PANDROL

# Reversing Rail Saw

## MODEL 03900A

**OPERATION AND MAINTENANCE MANUAL**

**ENG_OMM_REVERSING_RAIL_SAW_P01**
09th November 2021

Partners in excellence

**Thank you for choosing Reversing Rail Saw!**

**You are now the owner of a quality product from Pandrol.**

# 1. Preface

This manual aims to help you get to know your new Reversing Rail Saw, to use it in the best way and to maintain it properly for a long lifetime. It also presents important safety regulations and warnings.

The manual is intended for people who handle and operate the machine. It is originally written in English and translated into the local language by Pandrol.

Pandrol reserves the right to change specifications, equipment, instructions and maintenance guidelines without prior notice.

The manual contains instructions about the following topics:

1. Installation
2. Operation
3. Safety features and warnings
4. Maintenance and troubleshooting

(1) refers to a component in a figure/illustration.

**IMPORTANT**

This manual contains ordered actions, e.g.

1. Do this
2. ...and then this...
3. ...and finally this

These actions **must** be done in the numerical order presented.

# 2. Revision

| Revision | Date | Comments |
|---|---|---|
| P01 | 2021-11-09 | New Manual |
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# 3. Safety Information

## 3.1. General

- Tool operators and maintenance personnel must always comply with the safety precautions given in this manual, and with all stickers and tags attached to the tool and hoses.
- All safety precautions are given for your safety. Read to understand and follow all safety, maintenance and operation instructions before you use or maintain the tool.
- Review the manual daily before using the tool.
- Follow all safety guidelines given you by your supervisor. Do not use the tool if you have any questions about the operation, safety or maintenance of this tool . Failure to follow these instructions can result in personal injury or equipment damage.
- Pandrol has no control over the tool use or operation once it leaves the plant. Pandrol has no control over operator or maintainer selection. The customer must assume responsibility for the tool suitability for a particular function.
- During use of the tool, good judgement must be used to work safely and efficiently without endangering themselves or bystanders.
- Understanding of the operation and maintenance manual is essential for anyone using or maintaining the tool.
- Warnings and safety precautions described in this document shall only be considered as a minimum. National conditions, standards and regulations override conditions, standards and regulations described in this document.
- Work with the machine is only to be carried out by qualified personnel, well-informed and educated in general railway workmanship and specifically in the conditions, standards and regulations on specific rail track.
- The machine may only be used for its specified purpose.
- Any adjustments or service on the machine is only allowed to be done by qualified personnel that have read and understood this manual and have had training and information from Pandrol.

## 3.2. Safety actions

- Read and understand all safety regulations and warnings before installation, operating or performing maintenance on this machine.
- Do not operate the tool until you have been thoroughly and properly trained or under the supervision of an instructor.
- Check power source daily to determine if correct flow and pressure are available.  Never exceed flows or pressures for the tool being used.  Personal injury or damage to the tool can result.
- Operators must clear the work area of non-essential personnel. Flying debris can cause serious injury.
- The operator must be familiar with all prohibited work areas such as unsafe grades, poor footing areas and overhead hazards.
- Use standards and regulations, accident prevention regulations and regulations concerning special ambient conditions (e.g. areas potentially endangered by explosive materials, heavy pollution or corrosive influences).
- Maintain balance and proper footing at all times.  Never overreach to the extent that a broken part or sudden movement of the tool can cause you to lose your balance and fall, or cause injury to your self or someone else.

- Do not operate the tool at excessive fluid temperatures operator discomfort and potential burns can result at high oil temperatures.
- Do not clean inspect or repair the tool while connected to the power source. Accidental engagement of the tool can cause serious personal injury.
- Oil injection hazard exists with this tool. Oil injection is a condition where hydraulic oil is injected under the skin from pressure in the line. Always wear gloves and repair any leaks immediately. Never carry a tool by the hoses.
- Do not use damaged equipment. Immediately replace any damaged hoses, fittings, or other components showing wire braid, nicks, cuts, damage or abrasions. Failure to do so may result in equipment damage and / or personal injury or death.
- Clean up any oil or fluid spills immediately.

## 3.3. Personal/Safety equipment

- Never wear loose clothing that can get entangled in the working parts of the tools or be careless with hands, feet or other body parts around the working parts of the tools. Hydraulic tools exert high torque and force and can cause serious injury or death if improperly used.
- When working near electrical conductors, always assume that the conductors are energized and that hoses and clothing can conduct harmful electricity. Use hoses labeled and certified as nonconductive.
- Always wear safety equipment such as oil injection resistant work gloves, safety glasses, safety boots, ear protection and other safety apparel dictated by your supervisor applicable for the job you are doing and the tool you are using.
- The use of an compressed air, which must be less than 8 BAR (116 PSI), to blow parts clean or to blow them dry after being cleaned with a solvent will cause particles of dirt and/or droplets of the cleaning solvent to be airborne. These conditions may cause skin and/or eye irritation. When using an air jet do not direct it toward another person. Improper use of air jet could result in bodily injury.

