

Peristaltic condensate and metering pumps CPsingle, CPdouble with hoses -O2

Condensate accumulates when conditioning gas in gas conditioning. It always accumulates when cooling moist sample gas. On one hand this may occur inadvertently if thermal bridges occur in the sample gas lines. On the other hand the deposit of moisture is necessary to protect the measuring cells in the analyser from damage and/ or stabilise measurements.

Since the sample gas is often conveyed through the analysis system with suction, the condensate must be pumped off to remove it. So-called peristaltic pumps are particularly suited for this purpose. They systemically protect the sample gas system from external air and based on the hose material used offer high resistance against the often times highly corrosive condensate.

The CPsingle and CPdouble pump series were developed specifically for these severe operating conditions.

For applications with high-purity oxygen, special cleaning processes are used to remove particles, oils and fats from parts coming into contact with media. The contamination limits are based on the internationally used and applicable guideline EIGA Doc 33/18 “Cleaning of Equipment for Oxygen Service”.

- For applications with high-purity oxygen.
- Materials in contact with media are suitability-tested for high O_2 concentrations
- Cleaning standard is based on EIGA Doc 33/18 as regards the absence of particles, oils and fats for hoses with the O_2 version.
- Built-in and housing version
- Metering pumps with low flow rates
- Easy to replace hoses
- Separate installation possible
- 115/230 V AC or 24 V DC

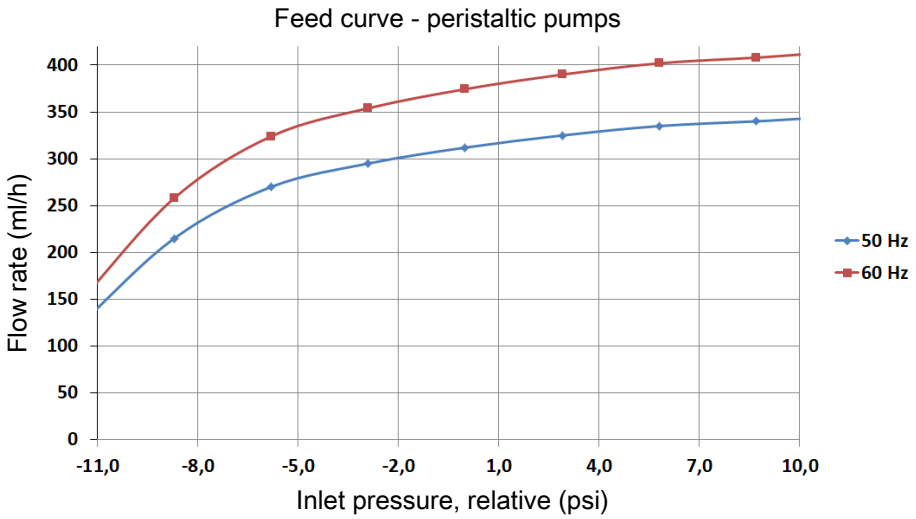
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Technical data for peristaltic pumps with -O2 hoses

Technical Data CPsingle/CPdouble Peristaltic Pumps		
Rated voltage/power input: at T_{amb} = 68 °F (20 °C) and under load	230 V 50/60 Hz, 0.028 A 115 V 50/60 Hz, 0.046 A 24 V DC, 0.1 A *)	
Flow rate:	0.3 l/h (50 Hz)/0.36 l/h (60 Hz)/0.3 l/h (24 V DC)	
Mechanical load:	Tested based on DNV CG-0339 vibration class A (0.7 g) 2 Hz-13.2 Hz amplitude ± 1.0 mm 13.2 Hz-100 Hz 0.7 g acceleration	
Inlet vacuum:	max. 11.6 psi	
Inlet pressure:	max. 14.5 psi	
Outlet pressure:	14.5 psi	
Weight:	CPsingle-SA: 1.54 lb CPsingle-OEM: 1.04 lb CPsingle-24V: 0.97 lb	CPdouble-SA: 1.63 lb CPdouble-OEM: 1.12 lb CPdouble-24V: 1.08 lb
IP rating:	IP 44 (housing version) IP 40 (built-in version)	
Ambient temperatures:	T_{max} = 131 °F (55 °C) (housing version) T_{max} = 140 °F (60 °C) (built-in version)	
Cable lengths:	6.6 ft (2 m) (housing version 115/230 V) 19.7 in (500 mm) (built-in version 115/230 V) 9.8 in (250 mm) (24 V DC)	
Parts in contact with media Hose: Connections:	 Versilon® F-5500-A PEEK Straight 5 mm (recommended hose 4/6) Elbow 6 mm (recommended hose 5/8) Screw-in connection DN 4/6 or 1/6"- 1/4")	

*) Lifetime 24 V DC 3000 h

Flow rate



When operating the pumps with 60 Hz, the values increase by 20 %.

