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Cleaner®



**Where
There's Smoke ...**
 The Municipal Pipe Tool Co.
 helps municipalities find and
 fix sources of leakage

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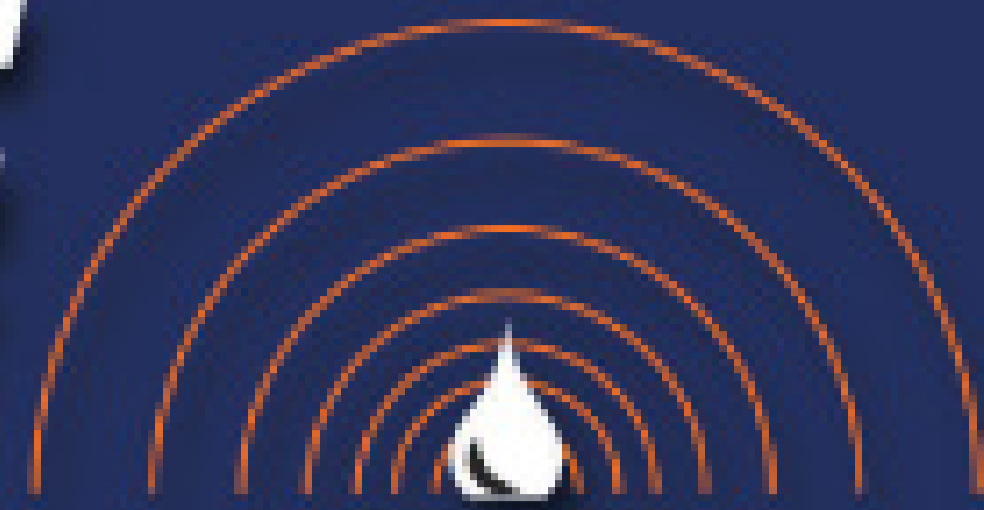
CIPP lining at a veneer mill

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Letters to the EDITOR

Perspective on Mechanical Root Cutting

I read Peter Kenter's article, Routing Roots (Tech Perspective, *Cleaner*, December 2008) with great interest, and I found that I agreed with many of the comments made by David Bradford of Shamrock Pipe Tools.

Our company, Productive Carbides Inc., is a carbide fabricator and tool manufacturer. Our comments favor cutting tools and are based on feedback from contractors working in the trenches. We add carbide teeth and wear pads to the standard 6- through 18-inch flat or concave saws used to remove roots and calcium deposits.

Saws are one inch smaller in diameter than the pipes being cleaned. Our special teeth and wear pads add approximately 1/4 inch to the diameter, so there is still plenty of clearance. The carbide increases the life of the saws by eight to 10 times. Many contractors use the specialty carbide-tipped saws to cut taps flush with the walls of the mainline in preparation for lining.

Jets are great for debris removal, but require close control to cut through roots. It can be done; high-pressure water is used to cut steel and other metals in metal shops that can position the jets precisely. We have furnished carbide nozzles with precision holes for close pressure control during cleaning, but the idea did not catch on in the field (probably too time-consuming).

We have braised carbide to chain for added life in flail chain cleaning. Many municipalities will not permit chain cleaning, as it destroys the line if conditions are not perfect. If a sewer line is broken open, an expensive excavation is usually required for repair. A few minutes with a carbide-tipped saw reduces the fracture risk.

Waterjet nozzles, steel saw cutters and chain knockers are usually available to most contractors. The selection of which to use depends on the contractor's ability to see the root or obstruction, direct the cutter, and clear the area for inspection and recutting if necessary. Jet nozzles take the most control to direct the jet squarely onto the root. Saw cutters take less control, but even they are often moved back and forth over a joint to get it clean. The chain flail will pulverize the roots, but will possibly take out parts of the pipe if not watched closely.

The choice of the best tool, knowing one's limitations, and the skill of the operator determine the profit from a cleaning job. Most contractors will talk about problem jobs, but are closed-mouthed about the jobs they successfully complete. Trade secrets and lack of good information cloud discussions on what really works best.

Nelson E. Wittman
Vice President Operations
Productive Carbides Inc.
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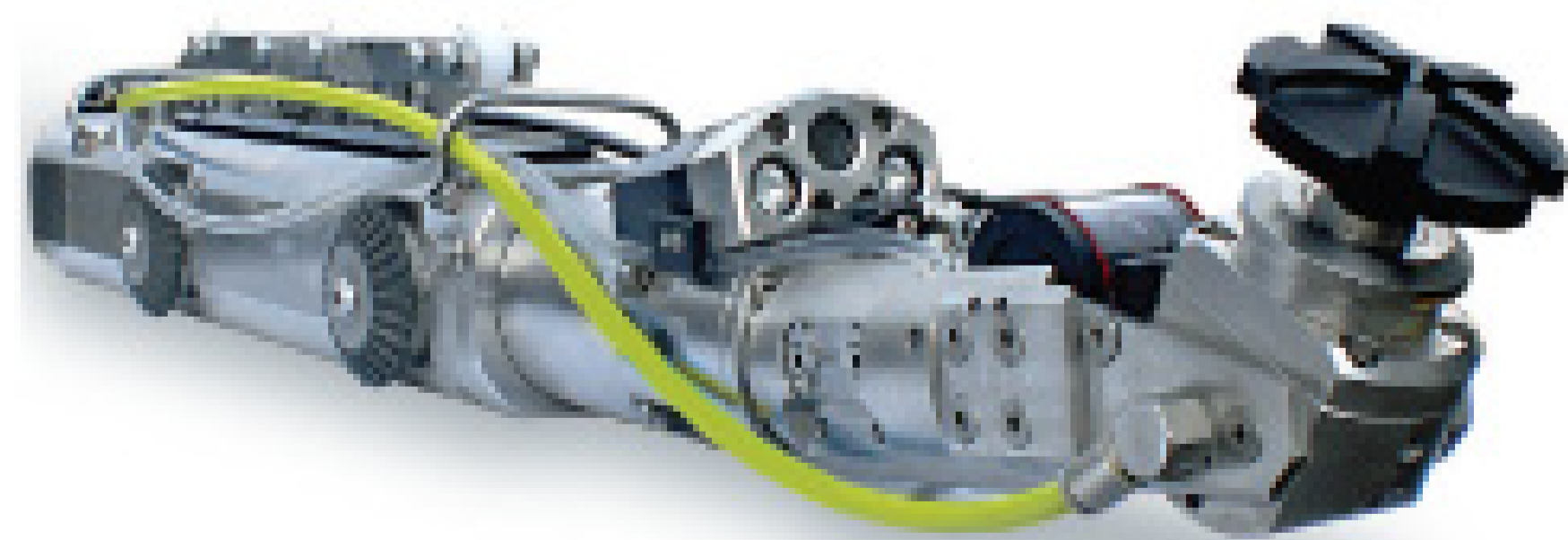
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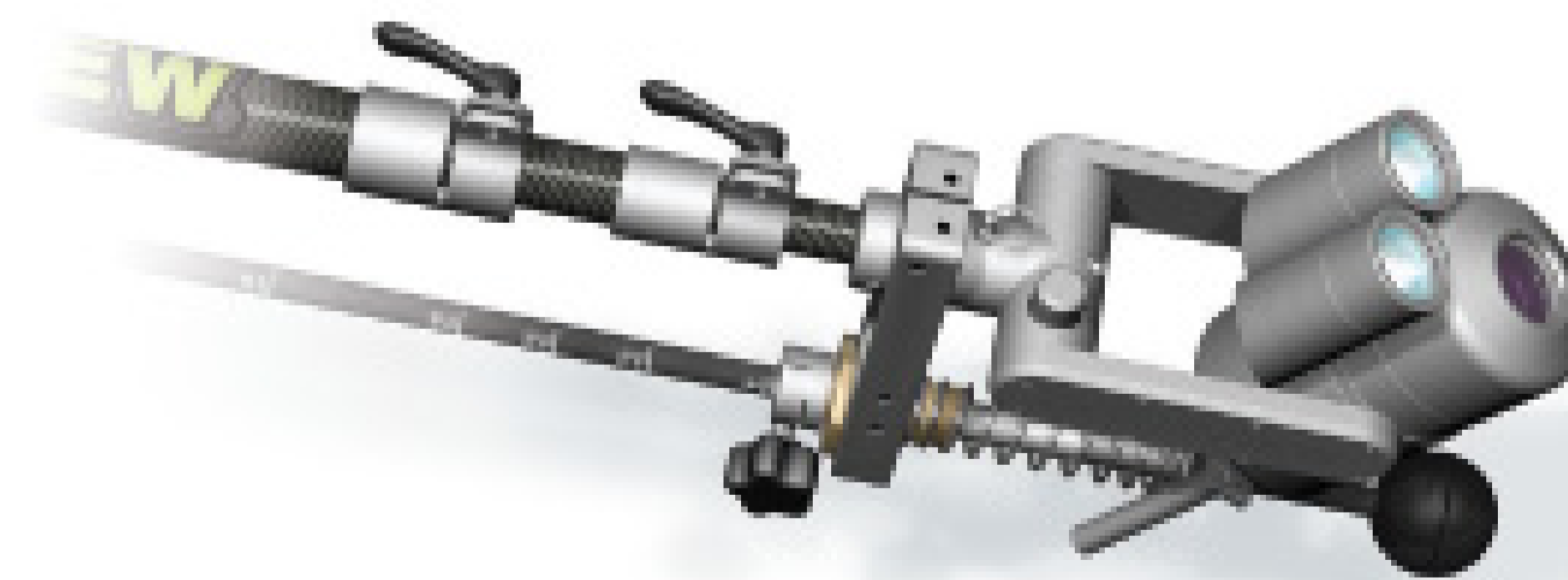


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Sewer leak detection is a specialty of the Municipal Pipe Tool Co. in Hudson, Iowa. Here, technician Eric Schumacher mans a smoke blower from Superior Signal Co. during smoke testing of sanitary sewer lines in the City of North English, Iowa. (Photography by Mark Tade)

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Cleaner
FOR RESIDENTIAL, MUNICIPAL AND INDUSTRIAL CLEANING CONTRACTORS

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Published monthly by
COLE Publishing Inc.
1720 Maple Lake Dam Rd.
PO Box 220
Three Lakes, WI 54562

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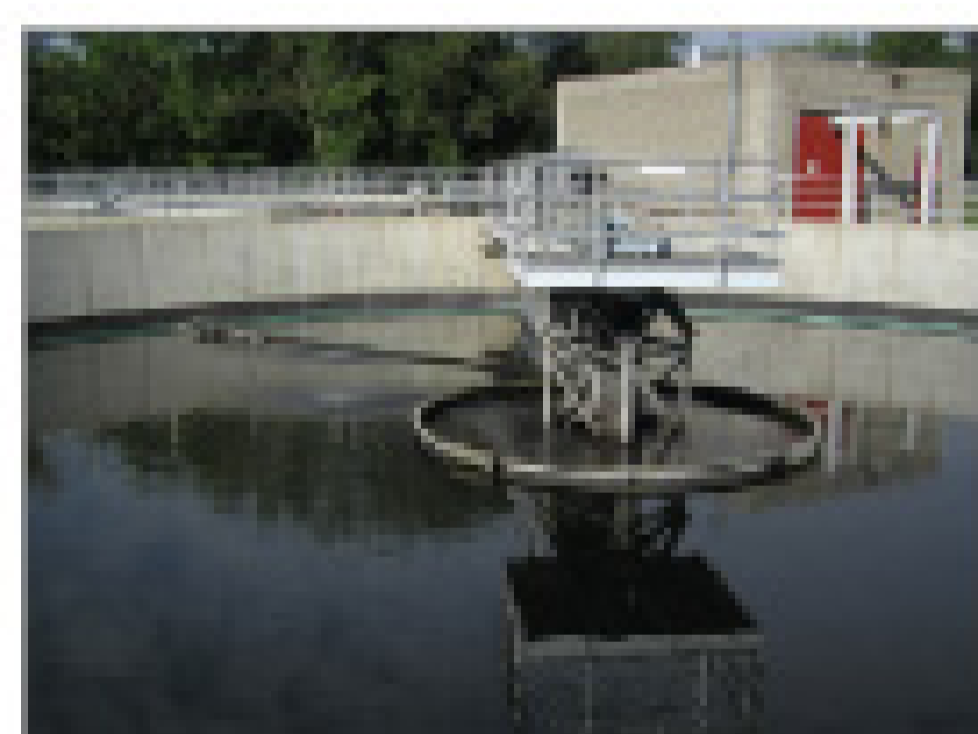
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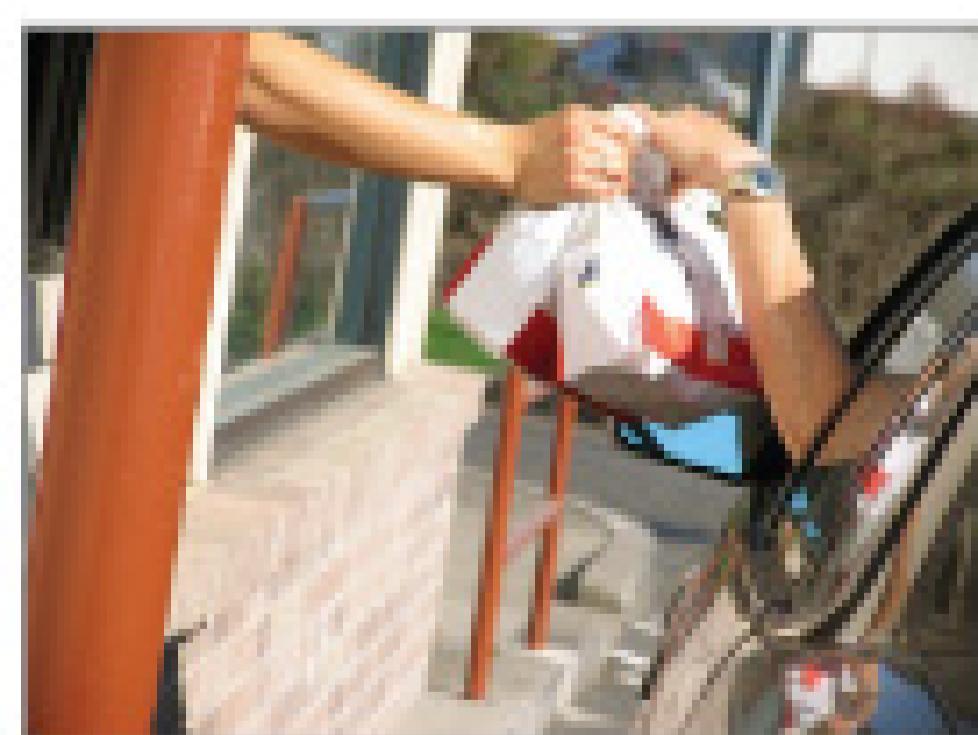
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Being Green

It's not so hard to do these days. And there are many good reasons, for social good and personal benefit, to lighten the load on the environment.

Ted J. Rulseh



Some say that when it comes to global climate change, the debate is over: Carbon dioxide levels in Earth's atmosphere are rising, the planet is warming, and human activity is the cause. Others are not convinced.

The thing is, in one important respect, it doesn't matter. The biggest way to combat the threat of

little healthier. On top of that, a switch to more earth-friendly fuels and more efficient vehicles and appliances can help create whole new industries and badly needed jobs.

Finally, saving energy is good business. The higher the prices of oil, coal, natural gas and electricity rise, the more you can gain by making investments that help you use energy efficiently. And because energy

days without seeing a list of energy-saving or pollution-preventing tips. As a small business owner, you can easily:

- Ask your electric or gas utility to do an energy audit of your office and shop.
- Add technologies like GPS and routing software to make fleet travel more efficient and save fuel.
- Keep vehicles tuned up and their tires properly inflated.
- Look into hybrid or other high-efficiency vehicles.
- Educate field technicians to avoid fast acceleration, high speeds, and other energy-wasting driving practices.
- Consider energy-efficiency ratings when buying equipment.
- Shut off lights, appliances and equipment when no one is using them.
- Outfit your office with programmable thermostats that automatically turn down the heat or shut off the air conditioner at night. Consider lower settings in winter and higher settings in summer.
- Use less paper. Communicate by e-mail when appropriate. Print fewer e-mail messages and documents.
- Recycle valuable commodities like paper and metals.
- See if your electric utility has a green power program that lets you buy electricity generated by solar, wind, or hydroelectric sources.
- Buy supplies made from recycled, non-toxic, or biodegradable materials.

- Ask suppliers about their policies on running a green business.

Talk it up

Of course, these are basic steps. None of them alone (or together for that matter) will save the planet or let you save enough money to retire early. But they all make sense, and the benefits can go beyond improvement on the expense side of your ledger.

Today's consumers are trying to lessen their impact on the environment, and many look to work with businesses that do, too. Is there any potential in talking up your company's green attributes as a way to set yourself apart from competitors?

All that aside, we at *Cleaner* want to know what businesses in our industry are doing to save energy and be green. Tell us about the special measures you're taking and, in particular, about how your business benefits.

We'll report success stories in future issues of the magazine. To pass along your story, send a note to editor@cleaner.com. By sharing your accomplishments with others, you can help multiply the positive effects of the good things you're doing. ■

Today's consumers are trying to lessen their impact on the environment, and many look to work with businesses that do, too. Is there any potential in talking up your company's green attributes as a way to set yourself apart from competitors?

global warming is to burn less fossil fuel. And there are big reasons, beyond global warming, why that's a good idea.

For one, burning less gasoline and diesel fuel means we depend less for energy on unstable countries that don't like us. For another, it means we release less nitrogen oxide, sulfur dioxide, particulate matter and other pollutants, and so make the air a

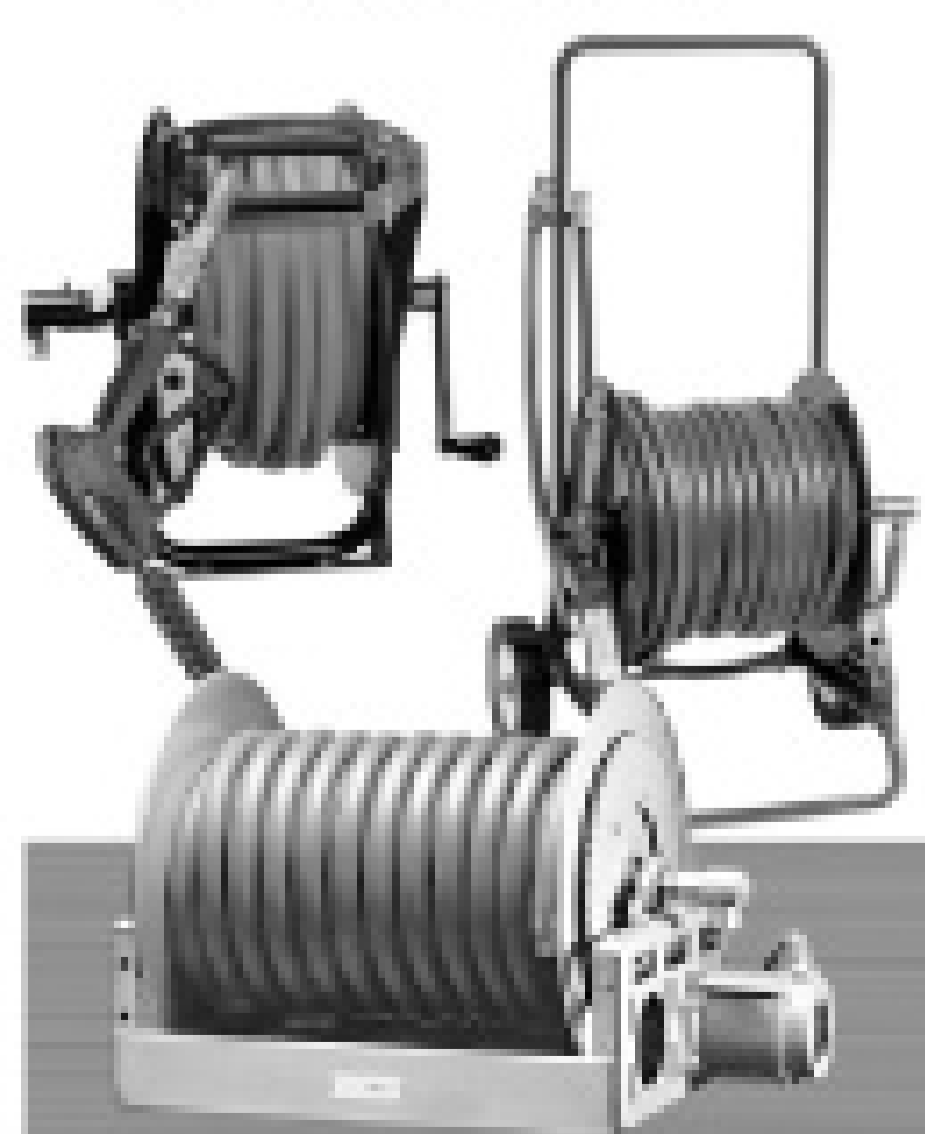
part of the cost of almost everything we use, it makes financial sense in general to use products wisely, waste less and recycle more.

Getting advice

So, what has your business done lately to lighten up on the environment? There's no shortage of advice available – you can hardly read a newspaper or watch TV these

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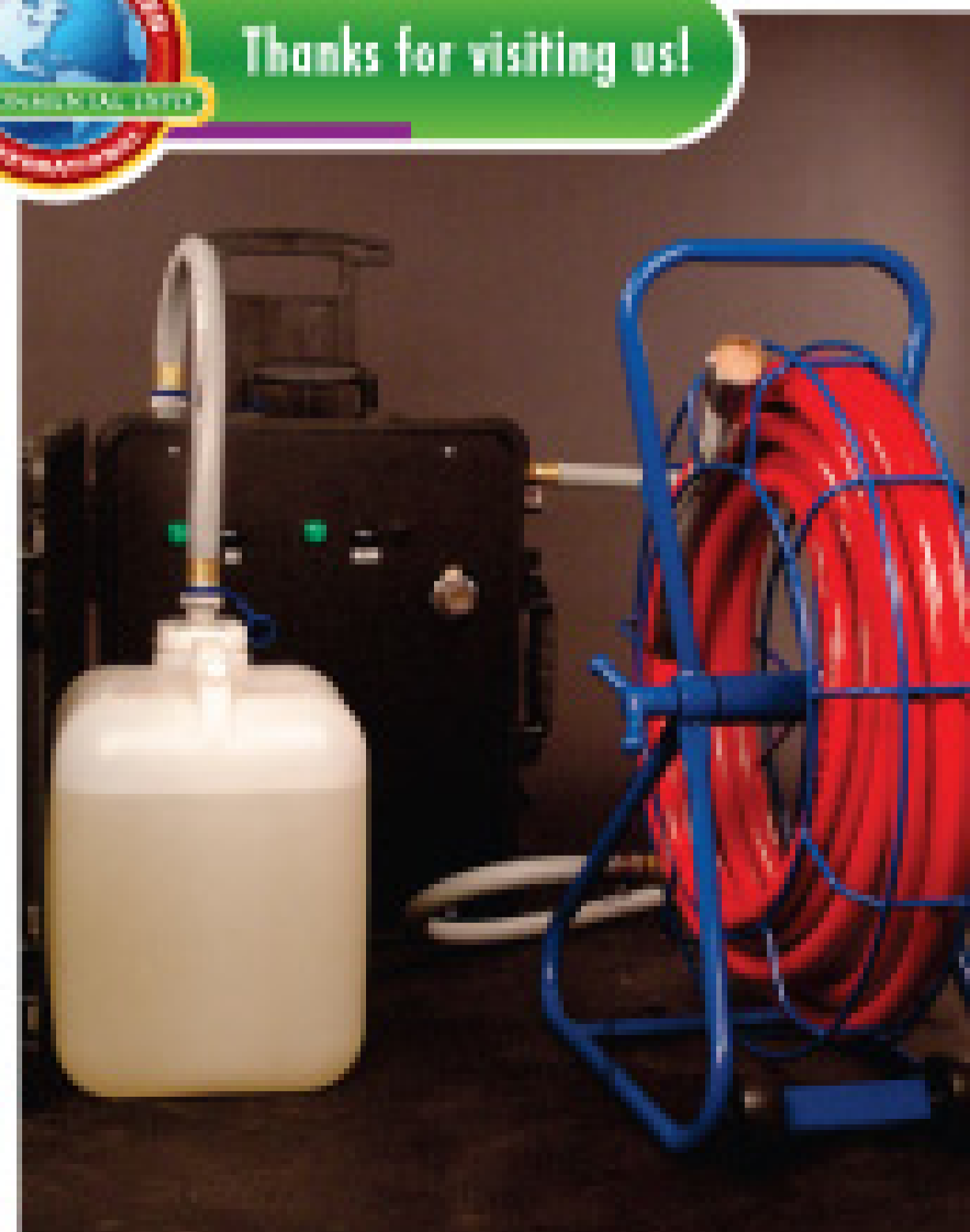
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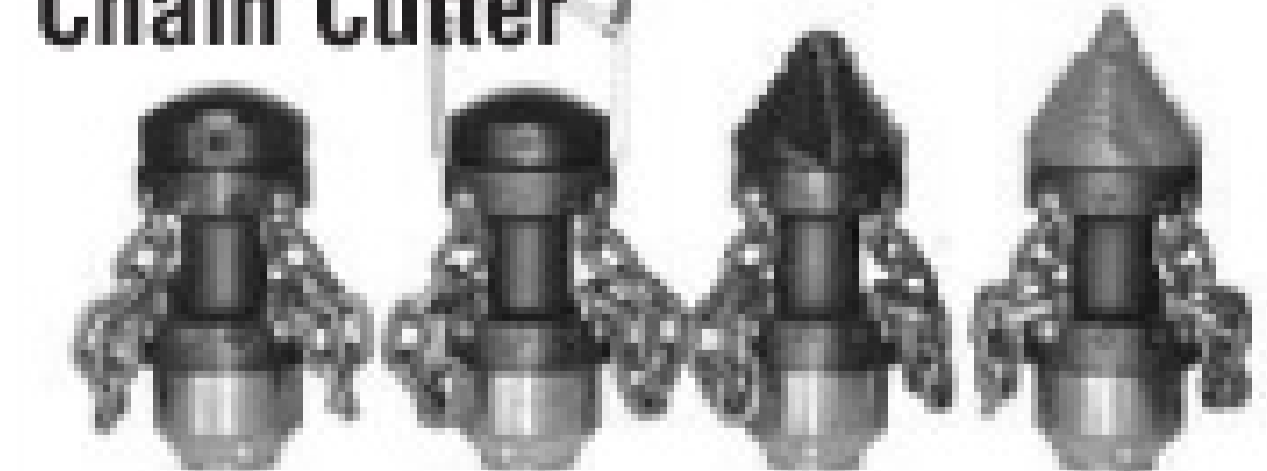
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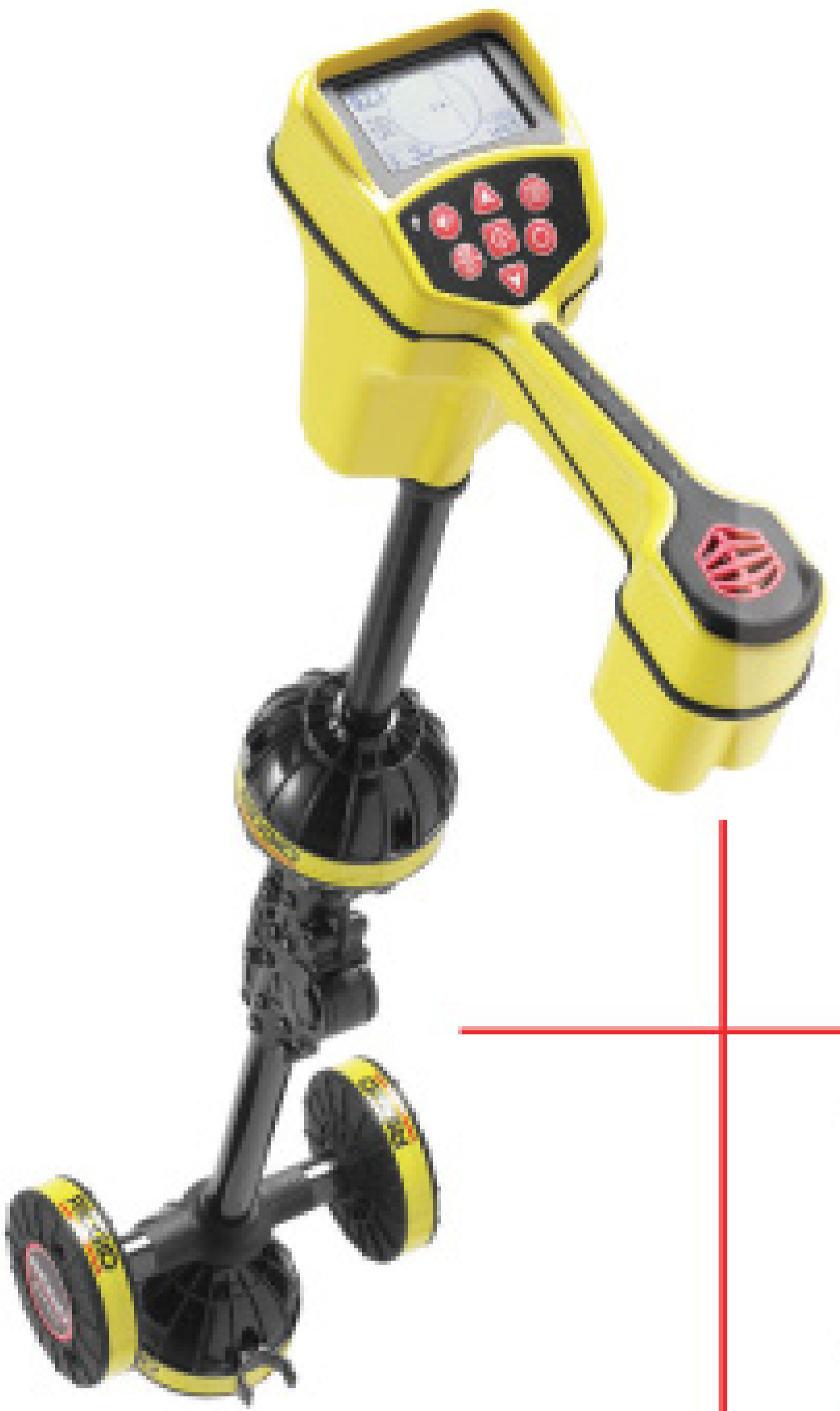


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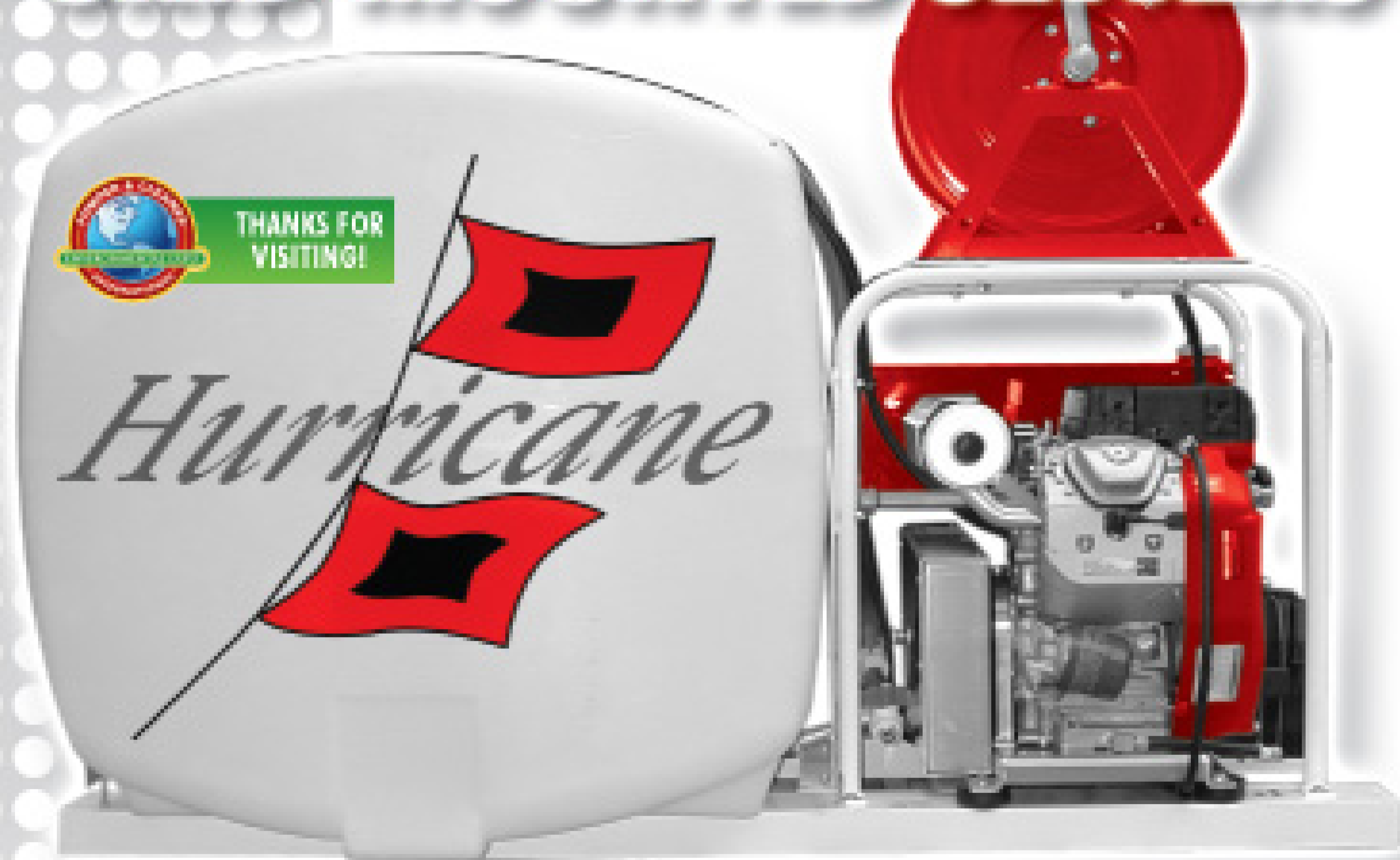


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Know Your Enemy

It's always worth revisiting the dangers of hydrogen sulfide, the highly toxic gas most often associated with sewer fatalities

By Ted J. Rulseh

Every year, some sewer workers, farmers, construction workers and others die from exposure to hydrogen sulfide (H₂S).

