

European Aviation Safety Agency

EASA TYPE-CERTIFICATE DATA SHEET

Number: E.070
Issue: 04
Date: 13 December 2011
Type: GE M601 series turboprop engines

Models:

M601D
M601D-1
M601D-2
M601D-11
M601D-11NZ
M601E
M601E-11
M601E-11A
M601E-11AS
M601E-11S
M601E-21
M601F
M601FS
M601F-11
M601F-22
M601F-32
M601T
M601Z
H80
H80-100
H80-200

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I. General

1. Type/ Models: M601D, M601D-1, M601D-2, M601D-11, M601D-11NZ, M601Z, M601E, M601E-21, M601E-11, M601E-11S, M601E-11A, M601E-11AS, M601T, M601F, M601F-11, M601FS, M601F-32, M601F-22, H80, H80-100, H80-200.

2. Type Certificate Holder:

GE Aviation Czech s.r.o.
Beranových 65,
199 02 Praha 9 – Letňany
Czech Republic
(formerly WALTER ENGINES a.s.)

EASA Design Organisation 21J.300

3. Manufacturer: GE Aviation Czech s.r.o.

4. Application Date:

M601D	M601D-1	M601D-2	M601D-11	M601D-11 NZ	M601Z	M601E	M601E-21	M601E-11
JUNE 29, 1990	NOV 3, 1998	Nov 3, 1998	MAY 13, 1997	MAY 13, 1997	FEB 25, 1994	FEB 29, 1988	JULY 21, 1994	MARCH 3, 1995
M601E-11 S	M601E-11 A	M601E-11 AS	M601T	M601F	M601F-11	M601FS	M601F-32	M601F-22
MARCH 16, 2001	MARCH 15, 1999	MARCH 16, 2001	APR 13, 1992	APR 7, 2000	APR 14, 2004	MAY 27, 2002	JULY 20, 1995	JULY 20, 1994
H80	H80-100	H80-200						
25/11/2008	26/10/2011	26/10/2011						

Note: WALTER a.s. as holder of the Czech TC applied on 10 Dec 2004 for issue of EASA Type Certificate on basis of the Type Certificates issued by the Czech Republic.

5. Reference Date for Determination of the Applicable Requirements: 29. February 1988

6. Certification Date:

M601D	M601D-1	M601D-2	M601D-11	M601D-11 NZ	M601Z	M601E	M601E-21	M601E-11
NOV 12, 1990	DEC 15, 1999	DEC 15, 1999	JUNE 10, 1999	JUNE 10, 1999	AUG 18, 1994	MARCH 22, 1988	AUG 18, 1994	AUG 15, 1995
M601E-11 S	M601E-11 A	M601E-11 AS	M601T	M601F	M601F-11	M601FS	M601F-32	M601F-22
APR 11, 2001	JAN 10, 2001	Apr 11, 2001	MAY 31, 1993	JULY 14, 2000	JUNE 14, 2004	JUNE 14, 2002	DEC 18, 1996	OCT 18, 1994
H80	H80-100	H80-200						
December 13, 2011	December 13, 2011	December 13, 2011						

EASA Type Certificate of these models had previously been covered by the Czech Republic Type Certificates:

TC No.:	99-02	M601D-1, M601D-2
TC No.:	88-02 & 88-02 Supp. 1	M601E & M601E-21
TC No.:	00-03	M601F, M601F-11
TC No.:	99-04/1	M601D, M601D-1, M601D-11, M601D-11NZ, M601Z
TC No.:	89-03	M601E, M601E-21, M601E-11, M601E-11S, M601E-11A, M601E-11AS, M601T, M601F, M601FS, M601F-32, M601F-22

Transfer date to EASA Type Certificate: 26 January 2005

II. Certification Basis

1. Airworthiness Standards:

CS-E, Amendment 1, dated 10 December 2007 (except E515) JAR-E515 of JAR-E, Change 9	H80, H80-100, H80-200
JAR-E Change 9 dated October 21, 1994	M601D-1, M601F, M601F-11
JAR-E Change 9 + OP/E/96/1 + OP/E/97/1	M601D-2
JAR-E Change 7 dated January 24, 1986,	M601E, M601E-21
FAR 33 Amdt. 12 effective Sept 2, 1988	M601D, M601D-1, M601D-11, M601D-11NZ, M601Z, M601E, M601E-21, M601E-11, M601E-11S, M601E-11A, M601E-11AS, M601T, M601F, M601FS, M601F-32, M601F-22

Note: For some models compliance was shown with JAR-E and FAR 33

2. Special Conditions:

none

3. Equivalent Safety Findings:

JAR-E 570(a) and FAR 31.71 (b)(6) - Oil filter warning means indicating to the pilot impending its blockage.

JAR-E 560(d) and FAR 33.67 (b) - Fuel filter.

