

# Log Splitter Parts Kit Assembly Guide

This short guide covers the basics for mounting and installing replacement parts for a log splitter. Below we describe the order and orientation that we have found best with our years of experience building log splitters. That said, there is more than one way to do these procedures. You may choose to modify these steps or to complete them in a different order.

This guide does not include specifics about hoses and fittings: different brands use different hardware and fittings.

## Tools needed:

- A set of SAE wrenches or adjustable wrenches
- A set of allen wrenches a.k.a. hex keys
- Socket set with a ratcheting handle and extension bar
- Pipe dope (preferred) or Teflon thread seal tape

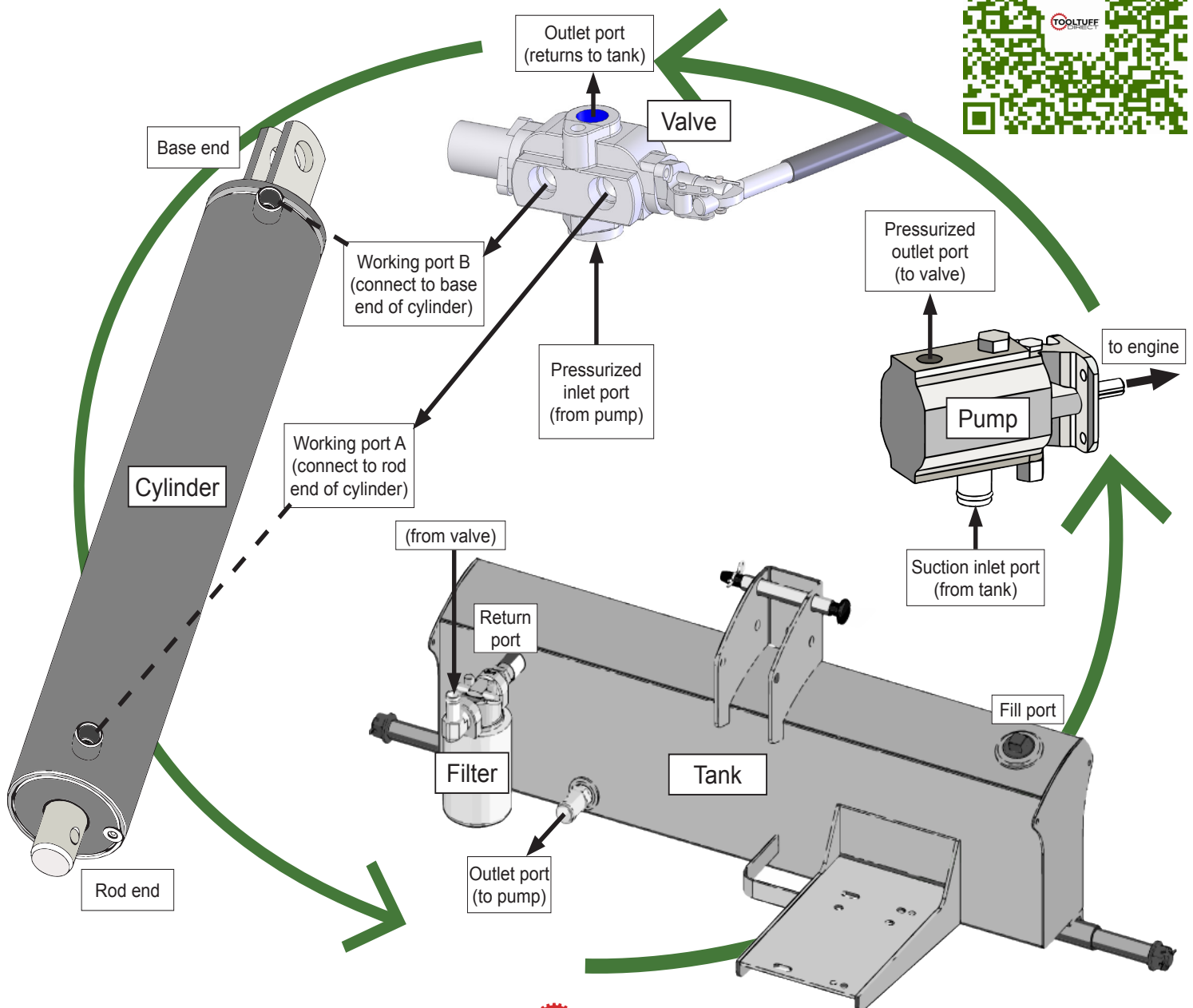
## Parts list:

