



# **COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST**

## **CFM56 ENGINE THROTTLE FUEL CONTROL BOX ASSEMBLY**

**PART NUMBER  
315A1040-10, -11, -3, -4, -5, -6, -7, -8, -9**

**BOEING PROPRIETARY, CONFIDENTIAL, AND/OR TRADE SECRET**

Copyright © 1995 The Boeing Company  
Unpublished Work - All Rights Reserved

Boeing claims copyright in each page of this document only to the extent that the page contains copyrightable subject matter. Boeing also claims copyright in this document as a compilation and/or collective work.

This document includes proprietary information owned by The Boeing Company and/or one or more third parties. Treatment of the document and the information it contains is governed by contract with Boeing. For more information, contact The Boeing Company, P.O. Box 3707, Seattle, Washington 98124.

Boeing, the Boeing signature, the Boeing symbol, 707, 717, 727, 737, 747, 757, 767, 777, 787, Dreamliner, BBJ, DC-8, DC-9, DC-10, KC-10, KDC-10, MD-10, MD-11, MD-80, MD-88, MD-90, P-8A, Poseidon and the Boeing livery are all trademarks owned by The Boeing Company; and no trademark license is granted in connection with this document unless provided in writing by Boeing.

PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA  
A DIVISION OF THE BOEING COMPANY  
PAGE DATE: Jul 01/2009

**76-11-13**

Page 1  
Jul 01/2009

**COMPONENT MAINTENANCE MANUAL**

Revision No. 26  
Jul 01/2009

To: All holders of CFM56 ENGINE THROTTLE FUEL CONTROL BOX ASSEMBLY 76-11-13.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

Pages replaced or made obsolete by this revision should be removed and destroyed.

ATTENTION

IF YOU RECEIVE PRINTED REVISIONS, PLEASE VERIFY THAT YOU HAVE RECEIVED AND FILED THE PREVIOUS REVISION. BOEING MUST BE NOTIFIED WITHIN 30 DAYS IF YOU HAVE NOT RECEIVED THE PREVIOUS REVISION. REQUESTS FOR REVISIONS OTHER THAN THE PREVIOUS REVISION WILL REQUIRE A COMPLETE MANUAL REPRINT SUBJECT TO REPRINT CHARGES SHOWN IN THE DATA AND SERVICES CATALOG.

**76-11-13**  
TRANSMITTAL LETTER  
Page 1  
Jul 01/2009

315A1040



## COMPONENT MAINTENANCE MANUAL

Location of Change

Description of Change

NO HIGHLIGHTS

**76-11-13**

HIGHLIGHTS

Page 1

Jul 01/2009



## COMPONENT MAINTENANCE MANUAL

| Subject/Page                           | Date        | Subject/Page                                    | Date        | Subject/Page                           | Date        |
|--|-------------|---|-------------|--|-------------|
| TITLE PAGE                             |             | 76-11-13 CLEANING (cont)                        |             | 76-11-13 ILLUSTRATED PARTS LIST (cont) |             |
| O 1                                    | Jul 01/2009 | 402   | BLANK       | 1003                                   | Mar 01/2006 |
| 2                                      | BLANK       | 76-11-13 CHECK                                  |             | 1004                                   | Mar 01/2006 |
| 76-11-13 TRANSMITTAL LETTER            |             | 501   | Mar 01/2006 | 1005                                   | Mar 01/2006 |
| O 1                                    | Jul 01/2009 | 502   | BLANK       | 1006                                   | Mar 01/2006 |
| 2                                      | BLANK       | 76-11-13 REPAIR - GENERAL                       |             | 1007                                   | Mar 01/2006 |
| 76-11-13 HIGHLIGHTS                    |             | 601   | Mar 01/2006 | 1008                                   | Mar 01/2006 |
| O 1                                    | Jul 01/2009 | 602   | Mar 01/2006 | 1009                                   | Mar 01/2006 |
| 2                                      | BLANK       | 76-11-13 REPAIR 1-1                             |             | 1010                                   | Mar 01/2006 |
| 76-11-13 EFFECTIVE PAGES               |             | 601   | Mar 01/2006 | 1011                                   | Mar 01/2006 |
| 1                                      | Jul 01/2009 | 602   | BLANK       | 1012                                   | Mar 01/2006 |
| 2                                      | BLANK       | 76-11-13 REPAIR 1-2                             |             | 1013                                   | Mar 01/2006 |
| 76-11-13 CONTENTS                      |             | 601   | Mar 01/2006 | 1014                                   | BLANK       |
| 1                                      | Mar 01/2006 | 602   | BLANK       |  |             |
| 2                                      | BLANK       | 76-11-13 REPAIR 2-1                             |             |  |             |
| 76-11-13 TR AND SB RECORD              |             | 601   | Nov 01/2008 |  |             |
| 1                                      | Mar 01/2006 | 602   | Mar 01/2006 |  |             |
| 2                                      | BLANK       | 76-11-13 REPAIR 3-1                             |             |  |             |
| 76-11-13 REVISION RECORD               |             | 601   | Mar 01/2006 |  |             |
| 1                                      | Mar 01/2006 | 602   | Mar 01/2006 |  |             |
| 2                                      | Mar 01/2006 | 76-11-13 REPAIR 4-1                             |             |  |             |
| 76-11-13 RECORD OF TEMPORARY REVISIONS |             | 601   | Mar 01/2006 |  |             |
| 1                                      | Mar 01/2006 | 602   | BLANK       |  |             |
| 2                                      | Mar 01/2006 | 76-11-13 ASSEMBLY                               |             |  |             |
| 76-11-13 INTRODUCTION                  |             | 701   | Mar 01/2006 |  |             |
| 1                                      | Mar 01/2009 | 702   | Mar 01/2006 |  |             |
| 2                                      | BLANK       | 703   | Mar 01/2006 |  |             |
| 76-11-13 DESCRIPTION AND OPERATION     |             | 704   | Mar 01/2006 |  |             |
| 1                                      | Mar 01/2006 | 76-11-13 FITS AND CLEARANCES                    |             |  |             |
| 2                                      | Mar 01/2006 | 801   | Jul 01/2006 |  |             |
| 76-11-13 TESTING AND FAULT ISOLATION   |             | 802   | Mar 01/2006 |  |             |
| 101                                    | Mar 01/2006 | 803   | Mar 01/2006 |  |             |
| 102                                    | BLANK       | 804   | BLANK       |  |             |
| 76-11-13 DISASSEMBLY                   |             | 76-11-13 SPECIAL TOOLS, FIXTURES, AND EQUIPMENT |             |  |             |
| 301                                    | Mar 01/2006 | 901   | Mar 01/2006 |  |             |
| 302                                    | Mar 01/2006 | 902   | BLANK       |  |             |
| 76-11-13 CLEANING                      |             | 76-11-13 ILLUSTRATED PARTS LIST                 |             |  |             |
| 401                                    | Jul 01/2006 | 1001  | Nov 01/2008 |  |             |
|  |             | 1002  | Jul 01/2006 |  |             |

A = Added, R = Revised, D = Deleted, O = Overflow

# 76-11-13

EFFECTIVE PAGES

Page 1

Jul 01/2009

**COMPONENT MAINTENANCE MANUAL****TABLE OF CONTENTS**

| <b><u>Paragraph Title</u></b>   | <b><u>Page</u></b> |
|---|--------------------|
| CFM - 56 ENGINE THROTTLE FUEL - CONTROL BOX ASSEMBLY -<br>DESCRIPTION AND OPERATION | 1                  |
| TESTING AND FAULT ISOLATION   | (Not Applicable)   |
| DISASSEMBLY   | 301                |
| CLEANING  | 401                |
| CHECK   | 501                |
| REPAIR  | 601                |
| ASSEMBLY  | 701                |
| FITS AND CLEARANCES   | 801                |
| SPECIAL TOOLS, FIXTURES, AND EQUIPMENT  | (Not Applicable)   |
| ILLUSTRATED PARTS LIST  | 1001               |

**76-11-13**

CONTENTS

Page 1

Mar 01/2006















## COMPONENT MAINTENANCE MANUAL

### INTRODUCTION

#### 1. General

- A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.
- B. This manual is divided into different parts:
  - (1) Title Page
  - (2) Transmittal Letter
  - (3) Highlights
  - (4) List of Effective Pages
  - (5) Table of Contents
  - (6) Temporary Revision & Service Bulletin Record
  - (7) Record of Revisions
  - (8) Record of Temporary Revisions
  - (9) Introduction
  - (10) Procedures & IPL Sections
- C. Components that can be repaired have a different repair number for each specified repair. To find the repair number location of a component, look in the Repair-General procedure at the beginning of the REPAIR section. The Repair-General procedure also has an explanation of the True Position Dimension symbols used.
- D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.
- E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.
- F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.
- G. The tool reference numbers found in the individual procedures and in the Special Tools, Fixtures, and Equipment section are used to identify if a tool is a standard tool (STD-XXXX), a commercial tool (COM-XXXX), or a Special Tool (SPL-XXXX). This reference number is also used to distinguish between tools with similar names in the same procedure. These reference numbers are for use in the documentation only. They are not to be used for ordering tools.

# 76-11-13

INTRODUCTION

Page 1

Mar 01/2009



## COMPONENT MAINTENANCE MANUAL

### CFM - 56 ENGINE THROTTLE FUEL - CONTROL BOX ASSEMBLY - DESCRIPTION AND OPERATION

#### 1. Description

- A. The Engine Throttle Fuel Control Box Assembly uses a bearing-mounted gear to control the fuel flow to the CFM-56 engine.
- B. The gear is located inside the box and meshes with a gear rack and a "synchro" or transducer.

#### 2. Operation

- A. The throttle push-pull cable controls the linear movement of the rack inside the control box assembly.
- B. The rack then turns the control box gear and then this turns the transmitter assembly called the "power lever angle synchro."
- C. A fork extends out from the control box gear to position the power lever.
- D. When the power lever is in the correct position, then the transmitter assembly sends the angular position back to the auto-throttle servo computer.

