



Cartridge-type Chemical Vapour Locks[®] from TECHAP

Patent pending



- Absorption of hazardous and pollutant chemical vapours produced during the filling, decanting and draining of closed pressureless storage tanks and containers
- For all current chemicals, acids, lyes, oils and solvents
- For removal of CO₂ from air when storing demineralised water
- For extracting humidity from gas atmospheres for materials which absorb humidity (H₂SO₄)
- Suitable for installation in enclosed and outside positions
- Ease of handling, with problem-free cartridge exchange
- Protects against emissions
- Sterile filtration
- Pressure vacuum breakers

Chemical vapour locks from TECHAP

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for old-type chemical vapour locks for use with cartridges

Environmental protection and operational safety

In the chemicals industry, decanting and emptying processes involving liquid chemicals is a daily activity in many different types of application. It is not a rare occurrence for large quantities of poisonous vapours to be released in the process; these can be harmful to health and can form explosive gas-air mixes.

The evaporation rate depends on many factors, but the estimated quantity involved is massive: in Germany alone, around 700,000-800,000 tonnes of chemicals (excluding petrol) are decanted every year, and as a result polluting our environment, attacking machinery and also posing a potential health risk. By contrast, using TECHAP chemical vapour locks for closed pressureless storage tanks and containers, transport containers and replacement containers guarantees high levels of operational safety and environmental protection. The dangerous exchange of chemicals is made easy, and safe.

In the standard finish, the chemical vapour locks are PVC containers with a transparent cylinder section, based on a cartridge system. The binding agent which absorbs the harmful vapours which are created is located here in the filter bag, which is subsequently disposed of with the used binding agent.

TECHAP has the right solution for all currently-used chemicals. Existing old-style chemical vapour locks with a loose binding agent can be retrofitted cost-favourably for cartridge operation. In addition, we are always ready to develop individually-customised solutions to satisfy your requirements.

Our wealth of experience of chemical materials, their characteristics and the legal regulations pertaining to them make us the ideal partner for companies in the chemicals value-added chain.



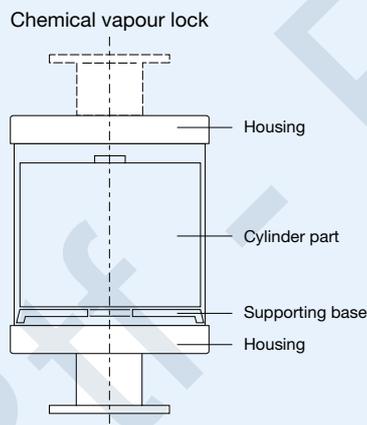
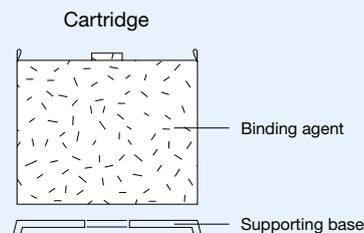
Chemical vapour locks

Design / Advice on installation

Design

All our chemical vapour locks are based on the cartridge system. In this design, the binding agent is already contained in the filter bag, which is subsequently disposed of with the used binding agent. In the standard finish, the housing is in PVC with a transparent cylinder section. For models with the additional label "G", the housing is in PP, with a glass cylinder. The housing can also be supplied in the V4A steels (e.g. 1.4571 stainless steel) or PVDF. No materials containing asbestos or silicone are used in the manufacture of these items.

As a special finish, chemical vapour locks can also be manufactured to withstand pressures of up to 6bar. Models above the size of the SL5 can also be equipped for use in outside situations, with a self-regulating heating element. The element is then integrated into the filter bag. To protect the binding agent against the rain, a rain protector is required. Other than to change the cartridges, no maintenance is needed. The consumption of binding agents BM1 and BM4 is shown by the change in the colour indicators.



Advice regarding retrofitting kits

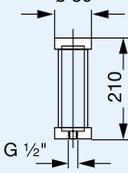
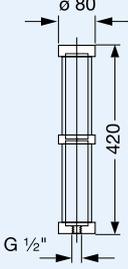
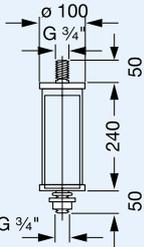
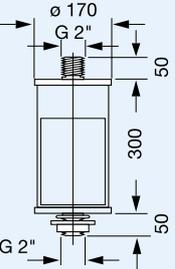
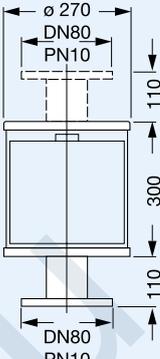
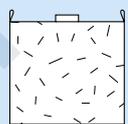
Existing old-style chemical vapour locks with a loose binding agent can be retrofitted cost-favourably for cartridge operation. Using cartridges makes replacing the binding agent a much more simple operation, meaning that the cost of conversion is recouped with the very first filter change.

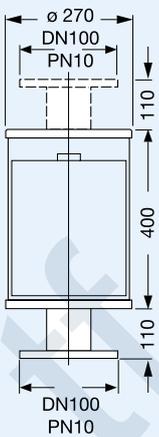
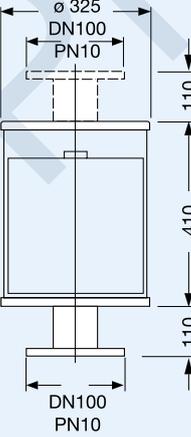
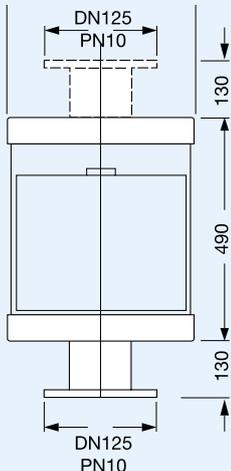
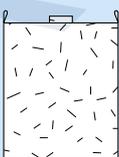
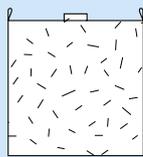
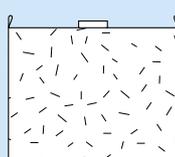
Advice on use and installation

