COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

Flight Lock Assembly

PART NUMBER 146A6516–1

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COMPONENT MAINTENANCE MANUAL

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To: All holders of Flight Lock Assembly 52-21-04.

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.

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Location of Change	Description of Change
	NO HIGHLIGHTS

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

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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR38130	MAR 01/2007

All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

Revision		Filed	
Number	Date	Date	Initials

Revision		Filed	
Number	Date	Date	Initials

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

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Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

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.

FLIGHT LOCK ASSEMBLY - DESCRIPTION AND OPERATION

1. **Description**

   A. The flight lock assembly prevents the operation of the middle exit door in flight. The fight lock assembly has a pawl shaft and a cradle.

2. **Operation**

   A. The flight lock assembly automatically activates on takeoff roll. This prevents the operation of the door handle in low differential pressure and in unpressurized flight.

3. **Leading Particulars (Approximate)**

   A. Length – 6 inches

   B. Width – 3 inches

   C. Height – 4 inches

   D. Weight – 1.1 pounds

(NOT APPLICABLE)

DISASSEMBLY

1. **General**

   A. This procedure tells how to disassemble the flight lock assembly.

   B. Disassemble this component sufficiently to isolate the defects, do the necessary repairs, and put the component back to a serviceable condition.

   C. Refer to IPL Figure 1 for item numbers.

2. **Disassembly**

   A. Procedure

      (1) Remove pawl shaft (40) from cradle (80):

         (a) Remove nut (25) from bolt (10).

         (b) Carefully pull bolt (10) out from cradle (80).

         (c) Remove washers (15, 20) and bushings (30).

      (2) Remove tension spring (5) from pawl shaft (40) and cradle (80):

         (a) Remove nut (70) from bolt (50).

         (b) Carefully pull bolt (50) from spring retainer (75), spacer (65) and cradle (80).

         (c) Remove washers (55, 60).

CLEANING

Special instructions are not necessary. Use standard industry procedures.

CHECK

1. **General**
   A. This procedure tells how to find defects in the material of the specified parts.
   B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.
   C. Refer to IPL Figure 1 for the item numbers.
2. **Check**
   A. Procedure
      (1) Use standard industry procedures to do a visual check of all the parts for defects. Do a penetrant or magnetic particle check if the visual check shows possible damage or if you suspect possible damage on the parts that follow:
         (a) Do a Class B magnetic particle check (SOPM 20-20-01) of these parts:
            1) Pawl shaft (40)
            2) Spring retainer (75)
         (b) Do a penetrant check (SOPM 20-20-02) of these parts:
            1) Cradle (80)

REPAIR

1. **General**

   A. Instructions for repair, refinish, and replacement of the specified subassembly parts are included in each REPAIR when applicable:

PART NUMBER	NAME	REPAIR
———	REFINISH OF OTHER PARTS	1-1
146A6516-1	FLIGHT LOCK ASSEMBLY	2-1

2. **Dimensioning Symbols**

   A. Standard True Position Dimensioning Symbols used in the applicable repair procedures are shown in REPAIR-GENERAL, Figure 601, (Sheet 1)

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
↗↗	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
∨	COUNTERSINK
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
(ST)	STATISTICAL TOLERANCE
↔	BETWEEN
∅	DIAMETER
S ∅	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE. FROM THIS FEATURE PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[A]◀	DATUM
(F)	FREE STATE
(T)	TANGENT PLANE
(M)	MAXIMUM MATERIAL CONDITION (MMC)
(L)	LEAST MATERIAL CONDITION (LMC)
(S)	REGARDLESS OF FEATURE SIZE (RFS)
(P)	PROJECTED TOLERANCE ZONE
FIM	FULL INDICATOR MOVEMENT
TIR	TOTAL INDICATOR READING

