

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

H40NM
Revision 5

COLUMBIA
CH-54A
November 14, 2005

TYPE CERTIFICATE DATA SHEET NO. H40NM

This data sheet, which is a part of Type Certificate No. H40NM, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the Airworthiness Requirements of the Federal Aviation Regulations.

Type Certificate (TC) Holder: Erickson Air-Crane Incorporated, DBA Erickson Air-Crane
3100 Willow Springs Road
P. O. Box 3247
Central Point, Oregon 97502

Type Certificate Holder Record: Columbia Helicopters, Inc.
P.O. Box 3500
Portland, Oregon 97208

I. Model CH-54A (Restricted Category) Approved October 22, 1992 (See Note 6)

Engines: 2 Pratt & Whitney JFTD12A-4A (T73-P-1) (See NOTES 8 and 9)
Fuel: Aviation Kerosene JP4 or JP5

Engine Limits:

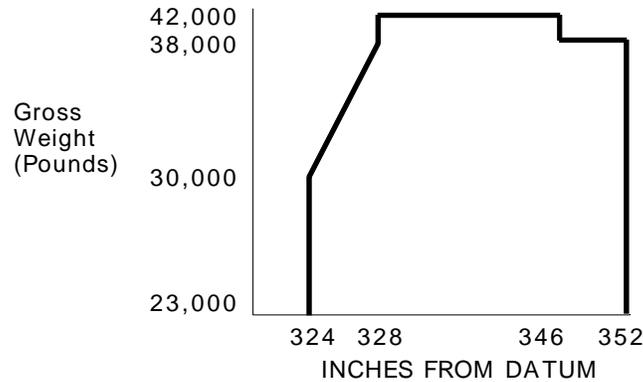
	Shaft <u>H.P.</u>	Power Turbine <u>Speed (N₂)</u>	Gas Gen. <u>Speed (N₁)</u>	Power Turbine <u>Inlet (T₅)</u>
Military Power (30 min.)	4500	105%	104%	688°C
Normal Continuous cruise	4000	104%	104%	655°C

Rotor Limits Maximum 204 r.p.m. (110% N_r)
Minimum 167 r.p.m. (90% N_r)

Airspeed Limits (IAS) Never Exceed: 99 kt. between 38,000 lb. and 42,000 lb. gross weight
115 kt. up to 38,000 lb. gross weight

C.G. Range 324.0 to 352.0 at 23,000 lb.
324.0 to 352.0 at 30,000 lb.
328.0 to 352.0 at 38,000 lb.
328.0 to 346.0 at 38,000 lb.
328.0 to 346.0 at 42,000 lb.
straight line variation between points given

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Datum	336 inches forward of main rotor centroid.
Leveling Means	Plumb line from top level plate inside cockpit aft door.
Maximum weight	42,000 lb.
Minimum crew	2 (pilot and co-pilot)
No. seats	5 2 at (+92.9), 1 at (+108.5), 1 at (+127.0), 1 at (+130.0).
Maximum cargo	See NOTE 5.
Fuel capacity	1351 gal.; 454 gal. at (+280.8), 454 gal. at (+397.3), 443 gal at (+461.3).
Oil capacity	3.2 gal. at (+234.0) (2 tanks 1.6 gal. each).
Rotor blade and control movements	For rigging information, see NOTE 8.
Other operating limitations	See NOTE 4.
Serial Nos. eligible	67-18421, 67-18425, 68-18440 and 68-18461, only
Certification basis	FAR 21.25(a)(2) and (b) effective February 1, 1965, including amendments 21-1 through 21-42. Type Certificate No. H40NM issued October 22, 1992 for the Special Purpose of carriage of external loads in accordance with FAR 133. Date of application for Type Certificate: April 1, 1992.
Production basis	None. Prior to certification of each aircraft, an FAA representative must perform a detailed inspection for workmanship, materials, and conformity with approved technical data, and will verify that a maintenance flight test has been completed for each aircraft by qualified maintenance personnel in accordance with the Department of the Army Technical Manual TM 55-1520-217-MFT-1, dated June 17, 1985.
Equipment	Equipment necessary for the particular special purpose operation must be installed (see NOTE 5).
NOTE 1.	A current weight and balance report including a list of equipment included in the certificated empty weight, and loading instructions when necessary, must be in each helicopter at the time of original airworthiness certification and at all times thereafter.
NOTE 2.	The following placard must be prominently displayed in the cockpit in full view of the pilots:

"THIS ROTORCRAFT MUST BE OPERATED IN ACCORDANCE WITH
THE RESTRICTED CATEGORY OPERATING LIMITATIONS OF FAR 91.313."

NOTE 3. The Maximum Allowable Operating Time (MAOT) schedule for Service Life Limited Part overhaul and retirement intervals are specified in Chapter 1, Section VI of Technical Manual No. TM 55-1520-217-23-1, "Aviation Unit and Intermediate Maintenance Manual CH-54A Helicopter," with Changes 1 through 21, dated September 23, 1987, as supplemented with the life limits specified herein. Refer to Department of the Army Memorandum, HQ, AVSCOM, AMSAV-ECC (702-3b), dated July 9, 1991, for a listing of MAOT extensions for CH-54A, gearboxes, engines, main rotor and tail rotor heads. MAOT extensions were granted individually for certain CH-54A T73 engines in accordance with Department of the Army, AVSCOM, (AMSAV-EP) letters.

MAXIMUM ALLOWABLE OPERATING TIMES
for
MAIN ROTOR HEAD P/N's S6410-20004-029, -031, -035

<u>ITEM</u>	<u>NOMENCLATURE</u>	<u>PART NUMBER</u>	<u>RETIREMENT INTERVAL</u>
1	Upper Plate	6410-23011-101	3000
2	Lower Plate	6410-23009-101	3000
3	Spacer	6410-23016-041	9000
		6410-23006-012	4175
4	Hub	1510-23001-4	1030
5	Sleeve Locknut	1510-23357-1	18300
6	ROT SWPLT	6410-24002-102	4560
7	Spindle Locknut	1510-23031-1	10500
		1510-23031	750
8	Sleeve	1510-23351	10200
9	Spindle	1510-23027-4	5675
10	Control Horn	1510-23350-2	1600
11	Horiz. Hinge Pin	1510-23099-1	3500
12	Vertical Hinge Pin	1510-23022	2800
13	Primary Servo	1565-20421-010	5050
14	Primary Servo	1565-20421-011	5050
15	Primary Servo	1565-20421-041	5050
16	Primary Servo	1565-20421-042	5050

NOTE 4. These helicopters must be operated in accordance with a Flight Manual comprised of the following:

- (1) Department of the Army Technical Manual No. TM 55-1520-217-10-1, "Operator's Manual, Army Model CH-54A Helicopters," dated April 8, 1977, with Changes 1 through 8, revised September 25, 1986.
- (2) Department of the Army Technical Manual No. TM 55-1520-217-CL-1, "Operator's & Crewmember's Checklist, Army Model CH-54A Helicopters, Pilot's Checklist," dated June 2, 1985

Day/VFR Restricted Category operations only.

NOTE 5. Provisions for the carriage of external loads are available in the form of structural hard points on the fuselage and main landing gear; single and four-point hoists; and a four-point load-leveler suspension system. Information concerning the operating limitations with this equipment is contained in the Flight Manual.

NOTE 6. Prior to civil airworthiness certification, the following Department of the Army Modification Work Orders (MWO) must be incorporated:

MWO 55-1520-217-20-1 Incorporation of an improved coupler spring device (CH-54A Helicopter), dated May 1, 1968.

MWO 55-1520-217-20-4 Incorporation of an improved oil transmitter restrictor (CH-54A Helicopter), dated November 21, 1968.

