

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

EIPC-1  
Ishikawajima-Harima  
CT58-1H1-110-1  
CT58-1H1-140-1  
  
August 10, 1970

TYPE CERTIFICATE DATA SHEET NO. EIPC

Engines of models described herein conforming with this data sheet (which is a part of Type Certificate No. EIPC) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate Holder	Ishikawajima-Harima Heavy Industries Co., Ltd. Aircraft Engine Division, 3-5 Mukodal-cho Tanashi-Tokyo Japan		
Model	CT58-1H1-110-1	CT58-1H1-140-1	
Type	Axial flow, free turbine turboshaft Ten stage compressor Annular combustion chamber Two-stage gas generator turbine Single stage power turbine		
Ratings (See Note 14)	At nominal power turbine speed of 19,500 r.p.m.		
	Max. continuous at sea level; hp.	1050	1250
	Takeoff (5 min.) at sea level; hp.	1250	1400
	30 min. helicopter rating at sea level; hp.	1250	1400
	2½ min. helicopter rating at sea level; hp.	1350	1500
Alternate Rating (See Note 9)	Max. continuous and takeoff at sea level; hp.	730	- -
Fuel Control	Hamilton Standard JFC-26 and Pesco 023104 gear type fuel. Pump with integral boost.		
Fuel (See Note 15)	Fuel conforming to Ishikawajima-Harima Heavy Engineering Standards No. AJT-D50TF2, current revision. Kerosene JP4 and JP5 fuels are acceptable but whenever a change is made, readjustment of the fuel control to the appropriate setting must be made. See Ishikawajima-Harima Engine Bulletin 1H1M 2234 for specific oils approved per the subject spec.		
Oil	Oil conforming to Ishikawajima-Harima Heavy Engineering Standards No. AJT-50TF1 current revision. See Ishikawajima-Harima Engine Bulletin 1H1M 2281 for specific fuels approved per the subject spec.		
Principal Dimensions	Length, in.	59	- -
	Max. diameter, in.	16	- -

"- -" indicate "same as preceding model."

Page No	1	2	3	4	5
Rev No.	1	1	1	1	1

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		CT58-1H1-110-1	CT58-1H1-140-1
Weight (dry), lb. (includes essential engine accessories and turbine bucket guard)		315	340
C.G. location with down exhaust aft of front mount centerline in.		18.45	19.65
Below engine centerline, in.		1.50	1.80
Ignition System (24 volts. D.C.150 watts max.)	Bendix Scintilla-Yokogawa Aviation Co. dual ignition unit type TGLN with integral junction bos assembly and two igniter plugs		- -
Igniter plugs	P/N 378200275		- -
NOTES:		1 through 16, 18	1 through 15, 17, 18

"- -" indicate "same as preceding model."

Certification Basis            Federal Aviation Regulations (FAR) Part 21.29. Applicable FAR is FAR Part 33 dated February 1965, including Amendments 33-1 through 33-3.

Date of Application for Type Certificate - February 3, 1968  
(CT58-1H1-110-1); May 7, 1970 (CT58-1H1-140-1).

Type Certificate No. EIPC issued 16 January 1970 (CT58-1H1-110-1);  
Revised 31 July 1970 (CT58-1H1-140-1).

Import Requirements            Each engine must be accompanied by a Japanese Certificate of Airworthiness for Export signed by a representative of the Japan Civil Aviation Bureau containing the following notation: "The engine covered by this certificate (1) has been found to conform to Type Certificate EIPC and is in a condition for safe operation, and (2) has been subjected by the manufacturer to a final operational check."

NOTE 1.    Maximum permissible gas generator operating speeds (r.p.m.\*) are as follows:

	<u>CT58-1H1-110-1</u>	<u>CT58-1H1-140-1</u>
2½-minute helicopter rating	26,800	- -
30-minute helicopter rating	26,300	- -
Takeoff	26,300	- -
Maximum continuous	26,300	- -
Alternate rating	24,300	- -

NOTE 2.    Maximum permissible temperatures:

	CT58-1H1-110-1	CT58-1H1-140-1
Power turbine inlet (T <sub>5</sub> )*		
2½-minute helicopter rating	1300°F	1330°F
30-minute helicopter rating	1250°F	1285°F
Takeoff	1250°F	1285°F
Maximum continuous	1175°F	1220°F
Maximum transient	1545°F (2 sec.)	- -
Starting	1545°F (4 sec.)	1740°F ( sec.)
Oil inlet	250°F	

\*The power turbine inlet gas temperature is measured by eight thermocouples mounted in a radial plane in the second stage turbine casing. Refer to General Electric Maintenance Manual SE1-101 (CT58-1H1-110-1) and SE1-182 (CT58-1H1-140-1) for inspection requirements when limits are exceeded.

NOTE 3. Fuel and oil pressure limits:

Fuel: Minimum at engine pump inlet, 0.3 V/L (max.) with maximum of 50 p.s.i. above absolute ambient atmospheric pressure.

Oil: At ground idle, 8 p.s.i.g. minimum  
Operating range, 20 to 50 p.s.i.g.

NOTE 4. Accessory drive provisions:

Drive	Type	Direction of Rotation*	Speed**	Max. Torque continuous	in. lb. Static
Starter	Special	CC	1.0**	180	336
Gas generator tachometer	AND20005 Type XVB	C	0.160**	7	50
Power turbine tachometer	AND20005 Type XBV	CC	0.200***	7	50
Dynamic fuel filter	Special	CC	0.160**	5	50

\* "C" - Clockwise, "CC" - Counter-clockwise facing engine pad.

