

TAKEOFF-BMW - Propeller drive

As new flat engines of BMW the 1100 RS/ GS/ have been introduced years ago into the quantity production. It is now time to let this technological top performance of the engine building. fly. As a result of our experiences with BMW-engines as aircraft engines lasting for years, according to the state of the art we realized our ideas about a modern, high-performance propeller drive. For ultralight planes this drive has been certified since 4/98. It runs with very few vibration, is quiet, extremely economical and strong.

The Highlights:

- Enormous power weight (to 0,77 kg/hp)
- Extremely economical consumption (235 g/kW/h)
- Processorcontrolled injection
- Non-polluting due to regulated 3-way catalytic converter
- Height compensation by crusher gage sensor
- Continuous duty depending on motor 43 - 74 kW (70 - 100 hp)

Specifications:

Cubic capacity:	1085 ccm
Bore/stroke:	99 x 70,5 mm
Power/	Type: GS 58 kW/80 PS/6200 min ⁻¹
torque:	97 Nm/ 5000 min ⁻¹
	Type: RS 66 kW/90 PS/7200 min ⁻¹
	95 Nm/ 5500 min ⁻¹
	Type: S 72 kW/100PS/7500 min ⁻¹
	98 Nm/ 5600 min ⁻¹

Compression:	10,7 : 1 (RS)
Consumption:	8 -10l unleaded at 75 %
Cooling system:	65% oil - 35 % air
Four-valve-technology:	separate oil cooling (50 l/h) for the outlet valve

Ignition system: Motronic (characteristic control) with emergency running control in case of breakdown of sensors

Ignition release mechanism: 2 independent Hall generators controlled by the crankshaft

Mixture control: characteristic controlled injection system with sensors for rotational speed, oil temperature, throttle control position, air temperature, air pressure and lambda probe
3 bar pressure system in the injection system to avoid vapor lock

Environmental compatibility: 3-way catalytic converter, HC-reduction about 85%; NOx-reduction about 80%

Gear:

Helical, with hardened and grinded gearwheels. Gear

reduction: (2,5-; 3,05- , 3,48 :1 possible)

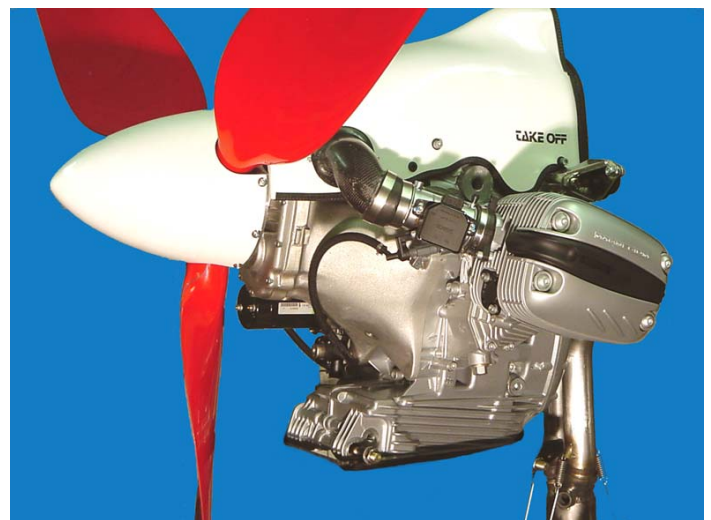
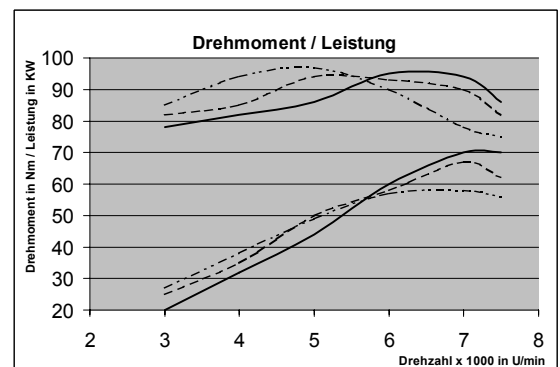
Springless, one-piece centrifugal automatic-clutch (rotational speed of action 2800 1/min)

