

2016 Melfred Borzall Reference Catalog

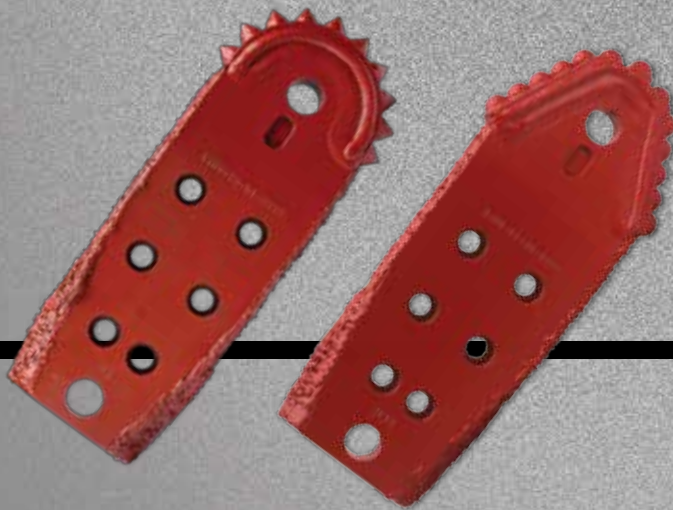
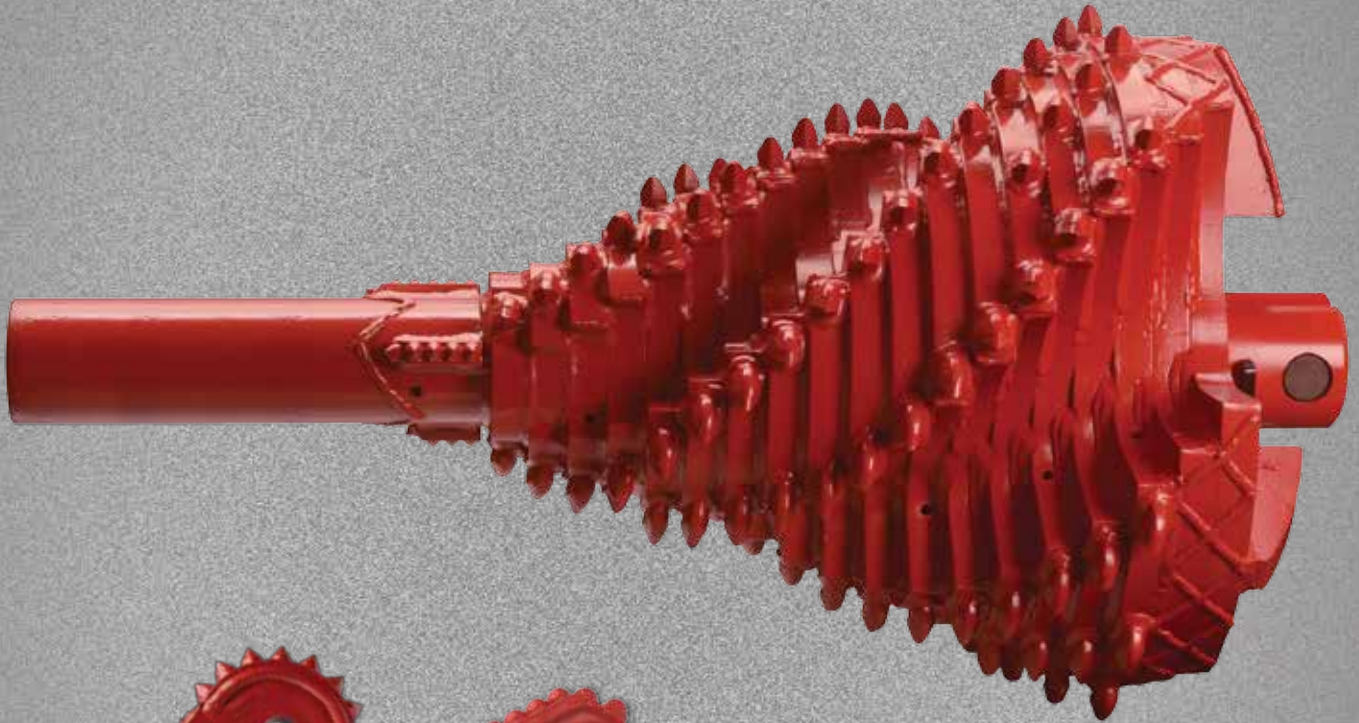


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# HDD Tools

Volume 1, 2016



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**MELFRED  
BORZALL**

**70**  
ANNIVERSARY  
1946 2016

Nothing bores like a Borzall!

# DRILL RIG CHART

The chart below lists the Melfred Borzall drill rod and quick-disconnect thread numbers for current drill rigs.  
Drill rig manufacturer's OEM threads are listed for reference.

Vermeer®	Thrust	Drill Rod Thread		Quick-Disconnect Thread				Notes
		OEM	MB#	OEM Opt 1	MB# Opt 1	OEM Opt 2	MB# Opt 2	
D7x11 S1 & S2	7,000 lb	FS200	31	1.625 LP	L42	QF300		
D9x13 S1 & S2	9,000 lb	FS200	31	1.625 LP	L42	QF300		
D10x15	10,000 lb	FS200	31	1.625 LP	L42	QF300		
D16x20	16,000 lb	FS250	32	2.125 LP	L43	QF400		
D16x20 S2	16,000 lb	FS250	32	2.125 LP	L43	QF400		
D18x22	18,000 lb	FS250 / FS400	32 /30	2.125 LP	L43	QF400		
D20x22 S2 & S3	20,000 lb	FS400	30	2.125 LP	L43	QF400		
D23x30 S3	23,000 lb	FS400 / FS600	30-40	2.125 LP	L43	QF400		
D24x26	24,000 lb	FS400	30	2.125 LP	L43	QF400		
D24x40 S1,S2 & S3	24,000 lb	FS600	40	2.125 LP	L43	QF400		
D33x44	33,000 lb	FS602 / FS650	33 / 46	2.125 LP	L43	QF400		
D36x50 S1 & S2	36,000 lb	FS602 / FS650 / FS700	33 / 46 / 41	2.125 LP	L43	QF460		
D36x50 DR	36,000 lb	FS750 *		2.125 LP	L43	QF700		
D40x40	40,000 lb	FS600	40	2.125 LP	L43	QF400		
D45x50	45,000 lb	FS700	41	2.125 LP	L43	QF460		
D50x100	50,000 lb	FS900	50					
D60x90	60,000 lb	FS900	50					
D80x100 & D80x120	80,000 lb	FS800	80					
D100x140	100,000 lb	FS1000	82					
<b>Ditch Witch®</b>								
JT5	5,000 lb	1.10-4	04	1.31-6	L520			
JT520	5,000 lb	1.21-6	05	1.31-6	L520			
JT920, JT920L, JT921	9,000 lb	1.41-6	OIA	1.63-6	L55	HE275		
JT922, JT9	9,000 lb	1.30-5	09	1.63-6	L55	HE275		
JT1220 M1	12,000 lb	1.47-4	34	1.88-6 EZ-3	L58	HE275 / HE350		
JT1720 M1	17,000 lb	1.69-6	86	2.00-6	L54	HE350		
JT20, JT2020 M1	20,000 lb	1.94-4	20	2.00-6	L54	HE350		
JT25, JT30, JT3020 M1	25 - 30,000 lb	2.11-4	36	2.25-6 EZ-3	L59	HE350 / HE390		
JT2720	27,000 lb	1.94-4	35	2.00-6	L54	HE350		
JT2720 M1	27,000 lb	2.11-4	36	2.25-6 EZ-2	L56	HE350 / HE390		
JT2720 AT	27,000 lb	2.77DS *		2.25-6	L56			
JT30 AT, JT3020 AT	30,000 lb	2.77DS *		2.25-6 EZ-3	L59	HE350 / HE390		
JT4020	40,000 lb	2.40-4	42	2.63-6	L57	HE350 / HE390		
JT4020 M1	40,000 lb	2.59-4	43	2.63-6	L57	HE350 / HE390		
JT4020 AT / JT60AT	40,000 lb	3.25 *						
JT60	60,000 lb	2.46-4 / FS900	N/A / 50	3.50-4				
JT7020, JT8020 M1, JT100	70 - 100,000 lb	3.27-4	72	3.50-4				
JT100 AT	100,000 lb	3.44 *						
<b>Astec®/Toro®</b>								
DD65	6,500 lb	FS200	31		L65			
DD1215, DD1416	12,000 lb	FS400	30		L58			
DD2024	20,000 lb	FS400	30		L54			
DD3238	32,000 lb	FS600 / 38	40 / 38	2.125 LP	L43			
DD4045 14050	40,000 lb	FS602	33	2.125 LP	L43			
DD9014	90,000 lb	2-7/8 IF	27					
<b>American®</b>								
DD4	40,000 lb	2-3/8 MJ & FS400	13 & 30					
DD5	50,000 lb	2-7/8 IF	27					
DD6	60,000 lb	2-7/8 IF	27					
DD8	80,000 lb	2-7/8 IF	27					
DD10	100,000 lb	2-7/8 IF & FS802	27 & 81					
DD110	110,000 lb	3 1/2 IF	29					
DD140	140,000 lb	4 1/2 IF RANGE 2	47					

