



RAILHEAD
UNDERGROUND PRODUCTS, LLC.



Product Catalog

Dealer Catalog Version 1114008

www.railhead.com

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Railhead will not be responsible for any damage resulting to or caused by reason of installation, improper storage, unauthorized service or alteration of its products, neglect or abuse, or use of the product in a manner inconsistent with its design. The commercial user is responsible for all maintenance services consisting of cleaning and lubrication of equipment, replacing expendable parts, and performing maintenance checks. Any modifications or alterations of Railhead products from their original form such as the application of hard surfacing, welding on and/or machining, will make any warranty consideration null and void. Such modifications or alterations could be in violation of Railhead Underground Products LLC's U.S. Patents. All ground engaging items are not eligible for warranty consideration unless failure is due to manufacturers defects. This includes, but not limited to, sonde housing assemblies, lead rods, hex collars, bits and reamers.

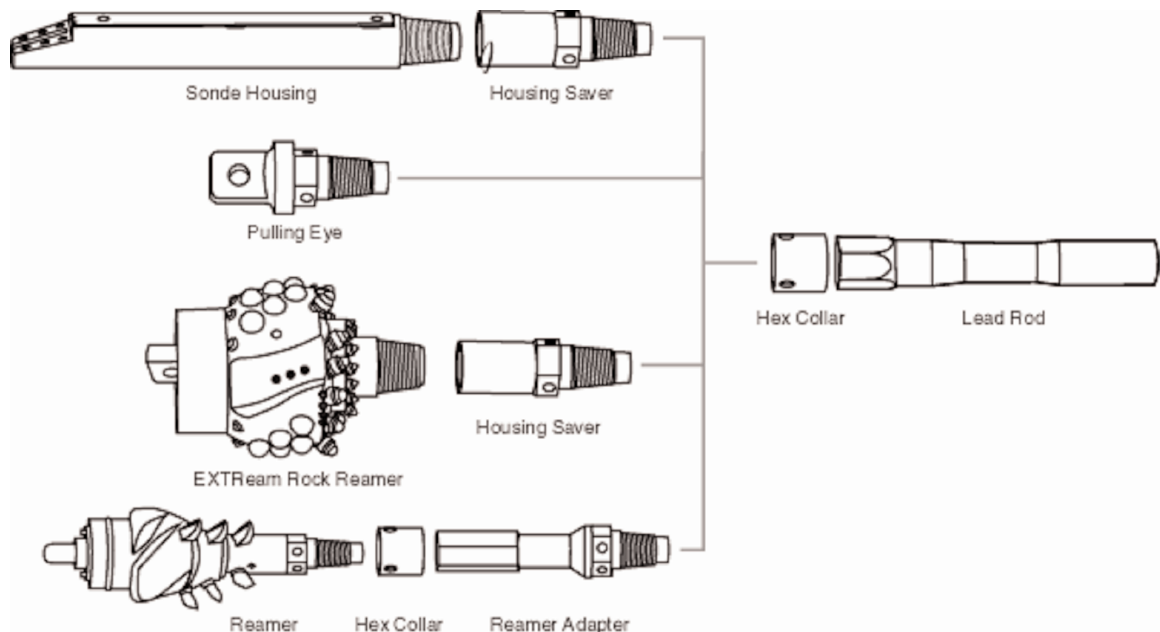
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Railhead Quick Connect System



Connection Options

The following lists the different types of connection methods. You need a housing saver to fit a Basic Rotolock Connection. All connection methods may not be available to every machine type.

Direct Connect - This method of connection attaches directly to the drill rod of the machine, without the use of any type of lead rods or hex collars.

Manufactures Easy Connect - This method of connection attaches using the manufactures easy connect (ie. pin to pin adapters or manufactures starter rods).

Railhead Quick Connect System - This method of connection includes a Railhead lead rod, hex collar, and reamer adapter. The Railhead system allows the tooling to be installed or removed with only 1-1/2 rotations. This allows for quick connection and disconnection of both drill heads and reamers.

End-Load Sonde Housing Adapter - This method of connection attaches an INCREDIBIT to a screw-on adapter for end-load sonde housings with API Regular threads and IF threads.

General Instructions

Drilling

Drilling in Rock - The most important factor in a successful bore is patience. When drilling in harder formations it is important to not force the Incredibit, but let it drill at its own pace. Apply steady pressure. Too much pressure will burn the bit. Start with 500 pounds of forward thrust and move up as needed based on the conditions of the bore site. Rotational torque may also start at 500 pounds. It is seldom necessary to use more than 1,500 pounds of thrust. Slow rotation also gives the Incredibit more time to work. Simply allow the Incredibit to work while maintaining enough pressure to accomplish the job.

Drilling in Soft Conditions - The drilling technique used in soft conditions is similar to a flat bill bit.

Steering

Steering in Rock - The best method for steering in rock is to push into the rock and cut over to create a relief, pull back, rotate, and do it again. If you want to go to 12 o'clock with a standard Incredibit, you would normally push in at 10 and rotate to 2. With an aggressive Incredibit, you would push in at 9 and rotate to 1. After creating a relief, pull back and start drilling slowly into the relief. The Incredibit patented drill bit with concave steering channel will follow the point of least resistance.

Steering in Soft Conditions - Steering in soft conditions is similar to a flat bill bit - turn and push. However, since the Incredibit steers faster than other bits, you may only need to push half as far as you would with a flat bill bit to get the same result. New users should locate often to prevent over steering in soft conditions.

Reducing Wear

A major cause of wear on an Incredibit is insufficient or improper drilling mud. Mud is used to: a) seal the hole, b) suspend the cuttings, and c) flush the cuttings out of the hole. If all the cuttings are not removed from the hole, all down hole tooling will wear prematurely. Never drill with plain water, or just water and polymer. When drilling in soft conditions, be careful not to outrun the mud.

The Incredibit needs volume not high pressure. Pressure greater than 500 psi or dirty mud from a mud recovery system will wash out the water ports of the Incredibit. The following chart shows the minimum volume of mud required to flush the cuttings from the hole for each size Incredibit.

Incredibit size	2-3/4"	3"	3-1/2"	4-1/8"	5"
Average hole diameter created	4-1/2"	5-1/2"	6-1/2"	9"	11"
Gallons of cuttings created per foot	0.83	1.23	1.73	3.31	4.94
Min. gallons of mud per foot to clean hole	2.48	3.70	5.17	9.91	15.2

Ordering Parts

*** All pricing is in U.S. Dollars ***

For information or questions call (817) 594-6663 or (888) 313-7455. Fax (817) 594-3697.
Email sales@railhead.com

UPS shipping - International, Next Day Air, Second Day Air and Three Day Select orders that are received prior to 12 noon Central Standard Time will ship on the same day, if parts are in stock. Those orders received after 12 noon Central Standard Time are not guaranteed out the same day. Ground shipments are not guaranteed same day shipping. However, every attempt will be made to ship that day, if parts are in stock.

FedEx shipping - International, Next Day Air, Second Day Air orders that are received prior to 9 am Central Standard Time will ship on the same day, if parts are in stock. Those orders received after 9 am Central Standard Time are not guaranteed out the same day. Ground shipments will not ship until the following day, if the parts are in stock.

LTL shipping - LTL shipping is not guaranteed same day shipping, however, every attempt will be made to ship it that day, if parts are in stock.

Consignee Requested shipping - You must have your carrier coordinate the order pick-up with our shipping department at (817) 594-6663. If your carrier arrives un-announced your order may not be ready and you could be penalized by your carrier for a secondary attempt.

Product Returns - For tracking purposes all products returning to Railhead must have an RMA (Return Material Authorization) number. Call for information. All return freight is at dealer expense.

