PFEA vane and PVPCA piston pumps - for potentially explosive atmospheres according to 2014/34/EU Atex directive

PFEA vane and PVPCA piston pumps are certified for application in potentially explosive atmospheres according to ATEX 2014/34/EU, protection mode Ex II 2/2 GD ckb IIC T6/T5/T4 (group II for surface plants with gas, vapours and dust environment, category 2, zone 1, 2, 21 and 22).

The external surface temperature of the pump is in accordance with the certified class, to avoid the self ignition of the explosive mixture present in the environment.

- **PFEA** are fixed displacement-twelve-vane pumps available in three different body sizes and with following executions:
  - PFEA-*1 max pressure 210 bar
  - PFEA-*2 max pressure 300 bar
  - Displacements up to 150 cm³/rev.
  - SAE J744 mounting flange and shaft.
  - Optional through output shaft execution.

- **PVPCA** are variable displacement axial piston pumps for high pressure operation, and low noise level, available in a wide range of hydraulic and proportional controls.
  - PVPCA max working pressure 280 bar
  - max peak pressure 350 bar
  - Displacement: 29-46-73-88 cm³/rev.
  - SAE J744 mounting flange and shaft.
  - Optional through output shaft execution.

### 1. EXPLOSION PROOF CERTIFICATION MAIN DATA

<table>
<thead>
<tr>
<th>PUMP TYPE</th>
<th>Temperature class</th>
<th>Surface temperature</th>
<th>Ambient temperature</th>
<th>Max inlet fluid temperature</th>
<th>Protection degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-20 °C, +60 °C)</td>
<td>(-20 °C, +60 °C)</td>
<td>(-20 °C, +60 °C)</td>
</tr>
<tr>
<td>PFEA</td>
<td>T6</td>
<td>85 °C</td>
<td>20 °C to +60 °C</td>
<td>50 °C to +60 °C</td>
<td>60 °C to +60 °C</td>
</tr>
<tr>
<td></td>
<td>T5</td>
<td>100 °C</td>
<td>20 °C to +60 °C</td>
<td>+80 °C to +60 °C</td>
<td>+60 °C to +60 °C</td>
</tr>
<tr>
<td>PVPCA</td>
<td>T5</td>
<td>100 °C</td>
<td>20 °C to +60 °C</td>
<td>+80 °C to +60 °C</td>
<td>+60 °C to +60 °C</td>
</tr>
</tbody>
</table>

### 2. CERTIFICATION

#### 2.1 EXAMPLE OF PFEA NAMEPLATE MARKING

At side are resumed the pumps marking according to Atex certification

- **PFEA** - Ex II 2/2 GD ckb IIC T6
- **PVPCA** - Ex II 2/2 GD ckb IIC T5

### 3. TECHNICAL CHARACTERISTICS and OVERALL DIMENSIONS

<table>
<thead>
<tr>
<th>PFEA</th>
<th>PVPCA (with hydraulic controls)</th>
<th>PVPCA (with proportional controls)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PFEA-*1, see tab. A005</td>
<td>PVPCA (with hydraulic controls), see tab. A160</td>
</tr>
<tr>
<td></td>
<td>PFEA-*2, see tab. A007</td>
<td>PVPCA (with proportional controls), see tab. AS170</td>
</tr>
</tbody>
</table>

### 4. INSTALLATION NOTES

Before installation and start-up please consult tab. AX020

- According to EN 1127-1:2008, the maximum surface temperature indicated in the nameplate must be lower than the following Tmax values:
  - **Gas** - Tmax = max value (80% of gas ignition temperature)
  - **Dust** - Tmax = dust ignition temperature - 75K

- The fluid ignition temperature must be 50K greater than the maximum surface temperature indicated in the nameplate

- The maximum operating pressure and minimum inlet pressure are indicated on pump’s nameplate.

- The pump must be connected to ground using the ground facility (threaded hole M3x7) provided on the pump body and evidenced with special nameplate. The pump’s body and the electric motor, or other devices used to driving the pump, must be connected at the same electric potential.

