

ALERT SERVICE BULLETIN

REVISION NOTICE

Bell Helicopter **TEXTRON**

A Subsidiary of Textron Inc.

DATE Nov 22, 2002

TO: All Owners/Operators of Bell 205B Helicopters

**SUBJECT: REVISION "B" TO ALERT SERVICE BULLETIN 205B-02-39:
MAIN ROTOR GRIPS 204-011-121-005, -009, 113, -117 AND
-121, ULTRASONIC INSPECTION OF.**

Continued testing of the main rotor grips has provided sufficient documentation and justification to substantiate a change to the grips ultrasonic inspection interval.

Revision "B" to this bulletin changes the grips ultrasonic inspection interval.

7851 60046 REV 1198

AN APPROPRIATE ENTRY SHOULD BE MADE IN THE AIRCRAFT LOG BOOK UPON ACCOMPLISHMENT
IF OWNERSHIP OF AIRCRAFT HAS CHANGED PLEASE FORWARD TO NEW OWNER

ALERT SERVICE BULLETIN

Bell Helicopter **TEXTRON**

A Subsidiary of Textron Inc.

NO. 205B-02-39

DATE May 03, 2002

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DATE Nov 22, 2002

REV "B"

MODEL AFFECTED: 205B

SUBJECT: MAIN ROTOR GRIPS 204-011-121-005, -009, -113, -117 AND -121, ULTRASONIC INSPECTION OF.

HELICOPTERS AFFECTED: All Model 205B Helicopters

COMPLIANCE: No Later Than September 30, 2002.

DESCRIPTION:

Bell Helicopter has released Information letters 205B-02-12, 205B-02-13 and 205B-02-14 describing in detail the pending requirement for a repetitive ultrasonic inspection of the lower main rotor grip tang on the model 205B.

All 204-011-121-005, -009, 113 grips with 4000 or more hours Time In Service (TIS) will require a repetitive Ultrasonic Inspection every 400 hours or 1600 start/stop cycles which ever comes first.

All 204-011-121-117, -121 grips with 500 hours or more TIS will require a repetitive Ultrasonic Inspection every 150 hours or 600 start/ stop cycles which ever comes first.

Two methods of inspection are available for operators. The first and preferred method is for the grips to be inspected by a qualified ultrasonic NDT level II or III individual in accordance with the attached procedure. Alternately operators may have their qualified aircraft maintenance technicians attend an Ultrasonic Level I Special Inspection course being offered by Bell Helicopter worldwide on a limited basis. Operators may also send one Ultrasonic NDT qualified Level II or III individual to the course and then this individual would then be qualified to train operators maintenance technicians at their convenience and base of operation.

Maintenance technicians that attended the Ultrasonic Level 1 Special Inspections course on the 204-011-121-009 and -121 grips are also qualified to do the inspection on the 204-011-121-005 / -113 and -117 grips.

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Operators are encouraged to refer to the Information Letters for an in depth description of the history, inspection and training requirements for this bulletin. Please note the existing 25-hour visual inspection is still required per ASB 205B-95-21.

APPROVAL:

The engineering design aspects of this bulletin are FAA/DER approved.

MANPOWER:

Approximately 1 man-hour is required to complete this bulletin. Man-hours are based on hands-on time, and may vary with personnel and facilities available.

MATERIAL:

Required Material:

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Helicopter Textron Supply Center. With the exception of the Calibration Standard, which is made by Bell Helicopter, these tools may also be obtained through the vendor. See Information Letter 205B-02-13.

| <u>Part Number</u> | <u>Nomenclature</u> | <u>Quantity</u> |
|--------------------|----------------------|-----------------|
| USM22B | Test Set | 1 |
| 389-025-070 | Transducer | 1 |
| 362-001-210 | Wedge | 1 |
| 118-140-012 | Cable | 1 |
| UT-010-057 | Calibration Standard | 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 Helicopter Textron Supply Center.

| <u>Part Number</u> | <u>Nomenclature</u> | <u>Quantity</u> |
|--------------------|---------------------|-----------------|
| 118-300-500 | Couplant | 1 |

SPECIAL TOOLS:

None required

WEIGHT AND BALANCE:

Not Affected

ELECTRICAL LOAD DATA:

Not affected

REFERENCES:

BHT-212 -IPB Illustrated Parts Breakdown
BHT-212 -MM Maintenance Manual
BHT-212 -CR&O Component Repair and Overhaul Manual
Information Letter 205B-02-12, 205B-02-13, 205B-02-14.
Alert Service Bulletin 205B-95-21.

