



STANDARD OVERHAUL PRACTICES MANUAL

HOW TO INSTALL BOLT RETAINING HARDWARE ON CLAMPS

**PART NUMBER
NONE**

BOEING PROPRIETARY, CONFIDENTIAL, AND/OR TRADE SECRET

Copyright © 1995 The Boeing Company
Unpublished Work - All Rights Reserved

Boeing claims copyright in each page of this document only to the extent that the page contains copyrightable subject matter. Boeing also claims copyright in this document as a compilation and/or collective work.

This document includes proprietary information owned by The Boeing Company and/or one or more third parties. Treatment of the document and the information it contains is governed by contract with Boeing. For more information, contact The Boeing Company, P.O. Box 3707, Seattle, Washington 98124.

Boeing, the Boeing signature, the Boeing symbol, 707, 717, 727, 737, 747, 757, 767, 777, 787, Dreamliner, BBJ, DC-8, DC-9, DC-10, KC-10, KDC-10, MD-10, MD-11, MD-80, MD-88, MD-90, P-8A, Poseidon and the Boeing livery are all trademarks owned by The Boeing Company; and no trademark license is granted in connection with this document unless provided in writing by Boeing.

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

20-50-25

Page 1
Jul 01/2009



STANDARD OVERHAUL PRACTICES MANUAL

Revision No. 1
Jul 01/2009

To: All holders of HOW TO INSTALL BOLT RETAINING HARDWARE ON CLAMPS 20-50-25.

Attached is the current revision to this STANDARD OVERHAUL PRACTICES MANUAL

The STANDARD OVERHAUL PRACTICES 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.

Pages replaced or made obsolete by this revision should be removed and destroyed.

ATTENTION

IF YOU RECEIVE PRINTED REVISIONS, PLEASE VERIFY THAT YOU HAVE RECEIVED AND FILED THE PREVIOUS REVISION. BOEING MUST BE NOTIFIED WITHIN 30 DAYS IF YOU HAVE NOT RECEIVED THE PREVIOUS REVISION. REQUESTS FOR REVISIONS OTHER THAN THE PREVIOUS REVISION WILL REQUIRE A COMPLETE MANUAL REPRINT SUBJECT TO REPRINT CHARGES SHOWN IN THE DATA AND SERVICES CATALOG.

20-50-25

TRANSMITTAL LETTER

Page 1

Jul 01/2009

PART NUMBER NONE



STANDARD OVERHAUL PRACTICES MANUAL

Location of Change

Description of Change

NO HIGHLIGHTS

20-50-25

HIGHLIGHTS

Page 1

Jul 01/2009



STANDARD OVERHAUL PRACTICES MANUAL

Subject/Page	Date	Subject/Page	Date	Subject/Page	Date
TITLE PAGE					
O 1	Jul 01/2009				
2	BLANK				
20-50-25 TRANSMITTAL LETTER					
O 1	Jul 01/2009				
2	BLANK				
20-50-25 HIGHLIGHTS					
O 1	Jul 01/2009				
2	BLANK				
20-50-25 EFFECTIVE PAGES					
1	Jul 01/2009				
2	BLANK				
20-50-25 CONTENTS					
1	Mar 01/2009				
2	BLANK				
20-50-25 REVISION RECORD					
1	Mar 01/2009				
2	Mar 01/2009				
20-50-25 RECORD OF TEMPORARY REVISIONS					
1	Mar 01/2009				
2	Mar 01/2009				
20-50-25 INTRODUCTION					
1	Mar 01/2009				
2	BLANK				
20-50-25 SUBJECT					
1	Mar 01/2009				
2	Mar 01/2009				
3	Mar 01/2009				
4	Mar 01/2009				
5	Mar 01/2009				
6	BLANK				

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

20-50-25

EFFECTIVE PAGES

Page 1

Jul 01/2009



STANDARD OVERHAUL PRACTICES MANUAL

TABLE OF CONTENTS

<u>Paragraph Title</u>	<u>Page</u>
HOW TO INSTALL BOLT RETAINING HARDWARE ON CLAMPS	1
INTRODUCTION	1
BACKGROUND	1
MATERIALS AND EQUIPMENT	1
PROCEDURE	1

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.