## 3.4. Safety precautions

- Always wear protective equipment such as gloves, safety glasses, ear protection and safety shoes.
- Do not wear clothing which may become entangled in the tool.
- Always keep work area free of tools or any other objects which may impair sound footing.
- Caution oil injection hazard exists with this tool. Oil injection is a condition where the hydraulic oil is forced under the skin through pressure in the line. Always wear gloves, do not carry the tool by hydraulic hoses, and repair leaks immediately.
- Never use the rail saw as a free hand tool.
- Never change blades with the power source valve(s) in the “on” position, turn the power source “off”.
- Never carry the rail saw with the power source in the “on” position, turn the power source “off”.
- Never touch or try to stop a moving blade.
- Always check the work area for any trash which may ignite from sparks.
- Always check the area for smoldering ties or trash before leaving the site.
- Always keep a firm grasp on the saw, with both hands, at all times.

- When changing blades, follow all blade manufacturers instructions for safety and operation. Use only blades that comply with ANSI standards. Before using, run new saw blade for one minute at full speed to check for defects or vibration.
- Never let the saw blade cut into any material (tie, ballast, etc…) other than the rail being cut.
- Most hydraulic oils have a flash point of approximately 450 degrees (f). Make sure hoses are completely clear of sparks and hot debris. Have another person stand close to hydraulic power source controls to observe operation and for emergency shutdown if necessary
- If the blade stops during the cutting process due to rail bind or other problem, immediately turn off the power source and disconnect the hoses before attempting to free the blade. After freeing the blade replace it with a new blade before continuing the cut.

## 3.5. Qualified personnel

The machine is only to be used by trained personnel, thoroughly familiar with and trained in general railway workmanship. The equipment should be operated according to the conditions and standard regulations applying to the track they are working on.

The equipment must be serviced, maintained, or in any way modified only by trained personnel, who are familiar with the Operation & Maintenance Manual and have received training and information from Pandrol.

In order to avoid personal injury and/or material damage, everyone involved with assembling, starting-up or overhaul must possess relevant knowledge of the equipment, its use, maintenance requirements and procedures.

# 4. Summary

The Pandrol Reversing Rail Saw is a hydraulic powered abrasive rail saw that can cut rail from either side of the rail safely without disconnecting or realignment; simply pivoting the saw to the other side of the rail provides the flexibility and safety that is needed on track

*Fig 1.*

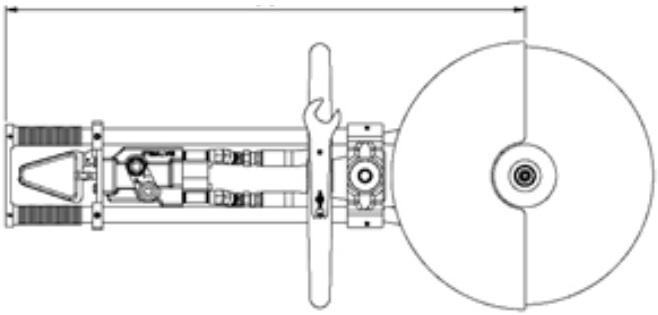


*Fig 2.*

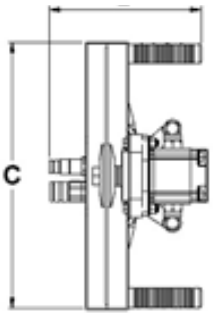



*Fig 3.*

| | | | | |
|---|---|---|---|---|
| **Flow** | **Pressure** | **RPM** | **Weight** | **Weight** |
| 10 GPM (38 LPM) | 2000 PSI (140 BAR) | 3200 | A - 36” (91.44 cm)<br>B - 10” (25.4 cm)<br>C - 17” (43.18 cm)<br><br>CLAMP<br>36" (91.44 cm)<br>8" (20.32 cm)<br>11" (27.94 cm) | 38 lbs (17 kg)<br><br>CLAMP<br>20 lbs (9 kg) |

## Accessories:

00897 - 14” Saw blades

00899 - 16” Saw blades

# 5. Operation

- Position saw clamp squarely on rail and tighten. Note some saw clamps maybe equipped with a retractable cut indicator which helps align the clamp for cutting location.
- Attach the rail saw to the clamp assembly and tighten.
- With the power source in the "OFF" position, connect the hoses. Do not drag the service hose by pulling with the tool. Loop the service hose in the work area in such a way to relieve stress on the hose and quick disconnect fittings while working. Be aware of hose location at all times. Keep hoses clear of sparks.
- Turn power source to the "ON" position to supply 10 GPM to tool.
- Grasp the saw firmly and pull up on the trigger to start the saw blade rotating. Before using, run saw blade for one minute at full speed to check for defects or vibration before touching rail. The saw is designed to throw sparks away from the operator.
- Keep the saw oscillating while making the cut. This will reduce glazing and cutting time.
- The operator can start from either side of the rail or rotate to the opposite side of the rail to complete the cut. To rotate the saw, release the trigger to stop the saw and without moving the clamp simply pivot the saw over and move to the opposite side of the rail. Your sawing position will change but it is designed so that you will still be pulling up on the trigger to resume cutting. Keep clear of the trigger and blade while changing positions. Ensure hose is routed away from sparks.
- After finishing the cut, turn the power source "OFF" and disconnect hoses before attempting to remove the saw.

