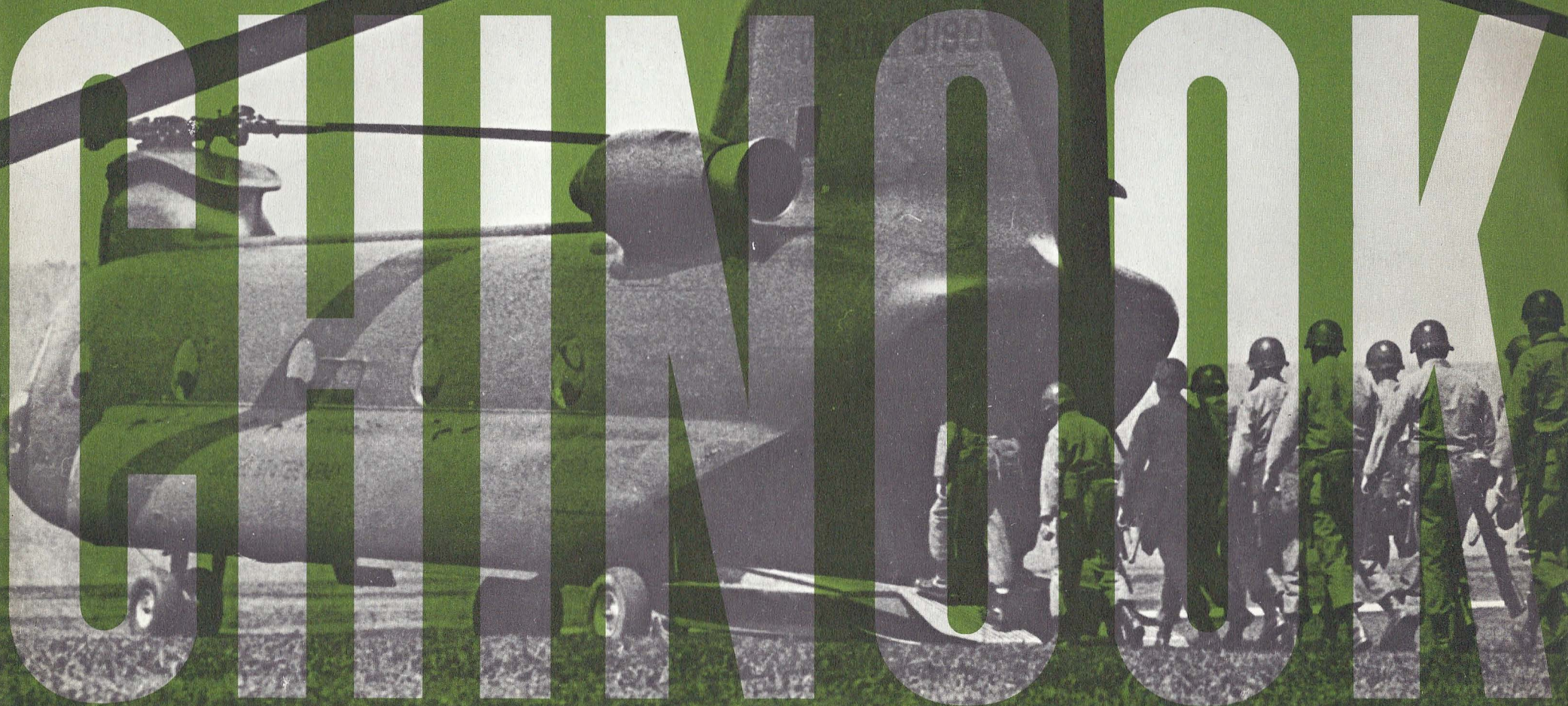


**THE NEW CH-47B**

**LOOK**



**HELICOPTER**

## INTRODUCTION

The CH-47B is the new version of the world-famed and combat-tested U.S. Army Chinook—the CH-47A—which has been the Army's Standard-A medium transport helicopter since 1963. Except for slightly larger rotor blades, the CH-47B is identical in size and similar in appearance to the CH-47A. The flight performance of the CH-47B, however, is appreciably superior. This is achieved primarily through the use of more powerful engines and new rotor blades of advanced design which provide significant increases in both speed and payload. Other improvements include better stability and flying qualities, plus provisions for additional fuel capacity.

The first CH-47B was delivered in May 1967, at which point it became the production Chinook.





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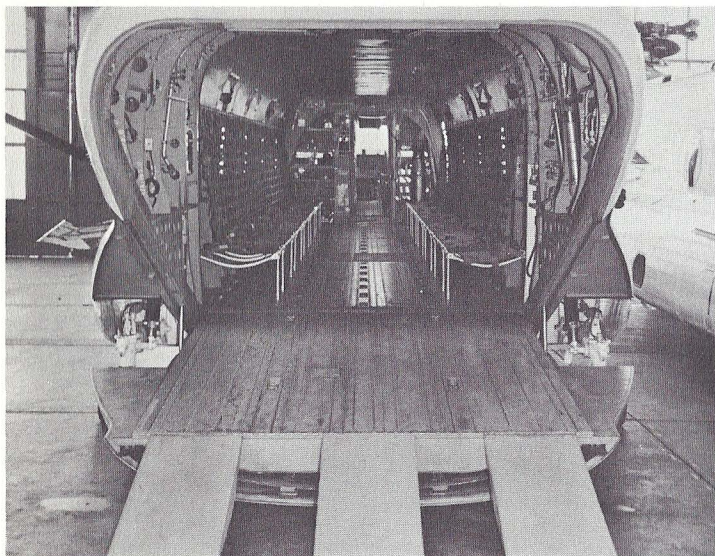
## DESCRIPTION

The CH-47B is a twin-turbine, tandem-rotor helicopter with a normal crew complement of three. The internal cabin space is large enough to carry up to 44 combat-equipped troops, or 24 litter patients plus two medical attendants. The 30-foot 2-inch (9.19m) long cabin features straight-in loading through a rear ramp, and has an unobstructed cross-section 6½ feet (1.98m) high by 7½ feet (2.29m) wide. Usable cabin volume is 1440 cubic feet (40.8 cu m). The fuselage hull is sealed during manufacture to provide water landing capabilities.

To support the heavy vehicles and equipment which the Chinook is able to carry, the cargo compartment floor is designed for a distributed load of 300 pounds per square foot (1464.6 kg per sq m). The outboard portion of the floor, or treadway, is designed for wheel loads of 2500 pounds (1136.4 kg) per wheel. Standard Army roller tracks can be installed on each side of the center panel for one-man handling of standard pallets or wire baskets.