[illegible]

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

[illegible]

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

When the temporary revision is incorporated or cancelled, and the pages are removed, enter the date the pages are removed and the initials of the person who removed the temporary revision.

[illegible]

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

[illegible]

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



STANDARD OVERHAUL PRACTICES MANUAL

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.

20-50-25

INTRODUCTION

Page 1

Mar 01/2009



STANDARD OVERHAUL PRACTICES MANUAL

HOW TO INSTALL BOLT RETAINING HARDWARE ON CLAMPS

1. INTRODUCTION

- A. The data in this subject comes from Boeing Part Standards BACC15AN and BACB19F, plus advice from the part suppliers. The airline has a copy of the Boeing Part Standards Manual.
- B. The data is general. It is not about all situations or specific installations. Use this data to help you write minimum requirements.
- C. Refer to SOPM 20-00-00 for a list of all the vendor names and addresses.

2. BACKGROUND

- A. These clips and blocks are used to hold bolts and studs to band clamps to give support to brackets and other supports, to hold electrical conduits and hydraulic tubes along large cylindrical members of landing gear and other airplane components.
- B. These procedures will help prevent broken clips during service.

3. MATERIALS AND EQUIPMENT

- A. Fixture block – Locally made (See Figure 1)
- B. Shim stock – 0.050 inch thick, 0.650 inch wide
- C. Clips – BACC15AN or equivalent, as used in actual installation
- D. Blocks – BACB19F or equivalent, as used in actual installation
- E. Bolts or studs – As used in actual installation
- F. Clamp – As used in actual installation

4. PROCEDURE

- A. Get or make a fixture block with a vertical hole in it to fit the bolt or stud (Figure 1).
- B. Method 1 – Standard clip position (Figure 2)
 - (1) Turn the clip to put its tabs up.
 - (2) Put the block on the bolt with the channel toward the bolt head.
 - (3) Slide this unit into the clip from the side.
 - (4) Slide the band of the clamp between the block and the clip.
 - (5) Slide the piece of shim stock between the band and the clip. This will make a gap in the stackup, to let the finished clip slide easily on the band.
 - (6) Put this assembly on the work surface with the bolt shank up.
 - (7) Carefully pre-bend the clip tabs to approximately 45 to 60 degrees from vertical, to make it easier for the fixture block to bend the tabs down.
 - (8) Put the fixture block down on the assembled parts with the bolt shank into the hole in the fixture block.
 - (9) With a hammer, lightly tap on the fixture block until the clip tabs are bent down over the block, and nearly touch in the middle.
 - (10) Remove the fixture block and, with pliers, carefully squeeze the clip tabs down, to start them towards the flush position.
 - (11) Pull out the piece of shim stock.

20-50-25

**STANDARD OVERHAUL PRACTICES MANUAL**

- (12) With pliers, carefully squeeze the clip tabs until they touch in the middle and are flush with each other. Do not let the clip tabs overlap each other.
- (13) Do this procedure again as necessary to install the remaining clips, blocks and bolts on the clamp.

