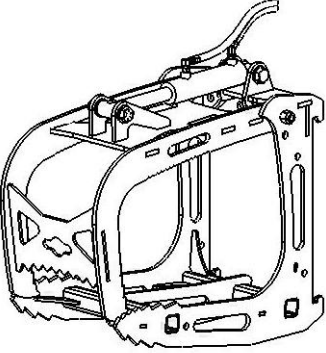
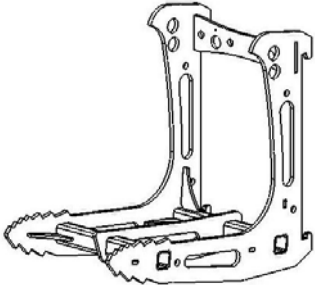


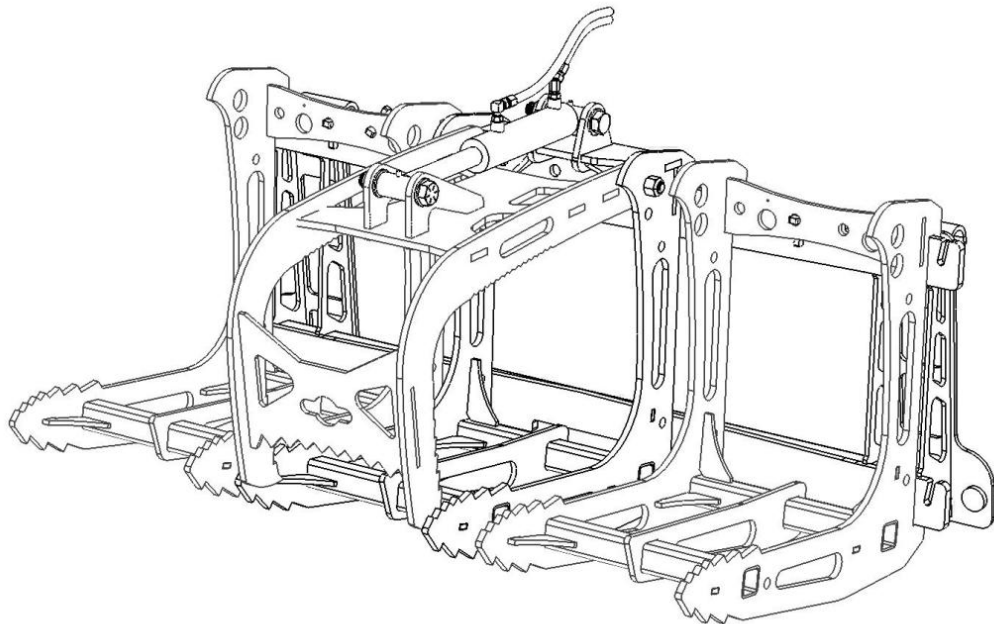


Artillian GP20 Modular Grapple System

A GENERAL PURPOSE FRONT-END-LOADER MOUNTED GRAPPLE & RAKE ATTACHMENT SYSTEM FOR ARTILLIAN PALLET FORK FRAMES

Grapple Module	Rake Module
 <p><u>Includes</u></p> <ul style="list-style-type: none"> -Grapple Assembly -(2) Lock Keys -Hydraulic Hose Assembly -Elastic Hose Restraint 	 <p><u>Includes</u></p> <ul style="list-style-type: none"> -Rake Assembly -(2) Lock Keys