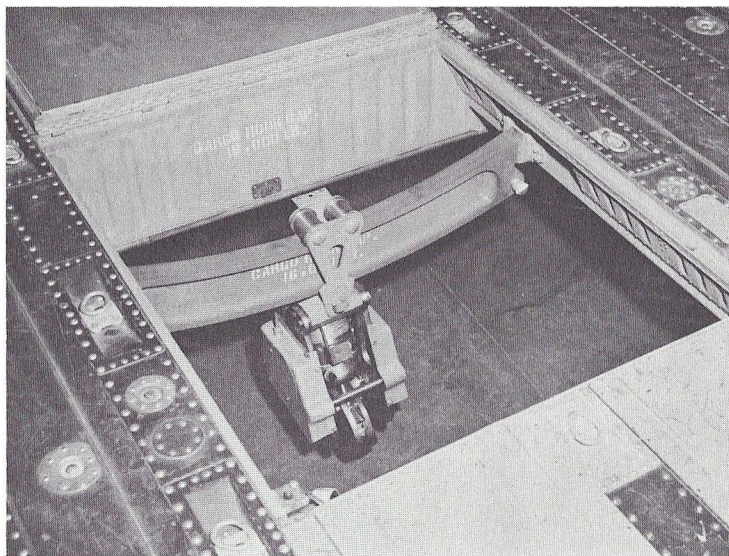
The cargo and personnel hoist system incorporates a winch usable for cargo loading through the rear ramp, or for hoisting personnel through the cargo hatch. An external cargo hook with an approved capacity of 16,000 pounds (7258 kg) is located in the cargo hatch.

Rear Loading Ramp

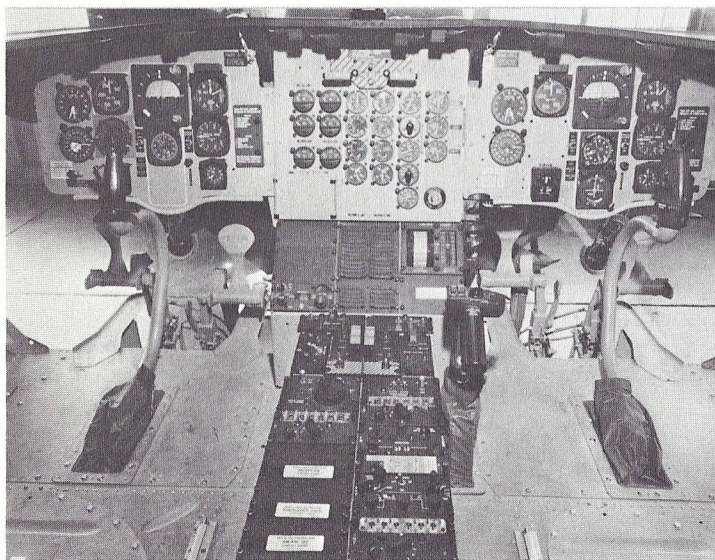


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External Cargo Hook Suspension System

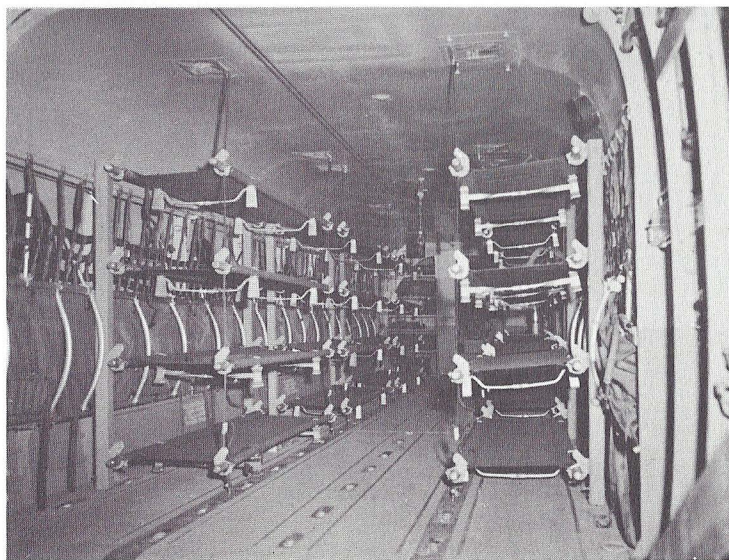


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Cockpit

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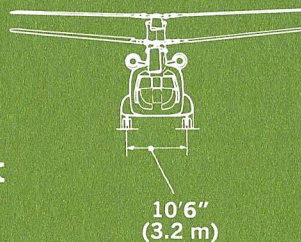
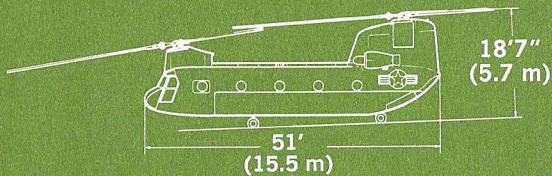
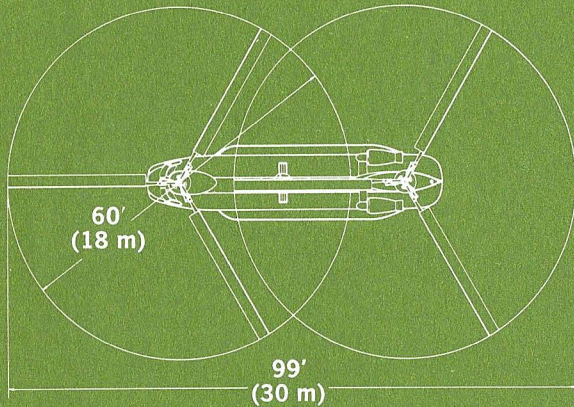
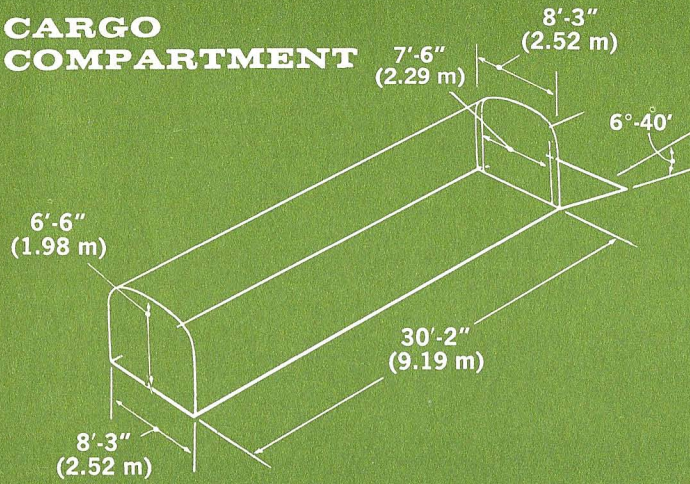


