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## Ratings

RPM	Gross Engine Output			Net Engine Output *		
	PRP	DCP	ESP	PRP	DCP	ESP
	kWm	kWm	kWm	kWm	kWm	kWm
1500	2210	2210	2450	2208.4	2208.4	2448.4


1 kWm = 1,34 BHP

\* This data is calculated without radiator.

## Basic data

Engine model	.....	20M33G2750/5
N° of Cylinders / Valves	.....	20 / 80
Cylinders arrangement	.....	At Vee
Bore x Stroke (mm)	.....	150 x 185
Displacement (L)	.....	65.4
Thermodynamic Cycle	.....	Diesel 4 stroke
Mean Piston Speed (m/s)	.....	9.25
BMEP @ ESP (Bar)	.....	29.97
Cooling System	.....	Liquid (water + 50% antifreeze)
Injection System	.....	Direct
Fuel System	.....	High Pressure Common Rail
Aspiration	.....	Turbocharged and Aftercooled
Compression ratio	.....	14 : 1
Flywheel housing	.....	SAE 00
Flywheel	.....	21"
N° of teeth on flywheel ring gear	.....	159
Inertia of flywheel (kg·m <sup>2</sup> )	.....	8.64
Inertia of crankshaft (kg·m <sup>2</sup> )	.....	16.24
Emission standard	.....	N/A
Overall Dimensions without radiator (Length x Width x Height) (mm)	.....	3278 x1633x2144
Engine dry weight without radiator and without radiator pipes (kg)	.....	6650

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### Air intake system

Air intake temperature rise (°C) .....	≤ 5
Air intake restriction clean filter (mBar) .....	≤ 30
Air intake restriction dirty filter (mBar) .....	≤ 75
Recommended air flow @ PRP (m <sup>3</sup> /min) .....	150.1
Recommended air flow @ ESP (m <sup>3</sup> /min) .....	169.5
Min. diameter of intake pipe (mm) .....	140

### Aftercooling system

Aftercooler system type .....	Air to Water
Max. intake temperature @ 25°C ambient temperature (°C) .....	55
Max. difference between intake temperature and ambient temperature (°C) .....	30
Max. intake pressure drop of aftercooler (mBar) .....	80

### Lubrication system


Oil capacity Low / High (L) .....	210/240
Oil pressure in normal condition idle speed (Bar) .....	≥ 2
Oil pressure in normal condition at 1500 Rpm @ PRP (Bar) .....	4 - 6.5
Lowest oil pressure alarm (shutdown) (Bar) .....	2
Max. oil temperature (°C) .....	105
Oil flow at 1500 Rpm (L/min) .....	≥ 640
Oil fuel consumption ratio based on engine fuel consumption data .....	≤ 0.3 %
Total system capacity (including filters) (L) .....	319

### Heat balance test data (with ambient temperature 25 °C)

Total heat dissipation @ ESP (kJ/s) .....	3584.6
- Heat Rejection to HT Circuit @ ESP (kJ/s) .....	912.3
- Heat Rejection to LT Circuit @ ESP (kJ/s) .....	636.9
- Radiated Heat to Ambient @ ESP (kJ/s) .....	55.7
- Heat Rejected to Exhaust @ ESP (kJ/s) .....	1979.7

### Exhaust system

Max. exhaust back pressure (mBar) .....	75
Max. exhaust temperature before turbocharger (°C) .....	780
Max. exhaust temperature after turbocharger (°C) .....	580
Exhaust flow @ PRP (m <sup>3</sup> /min) .....	514.9
Exhaust flow @ ESP (m <sup>3</sup> /min) .....	581.9
Min. diameter of exhaust pipe (mm) .....	200
Max. bending moment of exhaust gas exit flange (Nm) .....	10

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### Cooling system

Min. inside diameter of coolant outlet pipe LT/HT(mm) .....	60 / 80
Coolant alarm (shutdown) temperature (°C) .....	108
Thermostat opening temperature / full open temperature (°C) .....	80 / 92
Coolant capacity of the engine (L) .....	140
Max. additional restriction for external cooling circuit (Bar) .....	0.34
Max additional restriction - Duct allowance (Pa) .....	150

### Fuel system


Governor .....	ECU
Governor steady state speed stability at constant load (ISO 8528-5 Class G3) <sup>1</sup> .....	≤ +/- 0.5 %
Max. restriction at fuel inlet (Bar) .....	0.5
Max. pressure at fuel inlet (Bar) .....	1
Max. fuel return restriction (Bar) .....	1
Max. fuel inlet temperature (°C) .....	70
Fuel supply flow (L/hr) .....	2900
Min. internal diameter of inlet pipe (mm) .....	19
Min. internal diameter of return pipe (mm) .....	19

### Electrical system

Electrical system voltage (negative to ground) (Vdc) .....	24
Starter power (kW) .....	2 x 10
Battery charger current (A) .....	55
Battery charger absorbed power (kW) .....	1.6
Battery discharge current requirement at -18°C (CCA) .....	1800 - 2800
Max. electric resistance of starting circuit (Ω) .....	0.008
Min. sectional area of wire (mm <sup>2</sup> ) .....	95
Min. ambient cold start temperature without auxiliary starting device (°C) <sup>2</sup> .....	- 10
Min. ambient cold start temperature with auxiliary starting device (°C) <sup>2</sup> .....	- 25

<sup>1</sup> This refers only to the frequency response of the engine and should not be confused with the performance class of the Generator Set, which is subject to additional contributing factors such as alternator selection and control settings.

<sup>2</sup> Engines used in emergency standby application or applications that require immediate start under load, they 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.

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## Noise

Diesel engine noise (Acoustic power level) (dB(A)) .....	120.7
Noise - upper side (dB(A)) .....	104.3
Noise - right side (view from flywheel) (dB(A)) .....	101.8
Noise - left side (view from flywheel) (dB(A)) .....	102.9
Noise – front (radiator) side (dB(A)) .....	99.5
Noise – rear (flywheel) side (dB(A)) .....	103.1

### Notes :

- Noise test made at 100% of the ESP power, at 1 mt. distance, on engine without radiator, without cooling fan and without silencer.
- 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	204.8	598.2
100% PRP	200.0	515.3
75% PRP	198.8	388.9
50% PRP	199.2	262.1
25% PRP	214.2	139.9
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.

### Data Centre Power (DCP)

Data Centre Power is defined as being the maximum power which a generating set is capable of delivering while supplying a variable or continuous electrical load and during unlimited run hours. Depending on the sites to supply and the availability of reliable utility, the generating set manufacturer is responsible to define what power level he is able to supply to fulfil that requirement including hardware or software or maintenance plan adaptation.

Note : The engine driven alternating current generating set is a reliable source of power for the data centre and it can be also used to back up a reliable utility. Prolonged operation at load in parallel with a utility is not permitted.

- All ratings are based on operating conditions under ISO 8528-1, ISO 3046, DIN6271. Performance tolerance of  $\pm 5\%$ .
- 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.
- 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.
- The engine has not been released, the datasheet is for reference only.