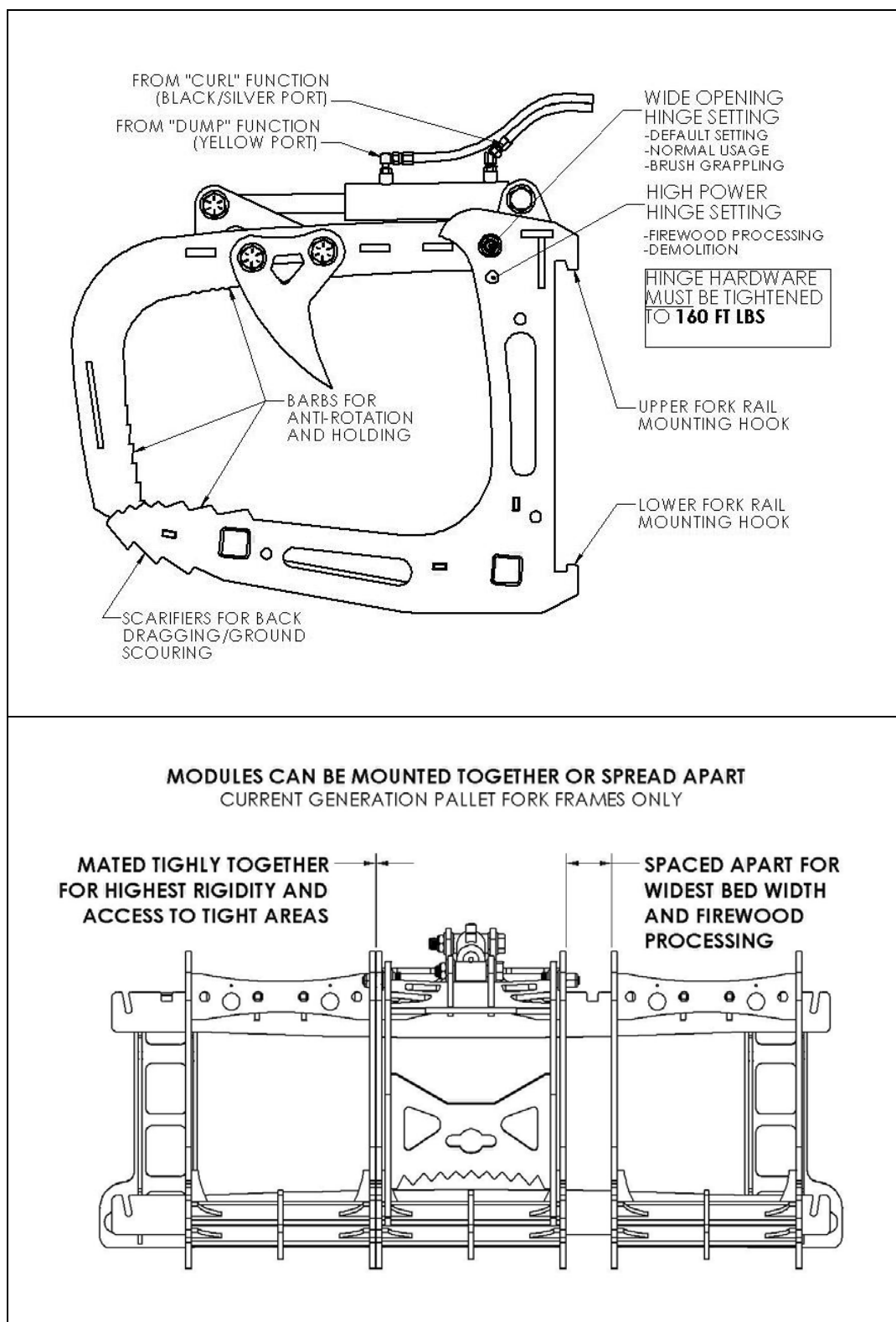
The Artillian Modular Grapple System for the Artillian Pallet Fork Frames offers a configurable platform, providing the ability to mix and match modules as appropriate for the end user.



This is just one of several configurations of the Artillian Modular Grapple System. In this case, one Grapple Module is in the center with an adjacent Rake Module on each side. Many variations are readily achievable and can be varied depending on the task at hand.

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Feature Highlights – Grapple Module (Rake Module similar, where applicable)



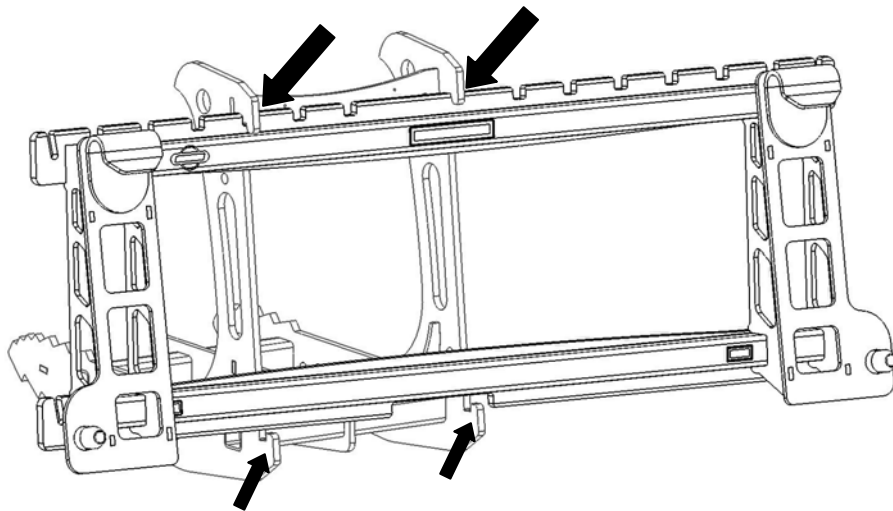
Installation – Mounting Modules onto the Pallet Fork Frame

The illustrations below assume the Pallet Fork Frame is installed on your tractor (not shown), and the fork tines have been removed from the fork frame.

