TO: ALL HOLDERS OF POSITIVE LOCK FASTENER INSTALLATION (ASP AND MAF FASTENERS) COMPONENT MAINTENANCE MANUAL 78-00-08

REVISION NO. 1 DATED JUL 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. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE

POSITIVE LOCK FASTENER INSTALLATION (ASP AND MAF FASTENERS)

NO ASSIGNED PART NUMBER

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

K66332

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

K66333

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

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

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS

*[1] Not applicable.

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.

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.

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.

REPAIR - GENERAL

1. General

   A. This section has the necessary iformation 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. Special Tools and Equipment

      (1) Zephyr Super Shaver, AT507 with a ZT507-20B cutter or equivalent.

      (2) Installation tools, see Fig. 601.

   B. References

      (1) BAC5004-2, Permanent Straight Shank Fastener Installation

   C. Procedure

      (1) Install the pin as shown in Fig. 601.

      (2) Install the sleeve on the pin as shown in Fig. 601.

      (3) Tighten the sleeve with the tools as shown in Fig. 602, Table A.

      (4) Place the lock collar over the pin as shown in Fig. 601.

      (5) Set the lock collar with the tools as shown in Fig. 601 and Fig. 602, Table B.

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

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

(6) Shave the broken pin end flush with head using a Zephyr Super Shaver, ZT507 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. Special Tools and Equipment

(1) Removal Tools, see Fig. 603.

