



CLASS I

SERVICE INSTRUCTIONS

76

No. 1057
ATA Code 27-20

SUBJECT: FLIGHT CONTROLS - REPLACEMENT OF THE ELEVATOR AND RUDDER TAB PUSH RODS

EFFECTIVITY: BEECHCRAFT Duchess 76, serials ME-1 through ME-6, ME-8 through ME-62 and ME-66.

REASON: To provide improved elevator and rudder trim tab push rods.

These Service Instructions are being issued to submit information contained in Liberal Service Letter No. 78-4, dated September 14, 1978, in the format of regular BEECHCRAFT Service Instructions. Liberal Service Letter No. 78-4 was issued to provide improved elevator and rudder trim tab push rods.

If compliance was made with Liberal Service Letter No. 78-4, no further action is required except to enter a compliance statement for both documents in the Airplane Maintenance Record.

COMPLIANCE: Beech Aircraft Corporation considers this to be a mandatory modification and it should be accomplished prior to further flight. FAA Airworthiness Directive No. 78-20-08 has been issued on this subject.

APPROVAL: FAA Approved - DOA CE-2.

MANPOWER: The following information is for planning purposes only:

- Estimated man-hours for push rod replacement: 5 hours.
- Estimated number of men for push rod replacement: 1 man.
- Estimated man-hours for push rod replacement and balancing: 14 hours.
- Suggested number of men for push rod replacement and balancing: 1 or 2 men.

MATERIAL: The following parts required for accomplishing these Service Instructions may be ordered through BEECHCRAFT Aero or Aviation Centers and International Distributors and Dealers.

PART I AND PART II

PART NUMBER	DESCRIPTION	QUANTITY
105-520048-1	Push Rod Assem. (Elev. Trim Tab)	2 per airplane

DB-126
579 I

Beech Aircraft Corporation issues service information for the benefit of owners and fixed base operators in the form of three classes of Service Instructions. CLASS I (Red Border) are changes, inspections, and modifications that could affect safety. The factory considers compliance mandatory. CLASS II (Green Border) covers changes, modifications, improvements or inspections the factory feels will benefit the owner and although highly recommended, they are not considered mandatory compliance, unless specified at the time of issuance. Class I and II are mailed to:

- (a) BEECHCRAFT Aero or Aviation Centers and International Distributors and Dealers.
- (b) Owners of record on the FAA Registration list and the

BEECHCRAFT International Owner Notification Service List.
(c) Those having a publications subscription.

CLASS III (No Border) covers changes which are optional, maintenance aids, product improvement kits and miscellaneous service information. Compliance is at the owner or operator's prerogative. Copies of Class III are distributed per a and c above. Information on Owner Notification Service or Subscriptions can be obtained through any BEECHCRAFT Aero or Aviation Center, International Distributor and Dealer, or the Factory. As Service Instructions are issued, temporary notation in the index should be made until the index is revised. Warranty will be allowed only when specifically defined in the Service Instructions and in accordance with Beech Warranty Policy.

98-34239L



CLASS I

Service Instructions No. 1057

PART NUMBER	DESCRIPTION	QUANTITY
105-520045-9	Push Rod Assem. (Rudder Trim Tab)	1 per airplane
AN23-12 /M/	Bolt	4 per airplane
AN23-10 /M/	Bolt	2 per airplane
MS24665-170	Cotter Pin	6 per airplane
PART II ONLY		
1601-0410	Rivet	24 per airplane

WARRANTY: Warranty credit for parts and labor to the extent noted under MATERIAL and MANPOWER will be allowed on all affected airplanes.

All warranty reimbursements are handled through franchised BEEHCRAFT outlets. Owners and operators may arrange with these outlets to perform the work and submit the standard Beech Aircraft Corporation warranty claim form to the Commercial Service Department, Beech Aircraft Corporation, Wichita, Kansas, 67201.

SPECIAL TOOLS: None.