- Hydraulic pump
- Pump mount
- Valve (3-position 4-way detent valve)
- Lovejoy coupler assembly
- Assorted hoses & NPT fittings
- Assorted hardware: nuts, washers, bolts,

For additional support, check out our online product-support videos:

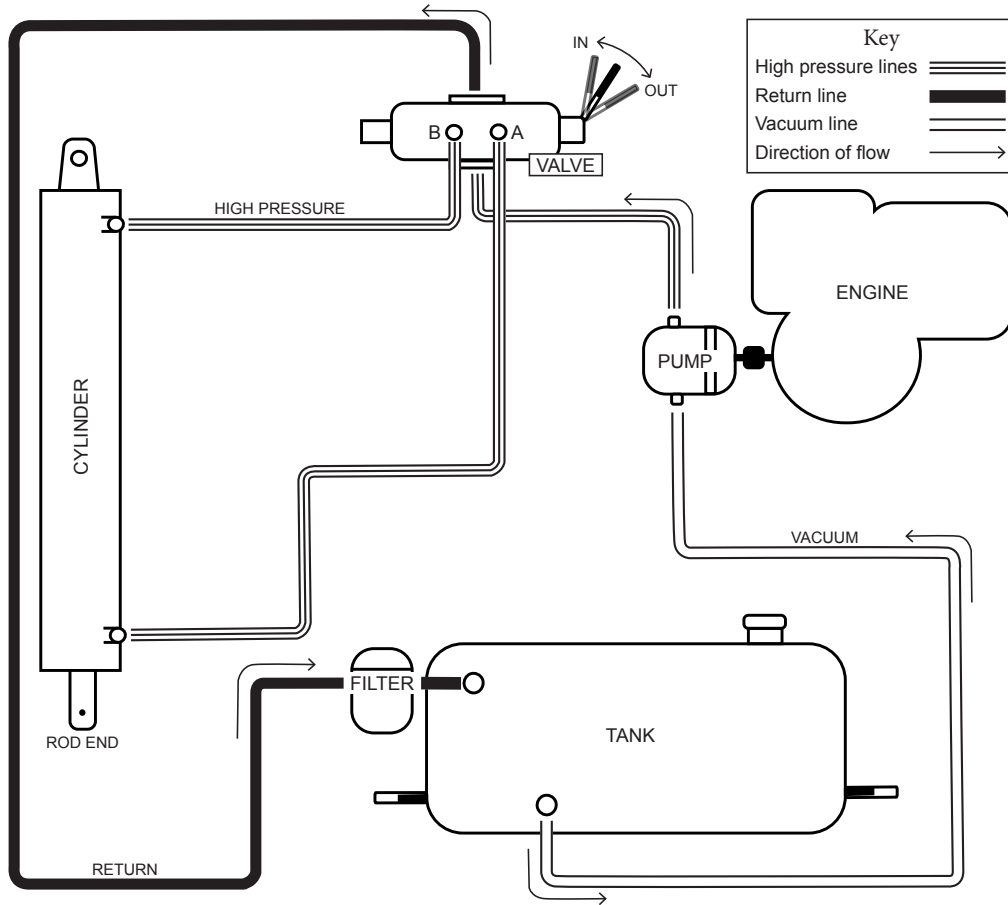


## System Overview



# Hydraulic Log Splitter Overview

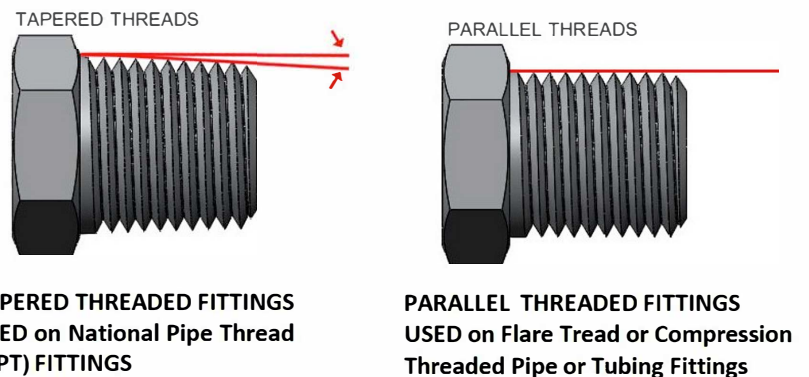
A hydraulic log splitter works when an engine mounted to a hydraulic pump powers an actuator (cylinder) to split wood by means of a valve. In the most common set-up, a pump pulls hydraulic fluid from a reservoir and pushes the pressurized fluid out to a 3-position 4-way detent valve. The valve has 3 settings [a.k.a. positions]: forward, back, and neutral, to control the action of the cylinder. At the end of each cycle the detent pressure-release mechanism kicks the valve back into neutral. In that setting, the valve allows the fluid from the pump to flow through it and directly back to the reservoir. The fluid passes through an oil filter and then flows back into the reservoir, completing the circuit. We recommend an AW32 or AW46 hydraulic oil for our splitters.



## About NPT fittings

Our log splitters use NPT fittings. NPT fittings have a tapered thread, and they require thread sealant tape or pipe dope to create a leak-free connection. NPS fittings, which have the same thread angle and pitch, have a straight (or parallel) shaft, and rely on an O-ring to complete the seal. **DO NOT** attempt to use NPS, SAE, or any other type of fitting when assembling your log splitter: They may appear to fit together well, but leaks and weak points may emerge that could lead to extremely dangerous conditions when the system is pressurized.

