

WE LEARN FROM YOU EVERY DAY –  
AND THINK OUTSIDE THE BOX.



Explosion protection

Solenoid valves for safety in your plant

When it comes to dealing with liquids and gases, Bürkert has become a sought-after partner all over the world. Why? Probably because we have been learning for and from our customers for more than 70 years now. This enables us to always think that crucial step ahead and around the bend.

For your added value. Let us prove it to you – we look forward to your challenge.



We make ideas flow.

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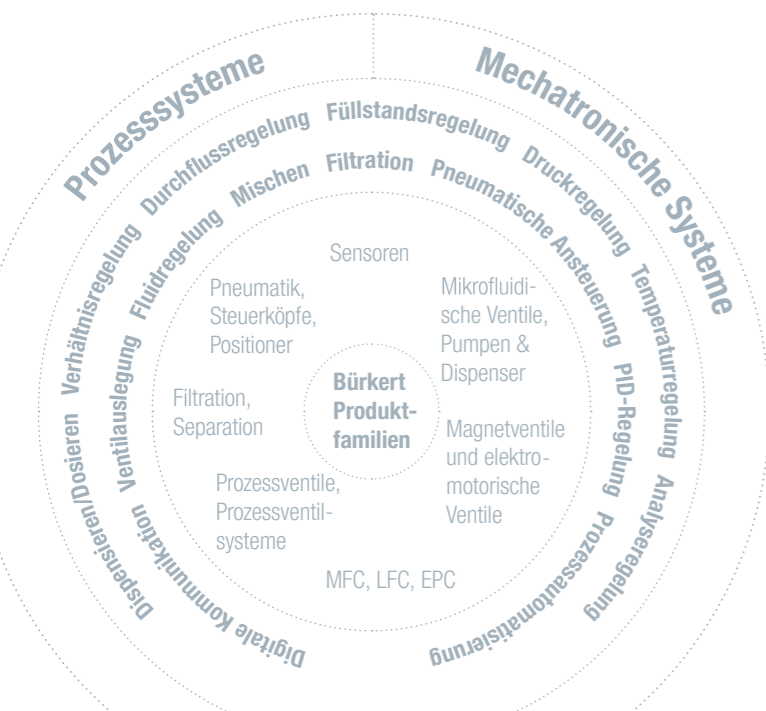
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## WE SPEAK YOUR LANGUAGE. FLUENTLY.

We always look forward to an interesting challenge. Because we are fascinated by everything that flows – never mind whether our customers want to measure it, monitor it or regulate it. To achieve unique solutions we look at unusual approaches.

Whether the focus is on flow rates, filling levels, pressure, dosage, analysis, filtration, temperature, mixing or process automation – liquids and gases must be measured, monitored and regulated. Industrial process technology is based on these essential aspects of fluid metrics. This is where Bürkert excels and its range of performance is located.

What makes Bürkert special: We first take on your fluid technology challenge and apply fundamental physical principles. We then draw on our accumulated experience of physical interrelationships and cross-link it with very varied applications and areas of use in order to solve identical or similar problems. This allows you to benefit from the wealth of experience that we gather across all sectors and then apply specifically to your circumstances. To find the best solution in each case.



## BÜRKERT – YOUR PARTNER WITH WORLDWIDE APPROVAL

Approvals and guidelines represent important factors regarding plant safety and regional growth. Only those who make continuous efforts to maintain compliance with the latest standards can be sure that their products remain viable in the future. At Bürkert, we face these challenges from day to day, and in doing so we contribute to our customers' success.

### 4 Cleaning in a sewage treatment plant – bar screen

Deployment in extreme environments is possible due to high corrosion resistance of the materials involved.

### 5 Pneumatic conveying in dust area

Maximum conveyance quantities thanks to high throughput volumes in the valves make for highest possible process efficiency.

### 6 Combustible gas dosage with the aid of gas devices

Variable sizing and flexibility in the choice of material (stainless steel, brass, plastic) allow for use in extremely varied situations.

### 7 Product range and approvals

The right product for each application with approval for the country concerned.

### 8 Your solution

Explosion protection solutions for your plant's safety.

### 12 Practical example

Explosion protection solenoid valves for pressurized enclosures in control cabinets.