Why should this be? The hazards are well known. A whole industry has grown up around protecting people about this and other toxic gases. There's confined-

H₂S is a colorless, flammable, extremely hazardous gas that has a rotten egg smell. It is sometimes called sewer gas, stink damp, swamp gas, or manure gas. It comes from bacterial breakdown of materials like manure and sewage.

H₂S is heavier than air and collects in low-lying, enclosed and poorly ventilated areas, including manholes and sewer lines. The primary route of exposure is inhalation; the lungs absorb the gas rapidly.

You can smell H₂S at low concentrations, but after continuous

nervous system. Its effects can vary depending how much you are exposed to and for how long. Low concentrations irritate the eyes, nose, throat and respiratory system – you may experience burning or tearing of the eyes, coughing, or shortness of breath. People with asthma may have trouble breathing.

The effects can be delayed for several hours, or sometimes several days, when you work in low concentrations. Repeated or prolonged exposures may cause eye inflammation, headaches, fatigue, irritability,

any other necessary personal protective equipment, as well as rescue and communication equipment. The OSHA confined spaces standard contains specific requirements for identifying, monitoring and entering confined spaces.

OSHA has determined that a level of H₂S gas at or above 100 parts per million is immediately dangerous to life and health (IDLH). Entry into IDLH atmospheres can only be made using a full-facepiece, pressure-demand, self-contained breathing apparatus (SCBA) with a

Safety FIRST

space entry training. There are confined-space safety systems that include gas detectors, tripods with winches, respirators and other gear.

Why should anyone ever be exposed to harmful amounts of this gas? Well, it's because either they don't know the risks or they ignore the warnings. So it's worthwhile to revisit the dangers of H₂S, and especially to share the information with new people coming into the drain and pipe maintenance profession.

Know the basics

OSHA provides extensive information about H₂S. Here are some facts and cautionary advice taken from an H₂S fact sheet.

You can smell H₂S at low concentrations, but after continuous exposure, you lose your ability to smell the gas (this is called olfactory fatigue). At high concentrations, olfactory fatigue can occur almost instantly. Therefore, never rely on your sense of smell to indicate whether H₂S is present or to warn of high levels.

exposure, you lose your ability to smell the gas (this is called olfactory fatigue). At high concentrations, olfactory fatigue can occur almost instantly. Therefore, never rely on your sense of smell to indicate whether H₂S is present or to warn of high levels.

Effects on health

H₂S is both an irritant and a chemical asphyxiant. It affects oxygen utilization and the central

insomnia, digestive disturbances and weight loss. Moderate concentrations can cause more severe eye and respiratory irritation (coughing, difficulty breathing, fluid in the lungs), as well as headaches, dizziness, nausea, vomiting, staggering and excitability.

High concentrations can cause shock, convulsions, inability to breathe, extremely rapid unconsciousness, coma and death. Effects can occur within a few breaths and possibly a single breath.

Protecting yourself

Before you enter an area where H₂S may be present, the air must be tested for its presence and concentration by a qualified person, using equipment such as H₂S detector tubes or a multi-gas meter. Testing should also determine if fire or explosion precautions are also necessary. If the gas is present, the space must be ventilated continually.

If the gas cannot be removed, the person entering the space must use appropriate respiratory protection and

minimum service life of 30 minutes, or a combination full-facepiece, pressure-demand, supplied-air respirator with an auxiliary self-contained air supply.

If the H₂S level is below 100 ppm, an air-purifying respirator may be used, assuming the filter cartridge/canister is appropriate for H₂S. A full-facepiece respirator will prevent eye irritation.

If air concentrations are elevated, eye irritation may become a serious issue. If a half-mask respirator is used, tight-fitting goggles must also be used. Workers in areas containing H₂S must be monitored for signs of overexposure.

And finally, OSHA warns that no one should attempt a rescue in an area that may contain H₂S without using appropriate respiratory protection and without being trained in such rescues. The likely result of attempting a rescue while untrained and ill-equipped is a multiple fatality. ■

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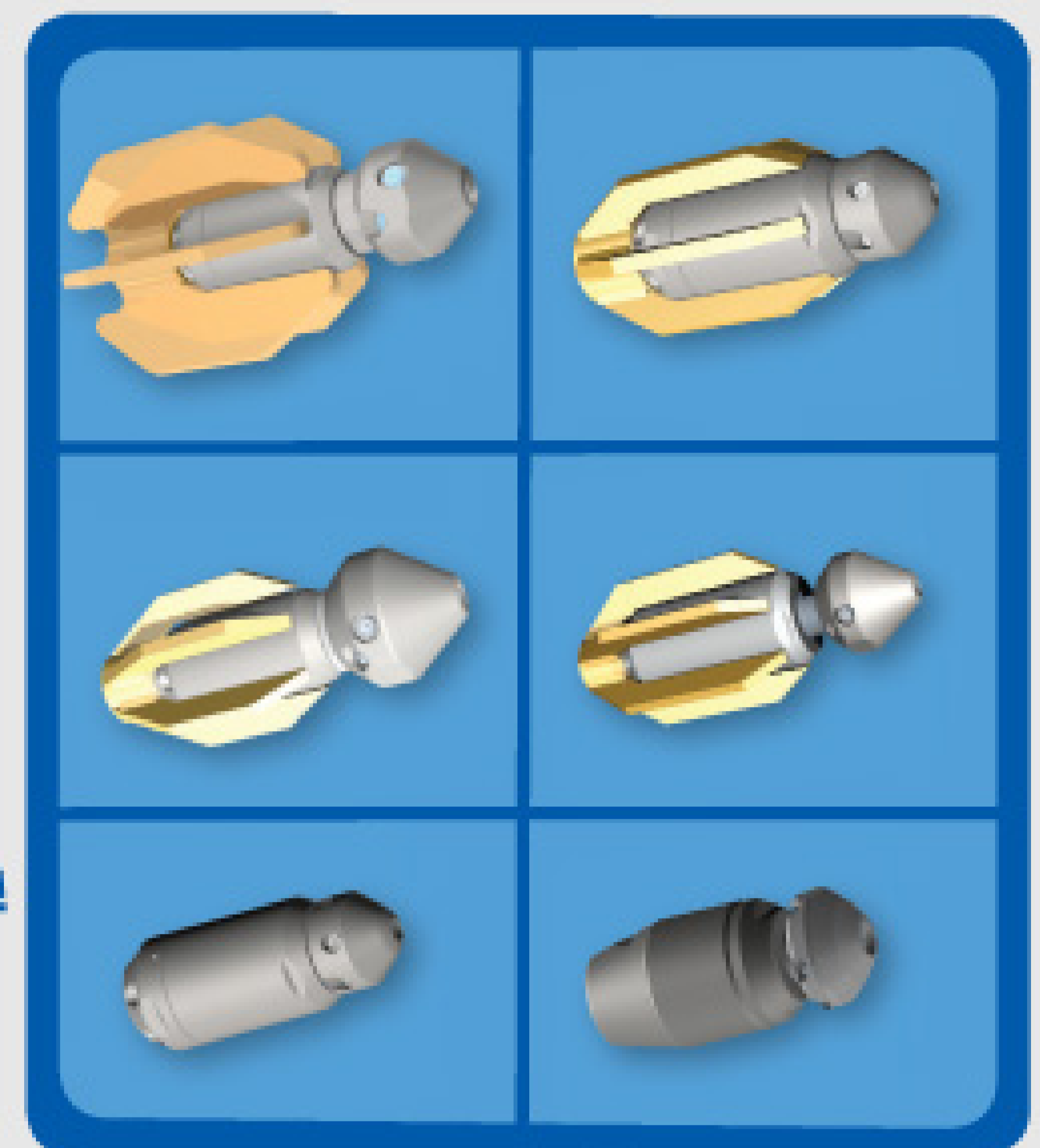
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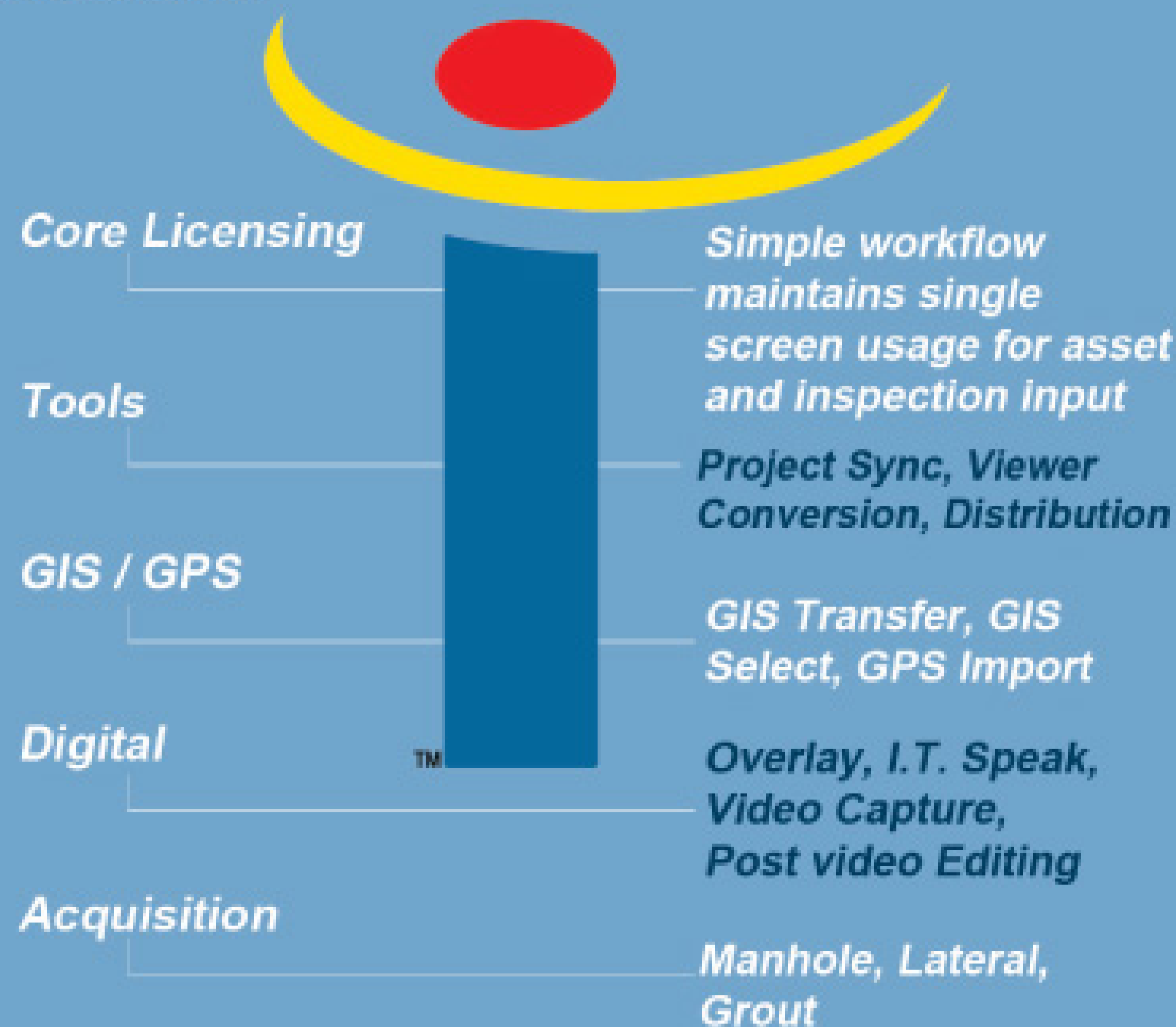
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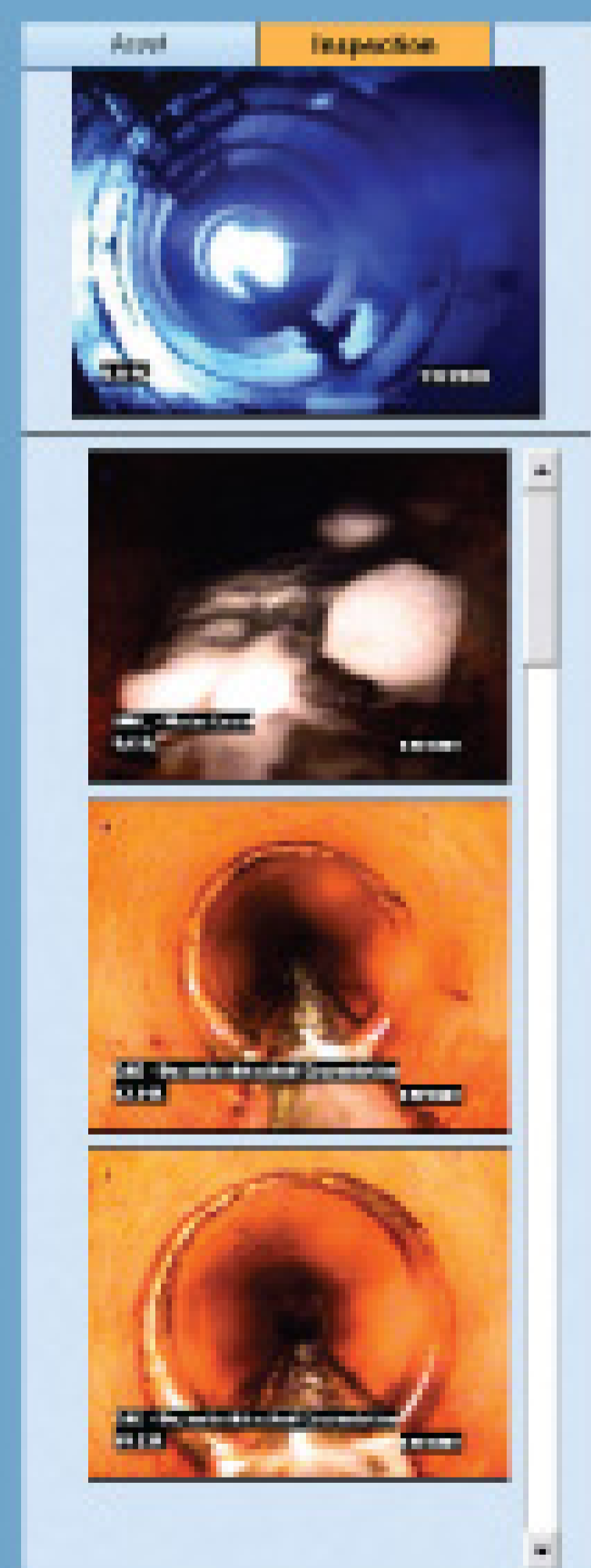


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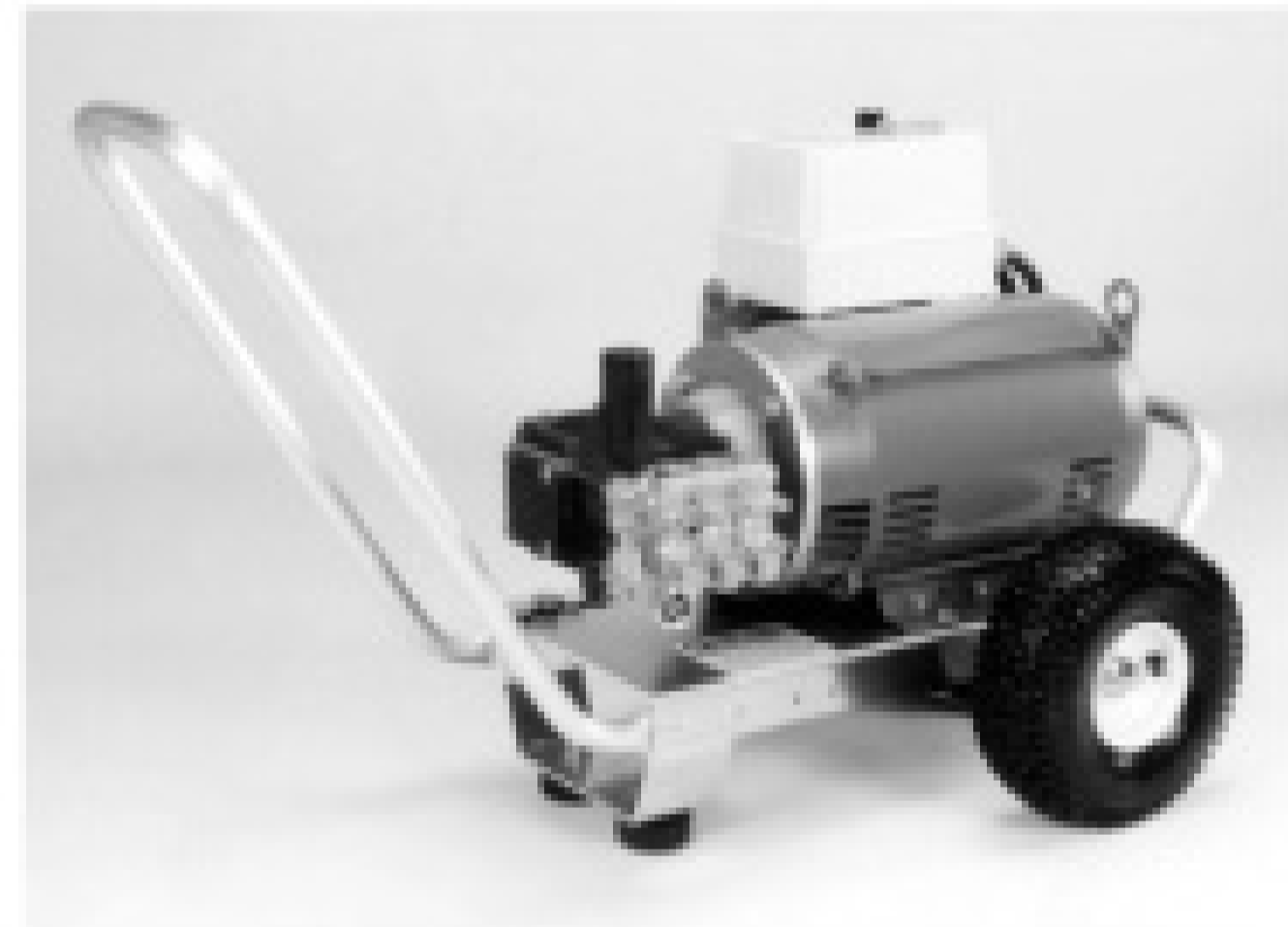


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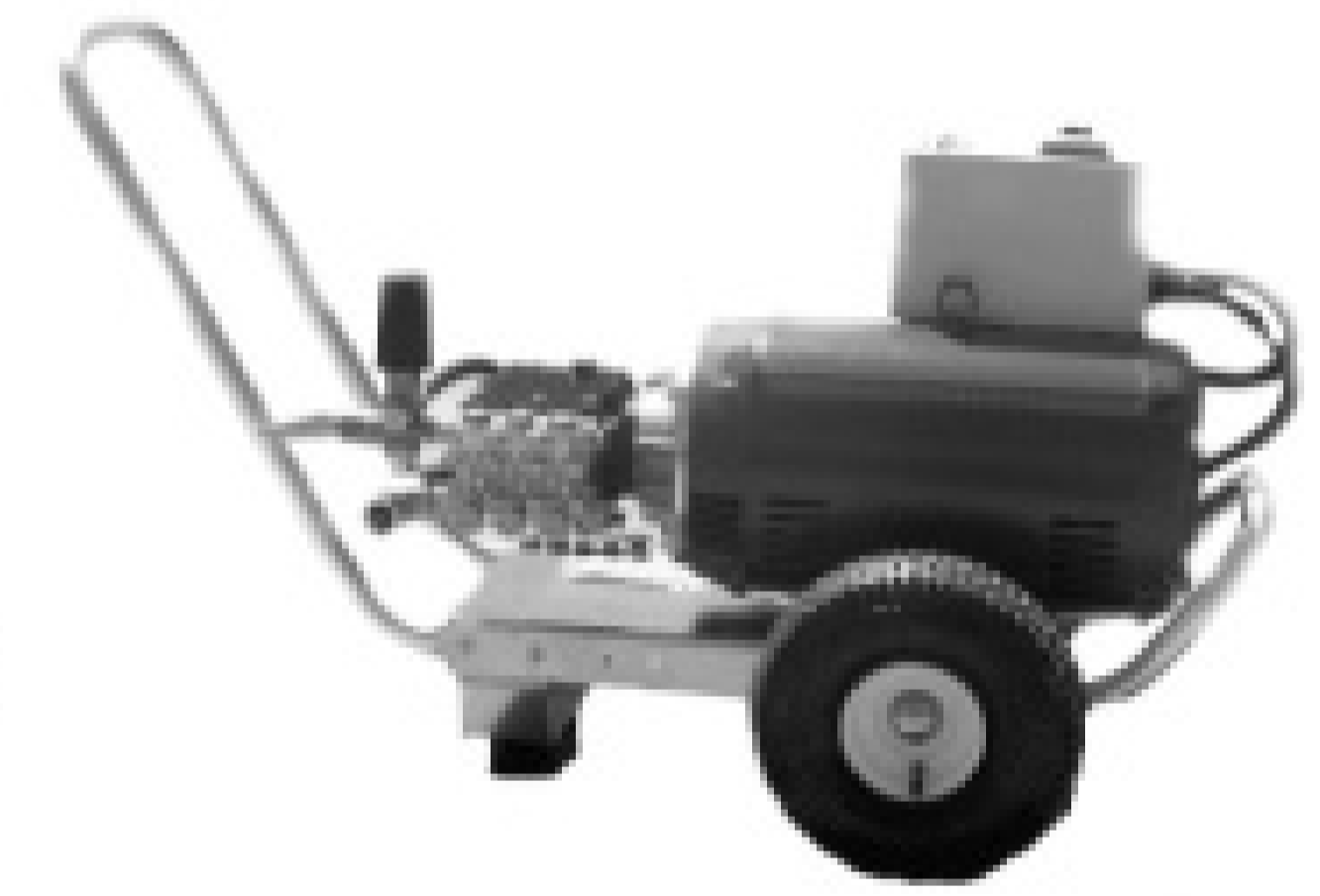


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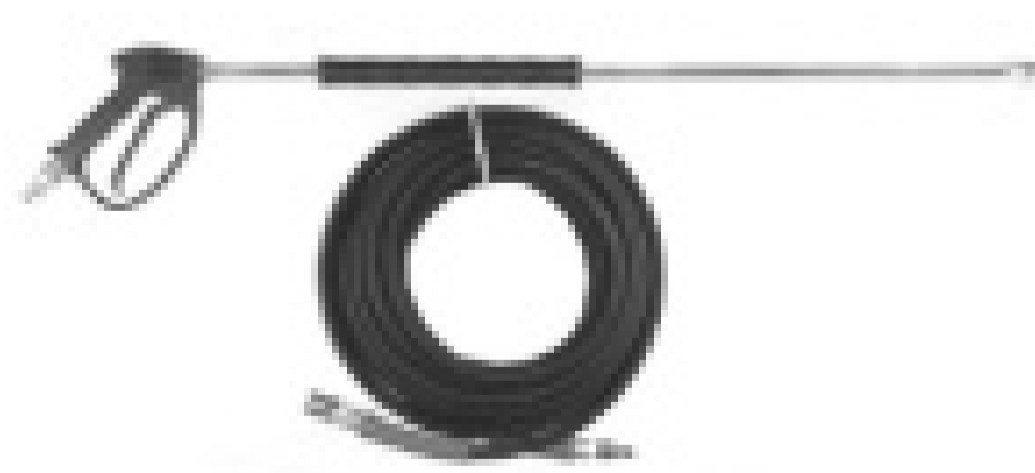
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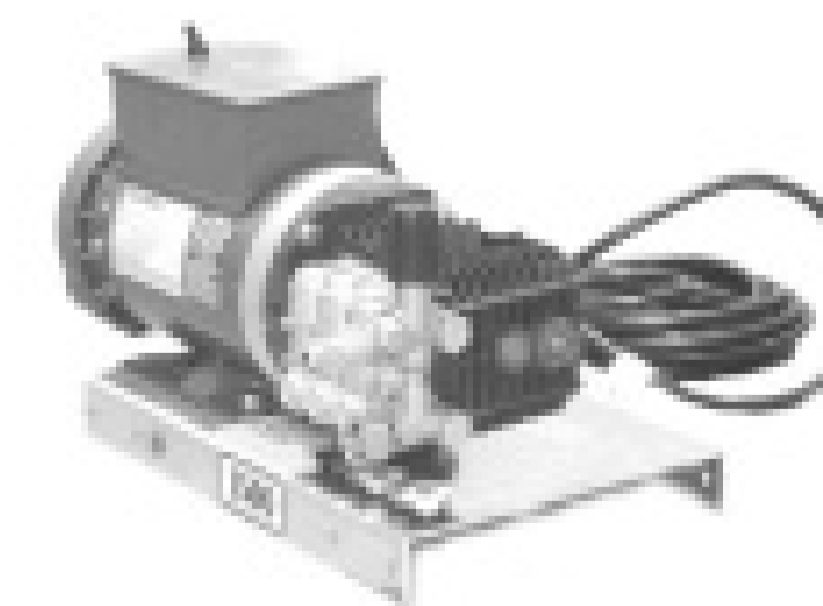
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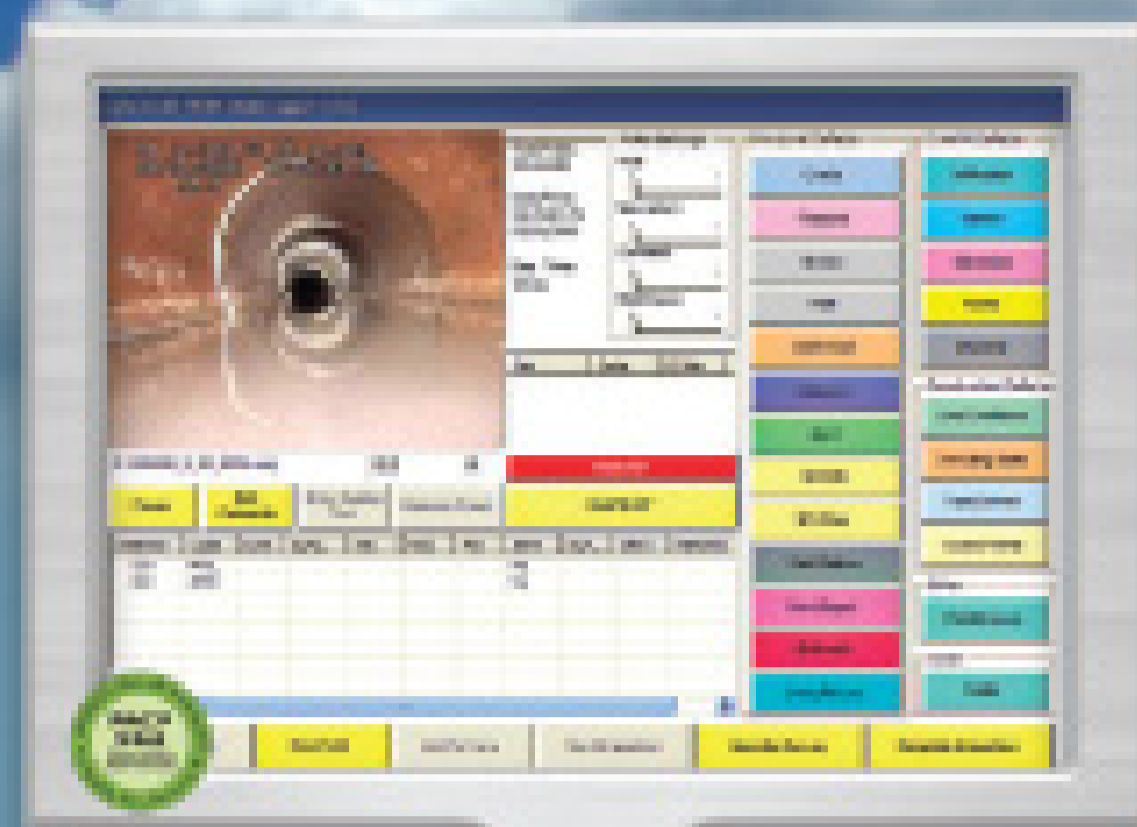
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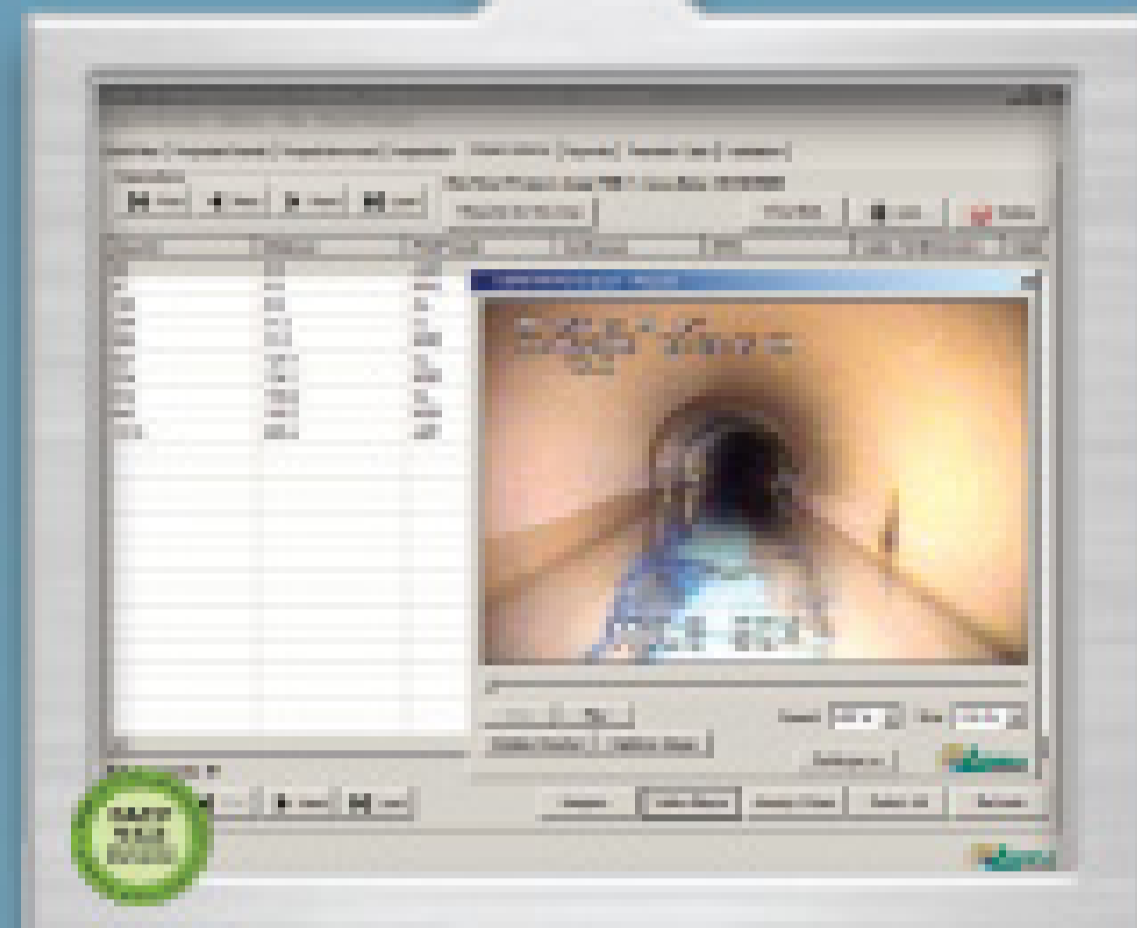


