TO: ALL HOLDERS OF SIDE CARGO DOOR MANUAL DRIVE GEARBOX ASSEMBLY COMPONENT MAINTENANCE MANUAL 52-34-22

REVISION NO. 2 DATED MAR 01/02

HIGHLIGHTS

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter Revision No. and date to the Record of Revision Sheet.

| CHAPTER/SECTION AND PAGE NO. | DESCRIPTION OF CHANGE |
|---|---|
| CONTENTS<br>1<br>801 | Addd Fits and Clearances data. |
| 101 | Changed the torque-value for Testing to 5 to 10 pound-inches. |
| REPAIR 1-1<br>601<br>REPAIR 3-1<br>601 | Clarified the refinish data for gears 65B83639-1, -2. |
| REPAIR 2-1<br>601-602 | Added Fig. 601 to Repair 2-1 to show the areas that do not get primer. |

# SIDE CARGO DOOR MANUAL DRIVE GEARBOX ASSEMBLY

# PART NUMBER 65B83637-4,-6

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and initial.

| REVISION NUMBER | REVISION DATE | DATE FILED | BY | REVISION NUMBER | REVISION DATE | DATE FILED | BY |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

| BOEING SERVICE BULLETIN | BOEING TEMPORARY REVISION | OTHER DIRECTIVE | DATE OF INCORPORATION INTO MANUAL |
|---|---|---|---|
| | | | |

| PAGE | DATE | CODE |
|---|---|---|
| 52-34-22 | | |
| TITLE PAGE | | |
| 1 | OCT 01/87 | 01 |
| 2 | BLANK | |
| REVISION RECORD | | |
| 1 | OCT 01/87 | 01 |
| 2 | BLANK | |
| TR & SB RECORD | | |
| 1 | OCT 01/87 | 01 |
| 2 | BLANK | |
| LIST OF EFFECTIVE PAGES | | |
| *1 | MAR 01/02 | 01 |
| THRU LAST PAGE | | |
| CONTENTS | | |
| *1 | MAR 01/02 | 01.1 |
| 2 | BLANK | |
| INTRODUCTION | | |
| 1 | OCT 01/87 | 01 |
| 2 | BLANK | |
| DESCRIPTION & OPERATION | | |
| 1 | OCT 01/87 | 01 |
| 2 | BLANK | |
| TESTING & TROUBLE SHOOTING | | |
| *101 | MAR 01/02 | 01.1 |
| 102 | BLANK | |
| DISASSEMBLY | | |
| 301 | JUL 01/88 | 01.1 |
| 302 | BLANK | |
| CHECK | | |
| 501 | OCT 01/87 | 01 |
| 502 | BLANK | |

| PAGE | DATE | CODE |
|---|---|---|
| REPAIR-GENERAL | | |
| 601 | JUL 01/88 | 01.1 |
| 602 | BLANK | |
| REPAIR 1-1 | | |
| *601 | MAR 01/02 | 01.1 |
| 602 | OCT 01/87 | 01 |
| REPAIR 2-1 | | |
| *601 | MAR 01/02 | 01.1 |
| *602 | MAR 01/02 | 01.1 |
| REPAIR 3-1 | | |
| *601 | MAR 01/02 | 01.1 |
| 602 | OCT 01/87 | 01 |
| ASSEMBLY | | |
| 701 | OCT 01/87 | 01 |
| 702 | BLANK | |
| FITS AND CLEARANCES | | |
| *801 | MAR 01/02 | 01.1 |
| *802 | BLANK | |
| ILLUSTRATED PARTS LIST | | |
| 1001 | OCT 01/87 | 01 |
| 1002 | OCT 01/87 | 01 |
| 1003 | BLANK | |
| 1004 | OCT 01/87 | 01 |
| 1005 | JUL 01/88 | 01.1 |
| 1006 | BLANK | |

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS



*[1] Special instructions not required. Use standard industry practices.

## INTRODUCTION

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement to complete shop-type repair.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions
3. Temporary Revision & Service Bulletin Record
4. List of Effective Pages
5. Table of Contents
6. Introduction
7. Procedures & IPL Sections

Refer to the Table of Contents for the page location of applicable sections. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

The beginning of the REPAIR section includes a list of the separate repairs, a list of applicable standard Boeing practices, and an explanation of the True Position Dimensioning symbols used.

An explanation of the use of the Illustrated Parts List is provided in the Introduction to that section.

