



A Textron Company

ALERT SERVICE BULLETIN

430-14-54
10 November 2014

MODEL AFFECTED: 430

SUBJECT: GOODRICH EXTERNAL HOIST

HELICOPTERS AFFECTED: Serial number 49001 and subsequent with Goodrich 42325 Series Hoist System installed.

COMPLIANCE: See attached Vendor Bulletin ASB 44301-10-18 Rev. 2. It is the responsibility of the owner to ensure that the most current version of the Goodrich ASB 44301-10-18 is consulted.

DESCRIPTION:

The purpose of this bulletin is to achieve complete distribution of the attached vendor bulletin to the current affected model distribution list on record by Bell Helicopter.

APPROVAL:

See attached Vendor Bulletin ASB 44301-10-18 Rev. 2

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Goodrich Corporation
Sensors & Integrated Systems
Brea, CA 92821
Phone: 714-984-1461



SENSORS & INTEGRATED SYSTEMS- CALIFORNIA
2727 E IMPERIAL HIGHWAY, BREA, CA 92821

TO: HOLDERS OF SERVICE BULLETIN 44301-10-18, DATED SEP 5/14.

REVISION NO. 2. DATED Oct 7/14

HIGHLIGHTS

Pages which have been revised are outlined below together with the highlights of the revision. Please destroy obsolete pages in your copy of this bulletin and replace them with Revision No. 2 pages dated Oct 7/14.

PAGE NO.	DESCRIPTION OF CHANGE	EFFECTIVITY
1	Updated Table 1 to refer to Tables 2 and 3 for upper load check limits.	All
2-3	Added Tables 2 and 3. Following tables renumbered.	All
6	Changed compliance requirements	All
7	Revised note Revised information recorded Revised table	All
8	Revised 44301-10-4 usage	All
9	Added note	All
11	Added note about controlled environment Revised note to add maximum load	All
12	Added additional information about evaluation of test results	All
13	Added Figure 4	All
14	Revised actions following testing failure	All
16	Revised reporting form	All



ALERT SERVICE BULLETIN

Equipment/Furnishings - Load Check Inspection - Safety and Reliability

1. Planning Information

A. Effectivity

This Alert Service Bulletin and the information it contains is applicable to all part numbers of the hoists listed in Table 1. These hoists are manufactured by Goodrich Sensors & Integrated Systems, Brea, CA.

TABLE 1.

Hoist Family	Slip Load (Lb)		
	Low temp 32-64°F (0-18°C)	Normal temp 65-85°F (18-30°C)	High temp 86-120°F (30-50°C)
42315	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
42325	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
44301-10-4, -7, -9, -12, -13	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
44301-10-1, -2, -5, -6, -8, -10, -11	1000-see Table 3/Figure 2	1040-see Table 3/Figure 2	1040-1500
44311	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
44312	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
44314	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
44315	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
44316	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800
44318 (except 44318-11-103)	1200-see Table 2/Figure 1	1275-see Table 2/Figure 1	1275-1800

Sep 5/14

TRANSMITTAL OF TECHNICAL DATA (EAR) "These commodities, technology or software are controlled by the US Export Administration Regulations (EAR). Diversion contrary to U.S. law is prohibited. ECCN: 9E991"

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TABLE 2. Upper Load Limit, 600 lb hoists

°F	°C	Lbs	°F	°C	Lbs	°F	°C	Lbs
32	0	1702	50	10.0	1735	68	20.0	1768
33	0.6	1704	51	10.6	1737	69	20.6	1769
34	1.1	1706	52	11.1	1738	70	21.1	1771
35	1.7	1707	53	11.7	1740	71	21.7	1773
36	2.2	1709	54	12.2	1742	72	22.2	1775
37	2.8	1711	55	12.8	1744	73	22.8	1777
38	3.3	1713	56	13.3	1746	74	23.3	1779
39	3.9	1715	57	13.9	1748	75	23.9	1780
40	4.4	1717	58	14.4	1749	76	24.4	1782
41	5.0	1718	59	15.0	1751	77	25.0	1784
42	5.6	1720	60	15.6	1753	78	25.6	1786
43	6.1	1722	61	16.1	1755	79	26.1	1788
44	6.7	1724	62	16.7	1757	80	26.7	1790
45	7.2	1726	63	17.2	1759	81	27.2	1791
46	7.8	1727	64	17.8	1760	82	27.8	1793
47	8.3	1729	65	18.3	1762	83	28.3	1795
48	8.9	1731	66	18.9	1764	84	28.9	1797
49	9.4	1733	67	19.4	1766	85	29.4	1799