PUBLICATIONS AFFECTED:

BHT-212 -MM Maintenance Manual
BHT-212 -CR&O Component Repair and Overhaul Manual

ACCOMPLISHMENT INSTRUCTIONS:

1. All main rotor grips 204-011-121-005 / -009 and -113 with 4000 hours or more TIS are to be ultrasonically inspected every 400 hours or 1600 start/stop cycles which ever occurs first. All 204-011-121-005 / -009 and -113 grips with less than 4000 hours TIS do not require inspection until reaching 4000 hours.

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-NOTE-

If flight hours cannot be determined assume 900 hours per year that component has been installed.

2. All main rotor grips 204-011-121-117 and 121 with 500 hours or more TIS are to be ultrasonically inspected every 150 hours or 600 start/stop cycles which ever occurs first. All 204-011-121-117 and -121 grips with less than 500 hours TIS do not require inspection until reaching 500 hours.

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-NOTE-

A Start /Stop Cycle is defined as any time the aircraft engine is started followed by a shut down.

3. The following ultrasonic inspection, can only be accomplished by individuals, that have been qualified to perform the inspection in accordance with either Method 1 or Method 2.

Method 1

Operators that have available in their respective geographic location an Ultrasonically qualified level II or III NDT technician are to inspect the lower grip tang in accordance with the ultrasonic inspection requirements attached. This inspection procedure has been developed by Bell Helicopter, NTD Level III personnel, specifically for Ultrasonically qualified level II or III Individuals per ATA 105.

Method 2

Operators that do not have access to a qualified Level II or III technician may send their aircraft maintenance technicians to a specifically designed course that Bell Helicopter is conducting at various locations throughout the world. This 2 day course is designed to train aircraft maintenance technicians, specific requirements to inspect the grip tang ultrasonically. This training then qualifies the maintenance technician to a NDT level one special qualification. For course dates and locations operators need to refer to Information Letter 205B-02-14. Alternately operators may send one Ultrasonically qualified level II or III individual to this training course. This would then qualify this individual to train aircraft maintenance technicians to the level one special qualification, at the operators convenience and their base of operation.

-NOTE-

Disassembly of the aircraft or removal of the paint from the grip tang is not necessary. Only clean lower grip tang surfaces of any grease or other contamination.

4. Inspection is accomplished on both lower grip tangs installed on the aircraft. Ultrasonically inspect P/N 204-011-121-005, -009, -113 grips every 400 hours or 1600 start/stop cycles which ever comes first and P/N 204-011-121-117, -121 every 150 hours or 600 start/ stop cycles which ever comes first.

5. Any indication of a crack in accordance with the instructions will require the grip to be removed from service and a serviceable grip installed. If the grip was inspected by a Level one special inspector, the unserviceable grip is to be sent to a facility that has level II or III ultrasonic capability for further investigations. All grips that have a crack indication that have been inspected by a level II or III are to be sent to Bell Helicopter. Please contact Product Support if shipping instructions are required.

6. Annotate records to indicate compliance with this bulletin.

NONDESTRUCTIVE INSPECTION PROCEDURE**TASK: ULTRASONIC INSPECTION OF 204-011-121 MAIN ROTOR GRIP.****PART NUMBERS: 204-011-121****REFERENCES:****1.0 AREA OF INSPECTION**

1.1 The inside surface of the blade bolt hole bore at the end of the Grip.

2.0 PERSONNEL

2.1 Individuals performing this inspection shall be qualified and certified UT level II or III per ATA Specification 105 or level I special with the approved BHT training and examination.

3.0 EQUIPMENT

3.1 Krautkramer USN-52, or equivalent piece of ultrasonic testing equipment.

3.2 A 10.0MHz ¼" transducer, with plastic wedges to create a 23 degree longitudinal wave in aluminum.

3.3 BHTI supplied reference standard UT-010-057.

4.0 CALIBRATION

4.1 Longitudinal Wave Inspection (23 degree in Al)

4.1.1 Initial setup of the flaw detector shall be as shown in table 1.

4.1.2 Position the transducer with the 23 degree wedge on the reference standard as shown in Figure 1, and direct the sound beam toward the side drilled hole number 1 (SDH).

4.1.3 Manipulate the transducer slightly to obtain a maximum response from the (SDH). Increase the dB's of gain to achieve a 80% screen amplitude signal (ref. Figure 2a).

4.1.4 Slide the transducer to the left and aim the sound beam toward the lower left corner Of the standard. The signal should appear as shown in figure 2b.