MWO 55-1520-217-30-7 Incorporation of inspection port in main gear box oil cooler blower and transition duct (CH-54A Helicopter), dated October 11, 1968.

- MWO 55-1520-217-30-11 Engine Pressure ratio (E.P.R.) system improvement (CH-54A Helicopter), dated February 27, 1968.
- MWO 55-1520-217-30-12 Incorporation of AFCS pedal switches, dated July 12, 1968.
- MWO 55-1520-217-30-19 Modification to avert 1st and 2nd stage servo system physical interference with primary servo armor (CH-54A Helicopter), dated August 16, 1968.
- MWO 55-1520-217-30-20 Change in the sensitivity of the fire surveillance test circuit (CH-54A Helicopter), dated July 25, 1968.
- MWO 55-1520-217-30-22 Incorporation of a redesigned adapter in all flight control rod assemblies (CH-54A Helicopter), dated October 9, 1967.
- MWO 55-1520-217-30-23 Installation of improved main landing gear wheels (CH-54A Helicopter), dated October 13, 1968.
- MWO 55-1520-217-30-25 Change of pressure switch assembly in auxiliary tank low fuel warning light system (CH-54A Helicopter), dated June 14, 1968.
- MWO 55-1520-217-30-29 Installation of improved right-hand flight control rod assembly and modification of the right-hand oil cooler support strut assembly (CH-54A Helicopter), dated February 5, 1968.
- MWO 55-1520-217-30-30 Improved electrical wiring installation for main hoist cable cutter (CH-54A Helicopter), dated April 18, 1969.
- MWO 55-1520-217-30-34 Retrofit improvements to increase aft pilot visibility (CH-54A helicopters), dated January 5, 1970.
- MWO 55-1520-217-30-37 Incorporation of redundant electrical circuit for cargo hook release system (CH-54A Helicopter), dated January 10, 1973 with Change 1, dated May 2, 1973.
- MWO 55-1520-217-30-39 Design improvements in cargo handling system (CH-54A Helicopter), dated January 25, 1974.
- MWO 55-1520-217-30-45 Incorporation of strengthened control rod assembly (CH-54A Helicopter), dated October 1, 1970.
- MWO 55-1520-217-30-48 Incorporation of an improved control speed setting actuator (CH-54A Helicopter), dated October 26, 1971.
- MWO 55-1520-217-30-51 Incorporation of magnecraft relay in the pilot's and copilot's turn and bank indicator circuitry (CH-54A Helicopter), dated September 8, 1972, with Change 1, dated November 16, 1972.
- MWO 55-1520-217-30-54 Improved main gear box oil pressure switch assembly (CH-54A Helicopter), dated September 17, 1976.
- MWO 55-1520-217-30-55 Fire surveillance system improvements (CH-54A/B Helicopters) dated November 30, 1976, with Change 1, dated August 9, 1983.
- MWO 55-1520-217-30-56 Improvements to cargo hook release system (CH-54A Helicopter), dated January 31, 1974.
- MWO 55-1520-217-30-57 Improved bearing support assemblies for the tail rotor drive shafting (CH-54A/B Helicopters), dated September 30, 1976.
- MWO 55-1520-217-30-60 Relocation of rotor brake hydraulic package and supporting bracket (CH-54A/B Helicopters), dated July 9, 1976, with Changes 1 and 2, dated May 18, 1984.

