

## **HYDRAULIC JACK REBUILD COMMON QUESTIONS AND ANSWERS**

### **How and why do I need to bleed my hydraulic jack?**

Hydraulic jacks need to be bled on occasion. This can be because of a low oil situation allowing air to be ingested, heavy movement which can allow the oil to slosh around in the reservoir or a bad pump seal that lets air into the system.

Things to make sure you do:

First, make sure there is sufficient oil in the reservoir.

Then, simply put the jack in the release position and pump the handle 6-8 times. This will make the circuit between the reservoir, through the valve system, through the release vein and back into the reservoir all the time purging the lines from any air. Make sure, when doing this, have the vent open or take it off. The jack needs to be able to breathe.

### **How much oil does my jack require?**

On floor jacks, the oil should rest 5/16" below the fill hole or rest just above the inner cylinder, when looking through the hole.

On bottle jacks, the fill hole is generally on the reservoir approximately 3/4 of the way up. The fill hole should be filled until the oil starts to trickle out of the hole, when the jack is in the upright position.

Always check oil levels with the jack arm lowered or the bottle jack ram retracted (in the down position).

### **My jack feels "spongy" and has poor lift performance. What do I do?**

1. Check the oil level.
2. Bleed, if necessary.

### **I have checked the oil level and bled the jack and it is still not working correctly. What do I do?**

1. Check for signs of leakage. "Not working correctly" is an indication that a seal has failed.
2. Inspect your jack for individual seal leakage. There are tutorials on our website to cover some of the most popular jack models.
3. Typical Import: Japan, Taiwan/China... Probably makes up the majority of the jacks out there with only subtle changes between models.

4. There are two tutorials on our website filed under “How-To: Instructions” page which cover the 93632 and others. There are subtle changes between the models such as type of seal used (leather versus poly) along with hydraulic unit variations.

### **I removed the hydraulic unit from the frame, and ...**

1. Now I cannot get the tank nut off.

Make sure the tank nut is a threaded nut. Some jacks use an internal C-clip to get to the ram.

If it is threaded, the thread has always been standard (lefty loosey/righty tighty). These tank nuts are extremely tight because a lot of them (not all) need this torque to seal the reservoir at both ends (metal to metal).

A proper size tool is important. Go buy the correct socket. A pipe wrench on a hex style nut will leave teeth marks.

2. You will need a vise or press capable of holding the unit while you attempt to unscrew the nut. To give you strength and more leverage, use a 6 foot piece of square tubing that slips over the breaker bar to help unscrew the nut.

### **How do I handle the overload?**

Most hydraulic jacks utilize a safety overload. The safety overload is a valve that is made up of a seat/ball or cone/heavy spring with an adjustment on top.

When the plug is adjusted down, the plug compresses the spring which, in turn, adjusts the seating pressure of the ball/cone. All of your seals have a maximum operating PSI. When the overload is properly adjusted, it is set to open when the cylinder PSI exceeds the working pressure of the seal/jack. This setting will vary from jack to jack based on the cylinder bore/spring tension, etc. Over the years, these heavy springs which are compressed for their entire life lose their tension or back-off and thus lift prematurely. It takes a specialty press with a gauge and some minor calculations to properly adjust these.

Do not start blindly turning anything on your jack. First, find out the current setting by adjusting the nut completely closed. Take careful consideration to count the revolutions to the point of being fully closed. When you put it back together you can simply tighten it down and back it off appropriately.

A hydraulic jack is only for lifting a load. Once the load is up, make sure you use a jack stands. Never trust your life to a hydraulic jack no matter which brand it is or what the tonnage is. **JACK STANDS SAVE LIVES.**

## Common signs that the main ram has failed

Generally, when you see any leakage around the tank nut, this is a good sign that either the seal has failed or is compromised. Hydraulic jacks utilize a seal in the top end that is supposed to handle any light leakage. This top seal is not designed to handle high pressure bypass. You also will find where the load will drop over time. The more severe the seal problem, the more noticeable the descent will be.

## Why do seals fail?

The life of a hydraulic seal is determined by many different factors.

