

## **Section 2**

### **Airframe and Landing Gear**

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**Procedures covered in this section:**

Drill airframe bushings; mount front and rear landing gear; install skid tubes; tap body support adjustment pad bushings; fabricate retention straps for battery box.

**Cards used in this section:**

HARDWARE CARD    E11 CARD 1F  
E10 CARD 1F

**Prints used in this section:**

E10-2000                    E16-2000

**Templates used in this section:**

None

**Tools required for this section:**

Air or electric drill	Drift punch	Mallet	Screwdriver
"C" clamps	Files	Nut driver	Tap: 5/16-18
Center punch	Grinder	Pop rivet gun	Tap handle
Countersink	Level	Protractor level	Tape measure

Drill bits of the following sizes: 1/8", 1/4", 3/8", Letter "H"

Ratchet with sockets of the following sizes: 7/16", 9/16"

Wrenches of the following sizes: 7/16", 9/16"

**Notes:**

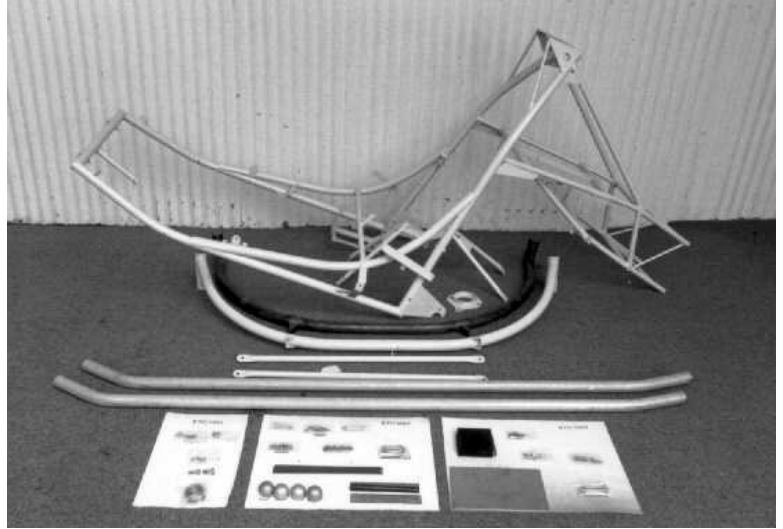
1. FRONT LANDING GEAR BOLTS: The bolts that hold the two halves of the front landing gear together are for shipping only. On final assembly, make sure to replace them with the bolts (E00-2413), nuts (E00-3402) and washers (E00-4401) found on E11 CARD 1F.
2. TAIL BOOM SUPPORT BRACE TUBES: When these tubes are removed from the airframe, the bolt holes may appear to be misaligned upon re-installation. This is normal, and does not indicate any problem or damage to the airframe. Hole alignment can be achieved using an alignment punch or by simply applying pressure to the airframe in the necessary direction.



## **AIRFRAME AND LANDING GEAR**

### **Photo #1**

Use prints E10-2000 and E16-2000 when assembling the airframe and landing gear. Parts as received from RotorWay International.



