

# Cleaner

FOR DRAIN AND PIPE CLEANING, INSPECTION AND REHABILITATION PROFESSIONALS

cleaner.com | JUNE 2014

## THE SIZE OF SUCCESS

WATER WORKS PLUMBING FOCUSES ON THE QUALITY OF ITS WORK, NOT PUTTING MORE TRUCKS ON THE ROAD **PAGE 20**

### MONEY MACHINES

Easement unit shoulders the load

### TOUGH JOB

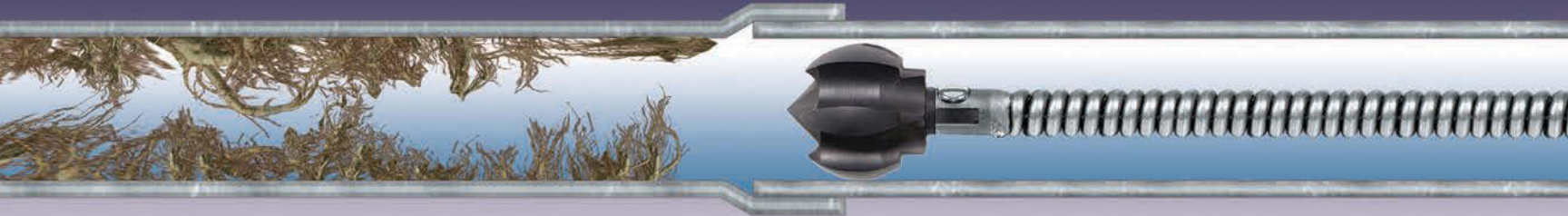
Relining contractor conquers cold weather and deep water

### EXPO SPOTLIGHT

Camera system is iPad-ready

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**ON THE COVER:**

John Johnson, owner of Water Works Plumbing in Moore, Okla., poses for a photo on a jobsite in Norman, Okla. Johnson prefers to keep his fleet small so he can stay involved with projects in the field and guarantee the highest quality work. (Photography by Brett Deering)

## COMING IN JULY

### ISSUE FOCUS: Annual Buyer's Guide

- **MONEY MANAGER:** Reinvesting in your business
- **PROFILE:** Drain Line Services, Louisville, Ky.
- **PROFILE:** C-More Pipe Services, Rickreall, Ore.

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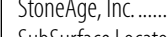
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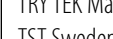
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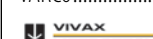
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Luke Laggis  
editor@cleaner.com

# Customers Come First

Regardless of the size of your business, taking good care of the people who pay your bills is key

By Luke Laggis

**W**elcome to the June issue of *Cleaner*. The two businesses profiled in this month's issue are very different, but they've succeeded by operating with one fundamental principle: The customer always comes first.

John Johnson owns Water Works Plumbing with his wife, Donna, in Oklahoma City, Okla. They opened the business in 1992 shortly after John got his contractor's license. It was just the two of them at first, providing traditional plumbing services. The business grew, but only as much as he would allow. Unlike many contractors, Johnson's goal was not to be the biggest contractor in the area, just the best.

Johnson runs three service vehicles and prefers to keep his business at that size. He likes to be in the field, down in the trenches, helping out and

keeping an eye on the work his company is hired to do. It helps ensure his customers get exactly what they're paying for: quality long-term solutions to their problems. He's gone from general plumbing, to drain cleaning, to pipe bursting, jetting and whatever service he feels will benefit his company and his customers. He understands that the more needs he can meet for his customers, the better off his company will be.

Out East, Basim Mansour, owner of Michael & Son Services, also knows the value of customer service. When the Washington, D.C.-based company became successful, Mansour decided to take a risk on additional expansion. He wanted to know if the company's success was attributable to luck or good work and quality service. He also had the foresight to keep the next location close to home so he could watch it carefully. Customers had to be treated right.

Next, Michael & Son opened locations in Richmond and Virginia Beach in 2009. When those locations became successful, Mansour grew more comfortable with continued expansion. In total, the company opened six locations in a four-year time span. Revenue for the sewer and water division in the Washington, D.C., location alone was \$500,000 in 2009, but jumped to \$4 million in 2013. This year, the company projects revenue of \$5.5 million for water and sewer in the Washington, D.C., location.

Mansour attributes the company's success to attentive customer service, based on the philosophy that customers come first. He understands that providing good customer service means doing what's right for the customer, regardless of time and cost.

"Everything we do is for the customer," Mansour says. "When all of our efforts are for taking care of the customer, then everything goes right for us. I remind our staff that although I sign the checks, without the customer, the signature would be worthless."

While one contractor sees virtue in staying small, the other sees value in continuing to expand; yet both know it's all about the customer and making sure their needs are met. It's a simple philosophy, but one that's often lost in the quest for growth and greater profitability. If the customers aren't satisfied, your business won't be successful.

I hope these stories can provide some insight on how to improve your own business.

Enjoy this month's issue. **c**

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# THE SIZE OF SUCCESS



Water Works Plumbing employees from left, Jason Dunn, Scott Jeffries and Field Supervisor Eric Howell use the Jetters Northwest Eagle 200 jetter on a cleanout in Oklahoma City.

## WATER WORKS PLUMBING FOCUSES ON THE QUALITY OF ITS WORK, NOT PUTTING MORE TRUCKS ON THE ROAD

BY LUKE LAGGIS

PHOTOGRAPHY BY BRETT DEERING

# S

ome contractors strive to be the biggest. John Johnson would rather be the best.

Johnson owns and operates Water Works Plumbing in Oklahoma City. He currently has three service trucks and six employees, including three plumbers in the field, his wife, Donna, who handles the bookkeeping and human resources, dispatcher Joanna See and Johnson, who likes to spend as much time in the field as possible. He says it's tough to operate in the two- to five-truck size range, but it's the size he prefers.

"I have a very professional mom-and-pop mentality, which is kind of an in-between spot," Johnson says. "I like the feel of a small company. I like the good relationships you can have with your employees in a small company environment, but I still want to deliver top-notch service, the unusual and tough solutions that no one else can figure out. The only way you can do it is if the few people you do surround yourself with happen to be incredible.

**"I like the good relationships you can have with your employees in a small company environment, but I still want to deliver top-notch service, the unusual and tough solutions that no one else can figure out."**

John Johnson

"I like to be involved in what's going on in the field. Our size is good because I can supervise and oversee the quality of our work and have personal involvement with each of our plumbers."

### GETTING STARTED

Johnson comes from a family of tradesman, but he didn't pursue that path early on. Instead, he worked as an auditor and mortgage accountant, and eventually got laid off in the early 1980s. He then took a job as an apprentice at a plumbing firm in Oklahoma City. After he finished his apprenticeship and got his contractor's license, he and Donna struck out on their own.

"It was me in a truck and Donna with a pencil and paper and phone," Johnson recalls. "I'd take a roll of quarters out on the



Scott Jeffries attaches the bracket on a new Myers WRH 30-21 lift station pump.

road with me so I could stop at a pay phone and call in, and I had a pager. I just started by word of mouth, making sure everybody I met knew what my business was.”

Water Works started in residential and commercial plumbing repair services such as toilet and faucet repairs, garbage disposals, replacing water heaters, and restaurant service.

“I have customers today who were my customers within the first month or two of when we started. I’m very grateful for that.”

John Johnson

“I put fliers in everyone’s door in my neighborhood, and all the neighborhoods around me, and I knocked on every restaurant and business door that was within five miles of my house until I was able to drum up enough business. Then that business turned into repeat business and referral business,” Johnson says. “I still have customers today who were my customers within the first month or two of when we started. I’m very grateful for that.”

Johnson eventually got into drain work as he was able to acquire equipment, including cameras, excavation equipment, and eventually, pipe bursting equipment. Oklahoma City is full of deep sewer lines, but there typically isn’t enough room to use a large backhoe. Johnson’s crew frequently digs down as far as possible – about 7 feet – with a Kubota U17, sets up shoring, and then digs the rest out by hand and runs it up in buckets. They also use a spade bit on their Bosch rotary hammer for some excavation work.

“We use that down in the ditch, digging out dirt from around city mains,” Johnson says. “It’s really hardpan clay or sandstone around here and sometimes once you get down in the ditch and you need to do a little hand digging, there’s no hand digging to be done because the soil is so tight.”

#### CURRENT SERVICES

General plumbing services still provide a foundation for Water Works, but drain maintenance and replacement are now an equal or larger part of the business.

## profile

### WATER WORKS PLUMBING, OKLAHOMA CITY, OKLA.



- OWNERS:** John and Donna Johnson
- SERVICE AREA:** Central Oklahoma
- YEARS IN BUSINESS:** 22
- STAFF:** 6 – 3 plumbers, 3 office staff
- FLEET:** 3 service vehicles
- WEBSITE:** [www.waterworksokc.com](http://www.waterworksokc.com)

Water Works Plumbing owners John and Donna Johnson (left) pose with employees (from left) Eric Howell, plumbing contractor and field supervisor; Scott Jefferies, journeyman plumber; Joanna See, dispatcher; Jama Lee, office manager; and Jason Dunn, second-year apprentice.



“That’s been a good niche for us, especially with pipe bursting because we were one of the first companies in the state to offer it,” Johnson says. “We’ve been successful with that. We’ve done several difficult projects, several projects for other plumbing contractors as well.”

He says it’s about providing what people need, not just what they want. He’s filling a niche and solving problems that people need to have fixed.

“I want to be able to do things that ensure people will call us for something,” Johnson says. “So they may need a major pipe bursting job with 600 feet of 6-inch pipe that has to be run under a mobile home park. We can do that, and we have done that. They may need a toilet flapper replaced because their toilet runs at night and wakes them up, and we can do that. And if we find something else weird that’s bugging our customers, I’m probably going to learn how to do that, too. I don’t want to stop learning how to do new things, because that’s how I keep myself and my guys employed.”

Pipe bursting is one of the company’s specialties, but Johnson says it’s not so special to him and his crew anymore because they’ve done so much of it over the past nine years. It’s just like another pipe wrench in the tool bag, he says.

“For us, if a pipe bursting job is what needs to be done today, fine, we’re prepared. We’ve got the equipment and we can get it done in a big way, but if what you need is a spot repair, we can dig that up and do a spot repair,” Johnson says.

On one job they burst over 4,000 feet of pipe, and Johnson says that didn’t even scratch the surface of all the pipe on the property.

“They have other clay pipes, and any plumber could make a pretty good case for the fact that they should all be replaced, but we’ve been able to use RootX and our hydrojetting equipment from JETTERS NORTHWEST to keep those lines in service without having to replace everything.”

Johnson and his wife also own and operate a Bath Fitter franchise from their location. The franchise focuses solely on tub and shower renovations. This division of his operation is just another niche service that helps keep everyone on the job. The bath remodel business has its own installers, estimators and administrative staff.

### HIGH-PRESSURE SOLUTION

Johnson is always looking for new opportunities to serve his customers’ needs. It wasn’t until late 2012 that he finally got into jetting.

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## FROM TRAGEDY COMES STRENGTH

On May 20, 2013, a powerful tornado swept through the Oklahoma City area, with winds reportedly topping 200 mph. Homes, schools and commercial buildings, including the shop and offices of Water Works Plumbing, were severely damaged.

"The storm came in on the west side of town and tornadoes started popping up everywhere," says Water Works owner John Johnson. "Well, a tornado came across and peeled the roof back and blew in the back doors of our shop, and that wasn't really even the bad part. The bad part was we had a record 11 inches of rain that night with no roof. It destroyed everything in the showroom. It destroyed all our office equipment. Everything was just ruined."

Later that night, after the worst had passed, Johnson and his wife, Donna, made their way to the shop to inspect the damage. It continued to rain inside the shop while Johnson grabbed the computer server and a few other things. The next morning he got in contact with his crew and told them what had happened. Then he rented a truck and they all met at the shop and started loading up everything they needed to continue working. Tools, equipment and supplies were put in the garage and yard at his house, and he was able to hook up the hard drive from the server to his home computer.

"By Monday morning we had a couple office chairs and a table and things set up at the house and our admin staff was able to have a place to work and make calls to customers and continue with some of the jobs that were already scheduled," he says. "We lost a few days of work, but it really wasn't that big of a deal in the grand scheme of things because everybody was OK."

Water Works operated out of a temporary facility with a few folding tables for the rest of the year, and finally moved back into the regular shop in February 2014. Johnson credits his family and staff for making the ordeal easier.

"The character and the awesomeness of our employees, families and friends really came through. Donna and I are very lucky to be surrounded by such great people."



Working on folding tables and out of cardboard boxes in the company's temporary office, Water Works Plumbing Owner John Johnson prepares for the workday. A tornado that severely damaged the company's permanent shop last spring forced the company to operate out of a temporary facility until February of this year.

"The jetter we use from JETTERS NORTHWEST has opened the doors to a lot of things we couldn't do before," he says.

The company uses the Eagle 200 trailer jetter primarily on root blockages and also relies on it for other tough clogs. It features a 22 hp Subaru engine and 300 feet of hose along with 300 additional feet on a separate reel. He went with the trailer

forward through the '40s. In the '40s up through the early '60s we had concrete pipe. From the '60s we had Orangeburg pipe, and then from the early '70s forward PVC started to come in."

Johnson says each product has its own weaknesses, things you can and can't do with it.

"Fortunately in Oklahoma City, if you've worked around here long enough you can look at

**"Here I am, 22 years in business and I'm taking on new things, trying to learn new processes, because plumbing service is becoming more and more competitive. I don't want to be in a position where one piece of equipment can cost me a key customer."**

John Johnson

jetter over a similar cart jetter to eliminate water supply issues. Warthog (StoneAge) and RootRat (Chempure Products) nozzles are typically affixed to the business end of the jetter.

"Here I am, 22 years in business and I'm taking on new things, trying to learn new processes, because plumbing service is becoming more and more competitive. I don't want to be in a position where one piece of equipment can cost me a key customer."

### CURING THE ILLS

"The three biggest sewer problems for us are from three different eras," Johnson says. "We have clay pipes from about the turn of the 20th century

a map and tell what kind of sewer line they have before you ever go out there, just because you know the age of that neighborhood.

"I like clay, because if it's still together, even if it has bad root intrusion, if it's not broken down you can be pretty aggressive and get the roots out," he adds. "Roots are the big thing in the sewers around here."

Johnson says he's also seeing more issues from low-flow toilets, and he expects that to increase in the coming years. Water Works tackled a huge project for a bank and another in an old church, both of which had problems related to low-flow toilets installed on 4-inch cast-iron pipe.

"There's just not enough water to get everything

CONTINUED >>



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to flow down," he says. "They're lucky sometimes if the waste and the paper can go 20 feet downstream, much less make it all the way to the city main."

Water Works also does a fair share of inspection work with RIDGID SeeSnake cameras and NaviTrack locators. Like the pipe bursting equipment, these tools have helped keep the company busy. Johnson says everything works together.

"Jetting blind upstream is something you'd never want to do without the camera equipment, and being sure all the debris gets flushed downstream ... you can't do that without a jetter. They really go hand in hand."

### CAREFUL CONSIDERATION

Johnson spends a lot of time shopping when he's in the market for new equipment, and he's constantly on a quest for information. He'll also ask other contractors how they're using a piece of equipment and what they like and don't like about it. He says he spent several months researching before he bought the JETTERS NORTHWEST unit.

Cured-in-place lining is one area the company has not ventured into yet. Johnson says he hasn't come across enough need and opportunity to justify the expense. Besides, he is a big believer in the end product with pipe bursting. He's so confident in his HDPE installations that he gives customers a written 50-year warranty.

"It's not a big deal to me. The pipe has a 100-year life expectancy, it's practically impervious to everything except open excavation and dynamite. You can't tear it apart, it's fused together, and it's scientifically impossible for roots to grow through a fused joint, so yeah, I give a 50-year warranty. It's not going to break. It's not like I'm risking much."

Johnson says with short manufacturer warranties on pipe patching and

**ABOVE:** Water Works Plumbing employees prepare the rigging for swapping out a lift station pump in Oklahoma City. **BELOW:** Scott Jeffries, left, and Field Supervisor Eric Howell prepare the new lift station pump for installation.



lining systems, the high initial cost of equipment, the learning curve and risk factor if there are problems, it's just not for him. Still, it's not out of the question. He says he's intrigued by pipe patching systems for repairs in inaccessible locations, and he'll likely buy into that before a full lining system.

"Five years ago that's how I felt about jetting. Heck, 15 years ago that's how I felt about email. So nothing is ever written in stone. By the time this hits the press, I may be shopping for a lining system." **C**

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Erik Gunn is a magazine writer and editor in Racine, Wis. Readers may direct inquiries to him by contacting this publication at 800/257-7222 or emailing editor@cleaner.com.

# Cutting and Spending

You can improve your bottom line by cutting certain expenses, but sometimes you need to spend more

By Erik Gunn

**C**utting expenses might seem like a sign of trouble, but it doesn't have to be. Even the most profitable business can benefit from a long, hard look at how it spends and where it can rein in expenses. That's only one side of the equation, though. The other side is determining where you might profitably spend more – and the right decision there can be just as important to your long-term success.

Of course, each of those choices sooner or later brings on what I call the Goldilocks moment: You don't want to spend too much, and you don't want to spend too little – you've got to figure out what is just right.

As business consultant, coach and speaker Ron Hequet of Weatherford, Texas, points out, decisions about cutting and spending are deeply intertwined. Hequet was one of a number of business experts who recently offered me their insights on the twin questions of what to cut and where to spend more.

**“There are key functions or processes in any business that if eliminated would place the company in jeopardy of losing market share or core customers.**

**Don't use an axe; use a surgical knife.”**

Ron Hequet

Ideally, says Hequet, a cost-cutting plan should be part of a much bigger picture: A plan to boost your business to increase profits – or as he puts it, “a plan to sell your way out of a decrease in profitability.”

Even if cutbacks are urgent, you should still proceed with care. “There are key functions or processes in any business that if eliminated would place the company in jeopardy of losing market share or core customers,” says Hequet, whose website is <http://profitandcashstrategist.com>. “Don't use an axe; use a surgical knife.”

## WHERE TO CUT

**Anemic promotion:** Look closely at your ad spending, suggests Ken Boyd, author of *Cost Accounting for Dummies* and a St. Louis-based small-business finance consultant. Where do you get the bulk of your referrals – the Yellow Pages? An online listing? Through a curated directory like Angie's List? Focus on the ones that deliver and cut back on – or cut out entirely – those with less oomph for your operations.

