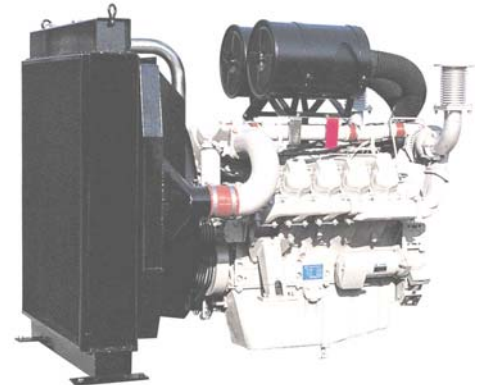


## ◎ POWER RATING

Engine Speed rev/min	Type of Operation	Engine Power	
		kWm	Ps
1800	Continuous Power	452	614
	Prime Power	497	676
	Standby Power	540	734
1500	Continuous Power	398	541
	Prime Power	443	602
	Standby Power	496	674



Note : -. The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271.

-. Ratings are based on ISO 8528.

→ **Prime power** available at variable load. The permissible average power out put (during 24h period) shall not exceed 70% of the prime power rating.

→ **Standby power** available in the event of a main power network failure. No overload is permitted.

## ◎ MECHANICAL SYSTEM

○ Engine Model	P180LE
○ Engine Type	V-type 4 cycle, water cooled Turbo charged & intercooled (air to air)
○ Combustion type	Direct injection
○ Cylinder Type	Replaceable wet liner
○ Number of cylinders	10
○ Bore x stroke	128(5.04) x 142(5.59) mm(in.)
○ Displacement	18.273(1,115.02) lit.(in <sup>3</sup> )
○ Compression ratio	15 : 1
○ Firing order	1-6-5-10-2-7-3-8-4-9
○ Injection timing	16° BTDC
○ Compression pressure	Above 28 kg/cm <sup>2</sup> (398 psi) at 200rpm
○ Dry weight	Approx. 1,175 kg (2,590 lb)
○ Dimension (LxWxH)	1,557 x 1,389 x 1,248 mm (61.3 x 54.7 x 49.1 in.)
○ Rotation	Counter clockwise viewed from Flywheel
○ Fly wheel housing	SAE NO.1
○ Fly wheel	Clutch NO.14

## ◎ MECHANISM

○ Type	Over head valve
○ Number of valve	Intake 1, exhaust 1 per cylinder
○ Valve lashes at cold	Intake 0.25mm (0.0098 in.) Exhaust 0.35mm (0.0138 in.)

## ◎ VALVE TIMING

	Opening	Close
○ Intake valve	24 deg. BTDC	36 deg. ABDC
○ Exhaust valve	63 deg. BBDC	27 deg. ATDC

## ◎ FUEL CONSUMPTION

○ Prime Power (lit/hr)	<b>1,500 rpm</b>	<b>1,800 rpm</b>
25%	29.6	34.9
50%	54.8	63.3
75%	81.3	93.4
100%	111.6	128.2
○ Standby Power (lit/h)	<b>1,500 rpm</b>	<b>1,800 rpm</b>
25%	33.1	38.0
50%	62.0	69.8
75%	93.5	104.8
100%	128.7	144.6

## ◎ FUEL SYSTEM

○ Injection pump	Bosch in-line "P" type
○ Governor	Electric type
○ Feed pump	Mechanical type
○ Injection nozzle	Multi hole type
○ Opening pressure	285 kg/cm <sup>2</sup> (4,054 psi)
○ Fuel filter	Full flow, cartridge type
○ Used fuel	Diesel fuel oil

## ◎ LUBRICATION SYSTEM

○ Lub. Method	Fully forced pressure feed type
○ Oil pump	Gear type driven by crankshaft
○ Oil filter	Full flow, cartridge type
○ Oil pan capacity	High level 35 liters ( 9.2 gal.) Low level 28 liters ( 7.4 gal.)
○ Angularity limit	Front down 24 deg. Front up 20 deg. Side to side 15 deg.
○ Lub. Oil	Refer to Operation Manual

