



## Sample gas pumps P2.x ATEX

Even in explosive systems in the chemical industry, petrochemistry or biochemistry, gas analysis is key for safe operation. Many of the analysis processes used in these fields require extracting and special conditioning of the sample gas.

Sample gas pumps convey the sample gas from the sampling point to the conditioning system. The main item in these specially designed pumps is the PTFE single-piece bellows. Combined with the pump head, also single-piece, this solution provides high resistance against particularly aggressive sample gas. Turning the pump head allows gas with condensate to be conveyed without a problem.

There are several different models with separate drive, depending on the requirements. These versions allow the installation of a coupling flange to install the pump heads inside heated housings away from the motor whilst the motor remains outside the housing.

The series are available for various EX hazard and classification zones with flow rates up to 700 L/h.

**Easy, sturdy set-up**

**Easy to replace valves**

**Single-piece bellows**

**For aggressive sample gas**

**Conveys sample gas with condensate**

**Long life**

**Pump head with optional adjustable bypass valve**

**Bypass valve for PTFE and VA pump body**

**Low noise emission**

**With mounting bracket**

**ATEX versions category 2**



## Pump Overview

|   | Direct-drive pumps |            | Pumps with intermediate flange |            |
|---|--------------------|------------|--------------------------------|------------|
| Flow rate<br>(see flow curve)                   | 400 l/h            | 700 l/h    | 400 l/h                        | 700 l/h    |
| <b>ATEX models</b><br>II 2G Ex h IIC T3/T4 Gb X | P2.2 ATEX          |            | P2.4 ATEX                      |            |
| <b>ATEX models</b><br>II 2G Ex h IIC T3 Gb X    |                    | P2.72 ATEX |                                | P2.74 ATEX |

## P2.2/P2.4 ATEX technical data

## Technical data

|   |  |
|---|--|
| Nominal voltage:  | see ordering information   |
| Marking:  | II 2G Ex h IIC T3/T4 Gb X  |
| IP rating:  | electrical IP65<br>mechanical IP20   |
| Dead volume:  | 8.5 ml   |
| Weight:   | approx. 7.5 kg (P 2.2 ATEX)<br>approx. 8.5 kg (P 2.4 ATEX)   |
| Materials in contact with media<br>varies by configuration: | PTFE, PVDF (standard pump with 100 °C valves)<br>+ PEEK (standard pump with 140 °C valves)<br>+ FKM (standard pump with 100 °C valves and bypass valve)<br>+ PCTFE, FKM (standard pump with 140 °C valves and bypass valve)<br>+ 1.4571 (VA pump body)<br>+ 1.4401, FKM (VA pipe fittings)<br>+ FKM (VA pump body with bypass valve) |

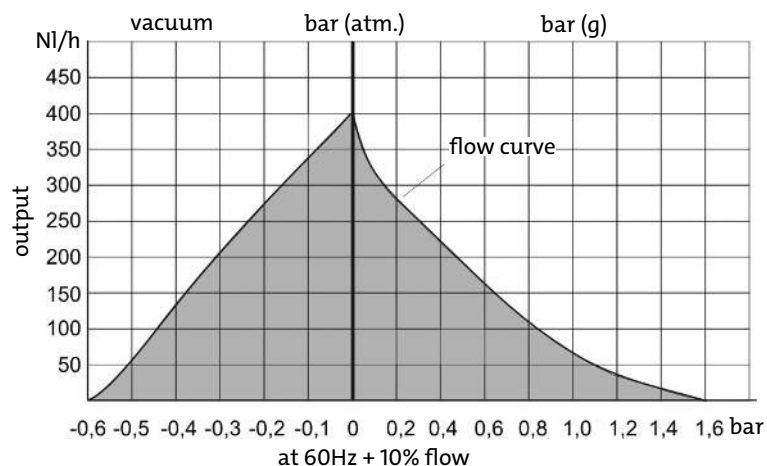
The following table describes the temperature characteristics and the resulting limits for the permissible operation of the sample gas pumps. The temperature classes apply both to the gas in the installation area (zone) and to the explosive pumped medium in the gas path:

| Temperature class | Motor ambient temperature | Pump head ambient temperature | P2.2                            |                           | P2.4  |                                 |
|-------------------|---------------------------|-------------------------------|---------------------------------|---------------------------|---|---------------------------------|
|                   |                           |                               | Media temperature <sup>1)</sup> |                           | Pump head ambient temperature <sup>1)</sup> | Media temperature <sup>1)</sup> |
|                   |                           |                               | without bypass valve            | with bypass valve         |   |                                 |
| T3                | -20 °C...50 °C            | max. 50 °C                    | max. 140 °C                     | max. 135 °C <sup>2)</sup> | max. 100 °C                                 | max. 140 °C                     |
| T4                |                           |                               | max. 90 °C                      | max. 85 °C                | max. 90 °C                                  | max. 90 °C                      |

