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**SERVICE BULLETIN**  
**OPTIONAL****N° 109EP-048****DATE:** November 10, 2004**REV. :** D - July 27, 2023

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**TITLE**

**ATA 25 - REPLACEMENT OF THE HOOK ASSEMBLY P/N HK-117-1 WITH THE NEW HOOK ASSEMBLY P/N HK-121-2 OR WITH THE NEW HOOK ASSEMBLY P/N HK-116-2 (THE BOTH OF THEM PROVIDED WITH A DUAL SAFETY FEATURE), ON THE LEONARDO RESCUE HOIST P/N 109-0900-61-201 (BREEZE-EASTERN P/N BL-20200-110).**

**REVISION LOG**

Helicopters that have complied with previous issue of this Service Bulletin do not need any additional action.

Revision D is issued to:

- Update Annex A with Breeze-Eastern Service Bulletin BL-20200-110-25-01 rev. F;
- Update the Service Bulletin to the latest standard.

# 1. PLANNING INFORMATION

## A. EFFECTIVITY

All the A109E helicopters equipped with rescue hoists P/N 109-0900-61-201 (Breeze-Eastern P/N BL-20200-110).

## B. COMPLIANCE

At Customer's option.

## C. CONCURRENT REQUIREMENTS

N.A.

## D. REASON

This Service Bulletin is issued in order to provide the necessary instruction on how to replace the hook assembly P/N HK-117-1 with the hook assembly P/N HK-121-2 or with the hook assembly P/N HK-116-2, on the rescue hoists P/N 109-0900-61-201.

LH issued this SB for the following reason:

Helicopter Reliability/Maintainability	
Product Improvement	
Obsolescence	
Customization	✓
Product/Capability Enhancement	

## E. DESCRIPTION

The Swedish Air Force (SAF) has forwarded Leonardo with a request to install a hook provided with a dual safety feature (P/N HK-121-2) on the Leonardo rescue hoists P/N 109-0900-61-201 (Breeze-Eastern P/N BL-20200-110) installed on the Leonardo A109E helicopters currently operative at the SAF bases.

Later on some other operators have requested the installation of the same hook.

Subsequently, the Royal Australian Navy has similarly requested to install a different type of hook (P/N HK-116-2), provided with additional safety features.

This Service Bulletin is issued with the purpose of providing the necessary instructions to replace the hook assembly P/N HK-117-1 with the hook assembly P/N HK-121-2 or with the new hook assembly P/N HK-116-2 (the both of them provided with a dual safety feature) on the Leonardo rescue hoists P/N 109-0900-61-201 (Breeze-Eastern P/N BL-20200-110).

The three hooks (P/N HK-117-1, P/N HK-121-2 and P/N HK-116-2) are functionally and physically interchangeable.

## F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before applying the Service Bulletin, applicable Aviation Authority approval must be checked within Leonardo Helicopters customer portal.

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives. If an aircraft listed in the effectivity embodies a modification or repair not LHD certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.

## G. MANPOWER

To comply with this Service Bulletin 1,20 (one hour and twenty minutes) MMH are deemed necessary.

MMH are based on hands-on time and can change with personnel and facilities available.

## H. WEIGHT AND BALANCE

N.A.

## I. REFERENCES

### I.1 PUBLICATIONS

<u>SECTION/PARAGRAPH</u>	<u>DESCRIPTION</u>
DM01 00-20-1	Helicopter safety

### I.2 ACRONYMS & ABBREVIATIONS

AMDI	Aircraft Material Data Information
AR	As Required
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
IPC	Illustrated Parts Catalogue
LHD	Leonardo Helicopters Division

MM	Maintenance Manual
MMH	Maintenance Man Hours
N.A.	Not Applicable
P/N	Part Number
PTUM	Pictorial Tools Usage Manual

### **I.3 ANNEX**

Annex A Breeze-Eastern Service Bulletin BL-20200-110-25-01 rev. F

### **J. PUBLICATIONS AFFECTED**

IPC Up to S/N 11600.

### **K. SOFTWARE ACCOMPLISHMENT SUMMARY**

N.A.

## **2. MATERIAL INFORMATION**

### **A. REQUIRED MATERIALS**

#### **A.1 PARTS**

<b>#</b>	<b>P/N</b>	<b>ALTERNATIVE P/N</b>	<b>DESCRIPTION</b>	<b>Q.TY</b>	<b>LVL</b>	<b>NOTE</b>	<b>LOG P/N</b>
1	109-0883-83-101		HOIST KIT 600 LBS	REF	.		
2	HK-121-2		Hook assembly	1	..		
3	109-0883-83-103		HOIST KIT 600 LBS	REF	.		
4	HK-116-2		Hook assembly	1	..		
5	MS24665-88	MS24665-90	Cotter pin	2	.		

#### **A.2 CONSUMABLES**

Refer also to AMDI for the consumable materials required to comply with the MM Paragraphs referenced in the accomplishment instructions.

#### **A.3 LOGISTIC MATRIX**

N.A.

### **B. SPECIAL TOOLS**

Refer to PTUM for the special tools required to comply with the MM Paragraphs referenced in the accomplishment instructions.

