

# 4DWY- 20

## DWY Series for Diesel Generator application

### POWER RATING

Engine Speed	Type of Operation	Engine Gross Power	
		kW	PS
1500 rpm	Prime Power	<b>16</b>	<b>22</b>
	Standby Power	<b>17</b>	<b>23</b>
1800 rpm	Prime Power	<b>18</b>	<b>24</b>
	Standby Power	<b>20</b>	<b>27</b>

- 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,  
Natural Aspiration  
Water cooled
- Combustion type Direct injection
- Cylinder Type Wet type
- No. of Cylinders 4
- Bore x stroke 85 x95 mm
- Displacement 2.156 liter
- Compression ratio 18 : 1
- Firing order 1 – 3 – 4 – 2
- Injection timing 14 °BTDC
- Dry weight Approx. 200 kg
- Dimension(LxWxH) 770 x 575 x 725 mm
- Rotation Anti-clockwise  
(Face to the flywheel)
- Fly wheel housing SAE NO. 4
- Fly wheel SAE NO. 7.5
- Ring Gear Tooth 109 EA

### Mechanism

- Type Overhead valve
- Number of valve Intake 1, exhaust 1 per  
Cylinder
- Valve lashes at cold Intake 0.20~0.25 mm  
Exhaust 0.25~0.30 mm

### Fuel Consumption Data

Speed Rating	( Liter/ Hour )			
	1500 rpm		1800 rpm	
	Prime	Standby	Prime	Standby
100% Load	4.9	5.1	5.6	6.1
75% Load	4.1	4.5	5.0	5.3
50% Load	3.3	3.5	4.0	4.2
25% Load	2.4	2.4	2.6	2.8

### Fuel System

- Injection pump Direct Injection type
- Governor Electronic type
- Feed pump Mechanical type
- Injection nozzle Multi-hole type / 0.23 mm
- Opening pressure 19.6 +1 MPa
- Fuel filter Single Stage, Paper
- Used fuel Diesel fuel oil

### Lubrication System

- Lub. Oil Grade CD-4 oil
- Lub. Oil Pan Capacity 6.5 liter
- Max. allowable Oil Temp 110 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 4 liter (engine only)
- Max. Water Temp 95 degree C.
- Thermostat Open 71°C / Full 82°C
- Cooling Fan Blade 7EA - Ø 410 mm

### Engineering Data

		1500 rpm		1800 rpm	
○ Media Flow		Prime	S/B	Prime	S/B
Combustion Air	m3/min	1.1	1.1	1.2	1.3
Exhaust Gas	m3/min	2.7	2.8	3.0	3.6
Cooling Fan	m3/min				
<b>○ Heat Rejection</b>					
to Exhaust	kW	12.9	13.7	28.9	16.1
to Coolant	kW	10.4	11.1	11.9	13.1
to Intercooler	kW	-	-	-	-
to radiation	kW	2.7	2.9	3.2	3.4

### Intake & Exhaust System

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

### Electric System

- Charging generator 14 V × 36 A (500 W)
- Voltage regulator Build-in type IC regulator
- Starting motor 12 V × 3 kW
- Battery Voltage 12 V
- Battery Capacity 120 Ah

### Conversion Table

in. = mm × 0.0394	lb/ft = N.m × 0.737
PS = kW × 1.3596	U.S. gal = lit. × 0.264
psi = kg/cm <sup>2</sup> × 14.2233	kW = 0.2388 kcal/sec
in <sup>3</sup> = lit. × 61.02	lb/PS.h = g/kW.h × 0.00162
HP= PS × 0.98635	Cfm = m3/min × 35.336
lb = kg × 2.20462	

### Engine Layout & Dimension

