

Operating Instructions for General's Chain Saw Nozzle

For high pressure water jets

Your Model J-CSN Chain Saw Nozzle is designed to give you years of trouble-free, profitable service. However, no tool is better than its operator. We therefore suggest you read these instructions through carefully before using your water jet on the job. This will enable you to operate the Chain Saw Nozzle more efficiently and more profitably. Failure to follow these instructions may cause personal injury to operator or damage to equipment.

Tool Selection Guide

Catalog Number	For use with the following jet models	For hose diameter	Pressure and Flow Specifications
J-CSN-15	J-2512-A & C	1/2"	2500 psi at 12 gpm
J-CSN-14	J-2512-B	3/8"	2500 psi at 12 gpm
J-CSN-11	J-3080	3/8"	3000 psi at 8 gpm
J-CSN-9	J-3055	3/8"	3000 psi at 5.5 gpm
J-CSN-6	J-3000 & J-2900	3/8"	3000 psi at 4 gpm



Components

- **Stem**—the stationary part of the nozzle, on which the rotors (chains or cable) spin.
- **Rotor**—the part of the nozzle that spins on the stem, creating the pull and cutting power inside the pipe.
- **Bearing**—located between the stem and rotor, it allows the rotor to spin with less resistance, maintaining a higher RPM when cutting.
- **Cap**—located between the bearing and the nut, holds the bearing in place and allows for cooling.
- **Nut**—nylon locking, holds the system together.

Recommendations for starting the job

When choosing which Chain Saw Nozzle configuration (chains or cable) to use, take into consideration the age and diameter of the pipe so that you don't cause unnecessary damage while removing roots and other obstructions. We strongly recommend using a Gen-Eye video pipe Inspection system to determine if a chain saw nozzle is needed, and whether aggressive or non-aggressive cleaning is required.

1. **The Chain Rotor** is used for attacking roots, encrustations or other blockages that require aggressive means of removal. Because of the strength of the chains, this rotor also allows for longer run times before replacement or repair.
2. **The Cable Rotor** is used for lighter, non-aggressive applications, such as minor root incursions or for sweeping heavy debris such as dirt, leaves and rocks out of the pipe. The Cable Rotor can use several types of standard sized wire rope cable. Plastic coated cables reduce fraying; stainless steel cables are more rigid and last longer. Zinc coated cables are more flexible and are recommended for negotiating bends, traps and turns within the pipe. (Keep in mind that it's possible to attach a forward cutting device on the front of the 1/2" and 1" Cable Rotor units, so that hole saws or blades can be used to solve a particular drain cleaning problem.)

Assembly

1. Select the appropriate rotor for the application at hand.
2. Slide the rotor onto the stem with the jets facing towards the rear. (The rotor will not spin if it is assembled with the jets facing forward.)

3. Next, slide on the bearing and cap. Tighten the locking nut to 12 foot pounds of torque, but avoid over-tightening.
4. If a cable rotor is installed, make sure that you cut the cable 1/8" to 1/4" smaller than the pipe diameter to allow the rotor to maintain a higher RPM. Tighten the set screws with the provided Allen wrench. Depending on the application, the cable could be looped or straight cut to accommodate the cleaning results expected.
5. If a Chain Rotor is installed, choose the desired length of the chain to accommodate the diameter of the pipe. Whenever possible, use a shorter length of chain to get the drain flowing, and a longer length to clean the entire diameter of the pipe. For less aggressive cleaning you can loop the chains from one pocket to the next.
6. After each use, check the nozzle for chain pin or cotter key wear, and to ensure that there is no flail chain left in the pipe.

Operation

1. Before using the Chain Saw Nozzle, we recommend using a Gen-Eye Pipe Inspection system to check the pipe for unexpected blockages, encrustations, root incursions or structural problems. If you find that the pipe is filled with water, send a Cleaning or Penetrating nozzle down the line first. When possible, insert the hose from the downstream side of the pipe, so that water and debris can be flushed down into a larger drain. After you've removed as much standing water from the pipe as possible, and you have a good idea of the nature of the problem, you are ready to insert the General Chain Saw Nozzle.
2. Carefully push the hose and nozzle a safe distance into the pipe before turning on the machine or engaging the pump. Always maintain a safe distance between you and the nozzle: The chain rotation can be as high as 50,000 RPM's depending on flows and pressures. Less standing water in the pipe will allow for higher RPM's.
3. Use a steady forward and back motion to move the nozzle down the pipe. To remove larger root masses, take smaller 'bites' (forward motions) in order to ensure that the nozzle doesn't lose its RPM and 'stall out'. Inspect the pipe periodically with a camera system to verify your progress and to check chain and cable wear.
4. When removing root masses and encrustations, start with a smaller chain size and then work up to the full diameter of the pipe. Using a section of chain that is too long can inhibit the nozzle from moving forward at a reasonable pace.
5. When using the Chain Saw Nozzle in a PVC or plastic pipe, do not let the nozzle spin in the same spot for extended periods of time, as this will cause significant wear to the pipe.

Maintenance

After every use, lubricate with light penetrating oil and check for any unusual wear. If the nozzle is not going to be used for a few days, remove the chain pins, check for wear and store in a well ventilated area. Remove the bearing and check it for wear. After you have replaced any worn items, lubricate, then reassemble for future use. Check the nylon nut for wear. If the nylon is not holding the nut in place, replace it with a new nut. Replace the chain used on the previous job. (The chain and cable are wear items that usually must be replaced after every job, so be sure not to run out of spare parts.) If necessary, use a cut-off wheel or bolt cutters to cut flail chain or cable.

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