

TECHNICAL MANUAL

**AVIATION UNIT AND AVIATION
INTERMEDIATE MAINTENANCE MANUAL**

CH-47D HELICOPTER

This manual together with TM 55-1520-240-23-1, TM 55-1520-240-23-3, TM 55-1520-240-23-4, TM 55-1520-240-23-5, TM 55-1520-240-23-6, TM 55-1520-240-23-7, TM 55-1520-240-23-8, TM 55-1520-240-23-9, TM 55-1520-240-23-10, TM 55-1520-240-23-11, supersedes TM 55-1520-240-23-1, TM 55-1520-240-23-2, TM 55-1520-240-23-3, TM 55-1520-240-23-4, TM 55-1520-240-23-5, TM 55-1520-240-23-7, TM 55-1520-240-23-8, TM 55-1520-240-23-9, TM 55-1520-240-23-10, 10 May 1983, and TM 55-1520-240-23-6, 6 May 1983, including all changes.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

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HEADQUARTERS
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AVIATION UNIT AND AVIATION
INTERMEDIATE MAINTENANCE MANUAL
CH-47D HELICOPTER

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) located in the back of this manual, directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028. For the World Wide Web use: <https://amcom2028.redstone.army.mil>.

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CHAPTER 2

AIRFRAME

SECTION I

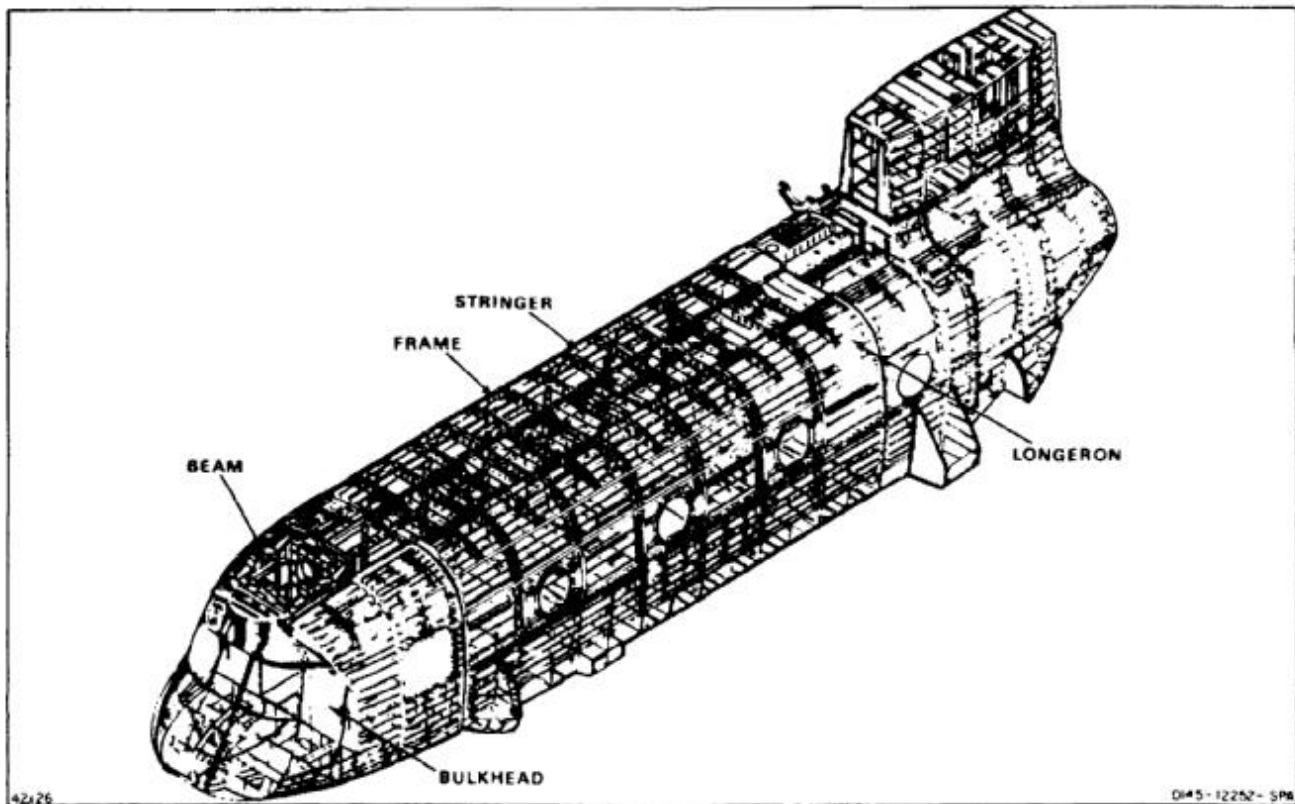
GENERAL STRUCTURAL REPAIR

DESCRIPTION AND OPERATION

The airframe structure consists of two parts — the primary structure and the secondary structure. Both are made mostly of high-strength aluminum alloy.

