FM 10-450-5
MCRP 4-11.3E, VOL III
NWP 3-04.13

AFJMAN 11-223, VOL III
COMDTINST M13482.4A

MULTISERVICE HELICOPTER SLING LOAD:

DUAL-POINT LOAD RIGGING PROCEDURES

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MARINE CORPS PCN: 14400007200

HEADQUARTERS
DEPARTMENT OF THE ARMY
UNITED STATES MARINE CORPS
DEPARTMENT OF THE NAVY
DEPARTMENT OF THE AIR FORCE
UNITED STATES COAST GUARD

FIELD MANUAL 10-450-5
MARINE CORPS REFERENCE PUBLICATION 4-23E, VOL III
NAVAL WARFARE PUBLICATION 3-04.13
AIR FORCE JOINT MANUAL 11-223, VOL III
COMMANDANT INSTRUCTIONS M13482.4A

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Washington, DC, 30 August 1999

MULTISERVICE HELICOPTER SLING LOAD: DUAL-POINT LOAD RIGGING PROCEDURES

PREFACE

This manual is one of a series of manuals for aviation and ground personnel who perform helicopter sling load missions ashore or aboard ship. Other manuals in this series are FM 10-450-3/MCRP 4-23E, VOL I/NWP 3-04.11/ AFJMAN 11-223, VOL I/COMDTINST M13482.2A and FM 10-450-4/MCRP 4-23E, VOL II/NWP 3-04.12/AFJMAN 11-223, VOL II/COMDTINST M13482.3A.

These manuals are a coordinated effort of the US Army, US Marine Corps, US Navy, US Air Force, and US Coast Guard. All services participate in the sling load certification program begun by the Army in 1984. These manuals include standardized rigging procedures and other information from that program. Chapters 2 through 13 contain rigging procedures for dual-point loads which have been certified for sling load. Chapter 14 contains rigging procedures which have not been certified but have demonstrated acceptable static lift and flight characteristics during a flight test.

Efforts were made to standardize ground crew and hookup procedures and terminology. Where service-unique requirements apply to an entire chapter or body of text, the service initials are at the beginning of the chapter or text. Otherwise the initials are at the end of the applicable sentence.

Rigging equipment and procedures described in this manual may not be authorized for all aircraft or services because of equipment or service restrictions.

*This publication supersedes FM 55-450-5, 11 February 1991.

MARINE CORPS PCN: 14400007200

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CHAPTER 1

FUNDAMENTAL PRINCIPLES

1-1. INTRODUCTION

This chapter contains general information about certification for helicopter sling load and explains the role of the Military Traffic Management Command Transportation Engineering Agency (MTMCTEA) and the Department of Defense (DOD) sling load certification authority. This authority rests with the US Army Soldier Systems Center (SSC). This chapter also explains the information contained in the equipment rigging procedures and gives some general rigging instructions.

1-2. CLASSIFICATION DEFINITIONS OF SLING LOADS

a. Certified Sling Loads. Certified sling loads are those items of equipment and their associated rigging procedures which have completed the evaluation and testing required by SSC for sling load certification. These rigging procedures are in Chapters 2 through 13. Only certified sling loads are authorized for the Marine Corps. The following restrictions apply for dual point sling load certification to remain in effect:

(1) The load must be within the lifting capability of the desired helicopter model.

(2) The load shall be rigged in accordance with the certified dual point rigging procedure.

(3) The recommended stable airspeed specified for the load in the applicability section of the rigging procedure is a recommendation and not a restriction, unless so stated.

(4) This certification does not apply to helicopters of different designations (for example, CH-47 versus CH-53E helicopter) because of possible differences in dynamic vibration, helicopter/load mass differential, and rotor wash pattern.

b. Suitable Sling Loads. Suitable sling loads are those items of equipment and their associated rigging procedures that have not been certified but have demonstrated acceptable static lift and flight characteristics. In most cases these loads were not pull tested in accordance with MIL STD 913, but are known loads which have been flown without incident for years and which SSC considers to be proven safe. These rigging procedures are in Chapter 14.

c. Unique Sling Loads. Unique loads are also equipment carried on a one time or low-frequency basis, such as telephone poles, artillery targets, or barrier material.The lack of sling load certification in itself does not preclude a unit commander from carrying a load that is not certified. Each service is responsible for determining its policy on carrying loads that have not been certified for sling load.

d. Prohibited Sling Loads. Prohibited sling loads are items of equipment that are prohibited from sling loading as determined by each service. These loads have been denied sling load certification and are a safety hazard if carried. They have either structural deficiencies or have exhibited unstable flight characteristics during flight testing. Each service will identify these loads and transmit this information by separate list. Contact your service point of contact identified in the Preface if you have any questions regarding the classification of a particular load.

