



# “Stinger”

Tail Wheel System

ACME AERO Suspensions, LLC

3524 Airport Road

Maiden, NC 28650

PH: 704-496-9022

[www.acmeaerofab.com](http://www.acmeaerofab.com)

**Installation, Operation and Maintenance Instructions  
For ACME Aero  
Stinger Tail Wheel Suspension System**

## **Table of Contents**

Aircraft Specific Data	3
Installation Instructions	4
Adjustment	9
Operation and Maintenance	11
Warranty	12
Assembly Parts List	14

# Aircraft Specific Data

Serial Number: \_\_\_\_\_

Tail Weight: \_\_\_\_\_

Nitrogen Pressure: \_\_\_\_\_

N Number: \_\_\_\_\_

Build Date: \_\_\_\_\_

Special Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# **Installation Instructions**

A video of how to install Acme Aero Stinger Tail Wheel Suspension System is on our YouTube Channel [@AcmeAero](#). Click on the YouTube link via our website at [www.acmeaerofab.com](http://www.acmeaerofab.com).

## **Step 1**

### **Inspect Stinger Tail Wheel Suspension System for all parts.**

The stinger will come assembled loose with hardware in proper locations.

Take note of where bolts and washer were removed from to make the assembly process easier and correct.

- Mount
- A-arm
- Shock
- Steel Clevis (will come already tightened and does NOT need to be removed for installation)
- Hardened square washer

## **Step 2**

### **Raise the rear of the aircraft to a level height.**

Support the tail in a way that will relieve the tail wheel of any weight.

## **Step 3**

### **Ensure aircraft wings are level.**

Use a level on header rack inside the cockpit to level the aircraft side to side. This step will help with proper camber adjustment later in the install process.

## **Step 4**

### **Remove existing tailwheel.**

Remove the one internal bolt (forward) and the two smaller external bolts (aft) as well as the bolt(s) that attaches the wheel to the leaf spring.

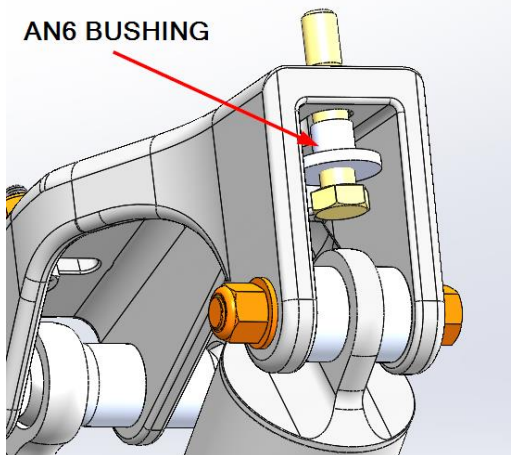
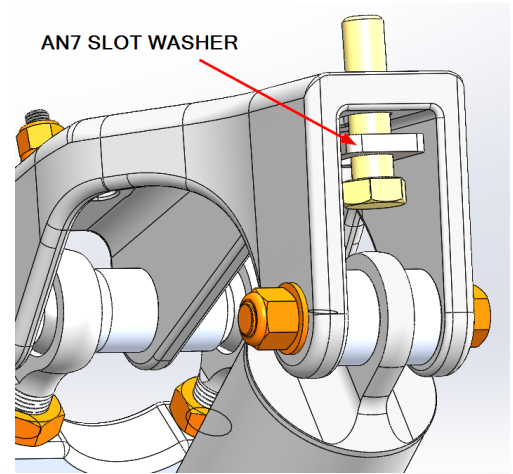
## **Step 5**

### **Install Stinger Mount to the airframe.**

A rectangular hardened washer has been zip tied to the front of the Stinger Mount in its proper position prior to delivery.

**NOTE: This mount was designed for -7 Bolt. If you must run -6 CONTACT US for the appropriate bushing. (Do NOT run -6 in -7)**

- a. Run AN7 or AN6 bolt (\*not provided) used to attach the front of the mount to the fuselage up through rectangular hardened washer with the nyloc nut inside the aircraft. Ensure proper thread engagement.
- b. Run the (2) AN4 bolts up through the aft slots to completely attach the Stinger Mount.
- c. Torque the AN7 bolt to 40 foot lbs.
- d. Torque the AN4 bolts to 12 foot lbs.



