

AEROSTAR SERVICE BULLETIN #122

JANUARY 15, 1987

SUBJECT: All Classic IX and X baskets, S-66A and S-77A, otherwise known as IW model baskets of Aerostar or Raven manufacture are affected. A mandatory cable arrangement is to be installed as a superstructure/lower frame redundancy.

PROBLEM: The Aluminum frame of the Classic IX/X basket may be susceptible to failure under certain circumstances. Sudden impact and overload of the frame, following high cycle fatigue or previous off-design loading such as severe impact or static overloading may lead to a failure of the frame tubing in areas where the tube is fastened in contact with suspension fittings, interface pins, etc.

DISCUSSION: Two Classic IX/X baskets flown with Raven model S-77 envelopes at a near gross lift condition experienced tubing failure on landing. Independent testing lab analysis of the failed parts indicated primary evidence of impact and sudden gross overload of the frame system in the failed areas. The tube failed at the juncture between the support fitting (envelope attach point) and the third bolt hole.

Other evidence indicated that high cycle fatigue in conjunction with a form of stress corrosion may have contributed to the failures. This corrosion and fatigue could occur when the frame and attached fittings become loosened and worn over a period of time due to transportation with a burner attached, allowing off-design structural cyclic flexure.

Further evidence also indicated previous bending due to impact overload of the frame which also weakened and fatigued the aluminum superstructure in the failed regions.

APPLICABILITY: This Service Bulletin applies to all Classic IX/X baskets delivered with Raven model hot air balloon systems up to and including basket serial number IW-3002. All baskets fitting this classification must comply with procedures outlined in this Service Bulletin before future flight.

CORRECTIVE ACTION: A cable backup system, utilizing enclosed parts, routed external to the Aluminum frame of the gondola is to be installed per the following instructions. This procedure is not recognized as preventative maintenance and therefore may not be performed by persons other than those recognized by the FAA to perform aircraft repairs/alterations. Hot air balloon Repair Station or Repairman Certificate holders, Aircraft Mechanics or other FAA recognized individuals are qualified to perform procedures in this Service Bulletin.

PROCEDURE: The following tools will be required to attach the cable redundancy:

- \* 1/8 inch Nicopress sleeve compression tool or equivalent;
- \* large flat bladed screwdriver;
- \* cable cutter;
- \* hot air gun;
- \* #2 phillips screwdriver.

Verify that all of the following items have been received with this service bulletin:

- [1] [2] pcs 1/8" cable, appx 170 inches, no ends swaged
- [2] [2] pcs 1/8" cable, appx 140 inches, one end swaged
- [3] [6] 1/8" cable thimbles
- [4] [4] 1/4" rapid links
- [5] [6] pcs heat shrink
- [6] [6] 1/8" cable Nicopress sleeves
- [7] [4] appx 3 1/2" x 14" leather sleeves
- [8] [1] 30" flat cable guide tool

Referring to the attached schematic, the frame redundancy should be installed as follows:

- 1) Lay basket on its end and as shown in figure 1, route item [1] through the center floor stiffener board, adjacent to the frame tube, with the cable midpoint located appx at the floor stiffener board.
- 2) Route item [1] through the skid adjacent to the frame tube. A small hole may be provided in the skid by carefully punching through with a #2 phillips screwdriver or similar object of about 1/4" diameter. Be especially careful not to scratch the frame tubing. Refer to figure 2 for details.
- 3) Route item [1] through wicker adjacent to frame tubing, always keeping the cable as close to the tube as possible.
- 4) At a location about 3" from the top side of the floor, loop the cable around the tube as shown in figure 3. Spread the wicker so that the cable wraps directly around the frame tube. Be sure cable locks around itself as shown.

5) Finish routing item [1] cable through the wicker, always staying to the inner side of the frame tube.

6) Repeat for the remaining 3 corners.

7) Turn basket upright and snug up cables. (There should be no slack in the cable below the floor). Slide heat shrink stock, item [5], onto cable and then fabricate eyes with Nicopress sleeves, item [6] at a height relative to the connector fitting as shown in figure 4. Perform for all four corners. Wait for step 14 before warming the heat shrink tube.

8) Slide the cable, item [2], under the upright padded cover, between the cover and the padding, from the bottom. Keep the cable routed to the inner side of the tube. A piece of band material, item [8], is provided if this proves difficult. The band, however, should be inserted from the top. Wrap a spiral of electrical tape around the cut end of the cable and the lower end of the band and draw back up through the leather cover.

9) Pass the cable up through the burner support tube and push it through the opposite side. See figure 4 for routing.

10) Pass the cable down through the opposite cover using the same procedure as in step 8. Repeat the operation for the other end of the gondola.

