

TECHNICAL BULLETIN

DATE: 9 FEBRUARY 2011

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*Supersedes Technical Bulletin TB900-034, dated 25 June 2010. Revised to add and change part numbers for replacement parts and supplies and to change rework instructions.

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

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J. Material/Part Availability:

Removed control bearings and bolts can be used again.

REPLACEMENT PARTS / SUPPLIES			
Nomenclature	Part No.	Qty.	Source
Bearing, Control	CEKP3AR11-2	8 to 24	MDHI
Bolt, Titanium	MHS5555V3-7 (Truss Head) NAS673V7 (Alternative) (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	MRM012116 (32 inch ² (206 cm ²))	AR	MDHI
Fiberglass	AMC-C-9084, Type III, Class 12 or Type 8A, Class 12	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	Release Ply C (Preferred) Release Ply G (Alternative)	AR	Airtech International Inc. (MS1), 5700 Skylab Rd., Huntington Beach, CA 92647 Telephone: 714-899-8100
Primer	MIL-PRF-23377, Type I, Class 1 (PN 513X390) (C310)	AR	PRC-Desoto International Inc. (MS15), 5454 San Fernando Rd., Glendale, CA 91203 Telephone: 818-240-2060 Crown Metro Inc. (MS17), PO Box 5857, Greenville, SC 29606 Telephone: 864-299-1331 The Sherwin-Williams Co. (MS55), 101 Prospect Ave. NW, Cleveland, OH 44115 Telephone: 800-515-4825

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REPLACEMENT PARTS / SUPPLIES (Cont.)			
Nomenclature	Part No.	Qty.	Source
Release Agent, Fluorocarbon	Sprayon® P00311 (C235) REN RP 79-2 (C235)	AR	The Sherwin-Williams Co. (MS55), 101 Prospect Ave. NW, Cleveland, OH 44115 Telephone: 800-515-4825
Release Film	A4000	AR	Airtech International Inc. (MS1), 5700 Skylab Rd., Huntington Beach, CA 92647 Telephone: 714-899-8100
Resin, Epoxy	Araldite® 501 (C504)	AR	Huntsman Advanced Materials, 8600 Gosling Rd., The Woodlands, TX 77380 Telephone: 281-719-6000
Rivet, Blind – Hollow: Pull Thru, Countersunk Head	MHS5422C3125	32	MDHI
Sandpaper, Non-Aluminum Oxide (180-Grit or Finer)		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
Washer, Flat	NAS1149C0332R	16 to 48	Commercial
Washer, Flat	NAS1149C0363R	24	Commercial

K. Warranty Policy:

Standard warranty policy applies.

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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
- SL900-068 Thruster Assembly Washer Modification

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2. ACCOMPLISHMENT INSTRUCTIONS

