INSTALLATION and MAINTENANCE MANUAL
NUMBER PA234001

FAA/STC SA02298CH
PIPER PA23 Series Aircraft
Three Point Torso Restraint System Installations

PA-23, PA-23-160, PA-23-235, PA-23-250, PA-E23-250
Per Approved Model List

Model PA23-114FS

Model PA23-114IR

Alpha Aviation Inc.
1500 East Main Street
Owatonna, Minnesota 55060
800-653- 5112

Revision	Date	Change	Approved
A	5/10/2006	Initial Issuance	-
B	12/11/2016	Manual Update – Part Revision	-
C	11/01/2019	Add: Page 7- TSO Items; Or "Equivalent FAA Approved Restraint system"	DCM

**** FOR REVIEW ONLY – NO STC AUTHORIZATION ****

Table of Contents

1.0 Model Designations

Model Number	Product Description
PA23-114FS	Three-point restraint system, TSO-C114, Fixed torso strap
PA23-114IR	Three-point restraint system, TSO-C114, Inertial reel torso strap

2.0 Product Description

Model PA23-114FS

Accommodates the installation of a vendor supplied, FAA approved, TSO-C114 restraint system, at each pilot position. The restraint system incorporates a traditional pelvic restraint strap (lap belt) provided with the provision to attach, as needed, a single diagonal torso restraint strap. The upper end of the torso restraint strap is hard mounted to the airframe at a location aft and above the pilot position. The free end of the strap is attached to the pelvic restraint strap at the buckle location and adjusted, as necessary, by use of the cinch strap provided.

The attachment points for the pelvic restraint strap (lap belt) are continued in use, as they were provided by the manufacturer at the time of type certification.

This installation requires that the installing mechanic inspect the attachment hardware configuration for correctness and install the TSO-C114 pelvic restraint strap to the primary attachment points, using the original hardware configuration.

The attachment of the fixed end of the torso restraint strap is accomplished by the installation of an AN4-30A bolt e/w spacers, to the fuselage structure and passenger assist strap gusset, adjacent to each pilot position at fuselage station 112.0.

Model PA23-114IR

Accommodates the installation of a vendor supplied, FAA approved, TSO-C114 restraint system, at each pilot position. The restraint system incorporates a traditional pelvic restraint strap (lap belt) provided with the provision to attach, as needed, a single diagonal torso restraint strap. The upper end of the torso restraint strap is equipped with an inertial reel assembly, which is hard mounted to the airframe at a location aft and above the pilot position. The free end of the strap is attached to the pelvic restraint strap at the buckle location and is self adjusting through the inertial reel.

The attachment points for the pelvic restraint strap (lap belt) are continued in use, as the manufacturer provided them, at the time of type certification.

This installation requires that the installing mechanic inspect the attachment hardware configuration for correctness and install the TSO-C114 pelvic restraint strap to the primary attachment points, using the original hardware configuration.

The attachment of the inertial reel end of the torso restraint strap is accomplished by the installation of an AN4-30A bolt e/w spacer, to the fuselage structure and passenger assist strap gusset, adjacent to each pilot position at fuselage station 112.0.

3.0 Airframe Qualification

Aircraft that have a standard airworthiness certificate are eligible for this installation.

The airworthiness certificate must be issued in the Normal category.

Inspect the aircraft and its records to assure that any change in structure or window installation does not preclude the installation of the Model PA23-114FS or Model PA23-114IR restraint system.

4.0 Weight and Balance

Model PA23-114FS has a location of station 65.33 and a net weight change of 1.75 pounds per installation; two pilot positions.

Model PA23-114IR has a location of station 65.33 and a net weight change of 3.50 pounds per installation; two pilot positions.

5.0 FAA Documentation

The installation of either model restraint system is an FAA approved installation, when accomplished using the approved data and parts. All parts supplied by Alpha Aviation Inc. are either FAA/PMA modification parts or standard parts and the installation manual PA234001 is FAA approved data.

When the installation is completed, per the approved data, the installer should:

Update the aircraft equipment list.

Update the aircraft weight and balance record.

Install the "Instructions for Continued Airworthiness" (ICA)) in the aircraft maintenance records.

