

SERVICE BULLETIN

DATE: 9 APRIL 2010

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* Supersedes Service Bulletin SB900-116, dated 24 February 2010. Revised to change the inspection interval for the blade retention bolt force and torque check following the first flight after installation from 4 to 6 flight-hours to 8 to 10 flight-hours; and to revise the change of force or torque from not more than 10 percent to not more than ± 10 percent.

300-HOUR INSPECTION FOR THE MAIN ROTOR BLADE RETENTION BOLTS

1. PLANNING INFORMATION

A. Aircraft Affected:

All MD900 helicopters with 900R3100001-103 and 900R3100001-105 blade retention bolts installed.

B. Assembly/Components Affected By This Notice:

900R3100001-103 Blade Retention Bolts
900R3100001-105 Blade Retention Bolts

C. Reason:

This bulletin is issued to add a gap check of the main rotor blade retention bolts to the CSP-900RMM-2 Rotorcraft Maintenance Manual (RMM) - Servicing and Maintenance 300-hour inspection, and to reinforce the requirements for force validation and pre- and post-flight inspections currently in the RMM.

Failure to comply with this bulletin can cause increased vibration and failure of a bolt.

D. Description:

Procedures in this Bulletin give owners and operators information to do a gap check of the blade retention bolts used for the main rotor blade installation.

E. Time of Compliance:

Section 2.A.: Complete this check at the next 300-hour inspection and then during every 300-hour inspection thereafter.

Section 2.B.: Complete this check of the blade retention bolt force following the first flight after installation and then every 8 to 10 flight-hours until the change of force is not more than ± 10 percent of the initial installation force, but not less than the minimum force (**65 lbf / 29.48 kgf**).

Section 2.C.: Complete this check of the blade retention bolt torque following the first flight after installation and then every 8 to 10 flight-hours until the change of torque is not more than ± 10 percent of the initial installation torque, but not less than the minimum force (**350 in-lb / 39.5 Nm**).

Section 2.D.: Complete this check during every Daily Preflight Check.

F. FAA Approval:

The technical design aspects of this Bulletin are FAA Approved.

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G. Manpower:

N/A

H. Interchangeability:

None.

I. Points of Contact:

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

J. Material/Part Availability:

N/A

K. Warranty Policy:

N/A

L. Disposition of Parts Removed:

N/A

M. Tooling:

TOOLS AND EQUIPMENT	
Nomenclature (Item No.)	Source (Supplier No.)
Ground Power Unit, PN T11000-GPU-24 (T2002)	Tesla Industries Inc. (CAGE Code 0VWE2), 109 Centerpoint Boulevard, New Castle, DE 19720 (TS29) Phone: 302-324-8910
Push/Pull Spring Scale (50 to 150 lbf / 22.68 to 68.04 kgf)	Commercially Available

N. Weight and Balance:

N/A

O. Electrical Load Data:

N/A

P. Other Publications Affected:

CSP-900RFM206A-1 Rotorcraft Flight Manual

CSP-900RFM206E-1 Rotorcraft Flight Manual

CSP-900RFM207E-1 Rotorcraft Flight Manual

CSP-902RFM206E-1 Rotorcraft Flight Manual

CSP-902RFM207E-1 Rotorcraft Flight Manual

CSP-900RMM-2 Rotorcraft Maintenance Manual - Servicing and Maintenance

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Q. Reference Publications:

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

CSP-900RFM206A-1 Rotorcraft Flight Manual

CSP-900RFM206E-1 Rotorcraft Flight Manual

CSP-900RFM207E-1 Rotorcraft Flight Manual

CSP-902RFM206E-1 Rotorcraft Flight Manual

CSP-902RFM207E-1 Rotorcraft Flight Manual

CSP-900RMM-2 Rotorcraft Maintenance Manual - Servicing and Maintenance

CSP-900IPL-4 Illustrated Parts List

SB900-092 Main Rotor Blade Retention Bolt Inspection

SL900-063 Main Rotor Blade Retention Bolt Check

SL900-064 Main Rotor Blade Retention Bolt

2. ACCOMPLISHMENT INSTRUCTIONS

A. Gap Check of the Blade Retention Bolts (P/N 900R3100001-103 and 900R3100001-105)

Do this check at the next 300-hour inspection and then during every 300-hour inspection thereafter.

