



## AERONAUTICAL ACCESSORIES, INC.

P.O. Box 3689

Bristol, Tennessee 37625-3689

Telephone: 423-538-5151 800-251-7094

Telefax: 423-538-8469 E-MAIL: [aero-access.com](mailto:aero-access.com)

# CUSTOMER ADVISORY BULLETIN

## CAB-102

### PRODUCT RELIABILITY IMPROVEMENT FOR BL-4807 SWIVEL HOOK

- SUBJECT:** **BL-4807-Swivel Hook, Product Reliability Improvement**
- HELICOPTERS AFFECTED:** All Bell 205A-1, 212, 412, 412EP, 412CF equipped with Breeze Eastern External Hoist.
- COMPLIANCE:** Compliance with this Bulletin is recommended within 90 days per Breeze Eastern's CAB-100-59 Revision A (attached)
- DESCRIPTION:** Examination of a BL-4807 Swivel Hook by Breeze-Eastern showed that the hook had sustained a brittle fracture in the shank between the threads and the bearing shoulder. Breeze-Eastern concluded that if a hook was aged at low temperatures and exposed to an electrolyte, such as saltwater, and subjected to a prolonged period of constant stress, a stress corrosion fracture may occur. All BL-4807 swivel Hooks manufactured prior to 11-23-98 were aged at slightly lower temperature than the recommended aging temperature. Aeronautical Accessories, Inc. and Breeze Eastern therefore recommend rework of all BL-4807 Swivel Hooks.
- MANPOWER:** Approximately 2.0 man-hours.

**MATERIAL:**

Refer to Breeze-Eastern's CAB-100-59.

**SPECIAL TOOLS:**

None required.

**WEIGHT AND BALANCE:**

Not affected.

**REFERENCES:**

Breeze-Eastern CAB-100-59.

**PUBLICATIONS AFFECTED:**

None affected.

**ACCOMPLISHMENT INSTRUCTIONS:**

Refer to Breeze-Eastern's CAB-100-59. Any question regarding this bulletin should be addressed to:

**Aeronautical Accessories, Inc.  
Product Support**

or

**Breeze-Eastern Product Support  
700 Liberty Ave, Union, N.Y. 07083  
Phone 1-800-929-1919 or 908-686-4000 ext 357  
Fax 908-688-6495  
e-mail 2172990@mcimail.com**

### CUSTOMER ADVISORY BULLETIN

### PRODUCT RELIABILITY IMPROVEMENT FOR BL-4807 SWIVEL HOOK, USED IN BL-4810 AND BL-5740 HOOK ASSEMBLIES

Prepared By: Desmond J. Weakland Date 12/23/98  
Desmond J. Weakland  
Manager, ILSMT

Reviewed By: Arnold Schneck Date 2/3/99  
Arnold Schneck  
V.P., Development Program Management

Reviewed By: Ehambaram Sundarēsan Date 2/3/99  
Ehambaram Sundarēsan  
V.P., Quality Assurance

Approved By: Michael Mitchell Date 2/3/99  
Michael Mitchell  
V.P., Engineering

A	ECO 15494	2-18-99	G.L.				
SYM	CHANGES-SEE CHANGE NOTICE	DATE	BY				

SHEET NO

REVISION PAGE

Rev. #	Page #	Description	Date
A	3	Section 3.0 – FINDINGS was rewritten.	2/18/99

1.0 PURPOSE:

The purpose of this Customer Advisory Bulletin is to outline Breeze-Eastern's recommended product improvements to enhance the reliability of the BL-4807 Swivel Hook.

2.0 SCOPE

The BL-4807 Swivel Hook is the base line hook for the BL-4810 Swivel Hook Assembly used in the final BL-5740 Hook Assembly. This Hook Assembly is part of several Breeze-Eastern Rescue Hoist Assemblies. Breeze-Eastern has evaluated the Hook Assembly and after careful examination, Breeze-Eastern has concluded that if a hook was aged at low temperatures and exposed to an electrolyte, such as salt water, and subjected to a prolonged period of constant stress, a stress corrosion fracture may occur.