- The storage tank should not be overfilled.
- The liquid must not penetrate into the binding agent or into the cartridge.
- The fill rate as shown in the table should never be exceeded.
- With fill procedures involving compressed air, the chemical vapour lock should always be over-dimensioned by one size, in order to ensure operational safety. Installation of a quick-action shut-off device is recommended.
- Avoid sudden pressure shocks and impacts or decompressions, especially during filling procedures and when displacing pressure from the supply tank.
- With new plants, the pressure loss in accordance with the nominal flow rate for BM1 is approx. 1-10mbar. For BM2 and BM4, it is 0.5-10mbar (at nominal velocity).
- The cartridges with binding agents BM2, 2.2 and 2.3 are to be replaced at regular intervals (roughly half-yearly).
- For binding agents BM1 and BM2, the heater should only be activated when there is a risk of frost.
- For binding agent BM4, the heater should always be activated.
- With the cartridge design, the heating element is integrated into the filter bag. On site, the binding agent - e.g. BM4 - is then filled into the installed filter bag. These filter bags are to be replaced after they have been filled twice with binding agent; if binding agent BM1 is used, then the filter bag must be replaced after each use.
- The base glued to the cylinder part is always at the bottom. With the PPH finish, e.g. the SL11, the sealed-in part is similarly to be used as the base.
- If being set up outside, the chemical vapour locks must be protected against rain and sun using our rain protector
- Avoid temperatures over 50°C for PVC products, 80°C for the PP finish, and 40°C when using binding agent BM1.
- Take note of the possible heating of the storage tank through insulation. Black tanks can be heated to temperatures of up to 80°C. This temperature generates significant volumes of vapourised gas. Run-off pipes must be installed with the fall on the chemical vapour lock running away from the tank, so that no condensate can flow back.
- Always follow instructions and regulations, such as DIN, UVV, VDE, VBF, ZVEI and TA-Luft, and other national and international specifications (e.g. German water conservancy law - WHG)

Chemical vapour locks for pressureless storage tanks and containers

Overview of types of chemical vapour locks for pressureless storage tanks and containers

Type	BL1G	2 x BL1GD	SL1K	SL3K	SL5K
Max. air quantity	500 litres/h	500 litres/h	1,500 litres/h	5,000 litres/h	15,000 litres/h
Dimensions (in mm)					
SL5K and above with one base flange, optionally with two flanges					
Matching cartridge types with 1µ fine filter (filter unit for single use)					
Type BM1 ...	BM1KBL	BM1KBL	BM1K1	BM1K3	BM1K5
Type BM2 ...	BM2KBL	BM2KBL	BM2K1	BM2K3	BM2K5
Type BM4 ...	BM4KBL	BM4KBL	BM4K1	BM4K3	BM4K5

Type	SL7K	SL9K	SL11K
Max. air quantity	30,000 litres/h	72,000 litres/h	150,000 litres/h
Dimensions (in mm)			
SL5K and above with one base flange, optionally with two flanges			
Matching cartridge types with 1µ fine filter (filter unit for single use)			
Type BM1 ...	BM1K7	BM1K9	BM1K11
Type BM2 ...	BM2K7	BM2K9	BM2K11
Type BM4 ...	BM4K7	BM4K9	BM4K11

Flanges to ANSI standard on request. Other connectors, e.g. clamp connectors, to ISO on request.

Chemical vapour locks for pressureless storage tanks and containers

Ordering data for chemical vapour lock® with the cartridge system

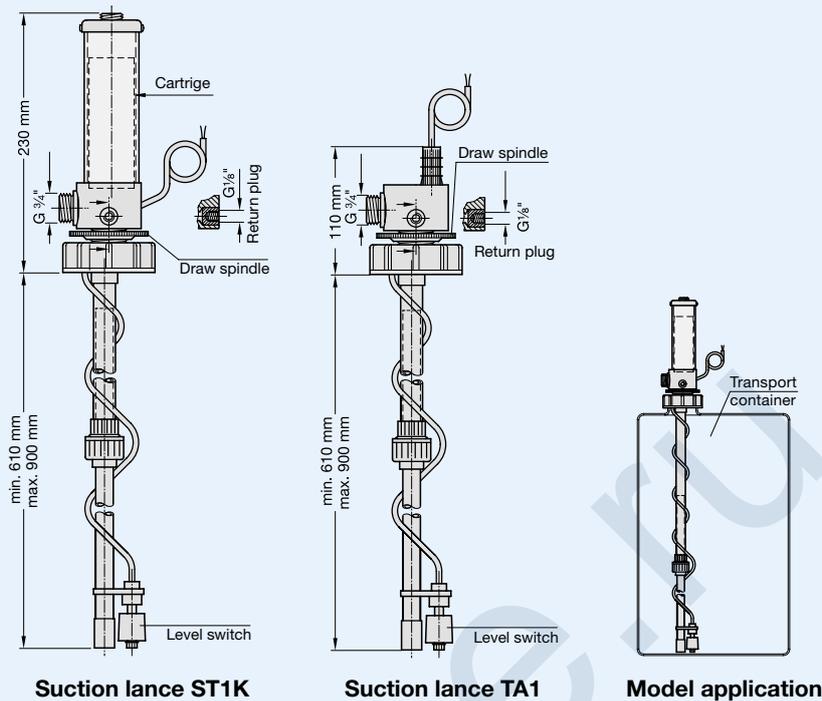
Type	Case				Standard binding agent			Weight in kg *)
	Max. air quantity litre/h	Material Lid/ Cylinder	Flange/ Screw thread	Order No. *)	BM1K Order No.	BM2K Order No.	BM4K Order No.	
BL1-G	500	PTFE/Glass	G 1/2"	860 0106	860 4058	860 4044	860 4033	0,5
2x BL1-G	500	PTFE/Glass	G 1/2"	860 0004	860 4058	860 4044	860 4033	1,0
SL1K	1.500	PVC/PVC	G 3/4"	860 4010	860 4011	860 4055	860 4081	0,3
SL1KPP-PVC	1.500	PP/PVC	G3/4"	860 4110	860 4011	860 4055	860 4081	0,3
SL1KPP-G	1.500	PP/Glass	G 3/4"	860 4035	860 4011	860 4055	860 4081	0,43
SL1KVA-G	1500	V4A/Glass	G 3/4" PP	860 4135	860 4011	860 4055	860 4081	1,3
SL1KVA-G	1.500	V4A/Glass	○	860 4235	860 4011	860 4055	860 4081	3,8
SL3K	5.000	PVC/PVC	G 2"	860 4040	860 4042	860 4056	860 4082	1,0
SL3KPP-PVC	5.000	PP/PVC	G 2"	860 4140	860 4042	860 4056	860 4082	0,95
SL3KPP-G	5.000	PP/Glass	G 2"	860 4034	860 4042	860 4056	860 4082	1,9
SL3KVA-G	5.000	V4A/Glass	○	860 4251	860 4042	860 4056	860 4082	2,2
SL5K	15.000	PVC/PVC	○	860 4045	860 4046	860 4047	860 4083	5,1
SL5.2K	15.000	PVC/PVC	○○	860 4060	860 4046	860 4047	860 4083	5,7
SL5KPP-PVC	15.000	PP/PVC	○	860 4145	860 4046	860 4047	860 4083	4,6
SL5.2KPP-PVC	15.000	PP/PVC	○○	860 4160	860 4046	860 4047	860 4083	5,3
SL5KPP-G	15.000	PP/Glass	○	860 4069	860 4046	860 4047	860 4083	5,2
SL5.2KPP-G	15.000	PP/Glass	○○	860 4141	860 4046	860 4047	860 4083	6,9
SL5KVA-G	15.000	V4A/Glass	○ V4A	860 4253	860 4046	860 4047	860 4083	14,4
SL5.2KVA-G	15.000	V4A/Glass	○○ V4A	860 5253	860 4046	860 4047	860 4083	16,0
SL7K	30.000	PVC/PVC	○	860 4070	860 4076	860 4071	860 4084	5,7
SL7.2K	30.000	PVC/PVC	○○	860 4078	860 4076	860 4071	860 4084	6,1
SL7KPP-PVC	30.000	PP/PVC	○	860 4170	860 4076	860 4071	860 4084	5,5
SL7.2KPP-PVC	30.000	PP/PVC	○○	860 4146	860 4076	860 4071	860 4084	6,8
SL7KPP-G	30.000	PP/Glass	○	860 4179	860 4076	860 4071	860 4084	8,3
SL7.2KPP-G	30.000	PP/Glass	○○	860 4171	860 4076	860 4071	860 4084	8,7
SL7KVA-G	30.000	V4A/Glass	○ V4A	860 4255	860 4076	860 4071	860 4084	16,2
SL7.2KVA-G	30.000	V4A/Glass	○○ V4A	860 5255	860 4076	860 4071	860 4084	16,9
SL9K	72.000	PVC/PVC	○	860 4073	860 4077	860 4072	860 4085	5,9
SL9.2K	72.000	PVC/PVC	○○	860 4074	860 4077	860 4072	860 4085	7,5
SL9PP-PVC	72.000	PP/PVC	○	860 4147	860 4077	860 4072	860 4085	5,8
SL9.2KPP-PVC	72.000	PP/PVC	○○	860 4148	860 4077	860 4072	860 4085	7,4
SL9KPP-G	72.000	PP/Glass	○	860 4180	860 4077	860 4072	860 4085	11,4
SL9.2KPP-G	72.000	PP/Glass	○○	860 4194	860 4077	860 4072	860 4085	13,2
SL9KVA-G	72.000	V4A/Glass	○ V4A	860 4256	860 4077	860 4072	860 4085	16,9
SL9.2KVA-G	72.000	V4A/Glass	○○ V4A	860 5256	860 4077	860 4072	860 4085	17,4
SL11K	150.000	PVC/PVC	○	860 4190	860 4094	860 4096	860 4102	8,5
SL11.2K	150.000	PVC/PVC	○○	860 4191	860 4094	860 4096	860 4102	9,8
SL11KPP-PVC	150.000	PP/PVC	○	860 4192	860 4094	860 4096	860 4102	8,4
SL11.2KPP-PVC	150.000	PP/PVC	○○	860 4193	860 4094	860 4096	860 4102	9,0
SL11KPP-PMMA	150.000	PP/PMMA	○	860 5181	860 4094	860 4096	860 4102	13,2
SL11.2KPP-PMMA	150.000	PP/PMMA	○○	860 5182	860 4094	860 4096	860 4102	15,0
SL11KVA-PMMA	150.000	V4A/PMMA	○ V4A	860 4257	860 4094	860 4096	860 4102	21,3
SL11.2KVA-PMMA	150.000	V4A/PMMA	○○ V4A	860 5257	860 4094	860 4096	860 4102	26,5

