

INSTRUCTION SHEET FOR LOCK NUT CYLINDERS

Repair Parts Sheets for hydraulic hand pumps are available from your nearest authorized EAGLE PRO Service Center or EAGLE PRO Sales office.

NOTE

PLEASE READ AND FOLLOW THIS INSTRUCTION BEFORE YOU USE EAGLE PRO LOCK NUT CYLINDERS.

Carefully inspect all components for shipping damage, if shipping damage is found. Please notify carrier at once. The carrier is responsible for any damage resulting from shipment.

01 SAFETY



To avoid personal injury or property damage, please follow all safety precautions. EAGLE PRO cannot be responsible for injury or damage resulting from unsafe and incorrect products use or system operation, or lack of maintenance.

DANGER is only used when your action or lack of action may cause serious injury or even death.

WARNING indicates a potential danger that requires correct action to avoid personal injury.

IMPORTANT indicates correct action to prevent damage or equipment failure.



DANGER

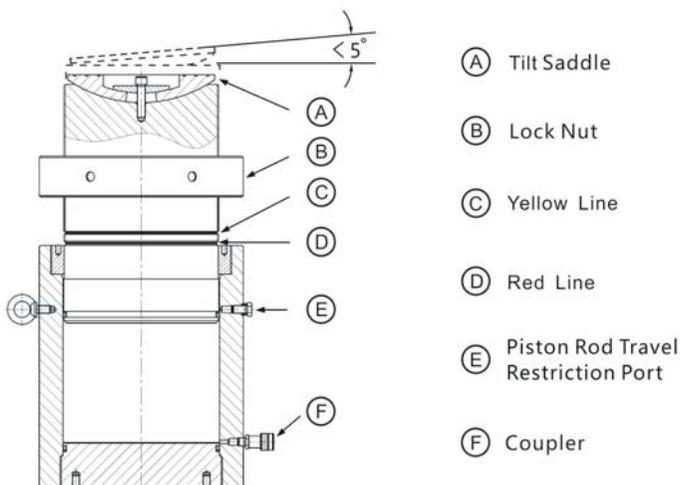
- The hydraulic equipment operator must be a qualified operator must have correct training and work experience with hydraulic equipment. Lack of knowledge in any of these areas can lead to equipment damage or personal injury.
- Carefully inspect cylinder, coupler, hose and hand pump before using hydraulic equipment, if you find any damage, please contact with your nearest Authorized EAGLE PRO Service Center or Sales office. Any damage can cause personal injury when you use the cylinder.
- To avoid personal injury, please do not modify or weld hydraulic equipment without approval of EAGLE PRO.
- Please never lift a more than the rated capacity of the cylinder, overloading causes equipment failure and serious personal injury.
- The cylinder is a load lifting device, not a load holding device. After the load has been raised or lowered, it must always be held mechanically, never work under a load supported by a hydraulic unit.
- Keep hands and feet away from cylinder and workplace during operation to avoid personal injury.
- NEVER put unbalanced or off-center loads on cylinders. The incorrect load can result in equipment failure and serious personal injury.



WARNING

- Please wear safety glasses, helmet and other necessary personal protective equipment when operating hydraulic equipment

Figure 1



Piston Rod shown at maximum extension

- EAGLE PRO EL and ELL series Lock Nut cylinders are not equipped with a stop ring to retain the Piston rod. To prevent piston rod over-extension, a port is provided to vent the oil out of the cylinder as the piston rod reaches the maximum stroke. When the YELLOW LINE around the piston rod becomes visible, the piston rod will reach to the maximum stroke, please stop lifting. Once the RED LINE becomes visible, the piston rod has reached the maximum extension; further extension could damage the seals or result in the piston rod being forced out of the cylinder (See Figure 1).
- NEVER remove the plug or substitute a conventional pipe plug from the piston rod travel restriction port (See Figure 1).
- Tilt saddle (if available) MUST NOT exceed the maximum tilt angle of 5 ° (See Figure 1).
- Use cylinder to lift load should have solid lifting surface for correct support. Please select steel or wood those are capable of supporting the load.
- Please install pressure gauge in the system to monitor the operating pressure. The gauge must have same pressure rating as the pump and cylinder in the system. The wrong gauge may cause equipment failure and possible personal injury.
- Please carefully inspect the cylinder and coupler before use cylinder or shift coupler. NEVER connect the cylinder with damaged coupler or damaged port threads. The damaged coupler or damaged port thread may cause equipment failure and possible

