## Important

This Technical Data Sheet and the corresponding Installation Instructions provide important information to ensure the installed engine will operate according to the design specification in the Volvo Penta application for certification.

Requirements marked with ⚠ e considered as critical for exhaust emissions compliance according to the design specification in the Volvo Penta application for certification.

Failing to follow and meet these instructions and requirements when installing a certified engine in a piece of nonroad equipment for use in the United States violates U.S. federal law (40 CFR 1068.105(b)), subject to fines or other penalities as described in the Clean Air Act.

## General

In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel.
Turbocharged

| | | | |
|---|---|---|---|
| Number of cylinders | | | 6 |
| Displacement, total | | litre<br>$in^3$ | 16,12<br>983,9 |
| Firing order | | | 1-5-3-6-2-4 |
| Bore | | mm<br>in | 144<br>5,67 |
| Stroke | | mm<br>in | 165<br>6,50 |
| Compression ratio | | | 16.5:1 |
| Wet weight<br>(Not including after treatment system) | Engine only | kg<br>lb | 1755<br>3869 |
| | Engine incl. cooling system and air filtration system | kg<br>lb | 2065<br>4553 |
| | Engine incl. cooling system, air filtration system, and frame | kg<br>lb | 2605<br>5743 |

| **Performance** | | | **rpm** | **1500** | **1800** |
|---|---|---|---|---|---|
| Prime Power | | without fan | kW<br>hp | 522<br>710 | N/A |
| | | with fan | kW<br>hp | 505<br>687 | |
| Standby Power | | without fan | kW<br>hp | 574<br>781 | N/A |
| | | with fan | kW<br>hp | 557<br>758 | |
| Torque at: | Prime Power | | Nm<br>lbft | 3323<br>2451 | N/A<br>N/A |
| | Standby Power | | Nm<br>lbft | 3654<br>2695 | N/A<br>N/A |
| Power tolerance | | | % | +5 / -1 | |
| Mean piston speed | | | m/s<br>ft/sec | 8,3<br>27,1 | |
| Effective mean pressure at: | Prime Power | | MPa<br>psi | 2,6<br>376 | |
| Effective mean pressure at: | Standby Power | | MPa<br>psi | 2,8<br>413 | |
| Max combustion pressure at: | Prime Power | | MPa<br>psi | 19,2<br>2785 | N/A |
| Max combustion pressure at: | Standby Power | | MPa<br>psi | 20,4<br>2959 | N/A |
| Total mass moment of inertia, J ($mR^2$) | | | $kgm^2$<br>$lbft^2$ | 4,20<br>99,7 | |
| Friction Power | | | kW<br>hp | 38<br>51,68 | N/A |
| **Derating due to altitude - see Technical Diagrams** | | | | | |

**Engine noise emission**

Test Standards: ISO 3744-1981 (E) sound power

| Tolerance ± 0.75 dB(A) | | | rpm | 1500 | 1800 |
|---|---|---|---|---|---|
| Measured sound power Lw | No load | | dB(A) | 131 | N/A |
| | Prime Power | | dB(A) | 126 | N/A |
| | Standby Power | | dB(A) | 129 | N/A |
| Calculated sound pressure Lp at 1 m | No load | | dB(A) | 114 | N/A |
| | Prime Power | | dB(A) | 109 | N/A |
| | Standby Power | | dB(A) | 112 | N/A |

**Unsilenced exhaust noise**

Data calculated as sound pressure Lp.

| Assumed microphone distance 1 m | rpm | 1500 | 1800 |
|---|---|---|---|
| Prime Power | dB(A) | 115 | N/A |
| Standby Power | dB(A) | 115 | N/A |

**Test conditions for load acceptance data**

| Warm engine. | **Generator** | | **Model** | | **Type of AVR** | |
|---|---|---|---|---|---|---|
| | Stamford | | HCI534F1 | | MX341 | |
| AVR Settings | UFRO (Hz): | 57 | DIP (%)*: | | DWELL (%)*: | |
| | Stability (%)*: | | Voltage (V): | 400 | Load factor: | 1.0 |

Applies to Stamford nomenclature,

(%)* : % of max potentiometer setting range

Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions.

| **Abbreviation:** | **Full name:** | **Descriptions** |
|---|---|---|
| AVR | Automatic Voltage Regulator | Generator performance and safty control unit |
| UFRO | Under Frequency Roll Off | Overheating protection at under frequency |
| DIP | | Controls the slope of voltage drop when the UFRO is active |
| DWELL | | Controls the slope of voltage recovery when the UFRO is active. |

**Single step load performance at 1500 rpm - PRIME (Resistiv load)**

| Load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) | Remaining load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) |
|---|---|---|---|---|---|---|---|---|---|
| 0-20 | 2,8 | 1,8 | | | 20-100 | 11,6 | 3,7 | | |
| 0-40 | 5,6 | 1,9 | | | 40-100 | 7,3 | 2,7 | | |
| 0-48 | 7,0 | 2,6 | | | 50-100 | 6,3 | 2,1 | | |
| 0-60 | 8,8 | 2,8 | | | 60-100 | 5,5 | 1,9 | | |
| 0-65 | 10,0 | 3,1 | | | 65-100 | 4,6 | 1,5 | | |
| 0-80 | 13,6 | 4,0 | | | 80-100 | 3,1 | 1,5 | | |
| 0-100 | 18,7 | 5,5 | | | | | | | |
| | | | | | | | | | |
| 100-0 | 8,8 | 2,4 | | | | | | | |

**Single step load performance at 1500 rpm - STAND BY (Resistiv load)**

| Load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) | Remaining load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) |
|---|---|---|---|---|---|---|---|---|---|
| 0-20 | 3,2 | 1,9 | | | 20-100 | 12,5 | 9,2 | | |
| 0-40 | 6,3 | 2,1 | | | 40-100 | 7,5 | 9,0 | | |
| 0-44 | 7,0 | 2,7 | | | 50-100 | 7,0 | 7,8 | | |
| 0-59 | 10,0 | 3,3 | | | 60-100 | 5,8 | 4,3 | | |
| 0-60 | 10,2 | 3,4 | | | x-100 | 5,7 | 3,9 | | |
| 0-80 | 15,9 | 4,5 | | | x-100 | 3,0 | 1,6 | | |
| 0-98 | 20,4 | 8,8 | | | | | | | |
| | | | | | | | | | |
| 98-0 | 9,1 | 2,4 | | | | | | | |

**Single step load performance at 1800 rpm - PRIME (Resistiv load)**

| Load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) | Remaining load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) |
|---|---|---|---|---|---|---|---|---|---|
| 0-20 | N/A | N/A | N/A | N/A | 20-100 | N/A | N/A | N/A | N/A |
| 0-40 | N/A | N/A | N/A | N/A | 40-100 | N/A | N/A | N/A | N/A |
| 0-50 | N/A | N/A | N/A | N/A | 50-100 | N/A | N/A | N/A | N/A |
| 0-60 | N/A | N/A | N/A | N/A | 60-100 | N/A | N/A | N/A | N/A |
| 0-x | 7 (G3) | N/A | N/A | N/A | x-100 | N/A | N/A | N/A | N/A |
| 0-x | 10 (G2) | N/A | N/A | N/A | x-100 | N/A | N/A | N/A | N/A |
| 0-80* | N/A | N/A | N/A | N/A | | N/A | N/A | N/A | N/A |
| 0-100* | N/A | N/A | N/A | N/A | | N/A | N/A | N/A | N/A |
| 100-0 | N/A | N/A | N/A | N/A | | N/A | N/A | N/A | N/A |