EXAMPLES

[— | 0.002]	STRAIGHT WITHIN 0.002
[⊥ | 0.002 | B]	PERPENDICULAR TO DATUM B WITHIN 0.002
[// | 0.002 | A]	PARALLEL TO DATUM 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
[⌒ | 0.006 | A]	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART RELATIVE TO DATUM A
[⌓ | 0.020 | A]	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.020 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
[◎ | ∅ 0.0005 | C]	CONCENTRIC TO DATUM C WITHIN 0.0005 DIAMETER
[⌯ | 0.010 | A]	SYMMETRICAL WITH DATUM A WITHIN 0.010
[∠ | 0.005 | A]	ANGULAR TOLERANCE 0.005 WITH DATUM A
[⌖ | ∅ 0.002 (S) | B]	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
[⊥ | ∅ 0.010 (M) | A] 0.510 (P)	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
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

REFINISH OF OTHER PARTS - REPAIR 1-1

1. General

A. This procedure tells how 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 this procedure.

C. Refer to IPL Figure 1 for item numbers.

2. Refinish of Other Parts

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure

NOTE: For the stripping of protective finishes, refer to SOPM 20-30-02. For the general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Instructions for the repair of the parts specified in REPAIR 1-1, Table 601 are for repair of the initial finish.

(2) Refer to REPAIR 1-1, Table 601 for the refinish details.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
IPL Fig. 1		
Pawl Shaft (40)	15-5PH STEEL 180-200 KSI	Passivate (F-17.25)
Spring Retainer (75)	15-5PH STEEL 180-200 KSI	Cadmium plate (F-15.06)
Cradle (80)	AL ALLOY	Boric acid-sulfuric acid anodize (F-17.31) all over and apply primer, C00259 (F-20.03)

FLIGHT LOCK ASSEMBLY - REPAIR 2-1

146A6516–1

1. General

A. This procedure tells how to replace the bearings (35, 45).

B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1 for item numbers.

2. Bearing Replacement

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95

B. References

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

C. Procedure

(1) Remove bearing (35, 45) from cradle (80), as necessary.

(2) Install bearing (35, 45) in cradle (80) with sealant, A00247 as specified in SOPM 20-50-03.

(3) Install bolt (10) and nut (25) as specified in the ASSEMBLY instructions before the sealant around the bearings (35) is fully cured.

ASSEMBLY

1. General

A. This procedure tells how to assemble the flight lock assembly.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1 for the item numbers.

2. Flight Lock Assembly

A. Procedure

(1) Install pawl shaft (40) on cradle (80):

(a) Install bearings (35) in cradle (80) as specified in REPAIR 2-1.

(b) Slide bolt (10) through the washers (15, 20), bearings (35), bushings (30), and pawl shaft (40).

(c) Install nut (25) on bolt (10).

1) Tighten nut (25) to 90-125 pound-inches before the sealant around the bearings (35) is fully cured.

(2) Install the tension spring (5) as follows:

(a) Attach tension spring (5) to pawl shaft (40) and spring retainer (75).

(b) Slide bolt (50) through washers (55, 60), cradle (80), spacer (65), and spring retainer (75).

1) Make sure spring retainer (75) is aligned with spring (5) within + or - 5 degrees.

(c) Install nut (70) on bolt (50).

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FITS AND CLEARANCES

(NOT APPLICABLE)

(NOT APPLICABLE)

