Ratings

RPM	Gross Engine Output	
	PRP kWm	ESP kWm
1500	18	20

Basic data

Engine model 4M06G20/5
N° of Cylinders / Valves ..... 4 / 8
Cylinders arrangement ..... In line
Bore x Stroke (mm) ..... 89 × 92
Displacement (L) 2.3
Thermodynamic Cycle ..... Diesel 4 stroke
Cooling System ..... Liquid (water + 50% antifreeze)
Injection System ..... Direct
Fuel System ..... Mechanical Pump
Aspiration ..... Natural
Compression ratio ..... 17.5 : 1
Flywheel housing ..... SAE 4
Flywheel ..... 7.5"
N° of teeth on flywheel ring gear 104
Inertia of flywheel (kg/m²) 0.24
Inertia of crankshaft (kg/m²) 0.039
Emission standard ..... N/A
Overall Dimensions with radiator (Length x Width x Height) (mm) ..... 1084 × 635 × 785
Engine dry weight without radiator and without radiator pipes (kg) ..... \
Engine dry weight with radiator and radiator pipes (kg) 277
Engine wet weight with radiator (includes oil, coolant) (kg) 305

Air intake system

Air intake temperature rise (°C) .....≤ 5
Air intake restriction clean filter (mBar) .....≤ 35
Air intake restriction dirty filter (mBar) .....≤ 60
Recommended air flow @ PRP (m³/min) 1.38
Recommended air flow @ ESP (m³/min) 1.38
Min. diameter of intake pipe (mm) 50

Aftercooling system

Aftercooler system type .....N/A
Aftercooler heat dissipating capacity @ PRP (kJ/s) .....N/A
Aftercooler heat dissipating capacity @ ESP (kJ/s) .....N/A
Max. intake temperature @ 25°C ambient temperature (°C) .....N/A
Max. difference between intake temperature and ambient temperature (°C) .....N/A
Max. intake pressure drop of aftercooler (mBar) .....N/A

Cooling system with standard radiator

System designed for ambient temperature up to (°C) 50
Radiator type ..... Mechanical
Fan type .....Belt driven pusher
Min. inside diameter of coolant outlet pipe (mm) 32
Coolant capacity of radiator and pipes (L) 11
Coolant alarm (shutdown) temperature (°C) 105
Thermostat opening temperature / full open temperature (°C) .....72 / 82
Min. pressure in cooling system (Bar) 0.15
Coolant capacity of the engine (L) 5
Cooling fan airflow (m³/min) 48
Max additional restriction - Duct allowance (Pa) 120

Exhaust system

Max. exhaust back pressure (mBar) 80
Max. exhaust temperature before turbocharger (°C) .....≤ 700
Max. exhaust temperature after turbocharger (°C) .....N/A
Exhaust flow @ PRP (m³/min) 4.3
Exhaust flow @ ESP (m³/min) 4.5
Min. diameter of exhaust pipe (mm) 50
Max. bending moment of exhaust gas exit flange (Nm) 10

Lubrication system

Oil capacity Low / High (L) .....7.1 / 9.5
Oil pressure in normal condition idle speed (Bar) .....≥ 1
Oil pressure in normal condition at 1500 Rpm @ PRP (Bar) ..... 2 - 5
Lowest oil pressure alarm (shutdown) (Bar) 1
Max. oil temperature (°C) 115
Oil flow (L/min) 22
Oil fuel consumption ratio based on engine fuel consumption data ..... ≤ 0.4 %
Total system capacity (including filters) (L) 11.5

Heat balance test data (with ambient temperature 28 °C)

Total heat dissipation @ ESP (kJ/s) 40.2

Fuel system

Governor .....Electronic
Max. restriction at fuel pump inlet (Bar) 0.5
Max. fuel return restriction (Bar) 0.5
Max. fuel inlet temperature (°C) 70
Fuel supply flow (L/hr) 40.2
Min. pressure of fuel pump (Bar) 1.3
Min. diameter of inlet pipe (mm) 10
Min. diameter of return pipe (mm) 10

Electrical system

Electrical system voltage (negative to ground) (Vdc) 12
Starter power (kW) 3
Battery charger current (A) 55
Battery charger absorbed power (kW) 0.8
Max. electric resistance of starting circuit (Ω) 0.004
Min. sectional area of wire (mm²) 50
Min. cold start temperature without auxiliary starting device (°C) [1] ..... - 5
Min. cold start temperature with auxiliary starting device (°C) [1] ..... - 15

[1] Engines used in emergency standby application or application that require immediate start under load, must be equipped with coolant heaters. Baudouin recommend heaters installation to be executed by providing constant coolant circulation across all the engine components. Two heaters are required for V-type engines, one per each side.

Performance data

Mean Piston Speed (m/s) 4.6

BMEP (Bar) 6,95

Fan absorbed power (kW) 0.5

Noise

Diesel engine noise (Acoustic power level) (dB(A)) 105.9

Noise - upper side (dB(A)) 90.5

Noise - right side (view from flywheel) (dB(A)) 90.3

Noise - left side (view from flywheel) (dB(A)) 92.3

Noise – front (radiator) side (dB(A)) 93

Noise – rear (flywheel) side (dB(A)) 93.9

Notes :

a) Noise test made at 100% of the ESP power, 1 mt. distance, on engine without radiator, without cooling fan and without silencer.

b) Noise test refers to GB/T 1859 norm : Reciprocating internal combustion engines. Measurement of emitted airborne noise. Engineering method and survey method

Fuel consumption

Rating	gr/kWh	L/hr
100% ESP	219	5.2
100% PRP	218.3	4.7
75% PRP	224.1	3.6
50% PRP	244.4	2.6
25% PRP	350	1.9
	Fuel consumption tolerance + 3 %	

Ratings definitions

Emergency Standby Power (ESP)

Emergency Standby Power is the maximum power available for a varying load for the duration of a main power network failure. The average load factor over 24 hours of operation should not exceed 70% of the engine's ESP power rating. Typical operational hours of the engine is 200 hours per year, with a maximum usage of 500 hours per year. This includes an annual maximum of 25 hours per year at the ESP power rating. No overload capability is allowed. The engine is not to be used for sustained utility paralleling applications.

Prime Power (PRP)

Prime Power is the maximum power available for unlimited hours of usage in a variable load application. The average load factor should not exceed 70% of the engine's PRP power rating during any 24 hour period. An overload capability of 10% is available, however, this is limited to 1 hour within every 12 hour period.

1) All ratings are based on operating conditions under ISO 8528-1, ISO 3046, DIN6271. Performance tolerance of ±5%.
2) Test conditions : 100 kPa, 25°C air inlet temperature, relative humidity of 30%, with fuel density 0.84 kg/L. Derating may be required for conditions outside these; please contact the factory for details.
3) 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.