COMPONENT MAINTENANCE MANUAL

POSITIVE LOCK FASTENER INSTALLATION (ASP AND MAF FASTENERS)

PART NUMBER NONE

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To: All holders of POSITIVE LOCK FASTENER INSTALLATION (ASP AND MAF FASTENERS) 78-00-08.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

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Location of Change	Description of Change
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COMPONENT MAINTENANCE MANUAL

Subject/Page	Date
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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

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.

POSITIVE LOCK FASTENER INSTALLATION - DESCRIPTION AND OPERATION

1. Description

A. This procedure is for installation and removal of Huck (ASP) and Monogram (MAF) fasteners.

B. ASP and MAF fasteners are used when fastening metal surfaces to soft core composite materials without crushing the composite core.

(NOT APPLICABLE)

(NOT APPLICABLE)

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REPAIR

1. General

A. This section has the necessary information that is required to install and remove the ASP and MAF fasteners:

(1) ASP = Adjustable clamping force self-sustaining positive lock

(2) MAF = Monogram Aerospace Fasteners

2. Installation of Positive Lock Fasteners

A. Procedure

NOTE: For installation tools, see REPAIR-GENERAL, Figure 601.

NOTE: Refer to BAC5004-2, for permanent straight shank fastener installation. Refer to 012W6100 for Materials, Part and Process Substitution and Equivalents

(1) Install the pin as shown in REPAIR-GENERAL, Figure 601.

(2) Install the sleeve on the pin as shown in REPAIR-GENERAL, Figure 601.

(3) Tighten the sleeve with the tools as shown in REPAIR-GENERAL, Figure 602, Table A.

(4) Place the lock collar over the pin as shown in REPAIR-GENERAL, Figure 601.

(5) Set the lock collar with the tools as shown in REPAIR-GENERAL, Figure 601 and REPAIR-GENERAL, Figure 602, Table B.

(a) The pin protrusion after installation and break-off must be in the limits as shown in REPAIR-GENERAL, Figure 602, Table C. Pin protrusion is measured from the sleeve head to the outside diameter of the break-off groove as shown in REPAIR-GENERAL, Figure 602, (Sheet 1).

(b) The driven collar is permitted to have a thin concentric ring of flash adjacent to the pin thread as shown in REPAIR-GENERAL, Figure 602, (Sheet 1), or a non-concentric ring of flash thicker on one side than the other as shown in REPAIR-GENERAL, Figure 602, (Sheet 1). Flash must be in the height limits as shown in REPAIR-GENERAL, Figure 602, Table D when it is measured from the top of the sleeve at the widest area of the flash.

(c) The height of the driven collar in the area away from the flash must be in the limits as shown in REPAIR-GENERAL, Figure 602, Table D when it is measured from the top surface of the sleeve as shown in REPAIR-GENERAL, Figure 602, (Sheet 1).

(6) Shave the broken pin end flush with head using a Zephyr Super Shaver, SPL-4697 with a ZT507-20B cutter or equivalent.

(a) The broken pin end and lock collar protrusion may be shaved to a 0.002-inch minimum above the sleeve for the necessary flushness. The sleeve head must not be shaved.

(b) Sleeves and pins must be shear as shown in BAC5004-2.