### **C. INDUSTRY SUPPORT INFORMATION**

Customization

### **3. ACCOMPLISHMENT INSTRUCTIONS**

#### **GENERAL NOTES**

- a) Place an identification tag on all components that are re-usable, including the attaching hardware that has been removed to gain access to the modification area and adequately protect them until their later re-use.
1. In accordance with MM Paragraph 00-20-1, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
2. In accordance with Annex A, remove the hook assembly P/N HK-117-1 or the hook assembly P/N HK-121-2 from the rescue hoist cable.
3. In accordance with Annex A, install the new hook assembly P/N HK-121-2 or the new hook assembly P/N HK-116-2 on the cable of the rescue hoist.
4. In accordance with Annex A, perform a “Hook Load Test”.

#### **CAUTION**

For operations concerning the cleaning, inspections, maintenance and removal of the new hook assemblies P/N HK-121-2 or P/N HK-116-2, pertain to the instructions given in the Annex A.

5. Record compliance with this Service Bulletin in the pertinent rescue hoist documents as well as the rescue hoist nameplate in the field “CONTRACT NO”, after the Leonardo P/N of the component (use an etch pen).
6. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.
7. Gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

As an alternative, send the attached compliance form to the following mail box:

[engineering.support.lhd@leonardo.com](mailto:engineering.support.lhd@leonardo.com)

and (for North, Central and South America) also to:

[AWPC.Engineering.Support@leonardocompany.us](mailto:AWPC.Engineering.Support@leonardocompany.us)

# **ANNEX A**

## **BREEZE-EASTERN**

### **SERVICE BULLETIN BL-20200-110-25-01 REV.F**

 BREEZE • EASTERN <small>Be Ready. Be Sure.</small>  SERVICE BULLETIN	35 Melanie Lane Whippany, NJ 07981	CAGE CODE 08484
		SB BL-20200-110-25-01 Revision F, 7/28/22 HIGHLIGHTS

**Part Number BL-20200-110 Rescue Hoist Assembly  
Hook Assembly Configuration Substitution**

TO: HOLDERS OF SERVICE BULLETIN BL-20200-110-25-01, REVISION E, DATED 1/30/15.

THIS IS TO INFORM YOU OF THE RELEASE OF SERVICE BULLETIN BL-20200-110-25-01, REVISION F, DATED 7/28/22. REVISION F SUPERSEDES ALL EARLIER REVISIONS OF THIS SERVICE BULLETIN.

**HIGHLIGHTS SHEET**

Pages that have been revised are outlined below together with the highlights of the revision. Please delete Revision E and enter Revision F, dated July 28, 2022 in your records.

PAGE/PARAGRAPH	DESCRIPTION OF CHANGE
ALL	Updating the Service Bulletin to show how the HK-117-1 will be removed and replaced with a qualified HK-116-2 or a HK-121-2 Rescue Hoist Hook Assembly. The replacement Rescue Hoist Hook Assemblies are interchangeable functionally and physically with hook assembly HP-117-1 that is currently used with Rescue Hoist Assembly BL-20200-110.

Service Bulletin BL-20200-110-25-01, Revision F

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## Part Number BL-20200-110 Rescue Hoist Assembly Hook Assembly Configuration Substitution

**SUBJECT:** This Service Bulletin provides instructions to remove the existing configuration Hook Assembly from Rescue Hoist Assembly BL-20200-110 and replace it with a customer requested Hook Assembly.

### I. PLANNING INFORMATION.

#### A. Effectivity.

This Service Bulletin (SB) is applicable to all helicopters equipped with Rescue Hoist Hook Assembly HK-117-1.

#### B. Reason.

Leonardo Helicopters, the helicopter manufacturer requested that a substitute Rescue Hoist Hook Assembly be offered at their customer's request.

#### C. Description.

The HK-117-1 will be removed and replaced with a qualified HK-116-2 or a HK-121-2 Rescue Hoist Hook Assembly. The replacement Rescue Hoist Hook Assemblies are interchangeable functionally and physically with hook assembly HP-117-1 that is currently used with Rescue Hoist Assembly BL-20200-110.

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		SB BL-20200-110-25-01 Revision F, 7/28/22 Page 2 of 14

## Part Number BL-20200-110 Rescue Hoist Assembly Hook Assembly Configuration Substitution

### D. Compliance Recommendation.

This Service Bulletin is for convenience and can be accomplished anytime the helicopters and hook assemblies are available.

### E. Manpower.

The hook assembly change out is estimated to take one (1) maintenance technician approximately twenty (20) minutes to disassemble, reassemble, and test.

### F. Material - Cost and Availability.

The purchase of replacement hook assemblies can be accomplished by the contacts below.

Any questions pertaining to this service bulletin should be directed to Breeze-Eastern's Customer Services contacts listed below.

Breeze-Eastern  
35 Melanie Lane

Whippany, New Jersey 07981-1638 USA

Phone Number: (973) 602-1001.

E-Mail: [B-Ecustomerservices@breeze-eastern.com](mailto:B-Ecustomerservices@breeze-eastern.com)

Web Site: [www.breeze-eastern.com](http://www.breeze-eastern.com)

### G. Tooling - Price and Availability.

Not applicable.

### H. Weight and Balance.

Not affected.

### I. Electrical Load Data.

Not affected.