3.0 FINDINGS

Examination of a BL-4807 Swivel Hook by Breeze-Eastern showed that the hook had sustained a brittle fracture in the shank between the threads and the bearing shoulder. There is no evidence of fatigue progression on the fracture and there is no evidence of plastic deformation such as bending or tensile necking in the shank. The hook material is AMS 5643 (17-4PH) which is a precipitation hardening stainless steel. As described above, one of the required conditions for a stress corrosion fracture is aging at low temperatures. An audit of all Breeze-Eastern documentation (drawings, processing specifications and certifications) revealed that all BL-4807 swivel hooks manufactured prior to 11/23/98, were aged at slightly lower temperature than the recommended aging temperature. Therefore, it is the conclusion of Breeze-Eastern that all BL-4807 swivel hooks manufactured prior to 11/23/98 must be reworked and identified in accordance with paragraph 4.0.

Despite that fact that the condition necessary for stress corrosion, (presence of electrolyte such as salt water and a prolonged period of constant stress on the part, and the component having been aged at low temperature) are unusual, the recommendations of Breeze-Eastern are as follows.

4.0 CORRECTIVE ACTION

The BL-4807 Swivel Hook must be reprocessed with respect to proper precipitation heat treat and N.D.T testing.

After rework has been completed, the BL-4807 hook will be identified as shown in Figure 3-4.

## 5.0 DISASSEMBLY INSTRUCTIONS

Users should remove the BL-5740-XX Swivel Hook Assembly from the Rescue Hoist per Figure 3-4 and "INSTRUCTIONS FOR REMOVAL OF SWIVEL HOOK ASSEMBLY" (Section 6.0).

The BL-5740-XX or any lower subassembly form of the hook can be returned to Breeze-Eastern for re-heat treatment processing at no cost. See Section 10.0 for full details of the Exchange Program

It is highly recommended that the users send their hooks to Breeze-Eastern for implementation of the work described in this Bulletin. If a user wishes to assume responsibility for implementation of the rework, please contact Breeze-Eastern Product Support for more information.

## 6.0 INSTRUCTIONS FOR REMOVAL OF SWIVEL HOOK ASSEMBLY (FIG 3-4)

- a. Separate bumper assembly (30) from sleeve (31) as required and slide the bumper assembly up along the cable assembly toward the hoist drum.
- b. Remove cotter pin (32) and setscrew (33) from nut (34).

### CAUTION

**The swivel hook assembly and the parts located in the inner, upper side of hook housing (35) will fall free after disengagement of the nut. Place the hook assembly on a firm surface before removing the nut.**

- c. While holding hook housing (35), loosen and remove nut (34) to free sleeve (31), terminal clamp (37), ring (36), and rubber bumper (63) and label as required.
- d. Set these parts aside, including the nut and the assembled hook, on a clean surface.
- e. Replace worn, damaged parts.

6.1 Removal of Hook Parts

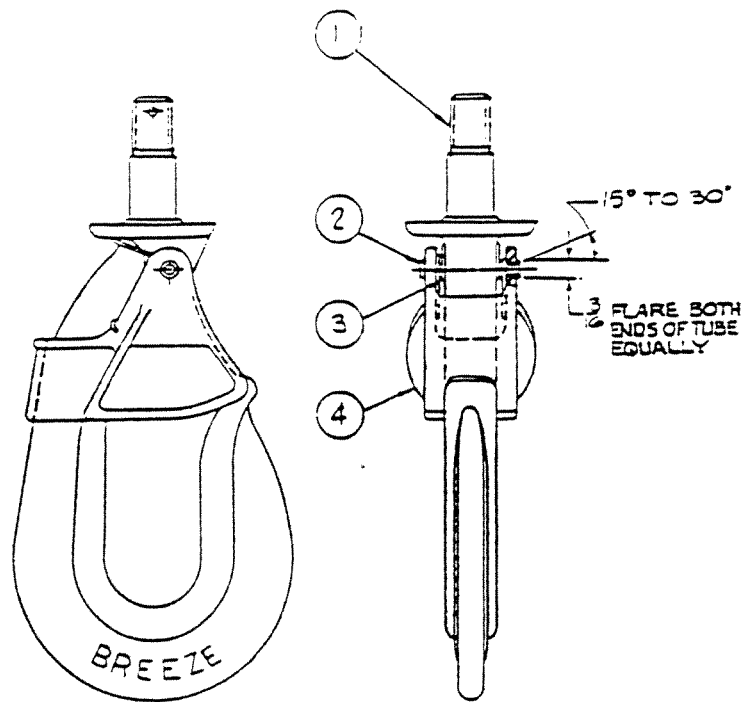
- a. Remove spring pin (64) and nut (65) from top of the assembled hook.
- b. Remove thrust bearing assembly (68), bearing retainer (67), and packing (66) from body (35).
- c. Lift body (35) and remove bearing (69) from the stem of the hook.
- d. Replace worn, damaged parts.
- e. Inspect hook and keeper assembly (70) for cracks, corrosion, damaged thread, flaked or spalled area, or any other imperfection. If the hook is found to be unacceptable, replace with new hook and keeper assembly.

