SERVICE LETTER No. 819A

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.
August 31, 1977 M

(Supersedes and voids Service Letter No. 819 dated June 28, 1977)

Subject: Air-Conditioning Compressor Drive Belt Alignment Procedure

Reason for Revision: Revised belt alignment procedure, ref. attached sketch/instruction data, items q.1. and r; revised Sketch "C"

Models Affected:	Serial Numbers Affected:
PA-31T Cheyenne	31T-7400002 and up.

Compliance Time: At owner/operator's discretion.

Purpose: An air-conditioning system compressor drive belt alignment tool and detailed alignment procedures have been developed and are being announced by means of this Service Release. This product refinement program is designed to insure proper air-conditioning compressor drive belt alignment and to extend the operational life of the compressor drive belt.

Instructions: The attached sketch/instruction data specifies the detailed compressor drive belt alignment procedure and features application of the new alignment tool (reference Material Required, below).

Material Required: Piper Part No. 49186-02 Air-Conditioning Compressor Drive Belt Alignment Tool, recommended for Cheyenne Field Service Facilities at $ 8.42I each.

Availability of Parts: Through Piper CORPAC's.

Effectivity Date: This Service Letter is effective upon receipt.

Summary: Although the technical content of this Service Release is primarily directed to the Cheyenne Field Service Facilities, this product refinement Service Release also notifies interested Cheyenne owners/operators of the availability of the above referenced new air-conditioning system maintenance procedure, designed to minimize belt replacements and prolong air-conditioning drive belt service life.

AIR CONDITIONING COMPRESSOR DRIVE SYSTEM INSPECTION The following procedure is recommended at the next opportune maintenance and/or inspection interval, or sooner, if compressor drive belt replacement or related air-conditioning system problems occur. (Refer to Figure 13-37A.)

a. Remove the upper and lower cowling from the right engine.

b. Relieve the compressor drive belt tension by loosening the locknut on the adjustment rod and backing off the adjustment.

c. Loosen the top mounting bolt on the compressor.

d. Loosen the bottom mounting bolt to allow the adjustment bracket on the compressor to move freely with the compressor.

e. Remove the adjustment rod at the compressor by removing the attachment bolt.

f. Remove the snap ring (B) from the end of the quill shaft, groove (B).

g. Remove the safety wire and compressor drive cap screws and cap from the housing.

h. Inspect the cap for evidence of rubbing on cap under snap ring (B). If there is evidence of galling or rubbing under the snap ring, spot face the aft side 1 in. dia. x .060 deep.

i. Inspect the inner snap ring (A) and washer for security, if faulty replace these parts. Use Walds Kohinoor Snap Ring P/N 5160-47.

j. Inspect the quill shaft end play, it should not exceed .005 of an inch. If more than .005 of an inch end play is found, remove the shaft and inspect the complete shaft for spline wear and snap ring groove condition. If the shaft is worn or faulty, replace it.

k. Inspect the ball bearings for flat spots by slowly rotating the bearings, if found defective, replace the bearings.

l. If the shaft is in good condition, but the end play is more than .005, and/or the snap rings or groves are deformed it will be necessary to re-machine the snap ring groove and install a Walds Kohinoor Snap Ring No. 5160-47 per the following instructions: (Refer to Sketch B.)

1. Measure dimension (C) which is the distance from the outer faces of both bearings.
2. Measure thickness of washer used with inner snap ring (A).
3. Re-machine snap ring groove (A) so that the forward edge of groove (A) on dimension (D) equals dimension (C) plus the washer thickness (+.005/-.000). Groove dimensions are as follows: .442/.445 minor dia. and .046/.049 width.
4. If the snap ring groove (B) is damaged, re-machine it to accept the heavier snap ring, holding dimension (E) at 2.729 + .010/-.000 of an inch.

m. Clean any paint from the cap and housing mating surface.

n. In both the housing and end plate inspect bearings for looseness, they should be a press fit on early models and Loctited in place on later models.

o. If the bearings show sings of rotation within the housing or end plate, or if by measurement the housing or end plate bore is eccentric by more than .005 total indicator runout, it will be necessary to replace the housing and bearing.

p. When the bearings are replaced in new housing, Locitite "E" should be used on the outer surface of the bearing only.

q. With the drive unit assembled in accordance with service manual and the belt installed, proceed to check belt alignment as follows: (Refer to Sketch C.)

