

Sample Gas Cooler PKE 42



The PKE 42 cooling system consists of semiconductor Peltier cooling elements with an aluminum cooling block. Fitted into the block is a removable, high-efficiency heat exchanger made of stainless steel, DURAN-glass or PVDF with 1 or 2 gas paths.

The unit maintains a constant outlet dew point of 40 °F with an electronic controller. The temperature of the cooling block is shown on an LED-display. The status is indicated by a flashing LED which shows high or low temperature alarms and operates together with relay to halt the flow of sample gas in fail-safe mode.

The relay maybe used to control the sample gas pump when the cooler reaches the desired temperature range.

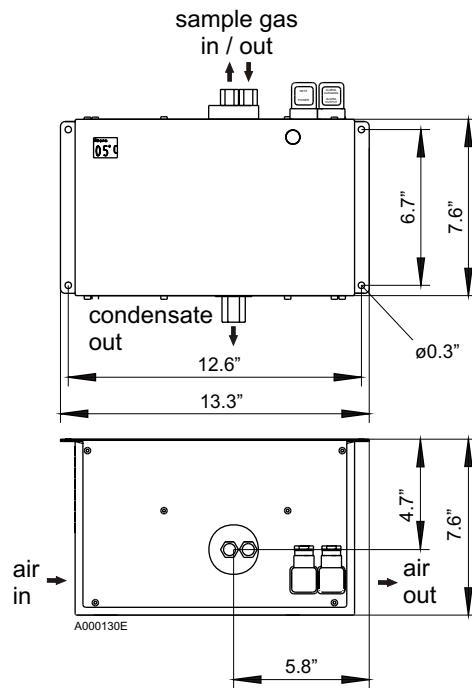
Condensate is removed either by peristaltic pumps, by automatic condensate drains, or condensate vessels.

- **Compact design**
- **Quick installation**
- **No maintenance required**
- **Low noise**
- **Efficient heat exchangers made of stainless steel, Duran-glass or PVDF**
- **Nominal cooling capacity 133 Btu/hr**
- **Dew point stability 0.2°F**
- **Status display and output**
- **Cooling temperature display**
- **Heat exchanger with 1 or 2 gas paths**

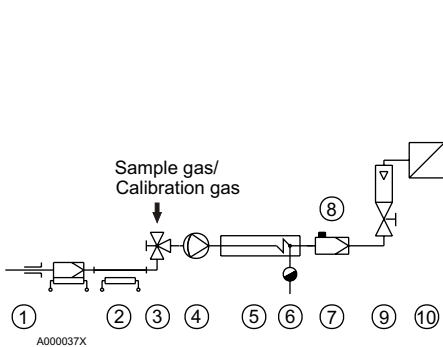
Technical Data

Ready for operation	After max. 10 minutes
Cooling capacity (at 75°F)	133 Btu/hr
Ambient temperature	40 °F to 120 °F
Factory set dew point	5 °C (40 °F)
Dew point noise static	0.1 K
Drift over full specified range	± 1.5 K
Power supply	115 V or 230 V, 50/60Hz, plug DIN 43650
Power consumption	max. 350 VA
Status output	Electrical spec. max. 230 V AC, 150 V DC
	2 A, 50 VA
	dry contacts
	DIN 43650
	Plug
Protection class	IP 20
Housing	Stainless Steel
Weight	approx. 24 lb.

Dimensions (inch)



Typical Installation Diagram:



- 1 Sample probe
- 2 Sample tube
- 3 3 way valve
- 4 Sample gas pump
- 5 Sample gas cooler EGK-1/2
- 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 $\tau_e=105^\circ\text{F}$, $\vartheta_G=160^\circ\text{F}$ at 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.