Litter Installation

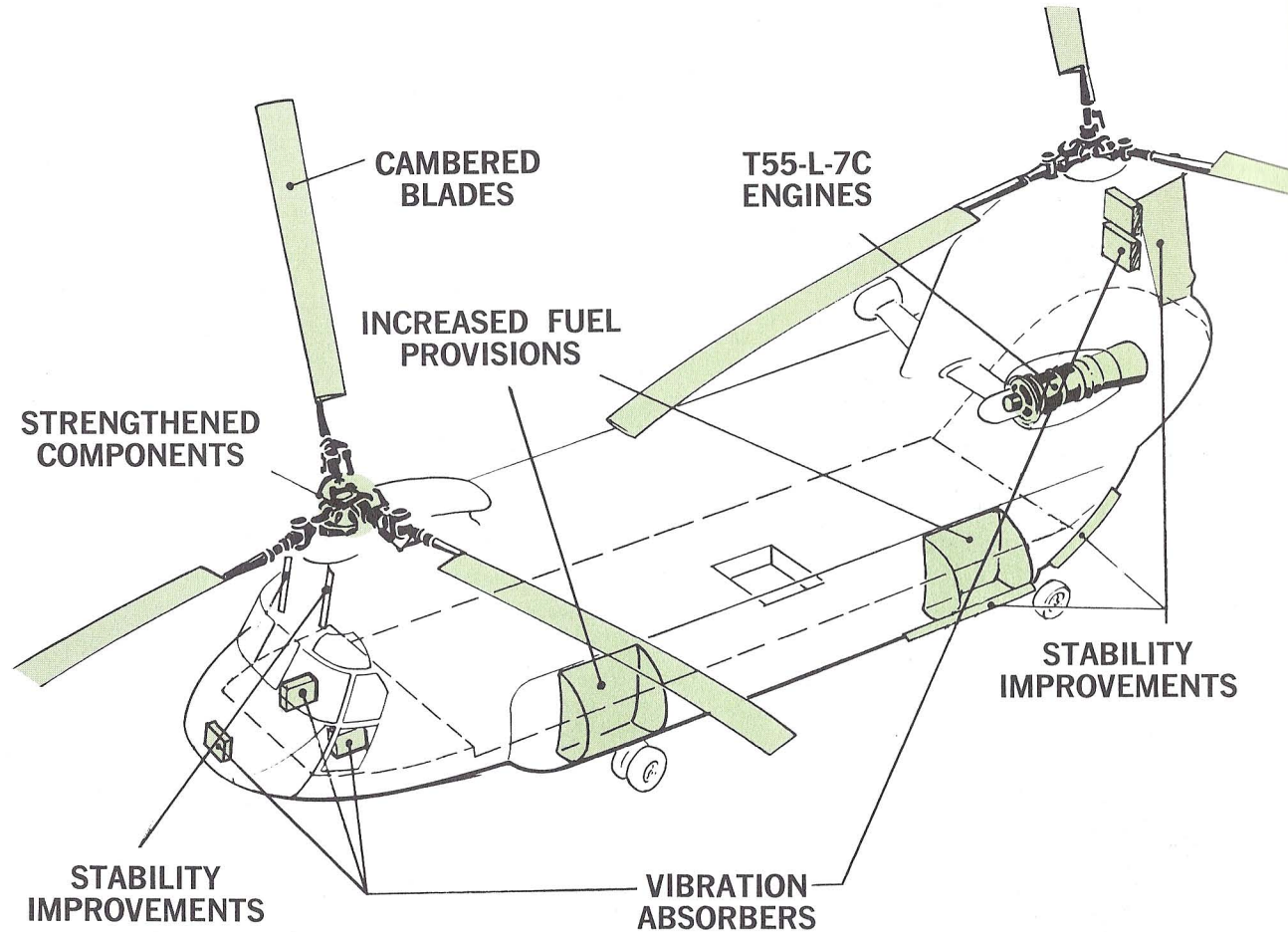
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# CH-47B CHINOOK

## CARGO COMPARTMENT



## GENERAL DIMENSIONS CH-47B CHINOOK HELICOPTER

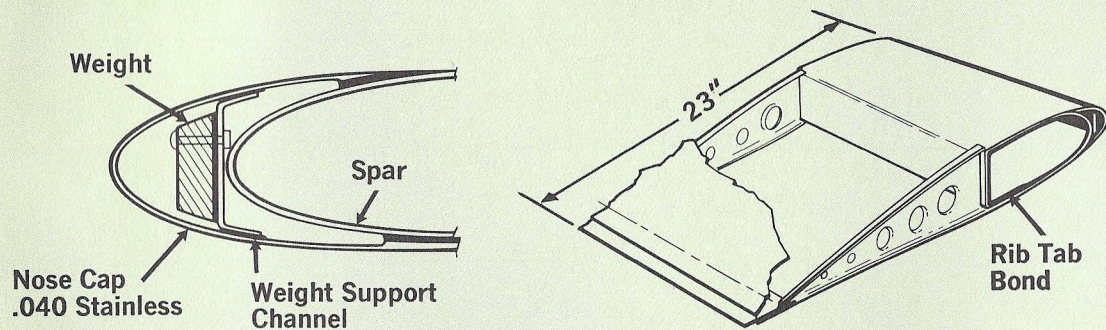


### OPERATIONAL IMPROVEMENTS:

- Increase in Payload Capability
- Speed Increases at all Altitudes
- Reduced Vibration Levels
- Improved Flying Qualities
- Improved Dynamic System Life

