

TECHNICAL BULLETIN

DATE: 25 JUNE 2010
PAGE 1 OF 16

THRUSTER ASSEMBLY MODIFICATION

1. PLANNING INFORMATION

A. Aircraft Affected:

MD900 helicopter serial numbers (SNs) 900-00008 thru 900-00036 (if SB900-023 was completed), and 900-00037 thru 900-00139. This change has been implemented on new production aircraft, SNs 900-000140 and subsequent.

B. Assembly/Components Affected By This Bulletin:

900F5421510-119 Modified Thruster Assembly

900F5421510-121 Modified Thruster Assembly

90001420102-107 Thruster Buildup Assembly

90001420102-109 Thruster Buildup Assembly

C. Reason:

To give owners and operators procedures to add bearings to the thruster buildup. An increase in the number of bearings reduces contact pressure against the race of the rotating cone during operation and will reduce wear of the rotating cone raceway. Different mission profiles and maneuver tendencies will cause some operators to benefit more than others as a result of this change. For this reason, this modification is optional.

D. Description:

Procedures in this Bulletin provide owners and operators instructions to modify the thruster buildup assembly to a 90001420102-111 thruster buildup assembly. Eight bearings are added to the stationary thruster, and 8 bearings are relocated.

E. FAA Approval:

The technical design aspects of this Bulletin are FAA Approved.

F. Manpower:

Eight (8) man-hours.

G. Time of Compliance

Customer option, at owner/operator discretion.

H. Interchangeability:

None.

I. Points of Contact

For further assistance, contact your local MDHI Field Service Representative or contact the Field Service Department at MDHI, Mesa, Arizona. Telephone 1-800-388-3378 or 480-346-6387. DATAFAX: 480-346-6813

DATE: 25 JUNE 2010
PAGE 2 OF 16

TECHNICAL BULLETIN

J. Material/Part Availability:

Removed control bearings and bolts can be used again.

REPLACEMENT PARTS/SUPPLIES			
Nomenclature	Part No.	Qty.	Source
Adhesive, Epoxy	MDM16-1068, Class 5 (C404)	AR	Dexter Adhesive & Coating Systems, Hysol & Frekote Products, 1 Dexter Dr., Seabrook, NH 03874-4018 800-254-2636
Adhesive, Epoxy Paste	MDM16-1068, Class 11 (C410)	AR	Dexter Adhesive & Coating Systems, Hysol & Frekote Products, 1 Dexter Dr., Seabrook, NH 03874-4018 800-254-2636
Bearing, Control	CEKP3AR11-2	8 to 24	MDHI
Bolt, Titanium	MHS555V3-7 (Truss Head) NAS673V7 (Alternate) (Hex Head)	8 to 24	MDHI
Cloth, Crocus	ANSI-B74.18	AR	Commercial
Cloth, Lint-Free	MIL-DTL-24671	AR	Commercial
Cloth, Black Carbon, Plain Weave		AR	MDHI
Fiberglass	AMC-C-9080, Type III	AR	Commercial
Glue, Super	MIL-A-46050, Type II, Class 2 (C442)	AR	Commercial
Lockwire	MS20995C32 (C702)	AR	Commercial
Nutplate, Self-Locking, Plate, Corner, Reduced Rivet	MS21074-3	16	Commercial
Peel Ply	HMS20 1267/1615	AR	Commercial

