Vermeer

FIBER SOLUTIONS

EQUIPMENT FOR EVERY INSTALLATION

BUILDING

MASSIVE FIBER NETWORKS

The fiber market is booming everywhere. There's an endless need for developing high-speed digital highways to transmit data globally. But a strong fiber backbone is nothing without all the individual connection points required to give every person access at home and work to upload and download information, access entertainment and communicate with others.

At the center of the effort to build these massive fiber networks is you, the utility contractor, navigating crowded underground spaces in the world's biggest cities, small communities and rural areas. **You're connecting businesses, homes and smart devices that are powering modern-day life — one foot at a time.**

As you and your crew roll up your sleeves every day doing the important work of building the world's fiber networks, trust the team at Vermeer and its global dealer network to be there for all your fiber equipment installation needs.

FIBER-DROP INSTALLATIONS

While miles of mainline fiber carry data great distances, people depend on individual fiber connections at home and work to connect to networks. These short home and business fiber-drop installations are critical for building robust networks, but they can be challenging work.

To optimize your fiber crews' efficiencies in this part of building a fiber network, Vermeer offers a range of productive compact fiber solutions.

Solutions for fiber-drop installations

- **Compact horizontal directional drills (HDDs) —** Need to drill in congested city environments or a backyard where access is tight? No problem. The narrow bodies of Vermeer D8x12 and D10x15 S3 HDDs can fit in tight spaces and deliver the performance needed to make the connection.

- **Vibratory plows and trenchers —** When your crews aren't working in the concrete jungle of a busy city, small vibratory plows and trenchers are efficient fiber solutions for making short residential and business-drop installations.

  – The Vermeer SPX25 vibratory plow is operated by a full-function remote to give operators a 360-degree view of the job at hand — something you want when working in tight, congested areas.

  – When working on harder grounds or plowing deeper, you should consider the Vermeer PTX40, PTX42 or PTX44 plow/trencher. These units can plow up to 24-inches (61-cm) deep and cut a trench up to 42-inches (106.7-cm). You choose your operating preference from walk-beside hand controls, full-function remote or atop an operator seat.

- **Vermeer Hole Hammer® positive-turn and quarter-turn reverse pneumatic piercing tools —** Handy for making short fiber bores under hard surfaces like driveways and roadways, these tools are compact, fast and economical.

FIBER MAINLINE EQUIPMENT SOLUTIONS

For fiber mainline installation work in urban and rural areas, the equipment you choose can impact your crews' productivity. Whether you're boring 300 feet (91.4 m) at a time or doing miles of direct fiber installation, Vermeer has the right equipment solutions and all the accessories for the job.

Urban fiber mainline work

The bulk of urban fiber mainline work being done today involves HDDs. The Vermeer HDD lineup includes some of the most widely used drills for this type of work.

The industry's most popular drills for urban mainline work

- **Vermeer D20x22 S3 HDD —** Ideal for residential fiber work because of its power to perform long drill shots, this drill's compact size also allows it to perform short bores in tight working conditions.
- **Vermeer D23x30 S3 HDD —** Whether you're working in challenging ground conditions or need a drill capable of extending your bore distances, this is the drill fiber professionals choose. Like all Vermeer drills carrying the series 3 (S3) nomenclature, this drill is built for speed, simplicity and low sound levels — the ideal combination for installing fiber in urban areas.
- **Vermeer D23x30DR S3 HDD —** When the ground conditions are challenging, such as a mix of hard clay and rock, it may be time to consider this dual-rod drill. Designed to maneuver through rock in congested cities, busy neighborhoods or tight jobsites, the D23x30DR leads its drill class with its narrow footprint and lightweight design. This drill packs a punch with 3,000 foot-pounds (4,067.5 Nm) of rotational torque and 24,000 pounds (106.8 kN) of thrust.

Ride-on tractors for urban fiber installation

- Quick and efficient with minimal restoration work, Vermeer RTX450, RTX550 and RTX750 ride-on tractors can be outfitted with a range of attachments for fiber work, including a vibratory plow. You can also choose between tires and tracks to match the jobsite environment.
- When there isn't room to install fiber in the right of way, it's time to bring in a Vermeer tractor, like the RTX550 equipped with an MTR12 microtrenching attachment. This combination gives you the ability to cut a narrow trench between the seam of the curb/gutter and the roadway. Microtrenching is economical and productive.

