



SERVICE BULLETIN

No. 739

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.

FAA Approved

March 1, 1982

M

Subject:

Restriction of Flap Travel and Inspection
of Wing Flap Flexible Drive Shaft

Models Affected:

PA-31-300 Navajo, PA-31 Navajo
PA-31-325 Navajo C/R
PA-31-350 Chieftain
PA-31P Pressurized Navajo

Serial Numbers Affected:

31-2 through 31-7812129
31-5001 through 31-7852171
31P-1 through 31P-7730012

Compliance Time:

- PART I: Within the next twenty-five (25) hours of operation.
PART II: Within the next one hundred (100) hours of operation or at the next scheduled inspection interval or Programmed Inspection Event, whichever occurs first, and at each five hundred (500) hours of operation thereafter -- subsequent to initial compliance with this Service Release.
PART III: On or before August 1, 1982.

Purpose: Recent field reports have been received indicating flap system malfunctions which were the result of failures of the wing flap flexible shaft assemblies. Should such a failure occur, an asymmetric ("split flap") condition could result. An asymmetric flap condition in excess of 25° flap extension could result in loss of lateral control.

Recent Flight Test evaluations have demonstrated that restriction of flap travel to 25° will allow the aircraft to be controllable should a full, split flap condition occur.

This Service Bulletin provides instructions in three (3) PARTS as follows:

PART I

Restricts the use of full flaps to 25°, requires installation of temporary placards and incorporation of hand written Pilot's Operating Handbook/AFM revision until compliance with PART III of this Service Bulletin is completed.

PART II

Includes detailed instructions for inspection of the wing flap flexible shaft assemblies.

(over)

Purpose: (continued)

PART III

Announces the appropriate Piper Kits which provide instructions, placards, and hardware for positive restriction of flap travel, and incorporates information regarding permanent Pilot's Operating Handbook/AFM revisions.

NOTES:

1. For PA-31-300 Navajo, PA-31 Navajo, PA-31-325 Navajo C/R, PA-31-350 Chieftain
It has been demonstrated that restricting flap travel to 25° will not result in increased full flap stall speeds or landing distances as presently published in the Performance section of the Pilot's Operating Handbook/AFM for these airplanes.
2. For PA-31P Navajo
Restriction of flap travel to 25° will result in an increase of approximately 10% to the landing distances and an increase of full flap stall speeds as presently published in the Pilot's Operating Handbook/AFM for the affected airplanes.

PART IInstructions:

1. Verify rigging and adjustment of flap position sender as described in the Surface Controls section (Chapter 5) of the appropriate Service Manual.
2. Lower flaps to the 25° position.

NOTE: Remove excess play by lifting the flap trailing edge and obtain an angle measurement using a propeller protractor.

3. Paint a red full flap radial position mark to correspond with the needle position at 25° on the flap position indicator lens. Also, extend a white slippage mark from the indicator case to the lens. (Ref. Sketch A.)
4. Attach the appropriate Flap Operation Placard on the left window molding in plain view of the pilot. (Ref. Sketch B.)
5. For PA-31P aircraft attach appropriate Stall Speed Placard(s) adjacent to the airspeed indicator(s). (Ref. Sketch C.)
6. Make the necessary handwritten changes in pen and ink to the appropriate Airplane Flight Manual/Pilot's Operating Manual/Pilot's Operating Handbook as follows:
 - (a) For Piper Model PA-31-300:
 - (i) Approved Airplane Flight Manual per PAC Report No. 1470 for Model PA-31-300, Serial Nos. 31-2 through 31-511.

Page 1c. Log of Revisions. Add: Interim Revision 20
IAW Piper Service Bulletin 739.

Page 6a. Subparagraph M - Placards

Add the following Placard:

On Pilot's left window moulding:

- " - Flap settings in excess of 25° are not approved.
- Disengage the aircraft autopilot prior to operating flaps.
- Operate flap control in small increments to assure flap symmetry.

Instructions: (continued)

6. (a) continued

Page 15 Paragraph 13 - Before Landing

- f. Wing flaps - as required (in Steps) - Extend at less than 150 mph. (maximum extension -25°)

Page 21a. Paragraph 15 - Asymmetric Flap Condition

Delete: Existing Asymmetric Flap Condition Procedures

Add: Split Flaps (0° to 25°)

- (1) Flap Switch - OFF
- (2) Aileron - Maintain Wings Level
- (3) Airspeed - 120 mph
- (4) Flap Switch - UP (to obtain symmetric flaps)

NOTE: If flap symmetry cannot be obtained, then ---

- (5) Flap Switch - OFF
- (6) Flap Control Circuit Breaker --- Pull
- (7) Land as soon as possible at nearest suitable airport.

(b) For Piper Model PA-31:

- (i) Approved Airplane Flight Manual per PAC Report 1362 for Model PA-31, Serial Nos 31-2 through 31-659, 31-661 through 31-771.

Page 1f. Log of Revisions. Add: Interim

Revision 32 (IAW) Piper Service Bulletin 739.

Page 6a. Subparagraph M - Placards

Add the following placard:

On Pilot's left window moulding:

- " - Flap settings in excess of 25° are not approved.
- Disengage the aircraft autopilot prior to operating flaps.
- Operate flap control in small increments to assure flap symmetry."

Page 16 Paragraph 14 - Before Landing

- f. Wing flaps - as required (in steps) - Extend at less than 150 mph maximum extension -25°.

Page 21a. Paragraph 16 - Asymmetric Flap Condition

Delete: Existing Asymmetric Flap Condition Procedures

Add: Split Flaps (0° to 25°)

- (1) Flap switch - OFF
- (2) Aileron - Maintain wings level
- (3) Airspeed - 120 mph
- (4) Flap Switch - UP (to obtain symmetric flaps)

NOTE: If flap symmetry cannot be obtained, then ---

- (5) Flap Switch - OFF
- (6) Flap Control Circuit Breaker -- Pull
- (7) Land as soon as possible at nearest suitable airport.

(over)

Instructions: (continued)

6. b. (ii) Approved Airplane Flight Manual per PAC Report No. 1655 for Model PA-31 without nacelle wing lockers and with TI0-540-A2C engines Nos. 31-712 through 31-751.

Page 2a. Log of Revisions. Add: Interim Revision 13
IAW Piper Service Bulletin 739.

Page 8 Subparagraph M - Placards
Add the following placard:
On pilot's window moulding
" - Flap settings in excess of 25° are not approved.
- Disengage the aircraft autopilot prior to operating flaps.
- Operate flap control in small increments to assure flap symmetry."

Page 19 Paragraph 14 - Before Landing
f. Wing flaps - as required (in steps) - Extend at
less than 150 mph (maximum extension -25°).

Page 26 Paragraph 16 - Asymmetric Flap Condition
Delete: Existing Asymmetric Flap Condition procedures.
Add: Split Flaps (0° to 25°)
(1) Flap switch - OFF
(2) Aileron - maintain wings level
(3) Airspeed - 120 mph
(4) Flap switch - UP (to obtain symmetric flaps)
NOTE: If flap symmetry cannot be obtained, then ---
(5) Flap switch - OFF
(6) Flap control Circuit Breaker - PULL
(7) Land as soon as possible at nearest suitable airport.

