

12M33D1265E201 G-Drive Engine Data Sheet

| Speed | Gross Engine Output | | |
|-------------|---------------------|-------------|-------------|
| | COP | PRP | ESP |
| rpm | kWm | kWm | kWm |
| 1800 | 920 | 1150 | 1265 |

Ratings Definitions

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

Engine basic data

| | | | |
|--|--------------------------|-------------------------------------|------------------------------|
| Engine model | 12M33D1265E201 | Cylinder number/valve number | 12/48 |
| bore diameter /stroke mm | 150×185 | Displacement(L) | 39.2 |
| Fuel System | Mechanical Pump | Aspiration | Turbocharged and Iftercooled |
| Compression Ratio | 15:1 | Emission Standard | / |
| Overall Dimension (Length×Width×Height) (mm) | 2019×1338×1730 | Engine net weight (kg) | 3390 |
| Injection timing (°CA) | 23-24 | | |
| Flywheel housing | SAE 0 | Flywheel | 18 |
| Max. Permissible Fixing Angle (°) | Longitudinal Inclination | Front /Rear | / |
| | Cross Inclination | Left/Right | / |
| Dynamic angle (°) | Longitudinal Inclination | Front/Rear | / |
| | Cross Inclination | Exhaust pipe side /Intake pipe side | / |

| | | | |
|-------------------------------------|---|-------------------------------|------|
| Permitted temperature ambient °C | -10~50 | Permitted altitude limit m | 2000 |
| Valve lashes at cold (mm) | (intake valve:0.3±0.03) /(exhaust valve:0.4±0.03) | | |

Performance Data

| | | | |
|-------------------------|-----------------|----------------------------|-------------------------|
| Idle Speed (rpm) | 700-750 | Over Speed limit (rpm) | 1854 |
| Mean Piston Speed (m/s) | 11.1 | BMEP (MPa) | 1.956 |
| Friction Power (kW) | / | Fan Power (kW) | / |
| Load factor | Power kW | Fuel consum. g/kW.h | Fuel consum. L/h |
| 10% | 115 | 339.8 | 46.52 |
| 25% | 287.5 | 234.8 | 80.36 |
| 50% | 575 | 205.6 | 140.74 |
| 75% | 862.5 | 200.5 | 205.87 |
| 85% | 977.5 | 200.4 | 233.20 |
| 100% | 1150 | 203.6 | 278.74 |
| 110% | 1265 | 208.1 | 313.39 |

Air intake system

| | | |
|---|---|-------|
| Intake air temperature rise (°C) | Permitted difference between turbocharger inlet temperature and ambient temperature(this parameter impacts emission ,LAT and altitude capability) | ≤5 |
| Intake air resistance (kPa) | Clean filter | ≤3 |
| | Dirty filter | ≤5 |
| Air filter mass flow (kg/h) | | / |
| Air mass flow (kg/h) | Rated Power | 6728 |
| | Standby Power | 7028 |
| Clear efficiency of air filter (%) | | 0.995 |
| Recommended Min. diameter of intake pipe (mm) | | 160 |

Inter cooling system

| | | |
|--|---------------|-------|
| Intercooler heat dissipating capacity (KJ/S) | Rated Power | 277.6 |
| | Standby Power | 322.9 |
| Intercooler efficiency (%) | Rated Power | ≥85 |
| | Standby Power | ≥85 |
| Max. intake temperature (°C) | | 55 |

| | |
|---|-----|
| Max. difference between intake temperature and ambient temperature (°C) | 30 |
| Permitted max. intake pressure drop of intercooler (kPa) | 12 |
| Recommended intercooler radiator cooling area (m ²) | 170 |

Exhaust system

| | | |
|--|---------------------|------|
| Max. exhaust back pressure (kPa) | 7.5 | |
| Max. exhaust temperature (°C) | Before turbocharger | 700 |
| | After turbocharger | 550 |
| Recommended muffler mass flow/volume (kg/h) | / | |
| Exhaust-gas mass flow (kg/h) | Rated Power | 6962 |
| | Standby Power | 7231 |
| Recommended Min. diameter of exhaust pipe (mm) | 220 | |
| Max. bending moment of turbocharged flange (N•m) | 10 | |

Lubrication system

| | | |
|---|-------------|---------|
| Volume of oil pan (L) | 146 | |
| Oil pressure in normal condition (kPa) | Idle speed | ≥200 |
| | Rated Power | 450~650 |
| Alarm for low & high oil pressure (kPa) | 200/1000 | |
| Temperature range in main oil passage at rated working condition (°C) | 85~105 | |
| max. oil temperature (°C) | / | |
| Max. oil pressure while engine starting (kPa) | 1000 | |
| Opening pressure of main oil passage pressure limiting valve (kPa) | 500-550 | |
| Max. Oil flow (L/min) | ≥392 | |
| Oil consumption | ≤0.4% | |

