

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET E00048EN	TCDS NUMBER E00048EN REVISION: Revision 12
	DATE: December 2, 2014 GE Aviation Czech s.r.o. MODELS: M601D-11 M601E-11, M601E-11S, M601E-11A, M601E-11AS M601F H80, H80-100, H80-200 H75-100, H75-200, H85-100, H85-200

Engines of models described herein conforming with this data sheet (which is part of Type Certificate Number E00048EN) 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 Federal Aviation Regulations, provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

TYPE CERTIFICATE (TC) HOLDER: GE Aviation Czech s.r.o.
 (formerly WALTER Engines a.s., Walter a.s. and MOTORLET a.s.)
 Beranovych 65
 199 02 Praha 9 – Letnany
 Czech Republic

I. MODELS	M601E-11 / M601E-11S	M601E-11A / M601E-11AS	M601F	M601D-11	H80 / H80-100	H80-200
TYPE RATINGS (See NOTE 1)	Two rotors, free turbine, turboprop with propeller reduction					
Maximum continuous at sea level Total output shaft hp.	657 (490 kW)	650 (485kW)	777 (580 kW)	604 (450kW)	800 (597 kW)	800 (597 kW)*
Takeoff at sea level (5 min) Total output shaft hp.	751 (560 kW)	705 (526kW)	777 (580 kW)	604 (450kW)	800 (597 kW)	800 (597 kW)
Takeoff (5 min) with water injection Total output shaft hp	751 (560 kW)	---	777 (580 kW)	---	---	---
Maximum takeoff (5 min.) Total output shaft hp	---	---	777 (580 kW)	---	---	---
MODELS (continuing)	H75-100	H75-200	H85-100	H85-200		
Maximum continuous at sea level Total output shaft hp.	751 (560 kW)	798 (595kW)	850 (634 kW)	850 (634kW)		
Takeoff at sea level (5 min) Total output shaft hp.	751 (560 kW)	751 (560kW)	850 (634 kW)	850 (634kW)		

*L-410 commuter has a maximum continuous at sea level Total output shaft hp of 700 (522 kW).

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LEGEND:	"-"	INDICATES	"SAME AS PRECEDING MODEL"
	"---	NOT APPLICABLE	

CERTIFICATION BASIS 14 CFR § 21.29, and 14 CFR part 33 dated February 1, 1965, including amendments 33-1 through 33-12, inclusive and Special FAR 27-5.

For H80, H80-100, H80-200, H75-100, H75-200, H85-100 and H85-200 engine models, 14 CFR part 33, effective February 1, 1965, including amendments 33-1 through 33-31, except for §33.70, Engine Life-Limited Parts. Section 33.14, Start-stop cyclic stress (low cycle fatigue) per amendment 33-10 applies. 14 CFR part 34, amendment 5, effective December 31, 2012. See NOTE 19. for detailed summary of the certification basis for fuel venting and exhaust emissions.

Model	Date of Application	Date Type Certificate Issued/Revised
M601E-11	MAY 10, 1990	JAN. 6, 1995
M601F	JAN. 31, 1996	OCT. 2, 1998
M601D-11	JUNE 9, 1997	JULY 17, 2002
M601E-11A	JAN. 11, 2001	JULY 17, 2002
M601E-11S	APRIL 25, 2001	JULY 17, 2002
M601E-11AS	APRIL 25, 2001	JULY 17, 2002
H80	NOVEMBER 6, 2009	MARCH 13, 2012
H80-100	MARCH 6, 2012	MARCH 13, 2012
H80-200	MARCH 6, 2012	MARCH 13, 2012
H75-100	DECEMBER 7, 2012	APRIL 22, 2014
H75-200	DECEMBER 7, 2012	APRIL 22, 2014
H85-100	DECEMBER 7, 2012	APRIL 22, 2014
H85-200	DECEMBER 7, 2012	APRIL 22, 2014

The Czech Republic Civil Aviation Authority (CAA) originally type certificated this engine. The FAA validated this product under U.S. Type Certificate Number E00048EN. Effective September 28, 2003, the European Aviation Safety Agency (EASA) began oversight of this product on behalf of the Czech Republic CAA.