**NOTE**

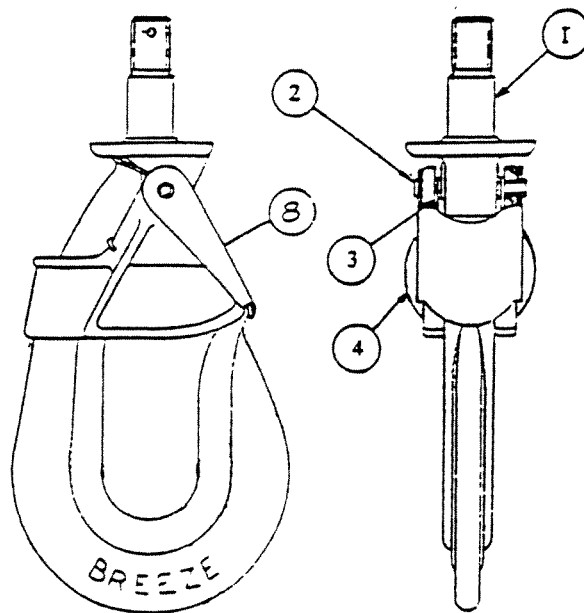
**Table 3-1 and Figure 3-3 may be referenced during the execution of the following procedure steps f and g.**

Table 3-1. Legend for Hook Assembly of Figure 3-3.

ID No.	Part No.	Description	UOC	UOM	QTY
	BL-4810	HOOK ASSEMBLY, Swivel	A	EA	1
	BL-4810-3	HOOK ASSEMBLY, Swivel	B	EA	1
	BL-4810-4	HOOK ASSEMBLY, Swivel	C	EA	1
	BL-4810-5	HOOK ASSEMBLY, Swivel	D	EA	1
	BL-4810-6	HOOK ASSEMBLY, Swivel	E	EA	1
-1	....BL-4807	HOOK, Swivel Machined		EA	1
-2	....BL-5497	TUBE	ACE	EA	1
	....BL-5497-1	TUBE	BD	EA	1
-3	....BL-4809	SPRING, Keeper		EA	1
-4	....BL4808	KEEPER, Swivel Hook	ABDE	EA	1
	....BL-4808-2	KEEPER	C	EA	1
-5	....Y-1174-1-1	SLEEVE	C	EA	1
-6	....Y-1223-1-1	PIN, Quick Release	C	EA	1
-7	....BL-8062	CABLE ASSEMBLY	C	EA	1
-8	....BL-4799	GUARD	B	EA	1
-9	....BL-9736	SPRING, Keeper Guard	D	EA	1
-10	....BL-9735	GUARD, Keeper	D	EA	1
-11	....Y-1086-2-1	Rivet, Round Head	D	EA	1



