

TUFF BITS FOR A TUFF MOTHER.

PRODUCT CATALOG + RESOURCE GUIDE 2018-19



**MELFRED
BORZALL**

THE HDD TOOLING EXPERTS

NEW TOOLS YOU NEED TO KNOW ABOUT

Eagle Claw SD
page 29



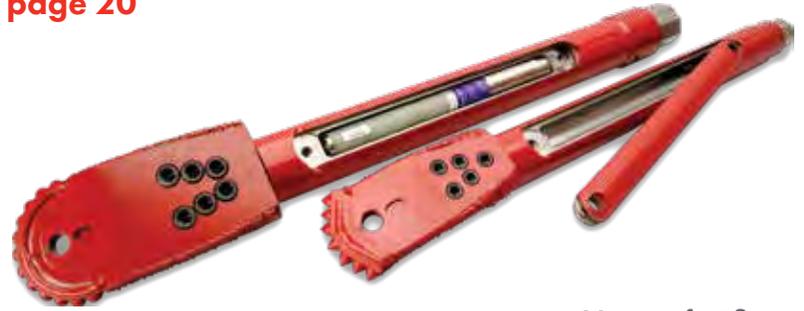
The best selling
hard soil bit just
got Super Duper!

Pitbull Housing + Blades
page 16



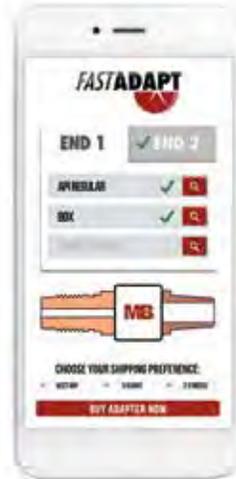
Leave no bit behind.

Housings For Digitrak® Transmitters
with Ditch Witch® Bolt Patterns
page 20



It's a perfect fit.

FastAdapt Same Day
Custom Adapters
page 60



Any adapter. Any time.

Red Diamond Blade
page 23



100% carbide coverage.

Breakaway Swivel
page 55



Reduce the number
of connections.

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OUR STORY

Over 70 years of groundbreaking drilling solutions...and still going strong.



1946

Machinist, welder and innovator Fred Melsheimer launches Melfred Welding & Manufacturing, designing and creating tools for the first horizontal directional drilling system.



1950s

Fred's two sons, Ted and Dick Melsheimer, come to work at the company after school. They design the DynaMole, a self-propelled boring machine that could bore and pull in 1500+ feet of gas pipe/day.



1970s

Ted Melsheimer invents the successful line of Mustang pipe squeeze off tools. Fred's son-in-law, mechanic and sales expert Larry Coots, lays the groundwork for a changing industry by getting these innovative tools into drillers' hands.



1980s

Dick Melsheimer launches Borzall Equipment, producing bits, reamers and other drill parts that last longer and stand up to tougher conditions. Borzall Equipment redesigns the DynaMole for even better daily production of utility installations. Melfred Welding joins forces with Borzall Equipment to create Melfred Borzall, Inc.



1990s

Melfred Borzall develops, demonstrates and sells the world's first commercially available horizontal directional drilling system, the Sure Shot. Melfred Borzall opens up opportunities for U.S. and international expansion, ultimately spanning five continents.



Today

In 2016, we celebrated our 70th anniversary. Our mission remains unchanged: to enable a more efficient, cost-effective means of installing utilities underground so utility contractors can be as productive and profitable as possible.

Proud to Be Green

We don't just protect drillers, we protect the Earth. Our superior quality tools are designed and manufactured in a spotless, environmentally-friendly facility.

800

Solar panels in our Santa Maria plant

75%

Of our energy derived from solar

50%

Cut in energy use from installing skylights & T5 fluorescents

6

Charging stations for company electric cars

WHY MELFRED BORZALL?

HDD tooling solutions from the company that laid the foundation for horizontal drilling.



Constant Innovation

Our expert team is relentless about engineering ground-breaking tools, improving materials selection, creating a smoother sales processes, and delivering more personalized & attentive customer service.



Custom Solutions

Whether your job requires a modification to a tool we have in our inventory, or you need us to develop an entirely new solution, we can design it, manufacture it and get it to you fast—every time.



Quality Control

We personally inspect each tool during every stage of the manufacturing process. Tools that don't make the cut (there aren't many, by the way) are scrapped before they leave the factory floor.



State-of-the-Art Facility

No rusty production warehouses for us. We engineer and manufacture all our products in a spotless, modern facility, using state-of-the-art computerized machining stations that we maintain using lean methodology.



Rapid Shipping

When you need a new tool, we know the clock is ticking. We double-check every order before shipping and pack every product in sturdy foam & shrink wrap, designed specifically to handle the weight and non-standard shapes of our tools.



Lasting Relationships

We care what happens to our products after they leave our plant. Every tool we ship is more than an order—it's a new relationship. We pay attention to details, double-check our work and listen to our customers.

CUSTOMER SERVICE

Drilling is tough enough. Working with your HDD tooling supplier shouldn't be.



Expert Recommendations

Our expert HDD tooling team understands soils and rock variations, HDD tooling compatibility, and logistical issues that can challenge your job. We'll provide insight and recommendations to make your job more efficient, more effective and more profitable.



Helpful Distributors

Every Melfred Borzall distributor knows HDD drilling inside and out. Better yet, your local distributor understands the ground conditions you're dealing with because they are close by. Your distributor can advise on the right tools for the project and have stock on hand for a quick solution to your HDD challenges.



Extensive Reach

When you're at a remote job site, you can't halt production to go pick up tools. Our distributors can get you the right tool for the job in every single US state and 10 key international locations.



Same Day Shipping

Our strategic partnerships with air freight and ground transportation companies ensure the products you order arrive when you need them, at the lowest possible cost. All stock items ship the same day.



100% Satisfaction Guarantee

We offer the best money-back guarantee in the industry. If you're not satisfied with your purchase, give us a call and we'll make things right. Otherwise, we'll issue a full refund for all merchandise returned within 30 days of delivery.



1

**MELFRED
BORZALL**

YOUR UNDERGROUND SUPERSTORE

DRILL RODS

LOCATORS

BITS & BLADES

ACCESSORIES

BACKREAMERS

PULLING SWIVELS

DIRECTIONAL HEADS

DUCT PULLING DEVICES

FASTBACK[®] SYSTEM

Ream and pullback without ever taking off the bit.
Save time, increase productivity, save money.

FastBack Patent #9,719,344 B2



“Borzall’s new FastBack system has been a real timesaver for us. We’ve been doing a lot of fiber installs recently and most of them are in tight areas. The ease in attaching tools right in the pit and pulling product in one shot is a great timesaver. We couldn’t be happier with this new product and the increase in production.”



Scan for more info



FastBack
System

Transmitter
Housings &
Locators

Bits & Blades

Rock Tools &
Mud Motors

Reamers

Quick-
Disconnects
& Collars

Swivels

Pullers

Drive Chucks
& Sub-Savers

Adapters

Parts &
Accessories

REAM A HOLE UP TO 12" WITHOUT EVER TAKING THE DRILL HEAD OFF.

Our goal is to increase your production. That's what it's about in this biz and with our patented FastBack® pullback attachments, you can do just that. Whether you are using an Eagle Claw for shale, or just a good 'ol "duck bill", we have an attachment to make it fast and easy for direct pullbacks and to enlarge the hole — all without ever taking off your drill head.



FastBack® Adapters Featuring MudBoost pg. 12

Replaceable adapters and dual MudBoost ports to maximize fluid flow

FastReam® Cutter Blocks

Enlarge the hole to 12"

FastReam® Housings

Featuring chunky carbide wear protection

FASTREAM® CUTTER BLOCKS

Ream without ever taking off the drill head.

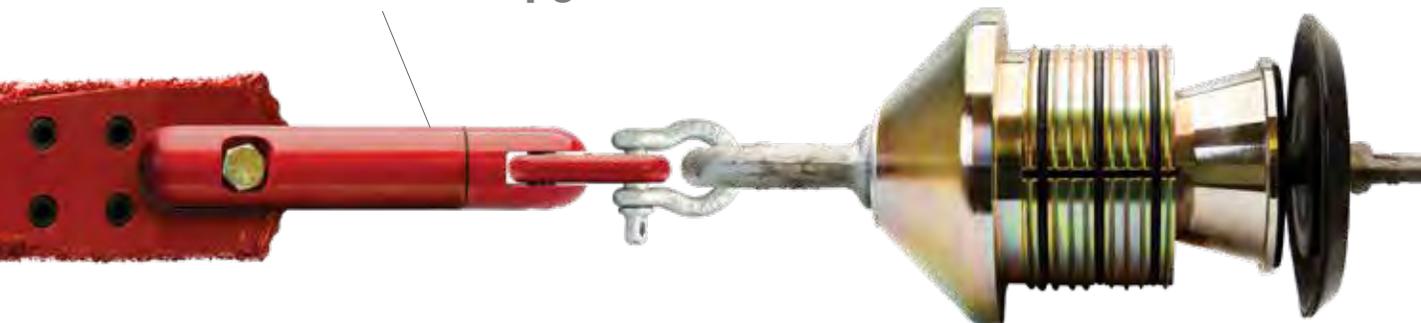
Fastream Cutter Blocks		
Housing Diameter	Cutting Diameter	Part Number
2.5"	4.5"	FR-250-EX-45
2.5"	6"	FR-250-TE-47-60
2.5"	8"	FR-250-TE-47-80
2.5"	10"	FR-250-TE-57-10
2.75"	6"	FR-275-TE-47-60
2.75"	8"	FR-275-TE-47-80
2.75"	10"	FR-275-TE-57-10
2.75"	12"	FR-275-TE-80-12
3.25"	6"	FR-325-EX-35-60
3.25"	8"	FR-325-TE-57-80
3.25"	10"	FR-325-TE-57-10
3.25"	12"	FR-325-TE-80-12

FastReam® cutter blocks designed after our best selling reamer, the Tornado.

Assortment of sizes available to enlarge hole up to 12"



FastBack® Pullback Attachments pg. 12 - 13



FASTREAM® HOUSINGS

Open your hole up to 12" without ever taking off the housing. Patent #9,719,344 B2

Precision-machined flats for securely attaching FastReam® cutter blocks



Robotically-applied carbide hardfacing increases housing life up to 50%

FastReam Bolt-On Housing Using DigiTrak® for Vermeer® Drills								
Drill Rig Thrust	Diameter	Rear Thread	Bolt Pattern	Housing Part #	FastReam Cutter Blocks Part #			
					6" Cut	8" Cut	10" Cut	12" Cut
6,000 to 10,000 lb.	2.5"	2" IF Box	6-bolt, 1/2"	3625-HT3-13-FR	FR-250-TE-47-60	FR-250-TE-47-80	FR-250-TE-57-10	
10,000 to 20,000 lb.	2.75"	2" IF Box	6-bolt, 1/2"	3627-HT3-13-FR	FR-275-TE-47-60	FR-275-TE-47-80	FR-275-TE-57-10	FR-275-TE-80-12
20,000 to 40,000 lb.	3.25"	2.375" Reg Box	6-bolt, 1/2"	3632-HT3-13-FR	FR-325-EX-35-60	FR-325-TE-57-80	FR-325-TE-57-10	FR-325-TE-80-12

FastReam Bolt-On Housing Using Subsite® Beacons for Ditch Witch® Drills								
Drill Rig Thrust	Diameter	Rear Thread	Bolt Pattern	Housing Part #	FastReam Cutter Blocks Part #			
					6" Cut	8" Cut	10" Cut	12" Cut
6,000 to 20,000 lb.	2.75"	2" IF Box	5-bolt, 12mm	3927-HD3-14-FR	FR-275-TE-47-60	FR-275-TE-47-80	FR-275-TE-57-10	FR-275-TE-80-12
20,000 to 30,000 lb.	3.25"	2.375" Reg Box	6-bolt, 16mm	3932-HD3-15-FR	FR-325-EX-35-60	FR-325-TE-57-80	FR-325-TE-57-10	FR-325-TE-80-12

FastReam Thread-On Housing Using DigiTrak® for Vermeer® Drills								
Drill Rig Thrust	Diameter	Rear Thread	Bit Thread	Housing Part #	FastReam Cutter Blocks Part #			
					6" Cut	8" Cut	10" Cut	12" Cut
6,000 to 10,000 lb.	2.5"	2" IF Box	2" IF Box	3625-HT3-FR	FR-250-TE-47-60	FR-250-TE-47-80	FR-250-TE-57-10	
10,000 to 20,000 lb.	2.75"	2" IF Box	2" IF Box	3627-HT3-FR	FR-275-TE-47-60	FR-275-TE-47-80	FR-275-TE-57-10	FR-275-TE-80-12
20,000 to 40,000 lb.	3.25"	2.375" Reg Box	2.375" Reg Box	3632-HT3-FR	FR-325-EX-35-60	FR-325-TE-57-80	FR-325-TE-57-10	FR-325-TE-80-12

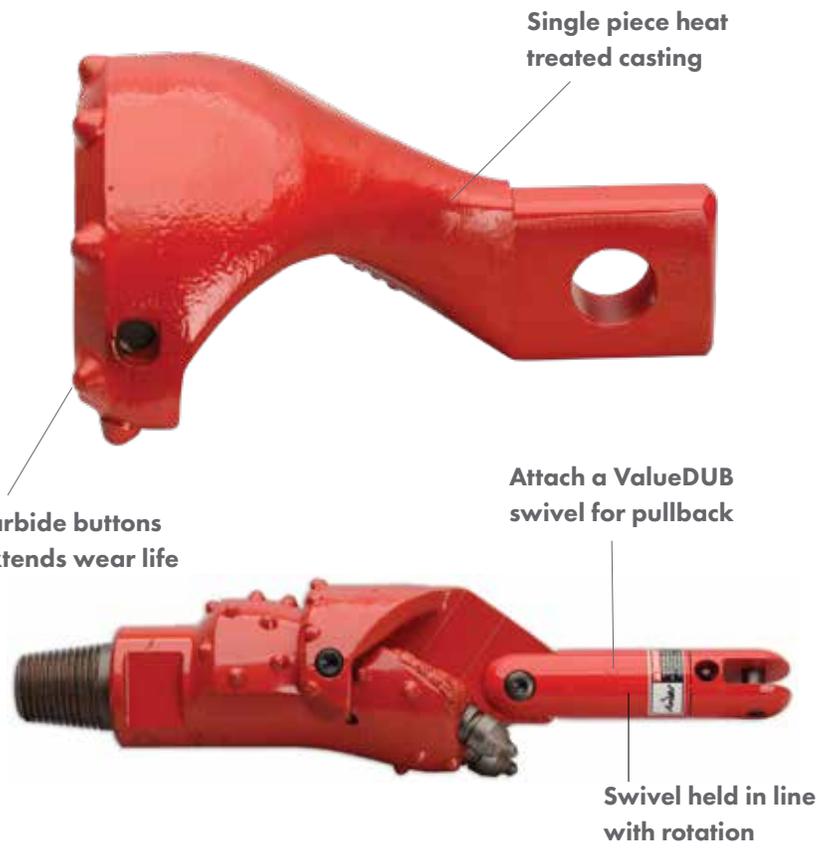
FastReam Thread-On Housing Using Subsite® Beacons for Ditch Witch® Drills								
Drill Rig Thrust	Diameter	Rear Thread	Bit Thread	Housing Part #	FastReam Cutter Blocks Part #			
					6" Cut	8" Cut	10" Cut	12" Cut
6,000 to 20,000 lb.	2.75"	2" IF Box	2" IF Box	3927-HD3-FR	FR-275-TE-47-60	FR-275-TE-47-80	FR-275-TE-57-10	FR-275-TE-80-12
20,000 to 30,000 lb.	3.25"	2.375" Reg Box	2.375" Reg Box	3932-HD3-FR	FR-325-EX-35-60	FR-325-TE-57-80	FR-325-TE-57-10	FR-325-TE-80-12

EAGLE EYE

Fast pull back using your Eagle Claw bit.

Be ready for direct pullback in a matter of minutes. Bolt your Eagle Eye onto your Eagle Claw bit for direct pullbacks and provide a secure link that keeps the swivel straight and on the centerline. Eagle Eye's heat-treated one-piece design with carbide buttons gives you maximum strength and longevity.

Eagle Eye	
Eagle Claw Size	Part#
3.5"	EC35-FB42-305
4.25"	EC42-FB50-305
5"	EC50-FB60-310



FASTBACK® ADAPTERS FEATURING MUDBOOST

Boost your flow for a clean hole.

Special adapters for the FastBack system incorporate dual MudBoost fluid ports to ensure smooth, easy pullback with maximum flow.

MudBoost feature can be added to just about any Borzall adapter. Call us to get the adapter you need with the power of MudBoost.



QUICK-SWIVEL

Fast and furious pullbacks.

Quick Swivel				
Pullback Capacity	Part #	Replacement Bolt	Replacement Nut	Replacement Washer
5 ton	00503-205-QS	HHCS-3/4-2.75-8	3/4-10-NUT	3/4 WASHER



Quick-swivel allows for fast and secure connection without removing the drill head and holds rotation on center



QUICK-LINK

Safety first. Ya dig?

Quik Link				
Swivel Being Used	Part #	Replacement Bolt	Replacement Nut	Replacement Washer
00503-205, 5-ton Valu-DUB Swivel	QL-305	HHCS-3/4-2.75-8	3/4-10-NUT	3/4 WASHER
00503-210, 10-ton Valu-DUB Swivel	QL-310	HHCS-3/4-2.75-8	3/4-10-NUT	3/4 WASHER



Quick-Link connects quickly to Melfred Borzall blades and holds swivel rotation on center



TRANSMITTER HOUSINGS & LOCATORS

Transmitter housings for hard-working directional drills

"Borzall housings are simply dependable. Since we've been using them in the past few years, we've seen less down time and the housings last longer than any others we've tried. The most durable on the market, hands down."