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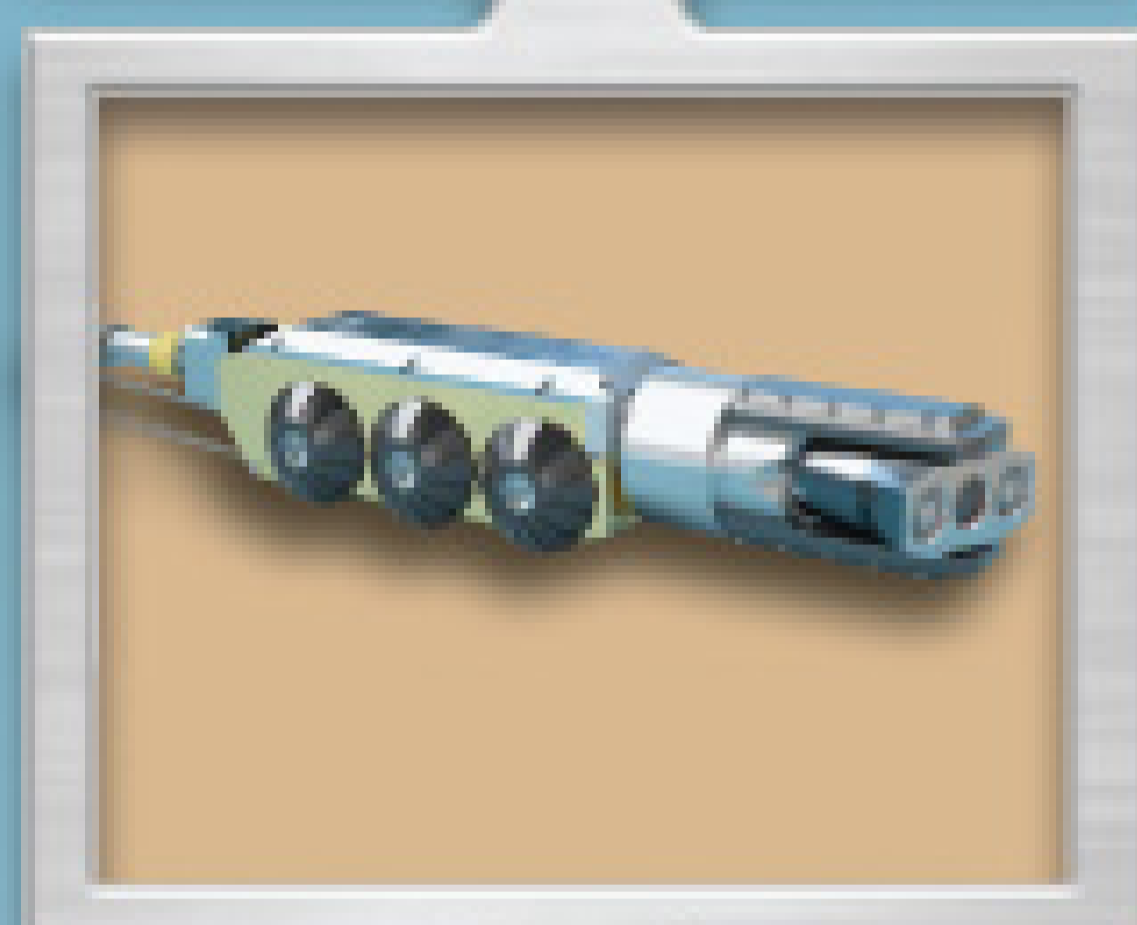


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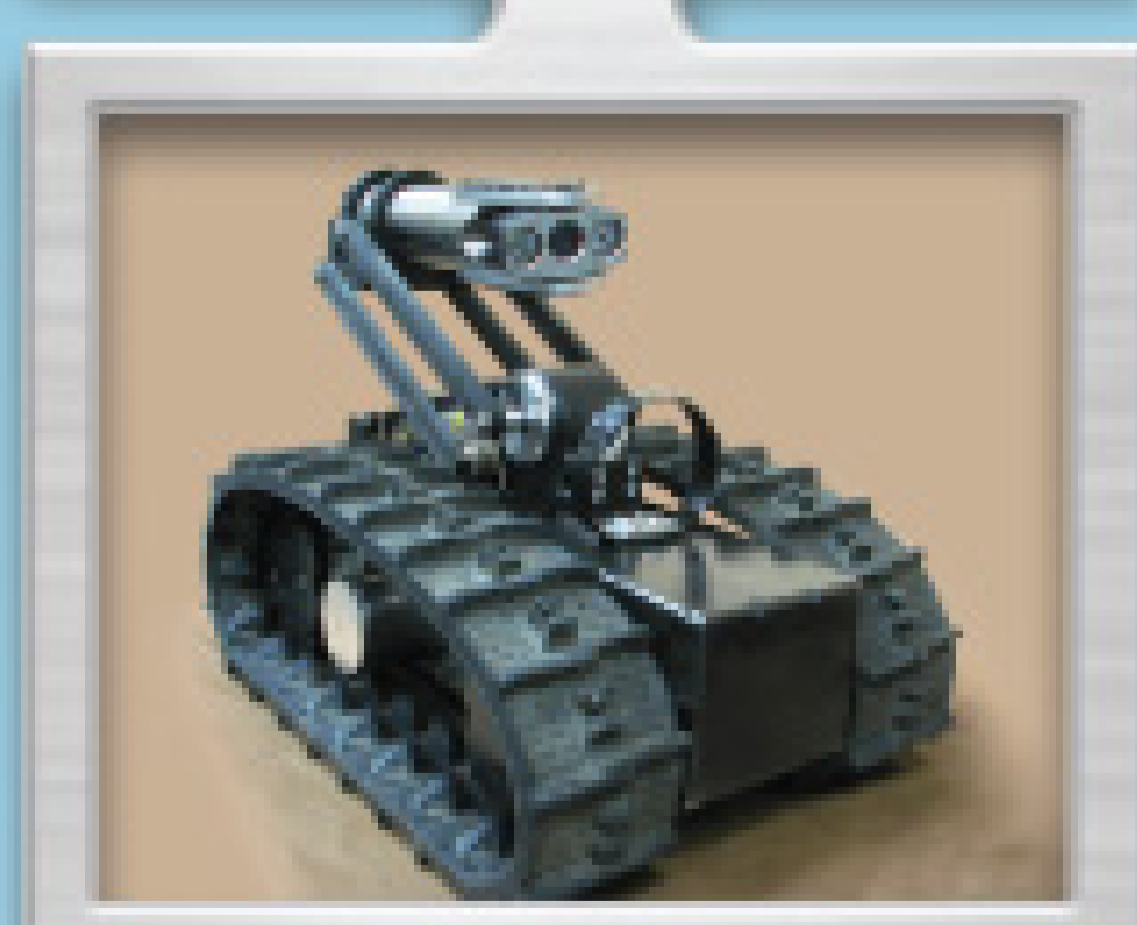
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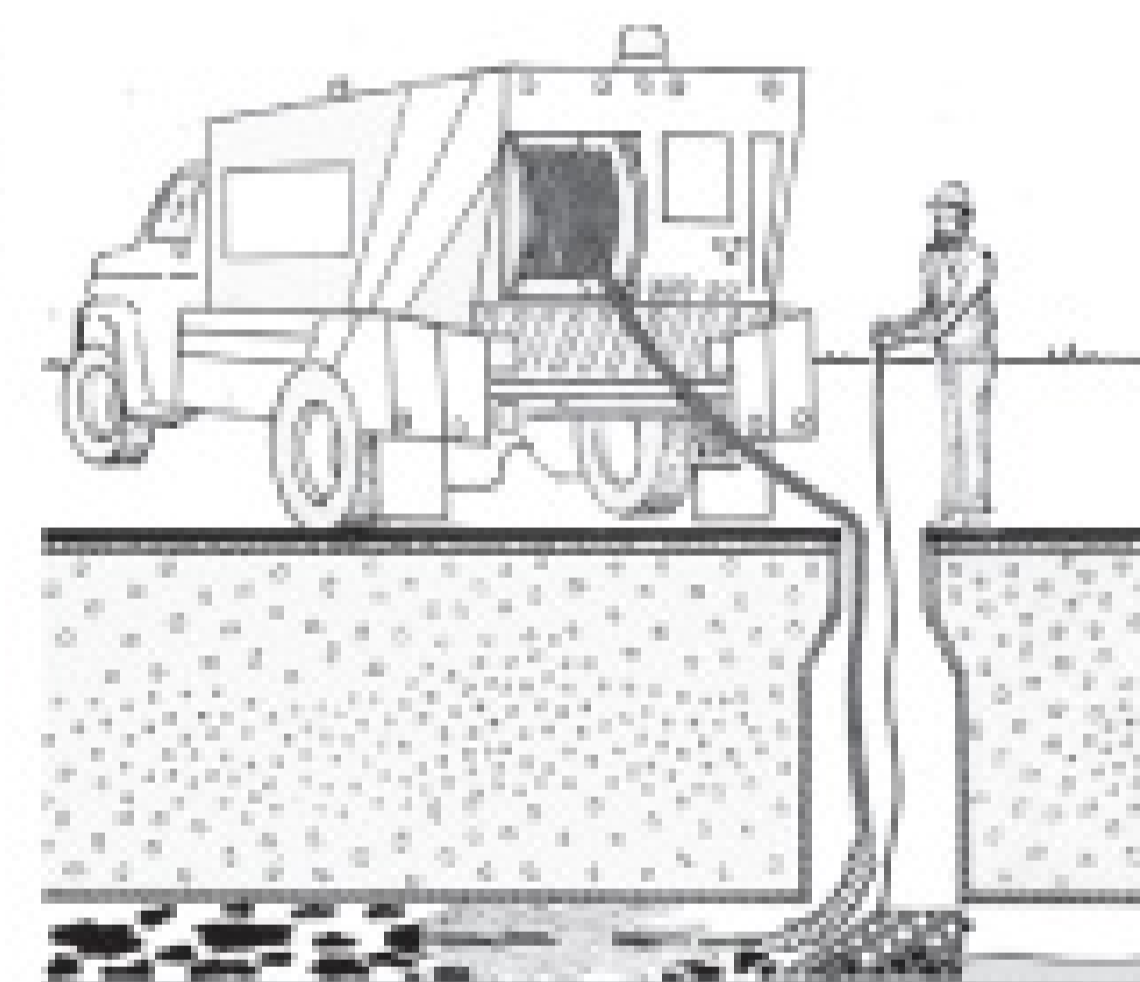
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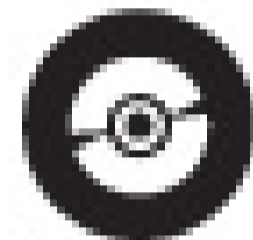
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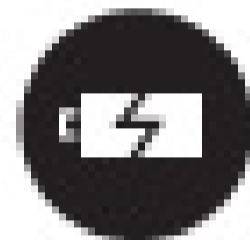
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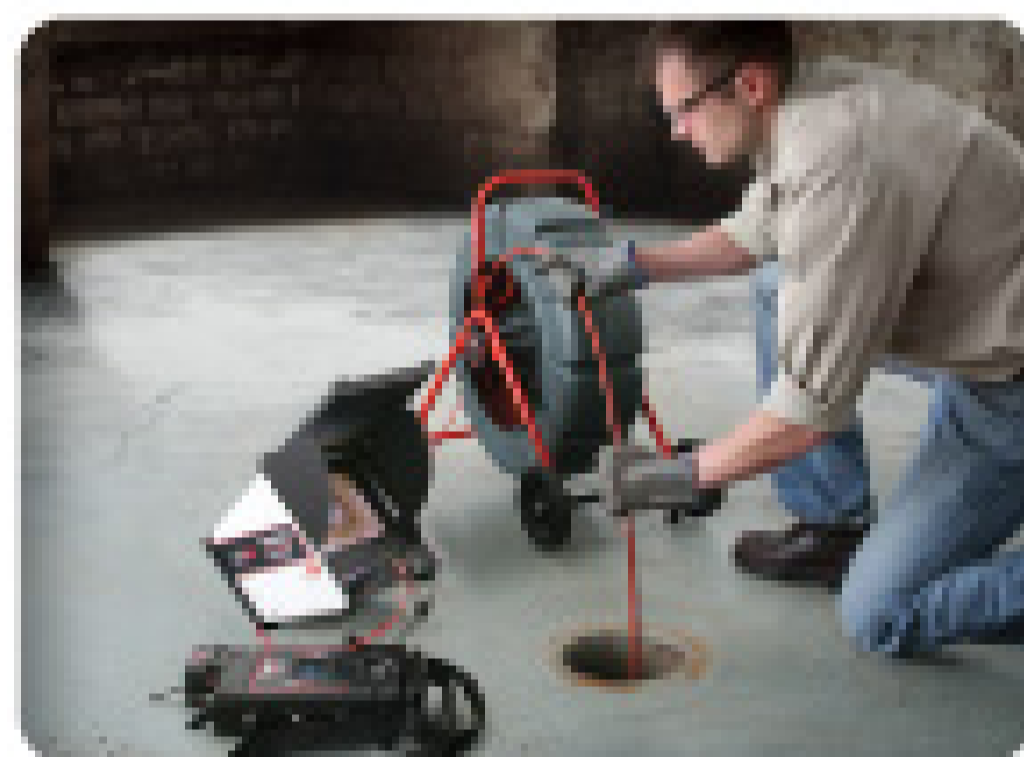
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46 Ways to Pay Taxes

An understanding of individual state laws, good records and a big supply of antacid tablets can help you survive a sales tax audit

By Judy Kneiszel

In 1930, Mississippi became the first state to adopt a general sales tax. Since then, all but four states have jumped on the bandwagon, and 46 states means 46 sets of rules, regulations, rates and exemptions.

For many years, sales tax laws in other states weren't of much concern to small businesses. It was mostly big companies that engaged in interstate commerce. But now the world is one big shopping mall, and with a few keystrokes consumers can buy goods in any state from Maine to California.

In a 1992 decision, the U.S. Supreme Court exempted out-of-state retailers from collecting sales taxes in states where they have no physical

presence, like a store, office or warehouse. Although that decision involved a mail order company, the ruling has been applied to all remote sellers, including online retailers. The result? Companies have increased their geographic market, costing states billions in sales tax revenue.

The use tax

So, what are states doing? Many are trying to strengthen use-tax compliance. A use tax applies to transactions not subject to sales tax where tangible personal property, bought in one state, is used in another state. The use tax is generally the same rate as the state's sales tax, and is to be paid by the party making the purchase. That means you may owe use tax on a computer you ordered from another state and on which you did not pay sales tax.

Use tax looks like sales tax, smells like sales tax and costs like sales tax, so states are making up for sales tax losses and enforcing the collection of use tax by conducting sales/use tax audits. All this means you need to be prepared. There has been a noticeable increase in sales/use tax audits as states try to recoup those lost sales tax revenues.

Tax laws vary greatly from state to state. Here is just one quirky example: Antacids are exempt in

If you're audited

Connecticut, but are taxable once you cross into Massachusetts. It doesn't take much research to see that learning all the differences in sales tax laws would require more antacids than both those states could hold.

The best defense in a sales/use tax audit is thorough record keeping. Detailed documentation could save you big money in taxes and penalties, while decreasing the amount you have to spend on defending yourself in the audit.

Some records that may be reviewed include sales tax returns, worksheets, canceled checks, federal income tax returns, state tax returns,

Judy Kneiszel has operated her own small business for a decade. She can be reached at thewordhouse@ameritech.net.



only what they ask for. Too much information can potentially uncover liabilities they weren't even looking for and waste a lot of your time. Too little information might raise the auditor's suspicions and cause the scope of the audit to be increased.

While sales tax and use-tax regulations vary slightly for retailers, laws vary wildly for construction, manufacturing, distribution and other businesses like drain cleaning that may have mixed taxable and nontaxable transactions. To help you understand where you may have sales tax exposure and get a jump on a possible audit, learn the laws of your state and the states where you have a physical presence.

Most states detail their rules on the Internet.

The best defense in a sales/use tax audit is thorough record keeping. Detailed documentation could save you big money in taxes and penalties, while decreasing the amount you have to spend on defending yourself in the audit.

general ledger, general journal and closing entries, sales invoices, exemption documents supporting nontaxable sales, charts of accounts, fixed asset purchases/sales invoices, expense purchases, merchandise purchases, bank statements, canceled checks and deposit slips, cash receipts and depreciation schedules.

A sales/use tax audit usually begins when an auditor contacts you by letter or phone to schedule a pre-audit meeting. In this meeting, the auditor will typically present an audit authorization letter and other documents for you to sign. He or she will then explain what records are required to complete the audit and ask for additional information such as details of your accounting procedures.

Getting ready

To prepare for the scheduled audit, you will need to gather and organize the records requested by the auditor. Don't provide too much or too little information

To get started, go to a map at www.taxadmin.org/fta/link/default.html on the Federation of Tax Administrators Web site, click on your state, and start studying. You'll soon realize those lawmakers back in Mississippi had no idea in 1930 the size of the genie they were letting out of the bottle when they created sales tax. ■



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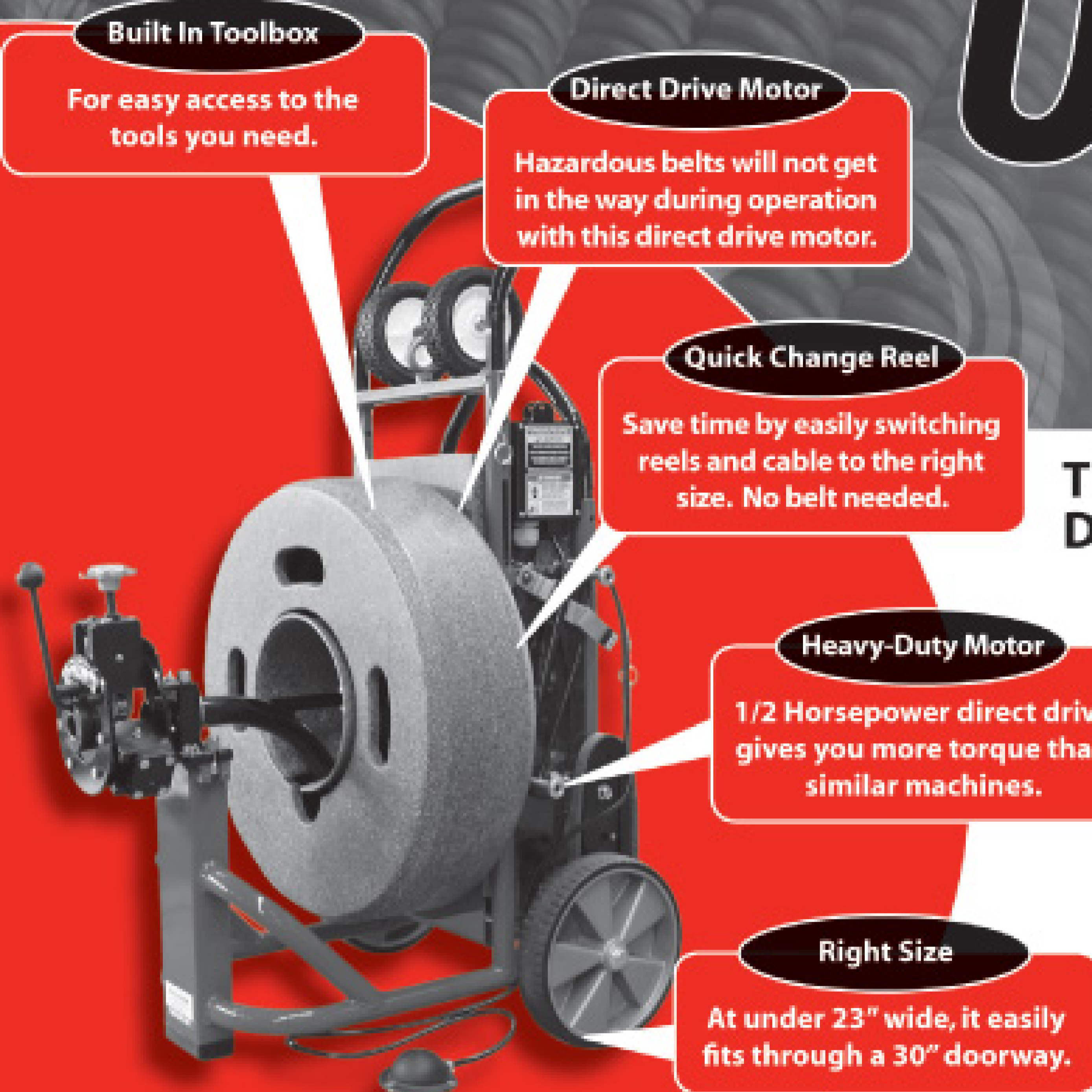
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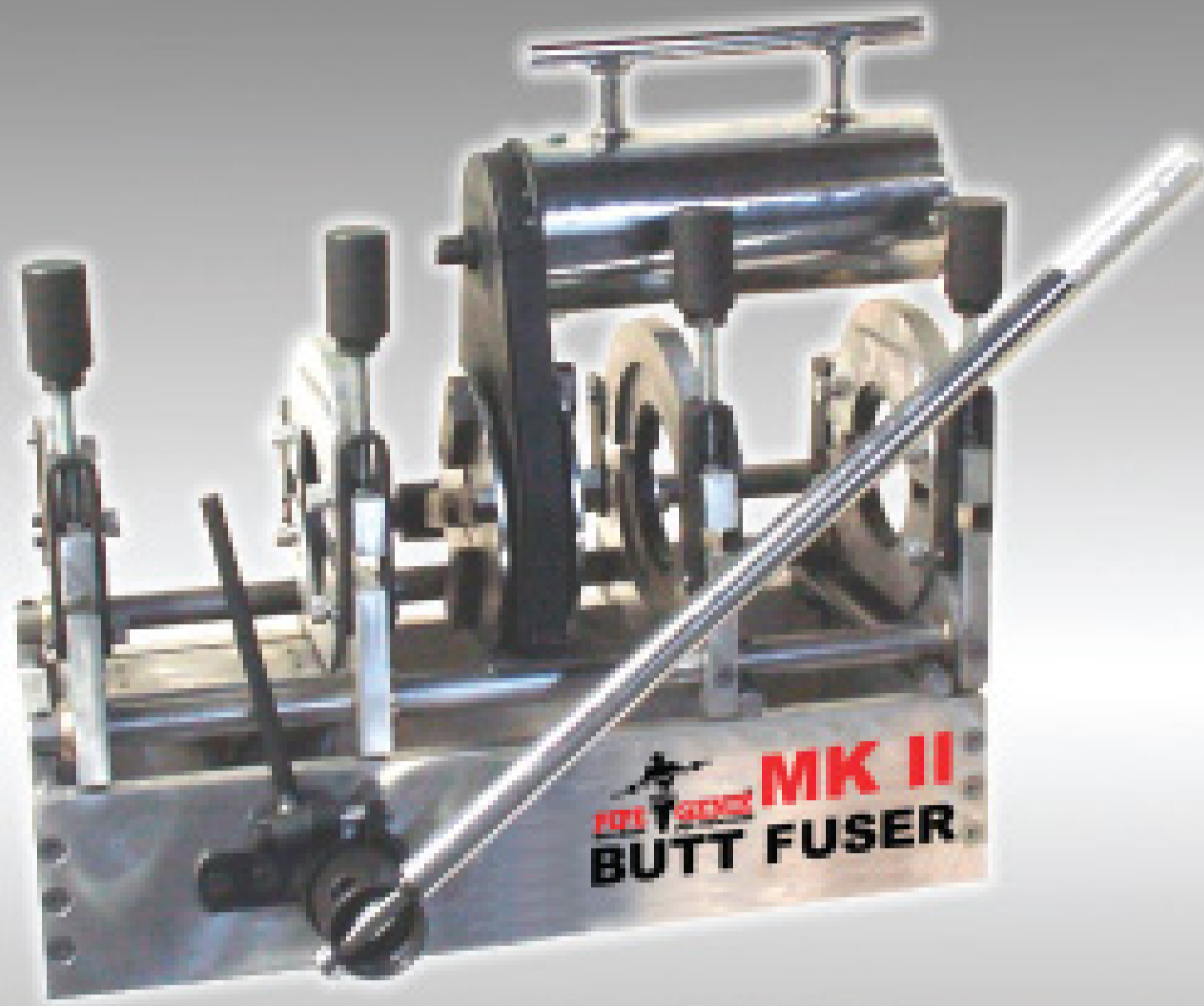
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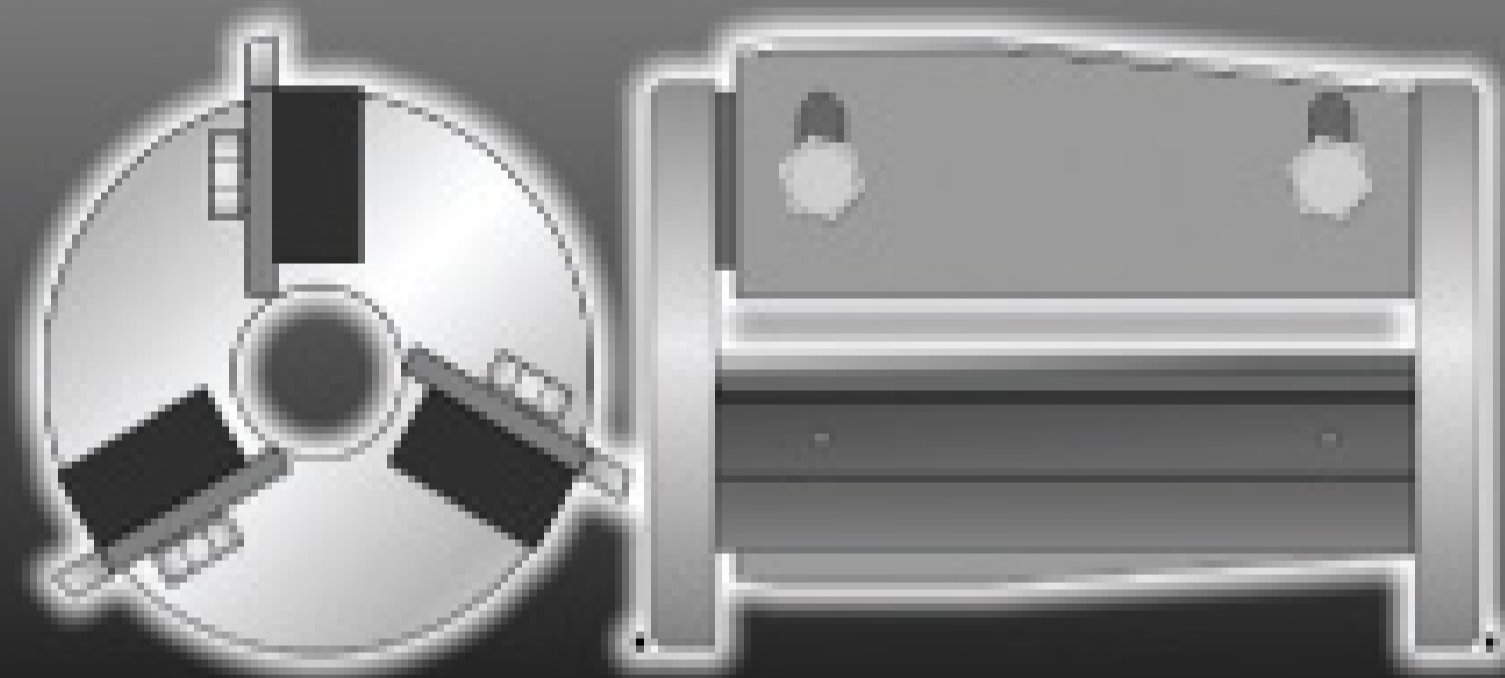
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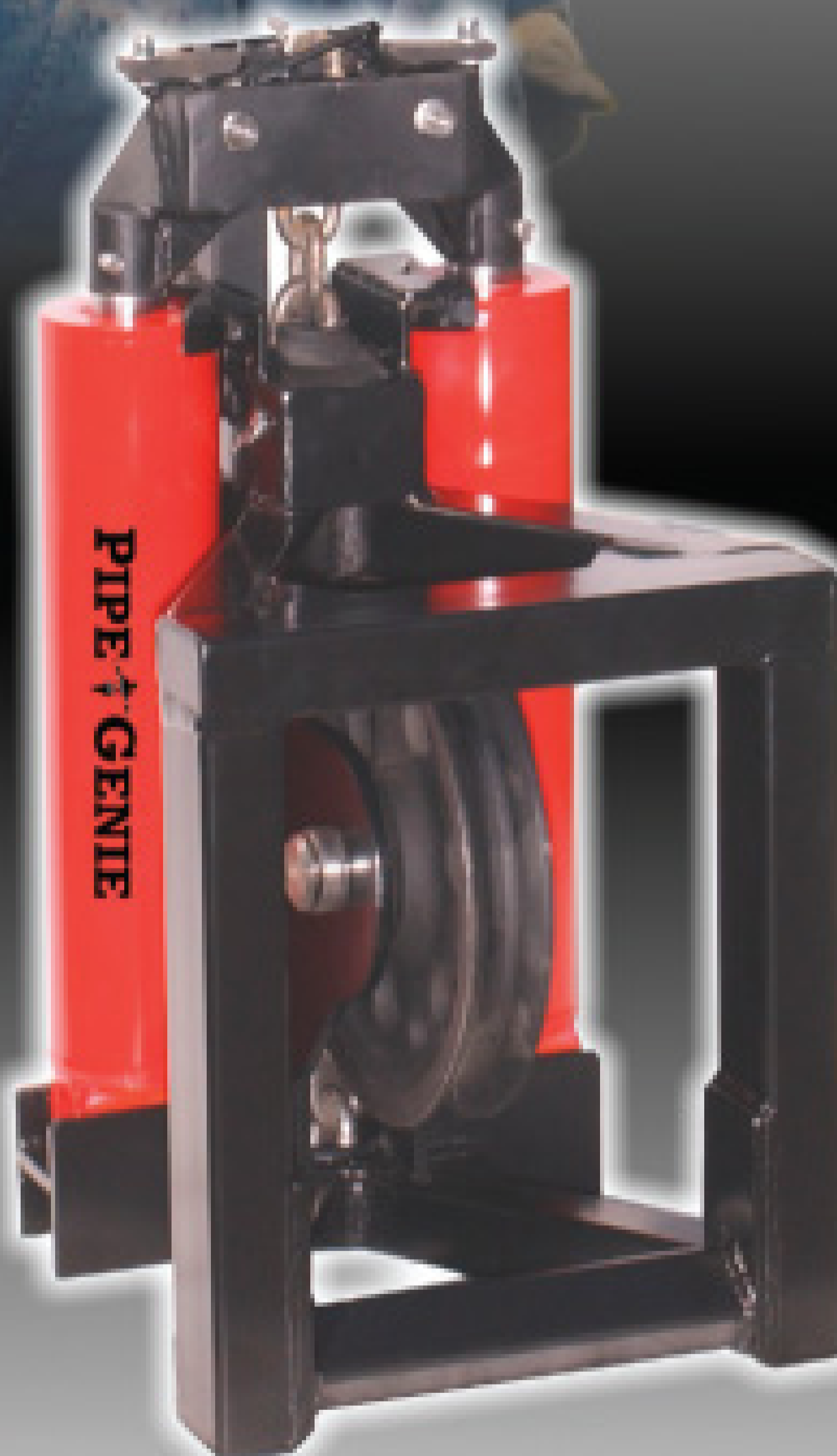
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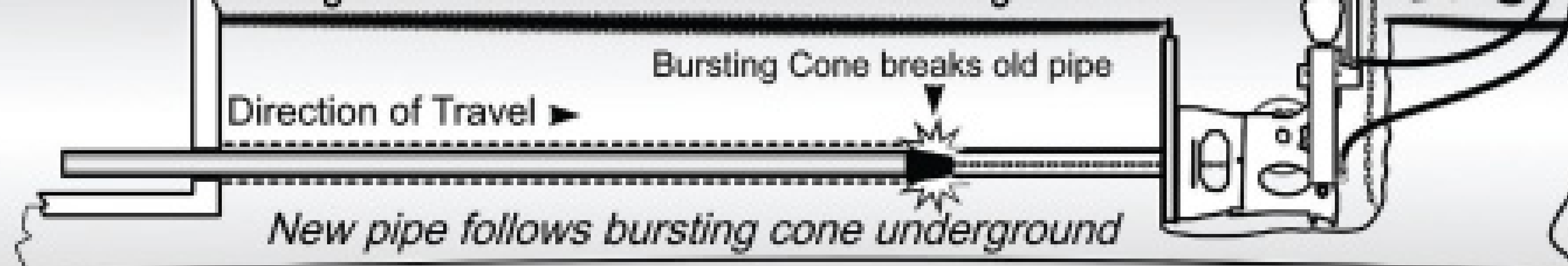
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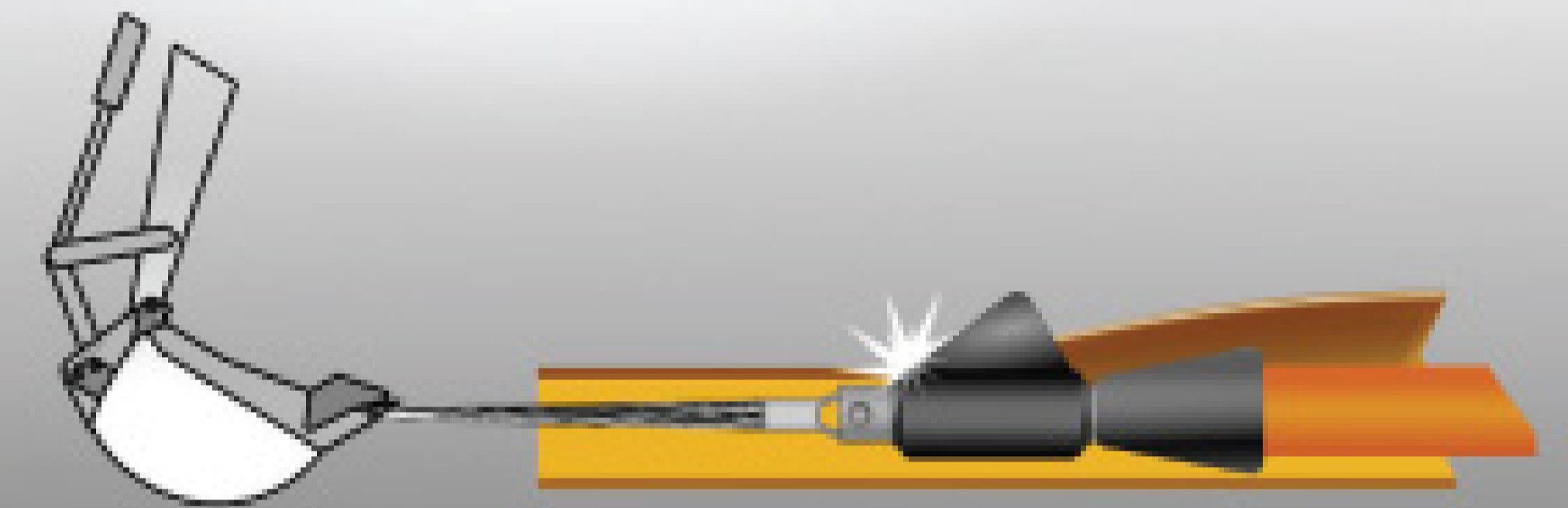


