

9 Appendices

9.1 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 mechanical IP20
Dead volume:	8.5 ml
Weight:	approx. 7.5 kg (P 2.2 ATEX) approx. 8.5 kg (P 2.4 ATEX)
Materials in contact with media varies by configuration:	PTFE, PVDF (standard pump with 100 °C valves) + PEEK (standard pump with 140 °C valves) + FKM (standard pump with 100 °C valves and bypass valve) + PCTFE, FKM (standard pump with 140 °C valves and bypass valve) + 1.4571 (VA pump body) + 1.4401, FKM (VA pipe fittings) + FKM (VA pump body with bypass valve)

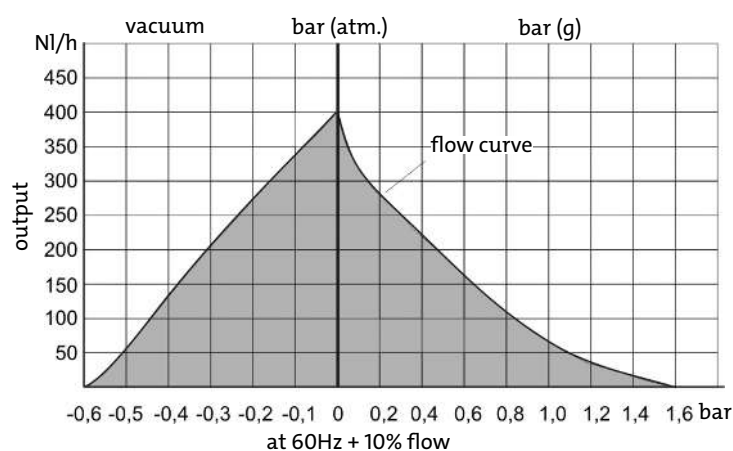
The following table describes the temperature characteristics and the resulting limits for the permissible operation of the sample gas pumps. The temperature classes apply both to the gas in the installation area (zone) and to the explosive pumped medium in the gas path:

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

¹⁾ Particularly in applications with increased ambient or medium temperatures, the corresponding thermal endurance properties of these components must be taken into account when using plastic screw-in fittings. The compression processes inside the pump cause additional temperature increases. The plastic screw-in fittings (PVDF) installed at the factory have a maximum continuous operating temperature of 140 °C.

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

Feed curve 400 l/h



9.2 Technical data P2.72/P2.74 ATEX

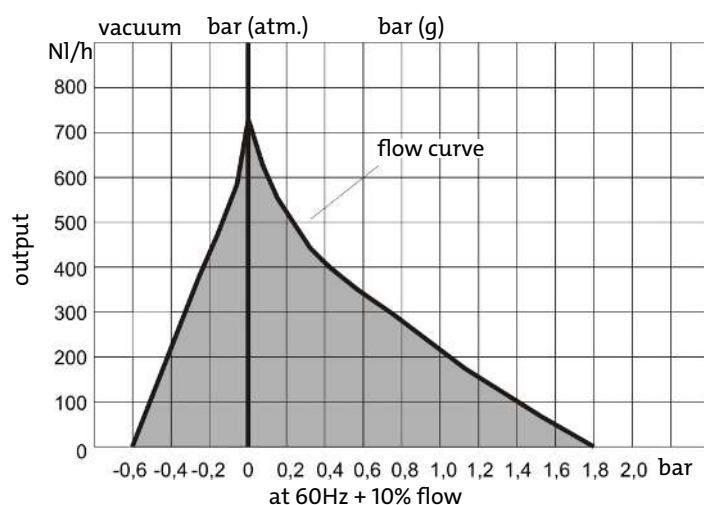
Technical data

Nominal voltage:	see ordering information
Marking:	II 2G Ex h IIC T3 Gb X
IP rating:	electrical IP65 mechanical IP20
Dead volume:	8.5 ml
Weight:	approx. 7.5 kg (P 2.72 ATEX) approx. 8.5 kg (P 2.74 ATEX)
Materials in contact with media:	PTFE, PEEK, 1.4571 (used in all models) + FKM (bypass valve) + 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	Medium temperature		Pump head ambient temperature	Medium 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



9.3 Technical Data P2.x ATEX-H2/-O2

Nominal voltage:	see ordering information
Marking:	II 2G Ex h IIC T3/T4 Gb X (P2.2/P2.4 ATEX) II 2G Ex h IIC T3 Gb X (P2.72/P2.74 ATEX)
IP rating:	electric IP65 mechanical IP20
Dead volume:	8,5 ml
Weight:	approx. 7,5 kg (P2.2/P2.72 ATEX) approx. 8,5 kg (P2.4/P2.74 ATEX)
Materials in contact with media vary by configuration:	PTFE, PEEK, 1.4571 (contained in all models) + FKM (bypass valve) + 1.4401, FKM (VA pipe fittings for H ₂ variant) + 1.4401 (VA RT pipe fittings for O ₂ variant, BAM-tested PTFE sealing tape required [see accessories])

