TO: ALL HOLDERS OF FORWARD/AFT CARGO DOOR BUNGEE ASSEMBLY COMPONENT MAINTENANCE MANUAL 52-34-05

REVISION NO. 5 DATED MAR 01/03

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. 4 dated Jan 10/84 on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
101 701 901	Added tool A52009-22, which replaces A52009-1 for all new orders of this test fixture.

FORWARD/AFT CARGO DOOR BUNGEE ASSEMBLY

PART NUMBER 140T2941-1, -2

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

BOEING

COMPONENT
MAINTENANCE MANUAL

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
52-34-05		
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TR & SB RECORD		
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*1	MAR 01/03	01
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*[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.

Verification:

Testing/TS	Jun 25/81
Disassembly	Jun 25/81
Assembly	Jun 25/81

FORWARD/AFT CARGO DOOR BUNGEE ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

   A. The cargo door bungee is a spring-loaded unit containing a sliding rod, two rod ends, a spring, a spring support, and a spring retainer.

2. Operation

   A. The bungee is part of the cargo door latching system and applies a preloaded force to keep the latches engaged and to assist in the initial lifting of the door.

3. Leading Particulars (Approximate)

   Length -- 12 inches (with quick-release rig pin removed)
   Width -- 2 inches
   Weight -- To be provided

TESTING AND TROUBLE SHOOTING

1. Equipment

NOTE: Equivalent substitutes may be used.

A. Test fixture -- A52009-1, -22 - Cargo Door Bungee Spring

2. Functional Test

CAUTION: ENSURE THAT QUICK-RELEASE PIN HAS BEEN REMOVED FROM ASSEMBLY BEFORE PERFORMING TESTS OR DAMAGE TO UNIT MAY RESULT.

A. Install unit in test fixture.

B. Compress unit to 8.40-8.50 inches between bearing centers, and check for a load of 155-170 pounds.

C. Allow unit to extend to 11.25-11.35 inches between bearing centers, and check for a load of 7-49 pounds.

D. Slowly compress and extend unit between 8.35-8.55 inches and 11.20-11.40 inches five times. Unit shall operate smoothly without any evidence of binding or chattering.

E. Compress unit to 8.73-8.77 inches between bearing centers, and check for a load of 141-151 pounds.

DISASSEMBLY

NOTE: See Testing and Troubleshooting 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. Loosen single jamnut (5), then remove rod end (10).

WARNING: REMOVE SPRING LOAD COMPLETELY BEFORE CONTINUING BUNGEE DISASSEMBLY OR INJURY TO PERSONNEL MAY OCCUR.

2. Back off double nuts (5) next to retainer (15) until spring load is completely relieved.

3. Use standard industry practices to complete disassembly of the component.

CHECK

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

2. Magnetic particle check per 20-20-01 -- Rod end (10), spring retainer (15), helical spring (20), rod (40) and rod end (65, 65A).

3. Check helical spring (20).

   A. Compress spring to 3.47-3.53 inches and check that load is 140-170 pounds.

   B. Compress spring to 5.82-5.88 inches and check that load is 42-52 pounds.

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
140T2942	ROD END ASSEMBLY	1-1
140T2997	ROD END 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
   20-42-03 Hard Chrome Plating
   20-50-03 Bearing Installation and Retention

3. Materials

   A. Dow Corning Sealant -- 30-121 (Ref 20-60-04)

   B. Sealant -- BMS 5-95 (Ref 20-60-04)

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in Fig. 601.

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE FROM WHICH PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[-A-]	DATUM
Ⓜ	MAXIMUM MATERIAL CONDITION (MMC)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE

