



A Textron Company

ALERT SERVICE BULLETIN

429-19-43

26 February 2019

Revision A, 2 April 2019

Revision B, 12 May 2022

MODEL AFFECTED: 429

SUBJECT: MAIN ROTOR MAST ASSEMBLY 429-040-040-105
LOWER SPLINE INSPECTION, INTRODUCTION OF

HELICOPTERS AFFECTED: Serial numbers 57001 and subsequent.

COMPLIANCE: Upon reaching 1600 flight hours total time since new (TTSN) on affected mast assemblies, and every 1600 flight hours thereafter.

For main rotor mast assemblies that have exceeded 1600 flight hours TTSN, the inspection shall be accomplished within the next 200 flight hours from the publish date of this bulletin.

DESCRIPTION:

Bell has received reports of pitting damage on the lower splines of the mast pole assembly 429-040-040-105 as used in the 429-040-011-105 main rotor mast assembly. This Alert Service Bulletin introduces a repetitive inspection of the mast assembly lower drive splines, as well as the inner splines, of the splined shaft 429-040-301-101. The splined shaft is to be inspected concurrently with the mast assembly. Mast assemblies and splined shafts with spline tooth pitting damage beyond the limits introduced in this bulletin shall be removed from service.

Revision A of this ASB clarifies the part number applicability and adds an additional figure to improve component identification. Additionally, this revision introduces clarified width damage criteria. Applicability of this bulletin to any spare part shall be determined prior to its installation on an affected helicopter.

Revision B of this ASB expands the mast damage limits in Figure 2 to match those published in BHT-429-MM, DMC-429-A-63-10-00-00A-310A-A, Figure 3. References to the customer property return process Information Letter GEN-04-98 have been revised to refer to the latest Information Letter GEN-21-149. Finally, the BHT-429-CMM has been removed from the **PUBLICATIONS AFFECTED** section because that manual was revised with the latest damage limits for the mast and splined shaft. The Maintenance Manual is still listed in that section because a terminating action has yet to be determined.

APPROVAL:

The engineering design aspects of this bulletin are Transport Canada Civil Aviation (TCCA) approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering
INTERMEDIATE Tel: 450-437-2077 / 1-800-463-3036 / productsupport@bellflight.com

MANPOWER:

Approximately 12 man-hours are required to complete this bulletin. This estimate is based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

There is no warranty credit applicable for parts or labor associated with this bulletin.

MATERIAL:

Required Material:

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty (Note)</u>
AS3209-008	Packing	2
AS3209-109	Packing	1
AS3209-265	Packing	2
AS3209-266	Packing	1

Consumable Material:

The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty (Note)</u>	<u>Reference *</u>
2400-00020-00	Lubricating Oil	1 QT (1)	C-030
2010-10345-01	Sealant	1 PT (1)	C-308
2010-00113-00	Sealant	1 QT (1)	C-328

* C-XXX numbers refer to the consumables list in the BHT-ALL-SPM, Standard Practices Manual

NOTE 1: The quantity indicated is the format the product is delivered in. Actual quantity required to accomplish the instructions in this bulletin may be less.

SPECIAL TOOLS:

T102137-111 Lifting Tool
 429-240-005-101 Transmission Lift Cover Assembly

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-429-MM, Maintenance Manual
 GEN-21-149, General Information Letter

PUBLICATIONS AFFECTED:

BHT-429-MM Maintenance Manual

ACCOMPLISHMENT INSTRUCTIONS:

1. Prepare the helicopter for maintenance.
2. Remove the main rotor mast assembly (1, Figure 1) from the transmission assembly (4) (DMC-429-A-63-10-00-00A-520A-A).
3. Remove the debris pan (2) from the transmission assembly (4).
4. Remove splined adapter (3) from the transmission assembly (4).

-NOTE-

429-040-011-101 mast assemblies that have been retrofitted with the 429-040-040-105 mast pole assembly are equivalent to the 429-040-011-105 mast assembly.

Main rotor mast assemblies 429-040-011-105 must be sent through Bell Customer Property Return (CPR) for mast pole assembly 429-040-040-105 replacement. Refer to General Information Letter GEN-21-149.