The following tables describe the temperature characteristics and the resulting limits for the permissible operation of the sample gas pumps. The temperature classes apply to the gas in the installation area (zone) as well as to the explosive medium in the gas path:

Temperature characteristics P2.x ATEX-H2 variants

		P2.2			P2.4	
Temperature class	Ambient temperature motor	Ambient temperature pump head	Media temperature		Ambient temperature pump head	Media temperature
			without bypass valve	with bypass valve		
T3	-20 °C...50 °C	max. 50 °C	max. 140 °C	max. 135 °C	max. 100 °C	max. 140 °C
T4			max. 90 °C	max. 85 °C	max. 90 °C	max. 90 °C

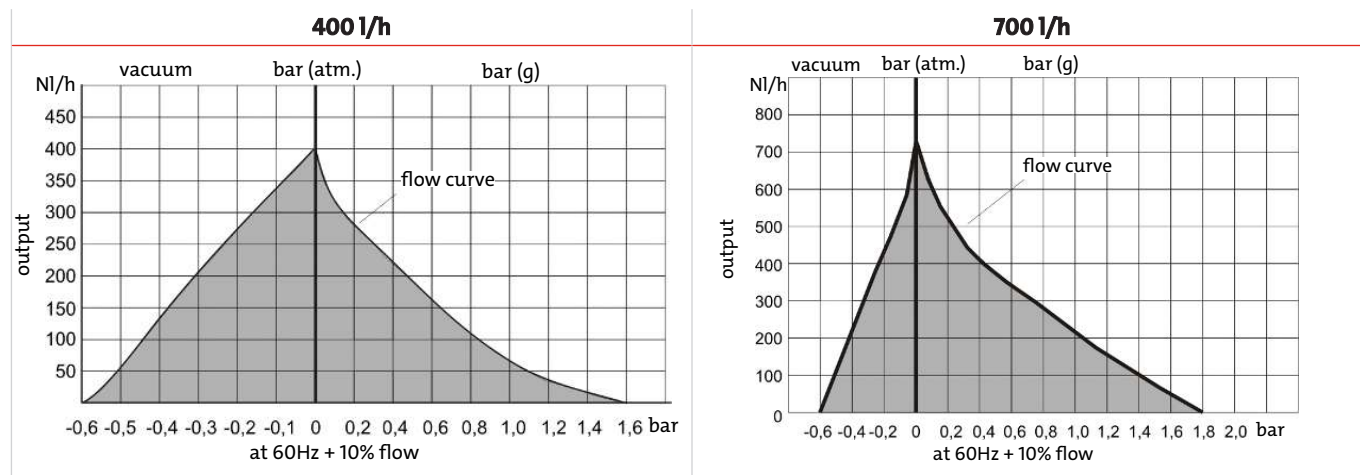
		P2.72			P2.74	
Temperature class	Ambient temperature motor	Ambient temperature pump head	Media temperature		Ambient temperature pump head	Media temperature
			without bypass valve	with bypass valve		
T3	-20 °C...50 °C	max. 50 °C	max. 115 °C	max. 105 °C	max. 100 °C	max. 115 °C

Temperature characteristics P2.x ATEX-O2 variants

		P2.2		P2.4	
Temperature class	Ambient temperature motor	Ambient temperature pump head	Media temperature	Ambient temperature pump head	Media temperature
T3	-20 °C...50 °C	max. 50 °C	max. 75 °C	max. 75 °C	max. 75 °C
T4					

		P2.72/P2.74	
Temperature class	Ambient temperature motor	Ambient temperature pump head	Media temperature
T3	-20 °C...45 °C	max. 45 °C	max. 45 °C

