

## POWER RATING

Engine Speed rev/min	Type of Operation	Engine Power	
		kWm	Ps
1800	Prime Power	-	-
	Standby Power	566	770
1500	Prime Power	452	615
	Standby Power	496	675

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** should be applied only to provide a basic support function to a building electrical supply in the event of a main power network failure. No overload is permitted.

-. This Rating fulfills EPA exhaust emission regulation Tier-2

## MECHANICAL SYSTEM

○ Engine Model	P180FE
○ 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	14.2 : 1
○ Firing order	1-6-5-10-2-7-3-8-4-9
○ Injection timing	12° BTDC (60Hz) / 8° BTDC (50Hz)
○ Compression pressure	Above 28 kg/cm <sup>2</sup> (398 psi) at 200rpm
○ Dry weight	Approx. 1,188 kg (2,619 lb)
○ Dimension (LxWxH)	1,539 x 1,389 x 1,250 mm (60.6 x 54.7 x 49.2 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 2, exhaust 2 per cylinder
○ Valve lashes at cold	Intake 0.4mm (0.0157 in.) Exhaust 0.5mm (0.0197 in.)

## VALVE TIMING

	Opening	Close
○ Intake valve	24 deg. BTDC	30 deg. ABDC
○ Exhaust valve	59 deg. BBDC	21 deg. ATDC

## FUEL CONSUMPTION

○ Prime Power (lit/hr)	<b>1,500 rpm</b>	<b>1,800 rpm</b>	
	25%	30.2	-
	50%	60.6	-
	75%	91.0	-
○ Standby Power (lit/h)	<b>1,500 rpm</b>	<b>1,800 rpm</b>	
	25%	31.7	38.9
	50%	63.6	75.7
	75%	96.7	112.7
100%	137.5	153.0	

## 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 508 liters ( 134.2 GPM)/min  
at 1,800 rpm (engine only)
- 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

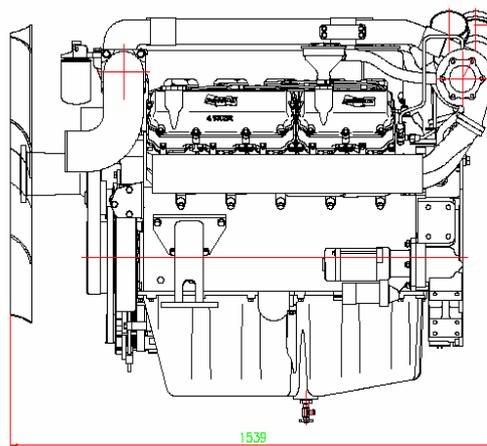
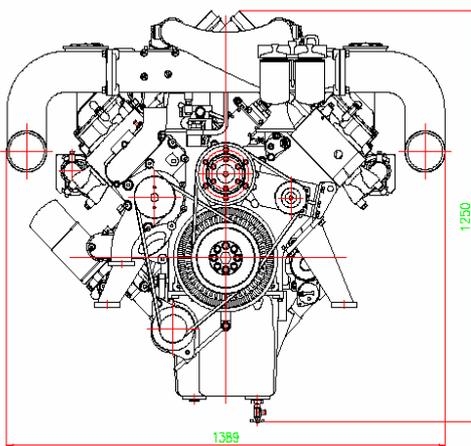
- Charging generator 24V x 45A alternator
- Voltage regulator Built-in type IC regulator
- Starting motor 24V x 7.0kW
- Battery Voltage 24V
- Battery Capacity 200 AH (recommended)
- Starting aid (Option) Block heater

## ENGINEERING DATA

- |                                 |  |
|---------------------------------|--|
| ○ Water flow                    | 433 liters/min @1,500 rpm                                      |
| ○ Heat rejection to coolant     | 44.6 kcal/sec @1,500 rpm                                       |
| ○ Heat rejection to CAC         | 25.5 kcal/sec @1,500 rpm                                       |
| ○ Air flow                      | 42.0 m <sup>3</sup> /min @1,500 rpm                            |
| ○ Exhaust gas flow              | 90.6 m <sup>3</sup> /min @1,500 rpm                            |
| ○ Exhaust gas temp.             | 547 °C @1,500 rpm  |
| <hr/>                           |  |
| ○ Water flow                    | 508 liters/min @1,800 rpm                                      |
| ○ Heat rejection to coolant     | 49.7 kcal/sec @1,800 rpm                                       |
| ○ Heat rejection to CAC         | 38.1 kcal/sec @1,800 rpm                                       |
| ○ Air flow                      | 54.3 m <sup>3</sup> /min @1,800 rpm                            |
| ○ Exhaust gas flow              | 113.7 m <sup>3</sup> /min @1,800 rpm                           |
| ○ Exhaust gas temp.             | 516 °C @1,800 rpm  |
| <hr/>                           |  |
| ○ 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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