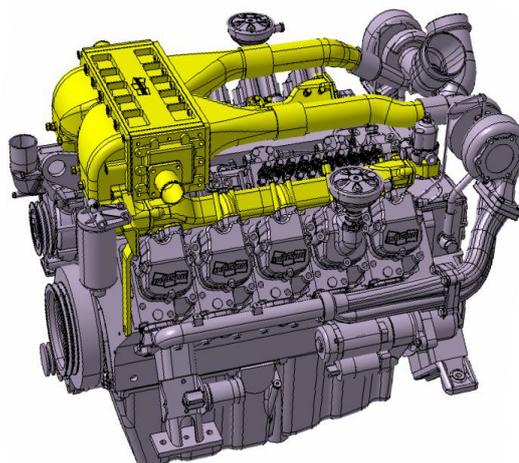


## POWER RATING

RPM	Power rating kW(PS)	Torque N.m(kg.m)	Fuel consumption g/kW.h(g/PS.h)
1470	445 (605)	2894 (295)	199 (146)
1760	490 (666)	2659 (271)	205 (151)
2100	506 (688)	2305 (235)	224 (165)
2350	511 (695)	2078 (212)	241 (177)

Note : 1. The engine performance corresponds to ISO 3046.  
 2. Engines are not to be used for continuous duty. Engines are to be used only for stationary emergency standby fire pump service.  
 According to NFPA 25 engines are to be tested 30 minutes per week at no pump flow and full pump flow once per year.



## MECHANICAL SYSTEM

- Engine Model PU180TI Fire Pump Driver
- Engine Type V-type 4 cycle, water cooled  
Turbo charged & intercooled
- 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 14.6 : 1
- Firing order 1-6-5-10-2-7-8-3-4-9
- Injection timing 16° BTDC
- Dry weight Approx. 1,225 kg (2,700 lb)
- Dimension 1,295 x 1,140 x 1,262 mm  
(LxWxH) (51.0 x 44.9 x 49.7 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 |

## ENGINE EQUIPMENT

- Engine parts Fly wheel & housing  
Intake & exhaust manifold  
Water to air inter cooler
- Electrical parts Stop solenoid of ETS type (only EASPB)

## FUEL SYSTEM

- Injection pump Bosch in-line "P" type
- Governor Mechanical type (only EASPB)  
Electrical type (only EASPC)
- Feed pump Mechanical type
- Injection nozzle Multi hole type
- 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.)
- Water pump Centrifugal type driven by belt
- Water pump Capacity 702 liters ( 185 gal.)/min  
at 2,350 rpm (engine)
- Thermostat Wax – pellet type  
Opening temp. 71°C  
Full open temp. 85°C
- Water flow in intercooler
  - . Critical velocity 2.0 m/s max.
  - . Pressure drop 0.1 bar

### ELECTRICAL SYSTEM

- Charging generator      28.5V 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

### NOISE DATA

- Test Standards          ISO-3744 / JIS-B8005
- Test Condition          1m at the Cylinder Block
- Calculated sound pressure