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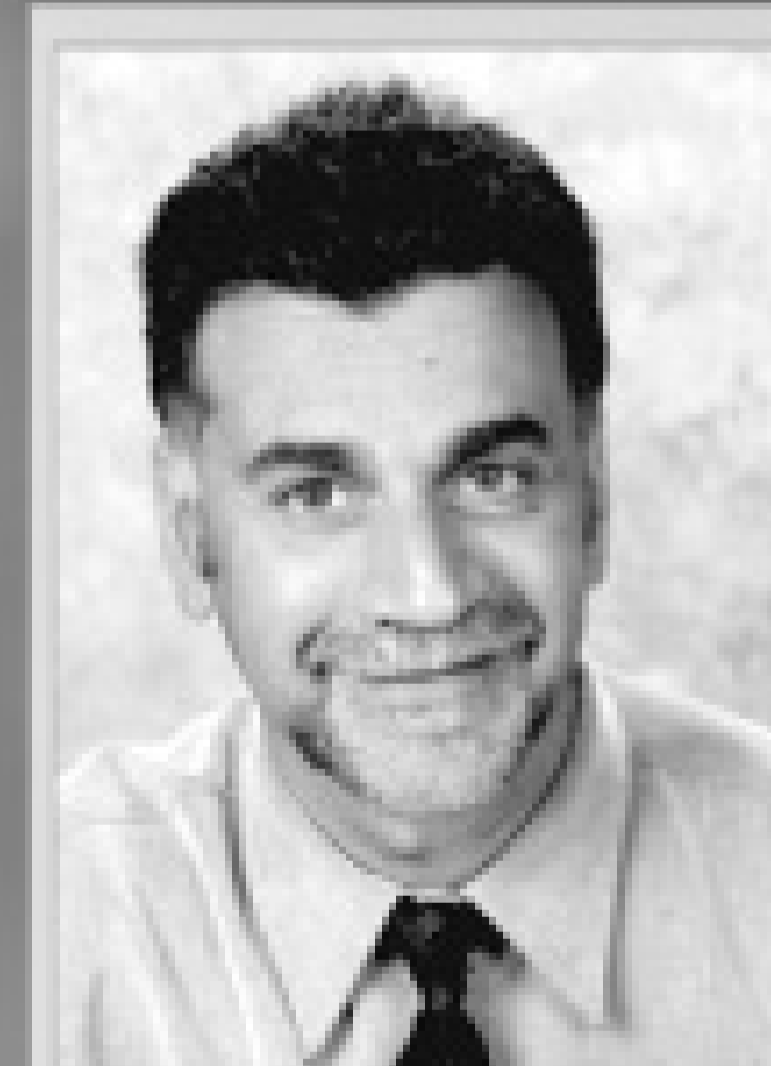
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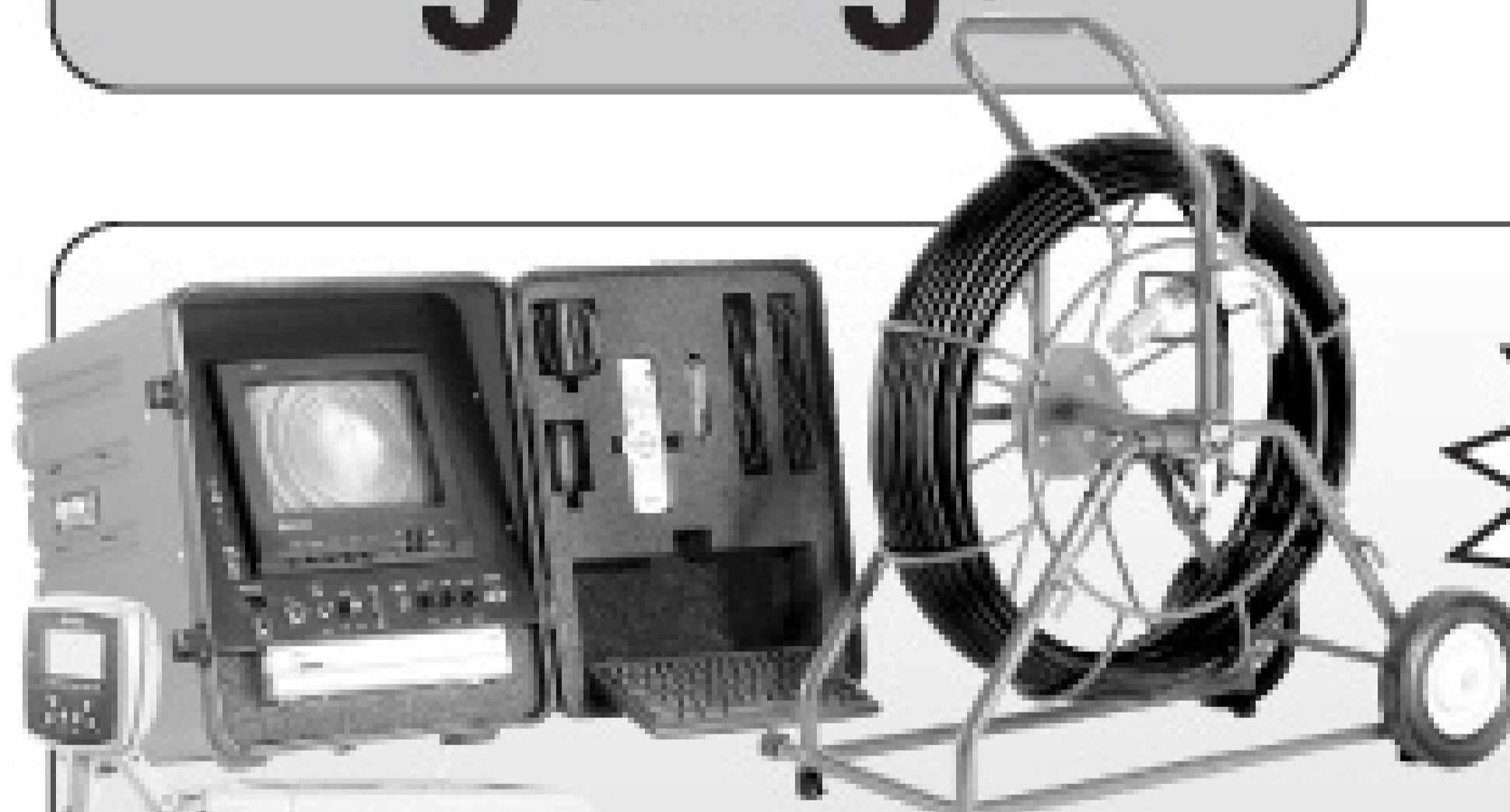
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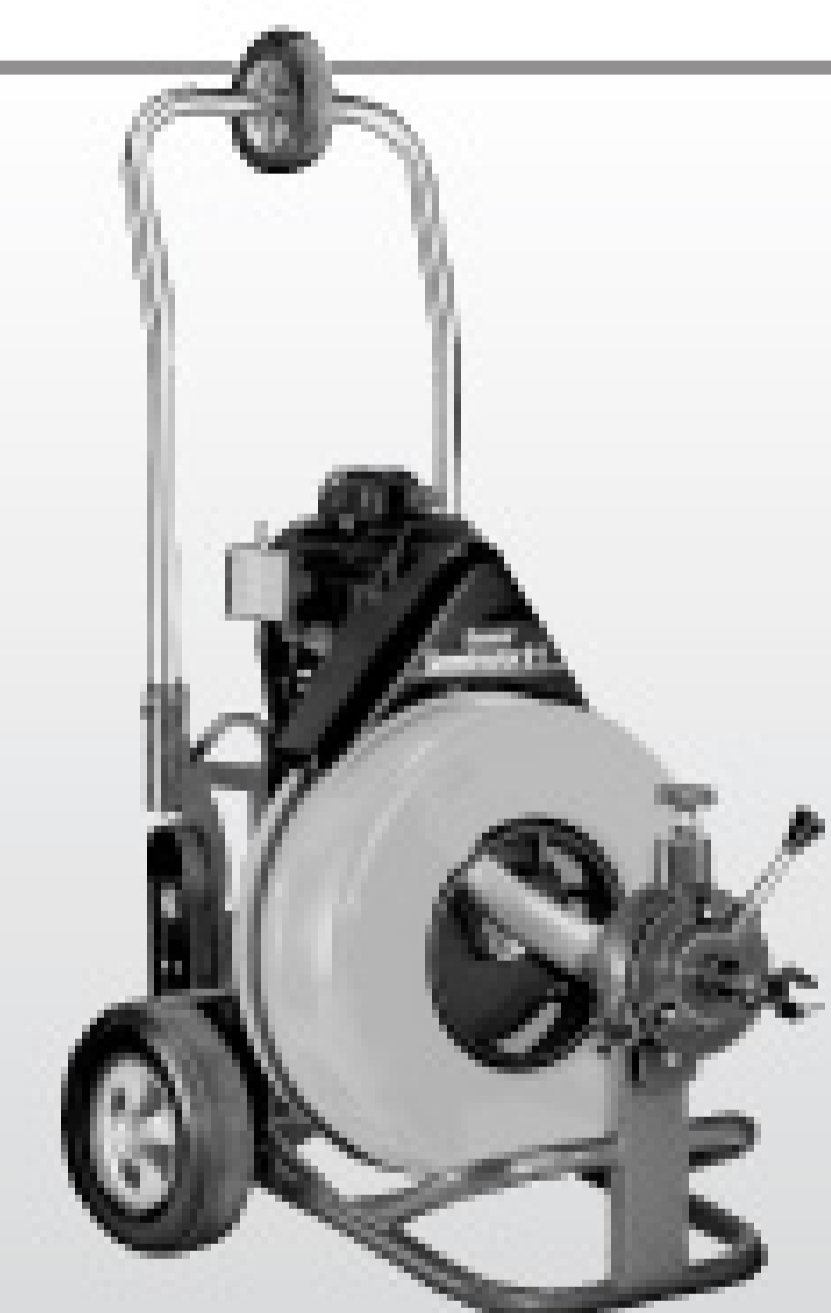
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The Contractor's Wife

It is often the bookkeeping spouse who has the best perspective on what ails a business, and often on what it takes to set things right

By Frank Blau

I'd like to share with you a letter I once received from a contractor's wife. The letter basically speaks for itself.

"Ten years ago my husband's partner died. As no one else came running forward, I picked up his job managing the books. How hard could it be?

"After years of struggling, we joined the Plumbing-Heating-Cooling Contractors Association. We went looking for kindred souls. Surely there were folks out there who could help us figure out what we were doing wrong. We were working hard and getting nowhere, but we were doing, it seemed, what every other contractor was doing. Why were we going broke? What were we missing?

"At the convention I asked lots of questions. 'How are things in your business? Are you making money? How many hours a week do you work?' The men huffed, 'Busy as hell. Things couldn't be better.' But I noticed behind each pompous fellow, a woman with a slightly wrinkled brow and bit of a frown. I started to figure out there was more to the story.

"Women in this industry often take on the role of bookkeeper. The plumbers are too busy doing the 'important' stuff, like turning wrenches. They have neither the time nor ability to do things like bill paying, determining pricing strategies, laundry or dusting. So the woman, bless her heart, does the housekeeping and the bookkeeping. One of two things happens at this point.

"Scenario 1: Mrs. Herman's job consists of sweeping up after Mr. Herman. Her husband can't be bothered to talk to customers to get approval before he starts working. He goes at it, turns wrenches and tells her to bill Mr. Fernwicky. She

does. Mr. Fernwicky calls and accuses her of high-way robbery. She apologizes.

"Mr. and Mrs. Herman argue. She tells him to work harder. They need the money. He tells her she is a spendthrift. She shouldn't be wasting money on those business seminars. She gets a second job to make ends meet. Every once in awhile they attend a PHCC function. They dress up and pretend they are wealthy and successful – like all the other plumbing contractors.

"Scenario 2: Mrs. Progressive acknowledges what she's learning – that most contractors don't know how to run a business, and to blindly follow their lead is foolish. She reads the financial data she collects and realizes that their selling prices must

There are many husband and wife teams in the contracting fields working long hours side by side, often for substandard pay and benefits. One of my pet peeves is that not only do most contractors fail to compensate themselves fairly, more often than not, they pay their working wives nothing at all.

go up. Drawing on her experience as a consumer, she understands the need to improve their customer service and selling systems.

"She meets with Mr. Progressive. They argue. But they both commit to improving the business. They determine that the reward for their hard work should be commensurate with the risk and hassle. They objectively view their strengths and weaknesses. They refine and delegate job positions, respecting each other's areas of expertise. They develop a company they can be proud of.

"Though there are days I wish I didn't work with my husband, I feel my place is in the business. When I took on the accounting duties, I had no idea how incapable I was. But over time, by keeping an open mind and learning and changing, I've become a business-woman.

"If other wives out there will validate what they know is true ('Honey, we are not

charging enough to cover the costs of doing business'), they can become a powerful force in bettering our industry. Surely we care about these guys and understand their worth. By realizing our own capabilities, we can work together to create family businesses worth passing on to our children. It's time to accept our own responsibilities in this industry."

There are many husband and wife teams in the contracting fields working long hours side by side, often for substandard pay and benefits. One of my pet peeves is that not only do most contractors fail to compensate themselves fairly, more often than not, they pay their working wives nothing at all! This is a form of modern-day slavery, yet

it's the only way they can make ends meet with the typical prices charged for work.

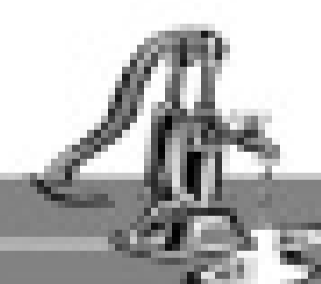
This woman was astute enough to pinpoint that root cause of under-pricing. She also deserves applause for taking action to correct the problem. Her point is well taken: Frequently it is the bookkeeping spouse who has the best perspective on what ails the business. The hard part then becomes pounding this message through the thick skull of a husband who thinks first, last and always like a laborer rather than a businessman.

Habits are hard to break – such as not being able to pay bills on time, not being able to provide for a family, or not putting money aside for retirement. I applaud spouses who dive in to help out in a family business and try to break some of those old habits.

Developing a business requires a great deal of commitment and hours. It requires paying attention to numbers, developing strategies, and attending trade functions after business hours. As a business owner or manager, you will encounter worries that may be too burdensome for one mind.

Share with your mate fears about finances, thoughts about problem customers and employees, or that new advertising campaign. Developing support on the home front can be reassuring. ■

Frank Blau is president of Blau Plumbing Inc., Milwaukee, Wis., which he founded in 1960 and grew into a multimillion dollar service company. He can be reached at ffbjr@blauplumbing.com.



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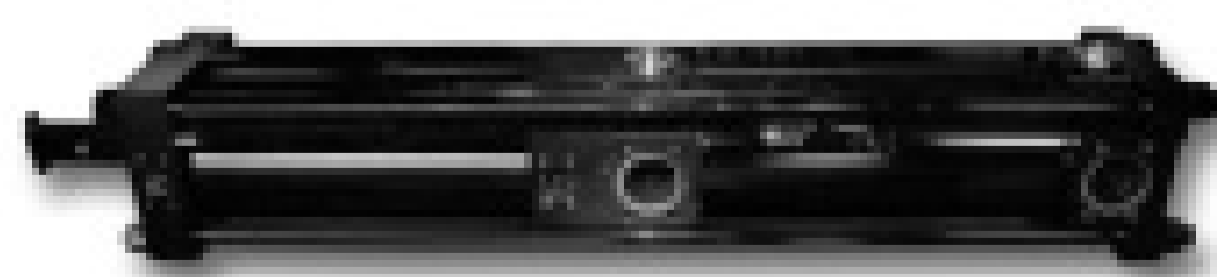
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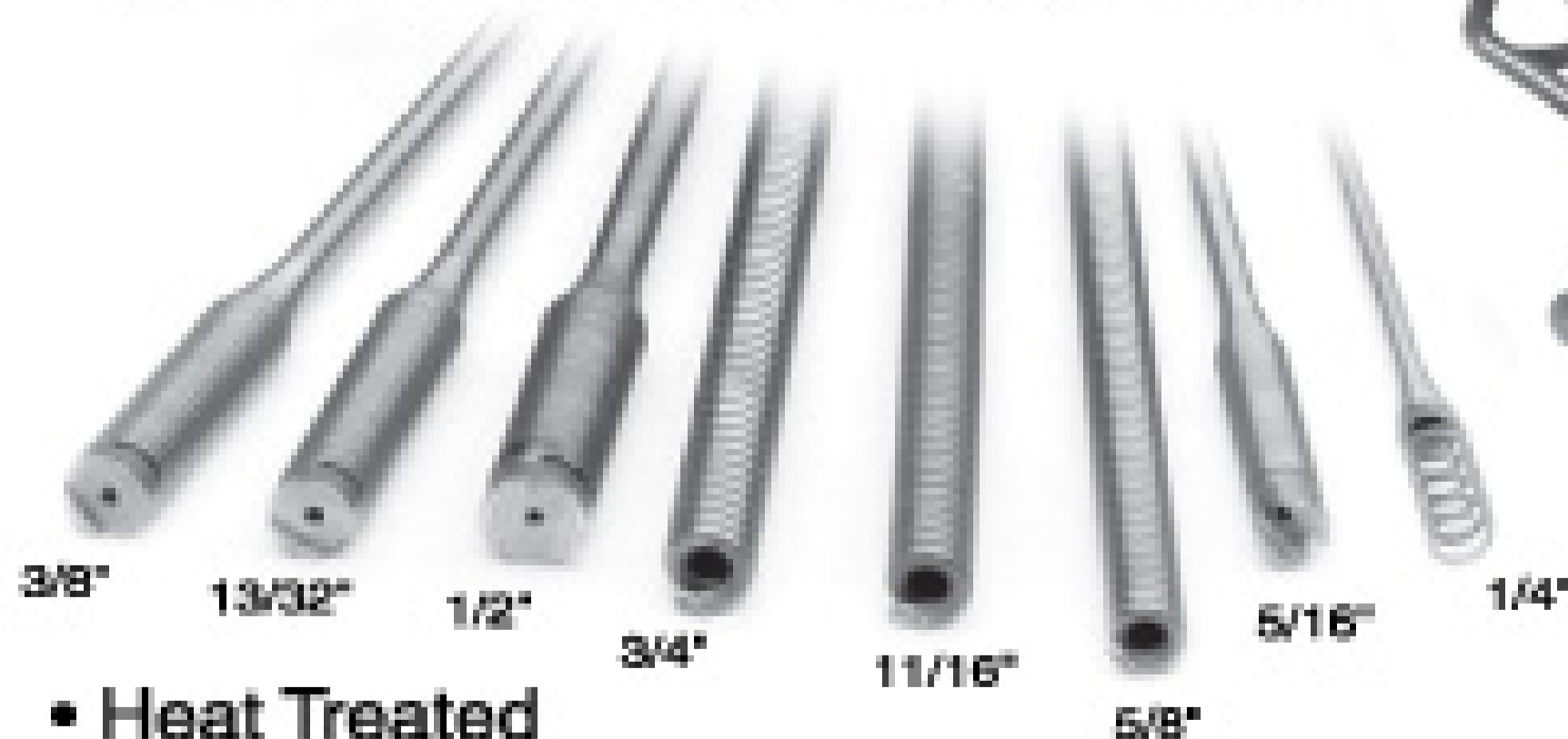
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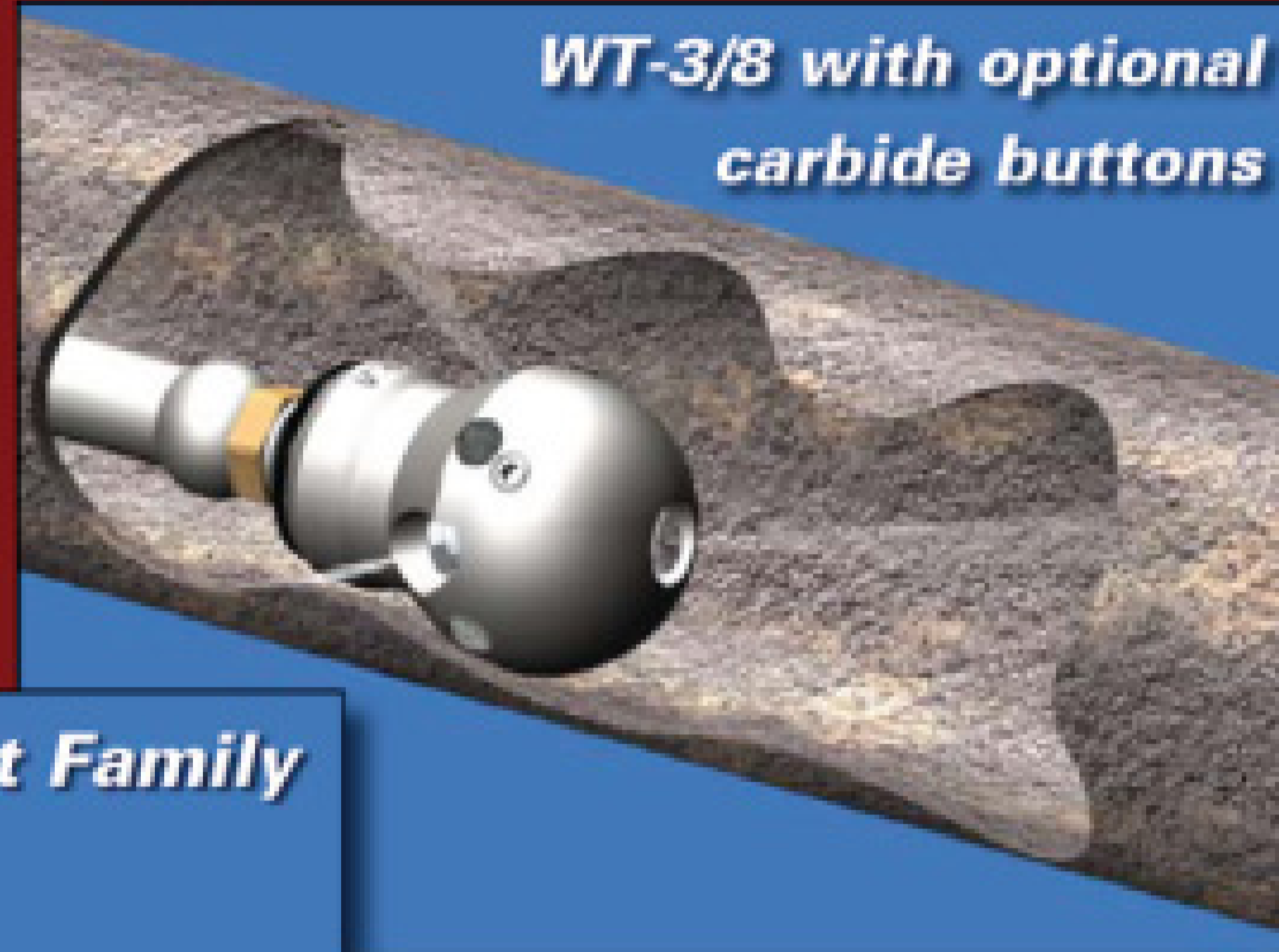
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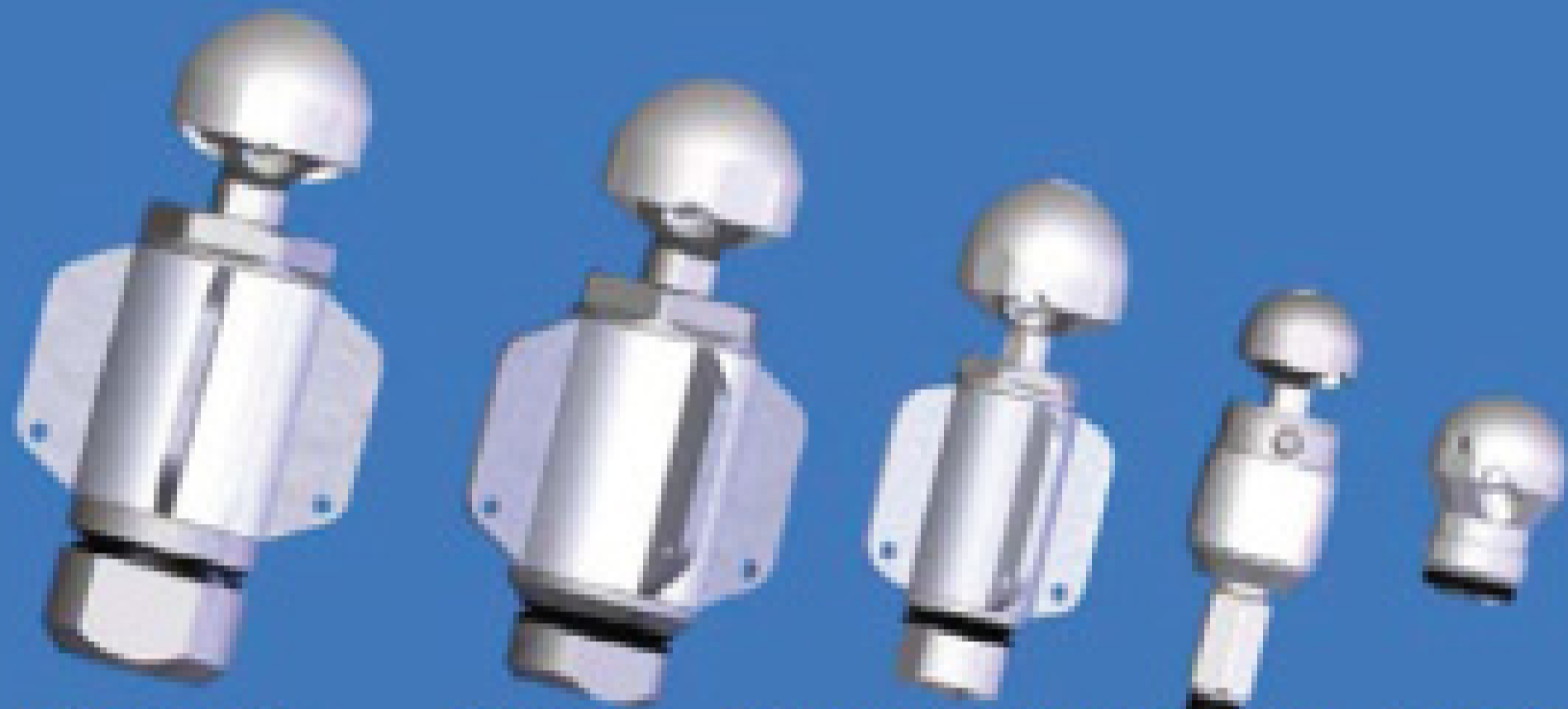


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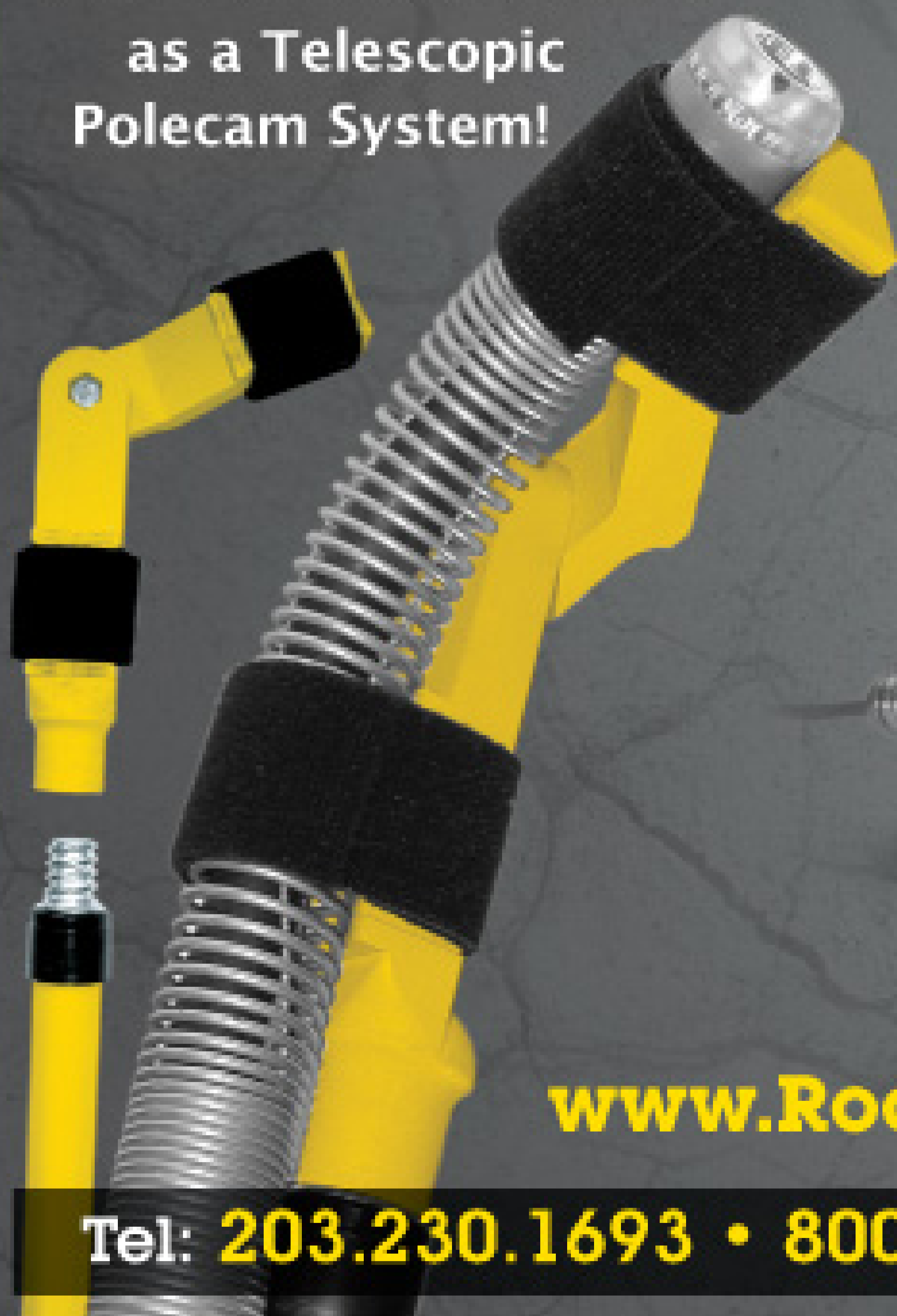


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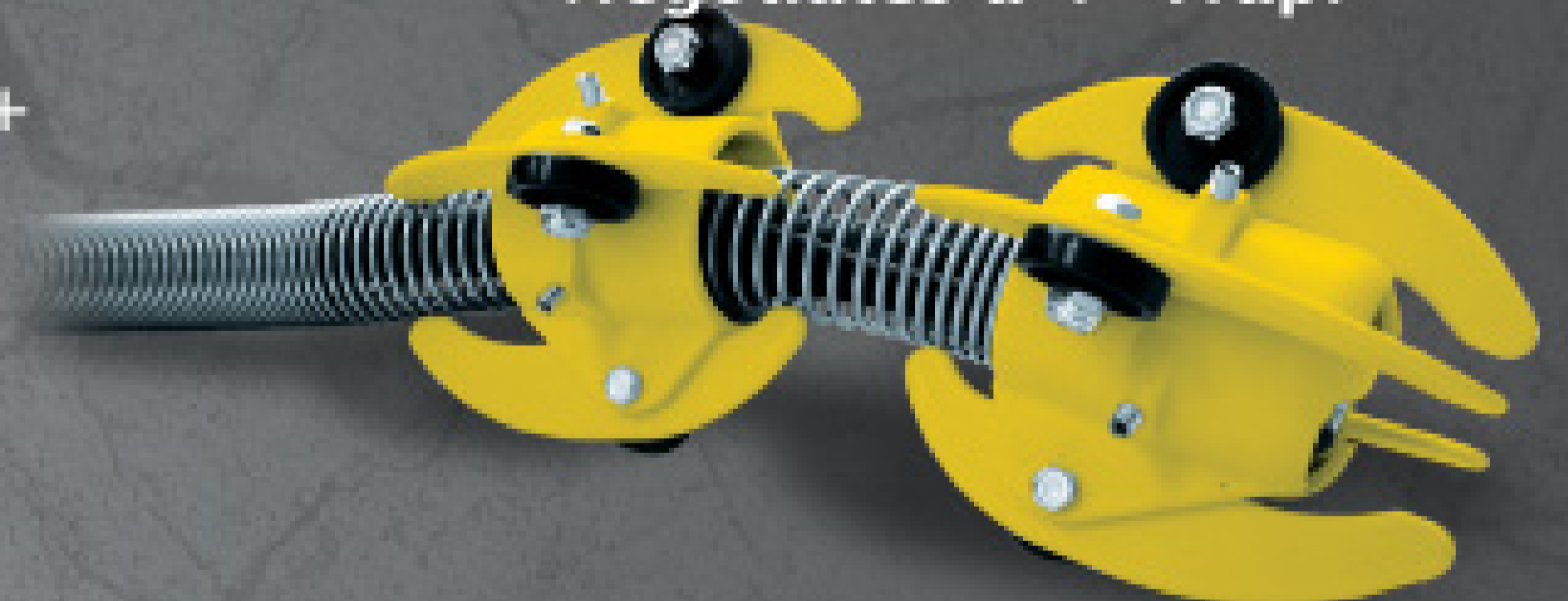
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RABCO

Taking Inventory

Milwaukee-area drain cleaner's trucks are integrated with inventory software to keep field technicians organized and well stocked

By Ken Wysocky

The chances of Flat Rate Plumbing technicians heading for a job without the right parts are about as good as people failing to notice the bright, bold logo on Flat Rate trucks. That's because the company, in New

Highly systematic

Each bin is assigned a number, as is each slot inside the bin. The slots also carry a quantity number and a brief description of the part stored. Part numbers correspond with the specific bin and slot in which they should be stored; the numbers start with either an L or an R to tell the technicians on which side of the truck the part is stored.