WEIGHT AND BALANCE: None.

REFERENCES: BEEHCRAFT Duchess 76 Maintenance Manual, P/N 105-590000-7 or subsequent, Chapters 27-20, 27-30, 55-20 and 55-40.
FAA Airworthiness Directive No. 78-20-08 or subsequent.

PUBLICATIONS AFFECTED: It is recommended that a note to "See Service Instructions No. 1057" be made in the following:

Duchess 76 Maintenance Manual copies, P/N 105-590000-7 or subsequent, Chapter 27-30, 55-20 and 55-40.
Duchess 76 Parts Catalog copies, P/N 105-590000-9 or subsequent, Chapters 27-20 and 27-30.

ACCOMPLISHMENT INSTRUCTIONS: These Service Instructions may be accomplished as follows:

NOTE

Some airplanes may require rebalancing of one or more of the control surfaces after replacing the trim tab push rod. The balancing requirements are controlled by the manufactured configuration of the control surface assembly which may be determined by checking the serial number. The serial number is metal stamped on the control surface identification plate. The identification plates are located on the inboard end of the elevators and on the lower end of the rudder.

The following are serial numbers of the elevators and rudders which will require rebalancing when the new trim tab push rods are installed.

ELEVATORS

LH (P/N 105-610000-1)

ME-1, ME-15, ME-17, ME-18, ME-19, ME-21, ME-22, ME-23, ME-24, ME-25, ME-26, ME-27, ME-29, ME-34, ME-35, ME-45, ME-47, ME-48, ME-49, ME-50, ME-60, ME-61 and ME-62.

RH (P/N 105-610000-3)

ME-1, ME-3, ME-4, ME-9, ME-16, ME-18, ME-20, ME-21, ME-22, ME-24, ME-25, ME-26, ME-28, ME-29, ME-31, ME-32, ME-34, ME-35, ME-36, ME-37, ME-38, ME-39, ME-47, ME-49, ME-50, ME-60, ME-61 and ME-62.

RUDDERS

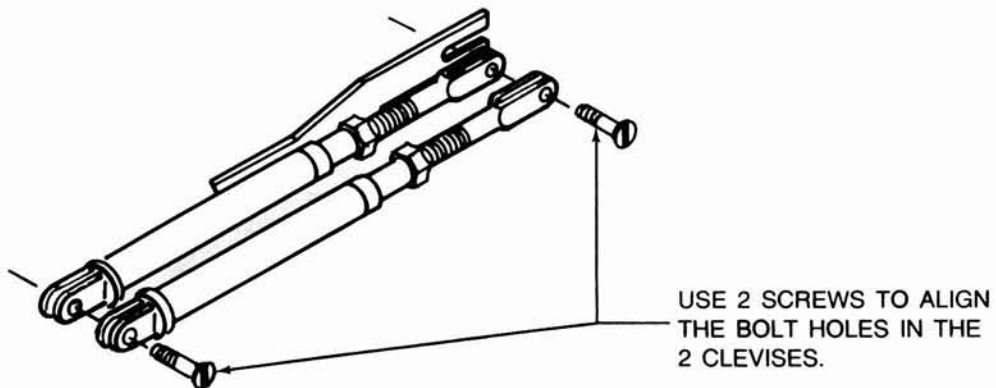
ME-1, ME-3, ME-5, ME-6, ME-8, ME-9, ME-11, ME-13, ME-16, ME-17, ME-19, ME-22, ME-29, ME-32, ME-33, ME-39, ME-40, ME-44, ME-48, ME-52, ME-60, ME-65 and ME-66.

NOTE

The serial numbers of each control surface may or may not be the same as the serial number of the airplane.

THE SERIAL NUMBER OF THE ELEVATOR AND/OR THE RUDDER DETERMINES IF THE CONTROL SURFACE MUST BE REBALANCED, NOT THE SERIAL NUMBER OF THE AIRPLANE.