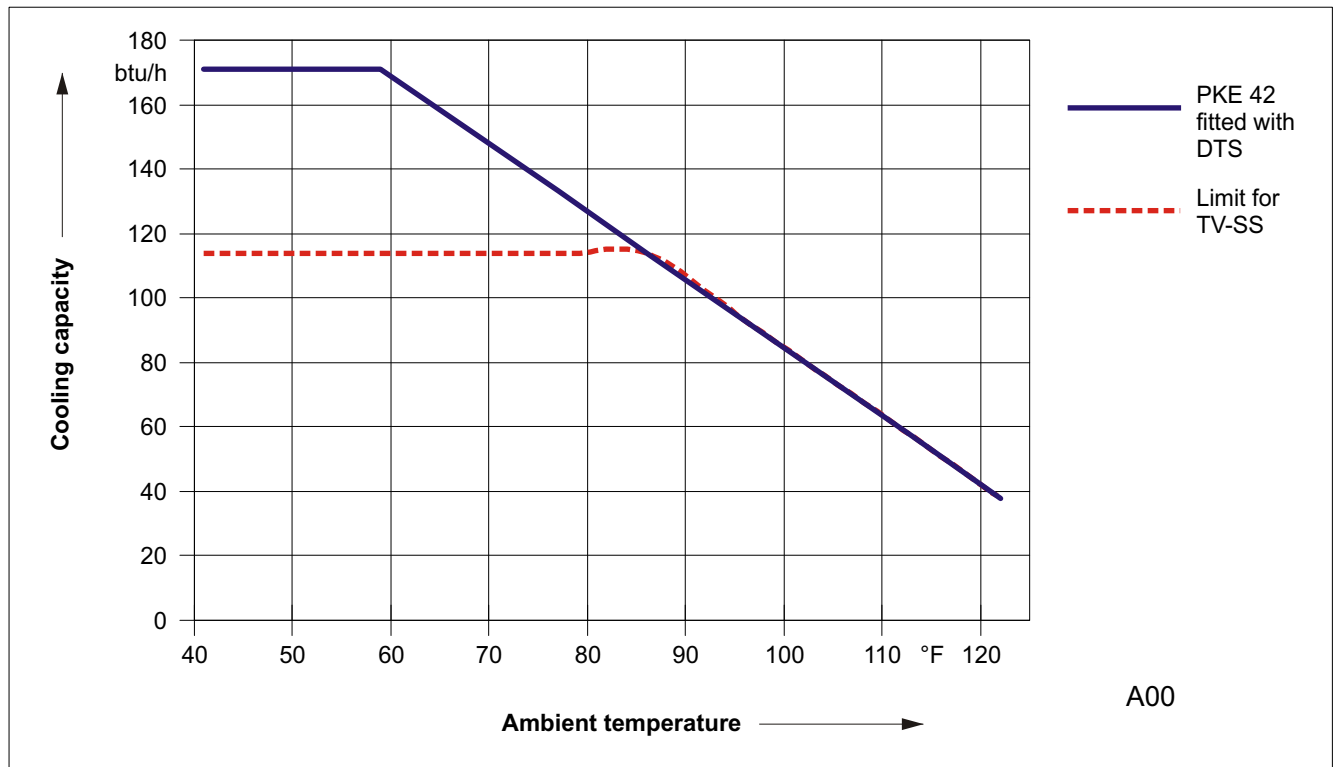
Heat Exchanger	TS	TG	TV-SS	DTS	DTG	DTV ³⁾
Flow rate v_{max} ¹⁾	8.3 lpm	6.7 lpm	3.9 lpm	2 x 4.2 lpm	2 x 3.3 lpm	2 x 2.7 lpm
Inlet dewpoint $\tau_{e,\text{max}}$ ¹⁾	175 °F	175 °F	150 °F	175 °F	150 °F	150 °F
Gas inlet temperature. $\vartheta_{G,\text{max}}$ ¹⁾	355 °F	285 °F	285 °F	355 °F	285 °F	285 °F
Max. cooling capacity Q_{max}	427 Btu/hr	218 Btu/hr	114 Btu/hr	427 Btu/hr	218 Btu/hr	175 Btu/hr
Gas pressure p_{max}	2321 psig	44 psig	44 psig	363 psig	44 psig	29 psig
Pressure drop Δp ($v=2.5$ lpm)	0.12 psig	0.12 psig	0.12 psig	each 0.07 psig	each 0.07 psig	each 0.22 psig
Dead volume V_{tot}	4.2 cu. in.	2.9 cu. in.	7.9 cu. in.	1.7 / 1.5 cu. in.	1.7 / 1.5 cu. in.	1.3 / 1.3 cu. in.
Sample gas connections	G 1/4" i ²⁾	GL 14	DN 4/6	tube 6 mm	GL 14	DN 4/6
Condensate outlet connections	G 3/8" i ²⁾	GL 25	G 3/8" i	tube 10 mm	GL 18	DN 4/6

¹⁾ Max. cooling capacity of the cooler must be considered

²⁾ NPT-threads upon request

³⁾ Can only be used with peristaltic pumps

Performance Data



A00

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	4	7	0				0	0	0	PKE 42	
Power Supply												
	1										115 V	
	2										230 V	
Gas Path/ Material/ Version												
		0	0	0								without heat exchanger
		1	1	0								single path heat exchanger TS, stainless steel
		1	2	0								single path heat exchanger TG, glass
		1	3	0								single path heat exchanger TV SS, PVDF
		2	6	0								dual path heat exchanger DTS, stainless steel
		2	7	0								dual path heat exchanger DTG, glass
		2	8	0								dual path heat exchanger DTV, PVDF ¹⁾
Condensate Discharge ¹⁾												
				0								without condensate discharge
				1								peristaltic pump(s) ³⁾

¹⁾ Condensate outlet only suitable for connecting peristaltic pumps

²⁾ 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

451 00 08	Automatic condensate drain AK 5.2
441 00 05	Condensate vessel GL1, 0,4l
912 40 30 104	Peristaltic pump 0.3 l/h, 230V, for separate mounting
912 40 30 105	Peristaltic pump 0.3 l/h, 115V, for separate mounting