4.1.5 Slide the transducer so that both reflectors are displayed on the screen. Manipulate the transducer so that the amplitude from both signals (SDH and the corner) is displayed equally. Increase the gain as shown in figure 2c.

4.1.6 Verify the ALARM GATE is located as shown in figure 2a – 2c.

5.0 PRE INSPECTION

5.1 Be sure that the inspection surface is clean and free of loose debris, so as not to interfere with the inspection.

| PREPARED BY | NDT LABORATORY | PRODUCT ASSURANCE | DESIGN ENGINEERING | |
|--------------------|-----------------------|--------------------------|---------------------------|--|
| E Hohman | T G Marshall | | | |

NONDESTRUCTIVE INSPECTION PROCEDURE

6.0 INSPECTION

6.1 Perform multiple pass inspections of each grip lug using the setups described in section 4.1 and 4.2 and as described in Figure 4. A relevant signal response should appear as shown in figure 3.

NOTE 1: Only inspect in the areas described in Figure 4 of this procedure. Scanning outside the boundaries shown may result in false/non-relevant signal response.

NOTE 2: The surface condition of the grip in the area of inspection should be relatively smooth. A scotch-brite pad may be used to remove rough or raised contamination areas when necessary.

NOTE 3: The transducer will not sit solidly on the grip surface due to the curvature of the grip tangs. It is important to keep the exit point (as marked on the transducer wedge) against the surface of the grip tang in order to maximize detection capability.

7.0 EVALUATION

7.1 Scan the grip surfaces as shown in Figure 4 for indications that move across the base line and increase in amplitude.

7.2 If an indication is observed manipulate the transducer in order to maximize the amplitude of the signal.

8.0 ACCEPT/REJECT CRITERIA

8.1 Any indication considered relevant by the person doing the inspection shall be cause for rejection.

9.0 RECORDS

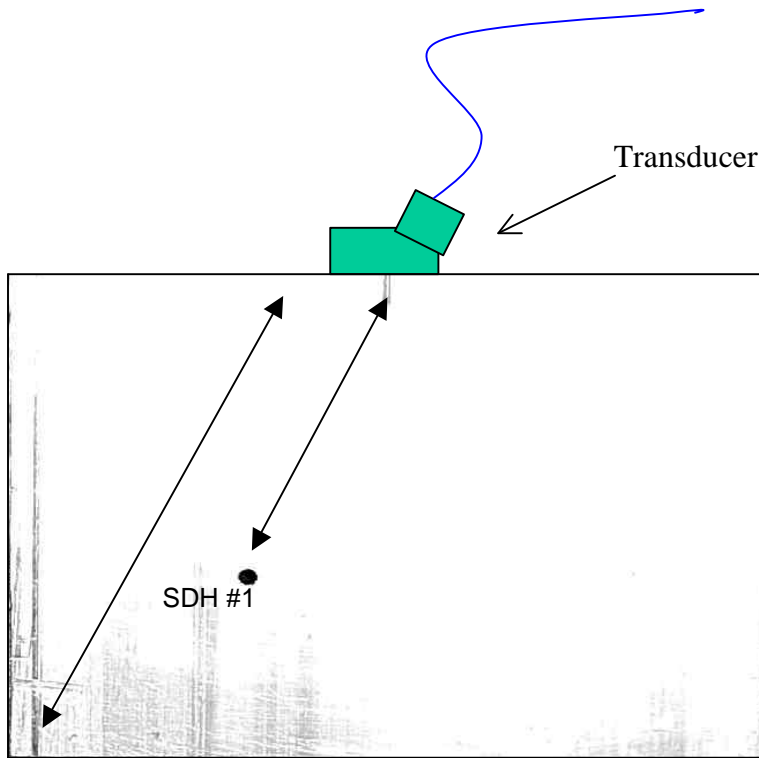
9.1 Records of all aircraft inspected and grip serial numbers shall be kept, and any grips with indications shall be recorded in the maintenance log book.