<sup>1)</sup> Due to the maximum continuous operating temperature of the factory-installed plastic screw-in fittings, the maximum permitted media and ambient temperature for these versions is limited to ≤ 80 °C for pumps without a bypass valve and ≤ 75 °C for pumps with a bypass valve.

<sup>2)</sup> At a media temperature of > 85 °C, operation with a bypass valve is only permitted in the stainless steel version.

## Feed curve 400 l/h



## Technical Data P2.72/P2.74 ATEX

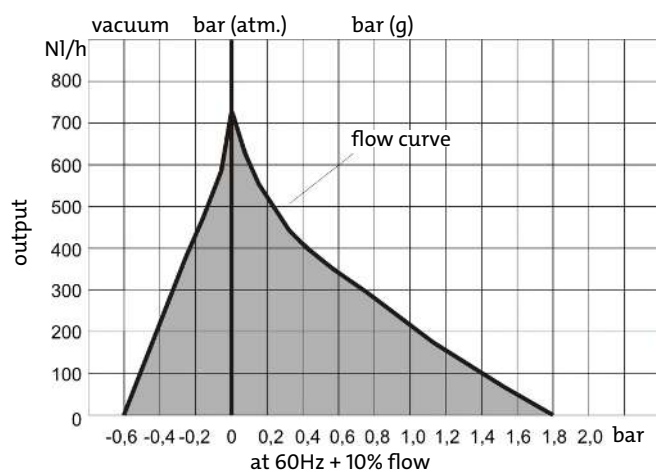
## Technical data

|                                  |  |
|----------------------------------|--|
| Nominal voltage:                 | see ordering information   |
| Marking:                         | II 2G Ex h IIC T3 Gb X   |
| IP rating:                       | electrical IP65<br>mechanical IP20   |
| Dead volume:                     | 8.5 ml   |
| Weight:                          | approx. 7.5 kg (P 2.72 ATEX)<br>approx. 8.5 kg (P 2.74 ATEX)                                       |
| Materials in contact with media: | PTFE, PEEK, 1.4571 (used in all models)<br>+ FKM (bypass valve)<br>+ 1.4401, FKM (VA pipe fitting) |

The following table describes the temperature characteristics and the resulting limits for the permissible operation of the sample gas pumps. The temperature class applies both to the gas in the installation area (zone) and to the explosive pumped medium in the gas path:

|                   |                           | P2.72                         |                      |                   | P2.74                         |                   |
|-------------------|---------------------------|-------------------------------|----------------------|-------------------|-------------------------------|-------------------|
| Temperature class | Motor ambient temperature | Pump head ambient temperature | Media temperature    |                   | Pump head ambient temperature | Media temperature |
|                   |                           |                               | without bypass valve | with bypass valve |                               |                   |
| T3                | -20 °C...50 °C            | max. 50 °C                    | max. 115 °C          | max. 105 °C       | max. 100 °C                   | max. 115 °C       |

## Flow curve 700 l/h



**Important motor notices**

**Motors used in EX areas require a protection device!**

**Installing the motor protection switch outside the EX area**

| Motor voltage       |               | Item no.   |
|---------------------|---------------|------------|
| 7 = 230 V 50/60 Hz  | 0,7 - 1 A     | 9132020041 |
| 8 = 115 V 50/60 Hz  | 1,4 - 2 A     | 9132020057 |
| 9 = 380-420 V 50 Hz | 0,45 - 0,63 A | 9132020055 |
| 0 = 500 V 50 Hz     | 0,35 - 0,5 A  | 9132020071 |