# IMPROVEMENTS

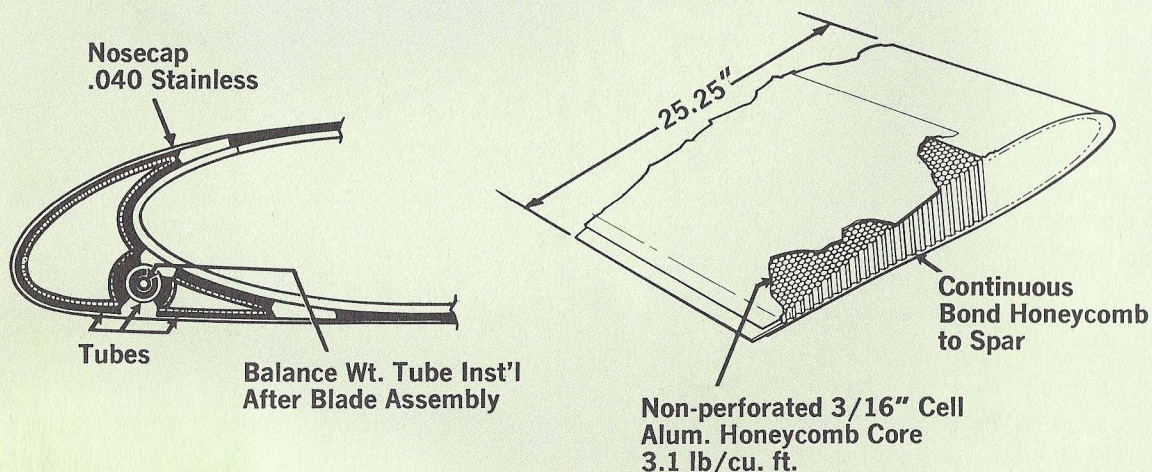
## CH-47A BLADE



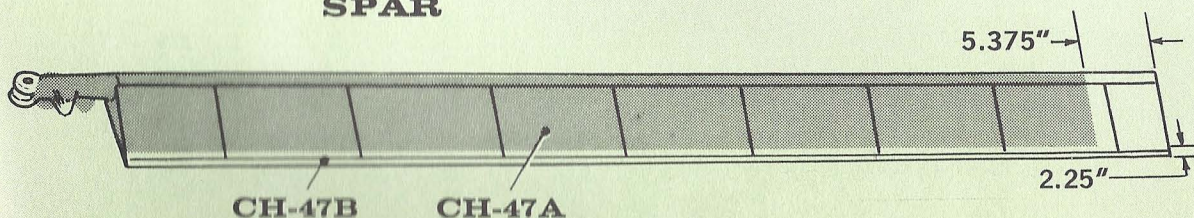
**NOSE CAP**

**TRAILING EDGE BOX**

## CH-47B BLADE



**SPAR**



# INCREASED POWER

T55-L-7 engines are replaced by T55-L-7C engines.

## SHAFT HORSEPOWER AVAILABLE

	CH-47A	CH-47B
Max. Rating (SHP)	--	2850
Mil. Rating (SHP)	2650	2650
Normal Rating (SHP)	2200	2400

## WEIGHTS AND PERFORMANCE

### WEIGHTS

	CH-47A	CH-47B
Design Gross Weight (LBS)	28,550	33,000
(KG)	12,950	14,969
Alternate Gross Weight (LBS)	33,000	40,000
(KG)	14,969	18,140
Payload Capability (LBS)	10,313	15,870
(Fuel Tanks Full) (KG)	4,678	7,209
Payload Capability @ S.L. (LBS)	13,800	19,300
(10 N Mi or 18.5 Km) (KG)	6,250	8,754

### PERFORMANCE\* (33,000 LBS. GW—Std. Day)

Hover Ceiling—Out-of-Ground Effect (FT)	7,300	10,650
(M)	2,220	3,245
Speed Capability, NRP (KTS)	110	155
@ Sea Level (KM/HR)	204	287
Radius of Action @ S.L. (N Mi)	100	100
(Integral Fuel) (KM)	185	185

\*Data Basis: Flight Test

## MAJOR DESIGN FEATURES

Twin T55-L-7C gas turbine engines, each with ratings of 2850 shp for 10 minutes, 2650 shp for 30 minutes and 2400 shp continuous at sea level, standard temperature.

Tandem rotor configuration for excellent hover performance; indiscriminate troop or cargo loading.

Individually interchangeable rotor blades of steel/aluminum/fiber glass construction.

The CH-47B drive system is currently qualified for 4970 shp at 230 rotor rpm.

Hydraulic lower and upper actuators in the control system are dualized for improved reliability, with each pair powered by an independent hydraulic system.

Dual Stability Systems, which incorporate completely independent sensing and hydraulic power actuation, form an integral part of the basic flight control system and provide reliable, positive dynamic stability throughout the entire flight regime from hovering to maximum forward speed.

Automatic speed trim feature maintains an essentially level fuselage attitude throughout the cruising speed range.

Built-in T62 gas turbine auxiliary power unit permits operation of all electrical and hydraulic systems with the main engines shut down and without requiring ground support power units. The APU also permits starting the main engines at any temperature from minus 65°F (−53.9°C) to plus 125°F (51.7°C) without the use of external power units.

Duplicate AC electrical generators and duplicate AC-to-DC transformer-rectifiers.

Accommodations in the cargo compartment for up to 44 fully-equipped combat troops and provisions for alternative accommodation of 24 litter patients plus two medical attendants.

Hydraulically actuated rear loading ramp, operable in flight for free-drop or paradrop operations. Ramp can be left open in flight to accommodate overlength cargo or to speed unloading of troops and vehicles during assault landing operations.

Fuselage sealed in production, facilitating water operations.

Strength and performance capability to satisfactorily transport up to ten tons (9072 kg) of cargo internally or eight tons (7258 kg) externally.

All major dynamic system components designed for a minimum of 1200-hours between overhaul; 3600-hours service life.

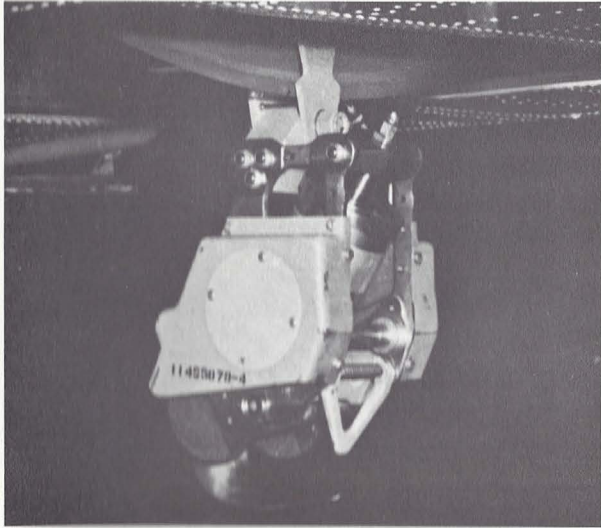
Crash resistant, self-sealing fuel cells; 621 U.S. gallons (2350 liters) capacity. Space exists to accommodate integral tanks for greater capacity.

