U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET E00051EN	TCDS NUMBER E00051EN REVISION: REVISION 4* DATE: January 28, 2011 BRP--POWERTRAIN GMBH & CO KG MODELS: ROTAX 912 F2 912 F3 912 F4 912 S2 912 S3 912 S4

Engines of models described herein conforming with this data sheet (which is part of Type Certificate Number E00051EN) 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 — BRP--POWERTRAIN GMBH & CO KG
A-4623 Gunskirchen, Austria

TYPE CERTIFICATE HOLDER RECORD — Bombardier- Rotax GmbH transferred TC E00051NE to BRP--POWERTRAIN GMBH & CO KG on December 18, 2003

I. MODELS	912 F2	912 F3	912 F4	912 S2	912 S3	912 S4
TYPE (See NOTE 1)	Four cylinder, horizontally opposed, four stroke engine, reduction gear driven, liquid cooled cylinder head's, ram air cooled cylinders, dry sump pressure lubrication, dual magneto high-voltage condenser ignition, contactless, two constant depression carburetors, electric starter, generator, fuel pump, vacuum pump.					
RATINGS						
Takeoff power (5 min.) : (sea level pressure altitude)	59.6 kW/81 HP at 5,800 rpm	- -	- -	73.5 kW/99 HP at 5,800 rpm	- -	- -
Max. continuous power : (sea level pressure altitude)	58 kW/79 HP at 5,500 rpm	- -	- -	69 kW/93 HP at 5,500 rpm	- -	- -
OIL pressure:	See NOTE 2					
Max. oil-temperature (° C):	140	- -	- -	130	- -	- -
Max. cylinder-head temperature (° C) :	150	- -	- -	135	- -	- -
COOLANT temperature:	Monitored via cylinder head temperature					
specification:	See NOTE 6 for a reference to coolant specifications (ref. Operator's Manual).					
FUEL pressure: (See NOTE 2)	minimum: 0.15 bar (2.2 psi) maximum: 0.4 bar (5.8 psi)					
specification:	See NOTE 5					
OIL, Lubrication:	maximum capacity: 3.0 L (2.84 qts) See NOTE 6 for a reference to oil specifications (reference Operator's Manual).					

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LEGEND: "- -" INDICATES "SAME AS PRECEDING MODEL"
"---" INDICATES "DOES NOT APPLY"

NOTICE: ALL PAGES ARE REFORMATTED. SIGNIFICANT CHANGES, IF ANY ARE BLACK-LINED IN THE LEFT MARGIN.

I. MODELS (Continued)	912 F2	912 F3	912 F4	912 S2	912 S3	912 S4
CARBURETOR	2 x BING constant pressure carburetor type 64/32 main nozzle 158 or 155			2 x BING constant depression carburetor type 64/32 main nozzle 155		
FUEL PUMP	Mechanical pump			Mechanical pump		
IGNITION SYSTEM	Rotax dual magneto high-voltage condenser ignition, contactless SMD type.					
Ignition timing	26° BTC					
SPARK PLUGS	NGK DCPR 7E			NGK DCPR 8E		
ALTERNATOR, external	Nippondenso F3A with integrated regulator. (OPTIONAL - see NOTE 7)					
GENERATOR	Integrated Ducati, permanent single phase generator with external regulator rectifier.					
STARTER	Nippondenso ferrite type 12V / 0.5 kW, engagement via reduction gear and freewheel.					
VACUUM PUMP	Airborne 211 CCW, including drive. (OPTIONAL) - see NOTE 8.					
ENGINE SPEED MEASUREMENT (rpm)	electronic tachometer connector and optional mechanical tachometer drive					
WEIGHT (dry) (See NOTE 4.)	57.1 kg (125.9 lbs)	59.8 kg (131.8 lbs)	57.1 kg (125.9 lbs)	58.3 KG (128.5lbs)	61 KG (134.5 lbs)	58.3 kg (128.5 lbs)
DISPLACEMENT	1211 cm^3 (73.9 in^3)	- -	- -	1352 cm^3 (82.5 in^3)	- -	- -
BORE	79.5 mm (3.13 in.)	- -	- -	84 mm (3.3 in.)	- -	- -
STROKE	61 mm (2.40 in.)	- -	- -	61 mm (2.40 in.)	- -	- -
COMPRESSION RATIO	9.0 : 1	- -	- -	10.5:1	- -	- -
PROPELLER ROTATION	CCW	- -	- -	- -	- -	- -
PROPELLER FLANGE	P.C.D. 75 mm, 80 mm, and 4 inch diameter for fixed propeller	P.C.D. 75 mm, 80 mm, and 4 inch diameter with drive for hydraulic gov. for constant speed propeller	P.C.D. 75 mm, 80 mm, 4 inch diameter prepared for hydraulic gov. for constant speed propeller	P.C.D. 75 mm, 80 mm, and 4 inch diameter for fixed propeller	P.C.D. 75 mm, 80 mm, and 4 inch diameter with drive for hydraulic gov. for constant speed propeller	P.C.D. 75 mm, 80 mm, and 4 inch diameter with drive for hydraulic gov. for constant speed propeller
GEAR REDUCTION (crankshaft to prop)	2.2727 : 1	- -	- -	2.4286:1	- -	- -
PROPELLER CONTROL	---	---	adapter and drive for hydraulic constant speed propeller	---	---	adapter and drive for hydraulic constant speed propeller
GOVERNOR (see Note 10.)	---	Woodward (Rotax P/N 210 786)	---	---	Woodward (Rotax P/N 210 786)	---
OPERATING INSTRUCTIONS	Refer to Operator's Manual for all vesions of Rotax 912 engine models – part number 899.420 in the latest revision. See NOTE 6.					

