



Interagency Aviation Safety Alert



No. IASA 12-01
Revision 1

June 18, 2012

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Subject: **REVISED** Helicopter Cargo Hauling Equipment
This replaces the previous version of IASA 12-01

Area of Concern: Helicopter Operations

Distribution: All Aviation Operations and Incident Support Caches

ISSUE: Some helicopter cargo hauling equipment may fail to meet strength standards, compromising safety.
During an external cargo operation, an empty net and swivel dislodged during flight resulting in an uncommanded dropped load ([SAFECOM 11-0592](#)). It was discovered that the keeper gate of the leadline was bent and completely open, which ultimately led to the loss of the net and swivel.

The second issue involves conflicting load limits on leadline components ([SAFECOM 11-0665](#) and [SAFECOM 11-1000](#)). In example 1 (below), the pear link is marked with a limit of 2900 lbs, the leadline tag shows 3000 lbs, and the hook shows 1 ½ tons (3000 lbs.). In example 2, the leadline identification tag shows 3000 lbs., the pear link 4200, and the hook lacks any identification. This conflict may exist since equipment was procured with commercially available components. However, it's important to remember that **new leadline components should never indicate a value less than what's stated on the leadline identification tag.** Unfortunately, this situation may exist on older components until they are replaced as explained in the following page. **Until then, the lower of the two limits should govern their use.**

The third issue is related to the SWL (Safe Working Load) and WLL (Working Load Limit) stamps on the leadline components. The Rigging Industry introduced WLL as a replacement for SWL a number of years ago. Both terms are generally interchangeable and both terms continue to be used, although WLL is becoming more common. The change from using SWL within Industry is associated with the implied liability in using the word "safe".



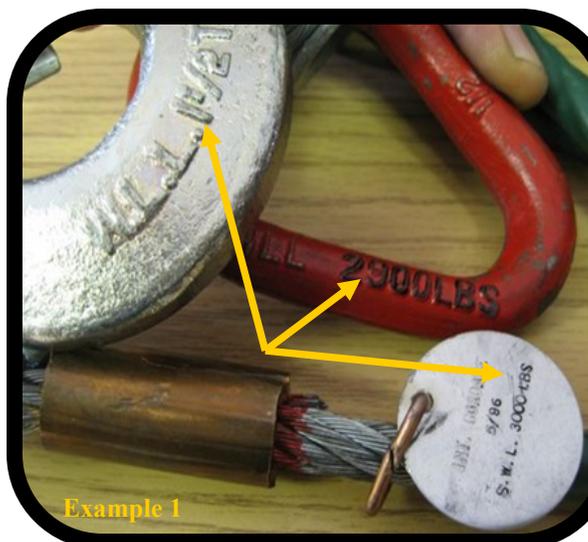
Figure 1

Keeper Gate / Snap-back Spring Gate

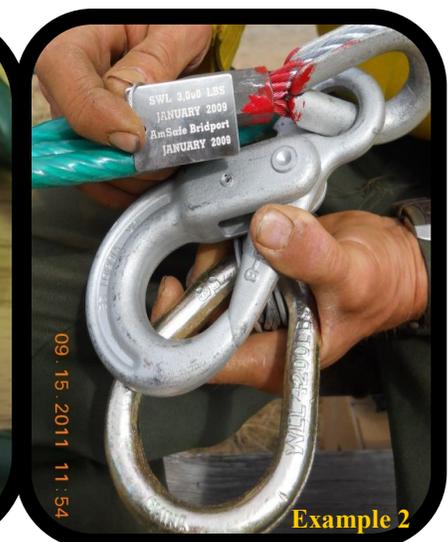


Figure 2

Keeper-less Gate / Sure Lock Hook



Example 1



Example 2

DISCUSSION: Over the years the Snap-back spring-gates/Keeper Gates normally used on both leadlines and cargo swivels (figure 1) often failed and contributed to uncommanded dropped loads. In 1995, a study was commissioned to improve the hook design which resulted in the self-locking gate hook (figure 2). The specification for cargo swivels was changed and procurement procedures for the new hook design was implemented. In 2004, an interagency retrofit program was implemented in order to remove the old snap gate cargo swivels that were procured prior to the specification change (Cache Memorandum 08-2). By 2007, the snap gates were eliminated from the cache system. In 2008, the snap gate cargo swivels were no longer permitted however, some field units may not have implemented the retrofit program or received any such guidance. [SAFECOM 11-0592](#) provides a good example as to why we need to replace the old snap-gate hooks for self-locking hooks on existing leadlines.