### J. Software Accomplishment Summary.

Not applicable.

### K. References.

This Service Bulletin will be attached to Technical Document (TD) 98-005 as an amending document.

Service Bulletin BL-20200-110-25-01, Revision F

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Part Number BL-20200-110 Rescue Hoist Assembly  
Hook Assembly Configuration Substitution

**L. Other Publications Affected.**

Not applicable.

**M. Family Tree Charts of Modification Relationships.**

N/A

**II. ACCOMPLISHMENT INSTRUCTIONS.**

Complete disassembly instructions are provided for the HK-117-1 Hook Assembly. Please follow the instructions provided, use the additional instruction as necessary.

Complete disassembly, cleaning, routine maintenance, and assembly instructions are provided for the HK-116-2 and the HK-121-2 Hook Assemblies. Please follow the instructions provided, use the additional instruction as necessary.

This Service Bulletin modification shall be registered on the applicable rescue hoist log / track card, as well as the rescue hoist identification plate. In addition, reference of incorporation shall be documented in the helicopter and rescue hoist logbooks.

Service Bulletin BL-20200-110-25-01, Revision F

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		SB BL-20200-110-25-01 Revision F, 7/28/22 Page 4 of 14

**Part Number BL-20200-110 Rescue Hoist Assembly**  
**Hook Assembly Configuration Substitution**  
**PN HK-117-1**

Disassembly Procedure.

**IIA. HK-117-1 Hook Assembly Removal Instructions (Refer to Figure 1).**

1. Remove HK-117-1 Hook Assembly from cable.
  - A. Apply power to hoist.
  - B. Pay out approximately 6 feet (1.8 meters) of cable from hoist, or as needed, to allow the hook and bumper assemblies to rest on flat surface with 3 feet (.91 meter) of slack.
  - C. Disconnect power from hoist.
  - D. Pull up on bumper assembly, which consists of a bumper retainer , a compression spring, and an over travel bumper and slide it along cable away from hook and toward the hoist to separate the bumper assembly from the nut (Item 14, Qty. 1) in the hook assembly. Set aside until reassembly.

**CAUTION: PARTS LOCATED INSIDE OF THE HOOK ASSEMBLY WILL FALL FREE AFTER DISENGAGEMENT OF THE NUT FROM THE BODY. PLACE THE HOOK ASSEMBLY ON A FIRM CLEAN SURFACE BEFORE REMOVING THE NUT.**

- E. Remove cotter pins (Item 16, Qty. 2) securing locking screw (Item 15, Qty. 2).
- F. Remove locking screws (Item 15, Qty. 2) from nut (Item 14, Qty. 1).
- G. While holding hook body (Item 3, Qty. 1), unthread nut (Item 14, Qty. 1) from hook body (Item 3, Qty. 1).

**CAUTION: THE TERMINAL CLAMP USED ON THE HK-117-1 IS NOT INTERCHANGEABLE WITH THE TERMINAL CLAMP USED ON BOTH THE HK-121-2 AND HK-116-5.**

**NOTE: TERMINAL CLAMP (ITEM 11, QTY. 1) IS A TWO PIECE MATCHED SET. KEEP BOTH HALVES TOGETHER FOR FUTURE USE.**

- H. Hold nut (Item 14, Qty. 1) and sleeve (Item 13, Qty. 1) and push cable through to expose terminal clamp (Item 11, Qty. 1).
- I. Remove ring (PN BL-4718, Qty. 1, not shown) securing terminal clamp. Remove and retain the two piece matched set terminal clamp (Item 11, Qty. 1).
- J. Slide nut (Item 14, Qty. 1) and sleeve (Item 13, Qty. 1) down off the cable.

Service Bulletin BL-20200-110-25-01, Revision F

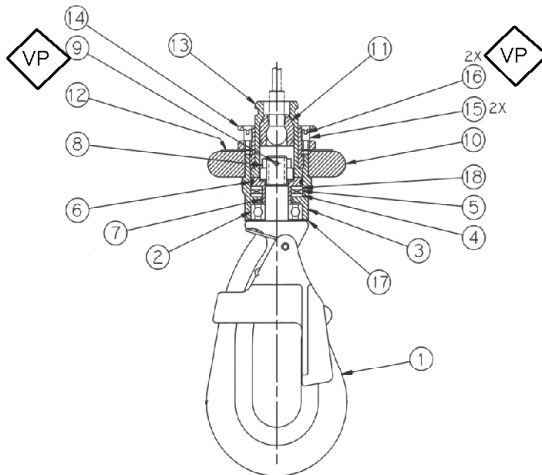
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### Part Number BL-20200-110 Rescue Hoist Assembly Hook Assembly Configuration Substitution

**NOTE:** THIS COMPLETES THE REMOVAL OF THE HK-117-1 HOOK ASSEMBLY FROM THE RESCUE HOIST CABLE. PROCEED TO THE INSTALLATION OF THE HK-121-6 PARAGRAPH IID AND HOOK LOAD TEST PARAGRAPH IIF TO TERMINATE THIS SERVICE BULLETIN. ADDITIONAL INFORMATION PROVIDED FOR CONVENIENCE.