Astec Underground (American Augers)

DD 1/ DD1215

Incredibit

<u>Part #</u>	<u>Description</u>
1503	2-3/4" Standard Incredibit

Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1800	2-3/4" Incredibit Sonde Housing (2-3/4" Rotolock) * Requires Housing Saver * Requires Sonde Block Set (DD1215 may run optional 3" tooling - See DD 2024 information)



RAM Sonde Housings

<u>Part #</u>	<u>Description</u>
3100	2-3/4" Vermeer 7-Hole Bolt Pattern (2-3/4" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle
3200	2-3/4" Ditch Witch 5-Hole Bolt Pattern (2-3/4" Rotolock) *3200 Sonde Housing is Subsite specific (No Sonde blocks needed) * Requires Housing Saver * Requires Water Nozzle

Water Nozzles

<u>Part #</u>	<u>Description</u>
2156	3 - Hole Nozzle .064 Orifice
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice



Housing Saver

<u>Part #</u>	<u>Description</u>
4304	1.66 Firestick Box (DD1 Direct Connect) (2-3/4" Rotolock) * American Auger 1.66 Extingisher is same as 1.66 Firestick
4409	2" Ramon Pin Housing saver (Railhead Quick Connect)
4422	1.66 Astec Box Housing saver (DD1215 Direct Connect)

Lead Rod

<u>Part #</u>	<u>Description</u>
1266	1.66 Astec Box to 2" Ramon Box

Replacement Teeth,Bolts & O-rings

<u>Part #</u>	<u>Description</u>
5013	Hard Condition, Dual Conical Tip (1503) (Bucket 100)
5208	O-Ring, Water Port (1503) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1503) (Bag 50)
5316	Bolts, Socket Cap Bolt (3100) (Bag 50)
5317	Bolts, Socket Cap Bolt (3200) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4716	Digitrak
4721	Radiodetection
4726	McLaughlin

Astec Underground (American Augers)

DD 2024

Incredibit

<u>Part #</u>	<u>Description</u>
1526	3" Standard Incredibit
1528	3" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1830	3" Incredibit Sonde Housing (3" Rotolock) * Requires Housing Saver * Requires Sonde Block Set

Endurance & RAM Sonde Housings

<u>Part #</u>	<u>Description</u>
2830	3" Railhead 6-Hole Bolt Pattern (3" Rotolock)
3120	3" Vermeer 7-Hole Bolt Pattern (3" Rotolock)
3230	3" Ditch Witch 6-Hole Bolt Pattern (3" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Housing Saver

<u>Part #</u>	<u>Description</u>
4409	2" Ramon Housing Saver

Lead Rod

<u>Part #</u>	<u>Description</u>
1267	2.0 astec box to 2" Ramon Box

Water Nozzes

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Replacement Teeth, Bolts & O-rings

<u>Part #</u>	<u>Description</u>
5019	Hard Condition, Dual Conical Tip (1526/1528) (Bucket 100)
5021	General Condition, Conical Tip (1526/1528) (Bucket 100)
5031	Cobble/Extreme Condition, Ball Tip (1526/1528) (Bucket 100)
5208	O-Ring, Water Port(1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1526/1528) (Bag 50)
5316	Bolts, Socket Cap Bolt (3100) (Bag 50)
5317	Bolts, Socket Cap Bolt (3230) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Endurance Bit to Incredibit Sonde Housing Key

* Recomendend for use with Paddle Bits.

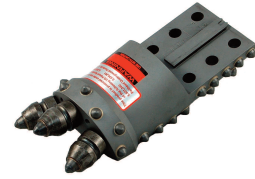
<u>Part #</u>	<u>Description</u>
2201	Key for 2210 & 2220 Series Endurance Bits

Astec Underground (American Augers)

DD 3 / DD 4 / DD 3238

Incredibit

<u>Part #</u>	<u>Description</u>
1554	3-1/2" Standard Incredibit
1555	3-3/4" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1860	3-1/2" Incredibit Sonde Housing (3-1/2" Rotolock)
	* Requires Housing Saver * Requires Sonde Block Set



Endurance & RAM Sonde Housings

<u>Part #</u>	<u>Description</u>
2860	3-1/2" Railhead 6-Hole Bolt Pattern (3-1/2" Rotolock)
3160	3-1/2" Vermeer 7-Hole Bolt Pattern (3-1/2" Rotolock)
3260	3-1/2" Ditch Witch 6-Hole Bolt Pattern (3-1/2" Rotolock)
	* Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle



2860



3160



3260

See pages 32 through 40 for paddle bit styles and additional reamers.

Housing Saver

<u>Part #</u>	<u>Description</u>
4309	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (3-1/2" Rotolock)
4351	2-3/8" Mayhew Jr Box (Direct Connect) (3-1/2" Rotolock)
4421	2-3/8" Astec Box (DD3238 Direct Connect) (3-1/2" Rotolock)

Railhead Quick Connect

<u>Part #</u>	<u>Description</u>
1206	Lead Rod, 2-3/8" Mayhew Jr Box to 2-1/2" RAMON Box (DD 3 / DD 4)
1270	Lead Rod, 2-3/8" Astec Box to 2-1/2" RAMON Box (DD 3238)
1410	Tool Adapter, 2-1/2" RAMON Pin to 2-3/8" Mayhew Jr Pin
1108	3" ID Standard Hex Collar
1113	3" ID Carbide Rubble/Hard Surface Hex Collar

Astec Underground (American Augers)

DD 3 / DD 4 / DD 3238

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Replacement Rock Points,Bolts and O-Rings

<u>Part #</u>	<u>Description</u>
5026	Hard Condition, Dual Conical Tip (1554/1555) (Bucket 50)
5022	General Condition, Conical Tip (1554/1555) (Bucket 50)
5030	Cobble/Extreme Condition, Ball Tip (1554/1555) (Bucket 50)
5209	O-Ring, Water Port (1554/1555) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5314	Bolts, Socket Cap Bolt (Hex Collar) (Bag 50)
5316	Bolts, Socket Cap Bolt (1554/1555) (Bag 50)
5318	Bolts, Socket Cap Bolt (3260) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

EXTReam Reamers

<u>Part #</u>	<u>Description</u>
1340	8" EXTReam (3-1/2" Rotolock)
1350	12" EXTReam (3-1/2" Rotolock)
1370	16" EXTReam (4-1/8" Rotolock)

* Requires Housing Saver

All EXTReam Reamers come complete with Puller/Driver, 1 set of teeth and nozzles.