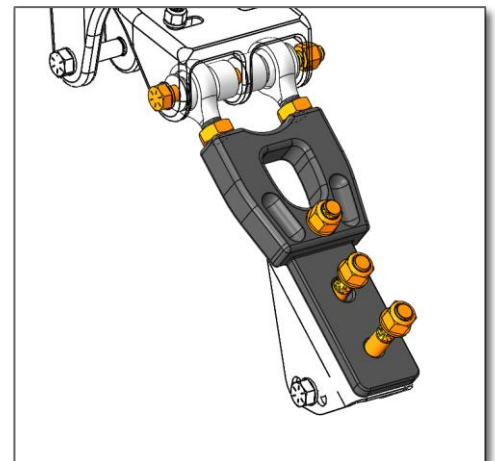
\*AN7 hardware is not provided because of different airframe mounts and styles. Use correct bolt length, ensuring nut doesn't bottom out on the shank before mount is tight.

\*\*AN7 is preferred to attach front of mount to fuselage

## **Step 6**

### **Mount A-arm assembly to the Stinger Mount**

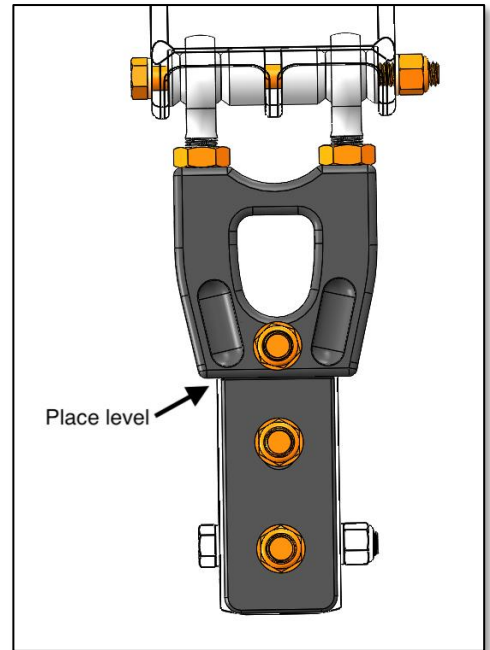
- a. Use (2) thin and (2) thick bushings and AN6-43 hardware in the configuration the Stinger was received in to attach the A-arm to the Mount.
- b. Once tightened ensure the A-arm moves pivots freely.



## **Step 7**

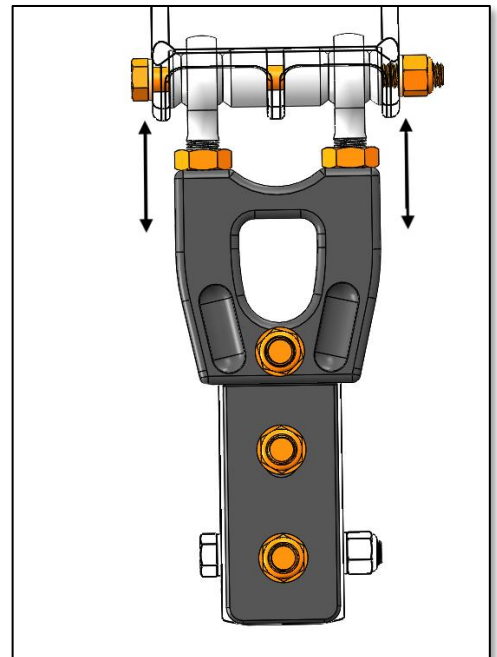
### **Check for levelness**

- a. Allow A-Arm to hang perpendicular to the ground
- b. Place a level where the tailwheel attaches to the Stinger to ensure levelness. If needed, lengthen one heim and/or shorten the other to achieve levelness. (1/2 a round will most likely be all it needs)
- c. Once level tighten jam nuts on the heims to the A-arm.