“Small businesses either attempt too many ways to produce sales simultaneously or go with the ‘hot’ sales method of the month,” says Hequet. Business owners need to research which ways work best.

And if you don't know where your customers come from, ask them! Ask all first-time callers “How did you hear about us?” and collect the answers.

Dave Bakke of the website Money Crashers ([www.moneycrashers.com](http://www.moneycrashers.com)) points out that social media – Facebook, Twitter and the like – can offer free or inexpensive opportunities to market your services that may be as effective as more expensive traditional advertising channels.

In a related issue, do you belong – and pay dues – to a host of business organizations in which you have little or no involvement? Drop out, says CPA Thomas Scanlon of Borgida & Co. in Manchester, Conn.

And Hequet points to another likely expendable form of promotion: “institutional marketing” that's solely aimed at “keeping your name out there” or community support. “When a customer wants to make a purchase, the fact that you placed an ad in the high school or Little League program won't be one of the reasons they choose to do business with you,” he says. There's nothing wrong, and plenty right, with supporting your community – but don't consider that part of your marketing and promotional efforts.

**Office supplies:** If you're not already signed up for your office supply retailer's rewards program, you're probably missing out. Bakke notes that the discounts you get for accumulated purchases can add up to important savings.

**Vehicle insurance:** Check if your company vehicles are over-insured, says John O'Donnell, chief knowledge officer for Online Trading Academy. Can you afford a higher deductible or a lower replacement value? Are you paying twice for the same coverage – like towing insurance both through your insurer and through a motorist's club?

At the same time, don't overreact: As CPA Scanlon points out, having too little insurance is a huge risk you don't want to take on.

**Cellphone insurance:** This kind of insurance, though, is probably expendable for almost all of us. It seems like such a small amount – \$5 to \$11 a month tacked on your cellphone bill – but over a two year period that can add up to \$100 or more per phone. Not only that, but for higher-end smartphones, you can still have a deductible of as much as \$200 – and you're limited to as few as two claims a year. Instead, see if you can include your cellphones in your general business policy. Or set aside money to replace or repair equipment when it gets lost, stolen or damaged. At the very least, research third-party alternatives to your cell provider's insurance; some provide a better deal at a lower price.

**Credit card processing fees:** You have to accept credit cards if you want fast payment on your invoices, but take time to research alternative processing providers, says DeKesha Williams, a business strategist with Visions Consulting.

**Technology:** Williams also suggests looking closely at things like website fees, your cellphone and office phone service, and fax expenses. Online presence is mandatory, but low-cost alternatives are proliferating for all of these. Check them out.

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**Utilities:** When did you last have an energy audit of your office? Bakke points out that your local power company probably offers that as a free service, and can help you find ways to cut your bill for heating and electricity.

**Customers:** Wait, what? Cut customers? Yes – within reason. Consider reducing your service area, especially if outlying regions are less profitable. “The smaller geographical area you cover, the more you save on time and gas,” notes Scanlon, the Connecticut CPA. And while it may seem easier said than done, ease yourself out of relationships with the “pain-in-the-neck” clients, he adds: “It frees up time and energy to focus on nice clients.”

## WHERE TO SPEND

**Tools and trucks:** In the trades especially, your vehicles and your tools and equipment are two of your most important assets. Don't overpay, but don't skimp, either, when making the choice of what to buy or investing in maintenance and repairs. “You need your vehicles and equipment in good working order,” says Boyd, the St. Louis consultant.

**Technology:** You can make smart choices that will save you money on tech, but don't try cutting it out entirely – tablets, smartphones and networked computers are all here to stay, and they are part of your business infrastructure, whether you know it – or like it – or not, Scanlon points out.

**Marketing and service:** “Don't cut down on your social media,” says Scanlon. “This is the way of the world now.” Don't cut corners on appearance

and image, either: prospects and existing customers alike buy perception. And don't skimp on personalized service, he adds: “This is what keeps your customers coming back and makes you referable.”

To that, DeKesha Williams adds that you can't simply do without marketing or advertising of any kind. And make sure customer engagement – finding ways to cement the relationship between your business and the people whom you serve – is part of what you're investing in, she says.

## BEYOND CUTTING AND SPENDING

Ultimately, whether cutting costs or spending more, you don't just act blindly. You need to make informed decisions, based on sound evidence and rational analysis – not just of how you spend your money, but of the service, product or provider you're spending it on.

And as Ron Hequet points out, any cost-cutting campaign is just an emergency first step. The key is what comes next: Creating a plan for growth. “Growth without a documented plan and the preparation of the talent to act is a wish, not a plan,” Hequet says.

And if all you have is a wish, in a year or even less, you're likely to be forced to make more and deeper cuts all over again. And then you might not even have the chance to decide how you can invest more because the money to do so just won't be there. **C**

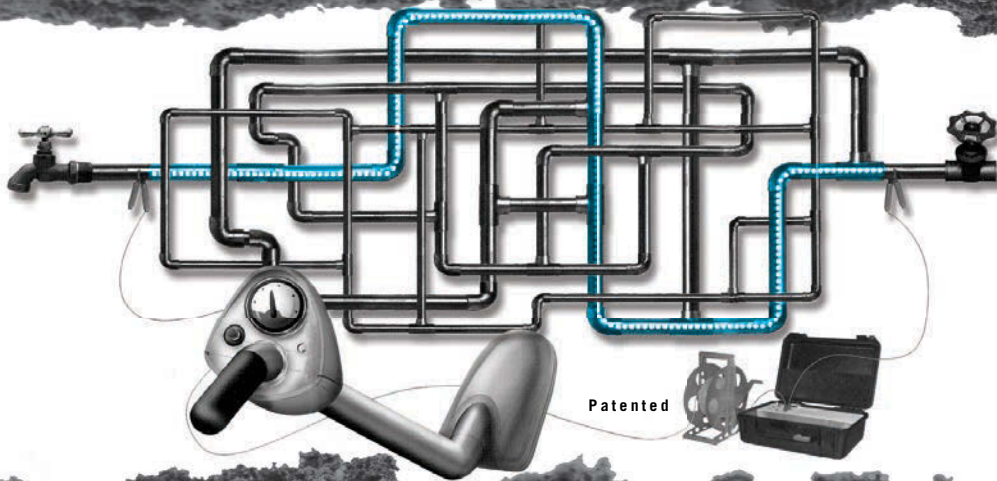
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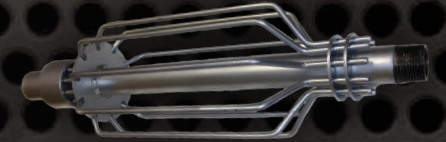
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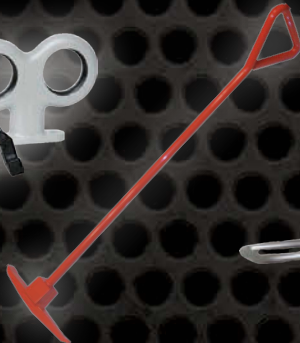
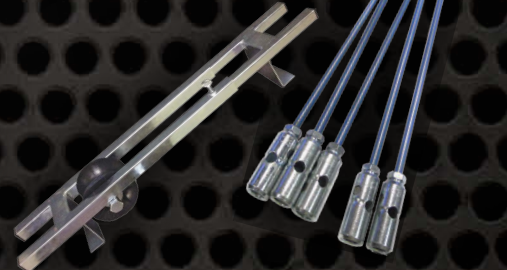
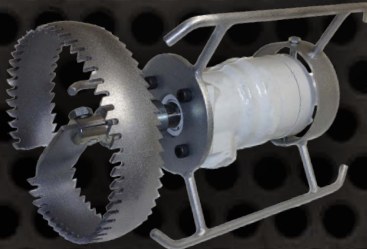
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# Battle Burnout

Address these six motivating factors and help your employees enjoy work

By Erick Lauber, Ph.D.

**G**reg wasn't happy at work. It wasn't that he hated his job or anything like that. His co-workers were fine and he didn't mind the type of work he did. In fact, he thought he did it pretty well. Of course, he wanted more money, but who didn't?

No, something else was bothering him. At some basic level he simply didn't enjoy coming to work. Whatever excitement or sense of accomplishment he used to get had been replaced by a lack of motivation.

Greg's issue was a common one. Employees around the world sometimes lose sight of what makes their work worthwhile. They get run down, burnt out and de-motivated. At times like these it can be difficult for anyone to enjoy work and find the old levels of motivation and energy.

To help Greg and the millions like him, it is necessary to look at the underlying causes. Why do any of us enjoy work? And can we reignite those causes in our own work environment? The answer is yes, there are at least six different reasons why we enjoy work, ignoring money, of course.

The small euphoria that comes from developing something new or conquering a complex problem can be a big part of enjoying work for some.

## INNER ACCOMPLISHMENT

The remarkable time and energy some people put in to their work can only be understood as an "inner drive" – they simply want to achieve *that* goal. Seeking a personal sense of accomplishment is natural and can be harnessed every day by millions of workers and employers. It can be described as "taking pride in one's work" or a sense that "this is what I was meant to do." Whether the objectives are short-term or long-term, making progress toward a goal makes all of us feel good.

## THE GREATER GOOD

Many of us are also motivated by a sense of community. The feeling that we are part of something larger and that life isn't just about our own individual needs and wants. This particular joy and peace is experienced by millions as they volunteer for church or service club tasks, but it can also be encouraged in the workplace. For example, many Asian/Eastern companies reinforce this message. Clearly many Americans are also motivated by community considerations. Perhaps Greg could be encouraged to reframe his circumstances and see how he is contributing to the greater good.

## PERSONAL RELATIONSHIPS

Many get enjoyment from the individual relationships they experience at work. It helps them look forward to each day. The laughter, the camaraderie, the forgiveness and even the occasional stress are all something they enjoy and know they wouldn't want to live without. But not everyone is the same, and certainly we're not all our best self every single day. Enlightened managers respect this basic human need to connect with others and allow it, if not encourage it, in their workplace. Has Greg's manager given him the opportunity to connect with others? Has he diagnosed that this is something important to him?

## SENSE OF TEAM

Similarly, some people enjoy a special sense of completeness and wholeness by experiencing teamwork. In the workplace, many employers work hard to encourage this shared identity by conducting internal PR and messaging campaigns. For quieter teammates, a sense of camaraderie might provide an extremely important opportunity to connect and feel like they belong. Does Greg feel he's part of a team? How much team spirit has his boss created?

## PHYSICAL EXERTION

For some, a special sense of joy comes from physical exertion, and the absence of it makes any job less appealing. It just doesn't feel like work if they aren't breaking a sweat or doing battle with the weather. This is partly a product of socialization and might be tied up with what "work" means to them. Modern day psychology reaffirms the benefits from physical labor. We all know how endorphins can give us a slight high and everyone knows about the stress-management benefits from working out. Is getting physical a way for Greg to battle his lack of motivation? If his job is sedentary, does his employer offer a "get in shape" program?

## MENTAL CHALLENGES

Finally, a great many of us enjoy the special mental feeling that comes from exercising our creativity or satisfying our curiosity. The small euphoria that comes from developing something new or conquering a complex problem can be a big part of enjoying work for some. Does Greg's boss know whether he's incredibly bored or frustrated by his tasks? Is it time for a promotion, or perhaps a little job engineering to offer a chance at being creative?

## "WHY" IS THE ANSWER TO "HOW"

So, what can be done more generally to help employees enjoy their work? Or what can Greg or any employee do themselves? The answer is simple: treat the cause, not the symptoms. Instead of worrying about symptoms like aggressive behavior or poor attitude, employees and employers can create



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a more enjoyable work environment by directly addressing one or more of these common denominators. Why not casually interview Greg about whether he feels connected to his fellow co-workers? Does he have any friends at work? Why not ask "Is this job challenging enough?" or "Would you like the opportunity to be more creative?"

Stepping back and reflecting on each of these six motivators can guide any manager or employee toward a more enjoyable work place. There is hope for Greg in the application of modern day psychology to the workplace. **c**

### ABOUT THE AUTHOR

Erick Lauber, Ph.D., is an applied psychologist and faculty member at Indiana University of Pennsylvania. He speaks and consults on leadership, personal growth and development, and taking charge of our own life stories.



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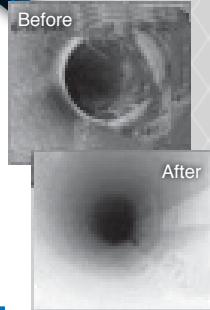


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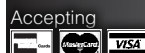
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# A Tool to Diversify

Versatile iPad-ready SparVision camera system generates big interest at Expo

By Craig Mandli

**S**partan Tool had a huge booth at the 2014 Pumper and Cleaner Environmental Expo International, with dozens of technicians and representatives ready to answer questions from the thousands who attended the show. One product in particular, though, the iPad-ready SparVision 200 pipe inspection camera, stole the show for Spartan.

Two demos in the Spartan booth displayed the versatility of the unit. One gave attendees the opportunity to snake the flexible pushrod camera through an S-shaped toilet trap, while the other allowed attendees to see firsthand how the optional Spartan Tool Trap Eze camera extension system effectively fits through narrow sink drains and traps, increasing the versatility of the system.

“Attendees really liked being able to see how this system would operate in real-world scenarios,” says Tony Marini, the company’s Long Island territory manager. “Allowing people to demo it here at the show really gets across how easy to use the SparVision actually is.”

**“I think what customers are really excited about is that we’ve incorporated a tool, the iPad, that many of them already use every day, and made it a functional part of our system.”**

Tony Marini

The system is lightweight for easy maneuvering, and comes complete with 200 feet of slick pushrod, a color self-leveling camera head with scratch-resistant sapphire glass lens, 512 Hz locating beacon, 110 volt or battery operation, up to six hours of battery life on a single charge, a built-in transport cart with extending handle and high-clearance wheels, and a heavy-duty rotationally molded case to protect the unit in harsh conditions.

“It’s a great unit for the septic technician that’s looking to diversify into drain cleaning and pipe inspection,” says Marini. “It can handle almost any sort of pipe inspection, yet is portable and lightweight enough to fit in a toolbox. With so many drain cleaners and septic professionals at the Expo, it’s the perfect fit for the SparVision.”

Perhaps the most innovative feature of the system is its screen, a retina-display iPad 4 that offers technicians flexibility on and off the job site. It allows for freeze-frame snapshot capability at any time, the addition of text at any time to any video or snapshot, changeable font sizes, colors and locations, communication via Wi-Fi router connection, the capability to email a file at any time, a built-in microphone for easy job site narration, an on-screen repositionable footage counter and camera light intensity rheostat.

“Plus, if you already have your own iPad, or an Andriod Nexus tablet, you can save money and just download our app to use your own unit as the screen,”



Spartan Tool Long Island Territory Manager Tony Marini, left, explains the features of the iPad-ready SparVision 200 pipe inspection system to an Expo attendee. (Photo by Craig Mandli)

says Marini. “You can even detach the iPad and, using the Wi-Fi router, walk up to 30 feet away and still get your camera signal. That could come in very handy to show the customer a blockage or some other issue.”

The optional Trap Eze ultra-flexible black-and-white 7/8-inch camera expands the system even further, allowing quick peeks into small drainlines without removing the trap. It connects to the SparVision 200 camera system, which automatically senses when the Trap Eze camera has been attached. The 4-pound unit comes with an additional 50-foot ultra-flexible pushrod, a convenient carrying reel and a 10-foot cord for connection to the SparVision 200.

“I think what customers are really excited about is that we’ve incorporated a tool, the iPad, that many of them already use every day, and made it a functional part of our system,” says Marini.

While he’s a 20-year veteran of the drain cleaning industry, the 2014 Expo was Marini’s first as a Spartan employee.

“It’s been a lot of fun seeing things from the sales point of view,” he says. “Everyone here is so excited to see the new products out there. I know Spartan always tries to bring something new and innovative to this show, and I know they’re working on something good for next year.” **800/435-3866; [www.spartantool.com](http://www.spartantool.com). c**



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“These strategic partnerships enhance Jetstream's product offering and provide customers with greater access to category-leading specialty equipment and accessories that enhance operator safety and productivity and help contractors perform their jobs more profitably,” said Joe Varca, business unit director at Jetstream. “The collaboration with these well-known automation partners, combined with our nine FS Solutions authorized retail support and rental centers across the United States, enables Jetstream to better meet our customers' needs for total hands-free solutions, including the purchase and/or rental of Jetstream waterblasting equipment, parts, accessories, training and service support.”

With the goal of reducing the number of workplace fatalities and injuries related to improper use of high-pressure waterblasting and providing a safer environment for equipment operators, Jetstream is developing and delivering hands-free waterblasting solutions and training to industrial cleaning contractors. As part of the initiative, Jetstream's experts consult with customers, visiting job sites to identify the right hands-free waterblasting solutions for the location.

“Jetstream and FS Solutions can demo, sell and rent the broadest offering of hands-free cleaning solutions in the industry, including automated and robotic tools and accessories.” Varca said.