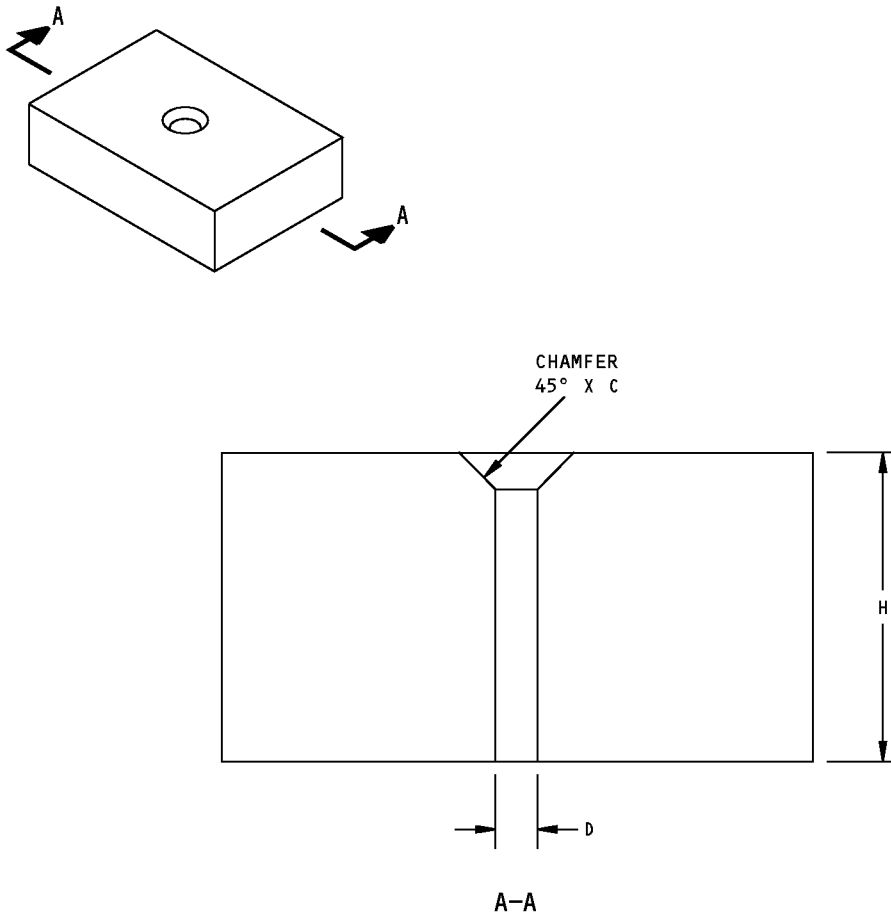
C. Method 2 – Optional clip position (Figure 3)

- (1) Turn the clip to put its tabs up.
- (2) Slide the block, channel side up, into the clip from the side, then put the bolt down through the clip and block until the bolt head is down against the bottom of the channel in the block.
- (3) Put this assembly on top of the fixture block, with the bolt shank down into the hole in the fixture block.
- (4) Slide the band of the clamp under the tabs of the clip and down on top of the bolt head and adjacent block surfaces.
- (5) Slide the piece of shim stock under the tabs of the clip and on top of the band of the clamp. This will make a gap in the stackup, to let the finished clip slide easily on the band.
- (6) With a hammer, carefully bend each tab of the clip down over the shim stock until the tabs almost touch in the middle.
- (7) With pliers, carefully squeeze the clip tabs down, to start them towards the flush position.
- (8) Pull out the piece of shim stock.
- (9) With pliers, squeeze the clip tabs until they touch in the middle and are flush with each other. Do not let the clip tabs overlap each other.
- (10) Do this procedure again as necessary to install the remaining clips, blocks and bolts on the clamp.

20-50-25



STANDARD OVERHAUL PRACTICES MANUAL



C, D, H TO FIT BOLT OR STUD

APPROXIMATE VALUES FOR BACB30NM3K37 BOLT:

C = 0.100

D = 0.200-0.250

H = 2.600

BREAK SHARP EDGES

MATERIAL: WOOD, PLASTIC OR METAL

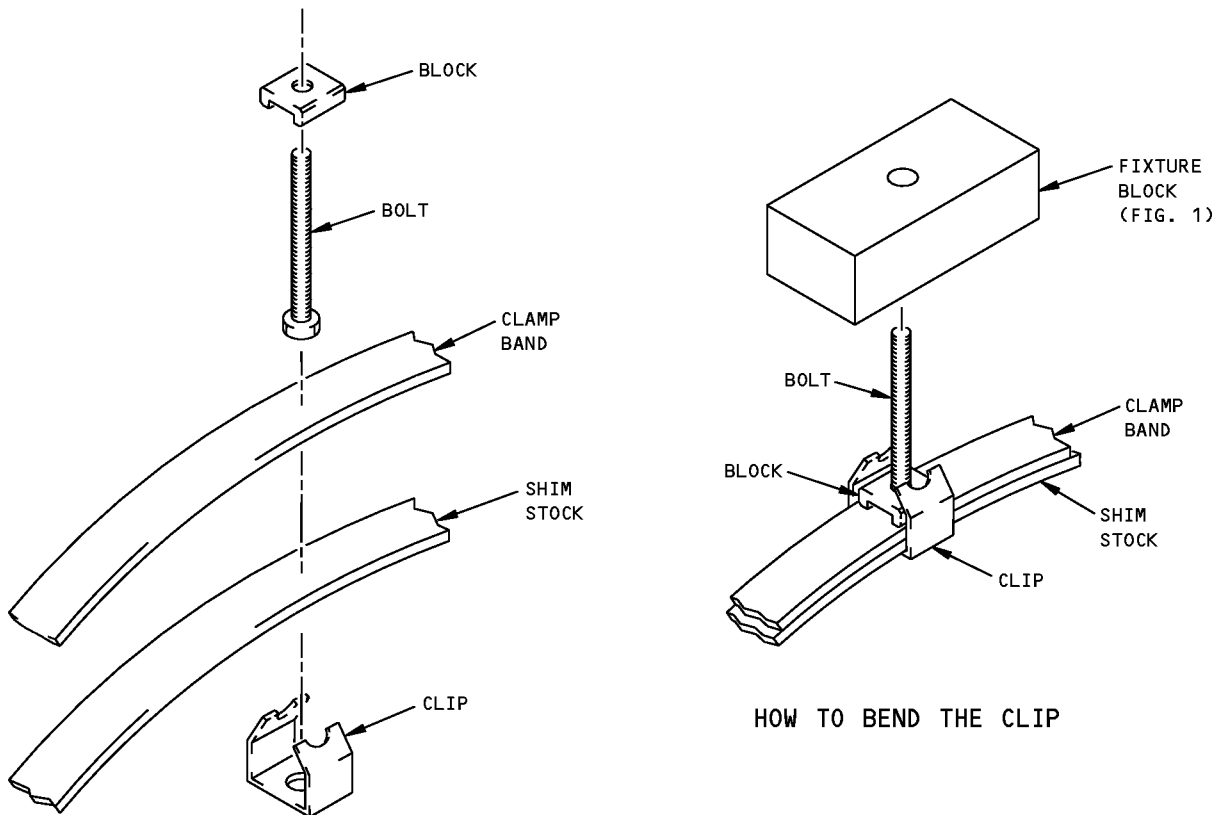
ALL DIMENSIONS ARE IN INCHES

1738356 S0000314171_V1

Fixture Block Details
Figure 1

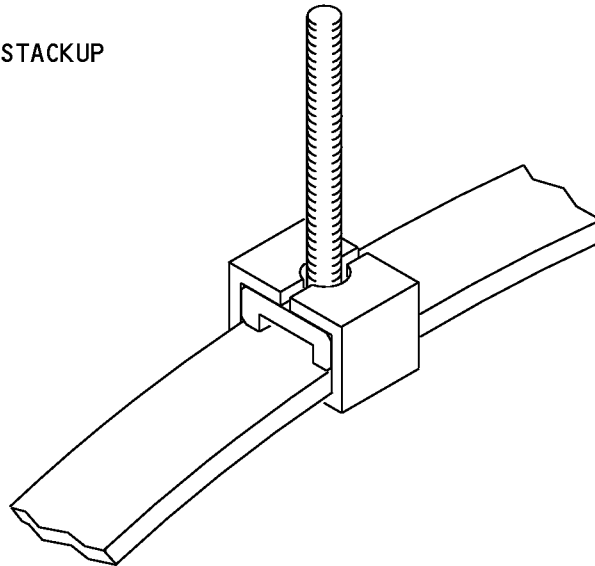
20-50-25

STANDARD OVERHAUL PRACTICES MANUAL



PARTS STACKUP

HOW TO BEND THE CLIP



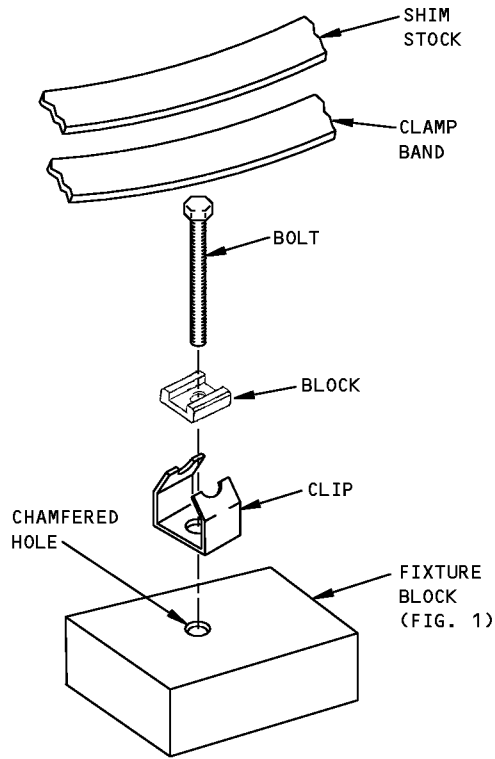
