



Operation and Maintenance Manual

Enerpac RP70A2L

Hydraulic Rail Puller/Stressor

Document Number: L5048

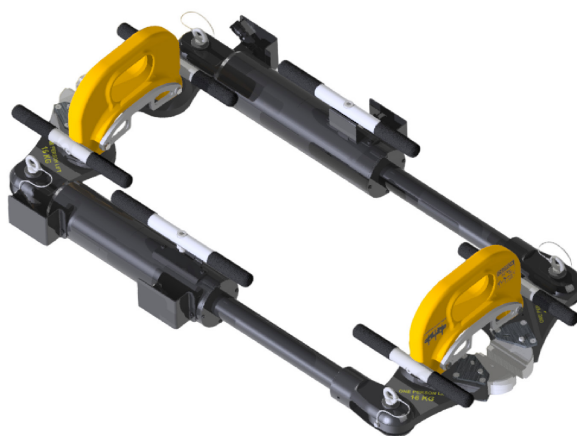
Document Revision: A

Document Revision Date: 20-AUG-2026

Document Language: ENGLISH EN



Pull: 70 Tons



Stretch: 45 Tons



To reduce the risk of injury, user must read and understand this document before use.

ABOUT US

Enerpac is a global market leader in high pressure hydraulic tools, controlled force products, portable machining, on-site services and solutions for precise positioning of heavy loads. As a leading innovator with a 110-year legacy, Enerpac has helped move and maintain some of the largest structures on earth. When safety and precision matters, elite professionals in industries such as aerospace, infrastructure, manufacturing, mining, oil & gas and power generation rely on Enerpac for quality tools, services and solutions. For additional information, visit www.enerpac.com.



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WARRANTY

Refer to the Enerpac Global Warranty document for terms and conditions of the product warranty. Such warranty information can be found at www.enerpac.com.

NAMEPLATE



AVAILABLE LANGUAGES

L5048 is available in the following languages, visit www.enerpac.com for a copy.

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1. Safety

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the product and/or damage to other property. Enerpac cannot be responsible for any damage or injury from unsafe use, lack of maintenance, or incorrect operation. Do not remove warning labels, tags, or decals. In the event that any questions or concerns arise, contact Enerpac or a local Enerpac distributor for clarification.

Save these instructions for future use.

If you have never been trained on high-pressure hydraulic safety, consult your distributor or service center for information about Enerpac Hydraulic Safety Courses.

This manual follows a system of safety alert symbols, signals, words, and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damage to the equipment or other property.



The Safety Alert Symbol appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious injury.

Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are DANGER, WARNING, CAUTION, and NOTICE.

⚠ DANGER Indicates a hazardous situation that, if not avoided, will result in death or serious personal injury.

⚠ WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious personal injury.

⚠ CAUTION Indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

NOTICE Indicates information considered important, but not hazard related (e.g. messages related to property damage). Please note that the Safety Alert Symbol will not be used with the signal word.

1.1 Safety Precautions



Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Always wear protective head-wear, ear protectors, footwear and gloves (at a minimum rigger type gloves) suitable for safe operation of the tool. The protective clothing must not interfere with safe operation of the tool or restrict the ability to communicate with co-workers.
- Be sure your workplace is safe. Follow the instructions in your workplace's standard operating procedures and be sure to observe all communicated safety precautions.
- Read and completely understand the safety precautions and instructions in this manual before operating the system or preparing it for use. Always follow all safety precautions and instructions, including those that are contained within the procedures of this manual.
- Ensure all hydraulic components are rated to a safe working pressure.
- Never set the relief valve to a higher pressure than the maximum rated pressure of the system. Higher settings may result in equipment damage and/or personal injury.
- Do not overload equipment. Never attempt to move a load weighing more than the capacity of the system. Overloading causes equipment failure and possible personal injury.
- Be sure setup is stable before moving load.
- Always perform a visual inspection of the system before placing it into operation. If any problems are found, do not use the tool. Have the tool repaired and tested by an Enerpac Authorized Service Center before it is returned to service.
- Never use a tool that is leaking oil. Do not use the equipment if it is damaged, altered or in need of repair.
- Be sure the operator has completed safety induction training, specific to the work surroundings. The operator should be thoroughly familiar with the controls and the proper use of the tool.
- The operator must be of at least the minimum age required by applicable local regulations, laws and the facility standard operating procedures.
- Never attempt to relieve hydraulic pressure by loosening a coupler.
- Never use force to unseat a coupler check ball that is under hydraulic pressure.
- Take every precaution to prevent oil leaks from occurring. High pressure oil leaks can penetrate the skin, resulting in serious injury.
- Do not over-tighten connections; connections need only be secure and leak free. Over tightening can cause premature thread failure.

- Loose or cross threaded fittings can be potentially dangerous if pressurized. Never stand directly in line with any hydraulic connection while pressurizing.
- Never strike the tool while it is pressurized or moving load. Components under tension may become dislodged, allowing them to become dangerous projectiles. Uncontrolled release of pressurized hydraulic oil could also occur.
- Avoid striking the tool at any time, even when it is not pressurized or moving load. Striking the tool could cause permanent damage to system components and may affect its functioning.
- Be certain that no persons are working within 3 meters of the tool before moving of the load begins. Alert all personnel in advance that the procedure is about to occur.
- Always maintain communication with the operator during procedure to avoid accidents. Use hand signals, two- way radios or other appropriate forms of communication (as required by applicable laws and regulations) if the load is not visible to the operator.
- Operate RP70A2L as required to ensure that the load is moved evenly and at a controlled rate.
- Closely watch the load at all times during operation. Stop work immediately if the load becomes unstable or appears to be moving unsteadily.
- Immediately replace worn or damaged parts. Use only genuine Enerpac parts from approved distributors or service centers. Standard grade parts will break causing personal injury and property damage. ENERPAC parts are designed to fit properly and withstand high loads.
- To minimize risk of personal injury keep hands and feet away from the tool and workpiece during operation.



Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.

- Ensure components are protected from external sources of damage, such as moving machine parts, sharp edges, weld spatter, corrosive chemicals and excessive heat or flame.
- Keep hydraulic equipment away from flames and heat. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings.
- For optimum performance, do not expose hydraulic equipment to temperatures of 150°F [65°C] or higher. Protect all hydraulic equipment from weld spatter.
- Lubricate tools as directed in this manual prior to operation. Use only approved lubricants of high quality such as Eurol CS-2/103-S or CS-2/502-S, following the lubricant manufacturers instructions
- Protect hoses and cylinders from weld spatter.

- Avoid damaging the hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe backpressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.
- Do not drop heavy objects on hose. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.
- Do not lift hydraulic equipment by the hose or couplers. Use the lifting handles provided on cylinders and clamp assemblies.
- Do not pull on a hose that is connected. If pulling forces are exerted on a hydraulic coupling the hose and coupling interface will weaken which may result in the hose bursting out of the coupling.
- Always lift a hose by the hose itself, whilst supporting the coupling.
- Do not handle pressurized hoses. Oil leaks under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, see a doctor immediately.
- During assembly the hose must be supported by necessary use bend guides to prevent twisting of the hose.
- Change worn or damaged hoses immediately.
- Do not use dirty or corroded couplings.

NOTICE

Failure to observe and comply with the following precautions could result in property damage and/or void the product warranty.

- In severe service conditions, be aware that the RP70A2L must be inspected, cleaned and lubricated more frequently than normal.
- If oil leakage is present, replace seals as required before placing the tool back into service.
- If the RP70A2L is dropped from a significant height, have the tool inspected and checked for proper operation before placing it back into service.
- While moving the hoses, prevent the couplings being dragged over the ground:
- Always follow the inspection and maintenance instructions contained in this manual. Perform maintenance and inspection activities at the specified time intervals.
- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Enerpac Authorized Service Center in your area.
- To help ensure proper operation and best performance, use of Enerpac oil is strongly recommended.

2. Compliance

2.1 Compliance Statements

70 Ton Hydraulic Rail Puller/Stressor
Model RP70A2L



Enerpac declares that the model RP70A2L 70 Ton Hydraulic Rail Puller/Stressor has been tested and conforms to applicable standards and is approved to carry the CE and UKCA certification marks.

NOTICE A copy of the product's EU Declaration of Conformity is enclosed with each shipment. A copy of the UK Self-Declaration of Conformity is also enclosed.

3. Intended Use

The definition of 'intended use' excludes any and all uses which do not meet the descriptions, including use that exceeds the machine's technical limitations. Enerpac shall not accept any liability for damage resulting from use that is not in accordance with the machine's intended use. The user shall bear any and all risks. The definition of 'intended use' also includes strict compliance with the instructions in the user manual and assumes that the equipment is inspected and maintained at the indicated times.

- The System should only be used in the intended manner as described in the instructions in this manual.
- The System should only be operated by operators with full knowledge of the applicable safety regulations and the hazards which may arise during use.
- The System was developed and built according to the officially recognized safety regulations. However, if the machine is not used as intended:
- This may pose a risk to the health and lives of operators and bystanders.
- The System may not function properly or may create hazardous situations.
- The System should only be used if the machine is in perfect technical condition.
- Faults which may result in hazardous situations must be resolved immediately.
- The machine must not be used in potentially explosive environments.

The intended use of the system is moving the "rail" in 2 ways:

- Stretching
- Pulling

4. Transport, Loading and Unloading of the System

- Loading and unloading has to be performed by properly trained operators.
- Only use lifting and hoisting equipment with suitable capacity for the loads in question.
- Lift loads as described in the user manual (connection points for lifting hooks) and observe the professional standards. Lift the complete assembled system by using the hand holds on the clamp. Lift vertically on two points.

CAUTION

When lifting one clamp with only arms attached, watch out for the rotation of the arms because these can fall when they rotate unintended.

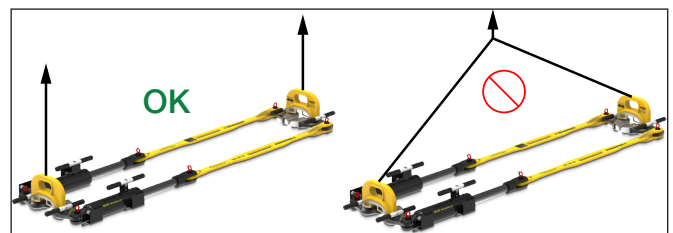


Figure 1: RP70A2L Lifting Procedure for assembled unit

- Only use suitable containers with adequate load-bearing capacity for transport purposes.
- Disconnect all hydraulic connections when the System has to be moved, even if it is for only a short distance.
- To avoid damage during transport use rubber pads and plastic for packaging.
- Containers may be used for transport since they provide rigid protection against and avoid weather influences. Make sure that all parts are secured against sliding around.

5. Texts and Signs on the System



Clamp: Caution, 32 kg, Two persons lift



Clamp: Hoisting point



Clamp: Gripper arms direction



Cylinder: 25 kg, One person lift



Extension strip: 19 kg, One person lift



Extension strip: Identification plate



Swing arm: 16 kg, One person lift

6. Hoses Connection

NOTICE

Wipe off couplers before use to prevent contamination from getting into the system.

Hydraulic couplers can be connected and disconnected without tools and without much leakage. These couplers come with a safety lock to add an extra layer of safety by eliminating any risks of accidental disconnections.

To connect the couplers, push down the safety lock and push both couplers together till they are completely mated. The safety lock will return to its original position by spring force and seal the connection.

NOTICE

To disconnect the couplers, push down the safety lock and pull the couplers apart.

NOTICE

Hydraulic pressure can sometimes become trapped within a hydraulic hose. A common indication of trapped pressure is when mating couplers will not engage or are unusually difficult to engage. Do not apply wrenches or pliers. If couplings will not fully turn, then release system pressure at the external power source that may have been built up.

WARNING

Careless handling of hydraulics can cause serious injuries.

