12M33D1420E201 / 1320E200 Engine Data Sheet

Model Name (rpm)	Gross Engine Output (kWm / PS)	
	PRP	ESP
12M33D1420E201 (1800)	1290 (1754)	1420 (1931)
12M33D1320E200 (1500)	1200 (1632)	1320 (1795)

Ratings Definitions

Rating	Prime Power (PRP)	Standby Power (ESP)
Annual Working Time	Unlimited	≤200 h
Mean Engine Load Factor	≤70% per 24 h	≤70% per 24 h
Time at Full Load	≤500 h per year	≤25 h per year
Overload Capacity	1 h per 12 h (10% overload) ≤25 h 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 1000 m 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; notincluded are battery charging alternator, fan and optional equipment.

Basic Data

Engine Model	12M33D1420E201 12M33D1320E200	Cylinder / Valve No.	12 / 48
Bore / Stroke (mm)	150 × 185	Displacement (L)	39.2
Fuel System	Mechanical Pump	Aspiration	Turbocharged / Intercooled
Compression Ratio	15 : 1	Emission Standard	EU Stage II
Overall Dimension (L × W × H) (mm)	2,524 × 1,312 × 1,731	Engine Net Weight (kg)	3,495
Injection Timing (°CA)	21 - 22 BTDC		
Flywheel Size	SAE NO. 0 / 18	Tooth No.	194
Max. Permitted Installing Angle (°)	Longitudinal Inclination	Front / Rear	10 / 10
	Cross Inclination	Left / Right	22.5 / 22.5
Permitted Ambient Temperature (℃)	-10 ~ 50	Permitted Altitude Limit (m)	2,000
Valve Lash at Cold (mm)	(intake valve:0.3±0.03) / (exhaust valve:0.4±0.03)		

Performance Data

	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ
Idle Speed (rpm)	700 - 750		Max. Speed Limit (rpm)		1,725	2,070
Mean Piston Speed (m/s)	9.25	11.1	BMEP (MPa)		2.245	2.364
Friction Power (kW)			Fan Power (kW)		31	45
Load Factor	**Power (kW)**		**SFC (g/kW.h)**		**Fuel Consumption (L/h)**	
110%	1210	1,420	198.5	201.5	285.9	340.6
100%	1100	1,290	196.5	198.4	257.3	304.7
90%	990	1,161	195.4	197.4	230.3	272.8
80%	880	1,032	193.8	195.8	203.0	240.5
70%	770	903	193.2	195.2	177.1	209.8
60%	660	774	196.1	198.1	154.1	182.5
50%	550	645	197.3	199.3	129.2	153.0
40%	440	516	202.9	213.6	106.3	131.2
30%	330	387	210.8	221.9	82.8	102.2
20%	220	258	238.2	250.7	62.4	77.0
10%	110	129	288.7	303.9	37.8	46.7

* BMEP : Brake Mean Effective Pressure

* SFC : Specific Fuel Consumption

Air Intake System		50HZ	60HZ
Intake Air Temperature Rise (℃)	Permitted difference between turbocharger inlet temperatureand ambient temperature (this parameter impacts emission, LAT and altitude capability)	≤5	
Intake Air Resistance (kPa)	Clean filter	≤3	
	Dirty filter	≤5	
Combustion Air Flow (kg/h)	Rated Power	5,639	7,449
	Standby Power	6,066	8,013
Air Filter Clear Efficiency (%)		≥99.5%	
Recommended Min. Diameter of Intake Pipe (mm)		160	

Intercooler System

Intercooler Heat Dissipating Capacity (kJ/s)	Rated Power	253.6	384.5
	Standby Power	284.5	431.3
Intercooler Efficiency	Rated Power	≥85%	
	Standby Power	/	
Max. Intake Temperature at Amb. Temp. 25 ℃ (℃)		55	
Permited Temperature Difference between Intake Temperature and Ambient Temperature (℃)		30	
Permitted Max. Intake Pres. Drop of Intercooler (kPa)		12	
Recommended Intercooler Radiator Cooling Area (m2)		170	

Exhaust System

Permitted Max. Exhaust Back Pressure (kPa)		7.5	
Max. Exhaust Temperature (℃)	Before turbocharger	700	
	After turbocharger	550 (rated power)	
Exhaust Gas Mass Flow (kg/h)	Rated Power	5,862.8	7750.8
	Standby Power	6,314.4	8347.7
Recommended Min. Diameter of Exhaust Pipe (mm)		220	
Max. Bending Moment of Turbocharger Flange (N•m)		10	

Lubrication System

Quantity of Oil (L)	Oil Pan Full Level	146	
	Oil Pan Low Level	126	
	Others (Filter etc.)	25	
Oil Pressure in Normal Condition (kPa)	Idle Speed	≥200	
	Rated Power	400 - 650	
Lowest Oil Pressure Alarm / Highest Alarm (kPa)		200 / 1,000	
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 (kPa)		500 - 550	
Oil Flow (L/min)		≥392	≥470
Oil Fuel Consumption Ratio		≤0.3%	

Noise and Emission

Exhaust Smoke (FSN)	Rated Working Station	≤1.5
	Max. Torque Working Condition	/
Diesel Engine Noise (Acoustic Power Level) (dB(A))		121

