TO: ALL HOLDERS OF NOSE GEAR ALTERNATE EXTEND LOAD LIMITER ASSEMBLY COMPONENT MAINTENANCE MANUAL 32-35-91

REVISION NO. 3 DATED JUL 01/90

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. 2 and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
DESCRIPTION & OPERATION 1 401 501	Nontechnical editorial change.
301	Clarified Disassembly procedure.
REPAIR-GEN 601-602 REPAIR 1-1 602	Added consumable materials.
REPAIR 2-1 601-602	Deleted Shaft 257T3524-1 and added Shaft 257T3524-2.
701	Clarified Assembly procedures.
1005	Added Bearing Part Numbers, M81935-1-4, -5.

BOEING

COMPONENT
MAINTENANCE MANUAL

NOSE GEAR ALTERNATE EXTEND LOAD LIMITER ASSEMBLY

PART NUMBER 257T3502-2,-3,-4,-5

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

71269

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
SB 767-32-12		PRR VDCT0215 PRR B10997	JUL 10/83 OCT 10/83

PAGE	DATE	CODE
32-35-91		
TITLE PAGE		
1	OCT 10/83	01.1
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REVISION RECORD		
1	JUL 10/83	01
2	BLANK	
TR & SB RECORD		
1	OCT 10/83	01.1
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LIST OF EFFECTIVE PAGES		
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*604	BLANK	
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1001	JUL 10/83	01
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1003	BLANK	
1004	OCT 10/83	01.1
*1005	JUL 01/90	01.1
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1008	BLANK	

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS

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 Revisions & 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
Disassembly
Assembly

NOSE GEAR ALTERNATE EXTEND LOAD LIMITER ASSEMBLY

DESCRIPTION AND OPERATION

1. The NLG alternate extend load limiter assembly consists of a shaft connected to cartridge, housed in an aluminum alloy housing.

2. The load limiter assembly connects to the torque shaft and control lever. In case of hydraulic failure, the load transmitted by the control lever crushes the cartridge, enabling the quadrant to rotate.

3. Leading Particulars (Approximate)

   Length -- 15.0
   Width -- 1.65

DISASSEMBLY

NOTE: Disassemble this component only as necessary to complete fault isolation, determine the serviceability of parts, perform required repairs and restore the unit to serviceable condition.

1. Disassemble 257T3502-2, -3, -4 (IPL, Fig. 1)

   A. Remove rivets (3) (257T3502-4 only).

   B. Loosen nuts (5), remove bearings (10, 15) from housing (55) and shaft (50). Remove nuts (5) from bearings (10, 15).

   C. Remove pins (20) from housing (55) and cap (45).

   D. Remove cap (45) and slide shaft (50) and attached parts from housing (20).

   E. Remove pin (25) from nut (30) and shaft (50). Remove nut (30), washer (35), cartridge (40) and cap (45) from shaft (50).

2. Disassemble 257T3502-5 (IPL, Fig. 2)

   A. Remove pin (5, IPL Fig. 2) from housing assy (10) and end cap (45). Loosen end cap (45) and slide shaft assy (50) with attached parts from housing assy.

   B. Remove pin (25) from nut (30) and shaft (50). Remove nut (30) and washer (35), cartridge (40) and end cap (45) from shaft assy (50).

   C. Remove rod end (55) from shaft (60) and remove rod end (15) from housing (20).

CLEANING

1. Clean all parts except cartridge (40, IPL Fig. 1) using standard industry practices per 20-30-03.

2. Clean cartridge (40) according to manufacturer's instructions.

CHECK

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

2. Magnetic particle check per 20-20-01 -- washer (35, IPL Fig. 1).

3. Penetrant check per 20-20-03 -- cap (45), shaft (50) and housing (55 on IPL Fig. 1 and 20 on IPL Fig. 2).

REPAIR - GENERAL

1. Contents

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

P/N	NAME	REPAIR
257T3522	HOUSING	1-1
257T3524	SHAFT	2-1
--	MISC PART REFINISH	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
   20-40-02 Temporary Protective Coating
   20-41-01 Decoding Table For Boeing Finish Codes
   20-42-05 Bright Cadmium Plating
   20-43-01 Chromic Acid Anodize
   20-50-03 Bearing Installation and Retention

3. Materials

   NOTE: Equivalent substitutes may be used.