- K. Remove rubber bumper (Item 10, Qty. 1) with cable size label (Item 12, Qty. 1).
- L. Line up hole in hook body, and using a drift and mallet, gently tap out spring pin (Item 9, Qty. 1). Remove and discard spring pin from the hook assembly.
- M. Remove nut (Item 8, Qty. 1) from threaded stem of hook assembly (Item 1, Qty. 1), and remove hook assembly (Item 1, Qty. 1).
- N. Remove bearing retainer (Item 7, Qty. 1) with preformed packing (Item 6, Qty. 1), thrust washer (Item 18, Qty. 1) with needle thrust bearing (Item 5, Qty. 1), thrust washer (Item 4, Qty. 1) from body (Item 3, Qty. 1), and remove body from hook assembly (Item 1, Qty. 1).
- O. Remove ball bearing (Item 2, Qty. 1), and spacer (Item 17, Qty. 1) from top of hook.



1	18	BL-4712-2	WASHER, THRUST			
1	17	BL-3915-11	SPACER			
2	16	MS24665-88	PIN, COTTER			
2	15	BL-9920	SCREW, LOCKING			
1	14	BL-5448-1	NUT			
1	13	BL-5449	SLEEVE			
1	12	BL-15578-1	LABEL, CABLE SIZE			
1	11	BL-4708-1	CLAMP, TERMINAL			
1	10	BL-4719	BUMPER, RUBBER			
1	9	BL-14792-1	PIN-SPRING			
1	8	AN310C7	NUT, PLAIN			
1	7	BL-4707	RETAINER, BEARING			
1	6	AS3578-022	PACKING, PREFORMED			
1	5	BL-4712-1	BEARING-NEEDLE THRUST			
1	4	BL-4712-3	WASHER, THRUST			
1	3	BL-4706	BODY			
1	2	BL-4720	BEARING			
1	1	BL-4810-6	HOOK ASSY, SWIVEL			
QTY REQD	ITEM NO.	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL / SPECIFICATION	NOTES
PARTS LIST						

**VP** Independent Assembly /  
Process Verification Required

**Figure 1. HK-117-1 Section View and Parts List.**

Service Bulletin BL-20200-110-25-01, Revision F

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		SB BL-20200-110-25-01 Revision F, 7/28/22 Page 6 of 14

Part Number BL-20200-110 Rescue Hoist Assembly  
 Hook Assembly Configuration Substitution  
PN HK-116-2

Assembly Procedure

**IIB. HK-116-2 Hook Assembly Installation (Reference Figures 2).**

**NOTE:** All procedures with the note **VITAL INSPECTION POINT** and parts with item numbers that are identified with the note **VP** require a qualified technician, other than the maintenance technician who performed the operation, to inspect the work completed, due to the criticality of the operation. This inspection must be documented in both the helicopter and Hoist maintenance log.

1. Install HK-116-2 hook assembly onto cable as follows:

- A. **VITAL INSPECTION POINT** Install nut (Item 5, Qty.1), and two-piece terminal clamp (Item 3, Qty. 1), onto the cable with the cone portion of the clamp facing up toward the hoist, and the ring groove orientated toward the hook. Secure terminal clamp with ring (**VP** PN BL-4718, Qty. 1, not shown). As shown in Figure 3.
- B. Install flat washer (Item 2, Qty. 1) onto hook (Item 12, Qty. 1).
- C. Lubricate ball bearing with Dow Corning 33 Bearing Grease, or equivalent. Install ball bearing (Item 1, Qty. 1), and thrust washer (Item 4, Qty. 1) into housing (Item 6, Qty. 1). Align and install onto stem of hook assembly.
- D. With an applicator brush, spread vibra-tite on the male threads of the hook. Completely cover threads in the area where the nut will be engaged when assembled. Allow vibra-tite to dry.

**CAUTION:** Only tighten hex nut (Item 9, Qty.1) hand tight (if hand threading is difficult a wrench can be used to assist), *then back-off*. Never tighten the nut to reach the next available castellation.

Over tightening may induce undesirable stress conditions.

- E. Install hex nut (Item 9, Qty.1) onto the hook assembly threaded shaft. Thread down until hand tight, and then back off to line up hole with spring pin hole in housing.
- F. **VITAL INSPECTION POINT** Install new spring pin (**VP** Item 7, Qty. 1) through housing, nut, and hook assembly shaft.
- G. Check for binding while holding hook housing (Item 6, Qty. 1), and rotating hook (Item 12 or 13, Qty. 1). If binding is found, remove pin, and back castellated nut off one slot to allow installation of spring pin in body through stem of hook assembly. Continue this check until binding is eliminated and the hook rotates smoothly
- H. Install bumper (Item 8, Qty. 1) onto housing (Item 6, Qty. 1).

Service Bulletin BL-20200-110-25-01, Revision F

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		SB BL-20200-110-25-01 Revision F, 7/28/22 Page 7 of 14

### Part Number BL-20200-110 Rescue Hoist Assembly Hook Assembly Configuration Substitution

- I. Install housing and assembled hook parts onto nut (Item 5, Qty.1) by threading or screwing them together until bottomed. Then back off to line up tapped hole with nearest slot in housing to allow installation of locking screws.
- J. **VITAL INSPECTION POINT**. Install locking screws (VP Item 10, Qty.2) and thread down to bottom of slot in nut and secure with new cotter pins (VP Item 11, Qty. 2). As shown in Figure 4.
- K. For hooks having a bumper assembly, push down and snap spring coil of bumper assembly onto nut (Item 5, Qty. 1) top surface.
- L. Apply power to hoist.
- M. Run hoist to the full in position to secure to hook and bumper assembly on hoist.
- N. **VITAL INSPECTION POINT**. Perform hook load test in accordance with paragraph **III.F.** to ensure hook assembly has been properly installed. Verify hook rotates with smooth, non-binding rotation.