- (iii) Approved Airplane Flight Manual per PAC Report No. 1686 for Model PA-31 with nacelle wing lockers and with TI0-540-A2C engines, Serial Nos. 31-712 through 31-751.

Page 2a. Log of Revisions. Add: Interim
Revision 11 IAW Piper Service Bulletin 739.

Page 8 Subparagraph M - Placards
Add the following placard:
On pilot's left window moulding:
" - Flap settings in excess of 25° are not approved.
- Disengage the aircraft autopilot prior to operating flaps.
- Operate flap control in small increments to assure flap
symmetry."

Page 19 Paragraph 14 - Before Landing
f. Wing flaps - as required (in steps) - Extend at
less than 150 mph (maximum extension -25°).

Instructions: (continued)

6. b. (iii) continued

Page 26 Paragraph 16 - Asymmetric Flap Condition

Delete: Existing Asymmetric Flap Condition Procedures

Add: Split Flaps (0° to 25°)

(1) Flap Switch - OFF

(2) Aileron - maintain wings level

(3) Airspeed - 120 mph

(4) Flap switch - UP (to obtain symmetric flaps)

NOTE: If flap symmetry cannot be obtained, then ---

(5) Flap Switch - OFF

(6) Flap Control Circuit Breaker -- Pull

(7) Land as soon as possible at nearest suitable airport.

(iv) Approved Airplane Flight Manual per PAC Report No. 1702 for model PA-31, Serial Nos. 31-752 through 31-7612110.Page 2f. Log of Revisions. Add: Interim Revision 23 IAW
Piper Service Bulletin 739

Page 8a. Subparagraph M - Placards

Add the following placard:

On pilot's left window moulding:

" - Flap settings in excess of 25° are not approved.

- Disengage the aircraft autopilot prior to operating flaps.

- Operate flap control in small increments to assure flap symmetry."

Page 19 Paragraph 13 - Before Landingf. Wing flaps - as required (in steps) - Extend at less than
150 mph (maximum extension -25°).Page 26d. Paragraph 15 - Asymmetric Flap Condition

Delete: Existing Asymmetric Flap Condition Procedures

Add: Split Flaps (0° to 25°)

(1) Flap switch - OFF

(2) Aileron - maintain wings level

(3) Airspeed - 120 mph

(4) Flap switch - UP (to obtain symmetric flaps)

NOTE: If flap symmetry cannot be obtained, then ---

(5) Flap switch - OFF

(6) Flap control Circuit Breaker -- PULL

(7) Land as soon as possible at nearest suitable airport.

(v) Approved Pilot's Operating Handbook per PAC Report No. 2045 for Model PA-31, Serial Nos. 31-7712001 through 31-7812129.Page iv-j. Log of Revisions. Add: Interim Revision 11
IAW Piper Service Bulletin 739.

(over)

Instructions: (continued)

6. b. (v) continued

Page 2-1 Paragraph 2.3 Airspeed Limitations

Maximum Flap Extended Speed (Vfe)

Do not exceed this speed with a given flap setting.

Delete: 25° flap and related airspeeds.

Delete: 40° flap and related airspeeds.

Add: 25° flap 130 KCAS 140 KIAS

Page 2-14 Paragraph 2.27 - Placards

Add the following placard:

On pilot's left window moulding:

" - Flap settings in excess of 25° are not approved.

- Disengage the aircraft autopilot prior to operating flaps.

- Operate flap control in small increments to assure flap symmetry."

Page 3-7 Asymmetric Flap Condition (Ser. Nos. 31-7712001 through 31-7812129)

Delete: Existing Asymmetric Flap Condition procedure

Add: Split Flaps (0° to 25°)

Flap Switch -----OFF

Aileron -----Maintain Wings Level

Airspeed -----100 KIAS

Flaps Switch --- UP (to obtain symmetric flaps)

NOTE: If flap symmetry cannot be obtained, then ---

Flap Switch ---- OFF

Flap Control Circuit Breaker ----PULL

Land as soon as possible at nearest suitable airport.

Page 3-20 Paragraph 3.39 - Asymmetric Flap Condition (Serial No. 31-7712001 through 31-7812129)

Delete the fourth paragraph.

Page 4-1 Paragraph 4.3-Airspeed for Safe Operation

(d) Maximum Flap Extended Speeds

Delete: 25° Flaps and related airspeeds

Delete: Full Flaps (40°) 140 KIAS

Add: 25° Flaps 140 KIAS

Page 4-8 Before Landing (Checklist)

Wing Flaps

Delete: (174 KIAS max. 25° s/n 31-7812001 and up)

Delete: (140 KIAS max. 40°)

Add: (140 KIAS max. 25°)

Page 4-16 Paragraph 4.29 Before Landing

Fourth Subparagraph.

Change: "Maximum speed for 40° flap extension is 140 KIAS."

to "Maximum speed for 25° flap extension is 140 KIAS."

Delete: Last sentence

Instructions: (continued)

6. c. For Piper Model PA-31-325

- (i) Approved Airplane Flight Manual per PAC Report No. 1860 for Model PA-31-325, Serial Nos. 31-7300932 through 31-7612110.

Page 3-viii. Log of Revisions. Add: Interim Revision 12
IAW Piper Service Bulletin 739.

Page 3-7 Subparagraph M - Placards
Add the following placard:
On pilot's left window moulding:
" - Flap settings in excess of 25° are not approved.
- Disengage the aircraft autopilot prior to
operating flaps.
- Operate flap control in small increments to assure
flap symmetry."

Page 3-21 Paragraph 13 - Before Landing
i. Wing Flaps - as required (in steps) -
extend at less than 150 mph.
(Maximum extension -25°).

Page 3-30a Paragraph 17- Asymmetric Flap Extension
Delete: Existing Asymmetric Flap Condition Procedure.
Add: Split Flaps (0° to 25°)
(1) Flap Switch - OFF
(2) Aileron - Maintain Wings Level
(3) Airspeed - 115 MPH CAS
(4) Flap Switch - UP (to obtain symmetric flaps).
NOTE: If symmetric flaps cannot be obtained,
then ---
(5) Flap Switch - OFF
(6) Flap Control Circuit Breaker --- PULL
(7) Land as soon as possible at nearest
suitable airport.

- (ii) Approved Pilots Operating Handbook per PAC Report No. 1964 for Model PA-31-325, Serial Nos. 31-7712001 through 31-7812129.

Page iv-j. Log of Revisions. Add: Interim Revision 10
IAW Piper Service Bulletin 739.

Page 2-1 Paragraph 2.3 Airspeed Limitations
Maximum Flaps Extended Speed (Vfe) -
Do not exceed this speed with a given flap setting.
Delete: 25° flap and related airspeeds.
Delete: 40° flap and related airspeeds.
Add: 25° flap 130 KCAS 127 KIAS.

(over)

Instructions: (continued)

6. c. (ii) continued

Page 2-14

Paragraph 2.22 - Placards

Add the following placard:

On pilot's left window moulding"

" - Flap settings in excess of 25° are not approved.

- Disengage the aircraft autopilot prior to operating flaps.

- Operate flap control in small increments to assemble flap symmetry."