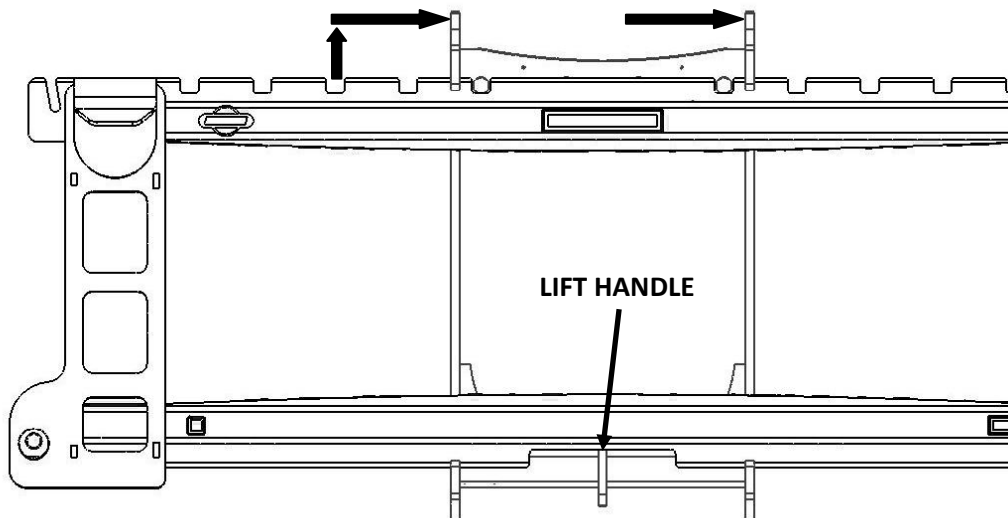
Modules can be installed either by lifting and installing each Module one at a time onto the frame or, you can use your tractor to pick-and-lift Modules from the ground. To do this, approach the Module with the pallet fork frame, carefully catching the upper hooks as shown below and lifting each Module up one at a time, then shift into place.

These instructions work the same for the Grapple Modules as well as the Rake Modules. Rake Modules shown.

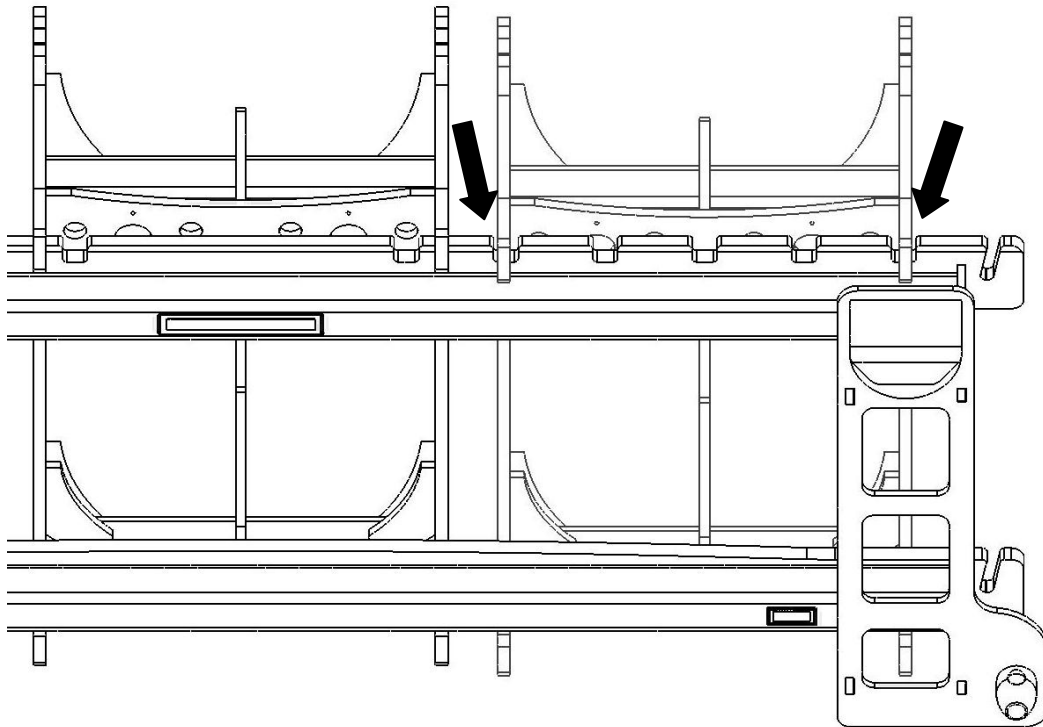
- 1. Hang Module by upper hooks on the Fork Rails. Hang one hook near the center of the fork rail and the other in one of the fork detents. Allow Module to rest flat against Pallet Fork Frame so that both lower hooks pass under the bottom rail.**