As previously mentioned, the conflicting load limit information on the various components of a leadline may take some time to be fully eliminated due to previous specifications. Generally, steel forging suppliers do not make a pear link rated at 3,000 lbs. As a result, the pear link the load limit on most vendor supplied leadlines will probably not match the rating on the tag as it will most likely indicate a higher limit. Despite this difference, the new specification prohibits the inclusion of a component with a lower indicated load limit than the leadline tag. Previously, leadlines containing a 2900 lb. WLL pear link were manufactured in accordance with specifications at the time they were procured however, leadline specifications were subsequently changed. These leadlines may still be used until they no longer meet the refurbishment standard (e.g. kinked or other damage), but their use must be governed by the lowest rated component on the leadline.

Review of various SAFECOMs related to this subject revealed that one of the photographed leadlines was **not** procured through the General Services Administration (GSA), and therefore fails to meet the specifications. This is most likely to occur when this type of equipment is exchanged with a vendor's leadline after a fire incident. **It is critical to ensure that government equipment is not exchanged with vendor equipment or anything that's not been acquired through approved sources.** The current specification requires the following information to be printed on the tag:

1. Name or Trademark of the Supplier
2. Rated capacity of the leadline (either SWL or WLL)
3. Date of Manufacture (month and year)



RECOMMENDATIONS:

1. Field units inspect all equipment prior to its use in accordance with the Interagency Helicopter Operations Guide (IHOG), Chapter 9. Suspect equipment should be tagged and either refurbished or replaced.
2. Caches and local units phase out all leadlines with snap-back spring/keeper gated hooks by May 1, 2013. This equipment can be replaced with leadlines equipped with “sure lock” hooks available from GSA. To reduce the cost of implementation, retrofitting the leadline with a snap-back spring/keeper gate is an acceptable option. Local units are responsible for retrofitting or replacing their own inventory of keeper gated hooks as there is no centralized recall or retrofit program sponsored by the National Interagency Support Cache (NISC) system. Retrofits must be completed by a commercial/industrial rigging company utilizing the attached Appendix from San Dimas Technology and Development Center. A Cache Memo related to this matter is forthcoming.
3. Ensure all cargo hauling equipment is restricted to the lowest WLL/SWL rating. For example, if a piece of hardware (link or hook) is stamped with a rating of 2,900 lbs. and the tag indicates a rating of 3,000 lbs., then the limiting carrying capacity should be limited to 2,900 lbs.
4. Revise leadline specification to require the GSA contract number be stamped on the identification tag and that the link or hook rating be no less than the rating on the identification tag.
5. Ensure that government supplied equipment is not exchanged with contractors, cooperators, or locally procured equipment.
6. Ensure a swivel is utilized with each leadline in accordance with the IHOG, Chapter 11.

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Appendix – Leadline Retrofit

Field units may use the following information to implement a retrofit program on snap-back spring gated hook leadlines.

Field units will:

- First identify the leadlines that require retrofit.
- Find a rigging vendor to perform the retrofit work.
- Provide the rigging vendor with the “Leadline Retrofit Statement of Work” below and obtain a price for the work. Field units must not change the requirements identified in the Leadline Retrofit Statement of Work.
- When the contractor indicates the work is completed, review the contractor’s documentation which is required for them to submit to you in paragraph 11 of the statement of work for accepting the retrofit leadlines.
- Examine the Contractor Supplied Acceptance Data Package:
 - Was an acceptance package presented by the contractor? If not reject the lot.
 - Did the package contain the documents identified in paragraph 11? If not reject the lot.
 - Did each and every document in the acceptance data package meet the requirements identified? If not reject the lot.
 - Did the Certificates of Conformance provide all of the information required in paragraph 4 for both the hook and the thimble?
 - Did the Contractor provide inspection records/documentation? Examine one or two to determine if the contractor has an inspection system and that it was involved in the retrofit work.
 - Did the Contractor provide evidence that all of the leadlines were proof tested?
 - Did the Contractor’s Certification of Compliance provide all of the statements required in paragraph 12? Was it signed?
- The above should provide you with an acceptable level of assurance regarding the quality of the retrofit work. However, if you believe it is appropriate or required, field units may also inspect the leadlines for acceptance, as identified in paragraph 11. Please contact San Dimas for assistance if you decide to inspect the leadlines.