7. Features & Components

7.1 Feature Diagram

- | | |
|--------------------------------|------------------------------|
| 1. Connector pins (6 items) | 5. Extension strip (2 items) |
| 2. Hydraulic coupler (4 items) | 6. Clamp (2 items) |
| 3. Cylinder (2 items) | 7. Rail grip (4 items) |
| 4. Rail (1 item) | 8. Swing arm (4 items) |

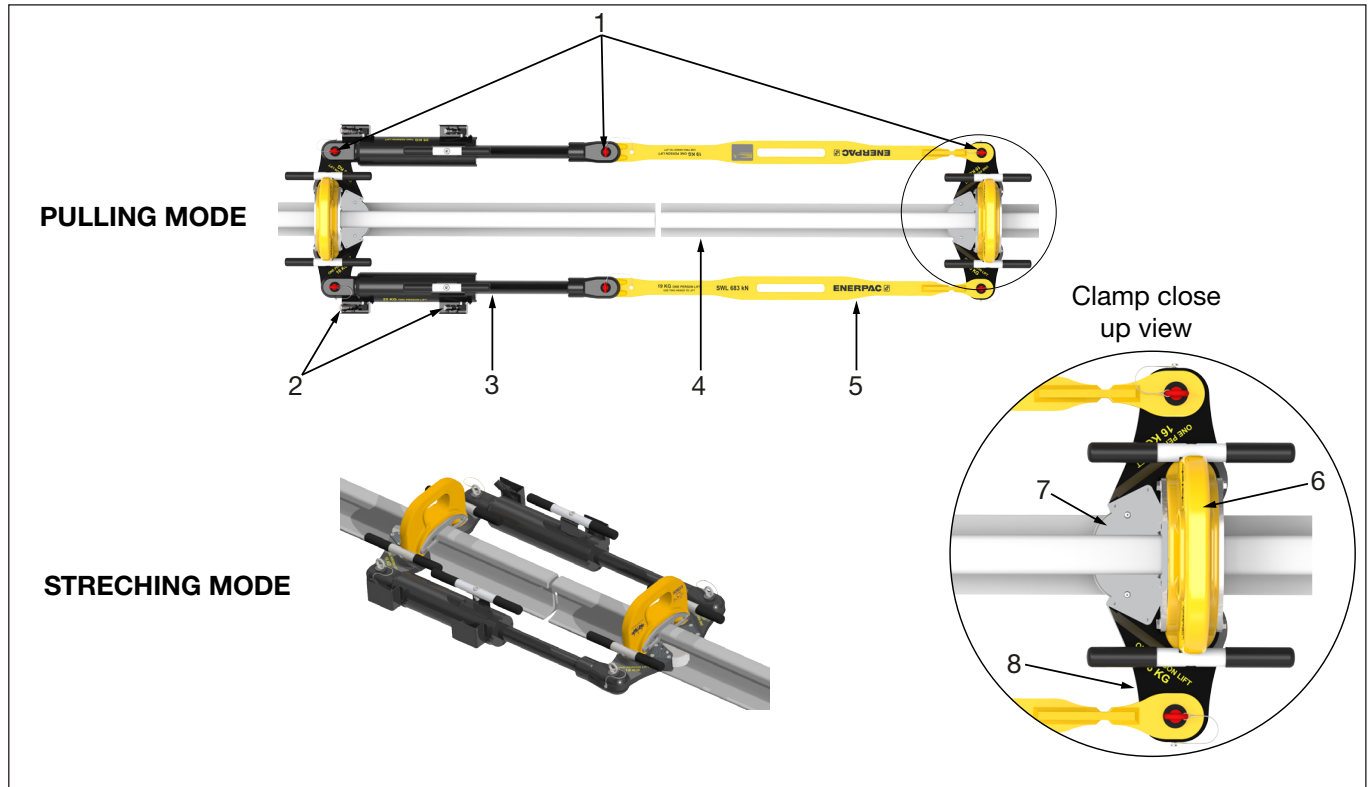


Figure 2: Major Features and Components of RP70A2L

The rail grips (Figure 2, item 7) are mounted on swing arms (Figure 2, item 8), which are attached to the clamps in a flexible way.

The positioning plates are part of the clamps (Figure 2, item 6) and they are used to put the clamp correctly on the rail.

The engraving of the positioning plates indicates the type of rails and the undermount/topmount orientation on which this tool is allowed to be used.

The handles are intended to be used to lift the different items of the system independently. See Section 8.2.1. Lift each part independently using the handles.

NOTICE

The cylinders are operated by a powerpack, which is not part of the delivery.

The positioning plates are used to guide the clamp correctly either on top of the rail or under the rail if using the undermount function, before using the rail puller/stressor. These plates are not intended to transmit force and must not be used in this way. Check the position plate has no sign of distortion before being used.

7.2 Spare Parts

Never make any modifications or additions which could have an adverse impact on safety without prior approval from Enerpac. This also applies to the installation and adjustment of safety devices and valves and welding work on the system.

Spare parts should meet the technical specifications given by Enerpac.

Apply original spare parts as these parts are made according to the technical specifications of Enerpac. In cases of doubt, please contact Enerpac.

7.3 General Description

The main principles of the operating modes are illustrated below in a schematical way. These modes are consistent whether the unit is mounted on top of the rail or is used under the rail in the undermount mode. Top mount view is shown below.

→ Blue, thicker arrows show the direction of the exerted forces.

→ Purple, thinner arrows show the movement direction of the rods of the cylinders.

The system has two operating modes:

7.3.1 Pulling Mode

In this operating mode two rail-ends are pulled towards each other.

- The hydraulic cylinders pull the extension strips.
- The extension strips are connected to the clamp of the opposite side.
- Rail grips secure both clamps to the rail.

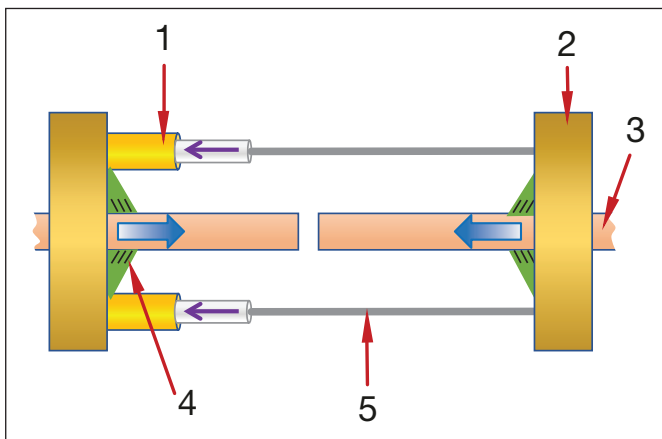


Figure 3: Pulling Mode Top View

1. Hydraulic cylinder
2. Clamp
3. Rail
4. Rail grip
5. Extension Strip

7.3.2 Stretching Mode

In this operating mode a rail is stretched.

- The pistons of the hydraulic cylinders push directly against the clamp at the opposite side. No use is made of extension strips.
- Rail grips secure both clamps to the rail.

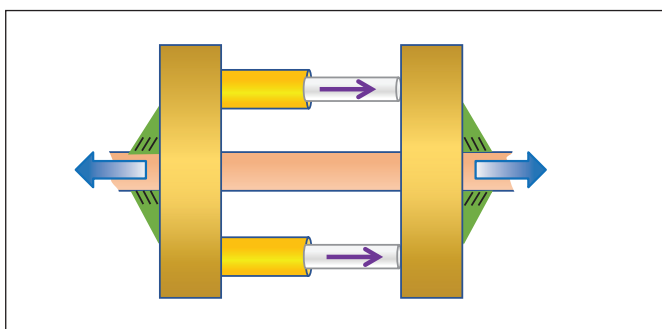


Figure 4: Stretching Mode Top View

⚠ WARNING

The System is intended for stressing rails. Do not use the System for any other purpose.

⚠ WARNING

No alterations may be made to the System. Only use the System as it was delivered. Using the System for other purposes than the intended use may cause hazards to personnel and may cause damage to the equipment.

8. Technical Product Data

8.1 RP70A2L Capabilities

TEMPERATURE		
Operating temperature	Min	-10°C
	Max	+65°C
Temperature of the hydraulic oil	Min	-20°C
	Max	+70°C
Storage temperature	Min	-25°C
	Max	+60°C

⚠ CAUTION

There is a risk of ice accretion at temperatures below 0°C. If ice has accreted on machine components, they cannot be used since they may lock up.

Consult Enerpac if you want to apply the system by other temperatures.

HYDRAULIC FEATURES		
Powerpack requirements	Type	Manual, Electric, Air or Intensifier Driven
	Pressure	Max 8400 PSI (580 Bar)
Hoses	Maximum pressure	700bar
Hydraulic oil	Type	Enerpac Type HF (ensure that any hydraulic oil alternatives that are used meet the same specifications)
	Minimum requirement	The purity of the medium is in accordance with: • Class 10 of NAS 1638 • Class 21/19/16 of ISO DIS 4406
	Viscosity	Viscosity grade 155 according the D2270 Standard Practice for Calculating Viscosity Index from Kinematic Viscosity at 40 and 100°C

CYLINDER FEATURES		
Rated pull pressure	8400 psi	580 bar
Rated push pressure	4000 psi	280 bar
Rated pull capacity	70 Tons	683 kN
Rated push capacity	45 Tons	440 kN kg
Stroke	15 in	380 mm

WEIGHTS		
Item	Weight	Can be carried by...
Clamp	32 Kg	2 people
Swing arm	16 kg	1 person
Hydraulic cylinder	25 kg	2 people
Extension strip	19 kg	1 person
Extension strip short	8 kg	1 person

8.2 Dimensional Callout Art

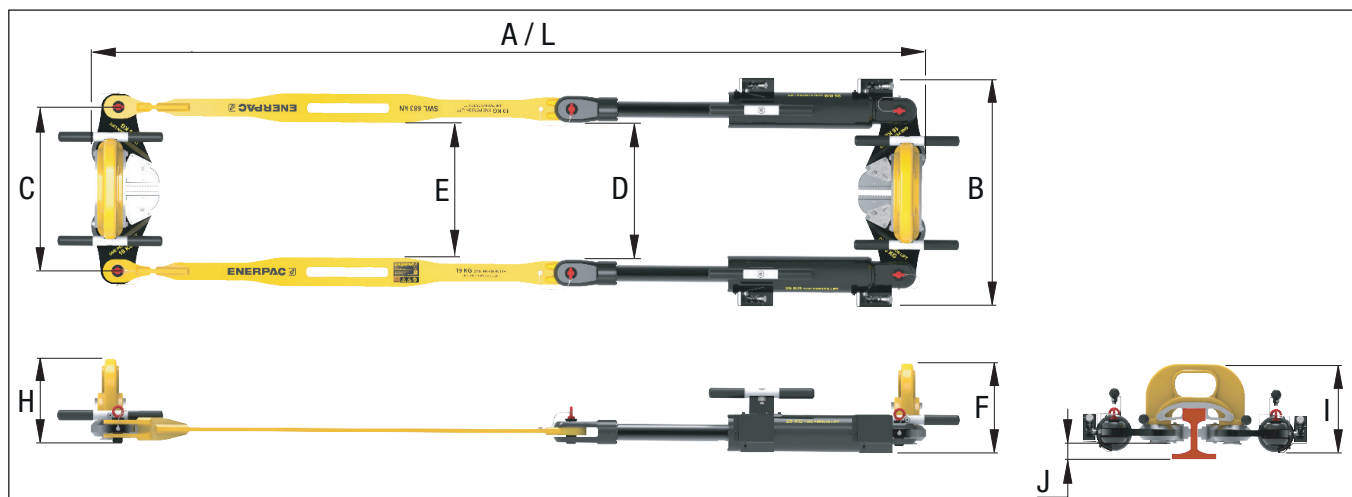


Figure 5: RP70A2L Dimensions

8.3 Dimensional table

Dimension	mm	in
A	3452	136
B	838	33
C	601	24
D	502	20
E	496	20
F	328	13
G	97	4
H	308	12
I	328	13
J	39	2
L	3072	121

9. Operation

9.1 Side Load

Side load may endanger the stability of the system.

Side load may be caused by:

- Incorrect positioning of the clamps.
- Incorrect installation of the system.
- Rails are not in straight line.



Side load is not permitted for hydraulic rail puller/stressor.

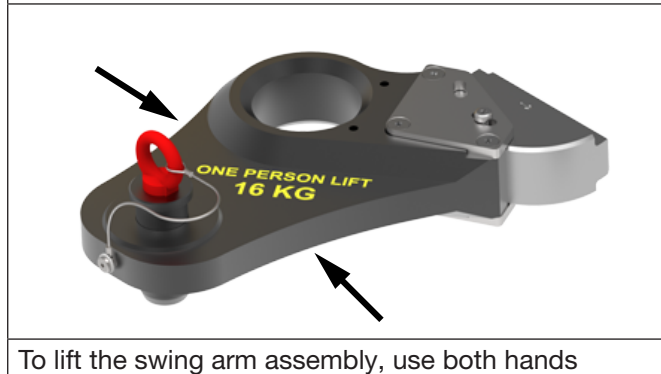
9.2 Initial Setup

9.2.1 Hoisting Instructions

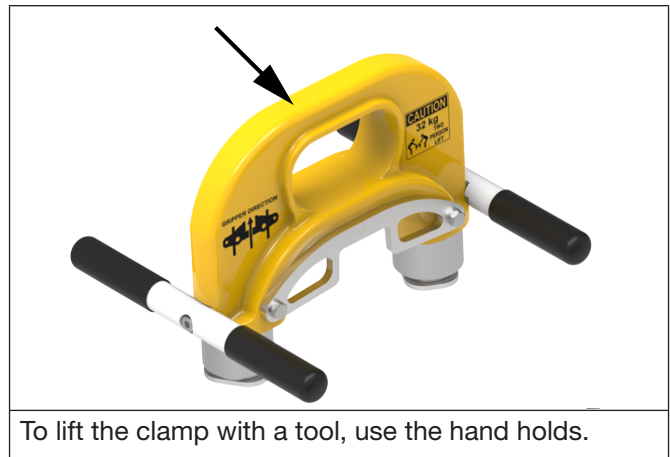
Observe the weights and the required number of people to handle the parts as given in Section 7.1 “Table of Weights”. The extension strip has no handles.