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given they will be in parentheses following the English units.

Design changes, optional parts, configuration differences and Service Bulletin modifications create alternate part numbers. These are identified in the Illustrated Parts List (IPL) by adding an alphabetical character to the basic item number. The resulting item number is called an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless otherwise indicated.

This CMM provides data also provided in 747 Overhaul Manual (52-31-51).

Verification:

Testing/TS
Assembly

# SIDE CARGO DOOR MANUAL DRIVE GEARBOX ASSEMBLY

## DESCRIPTION AND OPERATION

1. Description

   A. The side cargo door manual drive gearbox assembly consists of two gears, bearings, a housing assembly, and associated parts.

2. Operation

   A. The gearbox assembly is part of the mechanism for manually opening or closing the forward and aft cargo doors in case of electrical failure.

3. Leading Particulars (Approximate)

   Width -- 4 inches
   Length -- 2 inches
   Height -- 2 inches
   Weight -- 3 pounds

TESTING/TROUBLE SHOOTING

1. Functional Test

A. Apply 5- to 8-pound axial load outward on gear assembly (40). Clamp gear from turning.

B. Apply 5- to 8-pound axial load outward on gear (30). Apply a 5 to 10 pound-inch torque to gear (30) and measure backlash at three points approximately 120 degrees apart on the pitch circle. The backlash shall be 0.003 to 0.005 inch.

NOTE: Backlash required is total clearance measured from torqued position in one direction to torqued position in opposite direction. Backlash is controlled by use of shim (20).

DISASSEMBLY

NOTE: See Testing and Trouble Shooting to establish the condition of the component or most probable cause of its malfunction. This is to determine the extent of disassembly required without completely tearing down and rebuilding the component.

1. Use standard industry practices to disassemble this component.

CHECK

1. Check all parts for obvious defects in accordance with standard industry practices.

2. Penetrant check per 20-20-02 -- Housing (60, IPL Fig. 1).

3. Magnetic particle inspect per 20-20-01 -- Gears (30, 45).

# REPAIR - GENERAL

1. Content

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

| P/N | NAME | REPAIR |
|---|---|---|
| 65B83637 | GEAR ASSEMBLY | 1-1 |
| 65B83638 | HOUSING ASSEMBLY | 2-1 |
| - - | MISCELLANEOUS PARTS | 3-1 |

2. Standard Practices

   A. Refer to the following standard practices, as applicable, for details of procedures in individual repairs.

   20-30-02 Stripping of Protective Finishes
   20-30-03 General Cleaning Procedures
   20-41-01 Decoding Table for Boeing Finish Codes
   20-41-02 Application of Chemical and Solvent Resistant Finishes
   20-42-05 Cadmium Plating
   20-43-01 Chromic Acid Anodizing
   20-50-12 Application of Adhesives
   20-60-02 Finishing Materials

3. Materials

   NOTE: Equivalent substitutes may be used.

   A. Adhesive -- Type 38 (Ref 20-50-12)

   B. Grease -- MIL-G-23827 (Ref 20-60-03)

   C. Primer -- BMS 10-11, Type 1 (Ref 20-60-02)

GEAR ASSEMBLY - REPAIR 1-1

65B83637-5, -7

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, Fig. 602.

1. Repair

A. If replacement of plug (50 or 50A, IPL Fig. 1) becomes necessary, proceed as follows.

(1) Fabricate new plug from laminated thermosetting rod, phenolic resin, per Fig. 601.