○ Housing with 1 base flange ○ ○ 2 flange (bottom and top) V4A flange from 1.4571 *) without binding agent
Flanges to ANSI standard on request. Other connectors, e.g. clamp connectors, to ISO on request.

Suction lances with chemical vapour locks for transport containers and special tanks

Suction lances for gassing (ST1K) and non-gassing (TA1) liquids:

- Adjustable length
- Max. of 2 level switches (in PVC or PTFE) possible
- Level switch can be used as a closer or opener, by reversing the float
- Easy-to-handle suction lances - they are simply inserted into the transport container and screwed tight
- Return flow connector with plug included in scope of delivery; if required, can be drilled through and glued to the head of the suction lance
- Special lengths on request

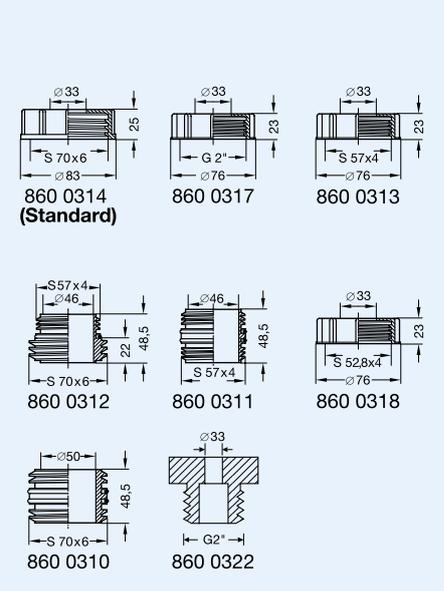


Order data Suction lances for transport containers

Lance type	Description		Adjustable length	Order No.	Binding agents	Type	Order No.
ST1K-FV for gassing liquids	<ul style="list-style-type: none"> • Cartridge system • With base valve 	30 litres	400 ... 600 mm	860 4041	Cartridges (only for ST1K and ST1K-FV)	BM1K	860 4051
		60 litres	610 ... 900 mm	860 4050		BM2K	860 4052
ST1K for gassing liquids	<ul style="list-style-type: none"> • Cartridge system • No base valve • Level switch at top ("full") 		610 ... 900 mm	860 4048		BM4K	860 4080
TA1-FV for non-gassing liquids	<ul style="list-style-type: none"> • Without cartridge system • With base valve 	30 litres	400 ... 600 mm	860 0038		X	
		60 litres	610 ... 900 mm	860 0049			
TA1 for non-gassing liquids	<ul style="list-style-type: none"> • Without cartridge system • No base valve • Level switch at top ("full") 		610 ... 900 mm	860 0039			