Fuel System

Governor		Electric Governor	
Steady Speed Drop		≤3%	
Max. Fuel Supply Resistance of the Fuel Pump at Rated Working Condition (kPa)		13	
Max. Fuel Return Resistance (kPa)		15	
Permitted Max. Fuel Inlet Temperature (℃)		45	
Fuel Supply Flow (kg/h)	Rated Power	216.2	255.9
	Standby Power	240.2	286.1
Min. Pressure of Fuel Pump (kPa)		35	
Recommended Diameter of Inlet Pipe (mm)		12	
Recommended Diameter of Return Pipe (mm)		12	

Electric System

Electric System Voltage (V)		24
Starter Power / Voltage (kW/V)		10 / 24
Alternator Power / Voltage (kW/V)		1.54 / 28
Battery Capacity		400 Ah (12V / 200 Ah x 4 EA)
Permitted Max. Electric Resistance of Starting Circuit (Ω)		0.002
Recommended Min. Sectional Area of Wire (mm^2)		70
The Lowest Cold Starting Temperature (℃)	Without Auxiliary Starting Device	-5
	With Auxiliary Starting Device	-10

Cooling System

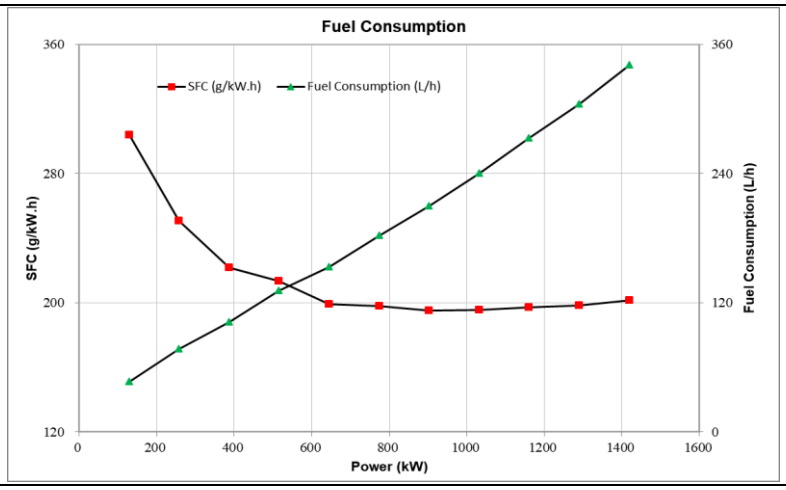
Water Pump Transmission Speed Ratio	1.9
Permited Min. Coolant Temp. When Engine Working (℃)	50
Fan Air Flow (m3/min)	1580
Water pump Flow (m3/h)	L : 45, R : 45
Recommended Min. Inside Dia of Outlet Water Pipe (mm)	45
Min. Pressure at Water Pump Inlet without Degassing Device or with Some Degassing Device (kPa)	50
Min. Pressure At Water Pump Inlet With Full Degassing Device (kPa)	0
Max. Degassing Time (min)	15
Coolant Capacity of Engine (L)	83
Coolant Capacity of Radiator (L)	135 (with pipe 163 L)
High Alarm / Shut Down Temperature (℃)	95 / 103
Thermostat Opening / Full Open Temp. (℃)	77(1/-2) / 87
Permitted Min. Pressure in Cooling System (kPa)	50
Permitted Max. External Resistance (at Rated Speed) (kPa)	50

Mounting System

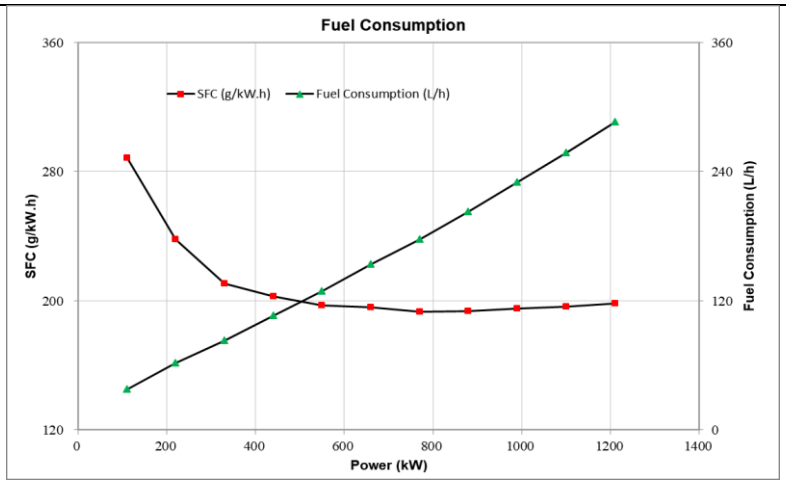
Inertia of Flywheel (kg•m2)	7.18
Inertia of Crankshaft (kg•m2)	4.52

Fuel Consumption Curve

Fuel Consumption Curve versus Engine Power (60HZ)



Fuel Consumption Curve versus Engine Power (50HZ)



※ Specifications are subject to change without prior notice. [End]