Scan for more info



HIGH FLOW TRANSMITTER HOUSINGS

Ideal for use with Mud Motors, Eagle Claw, Iron Fist Bits, and Bolt-On Bit Bodies

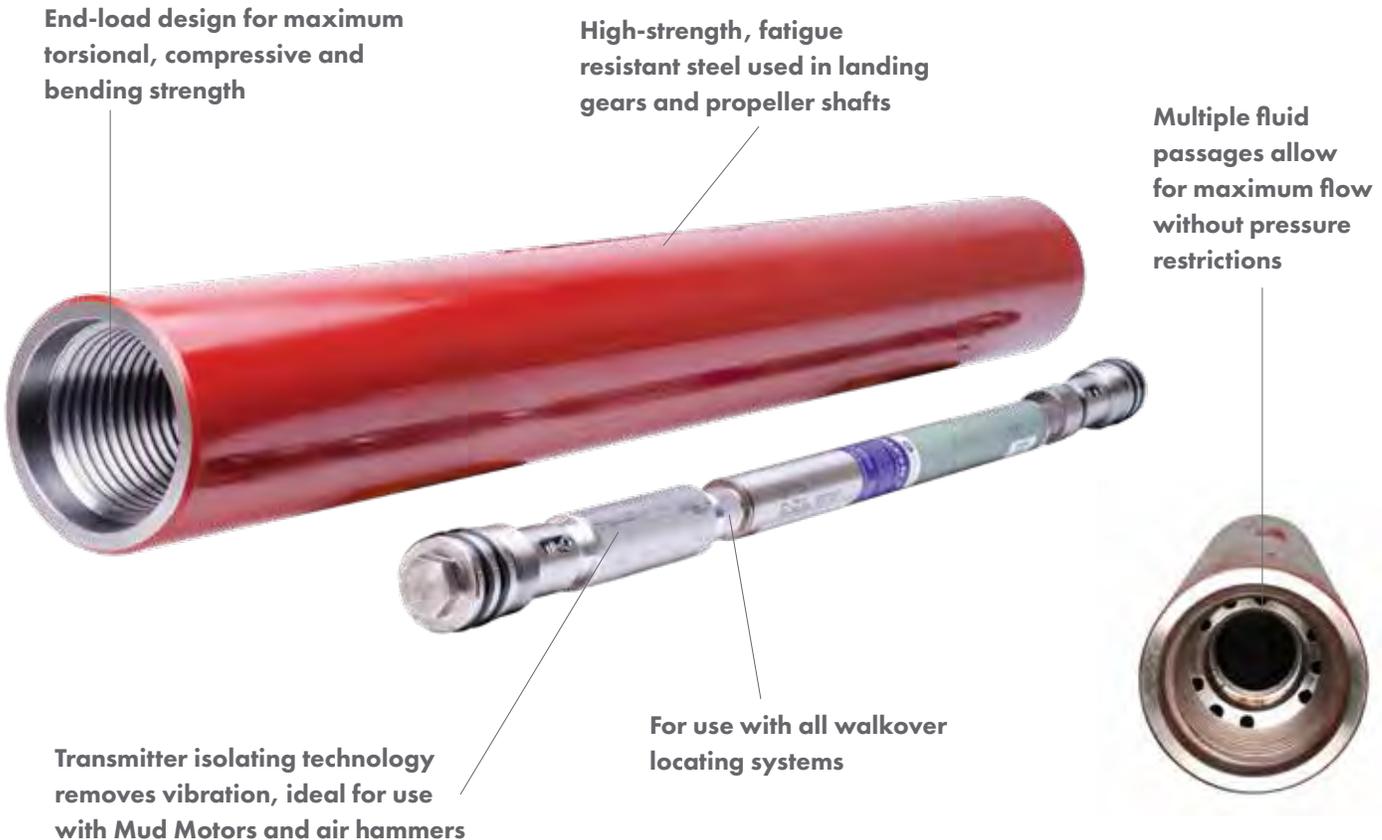
Maximum mud flow with minimum restriction. The Melfred Borzall End-Load, High Flow Housing are a perfect match for your next rock job when utilizing a mud motor or air hammer. They have the design, strength and flow capacity to handle the toughest rock bores. Ideal for use with Mud Motors, Eagle Claw & Iron Fist bits and bolt-on bit bodies. Run your mud motors at maximum power and efficiency, even on long bores.

Refer to our Mud Motor Section on pg. 32 for more information.

End-Load, Thread-On, High Flow Housings				
Capacity	Diameter	Rear Thread	Front Thread	Part #
<40,000	3.5"	2.375" IF	2.375" Reg	ELH-350
40,000 - 80,000	4.25"	2.875" IF	2.875" Reg	ELH-425
80,0000 - 140,000	4.875"	3.5" IF	3.5" Reg	ELH-487
140,000 - 300,000	6.375"	4.5" IF	4.5" Reg	ELH-638

Transmitter Kits for High Flow Housings		
Transmitter Type	When Using ELH-350, 425, 487	When Using ELH-638
DigiTrak®, 15"	ELH-DIGI-KIT	ELH-638-DIGI-KIT
DigiTrak®, 19"	ELH-DIGIXL-KIT	ELH-638-DIGIXL-KIT
DigiTrak®, 15" Green	ELH-DIGI-KIT-G	ELH-638-DIGI-KIT-G
DigiTrak®, 19" Green	ELH-DIGIXL-KIT-G	ELH-638-DIGIXL-KIT-G
DigiTrak®, Cable 15"	ELH-DIGIWIRE-KIT	ELH-638-DIGIWIRE-KIT
Subsite®, 86B	ELH-86B-KIT	ELH-638-86B-KIT
Subsite®, 86BV2	ELH-BV2-KIT	ELH-638-BV2-KIT

* Transmitter kit comes with high flow housing



End-load design for maximum torsional, compressive and bending strength

High-strength, fatigue resistant steel used in landing gears and propeller shafts

Multiple fluid passages allow for maximum flow without pressure restrictions

Transmitter isolating technology removes vibration, ideal for use with Mud Motors and air hammers

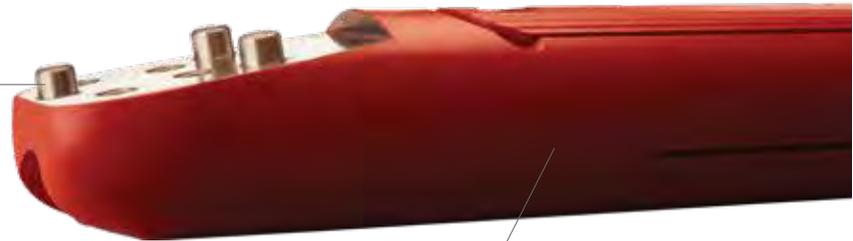
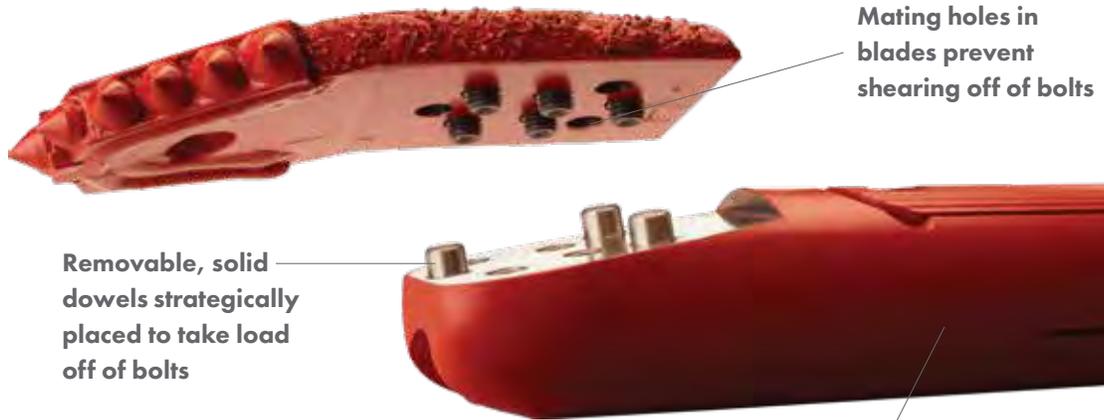
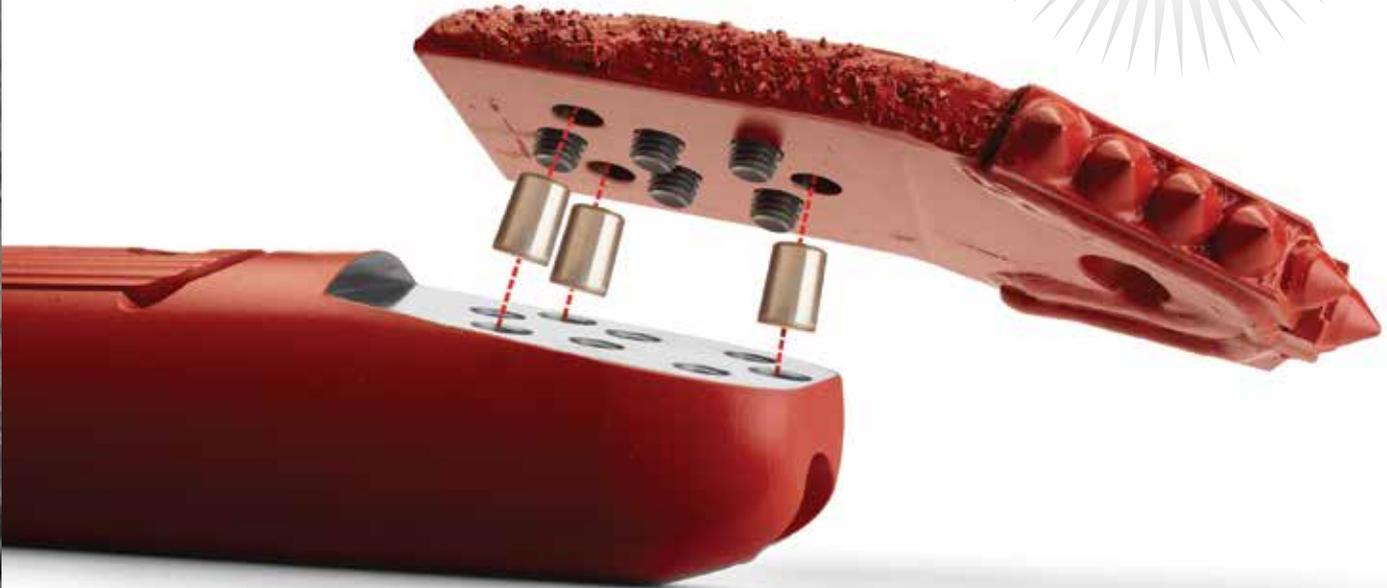
For use with all walkover locating systems

PIT BULL HOUSINGS & BLADES

Leave no bit behind.

New patent-pending Pit Bull blade and housing design will make sure you never shear another bolt off again. Also helps with blade bolts rattling loose.

Simply look for the **PB** symbol to indicate Pit Bull design available on housings and blades



Pit Bull Housings - Using DigiTrak® Transmitters					
Drill Rig Thrust	Diameter	Thread (rear)	Bolt Pattern	Standard Pit Bull	FastReam Pit Bull
<8,000	2.5"	FS300	VER 5, 3/8" bolts	3825-HT3-06	3825-HT3-06-FR
6,000 - 10,000	2.5"	2" IF	VER 6, 1/2" bolts	4625-HT3-13	4625-HT3-13-FR
10,000 - 20,000	2.75"	2" IF	VER 6, 1/2" bolts	4627-HT3-13	4627-HT3-13-FR
10,000 - 20,000	2.75"	2" IF	DW 5, 12mm bolts	4627-HT3-14	4627-HT3-14-FR
20,000 - 40,000	3.25"	2.375 Reg	VER 6, 1/2" bolts	4632-HT3-13	4632-HT3-13-FR



Steep Taper Ultra Bit - Vermeer® Bolt Pattern			
Bolt Pattern	3.5"	4"	5"
5 bolt, 3/8"	1800-06-35-BSU3		
6 bolt, 1/2"	1800-13-35-BSU3	1800-13-40-BSU3	1800-13-50-BSU3

Steep Taper Ultra Bit - Ditch Witch® Bolt Pattern			
Bolt Pattern	3.5"	4"	5"
5 bolt, 12mm	1800-14-35-BSU3	1800-14-40-BSU3	1800-14-50-BSU3



Red Diamond Bit - Vermeer® Bolt Pattern		
Bolt Pattern	4.5"	5.5"
6 bolt, 1/2"	1800-13-45-BRD	1800-13-55-BRD

Red Diamond Bit - Ditch Witch® Bolt Pattern		
Bolt Pattern	4.5"	5.5"
5 bolt, 12mm	1800-14-45-BRD	1800-14-55-BRD



Ultra Bit Style - Vermeer® Bolt Pattern			
Bolt Pattern	3.5"	4"	5"
5 bolt, 3/8"	1800-06-35-BBU3		
6 bolt, 1/2"	1800-13-35-BBU3	1800-13-40-BBU3	1800-13-50-BBU3

Ultra Bit Style - Ditch Witch® Bolt Pattern			
Bolt Pattern	3.5"	4"	5"
5 bolt, 12mm	1800-14-35-BBU3	1800-14-40-BBU3	1800-14-50-BBU3



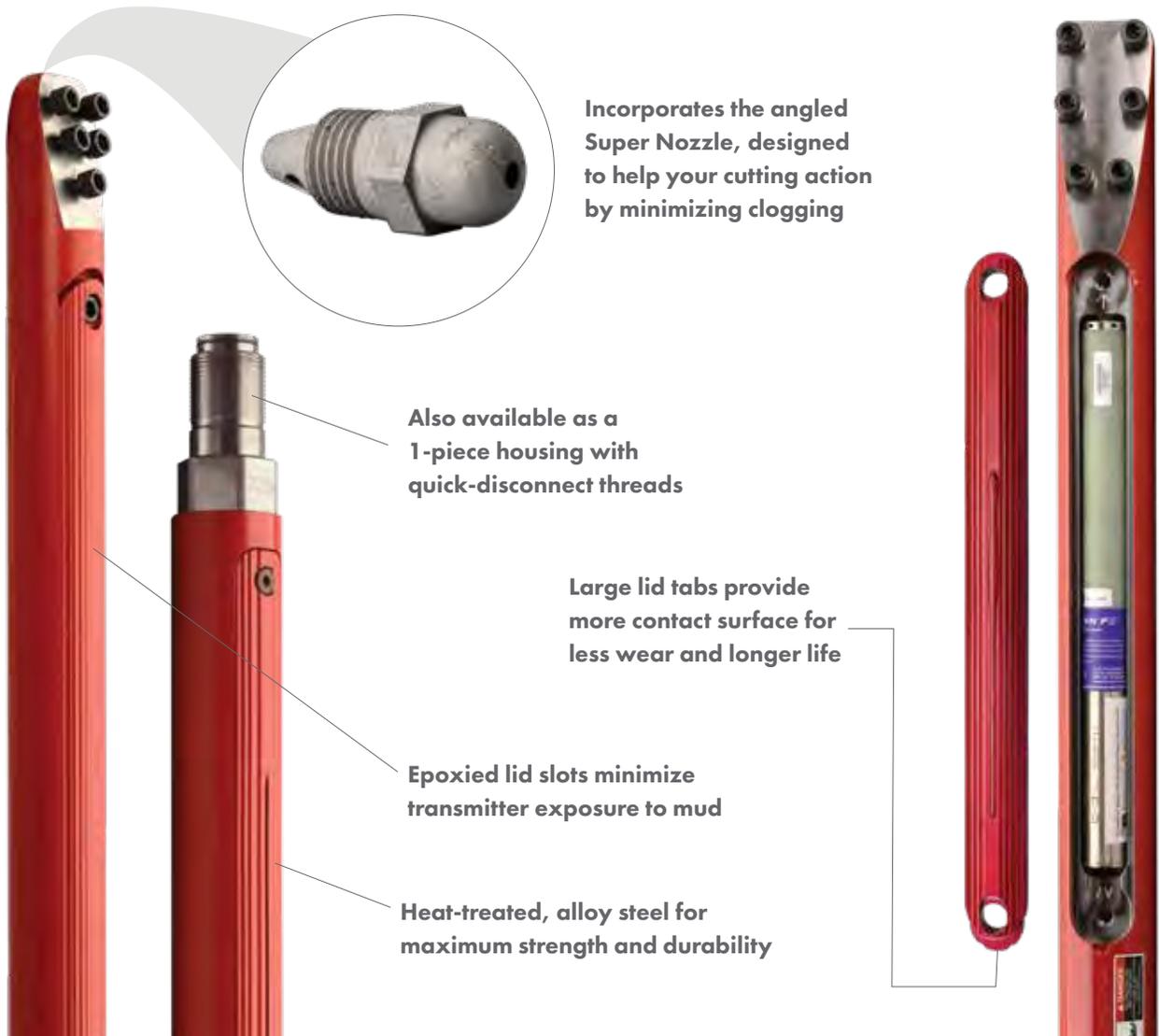
Pit Bull Housings - Using Subsite® Transmitters					
Drill Rig Thrust	Diameter	Thread (rear)	Bolt Pattern	Standard Pit Bull	FastReam Pit Bull
< 10,000	2.5"	2" IF	DW 5, 12mm bolts	4925-HD3-14	4925-HD3-14-FR
6,000 - 20,000	2.75"	2" IF	DW 5, 12mm bolts	4927-HD3-14	4927-HD3-14-FR

SIDE-LOAD, BOLT-ON TRANSMITTER HOUSINGS

Designed for DigiTrak® Transmitters and Subsite® Beacons

Using DigiTrak® Transmitters				Standard Hsg	FastReam Hsg	Replacement Parts		
Drill Rig Thrust	Diameter	Thread (rear)	Bolt Pattern	Part #	Part #	Blade Bolts	Housing Lid	Lid Bolts
< 6,000 lb.	2"	1.10-4	DW 3, 10mm bolts	1720-HM-09	N/A	SHCS12MMX20MM	1720-HM-09-CP	SHCS3/8X3/4
< 8,000 lb.	2.5"	FS300	VER 5, 3/8" bolts	3625-HT3-06 PB	3625-HT3-06-FR	SHCS3/8X5/8	3625-HT3-13-CP	SHCS1/2X3/4-N
6,000 - 10,000	2.5"	2" IF	VER 6, 1/2" bolts	3625-HT3-13 PB	3625-HT3-13-FR	SHCS1/2X1	3625-HT3-13-CP	SHCS1/2X3/4-N
10,000 - 20,000	2.75"	2" IF	VER 6, 1/2" bolts	3627-HT3-13 PB	3627-HT3-13-FR	SHCS1/2X1	3627-HT3-13-CP	SHCS1/2X3/4-N
10,000 - 20,000	2.75"	2" IF	DW 5, 12mm bolts	3627-HT3-14 PB	3627-HT3-14-FR	SHCS12MMX25MM	3627-HT3-13-CP	SHCS1/2X3/4-N
20,000 - 24,000	3"	2.125" Low-Profile	VER 6, 1/2" bolts	2630-HT-13-L43	N/A	SHCS1/2X1	2630-HT-13-CP	SHS1/2X3/8-N
20,000 - 40,000	3.25"	2.375" Reg	VER 6, 1/2" bolts	3632-HT3-13 PB	3632-HT3-13-FR	SHCS1/2X1	3632-HT3-13-CP	SHCS1/2X3/4-N
20,000 - 40,000	3.25"	2.375" Reg	DW 6, 16mm bolts	3632-HT3-15	3632-HT3-15-FR	SHCS16MMX35M	3632-HT3-13-CP	SHCS1/2X3/4-N

Using Subsite® Transmitters				Standard	FastReam	Replacement Parts		
Drill Rig Thrust	Diameter	Thread (rear)	Bolt Pattern	Part #	Part #	Blade Bolts	Housing Lid	Lid Bolts
< 6,000 lb.	2"	1.10-4	DW 3, 10mm bolts	1920-HD-09	N/A	SHCS12MMX20MM	1920-HD-09-CP	SHCS3/8X3/4
<10,000 lb.	2.5"	2" IF	DW 5, 12mm bolts	3925-HD3-14 PB	3925-HD3-14-FR	SHCS12MMX25MM	3927-HD3-CP	SHCS12MMX20MM-N
6,000 - 20,000	2.75"	2" IF	DW 5, 12mm bolts	3927-HD3-14 PB	3927-HD3-14-FR	SHCS12MMX25MM	3927-HD3-CP	SHCS12MMX20MM-N
20,000 - 30,000	3.25"	2.375" Reg	DW 6, 16mm bolts	3932-HD3-15	3932-HD3-15-FR	SHCS16MMX35MM	3932-HD3-CP	SHCS16MMX25MM-N
20,000 - 40,000	3.50"	2.375" Reg	DW 6, 16mm bolts	3935-HD3-15	3935-HD3-15-FR	SCHS16MMX35MM	3935-HD3-CP	SHCS16MMX25MM-N