EXAMPLES

— 0.002	STRAIGHT WITHIN 0.002
⊥ B 0.002	PERPENDICULAR TO B WITHIN 0.002
// A 0.002	PARALLEL TO A WITHIN 0.002
○ 0.002	ROUND WITHIN 0.002
⌭ 0.010	CYLINDRICAL SURFACE MUST LIE BETWEEN TWO CONCENTRIC CYLINDERS, ONE OF WHICH HAS A RADIUS 0.010 INCH GREATER THAN THE OTHER
⌒ A 0.006	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART IN RELATION TO DATUM PLANE A
⌓ A 0.020	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.02 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ C ∅ 0.0005	CONCENTRIC TO C WITHIN 0.0005 DIAMETER (FULL INDICATOR MOVEMENT)
⌯ A 0.010	SYMMETRICAL WITH A WITHIN 0.010
∠ A 0.005	ANGULAR TOLERANCE 0.005 WITH A
⌖ B ∅ 0.002 Ⓢ	LOCATED AT TRUE POSITION WITHIN 0.002 DIA IN RELATION TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ A ∅ 0.010 Ⓜ 0.510 Ⓟ	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010-INCH DIAMETER, PERPENDICULAR TO, AND EXTENDING 0.510-INCH ABOVE, DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

3874

ROD END ASSEMBLY - REPAIR 1-1

140T2942-1

1. Bearing Replacement

   A. Remove bearing (55) and sleeve (60).

   B. Install bearing (55) and new sleeve (60) with gap in sleeve positioned at approximately 90 deg to rod axis. Swage sleeve per 20-50-03.

   C. Fill gap in sleeve (60) with 30-121 Dow Corning sealant.

2. Refinish

   A. Rod end (65) -- Passivate (F-17.09). Material: 15-5PH CRES, 180-200 ksi.

ROD END ASSEMBLY - REPAIR 2-1

140T2997-1

1. Bearing Replacement (IPL Fig. 1)

   A. Remove bearing (55) and sleeve (60).

   B. Install bearing (55) and new sleeve (60) with gap in sleeve positioned at approximately 90 deg to rod axis. Swage sleeve per 20-50-03.

   C. Fill gap in sleeve (60) with wet BMS 5-95 sealant.

2. Refinish (IPL Fig. 1)

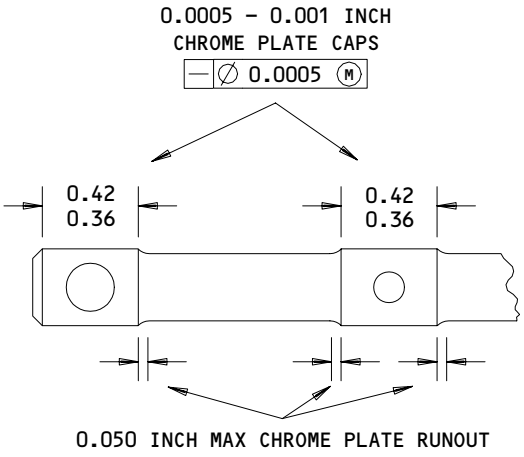
   A. Rod end (65A) -- passivate (F-17.09). Material: 17-4PH CRES, 180 KSI min.

MISCELLANEOUS PARTS REFINISH - REPAIR 3-1

1. Repair of parts listed in Fig. 601 consists of restoration of the original finish.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Spring retainer (15)	15-5PH CRES, 180-200 ksi	Passivate (F-17.09).
Helical spring (20)	17-7PH CRES	Passivate (F-17.09).
Rod (40)	15-5PH CRES, 150-170 ksi	Chrome plate to thickness indicated in Fig. 602 per 20-42-03 (F-15.03).

Refinish Details
Figure 601



ROD (40)

ALL DIMENSIONS IN INCHES

Rod Refinish
Figure 602

3886

ASSEMBLY

1. Equipment and Materials

NOTE: Equivalent substitutes may be used.

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

B. Putty, inspection -- BMS 8-45 (Ref 20-50-04)

C. Test fixture -- A52009-1, -22 - Cargo Door Bungee Spring

D. Quick-release pin -- BACP18AN3-6

2. Assembly

A. Attach rod end assembly (50 or 50A) with sleeve (45), pin (30A), washer (35), and cotter pin (25).

B. Apply grease to contact surfaces of rod end assembly (50 or 50A) and retainer (15) and to threads of rod (40).

C. Slide spring (20) and retainer (15) over rod (40) and install nuts (5) and rod end (10).

D. Preload spring as follows:

(1) Insert unit in test fixture.

(2) Compress spring (20) until rig pin holes in rod end assembly (50 or 50A) and rod (40) are aligned and install quick release pin.

