

# DIESEL ENGINE

# MODEL 4DSG-45

## Performances

| Ratings      |     | 1500 rpm |          | 1800 rpm |          |
|--------------|-----|----------|----------|----------|----------|
|              |     | PRIME    | STAND-BY | PRIME    | STAND-BY |
| Rated Output | kWm | 41.2     | 45.0     | 47       | 51.7     |

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

|                                | 4DSG-45 (50Hz)                                       | 4DSG-45 (60Hz) |
|--------------------------------|--|----------------|
| Engine model                   | 4DSG-45 (50Hz)                                       | 4DSG-45 (60Hz) |
| Engine type                    | In-line, 4 stroke, water cooled                      |                |
| Combustion type                | Direct Injection                                     |                |
| Cylinder type                  | Wet liner  |                |
| Air intake type                | Turbocharger   |                |
| Cylinder No.                   | 4  |                |
| Bore*Stroke(mm)                | 100*115  |                |
| Total displacement(L)          | 3.61   |                |
| Compression ratio              | 17:1   |                |
| Firing order                   | 1-3-4-2  |                |
| Injection timing               | 15°±2°   | 17°±2°         |
| Speed governor                 | Mechanical ≤5%, (If choose Electronic governor, ≤1%) |                |
| Exhaust temperature (°C)       | ≤540   |                |
| Mean Effective Pressure (KPa)  | 950  |                |
| Noise Level(dBA)               | ≤95  |                |
| Exhaust gas back pressure(KPa) | 7  |                |
| Exhaust flow (m³/h)            | 758  |                |
| Cooling air flow (m³/h)        | 4140   |                |
| Air for combustion flow (m³/h) | 270  |                |
| Piston Speed(m/s)              | 5.75   | 6.9            |
| Dry weight (kg)                | 350  |                |
| Dimension(L*W*H)(mm)           | 1038*624*1030(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 0.35-0.45mm<br>Exhaust valve 0.35-0.45mm |

**Valve timing** (crankshaft rotating angel)

|                        |                                    |
|------------------------|------------------------------------|
| Air intake valve open  | 12° ± 3° before top dead center    |
| Air intake valve close | 36° ± 3° after bottom dead center  |
| Exhaust valve open     | 56° ± 3° before bottom dead center |
| Exhaust valve close    | 12° ± 3° after top dead center     |

**Specific fuel consumption**

| rpm                      | 1500   | 1800 |
|--------------------------|--------|------|
| Fuel consumption (g/kWh) | ≤251.6 |      |

**Oil consumption**

|                        |       |
|------------------------|-------|
| Oil consumption(g/kWh) | ≤2.04 |
|------------------------|-------|

**Fuel system**

|                    |                              |
|--------------------|------------------------------|
| Fuel injector pump | No.1 pump                    |
| Governor model     | RSV full range type          |
| Feed pump          | Mechanical type              |
| Injection nozzle   | Single hole type             |
| Fuel filter        | Spin-on type/water separator |
| Fuel               | Diesel                       |

**Lubrication system**

|  |   |
|--|---|
| Type   | Mixed type, pressure and splash lubrication |
| Oil pump Displacement/speed<br>(L/min/r/min) | Inner and outer rotor type<br>35/2350       |
| Oil filter                                   | Spin-on type                                |
| Lube oil total system capacity               | 14L including pipes, filters etc.           |

**Cooling system**

|                               |                                  |
|-------------------------------|----------------------------------|
| Cooling method                | Water cooled, forced circulation |
| Coolant capacity: engine only | 7L                               |
| engine+radiator               | 14.5L                            |
| Water pump type               | Centrifugal type driven by belt  |
| Water pump capacity(L/min)    | ≥100                             |
| Thermostat                    | Opening temp.60°C                |
| Cooling fan                   | Φ450m, 6blades, PA               |

**Electronic system**

|                     |  |
|---------------------|--|
| Charging alternator | 14v/550w   |
| AVR                 | No AVR for meter panel or monitor controller / Built-in type |
| Starting motor      | 12v/3.0kW  |
| Battery capacity    | 12v/120Ah  |