**AD93**

**POWER YOUR FUTURE**

91kVA / 73kW
POWERED by Doosan

**DIESEL GENERATING SET  400/230 V - 50 Hz**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>400/230 V - 50 Hz</th>
<th>AD93</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby</td>
<td>kWh</td>
<td>kW</td>
</tr>
<tr>
<td>Prime</td>
<td>kWh</td>
<td>kW</td>
</tr>
</tbody>
</table>

| Power Pf. 0.8 | kVA | 91 |
|              | kW | 73 |
|              | kVA | 82 |
|              | kW | 66 |

Standby : Continuous running at variable load for duration of an emergency. No overload is permitted on these ratings. In accordance with ISO 3046 .
Prime : Continuous running at variable load for unlimited periods with 10% overload available for 1 hour in any 12 hour period. In accordance with ISO 8528,ISO 3046.

- High quality, reliable and complete power unit
- Compact design
- Easy start and maintenance possibility
- Every generating set is subject to a comprehensive test program which includes full load testing, checking and provision of all control and safety shut down functions testing
- Fully engineered with a wide range of options and accessories: Canopy, sound proof canopy and on-road trailer

Manufacturer reserves the right to make changes in model, technical specifications, color, equipment and accessories without prior notice.

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### ENGINE

<table>
<thead>
<tr>
<th>Model</th>
<th>DOOSAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Power Output at rated rpm</td>
<td>kWm 85</td>
</tr>
<tr>
<td>Engine Power Output at rated rpm</td>
<td>HP 114</td>
</tr>
<tr>
<td>Aspiration and Cooling</td>
<td>Natural</td>
</tr>
<tr>
<td>Total Displacement</td>
<td>Litre 8.071</td>
</tr>
<tr>
<td>No. of Cylinders and Build</td>
<td>6-Cylinder, in-line</td>
</tr>
<tr>
<td>Engine Speed</td>
<td>rpm 1500</td>
</tr>
<tr>
<td>Bore and Stroke</td>
<td>mmxmm 111 x 139</td>
</tr>
<tr>
<td>Compression Ratio</td>
<td>17.5 : 1</td>
</tr>
<tr>
<td>Governor</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Fuel Consumption at full load</td>
<td>L/hr 20.6</td>
</tr>
<tr>
<td>Oil Capacity</td>
<td>Litre 15.5</td>
</tr>
<tr>
<td>Coolant Capacity</td>
<td>Litre 34</td>
</tr>
<tr>
<td>Radiator Cooling Air</td>
<td>m³/min 200</td>
</tr>
<tr>
<td>Air Intake – Engine</td>
<td>m³/min 10.58</td>
</tr>
<tr>
<td>Exhaust Gas Flow</td>
<td>m³/min 18.8</td>
</tr>
</tbody>
</table>

- Heavy duty DOOSAN diesel engine
- Four stroke, water cooled, Natural
- Direct injection fuel system
- Mechanical Governor system
- 12/24 V D.C. starter and charge alternator
- Replaceable fuel filter, oil filter and dry element air filter
- Cooling radiator and fan
- Starter battery (with lead acid) including Rack and Cables
- Flexible fuel connection hoses and manual oil sump drain valve
- Industrial capacity exhaust silencer and steel bellows
- Jacket water heater (at automatic models)
- Operation manuals and circuit diagram documents

### ALTERNATOR

<table>
<thead>
<tr>
<th>Design</th>
<th>Brushless, single bearing, revolving field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stator</td>
<td>2/3 pitch</td>
</tr>
<tr>
<td>Rotor</td>
<td>Single bearing, flexible disc</td>
</tr>
<tr>
<td>Insulation System</td>
<td>Class H</td>
</tr>
<tr>
<td>Standard Temperature Rise</td>
<td>125 - 163°C Continuous</td>
</tr>
<tr>
<td>Exciter Type</td>
<td>Self Excited</td>
</tr>
<tr>
<td>Phase Rotation</td>
<td>A (U), B (V), C (W)</td>
</tr>
<tr>
<td>Alternator Cooling</td>
<td>Direct drive centrifugal blower fan</td>
</tr>
<tr>
<td>AC Waveform Total Harmonic Distortion</td>
<td>No load &lt; 1.5%, Non distorting balanced linear load &lt; 5%</td>
</tr>
<tr>
<td>Telephone Influence Factor (TIF)</td>
<td>&lt;50 per NEMA MG1-22.43</td>
</tr>
<tr>
<td>Telephone Harmonic Factor (THF)</td>
<td>&lt;2%</td>
</tr>
</tbody>
</table>