INITIAL SETUP

| | |
|---------------------------------------|---------------------------|
| Delay.....1.000 inch | Gate Start.....3.00 inch |
| Range.....5.0 inch | Gate Length.....1.20 inch |
| Velocity: | Gate Threshold.....40% |
| Long. = 2.40 in sec x 10 ⁵ | |
| Dampening..... 50 Ohm | |
| Rep-Rate.....Low | |
| Frequency.....10.0 MHz | |
| Reject.....10% | |
| Rectifier.....Full Wave | |

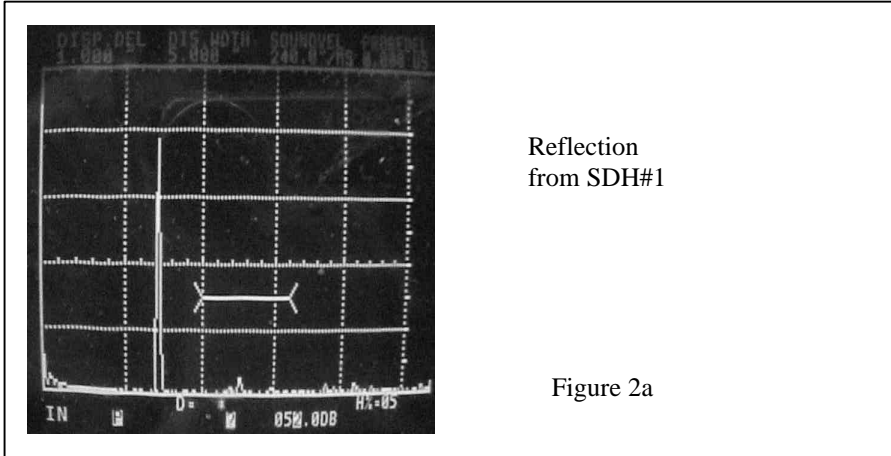
TABLE 1

NONDESTRUCTIVE INSPECTION PROCEDURE



Side drilled hole and corner reflector sound paths.

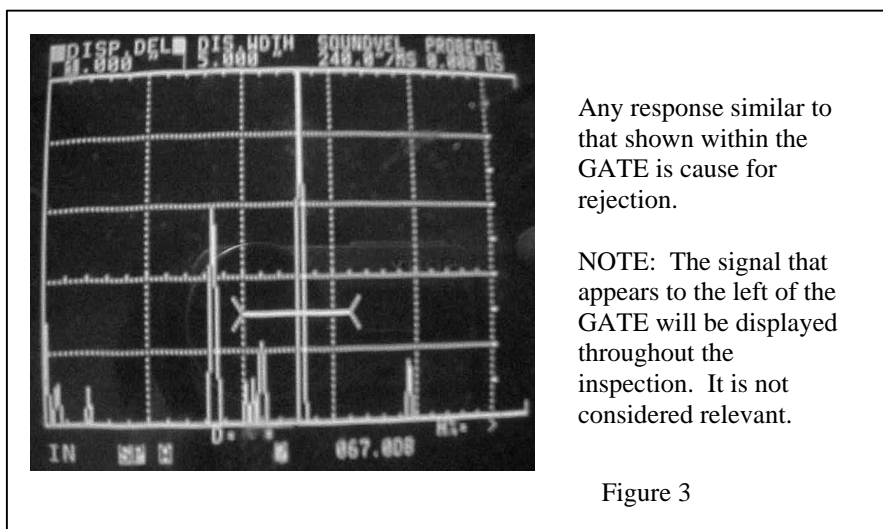
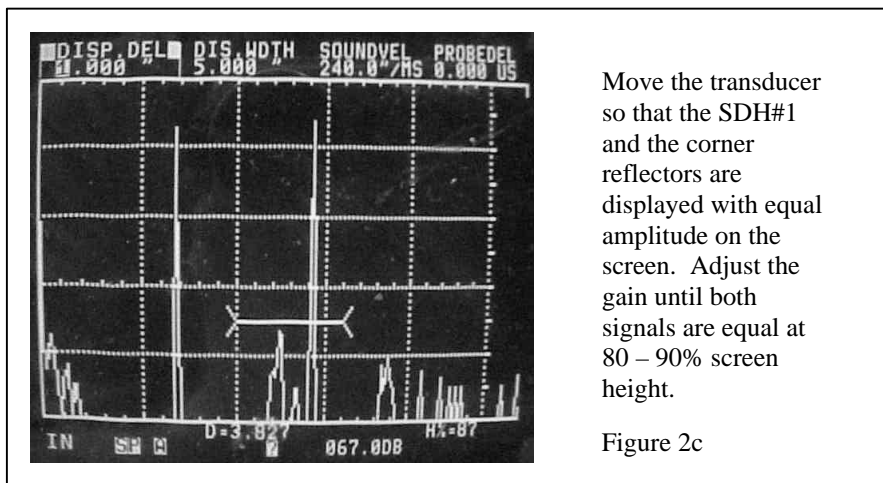
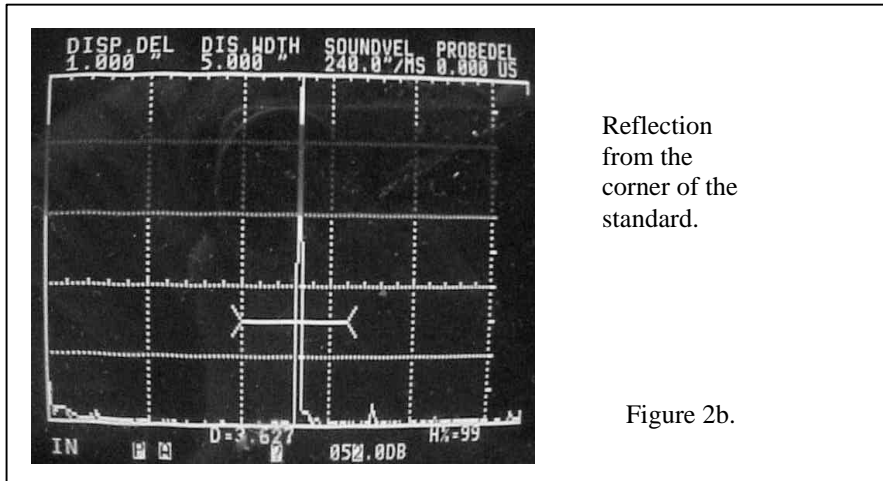
Figure 1



