

ALERT SERVICE BULLETIN
Bell Helicopter **TEXTRON**

A Subsidiary of Textron Inc.

NO. 427-07-19

DATE OCT 3, 2007

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DATE

REV

MODEL AFFECTED: 427

SUBJECT: TRANSMISSION CASE SET P/N 427-040-200-111
SURFACE FINISH, IMPROVEMENT OF.

HELICOPTERS AFFECTED: Model 427 helicopters serial number 56001 through 56044 and 58001 and 58002 equipped with main rotor transmission case set P/N 427-040-200-111.

[Model 427 helicopters serial numbers 56045 and subsequent and 58003 and subsequent are equipped with new transmission case set P/N 427-040-200-113 and are not affected by this bulletin.]

COMPLIANCE: Within the next 50 flight hours after receipt of this bulletin but no later than January 31, 2008.

DESCRIPTION:

Bell helicopter has received reports of main transmission case cracked at the left hand quill port.

The transmission case set P/N 427-040-200-111 lower case was manufactured from a 427-040-202-103C casting. These transmission main cases are at risk of developing a fatigue crack in the radii transition area of the case between the left input and portion of the lower case.

This bulletin defines a procedure for the polishing of the case in the radii transition area to improve the "as cast" surface finish and increase the fatigue strength to reduce the potential for cracking in service. The following procedure is for the polishing of the transmission case to be performed on the helicopter.

Bell Helicopter has introduced at helicopter serial number 56045 a new case set P/N 427-040-200-113 manufactured using P/N 427-040-202-105C casting that is reinforced in specific areas. No polishing is required on these cases.

APPROVAL:

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

MANPOWER:

Approximately 6 man-hours are required to complete this bulletin. Man-hours are based on hands-on time, and may vary with personnel and facilities available.

WARRANTY:

Owners / Operators of Bell 427 Helicopters who comply with the instructions in this Bulletin will be eligible to receive a credit for the re-work Kit outlined under the required material section. There will also be \$480.00 USD allowed to cover the labor portion of this bulletin.

To receive this credit:

- Purchase the Kit part number CA427-07-19 from a BHT supply source.
- Comply with the instructions contained in this Bulletin no later than the applicable hours in the “compliance section” of this ASB, or before January 31, 2008.
- Submit an MMIR to the Bell Warranty Department for the kit and the \$480.00 USD for labor.

MATERIAL:

Materials including consumables and special tools for this bulletin can be acquired as a kit using P/N CA427-07-19 and consist of the following items:

Required Material:

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

<u>Part Number</u>	<u>Nomenclature</u>	<u>Quantity</u>
M83248/1-236	packing	1(note A)
M83248/1-024	packing	1(note A)

Note A: Included in kit P/N CA427-07-19

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 Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Quantity</u>	<u>Reference</u>
MIL-PRF-85285, TY1	Polyurethane Paint 4 Oz kit	1(note A)	
MIL-PRF-2337, TYICLC	Primer Epoxy 1 oz kit	1(note A)	
180 Grit Silicone	180 Grit Cloth 9X11 sheet	1(note A)	
280 Grit Silicone	280 Grit Cloth 9X11 sheet	1(note A)	
706454	Cylindrical Cartridge Roll	1(note A)	
A-A-55827 1.3 oz	Chromium Trioxide	1(note A,B)	
Calcium Sulfate 1.0	Calcium Sulfate	1(note A,B)	
Scotchbrite TY-A	Scotchbrite TY-A 4 inches	1(note A)	C-407
TT-N-95, TYII 1GAL	Aliphatic Naphtha	1(Note C)	C-305

Note A: Included in kit P/N CA427-07-19

Note B: DOW19 (MIL-M-3171C) is a corrosion preventive chemical treatment for magnesium surfaces. BHT does not spare this product. This product can be locally made by mixing Chromium Trioxide and Calcium Sulfate included in kit P/N CA427-07-19 and water. Refer to the Corrosion Control Guide CSSD-PSE-87-001, Table C-1, Item B-2 for details.

Note C: Toluene (C-306) or MEK (C-309) may be used as a substitute to Aliphatic Naphtha (C-305).