(3) Adjust retainer (15) to obtain a spring load of 141-151 pounds then tighten nuts (5) against retainer (15).

(4) Check spring load and if correct seal nuts with inspection putty.

(5) Adjust rod end (10) to obtain dimension shown in Fig. 701. End of rod (40) must cover inspection hole in rod end (10).

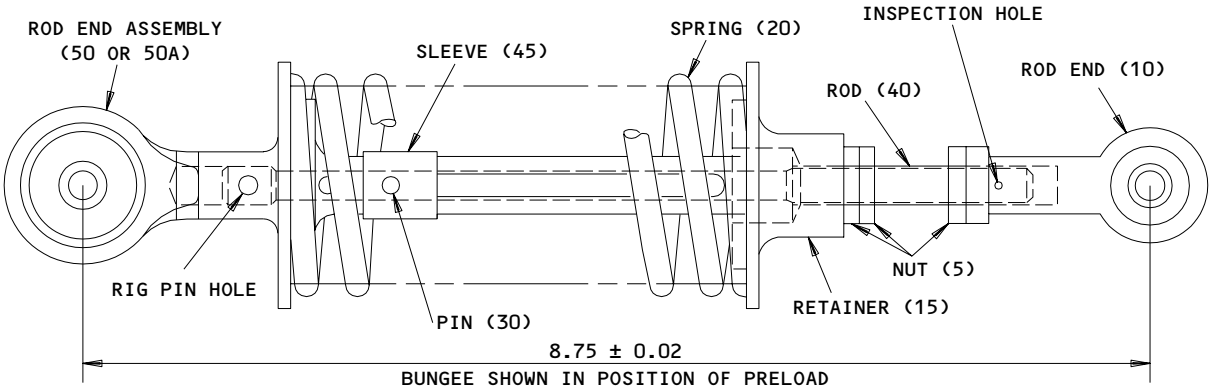
(6) Remove quick-release pin and slowly release spring load until pin (30A) contacts end of slot in rod end (65 or 65A).

(7) Perform functional test per TESTING AND TROUBLESHOOTING.

(8) Remove unit from test fixture.

3. Storage

A. Use standard industry practices to store this component.



Assembly Data
Figure 701

SPECIAL TOOLS

NOTE: Equivalent substitutes may be used for listed items.

1. BACP18AN3-6 -- Quick-Release Pin *[1]

*[1] Ardel, Incorporated, 210 South Victory Boulevard, Burbank, California 91502

The Hartwell Corporation, 9035 Venice Boulevard, Los Angeles, California 90034

Space-Lok Incorporated, 406 South Varney, Burbank, California 91502

2. Test fixture -- A52009-1, -22 - Cargo Door Bungee Spring

NOTE: A52009-22 replaces A52009-1 for all new orders of this test fixture.

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 are 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.