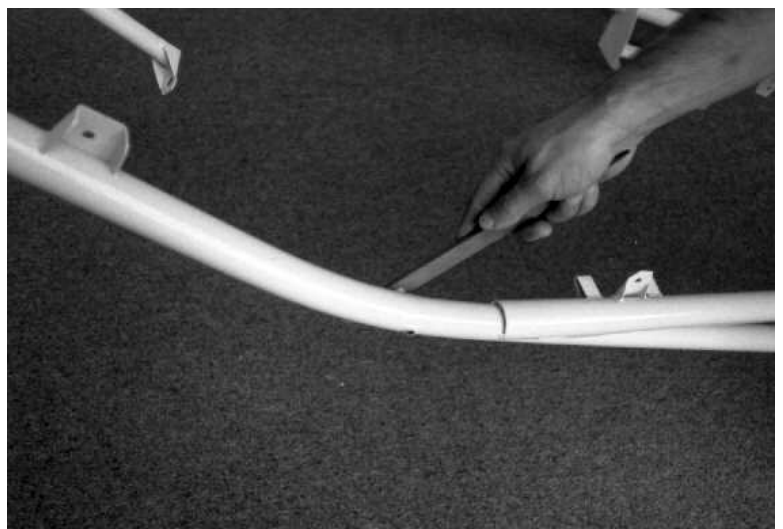
### **Photo #2**

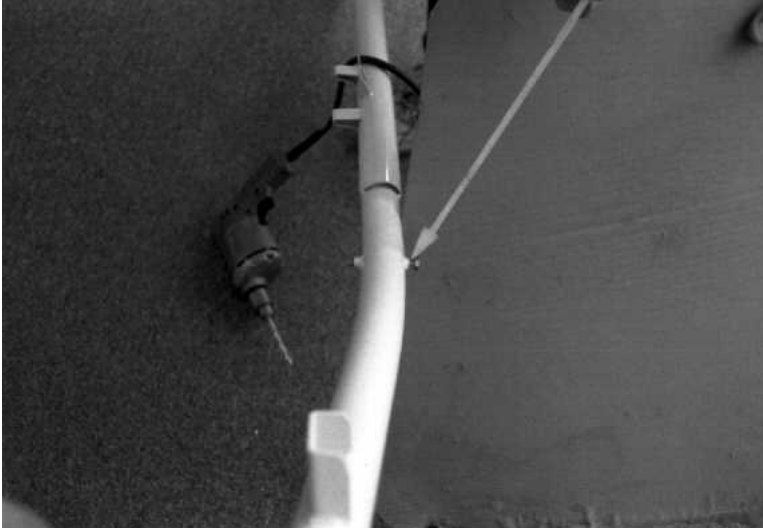
Drill the bushing with a 1/4" drill bit for the front landing gear attachment.



### **Photo #3**

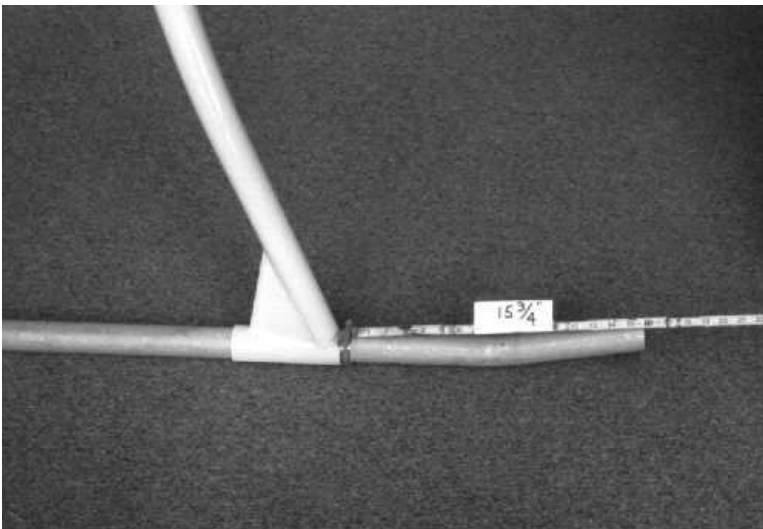
It is necessary to shorten the bushings to allow the front landing gear to fit in between and for the 1/4" bolts to fit. Use a file to square the ends of the bushings (the ends of all bushings must be 90 degrees to the hole).





**Photo #4**

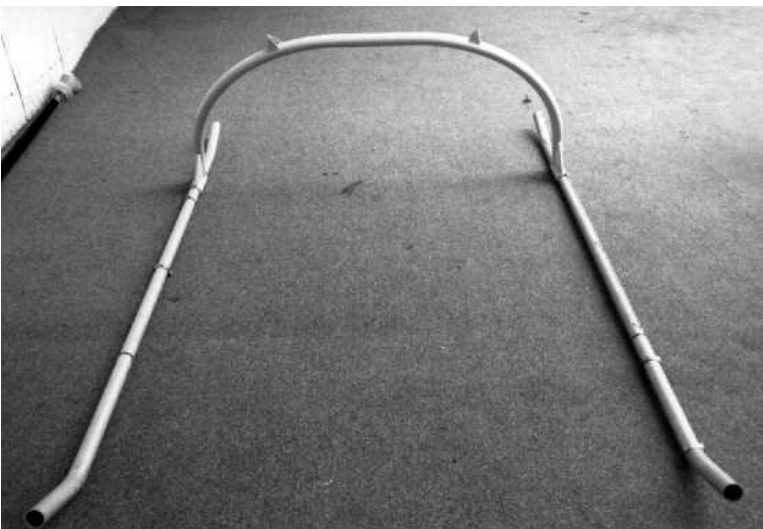
Use a 1/4" bolt to check the ends of the bushings. The head of the bolt should make contact all the way around. (See Standard Construction Procedures.)