SPECIAL TOOLS:

<u>Nomenclature</u>	<u>Part Number</u>	<u>Quantity</u>
• Dremel rotary tool or equivalent high speed rotary tool	3EB98	1(note A)
• Spiral Arbor 1/8 inch pilot	M-5	1(note A)

Note A: Included in kit P/N CA427-07-19

WEIGHT AND BALANCE:

Not Affected

ELECTRICAL LOAD DATA:

Not affected

REFERENCES:

BHT-427-IPB Illustrated Parts Breakdown

BHT-427-MM Maintenance Manual

BHT-ALL-SPM

CSSD-PSE-87-001

PUBLICATIONS AFFECTED:

None affected

ACCOMPLISHMENT INSTRUCTIONS:

1. Prepare the helicopter for maintenance.
2. Insure all power is removed from helicopter by disconnecting the battery and removing the external power. Refer to the BHT-427-MM, chapter 96.
3. For access purposes, remove the transmission oil filter housing P/N 406-040-060-105. Position housing with filter in plastic bag to prevent contamination. Refer to the BHT-427-MM, chapter 63.
4. Refer to figure 1 to identify area to be polished.
5. Protect the transmission number one engine input seal, outer race, clutch area and input driveshaft from sanding debris using tape and/or plastic bag and/or with cloth adjacent to area being sanded.
6. Disconnect wiring harness from P/N 407-375-017-101 monopole sensor, P/N MS28034-3 temp bulb, P/N 222-375-077-121 oil pressure transducer, and P/N 901-375-910-101 oil temp switch. Refer to the BHT-427-MM, chapter 63 and 96.
7. Wrap all connectors and sensor in plastic bag to prevent contamination.
8. Remove P/N 427-040-669-101 tube assy and cap the fitting at the breather assy.

CAUTION

Remove minimum material during sanding and polishing procedures. Avoid undercutting case walls.

-NOTE-

Because of the limited access the Dremel rotary tool will mostly be utilized for the top radii transition area. Additional hand sanding and polishing will be required for the top and bottom radii transition area.

9. Using the provided Dremel rotary tool P/N 3EB98 with arbor P/N M-5 and Cylindrical Cartridge Roll P/N 706454. Sand the radii transition area identified in figure 1 to improve surface finish and increase fillet radius. Remove minimum material needed to remove any pits in the radii area and to blend with adjacent cast surfaces. Refer to figure 2 and 3 for pictures of area after sanding with Dremel rotary tool.
10. Hand sand/polish the reworked area with 180 grit silicone cloth using light finger pressure then repeat the hand sanding with 280 grit silicone cloth.
11. Final polish reworked area with Scotchbrite P/N Scotchbrite TY-A item C-407. Surface finish on reworked area of main case should be similar in appearance to that shown in the figure 4 and 5.
12. Solvent clean reworked area of magnesium main case using Aliphatic Naphtha (C-305) or Toluene (C-306) or MEK (C-309). Refer to BHT-SPM-ALL, chapter 4, Table 4-3.

-NOTE-

Chromium Trioxide and Calcium Sulfate are included in kit P/N CA427-07-19.

-NOTE-

For ease of handling the Calcium Sulfate and Chromium Trioxide are pre-weighed and ready to be mixed. Once

mixed together only water will need to be added. The resulting mixture is DOW19 (MIL-M-3171C).

WARNING

Ensure all safety precautions are followed when using consumable. Failure to do so can result in injury or death.

For additional information pertaining to the safety precautions, definitions, application and use of these consumables. Please refer to the Material Safety Data Sheet (MSDS).

