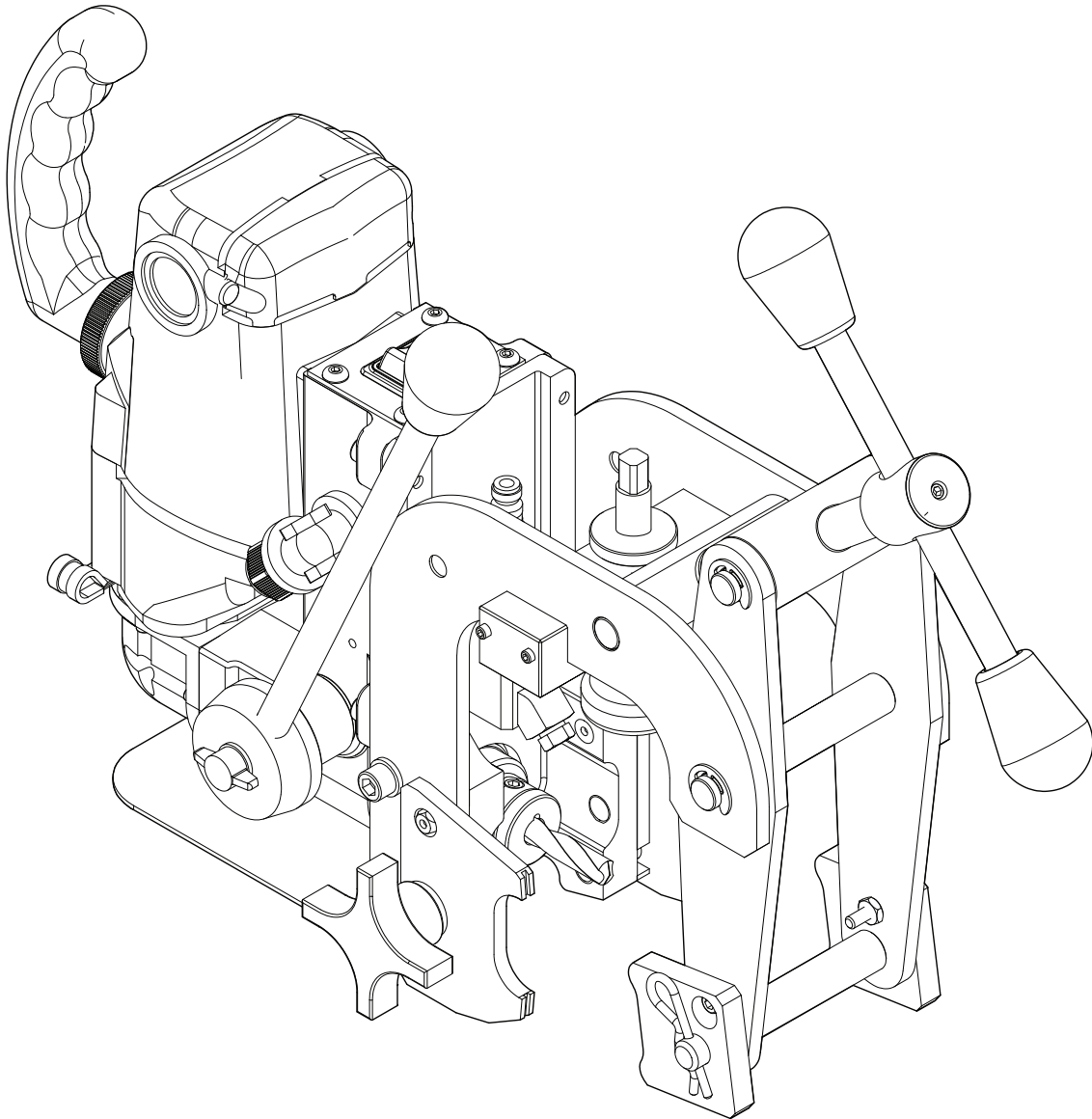




BD17 TRANSDUCER DRILL

OPERATOR'S MANUAL

COVERS DRILL PART NUMBER 0017109



Serial #: _____ Date: _____

Trak-Star®

BD17 Transducer Drill

Welcome to Trak-Star®

Congratulations on your purchase of the Trak-Star® Transducer Drill. Your model is designed to produce superior holes quickly and efficiently. Through constant innovation and development, Trak-Star® is committed to provide you with hole-producing tools and products that lead the industrial world.

Before attempting to operate your new Transducer Drill, please read all instructions first. These include the Operators Manual and Warning Label on unit itself. With proper use, care, and maintenance, your model will provide you with years of effective hole drilling performance. Once again, thank you for selecting our product and welcome to Trak-Star®.

0017109 - BD17 120 volt, Transducer Drill

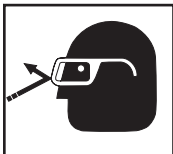
SPECIFICATIONS

Cutter Type.....3/8" Flatted Shank Bonding Drill
Hole Diameter Capacity.....13/32"
Depth of Cut.....3/4" / 19mm
Motor.....120V, 7.2A, 450 RPM
Electrical.....120V, 50/60 Hz, 8A, 960W
Feed System.....Manual Quill Feed
Net Weight.....28.5 lbs.

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SAFETY FIRST



Always wear eye protection while using cutting tools, or in the vicinity of cutting.



CAUTION! Cutters are sharp. Wear gloves when installing or removing cutter from arbor. Do not grab a rotating cutter.



CAUTION! The slug is ejected at the end of the cut. Do not aim cutter or arbor so that ejected slug may hit someone around, or below you.



CAUTION! To prevent electric shock, do not use power tools near wet areas, or where power tool may become wet.

IMPORTANT SAFETY INSTRUCTIONS



WARNING: Read and understand all instructions. Failure to follow all instructions listed below, may result in electrical shock, fire and/or serious personal injury.

Work Area

Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.

Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.

Keep bystanders, children, and visitors away while operating a power tool. Distractions can cause you to lose control.

Electrical Safety

Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the ground prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. If the tools should electrically malfunction or breakdown, grounding provides a low resistance path to carry electricity away from the user.

Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock of your body is grounded.

Don't expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electric shock.