FLIGHT LOCK ASSEMBLY

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

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

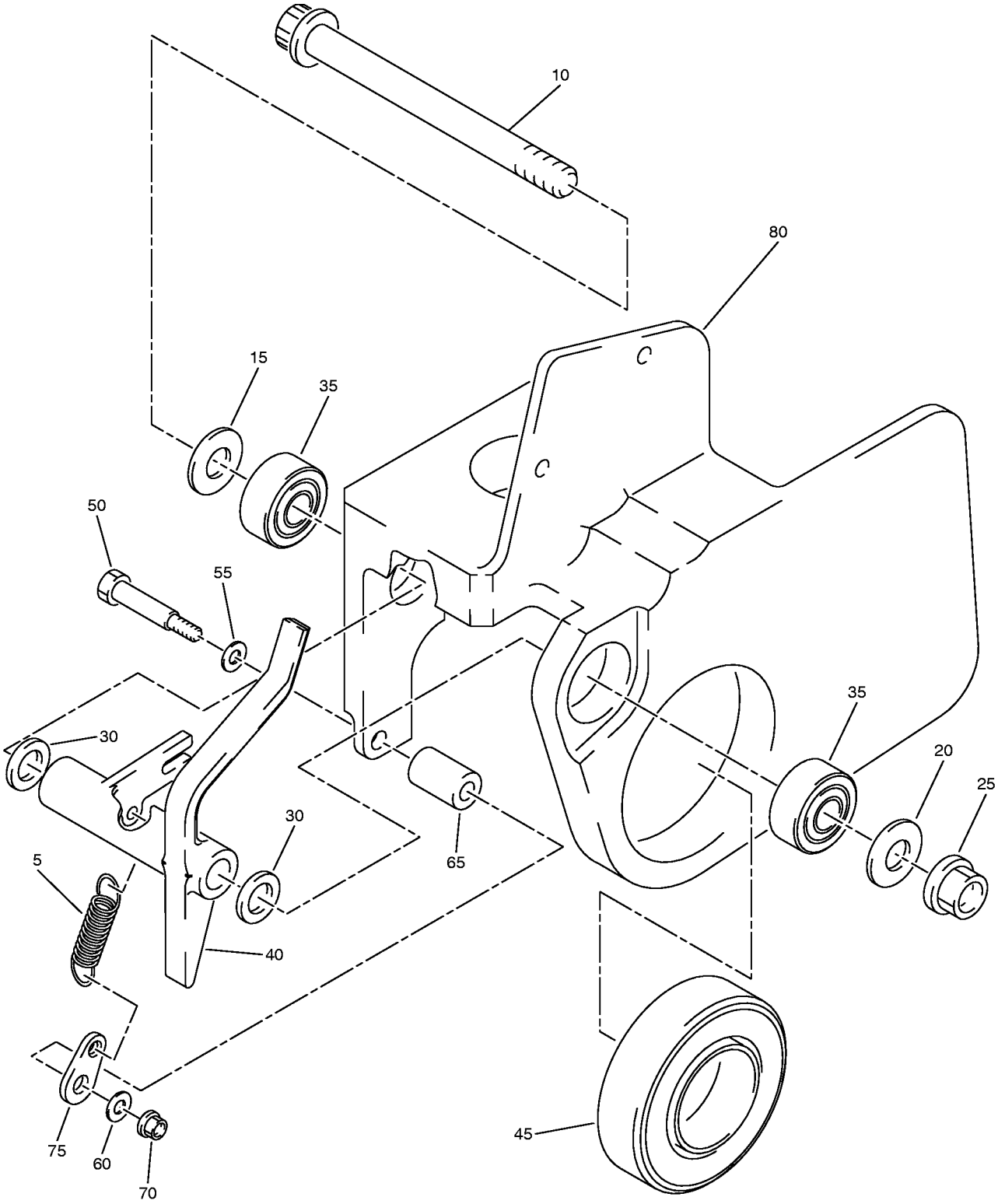
VENDOR CODES

Code	Name
06144	INDUSTRIAL TECTONICS BEARING CORP 18301 SOUTH SANTA FE AVENUE RANCHO DOMINGUEZ, CALIFORNIA 90221 FORMERLY IN COMPTON, CALIFORNIA
15653	ALCOA GLOBAL FASTENERS INC DIV KAYNAR PRODUCTS 800 S STATE COLLEGE BLVD FULLERTON, CALIFORNIA 92831-3001 FORMERLY VK6405 MICRODOT AEROSP LTD; FORMERLY KAYNAR TECH FORMERLY FAIRCHILD FASTENERS KAYNAR DIV
21335	TIMKEN US CORPORATION DIV FAFNIR 336 MECHANIC STREET LEBANON, NH 03766-0267 FORMERLY FAFNIR BRG AND TEXTRON INC FAFNIR DIV IN NEW BRITAIN, CONNECTICUT ; FORMERLY TORRINGTON CO THE SPECIAL PRODUCTS DIV SUB OF THE INGERSOLL-RAND CO V8D210 FORMERLY TORRINGTON CO FAFNIR BEARING DIV IN TORRINGTON, CT
21760	SCHATZ BEARING CORP 10 FAIRVIEW AVENUE PO BOX 1191 POUGHKEEPSIE, NEW YORK 12601-1312 FORMERLY FEDERAL BRG CO AND SCHATZ MFG CO V53268 FORMERLY SCHATZ MFG CO
40920	MPB MINIATURE PRECISION BEARING DIV PRECISION PARK PO BOX 547 KEENE, NEW HAMPSHIRE 03431 FORMERLY MPB CORP AND MINIATURE BRG DIV MPB CORP