\*Rod is in a rod system

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## WHO WE ARE

Since 1946, when Fred Melsheimer introduced the first commercial horizontal drilling system to the public, HDD contractors have trusted Melfred Borzall tools for versatile selection, dependable quality and outstanding value. After more than half a century of ongoing development and innovation, Melfred Borzall's HDD tools continue to lead the industry with quality construction, productive designs and value pricing. To this day, our engineers keep pushing and expanding the boundaries of HDD tool development giving you maximum production with your drilling operation.



## HOW WE OPERATE

Our signature red tools are built in a state-of-the-art manufacturing plant in Santa Maria, CA. Our tools and parts are welded, machined, milled and turned using Computer Numerical Control (CNC) machining and robotic welding centers. Our engineers use Computer Aided Manufacturing (CAM) programs to design our HDD tooling. Utilizing CAM and CNC automation provides consistent quality, flexibility in design, and cuts down manufacturing time; a savings we pass down to our customers by providing high quality tools at reasonable prices. To further cut manufacturing costs, we utilize approximately 1,000 photovoltaic (solar) panels to help run the manufacturing and office systems. So when you see the "Made with Solar Power" symbol, you can rest assured that not only are our tools manufactured to the highest standards, they are made "green" as well.

## YOUR SATISFACTION IS OUR #1 PRIORITY

If you're not happy, we're not happy. That's why we offer the best money-back guarantee in the industry. Our customer service personnel and our distributors are very experienced with HDD tools and very focused on ensuring you get the tool that will make you most productive in your operation. We'll work with you to make sure you're 100% satisfied with your purchase. We offer this extraordinary guarantee because we go to great lengths to provide our customers the highest quality products available. We also offer "**Fast Ship**" — orders for in-stock items placed before 6 p.m. EST ship the same day.



# TRANSMITTER HOUSINGS

- Engraved batch number to trace material, heat treat, and manufacturing date; engraved part number for identification
- Bolt-On housings incorporate the Super Nozzle designed to minimize clogging
- Thread-milled bolt holes give a better quality thread and allow more threads to engage
- Epoxied slots minimize the transmitter's exposure to mud and debris
- Heat-treated, chrome-nickel-moly alloy steel for maximum strength and durability – the same high strength, fatigue-resistant steel used in landing gears and propeller shafts
- Removable, replaceable tail-piece increases life of housing, while standard API threads adapt to various rigs

## SIDE-LOAD, BOLT-ON



## SIDE-LOAD, BOLT-ON One-Piece Housing



## SIDE-LOAD, THREAD-ON



Notes:

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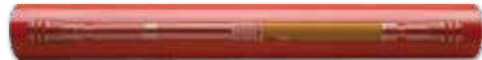
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Capacity	Diameter	Rear Thread	Bolt Pattern	Bolt-On Housing Part #	Replacement Lid Part #	Housing Lid Bolts Part #
<b>Bolt-On Using DigiTrak for Vermeer® Drills</b>						
< 6,000 lb.	2"	1.21-6 Box	3-bolt, 10mm	1720-HM-09	1720-HM-09-CP	SHCS3/8X3/4
6,000 to 10,000 lb.	2.5"	FS200	5-bolt, 3/8"	3625-HT3-06	3625-HT3-CP	SHCS1/2X3/4-N
6,000 to 10,000 lb.	2.5"	2" IF Box	6-bolt, 1/2"	3625-HT3-13	3625-HT3-CP	SHCS1/2X3/4-N
10,000 to 20,000 lb.	2.75"	2" IF Box	6-bolt, 1/2"	3627-HT3-13	3627-HT3-CP	SHCS1/2X3/4-N
20,000 to 24,000 lb.	3"	2.125" LP Pin	6-bolt, 1/2"	2630-HT3-13-L43	2630-HT3-13-CP	*SHCS1/2X3/8-N & *SHCS1/8X5/8-N
20,000 to 40,000 lb.	3.25"	2.375" Reg Box	6-bolt, 1/2"	3632-HT3-13	3632-HT3-13-CP	SHCS1/2X3/4-N
<b>Bolt-On Using Subsite Beacons for Ditch Witch® Drills</b>						
< 6,000 lb.	2"	1.21-6 Box	3-bolt, 10mm	1920-HD-09	1920-HD-09-CP	SHCS3/8X3/4
6,000 to 20,000 lb.	2.5"	2" IF Box	5-bolt, 12mm	3927-HD3-14	3927-HD3-CP	SHCS12mmx20mm-N
20,000 to 30,000 lb.	3.25"	2.375" Reg Box	6-bolt, 16mm	3932-HD3-15	3932-HD3-CP	SHCS16mmx25mm-N
20,000 to 40,000 lb.	3.5"	2.375" Reg Box	6-bolt, 16mm	3935-HD3-15	3935-HD3-CP	SHCS16mmx25mm-N
<b>Super Nozzel Replacements</b>		<b>Hole Size</b>	<b>Part #</b>	<b>Hole Size</b>	<b>Part #</b>	<b>Hole Size</b>
		.125" hole	1600-1712	.156" hole	1600-1715	

\*Housing 2630-HT3-13-L43 uses both SHCS1/2X3/8-N & SHCS1/8X5/8-N bolts.

Capacity	Diameter	Rear Thread	Bit Thread	Thread-On Housing Part #	Replacement Lid Part #	Housing Lid Bolts Part #
<b>Thread-On Using DigiTrak for Vermeer® Drills</b>						
6,000 to 10,000 lb.	2.5"	2" IF Box	2" IF Box	3625-HT3	3625-HT3-CP	SHCS1/2X3/4-N
10,000 to 20,000 lb.	2.75"	2" IF Box	2" IF Box	3627-HT3	3627-HT3-CP	SHCS1/2X3/4-N
20,000 to 40,000 lb.	3.25"	2.375" Reg Box	2.375" Reg Box	3632-HT3	3632-HT3-CP	SHCS1/2X3/8-N
40,000 to 80,000 lb.	4.25"	2.875" IF Box	2.875" IF Box	3742-HT3	3742-HU3-CP	SHCS1/8X5/8-N
<b>Thread-On Using Subsite Beacons for Ditch Witch® Drills</b>						
6,000 to 20,000 lb.	2.5"	2" IF Box	2" IF Box	3927-HD3	3927-HD3-CP	SHCS12mmx20mm-N
20,000 to 30,000 lb.	3.25"	2.375" Reg Box	2.375" Reg Box	3932-HD3	3932-HD3-CP	SHCS16mmx25mm-N
20,000 to 40,000 lb.	3.5"	2.375" Reg Box	2.375" Reg Box	3935-HD3	3935-HD3-CP	SHCS16mmx25mm-N
40,000 to 80,000 lb.	4.25"	2.875" IF Box	2.875" IF Box	3942-HD3	3742-HU3-CP	SHCS1/2X3/4-N

# END-LOAD, HIGH-FLOW TRANSMITTER HOUSINGS



- Heat-treated, chrome-nickel-moly 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
- 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
- Accommodates DigiTrak 2-cell, 4-cell, and cable transmitters (Eclipse systems and newer); Subsite 86B, 86BV2 beacons
- For rigs from 20,000 to 160,000+ lbs. thrust
- Stainless steel springs support and cushion the transmitter allowing it to be used with air hammers, as well as mud motors
- Can be used with Mud Motors, Eagle Claw bits, Iron Fist bits and Bolt-On Bit Bodies