Astec Underground (American Augers)

DD 6 / DD 8

Incredibit

<u>Part #</u>	<u>Description</u>
1562	4-1/8" Standard Incredibit
1565	4-1/8" Aggressive Incredibit
1581	5" Standard Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1850	4-1/8" Incredibit Sonde Housing (4-1/8" Rotolock) * Requires Housing Saver * Requires Sonde Block Set
1880	5" Incredibit Sonde Housing (5" Rotolock) * Requires Housing Saver * Requires Sonde Block Set

Housing Saver

<u>Part #</u>	<u>Description</u>
4-1/8" 4311	2-7/8" IF Box (Direct Connect) (4-1/8" Rotolock)
5" 4383	2-7/8" IF Box (Direct Connect) (5" Rotolock)

Replacement Rock Points, Bolts and O-rings

<u>Part #</u>	<u>Description</u>
5020	General Condition, Conical Tip (1562) (Bucket 25)
5023	Hard Condition, Dual Conical Tip (1562) (Bucket 25)
5024	General Condition, Conical Tip (1565) (Bucket 25)
5029	Hard Condition, Dual Conical Tip (1565) (Bucket 25)
5032	General Condition Conical Tip (1581) (Bucket 12)
5209	O-Ring, Water Port O-Ring (1562/1565) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5342	Bolts, Socket Cap Bolt (1562/1565) (Bag 50)
5213	O-Ring, Water Port (1581) (Bag 50)
5344	Bolts, Socket Cap Bolt (1581) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

EXTReam Reamers

<u>Part #</u>	<u>Description</u>
1360	12" EXTReam (4-1/8" Rotolock)
1370	16" EXTReam (4-1/8" Rotolock) * Requires Housing Saver

Astec Underground (American Augers)

DD 10 / DD 140

Incredibit

<u>Part #</u>	<u>Description</u>
1581	5" Standard Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1880	5" Incredibit Sonde Housing (5" Rotolock) * Requires Housing Saver * Requires Sonde Block Set



Housing Saver

<u>Part #</u>	<u>Description</u>
4384	3-1/2" IF Box (Direct Connect) (5" Rotolock)

Replacement Rock Pints,Bolts and O-rings

<u>Part #</u>	<u>Description</u>
5032	General Condition Conical Tip (1581) (Bucket 12)
5213	O-Ring, Water Port (1581) (Bag 50)
5344	Bolts, Socket Cap Bolt (1581) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

EXTReam Reamers

<u>Part #</u>	<u>Description</u>
1360	12" EXTReam (4-1/8" Rotolock)
1370	16" EXTReam (4-1/8" Rotolock) * Requires Housing Saver

Case

6010

Incredibit

<u>Part #</u>	<u>Description</u>
1526	3" Standard Incredibit
1528	3" Aggressive Incredibit

Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1830	3" Incredibit Sonde Housing (3" Rotolock) * Requires Housing Saver * Requires Sonde Block Set

Endurance & RAM Sonde Housings

<u>Part #</u>	<u>Description</u>
2830	3" Railhead 6-Hole Bolt Pattern (3" Rotolock)
3120	3" Vermeer 7-Hole Bolt Pattern (3" Rotolock)
3230	3" Ditch Witch 6-Hole Bolt Pattern (3" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Housing Saver

<u>Part #</u>	<u>Description</u>
4356	2" UNJ Pin - 2-1/2" Hex (Railhead Connection) (3" Rotolock)

Railhead Connection

<u>Part #</u>	<u>Description</u>
1250	Lead Rod, 2-1/16" Case Box to 2" UNJ/UNC Box
1107	2-1/2" ID Standard Hex Collar

Replacement Rock Points ,Bolts & O-Ring

<u>Part #</u>	<u>Description</u>
5019	Hard Condition, Dual Conical Tip (1526/1528) (Bucket 100)
5021	General Condition, Conical Tip (1526/1528) (Bucket 100)
5031	Cobble/Extreme Condition, Ball Tip (1526/1528) (Bucket 100)
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1526/1528) (Bag 50)
5314	Bolts, Socket Cap Bolt (Hex Collar) (Bag 50)
5316	Bolts, Socket Cap Bolt (3120) (Bag 50)
5317	Bolts, Socket Cap Bolt (3230) (Bag 50)

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Sonde Blocks

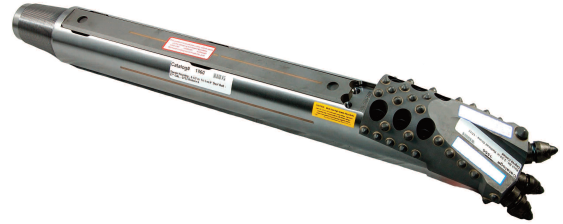
<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Case

6030

Incredibit

<u>Part #</u>	<u>Description</u>
1554	3-1/2" Standard Incredibit
1555	3-1/2" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1860	3-1/2" Incredibit Sonde Housing (3-1/2" Rotolock) * Requires Housing Saver * Requires Sonde Block Set

Endurance & RAM Sonde Housings

<u>Part #</u>	<u>Description</u>
2860	3-1/2" Railhead 6-Hole Bolt Pattern (3-1/2" Rotolock)
3160	3-1/2" Vermeer 7-Hole Bolt Pattern (3-1/2" Rotolock)
3260	3-1/2" Ditch Witch 6-Hole Bolt Pattern (3-1/2" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Railhead Quick Connect

<u>Part #</u>	<u>Description</u>
1237	Lead Rod, 2-3/8" Case Box to 2-1/2" RAMON Box
1414	Tool Adapter, 2-1/2" RAMON Pin to 2" UNJ Box
1108	3" ID Standard Hex Collar
1113	3" ID Carbide Rubble/Hard Surface Hex Collar

Housing Saver

<u>Part #</u>	<u>Description</u>
4309	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (3-1/2" Rotolock)
4389	2-1/2" Case BSW Pin (Manufacturer's Easy Connect) (3-1/2" Rotolock)

Replacement Teeth, Bolts & O-rings

<u>Part #</u>	<u>Description</u>
5026	Hard Condition, Dual Conical Tip (1554/1555) (Bucket 50)
5022	General Condition, Conical Tip (1554/1555) (Bucket 50)
5030	Cobble/Extreme Condition, Ball Tip (1554/1555) (Bucket 50)
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5316	Bolts, Socket Cap Bolt (1554/1555) (Bag 50)
5318	Bolts, Socket Cap Bolt (3260) (Bag 50)

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Ditch Witch

Ditch Witch 920 / 920L / 921 / 1220 M1

Incredibit

<u>Part #</u>	<u>Description</u>
1503	2-3/4" Standard, Medium Rock & Cobble

Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1800	2-3/4" Incredibit Sonde Housing (2-3/4" Rotolock)
1810	2-3/4" Incredibit Sonde Housing (2-3/4" Rotolock) *1810 Incredibit Housing is Subsite specific (no sonde blocks needed) * Requires Housing Saver
<u>RAM Sonde Housing</u>	
3200	2-3/4" Ditch Witch 5-Hole Bolt Pattern (2-3/4" Rotolock) *3200 Sonde Housing is Subsite specific (no sonde blocks needed) * Requires Housing Saver * Requires Water Nozzle

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Endurance Bit to Incredibit Sonde Housing Key

	* Recommended for use with Paddle Bits.
<u>Part #</u>	<u>Description</u>
2201	Key for 2210 & 2220 Series Endurance Bits

Housing Saver

<u>Part #</u>	<u>Description</u>
4308	1.41" DW Fld Miser Pin (2-3/4" Rotolock) (Direct Connect)
4415	1.63" DW EZ II Box (2-3/4" Rotolock) * Requires Ditch Witch Transition sub #400-067
4416	2.06" DW Fld Miser Box (2-3/4" Rotolock) * Requires Ditch Witch Transition sub #400-005
4417	1.88" DW EZ II Box (2-3/4" Rotolock) (1220 M1) * Requires Ditch Witch Transition sub #400-917

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5013	Hard Condition, Dual Conical Tip (1503) (Bucket 100)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5208	O-Ring, Water Port (1503) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1503) (Bag 50)
5316	Bolts, Socket Cap Bolt (3100) (Bag 50)
5317	Bolts, Socket Cap Bolt (3200) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4716	Digitrak
4721	Radiodetection
4726	McLaughlin



Ditch Witch

Ditch Witch 1720 / 1720M1 / 2020 M1

3" Tooling Optional for the DW 1220

Incredibit

<u>Part #</u>	<u>Description</u>
1526	3" Standard Incredibit
1528	3" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1830	3" Incredibit Sonde Housing (3" Rotolock) * Requires Housing Saver