The positions for hand lifting are indicated above.



To lift the swing arm assembly, use both hands



To lift the clamp with a tool, use the hand holds.

9.3 Inspect the parts

Inspect all pivot points of the stressor for any unusual wear, contamination or debris.

Keep all pivot points clean and apply never-seize lubricant only where specified.

If any damage or unusual wear is noted, remove immediately from service.

Contact Enerpac if assistance is required for solving problems.



Figure 6: RP70A2L parts

9.4 Assemble the System

To assemble the system for pulling mode or for stretching mode, proceed as follows.



Follow the safety measures as given in Section 1 of this manual.

9.4.1 Test the hydraulics

1. Connect the hydraulics, as described in Section 8.4.3 “Connect the hydraulics”.
2. Use the powerpack to fully extend and retract the hydraulic cylinders.
3. Verify that the system is free from leaks.
4. Verify that the hydraulic cylinder piston rods are free from damage.

5. Maintain the system pressure for 5 minutes.
 - Verify that the system is free from leaks.
 - Verify that the pressure did not lower.
6. Release the pressure.
 - Disconnect the hydraulic hoses.
 - Replace the dust caps.

9.4.2 Clamp Set-Up

1. Make sure the correct adapter plates for the rail size and for top mount are installed, depending on top mount or under mount operation.

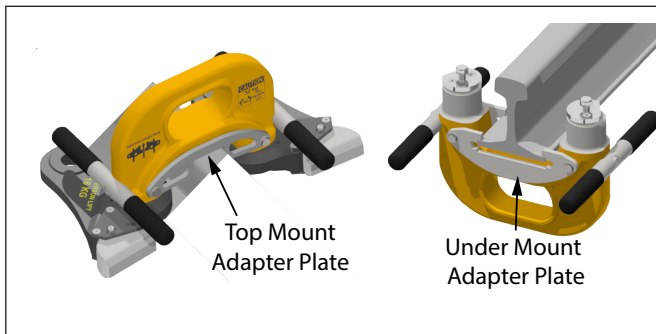


Figure 7: Top and Under Mount Adapter Plates

2. Ensure the cutouts on the adapters are facing outwards. They must point towards the inside for pulling and outside for pushing.

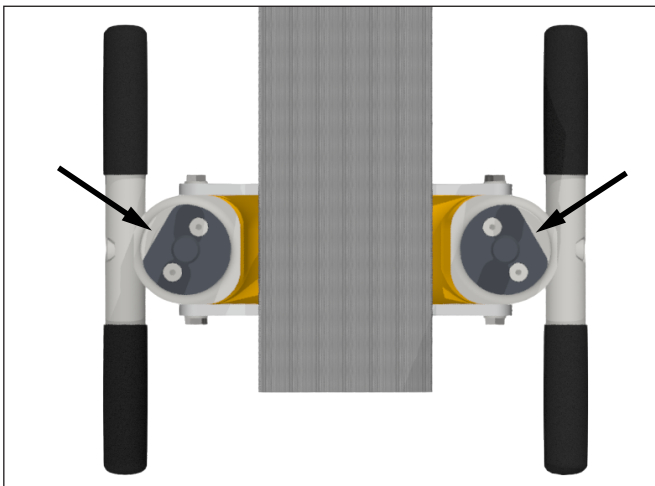
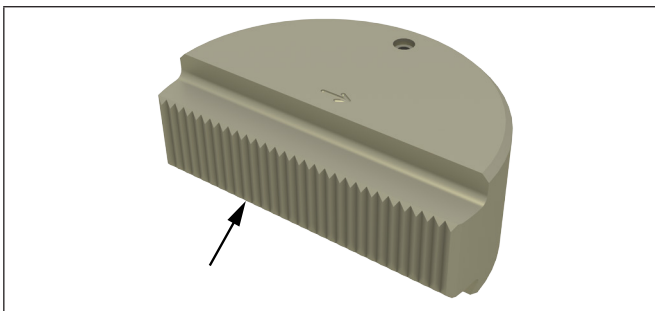


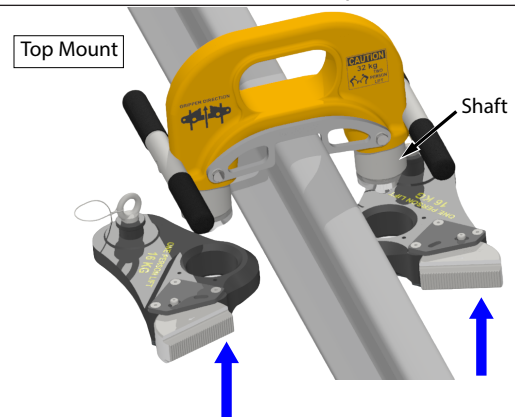
Figure 8: Adapters Orientation

9.4.3 Install the swing arms on the clamps

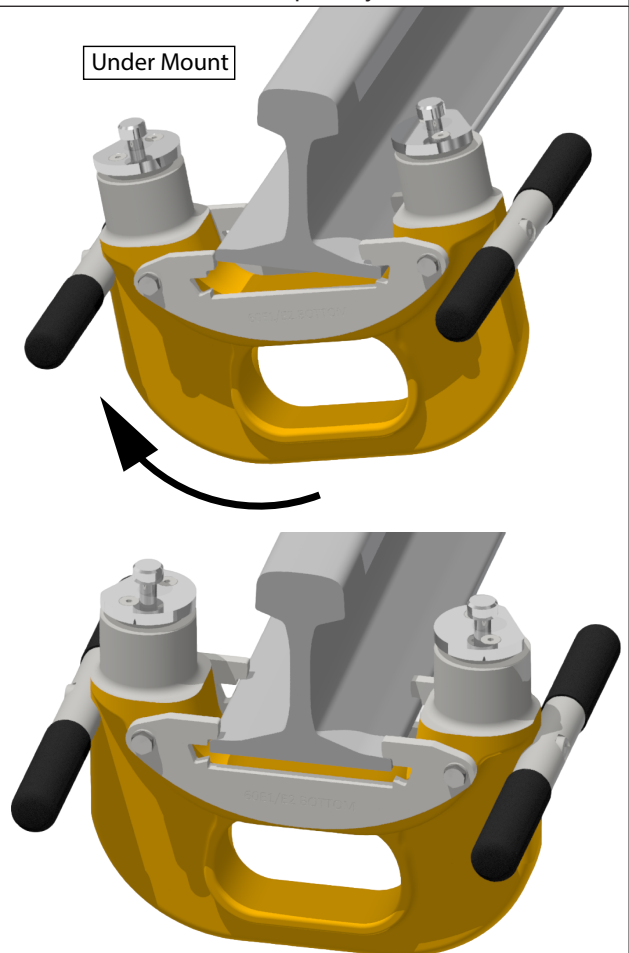
To mount the four swing-arms on the two clamps, proceed as follows:



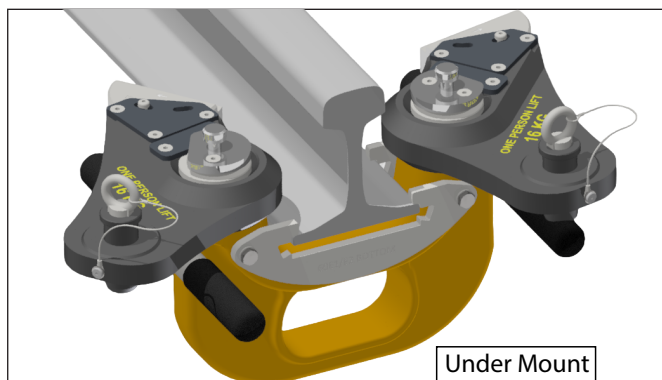
- Ensure that the teeth of the rail grips are clean, free from grease, and free from cracks. Make sure the top of the teeth are sharp, not flattened.
- If necessary, use a wire brush to remove dirt.
- If cracks are visible, then replace the clamps.



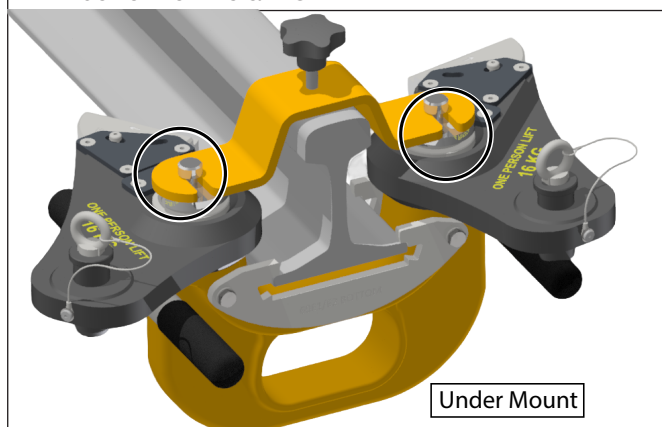
- For top mount: put the clamp on the track. Then, put the swing arms on the shaft of the clamp. NOTE: The direction of the swing arms is illustrated in the clamp body.



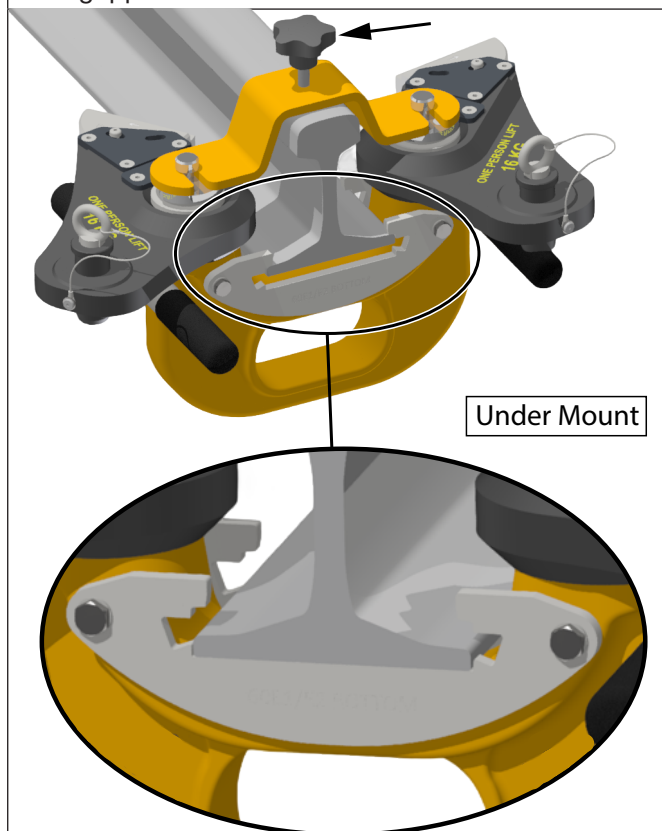
- Pivot the clamp assembly onto the bottom flange of the rail with the adapter plates.
- Make sure the clamp is centered on the web.
- The clamp hangs from the bottom rail on its own.



- Put the swing arms upside down on the shaft of the clamp. The weight sticker must be on the bottom of the arms.



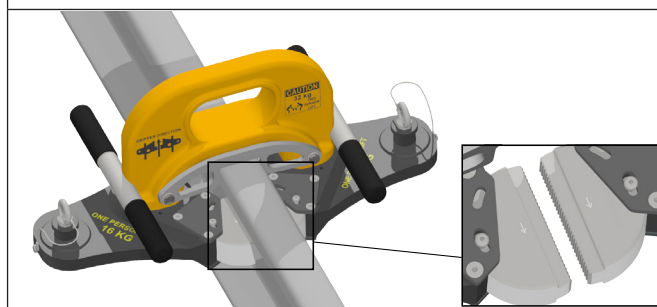
- Mount the undermount adapter bracket. Make sure the slots in the bracket face away from the grippers.