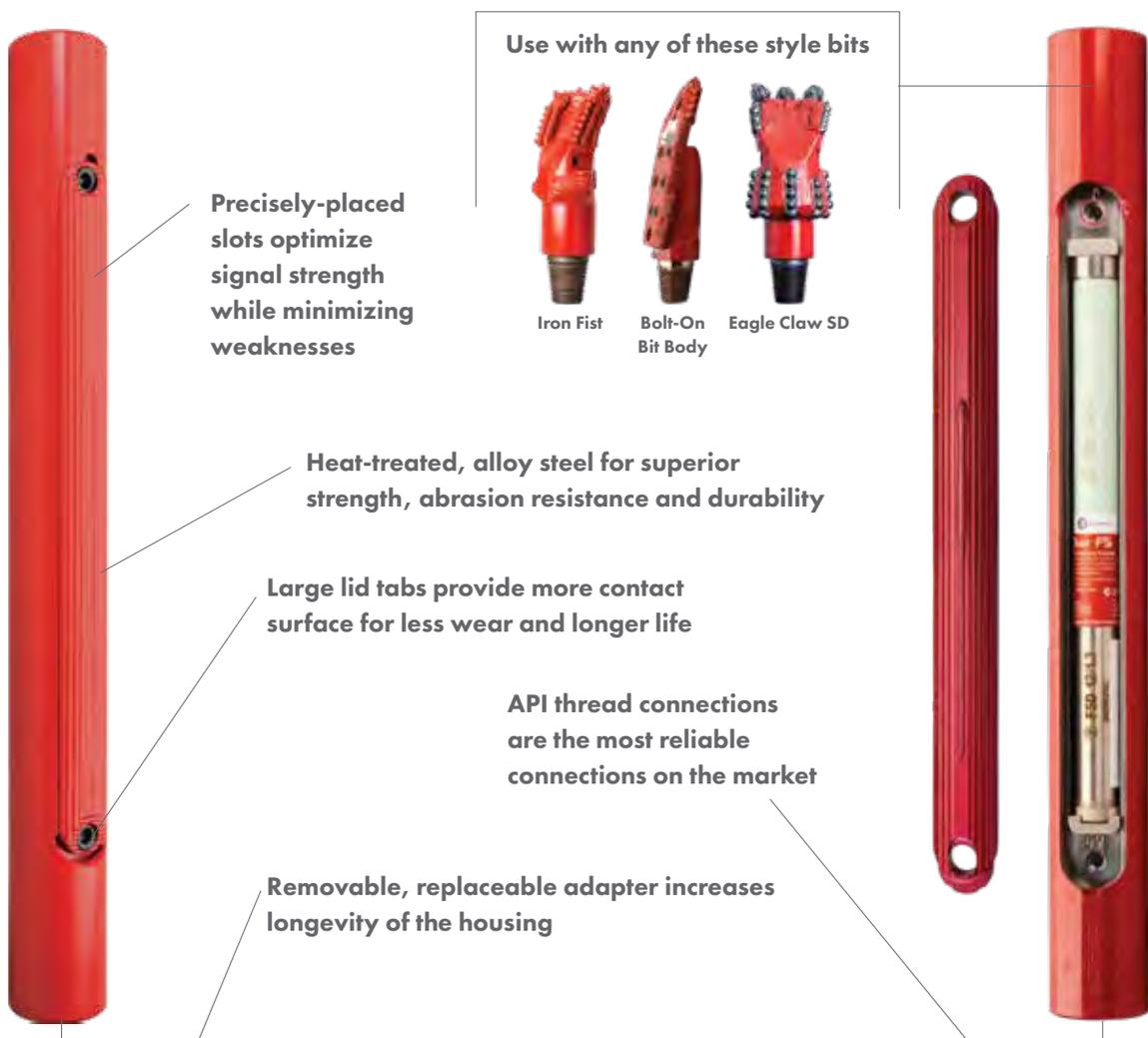
SIDE-LOAD, THREAD-ON TRANSMITTER HOUSINGS

Designed for DigiTrak® Transmitters and Subsite® Beacons and Ideal for Use with Eagle Claw and Iron Fist Bits and Bolt-On Bit Bodies

Same heat-treated, alloy steel as our bolt-on transmitter housings. Box-by-box design provides unmatched versatility and value so you can use your Eagle Claw, Iron Fist or bolt-on blades with one housing. The stainless steel timing mechanism makes clocking the transmitter to the bit a cinch. Straight- through gun-drilled fluid ports make the transmitter housing easy to clean.

Using DigiTrak® Transmitters				Standard Hsg	FastReam Hsg	Replacement Parts		
Drill Rig Thrust	Diameter	Thread (rear)	Thread (front)	Part #	Part #	Bolt-On Bit Body	Housing Lid	Lid Bolts
6,000 - 10,000	2.50"	2" IF	2" IF	3625-HT3	3625-HT3-FR	1725-13	3625-HT3-CP	SHCS1/2X3/4-N
10,000 - 20,000	2.75"	2" IF	2" IF	3627-HT3	3627-HT3-FR	1727-13	3627-HT3-CP	SHCS1/2X3/4-N
20,000 - 40,000	3.25"	2.375" Reg	2.375" Reg	3632-HT3	3632-HT3-FR	1632-13	3632-HT3-CP	SHCS1/2X3/4-N
40,000 - 80,0000	4.25"	2.875" IF	2.875" Reg	3742-HT3	N/A	1742-23	3742-HU3-CP	SHCS1/2X3/4-N

Using Subsite® Transmitters				Standard	FastReam	Replacement Parts		
Drill Rig Thrust	Diameter	Thread (rear)	Thread (front)	Part #	Part #	Bolt-On Bit Body	Housing Lid	Lid Bolts
6,000 - 20,000	2.50"	2" IF	2" IF	3927-HD3	3927-HD3-FR	1927-14	3927-HD3-CP	SHCS12MMX20MM-N
20,000 - 30,000	3.25"	2.375" Reg	2.375" Reg	3932-HD3	3932-HD3-FR	1932-15	3932-HD3-CP	SHCS16MMX25MM-N
20,000 - 40,000	3.50"	2.375" Reg	2.375" Reg	3935-HD3	3935-HD3-FR	1935-15	3935-HD3-CP	SHCS16MMX25MM-N
40,000 - 80,0000	4.25"	2.875" IF	2.875" Reg	3942-HD3	N/A	N/A	3742-HU3-CP	SHCS1/2X3/4-N



Precisely-placed slots optimize signal strength while minimizing weaknesses

Heat-treated, alloy steel for superior strength, abrasion resistance and durability

Large lid tabs provide more contact surface for less wear and longer life

API thread connections are the most reliable connections on the market

Removable, replaceable adapter increases longevity of the housing

Use with any of these style bits



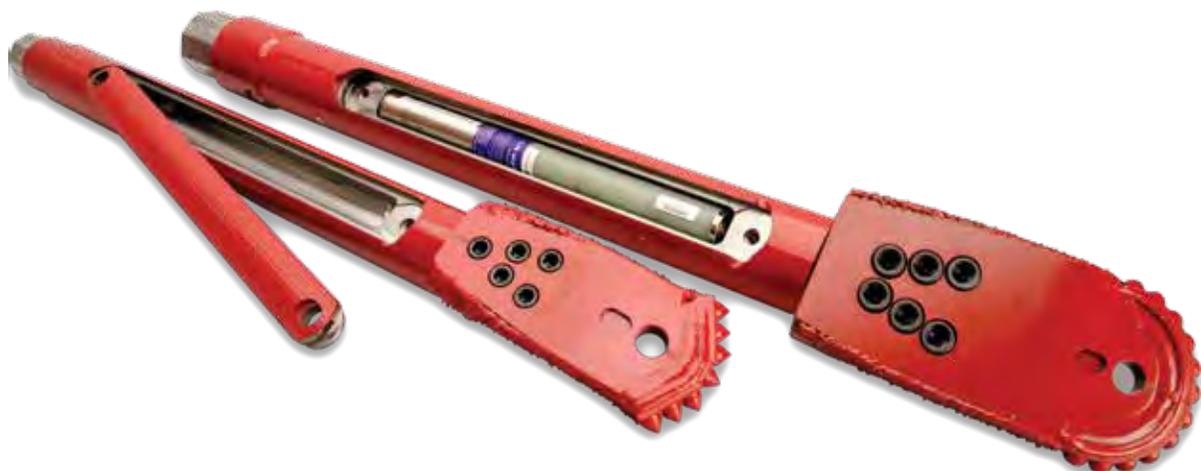
HOUSINGS FOR DIGITRAK[®] TRANSMITTERS WITH DITCH WITCH[®] BOLT PATTERNS

Melfred Borzall makes side-load housings to fit your Ditch Witch[®] Rig that also perfectly fit DCI's DigiTrak[®] Falcon F5 Transmitter without the use of spacers.

Trade in your Subsite[®] for up to \$5000 towards the purchase of a new Falcon F5 Locating System!



Drill Rig Thrust	DigiTrak [®] Transmitter Housing			Standard Hsg	FastReam Hsg
	Diameter	Thread (rear)	Bolt Pattern	Part #	Part #
10,000 - 20,000	2.75"	2" IF	DW 5, 12mm bolts	3627-HT3-14	3627-HT3-14-FR
20,000 - 40,000	3.25"	2.375" Reg	DW 6, 16mm bolts	3632-HT3-15	3632-HT3-15-FR



BOLT-ON BIT BODIES FOR THREAD-ON STYLE HOUSINGS

Use any bit you want. You know the drill.

Make your thread-on housing even more versatile with a bit body to use with bolt-on blades.

Bolt-On Bit Body for Vermeer [®] Drills				
Thread ▶	2" IF Pin	2-3/8" Reg Pin	2-7/8" Reg Pin	3-1/2" Reg Pin
Bolt Size ▼	Part #	Part #	Part #	Part #
1/2"	1725-13*	1632-13*		
5/8"			1742-23	
3/4"				3748-33

Bolt-On Bit Body for Ditch Witch [®] Drills				
Thread ▶	2" IF Pin	2-3/8" Reg Pin	2-7/8" Reg Pin	3-1/2" Reg Pin
Bolt Size ▼	Part #	Part #	Part #	Part #
12mm	1927-14*	1932-14*		
16mm		1932-15*		
20mm			1942-25*	

Melfred Borzall offers a variety of replacement bolts for your blades and housings. Other bolt patterns and threads can be special ordered. Call for a complete selection.
**Equipped with internal check valve to minimize clogging.*



Incorporates the Super Nozzle—designed to minimize clogging



Check valve minimizes chance of clogging nozzle

DIGITRAK® FALCON GUIDANCE SYSTEMS

Don't let interference slow you down.

Falcon Receivers

As jobsites become increasingly complex, interference has become one of the biggest obstacles to completing HDD jobs. Falcon technology helps crews overcome both passive and active interference with frequencies that are tailored to each project.



DigiTrak Falcon F5®

The high-performance Falcon F5 tackles complex jobs with active and passive interference using the most advanced toolset available.



DigiTrak Falcon F2®

Battle active interference with our simple yet sophisticated F2 system. Increase bore efficiency and reduce down time, saving thousands of dollars per year.



DigiTrak Falcon F1®

Designed for projects such as house drops from street to home, the easy to use and friendly priced F1 uses a single band to combat active interference.

DigiTrak® Transmitters

Our single and multi-frequency transmitters send pitch, roll, depth, and temperature information to our receivers. Choose the one best suited to your system and job requirements.

**See Ditch Witch®
Housings that
snugly fit Falcon
Transmitters on
page 20**



Falcon F5

The DigiTrak Falcon F5® transmitter supports hundreds of frequencies between .33 kHz - .75 kHz and 4.5 - 45 kHz. Operators can avoid active and passive interference by choosing the two optimum bands for the current site.



Falcon F2

The DigiTrak Falcon F2™ transmitters, offered in two lengths, support hundreds of frequencies between 4.5 and 45 kHz. Operators can avoid active interference by choosing the two optimum bands for each jobsite.



Falcon F1

The DigiTrak Falcon F1™ transmitters support dozens of frequencies between 9.0 and 13.5 kHz. Operators can avoid active interference by optimizing for the current site.

Remote Displays

The rugged DigiTrak® Aurora® display, the HDD industry's first color touchscreen, is compatible with all current DCI locating systems and ships pre-loaded with custom applications. Get basic locating support with the Falcon Compact Display (FCD).



AF8

The Aurora 8.4" display is available freestanding or panel-mounted. The robust, color touchscreen supports LWD Live, Target Steering, and other applications that increase jobsite productivity.



AF10

The Aurora freestanding 10.4" display is a color touchscreen with on- and off-rig docking stations. This rugged display supports LWD Live, Target Steering, and other applications that increase jobsite productivity.

Watch our
Tool Talk Video
to learn more



**Call 800.558.7500 for more information or to arrange
for a demo of the new Falcon Guidance Systems.**

BITS & BLADES

Harder, Faster, Stronger Bolt-On Blades and Directional Drilling Bits

“Conditions were rough and rocky. We were doing the pilot bore with the OEM tool and getting nowhere. We ended up pulling back out and the bit was completely chewed up. We called Melfred Borzall and they suggested the Steep Taper Ultra Bit. What a difference! The bore went incredibly smooth and fast. When we finished the bore the bit showed very little wear. Very impressive, especially when we discovered we had drilled through a solid boulder!”



Scan for more info



RED DIAMOND BLADE

100% carbide coverage

Increase your production rate with this new Melfred Borzall innovation that works harder and smarter than the average blade. The Red Diamond Blade design features a single front-end domed carbide for blunt force that extends the blade's overall life. The new diamond-shaped carbides on the front sides aggressively tear through hard ground conditions and the low-profile diamond carbides near the rear help to minimize drag. The continuous perimeter of carbides give the blade a mean look with a lethal bite. Diamonds are a driller's best friend.

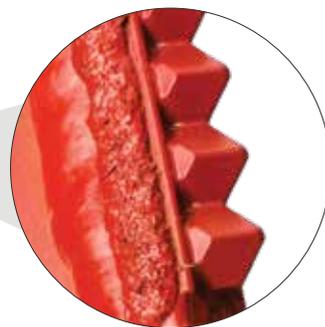
Vermeer®		
Product description	Cut Size	
	4.5"	5.5"
6-bolt	1800-13-45-BRD 	1800-13-55-BRD 

Ditch Witch®		
Product description	Cut Size	
	4.5"	5.5"
5-bolt	1800-14-45-BRD 	
6-bolt		1600-15-55-BRD

Chunky carbide hardfacing further protects all high wear areas.



Durable Domed Front Carbide



Diamond-shaped carbides on sides for aggressive cutting and 100% carbide coverage

Continuous low-profile back carbides to minimize wear

Tapered design towards the rear to reduce drag

ROCK SAW

Nothing stands between a Rock Saw and a hard place.

Get ready to rock and roll with this bullnose-designed bolt-on blade. Rock Saw gives you smoother rotation, better cutting and easier steering pushes in rocky and abrasive soil conditions. Get more aggressive forward- and side-cutting with Rock Saw's UltraBit-style conical carbide cutters around the front of the bit. Now available with dome carbides for rockin' past those cobbles without getting hung up. Available cutting sizes 3.5" - 6".

BEST FOR:

HARDPAN



GRAVEL



GOOD FOR:

COBBLES



Vermeer®								
Product description	Cut Size							
	3.5"		4"		5"		6"	
	Conical	Dome	Conical	Dome	Conical	Dome	Conical	Dome
6 bolt, 1/2"	1600-13-35-BBX3	1600-13-35-BBXD	1600-13-40-BBX3	1600-13-40-BBXD	1600-13-50-BBX3	1600-13-50-BBXD	1600-13-60-BBX3	1600-13-60-BBXD

Ditch Witch®								
Product description	Cut Size							
	3.5"		4"		5"		6"	
	Conical	Dome	Conical	Dome	Conical	Dome	Conical	Dome
5 bolt, 12mm	1600-14-35-BBX3	1600-14-35-BBXD	1600-14-40-BBX3	1600-14-40-BBXD				
6 bolt, 16mm			1600-15-40-BBX3	1600-15-40-BBXD	1600-15-50-BBX3	1600-15-50-BBXD	1600-15-60-BBX3	1600-15-60-BBXD

Conical carbide cutters for aggressive forward - and side - cutting

Bullnose profile design for better steering and easier steering pushes

Welds are reinforced with hardfacing for longer bit life

Chunky carbide hardfacing along the entire length of the blade reduces wear

Low profile and contoured back design minimizes drag

Available with dome carbides for cobble and gravel

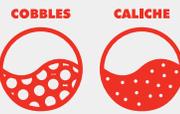


STEEP TAPER ULTRA BIT 3

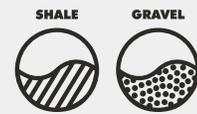
This is gonna leave a mark.

Steer through difficult ground without locking up. This premium drill bit slices through cemented cobble, hard packed soils and softer shales. Keep a firm grip on the job with an aggressive tapered bit-front and contoured steel surface featuring chunky carbide wear. Now available with dome carbides for blazing through those cobbles without missing a beat. Available cutting sizes: 3.5" - 6".

BEST FOR:



GOOD FOR:



Vermeer®						
Product description	Cut Size					
	3.5"	4"	5"	5"	6"	6"
5 bolt, 3/8"	Conical	Conical	Dome	Conical	Dome	Conical
6 bolt, 1/2"	1800-06-35-BSU3 PB	1600-13-40-BSU3 PB	1600-13-40-BSUD PB	1600-13-50-BSU3 PB	1600-13-50-BSUD PB	
6 bolt, 5/8"				1610-23-50-BSU3	1610-23-50-BSUD	1610-23-60-BSU3

Ditch Witch®						
Product description	Cut Size					
	3.5"	4"	5"	5"	6"	6"
5 bolt, 12mm	Conical	Conical	Dome	Conical	Dome	Conical
6 bolt, 16mm		1600-14-40-BSU3 PB	1600-14-40-BSUD PB	1600-14-50-BSU3 PB	1600-14-50-BSUD PB	
6 bolt, 25mm		1600-15-40-BSU3	1600-15-40-BSUD	1600-15-50-BSU3	1600-15-50-BSUD	1610-25-60-BSU3

Center point tooth for easier penetration

Carbide cutter blocks set at an aggressive angle to get through cobble

Bit of choice for ground where it's hard to do directional "pushes"

Weld bead is reinforced with hardfacing to increase bit life



Available with dome carbides for cobble and gravel

Low-profile, tapered design to minimize torque-stealing drag

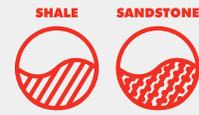
Chunky carbide hardfacing the entire length of blade for maximum longevity

ULTRA BIT 3

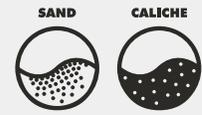
Break ground without breaking a sweat.

This is the MVP of our fleet of bits & blades. Ultra Bit 3 is an outstanding all-around ground solution with excellent steering and incredible durability, thanks to its large welded carbide blocks and contoured steer surface with chunky carbide wear surface. Available cutting sizes: 3" - 9".

BEST FOR:



GOOD FOR:



Vermeer®						
Product description	Cut Size					
	3.5"	4"	5"	6"	7.5"	9"
5 bolt, 3/8"	1800-06-35-BBU3 PB					
6 bolt, 1/2"	1600-13-35-BBU3	1600-13-40-BBU3 PB	1600-13-50-BBU3 PB			
6 bolt, 5/8"				1610-23-60-BBU3	1612-23-75-BBU3	
6 bolt, 3/4"					1612-33-75-BBU3	1612-33-90-BBU3

Ditch Witch®				
Product description	Cut Size			
	3.5"	4"	5"	6"
5 bolt, 12mm	1600-14-35-BBU3 PB	1600-14-40-BBU3 PB	1600-14-50-BBU3 PB	
6 bolt, 16mm		1600-15-40-BBU3	1600-15-50-BBU3	
6 bolt, 25mm				1610-25-60-BBU3

Conical carbide cutters make this an aggressive bit for hard soils

Chunky carbide hardfacing the entire length of blade for maximum longevity

Welds are reinforced with hardfacing to extend bit life

Low-profile, tapered design to minimize torque-stealing drag



EXCALIBUR

A legend in its own time.

