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FAA APPROVED ROTORCRAFT FLIGHT MANUAL SUPPLEMENT

STC SR01778SE

Cargo Hook Kit
With Talon LC Hydraulic Cargo Hook

MDHI Models
369D, 369E, 369F, 369FF, 369HE, 369HM, 369HS, 500N

R/N _____ S/N _____

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

Date: 10 JAN 2020

Record of Revisions

Rev.	Date	Page(s)	Reason for Revision
0	Oct. 4, 2011	All	Initial Release.
1	Aug. 12, 2015	All	Updated Type of Operation section.
2	Jan. 19, 2017	All	Added cargo hook P/N 528-028-02 and associated instructions.
3	10 JAN 2020 R. Schleim	All	Add C-40 Indicator, incorporated other kits approved under this STC (200-300-00 and 200-301-00) into this supplement (were under 121-028-00). General updates throughout.

PART I
GENERAL

This supplement must be attached to the appropriate FAA approved MD Helicopters' (MDHI) Rotorcraft Flight Manual when an Onboard Systems International P/N 200-300-00, 200-301-00, 200-378-00, 200-378-10, 200-379-00, 200-379-01, 200-379-10, or 200-379-11 Cargo Hook Kit is installed in accordance with Supplemental Type Certificate (STC) NO. SR01778SE. The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures and performance information not contained in this supplement consult the basic Rotorcraft Flight Manual and the MDHI "Cargo Hook Kit" Flight Manual Supplement

The kits listed above are upgrade kits, intended for use on rotorcraft previously equipped with a type certificated cargo hook kit.

The cargo hook kits are comprised of:

- A cargo hook for attachment, retaining in flight, and release of external loads. Kit P/Ns 200-378-10, 200-379-10, and 200-379-11 include a cargo hook (P/N 528-028-02) with a delay circuit to help protect against inadvertent load release as a result of accidental contact with the Cargo Release switch or inadvertently pressing this switch. This delay circuit requires that the release switch be held for approximately ½ second in order to release the cargo hook load. This feature is referred to as Surefire Release. See instructions in Part IV for this model.
- An attach point assembly which bolts to the belly of the helicopter and supports the cargo hook and provides for pivoting fore and aft and side to side in response to the movement of the external load.
- An electrical release system, which serves as the primary cargo hook load release by means of pilot actuation of a switch on the cyclic. These kits interface with the MDHI internal electrical wiring including the switch on the cyclic.
- A hydraulic release system, which provides a backup means of releasing a cargo hook load. It replaces the MDHI mechanical release cable. A lever mounted to the cyclic actuates it.

The P/N 200-301-00 and 200-379-XX kits include a Load Weigh System. The Load Weigh System includes a load cell at the cargo hook, a cockpit mounted load indicator, and the interconnecting wire harness. Two indicators are eligible for installation under this STC: the C-39 model and the C-40 model (refer to Part IV herein for identification). For more information on the C-39 indicator refer to Owner's Manual 120-039-00. For more information on the C-40 indicator refer to Owner's Manual 120-152-00.

PART II
LIMITATIONS

Type of Operation

With a load attached to the cargo hook, operation shall be conducted in accordance with the respective national operational requirements.

The cargo hook kit configurations (as installed in accordance with this STC SR01778SE) do not meet the 14 CFR part 27 certification requirements for Human External Cargo (HEC).

NOTICE

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

Weight Limitations

Consult the MDHI Flight Manual Supplement for weight limitations.

Center of Gravity Limitations

Consult the MDHI Flight Manual Supplement for center of gravity limits when an external load is attached.

External Load Limitations

Load capacities given below are for the equipment described only. External load limits for the rotorcraft still apply. Consult the MDHI Flight Manual Supplement for external load and structural limitations.

The cargo hook kits listed herein have a maximum load capacity of 2,500 lbs. (1,134 kg).

Airspeed Limitations

Consult the MD Helicopters' Flight Manual Supplement for airspeed limits when an external load is attached. The operator must establish the maximum airspeed for each specific external load configuration.

Placards

The following placards pertaining to the load weigh system are included.