## 5.1. Changing blades

- Turn power source “OFF” and disconnect hoses from tool.
- With the power source off, hoses disconnected, saw blade elevated above the ground or on a clean work area, remove the ¾” jam nut, nylon washer and the outside flange. Be careful not to misplace the nylon washer. This washer must be on for safe operation. Install new blade, outer flange, nylon washer and tighten jam nut.

## 5.2. Cold weather operation

Hydraulic system performance is affected when the temperature drops below 50°F. Therefore, measures should be taken to pre-warm tools and fluids before operating.

**NOTE!**
- **Refer to operating procedures of this manual before starting**

# 6. Trouble shooting guide

| Problem | Remedy |
|---|---|
| **Saw doesn't cut rail fast enough** | • Check flow under load. Power source must maintain 10 GPM under normal load. Install flow meter and restrict to approximately 1500 PSI. Flow should be 10 GPM at 1500 PSI working pressure.<br>• Determine that operator is using saw properly. The saw should be oscillated back and forth while cutting. The average cutting time is 1 - 2 minutes for 132 lb rail.<br>• The proper RPM of the Pandrol saw is 3200 (±100) RPM at 10 GPM.<br>• The saw RPM is proportional to the flow provided. If the flow drops to 8 GPM the RPM of the saw will be 2400 RPM, much too slow for cutting rail. If the flow is increased to 18 GPM the saw RPM will be 5500 RPM. Proper flow is critical for proper operation and safety of the operator. Determine if the power source is delivering the proper flow and relief pressure to the saw and all other speed related tools by checking flow with a flow gauge. (Pandrol part number 03600 – flow and pressure gauge, or equivalent). |
| **The saw cuts crooked** | • Play in any of the connections on clamp arm.<br>• Bad, glazed, or defective blades.<br>• Low flow reducing saw RPM.<br>• Loose arbor on saw motor.<br>• Loose blade flanges.<br>• Bent saw frame between motor and pivot point.<br>• Untrained operator |

# 7. Review of hydraulic principles

**Tool circuit**

## 7.1. Hydraulic formulas

$$GPM = \frac{CID \times RPM}{231}$$

$$HP = \frac{GPM \times PSI}{1714\ (.85)\ 1456.9}$$

Example: HP required to deliver 10 GPM at 1500 PSI.

$$\frac{10\ GPM \times 1500\ PSI}{1456.9} = \frac{15000}{1456.9} = 10.3\ HP$$

(subtract back pressure for tool HP)

Estimated HP delivered by pump or used by tool

| | | | | | | |
|---|---|---|---|---|---|---|
| | **PSI** | | | | | |
| **GPM** | **500** | **1000** | **1500** | **2000** | **2500** | **3000** |
| 3 | 1.03 | 2.06 | 3.09 | 4.12 | 5.15 | 6.18 |
| 5 | 1.72 | 3.43 | 5.15 | 6.86 | 8.58 | 10.30 |
| 10 | 3.43 | 6.86 | 10.30 | 13.70 | 17.20 | 20.60 |
| 15 | 5.15 | 10.30 | 15.40 | 20.60 | 25.70 | 30.90 |

## 7.2. Back pressure

Back pressure measured at the tool return port must not exceed the manufacturers back pressure rating. Most manufacturers list the maximum back pressure for their hydraulic tools at 250 PSI. Back pressure measured on the return side of the tool is the force required to get the oil back to the tank. In almost all cases the lower the back pressure the better the tool performance. First, the back pressure is subtracted from the maximum tool pressure to arrive at a maximum tool operating pressure. For example, tools with 2000 PSI operating pressure are installed on a system with 250 PSI back pressure. This leaves 1750 PSI as a maximum tool pressure. Imagine a system with 500 PSI back pressure. 2000 Minus 500 PSI back pressure leaves only 1500 PSI for the tool. Second, tools are designed for pressure to build on the pressure side of the tool. If too much pressure builds on the return side, not only is performance effected, but seals may blow. This is why it is very important to direct the flow into the tool correctly. Reversing the hoses to test may result in blown seals, damage to the tool, and personal injury.

# 8. Maintenance

## 8.1. General

**Maintenance and overhaul is to be carried out by qualified personnel only**
**Warranty is based on parts and spares delivered by Pandrol.**

**Check tools DAILY for proper operation, leaks, or damage.**

**Inspect hoses DAILY. Replace cut, burned, or otherwise damaged hoses.**

**Keep quick disconnect couplers clean and lubricated.**

Use hydraulic fluids that comply with HTMA Specification 5.7, The hydraulic fluid should have a viscosity between 100 and 400 SSU (20-82 centistokes) at the maximum and minimum expected operating temperatures. Petroleum based hydraulic fluids with anti-wear properties and a viscosity index of over 140 work for a wide range of operating conditions.