### TAPERED NPT THREADS vs PARALLEL IPS/NPS THREADS



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# Mounting a 4-way detent valve onto a hydraulic cylinder

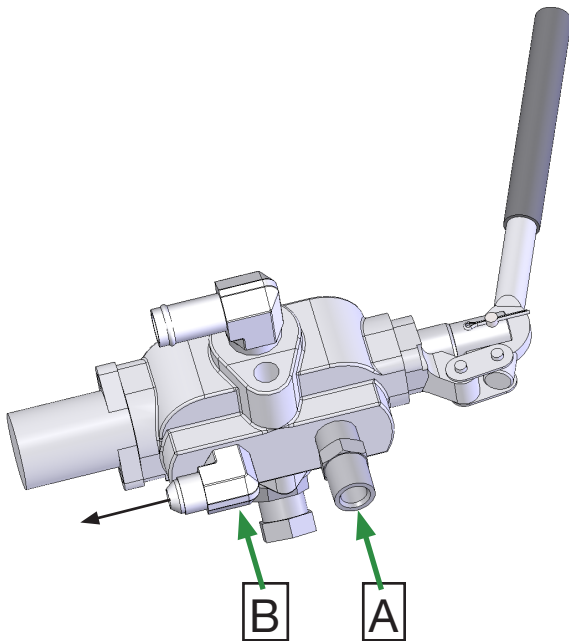
Layout all the parts of the valve assembly kit: the valve, fittings, cylinder, hoses, and flared high-pressure (J.I.C.) tube. Check that you have the correct fittings for your kit—these vary depending on the hardware. Gather together the tools for assembly, including pipe dope or thread-seal tape to seal all fittings.

## NOTICE

- You may need to disassemble the cylinder from the log-splitter beam to install the valve.
- When tightening NPT fittings with thread seal tape, tighten until snug and do not back out the fitting once tightened as this may cause a crease in the seal tape. If you need to back out and remount the fitting, it's best to redo the thread-seal tape.

### 1. Mount the fittings onto the valve.

- Mount the straight fitting onto working port A. Apply thread sealant and tighten the fitting firmly onto the valve.
- Mount the elbow fitting onto working port B. The flared end should face towards the cap, away from the control lever when tightened.



## NOTICE

- The orientation of the valve is critically important: the A and B working ports of the valve must be connected to the correct sides of the cylinder. (See System Overview diagram if you have doubts.)