Disassembly Procedure.

#### **II.C. HK-116-2 Hook Assembly Removal Instructions (Refer to Figure 2).**

1. Remove HK-116-2 Hook Assembly from cable.
    - A. Apply power to hoist.
    - B. Pay out approximately 6 feet (1.8 meters) of cable from hoist, or as needed, to allow the hook and bumper assemblies to rest on flat surface with 3 feet (.91 meter) of slack.
    - C. Disconnect power from hoist.
    - D. Pull up on bumper assembly, which consists of a bumper retainer, a compression spring, and an over travel bumper, and slide it along cable away from hook and toward the hoist to separate the bumper assembly from the nut (Item 5, Qty. 1) in the hook assembly. Set aside until reassembly.
- CAUTION: PARTS LOCATED INSIDE OF THE HOOK ASSEMBLY WILL FALL FREE AFTER DISENGAGEMENT OF THE NUT FROM THE BODY. PLACE THE HOOK ASSEMBLY ON A FIRM SURFACE BEFORE REMOVING THE NUT.**
- E. Remove cotter pins (Item 11, Qty. 2) and locking screws (Item 10, Qty. 2) from nut (Item 5, Qty. 1).
  - F. While holding hook housing (Item 6, Qty. 1), loosen and unthread nut (Item 5, Qty. 1) and remove hook housing (Item 6, Qty. 1) and hook parts from assembly.

**NOTE: TERMINAL CLAMP (ITEM 3, QTY. 1) IS A TWO-PIECE MATCHED SET. KEEP BOTH HALVES TOGETHER FOR FUTURE USE.**

Service Bulletin BL-20200-110-25-01, Revision F

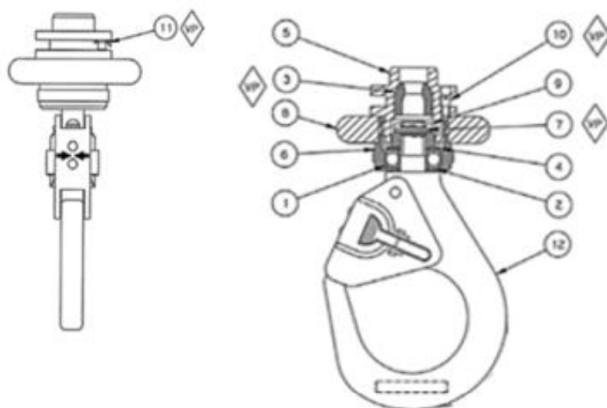
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<b>SERVICE BULLETIN</b>		

**Part Number BL-20200-110 Rescue Hoist Assembly  
Hook Assembly Configuration Substitution**

- G. Push terminal clamp (Item 3, Qty. 1) out of nut (Item 5, Qty. 1). Remove ring (BL-4718, part of Item 3, Qty. 1) from terminal clamp (Item 3, Qty. 1), and then remove terminal clamp (Item 3, Qty. 1) and nut (Item 5, Qty. 1) from cable.
- H. Remove rubber bumper (Item 8, Qty. 1) from hook housing (Item 6, Qty. 1).
- I. Line up hole in hook housing (Item 6, Qty. 1) with orange colored spring pin (Item 7, Qty. 1) and, using a drift and a mallet, gently tap out orange colored spring pin (Item 7, Qty. 1) to remove it from hook housing (Item 6, Qty. 1).
- J. Remove hex nut (Item 9, Qty. 1) from top of the hook assembly.
- K. Remove thrust washer (Item 4, Qty. 1), ball bearing (Item 1, Qty. 1), housing (Item 6, Qty. 1) from hook, and remove flat washer (Item 2, Qty. 1) from hook (Item 12, Qty. 1).

**NOTE:** HOOK (ITEM 12, QTY. 1) IS A PURCHASED ITEM AND THIS INSTRUCTION DOES NOT INCLUDE DISASSEMBLY OF THIS ITEM.



1	12	Y-1231-10-1	HOOK, SWIVEL
2	11	MS24665-88	PIN, COTTER
2	10	BL-9920	SCREW, LOCKING
1	9	BL-8089	NUT, HEX
1	8	BL-4719	BUMPER
1	7	BL-14792-2	PIN, SPRING
1	6	BL-11686-1	HOUSING, HOOK
1	5	BL-11685-1	NUT, BUSHING
1	4	BL-11684-2	WASHER, THRUST
1	3	BL-11682-1	CLAMP, TERMINAL
1	2	AN960C816	WASHER, FLAT
1	1	AJ-9800-95-8	BEARING, BALL
QTY REQD	ITEM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
<b>PARTS LIST</b>			

**Figure 2. HK-116-2 Section View and Parts List.**

Service Bulletin BL-20200-110-25-01, Revision F

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		SB BL-20200-110-25-01 Revision F, 7/28/22 Page 9 of 14

## Part Number BL-20200-110 Rescue Hoist Assembly Hook Assembly Configuration Substitution

### IID. HK-121-2 Hook Assembly Installation (Reference Figures 3, 4 and 5).

**NOTE:** All procedures with the note **VITAL INSPECTION POINT** and parts with item numbers that are identified with the note **VP** require a qualified technician, other than the maintenance technician who performed the operation, to inspect the work completed, due to the criticality of the operation. This inspection must be documented in both the helicopter and Hoist maintenance log.