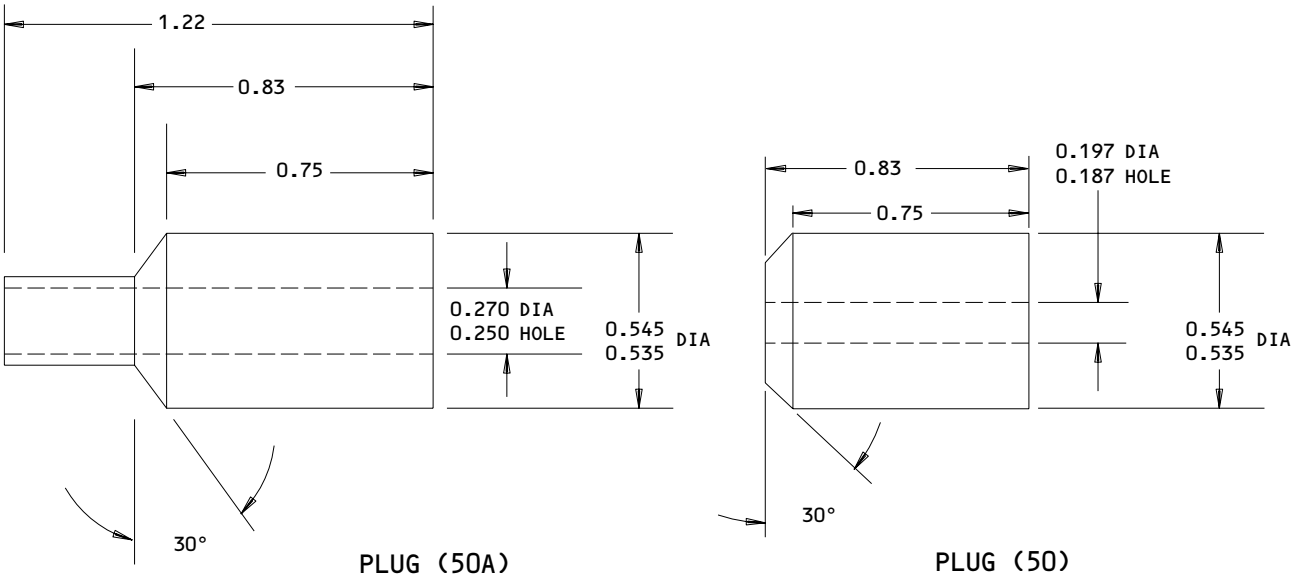
(2) Thoroughly clean bore of gear (45).

(3) Install plug using type 38 adhesive per 20-50-12.

2. Refinish

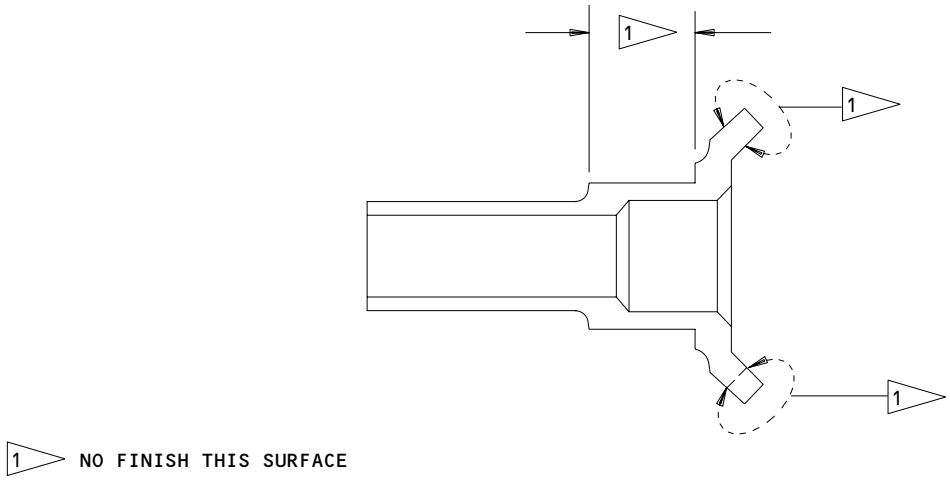
A. Gear (45) -- Cadmium plate (F-15.23) all surfaces but those shown in Fig. 602. Apply BMS 10-11, Type 1 primer (F-20.03) to the bores. Apply no finish (F-25.01) to the areas not finished.

B. Material -- 4340 Steel, 180-200 ksi.




MATERIAL: LAMINATED THERMO SETTING ROD,
PHENOLIC RESIN, MIL-P-79, TYPE FBG

69B84018-1
69B84018-2
Plug Fabrication
Figure 601




65B83639-2
Gear Refinish
Figure 602

## HOUSING ASSEMBLY - REPAIR 2-1

65B83638-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction.