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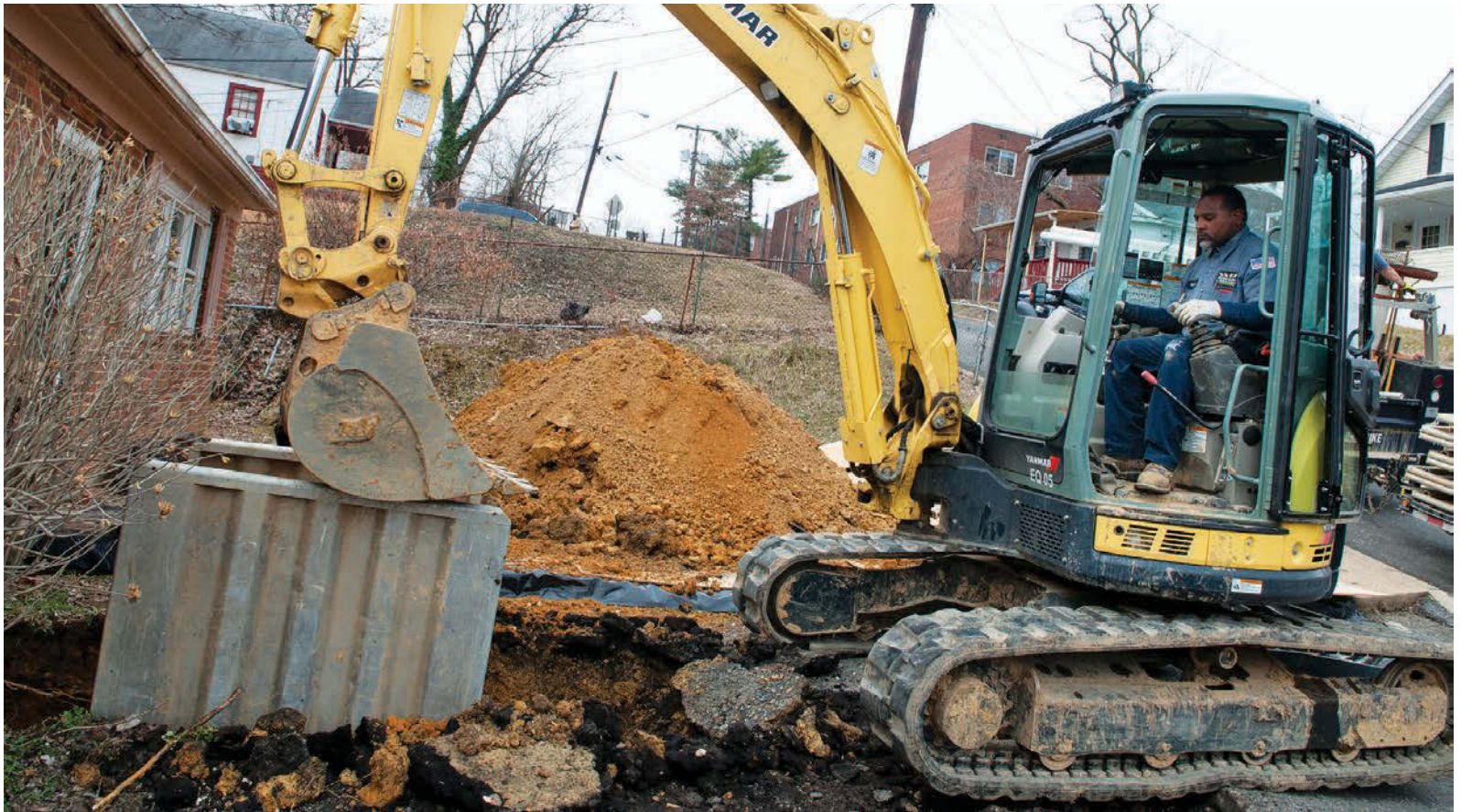
**W**hen 6-year-old Basim Mansour tagged along with his father during electrical repair calls in the 1970s, he had no idea that one day he would own the company and grow it from a one-truck operation to one of the nation's largest privately owned plumbing, electrical, heating and cooling companies with more than 500 employees.

In 1990, Mansour took over the electrical contracting company after the untimely death of his father. Thrust into the responsibility of running his family's business at the young age of 19, Mansour left school to dedicate his time to the company. Through times of recession, the company overcame struggles and thrived while other established companies were failing.

Nine years later, Mansour saw the opportunity to grow from electrical contracting to residential electrical service. From there, the company began adding other residential services, including HVAC, plumbing and sewer/water. When the plumbing division, which includes sewer and water, was added in 2004, the company promoted it heavily to help it grow.



**OPPOSITE PAGE:** Michael & Son Services Sewer and Water Manager Ken Heflin, far right, stands with crew members in front of a company service truck. Pictured from left to right are, top: Stephen Savoy, Dan Humphries, and Wylace Liggon; standing: Mario Reyes, Tyrone Couser, Terence Bridgett, Tony Haynes, Humberto Hernandez, Chris Gooding, Chris Kornegay, Raymond Odemns, Eric Moss, Glenn Knight, Tim Briggs, Clevon Marshall, and Heflin; kneeling: Luis Land, Dion Lee, Ken Scott, and Yazmani Barron.  
**BELOW:** Field technician Terence Bridgett uses a Yanmar ViO55 excavator to place a shoring box in a trench during a residential sewer line replacement in Capitol Heights, Md.



“We dedicated a lot of attention to go after it, and we started by getting involved with low-profit-margin work for big retail shops, such as installing water heaters, disposals and plumbing fixtures,” Mansour says.

After heavy advertising and a lot of job calls, local customers became aware of Michael & Son plumbing services. As the residential client base grew, the company hired talented professional staff, including plumbing and excavation managers with extensive experience in those areas.

### AGGRESSIVE GROWTH

Today, the plumbing division, which accounts for 40 percent of the entire company’s profit, performs every residential service from simple drain cleaning to full sewer replacement via open trench excavation, pipe bursting and directional drilling. Underground boring accounts for 99 percent of the company’s water service installation.

When the company’s first location in Washington, D.C., became successful, Mansour decided to take a risk on additional expansion.

“I wondered if we were doing well in D.C. because we got lucky or because of good timing,” Mansour says. “I didn’t know just how good we really were, so I wanted to open a location where people wouldn’t know us, but it would still be close enough so I could watch it carefully.”

Next, Michael & Son opened locations in Richmond and Virginia Beach in 2009. When those locations became successful, Mansour grew more comfortable with continued expansion. In total, the company opened six locations in a four-year time span. Revenue for the sewer and water division

profile

## MICHAEL & SON SERVICES,

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**SERVICE AREA:** Seven offices in Baltimore, Md.; Washington, D.C.; Charlottesville, Va.; Richmond, Va.; Virginia Beach, Va.; Raleigh, NC; and Charlotte, NC

**YEARS IN BUSINESS:** 37

**STAFF:** 175 technicians (plumbing, sewer and water divisions), 500 employees total

**FLEET:** 400 service trucks (across all divisions)

**WEBSITE:** [www.michaelandson.com](http://www.michaelandson.com)

in the Washington, D.C., location alone was \$500,000 in 2009, but jumped to \$4 million in 2013. This year, the company projects revenue of \$5.5 million for water and sewer in the Washington, D.C., location.

### DEDICATED CUSTOMER SERVICE

Mansour attributes the company’s success to attentive customer service, based on the philosophy that customers are the boss.

“Everything we do is for the customer,” he says. “When all of our efforts are for taking care of the customer, then everything goes right for us. I remind our staff that although I sign the checks, without the customer, the signature would be worthless.”

Michael & Son Services field technician Ken Scott retracts the Ditch Witch JT922 directional drill, pulling a new copper pipe into place during a residential water line replacement in Alexandria, Va.



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To Michael & Son, providing customer service means doing what's right for the customer, regardless of time and cost.

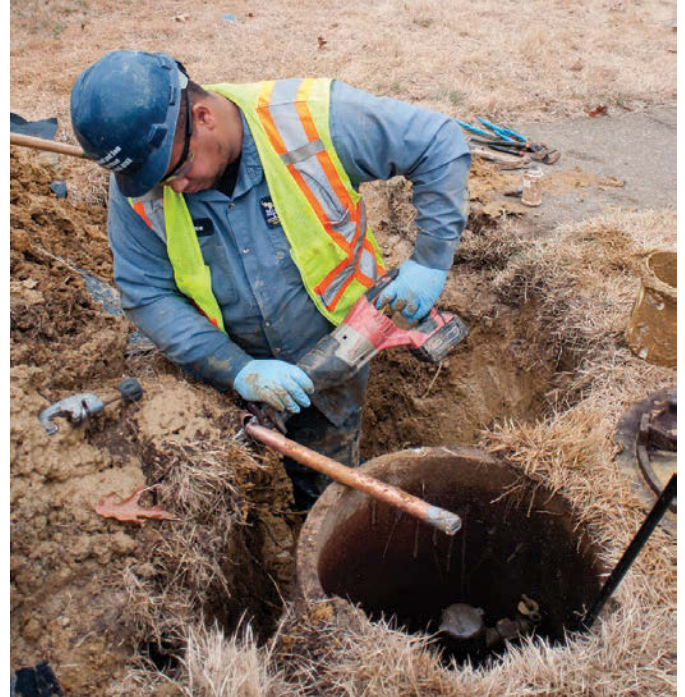
"Quality control is a philosophy we live as managers," says Ken Heflin, manager of water and sewer. "Basim holds managers accountable for issues or problems. If a complaint comes in, we have one hour to come up with a resolution. This idea is enforced all the way to the top of this organization."

**"When all of our efforts are for taking care of the customer, then everything goes right for us."**

Basim Mansour

To stay on top of competitors, Michael & Son offers a robust warranty of 20 years on labor and lifetime for materials. To further stand out, the company has one of the only 24/7 service operations in the area, providing service the same day or next day for water and sewer problems.

The customer experience is especially important to Michael & Son. Last September, the company built a customer call center in the Richmond office that seats up to 137 service representatives for taking customer calls. Currently, the company is handling more than 4,000 calls per week out of the call center. An average of 30 to 40 representatives work in the call center at any time, but the company is holding weekly job fairs to hire more staff in preparation for growth.



Field technician Stephen Savoy trims and prepares to hook up the new water line during a residential water line replacement in Alexandria, Va.

"We want the ability to handle more call volume so we can get to our customers faster," Mansour says. "When our customers call us, we never want them to be greeted by an automated system. They will always hear a friendly human voice on the other end."

To address customer concerns or problems, two staff members are dedicated to customer relations. These specialists are trained

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to deal with customer issues, understand the limitations and resolve problems so customers stay happy. Designating people to this task helps relieve other staff members from customer relations responsibilities.

“We want our customers to be satisfied with our work, so this provides an outlet to get things taken care of,” Mansour says. “I can’t expect all of my staff to know how to treat a problem in the same manner. I can’t take a chance on losing a customer because we didn’t do everything necessary to solve an issue. That’s what the customer relations team does.”

### A MIGHTY FLEET

Michael & Son owns more Vivax-Metrotech inspection equipment than any other contractor in the country, with 12 Vcam inspection systems and locators. These inspection systems are especially important for the company because they are used to provide free camera inspections after a paid drain cleaning job is completed. Michael & Son offers CCTV inspections for residential, commercial and municipal customers.

**“Trenchless technology will be the way everything is done, and there will be less excavation in the future.”**

Ken Heflin

“A free camera inspection builds value into the work we do for the customer,” says Heflin. “It allows us to get to the root of the problem so we can properly diagnose what’s going on and provide the best service possible.”

The company’s water and sewer division has an extensive fleet of equipment, including eight Ford 450 utility body trucks for excavation crews, a Sterling single-axle dump truck, two additional Ford 550 dump trucks, a Ford 550 with interior box-mounted jetting equipment and 12 Sprinter short wheelbase vans for drain cleaning. A new pump truck will be added later in 2014 to expand current services.

Additional equipment includes a Ditch Witch JT922 directional drill, six John Deere D50 rubber track excavators, a John Deere D35 rubber track excavator, HammerHead pipe bursting equipment (with burst heads and fusion equipment for pipe up to 6 inches), RIDGID K1500 and K50 snaking equipment, a Vivax-Metrotech HL 5000 leak detection

CONTINUED >>



Field technician Ken Scott, left, looks on as Chris Kornegay uses an Eastcom RD7000+ locator to find the sewer line before drilling begins on a residential water line replacement in Alexandria, Va.

## SERVING THOSE IN NEED

Sometimes there is more to being successful than just improving the bottom line.

In 2010, after a customer in Richmond undergoing chemotherapy had difficulty with payment, Michael & Son provided the services at no cost. Seeing the impact that charity had on the customer, and receiving appreciation from the community, the company started a 501c3 nonprofit called Michael & Son Cares to help customers with hardships.

“When people in need find they have nowhere to turn, that’s when we come in,” says company owner Basim Mansour.

Michael & Son Cares has been introduced at the parent company’s seven service areas. Since its inception, the organization has provided home improvement services to 15 to 20 homeowners annually, as well as a Wounded Warrior facility and a domestic violence shelter.

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Michael & Son Services Owner and President Basim Mansour, left, and Sewer and Water Manager Ken Heflin stand in front of company service trucks and a Ditch Witch JT922 directional drill.

device with an 810 locator, Wacker Neuson compactors, STIHL concrete saws and ultraShore shoring systems (Safety Corporation of America) for excavations up to 15 feet deep.

Heflin says the company is planning to purchase a second directional drill and a vertical drill in the coming year to address the growing demand for trenchless water and sewer repair.

**"I can't take a chance on losing a customer because we didn't do everything necessary to solve an issue."**

Basim Mansour

"Trenchless technology will be the way everything is done, and there will be less excavation in the future," he says. "We are gearing up for that now."

Owning such an extensive fleet of equipment presents management and storage challenges. The company has a storage yard where all equipment is returned when a job is

completed, but as operations expand this year, Heflin plans to find another lot or warehouse just for storing the excavation equipment.

### HEAVY-DUTY PROMOTION

A heavy promotional schedule has been important for company growth. Michael & Son runs advertisements on local television, radio, Internet and Yellow Pages. Technicians use specialty yard signs at job sites and provide leave-behind slips for customers to reference in the future.

The company sponsors local athletic teams, including the NHL's Washington Capitals and the NBA's Washington Wizards. The unique blue design of the Michael & Son service trucks provides an instantly recognizable look, which the company uses as a branding tool.

At Wizards games, a blimp shaped like the Michael & Son truck flies around the arena dropping prizes for spectators. At Capitals games, the Zamboni is wrapped to look like a blue Michael & Son truck.

"There aren't a lot of blue service trucks out there, so people see the trucks and already think of us," Mansour says. "All of our advertising has to work together. When we touch people in more than one way, they remember us."

Despite all the promotional activity, Mansour is certain that the workers themselves provide the best advertising.

"When we dig in someone's yard, it's very disruptive," Mansour says. "We put all our dirt on tarps and plywood to reduce disruption to the existing grass. We take extra steps to make sure we minimize the damage to the yard. It takes more time and money, but it makes the yard look better. The best advertising is having our guys do their jobs well and take pride in their work." **C**

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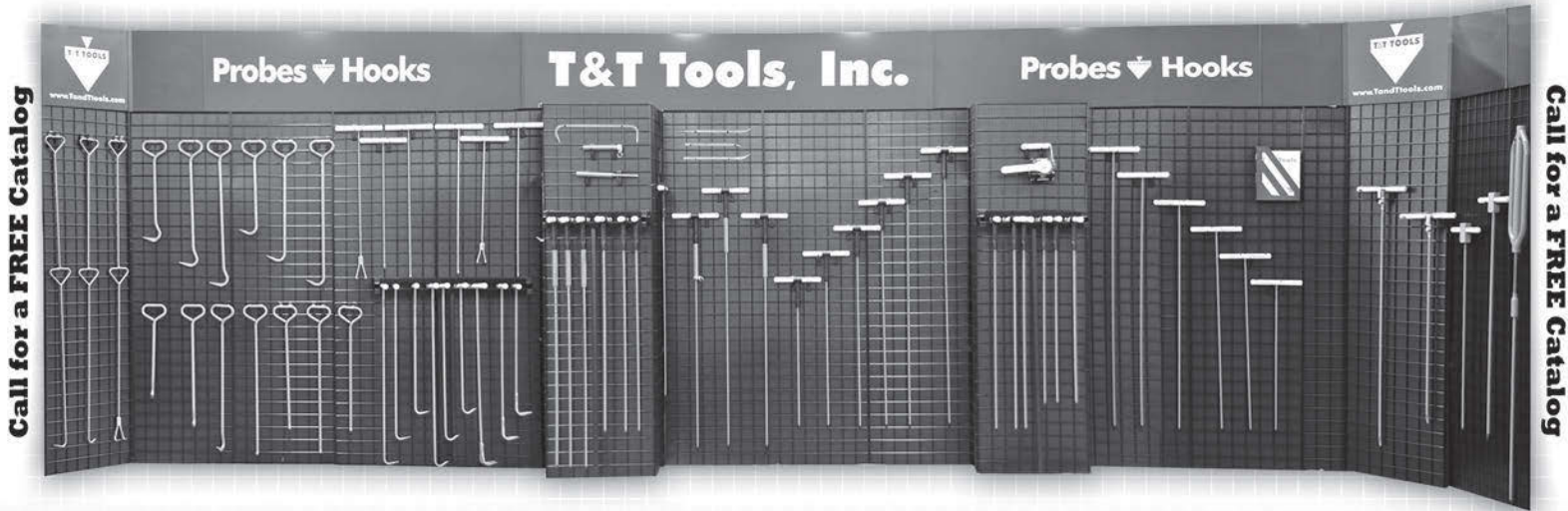
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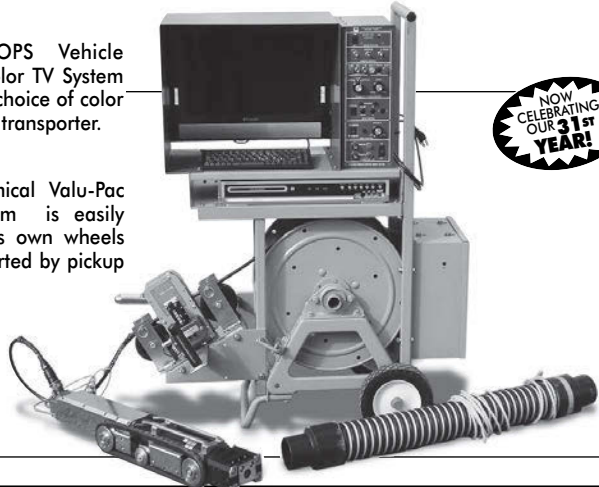
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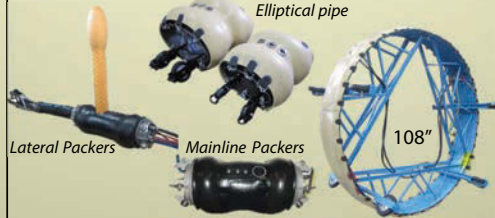
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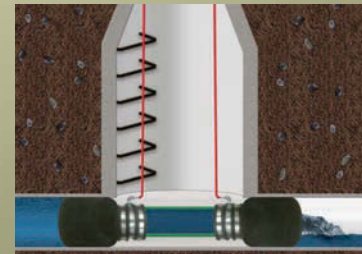
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# Dammed if They Don't

Contractor conquers cold weather, deep water and logistical challenges to clear and reline a clogged pond drain

By **Scottie Dayton**

**H**eavy winter rains and a clogged cast-iron drainage system in a private 2-acre pond flooded a family's pet cemetery in Lexington, S.C. A plumber recommended the homeowners call Drain Pro in Columbia, S.C.