3. Removal of Positive Lock Fasteners

A. Procedure

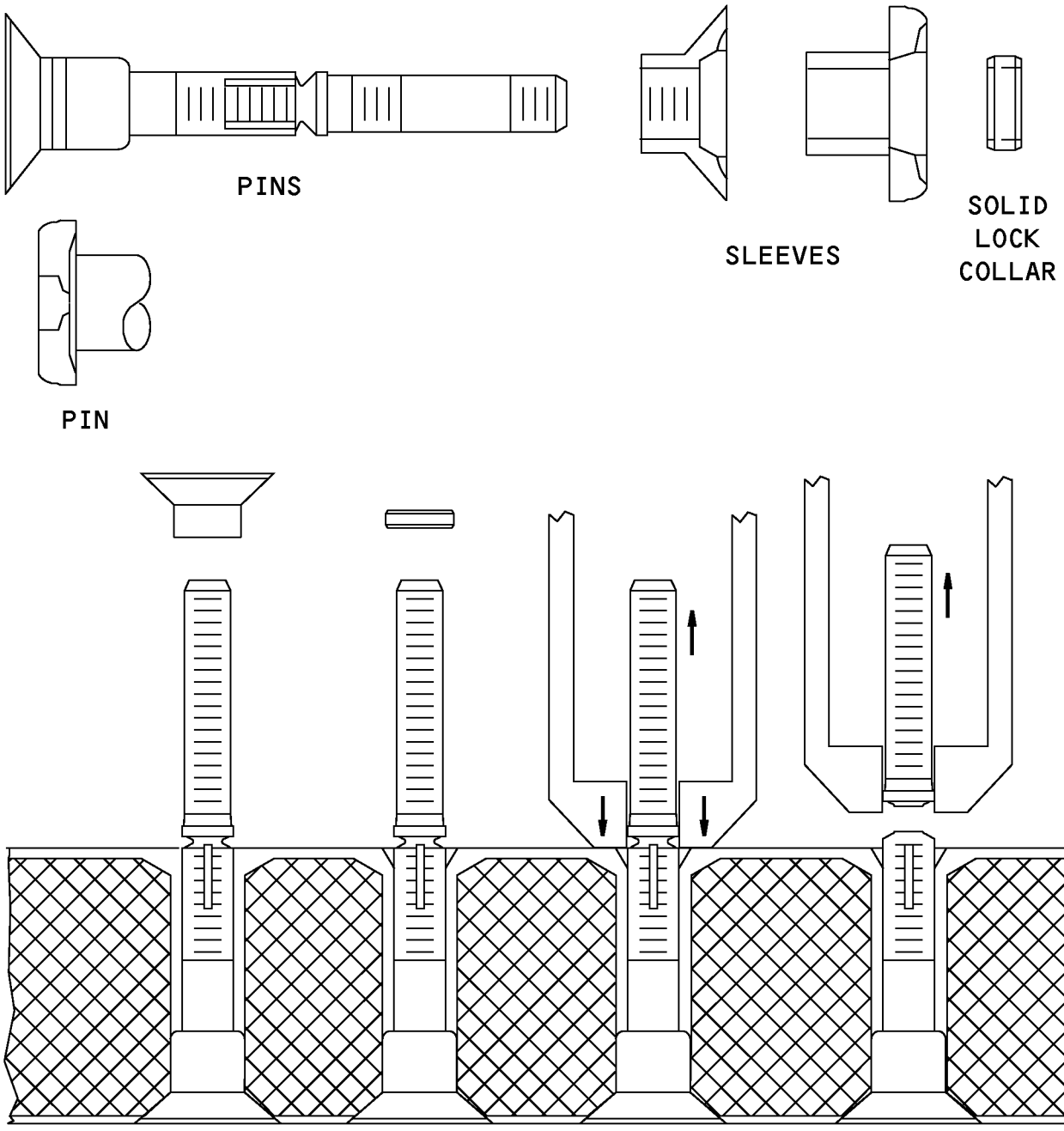
NOTE: For removal tools, see REPAIR-GENERAL, Figure 603.

(1) Use REPAIR-GENERAL, Figure 603, Table E for the selection of the drill and bushing.

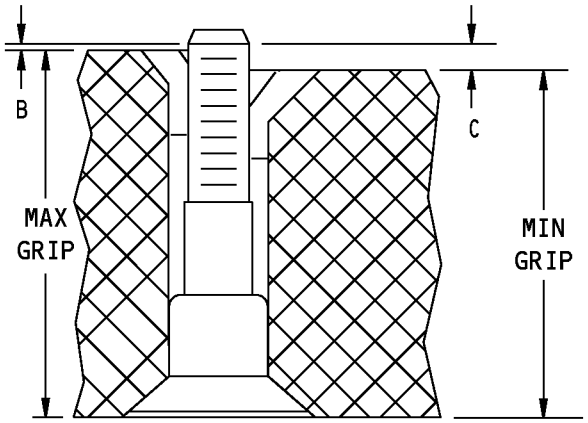
(2) Place the drill and bushing on the fastener as shown in REPAIR-GENERAL, Figure 603 and drill to the depth shown in REPAIR-GENERAL, Figure 603, Table E.

(3) Remove the lock collar.

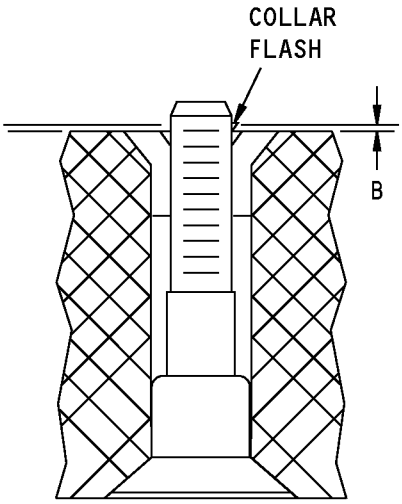
(4) Unscrew the sleeve from the pin.