- (1). Visually examine blade retention bolts (1) for a gap between thrust washer (2, 4) and retainer (8, 9). (Ref. Figure 1 and Figure 2.)
 - (a). Make sure O-ring (7) is installed.
 - 1). Install missing O-rings (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation).
 - (b). If there is a gap go to Step (2).
 - (c). If there is no gap, remove blade retention bolt (1) (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation).
 - 1). Visually examine the assembled bolt for damage.
 - 2). Re-install an undamaged bolt (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation).
- (2). Measure the gap at two locations, 180 degrees apart, with a feeler gage.
 - (a). If the gap is more than **0.100 inch (2.54 mm)** remove blade retention bolt (1) (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation).
 - 1). Visually examine the assembled bolt for damage.
 - 2). Re-install an undamaged bolt (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation).
- (3). Record the results in the logbook.

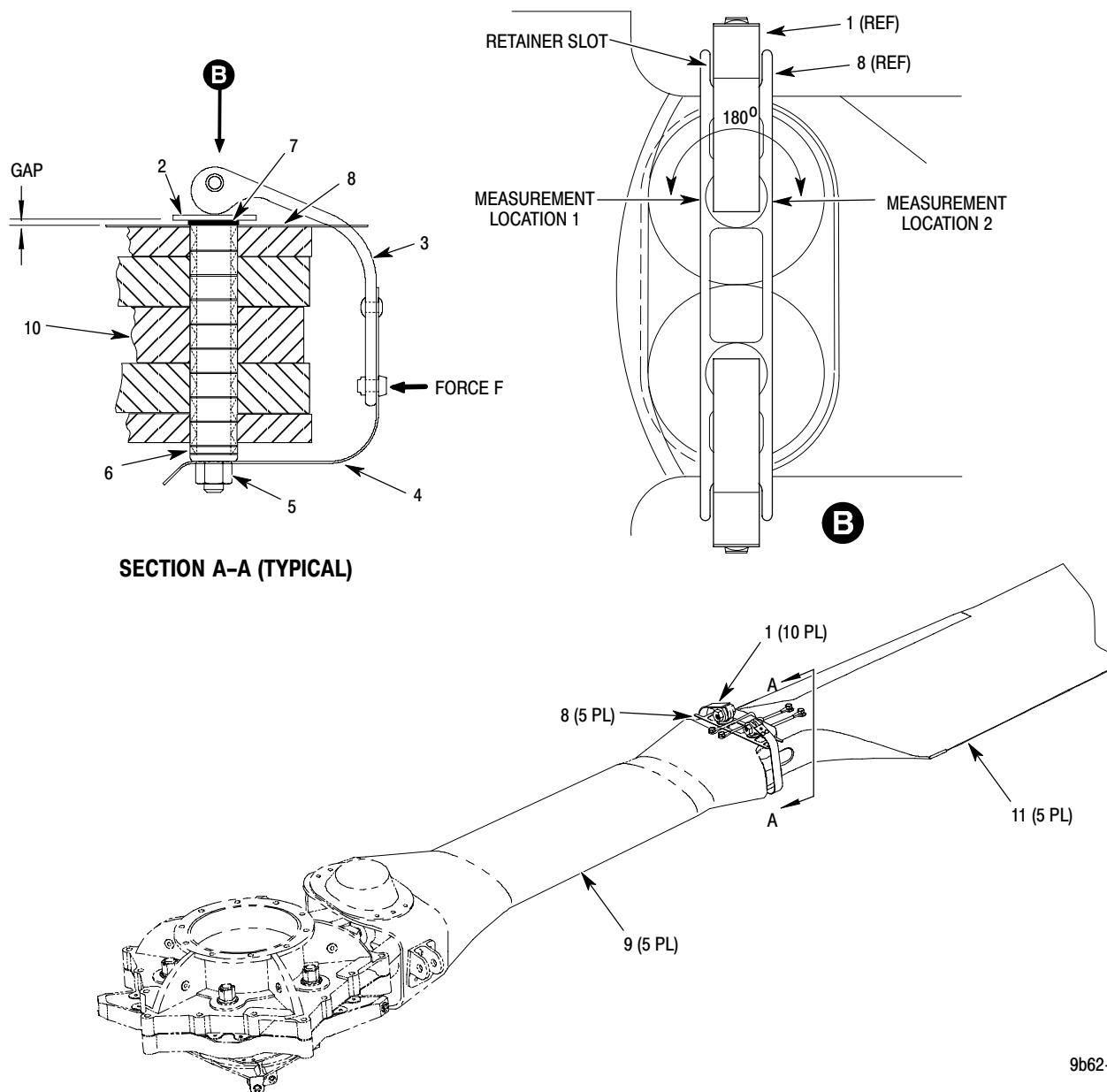
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- 1. BLADE RETENTION BOLT
- 2. THRUST WASHER
- 3. CAM HANDLE
- 4. SPRING CLIP
- 5. HEX NUT
- 6. LOCK RING
- 7. O-RING
- 8. RETAINER
- 9. PITCHCASE
- 10. FLEXBEAM
- 11. MAIN ROTOR BLADE