#### 3. Leading Particulars (approximate)

- A. Height – 4 inches
- B. Width – 11 inches
- C. Thickness – 2 inches

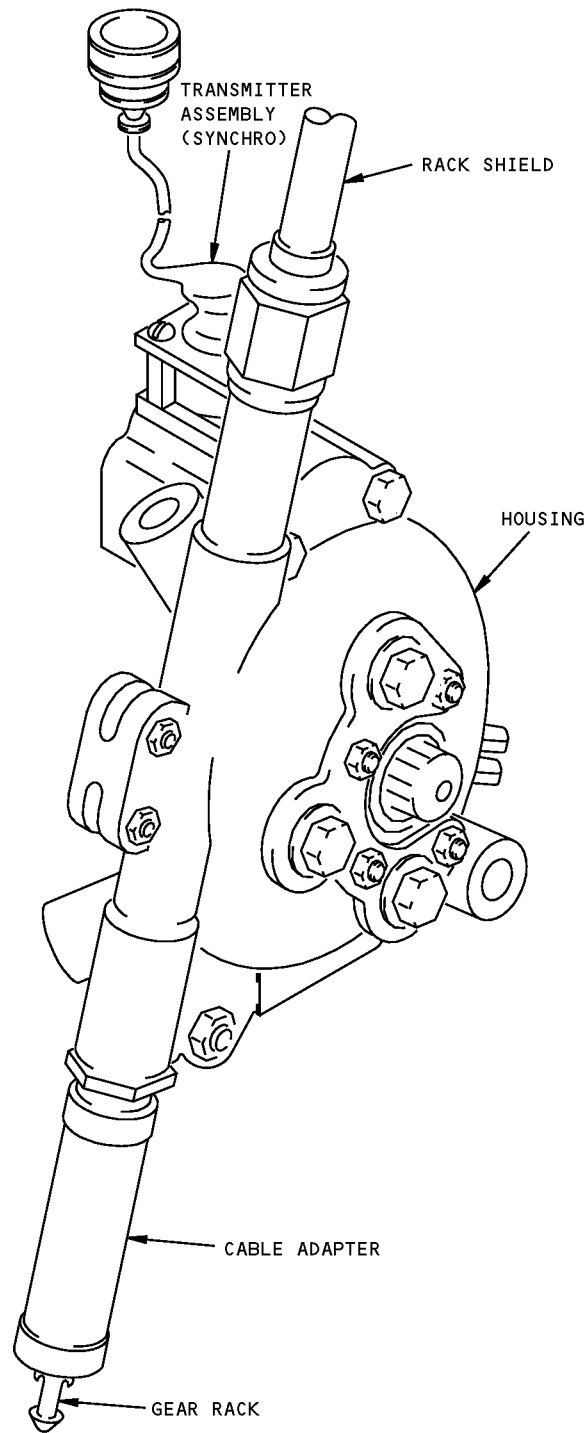
# 76-11-13

DESCRIPTION AND OPERATION

Page 1

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



315A1040-3 Thru -11 CFM-56 Engine Throttle Fuel Control Box Assembly  
Figure 1

**76-11-13**

DESCRIPTION AND OPERATION

Page 2

Mar 01/2006



**COMPONENT MAINTENANCE MANUAL**

**TESTING AND FAULT ISOLATION**

**(NOT APPLICABLE)**

**76-11-13**

TESTING AND FAULT ISOLATION

Page 101

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### DISASSEMBLY

#### 1. General

- A. This procedure contains the data necessary to disassemble the engine throttle fuel control box assembly.
- B. Disassemble the control box assembly only when necessary to do the specified procedures that follow:
  - (1) To complete any type of testing and fault isolation.
  - (2) To find out if the parts are in a serviceable condition.
  - (3) To make any necessary repairs to the control box assembly.
  - (4) To put the control box assembly back into a serviceable condition.
- C. Refer to IPL Figure 1 for the item numbers.

#### 2. Disassembly

- A. Consumable Materials

**NOTE:** Equivalent substitutes may be used.

| Reference | Description   | Specification     |
|-----------|---|-------------------|
| G01048    | Lockwire - Corrosion Resistant Steel (0.032 In. Dia.) | NASM20995~<br>C32 |

- B. Parts Replacement

**NOTE:** These parts that follow are recommended for replacement. Replacement of other parts can be by in-service experience.

- (1) Lockwire – MS20995C32lockwire, G01048

- C. Procedure

- (1) Remove nut (5) and washer (10).

**CAUTION:** CAREFULLY DISENGAGE GEAR TEETH TO PREVENT DAMAGE.

- (2) Separate the gear assy (15A) including the attached support fitting (43 or 45) from the housing (130).
  - (a) Do not disassemble the gear assy (15A) or the support fitting (43 or 45) and do not remove the dowel pins (47, 50) unless repair or replacement is specified.
  - (b) If necessary to disassemble the gear assembly (15A), remove the sealant around the nut (5) by touching the sealant with a soldering iron.
- (3) Remove lockwire from the nuts (60, 75, 85).
- (4) Do the steps that follow to disassemble the housing (130).
  - (a) Remove nuts (85) and washers (90) and pull eccentric pins (95) out of housing (130).
 

**NOTE:** The bearings (100) will drop out of the slot in the housing as the pins are removed.
  - (b) Remove the rack (55) from the housing (130).
  - (c) Remove the coupling nut (60).
  - (d) Remove the sleeve (65) and the shield (70).
  - (e) Loosen the nut (75) and remove the adapter (80).

# 76-11-13

DISASSEMBLY

Page 301

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

- (f) Remove the nuts (105A), the washers (110), and the bolts (115).
- (5) Separate the clamps (120) and remove the synchro (125A) from the housing (130).

**76-11-13**

DISASSEMBLY

Page 302

Mar 01/2006





## COMPONENT MAINTENANCE MANUAL

### CLEANING

#### 1. General

- A. This procedure has the data necessary to clean the engine throttle fuel control box assembly.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) subjects identified in this procedure.
- C. Refer to IPL Figure 1 for item numbers.

#### 2. Cleaning

- A. Consumable Materials

**NOTE:** Equivalent substitutes may be used.

| Reference | Description                                  | Specification |
|-----------|--|---------------|
| G50316    | Cloth - Clean, Dry, Lint-free, White, Cotton |               |

- B. References

| Reference     | Title                       |
|---------------|-----------------------------|
| SOPM 20-30-03 | GENERAL CLEANING PROCEDURES |

- C. Procedure

- (1) Clean all parts but bearings (30, 100, IPL Figure 1) by standard industry practices and information contained in SOPM 20-30-03.
- (2) Clean carbon graphite bearings (100) with a clean cotton cloth, G50316 only. Do not use solvent or lubricant.
- (3) Clean bearings (30) by the vendor's instructions.

# 76-11-13

CLEANING  
Page 401  
Jul 01/2006



## COMPONENT MAINTENANCE MANUAL

### CHECK

#### 1. General

- A. This procedure has the data necessary to find defects in the material of the specified parts.
- B. Refer to FITS AND CLEARANCES for the design dimension and wear limits.
- C. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- D. Refer to IPL Figure 1 for item numbers.

#### 2. Check

##### A. References

| Reference     | Title                           |
|---------------|---------------------------------|
| SOPM 20-20-01 | MAGNETIC PARTICLE INSPECTION    |
| SOPM 20-20-02 | PENETRANT METHODS OF INSPECTION |

##### B. Procedure

- (1) Use standard industry practices to examine all of the parts for defects or damage.
- (2) Examine carbon graphite bearings (100, IPL Figure 1) for external damage, too much radial play, concentricity, and signs of cracks or breakdown of the carbon graphite.

**NOTE:** Replace these bearings if you find more than just small defects.

**CAUTION:** TO PREVENT DAMAGE FROM MAGNETIZATION, BE SURE TO REMOVE BEARING (30) BEFORE THE MAGNETIC PARTICLE INSPECTIONS.

- (3) Do a magnetic particle inspection (SOPM 20-20-01) – Clamp (25A), gear (40A thru 40F), fitting (43 or 46), rack (55), clamp (120), housing (130).
- (4) Do a penetrant inspection (SOPM 20-20-02) – Shield (70), pin (95).
- (5) Do an inspection of the teeth on the gear (40A thru 40F) and the rack (55) for too much wear.

**NOTE:** Replace parts if you find wear or galling that is more necessary for these parts to work correctly in service.

# 76-11-13

CHECK

Page 501

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### REPAIR

#### 1. Content

A. Repair, replacement, and refinish procedures are included in separate REPAIR sections as follows:

**Table 601:**

| <b>P/N</b> | <b>NAME</b>                  | <b>REPAIR</b> |
|------------|------------------------------|---------------|
| 315A1045   | GEAR                         | 1-1, 1-2      |
| 315A1019   | FITTING                      | 2-1           |
| 315T1029   | PIN                          | 3-1           |
| ----       | MISCELLANEOUS PARTS REFINISH | 4-1           |

#### 2. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in REPAIR-GENERAL, Figure 601.

# 76-11-13

REPAIR - GENERAL

Page 601

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

|    |   |            |  |
|----|---|------------|--|
| —  | STRAIGHTNESS  | ∅          | DIAMETER   |
| □  | FLATNESS  | S ∅        | SPHERICAL DIAMETER   |
| ⊥  | PERPENDICULARITY (OR SQUARENESS)                        | R          | RADIUS   |
| // | PARALLELISM   | SR         | SPHERICAL RADIUS   |
| ○  | ROUNDNESS   | ( )        | REFERENCE  |
| ⊙  | CYLINDRICITY  | BASIC      | A THEORETICALLY EXACT DIMENSION USED                                   |
| ⌒  | PROFILE OF A LINE                                       | (BSC)      | TO DESCRIBE SIZE, SHAPE OR LOCATION OF                                 |
| ⌒  | PROFILE OF A SURFACE                                    | OR         | A FEATURE. FROM THIS FEATURE PERMISSIBLE                               |
| ◎  | CONCENTRICITY   | <b>DIM</b> | VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES. |
| ≡  | SYMMETRY  | <b>-A-</b> | DATUM  |
| ∠  | ANGULARITY  | Ⓜ          | MAXIMUM MATERIAL CONDITION (MMC)                                       |
| ↗  | RUNOUT  | Ⓛ          | LEAST MATERIAL CONDITION (LMC)   |
| ↗  | TOTAL RUNOUT  | Ⓢ          | REGARDLESS OF FEATURE SIZE (RFS)                                       |
| □  | COUNTERBORE OR SPOTFACE                                 | Ⓟ          | PROJECTED TOLERANCE ZONE   |
| ∇  | COUNTERSINK   | FIM        | FULL INDICATOR MOVEMENT  |
| ⊕  | THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION) |            |  |

