

Hydraulic High-Speed Rail Drill

910070

Operating Manual



Hydraulic High-Speed Rail Drill

910070

Record of Changes

Rev No.	Date	Description of Changes
Rev 1	3.2015	Initial release.
Rev 2	1.2019	Added assembly drawings and parts list
Rev 2.1	3.2023	Update Footer and Contact Information Update Parts and Service page with contact information
Rev 2.1	3.2023	Update Footer and Contact Information Update Parts and Service page with contact information

Table of Contents

Section 1: Overview and Safety	5
Hydraulic High-Speed Rail Drill Overview.....	5
Environmental Protection	5
Safety Information	6
Safety Terms	6
Section 2: Specifications and Installation.....	7
Specifications	7
High-Speed Rail Drill Components	8
Installation	9
Hose Requirements	10
Hose Types	10
Hydraulic Hose Recommendation.....	10
Hydraulic Fluid Recommendation	11
Tool Connecting Procedures.....	11
Disconnecting Hoses.....	12
Section 3: Tool Operation	12
Personal Protective Equipment	12
Installing a Broaching Cutter	13
Chuck Adapter.....	13
Installing Rail Shoes.....	14
Removing Rail Shoes.....	14
Coolant System.....	15
Using the Indexing Plate.....	16
Attaching the Drill	17
Drilling a hole.....	18
Removing the Drill	18
Storing and Packing the High-Speed Rail Drill	18
Section 4: Maintenance.....	19
Slide Adjustment.....	19
Nylube Bush.....	19
Section 5: Parts and Service Support	20
Technical Support & Service	20
Drill Assembly	21

Drill Assembly Parts List.....	22
Clamp Assembly	23
Clamp Assembly Parts List.....	24
Switch-Lock Arbor Assembly	25
Switch-Lock Arbor Assembly Parts List.....	25
Standard Arbor Assembly	26
Standard Arbor Assembly Parts List	26
Ball Valve and Oil Feed Assembly (Make 1).....	27
Ball Valve and Oil Feed Assembly (Make 1) Parts List.....	27
Ball Valve and Oil Feed Assembly (Make 2).....	28
Ball Valve and Oil Feed Assembly Parts List (Make 2)	28
Section 6: Warranty Terms and Conditions	29

Section 1: Overview and Safety

Hydraulic High-Speed Rail Drill Overview

Racine Railroad Products designs and manufactures equipment primarily for the repair and new construction of rail and railroad tie track maintenance.

The Hydraulic High-Speed Rail Drill is a quality product with unique features that make this the perfect solution for your entire rail drilling requirements.

- Easy to use and rugged design makes the High-Speed Rail Drill a cost effective solution to drilling clean, accurately positioned holes in rail sections for bonds, and fishplates.
- Can drill up to 1 1/2" (38 mm) with annular broaching cutters.
- The new integral arbor support gives guaranteed hole tolerance and ensures no burring of hole.
- The enclosed cutter action ensures operator safety.
- The new and unique Tommy bar clamping system facilitates clamping in confined spaces such as check rail.
- The hard wearing and tough metal carry case provides protection for your drill in transit. The spacious design leaves enough room for all your tools and ancillaries.

Do not use this machine for other than its intended purpose.

Please read these instructions when using this tool, which can only be used for the specified purpose. This instruction manual should be kept throughout the life of the tool.

The operator of this tool should:

- Have access to this operation instruction.
- Read and understand this operation instruction.

Note: Information in this document is subject to change without notice.

Environmental Protection



Comply with relevant national waste disposal laws and regulations. Waste electronic devices cannot be treated as household waste.

Equipment, accessories, and packaging shall be recyclable.



Don't throw the discarded equipment in trash cans.

Safety Information

For safe installation and operation of this equipment, carefully read and understand the contents of this manual. Improper operation, handling, or maintenance can result in equipment damage and personal injury.

Only trained and authorized personnel should be allowed to operate this machine. In addition, all personnel at the worksite should be aware of the safety concerns and their individual responsibilities prior to working this machine.

Please read and comply with all the safety precautions in this manual **before** operating this machine. Your safety is at risk.

Safety Terms

**DANGER**

DANGER indicates a hazardous operating procedure, practice, or condition. If the hazardous situation is not avoided death or serious injury will occur.

**WARNING**

WARNING indicates a hazardous operating procedure, practice, or condition. If the hazardous situation is not avoided death or serious injury could occur.

**CAUTION**

CAUTION indicates a potentially hazardous operating procedure, practice, or condition. If the hazardous situation is not moderate or minor injury could occur.

Machine Use and Safety Precautions

**WARNING**

Failure to follow safety precautions when operating this equipment can result in serious injury or death to the operator or other persons in the area. Observe the following precautions whenever you are operating, working on or near this equipment.

Do not use this machine for other than its intended purpose.

Do not make any modifications without authorization or written approval from Racine Railroad Products. Replace all Racine Railroad Products and OEM parts with genuine Racine Railroad Products and OEM parts. Using non-OEM parts may compromise the safety of the machine.

Do not wear loose clothing, jewelry, radio belts, etc., when operating, working on or near this equipment. They can be caught in moving parts and may result in severe injury.

Always wear appropriate personal protective clothing when operating this equipment: e.g. Orange safety vest, hard hat, safety glasses with side shields, hearing protection, steel-toed safety boots, leather gloves, dust respirator, etc.

Always lift heavy objects with the knees and legs, not the arms and back.

Always keep hands, arms, feet, head, clothing, etc., out of the operating area and away from all rotating or moving components when operating, working on or near this machine.

Always make sure that all guards, covers, belts, hoses and operating components are in good working order and that all controls are in the appropriate position before starting the engine.

Always make sure that all safety equipment installed properly and are in good working order. Do not operate the machine until unsafe conditions have been corrected.

Always operate in a well-ventilated area and make sure that the air filters, air filter covers, and muffler are in good condition.

Always keep the machine clean and free of debris. Operate the machine in a safe and responsible manner. Exercise caution when fueling, working on or near rotating or moving components, hot components, and fuel systems. Be aware of potential fire hazards and prevent sparks, exhaust, etc., from starting fires on the machine and/or work area.

Always comply with all instructions provided on any decals or placards installed on the machine and with any relevant amplifying information provided in this manual or other general operating procedures.

Always disconnect the power source and make sure that all controls are in a safe position and install all appropriate locking and safety devices before doing any of the following:

- Lubricating
- Adjusting
- Installing Tooling
- Making Repairs
- Performing Service

