



B series

The challenger





QUESTIONS FACTS ANSWERS

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Can the diesel engine be reinvented at random ?

1B20
1B30
1B40



If the HATZ development team set themselves a goal, the result is always a real innovative thrust.

Thus, the diesel engine has benefited so far from many inventions made by HATZ at least in some details.

The details integrated to form a whole make for technical progress.

This applies especially to the new HATZ single-cylinder diesel engines with the type designation 1 B..

On the one hand, the special features of the new engine concept catch the eye, as they affect its external appearance; the real qualities, however, are integrated in the engine design:

Extremely compact installation dimensions, low weight, easy start and an attractive design are assets for any machine.

1B20
1B30
1B40

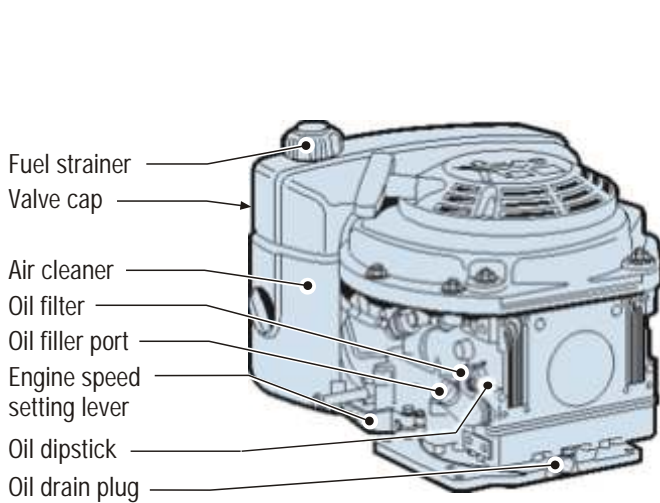


Motordaten		1B20 / V	1B30 / V	1B40 / V
Number of cylinders		1	1	1
Bore x stroke	mm	69 x 62	80 x 69	88 x 76
	inches	2.72 x 2.44	3.15 x 2.72	3.46 x 2.99
Piston displacement	l	0.232	0.347	0.462
	cu.in.	14.15	21.16	28.19
Medium piston speed at 3,000 r.p.m.	m/s	6.2	6.9	7.6
	ft/min	1221	1358	1496
Compression ratio		21.0	21.0	20.5
Lubricating-oil capacity max./min.	l	0.9 / 0.4	1.1 / 0.6	1.55 / 0.77
	US qts	0.95 / 0.42	1.16 / 0.63	1.64 / 0.81
Engine speed control	Low idle speed Stat. speed deviation	approx. 900 r.p.m. approx. 5% at 3,000 r.p.m.		

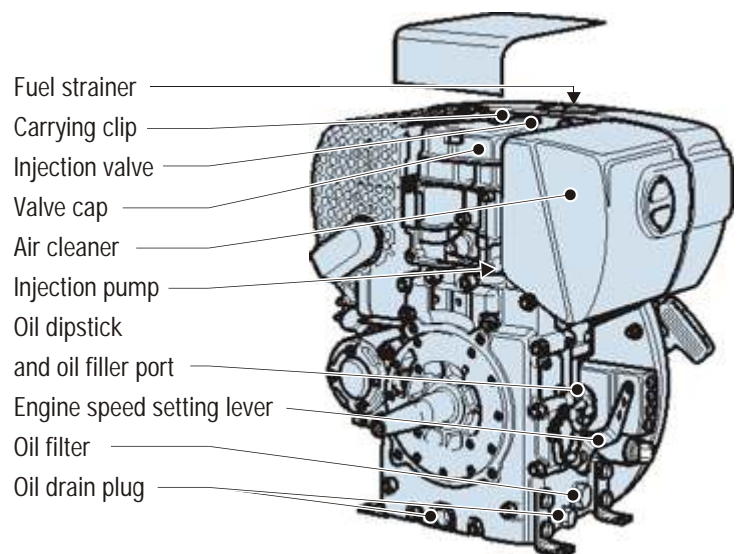
Installation data		1B20 / V	1B30 / V	1B40 / V
Combustion air volume at 3,000 r.p.m. approx. ¹⁾	m ³ / min	0.35	0.52	0.69
	cu.ft./min	13	19	25
Cooling-air volume at 3,000 r.p.m. approx. ¹⁾	m ³ / min	4	4,5	8.7
	cu.ft./min	140	160	309
Permanently inclined position	max. degrees	25 ²⁾ , 35 ³⁾		
Starter		12 V - 0.8 kW		
Generator charging current at 3,000/1,500 r.p.m.		12 V - 14 A / 7 A		
Battery capacity	min / max Ah	12 V / 36 / 60 Ah		

