

FAA APPROVED

R44 I or II

ROTORCRAFT FLIGHT MANUAL SUPPLEMENT

**EXTERNAL CARGO RACK
STANDARD DESIGN & FOLDING DESIGN**

“THE ALASKA RACK”

This supplement must be included in the FAA approved Pilot's Operating Handbook when the "Alaska Rack" external cargo rack system is installed in accordance with STC SR02364AK.

Information contained herein supplements the basic manual only in those areas listed in this supplement. For limitations, procedures, and performance information not contained in this supplement, consult the basic Pilot's Operating Handbook.

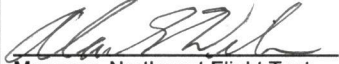
FAA APPROVED:



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

Date: November 1, 2017

RECORD OF REVISIONS

Revision	Page No.	Date	Description of Revision	FAA Approved
0	All	1-21-10	Initial Release	A. Asay
1	2	2-4-13	Added Record of Revision page to 2 nd page of manual. Added folding rack language to Sec. 1, General. Added language to allow for the use of a single rack, Section 2, Flight and Maneuver Limitations. Added folding rack language to Section 4, Normal Procedures, Daily or Preflight	A. Asay
2	3	7-18-13	Added description of approved cargo envelope concept. Approved Cargo Rack limitations added to Limitations section. Removed and modified descriptions in "Center of Gravity" and "Flight and Maneuver Limitations". Modified cockpit sticker to describe approved cargo compartment and passenger restrictions. Modified Normal Procedures section. Added language to describe the normal procedures for use of the approved cargo compartment and for cargo attachment.	A. Asay
3	5	11-1-17	Modified Cargo Attachment section to include the ability to utilize containers carried within the Approved Cargo Envelope.	 Manager, Northwest Flight Test Section, AIR-715

Section 1: General

Introduction

This supplement contains the changes and additional data applicable when the "Alaska Rack" external cargo rack system is installed. This supplement includes data for both the standard design racks and the folding design racks.

The use of the Alaska Rack system does not place the aircraft under the scope and direction of FAR 133 for Class A external loads provide the cargo affixed to the rack is within the "approved cargo envelope" specified for the rack system. (See Section 2: Limitations, "Approved Cargo Envelope Limitations.")

Section 2: Limitations

Airspeed Limits

Vne = 100 knots with external cargo racks installed. Do not exceed the Vne of the basic helicopter. (Vne determined from maximum demonstrated airspeed with empty racks.)

CAUTION

Maximum operational air speed with external loads is dependent upon the load configuration. It is the operator's responsibility to establish the maximum operation airspeed for each specific configuration.

Additional Airspeed Limits

Do not exceed 100 KIAS with empty external racks installed.

With the external cargo racks loaded, airspeed is limited by available MCP. Do not exceed MCP with external cargo racks installed and loaded.

Weight Limits

Maximum weight per cargo rack..... 150 pounds

Approved Cargo Envelope Limitations

Cargo attached to the racks must remain within the limits of the "approved cargo envelope" for the aircraft to not fall into the Class A External Load requirements of FAR 133. The limitations for this cargo envelope are:

- a. Cargo must not block any aircraft exit
- b. Cargo must not exceed 30 inches fore and aft of the rack deck; 8 inches outside (left and right) of the rack lateral sides; or 28 inches above the rack deck.

Center of Gravity (CG) Limits

CG limitations do not change with this installation. See figure on page 2-4 for loading and CG limitations.

Flight and Maneuver Limitations

Flight with only one rack installed is approved, provided Weight and Balance CG limitations are not exceeded.

Placards

The following placards must be installed when the external cargo racks are installed.

On each rack

"Maximum Weight – 150 lbs".

In clear view of the pilot

Approved Cargo Envelope
Cargo carried on the external load racks outside the "approved cargo envelope" limits of the Pilot Operating Handbook Flight Manual Supplement, places the aircraft within the FAR Part 133 requirements for Class A External Loads. In this case, the applicable essential crew limitations apply. These crew limitations do not apply provided the cargo is within the "approved cargo envelope" limits.

