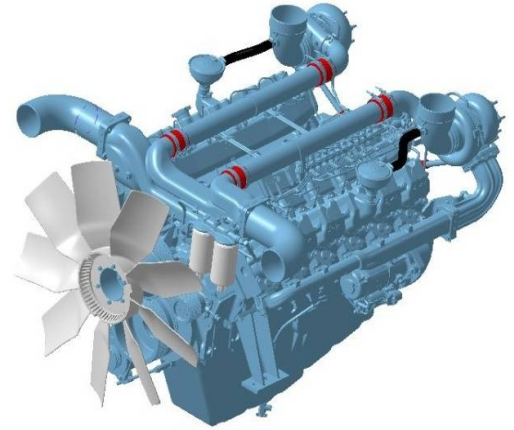


DOOSAN INFRACORE GENERATOR ENGINE

DP222LC



| Ratings (kWm/PS) | Gross Engine Output - without Cooling Fan | | Net Engine Output - with Cooling Fan | |
|----------------------|--|----------|---|---------|
| | Standby | Prime | Standby | Prime |
| 1500rpm(50Hz) | 723/983 | 657/894 | 699/950 | 633/861 |
| 1800rpm(60Hz) | 828/1126 | 753/1023 | 790/1074 | 715/972 |

* 50Hz : DP222LCF, 60Hz : DP222LCS

Ratings Definitions

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

Fuel Stop power in accordance with ISO 3046.

Electric power(kWe) should be estimated by considering generator efficiency, cooling fan power loss and power derating due to altitude and ambient temperature.

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 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 24 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 within a 12 hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

© GENERAL ENGINE DATA

| | |
|-------------------------------|--|
| ○ Engine Model | DP222LC |
| ○ 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 | 15 : 1 |
| ○ Rotation | Counter clockwise viewed from Flywheel |
| ○ Firing order | 1-12-5-8-3-10-6-7-2-11-4-9 |
| ○ Injection timing | 21°±1° BTDC @ 1800 rpm, 19°±1° BTDC @ 1500 rpm |
| ○ Dry weight | 1,420 kg(with Fan) |
| ○ Dimension (LxWxH) | 1,738 x 1,389 x 1,258 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(*Air On 43°C) : Approx 114 lit. |
| ○ Coolant flow rate | 660 liters / min @ 1800 rpm, 550 liters / min @ 1500 rpm |
| ○ Pressure Cap | 49 kPa |
| ○ Water Temperature | |
| - Maximum for standby and Prime | 103°C |
| - Before start of full load | 40.0°C |
| ○ 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 blades |
| ○ Max. external coolant system restriction | Not available |

* Two radiator options are provided, based on allowable maximum Air temperature On radiator inlet (Air On) : Air On 43°C / Air On 52°C
- ATB(Ambient Temperature before Boiling) of generator set varies depending on the engine room ventilation design, even if the same radiator applied.
Adequate selection of radiator options by means of the cooling test is highly recommended, and generator set makers are responsible for the selection.

◎ 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. 27 liters |
| ○ Lub oil pressure | Idle Speed : Min 100 kPa Governed Speed : Min 250 kPa |
| ○ Maximum oil temperature | 120°C |
| ○ 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 | G2 Class (ISO 8528) |
| ○ Feed pump | Mechanical type in injpump. |
| ○ Injection nozzle | Multi hole type |
| ○ Opening pressure | 28 MPa |
| ○ Fuel filter | Full flow, cartridge type with water drain valve. |
| ○ Maximum fuel inlet restriction | 30 kPa |
| ○ Maximum fuel return restriction | 60 kPa |
| ○ Fuel feed pump Capacity | 630 liters / hr |
| ○ Used fuel | Diesel fuel oil |

◎ ELECTRICAL SYSTEM

| | |
|-------------------------------|----------------------------|
| ○ Battery Charging Alternator | 27.5V x 45A alternator |
| ○ Voltage regulator | Built-in type IC regulator |
| ○ Starting motor | 24V x 7.0 kW |
| ○ Battery Voltage | 24V |
| ○ Battery Capacity | 2 x 200 Ah (recommended) |
| ○ Starting aid (Option) | Block heater |

◎ VALVE 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 | |
| ○ 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 | 1650 | 1980 | |
| ○ Gross Engine Power Output | kW | 657 | 753 | 723 | 828 | |
| | PS | 894 | 1023 | 983 | 1126 | |
| ○ Break Mean effective pressure | MPa | 2.39 | 2.29 | 2.63 | 2.52 | |
| ○ Mean Piston Speed | m/s | 7.1 | 8.5 | 7.1 | 8.5 | |
| ○ Friction Power | kW | 48 | 66 | 48 | 66 | |
| | PS | 65.3 | 89.7 | 65.3 | 89.7 | |
| ○ Specific fuel consumption | | | | | | |
| | 25% load | liters/hr | 42.1 | 49.1 | 45.6 | 53.3 |
| | 50% load | liters/hr | 79.3 | 91.3 | 86.4 | 99.3 |
| | 75% load | liters/hr | 119.1 | 134.4 | 129.1 | 147.2 |
| | 100% load | liters/hr | 161.0 | 183.2 | 172.8 | 203.8 |
| ○ Fan Power | kW | 24 | 38 | 24 | 38 | |
| ○ Sound Pressure at 1m from the each side of Cylinder Block | | | | | | |
| | (without Fan) | dB(A) | 100.14 | 102.11 | 100.14 | 102.11 |

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.