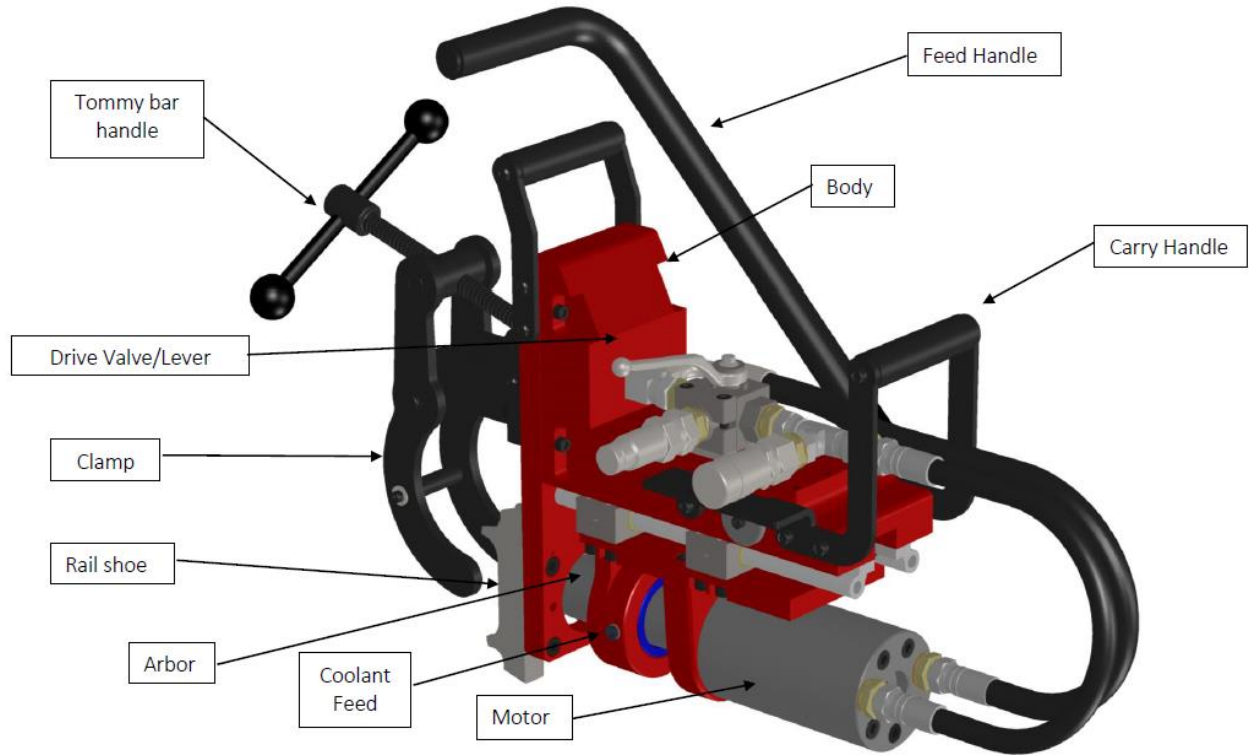
Section 2: Specifications and Installation

Specifications

Circuit	10 GPM @ 2,000 psi (38 LPM @ 138 bar)
Motor	Gerotor
Length	16 in. [40.6 cm]
Width	4 in. [10.1 cm]
Height	12 in. [30.5 cm]
Weight	53 lbs [24.0 kg]
Drilling range	1 to 1 1/2" (25 mm – 38 mm) hole diameter

High-Speed Rail Drill Components

Before you use your new High-Speed Rail Drill, please take the time to familiarize yourself with the functions and controls.



The Coolant Bottle

The Pressurized Coolant System designed to give maximum coolant and lubrication will help to prolong cutter life. As well as ensuring a clean hole every time.

NB. Always use recommended cutting fluid.

Storage Case

This hard wearing and tough metal carry case provides protection for your drill in transit. The spacious design leaves enough room for all your tools and ancillaries.

Index Drilling Plate

Used to ensure holes are correctly distanced from end of rail and center to center, guaranteed to provide complete accuracy.

Rail Shoes

Manufactured from aluminum, ensuring accuracy and repeatability.

Broaching Cutters

Universal broaching cutters provide an unrivaled quality and accuracy allowing you to drill with confidence.

Chuck Adapter

This Chuck adapter can be used to fit any standard stub drill to the High-Speed Rail Drill giving you the ability to cut any hole up to a maximum diameter of 13mm.

Installation

Unpacking Instructions

Upon receiving your High-Speed Rail Drill promptly remove it from the shipping container. Always keep top side of container up. Inspect unit for damage which may have incurred during shipping and report it to carrier for claim.

Tool Preparations

The High-Speed Rail Drill requires some assembly before use. If the tool is used in cold weather, preheat the hydraulic fluid by running power source at low engine speed.

Fluid temperature should be at or above 50° F/10° C (400-ssu / 82 centistroke) before use, when using recommended fluids. Using too thick of fluid may result in tool damage.



WARNING

Never stick foreign objects, fingers, or other extremities into moving mechanism. Failure to follow these instructions may lead to severe personal injury or tool damage.

Hose Requirements

It is not often necessary or advisable to use long hoses. All hoses must have an oil resistant inner surface and an abrasion resistant outer surface. Each hose must have male pipe ends for most application.

Longer hoses can be used when necessary but can affect the operation of the tool due to resistance in the hose.

If small diameter or long hoses are used, or if restrictive fittings are connected to the supply and return ports, the pressure required to push the fluid through the system and back to the tank will be higher. This will reduce tool power.

Important: Oil should always flow from the male coupler through the female coupler.

Note: The pressure increases in uncoupled hoses left in the sun. This may make them difficult to connect. When possible after use, connect the free ends of the operating hoses together.

Hose Types

Hydraulic hose types authorized for use with the High-Speed Rail Drill are:

1. Labeled and certified nonconductive.
 - This is the only hose authorized for use near electrical conductors.
2. Wire braided (conductive)
 - This hose is conductive and must never be used near electrical conductors.
3. Fabric braided (not certified or labeled non-conductive)
 - This hose is conductive and must never be used near electrical conductors.

The rated working pressure of the hydraulic hose must be at least 2500 psi (175 bar).

Hydraulic Hose Recommendation

Hydraulic Hose Recommendation								
Flow Per Circuit		Length Each Hose		Use	Inside Diameter		SAE Spec Hose (Wire Braid)	SAE Spec Hose (Fiber Braid)
GPM	LPM	Feet	Meter		Inch	MM		
5 to 8	19 to 30	To 50	To 15	Both	1/2	13	SAE 100R1-8	100R7-8
5 to 8	19 to 30	51 to 100	15 to 30	Both	5/8	16	SAE 100R2-10	SAE 100R8-10
5 to 8	19 to 30	100 to 300	30 to 90	Pressure Return	5/8 3/4	16 19	SAE 100R2-10 SAE 100R1-12	SAE 100R8-10 SAE 100R7-12
9 to 12	34 to 45	To 50	To 15	Both	5/8	16	SAE 100R2-10	SAE 100R8-10
9 v 12	34 to 45	51 to 100	15 to 30	Pressure Return	5/8 3/4	16 19	SAE 100R2-10 SAE 100R3-12	SAE 100R8-10 SAE 100R7-12
9 to 12	24 to 45	100 to 200	30 to 60	Pressure Return	3/4 1	19 25.4	SAE 100R2-12 SAE 100R1-16	SAE 100R8-12 SAE100R7-16

The rated working pressure of the hydraulic hose must be at least 2500 psi (173 bar).

Hydraulic Fluid Recommendation

Inspect hoses for cuts, crushing, leaks, or abrasion, which may be a safety hazard or reduce fluid flows.

The following fluids work well over a wide temperature range at startup, allow moisture to settle out, and resist biological growth likely in cool operating hydraulic circuits.

Others that meet or exceeds the specifications of these fluids may also be used.

Type	Hydraulic fluid
Amsoil	AWH ISO 32
Chevron	Rando HD Premium Oil MV ISO VG 32 Rando HDZ ISO 32
Gulf	Harmony AW ISO Multi-Grade 32
Mobil	DTE Oil Excel 32
Schaeffer	Dilex Supreme Hydraulic Fluid w/ Dynavis ISO 46.
Shell	Shell Tellus S2 VX 32
Sunoco	Sunvis 1032 HVI Hydraulic Oil

Tool Connecting Procedures

1. Stop the engine before connecting the tool and or hoses to the power unit, and when switching hoses or tools.

2. Turn the hydraulic on/off valve to the off position before starting the engine.

Make sure all hoses are connected for correct flow direction to and from the tool being used.