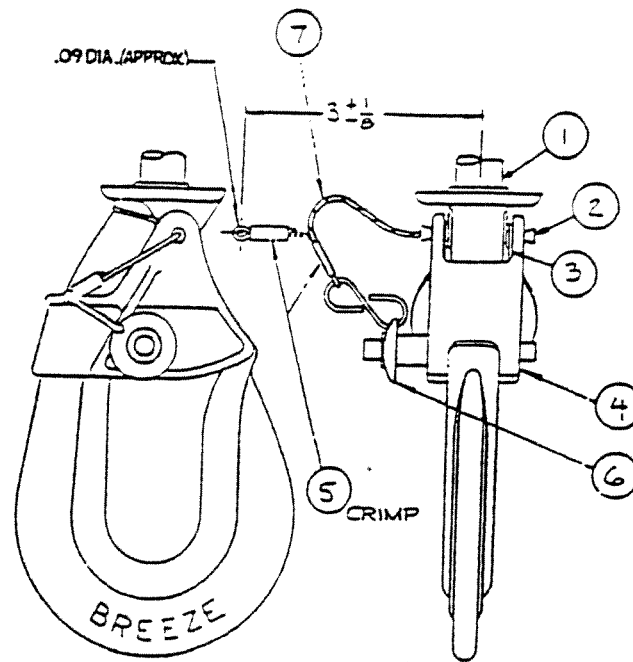
(A) BL-4810



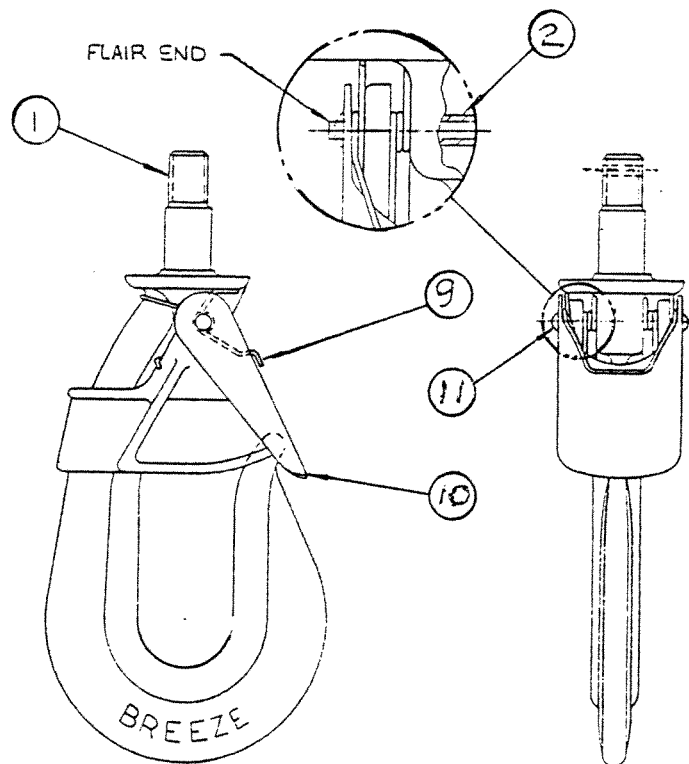
(B) BL-4810-3

Figure 3-3. Hook Assembly (1 of 3)