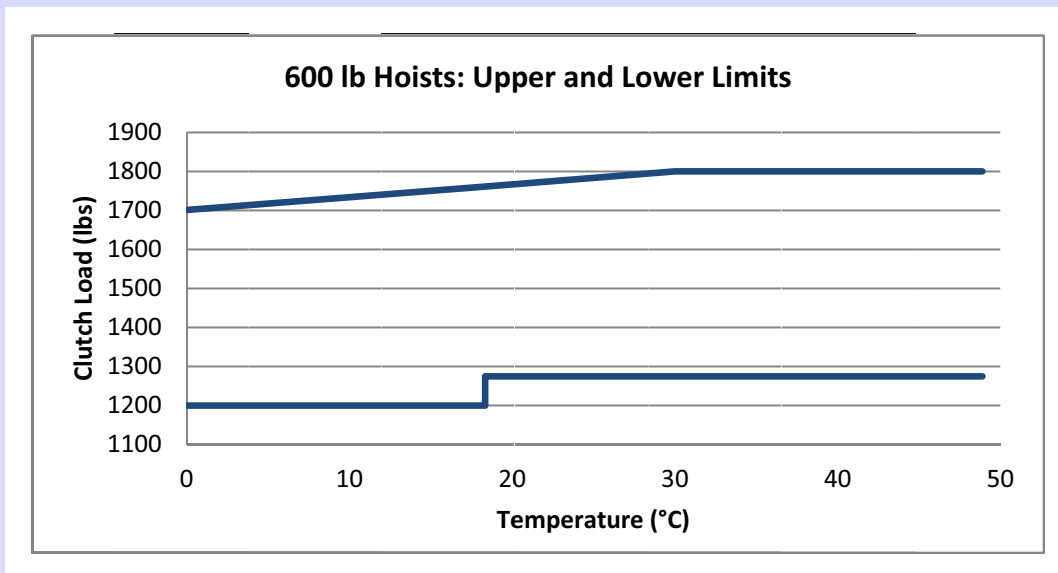


Figure 1. Acceptable Range for the 600 lb capacity hoists

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Equipment/Furnishings - Load Check Inspection - Safety and Reliability

TABLE 3. Upper Load Limit, 500 lb hoists

°F	°C	Lbs	°F	°C	Lbs	°F	°C	Lbs
32	0	1402	50	10.0	1435	68	20.0	1468
33	0.6	1404	51	10.6	1437	69	20.6	1469
34	1.1	1406	52	11.1	1438	70	21.1	1471
35	1.7	1407	53	11.7	1440	71	21.7	1473
36	2.2	1409	54	12.2	1442	72	22.2	1475
37	2.8	1411	55	12.8	1444	73	22.8	1477
38	3.3	1413	56	13.3	1446	74	23.3	1479
39	3.9	1415	57	13.9	1448	75	23.9	1480
40	4.4	1417	58	14.4	1449	76	24.4	1482
41	5.0	1418	59	15.0	1451	77	25.0	1484
42	5.6	1420	60	15.6	1453	78	25.6	1486
43	6.1	1422	61	16.1	1455	79	26.1	1488
44	6.7	1424	62	16.7	1457	80	26.7	1490
45	7.2	1426	63	17.2	1459	81	27.2	1491
46	7.8	1427	64	17.8	1460	82	27.8	1493
47	8.3	1429	65	18.3	1462	83	28.3	1495
48	8.9	1431	66	18.9	1464	84	28.9	1497
49	9.4	1433	67	19.4	1466	85	29.4	1499