When operating a power tool outside, use an outdoor extension cord marked "W-A" or "W"; These cords are rated for outdoor use and reduce the risk of electrical shock.

Personal Safety

Stay alert, watch what you are doing and use common sense when using a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.

Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.

Avoid accidental starting. Be sure switch is off before plugging in. Carrying tools with your finger on the switch or plugging in tools that have the switch on invites accidents.

Remove adjusting keys or switches before turning the tool on. A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.

Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the tool in unexpected situations.

Use safety equipment. Always wear eye protection. Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

Tool Use and Care

Use clamps or other practical way to secure and support the work piece to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.

Do not force tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

Do not use tool if switch does not turn it on or off. Any tool that cannot be controlled with the switch is dangerous and must be repaired.

Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.

Store idle tools out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.

Maintain tools with care. Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.

Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tools operation. If damaged, have the tool serviced before using. Many accidents are caused by poorly maintained tools.

Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool, may become hazardous when used on another tool.

Service

Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.

When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.

IMPORTANT SAFETY INSTRUCTIONS

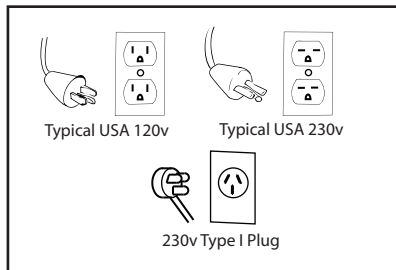


WARNING: Read and understand all instructions. Failure to follow all instructions listed below, may result in electrical shock, fire and/or serious personal injury.

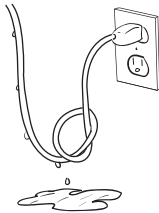
Safe Electrical Connection

Your Transducer Drill is rated for use on 115VAC at 50-60Hz. Do not attempt to use drill on power sources rated other than this.

Plugs and Receptacles



Wet electrical connections are shock hazards. To prevent the cutting fluid from traveling along the cord and contacting the plug or power outlet, tie a drip loop as shown. Also, elevate extension cords or gang box connections.



Extension Cords

Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-pole receptacles that accept the tool's plug. Replace or repair damaged cords. Make sure the conductor size is large enough to prevent excessive voltage drop which will cause loss of power and possible motor damage.

Extension Cord Table

LENGTH OF CORD, FEET	RECOMMENDED WIRE GAUGE	RECOMMENDED WIRE GAUGE
	115V MOTOR 10 - 12 AMPS	230 V MOTOR 5 - 6 AMPS
UP TO 25	16	18
26 - 50	14	18
51 - 100	10	16
101 - 200	8	14
201 - 300	6	12
301 - 500	4	10

Outdoor Use Extension Cords

When tool is used outdoors, use only extension cords intended for use outdoors and so marked.

Additional Safety Precautions

Arbor and cutter should never be used as a handhold. Keep hands and clothing away from all moving parts. Also, adhere to all operating instructions. Do not drill through any surface that may contain live electrical wiring. Drilling into a live wire could cause exposed metal parts of the drill to be made live. Remove chips wrapped around cutter and arbor after each hole. With motor off and power disconnected, grasp chips with leather gloved hand or pliers and pull while rotating counterclockwise. Should the cutter become jammed in the work, stop the unit immediately to prevent personal injury. Disconnect the drill from the power supply and loosen jammed cutter by turning the arbor counterclockwise. Never attempt to free the jammed cutter by starting the motor. Service at authorized repair center only.

Operating Near Welding Equipment

DO NOT operate this unit on the same work surface that welding is being performed on. Severe damage to the unit, particularly the power cord, could occur. This could also result in personal injury to the operator.

Circuit Breaker (If Applicable)

Changing of the circuit breaker to a higher amp rated breaker, or bypassing the circuit breaker is not recommended and will void product warranty.

Circuit Breaker Operation (If Applicable)

The circuit breaker is a thermal breaker. When it reaches the higher temperature rating it will trip and cause the unit to shut down. This is a protective device and can be reset after 5 to 10 minutes. To reset the breaker, press the breaker button back in. If it does not reset, let the unit cool a little longer until you can push the button in and it stays in position.

Save these Instructions.

INSTALLING / REMOVING BONDING BIT ADAPTER

INSTALLING THE BONDING BIT ADAPTER

Be sure engine is stopped and turned off. Turn off coolant at shut-off.

1. Position the Bonding Bit so the flat is in-line with the set screw on the Bonding Bit Adapter. Push the Bonding Bit into the Bonding Bit Adapter and tighten the set screw.
2. Line the flat surface of the Bonding Bit Adapter with the dowel pin that is located at the end of the Arbor Body Assembly. Push the Bonding Bit Adapter in toward the Arbor Body and twist the Adapter clock-wise until it is locked into place.
3. Install the correct size rail shoe, according to the size of rail that is being drilled.

The Bonding Bit Adapter is now installed and ready for use. Follow all standard operation procedures to operate your BD17 Transducer Drill.

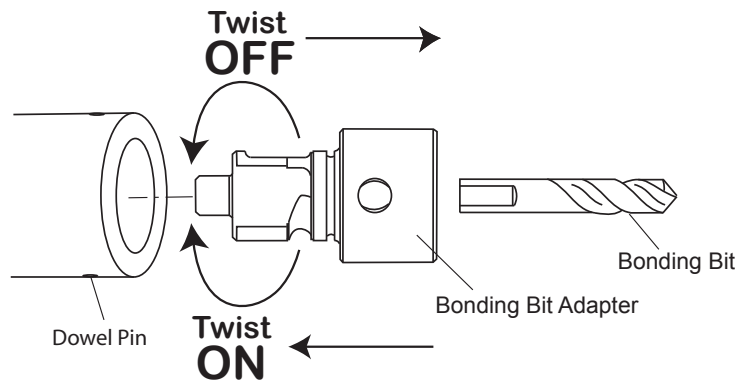
REMOVING THE BONDING BIT ADAPTER

Be sure engine is stopped and turned off. Turn off coolant at shut-off.

