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Sealing the main-lateral connection

MONEY MANAGER

Making the lease vs. buy decision

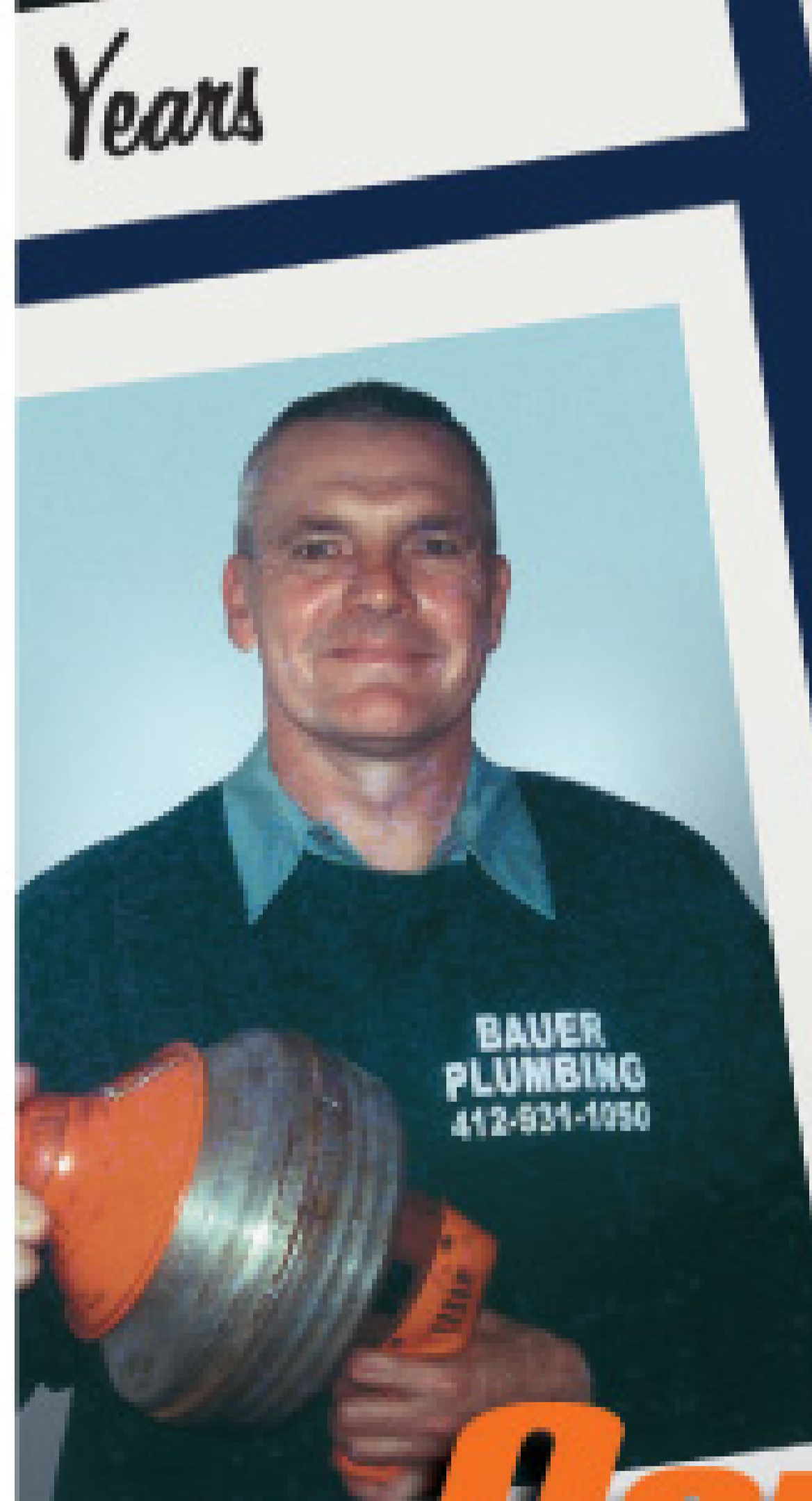
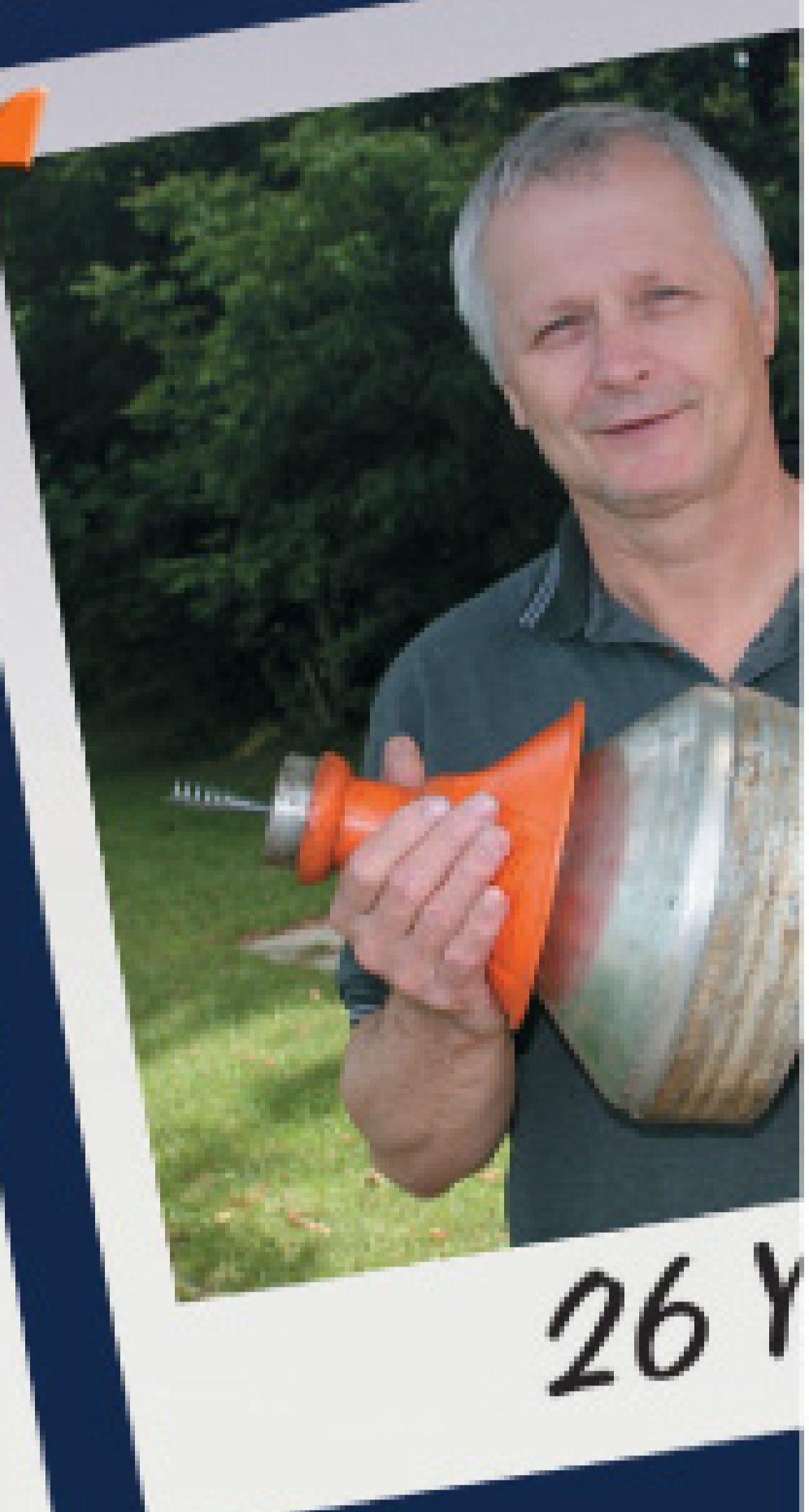
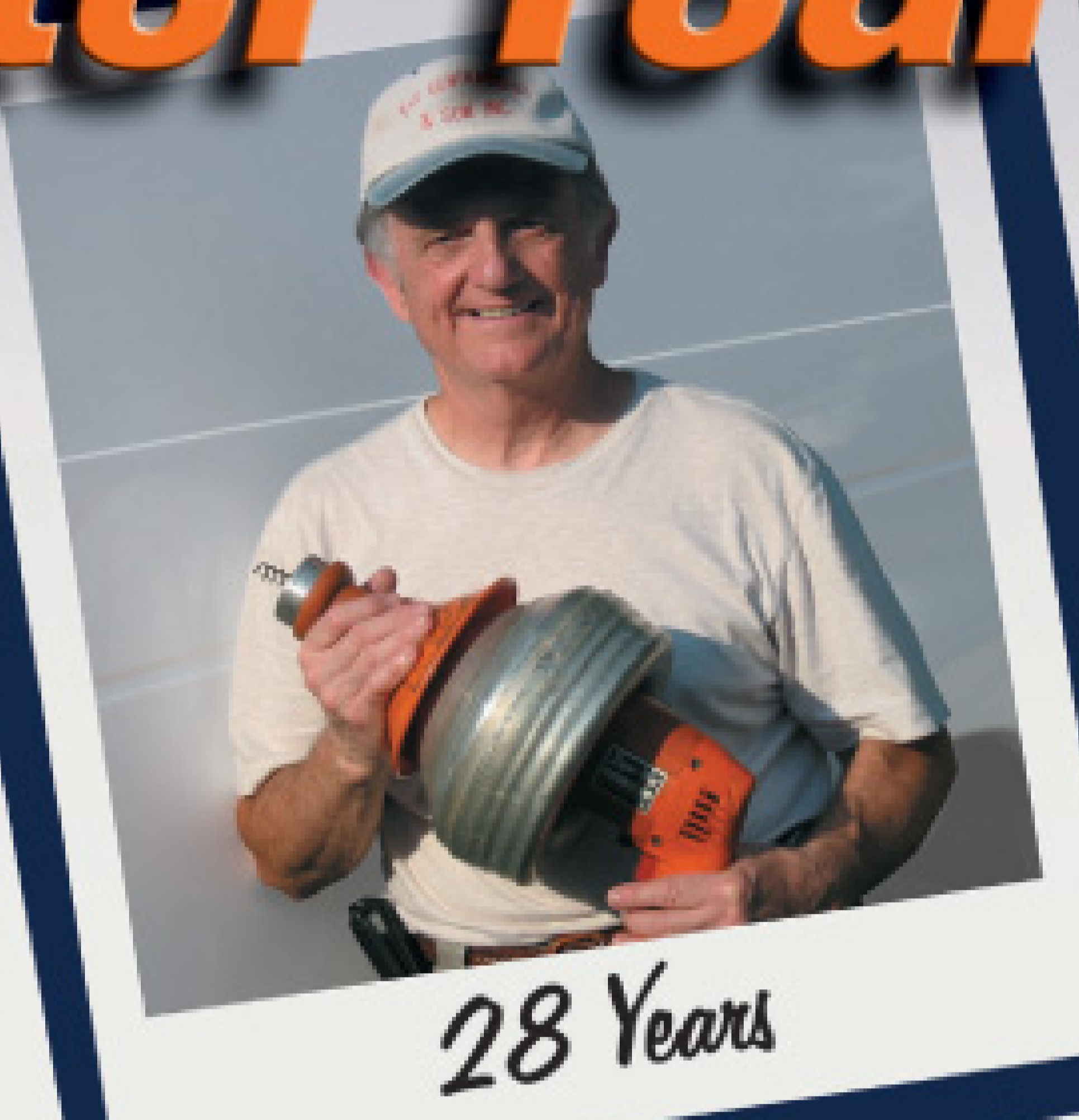
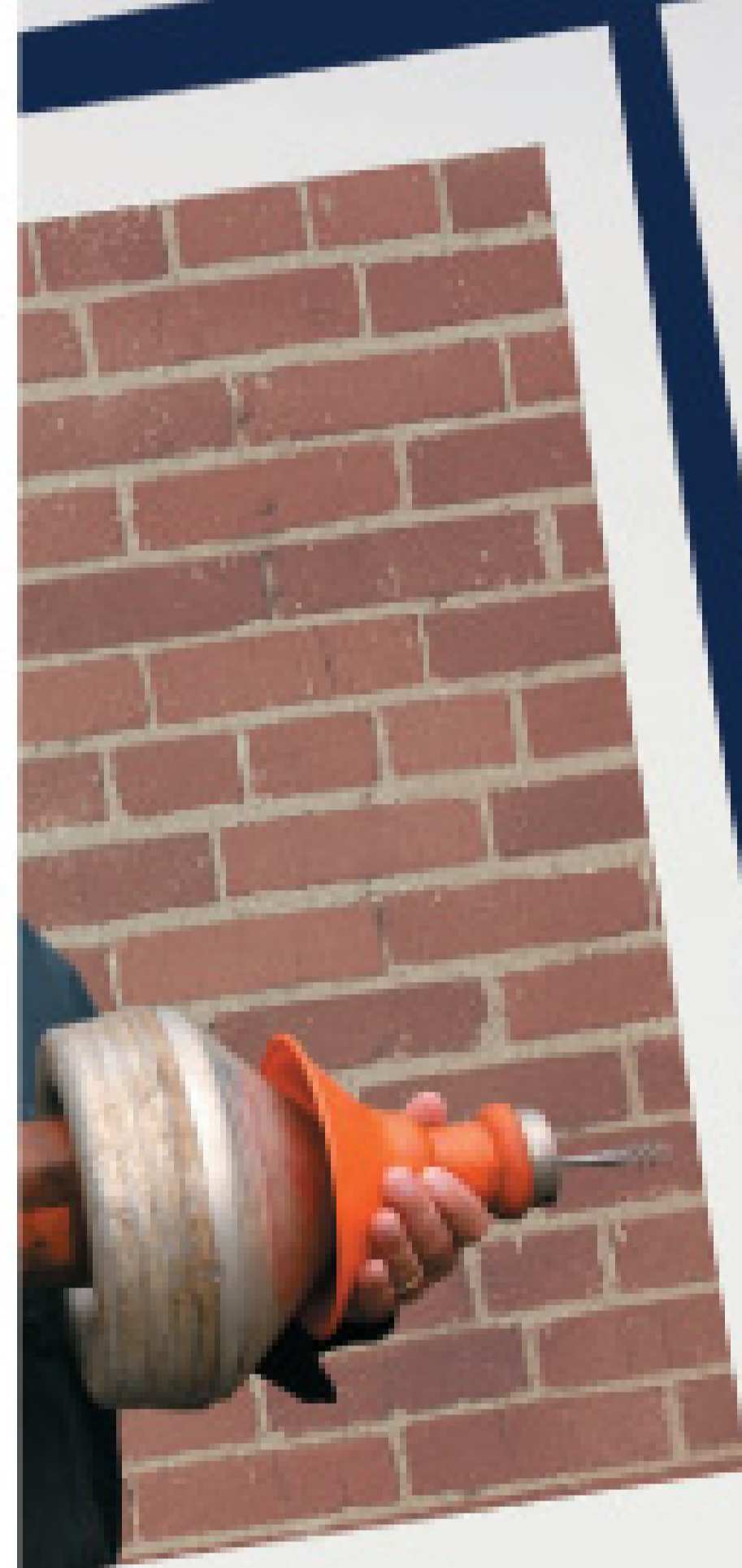
AFTER HOURS

A contractor becomes the Halloween King

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Smoke Testing Supplier Responds

To the Editor:

COLE Publishing provides an excellent medium to disseminate valuable information about the sewer service industry. The April 2008 article in Cleaner magazine about smoke and dye testing, "Bringing Leaks to Light," was an exception, as there were some unfortunate errors and misstatements.

Superior Signal Co. has provided smoke-testing equipment and service for more than 45 years. We have made it our policy to promote our products based on their features and performance. We welcome fair competition. However, it appears that one supplier in the industry prefers to attack our excellent reputation, using a negative campaign of misleading statements and scare tactics, rather than promote his own products based on their performance. We have generally ignored this misinformation, as we hope most customers recognize his misleading ads for what they are.

The circulation of inaccurate and/or incomplete information by any supplier in an attempt to gain commercial advantage serves primarily to create confusion, and is detrimental to the sewer service industry as a whole. As Cleaner magazine unfortunately printed some of this false and misleading information in what should have been a neutral and factual article, we believe it is now our obligation to address these issues, clarify the truth, and restore integrity to the smoke-testing marketplace.

Perhaps one of the most talked about yet least understood aspects of smoke testing is the use and safety of these products. In the name of competition, some imply danger in the use of products they do not happen to sell. Laboratory reports, scientific studies and even Material Safety Data Sheets (MSDSs) can be quite confusing to most of us who are neither trained nor qualified to make scientific judgments on this data. Reading half-truths or misstatements based supposedly on these authoritative sources can be dangerous, as most of us tend to assume: It must be true.

For example, there is no safety issue with the ignition system for solid smoke generators when used as directed. The smoke is introduced at the fresh air intake of the blower, with the smoke generator upstream of the airflow, where no sewer gases are present. The truth is that both solid and liquid-based smoke systems are safe when used as directed.

Other misstatements that have been made include warnings to wear a respirator while smoke testing. While a certain supplier has issued this warning about competitive products, he does not qualify the statement, nor does he mention the fact that the same could be said of his own product.

The fact is that a respirator should be worn whenever a person would be exposed to any substance in quantities that exceed OSHA limits. Would smoke testing personnel be exposed to enough smoke to exceed these limits? Not likely. The bottom line on safety is to use common sense. All smokes – solid or liquid – can be used safely and effectively without a respirator.

Superior Signal is the true innovator of the smoke-testing technique for inflow studies, as presented by Superior at WEFTEC in 1973, and this technique remains the industry standard today. Superior is the only supplier/manufacturer of both solid and liquid smoke systems, in the form of our Classic Smoke Candles and our Sewer Smoke Fluid Systems, and therefore we have no commercial bias for or against any particular type of smoke testing.

Our products and specifications meet all recommendations of NASSCO, EPA and WEF, and Superior Smoke products have been safely used to identify leaks in billions of feet of sewer line, in thousands of municipalities, throughout the U.S. and beyond.

Sincerely,
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Correction

Bowman Tool Company and Systems was mistakenly omitted from the Reinstatement Cutters category of the 2008 Cleaner Buyer's Guide, published in July.

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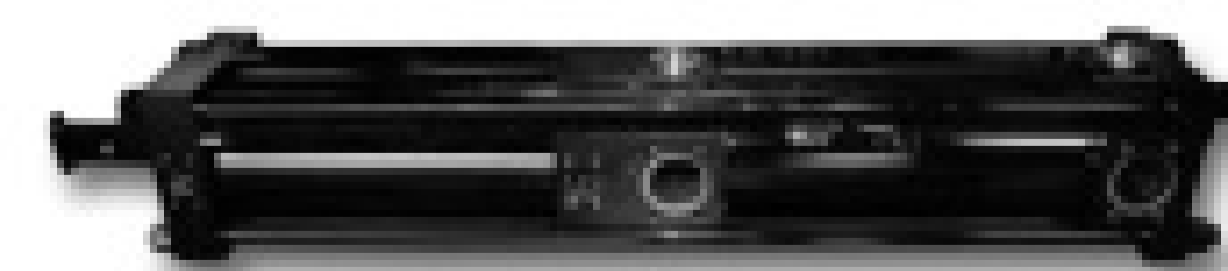
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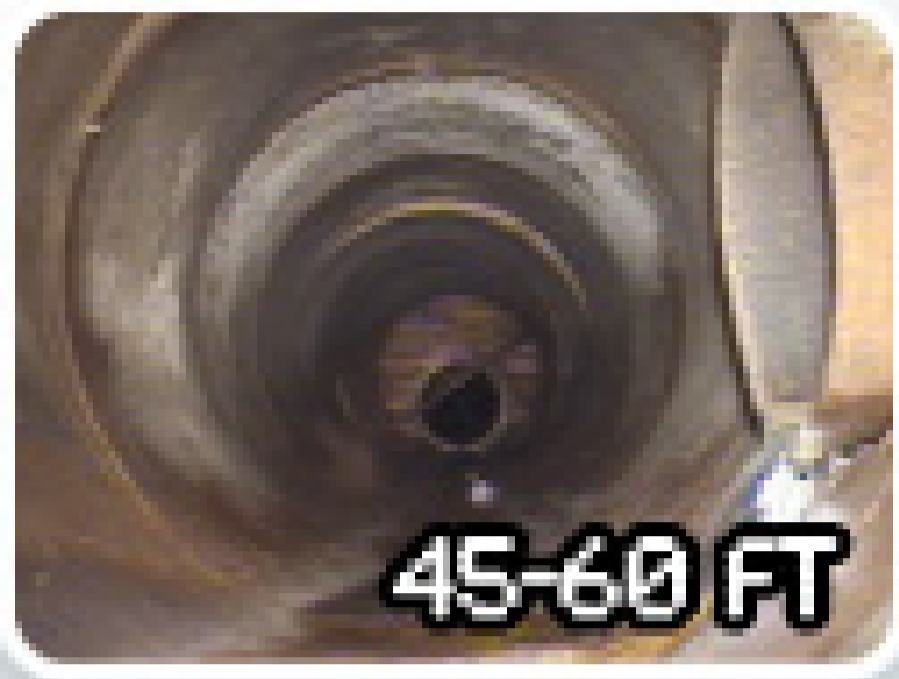
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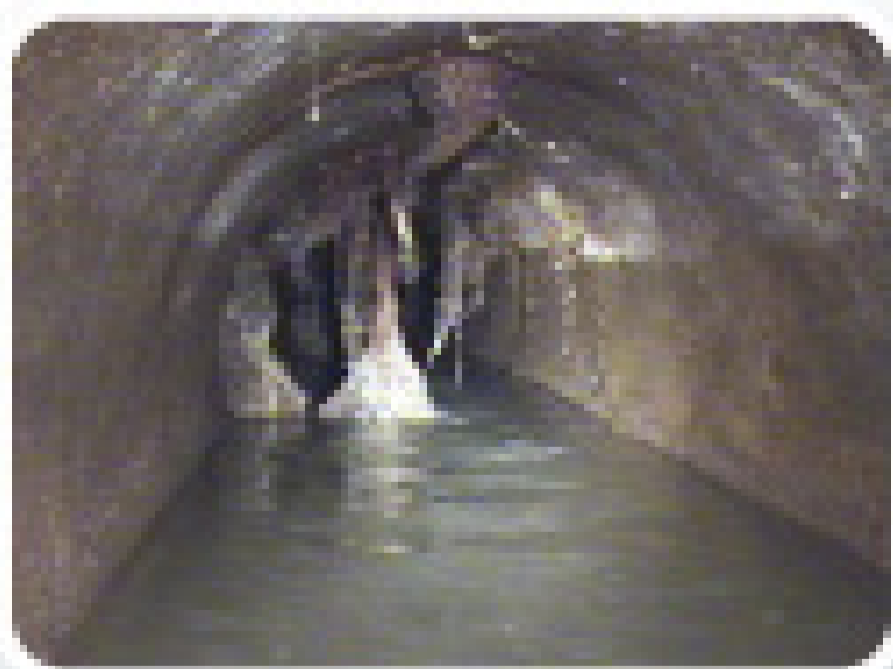
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On the cover: Jim Steinle, owner of Atomic Plumbing and Drain Cleaning in Virginia Beach, Va., credits seminars and conferences sponsored by trade associations and industry organizations with helping him learn to run a successful business. His sales and profits improved dramatically through the training programs and networking. Here, company service mechanic Scott McCants prepares to deploy a Spartan cable machine. (Photography by Bobby Thigpen)

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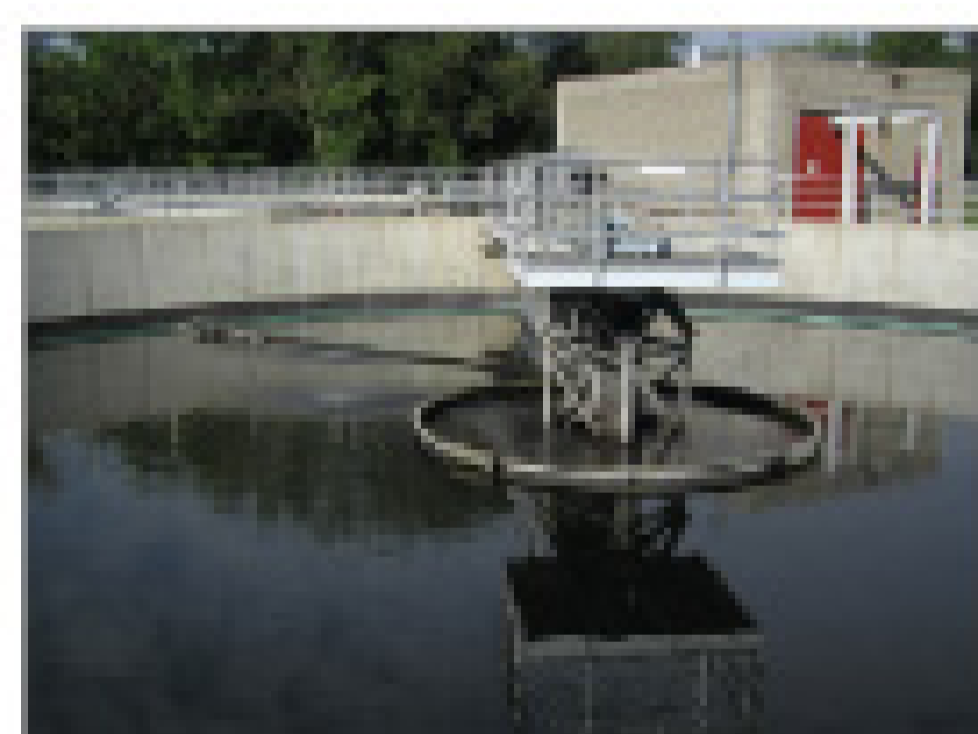
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- After Hours: A contractor in Arkansas helps form a Bible college
- Better Business: Keeping up on the basics when hiring

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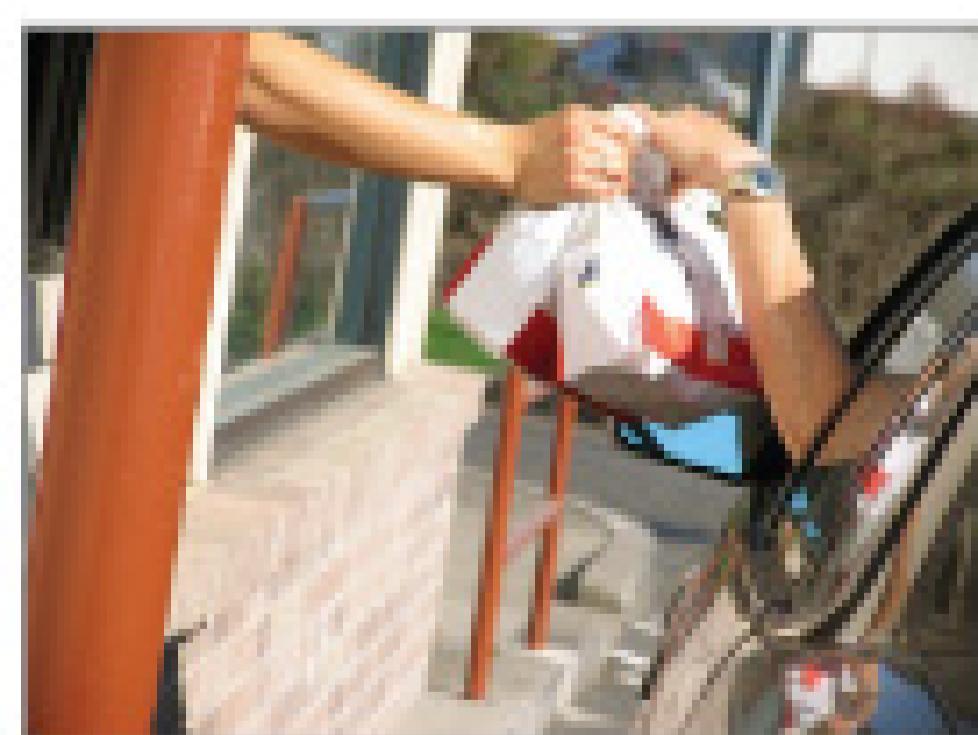
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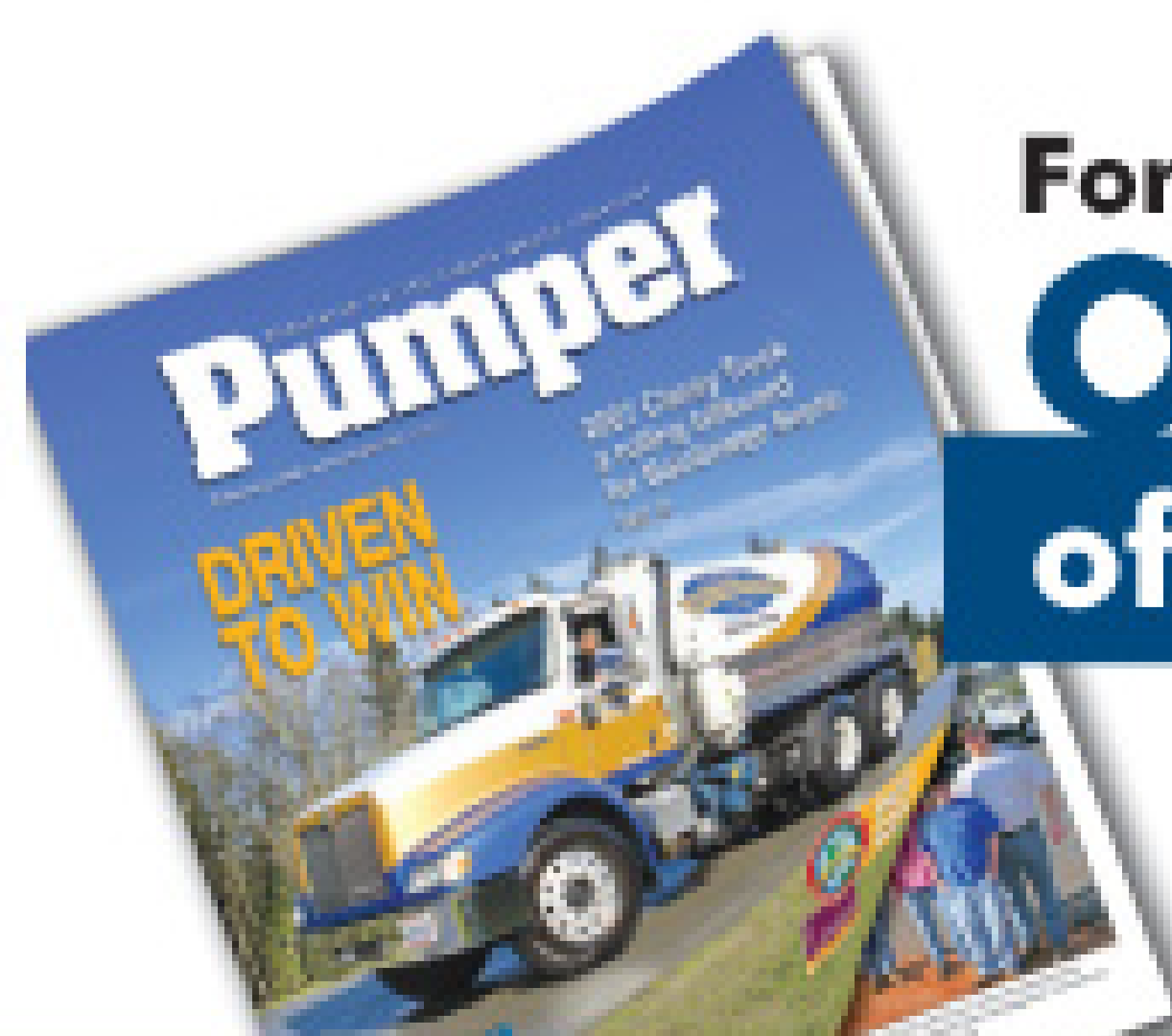
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You can gain more control over your time and get more done by conquering the problems of procrastination and interruptions

I learned a lesson in a time-management seminar that has always stuck with me. The seminar leader asked us to imagine that on a Wednesday we were given an all-expenses-paid trip to Tahiti – leaving Friday morning. Chances are, he said, we would clear our work schedules and grab that once-in-a-lifetime opportunity.

So then, he offered, why not go to Tahiti every day? In other words, end each day without a whole carload of unfinished business to worry about all night. For me, a Canadian fishing trip would be better motivation than a tropical island vacation, but the advice rings true regardless.

One of the toughest things to do in work life, especially for people who own businesses, is to keep the work from taking over. Many people about to retire say one of the biggest things they look forward to is “having my life back.”

Dedication to the job is good; in fact, it's necessary. You don't get anywhere in life if you're constantly heading off on a whim to amuse yourself. Still, there is such a thing as being too tied down.

And if we think about it, most of us find the pains of overwork are to some extent self-inflicted. If we were better at delegating, if we weren't too cheap to hire that extra part-time employee, if we weren't such perfectionists, we wouldn't have to wait for retirement to “get our lives back.”

Doing it now

You can learn about two good ways to get

more control of your time in a book, *Goal Setting: How to Create an Action Plan and Achieve Your Goals*, by Susan B. Wilson and Michael S. Dobson.

In a chapter on time management, the authors cover two all-too-common time wasters: procrastination and interruptions. The first is strictly our own fault. The second we can easily blame on others – though we have more control of it than we imagine.

Let's look at these two problems. Procrastination, of course, means “putting off until tomorrow.” We put things off, Wilson and Dobson argue, because they are somehow overwhelming, difficult, unpleasant, effort-intensive or unrewarding – or some mix of these. Here are some of their suggestions for getting off the dime:

- Ensure that the task is really a priority. If not, take it off your to-do list.
- Break the task into its component parts. “This way, it is more manageable,” the authors state. “Begin by working on just one part of the task.”
- Use a 10-minute strategy. “You can commit ten minutes of effort to almost any task. And ten minutes is enough to get you started. If after ten minutes you feel that you must stop, then do. But you may find that you want to keep going after the initial plunge.”
- Reward your effort. Give yourself a small reward for getting started. “Remember one of the principles of human nature: We continue to do those things that are rewarding; we stop doing those things that are not.”

Getting derailed

Of course, you can stop procrastinating and still get knocked off course by interruptions. In these days of cell phones, pagers, e-mails and text messages, it can be harder than ever to focus on the task at hand. There is a fine line

between keeping yourself accessible to your team and being so accessible that you spend all your time responding to calls and messages and not doing the things you had planned.

“Each time you do not say no – that you pick up your telephone, open your door, or don't communicate that you are busy – you make a decision to be interrupted.”

One simple but critical fact to remember is that your office has a door and your cell phone, computer and pager have off switches. Wilson and Dobson observe that many interruptions are the result of decisions you make. “Each time you do not say no – that you pick up your telephone, open your door, or don't communicate that you are busy – you make a decision to be interrupted,” they write.

One cause of interruptions, the authors note, is the open office door. When someone appears in the doorway, they advise, ask about the reason for the visit and find out how long the person thinks it will take. If the person needs more than, say, 10 minutes, suggest a scheduled meeting. Here are some of the authors' other ideas for safeguarding your time:

- Do not accept interruptions from people someone else can take care of.
- Don't invite drop-in visitors to sit down.
- Establish a policy of encouraging employees and colleagues to schedule appointments when possible.
- When you take phone calls, avoid social conversation, and put a time limit on the call. Develop language you can use to end calls politely.