Quadricycle type landing gear. Power steering. Hydraulically actuated brakes will hold aircraft on a 20-degree slope.

Power plant fire detector system; fire extinguisher system; engine air inlet anti-icing system; windshield anti-icing.



External Cargo Hook



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Rapid Troop Dispersal



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Quadricycle Type Landing Gear

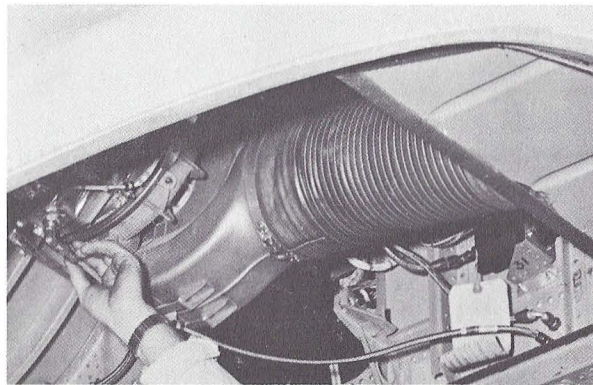


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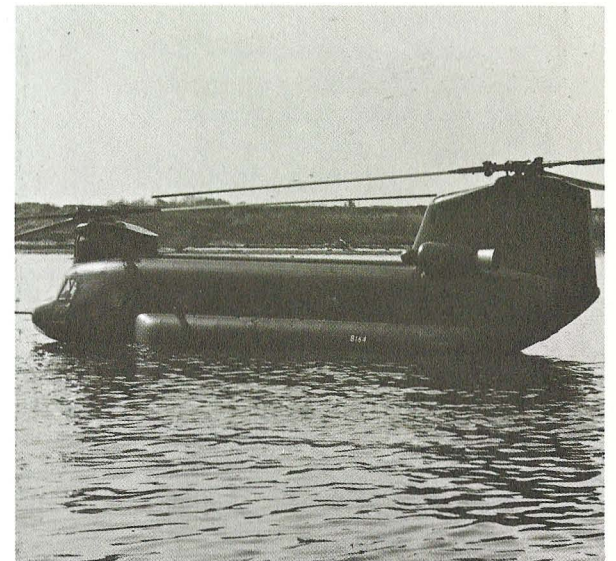
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Detachable Fuel Cell



65310

Integral Auxiliary Power Unit



112100

Water Operations

## MISSIONS

These are typical Chinook helicopter missions in combat, illustrated with CH-47A and CH-47B photographs. Mission applications for which the new CH-47B provides a substantial increase in productivity include the following:

- Deliver artillery—Tube (105 and 155mm howitzers) or rocket type —to firing positions complete with crew and ammunition.
- Transport combat troops in assault operations—retain unit integrity by delivering up to a full rifle platoon at one time.
- Logistically support mechanized units on the move—supply food, water, fuel and ammunition.
- Refuel ground or air vehicles.
- Provide support for combat engineers.
- Transport command and control equipment.
- Evacuate wounded or large numbers of civilian evacuees.
- Recover or evacuate downed or damaged aircraft.
- Short distance heavy-lift applications.



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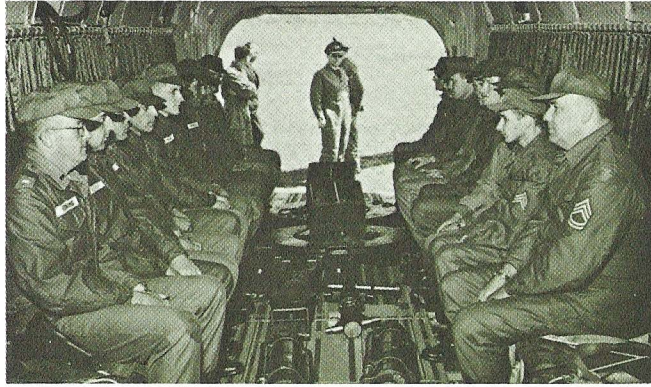
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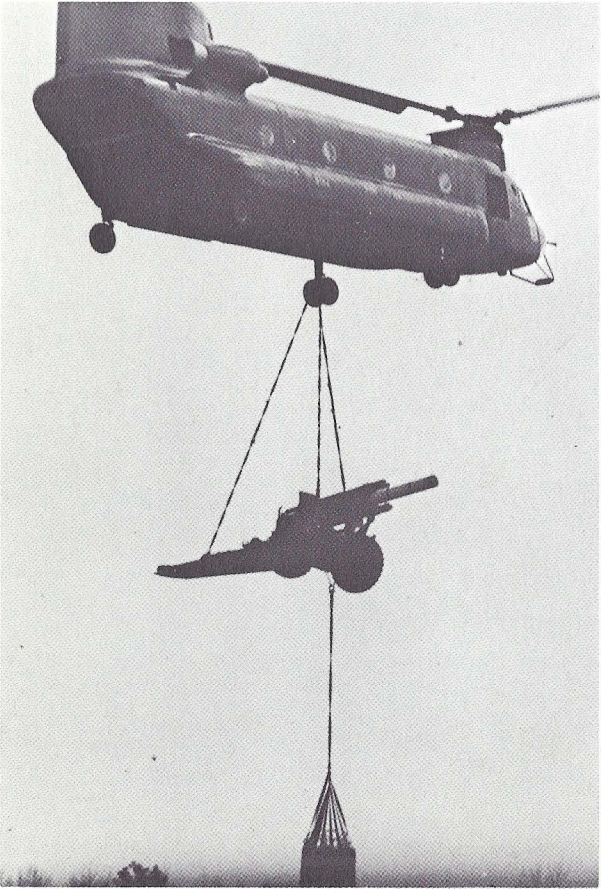
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## MAINTENANCE

The Chinook has consistently been maintained at the operating unit level in the field with the U.S. Army mechanic's standard tool kit and a minimum of special tools. The integral APU furnishes all the power for systems checkout and engine starting; sight gages have replaced dip sticks; dry-lube or oil-lube bearings have eliminated the daily grease gun; and integral flush steps and work platforms provide all necessary component access. The built-in provisions for a light air-transportable crane have permitted major component change in remote unsecured areas, putting the Chinook back in service in minimum time.

This inherent maintainability, so vital in Southeast Asia, indicates that the Chinook can see routine service anywhere in the world.