Flow curves



9.4 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

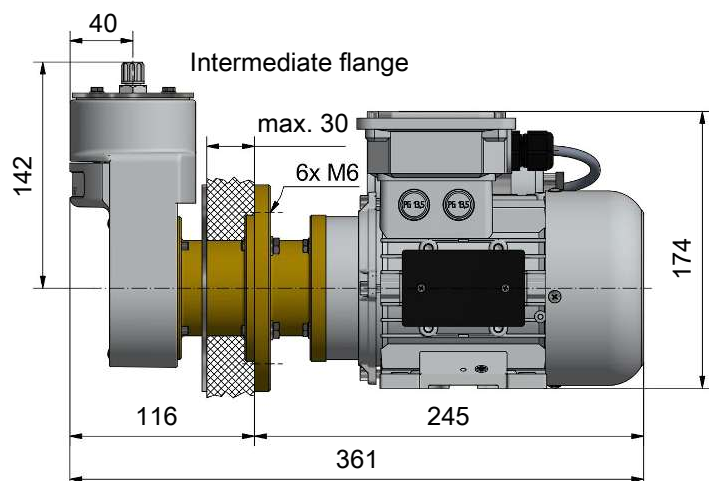
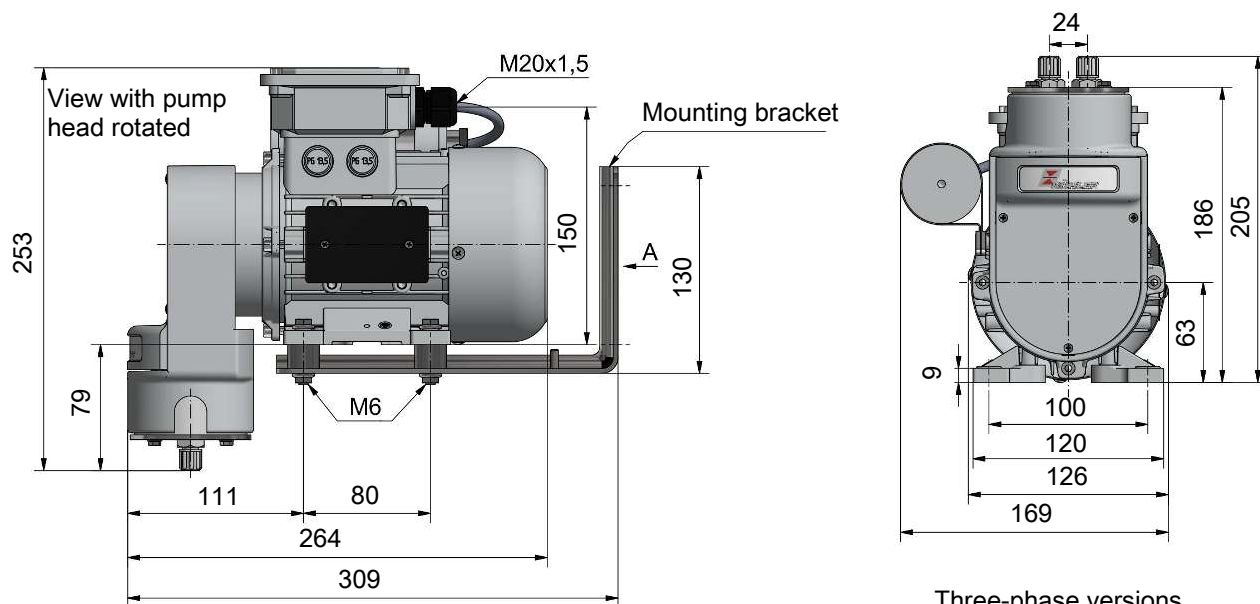
Installing the motor protection switch inside the EX area Zone 1 or 2 (ATEX only)

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

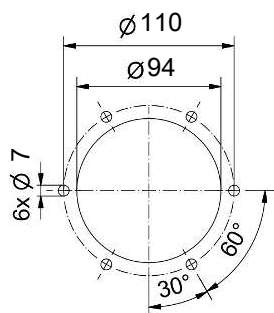
9.5 Dimensions

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

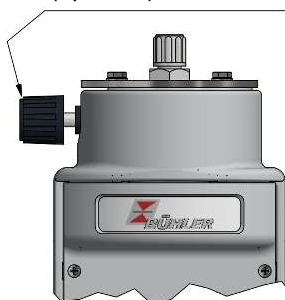
P2.4 ATEX, P2.74 ATEX – versions with intermediate flange



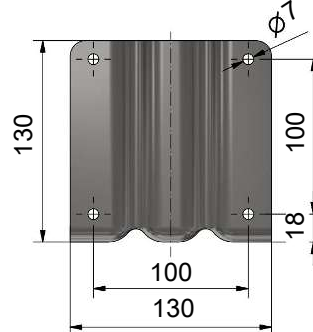
Cabinet cut-out for pumps with intermediate flange



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.

9.6 List of chemical resistance

The materials of your device that come into contact with media are printed on the type plate.