JAR-E 530(e) - Fire Precautions

None for H80, H80-100, H80-200

4. Exemptions:

none

5. Environmental Standards:

Fuel Venting: CS-34.1

III. Technical Characteristics

1. Type Design Definitions:

M601D: S-M601D, M601E: S-M601E, M601F: S-M601F, M601FS: S-M601FS, M601E-11A: S-M601E-11A, H80: T-524/2011,	M601D-1: S-M601D-1, M601E-21: S-M601E-21, M601F-11: S-M601F-11, M601T: S-M601T, M601E-11AS: S-M601E-11AS, H80-100: T-524/2011,	M601D-2: S-M601 D-2, M601E-11: S-M601E-11, M601F-22: S-M601F-22, M601Z: S-M601Z, M601D-11NZ: S- M601D-11NZ, H80-200: T-524/2011	M601D-11: S-M601D-11, M601E-11S: S-M601E-11S, M601F-32: S-M601F-32,
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2. Description:

The M601 series engines are 2 spool turboprop engines with reverse flow of air and gas, two stage axial compressor, one stage centrifugal compressor, annular combustor, one stage high-pressure turbine and one stage free turbine.

3. Equipment:

Approved Equipment is defined in the applicable Engine Installation Manual.4. Dimensions (mm):

Overall Length	1675
Overall Width	590
Overall Height	650

5. Weight (kg)

H80-100	200
H80, H80-200	202
M601D, M601D-1, M601D-2	197
M601E, M601E-21, M601E-11, M601E-11A, M601F, M601F-11, M601F-22, M601F-32, M601T	207
M601D-11, M601D-11NZ	204
M601Z	201
M601E-11S, M601E-11AS, M601FS	212

6. Ratings (kW)

	Maximum Continuous at sea level	Take-off (5 min) at sea level	Take-off with water injection (5 min) at sea level	Max. Contingency (10 min) at sea level	Intermediate Contingency at sea level
M601D-1	490	540	-	-	-
M601D-2	400	450	-	-	-
M601E	490	560	560	595	560
M601E-21	490	560	560	595	560
M601F	500	580	580	595	580
M601F-11	500	580	580	595	580
M601D	490	540	540		
M601D-11	450	450	-		
M610D-11NZ	320	410	-		
M601Z	245	382	-		
M601E-11	490	560	560		

M601E-11S	490	560	560		
M601E-11A	485	526	-		
M601E-11AS	485	526	-		
M601T	490	560	-		
M601FS	500	580	580		
M601F-32	490	560	-		
M601F-22	490	560	-		
H80	597	597	-		
H80-100	597	597	-		
H80-200	522	597	-		

M601E and M601E-21 models have according to FAR also been certified for:
Max. Take-off (5 min at sea level): 595 kW
Max. Continuous at sea level: 560 kW

M601F and M601FS models have according to FAR also been certified for:
Max. Take-off (5 min at sea level) and Max. Continuous: 580 kW

H80 and H80-200 models are certified for a Continuous OEI Rating of 597kW

See Note 1

7. Control System:

Hydro mechanical fuel control system.

8. Fluids (Fuel/Oil/Additives):

See applicable Operation Manual.

9. Aircraft Accessory Drives:

For accessory drives specifications, including direction of rotation, drive speed ratio to engine speed, torque continuous pad rating and maximum overhung moment, refer to applicable Engine Installation Manual

10. Maximum Permissible Air Bleed Extraction:

For all engine models, the air bleed extraction limits are specified in the applicable Engine Installation Manual. M601E-11, M601E-11A, M601E-11S, M601E-11AS, M601F, M601FS and M601F-11 can have both a high-pressure air bleed system and a low-pressure air bleed system. The high-pressure air bleed system is the standard bleed system. Low-pressure bleed system can be installed as an option and this engine build configuration is indicated on the engine identification plate by the additional designation BC01.

11. Engines with 4000 flight cycles:

Number of equivalent flight cycles within TBO is extended up 4000 while hourly TBO limit is observed for the following engine models with the additional designation BC02 on the engine plate: M601D, M601E, M601E-11.

IV. Operational Limits

1. Temperature Limits:

1.1 Maximum Interturbine Temperature [°C]:

	Maximum Continuous	Take-off (5 min)	Max. Contingency (10 min)	Intermediate Contingency
M601D-1	690	735	-	-
M601D-2	660	710	-	-
M601E	690	735	780	760
M601E-21	690	735	780	760
M601F	690	735	780	760
M601F-11	690	735	780	760
M601D	690	735	-	-
M601D-11	690	735	-	-

M601D-11NZ	650	700	-	-
M601Z	650	710	-	-
M601E-11	690	735	-	-
M601E-11S	690	735	-	-
M601E-11A	710	710	-	-
M601E-11AS	710	710	-	-
M601T	690	735	-	-
M601FS	690	735	-	-
M601F-32	710	735	-	-
M601F-22	710	735	-	-
H80	750	780	-	-
H80-100	750	780	-	-
H80-200	720	780	-	-

Models M601E, M601E-21, M601F and M601FS have according to FAR also been certified for Maximum Interstage Turbine Temperature of: 780 °C at Max. Continuous

