

TECH TIPS

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PROPER NOZZLE SELECTION IN SEWER CLEANING

By NASSCO member Barry Howell, General Manager, Visu-Sewer, Inc.

Choosing the correct nozzle (or nozzles) for a sewer cleaning job can be a daunting task for the uninformed. However, with a little bit of information and understanding of the task at hand, this process can be quite simple. The purpose of this installment of NASSCO's *Tech Tips* is to provide the buyer and the end user a quick guide to the initial purchase and field usage of the proper sewer tool.

As with most humans, jetter operators are creatures of habit. It is very common for an operator to "fall in love" with a particular nozzle or type of nozzle and use that tool for all applications. Cleaning and debris removal are a process, analogous to building a house. A carpenter wouldn't use the same tool to plane a door as he or she would to drive roofing nails. Conversely, the jetter operator should not use the same tool to penetrate a blockage as he or she would to do standard cleaning; there is a correct tool available for every job.



KNOWING THE PUMP CAPACITY AND PRESSURE IS CRITICAL TO CHOOSING THE APPROPRIATE NOZZLE FOR THE PROJECT

Before nozzles can be used on a job, they must be purchased from the manufacturer or vendor. A buyer of sewer nozzles would be wise to read NASSCO's *Jetter Code of Practice* for an in-depth discussion on nozzle selection. However, a quick synopsis of nozzle selection is as follows:

BUDGET AVAILABLE – Nozzles can run the gamut from inexpensive to pricey. The contractor must determine what is important in their purchasing decision: First cost, versatility, life cycle costs, or other considerations. The Jetter Code defines nozzles as Tier One, Tier Two, or Tier Three. Tier One nozzles are typically the least expensive, have good to poor fluid mechanics, and can only be configured for one flow and pressure scenario, e.g. 65 GPM at 2,000 PSI; they also tend to have a short life cycle before they lose effectiveness. Tier Two nozzles typically have better fluid mechanics, replaceable inserts for configuration flexibility, and a longer life cycle than Tier One products, but are usually more expensive. Finally, Tier Three nozzles have excellent fluid mechanics, replaceable inserts for flexible configurations, and lower life cycle costs than other products, but the highest first costs. Understanding the options available and their impact on equipment budgets and operating budgets is a must in nozzle selection.

JETTER EQUIPMENT BEING USED – The type of equipment will dictate the appropriate nozzle size. Nozzles correspond to hose size, i.e. one inch nozzles fit one inch hose, and so on. Knowing the pump capacity and pressure is critical to choosing the appropriate nozzle for the project and determines what size nozzle to use. For example, you would not use an 80 GPM one inch nozzle for a 15 GPM, one half inch jetter.

JOB REQUIREMENTS – Nozzles are made to penetrate blockages, do maintenance cleaning, cut roots, remove grease deposits, etc. Manufacturers offer different features on different tools for a reason. Remember the carpenter? The jetter operator should remember that the condition of the pipe dictate the correct tool to be used. Penetrating nozzles are not intended to be grease removal tools, nor are root saws intended to be all purpose cleaning "heads".

ANGLES OF INCIDENCE – Finally, when selecting a nozzle, the operator should understand the angles of the nozzle's jets and how they affect the tool's ability to do the work required. The technical term for this is "angles of incidence". What these angles determine are either the nozzle's ability to produce thrust (propel itself up the pipeline) or wall force (cleaning ability). As with most things in life, everything is a trade off. The wider the angle of a jet, the more wall force is produced at the expense of thrust; conversely, narrow jet angles propel the nozzle at the expense of cleaning ability. Nozzles may be referred to as a "40 degree" nozzle, and, for example, this should tell the operator that this tool will be an effective cleaner but generally have limited ability to propel itself. On the other hand, a nozzle featuring "8 degree" jets may run up the pipe like a rocket, but provide very little wall force for cleaning purposes.

In conclusion, nozzle selection is not difficult if the user understands the basics: how much can I spend, what is the job to be done, and what features are available.

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