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## **Unapproved After-Market Components: Safety and Liability Concerns**

During a recent equipment malfunction incident that came to the attention of both PIA and USPA, several pairs of after-market tandem main risers suffered hardware bending due to the use of improper rings. These risers were manufactured by an FAA master rigger who did not have manufacturer or FAA approval. The two primary U.S. tandem system manufacturers upgraded these specific riser rings 24 years ago due to similar bending incidents. Had the rigger requested approval or consulted with the manufacturer, the inadequacy would have been discovered prior to failing in actual use.

In every case, it is crucial to consult the manufacturer of the original equipment before proceeding with the manufacture and sale of replacement components. Parachute systems and their components are far more complex and interrelated than ever before. Changing one small facet of a design could affect safety.

To achieve and maintain a sufficient level of safety and confidence for the skydiving public, the parachute equipment manufacturer designs and tests the product, administers a quality assurance program, and continues testing and improving the product throughout its lifetime.

For drop zone operators, a responsible quality assurance program for replacement components is essential to their safety and risk management program. In particular, equipment for tandem skydiving, student training, and rental calls for a higher standard of care. Except for main canopies, U.S. tandem system manufacturers do not authorize the use of after-market components on either TSO-approved or non-TSO'd components.

The parachute rigger must understand and recognize the importance of providing high quality, tested materials and components that meet approved standards. After-market products should meet the original standards or surpass them.

Altering or manufacturing any after-market part of a parachute system, especially any system used commercially, exposes the users to grave personal risk. The parachute operation, the manufacturer of the parachute systems, the person who performed the alteration, and the person who packed the parachute can be held responsible. FAA rules in the USA also hold the pilot of the aircraft and others involved in the parachute operation responsible for any potential violations (see “parachute operation” in FAA CFR 105, “Definitions”).

Riggers and operators are advised to avoid liberal interpretations of the Federal Aviation Administration Code of Federal Regulations, Advisory Circulars, and other regulatory and explanatory documents.