IMPORT REQUIREMENTS To be considered eligible for installation on United States registered aircraft, each new engine to be exported to the United States with Czech Republic CAA or EASA airworthiness approval shall have a Joint Airworthiness Authority (JAA) or EASA Form 1, Authorized Release Certificate. The JAA or EASA Form 1 should state that the engine conforms to the type design approved under the U.S. Type Certificate E00048EN, is in a condition for safe operation and has under gone a final operational check.

NOTES

NOTE 1.

- a) Engine ratings are based on ICAO International Standard Atmosphere sea level, static conditions with no installation losses, compressor intake screen installed, no external accessory loads and no air bleed.
- b) For the M601E-11 and M601E-11S, the takeoff rating is flat rated to 73.4°F (23°C) at 14.7 psi, the takeoff rating with water injection is flat rated to 91.4°F (33°C) at 14.12 psi, and the max. continuous rating is flat rated to 64.4°F (18°C) at 14.7 psi.
- c) For the M601F, the takeoff rating is flat rated to 73.4°F (23°C) at 14.7 psi, the takeoff rating with water injection is flat rated to 91.4°F (33°C) at 14.12 psi, the max. takeoff rating is flat rated to 86°F (30°C) at 14.46 psi, and the max. continuous rating is flat rated to 77°F (25°C) at 14.7 psi.
- d) For the M601E-11A and M601E-11AS, the takeoff rating is flat rated to 75.2°F (24°C) at 14.7 psi and the max. continuous rating is flat rated to 87.8°F (31°C) at 14.7 psi.
- e) For the M601D-11, the takeoff rating is flat rated to 87.8°F (31°C) and the maximum continuous rating is flat rated to 68°F (20°C), both at 14.7 psi.
- f) For the H80 and the H80-200 the takeoff and max continuous ratings are flat rated to 105.8°F (41°C) at sea level static.
- g) For the H80-100 the takeoff rating is flat rated to 105.8°F (41°C) at sea level static, and the max. continuous rating is flat rated to 87.8°F (31°C) at sea level static.
- h) For the H75-100 and H75-200, the take off rating is flat rated to 118°F (48°C). Max. continuous is flat rated to 113°F (45°C) for H75-100 and to 107°F (41°C) for H75-200.
- i) For the H85-100 and H85-200, the take off rating is flat rated to 94°F (34°C). Max. continuous is flat rated to 90°F (32°C) for H85-100 and to 94°F (34°C) for H85-200.

NOTE 2.

SPEED LIMITATIONS: 100% gas generator shaft speed equals 36,660 rpm, 100% free turbine shaft speed equals 31,023 rpm.

	M601E-11 M601E-11S	M601E-11A M601E-11AS	M601F	M601D-11	H80	H80-100	H80-200
Maximum continuous							
Propeller rpm (max.)	2080	--	--	1950	2080	2080	2080
Gas Generator speed (max.)	97%	98.5%	100.5%	98.5%	101.5%	100.1%	101.5%
Takeoff (5 min)							
Propeller rpm (max.)	2080	2080	2080	1950	2080	2080	2080
Gas Generator speed (max.)	100%	98.5%	100%	100%	101.5%	101.5%	101.5%
Takeoff (5 min) with water injection							
Propeller rpm (max.)	2080	---	2080	---	---	---	---
Gas Generator speed (max.)	100%		100%	---	---	---	---
Maximum takeoff (5 min.)							
Propeller rpm (max.)	---		2080	---	---	---	---
Gas Generator speed (max.)	---		102%	---	---	---	---
	H75-100	H75-200	H85-100	H85-200			
Maximum continuous							
Propeller rpm (max.)	2080	2080	2080	2080			
Gas Generator speed (max.)	101.1%	101.5%	101.2%	101.5%			
Takeoff (5 min)							
Propeller rpm (max.)	2080	2080	2080	2080			
Gas Generator speed (max.)	101.5%	101.5%	101.5%	101.5%			
Refer also to the Installation Manual and Operation Manual.							