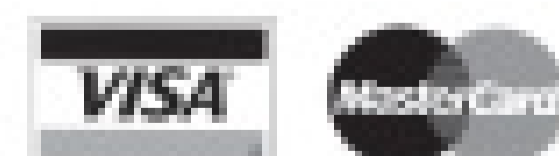
Following this advice may not get you to Tahiti on a regular basis, but it will help you make your days more productive and your business life more rewarding. ■



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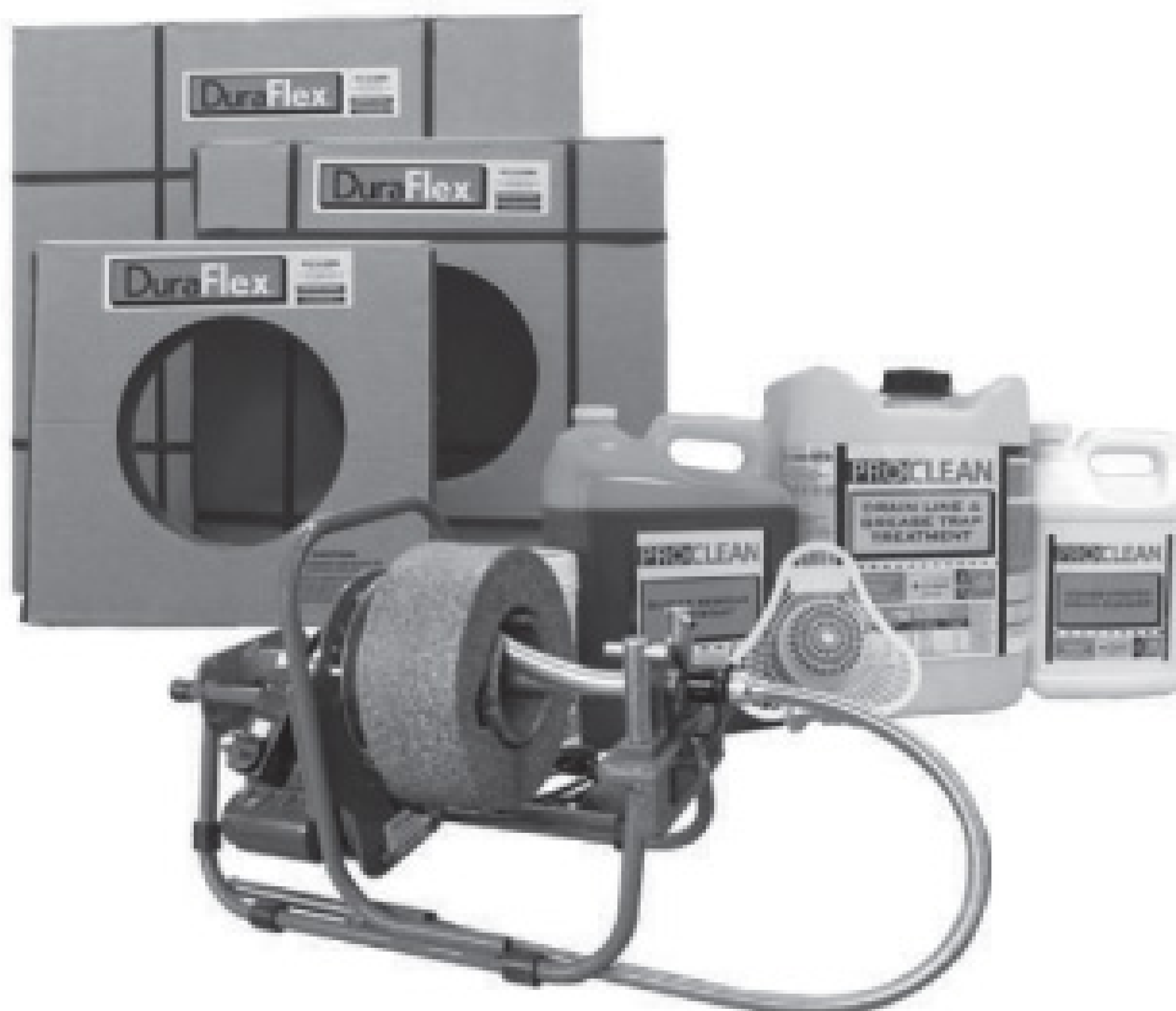


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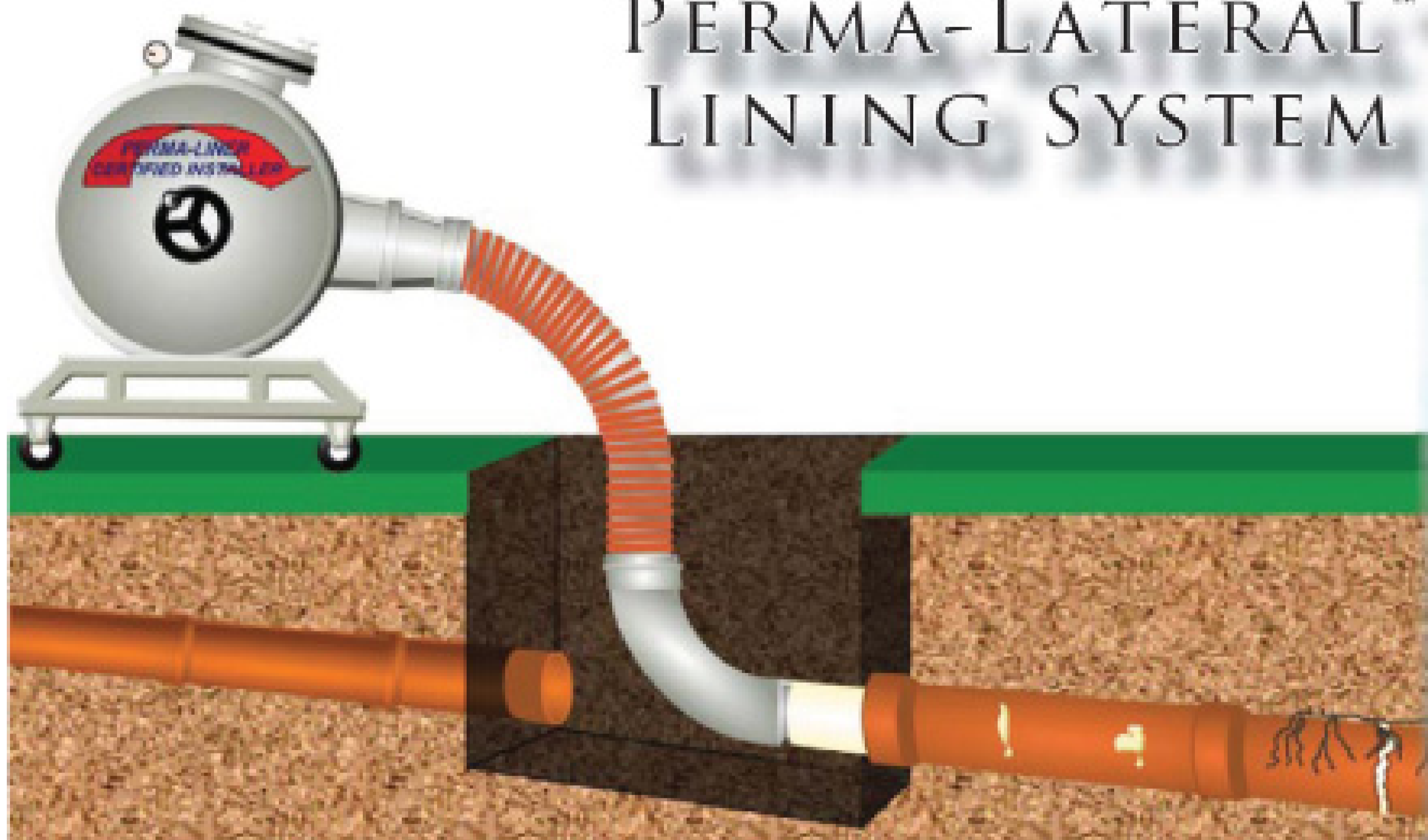


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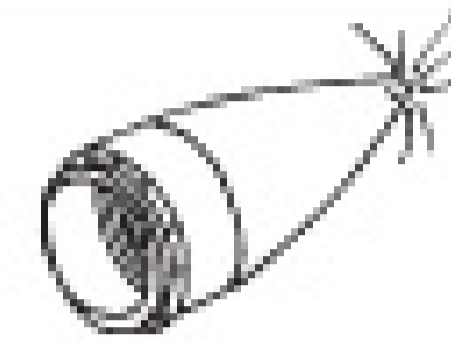
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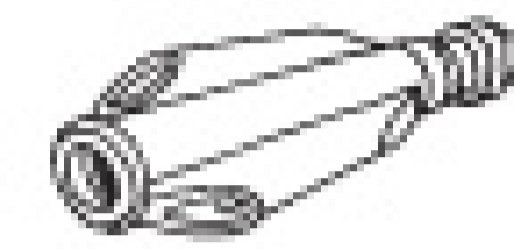
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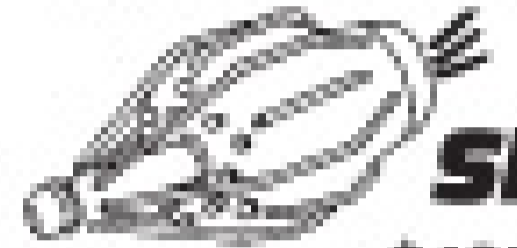
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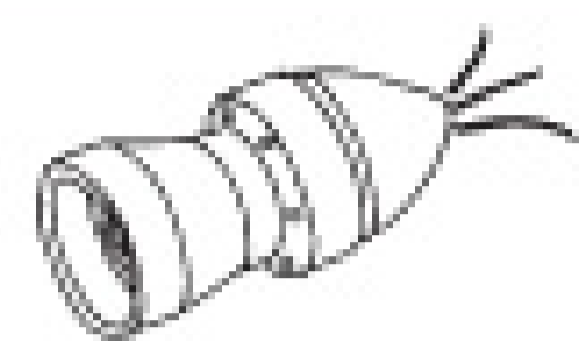
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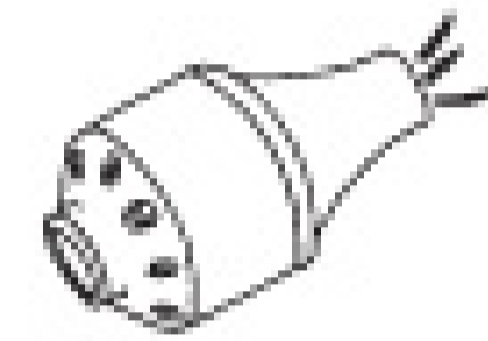
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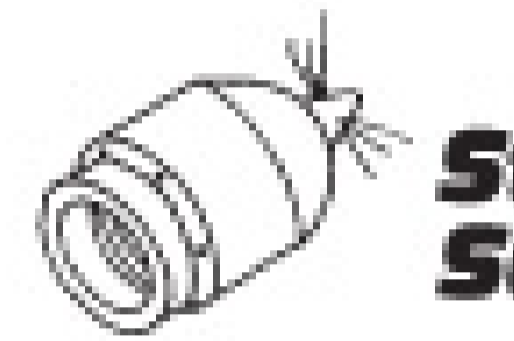


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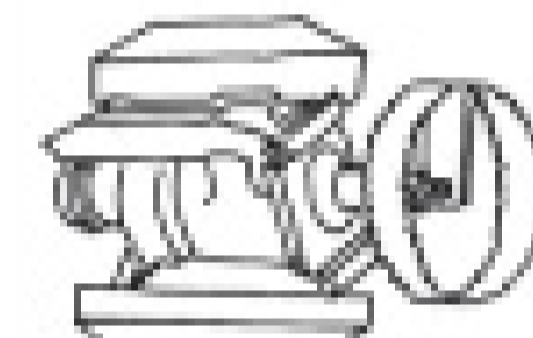


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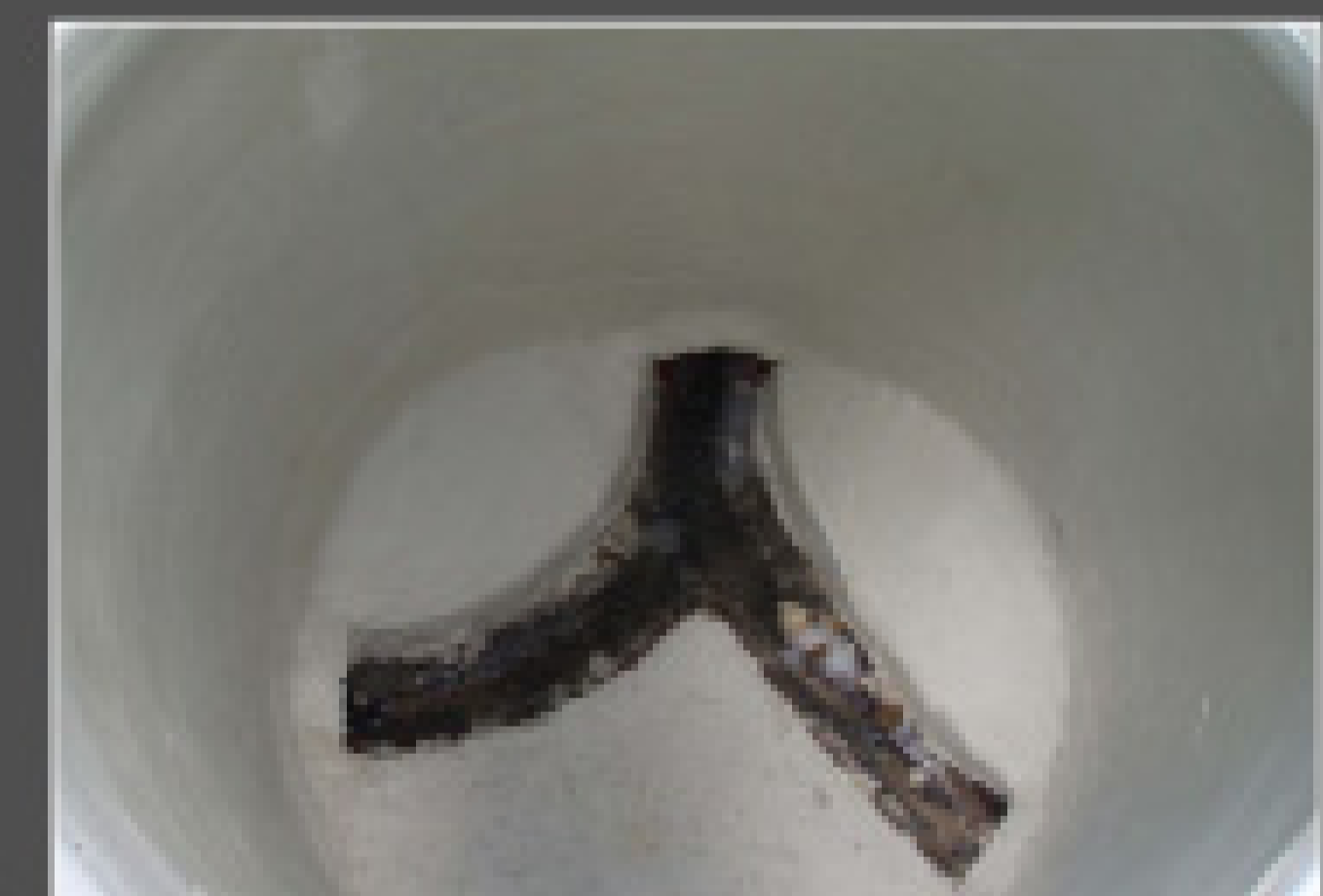
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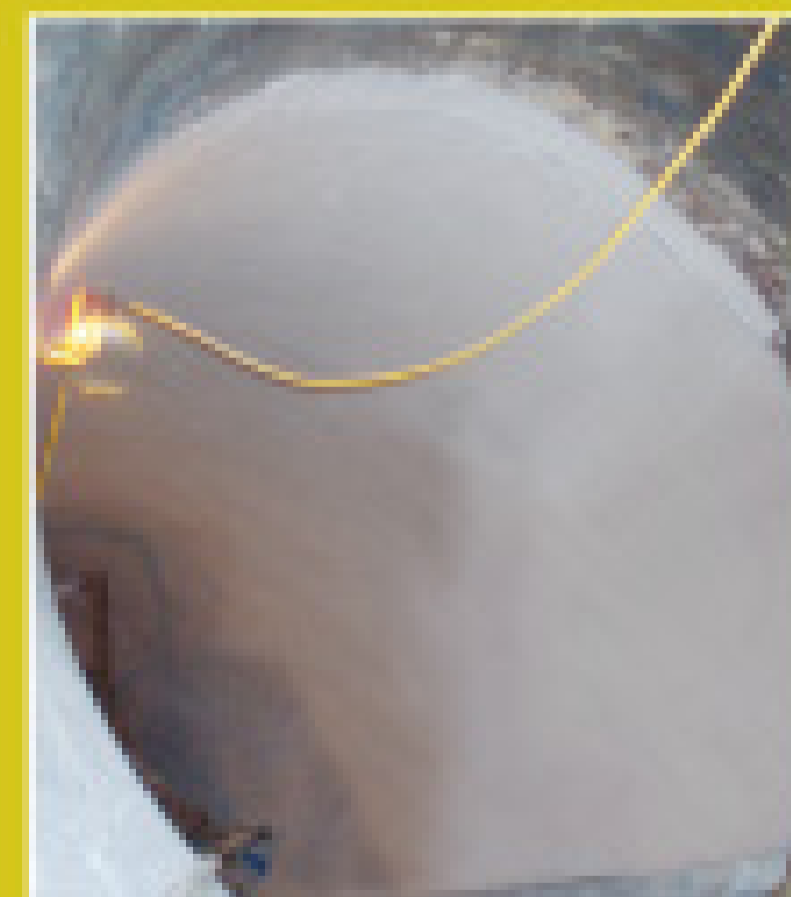
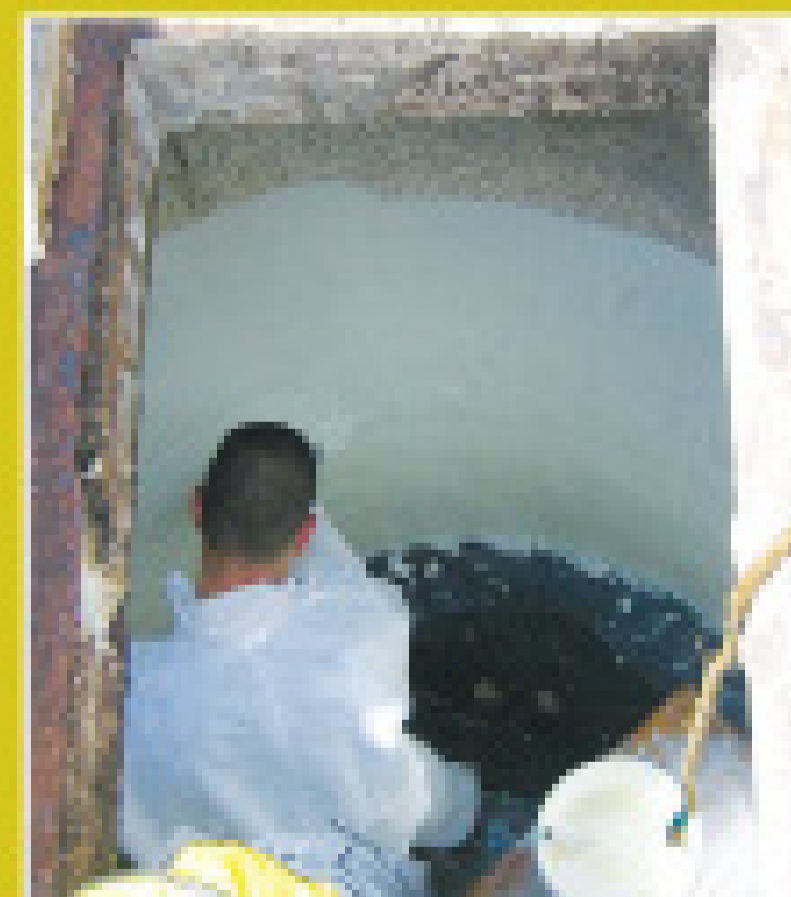


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Shine On

Knowing what to do for a black eye can save valuable time and prevent possible loss of vision

By Scottie Dayton

Almost everyone has had a black eye and thought nothing of it. A blow to the face or head bruises the skin around the eye bones (orbits), causing blood and other fluids to collect in the tissues around them. The signature discoloration and swelling give the injury its name.

The skin around the eye is very loose, with mostly fat underneath, making it one of the first places to swell in even minor face and head injuries. Consequently, toolbox talks focus on preventing foreign objects from entering the eye, and what first aid to administer when they do. Few see danger in a black eye.

Ophthalmologists agree that foreign objects in the eye may present fewer vision problems than black eyes because people seek medical attention for the former but assume black

eyes are harmless. A black eye suffered on the job usually results from a hefty blow. Victims attribute a headache, some blurry vision, or difficulty opening the eye to side effects of that trauma, yet they can be symptoms of more serious vision problems.

Safety FIRST

Better safe than sorry

Employers should stress that workers with job-related black eyes visit an ophthalmologist (an eye specialist who is a medical doctor) to rule out vision-threatening injury. A blow severe enough to cause a black eye can fracture the orbit bone. In addition, the floor of the orbit can blow out, trapping an eye muscle.

"A common complaint of an orbital blowout fracture is vertical double vision," says optometric physician Dr. Troy L. Bedinghaus of Lakewood Ranch, Fla. "Furthermore, blood and fluid seeping through the broken orbit can cause facial congestion or fullness. Never delay medical evaluation of eye trauma, as serious eye conditions can worsen if not treated early. For example, recurring bleeding in the eye can reduce vision and damage the cornea. In severe cases, glaucoma can occur."

and reducing fluid accumulation. Caregivers should apply ice or a cold compress to the eye for 15 to 20 minutes every hour for the first 24 hours while the person is awake.

"Never press on the eye to prevent further bleeding or swelling," says Bedinghaus. "To protect the skin, wrap the ice in a cloth or use a commercial ice pack. If you have neither, a bag of frozen peas wrapped in a shirt works great."

Another recommended way to reduce swelling is to elevate the head

"Never delay medical evaluation of eye trauma, as serious eye conditions can worsen if not treated early. For example, recurring bleeding in the eye can reduce vision and damage the cornea. In severe cases, glaucoma can occur."

Dr. Troy L. Bedinghaus

Supervisors should call 911 or take the worker to an emergency room if there is:

- Bleeding from the eyeball (*do not apply pressure*)
- Blood or clear fluids draining from the nose or ears
- Loss of consciousness
- Two black eyes (especially if the injury was to a head area other than the face)
- Confusion
- Loss of vision or blurred vision
- Vertigo (dizziness)
- Broken facial bones or teeth
- Change in behavior
- Vomiting
- Inability to walk after the injury
- Lacerations to the face or head

"People taking blood thinners, such as warfarin (Coumadin), or those with a history of bleeding problems, such as hemophilia, should also go to a hospital emergency department," says Bedinghaus. "Do not give the person aspirin or ibuprofen for pain, as that can increase bleeding. Administer acetaminophen."

The immediate treatment for a black eye is ice and rest, a combination often ignored in the rush to complete projects. Ice helps reduce swelling by constricting blood vessels

of the bed 3 inches or sleep on an extra pillow. "Forget the adage about putting raw steak on a black eye," says Bedinghaus. "No scientific evidence supports this claim, and you run the risk of a dangerous eye infection caused by organisms living on the meat."

Back home

Workers who refuse medical attention should know that symptoms can develop hours later. Doctors recommend an immediate, in-depth evaluation if the person shows:

- Signs of infection (increased redness, warmth and puslike drainage)
- Persistent eye pain
- Changes in vision
- Visible abnormality of the eyeball
- Visible bleeding on the white part (sclera) of the eye, especially near the cornea
- Swelling that does not improve after a few days

"Avoid athletic or other possibly injurious activities until after the eye heals in one to two weeks," says Bedinghaus. "Applying ice in the first 24 hours after the injury has the most significant effect on the speed with which the injury heals." ■

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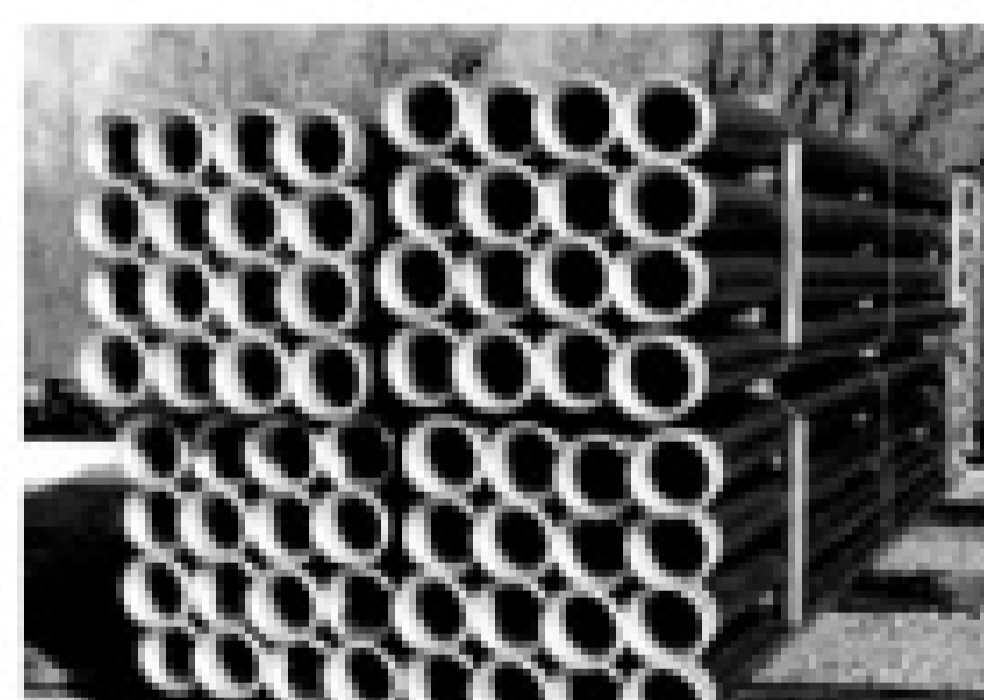
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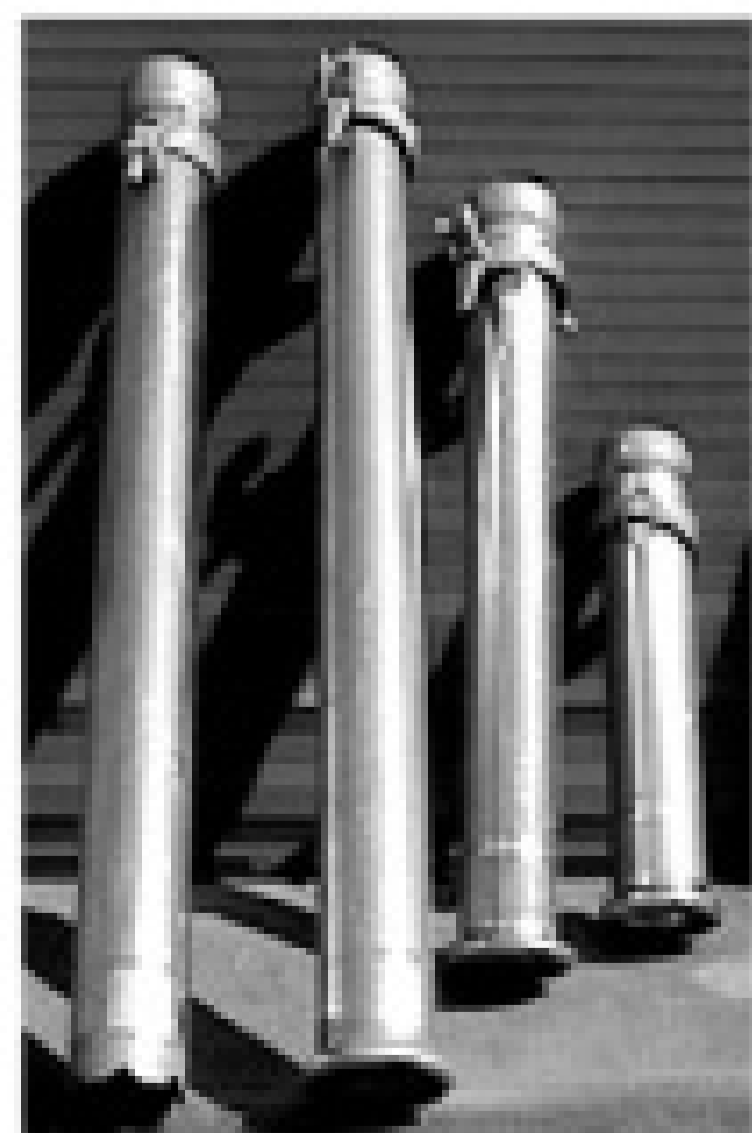
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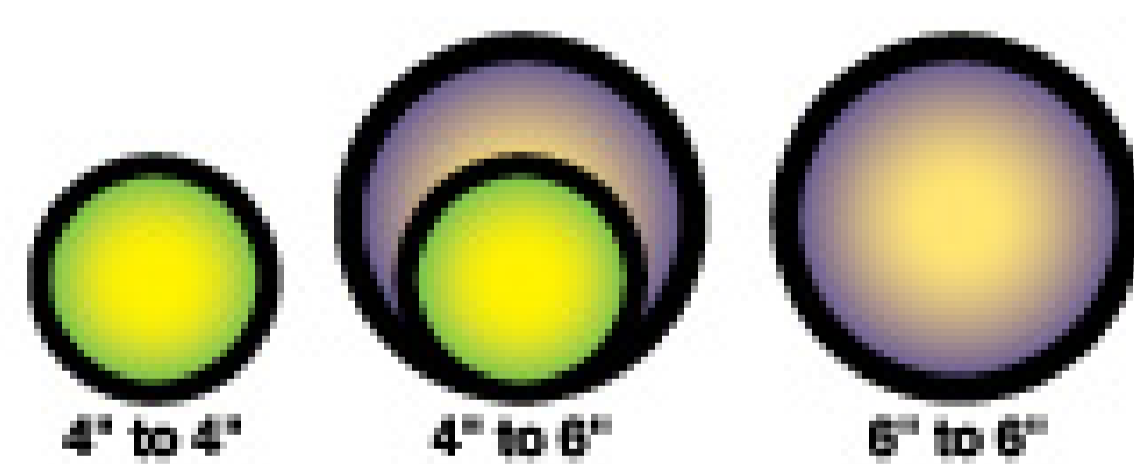
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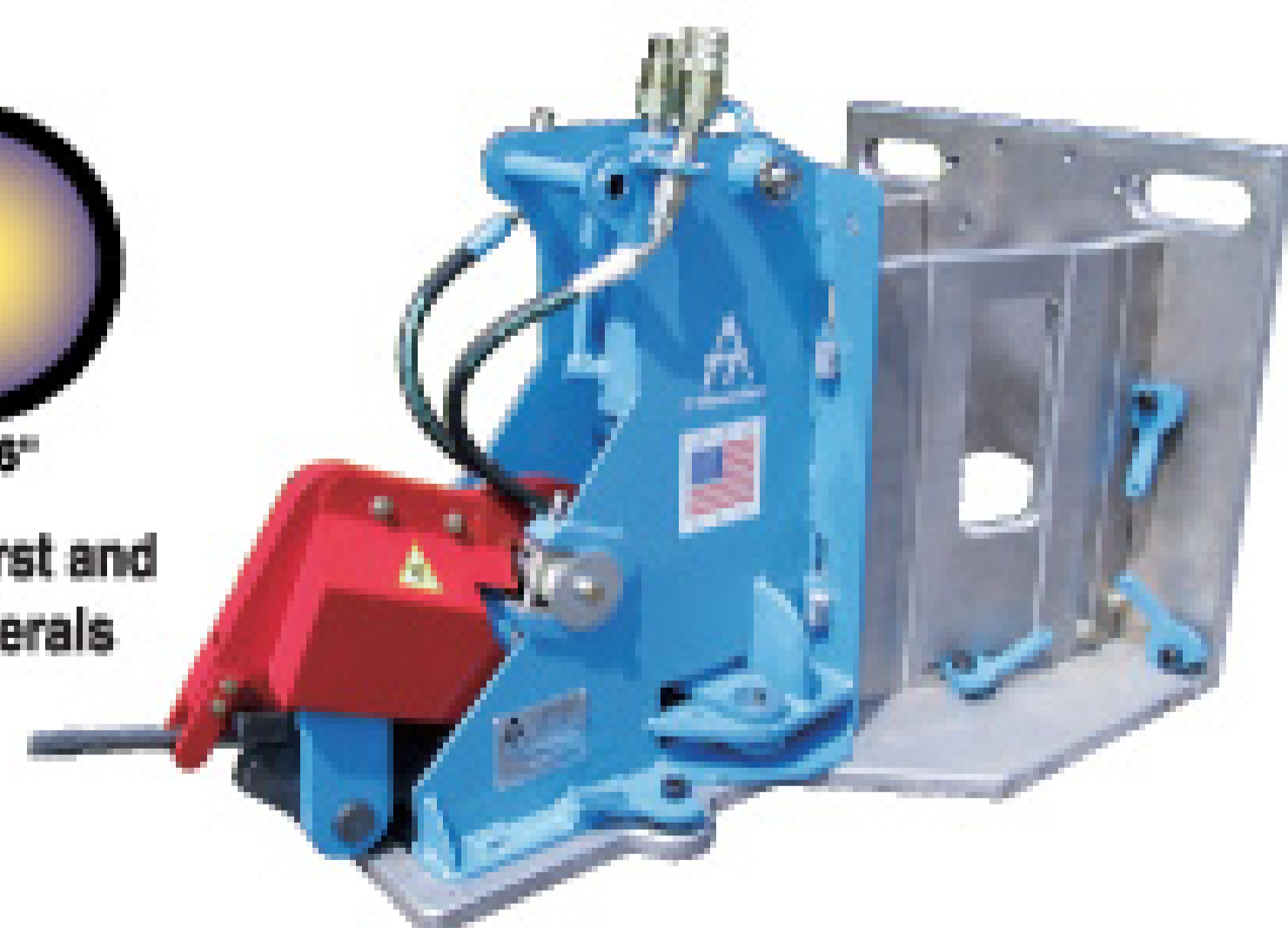
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Smart Leasing

It's important to know when it makes sense to lease instead of buying, and to understand the lease terms and conditions

By Fred S. Steingold

Whether your business needs a \$2,000 photocopier or a \$20,000 truck or jetter, you face a key decision: Should you buy the equipment or lease it? There's no one-size-fits-all answer. It all depends on business and financial factors.

Let's start with pros and cons of leasing versus buying business equipment. Then we'll look at some details of what's contained in an equipment lease.

Buy or lease?

Leasing can be the better choice if you have limited money in the bank or if your business needs to move up to improved equipment every few years. With a lease, you probably won't have to make a down payment. You can start using the equipment right away without depleting your cash reserves. And typically you can deduct the lease payments on your tax return, reducing the tax you owe.

Another advantage is that it may be easier to lease equipment than to qualify for a bank loan that would let you buy the equipment outright. This could be important if your business hasn't yet established a sterling credit record. And if you

need high-tech equipment or equipment that's likely to become obsolete quickly, leasing frees you up to get the next generation of equipment once the lease expires.

But while there are several advantages to leasing, there are also some drawbacks. For one thing, over the long haul, it's usually more expensive to lease than to buy. The monthly payments will add up to more than the price of the equipment. What's more, when the lease is over, you must return the equipment to the company you leased it from – though this isn't a big deal if the equipment has become obsolete.

By contrast, when you buy equipment, you own it forever, giving you a choice of when it's best to upgrade. With equipment that has a long life span, it may pay to come up with the money to buy it. And since you'll own it, when it's time to move on to a newer version, you may be able to bring in some cash by selling the older version.

There's a tax advantage, too. When you buy new equipment, you can usually write off the entire cost in the year you buy it. This is known as a Section 179 deduction. Check the IRS site at www.irs.gov for details, or ask your accountant to explain.

Fred S. Steingold practices law in Ann Arbor, Mich. He is the author of Legal Guide for Starting and Running a Small Business and The Employer's Legal Handbook, published by Nolo. Legal strategies may vary depending on the state in which you live and the specifics of your situation. See your lawyer for legal advice.



Understanding the terms

Now, let's assume you've weighed the pros and cons, and you've decided that leasing is the way to go. What should you look for in the lease? Here are some suggestions:

Are you personally liable for the lease payments? You are if your business is a sole proprietorship or partnership. You are not if your business is a corporation or LLC – unless the lease requires a guarantee from you as a business owner. Check the lease carefully to see if you're required to sign as a guarantor.

Are there any charges in addition to the monthly lease payments? Sometimes, a lease requires a business to pay a delivery or setup charge, or both. A lease also may require you to insure the equipment, and to pay any personal property tax on it that may be assessed by the local government.

What's the penalty if you're late making a payment? Some leases hit you hard if you're more than a few days late.

Who is responsible for repair and maintenance costs? See what the lease says about this. If you have to pay these costs, it can add significantly to your financial burden, especially with equipment that's subject to frequent breakdowns.

Can you assign the lease? If you sell your business, you'd like to make it easy for the buyer to take over the remaining portion of the lease. Some leases prohibit assignment.

Is there a way to get out of the lease early? Some leases have an escape clause, though usually at a substantial cost. Still, it can be good to know you have a way to get out if the equipment doesn't meet your expectations, or if you'd like to upgrade.

Can you buy the equipment when the lease is over? Some leases give you the option of paying a preset amount and keeping the equipment. Even if the lease doesn't contain such a clause, you may be able to negotiate a buyout once the lease ends.

Do you have to keep the equipment at a specific location? Many leases have such a requirement. This can be a problem if your business has several locations, or if you're planning to move. Deal with this issue upfront so it won't be a headache later on.

Remember, leasing is often a great option – as long as you go into it with your eyes wide open. ■

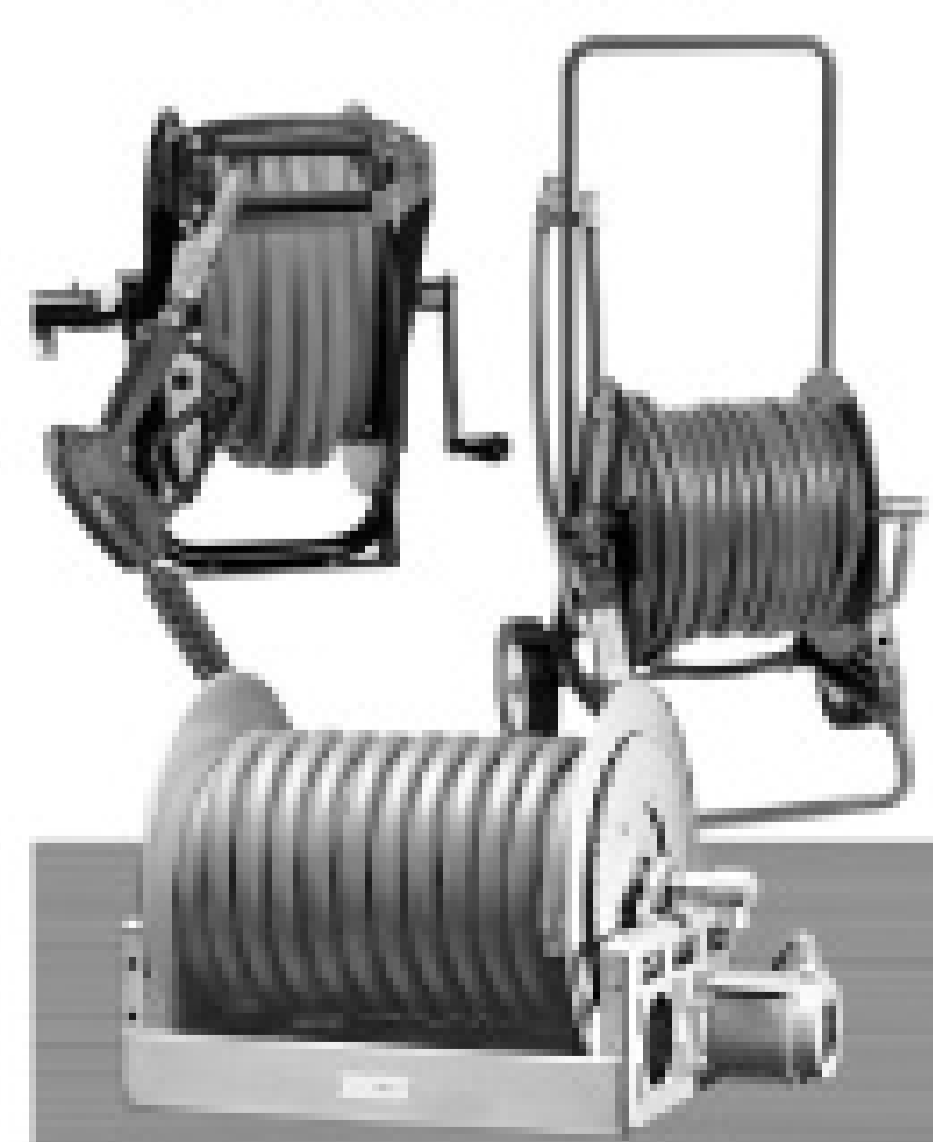
Leasing can be the better choice if you have limited money in the bank or if your business needs to move up to improved equipment every few years.

With a lease, you probably won't have to make a down payment.