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

   B. Enamel -- BMS 10-11, Type II Color 702 White Gloss (Ref 20-60-02)

C. Grease -- BMS 3-24 (Ref 20-60-03)

D. 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

HOUSING - REPAIR 1-1

257T3522-1, -3

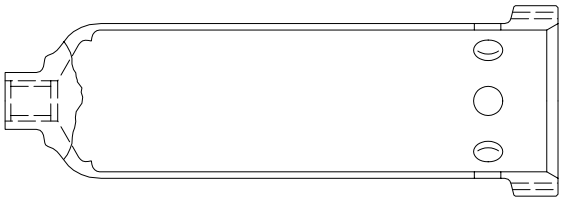
NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Rod End Replacement (257T3522-3)

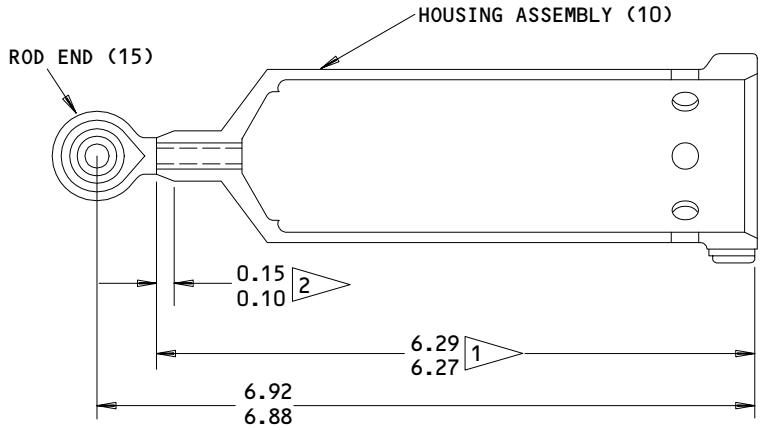
A. Remove rod end (15 IPL, Fig. 2) from housing assy (10).

B. Apply wet BMS 5-95 to threaded area and install new rod end (15) and roller swage per 20-50-03.

C. Apply fillet seal with BMS 5-95 sealant around rod end.



257T3522-1



257T3522-3

REFINISH

257T3522-1 -- CHROMIC ACID ANODIZE AND APPLY ONE COAT BMS 10-11, TYPE I, PRIMER (F-18.13) AND BMS 10-11, TYPE II ENAMEL (F-21.03) EXCEPT CHROMIC ACID ANODIZE (F-17.04) ON INTERNAL SURFACES AND ON THREADED AREAS ONLY

257T3522-3 -- CHROMIC ACID ANODIZE (F-17.04) AND AFTER SWAGING APPLY ONE COAT BMS 10-11, TYPE I, PRIMER (F-20.02) AND BMS 10-11, TYPE II ENAMEL (F-21.03) EXCEPT OMIT ON INTERNAL SURFACES AND ON THREADED AREAS

1 DIMENSION BEFORE SWAGING

2 SWAGE AFTER INSTALLATION OF ROD END

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

Housing Repair
Figure 601

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SHAFT - REPAIR 2-1

257T3524-2, -4

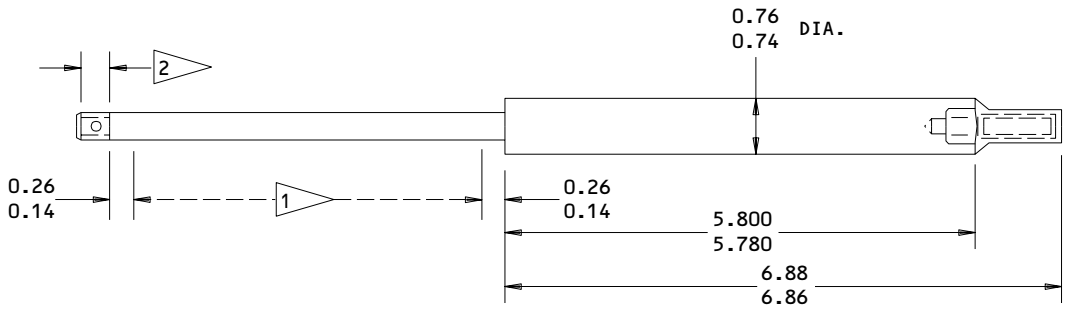
NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Rod End Replacement (257T3524-4)

