STANDARD OVERHAUL PRACTICES MANUAL

INSTALLATION OF PERMANENT PINS AND PLUGS IN DRILL PASSAGES

PART NUMBER NONE

PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA
A DIVISION OF THE BOEING COMPANY
PAGE DATE: Jul 01/2009

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STANDARD OVERHAUL PRACTICES MANUAL

Revision No. 11
Jul 01/2009

To: All holders of INSTALLATION OF PERMANENT PINS AND PLUGS IN DRILL PASSAGES 20-50-04.

Attached is the current revision to this STANDARD OVERHAUL PRACTICES MANUAL

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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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Revision		Filed	
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INTRODUCTION

1. General

A. The instructions in this manual tell how to do standard shop procedures during maintenance functions from simple checks and replacement to complete shop-type repair.

B. This manual is divided into separate sections:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) Effective Pages

(5) Contents

(6) Revision Record

(7) Record of Temporary Revisions

(8) Introduction

(9) Procedures

C. Refer to SOPM 20-00-00 for a definition of standard industry practices, vendor names and addresses, and an explanation of the True Position Dimensioning symbols used.

D. The data is general. It is not about all situations or specific installations. Use it as a guide to help you write minimum standards.

E. If the component overhaul instructions are different from the data in this subject, use the component overhaul instructions.

INSTALLATION OF PERMANENT PINS AND PLUGS IN DRILL PASSAGES

1. INTRODUCTION

A. The data in this subject comes from Boeing Process Specification BAC5061 for installation of permanent pins and plugs in drill passages. A copy of the Boeing Process Specification Manual is furnished to the airline.

B. The data is general. It is not about all situations or specific installations. Use it as a guide to help you write minimum standards.

C. Refer to SOPM 20-00-00 for a list of all the vendor names and addresses.

2. GENERAL

A. These plugs are used as permanent seals for drill passages. They are not recommended for installation in holes that are drilled at the parting line of forged parts, because stresses from the installed plug can cause cracks at the parting line. The oversize diameter plugs are usually only for repair applications.

B. Pins are supplied by the manufacturer with a wax layer on them. Do not degrease the pins. Also, keep water away from the pins, because water can dissolve the wax. In storage, keep the plugs and pins below 150°F. The wax is soft and easily melted. Be careful not to touch the pins too much.

C. Keep the plugs and pins together by lot numbers, because they are made in lots.

D. Plugs and pins are identified by colors as shown in Table 1. The same pins are used with the standard plugs as with the oversize plugs, because on oversize plugs only the outside diameter is oversize.

Table 1: BACP20AX Pin and Plug Color Codes

	Standard Diameter Plug	Oversize Diameter Plug	Mating Pin
Aluminum	Green	Red	Clear to Yellow
CRES	Clear	Black	Clear

3. EQUIPMENT

A. Removal

(1) Use the tool kits shown in Table 2 for removal of BACP20AX plugs and pins.

(2) Each kit is for only one plug and pin size, and contains a pin striker, a plug striker, a pin bolt, a plug bolt, and a removal tap set for the specified size.

Table 2: Removal Tools

SIZE	LEE (V92555) TOOL KIT NUMBER
-06	CUTA0930103B
-09	CUTA1250103B
-12	CUTA1560103B
-15	CUTA1870103B
-18	CUTA2180103B
-21	CUTA2500103B
-25	CUTA2810103B

Table 2: Removal Tools (Continued)

SIZE	LEE (V92555) TOOL KIT NUMBER
-37	CUTA4060103B
-43	CUTA4680103B
-50	CUTA5310103B
-62	CUTA6560103B

B. Installation

(1) Pins can be installed with these tools, in order of preference: power press, hand press, or hammer.

(2) Use a hammer only if a power or hand press is not available. If a hammer must be used, drive some practice plugs before you install the plug in a good component.

(3) If you use a hand or power press, use the installation force values of Table 3 as a guide.

Table 3: Hand or Power Press Installation Forces

DASH NO.	SERIES	ALUMINUM PLUG (LBS)	CRES PLUG (LBS)
-6	SHORT	400	500
-9	SHORT	400	600
-12	SHORT LONG	600 1500	1000 2500
-15	SHORT LONG	800 1600	1800 1800
-18	SHORT LONG	1600 1600	3000 3800
-21	SHORT LONG	2000 2400	2600 3200
-25	SHORT LONG	1500 3500	4000 5000
-31	SHORT LONG	1200 4000	2000 4000
-37	SHORT LONG	2400 3200	3000 4000
-43	SHORT LONG	3000 4000	5500 5500
-50	SHORT LONG	3000 5000	3800 6000
-62	SHORT LONG	3000 3000	3000 3000

4. INSTALLATION

A. Solvent clean and fully dry the hole in the part and the OD of the plug (SOPM 20-30-03).

CAUTION: DO NOT PUT THE PIN IN THE PLUG BEFORE YOU PUT THE PLUG IN THE HOLE, BECAUSE THE PLUG OD WILL EXPAND TOO MUCH AND CAUSE DAMAGE TO THE REAMED HOLE.