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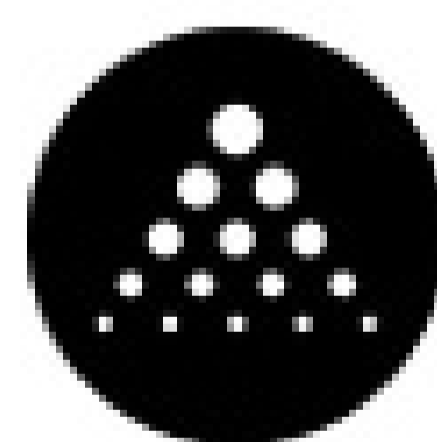


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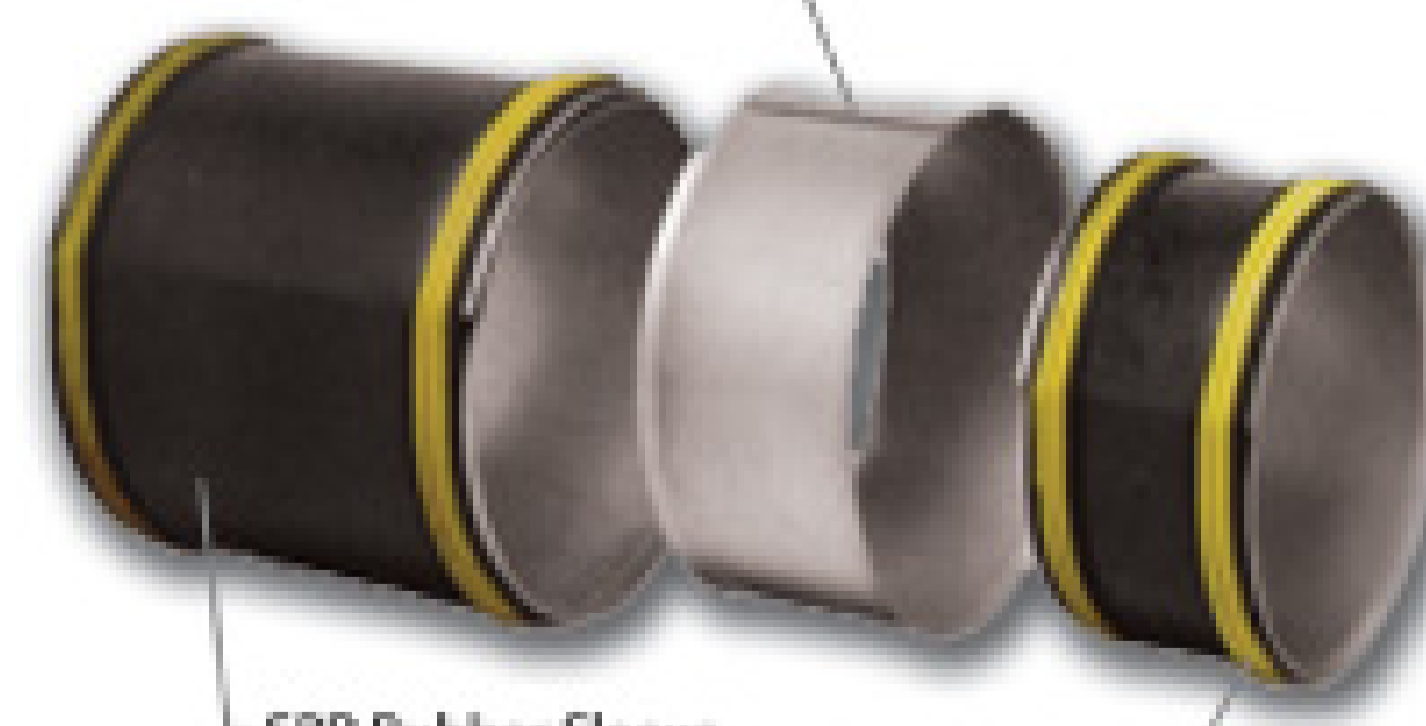
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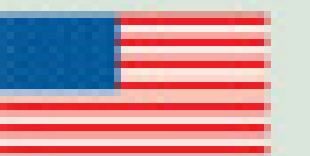
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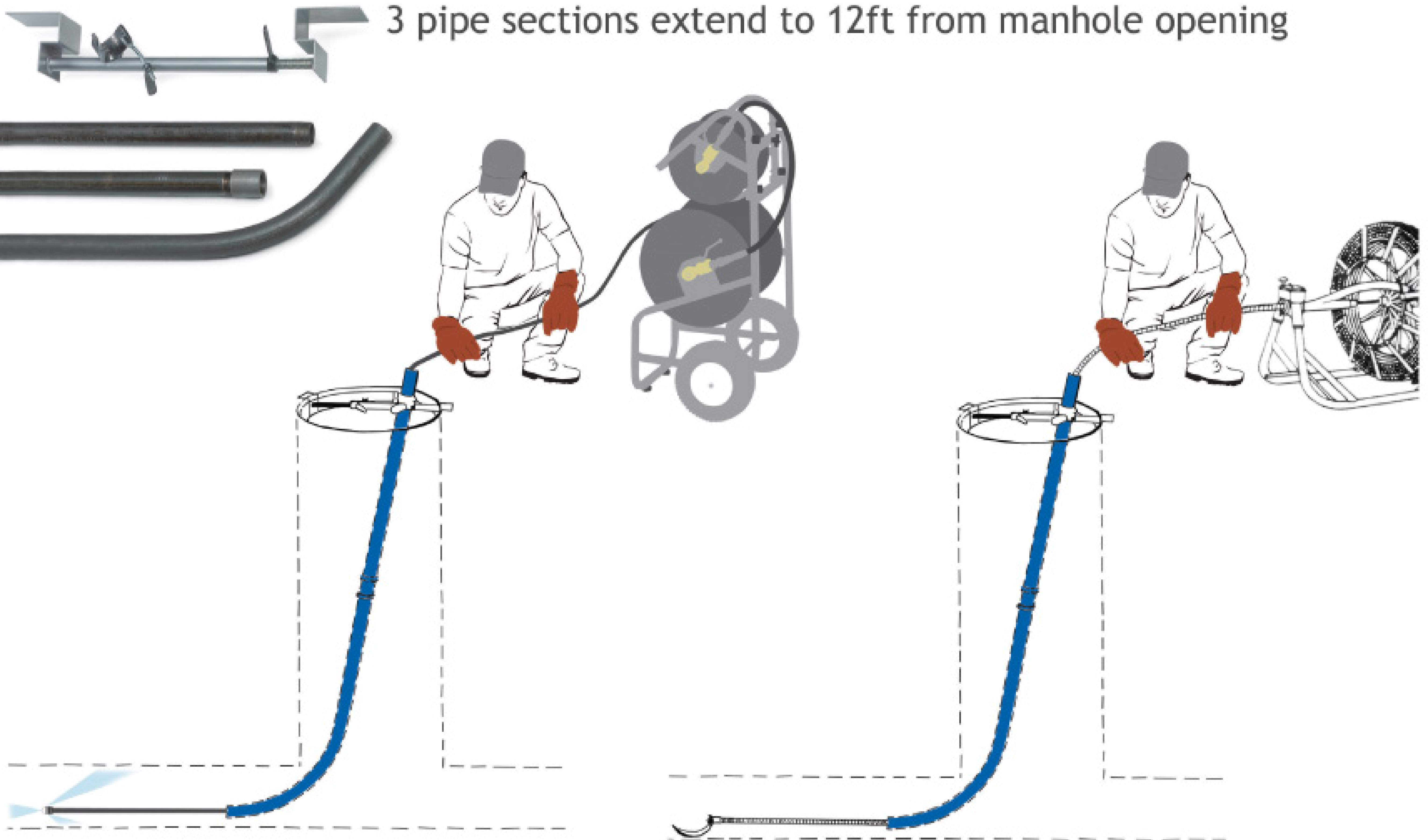


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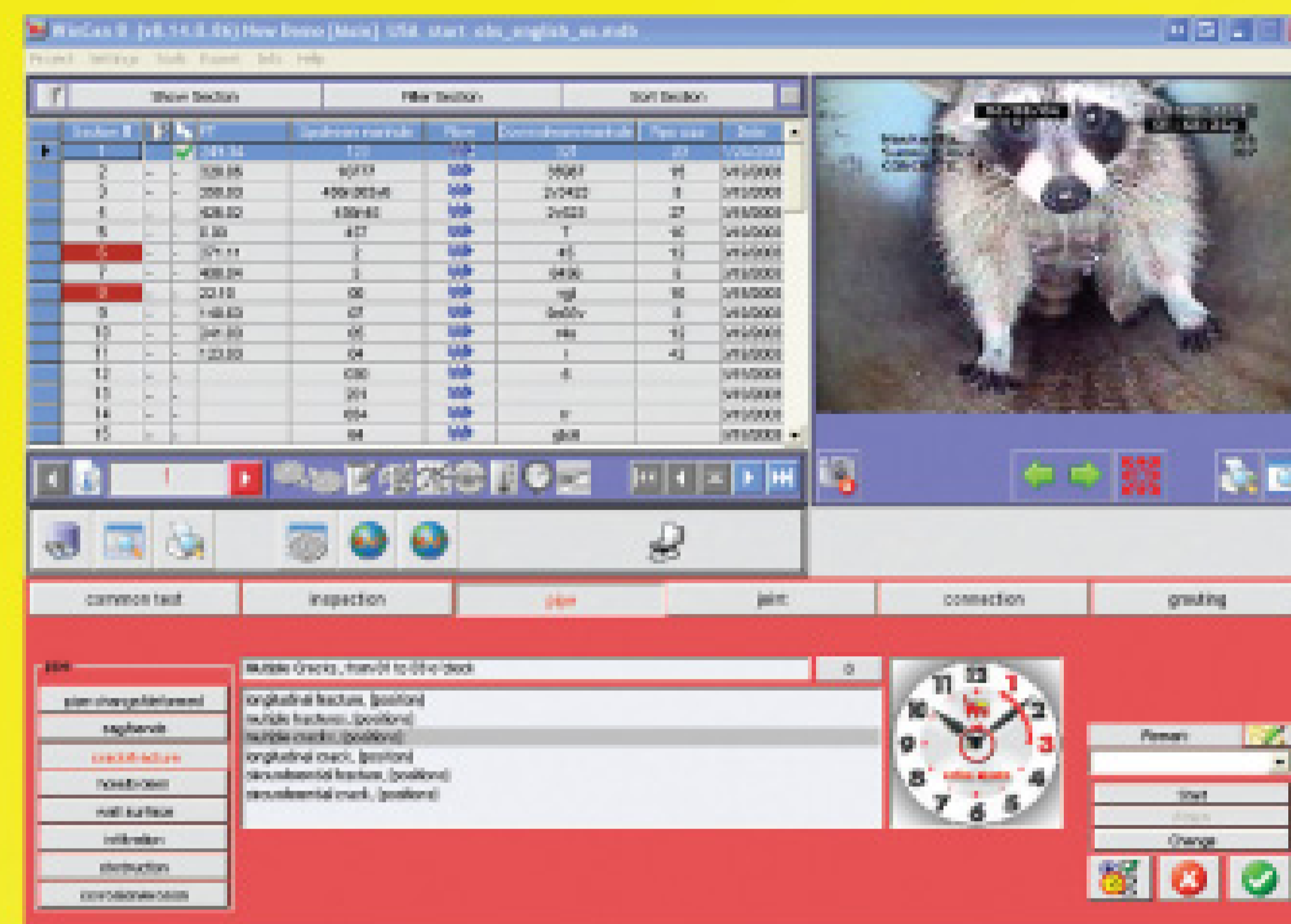
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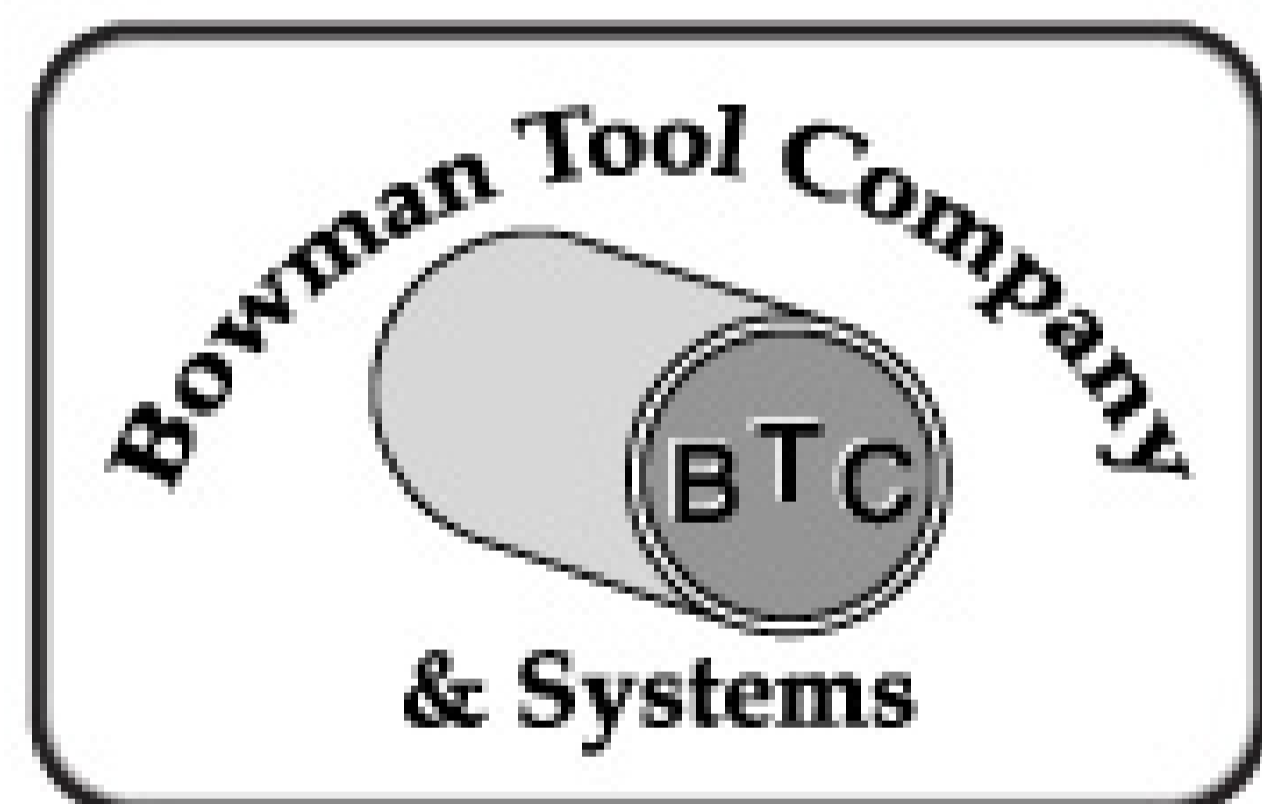
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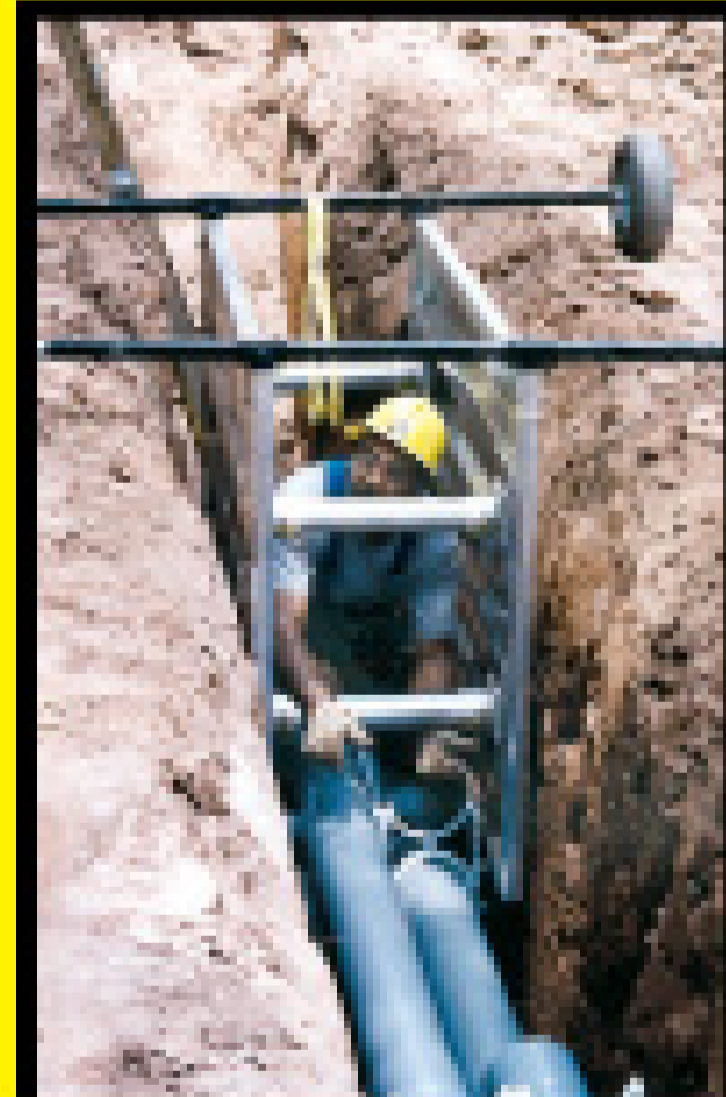
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Service: Another View

A new book says businesses can best increase satisfaction, build loyalty and control costs by liberating customers from customer service

By Ted J. Rulseh

See if this shoe fits: You take pride in running a business where, when customers come to you with problems, you respond quickly. You answer the phone in no more than three rings. You reply promptly to e-mails. By every measure, you provide service that customers will remember favorably.

Is that how you operate? Well, if you accept the premise of a new book, you may be measuring the wrong things, and your service might not be as good as you think. Bill Price and David Jaffe have written *The Best Service Is No Service: How to Liberate Your Customers from Customer Service, Keep Them Happy and Control Costs*.

They would argue that customers need customer service only when your company has done something wrong in the first place. And that eliminating the need for service is the best way to satisfy customers.

Getting it right

Maybe deep down you knew that already. After all, it seems obvious. But one argument the authors make is that many companies concentrate on meeting the demand for customer service instead of working to reduce that demand.

"Fortunately, not all companies have slavishly hewn to the cope-with-demand rut," the authors write. "Some have begun to scratch their heads to ask, 'Isn't there a better way to help our customers?'"

The Price/Jaffe book is aimed mainly at executives and managers in large companies, but as always, some of what they say applies to smaller businesses as well. The book spells out seven principles that, if followed, can move a company from basic service to best service.

"The whole purpose of listening is to take action and drive improvement for the customer and the company. Many companies are stuck today in a cycle of measurement that doesn't drive action."

Bill Price and David Jaffe

They spend the first chapter on the concept of eliminating "dump contacts" – occasions when a customer has to contact your business because of an underlying mistake, defect or confusion that you should instead address and remove.

Example: "(T)he average satellite TV provider gets three or four customer contacts to activate the service and make sure it is working, and often more during the first year due to outages, error messages on the TV screen, service upgrades, or

broken set-top boxes that need to be replaced . . . "The company might spend \$50 to acquire a new customer, or subscriber, but then spend another \$100 or more to support him – instead of building easier instructions into the product or reducing defects in the set-top boxes."

Ear to the ground

Some of their best and most applicable advice comes toward the end. The next-to-last chapter, titled, "Listen and Act," discusses the importance of listening to customers and responding affirmatively to what they say.

The authors argue that many companies spend vast sums of money trying to determine who their customers are, what they really want from the company, and how happy they are with the relationship. At the same time, they forget to listen to, record, and act on things customers tell them in everyday interactions. Price/Jaffe observe that companies with excellent service have:

- Figured out that each contact is a chance to listen, and each complaint is a gift.
- Trained their staffs to listen and not just process.
- Given staff members time, systems and processes to help them listen.
- Developed ways to capture what customers are saying.
- Created continuous feedback mechanisms.

One example of a good listener is the Trader Joe's chain of upscale grocery stores, which was named a Leading Listener Winner by *Fast Company* magazine. "In response to customers' requests or inquiries, the company has introduced

allergy labels before they were federally required, has stocked products quickly after they are mentioned, and has provided considerable autonomy to store managers to stock to suit local needs," the book states.

Price/Jaffe note that listening is not the end of the story. "The whole purpose of listening . . . is to take action and drive improvement for the customer and the company. Many companies are stuck today in a cycle of measurement that doesn't drive action."

Ted Rulseh is the editor of *Cleaner* magazine. He can be reached by calling 800/257-7222 or e-mailing editor@cleaner.com.



How well do your people listen to customers every day? Do comments and complaints make it quickly to management or ownership so that you can act on them? Or do the things your phone personnel hear simply end with them?

Making it count

No matter how well your company performs, you are certain to have contacts with customers – and when you do, Price/Jaffe observe, you need to handle them properly. They mention in particular five tests of the service measurements you are undertaking to make sure all elements of great service fall into place.

1. Strategic alignment test. Can you link all your measures back to the organizational strategy? If not, why are they there?

2. Wasted effort test. Are you collecting and reporting data that you are not using to drive action? Why keep score, then fail to act?

3. Customer impact test. Are you measuring things that are key for the customer? If not, how do you know how to improve the experience?

4. Control test. Do the people whose performance you are measuring have the power or ability to influence their results? If not, the process probably demotivates them.

5. Action test. Do you have processes in place to act on the measures you are obtaining? If not, why bother?

Best for last?

The authors saved one of their better nuggets of wisdom for the book's appendix. Price describes what he calls the Golden Thirty Seconds. Those are the seconds at the very start of a call when the customer is ready to describe her frustrations or insights.

Too often, the service person on the phone – trained to move quickly to problem resolution – disregards or glosses over this part of the call, or even interrupts and redirects the customer. Price/Jaffe advocate listening very closely to the opening of the call "and benefiting from what the customer is willing to share."

Advice you glean from *The Best Service Is No Service* can help you build and keep a large base of people loyal to your business – the key to prosperity and competitive advantage in any line of work. ■

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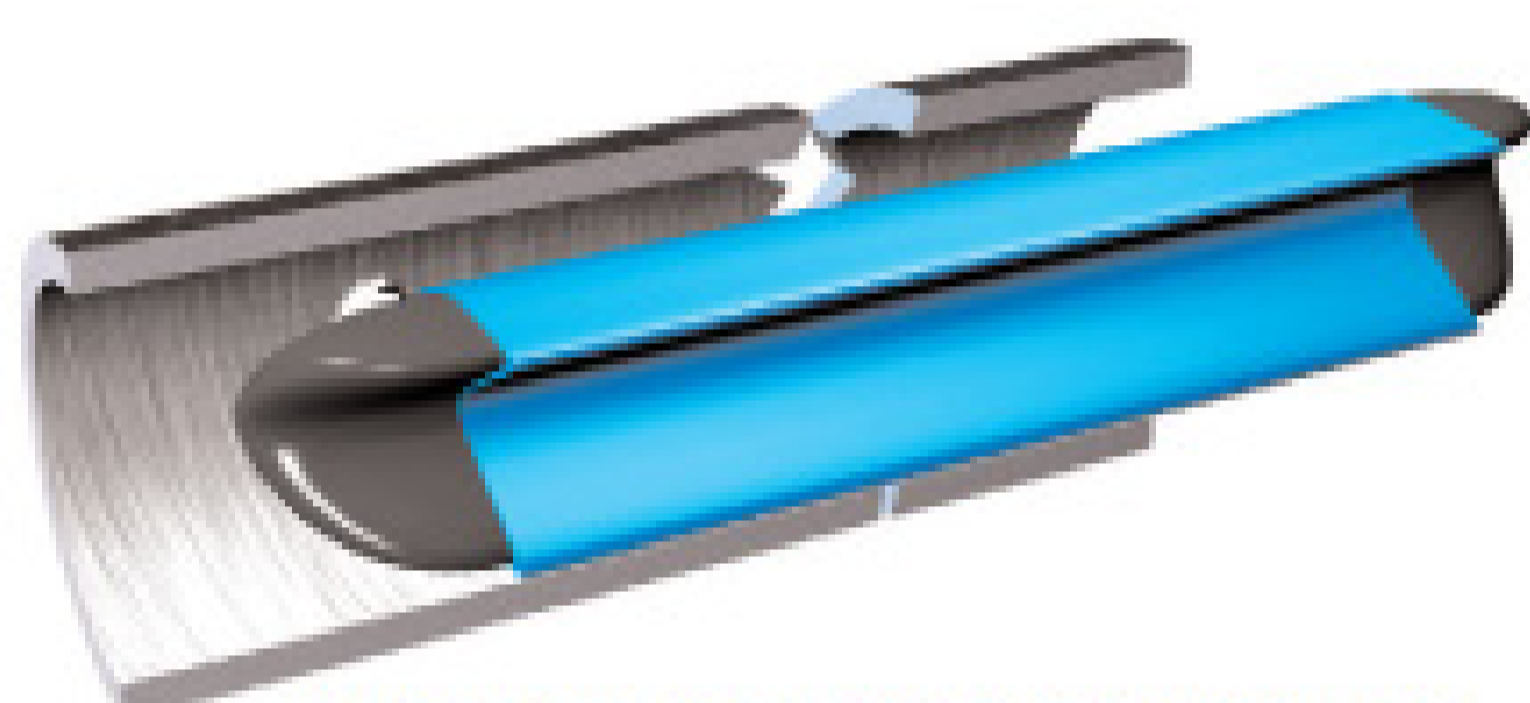
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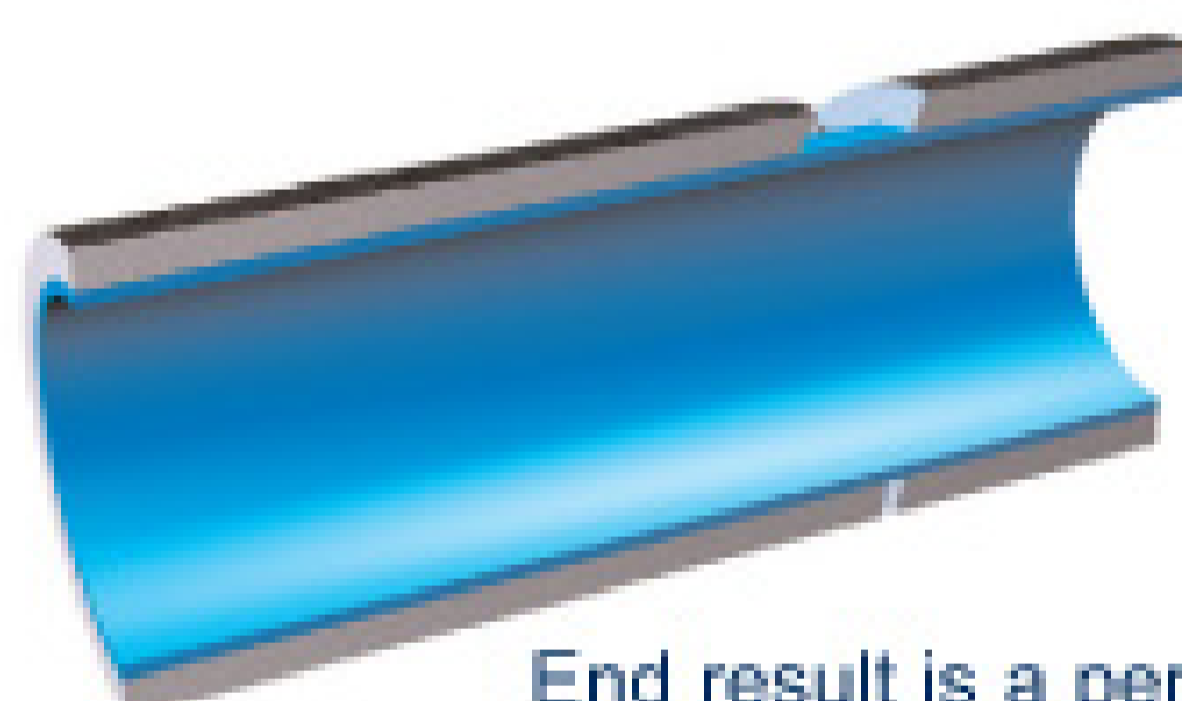
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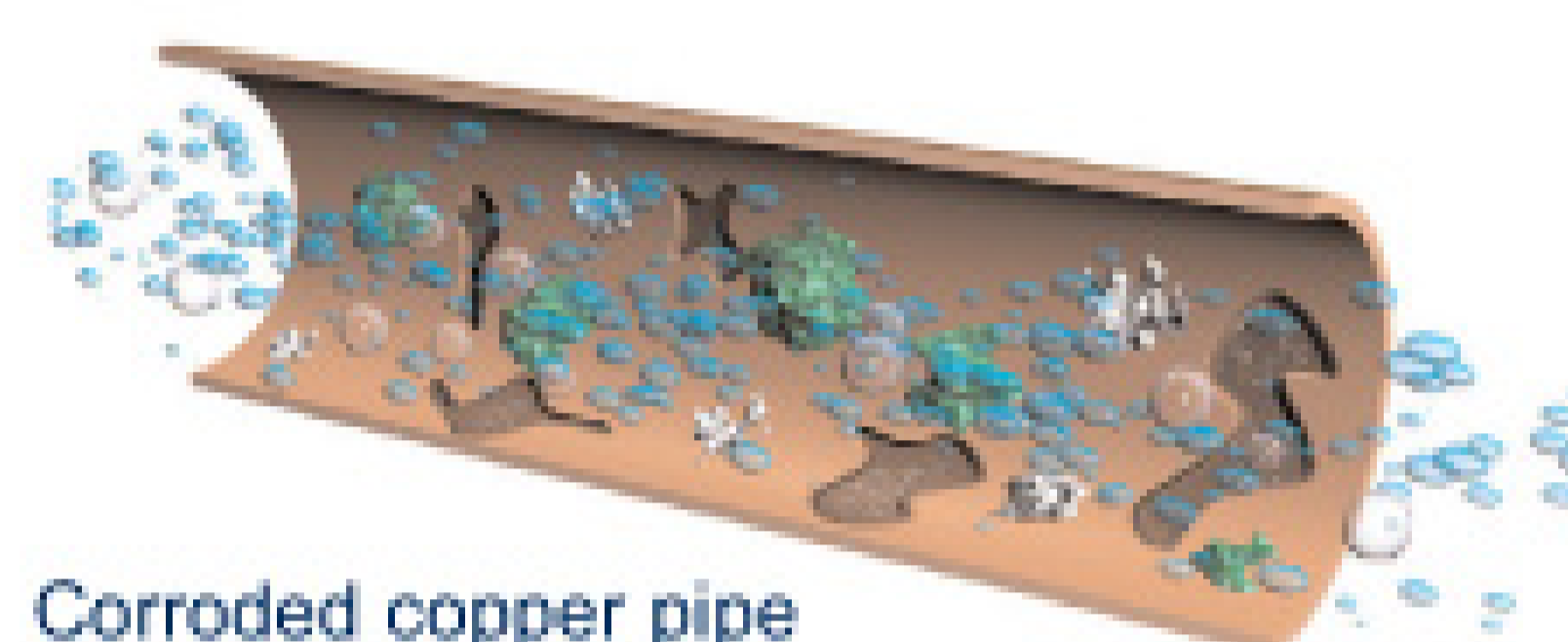
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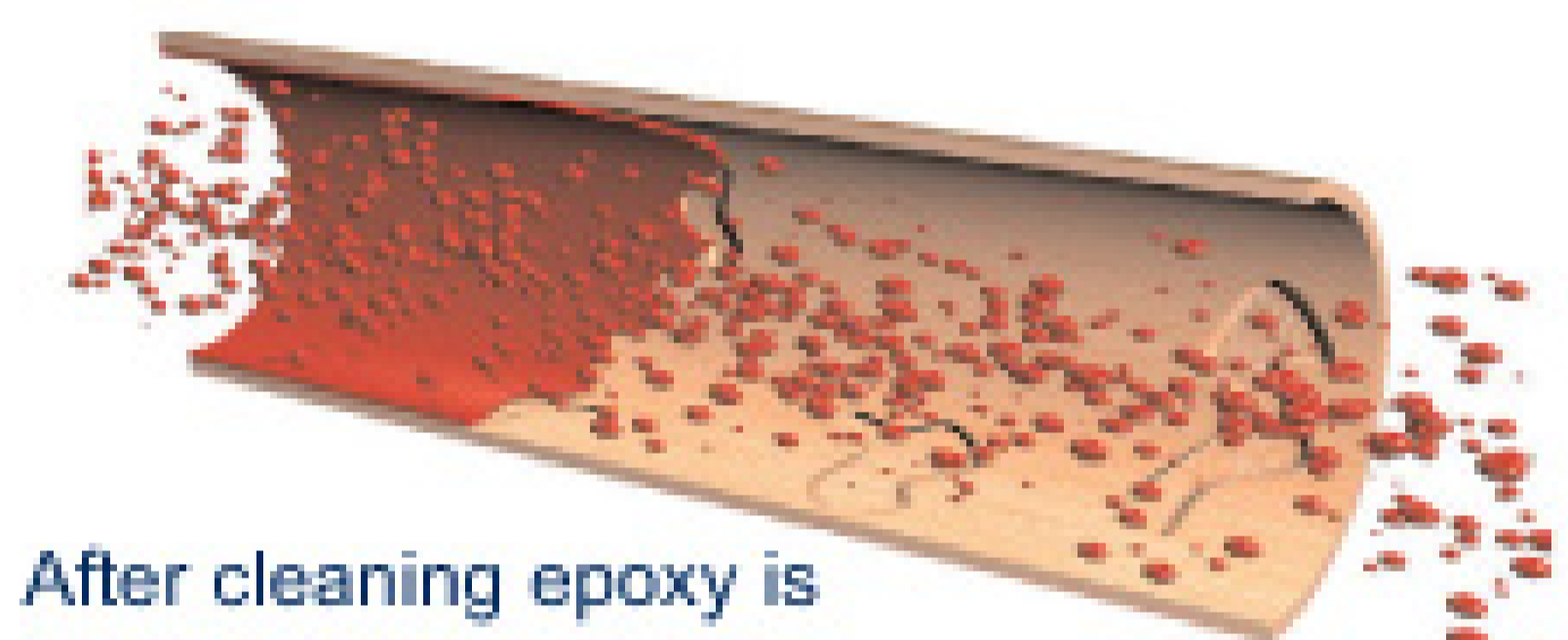
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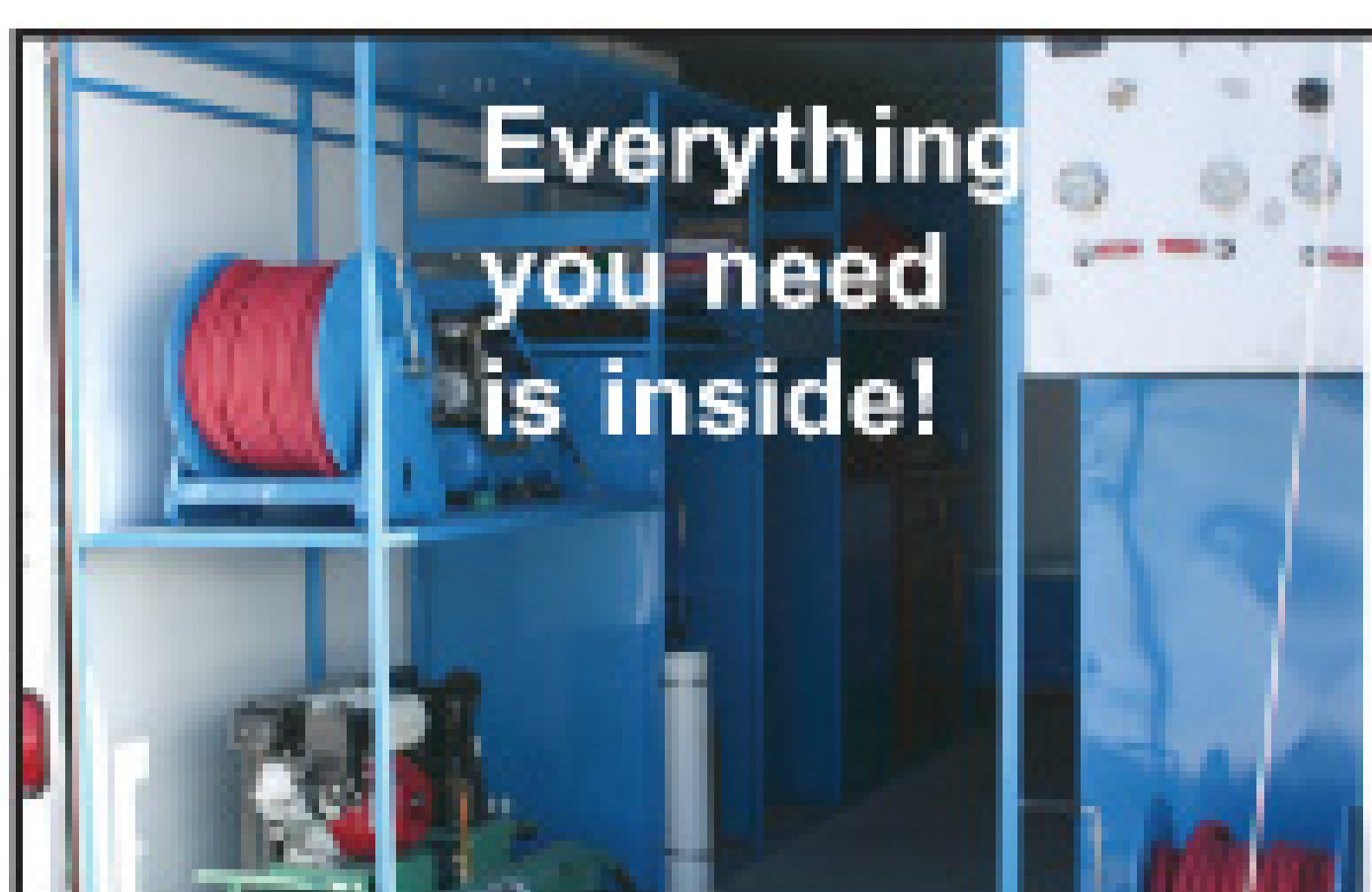
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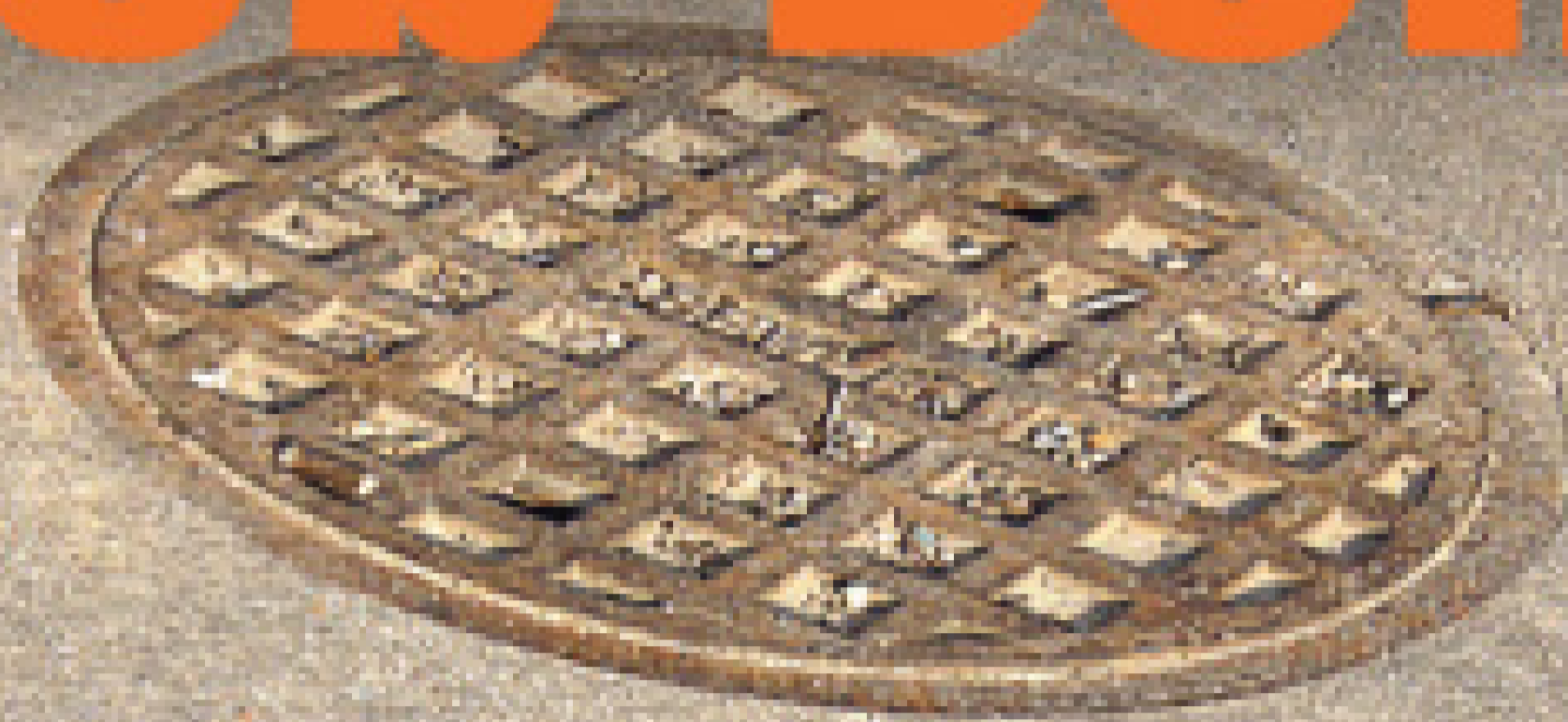


