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CREATING POWER SOLUTIONS.



1D81 Hydro *concept*

702 528 43 EN-04.13-0.5 Printed in Germany
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Hatz Diesel Engines – Made in Germany



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How the best can be made even better

To respond to specific market needs, Hatz has further developed its 1D81 and 1D90 high performance single-cylinder engines and offers them – initially as a concept study – with water cooling. This results in enormous advantages for certain niche markets.

The Hatz 1D81 high performance engine has proven itself a hundred thousand times around the world under the harshest conditions. The potential for the increase in performance by conversion to water cooling opens up new application possibilities for the engine series. With the new 1D81 Hydro concept, Hatz wants to gage the requirement for water-cooled engines on the market.

Thanks to a "simple" modification of the cylinder head and the cylinder, a fully water-cooled single-cylinder engine up to maximum 14.5 kW, in case of external cooling, can be offered.

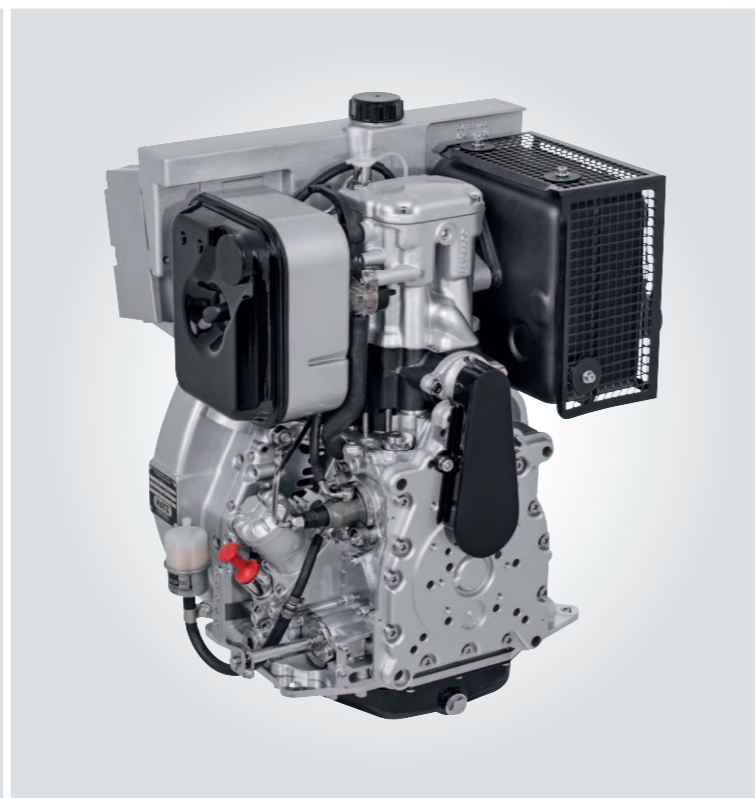
The amazing, patented Hatz concept integrates the cooling system in the engine housing. The engine cooling requires no external hose connections, the cooling fan is integrated in the flywheel. The expansion tank, cooler and water supply are brought together in the module housing.

In comparison to the air cooled engine type, the Hydro model is only slightly larger. It consists of around 90 % interchangeability of parts. The drive train, combustion and exhaust gas quality are identical.

The unique Hatz Hydro concept allow series production with existing tooling and production lines within a few months.

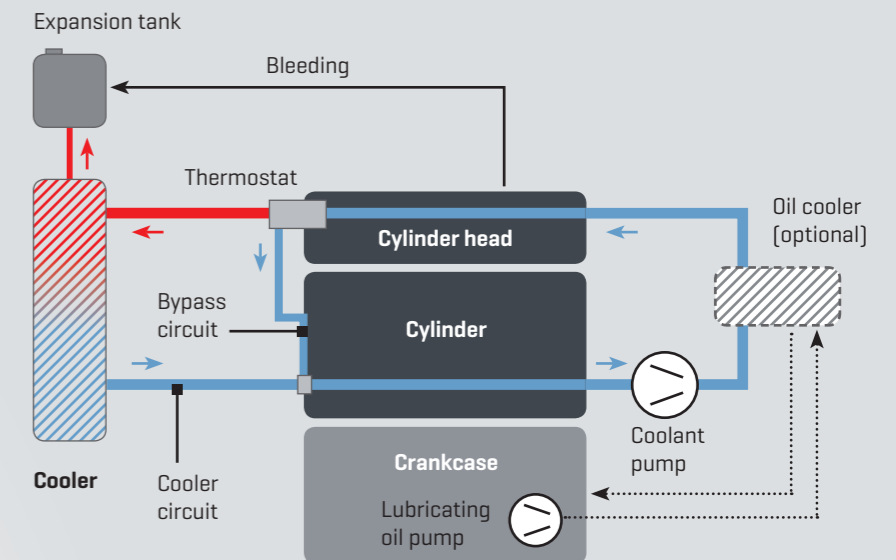
The advantages of water cooling

- Capacity increase of 1-2 kW (up to 20 %) depending on the cooling version and engine type
- Longer service life due to optimum temperature
- Longer maintenance intervals
- Up to 12 dB(A) reduction of basic noise possible by simple encapsulation
- In combination with the permanent magnet generator (PMG) up to 12 kW_e rated power [14.5 mech. on the 1D90V]



Operating principle

A belt-driven, mechanical coolant pump drives water through the circuit. The water flows completely through the cylinder liner and cylinder head. The flowing through of the liner serves as a bypass circuit at the same time until the operating temperature (approx. 85° C) is reached. The thermostat then opens the cooler circuit. An optional oil cooler can be integrated in the circuit for cooling the lubricating oil.

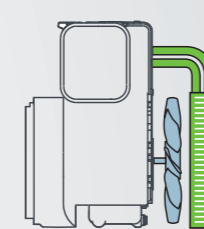


Design variants

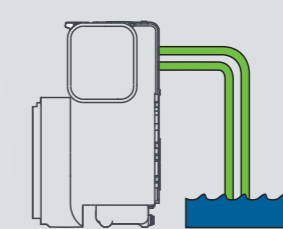
The water cooling opens up a variety of possibilities for the cooler design and thus optimum adaptation to the installation situation. Thus, for example, the conversion with seawater cooler is ideal for marine applications.



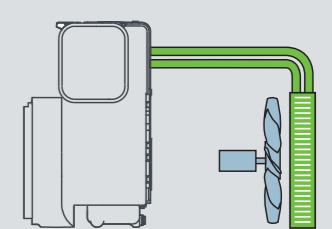
Standard design with integrated cooler



Design with external cooler and engine-powered fan



Design with seawater cooler



Design with external cooler and hydraulically/electrically powered fan

Technical data

	1D81 Hydro	1D90 Hydro	1D90V Hydro
Engine type	4-stroke diesel	4-stroke diesel	4-stroke diesel
Cylinder	1	1	1 vertical
Displacement [cm ³]	667	772	772
Bore [mm]	100	104	104
Stroke [mm]	85	85	85
Cooling system	water cooling	water cooling	water cooling
Injection system	DI	DI	DI

With water cooling: 1D81 Hydro

In comparison with the air cooled 1D81, the water cooled engine differs mainly by the cooler mounted on the outside. The Hydro model impresses due to its compact construction with no hose connections on the outside of the cooling system. The belt-driven coolant pump is connected via the power take-off.