TECHNICAL BULLETIN

DATE: 25 JUNE 2010

PAGE 3 OF 16

REPLACEMENT PARTS/SUPPLIES (Cont.)			
Nomenclature	Part No.	Qty.	Source
Primer	MIL-PRF-23377, Type I, Class 1 (PN 513X390) (C310)	AR	<p>PRC-Desoto International Inc. (MS15), 5454 San Fernando Rd., Glendale, CA 91203 Telephone: 818-240-2060</p> <p>Crown Metro Inc. (MS17), PO Box 5857, Greenville, SC 29606 Telephone: 864-299-1331</p> <p>Sherwin Williams (MS55), 101 Prospect Ave., 920 Midland Bldg., Cleveland, OH 44114 Telephone: 800-925-3434 or 216-566-2000</p>
Release Agent, Fluorocarbon	REN RP 79-2 (C235)	AR	Ciba Specialty Chemical Corp., Performance Polymers (MS13), 4917 Dawn Ave., East Lansing, MI 48823 Telephone: 800-367-8793 or 517-351-5900
Release Film	HMS20-1267/1566	AR	Commercial
Resin, Epoxy	Araldite 501 (MDM16-1115, Type III) (C504)	AR	Fiber-Resin Corp. (MS68), 20701 Nordhoff St., Chatsworth, CA 91311 Telephone: 800-624-9487 or 651-236-3000
Rivet, Blind - Hollow: Pull Thru, Countersunk Head	MHS5422C3125	32	MDHI
Sandpaper, Non-Aluminum Oxide (180-Grit or Finer)	HMS20-1267/1544	AR	Commercial
Sealant, Conductive	Cho-Bond 2165 (C229)	AR	Chomerics, Inc. (MS12), 77 Dragon Court, Woburn, MA 48823 Telephone: 781-935-4850
Solvent Cleaner	Desoclean 45 020X413 (C429)	AR	PRC-Desoto International Inc. (MS15), 5454 San Fernando Rd., Glendale, CA 91203 Telephone: 818-240-2060

DATE: 25 JUNE 2010
 PAGE 4 OF 16

TECHNICAL BULLETIN

REPLACEMENT PARTS/SUPPLIES (Cont.)			
Nomenclature	Part No.	Qty.	Source
Washer, Flat	NAS1149C0332R	16 to 48	Commercial
Washer, Flat	NAS1149C0363R	24	Commercial

K. Warranty Policy:

Standard warranty policy applies.

L. Tooling:

TOOLS AND EQUIPMENT	
Nomenclature	Source
C-clamps	Commercial
MD900 Stationary Thruster Bearing Hole Location Tool (PN 900F2421510-107-DJ1)	MDHI
Nutplate Jig	Locally Made

M. Weight and Balance:

This modification will add:

- 0.30 lb (0.14 kg) to the weight,
- 455 inches (1155.7 cm) to the longitudinal arm, and
- 137 in-lb (15.5 Nm) to the longitudinal moment.

N. Electrical Load Data:

N/A

O. Other Publications Affected:

- CSP-SPM Standard Practices Manual
- CSP-900RMM-2 Rotorcraft Maintenance Manual - Servicing and Maintenance
- CSP-900IPL-4 Illustrated Parts List

P. Reference Publications:

Refer to the latest revision of these publications for procedures and additional information:

- CSP-SPM Standard Practices Manual
- CSP-900RMM-2 Rotorcraft Maintenance Manual - Servicing and Maintenance
- CSP-900IPL-4 Illustrated Parts List
- SB900-023 Thruster Rotating Cone/Control Bearings Modifications