1) The indicated air volume must be calculated analogously in a linear manner for other speeds 2) Flywheel low 3) All other positions

Maintenance and servicing points



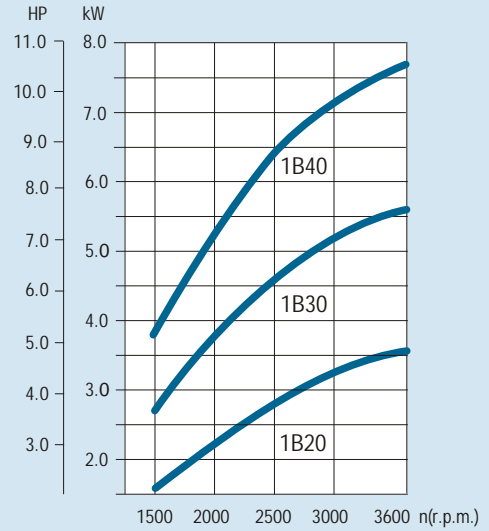
1B20V • 1B30V • 1B40V



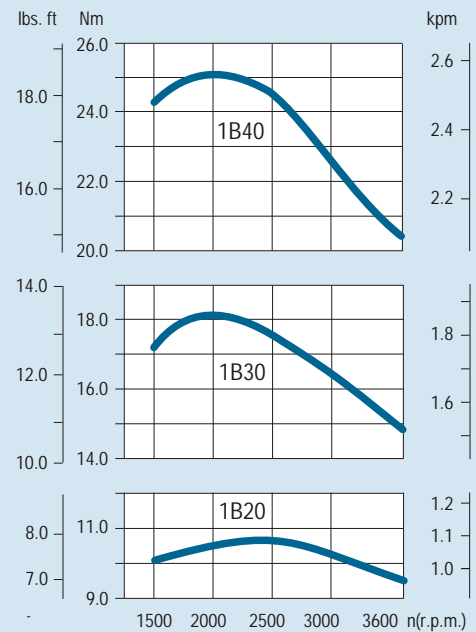
1B20 • 1B30 • 1B40

Power output, torque, fuel consumption

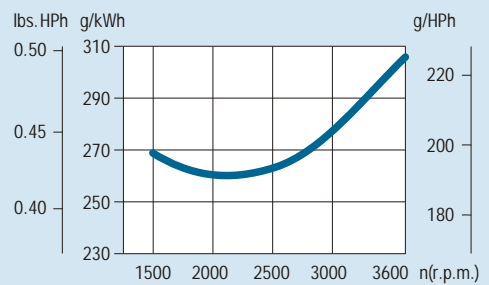
Vehicle power according to DIN 70020



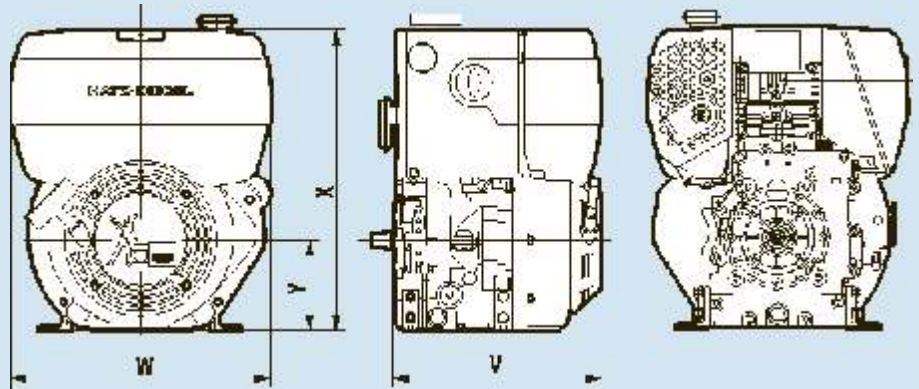
Torque at vehicle power



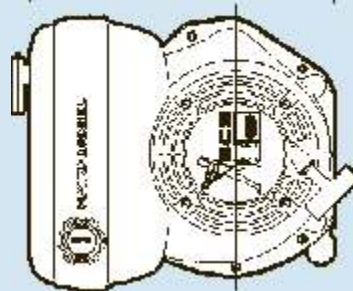
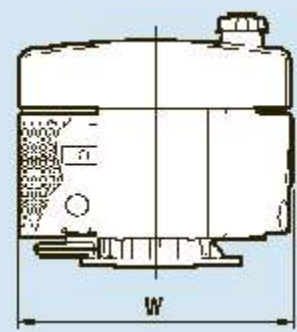
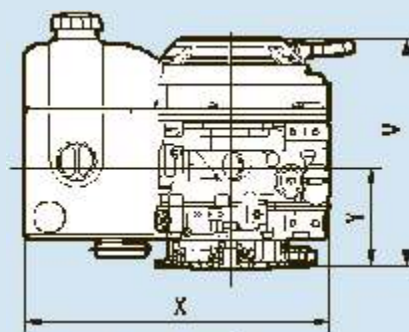