INSTALLATION COMPLETE

1739276 S0000314365_V1

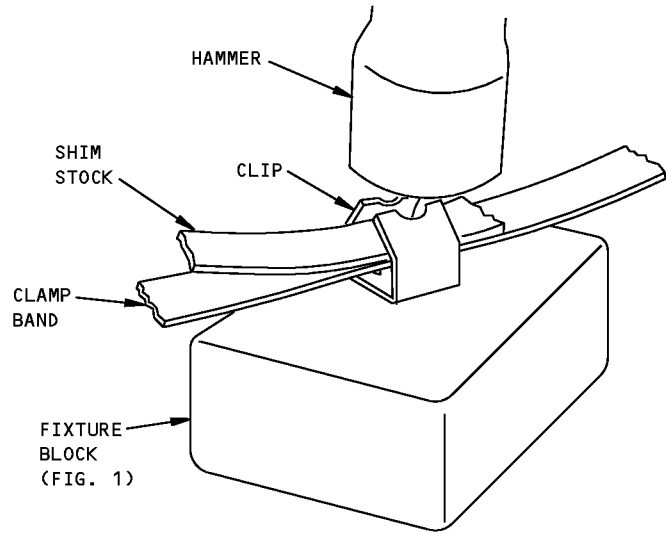
Standard Clip Position
Figure 2

20-50-25

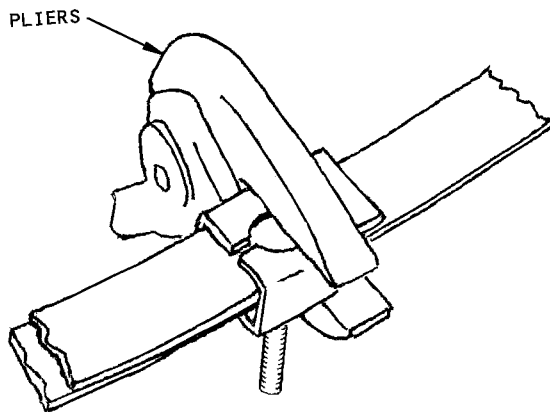
STANDARD OVERHAUL PRACTICES MANUAL



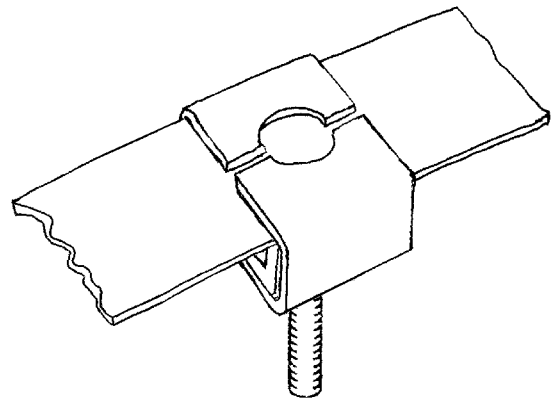
PARTS STACKUP



HOW TO BEND THE CLIP



FINAL BEND



INSTALLATION COMPLETE

1739508 S0000314366_V1

Optional Clip Position
Figure 3

20-50-25