The following instructions are separated for control surfaces which do or do not require rebalancing as indicated for this modification only.



NOTE: ON SOME INSTALLATIONS IT MAY BE NECESSARY TO DRILL A NEW .060 DIA. INSPECTION HOLE IN THE AFT END OF THE TRIM TAB PUSH ROD; .375 FORWARD OF AFT EDGE OF TUBE AND 90° TO EXISTING INSPECTION HOLE.

CORRECT CONFIGURATION



2 SCREWS ALIGNED IN THE BOLT HOLES IN THE 2 CLEVISES.

INCORRECT CONFIGURATION



SCREWS ARE NOT LINED UP EVENLY. MUST BE IN LINE.

Figure 1.

PART I: SURFACES WHICH REQUIRE REBALANCING

A: ELEVATORS

1. Disconnect the aft end of the elevator trim tab push rod from the trim tab horn. Discard the bolts and the cotter keys, but retain the washers and nuts.
2. Remove the elevator from the airplane.

CAUTION

Turning of the jack screw in the actuator will affect rerigging of the tab system. It is recommended that the jack screw be taped or safety wired to secure it from turning to minimize rerigging.

3. Remove the existing elevator trim tab push rods and identify them as left and right. Measure the length between the push rod bolt holes or use existing rods as a jig for new rod length by using two long 10-32 AN bolts through the attach bolt holes.
4. Adjust the new P/N 105-520048-1 elevator trim tab push rods to the measured length in step 3. (See figure 1.) Be certain to maintain the left and right identification of the rods when adjusting the new rods for correct length.
5. Temporarily install the elevator trim tab push rods on the elevator tab with the push rod in the normal position and balance the elevator. (Use new bolts listed under MATERIAL to install the push rods. Do not install the cotter pins at this time.)

NOTE

The clevis slot at the actuator (fwd.) end of the rod must be in the same plane as the tab horn clevis slot. (See figure 1.)

6. Remove the trim tab push rod from the elevator tab and install it on the trim tab actuator. Use new bolts and cotter pins. Be certain to remove the tape or safety wire which was used to secure the actuator jack screw in step 2. Do not reinstall the elevator at this time.

B: RUDDER

1. Remove the tail cone and disconnect the rudder tab push rod from the rudder tab.
2. Remove the taper pin from the rudder shaft and bell crank and slip the bell crank off the torque shaft.
3. Disconnect the rudder control cables from the bell crank and secure the cables.
4. Remove the four vertical bolts from the rudder support bracket.
5. Carefully slip the bottom of the rudder torque shaft out of the support bracket and lower the rudder to disengage the upper pin. Be certain to disconnect the bonding wire from the rudder.
6. Reinstall the bell crank on the rudder torque tube.
7. Remove the rudder trim tab push rod and compare the length with the new P/N 105-520045-9 rudder trim tab push rod.

NOTE

If the new rudder trim tab push rod is a different length it will be necessary to rereg the rudder trim tab system. (Refer to the Maintenance Manual, Chapter 27-20.)

8. Temporarily install the new P/N 105-520045-9 rudder trim tab push rod on the rudder

and balance the rudder. Use new bolts listed under MATERIAL. Do not install the cotter pin at this time.

9. Remove the rudder trim tab push rod from the rudder and install it on the trim tab actuator. Use new bolt and cotter pin listed under MATERIAL.

10. Reinstall the rudder and/or the elevator(s).

NOTE

AN960 or AN960L (obtain locally) washers may be installed as required on each side of the elevator horn to reduce side play of the elevators.

11. Reinstall the rudder control cables on the rudder bell crank and reinstall the bell crank on the rudder torque tube.

12. Connect the aft ends of the rudder and elevator trim tab push rods using new bolts and cotter pins listed under MATERIAL. The AN23-10 /M/ bolts are to be used in the aft ends of the elevator push rods.