Order data Accessories

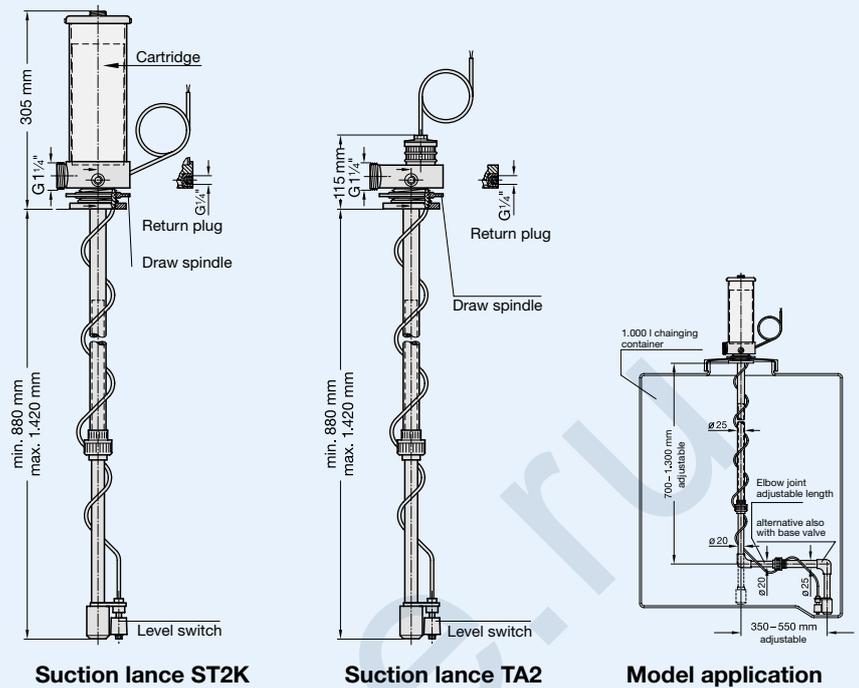
Description	Description	Order No.
Return flow plug for gluing	PVC, G 1/8"	860 0333
Level switch	PVC, cable 3 metre*)	350 0306
	PVC, cable 5 metre*)	350 0304
	Teflon, cable 5 metre*)	350 0316
Retainer for level switch	PVC or PP, adjustable	860 0321
Thread adaptor	equal to 70x6	860 0310
	equal to 57x4	860 0311
	Reducer 70x6 / 57x4	860 0312
	G 2"	860 0317
Draw spindle	Thread 57 x 4	860 0313
	Thread 70x6 (standard)	860 0314
	Thread 52,8 x 4	860 0318
	External thread	860 0322



Suction lances with chemical vapour locks for 1,000 litre replacement containers and others

Suction lances for gassing (ST2K) and non-gassing (TA1) liquids:

- Adjustable length
- Max. of 2 level switches (in PVC or PTFE) possible
- Level switch can be used as a closer or opener, by reversing the float
- Easy-to-handle suction lances - they are simply inserted into the transport container and screwed tight
- Return flow connector with plug included in scope of delivery; if required, can be drilled through and glued to the head of the suction lance
- Special lengths on request



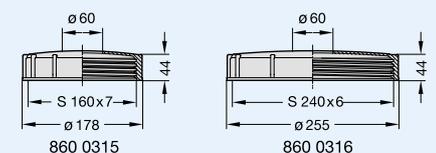
Order data Suction lances for transport containers

Lance type	Description	Adjustable length	Order No.	Binding agents	Type	Order No.
ST2K-FV for gas-sing liquids	<ul style="list-style-type: none"> • Cartridge system • With base valve 	700 ... 1,300 mm	860 4186	Cartridges (only for ST2K and ST2K-FV)	BM1K	860 4011
ST2K for gassing liquids	<ul style="list-style-type: none"> • Cartridge system • No base valve • Level switch at top ("full") 	700 ... 1,300 mm	860 4187		BM2K	860 4055
TA2-FV for non-gassing liquids	<ul style="list-style-type: none"> • Without cartridge system • With base valve 	700 ... 1,300 mm	860 0185		BM4K	860 4081
TA2 for non-gas-sing liquids	<ul style="list-style-type: none"> • Without cartridge system • No base valve • Level switch at top ("full") 	700 ... 1,300 mm	860 0183			

Order data Accessories

Description	Description	Order No.
Return flow plug for gluing	PVC, G 1/4"	860 0334
Level switch	PVC, cable 3 metre*)	350 0306
	PVC, cable 5 metre*)	350 0304
	Teflon, cable 5 metre*)	350 0316
Retainer for level switch	PVC	860 0321
Elbow joint	PVC, removable	860 0319
	PPH, removable	860 0320
Screw lid	S 160 x 7 mm	860 0315
	S 240 x 6 mm	860 0316

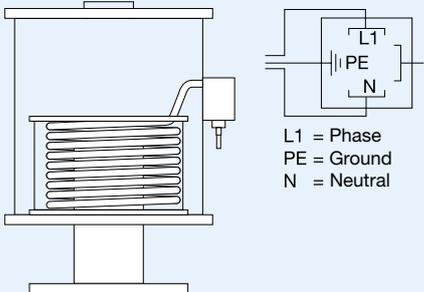
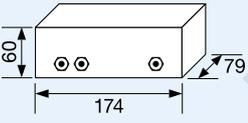
*) contact load 60V, 300mA



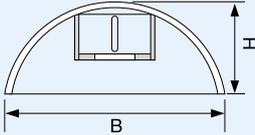
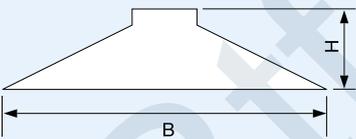
Additional equipment and accessories

Heater units/Rain protector

Heater units for SL5K ... SL11K

	Description	Suitable for types	Order No.
 <p>L1 = Phase PE = Ground N = Neutral</p>	<p>HE1 Self-regulating heater 230V, 50/60Hz, 0,3A</p>	SL5/7/9K	860 0059
<p>For binding agents BM1 and BM2, the heater should only be activated when there is a risk of frost. For BM4, the heater should always be activated.</p>	<p>HE2 Self-regulating heater 230V, 50/60Hz, 0,3A</p>	SL11K	860 0198
	<p>Ex-Schutz Zone 1 explosion protection for heater</p> <p>Temperature switch for für He1 und He2 Switch-on temperature can be selected > 0°C; Power supply 230V, 50/60Hz; Relay contact load max. 0.5A inductive</p> 	SL5/7/9/11K	860 0199
		SL5/7/9/11K	860 0201

Rain protectors for types SL3K ... SL11K

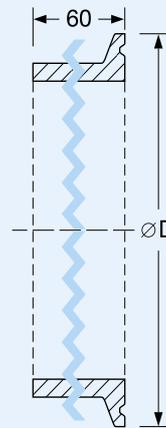
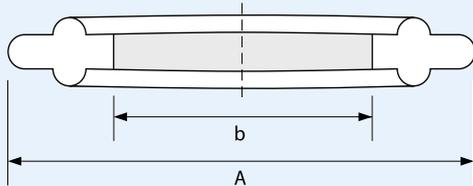
Dimensions	Description	Suitable for types	Order No.
	<p>RH1PP rain protector in PP B = 280 mm, H = 140 mm</p>	SL3K ... SL7K	860 0087
	<p>RH2PP rain protector in PP B = 500 mm, H = 180 mm</p> <p>RH3VA rain protector in V4A B = 400 mm, H = 120 mm</p> <p>RH4VA rain protector in V4A B = 500 mm, H = 180 mm</p>	SL9K ... SL11K	860 0197
		SL5K and SL7K	860 4196
		SL9K and SL11K	860 4197

Additional equipment and accessories

Clamp connectors/Pressure vacuum breakers

Clamp connectors to ISO 2852 and accessories

Instead of flanges or screw threads, chemical vapour locks can be equipped with clamp connectors in rigid PVC or V4A, for a supplementary charge. Please quote order number. Clips and seals are ordered separately.

