

6M16G220/5e2

G-Drive Engine Datasheet

| Speed | Gross Engine Output | | |
|-------|---------------------|-----|-----|
| | COP | PRP | ESP |
| rpm | kWm | kWm | kWm |
| 1500 | 182 | 182 | 200 |

Ratings definitions

| | Continuous Power (COP) | Prime Power (PRP) | Standby Power (ESP) |
|-------------------------|------------------------|--|---------------------|
| Annual working time | Unlimited | Unlimited | ≤200 h |
| Mean engine load factor | 100% | ≤70% per 250 h | ≤80% per 24 h |
| Time at full load | Unlimited | ≤500 h per year | ≤25 h per year |
| Overload capacity | No | 1 h per 12 h (10% overload) ≤25h per year | No |

1) The power ratings are in accordance with ISO 3046.

2) Test conditions: 100 kPa, 25 °C air inlet temperature, relative humidity of 30%, with fuel density 0.84 kg/L.

3) The engine maybe operated at : up to 1000m and 30°C without power deration. For sustained operation above these conditions, derate by 3% per 300m, and 2% per 11°C.

4) Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan and optional equipment.

Basic data

| | | | |
|---|---|------------------------------|------------------------------|
| Engine model | 6M16G220/5e2 | No. of Cylinders/Valves | 6/12 |
| Bore×Stroke (mm) | 126×130 | Displacement (L) | 9.726 |
| Fuel system | Mechanical pump | Aspiration | Turbocharged and Intercooled |
| Compression ratio | 17:1 | Emission standard | EU Stage II |
| Overall Dimension (Length×Width×Height) (mm) | 1525×730×1063 | Engine net weight (kg) | 875 |
| Fuel supply advance angle (°) | 14±1 | | |
| Flywheel housing | SAE 1 | Flywheel | 11.5"/14" |
| Max. permitted installing angle (°) | Longitudinal inclination | Front /Rear | 10/10 |
| | Cross inclination | Left/Right | 45/15 |
| Permitted temperature ambient (°C) | -30-50 | Permitted altitude limit (m) | 4000 |
| Valve lash/clearance at cold (mm) | (intake valve:0.3±0.06) /(exhaust valve:0.4±0.06) | | |

Performance data

| | | | |
|-------------------------|------------|------------------------|--------------------|
| Idle Speed (rpm) | 650±50 | Max. Speed Limit (rpm) | 1545 |
| Mean Piston Speed (m/s) | 6.5 | BMEP (MPa) | 1.497 |
| Friction Power (kW) | / | Fan Power (kW) | 6.08 |
| Load factor | Power (kW) | Fuel consum. g/(kW.h) | Fuel consum. (L/h) |
| 10% | 18.2 | 318.7 | 6.9 |
| 20% | 36.4 | 242.0 | 10.5 |
| 25% | 45.6 | 226.1 | 12.3 |
| 30% | 54.7 | 216.5 | 14.1 |
| 40% | 72.9 | 207.5 | 18.0 |
| 50% | 91.2 | 201.6 | 21.9 |
| 60% | 109.3 | 196.4 | 25.6 |
| 70% | 127.5 | 194.8 | 29.6 |
| 75% | 136.7 | 193.9 | 31.6 |
| 90% | 164.0 | 192.0 | 37.5 |
| 100% | 182.4 | 193.8 | 42.1 |
| 111% | 201.7 | 193.0 | 46.3 |

Air intake system

| | | |
|---|--|--------|
| Air intake temperature rise (°C) | Permitted difference between turbocharger inlet temperature and ambient temperature (this parameter impacts emission, LAT and altitude capability) | ≤15 |
| Air intake resistance (kPa) | Clean filter | ≤3.5 |
| | Dirty filter | ≤7 |
| Needed air flow (kg/h) | Rated Power | 955 |
| | Standby Power | 1025 |
| Air filter efficiency | | ≥99.5% |
| Recommended Min. diameter of intake pipe (mm) | | 100 |

Intercooler system

| | | |
|--|---------------|------|
| Intercooler heat dissipating capacity (kJ/s) | Rated Power | 17.2 |
| | Standby Power | 20.9 |
| Intercooler efficiency | Rated Power | / |
| | Standby Power | / |
| Max. intake temperature when the ambient temperature is 25°C (°C) | | 55 |
| Permitted temperature difference between intake temperature and ambient temperature (°C) | | 30 |
| Permitted max. intake pressure drop of intercooler (kPa) | | 12 |
| Intercooler radiator cooling area (m ²) | | 23 |

Exhaust system

| | | |
|--|---------------------|-------|
| Permitted Max. exhaust back pressure (kPa) | | 6±0.5 |
| Max. exhaust temperature (°C) | Before turbocharger | ≤700 |
| | After turbocharger | ≤600 |
| Exhaust flow (kg/h) | Rated Power | 994 |
| | Standby Power | 1031 |
| Recommended Min. diameter of exhaust pipe (mm) | | 100 |
| Max. bending moment at the turbocharger flange (N·m) | | 10 |

