

3.4 POWER-PLANT

3.4.1 ENGINE

Engine description	See »Maintenance Manual (Heavy Maintenance) for ROTAX Engine Types ROTAX 912 and 914 Series«, section 71.
Upper (rear) Engine Attachment	A tubular steel frame at the upper engine flanges, mounted in two vibration absorbing elements in the upper lateral tube of the fuselage frame.
Lower (front) Engine Attachment	A separate tubular steel frame at the lower engine flanges in two vibration absorbing elements in the forward lateral framework junctions.
Type	ROTAX 914 F2/S1 (modified ROTAX 914 F Aircraft engine, propeller shaft design with flange for fixed pitch propellers).

The ROTAX 914 F2/S1 is modified by STEMME and based on the type ROTAX 914 F2. The modification was completed as a co-operation with ROTAX and with approval by ROTAX.

The base engine ROTAX 914 F2/01 is certified according to JAR-E/FAR 33. It is turbocharged and has an electronic dual ignition system.

The modified version ROTAX 914 F2/S1 was specially developed for the STEMME S12, a variant of the motorglider type STEMME S10.

The engine modifications are certified together with the aircraft according to JAR 22. The modified version ROTAX 914 F2/S1 has the STEMME P/N: 11AM-M.

Due to special requirements for installation in the center fuselage, the following modifications were made:

- Relocation of the turbocharger unit to the aft of the engine to stay within the outlines of the S12 fuselage. The turbocharger unit is supported by five struts aft of the engine. A supercharger inter-cooler is installed. Relocation of the turbocharger unit required modifications of the exhaust system. The exhaust headers are attached to the turbocharger by springs, positioning them in spite of the high thermal stress.
- The layout of the oil pipes for the turbocharger are modified.
- The exhaust headers and the muffler are shrouded by temperature-resistant material, thus thermally isolating the system from the engine bay. The turbocharger unit and the air box are isolated by radiation protective shields.
- The original ROTAX engine mounting is not used. STEMME specially developed an engine mounting for a center installation, consisting of two upper and one lower supporting element.

- In the liquid cooling system, the combined function of the expansion reservoir and refill container was split up in two separate containers, with the expansion reservoir located above the engine and the refill container on the left side of the fire-wall.
- The ignition unit is installed above of the engine slightly behind the original ROTAX-position.
- The throttle levers on the carburetors have been slightly modified (modification does not affect the throttle rigging of the original engine) and additional springs have been installed (pulling towards full-power position) to compensate for friction due to the long control cables between cockpit and engine bay.

Engine performance data of the ROTAX 914 F2/S1 are identical to those of the ROTAX 914 F.

ENGINE PERFORMANCE DATA		
Max. T/O power.	84.5 kW at 5800 RPM	113.2 hp
Max. continuous power.	73.4 kW at 5500 RPM	98.4 hp
Engine reduction gear ratio	i = 2.4286	
Max. propeller	2650 RPM	

3.4.2 LUBRICATION SYSTEM

SYSTEM DESCRIPTION

Refer to »Maintenance Manual (Heavy Maintenance) for ROTAX Engine Types ROTAX 912 and 914 Series«, section 79.

The ROTAX 914 is equipped with a dry-sump pressure lubrication system. The pumps are part of the engine. It was necessary to modify the routing of the oil pipes between oil pump and turbo-charger. Oil is returned from the crankcase to the oil tank by compression blow-by pressure, and from the turbocharger via the secondary oil pump (scavenge pump).

The oil tank is standard from ROTAX. It is installed behind the fire-wall on the LH side of the fuselage frame. The oil filler cap is below a service access in the upper center fuselage fairing.

Oil is taken in flexible pipes from the oil tank through the fire wall to the engine bay. Any flexible oil lines in the engine compartment are shrouded by fire protective sleeves.

The oil cooler is installed on the RH side of the fuselage frame and supplied with air from the RH cowl flap.