"So, for example, part number L1206 goes on the left side of the truck, bin 12, slot 6," says general manager A.J. Jonathan. When technicians submit invoices, they also fill out a restocking slip that tells parts stockers how many of the parts were used, the

part descriptions, and the part numbers. All parts are restocked in no more than 48 hours.

The aisles in the parts department are laid out exactly like the insides of the trucks, making it easy for part stockers to find parts. The company manages its parts inventory with software made by Maio Success Systems Inc.

The idea for the numbering/restocking system came from an industry seminar. "It helps because most of the time, the guys are driving fully stocked trucks," Jonathan says. "If they need a fitting, for example, they don't have to make a supply house run. That saves us hundreds of dollars a day in lost production and wages.

MONEY Machines

Berlin, Wis., uses plumbing and drain-cleaning service trucks that work seamlessly with sophisticated inventory software.

It all starts inside the company's 12 Hino and Isuzu/Chevrolet trucks, outfitted with 12-foot aluminum bodies made by HI-V-CO (one body was made by Hackney USA). Each truck has the same

"When we hire new technicians, they're blown away by both the quality and efficiency of these trucks. A lot of them are used to vans that you can't even walk through because they're so messy and disorganized. These vehicles are first class."

A.J. Jonathan

custom-made HI-V-CO storage system, composed of aluminum shelves and 80 plastic bins (40 on each side wall).

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The custom-made parts storage system (right) includes coded bins, so that, for example, part number L1206 is located on the left side of the truck, bin 12, slot 6.

"When we hire new technicians, they're blown away by both the quality and efficiency of these trucks. A lot of them are used to vans that you can't even walk through because they're so messy and disorganized. These vehicles are first class."

Lots of space

Parts manager John Oberhofer observes, "The trucks are like miniature hardware stores. They save each technician a couple of hours a day, especially if you consider that when they go to a supply house, they could easily sit for 20 minutes before they even get waited on. Over a year, they save us unbelievable amounts of time and money."

Flat Rate also found the trucks inviting because they carry more

inventory than the previous trucks. Each truck can hold a 90-gallon water heater, tools, drain-cleaning equipment (RIDGID K-1500 and K-50 sectional drain cleaners), two toilets, and 10-foot lengths of various kinds of pipe. The trucks also have a rear pull-out ramp, 6 1/2-foot-high ceilings, and skylights. On the exterior, the trucks trumpet the company's name and phone number in red and blue on a white background.

Where would Flat Rate be without these trucks and the restocking system? "We'd be very disorganized," Jonathan says. ■

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Ready for Duty

Optimism pervades the exhibit hall as Pumper & Cleaner Expo attendees discover the latest technologies for pipe and drain cleaning, repair and maintenance

By Ted J. Rulseh

The 29th Annual Pumper & Cleaner Environmental Expo International drew an optimistic crowd to the Kentucky Exposition Center in Louisville, Feb. 25-28.

While the economy may have kept some visitors away, the event drew representatives from 3,780 companies and a total of 8,868 attendees. The prevailing attitude was that the industry will endure, and that no matter what may be happening in the financial sector, there is work to be done in the streets, in homes, and on commercial and industrial properties.

Attendees visited 519 exhibits in more than 500,000 square feet of show space. Education Day seminars and additional seminars during exhibit hours on Thursday and Friday drew full meeting rooms.

There certainly has been no slowdown in manufacturers' innovation: Attendees discovered the usual wide array of new tools and technologies that make pipe and drain cleaning, maintenance and rehabilitation, and industrial high-pressure cleaning easier and more effective. Here is a look at some highlights from the exhibit floor.





Armadillo tube cleaning system from Aqua Sales.



Hydrodig vacuum excavator from Hydrodig USA LLC.



Hydrostatic line tester from Cam Spray.

Cleaning power for tubes

The **Armadillo** tube cleaning system from **Aqua Sales** operates by remote control to eliminate technician exposure to the high-pressure water stream and limit operator fatigue. The unit is easily assembled on site and packaged for portability. Modular replacement of maintenance items expedites repairs. The system can be configured to accommodate virtually any set-up requirement. Call 218/722-2663 or visit www.armadillocleaner.com.

Vacuuming tools

The **GuzzlerGrip** line of industrial vacuum nozzles from **FS Solutions** is designed to enhance operator productivity and reduce fatigue. Handles are positioned for ease of use based on in-plant testing with cleaning professionals. Harnesses are designed to distribute nozzle weight optimally. Angled nozzle ends improve access to the material being vacuumed.

Tools include shovel-headed nozzles that vacuum material as it is loosened, backbone and long-reach versions for hard-to-reach locations, a pit-cleaning nozzle for vacuuming liquids from pits, and an easy-lift designed to relieve strain from long hours of vacuuming. Call 800/822-8785 or visit www.fssolutionsgroup.com.

Compact hydroexcavation

The **Hydrodig** vacuum excavator from

Hydrodig USA LLC comes mounted on a 4-wheel-drive for maneuvering around congested sites, accessing back alleys, and significantly reducing ground disturbance and site restoration. It can be used for a wide range of hydroexcavating applications, including pipeline and utility exposure; post-hole digging; slot trenching; catch basin, manhole and culvert cleanouts; and curb box water valve repairs. Call 403/748-2110 or visit www.hydrodig.com.

Simple inspection package

The **Gen-Eye The Pod** video inspection system from **General Pipe Cleaners** is an integral camera system that combines camera, reel and monitor. The 5.6-inch LCD screen is mounted on a gooseneck with 355-degree swivel that lets the operator adjust to the optimum viewing angle.

A video-out connection lets users record to an external device. The system, for inspecting 2- to 4-inch lines, includes a mini-reel with 125 or 175 feet of push rod, a color mini-camera, 512 Hz transmitter for camera location (optional), a frame and reel with drag brake and reel lock, and an LED dimmer control. Call 800/245-6200 or visit www.drainbrain.com.

Testing lines

The **hydrostatic line tester** from **Cam Spray** helps identify defects in pipes. The unit includes a

10.5 gpm/560 psi diaphragm pump driven by a 5 hp Honda GC engine. It has an easy-to-operate regulator and controls, a panel-mounted stainless steel line and bleeder valve, and dual pressure gauges.

The water system includes a 20-gallon tank, garden hose hookup, and overflow hose and tank bypass. The heavy-duty frame is powder-coated and has 13-inch pneumatic tires and swivel casters with brakes. The toolbox has quick couplers and adapters. A remote valve and gauge assembly allows for testing of lines away from the machine. Call 800/648-5011 or visit www.camspray.com.

Down in size

The **Elite-D DVD-R** recording system from **Ratech Electronics** has a 15-inch high-resolution, flat LCD screen, a Panasonic DVD recorder, and an 80-gigabyte fast hard drive. The recorder is accessible from the front of the unit. Users can burn video on the fly while performing inspections, just as on videotape, but with far greater capacity.

The control unit is designed with all operating functions top-mounted for ease of use. The panel includes a camera test terminal for easy analysis of problems. The compact camera measures 1.375 inches in diameter and 1.85 inches long and inspects 2- to 12-inch pipes. A 512 Hz transmitter is built in. Illumination comes from high-intensity LED lights with polycarbonate cover. Call 800/461-9200 or visit www.ratech-electronics.com.

GuzzlerGrip line of industrial vacuum nozzles from FS Solutions.



Gen-Eye The Pod video inspection system from General Pipe Cleaners.



Elite-D DVD-R recording system from Ratech Electronics.





DCB 10 digital inspection camera from MyTana Manufacturing Co.

Digital inspection

The **DCB 10 digital inspection camera** from **MyTana Manufacturing Co. Inc.** has a 12-inch touch screen, built-in microphone, full text writing capabilities and 11 on-screen touch-and-drag icons for identifying and locating problem areas. The camera head includes a built-in transmitter with adjustable, touch-screen lighting. Offering either battery or AC operation, the unit measures 15 inches high, 15 inches wide and 8.5 inches deep. Call 800/328-8170 or visit www.mytana.com.

High-pressure cleaner

Global-design high-pressure waterblast machines from **Jetstream** of Houston are available in pressures from 11,600 to 40,000 psi. They are designed to deliver high power in a compact footprint. Features include Deutz Euro 3 engines, integrated charge pump, air compressor, water recirculation tank, pneumatic water inlet and discharge bypass valves, and safety protection for inlet water temperature and flow.

The units have full sound-attenuated and weatherproof enclosures with forklift access and four-point lifting lugs. The control system lets users run to a preset pressure, monitors the pump and engine systems for faults, monitors filter conditions, and reports issues to the operator with full diagnostic data and suggested remedies. The system can

Global-design high-pressure waterblast machines from Jetstream.



Nozzles from USB-Sewer Equipment Corp. include Advanced Optimized 3D Hydromechanics.

detect broken hose lines and blocked nozzles, protecting the operator and the equipment. Call 713/462-7000 or visit www.waterblast.com.

Advance in nozzles

Nozzles from **USB-Sewer Equipment Corp.** include **Advanced Optimized 3D Hydromechanics** for high cleaning efficiency and safety. The hydromechanics are designed and engineered from one part, and the channels are manufactured from single-piece material. This eliminates the risk of nozzles bursting at welding or bonding seams and extends nozzle operating life.

In operation, pressurized water from the hose connection is distributed among the channels, oriented toward the jetting direction and redirected at the lowest possible point, ensuring high stability of pressurized water. Precise 3-D manufacturing of the interior reduces friction losses, increases hydraulic pressure, and enhances effectiveness and performance. Call 866/408-2814 or visit www.usbsec.com.

Into small spaces

The **SeeSnake microDrain inspection system** from **RIDGID** lets contractors inspect in places previously too small to reach. The small-diameter, tight-turn-radius camera head can pass through many toilet traps and through 1 1/4-inch lines. Multiple monitor capability lets operators use the

SeeSnake microDrain inspection system from RIDGID.



Torus 3D tool from StoneAge Waterblast Tools.

system with a SeeSnake monitor or the microEXPLORER digital inspection camera.

The system includes 30 feet of 0.33-inch cable. It weighs 8.6 pounds and can be easily stowed in a truck and carried to the jobsite. Call 800/769-7743 or visit www.ridgid.com.

Tank cleaning tool

The **Torus 3D tool** from **StoneAge Waterblast Tools** is designed for cleaning tanks in a full range of configurations. It handles pressures from 5,000 to 22,000 psi with a simple change of manifold and inlet coupling. Three manifolds handle flows from 17 to 80 gpm and can be easily interchanged.

While the tool is operating, the user can easily adjust the magnetic rotation speed to suit different applications. The operator simply adjusts a dial to decrease speed for difficult applications, and increase speed for easier jobs. The unit comes with two sets of arms – 2 inches and 8 inches. Longer extensions are available. Call 866/795-1586 or visit www.stoneagetools.com.

Looking deep

The **RD100 portable ground-penetrating radar system** from **Pearpoint/Radiodetection**, an SPX Company, simplifies location of buried infrastructure. Using radar technology, it creates and displays an image map of underground features.

RD100 portable ground-penetrating radar system from Pearpoint/Radiodetection.





Panorama SI (shaft inspection) system from RapidView IBAK North America.

Technicians can see a pipe or cable in its topographical context, making it easier to locate and excavate utilities.

The unit displays the subsurface map in real time on a high-contrast 7.25-inch color LCD screen. Integrated digital color and gain enhancements let operators maximize locate quality. Advanced digital filtering helps operators eliminate unwanted signals and improve accuracy. One-touch image recording helps technicians document findings. Images are saved to compact flash cards that can be copied to a PC using an inexpensive third-party card reader.

The device has an ergonomic handle and all-terrain wheels for easy operation across any surface. The battery pack is portable and weatherproof. Selectable depth lets users survey utilities buried up to 26.5 feet. Call 877/247-3797 or visit www.pearpoint.com.

Down the hole

The **Panorama SI (shaft inspection) system** from **RapidView IBAK North America** lets users inspect manholes and other structures up to 50 feet deep and from 16 inches to 10 feet in diameter in less than three minutes. The user sets up over the shaft, lowers a special camera to the bottom, and raises the camera back to the surface. There is no confined-space entry.

SP48 hydraulic compaction unit from Trench Grader.



Portable Inspection System from Cobra Technologies.

Once the camera has captured visual and geometric data, the user can analyze them using special software. Features include an “unfolded” sidewall view for visual measurement and a 3-D model for verifying diameter and defects. Users can view any manhole feature anytime and from any angle. Call 800/656-4225 or visit www.rapidview.com.

Comprehensive pipe surveying

The **Infrastructure Technologies (I.T.)** version of WinCan pipe survey software from **WinCan America** is a comprehensive collection, analysis and reporting application that is simple and fast to install. As a full computer-based digital solution, it eliminates hardware such as overlay or digital capture devices.

The workflow is designed to be simple to use, from creation of an asset or inspection to full synchronization and project management tools. A free viewer requires no registration and can be played on any computer with Windows Media Player. An open access database policy adheres to recognized industry software design standards.

Integration modules are complete for GBA, Cityworks, Cartegraph, Hansen and others. New, comprehensive GIS solutions work directly with ESRI products by tying assets to inspections, plotting visuals on maps for filtered data inside I.T., importing GPS data, and more. Call 505/341-0109 or visit www.wincanamerica.com.

Inspection on the go

The **Portable Inspection System** from **Cobra Technologies** is designed to let users inspect anywhere with the full functionality of a truck-based system. The unit operates all Cobra crawlers with straight-line or pan-and-tilt and zoom cameras. It can be installed in a pickup truck, Jeep, Humvee or



Inspector 07 locator from Subsurface Instruments.

ATV, providing access to locations not easily reached with conventional equipment.

The console contains a CD/DVD writer, crawler control, pan-tilt-zoom camera control, and the Cobra data logger. It operates on 100 V AC power. Case dimensions are 22 inches high, 19 inches wide, and 14 inches deep. A portable reel is installed on a lightweight hand cart. It is designed to hold up to 800 feet of 7/16-inch cable. It has an electric rewind gear motor with electric clutch and speed control. Call 800/443-3761 or visit www.cobratec.com.

Locating for all materials

The **Inspector 07 locator** from **Subsurface Instruments** locates utilities of virtually any material to depths of 10 to 12 feet. The self-contained unit weighs less than 2.5 pounds and requires no setup clamps or cables. It works in clay soils and is unaffected by moisture or salinity.

The unit can locate metallic or nonmetallic pipes and cables and almost any object – including septic tanks; graves, vaults and skeletons; buried walls and foundations; concrete storm sewer pipes, rebar in concrete, and water pipes in concrete floors. Call 920/328-8066 or visit www.ssilocators.com.

Hydraulic compactor

The **SP48 hydraulic compaction** unit from **Trench Grader** can compact trenches up to 30 inches wide and 42 inches deep. Equipped with a hydraulic vibrator for maximum compaction, the unit is designed for pipeline installation or wherever soil compaction is needed. It attaches to any skid-steer and can pivot seven degrees in either direction for use on slopes. Call 888/697-2225; www.trenchgrader.com. ■



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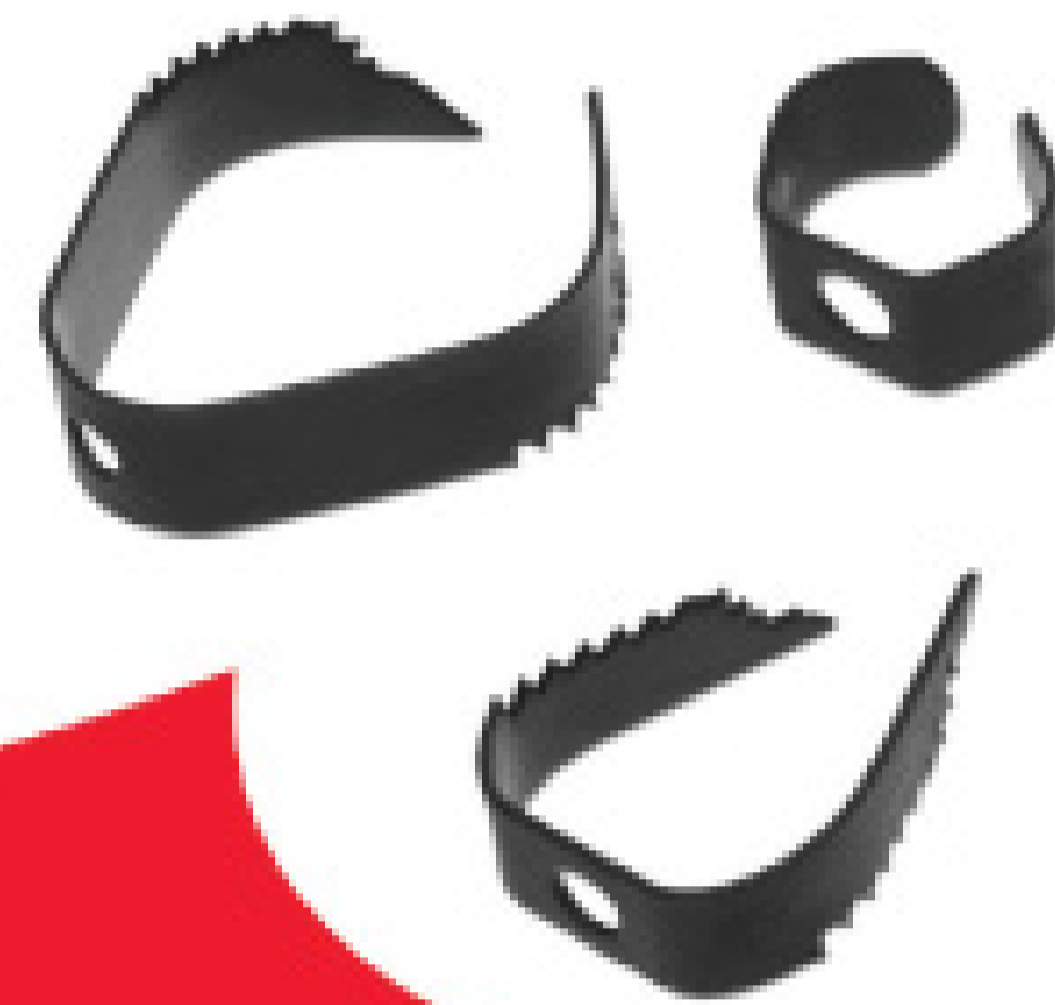
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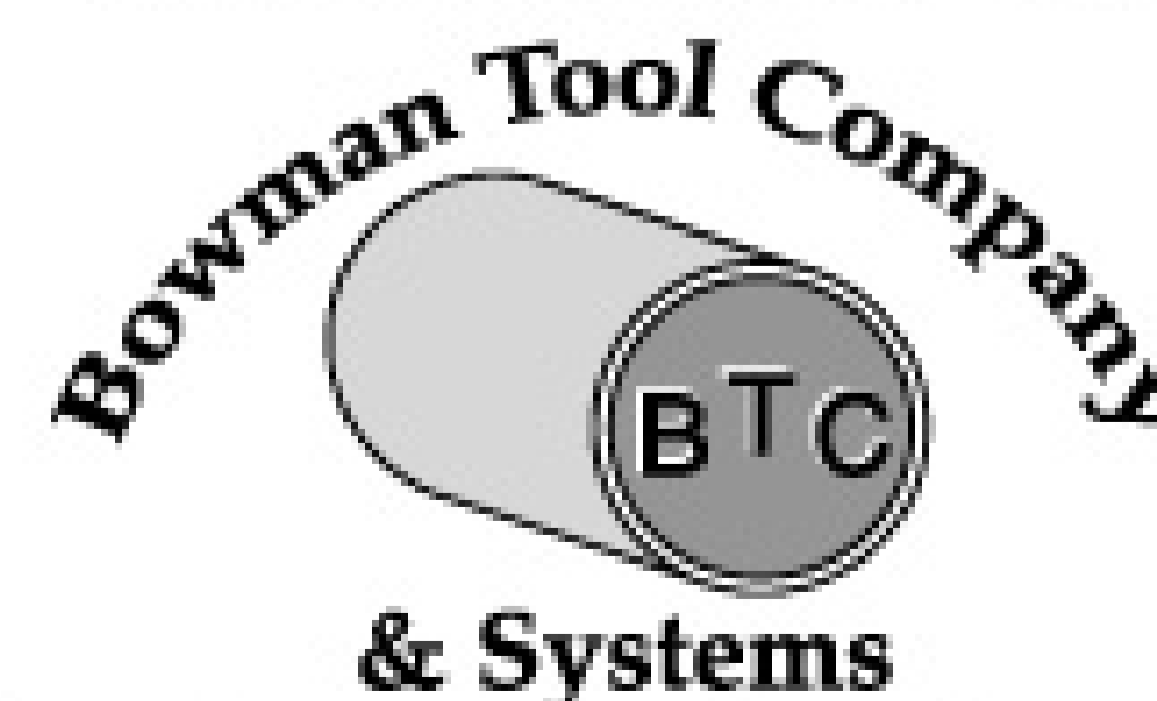


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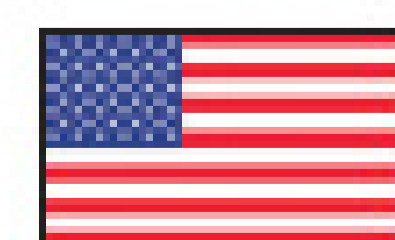
Aries high resolution camera module used in conjunction with the 432:1 zoom ratio and High intensity detachable LED lighthead, allows you see details that other cameras miss. The wireless operation makes the system extremely versatile and allows you to take it anywhere and transmit the video anywhere. When this system is used with the optional media case with 10" day light readable screen, it allows the user to inspect any pipe anywhere you can get to. For more versatility virtually any reporting software can be added to greater enhance the systems capabilities.



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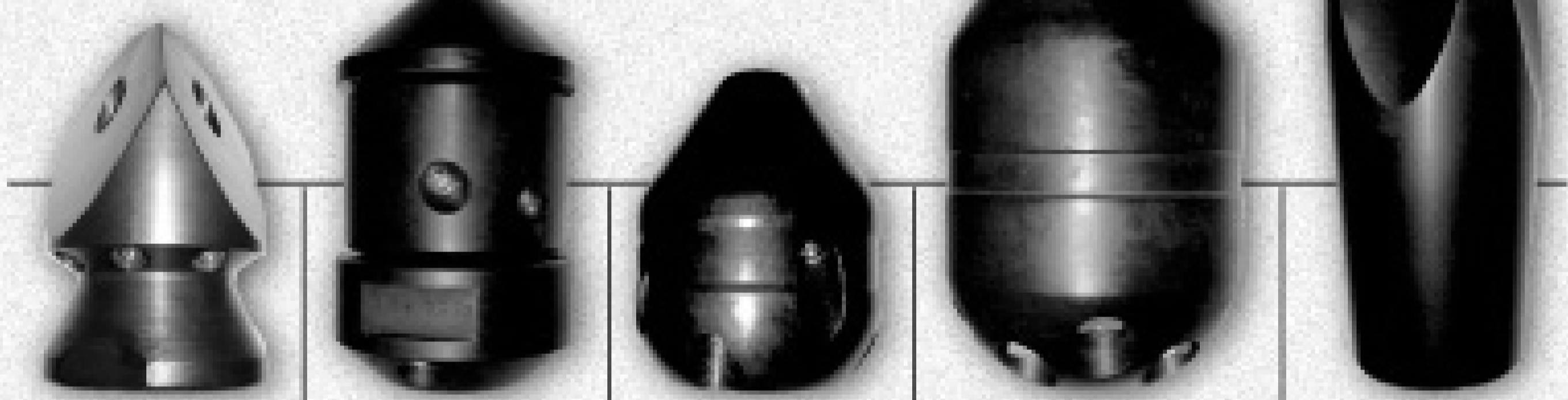
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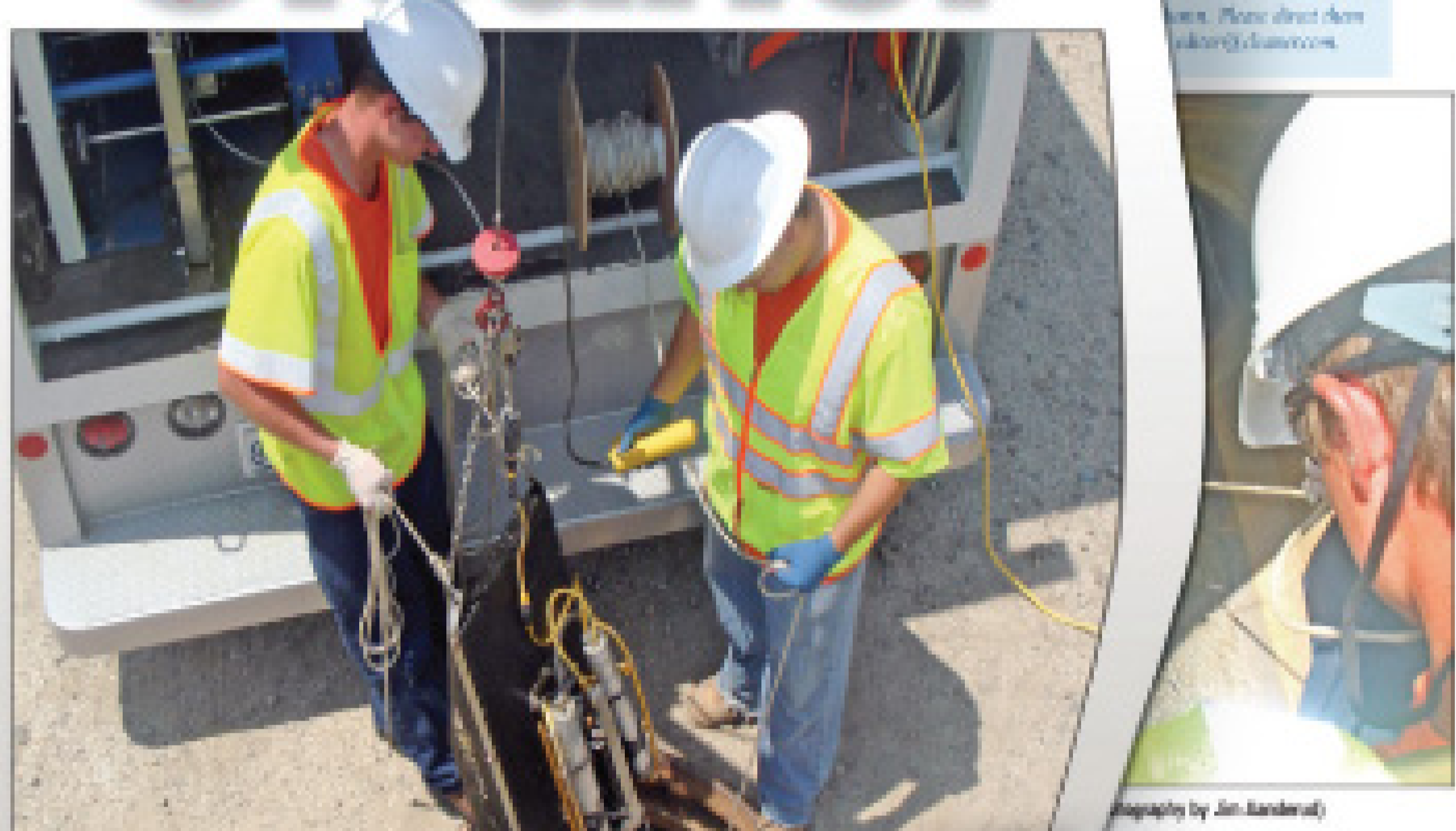
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Rooter-Man of Charleston uses camera inspections to show customers defects in their drainlines and laterals and to win repair jobs. Here, John McCoy (left) and John Greider deploy a push camera. The franchise uses a number of types of cameras as well as a line locator. (Photography by Kim Graham)

Leading with Vision

A South Carolina franchise uses video inspection and utility locating to drive growth in repairs and establish a strong business

By Marian Bond

FEarly in his time as owner of Rooter-Man in Charleston, S.C., Nelson Huggins offered video services to plumbing contractors at a discount. It gave an immediate boost to the bottom line, but Huggins found there was a disconnect. Too often, once customers had a line cleared, they did not see the value in using the camera.

“If everything was flushing, they would say no,” Huggins says. “It was with the repeat problems where we would use the camera.” After about a year in business, he decided to inspect every line and include the cost in the package price. That policy eliminated the callbacks and also increased sales.

“We found that by always using the camera, we could identify problems from broken pipes to bad joints to lines that needed replacement,” Huggins says. “We now inform the customer of the repairs needed. The customer gets peace of mind. When the problem is on the monitor, the

customer sees it and says, ‘Let’s get it fixed.’ We make more money in the end.”

Huggins started the business in 2006 with one van, which he drove. The plan was to do emergency service for commercial and residential customers. “That was our niche,” he says. “To give our customers service – to have it done today. It has served us well.”

Within eight weeks, he had hired a service technician and had generated enough calls to buy a second van. In just 24 months, he had grown the company to a fleet of six trucks and five full-time employees.

Starting small

Cameras have been a big part of the business from the beginning. Huggins got into the field after 17 years as a high school teacher and football coach. When he suddenly

Rooter-Man franchise.

He opened his shop in 2006 with one new Ford E-250 van and a recommended package of equipment, mostly from General Pipe Cleaners, and including a Gen-Eye

“We found that by always using the camera, we could identify problems from broken pipes to bad joints to lines that needed replacement. We now inform the customer of the repairs needed. The customer gets peace of mind. When the problem is on the monitor, the customer sees it and says, ‘Let’s get it fixed.’”

Nelson Huggins

faced high medical costs for a family member’s illness, he had to make a career change. After searching for a stable, profitable business offering independence, he settled on a

Junior camera. As the company grew, the cost of a camera for every van was a concern – but it was also a necessity.

“I knew I needed the cameras,”

ROOTER-MAN, CHARLESTON, S.C.