13. Check for proper rigging of the control surfaces affected by this change in linkage. A protractor and a bubble protractor may be used to check the travel of the trim tabs. New travel figures listed below should be used for rigging elevators and elevator trim tabs.

NOTE

The clips on the elevator trim tab push rods may be installed facing inboard or outboard.

NEW TRIM TAB TRAVEL FIGURES

Elevator Trim Tab	Elevator
4° ± ½° Up	20° + 1°/-0° Up
20° ± ½° Down	15° + 1°/-0° Down

PART II: SURFACES NOT REQUIRING REBALANCE

A: ELEVATORS

1. Disconnect the aft ends of the elevator trim tab push rods.
2. Carefully drill out the rivets from around the cap over the forward end of the elevator trim tab push rod on the upper leading edge of the elevator. (See figure 2.)
3. Using a thin piece of steel, approximately 1/16 inch X 1½ inches X 8 inches, with a sharpened edge, separate the cover from the elevator skin.
4. Disconnect the elevator trim push rods from the actuators and remove the push rods. Identify each push rod as left or right. Measure the length between the push rod bolt holes or use the existing rods as a jig for new rod length by using two long 10-32 AN bolts through the attach bolt holes.

CAUTION

Turning of the jack screw in the actuator will affect rerigging of the tab system. It is recommended that the jack screw be taped or safety wired to secure it from turning to minimize rerigging.

5. Adjust the new P/N 105-520048-1 elevator trim tab push rods to the measured length in step 4. (See figure 1.) Be certain to maintain the left and right identification of the rods when adjusting the new rods for correct length.

6. Using the new bolts and cotter pins listed under MATERIAL, reinstall the elevator trim tab push rods on the elevator trim tab and the actuator. Be certain to remove the tape or

