



Europa Trigear Tow Bar Installation Instructions

Pulling on your prop is not good for it or the engine front seals. The Europa tri-gear has always needed a good fitting, useable tow bar. After 3 attempts we finally perfected it. However costs of manufacturing have caused us to change the tow bar in 2016. See the supplement if you have an Allen head bolt axle. Using a machined Allen head means a larger diameter for the tow bar so some smooth machined parts are still required, but install is just as easy. See the Supplement at the end.

What is provided in the kit:

Prior to 2016 we provide a high strength machined grade 8 bolt as the axle which is threaded on both ends. Why threaded on both ends? This allows the ends of the stud to do double duty. They can be used with the studs to hook to the tow bar and also if left untrimmed, they may be used to screw on eye nuts to hold the aircraft nose gear down on the trailer. Also included are two thin jamb nuts and lock washers to secure the axle and wheel pant V supports properly. The bolt is machined to a very tight fit so a bit of de-burring of the nose gear fork 12 mm hole may be necessary with fine sand paper or file.

Installation:

Installation begins with the right tools. A flat floor, wheel chocks, and a suitable engine hoist, tail weight pull down rig or jacks to raise the nose of the aircraft are necessary. Work smart, support the aircraft and ensure you and the aircraft are safe with the nose wheel off the ground a few inches. Raise the nose of the aircraft and support it properly so it won't slip and fall down. (Technique: Remove the stabilators and use four concrete blocks or similar weights with ropes looped through them, then over the stab tube at the root and tighten the rope until the nose elevates.)

1. If a wheel pant is installed, remove the front cover.
2. Carefully mark the inside of the wheel pant for the axel bolt center.
3. Remove the wheel pant and open up the axle access hole to about 3/8 inch and attach the wheel pant V braces.
4. When all is test fitted on the nose gear, the pant and its brackets, and the hole in the wheel pant is exactly centered, disassemble, and open the hole to at least 3/4 inch to start.
5. See how far the wheel pant will spread to fit over the axel bolt. The pant should spread at least two inches. It is easier to cut the axel now and test fit than later. We leave the axel bolt threaded section as long as possible.
6. Remember to install the 7/32 inch spacer painted black up against the head when inserting the axle bolt. (Another spacer is provided if you wish to have a longer spacer.) The bolt has been machined to just fit the fork so the load bearing forces are on the smooth shank, and not resting on threads.

7. With the aircraft supported with the nose elevated to at least allow an inch or so under the nose tire, remove the original nose axle bolt. The springs and spacers on the nose wheel axle should allow the wheel and axle assembly to hold in place, but to be sure, use the new bolt provided as a punch to remove the old bolt and support the axle/wheel. Don't forget to keep your V brackets for the wheel pant in place. Use a light padded mallet to tap on the bolt to prevent damage.

8. Reattach the wheel pant brackets at the angle they were originally on the new axle bolt and check the new nut and lock washer fit your wheel pant support V brackets properly and give you acceptable clearance.

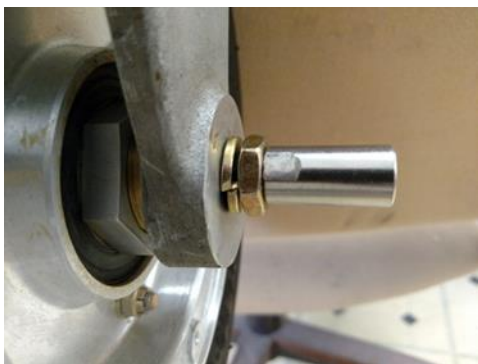
9. Test fit the wheel pant. If the wheel pant will not stretch over the threaded end of the axle bolt it can be measured and cut off just on just the threaded end. Use a cut off wheel and cooling water to grind or cut off the threaded end until you get a good fit. De-bur as required.

Typically, the head of the axle sticks out about an inch from the fork, and the threaded end with the coupler is about 1.5 inches long if left uncut. Be sure to use the jamb nut and lock washer, verses the Nylock supplied by Europa and the threaded coupler on the end. The spacer has two flats ground on one end to be used like a second jamb nut eliminating lock washer or a lock nut and provide a smooth end. Of course the threaded coupling is a bit long, so again mark it appropriately and trim to fit properly for your wheel pant. It is hardened stainless coupler, so feel free to remove it and secure it in your vice to cut and grind on as it will take a bit of time, even with an air cutoff wheel. There are no weight and balance changes necessary as the weight is unchanged.

10. The tow bar is perfectly sized for quick attachment and compact stowage. The ends of the tow bar have no inserts in the tubing to protect the threads from damage as the threaded spacer protects the threads.

Do not be concerned that the tow bar does not fit the axle before you cut the end of the axle bolt. No simple spreading type handle will close except at a specific length unless it is very sloppy or loose. The tow bar was prebent to just fit tightly after the bolt is cut to the width of your wheel pant.