Section 3: Emergency Procedures

No Change

Section 4: Normal Procedures

Daily or Preflight Checks

- External Load Rack No cracks on rack structure
- Rack attach fittings Fittings and tabs secure
- Rack Cargo Cargo adequately secured

- Folding Racks Only Security of bolts on vertical legs

Loading Procedures

As much as possible, and within the CG limitations, the cargo racks should be loaded such that loads are of similar weights on each side. If only the pilot is on board, the left rack should be utilized, provided the CG is still within limitations.

Approved Cargo Envelope

For normal category, passenger carrying operations, all cargo must stay within the limits of the approved cargo envelope.

Caution

While loading the racks, the primary center of the load weight must sit centered on the deck area of the rack. The fore, aft, and lateral extensions for the approved cargo envelope are based on the fact that the primary load center will be centered on the rack deck.

Cargo Attachment Methods

Cargo must be securely attached to the rack structure. This is by means of ratcheting cargo straps, parachute cord, rope, or any device or cord not susceptible to stretching or loosening. Elastic (bungee) cords are not acceptable.

Enclosed containers may also be secured to the racks, provided the container is securely fastened to the rack either by straps, bolts or other approved aircraft fastening fixture. Any lids or covers must be secured. The attached container must be within limits of the "approved cargo envelope" for the aircraft to not fall into the Class A External Load requirements of FAR 133.

Caution

While loading the right external cargo rack, do not place objects in front of the engine air intake.

Caution

When loading either cargo rack, do not place objects near or in front of the static ports. Turbulent air around the static ports may effect airspeed, altimeter, and VSI indications.

Section 5: Performance

Vne with external cargo racks installed, but not loaded, is limited to 100 knots.

Vne with external cargo racks installed, and loaded, is limited by maximum continuous power (MCP).

Section 6: Weight and Balance**General**

The helicopter must be loaded and flown within the weight and balance limits specified in Section 2 and 6 of the Pilots Operating Handbook. Loadings outside these limits can result in insufficient control travel for safe control.

Longitudinal and lateral limitations in Section 2 and 6 of the POH are **NOT** amended with this installation, and must be adhered to.

CAUTION

A load on these external cargo racks causes the center of gravity (CG) to move aft. Fuel is also located aft of the helicopter CG. Always determine safe loading with empty fuel as well as with take off fuel. Amount of fuel which can be off loaded to allow for greater payload is limited by CG location with empty fuel.

Lateral CG position

It is usually not necessary to determine lateral CG position as most optional equipment is located near the centerline. The lateral arm for these external cargo racks is 30 inches, plus or minus, right and/or left, thusly it is critical that loading be accomplished such that the CG does not fall outside the limitations in Section 2 of the POH.

Loading Instructions

In addition to the standard POH loading instructions (POH, Section 6), the below CG locations are to be used when determining helicopter CG position

Item	Long CG	Lateral CG
Right Side Rack	+109	+30
Left Side Rack	+109	-30

Utilizing the sample loading calculation work sheet and the above rack arms, determine the CG for each flight, and verify that the CG is within the limitations as shown on the allowable moment diagram shown in Section 6 of the POH.

CAUTION

All loads on the external cargo rack must be adequately secured for all possible flight scenarios. This includes takeoffs, landings, and enroute sections.

Section 7: Systems Description**External Cargo Racks**

The external cargo racks consists of two welded steel racks and associated attachment hardware. The racks are designed to be removed when not needed or may be left in place, but not loaded.

The maximum load per rack is 150 pounds. Loads must be secured for all flight scenarios. Loads must **NOT** block any occupied crew or passenger doors on the helicopter.

The racks require virtually no maintenance, but pilots are cautioned to include the racks and their securing hardware in their daily and/or preflight inspections.

Section 8: Handling and Maintenance**External Cargo Racks**

1. Inspect for cracks or loose attach hardware at every preflight.
2. Secure cargo for all flight scenarios.

Cargo racks must be installed, removed, and maintained in accordance with the "Alaska Rack" Construction and Installation manual.