



Mechanical Specialties, LLC
Olympia, WA

Doc. No.: MS-369-430-110
Revision: 1
Document Date: 04/21/2021

**ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
HUMAN EXTERNAL CARGO HOOK SYSTEM**

**FAA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT**

FOR

MECHANICAL SPECIALTIES, LLC
**HUMAN EXTERNAL CARGO HOOK SYSTEM
P/N 369-430-100**

INSTALLED ON

MD HELICOPTERS 369D, 369E, 369F, 369FF

Serial Number: _____
Registration: _____

This document describes the Flight Manual content for the Mechanical Specialties, LLC 369-430-100 Human External Cargo (HEC) Hook Installation and must be attached to the appropriate FAA Approved MD369 Series Rotorcraft Flight Manual when the 369-430-100 HEC Hook Kit is installed in accordance with

STC No. SR02713SE

The information contained herein supplements or supersedes the basic Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this document, consult the basic Rotorcraft Flight Manual.

FAA Approved: _____
Manager, Northwest Flight Test Section, AIR-715
Federal Aviation Administration
Des Moines, WA

Date Approved: _____



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LOG OF REVISIONS

Rev.	Pg. No.	Date	Description	FAA Approval
0	All	24 March 2021	Original Release	 R.B. STONEY for/ Manager, Northwest Flight Test Section, AIR-715 Federal Aviation Administration Des Moines, WA
1	All		Page 5, changed from "Installed with 15 amp circuit breaker." to "Installed with 5 amp circuit breaker."	Manager, Northwest Flight Test Section, AIR-715 Federal Aviation Administration Des Moines, WA



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SECTION I – GENERAL

This supplement must be attached to the appropriate MD Helicopters Rotorcraft Flight Manual when the Mechanical Specialties Model 369-430-100 Human External Cargo Hook System is installed. The HEC Hook System is for carrying Human External Cargo (HEC) loads and non-HEC loads.

This external load system meets the 14 CFR Part 27 certification requirements for Human External Cargo (HEC).

The following information supplements or supersedes the existing manual only for the areas listed in this supplement. For limitations, procedures and performance data not contained in this supplement consult the basic model specific Rotorcraft Flight Manual and the "Cargo Hook Kit" Rotorcraft Flight Manual Supplement issued by MD Helicopters, Inc.

The Model 369-430-100 Human External Cargo Hook System provides a means to engage, lift and transport external loads, including Human External Cargo. Each hook assembly has an electrical release as well as a manual emergency release system, in order to allow releases to be conducted by the Pilot-In-Charge in the cockpit. A manual release knob located on the side of each hook assembly allows cargo release to be conducted by ground crew personnel.

The Mechanical Specialties cargo hook Model 369-430-100 kit includes an electrical harness that interfaces with the aircraft's current electrical wiring and provisions to interface with the existing manual cable release system as supplied by MD Helicopters.

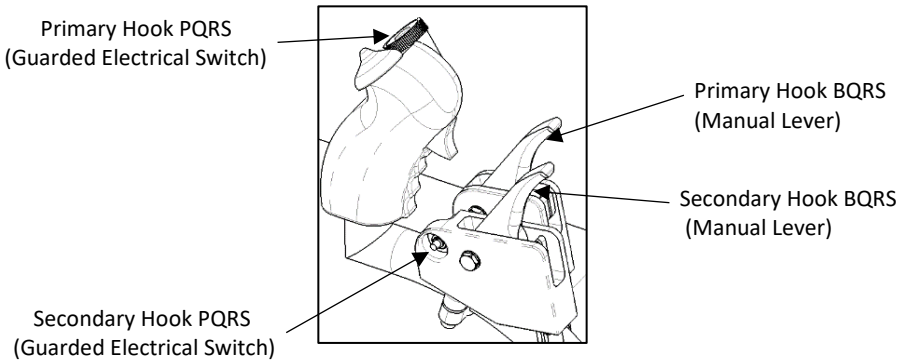
When the Human External Cargo Hook System is installed, an owner or operator holding a valid Rotorcraft External Load Operator Certificate may utilize the helicopter for transportation of external cargo when operated by a qualified pilot. WITH A HEC LOAD ATTACHED TO THE CARGO HOOK, OPERATION SHALL BE CONDUCTED IN ACCORDANCE WITH THE RESPECTIVE NATIONAL OPERATIONAL REQUIREMENTS. FOR U.S. OPERATORS, 14 CFR PART 133 ARE APPLICABLE.



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Release Actuation Methods

The release system for each cargo hook will consist of a primary electrical release with a secondary lever-type manual release. See Figure below. The hook releases are centrally located on the pilot's cyclic control but arranged so that only one can be operated at a time. The releases are independent of each other and must be operated individually to release the load from the helicopter.