B. Give good support to the part to get the plug.

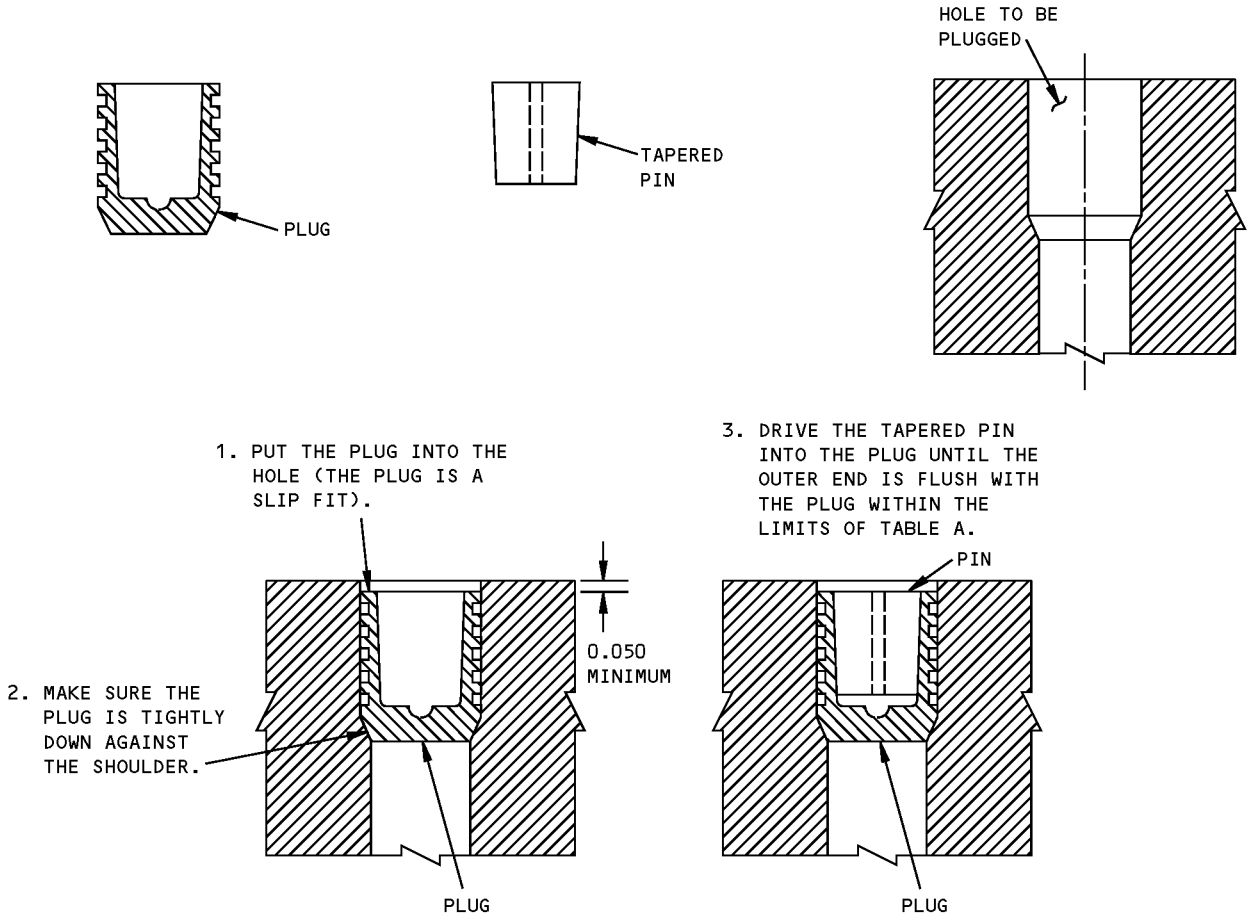
C. Put the plug into the hole until it is down against the shoulder of the reamed hole, as shown. Lightly tap the flat portion of the plug to make sure it is tightly against the shoulder. Make sure the top of the plug is a minimum of 0.050 inch below the outer surface around the hole, as shown.

