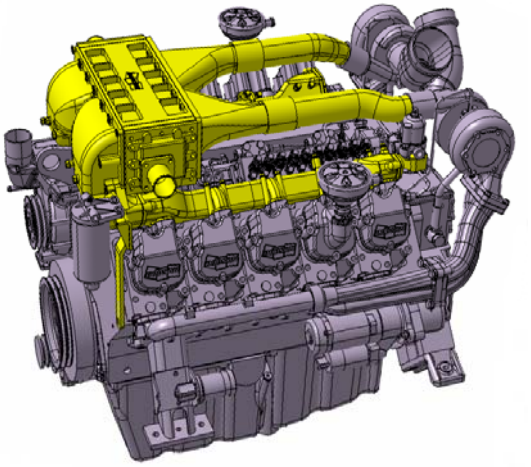
PU180TI Fire Pump Driver

◎ 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.
3. If needs continuous duty, Engine power is restricted to 441kW(600ps)@1800rpm.



◎ 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^3)
○ 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 (LxWxH)	1,295 x 1,140 x 1,262 mm (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 (engine only)	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

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◎ 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

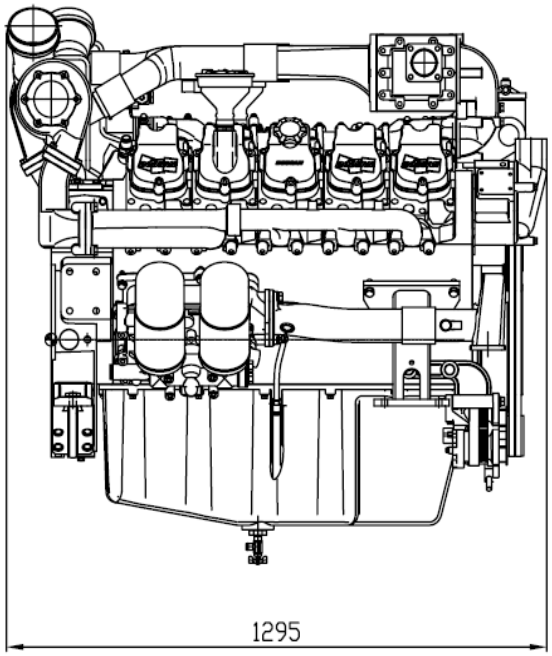
in. = mm x 0.0394	lb/ft = N.m x 0.737
PS = kW x 1.3596	U.S. gal = lit. x 0.264
psi = kg/cm2 x 14.2233	kW = 0.2388 kcal/s
in3 = lit. x 61.02	lb/PS.h = g/kW.h x 0.00162
hp = PS x 0.98635	cfm = m^3/min x 35.336
lb = kg x 2.20462	

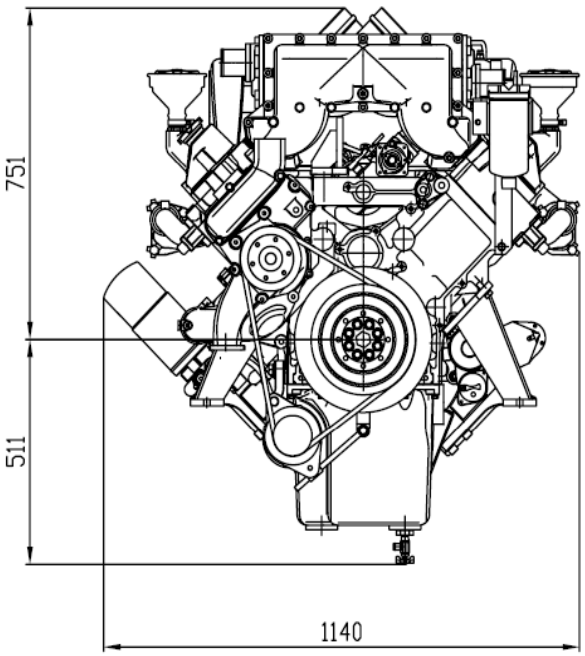
◎ ENGINEERING DATA

○ 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	64.9 m^3/min	@2,350 rpm
	60.4 m^3/min	@2,100 rpm
	53.3 m^3/min	@1,760 rpm
○ Exhaust gas flow	115.9 m^3/min	@2,350 rpm
	101.4 m^3/min	@2,100 rpm
	86.9 m^3/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_2O initial
	635 mmH_2O final
-. Exhaust system	1000 mmH_2O max.