RAM Sonde Housing

<u>Part #</u>	<u>Description</u>
2830	3" Railhead 6-Hole Bolt Pattern (3" Rotolock)
3120	3" Vermeer 7-Hole Bolt Pattern (3" Rotolock)
3230	3" Ditch Witch 5-Hole Bolt Pattern (3" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Housing Saver

<u>Part #</u>	<u>Description</u>
4364	2.06" DW Fld Miser Box (3" Rotolock) * Requires Ditch Witch Pin to Pin Adapter#368-264
4395	2.0" DW EZ II Box (3" Rotolock) * Requires Ditch Witch Transition sub #369-998
4418	1.88" DW EZ II Box (3" Rotolock for 1220) * Requires Ditch Witch Transition sub #400-917



Replacement Teeth

<u>Part #</u>	<u>Description</u>
5019	Hard Condition, Dual Conical Tip (1526/1528) (Bucket 100)
5021	General Condition, Conical Tip (1526/1528) (Bucket 100)
5031	Cobble/Extreme Condition, Ball Tip (1526/1528) (Bucket 100)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1526/1528) (Bag 50)
5316	Bolts, Socket Cap Bolt (3120) (Bag 50)
5317	Bolts, Socket Cap Bolt (3230) (Bag 50)

Sonde Blocks

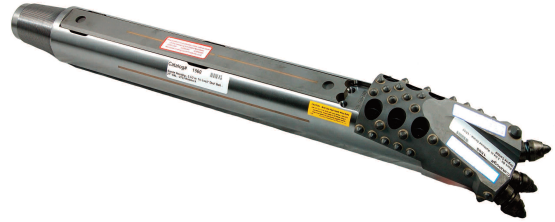
<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Ditch Witch

2720 / 2720M1 / 2720AT / 3020M1

Incredibit

<u>Part #</u>	<u>Description</u>
1554	3-1/2" Standard Incredibit
1555	3-1/2" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1860	3-1/2" Incredibit Sonde Housing (3-1/2" Rotolock)
* Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle	

Endurance Sonde Housing

<u>Part #</u>	<u>Description</u>
2860	3-1/2" Railhead 6-Hole Bolt Pattern (3-1/2" Rotolock)
3160	3-1/2" Vermeer 7-Hole Bolt Pattern (3-1/2" Rotolock)
3260	3-1/2" Ditch Witch 6-Hole Bolt Pattern (3-1/2" Rotolock)
* Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle	

Railhead Quick Connect

	<u>Part #</u>	<u>Description</u>
	JT 1233	Lead Rod, 2.06 Fluid Miser Pin to 2-1/2" Ramon Box
AT Dirt Pipe	1240	Lead Rod, 2.52 Fluid Miser Pin to 2-1/2" Ramon Box (Direct To Lead Pipe)
	JT 1409	Tool Adapter, 2-1/2" Ramon Pin to 2.06 Fluid Miser Pin
M1 & AT	1443	Tool Adapter, 2-1/2" Ramon Pin to 2.59 Fluid Miser Pin
	1108	Hex Collar, 4" OD 5/8" Wall Boring Collar
	1113	Hex Collar, 4" OD 5/8" with Carbide Rubble/Hard Surface
	3003	Pulling Eye, 2-1/2" Ramon Pin

Housing Saver

	<u>Part #</u>	<u>Description</u>
	4309	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (3-1/2" Rotolock) * On AT use Lead Rod #1240, goes direct to lead pipe
JT	4357	2.06" Fluid Miser Box (JT2720 Direct Connect) (3-1/2" Rotolock) * Will need Ditch Witch Pin to Pin Adapter # 368-261
JT	4396	2.00 EZ 2 Box (JT2720 Mfg Easy Connect) (3-1/2" Rotolock) * Will need Ditch Witch Transition Sub #400-134
M1	4397	2.25 EZ 2 Box (JT2720 M1 Mfg Easy Connect) (3-1/2" Rotolock) * Will need Ditch Witch Transition Sub #369-812
M1/AT	4379	2.59" Fluid Miser Box (JT2720 M1 / AT Direct Connect) (3-1/2" Rotolock) * M1 will need Ditch Witch Transition Sub #400-231 * AT will need Ditch Witch Transition Sub #369-410 or #400-057
AT	4314	2.52" Fluid Miser Pin (JT2720AT Dirt Pipe Direct Connect) (3-1/2" Rotolock) * Does not use transition sub, goes direct to lead pipe
JT	4373	2.06" Fluid Miser Pin (2720 Direct Connect) (3-1/2" Rotolock)
M1	4427	2.25" EZ3 Box (JT 3020M1 Mfg Easy Connect)

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5026	Hard Condition, Dual Conical Tip (1554/1555) (Bucket 50)
5022	General Condition, Conical Tip (1554/1555) (Bucket 50)
5030	Cobble/Extreme Condition, Ball Tip (1554/1555) (Bucket 50)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5316	Bolts, Socket Cap Bolt (1554/1555) (Bag 50)
5318	Bolts, Socket Cap Bolt (3260) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 Holes, .069 Orifice
2158	1 Hole, .250 Orifice

Endurance Bit to Incredibit Sonde Housing Key

* Recommended for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2202	Key for 2230 & 2240 Series Endurance Bits

Ditch Witch

4020 / 4020M1 / 4020AT

Incredibit

<u>Part #</u>	<u>Description</u>
1554	3-1/2" Standard Incredibit
1555	3-1/2" Aggressive Incredibit
1562	4-1/8" Standard Incredibit
1565	4-1/8" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1860	3-1/2" Incredibit Sonde Housing (3-1/2" Rotolock) * Requires Housing Saver * Requires Sonde Block Set
1850	4-1/8" Incredibit Sonde Housing (4-1/8" Rotolock) * Requires Housing Saver * Requires Sonde Block Set

Endurance Sonde Housing

<u>Part #</u>	<u>Description</u>
2860	3-1/2" Railhead 6-Hole Bolt Pattern (3-1/2" Rotolock)
3160	3-1/2" Vermeer 7-Hole Bolt Pattern (3-1/2" Rotolock)
3260	3-1/2" Ditch Witch 6-Hole Bolt Pattern (3-1/2" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Railhead Quick Connect

	<u>Part #</u>	<u>Description</u>
JT	1240	Lead Rod, 2.52 Fluid Miser Pin to 2-1/2" Ramon Box
Old JT	1437	Tool Adapter, 2-1/2" Ramon Pin to 2.52 Fluid Miser Pin
JT/M1	1443	Tool Adapter, 2-1/2" Ramon Pin to 2.59 Fluid Miser Pin
	1108	Hex Collar, 4" OD 1/2" Wall Boring Collar
	1113	Hex Collar, 4" OD 5/8" with Carbide Rubble/Hard Surface
	3003	Pulling Eye, 2-1/2" RamonPin

Housing Saver

		<u>Part #</u>	<u>Description</u>
3-1/2"	JT	4309	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (4-1/ 8" Rotolock)
	JT	4314	2.52 Fluid Miser Pin (Direct Connect) (3-1/2" Rotolock)
	JT	4359	2.52 Fluid Miser Box (Direct Connect) (3-1/2" Rotolock) * Will need Ditch Witch Pin to Pin Adapter # 369-001
	JT/M1	4398	2.63 EZ 2 Box (Mfg Easy Connect) (3-1/2" Rotolock) * Will need Ditch Witch Transition Sub #400-096
	JT/M1	4379	2.59 Fluid Miser Box (Direct Connect) (3-1/2" Rotolock) *JT will need Ditch WitchTransition Sub #400-700 *M1 will need Ditch WitchTransition Sub #400-575
4-1/8"	JT	4306	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (4-1/8" Rotolock)
		4363	3.27 Fluid Miser Box (Direct Connect) (4-1/8" Rotolock) * Will need Ditch Witch Pin to Box Adapter # 400-576

