6M21G440/5e2 G-Drive Engine Datasheet

Speed	Gross Engine Output		
	COP	PRP	ESP
rpm	kWm	kWm	kWm
1500	312.8	368	405

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	6M21G440/5e2	No. of Cylinders/Valves	6/24
Bore×Stroke (mm)	127×165	Displacement (L)	12.54
Fuel system	Mechanical pump	Aspiration	Turbocharged and Intercooled
Compression ratio	16:1	Emission standard	EU Stage II
Overall Dimension （Length×Width×Height）(mm)	1556×817×1094	Engine net weight (kg)	1000
Fuel supply advance angle （°）	/		
Flywheel housing	SAE 1	Flywheel	14"
Max. permited installing angle （°）	Longitudinal inclination	Front /Rear	10/10
	Cross inclination	Left/Right	45/15
Permitted temperature ambient (℃)	-30-50	Permitted altitude limit (m)	2300
Valve lash/clearance at cold (mm)	（intake valve:0.4）/(exhaust valve:0.6)		

Performance data

Idle Speed (rpm)	600±50	Max. Speed Limit (rpm)	1545
Mean Piston Speed (m/s)	8.25	BMEP (MPa)	/
Friction Power (kW)	/	Fan Power (kW)	13
Load factor	Power (kW)	Fuel consum. g/(kW.h)	Fuel consum. (L/h)
14%	50.3	238.2	14.3
20%	73.6	219.6	19.2
25%	91.9	213.2	23.3
30%	110.2	207.1	27.2
40%	147.0	200.6	35.1
50%	183.7	197.1	43.1
60%	220.5	195.1	51.2
70%	257.3	193.8	59.4
75%	275.7	193.4	63.5
90%	330.9	193.8	76.3
99%	366.1	195.1	85.0
110%	405.4	196.7	94.9

Air intake system

Air intake temperature rise （℃）	Permitted difference between turbocharger inlet temperature and ambient temperature(this parameter impacts emission ,LAT and altitude capability)	30
Air intake resistance (kPa)	Clean filter	≤3
	Dirty filter	≤6
Needed air flow (kg/h)	Rated Power	1774
	Standby Power	1899
Air filter efficiency		≥99.9%
Recommended Min. diameter of intake pipe (mm)		100

Intercooler system

Intercooler heat dissipating capacity（kJ/s）	Rated Power	67.4
	Standby Power	81.1
Intercooler efficiency	Rated Power	/
	Standby Power	/
Max. intake temperature when the ambient temperature is 25℃ （℃）		55
Permited temperature difference between intake temperature and ambient temperature (℃)		30
Permitted max. intake pressure drop of intercooler (kPa)		12
Intercooler radiator cooling area (m^2)		12.5

Exhaust system

Permited Max. exhaust back pressure (kPa)		7.5
Max. exhaust temperature (℃)	Before turbocharger	≤740
	After turbocharger	≤580
Exhaust flow （kg/h）	Rated Power	1845
	Standby Power	1979
Recommended Min. diameter of exhaust pipe (mm)		100
Max.bending moment at the turbocharger flange（N•m）		19

Lubrication system

Volume of oil pan (L)		36
Oil pressure in normal condition (kPa)	Idle speed	100-250
	Rated Power	350-550
Lowest oil pressure alarm valve/highest alarm valve （kPa）		80/1000
Temperature range in main oil passage under rated working condition (℃)		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）		190
Oil fuel consumption ratio		≤0.2%

Noise and Emission

Exhaust smoke (FSN)	Rated working station	≤1.5
	Max. torque working conditon	/
Diesel engine noise （Acoustic power level）(dB(A))		112.3

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 conditon（kPa）		18
Max. fuel return resistance（kPa）		22
Permited Max. fuel inlet temperature （℃）		70
Fuel suply flow（kg/h）	Rated Power	71.6
	Standby Power	79.67
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）		1.96/28V
Permited Max. electric resistance of the starting circuit（Ω）		0.004
Recommended Min. sectional area of wire（mm²）		50
The lowest cold starting temperature（℃）	Without auxiliary starting device	-10
	With auxiliary starting device	-30

Cooling system

Water pump Transmission speed ratio	2.01
Permited Min. coolant temperature when engine working（℃）	50
Coolant fill rate (L/min)	3-7
Max. time to fill (min)	17
Recommended Min. inside diameter of outlet water pipe(mm)	75
Min. pressure at water pump inlet without degassing device or with some degassing device（kPa）	/
Min. pressure at water pump inlet with full degassing device（kPa）	50
Max. degassing time(min)	25
Coolant capacity of engine（L）	25
Coolant capacity of radiator（L）	/
Water alarm temperature （℃）	98±2
Thermostat opening temp./ full open temp.（℃）	76（±2）/ 88
Permitted Min. pressure in cooling system	50
Permitted Max. external resistance（at rated speed）	50

Heat balance test data (with ambient temperature 26.8℃)

Pressure of water in/ water out （kPa / kPa）	Rated Power	0/35.1
	Standby Power	0/35.3
Coolant flow （m^3/h）	Rated Power	19.5
	Standby Power	20.4
Temperature of water in/ water out （℃/℃）	Rated Power	75.9/82.5
	Standby Power	78.6/85.6
Temperature before/after intercooler（℃/℃）	Rated Power	180/50
	Standby Power	203/52.3
Pressure before /after intercooler （kPa / kPa）	Rated Power	225.6/222.6
	Standby Power	248.7/245.7
Heat taken away by Coolant	Rated Power	134.2

（kJ/s）	Standby Power	148.7
Heat taken away by intercooler （kJ/s）	Rated Power	67.4
	Standby Power	81.1
Heat taken away by exhaust gas （kJ/s）	Rated Power	250.7
	Standby Power	277.3
Total heat dissipation（kJ/s）		854.2/951.3

Mounting system

Inertia of flywheel（kg•m^2）	1.34
Inertia of crankshaft（kg•m^2）	0.064

Fuel consum. Curve

Fuel consumption curve versus engine power