Diesel Generator Set

**mtu 18V2000 DS1400**

380V - 415V/50 Hz/continuous power/fuel consumption optimized/18V2000B26F

Optional equipment and finishing shown. Standard may vary.

**Product highlights**

**Benefits**
- Low fuel consumption
- Optimized system integration ability
- High reliability and availability of power
- Long maintenance intervals
- Optimized ratio between size and power
- Wide operating range without derating

**Support**
- Global product support offered

**Standards**
- Engine-generator set is designed and manufactured in facilities certified to standards ISO 2008:9001 and ISO 2004:14001
- Generator set complies to G3 according to ISO 8528
- Generator meets NEMA MG1, BS5000, ISO, DIN EN and IEC standards
- NFPA 110

**Power rating**
- System rating: 1010 kVA
- Accepts rated load in one step per NFPA 110
- Generator set complies to G3 according to ISO 8528-5
- Generator set exceeds load steps according to ISO 8528-5

**Performance assurance certification (PAC)**
- Engine-generator set tested to ISO 8528-5 for transient response
- 100% load factor for continuous power applications
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

**Complete range of accessories available**
- Control panel
- Power panel
- Fuel system
- Fuel connections with shut-off valve mounted to base frame
- Starting/charging system
- Exhaust system
- Mechanical radiator
- Water Charge-Air-Cooler
- Oversized voltage alternators

**Cooling System**
- Air-to-Air Charge-Air Cooling (TD)
- Water-to-Air Charge-Air Cooling (TB)

**Emissions**
- Fuel consumption optimized

**Certifications**
- CE certification option
- Unit certificate acc. to VDE-AR-N 4110

Optional equipment and finishing shown. Standard may vary.

A Rolls-Royce solution
### Application data

#### Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>mtu</td>
</tr>
<tr>
<td>Model</td>
<td>1BV2000B26F</td>
</tr>
<tr>
<td>Type</td>
<td>4-cycle</td>
</tr>
<tr>
<td>Arrangement</td>
<td>18V</td>
</tr>
<tr>
<td>Displacement: l</td>
<td>40.2</td>
</tr>
<tr>
<td>Bore: mm</td>
<td>135</td>
</tr>
<tr>
<td>Stroke: mm</td>
<td>156</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>17.5</td>
</tr>
<tr>
<td>Rated speed: rpm</td>
<td>1500</td>
</tr>
<tr>
<td>Engine governor</td>
<td>ADEC (ECU 9)</td>
</tr>
<tr>
<td>Speed regulation</td>
<td>± 0.25%</td>
</tr>
<tr>
<td>Max power: kWm</td>
<td>887</td>
</tr>
<tr>
<td>Mean effective pressure: bar</td>
<td>17.7</td>
</tr>
<tr>
<td>Air cleaner</td>
<td>dry</td>
</tr>
</tbody>
</table>

#### Fuel system

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum fuel lift: m</td>
<td>5</td>
</tr>
<tr>
<td>Total fuel flow: l/min</td>
<td>30</td>
</tr>
</tbody>
</table>

#### Fuel consumption

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 100% of power rating: l/hr</td>
<td>203</td>
</tr>
<tr>
<td>At 75% of power rating:</td>
<td>155</td>
</tr>
<tr>
<td>At 50% of power rating:</td>
<td>111</td>
</tr>
</tbody>
</table>

#### Lube oil system

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total system capacity: l</td>
<td>110</td>
</tr>
<tr>
<td>Max. lube oil temperature (alarm): °C</td>
<td>103</td>
</tr>
<tr>
<td>Max. lube oil temperature (shutdown): °C</td>
<td>105</td>
</tr>
<tr>
<td>Min. lube oil pressure (alarm): bar</td>
<td>4.5</td>
</tr>
<tr>
<td>Min. lube oil pressure (shutdown): bar</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Combustion air requirements

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustion air volume: m³/s</td>
<td>1.06</td>
</tr>
<tr>
<td>Max. air intake restriction: mbar</td>
<td>40</td>
</tr>
</tbody>
</table>

