PLEASE CHECK WEB SITE AT WWW.ONBOARDSYSTEMS.COM FOR THE LATEST REVISION OF THIS MANUAL

FAA APPROVED ROTORCRAFT FLIGHT MANUAL SUPPLEMENT

STC SR00713SE

Cargo Hook Suspension Kits (multiple models – see approved model list)

R/N _____ S/N _____

FAA Approved: _____ Digitally signed by ROBERT Y SCHLEIN Date: 2022.02.15 09:40:21 -08'00'

Manager, Northwest Flight Test Section, AIR-715
Federal Aviation Administration
Seattle, WA

Date: 15 Feb 2022

Record of Revisions

Rev.	Page(s)	Reason for Revision	FAA Approval
0	All	Initial Release.	Sept. 24, 2003
1	1	Added AB412, AB412EP, and Bell 210 models to cover sheet.	June 2, 2006
2	All	Added system P/N's 200-089-11, 200-089-22 and 200-089-23.	Sept. 26, 2007
3	1	Added Overseas Aircraft to title page.	May 18, 2010
4	1, 3, 4, 7	Listed 205B on cover page, updated format of "CAUTION" and "NOTICE" flags, changed "before each cargo hook use" to "before a flight involving external load operations", changed load limit wording to "The external load limit is the lesser of that specified by the Rotorcraft Flight Manual Supplement - Cargo Hook issued by Bell for your particular rotorcraft model or 5,000 pounds (2267 kgs)."	Aug. 1, 2012
5	All	Added 412CF and Tamarack UH-1F and UH-1H models to title page. Re-formatted, added language regarding HEC, general updates throughout.	March 30, 2017
6	All	Added kit P/Ns 200-088-11, 200-089-24, and 200-089-25 which include cargo hook with Surefire Release. Added associated instructions for Surefire Release.	September 14, 2018
7	All	Added kit P/Ns 200-089-26 and 200-089-27 with the C-40 Indicator and associated instructions.	 Digitally signed by ROBERT Y SCHLEIN Date: 2022.02.15 09:39:55 -08'00'

Introduction

Attach this supplement to the appropriate FAA approved Rotorcraft Flight Manual when an Onboard Systems 200-088-10, 200-088-11, 200-089-10, 200-089-11, 200-089-20, 200-089-21, 200-089-22, 200-089-23, 200-089-24, 200-089-25, 200-089-26, or 200-289-27 Cargo Hook Suspension System is installed in accordance with Supplemental Type Certificate (STC) NO. SR00713SE. 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 Rotorcraft Flight Manual Supplement – External Cargo Operation issued by the type certificate (TC) holder.

The Cargo Hook Suspension Systems serve as replacement suspension systems for the suspension system installed under the type certificate. These systems require that the rotorcraft be equipped with cargo hook fixed provisions.

1. Limitations

1-3 Types of Operation

The basic Flight Manual and Supplement for External Cargo Operation issued by the type certificate holder remain applicable.

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

The cargo hook suspension systems (as installed in accordance with this STC SR00713SE) do not meet the 14 CFR part 29 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.

1. Limitations continued

1-6 Weight and Center of Gravity

Consult the Supplement for External Cargo Operation issued by the type certificate holder for weight and center of gravity limitations.

The maximum weight to be carried on the cargo hook is the lesser of that specified by the Supplement for External Cargo Operation provided by the TC holder or 5000 lbs. (2268 kg).

1-7 Airspeed

Consult the Supplement for External Cargo Operation issued by the type certificate holder for airspeed limitations when carrying external cargo.

Maximum operational airspeed with an external load is limited by controllability. Caution should be exercised when carrying an external load, as handling characteristics may be affected by size, weight, and shape of the load.

1. Limitations continued

1-20 Placards

Consult the Supplement for External Cargo Operation issued by the type certificate holder for additional placards. The following placards are included under this STC.

- Adhered on the cargo hook adjacent to the manual release lever:

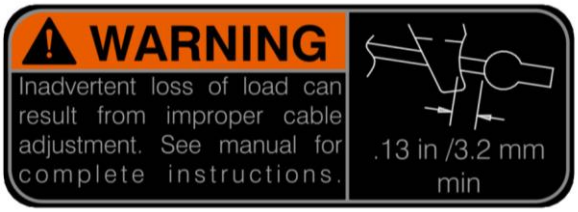
- Adhered on the solenoid housing of optional cargo hook P/N 528-020-12 which is equipped with Surefire Release.

- Adhered adjacent to the cockpit release switch if optional Cargo Hook with Surefire Release P/N 528-020-12 is installed.

