
MONOGRAM AEROSPACE FASTENERS

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DCB1001

INSTALLATION & INSPECTION SPECIFICATION

FOR

“DCB” AND “DCBP” TYPE BOLT FASTENERS

DATE: JUNE 12, 1990 ECN #6311

APPROVED BY: _____

JERRY QUARESMA
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REVISION: 08-23-91 ECN #6986 "A"
11-18-15 DCN# 15-0341 "B"

Original Signed Document on File

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1.0 SCOPE:

- 1.1 This specification outlines the installation and inspection requirements considered necessary to insure the proper performance of "DCB" and "DCBP" Bolt fasteners.

2.0 DESCRIPTION:

- 2.1 The "DCB1070", "DCB1090", "DCB1092" and "DCB1077SP" Bolts are a three (3) piece fastener assembly consisting of a threaded nut and screw, and body. The "DCBP173V" Bolt is also a three (3) piece fastener assembly consisting of a threaded nut and screw, and washer. They are available in sizes from 3/16" diameter through 3/8" diameter and in increments of .062 lengths. With the exception to the "DCB1092" Bolt which is available in 5/32" diameter only. The "DCBP3F" Bolt is a two (2) piece fastener assembly consisting of a threaded nut and screw and is available in 3/16" diameter only. Refer to the "DCB" and "DCBP" series product drawings for available sizes and types.

3.0 EQUIPMENT:

- 3.1 In order to ensure the best results, only approved pneumatic installation tools should be used. The current list of approved tools is noted in Table I and Table IA for the information of the user. These tools are available from:

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4.0 GENERAL INFORMATION:

- 4.1 These fasteners must be used within the grip range limits specified by the manufacturer in order to ensure proper performance.
- 4.2 It is required that only the approved tools listed in Paragraph 3 of this specification be used for the installation of these fasteners.
- 4.3 "DCB" Bolts should not be used in cocked hole applications, (See Paragraph 5.1.1.).

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TABLE 1
“DCB” and “DCBP173V” BOLTS
INSTALLATION TOOL DATA

FASTENER DIA. DASH NO.	PART NUMBER	PNEUMATIC PISTOL	NOSE ① ADAPTER	WRENCH ADAPTER
-05	DCB1092-05-()-()	MP550BF	MPR-05	MP-04
-06	DCB1090-06-()-()		MPR-06	MP-05
	DCB1070-06-()-()			
	DCBP173V-06-()-()			
-08	DCB1090-08-()-()		MPR-8	MP-06
	DCB1070-08-()-()			
	DCBP173V-08-()-()			
-10	DCB1090-10-()-()		MPR-10	MP-08
	DCB1070-10-()-()			
	DCBP173V-10-()-()			
-12	DCB1090-12-()-()		MPTFBF-12	MPTBF-10
	DCB1070-12-()-()			
	DCBP173V-12-()-()		MPR-12	

① MPF-() IS ALSO ACCEPTABLE NOSE ADAPTER, HOWEVER, MPR-() IS PREFERRED.

TABLE 1A
“DCB1077SP” BOLT
INSTALLATION TOOL DATA

FASTENER DIA. DASH NO.	PART NUMBER	PNEUMATIC PISTOL	NOSE ADAPTER	WRENCH ADAPTER
-06	DCB1077SP-06-()-()	MP550RL	MPF-06	MP-05
-08	DCB1077SP-08-()-()		MPF-08	MP-06

TABLE 1B
“DCBP3F” BOLT
INSTALLATION TOOL DATA

FASTENER DIA. DASH NO.	PART NUMBER	PNEUMATIC TOOL ASSEMBLY	TOOL ASSEMBLY (TO HOLD THE NUT)	INSTALLATION HAND TOOL		
				WRENCH ADAPTER	SOCKET	RACHET
-06	DCBP3F-V06-()-()	MP550BF-06	MH215CR-06	MHBF-06	MHS-03	MHR-01

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- 4.4 DCB and DCBP Bolts are supplied to the user with proper lubrication to ensure satisfactory driving characteristics. It is not recommended for this lubricant to be removed, or should any additional lubricant be added. **If additional lubricant is added by a customer, it will result in much higher pre-load values.**
- 4.5 If a DCB or DCBP Bolt is removed, the same diameter DCB or DCBP Bolt should be reinstalled provided the hole has not been damaged. In the event that the hole has been damaged, the next larger diameter DCB or DCBP Bolt should be used (NOTE: for flush head fasteners the countersink will have to be deepened).
- 4.6 Use of the fastener in special applications requiring use of sealants, paints, etc. should be thoroughly investigated by the user, prior to installation.