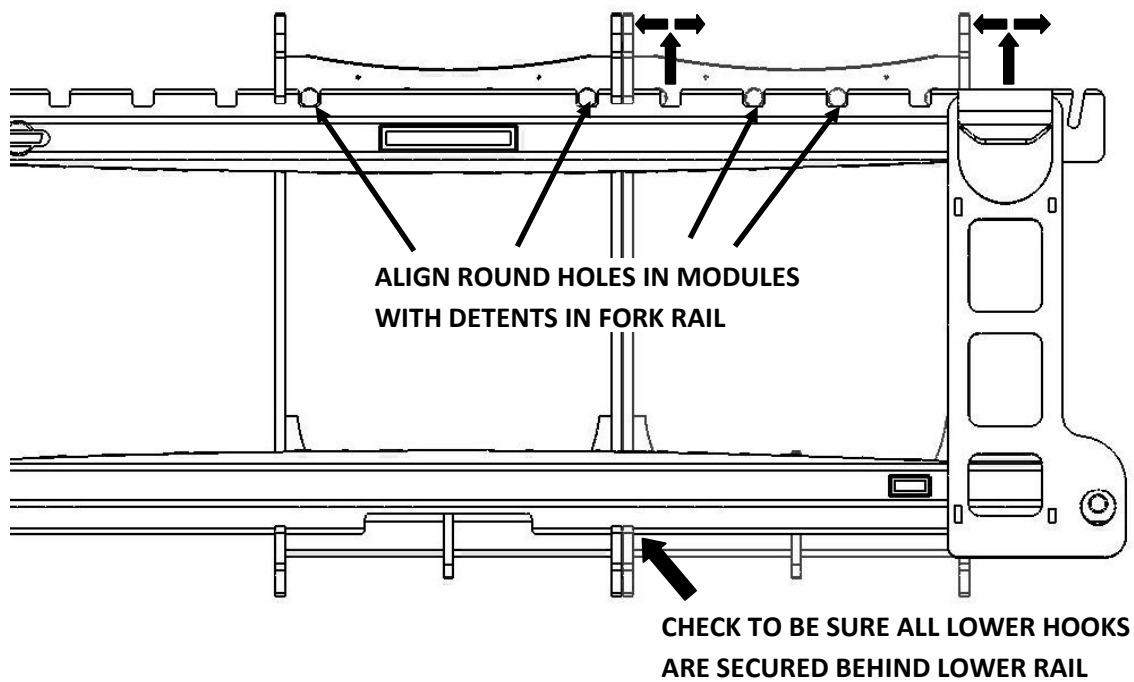
- 2. Lift Module straight up by its Lift Handle and slide Module along fork rail into place. The CENTER Module should be installed FIRST.**



3. To install the outer Modules, hang the upper hooks of the module in the fork rail detents as shown below. The lower hooks should pass under the lower rail.



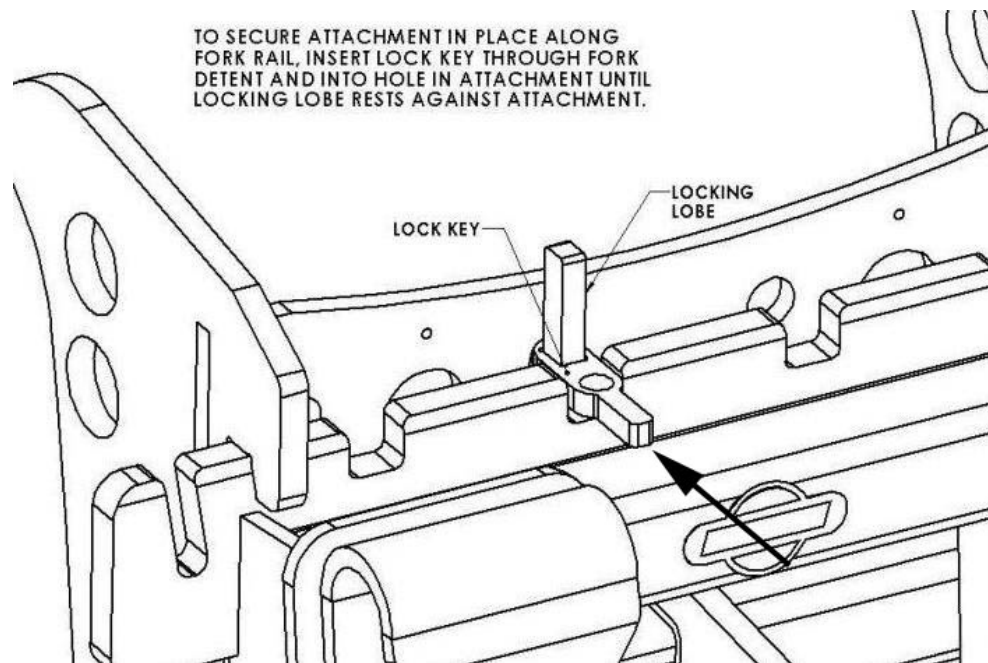
4. Using the Lift Handle, lift Module straight up and slide left or right, as desired.



