1106D-E70TAG5

234.5 kWm (Gross) @ 1800 rpm
ElectropaK

Basic technical data

Number of cylinders: 6
Cylinder arrangement: In-line
Cycle: 105 mm
Induction system: Turbocharged and air charge cooled
Combustion system: Direct injection diesel
Bore: 135 mm
Cubic capacity: 7.01 litres
Firing order: 1, 5, 3, 6, 2, 4
Estimated total weight (dry): 788 kg
Estimated total weight (wet): 822 kg

Overall dimensions (ElectropaK)

Height: 1142 mm
Length (air cleaner fitted): 1763 mm
Width: 788 mm

Moments of inertia

Engine rotational components: 0.27 kgm²
Flywheel: 1.26(SAE2) kgm²

General installation

<table>
<thead>
<tr>
<th>General Installation</th>
<th>Units</th>
<th>Standby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross engine power</td>
<td>kW</td>
<td>234.5</td>
</tr>
<tr>
<td>Brake mean effective pressure</td>
<td>kPa</td>
<td>2234.1</td>
</tr>
<tr>
<td>Mean piston speed</td>
<td>m/s</td>
<td>8.1</td>
</tr>
<tr>
<td>ElectropaK nett engine power</td>
<td>kW</td>
<td>223.5</td>
</tr>
<tr>
<td>Engine coolant flow (against 35 kPa restriction)</td>
<td>litres/min</td>
<td>170.0</td>
</tr>
<tr>
<td>Combustion air flow (at STP)</td>
<td>m³/min</td>
<td>18.5</td>
</tr>
<tr>
<td>Exhaust gas flow (maximum)</td>
<td>m³/min</td>
<td>38.47</td>
</tr>
<tr>
<td>Exhaust gas temperature (maximum) in manifold (after turbocharger)</td>
<td>°C</td>
<td>553</td>
</tr>
<tr>
<td>Nett engine thermal efficiency</td>
<td>%</td>
<td>39.8</td>
</tr>
<tr>
<td>Typical genset electrical output (0.8pf 25°C)</td>
<td>kWe</td>
<td>200</td>
</tr>
<tr>
<td>Regenerative power (estimated)</td>
<td>kW</td>
<td>3.0</td>
</tr>
<tr>
<td>Assumed alternator efficiency</td>
<td>%</td>
<td>92</td>
</tr>
<tr>
<td>Energy balance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat in fuel</td>
<td>kW</td>
<td>590.8</td>
</tr>
<tr>
<td>Power to cooling fan</td>
<td>kW</td>
<td>8.5</td>
</tr>
<tr>
<td>Power to coolant and lubricating oil</td>
<td>kW</td>
<td>91.9</td>
</tr>
<tr>
<td>Power to exhaust</td>
<td>kW</td>
<td>181.2</td>
</tr>
<tr>
<td>Power to residual losses (alternator)</td>
<td>kW</td>
<td>3.1</td>
</tr>
<tr>
<td>Energy to charge coolers</td>
<td>kW</td>
<td>47.4</td>
</tr>
<tr>
<td>Power to radiation</td>
<td>kW</td>
<td>35.2</td>
</tr>
</tbody>
</table>

Centre of gravity, ElectropaK

Forward from rear of block (wet): 476 mm
Above crankshaft centre line (wet): 176 mm
Offset to RHS of crankshaft centre line (wet): 16 mm

Performance

Speed variation at constant load: ± 0.76%
Cyclic irregularity at standby power: 0.009
All ratings within ± 3%

Sound level

Average sound pressure level for standby power @ 1 m: 101.7dBA

Test conditions

Air temperature: 25°C
Barometric pressure: 100 kPa
Relative humidity: 48%
Exhaust back pressure at maximum power: 15 kPa (maximum)
Fuel temperature: 40°C

If the engine is to operate in ambient conditions other than those of the test conditions, suitable adjustments must be made for these changes. For full details, contact Perkins Technical Service Department.