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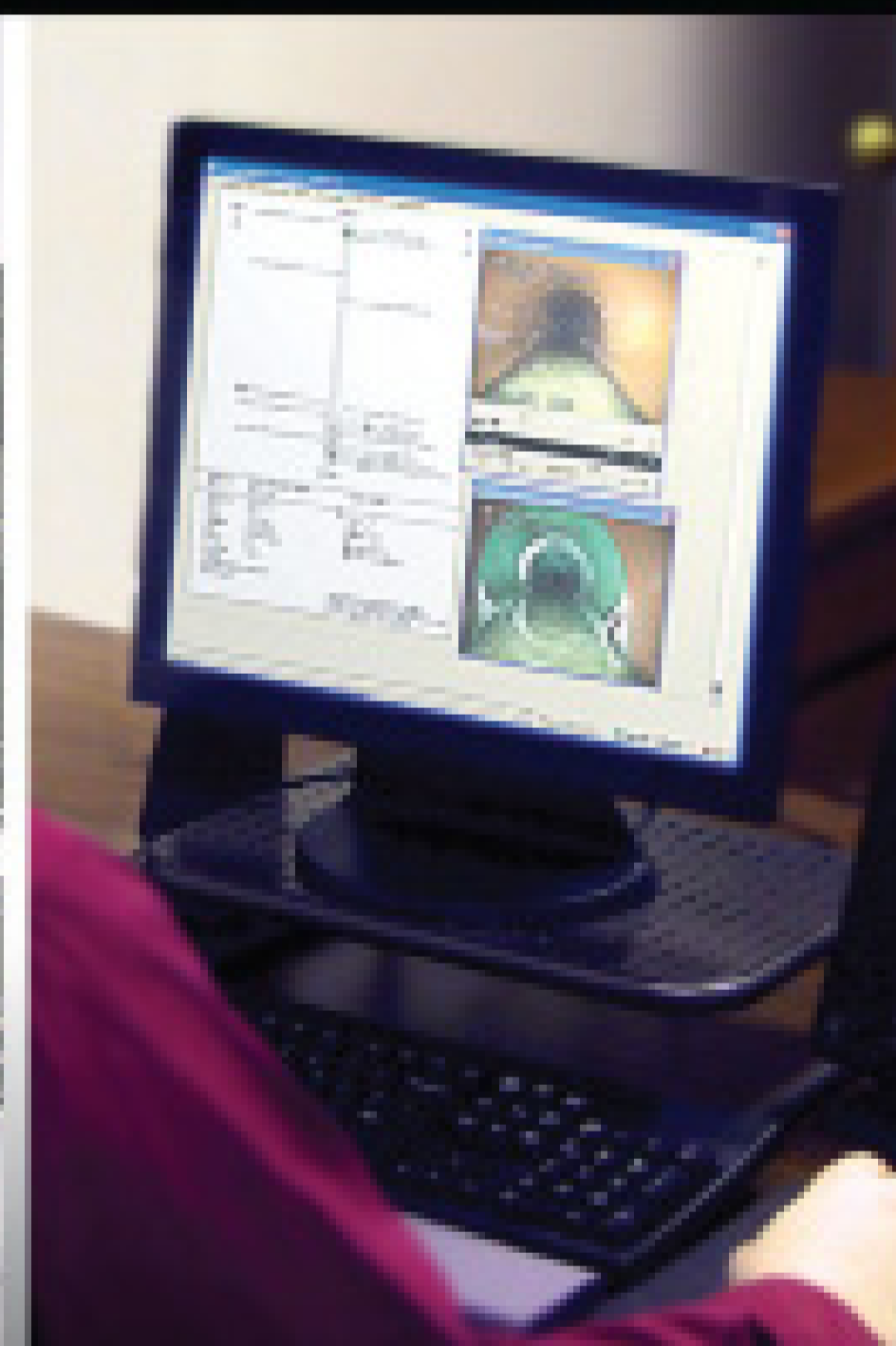
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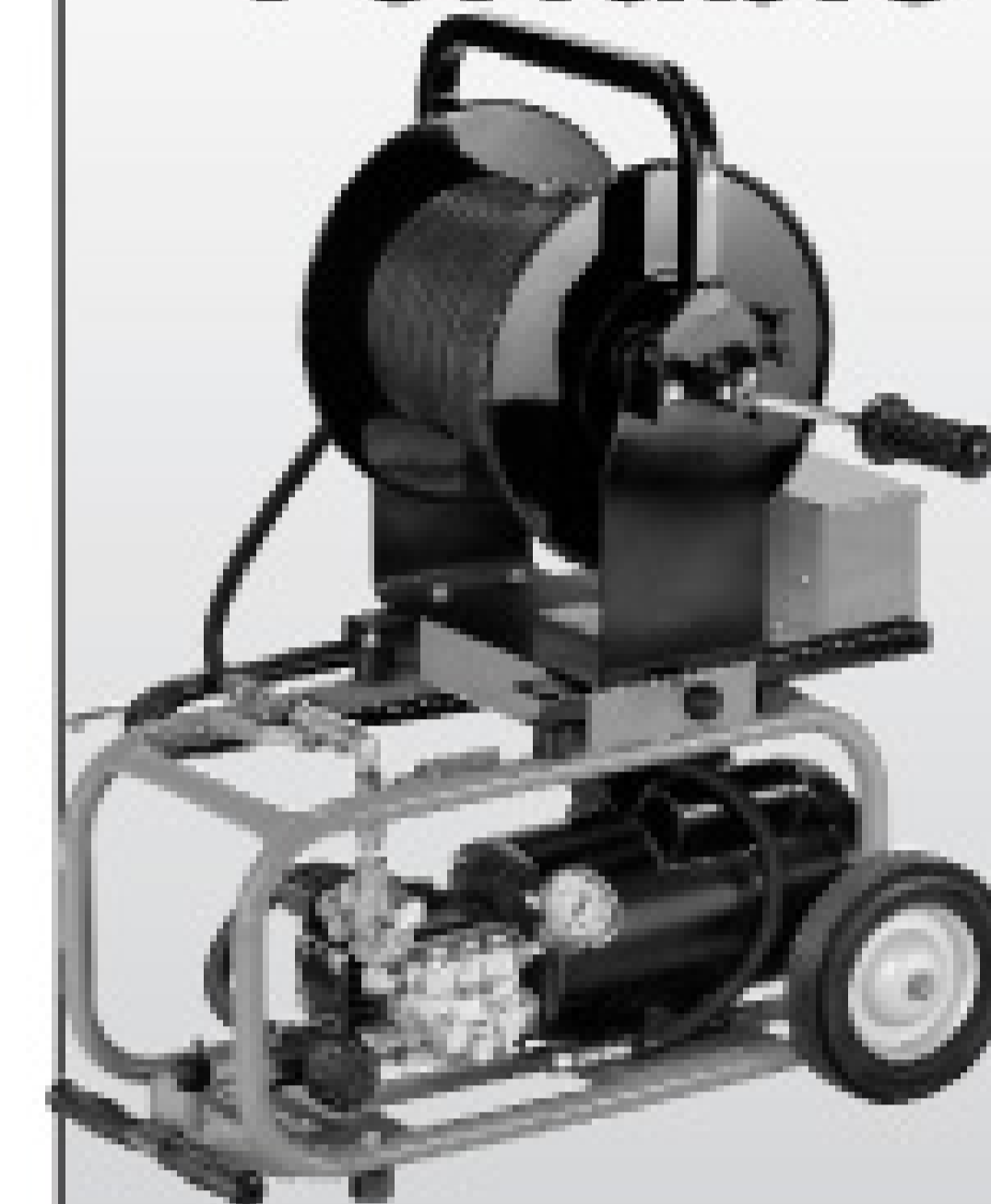
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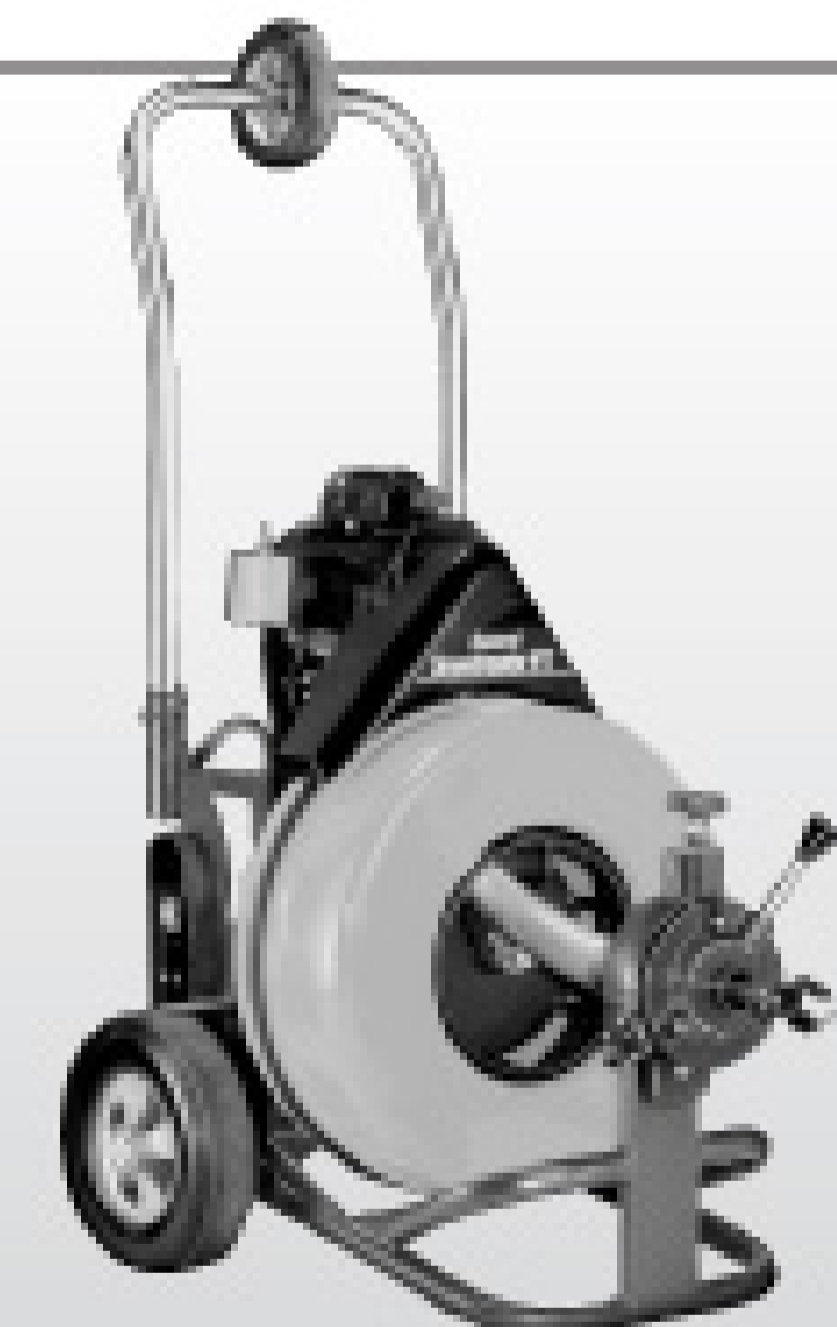


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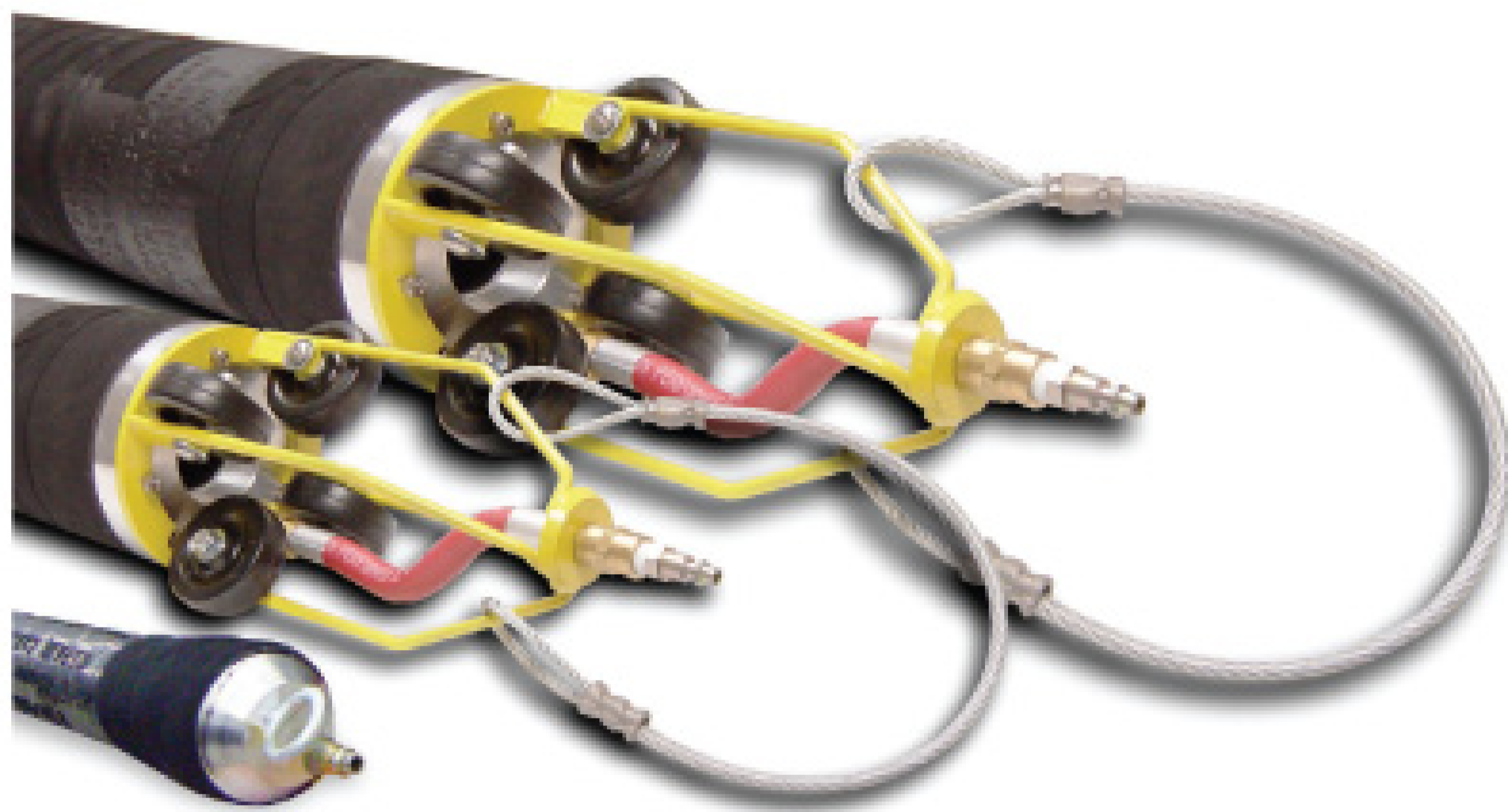
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 See ad pages 52-53	Aries Industries, Inc. 550 Elizabeth Street Waukesha, WI 53186 800-234-7205 Fax 262-896-7099 sales@ariesindustries.com www.ariesindustries.com			Yes		Yes	Yes
See ad page 16	Avanti International 822 Bay Star Blvd. Webster, TX 77598 800-877-2570 Fax 281-486-7300 sales@avantigrout.com www.avantigrout.com			Yes	Yes	Yes	Yes
See ad page 27	Bowman Tool Company and Systems 1515 Braggtown Road East Berlin, PA 17316 717-432-1403 Fax 717-432-0152 bowmantoolco@earthlink.net www.bowmantool.com			Yes			
 See ad page 81	CUES, Inc. 3600 Rio Vista Avenue Orlando, FL 32805 800-327-7791 Fax 407-425-1569 salesinfo@cuesinc.com www.cuesinc.com			Yes	Yes		Yes
See ad page 15	Epoxytec International Inc PO Box 3656 West Park, FL 33083 877-GOEPOXY Fax 954-961-2395 avaron@epoxytec.com www.epoxytec.com	Yes			Yes	Yes	
	Footage Tools Inc 145 Fenmar Dr. Toronto, ON M9L 1M7 888-737-3668 Fax 416-746-8906 dl@footage.ca www.footagetools.com		Yes				
See ad page 25	Global Pipeline Systems 760 Woodbrookbourne Ste. B Langhorne, PA 19047 215-702-7133 Fax 215-956-0761 info@globalpipelinesystems.com www.globalpipelinesystems.com	Yes		Yes	Yes	Yes	
 See ad page 71	HammerHead Equipment, An Earth Tool Company PO Box 3 Oconomowoc, WI 53066 800-331-6683 Fax 262-567-5068 info@hammerheadmole.com www.hammerheadtrenchless.com		Yes	Yes			
 See ad page 55	International Pipelining Technologies 6740 Nancy Ridge Drive San Diego, CA 92121 877-747-3737 Fax 858-909-0070 info@ipltechnologies.com www.ipltechnologies.com	Yes					
 See ad page 85	Lansas Products Mfg. by Vanderlans & Sons, Inc. 1320 South Sacramento Street Lodi, CA 95240 800-452-4902 Fax 209-339-8260 information@lansas.com www.lansas.com					Yes	

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See ad page 31	NuFlow 1010 Thorton Rd, South Oshawa, ON L1J 7E2 800-834-9597 Fax 905-433-9687 sales@nuflowtech.com www.nuflowtech.com	Yes		Yes		Yes	
See ad page 13	 Perma-Liner Industries, Inc. 6196 126th Ave North Largo, FL 33773 727-507-9749 Fax 727-507-9849 info@perma-liner.com www.perma-liner.com	Yes		Yes		Yes	
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See ad page 62	PrimeLine Products, Inc. 309 Altamonte Commerce Blvd. Altamonte Springs, FL 32714 877-409-7888 Fax 407-786-8131 sales@prime-line.net www.primelineproducts.com	Yes		Yes	Yes	Yes	Yes
See ads on pages 19, 21, 23, 25	Ratech Electronics Ltd. 260-7 Spinnaker Way Concord, ON L4K 4P9 800-461-9200 Fax 905-660-1519 sales@ratech-electronics.com www.ratech-electronics.com					Yes	
See ad page 9	 Relining Technologies, LLC 1036 West Taff Orange, CA 92865 800-496-1498 Fax 714-491-5324 j.stanley@reliningtechnologies.net www.reliningtechnologies.com	Yes		Yes		Yes	
See ad page 60	Sewer Equip. Co. of Florida, Inc. 1102 N Dixie Frwy New Smyrna Beach, FL 32168 800-635-2323 Fax 386-427-4552 wayne-sec@cfl.rr.com www.sewerequisiteco.com	Yes		Yes	Yes	Yes	Yes
See ad page 104	Spartan Tool LLC 1506 W. Division Street Medota, IL 61342 800-435-3866 Fax 888-876-2371 customerservice@spartantool.com www.spartantool.com		Yes	Yes			
See ad page 42	Super Products LLC 17000 W. Cleveland Ave New Berlin, WI 53151 800-837-9711 Fax 262-784-9561 lhaynes@superproductscorp.com www.superproductscorp.com	Yes	Yes	Yes	Yes	Yes	Yes
See ad page 10	 TRY TEK Machine Works, Inc. 250 N. Main Street Jacobus, PA 17407 717-428-1477 Fax 717-428-2865 trytek@trytek.com www.trytek.com	Yes		Yes		Yes	
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The Dope on Diesel

Market conditions and other factors drive up the price of fuel for heavy trucks and equipment. Expect prices to remain high in the foreseeable future

By Greg Northcutt

Diesel prices have been taxing for cleaning contractors and anyone else who depends on diesel-powered equipment and trucks. From July 2007 to July 2008, the national average price of diesel fuel in the United States increased 65 percent from \$2.89 to a record \$4.76 per gallon before dropping slightly.

And forget the traditional price advantage that diesel once had over gasoline. During mid-summer, the average retail price of diesel was 66 cents higher than that of regular gasoline.

The reason for the rise in diesel prices comes down to supply and demand. Supplies are limited by diminished refinery capacity and areas of strife in oil-producing regions. And demand is up all over, especially in China and India, where construction is ramping up and more people are driving cars. And demand for diesel is growing over gasoline because it is the fuel of choice for autos in Europe and elsewhere.

While the experts say a little price relief may come, it's not just around the corner. They say fuel prices will probably never drop to where they were a few years ago.

If there is any good news, it is that analysts with the U.S. Department of Energy's Energy Information Administration (EIA) expect the rate of increase in diesel prices – which increased about 40 percent during the first half of 2008 – will taper off significantly between now and the end of 2009. But that's

barring further changes in crude oil supplies or demands – a big if these days.

A closer look

Supply and demand issues have affected the petroleum industry in general. Lucian Pugliaresi, president of the Energy Policy Research Foundation, said at a May hearing before the U.S. House of Representatives: "Over the last 10 years, the world oil market has clearly experienced an unprecedented

"It's basically a matter of supply and demand forces at work, but the main point to realize is that demand for diesel is being met. There have been no shortages."

Ben Montalbano
Energy Policy Research Foundation

number of new and sustained impediments to development. At the same time, global oil demand has grown robustly."

Ben Montalbano, a senior research analyst for the foundation,

adds, "It's basically a matter of supply and demand forces at work, but the main point to realize is that demand for diesel is being met. There have been no shortages."

Diesel is one of several middle distillates refined from crude oil. The

thumb is that every one-dollar change in the price of crude results in a 2.4-cents-per-gallon change in the price of diesel," says Tancred Lidderdale, a senior economist with the EIA. The price of crude oil, in turn, is affected by various factors.

Growing demand. World oil consumption continues to grow despite seven consecutive years of increasing prices, the EIA reports. Rising incomes in many areas of the world, including India and China, have increased the demand for diesel significantly. In fact, most countries rely more heavily on diesel fuel than the U.S. does. Government subsidies for gasoline and diesel have also pushed up demand for crude oil.

Tight supplies. The oil market remains tight, as shown by rising



Rolle Garrett, owner of Robyn's Septic Service, refuels his truck. (Photos courtesy of Robyn's Septic Service)

prices, low surplus production capacity, and concern that global supply growth may not keep pace with demand growth, at least in the short run. Two years ago, the U.S. consumed 20.7 million barrels of petroleum products per day, 60 percent imported. Almost half the imports came from the Western Hemisphere.

Today the EIA estimates the world supply of crude oil at 86.5 million barrels per day. "The market

Risks to production. The price of diesel is also tied to the actual and perceived risks of a reduction in supplies of crude or refined oil. Those risks range from war and weather-related threats at production and transportation facilities to government policies affecting development of oil resources. The higher the risks, the more money oil investors and buyers demand.

Cleaner-burning fuels. The phase-in of U.S. EPA standards to

"We don't see the global forces pushing up oil prices over the past four years letting up immediately ... There's always a certain degree of uncertainty in the world oil market. So many things can happen to prove us wrong."

Tancred Lidderdale
Energy Information Administration

these days is calling for just about all of that supply immediately," says Montalbano. What's more, he notes, world oil supplies are about 2.5 million to 4.5 million barrels per day less than predicted at the beginning of this decade.

reduce sulfur content in diesel fuel helped pressure diesel prices upward, according to the EIA. These standards require all on-highway diesel fuel sold in the U.S. to be ultra-low-sulfur diesel (ULSD) by Dec. 1, 2010. Phasing in of clean-fuel requirements for off-highway began last year. Nearly all diesel fuel used in the U.S. must be ULSD by the end of 2014.

Market speculators. Rising crude oil prices have prompted calls in the U.S. Congress for closer scrutiny of trading in oil futures contracts and for limiting the role of speculators. As the value of the U.S. dollar has fallen, says Tavio Headley, staff economist with the American Trucking Associations, investors have been buying petroleum futures contracts as a hedge against inflation. "The big question is how much this is contributing to the run-up in crude oil prices," he says. "The federal Commodity Futures Trading Commission is looking into the matter."

No sudden price decreases

Historically, the pump price for diesel has been lower than that of regular gasoline, except during some winters when demand for heating oil was high. However, since fall 2004, diesel prices have generally been higher than gasoline prices. One reason is an increase in federal tax on diesel fuel. Another is increasing global demand.

By late summer, there were signs

INNOVATION ON THE WAY

Biodiesel and hybrid drive trains for trucks and construction equipment offer some long-term promise to help equipment users deal with diesel fuel prices.

Most biodiesel is made from soybean oil, although it can be produced from other oil crops and from animal fats, recycled cooking oils and trap greases.

"Biodiesel is one of the best-tested alternative fuels and the only alternative fuel to meet all the testing requirements of the Clean Air Act," says Amber Pearson, with the Biodiesel Board. "Biodiesel can be operated in any diesel engine with little or no modification to the engine or the fuel system."

Biodiesel is typically blended with petroleum diesel fuel at concentrations up to 20 percent (B20). Nearly all U.S. engine makers accept at least B5. Case, Cummins, Caterpillar and John Deere have approved B20 or higher in some or all engines, Pearson notes. New Holland supports B100 in all equipment with New Holland-manufactured diesel engines, including electronic injection engines with common rail technology.

"Thanks to the June approval of biodiesel blend levels by the standard-setting organization ASTM International, engine makers will be more receptive to adding to their warranty statements higher blend levels of biodiesel, like B20," Pearson says.

Biodiesel is also helping to keep a lid on petroleum prices. "Earlier this year, a commodity strategist with Merrill Lynch estimated that oil and gasoline prices would be about 15 percent higher if producers of biodiesel and other biofuels were not increasing their output," Pearson says.

In January, Mack Trucks demonstrated the use of hybrid technology in a 64,000-pound truck. Hybrid drive systems convert braking energy into electrical power, which then supplements engine power, saving on fuel.

"This project has persuaded us that hybrid systems can have a major impact on reducing the more than 38 billion gallons of diesel fuel the U.S. trucking industry consumes every year, but only if our industry and government apply creative thinking to the commercialization of this technology," says Paul Vikner, Mack president and CEO. "Our research indicates that hybrid electric systems in heavy-duty trucks could save as much as 35 percent of the fuel consumed by conventional vehicles."

Meanwhile, diesel fuel-saving hybrid vehicles are starting to show up in construction equipment. For example, New Holland Construction, in cooperation with Kobelco Construction Machinery America Co. Ltd., has developed a prototype hybrid 7-ton hydraulic excavator. Last March, Volvo unveiled a prototype of its L220F Hybrid wheel loader. Two months later, Komatsu introduced the PC200-9 Hybrid excavator to the Japanese market.

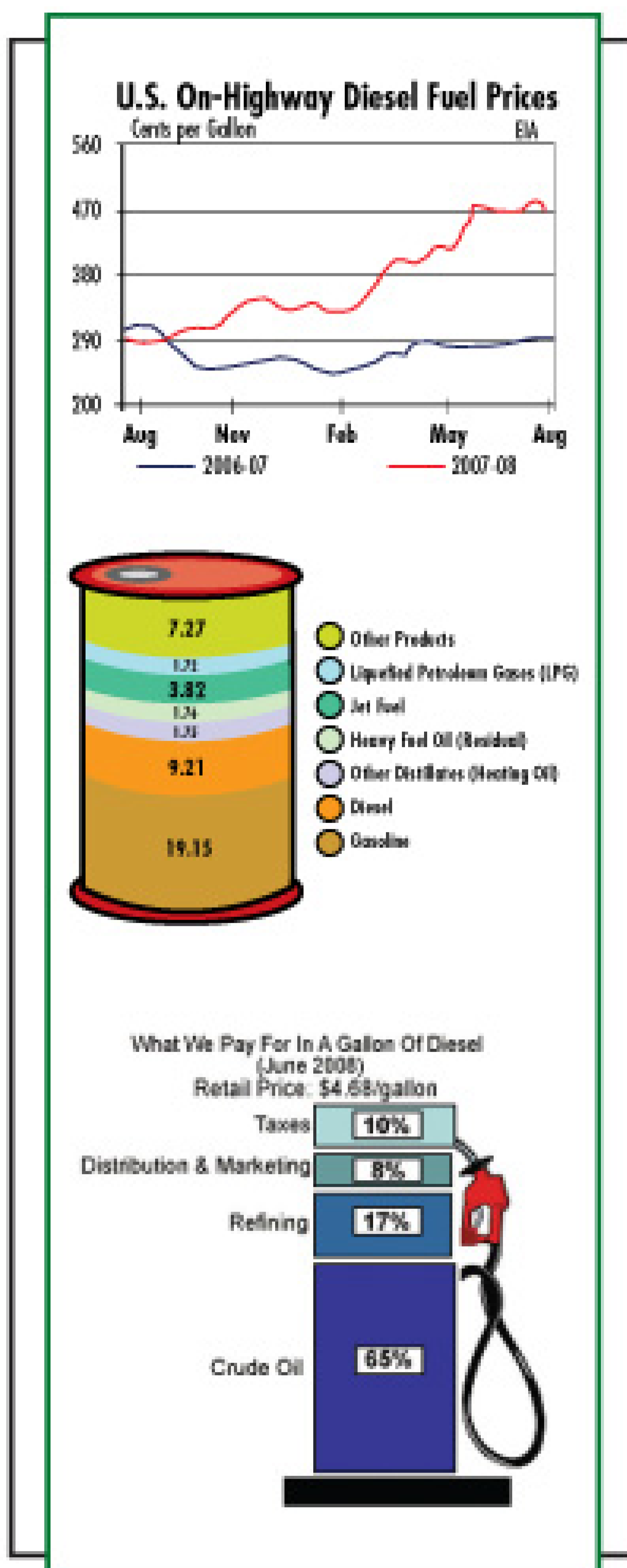
of moderation in diesel fuel prices. In July, EIA analysts projected the rate of increase in the spot price of West Texas Intermediate (WTI) crude oil to be moderate, peaking at \$140 per barrel in the fourth quarter before declining to \$127 by the fourth quarter of 2009.

Analysts expected a similar trend in the refinery price of diesel fuel, rising from \$3.67 per gallon in the second quarter to \$4.01 in the fourth quarter, then falling to \$3.53 by the fourth quarter of 2009.

In their July 2008 *Short-Term Energy Outlook*, the analysts reported, "WTI prices, which averaged \$72

per barrel in 2007, are projected to average \$127 per barrel in 2008 and \$133 per barrel in 2009. Diesel fuel retail prices in 2008 are projected to average \$4.35 per gallon, up from \$2.88 per gallon last year, and increase to an average of \$4.48 per gallon in 2009."

EIA's Lidderdale observes, "We don't see the global forces pushing up oil prices over the past four years letting up immediately. There's always a certain degree of uncertainty in the world oil market. So many things can happen to prove us wrong." ■