Calculating condensate accumulation

Dew point	86	104	122	140	158	176	°F
Moisture content Vol %	4	7	12	20	31	47	Vol %
Moisture accumulation (w) per 100 Nl/h/cooled air	2.2	4	6.5	12	22	44	$\frac{ml}{h}$ per 100 Nl

Total condensate accumulation formula:

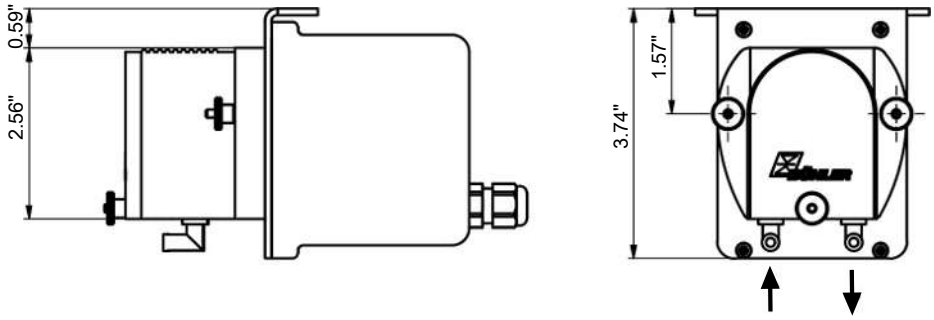
$$w_{tl} = \frac{\text{Cooled air flow}}{100\ \text{Nl/h}} \cdot w\ (\text{inlet dew point})$$

Example: 180 Nl/h behind the cooler; Inlet dew point 122 °F (50 °C).

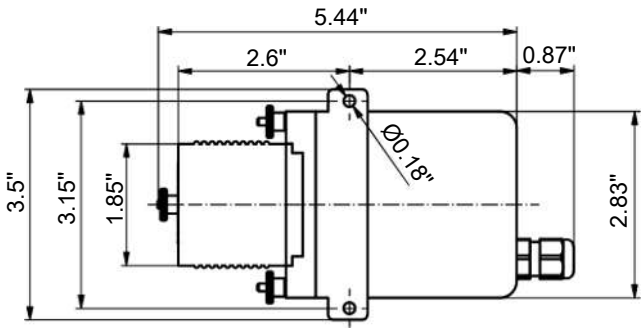
$$w_{tl} = \frac{180\ \text{Nl/h}}{100\ \text{Nl/h}} \cdot 6.5\ \frac{ml}{h} = 12\ \frac{ml}{h}$$