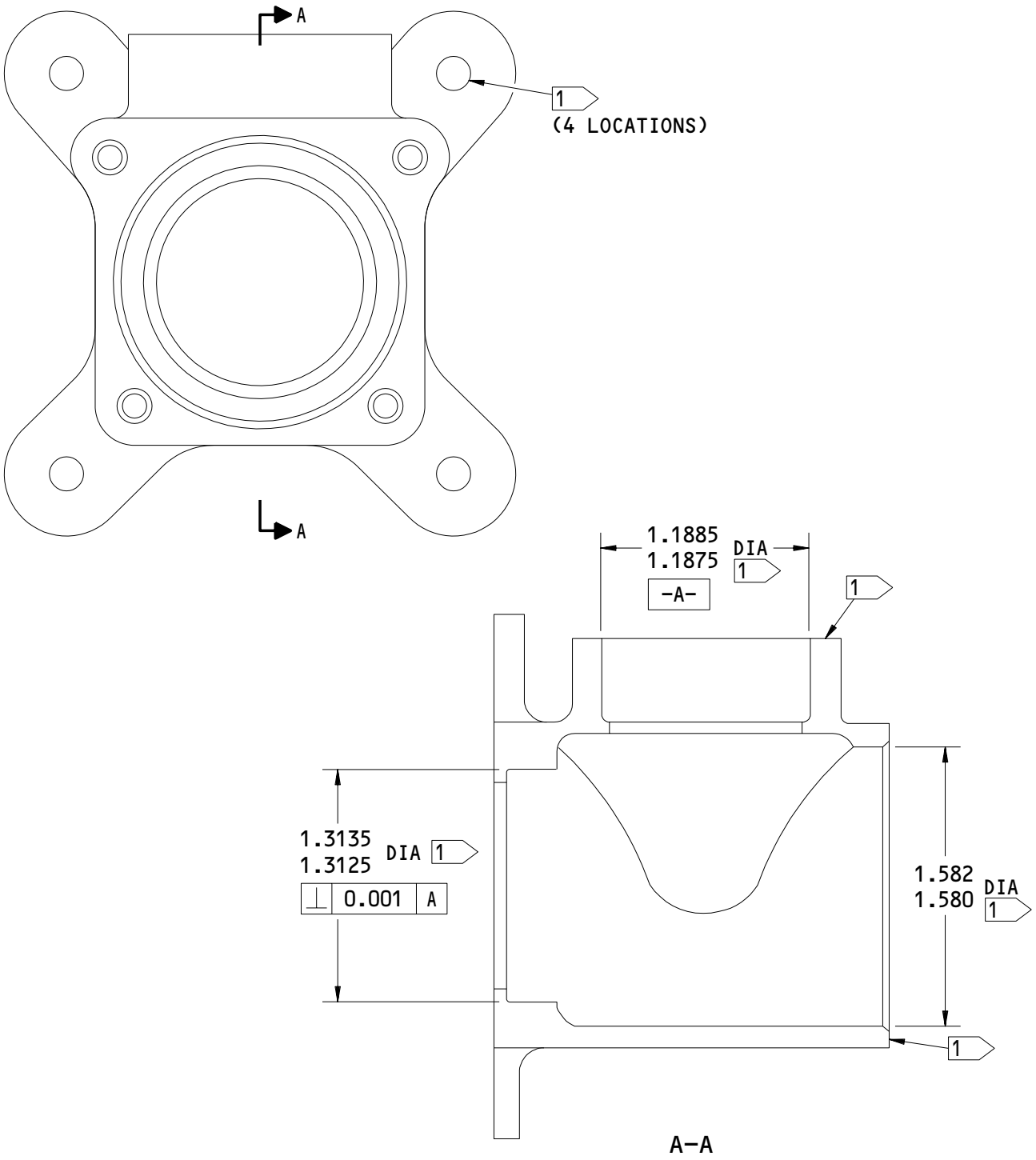
1. Insert (65) Replacement (IPL Fig. 1)

   A. Remove insert.

   B. Install insert (65) with wet primer BMS 10-11, type 1.

2. Refinish

   A. Housing (60) -- Chromic acid anodize (F-17.02) all surfaces. Apply one coat of BMS 10-11, Type 1 primer (F-20.02) on external surfaces, but not in the areas shown in Fig. 601.