Make the appropriate maintenance entries in the aircraft log book.

Prepare and submit FAA Form 337.

6.0 Instruction For Continued Airworthiness (ICA) Dated 5/10/2006

Models; PA23-114FS / PA23-114IR Three Point Restraint System

1. Introduction; This ICA is issued to provide information pertinent to the inspection and ongoing maintenance of the TSO-C114 Occupant Restraint System installed on this aircraft.

2. Description;
This aircraft has been modified by FAA approval for the installation of a TSO-C114 occupant restraint system, which consists of a lap belt arrangement and single diagonal shoulder strap. The shoulder strap is controlled by a cinch strap or inertial reel. One restraint system is installed at each pilot position.

3. Operation;
The occupant restraint system operates normally in all respects. The lap belt portion is connected via a lift lever buckle. The strap is shortened or lengthened by the use of the adjuster, which is integral with the connector half of the buckle assembly .

The shoulder strap originates at the sidewall upper attach point and is available to the pilot over the shoulder. It is connected to the lap belt portion of the system by adjusting the length and attaching the shoulder belt to the lap belt connecter half.

4. Servicing information; No field service allowed.

5. Maintenance instructions;
Inspection of the occupant restraint system shall be made on an Annual / 100 Hour Inspection basis and consist of an operational check of each installed belt system, and a visual inspection of all mounting hardware. Field maintenance is limited to the replacement of mounting hardware.

6. Trouble shooting procedures; None
7 Removal and replacement; No special procedures apply.
8 Diagrams; None required.
9 Special inspections; None required.
10 Special treatments; None required.
11 Data; Standard procedures and torque values apply.
12 Special tools; None required.
13 Does not apply.
14 Overhaul periods; Overhaul required “on condition”.
15 Airworthiness limitations; None required
16. Revisions; All revisions to this document must be prepared and presented to an FAA inspector, for field approval in the form of an FAA Form 337.

End

7.0

Issue B, Dated; 12/11/2016

INSTALLATION INSTRUCTIONS

UPPER MOUNT POINT

PIPER PA23 Series Aircraft

Per Approved Model List

These instructions cover the installation of the torso restraint upper mount; centered at fuselage station 112.0, adjacent to each pilot position.

The upper mount installation is accomplished by reference to Drawings PA233001 and PA233002. The attachment of the TSO-C114 restraint system is accomplished by reference to Drawing PA233002.

Except as noted below, the right and left side upper attach point installations are identical.

Step-by-Step Instructions;

Caution – Some aircraft have had wiring run through the headliner and window channel area. The installer must verify the existence of any wiring and prepare to work around or relocate the wiring, as necessary.

1. By reference to Drawing PA233001, locate fuselage station 112.0 on the right and left side of the fuselage. The vertical location is above and horizontally aft of each pilot's outboard shoulder.

2. Remove the passenger assist strap, interior trim and headliner to the extent necessary to gain access, exposing the passenger assist strap mounting gusset.

Note – The use of a heat gun or hair dryer to aid the release of any headliner adhesive can reduce the risk of damage to the headliner material.

3. Refer to Drawing PA233002. Drill out and remove the rivets securing the passenger assist strap nut plate to the gusset.

4. Enlarge the passenger assist strap nut plate hole – center hole – to ¼" (.250).

5. Carefully position the ¼" drill bit at a right angle to the passenger assist strap gusset. Continue drilling through the fuselage skin.

6. Install the AN4-30A bolt, through from the outside. Assemble the internal spacer and washers as shown on drawing PA233002.

7. Reinstall the headliner and moldings, locate and open the .250-inch mounting hole.

8. Complete the upper torso restraint strap or inertial reel installation using the hardware configuration as shown on Drawing PA233002.