1. Frequency of use. The more the seal is used, the longer it lasts. Using a seal keeps it from prematurely hardening.
2. Type of seal/material used. A lot of the older jacks used HUGE U-cups versus a lot of the smaller seals ones used today. It seems when combined with heavy usage, huge U-cup seals lasted a long time. The same can be said for the leather piston cups which have lasted with 40-50 years of service.
3. Conditions of the cylinder of which the seal is operating. Any pitting or imperfections that the seal has to ride against is going to damage the lip of the seal.

## What type of seal is this?

Poly U-Cup

These are made in Piston/Rod and some that can be used as either (symmetrical).



## Leather Piston Cup

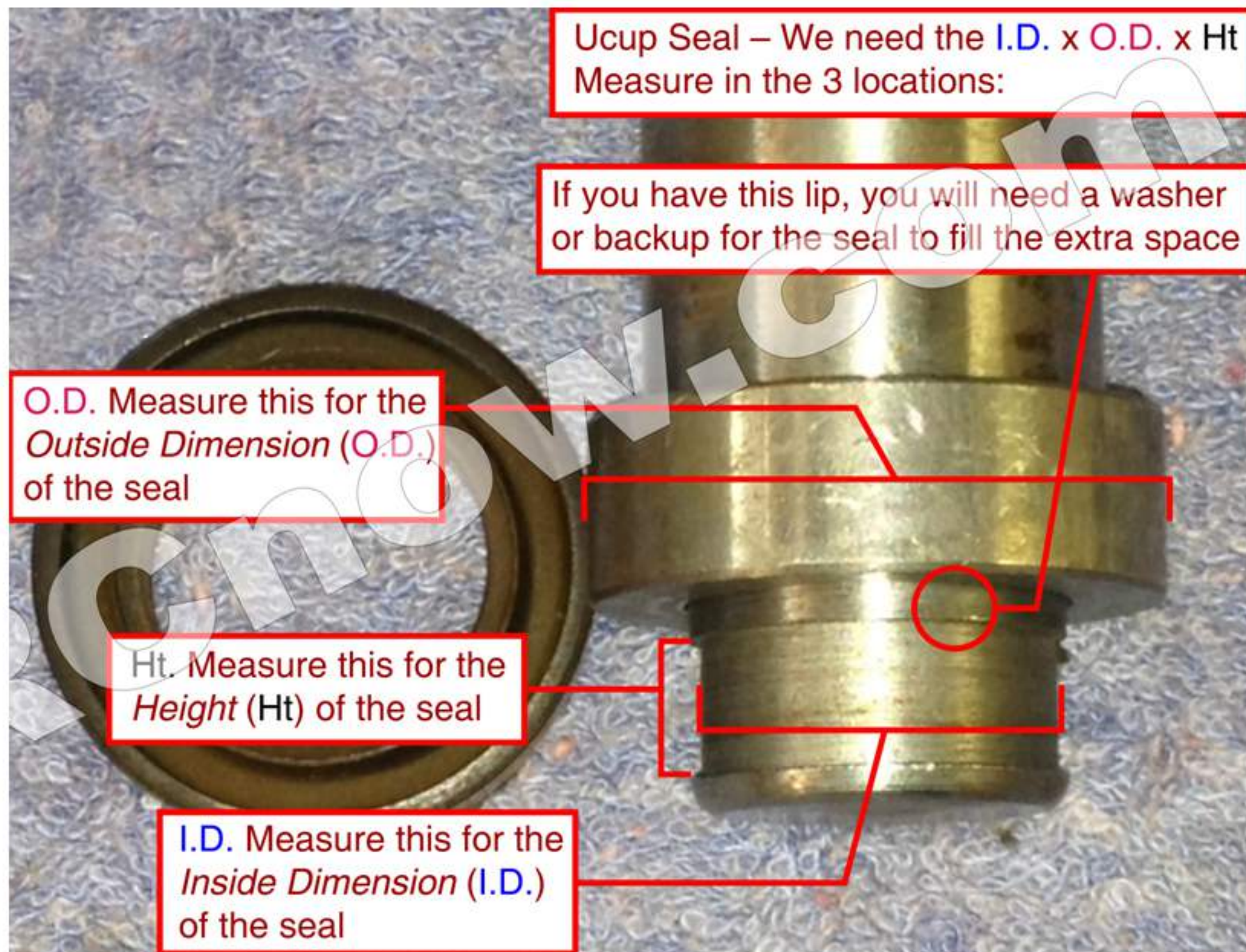
Generally, these are used in older hydraulic jacks, and they can still be used in all operations today.