Figure 1. Gap and Force Check of the Blade Retention Bolts

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B. Force Check of the Blade Retention Bolts (PN 900R3100001-103)

Do this check of the blade retention bolt force following the first flight after installation and then every 8 to 10 flight-hours until the change of force is not more than ± 10 percent of the initial installation force, but not less than the minimum force (**65 lbf / 29.48 kgf**) (ref. CSP-900RMM-2, Section 05-20-10, Table 203, Special Inspection - After Component Installation, Main Rotor: Blade Retention Bolt Torque Check).

- (1). Release the collective friction to remove the preload of flexbeams (ref. CSP-900RMM-2, 67-10-00, Rotor Flight Controls Removal/Installation).
 - (a). Apply electrical power with ground power unit (T2002) (ref. CSP-900RMM-3, 96-00-00, Electrical Power Maintenance Practices, Helicopter Electrical Power).
 - (b). Push the collective friction release switch forward to release the collective friction.
 - (c). Raise the pilot collective stick sufficiently to unload the collective controls (approximately 15 to 30 percent indication on the IIDS).
 - (d). Remove electrical power (ref. CSP-900RMM-3, 96-00-00, Electrical Power Maintenance Practices, Helicopter Electrical Power).
- (2). Support main rotor blade (11) in line with the angle of pitchcase (9). (Ref. Figure 1).



Do not use the spring clip as a lever to remove the blade retention bolts. This is an incorrect use of the spring clip. The spring clip can loose shape and tension if bent too much. Move the tab of the spring clip until there is sufficient space to disengage from the hex nut. Use a socket to hold and loosen the hex nut, as necessary.

- (3). Disengage spring clip (4) from hex nut (5).



Do not tap the bottom of the blade retention bolts. This will expand the bushings of the bolt and lock the bolt in position.

- (4). Lightly tap the top of blade retention bolt (1) with a mallet to loosen the bushings.

NOTE: If necessary, make small movements of the main rotor blade to help loosen the bushings.

- (5). Do a check of Force F with a push/pull spring scale.

NOTE: Force F is when spring clip (4) has pushed across the bolt end, just before hex nut (5) is engaged.

- (a). If Force F has changed by more than ± 10 percent of the recorded final installation force, turn hex nut (5) until the Force F required to close cam handle (3) is **65 to 115 lbf (29.48 to 52.16 kgf)**.
- (b). If necessary, turn hex nut (5), in the tightening direction only, to align the nut with the hex-shaped hole of spring clip (4) without a recheck of Force F.