Specific fuel consumption at vehicle power



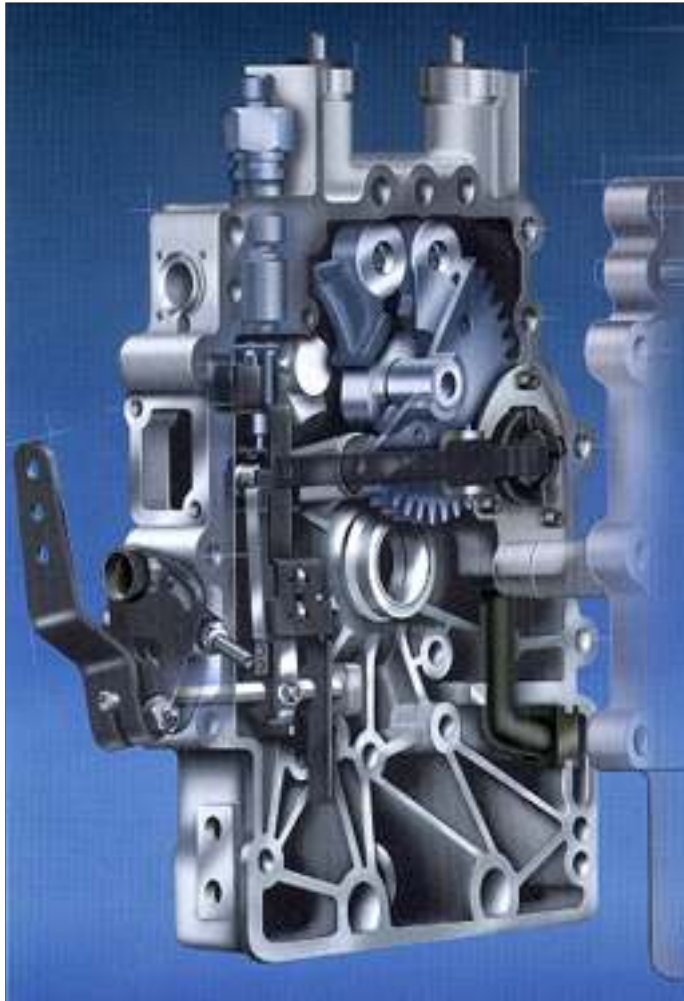
The power ratings refer to the reference location according to the power standard DIN ISO 3046:
 +25°C, 100 m above sea level, 30 % relative humidity.
 The indicated power is reached by the engine during the running-in period; on delivery, it may be 5% below.
 Power reduction according to DIN ISO 3046.
 Approximate values: over 100 m above sea level, approx. 1 % per 100 m, above 25°C approx. 4 % per 10°C.



	V	W	X	Y
1B20	268	360	400	130
1B30	297	370	430	130
1B40	315	394	480	155
1B20V	300	360	399	130
1B30V	329	370	429	136
1B40V	360	394	477	155