### The following oils meet HTMA Specification 5.7

| | |
|---|---|
| AMOCO RYKON MV | CITGO A/W ALL TEMP |
| SUNVIS 706 | MOBIL D.T.E. 13 |
| CHEVRON EP-MV | TEXACO "RANDO" HDAZ |

**Other fluids that meet or exceed this specification can be used.**

*** See cold weather operation hydraulic oil note.**

Have tool inspected, at least annually, by Pandrol or a Pandrol qualified service representative to determine if tool is in need of safety changes or worn part replacement.

Contact Pandrol on a periodic basis, at least annually, for service Bulletins, safety notices, or other important information pertaining to this tool.

**WARNING!**

- **All adjustments work, overhaul and service must take place with the machine turned off. Failure to do so could lead to fatal injury.**
- **It is of great importance that qualified personnel accomplish all service and overhaul**

## 8.2. Warning labels and information symbols

Below are examples of warning labels and information symbols on the machine. If any of these labels become damaged or lost, they are to be replaced with new original warning labels that are available from Pandrol.




# 9. Limited warranty

Pandrol, INC warrants to the original purchase of this product that the product will be free from defects in material and workmanship for the period of one (1) year after the delivery of such product to the customer. Other equipment and parts used, but not manufactured by Pandrol are covered directly by the warranty of the manufacturer of those products. Proof of purchase must be documented including reference to a serial number located on each tool. The purchaser's only remedies under this limited warranty shall be limited at Pandrol's sole option to the following: repair, replacement or refund of the purchase price of the defective products. Each of these remedies requires timely notification of the defect in the product and substantiation that the product has been properly stored, maintained and used. Pandrol's obligations hereunder extend only to the purchaser of the product and not to any third party.

As a condition precedent to Pandrol's obligation hereunder, the defective product must not have been altered or modified without the express written approval of Pandrol. The product must not have been subjected to deliberate damage, shipping damage, neglect, tampering by unauthorized personnel or damage by improper use, storage or maintenance. Serial numbers must not have been altered, defaced or removed. Such action voids limited warranty.

## 9.1. Exclusions to limited warranty

This limited warranty is exclusive and is in lieu of any other warranty, written or oral, expressed or implied, including, without limitation, any implied warranty or merchantability or fitness for a particular purpose.

Limited warranty does not cover normal wear and tear items such as filters, hoses, couplers, bits, sockets, augers, and batteries

## 9.2. Limitation of liability

Except as provided above, Pandrol shall in no event be liable or responsible for any injury, loss or damage, direct, incidental or consequential, arising out of the use or misuse or inability to use the product, however caused and on any theory of liability including, without limitations, breach of contract, tort, (including negligence or street liability) and not withstanding any failure of any remedy herein of its essential purpose, even if Pandrol was aware of this possibility of such damage. Pandrol's limited warranty as set forth above shall not be enlarged, diminished or affected by, and no obligation or liability shall arise or go out of the rendering of technical advice or service by Pandrol or its agents. The foregoing may not be changed except by written agreement signed by an authorized officer of Pandrol, the remedies set forth herein are exclusive.

# 10. Customer information

**Name** _____

**Company** _____

**Serial # of your Pandrol tool** _____

**Upon receiving your Pandrol tool, make sure to list serial number above so that a good record is kept for order information.**

## Pandrol hydraulic tool list

All Pandrol Hydraulic Tools operate at 5 GPM (19 LPM) or 10 GPM (38 LPM) @ 2000 PSI (140 BAR)

**Power units:**

00100K – Gasoline powered (1) 10 GPM or (2) 5 GPM circuits

02900A – Diesel (1) 10 GPM or (2) 5 GPM circuits (optional catalytic exhaust)

05500 – Twin power dual circuit (1) 10 GPM or (2) 5 GPM circuits & 5000 watt generator

02050RM – Modular power unit (1) 9 GPM

03700A – Electric power (1) 10 GPM or (2) 5 GPM circuits

**Grinders:**

09200A – Precision frog grinder

06000 – Profile grinder

06950 & 06950A – Multi-purpose grinder

05900 – Frog/profile grinder (trigger version available)

00700 – Rail surfacing guide

04600 – Straight stone grinder cw rotation (trigger version available)

04700 – Straight stone grinder ccw rotation (trigger version available)

07500 – Chamfer tool

04800 – 6" Cup stone grinder (trigger version available)

00600 – 8" Cup stone grinder

05400 – Angle grinder

09300 - Head wash grinder

**Track tools:**

03900A – Reversing rail saw
05100A & 05100B – Power weld shear
03500 – Self feed rail drill
04500D – 1/2” Hydraulic drill impact wrench
08200 – Tamper
02800A – 60 Ton bridge spreader
01200 – Spring anchor applicator
01100A – Spike puller (Single, 2 stage & trigger versions available)
00800A – 16” Rail saw
05000 – Hand pump weld shear
02500 – 10 GPM 1” Impact wrench
08300 – Spike driver
01600A – 5 GPM 1” Impact wrench
01100RM – Light-weight spike puller