High-Flow Housings used with all locating systems					
Capacity	Diameter	Rear Thread	Front Thread	Part #	
< 40,000 lb.	3.5"	2.375" IF Box	2.375" Reg Box	ELH-350	
40,000 to 80,000 lb.	4.25"	2.875" IF Box	2.875" Reg Box	ELH-425	
80,000 to 140,000 lb.	4.875"	3.5" IF Box	3.5" Reg Box	ELH-487	
140,000 to 300,000 lb.	6.375"	4.5" IF Box	4.5" Reg Box	ELH-638	

Locator Kits for High-Flow Housings		
Locator Type	ELH-350, 425, 487 Part #	ELH-638 Part #
DigiTrak, 15"	ELH-DIGI-KIT	ELH638-DIGI-KIT
DigiTrak, 19"	ELH-DIGIXL-KIT	ELH638-DIGIXL-K
DigiTrak, 15" Green	ELH-DIGI-KIT-G	ELH638-DIGI-K-G
DigiTrak, 19" Green	ELH-DIGIXL-KIT-G	ELH638-DIGIXL-K-G
DigiTrak, Cable 15"	ELH-DIGIWIRE-KIT	ELH638-DIGWIR-K
Subsite, 86B	ELH-86B-KIT	ELH638-86B-KIT
Subsite, 86BV2	ELH-BV2-KIT	ELH638-BV2-KIT

# BOLT-ON BIT BODIES

For Thread-On Bit Style Housings

- Allows blades to be used with Thread-On and High-Flow style housings
- All configurations incorporate the Super Nozzle designed to minimize clogging



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 #
<b>Bolt-On Bit Body for Vermeer® Drills</b>				
1/2"	1725-13*	1632-13*		
3/8"			1742-23	
3/4"				3748-33
<b>Bolt-On Bit Body for Ditch Witch® Drills</b>				
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.

Notes:

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# FASTBACK SYSTEM

## FASTREAM TRANSMITTER HOUSINGS



- FastBack allows you to do backreams in tight spaces
- Pull back product without taking off the drill head

- Start pulling product within minutes of completing the pilot bore
- Fast and easy underground production that puts you ahead of the curve

### SIDE-LOAD, BOLT-ON FASTREAM STYLE



### SIDE-LOAD, THREAD-ON FASTREAM STYLE



Capacity	Diameter	Rear Thread	Bolt Pattern	Housing Part #	Fastream Blades Part #				Replacement Bolt
					6" Cut	8" Cut	10" Cut	12" Cut	
<b>Fastream Bolt-On Housing Using Digitrak for Vermeer® Drills</b>									
6,000 to 10,000 lb.	2.5"	2" IF Box	6-bolt, ½"	3625-HT3-13-FR	FR-250-TE-47-60	FR-250-TE-47-80	FR-250-TE-57-10		SHCS7/16 X 3.25
10,000 to 20,000 lb.	2.75"	2" IF Box	6-bolt, ½"	3627-HT3-13-FR	FR-275-TE-47-60	FR-275-TE-47-80	FR-275-TE-57-10	FR-275-TE-80-12	SHCS7/16 X 3.5
20,000 to 40,000 lb.	3.25"	2.375" Reg Box	6-bolt, ½"	3632-HT3-13-FR	FR-325-EX-35-60	FR-325-TE-57-80	FR-325-TE-57-10	FR-325-TE-80-12	SHCS7/16 X 4.0
<b>Fastream Bolt-On Housing Using Subsite Beacons for Ditch Witch® Drills</b>									
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	SHCS7/16 X 3.5
20,000 to 30,000 lb.	3.5"	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	SHCS7/16 X 4.0
20,000 to 40,000 lb.	3.5"	2.375" Reg Box	6-bolt, 16mm	3935-HD3-15-FR	FR-350-EX-35-60	FR-350-TE-57-80	FR-350-TE-57-10	FR-350-TE-80-12	SHCS7/16 X 4.25
Capacity	Diameter	Thread	Bit Thread	Housing Part #	Fastream Blades Part #				Replacement Bolt
					6" Cut	8" Cut	10" Cut	12" Cut	
<b>Fastream Thread-On Housing Using Digitrak for Vermeer® Drills</b>									
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		SHCS7/16 X 3
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	SHCS7/16 X 3.5
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	SHCS7/16 X 4.0
<b>Fastream Thread-On Housing Using Subsite Beacons for Ditch Witch® Drills</b>									
6,000 to 20,000 lb.	2.75"		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	SHCS7/16 X 3.5
20,000 to 30,000 lb.	3.25"		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	SHCS7/16 X 4.0
20,000 to 40,000 lb.	3.5"		2.375" Reg Box	3935-HD3-FR	FR-350-EX-35-60	FR-350-TE-57-80	FR-350-TE-57-10	FR-350-TE-80-12	SHCS7/16 X 4.25

### FASTREAM ADAPTERS FEATURING MUDBOOST PORT



- Extends the life of your transmitter housings and backreamers
- Allows different threads to be used on a single housing or backreamer

- Removable sealed plug maintains high pressure jet at the cutting end during the pilot bore
- Removing the plug and installing the Mud Boost port for the pullback reduces pressure and increases mud flow rate
- Mud Boost ports can be added to almost any adapter

### EAGLE EYE

Blade pullback device



- Eagle Eye and Iron Eye turns your Eagle Claw and Iron Fist bits into a great pullback device
- Carbide hardfacing and carbide cutters make these tools tough and long lasting

### IRON EYE

Blade pullback device



Part numbers and information found on page 5

### QUICK SWIVEL



- Do direct pullbacks without removing the drill head
- Quickly bolts on to most Borzall blades
- Swivel stays in line with the rotation of the drill head
- Made from the same quality components as the 5-ton Valu-DUB swivel

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 LINK



- Easily bolts onto any Borzall blade for direct pullbacks
- The swivel bolts directly to the Quick Link, holding it in-line with the rotation of the drill head
- More secure and faster than using multiple shackles

Quick 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

# BOLT-ON BLADES

## STEEP TAPER ULTRA BIT

For hard, compact soil and gravel



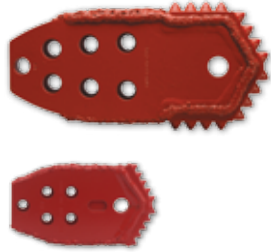
- Center point tooth for easier penetration
- Carbide cutters set in an aggressive angle to get through cobbles
- For ground that is hard to do directional "pushes"
- Chunky carbide hardfacing the entire length of blade for maximum longevity

**NOW AVAILABLE WITH THE CHOICE OF DOME OR CONICAL CUTTERS**

Steep Taper Ultra Bit					
	4"		5"		6"
Vermeer®	Conical	Dome	Conical	Dome	Conical
6-bolt, 1/2"	1600-13-40-BSU3	1600-13-40-BSUD	1600-13-50-BSU3	1600-13-50-BSUD	
6-bolt, 5/8"			1610-23-50-BSU3	1610-23-50-BSUD	1610-23-60-BSU3
Ditch Witch®					
5-bolt, 12mm	1600-14-40-BSU3	1600-14-40-BSUD			
6-bolt, 16mm	1600-15-40-BSU3	1600-15-40-BSUD	1600-15-50-BSU3	1600-15-50-BSUD	
6-bolt, 20mm					1610-25-60-BSU3

## ULTRA BIT

For hard, compact soil and gravel



- Conical carbide cutter blocks make this an aggressive bit
- Tapered, low-profile, design minimizes torque-stealing drag
- Chunky carbide hardfacing the entire length of blade for maximum longevity

Ultra Bit							
	3"	3.5"	4"	5"	6"	7.5"	9"
Vermeer®							
5-bolt, 3/8"	1600-06-30-BBU3	1600-06-35-BBU3					
6-bolt, 1/2"		1600-13-35-BBU3	1600-13-40-BBU3	1600-13-50-BBU3			
6-bolt, 5/8"					1610-23-60-BBU3		
6-bolt, 3/4"						1612-23-75-BBU3	1612-33-90-BBU3
Ditch Witch®							
5-bolt, 12mm		1600-14-35-BBU3	1600-14-40-BBU3	1600-14-50-BBU3			
6-bolt, 16mm			1600-15-40-BBU3	1600-15-50-BBU3			
6-bolt, 20mm					1610-25-60-BBU3		

