

Tie Tamper
910198
Operating Manual



Tie Tamper

910198

Record of Changes

Rev No.	Date	Description of Changes
Rev 1	7.2019	Initial release.
Rev 1.1	11.2019	Update Service Parts List
Rev 1.2	1.2023	Update format and layout
Rev 1.3	10.2023	Update Technical Support & Service information

Table of Contents

Section 1: Overview and Safety	5
Tie Tamper Overview	5
Environmental Protection	5
Safety Information	5
Safety Terms	6
Machine Use and Safety Precautions	6
Section 2: Specifications and Installation.....	7
Specifications	7
Sound Power and Vibration Declaration	8
Hose Requirements	8
Hose Types	9
Hydraulic Hose Recommendation.....	9
Hydraulic Fluid Recommendation	10
Tool Connecting Procedures.....	10
Disconnecting Hoses.....	11
Section 3: Tool Operation	12
Personal Protective Equipment	12
Tool Bit Installation.....	12
Operation.....	13
Cold Weather Operation.....	13
Section 4: Maintenance.....	14
Troubleshooting Guide.....	15
Charging the Accumulator.....	16
Charge Location.....	17
Testing the Accumulator Pressure	17
Section 5: Service Support.....	18
Tie Tamper Parts and Assembly.....	19
Tie Tamper Parts List	20
Seal Kit Parts List	21
Service Parts	22
Section 6: Warranty Terms and Conditions	23

This page was intentionally left blank.

Section 1: Overview and Safety

Tie Tamper Overview

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

The Tamping Tool spring-dampened anti-vibration handle isolates the tool's vibration which reduces operator fatigue and increases productivity. The spring-loaded bit keeper allows the bit to be backed out even when driven deeply into the ballast.

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.

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



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



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

Machine Use and Safety Precautions



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 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.

Do not weld, cut with an acetylene torch, or hard face the tie tamper tool.

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

Pressure Range	1500-2000 psi / 106-140 bar
Maximum Back Pressure	200 psi / 14 bar
Flow Range (5-GPM Models).....	4-6 GPM / 15-23 LPM
Flow Range (10-GPM Models).....	7-10 GPM / 26-38 LPM
Porting	-8 SAE O-ring
Connect Size and Type	3/8 in. Male Pipe Hose Ends
Connector.....	HTMA Flush Faced Coupler
Hose Whips	es
System Type	EHTMA Category C/HTMA Type I - Open Center
Weight (w/Steel)	56 lb / 25 kg
Overall Length (w/Steel).....	39.75 inches / 100.9 cm
Overall Width.....	14/17 inches / 35.6/44 cm3

Sound Power and Vibration Declaration

Test conducted on the Tie Tamper and operated at standard 5 GPM input.

Measured A-weighted sound power level, Lwa (ref. 1pW) in decibels	106 dBA
Uncertainty, Kwa, in decibels	3 dBA
Guaranteed sound power level	109 dBA
Measured A-weighted sound pressure level, Lpa (ref. 20 µPa) at operator’s position, in decibels....	98 dBA
Uncertainty, Kpa, in decibels	3 dBA

Values determined according to noise test code given in ISO 15744, using the basic standard ISO3744.

Test conducted by independent notified body to comply with 2000/14/EC:2005 requirements.

Note: The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements.

Declared vibration emission value in accordance with EN 12096

Measured vibration emission value: 3-Axis.....	6.3 m/sec ²
Uncertainty: K.....	1 m/sec ²
Measured vibration emission value: Z-Axis	3 m/sec ²
Uncertainty: K.....	0.7 m/sec ²

Values determined according to ISO 8662-5, ISO 5349-1,2

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 for them 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 tool are:

1. **Labeled and certified non-conductive.**

- This is the only hose authorized for use near electrical conductors.
- Constructed of thermoplastic or synthetic rubber inner tube, synthetic fiber braid reinforcement, and weather resistant thermoplastic or synthetic rubber cover.