"The water was 18 to 20 inches above the vertical 6-inch overflow," says Drain Pro owner Chris Bergeron. "It had happened before, and the customer blamed turtles for the blockage."

Bergeron and his brother, Jeremy, had never worked on a pond and were concerned about maintaining its integrity. Although they anticipated challenges, the project ballooned into their most difficult to date. The homeowner's cooperation, and equipment from Perma-Liner Industries, made it a success.



Chris Bergeron of Drain Pro struggles to attach a 6-inch PVC extension with flexible Fernco coupling to a submerged cast iron overflow pipe while Jeremy Bergeron (out of frame) steadies the extension and rowboat with a bow rake. (Photos courtesy of William Huang Photography)

## tough job

<b>PROJECT:</b>	Clear clogged drainline in pond
<b>CUSTOMER:</b>	Homeowner, Lexington, S.C.
<b>CONTRACTOR:</b>	Drain Pro, Columbia, S.C.
<b>EQUIPMENT:</b>	Lining system from Perma-Liner Industries LLC 866/336-2568 www.perma-liner.com
<b>RESULTS:</b>	Blockage removed, pipe rehabilitated

## LAY OF THE LAND

A 15-foot-high earthen dam across a stream in a heavily wooded area had created the 65-year-old pond. A walkway on top of the dam encompasses the pond. A 90-degree elbow connects the 12-foot-deep overflow to 75 feet of 6-inch pipe daylighting behind a woven field fence on the downstream side of the dam. The line discharges to the stream.

Bergeron used his Club Car turf utility vehicle to transport three Powerhorse bypass pumps from the staging area 500 yards to the pond. Three days of pumping with two 2-inch pumps (7,860 gph each) and a 3-inch pump (11,820 gph) failed to lower the water level.

"They couldn't keep up with the rain," says Bergeron. "Our only other option was extending the height of the overflow by attaching a flexible Fernco

Chris Bergeron prepares to jet the clogged cast iron drain from the outfall. A Pearpoint flexitrac P350 sewer camera is in the back of his Club Car turf utility vehicle.



coupling and a 24-inch length of 6-inch PVC pipe. However, we risked snapping off the elbow in the process.”

To reach the overflow 30 yards from shore, the brothers designed a small barge, but the idea was expensive. The homeowner responded by offering his rowboat. “This year, January temperatures were in the low- to mid-forties,” says Bergeron. “Once out on the pond, we discovered the boat had a hole in the bottom. The water bubbling up was frigid and we struggled to keep our feet dry.”

### NAVIGATIONAL SKILLS

To avoid accidentally rowing over the top of the overflow, Jeremy hooked it with a bow rake, then pulled gently until they drifted alongside. Attaching the extension to the overflow went slowly. The water numbed Chris’s hands in

“We pulled the liner back 5 feet, increased the pressure to 25 psi – just below popping the safety valve – and made four attempts before it shot around the bend.”

Chris Bergeron

a minute and he had to warm them repeatedly under his armpits. Meanwhile, Jeremy steadied the extension and boat with the rake.

The only way to reach the outfall to inspect the pipe was down the face of the dam. After the brothers parked a Generac generator and 18 gpm/4,000 psi trailer-mounted 300-gallon jetter (US Jetting) on the dam’s walkway, they tied a rope to trees to help navigate the slick 65-degree slope as they hauled the extension chord and jetter hose behind them.

With the owner’s permission, they cut and rolled back a section of fence wide enough for the ATV. “We strapped our Pearpoint P350 flexitrax sewer camera to the bed, then I drove the vehicle down the embankment,” says Bergeron. Inspecting the pipe revealed vegetation, heavy scaling in areas, and two dead turtles causing a blockage. Cleaning the line with a 1/2-inch Warthog nozzle from StoneAge exposed holes in the brittle metal.

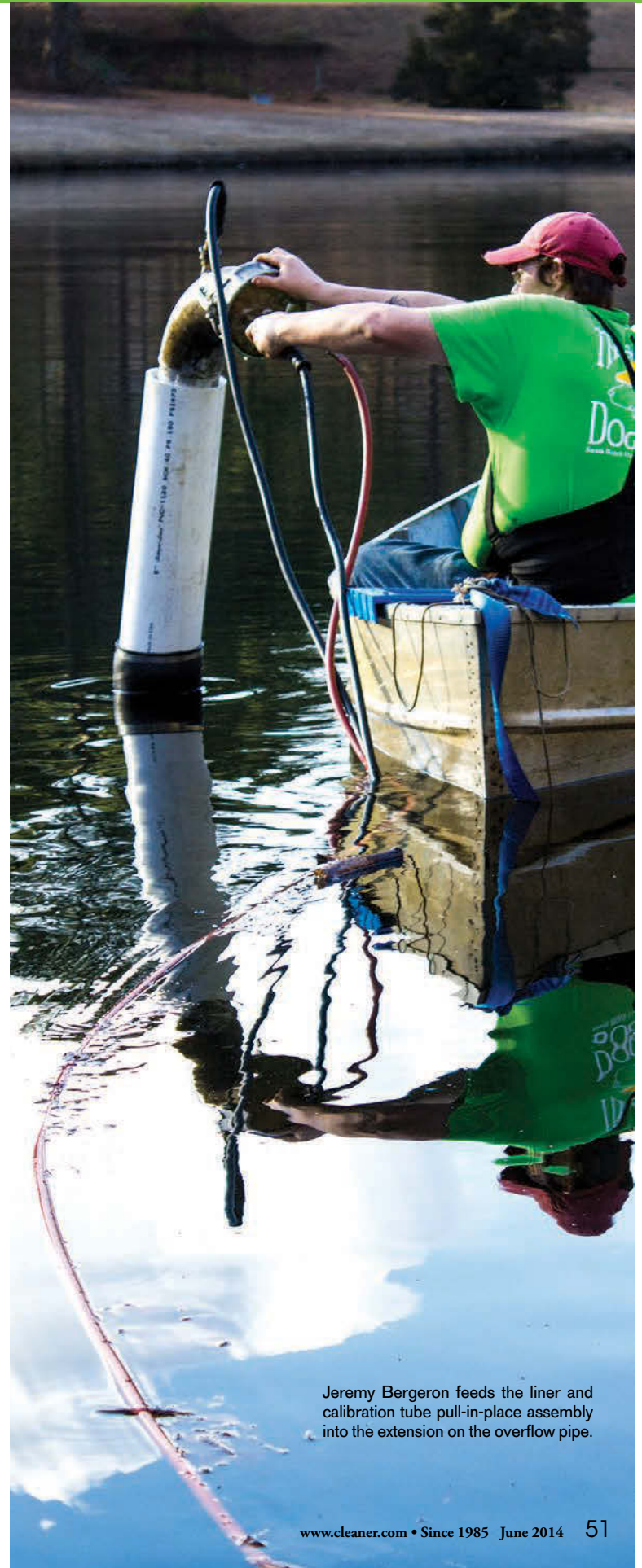
Driving back up the hill, Bergeron didn’t have enough momentum to crest the top. Gravity rolled the car into a tree, caving in the fender and grille and breaking the driver’s side mirror. Hemmed in by trees, Bergeron struggled to turn the vehicle around and back up the embankment.

### BEST SOLUTION

To prevent the pipe from collapsing, Bergeron suggested rehabilitating it using the Perma-Lateral liner system (Perma-Liner). The homeowner agreed. However, inverting the 3-mil liner downstream through the overflow would be complicated and risky. “We didn’t want to capsize, so we went with two liners, inverting the first from the outfall,” says Bergeron.

In preparation, the brothers hand-dug through the clay to expose 7 feet of pipe, then cut off 6 feet to make room for the inversion unit. In the Perma-Liner trailer, they wetted 75 feet of material with hot epoxy resin (60-minute working time), then transported it via ATV and by hand to the inversion unit.

Before blowing the liner at 8 to 10 psi, they turned off the bypass pumps to hear each other on two-way radios. The liner traveled 70 feet and stalled at the elbow. “We pulled the liner back 5 feet, increased the pressure to 25 psi –



Jeremy Bergeron feeds the liner and calibration tube pull-in-place assembly into the extension on the overflow pipe.

Chris and Jeremy Bergeron feed the 3-mil-thick liner through rollers to impregnate it with hot epoxy resin.

just below popping the safety valve – and made four attempts before it shot around the bend,” says Bergeron.

As expected, the 3 feet of unsupported liner in the overflow collapsed. Bergeron assumed the calibration tube would push the liner into place. It didn't. “We switched from inversion to pull-in-place,” says Bergeron. After retracting and inverting the calibration tube, Chris sent a fish tape downstream, Jeremy attached the liner's pull strap and the tube, and Chris pulled them up into the overflow.

“As we introduced steam, the pressure pushed the liner where we wanted it, while smoothing any wrinkles in the bend,” says Bergeron. Because the water and pipe were cold, the brothers steamed the liner for 30 minutes at 6 psi to jump-start the accelerant and compensate for heat displacement, then they introduced air at 10 psi for an hour to cool the liner.

### DOWN THE HATCH

To line the top 9 feet of the overflow and overlap the bottom liner by 12 inches, the brothers glued the second liner to the calibration tube. Once Jeremy was in the boat holding the assembly, there was no room for Chris to use the oars, so he paddled the boat like a canoe to the overflow. They attached the pull strap to the fish tape, sent it downstream, and an assistant pulled the strap as Jeremy fed the assembly into the overflow. “We shorted the second liner by 4 inches, as cutting it flush with the top of the overflow would require electric tools,” says Chris.



To project the outfall 12 inches into the stream, Chris attached 5 feet of PVC pipe to the liner using a Fernco coupling, then backfilled. Jeremy removed the extension on the overflow as Chris inspected the cured-in-place pipe. “The homeowner couldn't believe how good it looked,” he says. “Perma-Liner equipment came through for us again under difficult conditions.”

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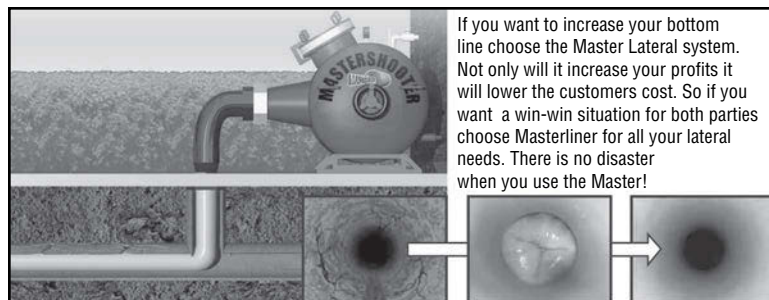
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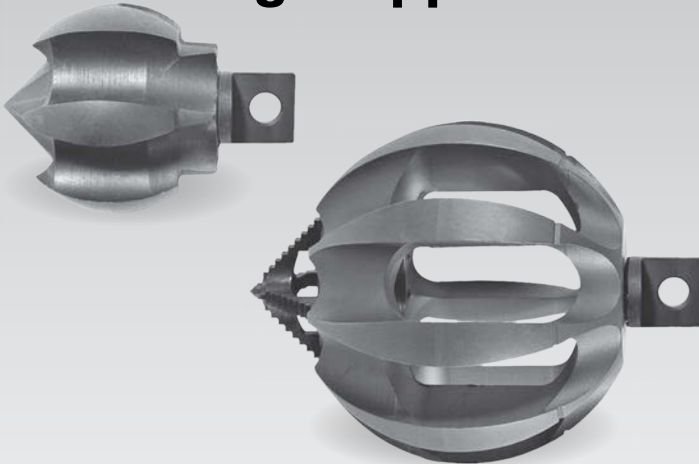
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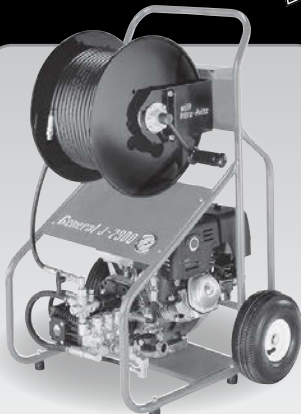
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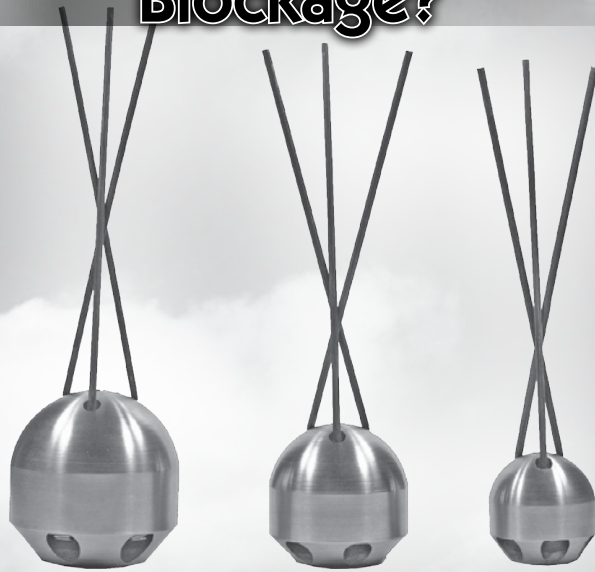


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- Self Levelling Camera Head w/Built in 512HZ Sonde Transmitter
- 10" LCD Monitor w/DVR & MIC
- Recording with USB Flash Drive or SD Card
- Heavy Duty Waterproof Case



### Long Range Pipe Inspection Camera

FB-PIC3488/3488T

Specs:

- 400FT Cable & Reel w/Meter Counter
- Self Levelling Camera Head w/ or w/o Built in 512HZ Sonde Transmitter
- 10" LCD Monitor w/DVR & MIC
- Recording with USB Flash Drive or SD Card
- Heavy Duty Waterproof Case



44110 Old Warm Springs Blvd. Fremont, CA 94538  
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ALAMO GROUP **GRADALL** 

# NOZZLE COMPANY

## DIRECTORY 2014

COMPANY	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Max Operating Pressure (PSI)	Weight	# of Avail. Front Jets	# of Avail. Rear Jets	Hose Size/Connecting Thread
<p>See ad page 62</p> <p><b>Advanced Infrastructure Technologies</b> 3055 Kashiwa St., Torrance, CA 90505 800-992-0222 • 310-534-4000 • (f) 310-534-4020 www.advancedworld.com sales@advancedworld.com</p>	Radial - Standard Cleaning	Small line cleaning, powerful lateral cleaner	2" - 6"	7 to 20	1,500 - 4,000	4 oz.	1	6	1/2"
	Grenade	Stable cleaner for sewer mains with debris, aggressive thrust action	6" - 24"	50 to 100	1,500 - 3,000	7 lbs.		10	3/4", 1", 1-1/4"
	Phantom Grenade	Lightweight alloy construction allows for wider jet angle = more power to the pipe wall	8" - 24"	50-100	1,500 - 3,000	5 lbs.		8	3/4" - 1"
	Chisel Blockage Nozzle	The standard in blockage clearing	2" - 24"	7 to 100	1,500 - 4,000	2 oz.	4	6	3/8" - 1/2" - 3/4" - 1, 1-1/1"
	Aquadrill	Great blockage clearing with extra large front jet that "warbles" randomly	2" - 18"	11 to 80	1,500	2 oz.	1	6	1/2" - 3/4" - 1"
	Torpedo Pulling Nozzle	The pulling champion nozzle, for long runs, hills	2" - 24"	14 to 80	1,500	2 oz.		8	1/2" - 3/4" - 1"
	Fluke, bottom cleaner	Superior silt & debris removal in an economical package	6" - 36"	16 to 100	1,500	17 lbs.		10	1/2" - 3/4" - 1"
	Bulldozer, sediment & debris	The ultimate bottom cleaner, features swivel connection and roll cage	12" and Up	50 to 100	1,500 - 3,000	15 lbs. - 82 lbs.			
	Spider 60 & 80 chain cutter	When jets alone cannot clear your roots chains	6" - 12"	50 to 100	1,500 - 3,000	18 oz.		6	3/4" & 1"
<p> <b>All Jetting Technologies, Inc.</b> 2740 Martin Downs Blvd., Ste. 318, Palm City, FL 34990 772-286-1218 • (f) 772-286-0069 www.alljetting.com info@alljetting.com</p> <p>See ad page 87</p>	1/4" - 28 UNF Sapphire Nozzles and Plugs	Ultra high pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
	3/8" - 24 UNF Sapphire Nozzles and Plugs	Ultra high pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
	7/16" - 20 UNF Sapphire Nozzles and Plugs	Ultra high pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
	Long Stem Sapphire, 60° seating angle	Ultra high pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
	M10 x 1.5 thread - 5MM Hex Key	Ultra high pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
	5/16" Hex with 3/8" - 24 UNF	Ultra high pressure waterjetting up to 55,000 PSI	NA	3 to 30	20,000 - 55,000		1		
<p>See ad page 13</p> <p><b>Amazing Machinery, Inc.</b> 2160 S Lee Hwy., Cleveland, TN 37311 800-504-7435 • 423-472-2527 • (f) 800-504-7436 www.amazingmachinery.com sales@amazingmachinery.com</p>	Spin-Jet	Flushing/cleaning	2" - 24"	2 to 80	500 - 4,000	1.2 oz to 8.6 oz		6	1/8" - 1/4" - 3/8" - 1/2" - 3/4"
	Deicer/Degreaser	Removing ice & grease	2" - 24"	2 to 80	500 - 4,000	0.9 oz to 5.6 oz	3	6	1/8" - 1/4" - 3/8" - 1/2" - 3/4"
<p> <b>Arthur Products Co.</b> 1140 Industrial Pky., Medina, OH 44256 800-322-0510 • 330-725-4905 • (f) 330-722-2698 www.arthurproducts.com apc@apcsq.com</p> <p>See ad page 46</p>	Cnt-r-KUT™ Elite Kit	Roots and other blockages	2" - 12"	4 to 80	2,000 - 10,000	varies per NPT size	Customer Spec	Customer Spec	3/8" - 1/2"
	Cnt-r-KUT™ Elite Mini Kit	Roots and other blockages in tight spaces	2" - 12"	4 to 80	2,000 - 10,000	varies per NPT size	Customer Spec	Customer Spec	3/8" - 1/2"
	Cnt-r-KUT™ Basic Kit	Deicing/degreasing, penetration, flushing	2" - 12"	2.5 to 80	2,000 - 10,000	varies per NPT size	Customer Spec	Customer Spec	3/8" - 1/2"
	Cnt-r-KUT™ Basic Mini Kit	Roots and other blockages	2" - 12"	2.5 to 80	2,000 - 10,000	varies per NPT size	Customer Spec	Customer Spec	3/8" - 1/2"
	Cnt-r-KUT™ Tow Hook	Pulling and towing applications	2" - 12"	2.5 to 80	1,200 - 15,000	varies per NPT size	Customer Spec	Customer Spec	3/8" - 1/2"
	Cnt-r-KUT™ Tow Hook Mini	Pulling and towing applications	2" - 12"	2.5 to 80	1,200 - 15,000	varies per NPT size	Customer Spec	Customer Spec	3/8" - 1/2"
	Mini-Mole	Special tapered thread for use in small tube cleaning on rigid lance	.200" - 1"	1.7 to 20	1,200 - 10,000	varies per NPT size	Customer Spec	Customer Spec	Special tapered thread
	Rodder Jets	General tube cleaning for use	.250" - 1"	1.7 to 40	1,200 - 15,000	varies per NPT size	Customer Spec	Customer Spec	Various male thread sizes
	Cnt-r-KUT™ Centering Device	Flexible elastomer for nozzle centering - for your existing nozzles	1" - 24"	1.7 to 80	1,200 - 10,000	varies per NPT size			3/8" - 1/2"
	Mega-Thruster PX Revolver	Full 360° rotation for cleaning & polishing; designed for long runs	1" - 24"	1.7 to 80	1,200 - 10,000	varies per NPT size	4	3	3/8" - 1/2"
<p>See ad page 32</p> <p><b>Chempure Products Corp.</b> PO Box 740, Bolivar, OH 44612 800-288-7873 • 330-874-4300 • (f) 330-874-4448 www.rootrat.net lloyd@chempure.com</p>	Root Rat	Root & enc	2" - 30"	4 to 150		0.5 lbs. - 5 lbs.			



