

# BRENTZ ENTERPRISES LLC

Doc No. PI-0001-00H

## Tail Lynx-Covered by US Patent 7,234,664

**IMPORTANT PRE-INSTALLATION NOTICE-** Before installing the Tail Lynx on your aircraft, read the Limited Warranty/Agreement located in the footnotes of this procedure. There is information in the Limited Warranty/Agreement that may alter your decision to install this product. IF YOU DO NOT ACCEPT THE TERMS OF THE LIMITED WARRANTY/AGREEMENT, DO NOT INSTALL THIS PRODUCT. THIS PRODUCT MAY BE RETURNED FOR A REFUND IF YOU DO NOT ACCEPT THE TERMS OF THE LIMITED WARRANTY/AGREEMENT.

### What comes in the Kit

(See Figures 1-3)

Item	Part Number	Description	Qty
1	500-0002-00	Key Fitting	2
2	500-0003-02	Tongue Fitting	2
3	500-0004-00	Precision Spacer, SST	2
4	070-0002-01	Tail Link Sub-assy	2
5	AN23-10	Clevis Bolt	4
6	AN960-10	#10 Steel Washer	4
7	AN960-10L	#10 Steel Washer, Thin	2
8	AN310-3	#10 Castle Nut	4
9	MS24665-132	Cotter Pin	4
10	-----	.625" OD x 2" Al Tube (Not Shown)	1