The mast pole assembly 429-040-040-105S is a synthetic part number that includes mast pole assembly 429-040-040-105 and wear sleeve 429-340-412-101.

5. Inspect the main rotor mast assembly (1), paying particular attention to the lower drive splines. Refer to Figure 2 for damage limits.
 - a. Enter the results of the inspection in Table 1.
 - b. Masts with drive spline damage beyond the limits in Figure 2 must be replaced with a serviceable 429-040-040-105S mast pole assembly.
6. Inspect the splined shaft (3) paying particular attention to the inner splines. Refer to Figure 3 for damage limits.
 - a. Enter the results of the inspection in Table 1.
 - b. Splined adapters with inner spline damage beyond the allowable limits in Figure 3 must be replaced with a serviceable 429-040-301-101 splined adapter.
7. Ensure that the splined shaft support (5) is in place prior to installing the splined shaft (3).
8. Install a serviceable splined shaft (3) by applying a film of lubricating oil (C-030) on the outer splines and sliding the splined shaft (3) into the main transmission bull gear splines.
9. Install a serviceable main rotor mast assembly (1) in the transmission assembly (4) (DMC-429-A-63-10-00-00A-720A-A).

10. Submit the inspection results that were logged in Table 1 to Product Support Engineering at productsupport@bellflight.com. **Make sure that the following is in the subject line of the e-mail:**
 - a. Service directive number: ASB 429-19-43
 - b. Helicopter serial number
 - c. Operator name
11. Make an entry in the helicopter logbook and historical service records indicating compliance with this Alert Service Bulletin.