2. **Wire braided** (conductive)

- This hose is conductive and must **never** be used near electrical conductors.
- Constructed of synthetic rubber inner tube, single or double wire braid reinforcement, and weather resistant synthetic rubber cover

3. **Fiber braided** (not certified or labeled non-conductive)

- This hose is conductive and must **never** be used near electrical conductors.
- Constructed of thermoplastic or synthetic rubber inner tube, synthetic fiber braid reinforcement, and weather resistant thermoplastic or synthetic rubber cover.

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

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 from 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.



Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.

Always connect hoses to the tool hose couplers before energizing the hydraulic power source. Be sure all hose connections are tight and are in good condition.

Do not operate the tool at oil temperatures above 140 °F/60 °C. Operation at higher temperatures can cause higher than normal temperatures at the tool which can result in operator discomfort.

When working near electrical conductors, always assume that all conductors are energized and that insulation, clothing and hoses can conduct electricity. Use hose labeled and certified as non-conductive.

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



Use of this tool on certain materials could generate dust potentially containing a variety of hazardous substances such as asbestos, silica or lead.

Inhalation of dust containing these or other hazardous substances could result in serious injury, cancer, or death. Protect yourself and those around you. Research and understand the materials you are cutting.

Tool Bit Installation

1. Remove the two cap screws that hold the bit keeper to the lower body or on some models remove the two hex head cap screws, outer springs, and nuts that hold the bit keeper to the lower body.
2. Remove the two pair of bit-retaining spring guides and spring or on some models the one pair of bit guides from the bit keeper.
3. Insert the hex end of the bit as far as possible through the small end of the bit keeper.
4. Install the coil spring on the bit hex flange. Install a spring guide pair on each end of the spring. On some models only one pair of bit guides need to be installed and **no** spring.

Note: There are two types of spring guides. Each of the two types must be installed in matched pairs. The pair used at the top of the spring have a flat end that goes against the bit collar.

5. Carefully install the bit keeper so that the lower spring guide fits into the lower keeper bore and that the upper flat end of the guide rests against the bit flange.
6. With the bit pulled down into the keeper, insert into the tie tamper hex, then press the bit keeper up against the lower body.
7. Tighten both cap screws or on some models install the hex head cap screws, outer springs, and nuts and tighten securely.

Operation

Observe all safety precautions and install the appropriate tool bit for the job if not already installed.

1. Place the tamper on the surface to be compacted.
2. The tamper will rise quickly when first turned on. Do not stand over or place any part of your body on top of the tamper. Wear safety shoes

Note: Partially pressing the trigger allows the tool to run at slow speed, making it easier to start or control.

3. Guide the tamper using both hands.

Cold Weather Operation

If the tie tamper is to be used during cold weather, preheat the system hydraulic fluid at low engine speed.

When using the normally recommended fluids, oil fluid temperature should be at or above 50 °F/10 °C (400 ssu/82 centistokes) before use.

Damage to the hydraulic system or tie tamper can result from use with oil that is too viscous or thick.

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.



WARNING

Do not perform maintenance on the machine while the hydraulic power source motor is running or when hoses are connected.

All maintenance must be done with the tool disconnected from the power source.

Cleaning and Maintenance Recommendations

- Wipe all external surfaces after each use with a clean, lint free cloth to remove surface contaminants from the tool.
- Store all tools in an enclosed area to prevent the weather from contaminating their systems.

Safety Devices

When maintenance is complete, make sure the following:

- The hydraulic control valves are operable.
- The hydraulic quick couplers and hoses are safe to use.

Storage Preparation

- Cover male and female hose whips.
- Store in the upright position. Secure tool to prevent it from being knocked over.
- Store the machine on a smooth level surface.
- The tool should be stored in a cool, dry environment which is not subjected to rapid temperature changes.

Daily



WARNING

Do not attempt to locate hydraulic leaks by feeling around hoses and fitting with hand. Pin-Hole leaks can penetrate the skin.