## ROCK SAW

For hard, compact soil and gravel



**NOW AVAILABLE WITH THE CHOICE OF DOME OR CONICAL CUTTERS**

- Aggressive carbide cutters around front of blade facilitate forward and side cutting
- Low profile and contoured back design minimizes torque-stealing drag
- Chunky carbide hardfacing along the entire length of blade reduces wear

Rock Saw				
	4"		5"	
Vermeer®	Conical	Dome	Conical	Dome
6-bolt, 1/2"	1600-13-40-BBX3	1600-13-40-BBXD	1600-13-50-BBX3	1600-13-50-BBXD
6-bolt, 5/8"			1610-23-50-BBX3	1610-23-50-BBXD
Ditch Witch®				
5-bolt, 12mm	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

## EXCALIBUR

For clay and abrasive soil conditions



- Bullnose design minimizes drag while rotating
- Carbide button bits grind through tough ground conditions
- Strategically placed carbides along side give this blade a long, productive life

Excalibur				
	2.5"	3.5"	4"	5"
Vermeer®				
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®				
3-bolt, 10mm	1600-09-25-BBX			
5-bolt, 12mm		1600-14-35-BBX	1600-14-40-BBX	1600-15-50-BBX
6-bolt, 16mm			1600-15-40-BBX	

## BEAR CLAW

For hard, rocky soil conditions



- Hardfacing along all wear edges makes this one long-lasting blade
- Large conical carbide cutters to eat through shale, sandstone and other tough conditions

Bear Claw			
	3.5"	4"	5"
Vermeer®			
6-bolt, 1/2"	1600-13-35-BBBC	1600-13-40-BBBC	1600-13-50-BBBC
Ditch Witch®			
5-bolt, 12mm		1600-14-40-BBBC	
6-bolt, 16mm		1600-15-40-BBBC	1600-15-50-BBBC

## CHUNKY

For sand and sandy loams



- Heat-treated blade that is both economical and durable
- Low-profile, tapered design to minimize torque-stealing drag
- Cutting edges impregnated with carbide chunks resists wear

Chunky					
	2.5"	3.5"	4"	5"	6"
Vermeer®					
6-bolt, 1/2"		1600-13-35-BBVC	1600-13-40-BBVC	1610-13-50-BBVC	
6-bolt, 5/8"				1610-23-50-BBVC	1610-23-60-BBVC
Ditch Witch®					
3-bolt, 10mm	1600-09-25-BBVC				
5-bolt, 12mm		1600-14-35-BBVC	1600-14-40-BBVC		
6-bolt, 16mm			1600-15-40-BBVC	1610-15-50-BBVC	1610-15-60-BBVC

# HARD SOIL BITS

## EAGLE CLAW

For hard, rocky soil conditions



- Unique balanced cutting design improves cutting efficiency
- Aggressive tri-tooth carbide cutting action gets through the hardest conditions
- Smooth running with minimal vibration to drill stem and rig
- Precisely placed carbide buttons to minimize bit body wear

- Quick and easy change out of carbide cutter teeth
- Easily threads on to a side-load or high-flow housing
- Conical steering face for quicker reaction to directional "pushes"
- Different tooth styles to accommodate a wide variety of job conditions

Eagle Claw Hard Soil Bits					
Cut Size	Thread	Part#	Replacement Cutters		
			Aggressive Conical	Dome	Large Conical
3.5"	2" IF Pin	EC-35A1-21M	EC35-C-01	EC35-C-02	
4.25"	2" IF Pin	EC-42A1-21M	EC42-C-01	EC42-C-02	EC42-C-03
4.25"	2 3/8" Reg Pin	EC-42A1-23M	EC42-C-01	EC42-C-02	EC42-C-03
5"	2 3/8" Reg Pin	EC-50A1-23M	EC50-C-01	EC50-C-02	EC50-C-03
5.5"	2 7/8" Reg Pin	EC-55A1-26M	EC55-C-01	EC55-C-02	EC55-C-03
6.5"	2 7/8" Reg Pin	EC-65A1-26M	EC65-C-01	EC65-C-02	EC65-C-03
6.5"	3 1/2" Reg Pin	EC-65A1-28M	EC65-C-01	EC65-C-02	EC65-C-03

## EAGLE EYE

Fits Eagle Claw bit

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

- The Eagle Eye changes your Eagle Claw into a pullback device
- With the Eagle Eye you'll be ready for direct pull back in a matter of minutes
- Built with button carbides for long wear



## IRON FIST

For cobble conditions



- Contoured design
- Wrench flats for easy removal
- Ideal for drilling in cobble conditions
- Balanced cutters for downhole stability
- Built-in check valve to minimize chance of clogging

- Compact cutters – less likely to hang up on cobbles
- 1/4" recessed water holes to prevent clogging
- Main carbide cutters positioned to allow for "rocking" the bit through rocks

Iron Fist Hard Soil Bits								
Cut Size	Thread	Iron Fist with Conical Cutters	Iron Fist with Dome Cutters	Replacement Cutters				
				Conical-Left	Conical-Right	Dome-Left	Dome-Right	Side Cutters
4"	2" IF Pin	IF-40AC-21M	IF-40DC-21M	IF-40-C-01-L	IF-40-C-01-R	IF-40-C-02-L	IF-40-C-02-R	
5"	2 3/8" Reg Pin	IF-50AC-23M	IF-50DC-23M	IF-50-C-01-L	IF-50-C-01-R	IF-50-C-02-L	IF-50-C-02-R	IF50-C-01-S
6"	2 7/8" Reg Pin	IF-60AC-26M	IF-60DC-26M	IF-60-C-01-L	IF-60-C-01-R	IF-60-C-02-L	IF-60-C-02-R	CC-01X4
6"	3 1/2" Reg Pin	IF-60AC-28M	IF-60DC-28M	IF-60-C-01-L	IF-60-C-01-R	IF-60-C-02-L	IF-60-C-02-R	CC-01X4

## IRON EYE

Fits Iron Fist bit

Iron Eye	
Iron Fist Size	Part#
4"	IF40-FB-304
5"	IF50-FB-304

- Great for cobble conditions.
- The Iron Eye turns your Iron Fist into a great pullback device.
- The Iron Eye features carbide hard facing for longevity
- Add our ValuDUB Swivel for a fast, smooth pullback





# REAMERS

## OGRE

For cobbles, shale, river rock, glacial til and hardpan



- One tough, solid reamer with smooth, efficient cutting action and more cutters than any other reamer in its class
- Carbide blocks prevent shaft from wearing directly in front of reamer body
- Slow taper and deep spiraled fluting combine to give the Ogre maximum mixing and pumping
- Angled water holes keep the carbides clear of debris
- Hardfacing on all wear areas
- Curved, hard-faced back-up blades for added wear resistance during pushbacks
- Deep flutes carry away cuttings
- Available with flange for use with built-in swivels — see page 13

Ogre							
Cut Diameter	Pack Diameter	Shaft Diameter & Thread					
		3.25"		4.25"		4.75"	6.5"
		2 5/8" Reg box x box	2 3/8" Reg box x flange	2 7/8" IF box x box	2 5/8" IF box x flange	3 1/2" IF box x box	4 1/2" IF box x box
10"	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"	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"	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"	22"			95-24-27F-27F	95-24-27F-F32X	95-24-29F-29F	95-24-47F-47F
28"	26"			95-28-27F-27F	95-28-27F-F32X	95-28-29F-29F	95-28-47F-47F
30"	28"			95-30-27F-27F	95-30-27F-F32X	95-30-29F-29F	95-30-47F-47F
34"	32"			95-34-27F-27F	95-34-27F-F32X	95-34-29F-29F	95-34-47F-47F
36"	34"			95-36-27F-27F	95-36-27F-F32X	95-36-29F-29F	95-36-47F-47F
40"	38"						95-40-47F-47F