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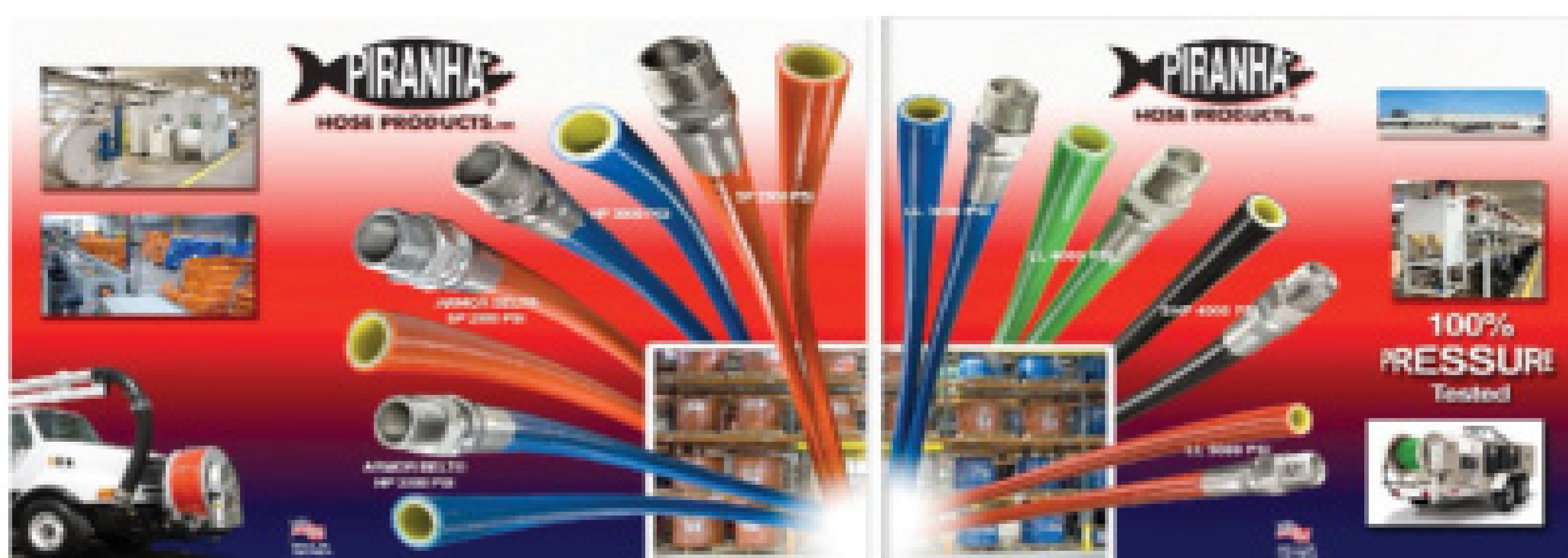
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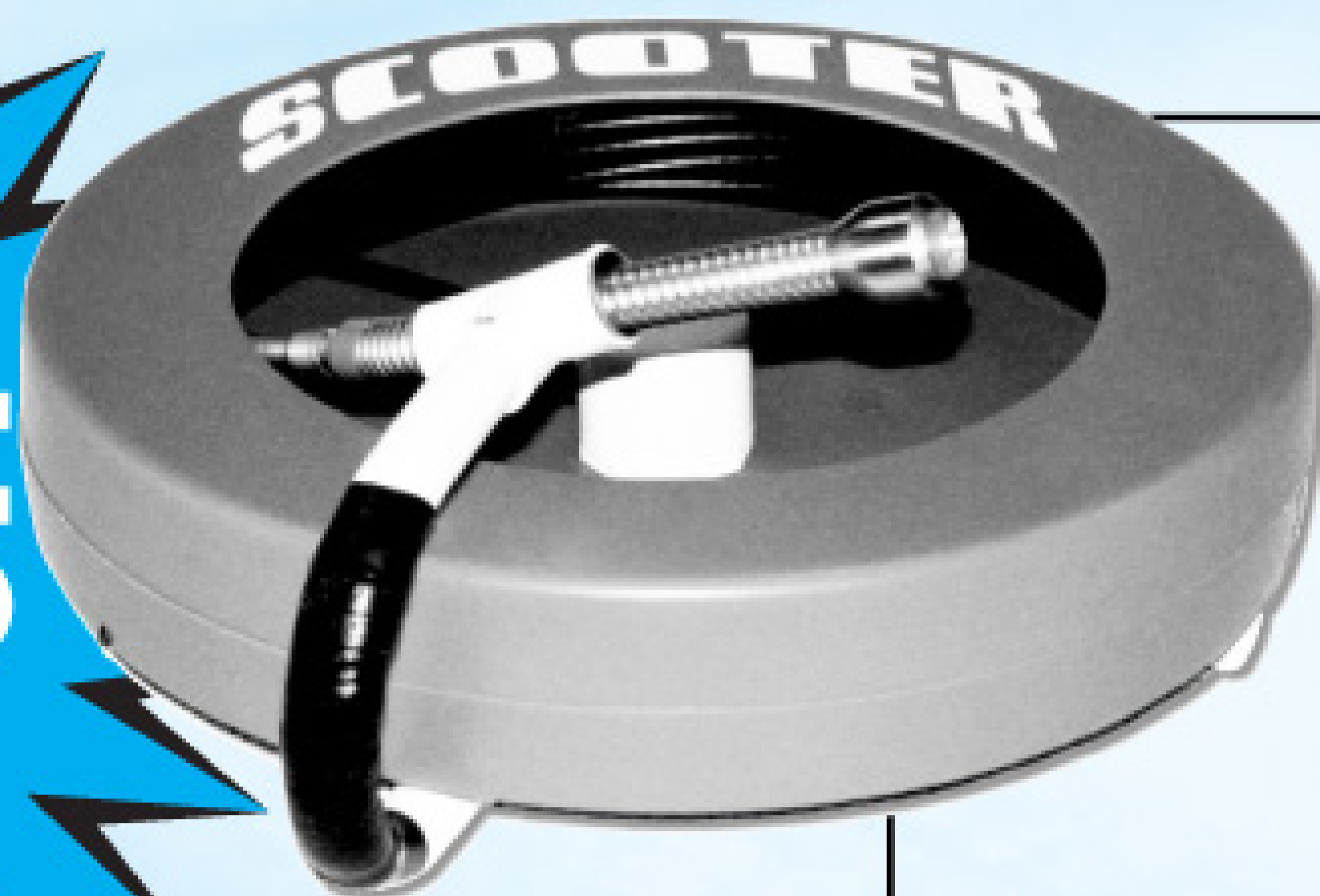
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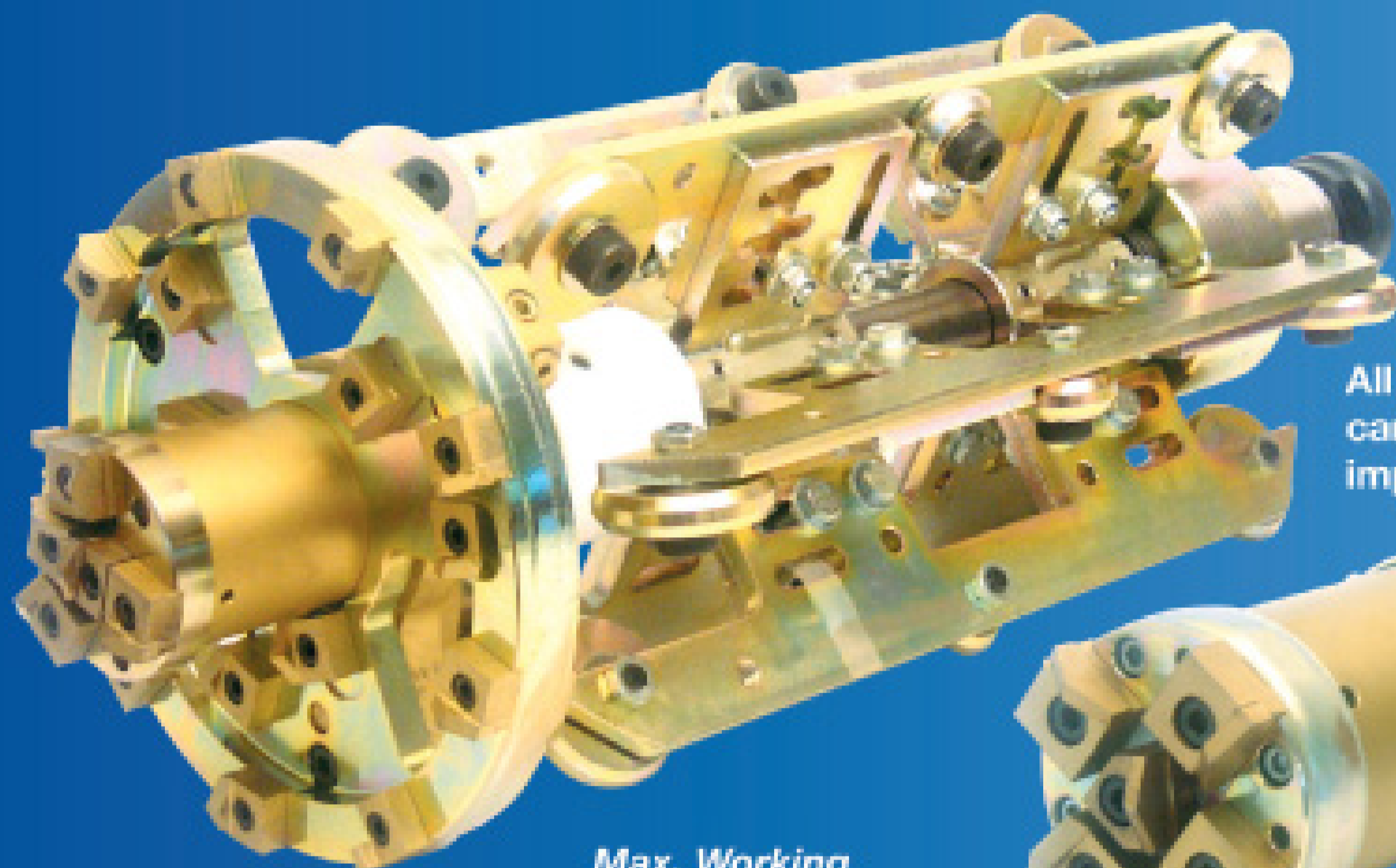
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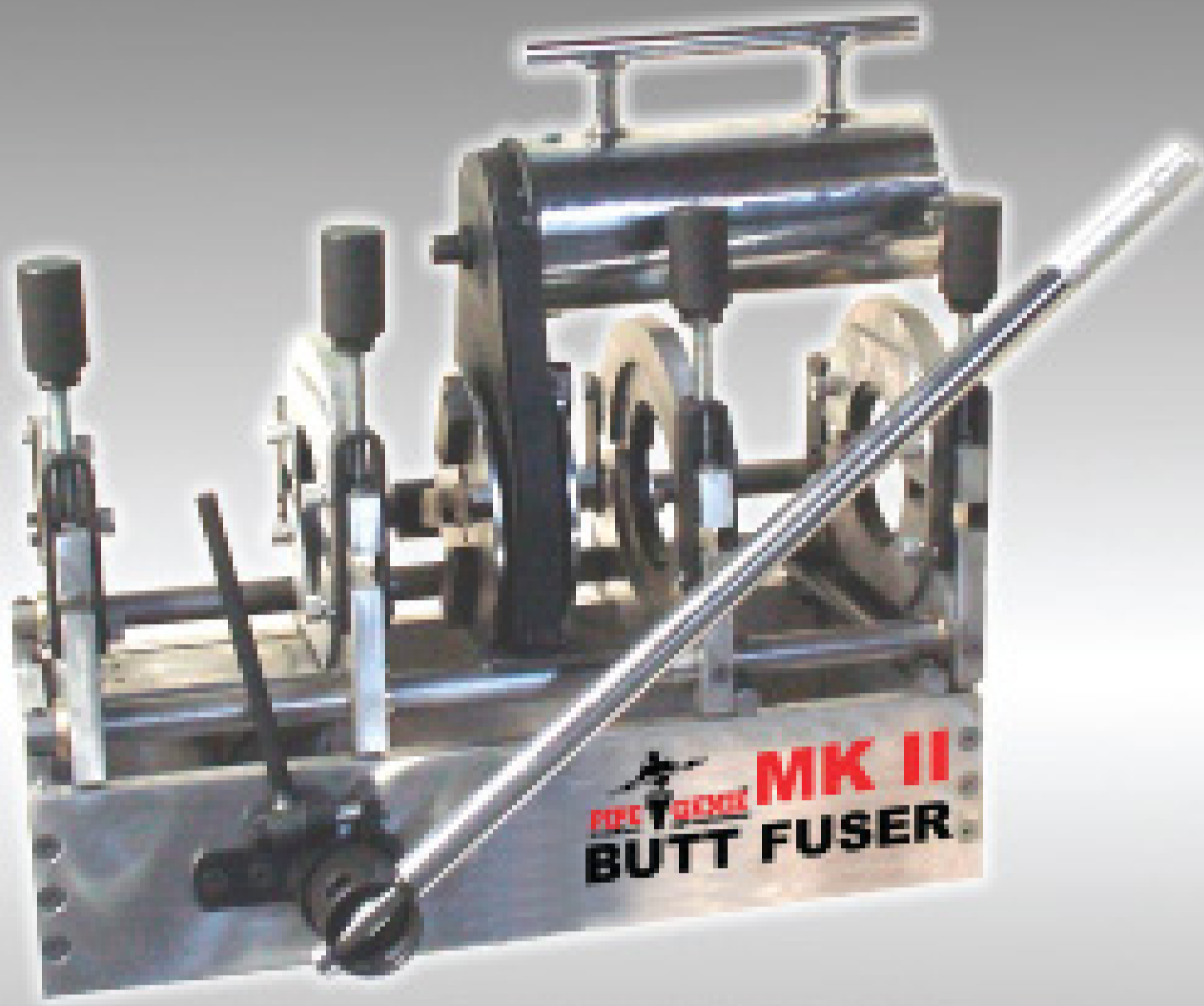
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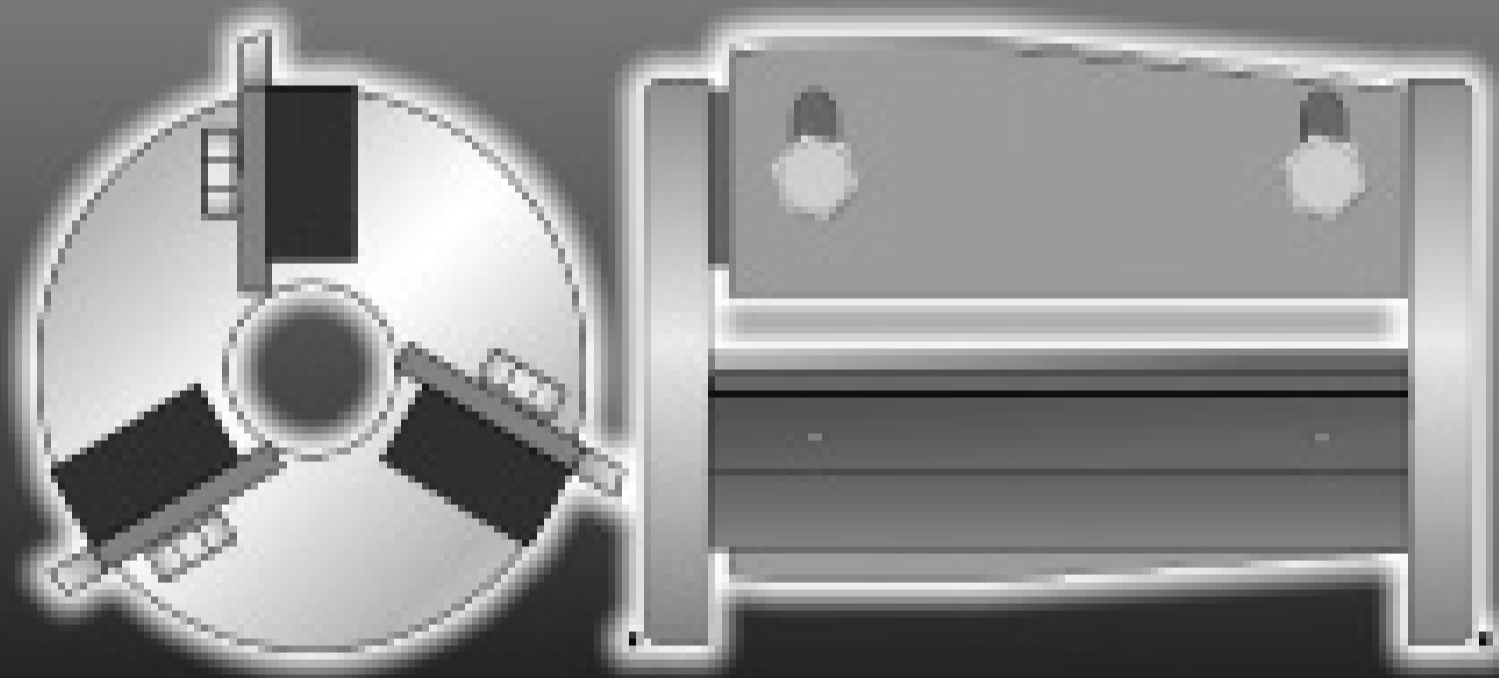
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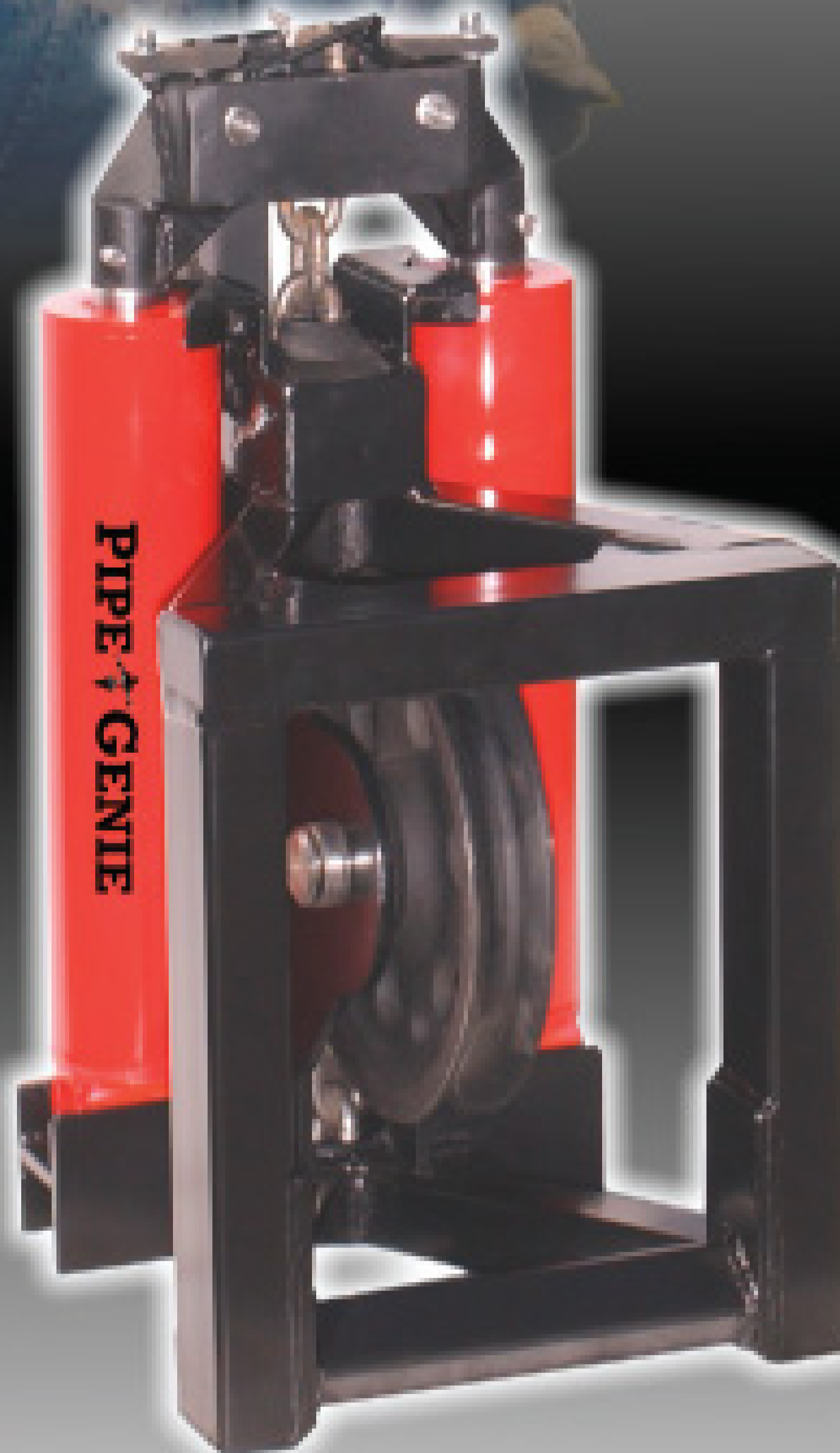
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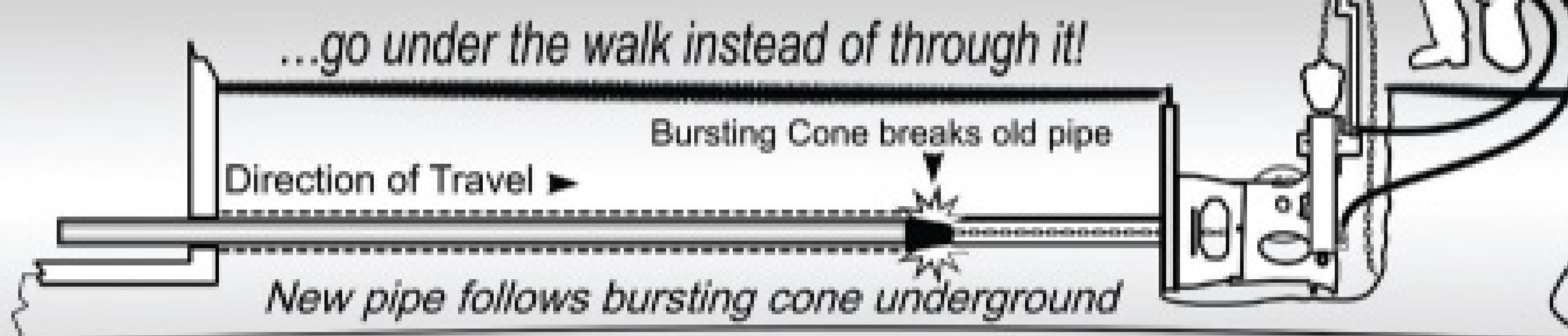
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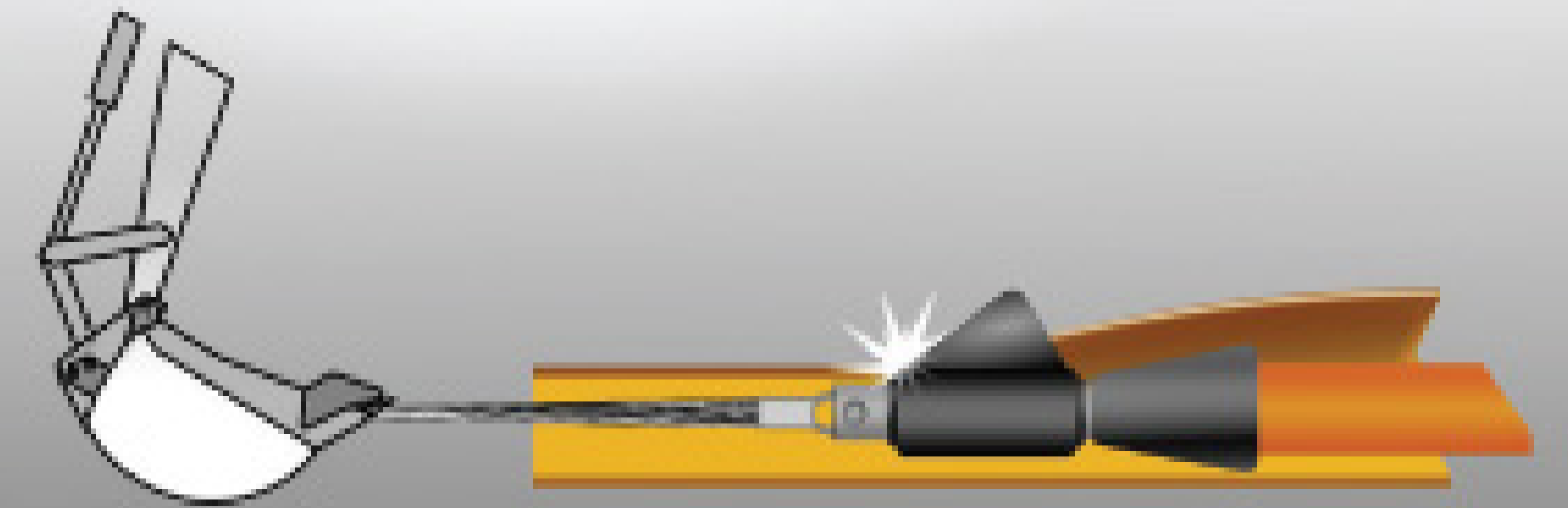
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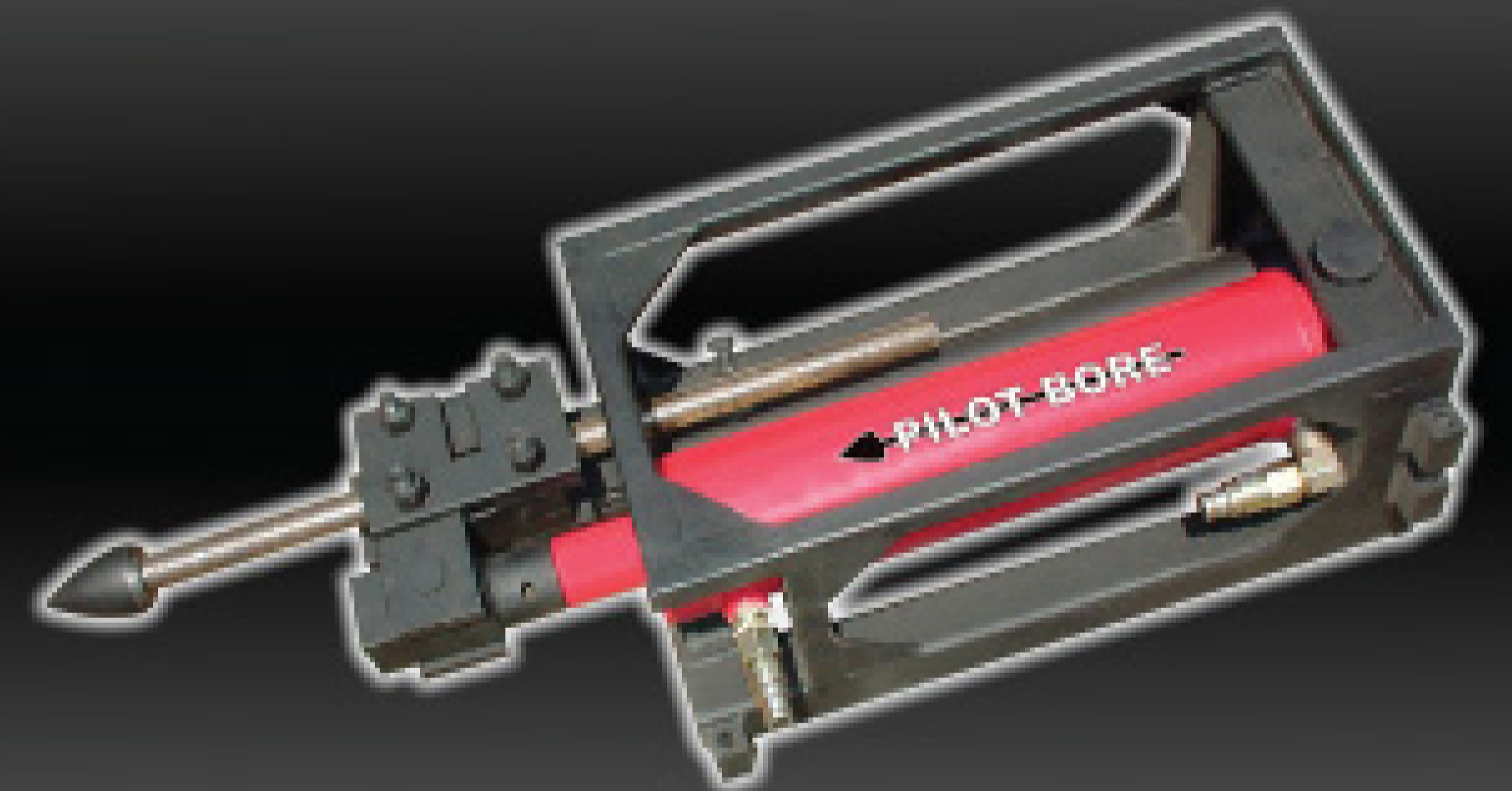


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Service manager and technician Paul Keane, service mechanic Scott McCants and Matt Landry prepare to inspect a sewer lateral after waterjet cleaning. (Photography by Bobby Thigpen)

COVER
STORY

A Hard-Won Lesson

Virginia contractor credits trade association seminars, and the colleagues they introduced him to, with boosting his business from pitiful to profitable

By Ken Wysocky

After eight years owning Atomic Plumbing and Drain Cleaning in Virginia Beach, Va., Jim Steinle came to a painful realization: He was a fine plumber, but he didn't know how to run a business profitably.

His only business education was a self-taught course in the school of hard knocks. He was tired of taking punches; something had to give. Change came in a new, tuition-free curriculum Steinle discovered right under his nose: seminars and conferences sponsored by trade associations and industry organizations.

Equally valuable was the advice from fellow contractors he met at those functions – people who were, as he puts it, “smarter, brighter and more successful than I was.”

Armed with more and more knowledge, Steinle slowly transformed his ways of doing business. The results were as dramatic as the initial years were painful. Annual

revenue jumped from about \$450,000 in the early years to an estimated \$2 million in 2007, and profit margins went from little or nothing to 6 to 8 percent.

The company now has 18 employees and nine Chevrolet 3500 extended van service vehicles. Each van carries three drain-cleaning machines from Spartan Tool LLC, \$8,000 worth of parts, \$2,700

worth of tools, and customized shelving and storage from American Van Equipment.

These days, Steinle is a changed man. With self-deprecating humor, he can cite the virtues of flat-rate pricing, list the principles of retaining good employees, explain the intricacies of inventory management, and report to the decimal point the percentage of service calls converted to jobs in the current month.

The hard way

Steinle admits he was naïve about the business world. He learned the perils of going into business with nothing more than technical skills. “I felt there wasn't a plumbing problem in the world I couldn't solve,” he recalls.

“To pay bills, I worked harder and longer hours, but didn't charge more money, so things never changed. It was the definition of insanity: doing the same thing over and over again and expecting different results.”

Jim Steinle



Paul Keane and Scott McCants prepare a Spartan 1065 mainline sewer machine for a lateral cleaning job.

"I just didn't know how to run a business, much less a profitable business.

"For years, I tried to run the business from my truck, without knowing a thing about profits, pricing, insurance, taxes, inventory, a balance sheet or, most important, how to

manage people," Steinle says. "To pay bills, I worked harder and longer hours, but didn't charge more money, so things never changed. It was the definition of insanity: doing the same thing over and over again and expecting different results."

"I used to think I had to stand on a desk and yell and scream at employees to get things done. I can't tell you how many good employees I lost. Now we haven't had an employee leave in years. I've learned there are much better ways to do things."


Jim Steinle



Keane, McCants and Landry jet a mainline sewer using a truck-mounted jetter.

P R O F I L E

ATOMIC PLUMBING AND DRAIN CLEANING, VIRGINIA BEACH, VA.

OWNER:	Jim Steinle	
YEARS IN BUSINESS:	21	
SPECIALTIES:	Drain cleaning and plumbing repairs	
SERVICE AREA:	50-mile radius	
EMPLOYEES:	18	
AFFILIATIONS:	Plumbing-Heating-Cooling Contractors Association	
WEB SITE:	www.atomicplumbing.com	

REPAIR OPTIONS INCREASE PROFITABILITY

At Atomic Plumbing, service technicians maximize profitability with an up-selling technique that offers customers good-better-best options.

In a typical case, "good" means a minimal repair, "better" means partial repair and partial replacement, and "best" means complete replacement of whatever is broken.

"You'll find most people don't want to take the cheapest way out," owner Jim Steinle says. "Whatever the price is, about 80 percent of the time, customers opt for the better or best solution, because we've already exceeded their expectations and gained their respect. Psychologically, they feel like they are in charge of the decision, not the technician."

In cases where a customer can't decide and asks what should be done, technicians are trained to ask probing questions that help determine which option is best. Sometimes people complain that the price is too high. They simply pay the service call charge, and the technician leaves.

But Steinle doesn't apologize for his prices, which are higher than those of many competitors. Without those prices, he couldn't run a profitable business while providing employee health insurance and other benefits, which enhance customer service by minimizing turnover.

"Are my prices higher than most contractors in town? Absolutely!" he says. "But we're very reasonable in terms of the service and value we give to our customers. If a customer perceives that what we do has value, then it's worth the price."

His journey to business enlightenment started in high school. Having no urge to go to college, he started taking plumbing classes at a vocational technical center in his junior and senior years. "I liked working with my hands, and I thought plumbing would be a way to make good money," he chuckles.

His teacher ran a small plumbing business where students could work part-time as plumbers. About five months after he graduated from high school, the owner of Atomic Plumbing, Jim Lane, asked the instructor if he could hire some of

the teacher's part-timers for a job that was too large for his staff.

The teacher agreed, so Steinle and four others went to work for Atomic Plumbing. One thing led to another, and soon Steinle was working for the company full-time. Lane put Steinle in a four-year apprenticeship program, and he did well enough so that Lane eventually asked him to buy a 25 percent share of the company. Steinle agreed.

Opportunity from tragedy

In 1986, Lane died of a heart attack. Lane's widow asked Steinle if

he would like to buy the business, and he did, under a buy/sell agreement that enabled him to acquire the business over time. For eight more years, he struggled to pay bills, paid himself a scant salary, built up no equity, and endured a revolving door of employee turnover.

All that started to change when he attended an annual Plumbing-Heating-Cooling Contractors Association (PHCC) state convention in Williamsburg. "I'd been a member for eight years because Jim had been a member, but I never attended any meetings," Steinle says. "But I heard about some of the seminars they

ering we all shared many of the same problems: how to keep good employees, pay bills on time, understand insurance, keep costs down and the like."

Another contractor told Steinle how he handled employees who showed up late: Send them home for the day. Several days after the convention, an employee gave Steinle a chance to give that method a try. "The next day he was at work 20 minutes early, and he came to work 20 minutes early right up until the day he retired recently," Steinle notes. "That policy is still in place today."

that point, I was doing everything on a time-and-materials basis. I realized that by not charging enough, I was being unfair to myself, my employees or the company." Flat-rate pricing turned Steinle's business around.

"It allowed me to be the professional I'd always wanted to be," he notes. "For the first time in a long time, I started to enjoy running my business again." But it wasn't just flat-rate pricing that jump-started Atomic Plumbing.

Steinle bought uniforms for employees so they would look professional. He trained them to put down a red mat on customers' doorsteps, then don plastic "booties" before entering a home. Technicians also present customers with a business card, and put down another red mat on which to place their toolbox.

"That immediately shows the customer you care about their carpet or hardwood floors," Steinle says. "These are all tiny little things we do to exceed a customer's expectations before we even give them a price."



Customer care is critical to Atomic Plumbing and Drain. Paul Keane puts on plastic booties before going into a customer's home – a standard practice for the company.

Technicians are also trained to look at the big picture – not just the problem the customer called about. With the customer's permission, they inspect the plumbing and suggest other things that could be fixed to prevent larger problems in the future – and offer a 20 percent discount if the customer agrees to have the work done right away.

Reaching the next level

Steinle credits NexStar Inc., a member-owned network of contractors, with taking the business to the next level by teaching him principles of effective management.

Atomic uses NexStar software that helps Steinle track a host of information aimed at increasing employee efficiency and profitability.

Items tracked include each technician's dispatch, arrival and departure times; sales and billable hours; and the number of jobs performed per call. Steinle posts the results to create a friendly competition among technicians.

"NexStar taught me how to get down to the real nuts and bolts of running a business – how to determine your break-even point, then add profit on top of that. How to coach and retain employees and track their performance," Steinle says. "I used to think I had to

"I know some people don't join associations because of the annual fees. But I'll tell you they don't cost you money, they make money. I get back many times over what I pay for various memberships."

Jim Steinle

were holding, and I wanted to see if I could learn how to do things differently.

"At the convention, I was welcomed with open arms by guys who remembered Jim and Atomic Plumbing," he says. "I couldn't tell you what the seminars were all about, but I do remember talking to many other contractors and discov-

Knowledge pays dividends

Inspired by the positive results, Steinle attended every seminar and conference he could, especially seminars put on by Frank Blau and Maurice Maio, who advocated flat-rate pricing.

"When Frank explained about mark-up and profit, that got everybody's attention," he recalls. "Up to



Jim Steinle (standing at right) conducts a training session with Atomic service technicians using Successware software projected on a big screen.



Dispatcher Deanna Davis and company president Jim Steinle review GPS tracking data and the day's work schedule.

stand on a desk and yell and scream at employees to get things done. I can't tell you how many good employees I lost. Now we haven't had an employee leave in years. I've learned there are much better ways to do things."

Steinle periodically reviews the company's flat-rate pricing schedule, consulting with his technicians in the process. Sufficient profit margins enable Steinle to offer decent benefits, such as paid vacation time, health insurance, and a dollar-for-dollar company match for employee IRA funds, up to 6 percent of the individual's salary.

Lessons learned

Looking back, Steinle is amazed at how much his business has changed since 1996. He's certain many small contractors face the same predicament he did – and could benefit from educational resources.

"If you don't belong to a trade organization that can help you better yourself and your business, you

should," Steinle says. "There is so much help out there for the typical technician. I know some people don't join associations because of the annual fees. But I'll tell you they don't cost you money, they make money. I get back many times over what I pay for various memberships. If I had started attending PHCC seminars and conferences from the start, I'd be retired by now."

By having transferred from the school of hard knocks, he's quickly making up for lost time. ■

MORE INFO:

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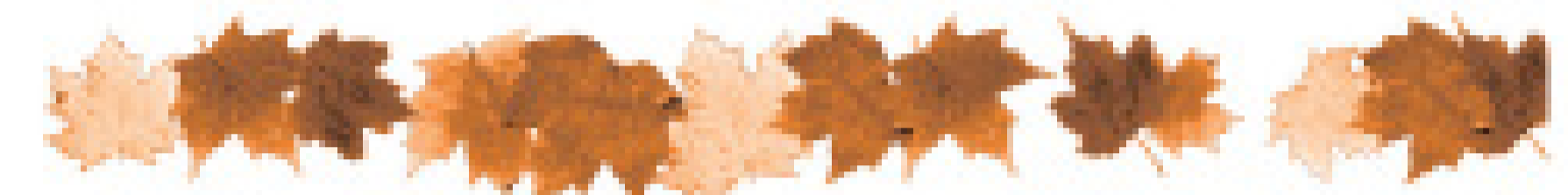


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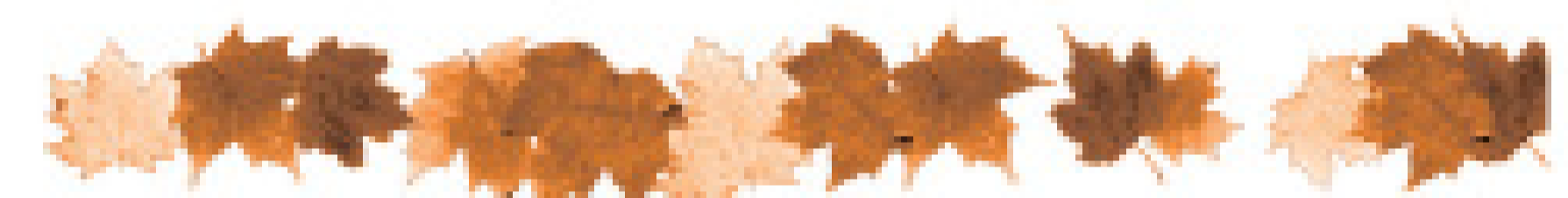


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The image is a composite. The background is a scenic landscape of a mountain range with snow-capped peaks, a dense forest of evergreen trees, and a clear, turquoise lake that reflects the surrounding scenery. In the bottom right foreground, a portion of a robotic crawler is visible, featuring two large, treaded black wheels with red hubs and a silver metal frame. The overall color palette is dominated by blues, greens, and greys, with the red of the crawler's wheels providing a strong contrast.

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Aries high resolution camera module used in conjunction with the 432:1 zoom ratio and High intensity detachable LED lightheads, 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.

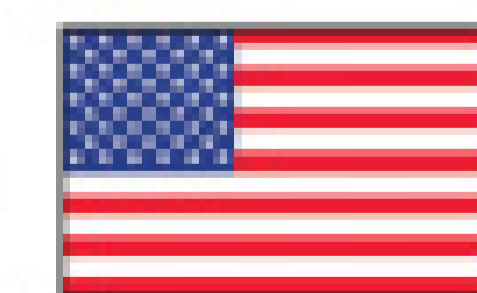


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Josh Miller, left, and Alfonso Rodriguez help Jerod Boltz jet a line through through a 6-inch cleanout at a housing complex in Bradenton, Fla. (Photography by Danielle Rappaport)

Weapon of Mass Detection

Sleuth Plumbing Technologies takes pride in being a resource for customers in a wide range of investigation and rehabilitation services

By Mary Shafer

Justin Mizell has a unique way of thinking about customer service. "We are a tool in our customer's toolbox," says Mizell, who owns Sleuth Plumbing Technologies with Jerry Mixon in Sarasota, Fla.

The company has been making its plumbing contractor clients look good for more than 25 years. "Our tagline is, 'Don't speculate, investigate,'" says Mizell. "And that's what we tell prospective customers. With our services, they don't have to do guesswork that could cost them a lot of money.

"Between our array of technology and our highly trained technicians, we can get down to within a foot of pinpointing where the problem is in their customer's system, without disturbing anything above ground."

Sleuth performs specialized application of "any investigational or

rehabilitation tool the plumber uses," according to Mizell. Sleuth doesn't offer plumbing, instead referring plumbing prospects to its best customers, who in turn refer work back.

Sleuth subcontracts all directional boring, geophysical services, concrete cutting and hydrojetting work to regional specialists. Everything else is done in-house, and the whole package is represented to prospects as "the Sleuth family of companies." Under this umbrella, Sleuth acts as a project manager, bringing in whatever specialized subcontractors are needed for each job.

Strong backgrounds


Mixon, a former plumbing supply house operator, spun off Sleuth Plumbing when its original owner decided to focus on leak detection as Sleuth Inc. back in

1982. They remain sister companies, having no common ownership, but sharing business referrals.

Mizell joined Mixon as vice president in 2003, moving over from a plumbing company that specialized in

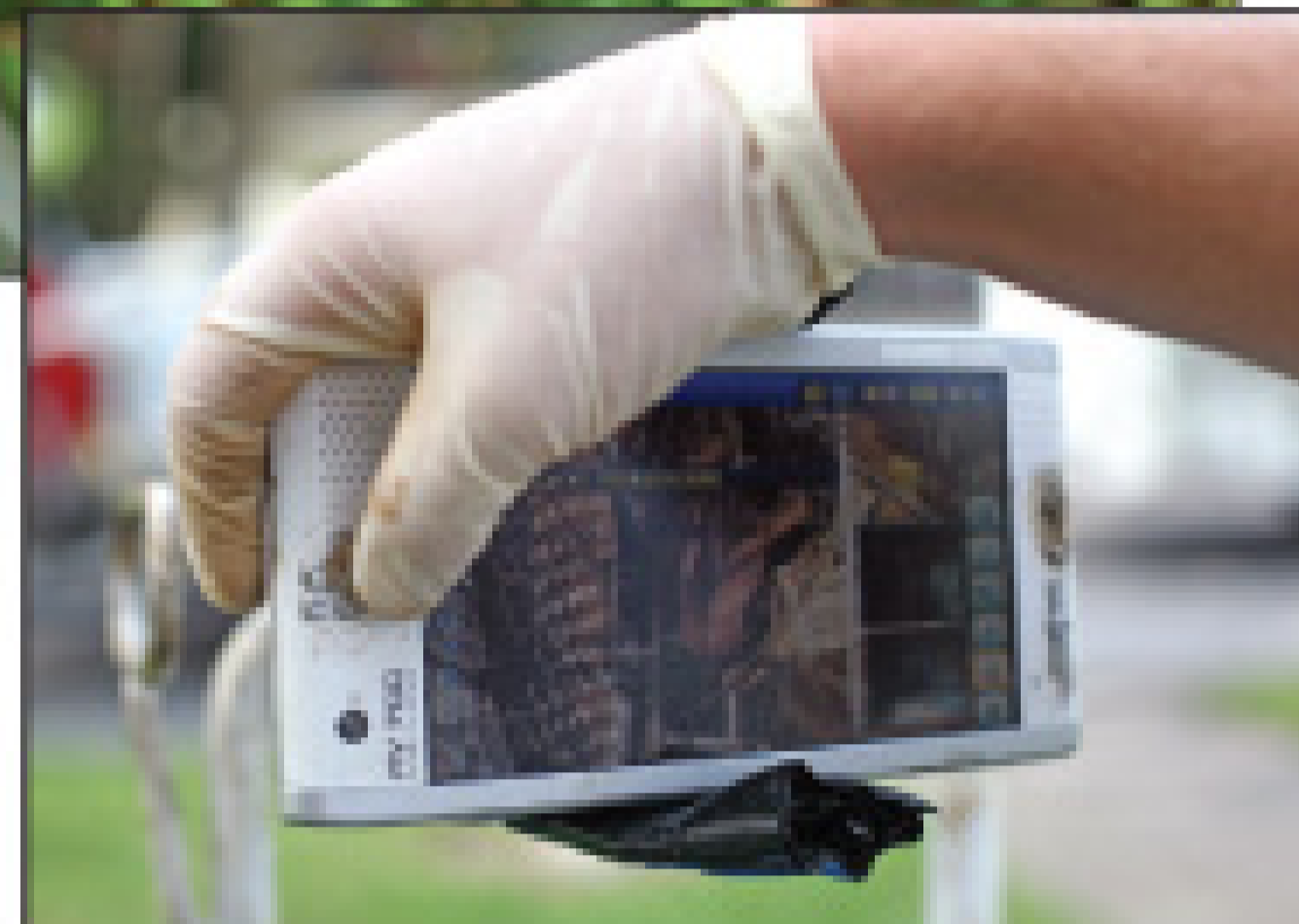
PROFILE

SLEUTH PLUMBING TECHNOLOGIES, SARASOTA, FLA.

OWNERS:	Jerry Mixon, president; Justin Mizell, vice president	
FOUNDED:	1982	
EMPLOYEES:	22	
SPECIALTIES:	Inspection, locating, odor detection, leak detection, pipe rehabilitation	
SERVICE AREA:	Florida (entire U.S. for vapor detection)	
AFFILIATIONS:	Plumbing-Heating-Cooling Contractors Association; Building Managers Institute; International Code Council	
WEB SITE:	www.sleuthpt.com	



Above, Jerod Miller locates a camera in a pipe. At the right, Josh Miller uses a mobile digital video recorder to view images from a camera deployed in a lateral.



serving condominiums and community associations. He had used Sleuth's services and was intrigued by the firm's use of technology.

"I could see how we could use technology to build a company that not only helped plumbers solve immediate mechanical problems, but could also help them take their whole businesses to the next level," Mizell says. That has been the goal ever since.

Regardless the job, nearly every project begins with some sort of inspection, and Sleuth depends heavily on digital video cameras. Like most other technology the firm uses, the video inspection equipment has been modified to accommodate the demanding applications the company puts it through.

"CUES Inc. is the base of what we use for our camera, but we've worked back and forth with them on

Chris Graybill, customer service representative for CUES, confirms that the Sleuth people are particular about their equipment. "They like their power control units configured a bit differently to accommodate their demanding needs," he says. "We build it to a personal preference in setup for unique positioning in vehicles and on the jobsite."

Taking stock

Sleuth begins with a stock ProScout portable inspection system from CUES, a van-mounted unit with a push cable. From there, the company has it modified to proprietary specifications, which in Mizell's opinion provide an edge on competitors.

The company also uses smaller CUES Mini-Push 20/20 units with battery instead of AC power. These can maneuver easily through 2-inch,

90-degree bends and P-traps, and are operable in air or underwater.

Sleuth refers to this sophisticated video camera setup, along with specialized LED light sources and other electronic equipment, as its own

RISING HIGH

Pipe rehabilitation has been driving some high-profile business for Sleuth Plumbing Technologies. The company recently finished the initial inspection at DeSoto Towers in Bradenton, Fla. Sleuth subcontracted a job for Texas Drain Team of Houston at this high-rise of 204 independent senior living units, run by a nonprofit corporation.

The job began last spring with camera inspection and cleaning of lines, during which crews found extensive deterioration of the original iron pipe. "We televised strategic stacks, based on reported problems like kitchen sink and main line stoppages," recalls Justin Mizell, Sleuth co-owner. "They'd had some piping fail and did conventional replacement with PVC. Camera work found problems in the main line from years of grease and scale buildup."

Sleuth proposed a four-man crew relining of some 1,200 feet of 4- to 10-inch cast iron sewers with CIPP liner from Nu Flow Technologies Inc. The Nu Flow system entails sending in a Scorpion chain flail cutter from any cleanout to remove roots, scale and other blockages.