   A. Remove rod end (55 IPL, Fig. 2) from shaft assy (50).

   B. Apply wet BMS 5-95 to threaded area and install new rod end (55) and roller swage per 20-50-03.

   C. Apply fillet seal with BMS 5-95 sealant around rod end.



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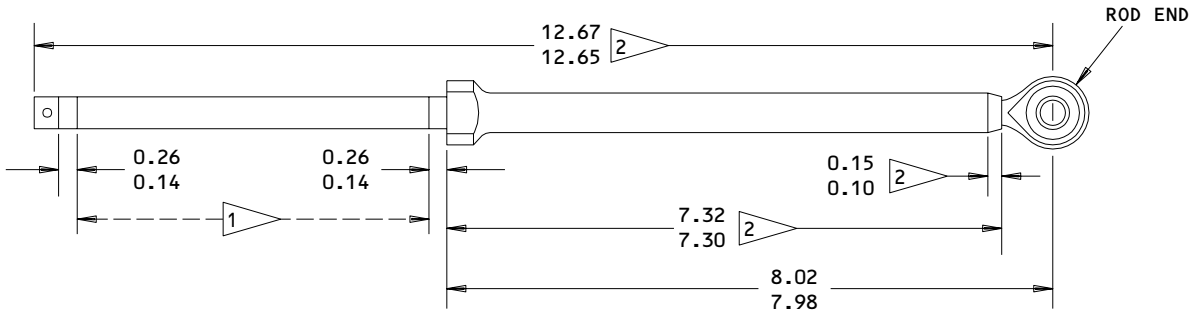


257T3524-4

REFINISH

257T3524-2 -- CHROMIC ACID ANODIZE AND APPLY ONE COAT BMS 10-11, TYPE I, PRIMER (F-18.13) AND BMS 10-11, TYPE II ENAMEL (F-21.03) EXCEPT ON THREADED AREA AND AS NOTED IN 1

1 BMS 10-11, TYPE II ENAMEL (SRF-14.905-101)

257T3524-4 -- CHROMIC ACID ANODIZE (F-17.04) AND AFTER SWAGING APPLY ONE COAT BMS 10-11, TYPE I, PRIMER (F-20.02) AND BMS 10-11, TYPE II ENAMEL (F-21.03) EXCEPT ON THREADED AREA, ROD END AND AS NOTED 1

1 BMS 10-11, TYPE II ENAMEL (SRF-14.905-101)

2 DIMENSION BEFORE SWAGING

3 SWAGE AFTER INSTALLATION OF ROD END

Shaft Repair
Figure 601

71306

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		
Washer (35)	4130 Steel 125-145 KSI	Cadmium plate and apply one coat BMS 10-11, type I primer (F-16.01).
Cap (45)	Al alloy	Chromic acid anodized and apply one coat BMS 10-11, type I primer (F-18.13). Apply one coat BMS 10-11, type II color BAC 702 white gloss enamel (F-21.03), except omit primer and enamel on threaded area.

Refinish Details
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

A. Grease -- BMS 3-24 (Ref 20-60-03)

2. Assembly

A. Install cap (45), cartridge (40), washer (35) and nut (30) on shaft (50). Tighten nut (30) to obtain 0.00-0.03 clearance between cap (45) and shaft (50) shoulder. Do not over tighten. Install pin (25) on nut (30) and shaft (50).

B. Slide shaft (50) and attached part into housing (55, IPL Fig. 1 or 20, IPL Fig. 2). Tighten cap (45) until holes align in housing and cap. Install pin (20, IPL Fig. 1 or 5, IPL Fig. 2) in housing and cap.

