

## 6M33D633E201 G-Drive Engine Data Sheet

Speed	Gross Engine Output		
	COP	PRP	ESP
rpm	kWm	kWm	kWm
<b>1800</b>	<b>460</b>	<b>575</b>	<b>633</b>

### 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	6M33D633E201	Cylinder number/valve number	6/24
bore diameter /stroke mm	150×185	Displacement(L)	19.6
Fuel System	Mechanical Pump	Aspiration	Turbocharged and Intercooled
Compression Ratio	15	Emission Standard	Off-road stageII
Overall Dimension (Length×Width×Height) (mm)	1698×1068×1513	Engine net weight (kg)	2090
Injection timing ( °CA)	24-25		
Flywheel housing	SAE1	Flywheel	14
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)	(0.3±0.03) / (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)	18
<b>Load factor</b>	<b>Power kW</b>	<b>Fuel consum. g/kW.h</b>	<b>Fuel consum. L/h</b>
10%	57.5	324.7	22.23
25%	143.75	233.6	39.98
50%	287.5	205.1	70.20
75%	431.25	198.3	101.81
85%	488.75	200	116.37
100%	575	203	138.96
110%	632.5	206.7	155.64

## 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	3240
	Standby Power	3431
Clear efficiency of air filter (%)		≥99.5
Recommended Min. diameter of intake pipe (mm)		160

## Inter cooling system

Intercooler heat dissipating capacity (KJ/S)	Rated Power	118.4
	Standby Power	141.2
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)	15
Recommended intercooler radiator cooling area (m <sup>2</sup> )	100.6

## Exhaust system

Max. exhaust back pressure (kPa)	7.5	
Max. exhaust temperature (°C)	Before turbocharger	700
	After turbocharger (Rated power)	550
Recommended muffler mass flow/volume (kg/h)	/	
Exhaust-gas mass flow (kg/h)	Rated Power	3356
	Standby Power	3561
Recommended Min. diameter of exhaust pipe (mm)	220	
Max. bending moment of turbocharged flange (N·m)	10	

## Lubrication system

Volume of oil pan (L)	60.5	
Oil pressure in normal condition (kPa)	Idle speed	≥350
	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)	550±25	
Max. Oil flow (L/min)	≥263	
Oil consumption	≤0.4	

## Noise and Emission

Emission standard	Off-road stageII	
Exhaust smoke (FSN)	Rated Power	≤1.5
	Standby Power	/
Diesel engine noise dB(A)	107.4	

## Fuel system

Injection pump type	Mechanical pump
Governor	Electric governor

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	116.2
	Standby Power	130.4
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)		8.5/24
Battery charging Alternator/ working voltage (kW/V)		1.5/28
Permitted max. electric resistance of motor control lines (Ω)		0.002
Recommended Min. conductor cross-sectional area (mm <sup>2</sup> )		70
The lowest cold starting temperature (°C)	No aided starting device	-5
	Aided starting device	-10

## Cooling system

Water pump Transmission ratio		2
Min. coolant temperature of engine working (°C)		50
Min. water fill rate (L/min)		18.1
Max. initial fill time (min)		2.3
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)	41.63
Coolant capacity of radiator (L)	/
High temperature of alarm (°C)	95
Thermostat opening temp./ full open temp. (°C)	(76±2) /88
Min. permitted pressure in cooling system (kPa)	50
Max. permitted external resistance (at rated speed) (kPa)	50

### Heat balance test data(The environment temperature 42.7°C )

Pressure of water in/ water out (kPa / kPa)	Rated Power	-34.9/83.9
	Standby Power	-31.3/78.3
Coolant mass flow (m <sup>3</sup> /h)	Rated Power	38.3
	Standby Power	36.6
Temperature of water in/ water out (°C/°C)	Rated Power	83.5/88.2
	Standby Power	86.2/91.6
Temperature of intake air : before/after intercooler (°C/°C)	Rated Power	189.8/58.9
	Standby Power	207.0/59.6
Pressure of intake air :before /after intercooler (kPa / kPa)	Rated Power	222.3/213.7
	Standby Power	243.9/234.5
Heat be taken away by Coolant (kJ/s)	Rated Power	193.6
	Standby Power	212.5
Heat be taken away by intercooler (kJ/s)	Rated Power	118.4
	Standby Power	141.2
Heat be taken away by exhaust gas (kJ/s)	Rated Power	422.3
	Standby Power	482.3
Gross Heat of Engine (kJ/s) Rated Power/Standby power		1355.7/1521.4

### Mounting system

Inertia of complete engine (kg •m <sup>2</sup> )		/
		/
		/
Inertia of flywheel (kg•m <sup>2</sup> )		4.76
Inertia of crankshaft (including crankshaft gear) (kg•m <sup>2</sup> )		2.22
Centroid position mm	X	/
	Y	/
	Z	/
Permitted static bending moment at flywheel housing flange face		/

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