PRIMARY STRUCTURE

The primary structure is the skeleton framework that gives the helicopter its shape. Stringers and longerons extend fore and aft. They are supported by frames and bulkheads that extend across the width of the fuselage. Formers and beams are used where needed to support loads such as powerplants, transmissions, and landing gear.

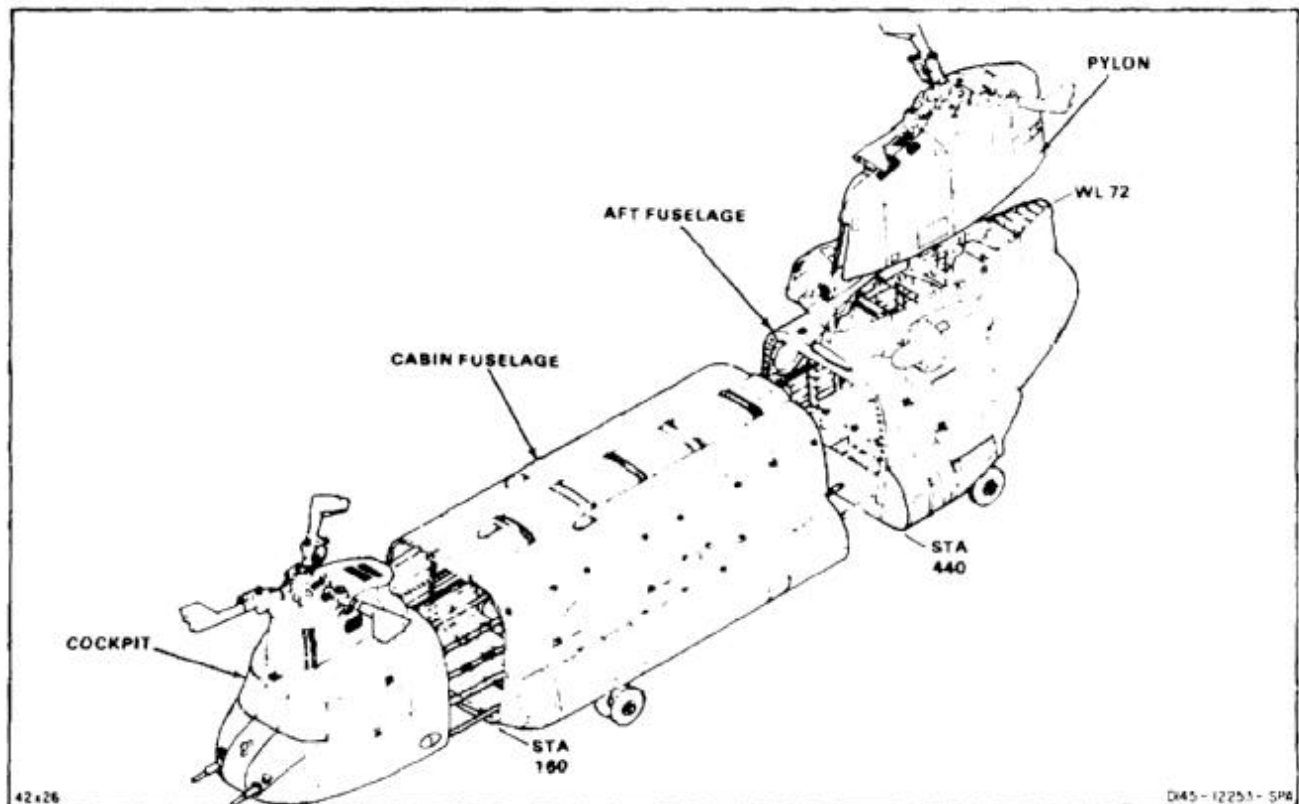


SECONDARY STRUCTURE

The secondary structure is made up of aluminum panels that are riveted to the primary structure. The panels are stressed to help provide strength and stiffness to the helicopter. Other panels protect and provide aerodynamic fairings over components.

The airframe is built in four sections — cockpit, cabin fuselage, aft fuselage, and pylon. The cockpit is spliced to the cabin fuselage at sta. 160. The aft fuselage is spliced to the cabin fuselage at sta. 440. The pylon is attached to the aft fuselage at water line 72.

The cockpit and fuselage sections cannot be separated. The pylon can be removed if needed to transport the helicopter.