1. Install HK-121-2 hook assembly onto cable as follows:
  - A. Slide rubber bumper (Item 14, Qty. 1) and nut (Item 10, Qty. 1) over ball end of cable.
  - B. **VITAL INSPECTION POINT**. Assemble two halves of terminal clamp (VP Item 9, Qty. 1), with the cone orientated upward toward the hoist and the ring orientated down toward the hook, around ball end of cable and secure terminal clamp with ring (VP PN 4718, Part of Item 9, Qty. 1). Slide nut (Item 10, Qty. 1) over terminal clamp (Item 9, Qty. 1). As shown in Figure 3.
  - C. Install ball bearing (Item 3, Qty. 1) and thrust washer (Item 4, Qty. 1) into hook housing (Item 2, Qty. 1).
  - D. Install flat washer (Item 13, Qty. 1) and hook housing (Item 2, Qty. 1) onto stem of hook (Item 1, Qty. 1).

- NOTE:** ONLY TIGHTEN CASTELLATED NUT (ITEM 5, QTY. 1) HAND TIGHT (IF HAND THREADING IS DIFFICULT, A WRENCH CAN BE USED TO ASSIST) THEN BACK OFF. NEVER TIGHTEN NUT TO REACH THE NEXT AVAILABLE CASTELLATION.
- E. Install castellated nut (Item 5, Qty. 1) onto stem of hook (Item 1, Qty. 1) and tighten until ball bearing (Item 3, Qty. 1) is fully seated in hook housing (Item 2, Qty. 1).
  - F. **VITAL INSPECTION POINT**. Back off castellated nut (Item 5, Qty. 1) slightly to allow installation of new orange colored spring pin (VP Item 6, Qty. 1) through stem of hook (Item 1, Qty. 1) and castellated nut (Item 5, Qty. 1), with access through the housing (Item 2, Qty. 1).
  - G. Install rubber bumper (Item 14, Qty. 1) onto hook housing (Item 2, Qty. 1).
  - H. Thread hook housing (Item 2, Qty. 1) and assembled hook parts onto nut (Item 10, Qty. 1) on cable. Then back off to line up tapped hole with nearest slot in housing.
  - I. **VITAL INSPECTION POINT**. Install locking screws (VP Item 11, Qty. 2) and thread down to bottom of slot in body and secure with cotter pins (VP Item 12, Qty. 2). As shown in Figure 4.
  - J. Check for binding while holding hook housing (Item 2, Qty. 1) and rotating hook (Item 1, Qty. 1). If binding is found, disassemble the hook (Item 1, Qty. 1) to provide access to castellated nut (Item 5, Qty. 1). Once hook (Item 1, Qty. 1) is disassembled, remove pin, and back off castellated nut (Item 1, Qty. 5) one slot to allow installation of spring pin (Item 6, Qty. 1) in body through stem of hook

Service Bulletin BL-20200-110-25-01, Revision F

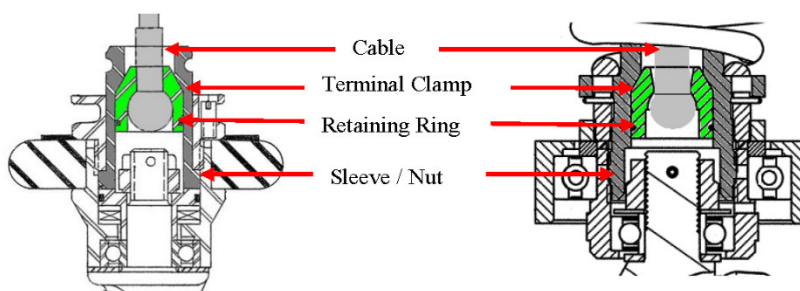
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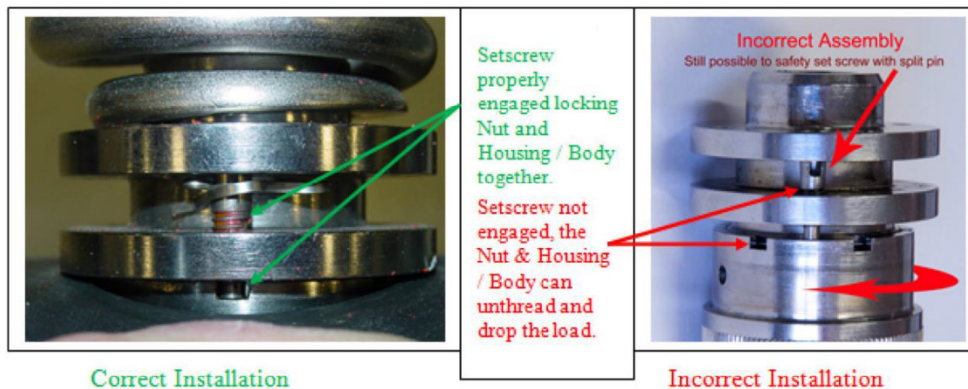
**Part Number BL-20200-110 Rescue Hoist Assembly  
Hook Assembly Configuration Substitution**

housing (Item 2, Qty. 1). Continue this check until binding is eliminated and the hook (Item 1, Qty. 1) rotates smoothly.