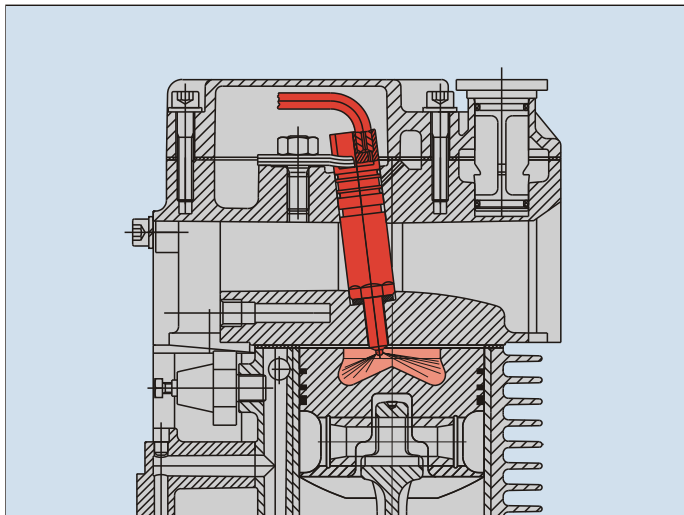


Timing case, injection equipment



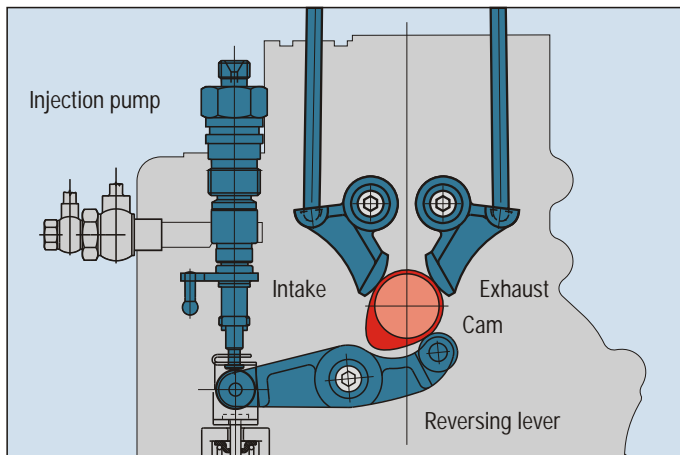
The cylinder crank case, the timing case and the cylinder head have all been made using the aluminium pressure diecasting method. The diecasting confers on the engine characteristics which are beneficial for the machine in question, i.e.: high solidity, low weight and a flawless surface.

The new engine operates according to a new, most recently developed direct injection procedure. The multihole nozzle is placed almost vertically above the combustion chamber recess in the piston head.



Extremely small injection holes in conjunction with a high injection pressure result in an optimum mixture preparation, as on the one hand, the fuel sprays emitted by all the injection holes have to cover approximately the same distance to the combustion chamber recess, and on the other hand, the system's high injection pressure results in excellent fuel atomization, and consequently, "interfacing" to the oxygen molecules.

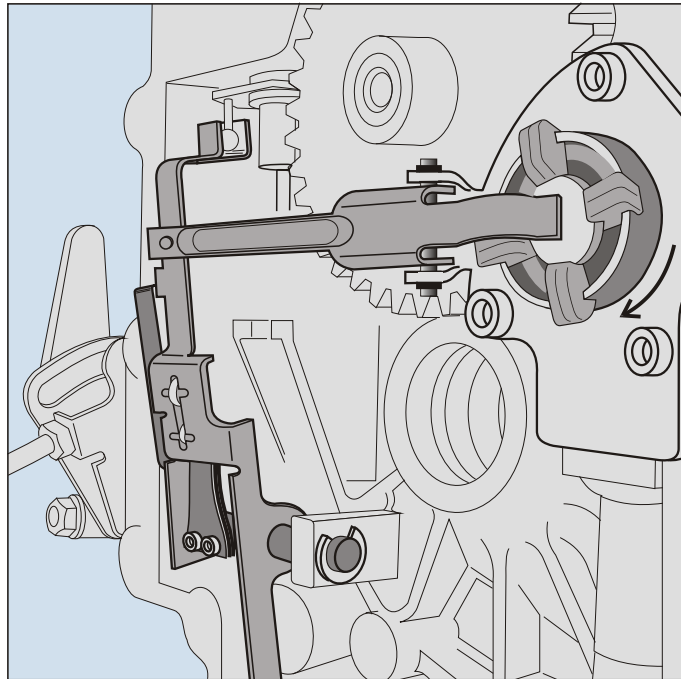
The direct injection procedure guarantees the best starting features, a scarcely detectable exhaust-gas turbidity and in conjunction with the timing (ignition point and characteristic) a pleasantly gentle combustion with a low noise level.



SCS (Single Cam System)

The injection pump and the two valves are actuated via a single cam and drag lever. This detail of design, for which HATZ has applied for a patent, is essential for the engine's short length.