**Single step load performance at 1800 rpm - STAND BY (Resistiv load)**

| Load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) | Remaining load (%) | Speed diff (%) | Speed Recovery time (s) | Voltage diff (%) | Voltage Recovery time (s) |
|---|---|---|---|---|---|---|---|---|---|
| 0-20 | N/A | N/A | N/A | N/A | 20-100 | N/A | N/A | N/A | N/A |
| 0-40 | N/A | N/A | N/A | N/A | 40-100 | N/A | N/A | N/A | N/A |
| 0-50 | N/A | N/A | N/A | N/A | 50-100 | N/A | N/A | N/A | N/A |
| 0-60 | N/A | N/A | N/A | N/A | 60-100 | N/A | N/A | N/A | N/A |
| 0-x | 7 (G3) | N/A | N/A | N/A | x-100 | N/A | N/A | N/A | N/A |
| 0-x | 10 (G2) | N/A | N/A | N/A | x-100 | N/A | N/A | N/A | N/A |
| 0-80* | N/A | N/A | N/A | N/A | | N/A | N/A | N/A | N/A |
| 0-100* | N/A | N/A | N/A | N/A | | N/A | N/A | N/A | N/A |
| 100-0 | N/A | N/A | N/A | N/A | | N/A | N/A | N/A | N/A |

| **Cold start performance** | | | **rpm** | **1500** | **1800** |
|---|---|---|---|---|---|
| Time from start to stay within 0.5% of no load speed at ambient temperature: | °C | 20 | s | 4,2 | N/A |
| | | 5 | s | 6,8 | N/A |
| | | -15 * | s | 4,8 | N/A |
| | | -30 ** | s | 21,0 | N/A |
| | | Min start temp* | °C | -31,0 | |

* With manifold heater 4 kW engaged, lubrication oil 15W/40 and block heater.

** With manifold heater 4 kW engaged, lubrication oil 5W/30 and block heater, Fuel MK-1.

| Block heater type | Make | Power kW | Engaged hours | Cooling water temp engine block |
|---|---|---|---|---|
| | Volvo Penta no: 889858 | 2 | 10 | 16°C<br>61°F |

| Lubrication system | | | rpm | 1500 | 1800 |
|---|---|---|---|---|---|
| Lubricating oil consumption | Prime Power | | litre/h<br>US gal/h | 0,05<br>0,013 | N/A |
| | Standby Power | | litre/h<br>US gal/h | 0,05<br>0,013 | N/A |
| Oil system capacity including filters | | | litre<br>US gal | 48<br>12,7 | |
| Oil sump capacity: | | max | litre<br>US gal | 42<br>11,1 | |
| | | min | litre<br>US gal | 32<br>8,5 | |
| Oil change intervals/specifications: | VDS-3 | | h | 500 | |
| | | | h | | |
| | | | h | | |
| Engine angularity limits: | | front up | ° | 30 | |
| | | front down | ° | 30 | |
| | | side tilt | ° | 30 | |
| Oil pressure at rated speed | | | kPa<br>psi | 365-515 | |
| Lubrication oil temperature in oil sump: | | max | °C<br>°F | 130<br>266 | |
| Oil filter micron size | | | µ | 0,040 | |

* See also general section in the sales guide

| Fuel system | | rpm | 1500 | 1800 |
|---|---|---|---|---|
| **Prime Power** Specific **fuel** consumption at: | 25% | g/kWh<br>lb/hph | 227<br>0,368 | N/A |
| | 50% | g/kWh<br>lb/hph | 210<br>0,340 | N/A |
| | 75% | g/kWh<br>lb/hph | 212<br>0,344 | N/A |
| | 100% | g/kWh<br>lb/hph | 210<br>0,340 | N/A |
| **% adBlue** consumption at: (Compare to Fuel consumption by Volyme) | 25% | % | N/A | N/A |
| | 50% | % | N/A | N/A |
| | 75% | % | N/A | N/A |
| | 100% | % | N/A | N/A |

| | | | | |
|---|---|---|---|---|
| **Standby Power** Specific **fuel** consumption at: | 25% | g/kWh<br>lb/hph | 228<br>0,370 | N/A |
| | 50% | g/kWh<br>lb/hph | 213<br>0,345 | N/A |
| | 75% | g/kWh<br>lb/hph | 211<br>0,342 | N/A |
| | 100% | g/kWh<br>lb/hph | 207<br>0,336 | N/A |
| **% adBlue** consumption at: (Compare to Fuel consumption by Volyme) | 25% | % | N/A | N/A |
| | 50% | % | N/A | N/A |
| | 75% | % | N/A | N/A |
| | 100% | % | N/A | N/A |

| Fuel system | rpm | 1500 | 1800 |
|---|---|---|---|
| Fuel to conform to | ASTM-D975-1D and 2D, JIS KK 2204, EN 590 | | |
| System supply flow at: | litre/h<br>US gal/h | 190,0<br>50,2 | N/A |
| Fuel supply line max restriction (Measured at fuel inlet connection) | kPa<br>psi | 10,0<br>1,5 | N/A |
| Fuel supply line max pressure, engine stopped | kPa<br>psi | 0,0 | N/A |
| System return flow | litre/h<br>US gal/h | 25,0<br>6,6 | N/A |
| Fuel return line max restriction (Measured at fuel return connection) | kPa<br>psi | 20,0<br>2,9 | N/A |
| Maximum allowable inlet fuel temp (Measured at fuel inlet connection) | °C<br>°F | 60<br>140 | N/A |
| Prefilter / Water separator micron size | µ | 10,000 | |
| Fuel filter micron size | µ | 5,000 | |
| Governor type/make, standard | Volvo / EMS 2.2 | | |
| Injection pump type/make | Delphi / E3 | | |

| Intake and exhaust system | | | rpm | 1500 | 1800 |
|---|---|---|---|---|---|
| Air consumption at:<br>(+25°C and 100kPa) | Prime Power | | $m^3$/min<br>cfm | 40<br>1413 | N/A |
| | Standby Power | | $m^3$/min<br>cfm | 40<br>1413 | N/A |
| ⚠ **See front page for important information**<br>Max allowable air intake restriction including piping | | | kPa<br>psi | 3<br>0,4 | N/A |
| Air filter restriction clean Volvo Penta filter | | | kPa<br>psi | 1,4<br>0,2 | N/A |
| Heat rejection to exhaust at: | | Prime Power | kW<br>BTU/min | 412<br>23430 | N/A |
| | | Standby Power | kW<br>BTU/min | 431<br>24511 | N/A |
| Exhaust gas temperature after turbine at: | | Prime Power | °C<br>°F | 426<br>799 | N/A |
| | | Standby Power | °C<br>°F | 476<br>889 | N/A |
| ⚠ **See front page for important information**<br>Max allowable back pressure in exhaust line (after turbine)<br>Pipe dimension Ø: 23 mm | | Prime Power | kPa<br>psi | 10<br>1,5 | N/A |
| | | Standby Power | kPa<br>psi | 10<br>1,5 | N/A |
| ⚠ **See front page for important information**<br>Max allowable temperature drop between turbine and SCR muffler inlet. | | Prime Power | Δ°C<br>Δ°F | N/A | N/A |
| | | Standby Power | Δ°C<br>Δ°F | N/A | N/A |
| SCR muffler pressure drop<br>(at exhaust gas flow and exhaust temp given) | | Prime Power | kPa<br>psi | N/A | N/A |
| | | Standby Power | kPa<br>psi | N/A | N/A |
| Pre-catalyst pressure drop | | Prime Power | kPa<br>psi | N/A | N/A |
| | | Standby Power | kPa<br>psi | N/A | N/A |
| Exhaust gas flow at:<br>(temp and pressure after turbine at the corresponding power setting) | | Prime Power | $m^3$/min<br>cfm | 105,0<br>3708 | N/A |
| | | Standby Power | $m^3$/min<br>cfm | 98,0<br>3461 | N/A |