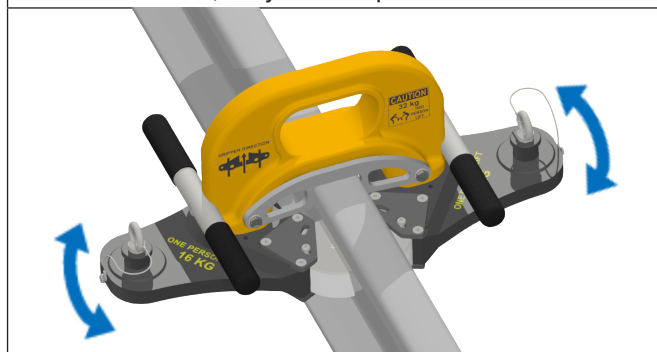
- Tighten the lobe knob until the bottom web of the rail sits flush against the adapter plates. Make sure it is centered.



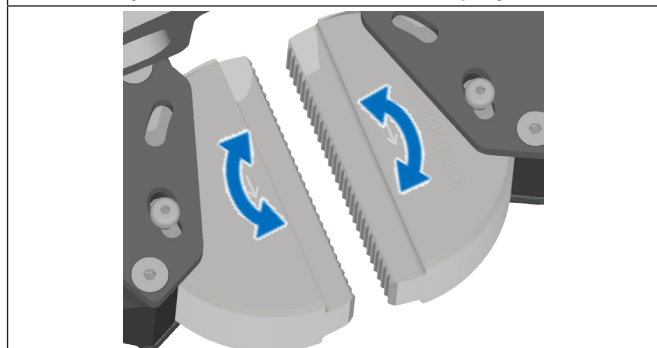
- Rotate the swing arm 90 degrees, to fixate it to the clamp.



- Verify that the arrows on the rail grips point in the direction as shown. NOTE: Be careful with lifting the clamp with arms on. When the arms rotate unintended, they can drop down



- Verify that the swing arms can move freely on the shafts of the clamp.
- Verify that there is no excessive play.



- Verify that the rail grips can rotate 5° in the swing arms.

⚠ WARNING

Do not use this tool if the rail grips are seized.

9.4.4 Connect the hydraulics

To connect the hydraulics, proceed as follows:

1. Observe the directions as given in Section 5.
2. Connect the hoses to the couplings of the hydraulic cylinders.

This procedure is valid both for the pulling and the stretching configuration.

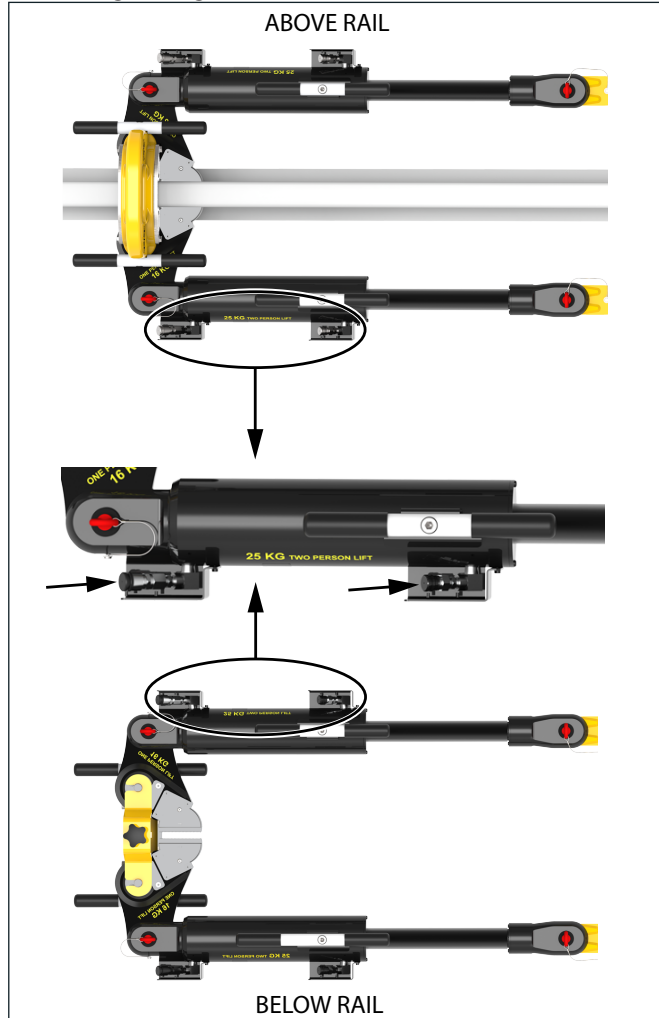
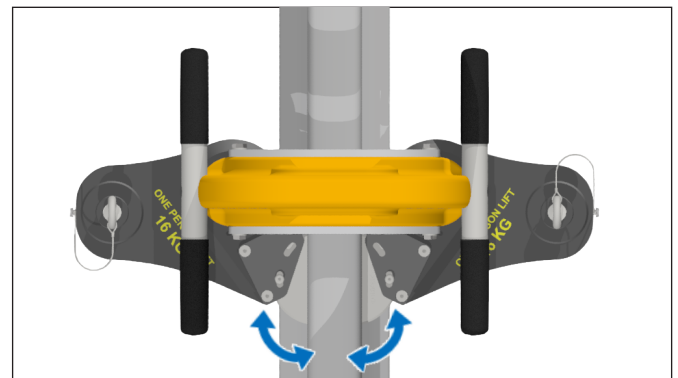
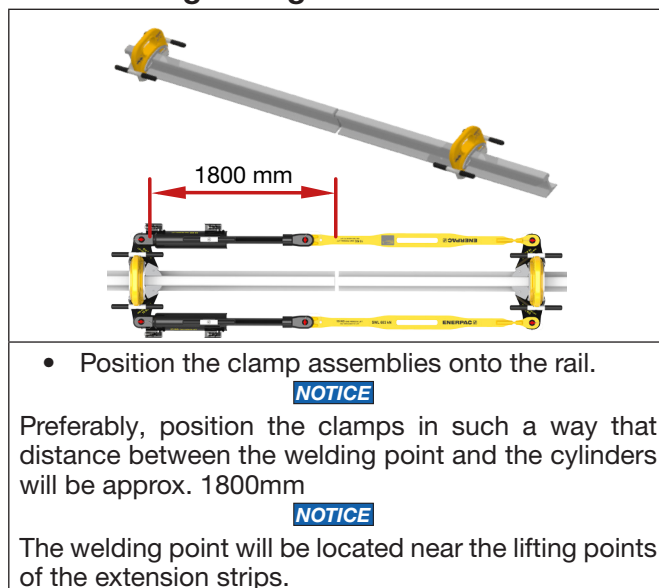
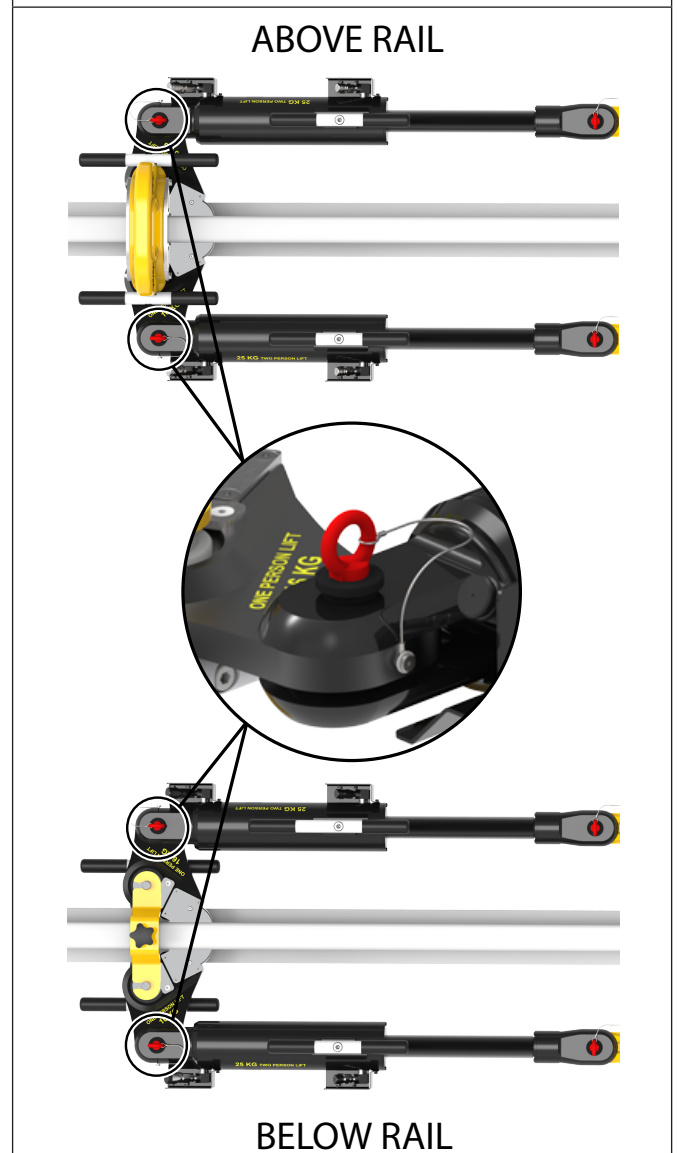


Figure 9: RP70A2L Couplers Connection

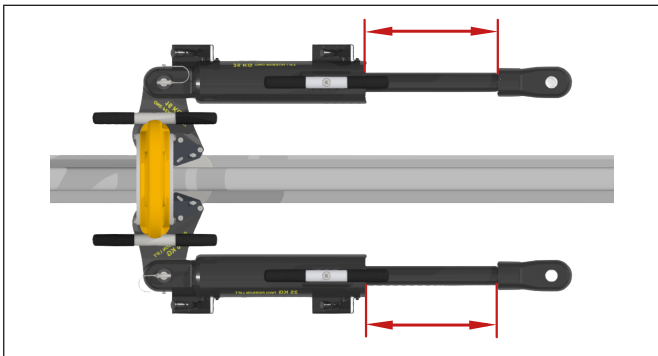
9.4.5 Pulling configuration



- Rotate the swing arms so that the rail grips are positioned on the web symmetrically.



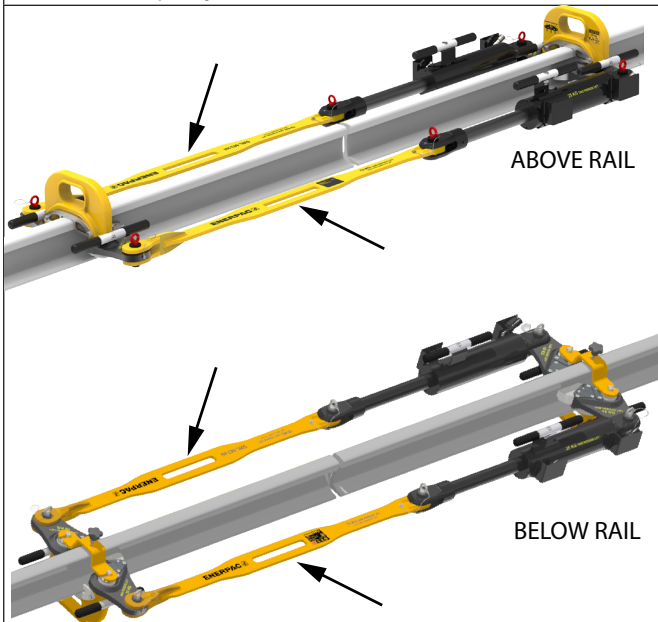
- Connect the hydraulic cylinder assemblies to the eyes of the swing arms.
- Ensure the connection pins are fully engaged.
- Verify that the pins in the fork and clevis ends fit easily without excessive play.



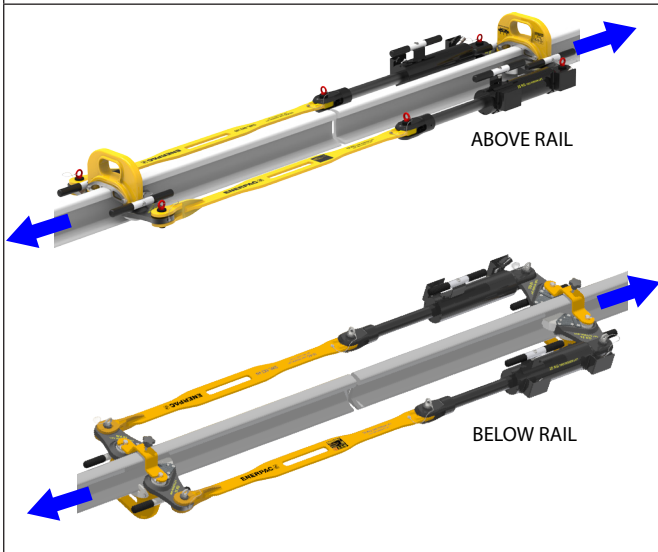
- Operate the powerpack to fully extend the cylinders.