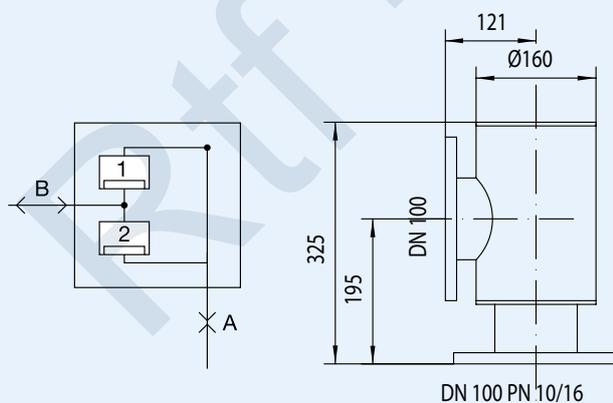


Nominal diameter		Measurement D	PVC clamp conn.	V4A clamp conn.	Viton seal	PTFE seal	Clips
mm	inch		Order-No.	Order-No.	Order-No.	Order-No.	Order-No.
25,0	1	50,5	860 0325	860 0335	860 4325	860 4425	860 4525
33,7	1 1/4	50,5	860 0326	860 0336	860 4326	860 4426	860 4526
40,0	1 1/2	64,0	860 0327	860 0337	860 4327	860 4427	860 4527
51,0	2	77,5	860 0328	860 0338	860 4328	860 4428	860 4528
63,5	2 1/2	91,0	860 0329	860 0339	860 4329	860 4429	860 4529
76,1	2 3/4	91,0	860 0330	860 0340	860 4330	860 4430	860 4530
88,9	3	106,0	860 0331	860 0341	860 4331	860 4431	860 4531
101,6	4	119,0	860 0332	860 0342	860 4332	860 4432	860 4532

Pressure vacuum breakers

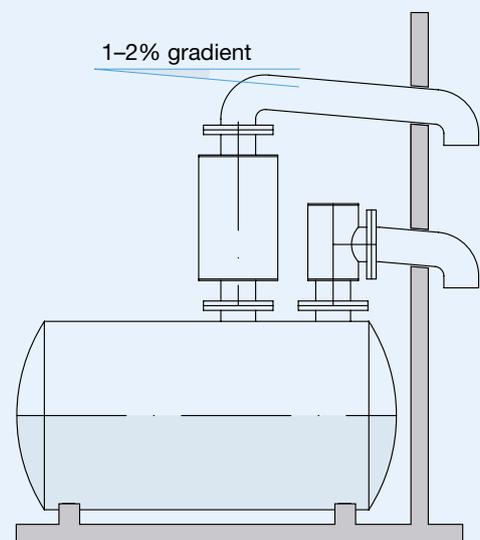
	Order No.	Description
Pressure vacuum breakers to protect storage tanks, mainly when filling using compressed air	860 8000	PVC, can be glued in, $\varnothing 90$ mm Can be pre-set to 15-20mbar

Dimensions (in mm)



A = Connection to storage tank
B = Air feed and venting pipe
1 = Overpressure valve
2 = Vacuum valve

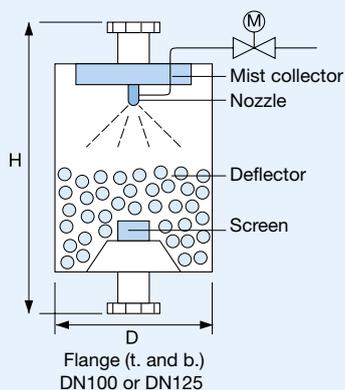
Model applications



Additional equipment and accessories

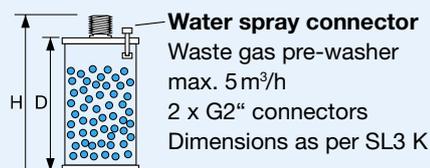
Waste gas pre-washer/Quick-acting fill protector

Waste gas pre-washer for SL3K-SL11K



Types

Pre-washers are available in three sizes. They are equipped with a mist collector, a spray nozzle, a deflector, a DN10 splash water connection for demineralised water (where there is a purity requirement), and 2 flanges top and bottom (DN100 or DN125, or G 2").



Note

Highly concentrated chemicals such as hydrochloric acid (above a 33% concentration) or ammonium hydroxide (above a 25% concentration) are highly gassing and thus consume disproportionately high amounts of binding agent. To normalise consumption, use of a waste gas pre-washer is recommended. It significantly reduces the concentration in the waste gas, thus prolonging the lifetime of the downstream cartridges considerably.

Description	Volume of waste gas	D (mm)	H (mm)	DN	Flow resistance with rated load	Splash water max.	Weight	Order No.
Waste gas pre-washer	up to 5 m ³ /h	160	400	G2"	approx. 0,5 ... 1 mbar	25 l/h	2 kg	860 2030
Waste gas pre-washer	50 m ³ /h	260	710	100	approx. 0,5 ... 1 mbar	50 l/h	8 kg	860 2050
Waste gas pre-washer	150 m ³ /h	415	770	125	approx. 0,5 ... 1 mbar	90 l/h	13 kg	860 2150

Quick-acting fill protector



To safeguard the storage tank when using a compressed air feed from the feed tank, TECHAP offers its quick-acting fill protector as a complete unit (fast-closing valve including control unit, sensor and bypass valve with pipework) in nominal diameters DN 32, 40, 50, 65 and 80. There is a choice of the following materials: PVC, PP, VA (1.4571) and St.37.

