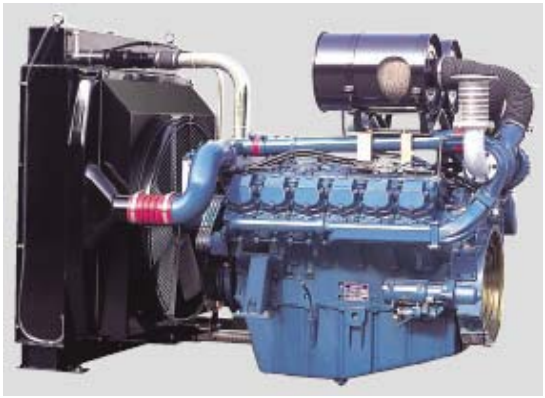
DOOSAN INFRACORE GENERATOR ENGINE

P222LE-II

Ratings (kWm/PS)	Gross Engine Output		Net Engine Output	
	Standby	Prime	Standby	Prime
1500rpm(50Hz)	652/886	-	629/855	-
1800rpm(60Hz)	736/1000	-	698/948	-



Ratings Definitions

The power ratings of Emergency Standby and Prime are in accordance with ISO 8528.
Fuel Stop power in accordance with ISO 3046.
STANDBY POWER RATING is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. A standby rated engine should be sized for a maximum of an 70% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating.

PRIME POWER RATING is available for an unlimited number of hours per year in variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The Total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour withing a 12 hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hous per year

◎ GENERAL ENGINE DATA	
○ Engine Model	P222LE-S
○ Engine Type	4-Cycle, V-type, 12-Cylinder, Turbo charged & intercooled (air to air)
○ Bore x stroke	128 x 142 mm
○ Displacement	21.927 liters
○ Compression ratio	14.6 : 1 (60Hz) / 14.0 : 1 (50Hz)
○ Rotation	Counter clockwise viewed from Flywheel
○ Firing order	1-12-5-8-3-10-6-7-2-11-4-9
○ Injection timming	19° BTDC (60Hz) / 13° BTDC (50Hz)
○ Dry weight	1,591 kg(with Fan)
○ Dimension (LxWxH)	1,697 x 1,389 x 1,281 mm
○ Fly wheel housing	SAE NO.1M
○ Fly wheel	Clutch NO.14M
○ Number of teeth on flywheel	160
◎ ENGINE MOUNTING	
Maximum Bending Moment at Rear Face to Block	1,325 N.m
◎ EXHAUST SYSTEM	
Maximum Back Pressure	5.9 kPa
◎ AIR INDUCTION SYSTEM	
Maximum Intake Air Restriction	
. With Clean Filter Element	2.16 kPa
. With Dirty Filter Element	6.23 kPa
○ Max. static pressure after Radiator	0.125 kPa

◎ COOLING SYSTEM

Water circulation by centrifugal pump on engine.

○ Cooling method	Fresh water forced circulation
○ Coolant capacity	Engine Only : Approx. 23 lit, With Radiator(standard) : Approx 88 lit.
○ Pressure Cap	Max. 49 kPa
○ Water Temperature	
- Maximum for standby and Prime	103℃
- Before start of full load	40.0℃
○ Water pump	Centrifugal type driven by belt
○ Thermostat Type and Range	Wax – pellet type, Opening temp. 71°C , Full open temp. 85°C
○ Cooling fan	Blower type, plastic , 915 mm diameter, 9 blade
○ Max. external coolant system restriction	Not available

◎ LUBRICATION SYSTEM

Force-feed lubrication by gear pump, lubricating oil cooling in cooling water circuit of engine.

○ Lub. Method	Fully forced pressure feed type
○ Oil pump	Gear type driven by crank-shaft gear
○ Oil filter	Full flow, cartridge type
○ Oil capacity	Max. 40 liters , Min. 33 liters
○ Lub oil pressure	Idle Speed : Min 100 kPa
	Governed Speed : Min 250 kPa
○ Maximum oil temperature	120℃
○ Angularity limit	Front down 10 deg , Front up 10 deg , Side to side 22.5 deg
○ Lubrication oil	Refer to Operation Manual

◎ FUEL SYSTEM

Bosch type in-line pump with integrated, electromagnetic actuator.

○ Injection pump	Bosch in-line "P" type
○ Governor	Electric type
○ Speed drop	G3 Class (ISO 8528)
○ Feed pump	Mechanical type in injpump.
○ Injection nozzle	Multi hole type
○ Opening pressure	27.9 MPa
○ Fuel filter	Full flow, cartridge type with water drain valve.
○ Maximum fuel inlet restriction	10 kPa
○ Maximum fuel return restriction	60 kPa
○ Fuel feed pump Capacity	630 liters / hr
○ Used fuel	Diesel fuel oil

◎ ELECTRICAL SYSTEM

○ Battery Charging Alternator	60Hz : without alternator, 50Hz : 28.5V x 45A alternator
○ Voltage regulator	60Hz : without alternator, 50Hz : Built-in type IC regulator
○ Starting motor	24V x 7.0 kW
○ Battery Voltage	24V
○ Battery Capacity	2 x 100 Ah (recommended)
○ Starting aid (Option)	Block heater, Air Heater

