Hatz B-series:
Flexible solution for all areas

The Hatz B-series scores high marks in mobile and stationary operations with compact installation dimensions and for all applications with a power requirement up to 8 kW due to its low weight. With its robustness and longevity, the series sets standards in the market. Regardless of whether on vibration plates or in the inhospitable environment of the Antarctic, the B-series has been tried and tested a hundred thousand times in harsh surroundings.

Environmental aspects
In our company protection of the environment is regarded as a key component of the company objectives. For example, the B-series engines are exclusively produced and marketed to the specification of the strict EPA Tier IV exhaust directive, even in countries where no limits are imposed on exhaust emission.

One power train – many variants
Thanks to the intelligent design of the engines, not only is it possible to offer various displacements based on the same power train but we have also succeeded in bringing the entire series as vertical engines (engine with vertical crankshaft and horizontal cylinder) with the same basic power train onto the market. For the customer, this provides many options for making the best possible use of the existing space on a machine, either height-optimized with the vertical engine, or with the conventional engine with optimum base area.

Optional noise package
Depending on the engine type the current low noise level can be significantly reduced further, even by 2 to 4 dB(A), by a noise package, decreased power and speed. This is possible thanks to optimizations in the area of intake and exhaust components.

Award
The B-series has been honored with the EUROMOT innovation prize for optimum carburation and emission quality.

<table>
<thead>
<tr>
<th>Sales area (Exhaust certificate)</th>
<th>1B20/1B20V</th>
<th>1B30/1B30V</th>
<th>1B40/1B40V</th>
<th>1B50/1B50V</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA (EPA/CARB constant speed)</td>
<td>(rpm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2250-3000</td>
<td>2500-3600</td>
<td>3000-3600</td>
<td></td>
<td></td>
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<tr>
<td>USA (EPA 2-Speed)</td>
<td>(rpm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2250-3600</td>
<td>2500-3600</td>
<td>3000-3600</td>
<td>3500-3600</td>
<td></td>
</tr>
<tr>
<td>USA (EPA variable speed)</td>
<td>(rpm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2250-3600</td>
<td>2500-3600</td>
<td>3500-3600</td>
<td>3500-3600</td>
<td></td>
</tr>
<tr>
<td>All others (Non-EPA)</td>
<td>(rpm)</td>
<td>1500-3600</td>
<td>1500-3600</td>
<td>1500-3600</td>
</tr>
</tbody>
</table>

As the only engine manufacturer worldwide, Hatz offers a diesel series with vertical crankshaft. For many applications, such as the prime example of the lawnmower, this design provides major advantages and significantly simplifies installation.

Flexibility through additional equipment
The B-series can be fully customized to the needs of the customer with an almost endless list of accessory parts. Among other things, there are six different output shafts for each type, an electric start with 12 or 24 V as well as various options for fuel tanks and filters, to name but the most important ones.

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SCS (Single Cam System)
One of the numerous innovations of the B-series is the single cam system, where the injection pump and the two valves are operated by just one cam and rocker arm. This design detail, for which Hatz has applied for a patent, substantially determines the very short overall length of the engine. In addition, the camshaft is driven via a gear wheel which is, at the same time, a component and drive of the oil pump.

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### Technical data, Performance Table

<table>
<thead>
<tr>
<th>1820 / 1820V</th>
<th>1827</th>
<th>1830 / 1830V</th>
<th>1840 / 1840V</th>
<th>1850 / 1850V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Air cooled single cylinder 4-stroke diesel engine with direct injection, horizontal crankshaft (variant V with vertical crankshaft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bore x stroke</strong> (mm / inch)</td>
<td>63 x 65 / 2.50 x 2.56</td>
<td>74 x 65 / 2.91 x 2.56</td>
<td>80 x 68 / 3.15 x 2.72</td>
<td>84 x 76 / 3.30 x 2.99</td>
</tr>
<tr>
<td><strong>Displacement</strong> (l / inches)</td>
<td>3.80 / 236</td>
<td>4.60 / 281</td>
<td>5.36 / 210</td>
<td>5.98 / 235</td>
</tr>
<tr>
<td><strong>Mean piston speed at 3000 r.p.m. (m/s / ft/min) per kW</strong></td>
<td>5.6 / 180</td>
<td>6.3 / 185</td>
<td>7.0 / 235</td>
<td>7.8 / 260</td>
</tr>
<tr>
<td><strong>Compression ratio</strong></td>
<td>17:1</td>
<td>18.5:1</td>
<td>18.5:1</td>
<td>18:1</td>
</tr>
<tr>
<td><strong>Lub. oil consumption, related to fuel consumption</strong> (min / max Ah)</td>
<td>0.0 / 0.4 / 0.6 / 0.8 / 1.0</td>
<td>0.0 / 0.6 / 1.0 / 1.3 / 1.5</td>
<td>0.0 / 0.7 / 1.0 / 1.3 / 1.7</td>
<td></td>
</tr>
</tbody>
</table>

### 1B50 and 1B50V

<table>
<thead>
<tr>
<th>1B50 / 1B50V</th>
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<th>1B50 / 1B50V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shaft forms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ø 19.05 mm</td>
<td>ø 25.4 mm</td>
<td>ø 25.4 mm</td>
<td>ø 25.4 mm</td>
</tr>
</tbody>
</table>

### 1B20 and 1B20V

<table>
<thead>
<tr>
<th>1B20 / 1B20V</th>
<th>1B27 / 1B30/1B40/1B50: ø 25 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shaft forms</strong></td>
<td></td>
</tr>
<tr>
<td>ø 25.4 mm</td>
<td></td>
</tr>
</tbody>
</table>

### Power output, torque und fuel consumption

#### 1B27

- Vehicle output acc. to ISO 3046-1 (kW / HP)

#### 1B30 and 1B30V

- Engine net brake fuel stop
- Power (IFN) for strong intermittent load

#### 1B40 and 1B40V

- Engine net brake fuel stop
- Power (IFN) for strong intermittent load

### 1B50 and 1B50V

- Performance data refer to Standard Reference Conditions of ISO 3046-1 (IFN): +25 °C (77 °F), 100 kPa, relative humidity 30 %.
- During running in period the output increases by approx. 5 % which is taken into consideration at delivery. Power reduction acc. to ISO 3046-1. Standard values: Above 210 kW / approx. 1.5% per 10 °C (50 °F). Above 35 kW / approx. 4% per 1 °C (32 °F). The power taken from charging alternator also has to be added to the demand of power.

### Shaft forms

#### Selection of available shaft forms

- Cylindrical with thread
- Cylindrical with key way

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4) For other p.p.m. there is a linear reduction in the air requirement.
Maintenance and operating points

Power-take-off points

Power-take-off shaft, governor side, with max. engine speed, Sense of rotation anti-clockwise

Permissible load on power-take-off points

1B20 / 1B27 / 1B30
1820 / 1830
1B20V / 1B30V
max. permissible radial force
F1 = 60 000 (N)
L (mm) = 70
max. permissible axial force
F2 = 800 (N)

1B40 / 1B50
1B40V / 1B50V
max. permissible radial force
F1 = 62 600 (N)
L (mm) = 84
max. permissible axial force
F2 = 1200 (N)

Dimensions

1B20
1B27
1B30

1B40
1B50

1B20V
1B30V

1B40V
1B50V

Spread at outlines ± 3 mm due to tolerance.

Drawings with detail and connection measures as PDF resp. DXF are shown under www.HATZ-DIESEL.com.

*) max. permanent tilting