**Photo #5**

Mount rear landing gear to the skid tubes so that the rear of the shoe is 15-3/4" from the end of the skid tube. Hold in position with hose clamps. Note: The rear of the skid tube has the smallest bend.

**MAKE SURE THE SKID TUBE WITH THE STEEL INSERT IS ON THE PASSENGER SIDE FOR THE BALLAST WEIGHT.**

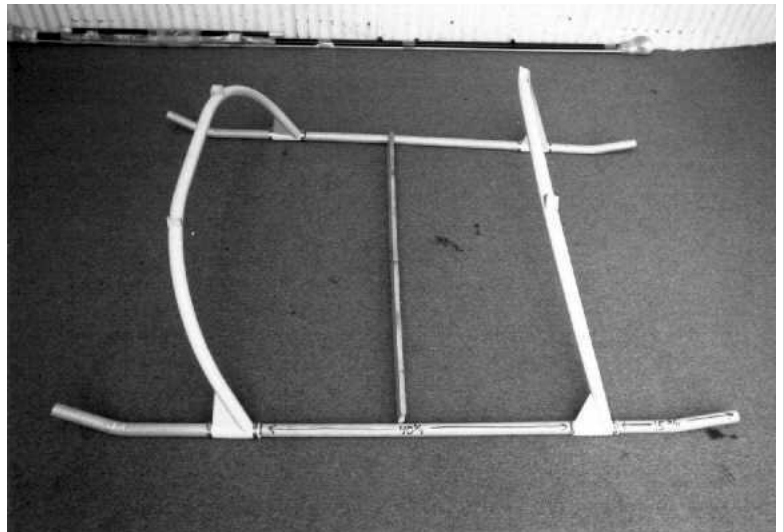


**Photo #6**

View of rear landing gear on skids.

**Photo #7**

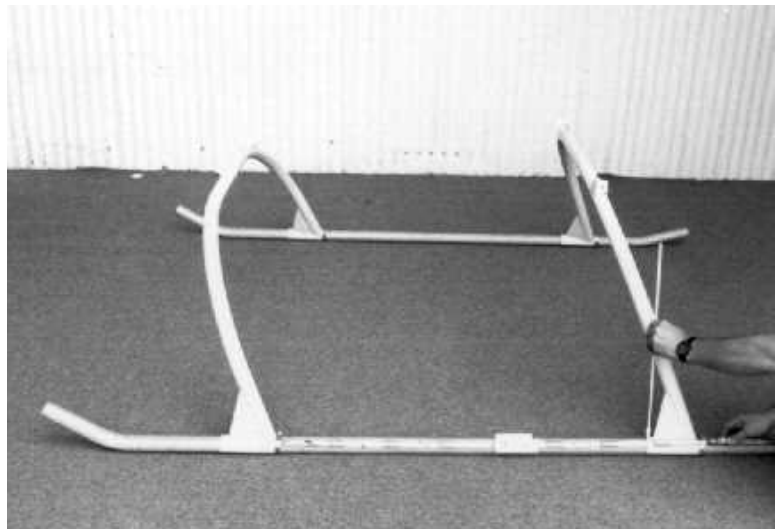
Locate and mark on both skid tubes 40-1/4" from the front of the rear landing gear shoes.



**Photo #8**

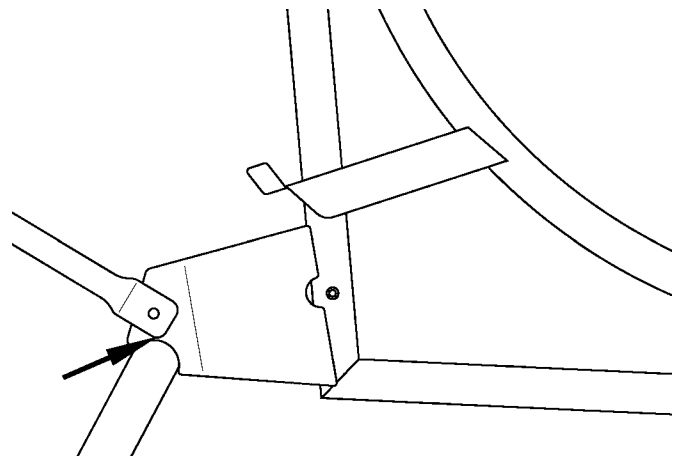
Mount the front landing gear on the skid tubes, using the marks to achieve the correct distance (40-1/4") between the front and rear landing gear. Hold with hose clamps. The 40-1/4" measurement is approximate; exact position of the front gear on the skid tubes is determined by alignment of the brackets on the gear to the bushings on the airframe (see photo #12).