### 2. Mount the valve onto the cylinder.

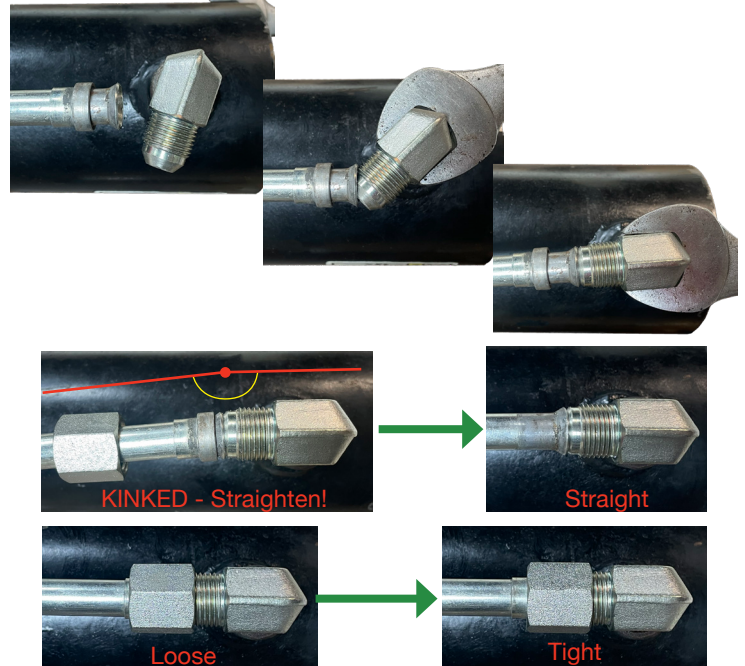
Apply thread sealant and to the straight fitting, line it up with the cylinder's rod-end port, then screw the valve onto the cylinder: Rotate the entire valve body until the fitting is securely tightened and the valve is parallel to the cylinder with the control lever towards the rod-end of the cylinder.

## NOTICE

- Below we describe installing a flared J.I.C. metal tube to connect the valve to the base port of the cylinder, but other configurations may use flexible hydraulic hoses.

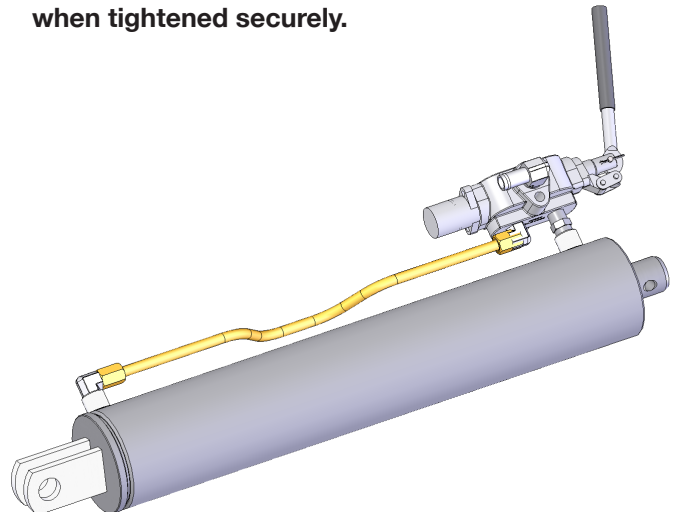
### 3. Connect working port B to the base of the cylinder.

- First, mount the NPT elbow fitting to the base of the cylinder. At this stage, don't fully tighten the fitting: leave about a quarter turn to fully seat the flared end.
- Next, mount one end of the flared tube to the fitting on the valve's working port B and tighten loosely. The tube is now ready to mount to the fitting at the base port of the cylinder.
- Line up the flared tube to the elbow fitting and give the final quarter turn to complete the mount. See sequence below. Straighten out the connection as needed. Once the tube is seated, tighten both ends of the tube firmly.



## NOTICE

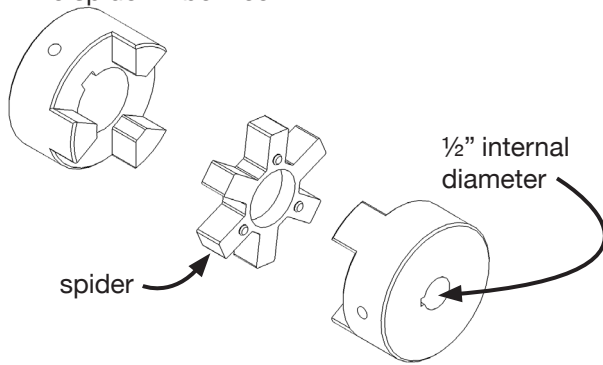
- The flared-tube-to-fitting (J.I.C.) connections do not require thread sealant: the flared fittings create a seal when tightened securely.