Reflection from SDH#1

Figure 2a

NONDESTRUCTIVE INSPECTION PROCEDURE



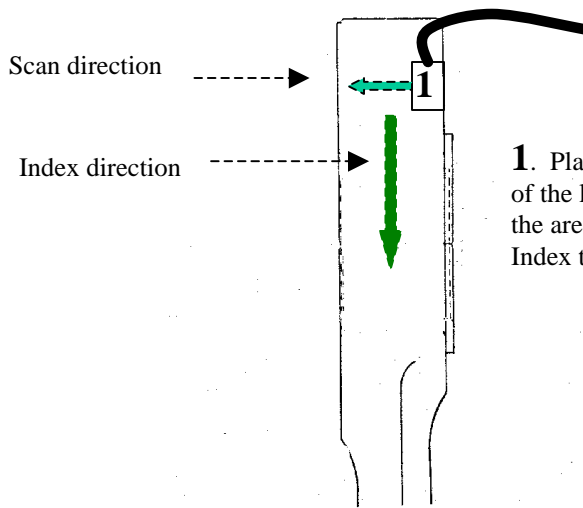
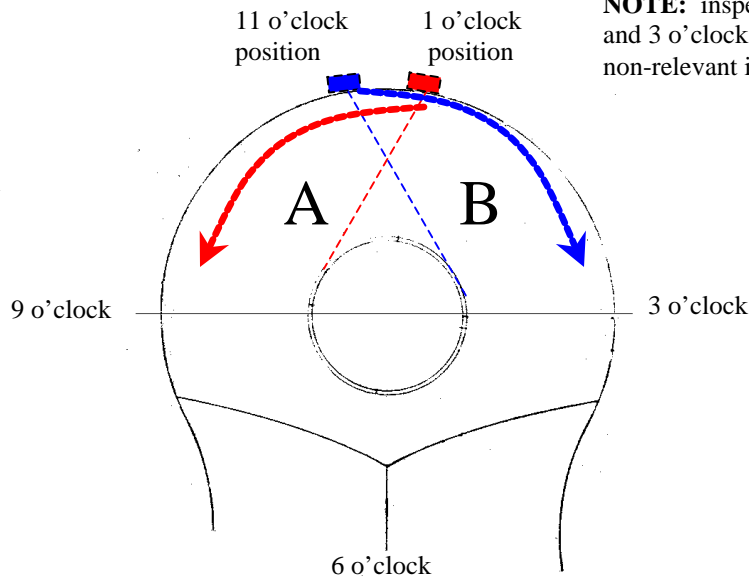
NONDESTRUCTIVE INSPECTION PROCEDURE

Area "A" - Place the transducer in the 1 o'clock position at the edge opposite the blade and inspect toward the 9 o'clock position. Index the transducer as described below. This inspection coverage will be the same for each technique described in the SIDE VIEW below.

Area "B" - The same as described for area "A" except inspect from the 11 o'clock position toward the 3 o'clock position.

NOTE: inspecting beyond the 9 o'clock and 3 o'clock positions may produce non-relevant indications.

FRONT VIEW
(Upper surface as installed)



1. Place transducer parallel with the edge of the lug and scan side to side inspecting the areas as shown in "A" and "B" above. Index transducer in the direction shown every 1/2".

Figure 4