

**DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION**

1H1 Revision 6 KAMAN K-190A K-225 September 26, 1950

HELICOPTER SPECIFICATION NO. 1H1

Manufacturer The Kaman Aircraft Corp.
 Bradley Field
 Windsor Locks, Conn.

I - Model K-190A, 2 POLH, Approved April 15, 1949

Engine	Lycoming O-435-C	
Fuel	73 min. octane aviation gasoline	
Engine limits	Maximum rpm (for all operation) 2550 (190 hp) Minimum idle rpm 800	
Rotor limits	Power Off (Rotor Tach.) Maximum 250 rpm Minimum 200 rpm	Power On (Engine Tach.) Maximum 2550 rpm Minimum 2375 rpm (Sea level to 3000 ft.) (Above 3000 ft. alt. increase minimum 20 rpm per thousand ft.)
Airspeed limits	Never exceed 65 mph True Ind. (Above 3000 ft. alt. decrease 3 mph per thousand ft.)	
C.G. range	(101.5) to (105.5)	
Empty weight C.G. range	None	
Maximum weight	2500 lbs.	
No. of seats	2. Pilot at (40.5) and passenger at (80).	
Maximum Baggage	75 lbs. (40.5)	
Fuel capacity	38 gals. (109)	
Engine oil capacity	3 gals. (135)	
Transmission oil tank capacity	1.5 gals. (109)	
Rotor blade travel	Teetering (Flapping) (About axis perpendicular to shaft) 12° UP to 12° DOWN. Hunting (About axis parallel to shaft) 0° to +10° Autorotation 0° to -23° Starting Tolerance $\pm 2^\circ$	
Rotor tab position	For rotor blade rigging information see applicable Service Manual.	

Page No.	1	2	3	4
Rev No.	4	4	6	6

I - Model K-190A, 2 POLH, Approved April 15, 1949 (Cont'd)

Serial Nos. eligible	2 and up
Required equipment	Items 1, 101(a), 102, 103, 104, 106, 201(a), 202, 205, 206, 301(a), 302(a), 303(a), 401(a).

II - Model K-225, 3 POLH, Approved September 16, 1949

Engine	Lycoming O-435-A2	
Fuel	91 min. octane aviation gasoline	
Engine limits	Maximum rpm (for all operation) 3000 (225 hp) Minimum idle rpm 900	
Rotor limits	Power Off (Rotor Tach.) Maximum 250 rpm Minimum 200 rpm	Power On (Engine Tach.) Maximum 3000 rpm Minimum 2700 rpm
Airspeed limits	Never exceed 72 mph True Ind.	
C.G. range	(101.5) to (105.0)	
Empty weight C.G. range	None	
Maximum weight	2500 lbs.	
No. of seats	3. Pilot at (40.5) and 2 passengers at (80).	
Maximum Baggage	75 lbs. (40.5)	
Fuel capacity	38 gals. (109)	
Engine oil capacity	3 gals. (135)	
Transmission oil tank capacity	1.5 gals. (109)	
Rotor blade travel	Teetering (Flapping) (About axis perpendicular to shaft) 12° UP to 12° DOWN. Hunting (About axis parallel to shaft) 0° to +10° Autorotation 0° to -23° Starting Tolerance $\pm 2^\circ$	
Rotor tab position	For rotor blade rigging information, see applicable Service Manual.	
Serial Nos. eligible	2 and up	
Required equipment	Items 1, 101(b), 102, 103, 104, 106, 201(a), 202, 205, 206, 301(b), 302(b), 303(b), 401(b).	

Specifications Pertinent to All Models

Datum	129 in. forward of centerline main landing gear torque tube.
Leveling means	Leveling lugs on right longeron (97) Fore & Aft. Cross Tube, base of tower, between fuel tank straps, (95) (Lateral).
Certification basis	Type Certificate No. 1H1 (CAR 6)

Specifications Pertinent to All Models (Cont'd)

Production basis	None. Prior to original certification a CAA Representative must perform a detailed inspection for workmanship, materials, and conformity with the approved technical data, and a check of the flight characteristics.
Export eligibility	Eligible for export to all countries subject to the provisions of ASR 312 (MOP 2-4 contains the same information).
Equipment:	A plus (+) or minus (-) sign preceding the weight of an item indicates the net weight change when that item is installed.