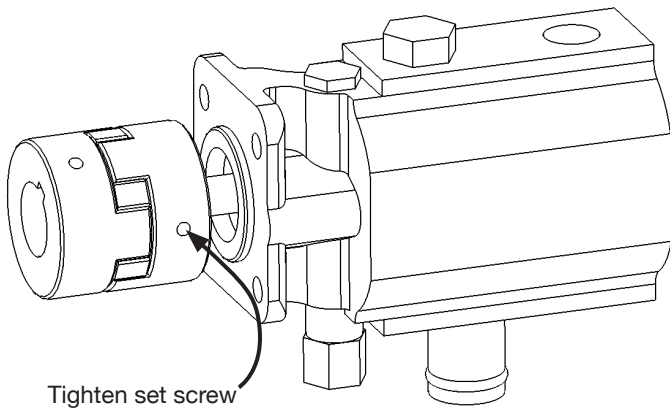
# Mounting a hydraulic pump onto an engine

Layout all the parts of the pump-mount kit: the pump, pump mount, and related hardware. Check that you have the right couplers, spider, nuts, bolts and washers. For best results use an adjustable wrench and a socket set with ratcheting handle (or impact driver) and extension bar for assembly.

1. Assemble the couplers with the spider in the middle, then mount the coupler assembly onto the pump.
  - a. The spider is bored (hollow) on one side. Mount the hollow side facing the pump, which is the  $\frac{1}{2}$ " ID (internal diameter) side of the lovejoy coupler. Fit the two pieces of the coupler together, with the spider in between.



- b. Once fitted together, mount the coupler onto the pump: The  $\frac{1}{2}$ " side mounts on the pump, the other side, which varies in size depending on your engine's power take off (PTO) shaft, mounts onto the engine.
- c. Set the drive key in place before mounting the coupler. Note the position of the key, and align it with the slot in the coupler. Once mounted, tighten the set screw (on the pump side) to secure the coupler and key in place.

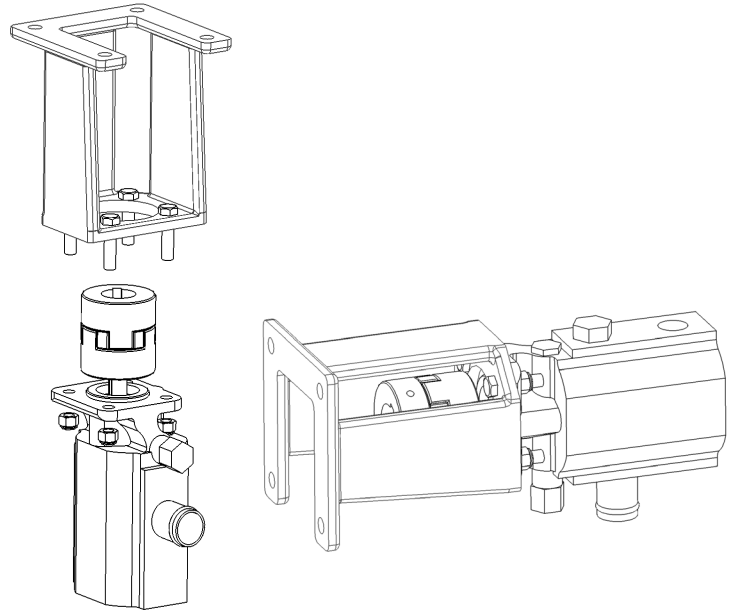


## NOTICE

- **Double check that the key is in place before tightening the set screw. Lost or missing keys are a primary cause of system malfunction: keys can easily fall out when mounting the coupler.**

2. Attach the pump mount to the pump.

Set the pump down with the drive shaft facing up. Orient the pump mount so that the open side (if applicable) faces the same way as pump's inlet port. (The inlet port has a fitting with a hose barb.) Set mounting bolts through the holes in the pump mount and pump. Secure with nylock nuts. Tighten all mounting hardware securely.



3. Mount the pump assembly onto the engine.

Orient the pump mount so that its open side (if applicable) and pump's inlet port are facing downward. Align the coupler to the engine's PTO, noting the position of the key, and fit the assembly onto the engine. Once seated, align the bolt holes on the pump mount and sockets on the engine, put the lock washers on the bolts and screw them into their sockets. Tighten firmly. Finally, tighten the set screw on the coupler.