#### Cooling/radiator system TD

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coolant flow rate (HT circuit): m³/hr</td>
<td>46.3</td>
</tr>
<tr>
<td>Coolant flow rate (LT circuit for TB): m³/hr</td>
<td>17.5</td>
</tr>
<tr>
<td>Heat radiated to charge air cooling (TB): kW</td>
<td>125</td>
</tr>
<tr>
<td>Input pressure customer radiator (TB): bar (rel.)</td>
<td>1.4</td>
</tr>
<tr>
<td>Max. pressure loss customer radiator (TB): bar</td>
<td>0.7</td>
</tr>
<tr>
<td>Heat dissipated by engine coolant: kW</td>
<td>375</td>
</tr>
<tr>
<td>Heat radiated to ambient: kW</td>
<td>45</td>
</tr>
<tr>
<td>Air flow required for mech. radiator (40°C cooled unit: m³/min)</td>
<td>1462</td>
</tr>
<tr>
<td>Max. lube oil temperature (alarm): °C</td>
<td>103</td>
</tr>
<tr>
<td>Max. lube oil temperature (shutdown): °C</td>
<td>105</td>
</tr>
</tbody>
</table>

#### Exhaust system

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust gas temp. (after turbocharger): °C</td>
<td>510</td>
</tr>
<tr>
<td>Exhaust gas volume: m³/s</td>
<td>2.86</td>
</tr>
<tr>
<td>Maximum allowable back pressure: mbar</td>
<td>50</td>
</tr>
<tr>
<td>Minimum allowable back pressure: mbar</td>
<td>30</td>
</tr>
</tbody>
</table>

#### Generator

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection class</td>
<td>IP23</td>
</tr>
<tr>
<td>Insulation class</td>
<td>H</td>
</tr>
<tr>
<td>Voltage regulation (steady state) ± 0.25%</td>
<td>0.25%</td>
</tr>
</tbody>
</table>

---

1. All data refers only to the engine and is based on ISO standard conditions (25°C and 100 m above sea level).
2. Values referenced are in accordance with ISO 3046-1. Conversion calculated with fuel density of 0.83 g/ml. All fuel consumption values refer to rated engine power.
Standard and optional features

Engine
- 4-cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Full flow oil filters
- Closed crankcase ventilation
- Governor-electronic isochronous
- ADEC/ECU9
- Common rail fuel injection
- Dry exhaust manifold
- Electric starting motor (24V)
- Fuel consumption optimized engine

Generator
- Leroy Somer low voltage generator
- Meets NEMA MG1, BS5000, IEC 60034-1, VDE 0530, DIN EN 12601, AS1359 and ISO 8528-3 requirements
- Superior voltage waveform
- Solid state, volts-per-Hertz regulator
- 4 pole three-phase synchronous generator
- Brushless, self-excited, self-regulating, self-ventilated
- Digital voltage regulator
- Anti condensation heater
- Stator winding Y-connected, accessible neutral (brought out)
- Protection IP 23
- less than 5% harmonic distortion
- 2/3 pitch stator windings
- No load to full load regulation
- ± 0.25% voltage regulation no load to full load
- Insulation class H, utilization acc. to H
- Radio suppression EN55011, group 1, cl. B
- Short circuit capability 3xIn for 10sec
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer generator)
- Winding and bearing RTDs (without monitoring)
- Excitation by AREP + PMI
- Mounting of CT’s: 3x 2 core CT’s
- Voltage setpoint adjustment ±10V
- Sustained short circuit current of up to 250% of the rated current for up to 10 seconds (Marathon generator)
- Marathon low voltage generator
- Oversized generator

Repsents standard features
☐ Represents optional features

System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>with mechanical radiator (TD) or charge-air-cooler (TB)**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>kWel</td>
</tr>
<tr>
<td>Leroy Somer SA 50.2 L7 (Low voltage Leroy Somer standard)</td>
<td>380 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>808</td>
</tr>
<tr>
<td>Leroy Somer LSA 50.2 L8 (Low voltage Leroy Somer oversized)</td>
<td>380 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>808</td>
</tr>
<tr>
<td>Marathon 742RSL7185 (Low voltage Marathon standard)</td>
<td>380 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>808</td>
</tr>
<tr>
<td>Marathon 743RSL7187 (Low voltage Marathon oversized)</td>
<td>380 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>808</td>
</tr>
</tbody>
</table>

* cos phi = 0.8
** BE, fuel optimized: max. power available up to: open power unit 40°C/400m; NOx emission optimized, EPA Tier 2 compl., NEA: standard operating conditions/open power unit 25°C/100m

Electrical outputs may vary depending on generator voltage and ambient conditions. For power outputs consult your mtu dealer.