TECHNICAL BULLETIN

DATE: 25 JUNE 2010
PAGE 5 OF 16

SL900-068 Thruster Assembly Washer Modification

2. ACCOMPLISHMENT INSTRUCTIONS

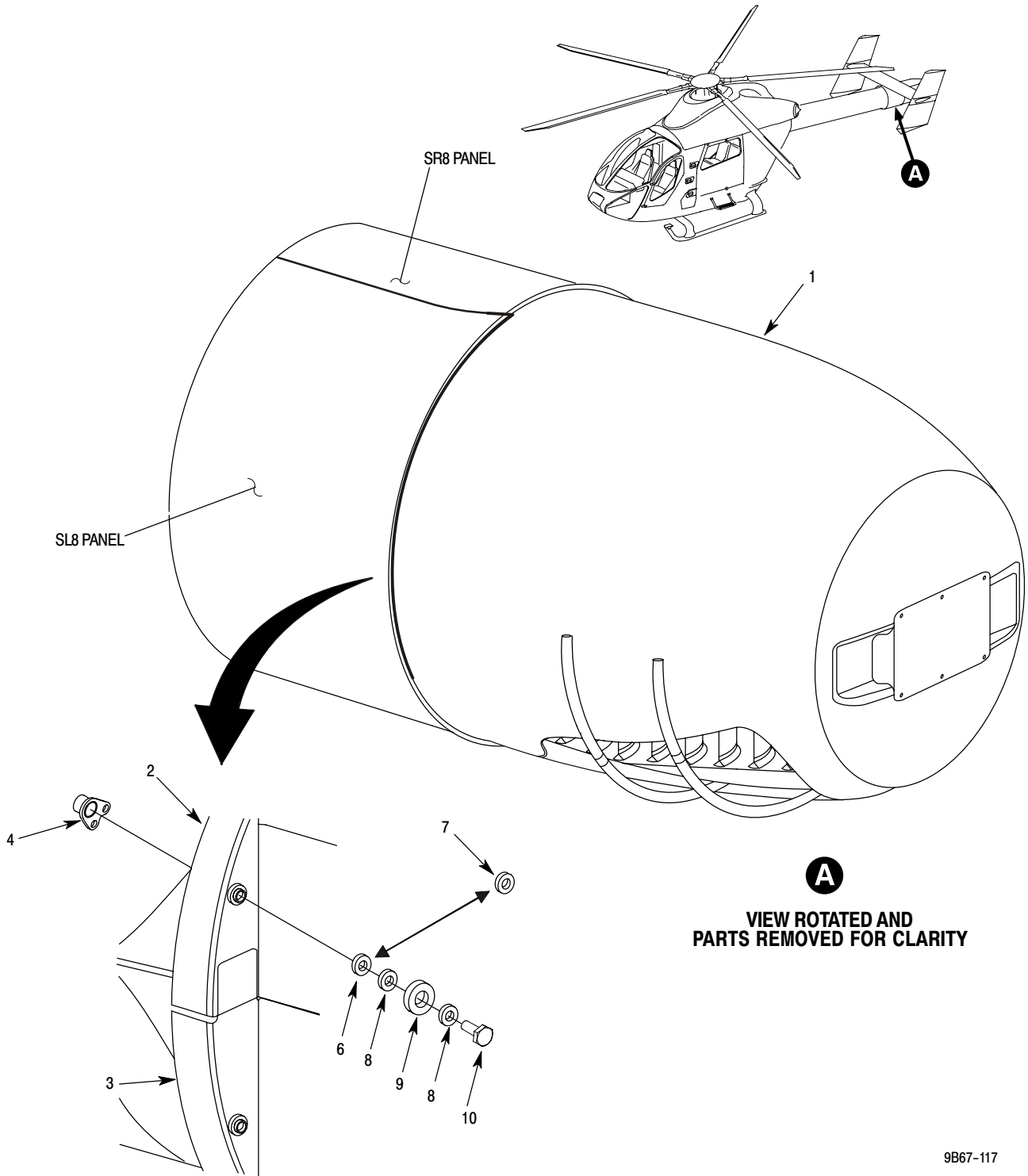
A. Preparation

- (1). Remove the SL8 and SR8 thruster extension fairing assemblies (ref. CSP-900RMM-2, 53-40-00, Maintenance Practices, and Figure 1).
- (2). Remove the thruster rotating cone cover (ref. CSP-900RMM-2, 67-20-00, Removal/Installation).
- (3). Remove the rotating cone assembly (ref. CSP-900RMM-2, 67-20-00, Removal/Installation).
- (4). Examine the bearing track surface on the inside of the bearing race of the rotating cone assembly (1) for cracks and too much wear.
 - (a). The maximum wear depth that is permitted is **0.001 to 0.003 inch (0.03 to 0.08 mm)** (ref. CSP-900RMM-2, 67-20-00, Inspection/Test/Rigging).
 - 1). If the wear is in the specified limit, blend wear indentations or sharp edges with a crocus cloth.
 - 2). If the wear is more than the specified limit, replace the bearing race of the rotating cone assembly (1) (ref. CSP-900RMM-2, 67-20-00, Removal/Installation).
 - (b). Replace the bearing race of the rotating cone assembly (1) if there are cracks (ref. CSP-900RMM-2, 67-20-00, Removal/Installation).

Legend (Ref. Figure 1)

1. ROTATING CONE ASSY
2. UPPER BULKHEAD ASSY
3. LOWER BULKHEAD ASSY
4. NUTPLATE
5. RIVET
6. NYLON WASHER
7. CRES WASHER
8. FLAT WASHER
9. CONTROL BEARING
10. BOLT