# NOZZLE COMPANY

## DIRECTORY 2014

COMPANY	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Max Operating Pressure (PSI)	Weight	# of Avail. Front Jets	# of Avail. Rear Jets	Hose Size/Connecting Thread
See ad page 79 <b>Cloverleaf Tool Co.</b> PO Box 1338, Tallahassee, FL 32304 800-365-6583 • 941-739-0707 • (f) 941-739-0001 www.cloverleaftool.com sales@cloverleaftool.com	Ultimate Penetrator	Sewer/storm pipe cleaning	12" - 24"	60 to 80		10 lbs.	1	5	3/4" - 1 1/4"
	Big Shark/Small Shark	Sewer/storm pipe cleaning	12" - 60"	60 to 80	1,800 - 2,500	30 lbs./14 lbs.	1	12	3/4" - 1 1/4"
	Aluminium Grease	Sewer pipe cleaning	6" - 12"	40 to 80	1,800 - 2,500	2 lbs.	1	6	3/4" - 1"
	Bomb	Sewer pipe cleaning	6" - 15"	60 to 80	1,800 - 2,500	3 lbs.	1	5	1"
	Chisel	Sewer pipe cleaning	6" - 15"	60 to 80	1,800 - 2,500	2 lbs.	1	6	3/4" - 1"
	Truder	Sewer/storm pipe cleaning	12" - 24"	60 to 80	1,800 - 2,500	16 lbs.	1	3	1"
	Floor Cleaner	Sewer/storm pipe cleaning	10" - 48"	60 to 120	1,800 - 3,000	50 lbs.		8	3/4" - 1 1/4"
	Floor Cleaner	Sewer pipe cleaning	6" - 12"	16 to 25	2,500 - 5,000	8 lbs.		10	1/2"
	Traction	Sewer cleaning	4" - 12"	16 to 25	3,000 - 5,000	1 lb.	1	12	1/2"
	Bomb	Sewer cleaning	4" - 12"	16 to 25	3,000 - 5,000	2 lbs.	1	14	1/2"
enz usa inc. 1585 Beverly Ct., Unit 115, Aurora, IL 60502 See ad page 28 877-369-8721 • 630-692-7880 • (f) 630-692-7885 www.enzusa.com sales@enzusa.com	Bulldog Antiblast	Anti-toilet blowing in residential	6" - 24"	55 to 80	1,500 - 1,800	17 lbs.	6		1" - 1 1/4"
	Bulldog	Cleaning grease, roots, deposits, etc.	8" - 24"	50 to 120	2,000 - 2,900	17 lbs.	7	6	1" - 1 1/4"
	Rotodril	Cleaning black pipes, frozen pipes, heavy debris	2" - 14"	13 to 80	2,000 - 4,000	0.25 lbs. to 1.5 lbs.	1	6	1/2" - 1"
	Grenade - 40.100	Flushing heavy debris	6" - 12"	40 to 80	2,000 - 3,600	11 lbs.		10	1"
	Chisel 60.100L	Penetrating clogs, root masses, frozen pipes	6" - 16"	50 to 80	2,000 - 3,600	6 lbs.	4	6	1"
	10.125TR Chain Scraper	Root removal, hard grease, hard deposits	5" - 12"	14 to 80	2,000 - 3,600	6 lbs.		7	1"
	10.200R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	8" - 16"	50 to 80	2,000 - 3,600	78 lbs.		6	1"
	10.400R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	16" - 32"	80 to 120	2,000 - 3,600	105 lbs.		6	1"
	14.300 Milling Cutter	Removal of concrete & mineral deposits	12"	80 to 100	2,000 - 2,200	178 lbs.		6	1"
	Turbopuls 410.120A	Removal of semi-hard thick deposits	8" - 40"	40 to 80	2,000 - 2,900	32 lbs.		9	1"
See ad page 2 <b>General Pipe Cleaners</b> 1101 Thompson Ave., McKees Rocks, PA 15136 800-245-6200 • 412-771-6300 www.drainbrain.com info@drainbrain.com	Chisel Point Nozzle	Penetrating, breaking up debris	4" - 10"	12	2,500	4 oz.	4	6	1/2"
	Traction Nozzle	Sand and mud removal	4" - 10"	12	2,500	8 oz.	1	6	1/2"
	Cleaning Nozzle	Maintenance cleaning	4" - 10"	12	2,500	12 oz.		8	1/2"
	Spring Leader Nozzle	Guiding hose around tight bends	2" - 10"	1.5 to 8	1,500 - 3,000	4 oz.		3 to 4	1/8" - 1/4" - 3/8"
	Downhead Nozzle	Dropping down Ts	2" - 4"	1.5 to 4	1,500 - 3,000	2 oz.		3	1/8"
	Chain Saw Nozzle	Cutting roots	4" - 10"	4 to 12	2,500 - 3,000	2 lbs.		2 to 4	3/8" and 1/2"
	Rotary Nozzle	Scour pipe walls clean	2" - 10"	1.5 to 12	1,500 - 3,000	2 oz. to 10 oz.		2 to 4	1/8" - 1/4" - 3/8" - 1/2"
See ad page 86 <b>Jet Clean Tools USA Inc.</b> 200 W 84th Dr., Ste. C, Merrillville, IN 46410 630-687-1188 www.us.nozzle-depot.com sales@jetcleantools.com	Blue100 Transformer	Multipurpose-rotating with speed adjustable	6" - 44"	45 to 2,900	700 - 2,900	15 lbs.	4	6	1"
	Blue50 Transformer	Multipurpose-rotating with speed control	4" - 8"	10 to 50	500 - 2,900	8 lbs.	1	3	1/2"
	Spider 50	Obstacle remover	4" - 6"	10 to 60	700 - 2,900	2 lbs.	3	3	1/2"
See ad page 39 <b>Jetstream of Houston</b> 5905 Thomas Rd., Houston, TX 77041 800-231-8192 • 832-590-1300 • (f) 832-590-1304 www.waterblast.com sales@waterblast.com	15K Orbi-Jet	Surface cleaning	N/A	25	15,000	N/A	4		1/2" NPT Female
	15K Straight Tip	Surface cleaning	N/A	51.7	15,000	N/A	1		1/4" NPT Male
	15K Fan Tip	Surface cleaning	N/A	51.7	15,000	N/A	1		1/4" NPT Male
	15K Rotomag	Pipe cleaning	>3"	50	15,000	N/A	2	2	3/4" NPT Male
	15K Tube Spinner w/Nozzle	Tube cleaning	>5"	50	15,000	N/A	Various	Various	Various
	15K Compact Nozzle	Tube cleaning	>5"	36.2	15,000	N/A	Various	Various	Various
	15K Evaporator Nozzle	Tube cleaning	>5"	36.2	15,000	N/A	Various	Various	Various
	15K Abrasive Nozzle	Surface cleaning	N/A	8	15,000	N/A	Various	Various	3/8" NPT Female
	20K Orbi-Jet	Surface cleaning	N/A	7.5	20,000	N/A	4		9/16" MP Female
	20K Straight Tip	Surface cleaning	N/A	20.7	20,000	N/A	1		Gun Nozzle Holder
	20K Fan Tip	Surface cleaning	N/A	20.7	20,000	N/A	1		Gun Nozzle Holder
	20K Rotomag	Pipe cleaning	>3"	55.3	20,000	N/A	2	2	3/4" MP Female
	20K Pineapple	Pipe cleaning	>3"	7.6	20,000	N/A	4	6	3/4" MP Female
	20K Tube Spinner w/Nozzle	Tube cleaning	>5"	14.6	20,000	N/A	2	2	Various
	20K Compact Nozzle	Tube cleaning	>5"	41.8	20,000	N/A	Various	Various	Various
	20K Evaporator Nozzle	Tube cleaning	>5"	41.8	20,000	N/A	Various	Various	Various
	20K Abrasive Nozzle	Surface cleaning	N/A	4.8	20,000	N/A	Various	Various	9/16" MP Female
	40K Tornado Nozzle	Surface cleaning	N/A	8.2	40,000	N/A	3 to 4		9/16" Button Seal
	40K UHPE Nozzle	Tube cleaning	>5"	7.8	40,000	N/A	Various	Various	Various

# NOZZLE COMPANY

## DIRECTORY 2014

COMPANY	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Max Operating Pressure (PSI)	Weight	# of Avail. Front Jets	# of Avail. Rear Jets	Hose Size/Connecting Thread
See ad page 29 <b>MyTana Mfg. Co. Inc.</b> 746 Selby Ave., St. Paul, MN 55104 800-328-8170 • (f) 651-222-1738 • (f) 651-222-1739 www.mytana.com jdonaldson@mytana.com	Cornering	Navigating elbows	1 1/2" - 8"+	2 to 8	1,500 - 3,000	<8 oz.	1	3	1/8" - 1/4" - 3/8" - 1/2"
	Penetrating Thrust	Paper products	1 1/2" - 8"+	2 to 8	1,500 - 3,000	<8 oz.	1	3	1/8" - 1/4" - 3/8" - 1/2"
	Blind Thrust	Pulling power	1 1/2" - 8"+	2 to 8	1,500 - 3,000	<8 oz.		4	1/8" - 1/4" - 3/8" - 1/2"
	Monster Flush	Pulling & cleaning	1 1/2" - 8"+	2 to 8	1,500 - 3,000	<8 oz.	1	6	1/8" - 1/4" - 3/8" - 1/2"
	General	Cleaning	1 1/2" - 8"+	2 to 8	1,500 - 3,000	<8 oz.		6	1/8" - 1/4" - 3/8" - 1/2"
	Degreasing/Delcing	Grease & frozen lines	1 1/2" - 8"+	2 to 8	1,500 - 3,000	<8 oz.	3	6	1/8" - 1/4" - 3/8" - 1/2"
	Rotating	Cleaning	1 1/2" - 8"+		1,200 - 4,000	<8 oz.		2	1/4" - 3/8" - 1/2"
	Drop Head	Touch corners commercial	1 1/2" - 4"	2 to 2	1,500	<8 oz.		3	1/8" - 1/4"
	Jetter Leader	Navigating	3" - 8"	4 to 12	3,000	<8 oz.		4	3/8"
See ads pages 14, 87 <b>NLB Corp.</b> 29830 Beck Rd., Wixom, MI 48393 248-624-5555 • (f) 248-624-0908 www.nlbcorp.com nlbmkgt@nlbusa.com	Typhoon™ 10	Tube cleaning	5/8" - 3/4"	9 to 20	15,000 to 40,000	2 oz. - 4 oz.	4 to 5		varies inches
	Typhoon™ 20	Pipe & tube cleaning	6" - 10"	20	24,000	2 oz.	4 to 5		3/4" - 2"
	TS-1	Tube cleaning	1/2"	5.6 to 8.25	10,000 - 15,000		1 to 4	6	1/16" NPT
	TS-1-20K	Tube cleaning	1/2"	4 to 10	20,000		1 to 4	2 to 6	1/4" UNF
	TS-1-40K	Tube and pipe cleaning	1/2"	4.75 to 8	40,000		1 to 2	2 to 3	1/4-28" UNF
	RLM	Pipe and tube cleaning	1/2" - 1 1/2"	5 to 18	10,000 - 20,000		1 to 4	3 to 6	varies
 <b>NozzTec® Inc.</b> 1497 Main St. #354, Dunedin, FL 34698 866-620-5915 • 603-413-6583 • (f) 603-413-6744 www.nozztec.com info@nozztec.com See ad page 54	BL Swiper™ (Med)	Reduce blown toilets and safe in lined pipes	8" - 18"	15 to 250	400 - 4,000	3 lbs.		4	1/2" - 3/4" - 1" - 1 1/4"
	HAMMERHEAD™	High performance sewer cleaning or storm water cleaning	6" - 12"	5 to 80	400 - 4,000	4 lbs.		4	1/2" - 3/4" - 1"
	Multi-Global Nozzle™	Sewer and pipe cleaning for penetration	2" and Up	4 to 170	400 - 4,000	2 lbs.	4	6-Jan	1/2" - 3/4" - 1" - 1 1/4"
	JAWS™	High performance sewer and pipe cleaning heavy debris	6" - 30"	30 to 265	400 - 4,000	7 lbs.		5	1/2" - 3/4" - 1" - 1 1/4"
	IceBear Penetrating Nozzle™	Sewer and pipe cleaning penetrating nozzle	1" and Up	4 to 170	400 - 4,000	1 - 3 lbs.	3		1/4" - 1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
	C-RAY 200™	Bottom cleaning for sewer and pipe	12" - 36"	30 to 265	400 - 4,000	22 lbs.	1	6	1/2"
	C-RAY 400™	Bottom cleaning for sewer and pipe	15" and Up	40 to 350	400 - 4,000	42 lbs.	1	8	3/4" - 1" - 1 1/4" - 1 1/2"
	BL Swiper™ (large)	Ventura effect type nozzle to clean with water in the line and sucks the water down	15" and Up	40 to 265	400 - 4,000	13 lbs.		39	
	Spinner Nozzles (No rebuilds)	Grease and other obstructions	4" and Up	14 to 350	400 - 4,000	3 - 15 lbs.	2		1/2" - 3/4" - 1" - 1 1/4" - 1 1/2"
	Goblin Grease Eater™	Grease nozzle sewer lines or storm lines	6" and Up	40 to 350	400 - 4,000	12 lbs.	1	10	3/4" - 1" - 1 1/4" - 1 1/2"
	NATAB	Penetration with sewer and pipe cleaning	4" - 12"	5 to 50	400 - 4,000	3 lbs.	1	4	1/2" - 3/4"
	BL Swiper™ (Small)	Helps reduce blown toilets with 1/2" and 3/4" units	4" - 12"	10 to 80	400 - 4,000	2 lbs.		4	1/2" - 3/4"
	MONRO-JET™	Hydro-Excavation	2" - 8"	3 to 20	2,000 - 36,000	2 lbs.	1		1/2"
	ORCA™	Two truck operation at either end of the pipe	15" - 60"	40 to 350	400 - 4,000	15 lbs.		8	3/4" - 1" - 1 1/4" - 1 1/2"
	Missile Nozzle	Heavy duty cleaning with optional front jet	6" - 36"	40 to 265	400 - 4,000	10 lbs.	4	6	3/4" - 1" - 1 1/4" - 1 1/2"
	Golden Nozzle	Recycled water use with our same tube system technology	6" - 36"	40 to 265	400 - 4,000	6 lbs.	1	6	3/4" - 1" - 1 1/4" - 1 1/2"
	C-RAY 800™	Dual truck operation for double the flow for large pipes	36" - 96"	120 to 350	400 - 4,000	50 lbs.		8	3/4" - 1" - 1 1/4" - 1 1/2"
	See ad page 7 <b>RIDGID</b> 400 Clark St., Elyria, OH 44035 888-743-4333 www.ridgid.com	Root Ranger RR3000	Roots	4" - 8"	4.5 to 5.5	3,000 - 4,000	1.4 lbs.		1
 <b>SPARTAN</b> 1506 W Division St., Mendota, IL 61342 800-435-3866 • 815-537-7411 • (f) 888-876-2371 www.spartantool.com customerservice@spartantool.com See ad page 92	Warhog	Roots, grease, general cleaning	2" - 18"	12 to 35	2,000 - 4,000	1 - 5 lbs.	1	4	3/8" - 1/2"
	Sandshoe	Sand, dirt and rocks	4" - 18"	12 to 18	2,000 - 4,000	7 lbs.		4	3/8" - 1/2"
	Rotating	Scrubbing pipe walls	2" - 12"	4 to 18	2,000 - 4,000	1 - 3 lbs.		3	1/4" - 3/16" - 3/8" - 1/2"
	Q Nozzle	Downhill jetting	4" - 12"	12 to 18	2,000 - 4,000	1 - 2 lbs.	3	4	3/8" - 1/2"
	Rocket Nozzle	Long distance jetting	4" - 12"	12 to 18	2,000 - 4,000	2 lbs.	1	4	3/8" - 1/2"
	Closed Nozzle	Standard jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb.		4	3/8" - 1/2"
	Open Nozzle	Standard jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb.	1	4	3/8" - 1/2"
	Brass Ball	Stainless steel hose jetting	2" - 8"	4 to 18	2,000 - 4,000	1 lb.		4	3/16"