Rural fiber mainline work

When working in wide-open spaces, choose Vermeer fiber installation equipment designed to help you achieve optimal distances.

Solutions for rural fiber mainline work

- Vibratory plows are fast ways to install fiber over longer distances in rural areas. Vermeer RTX750, RTX1250i2 and XTS1250i2 ride-on tractors can be equipped with a vibratory plow attachment and reel carrier, making them all-in-one fiber-laying machines. In rock, you can trade out the vibratory plow for a rockwheel to keep going, even when the ground conditions are less than ideal.
- When you have to cross under roadways, rivers, heavily wooded areas or any place where a plow isn't an option, consider using a Vermeer midsize utility HDD. Starting from D23x30 S3, the Vermeer drill lineup steps up in power and performance with the Vermeer D24x40 S3 and D40x55 S3 HDD, so you can drill farther and install larger-diameter product.

Support equipment

Vermeer offers a complete line of support equipment for verifying utility locates, mixing drilling fluids and handling returns.

- **Vacuum excavators** pothole existing underground infrastructure and remove spoils from an HDD jobsite.
- **Utility locators** verify called-in locates and mark private property lines.
- **Core saws** verify and daylight a utility under hard surfaces.
- **Mixing systems** produce an ideal batch of mud to help flush cuttings while drilling, provide bore-hole stability and cool the drill head.

TOOLING MAKES THE DIFFERENCE

To productively install fiber, you also need to select tooling designed for the working conditions and product size being installed. Vermeer has you covered here too.

HDD tooling solutions
From drive chucks and sub savers to drill bits, swivels and pullers, outfit your HDD with industry-leading tooling solutions.

Vermeer Firestick® drill rod
Made with forged, heat-treated, high-carbon alloy steel with robust threads and a double-shoulder design, the Vermeer Firestick drill rod holds up in demanding ground conditions day in, day out. It's the drill rod the industry knows by name.

QuickFire® connection system
Designed to minimize the labor involved with changing from pilot bore to pullback tooling, the non-torqued QuickFire and QuickFire HD systems only require four turns to thread on a drill housing.

Ultra X3 drilling system
Developed for utility-sized rigs, the Ultra X3 is a non-torqued spline connection system that gives HDD crews the ability to swap out tooling quickly, ream directly from the transmission housing and eliminate the need for starter rods and adaptors in certain applications. This system is a fiber crew's all-in-one ideal tooling solution.

Armor drilling system
If you're installing fiber in challenging rocky grounds, you'll want a non-torqued connection system that can keep your crews productive and will last. The Armor system is a modular soft-rock platform that allows you to drill in different rock types — cobble, soft formations and limestone.

Vermeer RigFitter HDD tooling configurator
Build out your entire drill string from the drive chuck to the drill bit or reamer with this digital HDD tooling configurator. Just select your drill model, the drill rod you're using and whether you're looking for configurations for the pilot bore or for reaming, and the configurator will show you all the options available. Try it out at **borestore.com/RigFitter**