- Brushless, single bearing system, flexible disc, 4 poles
- Insulation class H
- Standard degree of protection IP21 ("IP22/IP23 is available.")
- Self-exciting and self-regulating
- Impregnation with tropicalised epoxy varnish
- Solid state Automatic Voltage Regulator
- Stator winding with 2/3 pitch for improved harmonics
**CONTROL SYSTEM**

Control supervision and protection panel is mounted on the genset base frame. The control panel is equipped as follows:

1. **Auto Mains Failure Control Panel**
   - Panel equipments:
     - Control with AMF module
     - Static battery charger
     - Emergency stop push button

   a) **Generating set control module DSE6120 features:**
   - The module is used to monitor main supply and starts and stops of a standby generating set
   - Micro-processor based design
   - Automatic control of main and generator contactors
   - Monitors engine performance and AC power output LED alarm indication
   - Front panel configuration of timers and alarm trip points
   - 4 configurable analogue/digital inputs, 8 configurable digital inputs
   - 6 configurable DC outputs
   - Easy push button control
   - STOP/RESET - MANUAL - AUTO - TEST – START

   b) **Metering via LCD display:**
   - Generator Volts (L-L / L-N)
   - Engine oil pressure (PSI-Bar)
   - Generator Ampere (L1,L2,L3)
   - Engine temperature (°C &°F)
   - Generator Frequency (Hz)
   - Plant battery volts
   - Engine hours run
   - Mains Volts (Ph-Ph/Ph-N)

   c) **Alarms:**
   - Over and Under Speed
   - Low and High Battery Volt.
   - Start and Stop Failure
   - Charge fail
   - Over Current
   - Under / Over Generator Voltage
   - Low Oil Pressure
   - Emergency stop
   - High engine temperature

   d) **LED indications:**
   - Mains available
   - Generator available
   - Mains on load
   - Generator on load

2. **Power Outlet Terminal Board Mounted on the Gen-set Base Frame**

**OPTIONAL EQUIPMENTS**

**Diesel Engine**
- Oil heater
- Alternator
  - 3/4 Pole Output Circuit Breaker
  - Anti-condensation Heater

**Panel**
- Charge ammeter
- Transfer Switch 3 Pole
- Transfer Switch 4 Pole
- Earth Fault single set

**Accessories**
- Bulk fuel tank
- Automatic filling system
- Fuel-water separator filter
- Low fuel level alarm
- Residential silencer
- Enclosure or sound proof canopy
- Trailer
- Manual oil drain pump
- Tool kit for maintenance
CHASSIS

- The complete gen-set is mounted as whole on a heavy-duty fabricated, steel base frame
- Anti-vibration pads are fixed between the engine/alternator feet and the base frame
- Base frame design incorporates an integral fuel tank (Up to 1000 kVA)
- The generating set can be lifted or carefully pushed/pulled by the base frame
- Dial type fuel gauge and drain plug on the fuel tank
- Forklift pockets within base frame (up to 500kVA)

DIMENSIONS

<table>
<thead>
<tr>
<th>OPEN TYPE</th>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td>DIMENSIONS (LxWxH)</td>
<td>mm</td>
<td>2300x1080x1719</td>
</tr>
<tr>
<td>DRY WEIGHT</td>
<td>kg</td>
<td>1525</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CANOPY</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMENSIONS (LxWxH)</td>
<td>mm</td>
<td>3417x1136x2022</td>
</tr>
<tr>
<td>DRY WEIGHT</td>
<td>kg</td>
<td>1975</td>
</tr>
</tbody>
</table>

All canopy parts are designed with modular principles
- Without welding assembly
- Doors on each side
- All metal canopy parts are painted by electrostatic polyester powder paint
- Exhaust silencer is protected against environment influences
- Thermally insulated engine exhaust system
- Emergency stop push button is installed outside of the canopy
- Easy lifting and moving
- Easy maintenance and operation