## SHREDDER

For sand with cobbles, sandstone and hardpan

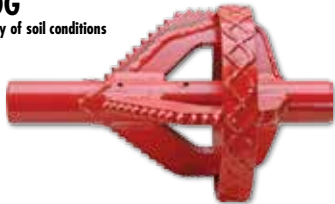


- Carbide tipped shark teeth efficiently rip through tough ground conditions
- Gradual taper of blades lessens torque requirements
- Drilling fluid is channeled out through the blades, as well as the shaft
- Back-up cutters make push-backs a breeze
- More cutter teeth than any other similar reamer
- Integrated "spider" support and stabilizer ring built into Shredders 18" and larger

Shredder					
Cut Diameter	Shaft Diameter & Thread				
	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"	69-08-21F-21F	69-08-23F-23F			
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		
14"	69-14-21F-21F	69-14-23F-23F	69-14-27F-27F	69-14-29F-29F	
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"		69-20-23F-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"			69-28-27F-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
48"			69-48-27F-27F	69-48-29F-29F	69-48-47F-47F

## HEDGEHOG

Works in a variety of soil conditions



- Economical – carbide cutters are built on blocks so they can be factory rebuilt at a lower cost than replacing the entire reamer
- Compact, aggressive reamer works in a variety of soil conditions
- Tapered blade for a smoother cutting action
- Reamers over 8" are built with a ring for strength and stability; reamers over 20" feature four blades
- Can be used as a "pull" or "push" reamer

Hedgehog					
Cut Diameter	Shaft Diameter & Thread				
	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

# TERMINATOR

For sticky clay, shale and sandstone



- Aggressive cutting with superior mixing action
- Efficient cutting action helps reduce pullback and rotary pressures
- An excellent choice for shale and sandstone
- Incredible mixing and pumping action makes this the ideal reamer for sticky situations
- Carbide tipped cutting blades are precisely positioned and angled so all the abuse is placed on the carbide tooth

Terminator					
Cut Diameter	Shaft Diameter & Thread				
	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	90-06-23F-23F			
8"	90-08-21F-21F	90-08-23F-23F			
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		
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"			90-28-27F-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

# TERMINATOR PUP

For sticky clay, shale and sandstone



- Special two-stage, heavy-duty Terminator, for pre-reaming in stages
- Mix & Match with Barrel Stabilizers to meet your job requirements

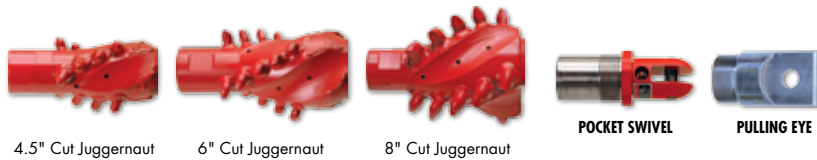
Terminator Pup		
Cut Diameter	Shaft Diameter & Thread	
	3.25"	4.25"
	2 3/8" Reg box x box	2 7/8" IF box x box
6" - 12"	90-06-12-23F-23F	90-06-12-27F-27F
12" - 18"	90-12-18-23F-23F	90-12-18-27F-27F
18" - 24"	90-18-24-23F-23F	90-18-24-27F-27F
20" - 28"	90-20-28-23F-23F	90-20-28-27F-27F
24" - 36"		90-24-36-27F-27F

NOTE: Standard cutting range sizes listed above. Call for a complete selection.

# JUGGERNAUT

jugg-er-nawt: A massive inexorable force, movement or object that crushes whatever is in its path.

- More cutters than any other reamer in its class resulting in a smoother cutting action
- Welded shark teeth with extra thick carbide inserts for maximum cutting action
- Deep, spiraled flutes allow for plenty of slurry to flow past the reamer
- Compact, fluted reamer swivels & pulling eye adapters available in a range of capacities for all size Juggernauts



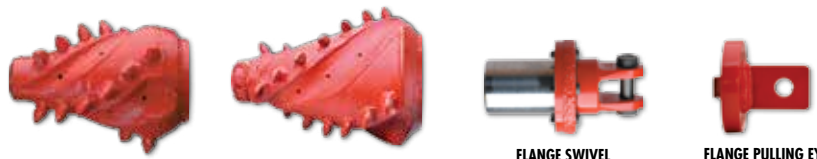
4.5" Cut Juggernaut    6" Cut Juggernaut    8" Cut Juggernaut

POCKET SWIVEL

PULLING EYE

With 4.5", 6" and 8" Juggernauts you have a choice of using a Pocket Swivel or Pulling Eye. Juggernauts ending with "44F" use the 44M pulling eyes (pg 10) or the 00503-604-44M 9000 lb swivel (pg 13). Juggernauts ending with "45F" can use 45M pulling eyes (pg 10) or 00503-604-45M (9000 lb), 00503-610-45M (20,000 lb) swivels (pg 13).

Juggernaut - Machined		Thread	
Cut Diameter	Pack Diameter	2" IF box x fine thread box	2 3/8" Reg box x fine thread box
4.5"	4"	85-04-21F-44F	
6"	4"	85-06-21F-44F	
8"	6"	85-08-21F-45F	85-08-23F-45F



10" Cut Juggernaut

12" Cut Juggernaut

FLANGE SWIVEL

FLANGE PULLING EYE

With 10", 12", 14" and 16" Juggernauts you have a choice of using a Flange Swivel or Flange Pulling Eye. Juggernauts ending with "F31X" use Flange pulling eyes (pg 10) or 00503-610 (20,000 lb), 00503-615 (30,000 lb) swivels (pg 13). Juggernauts ending with "F32X" use Flange pulling eyes (pg 10) or 00503-620 (40,000 lb), 00503-630 (60,000 lb) swivels (pg 13).

Juggernaut - Casted		Thread & Swivel Size				
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	85-12-27F-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

## SABERTOOTH

For cobbles, shale, river rock, glacial til and hardpan



- The must-have reamer for tough, combination soils
- Large shark teeth carbide cutters give an aggressive yet smooth cutting action
- Angled placement of cutters and spiral pattern results in an excellent mixing and pumping action
- Back-up blades make for easier push backs

Sabertooth						
Cut Diameter	Pack Diameter	Shaft Diameter & Thread				
		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				
8"	6 1/2"	96-08-21F-21F	96-08-23F-23F			
10"	6 1/2"	96-10-21F-21F	96-10-23F-23F	96-10-27F-27F		
12"	8 1/2"	96-12-21F-21F	96-12-23F-23F	96-12-27F-27F		
14"	10 3/4"	96-14-21F-21F	96-14-23F-23F	96-14-27F-27F	96-14-29F-29F	96-14-47F-47F
16"	12 3/4"	96-16-21F-21F	96-16-23F-23F	96-16-27F-27F	96-16-29F-29F	96-16-47F-47F
18"	14"		96-18-23F-23F	96-18-27F-27F	96-18-29F-29F	96-18-47F-47F
20"	16"		96-20-23F-23F	96-20-27F-27F	96-20-29F-29F	96-20-47F-47F
24"	20"			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
30"	26"			96-30-27F-27F	96-30-29F-29F	96-30-47F-47F
32"	28"			96-32-27F-27F	96-32-29F-29F	96-32-47F-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"			96-48-27F-27F	96-48-29F-29F	96-48-47F-47F

## TURBO

For sand, sandstone and clay



- Reamer of choice for sand and unstable soils
- Curved packer blades provide maximum mixing and pumping
- Heavy-duty blades with massive carbides provide an aggressive cutting action
- Back-up blades make for easier push backs

Turbo						
Cut Diameter	Pack Diameter	Shaft Diameter & Thread				
		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 1/2"	83-08-21F-21F	83-08-23F-23F			
10"	8 1/2"	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"		83-18-23F-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"			83-24-27F-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"			83-32-27F-27F	83-32-29F-29F	83-32-47F-47F
36"	32"			83-36-27F-27F	83-36-29F-29F	83-36-47F-47F
40"	36"					83-40-47F-47F
48"	44"					83-48-47F-47F

## BARREL STABILIZER

Centers reamer to create a round hole in all soil conditions



- Holds drill rod, reamer, and product pipe on center to create a round hole and a successful bore
- The key component of a successful large diameter project

Barrel Stabilizer					
Pack Diameter	Std Pack Length	Shaft Diameter & Thread			
		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 box
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

NOTE: Standard cutting range sizes listed above. Many more sizes available.