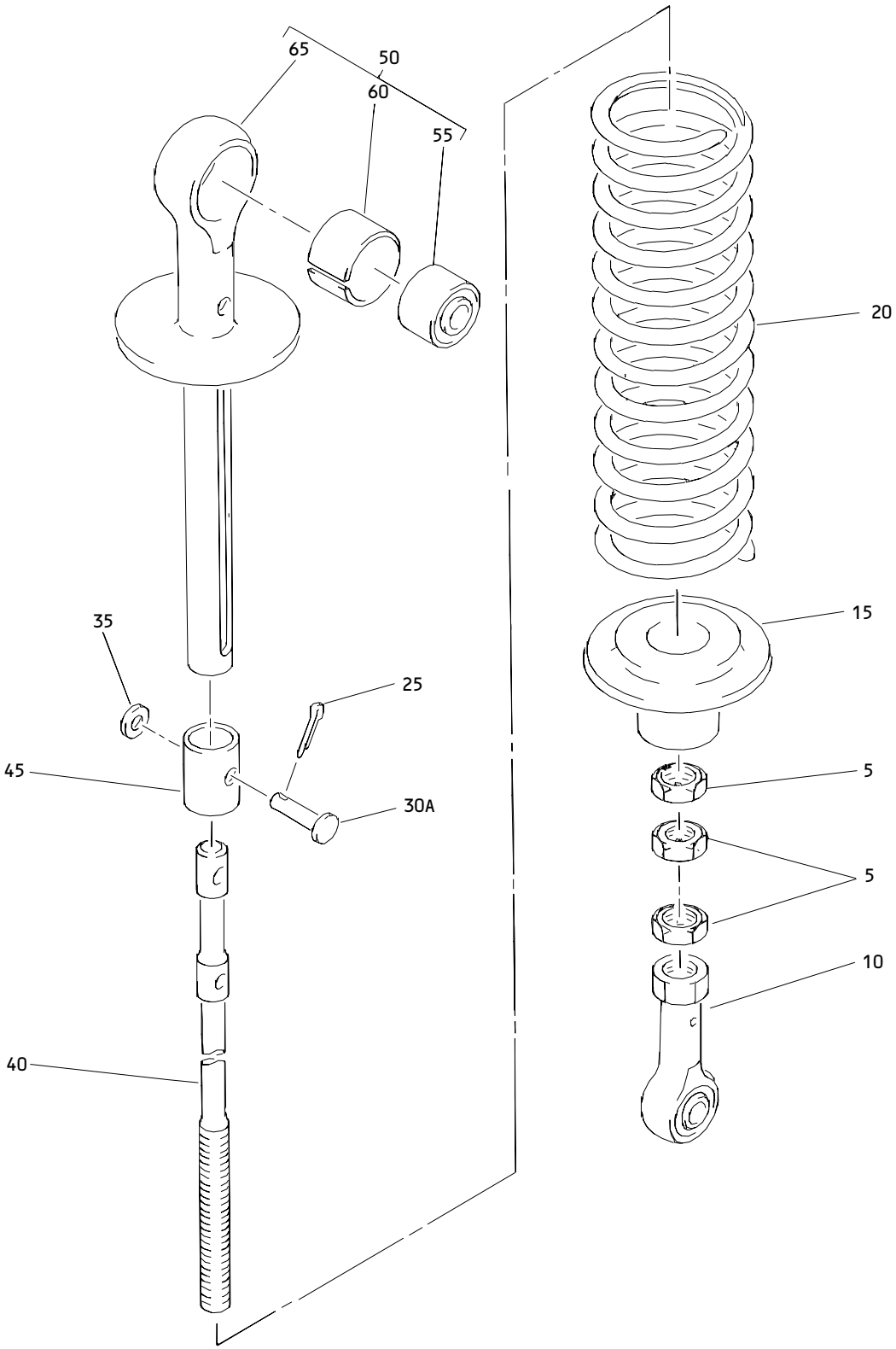
6. Parts Interchangeability

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



Cargo Door Bungee Assembly
Figure 1

T40549

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	140T2941-1		BUNGEE ASSY-FWD/AFT CARGO DOOR	A	RF
-1A	140T2941-2		BUNGEE ASSY-FWD/AFT CARGO DOOR	B	RF
5	NAS509-5		.NUT		3
10	REP4F5FS428		.END-ROD- (V21335) (SPEC BACB10AE4) (OPT HHRE4F5-1 (V38443)) (OPT REP4F5-3 (V38443)) (OPT REP4F5E9171 (V21335))		1
15	140T2959-1		.RETAINER-SPR		1
20	140T2944-1		.SPRING-HELICAL		1
25	MS24665-69		.PIN-COTTER		1
30	MS20392-1C17		DELETED		
30A	MS20392-1C23		.PIN-FLAT HEAD		1
35	AN960PD4		.WASHER		1
40	140T2943-1		.ROD		1
45	140T2978-1		.SLEEVE-PIN SPRT		1
50	140T2942-1		.END ASSY-ROD	A	1
-50A	140T2997-1		.END ASSY-ROD	B	1
55	DSP4		..BEARING- (V38443) (SPEC BACB10CA4) (OPT DSP4FS428 (V21335)) (OPT HHDSP4 (V38443))		1
60	140T2977-1		..SLEEVE-STAKING		1
65	140T2942-2		..ROD	A	1
-65A	140T2997-2		..ROD	B	1