OWNER: Nelson Huggins
YEARS IN BUSINESS: 2
SPECIALTIES: Drain cleaning, video inspection, locating
SERVICE AREA: Five counties
FLEET: 6 service vehicles
WEB SITE: www.rootermansc.com



Huggins says. "One camera would not take care of all the jobs. We needed a camera on each truck." Huggins ultimately chose three cameras from South Coast Equipment, two from Bill's Video of Fargo, N.D., and one from Rothenberger USA.

All are push cameras, used in laterals from 30 to 100 feet long, typically 3- and 4-inch lines. The Gen-Eye and the Rothenberger go out on specialty jobs where technicians need a record of the inspection and an included locator. Huggins often operates these cameras himself or has a designated technician do so. "I don't want these valuable items on the truck on a regular basis," he says.

More the better

While locating was not a high priority at first, Huggins quickly saw it as another compatible service. He purchased equipment, an LF2000 model from Prototek, offering the service to customers and at a discount to plumbers. He has just the one locator, which goes out once or

twice per week on request, such as to find a sewer tap in an older neighborhood.

For jetting, Huggins uses a Hurricane 3010 trailer unit (3,000 psi/10 gpm) from Triple R Specialty. A cart-mounted unit, also from Triple R, handles smaller grease traps and restaurant lines. He also has a converted pressure washer (2,000 psi/ 4 gpm).

"Jetting is not something the consumer here is knowledgeable about," Huggins says. "We don't get a lot of requests for jetting. We find we have to explain the benefits. We put the camera down, find the problem, and fix the problem, but once that's done, if the line is open, that's basically what the customer wants.

"We can show how the pipe is coated with grease or scale, and the only way it comes off is by jetting. However, they tend to be penny wise and pound foolish. I wish we were using the jetters more often. We have to work on that."

Branching out

As the fleet grew, Huggins needed a more suitable location. Within six months of opening his business, he rented office and warehouse space, where he has 2,500 square feet, plus parking. There is a garage area to house the jetters and one or two trucks. The trucks include a Ford E-250, four Ford E-150 vans, and a Ford F-150 pickup.

Huggins expanded by purchasing additional territories. He also opted to be licensed and to offer a full slate of plumbing services. "Our goal is to service everything all the way up the coast, to build the business from Georgia to North Carolina along Interstate 95," he says. "After two years, we're on track."

Covering such a large and diverse area means a variety of sewer systems in older and new neighbor-



Greider uses one of the company's inspection tools, a Gen-Eye Junior camera from General Pipe Cleaners.

SHOOTING FOR A WIN

"It was a roll of the dice." That's how Nelson Huggins describes looking for a business where he would do the work, get paid, and avoid the effects of a slow economy.

He decided to open a Rooter-Man business in part because he found strength in the franchise concept. He took the Rooter-Man training and also connected with other franchise owners, who allowed him to visit their businesses and work with them for a while as an observer and helper. He has stayed involved with those who helped him, and they still swap ideas.

"It's kind of a brotherhood," Huggins says. "A group of people you can call and ask questions and nobody is holding back."



A push camera is deployed for a residential inspection job.



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Rooter-Man of Charleston equips each of its service vehicles with an inspection camera so that technicians always have that diagnostic and sales tool close at hand.

Training for the coach

While Huggins wanted a business that would not depend on the economy, there have been impacts. One big one is the price of fuel, as he serves a 40-miles radius in each territory. "We debated, and at first we absorbed the cost," Huggins says. "But we decided to add a fuel

game plan. You have to be able to adjust. When plan A doesn't work, then you go to plan B."

Huggins definitely has a plan, and he is following it aggressively and in a carefully managed fashion. It's all about the team and executing the plan. It's about winning. You might say it's his plan A. ■

"Our goal is to service everything all the way up the coast, to build the business from Georgia to North Carolina along Interstate 95. After two years, we're on track."

Nelson Huggins

surcharge on every trip. We haven't had anybody complain."

Huggins' past career brought attributes that have served him well. "You are serving the public, and you are dealing with all types of people on a day-to-day basis," he says. "Some are glad to see you, and some are not. It was a definite plus being in education and being able to communicate. Teaching others how to do it has been a plus in growing a business.

"In business you look at it as a team," Huggins says. "Everybody has a role, and everybody must contribute to the bottom line. We try to reward the guys according to what they produce. Also, as a coach, you sometimes have to call people in and say, 'This isn't going the way we want it to go to get the results we want.' The coaching part is being able to deal with people and come up with a game plan. Business is a



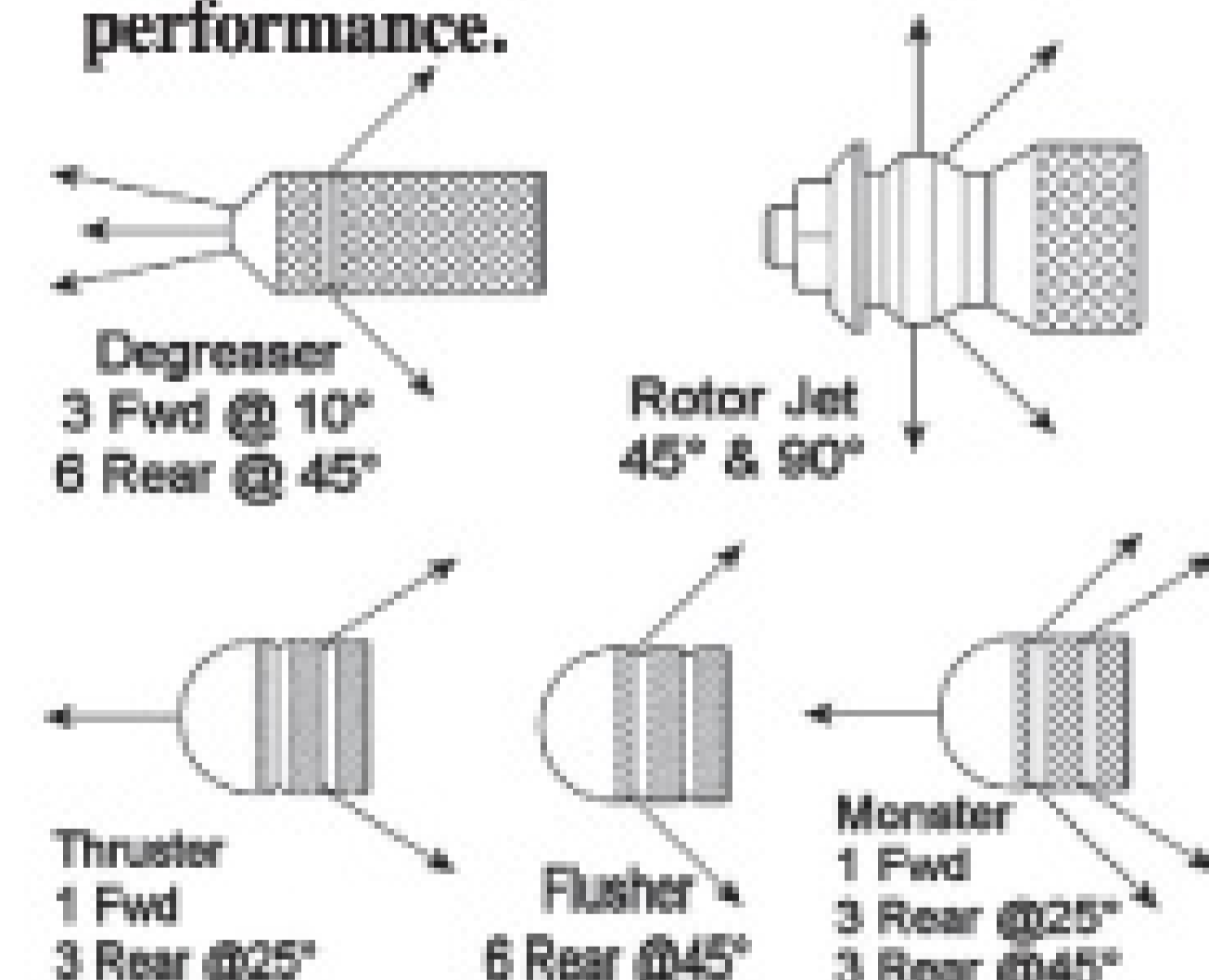
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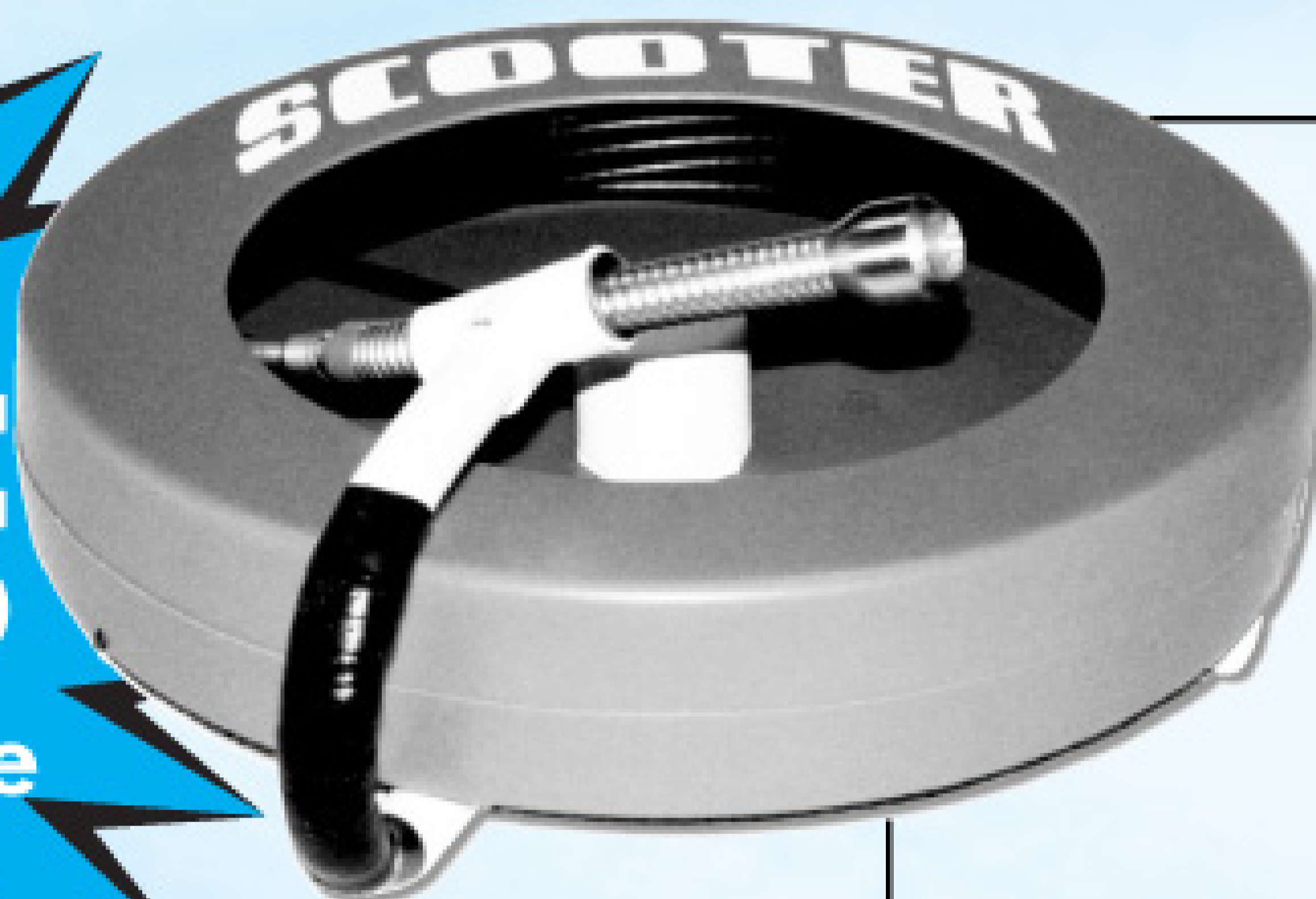
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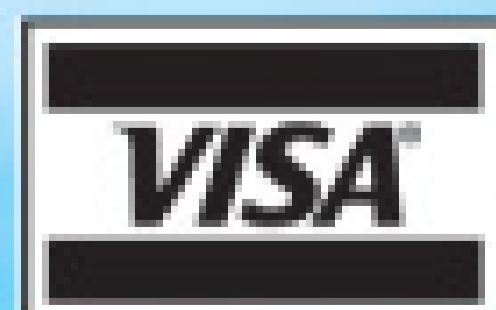


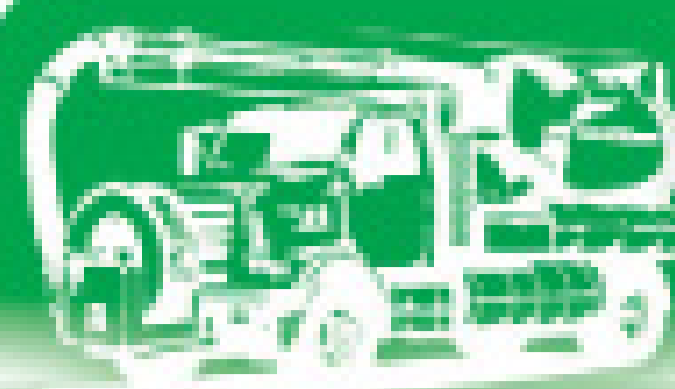
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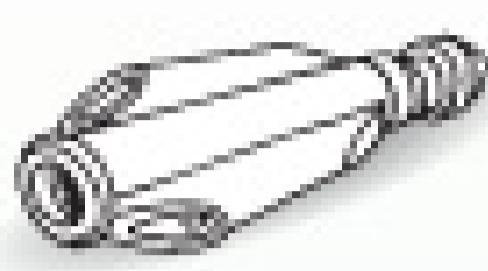
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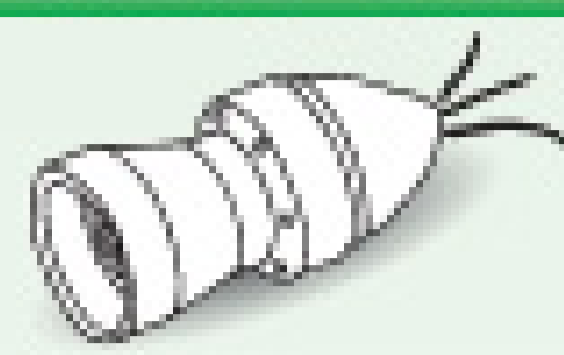
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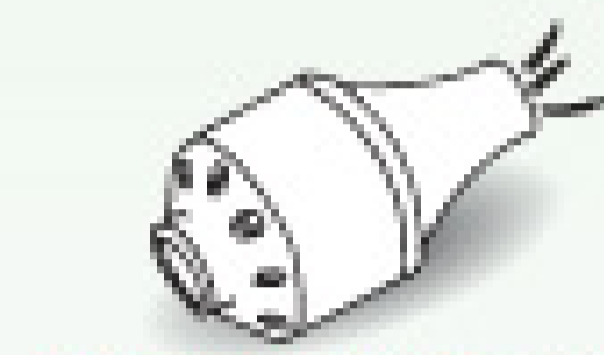
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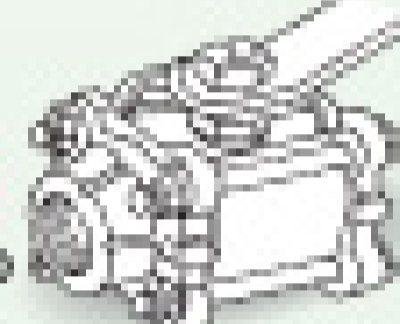


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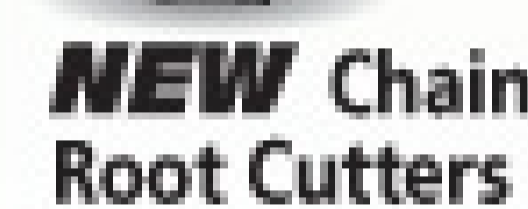
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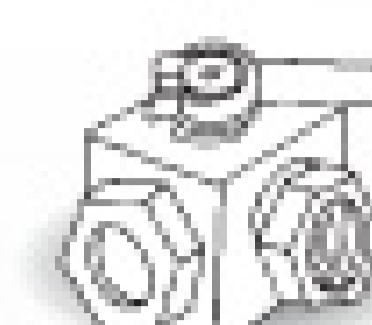
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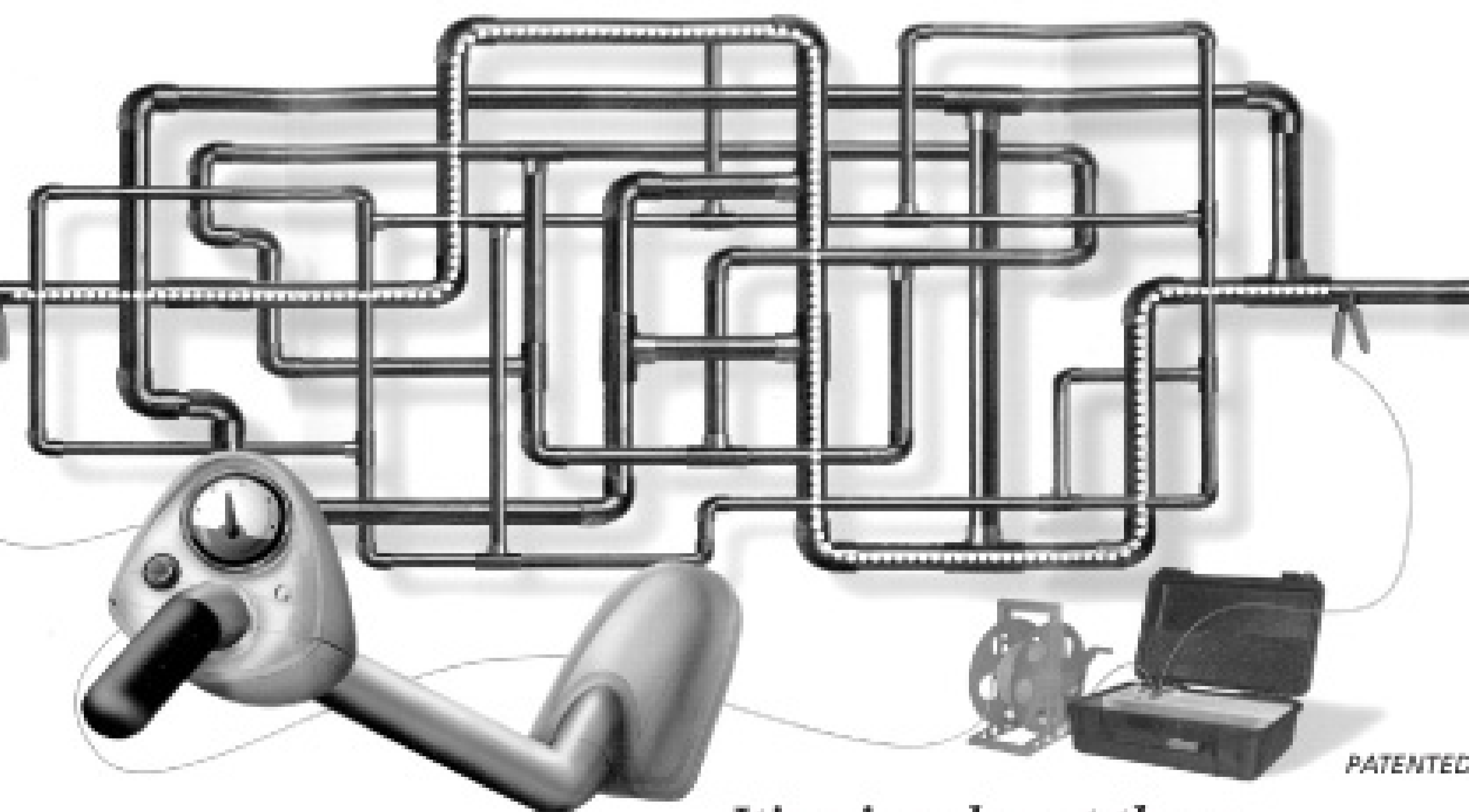
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Tech Perspective

Choosing Your Locator

Here are some tips for understanding utility locating technologies and selecting a unit to suit your everyday working conditions

By Matt Manning

Locating underground utilities is becoming more of a challenge as the vast array of lines in the ground continues to increase. As the ground becomes more congested with utility lines, it's vital to locate utilities accurately – gas, fiber, water, telecommunications and sewer – to ensure the safety of your

job of marking existing lines and pipes. However, due to interference, the marks may not be as accurate as needed. In some cases, privately owned lines not known by the One Call contractor may not be marked.

Many contractors show up and begin excavating. That's fine if the One Call markings are accurate. However, a mark could be 6 inches off and you may not find that line. Now you need to make a decision: Do you keep going or contact the One Call contractor and ask them to come back out?

Either way, it costs you time and money. However, if you have utility locating equipment, you can confirm the marks that are on the ground and

Active locating involves searching for a specific line using either the direct connection or the inductive method. In the direct connection, the contractor connects a transmitter to the line or pipe to be located by hooking cable leads, similar to jumper cables, to an above-ground structure (for example, a fire hydrant in the case of a water main locate). This imparts an alternating current down the cable or pipe that can be detected by the receiver.

The only issue with this method is gaining access to facilities. For example, a user who is not a contract locator for the telephone company cannot legally open a telephone pedestal to clip onto the line.



A worker uses a locator to find telecommunication lines in a residential area.



A locator is used at an electrical substation as part of a project addition at the site. (Photos courtesy of McLaughlin)

crew and protect your bottom line.

The first step before digging is to contact your state's One Call office and give them the location of the area to be excavated. A One Call contractor will visit the site and mark the locations of the utilities.

One Call contractors do a good

identify underground facilities that could have been missed.

Understand methods

In locating technology, there are basically two methods: passive and active. Passive locating is used to check for unknown lines. The contractor sweeps the area with a receiver. This method detects any frequencies created by energized power and radio signals being radiated by utilities. However, it does not allow the operator to distinguish between types of lines.

Virtually all manufacturers are putting more output power into their utility locators. While this extra power does not enhance accuracy, it does provide a clearer and higher-quality signal, which is beneficial as more lines are being installed using horizontal directional drilling at greater depths.

To overcome this, contractors can use a locator with inductive capability. Here, the user sets the transmitter on the ground, and it emits a signal that induces a current in the pipe or cable. The receiver then can detect the target utility.

Where to start

The industry offers two types of locators – single- and multiple-frequency units – to accomplish active and passive locating. Each unit has its advantages and limitations. Single-frequency locators have been

around for decades. These systems consist of a transmitter that is placed on the ground and induces a single high-frequency signal.

The signal is picked up by the underground line and then radiated outward so that the receiver can detect it. Single-frequency systems work well on lines and pipes in uncongested easements, but putting a high frequency into the ground in a congested area tends to “light up” everything underground, and that may produce a distorted signal.

In other words, the user cannot

Tech Perspective looks at technology-related issues and provides information and advice that cleaning professionals can apply to equipment selection and to their daily work in the field. Industry members are welcome to offer ideas for this column. Please direct them to editor Ted J. Rulseh, editor@cleaner.com.



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tell whether the signal comes from a power, gas or communications line. The other limitation is that most single-frequency locators cannot determine the depth of the line.

Since lines and pipes are constructed of different materials (copper, aluminum, iron, steel, etc.), the optimum locating frequency differs for each one. Multi-frequency systems (some offer up to five frequencies) allow users to tune the frequency being put into the ground to the type of line or pipe being located. A lower frequency reduces the chance that the frequency will jump from the target line to another nearby line. That makes it easier to distinguish, for example, a gas from a water line.

Some locators offer a current measurement index (CMI) that measures the current being put onto the line or pipe. This helps distinguish the type of utility, especially if it crosses over another line. It also helps

users ensure that they are staying on the original target line and are not jumping to other lines in the area.

Most modern receivers can also estimate the depth of the line or pipe at the push of a button. The locator measures signal strength and uses an algorithm to convert the information to an estimated depth. Although interference may distort the depth estimate, the user still gets an idea of the line's location before digging or hydroexcavating.

Changes on the horizon

While locator technology has changed little in the past five years, several manufacturers are adding enhancements.

Virtually all manufacturers are putting more output power into their utility locators. While this extra power does not enhance accuracy, it does provide a clearer and higher-quality signal, which is beneficial as

more lines are being installed using horizontal directional drilling at greater depths.

Many manufacturers have also made advancements in receiver software to help filter out noise in the ground and air. The other trend is linking locators with GPS devices to enable mapping of utility lines with latitude and longitude coordinates. This provides accurate location for future reference.

While it's important to select a utility locator that includes the technology necessary for the most common jobs, the devices also should be simple to operate. The simpler the operation, the less training users require. Ideally, operators should be able to use the unit after only a brief instruction, rather than a day-long training class. Operators may not use the unit for a week or more. In that event, they should be able to pick up the unit and recall

how to use the unit without further instruction.

Durability is also important. Operators take the equipment in and out of their trucks every day and may not handle it with absolute care. A locator must be durable enough to handle jobsite conditions. Weatherproofing is a desirable feature.

Locators can cost \$1,000 to \$4,500. While that may seem like a large expense, it is an investment that can pay off simply by helping to prevent one bad mistake. ■

Matt Manning is the locating equipment product manager for McLaughlin, a manufacturer of locating equipment based in Greenville, S.C. He can be reached at mmanning@mightymole.com.

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An inspection camera looks a closer look at a pipe's interior from inside a confined space. Photograph by Don Anderson

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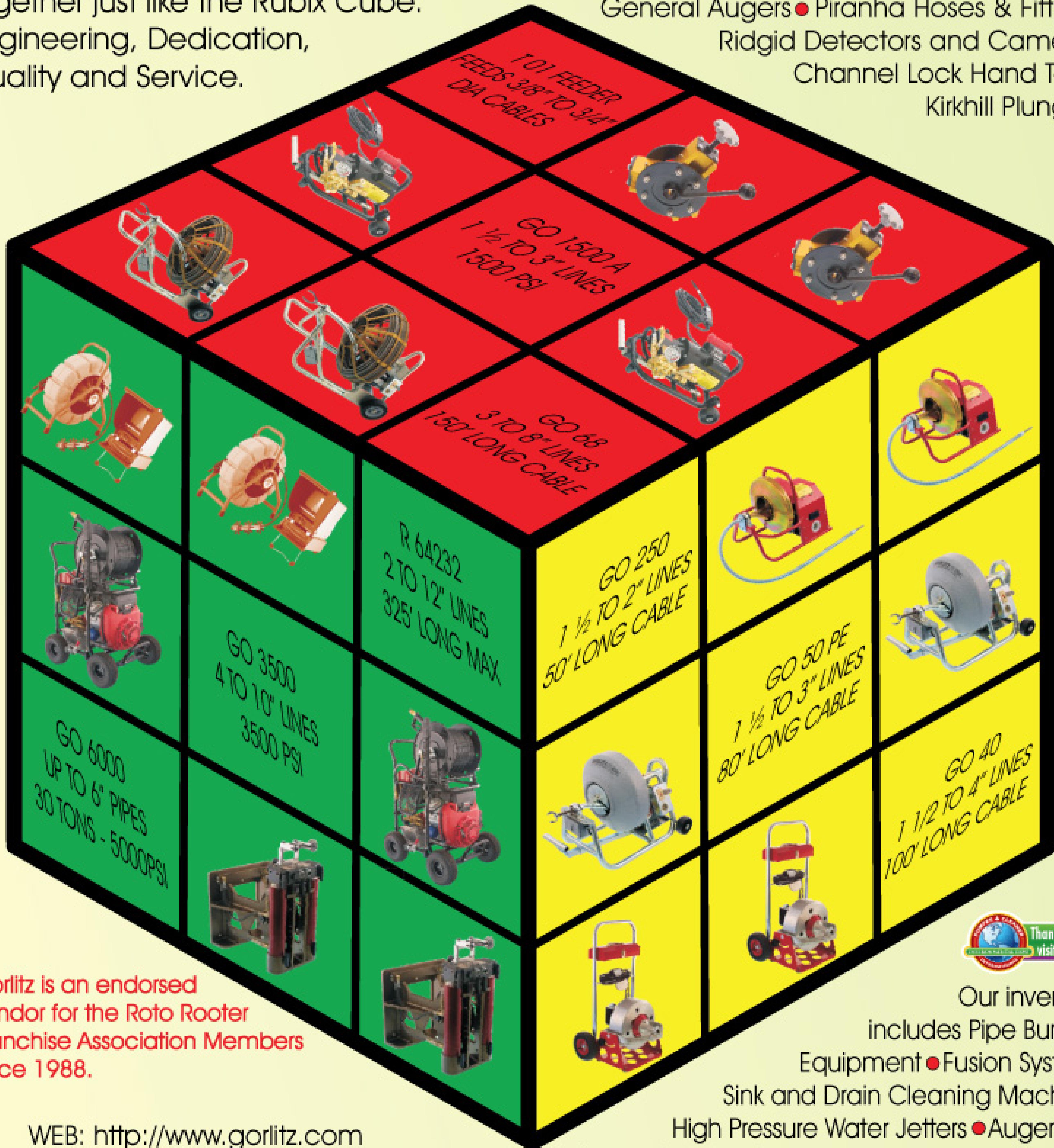
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Eric Schumacher, an employee of Municipal Pipe Tool Co. Inc., smoke-tests sanitary sewer lines in North English, Iowa, with a Superior Signal smoke blower. (Photography by Mark Tade)

The Municipal Pipe Tool Co. Inc. is an established and diversified firm, offering maintenance and trenchless rehabilitation for sanitary and storm sewers and conducting infiltration and inflow studies throughout Iowa and surrounding states.

The company, based in Hudson, Iowa, has offered smoke testing for almost 40 years. Though it accounts for less than 1 percent of annual revenue, smoke testing provides an important component in the company's arsenal of diagnostic tools. Because the tests require only a blower and a source of smoke, testing can be offered without tying up investment capital.

The company was founded in 1963 as a sales agent for Sewer Equipment Co. of America. It began servicing sewer and water lines in 1967 with the formation of Vic Gearheart & Son.

An early adopter of technology, the company purchased one of the first waterjet machines west of the Mississippi and owned and operated one of the first CCTV sewer inspection systems in the area. The son in the company name was Steve Gearheart, still a consultant with the firm.

"The televised inspection was very primitive," says Gearheart. "We were shooting in black-and-white, and as we moved the camera, the light bulb would crack and the camera would leak. It would sometimes take three to four passes to complete an inspection, and we would take Polaroids of the television screen to present to clients."

Smoke rising

The company became involved in smoke testing in 1972 with the advent of the federal Clean Water Act. "Smoke testing was an easy and cost-effective way to find the sources of extraneous inflows into the sanitary system," says Gearheart.

"When you're looking for a sewage leak, the rule seems to be that you find it under the last stone left unturned, and smoke testing leaves no stones unturned. I'd estimate that the number of cities that don't have a problem with inflow and infiltration at the bottom side of 10 percent."

Municipalities were eager to request the service, because federal incentives reduced the cost of smoke testing to about 10 cents on the dollar. Municipal provides collection system management services to more than 200 communities in Iowa, Minnesota, Illinois, Nebraska, South Dakota, Missouri and Wisconsin in a territory that covers a radius of about 150 miles.

The initial flurry of smoke testing engagements gave way to a more moderate pace. Gearheart recommends that municipalities smoke-test their systems at least once every 10 years to help to assess pipe degradation. Besides being prudent, that establishes a routine compliant with EPA recommendations for collection system maintenance.

"Smoke testing isn't the only way to go, but it's one of the tools we have available in our toolbox," Gearheart says. The company also provides smoke testing to industrial and residential clients, but these calls are less common.

Weather-dependent

Smoke testing can help trace uncapped or abandoned lines as well as detect leaks. For example, the company used smoke testing to help a John Deere manufacturing plant in Cedar Falls map out its

Where There's Smoke ...

The Municipal Pipe Tool Co. uses a simple testing protocol to identify sewer leaks – which often become repair business opportunities

By Peter Kenter

Harlan Sargeant (with clipboard) and Joe Jones Jr. document a sewer line clean-out pipe missing its cap. The sewer system in North English, Iowa, was being overloaded during snowmelt and heavy rains, and the city was trying to determine where the water was entering the system. Jones recorded digital video and audio, including a vocal description of the leakage and its locations.



sewer system. Recent one-off clients include a high-rise apartment complex and a church.

The smoke testing season is limited to snow-free months. Frozen soil and snow cover impede the passage of smoke, masking pipe leaks. June and July are prime months for smoke testing, although the company has tests as late as December. No license or certification is required for smoke testing, so the company differentiates itself through professional conduct and results.

“Conducting a proper smoke test requires industrial blowers and consistent smoke production,” says Todd Patterson, operations manager. “We’ve heard of contractors just tossing smoke bombs down a manhole and hoping for the best, or using a residential window fan to blow the smoke around. That’s just not going to do anything for the client. I’ve also heard of smoke bombs used in unventilated sewers, where the bomb has ignited the gas and blown off the manhole covers for several blocks around.”

