

CHAPTER 9. SHOULDER HARNESS INSTALLATIONS

SECTION 1. GENERAL

900. PURPOSE. The purpose of this chapter is to provide guidance for retrofit shoulder harness installations. Information contained herein may be adaptable for the installation of shoulder harnesses in aircraft for which aircraft manufacturer or Supplemental Type Certificate (STC) retrofit installations have not been developed.

901. HAZARDS AND WARNINGS. Installations that do not meet the minimum standards prescribed by regulations are not acceptable. At no time should a retrofit shoulder harness installation perform at less than the static test load requirements specified in Section 3, Table 9-1, Static Test Requirements.

902. ADDITIONAL REFERENCES. The following references (current editions) provide additional information for shoulder harness installations.

a. Advisory Circular (AC) 21-34, Shoulder Harness-Safety Belt Installations.

b. AC 23-17, Systems and Equipment Guide for Certification of Part 23 Airplanes and Airships.

c. AC 91-65, Use of Shoulder Harnesses in Passenger Seats.

d. Civil Aviation Regulation 6, Rotorcraft Airworthiness; Normal Category.

e. TSO-C22, Safety Belts.

f. TSO-C114, Torso Restraint Systems.

g. Aerospace Standard SAE, AS8043, Restraint Systems for Civil Aircraft.

903. INSTALLATION METHODS. Shoulder harness installations can be performed by minor or by major alterations to the type design, depending on the complexity.

✓ a. Minor alterations are limited to those where no change in the aircraft structure is required for mounting the harness. If the installation does not require operations such as drilling holes into or welding brackets onto the primary structure, it could be classified as a minor alteration. (See Figure 9-1.) Two examples of minor alterations for shoulder harnesses are:

✓ (1) Some aircraft manufacturers have included hard-points in the type design, such as nutplates or predrilled holes, for the mounting of harnesses. Some also provide service kits or service instructions that include parts and instructions necessary to install harnesses. If the harness installation does not involve modification of primary structures, it can be returned to service as a minor alteration, unless otherwise specified in the installation instructions. The authorized mechanic needs only to complete a maintenance record entry, and update the equipment list and weight and balance as required.

(2) In some instances, a cable or a bracket can be secured around a structural member, without altering the structure, which will accommodate attachment of the harness. Truss tube construction is most commonly retrofitted with harnesses using this method. After performing static load tests or obtaining stress analysis documentation, the record entries as described above are completed. Refer to chapter 1 to determine design loads.

b. Major alterations can be accomplished by one or more of the following methods and will