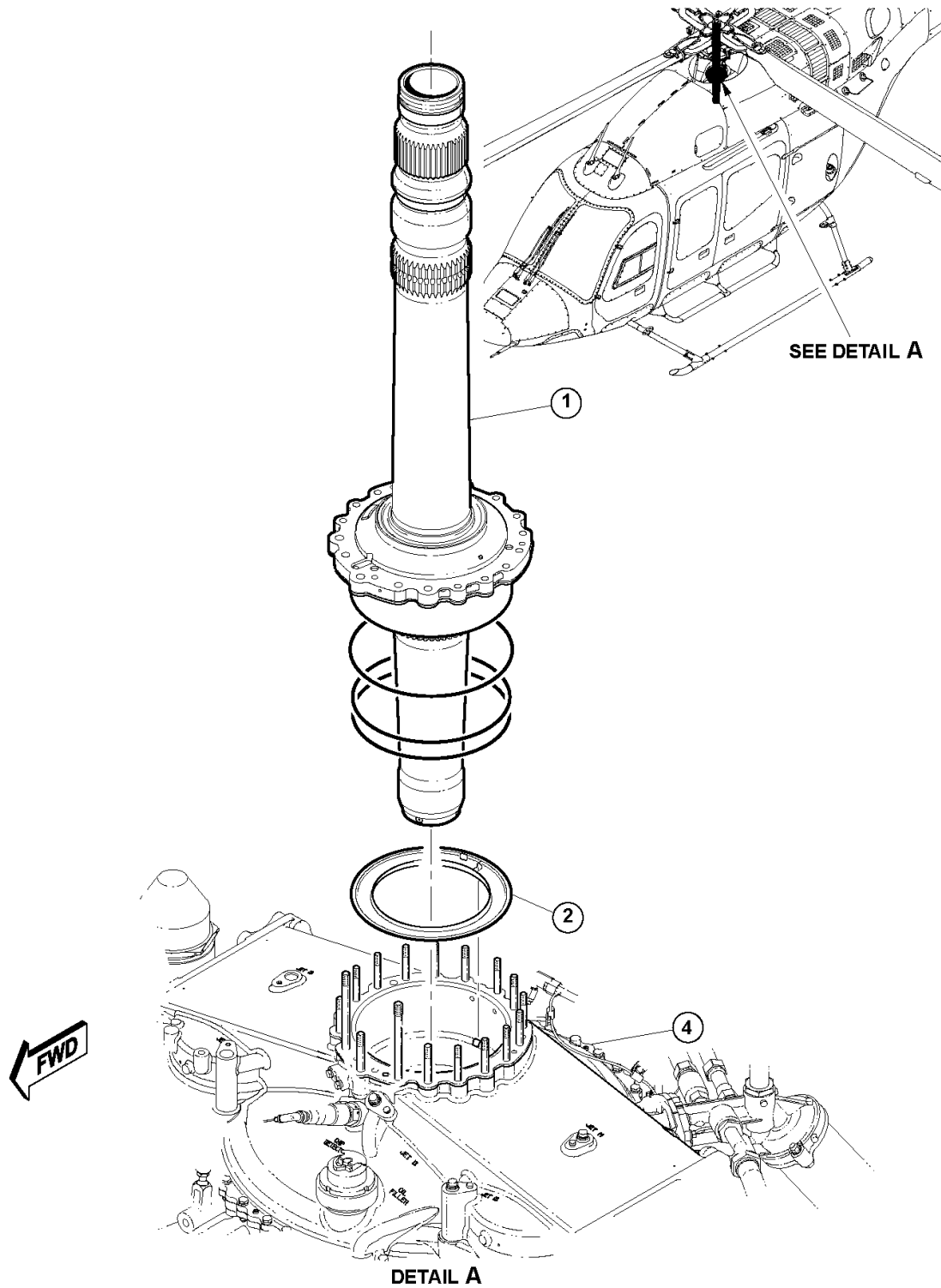
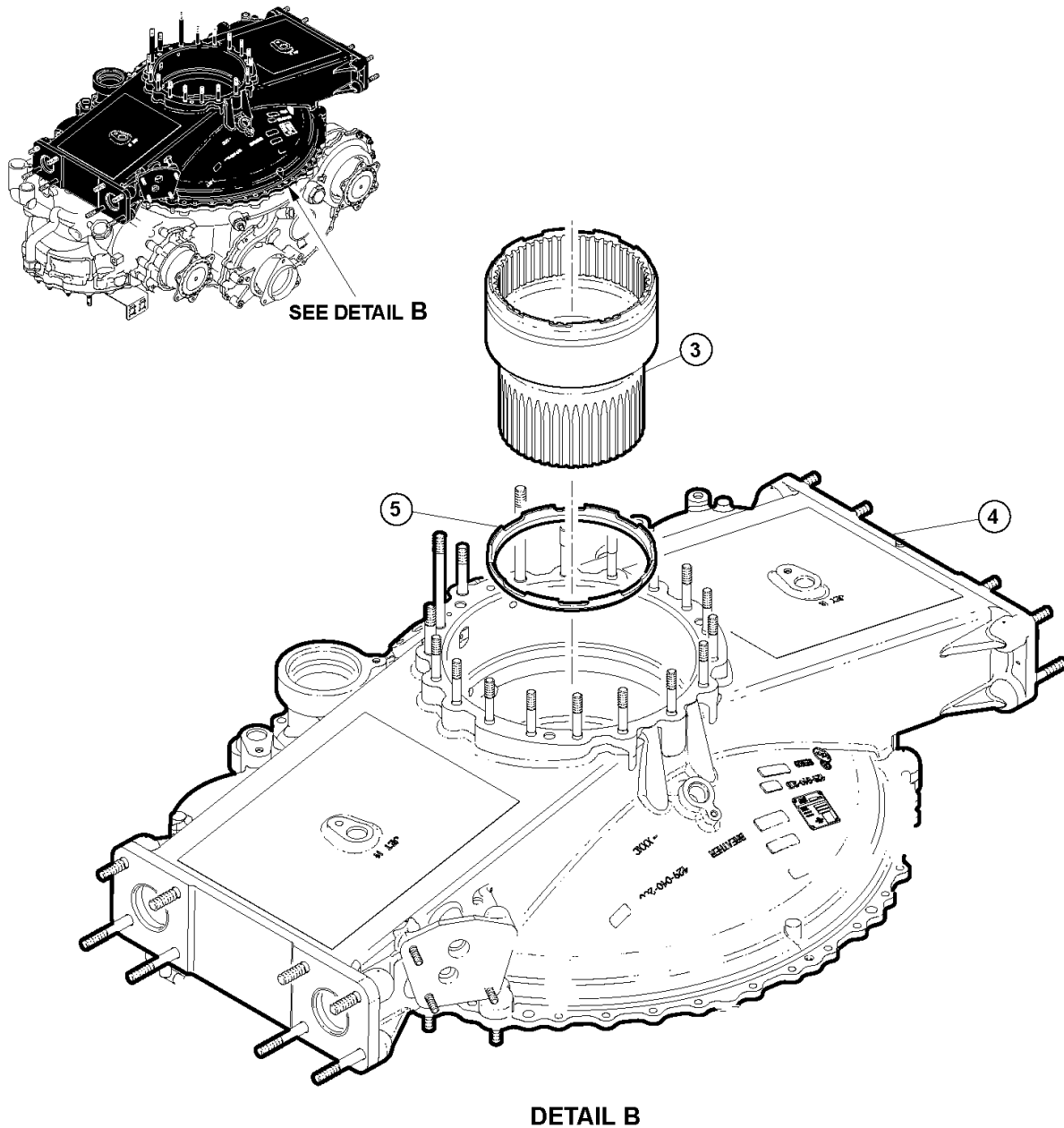
