Internal Air Transport Certification

AFLCMC/EZFC (ATTLA)
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Date: 10 August 2012
Item Nomenclature: Boeing CH/MH-47 Series Chinook Helicopters
File Number: 1.B.11, Rev 2
Requestor: CH-47 PMO Modernization – Product Improvements (Holley Wingard)
Superseded Certification Date: 05 July 2012

New Information Summary: Boeing CH/MH-47 series Chinook Helicopters air transport certification updated to include an alternate Versatile Aircraft Securement (VAS) Tiedown Adapter combination aft jack pad/tiedown fitting at the Fuselage Station (FS) 482 location.

Special Instructions: This memorandum replaces previous certifications (References 1 through 3) and applies to aircraft systems program office and Air Mobility Command. The C-17 and C-5 Cargo Loading Manuals, T.O. 1C-17A-9 and 1C-5A-9 (and variants), shall be updated to include the VAS Tiedown Adapter in the CH/MH-47 transport instructions.

Reference Documents:
1. 1.B.11 Boeing CH/MH-47 Series Chinook Helicopters, Rev 1, 05 July 2012
2. ASC/ENFC Memo, Air Transportability Certification of the Boeing CH/MH-47 Chinook Helicopters, Models C Thru G, 3 October 2005
3. ASC/ENFC Memo, Airlift Certification of the Boeing CH-47F Model Helicopter, 06 August 2002
4. U.S. Army Aviation and Missile Engineering Drawing No. 1028572 Tasking Number 94964, 15 April 2011, Structural Analysis Substantiation of the Aft Tie-Down Fitting
5. Redstone Test Center Document No. RTC-12-F2484-0428, 01 February 2012, Test Record For The Proof Load Testing Of The CH-47 Versatile Aircraft Securement (VAS) Tie-Down Adapter

Item Description: The Boeing CH-47C/D/F and its derivative MH-47C/D/E/G Special Operations Aircraft have previously been certified for air transportability (see References 1 through 3). The current aircraft configuration for the aft jack pad/tiedown fitting at Fuselage Station (FS) 482, left and right sides, has either a jacking adapter or an aft tiedown fitting installed. The new Versatile Aircraft Securement (VAS) Tiedown Adapter was designed as a combined jack pad/tiedown fitting alternative to the current either/or installation. Figure 2 shows the VAS Tiedown Adapter.