1. Position the BD17 so the cutter area is easily access able. While removing the Bonding Bit Adapter, a small amount of coolant may drain out from the Arbor Body.
2. Push the Bonding Bit Adapter toward the Arbor Body and twist the Adapter counter clock-wise until the Adapter is unlocked and the flat on the Adapter is aligned with the dowel pin in the Arbor Body. Pull the Bonding Bit Adapter out toward the Clamp Assembly.
3. With the assembly now free from the machine, you now have access to the set screw which holds the Bonding Bit in place. You can now use a hex key wrench and loosen the set screw to remove the Bonding Bit from the Adapter.

Refer to the installation steps listed above to re-install the Bonding Bit Assembly.

BONDING BIT ADAPTER ASSEMBLY



	9/32"	8mm	3/8"	13/32"
Bonding Bit Assembly (Adapter & Bit)	07305	07302	05565	07316
Bonding Bit	07307	07304	03452	07318

CLAMPING PROCEDURE

WARNING: IMPROPER CLAMPING WILL CAUSE PREMATURE CUTTER FAILURE

Confirm that the correct Rail Shoes have been installed according to the size of Rail that is being drilled. For Transducer use only shoe part no. 01909.

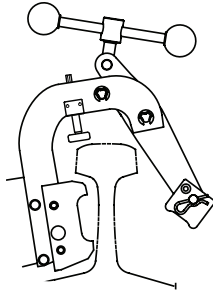


FIGURE A.

STEP #1:

With clamp in open position, rest unit on rail base. Bottom of shoes should contact taper on rail base. (See Fig. A)

* PERFORMANCE TIP:

Close clamp until clamp pad contacts web or rail prior to STEP #2.

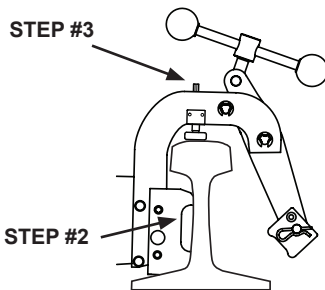


FIGURE B.

STEP #2:

Raise rear of rail drill to locate shoes in proper position. (See Fig. B)

STEP #3:

Loosen locking nut on Height Adjustment Assembly. Turn Height Screw to achieve desired hole height. Tighten locking nut to secure.

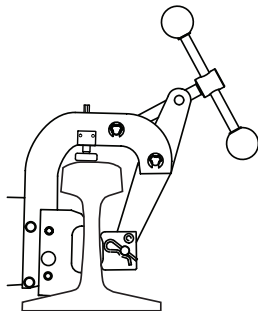


FIGURE C.

STEP #4:

While maintaining contact between shoes and rail, tighten clamp. (See Fig. C)

* CLAMPING NOTE:

When you have the clamp tight on the rail, check for pad contact. If pad contact is good, tighten clamp handle one more half turn. DO NOT OVER-TIGHTEN.

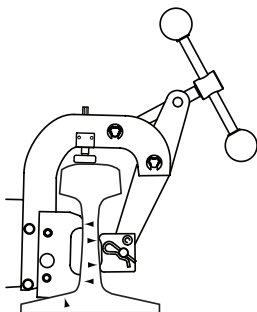


FIGURE D.

STEP #5:

When unit is firmly clamped, check for proper shoe and pad contact on both sides again. (See Fig. D)

When properly clamped to the rail there will be a small gap between the top of the shoe and the rail.

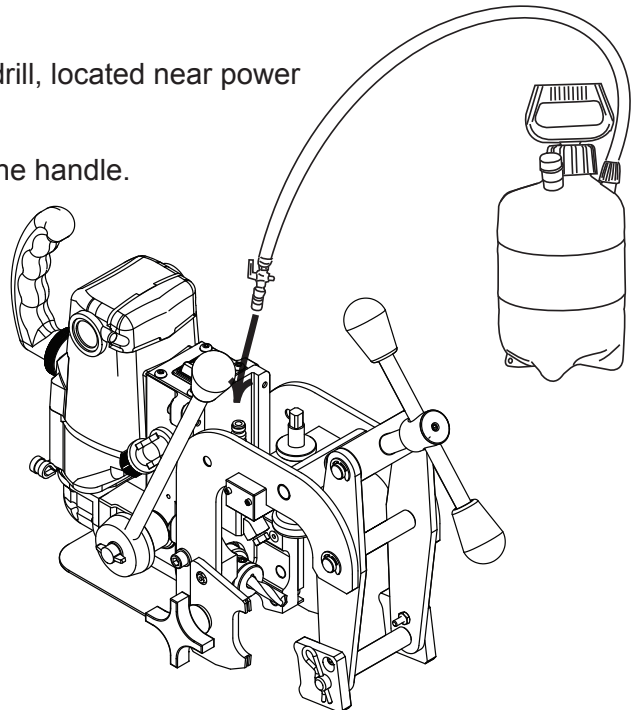
DRILL & PRESSURIZED COOLANT SYSTEM

DO NOT USE STRAIGHT WATER OR WINDOW WASHER FLUID. DAMAGE TO DRILL WILL OCCUR! ONLY USE TRAK-STAR ROTAMAGIC COOLANT.

1. Install correct shoes for rail type being drilled.
2. Install correct size Bonding Bit and Adapter into the Drill arbor. See Bonding Bit Installation procedure on previous page.
3. Fill coolant bottle with TRAK-STAR cutting fluid (a water soluble and biodegradable product) Conventional fill access is achieved by removing pump handle.
Caution: Contents under pressure. Partially open to slowly release pressure before removing.

4. Attach coolant bottle quick connect hose fitting to drill, located near power button in between Clamp arms.
5. Pressurize coolant bottle until resistance is felt in the handle.

6. Open coolant shut off valve 1/4" and watch for coolant flow from the nozzle onto the work surface.
NOTE - Coolant is under pressure -- stay out of path of spray. If coolant does not flow, rotate valve further to open or unclog coolant system.



Coolant System Replacement Parts

- 01569 On/Off Valve
- 05621 Quick Connect Fitting
- 01592 Coolant Bottle and Hose Assy

ROTAMAGIC™ CONCENTRATE CUTTING FLUID

A good flow of cutting fluid to the tool is important. It cools and lubricates the cutting edge, helps evacuate the chips, keeps the slug from expanding, and helps eject the slug. Various mineral and sulphur base oils are quite popular, however, water base solutions have better cooling qualities.

