

 DITCH WITCH® HDD SYSTEMS

TRIHAWK® AND HAWKEYE™



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TriHawk[®] HD Housing



The Ditch Witch[®] TriHawk is an exceptionally versatile, durable and productive housing for directional drilling. Available in four sizes, the TriHawk HD housing is compatible with Ditch Witch and Vermeer[®] drills. With its innovative high-flow design, TriHawk has the power and volume necessary to also run mud motors and air hammers. And, as drilling conditions change, you can change tooling with maximum speed and security thanks to the housing's square drive spline, one of TriHawk HD housing's many patented features.

Key Features

- Patented boltless pinned-lid system provides outstanding protection for and easy removal of your valuable electronics.
- Patented square drive spline designed for unbeatably fast, secure tooling changes; also allows automatic indexing to align the clock position.
- Bit-to-clock position rotated 90° to increase strength.
- Innovative five-slot design maximizes signal strength and further extends battery life, helping you keep the bore on target.
- Standard API connection threads and replaceable sub-adaptors for compatibility with a wide range of equipment brands.
- Check-valve design prevents plugging of fluid ports, increasing productivity.
- Industry-leading one-year warranty on new TriHawk HD units and factory-rebuild programs demonstrate the Ditch Witch organization's unparalleled product support.

TriHawk® I Drill Bit



TriHawk I is an aggressive directional drilling drill bit designed for soft rock conditions up to 8,000 psi (552 bar). It also provides excellent performance in dry, compacted soils as well as cobble and broken formations. Made of high-quality, heat-treated alloy steel, TriHawk I features replaceable carbide teeth that are angled into the cut to increase production and reduce machine vibration.

Key Features

- TriHawk I can be configured with multiple tooth-cutting styles to adjust to different rock or soil types.
- Strategically placed, welded carbide grit increases wear resistance and the life of the bit.
- Patented “crush zone” pulverizes drill cuttings into smaller, flowable returns.
- Replaceable, carbide-core cutting teeth are sharply angled to provide unbeatably smooth cutting performance.
- Bit-rebuild programs extend the life of your investment (see page 8).



TriHawk® III Drill Bit



TriHawk III features superior abrasion resistance and massive, carbide-core cutting teeth designed to efficiently cut through soft to medium rock up to 12,000 psi (827 bar) and cobble. Welded carbide grit is applied not only to the bit surface, but also into grooves that are cut into high-wear areas, keeping the bit surface smooth and resulting in less resistance when pushing to steer.

Key Features

- TriHawk III's large, flat steering plane helps provide outstanding steering control.
- Strategic placement of welded carbide grit increases wear resistance and extends the life of the bit.
- Optional, patented pull-back pin kit can be installed in the tooth pocket for quick product installation.
- Drilling fluid is delivered through two ports to improve fluid flow during direct thrust and to reduce plugging.
- Bit-rebuild programs extend the life of your investment (see page 8).



The TriHawk IV drill bit is designed for use in heavy, overburdened cobble or fractured rock. TriHawk IV is machined from high-grade alloy steel and engineered to reduce machine vibration in tough drilling conditions. The bit's numerous carbide chisels cut and fracture clearance space for the housing, and are positioned to help promote smooth, rotational drilling.

Key Features

- Composite carbide grit applied along the TriHawk IV's radial edge protects the carbide base from washout.
- Wide, dual-angle steering plane helps provide controlled carve steering.
- To reduce plugging, the TriHawk IV's water ports are positioned back from the face.
- Strategically placed welded carbide grit increases wear resistance and bit life.
- Bit-rebuild programs extend the life of your investment (see page 8).

V

TriHawk® V Drill Bit



The innovative design of TriHawk V combines torque-edge steering with thrust-face steering to provide unbeatable performance in round rock cobble, flat river stone, hardpan and loose fill. TriHawk V's patented J-tapered torque edge feature converts rotational torque to direct steering thrust, which gives the operator exceptional control. The key to TriHawk V's outstanding productivity is the tapering of the leading edge toward the bit's trailing edge.