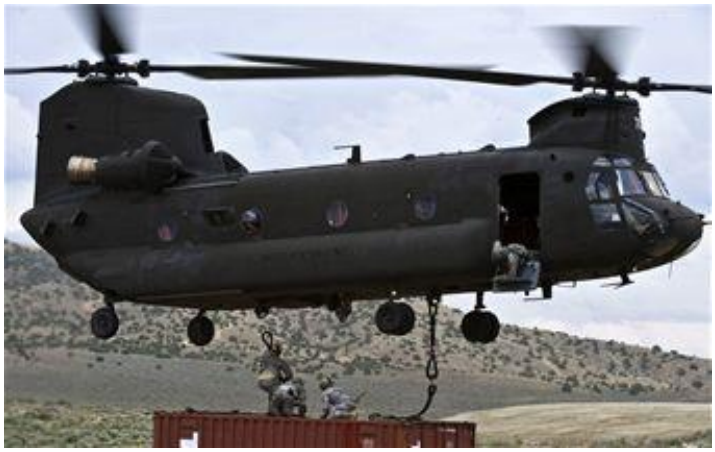

Figure 1: CH-47 Helicopter

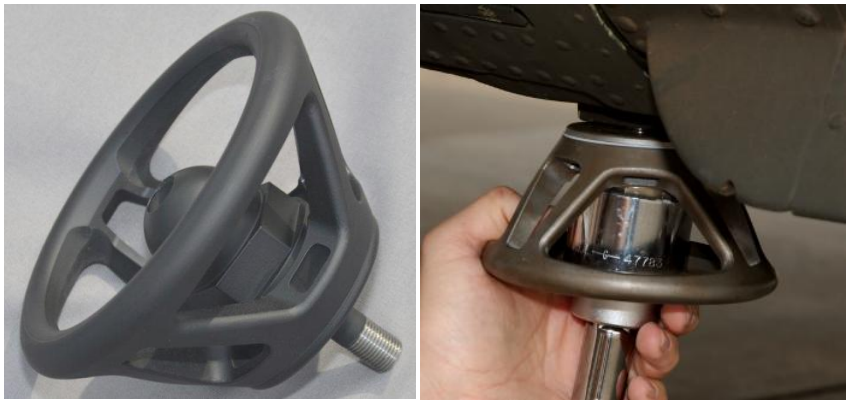

Figure 2: Versatile Aircraft Securement (VAS) Tiedown Adapter

Certified Aircraft: USAF C-17 and C-5

Conditions of Certification:

1. Maximum Weight for Air Transport:

a. Gross Vehicle Weight: See Table 1 (NOTE: These limits are unchanged from the previous certifications and T.O. 1C-XXX-9 series manuals).

Model	L (in)[1]	W (in)	H (in)	Max. Wt. without Cargo Hooks (lbs)	Max Wt. with Forward Cargo Hook and No Center Cargo Hook (lbs)	Max. Wt. with Both Forward and Center Cargo Hooks (lbs)
CH-47C/D/F	609	160	154	22,000	33,000	35,520
MH-47C/D	631	160	154	22,000	33,000	35,520
MH-47E/G	642	192	154	22,000	33,000	35,520

[1] Fuselage length does not include pitot probe or aerial refueling boom

Table 1: CH/MH-47 Limits for Air Transport

b. Wheel Limits: 5,500 lbs.

2. Item Preparation:

a. The helicopters shall have either the VAS or legacy tiedown adapters installed at the aft fuselage FS 482 locations.

b. If cargo hooks are installed, the hooks must be stowed to facilitate loading/unloading but can be reinstalled to provide additional tiedown for flight. If the helicopter is loaded nose first, turn the cargo hooks in reverse before attaching restraints.

c. All equipment shall be prepared, packaged, or mounted such that there is no adverse effect on the functioning of the equipment after being subjected to the aircraft environmental extremes. MIL-STD-810 provides guidance on approved test methods and data gathering techniques.

d. All hazardous materials (to include fuel level, batteries, etc.) must be prepared and certified for airlift in accordance with TM 38-250/AFMAN 24-204(I). Do not consider this air transport

certification as approval for hazardous materials. Authorization for airlifting hazardous material is the responsibility of 401 SCMS/GUMAA (DSN 787-4503 or COM (937) 257-4503).

3. Loading Instructions:

a. The helicopter shall be prepared and loaded using existing TO 1C-17A-9 Section VI or TO 1C-5A-9-2 Section IV procedures for Chinook helicopters, as applicable.

4. Restraint Requirements: The tiedown provisions for the helicopter are shown in Table 2, as referenced in the helicopter nose forward direction (NOTE: Except for the addition of the VAS Adapter, these provisions are unchanged from the previous certification, see Reference 1).

Location	Quantity	Helo FS[1] Location	Forward (lbs)	Aft (lbs)	Lateral (lbs)	Vertical (lbs)
Fwd Gear	Pair	205	7,800	7,800	11,800	11,800
Aft Gear	Pair	515	11,800	0	7,800	7,800
Aft Jack Pad/VAS[2]	Pair	482	14,260	14,260	15,656	15,656
Center Cargo Hook	One	331	56,000[3]	56,000	56,000	56,000
Fwd Cargo Hook	One	249	40,000	40,000	40,000	40,000

[1] FS – Fuselage Station

[2] Existing Aft Jack Pad Tiedown Fitting or new VAS Tiedown Adapter

[3] Adapter needed for strength in forward direction

Table 2: CH/MH-47 Tiedown Provision Ratings

Required Distribution:

1. Shipper shall give a copy of this certification to the ATOC representative when the item is presented for airlift. This certification shall be part of the official cargo manifest documentation package and shall be briefed to the aircraft loadmaster prior to loading this item.

2. AMC/A3V & AMC/A4T.

3. SDDC TEA.

4. AFLCMC/WLM & AFLCMC/WLS

5. WR-ALC/GRS

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