Figure 1

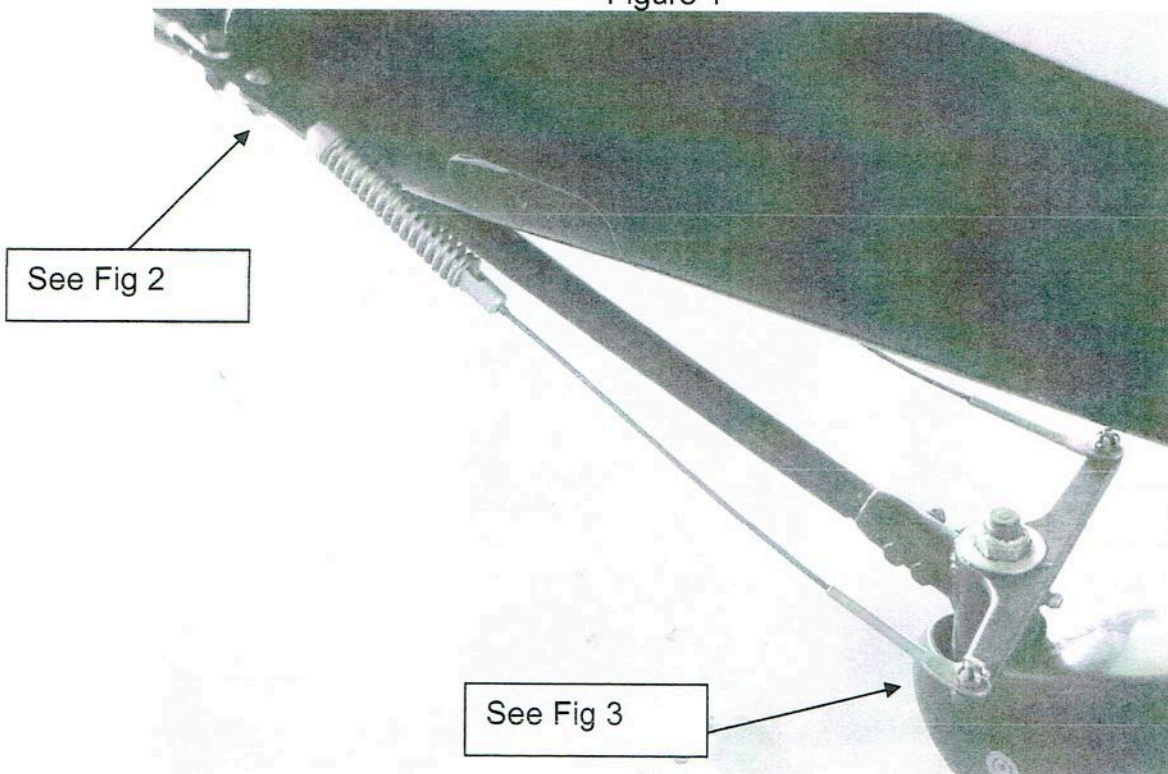


Figure 2

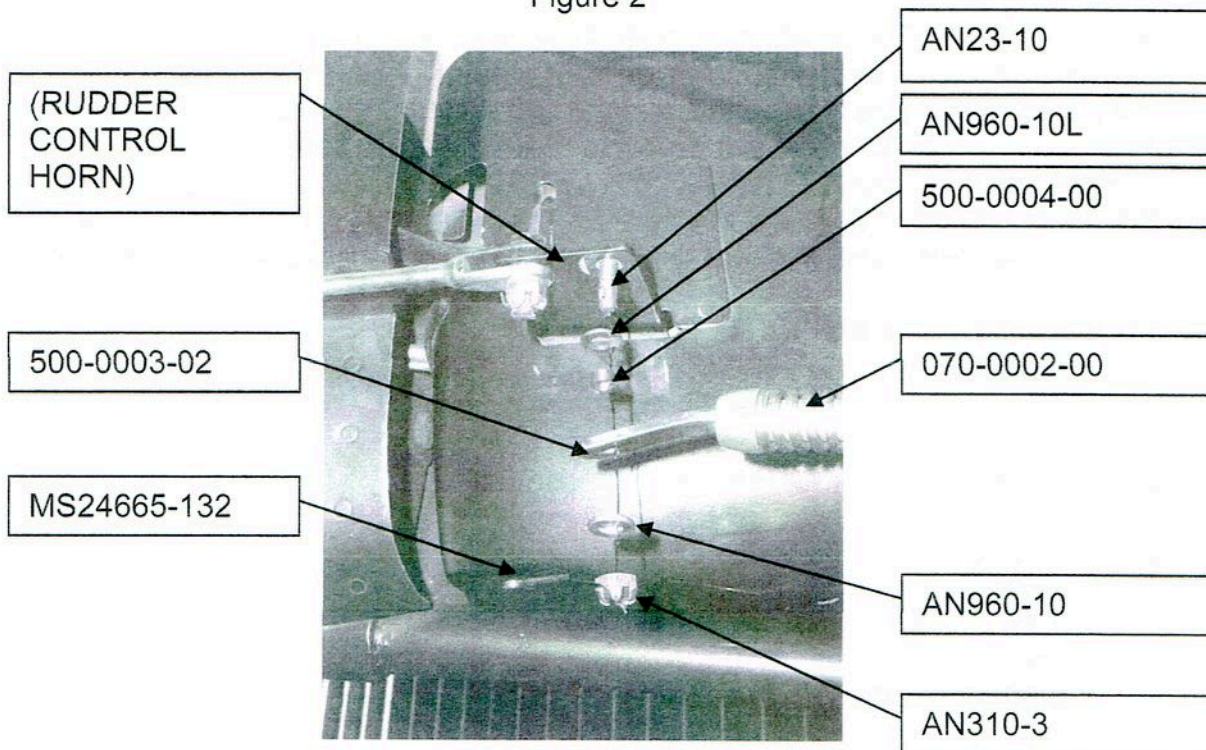
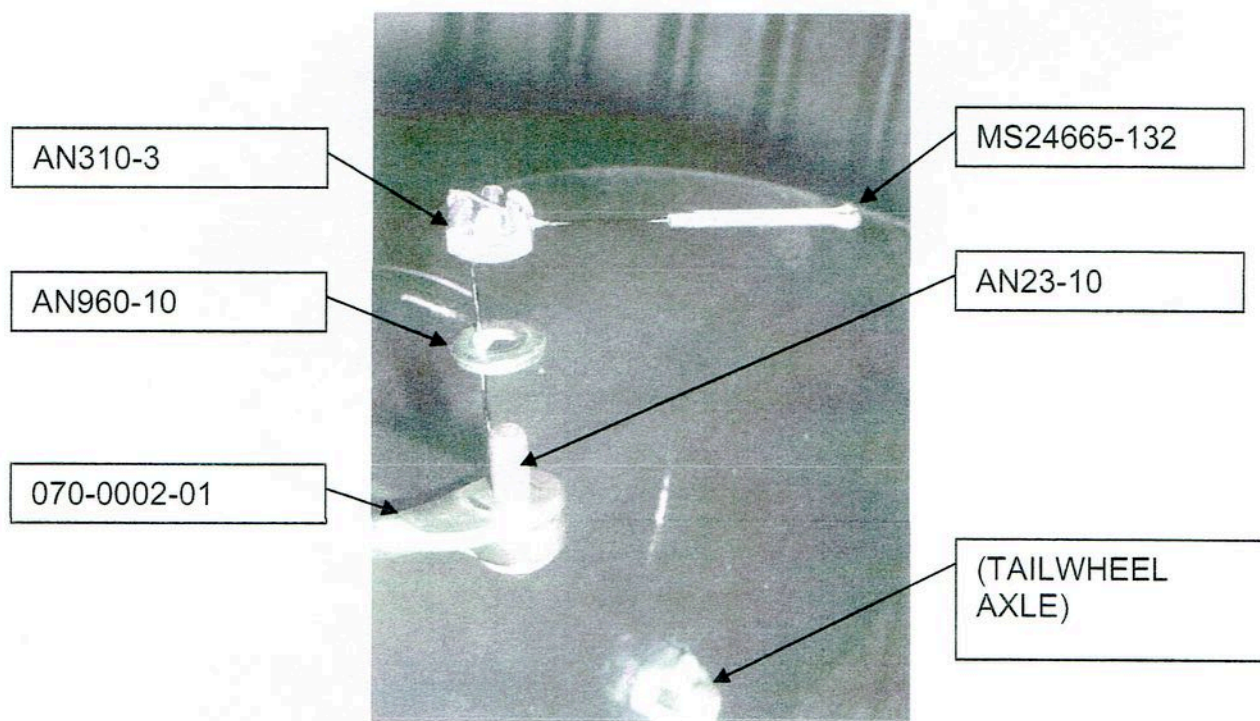


Figure 3





**Tools & Materials Needed**

Hack Saw (or Band Saw)  
Protractor & machinist's Square  
Files  
Bench Grinder w/grinding wheel & Scotchbrite Wheel  
Drill Vise  
Drill Press & Drill bits (Step drill recommended for tongue fitting)  
Mallet & wood block  
3/8 & 7/16 Wrenches  
Needle Nose Pliers  
Lubricant (Boeshield T-9 or equivalent)

**Installation Procedure for full swivel RV tail wheel (See Footnote a)**

**Step 1 Prepare Eye Fitting- (See Figures 4-6)**

- a. Mark bend line at .3" from hole center
- b. bend 20 degrees max as shown using a minimum .125" bend radius
- c. Check bend angle. Be careful not to overbend!!