*Access Panels and Integral Workstands*

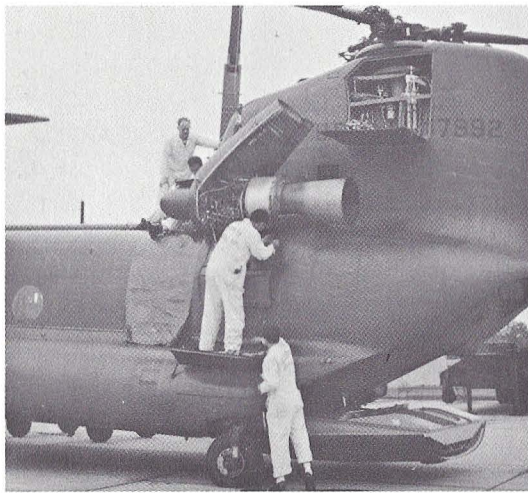


Combat Maintenance

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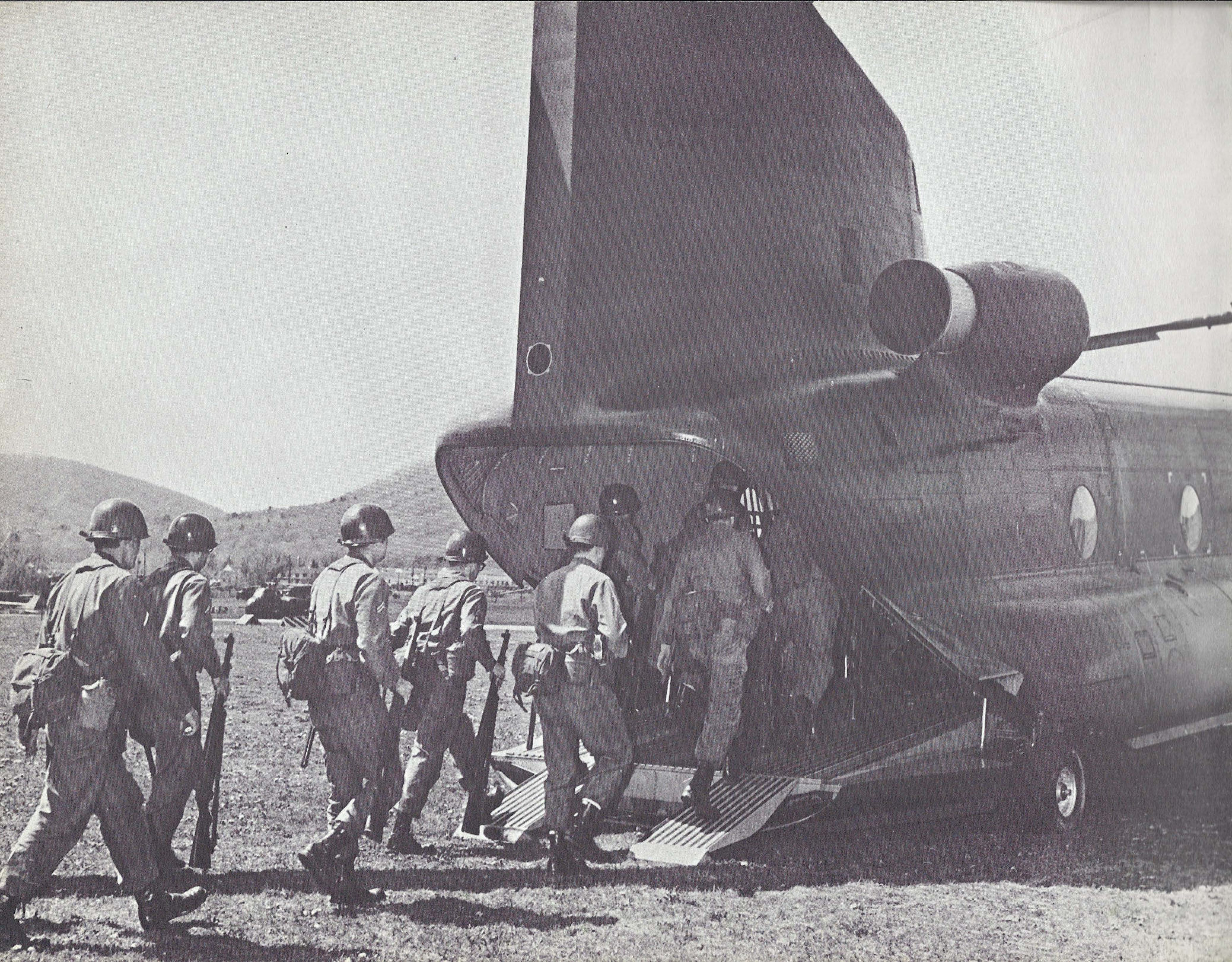


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Replacement of Major Components Using Portable Crane