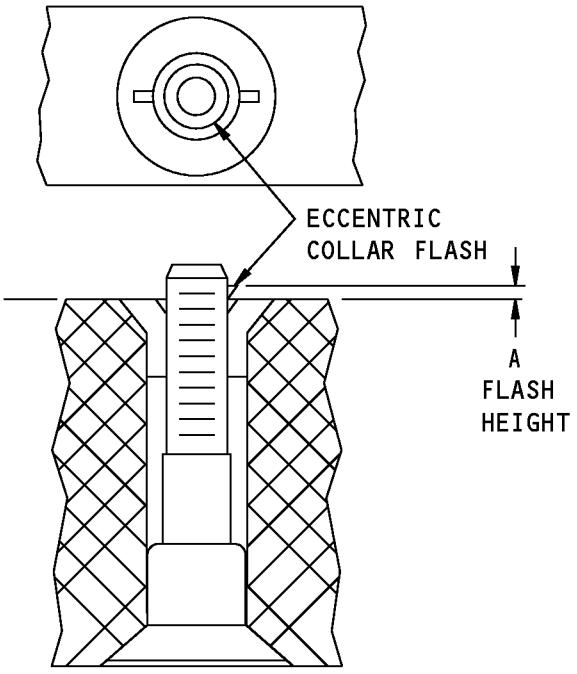
Installation Procedure
Figure 601



PIN PROTRUSION



COLLAR HEIGHT



COLLAR/FLASH HEIGHT

Installation Tools Inspection
Figure 602 (Sheet 1 of 3)

FASTENER DIAMETER	HEX WRENCH SIZE	SLEEVE DRIVER HUCK PART NO.	MAXIMUM* TORQUE
13/64 (6)	5/64	106524	10-20 INCH-LBS
17/64 (8)	3/32	106525	20-30 INCH-LBS
21/64 (10)	1/8	107735	30-40 INCH-LBS

* MINIMUM INSTALLATION TORQUE MUST BE ADJUSTED TO DETERMINE THE CONTROLLED CLAMPING FORCE REQUIRED FOR THE SOFT-CORE MATERIAL OF THE JOINT DESIGN SPECIFICATION.

INSTALLATION TOOLING
TABLE A

FASTENER DIAMETER	HUCK INSTALLATION TOOL NUMBERS	HUCK NOSE ASSEMBLY PART NUMBER
13/64 (6)	MODEL 200,352,229,210 OR 2702	99-895
17/64 (8)	MODEL 200,352,229,210 OR 2702	99-852
21/64 (10)	MODEL 353/4,225,4802 OR 4802	99-867

TOOL AND NOSE ASSEMBLY SELECTION
TABLE B

Installation Tools Inspection
Figure 602 (Sheet 2 of 3)

FASTENER DIAMETER	B MINIMUM PIN PROTRUSION ABOVE SLEEVE	C MINIMUM PIN PROTRUSION ABOVE SLEEVE
13/64 (6)	0.020	0.107
17/64 (8)	0.030	0.119
21/64 (10)	0.035	0.129