Page 3-7

Asymmetric Flap Condition (Ser Nos. 31-7712001 through 31-7812129)

Delete: Existing Asymmetric Flap Condition procedures.

Add: Split Flaps (0° to 25°)

Flap Switch ----- OFF

Aileron ----- Maintain Wings Level

Airspeed ----- 100 KIAS

Flap Switch ----- UP (to obtain symmetric flaps)

NOTE: If symmetric flaps cannot be obtained, then ---

Flap Switch ----- OFF

Flap Control Circuit Breaker --- PULL

Land as soon as possible at nearest suitable airport.

Page 3-20

Paragraph 3-39

Asymmetric Flap Condition

Delete the fourth Subparagraph.

Page 4-1

Paragraph 4.3 - Airspeed for Safe Operation

(d) Maximum Flaps Extended Speeds

Delete: 25° Flaps and related airspeeds

Delete: Full Flaps (40°) 127 KIAS

Add: 25° Flaps 127 KIAS

Page 4-8

Before Landing (Checklist)

Wing Flaps

Delete: (158 KIAS max 25°, s/n 31-7812001 and up)

Delete: (127 KIAS Max. 40°)

Add: (127 KIAS Max. 25°)

Page 4-16

Paragraph 4.29 Before Landing

Fourth Subparagraph

Change: "The maximum speed for 40° flap extension is

127 KIAS" to "The maximum speed for 25° flap

extension is 127 KIAS".

Delete: Last sentence

d. For Piper Model PA-31-350(i) Approved Airplane Flight Manual per PAC Report No. 1750 for Model PA-31-350, Serial Nos. 31-5001 through 31-7652177.

Page 3-xiv.

Log of Revisions. Add: Interim Revision 20 IAW

Piper Service Bulletin 739.

(over)

Instructions: (continued)

6. d. (i) continued

Page 3-2

Paragraph G. Airspeed Limitations

Delete: Flaps Extended Speed (40°) and related airspeeds.

Page 3-8

Add: Flaps Extended Speed (25°) 150 MPH 130 Kts.

Subparagraph M - Placards

Add the following Placard:

On pilot's left window moulding:

- " - Flap settings in excess of 25° are not approved.
- Disengage the aircraft autopilot prior to operating flaps.
- Operate flap control in small increments to assure flap symmetry."

Page 3-20

Paragraph 13 - Before Landing

- f. Wing flaps - as required (in steps) - Extend to 15° at less than 175 mph, 15° to 25° at less than 150 mph (130 kts).

Maximum Extension -25°.

Page 3-27b.

Paragraph 16 - Asymmetric Flap Condition

Delete: Existing Asymmetric Flap Condition Procedure

Add: Split Flaps (0° to 25°)

(1) Flap switch - Off

(2) Aileron - Maintain Wings level

(3) Airspeed - 120 mph

(4) Flap Switch - UP (to obtain symmetric flaps)

NOTE: If flap symmetry cannot be obtained, then ---

(5) Flap Switch - OFF

(6) Flap Control Circuit Breaker --- PULL

(7) Land as soon as possible at nearest suitable airport.

(ii) Approved Pilot's Operating Handbook per PAC Report No. 2046 for Model PA-31-350, Serial Nos. 31-7752001 through 31-7852171.

Page iv-j

Log of Revisions. Add: Interim Revision 11 IAW Piper Service Bulletin 739.

Page 2-1

Paragraph 2.3 Airspeed Limitations

Maximum Flaps Extended Speed (Vfe)

Do not exceed this speed with a given flap setting.

Delete: 25° Flap and related airspeeds.

Delete: 40° Flap and related airspeeds.

Add: 25° Flap 130 KCAS 132 KIAS

(over)

Instructions: (continued)

6. d. (ii) continued

Page 2-14

Paragraph 2.27 Placards

Add the following placard:

On pilot's left window moulding:

" - Flap settings in excess of 25° are not approved.

- Disengage the aircraft autopilot prior to operating flaps.

- Operate flap control in small increments to assure flap symmetry."

Page 3-7

Asymmetric Flap Condition (Ser Nos. 31-7752001 through 31-7852171)

Delete: Existing Asymmetric Flap Condition Procedures

Add: Split Flaps (0° to 25°)

Flap Switch----- OFF

Aileron----- Maintain Wings Level

Airspeed----- 100 KIAS

Flap Switch -----UP (to obtain symmetric flaps)

NOTE: If flaps symmetry cannot be obtained, then ---

Flap Switch ----- OFF

Flap Control Circuit Breaker --- PULL

Land as soon as possible at nearest suitable airport.

Page 3-20

Paragraph 3.39 Asymmetric Flap

Condition (Serial No. 31-7752001 through 31-7852171)

Delete the fourth Subparagraph.

Page 4-1

Paragraph 4.3 - Airspeed for Safe Operation

(d) Maximum Flaps Extended Speeds

Delete: 25° flaps and related airspeeds

Delete: Full Flaps (40°) 132 KIAS

Add: Full Flaps (25°) 132 KIAS

Page 4-8

Before Landing (Checklist)

Wing Flaps

Delete: (132 KIAS max 40°) and (162 KIAS max 25°)

Add: (132 KIAS max 25°)

Page 4-16

Paragraph 4.29 - Before Landing

Fourth subparagraph

Delete: "Maximum speed for 40° flap extension is 132 KIAS."

e. For Piper Model PA-31P(i) Approved Airplane Flight Manual per PAC Report No. 1615 for Model PA-31P, Serial Nos. 31P-1 through 31P-7630019.

Page 2f

or 2g

Log of Revisions. Add: Interim

Revision 26 IAW Piper Service Bulletin 739.

Instructions: (continued)

6. e. continued

- Page 4 Subparagraph H - Airspeed Limitations and Indicator.
Stall Speed Changed to Read:
Stall Speed 25° Flaps, Gear Down, Power Off,
(7800 lbs.) 86 MPH (75 KT)
- Page 5 Subparagraph H - Airspeed Limitations and Indication
markings
Add the following placard adjacent to airspeed indicator:
Stall speed 86 mph/75 KI with 25° Flaps.
- Page 8 Subparagraph M - Placards
Add the following placard:
On pilot's side window moulding:
"Flap settings in excess of 25° are not approved.
Operate flap control in small increments to assure flap
symmetry. Increase landing distance by 10% with the
use of 25° flaps. Approach speed 120 MPH (112 KT).
No flap selection with autopilot engaged."
- Page 8a Under Flap Indicator White Arc add: 129
Radial Red Line at 25°
- Page 19 Paragraph 13 - Before Landing
Change i to read:
i. Wing flaps - as required (in steps) -
Extend at less than 150 mph maximum extension -25°.
- Page 32a Paragraph 18 - Asymmetric Flap Condition
Delete: Subparagraph a. and b.
Add: New paragraph a. as follows:
a. Split Flaps (0° to 25°)
(1) Flap Switch - OFF
(2) Aileron - maintain wings level
(3) Airspeed - 133 mph
(4) Flap Switch - opposite direction
(Try to obtain symmetric flaps)
(5) Land as soon as possible at nearest
suitable airport.
- (ii) Approved Pilots Operating Handbook per PAC Report No. 2047 for
Model PA-31P, Serial Nos. 31P-7730001 and up.
- Page iv-b. Log of Revisions. Add: Interim Revision 4 IAW Piper
Service Bulletin 739.
- Page 2-2 Paragraph 2.3 - Airspeed Limitations
Stall Speed: Stall speed changes to read:
Gear Down and 25° flaps (7800 lbs.)
75 KCAS 76 KIAS
Paragraph 2.5 - Airspeed Indicator Markings add the
following placard adjacent to airspeed indicator:
"Stall Speed 75 KCAS/76 KIAS
with 25° Flaps."