- Wipe all tool surfaces, fittings, and couplings free of grease, dirt, and foreign materials.
- Inspect the tool, hydraulic system, hoses, and fittings for signs of leaks, cracks, wear, and/or damage. Replace if necessary.
- To prevent contamination, always install dust caps over the hydraulic ports when disconnected.
- Inspect machine for damage and wear, replace as required.

Monthly

- Perform a detailed inspection of the systems hoses and fittings according to the hydraulic hose operator's manual and as stated in SAE standard j1273, May 1989 or latest revision.

Replace the hoses and/or fittings if necessary.

Troubleshooting Guide

If symptoms of poor performance develop, the following chart can be used as a guide to correct the problem.

When diagnosing faults in operation, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure to the tool as listed in the following table.

Use a flow meter known to be accurate. Check the flow with the hydraulic fluid temperature at least 80 °F / 27 °C.

Symptom	Cause	Solution
Tie tamper does not run.	Power unit not functioning.	Check power source for proper flow and pressure, 4-6 GPM/14-23 LPM, 1500-2000 psi/106-140 bar. TT46233 Model, 7-10 GPM/26-38 LPM.
	Couplers or hoses blocked.	Remove restriction.
	Pressure and return line hoses reversed at ports.	Be sure hoses are connected to their proper ports.
	Mechanical failure of piston or automatic valve.	Disassemble tamper and inspect for damaged parts.
Tie tamper does not run effectively.	Power unit not functioning.	Check power source for proper flow and pressure, 4-6 GPM/14-23 LPM, 1500-2000 psi/106-140 bar. TT46233 Model, 7-10 GPM/26-38 LPM.
	Couplers or hoses blocked.	Remove restriction.
	Low accumulator charge (pressure hoses will pulse more than normal).	Recharge accumulator. Replace diaphragm if charge loss continues.
	Oil too hot (above 140°F/60°C).	Provide cooler to maintain proper oil temperature (140 °F/60 °C).
Tie tamper operates slow.	Low GPM supply from power unit.	Check power source for proper flow and pressure, 4-6 GPM/14-23 LPM, 1500-2000 psi/106-140 bar. TT46233 Model, 7-10 GPM/26-38 LPM.
	High back-pressure.	Check hydraulic system for excessive back-pressure (over 200 psi/14 bar).

Charging the Accumulator

To check or charge the accumulator, the following equipment is required:

- Accumulator tester
 - Charging assembly
 - Nitrogen bottle with an 800 psi/56 bar minimum charge.
1. On charge valves containing 5/8 inch hex locking nuts, first loosen the locking nut 1-1/2 turns.
 2. Holding the chuck end of the tester, turn the gauge fully counter-clockwise to ensure the stem inside the chuck is completely retracted.
 3. Thread the tester onto the charging valve of the tool accumulator (do not advance the gauge end into the chuck end. Turn as a unit).

Seat the chuck on the accumulator charging valve and hand tighten only.

4. Advance the valve stem by turning the gauge-end clockwise.
5. Connect the charge fitting on the hose to the charge valve on the Tester.
6. With the gauge and snub valve attached to the nitrogen bottle, and with the snub valve closed, open the nitrogen bottle valve.