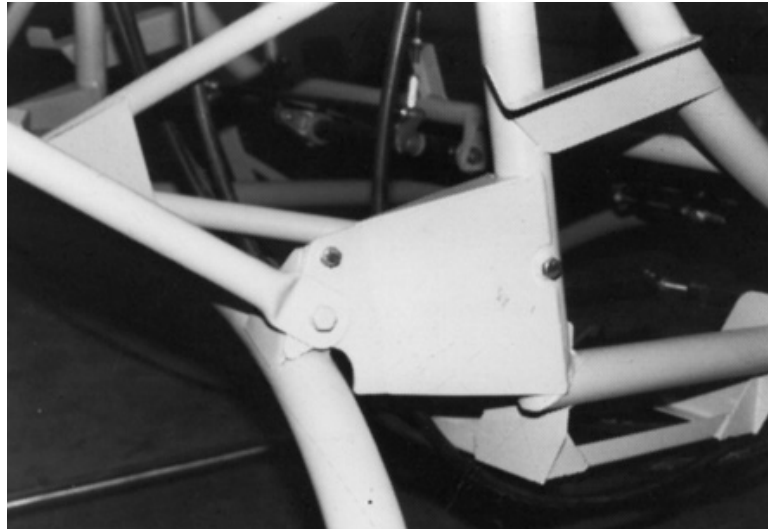
Note: The skid tubes are closer together on the rear than on the front. This allows for spread when the gear supports the weight of the helicopter.



**Photo #9**

Remove the tail boom support brace tubes and grind a radius on the ends of the tubes to allow the airframe to sit on the landing gear (arrow). Then clamp the tubes in place on the airframe bracket.





**Photo #10**

Place shims between the airframe and the landing gear. These shims are to ensure that the complete weight of the helicopter will be on the bolts. The shims may be from .020" to 1/4" thick to achieve the angles called for on the square drive tubes (see next photo). If more than 1/4" of shims are required, contact RotorWay. When the airframe is in the correct position, drill the 3/8" bolt holes in the landing gear brackets, using the existing holes in the brace tubes and airframe as a guide. Remove the shims and install the 3/8" bolts.

Note: The airframe is shipped with standard nuts on the 3/8" bolts. On final assembly, replace the nuts with the two 3/8" fiberlock nuts supplied on E10 CARD 1F.



**Photo #11**

Check the angles on the square drive tubes as follows:

1. The skid tubes must be level.
2. The rear square drive tubes should be level laterally.
3. The fore/aft square drive tube should be tilted downward approximately 4-1/2 to 5-1/2 degrees towards the front. (Exact angle is not critical.)

Note: Drill the rear landing gear attachment bolt holes and install the bolts only when the airframe is in the correct position.



**Photo #12**

Place an .020" shim between the landing gear and the airframe on each side. Drill the front landing gear attachment bolt holes and install the bolts.

Note: The landing gear may be shifted on the skid tubes for best alignment of the airframe bushings in the landing gear brackets. After the front bolts are installed, drill the 1/4" bolt holes above the 3/8" bolts on the rear landing gear and install the bolts.