\*\* Speed - Times Gas generator r.p.m.

\*\*\* Speed - Times Power turbine r.p.m.

NOTE 5. Engine ratings are based on calibrated test stand performance under the following conditions:

Static sea level standard conditions of 59°F and 29.92 in.Hg. Ishikawajima-Harima air Inlet IT-0367 and bullet nose IT-0366.

No external air bleed or accessory drive power for aircraft accessories.

Exhaust configuration as defined by 1H1 drawing #T37E500110 (110-1) and #T4006T87 (140-1).

No anti-icing air flow.

Additional performance parameters are contained in General Electric Operating Instructions SE1-180 (110-1) and SE1-197 (140-1).

NOTE 6. Maximum permissible air bleed extraction is 5.6 percent at standard sea level static conditions for 110-1, and 3.0 percent for 140-1.

NOTE 7. Power Turbine Normal Operating Range. The nominal power turbine operating speed is 19,500 r.p.m. An alternate nominal speed of 20,250 r.p.m. can also be provided. For engine identification and fuel control requirements, refer to 1H1 Engine Bulletin 1H1M2266E.

<u>Model</u>	<u>Min. Governing Speed</u>	<u>Governor Topping Speed</u>
CT58-1H1-110-1	16,600 r.p.m.	21,275 r.p.m.
CT58-1H1-140-1	17,000 r.p.m.	21,275 r.p.m.

NOTE 8. Power Turbine Shaft Torque Limits - All models:

Static 11,100 in.-lb.  
Maximum continuous No limit, provided that all other power, speed, and temperature limits are maintained.

NOTE 9. All models can be provided with alternate power ratings as noted.

A fuel control change is required to make this rating change. Refer to General Electric CT58 Service Bulletin #45 for listing of approved fuel control.

Consult individual engine nameplates for the engine - fuel control match established for the rating desired. In addition, the following CT58-140-1 ratings are provided:

Rating	Horsepower	
	59°F	80°F
2½ Minutes	1500	1350
30 Minutes & Takeoff	1250	1250
Maximum Continuous	1050	1050

NOTE 10. To be eligible for use in certificated aircraft, the engine installation must include an accurate engine output torque measuring device or an acceptable alternate means of determining engine power.

NOTE 11. This engine meets FAA requirements for operation in icing conditions, for adequate turbine disc integrity and rotor blade containment and does not require airframe-mounted armoring.

NOTE 12. Maximum permissible overspeeds are:

Gas generator 27,600 r.p.m. for 15 seconds.  
Power turbine 23,100 r.p.m. for 15 seconds.  
When either of these limits is exceeded, the engine must be disassembled for inspection.

NOTE 13. Because of differences in engine application and installation, each engine installation design must be evaluated with regard to engine overspeed protection and an airframe-mounted speed switch provided if deemed necessary.

NOTE 14. Below 59°F the sea level static power limits for the CT58-1H1-110-1 and CT58-1H1-140-1 engines will vary as follows:

Rating	CT58-1H1-110-1	CT58-1H1-140-1
2.5 Min. Helicopter	No variation - engine is flat rated at 1350 h.p. at 59° and below.	Increase linearly from 1500 hp at 59°F to 1545 hp. at -65°F.
Takeoff and 30 min. Helicopter	Increases from 1250 hp at 59°F to 1350 hp. at +23°F and flat rated below this temperature.	Increase linearly from 1400 hp at 59°F to 1510 hp. at 22°F and to 1540 hp. at -65°F.
Maximum continuous	Increases linearly from 1050 hp. at 59°F to 1230 hp at 29°F and flat rated at 1230 hp. at 29°F and below.	Increase linearly from 1250 hp. at 59°F to 1390 hp. at 39°F and flat rated at 1390 hp. at 39°F and below.

For power rating variation between standard day conditions and the temperatures listed above, refer to General Electric Operating Instructions No. SE 1-180 (110-1) and No. 197 (140-1).

The ratings referred to herein and the limitations on the usage of these ratings are defined in the applicable FAR's.

Engines with individual performance characteristics and capabilities to develop the low temperature power ratings noted above at higher ambient temperatures may be operated up to those power limits at any ambient conditions provided all other engine parameters are not exceeded.

NOTE 15. The only optional additives which may be used in approved fuels are as follows:

- (1) Phillips PFA-55MB or anti-icing additives to specification MIL-1-2768d at a concentration not on exceed of 0.15% by volume.
- (2) SOH10 Biobor JF biocide additive at a concentration not in excess of 20 p.p.m. elemental boron (270 p.p.m. total additive).
- (3) Shell ASA-3 anti-static additive at a concentration that will provide not in excess of 300 conductivity units which is approximately equivalent to 1 p.p.m.

The above additives may be used in combination.

NOTE 16. A speed deceiver gear defined by General Electric drawing 37R600175 is eligible for use on CT58-1H1-110-1 engine. This provides a gear reduction ratio of 3.25 to 1 and includes an integral torque sensing device.

Oil conforming to Ishikawajima-Harima Engineering Standard No. AJT-D50TF1 must be supplied to the gear box from the airframe oil supply system. Normal oil pressure operating limits for the gear box are 35 to 75 p.s.i.

NOTE 17. The CT58-1H1-140-1 engine is similar to the CT58-1H1-110-1 except for improved parts, increased airflow and compressor efficiency.

NOTE 18. Certain engine parts are life limited. These limits are listed in Ishikawajima-Harima Engine Overal Manual 1H1M 2013E (110-1), General Electric Engine Overhaul Manual SE1-183 (140-1), Engine General - Inspection Section.

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