**Other products:**

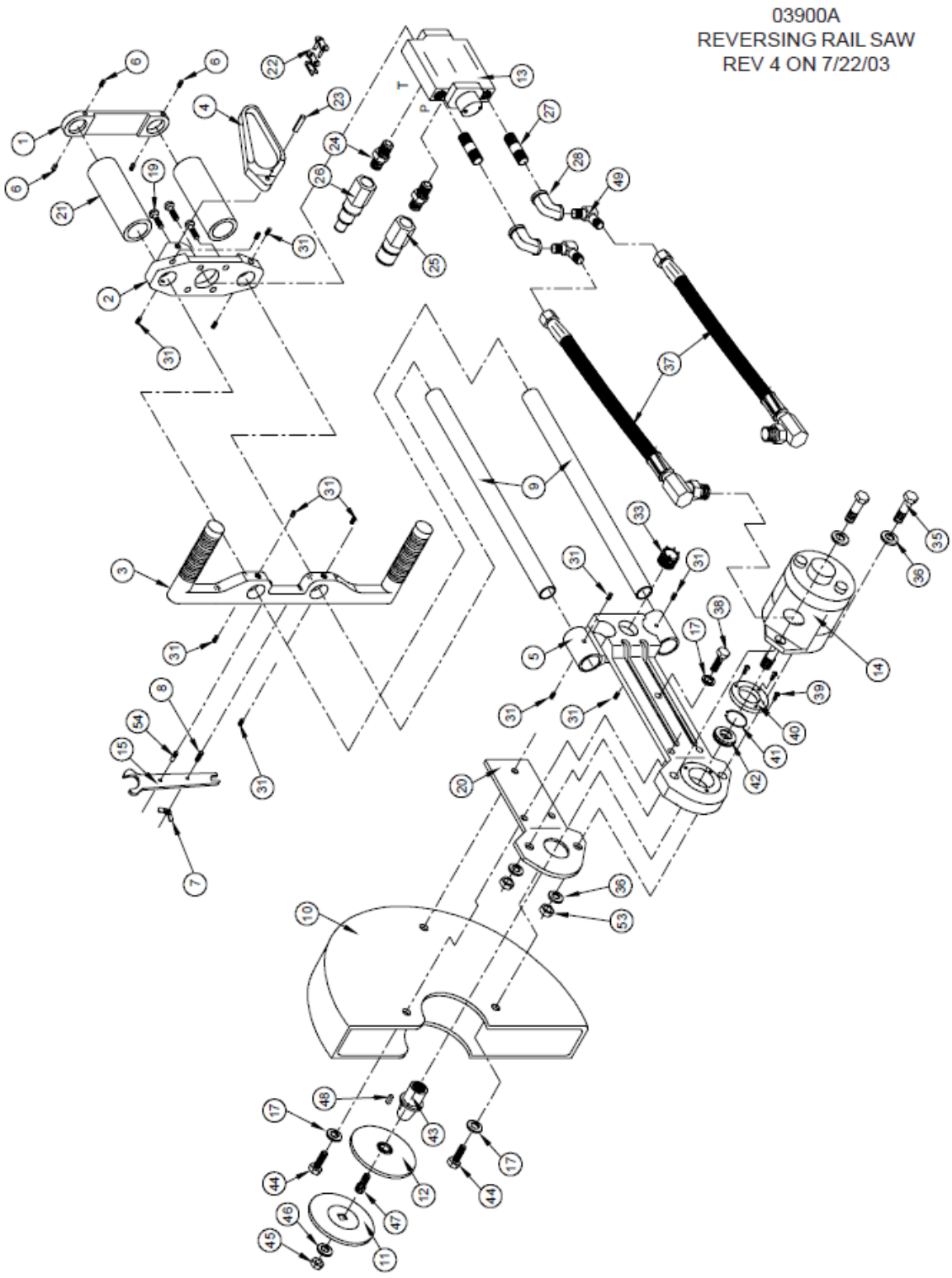
Hydraulic manifolds
Hydraulic test gauges
Hose reels
Hydraulic hoses