- MWO 55-1520-217-30-61 Incorporation of APP hydraulic start system improvement (CH-54A/B Helicopters), dated June 14, 1977
- MWO 55-1520-217-30-63 Incorporation of self-locking bolts in the engine and flight control systems (CH-54A/B Helicopters), dated July 21, 1981, with Change 1, dated August 9, 1983.
- MWO 55-1520-217-30-69 Incorporation of strengthened bulkhead at station 248, and a lower fuselage access panel (CH-54A/B Helicopters), dated October 25, 1982.
- MWO 55-1520-217-40-1 Incorporation of design improvement to strengthen pylon assembly (CH-54A Helicopter), dated January 15, 1973.
- MWO 55-1520-217-40-3 Incorporation of improved hydraulic manifold fittings and hydraulic line routing (CH-54A Helicopter), dated October 4, 1972, with Change 1, dated August 8, 1973.
- MWO 55-1520-217-40-4 Incorporation of improved vertical gyro indicating system (CH-54A Helicopters), dated January 1, 1974.
- MWO 55-1615-236-20-1 Incorporation of an improved main rotor blade tip cap with nickel plate leading edge (CH-54A Helicopter), dated February 25, 1971.
- MWO 55-1615-248-20-1 Incorporation of strengthened tail rotor pitch link assembly (CH-54A Helicopter), dated March 22, 1971, with Change 1, dated May 13, 1971.
- MWO 55-1615-255-30-1 Improved attachment bolts for the CH-54B main rotor blades and the CH-54A/B tail rotor blades (CH-54A/B Helicopters), dated April 4, 1974, with Change 1, dated November 14, 1977.
- MWO 55-1680-276-30-1 Up-date cargo hoist (6435-63000-018 or 6435-63000-019) to accept cable (6435-63090-101), (CH-54A Helicopter), dated September 18, 1970, with Change 1, dated November 5, 1970.
- MWO 55-2840-230-20-1 Replacement of accessory and component drives gearbox main oil strainer cover and oil pressure relief valve (T73-P-1 and T-73-P-700 turboshaft engines), dated March 10, 1972.
- MWO 55-2840-230-30-1 Installation of fuel pressurizing and dump valve vibration damping bracket (T73-P-1/700 Engines) for CH-54A/B Aircraft, dated October 10, 1982; except that engine Serial Number P672458 may be operated until overhaul provided the area prescribed in MWO 55-2840-230-30-1 is inspected for cracks at the formal FAA screening inspection and thereafter at 25 hour intervals, until overhaul(in approximately 90 hours).
- MWO 55-2840-230-30-2 Installation of improved design for lubrication and alignment of fuel control flexible shaft assembly to prevent wear and handling damage (T73-P-1/700 engines), dated October 26, 1986.

The following Modification Work Orders need not be incorporated for civil airworthiness certification:

MWO 55-1500-204-30-1, MWO 55-1520-217-20-2, MWO 55-1520-217-20-3,
MWO 55-1520-217-20-5, MWO 55-1520-217-30-21, MWO 55-1520-217-30-24,
MWO 55-1520-217-30-26, MWO 55-1520-217-30-35, MWO 55-1520-217-30-40,
MWO 55-1520-217-30-42, MWO 55-1520-217-30-49, MWO 55-1520-217-30-50,
MWO 55-1520-217-30-64, MWO 55-1520-217-30-65, MWO 55-1520-217-30-66,
MWO 55-1520-217-30-68, MWO 55-1520-217-40-2, MWO 55-1520-217-30-50-5,
MWO 55-1680-200-20-2, MWO 55-1680-321-50-1, MWO 55-2835-203-30-1,
MWO 55-2835-204-50-1, MWO 55-2835-204-50-2, MWO 55-2835-204-50-3,
MWO 55-2835-204-50-4, MWO 55-2835-204-50-5, MWO 55-2835-204-50-6
MWO 55-1615-237-55-1.

In order to be eligible for civil airworthiness certification, the rotorcraft must be equipped with a Sikorsky P/N 6435-20400-058 (heavy duty) main gear box assembly.

The installation of a Department of the Army cargo pod will require further FAA approval.

NOTE 7. Prior to civil airworthiness certification compliance with the following must be accomplished:

Department of the Army Technical Bulletins:

TB 1-1520-217-20-36, Vertical Hinge Pins, CH-54A, dated January 28, 1992

All other Technical Bulletins have been incorporated into the current Department of the Army Maintenance Manuals (See NOTE 8).