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SECTION II – LIMITATIONS

NOTE

The external load equipment certification approval does not constitute operational approval; operational approval for external load operations must be granted by the local Aviation Authority.

HUMAN EXTERNAL CARGO (HEC)

Kinds of Operations:

HEC operations are prohibited at night.

Load Limitations:

Human External Cargo (HEC) loads are limited to 714 lb. maximum load. The load limit includes all items below the cargo hook.

Airspeed Limitations:

Maximum HEC airspeed is 65 KIAS.

Equipment Limitations:

Operations with long lines other than approved HEC long lines (P/N369-430-035-###, where ### is length, in feet, 50 ft. min length, 200 ft. max length) is prohibited.

25 lb. weight must be added to end of empty line to prevent tail rotor contact.

Operation of the external load equipment with HEC requires the use of a Personnel Carrying Device System (PCDS), which must be approved by the local aviation authority. TSO-C167 provides one such acceptable means of approval.

Communications Limitations:

This external load system does not include equipment to allow direct intercommunication among required crewmembers and external occupants. Operating this external load equipment with HEC is not authorized unless equipment to allow direct intercommunication among required crewmembers and external occupants is approved by the local Aviation Authority.



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NON-HUMAN EXTERNAL CARGO

Load Limitations:

Refer to basic RFM Cargo Hook Supplement.

Equipment Limitations:

25 lb. weight must be added to end of empty line to prevent tail rotor contact.

WARNING

USE OF HEC LONG LINES FOR NON HUMAN EXTERNAL CARGO
GREATER THAN 714 LB. PROHIBITED



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HUMAN EXTERNAL CARGO HOOK SYSTEM PLACARDS

The following information on placards pertaining to hook operations must be displayed:

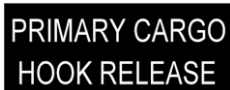
In full view of the pilot:



Primary Hook Manual Release Lever on Pilot's Cyclic. (0.25" x 1.9")



Secondary Hook Manual Release Lever on Pilot's Cyclic (0.25" x 1.9")



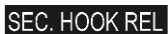
Pilot's Cyclic LH Side near Guarded Thumb Button (0.5" x 1.2")



RH Side of Release Handle Assembly near Electrical Release. (0.5" x 1.2")



Installed adjacent to Amber Caution Light on Instrument Panel. (0.5" x 1.2")



Installed with 5 amp circuit breaker. (0.2" x 0.9")



Installed with 1 amp circuit breaker. (0.2" x 0.9")



Installed on MD Exterior Loads Flip Chart Placard (Non-interfering)(0.5" x 1.75")



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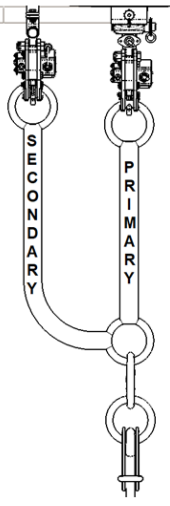
Outside the aircraft:

**PRIMARY
HOOK**

Forward Face of Primary Cargo Hook. (0.7" x 1.5")

**SECONDARY
HOOK**

Forward Face of Secondary Cargo Hook. (0.7" x 1.5")

WARNING			
	SECONDARY	PRIMARY	
<p>MAX NHEC LOAD: 2,000 LB (D, E, F, FF)</p> <p>UTILIZE PRIMARY HOOK ONLY AS SHOWN.</p> <p>INSTALL GENERAL PURPOSE LONG LINE ONLY FOR LOADS GREATER THAN 714 LB.</p> <p>DO NOT LOAD SECONDARY HOOK FOR NHEC OPERATIONS.</p> <p>SEE ICA FOR COMPLETE INSTALLATION INSTRUCTIONS.</p>			<p>MAX HEC LOAD: 714 LB. (ALL MODELS)</p> <p>HEC LONG LINE PERMITTED FOR NHEC LOADS LESS THAN 714 LB.</p> <p>INSTALL 369-430-028-001 "U" CABLE AS SHOWN.</p> <p>369-430-032-001 SHACKLE PIN MUST BE SECURED WITH NUT AND COTTER PIN OR SAFETY WIRE.</p> <p>INSTALL 369-430-035-### LONG LINE ONLY.</p> <p>SEE ICA FOR COMPLETE INSTALLATION INSTRUCTIONS.</p>
	Looking Aft		
			
			Looking Aft

P/N 369-430-030-008

Installed on right side of aircraft near aft jack point. (4"x 6")



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SECTION III – EMERGENCY AND MALFUNCTION PROCEDURES

EMERGENCY PROCEDURES: If any aircraft emergency occurs during flight with HEC, the operations should be terminated by landing HEC in the nearest safe area. If during an emergency the aircraft must be landed immediately due to engine failure, or catastrophic control failure, HEC may need to be jettisoned.