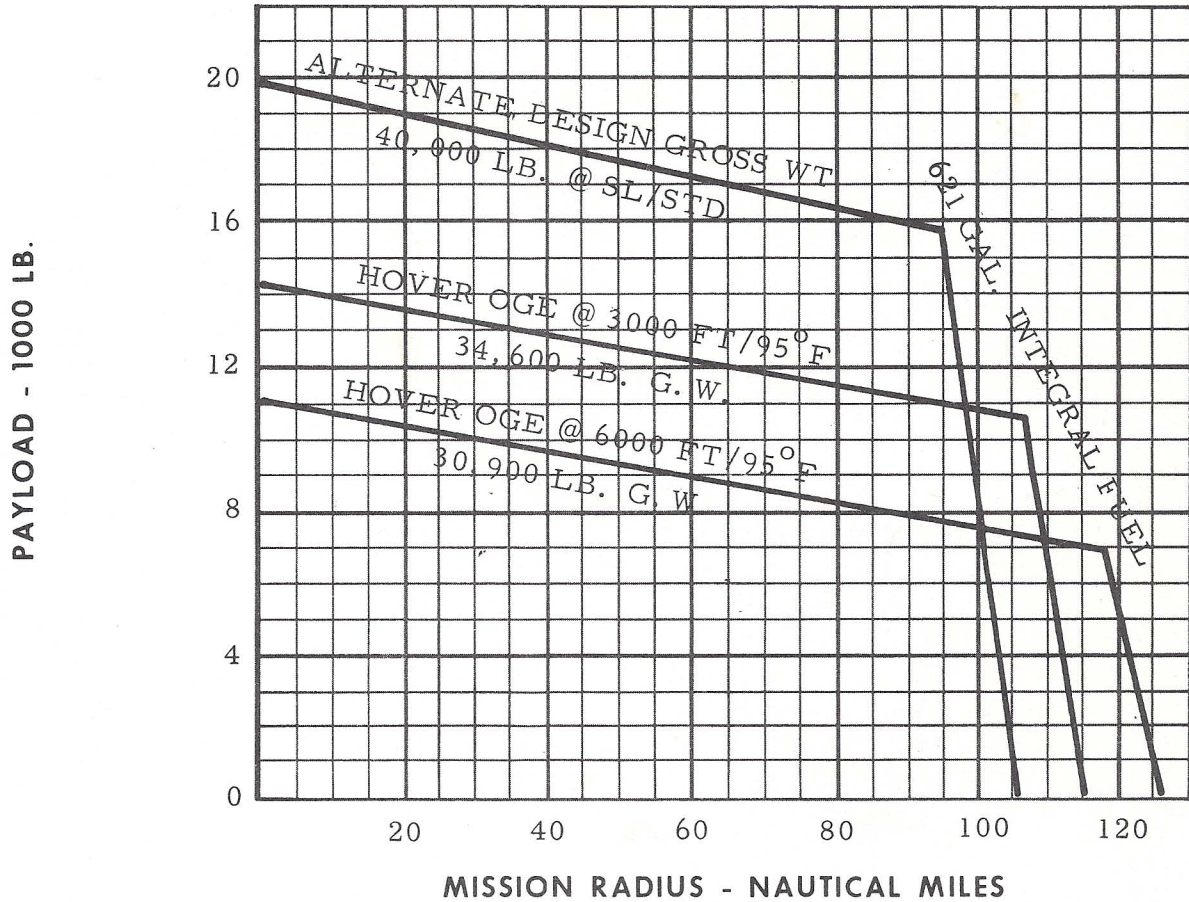
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***BOEING CH-47 CHINOOK***

THE BOEING COMPANY—VERTOL DIVISION

C 5727

# CH-47B HELICOPTER PAYLOAD CAPABILITY



## MISSION DESCRIPTION:

1. WARM-UP 2 MIN. AT NRP
2. TAKE-OFF AND CRUISE OUTBOUND AT NOTED CONDITIONS
3. LAND, EXCHANGE PAYLOAD (INBOUND PAYLOAD EQUALS 1/2 OUTBOUND PAYLOAD)
4. WARM-UP 2 MIN. AT NRP
5. TAKE-OFF AND CRUISE INBOUND AT NOTED CONDITIONS
6. LAND WITH 10% FUEL RESERVE

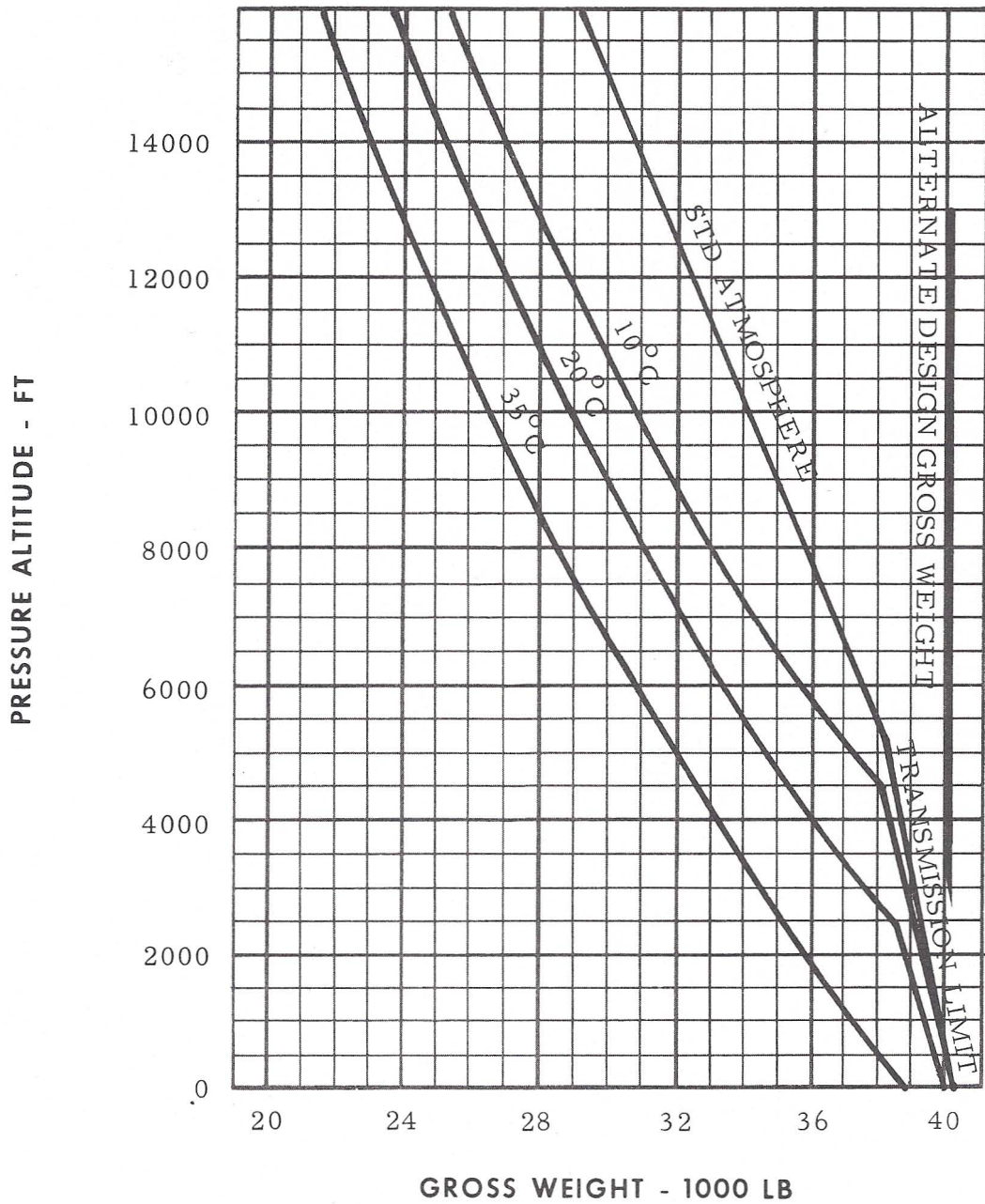
## NOTES:

1. CRUISE AT 99% OPTIMUM RANGE SPEED
2. (2) T55-L-7C ENGINES
3. SPEC. FUEL FLOW
4. 230 ROTOR RPM
5. WEIGHTS:  
WEIGHT EMPTY, 19,405 LB.  
FIXED USEFUL LOAD, 719 LB.



