



# SERVICE BULLETIN

No. 319

Piper Aircraft Corporation  
"FAA DOA EA-1 Approved"

Lock Haven, Pennsylvania, U.S.A.  
April 19, 1971

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- Subject: Exhaust System Inspection and Modification
- Models Affected: PA-23-250 (Six Place) and PA-E23-250 (Six Place);  
Normally Aspirated Only.
- Serial Numbers Affected:
- I. Factory Installed Ball Jointed Stack Assemblies:  
27-4330 to 27-4559 incl., 27-4561 to 27-4575 incl.,  
27-4577 to 27-4619 incl., 27-4621 to 27-4650, 27-4652  
and 27-4653.
  - II. Field Replaced Ball Jointed Stack Assemblies on any of  
the following aircraft:  
27-2505 to 27-4329 incl.
- Compliance Time:
- I. Aircraft with 50 hours or less operation time; inspect  
and modify (per attached instructions) within the  
next 25 hours of operation.
  - II. Aircraft (regardless of time) that have had existing  
stacks removed and reinstalled or replaced within  
the last 50 hours operation time; inspect and modify  
(per attached instructions) within the next 25 hours of  
operation.
  - III. Aircraft with operation time of 50 hours or more;  
inspect and modify (per attached instructions) at the  
next 100 hour inspection or annual inspection, which-  
ever occurs first.
- Purpose: An analysis of recent product condition reports indicates  
the necessity for further detailed installation and/or  
maintenance information concerning the above referenced  
aircraft exhaust system, with particular reference to the  
exhaust stack ball joints. Adherence to the attached exhaust  
system installation/maintenance information should preclude  
premature exhaust system failures such as separation at  
the front crossover slip joint, or tail pipe breakage, or both.

This Service Bulletin provides material and instructions  
for the inspection and modification of the above referenced  
aircraft exhaust system to preclude premature exhaust  
system discrepancies of a nature described above.

(over)

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Instructions:

1. Exhaust System Inspection and Adjustment Instruction plus Sketch "A" - Inspection Points and Sketch "B" - Adjustments are attached, and are to be adhered to as denoted in Compliance Time I, II and III, above.
2. Modify the exhaust system by replacing the existing Exhaust Stack (Crossover) Shrouds with improved Exhaust Stack (Crossover) Shrouds, as noted in the attached instruction sheet and Sketch "C" - Crossover Shroud Installation.

Material Required:

One (1) each (per engine) Exhaust Stack (Crossover) Shroud, part number 33178-02 (top half); and

One (1) each (per engine) Exhaust Stack (Crossover) Shroud, part number 33178-03 (bottom half).

Availability of Parts:

Your Piper Dealer.

Effectivity Date:

This Service Bulletin is effective April 30, 1971.

Summary:

The inspection and material replacement requirements of this Service Bulletin will be accomplished free of charge by your Piper Dealer for aircraft designated in Compliance Time I and II, above.

Material will be provided free of charge by your Piper Dealer relative to aircraft described in Compliance Time III, above.

**CHECKS AND ADJUSTMENTS OF BALL JOINT EXHAUST SYSTEMS. (Refer to Sketch A, B and C.)**

It has come to our attention that, in a few instances, the purpose of the ball joints, which have been added to the Aztec exhaust system, has been misunderstood. This has resulted in improper adjustment of the exhaust system causing separation at the front crossover slip joint or breaking of the tailpipe, or both.

The ball joints are not intended to take up any misalignment; that is, they should never be angled in any direction to position the tailpipe in the firewall "chute." You will notice that the crossover pipe fits into a slip joint at the tailpipe aft of ball joint. Obviously, then, the tailpipe must be held in its proper position in order for the crossover pipe slip joint to properly align and perform its function.

When the tailpipe is in the correct position (tube center line straight thru the ball joint) the crossover tube should align properly and have proper engagement at both the front and rear slip joints. This will prevent loading the front crossover slip joint in a manner which tends to separate the exhaust system at this point. Detailed inspection procedures are given below.

A new shroud assembly P/N 33178-02 and 33178-03 must be installed in place of the existing assembly. This must be accomplished on both engines. Refer to instruction below and Sketch C.

1. Remove both engine cowls. (Refer to Service Manual.)
2. Visually inspect both outboard exhaust stacks for alignment of ball joint tubes, crossover tubes, and for any cracks which may have developed in the welds as shown in Sketch A.
3. The center line of the short slip joint tube on the tailpipe must be parallel with the center line of the tailpipe tube as shown in Sketch A, top and side views. (Remove the figure eight clamp.)

**NOTE**

If the checks described in step 3 shows any misalignment between the two tubes or cracks at any of the welds, the tailpipe assembly should be replaced.