NOTICE

If partial extension is needed, due to the requirements of your operation, ensure that the cylinder rods are extended equally.



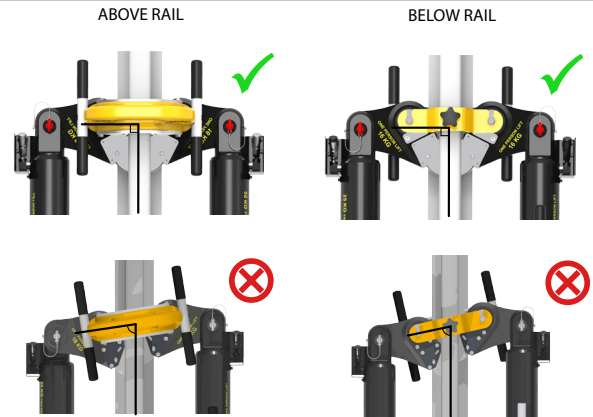
- Mount the extension strips.
- Make sure the connection pins are fully engaged.



- Open the swing arms a few degrees.
- Then, pull the clamp assemblies away from each other.

NOTICE

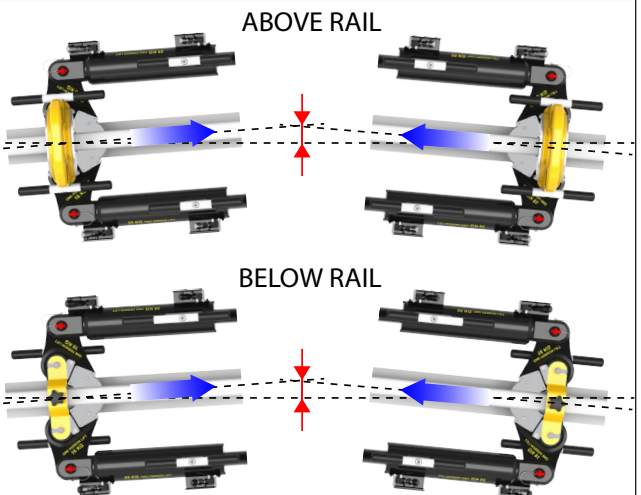
The grips will engage the rail web, and slack in the arms is removed.



- Ensure that the clamp assemblies are perpendicular to the rail.

WARNING

Do not operate if the clamp assemblies are not square to the rail.

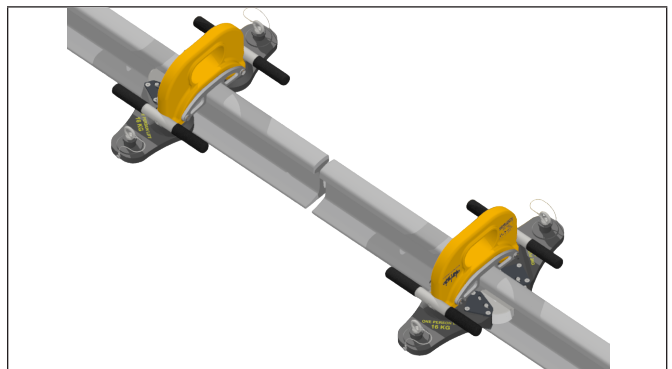


- The rail must be in parallel within a range of 2.5 mm.

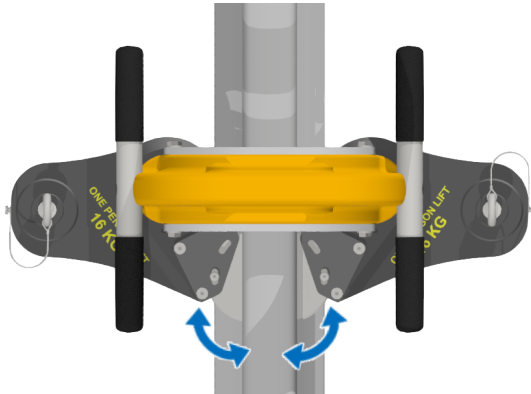
WARNING

Do not operate if the rails are without this range.

9.4.6 Stretching Configuration

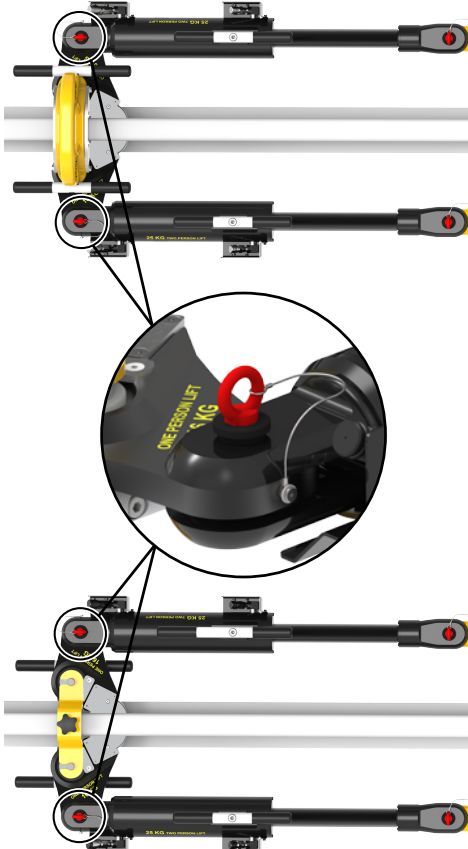


- Position the clamp assemblies onto the rail.
- For under mounting, use the undermount adapter plate to hold the clamp in place prior to putting on the swing arms.



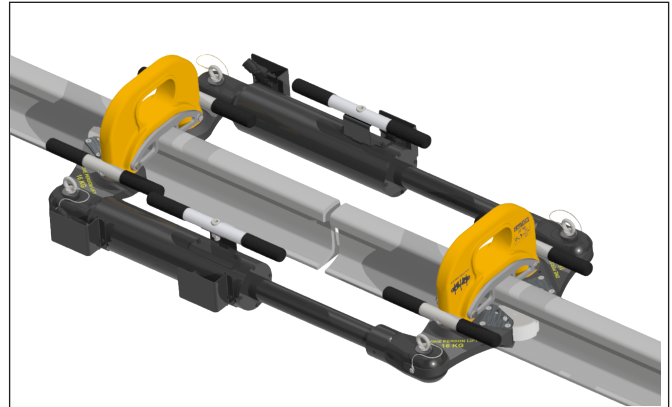
- Rotate the swing arms so that the rail grips are positioned on the web symmetrically.

ABOVE RAIL



BELOW RAIL

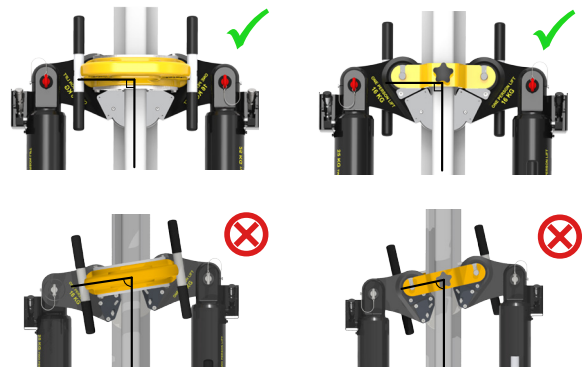
- Connect the hydraulic cylinder assemblies to the eyes of the swing arms.
- Ensure the connection pins are fully engaged.
- Verify that the pins in the fork and clevis ends fit easily without excessive play.



- Connect the rods of the hydraulic cylinder assemblies to the other clamp.

ABOVE RAIL

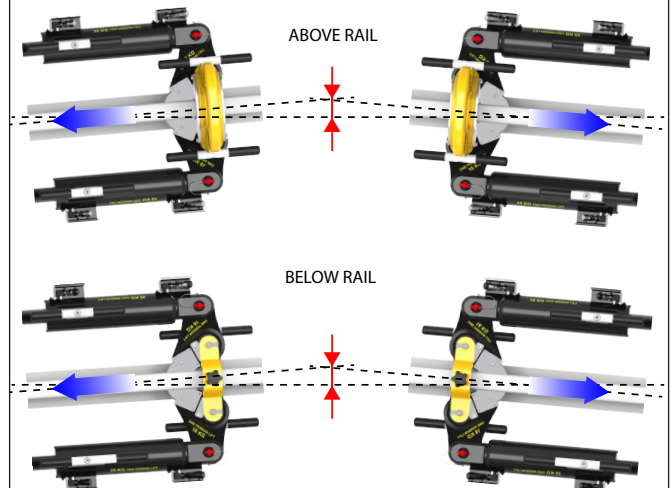
BELOW RAIL



- Ensure that the clamp assemblies are perpendicular to the rail.

WARNING

Do not operate if the clamp assemblies are not square to the rail.



- The rail must be in parallel within a range of 1.0 mm.

WARNING

Do not operate if the rails are without this range.

9.5 Execute an operation

The following procedure outlines the correct method for operation.

Preconditions for executing an operation:

- The system has been mounted on the rail.
- The operator is familiar with the operation procedures of the system.

⚠ WARNING

Do not remove rail grips or clips while the system is under tension on the rail. If rail movement occurs as anchors or clips are removed, the rail grips could lose their grip, allowing the system to slide rapidly and with extreme force along the rail in either direction. Serious personal injury and property damage could result if stressor strikes persons or objects in its path.

⚠ WARNING

Keep hands and feet away from cylinder and workpiece during operation.

⚠ WARNING

Use the safety measures as given in Section 1.

⚠ WARNING

If using the stressor in the under mount configuration and there is a need to run service vehicles across the tracks, don't remove the undermount bracket until there is some pressure in the system, otherwise the complete assembly will fall down and not be in the correct orientation to perform a proper operation.

9.5.1 Pulling and stretching

Operation procedures will vary, depending on hydraulic pump type, valve configuration and other factors. For detailed operating instructions and related information, refer to the instruction sheet included with your pump.

1. Observe the general risks and warnings as given in Section 1.
2. Operate the powerpack to retract (for pulling) or extend (for stretching) the cylinders.
3. Monitor the pressure during operation.

⚠ WARNING

Do not exceed the rated input pressure as given in Section 7.1.

4. Close the load lock valve on the powerpack.
5. Operate the powerpack until the required gap (pulling mode) or the required stretch (stretching mode) is obtained.

NOTICE

It is mandatory that the operator has a full understanding of all instructions, safety precautions and applicable safety regulations before operating any high force hydraulic equipment. If questions or concerns, contact your local Enerpac Distributor or Authorized Service Center.

9.5.2 Finish the operation

⚠ WARNING

If the stressor was used in the under mount configuration, make sure the undermount bracket is installed on both clamps prior to finishing the operation below.

1. Release the load lock valve.
 - For pulling: Extend the hydraulic cylinders until all loads are removed from the assembly.
 - For stretching: Retract the hydraulic cylinders until all loads are removed from the assembly.
2. Remove all connector pins.
3. Use the powerpack to fully retract the hydraulic cylinders.
4. Release any trapped pressure from stressor by shifting the control valve on the powerpack before connecting or disconnecting hoses.

⚠ WARNING

Never disconnect any other hydraulic connections on the stressor to release trapped pressure. See Troubleshooting Guide for correct procedure to release trapped pressure in the stressor hydraulic circuit.

5. Disconnect the hoses.
6. Clean the hydraulic components and couplings.
7. Refit the quick release coupling dust caps.

10. Storage

10.1 System

- Retract the cylinders.
- Coat the pins and clamp pivot bearings, to provide protection from wear and corrosion.

NOTICE

Lubrication of these surfaces is not required.

- Apply oil as a rust preventer to the inside surfaces of swing arms and at holes for connector pins.
- Keep contact surfaces of swing arms and clamps clean and oiled allowing swing arms to move freely.
- Lubricate the grips with light oil to prevent corrosion.
- Apply dust caps to hydraulic couplers.
- Storage.

Short term storage:

Cover the system with a tarpaulin in order to it dry, especially when stored in open air.

NOTICE

The tarpaulin is not included in the delivery but can be added as an option.

Long term storage:

Enerpac recommends a dry and closed space.

NOTICE

For storage temperature of the system reference is made in Section 7.1.

10.2 Hydraulic hoses

- Store hoses in a frost-free, cool, dry space with medium air humidity (condensation free).
- Keep hoses out of direct sunlight (UV radiation).
- Keep hoses out of the outlet flow of ventilators (drying effect).
- Do not store hoses in direct sunlight; the heat of the sun may cause unexpected raise of pressure.
- Protect hoses against exposure to ozone (released during welding work).
- Ozone causes accelerated ageing of hoses (splitting due to dryness).
- Protect hoses against dirt and moisture.
- Preferably store hoses in a horizontal position.