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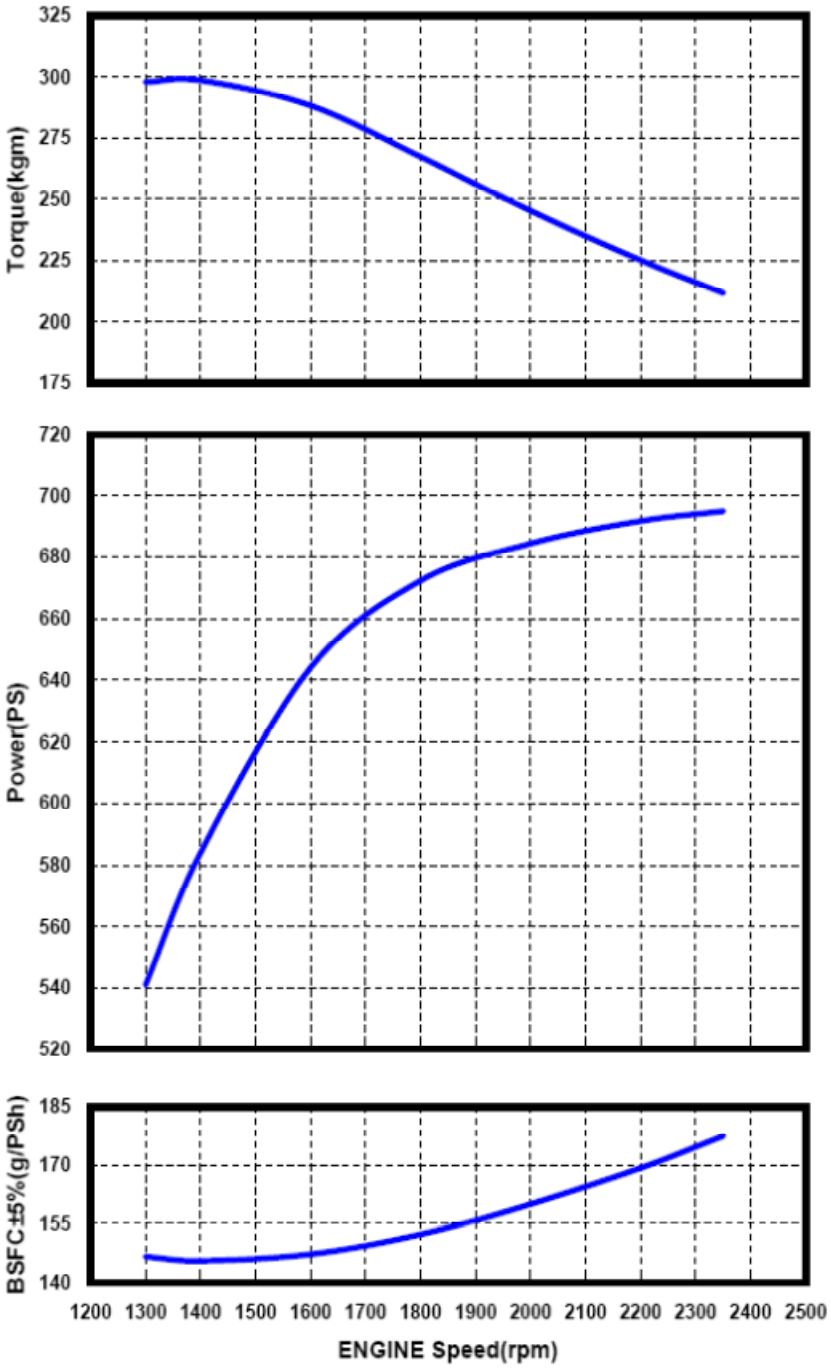
◎ PERFORMANCE CURVE



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 ℃ 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 ℃ above 25 ℃.

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

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※ Speccifications are subject to change without prior notice