TECHNICAL BULLETIN

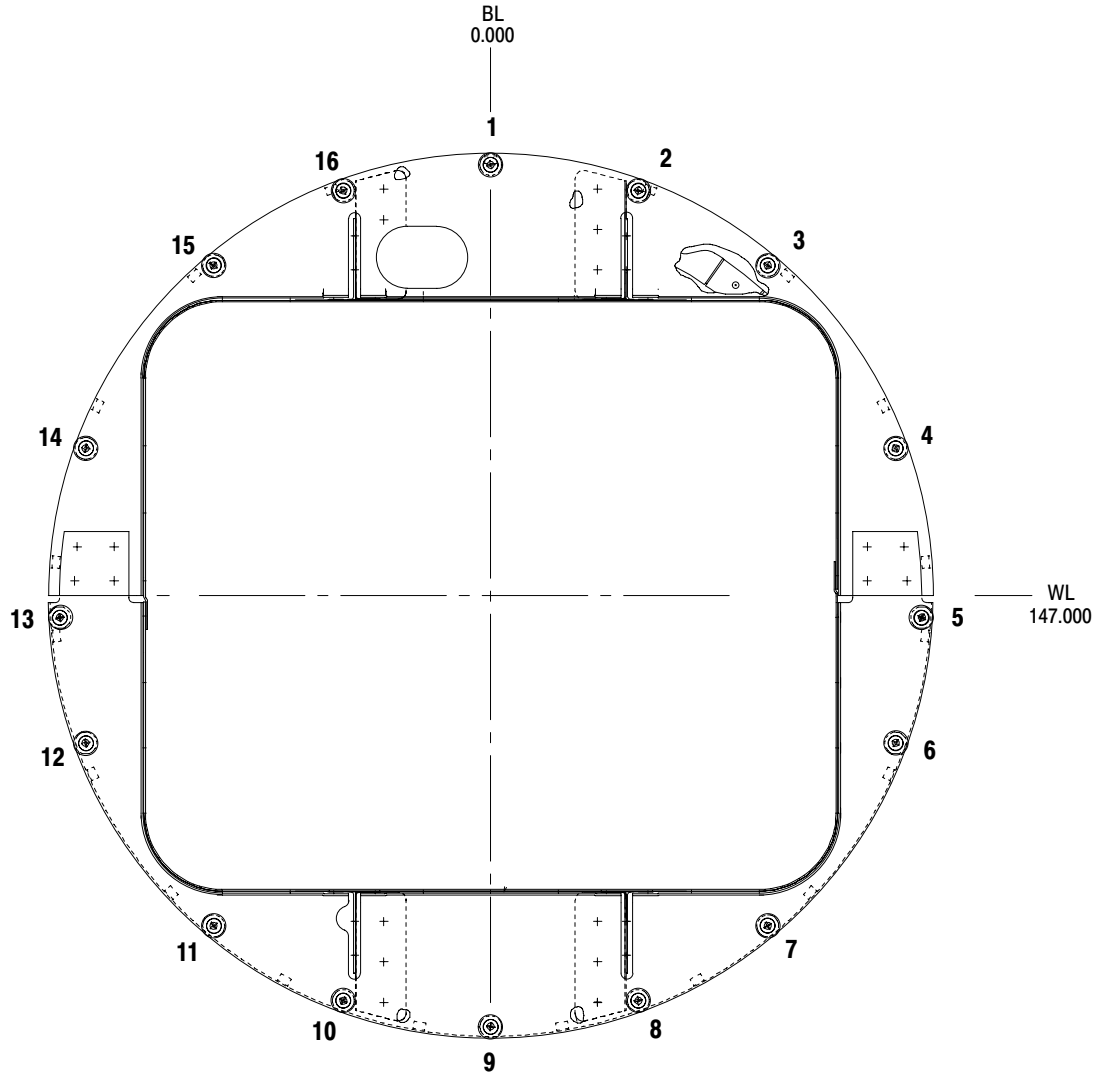


9B67-117

Figure 1. Thruster Assembly

TECHNICAL BULLETIN

DATE: 25 JUNE 2010
PAGE 7 OF 16



9b67-175

Figure 2. Location of 16 Control Bearings

DATE: 25 JUNE 2010
PAGE 8 OF 16

TECHNICAL BULLETIN

B. Rework Instructions

- (1). Remove bolts (10), control bearings (9), flat washers (8), and nylon washers (6) at locations 2, 4, 6, 8, 10, 12, 14, and 16 (ref. Figure 2).



The rivets and nutplates at locations 2, 4, 6, 8, 10, 12, 14, and 16 must be removed and discarded. Unrestrained and installed nutplates can cause foreign object damage (FOD).