5.0 **DETAIL REQUIREMENTS:**

5.1 **Hole & Sheet Preparation:**

- 5.1.1 Holes shall be drilled straight and perpendicular (within $1/2^{\circ}$) to the surface against which the manufactured head will bear. The hole shall be reasonably round and free from burrs. See Table II and Table IIA for recommended installation hole sizes.
- 5.1.2 Countersink the holes (See Table II and IIA). The countersink diameters shown may be adjusted to suit a specific manufacturer's flushness requirements.
- 5.1.3 Chamfer where the countersink and the hole diameter intersect. This chamfer should be equivalent to the maximum head to shank fillet radius of the "Nut" or the "Body" of the DCB and DCBP Bolt fastener. The chamfer is to be as a radius relief to ensure proper seating of bearing surfaces.
- 5.1.4 The sheets to be joined should be firmly clamped up or otherwise fixed to prevent hole misalignment.

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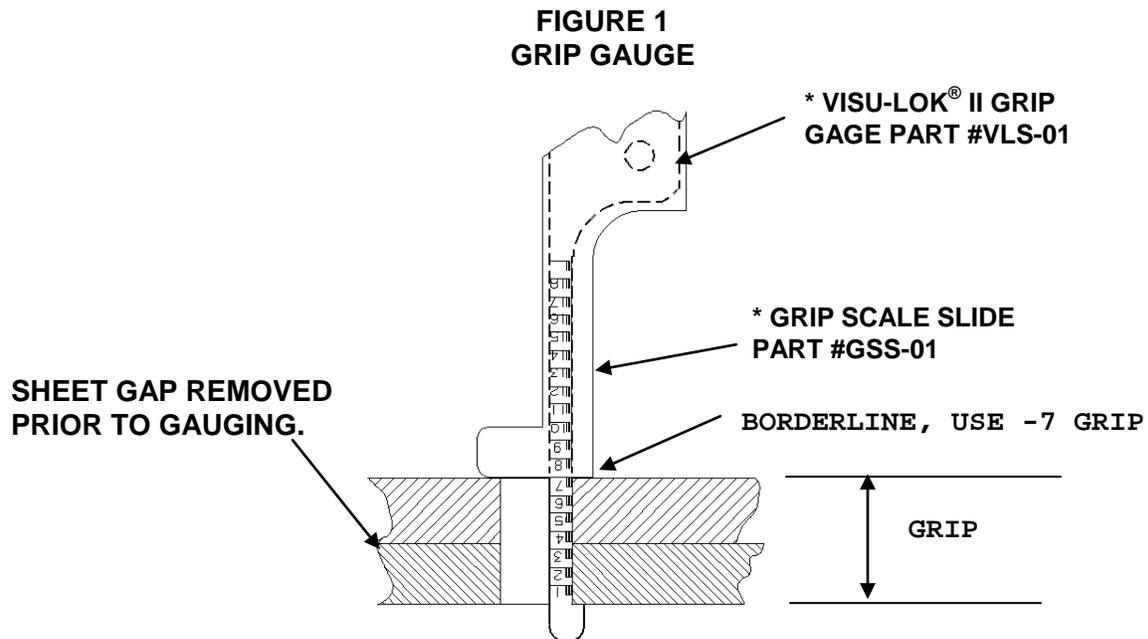
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TABLE II
(INCH)

DIA. DASH NO.	NOMINAL FASTENER DIAMETER (in.)	ACTUAL FASTENER DIAMETER (in.)	INSTALLATION HOLE SIZE (in.)	COUNTERSINK DIAMETER (100 E FLUSH TYPE ONLY) (in.)	COUNTERSINK DIAMETER (130 E FLUSH TYPE ONLY) (in.)
-05	.1630	.1640/.1620	.1670/.1645	100 E x .332/.325	130 E x .332/.325
-06	.1980	.1990/.1970	.2020/.1995	100 E x .385/.378	130 E x .385/.378
-08	.2590	.2600/.2580	.2630/.2605	100 E x .507/.499	130 E x .507/.499
-10	.3105	.3115/.3095	.3150/.3120	100 E x .635/.626	130 E x .635/.626
-12	.3735	.3745/.3725	.3780/.3750	100 E x .762/.752	130 E x .762/.752

6.0 SELECTION OF GRIP LENGTH:

- 6.1 Prior to installation, the grip length should be checked with a Visu-Lok grip gage (See Figure 1). Refer to product drawings for available grip ranges.