## TORNADO

For clay and other soft ground conditions



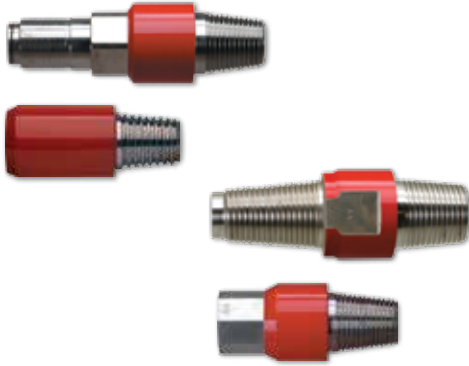
- Blades precisely angled and placed for efficient cutting and mixing action
- Carbide cutter blocks aggressively chew through the ground
- The most economical backreamer on the market with the quality design and workmanship you expect from a Borzall tool

Tornado			
Cut Diameter	Pack Diameter	Shaft Diameter & Thread	
		2.75"	3.25"
		2" IF box x box	2 3/8" Reg box x box
6"		65-06-21F-21F	
8"		65-08-21F-21F	65-08-23F-23F
10"		65-10-21F-21F	65-10-23F-23F
12"		65-12-21F-21F	65-12-23F-23F



# THREAD ADAPTERS

- Extends the life of your transmitter housings and backreamers
- Allows different threads to be used on a single housing or backreamer



Notes:

	Front Thread→	2" IF Pin	2 3/4" Reg Pin	2 1/4" IF Pin	3 1/2" IF Pin
	Connection Type ↓	Part #	Part #	Part #	Part #
<b>Adapters for Vermeer® Threads</b>					
D6x6; D7X11; D7X11 S2; D9X13 S2/S3; D10X15	1 1/2" Low Profile	21M-L42M			
	FS200 Drill Rod	21M-31F			
D16x20; D16x20 S2; D18x22	2 1/2" Low Profile	21M-L43M	23M-L43M		
	FS250 Drill Rod	21M-32F	23M-32F		
D20x22 S2/S3; D23x30 S3; D24x26	2 1/2" Low Profile	21M-L43M	23M-L43M		
	FS400 Drill Rod	21M-30F	23M-30F		
D23x30 S3; D24x40; D24x40 S2/S3	2 1/2" Low Profile	21M-L43M	23M-L43M		
	FS600 Drill Rod	21M-40F	23M-40F		
D33x44; D36x50; D36X50 S2; D40x55 S3	2 1/2" Low Profile	21M-L43M	23M-L43M		
	FS650 Drill Rod		23M-46F		
	FS700 Drill Rod		23M-41F		
D50X100; D60X90	FS900 Drill Rod		23M-50F	27M-50F	
D80X100; D80X100 S2	FS800 Drill Rod			27M-80F	29M-80F
D100X120; D100X140	FS1000 Drill Rod			27M-82F	29M-82F
D330X500	3 1/2" IF Drill Rod				29M-29F
<b>Adapters for Ditch Witch® Threads</b>					
JT5	1.31-6 EZ-Connect	21M-L52F			
	1.10 Drill Rod	21M-04M			
JT520	1.31-6 EZ-Connect	21M-L52F			
	1.21-6 Drill Rod	21M-05M			
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 Mach 1	1.88-6 EZ-Connect	21M-L58M			
	1.47-4 Drill Rod	21M-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		
	2.04-4 Drill Rod	21M-35M	23M-35M		
JT2720 Mach1	2.25-6 EZ-Connect	21M-L56F	23M-L56F	27M-L56F	
	2.11-4 Drill Rod	21M-36M	23M-36M	27M-36M	
JT25; JT30; JT3020 Mach1	2.25-6 EZ-Connect 3	21M-L59F	23M-L59F	27M-L59F	
	2.11-4 Drill Rod	21M-36M	23M-36M	27M-36M	
JT4020	2.63-6 EZ-Connect		23M-L57F	27M-L57F	
	2.40-4 Drill Rod		23M-42M	27M-42M	
JT4020 Mach 1	2.63-6 EZ-Connect		23M-L57F	27M-L57F	
	2.59-4 Drill Rod		23M-43M	27M-43M	
JT60	3.50-4 EZ-Connect			27M-L60F	
	2.46-4 Drill Rod			27M-60M	
	FS900 Drill Rod		23M-50F	27M-50F	
JT7020; JT8020; JT100	3.27-4 Drill Rod			27M-72M	

# PULLING EYES



- Match your swivel to a specific pulling eye for a secure connection



Reamer Shaft Size→	2 3/4"	3 1/4"	4 1/4"	4 3/4"	6 1/2"
Rear Thread→	2" IF Box	2 3/4" Reg Box	2 1/2" IF Box	3 1/2" IF Box	4 1/2" IF Box
For Use With ↓	Part #	Part #	Part #	Part #	Part #
<b>Rear Reamer Pulling Eyes for Deluxe DUB Swivels</b>					
5-ton	21M-EYE805				
10-ton	21M-EYE810	23M-EYE810			
15-ton; 20-ton; 30-ton		23M-EYE820	27M-EYE820		
40-ton			27M-EYE840	29M-EYE840	
60-ton			27M-EYE860	29M-EYE860	47M-EYE860
80-ton			27M-EYE880	29M-EYE880	47M-EYE880
<b>Rear Reamer Pulling Eyes for Valu-DUB Swivels</b>					
4.5-ton	21M-EYE304				
5-ton	21M-EYE305				
7.5-ton; 10-ton	21M-EYE310	23M-EYE310			
15-ton	21M-EYE315	23M-EYE315	27M-EYE315		
20-ton; 30-ton; 45-ton		23M-EYE820	27M-EYE820		

Juggernaut fluted reamers can be found on page 7.

Juggernaut Size→	4"	6"	8"	10"	12" & 14" & 16"
<b>Juggernaut Rear Reamer Pulling Eyes</b>					
4.5-ton Valu-DUB	44M-EYE304	44M-EYE304			
5-ton	44M-EYE305	44M-EYE305	45M-EYE305	85-F31X-EYE305	
7.5-ton; 10-ton	44M-EYE310	44M-EYE310	45M-EYE310	85-F31X-EYE310	85-F31X-EYE310
15-ton			45M-EYE315	85-F31X-EYE315	85-F31X-EYE315
20-ton; 30-ton; 45-ton				85-F31X-EYE320	85-F31X-EYE320

Juggernaut fluted reamers can be found on page 7.

# DRIVE CHUCKS & SUB-SAVERS

## Drive Chucks & Sub-Savers for or Vermeer® Drill Rigs

Drill Rig Model	Drive Flange Part #	Sub-Saver Part #
D7x11	VF-31M-F0	VS-31M-31F-V
D7x11 Series 2		VS-31M-32F
D9x13 Series 2		VS-31M-32F
D10x15	VF-31M-F0	VSL-31M-31F
D16x20	VS-32M-F0	VS-32M-32F-V
D16x20 Series 2		VS-32M-40F
D20x22		VS-30M-40F
D24x26	VFL-30M-F0	VSL-30M-30F
D24x40 - s/n 383 & lower	VF-40M-F0	VS-40M-40F-5.5
D24x40 - s/n 384 & higher	VF-40M-F0	VS-40M-40F-7.5
D24x40 Series 2		VS-40M-40F-9.5
D23x30 Series 3		VS-40M-40F-10.5
D36x50, FS650 thread		VS-46M-46F
D36x50, FS700 thread		VS-41M-41F
D50x100, FS900 thread	VF-80F-F0	VS-80M-50M
D50x100, FS800 thread	VF-80F-F0	VS-80M-80M
D60x90		VS-50M-50F
D80x100	VF-80F-F0	VS-80M-80M

Drive Chucks & Sub-Savers for Ditch Witch® Drill Rigs		
JT5	DF-40F	
JT520 Version 2	DF-05F2	
JT920, JT922 (fine thread)	DF-01F	
JT922 (coarse thread)	DF-09F	
JT1220	DF-34F	
JT1720	DF-86F	
JT2020	DF-20F	
JT2720	DF-35F	
JT30, JT3020	DF-25F	DS-25M-36F
<b>Glue Kit for Sub-Savers</b>	VF-GLUE	

- Protect your drill rod threads with our precision-machined Drive Chucks and Sub-Savers
- Completely heat-treated alloy for maximum durability
- All Drive Chucks are available with a replaceable Sub-Saver