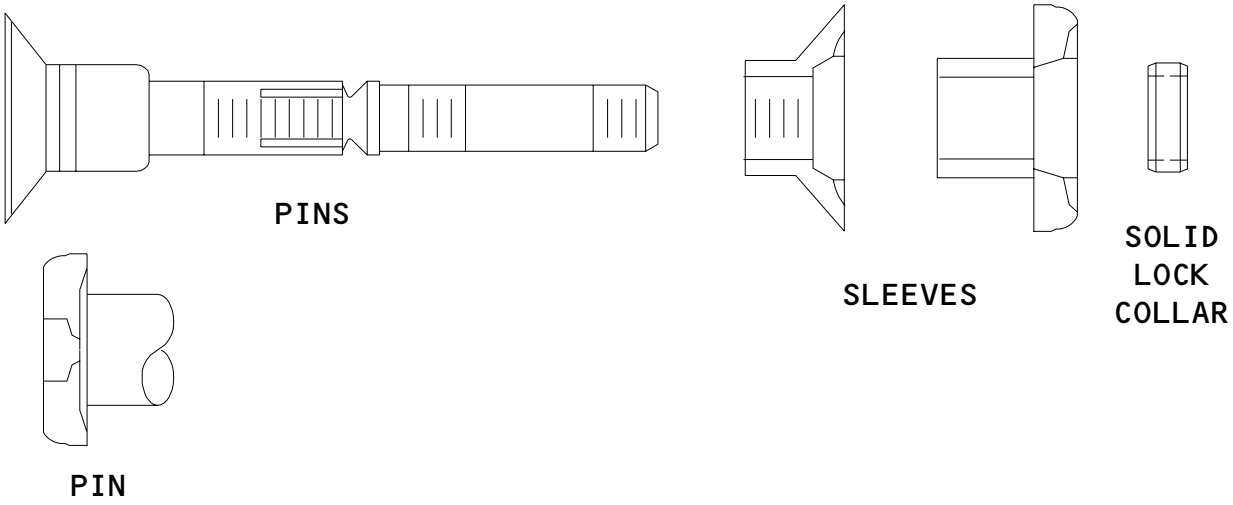
B. Procedure

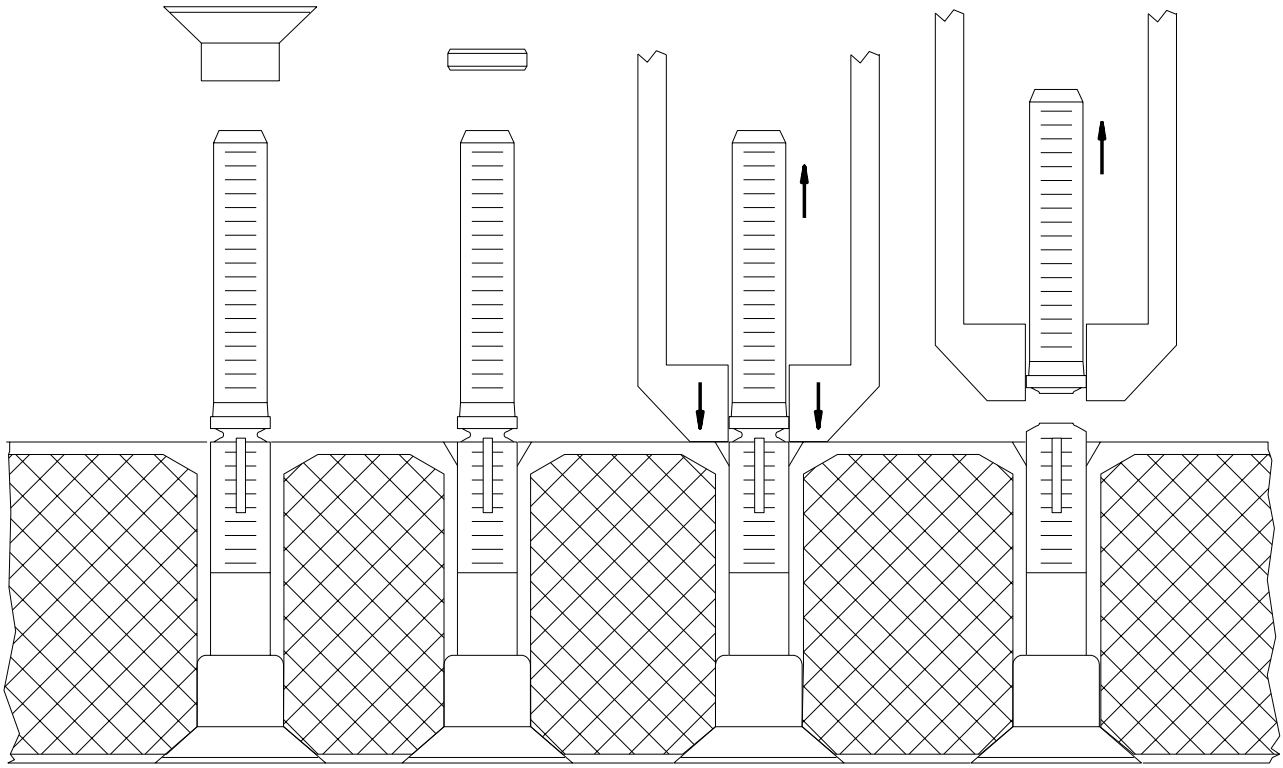
(1) Use Fig. 603, Table E for the selection of the drill and bushing.

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

(3) Remove the lock collar.

(4) Unscrew the sleeve from the pin.

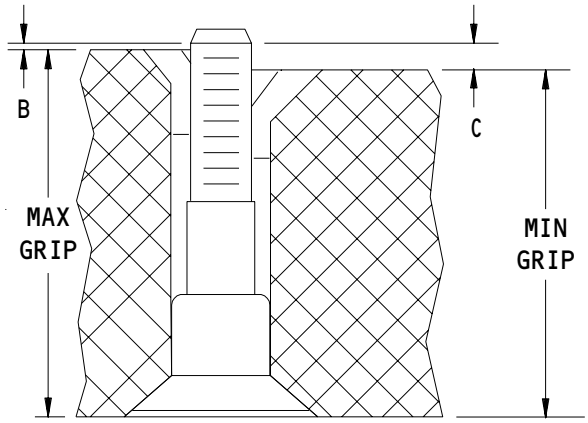




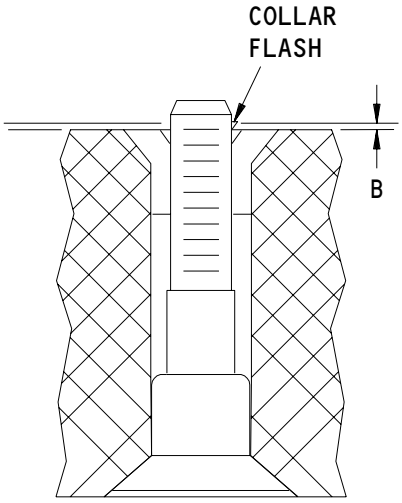
STEP 1	STEP 2	STEP 3	STEP 4
PIN IS INSERTED FROM ONE SIDE OF THE WORK	SLEEVE IS PLACED OVER PINTAIL AND TIGHTENED INTO POSITION	LOCK COLLAR IS PLACED OVER PINTAIL	HUCK INSTALLATION TOOL LOCKS FASTENER IN PLACE

Installation Procedure
Figure 601

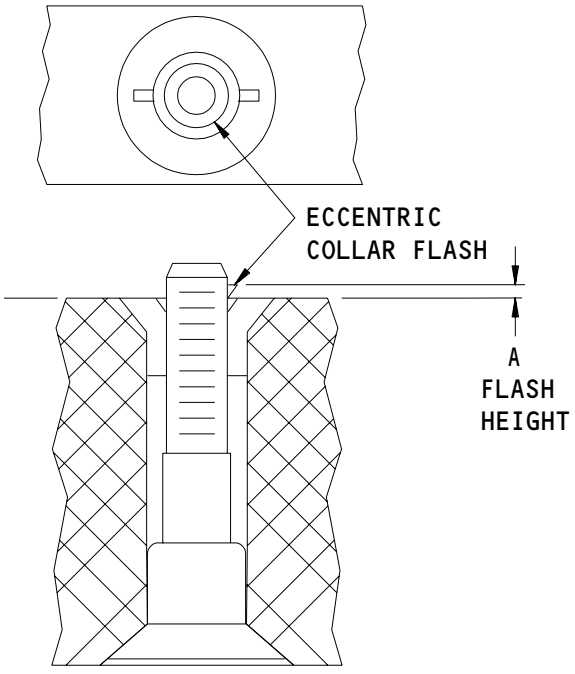
K66335



PIN PROTRUSION



COLLAR HEIGHT



COLLAR/FLASH HEIGHT

Installation Tools and Inspection
Figure 602 (Sheet 1)