**Installing the motor protection switch inside the EX area Zone 1 or 2 (ATEX only)**

| Motor voltage       |              | Item no.   |
|---------------------|--------------|------------|
| 7 = 230 V 50/60 Hz  | 0,63 - 1 A   | 9132020036 |
| 8 = 115 V 50/60 Hz  | 1.6 - 2.5 A  | 9132020033 |
| 9 = 380-420 V 50 Hz | 0,4 - 0,63 A | 9132020073 |
| 0 = 500 V 50 Hz     | 0,25 - 0,4 A | 9132020074 |

**Information about the versions****Pump head position (only P2.2 ATEX and P2.72 ATEX):**

If the gas contains condensate, the pump head must be installed rotated by 180°. In this case, turn the pump head as described in the operating instructions. Please note the correct pump head position for your application when placing your order to avoid conversion.

**Pump head material:**

The standard material is PTFE.

The pump head may be fitted with a bypass valve (P 2.2 ATEX and P2.72 ATEX only) to reach all the values in the grey area of the flow curve. Depending on the inlet and outlet pipe style, a stainless steel pump body may be ordered.

**Valve material (P2.2 ATEX models only):**

PTFE/PVDF valves must be used for unheated applications with a medium temperature up to max. 100 °C. For higher temperatures up to 140 °C, use the appropriate PTFE/PEEK valves. Please note, the max. temperatures are limited by the temperature classes (see Technical Data).

## Ordering instructions P2.2/P2.4 ATEX

| 42 | xx | x | x | x | x | x | 9 | 0 | 0 | 0 | Product characteristics  |
|----|----|---|---|---|---|---|---|---|---|---|--|
|    | 61 |   |   |   |   |   |   |   |   |   | <b>Base model</b>  |
|    |    |   |   |   |   |   |   |   |   |   | P2.2 ATEX 400 l/h (direct operation without intermediate flange) |
|    | 62 |   |   |   |   |   |   |   |   |   | P2.4 ATEX 400 l/h (with intermediate flange)                     |
|    |    |   |   |   |   |   |   |   |   |   | <b>Motor voltage</b>   |
|    |    |   |   |   |   |   |   |   |   |   | 230 V 50/60 Hz; 0.78/0.86 A                                      |
|    |    |   |   |   |   |   |   |   |   |   | 115 V 50/60 Hz; 1.56/1.72 A                                      |
|    |    |   |   |   |   |   |   |   |   |   | 380–420 V 50 Hz; 0.46 A  |
|    |    |   |   |   |   |   |   |   |   |   | 500 V 50 Hz; 0.36 A  |
|    |    |   |   |   |   |   |   |   |   |   | <b>Pump head position</b>  |
|    |    |   |   |   |   |   |   |   |   |   | Normal position vertical   |
|    |    | 1 |   |   |   |   |   |   |   |   | turned by 180° <sup>1)</sup>                                     |
|    |    | 2 |   |   |   |   |   |   |   |   |  |
|    |    |   |   |   |   |   |   |   |   |   | <b>Pump body material</b>  |
|    |    |   |   |   |   |   |   |   |   |   | PTFE   |
|    |    |   |   |   |   |   |   |   |   |   | Stainless steel 1.4571   |
|    |    |   |   |   |   |   |   |   |   |   | PTFE with bypass valve <sup>1)</sup>                             |
|    |    |   |   |   |   |   |   |   |   |   | Stainless steel 1.4571 with bypass valve <sup>1)</sup>           |
|    |    |   |   |   |   |   |   |   |   |   | <b>Valve material</b>  |
|    |    |   |   |   |   |   |   |   |   |   | up to 100 °C; PTFE/PVDF <sup>1)</sup>                            |
|    |    |   |   |   |   |   |   |   |   |   | up to 140 °C; PTFE/PEEK  |
|    |    |   |   |   |   |   |   |   |   |   | <b>Screw-in connections (depending on pump body)</b>             |
|    |    |   |   |   |   |   |   |   |   |   | <b>PTFE pump body</b>  |
|    |    |   |   |   |   |   |   |   |   |   | <b>Stainless steel pump body</b>                                 |
|    |    |   |   |   |   |   |   |   |   |   | DN 4/6 (standard)  |
|    |    |   |   |   |   |   |   |   |   |   | 6 mm (standard)  |
|    |    |   |   |   |   |   |   |   |   |   | DN 6/8   |
|    |    |   |   |   |   |   |   |   |   |   | 8 mm   |
|    |    |   |   |   |   |   |   |   |   |   | 3/8"–1/4"  |
|    |    |   |   |   |   |   |   |   |   |   | 3/8"   |
|    |    |   |   |   |   |   |   |   |   |   | 1/4"–1/8"  |
|    |    |   |   |   |   |   |   |   |   |   | 1/4"–1/6"  |
|    |    |   |   |   |   |   |   |   |   |   | 1/4"   |
|    |    |   |   |   |   |   |   |   |   |   | <b>Mounting accessories</b>                                      |
|    |    |   |   |   |   |   |   |   |   |   | incl. mounting bracket and bumpers <sup>1)</sup>                 |