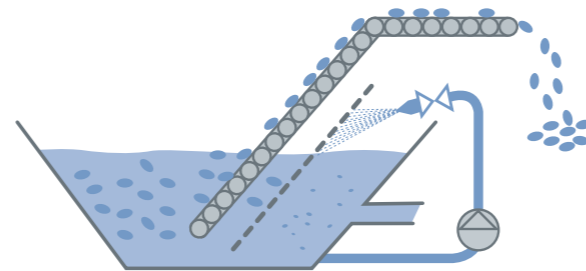
### BAR SCREEN CLEANING IN A SEWAGE TREATMENT PLANT

Explosion protection where it is least to be expected! Drinking water consumption is increasing throughout the world, and this means more work for sewage works: There is more wastewater treatment to be done. Right at the start of the treatment process, bar screens perform an essential filtering job. The solids filtered out by the screens consist mainly of organic substances such as toilet paper, faeces and food waste. The decomposition processes that ensue produce explosive gases. The filters are cleaned with the aid of a high-pressure water jet. The robust and stable Type 5282 solenoid valve allows for precise control of the water jet and explosions can be avoided.

Image source: Huber SE

#### YOUR BENEFITS

- No maintenance thanks to a high degree of resistance to the effects of dirt particles
- Extreme media tolerance against e.g. fermentation gas and UV radiation – wide range of usages.
- Maximum corrosion resistance thanks to the encapsulated solenoid drive – no contact with media.
- Safe use in the plant of the solenoid valves due to Zone 1 approvals
- No clogging thanks to media separation in the valves



Process of cleaning bar screens

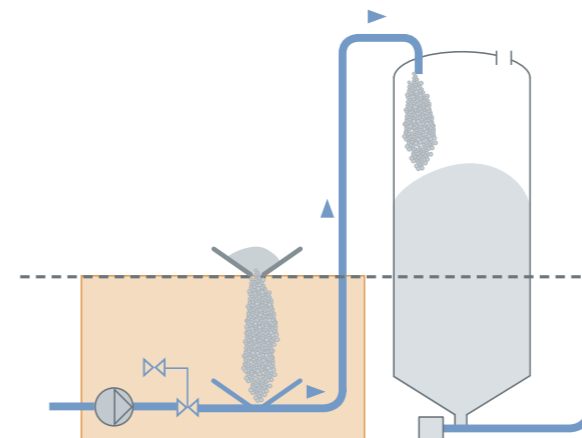


### PNEUMATIC CONVEYING MORE THAN JUST A DUSTY AFFAIR

Pneumatic conveyance for filling silos with bulk materials such as flour, coal dust, sugar or grain involves challenging product logistics. Large quantities of flammable dust in the surrounding area can lead to the formation of an explosive atmosphere. Also, deposited dust on hot process components represent an additional hazard. The Type 6519 pilot valves are approved for prevention of dust explosions. To prevent the build-up of explosive concentrations and to improve the breathing air quality, exhaust and ventilation flaps are used in the plants. These flaps are controlled by means of Type 6518 solenoid valves that provide protection against dust explosions – and for highest standards of safety in your plant.

#### YOUR BENEFITS

- Minimal dust deposition thanks to rounded form
- Efficient plant utilization thanks to high throughput volumes in the Type 6519 pilot valve
- Simple and flexible fitting thanks to standardized process connectors
- Manual override for easy start-up and maintenance



Typical process of pneumatic conveying



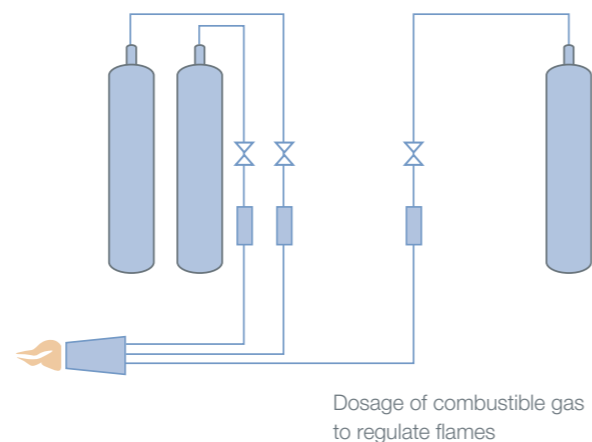


## COMBUSTIBLE GAS DOSAGE WITH THE AID OF GAS DEVICES

Gas dosage and gas mixing equipment is essential when it comes to maintaining flame quality and flame temperature. The range of applications is broad and many different gases are involved, sometimes using the same lines. Surface hardening and finishing as well as cutting and firing technologies with their challenging combustible gases make great demands on the valves used. As well as performing the required shut-off tasks reliably, these valves must also fulfil the stringent requirements of explosion protection regulations. With a comprehensive range of explosion-safe coil designs, Bürkert supplies category 2 and 3 solenoid valves as perfect solutions for your application.

