TYPE CERTIFICATE DATA SHEET Nº EM-9302

Type Certificate Holder:

BRP-Rotax GmbH & Co KG
Rotaxstraße 1
A-4623 Gunskirchen
AUSTRIA

EM-9302-01

Sheet 01

ROTAX

912 A1
912 A2
912 A3

27 March 2024

Engines of models described herein conforming with this data sheet, which is part of Type Certificate No. 9302, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Brazilian Aeronautical Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other instructions.

TYPE

Model 912 A2, Core model:

4-stroke, spark ignition, 4 cylinder horizontally opposed, one central camshaft, push-rods, overhead valves, liquid cooled cylinder heads, ram-air cooled cylinders, dry sump forced lubrication, dual breakerless capacitive discharge ignition, two constant depression carburetors, mechanical fuel pump, fixed pitch propeller configuration, drive output via reduction gear with integrated shock absorber and overload protection, electric starter, integrated AC generator, vacuum pump drive (optional), external alternator (optional)

Model A1

Same as A2, except fixed pitch propeller configuration, pitch circle diameter (P.C.D.) 100 mm (3.937 in.)

Model A3

Same as A2, except additional drive and adapter for hydraulic governor, hydraulic governor and propeller shaft for constant speed propeller.

RATINGS

At sea level pressure altitude	**912 A Series**
Max. Continuous, kW (hp):	58.0 (77.8)
rpm:	5500
Takeoff (max. 5 min.), kW (hp):	59.6 (79.9)
rpm:	5800

OIL, LUBRICATION

Oil capacity, consumption limit, lit (US gal)

Oil capacity (maximum-mark tank):	3.0 (0.79)
Oil capacity (minimum-mark tank):	2.5 (0.66)
Oil consumption per hour (maximum):	0.06 (0.016)

Oil specification: see applicable Operator's Manual at NOTE 5

COMPRESSION

Bore, mm (in.):	79.5 (3.13)
Stroke, mm (in.):	61 (2.40)
Displacement, cm^3 (cu.in.):	1211 (73.9)
Compression ratio:	9.0:1
Gear ratio (crankshaft: propeller shaft)	2.2727 : 1 or 2.4286 : 1 (optional)

FLUIDS
(Fuel, Oil, Coolant, Additives)

See Operators Manual HB-912 (German), OM-912 (English)
See Service Instruction SI-912-016 (German), SI-912-016 (English)

TEMPERATURE LIMITS See Note 1

PRESSURE LIMITS

Fuel pressure: 0.15 - 0.5 bar (2.18 - 7.25 psi)
Oil pressure:
Normal operation range above 3500 rpm: 2.0 – 5.0 bar (29 – 72.5 psi)
Minimum below 3500 rpm: 0.8 bar (11.6 psi)
At cold start and warming up period, maximum: 7.0 bar (101.5 psi)

DIMENSIONS

Description	mm	in.
Overall length	590	23.23
Overall length with optional 0,9 kW electric starter	630	24.80
Overall length with airbox	717	28.23
Overall height	375	14.76
Overall height with airbox and engine suspension frame	421	16.57
Overall width	576	22.68

DRY WEIGHT AND CENTER OF GRAVITY

See Note 4

IMPORT REQUIREMENTS

Each engine imported separately and/or spare parts must be accompanied by an Export Airworthiness Approval through the EASA Form 1, Authorised Release Certificate (or a third country authority Export Airworthiness Approval, in case of used engine imported from such country), certifying that the engine is in conformity with ANAC TC No. 9302 approved design data, is in condition for safe operation and has undergone a final operational check. The original Authorised Released Certificate should be sent with the engine and a copy remains with the issuing organization.

NOTE: ANAC approved Type Design corresponds to the EASA approved Type Design, an EASA Export Airworthiness Approval indicating compliance with the EASA approved Type Design as defined by the Type Certificate No.: EASA.E.121 is acceptable to establish compliance with the ANAC approved Type Design.

CERTIFICATION BASIS

Brazilian Type Certificate No.: 9302 is based on RBAC No. 21.29; including the following Airworthiness Requirements:

- JAR 22 Appendix H, Airworthiness requirements for engines of powered sailplanes, Amdt. 1 of May 18, 1981

Model	Application	Issued/Reissued TC
Rotax 912 A1	18 Nov. 1991	03 Feb. 1993
Rotax 912 A2	18 Nov. 1991	03 Feb. 1993
Rotax 912 A3	13 Jul. 1993	20 Mar. 1997

STATE OF DESIGN REFERENCE DOCUMENT EASA TCDS no. E.121, Issue 16, 14 July 2023.