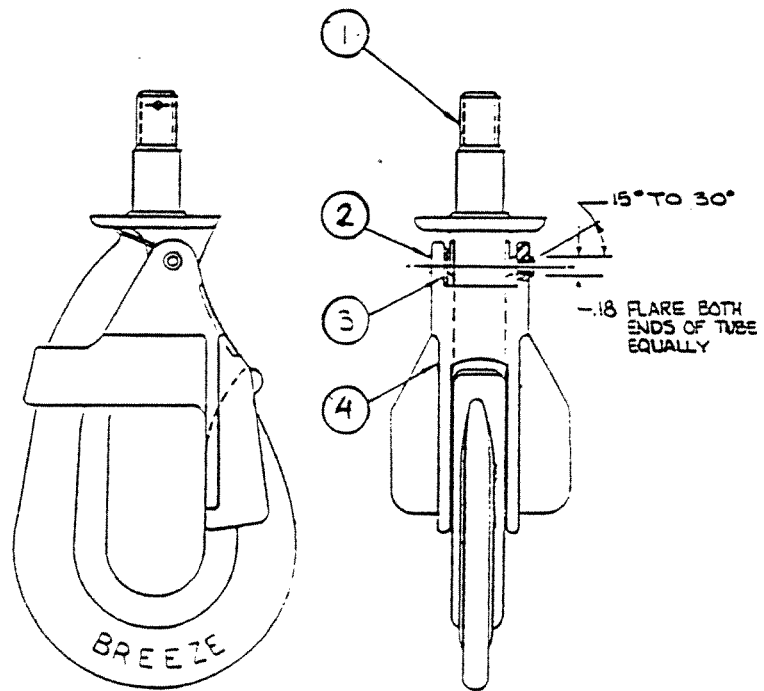


(C) BL-4810-4



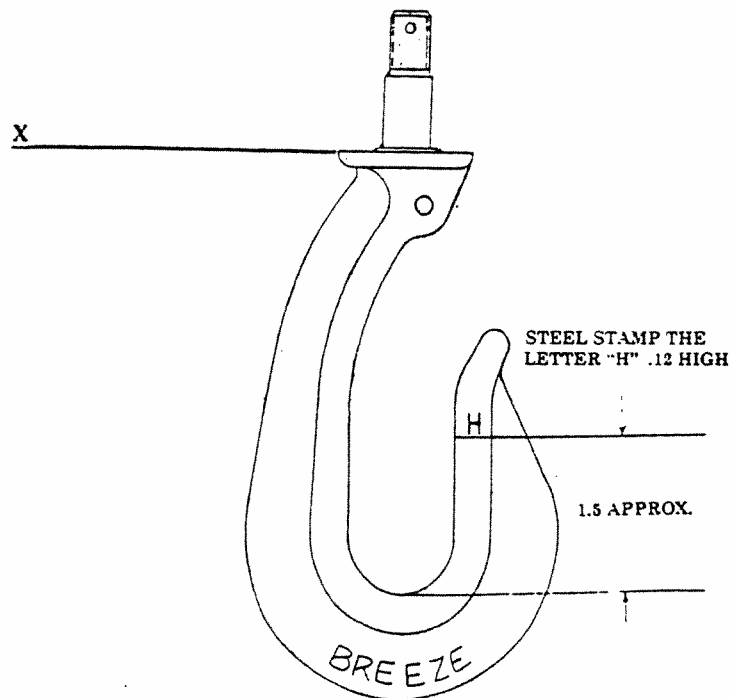
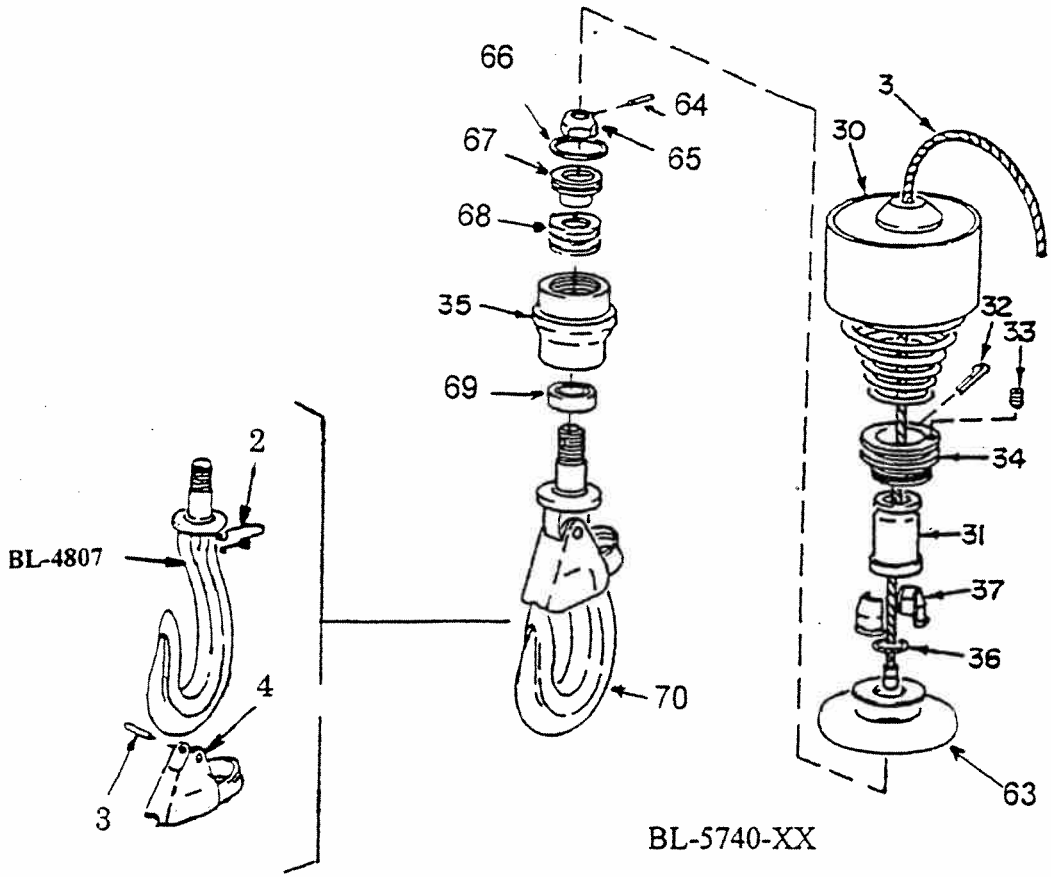
(D) BL-4810-5