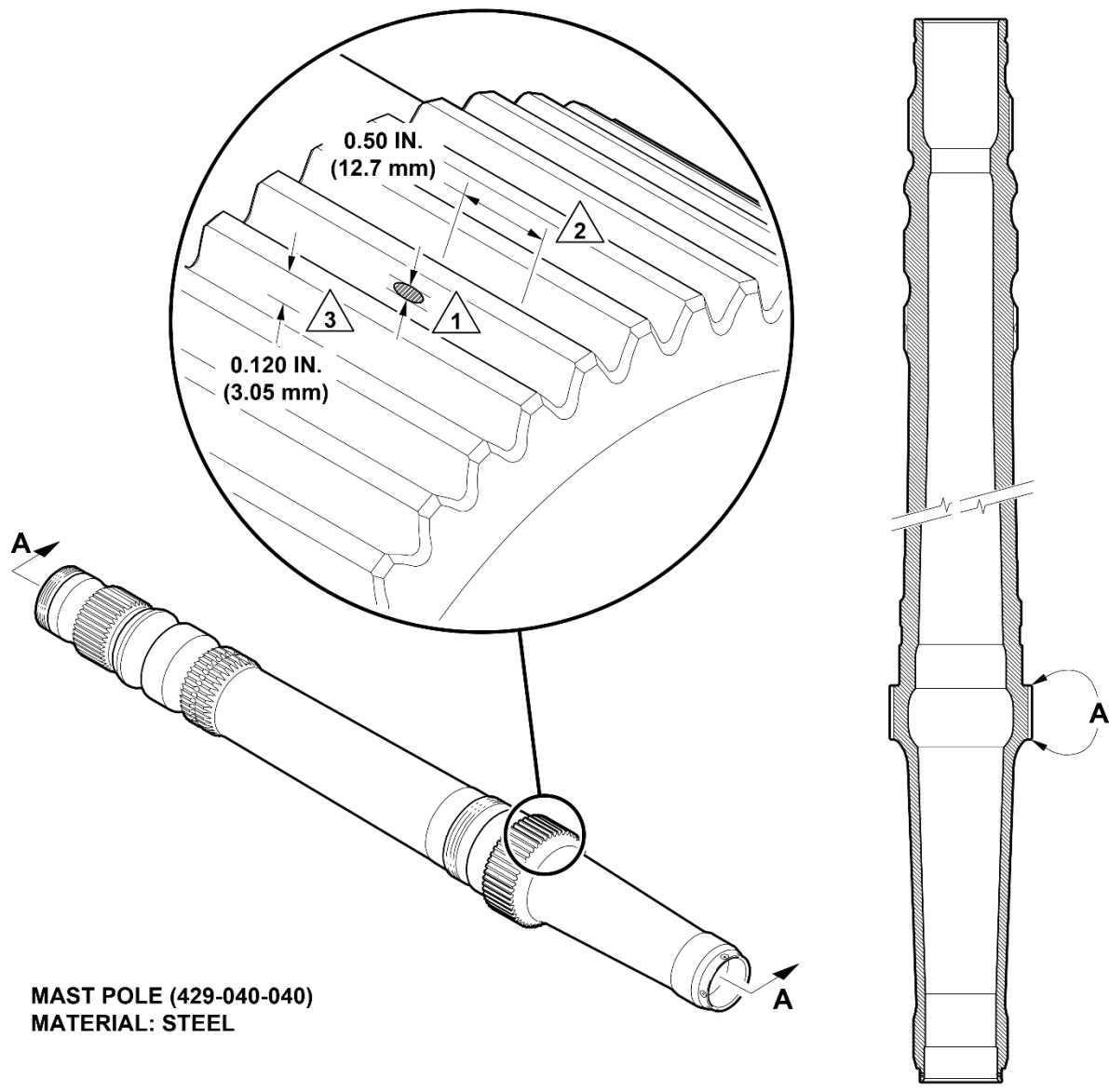