NOTES

NOTE 1 **Temperature Limits:**

Temperature limits (max permissible)	**°C**	**°F**
Cylinder head temperature in use of conventional coolant	150	302
Coolant exit temperature in use of conventional coolant (according installation manual EBHB-912 (German), IM-912 (English) and operators manual HB-912 (German), OM-912 (English))	120	248
Cylinder head temperature in use of waterless coolant	150	302
Oil temperature at inlet	140	284

Engine type designation extended with suffix "-01"*****:

Temperature limits (max permissible)	**°C**	**°F**
Coolant temperature (according installation manual EBHB-912 (German), IM-912 (English) and operators manual HB-912 (German), OM-912 (English))	120	248
Oil temperature at inlet	140	284

*** 912 A engine type designation extended with suffix "-01"**

New cylinder heads have been introduced for the Rotax 912 A engine series in order to standardize the cylinder head raw part with the Rotax 912 iSc Sport engine series. As a result the measurement position of the temperature sensor on the cylinder head has changed as well as the measurement medium (former aluminium, now coolant).

As a consequence for all Rotax 912 A engines which type designations are extended with suffix "-01" the engine temperature measurement methods have been amended from CHT (cylinder head temperature) and CT (coolant temperature) to only CT (coolant temperature). Therefore only the coolant temperature limit applies.

Exemplification for identification: "Rotax 912 A3 -01"

For further details refer to Service Bulletins SB-912-066 and SB-912-068 (respectively latest revision).

NOTE 2 Aircraft Accessory Drives

Accessory	912 A1	912 A2	912 A3	Rotation facing Drive Pad	Speed Ratio to Crankshaft		Max. Torque (N.m)	Max. Overhang Moment (N.m)
					i = 2.2727	i = 2.4286 optional		
Vacuum Pump	**	**	#	CC	0.585:1	0.548:1	0.1	0.40
Governor drive	#	#	*	CC	0.585:1	0.548:1	2.0	1.04
Tachometer drive	**	**	**	C	0.25:1	0.25:1	#	#

Keys: "#" Does not apply * Standard ** Optional "C" Clockwise "CC" Counter Clockwise

NOTE 3 Equipment: See Illustrated Parts Catalog ETK-912 (German) and IPC-912 (English)

NOTE 4 Engine dry weight is defined as the following configurations:

Description	kg	lbs.
With ignition unit and internal generator, carburetors, overload clutch, oil tank and electric starter but without muffler and radiator	57.1	125.88
With propeller flange P.C.D. 75/80 mm/4 in., drive gear, adapter and hydraulic governor for constant speed propeller	59.8	131.80
External alternator	3.0	6.61

Center of gravity: see Installation Manual EBHB-912 (German) and IM-912 (English)

NOTE 5 Operating and Service Instructions:

912 A series:

Manuals	**German**	**English**
Operators Manual	HB-912	OM-912
Installation Manual	EBHB-912	IM-912

Instructions for Continued Airworthiness (ICA)	**German**	**English**
Maintenance Manual Line	WHBL-912	MML-912
Maintenance Manual Heavy	WHBH-912	MMH-912
Overhaul Manual	GHB-912	OHM-912
Overhaul Manual, Appendix	GHBA-912	OHMA-912
Illustrated Parts Catalog	ETK-912	IPC-912
Service Bulletins, Service Instructions and Service Letters	as issued	as issued

NOTE 6 Generator and Alternator Parallel Operation:
The optional external alternator was certified with the engine under 14-CFR, part 33, using some of the standards specified in Aerospace Standard AS 8020. Compliance to the AS 8020 standard for parallel operation of the external alternator and internal generator has not been demonstrated.

NOTE 7 Vacuum Pump:
The vacuum pump is optional for the 912 A1/A2 engine models, and not applicable for the 912 A3 model.
Compliance has only been shown to the attachment requirements specified in FAR 33.25

CHANGE RECORD

Revision	Application Date	Changes	TC issue/reissue
Rev. 00	18 November 1991 (Models 912 A1 and A2) 13 July 1993 (Model 912 A3)	Original Issue.	03 February 1993 20 March 1997
Rev. 01	Not Applicable	TC holder transfer from Bombardier Rotax GmbH -Mototenfabrik- Austria to BRP-Rotax GmbH & Co KG. General update to reflect EASA TCDS E.121, Issue 16, 14 July 2023.	27 March 2024

This TCDS is available at ANAC website: https://sistemas.anac.gov.br/certificacao/Produtos/EspecificacaoOrgE.asp