| Cooling system | | | rpm | 1500 | 1800 |
|---|---|---|---|---|---|
| Heat rejection radiation from engine at: | | Prime Power | kW<br>BTU/min | 23<br>1308 | N/A |
| | | Standby Power | kW<br>BTU/min | 26<br>1479 | N/A |
| Radiator cooling system type | | | | Closed circuit | |
| Standard radiator core area | | | m²<br>foot² | 1,7<br>18,30 | |
| Fan diameter | | | mm<br>in | 965<br>37,99 | |
| Fan power consumption | | | kW<br>hp | 17<br>23 | N/A |
| Fan drive ratio | | | | 1.04:1 | |
| Coolant capacity, | engine only | | litre<br>US gal | 33<br>8,72 | |
| | CACs (Charge Air Coolers) | | litre<br>US gal | 10<br>2,64 | |
| | coolant radiators incl piping, engine circuit | | litre<br>US gal | 48<br>12,68 | |
| | coolant radiators incl piping, CAC-circuit | | litre<br>US gal | 48<br>12,68 | |
| | expansion tank, engine circuit | | litre<br>US gal | 20<br>5,28 | |
| | expansion tank, CAC circuit | | litre<br>US gal | 7<br>1,85 | |
| Coolant pump, engine circuit | | | drive/ratio | Belt / 1,85:1 | |
| Coolant pump, CAC circuit | | | drive/ratio | Belt / 2,29:1 | |
| Thermostat, engine circuit | | start to open | °C<br>°F | 82<br>180 | |
| | | fully open | °C<br>°F | 92<br>198 | |
| Thermostat, CAC circuit | | start to open | °C<br>°F | 40<br>104 | |
| | | fully open | °C<br>°F | 52<br>126 | |
| Maximum static pressure head<br>(expansion tank height + pressure cap setting) | | | kPa<br>psi | 100<br>14,5 | |
| Minimum static pressure head<br>(expansion tank height + pressure cap setting) | | | kPa<br>psi | 70<br>10,2 | |
| Standard pressure cap setting | | | kPa<br>psi | 75<br>10,9 | |
| Maximum top tank temperature, engine circuit | | | °C<br>°F | 107<br>225 | |
| Charge air pressure<br>(after charge air coolers) | | | kPa<br>psi | 480<br>69,6 | |
| **See front page for important information**<br>Max allowable Charge air outlet temp.<br>(Charge air temp after intercooler) | | Prime Power | °C<br>°F | 48<br>118 | N/A |
| | | Standby Power | °C<br>°F | 50<br>122 | N/A |

**OEM cooling system design:**

| **- move of standard radiatorts** | | **rpm** | **1500** | **1800** |
|---|---|---|---|---|
| Maximum additional coolant, engine circuit, with standard expansion tank | | litre<br>US gal | 15<br>3,96 | |
| Maximum additional coolant, CAC circuit with standard expansion tank | | litre<br>US gal | 5<br>1,32 | |
| Maximum distans in vertikal direction with standard pressure cap (75 kPa) | | m<br>ft | 2<br>6,56 | |
| Maximum additional pressure drop due to move | | KPa<br>psi | 10<br>1,5 | |
| **- replacement of standard radiators** | | | | |
| Heat rejection to coolant **engine radiator** at: | Prime Power | kW<br>BTU/min | 203<br>11544 | N/A |
| | Standby Power | kW<br>BTU/min | 215<br>12227 | N/A |
| Heat rejection to coolant **CAC radiator** at: | Prime Power | kW<br>BTU/min | 163<br>9270 | N/A |
| | Standby Power | kW<br>BTU/min | 176<br>10009 | N/A |
| Minimum coolant flow **engine radiator** (at fully open thermostat) | | litre/s<br>US gal/s | 4,8<br>1,27 | N/A |
| Minimum coolant flow **CAC radiator** (at fully open thermostat) | | litre/s<br>US gal/s | 2<br>0,53 | N/A |
| Maximum coolant pressure drop over **engine radiator** incl. Piping (at coolant flow above) | | kPa<br>psi | 45<br>6,5 | N/A |
| Maximum coolant pressure drop over **CAC radiator** incl. Piping (at coolant flow above) | | kPa<br>psi | 40<br>5,8 | N/A |
| Coolant pressure drop over complete engine circuit cooling system (at coolant flow above) | | kPa<br>psi | 110<br>16,0 | N/A |
| Coolant pressure drop over complete CAC circuit cooling system (at coolant flow above) | | kPa<br>psi | 87<br>12,6 | N/A |
| Nominal coolant pressure before engine circuit coolant pump | | kPa<br>psi | 30<br>4,4 | N/A |
| Nominal coolant pressure before CAC circuit coolant pump | | kPa<br>psi | 30<br>4,4 | N/A |

**Cooling performance**

Standard fan: Fan ratio: 1 : 1.04 Fan type: FIX

Cooling air flow and external restriction at different radiator air temperatures based on 107°C TTT and 40% antifreeze. Valid at 1 atm. (radiator and cooling fan, see optional equipment)

| Engine speed rpm | Air on temp °C | PRIME POWER | | STANDBY POWER | |
|---|---|---|---|---|---|
| | | Air flow kg/s | External restriction Pa | Air flow kg/s | External restriction Pa |
| 1500 | 68 | 12,0 | 0 | | |
| | 66 | 11,3 | 100 | 11,9 | 0 |
| | 65 | 10,7 | 200 | | |
| | 64 | 10,0 | 300 | 11,3 | 100 |
| | 63 | | | 10,4 | 200 |
| | 62 | | | 10,0 | 300 |
| 1800 | N/A | N/A | N/A | N/A | N/A |

Note! External restrictions are calculated for values >0 Pa

**Engine management system**

| Functionality | Alternatives | Default setting |
|---|---|---|
| Governor mode | Isochronus / Droop | Isochronus |
| Governor droop | 0-8% | 4,0 |
| Governor response | Adjustable PID-constants (VODIA) | Not adjusted |
| Dual speed | Single speed 1500rpm | 1500,0 |
| Idle speed | 600-1200 | 900,0 |
| Fine speed adjustment | +/-40 | 0,0 |
| Stop function | Energized to run/stop | Energized to Stop |
| Preheating function | On / Off | Off |
| Lamp test | On / Off | On |
| | | |
| | | |

**Engine sensor and switch settings**

| | | | Alarm level | | Engine protection | |
|---|---|---|---|---|---|---|
| **Parameter** | | **Unit** | **Setting range** | **Default setting** | **Level** | **Action. Default/Alternative** |
| Oil temp | | °C | 120 - 130 | 125 | Setting +5 | Shut down. |
| Oil pressure | Low idle | kPa | - | 190,0 | 165,0 | Shut down |
| | 1500 rpm | kPa | - | 300,0 | 275,0 | Shut down |
| | 1800 rpm | kPa | - | - | - | |
| Oil level | | | - | Min level | Low level | Shut down. |
| Piston cooling pressure >1000 rpm | | kPa | N/A | N/A | N/A | N/A |
| Coolant temp | | °C | 95 - 103 | 103 | Setting +5 | Shut down. |
| Coolant level | | | See cooling system | On | Low level | Shut down. |
| Fuel feed pressure | Low idle | kPa | | 150 | | - |
| | >1400 rpm | | | 250 | | - |
| Water in fuel | | | - | High Level | | - |
| Crank case pressure | | kPa | - | Increased Pressure | Increased Pressure | Shut down |
| Air filter pressure droop | | kPa | - | 5 | - | - |
| | | 0,0 | Alarm level | | Engine protection | |
| Altitude, above sea | | m | | | - | Automatic derating, see section derating |
| Charge air temp | | °C | - | 80 | 85,0 | Shut down |
| Charge air pressure | | kPa | - | 30 above demand | 40 above demand | Shut down |
| Engine speed | | rpm | 100 - 120% of rated speed | 115% of rated speed | Alarm level | - |
| | | | | | | |
| **Engine protection can be disabled. For consequences please see VP International Limited Warranty Policy** | | | | | | |