11) Attach the superstructure to the gondola, then join one eye formed in step 7 with the eye already formed on the upper cable.

12) Pull the slack out of the upper cable at the un-swaged end. Form eyes at the remaining ends providing only enough slack so that the rapid links can be slid on and off easily. See figure 4. Remember to slide the heat shrink over the unformed end before sliding the Nicopress sleeve on.

13) Repeat steps 8 through 12 for the other end of the gondola.

14) Cut off excess from cables and then warm the heat shrink tubes held in place over the swage and cut end of the cable.

15) Ensure that a logbook endorsement is made stating compliance with Aerostar Service Bulletin #122. Please also take the time to fill out the enclosed compliance card.

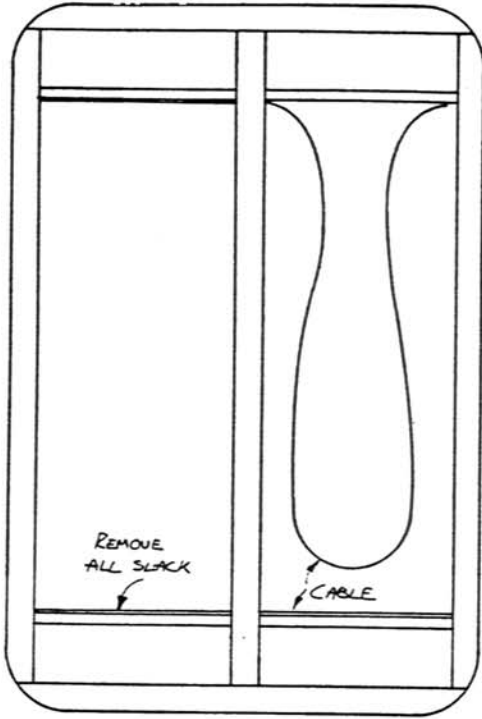


FIGURE 1.  
GONDOLA FLOOR

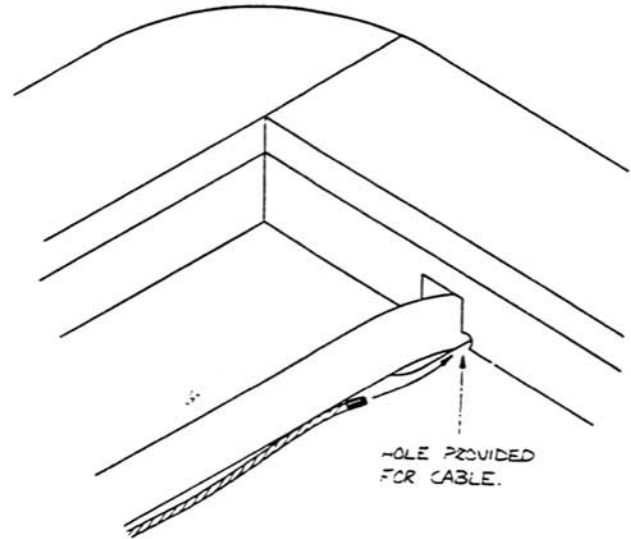


FIGURE 2

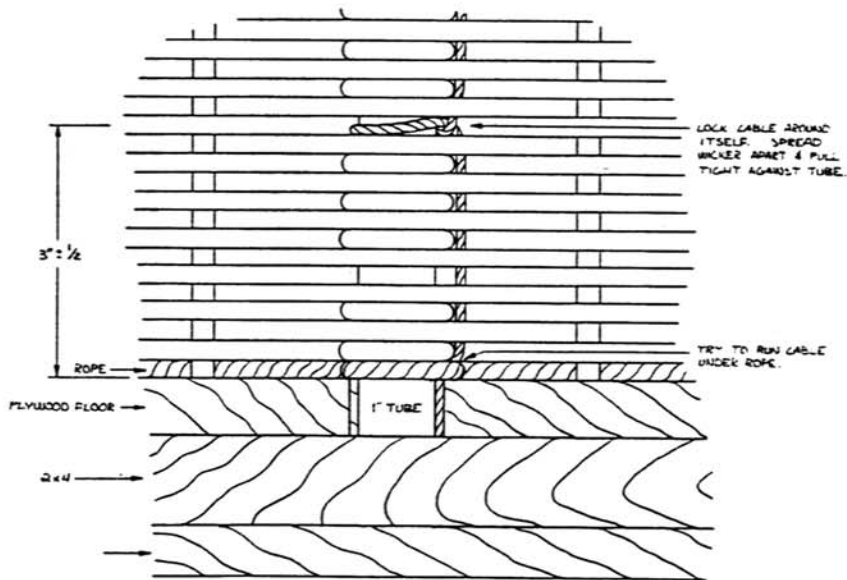


FIGURE 3

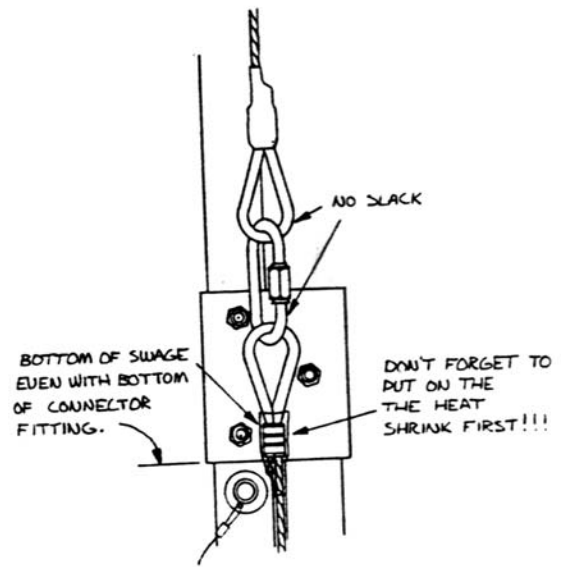
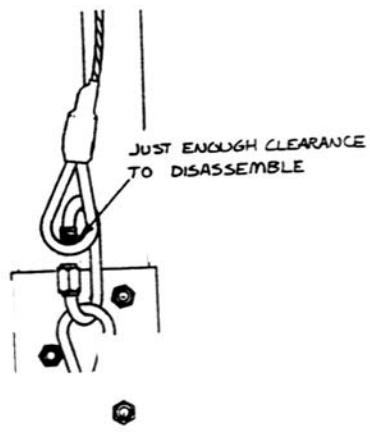
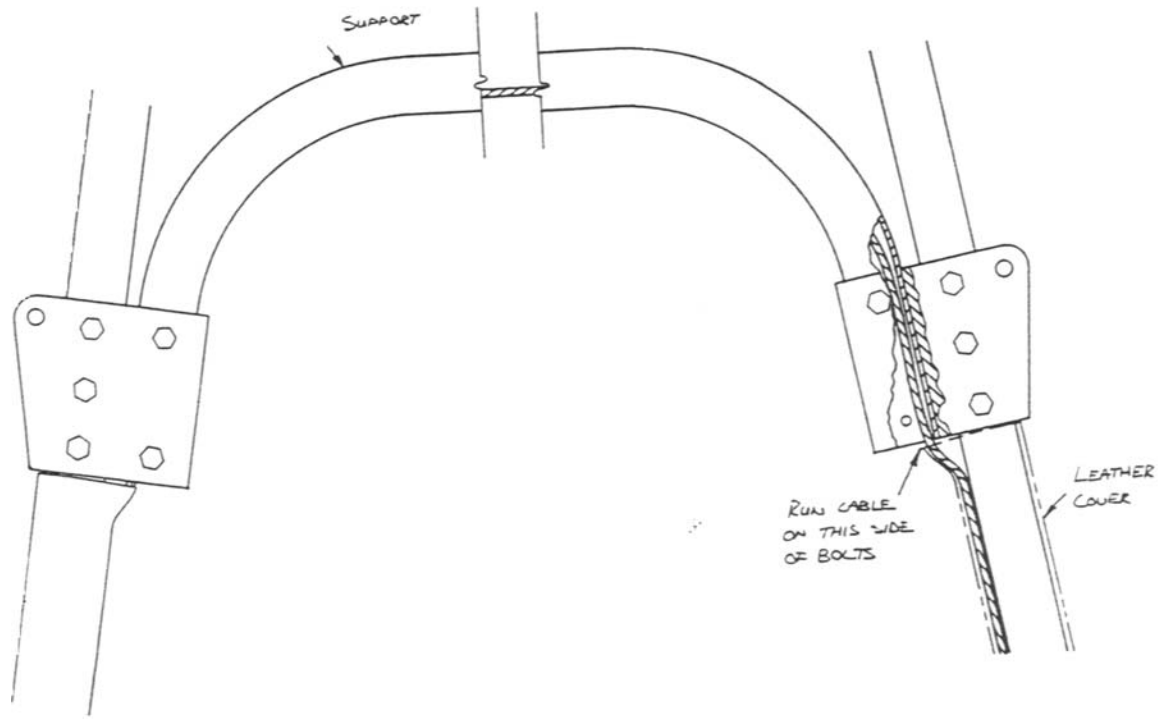


FIGURE 4