- (2). Remove rivets (5) and nutplates (4) at locations 2, 4, 6, 8, 10, 12, 14, and 16.
 - (a). Discard rivets (5) and nutplates (4).
- (3). Repair holes from removed nutplates:

NOTE: The lower and upper bulkhead assemblies (2, 3) are 5-harness satin 40% epoxy-resin-impregnated standard modulus carbon-fiber-reinforced fabric (MDM16-1246, Type II, Class 2, Grade C) structures.

- (a). Lightly sand holes to remove loose fibers.
- (b). Lightly abrade both sides of the surface around the holes with 180-grit or finer sandpaper.

Solvent Cleaner (C429)



- (c). Wipe the surfaces with solvent cleaner (C429) until there is no evidence of residue on a clean cloth (C802).
 - 1). Let the area dry for 15 minutes minimum.
- (d). Put release film and tape on the forward side of the holes.
 - 1). Make sure the release film and tape cover both rivet holes and the bolt hole.

Adhesive, Epoxy Paste (C410)



Resin, Epoxy (C504)



- (e). Fill holes with epoxy paste adhesive (C410) or epoxy resin (C504) mixed with milled carbon fibers (20 percent maximum by weight).
- (f). Put a layer of Peel Ply on the repaired areas and patches on both sides.
- (g). Put release film on the repaired areas on both sides.
- (h). Install small aluminum pieces on the release film on both sides with C-clamps (lightly tightened).

TECHNICAL BULLETIN

DATE: 25 JUNE 2010

PAGE 9 OF 16

- (i). Secure repaired area with C-clamps (lightly tightened).

Solvent Cleaner (C429)



- (j). Immediately clean unwanted material from parts and tools with solvent cleaner (C429).

NOTE: Clean unwanted material from parts and tools before you let the mixture cure.

- (k). Let mixture cure for 24 hours at ambient temperature.

NOTE: Ambient temperatures must be more than **60F (16C)**. For best results, the ambient temperature is **70 to 90F (21 to 32C)**.

- (l). Remove C-clamps and aluminum pieces.
(m). Remove Peel Ply.
(n). Lightly abrade repaired areas with sandpaper.

Solvent Cleaner (C429)



- (o). Wipe surfaces with solvent cleaner (C429).

- 1). Let the area dry for 15 minutes minimum.

Adhesive, Epoxy (C404)

