4DWD- 110

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DWD Series for Diesel Generator application

POWER RATING

Engine Speed	Type of Operation	Engine Gross Power	
		kW	PS
1500 rpm	Prime Power	82	112
	Standby Power	88	120
1800 rpm	Prime Power	86	117
	Standby Power	92	125

- The engine performance is as per ISO 3046. Type of operation is based on ISO 8528.
- Prime power is available for an unlimited number of hours per year in a variable load application.
- The permissible average power output over 24 hours of operation shall not exceed 80% of the prime power rating.

Engine Specifications

○ Engine Type	In-Line type, 4 strokes, water-cooled Turbocharged air-to-air intercooled
○ Combustion type	Direct injection
○ Cylinder Type	Wet liner
○ No. of Cylinders	4
○ Bore × stroke	110 ×125 mm
○ Displacement	4.75 liter
○ Compression ratio	16 : 1
○ Firing order	1 – 3 – 4 – 2
○ Injection timing	15 °BTDC
○ Dry weight	Approx. 500 kg
○ Dimension(LxWxH)	1113 × 720 × 1128 mm
○ Rotation	Anti-clockwise (Face to the flywheel)
○ Fly wheel housing	SAE NO. 3
○ Fly wheel	SAE NO.11.5
○ Ring Gear Tooth	130 EA

Fuel Consumption Data

(Liter/ Hour)

Speed	1500 rpm		1800 rpm	
Rating	Prime	Standby	Prime	Standby
	82 kW	88 kW	86 kW	92 kW
100% Load	23.2	24.6	24.8	24.0
75% Load	17.5	18.2	18.7	19.5
50% Load	12.9	13.3	13.7	14.3
25% Load	8.2	8.5	8.7	9.1

Fuel System

○ Injection pump	Direct Injection type
○ Governor	Electronic type
○ Feed pump	Mechanical type
○ Injection nozzle	Multi-hole type
○ Opening pressure	250 kg/cm2 (3556 psi)
○ Fuel filter	Full Flow, Cartridge type
○ Used fuel	Diesel fuel oil

Mechanism

○ Type	Overhead valve
○ Number of valve	Intake 1, exhaust 1 per Cylinder
○ Valve lashes at cold	Intake. 0.3 mm Exhaust 0.5 mm

Lubrication System

○ Lub. Oil Grade	CF-4 oil
○ Lub. Oil Pan Capacity	14 liter
○ Max. allowable Oil Temp	120 degree C.
○ Oil pressure	Min. 294 kPa Max. 490 kPa
○ Oil Consumption Rate	≤ 1.2 g/kWh

Cooling System

○ Cooling method	Fresh water forced type
○ Water Pump	Centrifugal, Belt driven
○ Water capacity	10 liter (engine only)
○ Max. Water Temp	99 degree C.
○ Thermostat	Open 76°C / Full 90°C
○ Water in/outlet Dia	45 mm
○ Cooling method	Fresh water forced type
○ Cooling Fan	Blade 10EA - Ø 530 mm

Intake & Exhaust System

○ Max air restriction	Clean 2 kPa / Dirty 5 kPa
○ Exhaust back pressure	Max 6 kPa

Electric System

○ Charging generator	28V × 36A (1008 W)
○ Voltage regulator	Build-in type IC regulator
○ Starting motor	24V × 7.5 kW
○ Battery Voltage	24 V
○ Battery Capacity	120 AH

Engineering Data

		1500 rpm		1800 rpm	
○ **Media Flow**		Prime	S/B	Prime	S/B
Combustion Air	m3/min	7.0	7.3	7.0	7.4
Exhaust Gas	m3/min	17.3	18.4	17.5	18.6
Cooling Fan	m3/min				
○ **Heat Rejection**					
to Exhaust	kW	67	71	69	74.5
to Coolant	kW	43	46	44	48
to Intercooler	kW	8	9	9	12
to radiation	kW	7	8	7	8

Conversion Table

in. = mm × 0.0394	lb/ft = N.m × 0.737
PS = kW × 1.3596	U.S. gal = lit. × 0.264
psi = kg/cm2 × 14.2233	kW = 0.2388 kcal/sec
in^3 = lit. × 61.02	lb/PS.h = g/kW.h × 0.00162
HP= PS x 0.98635	Cfm = m3/min x 35.336
lb = kg x 2.20462	

Engine Layout & Dimension