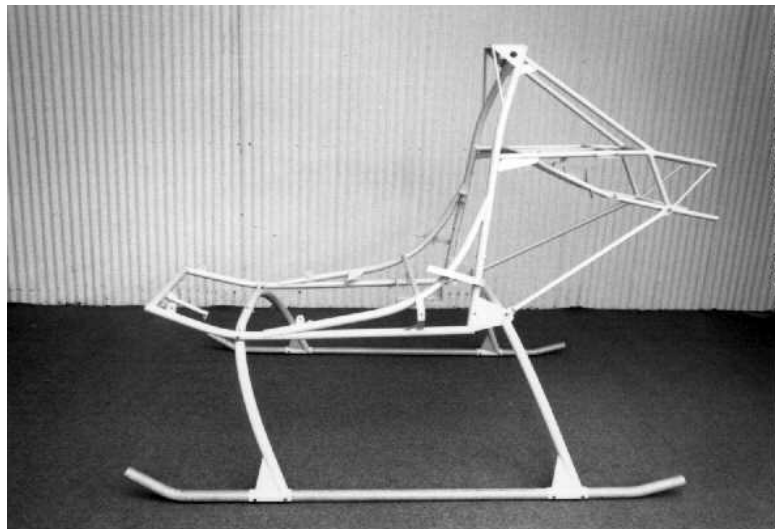
**Photo #13**

Locate and drill the attachment bolt holes in the shoes and skid tubes. Use a 7/8" thick board, the same length as the shoe, and mark 7/8" from both ends. Place this next to the shoe and use a center punch to mark the hole location. Mark and drill from both sides, then pass the drill through.



**Photo #14**

Landing gear bolted to the airframe and skid tubes.



**Photo #15**

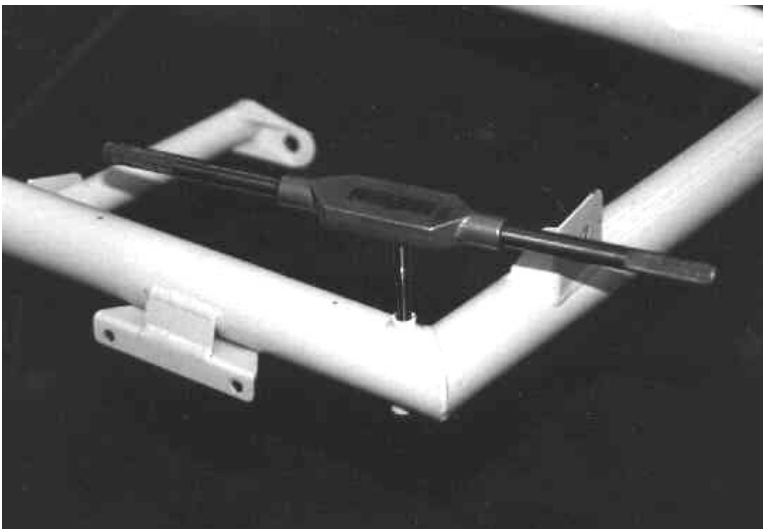
Grind or file each end plug to fit into the skid tubes. This should be a tight fit. Use a mallet to drive them in.





**Photo #16**

Drill both sides and install 1/8" pop rivets. Countersink the rivets on the front passenger side end plug so that the ballast weight tube will slide over without binding.

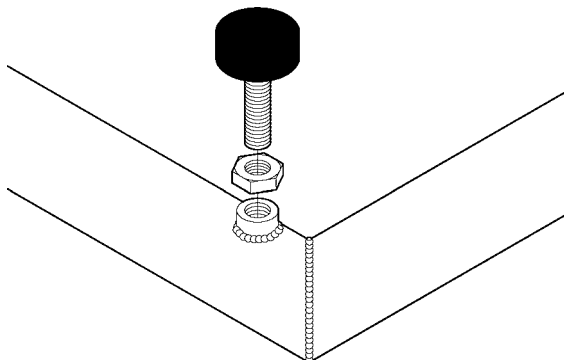


**BODY SUPPORT ADJUSTMENT PADS**

**Photo #17**

Cut or grind the four bushings in the front airframe cross tube so that they extend about 1/4" above the tube. Drill through each bushing with an "H" drill, then tap them with a 5/16-18 tap. Use plenty of oil when tapping.

Note: The standard drill size for a 5/16-18 tap is an "F" drill, but due to the hardness of the material we recommend an "H" drill for easier tapping.