Figure 4

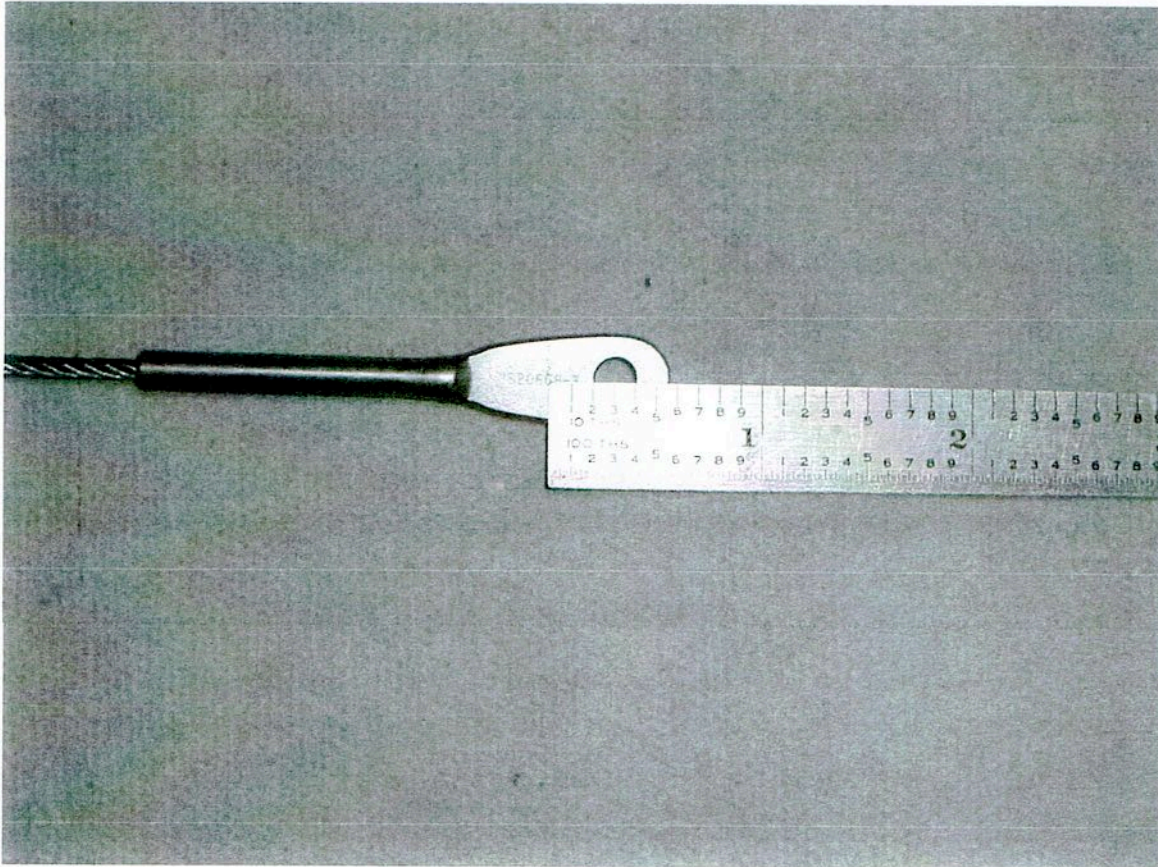




Figure 5

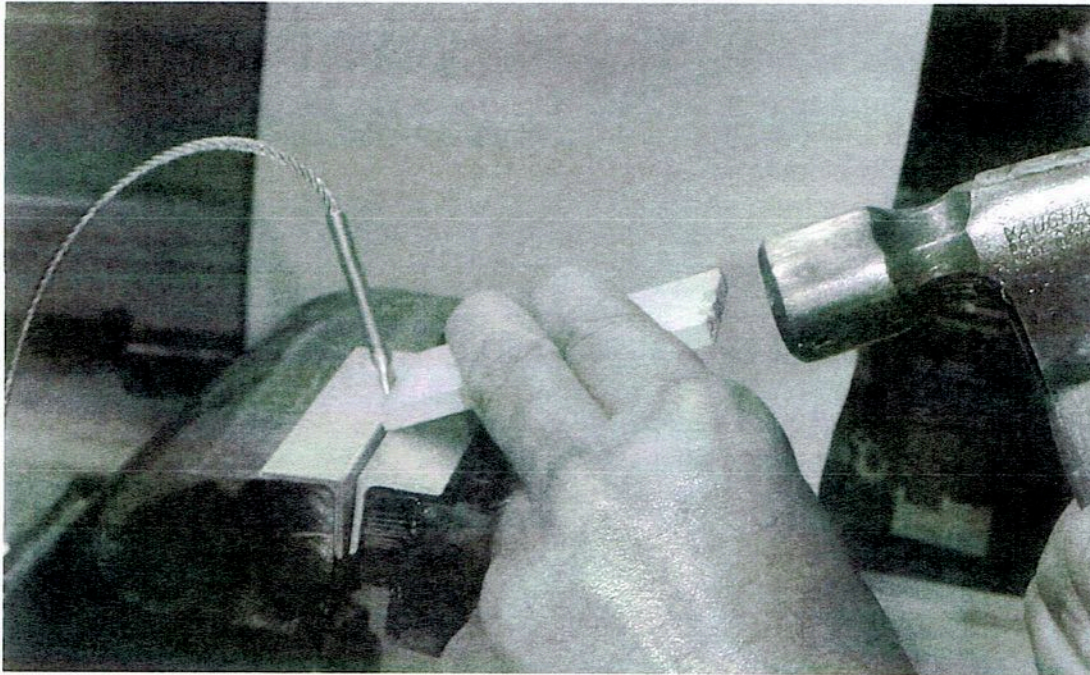
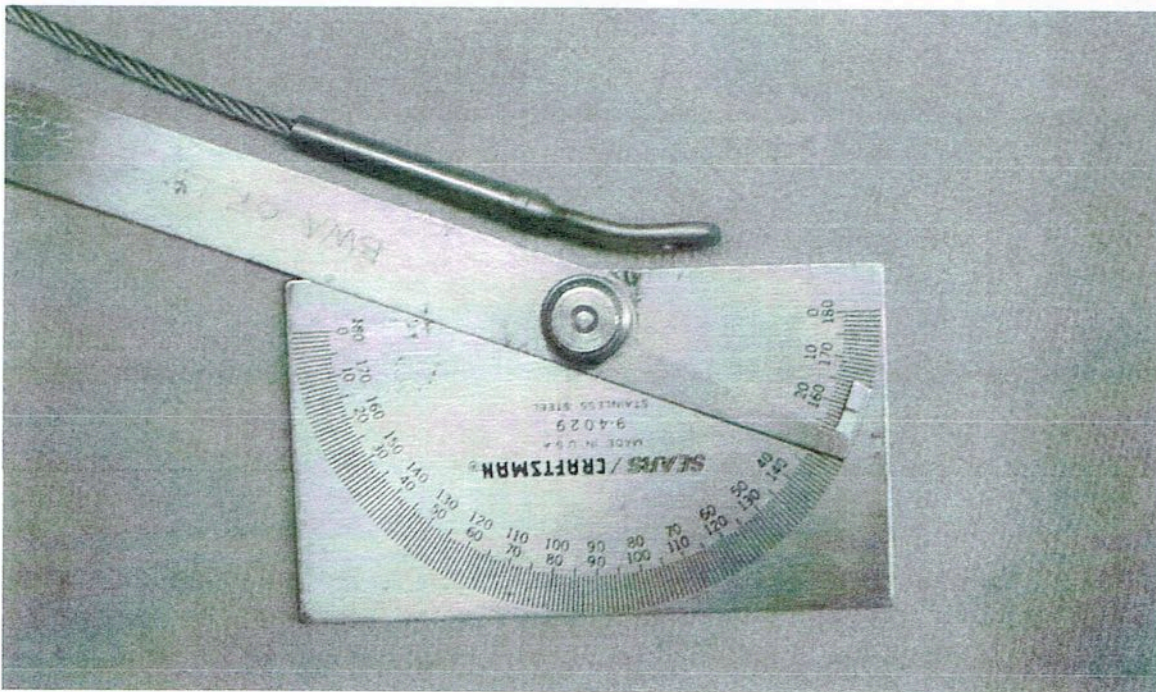


