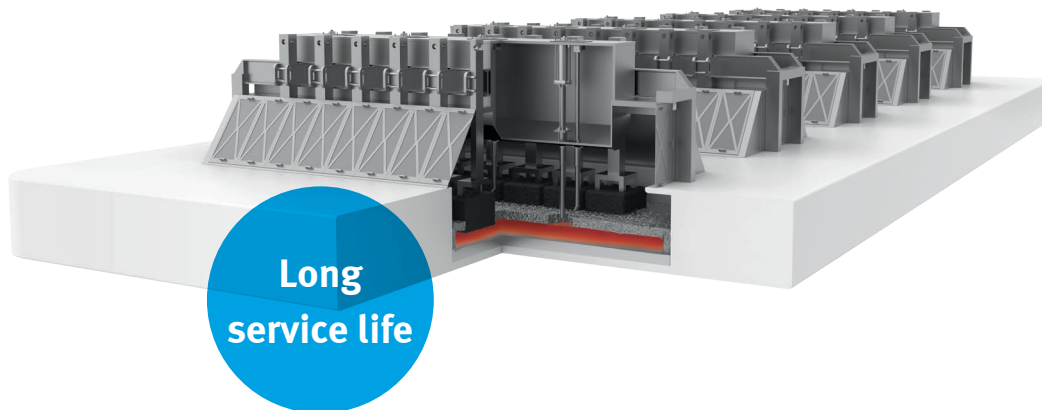


Automation solutions for pots in primary aluminium plants and other high temperature applications



Extremely robust and clever

Highlights

- Cylinders and valves optimised for the primary aluminium industry
- Cylinder/valve combinations with directly flange-mounted pilot valve

Crust breaker cylinder

- Suitable for temperatures up to 150 °C in continuous operation
- Pneumatic lock in the event of compressed air failure and pneumatic end-position sensing
- Electrical contacts for bath sensing
- Integrated energy-saving function

Automation components in primary aluminium plants are continuously exposed to extreme heat, ultra-fine alumina dust and strong magnetic fields. This means that the requirements for crust breakers, feeder cylinders as well as pilot valves are very high. They need to be able to withstand these aggressive ambient conditions.

Highly specialised product portfolio

Festo solutions are perfectly designed for automation tasks in aluminium plants. For example, our crust breaker cylinders are made from high-quality materials, right from the cylinder housing to the seals. They are suitable for temperatures up to 150 °C in continuous operation and a peak temperature of up to 200 °C during start-up of a pot. The pilot valves used to control them are resistant to magnetic fields.

Reduced air consumption saves energy!

The energy-saving function integrated into Festo crust breaker cylinders reduces air consumption by more than 50% and thus significantly lowers operating costs and load demand on the main compressor system. This also makes an important contribution to greater productivity while the long service life of the cylinders makes them very sustainable.

Crucial for production

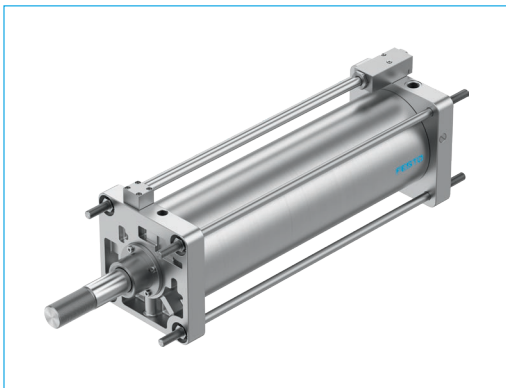
Crust breaker cylinders and feeder cylinders

Primary aluminium can be obtained through molten salt electrolysis of alumina, which has first been separated from bauxite. This reduction process not only requires huge amounts

of energy, but also generates high temperatures of up to 980 °C and strong magnetic fields in the cells. Feeder cylinders automate the addition of alumina and aluminium

fluoride to the process, while crust breaker cylinders ensure that the bath inside the pot is accessible at all times or, if necessary, break the crust. The production environment