Figure 3-3. Hook Assembly (2 of 3)



(E) BL-4810-6

Figure 3-3. Hook Assembly (3 of 3)



BL-4807  
Figure 3-4

- f. Inspect the keeper for material damage or poor activation and for broken spring or defective quick-release pin as applicable.

**NOTE**

**If the quick-release pin, keeper, guard, or spring of the hook assembly is found to be defective, it must be replaced.**

- g. To replace quick-release pin (6, Figure 3-3), keeper (4, Figure 3-3), guard (8, Figure 3-3), or spring (3, Figure 3-3), proceed as follows:
1. Cut cable assembly (7, Figure 3-3), remove the loop end of the cable from the S-shaped attachment link of pin (6, Figure 3-3) and discard the cable.
  2. Remove pin (6, Figure 3-3) from keeper (4, Figure 3-3) and check for quick, easy release.

**NOTE**

**If the keeper, guard, and spring are found to be acceptable, skip steps 3 through 6.**

3. Remove one flared end of tube (2, Figure 3-3) using 30-degree countersink mounted in a suitable drill press. Remove tube (2, Figure 3-3) from hook (1, Figure 3-3). For BL-4810-5, grind one end of rivet (11, Figure 3-3) flat and punch out rivet. Remaining disassembly same as all other hooks.
4. Remove keeper (4, Figure 3-3), guard (8, Figure 3-3), and spring (3, Figure 3-3) from hook (1, Figure 3-3) and replace worn or damaged parts.
5. Place spring (3, Figure 3-3), guard (8, Figure 3-3), and keeper (4, Figure 3-3) on hook (1, Figure 3-3) and insert new tube (2, Figure 3-3).
6. Flare ends of tube (2, Figure 3-3) to retain spring (3, Figure 3-3), guard (8, Figure 3-3), and keeper (4, Figure 3-3) permanently.
7. For BL-4810-5 install item 11 (Figure 3-3) through tube and flair as shown.

**NOTE**

**If replacement of a quick-release pin is not required, terminate this procedure.**

8. If pin (6, Figure 3-3) is found to be defective, replace with a new pin.
9. Install pin (6, Figure 3-3) in keeper (4, Figure 3-3).

- ii. Pass one end of new cable assembly (7. Figure 3-3) through tube (2. Figure 3-3) and loop the end of cable assembly (7. Figure 3-3) around the S-shaped attachment link of pin (6. Figure 3-3) to install and crimp sleeve (5. Figure 3-3) onto cable assembly (7. Figure 3-3).