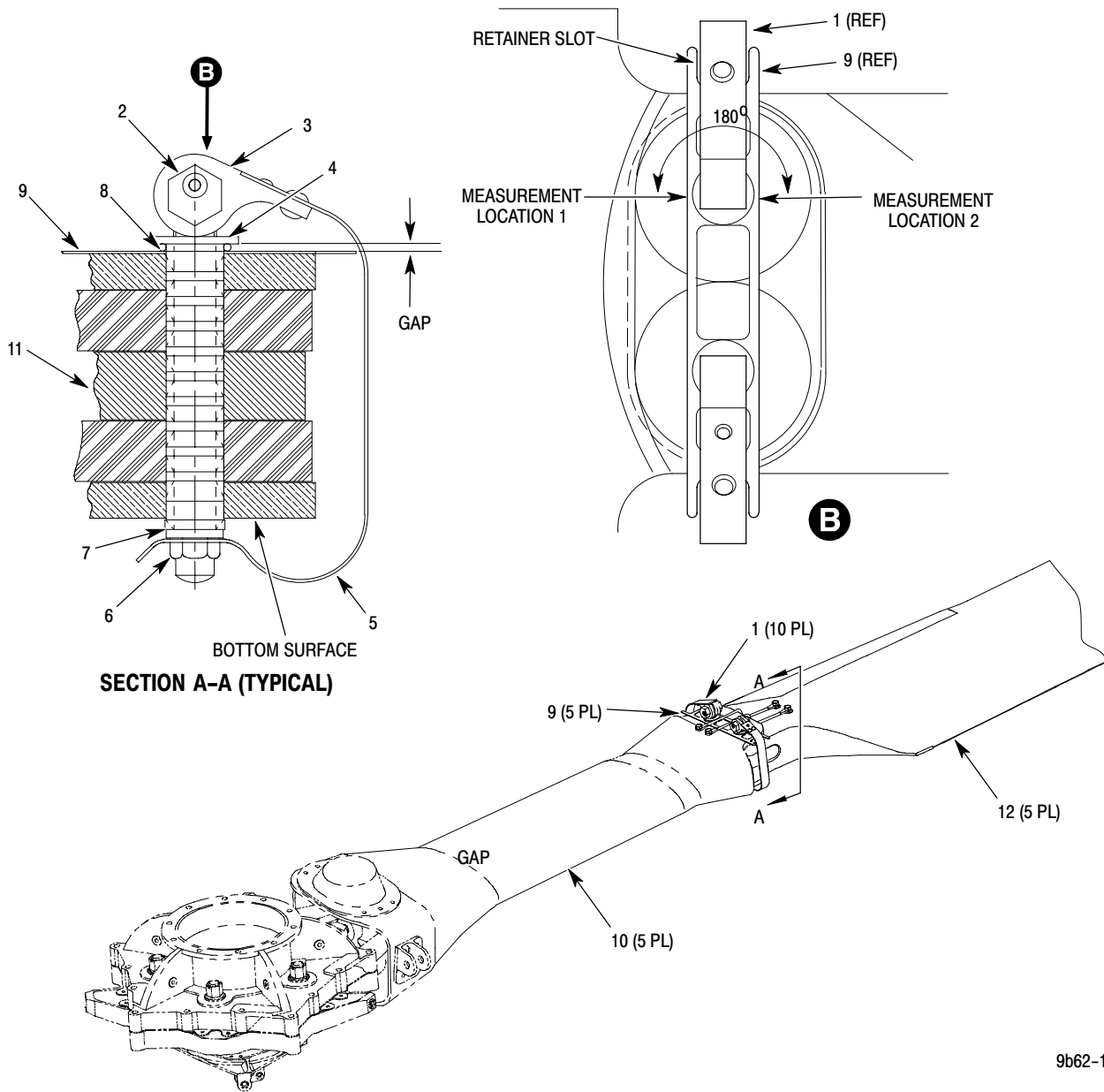
NOTE: Listen for a “click” or “snap” when the spring clip moves over hex nut (5).

- (6). Move and center spring clip (4) over hex nut (5).
- (7). Make sure lock ring (6) is expanded outside the bottom surface of pitchcase (9).
- (8). Make sure the hex-shaped hole of spring clip (4) is centered over hex nut (5).

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Figure 2. Gap and Torque Check of the Blade Retention Bolts

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Legend (Ref. Figure 2)

1. BLADE RETENTION BOLT
2. TORQUE NUT
3. CAM HANDLE
4. THRUST WASHER
5. SPRING CLIP
6. ADJUSTMENT NUT
7. LOCK RING
8. O-RING
9. RETAINER
10. PITCHCASE
11. FLEXBEAM
12. MAIN ROTOR BLADE

(9). Make sure cam handle (3) is centered in the slot of retainer (8).