# NOZZLE COMPANY

## DIRECTORY 2014

COMPANY	Name of Nozzle	Application	Pipe Diameter	Flow Rate (GPM)	Max Operating Pressure (PSI)	Weight	# of Avail. Front Jets	# of Avail. Rear Jets	Hose Size/Connecting Thread
See ad page 4 <b>StoneAge, Inc.</b> 466 Skyline Dr., Durango, CO 81303 866-795-1586 • 970-259-2869 www.sewernozzles.com bill.shires@stoneagetools.com	Warthog WGR Magnum	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	13 lbs.	1	4	1"
	Warthog WG-1	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	10 lbs.	1	4	1"
	Warthog WGP-1	Sewer jetting	8" - 36"	50 to 80	1,500 - 5,000	10 lbs.	1	4	1"
	Warthog WHP	Sewer jetting	6" - 18"	15 to 50	1,500 - 4,000	4 lbs.	1	2	1/2" - 3/4"
	Warthog WH	Sewer jetting	6" - 18"	10 to 45	1,500 - 8,000	4 lbs.	1	2	1/2" - 3/4"
	Warthog WS - 1/2	Sewer jetting	4" - 8"	8 to 20	1,500 - 5,000	3 lbs.	1	2	1/2"
	Warthog WT - 3/8	Sewer jetting	3" - 6"	5 to 12	1,500 - 5,000	1 lb.	1	2	3/8"
	Warthog WV - 1/4	Sewer jetting	2" - 4"	3 to 8	2,000 - 5,000	1 lb.	1	2	1/4"
Warthog WD 1-1/4	Sewer jetting	8" - 36"	80 to 120	1,500 - 5,000	11 lbs.	1	6	1-1/4"	
See ad page 47 <b>US Jetting, LLC</b> 850 McFarland Pkwy., Alpharetta, GA 30004 800-538-8464 • 770-740-9917 • (f) 770-740-0297 www.usjetting.com	RDP (Rapid Power Delivery)	General all purpose cleaning nozzle	3"-18"	10 - 36GPM	10,000	1 lb	1-4	6	3/8" - 1"
	RPD Chisel and Egg Style	Forward push when working down stream with the flow	2"-18"	10-65gpm	5,000	1-3 lbs	1-4	6-12	3/8"-1"
	Standard Drain Jet	Deicing or hard blockage penetration	3"-8"	6-18gpm	5,000	6oz	1	6	1/2"
	Ball Jets	Used in damaged pipes with offset joints	1"-8"	4-25gpm	5,000	6 oz-1lb	1	3-6	1/8" - 1/2"
	Dragon Jet	Large diameter storm drain culvert cleaning	10" - 48"	18-80gpm	4,000	50 lbs	0	4	1/2" - 1"
	Water Lubricated Rotary Nozzle	Grease and root removal	4"-12"	10-25gpm	10,000	3 lbs	1	2	
	Controlled Rotation Nozzle	Grease, roots and hard scale	4"-18"	6-80gpm	8,000	5-20lbs	1	2-4	
	Monro Orbital Drain Nozzle Vac Pump	Cutting obstacles out of pipes Venturi vac pump	4"-12"	10-30gpm 10-25gpm	10,000 3,000	5lbs 40lbs	1 0	3 6	
 <b>USB - Sewer Equipment Corporation</b> 1700 Enterprise Way, Ste. 116, Marietta, GA 30067 866-408-2814 • 770-984-8880 • (f) 770-984-2802 www.usbsec.com info@usbsec.com See ad page 70	Flying Nozzle - 3D	Hilly difficult terrain; silt, sand & large debris removal	4" - 24"	13 to 120	2,000 - 4,000	1/2/5/12 lbs.		6/8	1/2" - 3/4" - 1" - 1 1/4"
	Cleaning Nozzle - 3D	General cleaning of sand, silt, mud & grease	4" - 15"	13 to 80	2,000 - 4,000	1/2/5/7.5 lbs.	1	7/9/9/11	1/2" - 3/4" - 1"
	Pipe Wolf	Total obstructions & blockages caused by roots, grease & organic solid material	4" - 24"	15 to 120	2,000 - 4,000	2.2/5.8/12.8 lbs.	3	6	1/2" - 3/4" - 1" - 1 1/4"
	Primus Nozzle	Grease, scale, crusts & roots	4" - 24"	15 to 120	2,000 - 4,000	2.5/7/8/19.4 lbs.	5/6	3/4/06	1/2" - 3/4" - 1" - 1 1/4"
	Superior Penetrator Nozzle - 3D	Pipe lines w/off-sets, drop joints, voids, etc.	6" - 15"	30 to 120	2,000 - 3,000	9.8 lbs.	1	8	3/4" - 1" - 1 1/4"
	Dredger Nozzle	Removal of heavy solids, silt, sand & sludge at the bottom of pipe	8" - 96"	40 to 120	2,000 - 3,000	22/40/56/59 lbs.		6/8/10/14	3/4" - 1" - 1 1/4"
	Antiblaster Nozzle - 3D	Shallow sewer lines, Sewer lines close to homes	6" - 12"	30 to 80	2,000 - 3,000	4 lbs.	1	8	3/4" - 1"
	Ultimate Chisel Nozzle	Total obstructions, blockages & pipe deformations	6" - 24"	50 to 120	2,000 - 3,000	5.2 lbs.	4	6	1/2" - 3/4" - 1" - 1 1/4"
	Grand Slam - 3D	General sewer cleaning	6" - 15"	50 to 120	2,000 - 3,000	12 lbs.		8	3/4" - 1" - 1 1/4"
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 <b>VARCO</b> 7489 Mason King Ct., Manassas, VA 20109 866-872-1224 • 703-334-5980 • (f) 703-334-5979 www.varcopumper.com ron@varcopumper.com See ad page 71	Super Sewer Squad Kit	Penetration, flushing, deicing, degreaser, polishing	1" - 24"	1.7 to 80	1,200 - 10,000	varies per NPT size	Customer Spec	Customer Spec	1/8" - 1"
	Elite 6 Pack Nozzle Kit	Penetration, flushing, deicing, degreaser, polishing	1" - 24"	1.7 to 80	1,200 - 10,000	varies per NPT size	Customer Spec	Customer Spec	1/8" - 1"
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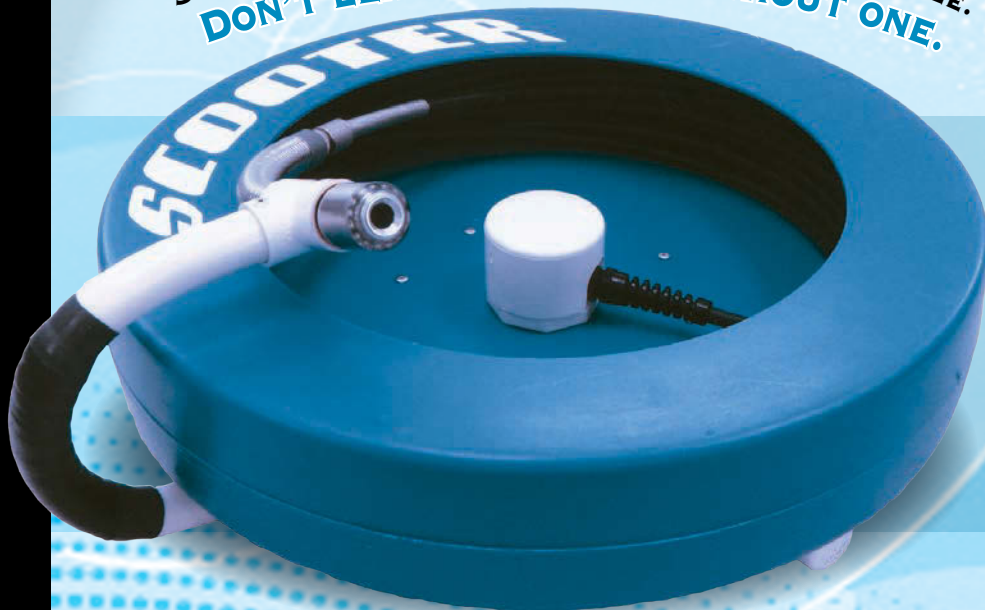
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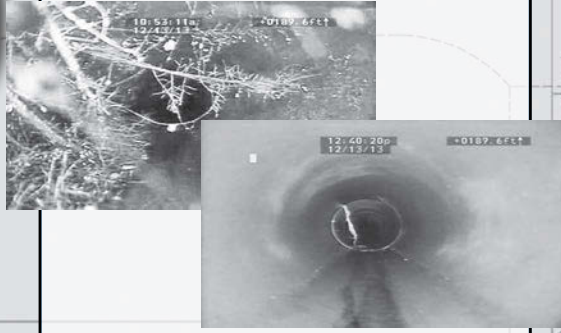


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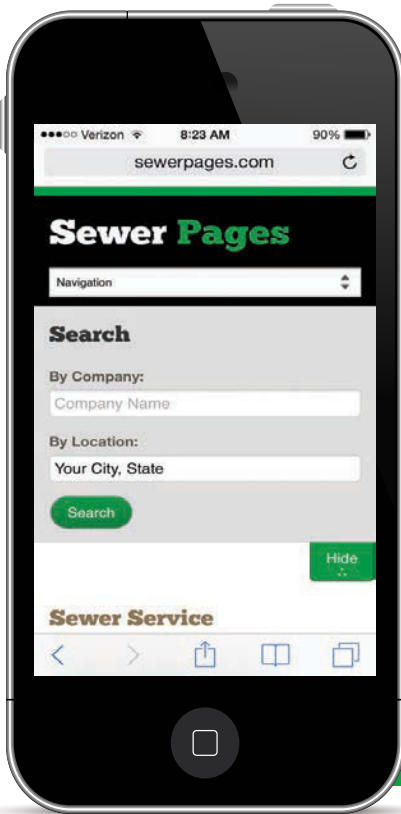
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# A Handy Sidekick

Easement reel shoulders the load and minimizes employee fatigue for a Louisiana contractor

By Ken Wysocky

Logging 600 or more feet of 1-inch-diameter hose from a vacuum truck to a remote manhole used to be a tiring, time-consuming task for crews at Video Pipe Inspection Inc. – especially in the extreme heat and humidity that’s common in the company’s service area in and around Louisiana.

But the task got a lot easier in 2010 when owner Ronnie Dugas purchased a SideKick easement reel made by PipeHunter Inc. The SideKick helps Video Pipe Inspection employees work more efficiently by minimizing the time spent on each job site and reducing fatigue, Dugas says. It is capable of carrying up to 600 feet of 1-inch-diameter hose and is powered by a 24 hp Honda gasoline engine.

Based in Denham Springs, Video Pipe Inspection serves a niche market: prepping sewer mainlines and other pipelines for relining by providing video inspection and pipeline cleaning services. Dugas and his partner, Lynn, established the company in 2000 and run a Vac-Con vacuum truck, two video-inspection vans built out by RS Technical Services Inc. and a PipeHunter portable jetter, used to clean sewer laterals (300-gallon water tank; 25 gpm at 3,500 to 4,000 psi).

“We have a lot of easements around Baton Rouge,” Dugas points out. “Some areas we work in are rural and the easements are larger than your typical everyday backyard. Instead of 100 feet away, the manholes might be 600 to 800 feet away. On one high-end residential property, we had to hook together two easement units to reach a manhole that was almost 1,500 feet from the vac truck.”

The steerable, four-dual-wheeled SideKick essentially serves as a hose-reel extension of the Vac-Con truck, which has a top jetter output of 65 gpm at 2,000 psi. Here’s how it works: The hose from the vac truck hooks up to the SideKick, which an employee rides atop a rear-mounted platform and steers with two joysticks on a control panel. The unit can handle tough terrain and makes slow, easy turns without chewing up residential lawns, Dugas notes.

But the SideKick’s real value stems from how it keeps Dugas’ crews fresher over the course of long, hot days.

“When we’re going hot and heavy ... we use the Sidekick almost on a daily basis, and it helps us get things done more efficiently than having our guys haul hose all day from the front of the vac truck,” he says. “Without the SideKick, we’ve got a couple guys literally dragging the sewer hose around, which takes additional time, plus you really wear out your people, manhandling hose in the heat and humidity here in Louisiana.”

How did employees react to the SideKick purchase? “Like a mule eating



Donny Gerald, a technician at Video Pipe Inspection Inc., uses a SideKick easement reel, made by PipeHunter Inc., to transport a long jetter hose from a vacuum truck to a remote manhole location.

## money machines

- OWNER:** Video Pipe Inspection Inc., Denham Springs, La.
- EQUIPMENT:** SideKick easement reel made by PipeHunter Inc.
- FUNCTION:** Extending jetter hoses over long distances with less fatigue
- FEATURES:** 24 hp gasoline-powered engine; four-wheel-drive powertrain; articulating reel with 600-foot hose capacity (using 1-inch hose)

briars,” Dugas reports. “I’ve had employees come from other companies that didn’t have easement reels and once they use one, they see how much easier it is.

“In the summer, the heat and humidity are tremendous – it’s commonly 95 degrees with 70 percent humidity,” he continues. “It’s so stifling it almost takes your breath away. You’re already sweating like crazy at 6 in the morning ... but the SideKick helps us work smarter, not harder.”

Dugas also notes that the SideKick minimizes employees’ contact with





Ronnie Dugas, the owner of Video Pipe Inspection Inc. in Denham Springs, La., operates the company's SideKick easement reel, made by PipeHunter Inc.

dirty hoses, which increases sanitation. "The less contact with dirty hoses, the better," he says.

The SideKick saves about 15 minutes per job, which may not sound like much – until you do the math and add it up over the course of a year. On a typical work day, when a crew might make seven or eight easement shots, that's about two hours gained per day, Dugas explains.

**"Without the SideKick, we've got a couple guys literally dragging the sewer hose around, which takes additional time, plus you really wear out your people, manhandling hose in the heat and humidity here in Louisiana."**

Ronnie Dugas

"So that allows us to video maybe another line or two per day," he says. "And that's more money in your pocket. It makes all the difference in the world to help our employees be more productive and increase the bottom line."

"We set out with a footage goal every week," Dugas adds. "We don't always achieve it because pipes have other thoughts – things like heavy roots or stuck nozzles. But we strive for 7,500 to 10,000 feet a week, and the Sidekick is instrumental in getting us there. When you can improve your bottom line and make employees happier, that's always a good thing." **C**

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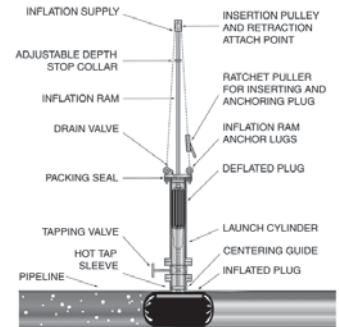
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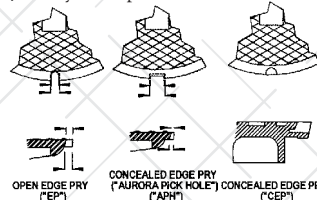
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# It Takes All of Us

National safety month focuses on continuous risk reduction across industries

By Doug Day

**"S**afety: It takes all of us" is the theme of 2014's National Safety Month. This year, the National Safety Council is promoting the key safety pillar of involving everyone in identifying and reporting hazards in the workplace.

NSC has also selected five weekly topics employers can use to build safety awareness:

## Week 1 - Prevent prescription drug abuse

NSC cites statistics of the Centers for Disease Control showing that more than 15,000 people die every year from overdoses of prescription medicines; pain relievers contribute to more deaths than all illegal drugs. "Many users of pharmaceuticals do not confine their use to inside their homes or only during their non-work hours, leading to increased risk of impairment while driving or in the workplace," says NSC in a white paper.

NSC suggests these actions for employers to help reduce the risk of prescription abuse on the job:

- Educate employees.
- Expand use of drug testing to include prescription drugs.
- Modify health insurance policies and agreements that may contribute to over-prescribing.
- Develop new processes to monitor use and misuse of drugs involved in worker's compensation claims.

## Week 2 – Stop slips, trips and falls

A focus on slips, trips and falls is no surprise since that category is one of the leading causes of injury in the workplace, accounting for one in every six lost-time injuries and 15 percent of accidental deaths, according to OSHA.

## Week 3 – Be aware of your surroundings

Situational awareness is part of hazard identification that is covered by various OSHA regulations, including a general safety provision that states, "It shall be the responsibility of the employer to provide for frequent and regular inspections of the job site, materials, and equipment by competent persons..." and requires employee training in the recognition, avoidance and prevention of unsafe conditions.

**"Many users of pharmaceuticals do not confine their use to inside their homes or only during their non-work hours, leading to increased risk of impairment while driving or in the workplace."**

National Safety Council

## Week 4 – Put an end to distracted driving

Distracted driving has been a growing safety concern as companies try to balance safety with the increased productivity available through technology. OSHA has encouraged employers to ban texting while driving, and many states have already done so. The Federal Motor Carrier Safety Administration has banned both texting and hand-held cellphone use for commercial truck drivers since 2010 and 2011.

## Week 5 – Summer safety (overexertion/heat stress)

OSHA began its Heat Illness Prevention Campaign in 2011 to educate people about the dangers of working in summer heat. Thousands of workers are sickened every year from heat; 60 workers died in 2011, according to OSHA. Water, rest and shade are key to safety in hot weather, it says, and offers these recommendations:

- Drink water every 15 minutes, even if you're not thirsty.
- Rest in the shade to cool down.
- Wear a hat and light-colored clothing.
- Learn the signs of heat illness and what to do in an emergency.
- Keep an eye on fellow workers.