Service Instructions No. 1057

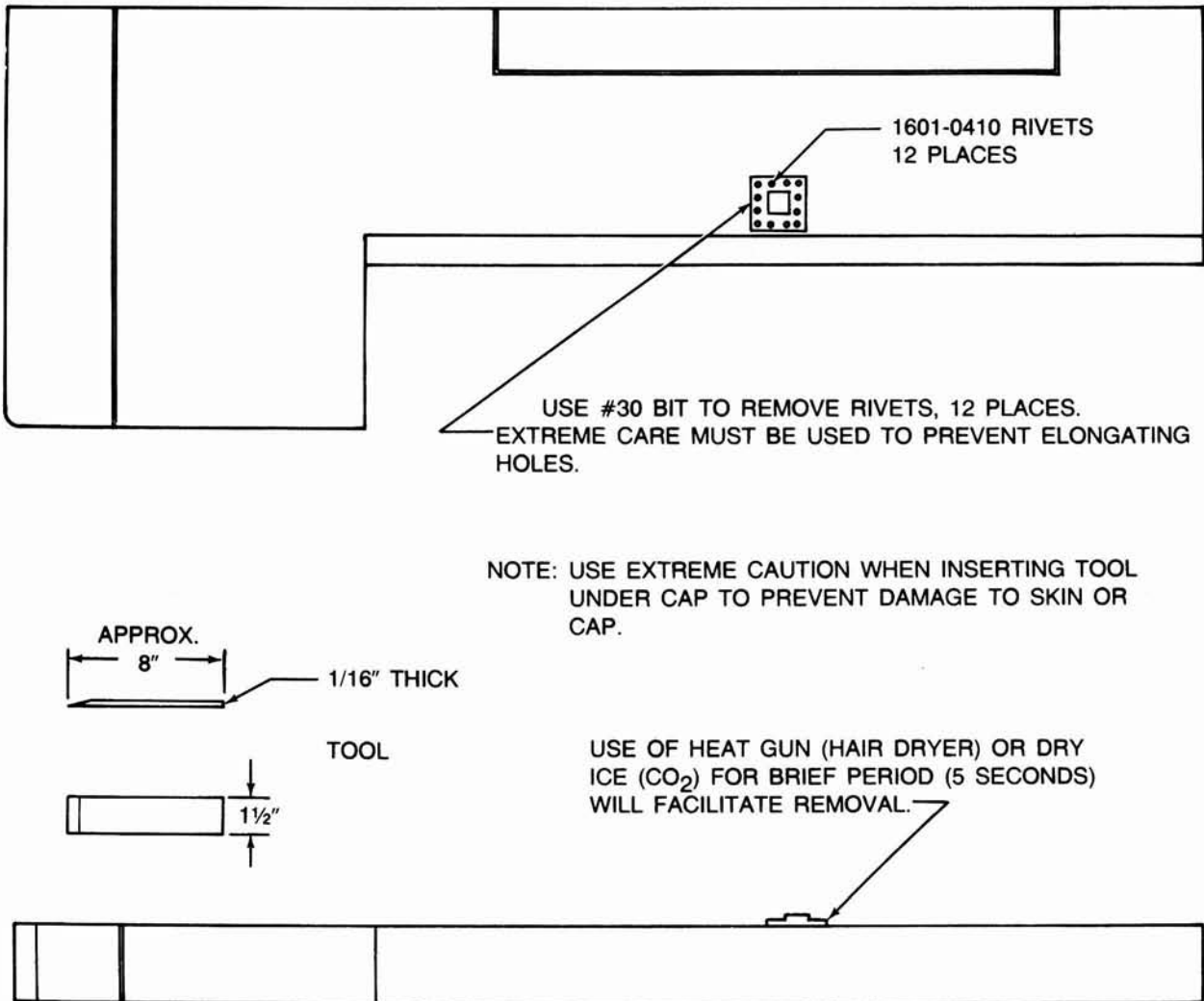


Figure 2.

- safety wire which was used to secure the actuator shaft in step 4.
7. Apply a thin even coat of Permatex No. 3 (P/N of Permatex Inc., Kansas City, Ks.) (obtain locally) to the surface of the cap which was removed in step 3.
 8. Place the cap in position and secure it with 1601-0410 rivets.

NOTE

The clips on the elevator trim tab push rods may be installed facing inboard or outboard.

B: RUDDER

1. Remove the tail cone.
2. Disconnect the aft end of the rudder trim tab push rod.
3. Remove the taper pin from the rudder torque shaft and the bell crank and slip the bell crank off the shaft.
4. Remove the 4 vertical bolts from the rudder support bracket.
5. Carefully slip the bottom of the rudder torque shaft out of the support bracket and lower the rudder to disengage the upper pin. Be certain to disconnect the bonding wire from the rudder.

6. Remove the rudder trim tab push rod and compare the length with the new P/N 105-520045-9 rudder trim tab push rod.

NOTE

If the new rudder trim tab push rod is a different length, it will be necessary to rerig the rudder trim tab system. (Refer to the Maintenance Manual, Chapter 27-20.)

7. Install the forward end of the new P/N 105-520045-9 rudder trim tab push rod on the actuator shaft. Use new bolts and cotter pins listed under MATERIAL.
8. Reinstall the rudder by reversing steps 3, 4 and 5.
9. Attach the aft end of the rudder trim tab push rod to the trim tab horn. Use new bolts and cotter pins listed under MATERIAL.
10. Check for proper rigging of the control surfaces affected by this change in linkage. A protractor and a bubble protractor may be used to check the travel of the trim tabs. New travel figures listed below should be used for rigging elevators and elevator trim tabs.

NEW TRIM TAB TRAVEL FIGURES

Elevator Trim Tab	Elevator
4° ± ½° Up	20° + 1°/-0° Up
20° ± ½° Down	15° + 1°/-0° Down

RECORD COMPLIANCE:

Upon completion of these Service Instructions, make an appropriate maintenance record entry.