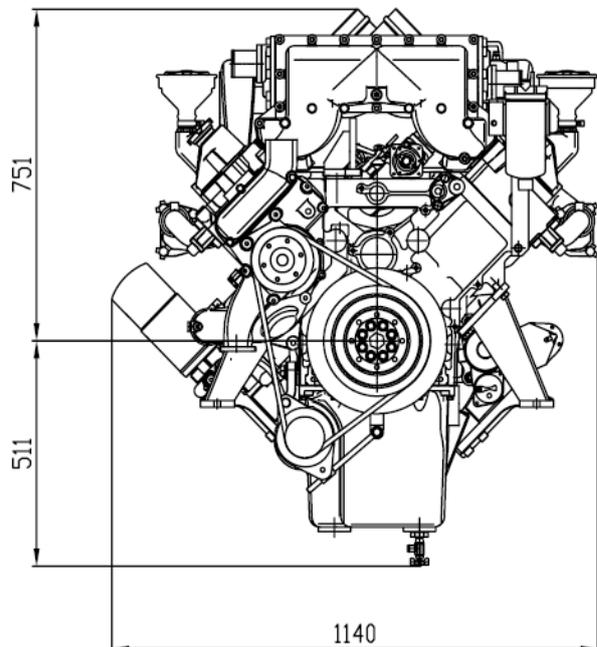
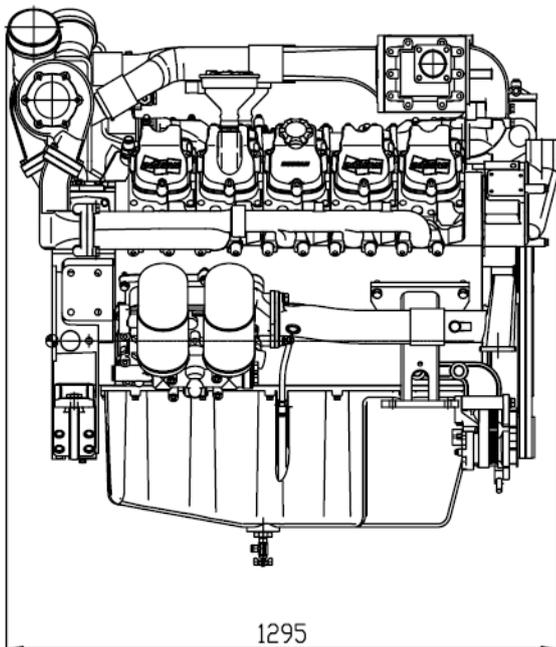
RPM	Power [PS]	Octave Band [dB(A)]
1760	666	102.2
2100	688	105.0
2350	695	106.5

### CONVERSION TABLE

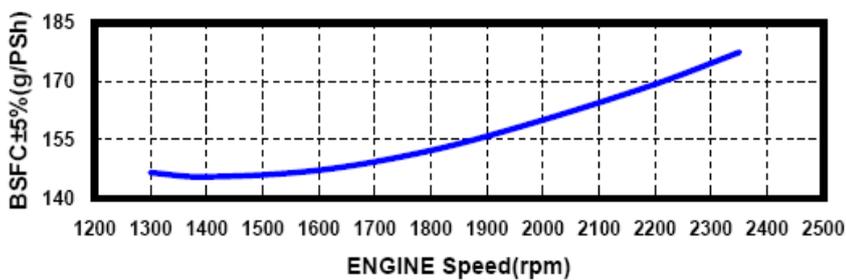
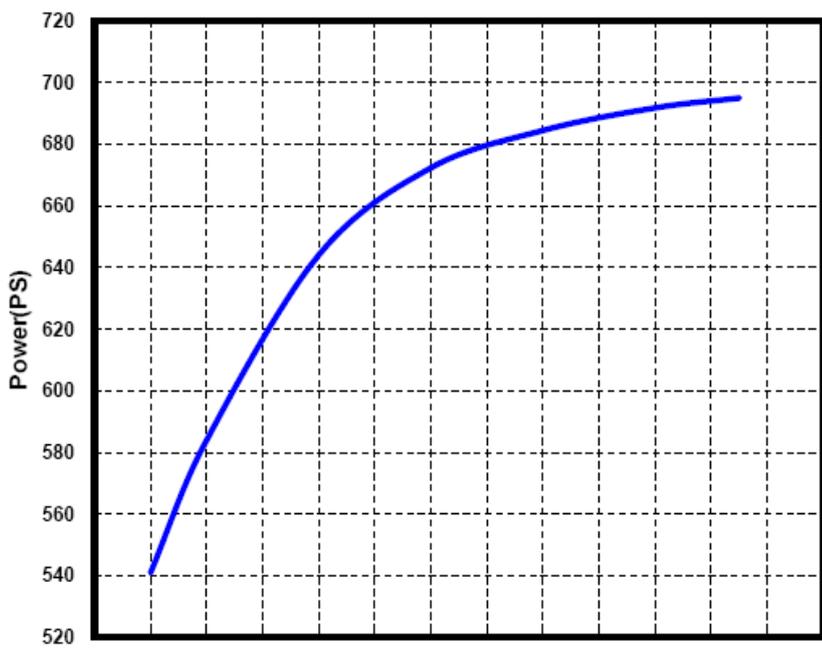
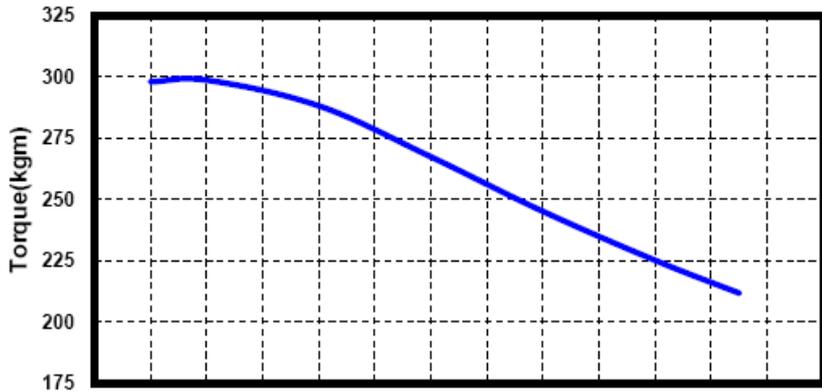
- in. = mm x 0.0394          lb/ft = N.m x 0.737
- PS = kW x 1.3596          U.S. gal = lit. x 0.264
- psi = kg/cm<sup>2</sup> x 14.2233      kW = 0.2388 kcal/s
- in<sup>3</sup> = lit. x 61.02          lb/PS.h = g/kW.h x 0.00162
- hp = PS x 0.98635        cfm = m<sup>3</sup>/min x 35.336
- lb = kg x 2.20462