Formula	Medium	Concentration	Teflon® PTFE	PCTFE	PEEK	PVDF	FFKM	Viton® FPM	V4A
CH ₃ COCH ₃	Acetone		1/1	1/3	1/1	3/4	1/1	4/4	1/1
C ₆ H ₆	Benzol		1/1	1/3	1/1	1/3	1/1	3/3	1/1
Cl ₂	Chlorine	10% wet	1/1	0/0	4/4	2/2	1/1	3/0	4/4
Cl ₂	Chlorine	97%	1/0	1/3	4/4	1/1	1/0	1/1	1/1
C ₂ H ₆	Ethane		1/0	0/0	1/0	2/0	1/0	1/0	2/0
C ₂ H ₅ OH	Ethanol	50%	1/1	1/3	1/1	1/1	1/1	2/2	1/0
C ₂ H ₄	Ethylene		1/0	0/0	0/0	1/0	1/0	1/0	1/0
C ₂ H ₂	Ethyne		1/0	0/0	0/0	1/0	1/0	2/0	1/0
C ₆ H ₅ C ₂ H ₅	Ethylbenzene		1/0	0/0	0/0	1/1	1/0	2/0	1/0
HF	Hydrofluoric acid		1/0	0/0	0/0	2/2	2/0	4/0	3/4
CO ₂	Carbon dioxide		1/1	0/0	1/0	1/1	1/0	1/1	1/1
CO	Carbon monoxide		1/0	0/0	1/1	1/1	1/0	1/0	1/1
CH ₄	Methane	technically pure	1/1	0/0	1/1	1/0	1/0	1/1	1/1
CH ₃ OH	Methanol		1/1	1/1	1/1	1/1	1/1	3/4	1/1
CH ₃ Cl ₂	Methylene chloride		1/0	2/0	1/0	1/0	1/0	3/0	1/1
H ₃ PO ₄	Phosphoric acid	1–5%	1/1	1/1	1/1	1/1	1/1	1/1	1/1
H ₃ PO ₄	Phosphoric acid	30%	1/1	1/1	1/1	1/1	1/1	1/1	1/1
C ₃ H ₈	Propane	gaseous	1/1	0/0	1/0	1/1	1/0	1/0	1/0
C ₃ H ₆ O	Propylene oxide		1/0	0/0	0/0	2/4	2/0	4/0	1/0
HNO ₃	Nitric acid	1–10%	1/1	1/0	1/1	1/1	1/0	1/1	1/1
HNO ₃	Nitric acid	50%	1/1	1/0	3/3	1/1	1/0	1/0	1/2
HCl	Hydrochloric acid	1–5%	1/1	1/1	1/0	1/1	1/1	1/1	2/4
HCl	Hydrochloric acid	35%	1/1	1/1	1/0	1/1	1/1	1/2	2/4
O ₂	Oxygen		1/1	0/0	1/0	1/1	1/1	1/2	1/1
SF ₆	Sulphur hexafluoride		1/0	0/0	1/0	0/0	1/0	2/0	0/0
H ₂ SO ₄	Sulfuric acid	1–6%	1/1	1/1	2/2	1/1	1/1	1/1	1/2
H ₂ S	Hydrogen sulphide		1/1	1/1	0/0	1/1	1/1	4/4	1/1
N ₂	Nitrogen		1/1	0/0	1/0	1/1	1/0	1/1	1/0
C ₆ H ₅ C ₂ H ₃	Styrene		1/1	0/0	1/0	1/0	1/0	3/0	1/0
C ₆ H ₅ CH ₃	Toluol (methylbenzene)		1/1	0/0	1/0	1/1	1/1	3/3	1/1
H ₂ O	Water		1/1	0/0	1/1	1/1	1/1	1/1	1/1
H ₂	Hydrogen		1/0	1/0	1/0	1/0	1/0	1/0	1/0

Tab. 2: Durability list

0 – no information available

1 – durability/suitability very good

2 – durability/suitability good

3 – limited suitability

4 – not suitable

Two values are specified per medium. Left number = value at 20 °C, right number = value at 50 °C.

Important information

The tables were listed based on specifications from various raw material manufacturers. The values solely refer to laboratory tests using raw materials. Components made from these are often subject to impacts which cannot be determined in laboratory testing (temperature, pressure, material strain, impacts of chemical agents, design features, etc.). The values specified can therefore only serve as a guide. When in doubt, we recommend performing a test. These specifications do not infer a legal claim, we exclude any warranty and liability. The chemical and mechanical durability alone do not suffice to determine the serviceability of a product. In particular the regulations for liquid fuels (Ex-protection) must be observed, among others.

Durability to other mediums available upon request.

9.7 User book (Please make copies)

Maintained on	Unit no.	Operating hours	Remarks	Signature