### **Camber Adjustment**

- a. With camber adjustment, a little does a lot. A half round out on one side is most likely all that you will need.
- b. If it is not quite level after a half round adjustment, on the opposing heim turn a half round in.
- c. If it is still out of level repeat the process until level.
- d. Once level tighten jam nuts to the heims on the A-arm.

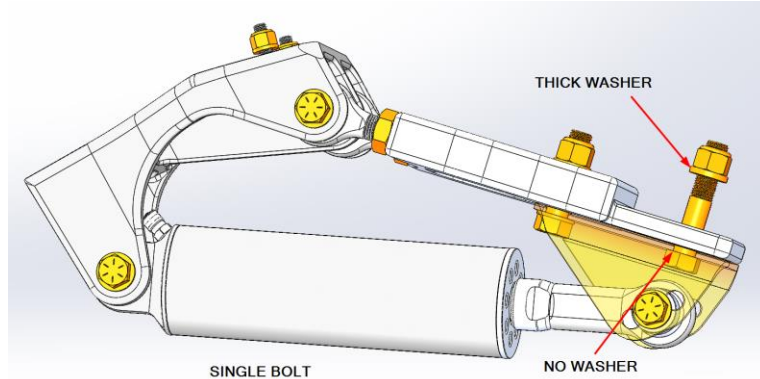
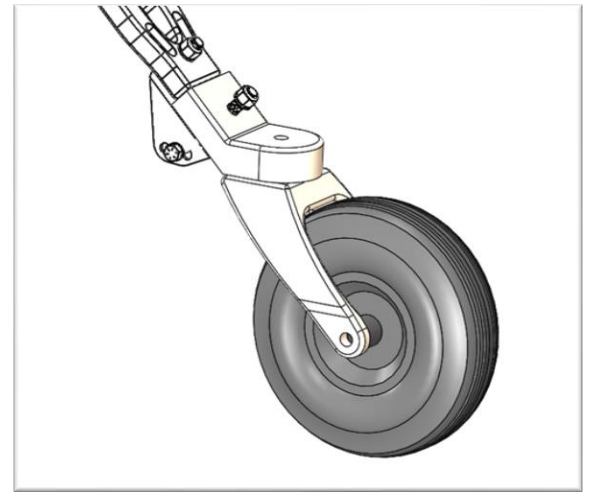


## Step 8

### **Mount tail wheel to the Stinger A-Arm**

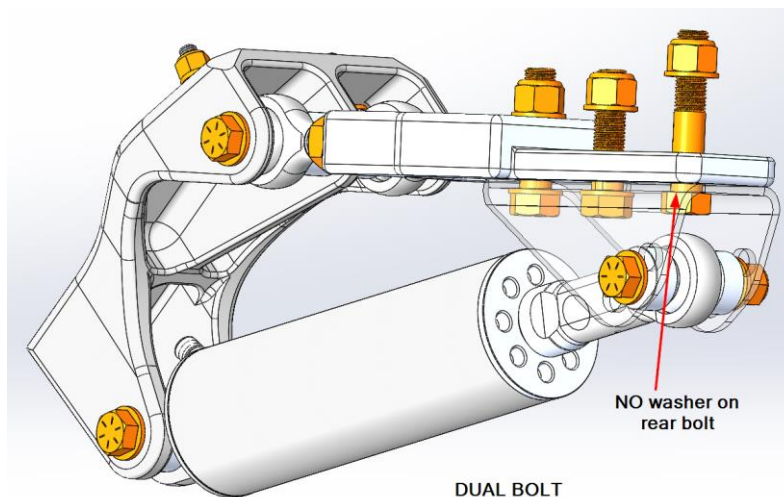
#### Single Bolt

- Run the AN7-20 up through the steel clevis with NO washer on the bottom (clevis side)
- Use the thick washer on top (tail wheel side) and tighten to 40 ft lbs