Ditch Witch

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5026	Hard Condition, Dual Conical Tip (1554/1555) (Bucket 50)
5022	General Condition, Conical Tip (1554/1555) (Bucket 50)
5030	Cobble/Extreme Condition, Ball Tip (1554/1555) (Bucket 50)
5020	General Condition, Conical Tip (1562) (Bucket 25)
5023	Hard Condition, Dual Conical Tip (1562) (Bucket 25)
5024	General Condition, Conical Tip (1565) (Bucket 25)
5029	Hard Condition, Dual Conical Tip (1565) (Bucket 25)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5316	Bolts, Socket Cap Bolt (1554/1555) (Bag 50)
5318	Bolts, Socket Cap Bolt (3260) (Bag 50)
5209	O-Ring, Water Port O-Ring (1562/1565) (Bag 50)
5342	Bolts, Socket Cap Bolt for (1562/1565) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Endurance Bit to Incredibit Sonde Housing Key

* Recommended for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2202	Key for 2230 & 2240 Series Endurance Bits

Water Nozzles

* Required for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2156	3 Holes, .064 Orifice
2157	2 Holes, .069 Orifice
2158	1 Hole, .250 Orifice

Ditch Witch

7020 / 8020

Incredibit

<u>Part #</u>	<u>Description</u>
1562	4-1/8" Standard Incredibit
1565	4-1/8" Aggressive Incredibit
1581	5" Standard Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1850	4-1/8" Incredibit Sonde Housing (4-1/8" Rotolock)
1880	5" Incredibit Sonde Housing (5" Rotolock)

* Requires Housing Saver * Requires Sonde Block Set

Housing Saver

<u>Part #</u>	<u>Description</u>
4363	3.27 Fluid Miser Box (Direct Connect) (4-1/8" Rotolock) * Will need Ditch Witch Pin to Pin Adapter # 368-742 - OR - * Will need Ditch Witch Transition Sub # 369-222 - OR - * Will need Ditch Witch EZ 2 Connect Adapter # 368-813
4387	3.27" Fluid Miser Box (Direct Connect) (5" Rotolock) * Will need Ditch Witch Pin to Pin Adapter # 368-742 - OR - * Will need Ditch Witch Transition Sub # 369-222 - OR - * Will need Ditch Witch EZ 2 Connect Adapter # 368-813

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5020	General Condition, Conical Tip (1562) (Bucket 25)
5023	Hard Condition, Dual Conical Tip (1562) (Bucket 25)
5024	General Condition, Conical Tip (1565) (Bucket 25)
5029	Hard Condition, Dual Conical Tip (1565) (Bucket 25)
5032	General Condition Conical Tip (1581) (Bucket 12)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5209	O-Ring, Water Port O-Ring (1562/1565) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5342	Bolts, Socket Cap Bolt (1562/1565) (Bag 50)
5213	O-Ring, Water Port O-Ring (1580) (Bag 50)
5344	Bolts, Socket Cap Bolts (1580) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Water Nozzles

	* Required for use with Paddle Bits.
<u>Part #</u>	<u>Description</u>
2160	1 Hole, .250 Oriffice

Endurance Bit to Incredibit Sonde Housing Key

	* Recomendded for use with Paddle Bits.
<u>Part #</u>	<u>Description</u>
2203	Key for 2250 & 2260 Series Endurance Bits

EXTReam Reamers

<u>Part #</u>	<u>Description</u>
1360	12" EXTReam (4-1/8" Rotolock)
1370	16" EXTReam (4-1/8" Rotolock)
	* Requires Housing Saver

All EXTReam Reamers come complete with Puller/Driver, 1 set of teeth and nozzles.



1370



1360

NOTE: EXTReam Reamers require housing savers to cross over between the drill pipe or lead rod to the reamer. Refer to the drill specific pages to determine the correct connection.

Straightline

2020

Incredibit

<u>Part #</u>	<u>Description</u>
1526	3" Standard Incredibit
1528	3" Aggressive Incredibit

Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1830	3" Incredibit Sonde Housing (3" Rotolock) * Requires Housing Saver

RAM Sonde Housing

<u>Part #</u>	<u>Description</u>
2830	3" Railhead 6-Hole Bolt Pattern (3" Rotolock)
3120	3" Vermeer 7-Hole Bolt Pattern (3" Rotolock)
3230	3" Ditch Witch 5-Hole Bolt Pattern (3" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Housing Saver

<u>Part #</u>	<u>Description</u>
4356	2" UNJ Pin - 3" Rotolock Box

Lead Rod

<u>Part #</u>	<u>Description</u>
1210	Lead Rod

Hex Collar

<u>Part #</u>	<u>Description</u>
1107	Hex Collar

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5019	Hard Condition, Dual Conical Tip (1526/1528) (Bucket 100)
5021	General Condition, Conical Tip (1526/1528) (Bucket 100)
5031	Cobble/Extreme Condition, Ball Tip (1526/1528) (Bucket 100)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1526/1528) (Bag 50)
5316	Bolts, Socket Cap Bolt (3120) (Bag 50)
5317	Bolts, Socket Cap Bolt (3230) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

D7x11 / D7x11A / D10x15

Incredibit

<u>Part #</u>	<u>Description</u>
1503	2-3/4" Standard, Medium Rock & Cobble

Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1800	2-3/4" Incredibit Sonde Housing (2-3/4" Rotolock)
	* Requires Housing Saver * Requires Sonde Block Set

RAM Sonde Housing

<u>Part #</u>	<u>Description</u>
3100	2-3/4" Vermeer 7-Hole Bolt Pattern (2-3/4" Rotolock)
3200	2-3/4" Ditch Witch 5-Hole Bolt Pattern (2-3/4" Rotolock)
	* Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Endurance Bit to Incredibit Sonde Housing Key

	* Recommended for use with Paddle Bits.
<u>Part #</u>	<u>Description</u>
2201	Key for 2210 & 2240 Series Endurance Bits

Housing Saver

<u>Part #</u>	<u>Description</u>
4301	1-5/8" Vermeer Low Profile Pin (2-3/4" Rotolock)
4304	1.66" Vermeer Firestick I Box (2-3/4" Rotolock)

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5013	Hard Condition, Dual Conical Tip (Bucket 100)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5208	O-Ring, Water Port O-Ring (1503) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1503) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4716	Digitrak
4721	Radiodetection
4726	McLaughlin



Vermeer

Vermeer 16x20 / 16x20A / 18x22 / 20x22

Incredibit

<u>Part #</u>	<u>Description</u>
1526	3" Standard Incredibit
1528	3" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1830	3" Incredibit Sonde Housing (3" Rotolock) * Requires Housing Saver



RAM Sonde Housing

<u>Part #</u>	<u>Description</u>
2830	3" Railhead 6-Hole Bolt Pattern (3" Rotolock)
3120	3" Vermeer 7-Hole Bolt Pattern (3" Rotolock)
* Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle	

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Endurance Bit to Incredibit Sonde Housing Key

* Recommended for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2201	Key for 2210 & 2220 Series Endurance Bits

Housing Saver

<u>Part #</u>	<u>Description</u>
4305	HS 2-1/8" Vermeer LP Pin (3" Rotolock)
4354	HS 2.06" Firestick I Box (3" Rotolock)
4355	HS 1.9" Firestick I Box (3" Rotolock)
4410	HS 1-5/8" Vermeer LP Pin (3" Rotolock)