Noise and Emission

| | | |
|---------------------------|---------------------------|--------|
| Emission standard | Off-road stageII | |
| Exhaust smoke (FSN) | Rated Power | Rb≤1.5 |
| | Standby Power | / |
| Diesel engine noise dB(A) | sound power level : 120.7 | |

Fuel system

| | |
|-------------------------------|-------------------|
| Injection pump type | Mechanical |
| Governor | Electric governer |
| Steady speed governing factor | ±3% |

| | | |
|--|---------------|-------|
| Max supply fuel restriction at rated power conditon (kPa) | | 13 |
| Return restriction in pipe (kPa) | | 15 |
| Max. supply fuel temperature at rated power condition (°C) | | 45 |
| Max. flow of fuel suply (kg/h) | Rated Power | 234 |
| | Standby Power | 263.2 |
| Min. pressure of fuel pump (kPa) | | 35 |
| Min. Ventilation rate of fuel tank (L/h) | | / |
| Recommended diameter of inlet pipe (mm) | | 10 |
| Recommended diameter of return pipe (mm) | | 10 |

Electrical system

| | | |
|--|--------------------------|---------|
| Electrical system voltage (V) | | 24 |
| Motor power/ working voltage (kW/V) | | 10/24 |
| Battery charging Alternator/ working voltage (kW/V) | | 1.54/28 |
| Permitted max. electric resistance of motor control lines (Ω) | | 0.002 |
| Recommended Min. conductor cross-sectional area (mm ²) | | 70 |
| The lowest cold starting temperature (°C) | No aided starting device | -5 |
| | Aided starting device | -10 |

Cooling system

| | | |
|--|--|-------|
| Water pump Transmission ratio | | 1.9 |
| Min. coolant temperature of engine working (°C) | | 50 |
| Min. water fill rate (L/min) | | 17.4 |
| Max. initial fill time (min) | | 9 |
| Recommended Min diameter of outside water pipe(mm) | | 45 |
| Min. pressure at water pump inlet at No or only a part of degassing Device (kPa) | | 50 |
| Min. pressure at water pump inlet at Complete degassing device (kPa) | | 0 |
| Max. deaeration time(min) | | 15 |
| Min. expansion tank volume (% total cooling system capacity) | | / |
| Min expansion space (% total cooling system capacity) | | / |
| Coolant capacity of engine (L) | | 75.94 |

| | |
|---|------------|
| Coolant capacity of radiator (L) | / |
| High temperature of alarm (°C) | 95 |
| Thermostat opening temp./ full open temp. (°C) | 77(1/-)/87 |
| Min. permitted pressure in cooling system (kPa) | 50 |
| Max. permitted external resistance (at rated speed) (kPa) | 50 |

Heat balance test data (ambient temperature: 24.9°C)

| | | |
|---|---------------|---------------------------------------|
| Pressure of water in/ water out (kPa / kPa) | Rated Power | left: -20.6/62.3; right: -29.3/69.6 |
| | Standby Power | left: -24.1/65.7; right: -31.4/82.7 |
| Coolant mass flow (m ³ /h) | Rated Power | left: 36.7; right: 37.0 |
| | Standby Power | left: 36.3; right: 39.3 |
| Temperature of water in/ water out (°C/°C) | Rated Power | left: 86.6/91.3; right: 86.6/91.6 |
| | Standby Power | left: 86.1/91.3; right: 86.1/91.1 |
| Temperature of intake air : before/after intercooler (°C/°C) | Rated Power | left: 199.0/57.7; right: 200.0/58.2 |
| | Standby Power | left: 221.5/68.1; right: 230.0/65.3 |
| Pressure of intake air :before /after intercooler (kPa / kPa) | Rated Power | left: 220.2/206.9; right: 223.4/203.2 |
| | Standby Power | left: 243.8/230.5; right: 251.8/231.0 |
| Heat be taken away by Coolant (kJ/s) | Rated Power | 366.3 |
| | Standby Power | 446.5 |
| Heat be taken away by intercooler (kJ/s) | Rated Power | 277.6 |
| | Standby Power | 322.9 |
| Heat be taken away by exhaust gas (kJ/s) | Rated Power | 952.1 |
| | Standby Power | 1043 |
| Gross Heat of Engine (kJ/s) Rated Power/Standby Power | | 2308.9/2563.3 |

Mounting system

| | | |
|--|------|---|
| Inertia of complete engine (kg•m ²) | / | |
| | / | |
| | / | |
| Inertia of flywheel (kg•m ²) | 7.18 | |
| Inertia of crankshaft (including crankshaft gear) (kg•m ²) | 4.52 | |
| Centroid position mm | X | / |
| | Y | / |
| | Z | / |
| Permitted static bending moment at flywheel housing flange face | / | |