When routing hose in the work area, position them where personnel will not be at risk of tripping over them where vehicles can run over the hoses. Do not lay hose over sharp objects.



WARNING Pressurized fluid escaping from a damaged hose can penetrate the skin and be injected in the body causing injury or death.

Do not pull on hoses to drag the power unit or tool.

Connecting Hoses

1. Wipe quick couplers with a clean lint free cloth before connecting them.
2. Depressurize the system.
3. Allow system and hydraulic fluid to cool if too hot to handle.
4. Securely connect the return (tank "R") hose from the power source to the tool.
5. Securely connect the supply (pressure "P") hose from the power source to the tool.

It is recommended that you connect the return hoses first and disconnect last to minimize or avoid trapping pressure within the tool.

When connecting the quick couplers, the flow should run from male coupler to the female coupler. The female coupler on the tool is the inlet. Quick couplers are marked with a flow direction arrow.



WARNING Pressurized fluid escaping from a damaged hose can penetrate the skin and be injected in the body causing injury or death.

Do not pull on hoses to drag the power unit or tool.

Note: When possible, connect the free ends of uncoupled hoses to prevent build up in the hoses. The sun can also increase pressure in the hoses and make connecting them difficult.

Disconnecting Hoses

1. Stop the hydraulic power source.
2. Depressurize the system.
3. Allow system and hydraulic fluid to cool.
4. Disconnect the supply (pressure) hose to the power source (pressure port) from the tool (IN port).
5. Disconnect the return (tank) hose to the hydraulic power source (return port) from the tool (OUT port).
6. To prevent contamination, always install dust caps over the hydraulic ports of the tool when disconnected.

Section 3: Tool Operation

Personal Protective Equipment



Before operating this machine, make sure that all general safety precautions are observed, and that proper personal protective clothing is worn as described below.

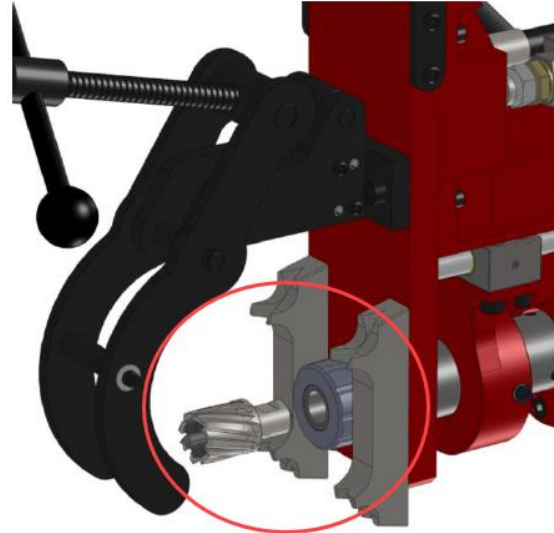
At a minimum, operators should wear the following Personal Protective Equipment:

1. Safety Glasses
2. Hearing Protection
3. Hard Hat
4. High Visibility Safety Vest
5. Leather Work Gloves
6. Steel Toed Safety Shoes

Installing a Broaching Cutter

1. Make sure the engine is not running.
2. Insert the pilot pin in the broaching cutter.
The main function of the pilot pin is to make sure ejection of the slug at the end of each drilling cycle.
3. Loosen the grub screws so the shank of the cutter fits neatly into the arbor.
4. Align the flats of the cutter with the grub screws.
5. Insert the cutter firmly into the arbor compressing the internal spring until the shoulder of the cutter meets the end of the arbor and tighten the grub screws.

Always have damaged grub screws replaced.



Note: Always make sure the screws clamp onto the flats. Failure to do so could result in the screws standing proud of the arbor and therefore causing damage to the guide bush.

Removing a Broaching Cutter

1. Loosen the grub screws.
The cutter will move out of the arbor under spring pressure.
2. Remove the cutter from the arbor

Note: It is recommended to store the drill with the grub screws installed.

If the collar becomes difficult to move, a pin can be placed in the hole in the top of the arbor quill to lock it to the arbor. A spanner may be used to loosen the collar.

Chuck Adapter

Installing the Chuck Adapter

The chuck adapter is installed the same way as a broaching cutter.

Using a Twist Drill in the Chuck Adapter

1. Insert the drill in the chuck.
2. Tighten the chuck first by hand then using the chuck key provided.

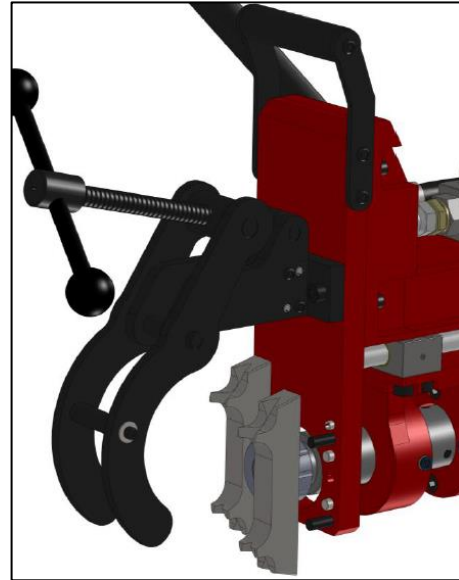


Installing Rail Shoes

Select the correct rail shoe for the rail being drilled.

Make sure that the fixtures are positioned in the correct place:

- 2x Ø6x15 long seloc/split pin in the top holes.
 - 4x M8x50 long cap screws through from the rear.
 - 4x Ø8x25 long dowels into the corresponding holes in the rail shoes.
1. Tighten the cap screws.
 2. Check that the shoes are drawn back equally and flush to the drill body.

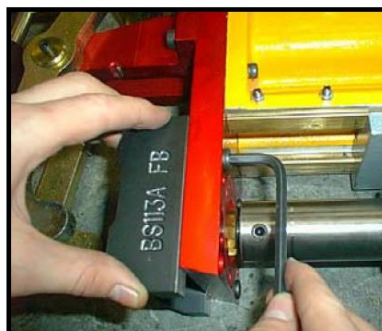
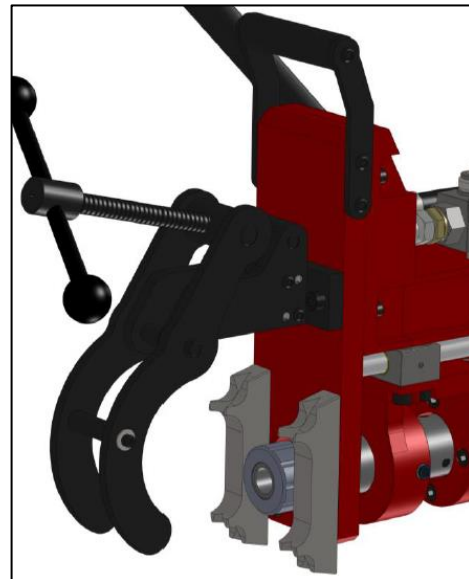


Removing Rail Shoes

1. Unscrew and remove the 4x cap screws.

If the shoes are difficult to remove after the cap screws have been unscrewed, place one of the screws in the central hole to jack the shoe away from the drill body.