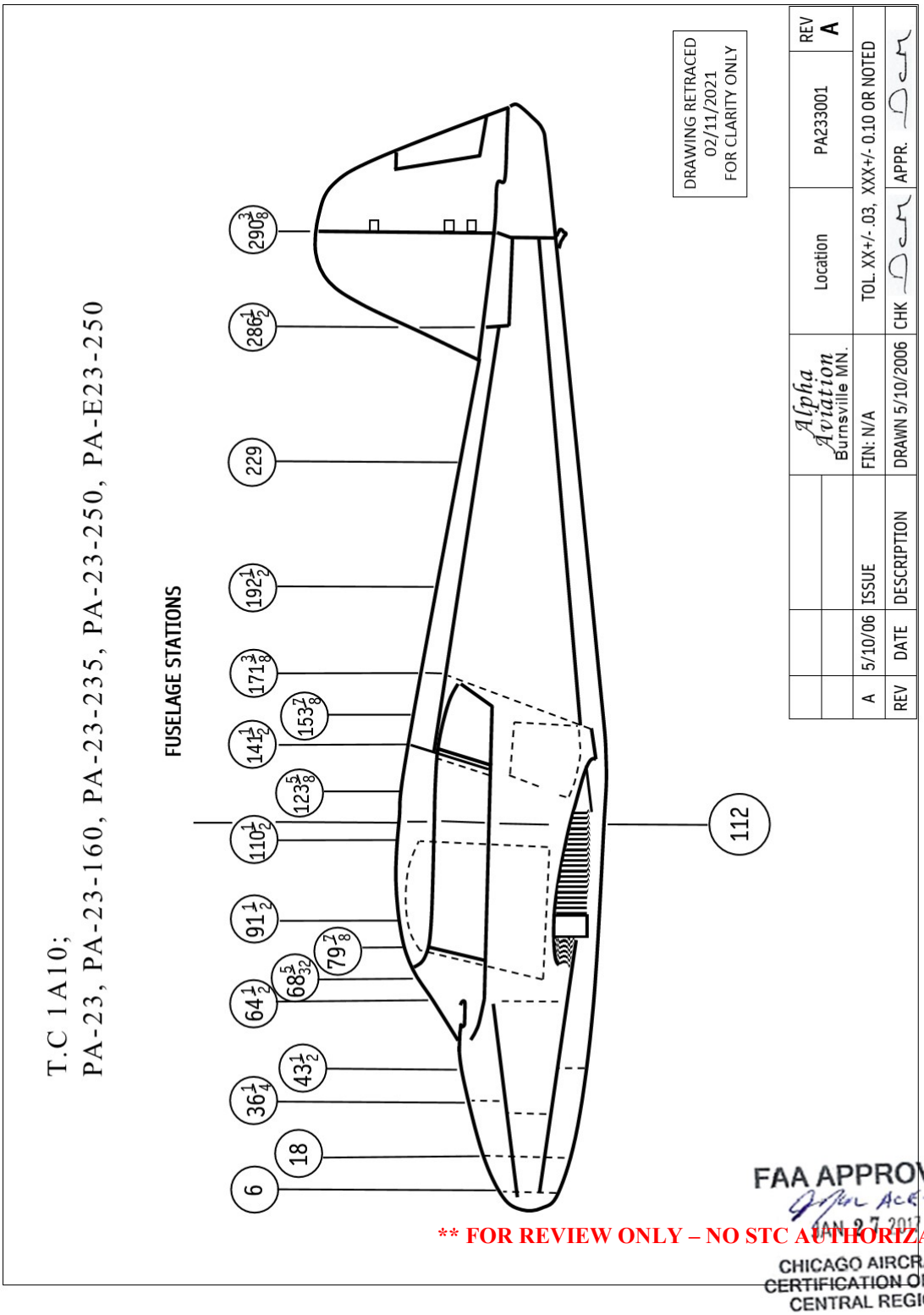
9. Torque each bolt to 60 in/lbs dry torque.