1. Remove the compressor drive cap and attachment screws as shown in Sketch C. Retain screws and washers.
2. Attach the alignment tool P/N 49186-02 to the compressor drive by using two MS35276-264 screws.
3. Tighten the attaching screws, making certain the tool is clear of all obstructions and lightly tighten the slip nut and bolt on the tool.
4. Tighten the compressor drive belt by pulling the compressor by hand.
5. While maintaining belt tension tighten the bottom attachment bolt.
6. Reattach the adjustment rod to the compressor and adjust to achieve the proper belt tension (Use a tensiometer, such as a Gates Rubber Co., 150.) (Refer to Table) and pulley alignment.

NOTE

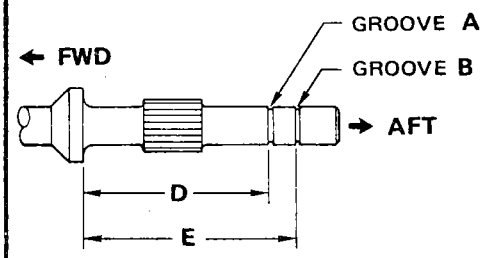
When acquiring belt tension, maintain even clearance between the face of the compressor pulley and alignment tool.

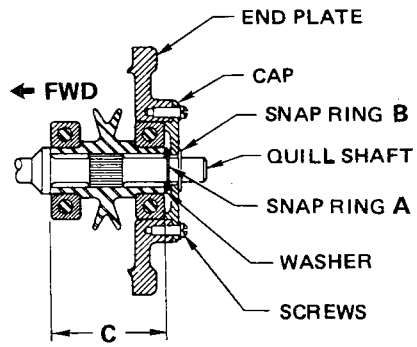
7. Tighten the top mounting bolt on the compressor.
8. Should it be necessary to align the pulleys forward or aft to achieve alignment, the support end of the housing can be milled up to .09 of an inch on either side and an aluminum or steel shim washer used to adjust the compressor position.

r. With the alignment completed, remove the alignment tool and reinstall the drive cap with original screws and washers. Safety wire the screws.

s. Reinstall the engine cowling.