**Electrical system**

| | | | |
|---|---|---|---|
| Voltage and type | | 24V / insulated from earth | |
| Alternator: | make/output | A | Bosch / 80 |
| | tacho output | Hz/alt. Rev | 6 |
| | drive ratio | | 3.9 : 1 |
| Starter motor | | make | Melco |
| | | type | 105P70 |
| | | kW | 7,0 |
| Number of teeth on: | flywheel | | 153 |
| | starter motor | | 12 |
| Max wiring resistance main circuit | | mΩ | - |
| Cranking current at +20°C | | A | 300 |
| Crank engine speed at 20°C | | rpm | 155 |
| Starter motor battery capacity: | max | Ah/A | 2x225 |
| | min at +5°C | Ah/A | - |
| Inlet manifold heater (at 20 V) | | kW | 4,0 |
| Power relay for the manifold heater | | A | 1 |

| **Power take off** | | **rpm** | **1500** | **1800** |
|---|---|---|---|---|
| Front end in line with crank shaft max: | | Nm<br>lbft | - | |
| Front end belt pulley load. Direction of load viewed from flywheel side: | max left | kW<br>hp | - | - |
| | max down | kW<br>hp | - | - |
| | max right | kW<br>hp | - | - |
| Timing gear at compressor PTO max: | | Nm<br>lbft | 160<br>118 | |
| Speed ratio direction of rotation viewed from flywheel side | | 1.31 : 1 / anti-clockwise | | |
| Timing gear at servo pump PTO max: | | Nm<br>lbft | 100<br>74 | |
| Speed ratio direction of rotation viewed from flywheel side | | | | |
| Timing gear at hydraulic pump PTO max: | | Nm<br>lbft | - | |
| Speed ratio direction of rotation viewed from flywheel side | | | | |
| Max allowed bending moment in flywheel housing | | Nm<br>lbft | 15000<br>11063 | |
| Max. rear main bearing load | | N<br>lbf | N/A | |

| Performance | Power (kW) | Rpm |
|---|---|---|
| Prime Power | 522 | 1500 |
| | | |
| Standby Power | 574 | 1500 |
| | | |

| Sensors Alarm | Signal | Range | Alarm switch | Alarm Level | Derating level | Condition/Delay | Derating |
|---|---|---|---|---|---|---|---|
| Boost pressure | 0,5-4,5 V | 50-550 kPa | N/A | 30 kPa above demand | 510kPa | | Shut down |
| Boost temperaure | 50-0 kΩ | -40° - 150 °C | N/A | 80°C | 85°C | | Shut down |
| Coolant level switch | Digital | | Alarm when closed | Low | | | Shut down |
| Coolant temperature | 50-0 kΩ | -40° - 130 °C | N/A | 103°C | 108°C | | Shut down |
| Crankcase pressure | 0,5-4,5 V | 0-15 kPa | N/A | Rapid pres inc | Rapid pres inc | | Shut down |
| Engine Speed Cam | Frequency | | N/A | Lost sign | | | |
| Engine Speed Crank | Frequency | | N/A | Lost sign | | | |
| Exhaust gas temp | | | N/A | N/A | N/A | | |
| Oil level sensor | | | N/A | N/A | N/A | | |
| Oil temperature | 50-0 kΩ | -40° - 140 °C | N/A | 125°C | 130°C | | |
| Piston cooling switch | Digital | | N/A | N/A | N/A | | |
| Water In fuel switch | Digital | | Alarm when closed | Water in Fuel | | | |
| | | | | | | | |

| Sensors Alarm | Signal | Range | rpm Map | | | | | Condition | Derating |
|---|---|---|---|---|---|---|---|---|---|
| ***Coolant pressure*** | 0,5-4,5 V | 0-300 kPa | **0 rpm** | **600 rpm** | **1000 rpm** | **1500 rpm** | **1900 rpm** | | |
| Warning Level | | | N/A | N/A | N/A | N/A | N/A | | |
| Alarm Level | | | N/A | N/A | N/A | N/A | N/A | | |
| ***Fuel pressure*** | 0,5-4,5 V | 0-700 kPa | **0 rpm** | **600 rpm** | **1000 rpm** | **1800 rpm** | **1900 rpm** | | |
| Warning Level | | | N/A | N/A | N/A | N/A | N/A | | |
| Alarm Level | | | N/A | N/A | N/A | N/A | N/A | | |
| ***Differential oil pressure*** | 0,5-4,5 V | 0-700 kPa | **0 rpm** | **500 rpm** | **1000 rpm** | **1500 rpm** | **1800 rpm** | | |
| Alarm Level | | | N/A | N/A | N/A | N/A | N/A | | |
| Derating Limit | | | N/A | N/A | N/A | N/A | N/A | | |
| ***Oil pressure*** | 0,5-4,5 V | 0-700 kPa | **0 rpm** | **500 rpm** | **1000 rpm** | **1500 rpm** | **1900 rpm** | | |
| Warning Level | | | N/A | N/A | N/A | N/A | N/A | | |
| Alarm Level | | | N/A | N/A | N/A | N/A | N/A | | |
| | | | | | | | | | |

Remarks

| ***1) Soft derate Coolant temp*** | **Speed / °C** | **101°C** | **103°C** | **106°C** | |
|---|---|---|---|---|---|
| Remaining torque in % | | | | | |
| | | | | | |
| | | | | | |

| **Derate map R2** | | | |
|---|---|---|---|
| °C | **101** | **103** | **106** |
| % | | | |

| ***2) Soft derate Oil temp*** | **Speed / °C** | **128°C** | **130°C** | **135°C** | |
|---|---|---|---|---|---|
| Remaining torque in % | | | | | |
| | | | | | |
| | | | | | |

| **Derate map R2** | | | |
|---|---|---|---|
| °C | **128** | **130** | **135** |
| % | | | |

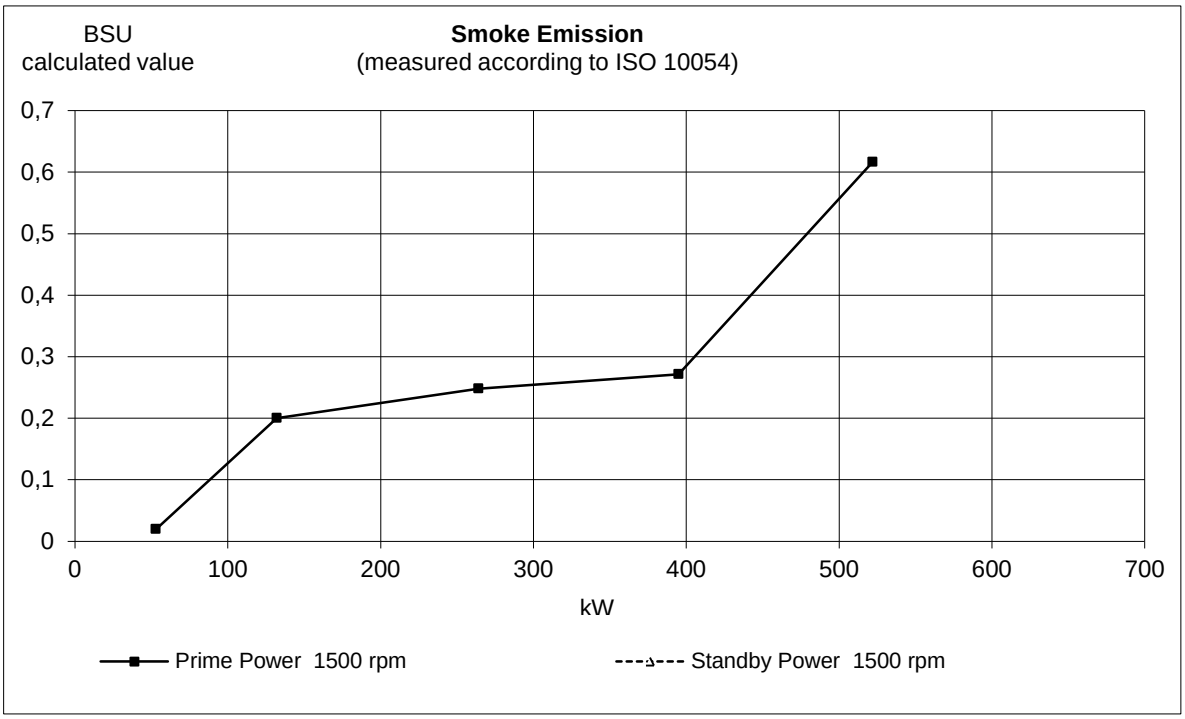
| *3)Soft derate Boost Temp* | Speed / °C | 90°C | 95°C | 105°C | |
|---|---|---|---|---|---|
| Remaining torque in % | | | | | |
| | | | | | |
| | | | | | |