Listed is our own recommended Concentrated Cutting Fluid for Twister Bits and similar cutting tools. It is a water soluble, biodegradable product. This cutting fluid contains no ingredients that are on the U.S. Government Hazardous Materials List. It is a super concentrated form that will require a 10:1 mixture of water.

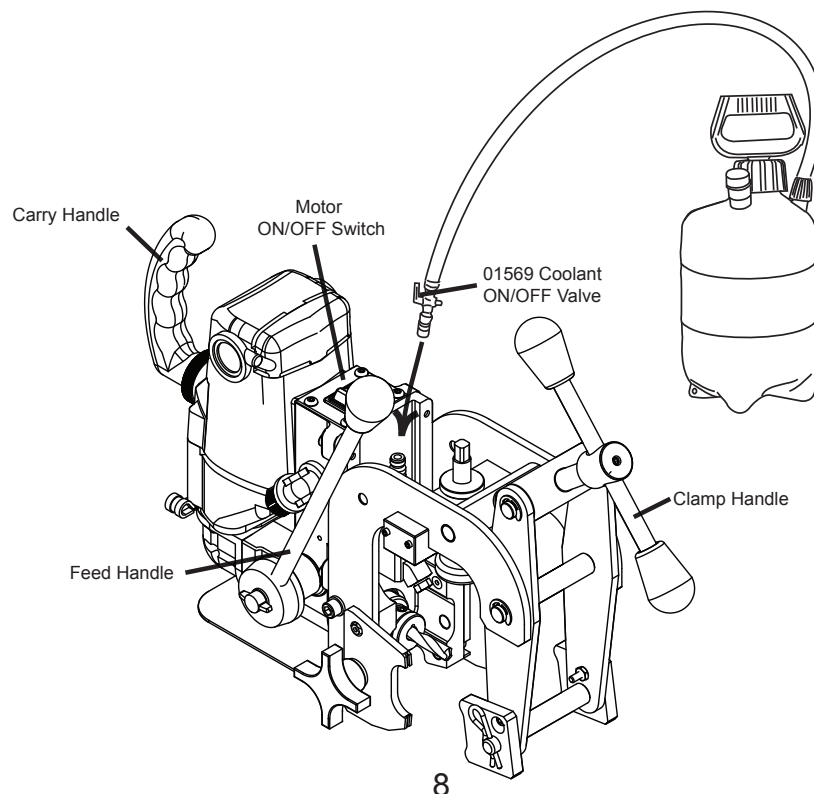
Part No.	Description
11742-4	(4) 1 Gallon concentrate bottles, makes 11 Gallons each, or 44 Gallons total.
11743	(1) 5 Gallon concentrate pail, makes 55 Gallons.