There is a good month of safety topics. Safety agencies such as OSHA and NSC offer plenty of information online you can use to plan safety meetings and tailboards. Take advantage of them, and make your workplace safer. **C**



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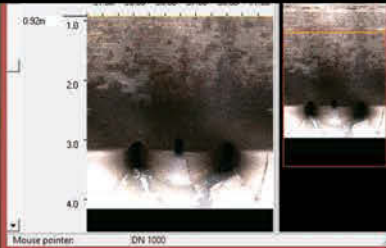


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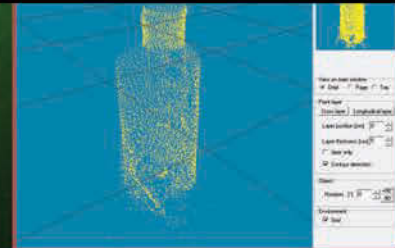
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3/16"	\$26.12	\$33.17	\$41.35	\$55.25	\$69.95	\$84.68	\$99.38	\$128.82	\$158.25	\$187.69
1/4"	\$29.85	-	\$55.85	\$81.82	\$107.77	\$126.38	\$150.52	\$198.77	\$247.02	\$295.28
3/8"	\$62.08	\$91.28	\$105.54	\$151.12	\$215.06	\$259.57	\$304.05	\$382.09	\$469.43	\$556.77
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PRODUCT OF THE YEAR 2012

# Chemical and Mechanical Root Control

By Craig Mandli

Chemicals can be an effective remedy for root infiltration in sewer lines, but mechanical removal with cutters, nozzles, cable machines and jetters is often needed for severe blockages. Manufacturers offer a wide variety of tools for cutting out and cleaning problem roots. Here are some of the latest offerings.

## ROOT CUTTERS

### HIGH-SPEED CUTTER

The **Supernova** high-speed, high-torque cutter from **KEG Technologies** quickly removes roots in sewer or storm lines from 6 to 48 inches. It has a heavy-duty one-piece stainless steel body and fin assembly; two heavy-duty roller chains; replaceable jet inserts sized for the equipment's gpm, psi and hose length; stainless steel skids and sizing plates; and minimal maintenance with no required lubrication. It is adjustable from 6 to 16 inches, with optional expansion kits to 48 inches, and can achieve operating flow rates from 60 to 180 gpm and working pressures from 1,700 to 3,000 psi. It can clear other obstacles in the line like concrete, grease, tuberculation or protruding laterals while eliminating root problems. **866/595-0515; www.kegtechnologies.net.**



KEG Technologies

### COMPACT PNEUMATIC CUTTER

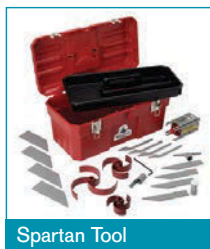
The **Pneumatic Micro-Cutter** from **Nu Flow Technologies** can be used to clean and remove pipe debris, calcite and roots from the inside of a variety of pipes, including steel, cast iron and Orangeburg. The system rotates at approximately 2,000 rpm in 1 1/2-inch and larger pipes in lengths up to 100 feet, and will negotiate turns of 90 degrees in pipes down to 2 inches in diameter. It runs at 40 cfm and allows for multiple cutting heads. It is available in an electric/light-duty model, and can also be used for reinstating. **800/834-9597; www.nuflowtech.com.**



Nu Flow Tech.

### HYDRAULIC MOTOR ROOT CUTTER

The **Model 468 Root Cutter** from **Spartan Tool** uses the flow from a hydrojetter to propel it down sewer lines to attack root intrusions and blockages. Its case-hardened saw blades combine with a high-rpm hydraulic motor to rip, tear and shred roots. It comes with an impact-resistant toolbox with quick-change



Spartan Tool

skids to center the unit in 4-, 6-, 8- and 10-inch sewer lines. These circular tri-blades are sized to stay just under the pipe's interior diameter and to attack roots, ensuring a clear pipe when the job is complete. It operates on 1/2-, 3/4- or 1-inch hose at flows between 10 and 15 gpm and pressures between 800 and 2,000 psi. **800/435-3866; www.spartantool.com.**

### CHAIN ROOT CUTTERS

**Turbo** chain cutters from **USB - Sewer Equipment Corporation** are made of tempered stainless steel and offer continuously adjustable guide skids. The chain retainer is driven by a high-performance turbine to remove roots, grease and mineral deposits from 4- to 48-inch sewer lines.

With an optimized 3-D hydromechanics design in conjunction with ceramic nozzle inserts, the cutters use recycled or clean water. They can also be used as barrel cutters with diamond bits for smooth removal of protruding laterals. Heavy mineral deposits can also be removed with carbide bits attached to the specialized chain. **866/408-2814; www.usbsec.com.**



USB - Sewer Equipment

## ROOT CHEMICALS

### ROOT HERBICIDE

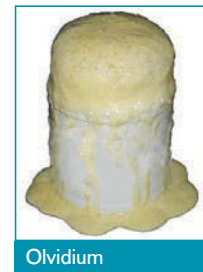
**Razorooter II** root-control herbicide from **Duke's Root Control** leads to extended pipe life, reduced SSO occurrences and maximized asset value. It contains the active ingredient diquat dibromide, a product of Sewer Sciences Inc. It is registered with the U.S. Environmental Protection Agency. The company can customize a root-control program that integrates capacity, management operations and maintenance into each municipality's O&M plan. If a root-related stoppage occurs within two to three years after treatment, they will re-treat the line. **800/447-6687; www.dukes.com.**



Duke's Root Control

### FOAMING ROOT CONTROL

**Oblitiroot**, a foaming sewer line root control product from **Olvidium**, has been formulated to use the maximum amount of the active ingredient dichlobenil currently allowed by the U.S. Environmental Protection Agency. It comes in two pouches which, when combined, create a sticky foam with a latex base that can be applied through the clean-out or in the toilet bowl. The latex makes it stick to pipes and roots, which causes the dichlobenil vapor to remain in the line to kill roots longer. **855/782-4531; www.olvidium.com.**



Olvidium

### ROOT INTRUSION FORMULA

Registered with the EPA, **RootX** can be used by sewer departments to enhance their pipe maintenance programs and by drain cleaners as an effective tool and profitable add-on service. The foaming action lifts the root-killing active ingredient to the top of the pipe where 90 percent of intrusion occurs. It also sticks to the top of the pipe and roots to keep blockages caused by root regrowth from occurring for up to 12 months. **800/844-4974; www.rootx.com.**



RootX



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The **Vaporooter** scientific formula destroys roots on contact and inhibits regrowth for years to maintain free-flowing lines at a fraction of the cost of cutting roots. It uses a combination of metam sodium and dichlobenil to create a one-two punch on roots. Metam sodium penetrates root cells, destroying roots on contact, while dichlobenil bonds to pipe walls, joints and cracks, preventing new root growth from blocking pipes for years. 800/841-1444; [www.vaporooter.com](http://www.vaporooter.com).



Vaporooter

## CUTTING NOZZLES

### TOWABLE JETTER NOZZLE

The **Cnt-r-KUT "TOW HOOK"** towable jetter nozzle from **Arthur Products** allows for pressurized water to be applied by the integration of a towing nozzle that can be pulled through the line. The technician can also pull a line from point "A" to point "B" if required. It is flexible enough to conform to damaged or deformed lines and can easily be trimmed in the field to fit virtually any line from 2 to 8 inches in diameter by attaching a 3/8- or 1/2-inch NPT hose to one end. It is available in standard and mini sizes. 800/322-0510; [www.arthurproducts.com](http://www.arthurproducts.com).



Arthur Products

### LOW-MAINTENANCE CUTTING NOZZLE

**Root Rat** cutting nozzles from **Chempure Products** are used with jetters from 11 hp to large truck-mounted models. Manufactured of hardened stainless steel, they come with a toolbox with two interchangeable rotors – one with cables and the other with chains. The combination kit includes extra chain, cable and bearings. They need no repair or rebuilding other than bearing replacement, which can be completed in less than two minutes with minimal parts. 800/288-7873; [www.chempure.com](http://www.chempure.com).



Chempure Products

### VIDEO NOZZLE

Deployed on any 3/4- or 1 1/2-inch jetter hose, the **JetScan HD** video nozzle from **Envirosight** allows cleaning crews to determine what tools and setup to use, identify blockages during emergency call-outs, and document the outcome of cleaning operations. It captures valuable HD video footage from underground that can be viewed immediately afterward on a tablet. As it advances down pipe 8 to 24 inches in diameter, it records 720p HD video in MPEG format to an onboard SD memory card. Immediately afterward, the card can be removed and video viewed on an iPad or other SD-compatible device. Twin high-output LED lamps ensure bright, vivid footage. It lasts four hours on rechargeable lithium-ion batteries, and stores up to eight hours of video. 866/936-8476; [www.envirosight.com](http://www.envirosight.com).



Envirosight

### TURBINE NOZZLE

With operating flows as low as 13 gpm at 2,000 psi, the **Golden Jet 10.125TR** turbine nozzle from **Enz USA** maintains high torque for effective pipe cleaning in lines ranging from 5 to 12 inches. Because of its sealed bearings, this nozzle can be operated with both clean and recycled water while being relatively maintenance



Enz USA

free. It is a powerful root remover and can be used to remove grease, solids, mineral deposits, concrete and grout. The kit provides a selection of pre-cut chains, skids and two head styles. 877/369-8721; [www.enzusainc.com](http://www.enzusainc.com).

### LOW-TORQUE CUTTING NOZZLE

**Lumberjack** low-torque, variable-speed, multipurpose cutting nozzles from **NozzTeq** are powered by common sewer jetting or combination trucks. The cutting chains rotate at speeds of 10,000 to 50,000 rpm, depending on pressure and flow rate. The cutter is designed to cut roots, but also clear out concrete, tuberculation, grease, protruding laterals and other obstructions. Low torque means it won't get stuck, harm host pipe or spin off the hose end. They have sealed, grease-lubricated bearings, and are water-cooled so they don't need daily maintenance. The cutter drive shaft and turbine are made of hardened steel and the supply tube is made of stainless steel. Six models clear pipes from 3 up to 48 inches. The kit includes the turbine, water supply tube, chain plate/pull plate, tow ring, cutting blade, sleds, five sets of chain per sled size, propelling nozzle with jets and adapter, spanner wrench, hand tools and tool box. 866/620-5915; [www.nozzteq.com](http://www.nozzteq.com).



NozzTeq

### SEWER CLEANING TOOL

The **WGR Warthog Magnum** sewer tool from **StoneAge** has a redesigned speed control and long-lasting carbide nozzles to generate high-quality controlled jets for blasting through roots and debris. High-pressure seals effectively handle dirty and recycled water. It has a hardened steel centralizer with individually replaceable fins that can be changed as wear occurs without opening the tool body. The body design is streamlined to improve forward and reverse movements through congested pipes, and the flush style head protects the front shaft seals for longer fluid life. 866/795-1586; [www.sewernozzles.com](http://www.sewernozzles.com).



StoneAge

## CABLE MACHINES

### MAINLINE DRAIN CLEANING MACHINE

The **TorqueMasterTM750** mainline drain cleaning machine from **Coast Manufacturing** has a double-welded, powder-coated tubular steel frame and an easy-start 3/4 hp dual-capacitor motor. The main shaft drive is fabricated from stress-proof steel, with sealed ball bearings on the shaft and drive arm bearings that never need lubrication. It has a straightforward pulley drive system, 10-inch-diameter solid polyurethane tires, extra-wide rear handle for stability in the upright position, and quick and easy one-man reel changeover. 800/541-7015; [www.coastmanufacturing.com](http://www.coastmanufacturing.com).



Coast Manufacturing

### SECTIONAL DRAIN CABLES

Sectional drain cables from **Draincables Direct** are available for almost every brand of machine on the market. Sizes include 5/8-, 7/8- and the larger 1 1/4-inch-diameter cables, along with several choices of inner cables and various lengths with the right fittings to match specific machines. 800/421-4580; [www.draincables.com](http://www.draincables.com).



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## COMPACT DRAIN CLEANING MACHINE

The **DM138** drain machine from **Duracable Manufacturing** cleans lines from 1 1/4 to 3 inches. It has a continuously welded frame, heavy-duty front bearing mount and self-aligning head bearing to ensure proper reel placement, quick reel change and longer lifespan. Designed for residential sink, shower and bathtub drains, it has a heavy-duty, 20-amp switch and revolving arm. Powered by a 1/4 hp motor that operates at 230 rpm, the machine weighs 22.5 pounds with a 7.75-pound, 14-inch reel. The reel is made of a polyethylene material that will not rust or dent, and it is easily drained with plugs located on the back of the reel. It can be operated upright or horizontal, and has non-marring rubber pads to protect the floor. **877/244-0556; www.duracable.com.**



Duracable Mfg.

## SECTIONAL DRAIN AND SEWER CLEANING MACHINE

The **Model C** cable sectional drain cleaner from **Electric Eel** runs up to 200 feet of 1 1/4-inch self-feeding dual cable in 8- or 10-foot sections that require no handling when rotating. One operator can effectively clean 3- to 10-inch-diameter lines at distances up to 200 feet. A heavy-duty 1/2 hp motor comes standard, with 3/4 and 1 hp motors available. A custom-designed gearbox ensures parts availability. A heavy-duty, fully adjustable safety clutch keeps cable and tool breakage to a minimum and provides overload protection. A fold-down handle allows for easy transportation, storage and use in crawl spaces. It also has a carry handle for balance and easy transport. **800/833-1212; www.electriceel.com.**



Electric Eel

## HEAVY-DUTY DRAIN CLEANING MACHINE

The **Model GO 68HD** heavy-duty electric drain cleaning machine from **Gorlitz Sewer & Drain** is available in two different versions, either with an open steel reel or enclosed polyethylene drum, and can be outfitted with an optional power feeder. The standard configuration is 150 feet of 11/16-inch hollow-core cable, which should reach most blockages with a single reel. The unit weighs 185 pounds, and a loading ramp and electric winch can be added to any vehicle to make transportation quick and simple. It is designed to clean pipes from 3 to 8 inches in diameter. **562/944-3060; www.gorlitz.com.**



Gorlitz Sewer & Drain

## BLOCKAGE-CLEANING CABLE MACHINE

The **400** cable machine from **Ken-Way Corporation** is designed for cleaning 3- to 10-inch lines of blockages ranging from roots to grease. It is equipped with an air switch-activated 1/2 hp motor and a three-speed pulley that allows speed adjustment depending upon length of cable and the obstruction being encountered. Two 8-inch wheels, along with a set of stair climbers, aid in handling and maneuverability. It is available with an optional power feed, or as a manual feed unit. Cables of 5/8-, 11/16- and 3/4-inch-diameter are available in either hollow core or inner core in various lengths. A set of six heavy-duty root cutting blades, along with a retriever tool and flexible cable leader come standard. **800/533-0551; www.ken-way.com.**



Ken-Way Corporation

## FLEXIBLE LEADER CABLE

The **LE151 Super Flex** leader cable from **MyTana Mfg. Company** is a flexible cable used for leading main cables down a sewer or drainline with twists, turns, elbows, offsets, sweeps and other irregularities. Many contractors keep several leaders available for use in special situations. For instance, leaders with a slight bend 8 to 10 inches from the end can help force a single blade to the outside of the pipe. The leader is suitable for 3/4-inch cable, and is available with a choice of fittings to attach to existing cables and blades. Other sizes of leader cables are also available. **800/328-8170; www.mytana.com.**



MyTana Mfg. Company

## LATERAL CUTTER AND DRAIN CLEANER

The **Maxi Miller** lateral cutter and two-step drain cleaning system from **Picote Solutions** features a range of 100 feet. Its 3-phase short circuit electric motor allows an efficient removal of hard materials from 3- to 10-inch drains and sewers with stainless steel grinding chains. It also powers Picote's Smart Cutter and Twister lateral cutters, enabling a quick reinstatement of connections. The drive unit's frequency transformer converts the 1-phase power input to 3-phase power for the motor. Its aluminum frame has powdercoating frame protection, a two-way moving system, and stair glides to ease up or down stairs. **219/440-1404; www.picotesolutions.com.**



Picote Solutions

## DRAIN-CLEANING MACHINE

The **R600** drain-cleaning machine from **ROTHENBERGER USA** is designed for pipes 3/4 to 6 inches in diameter in residential, commercial and industrial applications. It has a center-lock cable clutch system for safe and powerful transmission to the cable. The reinforced guide hose sheathing comes with a precision quick coupling for safe, kink-free cable feed that also helps prevent dirt from getting inside the machine. The lockable drive lever allows for a secure lengthening or shortening of cable, and also serves as a handle. It comes with a die-cast aluminum frame, fiberglass-reinforced side panels and an optional tripod. **800/545-7698; www.rothenberger-usa.com.**



ROTHENBERGER USA

## FLEXIBLE DRAIN CLEANER

The **Flexi-Cleaner** from **Southland Tool Mfg.** comes equipped with a Briggs & Stratton or Honda engine and features a steel frame and four wheels for easy tracking (pneumatic tires are available). It comes with instant reverse transmission and an automatic chuck to grip the cable. Its close-coiled, left-hand-wound rods are 1-inch-diameter and 25 feet long. They are easily coupled together for cleaning runs up to 600 feet. Once the rod and tool are started in the drain, the unit is wheeled forward or pulled back, which pushes or pulls the rod in or out of the line. **714/632-8198; www.southlandtool.com.**



Southland Tool

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Amazing Machinery

### TRAILER JETTER

The **E Series** trailer jetter from **American Jetter** offers protection from the elements in a compact enclosed package, with water flows from 7 to 40 gpm up to 5,000 psi. Up to 80 hp of power is provided by a Kohler diesel or gas engine using the dual engine option. It offers a standard 200- to 330-gallon water supply tank depending on model. Optional auxiliary feed allows for a towing vehicle to carry a larger supply tank, enabling higher flows and longer run times. Low water shut-off prevents pump damage. Standard hose reel speed control allows for precise cleaning in both directions. The wireless remote option provides water ON/OFF, engine shutdown and hose reel control. **866/944-3569; www.americanjetter.com.**



American Jetter

### SUITCASE JETTER

The **Crap Shooter** sewer jetter from **BullFrog Industries** weighs less than 25 pounds and offers 1,500 psi running off a 15-amp circuit without losing any water pressure. A 50-foot high-pressure hose with quick connect attaches to the unit, and two heavy-duty nozzles are designed to enhance performance. Designed to handle up to 3-inch pipes, two different faucet adapters make the unit versatile. All fixtures and hoses can handle up to 120-degree water temperatures. A heavy-duty case with carry handle encases the entire unit. **303/338-0805; www.bullfrogind.com.**



BullFrog Industries

### SKID-MOUNTED JETTER

The **RCJ Series** skid-mounted jetter from **Cam Spray** is offered in flows and pressures of 8 gpm at 3,500 psi and 7 gpm at 4,000 psi. It features a three-plunger industrial pump with pulse feature powered by a 688 cc Honda engine. It comes with 200 feet of jetter hose that can also be used to supply an optional portable reel cart available with 200 or 300 feet of jet hose. It is equipped with a 35-gallon buffer water tank with float control, powder-coated heavy tube frame, washdown gun and four-nozzle set. It easily mounts in the side door of a cargo van, on a truck bed or inside a service truck. **800/648-5011; www.camspray.com.**



Cam Spray

### WATER JET DRAIN CLEANING MACHINE

The **JM-3080 Jet-Set** water jet drain cleaning machine from **General Pipe Cleaners** can clear grease stoppages, sand, sludge and ice clogs. It generates 3,000 psi at 8 gpm, and Vibra-pulse on demand helps the hose slide easily down long runs and around tight bends. A 20 hp Honda engine with electric start and 2-to-1 gear-reducer drives the pump, while a 12-gallon buffer tank protects the jet if the water supply can't match the pump demand. **800/245-6200; www.drainbrain.com.**



General Pipe Cleaners

### SEWER JETTER PUMP

The **HDP-196** sewer jetter pump series from **Hammelman Corp.** is suited for dirty water applications, offering flows up to 160 gpm and pressures of 3,200 psi. It has a compact design with optimum space utilization and an integral reduction gear. Options include horizontal or vertical models, a reversible pump head, a central or side-suction connection, discharge connections on both sides, left- or right-hand drive shaft, and operation at any angle. It has high-grade solid ceramic plungers, wear-resistant valve seats, low flow velocity over suction and discharge valves, packing seal sets within rust-resistant stainless steel sleeves, a slow plunger speed, an industrial drive end designed for continuous duty, a pressurized oil lubrication system, and clockwise or anticlockwise rotation. Maintenance is possible without removal of suction and pressure lines. **800/783-4935; www.hammelman.com.**



Hammelman

### TRUCK-MOUNTED HYDROJETTER

The **O'Brien 7000-T** hydrojetter from **Hi-Vac Corporation** includes all of the features of the O'Brien 7000 series trailer jetter but is designed for true truck-mounted applications. It has flow ranges of 18 to 65 gpm and pressure capabilities of 2,000 to 4,000 psi. **800/638-1901; www.obrienmfg.com.**



Hi-Vac Corporation

### CONVERTIBLE WATER JET UNIT

The **125 Series** convertible water jet unit from **NLB Corp.** converts in about 20 minutes to any of eight operating pressures, from 6,000 to 40,000 psi. A wide range of flows (4.4 to 32.5 gpm) provides additional operating flexibility. It features a continuous-duty six-cylinder diesel engine (electric models are also available), and is trailer-mounted for transport to job sites, with four-wheel electric brakes, heavy-duty axles and full DOT lighting package. All operating controls, including pressure gauge, rupture disc and bypass valve, are mounted on a separate accessory manifold. **248/624-5555; www.nlbcorp.com.**



NLB Corp.