Figure 1 - Mast Assembly and Splined Shaft Removal and Installation (Page 1 of 2)



1. Mast assembly
2. Debris Pan
3. Splined Shaft
4. Transmission Assembly
5. Splined Shaft Support

Figure 1 - Mast Assembly and Splined Shaft Removal and Installation (Page 2 of 2)



MAST POLE (429-040-040)
MATERIAL: STEEL

SECTION A-A

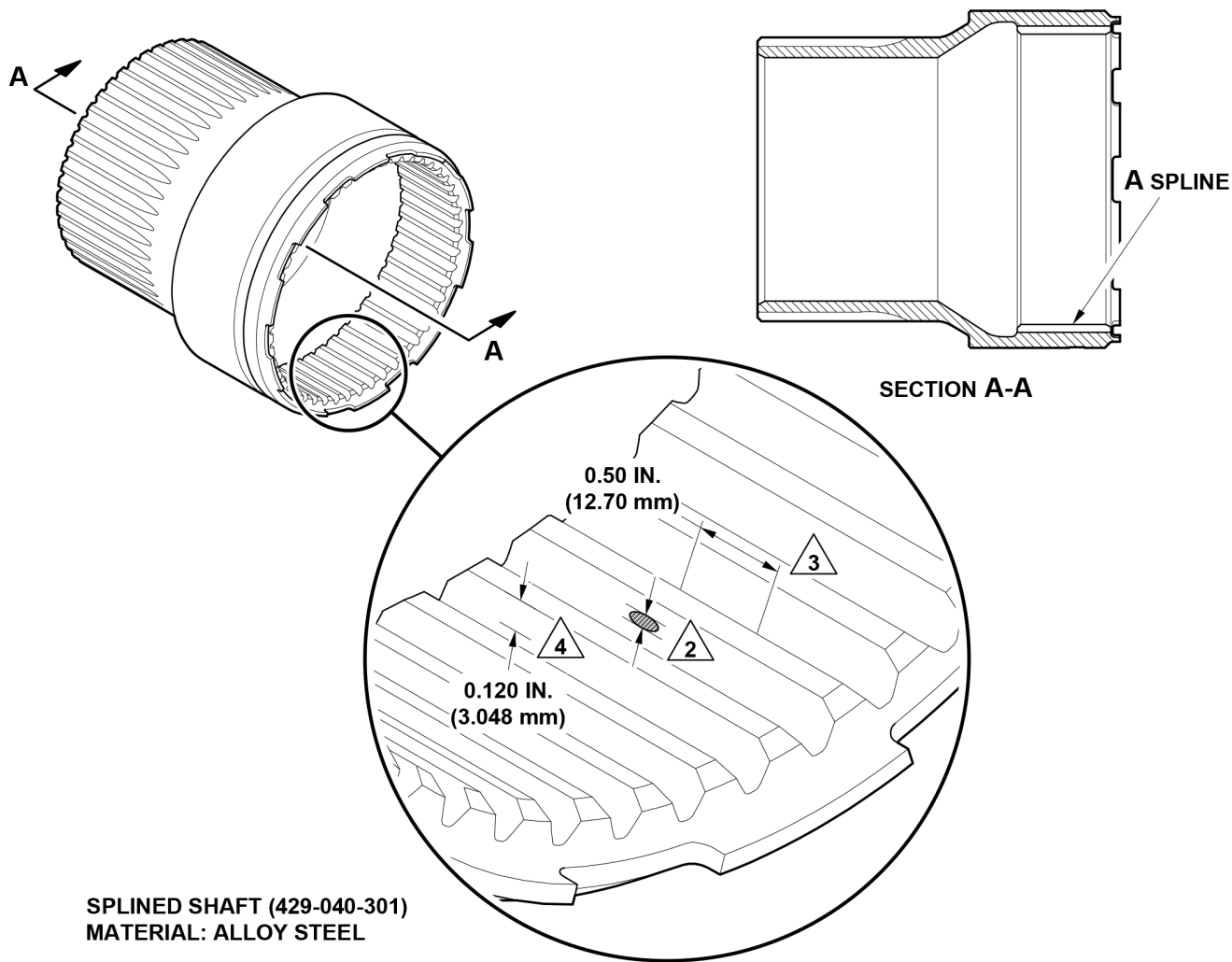
NO.	REF LTR	CHARACTERISTIC	INSPECTION METHOD	LIMIT
1.	A	Mechanical damage	Visual/ measure	Pitting or missing material on the tooth face up to 0.010 inch (0.25 mm) deep is allowable as long as any single pit found is no wider than 0.050 inch (1.27 mm) when measured perpendicularly to the tooth.