This versatile bit is as classy as it is powerful. Excalibur features larger and deeper carbides than competing drill bits, which lead to a longer life. Excalibur's round nose makes for smooth cutting and easier steering pushes in rocky and abrasive soil conditions. Available cutting sizes: 2.5" - 5".

BEST FOR:

SAND CLAY

GOOD FOR:

DIRT/SANDY LOAM HARDPAN

Vermeer®				
Product description	Cut Size			
	2.5"	3.5"	4"	5"
6 bolt, 1/2"		1600-13-35-BBX	1600-13-40-BBX	1600-13-50-BBX
6 bolt, 5/8"				1612-23-50-BBX

Ditch Witch®				
Product description	Cut Size			
	2.5"	3.5"	4"	5"
3 bolt, 10mm	1600-09-25-BX			
5 bolt, 12mm		1600-14-35-BBX	1600-14-40-BBX	1600-14-50-BBX
6 bolt, 16mm			1600-15-40-BBX	1600-15-50-BBX

Bullnose design minimizes drag while rotating



Carbide buttons grind through tough ground and give blade long life.

IRON FIST BIT

Wham. Bam. It's a real knockout.

Challenging cobble bore? Not anymore. The Iron Fist packs a major punch in cobble and loose rock conditions. It's also designed to be easily and inexpensively rebuilt, reducing your tooling costs. Bam.

BEST FOR:

COBBLES



GOOD FOR:

HARDPAN



Iron Fist			Replacement Cutters						Iron Eye Attachments	
Cut Size	Thread	Aggressive Bit	Dome Bit	Aggressive-Left	Aggressive-Right	Dome-Left	Dome-Right	Side Cutters	Part #	
4"	2" IF pin	IF-40AC3-21M	IF-40DC3-21M	IF40-C-01-L	IF40-C-01-R	IF40-C-02-L	IF40-C-02-R		IF40-FB-304	
5"	2-3/8" Reg pin	IF-50AC3-23M	IF-50DC3-23M	IF50-C-01-L	IF50-C-01-R	IF50-C-02-L	IF50-C-02-R	IF50-C-01-S	IF50-FB-304	
6"	2-7/8" Reg pin	IF-60AC3-26M	IF-60DC3-26M	IF60-C-01-L	IF60-C-01-R	IF60-C-02-L	IF60-C-02-R	CC-01X4		
6"	3-1/2" Reg pin	IF-60AC3-28M	IF-60DC3-28M	IF60-C-01-L	IF60-C-01-R	IF60-C-02-L	IF60-C-02-R	CC-01X4		

Compact cutters are less likely to hang up on cobbles

Main carbide cutters positioned to allow for "rocking" the bit through cobbles

Dome carbide option



Chunky carbide hard facing, on all wear areas

Minimize chance of clogging with built-in check valve



Step, concave steering for quick response

Balanced cutters for downhole stability and drilling off center



Fluid holes positioned on back side of the bit for better steering response in cobbles

Extra fluid port for more flow during pullback

EAGLE CLAW SD BIT

The Eagle has landed...again.

The new and improved Melfred Borzall Eagle Claw SD is the fastest drilling, best steering, and most durable hard soil bit on the market. Carbide button blocks in all the high wear areas to keep the Eagle Claw (and you) drilling and drilling and drilling.

BEST FOR:

SHALE



SANDSTONE



GOOD FOR:

HARDPAN



Eagle Claw SD			Replacement Cutters				Eagle Eye Attachments
Cut Size	Thread	Part #	Aggressive Conical	Dome	Large Conical	Conical w/ Carbide Hardfacing	Part #
3.5"	2" IF pin	EC-35D2-21M	EC35A1-C-01	EC35A1-C-02			EC35-FB42-305
4.25"	2" IF pin	EC-42D2-21M	EC42A1-C-01	EC42A1-C-02	EC42A1-C-03	EC42A1-C-03-X	EC42-FB50-304
4.25"	2-3/8" Reg pin	EC-42D2-23M	EC42A1-C-01	EC42A1-C-02	EC42A1-C-03	EC42A1-C-03-X	EC42-FB50-304
5"	2-3/8" Reg pin	EC-50D2-23M	EC50C1-C-01	EC50C1-C-02	EC50C1-C-03	EC50C1-C-03-X	EC50-FB60-310
5.5"	2-7/8" Reg pin	EC-55D2-26M	EC55A1-C-01	EC55A1-C-02	EC55A1-C-03	EC55A1-C-03-X	
6.5"	2-7/8" Reg pin	EC-65D2-26M	EC-65A1-C-01	EC65A1-C-02	EC65A1-C-03	EC65A1-C-03-X	
6.5"	3-1/2" Reg pin	EC-65D2-28M	EC-65A1-C-01	EC65A1-C-02	EC65A1-C-03	EC65A1-C-03-X	

Perfectly balanced cutting design for smooth, efficient operation.



Cutter teeth available with carbide hardfacing for maximum durability

Aggressive tri-tooth carbide cutting action gets through the hardest conditions

Quickly and easily change out carbide cutter teeth with straight-thru knockout holes.

Steering face has conical shape for quicker reaction to directional "pushes"

Smooth running with minimal vibration to drill stem and drill rig

100% coverage dome carbides provide great wear resistance without cutting top of hole for great steering.



Make direct pullbacks with your Eagle Claw using the FastBack® system on page 9.

Minimize chance of clogging with built-in check valve

Aggressive conical carbide



Dome carbide



Large conical carbide



Large conical with carbide hardfacing



BEAR CLAW

Only the strong survive.

Behold, the King of the Beasts! This burly blade uses large conical carbide cutters to eat through caliche, sandstone and other tough conditions. Our rugged design and engineering make the Bear Claw one of the fiercest blades on the market. Available sizes: 3.5" - 5".

BEST FOR: SAND CALICHE

GOOD FOR: DIRT/SANDY LOAM

Vermeer®			
Product description	Cut Size		
	3.5"	4"	5"
6 bolt, 1/2"	1600-13-35-BBBC	1600-13-40-BBBC	1600-13-50-BBBC

Ditch Witch®			
Product description	Cut Size		
	3.5"	4"	5"
5 bolt, 12mm	1600-14-35-BBBC	1600-14-40-BBBC	
6 bolt, 16mm		1600-15-40-BBBC	1600-15-50-BBBC

Large conical carbide cutters eat through caliche, sandstone and other tough conditions



Hardfacing along all wear edges create a long-lasting blade

ROCK TOOLS & MUD MOTORS

Less talk, more drilling rock.

"We own several Rock-It motors for our rigs which can range from 60k to 1.1 million pound capacity, and they've proven time and time again to be durable, solid performers. When the work load requires us to have more motors, we get a rental within two days, use it and then send it back. That's it. And we never have a repair charge. Our production has been consistently above our expectations, so yeah, Rock-It motors absolutely give us a competitive edge in a very competitive market."



Scan for more info



ROCK-IT MUD MOTORS AND TRI-CONE BITS

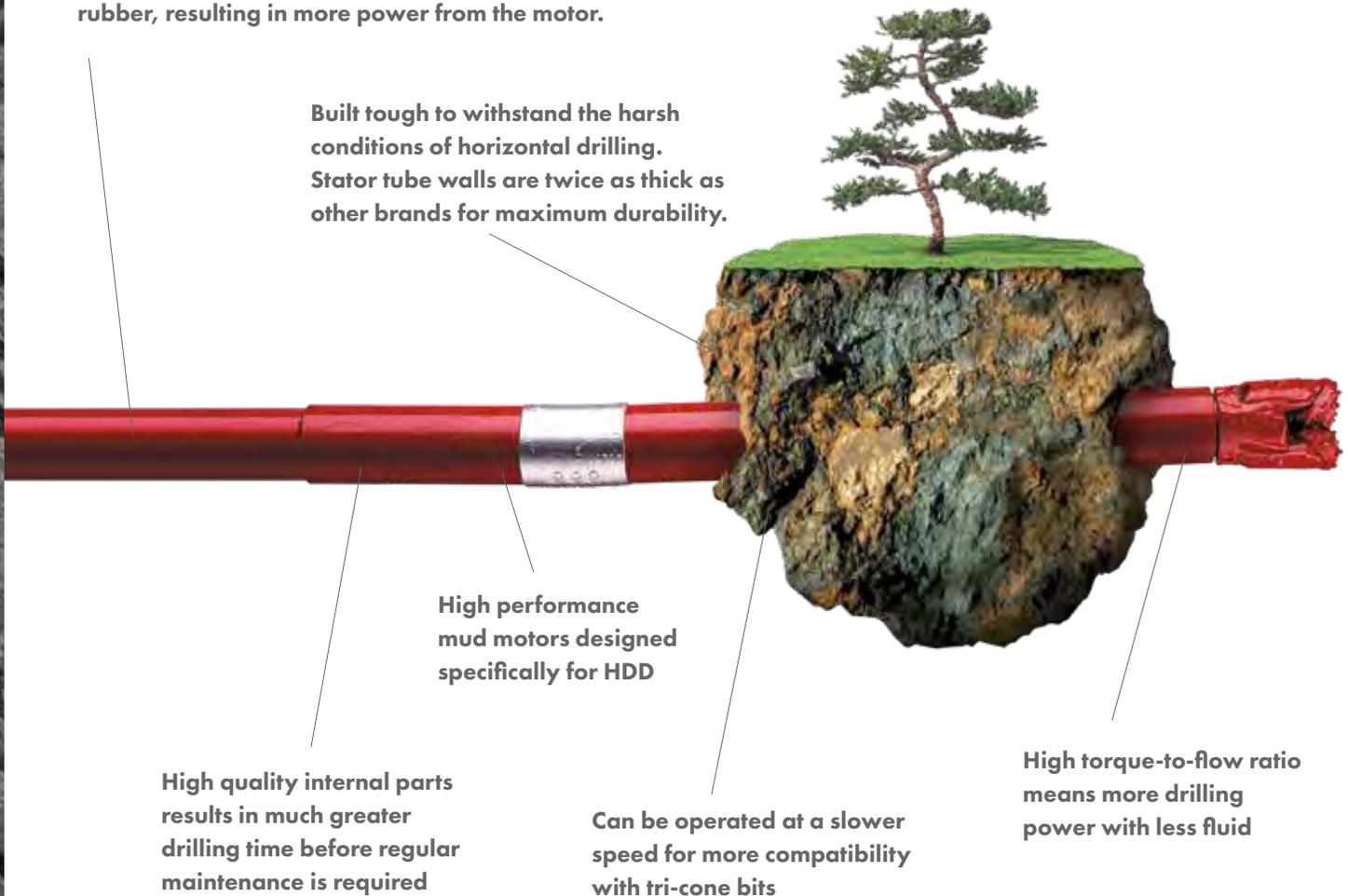
Take this job and Rock-It!

Rent it. Rock-It. Return it." No surprise fees. Rent for as little as 2 weeks and know what your costs will be.

Rock-It Mud Motors						
Standard Size	Torque Rating (ft-lbs)	Rotational Speed (rpm)	Flow Requirements (gpm @ 1,000 psi)	Operating Range (psi)	Recommended Bit Size	Recommended Drill Rig
3" 5/8 Lobe	250	80-346	20-60	350	3 7/8" to 4 1/2"	D24x40, D33x44, D40x40, JT2720, JT2720 Mach 1, DD3238
3 1/2" 5/8 Lobe	325	70-240	40-100	500	4 1/2" to 5 1/2"	D36x50, D40x40, JT3020 Mach 1, JT4020 Mach 1, JT4020, DD4, DD4045
3 3/4" 5/8 Lobe	1,200	200-400	100-170	350	5 1/4" to 6 1/4"	D50x100, D55x100, D60x90
4 3/4" 5/8 Lobe	1,200	180-370	100-170	350	6" to 7 7/8"	D80x100, JT7020 Mach 1, D60x90, DD6
5" 7/8 Lobe	2,500	105-230	140-300	600	6" to 7 7/8"	D100x120, D100x140, JT8020 Mach 1 JT100 Mach 1, DD10, DD140B, DD9014
6 3/4" 7/8 Lobe	5,000	70-150	200-500	500	8 3/4" to 9 7/8"	Maxi-Rigs
8 1/2" 7/8 Lobe	5,000	70-150	200-500	500	10 5/8" to 12 1/4"	Maxi-Rigs

Mud Motors available in more sizes and configurations. Call for a complete selection.

Rotors and stators are designed for HDD. They are shorter in length to help with motor steering. All stators are manufactured with a new "hard" Nitrile rubber, resulting in more power from the motor.



Built tough to withstand the harsh conditions of horizontal drilling. Stator tube walls are twice as thick as other brands for maximum durability.

High performance mud motors designed specifically for HDD

High quality internal parts results in much greater drilling time before regular maintenance is required

Can be operated at a slower speed for more compatibility with tri-cone bits

High torque-to-flow ratio means more drilling power with less fluid

END-LOAD, HIGH-FLOW TRANSMITTER HOUSINGS

Ideal for use with Mud Motors or Air Hammers

Use these puppies with Mud Motors, Borzall Eagle Claw & Iron Fist bits & bolt-on bit bodies. They come in sizes to accommodate rigs from 20,000 to 300,000 lbs. pullback.

End-Load, Thread-On, High Flow Housings				
Drill Rig Thrust (lbs)	Diameter	Rear Thread	Front Thread	Part #
<40,000	3.5"	2.375" IF	2.375" Reg	ELH-350
40,000 - 80,000	4.25"	2.875" IF	2.875" Reg	ELH-425
80,0000 - 140,000	4.875"	3.5" IF	3.5" Reg	ELH-487
140,000 - 300,000	6.375"	4.5" IF	4.5" Reg	ELH-638

Heat-treated, alloy steel for maximum strength and durability (the same high strength, fatigue resistant steel used in landing gears and propeller shafts)

Multiple fluid passages allow for maximum flow without pressure restrictions

Can be used with Mud Motors, Eagle Claw bits, Iron Fist bits and Bolt-On Bit Bodies

For rigs from 20,000 lbs. to 300,000+ lbs. thrust

End-load design for maximum torsional, compressive, and bending strength

Simple, interchangeable internal mechanism allows the same housing to be used with most locating systems

Stainless steel springs support and cushion the transmitter allowing it to be used with air hammers as well as mud motors

Accommodates DigiTrak® 2-cell, 4-cell, and cable transmitters (Mark V systems and newer); Subsite® 86B, 86BV2 Beacons and newer Beacons

REAMERS

It doesn't matter how good your Vermeer® or Ditch Witch® drills are if you don't have the right reamer for your job.

"We were replacing a water line under a river, about 20 feet below the bottom of the river with a bore of about 600 feet. The soil was thick mud with a lot of decomposed wood. The concern was the bore collapsing or fracturing out. After drilling the pilot bore we used Borzall's Tornado with a Barrel Stabilizer to backream. The tooling solved the problem of unstable conditions and we were able to pull product and finish the job under budget."



Scan for more info



JUGGERNAUT

Get ready to become unstoppable.

More carbide cutters than competitive fluted reamers mean that this versatile, compact tool makes tracks in lots of different soil types. Faster, smoother cutting action, longer life and more successful bores each day. Boom.

BEST FOR:

DIRT/SANDY LOAM



GRAVEL



GOOD FOR:

SHALE

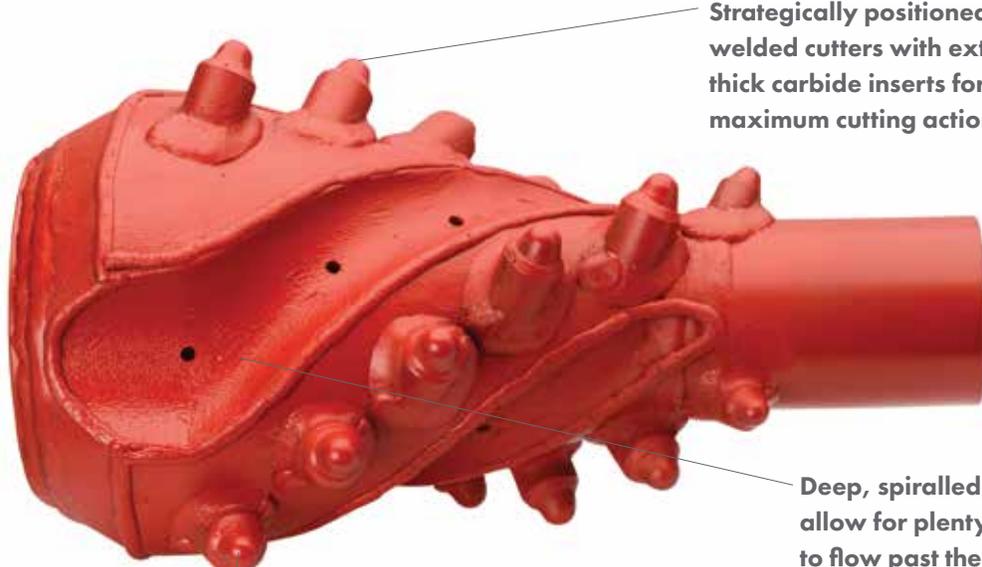


JUGGERNAUT - MACHINED BODY: Shaft Thread and Rear Connection

Cut Diameter	Pack Diameter	2"IF box X fine thread box	2-3/8" Reg box X fine thread box
		Use with a 4-ton or 5-ton Pocket Swivel Pg. 5	Use with a 4-ton or 5-ton Pocket Swivel Pg. 5
4.5"	4"	85-04-21F-44F	
6"	4.5"	85-06-21F-44F	
8"	6"	85-08-21F-45F	85-08-23F-45F

JUGGERNAUT - CASTED BODY: Shaft Thread and Rear Connection

Cut Diameter	Pack Diameter	2"IF box X flange	2-3/8" Reg box X flange	2-3/8" Reg box X flange	2-7/8" IF box X flange	2-7/8" IF box X flange
		Use with 10 or 15-ton Swivel	Use with 10 or 15-ton Swivel	Use with 20 or 30-ton Swivel	Use with 10 or 15-ton Swivel	Use with 20 or 30-ton Swivel
10"	8"	85-10-21F-F31X	85-10-23F-F31X			
12"	10"	85-12-21F-F31X	85-12-23F-F31X	85-12-23F-F32X	85-12-23F-F31X	
14"	12"	85-14-21F-F31X	85-14-23F-F31X	85-14-23F-F32X	85-14-27F-F31X	85-14-27F-F32X
16"	14"	85-16-21F-F31X	85-16-23F-F31X	85-16-23F-F32X	85-16-27F-F31X	85-16-27F-F32X



Strategically positioned and welded cutters with extra thick carbide inserts for maximum cutting action

Deep, spiralled flutes allow for plenty of slurry to flow past the reamer

Available with shark teeth or conical cutters with aggressive or dome carbides to cover a variety of tough ground conditions



(D) Dome carbide



(S) Sharktooth carbide



(C) Conical carbide



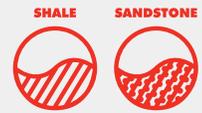
Available with built-in swivel or pulling eye - see page 51 for swivel information

SHREDDER

Your daily grind just got a whole lot easier.