personal injury.

- Change coupler in a clean place; prevent dirt or other debris from entering into cylinder body or tube. Dirt or other debris will damage the cylinder and result in equipment failure and possible personal injury.
- Before removing or tightening hose or coupler, fully release the hydraulic pressure in system.
- Never handle pressurized hoses; escaping oil under high pressure can penetrate the skin, causing serious injury. Seek medical aid immediately if injured.
- Please use EAGLE PRO oil or other approved hydraulic oil.
- For hydraulic technical help or repair service. Please contact the authorized EAGLE PRO Service Center in your area. EAGLE PRO has no obligations under any warranty with respect to products that have been repaired by unauthorized personnel, modified, or damaged through misuse, abuse, accident, neglect, or mishandling.

IMPORTANT

- Please keep the cylinder clean all the time.
- To reduce cylinder offset loading, optional ST-series tilt saddles are available. Always use grease underneath tilt saddles.
- Keep hydraulic equipment away from flames and heat, Overheating will soften seals and weakens hose materials, resulting in oil leaking or other equipment failure. Do not use equipment in temperatures of 65 °Cæ150°FH) or higher.
- When the cylinder is not in use, please keep the piston rod fully retracts, remove hose and use rubber cap to cover the coupler.
- Please do not drop heavy duty on hose.
- Before load, Please fix a saddle into piston rod, saddle will protect the piston rod.

02 DESCRIPTION

EL-Series Lock Nut Cylinders are Single-acting, high tonnage and load return with an overflow oil port for stroke restriction. EL cylinders DO NOT have a Stop Ring. EL cylinders are provided with a fully threaded piston rod and a safety lock nut for positive load holding operations.

ELA-Series Aluminum Lock Nut Cylinders are Single-acting, low weight and spring return with a stop ring for stroke restriction. ELA cylinders are provided with a fully threaded piston rod and a safety lock nut for positive load holding operations.

ELL-Series Pancake Lock Nut Cylinders are Single-acting, low height and load return with an overflow oil port for stroke restriction. ELL cylinders DO NOT have a Stop Ring. ELL cylinders are provided with a fully threaded piston rod and a safety lock nut for positive load holding operations.

03 CONNECTION

Before use cylinder, please visually check all units, to make sure there are no damage on cylinder, port threads, coupler and hose. No oil leaking and shortage of parts. If you find any problem please stop using your equipment and contact with your nearest authorized EAGLE PRO Service Center or Sales office.

Use a pump with a release valve or a 3-way valve and one hose to connect with lock nut cylinder. After connected all parts, please fully hand-tighten all couplers. If not, oil will be leaked when you operate the equipment.

04 OPERATION



WARNING: EAGLE PRO Lock Nut cylinders are not equipped with a stop ring to retain the Piston rod. When the **YELLOW LINE** around the piston rod becomes visible, please stop lifting immediately; further extension could damage the seals or result in the piston rod being forced out of the cylinder. Tilt saddle (if available) must not exceed the maximum tilt angle of 5° (See Figure 1).

Figure 2



4.1 Operate hydraulic pump to advance (see A in figure 2).

4.2 To hold the piston rod, clockwise rotate the Lock nut (see B in figure 2) until reach to the top of cylinder (see C in figure 2).