1 NO PRIMER IN THIS AREA

ALL DIMENSIONS ARE IN INCHES

65B83638-1
Housing Refinish
Figure 601



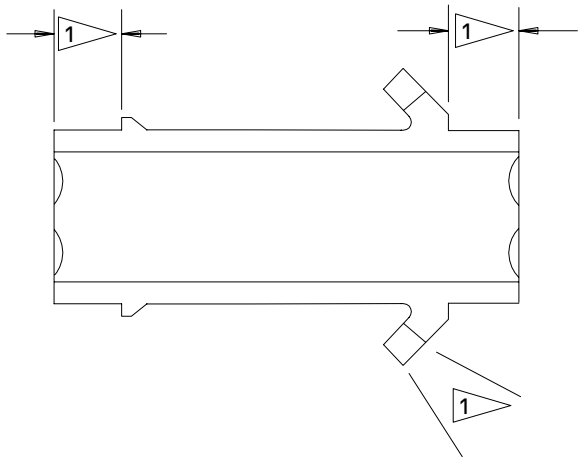
M47983

MISCELLANEOUS PARTS - REPAIR 3-1

1. Repair of these parts consists of restoration of original finish.

| IPL FIG. & ITEM | MATERIAL | FINISH |
|---|---|---|
| Fig. 1 | | |
| Cap (5) | Al alloy | Chromic acid anodize (F-17.02) all surfaces and apply BMS 10-11, Type 1 primer (F-20.02) on external surfaces only. |
| Cap (10) | 4340 Steel, 150-170 ksi | Cadmium plate (F-15.02) all surfaces. |
| Gear (30) | 4340 Steel, 180-200 ksi | Cadmium plate (F-15.23) all surfaces but those shown on Fig. 602. Apply BMS 10-11, Type 1 primer (F-20.03) to the bores. Apply no finish (F-25.01) to the areas with no finish. |

Refinish Details
Figure 601




1 NO FINISH THIS SURFACE

65B83639-1

Refinish Diagram
Figure 602



2367

ASSEMBLY

1. Materials

   NOTE: Equivalent substitutes may be used.

   A. Grease -- MIL-G23827 (Ref 20-60-03)

   B. Lockwire -- MS20995NC20 (Ref 20-50-02)

   C. Primer -- BMS 10-11, type 1 (Ref 20-60-02)

2. Assembly (IPL Fig. 1)

   A. Use standard industry practices for assembly of this component and additional procedures in following steps.

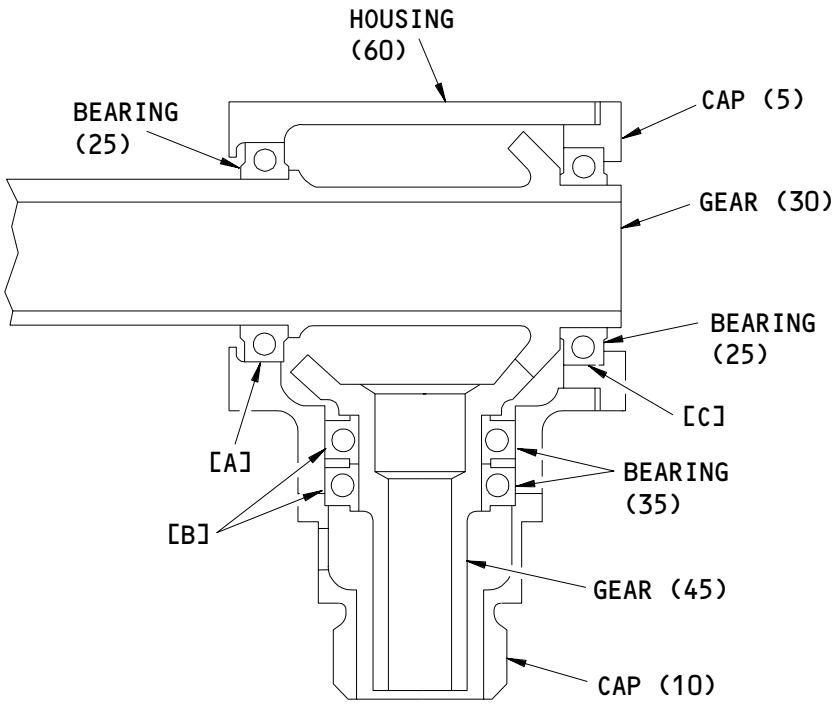
   B. Coat faying surfaces, square bores, and fill teeth of gears (30, 45) with grease.

      NOTE: Do not fill housing assembly (55) with grease.