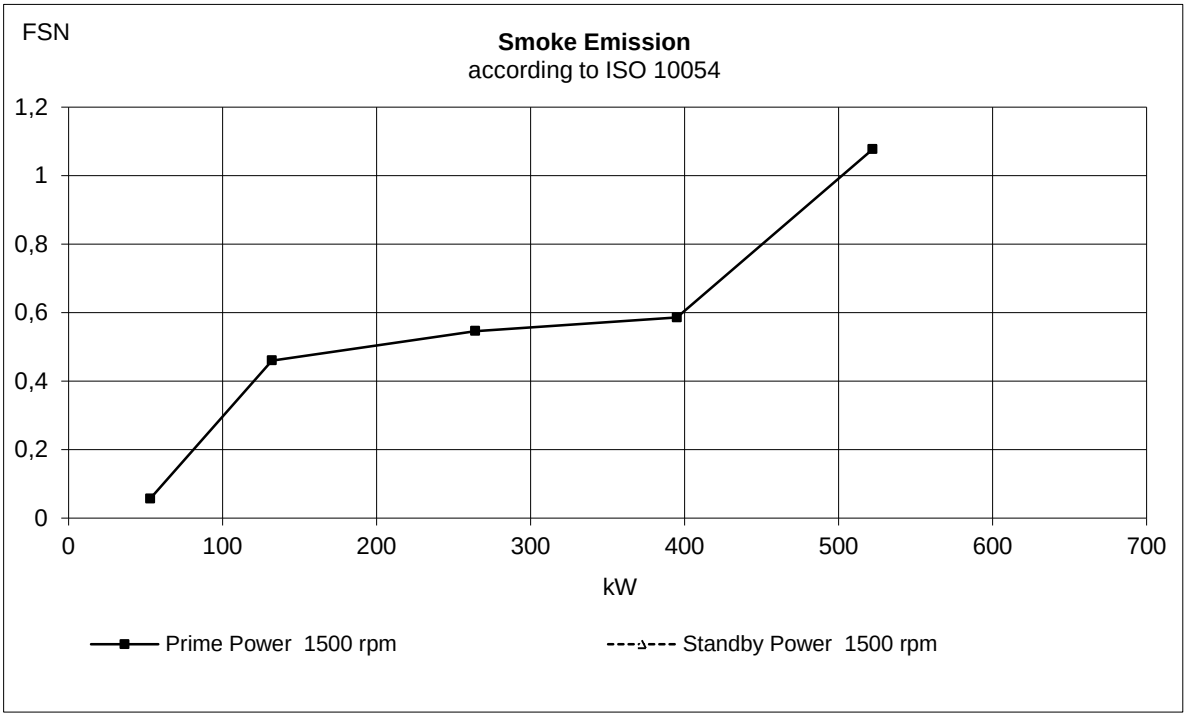
| Derate map R2 | | | |
|---|---|---|---|
| °C | 90 | 95 | 105 |
| % | | | |

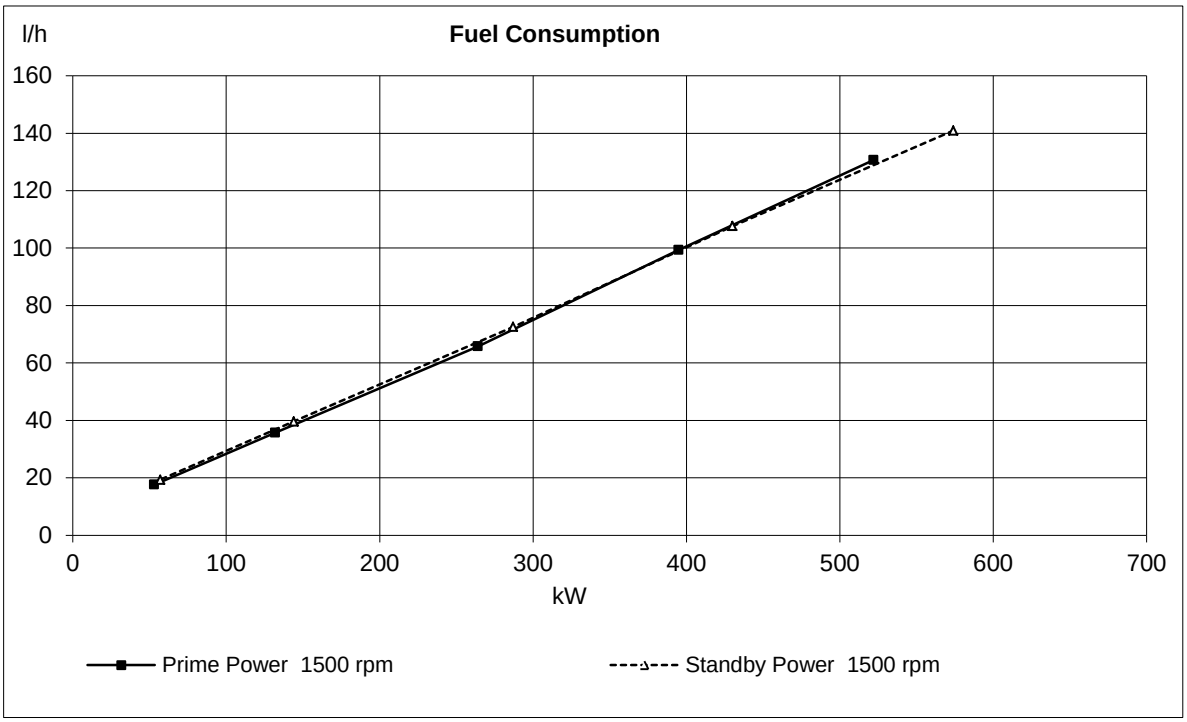
| *4)Soft derate Exhaust temp* | Speed / °C | 665°C | 675°C | 680°C | 685°C |
|---|---|---|---|---|---|
| Remaining torque in % | | | | | |
| | | | | | |
| | | | | | |