### EXAMPLES

|                          |  |                                    |  |
|--------------------------|--|------------------------------------|--|
| <b>—</b> 0.002           | STRAIGHT WITHIN 0.002  | <b>◎</b> ∅ 0.0005 <b>C</b>         | CONCENTRIC TO DATUM C WITHIN 0.0005 DIAMETER   |
| <b>⊥</b> 0.002 <b>B</b>  | PERPENDICULAR TO DATUM B WITHIN 0.002  | <b>≡</b> 0.010 <b>A</b>            | SYMMETRICAL WITH DATUM A WITHIN 0.010  |
| <b>//</b> 0.002 <b>A</b> | PARALLEL TO DATUM A WITHIN 0.002   | <b>∠</b> 0.005 <b>A</b>            | ANGULAR TOLERANCE 0.005 WITH DATUM A   |
| <b>○</b> 0.002           | ROUND WITHIN 0.002   | <b>⊕</b> ∅ 0.002 <b>Ⓢ</b> <b>B</b> | LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE  |
| <b>⊙</b> 0.010           | CYLINDRICAL SURFACE MUST LIE BETWEEN TWO CONCENTRIC CYLINDERS, ONE OF WHICH HAS A RADIUS 0.010 INCH GREATER THAN THE OTHER         | <b>⊥</b> ∅ 0.010 <b>Ⓜ</b> <b>A</b> | AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010 INCH DIAMETER, PERPENDICULAR TO DATUM A, AND EXTENDING 0.510 INCH ABOVE DATUM A, MAXIMUM MATERIAL CONDITION |
| <b>⌒</b> 0.006 <b>A</b>  | EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART RELATIVE TO DATUM A | 0.510 <b>Ⓟ</b>                     |  |
| <b>⌒</b> 0.020 <b>A</b>  | SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.020 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE                              | <b>2.000</b>                       | THEORETICALLY EXACT DIMENSION IS 2.000   |
|                          |  | OR                                 |  |
|                          |  | 2.000                              |  |
|                          |  | BSC                                |  |

True Position Dimensioning Symbols  
Figure 601

# 76-11-13

REPAIR - GENERAL

Page 602

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### GEAR ASSEMBLY - REPAIR 1-1

315A1045-6, -8, -10, -15, -16, -17

#### 1. General

- A. This procedure has the data necessary to repair the gear assembly.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in the repair.
- C. Refer to IPL Figure 1 for the item numbers.

#### 2. Support Fitting Replacement

##### A. References

| Reference     | Title                           |
|---------------|---------------------------------|
| SOPM 20-50-03 | BEARING AND BUSHING REPLACEMENT |

##### B. Procedure

**NOTE:** Support fitting (43, 46) is not part of the gear assy (15A), but the fitting is usually removed with the gear assy. It is included here for ease of repair.

- (1) Do the steps that follow to replace the support fitting (43, 46).
  - (a) Press out the initial support fitting.
  - (b) Refer to REPAIR 2-1 for the repair procedure of the support fitting.
  - (c) Use the shrink-fit method (SOPM 20-50-03) to install the new support fitting into the bearing (30).
- (2) Refer to REPAIR 1-2 if the replacement of the bearing (30) is necessary.

# 76-11-13

REPAIR 1-1

Page 601

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### GEAR ASSEMBLY - REPAIR 1-2

315A1045-6, -8, -10, -15, -16, -17

#### 1. General

- A. This procedure has the data necessary to repair and refinish the gear assembly.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in the repair.
- C. Refer to IPL Figure 1 for the item numbers.

#### 2. Repair Procedures

##### A. References

| Reference     | Title                                  |
|---------------|--|
| SOPM 20-30-02 | STRIPPING OF PROTECTIVE FINISHES       |
| SOPM 20-41-01 | DECODING TABLE FOR BOEING FINISH CODES |
| SOPM 20-50-03 | BEARING AND BUSHING REPLACEMENT        |

##### B. Bearing Replacement

- (1) Drill out the rivets (20A) and remove the clamp ring (25A).
- (2) Remove the bearing (30) (SOPM 20-50-03).
- (3) Press the new bearing into the gear (40A thru 40F) (SOPM 20-50-03).
- (4) Align the clamp ring (25A) with rivet holes on the gear (40A thru 40F) and make sure that the large cutouts on the gear are not blocked. Attach the rivets (20A).
- (5) Refer to REPAIR 1-1 to install the support fitting (43, 46).

##### C. Refinish

**NOTE:** For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01.

- (1) Gears (40A thru 40F) – Passivate (F-17.25) all over. Material: 17-4PH CRES
- (2) Clamp Ring (25A) – Passivate (F-17.25) all over. Material: 15-5PH CRES, 150-170 ksi

# 76-11-13

REPAIR 1-2

Page 601

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### SUPPORT FITTING ASSEMBLY - REPAIR 2-1

315A1019-3, -9

#### 1. General

- A. This procedure has the data necessary to repair the support fitting assembly.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in the repair.
- C. Refer to IPL Figure 1 for item numbers.

#### 2. Pin Replacement (REPAIR 2-1, Figure 601)

- A. Consumable Materials

**NOTE:** Equivalent substitutes may be used.

| Reference | Description                                    | Specification    |
|-----------|--|------------------|
| A00081    | Adhesive - Silicone Rubber - RTV 106           | BAC5010, Type 74 |
| A00160    | Sealant - Firewall - Hydraulic Fluid Resistant | BMS5-63          |
| A00900    | Sealant - Silicone, RTV - Dow Corning 93-006-1 |                  |

- B. References

| Reference     | Title  |
|---------------|--|
| SOPM 20-50-04 | INSTALLATION OF PERMANENT PINS AND PLUGS IN DRILL PASSAGES |
| SOPM 20-50-19 | GENERAL SEALING  |
| SOPM 20-60-04 | MISCELLANEOUS MATERIALS                                    |

- C. Procedure

**NOTE:** For miscellaneous materials, refer to SOPM 20-60-04. For sealants use BMS 5-63 sealant, A00160, Dow Corning 93-006-1 sealant, A00900 or RTV 106 adhesive, A00081

- (1) Remove the old pins (47, 50) (SOPM 20-50-04).
- (2) Use the press-fit or shrink-fit method (SOPM 20-50-04) to install the new pins (47, 50) up to the specified depth.
- (3) Seal (SOPM 20-50-19) the pin holes with sealant.

# 76-11-13

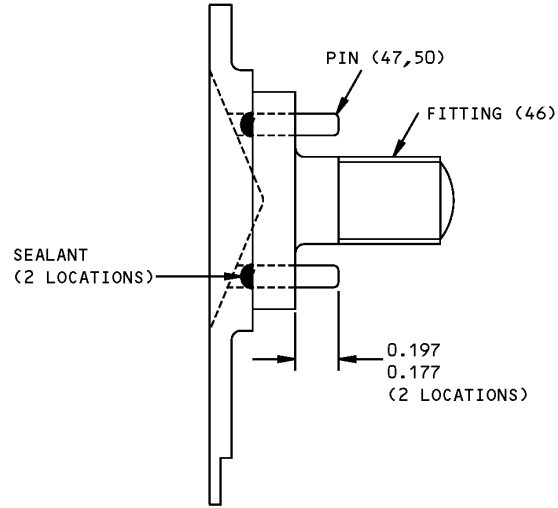
REPAIR 2-1

Page 601

Nov 01/2008



COMPONENT MAINTENANCE MANUAL



ITEM NUMBERS REFER TO IPL FIG. 1  
ALL DIMENSIONS ARE IN INCHES

315A1019-3,-9 Support Fitting Parts Replacement  
Figure 601

**76-11-13**

REPAIR 2-1  
Page 602  
Mar 01/2006





## COMPONENT MAINTENANCE MANUAL

### PIN - REPAIR 3-1

315T1029-1

#### 1. General

- A. This procedure has the data necessary to repair and refinish the pin.
- B. Refer to REPAIR-GENERAL, Figure 601 for the True Position Dimensioning Symbols used in the repair.

#### 2. Plating Repair

##### A. References

| Reference     | Title                                  |
|---------------|--|
| SOPM 20-30-02 | STRIPPING OF PROTECTIVE FINISHES       |
| SOPM 20-41-01 | DECODING TABLE FOR BOEING FINISH CODES |

##### B. Procedure

**NOTE:** For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01.

- (1) Repair is only replacement of the original finish. Refer to REPAIR 3-1, Figure 601 for the refinish instructions.

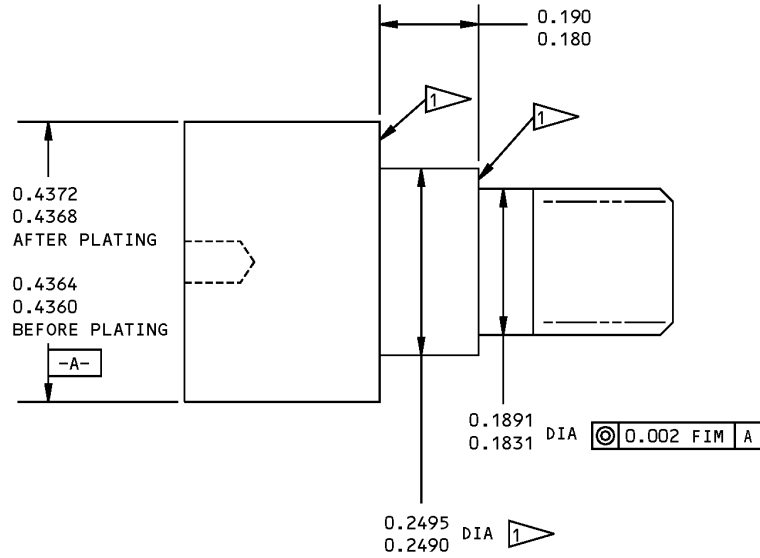
# 76-11-13

REPAIR 3-1

Page 601

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



REFINISH

CADMIUM PLATE (F-15.02) ALL OVER UNLESS SHOWN BY

NO PLATING ON THESE SURFACES

REPAIR

(SAME AS REFINISH)

ALL MACHINED SURFACES

MATERIAL: 304 CRES

ALL DIMENSIONS ARE IN INCHES

315A1029-1 Pin Repair and Refinish  
Figure 601

**76-11-13**

REPAIR 3-1

Page 602

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### MISCELLANEOUS PARTS REFINISH - REPAIR 4-1

#### 1. General

- A. This procedure has the data necessary to refinish the parts which are not given in the specified repairs.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in the repair.
- C. Refer to IPL Figure 1 for the item numbers.