# QUICK-DISCONNECTS & COLLARS



- Completely heat-treated alloy for maximum durability
- Precision gun-drilled and CNC machined
- 1/2" bolt retains slide collar
- Deluxe Quick-Disconnect features an internal check valve to minimize clogging & spiraled carbide studs minimize wear on quick-disconnect and collar



- Extra-heavy wall thickness
- Available with carbide studs; hardfacing and chunky carbide hardfacing for maximum wear life
- Also available with carbide cutters and chunky carbide hardfacing for great cutting action and maximum wear life
- Completely heat-treated alloy for maximum durability

Drill Rig Model	Deluxe Quick-Disconnect	Value Quick-Disconnect	Standard Collar	Carbide Stud	Chunky Carbide	Carbide Cutters
<b>Quick-Disconnects &amp; Collars for Vermeer®</b>						
D7x11, D7x11 S2, D9x13 S2, D10x15		VLRV-31F-L42F-XL	VLR-20-HC	VLR-20-HC-C	VLR-20-HC-HFC	VLR-20-HC-HFCS
D16x20, D16x20 S2	VLR-32F-L43F	VLRV-32F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR-25-HC-HFCS
D20x22	VLR-30F-L43F-XX	VLRV-30F-L43F-XX	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR-25-HC-HFCS
D24x26	VLR-30F-L43F-XL	VLRV-30F-L43F-XL	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR-25-HC-HFCS
D24x40	VLR-40F-L43F	VLRV-40F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR-25-HC-HFCS
D36x50, FS650 thread	VLR-46F-L43F	VLRV-46F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR-25-HC-HFCS
D36x50, FS700 thread	VLR-41F-L43F	VLRV-41F-L43F	VLR-25-HC	VLR-25-HC-C	VLR-25-HC-HFC	VLR-25-HC-HFCS
<b>EZ Quick-Disconnects &amp; Collars for Ditch Witch®</b>						
JT5		DLR2-04M-L52M	DL52-15-0C		DL52-15-0C-HFC	
JT520		DLR2-05M-L52M	DL52-15-0C		DL52-15-0C-HFC	
JT920, JT921		DLR2-01M-L55M	DL55-18-0C		DL55-18-0C-HFC	
JT922 (coarse thread)		DLR2-09M-L55M	DL55-18-0C		DL55-18-0C-HFC	
JT1220		DLR2-34M-L58M	DL58-22-0C		DL58-22-0C-HFC	
JT1720		DLR2-86M-L54M	DL54-25-0C	DL54-25-0C-C	DL54-25-0C-HFC	DL54-25-0C-HFCS
JT20, JT2020		DLR2-20M-L54M	DL54-25-0C	DL54-25-0C-C	DL54-25-0C-HFC	DL54-25-0C-HFCS
JT25, JT30, JT3020		DLR3-36M-L59M	DL59-27-0C		DL59-27-0C-HFC	DL59-27-0C-HFCS
JT2720		DLR2-35M-L54M	DL54-25-0C	DL54-25-0C-C	DL54-25-0C-HFC	DL54-25-0C-HFCS
JT2720 Mach 1		DLR2-36M-L56M	DL56-27-0C		DL56-27-0C-HFC	DL56-27-0C-HFCS

# SWIVELS

## VALU-DUB SWIVELS

Triple-stage seal system



Clevis x Clevis



Clevis x API Pin



Clevis x Hex Quick-Disconnect

- By far the most swivel for your money
- Features a triple-stage sealing system to keep debris from destroying bearings
- Push and pull loads are absorbed by premium quality angular contact bearings
- Fitted with a grease nipple for easy lubrication, making it a long-lasting swivel

Valu-DUB Swivels							Replacement Pin Kits	Rebuild Kit
Pullback Capacity	Swivel Diameter	Connection Type						
		Clevis x Clevis	Clevis x 2" IF Pin	Clevis x 2 3/8" Reg Pin	Clevis x 2 1/2" IF Pin			
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			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		

## DELUXE DUB SWIVELS

Quad-stage seal system



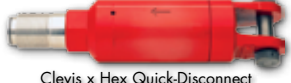
Clevis x Clevis



Clevis x API Box



Clevis x API Pin



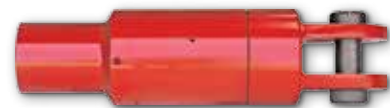
Clevis x Hex Quick-Disconnect

- Not the least expensive swivel, but it will save you the most money
- Deluxe bearings that can handle tensile, compressive and side loads
- Intricate quad-stage seal system designed specifically for HDD conditions
- Fitted with a grease nipple for easy lubrication, making it a long-lasting swivel

Deluxe DUB Swivels						Replacement Pin Kits
Pullback Capacity	Swivel Diameter	Connection Type				
		Clevis x Clevis	Clevis x 2 3/8" Reg Pin	Clevis x 2 1/2" IF Pin		
5,000 lb	2"	00508-202			00508-002	
10,000 lb	3.125"	00508-205			00508-005	
20,000 lb	3.75"	00508-210			00508-010	
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	4.75"	00508-230		00508-730-27M	00508-030	
80,000 lb	5.75"	00508-240		00508-740-27M	00508-040	
120,000 lb	7.5"	00508-260			00508-060	
160,000 lb	9"	00508-280			00508-080	

## MAXI RIG SWIVELS

Triple-stage seal system



Clevis x API Box

- Features a triple-stage sealing system to keep debris from destroying bearings
- Push and pull loads are absorbed by premium quality angular contact bearings
- Fitted with a grease nipple for easy lubrication, making it a long-lasting swivel

Maxi Rig Swivels					
Pullback Capacity	Swivel Diameter	Connection Type			
		Clevis x 4 1/2" IF Box	Clevis x 6 3/8" Reg Box	Clevis x 6 5/8" FH Box	Clevis x 7 3/8" Reg Box
220,000 lb	10.75"	00508-1110			
330,000 lb	10.75"	00508-1165			
440,000 lb	12.5"		00508-1220		
550,000 lb	14.5"			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

Notes:

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# DUCT PULLERS

## STANDARD DUCT PULLERS

Easy to install; strong grip



- Quick and easy to install with no special tools required
- Expanding jaws securely grip inside wall of duct
- Large number of jaw teeth results in much stronger grip
- Pluggers are available to help keep the mud out

Standard Duct Pullers		
Duct Size	I.D.	Part #
1¼"	1.28" to 1.50"	00620-125
1½"	1.47" to 1.69"	00620-150
2"	1.88" to 2.12"	00620-200
2½"	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

Fits most duct sizes from SDR11 through SDR17

## PREMIUM DUCT PULLERS

Easy to maintain and repair



- Fewer moving parts for easy repair and maintenance
- Expanding jaws securely grip inside wall of duct
- Comes standard with a polyurethane plugger
- Made from zinc dichromate coated steel

Premium Duct Pullers		
Duct Size	I.D.	Part #
2"	1.81" to 2.19"	00616-200
2½"	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

## DELUXE DUCT PULLERS

Stands up to the abuses of HDD



- Precision machined, hardened alloy steel pulling head will handle the abuses of HDD
- Outer sleeve prevents stretching and provides a water tight seal to protect ducting
- Fits most duct sizes from SDR9 through SDR21
- 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
- Oversized rear eye

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

## SUPER DELUXE DUCT PULLERS

One rugged puller



- A rugged puller that is quick and easy to install and remove
- Water tight by sealing on the inside of the product pipe
- High-tensile drop-forged eyebolt
- Can be disassembled in the field by hand for easy maintenance

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

## INNERDUCT PULLERS

Borzall pullers have phenomenal gripping power



- Economical means of pulling small diameter duct & innerduct
- Machined from steel and chrome-plated for durability
- Double cutting edges that actually cut a thread into the duct
- Quick and easy to install

Premium Duct Pullers		
Duct Size	I.D.	Part #
¾"	0.72" to 0.93"	00604-075
1"	0.94" to 1.15"	00604-100
1¼"	1.26" to 1.44"	00604-125
1½"	1.48" to 1.66"	00604-150
2"	1.91" to 2.08"	00604-200