OPERATING INSTRUCTIONS

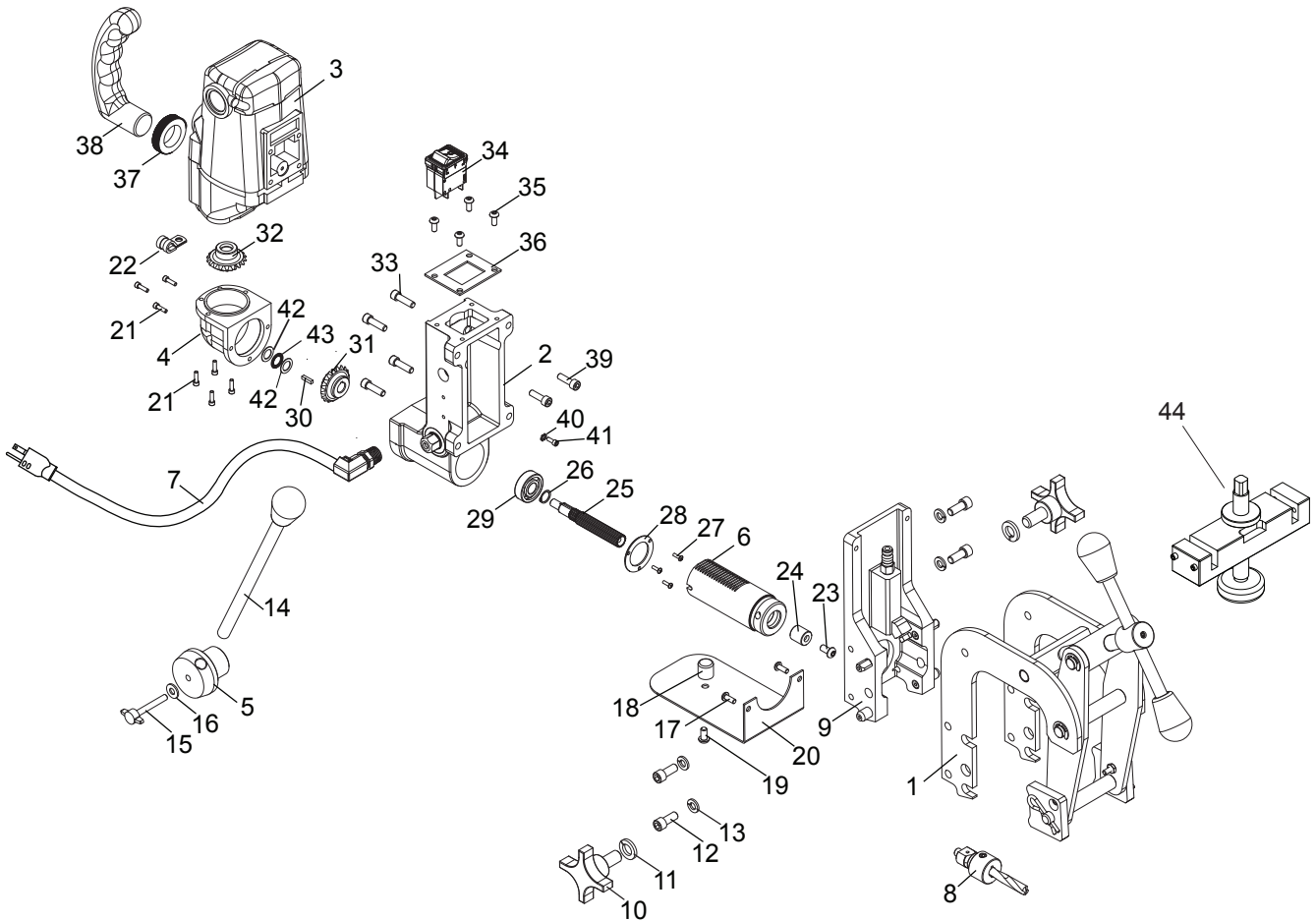
IMPORTANT NOTICE

- ⚠ Read all Safety Instructions listed at the beginning of this Operators Manual before operating the BD17 Transducer Drill.
- ⚠ Make sure the cutter is installed properly.
- ⚠ Verify that the correct shoes for the rail that is being drilled is installed.
- ⚠ Always use caution when contacting the rail with the cutting tool. Allow the cutter to enter the rail before full feed pressure is applied.
- ⚠ Verify that the power cord is clear of any moving objects.

1. Make sure the work piece, cutter and shoes are free of chips or any other forms of debris.
2. Secure the Drill to the rail and adjust height by following the Clamping Procedure listed previously in this Manual.
3. Slowly feed the Bonding Bit to the rail to verify the location of the hole. Once location is verified, retract the Bonding Bit so it is not contacting the rail.
4. Attach the Pressurized Coolant Bottle by following the procedure listed previously in this Manual. Open the valve on the Bottle Hose and verify that coolant is flowing.
5. Plug the power cord into the correct outlet. If an extension cord is needed, refer to the Extension Cord Chart in the Safety Instructions for the correct size and length.
6. Make sure the Bonding Bit is free of the work piece and turn the motor ON by moving the rocker switch to the On position.
7. Feed the Arbor slowly until the Bonding Bit makes full contact with the rail. Once full contact is made, full pressure can be applied to the Feed Handle.
8. Anticipate the end of your cut and ease up on the feed prior to completing the hole.
9. After completing the hole, retract the cutter fully and select OFF on the rocker switch.
10. Close the valve on the Coolant Bottle Hose to stop the coolant flow and unplug the power cord.
11. Loosen the Clamp Assembly and remove the Transducer Drill from the rail.