NOTE 3.

	M601E-11 M601E-11S	M601E-11A M601E-11AS	M601F	M601D-11	H80	H80-100
Maximum continuous (max.)	1274°F (690°C)	1310°F (710°C)	1400°F (760°C)	1274°F (690°C)	1436°F (780°C)	1382°F (750°C)
Takeoff at sea level (max.) (5 min.)	1355°F (735°C)	1310°F (710°C)	1355°F (735°C)	1355°F (735°C)	1436°F (780°C)	1436°F (780°C)
Takeoff (5 min) (max) with water injection	1355°F (735°C)	---	1355°F (735°C)	---	---	---
Maximum takeoff (5 min.) (max.)	---	---	1436°F (780°C)	---	---	---
Starting	1346°F (730°C)	1346°F(730°C)	--	--	--	--
	H80-200	H75-100	H75-200	H85-100	H85-200	
Maximum continuous (max.)	1436°F (780°C)	1418°F (770°C)	1436°F (780°C)	1418°F (770°C)	1436°F (780°C)	
Takeoff at sea level (max.) (5 min.)	1436°F (780°C)	1436°F (780°C)	1436°F (780°C)	1436°F (780 °C)	1436°F (780°C)	

NOTE 4.

TORQUE LIMITATIONS

	100% torque equals 1896 lb-ft. for M601D-11, M601E-11/-11S, and M601E-11A/-11AS and 1964 lb-ft. for M601F and 2021 lb-ft. for H80, H80-100 and H80-200 100% torque equals 2021 lb-ft. for H80, H80-100, H80-200 and 1896 lb-ft for H75-100, H75-200 and 2910 lb-ft for H85-100, H85-200.				
	M601E-11 M601E-11S	M601E-11A M601E-11AS	M601F	M601D-11	H80 H80-100 H80-200
Maximum continuous lb-ft (max.) applies within range of 1800 rpm to max. cont. speed limit	1896 (2570 Nm)	1782 (2415 Nm)	1964 (2665 Nm)	1630 (2210 Nm)	2021 (2740 Nm)
Takeoff at sea level (5 min) lb-ft (max.) applies at takeoff speed limit	1896 (2570 Nm)	1782 (2415 Nm)	1964 (2665 Nm)	1630 (2210 Nm)	2021 (2740 Nm)
Takeoff (5 min.) with water injection lb-ft (max.) applies at 2080 rpm	1896 (2570 Nm)	---	1964 (2665 Nm)	---	---
Maximum takeoff (5 min.) (max.) lb-ft (max.) applies at 2080 rpm	---	---	1964 (2665 Nm)	---	---
	H75-100	H75-200	H85-100	H85-200	
Maximum continuous lb-ft (max.) applies within range of 1800 rpm to max. cont. speed limit	1896 (2570 Nm)	2019 (2737 Nm)	2146 (2910 Nm)	2146 (2910 Nm)	
Takeoff at sea level (5 min) lb-ft (max.) applies at takeoff speed limit	1896 (2570 Nm)	1896 (2570 Nm)	2146 (2910 Nm)	2146 (2910 Nm)	

NOTE 5.

FUEL AND OIL LIMITATIONS

FUEL

Fuel pressure at the main fuel filter intake must be within the range as referenced in the Installation Manual.

Temperature at the fuel pump inlet in the range of -50°C (-58°F) to +60°C (140°F).