Lap Belt Attachment;

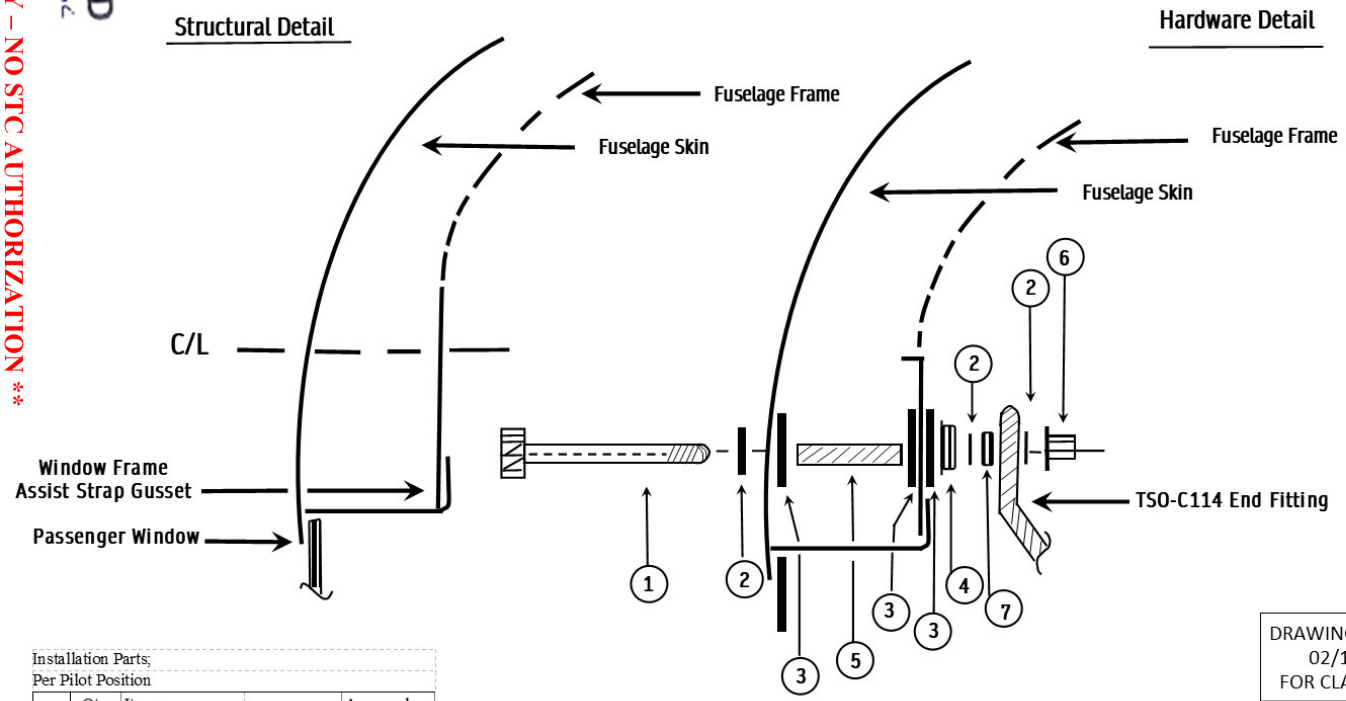
10. Remove the existing lap belts at their primary mounting point, saving the attachment hardware.

11. Install the new lap belt assembly, **buckle portion inboard**, using the original hardware configuration; as shown in Piper PA23 Series Maintenance Manual.

12. Test fit and inspect each completed installation. All end fittings and inertial reels should be firmly attached, all hardware should be tight and each belt segment should be free to rotate in response to any restraint system loading.



T.C 1A10;
PA-23, PA-23-160, PA-23-235, PA-23-250, PA-E23-250



DRAWING RETRACED
02/11/2021
FOR CLARITY ONLY

Installation Parts;
Per Pilot Position

	Qty	Item		Approval
7	1	NAS75-4-004	Bushing	Standard
6	1	NAS21042-4	Nut	Standard
5	1	PA232001	Spacer	FAA/PMA
4	1	AAI 4.2005	Bushing	FAA/PMA
3	3	AN970-4	Washer	Standard
2	3	AN960-416	Washer	Standard
1	1	AN4-30A	Bolt	Standard

			Alpha Aviation Burnsville MN.	Installation Detail	PA233002	REV A
A	5/10/2006	ISSUE	FIN: N/A	TOL. XX+/- .03, XXX+/- .010, OR NOTED		
REV	DATE	DESCRIPTION	DRAWN 5/10/2006	CHK.	APPR.	

PA23 INSTALLATION PHOTOS

FIXED STRAP

INERTIAL REEL

OUTSIDE

Last Update 02.09.2021