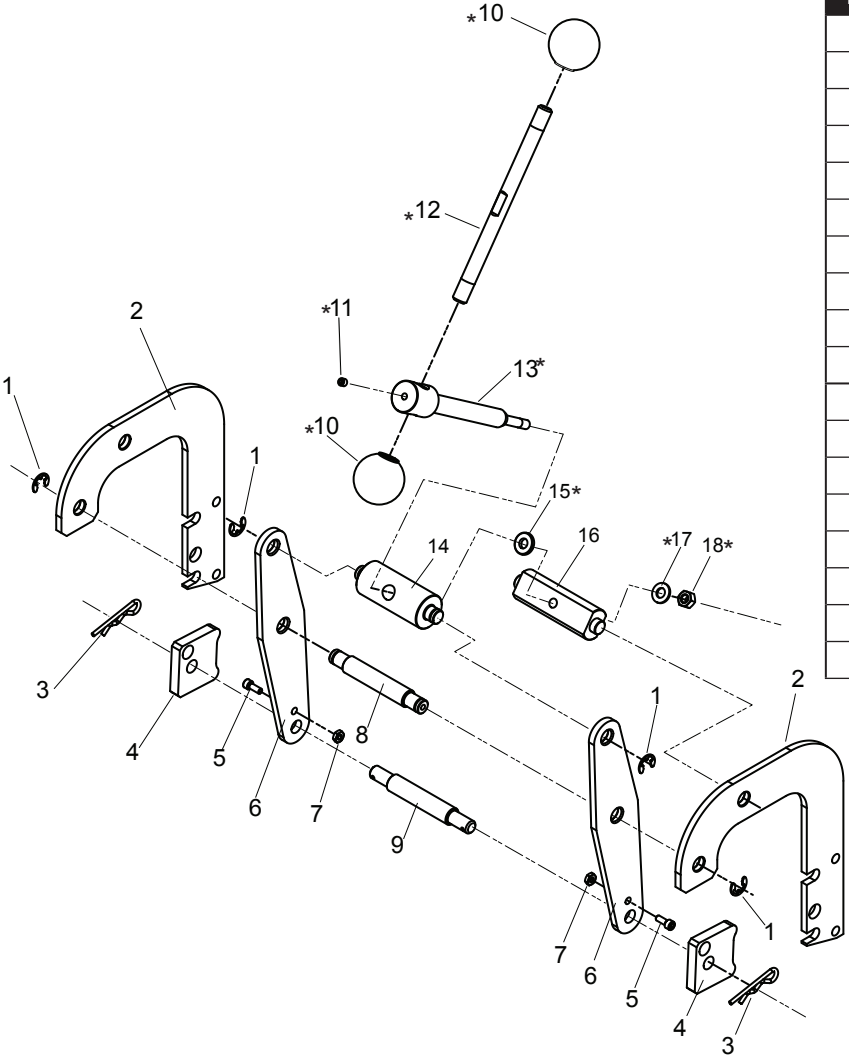
BD17 BREAKDOWN & PARTS LIST



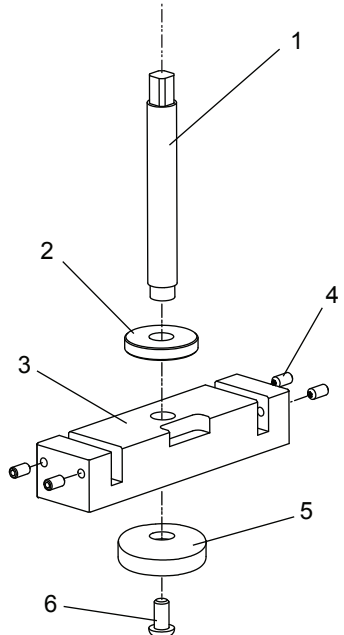
Item	Part #	Description	Qty
1	27115	Rail Clamp Assembly	1
2	07189	Housing Assembly	1
3	07241	120V Motor Assembly	1
4	07290	Gear Cap Assembly	1
5	07233	Feed Hub Assembly	1
6	07174	Quill/Arbor Assembly	1
7	07236	120V Power Cord Assembly	1
8	See pg. 5 (Adapter Install Inst.) for Adapters & Bits		
9	07250	Clamp Bracket Assembly	1
10	04918	4-Point Knob	2
11	40110	1/2" Lock Washer	2
12	40558	Screw - SHC 5/16-18 X 3/4	4
13	40107	5/16" Lock Washer	4
14	07190	Feed Handle Assembly	1
15	17291	Screw w/Knob M6-1 X 45mm	1
16	90027	1/4" Flat Washer	1
17	90077	Screw - BHC #10-32 X 1/2	2
18	07186	Rubber Bumper	1
19	90358	Screw - BHC 1/4-20 X 1/2	1
20	07170	Bonding Drill Guard	1
21	17002	Screw - SHC #6-32 X 1/2	7
22	02420	Cable Clamp	1
23	07187	Screw - BHC 1/4-28 X 1/2	1

Item	Part #	Description	Qty
24	07188	Retainer Cup	1
25	17280	Splined Shaft	1
26	17475	Retaining Ring	1
27	04718	Screw - Pan Head #4-40 X 3/8	3
28	17289	Bearing Retaining Washer	1
29	17270	Bearing 32 O.D X 12 I.D X 10mm	1
30	17277	1/8 Sq Key X .53	1
31	17278	Right Hand Miter Gear	1
32	17502	Left Hand Miter Gear	1
33	10553	Screw - SHC 1/4-20 X 7/8	4
34	07237	120V Rocker Switch	1
35	07245	Screw - BHC M5 X 12 mm	4
36	07168	Switch Plate	1
37	05920	Locking Nut 3/4-14 NPT	1
38	05921	Carring Handle	1
39	75096	Screw - SHC M6-1 X 20mm	2
40	90052	Lock Washer	1
41	24082	Screw - SHC #6-32 X 3/8	1
42	17517	Thrust Washer .312 X .750	2
43	17516	Thrust Bearing	1
	05372	Lubiplate Grease	
44	07556	Height Adjustment Bracket	1

CLAMP & HEIGHT ADJUSTMENT ASSEMBLY



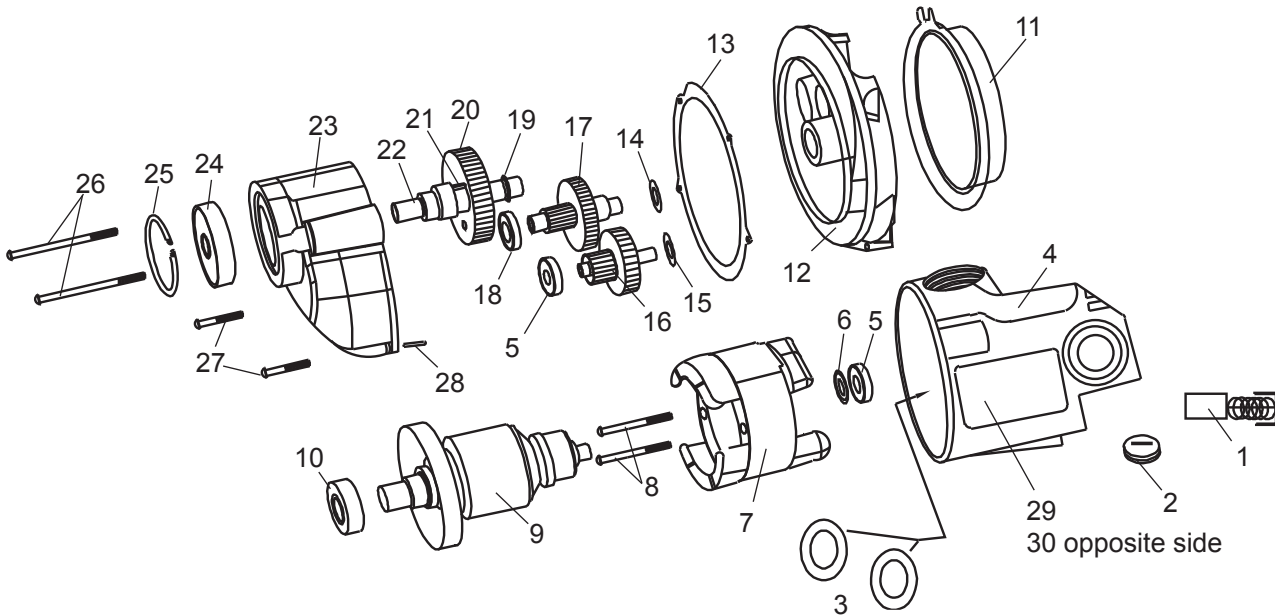
27080 CLAMP HANDLE ASSEMBLY			
Item	Part #	Description	Qty
1	27066	Retaining Ring Set	1
2	27110	Primary Clamp Arm	2
3	03501	Hitch Pin	2
4	27062	Clamp Pad	2
5	90098	Screw - #10-24 X 3/4	2
6	27022	Secondary Clamp Arm	2
7	10662	Lock Nut #10-24	2
8	27024	Pin	1
9	27023	Pin	1
10	04532	Knob	2
11	02470	Set Screw 1/4-28 X 3/8	1
12	03522	Clamp Turn Handle	1
13	27027	Clamp Feed Screw	1
14	27026	Bushing	1
15	04782	Flat Washer	1
16	27025	Bushing	1
17	40074	5/16 Flat Washer	1
18	03563	5/16-18 Hex Nut	1



07556 HEIGHT ADJUSTMENT ASSEMBLY			
Item	Part #	Description	Qty
1	07554	Height Adjustment Screw	1
2	51043	Lock Nut	1
3	07553	Height Mount Bracket	1
4	05473	Screw - #10-32 X 3/8	4
5	07555	Rail Pad	1
6	27022	Screw - 1/4-20 X 1/2	1