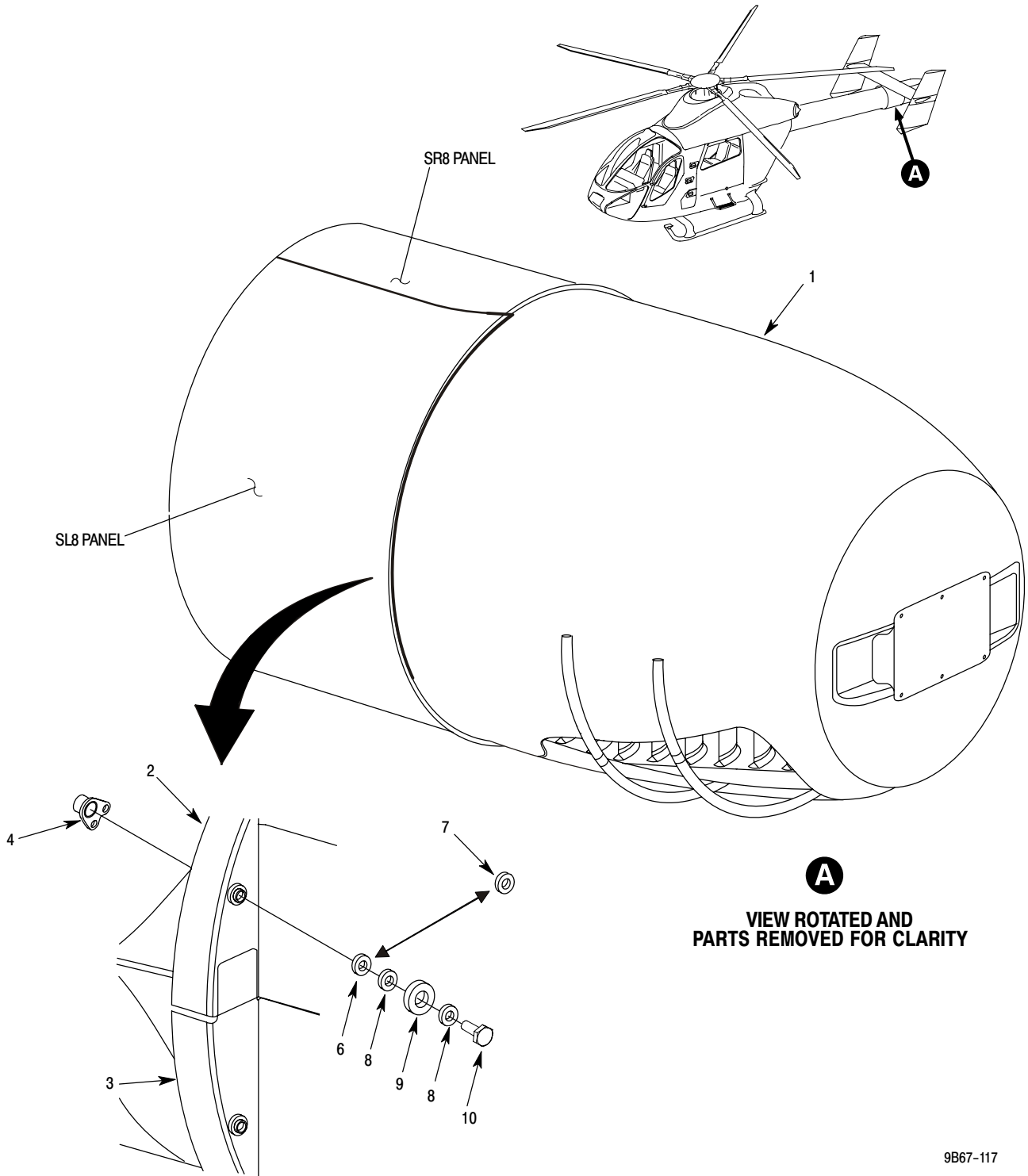
A. Preparation

- (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

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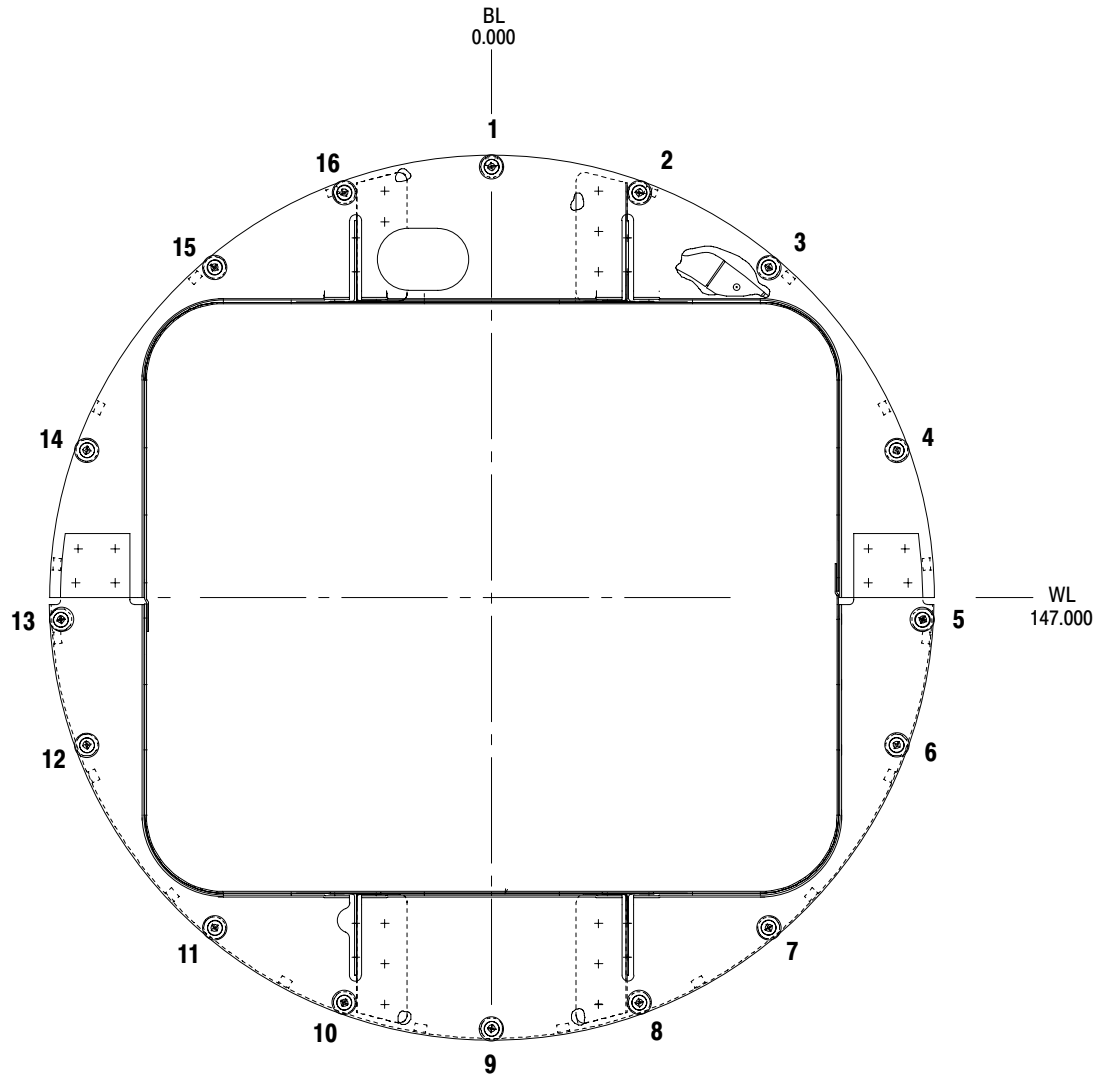


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Figure 1. Thruster Assembly

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Figure 2. Location of 16 Control Bearings

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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 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). Deleted.
 - 1). Deleted.

Resin, Epoxy (C504)



- (e). Put **1.00-inch (25.4 mm) diameter** patches of black carbon plain weave cloth on one side of the area to be repaired with epoxy resin (C504).
 - 1). Make sure both rivet holes and the bolt hole are covered.

Resin, Epoxy (C504)



- (f). Put **1.25-inch (31.8 mm) diameter** patches of **0.120-inch (30.5 mm) thick** fiberglass over the black carbon patches with epoxy resin (C504).
- (g). Put a layer of Peel Ply over the black carbon patches and fiberglass.

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- (h). Put release film over the black carbon patches, fiberglass, and Peel Ply.

Resin, Epoxy (C504)



- (i). Fill holes with epoxy resin (C504) mixed with milled carbon fibers (20 percent maximum by weight).

Resin, Epoxy (C504)



- (j). Put **1.00-inch (25.4 mm) diameter** patches of black carbon plain weave cloth on the other side of the repair area with epoxy resin (C504).

- 1). Make sure both rivet holes and the bolt hole are covered.

Resin, Epoxy (C504)



- (k). Put **1.25-inch (31.8 mm) diameter** patches of **0.120-inch (30.5 mm) thick** fiberglass over the black carbon patches with epoxy resin (C504).

- (l). Put a layer of Peel Ply over the black carbon patches and fiberglass.

- (m). Put release film over the black carbon patches, fiberglass, and Peel Ply.

- (n). Install small flat aluminum pieces on the release film on both sides with C-clamps (lightly tightened).

Solvent Cleaner (C429)



- (o). 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.

- (p). 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)**.