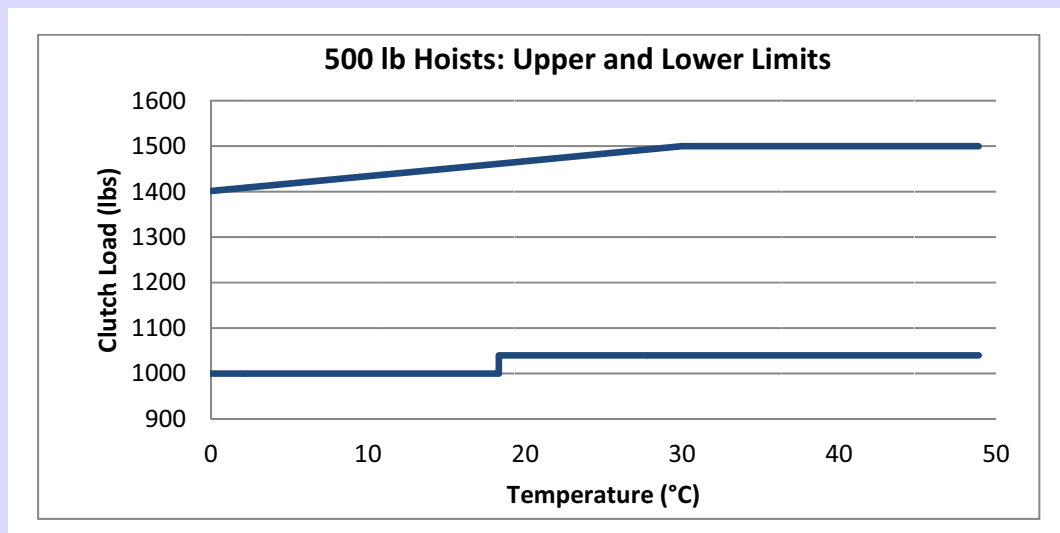


Figure 2. Acceptable Range for the 500 lb capacity hoists


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B. Reason

(1) Background

Goodrich received information from an Operator reporting an issue with a rescue hoist system. According to the information reported to Goodrich, the hoist lost the ability to hold a 252 kg load during a flight check, causing the test load to strike the ground. The incident did not result in any injuries. Goodrich has examined the subject hoist and has confirmed that the overload clutch was damaged to the point of failure. This overload clutch design is used in all external hoists and some of the findings from the failure investigation have highlighted the need for increased awareness within the hoist operator community of the clutch capability and how operators should best respond to events that may damage the clutch.

(2) Details

There are actions or conditions which could wear or degrade the capacity of the overload clutch.

- (a) **Peel out of the Cable.** Partial peel out of the cable which indicates clutch slippage can be recognized by the distinct stick/slip noise which might be audible on an external hoist when the cabin door is open, and can also be felt by a gloved hand on the cable. Failure to maintain vigilance by keeping a gloved hand on the cable and awareness of the load during operation can result in a partial peel out event without the operator's awareness of the event.

A "Partial Peel Out" is defined as an obvious detectable slip of the hoist overload clutch that results in approximately 20 inches (0.5 meters) or more of the hoist cable to reel off of the hoist cable drum in one overload clutch slip incident.

In the event of a partial peel out event, Goodrich recommends that the load be smoothly lowered to the ground while in a hover. Do not attempt to raise the load to the aircraft. Upon returning to base, remove the hoist from service and contact Goodrich Product Support at the address listed below to arrange for return of your hoist.

- (b) **High-energy overload event.** A single hoist high-energy overload event (approximately 200 feet per minute cable peel out for 6 seconds) can damage the overload clutch and result in the loss of the load attached to the hoist cable hook. In the event of a loss of load, the hoist shall be taken out of service and returned to Goodrich for servicing and repair. In the event of a high-energy overload event, Goodrich recommends that the load be smoothly lowered to the ground while in a hover. Do not attempt to raise the load to the aircraft. Upon



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returning to base, remove the hoist from service and contact Goodrich Product Support at the address listed below to arrange for return of your hoist.

- (c) **Entanglement of the cable on the ground or objects.** If a partial peel of more than 20 inches (0.5 meters) occurs due to entanglement of the cable, remove the hoist from service and contact Goodrich Product Support at the address listed below to arrange for return of your hoist.
- (d) **Flight Maneuvers on the Rescue Hoist System.** Excessive aircraft maneuvering has the capability to amplify hook loads that can exceed the overload clutch's capacity. Potential sources that could cause an overload condition are shock loads induced from slack on the cable, or a sharp turning radius with an extended cable, even at slow airspeeds, causing the peel out condition described above.