Intake air depression/mbar: 15mbar
Exhaust back pressure/mbar: 30mbar
Standard and optional features

Cooling system

*Air-to-Air Charge-Air-Cooling TD*

- Mechanical radiator
- Jacket water pump
- Expansion tank
- Fan
- Thermostat(s)
- Pre-wired control cabinet for easy application of customized controller (V1+)
- Island operation (V2)
- Automatic mains failure operation with ATS (V3a)
- Automatic mains failure operation incl. control of generator and mains breaker (V3b)
- Island parallel operation of multiple gensets (V4)
- Automatic mains failure operation with short (< 10s) mains parallel overlap synchronization (V5)
- Mains parallel operation of a single genset (V6)

*Water-to-Air Charge-Air-Cooling TB*

- Coolant pump
- Manifold with thermostatic valves
- WCAC-base frame with safety covers
- HT-piping with flexible engine connection

Control panel

- IP 54 front panel rating with integrated gasket
- Different expansion modules
- Remote annunciator
- Daytank control
- Generator winding- and bearing temperature monitoring
- Differential protection with multi-function protection relay
- Modbus TCP-IP
- Pre-wired control cabinet for easy application of customized controller (V1+)
- Island operation (V2)
- Automatic mains failure operation with ATS (V3a)
- Automatic mains failure operation incl. control of generator and mains breaker (V3b)
- Island parallel operation of multiple gensets (V4)
- Automatic mains failure operation with short (< 10s) mains parallel overlap synchronization (V5)
- Mains parallel operation of a single genset (V6)
- Mains parallel operation of multiple gensets (V7)
- Basler controller
- Deif controller
- Complete system metering
- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- SAE J1939 engine ECU communications
- Parametrization software
- Multilingual capability
- Multiple programmable contact inputs
- Multiple contact outputs
- Event recording

Power panel

- Available in 600x600
- Phase monitoring relay 230V/400V
- Supply for battery charger
- Supply for jacket water heater
- Plug socket cabinet for 230V compatible Euro

Fuel system

- Flexible fuel connectors mounted to base frame
- Fuel filter with water separator
- Switchable fuel filter with water separator
- Fuel cooler (for TD-only)

Starting/charging system

- 24V starter
- Starter batteries, cables, rack, disconnect switch
- Battery charger
- Redundant starter 2x 7.5kW

Mounting system

- Welded base frame
- Resilient engine and generator mounting
- Modular base frame design

Exhaust system

- Exhaust bellows with connection flange
- Exhaust silencer with 10 dB(A) sound attenuation
- Exhaust silencer with 30 dB(A) sound attenuation
- Exhaust silencer with 40 dB(A) sound attenuation
- Y-connection-pipe

- Represents standard features
- Represents optional features
Weights and dimensions

### Air-to-Air Charge-Air Cooling (TD)

<Diagram of Air-to-Air Charge-Air Cooling (TD)>

### Water-to-Air Charge-Air Cooling (TB)

<Diagram of Water-to-Air Charge-Air Cooling (TB)>

Drawing above for illustration purposes only, based on a standard open power 400 Volt engine-generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (LxWxH)</th>
<th>Weight (incl. engine-oil and coolant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open power unit (OPU)</td>
<td>4720 x 1990 x 2200 mm</td>
<td>7850 kg</td>
</tr>
<tr>
<td>Air-to-Air (TD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open power unit (OPU)</td>
<td>4711 x 1988 x 2046 mm</td>
<td>7500 kg</td>
</tr>
<tr>
<td>Water-to-Air (TB)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific engine-generator set.

### Sound data

Consult your local mtu distributor for sound data.

### Emissions data

Consult your local mtu distributor for emissions data.

### Rating definitions and conditions

Continuous power ratings apply to installations where the generator set serves as utility. At constant load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514 and AS 2789. Average load factor: ≤ 100%. Operating hours/year: unlimited.

Consult your local mtu distributor for derating information.