For additional information or questions please contact Carl Bamberger, USDA Forest Service, San Dimas Technology & Development Center. (909) 599-1267 ext. 253.

Leadline Retrofit Statement of Work

Purpose: In response to Safety Alert IASA 12-01, these instructions are provided. Land management agencies have in their inventories leadlines with snap-back spring gates. This type of gate is no longer desirable and the Government is interested in retrofitting these items. This Statement of Work defines the requirements for retrofitting these leadlines.

Requirements: The contractor shall retrofit the supplied Government leadlines as follows:

1. The contractor shall remove the existing hook and replace it with a hook that meets the following:
 - a. The hook shall have a minimum WLL of 3,000 lbs.
 - b. The hook shall have a minimum ultimate strength of 11,250 lbs.
 - c. The hook shall meet the dimensions shown in figure 1.

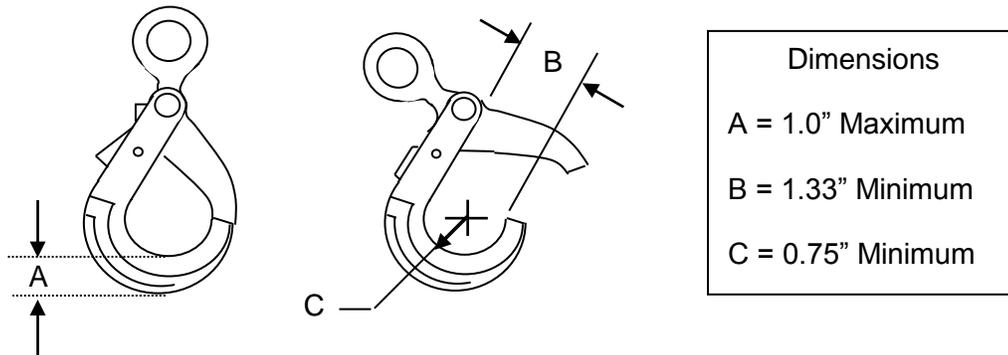


Figure 1, Self-Closing Hook

- d. A gate release shall be incorporated in the hook and have a spring return to lock the gate closed. The release lock and hook gate shall have a minimum engagement of 0.130 inches, as shown in figure 2. (Note: The dashed lines in figure 2 are hidden lines.)