#### 2. Refinish of Other Parts

##### A. References

| Reference     | Title                                       |
|---------------|---|
| SOPM 20-30-02 | STRIPPING OF PROTECTIVE FINISHES            |
| SOPM 20-41-01 | DECODING TABLE FOR BOEING FINISH CODES      |
| SOPM 20-50-08 | APPLICATION OF BONDED SOLID FILM LUBRICANTS |
| SOPM 20-60-03 | LUBRICANTS                                  |

##### B. Procedure

**NOTE:** For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For lubricants, refer to SOPM 20-60-03.

- (1) Repair of the parts listed in this repair is only replacement of the original finish.
- (2) Refer to REPAIR 4-1, Table 601 for the refinish details.

**Table 601:** Refinish Details

| IPL FIG. & ITEM | MATERIAL                | FINISH  |
|-----------------|-------------------------|---|
| Fig. 1          |                         |   |
| Fitting (43,46) |                         | Passivate (F-17.25, which replaces F-17.09).  |
| Rack (55)       | 15-5PH CRES 180-200 ksi | Passivate (F-17.25, which replaces F-17.09). Apply ARMOLOY chrome plate or thin dense chrome plate (F-15.43). Then apply dry film lubricant, Sermalube, Type 20 or Teceram 520 SOPM 20-50-08. |
| Shield (70)     | 304 CRES                | Passivate (F-17.25, which replaces F-17.09).  |
| Adapter (80)    | 15-5PH CRES 180-200 ksi | Passivate (F-17.25, which replaces F-17.09).  |
| Clamp (120)     | 15-5PH CRES 150-170 ksi | Passivate (F-17.25, which replaces F-17.09).  |
| Housing (130)   | 17-4PH CRES 130 ksi min | Passivate (F-17.25, which replaces F-17.09).  |

# 76-11-13

REPAIR 4-1

Page 601

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### ASSEMBLY

#### 1. General

- A. This procedure has the data necessary to assemble the CFM-56 engine throttle fuel control box assembly.
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in the assembly.
- C. Refer to IPL Figure 1 for item numbers.

#### 2. Assembly (IPL Figure 1, ASSEMBLY, Figure 701)

##### A. Consumable Materials

**NOTE:** Equivalent substitutes may be used.

| Reference | Description   | Specification                 |
|-----------|---|-------------------------------|
| A00253    | Adhesive - Epoxy, 2 Part, RT Cure                     | BMS5-109,<br>Type II, Class 2 |
| G01048    | Lockwire - Corrosion Resistant Steel (0.032 In. Dia.) | NASM20995~<br>C32             |

##### B. References

| Reference     | Title                             |
|---------------|-----------------------------------|
| SOPM 20-50-01 | BOLT AND NUT INSTALLATION         |
| SOPM 20-50-02 | INSTALLATION OF SAFETYING DEVICES |
| SOPM 20-50-12 | APPLICATION OF ADHESIVES          |
| SOPM 20-60-04 | MISCELLANEOUS MATERIALS           |

##### C. Procedure

**NOTE:** For bolt and nut installation, refer to SOPM 20-50-01. For miscellaneous materials, refer to SOPM 20-60-04.

- (1) Attach rack shield (70) to housing (130) with sleeve fitting (65) and coupling nut (60).
- (2) Install the rack (55) into the housing (130) as shown in ASSEMBLY, Figure 701.
- (3) Put eccentric pin (95) through housing (130) to attach bearing (100) in position.
- (4) Attach eccentric pin (95) with washer (90) and nut (85), but do not fully tighten the nut.
- (5) Turn eccentric pins (95) until rack (55) is at its lowest position and the distance between the rack and the center of the housing (130) is at a maximum.
- (6) Turn the gear assy (15A) with attached parts until rig marks are positioned as shown in ASSEMBLY, Figure 701.
- (7) Carefully press gear assy (15A) into housing (130). Make sure that the gear teeth engage teeth on rack (55) and that dowel pins (47,50) on support fitting (45) engage holes in housing.
- (8) Install washer (10) and nut (5) on gear assy (15A).
  - (a) Tighten nut (5) to 370-690 pound-inches.
  - (b) Solvent clean area (do not abrade), mask, and inject adhesive, A00253 around the edges of nut (5) (SOPM 20-50-12).

# 76-11-13

ASSEMBLY

Page 701

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

- (c) Fill cavity of fuel control box assemblies 315A1040-6 thru -11 only (FITS AND CLEARANCES, Figure 801).
- (d) Cure adhesive, A00253 at a maximum of 190°F for 15 minutes.
- (9) Adjust eccentric pins (95) to set the minimum backlash, not to more than 0.006 inch, between rack (55) and gear assy (15A).

**NOTE:** Backlash must be at a minimum over full stroke of rack with no evidence of binding. Measure the backlash at the location shown in ASSEMBLY, Figure 701.
- (10) Put the control box assy in a vertical position.
- (11) Pull rack (55) out until it is at the approximate maximum travel position.
- (12) To make sure the rack travels down to its lower position, apply a load not larger than 0.4 pounds.
- (13) Align rig mark on flange of synchro (125A) with rig mark on control box housing (130) and align dots on synchro gear with rig mark on gear assy (15A).
- (14) Put clamps (120) over synchro (125A) and secure with bolts (115), washers (110), and nuts (105A). Make sure that the backlash between synchro (125A) and gear assy (15A) is not more than 0.006 inch.
- (15) Install the adapter (80) with nut (75) in the control box housing (130). Do not fully tighten nut (75) at this time.
- (16) Tighten nuts (85) and use MS20995C32 lockwire, G01048 to connect them together by the double-twist procedure (SOPM 20-50-02).
- (17) Secure coupling nut (60) to housing (ASSEMBLY, Figure 701) with MS20995C32 lockwire, G01048 using the double-twist procedure (SOPM 20-50-02).
- (18) Adjust the rack (55) and the gear assembly (15A) positions as follows:
  - (a) Turn the rack (55) and the gear assembly (15A) until the rig marks are engaged.
  - (b) Put a 0.25-inch diameter rig pin into the housing (130) at the hole marked -R-. Be sure the gear rig marks are aligned at both locations.
  - (c) Measure dimension "B" from the surface of the cable connector and scribe a line on the housing at that point.
  - (d) Remove the rig pin from the housing.
  - (e) Extend the rack an additional 2.00 inches (same dimension as dimension "D") from scribe mark.
  - (f) Lightly push the rack to the opposite end, but stop when you feel resistance. Make sure that the stroke is within the dimension "C" limits shown.
- (19) Adjust the adapter (80) to dimension "A", and then tighten the nut (75) to the housing (130).
- (20) Install a MS20995C32 lockwire, G01048 on the nut (75), the housing (130) and the adapter (80) by the double-twist procedure (SOPM 20-50-02).
- (21) Before you move fuel control box, temporarily tie back the electrical connector for the synchro.

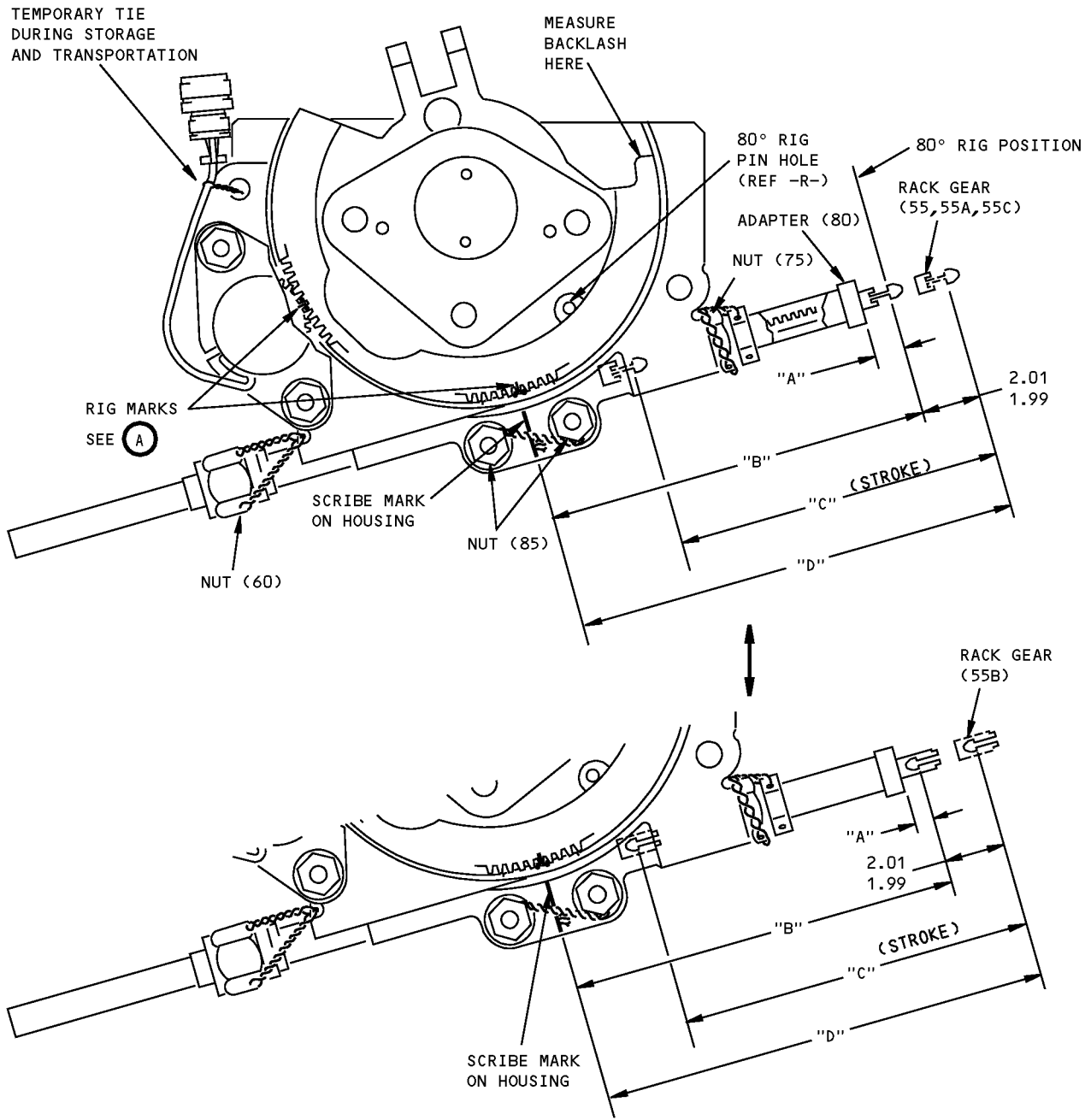
# 76-11-13

ASSEMBLY

Page 702

Mar 01/2006

COMPONENT MAINTENANCE MANUAL



(A)

