ENGINE PERFORMANCE CURVE

Rating: Gross Power
Application: Generator (60 Hz)
Target: 50 kWe Standby Market

Nominal Engine Power @ 1800 RPM

<table>
<thead>
<tr>
<th>Prime</th>
<th>kW</th>
<th>Standby</th>
<th>kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td>51</td>
<td>75</td>
<td>56</td>
</tr>
</tbody>
</table>

STANDARD CONDITIONS

- Air Intake Restriction: 12 in.H2O (3 kPa)
- Exhaust Back Pressure: 30 in.H2O (7.5 kPa)

Gross power guaranteed within + or - 5% at SAE J1995 and ISO 3046 conditions:

- 77 °F (25 °C) air inlet temperature
- 29.31 in.Hg (99 kPa) barometer
- 104 °F (40 °C) fuel inlet temperature
- 0.853 fuel specific gravity @ 60 °F (15.5 °C)

Conversion factors:
- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N·m = lb-ft x 1.356

All values are from currently available data and are subject to change without notice.

Notes:
- All OEM Gen Set Engine Applications must be prescreened for torsional vibration compatibility with the respective alternator end hardware.
- OEM Engine Application Engineering will perform this computer-based analysis work upon request.

Tier-3 Emission Certifications: Certified by:

* Revised Data
Curves 4045TF280180075

Engine Performance Curves 4045 - Generator August 2007
**Engine Installation Criteria**

### General Data
- **Model**: 4045TF280
- **Number of Cylinders**: 4
- **Bore and Stroke** - (in. (mm)): 4.19 x 5.00 (106 x 127)
- **Displacement** - (L): 275 (4.5)
- **Compression Ratio**: 19.0 : 1
- **Valves per Cylinder** - Intake/Exhaust: 1 / 1
- **Firing Order**: 1-3-4-2
- **Combustion System**: Direct Injection
- **Engine Type**: In-line, 4-Cycle
- **Aspiration**: Turbocharged
- **Engine Crankcase Vent System**: Open

### Physical Data
- **Length** - (mm): 33.9 (860)
- **Width** - (mm): 24.1 (612)
- **Height** - (mm): 39.1 (994)
- **Weight, with oil** - (lb (kg)): 72 (326)
  (Includes flywheel hsg., flywheel & electrics)
- **Center of Gravity Location** (Estimated based on Tier 2):
  - From Flywheel Hsg w/ 5-G Load: 600 (814)
- **Max. Allow. Static Bending Moment at Rear**
  - Face of Flywheel Hsg w/ 5-G Load: 125 (178)
- **Thrust Bearing Load Limit** - Forward/Rearward
  - Continuous: 500 (2224) / 225 (1000)
- **Max. Front of Crank. Torsional Vibration - DDA**: 0.25

### Air System
- **Max. Allowable Temp Rise - Ambient Air**
- **Engine Inlet** - °F (°C): 15 (8)
- **Max. Air Intake Restriction**
- **Dirty Air Cleaner** - in. H2O (kPa): 25 (6.25)
- **Clean Air Cleaner** - in. H2O (kPa): 12 (3)
- **Engine Air Flow** - ft³/min (m³/min): 173 (4.9) / 180 (5.1)
- **Intake Manifold Pressure** - psi (kPa): 8 (55) / 9 (62)
- **Air Cleaner Efficiency** - %: 99.9

### Electrical System
- **Min. Battery Capacity (CCA)** - (amp): 640 (570)
- **Max. Allow. Start. Circ't Resist.** - Ohm: 0.0012 (0.002)
- **Starter Rolling Current**: At 32 °F (0 °C) - amp: 780 (600)
  - At -22 °F (-30 °C) - amp: 1000 (700)
- **Noise - dB(A)** @ 1 m: 86.0* (86.3*)
- **Maximum Voltage From Engine Crankshaft/Generator Shaft to Ground** - VAC*: 0.15

### Exhaust System
- **Exhaust Flow** - ft³/min (m³/min): 424 (12.0) / 448 (12.7)
- **Exhaust Temperature** - °F (°C): 918 (492) / 945 (507)
- **Max. Exhaust Restriction** - H₂O (kPa): 30 (7.5)
- **Min. Exhaust Restriction** - H₂O (kPa): None
- **Max. Shear on Turbo Outlet** - lb (kg): 24 (11)

### Fuel System
- **Fuel Injection Pump**: Stanadyne DB4
- **Governor Type**: Mechanical
- **Total Fuel Flow** - lb/hr (kg/hr): 212 (96.0) / 212 (96.0)
- **Fuel Consumption** - lb/hr (kg/hr): 27.0 (12.3) / 29.3 (13.3)
- **Max. Fuel Temp.** - °F (°C): 176 (80)
- **Max. Fuel Return Pressure** - H₂O (kPa): 80 (20)

### Lubrication System
- **Oil Press. at Rated Speed** - psi (kPa): 50 (345) / 50 (345)
- **Min. Oil Pressure** - psi (kPa): 14.5 (100)
- **Max. Oil Carryover in Blow-by** - lb/hr (g/hr): 0.002 (1.0)
- **Max. Airflow in Blow-by** - g/hr (l/min): 26 (100)
- **Max. Crankcase Pressure** - H₂O (kPa): 2 (0.5)

### Performance Data
- **Rated Power** - hp (kW): 68 (51) / 75 (56)
- **Rated Speed** - rpm: 1800
- **Low Idle Speed**: 1400 / 1100
- **RPM @ Rated Speed** - Bosch No.: 17 (13) / 17 (13)
- **Friction Power**: 26.8 / 25.5
- **Altitude Capability** - ft (m): 10,000 (3050)

### Fuel Consumption -- lb/hr (kg/hr)
- **25 % Power**: 9.0 / 4.1
- **50 % Power**: 15.0 / 6.8
- **75 % Power**: 21.2 / 9.6
- **100 % Power**: 27.1 / 12.3

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All values at rated speed and power with standard options unless otherwise noted.

* Revised Data
Curve 4045TF280180075 Sheet 2 of 2

May 2008

Engine Performance Curves

4045 - Generator