#### Dual Bolt

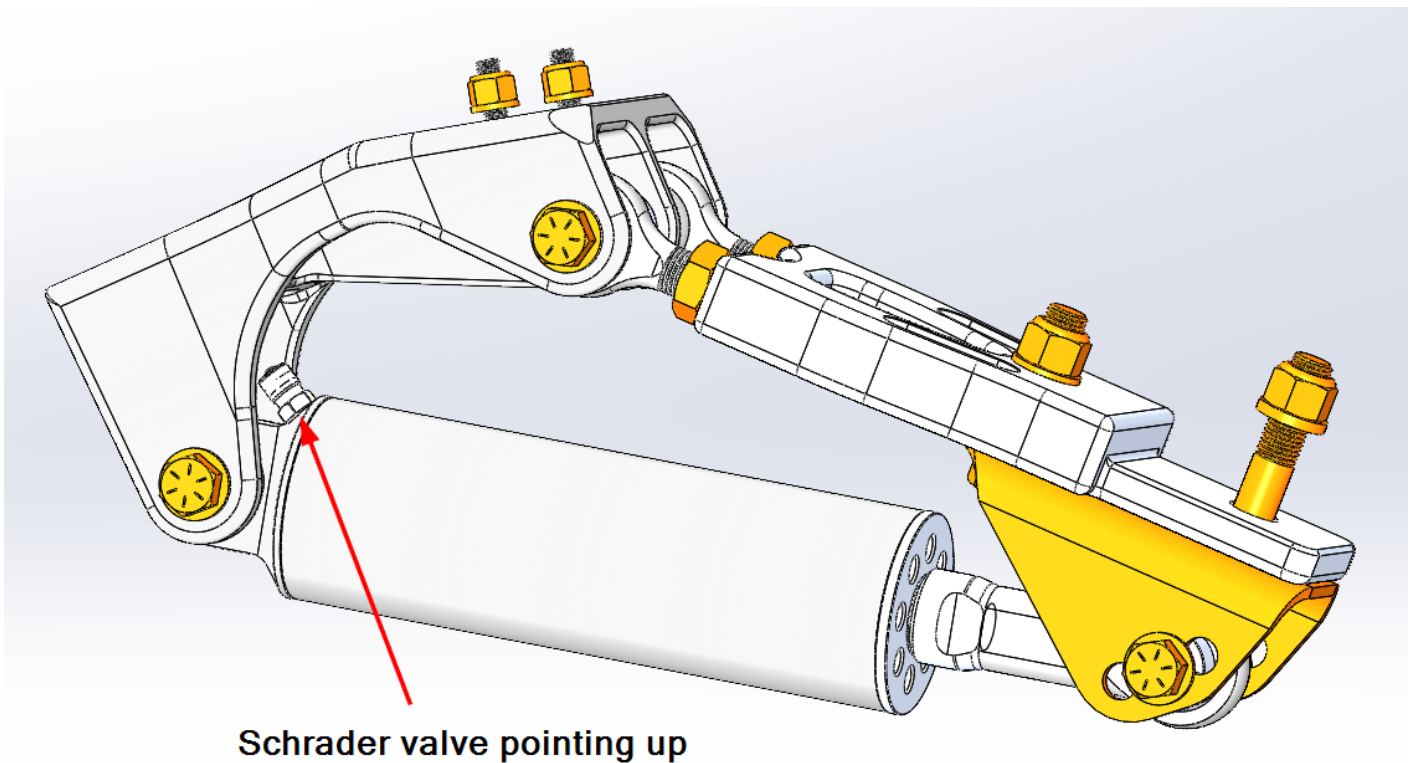
- Run the AN7-16 up through the forward steel clevis hole with a washer on both sides and tighten to 40 ft lbs
- Run AN7-21 up through the rear steel clevis hole with NO washer on the bottom (clevis side) and one washer on the top (tail wheel side).
- Tighten to 40 ft lbs



## **Step 9**

### **Attach shock to the mount and double shear bracket**

- a. With the tail wheel assembly and steel clevis mounted and properly torqued, install the shock using the bushings provided along with the two AN6-24 bolts
- b. Ensure that the Schrader valve is pointed up towards the fuselage
- c. Torque both AN6-24 bolts to 20 ft lbs.