### JETTER WITH RUN-DRY PUMP

The **Mongoose Model 254** jetter from **Sewer Equipment Co. of America** has a "Run Dry" pump that operates at 25 gpm at 4,000 psi, a tubular steel frame, corrosion-resistant pre-painted sub assemblies, updated and user-friendly controls, a strong hose reel and a high-quality diesel engine. **800/323-1604; www.mongoosejettters.com.**



Sewer Equipment Co. of America

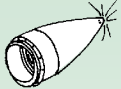
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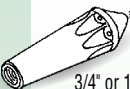


## JETTERS & JET VACS



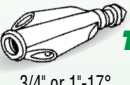
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3/4"-12°LT	\$69.00
1"-12°	\$72.00
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**Truder**

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**Shark**

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1" Big Shark	\$610.00




**Aluminum Sand**

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**Stainless Steel Nozzles**

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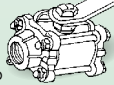


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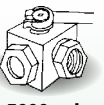
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3"-6" available

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## COMPACT JETTER

The SJPE-1500 portable, compact jetter from **Shark Pressure Washers & Jetters** has a detachable hose reel and a retractable handle that accommodates easy loading and unloading into vehicles, and allows for transport around work sites. Its Pulse Technology propels hose through the line and around tight curves to break through clogs. Rated at 1.7 gpm at 1,500 psi, it operates on 115-volt electricity and comes standard with a 35-foot power cord with GFCI. Designed for use in pipes less than 4 inches, it has a roll cage steel chassis, triplex pump and heavy-duty Baldor motor, and fits into tight work spaces with easy one-person operation. It is ETL safety certified. **800/771-1881; [www.sharkpw.com](http://www.sharkpw.com).**



Shark Pressure Washers

## TRUCK-MOUNTED HIGH-PRESSURE JETTER

The **Camel Jet 1600** truck-mounted, high-pressure water jetting system from **Super Products** utilizes three modular tanks to carry up to 1,600 gallons of water. The tanks are rotationally molded polyethylene with ultraviolet stabilizers. Its Lexan Containment System means that users have additional safety protection from hose rupture or high-pressure water. It has a heavy-duty, Triplex continuous-flow water pump to provide up to 80 gpm and pressure up to 2,000 psi. Its single-engine design translates to lower fuel costs. Water pump and drive system options are available, as well as a front- or rear-mounted 180-degree rotating hose reel with a 1,000-foot capacity. **800/837-9711; [www.cameleasy.com](http://www.cameleasy.com).**



Super Products

## HIGH-PRESSURE WATER JET MACHINE

**Hot Shot** high-pressure water jet machines from **Vac-Con** are used for obstructions from sanitary sewer and/or storm drainlines. They have a non-corroding, polyethylene water tank, and can be operated by a single person, with all controls for high-pressure water and the hose reel located at the front of the machine for ease of operation and increased safety. They are available with a 1,000- and 1,600-gallon water tank capacity. Options include variable flow, an articulating hose reel, polyethylene water tank, 30 gpm 3,000 psi water pump system, auxiliary engine or hydrostatic drive, cold-weather recirculation system, side-mounted tool boxes, air purge system, hose footage counter, arrowboard, strobe lights, inspector cam, high-pressure spray bar, hose rewind guide, 600 psi hand gun system with 25 feet of hose and a selection of nozzles. **888/491-5762; [www.vac-con.com](http://www.vac-con.com).**



Vac-Con

## TRUCK-MOUNTED JETTER

The truck-mounted **Vector Ramjet** from **Vector Manufacturing** comes equipped with a Jet Rodder water pump. Armed with up to 2,500 gallons of water in a stainless steel tank, it delivers flows of 60 to 100 gpm at 2,000 or 2,500 psi. The water pump is a single-piston, hydraulically driven, dual-acting pump that delivers a jackhammer-action water flow, breaking through line blockages and scouring caked-on debris from pipe walls. A single operator can quickly drive to each job site to solve line problems and tackle regular line maintenance. It can be configured with either a front- or rear-mounted hose reel. The auto-wind hose guide allows hands-free operation from the control panel for a clean, tight wrap. **800/627-3171; [www.vector.com](http://www.vector.com).**



Vector Manufacturing

## CART JETTER

The 15J41 jetter from **Water Cannon** has a Honda GX 390 engine, flow rates of up to 4 gpm, pressure up to 4,200 psi and a 200-foot 3/8-inch jetter hose. It has a stable tilt-back style portable frame with a roll cage, and a pulsation valve for instant pulsation on demand in order to allow the operator to quickly loosen blockages and flush them away. It comes with a ball valve, manually adjustable high-capacity Hosetract hose reel, and four jetter nozzles. **800/333-9274; [www.watercannon.com](http://www.watercannon.com). c**



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## INDUSTRY NEWS

### Oracle, RedZone form partnership

Oracle and RedZone Robotics partnered to assist owners in managing their water and wastewater assets and execute repair, replacement and rehabilitation projects through formation of the companies' YES (Your Entire System) program.

### Franklin Control Systems moves into larger facility

Franklin Control Systems, a wholly owned subsidiary of Franklin Electric, moved into a new 60,000-square-foot engineering and production facility in Hillsboro, Ore. The building enables the company to consolidate inventory and reconfigure its production area.

### Hino delivers 10,000th truck to Penske

Hino Trucks commemorated delivery of the 10,000th Hino truck to Penske Truck Leasing at Hino's plant in Williamstown, W.Va. The 2015 model 168A is part of Hino's Class 6 and 7 conventional truck line.

### Peerless adds transducer line

Peerless Electronics added Honeywell's PX2 Series of pressure transducers to its line of products. The transducers are compatible with a variety of harsh media, including brake fluid, refrigerants, engine oil, tap water, hydraulic fluids and compressed air.

### Isuzu marks 30th anniversary in U.S. market

Isuzu Commercial Truck of America celebrates 30 years in the U.S. market. The KS22, the first Isuzu truck in America, arrived at the Port of Jacksonville, Fla., on Nov. 10, 1984. It had no tilt cab and was powered by an 87 hp engine. **c**

## The Chinese Largest Manufacturer of Pipe Inspection Cameras



### Model: 3199F For pipe dia. 1" - 8"

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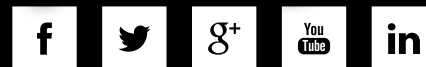
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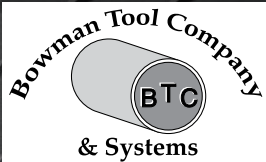
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## CASE STUDIES

### CHEMICAL AND MECHANICAL ROOT CONTROL

By Craig Mandli

#### ROOT CUTTER, CAMERA ASSIST IN CLEANING ROOT-CLOGGED LATERAL

##### PROBLEM

Ventura County, Calif., contractor From Sinks To Sewers was inspecting a lateral and found a massive amount of roots through its entire 60-foot length. The homeowner mentioned the lateral had always backed up, so for the past 10 years, he'd been snaking it with a 1/2-inch drum machine every four to six months.



##### SOLUTION

Using the **RIDGID Root Ranger** at 4.5 gpm and 3,000 psi, the plumber was able to remove all the roots in the clay lateral. Using a **Mini Color SeeSnake** during the jetting process allowed for exact root removal of specific troubled areas and verified the results to the customer.

##### RESULT

Dig and replace was often the only option for a root-infested sewer, but the Root Ranger allowed for a controllable measure against root stoppages. A neglected sewer lateral that had never been properly cleaned in the past 10 years was given a new start. 800/769-7743; www.ridgid.com.

#### CUTTER EFFECTIVE ON ROOTS IN SEWER SYSTEM

##### PROBLEM

In the city of Baton Rouge, La., roots are a major problem throughout the sewer system, which historically is the cause of many backups and overflows.

##### SOLUTION

The city contracted with Video Industrial Services to clean the collection lines to mitigate their ongoing root intrusion problems using a variety of cleaning methods. One of the tools they utilize is the **906** jet root cutter motor and circular saw blades from **Shamrock Pipe Tools**, which enables them to clean 6- to 18-inch lines. The unit also supports a variety of other root removal tools such as concave, circular or cable-style cutters so the operator can adjust the tool to fit the cleaning requirements easily.

##### RESULT

Since Video Industrial Services began their cleaning and root removal work on the collection system lines, there has been a noticeable reduction in blockages and overflows. 800/633-7696; www.shamrocktools.com. c



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- Hibon blower/Cyclo blower pump
- 18 yard debris box/Omsi transfer case
- Dense phase offload unit and module white transfer case



**2014 Kenworth with 2014 Predator  
Vacuum systems Truck ID #14148**

- Paccar PX-9 engine
- Fuller FRO11210C 10 speed transmission
- 350 horsepower @ 2,000 RPM
- Mileage: 2,438 Hours: 59
- RFL 100 Wittig pump
- 3,000 gallon tank capacity
- NVE valve upgrade/4" vacuum piping
- D.O.T. ASME 407/412



**2008 International with 2008 Vector HXX  
2112 PD Truck ID #94392**

- Cat C-13 engine
- Fuller FRO-15210C transmission
- 430 horsepower
- Mileage: 101,113 Hours: 9,652 hours
- GVWR 66,000; 20,000 front; 46,000 rear
- 8702 Hibon blower/Cat 20 GPM pump
- 12 yard debris box
- Unit equipped with boiler system

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## PRODUCT SPOTLIGHT

### Multipurpose truck performs vacuum loading, hydroexcavation

By Ed Wodalski

The multipurpose Guzzcavator from Guzzler combines the performance of a Guzzler CL vacuum loader with the versatility of a Vactor HXX hydroexcavator.

The unit's air filtration system features sixty 70-inch Dacron filter bags for wet/dry industrial cleaning. Designed for cleaning and recovering solids and dry bulk powders, liquids, slurries and thick sludge, the multipurpose truck also can be used for potholing, slot trenching and water valve box repair, as well as locating fiber optic lines, cable and other utilities.

"While it's certainly an ideal truck for supporting the oil and gas production and distribution industry, the Guzzcavator was initially designed for current Guzzler industrial cleaning contractor customers looking to grow their business by expanding their service offerings," says Ben Schmitt, product manager at Guzzler Manufacturing.

The truck's 1,300-gallon stainless steel water tank provides up to seven hours of continuous operation and removes debris by delivering up to 20 gpm of water and 2,500 psi when hydroexcavating.

"The Guzzcavator's weight is distributed to maximize water carrying capacity to legally carry a full tank of water to the job site," Schmitt says. "The modular design of the Guzzcavator separates the water tank from the debris body [16-cubic-yard capacity] so only the debris body is raised when off-loading, providing a more stable off-load."

The multi-flow water pump provides water pressure adjustment with the push of a button for various digging conditions. The water system is powered by a hydraulically operated triplex piston water pump, which can be mounted in an optional heated cabinet for cold



protection. The optional water heater (400,000 Btu or 800,000 Btu) provides the ability to operate in frozen or compact soil.

"The multipurpose aspect [of the truck] allows the typical contractor to operate their equipment throughout the year by offering additional services, such as tank cleaning and hydroexcavation," Schmitt says.

The truck has a 5-foot telescoping boom with 270-degree rotation, providing 21 feet of reach. The 8-inch-inside-diameter hose allows for passage of large or thick material. An extendable boom is available. Other features include full-opening rear door and rear-door-mounted sludge pump for off-loading. A wireless remote is standard and includes boom controls, full water pump control, vacuum enable/disable and emergency stop.

Toggle switch controls are mounted in a single, fully sealed aluminum panel for easy monitoring of the blower tachometer, E-Stop, blower temperature and hour meter, hydraulic, vacuum and air pressure gauges. Wiring is harnessed and color-coded. Each circuit is function stamped and individually grounded.

Large baghouse and cyclone clean-out access doors simplify clean up and maintenance. 800/627-3171; [www.guzzler.com](http://www.guzzler.com).



1

#### 1 VAC-CON GASOLINE AUXILIARY ENGINE

The gasoline auxiliary engine option from Vac-Con is a less expensive, lighter weight and quieter alternative to a Tier 4 diesel engine in the company's two-engine combination machine. The Ford V10 gasoline engine meets horsepower requirements for all water systems, delivering from 30 gpm to 120 gpm and up to 3,000 psi, yet weighs less than a comparable diesel engine. It also can be modified to run on compressed natural gas (CNG). 888/491-5762; [www.vac-con.com](http://www.vac-con.com).



2

#### 2 HONDA GXR120 RAMMER ENGINE

The GXR120 general purpose engine from Honda is designed for equipment used to compact soil or other granular material. Capable of meeting the high demands that rammers require, the engine has a displacement of 121 cc and can power 110- to 175-pound rammers at multiple attitudes. The cast-iron cylinder sleeve and carbon-steel, dual ball bearing crankshaft provide improved engine strength for rammer applications. 678/339-2600; [www.powerequipment.honda.com](http://www.powerequipment.honda.com).



3



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8

### 3 KNIPEX TOOLS X-CUT PLIERS

The X-Cut pliers from KNIPEX Tools is a compact, box-joint diagonal cutter. The box-joint design adds stability and eliminates backlash, while the slim shape provides access in confined areas. The pliers cut through fine strands similar to hard piano wire as well as multi-strand cable. **847/398-8520; www.knipex-tools.com.**

### 4 HI-VAC O'BRIEN 7000-T HYDROJETTER

The O'Brien 7000-T hydrojetter from Hi-Vac Corp. is designed for truck-mounted applications. Features include flow ranges of 18 to 65 gpm, 2,000 to 4,000 psi, 700-gallon polyethylene water tanks, triplex pump and hydraulic driven reel with variable-speed control. The hydrojetter is powered by a water-cooled diesel engine with 17-gallon fuel tank. **800/752-2400; www.aquatechinc.com.**

### 5 LMK SELF-DRIVEN PIPE RENOVATION SYSTEM

The Schwalm robotic pipe renovation system from LMK Technologies is compatible with sewer pipeline inspection camera systems and can cut, grind and chisel the full circumference of 5.5- to 24-inch-diameter pipe. It can remotely disconnect lining equipment, enabling the robot to install another liner while the first liner is curing. Equipped with an interchangeable digital zoom camera, the robot can reach 12 inches into a service connection to remove resin slugs, as well as cut and drive through a failed CIPP installation. It also can reinstate service connections post CIPP. **888/433-1275; www.lmktechnologies.com.**

### 6 VANAIR ROTARY SCREW AIR COMPRESSOR

The Viper diesel 80 cfm at 100 psi rotary screw air compressor from Vanair Manufacturing is designed to operate 90-pound jackhammers, as well as 1 1/2-inch impact wrenches and piercing tools. Powered by a Tier 4 certified Kubota engine, features include automatic variable throttle control to minimize fuel consumption, 48 cfm at idle, auto engine-off and restart based on air demand. **800/526-8817; www.vanair.com.**

### 7 REELCRAFT STAINLESS STEEL HOSE REEL

The hand-crank HS37000 L hose reel from Reelcraft holds 100 feet of 1-inch hose. Made of corrosion-resistant 304L grade stainless steel, the reel, rated at 500 psi, features a stainless steel brake, welded drum and vibration-proof fasteners. Two motor-drive models are available (12-volt DC explosion proof, 115-volt AC). **800/444-3134; www.reelcraft.com.**

### 8 COXREELS FULL-FLOW FLUID PATH

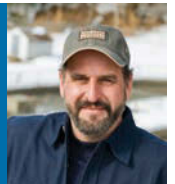
Model 1175 and 1185 Series reels from Coxreels have a swept outlet riser for maximum full-flow fluid path. Other features include one-piece, all-welded A-frame base designed to handle 1- and 1 1/2-inch I.D. hose. **800/269-7335; www.coxreels.com. c**

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