Dimensions for 115/230 V peristaltic pump

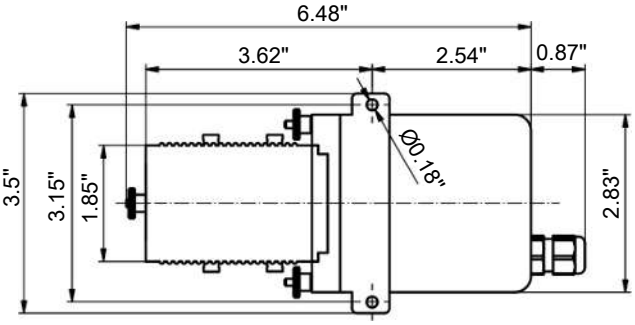
Housing versions



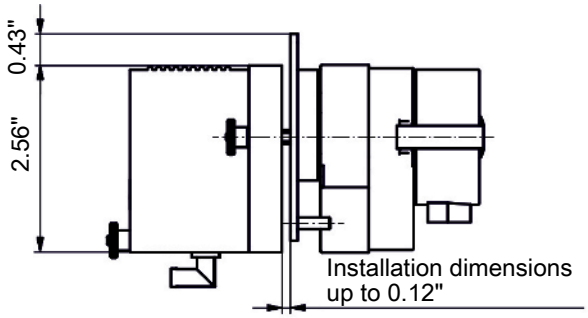
Housing version with 1 gas path

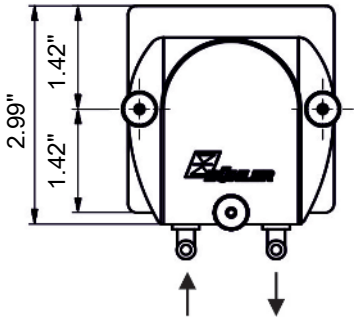


Housing version with 2 gas paths

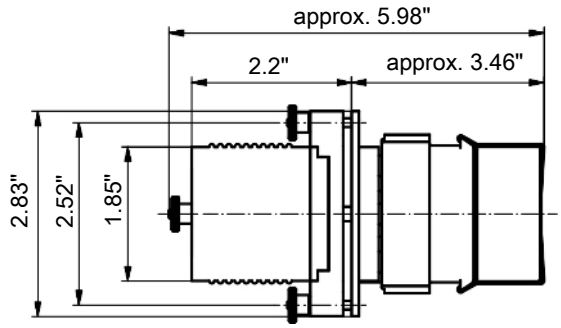


Built-in versions

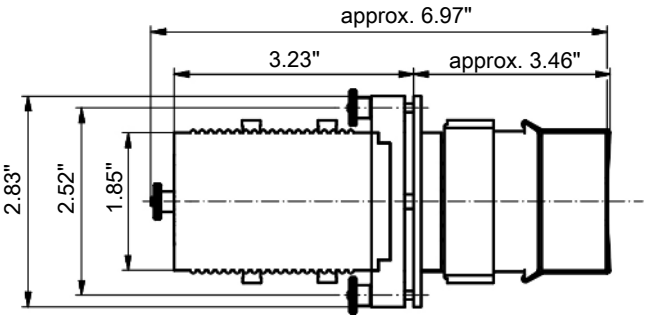




Built-in version with 1 gas path

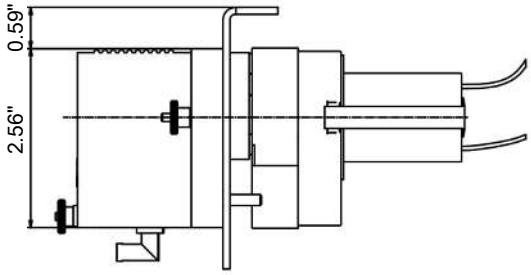


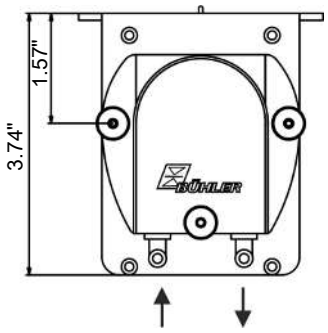
Built-in version with 2 gas paths



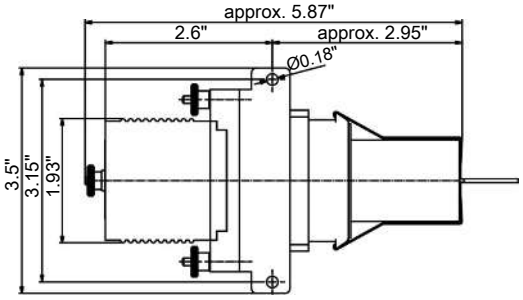
Dimensions for 24 V peristaltic pump

Housing versions

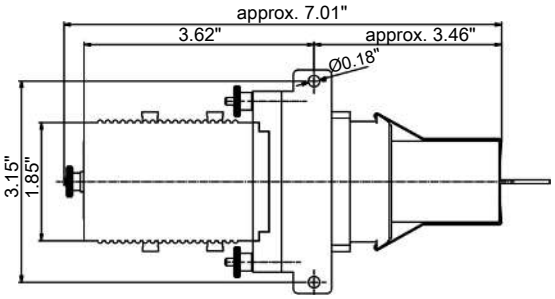




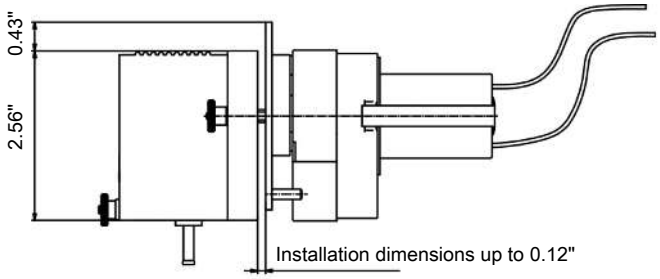
Housing version with 1 gas path

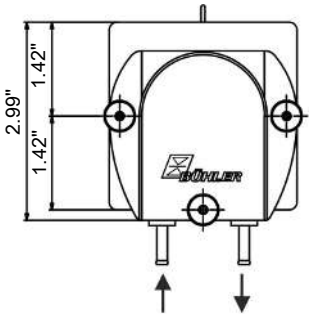


Housing version with 2 gas paths

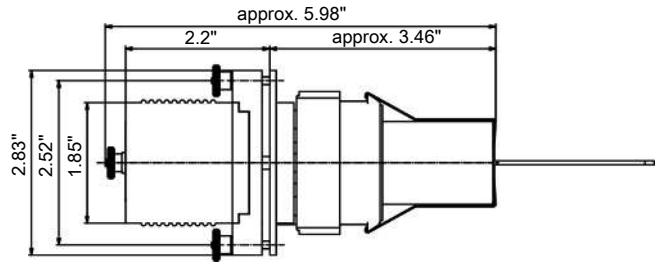


Built-in versions

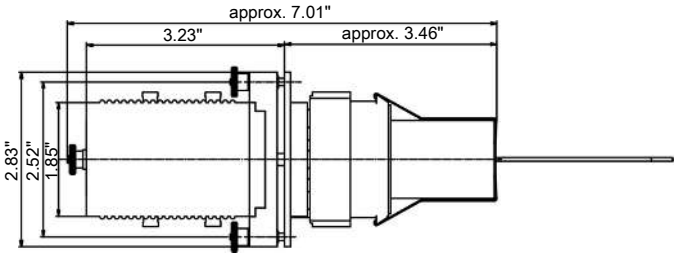




Built-in version with 1 gas path



Built-in version with 2 gas paths



Selection matrix for peristaltic pumps and subsequent add-on cooler

Cooler model	Built-in (OEM)/ housing version (SA)	Flow rate (l/h) for 230 V/50 Hz	Single (S)/ Double (D) version
TC-Standard	SA	0.3	S or D
TC-Double	SA	0.3	D
TC-MIDI	OEM	0.3	S or D
RC 1.1	OEM	0.3	S or D
RC 1.2 Rack	OEM	0.3	S or 2x S

Ordering instructions for peristaltic pumps with -O2 hoses

The item number is a code for the configuration of your unit. Please use the following model key:

4492	X	X	X	0	2	0	X	-O2	Product characteristic
									Gas path
	1								Single gas path
	2								Double gas path
									Version
		1							Housing version
		2							Built-in version
									Supply voltage
			2						115/230 V AC