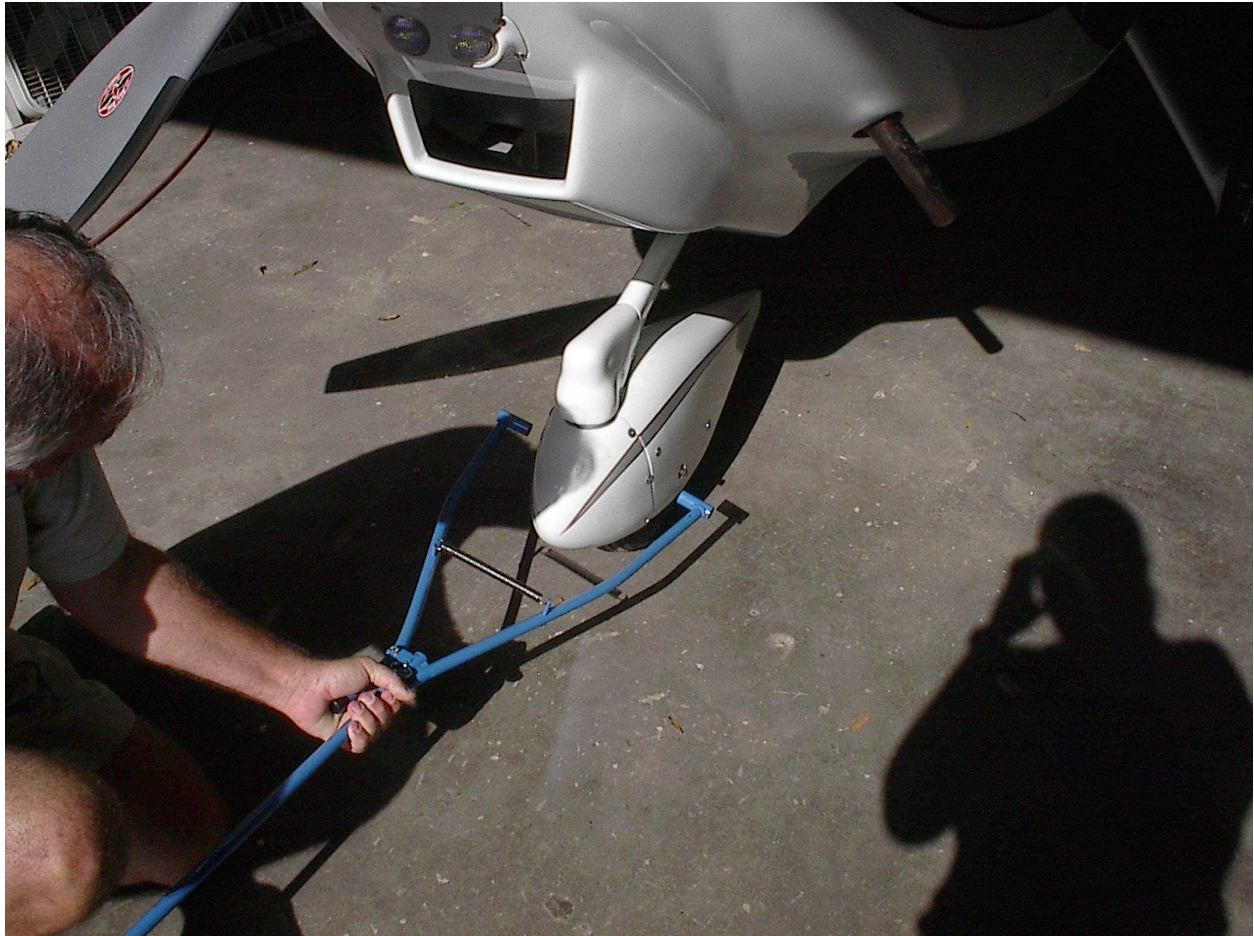
Your tow bar has been constructed of 4130 chrome moly tube and will give years of service. The spring action and jaws are optimized to clear the front wheel pant, and the handle length allows you to pull or push without interference with the spinner. We have found this tool indispensable in the shop and hangar.



Note the flat spots on the threaded spacer to allow tightening to "double nut the axle bolt. This may allow you to not use the lock washer, but it really is just to protect the threaded end. Cut the threaded spacer to suit your pant.



Note the short spacer to move the head of the axle bolt out to the edge of the wheel pant for easy installation of the tow bar and not increase drag by extending out beyond the pant surface.



Note that the handle spreads well wide of the pant to prevent scratching. Also note the axle ends are about ½ inch wide of the pant on this aircraft, but can be cut off flush by grinding on the spacers to suite your esthetic needs.

Note:

Your bar may have a PVC insert in the ends which allows for a very tight fit. If the angle of the end attachments is correct, it should slip on to the studs quite well after trimming. If after trimming it does not, you may rebend the end slightly without damage or ream the insides of the PVC for a slip fit.

Warning:

One client had a Fixed Base Operator use a Cirrus tow tug bar for towing his Europa with my axle bolt. That is unconfirmed from a secondhand owner in the US and the wheel pant was damaged. Use caution with tow tug equipment.

I was required to tow my Europa at an airshow once and we did use a rope attached to the T handle attached to the tug to assist me in pulling the aircraft the nearly 1000 meters to my parking spot. It did hold up, but it is not recommended.