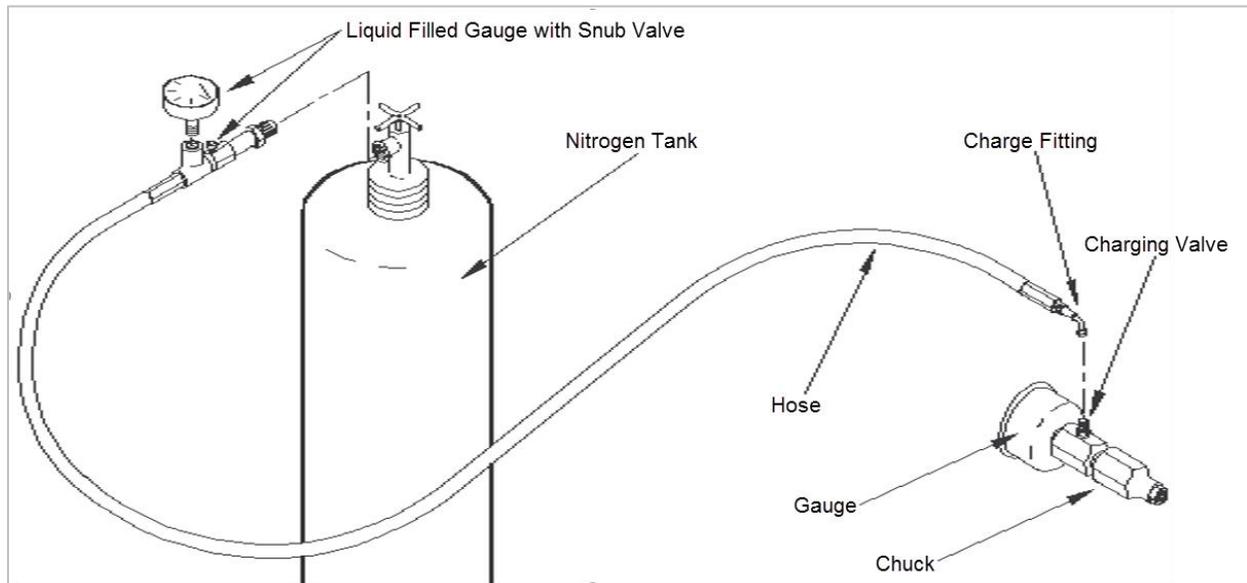
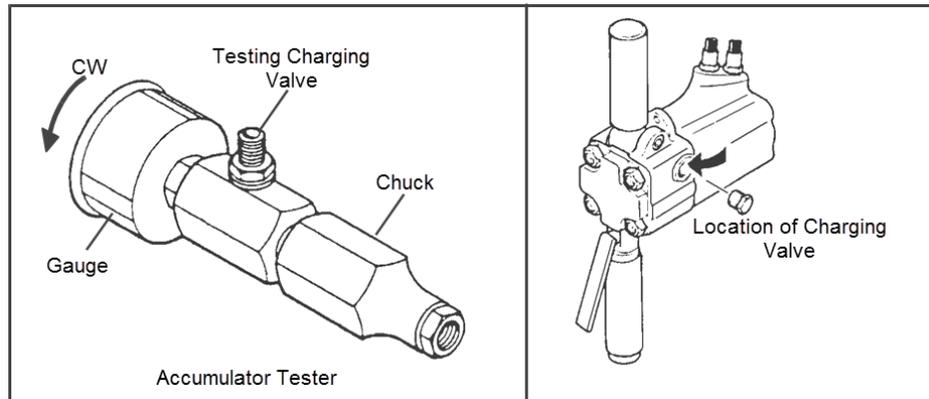
Note: It may be necessary to adjust the charge at 650-700 psi/45-48 bar to overcome any pressure drop through the charging system.

7. While watching the pressure gage, open the snub valve allowing the gauge to read 600 to 700 psi/42 to 48 bar.

Close the snub valve on the charging assembly and also on the nitrogen bottle. Remove the charging assembly from the accumulator tester.

8. Turn the gauge end of the tester fully counter-clockwise to retract the plunger in the chuck. Then remove the tester from the charge valve.
9. On charge valves containing 5/8 inch hex locking nuts, tighten the locking nut.

Charge Location



Testing the Accumulator Pressure

1. On charge valves containing 5/8 inch hex locking nuts, first loosen the locking nut 1-1/2 turns.
2. Holding the chuck end of the tester, turn the gauge fully counter-clockwise to ensure the stem inside the chuck is completely retracted.
3. Thread the tester onto the charging valve of the tool accumulator (do not advance the gauge end into the chuck end. Turn as a unit).
Seat the chuck on the accumulator charging valve and hand tighten only.
4. Advance the valve stem by turning the gauge-end clockwise.
5. Read the pressure on the gauge (pressure should be between 500 & 600 psi/35 & 42 bar).
6. If the pressure is low, recharge the tool.