## Another form of a U-cup

These were common in many “Quick Lift” jacks. It could be poly or Buna-N material. This U-cup utilizes a backup that the seal actually sits inside and will carry a ridge on the actual ram to accept the backup (which has a bigger ID to mate to that ridge).

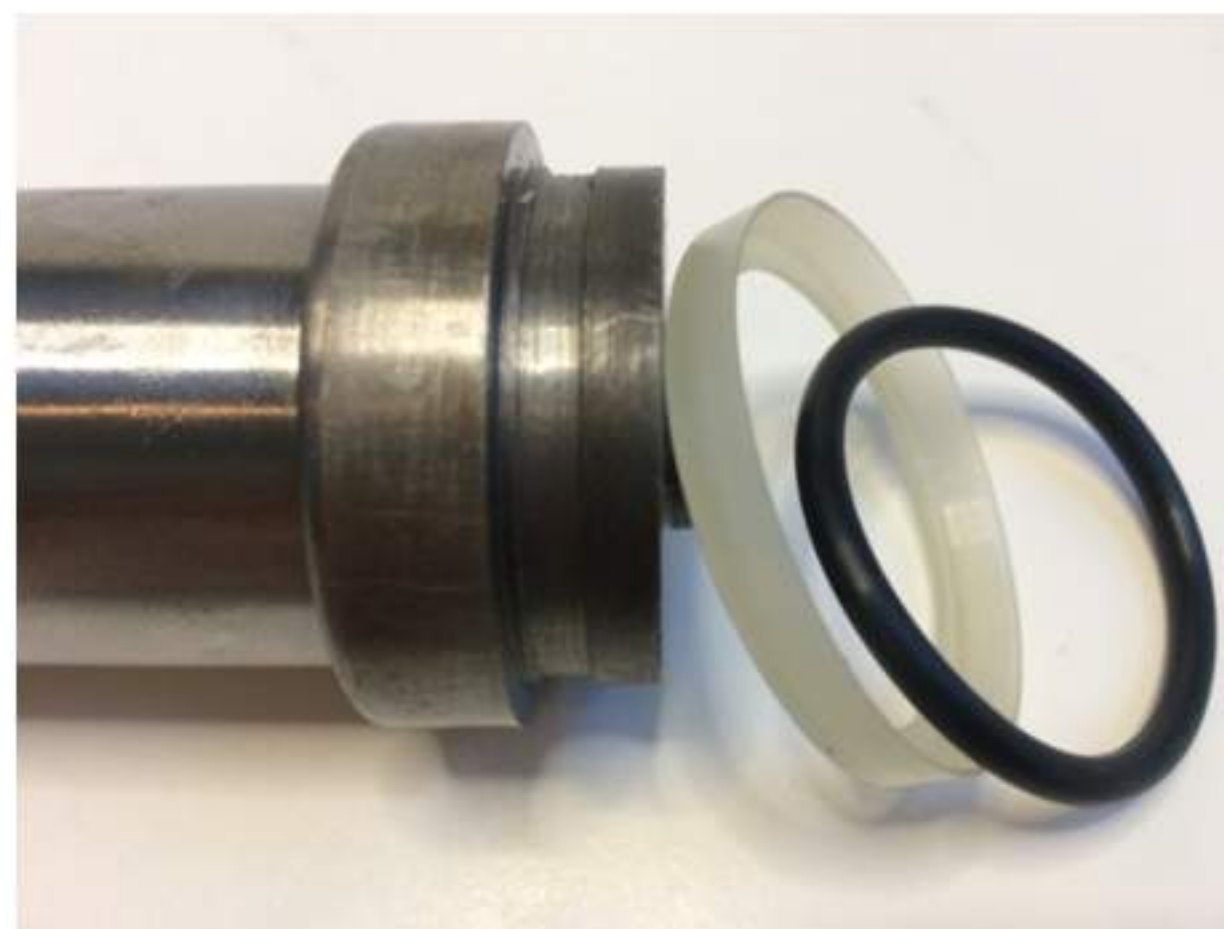




Picture of Ram with Ridge

### Retainer with O-ring

Probably the worst seal that can possibly be used on today's jacks. These are prone to early failure. It is good to replace them with a U-cup. Many times, minor metal work is required.