MOTOR BREAKDOWN & PARTS LIST

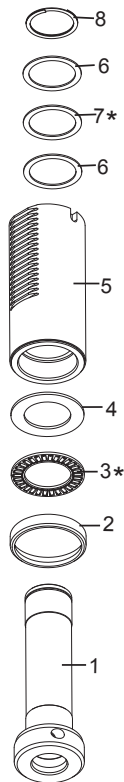
07241 - 120V Motor Assembly



Item	Part #	Description	Qty
1	17621	Carbon Brush	2
2	17622	Brush Cap	2
3	17632	Paper Washer	2
4	17600	Field Case	1
5	17602	Ball Bearing	2
6	17606	Dust Seal	1
7	17628	120V Field	1
8	17623	Pan Head Screw	2
9	17630	120V Armature	1
10	17604	Ball Bearing	1
11	17617	Fan Guide	1
12	17601	Gear Housing	1
13	17618	Gasket	1
14	17613	Flat Washer	1
15	17610	Flat Washer	1

Item	Part #	Description	Qty
16	17607	1st Inter. Gear Assy	1
17	17608	2nd Inter. Gear Assy	1
18	17603	Ball Bearing	1
19	17626	Retaining Ring	1
20	17609	Spur Gear	1
21	17611	Key	1
22	17616	Spindle	1
24	17605	Ball Bearing	1
24	17605	Ball Bearing	1
25	17627	Retaining Ring	1
26	17625	Pan Head Screw Long	2
27	17624	Pan Head Screw Short	2
28	17612	Dowel Pin	1
29	07243	Label - Motor Safety	1
30	07242	Label - Motor Specs 120V	1

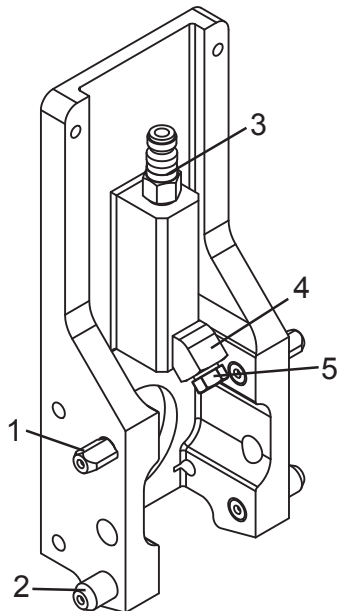
07174 ARBOR/QUILL BREAKDOWN & PARTS LIST



*Apply a light coat of grease to these parts if 07174 is disassembled.

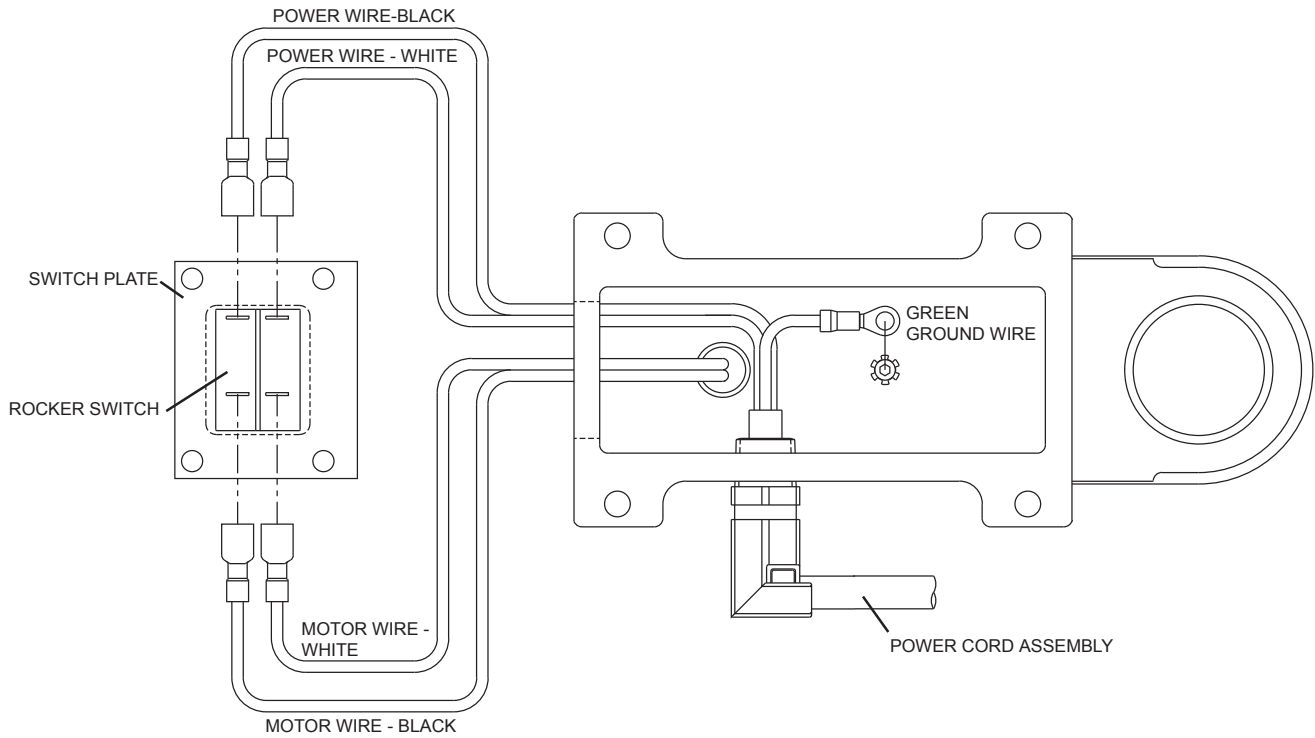
Item	Part #	Description	Qty
1	07173	Arbor Assembly	1
2	17643	Thrust Bearing Shield	1
3	17645	Thrust Bearing	1
4	17644	Bronze Thrust Washer	1
5	07172	Quill Assembly	1
6	17547	Steel Thrust Washer	2
7	17546	Bronze Thrust Washer	1
8	04720	Spiral Retaining Ring	1
9	24152	GR132 Lubiplate Grease	

07250 CLAMP BRACKET ASSY. BREAKDOWN & PARTS LIST



Item	Part #	Description	Qty
1	27006	Locating Pin - Diamond Shape	2
2	27007	Locating Pin - Round	2
3	05646	Quick Connect Fitting - male	1
4	07251	45° Fitting	1
5	07185	Spray Nozzle	1