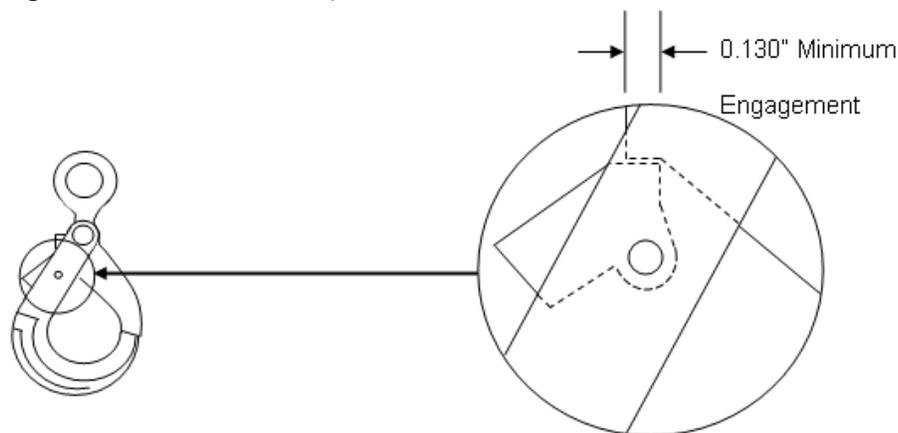


Figure 2, Gate Lock Engagement

- e. The hook shall be treated for corrosion resistance.
 - f. The contractor shall provide a Certificate of Conformance (COC) in accordance with paragraph 5 for the hook.
 - g. The hook shall be in a style similar to figure 1 in that it closes under load
2. The contractor may reuse the thimble from the removed hook end if it is serviceable (not collapsed, bent, etc.). The contractor shall supply a new thimble if the original one is not serviceable. The new thimble shall be rated extra heavy or heavy duty: and shall be galvanized coated. If a replacement thimble is provided, the contractor shall supply a COC for the thimble. The COC for the thimble shall meet the requirements of paragraph 5.
 3. The contractor shall mark each retrofit leadline item with a tag showing the information in figure 3. (Note: The date and company shown below for the tag are sample information. The actual date and proof testing date shall be used.) The text size shall be a minimum of 0.12 inches. The text shall be legible and permanently stamped, embossed, cut, or etched into the metal tag. The tag shall be either stainless steel or brass. The tag shall be attached to the leadline at the hook end using a galvanized steel wire rope. The hole in the tag shall be a minimum of one hole-diameter away from any edge of the tag. The securing wire rope for the tag shall be 1/16 inch galvanized steel. This wire rope shall be included in the swaging which attaches the hook. The loop formed shall be between 1 and 1-½ inches in diameter and oriented in the swage in the direction shown in figure 3. The tag shall not have sharp edges.