   C. Install bearings (25, 35) with wet primer.

   D. Lockwire screws (15) with MS20995NC20 lockwire, using double-twist method per 20-50-02.

## FITS AND CLEARANCES




| REF LETTER | REF IPL FIG. 1, MATING ITEM NO. | DESIGN DIMENSION* | | | | SERVICE WEAR LIMIT* | | |
|---|---|---|---|---|---|---|---|---|
| | | DIMENSION | | ASSEMBLY CLEARANCE | | DIMENSION | | MAXIMUM CLEARANCE |
| | | MIN | MAX | MIN | MAX | MIN | MAX | |
| [A] | ID 60 | 1.3125 | 1.3135 | 0.0000 | 0.0020 | --- | 1.3165 | 0.0040 |
| | OD 25 | 1.3115 | 1.3125 | | | 1.3085 | --- | |
| [B] | ID 60 | 1.1875 | 1.1885 | 0.0000 | 0.0020 | --- | 1.1915 | 0.0040 |
| | OD 35 | 1.1865 | 1.1875 | | | 1.1835 | --- | |
| [C] | ID 5 | 1.3125 | 1.3135 | 0.0000 | 0.0020 | --- | 1.3165 | 0.0040 |
| | OD 25 | 1.3115 | 1.3125 | | | 1.3085 | --- | |

* ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

Fits and Clearance
Figure 801



M47818

## ILLUSTRATED PARTS LIST

1. This section lists and illustrates replaceable or repairable component parts. The Illustrated Parts Catalog contains a complete explanation of the Boeing part numbering system.

2. Indentures show parts relationships as follows:

    Assembly
      Detail Parts for Assembly
      Subassembly
      Attaching Parts for Subassembly
        Detail Parts for Subassembly

    Detail Installation Parts (Included only if installation parts may be returned to shop as part of assembly)

3. One use code letter (A, B, C, etc.) is assigned in the EFF CODE column for each variation of top assembly. All listed parts are used on all top assemblies except when limitations are shown by use code letter opposite individual part entries.

4. Letter suffixes (alpha-variants) are added to item numbers for optional parts, Service Bulletin modification parts, configuration differences (except left- and right-hand parts), product improvement parts, and parts added between two sequential item numbers. The alpha-variant is not shown on illustrations when appearance and location of all variants of the part is the same.

5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

    A. When a new top assembly part number is assigned by Service Bulletin, the notations appear at the top assembly level only. The configuration differences at detail part level are then shown by use code letter.

    B. When the top assembly part number is not changed by the Service Bulletin, the notations appear at the detail part level.

6. Parts Interchangeability

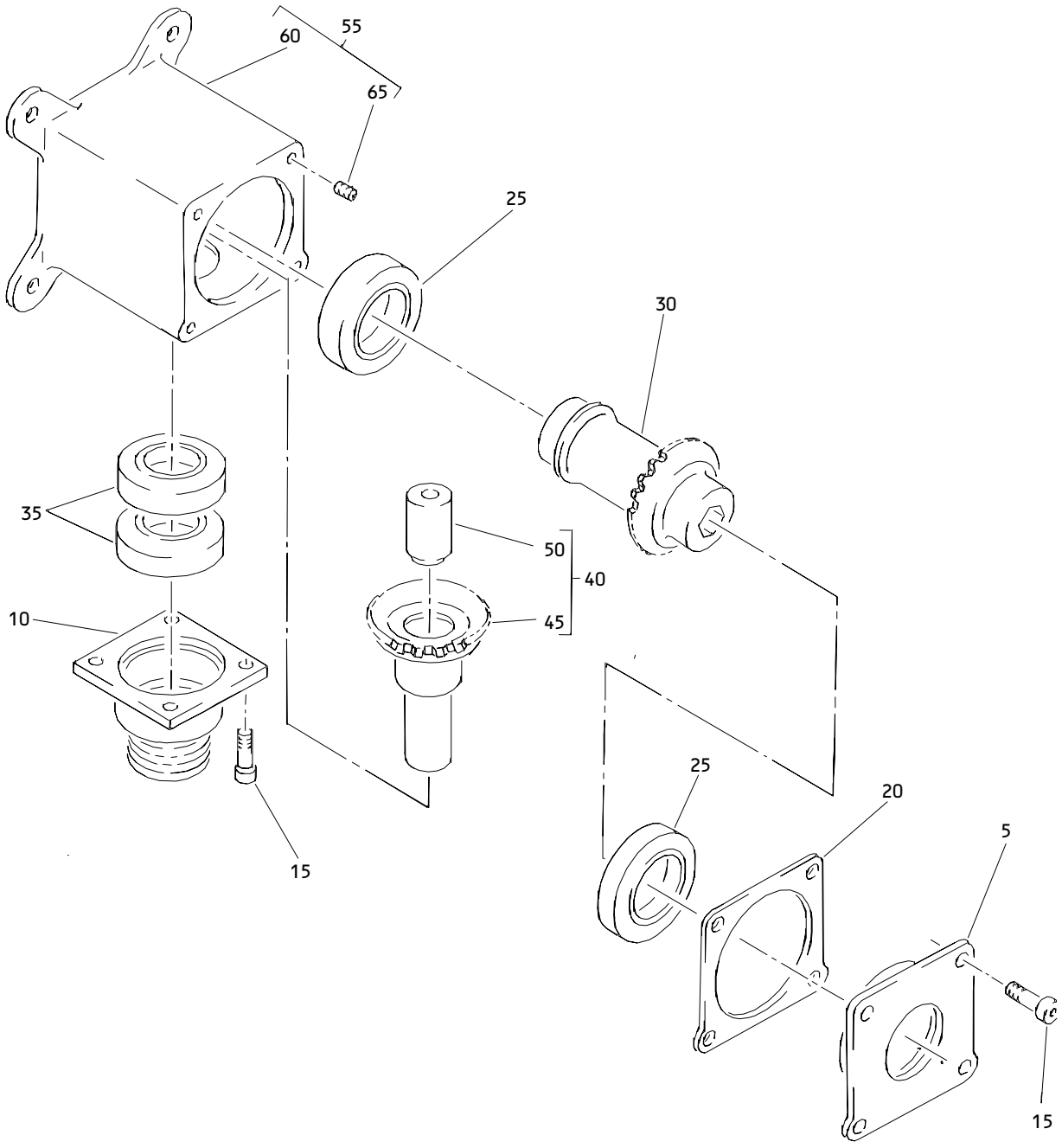
| | |
|---|---|
| Optional (OPT) | The parts are optional to and interchangeable with other parts having the same item number. |
| Supersedes, Superseded By (SUPSDS, SUPSD BY) | The part supersedes and is not interchangeable with the original part. |
| Replaces, Replaced By (REPLS, REPLD BY) | The part replaces and is interchangeable with, or is an alternate to, the original part. |