## ◎ COOLING SYSTEM

- Cooling method Fresh water forced circulation
- Water capacity 21 liters ( 5.54 gal.)  
(engine only)
- Pressure system Max. 0.9 kg/cm<sup>2</sup> ( 12.8 psi)
- Water pump Centrifugal type driven by belt
- Water pump Capacity 410 liters ( 108.2 gal.)/min  
at 1,800 rpm (engine)
- Thermostat Wax – pellet type  
Opening temp. 71°C  
Full open temp. 85°C
- Cooling fan Blower type, plastic  
915 mm diameter, 7 blade

## ◎ ELECTRICAL SYSTEM

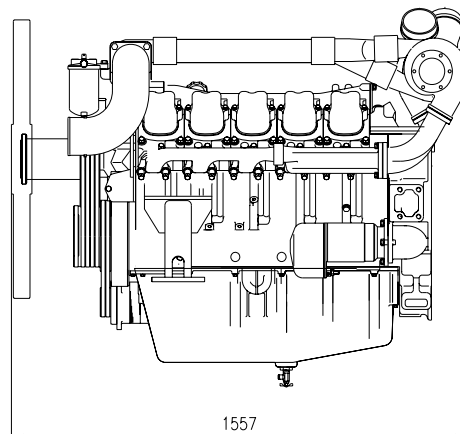
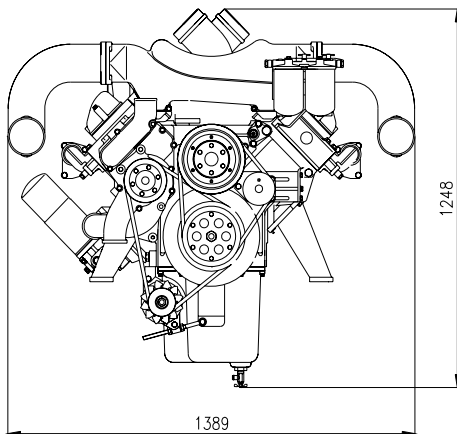
- Charging generator 24V x 45A alternator
- Voltage regulator Built-in type IC regulator
- Starting motor 24V x 7.0kW
- Battery Voltage 24V
- Battery Capacity 200 AH (recommended)
- Starting aid (Option) Block heater

## ◎ ENGINEERING DATA

- |                             |                                     |
|-----------------------------|-------------------------------------|
| ○ Water flow                | 342 liters/min @1,500 rpm           |
| ○ Heat rejection to coolant | 43.8 kcal/sec @1,500 rpm            |
| ○ Heat rejection to CAC     | 19.5 kcal/sec @1,500 rpm            |
| ○ Air flow                  | 31.6 m <sup>3</sup> /min @1,500 rpm |
| ○ Exhaust gas flow          | 97.9 m <sup>3</sup> /min @1,500 rpm |
| ○ Exhaust gas temp.         | 580 °C @1,500 rpm                   |
- 
- |                             |                                      |
|-----------------------------|--------------------------------------|
| ○ Water flow                | 410 liters/min @1,800 rpm            |
| ○ Heat rejection to coolant | 50.2 kcal/sec @1,800 rpm             |
| ○ Heat rejection to CAC     | 23.3 kcal/sec @1,800 rpm             |
| ○ Air flow                  | 38.9 m <sup>3</sup> /min @1,800 rpm  |
| ○ Exhaust gas flow          | 114.1 m <sup>3</sup> /min @1,800 rpm |
| ○ Exhaust gas temp.         | 606 °C @1,800 rpm                    |
- 
- |                                 |                                                                |
|---------------------------------|----------------------------------------------------------------|
| ○ Max. permissible restrictions |                                                                |
| -.Intake system                 | 220 mmH <sub>2</sub> O initial<br>635 mmH <sub>2</sub> O final |
| -.Exhaust system                | 600 mmH <sub>2</sub> O max.                                    |

## ◆ 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 <sup>2</sup> x 14.2233 | kW = 0.2388 kcal/s                 |
| in <sup>3</sup> = lit. x 61.02     | lb/PS.h = g/kW.h x 0.00162         |
| hp = PS x 0.98635                  | cfm = m <sup>3</sup> /min x 35.336 |
| lb = kg x 2.20462                  |                                    |



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※ Specifications are subject to change without prior notice