## 6.2 Maintenance of Hook Assembly Parts

### CAUTION

**Any part made of plastic or other synthetic material such as rubber bumpers, nuts having fiber or nylon inserts, oil seals, rubber grommets, and others must not be in contact with solvents, detergents, or fuel at any time as it may degrade the material properties of the part and deteriorate its intended capacity and application.**

- a. Inspect plastic and other synthetic materials for brittleness or material degradation or surface imperfection such as cracks, abrasion, erosion, wear, and laceration. Replace any worn or damaged part.
- b. Separate these parts from the other parts and set them aside on a clean surface.

### CAUTION

**Due to the special fabrication and application of load bearings, they must be cleaned separately in accordance with special cleaning procedures as required.**

- c. Separate all bearings from the other parts and set them aside on a clean surface.
- d. Loosen dirt and grease from all other metal parts such as screws, bolts, nuts, washers, housing, and other related components using a stiff-bristle, non-metallic brush and kerosene solvent or equivalent.
- e. Dry the parts with a clean cloth and place them on a clean surface.

### CAUTION

**The bearing performance and life depends upon the smoothness and cleanness of the working surfaces of the balls or rollers and the internal raceways. It is therefore required that these parts be protected from dirt, dust, or foreign matter contamination at any time and must be properly serviced in a clean area and lubricated when in use.**

### NOTE

**If a bearing is provided with a removable seal, it must be removed before service.**

- f. Lift and remove the bearing seal carefully by inserting a blunt, thin object between the seal edge and the raceway shoulder on both side of the bearing if applicable.
- g. Thoroughly clean all bearings with a lint-free, soft-bristle brush and kerosene. Federal Specification VV-K-211 or equivalent.

**CAUTION**

**Never spin ball or roller bearing when it is not lubricated as this may cause permanent damage to the rolling elements and raceways.**

- h. Dry the bearing with clean, dry compressed air at a maximum pressure of 20 psi, or with a clean, lint-free cloth.
- i. Apply a few drops of light oil on the raceways. Visually inspect the bearings for corrosion, galling or imperfection, or signs of roughness during rotation. If bearing is found to be unacceptable, discard and replace with new bearing.
- j. If ball or roller bearing performance is acceptable, repack the bearing 50% with grease, MIL-G-23827B or equivalent.
- k. Dry/clean the seals with a clean, lint-free cloth and install them as applicable. Make sure that the seals recess under the intended raceway shoulders to contain the grease properly.
- l. Lubricate thrust bearing assembly with Dow Corning No. 33 silicone grease or equivalent prior to installation.
- m. Lubricate all surfaces of new packing with Dow Corning No. 4 silicone grease or equivalent prior to installation.
- n. Coat the stem of the hook assembly with a light film of Dow Corning no. 33 silicone grease or equivalent prior to assembly.

7.0 **RECOMMENDATION**

Breeze-Eastern recommends to all users of BL- 5740-XX rescue hoist swivel hook assembly (BL-4807), to comply with this CAB WITHIN 90 DAYS.

8.0 CLASSIFICATION

- Product Improvement
- Reliability
- Service Life

9.0 RECOMMENDED IMPLEMENTATION

- Immediately

10.0 EXCHANGE PROGRAM

During the first 90 days of this program Breeze-Eastern has made available a limited rotatable pool of refurbished hooks for those users who wish to take advantage of this exchange program. Please notify Breeze-Eastern Product Support of the Quantity and type of hooks required and Product Support will arrange for the exchange at no charge. All shipping charges will be the responsibility of the customer.

Hooks returned for depot modification and/or exchange program will be evaluated prior to rework or exchange. If replacement parts other than the re-assembly kit parts are required, a quote will be issued to the customer prior to any action taken on the returned hooks.

To schedule depot level modification, or to request re-assembly kits, please contact :

Breeze Eastern Product Support  
700 Liberty Ave Union, N.J. 07083  
Phone 1-800-929-1919 or 908-686-4000 ext 357  
FAX. 908-688-6495