2. Remove the rail shoe.



Coolant System

Filling the pressurized sprayer bottle.

Fill your coolant pump bottle in accordance with the manufacturer's guidelines.

Preparing the bottle for use.

See manufacturers guidelines.

Attaching the Lubricant to the drill.

1. Push the pipe from the bottle into the coolant adapter.
2. Turn the valve on the pipe to the ON position to start coolant flow.



Removing the lubricant from the drill.

1. Turn the valve on the pipe to OFF to stop the coolant flow.
2. Remove the pipe by pressing the release ring on the coolant adapter.

Depressurizing the coolant bottle.

See manufacturers guidelines.

Remove the pipe from the coolant tap adapter.

Using the Indexing Plate

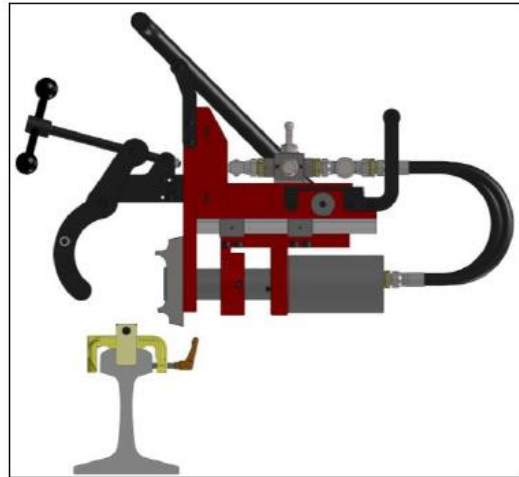
1. The machine is normally used with hole positioning indexing plates for 113FB and 95LB, Bull head rail.
2. Fit to rail head.
3. Make sure the end stop is to end of rail.
4. Tighten locking screw.
5. Locate the Clevis arm into the index slot and clamp the Rail Drill as described in the *Attaching the Drill* section.
6. Drill the first hole
7. Un-clamp the Rail Drill as described in the *Removing the Drill* section.
8. Clean between the rail shoes with a hand brush to clear all swarf.
9. Repeat above procedure for drilling the second hole.



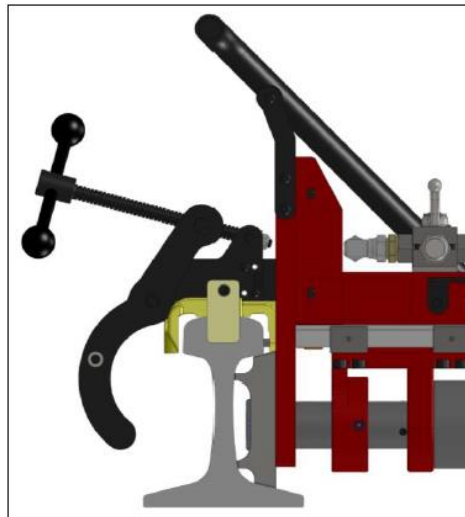
Attaching the Drill

Before attaching the rail drill make sure that the rail surface is free from debris and swarf from previously drilled holes.

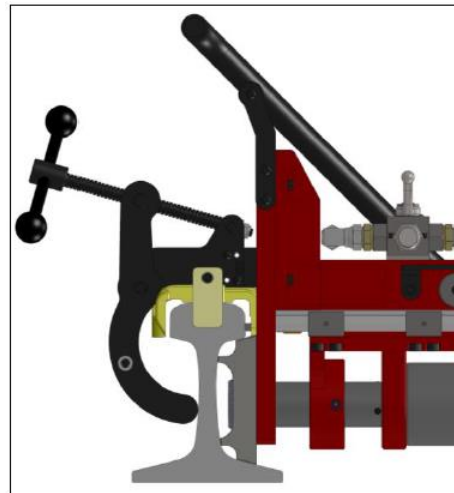
1. Place the rail drill over the rail section.
2. Locate the clamp arms into the first slot of the indexing plate.
3. Re-position in the other slots to continue drilling



4. Locate the rail shoes correctly in the web of the rail.
5. Support the drill using the carry handle while the tommy bar shaft is rotated clockwise until the clamp arm contacts the rail web.



6. Fully tighten the handle to secure the drill and check that the rail shoes fit squarely into the rail web.



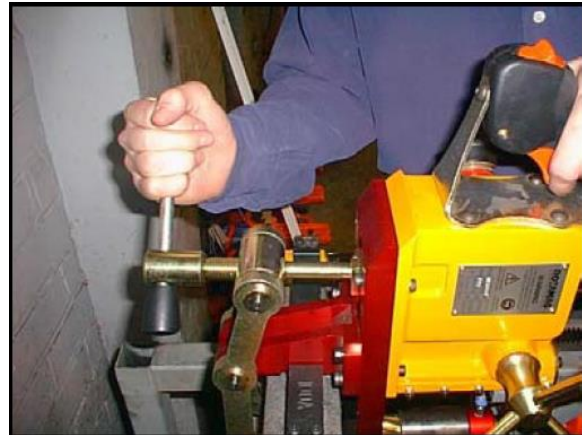
Drilling a hole.

- Install the indexing plate and clamp the machine to the rail.
- Make sure the cutter is clear of rail web.
- Start the hydraulic motor.
- Apply a small amount of drilling pressure until the cutter is engaged in rail web.
- Increase the pressure. Make sure not to overload the engine.
- Check that the slug has been ejected at the end of each drilling cycle.
- Retract the cutter. Make sure the cutter is clear of rail web.
- Close the drive valve to stop the motor and stop the coolant supply.

Removing the Drill

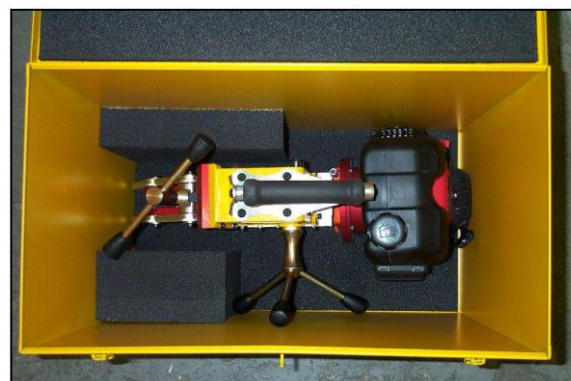
1. Once a hole has been drilled, release the rail drill by turning the tommy bar shaft anti-clockwise until it is possible to pull the end of the shaft out of the locking block pocket.
2. Fold the tommy bar shaft back against the rail drill base plate and lift the drill clear of the rail or indexing strip. (If used)
3. Clear swarf

After every hole is drilled, always make sure that the Nylube Bush is clean from any swarf, as it may cause the bush to wear. If the Arbor starts to wobble the Nylube Bush is ready for replacing.



Storing and Packing the High-Speed Rail Drill

1. Place the drill into the case.
2. Put any cutters rail shoes into the bottom of the case.
3. Place the indexing strips across the top of the drill.
4. Lastly, put the Pressure bottle across the top.



Section 4: Maintenance

It is highly recommended to practice regular check-ups and maintenance in accordance with the usage frequency to keep your tool in better condition and reduces total running costs.

Slide Adjustment

After repeated use the cradle may become loose and need to be tightened.