The problem

If the feed tank is impinged with compressed air to drive the liquid into the storage tank or even just to maintain the flow, then the vapour-saturated volume

of compressed air - i.e. two to three times the volume of the feed tank - will have to be disposed of as soon as the feed tank is empty. Since this exhaust air arrives at the storage tank at a speed between 20 and 30 times the normal rate, no cleaning device will be able to clean this volume and discharge it instantly, with the result that the storage tank (which is designed for pressureless operation) can be impinged with a pressure of up to 3bar, at least for a short while. In the case of a specified fill rate of 15m³/h, for example, then depending on the size of the pipes and the pressure, an exhaust air volume of up to 300-450m³/h may result.

TECHAP chemical vapour locks have been designed for a nominal fill rate and must not be loaded above that rate. Surge chambers or washers experience break-through, without performing their actual task of cleaning the air.

Information on fill rates is to be checked in all instances, especially for filling using compressed air. For example, in the case of a pressing power of 2bar in a DN 50 pipe (not taking into account the relative heights and without reducing the cross-section), a fill rate of possibly 50-80m³/h will be realised.

The chemical vapour trap must be designed to accommodate this rate, or the size

of the pipe reduced to ensure that the indicated fill rate is observed (please refer to container licensing and other regulations). Installing a baffle in the fill pipe is recommended.

The solution

Since the supplier cannot as a rule be expected to prevent break-through of air consistently and without exception during manual operations, installing a quick-acting gate valve in the fill pipe is essential.

The precondition for the fault-free function of the chemical vapour lock is that the fill data assumed in the model, in particular the fill rate and the velocity of the waste gas, are correctly adjusted and maintained.

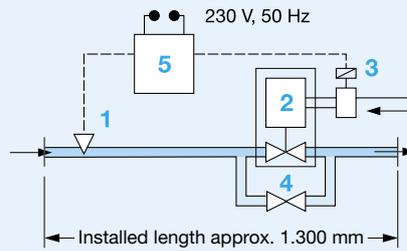
Notes

With fill procedures involving compressed air, the TECHAP chemical vapour lock should always be over-dimensioned by one size, in order to ensure operational safety.

Additional equipment and accessories

Quick-acting fill protector

Schematic diagram for the quick-acting fill protector



- 1 Measurement sensor
- 2 Quick-acting gate valve (pneumatic)
- 3 Pneumatic control valve
- 4 Manual bypass valve
- 5 Control unit

Order data Quick-acting fill protector

Description	Connector	Order No.			
		PVC	PP	VA	St37
Quick-acting gate valve Complete unit with pipework and including control unit and sensor V = Screw connector F = Flange	V DN32	860 0023			
	V DN40	860 0024	860 0842	860 0015	860 0036
	V DN50	860 0021	860 0843	860 0016	860 0037
	V DN65	860 0019	860 0844	860 0017	860 0038
	F DN80	860 0022	860 0845	860 0018	860 0039

Accessories for quick-acting fill protector

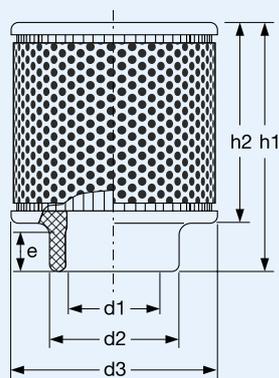
	Dimensions [mm]	Description	Description	Order No.
		Wall-mounted housing for control unit (without switches and without binding post)	IP 54	860 0025
		G1" sensor with Cx appliance plug	Ceramic in PVC casing, non-metallic	860 0027
		RS1 control unit in plug-in housing, Dimensions in mm, 230V power supply, sensitivity and delay time pre-set.	Contact load: 230V AC, 0.5A inductive, earth externally, change-over contact	860 0028

For quick-acting gate valves and valves, see the ball valve product area

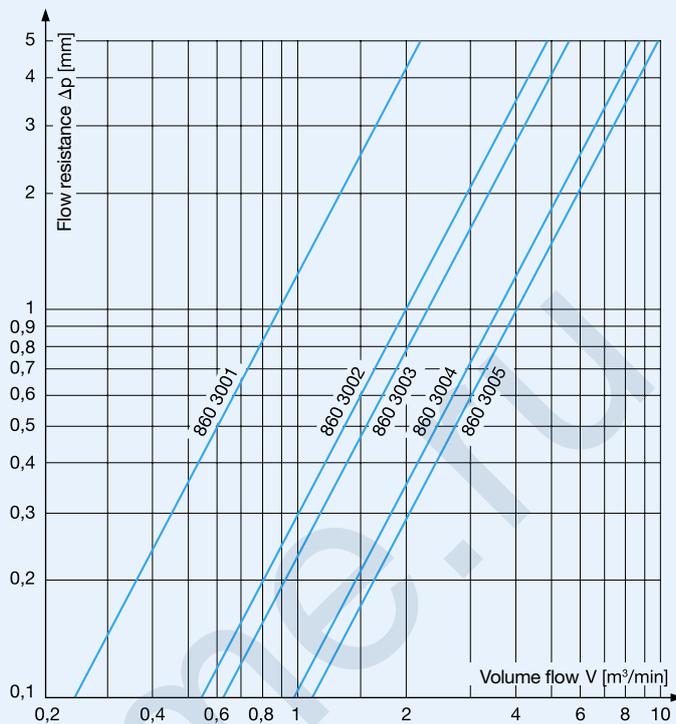
Additional equipment and accessories

Dust filters

Dust filters



- Up to 8,000 litres of air per minute, in both directions
- Filter fineness <math><2\mu\text{m}</math> absolute
- Low pressure loss - see diagram
- Non-metallic, using plastic material with a flexible connector
- Suitable for breathing filters
- Easy assembly using a strap retainer, easy to replace
- As a pre-filter for TECHAP chemical vapour locks or as an independent (stand-alone) dust filter



Item	Nominal capacity	Dimensions in mm					Insert depth	Weight	V2A strap retainer to fasten filter	
		Order No.	m³/min	d1	d2	d3			h1	h2
860 3001	1	50	65	110	120	95	20	160g	860 3021	
860 3002	2	75	90	130	150	125	20	240g	860 3022	
860 3003	4	75	90	160	165	140	25	380g	860 3022	
860 3004	6	100	120	230	160	120	30	680g	860 3023	
860 3005	8	100	115	175	300	250	35	770g	860 3023	

Binding agent/Model reactions/Chemicals which can be processed

Binding agents

Binding agent Type	Description	Disposal	Bulk density
BM1	Calcium hydrate with colour indicator (bluish discolouration), when reacting with acid vapours, stable salts are produced	Domestic waste	approx. 0.95kg/l
BM2	Various activated carbon types, with no colour indicator (smell test or test stick) - various types and particle sizes	Special waste	approx. 0.55kg/l
BM2.1	Special activated carbon type (on request)		
BM2.2	Special binding agent (on request)		
BM4	Air-drying agent with colour indicator, can be reprocessed by heating to approx. 70-80°C	--	

Note

for new plants, the pressure loss is approx. 1-10 mbar, in accordance with the nominal throughput for BM1. At nominal velocity!