C. Assemble 257T3502-2, -3, -4 assy IPL Fig. 1.

(1) Apply grease to threads of bearings (10, 15, IPL Fig. 1). Install nuts (5) on bearings (10, 15). Install bearing (10) in housing (55) and bearing (15) in shaft (50).

(2) Adjust bearing (10) to obtain 7.00-7.06 inches between face of cap (45) to centerline of rod end (10). Adjust bearing (15) to obtain 15.02-15.06 inches between centerline of rod ends (10, 15). Align holes in housing end (55) and shaft end (50) with holes in rod end (10, 15), install rivets (3). Tighten nuts (5).

D. Assemble 257T3502-5 assy IPL Fig. 2.

(1) Ensure that length between centerline of rod ends (15, 55) is 15.02-15.09 inches.

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

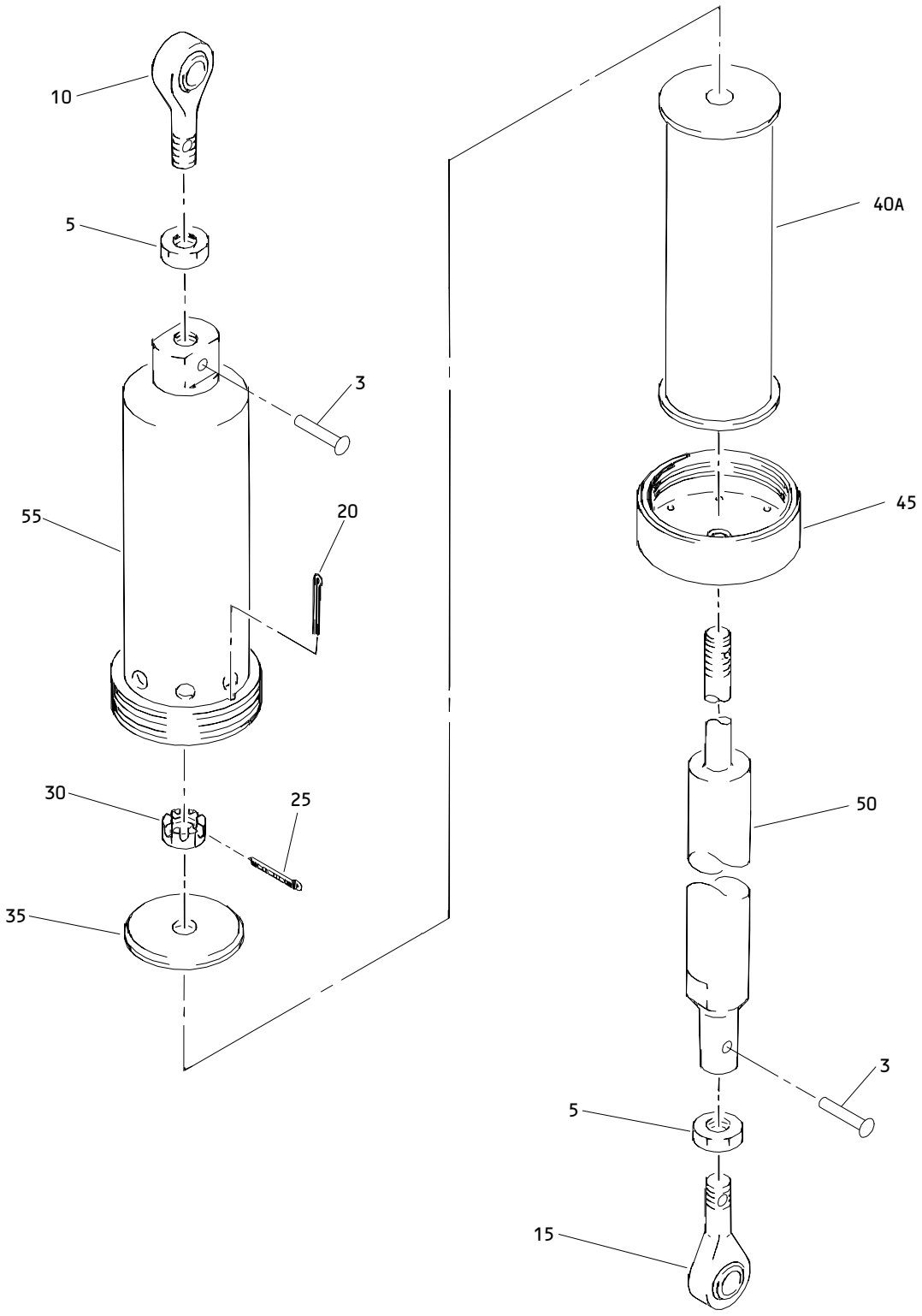
04621 HEXCEL CORPORATION
11711 DUBLIN BLVD
DUBLIN, CALIFORNIA 94566