**Accessories**

Drill bits
Shear Blades
Saw Blades
Grinding Stones
Sockets

# 11. Assembly

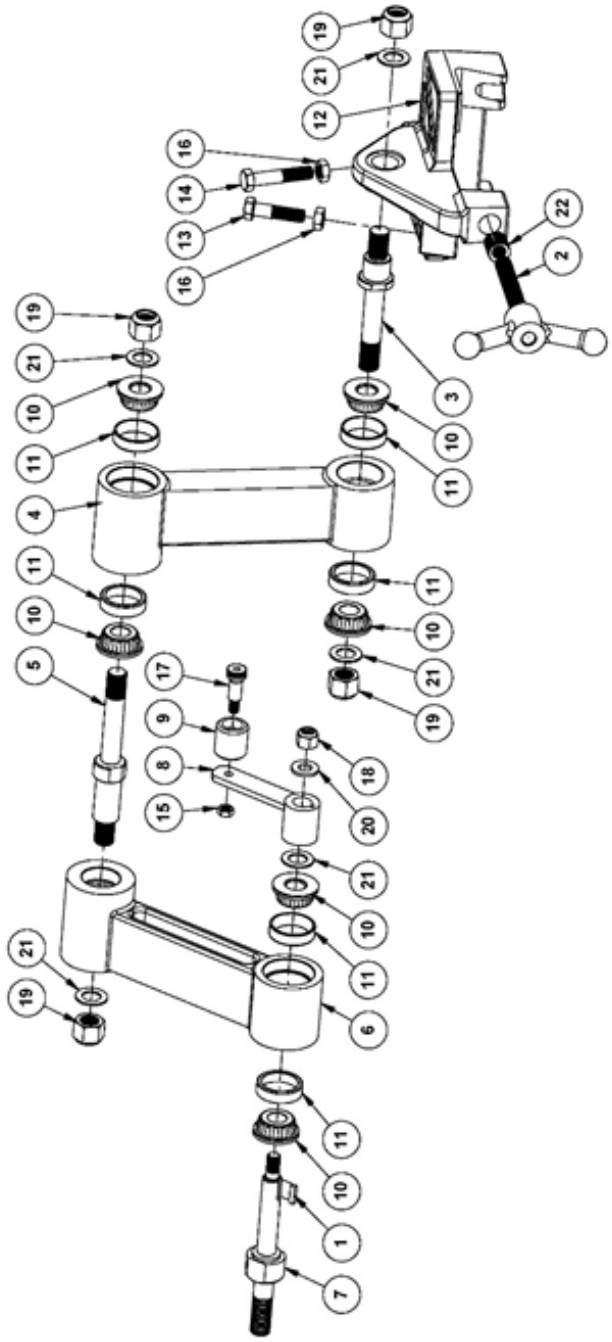
## 11.1. Saw parts diagram



## 11.2. Saw parts list

| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 03901A | HANDLE END CAP | 1 |
| 2 | 03905A | HANDLE BASE | 1 |
| 3 | 03903A-01 | HANDLE ARM | 1 |
| 4 | 03902A | TRIGGER LEVER | 1 |
| 5 | 03904A | FRAME | 1 |
| 6 | 03909A | REAR HANDLE | 2 |
| 7 | A2499 | 1/4-20 WING NUT | 1 |
| 8 | A5608 | 1/4-20 x 1 SET SCREW | 1 |
| 9 | 03929A | FRAME TUBE | 2 |
| 10 | 03906A | SAW GUARD | 1 |
| 11 | 03908A | OUTER FLANGE | 1 |
| 12 | 03907A | INNER FLANGE | 1 |
| 13 | 03913A | SAW VALVE | 1 |
| 14 | 03912A | SAW MOTOR | 1 |
| 15 | 03975A | SPANNER WRENCH | 1 |
| 16 | A1480 | 5/16-18 ACORN NUT | 2 |
| 17 | A2191 | 5/16 FLAT WASHER | 5 |
| 18 | 03916A | 5/16-18 x 6 3/8 ALL THREAD ROD | 2 |
| 19 | A6356 | 5/16-18 x 1 BHCS | 4 |
| 20 | 03950A | SAW GUARD SPACER | 1 |
| 21 | 01659 | REAR HANDLE GRIP | 2 |
| 22 | 01657 | CHAIN LINK | 1 |
| 23 | A6078 | 3/16 x 3/4 ROLL PIN | 1 |
| 24 | 249-08-08 | #8 x 1/2 MP NIPPLE | 2 |
| 25 | 00145 | Q.D. COUPLER | 1 |
| 26 | 00146 | Q.D. NIPPLE | 1 |
| 27 | 3/8X21/2-80 | 3/8 x 2-1/2" NIPPLE (SCH. 80) | 2 |
| 28 | 5505-06-06 | 3/8 NPT x 3/8 NPT 45 ELBOW | 2 |
| 31 | A5625 | 5/16-24 x 1/4 SET SCREW | 12 |
| 33 | RKK-3/4-10 | 3/4-10 KEENSERT | 1 |
| 35 | A1046 | 3/8-16 x 2 HEX HEAD BOLT | 2 |
| 36 | A2192 | 3/8 FLAT WASHER | 4 |
| 37 | 03931A | PRESSURE/RETURN HOSE | 2 |
| 38 | A1023 | 5/16-18 x 1 1/4 HEX HEAD BOLT | 1 |
| 39 | A6325 | 10-24 x 1/2 BHCS | 3 |
| 40 | 03935A | BEARING RETAINING RING | 1 |
| 41 | 03936A | RETAINING RING | 1 |
| 42 | 03933A | BEARING | 1 |
| 43 | 03934A | SPLINE ADAPTOR | 1 |
| 44 | A1021 | 5/16-18 x 1 HEX HEAD BOLT | 2 |
| 45 | A1465 | 3/4-16 JAM NUT | 1 |
| 46 | 02201 | 3/4 NYLON WASHER | 1 |
| 47 | A5450 | 5/16-24 x 1 SHCS | 1 |
| 48 | 03932A | SPLINE ADAPTOR KEY | 1 |
| 49 | 355-08-06 | 3/8 NPT x 3/8 JIC 45 ELBOW | 2 |
| 51* | 01631 | INTERNAL SEAL KIT | 1 |
| 52* | 01612 | SHAFT SEAL KIT | 1 |

