<table>
<thead>
<tr>
<th>FUEL TYPE</th>
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<tr>
<td>HF &amp; MDO &amp; MGO</td>
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<td>MDO &amp; MGO only</td>
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<td>MGO only with ≤ 0.1% sulphur</td>
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<th>Quantity PER ENGINE</th>
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<th>Material Name</th>
<th>Dimension, g/d</th>
<th>Standard or Drawing</th>
<th>Basic Material</th>
<th>Material Standard</th>
<th>Weight (GR/NET)</th>
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Material ID: DAAD098034

Product: W6-12X92DF

FUEL OIL SYSTEM
Brennstoffsysten
SPECIFICATIONS which must be met

**INLET - Pilot fuel oil**
- Fuel oil quality at engine inlet: MDO or MGO
- Pressure at engine inlet: 70 - 80 bar
- Volume flow: according to GTO
- Viscosity:
  - Viscosity MDO:MGO: 2-17 cSt
- Filtration:
  - One filter unit with max. 10 micron absolute, sphere passing mesh close to engine inlet.

**OUTLET - Pilot fuel oil**
- Normal operation condition: Returning to pilot fuel feed tank.
- Back pressure at engine outlet: max. 15 barg

**INLET - Fuel oil**
- Fuel oil quality at engine inlet: according to specification in Marine Installation Manual MIMO
- Pressure at engine inlet: stopped engine: 10 bar
  - running engine: 7-10 bar
- Volume flow: according to GTO
- Viscosity:
  - Viscosity for HFO: 10-20 cSt (recommendation: 13-17 cSt)
  - Viscosity MDO:MGO: 2-20 cSt
- Filtration:
  - At least one filter unit close to the engine inlet
  - One filter unit with max. 10 micron absolute, sphere passing mesh in the fuel system (either in feed- or booster circuit)
  - Bypass filter in parallel to the main fuel oil filter with max. 25 micron absolute, sphere passing mesh
- Fuel change-over:
  - Max. temperature gradient during fuel change-over: 2 °C/min
  - Fuel amount on engine side: Mentioned in table 1 on page 2 of this drawing.
  - Fuel amount on system side: According to project specific system layout.

**OUTLET - Fuel oil return**
- Normal operation condition: Returning to mixing unit
- Fuel oil change over while engine runs in service: Returning to service tank.

**OUTLET - Fuel leakage rail-unit (dirty)**
- Dirty fuel: Fuel leakage from rail-unit, not for re-use
- Free flow by gravity to sludge oil tank or appropriate tank.
- Pipe insulated and heated up IS0-95 °C

**OUTLET - Fuel leakage fuel pump and injection control (clean)**
- Clean fuel:
  - Normal leakage from fuel pump and injection control side.
  - Normal leakage from pilot fuel pump unit.
  - Additional leakage in emergency situation (e.g. high pressure pipe damage).
  - Free flow by gravity to FO overflow tank or appropriate tank.
  - Pipe insulated and heated up IS0-95 °C

**INLET - Heating medium for fuel oil trace heating**
- Connected to steam or thermal oil supply

**OUTLET - Heating medium for fuel oil trace heating**
- Connected to condensate manifold or thermal oil return
SPECIFICATION which must be met

**INLET** - Pilot fuel oil
- Fuel quality, pressure and viscosity: same as the main fuel oil.
  (connection 4.9)
- Volume flow: according to GTD.

**OUTLET** - Pilot fuel oil return
- Normal operation condition: returning to FO supply pump suction.
- Back pressure at ME outlet: max. 1.5 bar(g)

**INLET** - Fuel oil
Fuel oil quality: MDO with sulphur content: \( \leq 0.5\% \)
AND
MGO with sulphur content: \( 0.1\% \)
Pressure at engine inlet: stopped engine: 10 bar
running engine: 7 - 10 bar
Volume flow: according to GTD
Viscosity MDO/MGO: 2 - 17 cSt
Filtration:
- Main fuel oil filter with max. 10 micron (absolute, sphere passing mesh)
  close to engine inlet.
- Bypass filter in parallel to the main fuel oil filter with
  max. 25 micron (absolute, sphere passing mesh).
Fuel change-over:
- Max. temperature gradient during fuel change-over: 2°C/min.
- Fuel amount on engine side: Mentioned in Table 1 on page 2 of this drawing.
- Fuel amount on system side: According to project specific layout

**OUTLET** - Fuel oil return
- Normal operation condition: returning to upstream of the FO supply pump.

**OUTLET** - Fuel leakage rail-unit (dirty)
- Dirty fuel: Fuel leakage from rail-unit, not for re-use
  - Free flow by gravity to sludge oil tank or appropriate tank.

**OUTLET** - Fuel leakage fuel pump and injection control (clean)
- Clean fuel:
  - Normal leakage from fuel pump and injection control side.
  - Normal leakage from pilot fuel pump unit.
  - Additional leakage in emergency situation (e.g., high pressure pipe damage)
  - Free flow by gravity to FO overflow tank or appropriate tank.
SPECIFICATION which must be met

INLET - Pilot fuel oil
- Fuel quality, pressure, and viscosity: same as specified for the main fuel oil (connection 49).
- Volume flow: according to GTD.

OUTLET - Pilot fuel oil return
- Normal operation condition: returning to FO supply pump suction.
- Back pressure at ME outlet: max. 15 bar(g).

INLET - Fuel oil
Fuel oil quality: MGO
- Sulphur content: ≤ 0.1 %
- Pressure at engine inlet: stopped engine: 10 bar,
  running engine: 7 - 10 bar
- Volume flow: according to GTD
- Viscosity MGO: 2 - 17 cSt
- Filtration:
  - Main fuel oil filter with max. 10 micron (absolute, sphere passing mesh) close to engine inlet.
  - Bypass filter in parallel to the main fuel oil filter with max. 25 micron (absolute, sphere passing mesh).

OUTLET - Fuel oil return
- Normal operation condition: Returning to service tank.

OUTLET - Fuel leakage rail-unit (dirty)
- Dirty fuel: fuel leakage from rail-unit, not for re-use
- Free flow by gravity to sludge oil tank or appropriate tank.

OUTLET - Fuel leakage fuel pump and injection control (clean)
- Clean fuel:
  - Normal leakage from fuel pump and injection control side.
  - Additional leakage in emergency situation (e.g. high pressure pipe damage).
  - Free flow by gravity to FO overflow tank or appropriate tank.
Nominal pipe diameters (DN)

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<th>No. of cyl.</th>
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<th>B</th>
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<tr>
<td>12</td>
<td>125</td>
<td>100</td>
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</tr>
</tbody>
</table>

Capacity: 100 l
Design pressure: 10 bar
Service temperature: 150°C

Pos. Description
001 Outlet
002 Inlet, return line
003 Inlet, from feed pump
004 Outlet safety valve
005 Drain
006 Heating coil
007 Insulation
008 Mounting brackets *1)

Remarks:
- Configuration and dimensioning of the mixing unit have to comply with the relevant classification society/rules.
- *1) Mounting brackets for fixation on floor plate. The mixing unit must not be fitted unsupported under any circumstances.

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MIDS - WinGD-X92DF – FUEL OIL SYSTEM (DG9723)

TRACK CHANGES

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<td>System drg.- new revision</td>
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<td>2019-07-18</td>
<td>DAAD096234</td>
<td>System and main drg – new revision</td>
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<td>DAAD107659</td>
<td>System drg (MDO&amp;MGO only) - added</td>
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