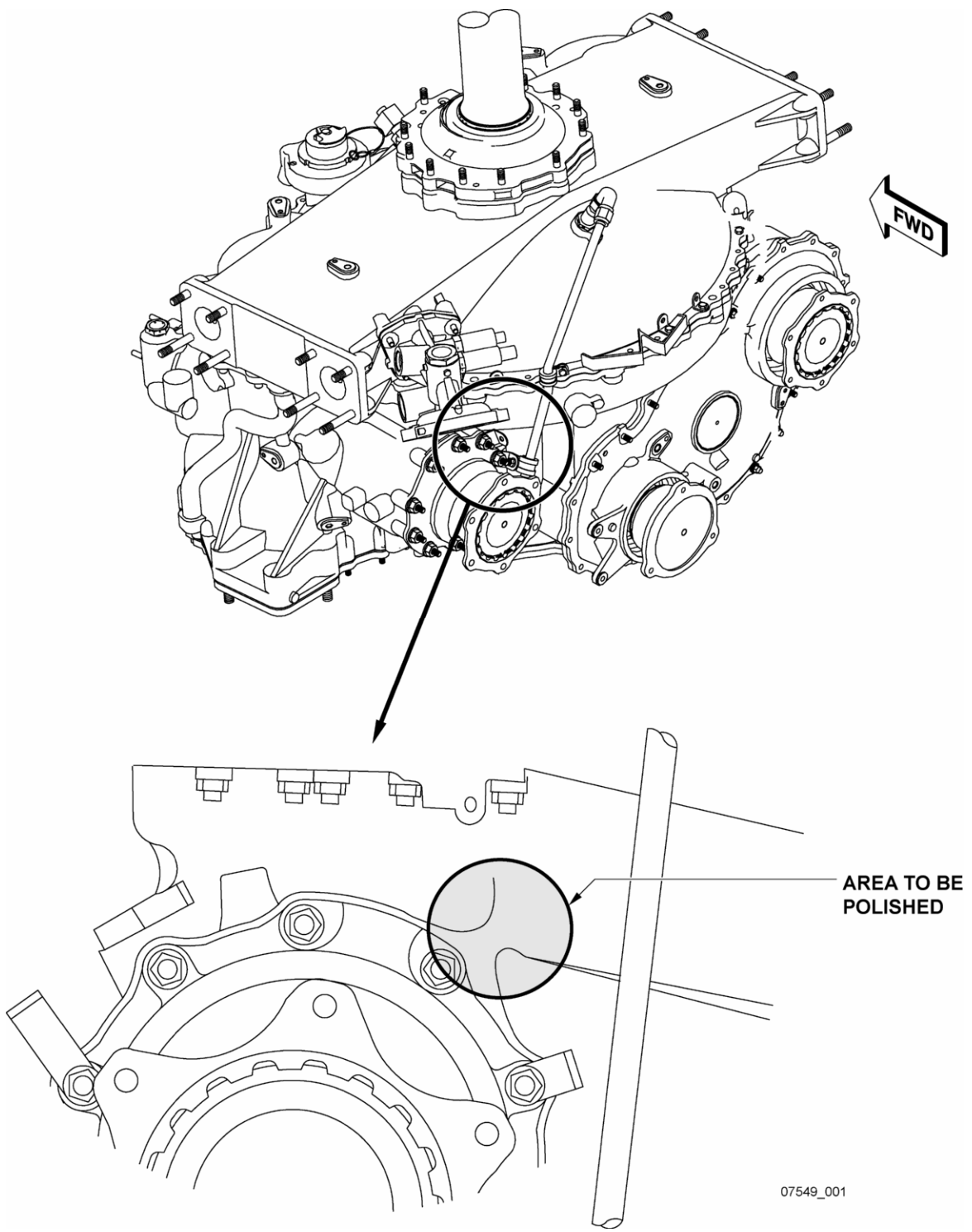
-NOTE-

Material Safety Data Sheet (MSDS) may be viewed at www.actiocms.com

User name: textron
Password: findmsds

13. Prepare DOW 19 (MIL-M-3171C) corrosion preventive chemical treatment for magnesium surfaces by mixing the provided Calcium Sulfate complete bottle content into the larger bottle containing Chromium Trioxide. Fill bottle mixture with clean water up to the neck (250 ml or 8.45 oz). Completely mix solution. Refer to CSSD-PSE-87-001, section 25-5 and table C-1, item B-2.
14. Apply corrosion protection Dow 19 to reworked magnesium surface area and immediately rinse with water. Refer to CSSD-PSE-87-001, section 25-5 and table C-1, item B-2.
15. Prepare the Epoxy Primer coating using the provided touch up kit P/N MIL-PRF-2337, TYICLC by mixing the content of bottle "B" (catalyst) into bottle "A". Completely mix solution.
16. Apply one coat of Epoxy Primer to reworked area. Refer to BHT-SPM-ALL, chapter 4.
17. Prepare the Polyurethane Paint using the provided touch up kit P/N MIL-PRF-85285, TY1 by mixing the catalyst and the paint in a separate container using a one to one mixing ratio. Completely mix solution.

18. Apply two coat of Polyurethane Paint to reworked area. Refer to BHT-SPM-ALL, chapter 4.
19. Reinstall P/N 427-040-669-101 tube assy.
20. Reconnect wiring harness to P/N 407-375-017-101 monopole sensor, P/N MS28034-3 temp bulb, P/N 222-375-077-121 oil pressure transducer, and P/N 901-375-910-101 oil temp switch. Refer to the BHT-427-MM, chapter 63 and 96.
21. Reinstall the transmission oil filter housing P/N 406-040-060-105 using packing P/N M83248/1-236 and P/N M83248/1-024. Refer to BHT-427-IPB and BHT-427-MM chapter 63.
22. Clean and inspect reworked area and remove any leftover tape, paper or static bag residue.
23. Reinstall the left hand forward engine cowling access door. Refer to the BHT-427-MM, chapter 53.
24. Perform ground run and check transmission oil level. Add oil if required. Refer to the BHT-427-MM, Chapter 12.
25. Annotate the helicopter records to reflect compliance with this bulletin.



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Figure 1



Top side after sanding with Dremel rotary tool

Figure 2



Bottom side after sanding with Dremel rotary tool

Figure 3



Top side after Hand Sanding/Polishing

Figure 4



Bottom side after Hand Sanding/Polishing

Figure 5