oil.

Lubrication

In general, the drain cleaner will not require lubrication. If the drum is removed or changed, grease the bearings with good general purpose grease.

Front Guide Hose

After use, flush the guide hose with water and drain.

Belt Removal/Installation

1. Remove belt guard by removing hold down screws located next to motor. Do

Using Machine with a Front Guide Hose

The front guide hose is an optional accessory to help protect fixtures and contain the liquid and debris thrown off of the cable. It can only be used with an AUTOFEED. Using the Front Guide hose can decrease feedback from the cable, making it harder to tell what conditions the cable is encountering. This may increase the possibility of damage to the cable. Using the front guide hose makes it more difficult to switch back and forth between manual and AUTOFEED operation.

Using a machine with the front guide hose is similar to using a machine with the AUTOFEED. Follow instructions with the following exceptions:

- When setting up the machine, insert the guide hose at least 6" into the drain.
- Instead of holding the cable, hold the guide hose. *See Figure 16.* Always control the guide hose and properly support the cable to prevent the cable from twisting, kinking or breaking.



Figure 16 – Using Machine with Guide Hose

When using a front guide hose, pay attention how the guide hose feels in your hand and watch the drum rotation. Because the guide hose is over the cable, there is less sensitivity to the loading of the cable, and it is harder to tell if the tool is rotating or not. If the tool is not rotating, the drain is not being cleaned.

If the tool continues to get hung up in the blockage, stop using the AUTOFEED (leave the feed lever in the neutral position) and work the cable manually. To do this, the cable must be retrieved from the drain and the guide hose removed to allow proper positioning of the machine to the drain and access to the

cable. Do not try to work the cable by hand with the front guide hose in place.

When retrieving the cable, be sure to stop the cable before the tool is pulled into the end of the guide hose to prevent damage.