Rotational oscillation damper (absorbes rotational oscillations of approx. +/- 10°)

Total weight when ready for take off including exhaust system, gear and coolant: approx. 80 kg

No other two-cylinder four-stroke engine has - caused by the pistons working in an opposite manner - a so perfect mass balancing so that the flat engine works without much vibrations even without weight increasing compensation shafts. The mass balancing gets more optimal at higher rotational speed. For the lower speed range the unfavorable traction combination of the degree of non-uniformity of the engine and the moment of inertia of the propeller is decoupled by a centrifugal clutch.

A rotary oscillation damper prevents resonances between engine, gear and propeller.



Two-cylinder four-stroke engine with spur gear and centrifugal clutch

Price list 11/2000

Order-No.	Description		price in DM	
			without VAT	/ with 16% VAT
TBM 10	BMW-flat engine R 1100 S (72 kW at 7500 1/min) with Motronic-characteristic controlled ignition and lambda probe, starter, alternator (600 W), oil cooler	61 kg	9923,-	11510,68
TBM 11	BMW-flat engine R 1100 RS (66 kW at 7200 1/min) with Motronic-characteristic controlled ignition and lambda probe, starter, alternator (780 W), oil cooler	64 kg	9349,32	10845,21
TBM 12	BMW-flat engine R 1100 GS (58 kW at 6200 1/min) with Motronic-characteristic controlled ignition and lambda probe, starter, alternator (780 W), oil cooler	64 kg	8753,60	10154,18
TMG 35	Spur gear, helical, hardened and grinded gearwheels, gear reduction: (2,47:1, 2,75:1, 2,96:1, 3,46:1 possible) matching for BMW 1100 series	7 kg	2176,42	2524,64
TFD 02	Centrifugal clutch, springless, rotational speed of action approx. 2400 1/min incl. integrated torsionally elastic vibration damper	4 kg	1464,80	1699,17
TEK 11	Cable harness with motor sided wiring and 4m long 12-core line to the cockpit	1 kg	735,48	853,16
TNG 02	Air filter made out of glass fiber-reinforced plastic	1 kg	590,80	685,32
TRA 12	Exhaust system, without manifold system,	3 kg	859,87	997,45
TKT 12	Component parts for manifold system	1,5 kg	395,08	458,29
TMK 72	Catalytic converter optional, integratable into the exhaust system	0,5 kg	459,-	532,44
TKM003	Vibrating element for the drive seat, tear-off safe (price for one.)	0,5 kg	39,45	45,75
TPM001	Electrical fuel pump, 3 bar pressure system	0,5 kg	246,23	285,63
TNL003	Adjustable 3-blade air propeller in pull- and push-version, Ø 1730 mm	5,6 kg	2245,30	2604,55
TNL002	Adjustable 2-blade air propeller,	4,5 kg	1714,43	1988,74
TEP002	Setting gage for propeller		98,52	114,28
TMA010	Oil temperature indicator with sensor (Ø 52 mm)		179,60	208,33
TMA020	Oil pressure indicator with sensor (Ø 52 mm)		220,50	255,78
TMA030	Revolution counter (Ø 52 mm)		181,-	209,96

The BMW engine 1100 with the TAKE OFF gear variant has been developed for land vehicles. This drive does not conform to the standard of aircraft industry. The drive is not tested or certified for the operation in aircrafts. After tests the manufacturer or experimental manufacturer of the air sports equipment has to decide on his own responsibility, how far this drive concept can be used in air sports equipment (UL) with safe gliding flight characteristics, that can safely land in case of engine failure. BMW and TAKE OFF do not assume any liability for consequential damages that are caused by a drive breakdown of an aircraft or air sports equipment.

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TakeOff Gear

