

Sample gas cooler EGK 4



Accurate measurements of gases require gas samples with stable dew points even under harsh ambient conditions.

The EGK models provide a compressor-type cooling system connected to a cooling block. The cooling block evenly dissipates the heat thus supporting the highly efficient heat exchangers. The temperature of the cooling block is regulated by the **Bühler Constant Regulating System**. This system allows smooth regulation and eliminates the disadvantages of the traditional on-off operating mode.

The cooling block accommodates up to four individual heat exchangers hence the cooler may serve up to four separate sample gas streams.

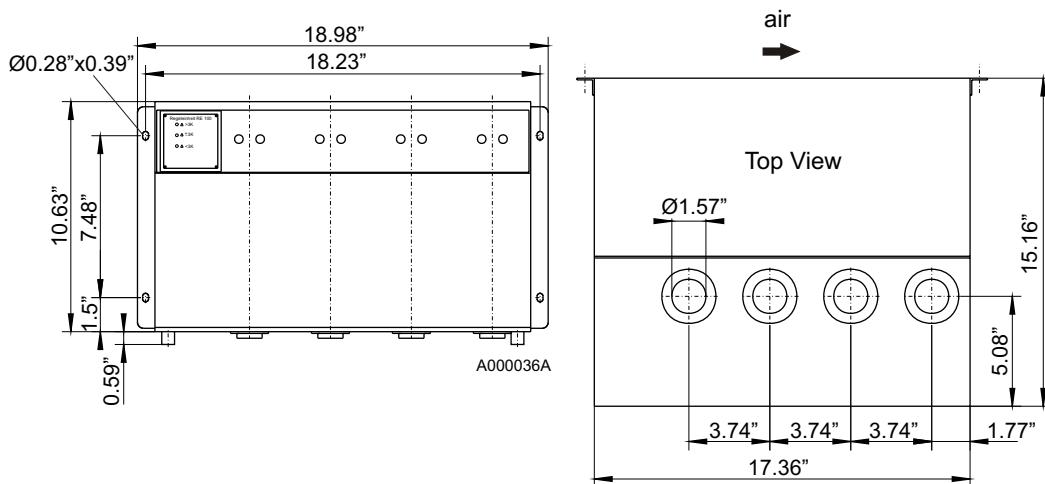
Condensate is removed either by peristaltic pumps, by automatic condensate drains or automatically drained condensate vessels, which can be directly attached to the heat exchangers within the cooler's outer contour (AK 5.1).

- **Compact design**
- **Easy to install**
- **Wall or rack mountable**
- **Reliable cooling system**
- **CFC-free**
- **Accommodates up to 4 gas streams**
- **Heat exchangers in SS, Glass or PVDF**
- **Nominal capacity 760 Btu/hr**
- **Dewpoint stability 0.4 °F**

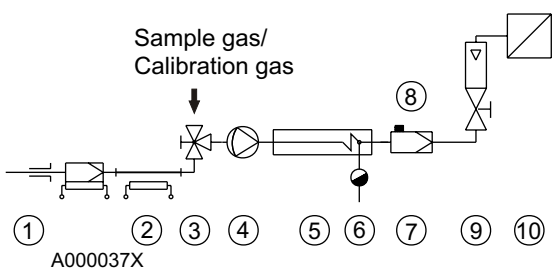
Technical Data

Ready for operation	max. 20 minutes
Cooling capacity (at 77°F)	760 Btu/hr
Ambient temperature	40 °F to 120 °F
Dew point (factory set)	approx. 41 °F
Dew point variations static	0.4 °F
Over full operation range	± 3.6 °F
Power supply	115 or 230V, 50/60 Hz
Power consumption	170/ 500 VA
Fuse	10 A
Alarm output	each 230V, 3 A, 690 VA Change over contact
Protection class	IP 20
Housing material	Varnished sheet metal
Installation	Wall or rack mounting
Dimensions	approx. 20 x 14 x 18 inches
Weight incl. 4 heat exchangers	approx. 84 lbs

Dimensions (inch)



Typical Installation Diagram:



- 1 Sample probe
- 2 Sample tube
- 3 3-way valve
- 4 Sample gas pump
- 5 Sample gas cooler EGK-4
- 6 Automatic condensate drain or perist. pump
- 7 Moisture detector
- 8 Fine filter
- 9 Flowmeter
- 10 Analyzer

For models and specs of components, see individual data sheets.

Heat Exchanger

The energy content of the sample gas and, as a result, the required cooling capacity of the gas cooler is determined by 3 parameters: gas temperature ϑ_G , dewpoint τ_e (moisture content) and flow v . The outlet dew point rises with increasing energy content (heat) of the gas. The required cooling capacity is determined by the maximum acceptable level of the outlet dew point.

The following table shows cooler performance assuming the following conditions: $\tau_e=120^\circ\text{F}$ and $\vartheta_G=160^\circ\text{F}$. Indicated is the v_{max} in lpm cooled air (i.e. after the moisture has condensed). If the actual values stay below the parameters τ_e and ϑ_G , v_{max} can be increased. For example (TG), instead of $\tau_e=120^\circ\text{F}$, $\vartheta_G=160^\circ\text{F}$ and $v=5.7$ lpm the values $\tau_e=105^\circ\text{F}$, $\vartheta_G=160^\circ\text{F}$ a maximum flow rate of $v=7.1$ lpm could be achieved.

Please contact one of Buhler's application specialists for assistance and further information.