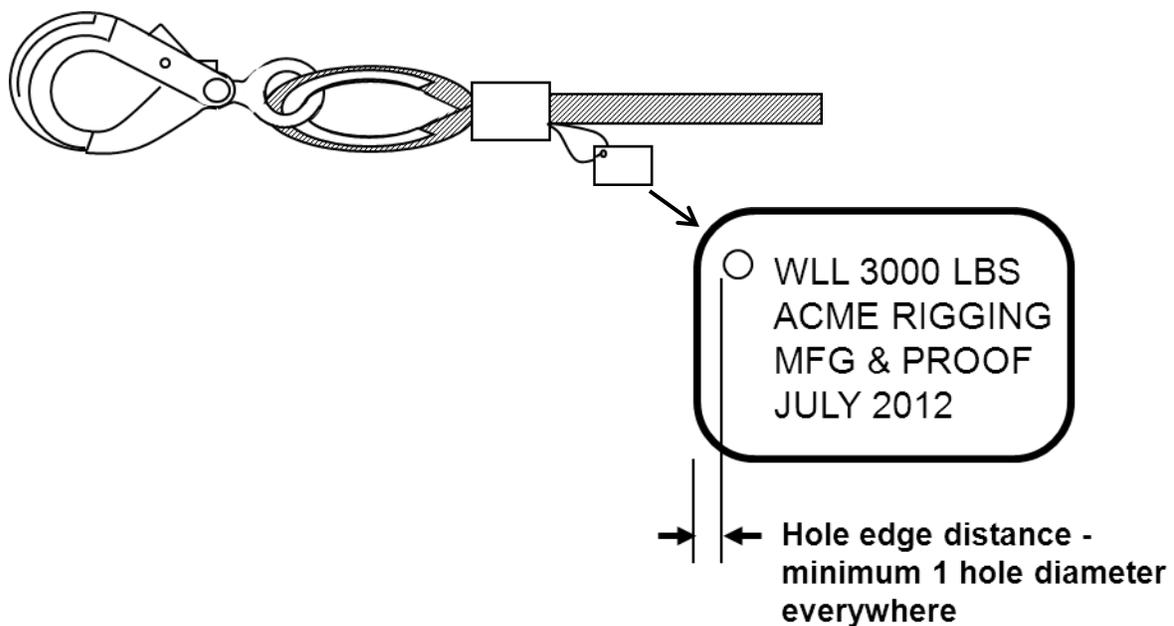


Figure 3, Tag Information and Orientation

4. Each and every leadline shall be proof tested to 6,000 lbs before delivery to the government. Slip indicator paint, see paragraph 8, shall be applied prior to proof testing. The contractor shall provide evidence (documentation) of proof testing for each retrofit leadline. The test equipment used for proof testing shall be calibrated to a recognized State or Federal standard. The equipment used for proof testing shall have been calibrated within the last 12 months of the proof testing. The proof load applied to the retrofit leadlines shall be a static load. If the proof test fixture is capable of testing more than one leadline at a time, the contractor shall provide evidence/information that each leadline receives the same load, within 75 lbs.

5. The contractor shall provide individual certificates of conformance for the components where required in this statement of work. The contractor shall provide the following information on the certificate:
 - a. Item description, i.e. eyelet hook, thimble
 - b. Item Manufacturer's name, address, and telephone number
 - c. Manufacturer's item part number
 - d. Procuring document for the item, including the quantity and date ordered
 - e. Manufacturer's late number, if applicable
 - f. Manufacturer's statement of working load limit and ultimate strength for the hook; and the part rating for the thimble

6. When removing the original hook from the leadline, the contractor shall ensure that the maximum length of the new leadline is achieved. The minimum length shall be 10 feet 2 inches for the retrofitted assembly. The measured length shall be as shown in figure 4 - measured from center to center of the thimbles, with the leadline taut, in a straight line, and on a flat surface.

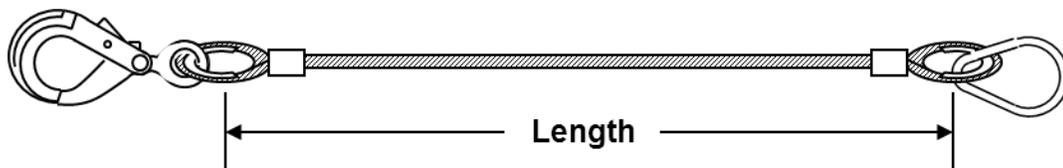


Figure 4, Length of Leadline

7. The retrofit leadline shall be manufactured by current standard production processes to provide a clean, finished quality product. Workmanship shall be equal to the best commercial practices consistent with the highest engineering standards in the industry and

shall be free from any defect that may impair serviceability or detract from the appearance of the product. The lead line shall be free of sharp edges or other that could result in injury.

8. The new hook shall be terminated in an eye using a thimble and swage collar. The swage collar shall be either stainless or carbon steel, copper, or zinc-coated copper. Aluminum swages shall not be used. The wire rope shall be striped of the plastic coating before swaging. The swaged area shall not incorporate any part of the plastic coating. All swages shall be painted for slip indication as shown in figure 5. The paint color shall be red. The pear link end swage shall also be similarly painted. Swages shall not be covered. Splices shall not be allowed in the finished leadline. For turnback swage terminations, both terminated ends of the wire rope shall be fully contained within their swages and the end of the wire rope shall be flush with the swage collar or extend no more than 0.125 inches beyond the swage. In no case shall the end of the wire rope be contained within the swage on turnback terminations. Flemish eye swage terminations shall meet the swage manufacturer's requirements. The contractor shall obtain and retain the Flemish eye swage termination requirements, including inspection requirements. If inspection of the Flemish eye requires special tools for inspection, the contractor shall make them available to the government during their acceptance.

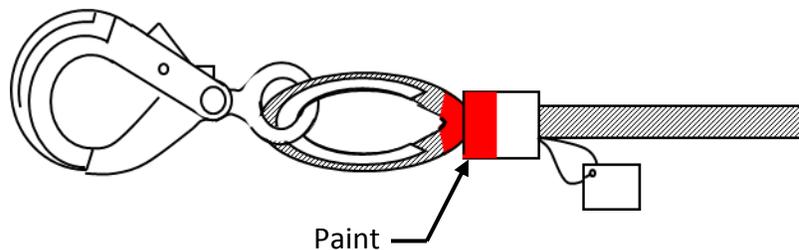


Figure 5, Slip Indicator Paint

9. The contractor shall be responsible for delivering quality products that meet the requirements of this statement of work. The contractor shall perform all inspections and test requirements specified herein prior to the submission of any items to the government for inspections and acceptance. The contractor's test and inspection results shall be made available to the government at acceptance of the products. The contractor may use his or her own test facilities or any commercial laboratory acceptable to the government. Inspections and test records shall be kept complete and available for the government.
10. The contractor shall perform the inspections and tests identified in table 1.