Code	Name
50294	NEW HAMPSHIRE BALL BEARINGS, INC PRECISION DIVISION 9700 INDEPENDENCE AVENUE CHATSWORTH, CALIFORNIA 91311 FORMERLY NIPPON MINATURE BEARING CORP V23589 AND NMB AMERICA INC AND NMB INC
62554	SIMMONDS MECAERO FASTENERS INC 1734 SEQUOIA AVENUE ORANGE, CALIFORNIA 92668
83086	NEW HAMPSHIRE BALL BEARING, INC HITECH DIVISION 172 JAFFREY ROAD PETERBOROUGH, NEW HAMPSHIRE 03458

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
146A6516-1		1	1A	RF
146A6517-1		1	80	1
258A4703-2		1	75	1
258A4704-1		1	40	1
ACMKP05JAP510LY		1	35	2
AMKP16BSNJC		1	45	1
BACB10FS05J		1	35	2
BACB10FV16J		1	45	1
BACB28AK05-006		1	30	2
BACB30LE5K45		1	10	1
BACB30NM3K10		1	50	1
BACN10YR3CD		1	70	1
BACN10YR5CD		1	25	1
BACW10BP3NDP		1	20	1
		1	60	1
BACW10DS3S		1	55	1
BACW10DS5S		1	15	1
H52732-3CD		1	70	1
H52732-5CD		1	25	1
MS24586C59		1	5	1
NAS43DD3-32FC		1	65	1
PACMKP05JAA3908		1	35	2
PACMKP16BSFS428		1	45	1
PACMKP5AFS428		1	35	2
PLH53CD		1	70	1
PLH55CD		1	25	1
SSMKP05AP		1	35	2
SSMKP05JAP		1	35	2
SSMKP05JASD705		1	35	2
SSMKP5ASD524		1	35	2



Flight Lock Assembly
IPL Figure 1

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1A	146A6516-1		LOCK ASSY-FLIGHT		RF
5	MS24586C59		. SPRING-TENSION		1
10	BACB30LE5K45		. BOLT		1
15	BACW10DS5S		. WASHER		1
20	BACW10BP3NDP		. WASHER		1
25	PLH55CD		. NUT (V62554) (SPEC BACN10YR5CD) (OPT H52732-5CD (V15653))		1
30	BACB28AK05-006		. BUSHING-PLAIN		2
35	SSMKP5ASD524		. BEARING-BALL (V50294) (SPEC BACB10FS05J) (OPT PACMKP05JAA3908 (V21335)) (OPT SSMKP05JASD705 (V83086)) (OPT PACMKP5AFS428 (V21335)) (OPT ACMKP05JAP510LY (V40920)) (OPT SSMKP05JAP (V21760)) (OPT SSMKP05AP (V21760))		2
40	258A4704-1		. SHAFT-PAWL		1
45	PACMKP16BSF˜ S428		. BEARING (V21335) (SPEC BACB10FV16J) (OPT AMKP16BSNJC (V06144))		1
50	BACB30NM3K10		. BOLT		1
55	BACW10DS3S		. WASHER		1
60	BACW10BP3NDP		. WASHER		1
65	NAS43DD3-32FC		. SPACER		1
70	PLH53CD		. NUT (V62554) (SPEC BACN10YR3CD) (OPT H52732-3CD (V15653))		1
75	258A4703-2		. RETAINER-SPRING		1
80	146A6517-1		. CRADLE-MID EXIT DOOR		1

–Item not Illustrated