### YOUR BENEFITS

- Standardized technology that can be adapted flexibly for your different media and processes
- Encapsulated solenoid drives allow use with aggressive media
- Energy-saving high-performance coils
- Time-saving installation and easy commissioning



## PRODUCT RANGE

	Type	Function	Coil	Process connectors	Pressure range (bar)	Pressure range (kPa)
<b>Direct-acting</b>						
<b>Plunger valves</b>	6013	2/2	AC 10	G 1/8 ... 3/8	0 ... 25	0 ... 2500
	6014	3/2	AC 10	G 1/8 ... 1/4	0 ... 16	0 ... 1600
	6027	2/2	AC 19	G 1/4 ... 1/2	0 ... 80	0 ... 8000
	2610	2/2	AC 19	G 1/4 ... 1/2	0 ... 10*	0 ... 1000
<b>Pivoted armature</b>	0121	3/2	ACP 16	G 1/4 ... 3/8	0 ... 6	0 ... 600
	0330	3/2	ACP 16	G 1/4 ... 3/8	0 ... 16	0 ... 1600
	0331	3/2	ACP 16	SFB DN 2 ... 5	0 ... 16	0 ... 1600
<b>Piloted</b>						
<b>Diaphragm valves</b>	6213 EV	2/2	AC 10	G 1/4 ... 3/4	0.5 ... 10	50 ... 1000
	6281 EV	2/2	AC 10	G 3/8 ... 2 1/2	0.2 ... 16	20 ... 1600
	5282	2/2	ACP 16	G 1/2 ... 2 1/2	0.2 ... 16	20 ... 1600
	0340	3/2	ACP 16	G 1/2 ... 1.0	0.5 ... 16	50 ... 1600
<b>Piston valves</b>	0142	3/2	ACP 16	Gluing sleeve / Screw connection DN 15 ... DN40	0.5 ... 6	50 ... 600
	5404	2/2	AC 10	G 1/2 ... 1.0	1 ... 50	100 ... 5000
	6240	2/2	AC 10	G 1/4 ... 3/8	0 ... 25	0 ... 2500
AC 19			G 1/2	0 ... 25	0 ... 2500	
<b>Pneumatic valves</b>	6519	3/2	AC 10	G 1/4, Namur flange	2 ... 8	200 ... 800
		5/2			2.5 ... 10	250 ... 1000
		5/2 BI			3 ... 10	300 ... 1000
		5/3			G 1/4	2 ... 8
	2.5 ... 10	250 ... 1000				
				3 ... 10*	300 ... 1000	

\* (10/2018)

SFB: The Bürkert Special Flange is a standard connector for mounting the solenoid valve directly onto a mounting plate. bi: bi-stable valve. The coils vary in size, design and performance: AC 10: Actuator coil with 10 mm core diameter | AC 19: Actuator coil with 19 mm core diameter | ACP 16: Actuator coil pivoted armature with 16 mm anchor diameter. You will find further details in the data sheet. Higher pressure ranges, larger orifices and more process connectors on request.

## APPROVALS



## YOUR SOLUTION FOR EXPLOSION PROTECTION IN CATEGORIES 2 AND 3

### Terminal box

Approved according to ATEX, IEC Ex, KOSHA, NEPSI standards

The terminal box features a robust metal housing and easy-to-handle electrical connection technology. In addition to a large clamping space, the lid is fixed in the open position for easy connection of the cables. The valve is opened and connected with the aid of just one tool. The unique, rotatable housing increases the options for coping with local space problems individually and quickly – saving valuable time and storage costs.

- Easy, time-saving installation, maintenance and service:
  - electrical connection with just one tool
  - lid locking mechanism
  - rotatable housing (in 90° steps)
- Extended protection:
  - robust, metal connection housing
  - lid can be sealed
  - earthing screw for external potential equalisation

### Coil with fixed connection cable

Approved according to ATEX, IEC Ex, KOSHA, NEPSI standards

The connection cable that is cast together with the coil as a single element and the epoxy resin encapsulation meet standard requirements and can withstand rough handling. Both the cable and the casting mass for the coil are chemically and thermally highly durable. The materials involved are subjected to particularly high degrees of wear and tear in machine rooms, at petrol stations and in other outdoor locations.