K66336

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)

K66337

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

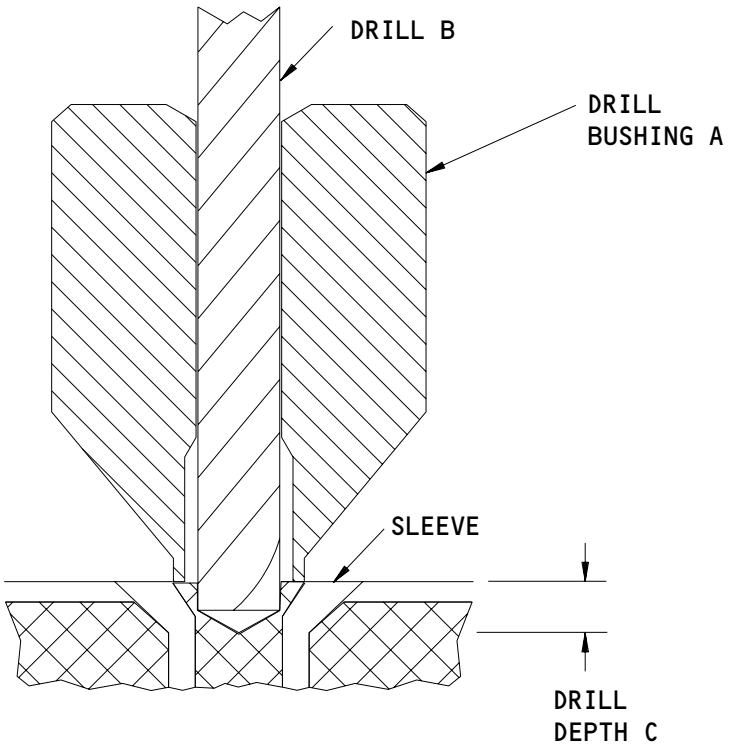
FASTENER DIAMETER	A MAXIMUM FLASH HEIGHT (WIDEST POINT)	B MAXIMUM COLLAR HEIGHT (NOT INCLUDING FLASH)
13/64 (6)	0.020	0.010
17/64 (8)	0.030	0.013
21/64 (10)	0.035	0.016

COLLAR HEIGHT
TABLE D

ALL DIMENSIONS ARE IN INCHES

Installation Tools Inspection
Figure 602 (Sheet 3)

K66348



LOCK REMOVAL

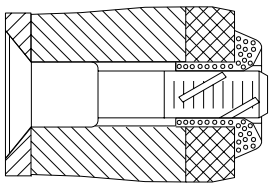
FASTENER DIAMETER	A DRILL BUSHING HUCK P/N	B DRILL DIAMETER	C DRILL DEPTH
13/64 (6)	103617	0.1562	3/64
17/64 (8)	103618	0.1875	1/16
21/64 (10)	103619	0.2280	5/64

TABLE E

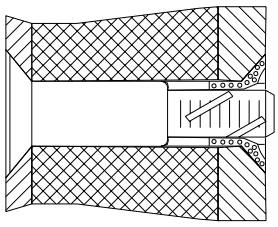
ALL DIMENSIONS ARE IN INCHES

Removal Procedure
Figure 603

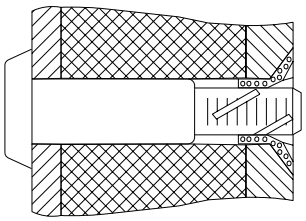
K66352



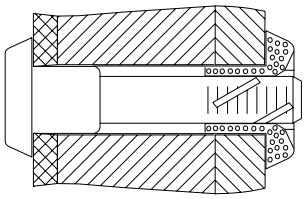
FLUSH HEAD PIN
AND PROTRUDING SLEEVE



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

K66353

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)

K66354

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)

K66355

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. Huck Installation Tools*

   A. 106524 - Sleeve Driver

   B. 106525 - Sleeve Driver

   C. 107735 - Sleeve Driver

   D. Model 200, 352, 229, 210 or 2702 - Installation Tool

   E. Model 353/4, 225, 4802 or 4802 - Installation Tool

   F. 99-895 - Nose Assembly

   G. 99-852 - Nose Assembly

   H. 99-867 - Nose Assembly

   I. 103617 - Drill Bushing

   J. 103618 - Drill Bushing

   K. 103619 - Drill Bushing

      * Huck Manufacturing Company
        900 Watson Center Road
        Carson, CA 90745