Mounted adjacent to the Onboard Systems C-39 load indicator (this placard is not applicable to the C-40 load indicator).

TURN THE WEIGHING SYSTEM OFF WHEN NAVIGATION EQUIPMENT IN USE. NO AIRCRAFT OPERATION SHOULD BE PREDICATED ON THE READING OF THE ONBOARD WEIGHING SYSTEM.

Mounted adjacent to both the load weigh system power switch (if installed) and circuit breaker:

ELECTRONIC WEIGHING SYSTEM

Placards continued

The following placards pertain to the cargo hook with Surefire Release (P/N 528-028-02).

Adhered on the solenoid housing of optional cargo hook P/N 528-028-02 which is equipped with Surefire Release:

Adhered adjacent to the cockpit cargo release switch if optional Cargo Hook with Surefire Release P/N 528-028-02 is installed:

Consult the MDHI Flight Manual Supplement for additional placards.

PART III
EMERGENCY AND MALFUNCTION PROCEDURES

Engine Failure

The presence of an external load may further complicate a failed engine condition. Release of loads attached to the cargo hook should be accomplished as soon as practical; consistent with other safety of flight factors. Consult the MDHI Flight Manual Supplement for additional information.

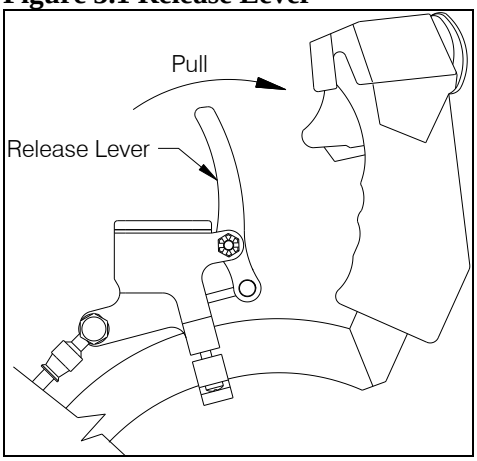
⚠ DANGER

In an emergency such as snagged load or engine failure, the manual release system should be the first option for release of the external load as this system provides greater load release authority in an overload condition. If the manual release option fails, NEXT try the electrical release.

Cargo Hook Backup Release

Actuate the release lever mounted on the cyclic (see Figure 3.1) to release the external load manually in the event of a failure of the electrical release system.

Figure 3.1 Release Lever



PART IV
NORMAL PROCEDURES

Pre-Flight Check

Before a flight involving external load operations perform the following procedures. If the procedures are not successful do not use the equipment until the problem has been corrected.

1. Check all mounting fasteners to ensure they are tight.
2. Check cargo hook attach point and other structural components related to the cargo hook for signs of cracks and damage.
3. Check the electrical connectors for security and damage.
4. Check the slave cylinder on the cargo hook for signs of hydraulic fluid leakage.
5. Swing the cargo hook assembly to its full travel extremes to verify that it does not reach the range of motion limits of the electrical harnesses and hydraulic hose.

Pre-Flight Check continued

6. Check the operation of the cargo hook's electrical release system to ensure proper operation. The following instructions are applicable to cargo hook P/N 528-028-00.

NOTICE

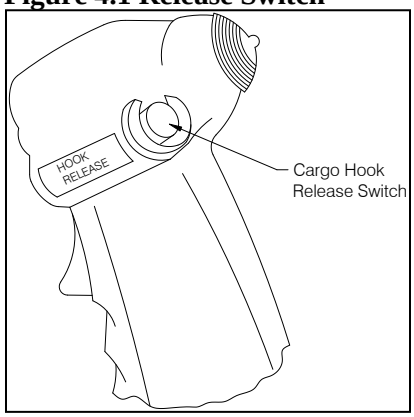
If Cargo Hook with Surefire Release (P/N 528-028-02) is installed, the electrical release includes a ½ second time delay. See specific procedures in this step for this model.

- Press the electrical release switch on the cyclic; the cargo hook load beam should fall to the open position.
- Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover (see Figure 4.3).

NOTICE

The cargo hook kits use the type certificated electrical release switch located on the cyclic (see Figure 4.1).