			4						24 V DC
									Area of application
				0					Standard applications – CE
									Hose material [1]
					2				Versilon® F-5500-A
									Flow rate/hour
						0			0.3 l/h (115/230 V AC and 24 V DC)
									Hose connection [1]
							1		straight hose nipple
							2		angled hose nipple
							3		straight and angled hose nipple
							4		Screw connection (metric) DN 4/6
							5		Screw connection (US) 1/6"-1/4"
							6		angled hose nipple and screw connection (metric)
							7		angled hose nipple and screw connection (US)
							8		straight hose nipple and screw connection (metric)
							9		straight hose nipple and screw connection (US)
								-O2	Optimised for high-purity oxygen

[1] With the O_2 version, a cleaned hose set is provided in a second bag.

Spare parts and accessories for condensate pumps with -O2 hoses

O_2 heat exchanger sets

Item no.	Description
WTSET21-O2	Connection kit DN5/8 -CP O_2 (for DTS-6 heat exchanger)
WTSET32-O2	Connection kit G3/8-CP O_2 (for TS and PTS heat exchangers)
WETSET33-O2	Connection kit NPT3/8-CP O_2 (for TS-I and PTS-I heat exchangers)

O_2 CP-Sets (incl. hose and connections)

Item no.	Description
44920035021-O2	straight hose nipple O_2
44920035022-O2	angled hose nipple O_2
44920035023-O2	straight and angled hose nipple O_2
44920035024-O2	Screw connection (metric) DN 4/6 O_2
44920035025-O2	Screw connection (US) 1/6"-1/4" O_2
44920035026-O2	angled hose nipple and screw connection (metric) O_2
44920035027-O2	angled hose nipple and screw connection (US) O_2
44920035028-O2	straight hose nipple and screw connection (metric) O_2
44920035029-O2	straight hose nipple and screw connection (US) O_2