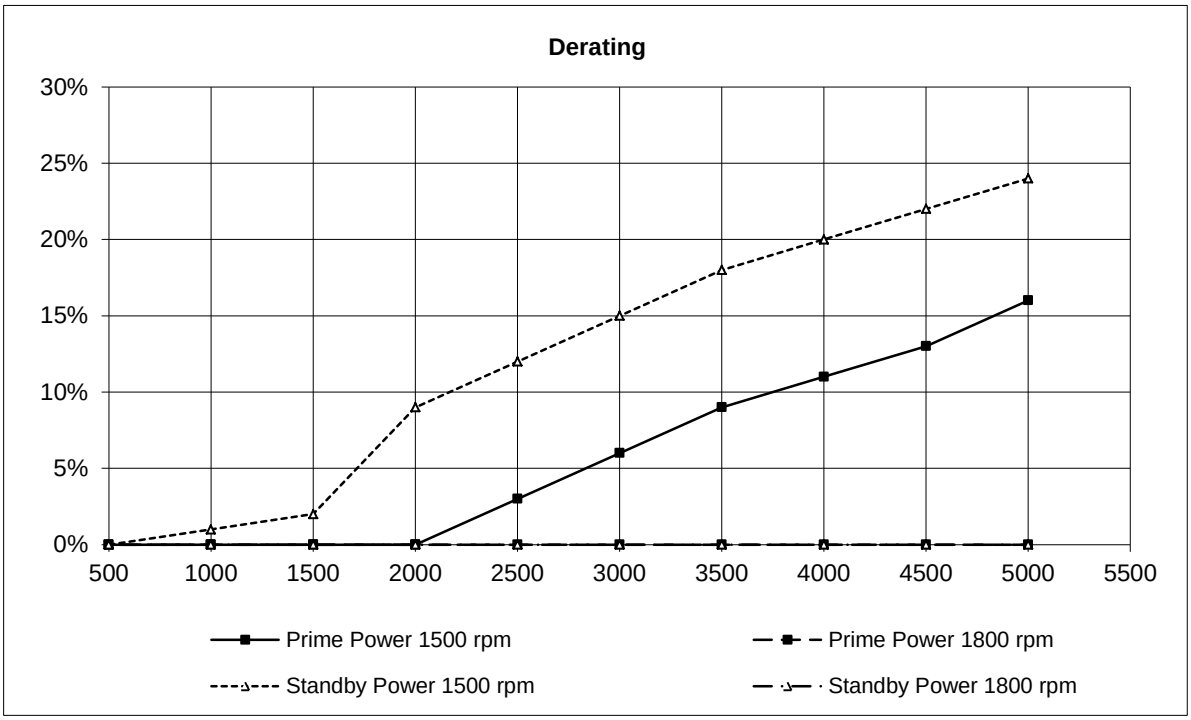
| Derate map R2 | | | | | |
|---|---|---|---|---|---|
| °C | 665 | 675 | 680 | 685 | |
| % | | | | | |

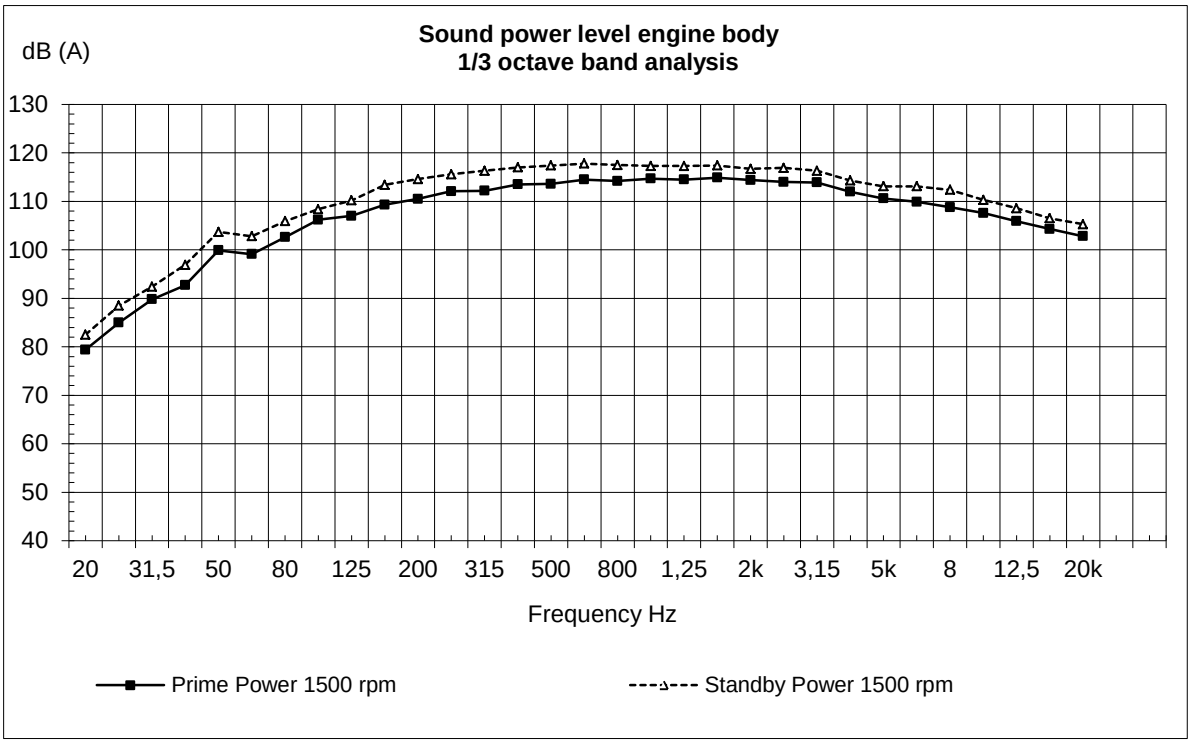
| Max Torque High Map R2 | 0 | 600 | 700 | 800 | 900 | 950 | 1000 | 1050 | 1100 | 1150 | 1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1400 | 1400 | 1900 | 2400 | 3450 | 3675 | 3700 | 3750 | 3850 | 3880 | 3925 |
| | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 1950 | 2100 | | |
| | 4050 | 4170 | 3820 | 3801 | 3600 | 2000 | 1000 | 0 | 0 | | |