Key Features

- Designed so thrust and rotation work in concert, TriHawk V helps provide outstanding steering control in the most demanding soil conditions.
- TriHawk V's cup-shaped steering plane enables controlled directional drilling in round rock cobble, flat river stone, hardpan and loose fill.
- Patented cutting edge provides unmatched performance in cobble.
- Strategically placed, welded carbide grit increases wear resistance and the life of the bit.
- Bit-rebuild programs extend the life of your investment (see page 8).

Dirt Bit Adaptor



With the economical Ditch Witch® dirt bit adaptor, you can quickly and easily convert your TriHawk® housing into a dirt drilling system.

Key Features

- Patented, modular design of the TriHawk housing system enables quick and easy tooling changes in the field.
- Dirt bit adaptor enables you to drill in all soil conditions with just one durable, versatile TriHawk housing.
- Available in both Ditch Witch and Vermeer® plate bit bolt patterns.
- Nozzle is designed for superior lubrication and economical replacement.

Hawkeye™ Quick Connect System

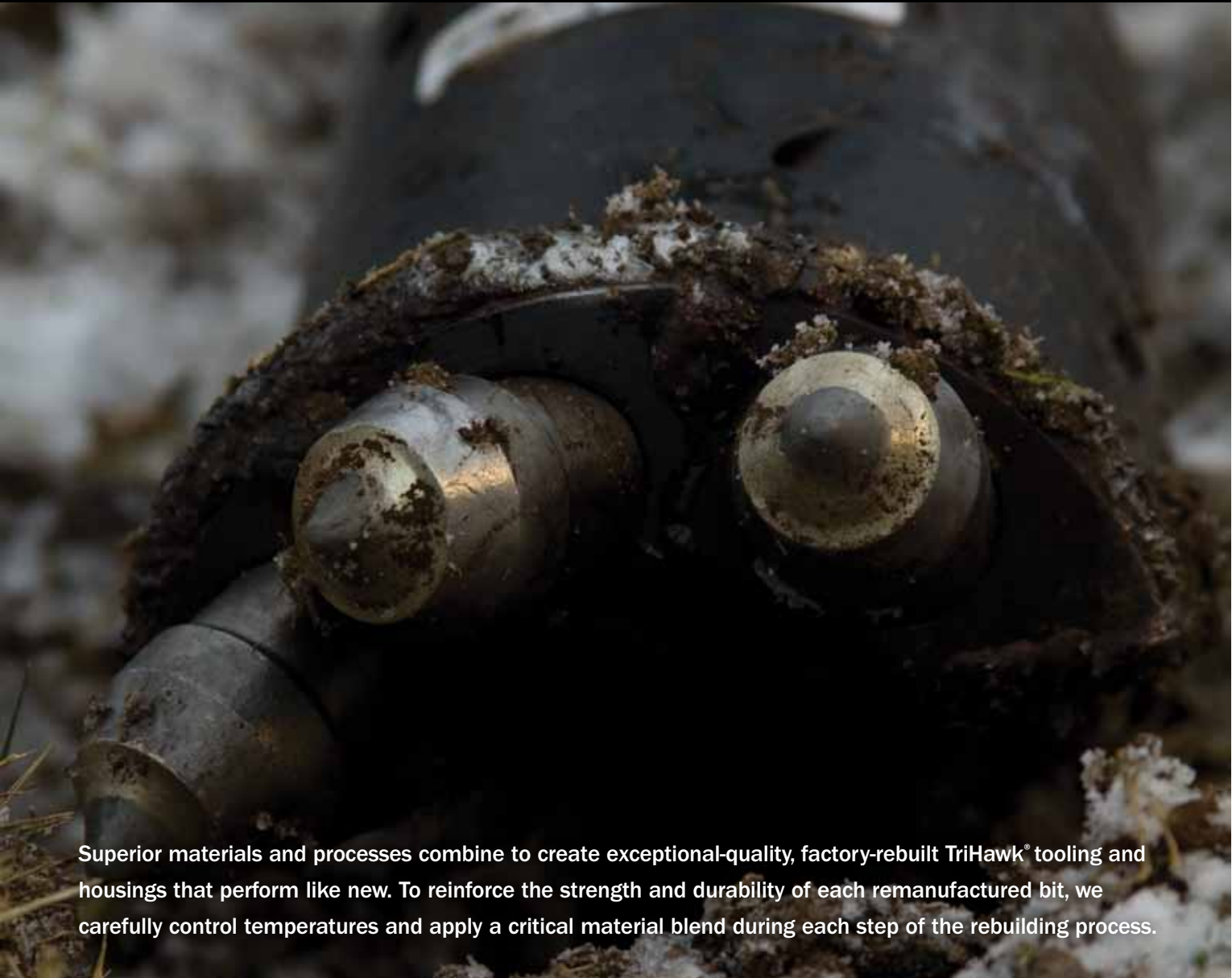


Modern directional drilling rigs have greater torque and pullback forces, requiring increased control over HDD tooling and backreamers. With its patented wear-compensating design, the revolutionary Hawkeye quick connect system helps improve steering control and tool life.

Key Features

- Patented thread profile compensates for normal wear by allowing thread rotation to the next flat.
- Eight flats simplify alignment and create a stronger joint with the same collar OD.
- Quick connect thread profile means connections can be made in as few as three rotations.
- Integrated collar-access slot provides easy access to the collar face, simplifying removal.
- Industry-standard API thread connections for universal compatibility with HDD tooling.
- Robust thread profile increases wear life and reduces the chance of cross-threading or galling.
- Hawkeye adaptors simplify tooling upgrades to virtually any machine, including Ditch Witch® and Vermeer® brands.

Factory-Rebuild Programs