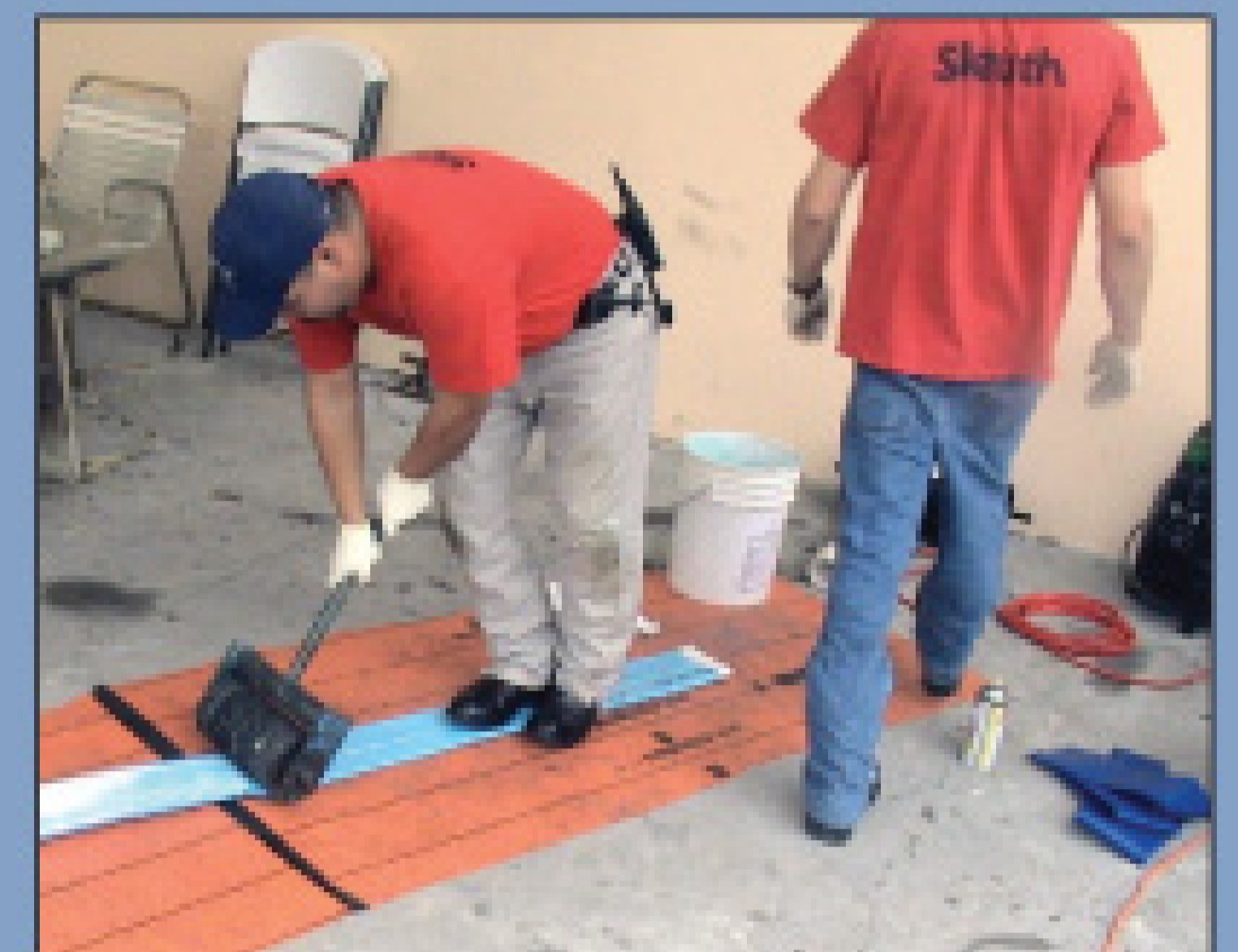
Once a video inspection determines that the line is clear, an inflatable bladder is sent in, carrying an epoxy-saturated felt blanket. Once that is in place, the bladder is inflated, forcing the liner to conform to the pipe and bridge any voids. When the epoxy has fully cured in three to four hours, the bladder is deflated and removed, leaving a seamless pipe surface.

With the proposal approved, Sleuth did the inspection and cleaning, then built a plan of attack starting with restoration of the main lines. This entailed lining the pipe beneath the foundation slab to the collection pipe, a run of about 400 feet. The main collection pipe, located outside, was to be rehabilitated from the cleanout through the 8- and 10-inch mains to the manhole, about 150 feet.

Restoration of 21 sanitary risers to the third floor will follow. This part of the job includes about 30 feet of pipe per riser, or just over 600 feet in all.



Josh Miller pours mixed two-part epoxy into a felt liner held by Alfonso Rodriguez.



Rodriguez impregnates the liner with epoxy.

Pipe View Technology. It allows operators to clearly see fine details in pipe walls and detect root intrusion, faults and cracks in sanitary lines and storm drains. Crews also use cameras with line-locating equipment to pinpoint problem areas.

Sleuth's digital video recorder permits permanent recording of inspections. "We've changed over to DVRs in the field, so that if something happens – such as a lost video – the data is still here," says

Mizell. The company uses Burning ROM editing and DVD compiling software from Nero Inc. that lets operators put images from before and after line rehabilitation on the same disc. "The biggest challenge is being able to format the DVD so everyone can read the format," admits Mizell. "It took about 40 hours to get to where we could do that."

As with everything else at Sleuth, it's all a matter of training and learning the technology.

"I could see how we could use technology to build a company that not only helped plumbers solve immediate mechanical problems, but could also help them take their whole businesses to the next level."

Justin Mizell

research and development and have modified their equipment," explains Mizell. "We don't try anything out on customers without knowing it works, so we put everything through the paces during staff training."



Josh Miller checks the video display as he drops a camera into a 6-inch cleanout at a housing complex.

Still, Mizell cautions that fancy gadgets are not the be-all and end-all. "Camera work is an identification tool," he says, "but the trick is knowing what to do with that information once you have it. We'll use those images to help us create a drawing of the system, trace it out, bring it back to the office and decide on the best rehab solution for the problem."

Training matters

Getting the best solutions means investing time, energy and money in technician training. Mixon, the firm's quality-control expert, works with Larry Mizell, Justin's brother and

operations manager, to make sure training gets done. Mixon rides along to projects with the technicians – greenhorns and veterans alike – critiquing their work with an eye to developing best practices.

New hires get two to three years of training before they can go out on their own, and all technicians are cross-trained in every facet of Sleuth's offerings except for work that gets subcontracted. "We like our technicians to be rounded in all our services," says Justin Mizell. "We have specialists in each area, but all our technicians can do each job."



Justin Mizell, vice president of Sleuth Plumbing Technologies, takes a business call while on a work site.

confidence transfers to his own when he pitches new jobs and new customers.

Along with standard training, Sleuth technicians take part in weekly tailgate safety meetings. These five- to 10-minute huddles at the office cover topics chosen for relevance to current projects. Rarely, Sleuth brings in equipment and tool manufacturer representatives to train staff in the use of their products. In addition, the company's in-house mechanic performs biweekly vehicle inspections.

Making the tools work

There are enough vehicles in the Sleuth fleet to make those inspections a big job. The company operates 10 vehicles: eight Dodge service trucks that run on biodiesel fuel, and two Dodge Sprinter vans that carry the mainline cameras and pull jetting equipment. Jetters include two 4000 series units from US Jetting (4,000 psi/18 gpm) and a DT 100 trailer unit from Harben Inc. (4,000 psi/16 gpm).

Other equipment includes a Lafayette Wc20 pipe bursting system from TRIC Tools Inc., able to replace

In the Sleuth staff hierarchy, the Tech 1 designation connotes a greenhorn. Tech 2 indicates some experience with core services. Tech 3 means the employee is experienced and knows the ropes, and those who advance to Master Technician qualify to function as onsite project managers.

It pays off, says Mizell, in technicians' confidence in decision-making and ability to think on their feet. That

2- to 8-inch lines with HDPE pipe around bends up to 45 degrees.

Likely one of the most valuable equipment setups Sleuth has is its cured-in-place-pipe (CIPP) lining system from Nu Flow Technologies Inc. The company is the exclusive Nu Flow licensee for its area.

Technology everywhere

Sleuth leverages technology in running its business as well as in doing its work. The office uses WinTac software from Intac International Inc. for dispatch and billing.

Networkfleet integrates GPS tracking and diagnostic monitoring, interfacing with each truck's computer to monitor engine needs, fuel usage and other items. This helps the office keep track of vehicles and manage routes. All trucks have Wright Express fuel cards to monitor fuel use and maintenance.

Overall, Sleuth believes the use of technology in every facet of business will quickly catch on as contractors realize the benefits. In service to that idea, the company focuses on its core business while following a more altruistic vision.

"My goal is to see the face of plumbing change," says Justin Mizell, co-owner. "I want to see the whole industry step up and become more green-minded. I want to assist plumbers in stepping up their image to a more professional level." ■

MORE INFO:

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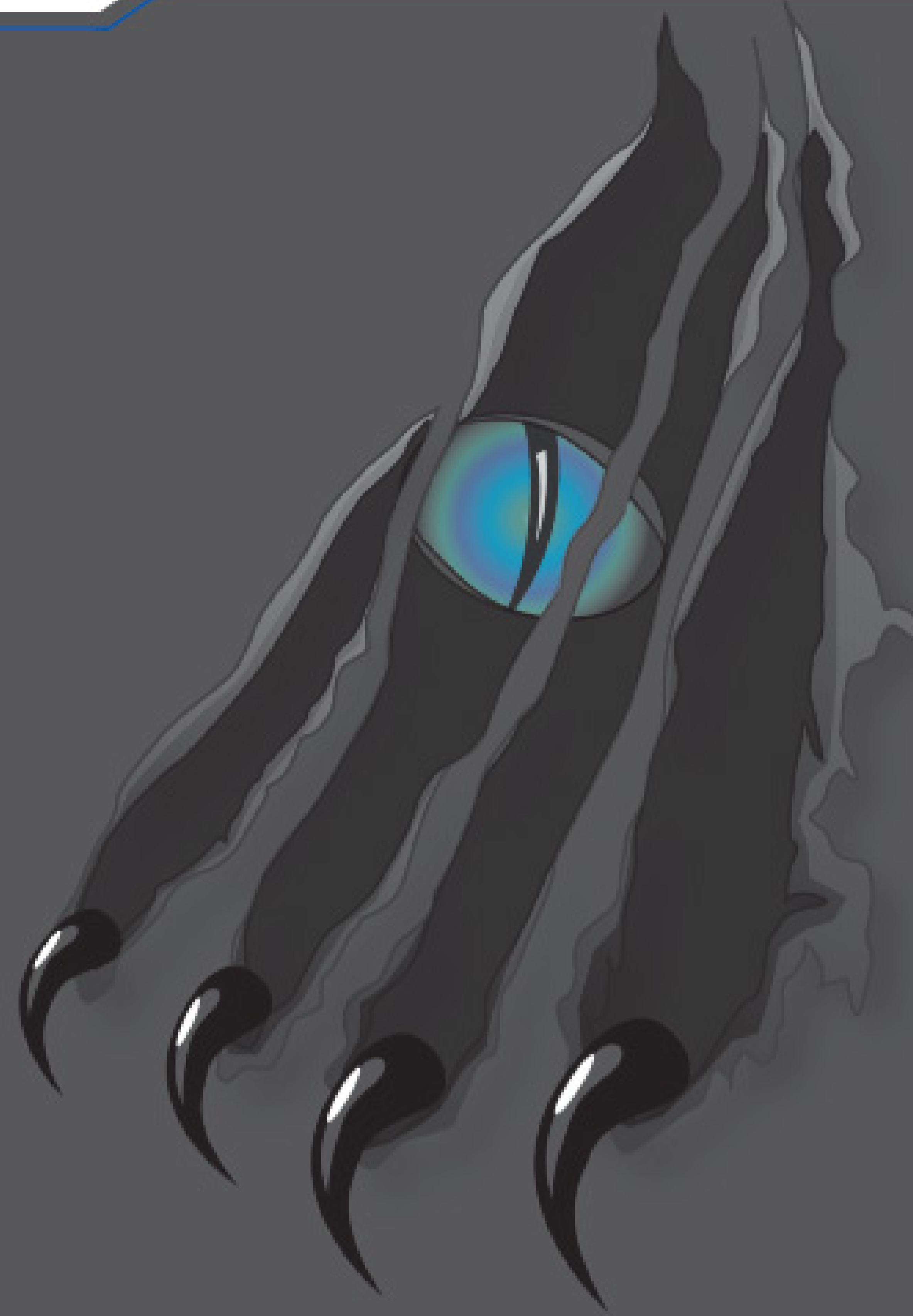
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Justin Mizell



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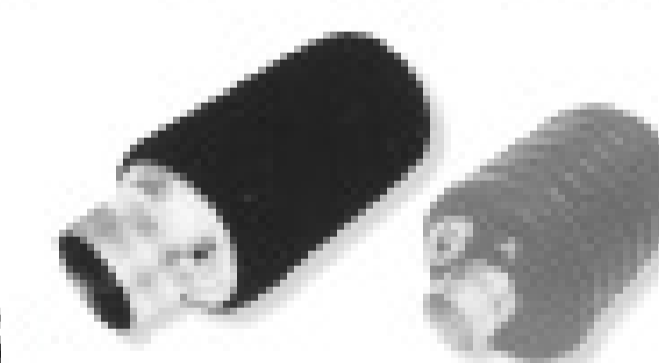
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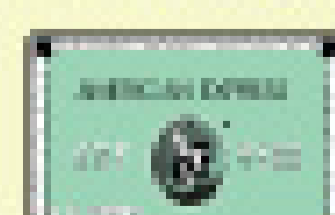
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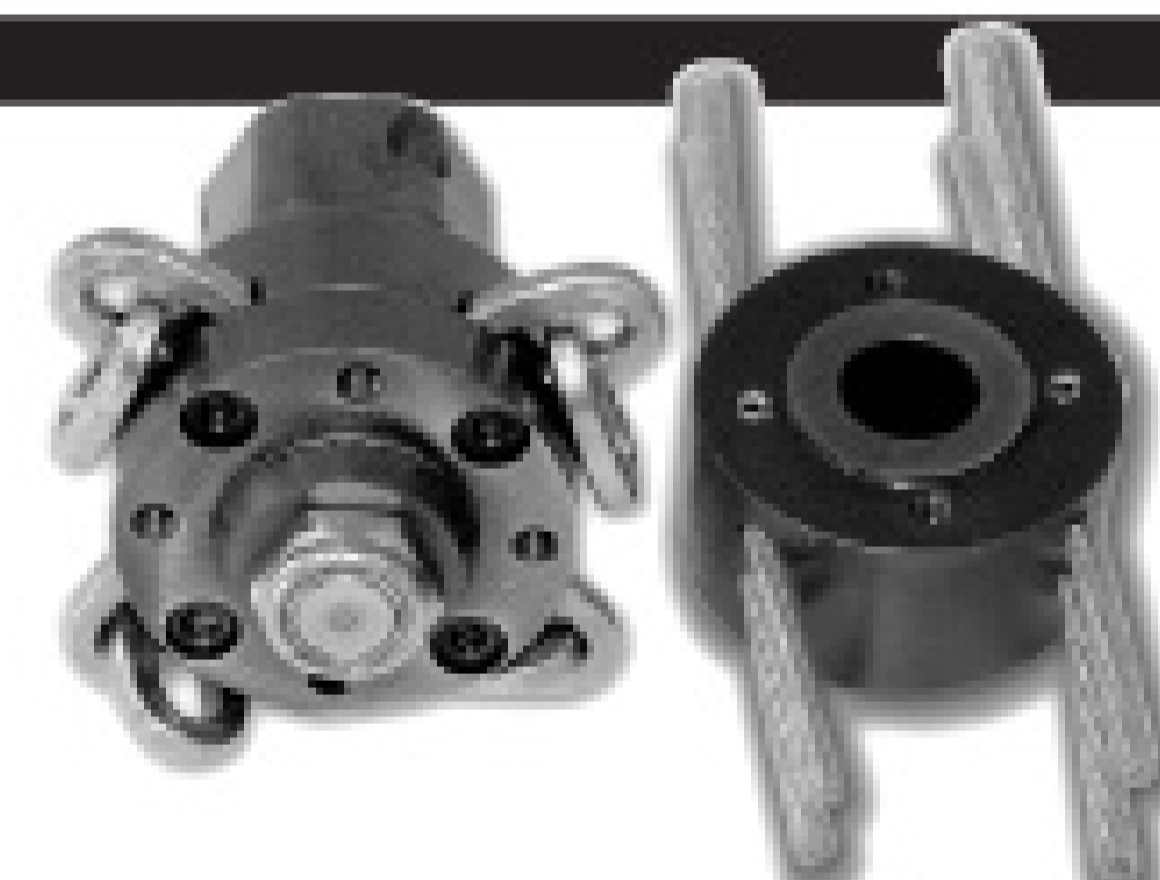
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Scaring Up Business

Halloween King raises funds for community programs and gains visibility for his drain-cleaning franchise with an annual haunted house attraction

By Mary Shafer

Chris Navo never intended to become Dr. Mortis, but that has become his alter-ego. What began as a Halloween lark became an identity, bringing visibility and community goodwill to his plumbing and drain-cleaning franchise in Grass Valley, Calif.

"It started very simply," says Navo. "My wife and I entered a Halloween decorating competition in our apartment complex. I decorated the two rooms you could see from the road to look like a tomb. I had a big captain's waterbed and made that look like a crypt, then actually painted the walls so they looked like bricks. It was way overboard, but we won the contest."

The next year, 1994, Navo decorated the entire apartment as a haunted house. In 1995, they moved to a rental home and created a walk-through haunted house. When they moved their act to the suburbs in 1997, some 1,000 people went through the attraction in three hours, creating traffic problems in the neighborhood. At that point, Navo realized things were getting out of hand.

Dilemma solved

Navo asked the local Lions Club for permission to use a building in Condon Park that the club had built and donated to the city. When the Lions agreed, Navo recruited actors from Nevada Union High School to play zombies, mummies, vampires and other fright characters.

By the next year, the haunted house drew 1,500 paying customers.



For the brave, here's a shaking electro-shock therapy prop made by Chris Navo's creative team. The chair and the hearse are part of the Mortis Manor event each year. At the right, Navo plays Dr. Mortis' assistant in the first year of Mortis Manor in 1995. (Photos courtesy of Roto-Rooter Sewer & Drain Cleaning Service)

Since then, face painting, a bounce house and other diversions for the younger kids have been added to the program, because the house itself is so scary.

Navo's day job is general manager of his family's business, Roto-Rooter Sewer & Drain Cleaning Service, formerly Navo & Sons Plumbing, founded by George Navo in 1956. Sons Randy and Mark joined the business 1968. Chris, Randy's son, joined the company full-time in 1992.

Today, Chris's mother, Jaye Deen Navo is office manager and accountant. George Navo, retired, remains on the corporation's board. Chris' younger brothers Jeremy, Justin, and

Josh work there, as do two in-laws and seven other employees.

The company picked up the Roto-Rooter franchise in 1987 and now provides services that include drain cleaning, plumbing, and septic system installation, repair and maintenance. Chris Navo says the company strives to be "on the cutting edge of whatever is going on in plumbing."

Get the party started

The haunted house runs for about a week at the end of October but takes almost all year to plan and execute. "I finally had to make a deal with my wife not to talk about the haunted house in November and December," Navo says. "But after



that, we work on it on and off for the rest of the year."

The design is new every year, and that means drawing out plans, then putting the drawing into a CAD program. Navo erects the entire haunted house – all 18 rooms – in 24 hours, using just three people. He gets help from his father-in-law, Ken Pearson, and best friend Aaron Tate.

The design changes every year. "It's all about distract and surprise," says Navo. "A haunted house can't scare you. It just has to have the different elements to spur you to scare yourself."



Local high school drama students play the haunted house characters. All makeup is done by volunteers Navo recruits and trains from the community.

Navo stays away from gratuitous gore or chainsaws, which he deems "too lazy and unimaginative." Still, he says, the house is scary enough so that 5 percent of the people who buy tickets never actually go in, and another 10 percent leave within the first few rooms.

Be very afraid

Navo applies the same concepts to promoting the event as he does to running the business. "One of the rules to a successful business is creating a name people remember," he says. "If you think about words that have the same first letter, it's more memorable. So I came up with

Mortis Manor, from rigor mortis. Then we came up with the idea that it would be an insane asylum, because that's really scary, and the idea that the doctor named it after himself." And so Navo's character, Dr. Mortis, was born.

The project makes money because he doesn't spend much on props. "Because my experience is in plumbing, making air-powered animatronics is easy," Navo says. He takes off work for the whole week of the show.

"During the week when it's happening, we need to move lots of the wall panels we've fabricated from our facility where they're stored, and do the initial setup. So there's some distraction, but it's mostly a good kind: people getting excited, talking about how fun it's going to be. We push off non-emergency calls and schedule appropriately."

The event has some great perks for the Roto-Rooter team. "It definitely builds morale," Navo says. "The employees really get into it. They all get free tickets. They know they're helping their community by being part of something bigger than themselves. Their kids can get a behind-the-scenes look at how we do the effects. We videotape the whole experience and give copies to our employees and sponsors."

The Lions Club and the drama department each receive about \$3,000 from the event each year. That gives him a kick that keeps him coming back. "The day I get tired of it is the day I quit," Navo says. "But I can't see that coming." ■

After Hours is an occasional feature that describes how business owners reconcile work life with family, leisure time, charitable pursuits, and personal interests and passions. Cleaner welcomes story ideas. If you take part in something interesting outside work, or if you know someone in the cleaning business who does, please send a note to editor@cleaner.com.

PROMOTING MORTIS MANOR

Chris Navo uses the tactics that have helped build the family's plumbing and roofer business to publicize his annual haunted house. He does promotional mailings and sponsor solicitations. The TV and radio stations that cover the event now also sponsor it.

"The event helps build our recognition factor in the Valley,"

Navo says. "We get a lot of good publicity from it. We sell tickets at the shop, and our logos get on all the flyers as sponsors." Inevitably, the event leads to radio interviews, for which Navo does the voice of Dr. Mortis. He never does TV, and Dr. Mortis is never out in public. "If you want someone to be bigger than life, make sure they're never seen," Navo says.

A Web site, www.drmortis.com, is dedicated to the haunted house. "We're trying to create a whole world and a persona, and people just have so many more questions," says Navo. "They can go there to find out more and get a richer sense of the experience."

A few years ago, Navo's parents gave him a white hearse as a birthday gift. It's lettered to promote Mortis Manor, and it's all he drives in September and October, and he sometimes drives it in parades.



The Mortis Manor sign is made of plastic foam and wood, but is textured and painted to look like concrete and stone.

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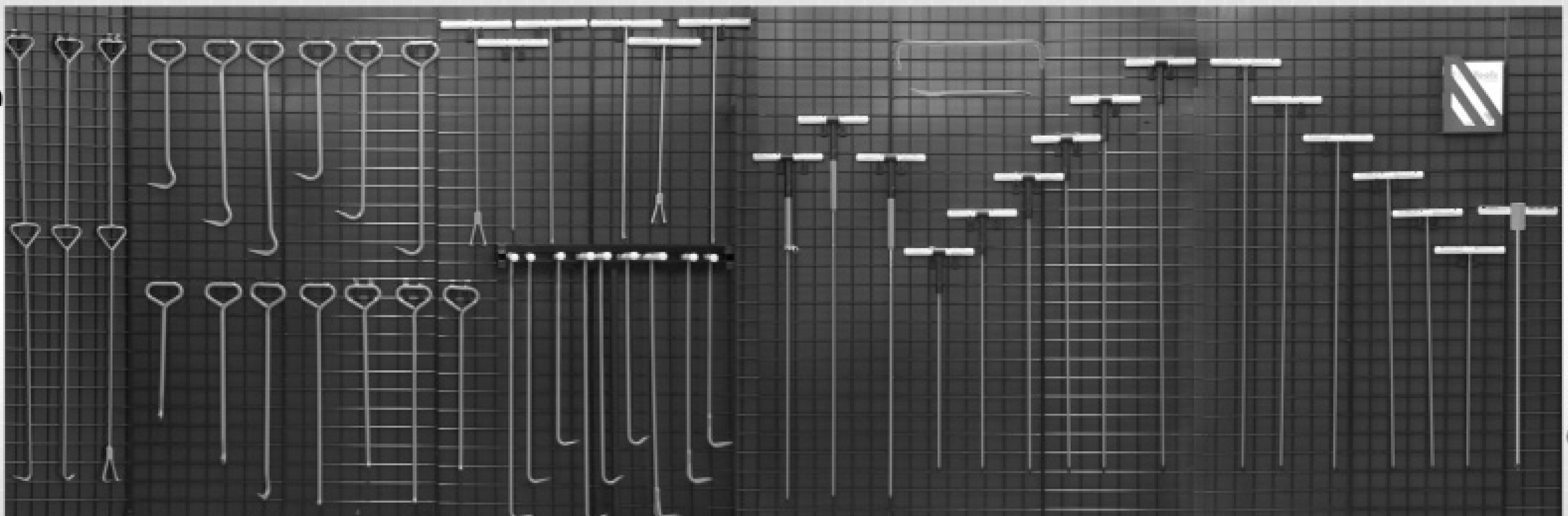
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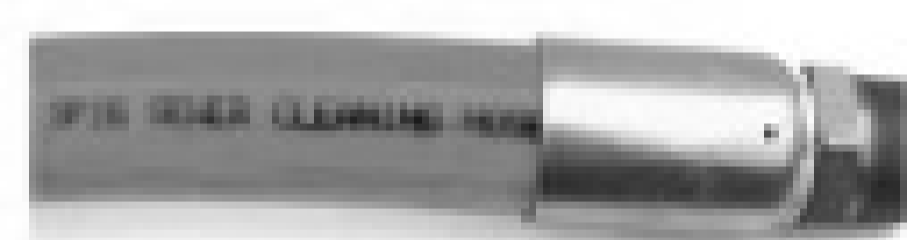


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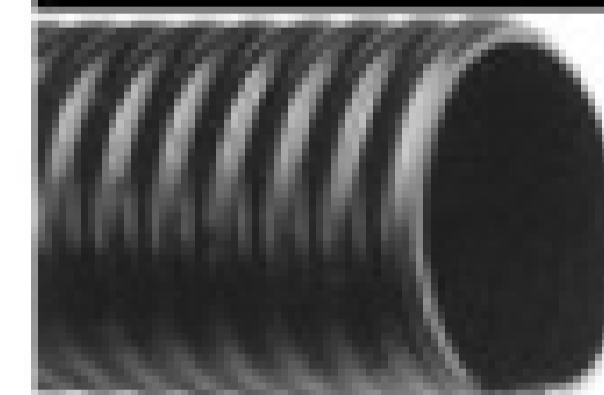


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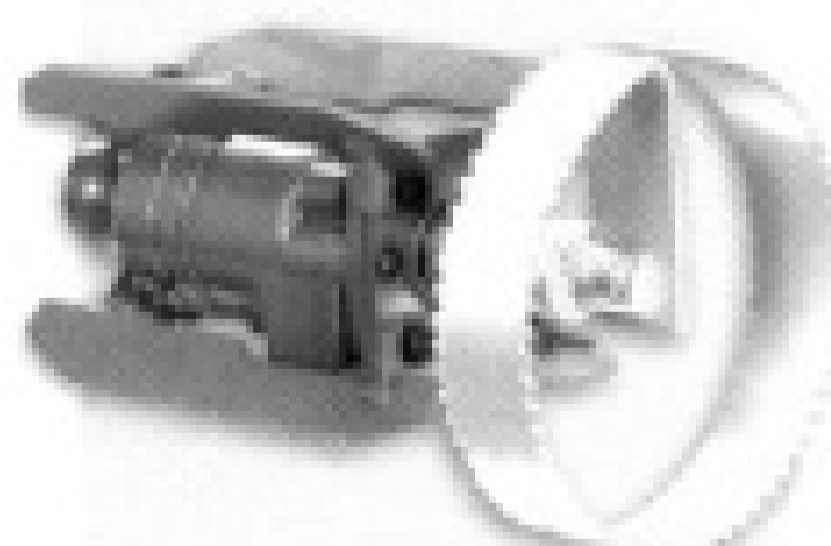
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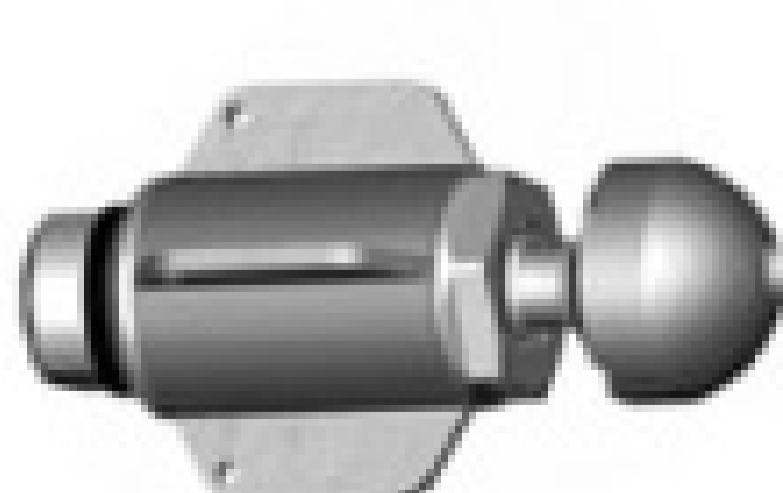
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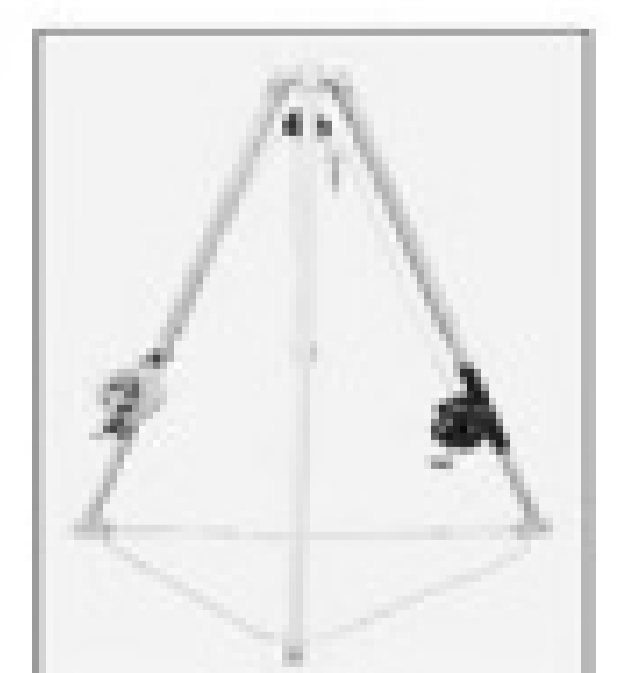
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Business Partners

Fully outfitted service vans support The Waterworks' technicians in a compensation program that links pay to productivity

By Ken Wysocky

Technicians at The Waterworks view their trucks as much more than just smart-looking workshops on wheels. They also consider them trusted business partners.

"These trucks save technicians a lot of time because they don't have to go back and forth for supplies," says David Specht, president of the company, which provides drain-cleaning services in a seven-county area in central Ohio. "They can do more jobs per week and handle more types of jobs, which increases customer satisfaction. That also helps the technicians make more money because they're paid based on productivity."

MONEY Machines

That's because the company's technicians are paid based on how much work they get done every day. And the trucks, with fiberglass Spartan box service van bodies, made by Supreme Corp., atop a Chevrolet one-ton chassis, provide valuable assistance.

"We include photos of the trucks in all our marketing material. People recognize the trucks. It's almost like a big yellow school bus – people know right away what it is."

David Specht

MONEY MACHINES

OWNER:	The Waterworks, Columbus, Ohio
FUNCTION:	Drain cleaning and plumbing service
VEHICLE TYPE:	Chevrolet 1-ton chassis with Spartan box body (Supreme Corp.)
PRIMARY EQUIPMENT:	RIDGID K-7500 drain cleaner, K-40 drain cleaner, SeeSnake camera
COST:	About \$35,000
WEB SITE:	www.thewaterworks.com

Many amenities

Each truck carries \$8,000 to \$10,000 worth of repair parts, along with tools and a water heater. Each also carries a RIDGID K-7500 heavy-duty drum drain cleaner and a RIDGID K-40 sink and tub drain cleaner. Most also carry RIDGID SeeSnake cameras.

Specht says The Waterworks owns almost 70 of the trucks and is slowly changing over its entire fleet to the Chevrolet/Spartan combination. Each has amenities such as a slide-up rear door, slide-out ramp, spacious headroom, rear safety step, GPS, backup camera that shows what is behind the truck, shelving and storage systems, security alarm, exterior side-storage compartments, a sleek windshield wind faring that increases gas mileage, and a side compartment door that doubles as a workbench.

"I grew up a plumber and wish I would have had a truck like this," Specht says.

The trucks also support marketing. "They're an integral part of branding our company," Specht says. The graphics display the company name and logo over a large, gold pipe wrench, along with the company slogan.

The Waterworks uses trucks that couple a Chevrolet 1-ton chassis with a fiberglass Spartan box service van body made by Supreme Corp. (Photos courtesy of The Waterworks)





Skilled professionals

"We include photos of the trucks in all our marketing material," Specht says. "People recognize the trucks. It's almost like a big yellow school bus – people know right away what it is." The sides also display a "vanity" phone number different from the main company number. That lets the firm track how much business the trucks generate.

Technicians are responsible for keeping the trucks clean inside and out. "They help reinforce our image," Specht says. "People know that if the truck is clean, we'll keep their house clean, too. It also sends a message that this is a skilled profession – that people can make a good living in this business."

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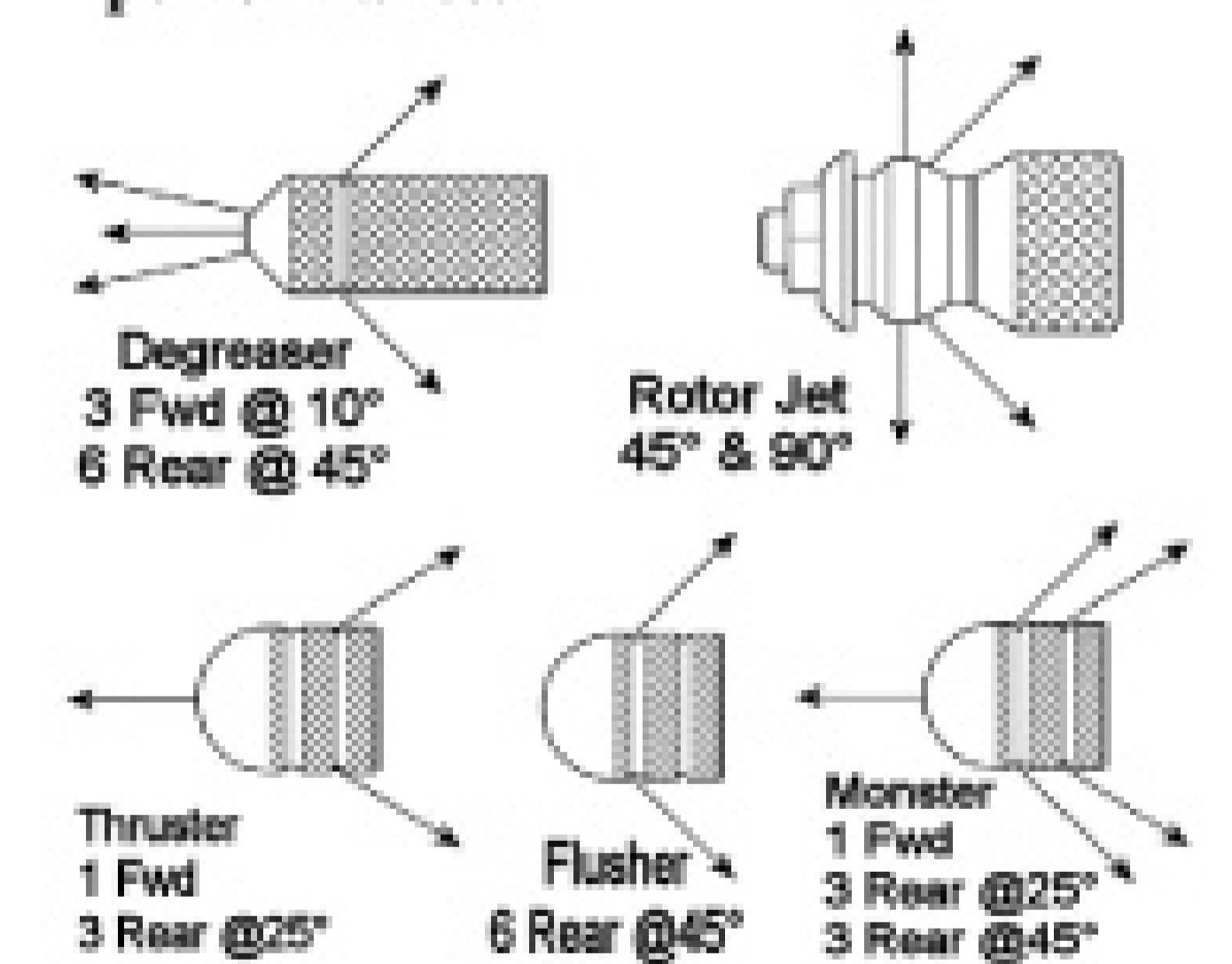
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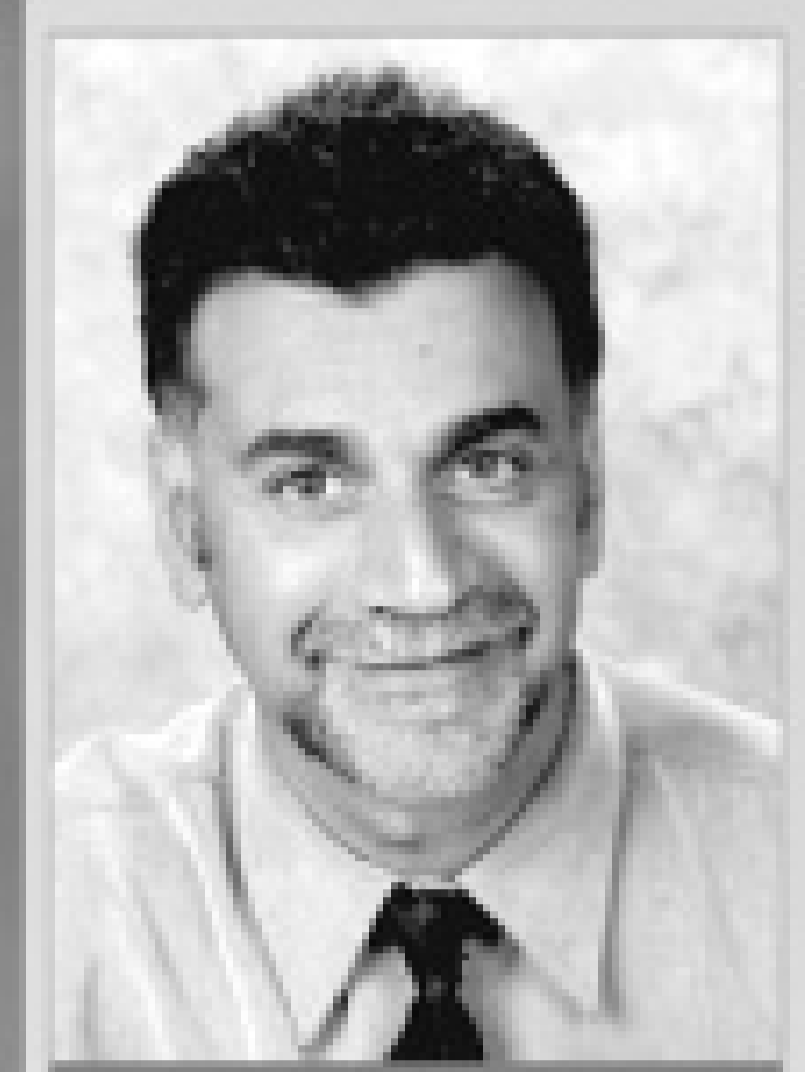
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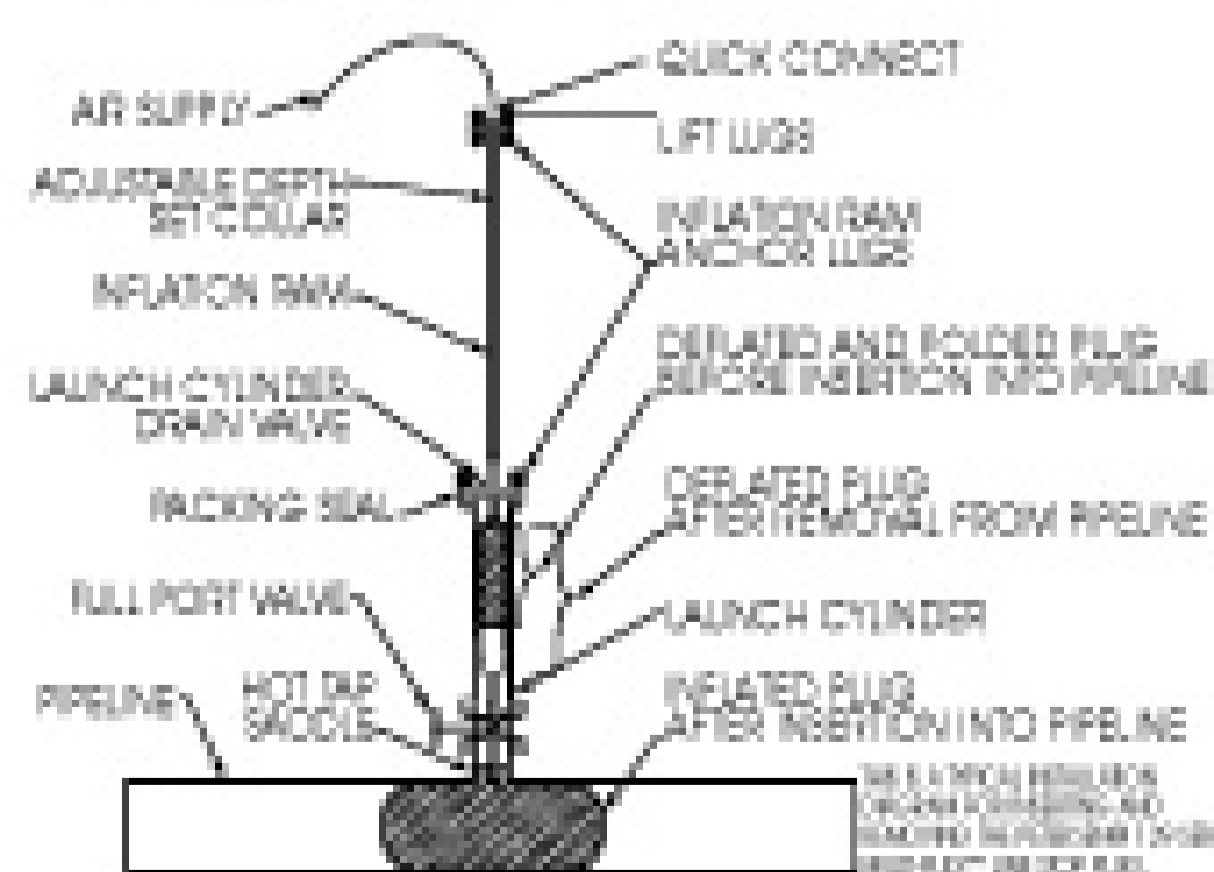
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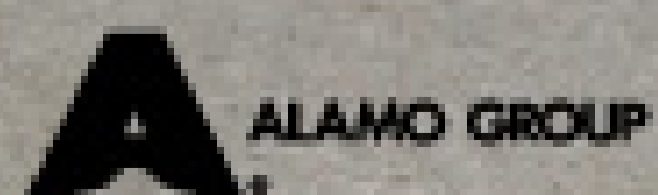
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Main Entrance

Lateral-to-main connections can be major sources of sewer leakage. Manufacturers have devised a variety of remedies for sealing that junction

By Peter Kenter

Lateral-to-main connections can be major sources of sewer system infiltration. Even after cured-in-place pipe (CIPP) lining, that junction can remain a significant leak point, in part defeating the purpose of the repair.