Note on disposal:

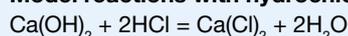
all information regarding disposal is offered as a recommendation, and requires clarification with the responsible authorities and supervisory bodies.

Model reactions for binding agents

Binding agent BM1

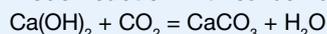
Binding agent BM1 largely comprises calcium hydroxide with a colour indicator.

Model reactions with hydrochloric acid



Consumption at 20°C per 10m³ 30% waste gases, approx. 260 g.

Model reaction with carbon dioxide

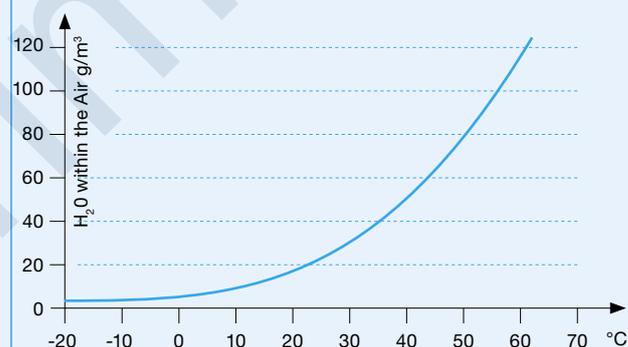


Consumption per 10m³ air approx. 8g. Despite the low consumption, the binding agent should be replaced in all cases at least once a year, to avoid formation of corridors and crusts. After a longer period in use, the colour indicator may become less active!

For CO₂ removal, we recommend the use of the nearest size chemical vapour lock for the respective application, to increase the dwell time.

Binding agent BM4

1 litre of BM4 moisture binding agent (bulk density = 805 g/l), at 20°C and 1.000mbar air pressure takes up around 25 per cent by weight of its own bulk density:
805 g/l / 4 = 201 g water/litre of BM4 binding agent



Chemicals which can be processed

Chemical description	Chemical Formula	Chemical description	Chemical Formula
Aluminium chloride	AlCl ₃	Monoethanolamine	C ₂ H ₇ OH
Formic acid	HCO ₂ H	Sodium hypochlorite	NaClO/H ₂ O
Aluminium sulphate (hygroscopic)	AlSO ₄	Sodium bisulphate	NaHSO ₃
Sulfamic acid	H ₂ NSO ₃ H	Sodium phosphate	Na ₃ PO ₄
Ammonium hydroxide *)	NH ₃ + H ₂ O	Soda lye	NaOH/H ₂ O
Acrylic acid	C ₃ H ₄ O ₃	Oleum (half filtering speed)	H ₂ SO ₄ + SO ₃
Acetone Carbon dioxide (v-max. = 50% CO ₂)	C ₃ H ₆ O	Phosphoric acid (any concentration)	H ₃ PO ₄
Ethanoic acid	CH ₃ COOH	Nitric acid (any concentration)	HNO ₃
Ferrous chloride	FeCl ₂	Hydrochloric acid **)	HCl
Ferric chloride	FeCl ₃	Sulphuric acid ***)	H ₂ SO ₄
Formaldehyde in water	HCHO+H ₂ O	Solution of hydrogen sulphide (toxic)	H ₂ S/H ₂ O
Hydrofluoric acid	HF+H ₂ O	Sulphurous acid (approx. 6% in water)	H ₂ SO ₃ /H ₂ O
Hydroxypropionic acid	CH ₃ CH(OH)CO ₂ H	Triethanolamine (hygroscopic)	N(CH ₂ CH ₂ OH)
Diamide hydrate (toxic)	N ₂ H ₄ /H ₂ O	Toluene	C ₆ H ₅ CH ₃
Potassium hypochlorite	KClO/H ₂ O	Xylene	C ₆ H ₄ (CH ₃) ₂
Carbon dioxide	CO ₂		

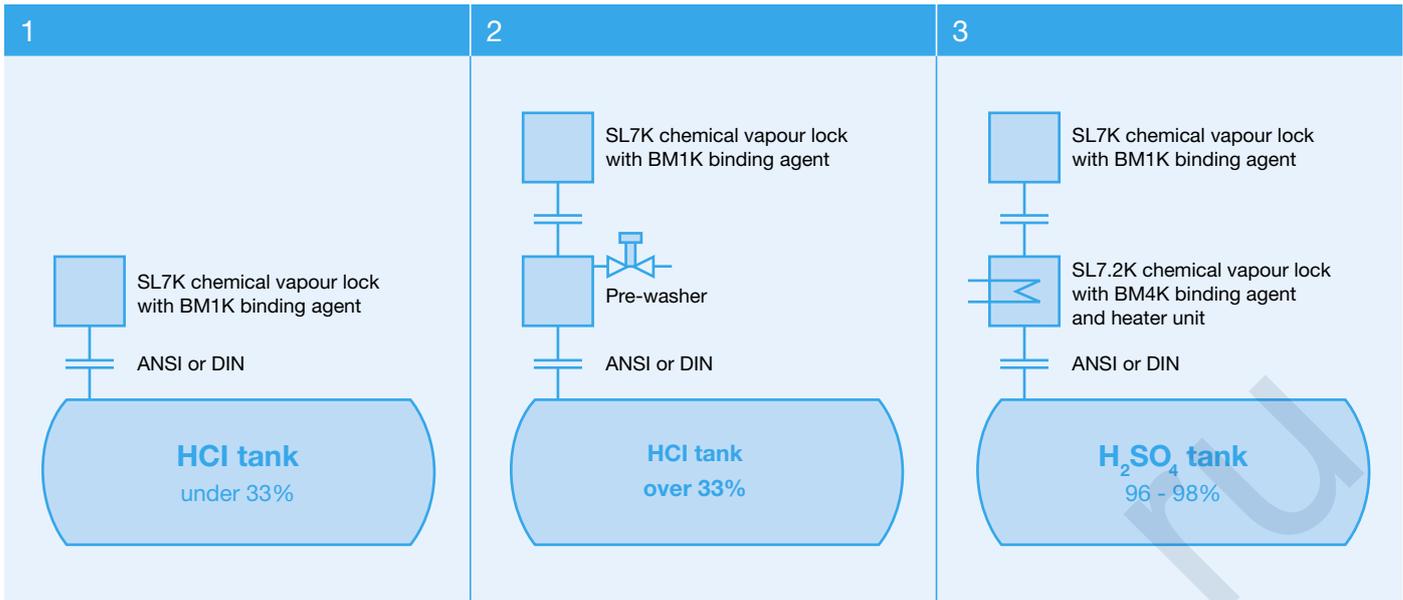
Further chemicals on request.