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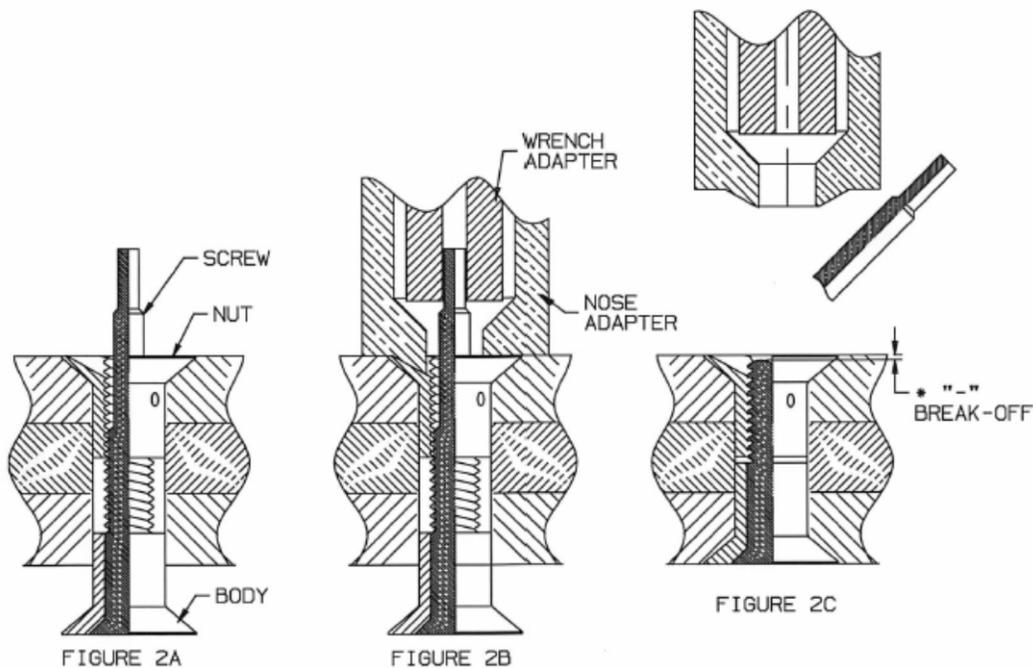
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7.0 DRIVING PROCEDURE FOR DCB1070; DCB1090 and DCB1092:

- 7.1 DCB Bolts are driven with special tools and equipment designed specifically for this job. The correct tools and equipment are listed in Table I and Table IA of this specification.
- 7.2 Insert the fastener in the hole. The DCB Bolt can be inserted in a properly prepared hole without interference (Figure 2A).
- 7.3 The wrenching part of the adapter assembly is inserted over the flatted portion of the screw and the nose piece engages the nut. The driving tool must be held firmly against the head of the nut and perpendicular to it (Figure 2B). Cocking of the driver may cause premature stem break-off before the fastener is completely driven or may cause the driving tool to "cam-out" the fastener recesses resulting in tool and/or fastener damage.
- 7.4 The driving force is then applied by the pneumatic power tool. As power is applied, the screw is turned and the nut is held stationary by the nose piece. As driving is completed, the flatted portion of the screw is snapped off and ejected from the spring loaded wrench adapter (Figure 2C). The resultant break-off should be within the limits specified on the product drawings.
- 7.5 In those instances where special driving tools are adapted by the user, wrenching speed of the tools shall not exceed 600 RPM.



