

# DIESEL ENGINE

# MODEL 4DSP-99

## Performances

Ratings		3000 rpm	
		PRIME	STAND-BY
Rated Output	kWm	90	99

Note:

**PRIME POWER:** The prime power is the maximum power available with varying loads for an unlimited number of hours. The average power output during a 24h period of operation must not exceed 80% of the declared prime power between the prescribed maintenance intervals and at standard environmental conditions. A 10% overload is permissible for 1 hour every 12 hours of operation.

**STAND-BY POWER:** The stand-by power is the maximum power available for a period of 500 hours/year with a mean load factor of 90% of the declared stand-by power. No kind of overloads is permissible for this use.

## Specifications

### Mechanical system

Engine model	4DSP-99
Engine type	In-line, 4 stroke, water cooled
Combustion type	Direct Injection
Cylinder type	Dry liner
Air intake type	Turbocharger
Cylinder No.	4
Bore*Stroke(mm)	105*118
Total displacement(L)	4.087
Compression ratio	17.5:1
Firing order	1-3-4-2
Injection timing	15°±1°
Speed governor	Mechanical ≤8%
Exhaust temperature (°C)	≤550
Mean Effective Pressure (KPa)	840
Noise Level(dBA)	≤93
Exhaust gas back pressure(KPa)	8.0
Exhaust flow (m <sup>3</sup> /h)	1485
Cooling air flow (m <sup>3</sup> /h)	810
Air for combustion flow (m <sup>3</sup> /h)	615
Piston Speed(m/s)	11.8
Dry weight (kg)	380
Dimension(L*W*H)(mm)	990*550*970 (with radiator)
Rotation	Counter clockwise viewed from flywheel
Flywheel housing/flywheel	SAE3/ 11.5"

**Mechanism**

Type	Over head valve
Valves per cylinder	2
Valve lash(cold state)	Air intake valve 0.30-0.40mm Exhaust valve 0.30-0.40mm

**Valve timing** (crankshaft rotating angel)

Air intake valve open	24.5° before top dead center
Air intake valve close	55.5° after bottom dead center
Exhaust valve open	54° before bottom dead center
Exhaust valve close	26° after top dead center

**Specific fuel consumption**

rpm	3000
Fuel consumption (g/kWh)	≤218

**Oil consumption**

Oil consumption(g/kWh)	≤1.63
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**Fuel system**

Fuel injector pump	BQ pump
Governor model	RSV full range type
Feed pump	Mechanical type
Injection nozzle	multi holes type
Fuel filter	Spin-on type
Fuel	Diesel

**Lubrication system**

Type	Mixed type, pressure and splash lubrication
Oil pump Displacement/speed (L/min/r/min)	Inner and outer rotor type 50/2000
Oil filter	Spin-on type
Lube oil total system capacity	9L including pipes, filters etc.

**Cooling system**

Cooling method	Water cooled, forced circulation
Coolant capacity: engine only	6L
Engine + radiator	14L
Water pump type	Centrifugal type driven by belt
Water pump capacity(L/min)	≥150
Thermostat	Opening temp.73°C
Cooling fan	Φ450mm, 7blades, PA

**Electronic system**

Charging alternator	14v/500w
AVR	Built-in type
Starting motor	12v/3.7kW
Battery capacity	12v/100Ah