No need to break the bank when you can use this powerful and economical reaming machine in shale, sandstone and hardpan. Open wide because the Shredder has a mouth full of carbide-tipped shark teeth to crunch through difficult ground conditions any day of the week.

BEST FOR:

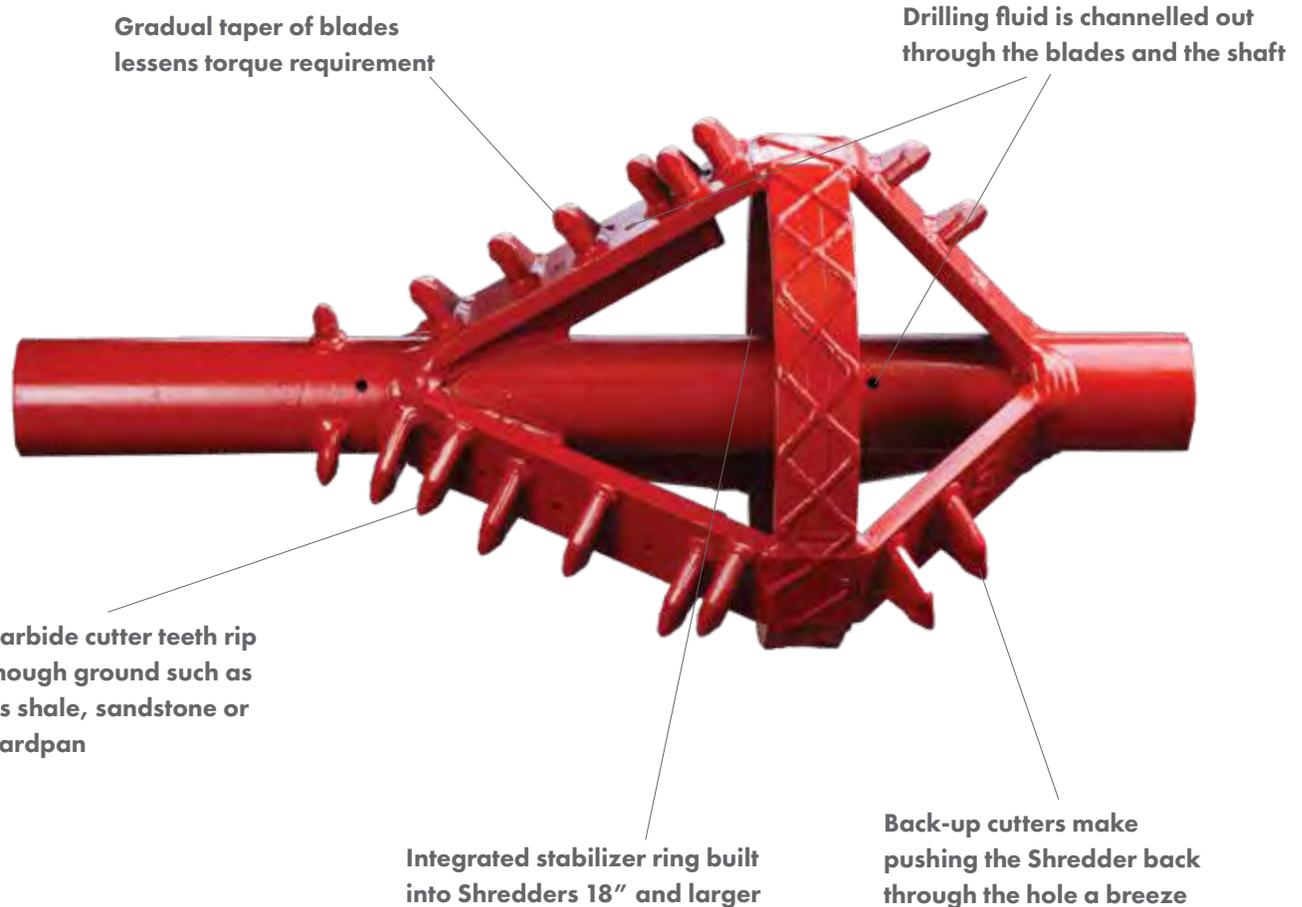


GOOD FOR:



SHREDDER Shaft Thread and Diameter

Cut	2.75"	3.25"	4.25"	4.75"	6.5"
Diameter	2" IF box X box	2-3/8" Reg box X box	2-7/8" IF box X box	3-1/2" IF box X box	4-1/2" IF box X box
6"	69-06-21F-21F				
8"	69-08-21F-21F	69-08-23F-23F	69-08-27F-27F		
10"	69-10-21F-21F	69-10-23F-23F	69-10-27F-27F		
12"	69-12-21F-21F	69-12-23F-23F	69-12-27F-27F	69-12-29F-29F	
14"	69-14-21F-21F	69-14-23F-23F	69-14-27F-27F	69-14-29F-29F	69-14-47F-47F
16"	69-16-21F-21F	69-16-23F-23F	69-16-27F-27F	69-16-29F-29F	69-16-47F-47F
18"	69-18-21F-21F	69-18-23F-23F	69-18-27F-27F	69-18-29F-29F	69-18-47F-47F
20"	69-20-21F-21F	69-20-23F-23F	69-20-27F-27F	69-20-29F-29F	69-20-47F-47F
24"		69-24-23F-23F	69-24-27F-27F	69-24-29F-29F	69-24-47F-47F
28"		69-28-23F-23F	69-28-27F-27F	69-28-29F-29F	69-28-47F-47F
30"			69-30-27F-27F	69-30-29F-29F	69-30-47F-47F
34"			69-34-27F-27F	69-34-29F-29F	69-34-47F-47F
36"			69-36-27F-27F	69-36-29F-29F	69-36-47F-47F
38"			69-38-27F-27F	69-38-29F-29F	69-38-47F-47F
40"			69-40-27F-27F	69-40-29F-29F	69-40-47F-47F
42"			69-42-27F-27F	69-42-29F-29F	69-42-47F-47F
48"				69-48-29F-29F	69-48-47F-47F

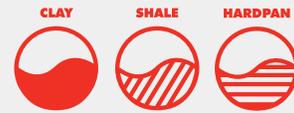


TORNADO

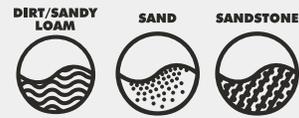
Destroys everything that stumbles into its path.

This Melfred Borzall original design combines aggressive cutting and mixing to reduce pullback and rotational forces. Tornado is ideal for sticky clays and reactive soils but can also be used successfully in a variety of conditions, from sand to hardpan.

BEST FOR:



GOOD FOR:

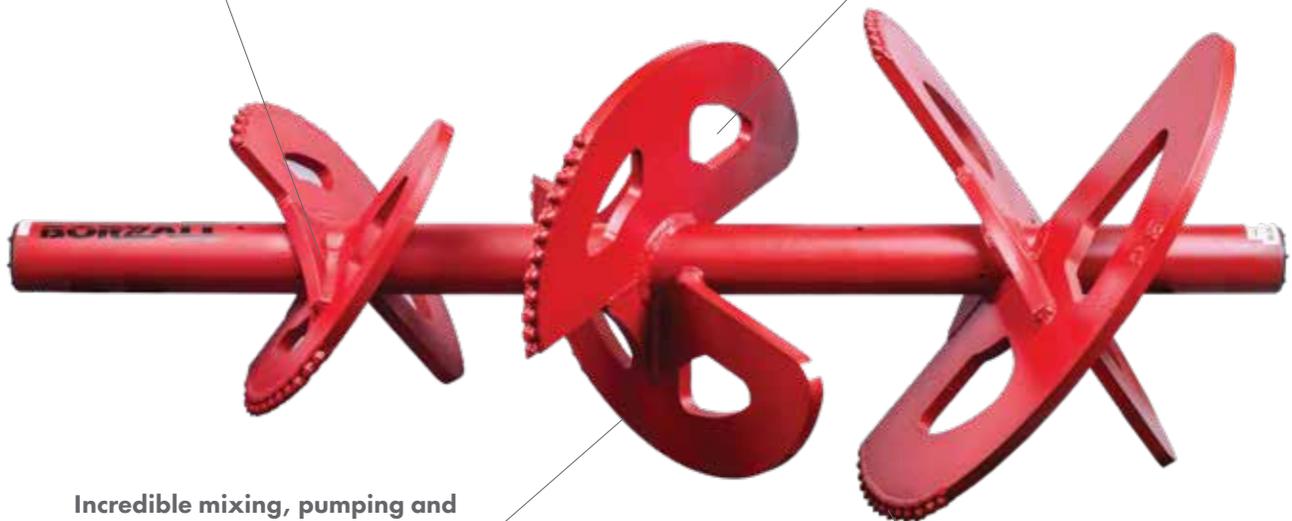


TORNADO (was Terminator) Shaft Thread and Diameter

Cut Diameter	2.75"	3.25"	4.25"	4.75"	6.5"
	2" IF box X box	2-3/8" Reg box X box	2-7/8" IF box X box	3-1/2" IF box X box	4-1/2" IF box X box
6"	90-06-21F-21F				
8"	90-08-21F-21F	90-08-23F-23F	90-08-27F-27F		
10"	90-10-21F-21F	90-10-23F-23F	90-10-27F-27F		
12"	90-12-21F-21F	90-12-23F-23F	90-12-27F-27F	90-12-29F-29F	
14"	90-14-21F-21F	90-14-23F-23F	90-14-27F-27F	90-14-29F-29F	90-14-47F-47F
16"	90-16-21F-21F	90-16-23F-23F	90-16-27F-27F	90-16-29F-29F	90-16-47F-47F
18"	90-18-21F-21F	90-18-23F-23F	90-18-27F-27F	90-18-29F-29F	90-18-47F-47F
20"	90-20-21F-21F	90-20-23F-23F	90-20-27F-27F	90-20-29F-29F	90-20-47F-47F
24"		90-24-23F-23F	90-24-27F-27F	90-24-29F-29F	90-24-47F-47F
28"		90-28-23F-23F	90-28-27F-27F	90-28-29F-29F	90-28-47F-47F
30"			90-30-27F-27F	90-30-29F-29F	90-30-47F-47F
34"			90-34-27F-27F	90-34-29F-29F	90-34-47F-47F
36"			90-36-27F-27F	90-36-29F-29F	90-36-47F-47F
38"			90-38-27F-27F	90-38-29F-29F	90-38-47F-47F
40"			90-40-27F-27F	90-40-29F-29F	90-40-47F-47F
42"			90-42-27F-27F	90-42-29F-29F	90-42-47F-47F
48"				90-48-29F-29F	90-48-47F-47F

Gusseted blades for extra strength

Blade cut-outs allow flow-through of slurry



Incredible mixing, pumping and cutting action reduces rotary pressure and makes it an ideal reamer for sticky situations

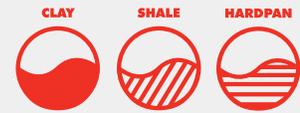
Carbide-tipped cutting blades are precisely positioned and angled so all the abuse is placed on the carbide tooth

TORNADO PUP

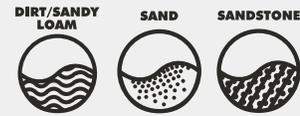
Unleash the Borzall reamer with a powerful bite.

Use these powerful puppies for bores requiring multiple reaming passes. Save money by only buying the exact amount of reaming you need. Tornado Pup reamers start cutting at a diameter, typically 2"-4" smaller than the previous reamer size. Remember, Tornado Pups work best with Borzall Barrels.

BEST FOR:



GOOD FOR:



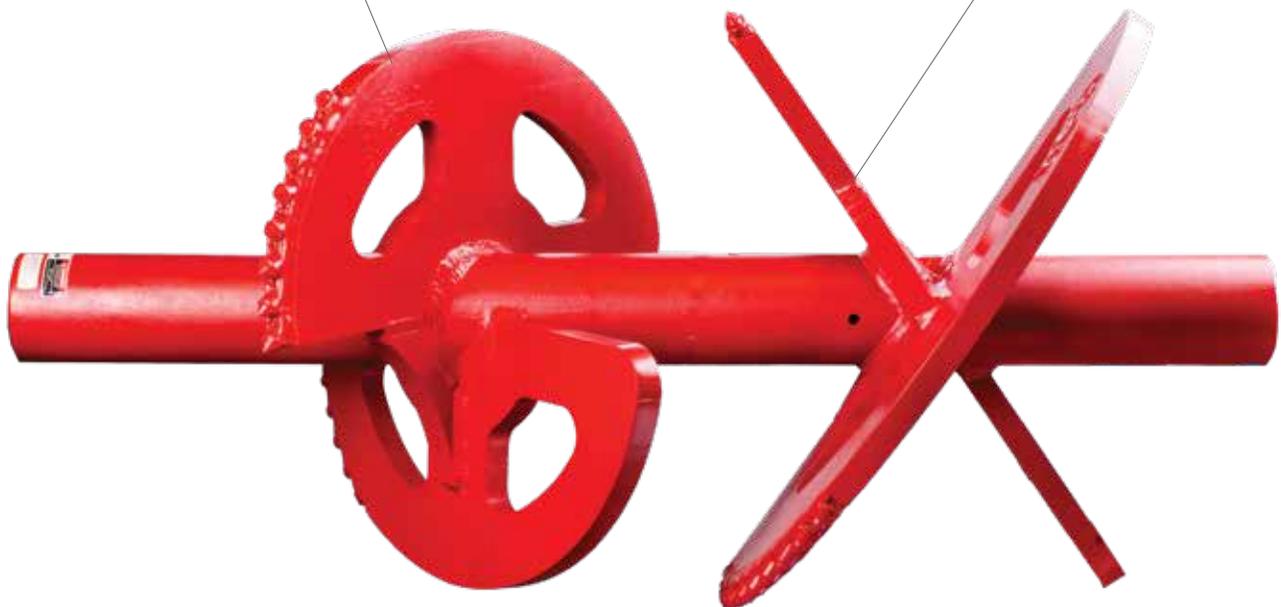
TORNADO PUP (was Terminator) Shaft Thread and Diameter

Cut Diameter	2.75"	3.25"	4.25"	4.75"	6.5"
	2" IF box X box	2-3/8" Reg box X box	2-7/8" IF box X box	3-1/2" IF box X box	4-1/2" IF box X box
6" - 12"	90-06-12-21F-F	90-06-12-23F-F	90-06-12-27F-F		
12" - 18"	90-12-18-21F-F	90-12-18-23F-F	90-12-18-27F-F		
14" - 24"		90-14-24-23F-F	90-14-24-27F-F	90-14-24-29F-F	
18" - 24"		90-18-24-23F-F	90-18-24-27F-F	90-18-24-29F-F	90-18-24-47F-F
20" - 28"		90-20-28-23F-F	90-20-28-27F-F	90-20-28-29F-F	90-20-28-47F-F
24" - 36"			90-24-36-27F-F	90-24-36-29F-F	90-24-36-47F-F

Other sizes and configurations available

Special two-stage, heavy-duty Tornado for pre-reaming in stages

Can mix and match with barrel stabilizers to meet job requirements

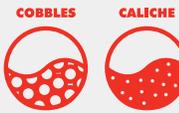


OGRE

Hard rock reaming made smooth.

Hard rock, chunk rock and cobble? Ogre chews 'em up and spits 'em out. Packed with carbide cutters, Ogre is unquestionably the best reamer on the market for faster, smoother cutting and unsurpassed durability in hard, rocky conditions. Available with different carbide cutter options, Ogre is the most productive reamer for your conditions.

BEST FOR:



GOOD FOR:



OGRE Shaft Thread and Diameter									
Cut Diameter	Pack Diameter	3.25"		4.25"		4.75"		6.5"	
		2-3/8" Reg box X box	2-3/8" Reg box X flange	2-7/8" IF box X box	2-7/8" IF box X flange	3-1/2" IF box X box	3-1/2" IF box X flange	4-1/2" IF box X box	4-1/2" IF box X flange
6"	4-1/2"	95-06-23F-23F							
8"	6-5/8"	95-08-23F-23F		95-08-27F-27F					
10"	8-5/8"	95-10-23F-23F	95-10-23F-F31X	95-10-27F-27F	95-10-27F-F32X	95-10-29F-29F	95-10-47F-47F		
12"	10-3/4"	95-12-23F-23F	95-12-23F-F31X	95-12-27F-27F	95-12-27F-F32X	95-12-29F-29F	95-12-47F-47F		
14"	12-3/4"	95-14-23F-23F	95-14-23F-F31X	95-14-27F-27F	95-14-27F-F32X	95-14-29F-29F	95-14-47F-47F		
16"	14"	95-16-23F-23F	95-16-23F-F31X	95-16-27F-27F	95-16-27F-F32X	95-16-29F-29F	95-16-47F-47F		
18"	16"	95-18-23F-23F	95-18-23F-F31X	95-18-27F-27F	95-18-27F-F32X	95-18-29F-29F	95-18-47F-47F		
20"	18"	95-20-23F-23F	95-20-23F-F31X	95-20-27F-27F	95-20-27F-F32X	95-20-29F-29F	95-20-47F-47F		
24"	20"			95-24-27F-27F	95-24-27F-F32X	95-24-29F-29F	95-24-47F-47F		
28"	24"			95-28-27F-27F	95-28-27F-F32X	95-28-29F-29F	95-28-47F-47F		
32"	28"			95-32-27F-27F	95-32-27F-F32X	95-32-29F-29F	95-32-47F-47F		
36"	32"			95-36-27F-27F	95-36-27F-F32X	95-36-29F-29F	95-36-47F-47F		
40"	36"			95-40-27F-27F	95-40-27F-F32X	95-40-29F-29F	95-40-47F-47F		

Other sizes available

With more cutters than any reamer in its class, each cutter only takes 1/2" more soil than the previous stage resulting in a smooth, efficient cutting action

Hardfacing on all wear areas

Angled fluid jets shoot water opposite the reamer rotation to keep carbides and flutes clear of debris

Back-up blades make pushback easier

Staggered carbide blocks prevent shaft from wearing directly in front of reamer body

Slow taper and deep spiralled fluting combine for maximum mixing and pumping

Deep flutes carry away cuttings

Available with a built-in flange swivel or in a through-shaft design

Available with different carbide cutter options



(D) Dome carbide



(S) Sharktooth carbide



(C) Conical carbide

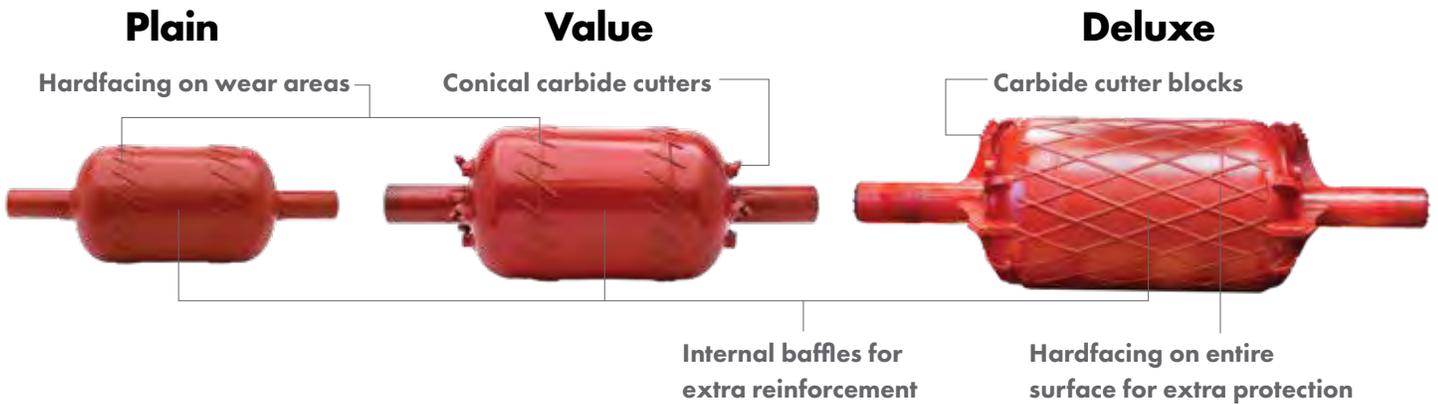
BARREL STABILIZER

Steady as a rock.