* BREAK-OFF IS MEASURED FROM THE NUT HEAD
A NEGATIVE BREAK-OFF IS SHOWN IN FIGURE 2C

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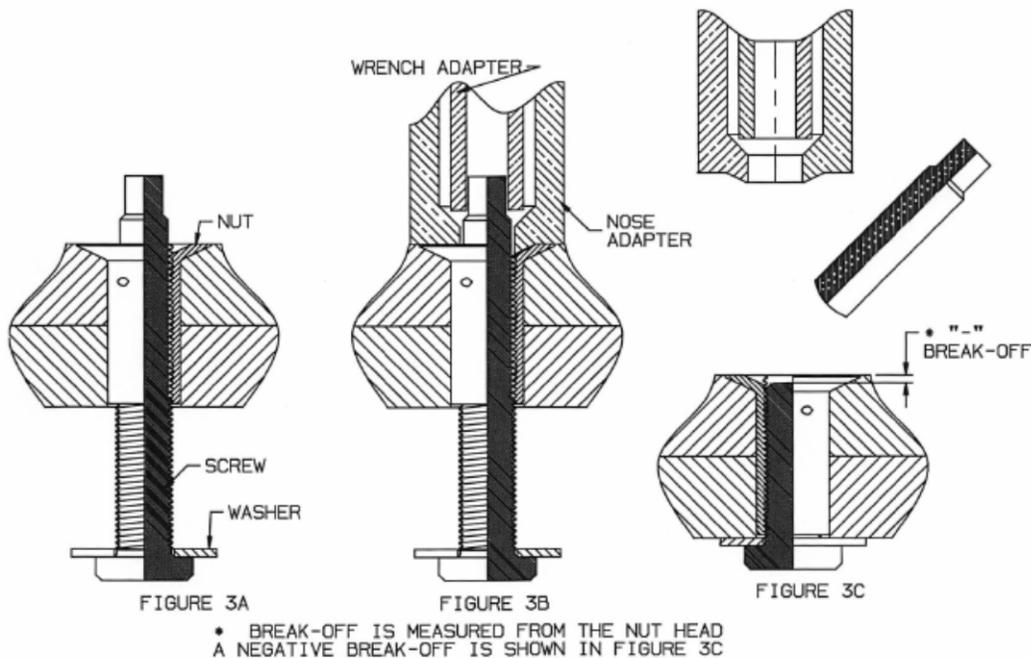
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8.0 DRIVING PROCEDURE FOR DCBP173:

- 8.1 DCBP173 Bolts are driven with special tools and equipment designed specifically for this job. The correct tools and equipment are listed in Table I and Table IA of this specification.
- 8.2 Insert the fastener in the hole. The DCBP173 Bolt can be inserted in a properly prepared hole without interference (Figure 3A).
- 8.3 The wrenching part of the adapter assembly is inserted over the flattened portion of the screw and the nose piece engages the nut. The driving tool must be held firmly against the head of the nut and perpendicular to it (Figure 3B). Cocking of the driver may cause premature stem break-off before the fastener is completely driven or may cause the driving tool to "cam-out" the fastener recesses resulting in tool and/or fastener damage.
- 8.4 The driving force is then applied by the pneumatic power tool. As power is applied, the screw is turned and the nut is held stationary by the nose piece. As driving is completed, the flattened portion of the screw is snapped off and ejected from the spring loaded wrench adapter (Figure 3C). The resultant break-off should be within the limits specified on the product drawings.
- 8.5 In those instances where special driving tools are adapted by the user, wrenching speed of the tools shall not exceed 600 RPM.



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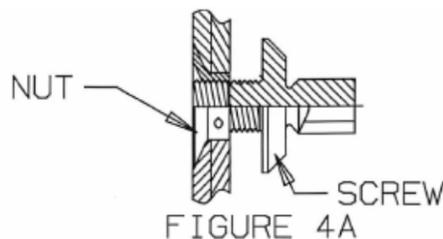
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9.0 DRIVING PROCEDURE FOR DCBP3F:

- 9.1 DCBP3F Bolts are driven with special tools and equipment designed specifically for this job. The correct tools and equipment are listed in Table I and Table IA of this specification.
- 9.2 Insert the fastener in the hole. The DCBP3F Bolt can be inserted in a properly prepared hole without interference (Figure 4A).
- 9.3 The wrenching part of the adapter assembly is inserted over the flattened portion of the screw and the nose piece of the special installation tool engages the nut from the opposite side. The special tool must be held firmly against the head of the nut and perpendicular to it (Figure 4B). Cocking of the driver may cause premature stem break-off before the fastener is completely driven. When the nut is not hold firmly, it may cause to "cam-out" the fastener recesses resulting in incomplete installation and/or fastener damage.
- 9.4 The driving force is then applied by the pneumatic power tool. As power is applied, the screw is turned and the nut is held stationary by the nose piece. As driving is completed, the flattened portion of the screw is snapped off and ejected from the spring loaded wrench adapter (Figure 4C). The resultant break-off should be within the limits specified on the product drawings.
- 9.5 In those instances where special driving tools are adapted by the user, wrenching speed of the tools shall not exceed 600 RPM.