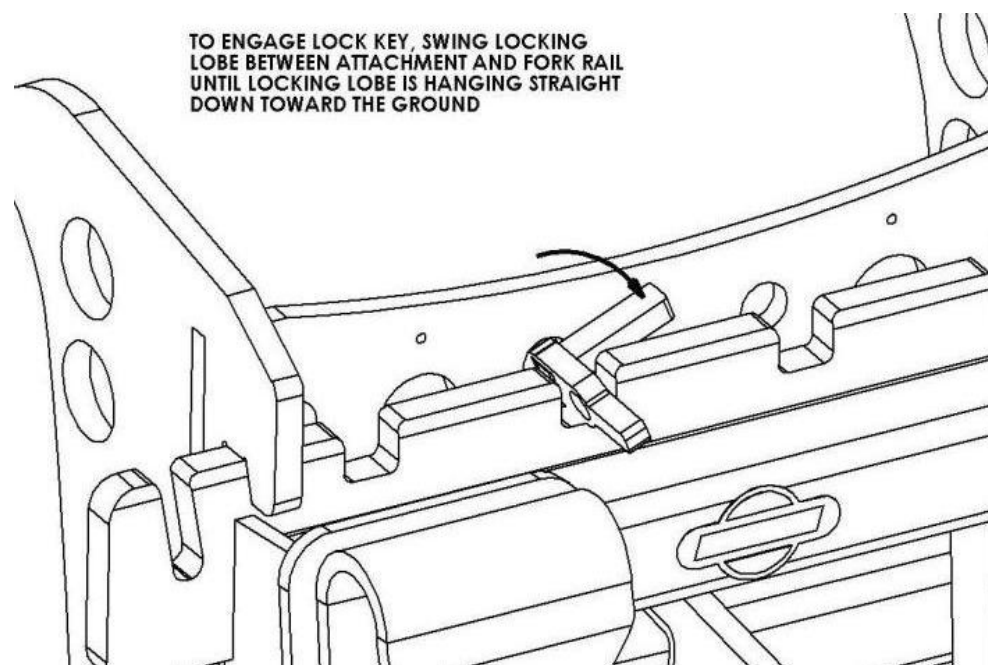
Installation – Securing Modules in place using the Lock Keys

Modules must be pinned to the Pallet Fork Frame to keep them in place.

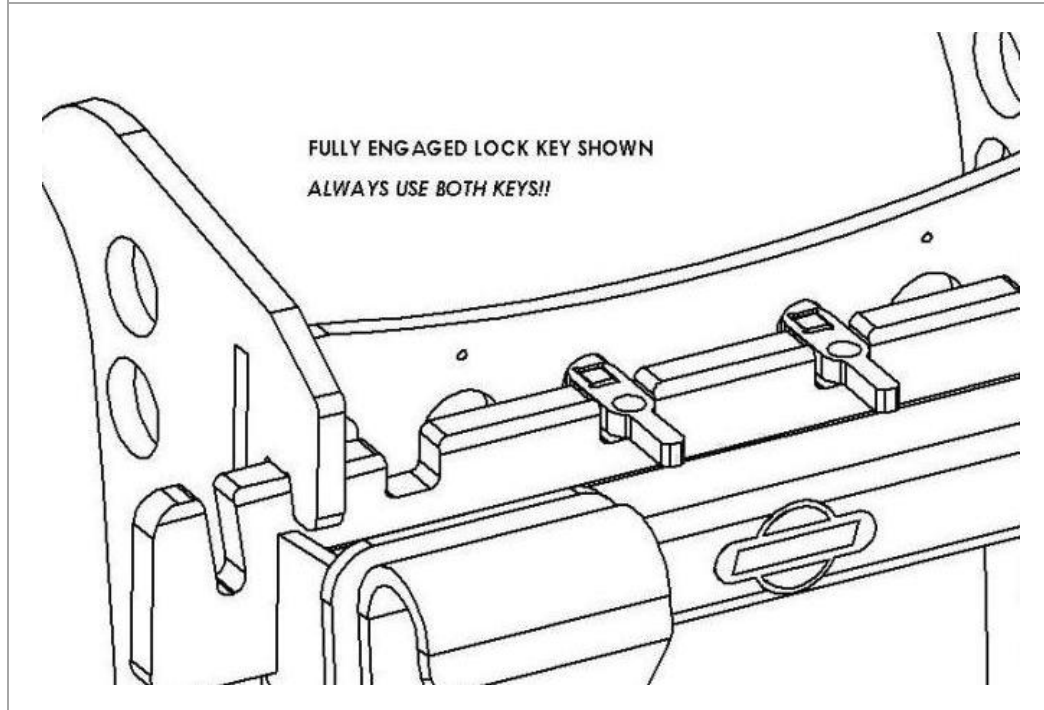
- 1. Locate Modules along the fork rail so the round holes in the Module align with fork rail detents (See *Lock Key Usage*). Insert Lock Key as shown**