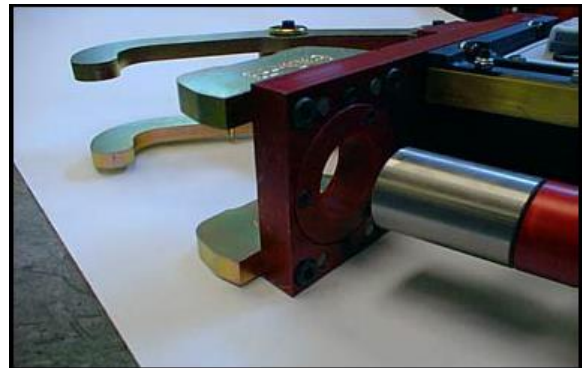
1. Put 2.5mm Allen Key into head of cradle retaining nuts, using 8mm Spanner undo the locking nuts anti-clockwise holding the Allen key without moving grub screws.
2. Using the Allen Key gently tighten screws in series until the cradle moves freely in the slide but does not allow the motor to wobble.
3. When adjustment is complete re-tighten locking nuts clockwise.



Nylube Bush.

After every hole is drilled, always make sure that the Nylube Bush is clean from any swarf, as it may cause the bush to wear.

If the Arbor starts to wobble the Nylube Bush is ready for replacing.



Section 5: Parts and Service Support

Technical Support & Service

Telephone and web-based technical support is available for current production models through our Technical Service Department. Service Manuals and limited technical support may be available for models that are no longer in production.

Telephone and E-mail Technical Support

Telephone and E-mail technical support is available on normal U.S. business days from 8:00 AM to 5:00 PM U.S. Central Time Zone (GMT +6 (+5 Daylight Savings Time)).



1955 Norwood Court
Mount Pleasant, WI 53403
Phone: (262) 637-9681
Email: custserv@racinerailroad.com
racinerailroad.com



Unit 3 Hartington Industrial Estate
Chesterfield • Derbyshire, S43 3YF
Phone: 0330 164 1375
Email: info@racinerailroad.co.uk
racinerailroad.co.uk

Non-Warranty Technical or Field Service Support

Depending upon the circumstances and availability of technical service personnel, we may provide technical assistance and/or field service support, *at the customer's expense*, to assist in the correction of non-warranty related problems. Contact our Technical Service Department to coordinate Non-Warranty Technical or Field Service Support.

Warranty Technical or Field Service Support

Depending upon the circumstances and availability of technical service personnel, we may provide technical assistance and/or field service support, *at no charge to the customer*, to assist in the correction of warranty related problems. Contact our Technical Service Department to coordinate Warranty Technical or Field Service Support.

Warranty Parts & Service

Warranty parts and service are coordinated through our Technical Service Department.

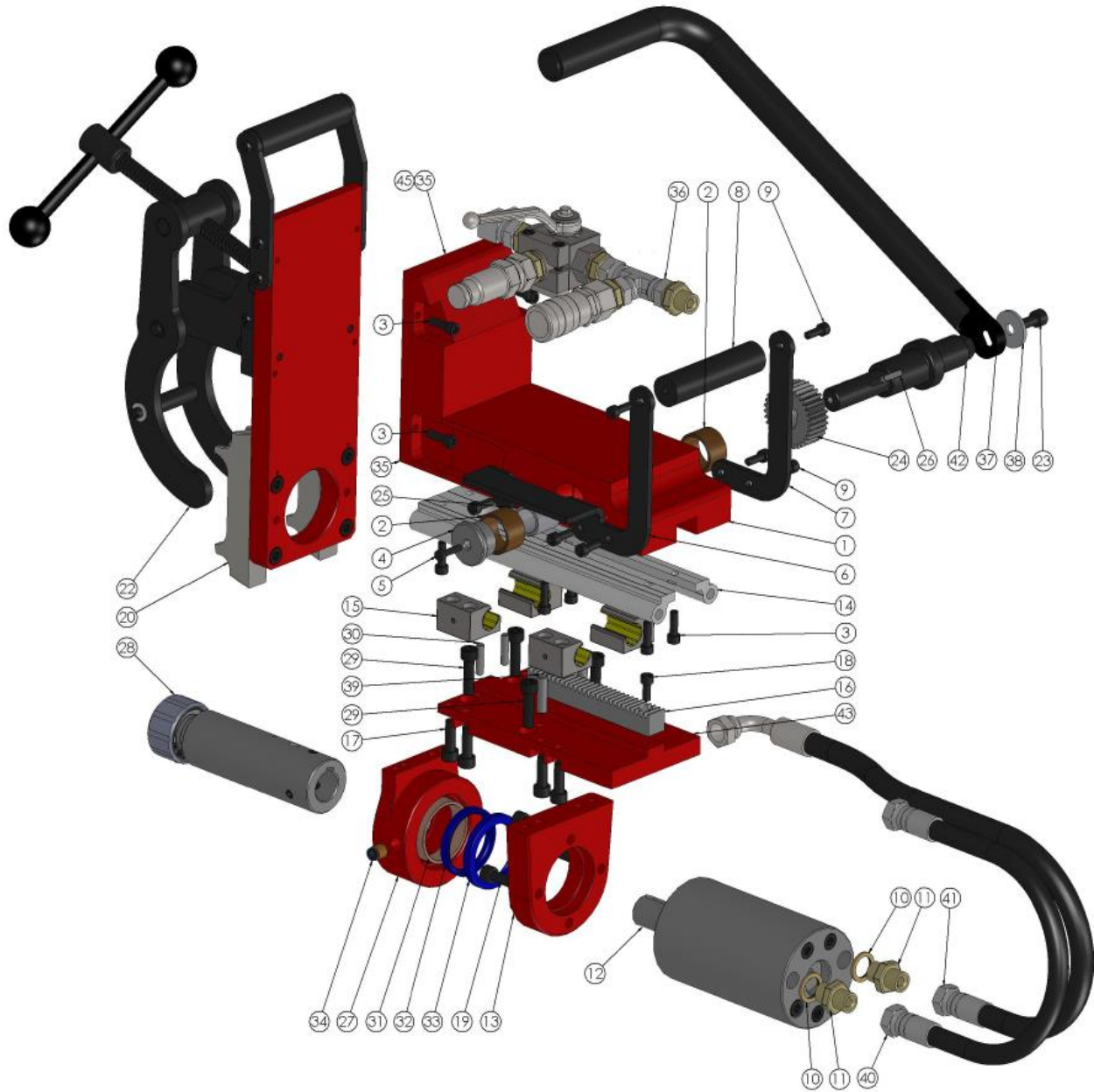
Warranty Parts Claims

Material claimed to be defective must be returned to our factory for evaluation. Defective materials will be replaced, or your account will be credited if replacement materials have already been purchased. Please contact our Technical Service Department at the address provided below if you have any questions or problems.

Warranty Service Support

Depending upon the circumstances and availability of technical service personnel, we may provide technical assistance and/or field service support, at no charge to the customer, to assist in the correction of warranty related problems. Contact our Technical Service Department at the address provided below to coordinate Warranty Technical or Field Service Support.