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5019	Hard Condition, Dual Conical Tip (1526/1528) (Bucket 100)
5021	General Condition, Conical Tip (1526/1528) (Bucket 100)
5031	Cobble/Extreme Condition, Ball Tip (1526/1528) (Bucket 100)
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5313	Bolts, Socket Cap Bolt (1526/1528) (Bag 50)
5316	Bolts, Socket Cap Bolt (3120) (Bag 50)
5317	Bolts, Socket Cap Bolt (3230) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

D24x40 / D33x44

Incredibit

<u>Part #</u>	<u>Description</u>
1554	3-1/2" Standard Incredibit
1555	3-1/2" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1860	3-1/2" Incredibit Sonde Housing (3-1/2" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Endurance Sonde Housing

<u>Part #</u>	<u>Description</u>
2860	3-1/2" Railhead 6-Hole Bolt Pattern (3-1/2" Rotolock)
3160	3-1/2" Vermeer 7-Hole Bolt Pattern (3-1/2" Rotolock)
3260	3-1/2" Ditch Witch 6-Hole Bolt Pattern (3-1/2" Rotolock) * Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle



Railhead Quick Connect

<u>Part #</u>	<u>Description</u>
1269	Lead Rod, 2-3/8" Firestick I Box to 2-1/2" RAMON Box
1259	Lead Rod, Vermeer Part 33x44 Box to 2-1/2" RAMON Box
1413	Tool Adapter, 2-1/2" RAMON Pin to 2-1/8" Vermeer LP Box
1108	Hex Collar, 4" OD 5/8" Wall Boring Collar
1113	Hex Collar, 4" OD 5/8" with Carbide Rubble/Hard Surface
3003	Pulling Eye, 2-1/2" Ramon Pin

Housing Saver

<u>Part #</u>	<u>Description</u>
4309	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (3-1/2" Rotolock)
4352	2-3/8" Firestick I Box (Direct Connect) (3-1/2" Rotolock)
4358	2-1/8" Vermeer LP Pin - 3" Hex (Mfg's Easy Connect) (3-1/2" Rotolock)

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5026	Hard Condition, Dual Conical Tip (1554/1555) (Bucket 50)
5022	General Condition, Conical Tip (1554/1555) (Bucket 50)
5030	Cobble/Extreme Condition, Ball Tip (1554/1555) (Bucket 50)

Vermeer

D24x40 / D33x44

Water Nozzles

<u>Part #</u>	<u>Description</u>
2157	2 - Hole Nozzle .069 Orifice
2158	1 - Hole Nozzle .250 Orifice

Endurance Bit to Incredibit Sonde Housing Key

* Recommended for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2202	Key for 2230 & 2240 Series Endurance Bits

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5316	Bolts, Socket Cap Bolt (1554/1555) (Bag 50)
5318	Bolts, Socket Cap Bolt (3260) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin



Endurance Housing
Vermeer Bolt Pattern
3160



Endurance Housing
Railhead Bolt Pattern
2860



8" EXTream



12" EXTream



16" EXTream

NOTE: EXTream Reamers require housing savers to cross over between the drill pipe or lead rod to the reamer. Refer to the drill specific pages to determine the correct connection.

D40x40 / D36x50

Incredibit

<u>Part #</u>	<u>Description</u>
1554	3-1/2" Standard Incredibit
1555	3-1/2" Aggressive Incredibit
1562	4-1/8" Standard Incredibit
1565	4-1/8" Aggressive Incredibit



Incredibit Sonde Housing

<u>Part #</u>	<u>Description</u>
1860	3-1/2" Incredibit Sonde Housing (3-1/2" Rotolock)
1850	4-1/8" Incredibit Sonde Housing (4-1/8" Rotolock)

* Requires Housing Saver * Requires Sonde Block Set

Endurance Sonde Housing

<u>Part #</u>	<u>Description</u>
2860	3-1/2" Railhead 6-Hole Bolt Pattern (3-1/2" Rotolock)
3160	3-1/2" Vermeer 7-Hole Bolt Pattern (3-1/2" Rotolock)
3260	3-1/2" Ditch Witch 6-Hole Bolt Pattern (3-1/2" Rotolock)

* Requires Housing Saver * Requires Sonde Block Set * Requires Water Nozzle

Railhead Quick Connect

<u>Part #</u>	<u>Description</u>
1269	Lead Rod, 2-3/8" Firestick I Box to 2-1/2" RAMON Box
1259	Lead Rod, Vermeer Part 33x44 Box to 2-1/2" RAMON Box
1413	Tool Adapter, 2-1/2" RAMON Pin to 2-1/8" Vermeer LP Box
1108	Hex Collar, 4" OD 5/8" Wall Boring Collar
1113	Hex Collar, 4" OD 5/8" with Carbide Rubble/Hard Surface
3003	Pulling Eye, 2-1/2" Ramon Pin

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Housing Saver

<u>Part #</u>	<u>Description</u>
4309	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (3-1/2" Rotolock)
4352	2-3/8" Firestick I Box (Direct Connect) (3-1/2" Rotolock)
4358	2-1/8" Vermeer LP Pin - 3" Hex (Mfg's Easy Connect) (3-1/2" Rotolock)
4306	2-1/2" RAMON Pin - 3" Hex (Railhead Quick Connect) (4-1/8" Rotolock)

Vermeer

D40x40 / D36x50 Continued

Water Nozzles

* Required for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2160	1 Hole, .250 Orifice (for 1850 Housing)
2157	2 - Hole Nozzle .069 Orifice (for 1860 Housing)
2158	1 - Hole Nozzle .250 Orifice (for 1860 Housing)

Endurance Bit to Incredibit Sonde Housing Key

* Recommended for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2203	Key for 2250 & 2260 Series Endurance Bits (for 1850 Housing)
2202	Key for 2230 & 2240 Series Endurance Bits (for 1860 Housing)

Replacement Rock Points,Bolts and O-rings

<u>Part #</u>	<u>Description</u>
5026	Hard Condition, Dual Conical Tip (1554/1555) (Bucket 50)
5022	General Condition, Conical Tip (1554/1555) (Bucket 50)
5030	Cobble/Extreme Condition, Ball Tip (1554/1555) (Bucket 50)
5020	General Condition, Conical Tip (1562) (Bucket 25)
5023	Hard Condition, Dual Conical Tip (1562) (Bucket 25)
5024	General Condition, Conical Tip (1565) (Bucket 25)
5029	Hard Condition, Dual Conical Tip (1565) (Bucket 25)
5208	O-Ring, Water Port (1526/1528) (Bag 50)
5310	Bolts, Socket Cap Bolt (Water Nozzle) (Bag 50)
5311	Bolts, Socket Cap Bolt (Housing Door) (Bag 50)
5316	Bolts, Socket Cap Bolt (1554/1555) (Bag 50)
5318	Bolts, Socket Cap Bolt (3260) (Bag 50)
5209	O-Ring, Water Port O-Ring (1562/1565) (Bag 50)
5342	Bolts, Socket Cap Bolt (1562/1565) (Bag 50)

D50x100 / D80x100 / D80x120 / D100x120

Incredibit

<u>Part #</u>	<u>Description</u>
1581	5" Standard Incredibit
1562	4-1/8" Standard Incredibit
1565	4-1/8" Aggressive Incredibit



Incredibit Sonde Housing

* Requires Housing Saver * Requires Sonde Block Set

<u>Part #</u>	<u>Description</u>
1880	5" Incredibit Sonde Housing (5" Rotolock)
1850	4-1/8" Incredibit Sonde Housing (4-1/8" Rotolock)