Care must be taken to operate the hoist and aircraft within the allowable limits and perform maintenance in accordance with published maintenance documentation.

If you have any questions regarding the operational limits of your aircraft with the hoist installed, contact your aircraft OEM for hoists installed under the aircraft Type Certificate or Goodrich for hoists installed under a Goodrich Supplemental Type Certificate.

After experiencing a partial peel event, remove the hoist from service and contact Goodrich Product Support at the address listed below to arrange for return of your hoist.

- (e) **Improper adjustment of Stop/Homing Load Limit Switches.** In the event of improperly adjusted or failed up stop/homing load limit switches, the overload clutch may be cycled if the motor operates with the hook in the homed position. Repetitive cycling of the overload clutch when driven by the motor can rapidly accumulate overload clutch cycles and degrade the overload clutch's capacity.

After adjusting the stop/homing load limit switches, perform the load check as described in paragraph 3 of this ASB prior to the next hoisting mission. If the hoist fails the load check, remove the hoist from service and contact Goodrich Product Support at the address listed below to arrange for return of your hoist.

- (f) **Storage related activities.** Any hoist kept in storage must be tested in accordance D.(1) and (2) before being returned to service. Additionally, amend the storage instructions found in the CMM to keep the gearbox filled with oil during long-term storage. Prepare a tag that reads "Gearbox filled. Drain and service to proper level before use" and attach it to the hoist.



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C. Description

The overload clutch design is common to all externally-mounted rescue hoists. Due to the nature of the reported incident, Goodrich is requiring the following inspection and one of the operational check procedures be performed to allow operators to check the rescue hoists in their fleets and to ensure that they remain in a serviceable condition.

D. Compliance

(1) Initial Test

The actions in this Alert Service Bulletin shall be performed according to Table 4, below.

TABLE 4. Compliance Times

Condition (since last load check)	Compliance time
Hoist currently in service	Within six (6) months of receipt of this ASB (Sept 5, 2014)
Return to service after depot maintenance	Six (6) months after return to service
In storage	Perform ASB prior to return to service

* Refer to the applicable Hoist CMM or OEM documentation for more information on defining “cycles” and “lifts.”

Hoists which are in storage do not need to meet these requirements, but will need to be tested IAW Table 4 before their next operation.

NOTE: If flight operations have been just completed with hoist operation, wait for a period of 5 hours to allow the hoist gearbox oil temperature to return to ambient conditions prior to initiating the initial test sequence

Record the performance of this ASB in the hoist log and complete the reporting form found the last page of this ASB. Send an email containing a copy of the reporting sheet to the type certificate (TC) holder and to ASB.SIS-CA@utas.utc.com indicating the hoist part number, serial number, slip load, ambient temperature, and the results of the test.

(2) Ongoing testing

This test shall be repeated every 6 months or 300 cycles for those operators using cycles as a method of recording usage, or every 6 months or 400 lifts for those operators using lifts as a method of recording usage, whichever occurs first.



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- E. Record the performance of this ASB in the hoist log and complete the reporting form found the last page of this ASB. Send an email containing a copy of the reporting sheet to the type certificate (TC) holder and to ASB.SIS-CA@utas.utc.com indicating the hoist part number, serial number, slip load, ambient temperature, gearbox lubricant and the results of the test. If the hoist fails the test, the hoist shall be removed from service. The TC holder will authorize the return of the hoist and log card to the TC holder or to Goodrich. Either the TC holder or Goodrich will contact the operator with an RMA to return the failed hoist for maintenance.

NOTE: Do not change type or brand of gearbox lubricant throughout the lifecycle of this ASB unless directed to as per section 3(k). Doing so may effect the performance of the overload clutch, rendering comparison values inaccurate and invalid. If directed to change to Mobil Jet II oil in paragraph 3(k), this same oil must be used in future oil changes.

- F. Approval

This service bulletin contains no modification information that revises the approved configuration.