4. The center line of the ball joints must match the center line of the mating tubes, as shown in Sketch A.
5. If the ball joints are not properly aligned, remove the outboard exhaust stacks and crossover tube to properly realign the stacks.

**NOTE**

To facilitate alignment, the complete exhaust system should be loosened.

6. Clean and apply Fel-Pro High Temp. anti-seize compound to both ends of the crossover tube, covering approximately two inches. To determine that the slip joints are installed properly, insert the crossover tube into the slip joints as far as it will go, then place a reference mark on the tube, in line with the end of the slip joint.

**CAUTION**

Use a strip of masking tape to show the reference mark. Do not scribe a reference mark or use a grease pencil, as this could cause a weak spot or hot spot on the tube.

**NOTE**

The above procedure (step 6) must be accomplished at both ends of the crossover tube and its mating slip joint.

7. Align the ball joint center line with the center line of the mating tube, forward and aft of the ball joint as shown in Sketch B, Figure 1. Ascertain that the crossover tube is properly positioned in the slip joints by checking the location of the previously made reference marks. Retighten the exhaust system.

8. Ascertain that the support bracket is shimmed to clear the counterbore on the sump housing with AN960-416 and AN960-416L washers (.062 max). Adjust the support bracket so there is no preloading on the exhaust system.

9. Adjust the clamp at the end of the support bracket to securely hold the tube, refer to Sketch B, Section B-B.

**NOTES**

1. The crossover tube must be free to move at both slip joints prior to clamping.
2. There must be a minimum clearance of 1-1/4 inches between the tailpipe and the firewall chute, as shown in Sketch B, Section C-C. If this dimension is not obtainable, the system is not set properly and should be readjusted.

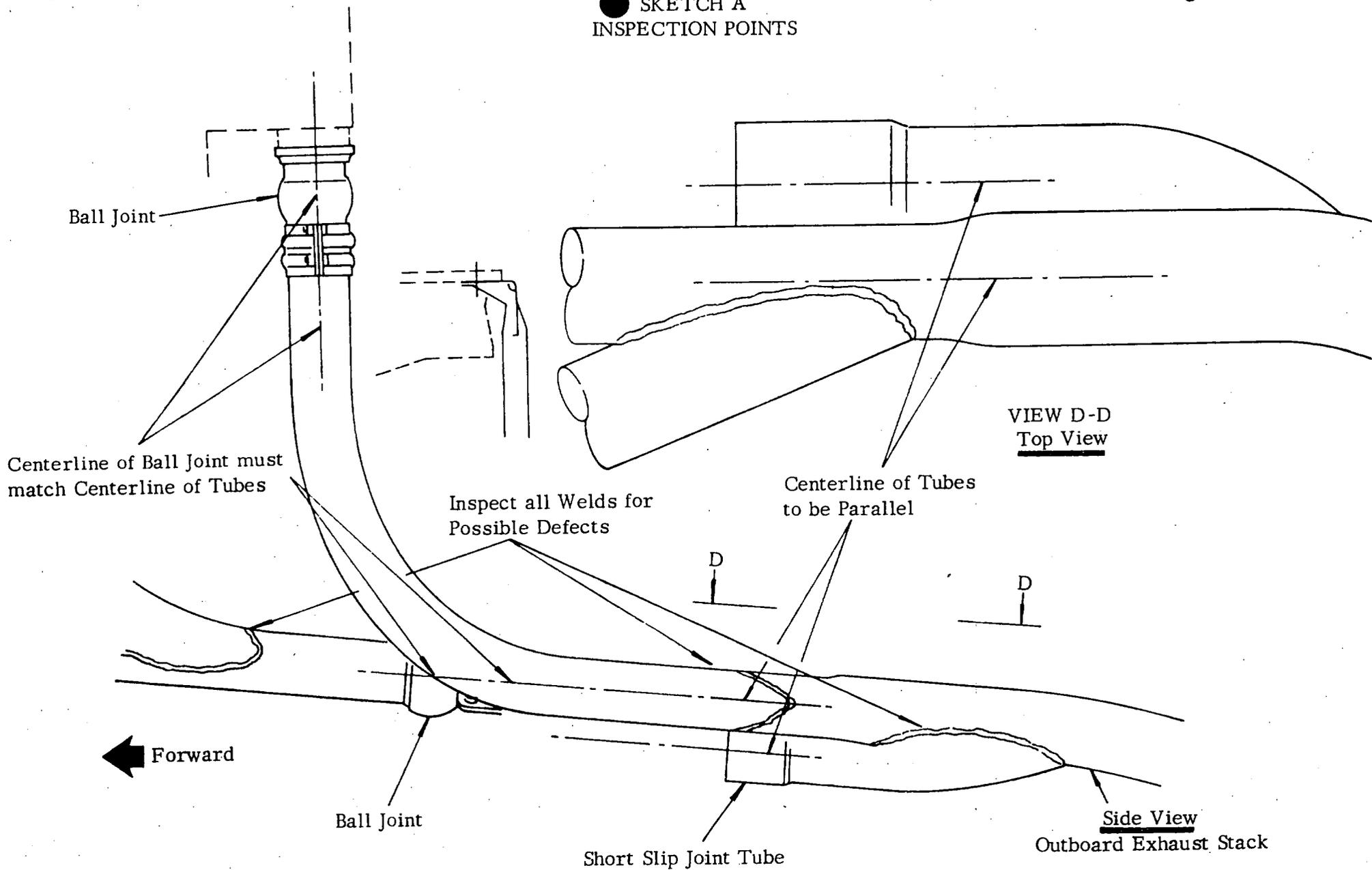
10. Replace existing shroud assembly with the new assembly P/N 33178-02 and 33178-03. Ascertain that 3/8 of an inch clearance is maintained between the end of the take-off assembly and the flange on the new shroud (Refer to Sketch C). The mounting holes of the new assembly should match the existing holes of the clamp assembly. The clamp should be moved to locate the shroud and maintain the end clearance.