Figure 6





**Step 2 Bend the Tongue Fitting-** (See Figures 7-9)

- a. Assure rudder and tailwheel are straight and aligned.
- b. Temporarily assemble Tail Lynx onto airplane. Note that the Eye fitting is assembled on the top of the Tail wheel control arm, and the Tongue Fitting is on the bottom side of the Rudder Control Horn.
- c. Mark bend line on Tongue Fitting at rear edge of rudder control horn.
- d. Bend **wide** part of Tongue Fitting to 15 degrees oriented with wide end of tongue exposed as shown. Use a .125" minimum bend radius
- e. Do NOT try to bend with the narrow part of the Tongue Fitting exposed, as it will be difficult to control the bend location. Do NOT bend where the wide part necks down to the narrow part. Do NOT over-bend.
- f. Check Bend angle as shown.

Figure 7

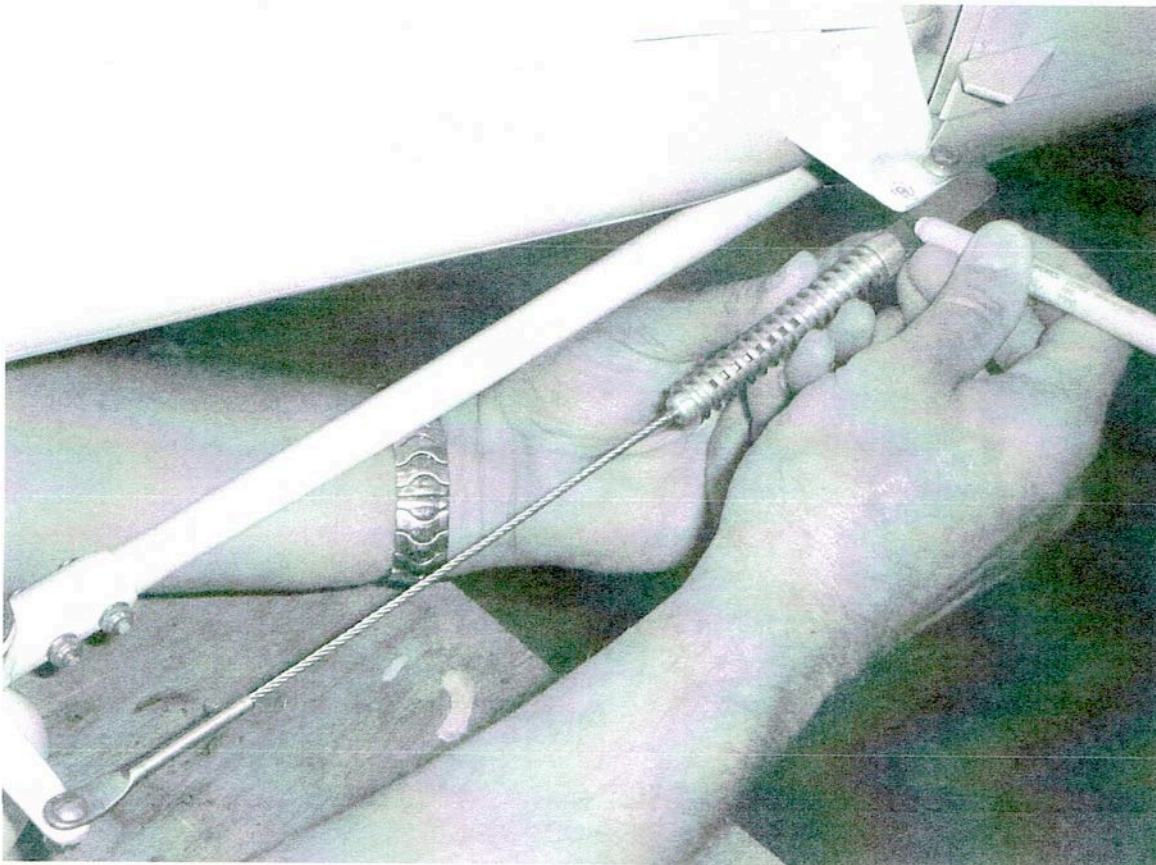




Figure 8

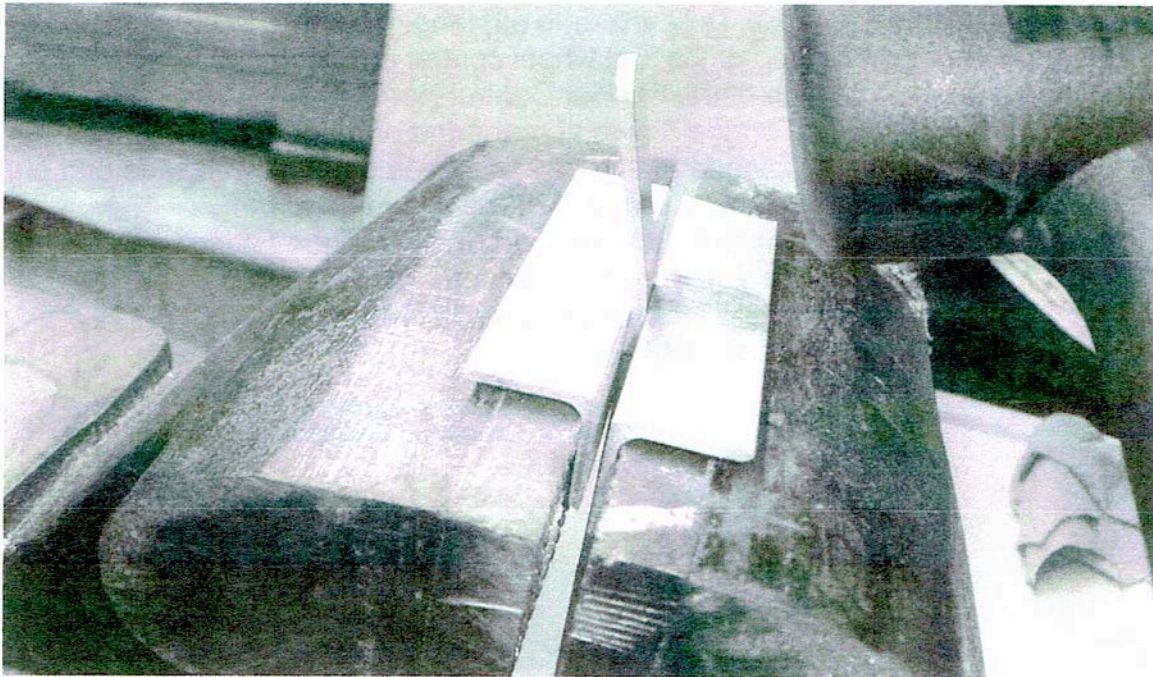
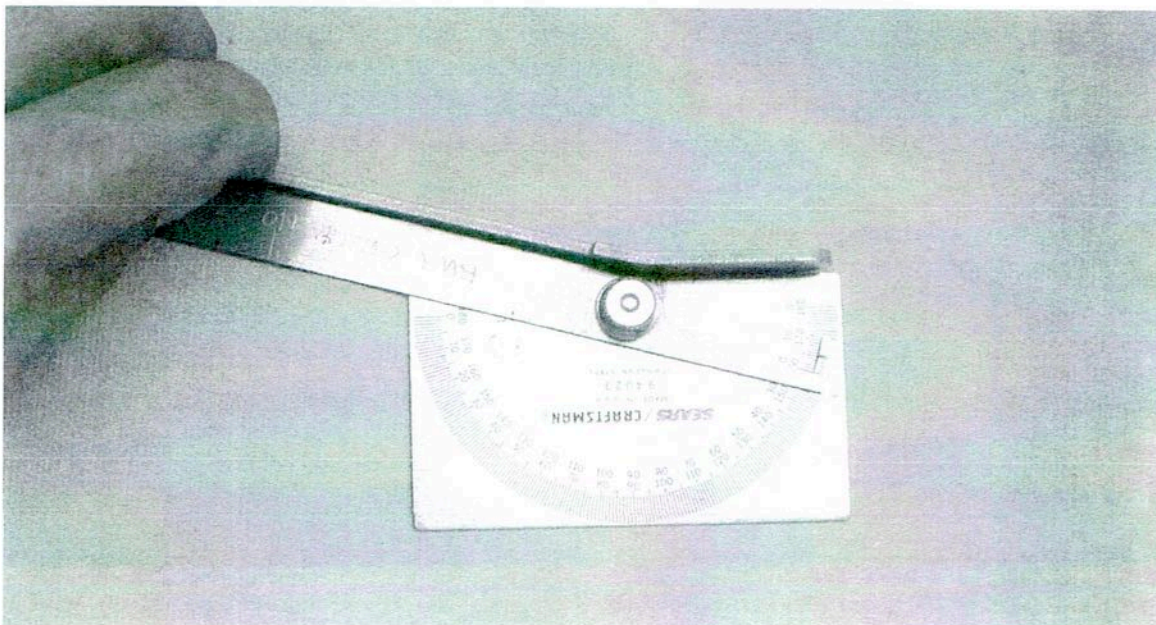


Figure 9





**Step 3 Drill and trim the Tongue Fitting** (See Figures 10-12)

- a. Enlarge holes in rudder control horn using a #12 drill to fit the AN23-10 bolts that will be installed.
- b. Temporarily re-assemble Tail Lynx onto airplane
- c. Mark reference hole location on Tongue Fitting using hole in rudder control horn as a template;
- d. Remove Tail Lynx from airplane
- e. Mark actual drill hole location on Tongue Fitting offset  $3/8$ " from reference hole location to provide cable slack when the finished Tail Lynx are installed. (See Footnote b)
- f. Center punch and drill Tongue Fitting to .250" diameter finished size (Step drill recommended)
- g. Remove excess material from end of Tongue fitting as necessary, maintaining a minimum of  $5/16$ " edge distance to the hole. (Fitting is provided oversized to accommodate construction variance in airplanes)
- h. Shape, deburr and polish edges of Tongue Fitting.