- G. Manpower

- (1) The estimated amount of labor to accomplish the instructions of this Alert Service Bulletin for Rescue Hoist Assembly is 60 minutes, as follows:

Perform cable conditioning lift*	30 minutes
Perform load test**	15 minutes
Oil change (if required)***	30 minutes
Second cable conditioning lift followed by second load check***	45 minutes

* After performing the cable conditioning lift, wait 2 hours to allow the hoist to return to ambient temperatures before performing the load check.

** After performing hoist operations, wait 5 hours to allow the hoist to return to ambient temperatures before performing the load check.

*** Only required if oil change and second test is required

- (2) The inspection described in this Alert Service Bulletin may be performed by the operator or other authorized repair facility.



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H. Material — Cost and Availability

None.

I. Tooling - Price and Availability

The Load Check Tool (p/n 49900-890) is available for short-term loan (no cost for tool or shipping) as part of the listed kits. Contact the Goodrich or the UTAS 24-Hour Customer Response Center (CRC) at the address below to arrange for loan of the needed tool.

Hoist	Kit	Adapter	Notes
44301-10-1, 44301-10-2, 44301-10-4, 44301-10-5, 44301-10-6, 44301-10-8 thru -10-11	49900-889-103	No adapter used. Remove the hook from cable and use only the load check tool (49900-890) on the ball end of the cable.	All hoists can be tested without an adapter. Remove the hook or hook damper from the cable and use the load check tool (49900- 890) on the ball end of the cable.
44308-11			
44311-10-1 thru -10-8 44311-10-10 thru -10-12			
44315-10-1, -10-2			
44301-10-7	49900-889-102	49900-891 49900-893	
All other external hoists	49900-889-101	49900-891	

Following outlines the tool loan process.

- (a) Contact the Goodrich Hoist & Winch (7 AM to 5 PM PT) at 714-984-1584, or the UTC CRC (outside normal working hours) at 1-877-808-7575 (US) or +1-860-654-2500 (outside US) to request a tool loan.
- (b) Goodrich/CRC will request information from the end user.
- (c) The tool kit will be shipped to the end user.
- (d) End user will perform load checks. If the end user encounters any technical issues, Goodrich/CRC is available to provide support by answering technical questions, including discussion of test results.
- (e) If you report an overload clutch failure, obtain a return authorization for the failed hoist using the standard RMA process through Goodrich at the address listed below.
- (f) Tool kit will be returned from the end user. The return shipping label is included with the tool kit and shipping is pre-paid.



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2. Background

A. Weight and Balance

Not affected.

B. Electrical Load Data

Not affected.

C. Software Accomplishment Summary

None.

D. Reference

EASA AD 2013-0275 and subsequent revisions or supersedures

E. Other Publications Affected

None.

3. Accomplishment Instructions

The requirements of this ASB can be satisfied by either of the two methods outlined below (ATP or Load Check Tool) and only one method needs to be followed to comply with this ASB.

A. Successful accomplishment of the factory acceptance test (approved ATP) will satisfy the testing requirements of this ASB.

B. Using the Load Check Tool

NOTE: After performing any hoist operations, wait at least 5 hours before performing the load check to allow the hoist to cool to ambient temperature.

(1) To prevent the cable from being pulled between wraps on the outer layer of the cable drum, perform a cable conditioning before performing the load check. Cable conditioning can be accomplished by utilizing either of the following procedures:

(a) In-flight conditioning lift

- 1 From a hovering aircraft, fully extend the hoist cable to the down limit stop.
- 2 Reel in a load of 500 lbs (227 kg) up to the maximum of the hoist rated capacity for the full length of cable.