Figure 4.1 Release Switch



Pre-Flight Check continued

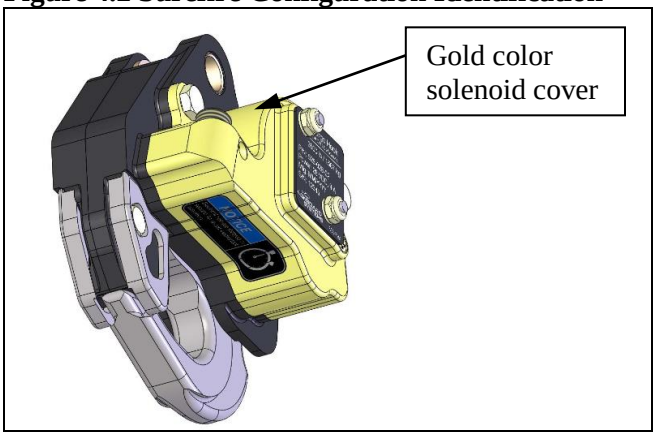
The following instructions are applicable to the cargo hook P/N 528-028-02. In addition to the P/N, this cargo hook can also be identified by its gold color solenoid cover (see Figure 4.2).

- *Very* briefly press the Cargo Release switch, the cargo hook should not actuate and the load beam should remain closed.
- Press and hold the Cargo Release switch for several seconds, the load beam should fall to the open position and the cargo hook solenoid should continue to cycle repeatedly.
- Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover (see Figure 4.3).

NOTICE

By design (to help protect against inadvertent load release) cargo hook P/N 528-028-02 requires that the Cargo Release switch on the cyclic be held for at least ½ second to release the load.

Figure 4.2 Surefire Configuration Identification



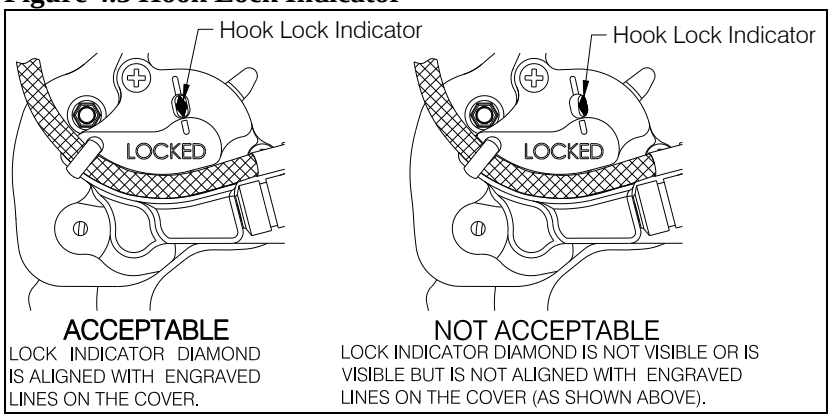
Pre-Flight Check continued

7. Check the operation of the cargo hook's hydraulic release system. Pull the release lever on the cyclic and the cargo hook load beam should fall to the open position. The cargo hook may be returned to the locked position by manually pushing up on the load beam. The cargo hook should snap shut. Verify that the hook lock indicator on the side of the hook returns to the fully locked position.

⚠ CAUTION

In the fully locked position the hook lock indicator should align with the lines on the cover (see Figure 4.3).

