SPECIFICATIONS

DGA12D
LOW-NOISE DIESEL-POWERED
AC GENERATOR

SHINDAIWA Corporation
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CHAPTER 1: GENERAL STANDARDS & CONDITIONS

1. DESIGN STANDARD

The designs and the productions are in conformity with:

1) Japan Industrial Standards
2) The Institute of Electrical Engineering of Japan
3) The Japan Electric Manufactures Association
4) Japan Construction Mechanization Association

2. DESIGN CONDITION

1) Installation Place: Inside/Outside
2) Ambient Temperature: -15°C to +35°C
3) Humidity: Less than 80%
4) Altitude: Below than three hundreds (300) meters above sea Level

3. FACTORY INSPECTION

The inspection test shall be done for the complete unit of Diesel Engine and portable Generator Unit.

Inspection items
1) Insulation and Dielectric Tests
2) Starting ability
3) Protection Devices Working Test
4) Voltage Deviation and Speed Variation: 1/4, 2/4, 3/4 and 4/4 Load
5) Load Test: 4/4 Load 30 minutes

4. PAINTING PROCESS

1) Painting process specifications and colors are based on the Manufacturer’s standard
## CHAPTER 2: EQUIPMENT SPECIFICATIONS

### 1. OVERALL SPECIFICATION

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>DGA12D-Ultra Quiet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALTERNATOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generator Type</td>
<td></td>
<td>Brushless.3-Phase synchronous AC Generator</td>
</tr>
<tr>
<td>Frequency (Allowance)</td>
<td></td>
<td>50+/−0.1Hz</td>
</tr>
<tr>
<td>Rated output</td>
<td>(kVA)</td>
<td>12</td>
</tr>
<tr>
<td>(kW)</td>
<td></td>
<td>9.6</td>
</tr>
<tr>
<td>Rated voltage (1 phase)</td>
<td>(V)</td>
<td>240</td>
</tr>
<tr>
<td>(3 phase)</td>
<td></td>
<td>415</td>
</tr>
<tr>
<td>Rated amperage</td>
<td>(1phase, 240V) (A)</td>
<td>15</td>
</tr>
<tr>
<td>(3phase, 415V)</td>
<td></td>
<td>16.7</td>
</tr>
<tr>
<td>Voltage Allowance (1phase)</td>
<td>%</td>
<td>±2.5</td>
</tr>
<tr>
<td>Voltage Allowance (3phase)</td>
<td>%</td>
<td>±5.0</td>
</tr>
<tr>
<td>Rated speed(50/60Hz)</td>
<td>(min⁻¹)</td>
<td>1500</td>
</tr>
<tr>
<td>Winding</td>
<td></td>
<td>3phase, 4-wire star with Neutral</td>
</tr>
<tr>
<td>Rated power factor</td>
<td></td>
<td>0.8 (Lagging)</td>
</tr>
<tr>
<td>Number of polarity</td>
<td>Poles</td>
<td>4</td>
</tr>
<tr>
<td>Sound level, No load at 23ft</td>
<td>dB(A)</td>
<td>51</td>
</tr>
<tr>
<td><strong>DIESEL ENGINE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make, model, type</td>
<td></td>
<td>Kubota D1703, Water cooled 4cylinder</td>
</tr>
<tr>
<td>Design features</td>
<td></td>
<td>Swirl chamber</td>
</tr>
<tr>
<td>Displacement</td>
<td>(L)</td>
<td>1.647</td>
</tr>
<tr>
<td>Bore x stroke</td>
<td>(mm)</td>
<td>87×92.4</td>
</tr>
<tr>
<td>Continuous rated output</td>
<td>(kW)</td>
<td>12.4(1500 min⁻¹)</td>
</tr>
<tr>
<td>Starting system</td>
<td></td>
<td>Electric 12V DC</td>
</tr>
<tr>
<td>Internal Fuel tank capacity</td>
<td>(L)</td>
<td>60</td>
</tr>
<tr>
<td>Fuel consumption, Full load</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/4 load</td>
<td>(L/hr)</td>
<td>3.31</td>
</tr>
<tr>
<td>1/2 load</td>
<td></td>
<td>2.61*</td>
</tr>
<tr>
<td>1/4 load</td>
<td></td>
<td>1.99*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.45*</td>
</tr>
<tr>
<td>Fuel classification</td>
<td></td>
<td>Diesel fuel ASTM No. 2 or Equivalent</td>
</tr>
<tr>
<td>Lubricating oil type</td>
<td></td>
<td>Class CC or better, SAE30</td>
</tr>
<tr>
<td>Lubricating oil capacity</td>
<td>(L/Gal)</td>
<td>8.2/2.17</td>
</tr>
<tr>
<td>Coolant capacity</td>
<td>(L/Gal)</td>
<td>7.3/2.62</td>
</tr>
<tr>
<td>Battery</td>
<td></td>
<td>75D31R</td>
</tr>
<tr>
<td>5-hour capacity</td>
<td>(Ah)</td>
<td>60</td>
</tr>
<tr>
<td>Dimensions L×W×H</td>
<td>(mm)</td>
<td>1350×780×1140</td>
</tr>
<tr>
<td>Unit dry weight</td>
<td>(kg)</td>
<td>680</td>
</tr>
</tbody>
</table>