Standby power: Limited to 500 hours annual usage, with an average load factor of 80% of the published standby power rating over each 24 hour period. Up to 300 hours of annual usage may be run continuously. No overload is permitted on standby power.
Cooling system

Cooling pack
Overall weight (wet) ................................................................. 90 kg  
Overall face area ................................................................. 611200 mm²  
Width ........................................................................... 764 mm  
Height ............................................................................ 800 mm  

Radiator
Face area ........................................................................... 351,840 mm²  
Number of rows and materials ........................................... 4 rows, Aluminium  
Matrix density and material ................................................. 10 fins per inch, Aluminium  
Width of matrix .................................................................. 440 mm  
Height of matrix .................................................................. 800 mm  
Pressure cap setting (minimum) ........................................... 100 kPa  

Charge cooler
Face area ........................................................................... 203,483 mm²  
Number of rows and materials ........................................... 2 rows, Aluminium  
Matrix density and material ................................................. 10 fins per inch, Aluminium  
Width of matrix .................................................................. 258 mm  
Height of matrix .................................................................. 789 mm  

Fan
Diameter ............................................................................ 686 mm  
Drive ratio .......................................................................... 1.2:1  
Number of blades ................................................................ 9  
Material .............................................................................. Nylon  
Type .................................................................................. Pusher  
Air flow @ 1800 rpm .............................................................. 6.75 kg/s  
Power @ 1800 rpm ................................................................. 10.5 kW  

Coolant
Total system capacity .............................................................. 21 litres  
System drawdown capacity ..................................................... 10%  
Engine capacity ................................................................... 9.5 litres  
Maximum top tank temperature ............................................ 108°C  
Temperature rise across engine (maximum rating dependent):  
- Maximum permissible external system resistance ............... 35 kPa  
- Thermostat operation range ................................................. 82°C to 95°C  
- Shutdown switch setting ..................................................... 114°C  
- Coolant pump method of drive ......................................... Gear  
- Recommended coolant immersion heater rating (minimum) ............................................................................. 0.75 kW  
- Recommended coolant ...................................................... S65890 - 1992, ASTM D3306 and ELC coolants to 1E1966

Duct allowance
Maximum additional restriction (duct allowance to cooling airflow and resultant minimum air flow) - Standby power

<table>
<thead>
<tr>
<th>Description</th>
<th>rpm</th>
<th>kPa</th>
<th>kg/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duct allowance with inhibited coolant at 53°C</td>
<td>1800</td>
<td>0.12</td>
<td>6.2</td>
</tr>
<tr>
<td>Duct allowance with inhibited coolant at 46°C</td>
<td>1800</td>
<td>0.200</td>
<td>5.6</td>
</tr>
</tbody>
</table>

Electrical system

Alternate current ................................. 138I  
Alternate voltage ................................... 12 volts  
Alternate output .................................... 100 amps  
Starter .................................................. AZF  
Starter voltage ....................................... 12 volts  
Starter motor voltage ............................. 4.0 kW  
Number of teeth on the flywheel ................... 126  
Pull-in current of starter motor solenoid ...... 12 volts 68 amps  
Hold-in current of starter motor solenoid ...... 12 volts 20 amps  
Engine stop method ................................ CAN link signal or Hardwire input to engine ECM

Cold start recommendations
Minimum required cranking speed over TDC ................................ 60 rpm

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Starter</th>
<th>Battery</th>
<th>Maximum breakaway current</th>
<th>Cranking current</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to -5°C</td>
<td>AZF</td>
<td>1 x 750CCA</td>
<td>NA</td>
<td>1000A</td>
</tr>
<tr>
<td>-5 to -20°C</td>
<td></td>
<td>2 x 750CCA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-20 to -25°C</td>
<td></td>
<td>2 x 900CCA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Battery capacity is defined by the 20 hour rate

Note: If a change to a low viscosity oil is made, the cranking torque necessary at low ambient temperatures is much reduced. The starting equipment has been selected to take advantage of this. It is important to change to the appropriate multigrade oil in anticipation of operating in low ambient temperatures