Sealing the lateral-to-main connection, whether as a spot repair or after lining and lateral reinstatement, has been a substantial technical challenge. The goal is to create a complete, lasting and leak-free connection that eliminates clear-water entry.

Manufacturers have developed a variety of materials and techniques for sealing the junction. Here are three widely used approaches to creating sound lateral-to-main connections.

non-woven felt with a PVC coating that's very flexible and impregnated with two-part epoxy," says Jerry D'Hulster, company president.

The product contains no styrene and as such does not shrink, enabling complete adhesion to the host pipes, he says. Before installation, the pipe is cleared of grease and debris. Using a turnkey trailer system, operators insert premanufactured structural liners designed for lateral connections at 22 degrees, 45 degrees or 90 degrees.

"We have the templates on hand for each type of lateral and can quickly make them to the angle of the existing connection," says D'Hulster. "Once the camera videotapes the existing pipelines, we can assemble custom-made repair kits the same day and have them in the contractor's hands within 48 hours."

"We have the templates on hand for each type of lateral and can quickly make them to the angle of the existing connection. Once the camera videotapes the existing pipelines, we can assemble custom-made repair kits the same day and have them in the contractor's hands within 48 hours."

**Jerry D'Hulster,
Perma-Liner Industries Inc.**

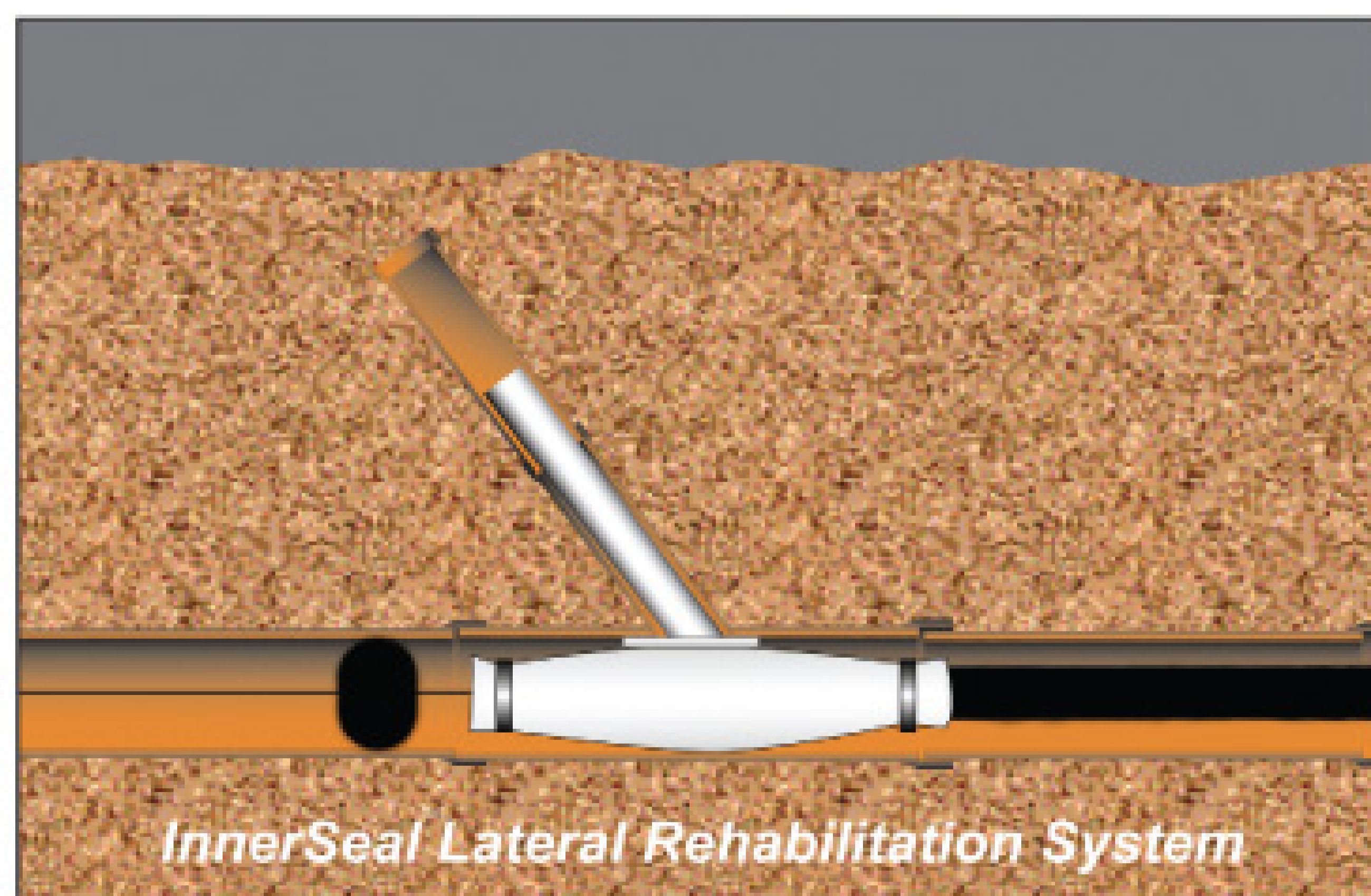
Ready templates

The InnerSeal lateral connection from Perma-Liner Industries Inc. is a CIPP resin-impregnated lining system composed of 100 percent solids epoxy. "The product uses scrim-reinforced,

The kits are placed from within the mainline and launched into the lateral, creating a watertight seal at the lateral connection. The operator controls the direction of the repair train and positions the train into the lateral connection, where the liner is inverted through the application of air pressure.

The operator controls the inversion pressure to secure the resin-impregnated liner properly against the host pipes. Constant pressure is applied as the liner extends through the lateral, sealing off water infiltration during application.

"The repair places a 4-inch brim inside the main around the lateral connection, then provides a liner for the lateral as well," says D'Hulster. "We can easily go 50 feet or more up the lateral to seal it against leaks and root intrusion. When you've got 300 feet of sewer



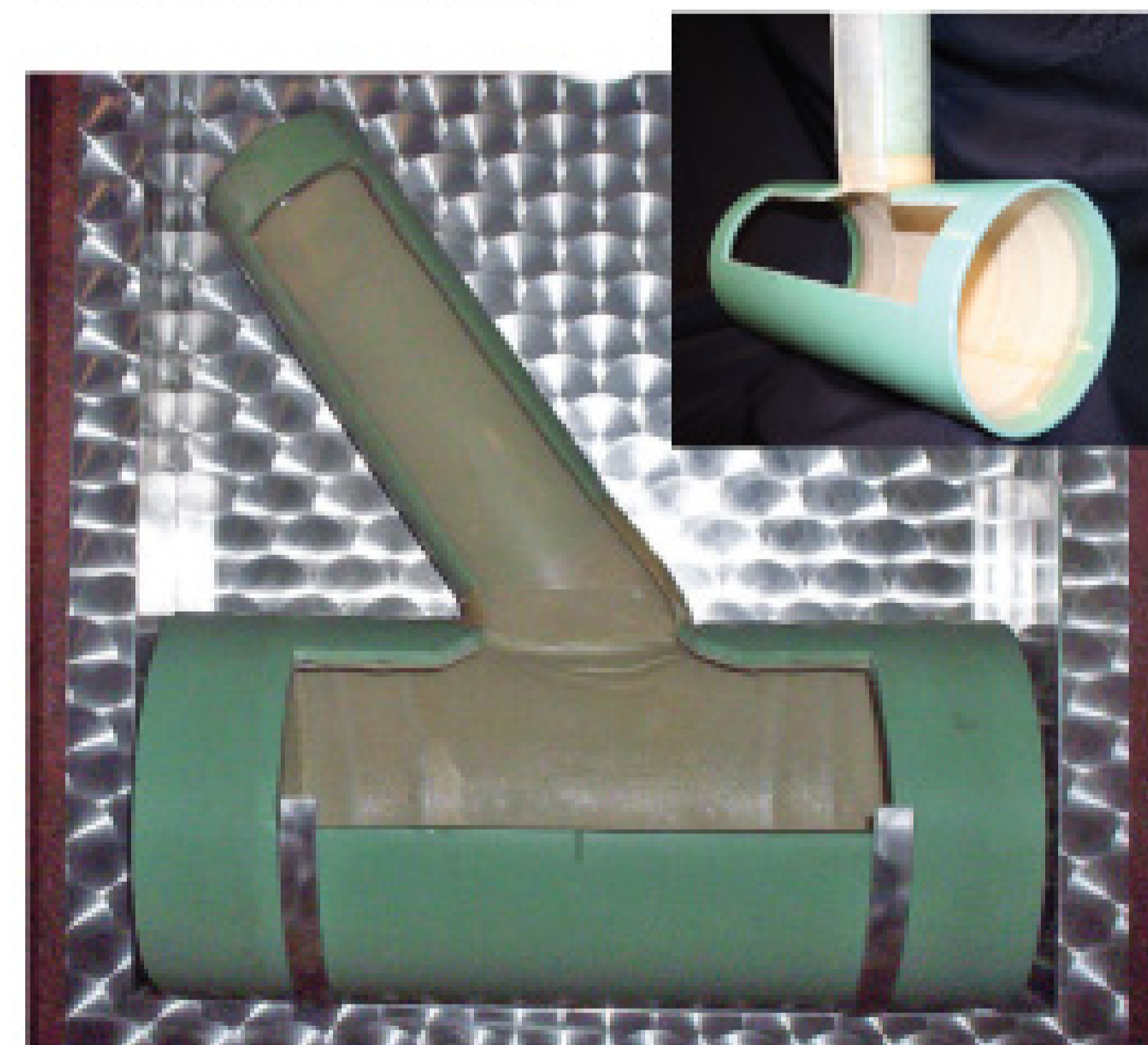
The InnerSeal lateral connection from Perma-Liner Industries Inc.

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.

main with 20 houses along it, each with 75 feet of lateral, almost all of your inflow and infiltration is coming from those laterals, and our product addresses that."

The resin is ambient-cured, and the formula can be modified for hot-water or steam curing. The product can rehabilitate mains from 6 to 24 inches and laterals from 3 to 8 inches. A crew can complete three to four installs per day.

D'Hulster notes that the InnerSeal system exceeds the specifications of ASTM F 1216: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube and has a guaranteed minimum life of 50 years. 866/336-2568; www.perma-liner.com.



The T-Liner system from LMK Enterprises Inc.

Compressive seal

The T-Liner system from LMK Enterprises Inc. is a stand-alone CIPP liner that renews the main-to-lateral connection while also rehabilitating the lateral pipe.

"Our system is not based on adhesion, but on compressive strength while using gasket sealing technology," says Rick Gage, national sales director. "It is designed to renew the connection while reducing I&I and eliminating root intrusion.

"We start with a coated flat sheet, and on each end we sew a 1-inch strip of compressible material," Gage says. "Once cured, the one-inch strips provide a smooth transition for flow from upstream to downstream in the mainline pipe. On the other side, we sew a strip of material that provides a smooth transitional overlap."

The lateral lining, whether it is a T or Y, is centered as one piece to the flat sheet using a sewn and heat-welded tape seam. The lateral lining consists of either coated felt or coated non-woven material, depending on the configuration of the lateral pipe.

“Once the lateral connection is positioned, the mainline sheet inflates, embedding the hydrophilic O-rings against the inner wall, producing a 360-degree connection in the main.”

**Rick Gage
LMK Enterprises Inc.**

“We may use non-woven materials to negotiate bends because they’re more flexible and have more stretch versus the traditional coated felt,” says Gage. Installers catalyze the liner resin and vacuum-impregnate the liner/bladder assembly onsite. The lateral lining is pulled inside a protective sleeve while the mainline portion is wrapped around the launching device, and then the assembly is inserted into the main through a manhole and pulled to the lateral connection.

The liner is robotically positioned at the main-to-lateral interface, and then air pressure is applied. The mainline portion inflates, and then the lateral lining is inverted up the lateral pipe. “Once the lateral connection is positioned, the mainline sheet inflates, embedding the hydrophilic O-rings against the inner wall, producing a 360-degree connection in the main,” says Gage.

“The lateral liner can be extended to just about any length. We’ve inverted as far up as 200 feet from the main.” After the inversion, 20 minutes of steam expedites curing, followed by a 10-minute cool-down. Each repair includes a printed indicia recording the street address, installer name and LMK manufacturing codes that provide information on the coating, and on the liner material, density and lot number that can be later read through a mainline camera.

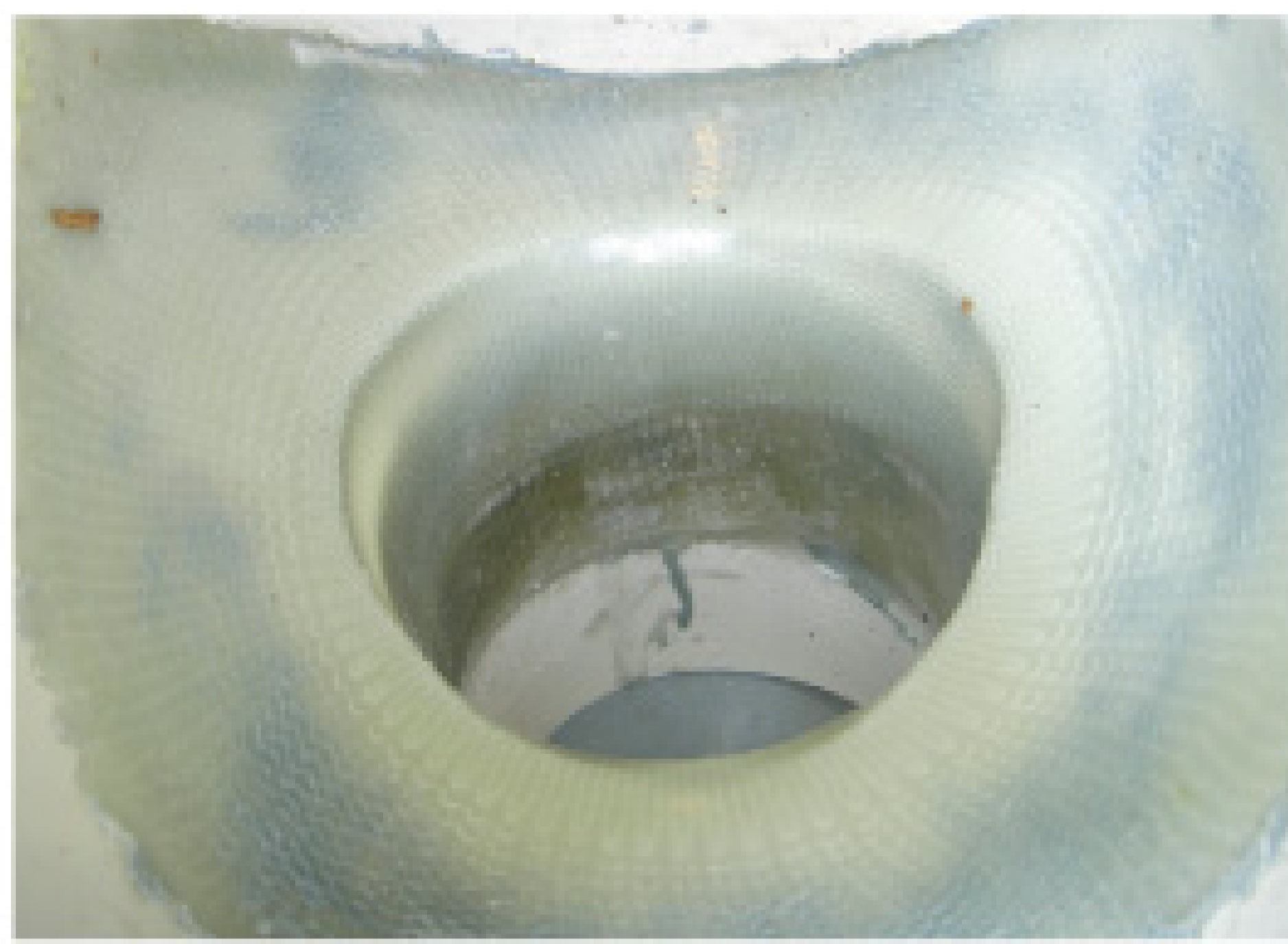
The manufacturer says the T-Liner system is fully compliant with ASTM F2561-06, Standard Practice for Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner. 815/433-1275; www.performanceliner.com.

Stovepipe hat

The Top Seal from AMerik Engineering is a resin-impregnated, non-woven, enhanced corrosion-resistant fiberglass composite laminate coated with bonding epoxy on the pipe contact surface.

“The product gets its name from its design,” says Erik Nielsen, president. “The seal is shaped like a stovepipe top hat, without the top.” The 6-inch stovepipe portion is sized for the interior circumference of the sewer lateral, and the 3-inch-wide brim seals to the interior surface of the main.

“We don’t go 1 or 2 feet into the lateral,” says



The Top Seal from AMerik Engineering.

Nielsen. “If you need that, you’re probably looking for more than a sealer between the main and the lateral. It doesn’t change the potential for groundwater infiltration or roots, which is better dealt with by a liner extended from the customer side of the lateral.”

“We don’t go 1 or 2 feet into the lateral. If you need that, you’re probably looking for more than a sealer between the main and the lateral. It doesn’t change the potential for groundwater infiltration or roots, which is better dealt with by a liner extended from the customer side of the lateral.”

**Erik Nielsen
AMerik Engineering**

The product is assembled in a trailer, placed on a tractor-applicator, then placed in the manhole, delivered to the lateral connection and positioned using the tractor-applicator and TV camera. The stovepipe portion of the composite is inserted into the lateral connection, while the brim remains in the sewer main and forms a reinforcing and sealing ring around the lateral opening.

Once inserted, a bladder is inflated, deploying the seal and pressing the fiberglass containing the epoxy bonding component against the inside of the lateral and main walls ringing the lateral. The inflation of the bladder further presses the laminate into the connection joint, mechanically locking it into position.

Because the laminate is non-woven, the

material expands tightly against the pipe walls, taking the shape of the connection. The expandable bladder is longer than the composite, so composite ends taper smoothly to interior pipe surfaces. The system can form to lateral T, Y or break-in connections, bridging smaller voids and cracks.

“Once the side bladder is inserted into the lateral, the operator switches to a second TV camera, placed inside the bladder, to confirm correct placement,” says Nielsen. “The bladder can be deflated to allow the laminate to be adjusted to achieve optimal placement.

“The operator then re-inflates the bladder and activates an ultraviolet light source within the bladder, curing the fiberglass to a solid structure in about seven minutes,” he says. The applicator is cooled for a few minutes, then removed, and the installation is examined using an external camera. Processing time for 8- to 21-inch mains with 4- or 6-inch laterals is about 30 to 45 minutes per installation, working from the same manhole. 770/924-2899; <http://amerikengineering.com>. ■

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Monitor Tells When It's Time for Grease Trap Service

By Ken Wysocky

Determining when a grease interceptor needs cleaning can be an inexact science. Too-frequent cleanings waste money. If cleanings are too infrequent, grease overflows into the sewers and can result in fines. Because each commercial kitchen generates varying amounts of grease, there's no one-size-fits-all cleaning schedule.

The Endura Sentry grease monitoring system from Canplas, designed to complement the Endura Grease Interceptor, takes out the guesswork with a wireless system that indicates if an interceptor is operating within its rated capacity. "That's important because regulators are increasingly concerned about grease buildup in sewers," says Andrew Bird, Canplas product manager for engineered environmental products.

"You tell the system what size of interceptor you're using by setting a switch configuration on the receiver," Bird explains. "After you establish wireless communication, a sensor inside the interceptor periodically sends the receiver data about the grease level. The receiver's LCD screen displays what's going on inside the interceptor. It

also displays the status of the signal strength and of the AA batteries that run the system."

When an interceptor reaches 90 percent of rated capacity, an interceptor icon on the receiver flashes, and an alarm chirps six times, once an hour. After the interceptor is cleaned, the system resets automatically. "The system is simple enough that restaurant owners can install it themselves," Bird says. "After it's set up, that's basically all that needs to be done."

The system keeps a 12-month rolling record of the information transmitted by the sensor. Accompanying software enables users to download the data onto a computer and use it to demonstrate a regular cleaning schedule. "The software interface allows you to see in graph form a history of interceptor maintenance," Bird says. "It can help you avoid unnecessary cleanings, as well as satisfy any local maintenance reporting requirements."



Moreover, if regulators are investigating grease overflows into sewers, restaurant owners can verify that their business isn't the source. The Endura Sentry is available through restaurant equipment and plumbing wholesale branches. 888/461-5307; www.endurainterceptor.com.



Electric Eel Introduces D-5 Cleaner

The D-5 continuous cable drum cleaning machine from Electric Eel Manufacturing Co. features 3/4-inch Tri-Max cable and can clean 3- to 10-inch diameter pipe up to 100 feet long. The unit has a high-density polyethylene drum, 1/2-hp capacitor-type motor with loading wheel built into the handle. 800/833-1212; www.electriceel.com.



Lenzyme Offers Maintenance Brochure

Lenzyme has designed a homeowner education brochure on the importance of regular cleaning and maintenance of septic and plumbing systems. The brochure includes information on how systems work through bacterial action and a calendar reminding homeowners to maintain their systems. 800/223-3083.



Raven Offers Wastewater Centrifuge

The bench-top Wastewater Centrifuge from Raven Environmental Products Inc. features a horizontal swing-out rotor that holds six centrifuge tubes. Made of heavy stainless steel and aluminum, the centrifuge delivers a digital, 15-minute spin test for mixed liquor suspended solids and return activated sludge suspended solids. It also is designed to provide a multitude of additional sludge quality parameters, such as aeration tank concentration, returns sludge concentration and clarifier sludge concentration. 800/545-6953; www.ravenep.com.



Muck-Truck Adds Loading Ramp

The Muck-Truck skip-loading ramp from Niche Product Sales LLC is made of lightweight steel and folds for storage and transportation. It weighs 137 pounds and measures approximately 30 inches wide, 59 inches long and 4 inches high. 772/621-3951; www.mucktruckamerica.com.



General Pipe Offers Power Vee Drain Cleaner

The Power Vee cable drain cleaner from General Pipe Cleaners is designed to work under sinks or other awkward places. A squeeze on the level feeds cable and drives it into the line at a rate of 16 feet per minute. The unit handles 1/4-inch through 3/8-inch Flexicore cables without the need for adjustment. Other features include the Dyna-Thrust bearing system for reduced motor wear and quick-change cable cartridges. 800/245-6200; www.drainbrain.com.



Water Cannon Introduces Construction-Grade Washers

Rated from 4 gpm to 8 gpm, Water Cannon's new line of industrial, continuous-duty pressure washers offers extended run times, 15-gallon onboard fuel tank and 20- to 27-hp engines. Available in poly-chain or 4-V belt-drive models, the washers also feature up to 7,000 psi, powder-coated steel frame, removable complete roll cage with hose reel platform, adjustable pressure unloader and thermal pump protection. Options include pneumatic wheel kit, EZ-start unloader, high-capacity 350-foot hose reel rated up to 5,000 psi, industrial wet blast attachment or pulse valve for commercial jetter applications. 800/454-9274; www.watercannon.com.



RIDGID Offers Quick-Acting Vises

Models XF-45 and XF-50 quick-acting vises from RIDGID feature a

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StoneAge Introduces Anti-Withdrawal Device

The VE-70000 anti-withdrawal device for pipe and tube cleaning from StoneAge Waterblast Tools can adapt to both horizontal and vertical exchangers and a variety of tube sizes. Made of stainless steel, different-sized collars are stored in the extension arm, while two ergonomic handles lock the unit into place. The adapter plate can be attached to multiple situations, and by removing the arms, can be used as a back-out preventer plate for flanged pipes. 866/795-1586; www.stoneagetools.com.



Putzmeister Introduces Steady End Hose

The Steady End Hose from Putzmeister America Inc. is designed to minimize the effects of end hose

movement by controlling pressure changes through the use of a specially designed reinforced fabric that dampens lateral deflections and excess vibration. The hose end is available in 10- and 13-foot lengths, with internal diameters of approximately 4 and 5 inches. 800/884-7210; www.putzmeister.com.



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Look Before You Line

CIPP repair is a valuable pipe-rehabilitation technology that also demands commitment to training from contractors who use it to solve customer problems

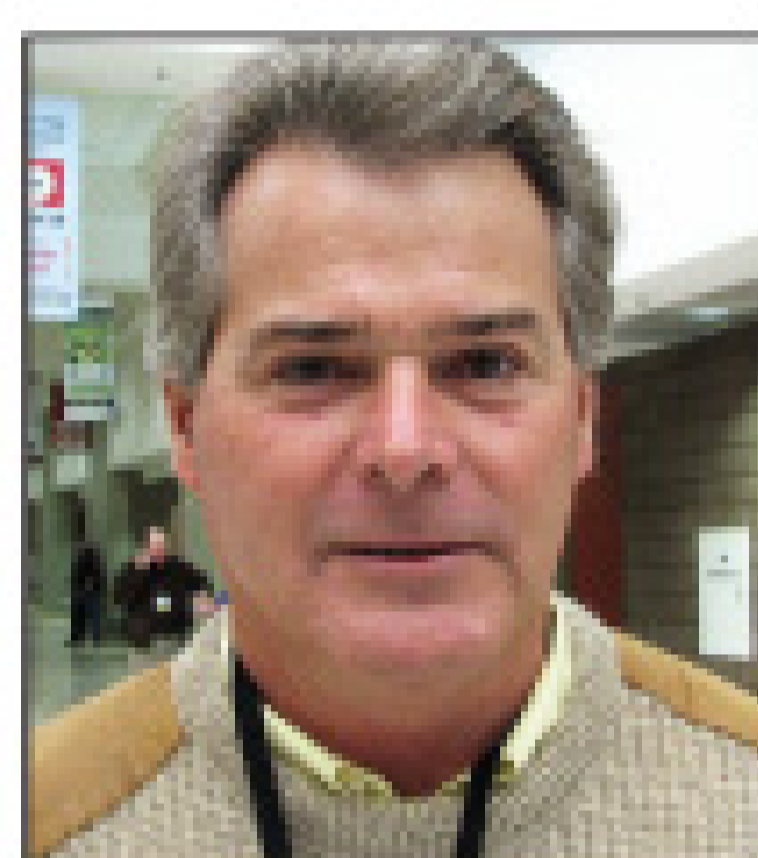
By Mary Shafer

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



Cured-in-place pipe lining is a fast-growing technology in pipe rehabilitation. There are several established CIPP system manufacturers, and new products appear every year. CIPP is attractive because it allows repairs to be made without disruption on the surface and often saves the customer money.

For contractors, the startup costs are substantial, and the process takes time to learn. Here, three contractors share what they have learned about adopting CIPP technology to solve their customers' problems.



Geoff James

Owner
G.F. James Plumbing Services
Lidcombe, New South Wales,
Australia
Employees: 20
Years in Business: 31

Geoff James, owner of G.F. James Plumbing Services, has brought pipe lining to his factory and other commercial plumbing customers in Australia. He is a proponent of CIPP technology, but acknowledges that it is not a cure-all and is not a solution every contractor should adopt.

He says pipe lining requires skill and takes time, patience and perseverance to perfect. "A lot of the success in using a lining system is being properly trained on it," he says. "You have to practice a lot. You have to give it a go, and be okay with trial and error. You have to be willing to work out problems.

"If it doesn't work, you've got to pull it out and do it again so you keep your name right with your customer. It's not for every job, but it will get you out of a lot of restoration problems. Where a customer would normally have to allow us to dig things up, we can go in and line the pipe without all the other costs involved with restoration."

James says the pulling and repositioning of saturated lining can be physically demanding, but he thinks the bigger challenge is having team members with problem-solving skills. "You need guys who are willing to think outside the square, and who are able to tackle each job separately," he says. "In the four-and-a-half-years that we've been doing it, we've found that every job is different. There is no standard CIPP job."

James cautions business owners considering

"You need guys who are willing to think outside the square, and who are able to tackle each job separately. In the four-and-a-half-years that we've been doing it, we've found that every job is different. There is no standard CIPP job."

**Geoff James, G.F. James Plumbing Services
New South Wales, Australia**

CIPP lining to be comfortable with and committed to being educators for each new crew member. "These systems have a significant learning curve," he says. "The good news is that the more jobs you do, the more skill you accumulate, so things do get easier."

"It's important to choose a product with great flexibility, to have a lot of experience with the product you're using, and to have a great company supporting you," says Frank Rossi, owner of NuFlow Pipelines of New York, based in Manhattan.

"We have very complicated jobs in high-rise office buildings. When I'm standing there with a facility manager and he's got 6,000 people up above him, I can't say, 'Oh, we can do this part, but not that part.' We've got to solve a problem.



Frank Rossi

Owner
Nu Flow Pipelines of New
York
New York, N.Y.
Employees: 14
Years in Business: 20

We need a system that's flexible enough to get the whole job done. It needs to be able to negotiate bends, to go down to inch-and-a-half pipe, maybe accommodate several different reinstatements."

Even the best technology will fail if installed by an inexperienced team. That's where training and confidence come in. "When a pipe breaks in Manhattan office buildings going for \$150 a square foot, there's no time to waste," Rossi says. "They can't afford to have a company that's indecisive because they're not confident about their product's quality or their training with it.

"Especially in a high-rise building, there are custom jobs that need special handling," Rossi

leans on intensive training from the liner manufacturer. "Because I have a company behind me that taught me how to do the whole job, we know how to clean the pipes with special products, how to do complicated jobs around bends, and reinstate laterals. I can do jobs that no other company can do, so I can make more money."

Manufacturer support extends to real-time troubleshooting. Rossi appreciates that his manufacturer representative is accessible whenever needed. "We have to do most of our work at night, when nobody's in the building," he says. "When we're having a problem in the middle of the night, we have a system of communication that allows us to talk to an entire team of experts who will help us until we get the answers we need."



Ron Stake

Labor Superintendent
Hoerr Construction
Peoria, Ill.
Employees: 30
Years in Business: 12

"You need to get people who are willing to learn the product, and you need to buy within your means to get started with equipment until you're familiar with the product," says Ron Stake, labor superintendent at Hoerr Construction in central Illinois.

The company's biggest customer is a heavy equipment manufacturer. Hoerr performs repair and replacement of water and sewer lines, manhole rehabilitation, point repair, and pipe cleaning and relining on plant properties. The firm uses both traditional open-dig and CIPP methods.

"You also have to be able to work fast, safe, and not make a big mess, while still solving your customer's problem," Stake says. All of these abilities depend on having the confidence that comes with thorough training and practice. "If you get it down to a fine art, you can work within your budget and still make money."

Stake believes CIPP is the future of pipe rehabilitation. "You don't have to go out there and dig holes," he says. "You go in through a manhole, pull it in, steam it, cook it, cut in your laterals, and you can walk away. It's a done deal, and you can do quite a bit of footage in a day without anyone knowing you were there." ■

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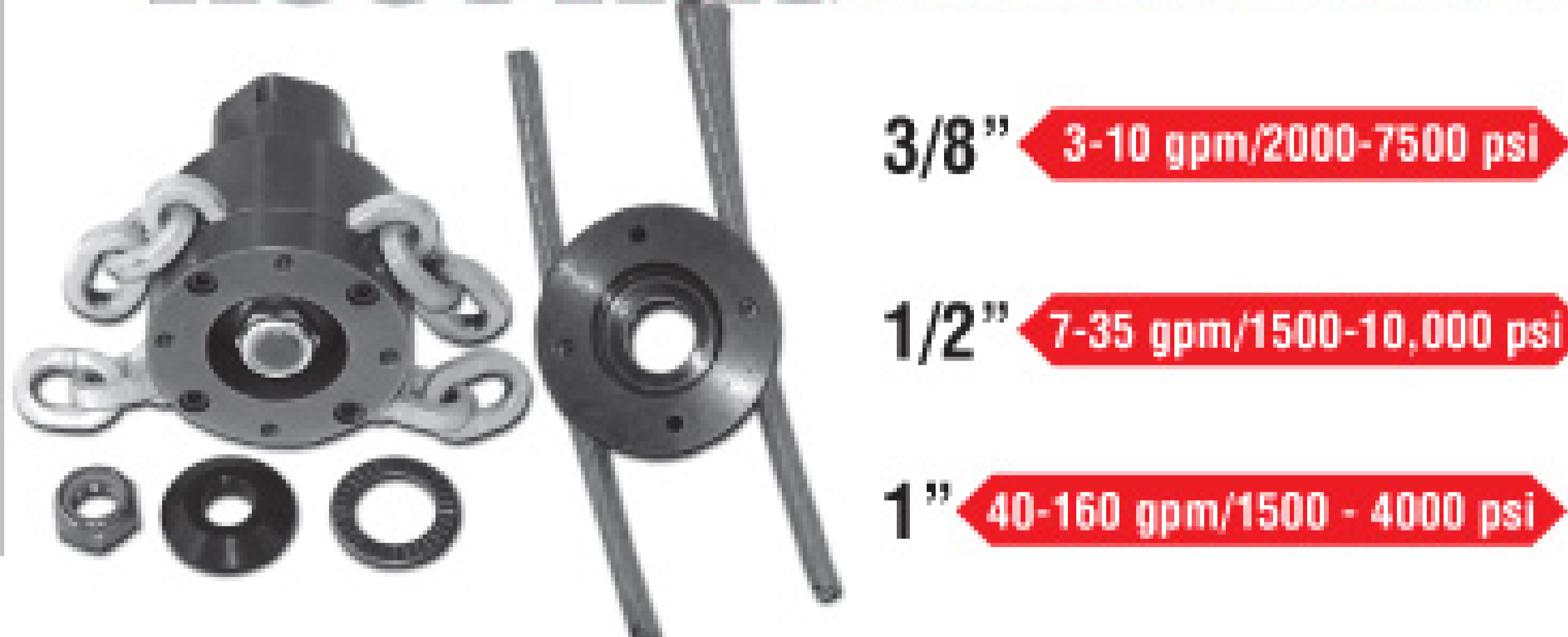
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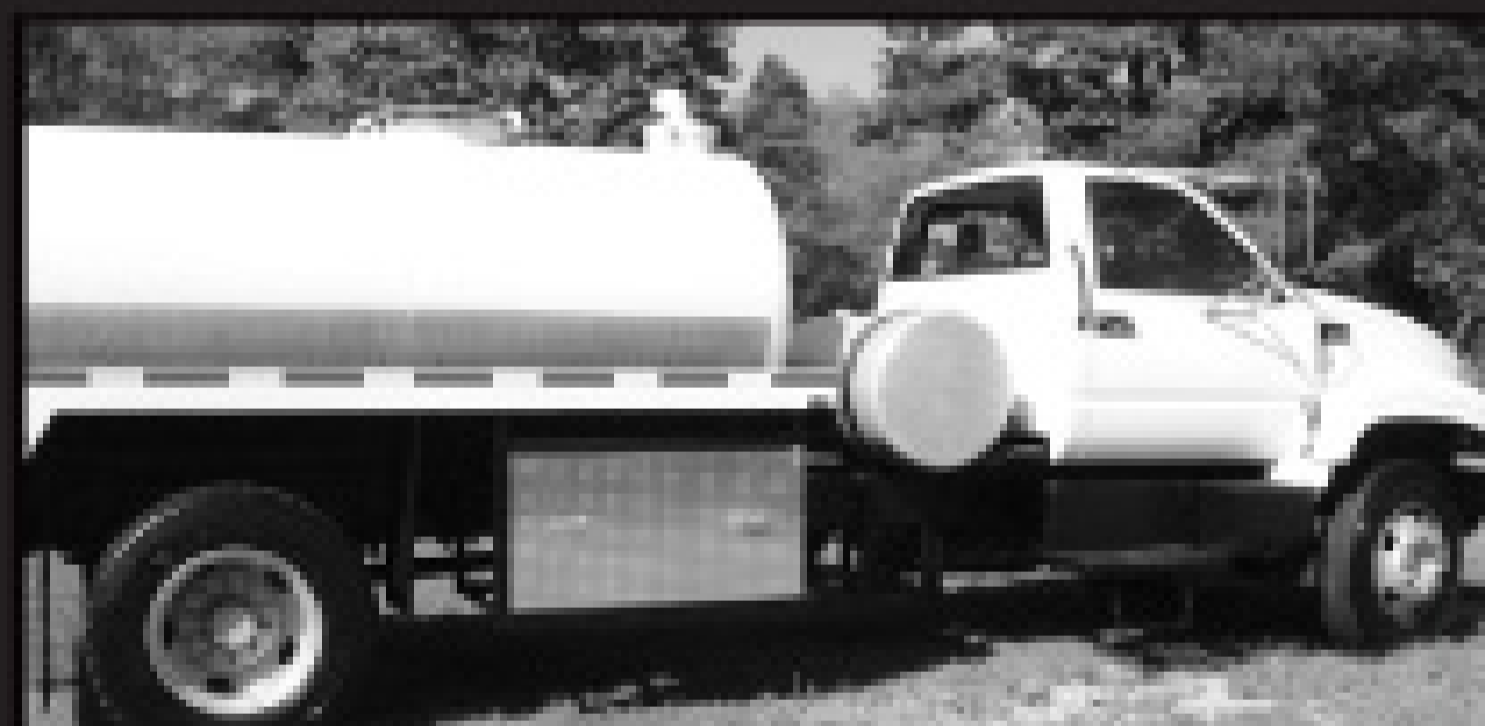
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1999 Vactor 2110J: 10-yd. debris body, 600' 1" rodder hose, 1500 gal. water tank, 8' vac hose, 8' hyd. telescoping boom, 80 gpm @ 2500 psi hydro-excavating package, 2-stage fan. More pics available at www.metroquip.com.
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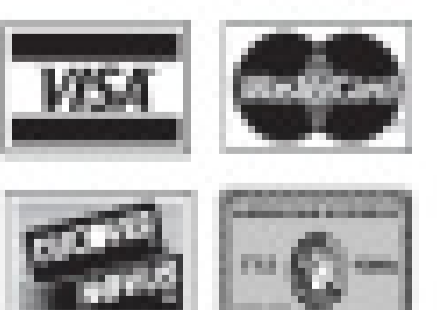
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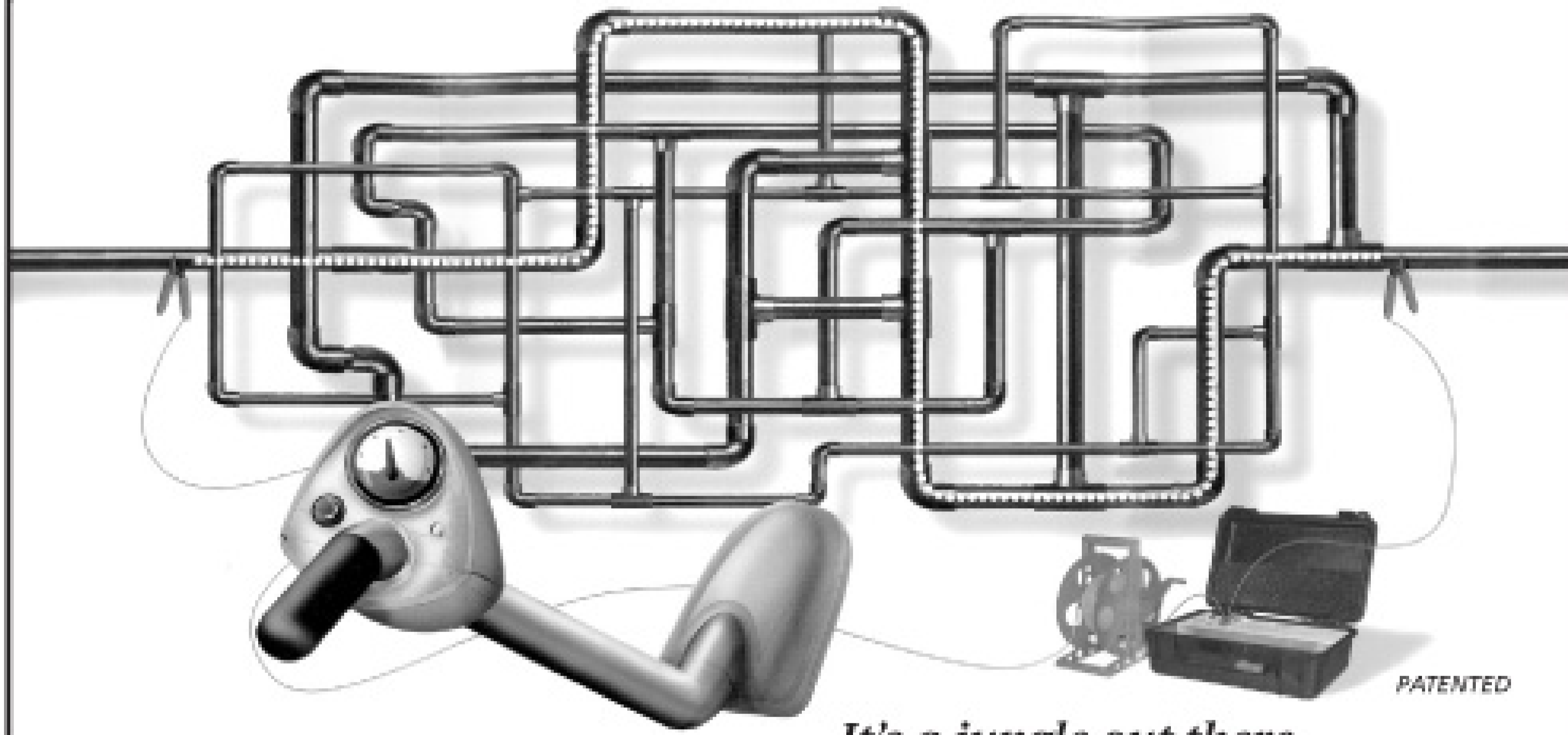
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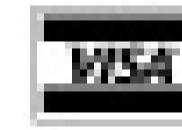