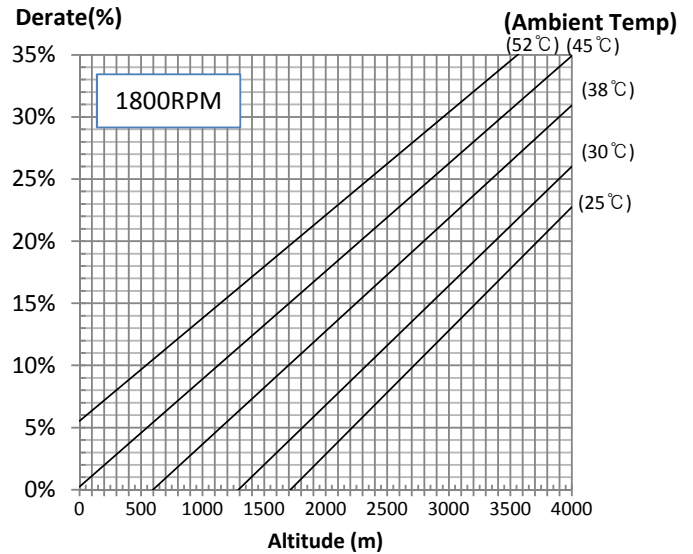
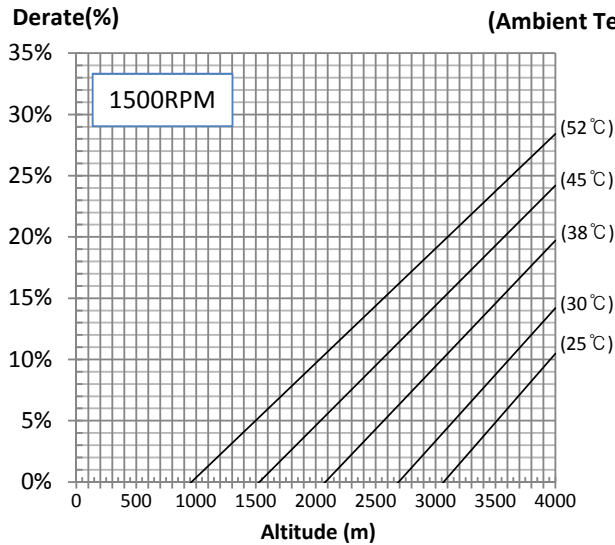
◎ Engine Data with Dry Type Exhaust Manifold

| | | | | | |
|----------------------------------|------------|------|------|------|------|
| ○ Intake Air Flow | m3/min | 42.2 | 55.2 | 45.4 | 59.4 |
| ○ Exhaust gas temp. after turbo. | °C | 493 | 477 | 519 | 499 |
| ○ Exhaust Gas Flow | m3/min | 119 | 152 | 132 | 168 |
| ○ Heat Rejection to Exhaust | kW | 596 | 678 | 639 | 754 |
| ○ Heat Rejection to Coolant | kW | 285 | 324 | 306 | 361 |
| ○ Heat Rejection to Intercooler | kW | 145 | 165 | 156 | 184 |
| ○ Radiated Heat to Ambient | kW | 60 | 69 | 65 | 77 |
| ○ Cooling water circulation | liters/min | 590 | 660 | 590 | 660 |
| ○ Cooling fan air flow | m3/min | 860 | 1050 | 860 | 1050 |

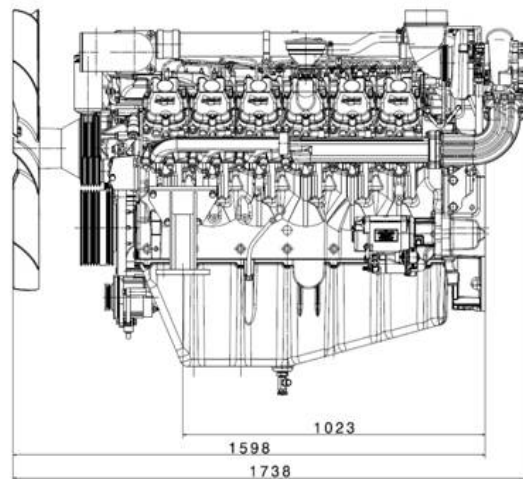
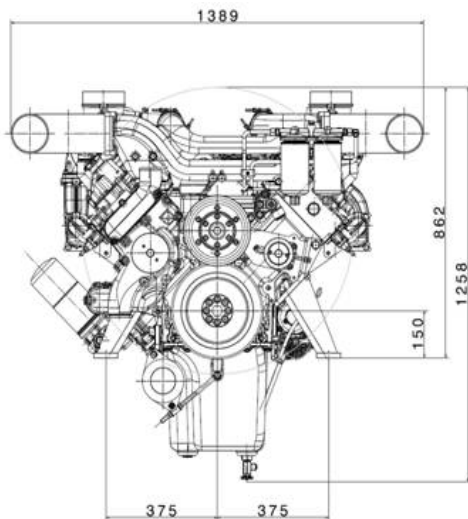
© DERATING FROM ISO 3046 STANDARD CONDITIONS

The maximum power is the STANDBY rating when assessing derate parameters.

Ambient temperature is air cleaner inlet temperature.



© ENGINE DIMENSION



◆ CONVERSION TABLE

| | |
|------------------------------------|------------------------------------|
| in. = mm x 0.0394 | lb/ft = N.m x 0.737 |
| PS = kW x 1.3596 | U.S. gal = lit. x 0.264 |
| psi = kg/cm ² x 14.2233 | kW = 0.2388 kcal/s |
| in ³ = lit. x 61.02 | lb/PS.h = g/kW.h x 0.00162 |
| hp = PS x 0.98635 | cfm = m ³ /min x 35.336 |
| lb = kg x 2.20462 | MPa = kPa x 1000 = bar x 10 |
| kW = kcal/sec x 0.239 | |

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※ Specifications are subject to change without prior notice.