4.3 To release the piston rod, Anticlockwise rotate the lock nut until reach to the top of piston rod

4.4 After finish the work, release the pressure and fully return the piston rod, remove the hose and cover the coupler by rubber cap.



IMPORTANT: EAGLE PRO Lock Nut Cylinder is load return. To reduce the wear and risk, please use less than the full stroke (stop lifting when the **YELLOW LINE** around the piston rod becomes visible.), and use less full capacity when possible. Do not allow piston rod to rotate when installing adaptors or during the work, rotating piston rod could damage the seals.

05 HOISTING CYLINDER



WARNING: To avoid equipment failure and possible personal injury, please always use all of the eye bolts when hoisting cylinder, Lifting straps must be at a 45 degree or greater angle ($\geq 45^\circ$) from horizontal.

06 MAINTENANCE

- Please always use clean EAGLE PRO oil or other approved hydraulic oil. Use other unapproved oil or dirty oil will damage the cylinders.
- Always keep cylinder clean, use dust cap to protect coupler.
- After finish work, Cylinder must be fully retracted, cleaned and stored in ventilation, moist-proof, corrosion-proof place.

07

TROUBLE-SHOOTING



WARNING: EAGLE PRO Cylinders should be repaired only by a qualified operator or authorized EAGLE PRO Service Center. Repair cylinders without special tools and knowledge may result in personal injury. Please release pressure and disconnect hose(s) before making repair.

Problem	Cause	Solution
Cylinder will not extend or fully extend	<ol style="list-style-type: none"> 1.Pump release valve open 2.Couplers not fully tightened 3.Oil level in pump reservoir is low 4.Pump or valve malfunctioning 5.Overload for cylinder 6.Cylinder piston rod binding 	<ol style="list-style-type: none"> 1.Fully tighten pump release valve 2.Fully tighten couplers 3.Fill oil in pump 4.Repair or use another pump and valve 5.Change another cylinder with appropriate capacity 6.Check for dirt or leaks, change the damage parts
Cylinder can not maintain pressure	<ol style="list-style-type: none"> 1.Leaky connection 2.Cylinder seals leaking 3.Release valve not fully closed 4.Pump or valve malfunctioning 	<ol style="list-style-type: none"> 1.Clean and reseal thread, tighten connection 2. Replace worn seals. Clean inside cylinder and use clean hydraulic oil 3. Fully tightening the release valve 4. Repair, or use another pump and valve
Cylinder extends slower than normal	<ol style="list-style-type: none"> 1. Leaky connection 2. Coupler not fully tightened 3. Pump malfunctioning 	<ol style="list-style-type: none"> 1.Clean and reseal thread, tighten connection 2. Fully tighten couplers 3. Repair or use another pump and valve
Cylinder extend in dithering	<ol style="list-style-type: none"> 1. Air in system 2. Cylinder piston rod binding 	<ol style="list-style-type: none"> 1. Bleeding air in the system 3. Check for dirt or leaks. Check for bent, misaligned and worn parts
Cylinder leaks hydraulic oil	<ol style="list-style-type: none"> 1. Leaky connection 2. Worn or damaged seals 3. Cylinder damage 	<ol style="list-style-type: none"> 1.Clean and reseal thread, tighten connection 2.Replace worn seals, clean inside cylinder and use clean hydraulic oil 3. Use new cylinder of contact with your nearest Authorized EAGLE PRO Hydraulic Service Center.
Cylinder will not retract or Retracts slower than normal	<ol style="list-style-type: none"> 1. Pump release valve closed 2. Couplers are not fully tightened 3. Pump reservoir is full 4. Hose is blocked 5.EL cylinders are load return 6. Cylinder damaged 	<ol style="list-style-type: none"> 1. Open release valve 2.Tightening the couplers 3. Drain hydraulic oil to correct level 4. Clean or change hose 5. Retract cylinder by load 6.Use new cylinder or contact your nearest Authorized EAGLEPRO Hydraulic Service Center