Section 5: Service Support

Technical Support & Service

Telephone and web-based technical support is available for current production models through our Customer 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)).

Phone: (262) 637-9681

Email: custserv@racinerailroad.com

Racine Railroad Products
1955 Norwood Court
Mount Pleasant, WI 53403

Non-Warranty Technical 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 Customer Service Department to coordinate Non-Warranty Technical or Field Service Support.

Warranty Support Technical 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 Customer Service Department to coordinate Warranty Technical or Field Service Support.

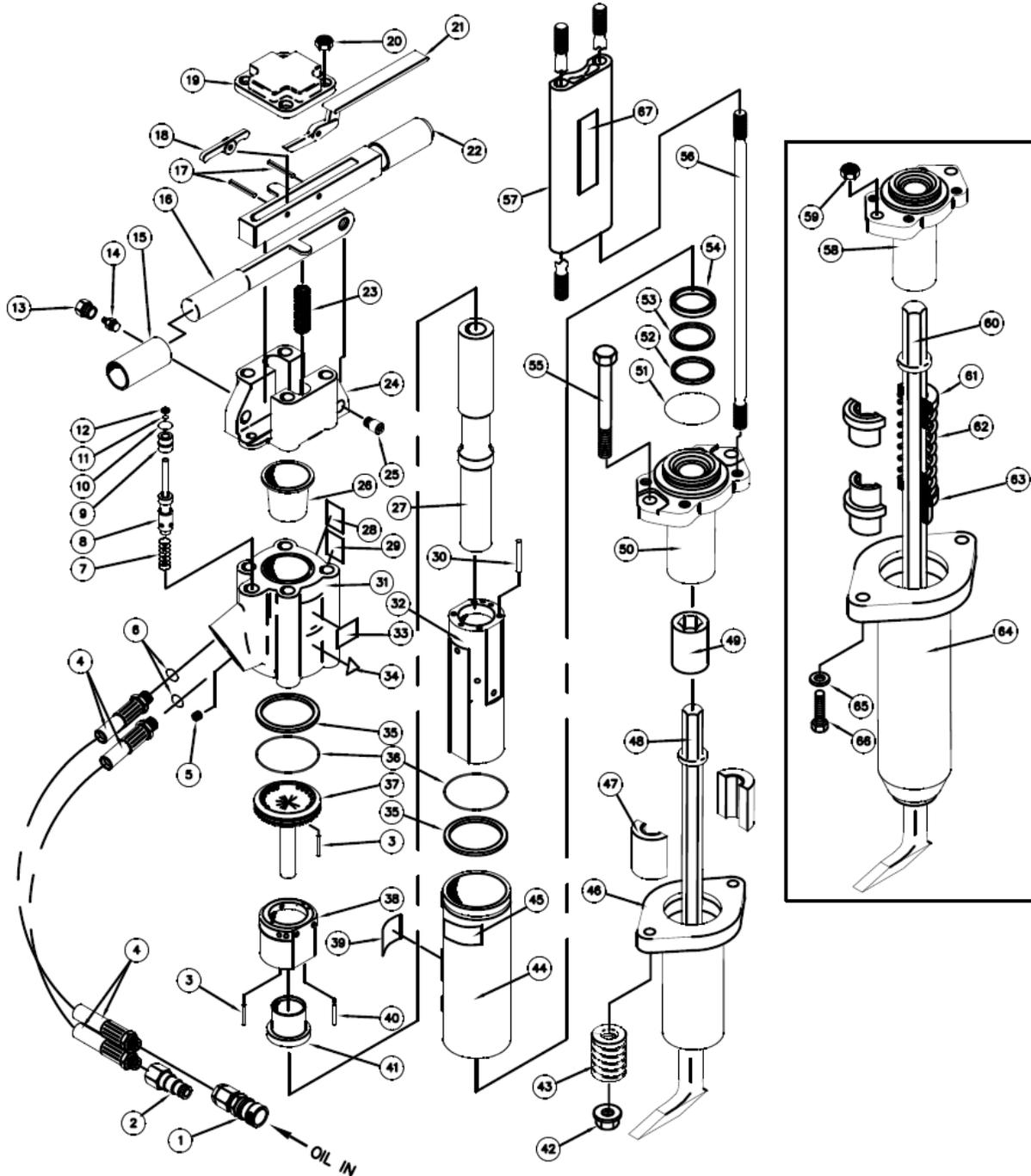
Warranty Parts Claims

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 Customer 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 Customer Service Department at the address provided above to coordinate Warranty Service Support.

Tie Tamper Parts and Assembly



Tie Tamper Parts List

Item	Quantity	Description
1	1	Female coupler set
2	1	Male coupler set
3	2	Roll pin
4	2	Hose Assembly
6	2	O-ring
7	1	Spring
8	1	Valve spool
9	1	Seal block
10	1	U-ring
11	1	O-ring
12	1	Rod wiper
13	1	plug
14	1	Charge valve
15	2	Handle grip
16	1	handle
17	2	Spiral pin
18	1	lever
19	1	Top plate
20	4	locknut
21	1	Trigger
22	1	Trigger handle
23	2	Spring
24	1	Handle pivot
25	1	Pivot screw
26	1	Accumulator diaphragm
27	1	piston
28	--	Label

Item	Quantity	Description
29	--	label
30	4	Push pin