CH-47B HELICOPTER  
HOVER CEILING  
OUT OF GROUND EFFECT

MAXIMUM POWER (2) T55-L-7C ENGINES  
230 ROTOR RPM



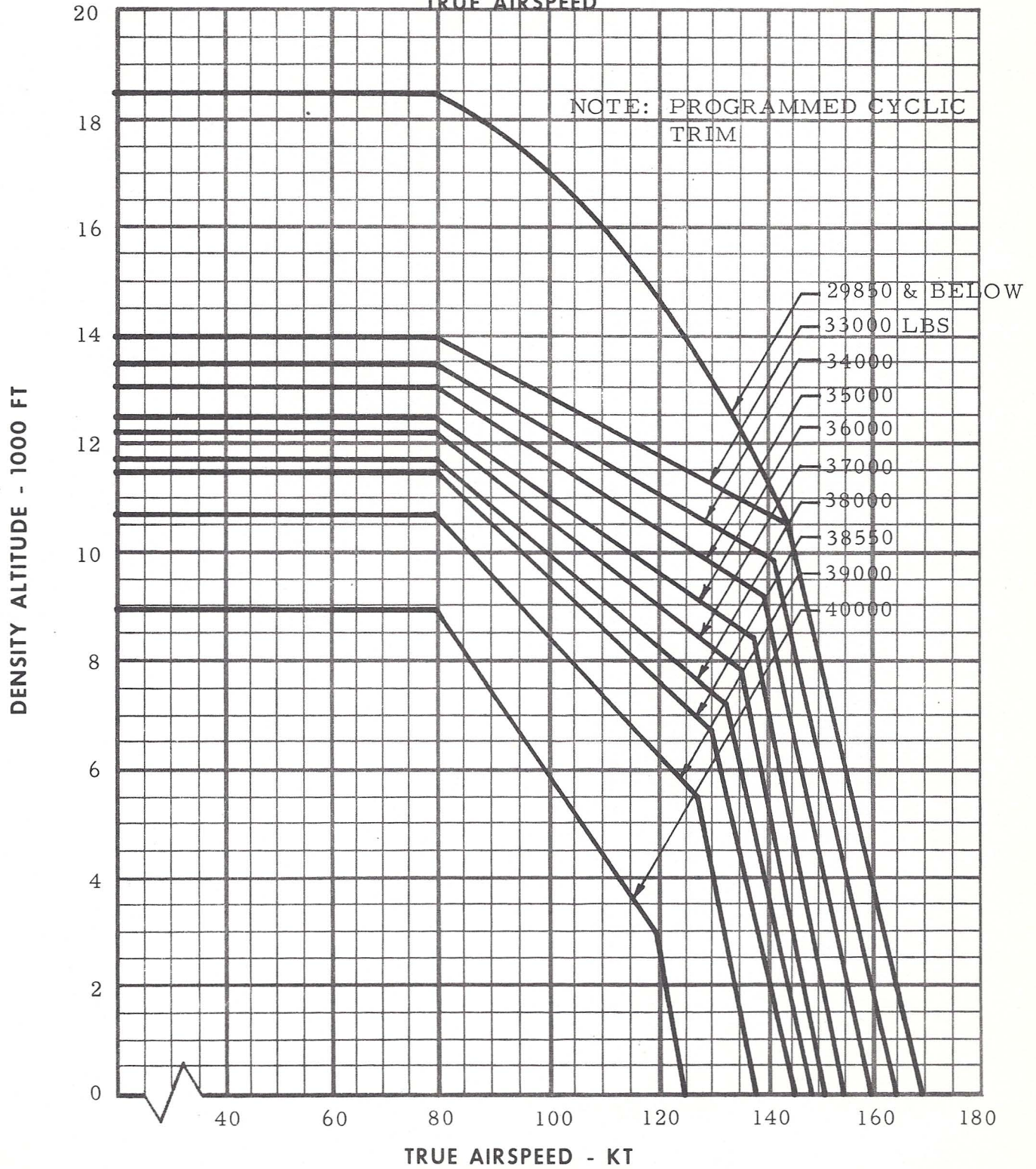
## CH-47 COMPARISON DATA

WEIGHTS		CH-47A	CH-47B
DESIGN GROSS WEIGHT	(LBS)	28550	33000
	(KG)	12950	14969
ALTERNATE GROSS WEIGHT	(LBS)	33000	40000
	(KG)	14969	18140
EMPTY WEIGHT	(LBS)	17932	19375
	(KG)	8134	8789
USEFUL LOAD	(LBS)	15068	20625
	(KG)	6835	9356
PAYLOAD CAPABILITY - FULL INTEGRAL FUEL (RADIUS OF ACTION - SEA LEVEL/STANDARD DAY)	(LBS)	10313	15870
	(KG)	4678	7209
<b>PERFORMANCE*</b> (33,000 LBS. GROSS WEIGHT - STANDARD DAY)			
SPEED CAPABILITY AT SEA LEVEL	(KNOTS)	110	170
	(KM/HR)	203	314
HOVER CEILING (OGE) MAX. POWER	(FT)	7300	10650
	(M)	2220	3245
SERVICE CEILING, NRP	(FT)	9200	16300
	(M)	2802	4968
FORWARD RATE OF CLIMB, SEA LEVEL, NRP	(FT/MIN)	1590	1990
	(M/SEC)	8.1	10
<b>FERRY CAPABILITIES</b> (STANDARD DAY - OPTIMUM ALTITUDES)			
RANGE USING INTEGRAL FUEL (10% FUEL RESERVE)	(N MI)	245	290
	(KM)	454	537
RANGE AT ALTERNATE GROSS WEIGHT USING INTEGRAL PLUS AUXILIARY FUEL (10% FUEL RESERVE)	(N MI)	830	1160
	(KM)	454	2149

\*DATA BASIS: FLIGHT TESTS

# CH-47B HELICOPTER FLIGHT ENVELOPE

230 ROTOR RPM  
TRUE AIRSPEED



# ***BOEING Helicopters***

VERTOL DIVISION / MORTON, PENNSYLVANIA, U. S. A.



Assembly Center