UTILITY TRACTOR ATTACHMENTS

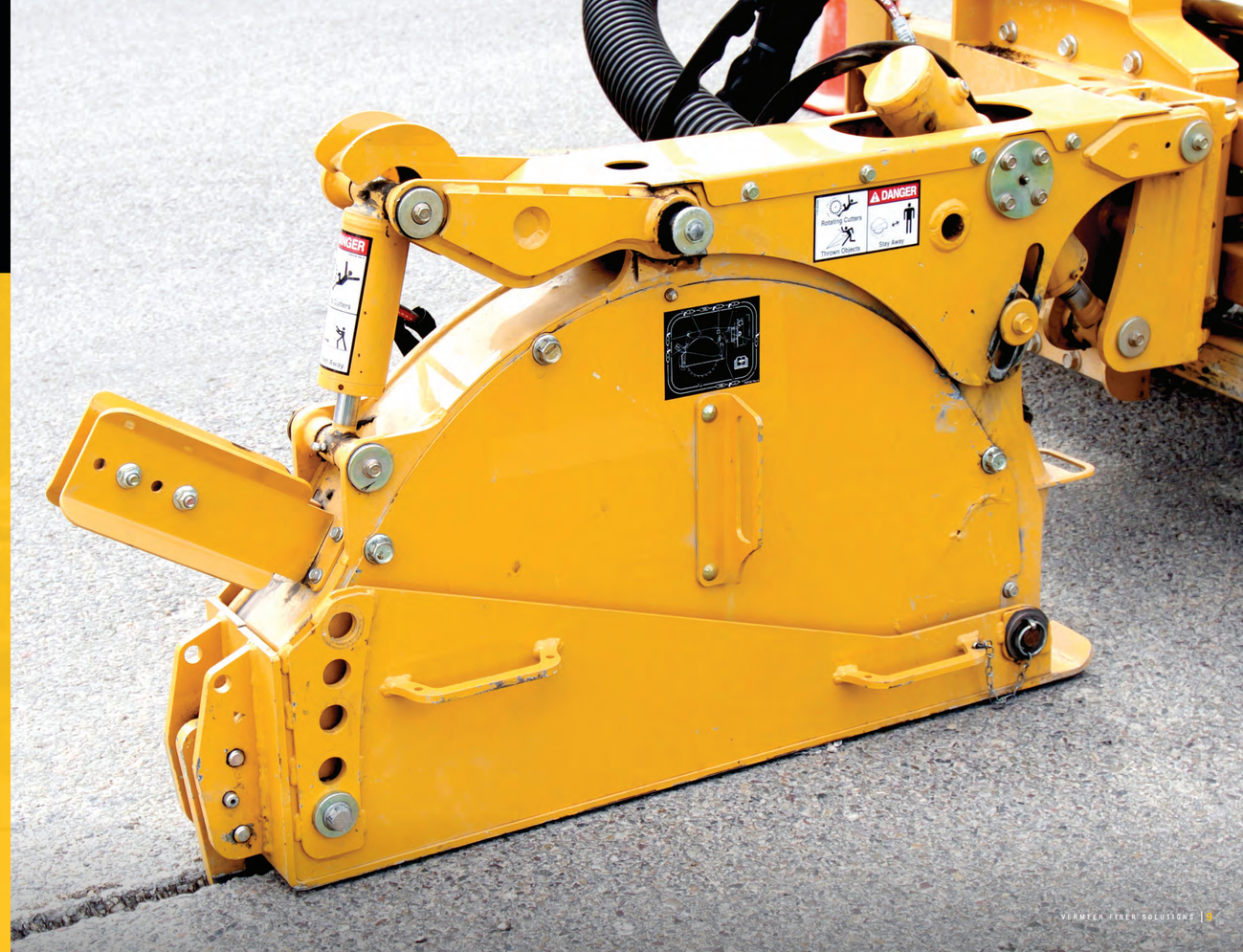
Vermeer utility tractors have an arsenal of attachments (front and rear) that your crew can use to tackle a variety of fiber installation jobs in different types of settings.

Rear attachment options (vary by model)

- **Center-mount trencher, sliding-offset trencher and sliding-offset with conveyor trencher —** Use these when you need to dig a trench to drop a utility in the ground.
- **Vibratory plow —** Ideally suited for installing cable, the vibratory plow buries the utility as it cuts through the ground in one efficient step, and with minimal surface disturbance. There are a range of plow blade options available.
- **Trencher/plow combo —** For flexibility, the trencher/plow combination attachment will allow you to switch from one to the other without having to swap out attachments.
- **Rockwheel —** When the ground's too hard for a plow or trencher, it's time for a rockwheel. This attachment cuts through rocky areas at depths of 4 inches - 12 inches (10.2 cm - 30.5 cm) or 24 inches - 52 inches (60.9 cm - 132 cm), depending on the type of rockwheel.
- **Microtrencher —** Cut through hard surfaces, like asphalt, to make it efficient to install utilities where directional drilling or conventional excavation isn't feasible.

Front attachment options

- **Backfill blade —** After installing your utility line, you can backfill the trench with the same machine.
- **Backhoe —** Some jobs call for open excavation, so having a backhoe attachment helps minimize the number of machines you need on a job.
- **Reel carriers —** When you're using a vibratory plow, a reel carrier attachment is a must-have. It will hold your cable line or poly pipe when preparing to install.