1. Land HEC safely to the ground as soon as possible.
2. Release empty long line as required.
 - a. Actuate SECONDARY CARGO HOOK RELEASE guarded switch.
-Or-
Pull SECONDARY manual release lever.
Amber indicator light "SECONDARY HOOK OPEN WHEN LIT" will illuminate.
 - b. Actuate PRIMARY CARGO HOOK RELEASE guarded switch.
-Or-
Pull PRIMARY manual release lever.
3. Refer to basic flight manual Emergency and Malfunction Procedures.

The basic Flight manual and the "Cargo Hook Kit" Rotorcraft Flight Manual Supplement issued by MD Helicopters, Inc. remain applicable.



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SECTION IV – NORMAL PROCEDURES

BEFORE ENGINE START

Perform the following checks prior to performing external load operations. If any of the following procedures are not successful do not use the equipment until the discrepancy has been resolved.

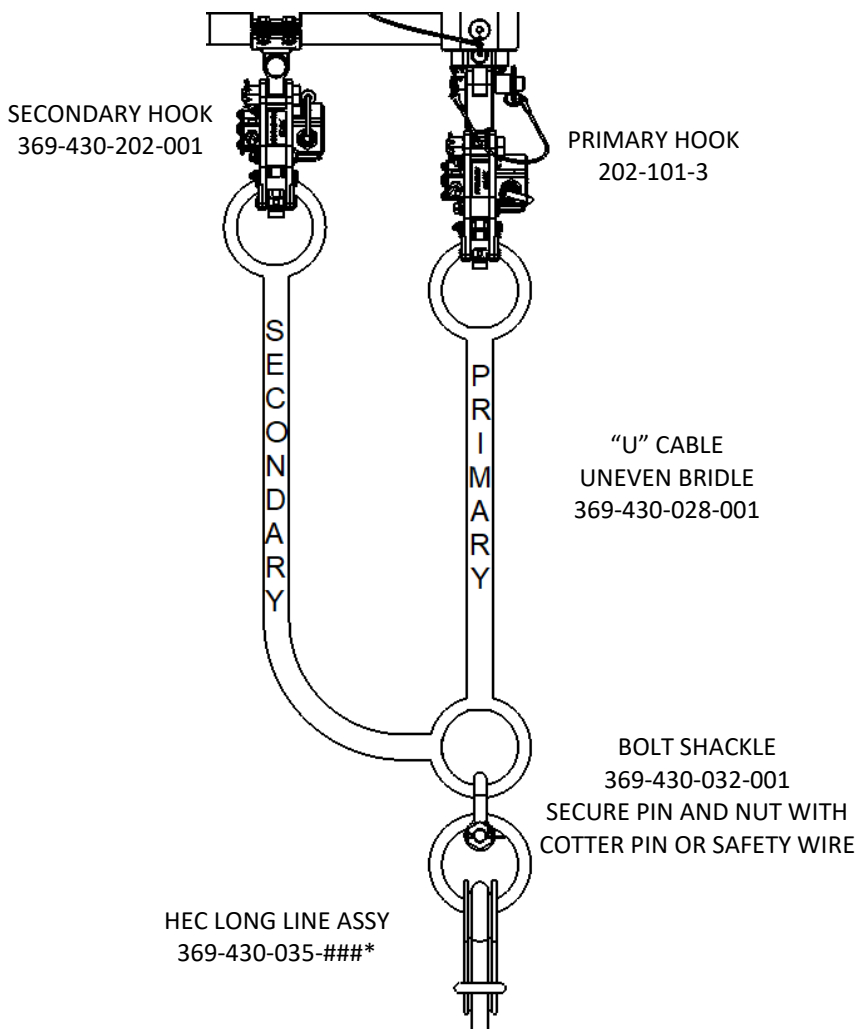
1. Visually check all mount hardware to ensure security of the cargo hooks.
2. Visually check the electrical harnesses for damage and security.
3. Visually check the manual release cables and the connection to the cargo hooks for damage and security.
4. Visually check the cargo hooks for damage and hardware for security.
5. Perform manual release using manual release lever on the cyclic for each cargo hook. Return load beam to locked position by manually pushing up on load beam.
6. Perform electrical release of secondary cargo hook by actuating secondary hook guarded switch. Return load beam to locked position by manually pushing up on load beam.
7. Perform electrical release of primary cargo hook by actuating primary release switch on cyclic. Return load beam to locked position by manually pushing up on load beam.
8. Rotate cargo hook the full range of motion to insure there is no cable binding that can cause the cargo hook to open.
9. Ensure two-way communications system between pilot and HEC personnel functions properly.