(10). Make sure there is a gap between thrust washer (2) and retainer (8) and the gap measurement is not greater than **0.100 inch (2.54mm)**

(11). Repeat procedure for the remaining 9 blade retention bolts (1).

C. Torque Check of the Blade Retention Bolts (PN 900R3100001-105)

Do this check of the blade retention bolt torque following the first flight after installation and then every 8 to 10 flight-hours until the change of torque is not more than ± 10 percent of the initial installation torque, but not less than the minimum torque (**350 in-lb / 39.5 Nm**) (ref. CSP-900RMM-2, Section 05-20-10, Table 203, Special Inspection - After Component Installation, Main Rotor: Blade Retention Bolt Torque Check).

- (1). Release the collective friction to remove the preload of the flexbeams (ref. CSP-900RMM-2, 67-10-00, Rotor Flight Controls Removal/Installation).
 - (a). Apply electrical power with ground power unit (T2002) (ref. CSP-900RMM-3, 96-00-00, Electrical Power Maintenance Practices, Helicopter Electrical Power).
 - (b). Push the collective friction release switch forward to release the collective friction.
 - (c). Raise the pilot collective stick sufficiently to unload the collective controls (approximately 15 to 30 percent indication on the IIDS).
 - (d). Remove electrical power (ref. CSP-900RMM-3, 96-00-00, Electrical Power Maintenance Practices, Helicopter Electrical Power).
- (2). Support main rotor blade (12) in line with the angle of pitchcase (9). (Ref. Figure 2).



Do not use the spring clip as a lever to remove the blade retention bolts. This is an incorrect use of the spring clip. The spring clip can lose shape and tension if bent too much. Move the tab of the spring clip until there is sufficient space to disengage from the hex nut. Use a socket to hold and loosen the hex nut, as necessary.

- (3). Disengage spring clip (5) from adjustment nut (6).



Do not tap the bottom of the blade retention bolts. This will expand the bushings of the bolt and lock the bolt in position.

- (4). Lightly tap the top of blade retention bolt (1) with a mallet to loosen the bushings.

NOTE: If necessary, make small movements of the main rotor blade to help loosen the bushings.

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(5). Do a torque check of torque nut (2).

(a). If the torque has changed by more than ± 10 percent of the recorded final installation torque (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation), turn torque nut (2) until the torque required to close spring clip (5) is **350 to 450 in-lb (39.5 to 50.8 Nm)**.

(b). If necessary, turn adjustment nut (6), in the tightening direction only, to align the nut with the hex-shaped hole of spring clip (5) without a recheck of the torque.

(6). Move and center spring clip (5) over adjustment nut (6).

NOTE: Listen for a “click” or “snap” when the spring clip moves over the adjustment nut.

(7). Make sure lock ring (7) expanded outside the bottom surface of pitchcase (10).

(8). Make sure the hex-shaped hole of spring clip (5) is centered over hex nut (5).

(9). Make sure spring clip (5) is centered in the slot of retainer (9).

(10). Make sure the gap between thrust washer (4) and retainer (9) is not more than **0.100 inch (2.54 mm)**.

(11). Repeat this procedure for the remaining 9 blade retention bolts (1).

D. Daily Preflight Check (P/N 900R3100001-103 and 900R3100001-105)

Do this check during every Daily Preflight Check.

(1). Examine the position of blade retention bolts for up or down movement (ref. Figure 1).

(a). Before further flight, if there are bolts that moved up or down, have a mechanic remove and examine these blade retention bolts (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation).

(2). Visually examine blade retention bolts for a gap between the thrust washer and the retainer.

(a). Before further flight, if there are bolts that have no gap between the thrust washer and retainer, have a mechanic remove and examine these blade retention bolts (ref. CSP-900RMM-2, 62-10-00, Main Rotor Blade Removal/Installation).



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Bulletin Completed Record

SB900-116R1 – 300-HOUR INSPECTION FOR THE MAIN ROTOR BLADE RETENTION BOLTS

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 Service 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: _____

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