Rotors and Rotor Equipment

1. Main Rotors (2) Kaman Dwg. R-30 and R-31 (Forged rotor hubs and rotor blade retention ends)	338 lbs. (109)
2. Weatherized Main Rotor Blades (2) Kaman Dwgs. R33-12 and R32-8	Use actual wgt. change

Engine and Engine Accessories - Fuel and Oil System

101. (a) Starter (Eclipse E80, Type 397, Model 50)	18 lbs. (118)
(b) Starter (Delco-Remy #1109652)	17 lbs. (119)
(c) 24 Volt system Starter (Delco Remy 24V No. X10353)	17 lbs. (119)
102. (2) Oil coolers (Young radiator No. 546922) (Mod. Kaman Dwg. L2-9 and 10)	16 lbs. (158)
103. Main transmission assembly (Serial Nos. 3 and up) Dwg. D-30	207 lbs. (110)
(Serial No. 2) Dwg. D-20	245 lbs. (110)
104. Cooling fan and clutch (Dwg. D-19-2)	47 lbs. (157)
105. Fuel filter (United Aircraft Prod. Type C-1A)	1 lb. (90)
106. Oil filter (Air Maze Model 02FC07)	2 lbs. (123)
107. Air Maze oil bath filter, Model F350S, Installation Dwg. P-6-6.	14 lbs. (18)

Landing Gear

201. Two main wheel assemblies, 5.00-5, Type III (a) Goodyear Model L5HBM Wheel Assembly No. 9520265	7 lbs. (129)
(b) Goodyear type PD 371, Assy. No. 9520425 Wheel brakes	7 lbs. (111)
202. Two main wheel, 4 ply rating tires, 5.00-5 Type III, with regular tubes.	14 lbs. (129)
205. One nose wheel, 5.00-5, Type III (a) Goodyear Model L5NBD, Assembly No. 9520653	3 lbs. (26)
206. One nose wheel, 4 ply rating tire, 5.00-5, Type III, with regular tube.	7 lbs. (26)

Electrical Equipment

301. (a) Battery (Reading 12 volt) Model S-24	22 lbs. (22)
(b) Battery (Reading 12 volt) Model R-37	36 lbs. (19)
(c) 24 volt system Batteries - Two (Reading 12V), Model S-24	44 lbs. (25)
302. (a) Volt Reg. (Delco-Remy) 8 amp (1118209)	1 lb. (91)
(b) Voltage Reg. (Delco-Remy 25 amp #1118263)	2 lbs. (91)
(c) 24 Volt system Volt Reg. (Delco-Remy 24V No. X40093)	2 lbs. (91)
303. (a) Generator (Champion E128, 8 amps at 12V)	8 lbs. (118)
(b) Generator (Delco-Remy 12V, 25 amp #1101882)	14 lbs. (118)
(c) 24 Volt system Generator (Delco-Remy 24 V No. X1296)	16 lbs. (118)

Interior Equipment

401. (a) "CAA approved Kaman Model K-190A Helicopter Flight Manual", dated June 28, 1949.
 (b) "CAA approved Kaman Model K-225 Helicopter Flight Manual", dated September 16, 1949, Revision No. 3, dated May 3, 1950.

Miscellaneous (not listed above)

601.	Crop dusting equipment, Dwg. M-13	116 lbs. (105)
602.	Baggage compartment, Dwg. M-19 (Maximum capacity 75 lbs.)	3 lbs. (189)
603.	Windshield, Dwg. M-20-1	27 lbs. (8)
604.	Dual controls. Installation Dwg. C-30 sh.2	14 lbs. (58)
605.	Steel spring control bungee Assy. Dwg. C-30-289	2 lbs. (30)
606.	Night flying equipment in accordance with Kaman Dwg. E-5	Use actual wgt. change.

NOTE 1. Current weight and balance report including list of equipment included in certificated weight empty, and loading instructions must be in each aircraft at the time of original certification and at all times thereafter. When changes are made to the helicopter which affect weight and balance, see instructions in Section IV of Flight Manual.

NOTE 2. The following placards must be displayed in the locations noted:

- (a) In front of and in full view of the pilot:
 "This aircraft must be operated in accordance with CAA Approved Kaman Helicopter Flight Manual."
 "Above 3000 feet altitude increase minimum engine RPM 20 per thousand feet". (Applicable to Model K-190A only).
 "Above 3000 feet altitude decrease never exceed speed (Vne) 3 MPH per thousand feet". (Applicable to Model K-190A only).
 "For continuous operation use only one light." (Applicable to Model X-225 only when used for night flying operations)
- (b) Baggage compartment:
 "Maximum capacity 75 lbs. For loading instructions see Flight Manual."
- (c) Dust hoppers:
 "Not approved for Sulfur Dust."
 "Maximum capacity 300 lbs. For loading instructions see Flight Manual."
- (d) In front of and in full view of occupant of rear seat:
 "Solo from front seat only."

NOTE 3. These helicopters must be serviced and maintained in conformance with instructions given by Kaman Aircraft Corporation in their Service Manual dated April 15, 1949.

NOTE 4. Night flying prohibited unless in compliance with Helicopter Night Flying Requirements or unless Item 606 is installed. Instrument and Acrobatic Flying prohibited.

NOTE 5. Model K-225 is approved with either a fixed vertical tail surface or with a controllable rudder surface.

NOTE 6. Information essential to the proper maintenance of the helicopter including retirement times of critical parts is included in the manufacturer's service instructions provided with each helicopter.

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