Housing Saver

	<u>Part #</u>	<u>Description</u>
D50x100	4380	2-7/8" Firestick I Box (Direct Connect) (5" Rotolock)
D80 & D100	4381	3-1/2" Firestick I Box (Direct Connect) (5" Rotolock)
D80 & D100	4307	3-1/2" Firestick I Box (Direct Connect) (4-1/8 Rotolock)
D50x100	4310	2-7/8" Firestick I Box (Direct Connect) (4-1/8 Rotolock)

Replacement Teeth

<u>Part #</u>	<u>Description</u>
5032	General Condition Conical Tip (1581) (Bucket 12)
5020	General Condition, Conical Tip (1562) (Bucket 25)
5023	Hard Condition, Dual Conical Tip (1562) (Bucket 25)
5024	General Condition, Conical Tip (1565) (Bucket 25)
5029	Hard Condition, Dual Conical Tip (1565) (Bucket 25)

Bolts & O-Rings

<u>Part #</u>	<u>Description</u>
5213	O-Ring, Water Port O-Ring (1580) (Bag 50)
5344	Bolts, Socket Cap Bolts (1581) (Bag 50)
5209	O-Ring, Water Port O-Ring (1562/1565) (Bag 50)
5342	Bolts, Socket Cap Bolt (1562/1565) (Bag 50)

Sonde Blocks

<u>Part #</u>	<u>Description</u>
4704	Subsite 86 (B or BH)
4735	Digitrak
4736	Radiodetection
4737	McLaughlin

Vermeer

D50x100 / D80x100 / D80x120 / D100x120

Water Nozzles

* Required for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2160	1 Hole, .250 Oriffice (for 1850 & 1880 Housing)

Endurance Bit to Incredibit Sonde Housing Key

* Recomendend for use with Paddle Bits.

<u>Part #</u>	<u>Description</u>
2203	Key for 2250 & 2260 Series Endurance Bits (for 1850

EXTReam Reamers

<u>Part #</u>	<u>Description</u>
1340	8" EXTReam (3-1/2" Rotolock)
1350	12" EXTReam (3-1/2" Rotolock)
1360	12" EXTReam (4-1/8" Rotolock)
1370	16" EXTReam (4-1/8" Rotolock)

* Requires Housing Saver



1340



1360



1370

NOTE: EXTReam Reamers require housing savers to cross over between the drill pipe or lead rod to the reamer. Refer to the drill specific pages to determine the correct connection.

Pullers/ Drivers

<u>Part #</u>	<u>Description</u>
5515	Rock Point Puller/ Driver (1526 & 1528 Rock Bits)
5516	Reamer Rock Point Puller (8", 12", & 16" Reamers)
5520	Rock Point Puller/ Driver (1554 & 1555 Rock Bits)
5525	Rock Point Puller/ Driver (1561, 1562, & 1565 Rock Bits)



DIRECTBORE TOOLING

DirectBore Rock Bits

<u>Part #</u>	<u>Description</u>
8150	2-3/8" API Pin DirectBore I
8185	4-1/2" API 9" DirectBore I
8190	4-1/2" API 13" DirectBore I
8230	2" IF Pin DirectBore II
8350	2-3/8" API DirectBore III



8150



8230



8350



8185



8190

DirectBore Sonde Housings

<u>Part #</u>	<u>Description</u>
8460	2-3/8" API Box Sonde Housing
* Designed for 24,000 to 40,000 # machines	
8430	2" IF Box Sonde Housing
* Used with 12,000 to 20,000 # machines	



Sonde Blocks (Clockable)

<u>Part #</u>	<u>Description</u>
4748	Subsite 86 (B or BH) (for 8460)
4747	Digitrak (for 8460)

*** Refer to Drill Specific pages 5 - 29 for connection options**

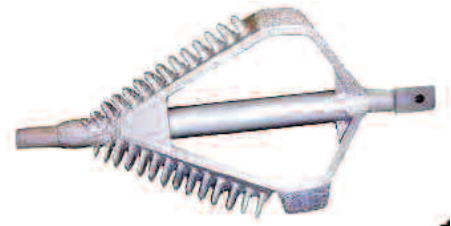
End Load Rock Bit Adapters

<u>Part #</u>	<u>Description</u>
1750	2-7/8" API Pin Rock Bit Adapter (1562,1565)
1751	2-3/8" API Pin Rock Bit Adapter (1562,1565)
1752	3-1/2" API Pin Rock Bit Adapter (1562,1565)
1760	2-6/8" API Pin Rock Bit Adapter (1554,1555)
1780	2-7/8" API Pin Rock Bit Adapter (1581)
1782	3-1/2" API Pin Rock Bit Adapter (1581)



Ram Reamers

Taper Winged Reamers come in sizes 8" to 30" o and 10" to 30" plus 36",42" and 48" sizes. Please call for availability and pricing



Stack Plate Reamers come in sizes 6" to 30"
Please call for availability and pricing



Padle Ball Reamers come in sizes 6" to 26" plus 30",36" and 48" sizes. Please call for availability and pricing



Solid Body Fluter Reamers



2-3/8" API SOLID BODY FLUTED REAMER WITH 15K SWIVEL

<u>Part #</u>	<u>Description</u>
7210	RAM 6-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 15K Swivel)
7211	RAM 8-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 15K Swivel)
7240	RAM 6-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 15K Swivel)
7241	RAM 8-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 15K Swivel)

2-3/8" API SOLID BODY FLUTED REAMER WITH 25K SWIVEL

<u>Part #</u>	<u>Description</u>
7201	RAM 6-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 25K Swivel)
7202	RAM 8-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 25K Swivel)
7203	RAM 10-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 25K Swivel)
7204	RAM 12-3/4" 2-3/8" API Solid Body Fluted Reamer W Conical Carbide(W/ 25K Swivel)
7205	RAM 14-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 25K Swivel)
7206	RAM 16-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 25K Swivel)
7207	RAM 18-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 25K Swivel)
7248	RAM 6-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 25K Swivel)
7249	RAM 8-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 25K Swivel)
7250	RAM 10-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 25K Swivel)
7251	RAM 12-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 25K Swivel)
7252	RAM 14-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 25K Swivel)
7253	RAM 16-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 25K Swivel)
7254	RAM 18-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 25K Swivel)

2-7/8" API SOLID BODY FLUTED REAMER WITH 50K SWIVEL

<u>Part #</u>	<u>Description</u>
7224	RAM 10-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 50K Swivel)
7225	RAM 12-3/4" 2-7/8" API Solid Body Fluted Reamer W Conical Carbide(W/ 50K Swivel)
7226	RAM 14-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 50K Swivel)
7227	RAM 16-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 50K Swivel)
7228	RAM 18-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 50K Swivel)
New	RAM 20-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 50K Swivel)
New	RAM 24-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 50K Swivel)
New	RAM 28-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(W/ 50K Swivel)
7266	RAM 10-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)
7267	RAM 12-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)
7268	RAM 14-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)
7269	RAM 16-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)
7270	RAM 18-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)
New	RAM 20-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)
New	RAM 24-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)
New	RAM 28-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(W/ 50K Swivel)

Solid Body Fluter Reamers

2-3/8" API SOLID BODY FLUTED REAMER WITHOUT SWIVEL

<u>Part #</u>	<u>Description</u>
7215	RAM 6-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
7216	RAM 8-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
7217	RAM 10-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(Wwithout Swivel)
7218	RAM 12-3/4" 2-3/8" API Solid Body Fluted Reamer W Conical Carbide(Without Swivel)
7219	RAM 14-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
7220	RAM 16-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
7221	RAM 18-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
7257	RAM 6-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
7258	RAM 8-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
7259	RAM 10-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
7260	RAM 12-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
7261	RAM 14-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
7262	RAM 16-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
7263	RAM 18-3/4" 2-3/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)