OIL

Pressure at the gas generator speed of 80 to 100%: min. 0.18 to max. 0.27 MPa (26.1 to 39.1 psi)
 Pressure at the gas generator speed below 80%: min 0.12 MPa (17.4 psi)
 Pressure at oil temperature below 0°C (32°F): max. 0.35 MPa (50.8 psi)
 Temperature: min. -20°C (-4°F)
 max. +85°C (185°F)

NOTE 6.**ACCESSORY DRIVE LIMITATIONS**

The following apply to the accessory gearbox drives, which are provided by the engine and included in the basic engine weight:

Drive	Sense of Rotation	Speed ratio	Max. Torque Nm lb.-in.)	Maximum Overhang Nm (lb.-in.)
Starter/generator	CW	.2899	11.2 (100)	21 (186)
Spare drive (hydraulic pump drive)	CCW	0.1974	5.8 (51)	M601E: 40 (354) M601D: 4 (35.4)
Alternator/engine turning	CCW	0.1145	11.5 (102)	M601E: 40 (354) M601D: 4 (35.4)
Speed Transmitter	CW	0.1145	0.5 (4.5)	4 (35.4)

NOTE 7.

AIR BLEED: Bleed flow limits vary with operating conditions. Representative bleed flow limits are provided below at specific operating conditions. Refer to the appropriate Installation Manual for more detailed information.

M601D: Maximum air bleed of 62 g/sec (8.2 l./min) at flight altitude of 2000 m (6560 ft) and air speed of 220 km/hr (120 kt).

M601E: Maximum air bleed of 62 g/sec (8.2 lb/min) at flight altitude of 4200 m (13,780 ft) and air speed of 400 km/hr (216 kt).

H80, H80-100, H80-200: Maximum air bleed of 80 g/sec (10.58 lb/min) at ground : H=0 m (0 ft) and air speed of 0 km/hr (0 kt), ISA conditions, Gas Generator Rotor Speed=97.8 %.

H75-100, H75-200, H85-100, H85-200: Maximum air bleed of 80 g/sec (10.58 lb/min) at ground : H=0 m (0 ft) and air speed of 0 km/hr (0 kt), ISA conditions, Gas Generator Rotor Speed=97.8 %.

M601E-11, M601E-11S, M601E-11A, M601E-11AS, M601F

These engine models can have both a high pressure bleed system (HPBS) and a low pressure bleed system (LPBS). The HPBS is the standard bleed system. The LPBS can be installed as an option and this engine build configuration is indicated on the engine identification plate by the additional designation BC01.

	Maximum Airbleed		Flight Altitude		True Air Speed	
	g/sec	lb/min	m	ft	km/hr	Kt
HPBS	62	8.2	4200	13,780	400	216
	44	5.8	7620	25,000	400	216
LPBS	100	13.2	4200	13,780	400	216
	69	9.1	7620	25,000	400	216

The LPBS and HPBS must not be used simultaneously for cabin pressurization/heating. If the LPBS is used then limited bleed flow from the HPBS can be used for deicing purposes only. For details, refer to the Installation Manual.

All M601 Models: Use of air bleed when using takeoff power settings is limited. In this circumstance, 25 g/sec (3.3 lb/min) of air from the HPBS can be bled for deicing purpose only. For details, refer to the Installation Manual.

Contamination does not exceed the following values for:

carbon monoxide: one part per 50,000 parts
nitrogen oxide: one part per 300,000 parts