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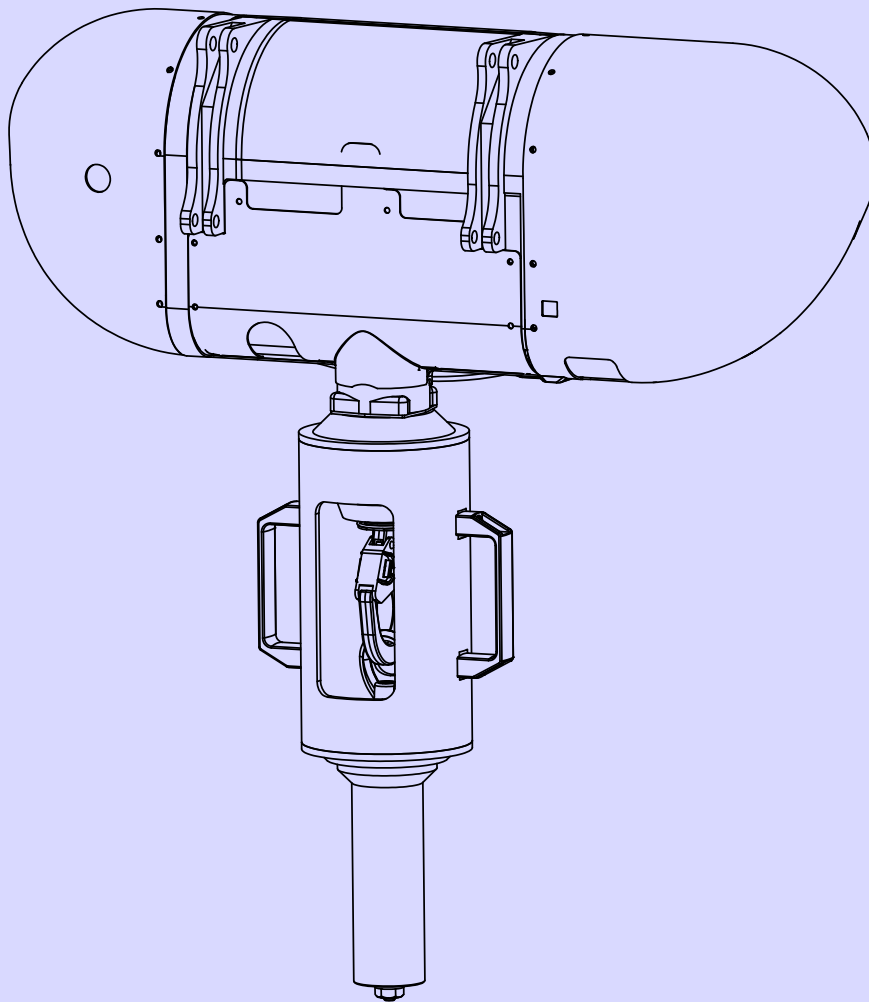
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- (b) The cable can also be reeled onto the drum using ground-support equipment capable of loading the cable to 500 lbs (227 kg) during reeling in.
- (c) Wait 2 hours to allow the hoist to return to ambient temperature before installing the load check tool.

CAUTION: FAILURE TO PRE-TENSION THE CABLE CAN RESULT IN DAMAGE TO THE CABLE DURING LOAD TESTING.

- (2) Install the load check tool in accordance with the instructions included with the tool (SIL 2014-01). See Figure 3 for a typical installation.



Rescue Hoist (typ.)

Load Check Tool
(49900-890) &
Hook Adapter
(49900-891)

Figure 3. Load check tool installed on a rescue hoist (typical).



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(3) Slip Load Test

NOTE: Performing the test at temperatures outside of the limits noted in Table 1 (<32°F/0°C or >120°F/50°C) is not authorized. Make a record of the air temperature on the test record form found on the last page of this document.

If possible, perform the testing in a controlled environment to minimize the difference between the ambient temperature and the temperature of the hoist gearbox.

- (a) Press the Peak button on the load meter.
- (b) Using the box wrench provided in the kit, tighten the hex nut on the load check tool at a rate not exceeding 90° per second to increase the load on the cable until the clutch slips.

NOTE: Clutch slippage will be indicated by a sudden slippage, or a failure of the clutch to reach the required load. You will also notice that the load displayed on the meter is not increasing with continued turns of the nut. Clutch slippage is generally accompanied by a single loud pop from within the hoist. Do not exceed 1850 lbs. on the Field Load Check Tool as it may cause damage to the tool.

- (c) Record the peak load as captured on the load meter.
- (d) Reset the peak value by pressing the Peak and Reset buttons together.
- (e) Repeat the test four (4) additional times, resetting the peak value after each slip.

NOTE: As the testing progresses, it may be necessary to stop between tests to unscrew the hex nut down the threaded shaft and re-seat the load tool against the hoist using the pendant.