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10. Load Rigging

The following figure shows the only approved load rigging configuration for HEC long line attachment:



**FIGURE 1: HEC CABLE INSTALLATION, LOOKING AFT
714 LB. MAX LOAD**

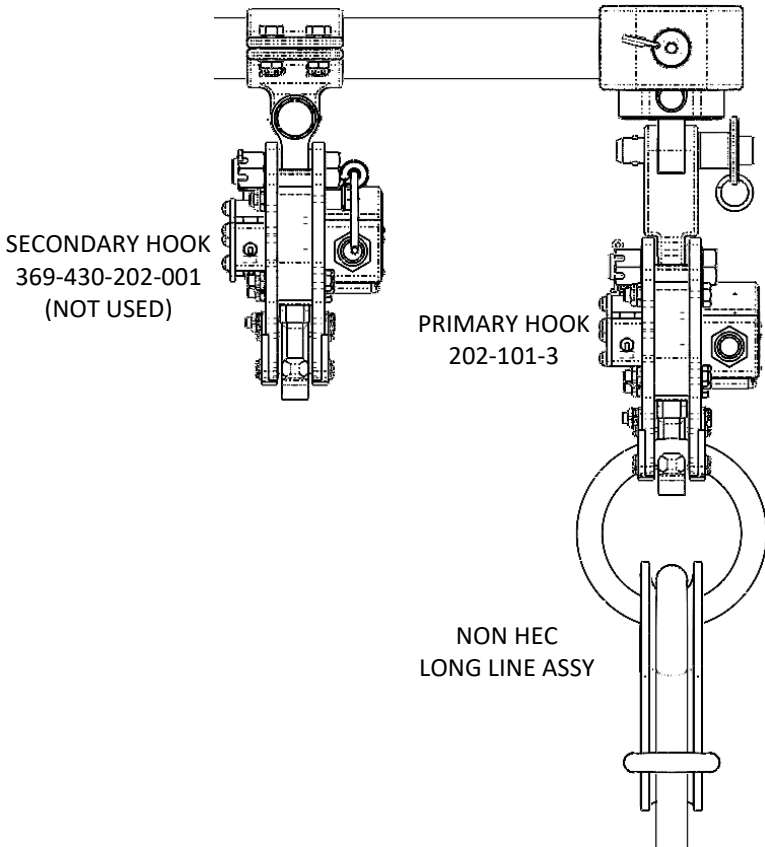
* ### indicates length in feet.



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10. Load Rigging (continued)

The following figure shows the only approved load rigging configurations for non-HEC long line attachment:



**FIGURE 2: NON-HEC CABLE INSTALLATION, LOOKING AFT
2,000 LB. MAX LOAD**



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11. Normal Release Procedure – HEC Loads
 - a. Ensure persons attached to long line are safely on the ground or structure.
 - b. HEC personnel will self-release from lower end of long line.
-OR-
 - c. Activate Secondary cargo release electrical guarded switch.
Amber indicator light "SECONDARY HOOK OPEN WHEN LIT" will illuminate.
 - d. Activate Primary cargo release electrical switch on cyclic to release cargo.

12. Normal Release Procedure – Non-HEC Loads
 - a. Land Load.
 - b. Activate Primary cargo release electrical switch on cyclic to release cargo.



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SECTION V – PERFORMANCE

No Change from basic MD 369D, E, F, or FF RFM or Cargo Hook RFMS.

SECTION VI – WEIGHT AND BALANCE

Refer to the model specific Basic Rotorcraft Flight Manual, Section IX, Cargo Hook Kit Supplement for loading data up to 700 lb.

Cargo Hook Loading Data:

	Weight (lb.)	Longitudinal STA (in.)	Longitudinal Moment (in-lb.)	Lateral STA (BL) (in.)	Lateral Moment (in-lb.)
HEC System Installation	24.3	99.3	2,413	7.3	177
Cargo Max Weight	714	99.3	70,900	0	0

NOTE

The HEC System Installation weight does not include any payload attached below the cargo hooks (long line, weight bag, etc.).

Cargo Max Weight includes total weight attached to the Cargo Hook.



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SECTION VII – HANDLING, SERVICE, AND MAINTENANCE

Refer to Mechanical Specialties, LLC Document No. 369-430-105, Instructions for Continued Airworthiness, Revision B or later.

Maintain cargo hooks in accordance with Mechanical Specialties, LLC Document No. MSI-MNL-010, "Maintenance Manual", Revision B or later.