1-3. CERTIFICATION OF EQUIPMENT FOR HELICOPTER SLING LOAD

a. Objective. The objective of helicopter sling load certification is to assure the user that the equipment being transported can withstand the stresses of a sling load flight environment. Certification for sling load assures the user that the item has met minimum standards for structural integrity and that the associated rigging procedures have been developed specifically for that item.

b. Responsibilities. Within the US Army, the MTMCTEA is responsible for transportability approval of developmental equipment. Within the DOD, SSC is the lead activity responsible for providing sling load certifica-

tion and rigging procedures for military equipment. When an item is certified for sling load, it means that SSC, in cooperation with various test activities, has:

(1) Conducted an engineering analysis of the load and lifting provisions for structural adequacy during sling loading.

(2) Verified that the lift provisions meet the strength requirements of the applicable military standard by means of proof load testing.

(3) Developed and/or validated sling load rigging procedures through static lift testing.

(4) Evaluated flight test reports and determined that the particular load meets acceptable flight characteristics with the type helicopter flown during the flight test.

(5) Issued a statement of sling load certification for the particular load, including load configuration(s), weight(s), types of helicopter(s), and maximum recommended airspeed(s) as attained during the flight test(s). Certification is valid only for the conditions specified in the rigging procedures.

1-4. REQUESTS FOR SLING LOAD CERTIFICATION

a. Fielded Equipment. Each service headquarters must designate, request, and prioritize the fielded equipment to be evaluated by SSC for sling load certification. Individual units can request sling load certification for fielded equipment through the appropriate service agency which will add the item to the prioritized list. The SSC will evaluate the equipment on a priority basis. The following agencies are responsible for their branch of service:

(1) US Army - Commander, Combined Arms Support Command, ATTN: QM Combat Developments, Suite 250, 3901 A Avenue, Fort Lee, VA 23801-1809.

(2) US Marine Corps - Commanding General, Marine Corps System Command (PSE) Quantico, VA 22134-5021.

(3) US Navy - Naval Air Systems Command (NAVAIR).

(4) US Air Force - US Air Force Systems Command.

b. Previously Certified Single-Point Loads. Single point loads which have been certified under any DOD helicopter may be flown in the single point configuration by any DOD helicopter with suitable lift capability.

c. Previously Certified Dual-Point Loads. Loads cannot be certified for dual-point lift based on previously certified dual-point rigging procedures because of the differences in dual hook helicopters, such as the distance between the two cargo hooks. Rigging procedures for dual-point loads must be developed and/or approved by SSC before the test flight.

1-5. UNIQUE ITEMS OF EQUIPMENT OR OPERATIONAL REQUIREMENTS

Helicopter sling loading of unique items, due to operational requirements, will be at the discretion of the commander. Equipment not listed in this manual should be static lifted (when possible) by a crane to determine proper rigging and stability characteristics. Personnel thoroughly familiar with sling load rigging procedures should assist in the static lift testing. Flight testing may be conducted after a satisfactory static rigging configuration has been determined.

NOTE: Low density equipment with low weight and large surface area (flat surfaces), such as shelters, empty trailers, pallet loads, and empty fuel or water drums, are likely to become extremely unstable when flown during sling load operations, even at low airspeeds, and should be flown with extreme caution.

1-6. EQUIPMENT RIGGING PROCEDURES

This section explains the information that is contained in the rigging procedures for each load. Chapters 2 through 13 contain the rigging procedures for certified dual-point loads and chapter 14 contains the rigging procedures for suitable dual-point loads.

a. Applicability Paragraph. The applicability paragraph states whether a load is "certified" or "suitable" for sling load. It also contains the helicopter types and recommended maximum airspeeds for each helicopter type. For certified loads, this airspeed is the maximum airspeed attained by the helicopter during the test flight before the load became unstable or before the aircraft power requirements were exceeded. For suitable loads, the maximum