1.2 Oil Inlet Temperature Range [°C]:

Maximum: 85
Minimum: -20

1.3 Fuel Inlet Temperature Range [°C]:

Maximum: 60
Minimum: -50

2. Maximum Permissible Rotor Speeds:

Rating	Engine Model	Gas Generator Rotor [%]	Propeller Shaft [min ⁻¹]
Take-off	M601D, M601D-1	101.5	2080
	M601D-2, M601D-11NZ	99	1950
	M601D-11	100	1950
	M601E, M601E-11, M601E-21, M601E-11S, M601F, M601FS, M601F-11, M601F-22, M601F-32, M601T	100	2080
	M601Z	99	1900
	M601E-11A, M601E-11AS	98,5	2080
	H80, H80-100, H80-200	101,5	2080
Max. Continuous	M601D, M601D-1	99	2080
	M601D-2	96	1950
	M601D-11	98,5	1950
	M601E, M601E-11, M601E-11S, M601E-21, M601F, M601FS, M601F-11, M601F-22, M601F-32, M601T	97	2080
	M601E-11A, M601E-11AS	98,5	2080
	M601D-11NZ	95	1950
	M601Z	94	1800
	H80, H80-100	100,1	2080
	H80-200	98,4	2080

Max. Contingency (10 min)	M601E, M601E-21, M601F, M601F-11, M601FS	102	2080
Intermediate Contingency	M601E, M601E-21, M601F, M601F-11, M601FS	100.5	2080
Max. Take-off (5 min) acc. to FAR	M601E, M601E-21, M601F, M601FS	102	2080
Max. Continuous acc. to FAR	M601E, M601E-21, M601F, M601FS	100,5	2080
	H80, H80-200	101,5	2080
	H80-100	100,1	2080

100% propeller shaft speed equals to 2080 rpm. Propeller shaft speed of 2080 rpm corresponds to free turbine speed of 31023 rpm.

100% gas generator rotor speed equals to 36660 rpm.

For engines with installed propellers having diameter smaller than 2185 mm the propeller speed limit is 1950 rpm.

3. Pressure Limits:

3.1 Fuel Pump Inlet Pressure (kPa):

Minimum absolute pressure: 80
Maximum gauge pressure: 300

3.2 Oil Pressure Limits (kPa):

Normal operating gauge pressure: 180 to 270
Minimum gauge pressure at Idle: 120

4. Installation Assumptions:

The installation assumptions are quoted in the respective Engine Installation Manuals.

V. Operating and Service Instructions

Engine Model	Installation Manual	Operation Manual	Maintenance Manual	Service Bulletins
M601D	0982051	0982424	0982051	Published as required
M601D-1	0982511	0982402	0982309	
M601D-2	0982511	0982415	0982309	
M601D-11	0982511	0982415	0982309	
M601D-11NZ	0982511	0982415	0982309	
M601Z	0982511	0982521	0982309	
M601E	0982502	0982404	0982055	
M601E-21	0982502	0982404	0982055	
M601E-11	0982504	0982406	0982302	
M601E-11S	0982504	0982406	0982302	
M601E-11A	0982504	0982406	0982302	
M601E-11AS	0982504	0982406	0982302	
M601T	0982506	0982410	0982304	
M601F	0982509	0982413	0982302	

M601FS	0982509	0982413	0982302	
M601F-11	0982509	0982413	0982302	
M601F-32	0982062 *)	0982108 *)	0982062 *)	
M601F-22	0982062 *)	0982108 *)	0982062 *)	
H80, H80-100, H80-200	0983202	0983302	0983402	

*) Manuals are issued only in the Russian language version

- Manual N°0982211 Technical Servicing Prescription is issued in the Russian language.

VI. Notes

- Note 1: The engine ratings are based on ICAO International Standard Atmosphere sea level, static conditions:
No loading of accessory drives
No compressor air bleed
No installation losses
- Note 2: Certain engine parts are life-limited. These limits are published in the Maintenance Manual, Airworthiness Limitations Section.
- Note 3: The M601 series engines meet the requirements of JAR-E 780 (CS-E780 for H80, H80-100, H80- 200) for operation in icing conditions as defined in FAR 25, Appendix C, when the intake system conforms to the approved design (Part number (P/N) B 062350).
- Note 4: The M601 series engines meet the requirements of JAR-E 500 (CS-E500 for H80, H80-100, H80-200) for surge free operation, when the intake system conforms to the approved design (Part number (P/N) B 062350).
- Note 5: The M601 series engines meet the requirements of JAR-E 800 (CS-E800 for H80, H80-100, H80- 200) for bird ingestion when the intake system conforms to the approved design (Part number (P/N) B 062350).
- Note 6: Power may be restored in hot day conditions by means of water injection when accomplished in accordance with requirements of the applicable Installation Manual and Operation Manual. This applies to M601D, M601E, M601E-21, M601E-11, M601E-11S, M601F, M601FS and M601F-11 engine models only.
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