31	1	Accumulator valve block
32	1	Flow sleeve
33	1	Label
34	1	label
35	2	Back-up ring
36	2	O-ring
37	1	Porting block
38	1	Automatic valve body
39	1	Label
40	2	Push pin
41	1	Automatic valve
42	1	Nut
43	1	Spring
44	1	Flow sleeve tube
45	1	label
46	1	Bit keeper
47	2	Bit Guide
48	1	Tie tamper bit
49	1	Hex Bushing
50	1	Lower Body
51	1	O-ring
52	1	Rod wiper
53	1	Back-up washer
54	1	Cup seal
55	1	Cap screw

Seal Kit Parts List

Item	Quantity	Description
4	2	Hose Assembly
6	2	O-ring
10	1	U-ring
11	1	O-ring
12	1	Rod wiper
35	2	Back-up ring
36	2	O-ring
51	1	O-ring
52	1	Rod wiper
54	1	Cup seal

Service Parts

NO.	QTY	DESCRIPTION	PART NO.
1	REF	HOSES, WHIP	26002503
2	REF	HANDLE, PIVOT	474759
3	REF	SPOOL, VALVE	474827
4	REF	BLOCK, SEAL	474828
5	REF	VALVE, CHARGE	474829
6	REF	GRIP, HANDLE	474830
7	REF	TRIGGER	474831
8	REF	PISTON	474832
9	REF	PIN, PUSH	474833
10	REF	SLEEVE, FLOW	474834
11	REF	BODY, AUTOMATIC VALVE	474835
12	REF	VALVE, AUTOMATIC	474836
13	REF	NUT	474837
14	REF	SPRING	474838
15	REF	TUBE, FLOW SLEEVE	474839
16	REF	BITKEEPER	474840
17	REF	GUIDE, BIT	474841
18	REF	BUSHING, HEX	474842
19	REF	BODY, LOWER	474843
20	REF	SCREW, CAP	474844
21	REF	ROD, SIDE	474845
22	REF	ASSEMBLY, HOSE	474846
23	REF	O-RING	474847
24	REF	U-RING	474848
25	REF	O-RING	474849
26	REF	WIPER, ROD	474850
27	REF	RING, BACKUP	474851
28	REF	O-RING	474852
29	REF	O-RING	474853
30	REF	WIPER, ROD	474854
31	REF	SEAL, CUP	474855

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 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