## DOOSAN INFRACORE GENERATOR ENGINE

# **P158LE**

Ratings ( kWm/PS)	Gross Engine Output		Net Engine Output		
	Standby	Prime	Standby	Prime	
1500rpm(50Hz)	414/563	363/494	400/544	349/475	
1800rpm(60Hz)	458/623	402/547	435/592	379/516	



### **Ratings Definitions**

The power ratings of Emergency Standby and Prime are in accordance with ISO 8528.

Fuel Stop power in accordance with ISO 3046.

<u>STANDBY POWER RATING</u> 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.

<u>PRIME POWER RATING</u> 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	P158LE
○ Engine Type	4-Cycle, V-type, 8-Cylinder, Turbo charged & intercooled (air to air)
○ Bore x stroke	128 x 142 mm
○ Displacement	14.618 liters
○ Compression ratio	15 : 1
○ Rotation	Counter clockwise viewed from Flywheel
○ Firing order	1-5-7-2-6-3-4-8
○ Injection timing	16°±1° BTDC
○ Dry weight	950 kg (with fan)
○ Dimension (LxWxH)	1,389 x 1,389 x 1,216 mm
○ Fly wheel housing	SAE NO.1M
○ Fly wheel	Clutch NO 14M
ONumber 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
O AIR INDUCTION SYSTEM	
Maximum Intake Air Restriction	
. With Clean Filter Element	2.16 kPa
. With Dirty Filter Element	6.23 kPa
OMax. static pressure after Radiator	0.125 kPa



## **© COOLING SYSTEM**

Water circulation by centrifugal pump on engine	9.		
○ Cooling method	Fresh water forced circulation		
○ Coolant capacity	Engine Only: Approx. 20 lit, With Radiator(standard): Approx 8		
○ Coolant flow rate	600 liters / min		
⊃ Pressure Cap	Max. 49 kPa		
○ Water Temperature			
- Maximum for standby and Prime	103℃		
- Before start of full load	<b>40.0</b> ℃		
○ 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, 7 blade		
Max. external coolant system restriction	Not available		
UBRICATION 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. 21 liters , Min. 17 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, electron	nagnetic actuator.		
○ Injection pump	Bosch in-line "P" type		
○ Governor	Electric type		
Speed drop	G3 Class ( ISO 8528 )		
> Food nump	Mechanical type in injumn		
1 Injection nozzlo	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 numn Canacity	315 liters / hr		
○ Used fuel	Diesel fuel oil		
© ELECTRICAL SYSTEM			
○ Battery Charging Alternator	28.5V x 45A alternator		
○ Voltage regulator	Built-in type IC regulator		
Starting motor	24V x 4.5 kW		
○ Battery Voltage	24V		
<ul> <li>Battery Capacity</li> </ul>	2 x 100 Ah (recommended)		



## **OVALVE SYSTEM**

○ Type	Overhead valve type		
Number of valve	Intake 1, exhaust 1 per cylinder		
○ Valve lashes at cold	Intake 0.25 mm, Exhaust 0.35 mm		
<ul> <li>Valve timing</li> </ul>			
	Opening Close		
Intake valve	24 deg. BTDC 36 deg. ABDC		
Exhaust valve	63 deg. BBDC 27 deg. ATDC		

O PERFORMANCE DATA		Prime	e Power	Standby	y Power
○ Governed Engine speed	rpm	1500	1800	1500	1800
○ Engine Idle Speed	rpm	800	800	800	800
Over speed limit	rpm	1650	1980	1650	1980
○ Gross Engine Power Output	kW	363	402	414	458
	PS	494	547	563	623
O Break Mean effective pressur	re MPa	1.99	1.84	2.27	2.09
○ Mean Piston Speed	m/s	7.1	8.5	7.1	8.5
○ Friction Horsepower	kW	32	44	32	44
	PS	43.5	59.8	43.5	59.8
<ul> <li>Specific fuel consumption</li> </ul>					•••••
25% load	liters/hr	23.7	28.0	26.5	30.5
50% load	liters/hr	43.9	50.6	49.6	57.6
75% load	liters/hr	65.1	74.7	74.8	85.9
100% load	liters/hr	89.3	102.5	102.9	118.6
Maximum Lube oil consumpti	ic g/h	346	383	394	436
○ Fan Power	kW	14	23	14	23
○ Exhaust Noise at 1m Horizon	tally from Center	line of Exhaust Pipe d	istance		•••••
(without Fan)	dB(A)	98.3	98.5	98.3	98.5

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.

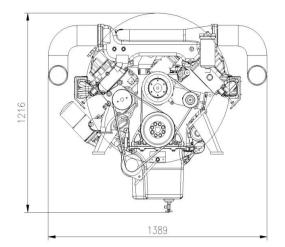
## Operation At Elevated Temperature And Altitude: The engine may be operated at :

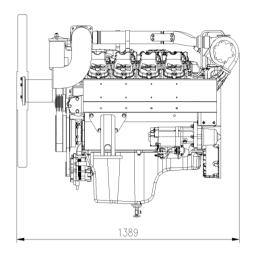
1800 rpm & 1500rpm up to 750~ 1000m and 30°C without power deration

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	26.2	33.7	29.1	36.9
○ Exhaust gas temp. after turb	o. °C	580	606	-	-
○ Exhaust Gas Flow	m3/min	78.3	91.3	-	-
○ Heat Rejection to Exhaust	kW	314.7	361.2	362.6	417.9
○ Heat Rejection to Coolant	kW	136.8	157.0	157.7	181.7
○ Heat Rejetion to Intercooler	kW	73.0	83.8	84.1	96.9
○ Radiated Heat to Ambient	kW	31.9	36.6	36.8	42.4
○ Cooling water circulation	liters/min	535	600	535	600
○ Cooling fan air flow	m3/min	522	618	522	618







### **◆** CONVERSION TABLE

in. =  $mm \times 0.0394$ 

 $PS = kW \times 1.3596$ 

 $psi = kg/cm2 \times 14.2233$ 

in3 = lit. x 61.02

 $hp = PS \times 0.98635$ 

 $lb = kg \times 2.20462$ 

 $kW = kcal/sec \times 0.239$ 

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<sup>3</sup>/min x 35.336

 $MPa = kPa \times 1000 = bar \times 10$ 

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