The market for smoke testing equipment and supplies is limited to a few major players. Municipal Pipe purchases most of its equipment

and supplies from Superior Signal Co. Inc., a company with almost 50 years invested in commercial smoke supply sales. “They’re reliable in

their deliveries, and they’re very consistent with supplying and updating their Material Safety Data Sheets,” says Patterson.

“When you’re looking for a sewage leak, the rule seems to be that you find it under the last stone left unturned, and smoke testing leaves no stones unturned. I’d estimate that the number of cities that don’t have a problem with inflow and infiltration at the bottom side of 10 percent.”

Steve Gearhart

creating sparks that may ignite sewer gases. Smoke testing for municipalities usually requires a three-person crew, which typically covers about 10,000 linear feet of line per 12-hour shift.

Once the smoke is generated, the team disperses along the length of the lateral flow, two scanning the right and left sides of the street, while the third member walks down the center, examining the street and catch basins. When they detect leaks, they record them on video for the client.

“Some clients expect to receive photographs of the testing, but I always tell them that shooting video is so much better,” says Patterson. “On a still photograph you can barely make out a wisp of smoke, but on a video you can actually see it moving. It’s the difference between night and day.”

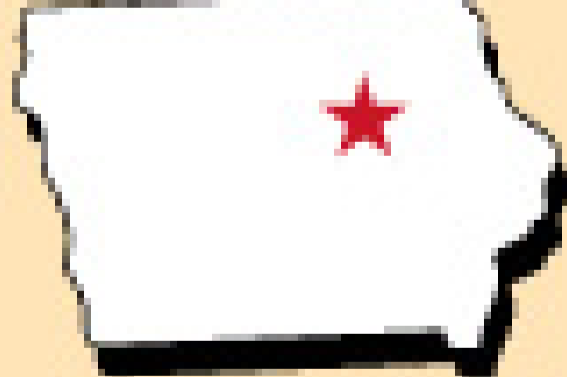
The crew can also train the video camera on street addresses and nearby intersections to help clients pinpoint the location of the leaks.

Ready to repair

If smoke testing uncovers a leak or other problem, Municipal crew members can often repair the defect.

PROFILE

MUNICIPAL PIPE TOOL CO. INC., HUDSON, IOWA

OWNER:	Mark Kaler	
FOUNDED:	1963	
ANNUAL REVENUE:	\$9 million	
SPECIALTIES:	Pipe maintenance and trenchless rehabilitation, CCTV pipe inspection, smoke testing	
EMPLOYEES:	46	
AFFILIATIONS:	National Association of Sewer Service Companies, Water Environment Federation, Iowa Water Pollution Control Association, Iowa Rural Water Association	
WEB SITE:	www.munipipe.com	



Harlan Sargeant drops a plug into a sanitary sewer manhole before smoke-testing sanitary sewer lines.

"If it's something we can help with, we're right there to fix it," says Gearheart. The company has a substantial fleet of cleaning, inspection and repair equipment that includes:

- Four Camel combination trucks from Super Products LLC.
- One combination sewer cleaner from Vac-Con Inc.
- Three inspection vans from RS Technical Services Inc.
- A grout van from Telespector.
- Three TV inspection and lateral reinstatement vans, two from Aries Industries Inc., and one from CUES Inc.
- A manhole rehabilitation trailer from AP/M Permaform.
- Four boiler trucks, two refrigerated trucks, and two refrigerated trailers used for cured-in-place pipe lining.
- Six waterjet trucks, four bucket machines and three duct rodders from SRECO-Flexible.

The company has three crews devoted to trenchless repairs. Structural defects are repaired with cured-in-place liners going manhole-to-manhole for lengths of 3 to 50 feet.

"Some clients expect to receive photographs of the testing, but I always tell them that shooting video is so much better. On a still photograph you can barely make out a wisp of smoke, but on a video you can actually see it moving. It's the difference between night and day."

Todd Patterson

If repairs can't be completed using trenchless methods, an excavation contractor is called in.

As needed

Gearheart says that the company doesn't advertise smoke testing except on its Web site or as part of

presentations at seminars given by the Water Environment Federation and others. Smoke testing is offered mostly on an as-needed basis or as an adjunct to collection system management services.

"When I'm talking to a client who says their flows go ballistic after a 1-inch rain, I'll ask them, 'Have you ever smoke-tested?'" says Patterson. "It's not something the client will usually ask for themselves, so we have to be the ones to offer it."

While locating pipe leaks

through smoke testing doesn't guarantee the company will earn a repair contract, it helps Municipal to promote itself as a knowledgeable, full-service enterprise offering the right diagnostic tools for the right job. ■

WHICH SMOKE WORKS BEST?

Although it's called smoke testing, contractors can choose between two entirely different types of testing products. On one hand there's petroleum-based smoke, and on the other, simple water vapor produced by smoke candles. Arguments for either choice run from simple preference to the ability of the smoke to carry for longer distances, or to remain suspended in the air longer.

"The water vapor has better buoyancy, has 10 times the optical density, and has been known to blow successfully through huge storm water lines for over a mile," says Frank Nichols Jr., president of Superior Signal, a manufacturer of smoke testing products. "Petroleum-based smoke can't do that. At trade shows, however, I have people telling me they prefer one smoke over another, for completely opposite reasons."

The Municipal Pipe Tool Co. uses petroleum smoke for sewers and vapor for home and business applications. "We prefer petroleum smoke for sewers because it provides a large volume of smoke, and once you start to feed in the liquid it produces that large volume for as long as you want it," says Todd Patterson, operations manager.

"In a large sanitary sewer line, we'd rather just start up the smoke blower and have it produce those volumes consistently instead of feeding in smoke bombs that might produce 40,000 cubic feet of smoke, but generate it for only three minutes."

For smoke, at least, the best choice is in the eye of the beholder.

MORE INFO:

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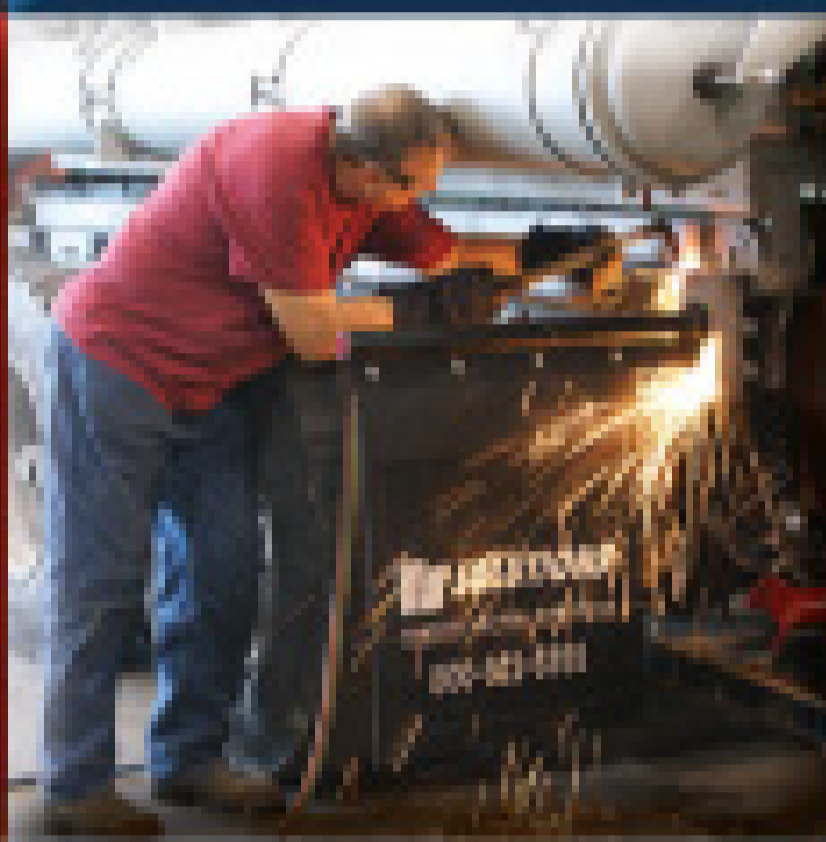
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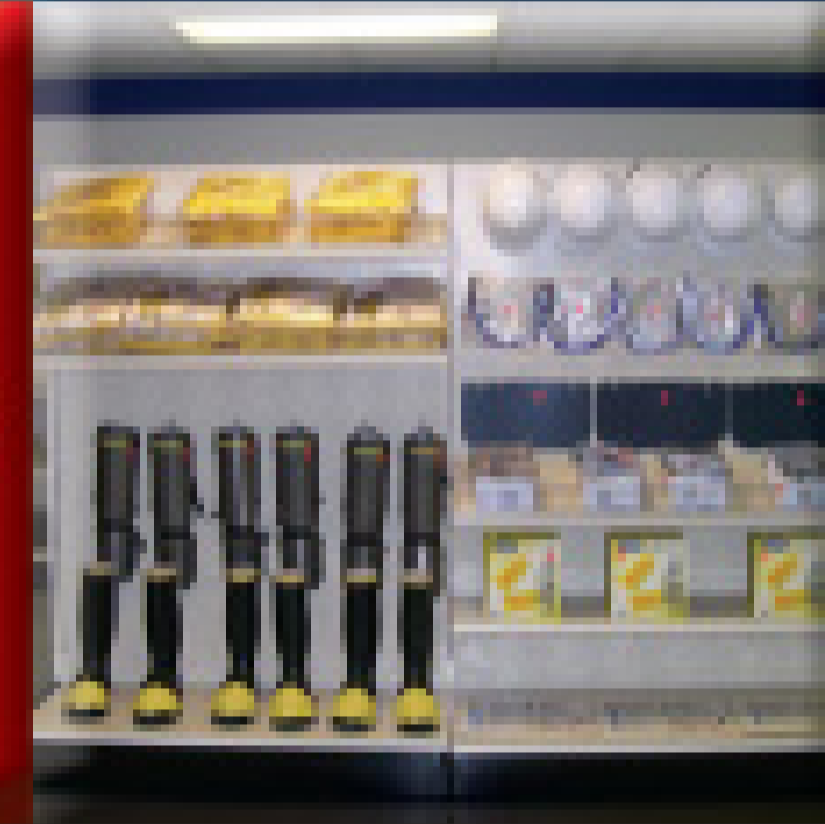
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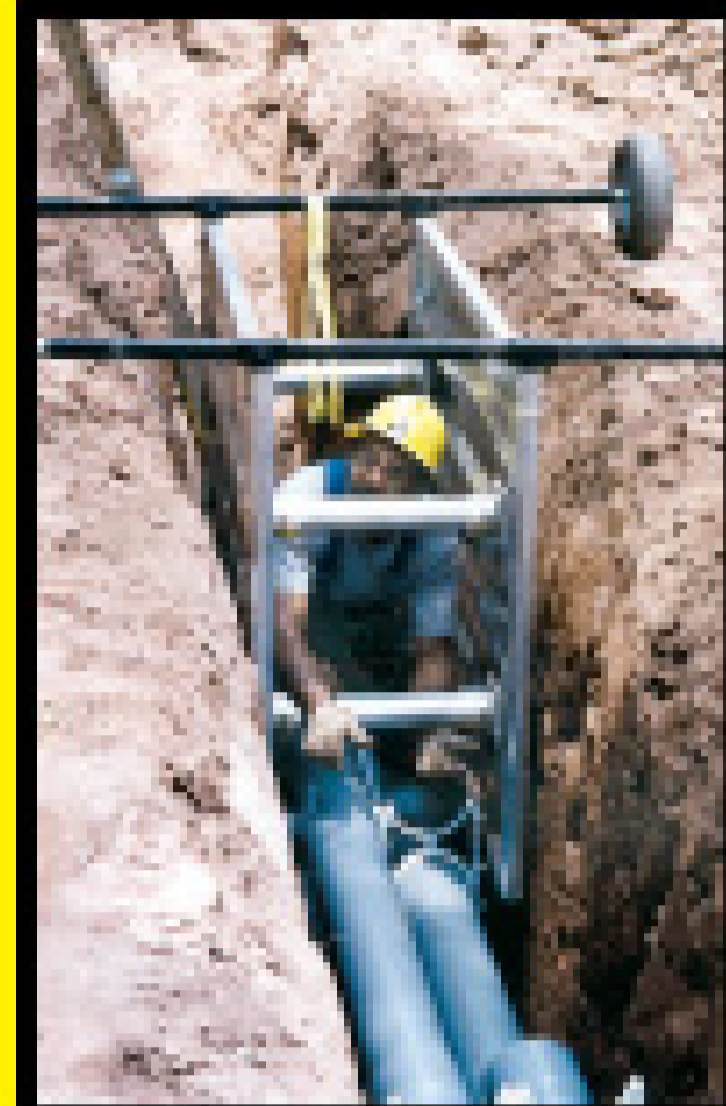
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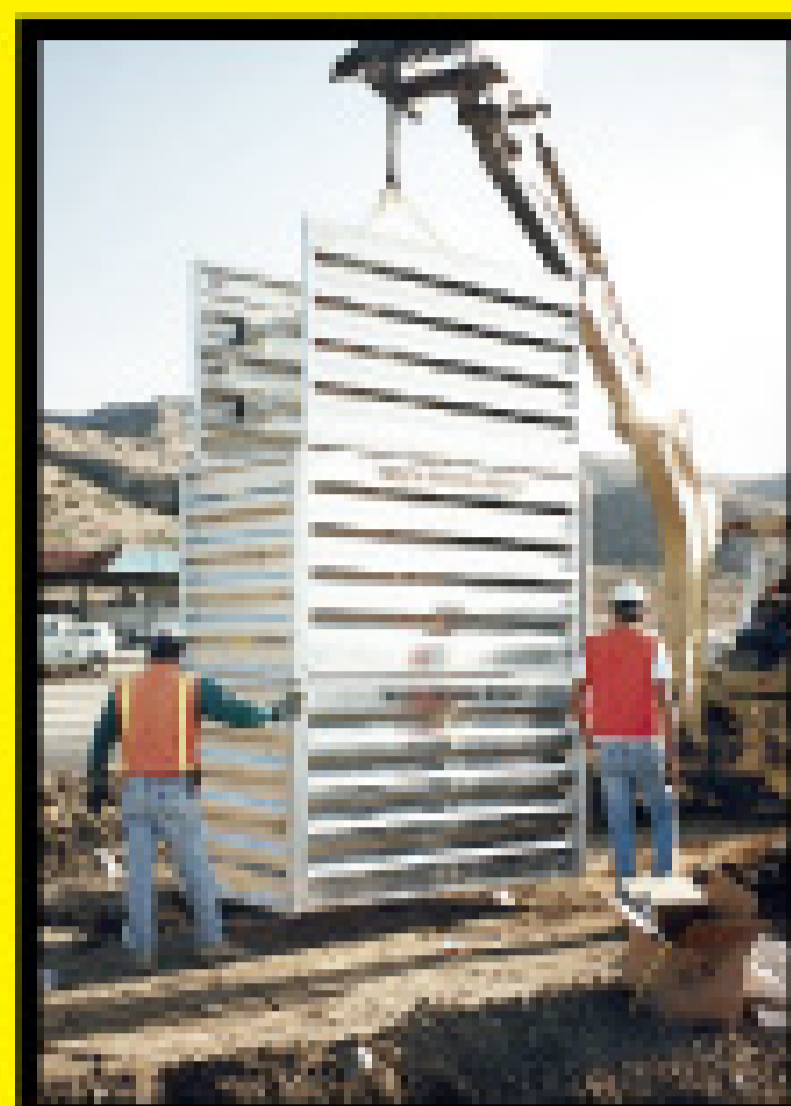
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Industry NEWS

Mr. Rooter Listed on Magazine's Top 500 List

Mr. Rooter Corp. ranks 147 on the latest Franchise 500 list by *Entrepreneur* magazine. The magazine also listed the company No. 36 on the Top Home-Based Franchises list and No. 115 on the Top Global Franchises list.

NASSCO Introduces Sewer Grouting Web Site

The National Association of Sewer Service Companies has launched www.sewergrouting.com, a Web site for the group's Infiltration Control and Grouting Association. The site features stories from the field, specifications, schedules for upcoming training and more.

Perma-Liner Receives Keeping America Strong Award

Perma-Liner Industries Inc. was presented the Keeping America Strong Award by Rear Adm. Kevin Delany (Ret.) on the *Heartbeat of America* program. The televised program focuses on small, American-based companies that promote economic growth within their respective industry.

Spartan Tool Names Nesky VP of Sales

Keith Nesky has been named vice president of sales, North America, by Spartan Tool LLC. He will be responsible for broadening product coverage among sewer and drain-cleaning professionals.

Flexible Pipe Tool Acquires Shamrock

Flexible Pipe Tool LLC has acquired Shamrock Pipe Tools Inc. Michael O'Leary, Shamrock general manager, has been promoted to president of Shamrock Pipe Tools. The company will continue to operate independently out of its Baton Rouge, La., location. All staff, existing dealers and representatives will remain unchanged.

REHAU, DBI to Produce Municipal PVC Pipe

REHAU Inc. of Leesburg, Va., and DBI of Quebec City have partnered to produce and distribute municipal PVC pressure, sewer and storm drain pipe. The agreement will enable REHAU to reopen its Prescott, Ontario, plant, which closed in November 2008. ■

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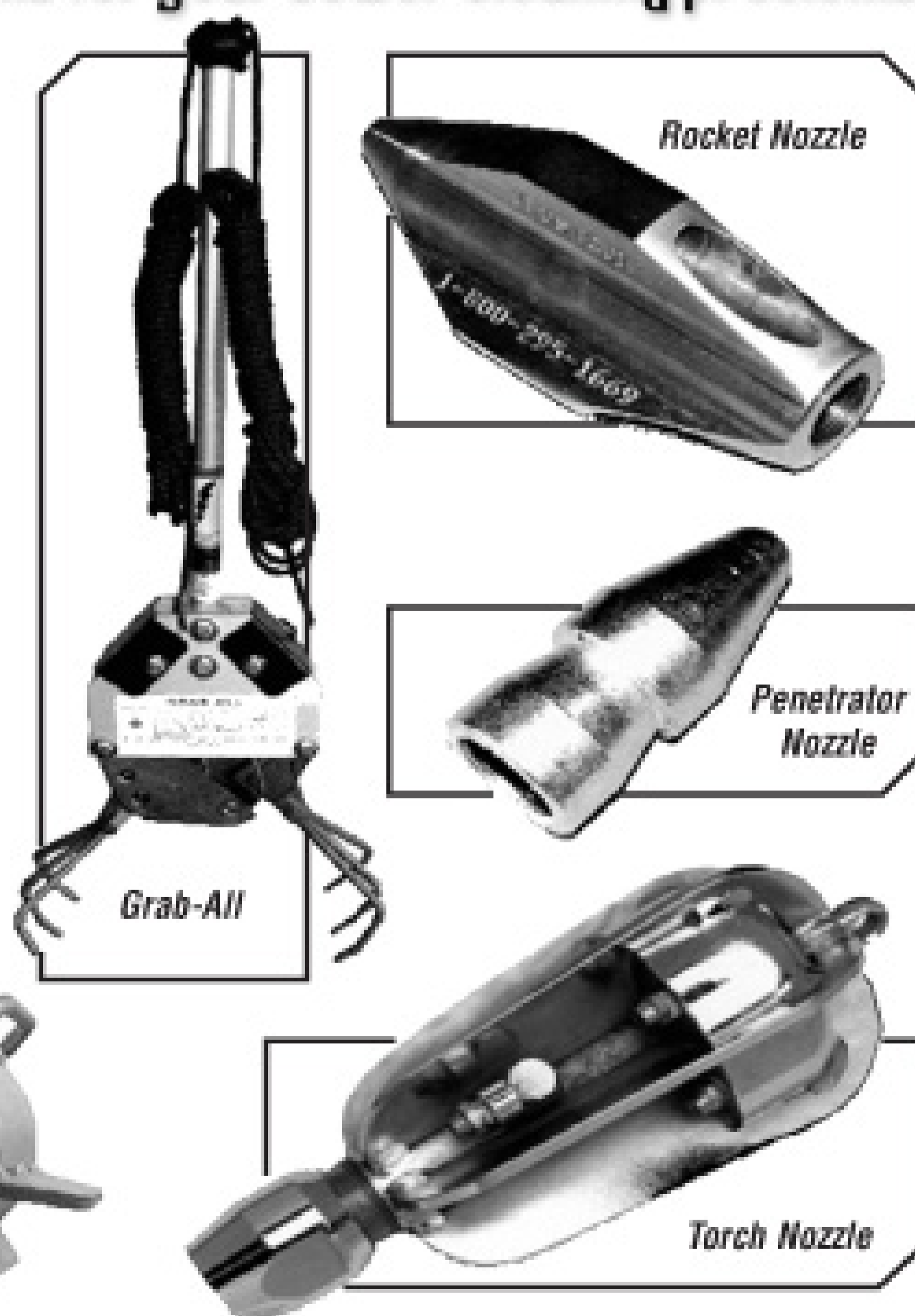
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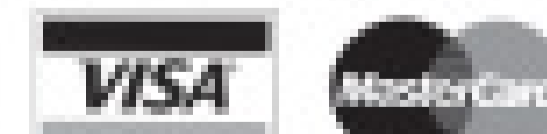
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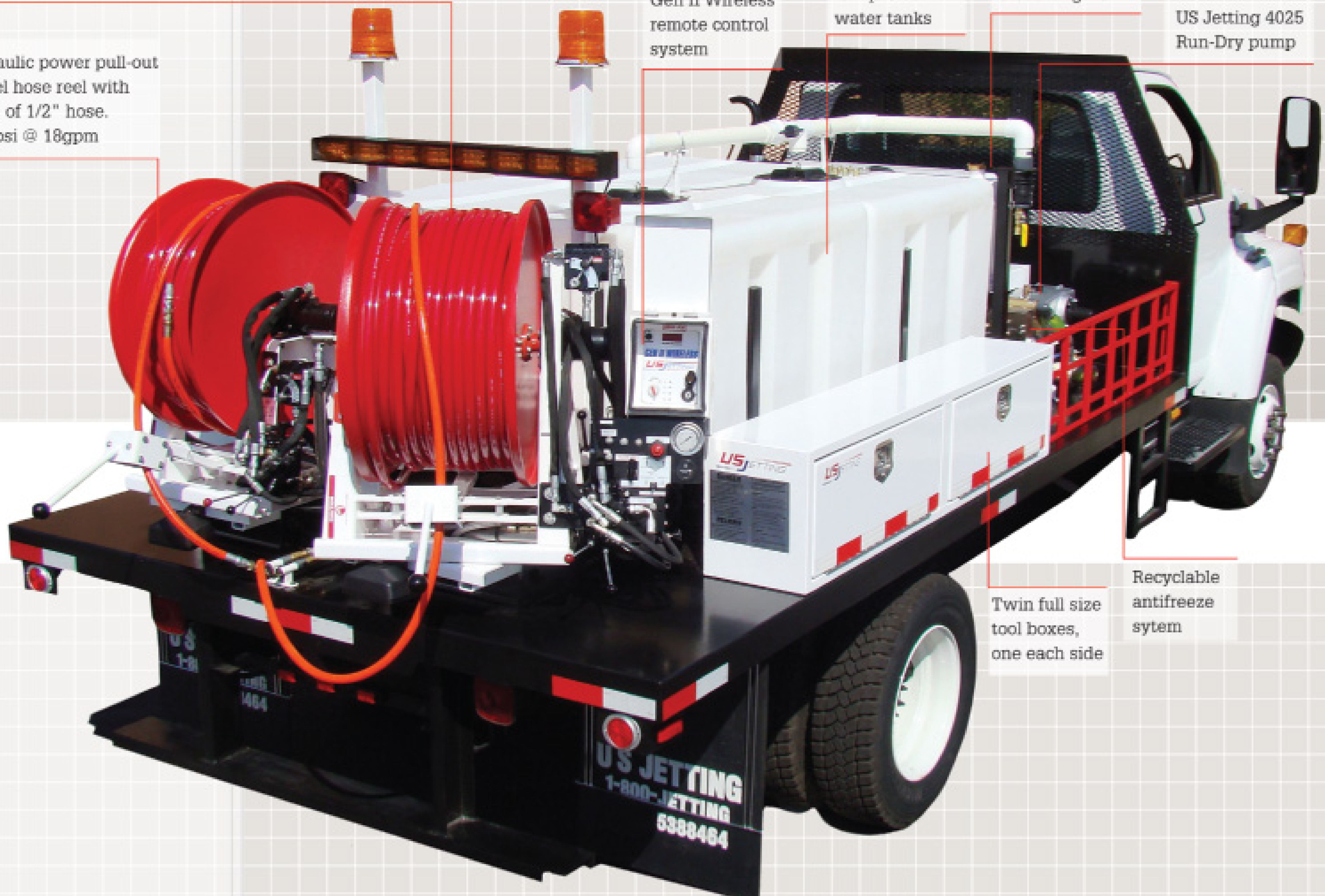
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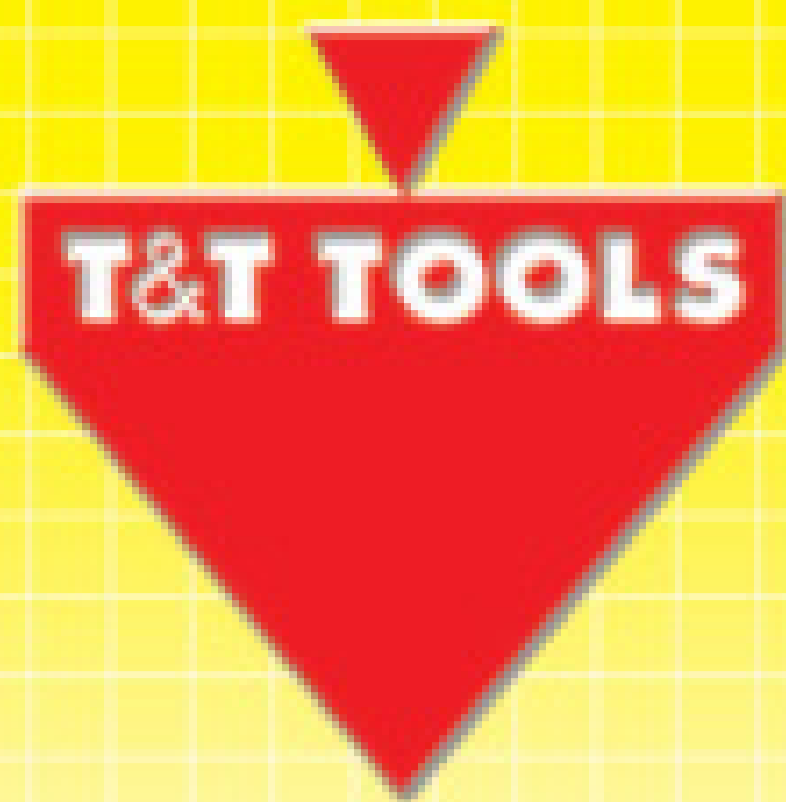
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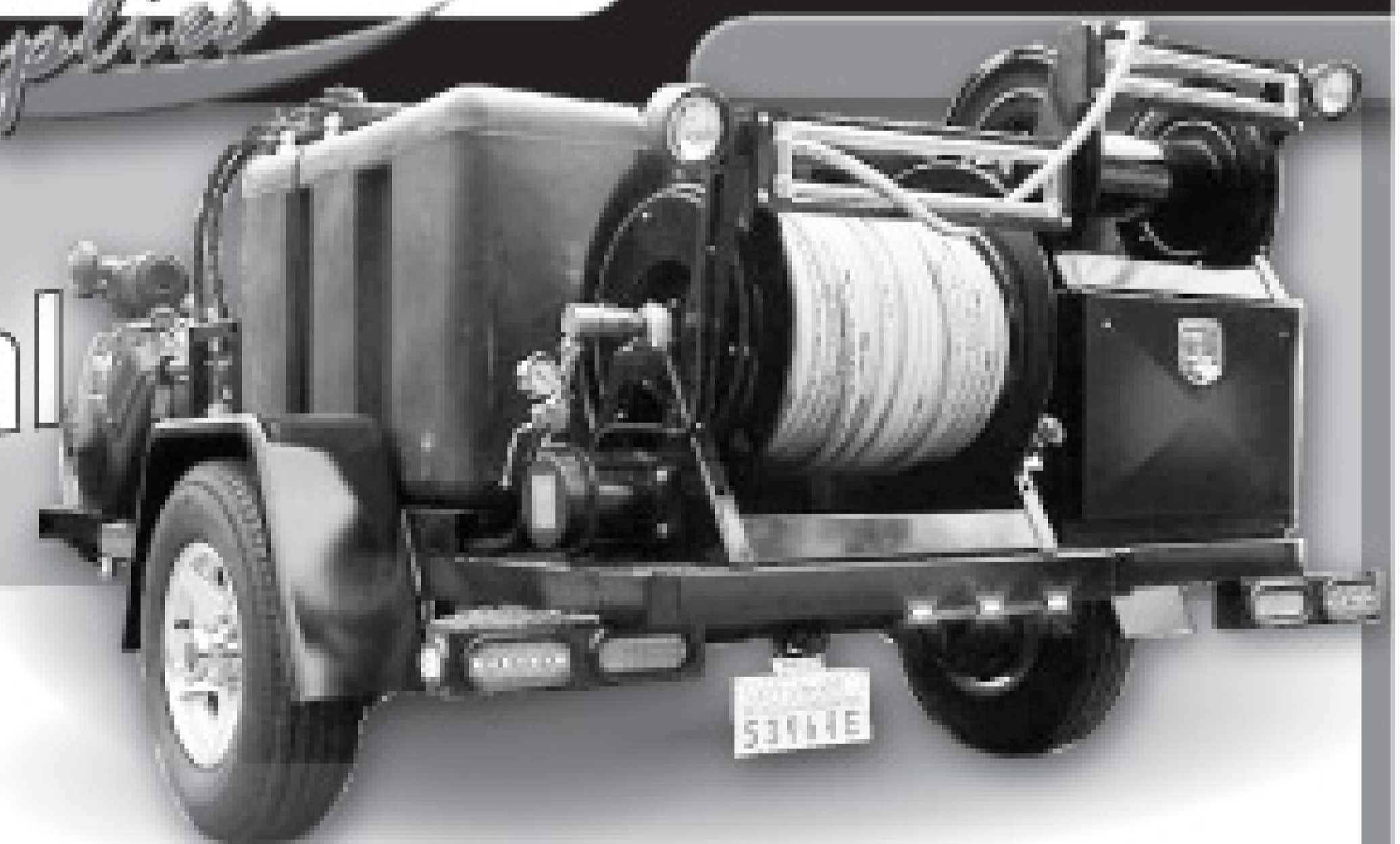
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Under the Gun

An emergency cured-in-place pipe repair enables a veneer mill in Oregon to pass its Department of Environmental Quality inspection

By **Scottie Dayton**

An old 6-inch vitrified clay pipe running along the face of a 100-foot cliff in St. Helens, Ore., had cracked. Sewage streaming through it quickly created a 5-inch hole, sending the flow down the cliff to collect in an unpaved area of the Boise/Cascade Veneer Mill parking lot.

The Department of Environmental Quality was scheduled to inspect the mill in four days. An uncontrolled raw sewage spill would cost untold dollars in fines and close the mill until the area was decontaminated. The situation required an immediate response.

Justin Rush, engineer I at the City of St. Helens, met with Sondi Edwards, project manager for Zwald

What lies beneath

Loose soil, rocks the size of bowling balls, and litter covered the cliff's rock face. Safety was paramount, as the ground shifted with every step. "The trickiest part was knowing where to start," says Edwards. "We were in uncharted territory, trying to develop safety strategies without full knowledge of potential dangers."

Edwards called safety adviser Greg McDonald of Public Works Supply Inc. in Donald, Ore., for advice. He recommended the safety equipment to purchase and called for a rope-grab system for workers to use as a lifeline when scaling the cliff. Footing was treacherous. "Boulders slid under our feet as

"The trickiest part was knowing where to start. We were in uncharted territory, trying to develop safety strategies without full knowledge of potential dangers."

Sondi Edwards

Industrial Services in Tillamook, Ore. "We stood at the top of the cliff and stared down at 211 feet of pipe running mostly underneath a bed of blackberry briars on unstable ground," says Edwards, who recommended a cured-in-place pipe (CIPP) lining system from Perma-Liner Industries Inc.

In one of the most complicated jobs in the company's history, Zwald established a bypass system, lined 150 feet of pipe, and met the mill's inspection deadline, all with a perfect safety record.

soon as we applied weight, and overgrown vegetation made it impossible to tell whether our next step would be on ground or on nothing at all," says Edwards.

Little of the trail following the pipe was visible or traversable. Clearing a path through the impenetrable briars posed another major problem. "Walking along the edge of the cliff was dangerous enough without operating a gasoline-powered, metal-bladed weed trimmer," says Edwards.

Certified installer Steve Neal



Certified lining installer Steve Neal carries a length of bypass pipe down the side of a cliff for placement. (Photos courtesy of Zwald Industrial Services.)

accepted the challenge. Strapped in his safety harness to the lifeline anchored at the top of the cliff, he cautiously worked his way up the path, being careful not to tangle the line in the metal blade. After many grueling hours, he had blazed a trail to the top of the pipe.