Federal Aviation Administration (FAA) Airworthiness Directives (ADs) No.:

71-24-05	JFTD12A engine compressor rotor disc
74-16-05	Main rotor head
76-06-01	Hydraulic pumps
77-20-01	Main transmission plates (see exception, below)
85-18-01	Main rotor blade outboard spars
85-25-03	Torque tube inner bracket assy.
90-26-12	Main rotor blades (see additional requirement)

AD 75-11-11 is not applicable

The following exception to AD 77-20-01 applies to all CH-54A helicopter serial numbers listed herein:

1. Aircraft certified under this data sheet will not be operated in high-cycle operations until compliance with AD 77-20-01 has been accomplished (reference AD 90-26-12 for definition of high cycle).
2. Until compliance with AD 77-20-01, aircraft are to be inspected daily for magnesium chips in the oil screen in accordance with S/B 64B35-7A.
3. Until compliance with AD 77-20-01, MGB must have boroscope inspection of planetary plate in accordance with S/B 64B35-7A within 50 hours of the formal FAA screening inspection, and at 50 hour intervals thereafter until planetary plate is replaced.

If main rotor blades part number 6415-20201-041 or -042 are used, the BIM inspections of AD 90-26-12 apply.

NOTE 8. These helicopters must be serviced and maintained in compliance with the following Department of the Army Technical Manuals (TM):

TM 1-1500-328-23, "Aeronautical Equipment Maintenance Management Policies and Procedures," dated February 28, 1991
 TM 11-6140-203-14-2, "Technical Manual Operators, Organizational, Direct Support, General Support, Maintenance Manual for Aircraft Nickel-Cadmium Batteries," with Change 1, dated December 28, 1983.
 TM 11-1520-217-35, "Electrical Equipment Configuration," dated March 1967
 TM 11-1520-217-PM, "Phased Maintenance Checklist," dated December 19, 1985, with Changes 1 and 2.
 TM 11-1520-217-PMD, "Preventative Maintenance Daily," dated July 10, 1984, with Change 1.
 TM 55-1520-217-23-1-1, "Aviation Unit and Intermediate Maintenance Manual," dated March 31, 1977, with Changes 1 through 21.
 TM 55-1520-217-23-1-2, "Aviation Unit and Intermediate Maintenance Manual," dated March 31, 1977, with Changes 1 through 11.
 TM 55-1520-217-23-1-3, "Aviation Unit and Intermediate Maintenance Manual," dated March 31, 1977, with Changes 1 through 8.
 TM 55-1520-217-23P-1, "Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List," dated Nov 14, 1979.
 TM 55-1520-217-23P-2, "Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List," dated Nov 14, 1979, with Change 1.
 TM 55-1520-217-23P-3, "Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List," dated Nov 14, 1979.
 TM 55-1520-217-23P-4, "Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List," dated Nov 14, 1979.
 TM 55-1520-217-MTF-1, "Maintenance Test Flight, CH-54A," dated June 17, 1985.
 TM 55-2835-203-23P, "Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List," dated Dec 15, 1980.
 TM 55-2835-204-24, "Maintenance Manual Auxiliary Power Unit," dated November 18, 1971, with Changes 1 through 4.
 TM 55-2840-230-23P, "Aviation Unit and Intermediate Maintenance Repair parts and Special Tools List-Engine, Aircraft, Free Turbine T-73-P-1, T-73-P-700," dated November 30, 1977.
 TM 55-2840-230-24, "Maintenance Manual for T73-P-1 and T73-P-700," dated September 1, 1971, with Changes 1 through 6.

NOTE 9 As stated in Pratt & Whitney engine Type Certificate Data Sheet No. E15EA-3, NOTE 13, the JFTD12A-4A (commercial) and T73-P-1 (military) engines are identical. When using the commercial version, maintenance must be in accordance with the latest Pratt & Whitney commercial maintenance/overhaul manual.

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