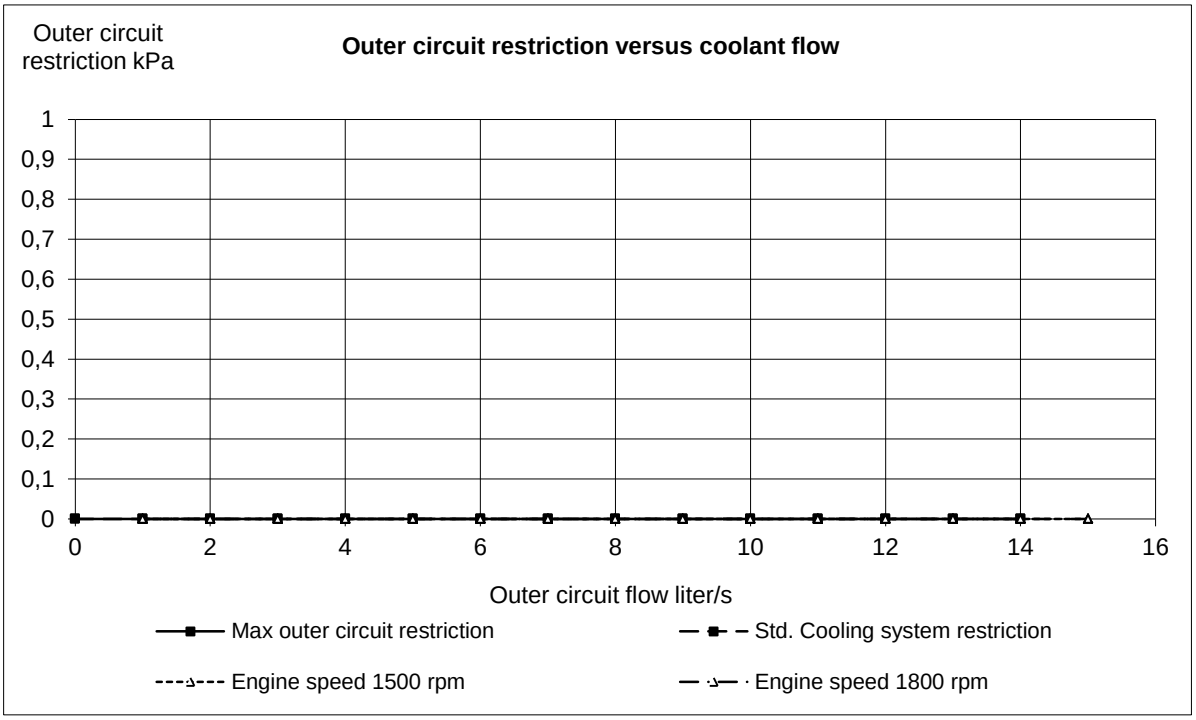

BSU
calculated value
Smoke Emission
(measured according to ISO 10054)
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
0
100
200
300
400
500
600
700
kW
Prime Power 1500 rpm
Standby Power 1500 rpm

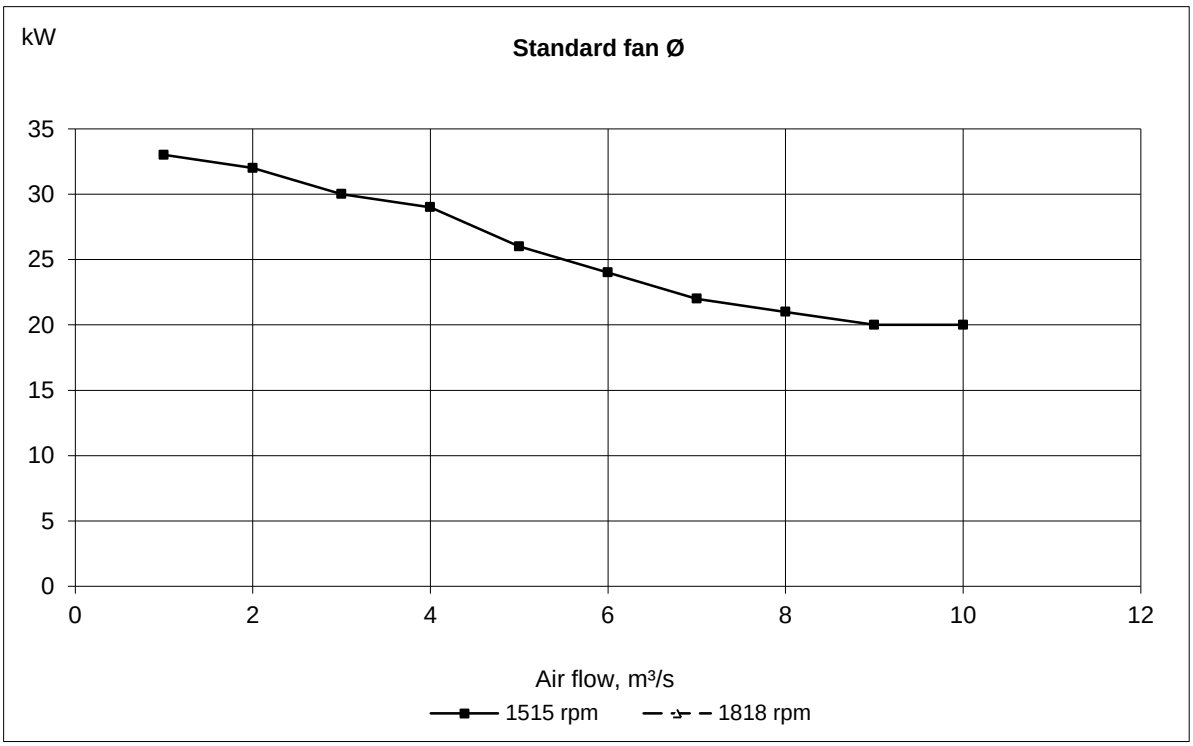

FSN
Smoke Emission
according to ISO 10054
1,2
1
0,8
0,6
0,4
0,2
0
0
100
200
300
400
500
600
700
kW
Prime Power 1500 rpm
Standby Power 1500 rpm

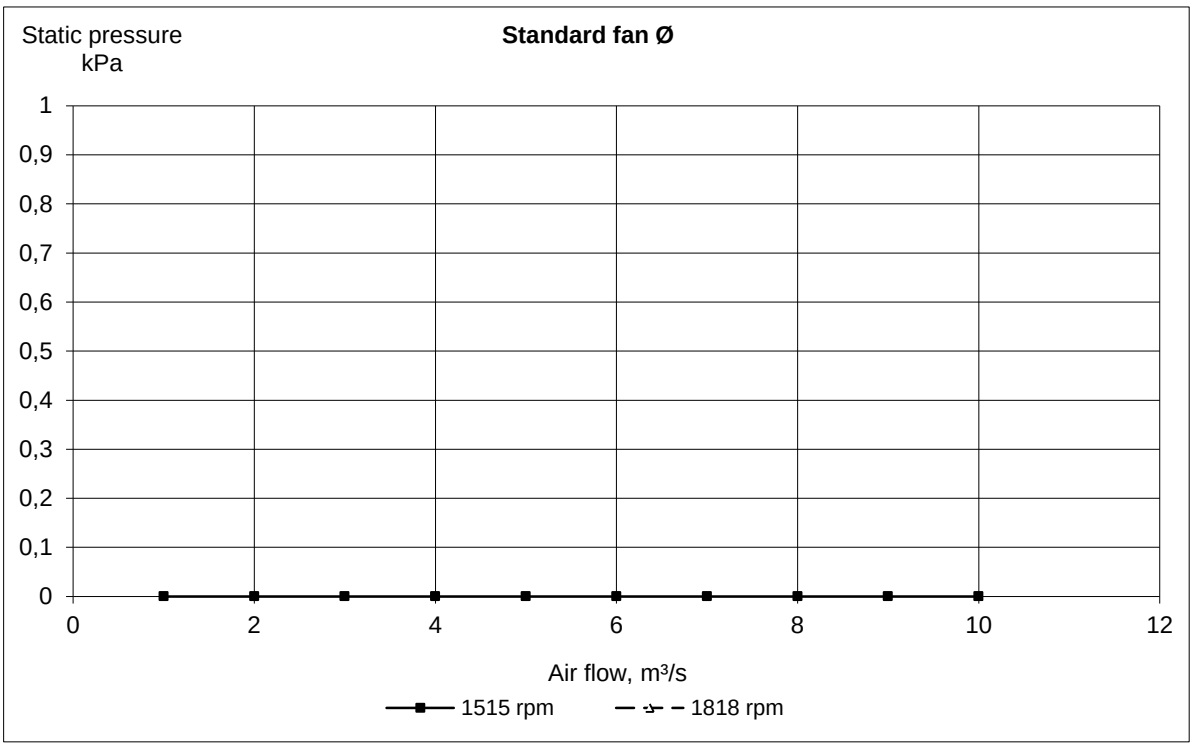

Fuel Consumption
l/h
160
140
120
100
80
60
40
20
0
0
100
200
300
400
500
600
700
kW
Prime Power 1500 rpm
Standby Power 1500 rpm