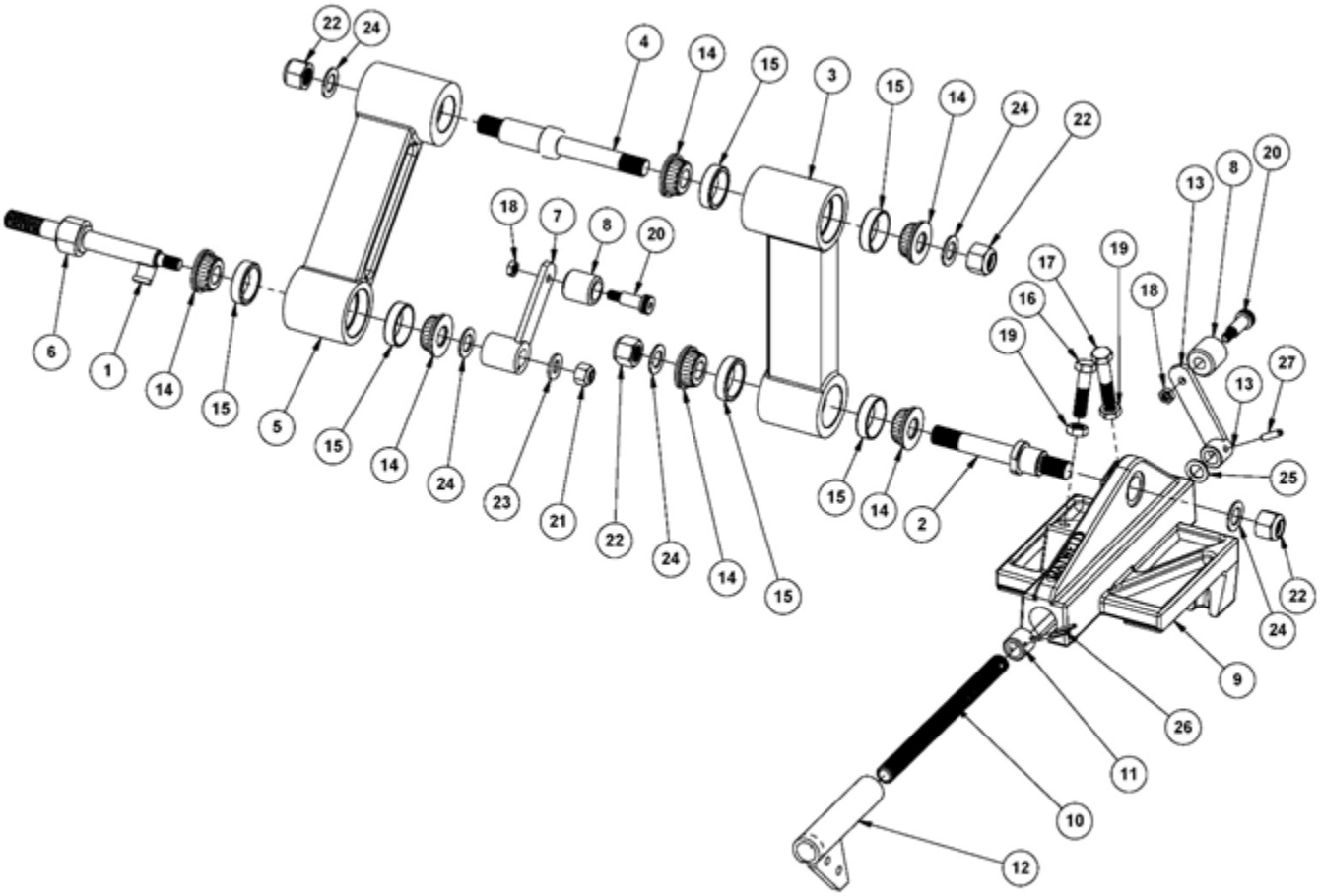
## 11.3. Saw clamp parts diagram



## 11.4. Saw clamp parts list

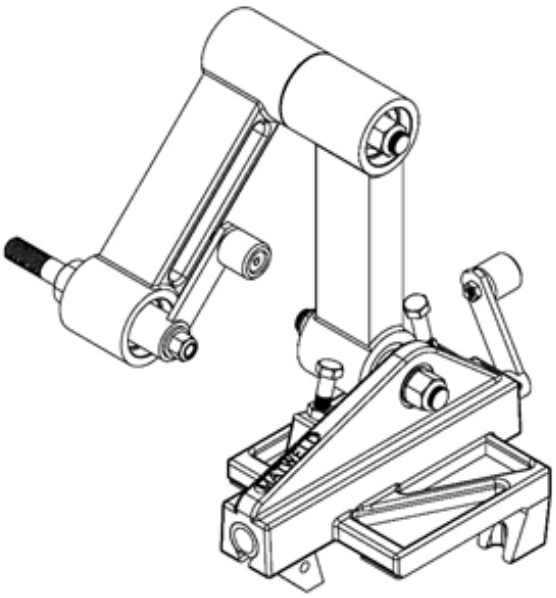
| ITEM NO | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 00806-01 | 3/16 SQ. KEY | 1 |
| 2 | 00832 | CLAMP SCREW | 1 |
| 3 | 03917A | BASE ARM MOUNTING STUD | 1 |
| 4 | 03918A | BASE ARM | 1 |
| 5 | 03920A | LINKING STUD | 1 |
| 6 | 03922A | MOUNTING ARM | 1 |
| 7 | 03923A | DISCONNECT BOLT | 1 |
| 8 | 03926A | DISCONNECT CRANK HANDLE | 1 |
| 9 | 03930A | DISCONNECT CRANK HANDLE KNOB | 1 |
| 10 | 03948A | BEARING | 6 |
| 11 | 03949A | BEARING RACE | 6 |
| 12 | 03955A | SAW CLAMP | 1 |
| 13 | A1085 | 1/2-13 x 2 HEX HEAD BOLT | 1 |
| 14 | A1087 | 1/2-13 x 2 1/2 HEX HEAD BOLT | 1 |
| 15 | A1454 | 3/8-16 HEX JAM NUT | 1 |
| 16 | A1458 | 1/2-13 HEX JAM NUT | 2 |
| 17 | A1481 | DIA. 1/2 x 1 SHOULDER BOLT | 1 |
| 18 | A2054 | 1/2-13 NYLOCK NUT | 1 |
| 19 | A2061 | 3/4-16 NYLOCK NUT | 4 |
| 20 | A2194 | 1/2 SAE FLAT WASHER | 1 |
| 21 | A2200 | 14 GA. 3/4" FLAT WASHER | 5 |
| 22 | RKK 5/8-11 | 5/8-11 KEEN SERT | 1 |

## 11.5. Crane rail clamp diagram



## 11.6. Crane rail clamp parts list

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 00806-01 | 3/16 SQ. KEY | 1 |
| 2 | 03917A | BASE ARM MOUNTING STUD | 1 |
| 3 | 03918A | BASE ARM | 1 |
| 4 | 03920A | LINKING STUD | 1 |
| 5 | 03922A | MOUNTING ARM | 1 |
| 6 | 03923A | DISCONNECT BOLT | 1 |
| 7 | 03926A | DISCONNECT CRANK HANDLE | 1 |
| 8 | 03930A | DISCONNECT CRANK HANDLE KNOB | 2 |