Table 1, Inspection and Measurements		
Method of Inspection	Examination	Appendix Reference Paragraphs
Measure	Measure the hook to assure the dimensions are as shown in figure 1.	1c
Review	Review the contractor's submitted Certificate of Conformance for the required data about the supplied hook.	1a, 1b, 1f, and 5
Measure	Measure the gate release lock engagement to assure the dimension is as shown in figure 2.	1d
Visual	Assure that the hook is coated for corrosion, e.g. painted, plated, etc.	1e
Review	Review the contractor's submitted Certificate of Conformance for the required data about the thimble, if appropriate.	2 and 5
Visual	Assure that the marking tag contains all of the information identified	3 and figure 3
Measure	Measure the characters heights to assure they meet the requirements.	3
Visual	Assure that the characters are legible and permanently stamped, embossed, cut, or etched in the metal tag.	3
Visual	Assure that the tag is either stainless steel or brass.	3
Visual	Assure that the tag is oriented in the swage properly, that a steel cable is used to hold the tag, and that the loop is as required.	3 and figure 3
Measure	Measure the tag wire rope for diameter and loop size	3
Review	Review the submitted documentation to assure that each finished assembly was proof tested to 6,000 lbs.	4
Measure	Measure the cable to assure that it is not less than 10 feet 2 inches, per figure 5.	6
Visual	Examine the finished hook installation for suitable workmanship and that no sharp edges exist.	7
Visual	Assure that the swag collar has been painted per figure 6 for slip indication.	8 and figure 6
Visual	Assure that no plastic coating was included in the swage.	
Visual	Assure that the terminated end (cut end) of the wire	8

	rope or does not extend greater than 0.125 inches beyond end of the swage collar, for turnback swage terminations.	
Visual	Assure that the terminated end (cut end) of the wire rope, for the hook end, is not recessed inside of the swage collar, for turnback swage terminations.	8
Review	Review the contractor supplied information on the Flemish eye swage, if applicable.	8
Visual	Assure that installed Flemish eye swages are installed per the manufacturer's inspection information, if applicable.	8
	End of table.	

11. The contractor shall provide an acceptance data package to the government at the time of acceptance. The package shall include the following:

- All required Certificates of Conformance, see paragraphs 1f, 2, and 5
- All contractor inspection results, see paragraphs 9 and 10
- All proof testing results, see paragraph 4
- Certification of Compliance, see paragraph 12

The Government reserves the right to review the contractor's inspection and other associated records/documentation and/ or inspect the leadlines as part of the acceptance process.

12. The contractor shall prepare a Certification of Compliance. The certificate shall state that the vendor certifies that the retrofit leadlines offered for acceptance comply with all of the requirements of this statement of work; that the vendor has performed all of the inspections identified in table 1 on each leadline and that the leadlines meet the identified requirements; that the proof testing equipment is within the 1 year calibration cycle; and that proof tested all of the leadlines. This certificate shall be on the contractor's letterhead (or similar). The contractor shall sign the certification. This signature shall show the person's printed name and position.

13. Notes to Contractors:

1. The leadlines were procured to a specification that established a minimum tensile strength of the raw wire rope material at a minimum of 11,250 lbs. Certifications were obtained at the time of procurement validating this. Hence leadlines shall not be rejected due to doubts about the

strength of the wire rope material. Leadlines may be rejected due to unacceptable wear or damage to the wire rope.

2. The Government will review the acceptance data package identified in paragraph 11 for determination of acceptance of the lot. The Government reserves the right to review the contractor's inspection and other associated records/documentation as part of the acceptance process.

End of Statement of Work