<sup>1)</sup> not possible with P2.4 ATEX.

## Ordering instructions P2.72/P2.74 ATEX

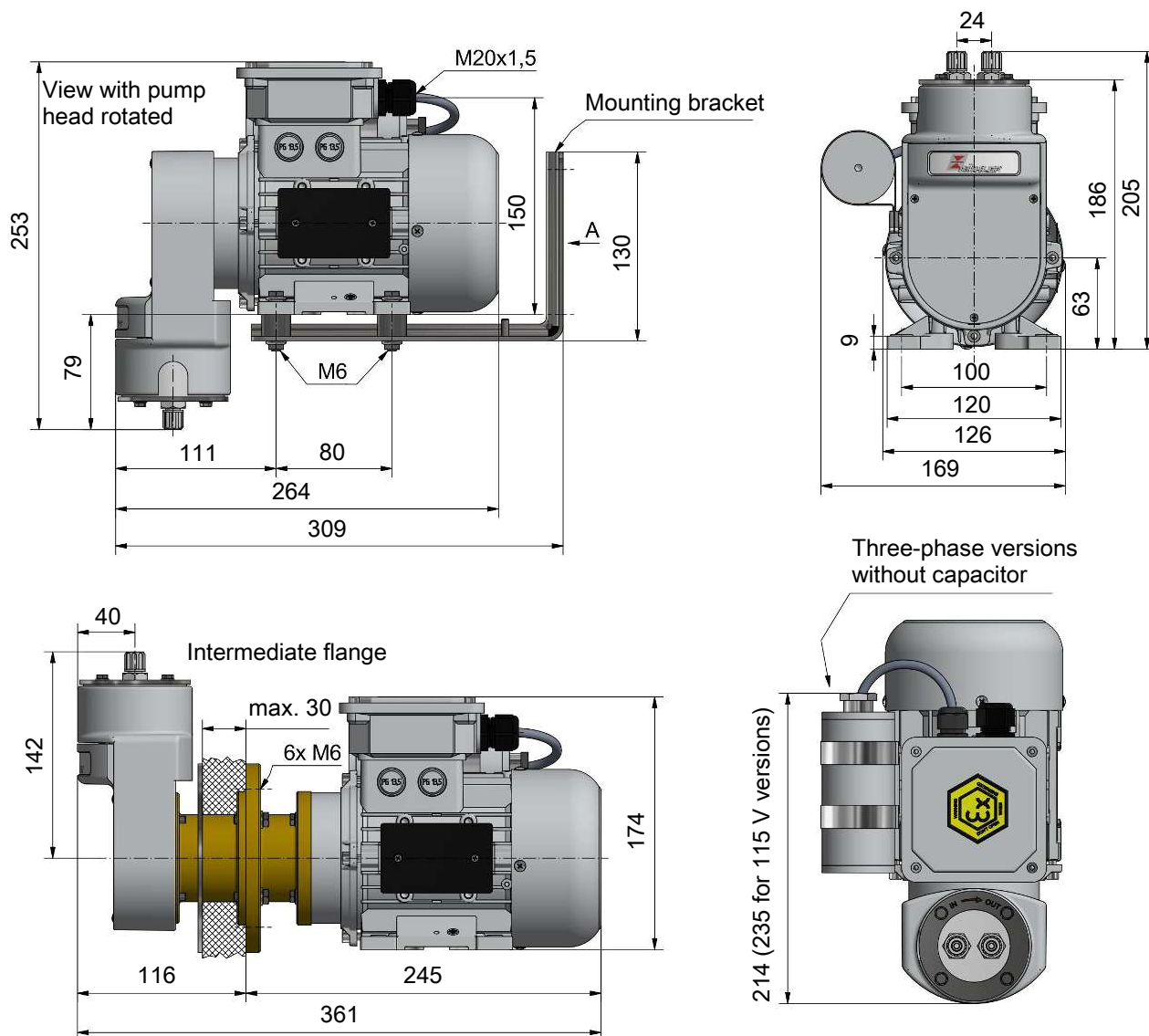
| 42 | xx | x | x | x | x | x | 9 | 0 | 0 | 0 | Product characteristics   |
|----|----|---|---|---|---|---|---|---|---|---|---|
|    |    |   |   |   |   |   |   |   |   |   | <b>Base model</b>   |
|    | 65 |   |   |   |   |   |   |   |   |   | P2.72 ATEX 700 l/h (direct operation without intermediate flange) |
|    | 66 |   |   |   |   |   |   |   |   |   | P2.74 ATEX 700 l/h (with intermediate flange)                     |
|    |    |   |   |   |   |   |   |   |   |   | <b>Motor voltage</b>  |
|    | 7  |   |   |   |   |   |   |   |   |   | 230 V 50/60 Hz; 0.78/0.86 A                                       |
|    | 8  |   |   |   |   |   |   |   |   |   | 115 V 50/60 Hz; 1.56/1.72 A                                       |
|    | 9  |   |   |   |   |   |   |   |   |   | 380–420 V 50 Hz; 0.46 A   |
|    | 0  |   |   |   |   |   |   |   |   |   | 500 V 50 Hz; 0.36 A   |
|    |    |   |   |   |   |   |   |   |   |   | <b>Pump head position</b>   |
|    |    | 1 |   |   |   |   |   |   |   |   | Normal position vertical  |
|    |    | 2 |   |   |   |   |   |   |   |   | turned by 180° <sup>1)</sup>                                      |
|    |    |   |   |   |   |   |   |   |   |   | <b>Pump body material</b>   |
|    |    |   | 2 |   |   |   |   |   |   |   | Stainless steel 1.4571  |