◎ VALVE SYSTEM

○ Type	Overhead valve type	
○ Number of valve	Intake 1, exhaust 1 per cylinder	
○ Valve lashes at cold	Intake 0.3 mm , Exhaust 0.4 mm	
○ Valve timing		
	Opening	Close
-. Intake valve	24 deg. BTDC	36 deg. ABDC
-. Exhaust valve	63 deg. BBDC	27 deg. ATDC

◎ PERFORMANCE DATA

		Prime Power		Standby Power	
○ Governed Engine speed	rpm	1500	1800	1500	1800
○ Engine Idle Speed	rpm	800	800	800	800
○ Over speed limit	rpm	-	-	1650	1980
○ Gross Engine Power Output	kW	-	-	652	736
	ps	-	-	886	1000
○ Break Mean effective pressur	MPa	-	-	2.38	2.24
○ Mean Piston Speed	m/s	-	-	7.1	8.5
○ Friction Horsepower	kW	-	-	32	44
	ps	-	-	43.5	59.8
○ Specific fuel consumption					
25% load	liters/hr	-	-	41.7	48.2
50% load	liters/hr	-	-	79.5	88.5
75% load	liters/hr	-	-	119.3	133.0
100% load	liters/hr	-	-	162.6	180.3
○ Maximum Lube oil consumpti	g/h	-	-	620	700
○ Fan Power	kW	23	38	23	38
○ Exhaust Noise at 1m Horizontally from Centerline of Exhaust Pipe distance					
(without Fan)	dB(A)	101.8	102.6	101.8	102.6

The all data and the specific fuel consumption are based on ISO 3046/1, Standard reference conditions are in accordance with 298 K(25° Celsius) air temperature, 100kPa(1000mbar) air pressure, 60% relative humidity, 110m(361ft) altitude.

Operation At Elevated Temperature And Altitude: The engine may be operated at :

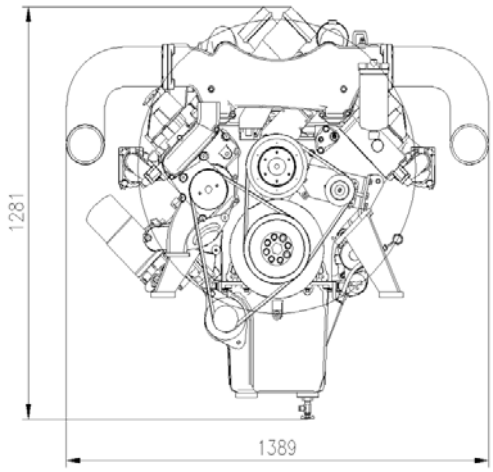
1800 rpm & 1500rpm up to 750~ 1000m and 30°C without power deration

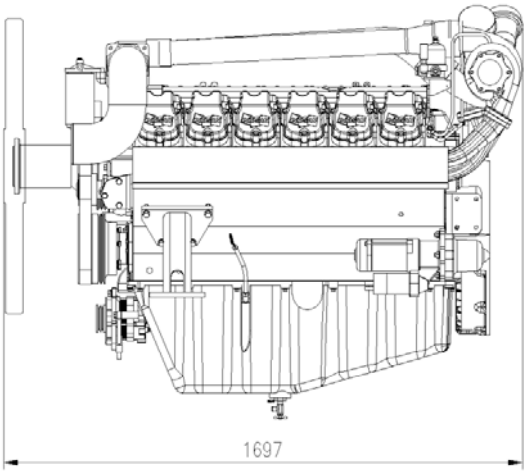
For sustained operation above these conditions, derate by 3% per 304m , and 2% per 11 °C

Engine Data with Dry Type Exhaust Manifold

○ Intake Air Flow	m3/min	-	-	42.5	52.9
○ Exhaust gas temp. after turbo	°C	-	-	635	548
○ Exhaust Gas Flow	m3/min	–	-	119.9	129.4
○ Heat Rejection to Exhaust	kW	-	-	573.0	635.4
○ Heat Rejection to Coolant	kW	-	-	249.1	276.2
○ Heat Rejetion to Intercooler	kW	-	-	132.9	147.3
○ Radiated Heat to Ambient	kW	-	-	58.1	64.5
○ Cooling water circulation	liters/min	-	-	645	720
○ Cooling fan air flow	m3/min	-	-	606	702

◆ ENGINE DIMENSION





◆ CONVERSION TABLE

in. = mm x 0.0394
PS = kW x 1.3596
psi = kg/cm2 x 14.2233
in3 = lit. x 61.02
hp = PS x 0.98635
lb = kg x 2.20462
kW = kcal/sec x 0.239

lb/ft = N.m x 0.737
U.S. gal = lit. x 0.264
kW = 0.2388 kcal/s
lb/PS.h = g/kW.h x 0.00162
cfm = m^3/min x 35.336
MPa = kPa x 1000 = bar x 10

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※ Speccifications are subject to change without prior notice

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