COMMON FIBER INSTALLATION QUESTIONS

Do you have questions about optimizing your fiber installation output? Your local Vermeer dealer is here to make sure you get the most from your Vermeer equipment. They can help with training, selecting tooling and just about anything related to fiber installation work. **In addition, here are a few frequently asked fiber-related questions you might have too.**

1. How do I decide which drill we should be using?
To decide the right drill models for your company, you need to review your average bore specifications, typical jobsite conditions and what you're using to haul it.

Start by noting the average bore distances your crew generally does. If most of your work is under 300 feet (91.4 m), look at drill models on the smaller size of the Vermeer HDD product line. For longer distances, check out larger utility drills.

Next, think about the jobsite conditions — above and below ground. If you're working in residential areas, you'll want a compact drill, but you'll need to balance that with ground conditions. You'll need more horsepower for optimal rotational torque and thrust in challenging grounds like hard clays and rock.

You also need to think about what you will be using to haul the drill. The bigger and heavier the drill, the bigger your truck needs to be.

2. When should we use a vibratory plow?
Utilities will typically include the required installation method on a fiber project. Most of the time in urban areas, HDD is used because of all the existing roadways and underground infrastructure. When making short home and business fiber drops, small vibratory plows are more commonly used because the drops are usually shallower than the mainlines being installed, and they're quick to deploy because they require minimal setup time.

In more open areas, HDD and larger vibratory plows may be used for installation work. Plows handle the bulk of the work, and drills are employed when there's a crossing. With many utilities, different subcontractors are used to handle each method. So, you don't necessarily have to offer both. Find your specialty and do a good job at it.

3. What's the proper way to locate and verify existing infrastructure?
The first step is to call 811 so the utility companies can send someone to mark water, sewer, gas, electric and any telecoms lines running through the area. This doesn't happen instantly; it can take several days before all the lines are marked. Make sure everyone knows that work can't start until this step is completed.

After that, whether you're drilling or plowing, you need to verify these locates for yourself. You also need to alert property owners that you'll be doing underground work there to determine if they have private electrical, irrigation or even gas lines running underneath their property. Those must be marked and verified too. To complete this process and check the work of the utility companies, consider getting a utility locating system like the Vermeer Verifier™ G3 locator.

Next, you need to visually see each utility you may intersect or come in close contact with when drilling or plowing. This process is often referred to as potholing or daylighting. It involves digging holes to expose each utility, and soft digging methods (vacuum excavators) are the industry's preferred way of doing this work. When you dig with a shovel or excavator bucket, you risk damaging a line you're trying to expose. Vacuum excavators dig with water or are paired with vacuum suction for a less invasive way of exposing underground utilities.

THE VERMEER FIBER ADVANTAGE

Having the right equipment is essential for fiber installation work, but there's more involved in this business. It takes a highly trained team, tools to help crews set up bores fast, and access to tooling, parts and service no matter where the work takes you. **Vermeer has dealers and resources in place to help in each of these areas.**

Training
Vermeer and Vermeer dealers offer a wide range of training classes and events to help your crew work efficiently and carefully. The Vermeer HDD Circuit® training program delivers a hands-on experience where attendees learn everything from operating a drill and locating to mixing drilling fluids and properly planning a bore. Many Vermeer dealers also offer classes related to every phase of the drilling process, including using the Vermeer HDD Simulator, which provides operators a chance to learn how to drill before getting behind the joysticks of an actual drill.

Bore planning
For help with bidding projects, bore planning, drilling and delivering as-built bore profiles, Vermeer created Vermeer Projects, a productivity tool designed to help teams work more efficiently through every phase of a project. Vermeer Projects is a technology solution that uses GPS to help you map out a bore plan, drill according to that plan and preserve the exact location and depth of a bore. Many utility companies appreciate that level of detail from a contractor.

Tooling support
Traveling in trucks and vans, many Vermeer dealers have mobile HDD tooling specialists on the road, meeting with contractors to make sure they have the tooling and supplies needed to complete a hard day's work. If you would rather select what you need yourself, visit borestore.com

Global dealer network
As you do your part in building fiber networks, Vermeer has developed its own network of dealers to support you wherever the work brings you. Whether you need onsite support, service, parts or equipment, there's a Vermeer dealer ready to help.

Learn more at **vermeer.com/fiber**