D. After you are sure the plug is fully installed in the hole, put the tapered pin, small end first, into the tapered hole in the plug. Be careful not to tilt the pin while you put it in.

E. Drive or press the pin into the hole until the driven end is flush with the plug within the tolerances shown.

(1) We recommend that you drive the pin with an arbor press or a hydraulic press. When you use an arbor press, use a punch with a diameter larger than the OD of the pin, but smaller than the OD of the plug, to let you feel when the pin is flush. When you use a hydraulic press, use a punch with a diameter smaller than the pin OD, to prevent damage to the plug when the pin becomes flush with the top of the plug.

(2) The pins can be installed with a hammer. If you use a hammer, use a punch or a drift slightly smaller than the pin diameter, and of a material softer than the pin. Drive the pin quickly, with a few heavy blows, to prevent a head on the pin.



PLUG TYPE	PIN FLUSHNESS LIMITS
LONG SERIES (SUFFIX D OR NO SUFFIX)	ABOVE THE PLUG 0.005 BELOW THE PLUG 0.010
SHORT SERIES (SUFFIX DA OR A)	ABOVE THE PLUG 0.005 BELOW THE PLUG 0.003

TABLE A

NOTE: THE PINS ARE SUPPLIED WITH WAX ON THEM. MORE LUBRICATION IS NOT NECESSARY. KEEP THE WAX AWAY FROM WATER BECAUSE WATER WILL DISSOLVE THE WAX.

ALL DIMENSIONS ARE IN INCHES.

Pin and Plug Installation
Figure 1

5. EXTRACTION

A. If removal of the plug is necessary for inspection, cleaning, to get access to the interior passage, or because there are leaks, use this procedure (Figure 2). If the hole size or surface finish are not within design dimensions, you can install an oversize plug per Paragraph 6.

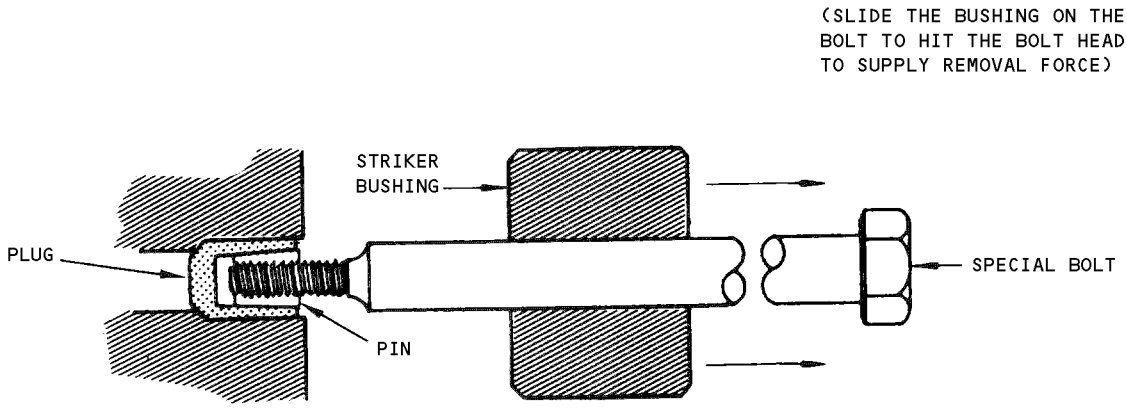
B. Use the tools from the applicable tool kit (Table 2) to remove the pin and plug. Equivalent substitutes can be used.

C. Drill and tap the pin. Make sure the depth of the tap drill into the pin is a small amount less than the length of the pin. To not strip the threads during the removal process, use the plug type and the bottoming type taps.

D. Turn the bolt (with the striker bushing on its shank) into the tapped threads by hand until it is tight. Then slide the bushing on the bolt, to hit the bolthead face to drive out the pin.

E. Tap the ID of the plug and remove it by the same procedure.

F. Discard the removed pin and plug. Do not try to use them again.



Pin and Plug Removal
Figure 2

6. INSTALLATION OF PIN AND OVERSIZE PLUG

A. If the hole size or surface finish is more than design values, ream the hole 0.010 inch diameter oversize. Restore 45° seat at design depth.

B. Install an oversize plug with a standard pin per Paragraph 4. Oversize plugs have part numbers the same as original parts plus a final X suffix, such as BACP20AX18DAX to identify the oversize equivalent of plug BACP20AX18DA. Oversize plugs use the same pins as the standard plugs.