A new path has been followed with regard to the injection components and the injection pump drive, aiming at a reduction to miniature dimensions at a simultaneously increased delivery rate. This was the only way to realize minimum engine dimensions. The camshaft is driven via a gear wheel that is also an integral part and drive component of the oil pump.

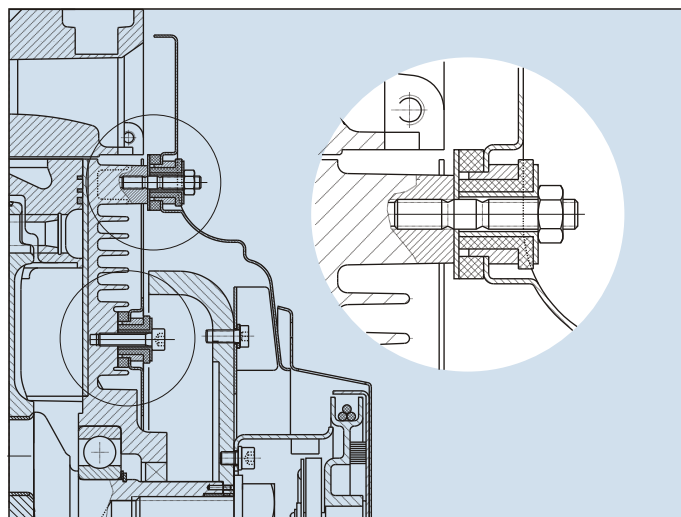


And as the engine features a lubricating oil pressure system, it is possible to install oil pressure monitoring devices.

Expensive and messy disposal of contaminated oil filter cartridges is not necessary, as the engine has a new type of suction screen installed on the intake side, which can easily be cleaned as often as necessary.

The engine is equipped with a variable-speed governor with an upper and low idle-speed setting feature. Precise actuation via Bowden cable is possible. The engine stop is realized by overriding the spring-loaded lower idle-speed stop.

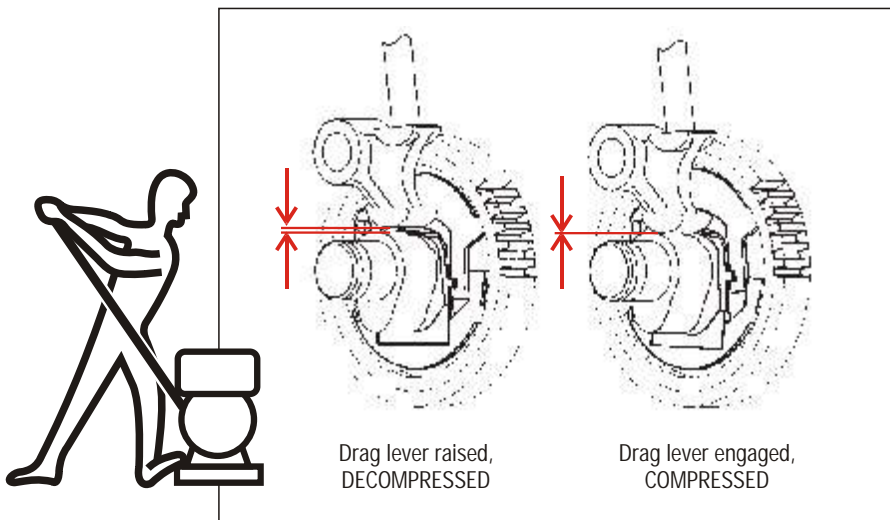
If the engine features an electric starter, additional electric shut-off possibilities are available.



The flywheel casing also serves as air guide casing; it is mounted to the cylinder crank casing in a structure-borne-sound insulated manner.

The method of structure-borne-sound decoupling of components is one of the achievements of Motorenfabrik HATZ whose origins date back to the development of the HATZ Silent-Packs (1978).