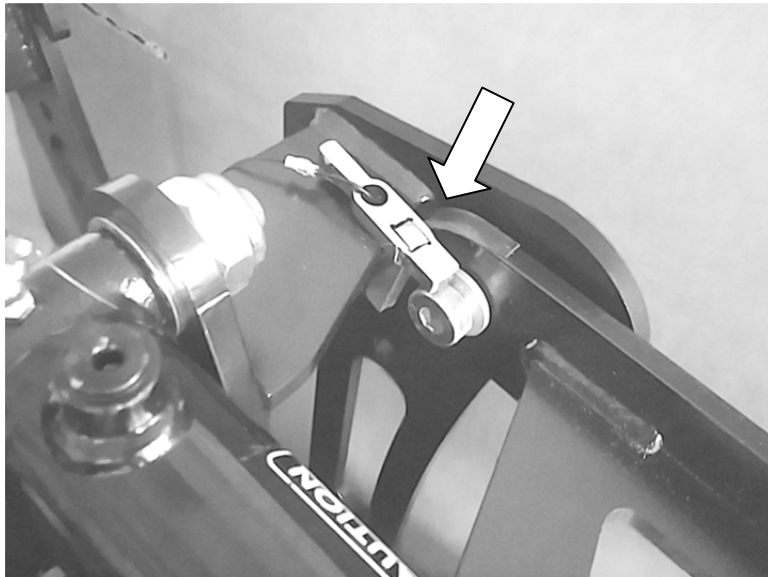
- 2. Rotate Key 180 degrees**



3. Always use both keys!



Lock Key Storage



Grapple Module Lock Keys can be stored as shown.

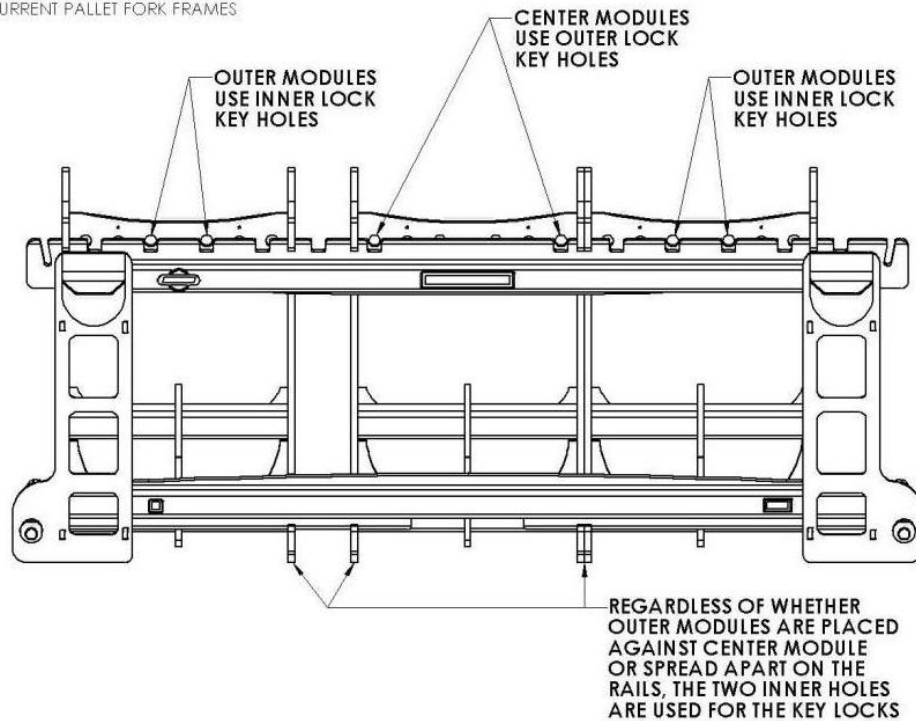
Rake Module Lock Keys can be stored just by hanging them over the front of the mounting plate.