*Note: The indicated values as (*) were obtained under specified operating condition. Use the numerical value as reference only*
2. DIESEL ENGINE REMARKS
Make, model : KUBOTA D1703
Fuel Filter : Paper Filter
Automatic Air Extraction : Standard Accessory
External Fuel Changeover : Standard Accessory

3. THREE PHASE GENERATOR REMARKS
1) Alternator
   Model : Rotating Field, Self-Ventilation
   Exciting Method : Brushless, AC Exciter
   Wiring : Star, 3-Phase 4-Wire,
   Insulation : Stator Wiring Class F
               : Rotor Wiring Class F

2) Characteristic
   Voltage Deviation : Less than ±1.0% for the nominal value
   : Transient Values to be less than 20% (100%kVA, Power Factor 0.4)
   Over-speed Endurance : 2 minutes of 120% of the rated speed
   Wave Distortion : Less than 2% (3-Phase, Line to Line, No Load)
   Generator Efficiency : More than 85%
   Insulation Resistance : More than 5MΩ
   Dielectric Insulation : 1500V for One (1) minute or 1800V for One (1) second

4. STRUCTURE
1) Beds (bottom columns) and Vibration Proof Device
   Alternator is coupled directly with engine and they are installed on the bed through vibration proof device (Rubber Pad and Angle).

2) Low Noise Sound-Proof Enclosure (Bonnet)
   The structure is that the inside of the bonnet is sound-proof treated and you can lift up the alternator and the engine together with the beds by using a lifting lug.

3) Fuel Tank
   The fuel tank is made of steel and incorporated with the electric type gauge.
5. CONTROL DEVICES, GAUGES, and PROTECTIVE DEVICES

1) Control Device
   Breaker: Main Circuit Breaker (Rate 600V 30A)
   3phase Circuit Breaker (Rate 415V 20A)
   1phase Circuit Breaker (Rate 240V 16A)
   Exciter Circuit: Automatic Voltage Regulator (F/V Characteristic)

2) Gauges (Displays)
   AC Volt Meter : 0-600V
   AC Ampere Meter : 0-75/150A
   Frequency Meter : 45-65Hz
   Hour Meter : 9999.9Hr (Max)
   Oil Pressure Gauge
   Water Temperature Gauge
   Preheat Lamp
   Warning Display Lamps: High Water Temperature, Low Oil Pressure, Insufficient Charging
   Voltage Adjuster: Adjustable Range; Below–10%- and over +5%
   Panel Light
   Voltmeter Change-over Switch
   Ammeter Change-over Switch

3) Protection Device

<table>
<thead>
<tr>
<th>Item</th>
<th>Set Value</th>
<th>Display</th>
<th>Trip</th>
<th>Shut-Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Oil Pres.</td>
<td>98.1kPa</td>
<td>○</td>
<td>-</td>
<td>○</td>
</tr>
<tr>
<td>High Water Temp.</td>
<td>105°C</td>
<td>○</td>
<td>-</td>
<td>○</td>
</tr>
<tr>
<td>Insufficient Charging</td>
<td>-</td>
<td>○</td>
<td>-</td>
<td>○</td>
</tr>
<tr>
<td>Over Current</td>
<td>120%</td>
<td>-</td>
<td>○</td>
<td>-</td>
</tr>
</tbody>
</table>