1. Limitations continued

1-20 Placards continued

- Adhered on the top of the cargo hook frame:



If the load weigh system with C-39 model load indicator (P/N 210-095-00 or P/N 210-095-02) is installed, the following placards apply:

- Adjacent to the Onboard Systems C-39 model load weigh indicator in full view of the pilot and co-pilot:

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

  This placard is **NOT** applicable to the C-40 model load weigh indicator (P/N 210-293-00).

2. Normal Procedures

The normal procedures in the Supplement for External Cargo Operation issued by the type certificate holder are applicable and are complemented by the following procedures.

NOTICE

If Cargo Hook with Surefire Release (P/N 528-020-12) is installed, the electrical release includes a ½ second time delay. See specific procedures in this section for this cargo hook model.

2-3 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.

NOTICE

The cargo hook suspension system interfaces with the rotorcraft's internal manual and electrical release systems as supplied by the TC holder. Consult the TC holder's Supplement for External Cargo Operation for operation of these systems.

2. Normal Procedures continued

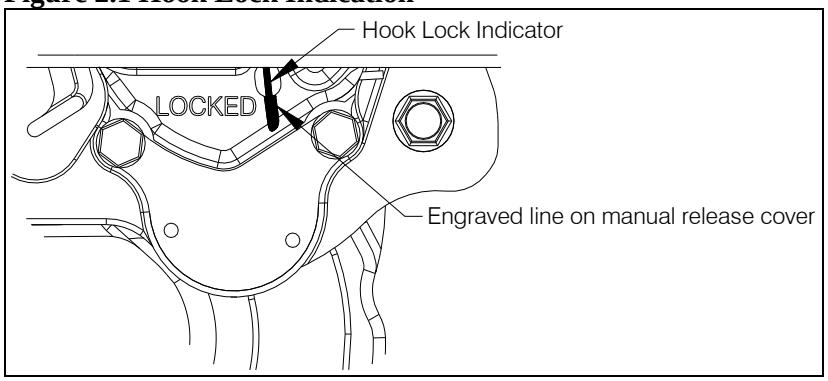
2-3 Pre-flight Check continued

1) Visually check the cargo hook case and covers for cracks and damage.

2) Visually check the cargo hook load beam for gouges and cracks.

3) Cycle the manual release system to ensure proper operation. Depress the manual release pedal in the cockpit and the load beam should fall open. 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 2.1).

Figure 2.1 Hook Lock Indication

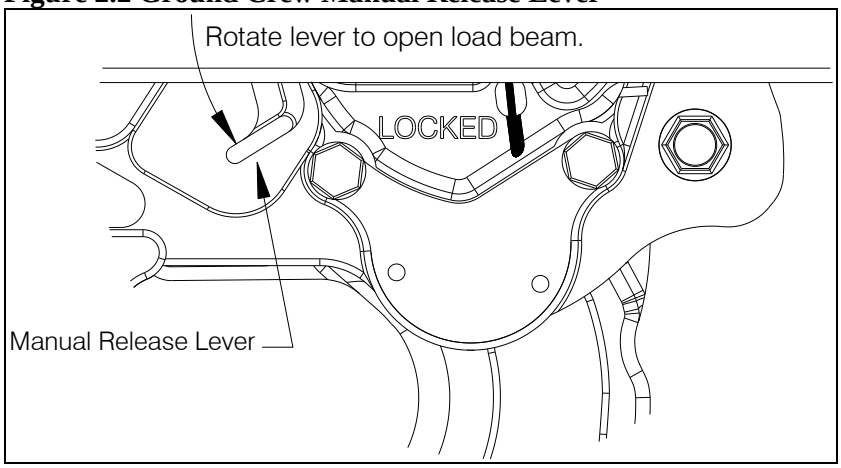


2. Normal Procedures continued

2-3 Pre-flight Check continued

4) Repeat previous step except use the manual release lever on the cargo hook (see Figure 2.2). The ground crew release lever may not be present, depending on hook configuration.

Figure 2.2 Ground Crew Manual Release Lever



2. Normal Procedures continued

2-3 Pre-flight Check continued

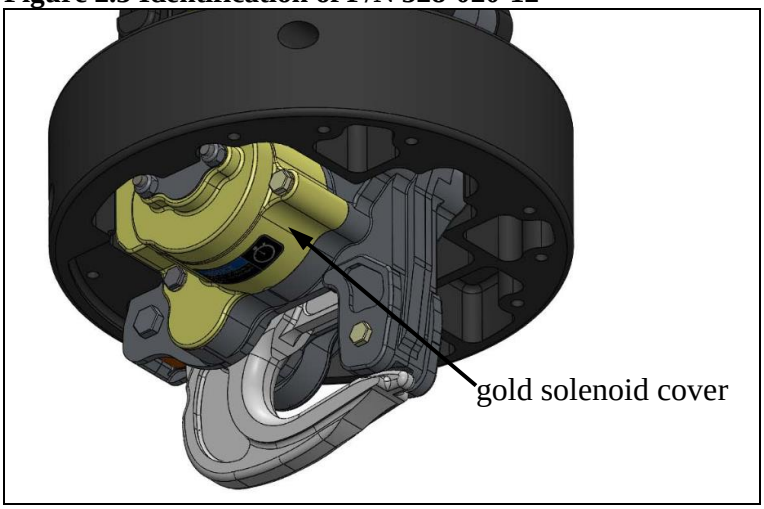
5) Cycle the electrical release system to ensure proper operation.