*) 24-26%, only decant with transfer pipe and pump (v = max. 50%)

***) 30-33%, 33% solution only with pre-washer)

****) any concentration, with 96% acid possibly may require feed air drying

Model applications

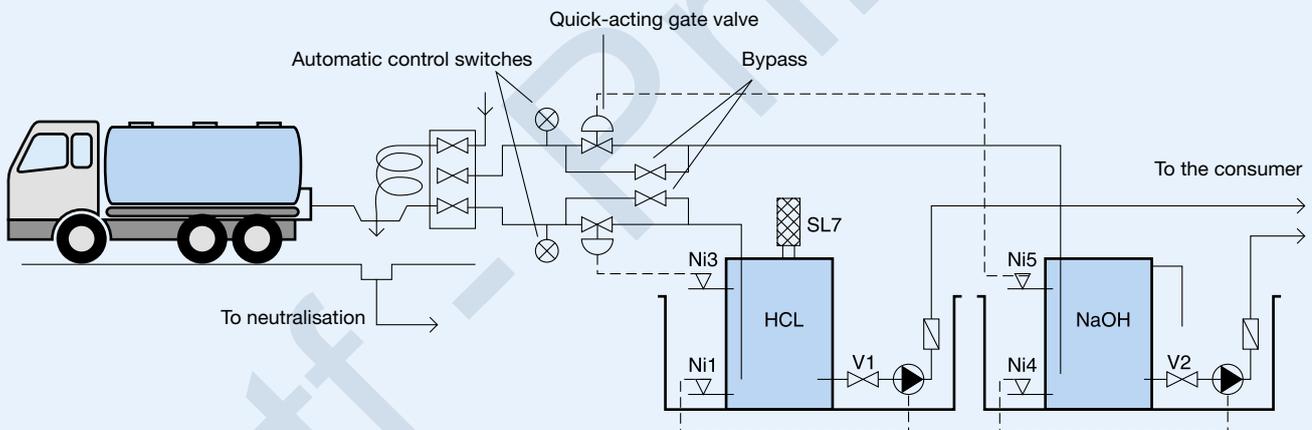


Decanting station with compressed air displacement

Installation of the quick-acting gate valve fill protector is urgently recommended if decanting involves use of compressed air.

Note

Here it is not only the exhaust air from the storage tank which needs to be cleaned, but also the compressed air from the feed tank, and taking into account the pressure being used for the entire volume being treated. If using the quick-acting gate valve as a fill shut-off in the event that the level is exceeded, the bypass valve must also be operated automatically.



Retrofitting kits for old-style non-cartridge chemical vapour locks

The cartridge insert simplifies the process to replace the binding agent considerably, with the result that the cost of conversion is already recouped on the next refill of agent.

Conversion process

SL1 (PVC) no conversion required

SL1 (PP/PVC, PP/Glass, VA/Glass)

Base parts and lid must be replaced and the tie rods need to be moved to the outside

SL3 Unscrew nozzle heads (sieve parts)

SL5 Remove all nozzles completely and insert the supplied supporting plate

SL7 as for SL5

SL9K Only supplied to date as SL9K (no conversion required)

SL11 Remove all nozzles and the fine filter, and move the tie-rods to the outside using the screw-on fixtures

General comments: converting the SL3-SL11 in the PP finish requires the tie rods to be moved to the outside.

Retrofitting kits for existing chemical vapour locks without a cartridge system

Old type	New type	PVC finish Order No.	Parts supplied	PP finish Order No.	Parts supplied
SL1	SL1K	--	--	860 7701	4 screw-on fixtures for tie-rods
SL3	SL3K	--	--	860 7703	
SL5	SL5K	860 7005	1 Supporting plate	860 7705	1 supporting plate 4 screw-on fixtures for tie-rods
SL7	SL7K	860 7007		860 7707	
--	SL9K	--	--	--	existing only like SL9K
SL11	SL11K	--	--	860 7711	1 supporting plate and 4 screw-on fixtures for tie-rods

Retrofitting kits for existing chemical vapour locks with a heating unit

Old type	New type	Order No.	Parts supplied
SL5	SL5K	860 7721	Special cartridge bag
SL7	SL7K	860 7721	
--	SL9K	860 7722	
SL11	SL11K	860 7723	



TECHAP is a leading provider of products for process engineering and customer-specific process solutions. Our products contribute to simplifying operating flows and operating processes and increasing operational safety. Since our products are standardised, they can be supplied to very short deadlines anywhere in the world.

The realisation of customised solutions is part of our work. We manufacture products which are precisely tailored to customer requirements. Flexibility and co-operation are instinctive to us.

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Chemical vapour locks

for absorption of hazardous and pollutant chemical vapours produced during the filling, decanting and draining of closed pressureless storage tanks and containers.



Part-turn valve actuators

impinged on both sides or with a spring return
 Pivoting angle: 90°, 120°, 180°, 360°
 Torque 5-1,600 Nm
 with the Miller Twin-Ball-System®



Process valves

TECHAP process valves are acid- and lye-resistant complete control units for practically all procedures involving ion exchange, such as water softening and desalination plants



Valves

Piston control valves
 Ceramic flat slide valves
 Motor and pneumatic ball valves
 Ball check valves
 Injection valves and on-off valves



Special valves

e.g. our 6-way injection and on-off valve for chromatographic analysis systems



Jet pumps

with performance adjustment, for suction, thinning, conveying and creating a vacuum; resistant to chemicals, with a choice of propellant, e.g.: water, liquid propellants, air, gases



Level switches

chemically resistant to acids and lyes, with reed contact magnetic switch, multiple potential uses, robust



UV radiation disinfection units

for sterilising water, with subsequent micro-filtration



Dosage pumps/dosage units

automatic, computer-controlled precision dosing, with 1-5 weighing points, dosing with digital quantity specification, networked weighing and dosing PCs with printer and data storage



Processing plants

Cation-anion-desalination plant
 Filtration plants (sand filter/activated carbon filter)
 Water softening plants
 Batch-neutralisation plants
 Discharge-neutralisation plants
 Regeneration stations
 Ion exchange resins



Process control units

for measurement, switching and regulation of time-dependent, volume-dependent or rate-dependent processes Freely programmable, capable of being equipped for unattended operation with feedback on function and fault correction



Metrology

Series of meters in DIN housings, controller-governed in SMD engineering with diagnostic-event memory



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