

6M33G660/5e2

G-Drive Engine Datasheet

Speed	Gross Engine Output		
	COP	PRP	ESP
rpm	kWm	kWm	kWm
1500	460	520	572

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	6M33G660/5e2	No. of Cylinders/Valves	6/24
Bore×Stroke (mm)	150×185	Displacement (L)	19.6
Fuel system	Mechanical pump	Aspiration	Turbocharged and Intercooled
Compression ratio	15:1	Emission standard	EU Stage II
Overall Dimension (Length×Width×Height) (mm)	2254×1138×1528	Engine net weight (kg)	2090
Fuel supply advance angle (°)	20-21		
Flywheel housing	SAE 1	Flywheel	14"
Max. permitted installing angle (°)	Longitudinal inclination	Front /Rear	10/10
	Cross inclination	Left/Right	22.5/22.5
Permitted temperature ambient (°C)	-10-50	Permitted altitude limit (m)	2000
Valve lash/clearance at cold (mm)	(intake valve:0.3±0.03) /(exhaust valve:0.4±0.03)		

Performance data

Idle Speed (rpm)	700-750	Max. Speed Limit (rpm)	1545
Mean Piston Speed (m/s)	9.25	BMEP (MPa)	2.122
Friction Power (kW)	/	Fan Power (kW)	15
Load factor	Power (kW)	Fuel consum. g/(kW.h)	Fuel consum. (L/h)
110%	574.2	200.9	137.3
100%	519.9	198.4	122.8
90%	467.9	198.9	110.8
75%	390.3	199.7	92.8
60%	312.0	203.9	75.7
50%	260.3	207.9	64.4
40%	207.1	214.4	52.9

25%	130.6	238.0	37.0
10%	53.1	249.7	15.8

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)	5
Air intake resistance (kPa)	Clean filter	≤3
	Dirty filter	≤6
Needed air flow (kg/h)	Rated Power	2752
	Standby Power	2933
Air filter efficiency		≥99.5%
Recommended Min. diameter of intake pipe (mm)		160

Intercooler system

Intercooler heat dissipating capacity (kJ/s)	Rated Power	101.3
	Standby Power	119.7
Intercooler efficiency	Rated Power	≥82%
	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)		15
Intercooler radiator cooling area (m ²)		100.6

Exhaust system

Permitted Max. exhaust back pressure (kPa)		7.5
Max. exhaust temperature (°C)	Before turbocharger	700
	After turbocharger	550
Exhaust flow (kg/h)	Rated Power	2856
	Standby Power	3048
Recommended Min. diameter of exhaust pipe (mm)		220
Max. bending moment at the turbocharger flange (N•m)		10

Lubrication system

Volume of oil pan (L)		60.5
Oil pressure in normal condition (kPa)	Idle speed	≥350
	Rated Power	400~650
Lowest oil pressure alarm valve/highest alarm valve (kPa)		200/1000
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		600±25
Oil flow (L/min)		≥263
Oil fuel consumption ratio		≤0.4%

Noise and Emission

Exhaust smoke (FSN)	Rated working station	≤1.5
	Max. torque working condition	/
Diesel engine noise (Acoustic power level) (dB(A))		117.6

Fuel system

Governor		Electric governor
Steady speed droop		≤3%
Max. fuel supply resistance of the fuel pump inlet at rated working condition (kPa)		13
Max. fuel return resistance (kPa)		15
Permitted Max. fuel inlet temperature (°C)		45
Fuel supply flow (kg/h)	Rated Power	103.1
	Standby Power	114.5
Min. pressure of fuel pump (kPa)		35
Recommended min. diameter of inlet pipe (mm)		10
Recommended min. diameter of return pipe (mm)		10

Electric system

Electric system voltage(V)		24
Starter power/voltage (kW/V)		8.5/24
Alternator power/voltage (kW/V)		1.54/28V
Permitted Max. electric resistance of the starting circuit (Ω)		0.008
Recommended Min. sectional area of wire (mm ²)		70
The lowest cold starting temperature (°C)	Without auxiliary starting device	-5
	With auxiliary starting device	-10

Cooling system

Water pump Transmission speed ratio		2 (1500rpm) , 1.67 (1800rpm)
Permitted Min. coolant temperature when engine working (°C)		50
Coolant fill rate (L/min)		18.1
Max. time to fill (min)		2.3
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)		50
Min. pressure at water pump inlet with full degassing device (kPa)		0
Max. degassing time(min)		15
Coolant capacity of engine (L)		41.63
Coolant capacity of radiator (L)		85
Water alarm temperature (°C)		95
Thermostat opening temp./ full open temp. (°C)		(80±2)/92
Permitted Min. pressure in cooling system		50
Permitted Max. external resistance (at rated speed)		50

Heat balance test data (with ambient temperature 29.1 °C)

Pressure of water in/ water out (kPa / kPa)	Rated Power	1.5/71.7
	Standby Power	2.8/75.7
Coolant flow (m ³ /h)	Rated Power	42.9
	Standby Power	43.2
Temperature of water in/ water out (°C/°C)	Rated Power	89.4/92.8
	Standby Power	89.1/92.8
Temperature before/after intercooler (°C/°C)	Rated Power	190.0/58.1
	Standby Power	204.0/57.8
Pressure before /after intercooler (kPa / kPa)	Rated Power	209.1/205.1
	Standby Power	234.7/231.1
Heat taken away by Coolant (kJ/s)	Rated Power	156.9
	Standby Power	171.9
Heat taken away by intercooler (kJ/s)	Rated Power	101.3
	Standby Power	119.7
Heat taken away by exhaust gas (kJ/s)	Rated Power	411.2
	Standby Power	450.4
Total heat dissipation (kJ/s)		1216.9/1346.4

Mounting system

Inertia of flywheel (kg•m ²)	4.76
Inertia of crankshaft (kg•m ²)	2.22

Fuel consum. Curve