- (f) Average the five (5) slip values to obtain the final value. Record the test results on the hoist log card and evaluate the test results in accordance with the values in Table 1 based on the ambient temperature at the time of testing.
- (g) Loosen the hex nut or reel out the cable to remove the load on the cable and remove the tool from the hoist.
- (h) Inspect the first 30 feet (10 meters) of the cable for damage and size in accordance with the Cable Inspection section of the CMM or helicopter documentation.
- (i) If the test results indicate a value within the allowable limits per Table 1, record the results, inform Goodrich and the TC holder, and continue operations.

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- (j) If the test results indicate a value below the acceptable lower limit per Table 1, obtain a return authorization for the failed hoist using the standard RMA process through Goodrich at the address listed below. Send results of testing to Goodrich.

- (k) If the test results indicate a value above the acceptable upper limit per Table 1, and the gearbox oil is not Mobil Jet II, perform the following additional steps:
 - 1 Perform an oil change using Mobil Jet II oil only, per applicable CMM or Helicopter level documentation. Maintain use of Mobil Jet II in the hoist at subsequent oil changes.

 - 2 Wait 24 hours to allow oil to soak into the clutch.

 - 3 Resume ASB by performing the cable conditioning as described above, and re-perform the slip load test.

NOTE: Do not change type or brand of gearbox lubricant throughout the lifecycle of this ASB unless directed to here. Doing so may effect the performance of the overload clutch, rendering comparison values inaccurate and invalid. If directed to change to Mobil Jet II oil here, this same oil must be used in future oil changes.

- (l) If the test results indicate a value above the acceptable upper limit per Table 1, contact the applicable Type Certificate (TC) holder for instructions on further use. Send results of testing to Goodrich.

NOTE: If the hoist was tested per Goodrich ASB 44311-10-18 Revision 1 after the EASA AD release date (8 September 2014), is still in your possession, and resulted in a failure due to a high pull load, check the recorded data against the new criteria in Goodrich ASB 44311-10-18 Revision 2. If the recorded data is now within the limits, proceed to use the hoist as is, and continue the load checks at the required compliance interval.

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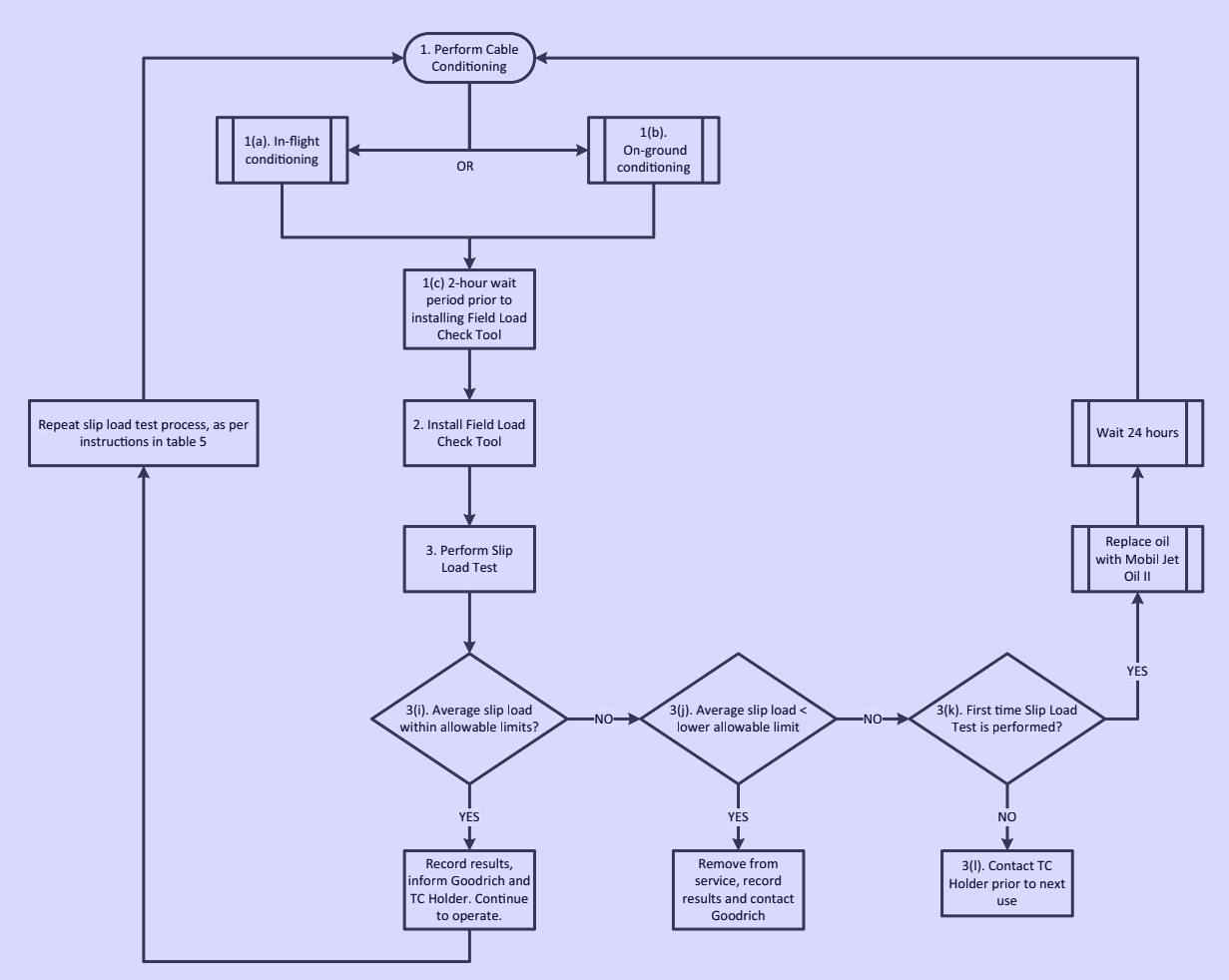