Superior materials and processes combine to create exceptional-quality, factory-rebuilt TriHawk® tooling and housings that perform like new. To reinforce the strength and durability of each remanufactured bit, we carefully control temperatures and apply a critical material blend during each step of the rebuilding process.

Program Features

- **Factory Quality Guarantee:** If a failure other than normal wear occurs due to the rebuilding process, the bit will be rebuilt or exchanged at no charge.
- **FASTRAK Exchange Program:** To keep your project running on schedule, we offer a 48-hour bit exchange. Simply contact your local Ditch Witch® dealer and they will ship the TriHawk bit to the factory for a rebuilding evaluation. Upon your acceptance of the quote, a rebuilt bit is shipped within 48 hours of receipt of the original bit—or the freight is free! FASTRAK Exchange is available on TriHawk I, III, and V drill bits.
- **General Rebuild Program:** After having your local Ditch Witch dealer ship your TriHawk bit to the factory, the bit is evaluated and a rebuild cost is quoted. Upon your acceptance of the quote, the bit is rebuilt and shipped back approximately two weeks after its original receipt. Program applies to TriHawk housing and TriHawk I, III and V drill bits.

Rock Hardness And Compressive Strength

	ROCK FORMATION	APPROXIMATE MOH'S HARDNESS*
SOFT ROCK 0-6k psi	Talc	1
	Shale	Less than 3
	Clay	0.7-2.8
	Mudstone	1.5-2.8
	Gypsum	2
MEDIUM ROCK 7k-12k psi	Calcite	3
	Limestone	2.2-3.3
	Marble	2.4-3.2
	Slate	4-5
	Fluorite	4
	Apatite	5
	Sandstone	3-6
MEDIUM HARD ROCK 13k-25k psi	Dolomite	5.2-6.7
	Graywacke	5.6-6.8
	Feldspar	6
	Granite	6-7
	Schist	6-7
	Gneiss	6-7
	HARD ROCK 26k-45k psi	Quartz
Quartzite		6-7
Diorite		7-7.5
Basalt		6.8-7.8
Taconite		7-7.8
VERY HARD ROCK 46k+ psi	Dyke	8
	Topaz	8
	Corundum	9
	Lava	9

*Moh's Hardness Scale



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FOR INFORMATION ABOUT EASY FINANCING AND TO FIND THE DEALER NEAREST YOU, VISIT DITCHWITCH.COM.

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GROUNDBREAKING EQUIPMENT FROM THE COMPANY THAT LAUNCHED THE INDUSTRY

COMPACT UTILITY | TRENCHERS | HDD | ELECTRONICS



CERTIFIED QUALITY
MANAGEMENT SYSTEM
ISO 9001:2000

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