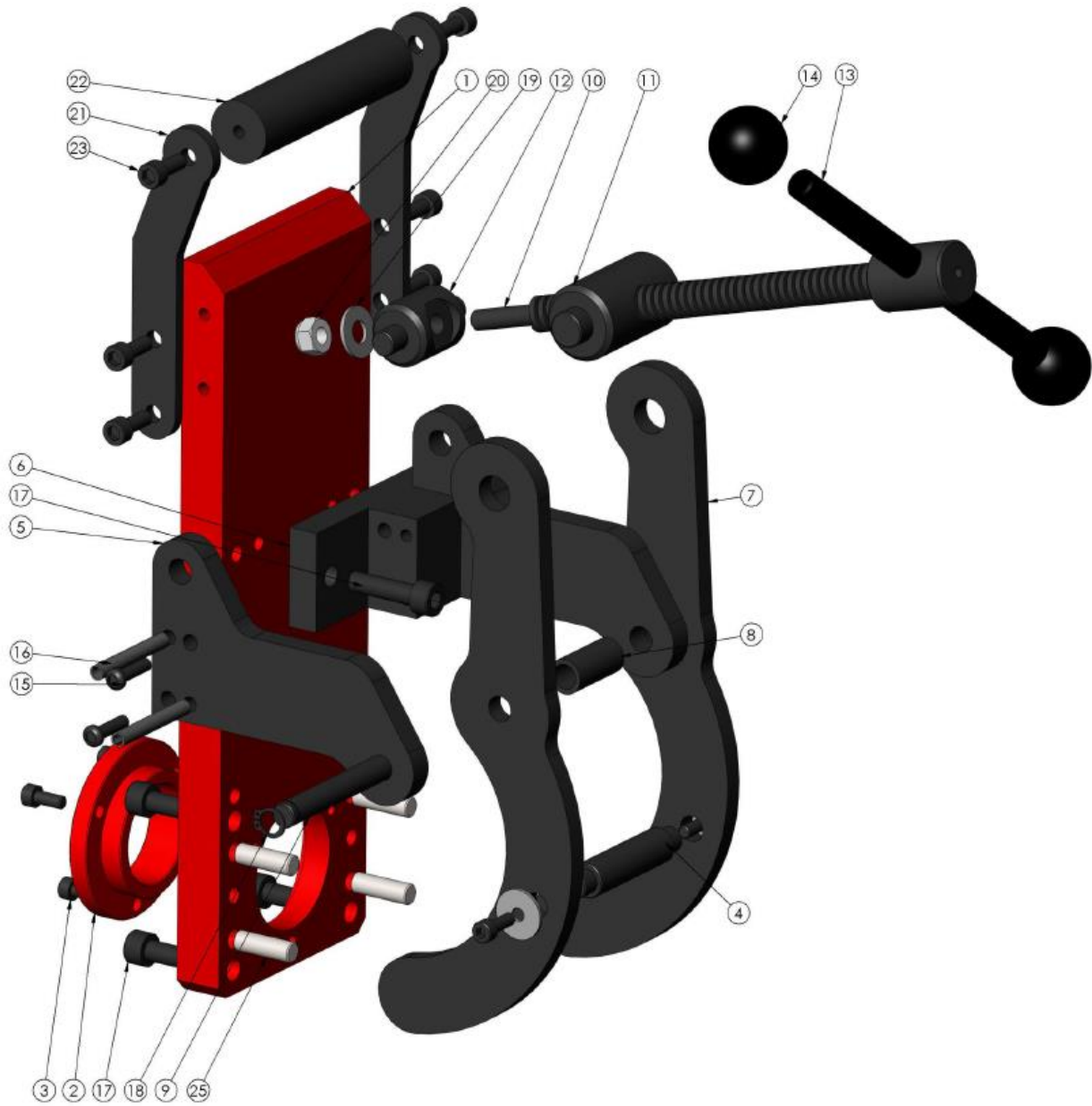
Drill Assembly



Drill Assembly Parts List

ITEM NO.	DESCRIPTION	QTY.
1	TMH3 DRILL BODY UPPER SECTION	1
2	OILITE BUSH	2
3	M6x20Lg CAPSCREW	10
4	PINION END CAP	1
5	M5x20Lg CAPSCREW	1
6	HANDLE SIDE BRACKET	1
7	HANDLE SIDE BRACKET	1
8	CARRY HANDLE	1
9	M6x16 Lg CAPSCREW	7
10	3/8" BSP BONDED SEAL	2
11	3/8" x 3/8" MALE/MALE COUPLING	2
12	HYDRAULIC MOTOR	1
13	TM1000 HYDRAULIC DRILL STEADY	1
14	TM1000 HYD SLIDE RUNNER	1
15	SLIDE BUSH HOUSING	4
16	TM1000 P4 RACK	1
17	M8x25Lg CAPSCREW	8
18	M6x15Lg CAPSCREW	2
19	M8x35Lg CAPSCREW	4
20	RAIL SHOE 132LBRE	2
22	CLAMP ASSEMBLY ELEC/HYD DRILL	1
23	M8x16Lg CAPSCREW	1
24	PINION SPUR GEAR	1
25	PINION SPACER	1
26	PINION KEY	1
27	INTEGRAL COOLANT STEADY	1
28	SWITCH-LOC ARBOR ASSEMBLY	1
29	M8x30 CAPSCREW BZP	4
30	Ø6x25Lg DOWEL	2
31	GUIDE BUSH	1
32	SHAFT SEAL	1
33	SHAFT SEAL	1
34	6mm PUSH FIT FITTING	1
35	TMH3 DRILL BODY LOWER SECTION	1
36	BALL VALVE AND OIL FEED ASSEMBLY	1
37	FEED HANDLE W/A	1
38	RATCHET WASHER	1
39	Ø8x30Lg DOWEL	2
40	HOSE	1
41	HOSE	1
42	PINION SHAFT SQUARE DRIVE	1
43	TMH3 HYDRAULIC DRILL SLIDE	1
44	M10x60Lg CAPSCREW	3
45	Ø10x60Lg DOWEL	2