15653 KAYNAR MFG COMPANY INC KAYLOCK DIV
PO BOX 3001 800 SOUTH STATE COLLEGE BLVD
FULLERTON, CALIFORNIA 92634

56878 SPS TECHNOLOGIES INC
HIGHLAND AVENUE
JENKINTOWN, PENNSYLVANIA 19046
USE APPLICABLE FACILITY CODE

72962 AMERACE CORP ESNA DIV
2330 VAUXHALL ROAD
UNION, NEW JERSEY 07083
ESNA DIV OF AMERACE CORP SEE AMERACE CORP ESNA DIV
ELASTIC STOP NUT DIV AMERACE CORP SEE ESNA DIV AMERACE CORP

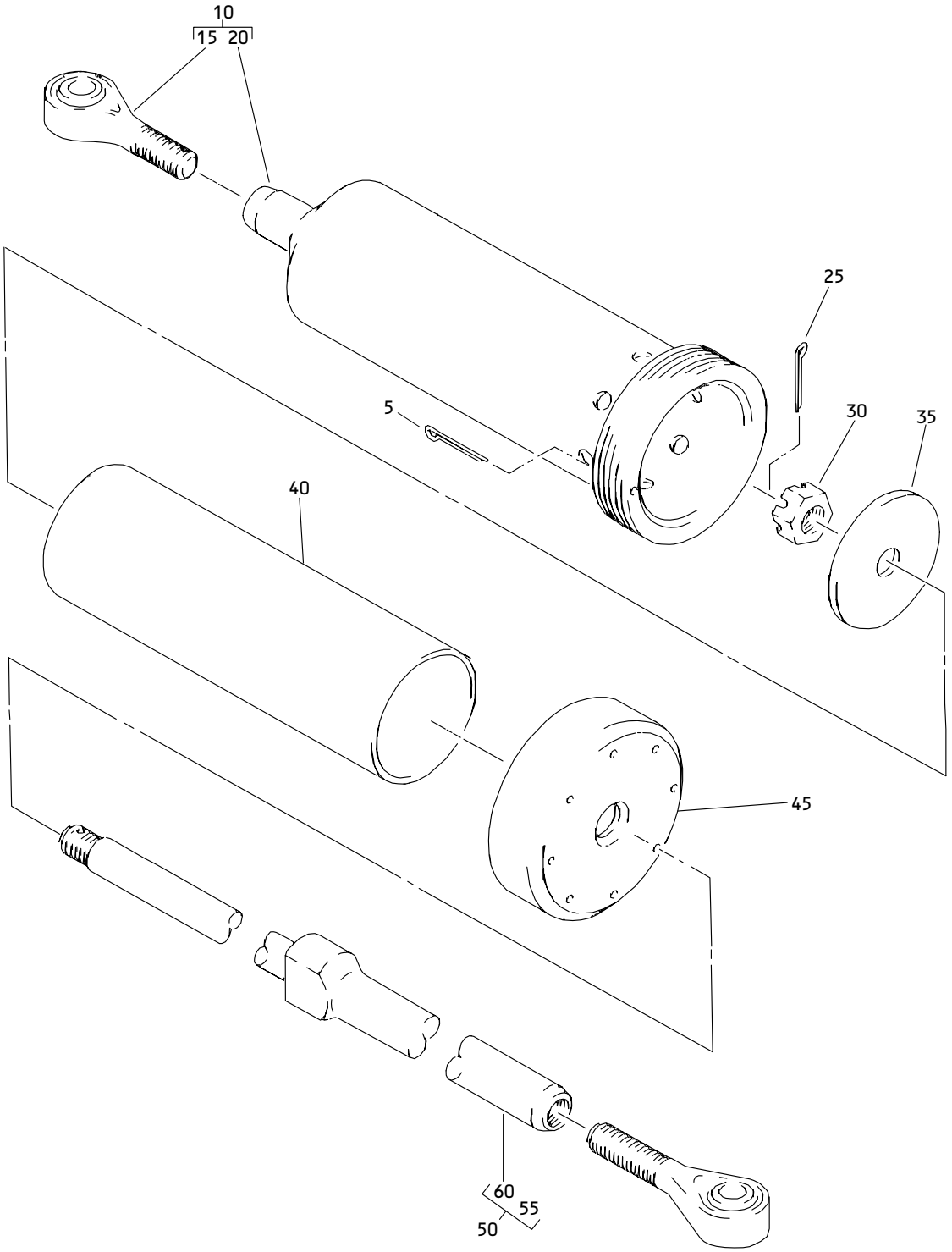
92595 AUTOMATIC SCREW MACHINE PRODUCTS CO
PO BOX 1608 709 2ND AVENUE SE
DECATUR, ALABAMA 35602