(over)

Instructions: (continued)

6. e. (ii) continued

- Page 2-3 Under (a) White Arc --- add:
"Red Radial Line @ 25°"
- Page 2-9 Paragraph 2.27 - Wing Flaps Limitations
Change (b) to read as follows and add (c):
(b) Landing 25°
(c) No flap selection with autopilot engaged.
- Page 2-14 Paragraph 2-33 - Placards
Add the following placard:
On pilot's side window moulding:
"Flap settings in excess of 25° are not approved.
Operate flap control in small increments to assure flap symmetry. Increase landing distance by 10% with use of 25° flaps. Approach speed 112 KIAS. No flap selection with autopilot engaged."
- Page 3-7 Paragraph 3.3 - Emergency Checklist -
Asymmetric Flap Condition
Delete: Split Flaps (0° and 15° or 15° and 40°) and associated instructions.
Replace with the following:
Split Flaps (0° to 25°)
Flap Switch ----- OFF
Aileron ----- Maintain wing level
Airspeed ----- 115 KIAS
Flap Switch ----- Opposite direction
(Try to obtain symmetric flaps)
Land as soon as possible at nearest suitable airport.
- Page 3-8 Delete: Subparagraph SPLIT FLAPS (0° and 30° or 0° and 40°)
- Page 3-20 Delete Paragraph 3.41
- Page 4-8 Paragraph 4.5 - Normal Procedures Checklist - Before Landing
Flaps changed to read:
Flaps (extend in steps at less than 126 KIAS, Maximum extension -25°) as required.
- Page 4-17 Paragraph 4.29 - Before Landing
In last sentence of third paragraph change
40° to 25°
- Page 5-40 Delete Figure 5-55
- Page 7-14 Paragraph 7.17 - Flight Control System
Revise:
(b) First sentence to read:
"Extend the flaps in small increments to assure flap symmetry."
(c) First sentence to read:
"Retract the flaps in small increments to assure flap symmetry."

Instructions: (continued)

7. Log compliance with Service Bulletin No. 739, PART I, in the Aircraft Logbook.

NOTE: Permanent revisions to the respective airplane Flight Manuals, Pilot's Operating Manuals and Pilot's Operating Handbooks for affected aircraft are in preparation as of the release date of this Service Bulletin. Upon completion, the revisions will be supplied through normal mailing procedures. Receipt and incorporation of these revisions will supersede the handwritten changes given in PART I, above.

PART II

Instructions:

1. Gain access to flap motor, Piper Part Number 475 208 and flexible shaft assemblies, (drive shaft), Piper Part Number 486 597, as outlined in the Surface Controls section (Chapter 5) of the appropriate Navajo/Chieftain/Pressurized Navajo Service Manual.
2. Remove all Ty-Raps and support clamps along the entire length of both flexible shaft assemblies, and inspect the outer housing. If the housing is damaged, replace the flexible shaft assembly.
3. Disconnect flexible shafts and remove the flap motor. Using caution not to damage the flexible shaft housing, route the flexible shafts outboard through the longitudinal beams (Ref Sketch D).

NOTE: Do not disconnect flexible shaft from transmission at this time.

4. Visually inspect the flexible shaft splined drive coupling and retaining pin for evidence of looseness on the cable swage fitting. (Ref Sketch D, Figure 2.) If any looseness is apparent, replace the flexible shaft assembly.
5. Inspect the swaged fittings at both ends of the flexible shaft as follows:
 - a. Expose the swaged portion of the inner cable at the motor end by twisting the outer housing two (2) turns clockwise. The swaged portion of the cable should have eight (8) flats clearly visible and free from deep scratches or wear marks. (Ref Sketch D, Figure 2.)
 - b. Using a micrometer, or dial caliper, measure the diameter of the swage for each of the flats at the middle of the swaged portion of the cable. A total of four (4) measurements should be taken. If any of the measurements exceed .247 inches, replace the drive shaft
 - c. Disconnect drive shaft from the flap transmission. Using caution not to damage the shaft housing, route inboard through the Sta. 87.50 bulkhead. (ref Sketch E.) Inspect the swaged portion of the drive blade fitting end as described in "a" and "b" above.
 - d. Inspect the drive blade dimension as shown in Sketch E, Figure 4.

(over)

Instructions: (continued)

6. Inspect the internal splines of the drive coupling for evidence of wear. If splines are distorted or significantly worn, replace the drive shaft. Use the following method to determine if the amount of spline wear is acceptable.
 - a. Twist a piece of .032 safety wire around the swaged fitting at the motor end of the drive shaft to form a pointer (Ref Sketch F, Figure 5). With one end of the flap motor armature shaft secured engage the opposite end into the flexible shaft spline.
 - b. Hold the spline end of the flexible shaft securely with one hand, and gently turn the flap motor to remove rotational play in the splines. Place a reference mark on the motor housing adjacent to the wire pointer (Ref Sketch F, Figure 5). Turn the flap motor gently in the opposite direction to remove rotational play and place another reference mark on the motor housing. If any distance between these two marks exceed 5/32 of an inch (4 mm) replace the flexible shaft assembly (Ref Sketch F, Figure 5).
7. While holding the transmission end of the drive shaft stationary, twist the motor end one (1) turn clockwise and release. Inspect for evidence of movement between the inner cable and the swaged fittings at both ends. Turn cable one (1) turn counter-clockwise and repeat inspection. (Ref Sketch D, E.) If movement or separation between the inner cable and the swage fitting is apparent, replace the flexible shaft assembly.

NOTE: If pliers or similar tool is used to twist cable, wrap cable ends with tape or a cloth to prevent damage.

8. Determine that the inner cable moves freely within the housing, and may be turned easily by hand. If there is any snagging or binding the cable must be replaced.
9. Reassembly of the flap system:
 - a. Ascertain that the flap motor shaft is centered within the motor adapter housing (Ref Sketch F, Figure 6.).
 - b. Lubricate both ends of the flexible shafts with MIL-G-23827 grease.
 - c. Reassemble and verify flap system rigging as outlined in the Surface Controls section (Chapter 5) of the appropriate Service Manual.
10. Reinstall floorboards and access panels.
11. Log compliance with Piper Service Bulletin No. 739, PART II, in the Aircraft Logbook.

Material Required: If required by Inspection, one (1) or two (2) each per aircraft Flexible Drive Shaft Assembly, Piper Part Number 486 597.

PART III

Instructions:

1. Install appropriate Piper Kit as follows:
 - a. For PA-31 and PA-31-300 Navajos, PA-31-325 Navajo C/R, and PA-31-350 Chieftain install Flap Travel Restriction and Placard Kit, Piper Part Number 764 396.
 - b. For PA-31P Pressurized Navajo, install Flap Travel Restriction and Placard Kit, Piper Part Number 764 397.