11. Ascertain that the take-off assembly is securely fastened to the stack, this may require bending the ears of the take-off assembly down over the stack before tightening the clamp. (Refer to Sketch C.)

**NOTE**

Recheck all fasteners for tightness and reinstall the engine cowlings. (Refer to Service Manual.)

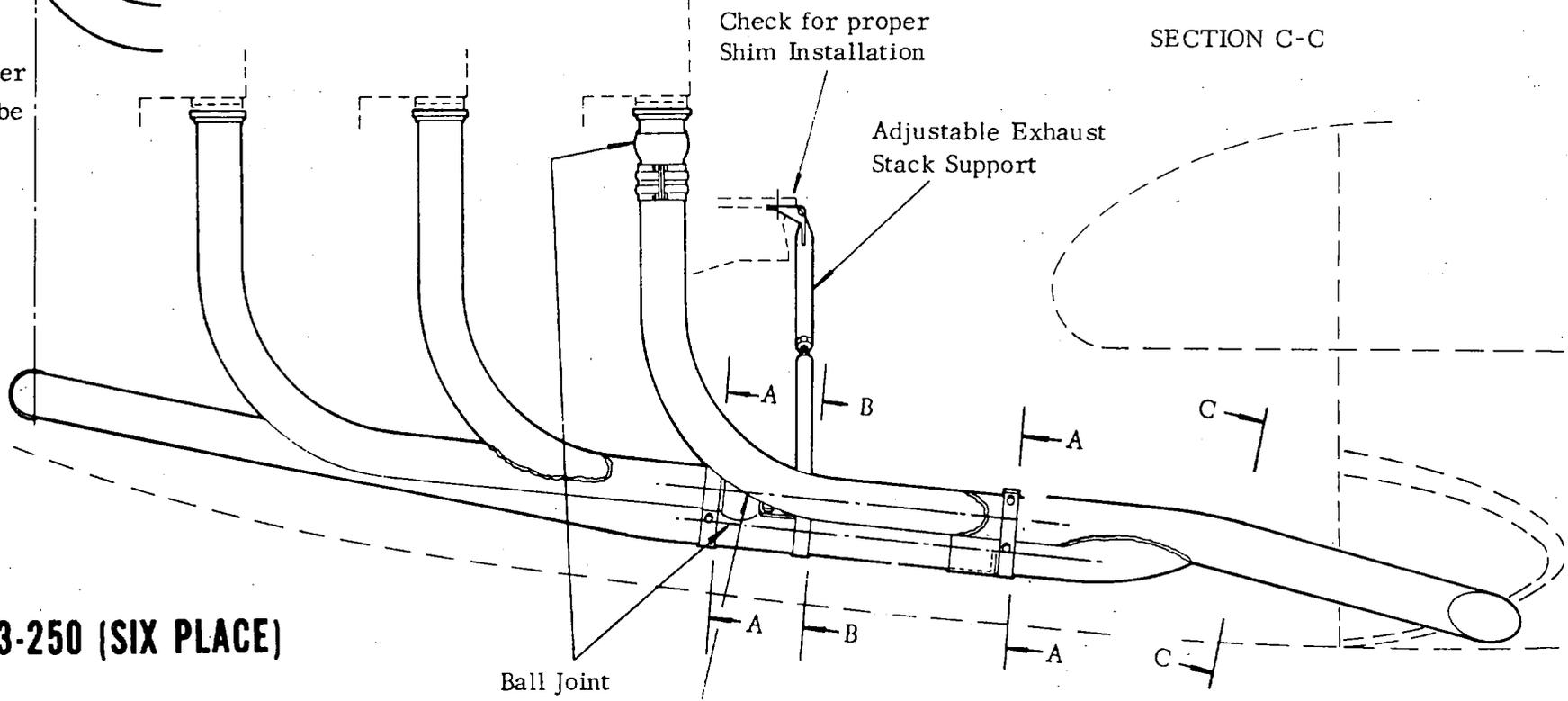
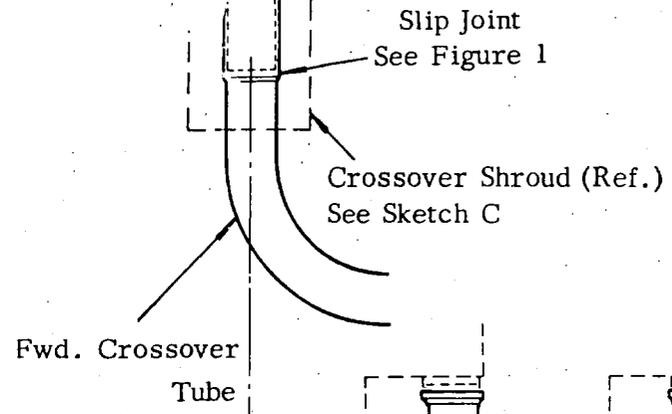
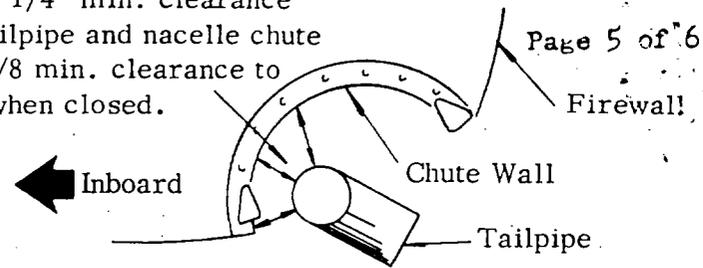
● SKETCH A  
INSPECTION POINTS