Nose Gear Alternate Extend Load Limiter Assembly
Figure 1

T67809

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	257T3502-2		LIMITER ASSY-NOSE GR ALTERNATE EXTEND LOAD	A	RF
-1A	257T3502-3		LIMITER ASSY-NOSE GEAR ALTERNATE EXTEND LOAD	B	RF
-1B	257T3502-4		LIMITER ASSY-NOSE GR ALTERNATE EXTEND LOAD	C	RF
-1C	257T3502-5		LIMITER ASSY-NOSE GEAR ALTERNATE EXTEND LOAD (FOR DETAILS SEE FIG. 2)	D	RF
3	BACR15BB4AD		.RIVET	C	2
5	AN316-5R		.NUT		2
10	M81935-1A4		DELETED		
-10A	M81935-1-4		.BEARING	ABC	1
15	M81935-1A5		DELETED		
-15A	M81935-1-5		.BEARING	ABC	1
20	MS24665-24		.PIN-COTTER	ABC	1
25	MS24665-153		.PIN-COTTER	ABC	1
30	BACN10JD106		.NUT- (V15653) (SPEC BACN10JD106) (OPT BACN10JD106 (V56878)) (OPT BACN10JD106 (V72962)) (OPT BACN10JD106 (V92595))		1
35	257T3014-2		.WASHER		1
40	S257T301-3		DELETED		
-40A	HD4-3003-3		.CARTRIDGE (V04621) (SPEC S257T301-3)	A	1
-40B	HD4-3003-4		.CARTRIDGE (V04621) (SPEC S257T301-4)	BC	1
45	257T3523-1		.CAP-END	ABC	1
50	257T3524-2		.SHAFT	ABC	1
55	257T3522-1		.HOUSING	ABC	1



Nose Gear Alternate Extend Load Limiter Assembly
Figure 2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
-1	257T3502-5		LIMITER ASSY-NOSE GR ALTERNATE EXTEND LOAD	D	RF
5	MS24665-24		.PIN-COTTER	D	1
10	257T3522-3		.HOUSING ASSY	D	1
15	257T3528-1		..ROD END	D	1
20	257T3522-2		..HOUSING	D	1
25	MS24665-153		.PIN-COTTER	D	1
30	BACN10JD106		.NUT	D	1
35	257T3014-2		.WASHER	D	1
40	HD4-3003-4		.CARTRIDGE (V04621) (SPEC S257T301-4)	D	1
45	257T3523-1		.CAP-END	D	1
50	257T3524-4		.SHAFT ASSY	D	1
55	257T3528-2		..ROD END	D	1
60	257T3524-3		..SHAFT	D	1