VENDORS

21335 TEXTRON INC FAFNIR BEARING DIVISION
37 BOOTH STREET
NEW BRITAIN, CONNECTICUT 06050

38443 TRW INC BEARING DIV
402 CHANDLER STREET
JAMESTOWN, NEW YORK 14701

43991 FAG BEARING INCORPORATED
HAMILTON AVENUE
STAMFORD, CONNECTICUT 06904




Side Cargo Door Manual Drive Gearbox Assembly
Figure 1



T31156

| FIG. & ITEM | PART NO. | AIRLINE PART NUMBER | NOMENCLATURE 1234567 | EFF CODE | QTY PER ASSY |
|---|---|---|---|---|---|
| 01- | | | | | |
| -1 | 65B83637-4 | | GEARBOX ASSY-SIDE CARGO DOOR MANUAL DRIVE | A | RF |
| -1A | 65B83637-6 | | GEARBOX ASSY-SIDE CARGO DOOR MANUAL DRIVE | B | RF |
| 5 | 69B83423-1 | | .CAP | | 1 |
| 10 | 69B83424-1 | | .CAP | | 1 |
| | | | ATTACHING PARTS | | |
| 15 | MS24677-8 | | .SCREW | | 8 |
| | | | -------*------- | | |
| 20 | 65B83640-6 | | .SHIM | | 1 |
| 25 | B540DD | | .BEARING- (V38443) (SPEC BACB10CF14PP) (OPT B540-2TS (V43991)) (OPT B540DDFS428 (V21335)) | | 2 |
| 30 | 65B83639-1 | | .GEAR | | 1 |
| 35 | B539DD | | .BEARING- (V38443) (SPEC BACB10CF12PP) (OPT B539-2TS (V43991)) (OPT B539DDFS428 (V21335)) | | 2 |
| 40 | 65B83637-5 | | .GEAR ASSY | A | 1 |
| -40A | 65B83637-7 | | .GEAR ASSY | B | 1 |
| 45 | 65B83639-2 | | ..GEAR | | 1 |
| 50 | 69B84018-1 | | ..PLUG | A | 1 |
| -50A | 69B84018-2 | | ..PLUG | B | 1 |
| 55 | 65B83638-1 | | .HOUSING ASSY | | 1 |
| 60 | 65B83638-2 | | ..HOUSING | | 1 |
| 65 | MS21209C0620 | | ..INSERT | | 8 |