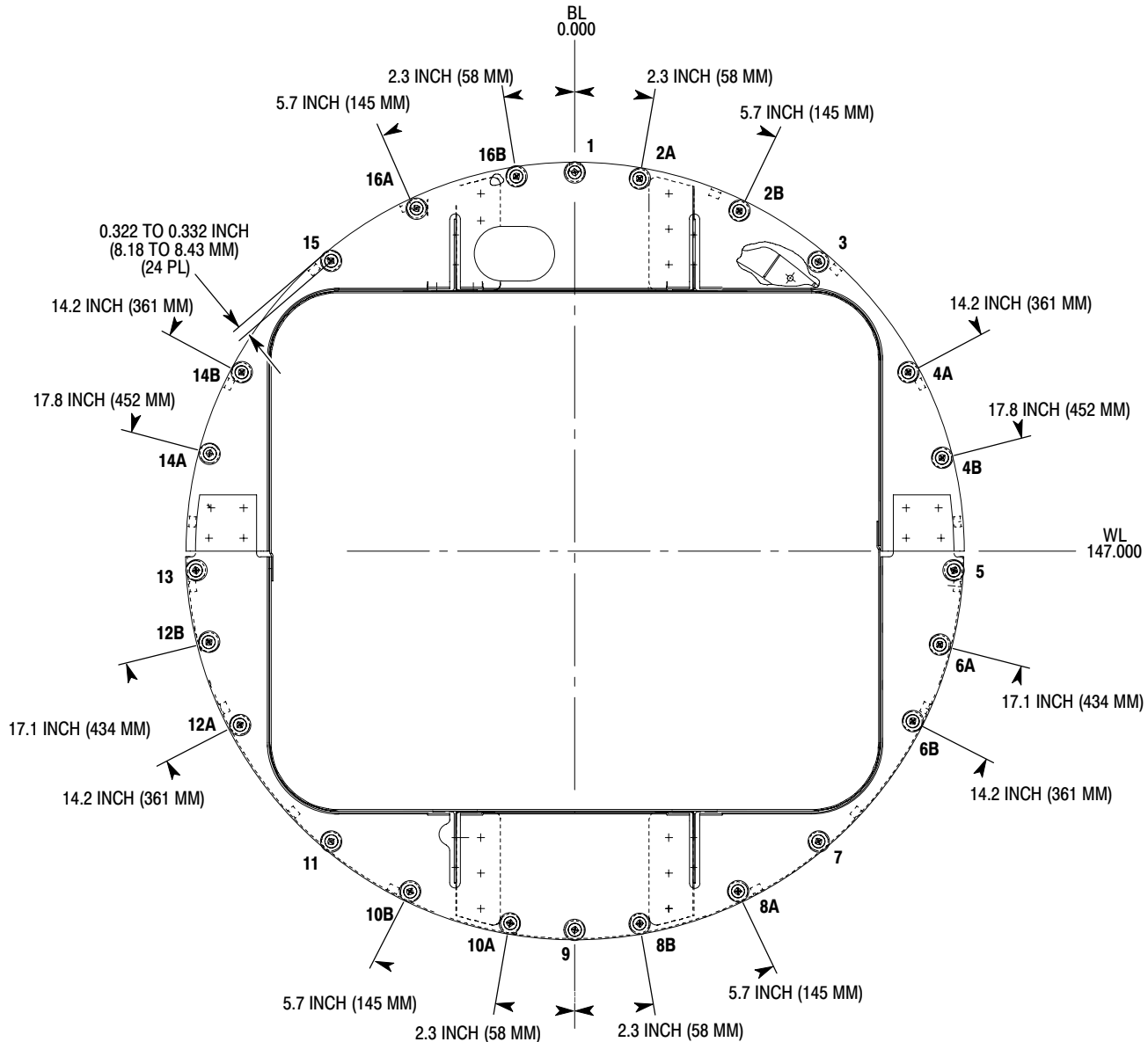


Resin, Epoxy (C504)



- (p). Put **1.00-inch-diameter (25.4 mm)** patches of black carbon plain weave cloth on both sides of the repaired areas with epoxy adhesive (C404) or epoxy resin (C504).
(q). Put **1.25-inch-diameter (31.8 mm)** patches of **0.120-inch-thick (30.5 mm)** white fiberglass over the black carbon patches on both sides with epoxy adhesive (C404) or epoxy resin (C504).
(r). Put a layer Peel Ply on the repaired areas and patches on both sides.
(s). Put release film on the repaired areas on both sides.
(t). Install small aluminum pieces on the release film on both sides with C-clamps (lightly tightened).
(u). Let the repaired areas cure for 24 hours at room temperature, or for 2 hours at **150 to 170F (66 to 77C)**.

TECHNICAL BULLETIN



9b67-176

Figure 3. Location of 24 Control Bearings

TECHNICAL BULLETIN

DATE: 25 JUNE 2010

PAGE 11 OF 16

- (v). Remove C-clamps and aluminum pieces.
- (w). Remove Peel Ply.
- (x). Lightly abrade with 180-grit or finer sandpaper both sides of the repaired areas until flat and uniform.

Solvent Cleaner (C429)



- (y). Wipe the surfaces with solvent cleaner (C429) until there is no evidence of residue on a clean cloth (C802).
 - 1). Let the area dry for 15 minutes minimum.

Adhesive, Epoxy (C404)



Resin, Epoxy (C504)