Ref: S.L. #819A

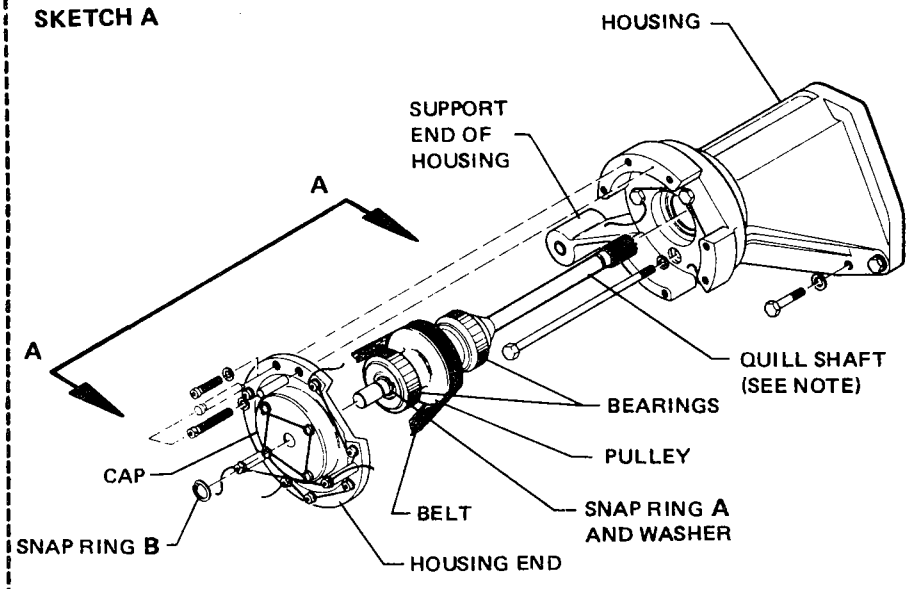




VIEW A-A

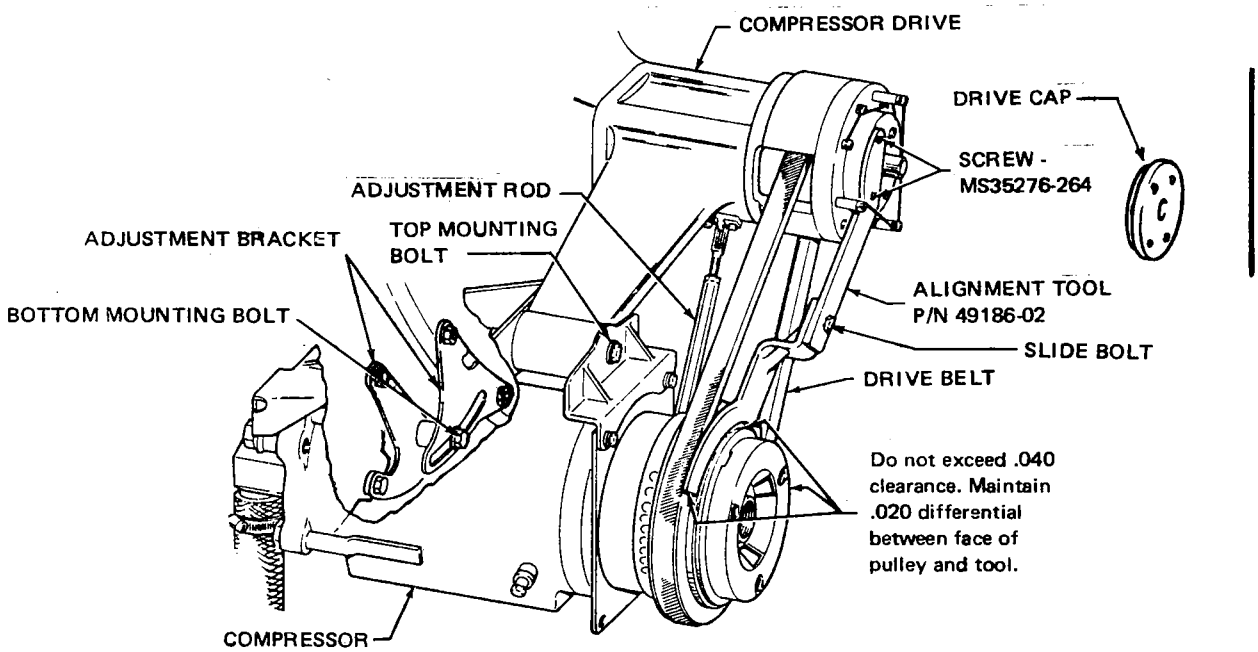
SKETCH B

SKETCH A



NOTE
ANYTIME QUILL SHAFT IS REMOVED LUBRICATE WITH MOLYBDENUM DISULFIDE, TYPE "G" PASTE FORM TYPE LUBRICATE BEFORE REINSTALLING.

Belt Condition	Minimum Tension Allowed	Required Tension
New		100 lbs. ± 5 lbs.
After One Hour	60 lbs.	75 lbs. ± 5 lbs.
In Service	50 lbs.	60 lbs. ± 5 lbs.



SKETCH C

COMPRESSOR DRIVE BELT ALIGNMENT

Figure 13-37A. Compressor Drive System Inspection

Ref: S.L. #819A