Material Required:

<u>Model</u>	<u>Part Number</u>	<u>Nomenclature</u>
PA-31, PA-31-300		
PA-31-325, PA-31-350	764 396	Kit - Flap Travel Restriction
PA-31P	764 397	Kit - Flap Travel Restriction

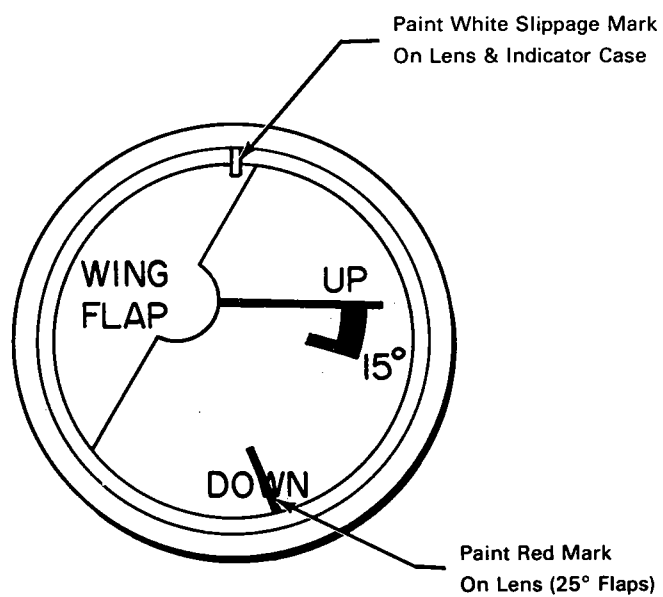
Availability of Parts: Piper Kits Part Numbers 764 396, 764 397 and Flexible Shaft Assemblies Piper Part Number 486 597 will be available from your Piper Field Service Facility on or before April 12, 1982.

NOTE: Upon release, Permanent Pilot's Operating Handbook/AFM Revisions will be mailed through normal procedures. If additional copies of revisions are required, advise your Piper Field Service Facility or contact Piper Aircraft Corporation, Customer Service Sales, Lock Haven, PA 17745, USA.

Effectivity Date: This Service Release is effective upon receipt.

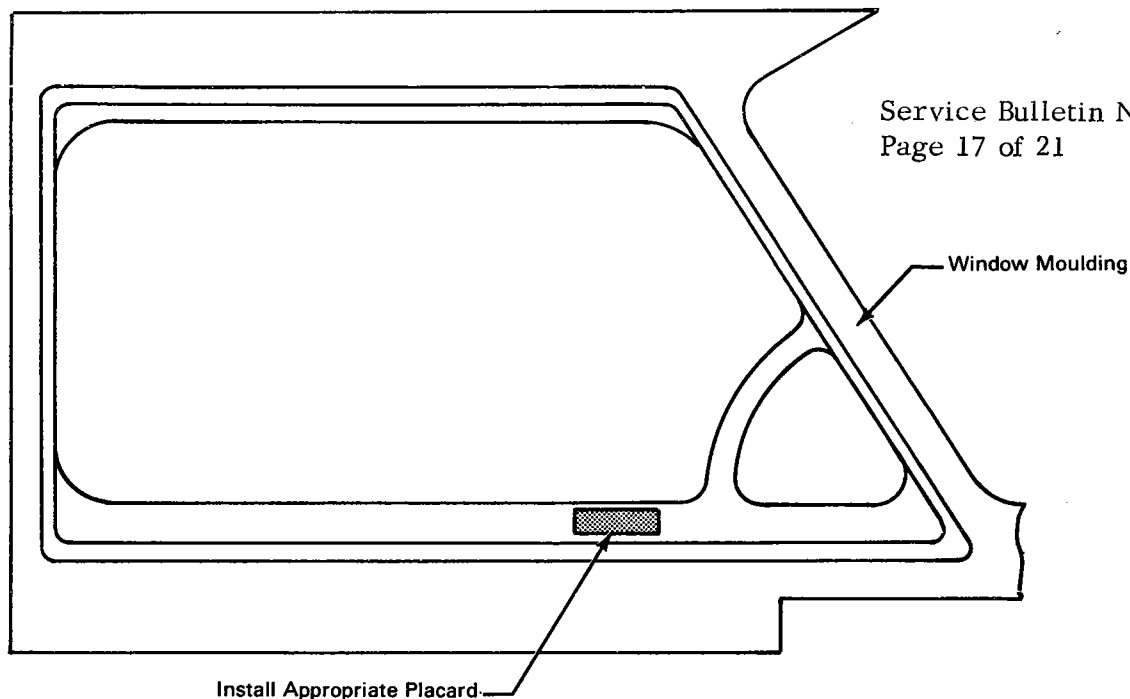
Summary: This Service Release was issued to provide detailed instructions for inspecting the flap system flexible shaft assemblies, and to announce the restriction of flap travel limits. This does not supercede the requirements of Service Bulletin 494B, as revised, and Service Letter 764A, as revised.

Please contact your local Piper Field Service Facility to make arrangements for compliance with the provisions of this Service Release in accordance with Compliance Time, above.



TYPICAL FLAP INDICATOR

SKETCH A



Typical Left Pilot's Window Moulding

FLAP SETTINGS IN EXCESS OF 25° ARE NOT APPROVED.
DISENGAGE THE AIRCRAFT AUTOPILOT PRIOR TO
OPERATING FLAPS.
OPERATE FLAP CONTROL IN SMALL INCREMENTS TO
ASSURE FLAP SYMMETRY.

71934-2

FOR: PA-31-300, PA-31 NAVAJO, PA-31-325 NAVAJO C/R, PA-31-350 CHIEFTAIN

Cut Out And Attach Placard P/N 71934-2 To Pilot's Window Moulding
As Shown In Sketch Above.