|    |    |   | 4 |   |   |   |   |   |   |   | Stainless steel 1.4571 with bypass valve <sup>1)</sup>            |
|    |    |   |   |   |   |   |   |   |   |   | <b>Valve material</b>   |
|    |    |   |   | 2 |   |   |   |   |   |   | up to 140 °C; PTFE/PEEK   |
|    |    |   |   |   |   |   |   |   |   |   | <b>Screw-in connections</b>                                       |
|    |    |   |   |   | 9 |   |   |   |   |   | 6 mm (standard)   |
|    |    |   |   |   | 1 |   |   |   |   |   | 8 mm  |
|    |    |   |   |   | 2 |   |   |   |   |   | 3/8"  |
|    |    |   |   |   | 4 |   |   |   |   |   | 1/4"  |
|    |    |   |   |   |   |   |   |   |   |   | <b>Mounting accessories</b>                                       |
|    |    |   |   |   |   | 9 |   |   |   |   | incl. mounting bracket and bumpers <sup>1)</sup>                  |

<sup>1)</sup> not possible with P2.74 ATEX.

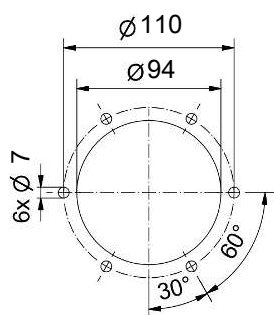
## Dimensions

P2.2 ATEX, P2.72 ATEX – standard versions

P2.4 ATEX, P2.74 ATEX – versions with intermediate flange



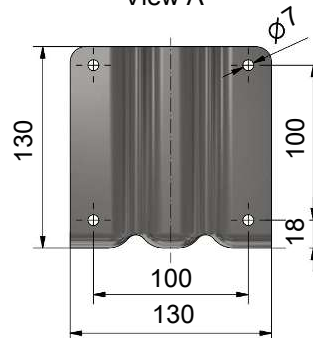
Cabinet cut-out for pumps with intermediate flange



Adjustable bypass valve (optional)



View A



### Installation notices:

- 1) This pump should be installed horizontally
- 2) If necessary, rotate the pump head during installation. When conveying gasses with condensate content it must be installed valves down.