Keep your bore centralized, stabilized and clean with these long-life barrels. Borzall Barrels feature internal baffles to reduce weight from drilling fluid and bi-directional cutter blocks for push or pull use. They also minimize hole collapse by using replaceable forward- and rear-facing nozzles to provide lubrication without jetting out bore hole walls.

BARREL STABILIZER Shaft Diameter and Thread					
Pack Diameter	Std Pack Length	3.25"	4.25"	4.75"	6.5"
		2-3/8" Reg box	2-7/8" IF box	3-1/2" IF box	4-1/2" IF
10"	20"	80-10-23F-23F	80-10-27F-27F		
12"	24"	80-12-23F-23F	80-12-27F-27F		
14"	28"	80-14-23F-23F	80-14-27F-27F		
16"	32"	80-16-23F-23F	80-16-27F-27F	80-16-29F-29F	
18"	36"	80-18-23F-23F	80-18-27F-27F	80-18-29F-29F	
20"	40"	80-20-23F-23F	80-20-27F-27F	80-20-29F-29F	80-20-47F-47F
36"	32"			80-36-27F-27F	80-36-29F-29F
40"	36"			80-40-27F-27F	80-40-29F-29F
48"	44"				80-48-29F-29F

Other sizes and configurations available



Front and rear water ports clear cutters and wash away cuttings

Back-facing and forward-facing blades ensure barrel proceeds smoothly through hole even if some hole collapse occurs





- FastBack System
- Transmitter Housings & Locators
- Bits & Blades
- Rock Tools & Mud Motors
- Reamers
- Quick-Disconnects & Collars
- Swivels
- Pullers
- Drive Chucks & Sub-Savers
- Adapters
- Parts & Accessories

SABERTOOTH

Sharpen your claws. It's about to get heavy.

Crunch through hard ground at an affordable price. With lots of tall shark teeth in a spiral pattern and a tapered packing section, Sabertooth tackles sticky, sandy or rocky ground conditions on a single bore.

BEST FOR:

SHALE



SANDSTONE



GOOD FOR:

HARDPAN



GRAVEL



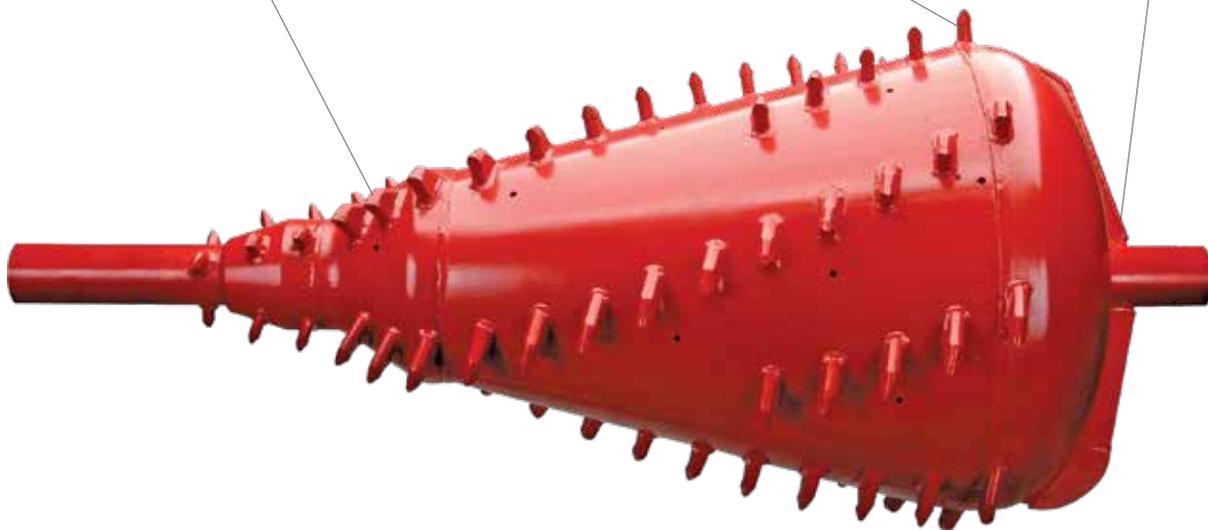
SABERTOOTH Shaft Thread and Diameter

Cut Diameter	Pack Diameter	2.75"	3.25"	4.25"	4.75"	6.5"
		2" IF box X box	2-3/8" Reg box X box	2-7/8" IF box X box	3-1/2" IF box X box	4-1/2" IF box X box
6"	4-1/2"	96-06-21F-21F	96-06-23F-23F			
8"	6-5/8"	96-08-21F-21F	96-08-23F-23F	96-08-27F-27F		
10"	8-5/8"	96-10-21F-21F	96-10-23F-23F	96-10-27F-27F		
12"	10-3/4"	96-12-21F-21F	96-12-23F-23F	96-12-27F-27F		
14"	12-3/4"	96-14-21F-21F	96-14-23F-23F	96-14-27F-27F	96-14-29F-29F	
16"	14"	96-16-21F-21F	96-16-23F-23F	96-16-27F-27F	96-16-29F-29F	96-16-47F-47F
18"	16"	96-18-21F-21F	96-18-23F-23F	96-18-27F-27F	96-18-29F-29F	96-18-47F-47F
20"	18"		96-20-23F-23F	96-20-27F-27F	96-20-29F-29F	96-20-47F-47F
24"	20"		96-24-23F-23F	96-24-27F-27F	96-24-29F-29F	96-24-47F-47F
28"	24"			96-28-27F-27F	96-28-29F-29F	96-28-47F-47F
32"	28"			96-34-27F-27F	96-34-29F-29F	96-34-47F-47F
36"	32"			96-36-27F-27F	96-36-29F-29F	96-36-47F-47F
40"	36"			96-40-27F-27F	96-40-29F-29F	96-40-47F-47F
48"	44"				96-48-29F-29F	96-48-47F-47F

Angled placement of cutters and spiral pattern results in excellent mixing and pumping action

Large shark teeth carbide cutters for aggressive yet smooth cutting

Back-up blades make for easier push backs



HEDGEHOG

Chew your way out of any tight squeeze.

Use this pointy little fellow to burrow into lots of soil types for an economical price. Bi-directional cutters allow Hedgehog to be used as both a conventional pull reamer or as a push reamer to get more production out of your Ditch Witch® or Vermeer® drill.

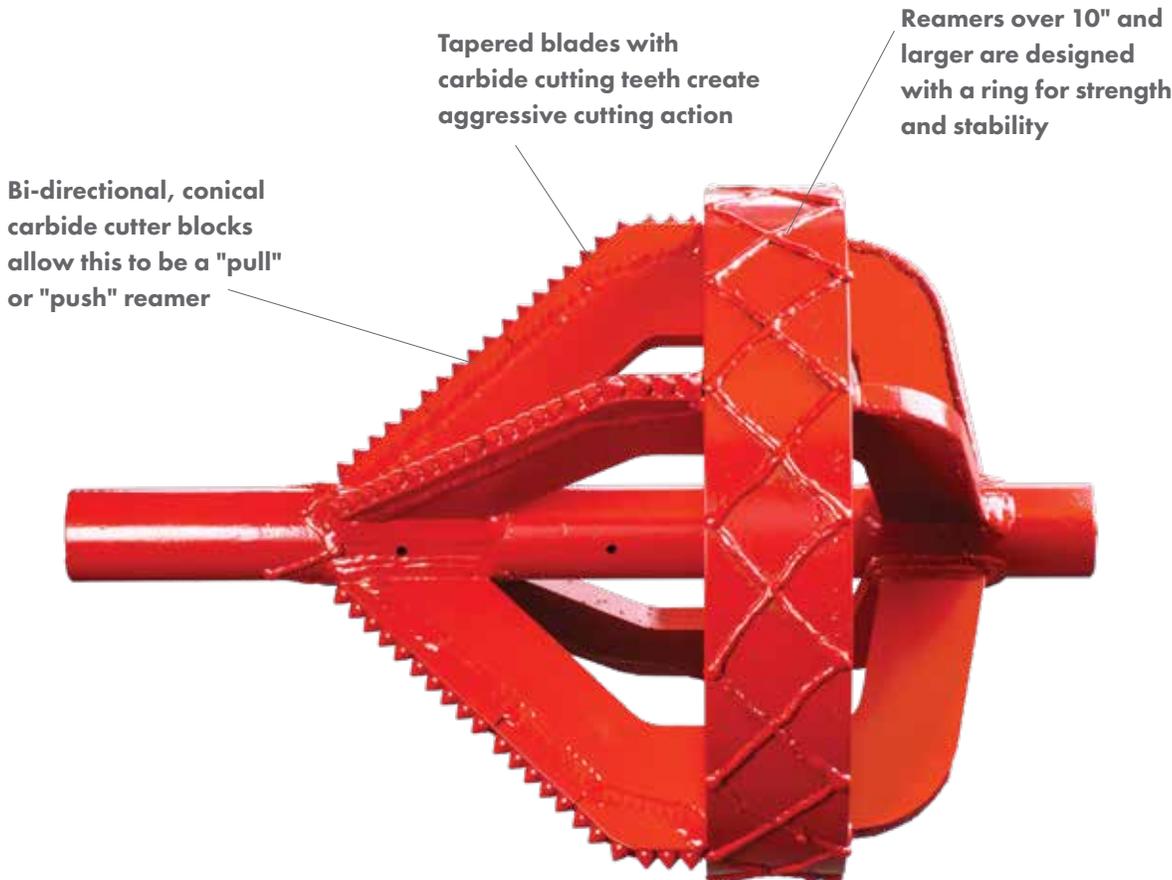
BEST FOR:

DIRT/SANDY LOAM **SHALE**

GOOD FOR:

CLAY **SANDSTONE**

HEDGEHOG Shaft Thread and Diameter					
Cut Diameter	2.75"	3.25"	4.25"	4.75"	6.5"
	2" IF box X box	2-3/8" Reg box X box	2-7/8" IF box X box	3-1/2" IF box X box	4-1/2" IF box X box
8"	68-08-21F-21F	68-08-23F-23F			
10"	68-10-21F-21F	68-10-23F-23F	68-10-27F-27F		
12"	68-12-21F-21F	68-12-23F-23F	68-12-27F-27F	68-12-29F-29F	
14"	68-14-21F-21F	68-14-23F-23F	68-14-27F-27F	68-14-29F-29F	68-14-47F-47F
16"	68-16-21F-21F	68-16-23F-23F	68-16-27F-27F	68-16-29F-29F	68-16-47F-47F
18"	68-18-21F-21F	68-18-23F-23F	68-18-27F-27F	68-18-29F-29F	68-18-47F-47F
20"		68-20-23F-23F	68-20-27F-27F	68-20-29F-29F	68-20-47F-47F
24"		68-24-23F-23F	68-24-27F-27F	68-24-29F-29F	68-24-47F-47F
28"			68-28-27F-27F	68-28-29F-29F	68-28-47F-47F
30"			68-30-27F-27F	68-30-29F-29F	68-30-47F-47F
36"				68-36-29F-29F	68-36-47F-47F
42"				68-42-29F-29F	68-42-47F-47F



TURBO

Supercharge your reaming in sand.

Reaming sand or unstable soils? Apply a little Turbo power. Turbo's newly redesigned mixing, pumping and packing features make boring in sand more manageable. Backup blades and Turbo's packing section make for easy pushbacks to swab out the hole, resulting in effortless pullbacks.

BEST FOR:

DIRT/SANDY
LOAM



SAND



GOOD FOR:

CLAY



TURBO Shaft Thread and Diameter						
Cut Diameter	Pack Diameter	2.75"	3.25"	4.25"	4.75"	6.5"
		2" IF box X box	2-3/8" Reg box X box	2-7/8" IF box X box	3-1/2" IF box X box	4-1/2" IF box X box
6"	4-1/2"	83-06-21F-21F	83-06-23F-23F			
8"	6-5/8"	83-08-21F-21F	83-08-23F-23F	83-08-27F-27F		
10"	8-5/8"	83-10-21F-21F	83-10-23F-23F	83-10-27F-27F		
12"	10-3/4"	83-12-21F-21F	83-12-23F-23F	83-12-27F-27F		
14"	12-3/4"	83-14-21F-21F	83-14-23F-23F	83-14-27F-27F	83-14-29F-29F	
16"	14"	83-16-21F-21F	83-16-23F-23F	83-16-27F-27F	83-16-29F-29F	83-16-47F-47F
18"	16"	83-18-21F-21F	83-18-23F-23F	83-18-27F-27F	83-18-29F-29F	83-18-47F-47F
20"	18"		83-20-23F-23F	83-20-27F-27F	83-20-29F-29F	83-20-47F-47F
24"	20"		83-24-23F-23F	83-24-27F-27F	83-24-29F-29F	83-24-47F-47F
28"	24"			83-28-27F-27F	83-28-29F-29F	83-28-47F-47F
32"	28"			83-34-27F-27F	83-34-29F-29F	83-34-47F-47F
36"	32"			83-36-27F-27F	83-36-29F-29F	83-36-47F-47F
40"	36"			83-40-27F-27F	83-40-29F-29F	83-40-47F-47F
48"	44"				83-48-29F-29F	83-48-47F-47F

Heavy duty blades with carbide teeth for aggressive cutting action

Curved packer blades provide maximum mixing and pumping

Back-up blades make for easier push backs



Long "Turbo" blades scoop up sand to keep it from piling up on the hole bottom and to mix it with drill fluid

THE BORZALL EDGE

Why Melfred Borzall backreamers are better

Better Materials

For the past 71 years—the entire lifespan of our company—we have specifically required that all our raw materials come from the United States. That means we purchase steel produced by U.S. mills.



Better Fabrication

Fresh ideas, creative thinking, and strong academic backgrounds fit right in with OUR REPUTATION for constant innovation, not just in our designs, but our manufacturing, logistics, and operations processes. We pair our decades of experienced welders and machinists with new robotic technology.



Better Support

Not only do we fabricate effective and long-lasting tooling, we know that mother earth can wear down even the best tooling. So, when eventual wear sets in, many of our backreamers can be rebuilt with new hardfacing and carbide teeth to give it renewed bite! Give us a call and we'll help you determine if that option is best for your situation.



Watch an Ogre Backreamer being made here



Need a custom reamer?
Call 800.558.7500, tell us what you need and let our experts do the rest. We'll get you a quote and drawing the same day.

QUICK-DISCONNECTS & COLLARS



The safer, easier way to swap out tools on your Vermeer® and Ditch Witch® drills

Scan for more info

EZ CONNECTS COMPATIBLE WITH DITCH WITCH® RIGS

We guarantee durability and compatibility with our precision gun-drilled, CNC-machined Ditch Witch® EZ Connects, manufactured from tough American chrome-moly steel.

Completely heat-treated
for maximum durability

Precision gun-drilled
and CNC-machined



For Ditch Witch® Rigs with EZ-Connect thread					
Drill Rig Model	Quick-Disconnect	Standard Collar	Carbide Stud	Chunky Carbide	Carbide Cutters
JT5	DLR2-04M-L52M	DL52-15-OC		DL52-15-OC-HFC	
JT520 (vesion 2)	DLR2-05M-L52M	DL52-15-OC		DL52-15-OC-HFC	
JT921	DLR2-01AM-L55M	DL55-18-OC		DL55-18-OC-HFC	
JT922 (coarse thread)	DLR2-09M-L55M	DL55-18-OC		DL55-18-OC-HFC	
JT1220	DLR2-34M-L58M	DL58-22-OC		DL58-22-OC-HFC	
JT1720	DLR2-86M-L54M	DL54-25-OC	DL54-25-OC-C	DL54-25-OC-HFC	DL54-25-OC-HFCS
JT20	DLR2-20M-L54M	DL54-25-OC	DL54-25-OC-C	DL54-25-OC-HFC	DL54-25-OC-HFCS
JT2020	DLR2-20M-L54M	DL54-25-OC	DL54-25-OC-C	DL54-25-OC-HFC	DL54-25-OC-HFCS
JT25	DLR3-36M-L59M	DL59-27-OC		DL59-27-OC-HFC	DL59-27-OC-HFCS
JT2720	DLR2-35M-L54M	DL54-25-OC	DL54-25-OC-C	DL54-25-OC-HFC	DL54-25-OC-HFCS
JT2720 Mach 1	DLR2-36M-L56M	DL56-27-OC		DL56-27-OC-HFC	DL56-27-OC-HFCS
JT30	DLR3-36M-L59M	DL59-27-OC		DL59-27-OC-HFC	DL59-27-OC-HFCS
JT3020	DLR3-36M-L59M	DL59-27-OC		DL59-27-OC-HFC	DL59-27-OC-HFCS

SLIDE COLLARS

Compatible with Vermeer® and Ditch Witch® Quick-Disconnects

All collars are not created equal. Our collars for Ditch Witch® and Vermeer® Quick-Disconnects have a thicker wall for more strength and longer life. Choose from collar options with chunky carbide hardfacing, carbide button studs, or even carbide cutter teeth to actually enlarge the hole during pullback. Collars with cutter teeth are part of Melfred Borzall's FastBack® System to accelerate your direct pullback operations.

Standard

Carbide Stud

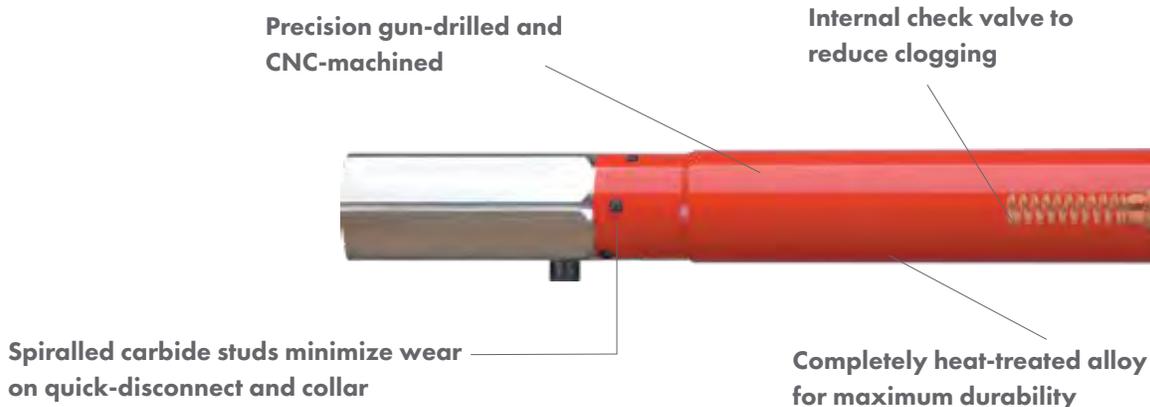
Chunk Carbide

Carbide Cutters



DELUXE QUICK-DISCONNECTS COMPATIBLE WITH VERMEER® RIGS

Minimize nozzle plugging during rod break out with our Deluxe Quick-Disconnect, featuring a built-in check valve. Carbide wear buttons extend the life of your quick-disconnect in the high-wear area immediately behind the hex collar.