COCKPIT

The cockpit section contains controls and the fully adjustable pilot's and copilot's seats. The forward transmission is mounted at the top of the section; covered by a fiberglass fairing. A hinged work platform is built into each side of the fairing.

Three self-tuning dynamic absorbers are installed in the cockpit section. One is in the nose and two are below the cockpit floor, under the seats. The absorbers automatically adjust themselves to lower vibration in the helicopter throughout its normal operating range.

The section contains three doors. A jettisonable door is next to each seat. The main entrance door is at the aft right side of the section.

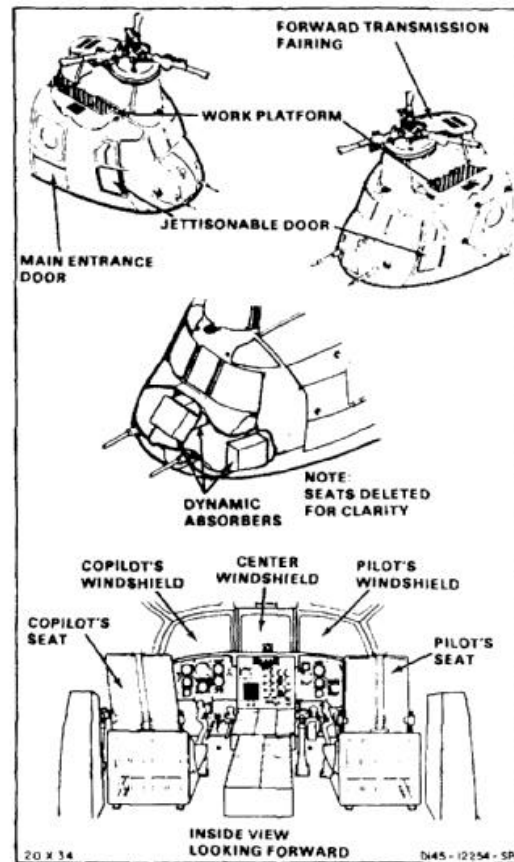
There are three windshields in the cockpit — pilot's, copilot's, and center. Each consists of three layers. The middle layer of all windshields is plastic. Inboard and outboard layers are either glass or plastic. The pilot's and copilot's windshield can be heated electrically for anti-icing or defogging. The center windshield can be heated for defogging only. Each windshield has a temperature sensing element to provide automatic temperature control.

Control Closet structure; location for the flight control linkage and controls.

Heater Closet area; houses the heater assembly, winch assembly, and the absorber control box.

Electronic Equipment compartment; provides mounting area for selected electronic equipment.

Forward Pylon area; located between sta. 120 and 150 above cockpit crown through (tunnel area) which supports hydraulic oil cooler and hydraulic system No. 1 hydraulic module.



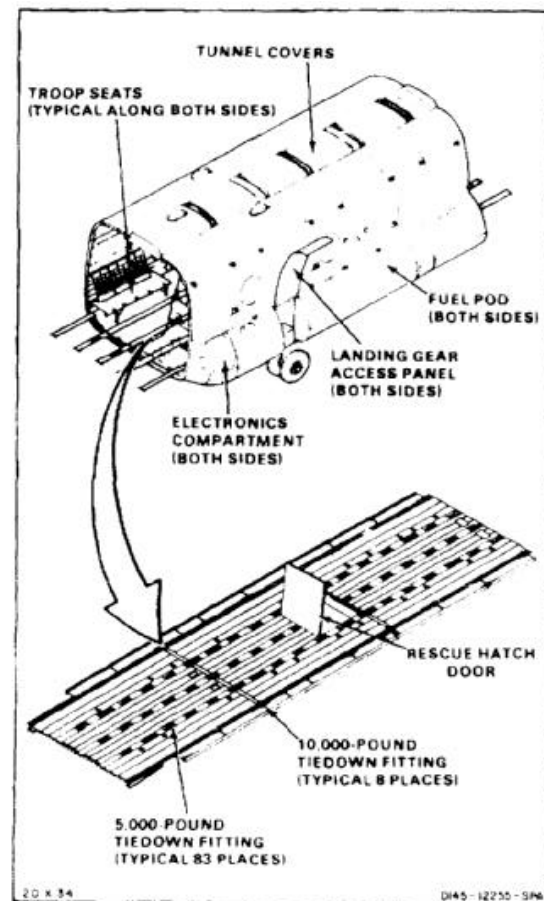
CABIN FUSELAGE

The cabin section located at sta. 160 to sta. 440 provides the major carrying capacity of the helicopter. It can be fitted to carry troops, litters, cargo, or any combination of the three.