- Encapsulation II 2 GD Ex mb
- Flexible and halogen-free cable
- Polyolefin cable very resistant to chemicals

Combination of different valves with the Ex coils (AC10, AC19, ACP)

Terminal box

Coil with fixed connection cable



AC19 K | AC19 L | AC10  
(K = 12 W; L = 20 W)



ACP



Pilot pneumatic system  
Types 6518 | 6519



Direct-acting Lifting armature  
Type 6027



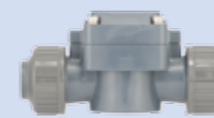
Direct-acting Lifting armature  
Types 6013 | 6014 | 6027 | 2610



Pilot Diaphragm valve  
Types 6213 EV | 6281 EV



Pilot Piston valve  
Types 5404 | 6240



Pilot Diaphragm valve  
Type 0142



Pilot Piston valve  
Type 0340



Pilot Diaphragm valve  
Type 5282



Direct-acting Pivoted armature  
Types 0121 | 0330 | 0331



Explosion protection solenoid valves for optimized overpressure encapsulation in control cabinets



## UNDER PRESSURE – PRESSURIZED ENCLOSURES FOR CONTROL CABINETS.

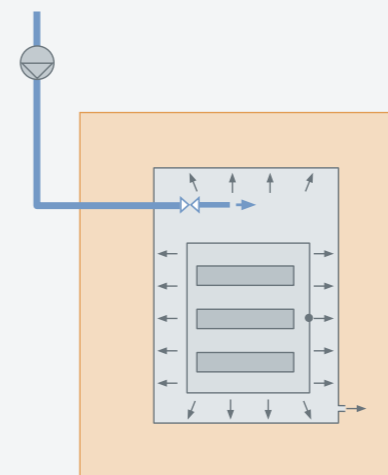
Many operators are faced with the problem of finding suitably approved components and control equipment when it comes to automating complex industrial plant in explosion-risk areas. In many cases it is not possible to place control units (e.g. large control cabinets) in safe areas – they need to be close to the process and therefore meet the ATEX requirements. Industrial users have therefore been using control cabinets with pressurized enclosures for many years now. According to IEC 60079-2, this allows the operator to use standard components inside control cabinets even in explosion-risk areas. Such complex control units are to be found in automotive paintshops as well as pharmaceutical or chemical plant, for instance.

The regulation and monitoring of the overpressure in the control cabinet is the crucial issue for ensuring protection against explosions and therefore the safety of the whole plant.

The valves used in this context have to fulfil two tasks: One of them is to flush the entire volume of the housing when a control cabinet door is opened (e.g. for maintenance work). The other is to maintain a constant throughput in the housing during operation in an explosive atmosphere. Customers are looking for a solution which can cope with both of these tasks at a reasonable price. In addition to this, during normal operation of the control cabinet the valves are unpowered. This means that they do not contribute towards generating heat in the control cabinet, nor do they need to be supplied with electricity. Therefore the valve cannot fail during normal operation and the customer can be sure that by using this valve there can be no interruption or disruption of the plant's operation on account of valve failure. Type 6281 valves, with ATEX certified Type AC10 Ex solenoid coils, have 2 adjustable throttles beneath the valve seat. This allows the operator to open the valve in a predictable manner and introduce a specific amount of air to maintain the over-

pressure. An overpressure between 5 and 8 mbar must be maintained. Bürkert began to develop this idea in cooperation with customers as early as 10 years ago, and continued to improve it ever since. So today we are supplying all well-known manufacturers of Ex-p systems with valves displaying these features. We have extended our approvals portfolio for international applications and can now supply flushing valves for explosion-risk plants in Europe, Asia and Australia.

Bürkert provides customer-specific and space-saving Ex solenoid valve solutions. The terminal box connector can be rotated through 90° by the customer. A further advantage can be seen in the fact that it takes considerably less time to open and close the terminal box. Instead of four, just one bolt has to be unscrewed. This means that Bürkert solenoid valves for explosion-risk areas are secure and reliable solutions for your plant as well.



### AT A GLANCE

<b>Application</b>	Use of standard components in explosion-risk areas thanks to overpressure encapsulation
<b>Requirement</b>	Regulation and monitoring of overpressure in control cabinets
<b>Solution</b>	Ex-protected solenoid valves that can perform various tasks in the explosive atmosphere
<b>Added value</b>	Safe, stable and reliable overpressure regulation