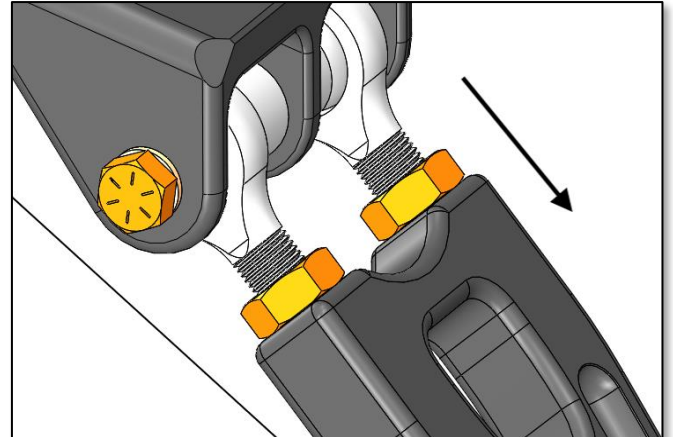
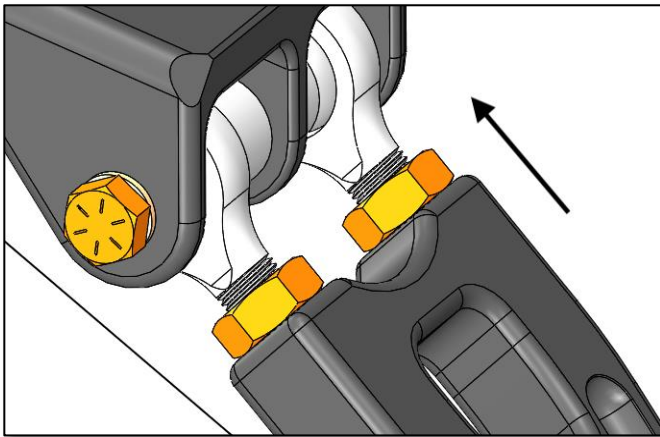


## **Step 10**

### **Adjustments and Tuning Tips**

#### **Check for proper caster angle**

- a. Set the plane on the ground.
- b. Ensure desired castor angle for your application.