When hoses are stored in vertical position use hose brackets with a bend radius of at least 200 mm, or more for larger hose diameter, according to the specifications of the manufacturer.

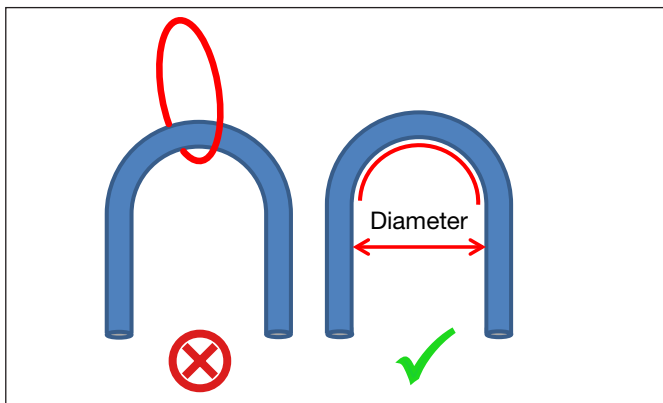


Figure 10: Hose bracket

11. Maintenance

Keep the machine in good condition to obtain optimum performance from your machine and to guarantee the safety of the users.

NOTICE

Annual Certification Recommended – (Procedures have been provided to service providers of how to conduct these tests).

- Pressure test of battery powered pump.
- Gauge calibration.
- Pressure test of hoses.
- Load test of stressor with battery powered pump.

NOTICE

Only perform maintenance on the system if not in use.

NOTICE

If the system has been idle for more than 12 months it is recommended that the annual certification should be present prior to use.

11.1 Rules to be observed for maintenance

Due to the regulations as stated in “ASME B30.1-2015” observe the following rules for maintenance:

1. If the system was idle for at least 12 months, all inspections as listed in the following section with a prescribed frequency of at least 12 months have to be performed.
2. Prior to use, all new, altered, modified, or repaired hydraulic components shall be inspected to verify compliance with the applicable provisions of this section. Written records are not required.
3. Only perform maintenance if the system is not under load.
4. Follow all safety instructions in this manual.
5. When working with flammable liquids, take the applicable safety regulations into account.
6. Make certain that the hydraulic system is not under pressure.
7. If maintenance has to be executed the system should be stopped and pressure released before going near the system.
8. Do not spill any oil and similar fluids. Be mindful of the environment and the costs of cleaning up.
9. Make certain that you apply personal protection equipment (PPE) and take any other safety precautions required by the working conditions.
10. Make sure that you know the location of fire alarms, firefighting facilities and fire extinguishers.
11. Only use suitable work equipment. Prevent damage due to use of unsuitable equipment.
12. Without the express consent of the manufacturer, you are not allowed to make any changes, additions or adjustments to the system which affect the safety of the machine.
13. Make certain that the system is made ready for operation after the maintenance work was been completed. Inform the operator.
14. Only use spare parts provided by Enerpac. If parts provided by other brands, not Enerpac, all guarantees will be voided.
15. Spare parts are provided in spare part kits. Please contact Enerpac for more information.

11.2 Lubrication and cleaning

The points to be cleaned and lubricated are shown below. The pins and bracket pivot bearings do not require lubrication, apply a light coat of Eurol 502 as a rust preventer to the inside surfaces of swing arms and at hole for latch pins if necessary.

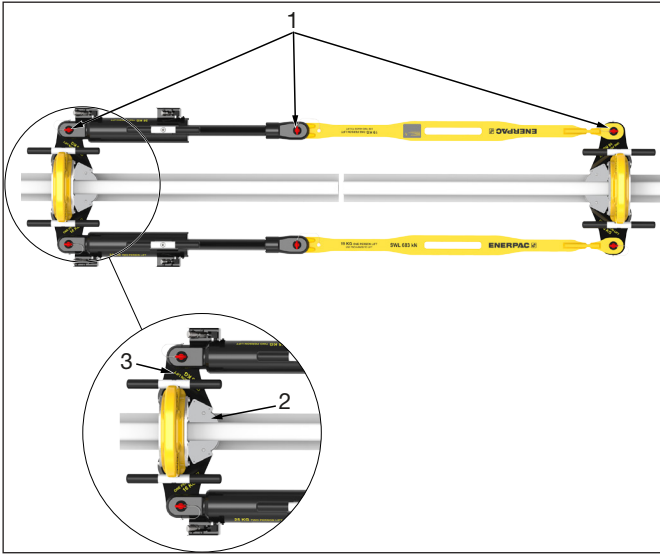


Figure 11: Lubrication Points

1. Connector pins and holes - inspect and keep contact surfaces clean.
2. Rail grips - inspect and clean before each use.
3. Swing arm - inspect and keep contact surfaces clean.

11.3 Dismantling the system

To dismantle the system at the end of its lifetime, proceed as follows:

1. Drain the fluids like hydraulic oil and lubricating oil.
2. Dismount rubber and plastic components.
3. Dismount the metal components.

Collect all material, sort it and let it be recycled by a specialized company.

12. Parts List

12.1 Clamp

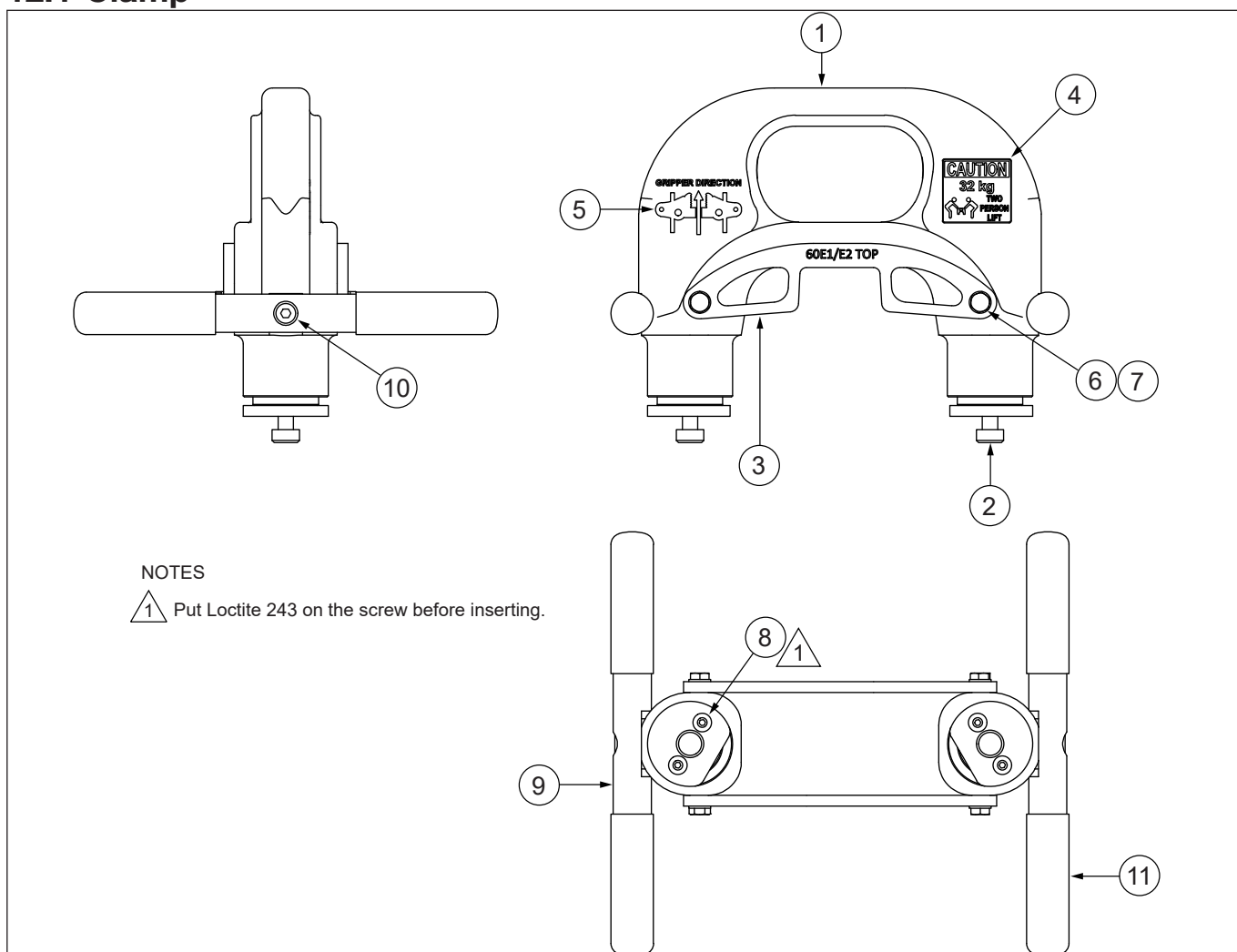


Figure 12: Clamp Main Components

Repair Parts List, Figure 10			
Item	Description	Qty.	Part number
1	Clamp	1	0409901010005
2	Adapter Undermounting	2	▲
3	Top Positioning Plate 60E1	2	★
	Undermount Positioning Plate 60E1	2	■
4	Caution Decal	4	◆
5	Arrow Direction Label	2	◆
6	Washer	4	★ ■
7	Hex-Head Bolt (M10 / Class 8.8)	4	★ ■
8	Hexagon socket countersunk head cap screws (M8 / Class 10.9)	4	▲
9	Handle	2	0409901010006
10	Hex SHCS Low Head (M16 / Class 8.8)	2	B07090.160.035
11	Handle Cover	4	0393901010029
▲ Indicated item included in and available only in SP Kit J Clamp Kit - 04099420002 (Kit includes 1 adapter mounting plate and hardware)			
★ Indicated item included in and available only in SP Kit A Top Positioning Plate Kit - 04099420001			
■ Indicated item included in and available only in SP Kit L Undermount Positioning Plate Kit - 04099420012			
◆ Indicated item included in and available only in SP Kit K Decal Kit - 04099420011 (Kit includes decals for both clamps)			
NOTE: Items available only in kits (not sold separately)			