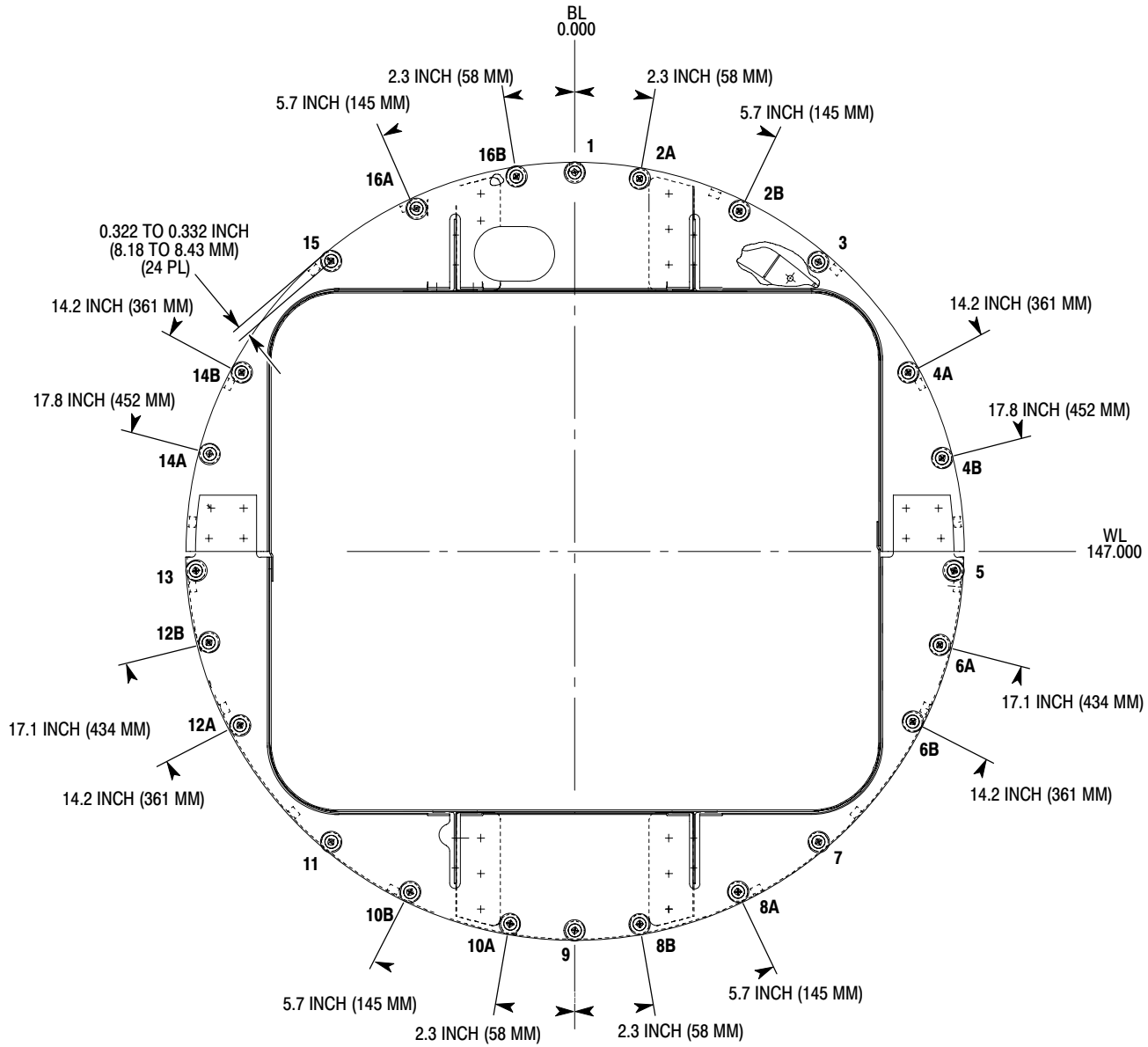
- (q). Deleted.

- (r). Deleted.

- (s). Deleted.

- (t). Deleted.