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1988 Ford F800 Sreco jet truck, 65 gpm, 2000 psi, former city truck, 47,300 miles, 1000 gallon water tank, Myers pump. 651-489-5185. (CPBM)

JET VACS

1998 Ford LT9513 Camel, Cat 3406E, 10-speed, Eaton Fuller, Hendrikson walking beam suspension, splitshaft drive, hydraulic tailgate, 8" high performance vac pump, 5' telescopic boom, rear discharge, 80 gpm @ 2000 psi, articulating front mounted hose reel. Price \$75,000. Call 503-969-9557 or 503-682-2723. (C10)

1982 Jet Vac, Vactor 810: New water pump, new Ford 300 vac engine. Works well. New 8" pump hose. Money maker! Call me and I will send additional photos. Joe @ 801-807-8335. (C10)

1998 Vac-Con Model V350THA, 3-stage fan, 50 gpm, 3000 psi pump, 5-yd. debris tank, new white paint. Was city owned. 714-639-8352. www.empireequip.com. (CPBM)

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1994 Guzzler, Ford LNT8000, 126,250 miles, 275 hp, auto transmission, 9-cy debris tank, 16" Roots blower, Myers water pump, 2000 psi @ 80 gpm, 1500 gal. capacity, 8' extendable boom. Good condition. Asking \$67K OBO. 716-523-6813 after 5:00 pm. (CP10)

1991 White Autocar Dry Vac, bag house, Cat 3306, 6 cylinder, Allison 5 speed automatic, Hendriksen Pad Suspension. Price \$45,000. Call 503-969-9557 or 503-682-2723. (C10)

2005 Vac-Con: 11-yard, Roots 827 PD (4200CFM@18"), 10' boom, 180° articulating hose reel, 80GPM@2000PSI water pump, 500' X 1" sewer hose, 50' hand gun hose reel, 20' of 8" tube & clamps, nozzles, mounted on 2005 International, low miles and hours. Price: \$148,000. Call: 843-556-8217. Pictures available. (C11)

1997 Clean Earth, Ford LNT 8000, 98,575 miles, 275 hp, auto transmission, 4-cy debris tank, 16" Roots blower, Myers water pump, 2000 psi @ 80 gpm, 2000 gal. capacity, 4' extendable boom, rear mount hose reel. Good condition. Asking \$52K OBO. 716-523-6813 after 5:00 pm. (CP10)

2002 Vactor Model 2103 on an International 4700, 40 gpm, 2000 psi, **PD blower**, new white paint, **no CDL required**. Located in Dallas. 972-938-1905. www.empireequip.com. (CPBM)

1996 Vactor 2100, 12-yr tandem on Ford L8000 automatic, 2-stage fan w/1252 hrs. 1500 gallon water tanks, 80 gpm @ 2000 psi w/1215 hrs., 8" boom w/8' extension, rotating front hose reel w/dual controls, hydraulic tool hook up, 25' of tube and accessories. Very good condition, city owned. Call Steve @ 800-798-4205. (C11)

2001 Vac-Con V312LHA/1300, 12 cu. yd., 80/120 gpm 2000/3000 psi, 600' hose, Sterling LT7501 with Allison auto, extended rear wheel kit (legal with a full load). Loaded, low miles, low hours, ready to make you money! \$100,000 firm. CA 916-416-7901. (CP11)

JET VACS

1991 Camel 200, 6-speed, 65 gpm, 2000 psi, Roots 624 blower, tandem axle, ready for work, 169,000 miles, excellent condition. \$46,000. Call 920-655-7302 or 920-866-9109. (CBM)

1998 Clean Earth, Ford Louisville, 136,900 miles, 275 hp, 10-speed Eaton Fuller, 10-cy debris tank, 27" Roots blower, variable speed Myers pump, 2000 psi @ 80 gpm, 1500 gal. capacity, 8' extendable boom. Also serves as a hydro-excavator. Good condition. Asking \$82K OBO. 716-523-6813 after 5:00 pm. (CP10)

1985 International Vacuum Truck, bag house. Price \$15,000. Call 503-969-9557 or 503-682-2723. (C10)

2002 Vactor 2112 on a 2002 Sterling, 80 gpm, 2500 psi, **PD blower**, new white paint. Located in Dallas. 972-938-1905. www.empireequip.com. (CPBM)

1994 Vac-Con Model V309THAZ Ford tandem, automatic, 78,000 miles, rebuilt motor and transmission. 11-yr. body, Triplex pump, nozzles, clamps, pipes. \$65,000. 603-279-0099. (C10)

1998 VacCon V312THA on a Ford LT8000, 3-stage fan, 65 gpm, 2000 psi pump, extendible boom, articulating hose reel, 12 yard debris tank, new paint. Was a city owned unit. Located in Dallas. 972-938-1905. www.empireequip.com. (CPBM)

1993 Vactor 2100, 9-yr tandem on Ford L8000 automatic, single fan w/5641 hrs., 1500 gallon water tanks, 80 gpm @ 2000 psi w/4294 hrs., 8" boom w/8' extension, rotating front hose reel w/dual controls, hydraulic tool hook up, 25' of tube and accessories. Very good condition, city owned. Call Steve @ 800-798-4205. (C11)

VacCon model VPD4209 THA on a 1997 Ford, **PD blower**, 4200 cfm, articulating hose reel, extendible boom, new white paint. Was a city owned unit. In excellent condition. 972-938-1905. www.empireequip.com. (CPBM)

1996 Vac-Con LTL 8000, automatic, 275 hp, 50 gpm, 3000 psi, telescoping boom, 3-stage fan, 10-yr., 1000 gallon water, good running truck, in good condition. \$85,000. Mahoney's Equipment LLC. 1-877-282-4949. Ask for Steve. (CP10)

JET VACS

1986 Vactor 1200 on a Ford L-8000 w/3208 Cat w/Allison auto, 68000 miles. Pony motor, 6V53 Detroit w/4365 hrs. Body washout, recir. and anti-freeze systems. \$18,000. Jim @ 313-849-2667. (CP11)

1996 Vac-Con V312THA/1300. Ford L8000 tandem, 131K mi, 5' tele-boom, 3-stage fan, 12-yr. debris, 1,300 gal. water, 600'- 3/4" hose, articulating reel, 50 @ 3,000 psi, municipal trade, located in WI. \$69,500. bernie@glueco.net or 262-424-2963. (C10)

1998 Vactor 2110 on a Freightliner FL80, 28,213 miles, 2-stage fan, 80 gpm, 2,000 psi pump off system accumulator. Was a city owned unit. Located in Dallas. 972-938-1905. www.empireequip.com. (CPBM)

1994 Vac-Con model V311-TA, 3-stage fan, 11-yr. debris tank, 50 gpm, 3000 psi pump, new white paint. Was city owned. 972-938-1905. www.empireequip.com. (CPBM)

1990 Aquatech B-10 (strong vacuum pump - new gear box), Meyers pump, 2000 psi, 80 gpm, International with automatic transmission. Price \$55,000. Call 503-969-9557 or 503-682-2723. (C10)

Jack Doheny Supplies Inc. offers a full range of late model combo units and DOT industrial vacuum loaders. Call us @1-800-3DOHENY. (CPBM)

1997 Vac-Con V390THA on a Ford, 3-stage fan, articulating hose reel, extendible boom, new white paint. Located in Dallas. 972-938-1905. www.empireequip.com. (CPBM)

1989 International Camel with 7248 hours, 12-yr. debris tank, extendable boom, 1500 gallon water capacity, Meyers pump, 80 gpm, 2000 psi, ex-municipality. Price \$39,000. Call 503-969-9557 or 503-682-2723. (C10)

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Restroom Trailer - Gold Series: 32', new and used. Women's - 5 stalls, 2 sinks; Men's - 2 stalls, 2 urinals, 2 sinks. CCI/Brian Touey 805-896-3777. (CBM)

Restroom Trailer - Platinum Series: 30', new and used. Women's - 4 stalls, 2 sinks. Men's - 2 stalls, 3 urinals, 2 sinks. CCI/Brian Touey 805-896-3777. (CBM)

PORTABLE RESTROOM TRUCKS

2007 XL Super Duty F550 4x4, Satellite tank 650/250 backpack dual side, 200,000 warranty, excellent condition, 44,000 miles. \$52,000. 208-253-6021. (CP10)

For Sale: 2000 Ford F450 Satellite toilet truck, 3-compartment tank, 550 gal., 150 gal., 150 gal., 7.3 diesel automatic, 370,000 mi.; 1999 3500 toilet truck, 350 gas, auto., 99,000 miles, 2-compartment tank, 500 and 200 gal. tank, tank needs painting; 1996 Ford F450 Satellite toilet truck, 3-compartment tank, 450, 120, 120 gal., 7.3 diesel automatic, 300,000 mi.; 40' heavy built toilet trailer, \$4,500 OBO. 618-497-2542. (P9C10)

2002 International Pumper Truck: 4700 series, DT466, automatic, air brakes, 1200 gallon waste, 300 gallon fresh water, Masport 75 pump. CCI/Brian Touey 805-896-3777. (CBM)

2006 XL Super Duty F550 4x4, Satellite tank 650/250. Backpack boxes, excellent condition, 200,000 extended warranty, 71,470 miles. \$47,000. 208-253-6851. (CP10)

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KEG seeks a TERRITORY MANAGER for the western USA and western Canada. The TM will demo and sell KEG nozzles to our end user and distributor customers. Experience with jetters, combo trucks, and sewer cleaning equipment required. Heavy travel. Salary plus commission. Please submit resumes to bhowell@kegtechnologies.net. (CM10)

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SBP, Inc., a Northwest Florida-based company, is seeking qualified personnel willing to travel. If you are experienced in cured-in-place pipe lining, high pressure cleaning and video and/or manhole or lift station rehabilitation using epoxy lining systems, fax your resume to 850-478-4507 to the attention of Wanda Murphy. (C10)

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1995 Ford L8000. 7-spd. Cummins diesel. New upholstery, new paint Dec. 2007. One owner. Bought new. 3000 gallon tank, 210,000 miles. 850-837-7200. (CP12)

2000 Chevy 630 van, diesel engine rebuilt, has 25K miles, new tranny, interior racks/shelves set up for drain cleaner. \$3,000 OBO. 230-838-7000. (CP10)

1998 International DT 466, 2600 gal., Masport pump, both 4 years old, 6-speed, great truck, rebuilt engine, paint good. \$26,000. 434-531-2720 Dan. (CP11)

1998 Peterbilt, Cat 3126 engine, Wallenstein 553HRVOA vac pump, 2500 gal tank, 149,000 miles, new tires, 150' hose, excellent condition. S.E. Iowa. \$40,000 OBO. Ken 319-648-2708. (CPI-10)

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Sewer Cam Reel and Camera Repair: Authorized for General Wire, Ratech & Ridgid. Quality service on all brands. Need more info? Give Chuck a call. Electronic Repair Co., Birmingham, AL 35206. 205-836-0454; email: part@servicewithasmile.com. (CBM)

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Shower Trailer - Gold Series: 32', new and used. Men and women sides each have 3 private shower stalls with changing area, 1 restroom stall, 1 sink. CCI/Brian Touey 805-896-3777. (CBM)

SWEEPERS

2008 American La France Condor with a Vac/All Model VS10DC 3-in-1 machine (sweeper, catch basin, leaf collector), 350 water comp, 10-yd. debris body; vacuum system: 16,500 cfm belt drive with silencer, driven by Cummins turbo charged 6 cyl. diesel. In stock RENT ME!!! (Stock #1791) **www.VacuumSalesinc.com, (888) VAC-UNIT (822-8648).** (C10)

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TRUCKS: HIGH PRESSURE

1995 Peterbilt water truck, 135,000 miles, diesel, Cummins, Allison automatic, air brakes, OMCO tank, extended leaf suspension, HF400 Flush Master, hydro static pumps (2 pumps), ex-municipality. Price \$65,000. Call 503-969-9557 or 503-682-2723. (C10)

TV INSPECTION

Cables, Connectors & Pigtails for all major TV Inspection Systems. Web site under construction. Jim Fowler, Oceanquip. 504-738-7833 phone/fax. (CBM)

TV INSPECTION

2005 Ford E450 TV Truck, 37,000 mi., EXCELLENT CONDITION, Aries Box upgraded by Optical Robotics, Cobra Tech software, new camera & 6"-96" tractor, diesel Onan gen., A/C office, work bench & washdown. Too much to list! \$70,000 OBO. Ready to run. 1-866-533-TEST. (CM12)

PipeHunter 30 gpm, 3,000 psi, 1997 GMC 3500 HD, AC, new tires, new paint, clean, 600' 3/4" hose, 625 gal. \$25,995. 518-747-2044. municipalsales.net/equipment.html. (CBM)

1993 Ford E350 box van, 7.3 diesel with Aries TV inspection, pan/tilt camera. Also have 2 extra tractors all on tracks, 1 stationary camera, and lots of extra parts, TV, VCR, rear air, diesel generator. Call or email and we will email pix, 573-374-8785, or elitemotors@charter.net. (CP11)

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1998 GMC Cues TV System: Approx. 1,700 L.F. of multi conductor cable, pan & tilt, Shorty transporter, washdown system, lots of storage. Good condition. Ready to work. Financing available. \$55,000. Kelly 608-279-2299. (CBM)

BEST BUY: Must see this 1997 RST video system that includes a P & T, tractor, and an additional main-line camera. Converted ambulance with odometer of 48,000, perfect studio, storage space and safety lights. The software includes printed reports, hard disc, and Sony Photomate. Photos of interior and exterior are available via e-mail. Special Price \$24,000. Call Don at 503-969-9557. (C10)

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1992 International 9400 with Keith Huber 4000 gallon liquid vac, \$30,000. 1997 Ford with Guzzler Ace body, \$70,000. Financing available. Call 704-731-0025. (CP10)

1995 Clean Earth Vacuum Truck, 5500 cfm, 27" blower, wet & dry. Call for pricing and pictures. 1-734-942-9300. (CP10)

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WANTED: Used/demo sewer camera equipment & crawlers by Cues, Aries, EnviroSight, Quickview, or Vivax. Email pictures & descriptions to sewercamera@gmail.com or call 866-286-7585. (C10)

WANTED: 12-yard debris tank for a Vactor PD unit. Call Kenneth @ 972-938-1905. (CPBM)

Wanted to Buy: Vactor 2100's and late model Guzzlers. Cash. 800-336-4369. (CPBM)

WANTED

WANTED: Vacuum tank 2,300 gallon or 2500 gallon. Must be in good shape. Ph. 972-837-4848. (P11)

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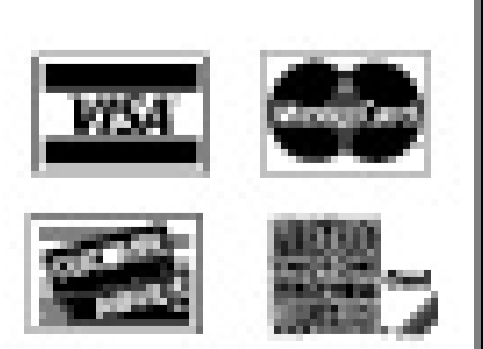
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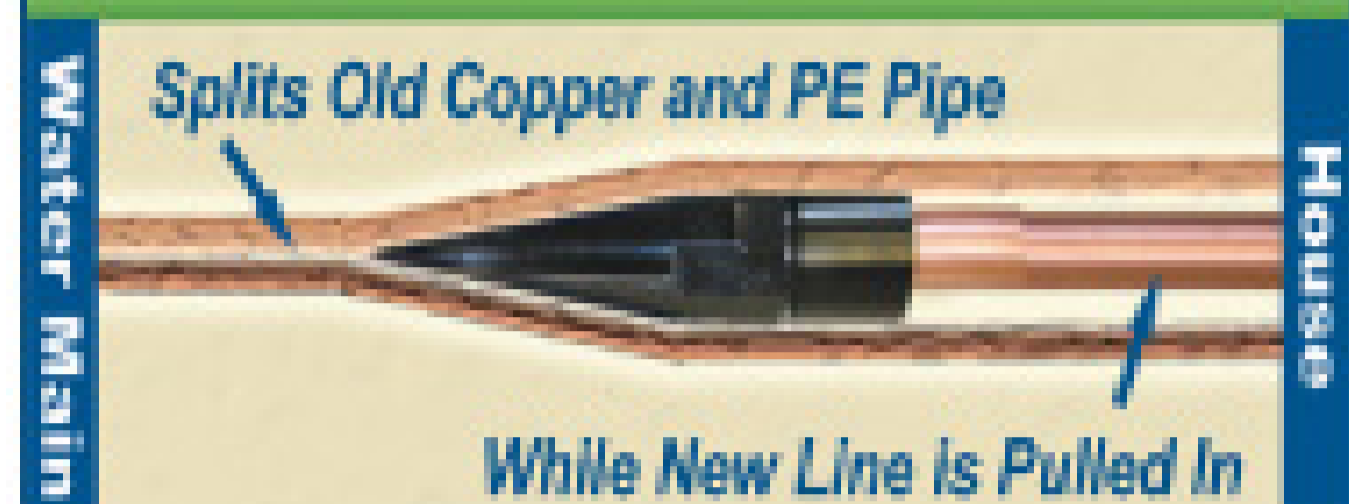
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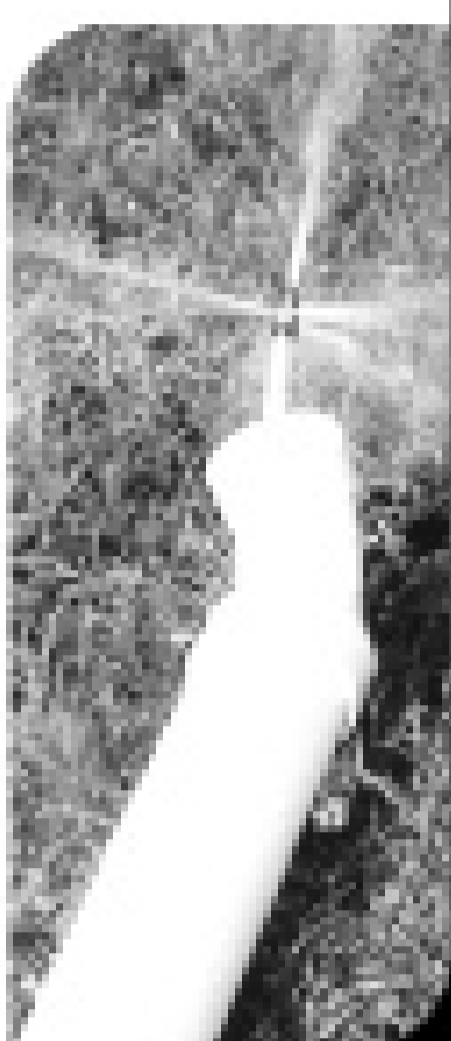


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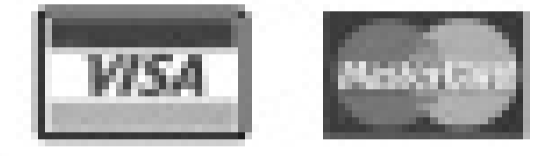
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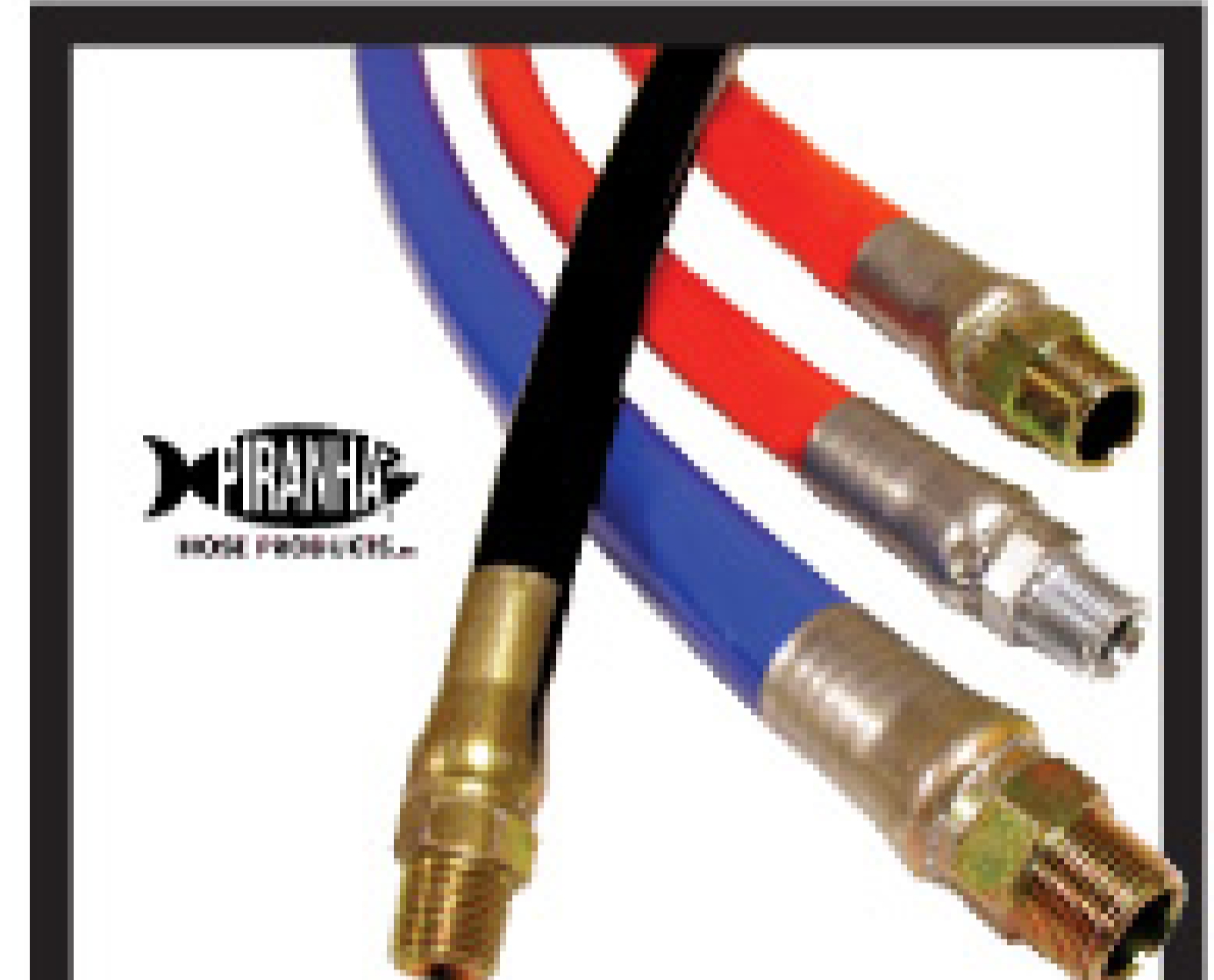
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High and Low

Fiberglass-reinforced lining enables a California contractor to rehabilitate 10 miles of sewer piping in backyards and canyons

By **Scottie Dayton**

The San Diego Metropolitan Wastewater Department has a U.S. EPA Consent Decree requiring rehabilitation of 225 miles of sewer mains and replacement of 130 miles more over the next six years. During 2007, one city bid was to rehabilitate 10 miles of vitrified clay pipe with 1,275 service lateral connections.

Erreca's Inc. of Lakeside, Calif., won the general contractor bid. It was the first time owner Scott Erreca would install a high-strength, stitch-bonded fabrics liner manufactured by San Diego-based International Pipe Lining Technologies Inc. (IPL). Therefore, IPL assisted as a subcontractor.

"What made this typical CIPP job tough was that 10 percent of the mains were in Norfolk Canyon and 25 percent were in residential backyards," says IPL project manager Abby De la Cruz. "The remainder was roadwork, but 25 percent involved working at night along the busy Pacific Coast Highway."

Among the obstacles, De la Cruz and the team faced language barriers, uncooperative homeowners, endangered species restrictions,



William Barreda prepares to run cables and hoses 120 feet from the street to a backyard manhole. The plastic foil that protects the liner extends up the middle of the driveway. (Photos courtesy of International Pipe Lining Technologies)

high-volume traffic, noncompliant drivers, bulldogs, and a cat with four kittens. Despite all that, they completed the job successfully.

Mixed bag

The project involved relining 1,819 feet of 6-inch, 46,577 feet of

8-inch, 2,718 feet of 10-inch, and 742 feet of 12-inch pipe using LightStream fiberglass-reinforced liners. It also included rehabilitating 700 vertical feet of manholes, rebuilding 20, and replacing the grade ring, frame and cover on 40. IPL inspected and cleaned the mains and set up bypass pumping where applicable.

"Cutting through the extensive root intrusion was our biggest cleaning problem," says De la Cruz. "We even de-rooted 380 laterals." To prevent roots from entering the relined pipe at the reinstatement, the contract specified service lateral connection liners, which resemble top hats. IPL made them from felt or fiberglass.

"The brim fits flush against the force main, and the cylindrical portion extends four inches into the lateral," says De la Cruz. A proprietary robot transported and inserted the connections into the laterals, then inflated the liners for curing.

Force mains in Norfolk Canyon

TOUGH JOB

PROJECT:

Rehabilitate 10 miles of sewer mains, service laterals and manholes

CUSTOMER:

City of San Diego Metropolitan Wastewater Department

CONTRACTOR:

Erreca's Inc., Lakeside, Calif.

SUBCONTRACTOR:

International Pipe Lining Technologies Inc. (IPL), San Diego

EQUIPMENT:

LightStream fiberglass-reinforced liner, IPL

RESULTS:

Pipeline rehabilitated and more lining projects scheduled



Superintendent Chris Holden (left) and foreman Roy Gallegos maneuver the light chain over a chain-link fence and down a 45-degree slope to a downstream manhole in a canyon. The 275-foot-long, 36-inch pipe to be lined sloped 40 degrees between the upstream and downstream manholes.

slope 20 feet down from grade as they pass beneath the canyon floor, but access to the manholes is along a road at the top of the 30-foot-high canyon ridge. "The difficulty here was maneuvering equipment up and down manholes 50 feet deep," says De la Cruz.

The area also is home to the endangered California gnatcatcher. "Officials limited us to working four hours in the morning because it was the songbird's breeding season," says De la Cruz. "Consequently, it took 14 days instead of five to complete the job."

Fast curing

LightStream liners were chosen because the system required less setup time and cured faster than steam- or heat-cured lining, enabling IPL to avoid bypass pumping in 60 percent of the work. The average setup to shut-down time including lateral reinstatements was three hours. Most runs were 300 feet between manholes. The longest measured 545 feet.

The equipment's small footprint and light weight allowed crews to work in restricted areas. "We carry most 8-inch liners by hand, and our equipment is a simple 5-ton winch and an air compressor blower," says De la Cruz.

When liners arrived, setup took 25 to 30 minutes. Workers gave the pipes a quick jet pass, then pulled the winch cable through the line from the downstream side and tied it to the liner. "The impregnated liner is encased in a plastic foil that eliminates any possibility of contaminating the soil with polyester resin," says De la Cruz. Two men helped unfold the liner during the pull.

Lights, camera, action

At the head of the light chain is a proprietary OpenEye camera with a light on each side. When activated, the winch pulled the light chain rope forward, enabling the crew to inspect the liner for fit and wrinkles. "If the liner's position isn't perfect, we can adjust it or, in the worst-case scenario, deflate and reset it," says De la Cruz.

After the liner passed inspection, a computer inside the IPL truck turned on the eight 400-watt UV light bulbs and regulated the speed of the cable drum as it pulled the light chain back. Sensors determined the speed of its return and the amount of heat generated by the catalyst as the UV light passed. William Barreda operated the UV light-curing process.

"The light activates the photo indicator in the resin that causes the catalyst to heat and cure a 300-foot liner in 40 minutes," explains De la Cruz. No cool-down time was necessary. IPL designed the EyeBotix reinstatement cutter because nothing on the market was powerful enough to quickly penetrate the



Workers from Erreca's Inc. in Lakeside, Calif., lower the ultraviolet light chain. The sewer rehabilitation system was light enough for them to carry into residential back yards and urban canyons.

When we said no, they did it anyway." Having a bilingual team member explain that water could back up into their homes made no difference.

IPL took pictures before entering properties and when leaving to refute potential homeowner claims that workers damaged something. The biggest residential obstacle was property line fences straddling manholes. Most fences simply were stuck in the ground, but a special team was necessary to remove and replace permanent fencing.

"We'd visit the property two days before the scheduled lining just to make sure the fence was still gone," says De la Cruz. Other obstacles included an 8-foot-diameter gazebo and an above-ground pool built over manholes.

"We parked our trucks as close to the homeowner's garage as possible, opened the back yard gate, then pulled the winch, light chain and cutter cables 200 feet to the manhole," says De la Cruz. Extensive landscaping often made the journey difficult. In five instances, De la Cruz had to assure homeowners – one with four unchained bulldogs – that workers would be gone by a certain time.

During a pipe inspection, the CCTV operator saw a cat with three kittens on the manhole channel. He found another kitten hiding in a nearby lateral. Work stopped until San Diego County Animal Control moved the family to safety.

On the road again

Roadwork was 65 percent of the job, but the section along the Pacific Coast Highway near San Diego Harbor and across from San Diego International Airport raised bypass and traffic-control issues that necessitated working from 8 p.m. to 5 a.m.

Some 70,000 vehicles travel the six-lane highway daily, and it has no emergency parking lanes. The speed limit is an unobserved 55 miles per hour. IPL was responsible for traffic control. Its setup and knockdown stretched the usual three-hour job to five or six. "Our biggest challenge was not being run over by drivers who didn't comply with our traffic control," says De la Cruz. IPL closed one lane 500 feet from the work area, and a second lane 200 feet from it.

The success of the nine-month project prompted the city to move any replacement job that didn't require upsizing into the rehabilitation category. Erreca's has since won a second contract with the city to rehabilitate 20 miles of sewer mains. ■

"What made this typical CIPP job tough was that 10 percent of the mains were in Norfolk Canyon and 25 percent were in residential back yards. The remainder was roadwork, but 25 percent involved working at night along the busy Pacific Coast Highway."

Abby De la Cruz

Once the liner was through the pipe and in the downstream manhole, the crew cut it free, leaving a 2-foot extension. They slipped the excess at both ends over a round cylindrical drum called a gate, duct-taped it, then winched it down with a ratchet strap for an airtight seal. The gate has a cap with a gasket through which the rope for the EyeBotix UV light chain slides.

Liners were temporarily pressurized at 6 psi to install the 8-foot-long UV light chain. "We remove the cap, pull the chain through, tie it to the rope on the downstream end, slip the cable through the gasket in the cap of the upstream gate, install the cap, and inflate the liner to 6 psi for larger lines or 10 psi for smaller ones," says De la Cruz. A 3/4-inch cable attached to the light chain has lights, sensors and camera power lines.

fiberglass-reinforced liner, rated at 50,000 psi flexural strength (resistance to bending) and 1.7 million psi flexural modulus (resistance to deflection or deformation).

"With this cutter, lateral reinstatements take five minutes," says De la Cruz.

Not in my back yard

The city mailed letters in English to homeowners asking them to sign a right-of-way permit allowing IPL to enter their backyards. However, many residents spoke only Spanish and didn't respond, so the city sent translators to help finalize the permits.

"We mailed a two-week and 24-hour reminder to homeowners and distributed fliers on lining day asking them not to use water," says De la Cruz. "Nevertheless, they still asked if they could use their water.

MORE INFO:

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Federal Signal Expands Dealership

Federal Signal's Environmental Solutions Group, Elgin, Ill., has added Trans Iowa Equipment Inc. of Ankeny, Iowa, and Nebraska Environmental Products of Lincoln, Neb., to its group of authorized sales and service dealers for Elgin Sweeper and Vactor Manufacturing. The dealers also offer full parts inventory, service, road service and rentals.

Logiball Celebrates 25th Anniversary

Logiball, which manufactures trenchless rehabilitation and collection system maintenance equipment, celebrates its 25th anniversary this year. Roger Bissonnette, P.E., founded Logiball in 1983 to provide equipment for his trenchless rehabilitation company, Renovation Aqua. Since then, Logiball has been providing test and seal packers, reinforced multisized plugs, carrier packers for sectional liners, lateral cleaning equipment and specialized tools for the rehabilitation and maintenance of collection systems.



Jerard Nighorn, vice president of sales, stands next to the solar heat panels installed at the Lenzyme facility.

Lenzyme Installs Solar Heating Panels

Lenzyme has installed a solar hot water heating system at its upgraded manufacturing facility in Little Suamico, Wis. The multiple solar panels provide 100 percent of the company's hot water needs, as well as providing supplemental heat. The company's facilities also are highly insulated and designed to take advantage of natural daylight and keep energy demands to a minimum. The 16

solar panels measure 4 feet by 8 feet each. When fluid in the panel reaches 120 degrees F, a thermostatic switch activates a pump inside the building, circulating the fluid through insulated tubing to a heat exchanger and hot water tank. A diverter valve also redirects excess fluid under floors in the production and office area to produce radiant heat.

Simple Solutions Adds Distributors

Simple Solutions LLC, makers of the Wolverine brand of activated carbon filters, has added new distributors: Carleton Environmental Services, Richmond, Ontario; Missouri Water and Wastewater Products, Camdenton, Mo.; and YTG, Yemen Technical Group, Sana'a, Haddah, Yemen.

Mr. Rooter Presents Franchise Awards

Mr. Rooter has recognized Paul Chierichetti of Josephine and Jackson counties as its Franchisee of the Year. Saunda Kitchen of Sonoma County was named Woman of the Year, John and Maureen Romney of Calgary received the Excellence in Leadership award, while Saunda and Paul Kitchen were honored for Excellence in Mentoring. John and Tammy Akhoian were named Sales Leader of the Year (population over 500,000) and Paul and Saunda Kitchen were named Sales Leader of the Year (population under 500,000). Justin and Jay Ullom of Central Indiana were named Rookie of the Year and Cory Harding of Tucson, Ariz., was named Service Leader of the Year. Aaron Hennagin was chosen Technician of the Year and Michele Brown was named Office Professional of the Year.

WJTA Offers Vacuum Safety Seminar

The Waterjet Technology Association will present "Safe Operation of Industrial Vacuum Equipment" on Oct. 16 at the Clarion Hotel in Atlantic City, N.J. The seminar will teach contractors how to get the most out of their industrial vacuum equipment by maximizing safety and enhancing production. The seminar combines classroom training, a step-by-step overview of vacuum trucks and components using wet, dry and combo machines onsite, and "ask the experts" roundtable sessions. The seminar is designed for vacuum equipment owners, operators, contractors and in-plant managers who contract for industrial vacuum services.

Vactor/Guzzler's Phil Stein will review industrial vacuum loaders. Topics range from operation to potential problems and safety issues. Gary Toothe, training manager for Thompson Industrial Services LLC, will cover job setup, maximizing production on the jobsite, problems with mixing materials, and case studies. Ravel Ammerman, a lecturer at the Colorado School of Mines, will discuss electrical hazards, including high-voltage hazards, overhead power lines, trailing cables, and proper grounding and bonding. For more information, call 314/241-1445, e-mail wjta@wjta.org, or visit www.wjta.org. ■

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