Figure 4. Load check flowchart



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C. On-going testing and retention of records

Record the test results on the hoist log card and compare to the initial reading, if applicable. Evaluate the current slip load with respect to initial results in accordance with the table below:

TABLE 5. Evaluation of test results

Test result	Decrease from initial test result	Action	Next test
Below lower limit as defined in Table 1	N/A	Remove the hoist from service and contact the TC holder	N/A
Within limits as defined in Table 1	Less than 200 lbs	Continue in service	In accordance with the interval defined in Section 1.D.(2).
	Between 200 lb and 300 lbs (inclusive)	Continue in service	Half the interval (cycles, lifts, or months) defined in Section 1.D.(2). (ie: 3 months, 150 cycles, 200 lifts)
	More than 300 lbs	Contact Goodrich	N/A
Above upper limit as defined in Table 1	N/A	If gearbox oil is other than Mobil Jet II, change oil IAW paragraph 3.k. Remove the hoist from service if oil type has already been changed to Mobil Jet II, and contact the TC holder	N/A

D. Marking

- (1) Document the incorporation of this ASB on the Hoist Log Card or maintenance record.

E. Points of Contact

To obtain a loan of the Load Check Tool or obtain an RMA for the return of a hoist that has failed the load check in this ASB:

Goodrich Corporation

A UTC Aerospace Systems Company, Hoist and Winch Division

2727 E Imperial Hwy

Brea, CA 92821

Phone: 714-984-1584



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To obtain a loan of the Load Check Tool outside of normal CA working hours, please contact:

UTC Aerospace Systems Customer Response Center (CRC)

1-877-808-7575 (US)

+1-860-654-2500 (Outside US)

4. Material Information

None



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Hoist Load Check Reply Form

Please complete this form upon completion of the load check IAW this ASB. Return a copy of this form to ASB.SIS-CA@utas.utc.com.

Name and address of operator _____

Helicopter model and serial number _____

Hoist Part number _____

Serial number _____

Operating hours _____

Cycles/Lifts _____

Slip loads (5) _____

Average slip load _____

Air temperature _____

Gearbox lubricant _____

Load check PASS

Load check FAIL

Oil changed to Mobil Jet II?

Note: If the hoist fails the load check, the hoist shall be removed from service. Regardless of pass or fail, the test result shall be forwarded by email to Goodrich and the type certificate (TC) holder.

Comments _____