CONTROL PANEL & WIRING BREAKDOWN



Part #	Description	Qty
07236	120V Power Cord Assembly (includes Power cord & Strain Relief)	1
07237	120V Rocker Switch	1
07168	Switch Plate	1

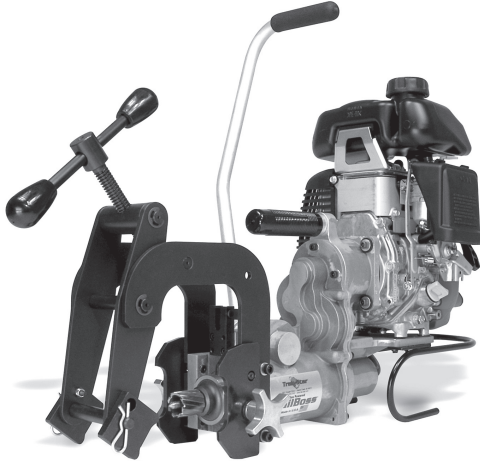
RAIL & SHOE DATA

Railway Association or System	Tee Rail Section (lb.)		Section Designation			Shoe Part No.
ASCE - American Society of Civil Engineers	70	7040	70	AS	701	01906
	75	7540	75	AS	753	01907
	80	8040	80	AS	800	01908
	85	8540	85	AS	851	01909
	90	9040	90	AS	---	01910
	100	10040	100	AS	---	01911
ARA - American Railway Association	Type "A" - High Rail for High Speeds					
	90	9020	90	RA	902	01927
	100	10020	100	RA	1003	01928
	Type "B" - Lower Rail for Heavy Loads @ Slower Speeds					
	90	9030	90	RB	905	01908
	100	10030	100	RB	1002	01910
AREA - American Railway Engineering Association	100	10025	100	RE	10025	01894
	110	11025	110	RE	1100	01895
	112	11228	112	RE	1121	01896
	115/119	11525	115	RE	1150	01897
		11937	119	RE	1190	
	130	13025	130	RE	1300	01898
	131	13128	131	RE	1311	01899
	132/136/141	13228	132	RE	1321	01902
		13622	136	RE	13637	
		---	141	---	---	
	133	13331	133	RE	1330	01901
140	---	140	RE	---	01903	
CSX	122	---	122	CB	---	01918
UP (former C & NW)	100	10035	100	DM	10035	01926
PS - Pennsylvania System	85	8531	85	PS	---	01912
	100	10031	100	PS	---	01913
	130	13031	130	PS	---	01914
	155	15531	155	PS	---	01919
NYC (Dudley) - New York Central & Hudson River Railroad	105	10524	105	DY	---	01915
	127	12723	127	DY	---	01916
PRR - Pennsylvania Railroad	85	8533	85	PR	---	01917

OTHER PRODUCTS OFFERED BY **Trak-Star®**

Modern, high speed railways and welded rails call for modern, high precision rail equipment. Through our continual commitment, we now offer additional products that will be beneficial to your specific applications.

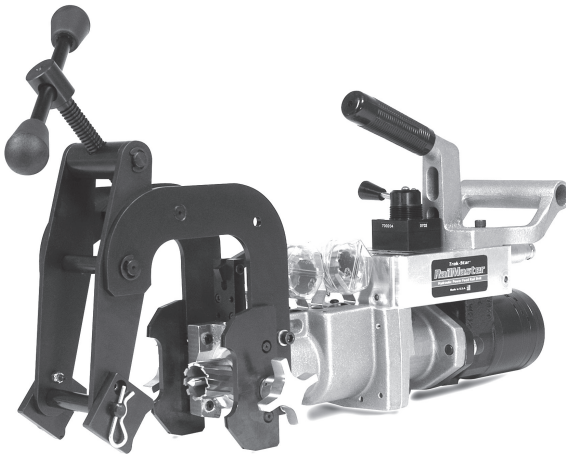
**Model RB28
Portable Gas Rail Drill**



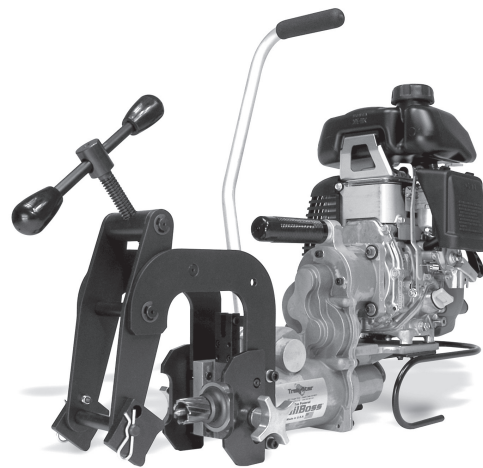
**Model HS16
Hydraulic Rail Saw**



**Model RM42
Power Feed Hydraulic Drill**



**Model RB30
Portable Gas Bonding Drill**



**Model GW12
Gas Impact Wrench**



**Model K1260
Portable Gas Rail Saw**



Commercial / Industrial Limited Warranty

Hougen Manufacturing, Incorporated warrants its Trak-Star Rail Drills, Portable Magnetic Drills, Electro-hydraulic Hole Punchers for one (1) year and other products for ninety (90) days from date of purchase against defects due to faulty material or workmanship and will repair or replace (at its option) without charge on any items returned. This warranty is void if the item has been damaged by accident or unreasonable use, neglect, improper service, or other causes not arising out of defects in material or workmanship. No other expressed warranty is given or authorized. Hougen Manufacturing, Inc., disclaims any implied warranty of MERCHANTABILITY or FITNESS for any period beyond the expressed warranty and shall not be liable for incidental or consequential damages. Some states do not allow exclusions of incidental or consequential damages or limitation on how long an implied warranty lasts and, if the law of such a state governs your purchase, the above exclusion and limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain warranty service, return the item(s), transportation prepaid, to your nearest Factory Authorized Repair Center or to Hougen Manufacturing, Inc. 3001 Hougen Drive, Swartz Creek, Michigan 48473.

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AREMA