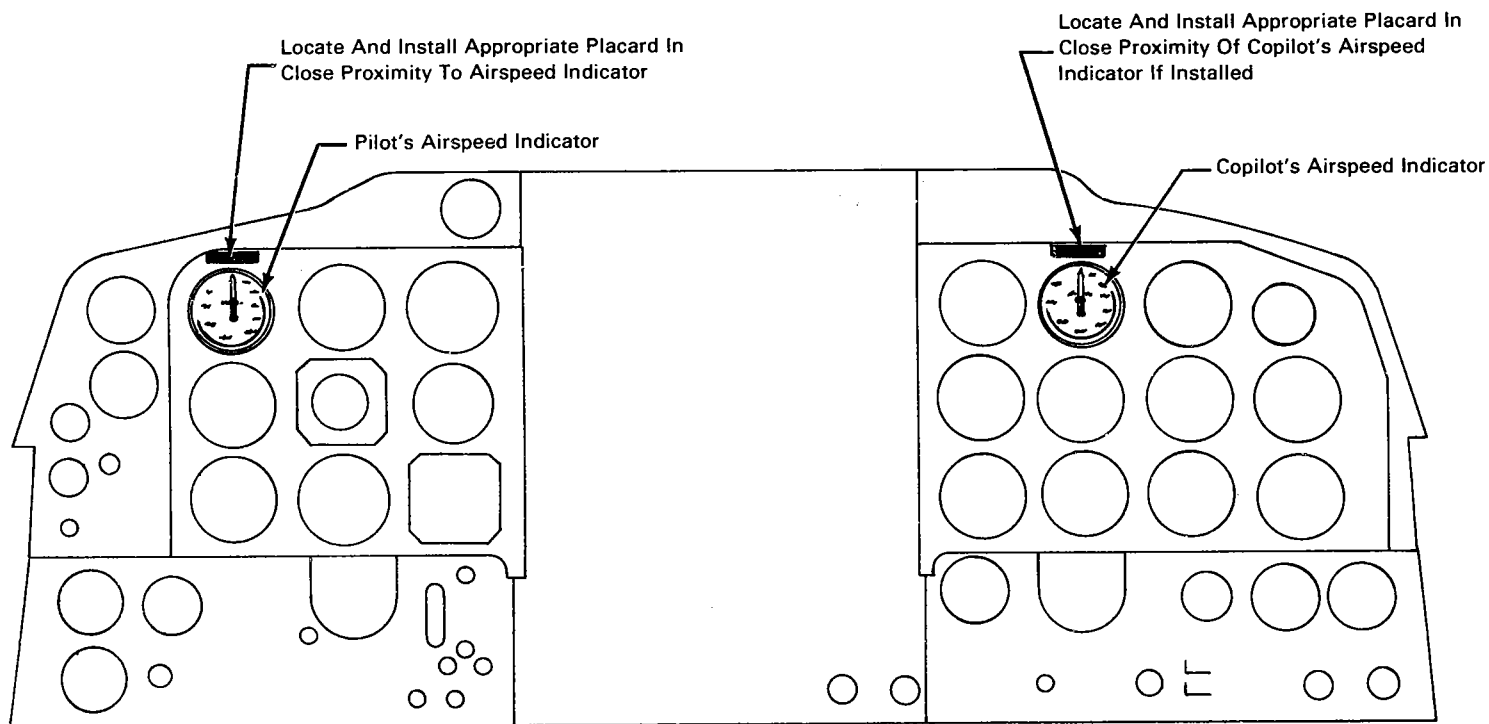
FLAP SETTINGS IN EXCESS OF 25° ARE NOT APPROVED.
OPERATE FLAP CONTROL IN SMALL INCREMENTS TO
ASSURE FLAP SYMMETRY. INCREASE LANDING
DISTANCE BY 10% WITH THE USE OF 25° FLAPS.
APPROACH SPEED 129 MPH (112 KT). NO FLAP
SELECTION WITH AUTOPILOT ENGAGED.

71859-2

FOR: PA-31P PRESSURIZED NAVAJO

Cut Out And Attach Placard P/N 71859-2 To Pilot's Window Moulding
As Shown In Sketch Above.

SKETCH B



PA-31P INSTRUMENT PANEL

**STALL SPEED 86 MPH/75 KT
WITH 25° FLAPS** 81008-2

**STALL SPEED 86 MPH/75 KT
WITH 25° FLAPS** 81008-2

For PA-31P Pressurized Navajo With Serial Nos. 31P-1 To 31P-7630019 Incl.

Cut Out And Attach Placard(s) P/N 81008-2 In Close Proximity
To Airspeed Indicator(s) As Shown Above.

**STALL SPEED 75 KCAS/76 KIAS
WITH 25° FLAPS** 81007-2

**STALL SPEED 75 KCAS/76 KIAS
WITH 25° FLAPS** 81007-2

For PA-31P Pressurized Navajo With Serial Nos. 31P-7730001 And Up.

Cut Out And Attach Placard(s) P/N 81007-2 To Instrument Panel
In Close Proximity To Airspeed Indicator(s) As Shown Above.