### ENGINEERING DATA

- Water flow                      702 liters/min @2,350 rpm  
627 liters/min @2,100 rpm  
525 liters/min @1,760 rpm
- Heat rejection to coolant    40.1 kcal/sec @2,350 rpm  
35.8 kcal/sec @2,100 rpm  
30.9 kcal/sec @1,760 rpm
- Heat rejection to CAC        36.0 kcal/sec @2,350 rpm  
32.5 kcal/sec @2,100 rpm  
25.6 kcal/sec @1,760 rpm
- Air flow                          45.8 m<sup>3</sup>/min @2,350 rpm  
43.9 m<sup>3</sup>/min @2,100 rpm  
38.7 m<sup>3</sup>/min @1,760 rpm
- Exhaust gas flow              133.2 m<sup>3</sup>/min @2,350 rpm  
121.9 m<sup>3</sup>/min @2,100 rpm  
105.4 m<sup>3</sup>/min @1,760 rpm
- Exhaust gas temp.            573 °C @2,350 rpm  
539 °C @2,100 rpm  
523 °C @1,760 rpm
- Max. permissible restrictions
  - Intake system                220 mmH<sub>2</sub>O initial  
635 mmH<sub>2</sub>O final
  - Exhaust system              1000 mmH<sub>2</sub>O max.



**PERFORMANCE CURVE**



All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and alternator; not included are compressor, fan, optional equipment, and driven components.

Data is based on operation at ISO standard 3046 conditions of 100 kPa barometric pressure, 100 m altitude, and 25 °C intake ambient temperature.

For sustained operation at high altitudes, the fuel rate of the engine should be adjusted to limit performance by 3 % per 300 m above 100 m altitude.

For sustained operation at high ambient temperatures, the fuel rate of the engine should be adjusted to limit performance by 2 % per 11 °C above 25 °C.

Engine is certified at any speed between 1470 and 2350 RPM.