12.2 a Extension Strip

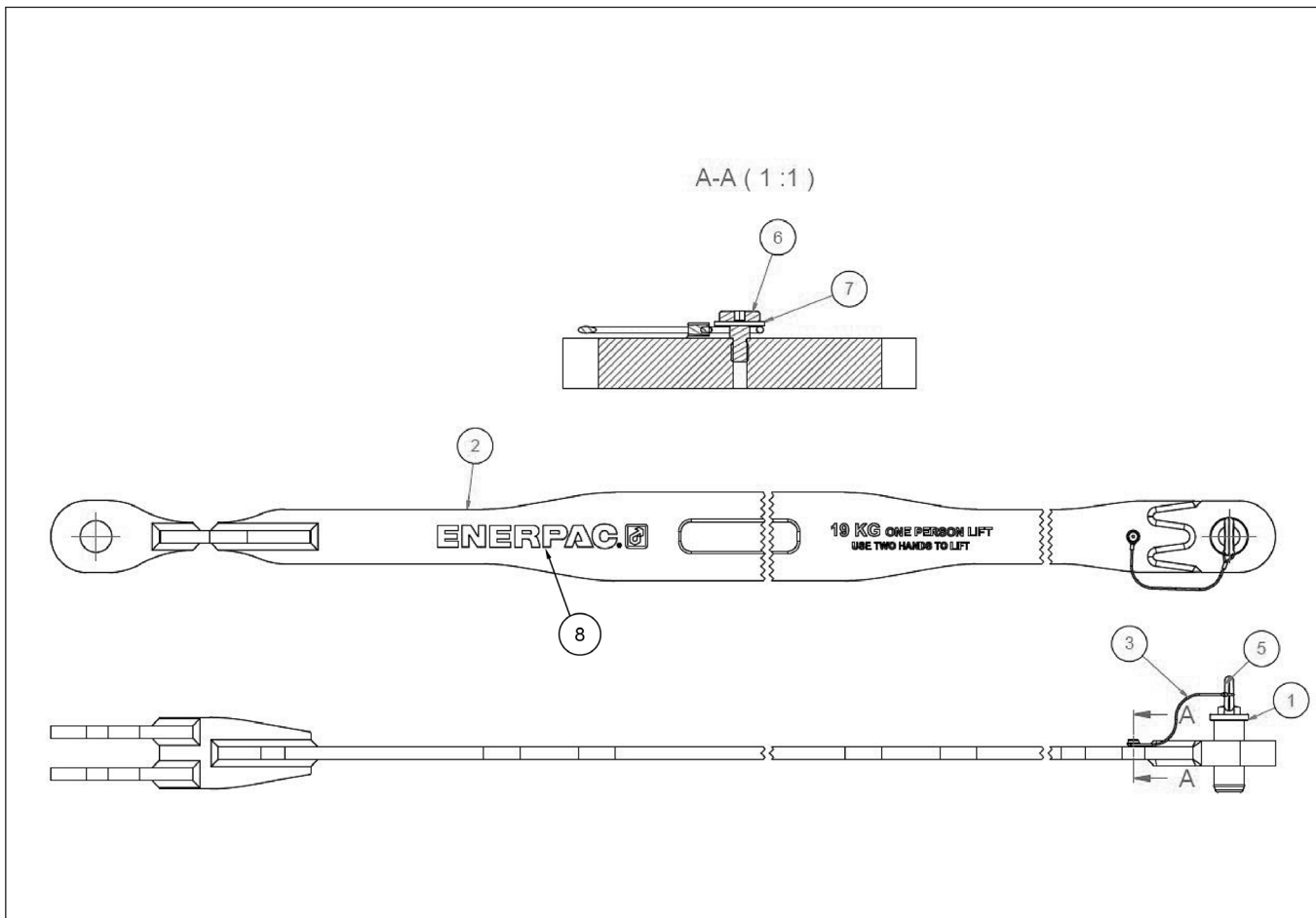


Figure 13: Extension Strip Main Components

Repair Parts List, Figure 11			
Item	Description	Qty.	Part number
1	Connection Pin	1	▲
2	Weld Extension Strip	1	03939010106
3	Cable	1	★
5	Lifting Eyebolt	1	▲
6	Shoulderbolt (M5 / Class 10.9)	1	★
7	Washer 3xd	1	★
8	Enerpac Decal	2	◆
▲ Indicated item included in and available only in SP Kit F Connection Pin Kit - 03939440006 (Kit includes 1 piece of each component)			
★ Indicated item included in and available only in SP Kit B Cable Kit - 03939440002 (Kit includes 1 piece of each component)			
◆ Indicated item included in and available only in SP Kit K Decal Kit - 04099420011 (Kit includes decals for both extension strips)			
NOTE: Items available only in kits (not sold separately)			

12.2b Extension Strip Short

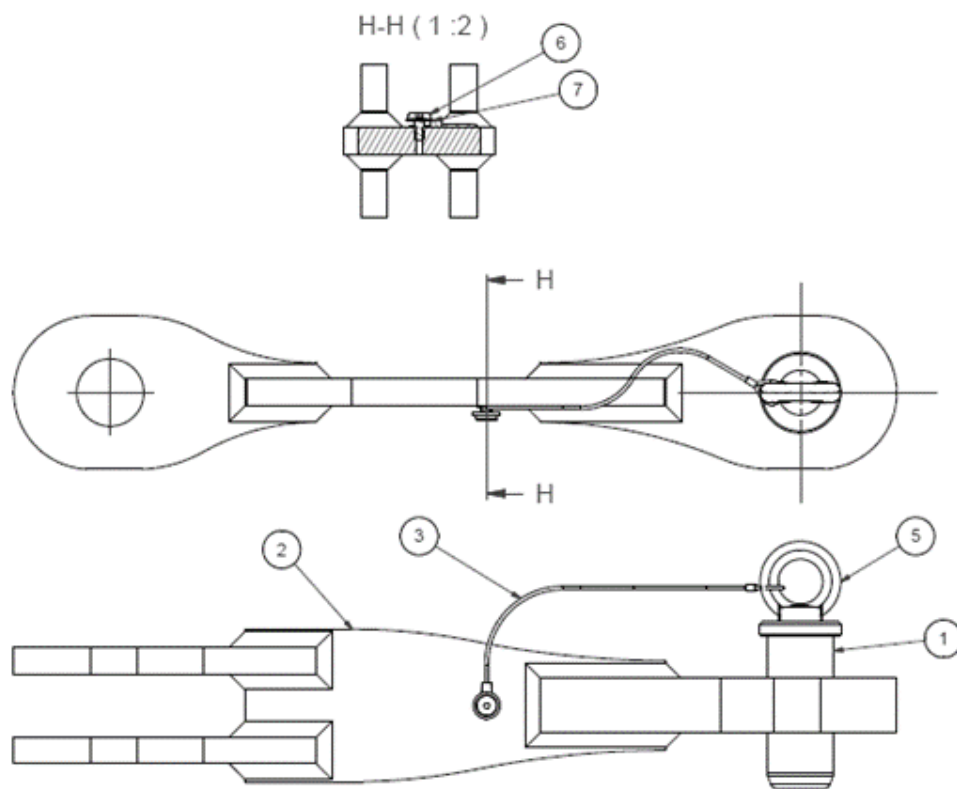


Figure 14: Extension Strip Main Components

Repair Parts List, Figure 12			
Item	Description	Qty.	Part number
1	Connection Pin	1	▲
2	Extension Strip Flat	1	RP70A2L-SES
3	Cable	1	★
5	Lifting Eyebolt	1	▲
6	Shoulderbolt (M5 / Class 10.9)	1	★
7	Washer 3xd	1	★
▲ Indicated item included in and available only in SP Kit F Connection Pin Kit - 03939440006 (Kit includes 1 piece of each component)			
★ Indicated item included in and available only in SP Kit B Cable Kit - 03939440002 (Kit includes 1 piece of each component)			
NOTE: Items available only in kits (not sold separately)			

12.3 Gripper Arm

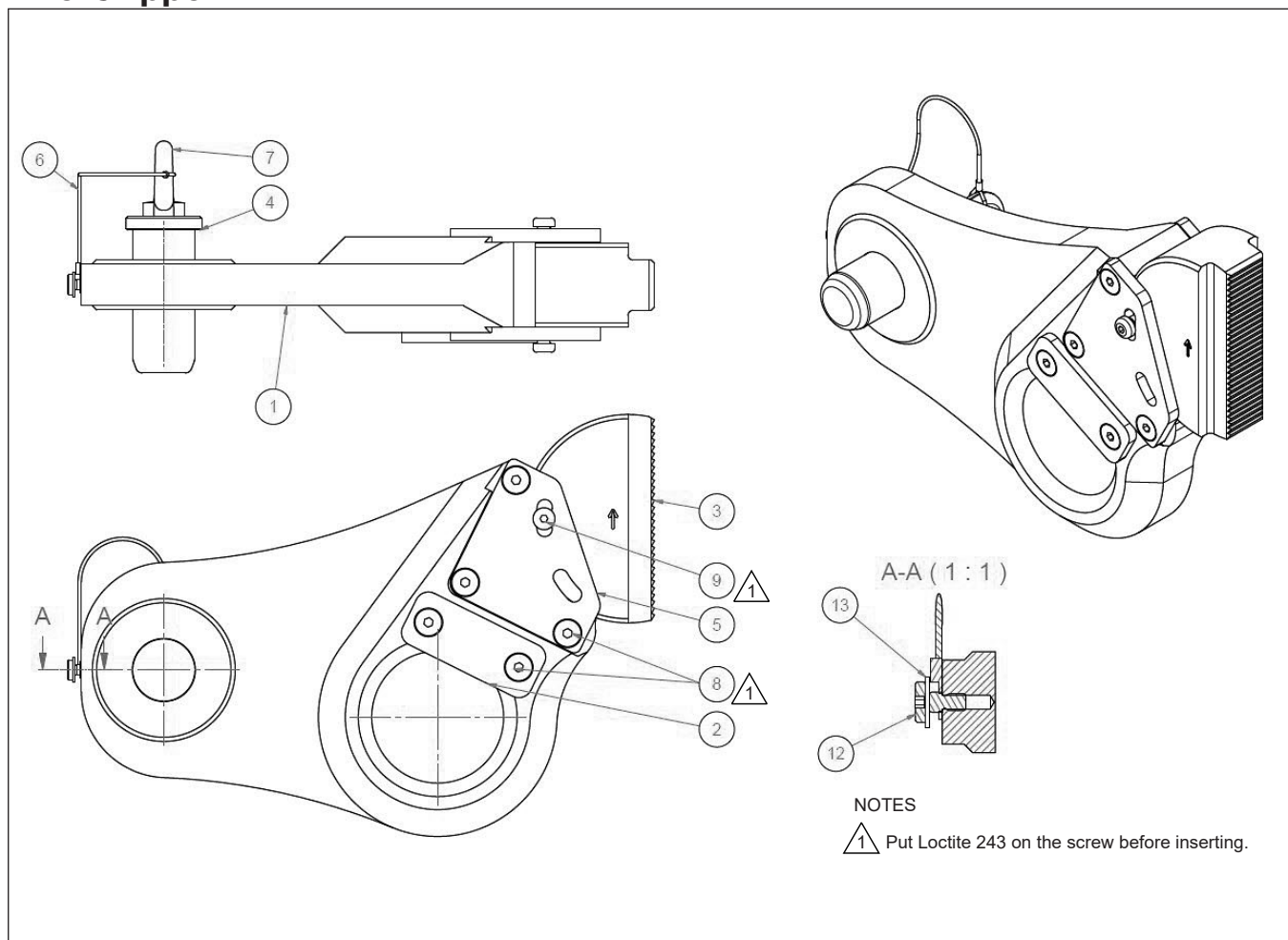


Figure 13: Gripper Arm Main Components

Repair Parts List, Figure 13			
Item	Description	Qty.	Part number
1	Gripper Arm	1	0393901010002
2	Lock Plate	1	▲
3	Kit C Gripper Kit	1	03939440003
4	Connection Pin	1	■
5	Gripper Lock Plate	2	▲
6	Cable	1	★
7	Lifting Eyebolt	1	■
8	Hexagon socket countersunk head cap screws (M8 / Class 10.9)	8	▲
9	Hexagon socket head shoulder screws (M6 / Class 12.9)	2	▲
12	Shoulderbolt (M5 / Class 10.9)	1	★
13	Washer 3xd	1	★
▲ Indicated item included in and available only in SP Kit I Gripper Lock Plate - 03939440009 (Kit includes quantity shown of each item)			
★ Indicated item included in and available only in SP Kit B Cable Kit - 03939440002 (Kit includes 1 piece of each component)			
■ Indicated item included in and available only in SP Kit F Connection Pin Kit - 03939440006 (Kit includes 1 piece of each component)			
NOTE: Items available only in kits (not sold separately)			

12.4 Cylinder RARP3515

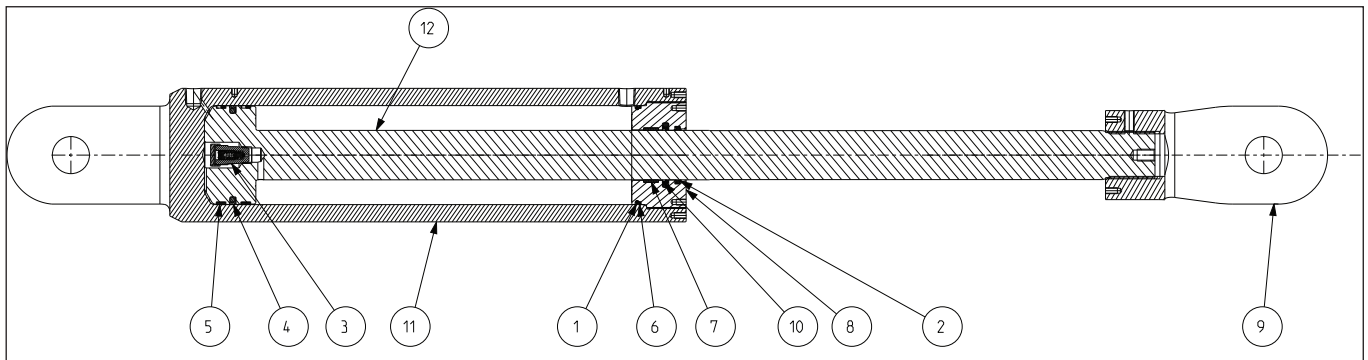


Figure 14: Pull Cylinder Main Components

Repair Parts List, Figure 14			
Item	Description	Qty.	Part number
1	O-Ring	1	▲
2	Scraper	1	▲
3	Relief valve assembly	1	CJ160900
4	Piston seal	1	▲
5	Piston bearing	2	▲
6	Backup ring	1	▲
7	Rod wear ring	1	▲
8	Stop ring	1	DQ2182044
9	Clevis eye	1	DQ2183056
10	Step seal with o-ring	1	▲
11	Cylinder base	1	N/A*
12	Plunger	1	RARP3515S040
▲ Indicated item included in and available only as a part of the Seal Kit RARP358K1			
* Order new cylinder: RARP3515S			
NOTE: Items available only in kits (not sold separately)			