(Thermal relay)

4) Output Terminals Plate
   4 (four) receptacles of IP66, 3phase/15A X 1, 1phase/20A X 3
   *IP(Ingress Protection) of IEC (International Electrotechnical Commission)

6. ACCESSORIES

   Fuse : 10A one piece
   Instruction manual
   Manual, engine
CHAPTER 3: OVERALL DIMENSIONS

1. FRONT VIEW

2. RIGHT SIDE VIEW

Emergency Stop Switch
3. LEFT SIDE VIEW

4. TOP VIEW
### 5. CONTROL PANEL

<table>
<thead>
<tr>
<th>NO.</th>
<th>Name</th>
<th>Description of function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3-phase circuit breaker</td>
<td>Turns the power supply to load equipment ON (closed) and OFF (open).</td>
</tr>
<tr>
<td>2</td>
<td>Pilot lamp indicator</td>
<td>Turn on when the engine is running</td>
</tr>
<tr>
<td>3</td>
<td>Voltage meter</td>
<td>Indicates voltage.</td>
</tr>
<tr>
<td>4</td>
<td>AC ampere meter</td>
<td>Indicates phase current.</td>
</tr>
<tr>
<td>5</td>
<td>Frequency meter</td>
<td>Indicates electricity frequency.</td>
</tr>
<tr>
<td>6</td>
<td>Voltage selector dial</td>
<td>Enable to select from three positions to change the generator output voltage. Never operate while engine is running.</td>
</tr>
<tr>
<td>7</td>
<td>Panel light</td>
<td>Illuminates control panel surface and gauges</td>
</tr>
<tr>
<td>8</td>
<td>Voltmeter selector switch</td>
<td>Used to select from one of five positions for voltage, in each phase with OFF position</td>
</tr>
<tr>
<td>9</td>
<td>Ammeter selector switch</td>
<td>Used to select from one of five positions for amperage, in each phase with OFF position</td>
</tr>
<tr>
<td>10</td>
<td>Warning indicator</td>
<td>Turn on when an equipment malfunction occurs.</td>
</tr>
<tr>
<td>11</td>
<td>Coolant temperature gauge</td>
<td>Indicates temperature of the engine coolant.</td>
</tr>
<tr>
<td>12</td>
<td>Oil pressure. gauge</td>
<td>Indicates lubricating oil pressure.</td>
</tr>
<tr>
<td>13</td>
<td>Fuel meter</td>
<td>Indicates internal fuel tank remaining level.</td>
</tr>
<tr>
<td>14</td>
<td>Hour meter</td>
<td>Indicates operating hours of the generator unit.</td>
</tr>
<tr>
<td>15</td>
<td>Glow lamp indicator</td>
<td>The indicator lights when the key switch is set to the [ON] position, and starts pre-heating.</td>
</tr>
<tr>
<td>16</td>
<td>Starter switch</td>
<td>OFF: stops engine operation. START: starts an engine operation. ON: supplies electricity for control operation, and starts pre-heating.</td>
</tr>
<tr>
<td>17</td>
<td>Panel light switch</td>
<td>Turn the panel light ON and OFF</td>
</tr>
<tr>
<td>18</td>
<td>1 Phase circuit breaker</td>
<td>Turns the power supply to load equipment ON (closed) and OFF (open).</td>
</tr>
<tr>
<td>19</td>
<td>3 Phase circuit breaker</td>
<td>Turns the power supply to load equipment ON (closed) and OFF (open).</td>
</tr>
<tr>
<td>20</td>
<td>Battery Isolator</td>
<td>Turn the lever to right for power supply.</td>
</tr>
</tbody>
</table>
6. RECEPTACLE PANELS

- 3 Phase circuit breaker
- 3 Phase 20A receptacle
- 1 Phase circuit breaker * 3pcs
- 1 Phase, 15A receptacle * 3pcs
8. ENGINE WIRING DIAGRAM
MEMO

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