**Photo #18**

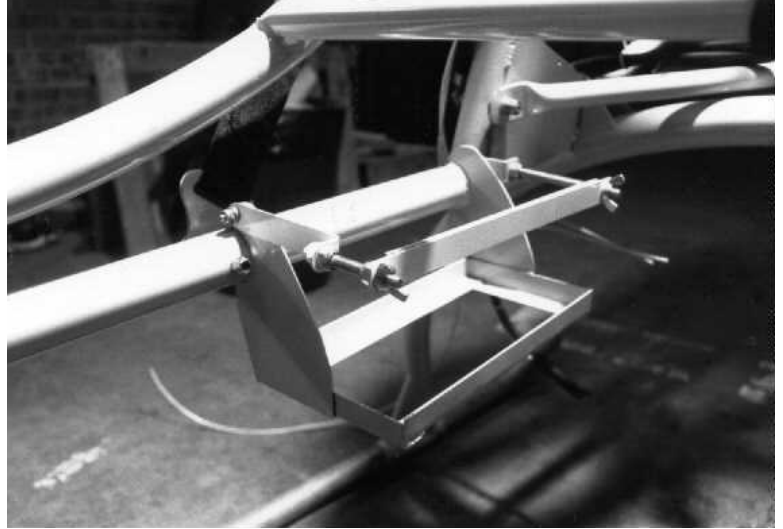
Install the body support adjustment pads into the tapped bushings using a 5/16-18 jam nut on each. Note: The adjustment pads and jam nuts are found on E10 CARD 1F.



**BATTERY BOX RETENTION STRAPS**

**Photo #19**

Make the battery retention strap, shown here installed on the battery box.



**Photo #20**

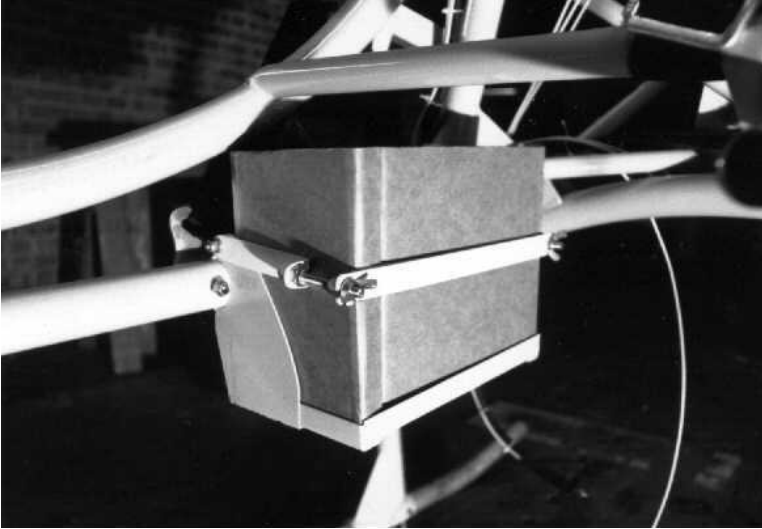
Rear view of the battery in the battery box. The front stud mounts the same as the rear stud shown here.



**Photo #21**

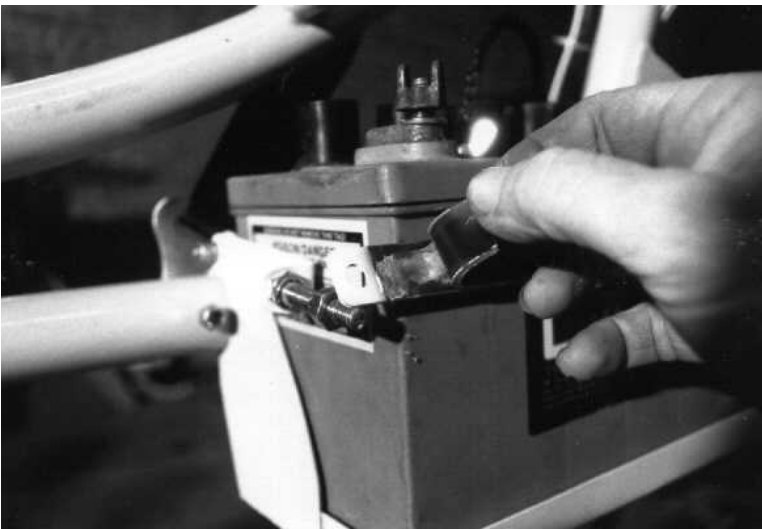
Side view of the battery clamped into the battery box.





**Photo #22**

To make the battery strap without the battery, use a cardboard box that will fit the battery box.



**Photo #23**

Use 3M weatherstripping adhesive to glue the rubber to the steel strap.