When Lock Keys aren't needed (such as a center Module on an Early Generation Pallet Fork Frame), fasten the Lock Key in place on the mounting plate using a cable tie.

Lock Key Usage – Early vs Current Pallet Fork Frames

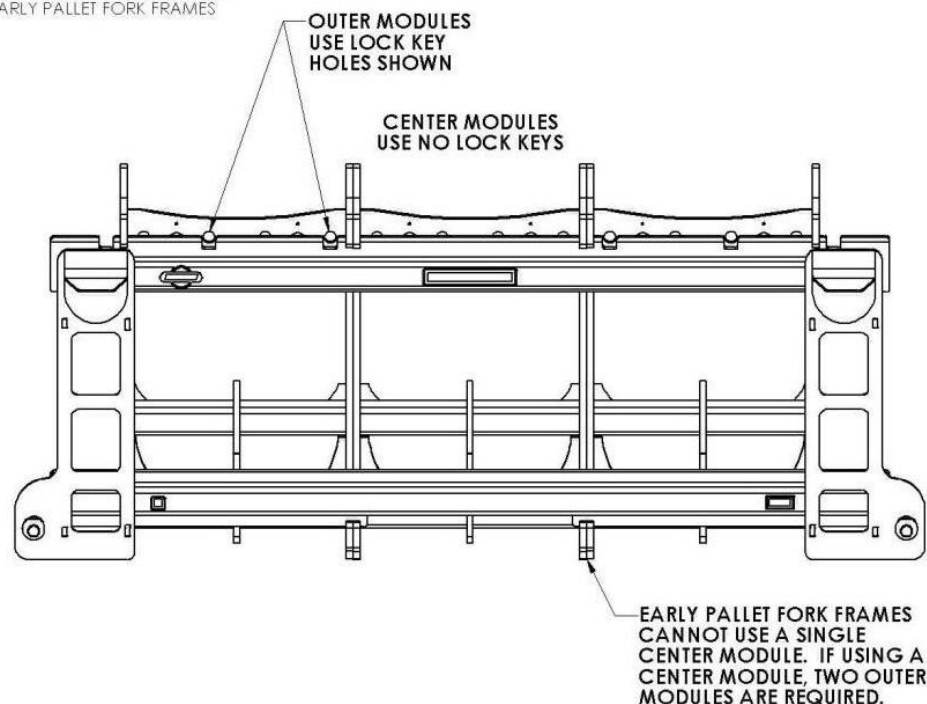
Current Generation Pallet Fork Frames have several fork rail detents, as shown