| 9 | 03941A | SAW CLAMP | 1 |
| 10 | 03942A-01 | ADJUSTMENT ROD SCREW | 1 |
| 11 | 03942A-02 | ADJUSTMENT SCREW COLLAR | 1 |
| 12 | 03943A | MOVEABLE CLAMP | 1 |
| 13 | 03944 | DISCONNECT CRANK HANDLE | 1 |
| 14 | 03948A | BEARING | 6 |
| 15 | 03949A | BEARING RACE | 6 |
| 16 | A1085 | 1/2-13 x 2 HEX HEAD BOLT | 1 |
| 17 | A1087 | 1/2-13 x 2 1/2 HEX HEAD BOLT | 1 |
| 18 | A1454 | 3/8-16 HEX JAM NUT | 2 |
| 19 | A1458 | 1/2-13 HEX JAM NUT | 2 |
| 20 | A1481 | DIA. 1/2 x 1 SHOULDER BOLT | 2 |
| 21 | A2054 | 1/2-13 NYLOCK NUT | 1 |
| 22 | A2061 | 3/4-16 NYLOCK NUT | 4 |
| 23 | A2194 | 1/2 SAE FLAT WASHER | 1 |
| 24 | A2200 | 14 GA. 3/4" FLAT WASHER | 5 |
| 25 | A2201 | 5/8 x 14 GA STEEL BUSHING | 1 |
| 26 | A6065 | 5/32 X 1 1/4 SPRING PIN | 2 |
| 27 | A6100 | DIA. 1/4 x 1 SPRING PIN | 1 |



# 12. Disclaimer

Pandrol exempts itself from liability in the event of usage that deviates from that recommended in this manual.

# 13. Contact

| Address | Phone | Internet and E-mail |
|---|---|---|
| | | www.Pandrol.com |
| | | |
| | | |
| | | |

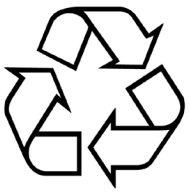
# 14. Recycling and Environment

Sustainable environment is a great part of Pandrol.

All components of the product can either be:

- Recycled
- Taken care of
- Be re-used

We recommend you to follow your local region regulations of environmental and recycling policies.



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Find out more at

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