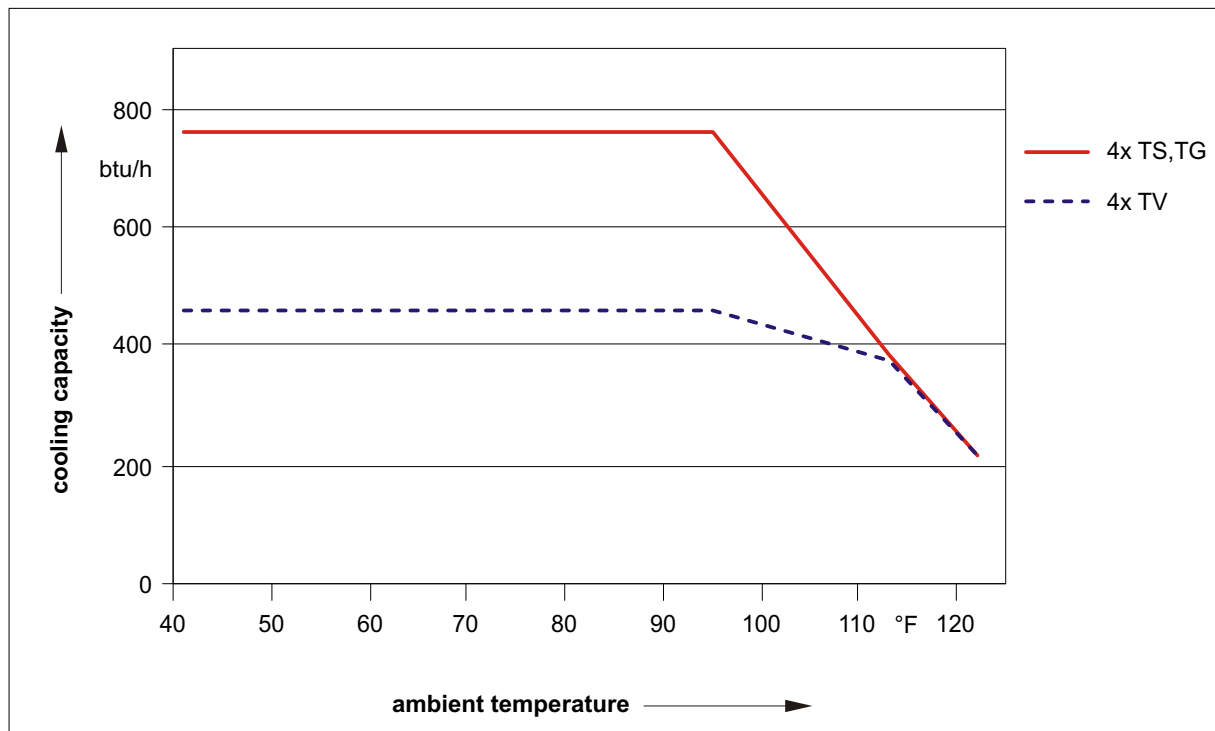
Heat Exchanger

	TS	TG	TV
Flow rate v_{max} ¹⁾	8.8 lpm	4.7 lpm	2.5 lpm
Inlet dewpoint $\tau_{e,\text{max}}$ ¹⁾	180 °F	180 °F	150 °F
Gas inlet temperature $\vartheta_{G,\text{max}}$ ¹⁾	360 °F	285 °F	285 °F
Max. cooling capacity Q_{max}	425 Btu/hr	220 Btu/r	114 Btu/hr
Gas pressure p_{max}	2300 psi	43 psi	43 psi
Pressure drop Δp ($v=150$ l/h)	0.1 psi	0.1 psi	0.1 psi
Dead volume V_{tot}	4.2 cu. in.	2.9 cu. in.	7.9 cu. in.
Sample gas connections	G 1/4" i ²⁾	GL 14	DN 4/6
Condensate outlet connections	G 3/8" i ²⁾	GL 25	G 3/8" i

¹⁾ with maximum heat transfer of the heat exchanger and max. cooling capacity of the cooler

²⁾ NPT-threads upon request

Performance Data



Please indicate with order

Please extract the part number for the cooler fulfilling your requirements from the type code below.

Please note: Each gas path should be equipped with a peristaltic pump or an automatic condensate drain.

Part no.	4	5	4					0	0	0	EGK 4
	Type										
	0	Wall mount									
	1	19"-rack mount									
	Power Supply										
	1	115V									
	2	230V									
	Gas Paths										
	0	without heat exchanger									
	1	1 gas path									
	2	2 gas paths									
	3	3 gas paths									
	4	4 gas paths									
	Gas Path/ Material/ Version										
	0	0	without heat exchanger								
	1	0	heat exchanger TS, stainless steel								
	2	0	heat exchanger TG, glass								
	3	0	heat exchanger TV SS, PVDF								
	3	1	heat exchanger TV-WS, PVDF								
	3	2	heat exchanger TV-SS-Pt100, PVDF								
	3	4	heat exchanger TV-SW (AK5.1), PVDF ¹⁾								
	3	5	heat exchanger TV-SW (AK5.1), PVDF ¹⁾								
	3	6	heat exchanger TV-WW-Pt100 (AK5.1), PVDF ¹⁾								
	3	8	heat exchanger TV-SW-PT 100 (AK5.1), PVDF ¹⁾								
	Condensate Discharge ²⁾										
	0	without condensate discharge									
	1	peristaltic pump(s) mounted incl. auxiliary frame									
	2	automatic condensate drain AK5.1									

¹⁾ Heat exchangers with horizontal condensate outlet are for mounting with automatic drain AK. 5.1 only. The automatic condensate drain is integrated in the cooler. each gas path is equipped with an automatic condensate drain.

²⁾ The peristaltic pumps for separate mounting available.

³⁾ Each gas path is equipped with a peristaltic pump with the same mains supply requirements as the cooler.

Accessories

912 40 30 104 peristaltic pump 230 V, 0,3 l/h, for separate mounting

912 40 30 105 peristaltic pump 115 V, 0,3 l/h, for separate mounting