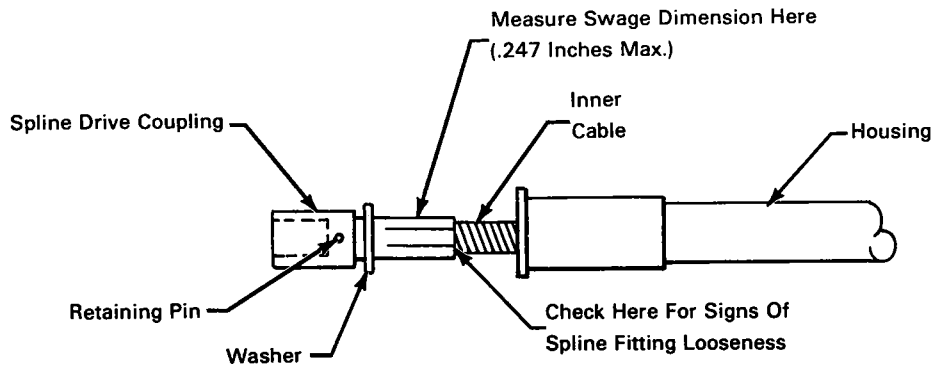


FIGURE 2

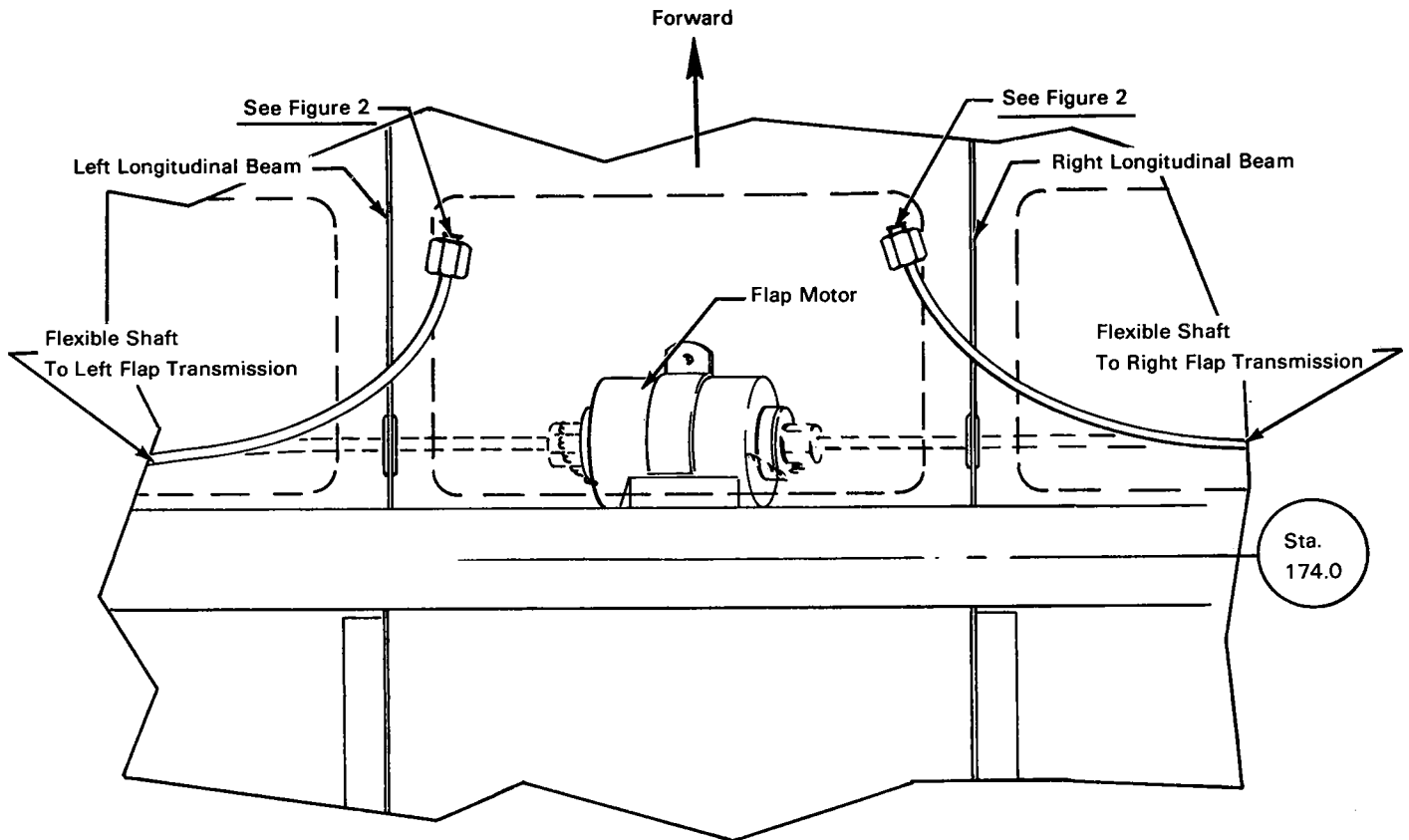


FIGURE 1

SKETCH D

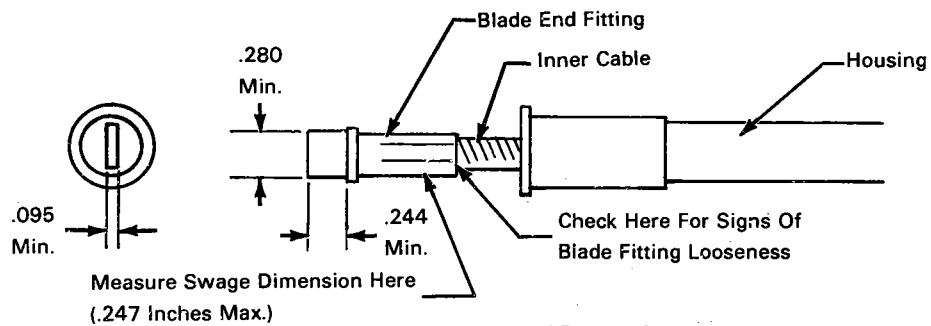


FIGURE 4

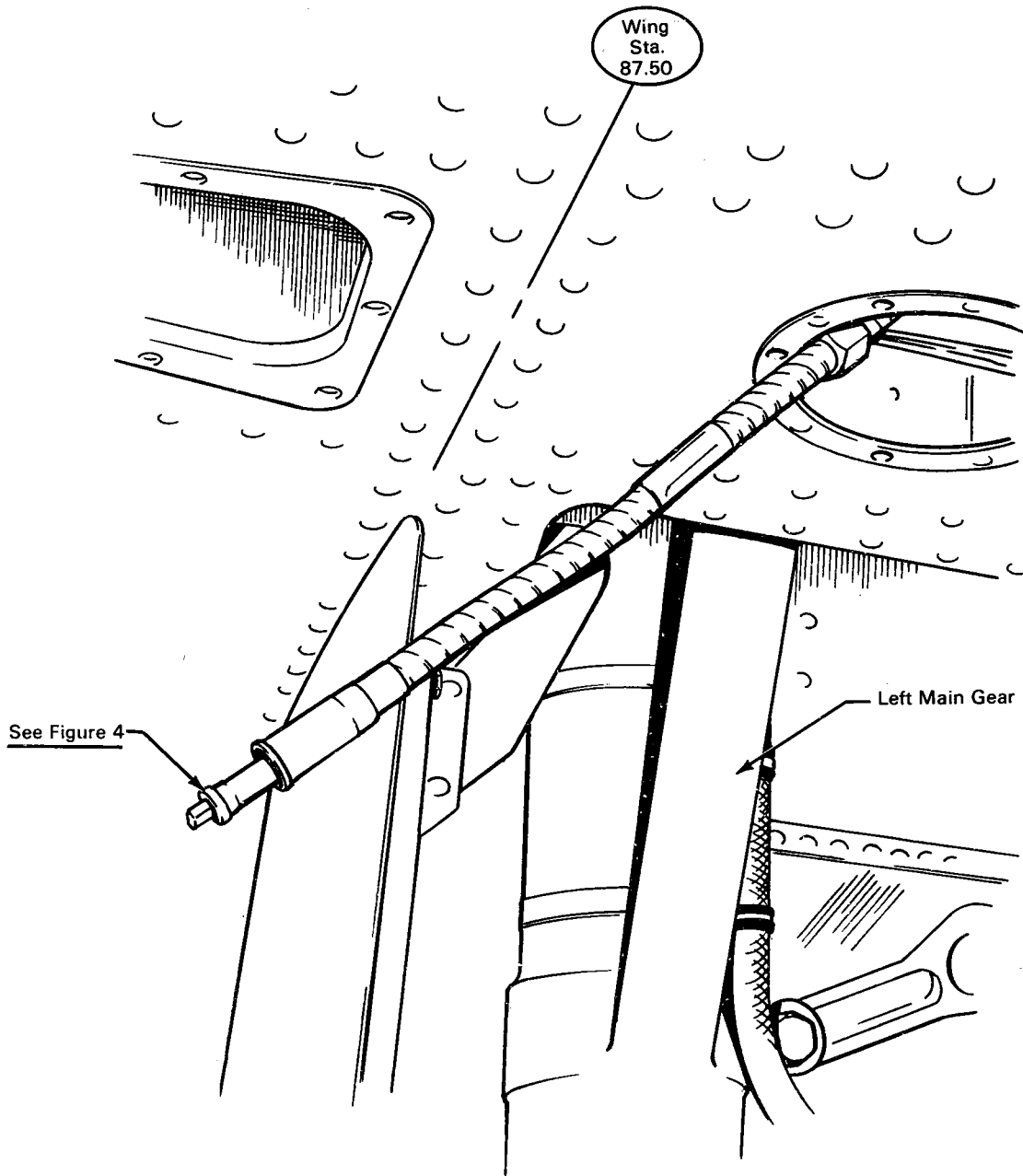
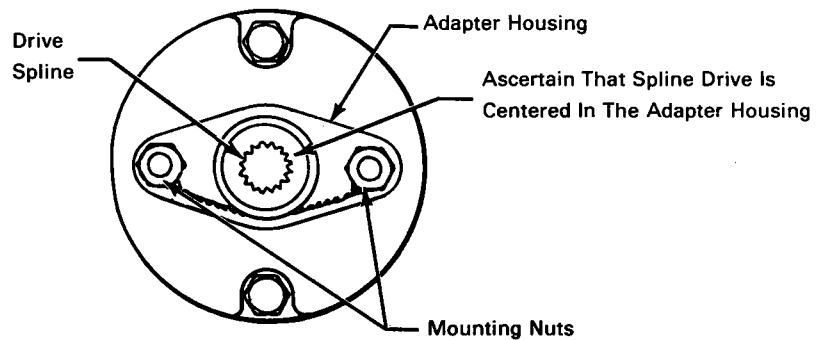
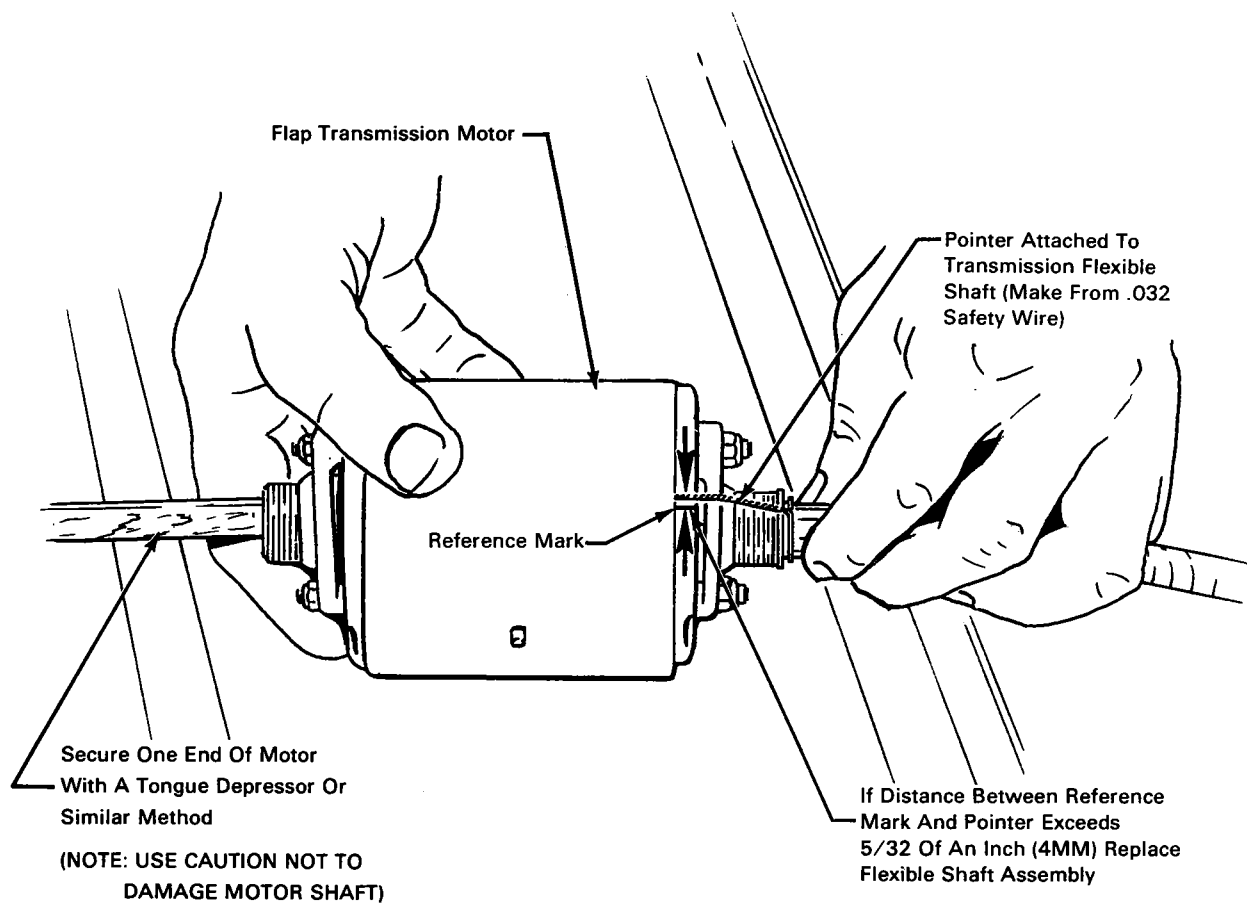