**WARNING:** The pumps must not be operated in dry conditions or with oil ports blocked.

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Table AX010-0/E
Replaces A300-1/E

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**PFEA**

- **PVPCA**

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**AX010**
MODEL CODE of VANE PUMPS type PFEA

PFEA

<table>
<thead>
<tr>
<th>XA</th>
<th>31</th>
<th>036</th>
<th>D</th>
<th>T</th>
<th>/7</th>
<th>**</th>
<th>/*</th>
</tr>
</thead>
<tbody>
<tr>
<td>XA = for coupling with PFEA-31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XB = for coupling with PFEA-41 (only for PFEA-4* and PFEA-5*)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XC = for coupling with PFEA-51 (only for PFEA-5*)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XO = with through shaft, without rear flange</td>
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<td></td>
</tr>
</tbody>
</table>

Fixed displacement vane pump with Ex-proof certification.

Additional suffix for pumps with through shaft, for coupling with 2nd pump type PFEA:

- XA = for coupling with PFEA-31
- XB = for coupling with PFEA-41 (only for PFEA-4* and PFEA-5*)
- XC = for coupling with PFEA-51 (only for PFEA-5*)
- XO = with through shaft, without rear flange

Option:

- /7 = for ambient temperature up to 70°C

Size:

- 31, 41, 51 (standard)
- 32, 42, 52 (high pressure and low noise)

Displacement of PFEA-1 [cm³/rev]
- for PFEA-31: 010, 016, 022, 028, 036, 044
- for PFEA-41: 029, 037, 045, 056, 070, 085
- for PFEA-51: 090, 110, 129, 150

Displacement of PFEA-2 [cm³/rev]
- for PFEA-32: 016, 022, 028, 036
- for PFEA-42: 045, 056, 070, 085
- for PFEA-52: 090, 110, 129, 150

Type of control (1):

- C = manual pressure compensator
- CH = manual pressure compensator with venting
- R = remote pressure compensator
- L = load sensing (pressure & flow)
- LW = constant power (combined pressure & flow)

For proportional controls see note (2)

Size:

- 3 = for displacement 029
- 4 = for displacement 046
- 5 = for displacement 073 and 090

Max displacement of axial piston pump:

- 029 = 59 cm³/rev
- 046 = 46 cm³/rev
- 073 = 73 cm³/rev
- 090 = 88 cm³/rev

Type of PVPCA (for double pumps), see tab. A160

- XA = for coupling with PFEA-3*
- XB = for coupling with PFEA-4*
- XC = for coupling with PFEA-5*

Option:

- /7 = for ambient temperature up to 70°C

1) Shaft type 5 has to be selected for PFEA rear pumps to be coupled with PFEAX*

2) Pumps with option /7 are always equipped with seals FKM

3) Pumps with option /7 are always equipped with seals FKM

OPERATING AND MAINTENANCE

Specific Operating and maintenance instructions are always enclosed with the delivered pumps together with the CE conformity declaration and the relevant catalogue technical tables.

For the operating and maintenance instructions, refer to the following documentations:

- PFEA and -PVPCA see table AX020

Seals material:

- omit for NBR (mineral oil & water glycol)
- PE = FKM (2)

Solenoid threaded connection (only for CH control):

- GK-1/2" ISO/UNI-6125 (tapered)
- NPT = 1/2" NPT ANSI B2.1 (tapered)
- M = M20x1,5 UNI-4535 (6H/6g)

Direction of rotation (viewed at the shaft end):

- D = clockwise
- S = counterclockwise

Shaft (SAE Standard):

- 1 = keyed (7/8" for 029 - 1" for 046 - 1 1/4" for 073 and 090)
- 5 = splined (13 teeth for 029 - 15 for 046 - 14 for 073 and 090)

Voltage code, only for CH

- see table EX010

Note:

- PFEA* are not reversible

1) Shaft type 5 has to be selected for PFEA rear pumps to be coupled with PFEAX*

2) Pumps with proportional controls type: CZ, LQZ, PES and PERS are available on request.

For the technical characteristics of PVPCA pumps with proportional controls, see table AS170

3) Pumps with option /7 are always equipped with seals FKM