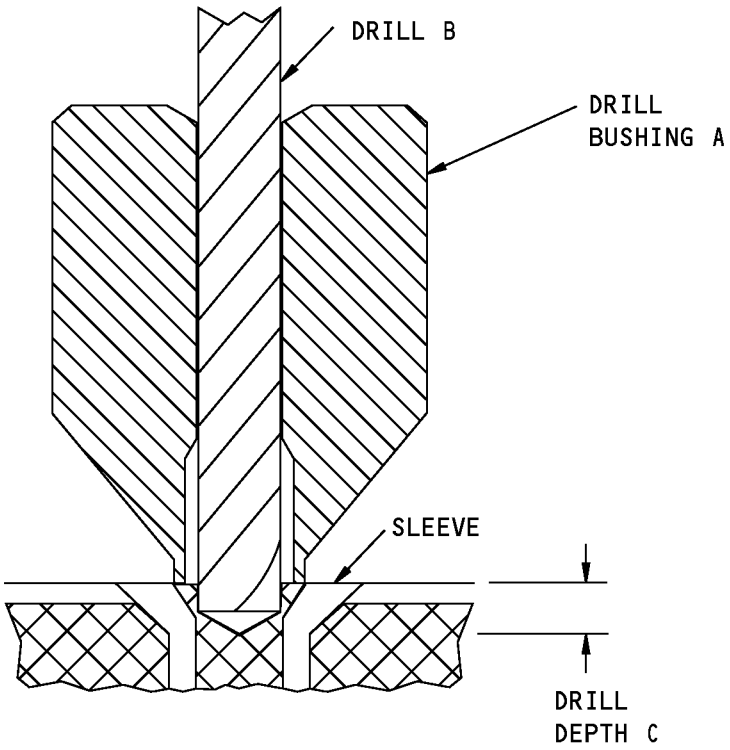
PIN PROTRUSION
TABLE C

FASTENER DIAMETER	A MAXIMUM FLASH HEIGHT (WIDEST POINT)	B MAXIMUM COLLAR HEIGHT (NOT INCLUDING FLASH)
13/64 (6)	0.020	0.010
17/64 (8)	0.030	0.013
21/64 (10)	0.035	0.016

COLLAR HEIGHT
TABLE D

ALL DIMENSIONS ARE IN INCHES

Installation Tools Inspection
Figure 602 (Sheet 3 of 3)



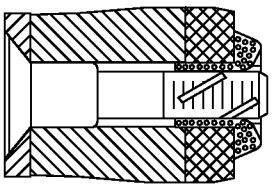
LOCK REMOVAL

FASTENER DIAMETER	A DRILL BUSHING HUCK P/N	B DRILL DIAMETER	C DRILL DEPTH
13/64 (6)	103617	0.1562	3/64
17/64 (8)	103618	0.1875	1/16
21/64 (10)	103619	0.2280	5/64

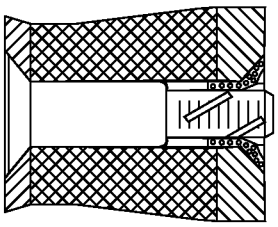
TABLE E

ALL DIMENSIONS ARE IN INCHES

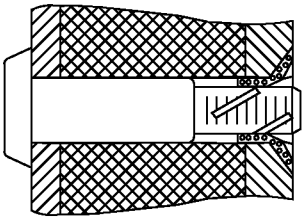
Removal Procedure
Figure 603



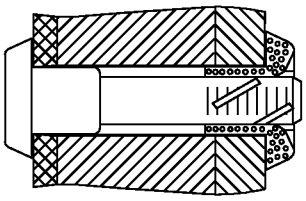
FLUSH HEAD PIN
AND PROTRUDING SLEEVE



FLUSH HEAD PIN
AND FLUSH SLEEVE



PROTRUDING HEAD PIN
AND FLUSH SLEEVE



PROTRUDING HEAD PIN
AND PROTRUDING SLEEVE

DIAMETER	SHANK DIAMETER	HOLE DIAMETER
06	0.2025 0.2005	0.203 0.208
08	0.2650 0.2630	0.266 0.271
10	0.3275 0.3255	0.328 0.333

FASTENER DIAMETERS
TABLE F

ALL DIMENSIONS ARE IN INCHES

Installed ASP and MAF Fastener Showing Head Style Combination
Figure 604

PIN PART NUMBER	CSK PIN HD DIA			SLEEVE PART NUMBER	CSK PIN HD DIA			COLLAR PART NUMBER
	06	08	10		06	08	10	
2ASPFF-DT()-()	0.302 MAX	0.399 MAX	0.479 MAX	ASPF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	ASP-LC-2AC()
2ASPFP-DT()-()	0.302 MAX	0.399 MAX	0.479 MAX	2ASPP-S-DT()				ASP-LC-2AC()
2ASPPF-DT()-()				ASPF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	ASP-LC-2AC()
2ASPPP-DT()-()				2ASPP-S-DT()				ASP-LC-2AC()
2ASP509F-DT()-()	0.386 MAX	0.507 MAX	0.634 MAX	ASPF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	ASP-LC-2AC()
2ASP509P-DT()-()	0.386 MAX	0.507 MAX	0.634 MAX	2ASPP-S-DT()				ASP-LC-2AC()
ASPFF-DT()-()	0.386 MAX	0.507 MAX	0.634 MAX	ASPF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	ASP-LC-2AC()
ASPFP-DT()-()	0.386 MAX	0.507 MAX		2ASPP-S-DT()				ASP-LC-2AC6
ASPPF-DT6-()				ASPF-S-DT6	0.386 MAX			ASP-LC-2AC8
ASP100F-DT08-18		0.399 MAX		ASPF-S-DT8		0.507 MAX		ASP-LC-2AC()
ASP100P-DT()-()	0.302 MAX	0.399 MAX		2ASPP-S-DT()				ASP-LC-2AC()
ASPFF-EU()-()AC	0.386 MAX	0.507 MAX	0.634 MAX	ASPF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	ASP-LC-2AC()
ASPFP-EU()-()AC	0.386 MAX	0.507 MAX	0.634 MAX	2ASPP-S-DT-()				ASP-LC-2AC()
ASPFP-MU10-()-()			0.634 MAX	2ASPP-S-DT10-()				ASP-LC-2AC10
ASPFF-MU10-()-()			0.634 MAX	ASPF-S-DT10-()			0.634 MAX	ASP-LC-2AC10
ASPSFP-MU10-()-()			0.479 MAX	2ASPP-S-DT10-()				ASP-LC-2AC10
ASPSFF-MU10-()-()			0.479 MAX	ASPF-S-DT10-()			0.634 MAX	ASP-LC-2AC10
ASPSPF-MU10-()-()				ASPF-S-DT10-()			0.634 MAX	ASP-LC-2AC10