The cabin floor consists of 12 removable panels set between five tiedown beams. The panels are made of riveted sections of magnesium alloy. Center panels are covered with non-skid material. Tiedown rings are installed in the tiedown beams. The rings have a capacity of **5,000 or 10,000 pounds**. A rescue hatch door of sandwich honeycomb construction is in the center of the floor. It hinges open for access to an external cargo hook and a movable hatch in the lower skin. The aircraft has a multiple (triple) cargo hook capability. The center cargo hook located at sta. 330 has a lift capacity of **26,000 pounds**. The forward cargo hook is located at sta. 249 and the aft cargo hook located at sta. 409 have a lift capacity of **17,000 pounds** each.

A tunnel along the top of the cabin section houses drive shafting and flight controls. The tunnel consists of six honeycomb covers that hinge open for access to components. A walkway at the right of the tunnel runs the length of the cabin.

Detachable pods on each side of the fuselage section contain the fuel tanks. The forward end of each pod contains components of the electronic and electrical systems. A hinged panel in each pod provides access to the forward landing gear.



AFT FUSELAGE AND PYLON

The aft fuselage and pylon sections together contain the aft transmission and the APU. The engines are mounted inside nacelles at the base of the pylon on each side of the fuselage.

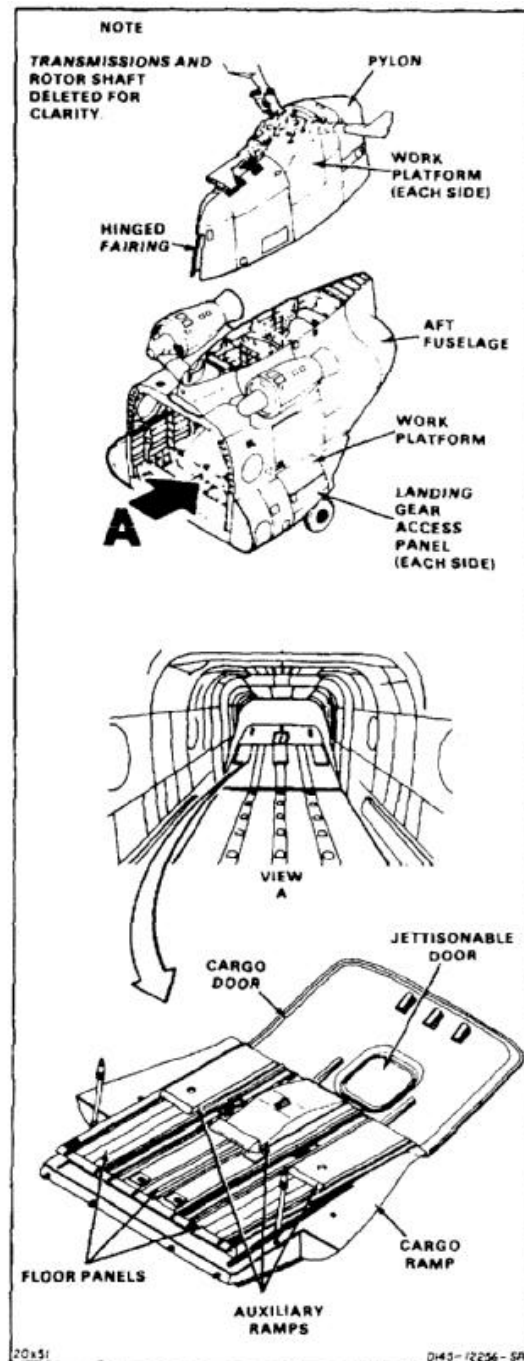
A hydraulically operated cargo loading ramp is at the aft end of the fuselage section. It includes a ramp, a jettisonable cargo door, and three auxiliary loading ramps. Three removable floor panels are set into the cargo ramp. Two **5,000 pound** tiedown fittings are at each side of the ramp. The cargo door retracts inside the ramp when the ramp is lowered and extends when the ramp is raised. A jettisonable door hatch is in the center of the cargo door.

The three auxiliary ramps are hinged at the aft edge of the ramp. In use, they are rotated from their stowed position on the ramp to bridge the gap from the ramp to the ground. The center auxiliary ramp can be used as a work platform for maintenance on the APU.

Pods along the lower edge of each side of the aft fuselage form an extension of the cabin fuselage pods. They contain access panels to the aft landing gear and fold-out work platforms for engine maintenance.

The pylon houses the aft rotor shaft and the combining transmission. The leading edge of the pylon is hinged on each side. It opens at the centerline for access to the combining transmission. A work platform opens to provide access to the rotor shaft.

The pylon is attached to the aft fuselage at water line 72. It can be removed if needed to transport the helicopter.



END OF TASK