Sanitary bypass

A temporary bypass rerouted the sewage and prevented further leakage. Neal and lead technician and certified installer Eric Manning carried 20-foot lengths of 6-inch 3034 snap-fit PVC pipe up the cliff, while other workers snapped the sections together from the bottom up. They followed the contour of the sewer line, which had ample slope to maintain hydraulic flow.

The Zwald crew plugged the old sewer with a pig at the hub in the manhole and detached the pipe

TOUGH JOB

PROJECT:

Reline 150 feet of 6-inch sewer pipe on a steep cliff face before a state environmental inspection

CONTRACTOR:

Zwald Industrial Services, Tillamook, Ore.

CUSTOMER:

City of St. Helens, Ore.

EQUIPMENT:

Lining from Perma-Liner Industries Inc., Largo, Fla.

RESULTS:

Pipe relined in four days and deadline met

at a joint. Using a Femco QwikSeal connection, they hooked up the bypass, deflated the pig, then walked the entire line checking for leaks. None appeared.

To stabilize the bypass line over the Memorial Day weekend, workers



Lining installer Steve Neal slicks the calibration tube with environmentally friendly vegetable oil to help it slide in and out of the liner when it is inverted.

lashed it to trees or drove 18-inch stakes in the ground. They coned off the contaminated area and work site to keep out unauthorized persons. City officials visited regularly over the holiday to verify that the line was undisturbed and not leaking.

On Tuesday morning, the Zwald crew arrived with the Perma-Liner trailer. They cleaned the old pipe with a Spartan mini-jetter, televised the line using a Ratech pushrod camera, measured the length of the repair, marked the start and stop points, and laid out 160 feet of liner material.

"We chose the Perma-Lateral single-access pipe relining system because we could position the air inversion tank at the top of the cliff and connect directly to host pipe with the delivery hose," says Edwards.

Everything associated with the lining process – calibration tube (heavy-duty balloon), pull tape, resin, oil, plywood – was measured and double checked for accuracy.

The team connected the 15-foot delivery hose with inversion head to the air inversion tank, then practiced swinging the hose over the edge of the cliff and using the rope tied near the inversion head to lower it to the open end of the host pipe. "We did everything we could to plan our safety and the installation process," says Edwards.

Wednesday morning

The team's meticulous preparations paid off. Working on a plastic-covered plywood sheet, they impregnated the felt with two-part resin, then rolled the liner into the air inversion tank. Edwards quickly scaled the cliff to position the inversion head and signal when it was safe for air pressure to invert and blow the liner through the pipe. She repeated her journey to insert the calibration tube, which was inflated to 14 psi to force the liner against the walls while the resin cooked.

Four hours later, the crew removed the calibration tube and



An inversion canister is shown at the end of the liner, ready to be installed.

inspected the work. "Our liner marks were dead on, and the liner looked awesome," says Edwards. After removing the bypass system, Dan Jones Conveyor Trucks Inc. in Portland delivered several cubic yards of gravel, covering a portion of exposed, unlined pipe to help prevent damage from exposure.

The City of St. Helens removed the contaminated soils where sewage had seeped, sanitized the area, and backfilled it. On Thursday, DEQ officials had no issues with that portion of the mill's property, and no evidence remained that Zwald Industrial Services had ever been there. ■

MORE INFO:

Fernco Inc.
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www.fernco.com

Perma-Liner Industries Inc.
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www.perma-liner.com

Public Works Supply
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Dealing With Tough Floor Drain Jobs

Contracting professionals share thoughts on the proper cable configuration for reaching from drains into laterals with potential blockages

This feature in *Cleaner* reports noteworthy conversations that take place in *Cleaner Discussion*, an e-mail based forum for industry professionals sponsored by COLE Publishing. *Cleaner Discussion* provides for the exchange of information and ideas on pipe cleaning, rehabilitation and maintenance, trucks and equipment, high-pressure cleaning, business improvement topics, and much more. To find out more about *Cleaner Discussion*, or to subscribe, visit www.cleaner.com.

Question:

When you clean a floor drain and into the 4-inch main line, what is the strongest cable that will pass through the trap but give you the most torque if you encounter a tough blockage in the 4-inch pipe?



Answers:

What do you do if you run your cable through the floor drain (1 1/2- or 2-inch pipe) and into the lateral (4-inch pipe) and the blockage is a ball of roots? Now you can't get the cable wrapped in roots back through the smaller drain line. In my opinion, going through the smaller line to clean the lateral is a bad idea.



Ideally, you want a 4-inch cleanout to clean a 4-inch line, but that's obviously not the case here. You really can't clean a 4-inch line through a floor drain, unless you know for sure there are no roots or other hard stoppages downstream.

For example, I have a burger joint that calls me about every three or four months. No roots, all grease. The entire mainline is only about 20 feet long to the grease pit. The problem is that the largest access in the kitchen is a 3-inch floor sink.

Outside is a one-way cleanout.

Ideally, they need to install a 4-inch, two-way cleanout to enable cleaning back on the line. As it stands, the best I can do is a 1/2-inch cable with a small blade. Honestly, I'm surprised the drain lasts as long as it does between cleanings. They won't pay for a two-way cleanout or for a jetter, so they get a minimum warranty.

As for your situation, what size is the trap? Are you using an open-wind cable or closed? You need to know these things first.

Question (cont.):

For sure I'm not going very far into the 4-inch line. The floor drains I'm asking about are what I call 1950s vintage: 3-inch grate but on the other side of the trap is usually 2-inch pipe. If I recall correctly, a maximum of 10 feet of 2-inch pipe was allowed before it had to terminate into a 4-inch pipe. I use 5/8-inch open-wind cable. It feels good in the hand, but I think it could feel better.

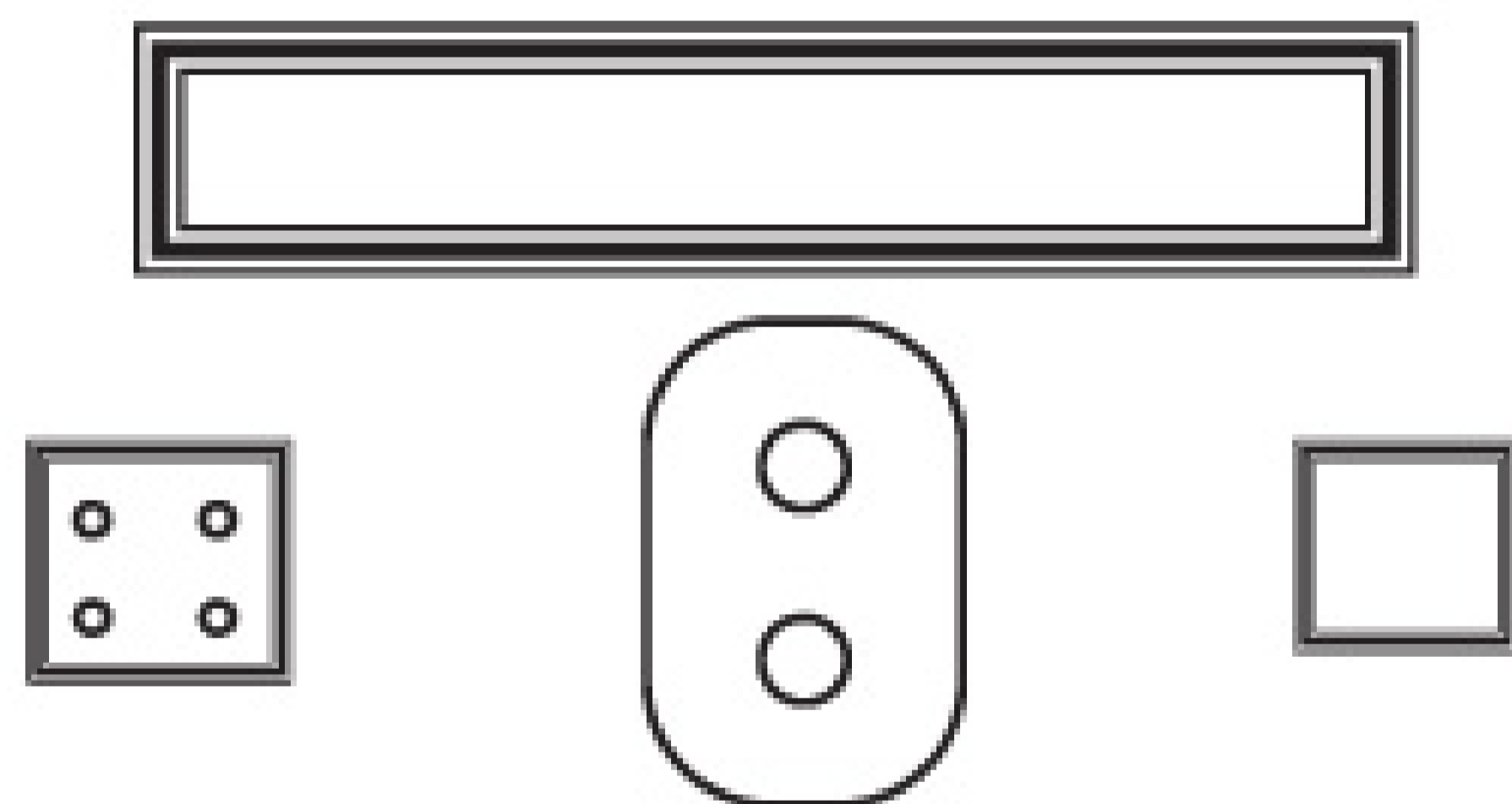
I have 1/2-inch tight-wind inner core loaded in an Electric Eel Model N, but I haven't tried it. I'm considering Electric Eel Dual-matic 5/8-inch (open-wind and small inner core). It is intended for the Model N but could be nice in a RIDGID K-50, too.

Answer:

The main thing here is to not get hung up and stuck. That's very easy to do when working through an access that is only half the size of the problem pipe, especially if there are heavy roots. Given the access size, you're not likely to get much of a cutter through the trap. An open-wind cable can typically negotiate the trap and turns easier than a closed-wind and is good for softer stoppages. Although I prefer to use closed-wind cable due to the ability to really torque down on roots and harder stoppages.

It's best to not force the cable too much in a situation like this. Take it slow and easy and you'll be OK. Pull back the cable and inspect it to see possibly what you're dealing with downstream. If you're unable to at least get it open and draining with either a cable or jetter, then your customer needs to make a decision on a repair. ■

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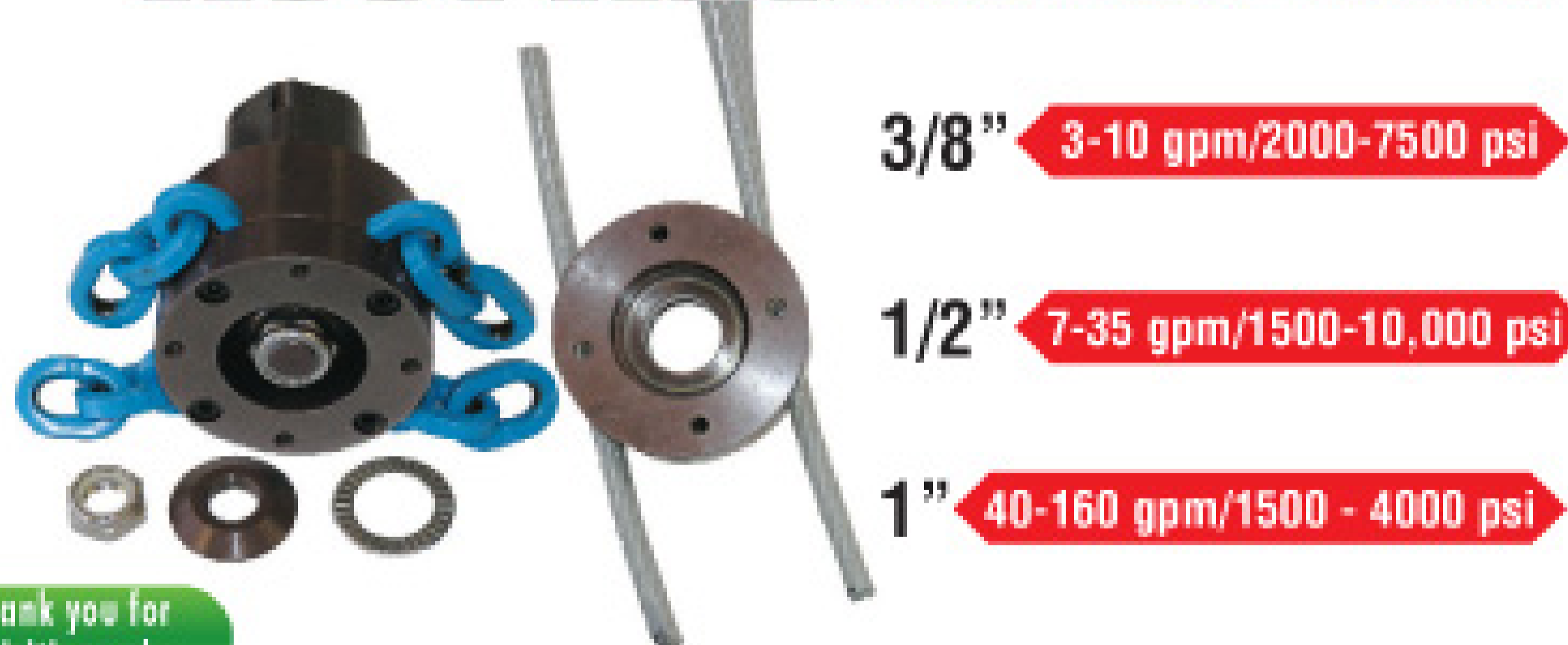


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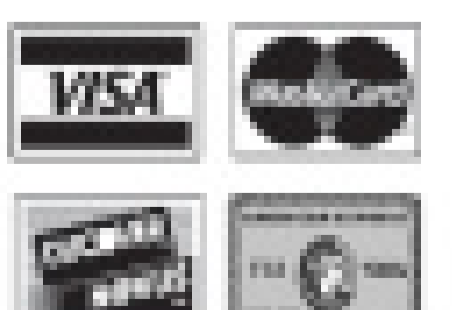
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Opportunity Knocks

Contractors protecting their customers' long-term interests find that a drain-cleaning service call often leads to more work to correct the root causes of stoppages

By Mary Shafer

There's no better time to remind customers of all your capabilities than when you've opened a drain line and can talk about a problem straight to the customer. While some operators seem to consider "upselling" a dirty word, others see opportunity in pointing out other issues that might soon require another visit while the pipe is exposed and the technician is on site.

Without taking advantage of people who are already dealing with a problem, savvy contractors



Barbie Dawson

Owner
Crowe Inc.,
Roanoke, Va.
Employees: 12-13
Years in Business: 40

recognize the chance to increase their value in a customer's mind by explaining what other problems are lurking in the plumbing. Most operators seem to take a natural approach to suggesting extra services, pointing out the potential cost savings in avoiding repeat service calls. They also depend heavily on modern technology to back up their recommendations.

"When we do any work, we want the homeowner to be there, so they can make decisions themselves," says Barbie Dawson, owner of Crowe Inc., Roanoke, Va.

"We have the homeowner right there seeing what we're seeing.

"We pride ourselves on our honesty, and the fact that nothing is done unless the homeowner authorizes it. So if we unstop a line and then camera it and find something that's causing the stoppage, we want the homeowner to see it."

Crowe serves half residential and half commercial customers. Technicians encourage commercial customers to be on hand for televising. They then explain what the problem is, what's causing it, and what it will cost to repair.

"If it looks like the whole line's bad, they have the options to replace just that part or replace the whole thing," Dawson says. During the process, technicians identify any collateral issues, but Dawson says the service call is intended mainly to address the original problem, not to look for others.

"Our technicians' first concern, of course, is to open the line and take care of the problem that the customer initially called for," says office manager Maridee Dukett. She takes some of the calls that



Maridee Dukett

Office Manager
AALCO Septic & Sewer Inc.,
Knoxboro, N.Y.
Employees: 18-20
Years in Business: 37

come in to AALCO Septic & Sewer Inc. in Knoxboro, N.Y., which provides grease trap and graywater pumping and drain cleaning.

"But once they're in there and see that maybe the line has a lot of grease or a particular problem, then they'll tell the customer how they can address that long-term. They may recommend waterjetting to get all that gook out of the line. They might find a low spot in the line while they're using the camera equipment, and ask the customer if they've experienced recurring problems." If so, they'll explain how the low spot could cause the issue, and what it would take to fix it.

"Our technicians' first concern, of course, is to open the line and take care of the problem that the customer initially called for. But once they're in there and see that maybe the line has a lot of grease or a particular problem, then they'll tell the customer how they can address that long-term."

Maridee Dukett

AALCO Septic & Sewer Inc., Knoxboro, N.Y.

"Typically, one of the first things they do to find out what's wrong is clean the line. If they come across a place where they find a root or a large amount of grease, it's a fairly simple upsell to a waterjetting service, because that's what needs to be done to take care of the problem. It's really what's needed to keep it from recurring as opposed to cable cleaning, which just clears a path instead of removing the stoppage."

Dukett says upselling isn't a company policy so much as it's the way the technicians are trained to deliver real value to clients.

Comments may be directed to Mary Shafer in care of Cleaner. You may also e-mail pipelines@cleaner.com.



After 15 years working for plumbing companies, Johnny Menser, owner of Tri-L Enterprises, in Nebo, Ky., decided it was time to make more

"I drop my video camera in, run it down there and show them where it's broken, or collapsed, or where roots may be intruding. Then I suggest that we replace that part of the line."

Johnny Menser
Tri-L Enterprises
Nebo, Ky.

money for himself and went out on his own. He likes being able to call the shots about the way customers get treated. Although he doesn't intentionally set out to upsell, customers often sell themselves on extra work because they can clearly see it needs to be done.

"After I go out and hear them say that they've had a problem four or five times, I access the prob-



Johnny Menser


Owner
Tri-L Enterprises, Nebo, Ky.
Employees: 2
Years in Business: 4

lem, then take my cable and try to unstop the pipe," says Menser, who works in northwestern Kentucky.

"Then I talk to my customer about actually seeing where the problem is in their line." He asks the customer to be present for televising – he finds their presence helps him make the sale.

"I drop my video camera in, run it down there and show them where it's broken, or collapsed, or where roots may be intruding," he says. "Then I suggest that we replace that part of the line." The video is convincing, and he burns a DVD of the inspection that the customer can keep. That helps remind them of the value of his work. ■

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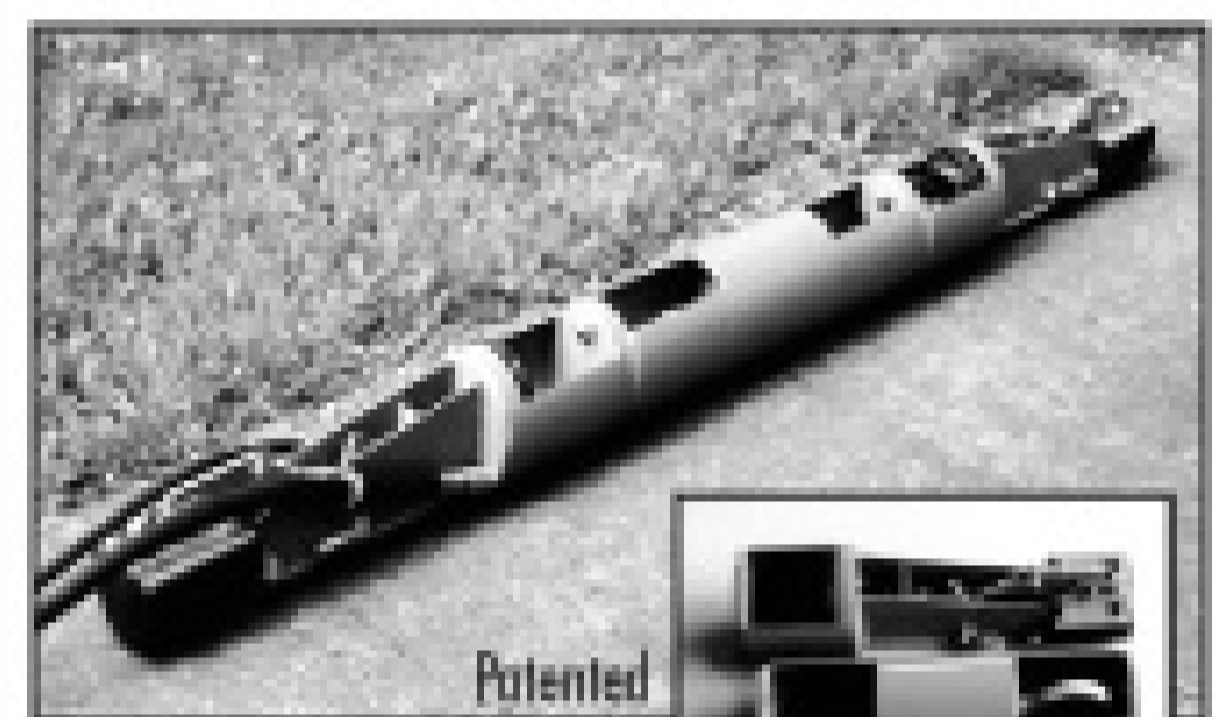
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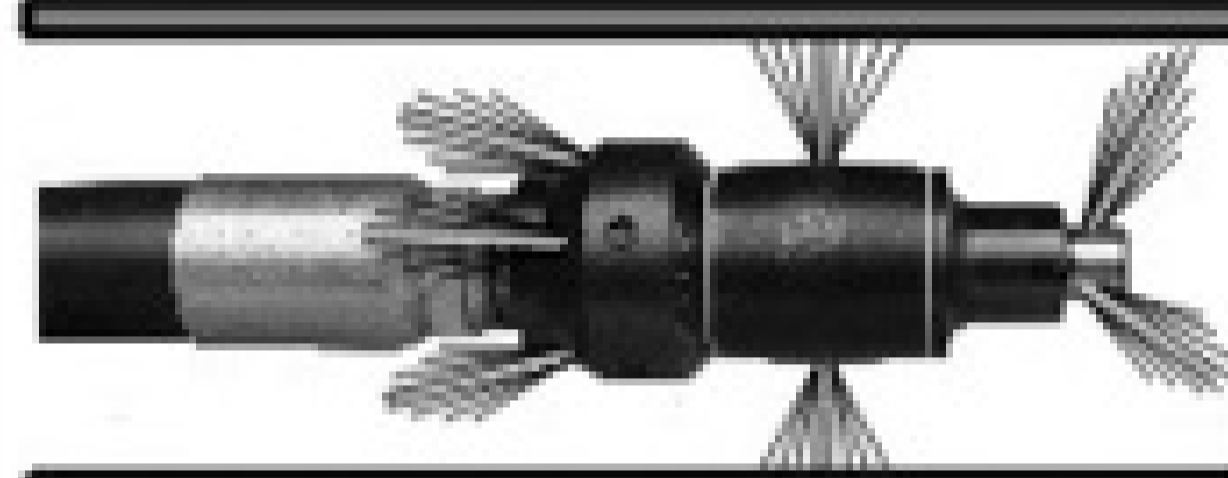


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Marketplace

Product Spotlight

Push Camera System Built for Versatility

By Ken Wysocky

The VeriSight push camera system from EnviroSight LLC offers drain cleaners multiple sonde frequencies, interchangeable camera heads, digital recording capability, and self-diagnostics.

The company's aim was to deliver a push camera system that cost less than its previous model but still included the features users expect, according to Richard Lindner, president. The unit includes a universal controller that works with any camera or reel.

The system, designed for plumbing contractors and municipalities, offers sonde frequencies of 512 Hz, 640 Hz and 33 Hz. This allows technicians to locate pipes at varying depths and made of materials from cast iron to PVC to concrete.

Interchangeable camera heads allow technicians to inspect different pipe sizes. The most popular option is a 1.7-inch self-leveling head that can inspect 4-inch laterals. Each camera delivers 420

HTVL resolution and has a scratch-resistant sapphire window. A 6- to 8-inch adjustable skid is available.

"A dimmable LED array produces a lot of light, which is always a challenge in these environments," Lindner says. Other camera options include 1.5-inch and 1.3-inch heads. The digital recording capability eliminates the need for DVDs or videotapes.

"Video footage goes right on the hard drive," says Lindner. From there, a USB 2.0 port lets users upload inspection results to a PC, then e-mail them to customers. The graphical user interface and intuitive menus make recording easy.


A 60 GB on-board hard drive stores 45 hours of MPEG4 video. Other features include an 8-inch recessed color display, analog and digital connectivity, a full-size waterproof keyboard with hot keys, a microphone for inspection narration, a footage counter in feet and meters, and a water-resistant ABS housing. A maintenance kit lets users trace problems



to the camera head, controller or cable.

"That way, customers don't have to send in the whole system for repair," Lindner says. "Service diagnostics are a big issue because the cameras really take a beating. An owner can get a repair part overnight and save on downtime and shipping."

Other features include a welded stainless-steel frame, a 200-foot Kevlar-reinforced push rod (12 mm or 10 mm), and spring shock absorbers in the wheels. For information: 973/252-6700; www.envirosight.com.



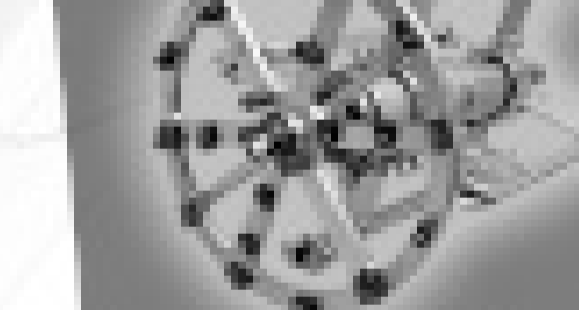




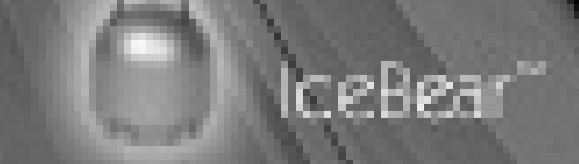


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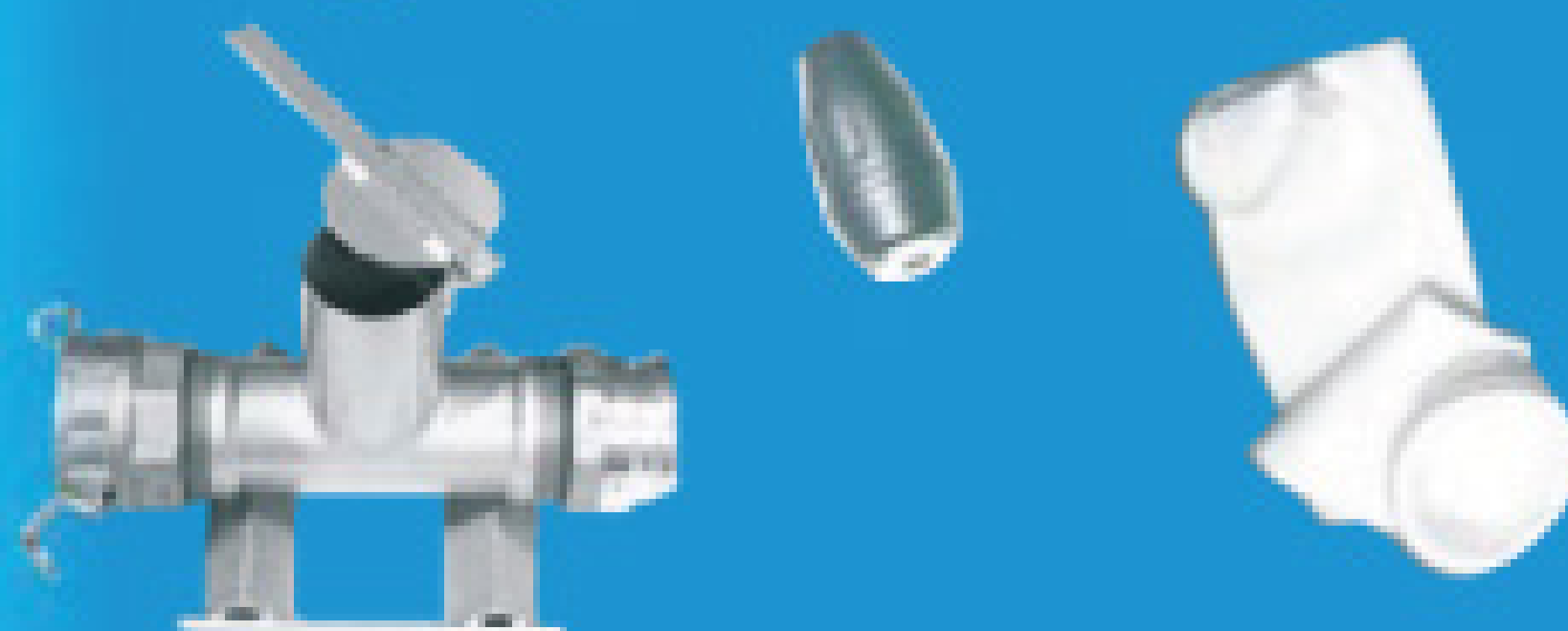
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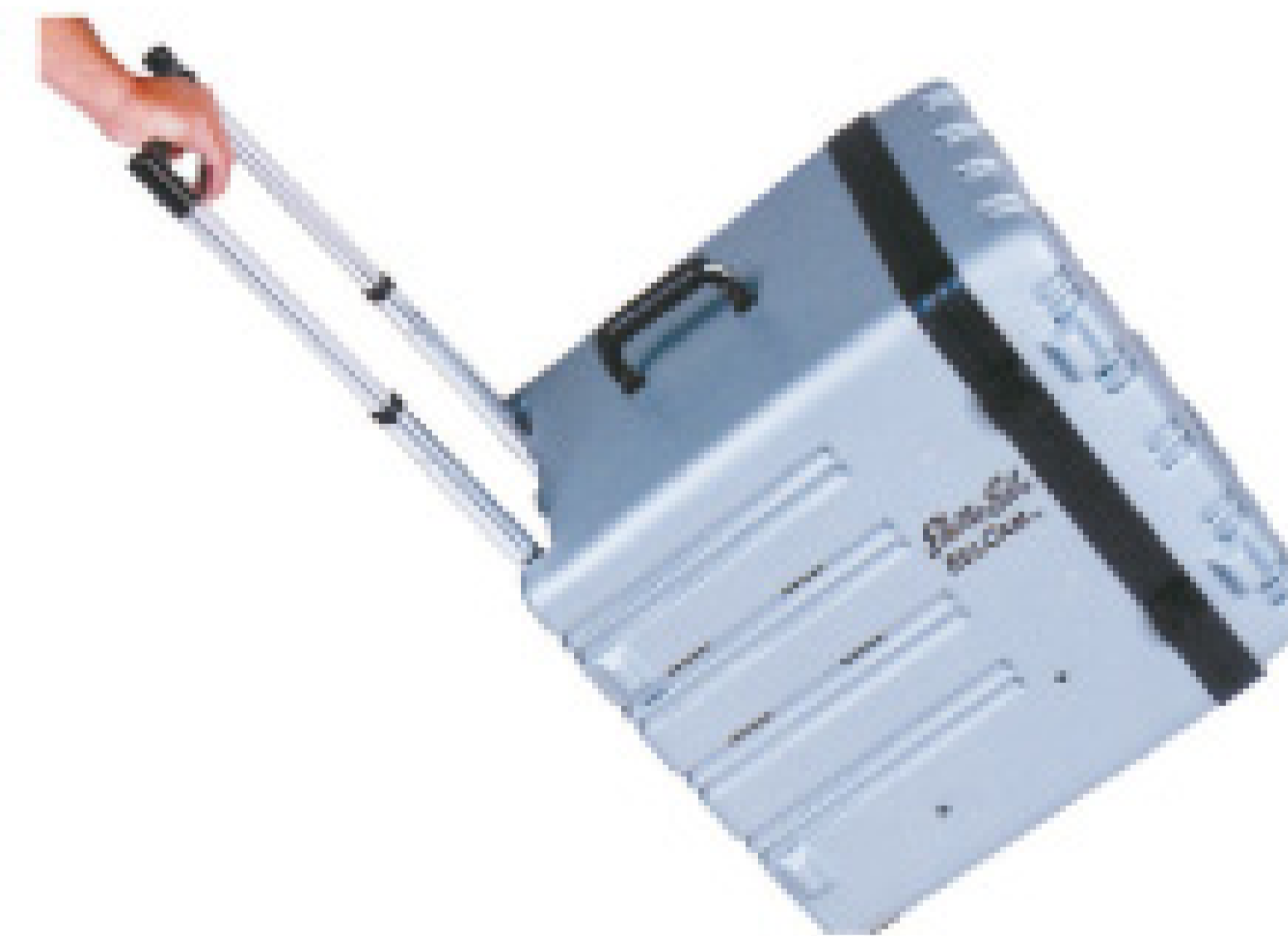
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