- K. Push down and snap bumper assembly spring coil onto nut (Item 10, Qty. 1) top surface.
- L. Apply power to hoist.
- M. Perform Hook Load Test in accordance with Paragraph IIF. After, verify hook turns with smooth, non-binding rotation.
- N. Run hoist to the full in position to secure to hook (Item 1) and bumper assembly on hoist.



**Figure 3. Required Terminal Clamp Orientation (Typical).**



**Figure 4. Hook Assembly Setscrew Correct vs. Incorrect Assembly.**

Service Bulletin BL-20200-110-25-01, Revision F

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		SB BL-20200-110-25-01 Revision F, 7/28/22 Page 11 of 14

## Part Number BL-20200-110 Rescue Hoist Assembly Hook Assembly Configuration Substitution

### III. HK-121-2 Hook Assembly Removal Instructions.

1. Remove HK-121-2 Hook Assembly from cable.
  - A. Apply power to hoist.
  - B. Pay out approximately 6 feet (1.8 meters) of cable from hoist, or as needed, to allow the hook and bumper assemblies to rest on a clean flat surface with 3 feet (.91 meter) of slack.
  - C. Disconnect power from hoist.
  - D. Pull up on bumper assembly, which consists of a bumper retainer, a compression spring, and an over travel bumper, and slide it along cable away from hook and toward the hoist to separate the bumper assembly from the nut (Item 10, Qty. 1) in the hook housing (Item 2, Qty. 1).
  - E. Remove cotter pins (Item 12, Qty. 2) and locking screws (Item 11, Qty. 2) from nut (Item 10, Qty. 1). Discard cotter pins.

**CAUTION:** PARTS LOCATED INSIDE OF THE HOOK ASSEMBLY WILL FALL FREE AFTER DISENGAGEMENT OF THE NUT FROM THE BODY. PLACE THE HOOK ASSEMBLY ON A FIRM SURFACE BEFORE REMOVING THE NUT.

- F. While holding hook housing (Item 2, Qty. 1), loosen and unthread nut (Item 10, Qty. 1) and remove hook housing (Item 2, Qty. 1) and hook parts from assembly.

**NOTE:** TERMINAL CLAMP (ITEM 9 QTY. 1) IS A TWO-PIECE MATCHED SET. KEEP BOTH HALVES TOGETHER FOR FUTURE USE.

- G. Push terminal clamp (Item 9, Qty. 1) out of nut (Item 10, Qty. 1). Remove ring (part of Item 9, Qty. 1) from terminal clamp (Item 9, Qty. 1), and then remove terminal clamp (Item 9, Qty. 1) and nut (Item 10, Qty. 1) from cable.
- H. Remove rubber bumper (Item 14, Qty. 1) from hook housing (Item 2, Qty. 1).
- I. Line up hole in hook housing (Item 2, Qty. 1) with orange colored spring pin (Item 6, Qty. 1) and, using a drift and a mallet, gently tap out orange colored spring pin (Item 6, Qty. 1) to remove it from hook housing (Item 2, Qty. 1).
- J. Remove castellated nut (Item 5, Qty. 1) from top of the hook housing (Item 2, Qty. 1).
- K. Remove thrust washer (Item 4, Qty. 1), ball bearing (Item 3, Qty. 1), hook housing (Item 2, Qty. 1) from hook (Item 1, Qty.1), and remove flat washer (Item 13, Qty. 1) from hook (Item 1, Qty. 1).

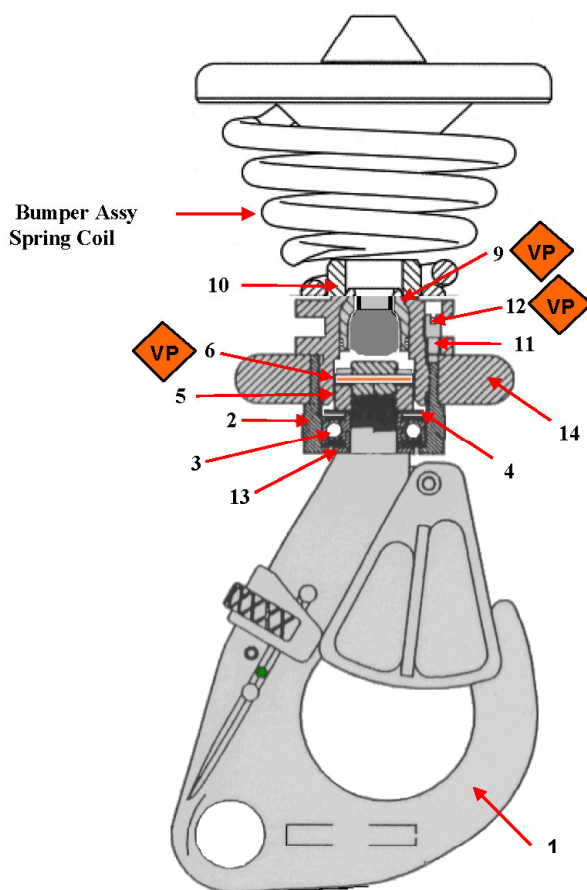
**NOTE:** HOOK (ITEM 1, QTY. 1) IS A PURCHASED ITEM AND THIS INSTRUCTION DOES NOT INCLUDE DISASSEMBLY OF THIS ITEM.