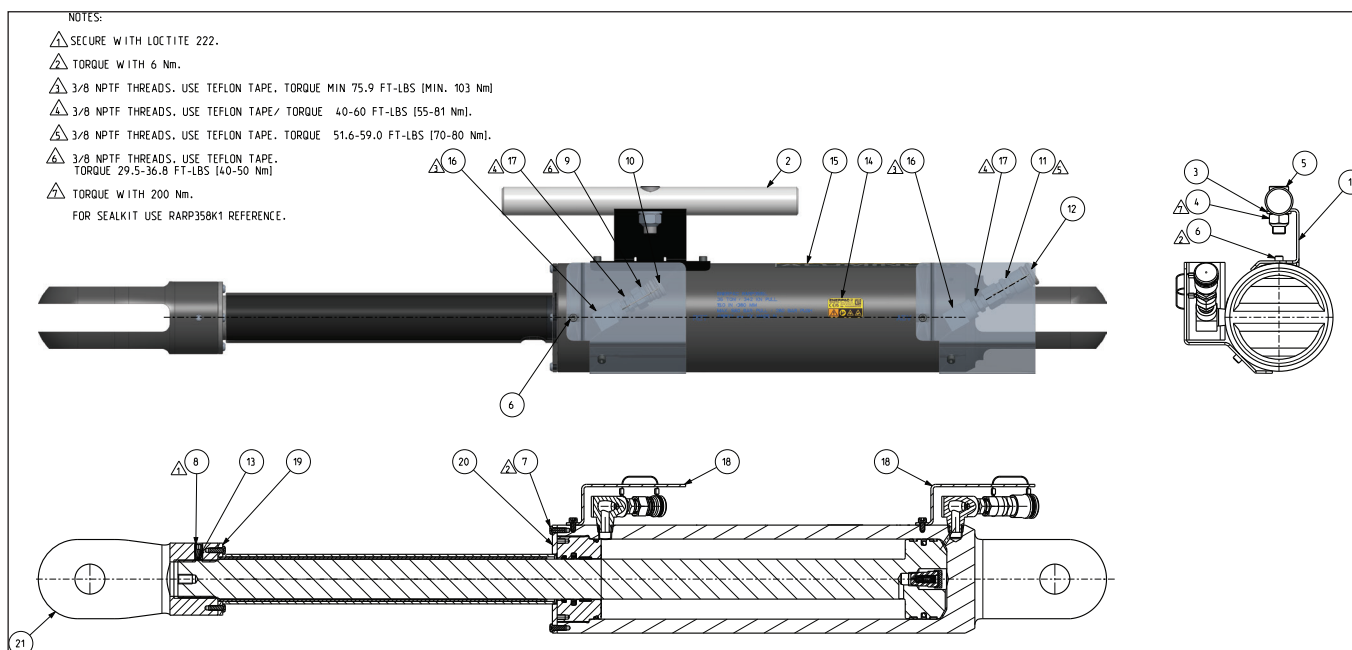


Figure 15: Pull Cylinder Assembly

Repair Parts List, Figure 15			
Item	Description	Qty.	Part number
1	Cylinder handle plate	1	0393901010017
2	Handle	1	0393901010014A
3	Flat wahser	1	CAE1160108-1A
4	Lock nut, Hex, M16	1	CBE1160120-2A
5	LHCS Screw, Hex, M16x2 x 50 / Class 10.9	1	CBE1633028-1D
6	SHCS Screw, Hex, M6x10 / Class 8.8	6	CBE615028-1A
7	BHCS Screw, Hex, M6x1 x 16 / Class 10.9	8	CBE619028-1E
8	Set screw	1	CCA1019028-5E
9	Coupler male half	1	CS364900
10	Metal dustcap for male coupler	1	★
11	Coupler female half	1	CS365900
12	Metal dustcap for female coupler	1	★
13	Nylon disc	1	CZ324071
14	Enerpac UIN warning decal	1	▲
15	Enerpac decal	1	▲
16	Street elbow	2	FZ1616
17	Nipple	2	FZ1617
18	Cover plate - left	2	RARP3515L017
	Cover plate - right	2	RARP3515R017
19	Sleeve assy	1	RARP3515LR900
20	Sleeve assy	1	RARP3515LR900-1
21	Aluminum pull cylinder 35 ton D/A 380 mm	1	RARP3515S
★ Indicated item included in and available only in SP Kit E Cylinder Dust Cap Kit - 03939440005			
▲ Indicated item included in and available only as a part of the Seal Kit RARP358K1			
NOTE: Items available only in kits (not sold separately)			

12.5RP70A2UMK - Undermount Kit

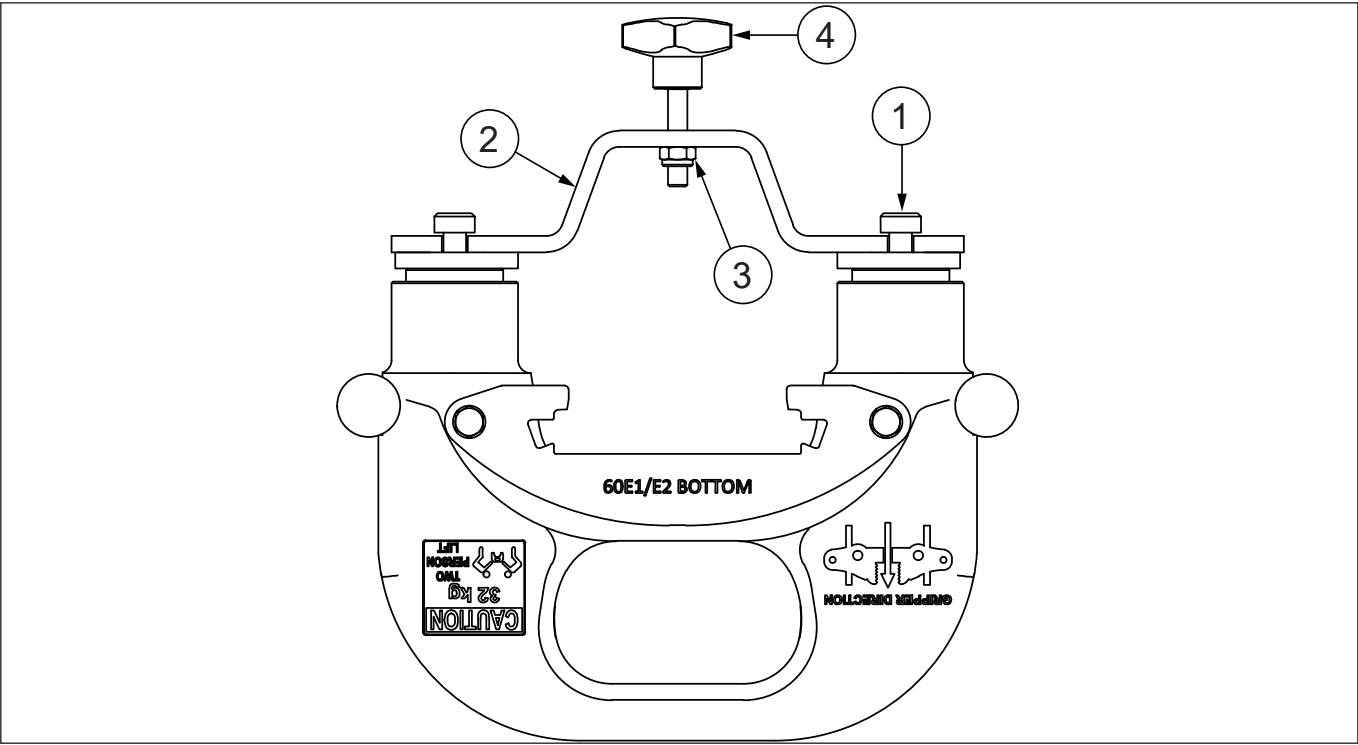


Figure 16: Undermount Kit Components

Repair Parts List, Figure 16			
Item	Description	Qty.	Part number
1	Adapter Undermounting	2	▲
2	Undermounting Support Bracket	1	N/A
3	Hex Locknut	1	N/A
4	Lobe Knob	1	04099420003
▲ Indicated item included in and available only in SP Kit J Clamp Kit - 03939440004 (Kit includes 1 adapter mounting plate and hardware)			

13. Troubleshooting

Refer to the troubleshooting guide when diagnosing tool operational problems. Please note that the troubleshooting guide is not all-inclusive and should only be considered as an aid to help diagnose the most common possible problems. For repair service, contact your nearest Enerpac Authorized Service Center. As required, also refer to the troubleshooting information provided with your hydraulic pump or power unit.

Troubleshooting Guide		
Symptom	Possible Cause	Solution
1. Plunger will not pull.	a. Pump release valve open.	Close pump release valve.
	b. Directional control valve not in proper position.	Shift directional control valve to proper position.
	c. Coupler not fully tightened.	Tighten coupler.
	d. Pump oil level is low.	Add oil to pump reservoir as required.
	e. Pump malfunctioning.	Repair or replace pump as required.
	f. Cylinder load rating too low for application.	Use a cylinder with a higher load rating.
	g. Cylinder seals leaking.	Repair or replace cylinder.
2. Plunger retracts only part way.	a. Oil level in pump is low.	Add oil to pump reservoir as required.
	b. Coupler is not fully tightened.	Tighten coupler.
	c. Cylinder plunger binding.	Repair or replace cylinder.
3. Plunger retracts erratically.	a. Air in hydraulic system.	Remove air from hydraulic system.
	b. Cylinder plunger binding.	Repair or replace cylinder.
4. Plunger moves more slowly than normal.	a. Leaking connection.	Repair leaking connection.
	b. Coupler not fully tightened.	Tighten coupler.
	c. Pump malfunctioning.	Repair or replace pump as required.
5. Plunger retracts but will not hold.	a. Pump malfunctioning.	Repair or replace pump as required.
	b. Leaking connection.	Repair leaking connection.
	c. Incorrect system set-up.	Check hose connections at pump and cylinders.
	d. Cylinder seals leaking.	Repair or replace cylinder.
6. Cylinder leaks oil.	a. Worn or damaged cylinder seals.	Repair or replace cylinder.
	b. Internal cylinder damage.	Repair or replace cylinder.
	c. Loose connection.	Tighten or repair connection.
7. Plunger will not retract or retracts more slowly than normal.	a. Pump release valve closed.	Open pump release valve.
	b. Directional control valve not in proper position.	Shift directional control valve to proper position.
	c. Pump reservoir is overfilled.	Drain oil from pump reservoir as required.
	d. Improper hose connections.	Check hose connections.
	e. Narrow hose restricting oil flow.	Replace with larger diameter hose.
	f. Internal cylinder damage.	Repair or replace cylinder.
8. Positioning plate is being deformed	a. Clamp is mounted at an angle.	Reposition clamp.
	b. Tracks are not in straight line.	Put tracks in straight line.
	c. Tracks are in a bend less than 250 meters.	Stop action, operation not allowed.

14. Appendix - Torque Settings

		Course Pitch (Nm)	Fine Pitch [Nm]
Nominal Size	Strength Class	(Copper-grease) 0.08	(Copper-grease) 0.08
M4	8.8	2.2	
	10.9	3.2	
	12.9	3.8	
M5	8.8	4.3	
	10.9	6.3	
	12.9	7.4	
M6	8.8	7.4	
	10.9	10.9	
	12.9	12.5	
M7	8.8	12.0	
	10.9	17.5	
	12.9	20.5	
M8	8.8	18	19
	10.9	26	28
	12.9	31	32
M10	8.8	36	37
	10.9	52	55
	12.9	61	64
M12	8.8	61	63
	10.9	90	93
	12.9	105	109
M14	8.8	97	103
	10.9	145	150
	12.9	165	175
M16	8.8	145	155
	10.9	215	225
	12.9	250	270
M18	8.8	210	230
	10.9	300	330
	12.9	350	380

		Course Pitch (Nm)	Fine Pitch [Nm]
Nominal Size	Strength Class	(Copper Grease) 0.08	(Copper Grease) 0.08
M20	8.8	300	320
	10.9	420	460
	12.9	500	530
M22	8.8	400	430
	10.9	570	610
	12.9	670	710
M24	8.8	510	640
	10.9	730	900
	12.9	850	1060
M27	8.8	750	920
	10.9	1070	1310
	12.9	1250	1530
M30	8.8	1000	1280
	10.9	1450	1820
	12.9	1700	2130
M33	8.8	1400	1700
	10.9	1950	2430
	12.9	2300	2840
M36	8.8	1750	2230
	10.9	2500	3170
	12.9	3000	3710
M39	8.8	2300	2850
	10.9	3300	4050
	12.9	3800	4740

NOTES

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NOTES

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