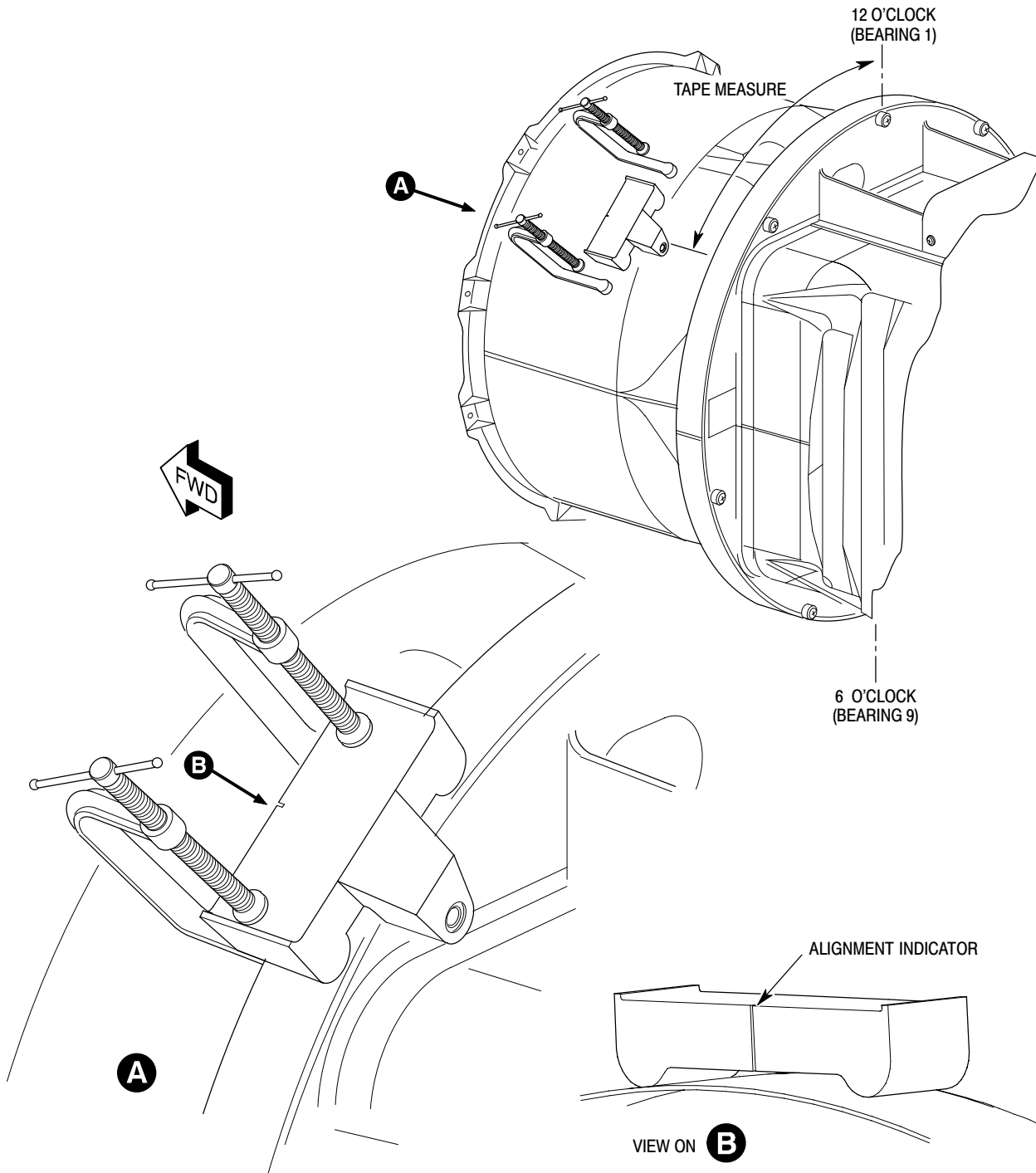
- (z). Apply a thin layer of resin (only use the resin part of epoxy adhesive (C404) or epoxy resin (C504)) to both sides of the repaired area.
- (aa). Let the repaired areas cure for 24 hours at room temperature, or for 2 hours at **150 to 170F (66 to 77C)**.
- (4). Find new bolt holes at locations 2A, 2B, 4A, 4B, 6A, 6B, 8A, 8B, 10A, 10B, 12A, 12B, 14A, 14B, 16A, and 16B (ref. Fig. 3) with MD900 stationary thruster bearing hole location tool (PN 900F2421510-107-DJ1), tape measure, and C-clamps. (Ref. Figure 3 and Figure 4.)
- (5). Drill 16 **0.190 to 0.193 inch (4.83 to 4.90 mm) diameter** bolt holes with MD900 stationary thruster bearing hole location tool (PN 900F2421510-107-DJ1), C-clamps and a spade bit at locations 2A, 2B, 4A, 4B, 6A, 6B, 8A, 8B, 10A, 10B, 12A, 12B, 14A, 14B, 16A, and 16B. (Ref. Figure 4.)
 - (a). Soak the edges of holes with super glue, let dry, then drill or ream hole to remove loose fibers.
- (6). Drill 32 holes for the nutplate rivets with a nutplate jig and **0.098 inch (2.5 mm)** or #40 drill with a spade bit.
 - (a). Soak the edges of holes with super glue, let dry, then drill or ream hole remove loose fibers.