VALUE QUICK-DISCONNECTS COMPATIBLE WITH VERMEER® RIGS

Quality and compatibility is assured by 100% thread inspection and unique single-setup machining process. We use chrome-moly steel produced by US Mills that matches our specs to create the highest strength and longest life quick-disconnect available.



For Vermeer® Drill Rigs with Low-Profile Quick-Disconnect Thread						
Drill Rig Model	Deluxe Quick-Disconnect	Value Quick-Disconnect	Standard Collar	Carbide Stud	Chunky Carbide	Carbide Cutters
D7x11		VLRV-31F-L42F-XL	VLR-20-HC	VLR-20-HC-C	VLR-20-HC-HFC	VLR-20-HC-HFCS
D7x11 Series 2		VLRV-31F-L42F-XL	VLR-20-HC	VLR-20-HC-C	VLR-20-HC-HFC	VLR-20-HC-HFCS
D9x13 Series 2		VLRV-31F-L42F-XL	VLR-20-HC	VLR-20-HC-C	VLR-20-HC-HFC	VLR-20-HC-HFCS
D10x15		VLRV-31F-L42F-XL	VLR-20-HC	VLR-20-HC-C	VLR-20-HC-HFC	VLR-20-HC-HFCS
D16x20	VLR-32F-L43F	VLRV-32F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS
D16x20 Series 2	VLR-32F-L43F	VLRV-32F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS
D20x22	VLR-30F-L43F-XXL	VLRV-30F-L43F-XXL	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS
D24x26	VLR-30F-L43F	VLRV-30F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS
D24x30	VLR-40F-L43F	VLRV-40F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS
D23x30, S2, S3	VLR-40F-L43F	VLRV-40F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS
D36x50, FS650 thread	VLR-46F-L43F	VLRV-46F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS
D36x50, FS700 thread	VLR-41F-L43F	VLRV-41F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR25-HC-HFCS

SWIVELS

Ensure a successful installation each and every time with our high quality HDD pullback swivels

"We were ready to start the backream and pull the product when we realized the swivel was on another jobsite. We were running a tight schedule so we contacted our local Borzall distributor. They got us hooked up with a 30-ton Deluxe DUB swivel and got it out to our jobsite within the hour. Not only tools you can count on, but they get them there when you need them."



Scan for more info



DELUXE DUB PULLING SWIVELS

Quad-stage seal system and 5-to-1 safety factor make the Deluxe DUB one long-lasting swivel.

It's not the cheapest, but it is the best. And if you're pulling in 1500' of 20" HDPE, isn't that what you really need? Deluxe DUB swivels are the most secure way to complete your backream pullbacks.

Deluxe DUB Swivels					
Pullback Capacity	Swivel Diameter	Clevis X Clevis	Clevis X 2-3/8" Reg Pin	Clevis X 2-7/8" IF Pin	Replacement Pin Kit
		Part #	Part #	Part #	
5,000 lb	2"	00508-202			00508-002
10,000 lb	3.125"	00508-205			00508-005
20,000 lb	3.75"	00508-210	00508-710-23M		00508-010
30,000 lb	4.75"	00508-215	00508-715-23M	00508-715-27M	00508-015
40,000 lb	5.75"	00508-220		00508-720-27M	00508-020
60,000 lb	6"	00508-230		00508-730-27M	00508-020
80,000 lb	6.5"	00508-240		00508-740-27M	00508-040
100,000 lb	7.5"	00508-250			00508-060
120,000 lb	7.5"	00508-260			00508-060
160,000 lb	9"	00508-280			00508-080

Clevis x Clevis



Metal-to-metal face seal to ensure reliability and long life

Clevis x Pin



Four-stage sealing system

Greasable tapered roller

VALU-DUB PULLING SWIVELS

Valu-DUB Swivels are as dependable as they are economical. Greasable premium angular contact bearings and triple sealing system meet the demands of even the toughest HDD job.

Valu DUB Swivels							
Pullback Capacity	Swivel Diameter	Clevis X Clevis	Clevis X 2" IF Pin	Clevis X 2-3/8" Reg Pin	Clevis X 2-7/8" IF Pin	Replacement Pin Kit	Rebuild Kit
		Part #	Part #	Part #	Part #		
5,000 lb	1.25"	00503-202				00020-HEX	
8,500 lb	2"	00503-204				00035-HEX	00503-K04
10,000 lb	2.25"	00503-205	00503-705-21M			00037-HEX	00503-K05
15,000 lb	2.5"	00503-208				00040-HEX	00503-K08
20,000 lb	2.5"	00503-210	00503-710-21M	00503-710-23M		00040-HEX	00503-K10
30,000 lb	3"	00503-215		00503-715-23M		00045-HEX	00503-K15
40,000 lb	4.75"	00503-220		00503-720-23M		00508-015	
60,000 lb	5.75"	00503-230			00503-730-27M	00508-020	
90,000 lb	6"	00503-245			00503-745-27M	00508-020	

Clevis x Clevis



Fitted with a grease nipple that makes for easy lubrication and a long-lasting swivel

Clevis x Pin



Push and pull loads are absorbed by premium quality angular contact bearings

QUICK-SWIVEL

Designed exclusively for Melfred Borzall blades

Quick-Swivel				
Pullback Capacity	Part #	Replacement Bolt	Replacement Nut	Replacement Washer
5 ton	00503-205-QS	HHCS-3/4-2.75-8	3/4-10-NUT	3/4 WASHER



Do direct pullbacks without removing the drill head

Made from the same quality components as the 5-ton ValuDUB swivel



Quickly bolts on to Melfred Borzall's most popular blades: Excalibur, Rock Saw, UltraBit

Swivel stays in line with the rotation of the drill head

MAXI-RIG SWIVEL

Triple-stage seal system keeps your bearings protected on your heaviest loads

Maxi Rig Swivels					
Pullback Capacity	Swivel Diameter	Clevis X 4-1/2" IF box	Clevis X 6-5/8" Reg box	Clevis X 6-5/8" FH box	Clevis X 7-5/8" Reg box
		Part #	Part #	Part #	Part #
220,000 lb	10.75"	00508-1110			
330,000 lb	19.5"	00508-1165			
440,000 lb	19.5"		00508-1220		
550,000 lb	19.5"			00508-1275	
700,000 lb	16"			00508-1351	00508-1350
1,000,000 lb	19.5"			00508-1501	00508-1500
1,400,000 lb	23"				00508-1700



Designed with service in mind. Seals are field replaceable

Fitted with a grease nipple and relief valve for easy lubrication, making it a long-lasting swivel

Push and pull loads are absorbed by premium quality angular contact bearings

FLUTED REAMER SWIVELS

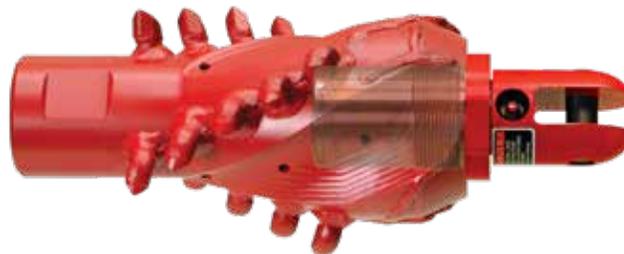
Designed exclusively for Melfred Borzall Juggernaut reamers

Pocket Swivels for Fluted Juggernaut		
Pullback Capacity	Juggernaut Size	
	4" - 6"	8"
4.5 ton	00503-604-44M	00503-604-45M
10 ton		00503-610-45M

Totally self-contained and greaseable for a long lasting swivel



Push and pull loads are absorbed by premium quality angular contact bearings



Flange Swivels for Fluted Juggernaut		
Pullback Capacity	Juggernaut Size	
	10" - 12"	14" - 16"
10 ton	00503-610	00503-610
15 ton	00503-615	00503-615
20 ton		00503-620
30 ton		00503-630

Hard-facing around face of flange minimizes wear at the head of the bolts



Features a triple-stage sealing system to keep debris from destroying bearings



Intricate quad-stage seal system designed specifically for HDD conditions

PULLERS

Keep a firm grip with rugged HDD pullers for every job

“We pull a lot of different product, so when we were on a high-profile fiber job, the last thing we needed to worry about was losing one of the multiple conduits. Our Borzall distributor came to the site with a truck full of different pullers and helped us choose the right size to ensure a smooth pullback. It’s good to know that in those occasional situations when we need something on the job site, Borzall is there to support us.”

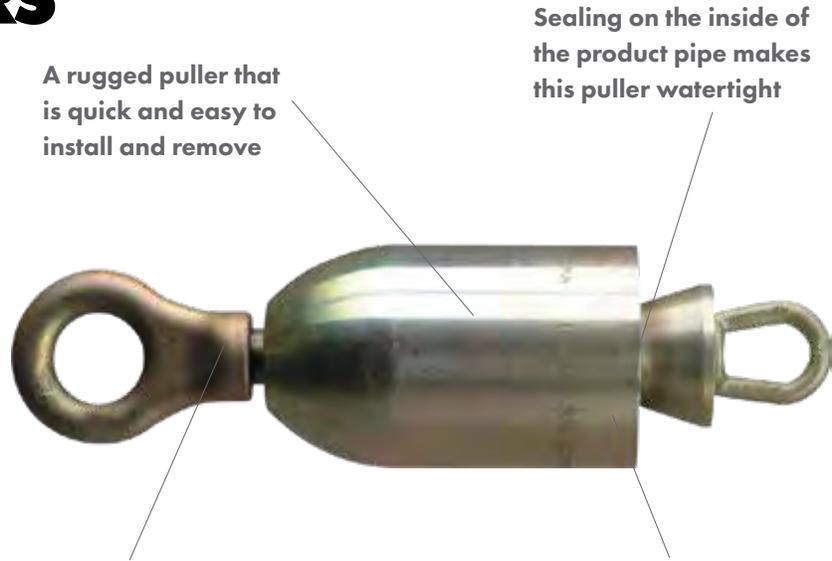


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SUPER DELUXE DUCT PULLERS

Super Deluxe Duct Pullers		
Duct Size	I.D.	Part #
1¼"	1.18" to 1.68"	00660-125
1½"	1.39" to 1.92"	00660-150
2"	1.68" to 2.40"	00660-200
2½"	2.24" to 2.90"	00660-250
3"	2.55" to 3.52"	00660-300
4"	3.31" to 4.52"	00660-400
5"	4.29" to 5.61"	00660-500
6"	5.20" to 6.69"	00660-600
8"	6.71" to 8.80"	00660-800



A rugged puller that is quick and easy to install and remove

Sealing on the inside of the product pipe makes this puller watertight

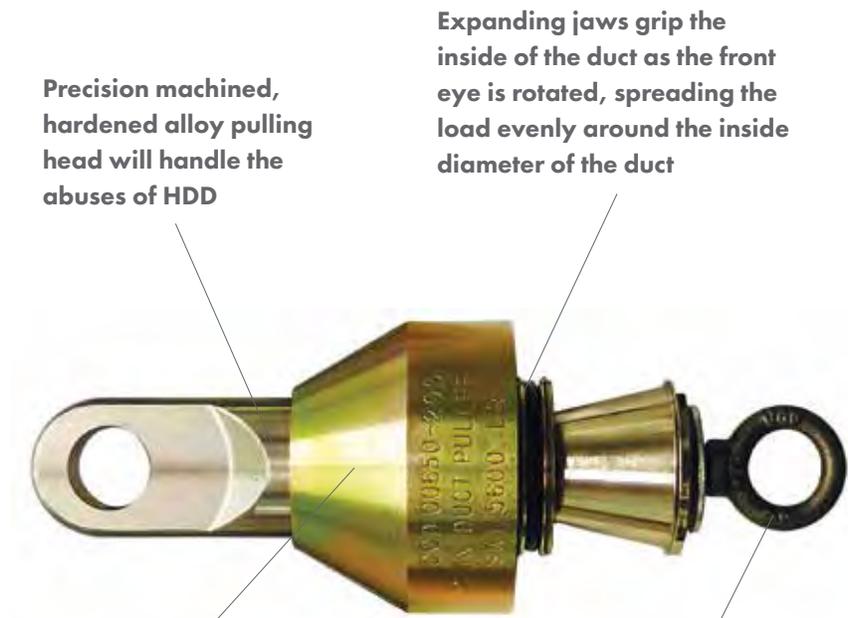
High-tensile drop-forged eyebolt

Can be disassembled by hand for easy maintenance in the field

DELUXE DUCT PULLERS

Deluxe Duct Pullers		
Duct Size	I.D.	Part #
1¼"	1.25" to 1.50"	00650-125
1½"	1.44" to 1.69"	00650-150
2"	1.81" to 2.19"	00650-200
2½"	2.19" to 2.56"	00650-250
3"	2.69" to 3.06"	00650-300
4"	3.44" to 4.25"	00650-400
5"	4.31" to 5.13"	00650-500
6"	5.06" to 6.06"	00650-600

* Metric sizes available



Precision machined, hardened alloy pulling head will handle the abuses of HDD

Expanding jaws grip the inside of the duct as the front eye is rotated, spreading the load evenly around the inside diameter of the duct

Outer sleeve prevents stretching of duct

Oversized rear eye

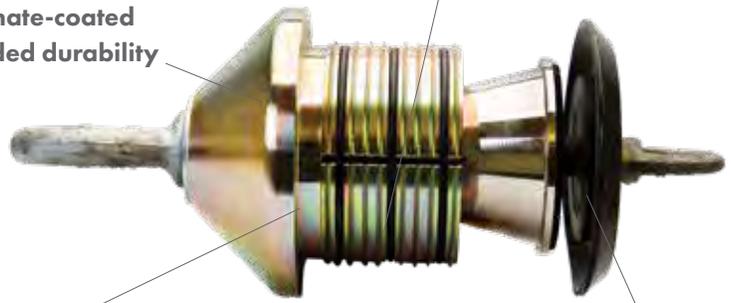
PREMIUM DUCT PULLER

Premium Duct Pullers		
Duct Size	I.D.	Part #
1/4"	1.28" to 1.61"	00616-125
1/2"	1.44" to 1.81"	00616-150
2"	1.81" to 2.19"	00616-200
2 1/2"	2.19" to 2.62"	00616-250
3"	2.69" to 3.12"	00616-300
4"	3.31" to 4.06"	00616-400
5"	4.25" to 5.06"	00616-500
6"	4.87" to 6.19"	00616-600

* Metric sizes available

Puller head made from zinc dichromate-coated steel for added durability

Fewer moving parts for easy repair and maintenance



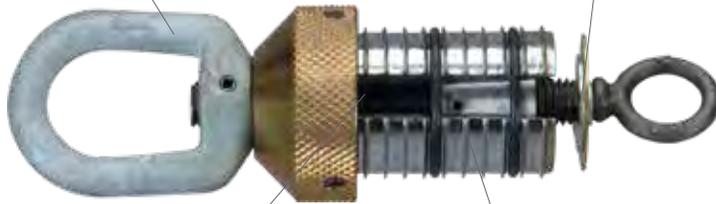
Expanding jaws securely grip inside wall of duct

Comes standard with a polyurethane plunger

STANDARD DUCT PULLERS

Quick and easy to install with no special tools required

Plungers available to keep mud out



Expanding jaws securely grip inside wall of duct

Large number of jaw teeth (compared to other brands) result in a stronger grip

Premium Duct Pullers		
Duct Size	I.D.	Part #
1/4"	1.28" to 1.50"	00620-125
1/2"	1.47" to 1.69"	00620-150
2"	1.88" to 2.12"	00620-200
2 1/2"	2.25" to 2.50"	00620-250
3"	2.75" to 3.06"	00620-300
4"	3.50" to 4.06"	00620-400
5"	4.50" to 5.00"	00620-500
6"	5.44" to 6.12"	00620-600
8"	6.44" to 7.87"	00620-800
10"	Please specify SDR	00620-1000
12"	Please specify SDR	00620-1200

* Metric sizes available

INNERDUCT PULLERS

Innerduct Pullers		
Duct Size	I.D.	Part #
3/4"	0.72" to 0.93"	00604-075
1"	0.94" to 1.15"	00604-100
1 1/4"	1.26" to 1.44"	00604-125
1 1/2"	1.48" to 1.66"	00604-150
2"	1.91" to 2.08"	00604-200

Phenomenal gripping power

Economical means of pulling small diameter duct and innerduct



No moving parts and maintenance free

Double cutting edges that actually cut a thread into the duct

BREAKAWAY CONNECTORS & PINS

Designed to protect polyethylene ducting from overload during installation.

Keep the assembly shorter by using the Breakaway Swivel. Or use the Breakaway Connector with your existing swivel and higher break points.

Light-Duty Breakaway Swivel

Break strengths from 750 lb to 2,500 lb

Utilizes up to 5 pins that are designed to break in tension at a specific load



Medium-Duty Breakaway Swivel

Break strengths from 750 lb to 12,500 lb

Protect your duct from failure

Designed to protect polyethylene ducting from overload during installation



Light-Duty Breakaway Connectors and Pins	
Description	Part #
Breakaway Connector	00560-010
Pin Kit (5 per kit)	Part #
750 lb. pin kit	00565-075
1,000 lb. pin kit	00565-100
1,500 lb. pin kit	00565-150
2,000 lb. pin kit	00565-200
2,500 lb. pin kit	00565-250

Heavy-Duty Breakaway Connectors and Pins	
Description	Part #
Breakaway Connector	00560-020
Pin Kit (5 per kit)	Part #
3,000 lb. pin kit	00565-300
6,000 lb. pin kit	00565-600
7,000 lb. pin kit	00565-700
8,000 lb. pin kit	00565-800
9,000 lb. pin kit	00565-900

Breakaway Swivel	
Description	Part #
Pins you can use: 00565-075 - 00565-250	
2.5 Ton Swivel Capacity	00570-202
7.5 Ton Swivel Capacity	00570-208

Light-Duty Breakaway Connector

Break strengths from 750 lb to 12,500 lb



Heavy-Duty Breakaway Connector

Break strengths from 3,000 lb to 45,000 lb



Color-Coded Breakaway Pins



SHACKLES

Shackles	
Size	Part #
7/16"	SHACKLE-7/16
5/8"	SHACKLE-5/8
3/4"	SHACKLE-3/4
7/8"	SHACKLE-7/8
1"	SHACKLE-100

These sturdy shackles connect all sizes of pulling grips and pullers.