Assembly Details  
Figure 701 (Sheet 1 of 2)

**76-11-13**




ASSEMBLY

Page 703

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

| PART NUMBER        | DIMENSIONS     |                |  |                |
|--------------------|----------------|----------------|--|----------------|
|                    | (A)            | (B)            | (C)  | (D)            |
| 315A1040-3 THRU -7 | 0.360<br>0.340 | 4.449<br>4.429 | 5.125<br> | 6.449<br>6.429 |
| 315A1040-8,-9      | 0.160<br>0.140 | 4.250<br>4.230 | 5.125<br> | 6.250<br>6.230 |
| 315A1040-10,-11    | 0.385<br>0.365 | 4.474<br>4.454 | 5.125<br> | 6.474<br>6.454 |

 THE MINIMUM LIMIT OF TRAVEL

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Assembly Details  
Figure 701 (Sheet 2 of 2)

# 76-11-13

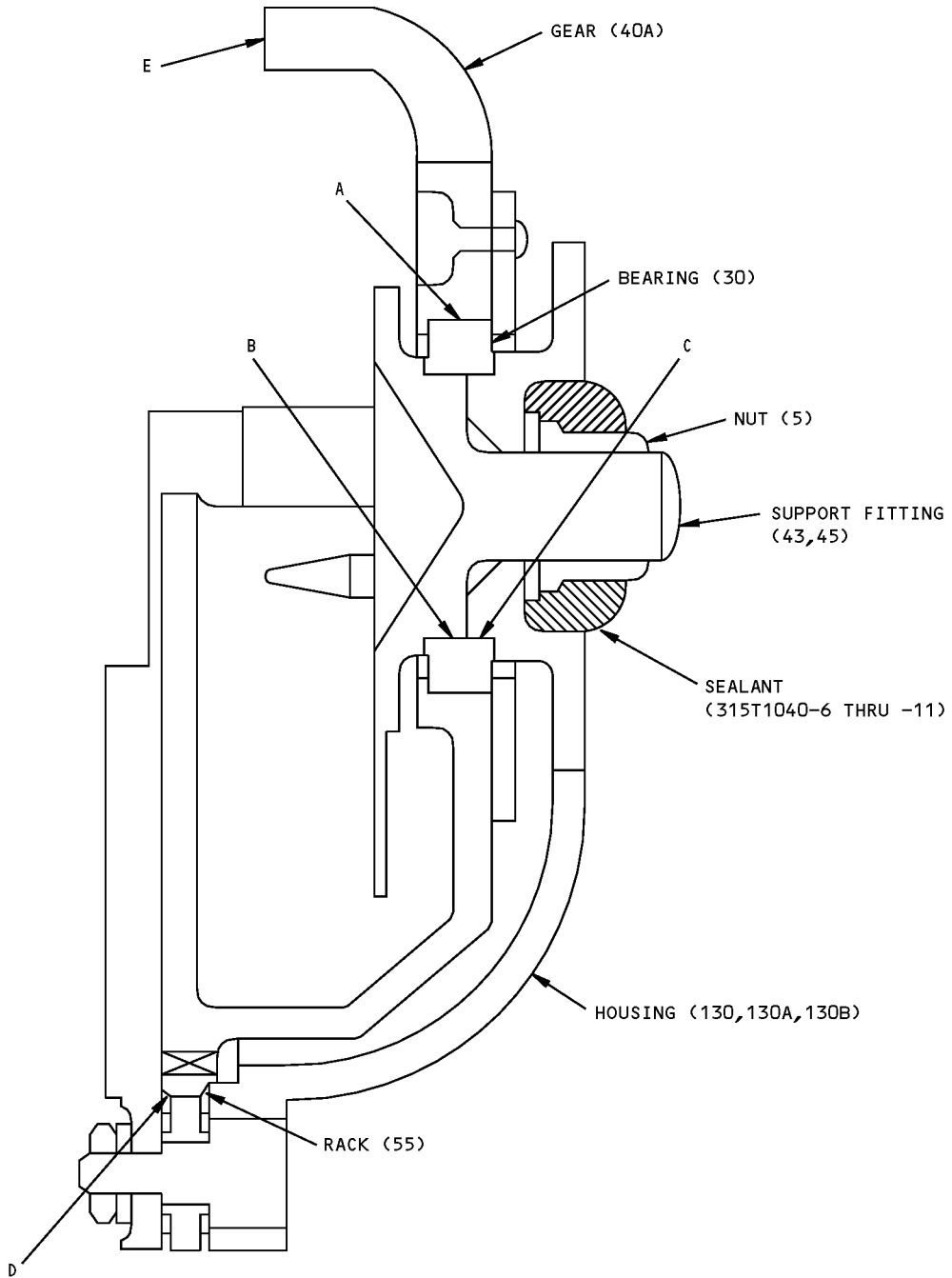
ASSEMBLY

Page 704

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

FITS AND CLEARANCES



Fits and Clearances  
Figure 801 (Sheet 1 of 2)





## COMPONENT MAINTENANCE MANUAL

| Ref<br>Letter<br>Fig.801 | Mating<br>Item No.<br>IPL Fig.1 | Design Dimension |        |                       |         | Service Wear Limit |        |                      |  |
|--------------------------|---------------------------------|------------------|--------|-----------------------|---------|--------------------|--------|----------------------|--|
|                          |                                 | Dimension        |        | Assembly<br>Clearance |         | Dimension          |        | Maximum<br>Clearance |  |
|                          |                                 | Min              | Max    | Min                   | Max     | Min                | Max    |                      |  |
| A                        | ID 40A                          | 1.4998           | 1.5002 | 0.0008                | -0.0003 | 1.4970             | 1.5033 | 0.0032               |  |
|                          | OD 30                           | 1.4994           | 1.5001 |                       |         |                    |        |                      |  |
| B                        | ID 30                           | 1.0623           | 1.0627 | 0.0002                | 0.0009  | 1.0597             | 1.0651 | 0.0030               |  |
|                          | OD 43,45                        | 1.0618           | 1.0621 |                       |         |                    |        |                      |  |
| C                        | ID 30                           | 1.0623           | 1.0627 | 0.0003                | 0.0037  | 1.0569             | 1.0678 | 0.0058               |  |
|                          | OD 130A                         | 1.0590           | 1.0620 |                       |         |                    |        |                      |  |
| D                        | 55                              | 0.1700           | 0.1715 | 0.004                 |         | 0.1480             | 0.0160 |                      |  |
| E                        | 40A                             | 2.2227           | 2.2235 | 0.004                 |         | 2.2178             | 0.0160 |                      |  |

- DIMENSION OVER 0.0576 INCH DIAMETER PIN  
 DIMENSION OVER 0.0576 INCH DIAMETER PIN TO CENTER OF BORE  
 MAXIMUM PERMITTED BACKLASH BETWEEN GEAR AND RACK  
 NEGATIVE VALUES ARE AN INTERFERENCE FIT

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances  
Figure 801 (Sheet 2 of 2)

**76-11-13**  
 FITS AND CLEARANCES  
 Page 802  
 Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

| REF IPL  |          | NAME | TORQUE*      |            |
|----------|----------|------|--------------|------------|
| FIG. NO. | ITEM NO. |      | POUND-INCHES | POUND-FEET |
| 1        | 5        | Nut  | 370-690      | 31-58      |

\* REFER TO SOPM 20-50-01 FOR TORQUE VALUES OF STANDARD FASTENERS.

Torque Table  
Figure 802



**COMPONENT MAINTENANCE MANUAL**

**SPECIAL TOOLS, FIXTURES, AND EQUIPMENT**

**(NOT APPLICABLE)**

**76-11-13**

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

Page 901

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

### ILLUSTRATED PARTS LIST

#### 1. Introduction

- A. The Illustrated Parts List (IPL) contains an illustration and a list of component parts you can repair or replace. The Illustrated Parts Catalog (IPC) shows how to use the Boeing part number system.
- B. This shows how parts are related: The relation of each item to its next higher assembly (NHA) is shown in the NOMENCLATURE column. Use the indenture system that follows:

| 1 | 2                            | 3                               | 4                               | 5                                 | 6 | 7   |
|---|------------------------------|---------------------------------|---------------------------------|-----------------------------------|---|---|
| . | Assembly                     |                                 |                                 |                                   |   |   |
| . | Attaching parts for assembly |                                 |                                 |                                   |   |   |
| . | .                            | Detail parts for assembly       |                                 |                                   |   |   |
| . | .                            | Subassembly                     |                                 |                                   |   |   |
| . | .                            | Attaching parts for subassembly |                                 |                                   |   |   |
| . | .                            | .                               | Detail parts for subassembly    |                                   |   |   |
| . | .                            | .                               | Sub-subassembly                 |                                   |   |   |
| . | .                            | .                               | Attaching parts for subassembly |                                   |   |   |
| . | .                            | .                               | .                               | Details parts for sub-subassembly |   |   |
|   |                              |                                 |                                 |                                   |   | Detail Installation Parts (Included only if installation parts may be sent to the shop as part of assembly) |

- C. Each top assembly is given one use code letter (A, B, C, etc.) in the USAGE CODE column. All subsequent component parts in the list can have one or more of the use code letters to show effectivity to top assemblies. A component part without a use code applies to all top assemblies.
- D. An alphabetical letter is added after the item number for optional parts, parts changed by a Service Bulletin, configuration differences (except left-handed and right-handed parts), last engineering releases, and parts added between item numbers in a sequence. The alphabetical letter will not be shown on the illustration for equivalent parts of the same part number.
- E. Color-coded parts are identified with a single digit alpha following the dash number or with "SP" suffix. If the "SP" suffix is used, it represents consolidation of all color codes applicable for a given usage which are not separately listed. Orders for color-coded parts should include the registry number of the airplane for which the parts are ordered.
- F. If a part number is 15 characters long but will not fit in the part number column, the part number will be displayed with a "~" at the end of the line and will be continued on the next line. The "~" denotes that the part number continues on the next line.
- G. Parts changed by a Service Bulletin are shown by PRE SB XXXX and POST SB XXXX added to the NOMENCLATURE column.
- (1) When a new top assembly is added by a Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the top assembly level only. The configuration differences at the detail part level are shown by use code letters.
- (2) When the top assembly part number is not changed by the Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the detail level.
- H. Interchangeable Parts