Lubrication system

| | | |
|--|-------------|---------|
| Volume of oil pan (L) | | 24 |
| Oil pressure in normal condition (kPa) | Idle speed | 100-250 |
| | Rated Power | 330-550 |
| Lowest oil pressure alarm valve/highest alarm valve (kPa) | | 80/1000 |
| Temperature range in main oil passage under rated working condition (°C) | | 85~105 |
| Max. oil pressure while engine starts (kPa) | | 1000 |
| Opening pressure of main oil passage pressure limiting valve | | 450-550 |
| Oil flow (L/min) | | 118 |
| Oil fuel consumption ratio | | ≤0.2% |

Noise and Emission

| | | |
|--|-------------------------------|------|
| Exhaust smoke (FSN) | Rated working station | ≤2.0 |
| | Max. torque working condition | / |
| Diesel engine noise (Acoustic power level) (dB(A)) | | / |

Fuel system

| | |
|--------------------|-----------------------------------|
| Governor | Electric/Mechanical governor |
| Steady speed droop | ≤3%(Electric), ≤5-6% (Mechanical) |

| | | |
|---|---------------|-------|
| Max. fuel supply resistance of the fuel pump inlet at rated working condition (kPa) | 18 | |
| Max. fuel return resistance (kPa) | 22 | |
| Permitted Max. fuel inlet temperature (°C) | 50 | |
| Fuel supply flow (kg/h) | Rated Power | 35.34 |
| | Standby Power | 38.92 |
| Min. pressure of fuel pump (kPa) | 35 | |
| Recommended min. diameter of inlet pipe (mm) | 12 | |
| Recommended min. diameter of return pipe (mm) | 12 | |

Electric system

| | | |
|--|-----------------------------------|-----|
| Electric system voltage(V) | 24 | |
| Starter power/voltage (kW/V) | 5.4/24 | |
| Alternator power/voltage (kW/V) | 1.54kW/28V | |
| Permitted Max. electric resistance of the starting circuit (Ω) | 0.004 | |
| Recommended Min. sectional area of wire (mm ²) | 50 | |
| The lowest cold starting temperature (°C) | Without auxiliary starting device | -10 |
| | With auxiliary starting device | -30 |

Cooling system

| | |
|--|-----------|
| Water pump Transmission speed ratio | 1.19 |
| Permitted Min. coolant temperature when engine working (°C) | 40 |
| Coolant fill rate (L/min) | 11 |
| Max. time to fill (min) | 5 |
| Recommended Min. inside diameter of outlet water pipe(mm) | 45 |
| Min. pressure at water pump inlet without degassing device or with some degassing device (kPa) | 0 |
| Min. pressure at water pump inlet with full degassing device (kPa) | 50 |
| Max. degassing time(min) | 25 |
| Coolant capacity of engine (L) | 22 |
| Coolant capacity of radiator (L) | 68 |
| Water alarm temperature (°C) | 98±2 |
| Thermostat opening temp./ full open temp. (°C) | (71±2)/82 |
| Permitted Min. pressure in cooling system | 50 |
| Permitted Max. external resistance (at rated speed) | 50 |

Heat balance test data (with ambient temperature 42°C)

| | | |
|--|---------------|-------------|
| Pressure of water in/ water out (kPa / kPa) | Rated Power | 5.9/16.1 |
| | Standby Power | 5.5/16.2 |
| Coolant flow (m ³ /h) | Rated Power | 14.1 |
| | Standby Power | 14.1 |
| Temperature of water in/ water out (°C/°C) | Rated Power | 72.2/76.9 |
| | Standby Power | 74.2/79.2 |
| Temperature before/after intercooler (°C/°C) | Rated Power | 121.0/51.3 |
| | Standby Power | 131.0/52.2 |
| Pressure before /after intercooler (kPa / kPa) | Rated Power | 98.7/97.5 |
| | Standby Power | 113.2/111.9 |
| Heat taken away by Coolant | Rated Power | 76.3 |

| | | |
|---------------------------------------|---------------|-------------|
| (kJ/s) | Standby Power | 81.2 |
| Heat taken away by intercooler (kJ/s) | Rated Power | 17.2 |
| | Standby Power | 20.9 |
| Heat taken away by exhaust gas (kJ/s) | Rated Power | 122.1 |
| | Standby Power | 135 |
| Total heat dissipation (kJ/s) | | 412.4/452.9 |

Mounting system

| | |
|--|------|
| Inertia of flywheel (kg•m ²) | 0.95 |
| Inertia of crankshaft (kg•m ²) | 0.35 |

Fuel consum. Curve