## WIRE MESH PULLING GRIPS



Standard-Duty Pulling Grips



Heavy-Duty Pulling Grips

Standard-Duty Wire Mesh Pulling Grips			
Duct Size	O.D.	Max Load	Part #
¼"	.24" to .37"	750 lbs	00670-025
⅜"	.38" to .74"	950 lbs	00670-038
½" & ¾"	.75" to 1.12"	1,100 lbs	00670-050
1"	1.13" to 1.49"	1,750 lbs	00670-100
1¼" & 1½"	1.50" to 1.99"	2,700 lbs	00670-125
2"	2.00" to 2.49"	4,000 lbs	00670-200
2½"	2.50" to 2.99"	6,000 lbs	00670-250

Heavy-Duty Wire Mesh Pulling Grips			
Duct Size	O.D.	Max Load	Part #
½" & ¾"	.75" to 1.12"	1,460 lbs	00680-050
1"	1.13" to 1.49"	2,410 lbs	00680-100
1¼" & 1½"	1.50" to 1.97"	3,600 lbs	00680-125
2"	2.00" to 2.50"	5,600 lbs	00680-200
2½"	2.50" to 2.99"	8,200 lbs	00680-250
3"	3.00" to 3.74"	12,200 lbs	00680-300
4"	4.25" to 4.99"	20,100 lbs	00680-400

- Made with a double weave of galvanized wire for maximum durability
- Return weave design so there are no crimped ends at the trailing end
- At least a 2X safety factor

## MULTI-DUCT PULLING SLINGS



- 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 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

## SHACKLES



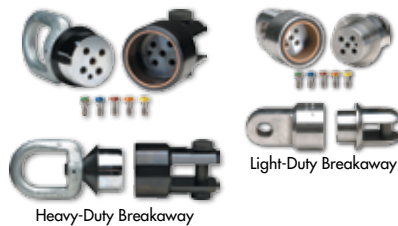
Don't forget to stock up on shackles to connect the pulling grips and pullers to your swivel.

Other sizes available on request

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

## BREAKAWAY CONNECTORS

Protect your duct from failure



Heavy-Duty Breakaway

Light-Duty Breakaway

- Designed to protect polyethylene ducting from overload during installation
- Utilizes up to 5 pins that are designed to break in tension at a specific load
- Available in 2 sizes, covering a range of breaking points from 750 lbs to 45,000 lbs



7.5 Ton Breakaway Swivel

- The 7.5 ton Breakaway swivel is designed around the 00505-208 Valu-DUB Swivel
- Breakaway Swivel uses same pins as the Light-Duty breakaway connector

Light-Duty Breakaway Connectors and Pins	
Pin Kit (5 per kit)	Part #
Breakaway Connector	00560-010
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
Breakaway Swivel	
7.5 ton	00570-208
Heavy-Duty Breakaway Connectors and Pins	
Breakaway Connector	00560-020
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

## ELECTRICAL SAFETY SHOES, BOOTS & ELECTRICAL SAFETY GLOVES



Boots are a 12" over-the-shoe style

- Dielectric boots are made of high-quality, tear-resistant rubber; conform with ASTM F1117 and tested to 20,000 volts
- Dielectric rubber gloves rated for usage at up to 17,000 V and meet ASTM specification D-120
- Leather protectors go over to protect rubber glove from damage

Safety Shoes & Boots	
Description	Part #
Over-the-shoe Safety Shoe	1830-SH
Over-the-shoe Safety Boot	1830-BT
Safety Gloves	
Rubber glove	1820-GLV
Leather protector	1820-PRO
Glove storage bag	1820-BAG

## ZAPALERT® ELECTRICAL STRIKE ALARM



U.S. Patent #5,027,108

- Helps alert crews to the possibility of a strike on an underground power line
- Easily installs on HDD rigs
- Tested from 100 to 100,000 volts AC
- Retrofit Zapalerts and parts available for Vermeer Navigator internal Zapalert

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

## HDD TRACER WIRE

Copperhead's tracer wires holds up to the rigors of HDD



- Insulating jacket for maximum durability during pullback
- Rugged tracer wires designed for HDD applications.
- #12 Copper-Clad = 1,150 lbs. tensile strength
- Custom lengths and insulating jacket colors available

Copperhead Tracer Wire	
#12 Copper-Clad	Part #
500 ft. reel	1059-STR-CC5
1,000 ft. reel	1059-STR-CC10

Jacket colors available in yellow, blue and green.

## DRILL ROD WIPERS

Keep your drill rod clean



- Direct replacement for most OEM wipers
- High quality solid rubber wiper keeps drill rod clean
- Solid 9" rubber wipers
- Dual-split 9" rubber wipers
- Dual-split 14" rubber wipers

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

# ACCESSORIES

## AUNTIE C'S®

Premium Copper Thread Lube



- Lead-free compound
- Provides maximum protection against galling and seizing
- 20 ounce tubes, 10 pound, 20 pound and 45 pound pails
- Available in Arctic Grade for cold conditions and to use with with auto-lubers
- Contains no zinc or other materials which may be affected by elevated temperatures
- Premium copper thread lube designed specifically for the demanding conditions found in HDD

Auntie C's Thread Lube	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

## BREAKOUT JAWS

High-quality Borzall breakout wrench replacement jaws will keep you drilling longer



Stationary



Cylinder



Insert

- High-quality replacement for most OEM jaws
- Available in Stationary, Cylinder, or Insert

Drill Rig	Jaw Type	Part #
<b>Ditch Witch® Compatible</b>		
JT922	Insert	JAW-01-INS
JT2020	Insert	JAW-20-INS
JT2720M1, JT3020, JT4020M1	Insert	JAW-37-INS
JT8020, JT100	Insert	JAW-100-INS

Drill Rig	Jaw Type	Part #
<b>Vermeer® Compatible</b>		
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
D40x40	Cylinder	JAW-40-CT
D24x40	Insert	JAW-40-INS
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

## CARBIDE CUTTER TEETH



CC-01



CC-01-BLOCK



CC-10



CC-10-BLOCK



CC-11



CC-21



CD-31-SHORT



CD-31-MED



CD-31

Carbide Cutter Teeth				
	Width	Height	Thickness	Part #
Conical cutter – Small	1/2"	2 1/8"		CC-01
Cutter block – Small	1 5/8"	3/4"		CC-01-BLOCK
Conical cutter – Large	3/4"	3 3/8"		CC-10
Cutter block – Large	2 1/4"	1 3/4"		CC-10-BLOCK
Angled conical cutter	3/4"	7/8"		CC-11
Angled conical cutter – Large	1"	1 1/8"		CC-21
Shark Tooth® cutter – Small	1 1/4"	1 1/4"	7/8"	CD-31-SHORT
Shark Tooth® cutter – Medium	1 1/2"	1 1/2"	3/4"	CD-31-MED
Shark Tooth® cutter – Large	2 3/4"	2 1/8"	7/8"	CD-31

## DIGITRAK®

Authorized supplier of DigiTrak locating equipment



Digitrak locating equipment features stunning 3D imaging, the first color display in the industry and ease of operation. Born from over two decades of experience, developed from over a million miles of drilling, and backed by world-class customer service.

### DIGITRAK® New Falcon Advanced Technology

DCI's Falcon technology represents a revolutionary, patented approach to provide better performance in the face of interference on the job site. The primary elements of Falcon include:

- Ability to scan hundreds of frequencies at your job site and recommend the frequencies with the lowest amount of active interference.
- A new wideband transmitter that will enable users to choose among hundreds of frequencies with a single transmitter.
- Each Falcon F5 and Falcon F2 locating system will include a Falcon wideband transmitter. The Falcon F5 version will include 24-clock roll and fluid pressure monitoring. The Falcon F2 version will include 12-clock roll.
- Each Falcon F5 and Falcon F2 transmitter will be based on DCI's patent-pending design for greater underground durability.

### NOW AVAILABLE!

#### DIGITRAK® Falcon F2

Advanced technology

- DigiTrak Falcon frequency optimization technology
- Pair two optimized frequency bands for each bore
- Convenient transmitter pairing using infrared ports
- Single wideband transmitter supports hundreds of frequencies between 4.5 kHz — 45 kHz
- Increased performance provides up to 100 ft. (30.48 m) depth and 125 ft. (38.1 m) data range
- Max Mode boosts data range and stabilizes depth readings in extreme interference
- 0.1% pitch resolution
- Target Steering™ (Aurora Touchscreen Display)
- Roll Offset



### AVAILABLE SOON!

#### DIGITRAK® Falcon F5





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