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1001

Nov 01/2008



## COMPONENT MAINTENANCE MANUAL

|  |  |
|--|--|
| Optional<br>(OPT)  | The part is optional to and interchangeable with other parts that have the same item number. |
| Replaces, Replaced by and not interchangeable with<br>(REPLACES, REPLACED BY AND NOT INTCHG/W) | The part replaces and is not interchangeable with the initial part.                          |
| Replaces, Replaced by<br>(REPLACES, REPLACED BY)   | The part replaces and is interchangeable with, or is an alternative to, the initial part.    |

### VENDOR CODES

| Code  | Name  |
|-------|---|
| 02758 | NETWORKS ELECTRONIC CORP U S BEARING DIV<br>9750 DE SOTO AVENUE<br>CHATSWORTH, CALIFORNIA 91311-4409<br>FORMERLY U S BEARING DIV NETWORKS ELEC CORP               |
| 06989 | API MOTION<br>WESTTOWN ROAD AT WESTCHESTER PARK PO BOX 547<br>WEST CHESTER, PENNSYLVANIA 19380  |
| 34336 | L AND S MACHINE COMPANY INCORPORATED<br>2019 SOUTHWEST BLVD PO BOX 12264<br>WICHITA, KANSAS 67277   |
| 50632 | KAMATICS CORP SUB OF KAMAN CORP<br>1335 BLUE HILLS ROAD<br>BLOOMFIELD, CONNECTICUT 06002-1304   |
| 55231 | TRIBON BEARING COMPANY<br>6200 HILLCREST DR<br>CLEVELAND, OHIO 44125<br>FORMERLY PURE CARBON COMPANY V80894   |
| 78118 | SPLIT BALL BEARING DIV OF MPB CORP<br>HIGHWAY 4<br>LEBANON, NEW HAMPSHIRE 03766-7301  |
| 97393 | SHUR-LOK CORPORATION<br>2541 WHITE ROAD PO BOX 19584<br>IRVINE, CALIFORNIA 92623-9584<br>FORMERLY SHUR LOK CORP VB0060<br>FORMERLY IN SANTA ANA, CALIFORNIA 92714 |

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1002

Jul 01/2006



## COMPONENT MAINTENANCE MANUAL

### NUMERICAL INDEX

| PART NUMBER | AIRLINE PART NUMBER | FIGURE | ITEM | UNITS PER ASSEMBLY |
|-------------|---------------------|--------|------|--------------------|
| 10602-00    |                     | 1      | 100  | 2                  |
| 315A1019-1  |                     | 1      | 43   | 1                  |
|             |                     | 1      | 46   | 1                  |
| 315A1019-10 |                     | 1      | 46B  | 1                  |
| 315A1019-3  |                     | 1      | 45   | 1                  |
| 315A1019-7  |                     | 1      | 46A  | 1                  |
| 315A1019-9  |                     | 1      | 45A  | 1                  |
| 315A1026-1  |                     | 1      | 25A  | 1                  |
| 315A1036-3  |                     | 1      | 55   | 1                  |
| 315A1036-7  |                     | 1      | 55A  | 1                  |
| 315A1036-8  |                     | 1      | 55B  | 1                  |
| 315A1036-9  |                     | 1      | 55C  | 1                  |
| 315A1040-10 |                     | 1      | 1H   | RF                 |
| 315A1040-11 |                     | 1      | 1J   | RF                 |
| 315A1040-3  |                     | 1      | 1A   | RF                 |
| 315A1040-4  |                     | 1      | 1B   | RF                 |
| 315A1040-5  |                     | 1      | 1C   | RF                 |
| 315A1040-6  |                     | 1      | 1D   | RF                 |
| 315A1040-7  |                     | 1      | 1E   | RF                 |
| 315A1040-8  |                     | 1      | 1F   | RF                 |
| 315A1040-9  |                     | 1      | 1G   | RF                 |
| 315A1043-1  |                     | 1      | 130  | 1                  |
| 315A1043-2  |                     | 1      | 130A | 1                  |
| 315A1043-3  |                     | 1      | 130B | 1                  |
| 315A1045-10 |                     | 1      | 15C  | 1                  |
| 315A1045-11 |                     | 1      | 40C  | 1                  |
| 315A1045-12 |                     | 1      | 40D  | 1                  |
| 315A1045-13 |                     | 1      | 40E  | 1                  |
| 315A1045-14 |                     | 1      | 40F  | 1                  |
| 315A1045-15 |                     | 1      | 15D  | 1                  |
| 315A1045-16 |                     | 1      | 15E  | 1                  |
| 315A1045-17 |                     | 1      | 15F  | 1                  |
| 315A1045-6  |                     | 1      | 15A  | 1                  |
| 315A1045-7  |                     | 1      | 40A  | 1                  |

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1003

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

| PART NUMBER         | AIRLINE PART NUMBER | FIGURE | ITEM | UNITS PER ASSEMBLY |
|---------------------|---------------------|--------|------|--------------------|
| 315A1045-8          |                     | 1      | 15B  | 1                  |
| 315A1045-9          |                     | 1      | 40B  | 1                  |
| 315A1048-1          |                     | 1      | 120  | 2                  |
| 315A1088-1          |                     | 1      | 70   | 1                  |
| 315A1919-1          |                     | 1      | 48   | 2                  |
| 315T1005-1          |                     | 1      | 75B  | 1                  |
| 315T1029-1          |                     | 1      | 95   | 2                  |
| 315T4012-1          |                     | 1      | 80   | 1                  |
| AN960C10L           |                     | 1      | 90   | 2                  |
| AN960C416L          |                     | 1      | 110  | 2                  |
| AN960C716           |                     | 1      | 10   | 1                  |
| BACN10DP5J          |                     | 1      | 60   | 1                  |
| BACN10GW7AS         |                     | 1      | 5    | 1                  |
| BACN10JC4CM         |                     | 1      | 105A | 2                  |
| BCREFA1477          |                     | 1      | 30   | 1                  |
| BCREFA1478          |                     | 1      | 30A  | 1                  |
| BCREFA1479          |                     | 1      | 30B  | 1                  |
| HS140-3             |                     | 1      | 125A | 1                  |
| HSP4TL104           |                     | 1      | 100  | 2                  |
| KRP114804BT         |                     | 1      | 100  | 2                  |
| LS5097              |                     | 1      | 75   | 1                  |
|                     |                     | 1      | 75A  | 1                  |
| MS20427M3C6         |                     | 1      | 20A  | 10                 |
| MS20819-5J          |                     | 1      | 65   | 1                  |
| NAS509-3C           |                     | 1      | 85A  | 2                  |
| NAS607-2-3P         |                     | 1      | 47   | 2                  |
|                     |                     | 1      | 50   | 2                  |
| NAS6704-12          |                     | 1      | 115  | 2                  |
| S17-24BIE3P515LY198 |                     | 1      | 30   | 1                  |
| S17-24BIE5P515LY198 |                     | 1      | 30A  | 1                  |
| S17-24BIE7P515LY198 |                     | 1      | 30B  | 1                  |
| S315A110-3          |                     | 1      | 125A | 1                  |
| S315N166-1          |                     | 1      | 100  | 2                  |
| SL2999-3C           |                     | 1      | 85   | 2                  |