Fastener Specifications
Figure 605 (Sheet 1 of 2)

PIN PART NUMBER	CSK PIN HD DIA			SLEEVE PART NUMBER	CSK PIN HD DIA			COLLAR PART NUMBER
	06	08	10		06	08	10	
ASPFF-V()-()	0.386 MAX	0.507 MAX		ASPF-S-V()-()	0.386 MAX	0.507 MAX		ASP-LC-MV()
ASPFF-V()-()	0.386 MAX	0.507 MAX	0.634 MAX	ASPF-S-V()-()	0.386 MAX	0.507 MAX	0.634 MAX	ASP-LC-2AC()
MAFFP-DT()-()	0.386 MAX	0.507 MAX	0.634 MAX	2MAFP-S-DT()				MAF-LC-2AC()
MAFFF-DT()-()	0.386 MAX	0.507 MAX	0.634 MAX	MAFF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	MAF-LC-2AC()
MAFPF-DT()-()				MAFF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	MAF-LC-2AC()
MAFFF-EU()-()AC	0.386 MAX	0.507 MAX	0.634 MAX	MAFF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	MAF-LC-2AC()
MAFFP-EU()-()AC	0.386 MAX	0.507 MAX	0.634 MAX	2MAFP-S-DT()				MAF-LC-2AC()
2MAFFF-DT()-()	0.302 MAX	0.399 MAX	0.479 MAX	MAFF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	MAF-LC-2AC()
2MAFFP-DT()-()	0.302 MAX	0.399 MAX	0.479 MAX	2MAFP-S-DT()				MAF-LC-2AC()
2MAFPF-DT()-()				MAFF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	MAF-LC-2AC()
2MAFPP-DT()-()				2MAFP-S-DT()				MAF-LC-2AC()
2MAF509F-DT()-()	0.386 MAX	0.507 MAX	0.634 MAX	MAFF-S-DT()	0.386 MAX	0.507 MAX	0.634 MAX	MAF-LC-2AC()
2MAF509P-DT()-()	0.386 MAX	0.507 MAX	0.634 MAX	2MAFP-S-DT()				MAF-LC-2AC()
ASPFF-V()-()AC	0.302 MAX	0.399 MAX	0.479 MAX	ASPF-S-V()AC	0.332 MAX	0.432 MAX	0.522 MAX	ASP-LC-MV()
ASPFP-V()-()AC	0.302 MAX	0.399 MAX	0.479 MAX	2ASPP-S-V()AC	0.332 MAX	0.432 MAX	0.522 MAX	ASP-LC-MV()
ASPFF-V()-()-()	0.386 MAX	0.507 MAX		ASPF-S-V()-()	0.386 MAX	0.507 MAX		ASP-LC-MV()

TABLE VII

Fastener Specifications
Figure 605 (Sheet 2 of 2)

(NOT APPLICABLE)

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FITS AND CLEARANCES

(NOT APPLICABLE)

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. General

A. This section lists the special tools, fixtures, and equipment necessary for maintenance.

NOTE: Equivalent substitutes may be used.

Special Tools

Reference	Description	Part Number	Supplier
SPL-4697	Zephyr Super Shaver, ZT507	ZT507	3JKA4

Tool Supplier Information

CAGE Code	Supplier Name	Supplier Address
3JKA4	GENERAL TOOL & INSTRUMENTS	80 WHITE STREET NEW YORK, NY 10013 Telephone: 212-431-6100 Facsimile: 212-431-6499

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ILLUSTRATED PARTS LIST

(NOT APPLICABLE)