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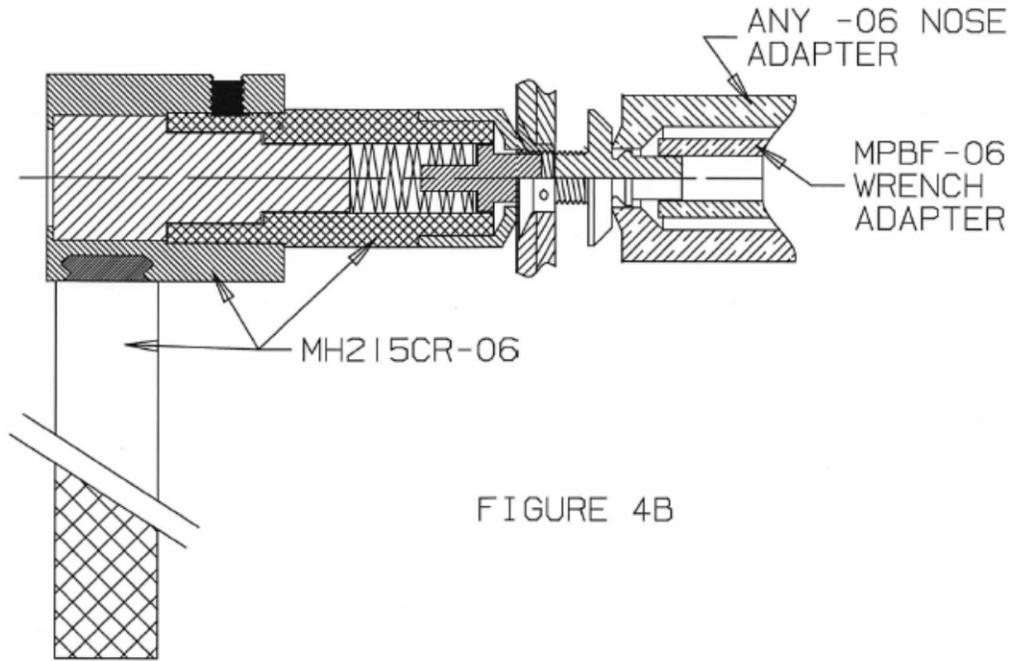


FIGURE 4B

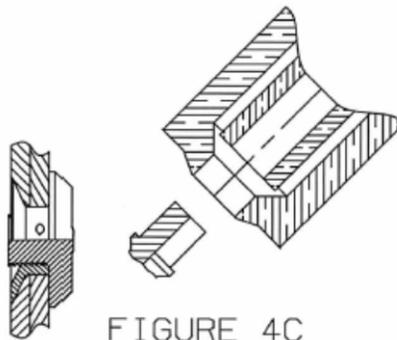


FIGURE 4C

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10.0 INSPECTION AFTER INSTALLATION:

10.1 The stem break-off position of the screw in the head of the nut is a positive indication that the fastener has been properly installed (provided the correct grip length fastener has been used). See Table III for stem break-off limits. A stem break-off higher than the limit shown is an indication that the fastener is too long; a stem break-off falling below the limit shown is an indication that the fastener is too short. In either case, the fastener should be removed, the grip length carefully checked, and then replaced by the next longer or shorter grip fastener, as necessary (Figure 5). Table IV list the recommended tooling for fastener removal.

10.2 After installation, fasteners may be individually checked for looseness. This can be done by holding the nose piece between the thumb and forefinger and applying a light torque on the head of the fastener in a counter-clockwise direction.

If desired the nose piece may be adapted to a torque wrench (Torque Adapter) and the torque values given in Table III can be used to determine looseness. However, caution should be exercised not to over-torque the installed fastener when this method is used.