LOCK KEY PLACEMENT CURRENT PALLET FORK FRAMES

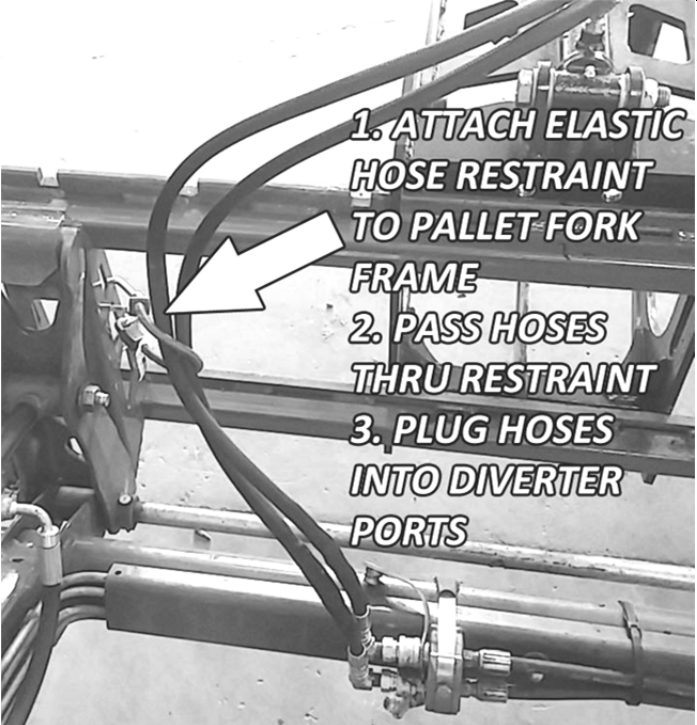


Early Generation Pallet Fork Frames have few fork rail detents, as shown

LOCK KEY PLACEMENT EARLY PALLET FORK FRAMES

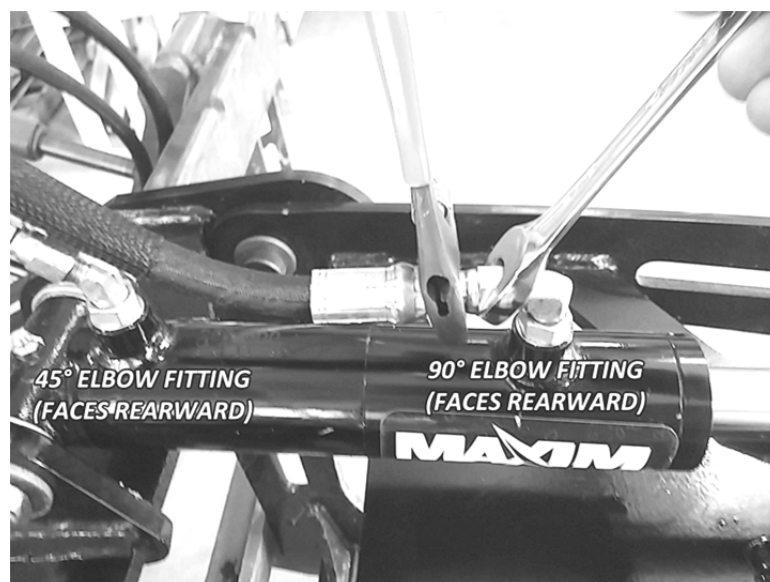


Hydraulic Hoses – Installation / First Use

	<p>Note:</p> <p>If using <u>two Grapple Modules</u>, attach one elastic hose restraint at one end of the Pallet Fork Frame and the other elastic hose restraint at the other end of the Pallet Fork Frame. The hoses from the left side Grapple should pass through the right side elastic hose restraint, and vice versa.</p> <p>If using <u>three Grapple Modules</u>, attach the third elastic hose restraint to the side of the Pallet Fork Frame <u>farthest away</u> from the diverter ports.</p> <p>Each set of cylinder hoses should have their own elastic hose restraint.</p>
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4a. If your Grapple was received with the hoses attached to the cylinder, momentarily loosen the joints as shown below to allow the hoses to find their natural orientation. Retighten securely. Repeat for both hoses.

4b. If your Grapple was received with the hoses separated from the cylinder, remove the plugs from the cylinder ports. Install the elbow fittings in the ports as shown, then attach the hoses to the elbow fittings as shown below, maintaining the orientation of the hoses as they are tightened.



Assembly & Maintenance Tools Required (Grapple Module only)

- Hex wrenches, Inch & Metric
- Open end wrenches and/or adjustable wrenches
- Socket set, ½" drive
- Torque wrench capable of applying 160 ft lbs
- Grease gun

Maintenance

Hydraulic Hoses

After a short amount of use of the Grapple Module, check all hydraulic fittings for leaks. If necessary, tighten slightly further. Check hoses occasionally for signs of abrasion, binding, or other damage.

Hinge Hardware

The hinge hardware requires no maintenance aside from being maintained at 160 lb ft of torque. This is necessary for the life of the special composite bearing as well as the hardware itself. Verify torque remains at 160 ft lbs after the first hour or two of use.

Cylinder Mounting Hardware

The cylinder mounting hardware requires regular greasing of the fore and aft mounting points using a grease gun. At original assembly, these points are greased with long life synthetic grease. We recommend keeping these joints lubricated at approximately every one to four hours of use, depending on harshness of environment.

The cylinder mounting hardware should only be tightened until it remains securely in place. It should not bear upon the cylinder crosstube mounts. The front cylinder mount is assembled with a removable threadlocking adhesive for extra security. The cylinder hardware should not need to be changed unless it becomes necessary to change the hydraulic cylinder.

Important Notes

1. Once installation is complete, start your tractor and carefully actuate the Grapple and your loader through all ranges of movement. Check for leaks and tighten any loose connections. Be sure the hoses from the hydraulic cylinder do not bind, kink or become stretched at any point. If this situation appears, adjust hose routing as needed or contact Artillian.
2. **Do not use the upper grapple jaw for digging or pushing/pulling foreign objects outside of the grapple bed.** Hydraulic cylinder damage may occur.
3. Hydraulic performance (clamping speed and power) depends on the output of your tractor. A tractor with higher flow rates and system pressure will yield higher grapple performance than a tractor with lower flow rates and system pressure.
4. Maximum hydraulic pressure is 3000 psi.
5. When disconnecting your grapple/pallet fork frame from your loader, remember to disconnect the hydraulic lines!!

Thank you for choosing Artillian!