European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

Number : E.122
Issue : 04
Date : 14 May 2014
Type : BRP – Powertrain GmbH & Co KG
Rotax 914 series engines

Models

Rotax 914 F2
Rotax 914 F3
Rotax 914 F4

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I. General

1. Type / Models:

Rotax 914/ Rotax 914 F2, Rotax 914 F3, Rotax 914 F4

2. Type Certificate Holder:

Since March 15, 2014	BRP-Powertrain GmbH & Co KG Rotaxstraße 1 A-4623 Gunskirchen, Austria DOA EASA.21J.048
Since February 3, 2009	BRP-Powertrain GmbH & Co KG Welser Straße 32 A-4623 Gunskirchen, Austria DOA EASA.21J.048
Before February 3, 2009	BRP-Rotax GmbH & Co. KG Welser Straße 32 A-4623 Gunskirchen, Austria DOA EASA.21J.048
Before June 16, 2004	Bombardier-Rotax GmbH & Co. KG Welser Straße 32 A-4623 Gunskirchen, Austria
Before December 29, 2001	Bombardier-Rotax Gesellschaft mbH Welser Straße 32 A-4623 Gunskirchen, Austria

3. Manufacturer:
As above

4. Certification Application Date:

4.1. Date of Application according FAR 33:

Certification Basis	Rotax 914 F2	Rotax 914 F3	Rotax 914 F4
FAR 33	20 December 1993	20 December 1993	20 December 1993

4.2. Date of Application according JAR-E:

Certification Basis	Rotax 914 F2	Rotax 914 F3	Rotax 914 F4
JAR-E	29 June 1995	29 June 1995	29 June 1995

EASA Certification Date:

Rotax 914 F2	Rotax 914 F3	Rotax 914 F4
15 May 1996	15 May 1996	15 May 1996

Note: EASA type certificate for all these models is granted in accordance with article 2 paragraph 3(a) of EU Commission Regulation 1702/2003 replacing the BAZ/ACG Austria certification of these products (Austrian Type Certification no. TW10-ACG).

II. Certification Basis

1. Airworthiness Standards:

1.1 FAR Part 33 Amdt. 15

Elect to Comply: FAA NPRM Doc. # 24922, Notice no. 92-14

1.2 JAR-E Change 9, dated 21 October 1994

2. Special Conditions (SC):

SC1 Turbo Charger Control Unit

3. Deviations:

None

4. Equivalent Safety Findings (ESF):

Propeller governor

Conformity with FAR 33.25, attachment of components has been proven.

5. Environmental Protection Requirements:

None (not required for piston engines)

III. Technical Characteristics

1. Type Design Definition:

As defined by the type design definition no. 30.914.0033

2. Description:

The ROTAX 914 engine is a 4-stroke engine with turbo super charger and electronic turbo charger control unit (TCU) 4 cylinder horizontally opposed, spark ignition engine with, propeller drive via integrated reduction gear, liquid cooled cylinder heads, ram-air cooled cylinders, dry sump forced lubrication.

Bore	79,5 mm	3.13 in.
Stroke	61 mm	2.40 in.
Displacement	1211 cm^3	73.9 cu.in.
Compression ratio	9:1	
Gear ratio (crankshaft : propeller shaft)	2,4286:1	

Model 914 F2

Basic model: 4 cylinder, horizontally opposed, 4-stroke engine with turbo supercharger and electronic turbocharger control unit, one central camshaft, push-rods, overhead valves, liquid cooled cylinder heads, ram-air cooled cylinders, dry sump forced lubrication, dual breakerless capacitor discharge ignition, two constant depression carburetors, two electrical fuel pumps, fixed pitch propeller configuration, drive output via reduction gear with integrated shock absorber and overload protection, superior steel exhaust system, engine mount, electric starter, integrated AC generator, vacuum pump drive (optional), external alternator (optional).

Model 914 F3

Same as 914 F2, except: additional drive and adapter for hydraulic governor, hydraulic governor and propeller shaft for constant speed propeller.

Model 914 F4

Same as 914 F3, except: prepared for hydraulic governor for constant speed propeller (without drive, adapter and governor).

3. Equipment:

Description	German	English
See Illustrated Parts Catalog (IPC)	ETK-914	IPC-914

4. Dimensions:

Description	mm	in.
Overall length	665,1	26.19
Overall height	531,0	20.90
Overall width	576,0	22.68

5. Dry Weight:

Description	kg	lbs.
With ignition unit and internal generator, carburetors, turbocharger, TCU, engine suspension frame, overload clutch, muffler, oil tank and electric starter but without fuel pumps and radiator	71,7	158
With propeller flange P.C.D. 75/80 mm/4 in., drive gear, adapter and hydraulic governor for constant speed propeller	74,4	164
External alternator	3,0	6.61
Center of gravity: see Installation Manual EBHB-914 (German), IM-914 (English)	-	-

6. Ratings: *) see note 4

Description	kW	hPa*)	in.HG*)	rpm
Max. continuous performance at sea level pressure altitude up to critical altitude of 16000 ft / 4875 m (with turbo control unit Version 4.3 / Rotax 21, up to engine s/n 4,420.199)	73,5	1150	34.0	5500
Max. continuous performance at sea level pressure altitude up to critical altitude of 16000 ft / 4875 (with turbo control unit Version 4.6 / Rotax 99, from engine s/n 4,420.200 onwards)	73,5	1180	34.9	5500
Take-off performance (max. 5 minutes) at sea level pressure altitude up to critical altitude of 8000 ft / 2450 m (with turbo control unit Version 4.3 / Rotax 21, up to engine s/n 4,420.199 onwards)	84,5	1300	38.4	5800
Take-off performance rpm (max. 5 minutes) at sea level pressure altitude up to critical altitude of 8000 ft / 2450 m (with turbo control unit Version 4.6 / Rotax 99, from engine s/n 4,420.200 onwards)	84,5	1320	39.0	5800

7. Control System:

All engines are equipped with an electronic turbo charger control unit (TCU).
Refer to the Installation / Operator's Manuals for further information.