Figure 10

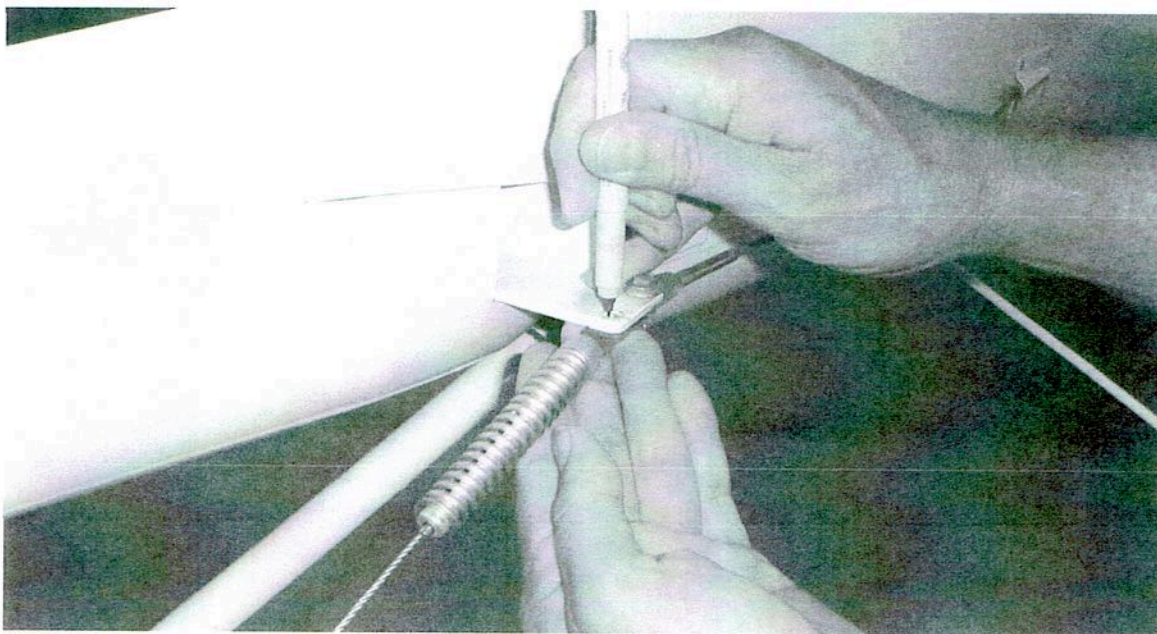
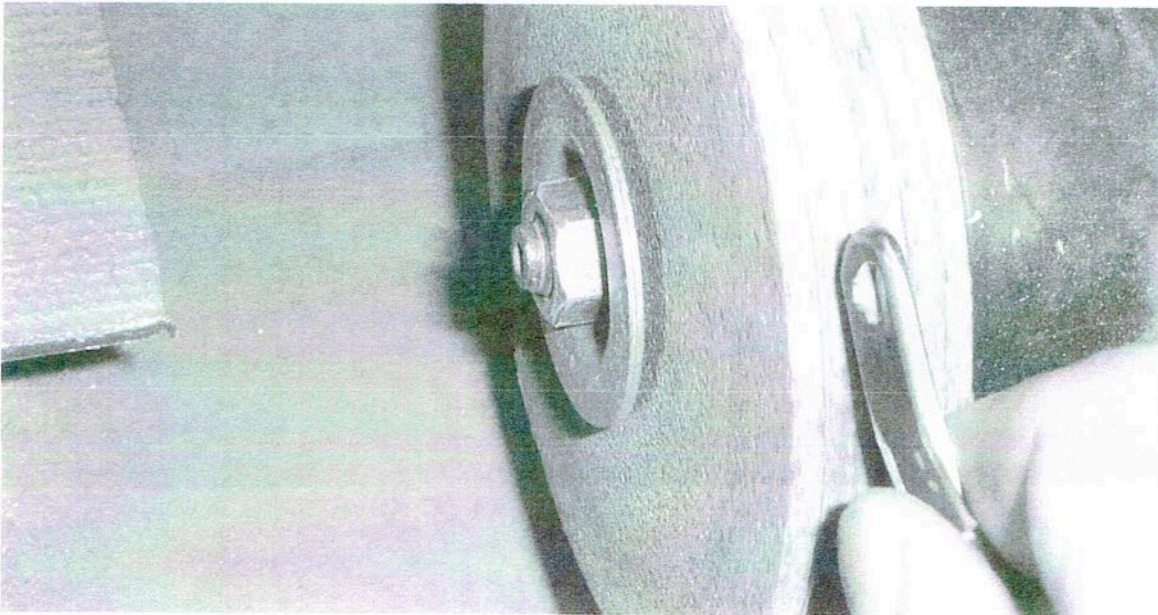