TABLE III

FASTENER DIA. DASH NO.	PART NUMBER	BREAK-OFF LIMITS [IN]	LOOSENESS TORQUE MINIMUM [IN-LBS]	TORQUE ADAPTER PART NUMBER
-05	DCB1092-05-()-()		4	MHTFDN-05
-06	DCB1070-06-()-()	+0.15	6	MHTFDN-06
	DCB1090-06-()-()	-.073		
	DCBP173V-06-()-()	+0.035		
	DCBP3F-06-()-()	-.040		
-08	DCB1077SP-06-()-()	.010 MAX	10	MHTFDN-08
	DCB1077SP-08-()-()	+0.850		
	DCB1070-08-()-()	+0.010		
	DCB1090-08-()-()	-.078		
-10	DCBP173V-08-()-()	+0.025	20	MHTFDN-10
	DCB1070-10-()-()	-.055		
	DCB1090-10-()-()	+0.010		
-12	DCB1070-10-()-()	-.083	30	MHTFDN-12
	DCBP173V-10-()-()	+0.015		
	DCB1090-10-()-()	-.065		
-12	DCB1070-12-()-()	+0.010	30	MHTFDN-12
	DCB1090-12-()-()	-.093		
	DCBP173V-12-()-()	+0.010		
		-.070		

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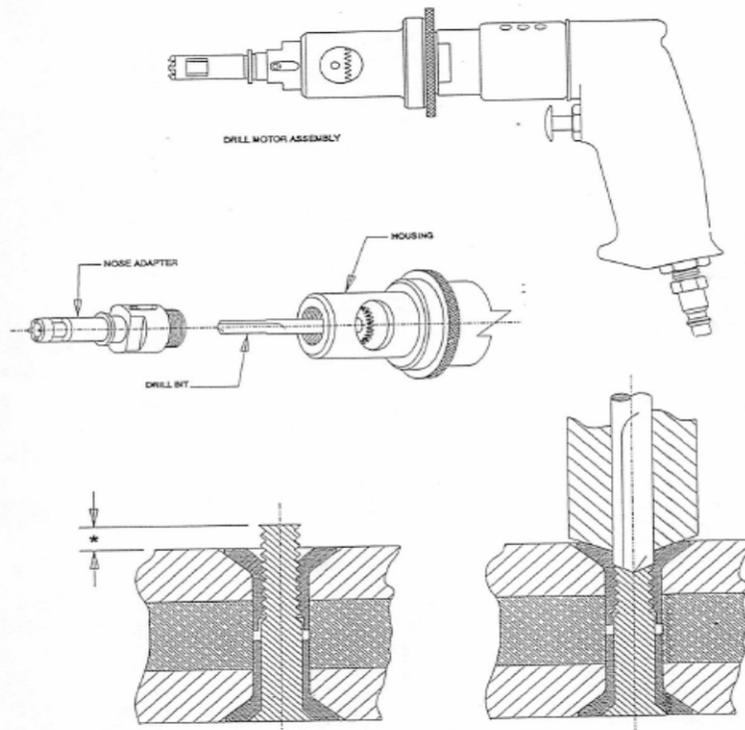
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TABLE IV

FASTENER DIAMETER DASH NUMBER	NOSE PIECE MODULE PART NUMBER	CARBIDE DRILL BIT	DRILL SIZE (in.)	DEPTH GAGE REQUIRED
-05 (.163)	RM3081-05	RC3050-05	.154	RC3031-05
-06 (.198)	RM3081-06	RC3050-06	.189	RC3031-06
-08 (.259)	RM3081-08	RC3050-08	.250	RC3031-08
-10 (.3105)	RM3153-10	RC3050-10	.302	RC3156-10
-12 (.3735)	RM3153-12	RC3050-12	.359	RC3156-12

FIGURE 5



* SCREW PROTRUSION SHOULD BE SHAVED FLUSH PRIOR TO DRILLING.

NOTES:

1. Screw protrusions should be shaved flush prior to removal (See 11.0).
2. A separate blank receptacle (RC3076) should be ordered for use with -5, -6 and -8 depth gages, and a blank receptacle (RC3119) should be ordered for use with the -10 and -12 diameters.

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11.0 SHAVING OF DCB BOLT:

11.1 The stem protrusion may be shaved flush with the sheet surface using Monogram's Little Shaver (MAPS-01). See Figures 5A, 5B, 5C and 5D.