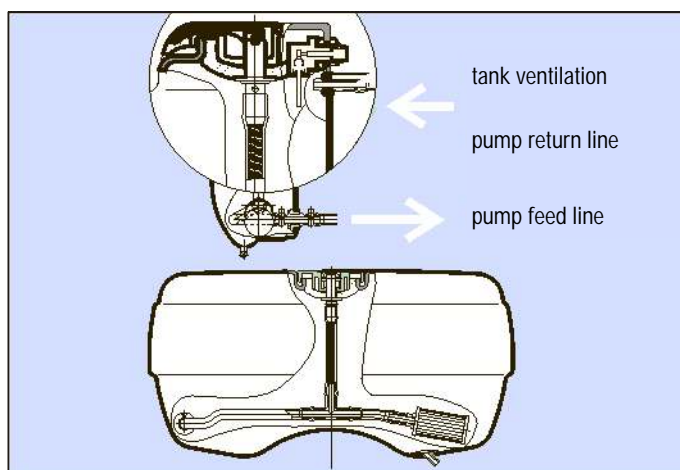
Reversing starter, fuel tank, air cleaner, exhaust silencer



The flywheel casing carries the reversing starter. The reversing starter is still a component of the engine, even if an electric starting device is used.

Automatic decompression is a sophisticated technical feature. It is installed in the camshaft gear wheel and utilizes the centrifugal force and gravitation to facilitate an easy start without return shock.

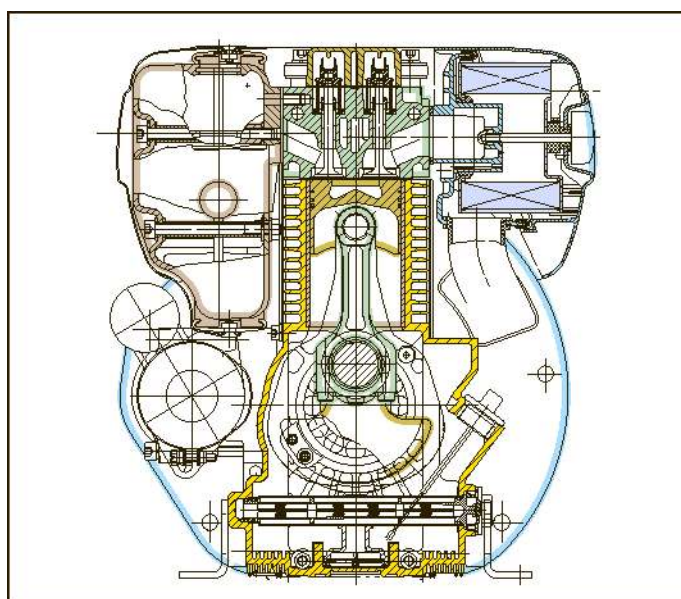
Thus, a reversing start really is a child's play.



The attractive fuel tank is equipped with an absolutely tight filler cap.

Ventilation of the fuel tank necessary to enable the withdrawal of diesel fuel is effected via an intelligently modelled pulse valve.

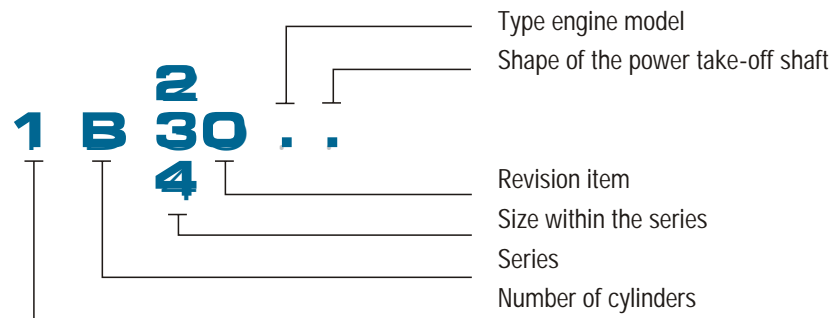
The automatically ventilated fuel strainer is also installed in the fuel tank.



The air cleaner with its amply dimensioned paper cartridge draws combustion air from the air scoop of the cooling blower fan. At the extraction point, it uses the cyclone effect of the cooling air coil, while suppressing the sound produced by air intake.

The exhaust silencer has been designed in shell construction. The exhaust connection can be mounted in optionally two positions, and moreover, it can be fully rotated, so that it is possible to choose the most favourite blow-out direction.

Type designation



Characteristic features

The HATZ diesel engine which belongs to the 1B series is delivered to you as a complete drive unit including fuel tank, air cleaner, exhaust silencer and reversing starter.

The "comfort" solution is additionally equipped with a 12 V electric starter and a 24 V generator, including a control panel, which features the ignition starter switch and the necessary pilot lamps.

The power take-off is realized on the timing end direction of rotations: to the left.

Flanges according to DIN and SAE for power generators, pumps, etc.

Various drive shafts satisfy all individual expectations.

Exhaust gas quality

All the engines in the B series comply with the exhaust emission certificates of the US-Environmental Protection Agency EPA !