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Figure 3. Location of 24 Control Bearings

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- (u). Deleted.
- (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)



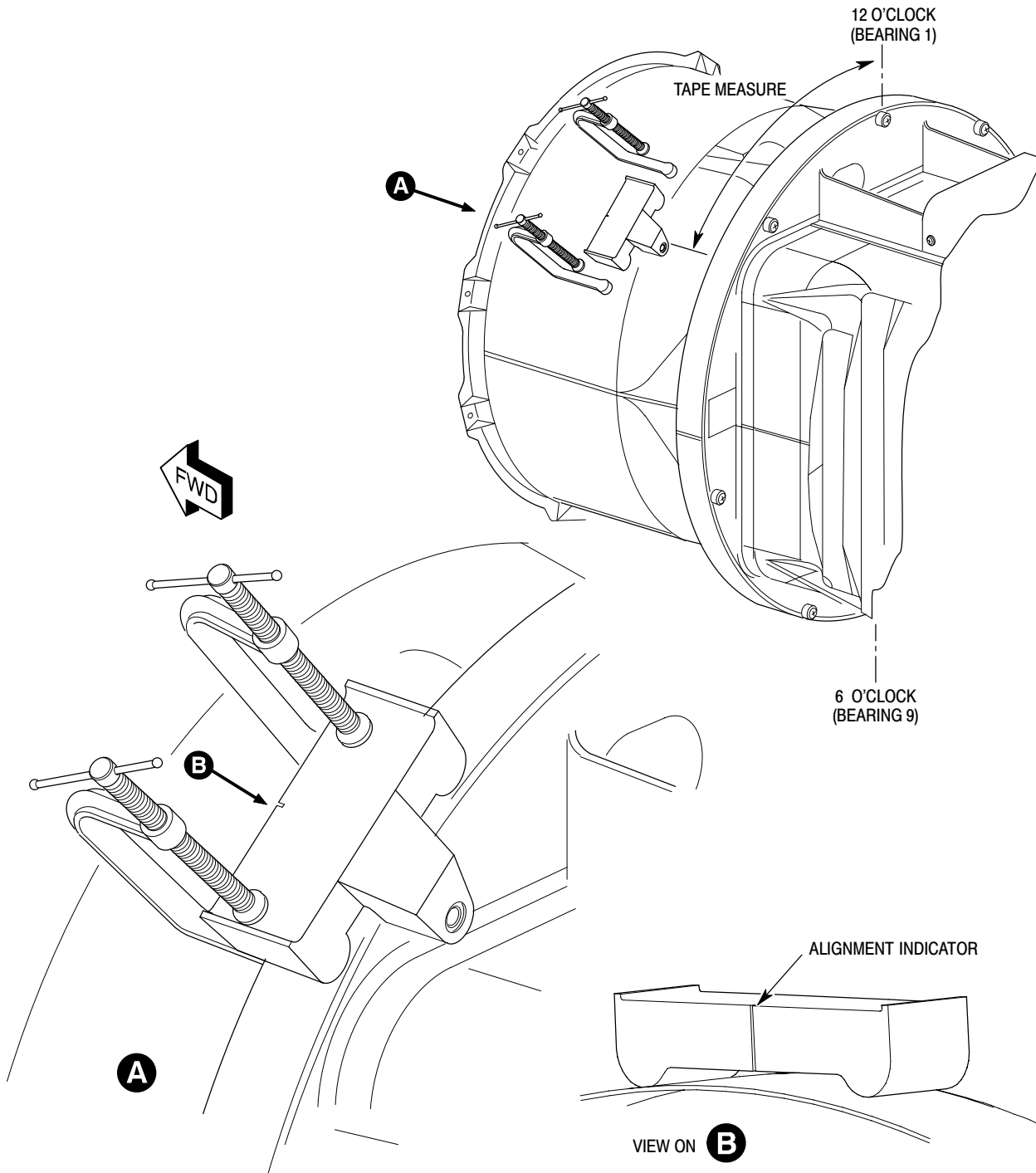
- (y). Wipe the surfaces with solvent cleaner (C429) until there is no evidence of residue on a clean cloth (C802).
 - 1). Let the area dry for 15 minutes minimum.
- (z). Deleted.
- (aa). Deleted.
- (4). Find new bolt holes at locations 2A, 2B, 4A, 4B, 6A, 6B, 8A, 8B, 10A, 10B, 12A, 12B, 14A, 14B, 16A, 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). Deburr the holes.
- (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). Deburr the holes.

Primer (C310)



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

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

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- (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.

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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.



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Bulletin Completed Record

TB900-034R1 - 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: _____
_____	Date: _____
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