Service Bulletin BL-20200-110-25-01, Revision F

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**Part Number BL-20200-110 Rescue Hoist Assembly  
Hook Assembly Configuration Substitution**



QTY. REQD	ITEM NO.	PART NUMBER	DESCRIPTION
1	14	BL-4719	Bumper, Rubber
1	13	AN960C816	Washer, Flat
2	12	MS24665-88	Pin, Cotter
2	11	BL-9920	Screw, Locking
1	10	BL-11685-1	Nut
1	9	BL-11682-1	Clamp, Terminal
-	8	-	Not Used
-	7	-	Not Used
1	6	BL-14792-2	Pin, Spring
1	5	BL-8089	Nut, Castellated
1	4	BL-11684-2	Washer, Thrust
1	3	AJ-9800-95-8	Bearing, Ball
1	2	BL-11686-1	Housing, Hook
1	1	BL-15704-2	Hook

Independent Assembly /  
 Process Verification Required

**Figure 5. HK-121-2 Section View and Parts List.**

Service Bulletin BL-20200-110-25-01, Revision F

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		SB BL-20200-110-25-01 Revision F, 7/28/22 Page 13 of 14

## Part Number BL-20200-110 Rescue Hoist Assembly Hook Assembly Configuration Substitution

### IIF. Hook Load Test.

#### 1. Test for correct assembly as follows:

After the hook assembly change out is completed, a hook load test shall be accomplished to ensure proper assembly.

The test procedure to check for proper installation is to apply a 600 lb. (272 kg.) load to the hook as follows:

- A. Run hoist to slowly pay out cable until the hook can be connected to a weight of 600 lb. (272 kg.) that is resting on the ground.
- B. Connect load to hook and slowly reel cable in until the weight is lifted off the ground.
- C. Once weight is off the ground, lower weight back to the ground.
- D. Remove weight and run hoist to the full in position to secure the hook and bumper assembly.

### IIIG. Cleaning and Inspection of Hook Assembly.

#### 1. Cleaning/Inspection

- A. Clean all metal parts with isopropyl alcohol ASTM D770, TT-I-735, or equivalent. Remove caked on dirt with a stiff bristle non-metallic brush and alcohol.
- B. Inspect all parts for corrosion. If corrosion exists, replace affected parts. If warranted, Magnetic Particle Inspect in accordance with ASTM-E1444. Liquid Penetrant Inspect in accordance with ASTM-E1417. Criteria for acceptance/rejection shall be in accordance with MIL-STD-1907.

### IIII. Routine Maintenance Instructions.

#### 1. Maintenance Practice.

- A. Inspect hook parts for cracks, corrosion, damaged threads, and gouges.
- B. Check that the keeper in the hook operates without binding and locks properly, and the rivet holding the keeper is properly fastened.
- C. Check that the terminal clamp and ring are properly installed in the hook, and properly oriented with the cone end pointing toward the top of the hook to secure it to the ball end of the cable.
- D. Check to see that locking screws are properly seated in the body and locked in place with the cotter pins.

Service Bulletin BL-20200-110-25-01, Revision F

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<b>SERVICE BULLETIN</b>		

**Part Number BL-20200-110 Rescue Hoist Assembly  
Hook Assembly Configuration Substitution**

- E. Check that the hook freely swivels/rotates in a smooth and non-binding manner. If binding occurs, disassemble, and inspect the bearing for corrosion, galling, imperfections, or signs of roughness during rotation. If bearing is found to be unacceptable, discard. Replace with new bearing, and assemble hook.
- F. After assembly, check that the hook swivels freely without binding.
- G. On pre-flight check, swivel hook assembly for smooth and non-binding operation, corrosion, and freeness of latch. Check to see that locking screws are properly seated in the body, and locked in place with the cotter pins. Check to see that the slide lock is secure, and travel limit rivets and ball detents are in place. Check that the rivet holding the keeper on the hook assembly is secure. Check that the ball end of cable has no signs of damage.
- H. If the hook assembly is immersed in water (fresh or salt water), or operated in a high humidity environment, corrosion may occur. Disassemble hook assembly, rinse with fresh water, clean, dry, and re-lubricate, if necessary during post-flight inspection after every rescue/training mission.
- I. Recommended inspection frequency is as follows:

Recommended Frequency of Inspections (whichever occurs first)*	Part Name	Figure #	Inspection Required
Every month / 25 hoist cycles / 50 flight hours	Hook Assembly	Figure 6	Inspect for defects, corrosion, and binding when installed.

Service Bulletin BL-20200-110-25-01, Revision F

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