FIGURE 3

Left Wing Shown - Right Wing Opposite

SKETCH E

**FIGURE 6****FIGURE 5****SKETCH F**



SERVICE BULLETIN

No. 739
Addendum 1

Piper Aircraft Corporation

FAA Approved

Lock Haven, Pennsylvania, U.S.A.

June 7, 1983

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(This Addendum provides supplemental information to PART II of Piper Service Bulletin No. 739, dated March 1, 1982, SUBJECT: "Restriction of Flap Travel and Inspection of Wing Flap Flexible Drive Shaft.")

NOTE: Insure that this Addendum is permanently attached to Piper Service Bulletin No. 739.

MODELS AFFECTED:

PA-31-300 Navajo, PA-31 Navajo and
PA-31-325 Navajo C/R
PA-31-350 Chieftain
PA-31P Pressurized Navajo

SERIAL NUMBERS AFFECTED:

31-2 through 31-7812129
31-5001 through 31-7852171
31P-1 through 31P-7730012

PURPOSE: The Instructions of PART II of Piper Service Bulletin No. 739 provided inspection dimensions for flexible shaft assemblies (drive shaft), Piper Part Number 486 597, with eight (8) flats on the swaged portion of the cable.

It has since been determined that an equally acceptable flexible drive shaft assembly, Piper Part Number 486 590, with six (6) flats on the swaged portion of the cable, may be installed on some aircraft.

This Addendum provides inspection dimensions for the six (6) flattened cable assembly.

SUPPLEMENTAL INSTRUCTIONS:

Refer to PART II of Piper Service Bulletin No. 739.

Page 13 of 21, Instruction 1:

1. Gain access to flap motor, Piper Part Number 475 208, and flexible shaft assemblies (drive shaft), Piper Part Number 486 590 or 486 597, as outlined in the Surface Controls Section (Chapter 5) of the appropriate Navajo/Chieftain/Pressurized Navajo Service Manual.

Page 13 of 21, Instruction 5.a. and 5.b.:

5. Inspect the swaged fittings at both ends of the flexible shaft as follows:
 - a. Expose the swaged portion of the inner cable at the motor end by twisting the outer housing two (2) turns clockwise. The swaged portion of the cable should have six (6) or eight (8) flats clearly visible and free from deep scratches or wear marks. (Ref. Sketch D, Figure 2.).

(over)

ATA: 2750

Supplemental Instructions: (continued)

Page 13 of 21, Instruction 5.a. and 5.b. (continued)

- b. Using a micrometer, or dial caliper, measure the diameter of the swage for each of the flats at the middle of the swaged portion of the cable. A total of three (3) measurements should be taken for the six (6) sided swage and a total of four (4) measurements should be taken for the eight (8) sided swage. If any of the measurements exceed .235 inch for the six (6) sided cable or .247 inch for the eight (8) sided cable, replace the drive shaft.

Page 19 of 21, Sketch D, Figure 2, and
Page 20 of 21, Sketch E, Figure 4:

Measure Swage Dimension Here
(.235 Inches Max. for Six (6) Flats)
(.247 Inches Max. for Eight (8) Flats)

SUMMARY: This Addendum DOES NOT supersede or void any information contained in Piper Service Bulletin No. 739, dated March 1, 1982. The information contained herein is supplemental to that contained in Service Bulletin No. 739.

Copies of Service Bulletin No. 739, if required, are available through your Piper Field Service Facility.