CERTIFICATION BASIS

14-CFR, part 33, Airworthiness Standards: Aircraft Engines, effective February 1, 1965, as amended by 33-1 through 33-15, inclusive, including Federal Aviation Administration Special Condition, NPRM Doc. 24922, Notice 92-14.

MODEL	DATE OF APPLICATION	DATE TC ISSUED OR REVISED
912 F2	November 18, 1993	February 2, 1995
912 F3	November 18, 1993	February 2, 1995
912 F4	November 18, 1993	February 2, 1995
912 S2	December 28, 1998	August 12, 1999
912 S3	December 28, 1998	August 12, 1999
912 S4	December 28, 1998	August 12, 1999

The Austrian aviation authority, Austro Control GmbH (ACG), originally type certificated this engine. The FAA validated this product under U.S. Type Certificate Number E00051EN. Effective September 28, 2003, the European Aviation Safety Agency (EASA) began oversight of this product on behalf of ACG.

IMPORT REQUIREMENTS

To be considered eligible for installation on United Sates registered aircraft, each new engine to be exported to the United States with ACG 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 E00051EN, is in a condition for safe operation and has under gone a final operational check.

NOTES

NOTE 1. Model Description:

F2	Basic model; 4-stroke, 4-cylinder horizontally opposed, one centrol 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 DC generator, vacuum pump drive (optional), external generator (optional).
F3	Same as F2 except; additional drive and adapter for hydraulic governor propeller shaft for constant speed propeller.
F4	Same as F3 except; fixed pitch propeller, prepared for hydraulic governor for constant speed propeller (without drive, adapter and governor).
S2	Similar to F2 except; increased displacement and horsepower, and larger reduction gearbox.
S3	Same as S2 except; additional drive and adapter for hydraulic governor propeller shaft for constant speed propeller.
S4	Same as S3 except; fixed pitch propeller, prepared for hydraulic govenor for constant speed propeller (without drive, adapter and governor).

NOTE 2. Pressure Limits:

Fuel Pressure at inlet to Carburetor: 0.15 bar (2.2 psi) - minimum
0.40 bar (5.8 psi) – maximum

The delivery pressure of a fuel pump connected in series (backing pump) must not exceed 0.3 bar (4.4 psi) to ensure not to override the float valve in the carburetor.

Oil pressure :

normal operation: 2.0 bar –5.0 bar (29-73 psi)*
idling: 0.8 bar (12 psi) – minimum**
starting & warm-up: 7 bar (102 psi) – maximum

For 912F up to engine Number 4412.764:
*normal operation: 1.5 bar –5.0 bar (22-73 psi)
**idling: 1.5 bar (22 psi) - minimum

NOTE 3. Accessory Drive Mounting Provisions:

Accessory	912 F2/ S2	912 F3/ S3	912 F4/ S4	Rotation, facing drive pad	Speed Ratio, to crankshaft	Maximum Torque	Overhung moment (max.)
Starter	*	*	*	CW	25.25 : 1	0.5 Nm	---
Alternator	**	**	**	CCW	1.32 : 1	2.0 Nm	---
Vacuum pump	**	---	**	CCW	0.58 : 1/ 0.54:1	0.1 Nm	0.4 Nm
Governor	---	*	---	CCW	0.58 : 1/ 0.54:1	2.0 Nm	1.04 Nm
Fuel pump	*	*	*	CW	0.44 : 1	---	0.14 Nm
Tachometer	**	**	**	CW	0.25 : 1	---	---
Water pump	*	*	*	CCW	0.87 : 1	0.5 Nm	
Oil pump	*	*	*	CCW	0.50 : 1	0.7 Nm	---

"---" indicates "does not apply"
"*" standard feature
"**" optional feature
"CW" clockwise
"CCW" counter clockwise

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

912 F2 / F4/ S2 / S4: with ignition unit and generator, carburetor, oil tank and electric starter, but without the muffler and radiator.
912 F3 / S3: with propeller flange P.C.D. 75/80 mm / 4", drive and adapter for hydraulic governor for constant speed propeller.
Alternator (external): 3.0 kg (6.6 lbs).
Center of Gravity (CG): Reference the Installation Manual, latest revision (see NOTE 6).

NOTE 5. Fuel Specifications (see Operator's Manual as defined in NOTE 6):

- 100LL AVGAS in accordance with American Society for Testing & Materials (ASTM) D910.
- Automotive gasoline, unleaded, minimum min AKI 87, in accordance with ASTM D4814.

NOTE 6. Operating and Service Instructions:

Operator's Manual – P/N OM-912 (all models)
Installation Manual – P/N im-912 (all models)
Maintenance Manual-Line– P/N MML-912 (all models)
Maintenance Manual-Heavy– P/N MMH-912 (all models)
Overhaul Manual – P/N OMHA-912 (all models)

NOTE 7. **Generator and Alternator 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 8. **Vacuum Pump**: The propeller shaft driven Airborn 211 CCW vacuum pump is optional for the 912 F2/S2/F4/S4 series engine models, and not applicable, nor available, for the 912 F3/S3 series engine model. During 14-CFR, Part 33 certification of the 912 series engine models, compliance for the vacuum pump has only been shown to the attachment requirements of 14-CFR, Part 33.25.

NOTE 9. **Governor**: During 14-CFR, Part 33 certification of the 912 series engine models, compliance for the Woodward hydraulic governor has been shown to the attachment requirements of 14-CFR, Part 33.25, and in lieu of 14-CFR, Part 35.42 (as required by Part 33.19(b)), JAR-E (b)(1)(ii) was used for governor functional testing.

NOTE 10. **Overhaul**: The Rotax 912 series engine must be overhauled in accordance with the approved overhaul manual or returned to the manufacturer for overhaul.

NOTE 11. 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 Austro Control GmbH. 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.

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