NOTE 8.**MODEL DESCRIPTION:**

M601E-11	Basic model. Two rotor, free turbine turboshaft engine. Gas generator with 2 axial compressor stages and 1 centrifugal compressor stage driven by a single stage axial turbine, annular combustor with fuel spray ring, power section with single stage axial turbine and two stage reduction gearbox designed to operate with a dual acting propeller and water injection.
M601E-11S	Similar to basic model. Designed to operate with single-acting propeller. Propeller governor and propeller overspeed governor added.
M601E-11A	Similar to basic model. Derated shaft horsepower, no water injection, ITT increased up to 710°C at the max. continuous rating, decreased to 710°C at take-off rating. Max operating altitude up to 30,000 feet, designed to operate with a dual acting propeller.
M601E-11AS	Similar to M601E-11A. Designed to operate with single-acting propeller. Propeller governor and propeller overspeed governor added.
M601F	Similar to M601E-11 but with increased power ratings, and increased speed, torque and interturbine temperature redlines.
M601D-11	Similar to basic model with derated shaft horsepower.
H80	Similar to M601F but with increased power ratings, improved flat ratings, and decreased fuel consumption.
H80-100	Similar to M601F but with increased power ratings, improved flat ratings, and decreased fuel consumption. Operate with single-acting propeller.
H80-200	Similar to M601F but with increased power ratings, improved flat ratings, and decreased fuel consumption. Operate with double-acting propeller.
H75-100	Similar to H80-100 but with decreased power ratings, improved flat ratings, and decreased fuel consumption. Operate with single-acting propeller.
H75-200	Similar to H80-200 but with decreased power ratings, improved flat ratings, and decreased fuel consumption. Operate with double-acting propeller.
H85-100	Similar to H80-100 but with increased power ratings, improved flat ratings, and decreased fuel consumption. Operate with single-acting propeller.
H85-200	Similar to H80-200 but with increased power ratings, improved flat ratings, and decreased fuel consumption. Operate with double-acting propeller.

NOTE 9.

The M601 series engines meet the requirements of 14 CFR § 33.68 for operation in icing conditions as defined in 14 CFR part 25, Appendix C, when the intake system conforms with the approved design (Part Number (P/N) B 062350).

NOTE 10.

The M601 series engines meet the requirements of 14 CFR § 33.65 for surge free operation, when the intake system conforms with the approved design (P/N B 062350).

NOTE 11.

The M601 series engines meet the requirements of 14 CFR § 33.77 for bird ingestion when the intake system conforms with the approved design (P/N B 062350).

NOTE 12.

Life limits for critical rotating components are published in the M601E-11/M601E-11A/M601F Maintenance Manual, P/N 0982302, the M601D-11 Maintenance Manual, P/N 0982309, and the GE H80/H75/H85 Maintenance Manual, P/N 0983402.

NOTE 14.

Power may be restored in hot day conditions by means of water injection when accomplished in accordance with the requirements of the Installation Manual and Operation Manual. This applies to M601E-11, M601E-11S and M601F engine models only.

NOTE 15.

Additives used for improving of anti corrosion and lubrication properties, additives for electric conductivity increase and additives for bonding of free water in the fuel shall be used within the manufacturer's instructions and relevant specifications, and/or with supplementary requirements of authorities.

NOTE 16.

Each of the documents listed below must state that it is approved by the European Aviation Safety Agency or, for approvals made before September 28, 2003, by the Czech Republic CAA. Any such documents, including those approved under a delegated authority, are accepted by the FAA and are considered FAA approved.

- Service bulletins,
- Structural repair manuals,
- Vendor manuals,
- Aircraft flight manuals,
- Overhaul and maintenance manuals

These approvals pertain to the type design only.

NOTE 18.

Instructions for continued airworthiness are incomplete. 14 CFR 21.50(b) requires the holder of this type certificate to ensure these instructions are complete and furnished prior to when the aircraft incorporating these engines are issued standard airworthiness certificates or delivered/returned to service, whichever occurs later. This applies to the H75-100, H75-200, H85-100, and H85-200 engine models only.

NOTE 19.

The following emissions standards promulgated in 14 CFR part 34, Amendment 5, effective December 31, 2012, and 40 CFR part 87, effective July 18, 2012, have been complied with for: H80, H80-100, H80-200, H75-100, H75-200, H85-100, and H85-200 engine models.

Fuel Venting Emission Standards: 14 CFR §§ 34.10(b) and 34.11; in addition, 40 CFR §§ 87.10(b) and 87.11.

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