11.1.1 Adjust shaver to desired cutting depth. It is always best to check for over-adjustment before running the shaver on your primary surface. This may be achieved by running it on a flat scrap piece of metal. If disc abrasions occur, depth is over adjusted. Re-adjust until cutting disc no longer contacts metallic surface.

11.1.2 Position the shaver so that pintail (screw) guard is directly over the pintail of the fastener. Make sure shaver is resting flat on the structure's surface, then release safety lever and bring motor to full rpm (Figure 5B).

11.1.3 While using very slight end pressure, slowly move the shaver over the pintail and begin cutting (Figure 5C). Caution: Too much end pressure on shaving unit may cause cutting disk to shatter.

11.1.4 Continue cutting until pintail has been completely "sliced" off (Figure 5D).

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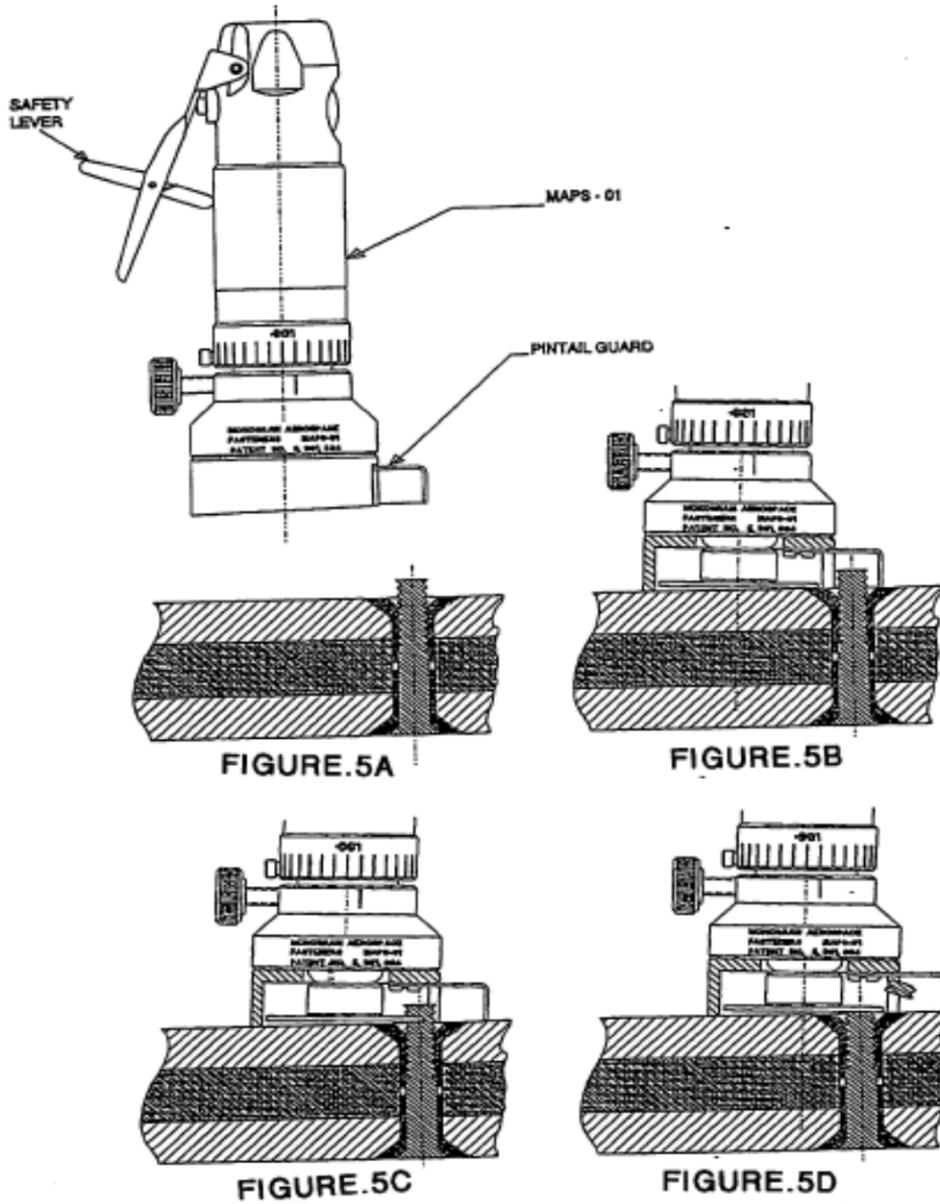
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