Primer (C310)



- (7). Wet install rivets (5) with primer (C310) and nutplates (4).

TECHNICAL BULLETIN



9b98-165

Figure 4. Find And Drill New Holes With The Location Tool

TECHNICAL BULLETIN

DATE: 25 JUNE 2010

PAGE 13 OF 16

- (8). Install CRES washers (7), flat washers (8), control bearings (9), and bolts (10) at locations 2A, 2B, 4A, 4B, 6A, 6B, 8A, 8B, 10A, 10B, 12A, 12B, 14A, 14B, 16A, and 16B.
 - (a). Torque bolts **15 to 20 in-lb (1.7 to 2.3 Nm)**.
 - (b). If necessary, to remove remaining axial play of the stack-up, torque bolts to **24 in-lb (2.7 Nm)** maximum.

NOTE: If SL900-068 has been done, Step (9). is not necessary.

- (9). Remove and replace nylon washers (6) with CRES washers (7) at locations 1, 3, 5, 7, 9, 11, 13, and 15 (ref. Figure 1 and Figure 3).
 - (a). Remove bolts (10), control bearings (9), flat washers (8), and nylon washers (6).
 - 1). Discard nylon washers (6).
 - (b). Install CRES washers (7), flat washers (8), control bearings (9), and bolts (10).
 - 1). Torque bolts (10) **15 to 20 in-lb (1.7 to 2.3 Nm)**.
 - 2). If necessary, to remove remaining axial play of the stack-up, torque bolts (10) to **24 in-lb (2.7 Nm)** maximum.
- (10). Make sure the control bearing installations are free of contamination and debris.
- (11). Examine all control bearings (9) for smooth movement.
 - (a). Replace control bearings (9) that catch or rub during movement.
- (12). Examine all control bearings (9) for corrosion, flat spots, and play.
 - (a). Replace control bearings (9) with corrosion.
 - (b). Replace control bearings (9) that are visually out of round.
 - (c). Replace control bearings (9) with flat spots wider than **0.100 inch (2.54 mm)**.
 - (d). Replace control bearings (9) with axial and/or radial play more than **0.003 inch (0.08 mm)**.
- (13). Identify the modified thruster buildup assembly near the old part number as 90001420102-111 "TB900-034" with permanent ink in a contrasting color.

C. Job Close-Up

- (1). Install the rotating cone assembly (ref. CSP-900RMM-2, 67-20-00, Removal/Installation).
- (2). Install the thruster rotating cone cover (ref. CSP-900RMM-2, 67-20-00, Removal/Installation).
- (3). Install the SL8 and SR8 thruster extension fairing assemblies (ref. CSP-900RMM-2, 53-40-00, Maintenance Practices).



Do not move the rotating cone assembly more than one-half left or one-half right open.

- (4). Slowly turn the rotating cone assembly by hand to make sure it moves freely thru its full range of travel.

DATE: 25 JUNE 2010
PAGE 14 OF 16

TECHNICAL BULLETIN

D. Compliance Record

- (1). Record compliance to this Technical Bulletin in the Compliance Record section of the Rotorcraft Log Book.
- (2). Complete Bulletin Completed Record form (attached) and FAX or e-mail to MHDI Field Service Department.



TECHNICAL BULLETIN

DATE: 25 JUNE 2010
PAGE 15 OF 16

Bulletin Completed Record

TB900-034 – Thruster Assembly Modification

MD Helicopters, Inc.
Field Service Department
4555 E. McDowell Road
Mesa, AZ 85215-9734

800-388-3378 Phone (U.S. and Canada)
480-346-6387 Phone (International)
480-346-6813 Fax

FAX this form to MDHI (480) 346-6813 or E-mail to ServiceEngineering@mdhelicopters.com

Dear Sir:

This is to tell you that this Technical Bulletin has been completed as follows:

Owner /Operator: _____	Helicopter Serial No: _____
Address: _____ _____ _____	Helicopter Total Time: _____
Phone: _____	Date: _____
E-mail: _____	Location: _____

This bulletin is complete: _____
 (Signature)

 (Print Name)

 (Title)

Comments: _____

DATE: 25 JUNE 2010
PAGE 16 OF 16

TECHNICAL BULLETIN

This page intentionally left blank!