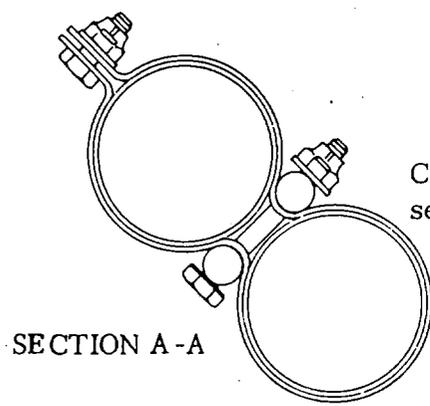
FA-23-250 (SIX PLACE)

● SKETCH B  
ADJUSTMENTS

Maintain 1 1/4" min. clearance  
between tailpipe and nacelle chute  
wall and 1/8 min. clearance to  
cowl flap when closed.

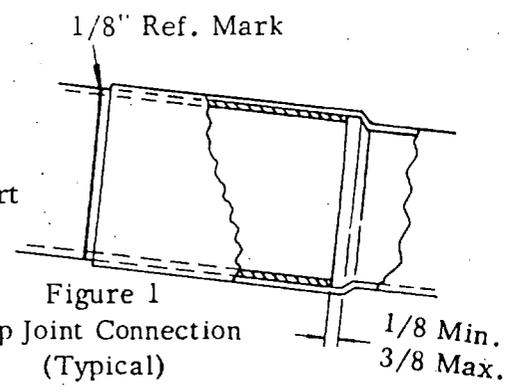
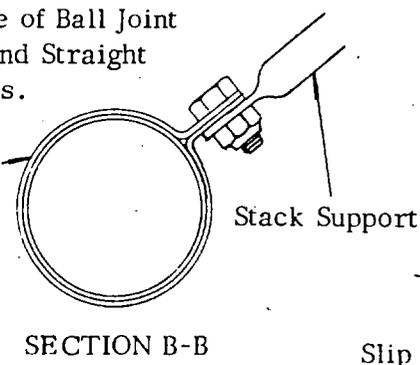


**PA-23-250 (SIX PLACE)**



Centerline of Ball Joint  
Parallel and Straight  
with Tubes.

Clamp must be  
secure on tube



● SKETCH C  
CROSSOVER SHROUD  
INSTALLATION

← Outboard (Left Engine) (Ref.)  
Inboard (Right Engine) (Ref.)