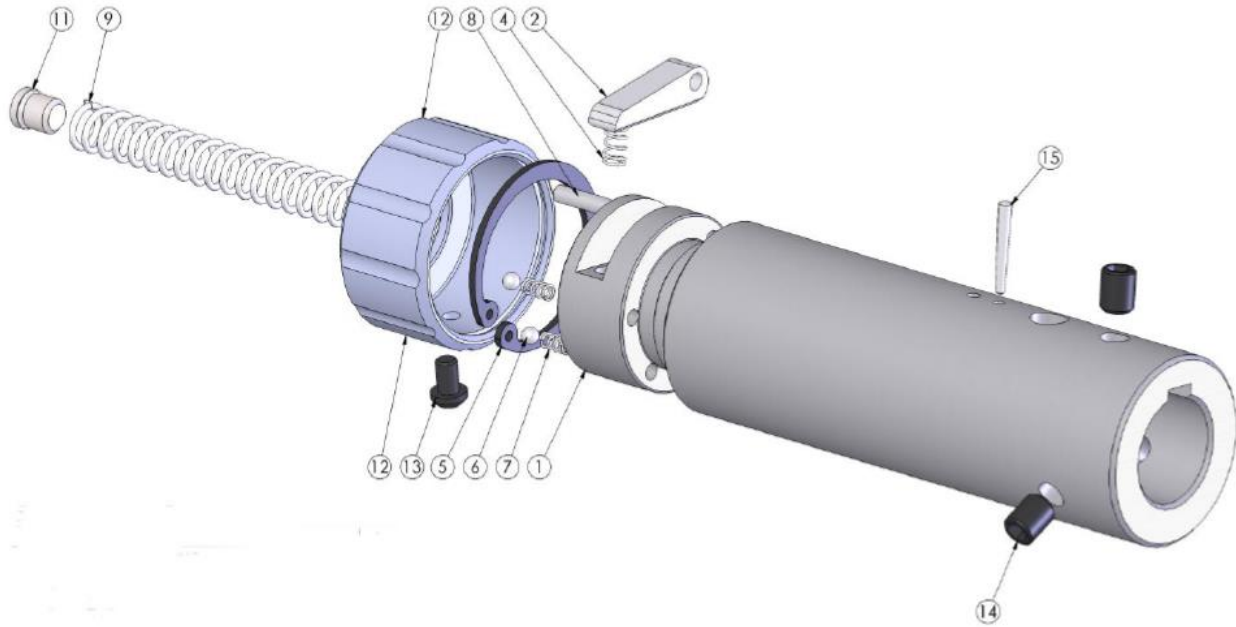
Clamp Assembly



Clamp Assembly Parts List

ITEM NO.	DESCRIPTION	QTY.
1	BASE PLATE FOR TMH3	1
2	NYLUBE BUSH	1
3	M5 x 12 Lg CAPSCREW	3
4	SPACER SHAFT	1
5	CLAMP SIDE PLATE	2
6	CLAMP MAIN BLOCK	1
7	CLAMP ARM	2
8	SPACER TUBE	1
9	CLAMP ARM PIVOT SHAFT	1
10	JACKING ROD	1
11	CLAMP THREADED BOSS	1
12	CLAMP PIVOT BOSS	1
13	HANDLE	1
14	HANDLE KNOB WDS-8143-223	2
15	M5x20 BUTTON HEAD SCREW	4
16	Ø6 x 45Lg SELOC PIN	2
17	M8x30 CAPSCREW BZP	6
18	EXTERNAL CIRLCIP Ø12	2
19	M8 FLAT WASHER	1
20	M8 NYLOC NUT	1
21	HANDLE SIDE BRACKET	2
22	CARRY HANDLE	1
23	M6x16 Lg CAPSCREW	6
24	Ø6x12 SELOC PIN	1
25	M8x25Lg DOWEL	4
26	M5 FLAT WASHER	2
27	M5x16 CAPSCREW	2

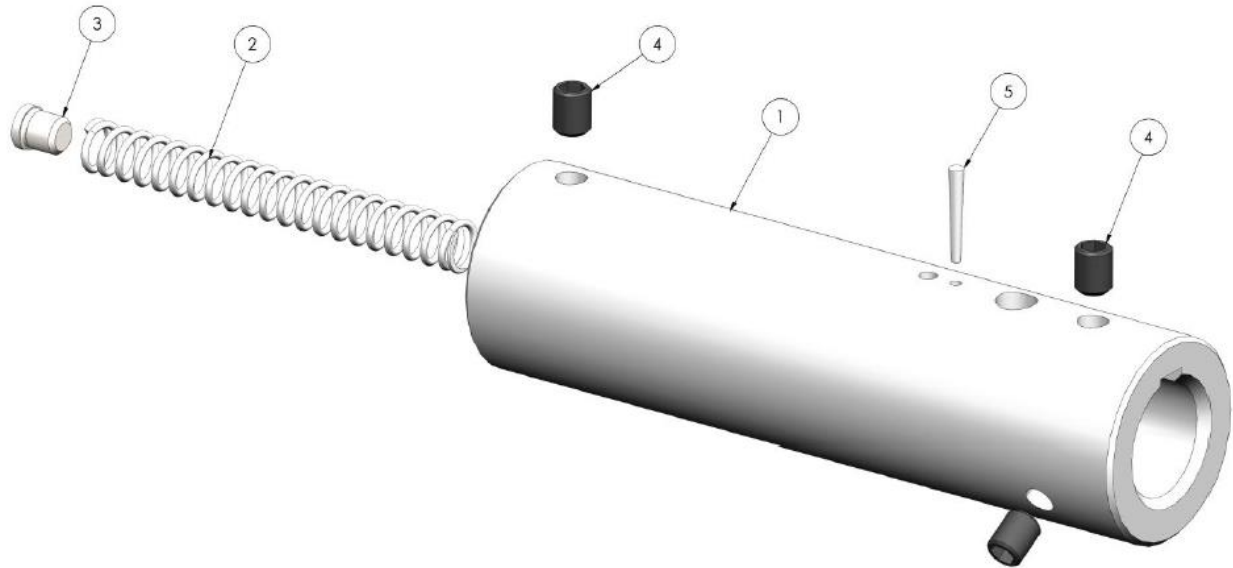
Switch-Lock Arbor Assembly



Switch-Lock Arbor Assembly Parts List

ITEM NO.	DESCRIPTION	QTY.
1	HYDRAULIC Q/R ARBOR	1
2	LOCKING KEY	1
4	SHOE SPRING	1
5	INTERNAL CIRCLIP FOR Ø42 BORE	1
6	Ø4 DETENT BALL	2
7	DETENT SPRING	2
8	Ø4x18 Lg DOWEL PIN	1
9	ARBOR EJECTION SPRING	1
11	ARBOR EJECTION PLUG	1
12	COLLAR	1
13	M5x8Lg BUTTON HEAD SKT SCREW	1
14	M8x10Lg GRUBSCREW	3
15	Ø1/8" x 3/4"Lg TAPER DOWEL	1

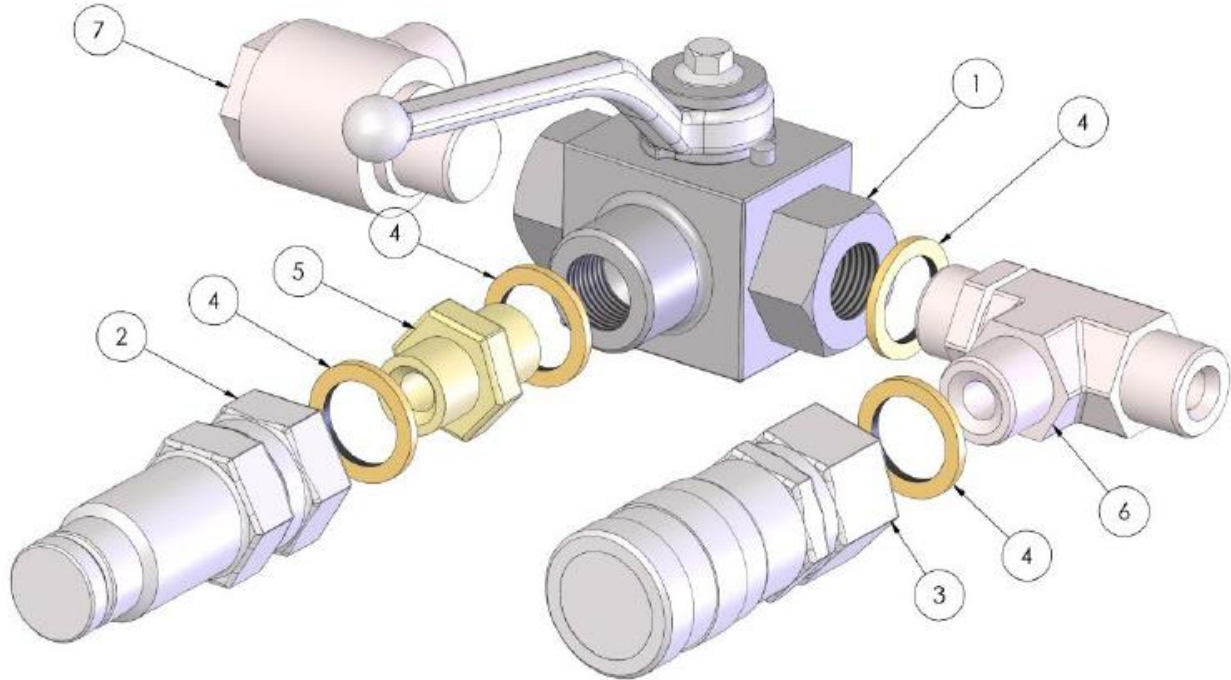
Standard Arbor Assembly



Standard Arbor Assembly Parts List

ITEM NO.	DESCRIPTION	QTY.
1	HYDRAULIC DRILL ARBOR	1
2	ARBOR EJECTION SPRING	1
3	ARBOR EJECTION PLUG	1
4	M8x10Lg GRUBSCREW	5
5	Ø1/8" x 3/4"Lg TAPER DOWEL	1