Figure 4.3 Hook Lock Indicator

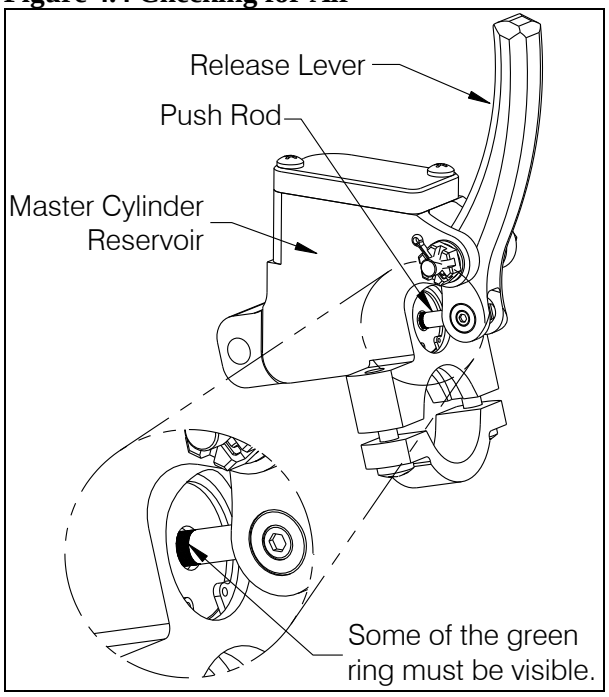


The cargo hook may be flown in the open position to facilitate loading by ground crew.

Pre-Flight Check continued

8. Check the hydraulic release system for excess air in the lines by pulling the release lever firmly until it bottoms out. Check the push rod position (see Figure 4.4). If some of the green ring on the push rod is visible, the system is ready for use. If none of the green ring is visible, the system needs to be bled. Refer to applicable Owner's Manual or ICA for bleed instructions.

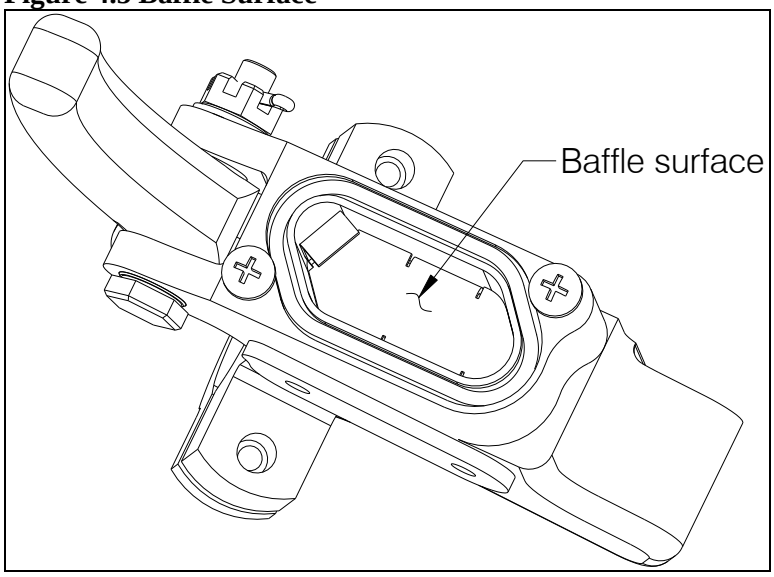
Figure 4.4 Checking for Air



Pre-Flight Check continued

9. Check the fluid level in the master cylinder reservoir. The master cylinder reservoir features a transparent lid through which the fluid level can be checked. Hydraulic fluid must be visible over the baffle surface (see below).

Figure 4.5 Baffle Surface



Pre-Flight Check continued

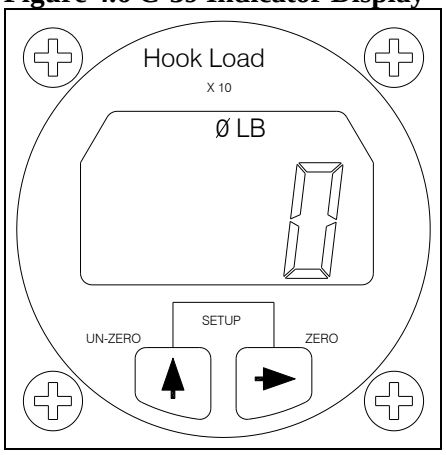
The following step only applies if the optional load weigh system is installed.

Procedures vary depending on the Indicator model installed. Refer to the following.