PULLING GRIPS

Standard-Duty Wire Mesh Pulling Grips			
Duct Size	Outer Diameter Range	Breaking Strength	Part #
1/4"	.24" to .37"	4,250 lbs	00670-025
3/8"	.38" to .74"	5,000 lbs	00670-038
1/2" & 3/4"	.75" to 1.12"	6,600 lbs	00670-050
1"	1.13" to 1.49"	10,000 lbs	00670-100
1 1/4" & 1 1/2"	1.50" to 1.99"	13,800 lbs	00670-125
2"	2.00" to 2.49"	14,200 lbs	00670-200
2 1/2"	2.50" to 2.99"	17,500 lbs	00670-250

Heavy-Duty Wire Mesh Pulling Grips			
Duct Size	Outer Diameter Range	Breaking Strength	Part #
3/8"	.50" to .74"	5,800 lbs	00680-038
1/2" & 3/4"	.75" to 1.12"	6,700 lbs	00680-050
1"	1.13" to 1.49"	10,000 lbs	00680-100
1 1/4" & 1 1/2"	1.50" to 1.97"	16,400 lbs	00680-125
2"	2.00" to 2.50"	18,500 lbs	00680-200
2 1/2"	2.50" to 2.99"	24,500 lbs	00680-250
3"	3.00" to 3.74"	24,500 lbs	00680-300
4"	4.25" to 4.99"	31,000 lbs	00680-400



Standard-Duty

Made with a double weave of galvanized wire for maximum durability

At least a 2X safety factor

Return weave design so there are no crimped ends at the trailing end



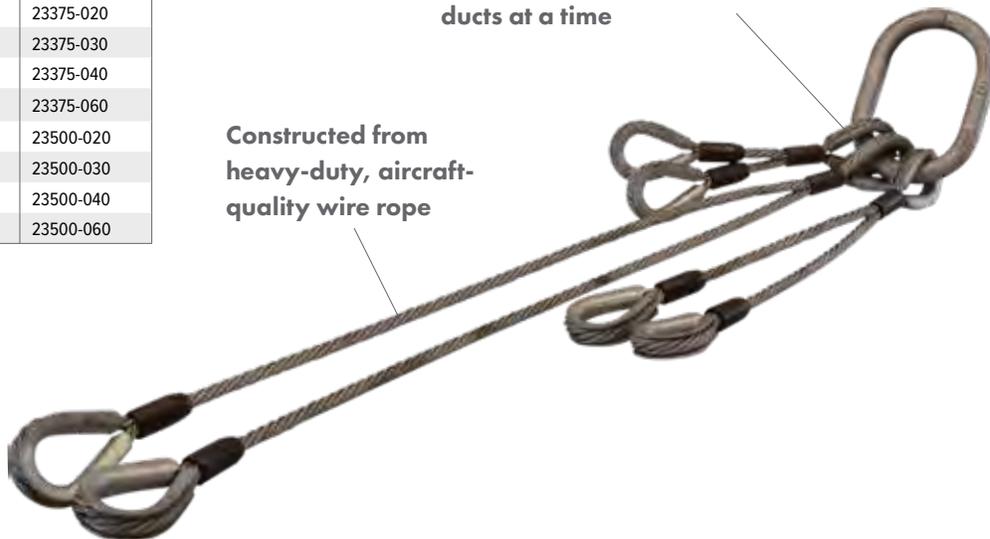
Heavy-Duty

PULLING SLINGS

Multi-Duct Pulling Slings		
Cable	Total Working Load	Part #
2-way, 3/8"	9,600 lbs	23375-020
3-way, 3/8"	14,400 lbs	23375-030
4-way, 3/8"	19,200 lbs	23375-040
6-way, 3/8"	28,800 lbs	23375-060
2-way, 1/2"	13,800 lbs	23500-020
3-way, 1/2"	20,700 lbs	23500-030
4-way, 1/2"	27,600 lbs	23500-040
6-way, 1/2"	41,400 lbs	23500-060

An inexpensive and effective way to hook up and pull 2 to 6 ducts at a time

Constructed from heavy-duty, aircraft-quality wire rope



MULTI-DUCT PULLING PACKER

Actual pulling device is protected by a heavy-duty packer housing

A simple and secure means of pulling several ducts at one time

Large variety of duct size combinations can be pulled

Packer provides a gradual transition from the swivel

Can be used with the Series 00616, 00620, 00650 or 00604 puller



Custom configurations available. Call 800.558.7500 for more information.

DRIVE CHUCKS & SUB-SAVERS

Protect the drill rod threads on your Vermeer Navigator[®] and Ditch Witch Jet Trac[®]

“Borzall has a great selection of drive chucks to fit our drills and drill rod. The high quality is long lasting and adds to the life of our drill rod. Using Borzall’s Drive Chucks solves the problem of prematurely wearing out the threads.”



Scan for more info



DRIVE CHUCKS & SUB-SAVERS FOR VERMEER NAVIGATOR® & DITCH WITCH JET TRAC®

Changing out worn sub-savers and drive chucks is an inexpensive and easy way to get the maximum life out of your drill rod. If they are allowed to wear too much, a drill rod's threads will start to deform to the shape of the worn sub-saver threads. When attaching the drill rod to the sub-saver or chuck, be sure to torque it up to the correct pressure.



Pro Driller Tip:
Don't forget the Auntie C's thread lube! See page 63

Drive Chucks For Vermeer® Drill Rigs		
Drill Rig Model	Drive Flange Part #	Sub-Saver Part #
D7x11	VF-31M-FO-V	VS-31M-31F-V
D7x11 Series 2		VS-31M-32F
D9x13 Series 2		VS-31M-32F
D10x15	VF-31M-FO-V	VSL-31M-31F
D16x20	VS-32M-FO-V	VS-32M-32F-V
D16x20 Series 2		VS-32M-40F
D20x22		VS-30M-40F
D24x26	VFL-30M-FO	VSL-30M-30F
D24x40 - s/n 383 and lower	VF-40M-FO	VS-40M-40F-5.5
D24x40 - s/n 384 and higher	VF-40M-FO	VS-40M-40F-7.0
D24x40 Series 2		VS-40M-40F-9.5
D23x30, D24x40 Series 3		VS-40M-40F-10.1
D36x50, FS650 thread		VS-46M-46F
D36x50, FS700 thread		VS-41M-41F
D50x100, FS900 thread	VF-80F-FO	VS-80M-50M
D50x100, FS800 thread	VF-80F-FO	VS-80M-80M
D60x90		VS-50M-50F
D80x100	VF-80F-FO	VS-80M-80M
D80x120		VSL-80M-80F

CNC-machined for a perfect match with your drill rod



Glue kit available for sub-savers

Completely heat-treated alloy for maximum durability



Most drive chucks are available with a replaceable, inexpensive sub-saver

Drive Chucks For Ditch Witch® Rigs		
Drill Rig Model	Drive Flange Part #	Sub-Saver Part #
JT5	DF-04F	
JT520 - version 2	DF-05F2	
JT920 - fine thread	DF-01AF	
JT922 - fine thread	DF-922-01AF	
JT922 - coarse thread	DF-09F	
JT1220	DF-34F	
JT1720	DF-86F	
JT2020	DF-20F	
JT2720	DF-35F	
JT30	DF-25F	DS-25M-36F
JT3020	DF-25F	DS-25M-36F

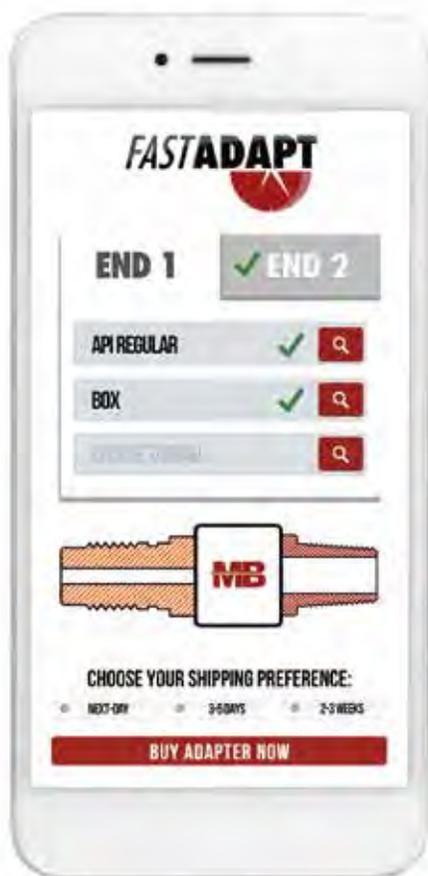
ADAPTERS

When the going gets tough,
we make it easy to adapt.

Our sturdy adapters seamlessly connect your Melfred Borzall tools to any Vermeer®, Ditch Witch® or other OEM drill rig connection. Choose from hundreds of stock adapter configurations or create your own custom adapter using our FastAdapt configurator or just give us a call. Whether stock or custom, we can ship your adapter the same day you order it, so you can get back to work fast.



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Configure Your Custom Adapter at
www.melfredborzall.com/fastadapt

FAST ADAPT PROGRAM

No matter what tools you're trying to connect, we can machine high-quality, sturdy adapters that are guaranteed to work. Not only do we have a ton of adapter configurations on the shelf, we can build custom adapters on the same day you order them and get them to you fast.

Adapters can be used with
Melfred Borzall reamers
and transmitter housings

Precision, CNC-machined
from US sourced, heat-
treated alloy steel

Adapters also available
with Mud Boost fluid
ports (see page 13)



COMMON STOCK ADAPTERS

Adapters for Vermeer® Threads					
Drill Rig	Front Thread ▶	2" IF Pin	2-3/8" Reg Pin	2-7/8" IF Pin	3-1/2" IF Pin
	Connection Type ▼	Part #	Part #	Part #	Part #
D6x6, D7x11, D7x11 S2, D9x13 S2/S3, D10x15	QF300	21M-L300MV3	23M-L300MV3		
	1-5/8" Low Profile QD	21M-L42M	23M-L42M		
	FS200 Drill Rod	21M-31F	23M-31F		
D16X20, D16X20 S2, D18X22	QF400	21M-L400MV3	23M-L400MV3		
	2-1/8" Low Profile QD	21M-L43M	23M-L43M		
	FS250 Drill Rod	21M-32F	23M-32F		
D20X22 S2/S3, D24X26	QF400	21M-L400MV3	23M-L400MV3		
	2-1/8" Low Profile QD	21M-L43M	23M-L43M		
	FS400 Drill Rod	21M-30F	23M-30F		
D23X30, D24X40, D24X40 S2/S3	QF400	21M-L400MV3	23M-L400MV3		
	2-1/8" Low Profile QD	21M-L43M	23M-L43M	27M-L43M	
	FS600 Drill Rod	21M-40F	23M-40F	27M-40F	
D33x44, D36x50, D36x50 S2 D40X55	QF460	21M-L460MV3	23M-L460MV3	27M-L460MV3	
	2-1/8" Low Profile QD	21M-L43M	23M-L43M	27M-L43M	
	FS650 Drill Rod		23M-46F	27M-46F	
	FS700 Drill Rod		23M-41F	27M-41F	
D50x100, D60X90	FS900 Drill Rod		23M-50F	27M-50F	
D80x100, D80x100 S2	FS800 Drill Rod			27M-80F	29M-80F
D80x120, D100x120	FS802 Drill Rod			27M-81F	29M-81F
D100x120, D100x140	FS1000 Drill Rod			27M-82F	29M-82F

Adapters for Ditch Witch® Threads					
Drill Rig	Front Thread ▶	2" IF Pin	2-3/8" Reg Pin	2-7/8" IF Pin	3-1/2" IF Pin
	Connection Type ▼	Part #	Part #	Part #	Part #
JT5, JT520	1.31-6 EZ-Connect	21M-L52F			
	1.10 Drill Rod	21M-04M			
JT9, JT920, JT921, JT922	1.63-6 EZ-Connect	21M-L55F			
	1.30-5 (coarse) Drill Rod	21M-09M			
	1.41-6 (fine) Drill Rod	21M-01M			
JT1220 Mach1	1.88-6 EZ-Connect	21M-L58F			
	1.47-4 Drill Rod	21M-34M	23M-34M		
JT1720	2.00-6 EZ-Connect	21M-L54F	23M-L54F		
	1.81-6 Drill Rod	21M-86M	23M-86M		
JT20, JT2020, JT2720	2.00-6 EZ-Connect	21M-L54F	23M-L54F		
	1.94-4 Drill Rod	21M-35M	23M-35M		
JT2720 Mach1	2.25-6 EZ-Connect		23M-L56F	27M-L56F	
	2.11-4 Drill Rod	21M-36M	23M-36M	27M-36M	
JT40	2.63-6 EZ-Connect		23M-L57F	27M-L57F	
	2.10 Drill Rod		23M-48M	27M-48M	
JT25, JT3020, JT30	2.25-6 EZ-Connect 3	21M-L59F	23M-L59F	27M-L59F	
	2.11-4 Drill Rod	21M-36M	23M-36	27M-36M	
JT4020	2.63-6 EZ-Connect		23M-L57F	27M-L57F	
	2.40-4 Drill Rod		23M-42M	27M-42M	
JT4020 Mach1	2.63-6 EZ-Connect		23M-L57F	27M-L57F	
	2.59-4 Drill Rod		23M-43M	27M-43M	
JT60	2.85-6 EZ-Connect			27M-60M	
	2.46-4 Drill Rod			27M-50M	
	FS900 Drill Rod				
JT7020, JT8020, JT100	3.27-4 Drill Rod			27M-72M	29M-72M

PARTS & ACCESSORIES

Drilling parts and accessories to reinforce HDD tools and the drillers who depend on them

“Whether we are drilling in the heat of summer or extreme cold conditions in winter, we can count on Borzall’s Auntie C’s to get us through tough conditions. Auntie C’s is the best thread lube we’ve come across and has kept our threads in great condition, making our drill rod last a lot longer.”



Scan for more info



AUNTIE C'S THREAD LUBE

Auntie C's Thread Lube		
Description	Part #	Arctic Grade Part #
20 oz. tube	AS-402-JT	
10 lb. (1 gal.) pail	AS-410	AS-410-AG
20 lb. (2 gal.) pail	AS-420	AS-420-AG
45 lb. (5 gal.) pail	AS-445	AS-445-AG

Lead-free, environmentally safe compound with no zinc or temperature-sensitive materials

New 5-gallon bucket in Arctic Grade for cold conditions and for rigs with auto-luber to get all the lube out

Pro Driller Tip: For rigs with auto-lubers, we recommend using the Arctic Grade Auntie C's

Provides maximum protection against galling and seizing

Premium copper thread lube designed specifically for the demands of HDD



DRILL ROD WIPERS

Drill Rod Wipers			
Drill Pipe Diameter Range	Solid 9" Wiper Part #	Split Wiper Part#	Dual Split Wiper Part#
1.6" - 1.75"	WIPE-31	WIPE-31-SPLIT	
1.75" - 2.25"	WIPE-32	WIPE-32-SPLIT	WIPE-32-DUALSP
2.25" - 2.6"	WIPE-40	WIPE-40-SPLIT	WIPE-40-DUALSP
2.6" - 3.1"	WIPE-50		WIPE-50-DUALSP
3.1" - 3.5"	WIPE-80		WIPE-80-DUALSP

High quality solid rubber wiper keeps drill rod clean

Direct replacement for most OEM wipers

Split 9" Wiper

Solid 9" Wiper

Dual-split 9" Wiper



ZAPALERT STRIKE ALARM & TESTER

Zapalert	
Description	Part #
12/24V Zapalert	1750-P
Grounding Stake	1750-GS
Grounding Cable	1750-GC
Zapalert Tester	1760

Easily installs on HDD rigs

Tested from 100 to 100,000 volt

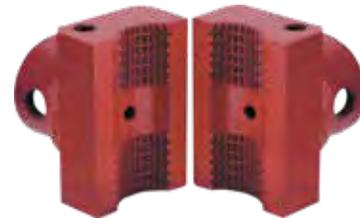
Retrofit Zapalerts and parts available for Vermeer® Navigator internal Zapalert



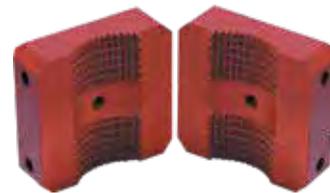
BREAKOUT JAWS

Breakout Jaws - DitchWitch® Compatible		
Drill Rig	Jaw Type	Part #
JT922	Insert	JAW-01-INS
JT922	Insert	JAW-20-INS
JT2720M1, JT3020, JT4020M1	Insert	JAW-37-INS
JT8020, JT100	Insert	JAW-100-INS

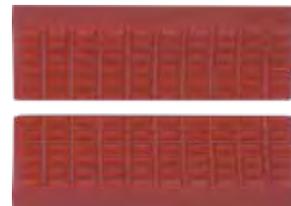
Breakout Jaws - Vermeer® Compatible		
Drill Rig	Jaw Type	Part #
D24a, D24x26	Stationary	JAW-30
D7x11, D10x15	Stationary	JAW-31
D7x11, D10x15	Cylinder	JAW-31-CT
D16x20	Stationary	JAW-32
D16x20	Cylinder	JAW-32-CT
D33x44	Stationary	JAW-33
D33x44	Insert	JAW-33-INS
D36x50	Stationary	JAW-36
D24x40a	Stationary	JAW-40
D24x40	Insert	JAW-40-INS
D40x40	Cylinder	JAW-40-CT
D50x100, 2 7/8" rod	Cylinder	JAW-50-CT
D50x100, 2 7/8" rod	Insert	JAW-50-INS
D50x100, D80x100, 3 1/2" rod	Cylinder	JAW-80-CT
D80x100, 3 1/2" rod	Insert	JAW-80-INS
D100x120, 3 1/2" rod	Insert	JAW-120-INS



Cylinder Side Breakout Jaws:
Breakout wrench replacement jaws



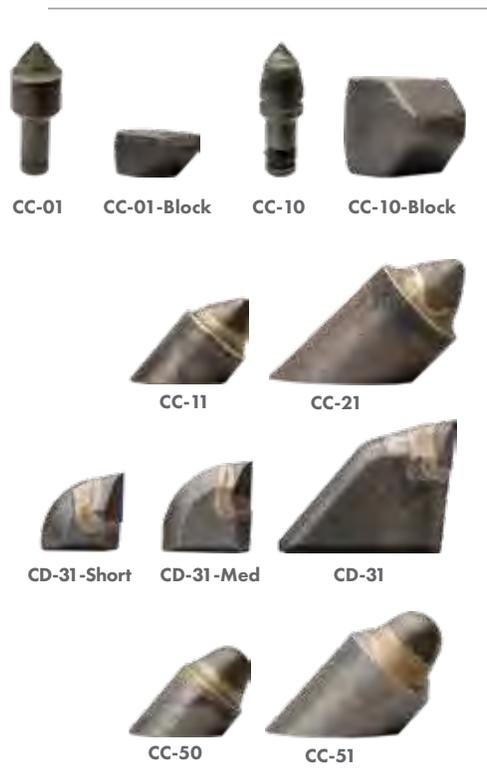
Stationary Side Breakout Jaws:
High quality replacement jaws



Breakout Jaw Inserts:
High quality replacement jaw inserts

REPLACEMENT CUTTERS AND BLOCKS

Carbide Cutter Teeth				
Description	Width	Height	Thickness	Part #
Conical cutter – Small	½"	2 ½"		CC-01
Cutter block – Small	1 ½"	¾"		CC-01-BLOCK
Conical cutter – Large	¾"	3 ¾"		CC-10
Cutter block – Large	2 ¼"	1 ¾"		CC-10-BLOCK
Angled conical cutter– Small	¾"	¾"		CC-11
Angled conical cutter – Large	1"	1 ½"		CC-21
Shark Tooth® cutter – Small	1 ¼"	1 ¼"	⅞"	CD-31-SHORT
Shark Tooth® cutter – Medium	1 ½"	1 ½"	¾"	CD-31-MED
Shark Tooth® cutter – Large	2 ¾"	2 ½"	⅞"	CD-31
Angled dome cutter – Small	¾"	1 ¾"		CC-50
Angled dome cutter– Large	1"	2"		CC-51



High-quality carbide cutter teeth to rebuild your HDD tools fast and accurately.

ELECTRICAL SAFETY BOOTS, SHOES & GLOVES

Safety Shoes & Boots	
Description	Part #
Over-the-shoe Safety Shoe	1830-SH
Over-the-shoe Safety Boot	1830-BT

Safety Gloves	
Description	Part #
Rubber glove	1820-GLV
Leather protector	1820-PRO
Glove storage bag	1820-BAG

Conform with ASTM F1117 and tested to 20,000 volts



Boots are a 12" over-the-shoe style

Leather protectors go over to protect rubber glove from damage

Dielectric rubber gloves rated for usage at up to 17,000 volts

Meets ASTM specification D-120



Half and whole sizes available