### Leather Vees

Commonly found in Walker / Lincoln / Hein-Werner / Blackhawk jacks. These can be found on the pumps and also on main rams. The leather vees pictured below are from a variety of Walker / Lincoln / Hein-Werner pump pistons.



### Typical O-Ring

The majority of modern day jacks utilize the typical o-ring. This one is of Buna-N material which is fine for the majority of jacks. Viton material (more expensive) is another option. Viton works best on a cylinder that is going to be around a lot of heat or create a lot of heat by moving very fast.



## Back-up

Found on some O-ring applications. Its job is to keep the O-ring from distorting under pressure. You will find back-ups in many “gland” sealing applications on hydraulic cylinders and on some Japanese-based jacks on the pump piston. Most of the time, they will be on the backside of the pressure. This means on a pump piston the backup will be on top to prevent distortion on the down stroke where it is actually moving oil form the galley to the cylinder. Sometimes you will find backups on both sides of the O-ring. Back-ups can be re-used unless they are damaged.



Back-ups come in many different styles and materials. All of these do the exact same thing.

## O-Ring with back-up

One side of the backup is generally flat. The other side is concave to accept the appropriate sized O-ring.



O-ring on top of backup

### **What type of fluid do I need? Where do I get it?**

Hydraulic jack fluid can be found at most Auto Parts stores. Bulk oil grade ISO32. Most fluids have important additive to prevent rust/foaming, etc. If you live in Antarctica or have an unheated garage, lighter weight fluid will work well for you. Use Jack fluid and buy in bulk to save money. ATF oil is okay to use, too. (We do not recommend ATF)

### **Why does the handle on my floor jack steadily rise when under load?**

Handle feedback is a sign of valve problems. Generally, the upper check ball is not seating properly. This causes high pressure oil to feedback into the valve. Since the path to the reservoir is blocked by the lower ball/seat, it transfers back into the pump piston which is connected to the handle.

### **Ball Seats? What is this? How do I fix it?**

If you are having handle feedback, inspect your seats. You will need to drain the oil or at minimum sway the oil away from the valves. Then you must remove the balls/weights/springs, etc. and look for any particles that would prevent the ball from seating. It is not always a bad seat. Sometimes part of a (deteriorating) seal will make its way through the system and find itself in between the ball and seat.

### **Procedure for re-seating the ball seat**

#### **\*\*THIS STEP IS FOR THE PROFESSIONAL ONLY\*\***

Insert the proper size ball into the valve. Find a punch approximately the size of the ball and “lightly” tap the punch, remove. Visibly inspect. Try the jack. Repeat as needed. It is possible to over-seat. If there is substantial damage or someone has put the wrong components in the jack and damaged the seat, you need to proceed to the next step.



## Valve lapping compound

Buy the correct tool! If not, you want to make your own tool by using your steady hands and good eye coordination.



Ball gauges, normally used as inspection tools may also be used with lapping compound to restore the seat.

Get a water base lapping compound as the grease/oil based one is sticky and difficult to remove. Using the greasy compound inside the hole where the balls go is difficult to clean. You might have to take apart the pump to flush the compound if it gets deep into the oil galleries.

## **Piston, Rod Seal - what are you talking about?**

### Piston seal

A piston seal that is located on the end of the pump/ram piston, when the pressure hits that seal it pushes the ram outward. Below is a picture of the ram from a Napa jack:



This specific seal is one of the cheaper retainer/o-ring and can be a U-cup, leather piston seal or vees.

Rod seals



Rod seals are in many hydraulic applications. Above you will see the sealing location and how the rod seal works. They are recessed into a groove and seal the outer portion of a rod. Rod seals can be made from many different materials including poly.

Buna/fabric/leather

Below are a few of vees that fit a 10-ton Hein-Werner. These are injected with many different materials.



These operate similar to a piston seal. When the pressure hits the V or U shaped channel, it expands to allow for a good seal.