For the C-39 model:

10. Power on the Indicator. After a brief self-diagnostic routine is complete the indicator display should indicate "0" as shown below (with no load on the cargo hook):

Figure 4.6 C-39 Indicator Display



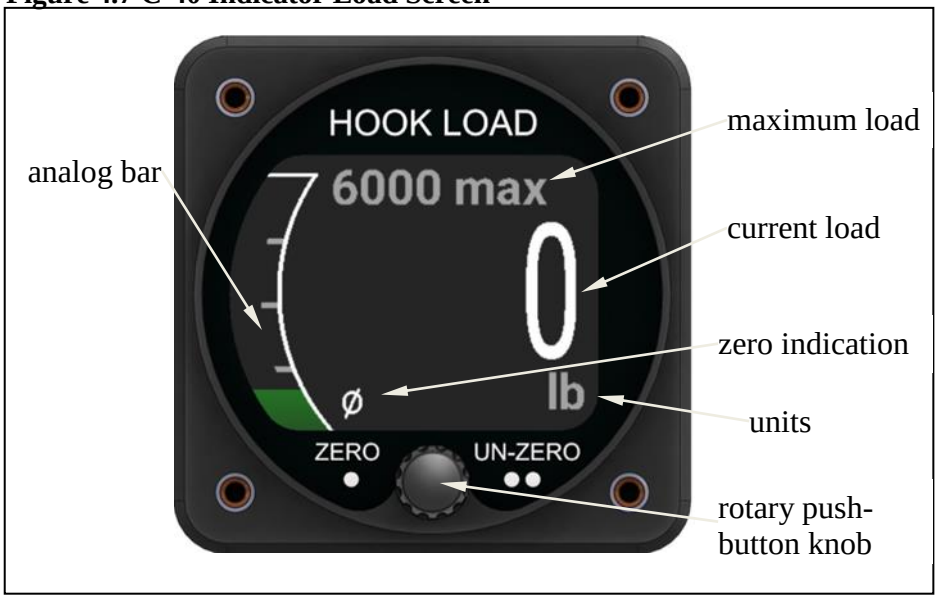
NOTICE

Refer to Owner's Manual 120-039-00 for setup instructions including changing the units, changing the calibration code, zeroing the display, changing the dampening level, etc.

Pre-Flight Check continued

For the C-40 model, on power up an Information screen will display the Hook Hours, software version, and serial number (S/N) and then the indicator should display the Load screen. The Load screen of the C-40 model is shown below.

Figure 4.7 C-40 Indicator Load Screen



NOTICE

For the C-40 model refer to Owner's Manual 120-152-00 for detailed setup instructions including changing the units, changing the brightness of the display, etc. and additional operation instructions.

Pre-Flight Check continued

The C-40 model includes a Maximum Load setting, this setting provides the option to select a maximum load for each flight involving external load operations based on flight conditions (temperature, altitude, fuel, etc.) or it can be set to the maximum external load rating for the helicopter. To set the maximum load:

- From the Load screen press and hold the rotary push button knob until the Maximum Load screen appears. Release the knob.

Figure 4.8 Maximum Load Screen

- Rotate the knob to the left or right to decrease or increase the value to the desired setting.
- Press the knob to set this value.

Pre-Flight Check continued

To zero (or tare) the weight of the long line, net, remote hook, etc. from the displayed load, apply that weight to the cargo hook and press the knob once and the display should zero out. Press the knob twice to un-zero (un-tare) the display and add this weight back in.

NOTICE

The analog bar always displays the un-zeroed load. If there is a discrepancy between the analog bar and the displayed load, a large amount of load has likely been zeroed.

Cargo Hook Rigging

Extreme care must be exercised in rigging a load to the Cargo Hook. See Figure 4.9 for the recommended rigging configuration and configurations to avoid. The examples shown are not intended to represent all possibilities.