The following instructions are applicable to the optional cargo hook P/N 528-020-12. In addition to the P/N, this cargo hook can also be identified by its gold color solenoid cover.

NOTICE

By design (to help protect against inadvertent load release) cargo hook P/N 528-020-12 requires that the Cargo Release switch on the cyclic be held for at least ½ second to release the load.

Figure 2.3 Identification of P/N 528-020-12



2. Normal Procedures continued

2-3 Pre-flight Check continued

- Very briefly press and release the Cargo Release switch without holding it down, 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.

The following instructions are applicable to cargo hook P/N 528-020 series other than P/N 528-020-12.

- Press the Cargo Release switch on the cyclic, the 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.

6) Swing the cargo hook suspension system throughout its range of motion and verify that the manual and electrical release cables are not pulled tight in any position.

7) Visually check the bumper for damage.

8) Cycle any accessories attached to the cargo hook slip-ring assembly to ensure proper operation.

2. Normal Procedures continued

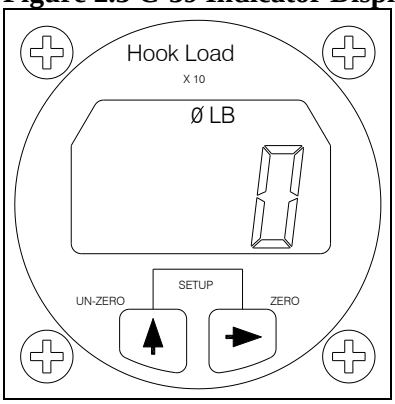
2-3 Pre-flight Check continued

When a Suspension System with Load Weigh is installed, perform the following additional procedures. Procedures vary depending on the Indicator model installed.

For the C-39 model (P/N 210-095-00 or P/N 210-095-02):

9) Power on the C-39 Load 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 2.3 C-39 Indicator Display



NOTICE

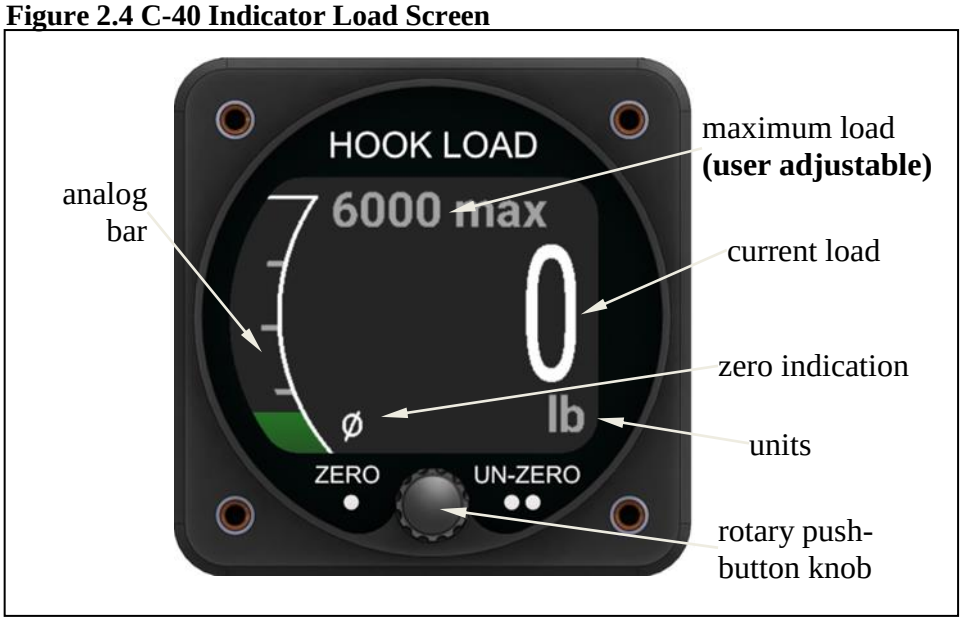
Refer to Owner's Manual 120-039-00 for setup instructions including changing the units, changing the calibration code, zeroing the display, changing the dampening level, etc.

NORMAL PROCEDURES continued

2-3 Pre-flight Check continued

10) 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 2.4 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.

4. NORMAL PROCEDURES continued

2-3 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 2.5 Maximum Load Screen

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

4. NORMAL PROCEDURES continued

2-3 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.