8. Fluids (Fuel/Oil/Additives/Coolant):

8.1 Fuel

Description	German	English
See Operator's Manual	HB-914	OM-914
See Service Instruction	SI-914-019	SI-914-019

8.2 Oil

Description	German	English
See Operator's Manual	HB-914	OM-914
See Service Instruction	SI-914-019	SI-914-019

8.3 Coolant

Description	German	English
See Operator's Manual	HB-914	OM-914
See Service Instruction	SI-914-019	SI-914-019

9. Aircraft Accessory Drives:

Model 914 F Serie							
Accessory	F2	F3	F4	Rotation facing drive pad	Speed ratio to crankshaft i = 2,4286	max. torque Nm	max. overhang moment Nm
Starter	*	*	*	CW	25,25:1	0,5	-
Alternator	**	**	**	CCW	1,24:1	1,6	-
Vacuum pump	**	-	**	CCW	0,548:1	0,9	0,4
Governor	-	*	-	CCW	0,548:1	1,8	1,04
Fuel pump	*	*	*	CW	0,41:1	-	0,14
Tachometer	**	**	**	CW	0,25:1	-	-
Water pump	*	*	*	CCW	0,87:1	0,5	-
Oil pump	*	*	*	CCW	0,50:1	0,7	-
" – "	Indicates "does not apply"						
" * "	Standard						
" ** "	Optional						
" CW "	Clockwise						
" CCW "	Counter-clockwise						

IV. Operational Limitations

1. Temperature Limits:

Temperature limits (max. permissible)	**°C**	**°F**
Cylinder head temperature in use of conventional coolant	135	275
Coolant exit temperature in use of conventional coolant (according installation manual EBHB-914 (German), IM-914 (English) and operator's manual HB-914 (German), OM-914 (English))	120	248
Cylinder head temperature in use of waterless coolant	135	275
Oil temperature at inlet	130	266
Air temperature maximum	72	161.6
Airbox temperature maximum, from engine s/n 4,420.200 onwards *) see note 4	88	190.4

2. Speed Limits:

Description	**1/min**	**rpm**
Take-off speed, maximum 5 minutes	5800	
Max. continuous speed	5500	

3. Pressure Limits:

3.1. Fuel Pressure

Fuel pressure at carburetor inlet		**bar**	**psi**
Minimum	airbox pressure +	0,15	2.18
Maximum	airbox pressure +	0,35	5.08
Normal	airbox pressure +	0,25	3.63

3.2. Oil Pressure

Oil pressure	**bar**	**psi**
Normal operating range above 3500 rpm	2,0 ÷ 5,0	29 ÷ 72.5
Normal operating range above 3500 rpm up to incl. s/n 4,420.085	1,5 ÷ 5,0	21.76 ÷ 72.5
Minimum below 3500 rpm	0,8	11.6
Minimum below 3500 rpm up to incl. s/n 4,420.085	1,5	21.76
At cold start and warming up period (maximum)	7,0	101.5

3.3. Manifold pressure

Manifold Pressure	**hPa**	**in.Hg.**
Take-off power (maximum) *) see note 4	1350	39.9
Take-off power (minimum) *) see note 4	1300	38.4
Max. continuous power *) see note 4	1200	35.4
Min. continuous power *) see note 4	1150	34.0

4. Oil consumption limit:

Engine oil	Lit	liq pt	US gal.
Oil capacity (maximum-mark tank)	3,0	6.34	0.79
Oil capacity (minimum-mark tank)	2,5	5.28	0.66
Oil consumption per hour (maximum)	0,06	0.127	0.016

5. Accelerations:

Time limit for engine operations at weightless condition and with negative gravity acceleration is max. 5 sec. at max. -0.5 g

V. Operational and Service Instructions

Description	German	English
Operator's Manual	HB-914	OM-914
Installation Manual	EBHB-914	IM-914
Maintenance Manual Line	WHBL-914	MML-914
Maintenance Manual Heavy	WHBH-914	MMH-914
Overhaul Manual	GHB-914	OHM-914
Overhaul Manual, Appendix	GHBA-914	OHMA-914
Illustrated Parts Catalog	ETK-914	IPC-914
Service Bulletins, Service Instructions and Service Letters	as issued	as issued

VI. Notes

Note 1: Generator / Alternator parallel operation

For the certification of the optional external alternator the aerospace standard AS 8020 has been determined as applicable requirement.

However compliance to the applicable parts for parallel operation of the internal generator (as integrated part of the engine) and the optional external alternator has not been demonstrated.

Note 2: Vacuum pump

Conformity with FAR 33.25 attachment of component has been proven

Note 3: TBO

For recommended TBO see Service Bulletin SB-914-027.

Note 4: TCU

Built standard and software status is defined in "Software Accomplishment Summary" Certification Report no. 18.