Figure 11



Figure 12





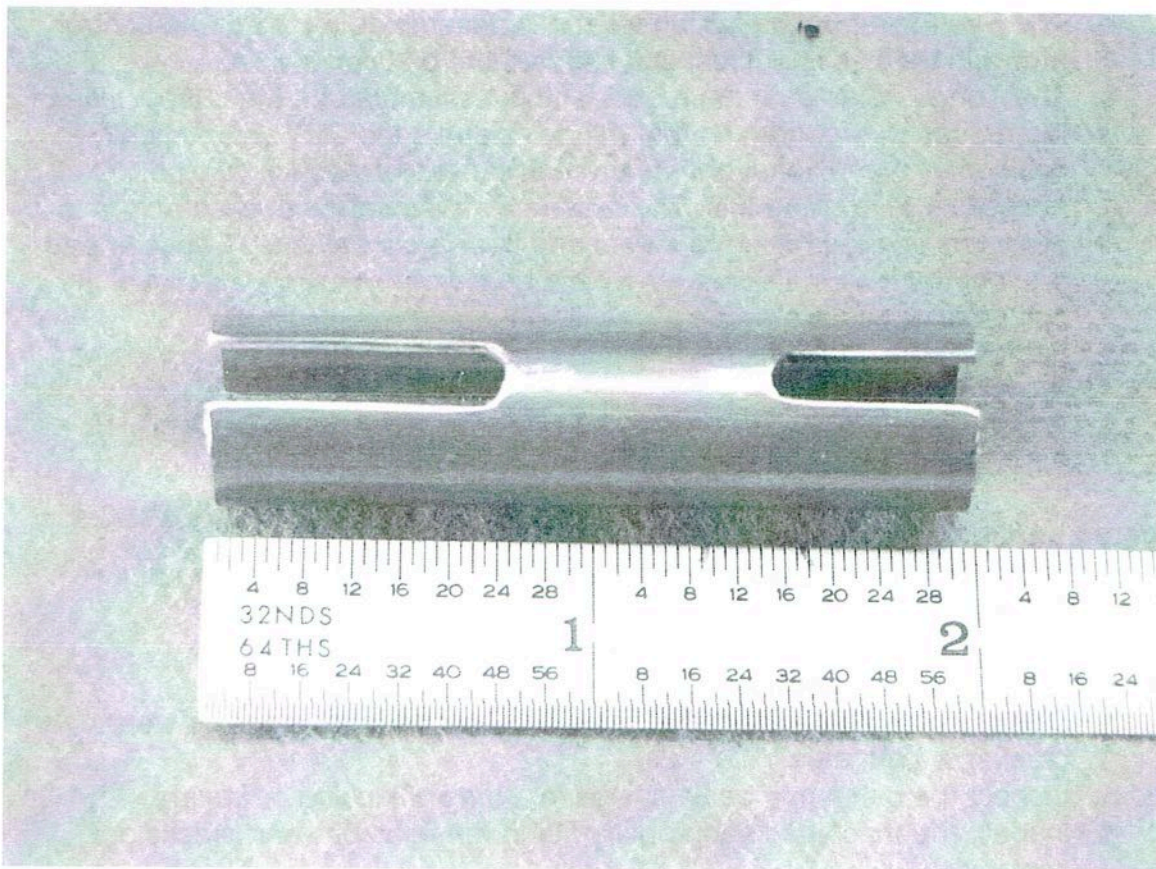
**Step 4- Optional finish of the Tongue and Key Fittings**

- a. The Tongue and Key Fittings are made of stainless steel, and have good corrosion resistance as received. A finish may be applied at the option of the builder as follows
- b. Prepare the parts for finish using PPG DX579 metal cleaner (or equivalent) and scotchbrite pads.
- c. Apply a good self etching primer followed with a final finish of polyurethane or equivalent.

**Step 5- Fabricate the Assembly Tool (See Figure 13)**

- a. Square the ends of the aluminum tube provided in the kit.
- b. Saw slots to the approximate depths shown and round the bottoms
- c. Deburr all rough edges

Figure 13





**Step 6- Assemble the Tail Lynx (See Figure 14)**

- a. Clamp the Tongue Fitting in a drill vise by the edges with the narrow end up and oriented vertically.
- b. Position the Tail Lynx Sub-Assy over the Tongue Fitting with the slotted holes in alignment.
- c. Position the Assembly Tool over the Tail Lynx Sub-Assy with the long slot down and in alignment with the Tail Lynx slotted holes.
- d. Assure all parts are square and vertical.
- e. Use a drill press to compress the spring enough to insert the Key Fitting oriented as shown; BE CAREFUL- The stored energy in the spring can exert considerable force!!
- f. When the Key Fitting is in position, uncompress the spring.
- g. Confirm that the finished Tail Lynx Assembly parts are keyed and locked together.

**Step 7- Install the Tail Lynx (See Figures 2-3)**

- a. Assemble the Tail Lynx with the hardware oriented as shown.
- b. The Eye Fitting on the tail wheel end is assembled on top of the control arm with the castle nut just snug so that the bolt can swivel.
- c. The Tongue Fitting on the rudder end is assembled on the bottom side of the rudder control horn so that the bolt clamps the SST spacer tightly in position. An additional or a different thickness of washer may be necessary to achieve this. The reason for this method of assembly is to allow the Tongue Fitting to swivel and bear against the SST spacer, and prevent the hole in the rudder control horn from wearing as it may if the bolt were not tight.
- d. Lubricate the Tail Lynx moving parts using Boeshield T9 or equivalent.
  - Eye Fittings
  - Tongue Fittings
  - Mating area of Key and Tongue Fittings