2. Normal Procedures continued

Cargo Hook Rigging

Extreme care should be exercised in rigging a load to the Cargo Hook. Steel load rings are recommended to provide consistent release performance and resistance to fouling. The following illustration shows the recommended rigging and rigging to avoid.

⚠ CAUTION

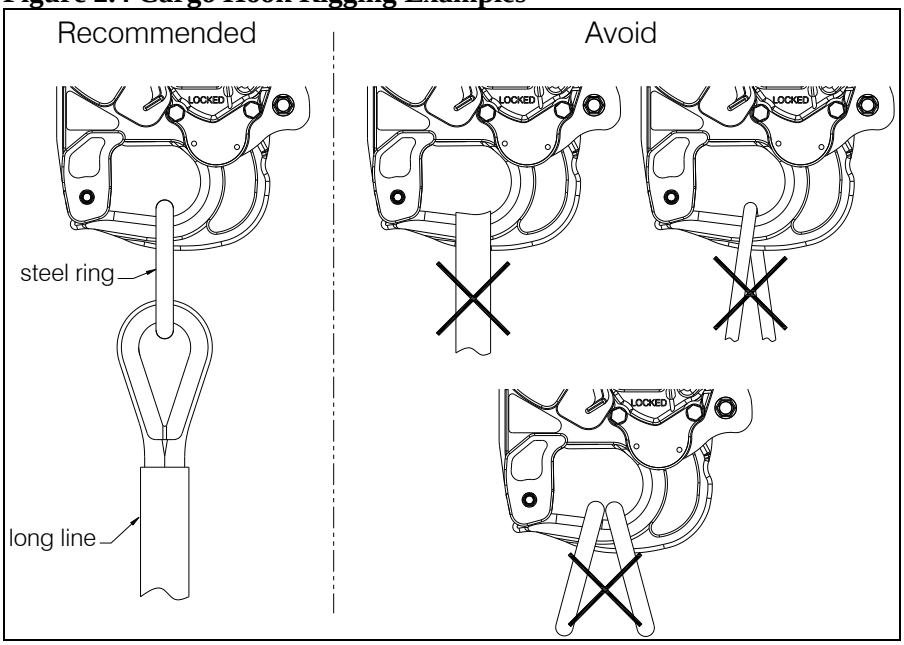
The examples shown are not intended to represent all rigging possibilities. It is the responsibility of the operator to ensure the hook will function properly with the rigging.

Nylon Type Straps or Rope

⚠ CAUTION

Nylon type straps (or similar material) or rope should not be used directly on the cargo hook load beam. If nylon straps or rope are used, they should be attached to a correctly sized primary ring. Only the primary ring should be in contact with the cargo hook load beam. See the following illustration.

Figure 2.4 Cargo Hook Rigging Examples



2. Normal Procedures continued

2-9 In-flight Operations

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

WARNING

Take precautions to prevent large load angles, an external load with an angle greater than the maximum angle of rotation of the cargo hook suspension may not be releasable in this position.

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.

3. Emergency Procedures

Consult the Flight Manual Supplement for External Cargo Operation issued by the type certificate holder for emergency procedures during external load operations.

WARNING

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.

4. Performance

The Flight Manual Supplement for External Cargo Operation remains applicable.

NOTICE

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 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.

5. Weight and Balance

No change to the rotorcraft's weight and balance from the original cargo hook suspension installation. Cargo hook is located at fuselage station 138.0 (3505 mm).

6. System Description

The suspension systems include the:

- Cargo Hook. The cargo hook serves as the attachment and release means for the external load. An optional cargo hook (P/N 528-020-12) with these kits includes a delay circuit to help protect against inadvertent load release as a result of accidental contact with the Cargo Release switch or inadvertently pressing the switch. This 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.
- Suspension Assembly. The suspension assembly transfers the load from the cargo hook up to the existing aircraft hard point. The suspension assembly included with these kits is a rotating design and includes a slip ring assembly.
- External Electrical Release Cable. The electrical release cable interfaces with the rotorcraft's existing internal electrical release system including the push button switch on the cyclic to serve as the cargo hook's primary quick release sub-system (PQRS).
- External Manual Release Cable. The external manual release cable connects to the rotorcraft's existing internal cargo hook manual release cable including its actuation means in the cockpit to serve as the cargo hook's backup quick release sub-system (BQRS).

6. System Description continued

- Load Weigh System. This is an optional system. It includes the load cell assembly on the suspension system, the load weigh indicator (the C-39 or C-40 model) in the cockpit and the interconnecting wire harnesses. This system provides the pilot with an indication of the weight of the load being carried on the cargo hook.
- Bumper. The bumper serves to protect the cargo hook and also to limit the travel of the suspension system. It interfaces with the existing rotorcraft contact surface.