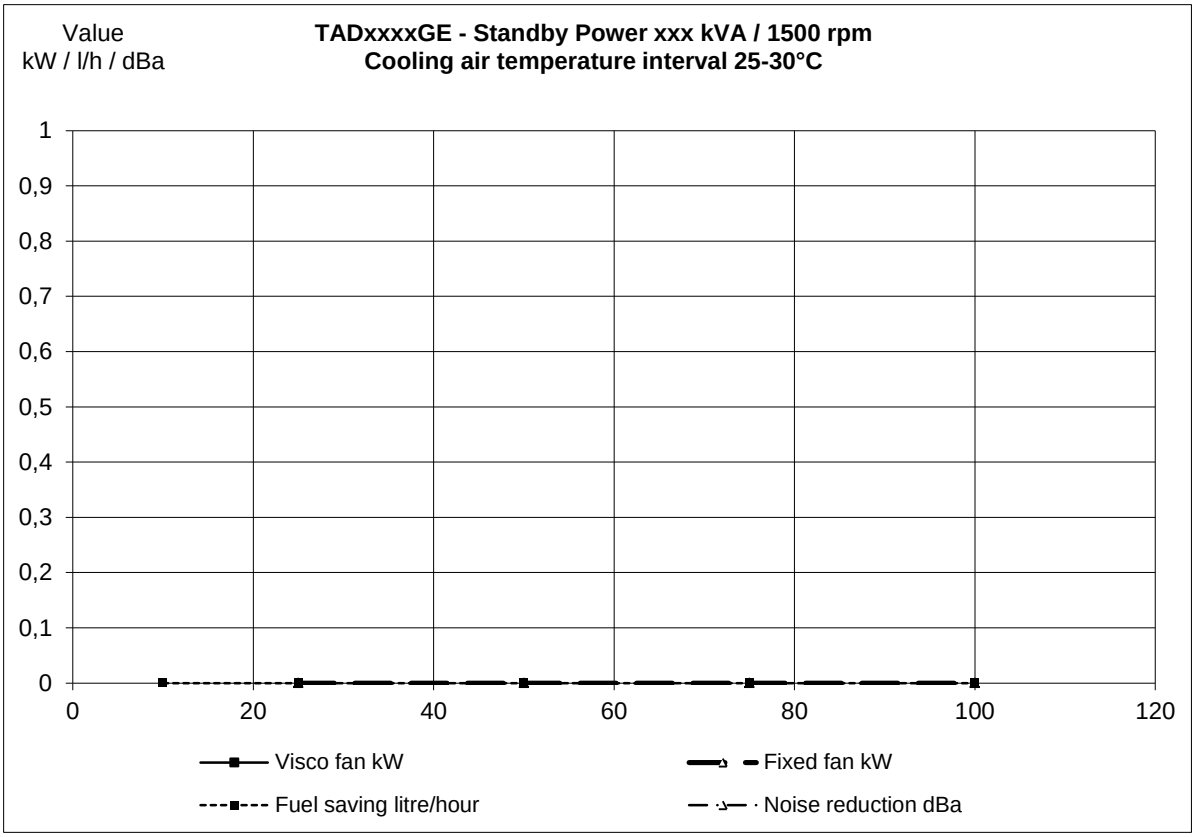

Derating
30%
25%
20%
15%
10%
5%
0%
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
Prime Power 1500 rpm
Prime Power 1800 rpm
Standby Power 1500 rpm
Standby Power 1800 rpm

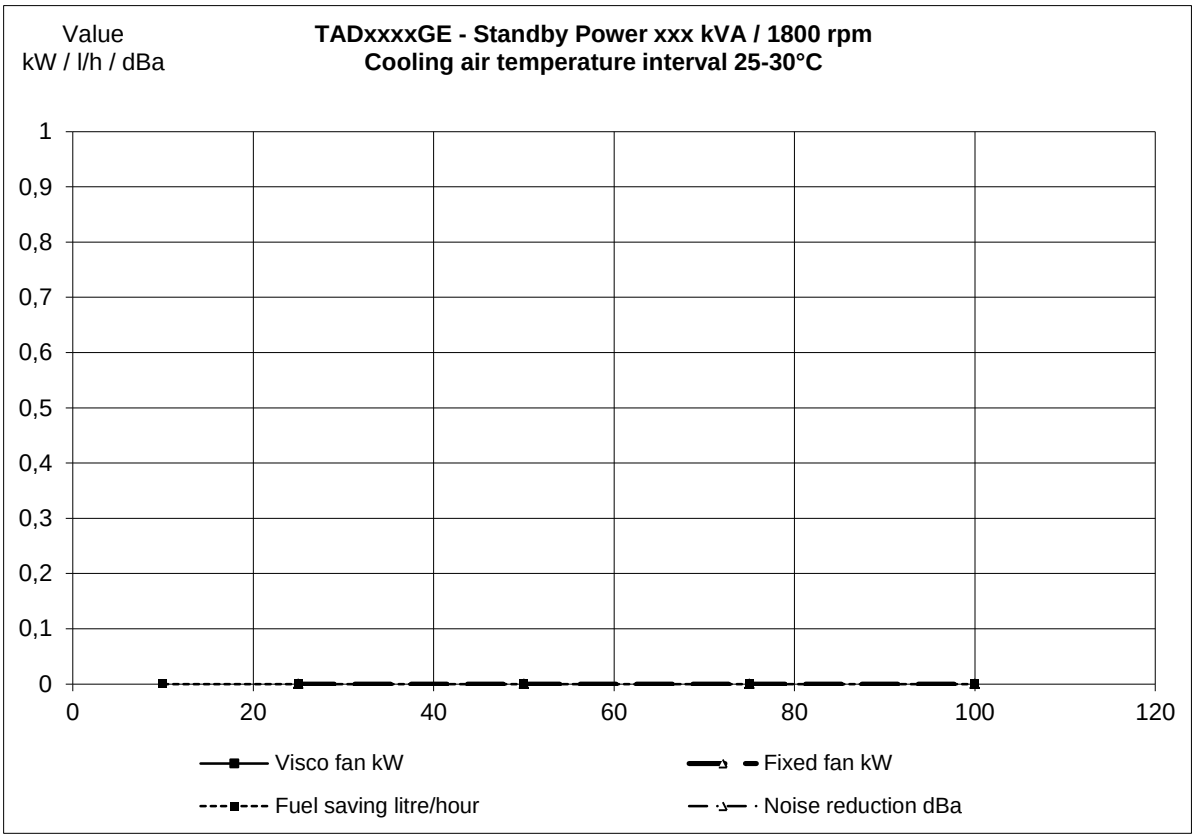

Sound power level engine body
1/3 octave band analysis
dB (A)
130
120
110
100
90
80
70
60
50
40
20
31,5
50
80
125
200
315
500
800
1,25
2k
3,15
5k
8
12,5
20k
Frequency Hz
Prime Power 1500 rpm
Standby Power 1500 rpm


Outer circuit restriction kPa
Outer circuit restriction versus coolant flow
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
0
2
4
6
8
10
12
14
16
Outer circuit flow liter/s
Max outer circuit restriction
Std. Cooling system restriction
Engine speed 1500 rpm
Engine speed 1800 rpm


kW
Standard fan Ø
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
Air flow, m³/s
1515 rpm
1818 rpm


Static pressure
kPa
Standard fan Ø
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
0
2
4
6
8
10
12
Air flow, m³/s
1515 rpm
1818 rpm


Value
kW / l/h / dBa
TADxxxxGE - Standby Power xxx kVA / 1500 rpm
Cooling air temperature interval 25-30°C
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
0
20
40
60
80
100
120
Visco fan kW
Fixed fan kW
Fuel saving litre/hour
Noise reduction dBa


Value
kW / l/h / dBa
TADxxxxGE - Standby Power xxx kVA / 1800 rpm
Cooling air temperature interval 25-30°C
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
0
20
40
60
80
100
120
Visco fan kW
Fixed fan kW
Fuel saving litre/hour
Noise reduction dBa