2-7/8" API SOLID BODY FLUTED REAMER WITHOUT SWIVEL

<u>Part #</u>	<u>Description</u>
New	RAM 20-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
New	RAM 24-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
New	RAM 28-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
New	RAM 20-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
New	RAM 24-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
New	RAM 28-3/4" 2-7/8" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)

3-1/2" API SOLID BODY FLUTED REAMER WITHOUT SWIVEL

<u>Part #</u>	<u>Description</u>
New	RAM 20-3/4" 3-1/2" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
New	RAM 24-3/4" 3-1/2" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
New	RAM 28-3/4" 3-1/2" API Solid Body Fluted Reamer W/ Conical Carbide(Without Swivel)
New	RAM 20-3/4" 3-1/2" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
New	RAM 24-3/4" 3-1/2" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)
New	RAM 28-3/4" 3-1/2" API Solid Body Fluted Reamer W/ Shark Teeth(Without Swivel)

Endurance Paddle Bits (Railhead Bolt Pattern)

Part #	Description
2210	DB 3-1/2" Sharp Shooter (2-3/4" or 3" Housings)
2210HDB	3-1/2" Sharp Shooter w/Pulling Hole (2-3/4" or 3" Housings)
2213	DB 3-1/2" Iron Claw (2-3/4" or 3" Housings)
2213HDB	3-1/2" Iron Claw w/Pulling Hole (2-3/4" or 3" Housings)
2215	DB 3-1/2" Button Bit (2-3/4" or 3" Housings)
2215HDB	3-1/2" Button Bit w/Pulling Hole (2-3/4" or 3" Housings)
2220	DB 4" Sharp Shooter (2-3/4" or 3" Housings)
2220HDB	4" Sharp Shooter w/Pulling Hole (2-3/4" or 3" Housings)
2223	DB 4" Iron Claw (2-3/4" or 3" Housings)
2223HDB	4" Iron Claw w/Pulling Hole (2-3/4" or 3" Housings)
2225	DB 4" Button Bit (2-3/4" or 3" Housings)
2225HDB	4" Button Bit w/Pulling Hole (2-3/4" or 3" Housings)
2230	DB 4" Sharp Shooter (3-1/2" Housings)
2230HDB	4" Sharp Shooter w/Pulling Hole (3-1/2" Housings)
2233	DB 4" Iron Claw (3-1/2" Housings)
2233HDB	4" Iron Claw w/Pulling Hole (3-1/2" Housings)
2235	DB 4" Button Bit (3-1/2" Housings)
2235HDB	4" Button Bit w/Pulling Hole (3-1/2" Housings)
2240	DB 5" Sharp Shooter (3-1/2" Housings)
2240HDB	5" Sharp Shooter w/Pulling Hole (3-1/2" Housings)
2243	DB 5" Iron Claw (3-1/2" Housings)
2243HDB	5" Iron Claw w/Pulling Hole (3-1/2" Housings)
2245	DB 5" Button Bit (3-1/2" Housings)
2245HDB	5" Button Bit w/Pulling Hole (3-1/2" Housings)
2250	DB 5" Sharp Shooter (4-1/8" Housings)
2250HDB	5" Sharp Shooter w/Pulling Hole (4-1/8" Housings)
2253	DB 5" Iron Claw (4-1/8" Housings)
2255	DB 5" Button Bit (4-1/8" Housings)
2255HDB	5" Button Bit w/Pulling Hole (4-1/8" Housings)
2260	DB 6" Sharp Shooter (4-1/8" Housings)
2260HDB	6" Sharp Shooter w/Pulling Hole (4-1/8" Housings)
2263	DB 6" Iron Claw (4-1/8" Housings)
2263HDB	6" Iron Claw w/Pulling Hole (4-1/8" Housings)
2265	DB 6" Button Bit (4-1/8" Housings)
2265HDB	6" Button Bit w/Pulling Hole (4-1/8" Housings)



RAM Paddle Bits

Ditch Witch Bolt Pattern

<u>Part #</u>	<u>Description</u>
7340	RAM 4" Spike Point Bit (12mm Ditch Witch 4 Bolt Pattern)
7350	RAM 3-1/2" Claw Bit (12mm Ditch Witch 5 Bolt Pattern)
7351	RAM 3-1/2" Taper Bit (12mm Ditch Witch 5 Bolt Pattern)
7352	RAM 3-1/2" Cutter Bit (12mm Ditch Witch 5 Bolt Pattern)
7353	RAM 3-1/2" Spike Point Bit (12mm Ditch Witch 5 Bolt Pattern)
7354	RAM 3-1/2" Button Bit (12mm Ditch Witch 5 Bolt Pattern)
7375	RAM 4" Claw Bit (12mm Ditch Witch 5 Bolt Pattern)
7376	RAM 4" Taper Bit (12mm Ditch Witch 5 Bolt Pattern)
7377	RAM 4" Cutter Bit (12mm Ditch Witch 5 Bolt Pattern)
7378	RAM 4" Spike Point Bit (12mm Ditch Witch 5 Bolt Pattern)
7379	RAM 4" Button Bit (12mm Ditch Witch 5 Bolt Pattern)
7400	RAM 4" Claw Bit (16mm Ditch Witch 6 Bolt Pattern)
7401	RAM 4" Taper Bit (16mm Ditch Witch 6 Bolt Pattern)
7402	RAM 4" Cutter Bit (16mm Ditch Witch 6 Bolt Pattern)
7403	RAM 4" Spike Point Bit (16mm Ditch Witch 6 Bolt Pattern)
7404	RAM 4" Button Bit (16mm Ditch Witch 6 Bolt Pattern)
7425	RAM 5" Claw Bit (16mm Ditch Witch 6 Bolt Pattern)
7426	RAM 5" Taper Bit (16mm Ditch Witch 6 Bolt Pattern)
7427	RAM 5" Cutter Bit (16mm Ditch Witch 6 Bolt Pattern)
7428	RAM 5" Spike Point Bit (16mm Ditch Witch 6 Bolt Pattern)
7429	RAM 5" Button Bit (16mm Ditch Witch 6 Bolt Pattern)



Vermeer Bolt Pattern

<u>Part #</u>	<u>Description</u>
7450	RAM 3-1/2" Claw Bit (1/2" Vermeer 7 Bolt Pattern)
7451	RAM 3-1/2" Taper Bit (1/2" Vermeer 7 Bolt Pattern)
7452	RAM 3-1/2" Cutter Bit (1/2" Vermeer 7 Bolt Pattern)
7453	RAM 3-1/2" Spike Point Bit (1/2" Vermeer 7 Bolt Pattern)
7454	RAM 3-1/2" Button Bit (1/2" Vermeer 7 Bolt Pattern)
7475	RAM 4" Claw Bit (1/2" Vermeer 7 Bolt Pattern)
7476	RAM 4" Taper Bit (1/2" Vermeer 7 Bolt Pattern)
7477	RAM 4" Cutter Bit (1/2" Vermeer 7 Bolt Pattern)
7478	RAM 4" Spike Point Bit (1/2" Vermeer 7 Bolt Pattern)
7479	RAM 4" Button Bit (1/2" Vermeer 7 Bolt Pattern)
7500	RAM 5" Claw Bit (1/2" Vermeer 7 Bolt Pattern)
7501	RAM 5" Taper Bit (1/2" Vermeer 7 Bolt Pattern)
7502	RAM 5" Cutter Bit (1/2" Vermeer 7 Bolt Pattern)
7503	RAM 5" Spike Point Bit (1/2" Vermeer 7 Bolt Pattern)
7504	RAM 5" Button Bit (1/2" Vermeer 7 Bolt Pattern))