**Caster Adjustment** Extend or shorten both A-arm heim joints equally to desired setting.

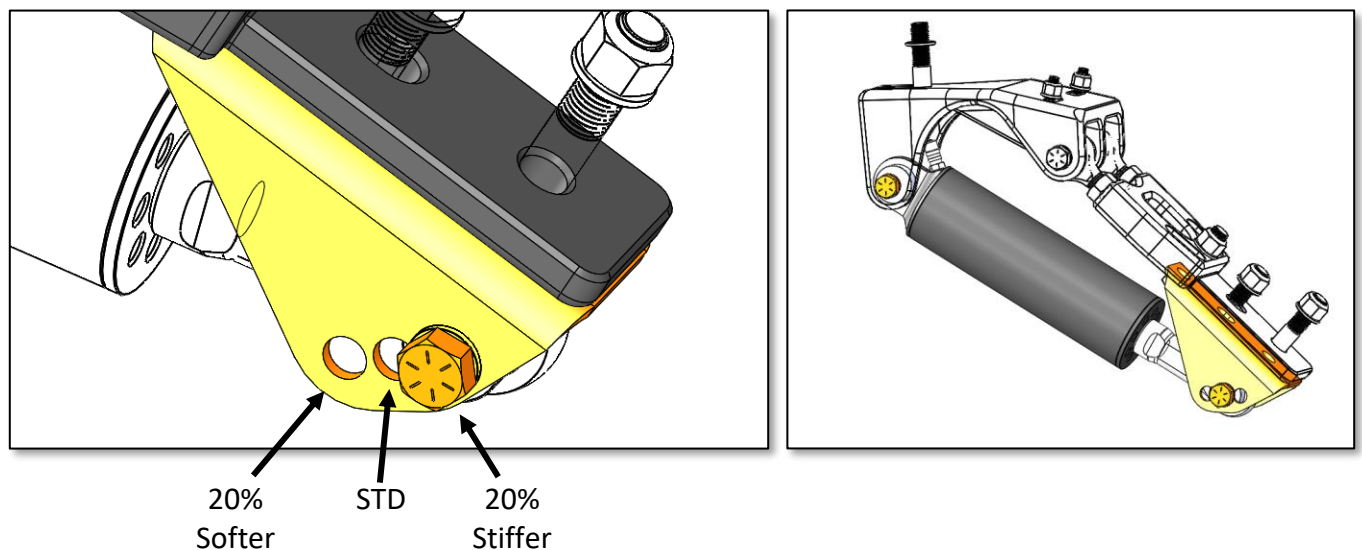
#### **Height Adjustment**

Equally adjust the A-arm heim joints in or out in conjunction with the shock heim joint in or out for desired height

## Adjusting Spring Rate

Start with the shock attached through the middle hole of the clevis.

- To decrease the rate (make the suspension softer) move the shock to the forward attachment point. This will also lower the tail, increasing angle of attack.
- To increase the rate (make the suspension stiffer) move the shock to the aft attachment point. This will raise the tail, decreasing angle of attack
- Each hole represents a 20% increase or decrease in spring rate.



A video of how to install Acme Aero Stinger Tailwheel Suspension System is on our YouTube Channel [@AcmeAero](#). Click on the YouTube link via our website at [www.acmeaerofab.com](http://www.acmeaerofab.com). Click on the Stinger Installation video for step-by-step video installation instructions.

If you have any questions whatsoever or anything is unclear during the installation of your Stinger Suspension System,  
[please call us at 704-496-9022](tel:704-496-9022)

## **Operation and Maintenance**

The Acme Aero Stinger Suspension System was designed to eliminate the need to constantly adjust pressures in your shocks or carry around a nitrogen bottle. They are meant to be as close to maintenance free as possible.

### **Preflight**

- Visually inspect both the top and the lower attachment points, attachment hardware, body cap of the shock, mount and A-arm
- Check for any foreign object damage to the shock shaft
- Ensure there are no damaged or bent components
- If any damage or broken components exist, please replace prior to operation

### **Annually**

- Remove shock and A-arm to inspect bushing inner diameters for wear
- Closely inspect the upper mount and lower attachment points. Look for any cracks or abnormal wear and tear
- Check for seepage around the upper and lower caps of the shock
- Closely inspect attachment hardware and ensure proper torque specs.
- Closely inspect the shock body, mount and A-arm to ensure there is no foreign object damage
- Only check nitrogen pressure if you have proper tools for shock inflation procedures. Check our website for the Acme Aero Inflation Kit, part number [INF-KIT](#).
- If you desire, Stinger Tailwheel System can be sent to Acme Aero for complete inspection and service. Shipping and service costs are the responsibility of the owner
- Acme Aero recommends TBO every 1,500 hrs

## Warranty

Acme Aero Suspensions warrants the Stinger Suspension System against defects and wear **when used under normal operating conditions**, for as long as such **original purchaser** owns the aircraft on which they were designed and constructed for.

Acme Aero's obligation under this warranty is limited to replacement of the worn-out or defective product in accordance with this warranty.

**Cost of removal and installation are not included, and any incidental and consequential damages - including coatings\* are excluded under this warranty, regardless of when the failure occurs. (\*Our shocks use several coating processes for corrosion resistance. DO NOT USE ANY CHEMICALS that could discolor or corrode)**

This warranty has no cash value. This warranty does not apply to products that have been modified, improperly applied or installed on aircraft in which they were not designed for.

Basically, Acme Aero stands behind the craftsmanship and operation of all our products. Obviously, you can't go wrapping your tail wheel around a tree or trying to plow over a 4' boulder.

To make a claim under this warranty, provide your name and the N number of your aircraft.