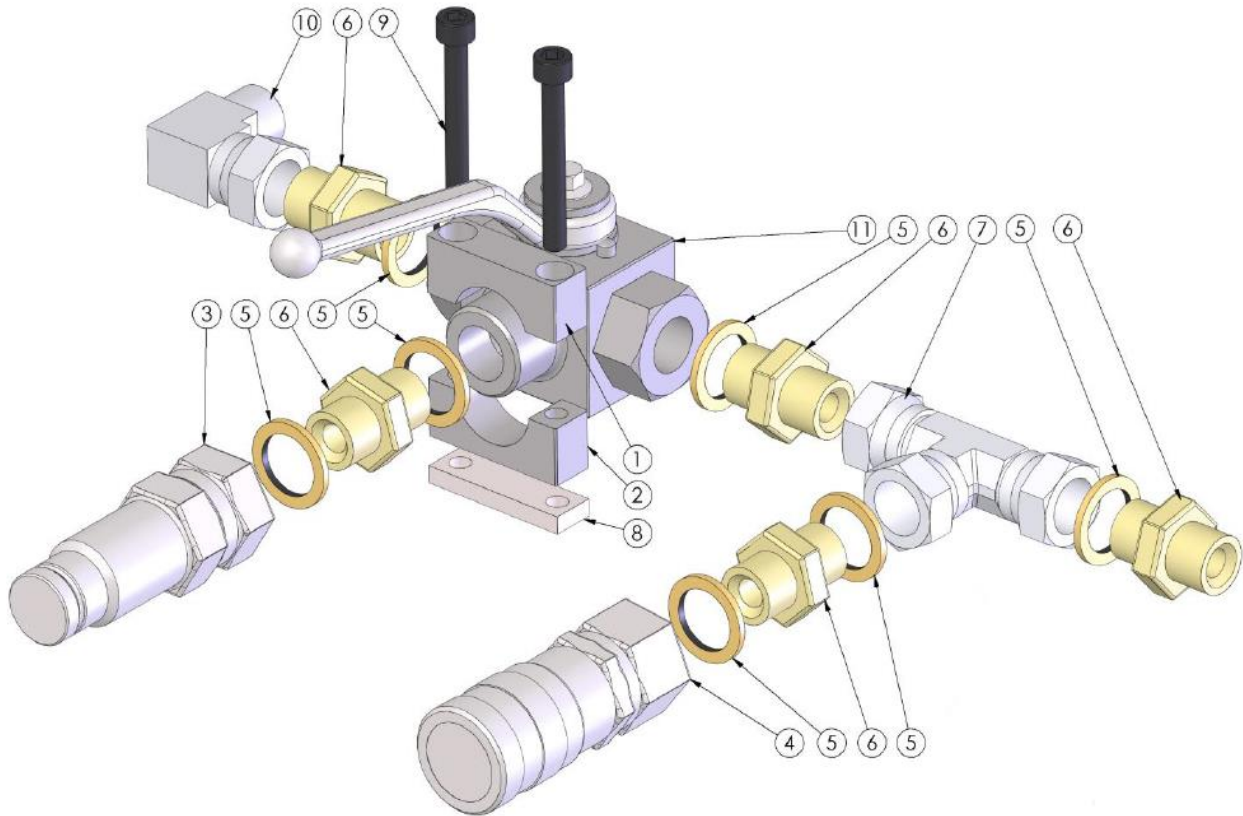
Ball Valve and Oil Feed Assembly (Make 1)



Ball Valve and Oil Feed Assembly (Make 1) Parts List

ITEM NO.	DESCRIPTION	QTY.
1	BALL VALVE BLOCK ASSEMBLY	1
2	3/8" MALE Q/R COUPLING	1
3	3/8" BSP FEMALE Q/R COUPLING	1
4	3/8" BSP BONDED SEAL	4
5	3/8" x 3/8" MALE/MALE COUPLING	1
6	3/8" TEE PIECE	1
7	3/8" BANJO	1

Ball Valve and Oil Feed Assembly (Make 2)



Ball Valve and Oil Feed Assembly Parts List (Make 2)

ITEM NO.	DESCRIPTION	QTY.
1	BALL VALVE UPPER CLAMP BLOCK	1
2	BALL VALVE LOWER CLAMP BLOCK	1
3	3/8" MALE Q/R COUPLING	1
4	3/8" BSP FEMALE Q/R COUPLING	1
5	3/8" BSP BONDED SEAL	7
6	3/8" x 3/8" MALE/MALE COUPLING	5
7	3/8" BSPP SWIVEL EQUAL TEE	1
8	BALL VALVE ASSEMBLY SHIM	1
9	M6x50Lg CAPSCREW	2
10	3/8" BSPP SWIVEL EQUAL TEE	1
11	BALL VALVE BLOCK ASSEMBLY	1

Section 6: Warranty Terms and Conditions

Warranty Period

Each new machine and new parts of our manufacture are warranted against defects in material and workmanship for one year from the date of shipment from our factory.

When contacting customer service for factory parts, service or warranty support please provide the:

- Racine Railroad Products Model
- Serial Number
- Any locally assigned identification

Vendor Parts Warranty Period

Other equipment and parts used, but not manufactured by Racine Railroad Products, Inc., are covered directly by the manufacturer's warranty for their products.

Warranty Parts and Service

We will repair or replace, without charge, F.O.B. factory, Racine, Wisconsin, USA, any part Racine Railroad Products manufactures which is proven to be defective during the warranty period.

Material claimed defective must be returned, if requested, to the factory within 30 days from the date of the claim for replacement. Ordinary wear and tear, abuse, misuse, and neglect are not covered by this warranty. Depending upon the circumstances, we may provide technical assistance and/or technical service support, without charge, to assist in the correction of warranty related problems.

Non-Warranty Parts and Service

Material damaged through normal wear and tear, abuse, misuse and/or neglect are not covered by our warranty and should be ordered directly from our Customer Service.

Note: Parts for models that are no longer in production may not be available.

Non-Warranty Parts Orders

When placing a parts order please provide the following information:

- Company Name and Billing Address
- Purchase Order Number and Issuing Authority
- Shipping Address
- Special Handling Instructions
- Contact Phone Number
- Machine Model and Serial Number
- Part Numbers and Quantities Being Ordered

Note: Please use Racine Railroad Products part numbers when ordering parts. Racine Railroad Products part numbers are shown in the parts lists and drawings of this manual and have only six (6) numbers.

Any part number with other than six numbers (e.g., contains alpha-numeric characters) is a Vendor Part Number and **not** a Racine Railroad Products part number