Exhaust system

Maximum back pressure - 1800 rpm .................................. 10 kPa  
Exhaust outlet, internal diameter ..................................... 115.9 mm
Fuel system

Injection components
- Injector: Electronic CRIN2
- Fuel pump: CB28

Fuel priming
- Priming pump type: Manual
- Maximum priming time: 180 seconds

Fuel feed
- Maximum fuel flow: 6.6 litres/min
- Maximum suction head at engine fuel pump inlet: 17 kPa
- Fuel temperature at engine fuel pump inlet: 75°C

Fuel specification
- Fuel standard: Various (contact Perkins Technical Department)

Fuel consumption

<table>
<thead>
<tr>
<th>Load</th>
<th>Type of operation and application</th>
<th>1800 rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>g/kWh</td>
<td>litres/hr</td>
</tr>
<tr>
<td>110% Prime power</td>
<td>210.2</td>
<td>59.1</td>
</tr>
<tr>
<td>100% Prime power</td>
<td>214.9</td>
<td>54.4</td>
</tr>
<tr>
<td>75% Prime power</td>
<td>229.1</td>
<td>43.5</td>
</tr>
<tr>
<td>50% Prime power</td>
<td>233.4</td>
<td>29.5</td>
</tr>
<tr>
<td>25% Prime power</td>
<td>253.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Induction system

Maximum air intake restriction
- Clean filter: 0.4 kPa
- Dirty filter: 0.8 kPa
- Air filter type: Paper element

Lubrication system
- Maximum total system oil capacity: 17.5 litres
- Minimum oil capacity in sump: 12.5 litres
- Maximum oil capacity in sump: 15.5 litres
- Maximum engine operating angles - Front up, front down, right side, left side: 7°
- Sump drain plug tapping size: 3/4 - 16 UNF
- Shutdown switch setting (where fitted)
- Oil pressure shut down switch: 90 kPa Falling

Lubricating oil
- Relief valve opening pressure: 430 kPa
- Pressure at maximum speed: 340 kPa
- Maximum continuous oil temperature (in rail): 125°C
- Oil consumption at full load (% of fuel): < 0.1

Recommended SAE viscosity

A multigrade oil must be used, which conforms to API CH4 or CI4. ACEA E5 must be used, see illustration below.

Mountings
- Maximum static bending moment at rear face of block: 1130 Nm
- Maximum permissible overhung load on the flywheel: Calculated on request
- Maximum bending moment at rear of flywheel housing: ± 3000 in Shock Nm

Load acceptance
- The data below complies with the requirements of classification 3 and 4 of ISO 8528-12 and G2 operating limits stated in ISO 8528-5.
- Initial load application: When engine reaches rated speed (15 seconds maximum after engine starts to crank).

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>1800 rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of prime power</td>
<td>%</td>
<td>66</td>
</tr>
<tr>
<td>Load</td>
<td>kWe</td>
<td>120</td>
</tr>
<tr>
<td>Transient frequency deviation</td>
<td>%</td>
<td>8.7</td>
</tr>
<tr>
<td>Frequency recovery time</td>
<td>Seconds</td>
<td>0.8</td>
</tr>
</tbody>
</table>
### Noise data

#### Noise levels

<table>
<thead>
<tr>
<th>Position</th>
<th>Prime power</th>
<th>Standby</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NA</td>
<td>99.7</td>
</tr>
<tr>
<td>R</td>
<td>NA</td>
<td>102.2</td>
</tr>
<tr>
<td>FR</td>
<td>NA</td>
<td>102.6</td>
</tr>
<tr>
<td>F</td>
<td>NA</td>
<td>103.7</td>
</tr>
<tr>
<td>FL</td>
<td>NA</td>
<td>101.9</td>
</tr>
<tr>
<td>L</td>
<td>NA</td>
<td>101.6</td>
</tr>
</tbody>
</table>

1 metre

45°

1 metre

45°