**Maintenance**

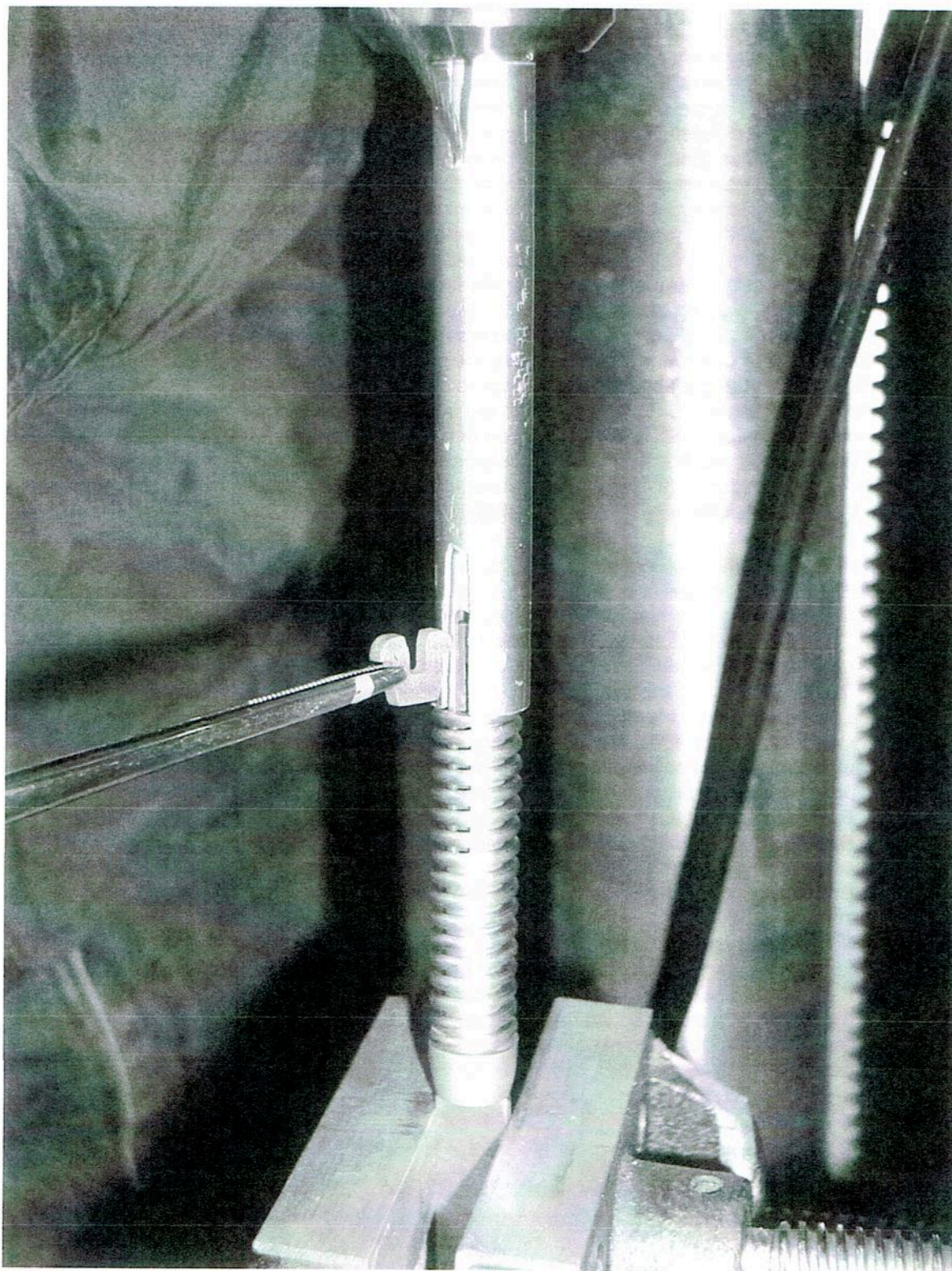
- a. Lubricate the Tail Lynx moving parts the shorter of every 50 hours or every 3 months.

**Annual Condition Inspection**

- a. Disassemble and inspect the Tail Lynx steel parts for signs of wear, cracks, or corrosion.
- b. Inspect the cable and cable fittings for signs of kinking or fraying.
- c. Inspect the machined spring body fitting for signs of wear, cracks or corrosion.
- d. Re-lubricate moving parts using Boeshield T9 or equivalent.



Figure 14





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Doc No. PI-0001-00H

### Footnotes

- a. The Tail Lynx have been designed and tested to fit RV models with the Van's standard (full swivel) tail wheel. The Tongue Fitting is long enough to allow approximately a 1" range for drilling. This is to accommodate length variations due to aircraft construction. It may be possible to fit the Tail Lynx to other tail wheel designs, but the bend angles for the fittings may need to be altered. In no case should bend angles exceed those specified in the above installation instructions. Suitability of non-swivel or other tail wheel installations is at the sole risk and discretion of the builder.
- b. Tail Lynx to be installed only as shown in the above installation instructions. **Deviation from the above installation instructions (e.g. with springs facing aft) is prohibited,** and will void your warranty. The rudder bottom may be protected from contact with Tail Lynx during large rudder deflections by applying a piece of transparent UHMW or polyurethane tape (see Fig 1). Brakes can be used during taxiing to kick the tailwheel loose for tight turns without large rudder deflections.
- c. Some cable slack may be preferred in the finished Tail Lynx installation to provide aerodynamic rudder control before tail wheel steering takes effect. Cable slack desensitizes tail wheel control authority to provide some margin of aerodynamic steering control during crosswind landings when the tail wheel might not otherwise be aligned with the runway during touchdown. The degree of slack (3/8") has been found by the designer to be adequate in his aircraft, but is a matter of pilot preference, and can be increased or decreased at the discretion of the aircraft builder.
- d. If the builder is not satisfied with the degree of cable slack in the finished installation, replacement tongue fittings can be purchased at a modest cost from Brentz Enterprises.

#### **e. LIMITED WARRANTY/AGREEMENT**

1. Brentz Enterprises LLC warrants its products to be free from defects in materials and workmanship for a period of one year commencing from the date of purchase. Brentz Enterprises will repair or replace components at its sole discretion providing such components are returned to Brentz Enterprises prepaid.
2. This warranty does not extend to any aircraft, engine, propeller or any other component to which the Tail Lynx are attached or used with in any way.
3. The remedies available to the purchaser are limited to repair, replacement or refund of the purchase price of the Tail Lynx at the sole discretion of Brentz Enterprises. Consequential damages, such as damage to the aircraft, engine, propeller or any other component are not covered, and are excluded from this warranty. Damages for physical injury to person or property are not covered, and are excluded from this warranty.
4. Brentz Enterprises is not liable for expenses incurred by the customer or installer due to Brentz Enterprises updates, modifications, improvements, changes, notices or alterations to the product.
5. Brentz Enterprises is not responsible for shipping charges or damages incurred during shipment.
6. No person is authorized to assume any other or additional liability for Brentz Enterprises in connection with the sale of Brentz Enterprises' products.
7. If the buyer of Brentz Enterprises' products does not agree to unconditionally accept all of the terms of this Limited Warranty/Agreement, the buyer may return the product for a full refund. If the buyer does not agree to unconditionally accept all of the terms of this Limited Warranty/Agreement, the buyer is prohibited from installing or using this product..

#### **f. Contact Information:**

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