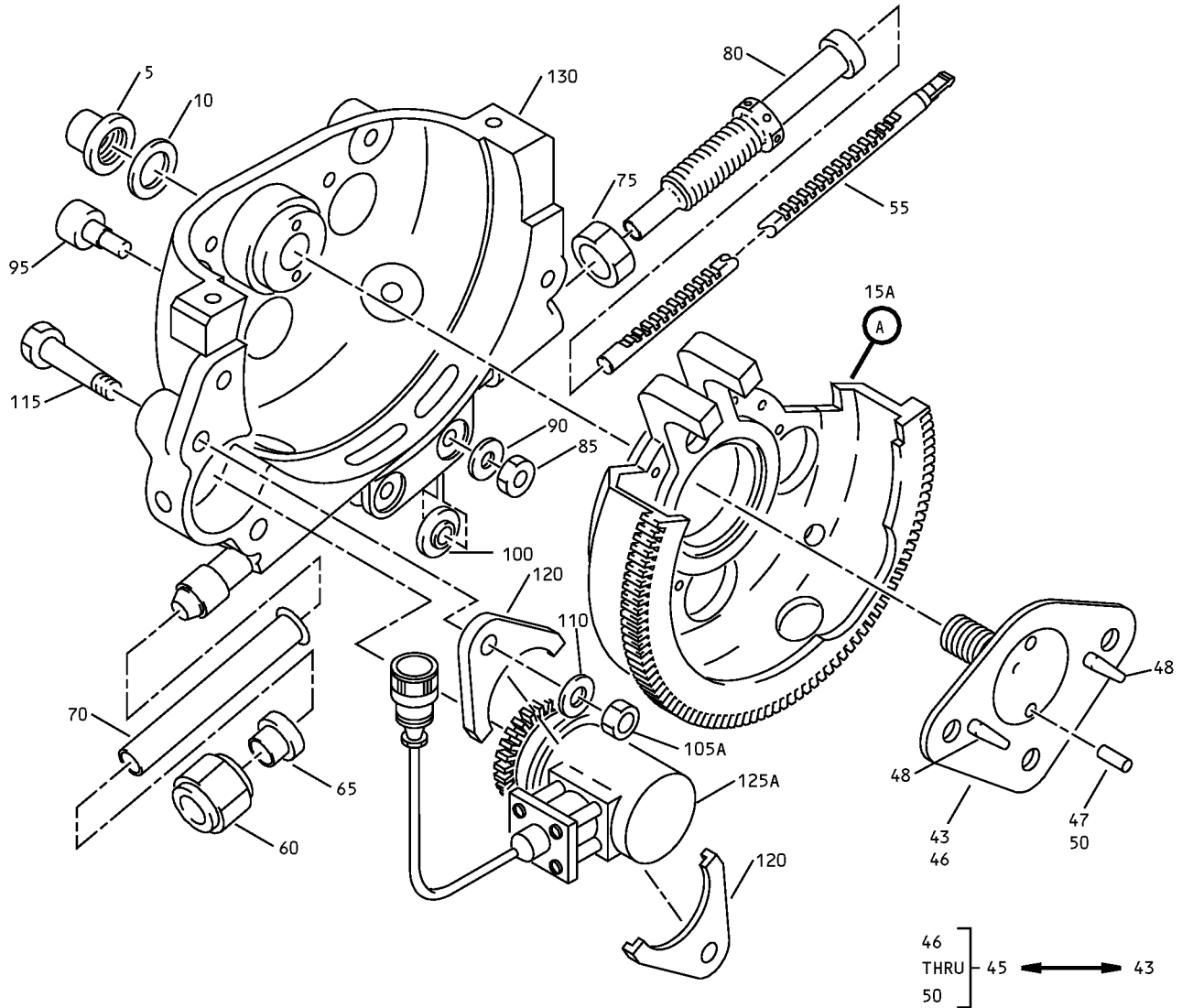
# 76-11-13

ILLUSTRATED PARTS LIST

Page 1004

Mar 01/2006

COMPONENT MAINTENANCE MANUAL

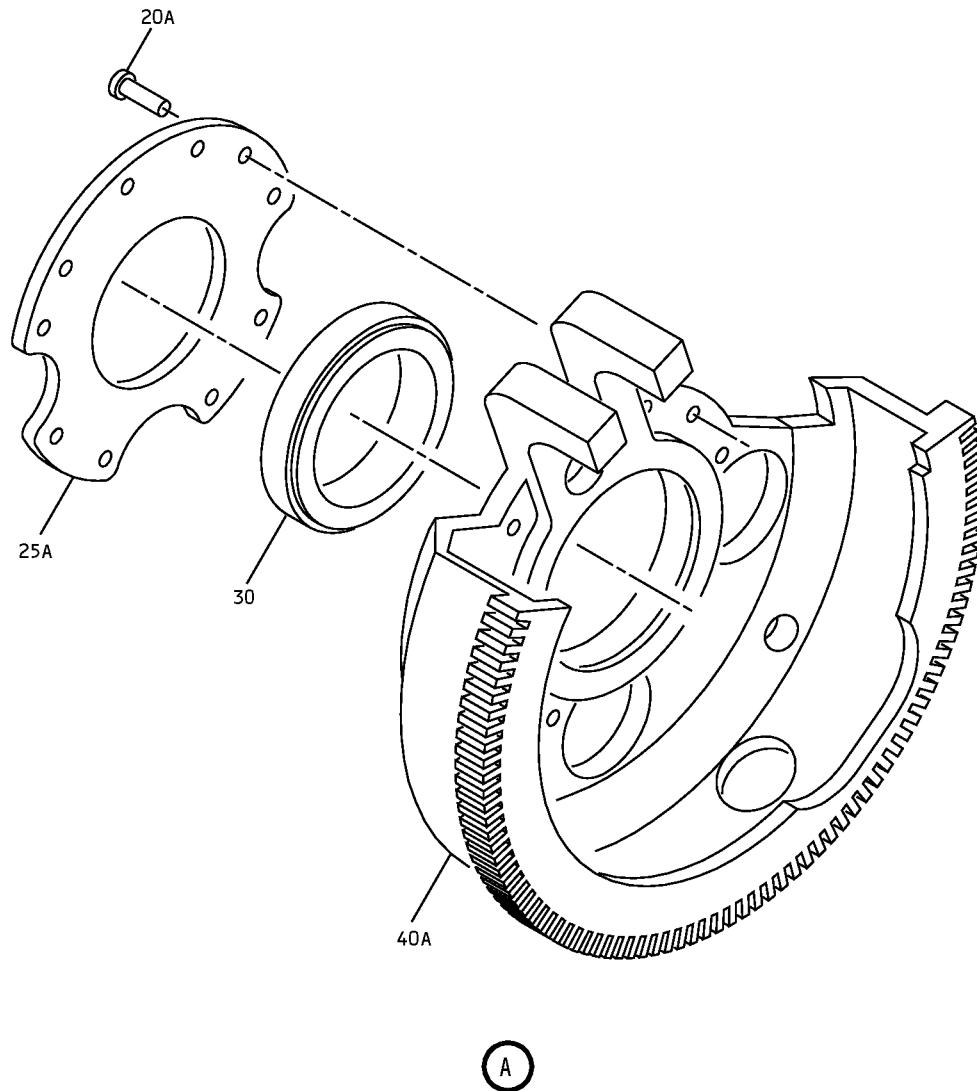


CFM-56 Engine Throttle Fuel Control Box Assembly  
IPL Figure 1 (Sheet 1 of 2)

**76-11-13**  
ILLUSTRATED PARTS LIST  
Page 1005  
Mar 01/2006



COMPONENT MAINTENANCE MANUAL



CFM-56 Engine Throttle Fuel Control Box Assembly  
IPL Figure 1 (Sheet 2 of 2)

**76-11-13**  
ILLUSTRATED PARTS LIST  
Page 1006  
Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

| FIG/<br>ITEM | PART NUMBER | AIRLINE<br>PART<br>NUMBER | NOMENCLATURE |   |   |   |   |   |   | USAGE<br>CODE | UNITS<br>PER<br>ASSY |
|--------------|-------------|---------------------------|--------------|---|---|---|---|---|---|---------------|----------------------|
|              |             |                           | 1            | 2 | 3 | 4 | 5 | 6 | 7 |               |                      |
| 1-           |             |                           |              |   |   |   |   |   |   |               |                      |
| -1           | 315A1040-10 |                           |              |   |   |   |   |   |   |               |                      |
| -1A          | 315A1040-3  |                           |              |   |   |   |   |   |   | A             | RF                   |
| -1B          | 315A1040-4  |                           |              |   |   |   |   |   |   | B             | RF                   |
| -1C          | 315A1040-5  |                           |              |   |   |   |   |   |   | C             | RF                   |
| -1D          | 315A1040-6  |                           |              |   |   |   |   |   |   | D             | RF                   |
| -1E          | 315A1040-7  |                           |              |   |   |   |   |   |   | E             | RF                   |
| -1F          | 315A1040-8  |                           |              |   |   |   |   |   |   | F             | RF                   |
| -1G          | 315A1040-9  |                           |              |   |   |   |   |   |   | G             | RF                   |

-Item not Illustrated

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1007

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

| FIG/<br>ITEM | PART NUMBER | AIRLINE<br>PART<br>NUMBER | NOMENCLATURE   |   |   |   |   |   |   | USAGE<br>CODE | UNITS<br>PER<br>ASSY |
|--------------|-------------|---------------------------|--|---|---|---|---|---|---|---------------|----------------------|
|              |             |                           | 1  | 2 | 3 | 4 | 5 | 6 | 7 |               |                      |
| 1-<br>-1H    | 315A1040-10 |                           | BOX ASSY-ENG THROT FUEL CONT<br>(REWORKED BY COMPONENT SB<br>315A1040-76-01)<br>(PERMITS FUEL CONTROL BOX<br>ASSEMBLIES 315A1040-6 THRU -11<br>TO BE REWORKED INTO ANY OTHER<br>315A1040-6 THRU -11 C05FIGURATION<br>BY CHANGING THE SUPPORT<br>FITTING ASSEMBLY, RACK, AND<br>GEAR ASSEMBLY)              |   |   |   |   |   |   | H             | RF                   |
| -1J          | 315A1040-11 |                           | BOX ASSY-ENG THROT FUEL CONT<br>(REWORKED BY COMPONENT SB<br>315A1040-76-01)<br>(PERMITS FUEL CONTROL BOX<br>ASSEMBLIES 315A1040-6 THRU -11<br>TO BE REWORKED INTO ANY OTHER<br>315A1040-6 THRU -11 C05FIGURATION<br>BY CHANGING THE SUPPORT<br>FITTING ASSEMBLY, RACK, AND<br>GEAR ASSEMBLY)              |   |   |   |   |   |   | J             | RF                   |
| 5            | BACN10GW7AS |                           | . NUT  |   |   |   |   |   |   |               | 1                    |
| 10           | AN960C716   |                           | . WASHER   |   |   |   |   |   |   |               | 1                    |
| 15           | 315A1045-15 |                           | DELETED  |   |   |   |   |   |   |               |                      |
| 15A          | 315A1045-6  |                           | . GEAR ASSY<br>(OPT ITEM 15B)  |   |   |   |   |   |   | A, B          | 1                    |
| -15B         | 315A1045-8  |                           | . GEAR ASSY<br>(OPT ITEM 15A)  |   |   |   |   |   |   | A, B          | 1                    |
| -15C         | 315A1045-10 |                           | . GEAR ASSY-*[1]<br>(POST SB 737-76-1021)<br>(REWORKED BY COMPONENT SB<br>315A1040-76-01)<br>(PERMITS FUEL CONTROL BOX<br>ASSEMBLIES 315A1040-6 THRU -11<br>TO BE REWORKED INTO ANY<br>OTHER 315A1040-6 THRU -11<br>C05FIGURATION BY CHANGING THE<br>SUPPORT FITTING ASSEMBLY,<br>RACK, AND GEAR ASSEMBLY) |   |   |   |   |   |   | C, D, F-H     | 1                    |

-Item not Illustrated

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1008

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

| FIG/<br>ITEM | PART NUMBER | AIRLINE<br>PART<br>NUMBER | NOMENCLATURE |   |   |   |   |   |   | USAGE<br>CODE | UNITS<br>PER<br>ASSY |    |
|--------------|-------------|---------------------------|--------------|---|---|---|---|---|---|---------------|----------------------|----|
|              |             |                           | 1            | 2 | 3 | 4 | 5 | 6 | 7 |               |                      |    |
| 1-<br>-15D   | 315A1045-15 |                           | .            |   |   |   |   |   |   |               | C, D, F-H            | 1  |
|              |             |                           |              |   |   |   |   |   |   |               |                      |    |
| -15E         | 315A1045-16 |                           | .            |   |   |   |   |   |   |               | E                    | 1  |
|              |             |                           |              |   |   |   |   |   |   |               |                      |    |
| -15F         | 315A1045-17 |                           | .            |   |   |   |   |   |   |               | J                    | 1  |
|              |             |                           |              |   |   |   |   |   |   |               |                      |    |
| 20           | MS20427M3C6 |                           |              |   |   |   |   |   |   |               |                      |    |
| 20A          | MS20427M3C6 |                           | .            | . |   |   |   |   |   |               |                      | 10 |
| 25           | 315A1026-1  |                           |              |   |   |   |   |   |   |               |                      |    |
| 25A          | 315A1026-1  |                           | .            | . |   |   |   |   |   |               |                      | 1  |
| 30           | BCREFA1477  |                           | .            | . |   |   |   |   |   |               |                      | 1  |
|              |             |                           |              |   |   |   |   |   |   |               |                      |    |