NOTES

- 1 The width of a single pit is to be measured perpendicular to the tooth length.
- 2 Within any 0.50 inch (12.7 mm) length of the tooth, the pits shall not exceed 25% of the area of the tooth face. It is acceptable for up to 5 teeth to have pits up to 40% of the area over a 0.50 inch (12.7 mm) length.
- 3 Pits shall not extend below 0.120 inch (3.05 mm) from the top of the tooth.

Figure 2 – Mast Pole Lower Drive Spline Mechanical Damage Limits

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NO.	REF LTR	CHARACTERISTIC	INSPECTION METHOD	LIMIT
1.	A	Mechanical damage	Visual/ measure	Pitting or missing material on the tooth face up to 0.010 inch (0.254 mm) deep is allowable as long as any single pit found is no wider than 0.050 inch (1.270 mm) when measured perpendicularly to the tooth length. △1

NOTES

- △1 It is acceptable to have the silver plate worn away in the spline tooth contact pattern area. Flaking of silver plating at the edge of the tooth contact pattern is a normal and acceptable condition.
- △2 The width of a single pit is to be measured perpendicular to the tooth length.
- △3 Within any 0.50 inch (12.70 mm) length of the tooth, the pits shall not exceed 25% of the area of the tooth face.
- △4 Pits shall not extend below 0.120 inch (3.048 mm) from the top of the tooth.

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Figure 3 – Splined Shaft Mechanical Damage Limits

Table 1 – Inspection Results

Helicopter Information		Splined Shaft Information		Mast Information	
Serial Number		Serial Number		Serial Number	
Registration		Date Installed		Date Installed	
Total Time Since New		Time Since New		Time Since New	

Mast Inspection Results			
Number of Splines Teeth with the Pitting Damage	Depth of Pitting Damage on the Worst Case Spline Tooth	Width of Pitting Damage on the Worst Case Spline Tooth	% of the Area that is Pitted on the Worst Case 0.5 Inch Long Tooth Area

Splined Shaft Inspection Results			
Number of Splines Teeth with the Pitting Damage	Depth of Pitting Damage on the Worst Case Spline Tooth	Width of Pitting Damage on the Worst Case Spline Tooth	% of the Area that is Pitted on the Worst Case 0.5 Inch Long Tooth Area

Note: Please provide a photo of the spline tooth with the worst pitting damage when submitting Table 1 to Bell Product Support Engineering.