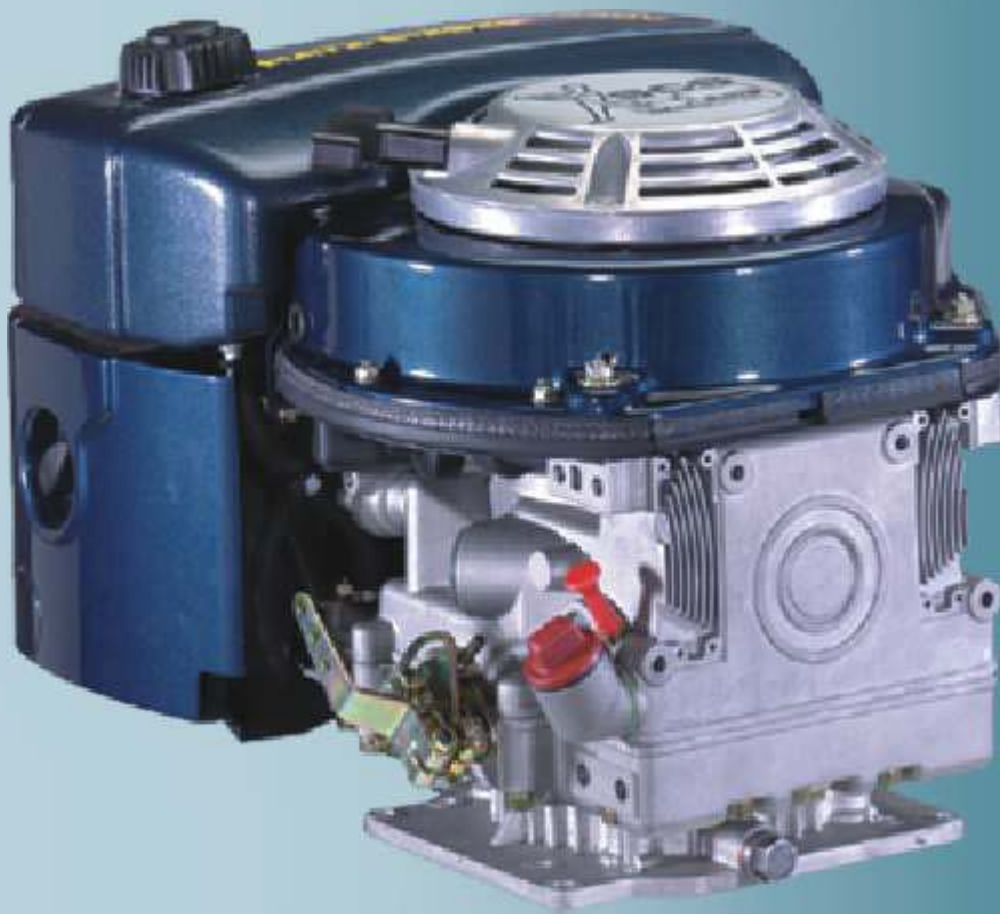
10 good reasons

why the 1 B.. engine is a perfect match for new, modern, innovative machines:

1. The installation dimensions, with reference to the power ratings, are compact beyond compare.
2. It is easy to install and attach the engine with angle pieces which compensate - within certain limits - the irregularities of the substructure.
3. In spite of the high quality installed in the engine, the 1 B.. engine has a low weight, e.g. fully equipped, incl. reversing starter, the 1 B 20 weighs only approx. 28 kg!
4. The easy-to-operate reversing starter functions down to a temperature of approx. 6°C, thanks to automatic decompression. The 12 V or 24 V starter provides a reliable starting speed in case of electric start.
5. And the engines run very smoothly, which is appreciated by the operator. He can dedicate his whole attention to his work.
6. Attractive as regards shape - everybody likes the design of the HATZ engines.
7. And as for quality, a HATZ engine is a must, enhancing as it does the image of the entire machine, exemplary as regards concept and serviceability.
8. The innovative lead of the 1 B.. engine guarantees that your machine will remain state-of-the-art for a long time - it is one of the machines which have been designed for the future.
9. HATZ are vendor-partners who offer acceptable solutions to your purchase conditions: quantities, just in time, packaging types, call-off conditions, reliable delivery etc. are renowned HATZ delivery qualities.
10. The HATZ service does not let its customers down. This applies world-wide - typical for HATZ.



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