Return the worn-out or defective product to:

Acme Aero Suspension  
Attn: Warranty  
3524 Airport Rd  
Maiden NC 28650



Please email photos and this form with your returned product



ACME AERO Suspensions, LLC  
3524 Airport Road  
Maiden, NC 28650  
PH: 704-496-9022

## Repair/Replacement Form

[www.acmeaerofab.com](http://www.acmeaerofab.com)

### **CONTACT INFO:**

Business/Owner Name: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Email: \_\_\_\_\_

Phone Number: \_\_\_\_\_

### **RETURN SHIPPING INFO:**

Business Name: \_\_\_\_\_

Contact Name/Email: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

### **PRODUCT INFO:**

Serial Number: \_\_\_\_\_

Airplane Type: \_\_\_\_\_

Are you the original owner? Yes  No

If NOT, who was? \_\_\_\_\_

Who did you purchase the product from? (Aids with product identification):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

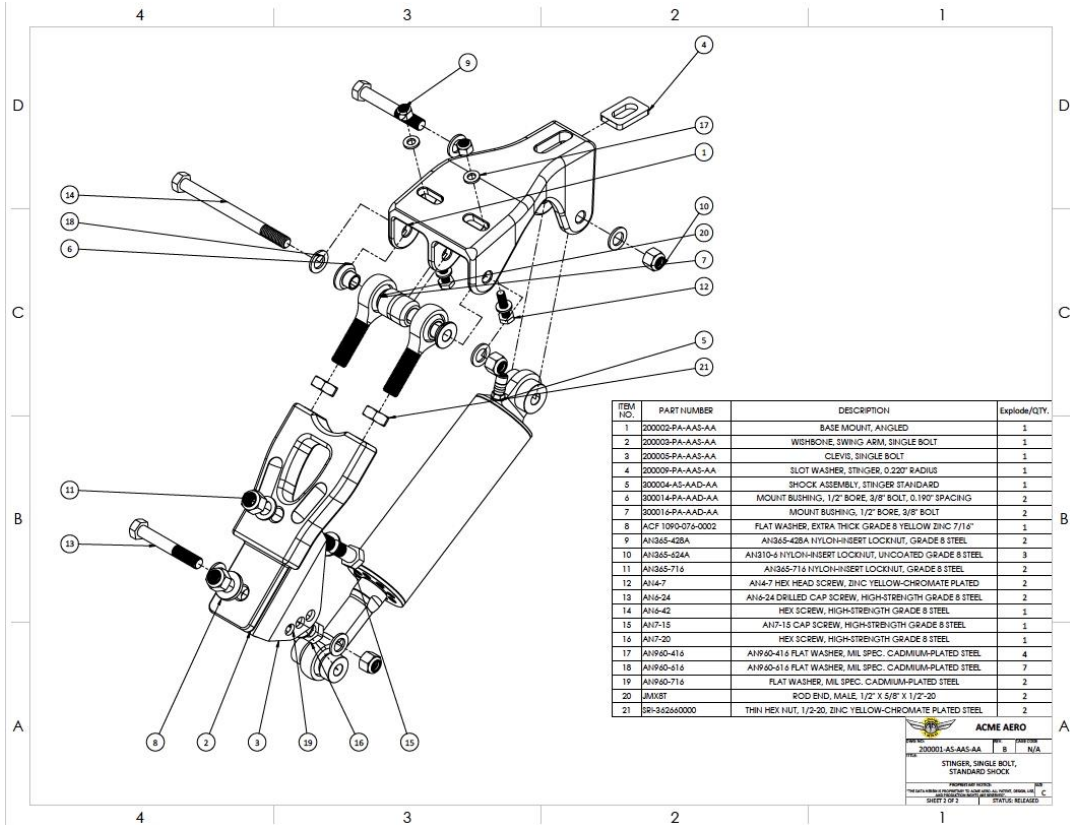
### **ISSUE WITH PRODUCT:** \_\_\_\_\_

What's happening: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Want to add a cool story or have questions? Then send those to [info@acmeaerofab.com](mailto:info@acmeaerofab.com)

# Single Bolt Diagram



# Dual Bolt Diagram