-Item not Illustrated

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1009

Mar 01/2006



## COMPONENT MAINTENANCE MANUAL

| FIG/<br>ITEM | PART NUMBER | AIRLINE<br>PART<br>NUMBER | NOMENCLATURE |   |  |   |   |   |           | USAGE<br>CODE | UNITS<br>PER<br>ASSY |
|--------------|-------------|---------------------------|--------------|---|--|---|---|---|-----------|---------------|----------------------|
|              |             |                           | 1            | 2 | 3  | 4 | 5 | 6 | 7         |               |                      |
| 1-           |             |                           |              |   |  |   |   |   |           |               |                      |
| -30A         | BCREFA1478  |                           | .            | . | BEARING<br>(V78118)<br>(S17-24BIE5P515LY198)<br>(OPT ITEM 30, 30B) |   |   |   |           |               | 1                    |
| -30B         | BCREFA1479  |                           | .            | . | BEARING<br>(V78118)<br>(S17-24BIE7P515LY198)<br>(OPT ITEM 30, 30A) |   |   |   |           |               | 1                    |
| 30C          | BCREFA1477  |                           |              |   | DELETED  |   |   |   |           |               |                      |
| -30D         | BCREFA1478  |                           |              |   | DELETED  |   |   |   |           |               |                      |
| -30E         | BCREFA1479  |                           |              |   | DELETED  |   |   |   |           |               |                      |
| 35           | 315A1045-12 |                           |              |   | DELETED  |   |   |   |           |               |                      |
| -35A         | 315A1045-11 |                           |              |   | DELETED  |   |   |   |           |               |                      |
| -35B         | 315A1045-7  |                           |              |   | DELETED  |   |   |   |           |               |                      |
| -35C         | 315A1045-9  |                           |              |   | DELETED  |   |   |   |           |               |                      |
| -35D         | 315A1045-13 |                           |              |   | DELETED  |   |   |   |           |               |                      |
| -35E         | 315A1045-14 |                           |              |   | DELETED  |   |   |   |           |               |                      |
| 40           | 315A1019-3  |                           |              |   | DELETED  |   |   |   |           |               |                      |
| 40A          | 315A1045-7  |                           | .            | . | GEAR<br>(USED ON ITEM 15A)   |   |   |   | A, B      |               | 1                    |
| -40B         | 315A1045-9  |                           | .            | . | GEAR<br>(USED ON ITEM 15B)   |   |   |   | A, B      |               | 1                    |
| -40C         | 315A1045-11 |                           | .            | . | GEAR<br>(USED ON ITEM 15C)   |   |   |   | C, D, F-H |               | 1                    |
| -40D         | 315A1045-12 |                           | .            | . | GEAR<br>(USED ON ITEM 15D)   |   |   |   | C, D, F-H |               | 1                    |
| -40E         | 315A1045-13 |                           | .            | . | GEAR   |   |   |   | E         |               | 1                    |
| -40F         | 315A1045-14 |                           | .            | . | GEAR   |   |   |   | J         |               | 1                    |
| -43          | 315A1019-1  |                           | .            | . | FITTING-SPRT   |   |   |   | A         |               | 1                    |

-Item not Illustrated





## COMPONENT MAINTENANCE MANUAL

| FIG/<br>ITEM | PART NUMBER | AIRLINE<br>PART<br>NUMBER | NOMENCLATURE |   |   |   |   |   |   | USAGE<br>CODE | UNITS<br>PER<br>ASSY |
|--------------|-------------|---------------------------|--------------|---|---|---|---|---|---|---------------|----------------------|
|              |             |                           | 1            | 2   | 3 | 4 | 5 | 6 | 7 |               |                      |
| 1-<br>-55A   | 315A1036-7  |                           | .            | RACK-GEAR<br>(OPT ITEM 55)<br>(REWORKED BY COMPONENT SB<br>315A1040-76-01)<br>(PERMITS FUEL CONTROL BOX<br>ASSEMBLIES 315A1040-6 THRU -11<br>TO BE REWORKED INTO ANY<br>OTHER 315A1040-6 THRU -11<br>C05FIGURATION BY CHANGING THE<br>SUPPORT FITTING ASSEMBLY,<br>RACK, AND GEAR ASSEMBLY) |   |   |   |   |   | A-E           | 1                    |
| -55B         | 315A1036-8  |                           | .            | RACK-GEAR<br>(REWORKED BY COMPONENT SB<br>315A1040-76-01)<br>(PERMITS FUEL CONTROL BOX<br>ASSEMBLIES 315A1040-6 THRU -11<br>TO BE REWORKED INTO ANY<br>OTHER 315A1040-6 THRU -11<br>C05FIGURATION BY CHANGING THE<br>SUPPORT FITTING ASSEMBLY,<br>RACK, AND GEAR ASSEMBLY)                  |   |   |   |   |   | F, G          | 1                    |
| -55C         | 315A1036-9  |                           | .            | RACK-GEAR<br>(REWORKED BY COMPONENT SB<br>315A1040-76-01)<br>(PERMITS FUEL CONTROL BOX<br>ASSEMBLIES 315A1040-6 THRU -11<br>TO BE REWORKED INTO ANY<br>OTHER 315A1040-6 THRU -11<br>C05FIGURATION BY CHANGING THE<br>SUPPORT FITTING ASSEMBLY,<br>RACK, AND GEAR ASSEMBLY)                  |   |   |   |   |   | H, J          | 1                    |
| 60           | BACN10DP5J  |                           | .            | NUT-COUPLING  |   |   |   |   |   |               | 1                    |
| 65           | MS20819-5J  |                           | .            | SLEEVE  |   |   |   |   |   |               | 1                    |
| -65A         | 315A1036-7  |                           |              | DELETED   |   |   |   |   |   |               |                      |
| -65B         | 315A1036-9  |                           |              | DELETED   |   |   |   |   |   |               |                      |
| -65C         | 315A1036-8  |                           |              | DELETED   |   |   |   |   |   |               |                      |
| 70           | 315A1088-1  |                           | .            | SHIELD  |   |   |   |   |   |               | 1                    |
| 75           | LS5097      |                           | .            | NUT<br>(V34336)   |   |   |   |   |   | A             | 1                    |
| -75A         | LS5097      |                           | .            | NUT<br>(V34336)<br>(OPT ITEM 75B)   |   |   |   |   |   | B-J           | 1                    |

-Item not Illustrated

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1012

Mar 01/2006



### COMPONENT MAINTENANCE MANUAL

| FIG/<br>ITEM | PART NUMBER | AIRLINE<br>PART<br>NUMBER | NOMENCLATURE |                            |   |   |   |   |     | USAGE<br>CODE | UNITS<br>PER<br>ASSY |
|--------------|-------------|---------------------------|--------------|----------------------------|---|---|---|---|-----|---------------|----------------------|
|              |             |                           | 1            | 2                          | 3 | 4 | 5 | 6 | 7   |               |                      |
| 1-           |             |                           |              |                            |   |   |   |   |     |               |                      |
| -75B         | 315T1005-1  |                           | .            | NUT                        |   |   |   |   |     | B-J           | 1                    |
|              |             |                           |              | (OPT ITEM 75A)             |   |   |   |   |     |               |                      |
| 80           | 315T4012-1  |                           | .            | ADAPTER                    |   |   |   |   |     |               | 1                    |
| 85           | SL2999-3C   |                           | .            | NUT                        |   |   |   |   |     |               | 2                    |
|              |             |                           |              | (V97393)                   |   |   |   |   |     |               |                      |
|              |             |                           |              | (OPT ITEM 85A)             |   |   |   |   |     |               |                      |
| -85A         | NAS509-3C   |                           | .            | NUT                        |   |   |   |   |     |               | 2                    |
|              |             |                           |              | (OPT ITEM 85)              |   |   |   |   |     |               |                      |
| 90           | AN960C10L   |                           | .            | WASHER                     |   |   |   |   |     |               | 2                    |
| 95           | 315T1029-1  |                           | .            | PIN-ECCENTRIC              |   |   |   |   |     |               | 2                    |
| -95A         | NAS509-3C   |                           |              | DELETED                    |   |   |   |   |     |               |                      |
| 100          | 10602-00    |                           | .            | BEARING-BACKUP             |   |   |   |   |     |               | 2                    |
|              |             |                           |              | (V55231)                   |   |   |   |   |     |               |                      |
|              |             |                           |              | (SPEC S315N166-1)          |   |   |   |   |     |               |                      |
|              |             |                           |              | (OPT HSP4TL104 (V02758))   |   |   |   |   |     |               |                      |
|              |             |                           |              | (OPT KRP114804BT (V50632)) |   |   |   |   |     |               |                      |
| 105          | 315T1029-1  |                           |              | DELETED                    |   |   |   |   |     |               |                      |
| 105A         | BACN10JC4CM |                           | .            | NUT                        |   |   |   |   |     |               | 2                    |
| 110          | AN960C416L  |                           | .            | WASHER                     |   |   |   |   |     |               | 2                    |
| -110A        | VTB08600    |                           |              | DELETED                    |   |   |   |   |     |               |                      |
| -110B        | 10602-00    |                           |              | DELETED                    |   |   |   |   |     |               |                      |
| 115          | NAS6704-12  |                           | .            | BOLT                       |   |   |   |   |     |               | 2                    |
| 120          | 315A1048-1  |                           | .            | CLAMP-SYNCHRO              |   |   |   |   |     |               | 2                    |
| 125          | NAS6704-12  |                           |              | DELETED                    |   |   |   |   |     |               |                      |
| 125A         | HS140-3     |                           | .            | SYNCHRO-XMTR               |   |   |   |   |     |               | 1                    |
|              |             |                           |              | (V06989)                   |   |   |   |   |     |               |                      |
|              |             |                           |              | (SPEC S315A110-3)          |   |   |   |   |     |               |                      |
| 130          | 315A1043-1  |                           | .            | HOUSING                    |   |   |   |   | A   |               | 1                    |
| -130A        | 315A1043-2  |                           | .            | HOUSING                    |   |   |   |   | B-J |               | 1                    |
|              |             |                           |              | (OPT ITEM 130B)            |   |   |   |   |     |               |                      |
| -130B        | 315A1043-3  |                           | .            | HOUSING                    |   |   |   |   | B-J |               | 1                    |
|              |             |                           |              | (OPT ITEM 130A)            |   |   |   |   |     |               |                      |
| 135          | HS140-3     |                           |              | DELETED                    |   |   |   |   |     |               |                      |
| 140          | 315A1043-3  |                           |              | DELETED                    |   |   |   |   |     |               |                      |
| -140A        | 315A1043-2  |                           |              | DELETED                    |   |   |   |   |     |               |                      |

-Item not Illustrated

# 76-11-13

ILLUSTRATED PARTS LIST

Page 1013

Mar 01/2006