WARNING

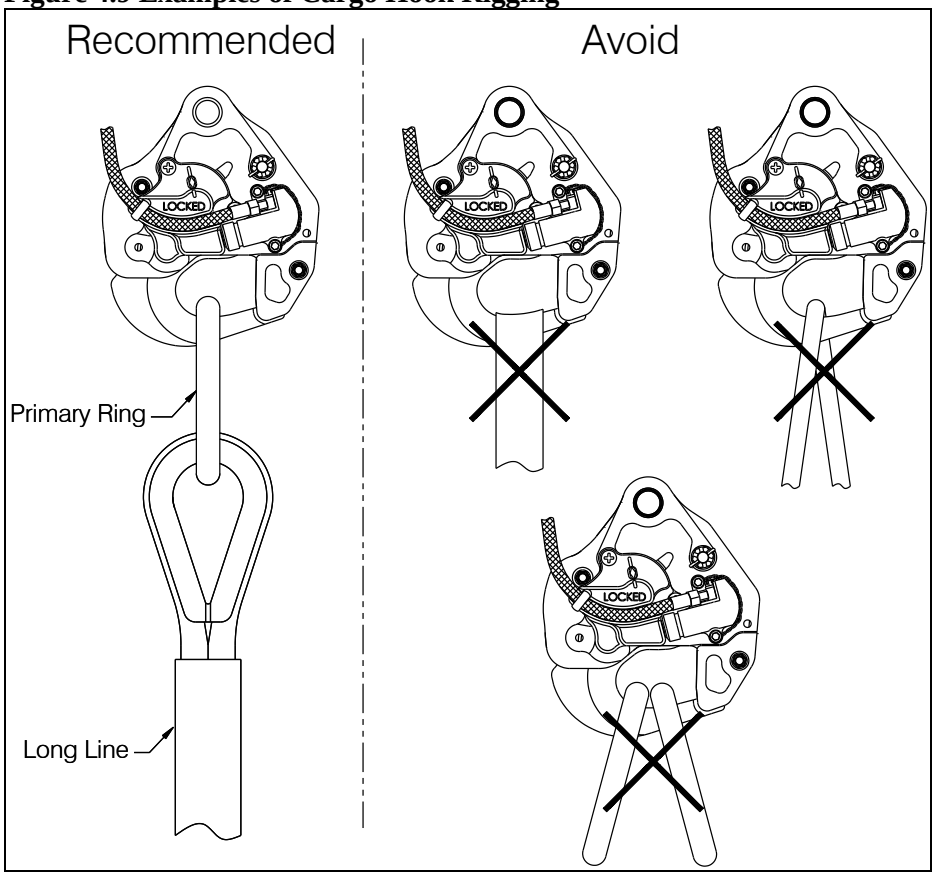
It is the responsibility of the operator to ensure the hook will function properly with the rigging.

Nylon Type Straps or Rope

WARNING

Nylon type straps (or similar material) or rope must not be used directly on the cargo hook load beam. If nylon straps or rope must be used they should be first attached to a steel primary ring. Verify that the ring will freely slide off the load beam when it is opened. Only the primary ring should be in contact with the cargo hook load beam.

Figure 4.9 Examples of Cargo Hook Rigging



In-Flight

The MDHI Flight Manual Supplement is applicable for normal in-flight procedures and is complemented by the following.

Maximum airspeed is dependent upon the size, weight, and shape of the external load and sling length. Closely observe the behavior of the load during flight and as airspeed is increased.

⚠ CAUTION

Use caution when flying with an unloaded long line as this is an extreme snag hazard.

Make all control movements gently with gradual acceleration and deceleration and only slightly banked turns.

⚠ WARNING

The attach point assembly is designed to allow the cargo hook to pivot and align with the external load in all directions with limits to prevent the cargo hook from contacting the belly of the aircraft. Take precautions to prevent external load angles which exceed the limits of rotation provided by the attach point assembly as the load may not be releasable in this position.

⚠ WARNING

After commanding a load release, verify that the external load and long line has dropped free from the rotorcraft before departing the drop-site.

PART V
PERFORMANCE

The basic Flight Manual and Flight Manual Supplement issued by MDHI remain applicable.

When there is an external load attached, performance will be reduced depending on its size, weight and shape.

The following applies if the optional load weigh system is installed.

The Load Weigh System is intended as a means of MONITORING the weight of the load suspended from the Cargo Hook.

Before lifting a load, it is recommended that the load weight be estimated, the shape/size is considered and, upon lifting the load, monitor the load indicator and compare the actual engine torque value vs. the expected value for a given weight to verify sufficient performance.

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PART VI
WEIGHT AND BALANCE DATA

Consult the MDHI "Cargo Hook Kit" Flight Manual Supplement for your particular helicopter model for weight and balance data.