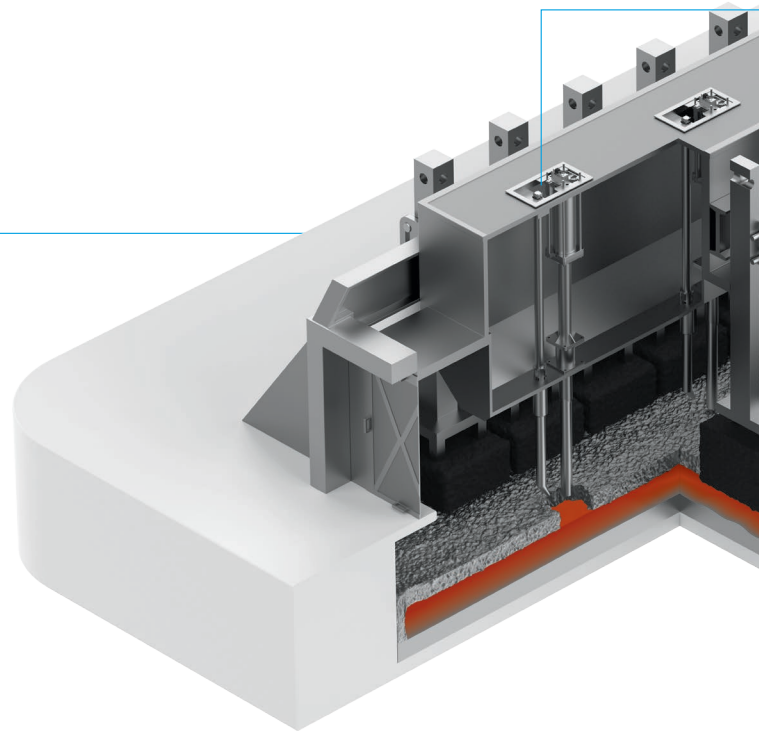
and the fine-grained structure of the raw materials mean the crust breaker and feeder cylinder system and its components have to meet the highest requirements.



Crust breaker cylinders

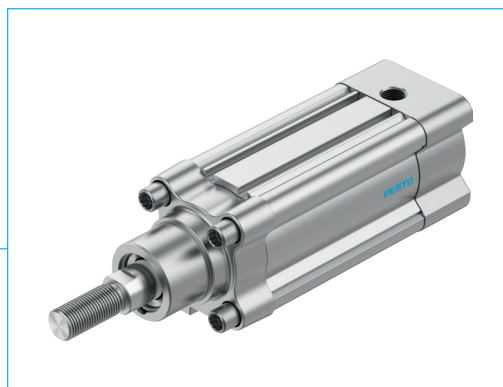
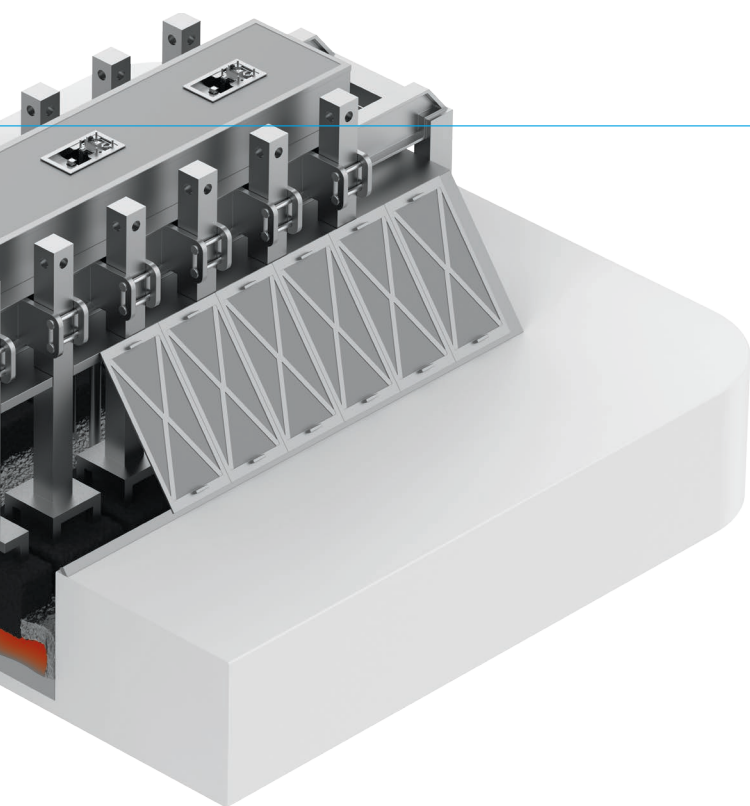
Crust breaker cylinders for the primary aluminium industry – with diameters from 125 to 200 mm – are tailored to the service life of a pot and extremely reliable.

They are the only answer to extreme conditions such as high transverse forces, dusty atmospheres and extreme temperatures.



Technical details

- Design of the crust breaker cylinders based on ISO 15552
- Diameters from 125 to 200 mm
- Variable end-position cushioning with special seals in both end positions
- Bearing neck on the cap can be unscrewed for maintenance-friendly replacement of the wiper seal and piston rod seal
- Special, hard wiper seal made of PTFE for peak temperatures of up to 200 °C
- Piston seal made of fluoro rubber (FKM)
- Piston rod seal for continuous temperatures of up to 150 °C
- Extra-long piston rod guide and wide piston – the ability to absorb high transverse forces ensures a long service life
- Reinforced, hard-chromium-plated piston rod
- Maintenance-free thanks to lifetime lubrication, even during continuous operation with unlubricated compressed air
- Direct mounting of pilot valves through standardized ISO 5599-1 interface
- Refurbishment made easy with orderable wear parts.



Feeder cylinders

Our series of heat-resistant metering cylinders DSBG offers a high level of resistance to harsh environments. Alternatively, you can also opt for special cylinders with piston rods that have the same wiper seals as crust breaker cylinders.

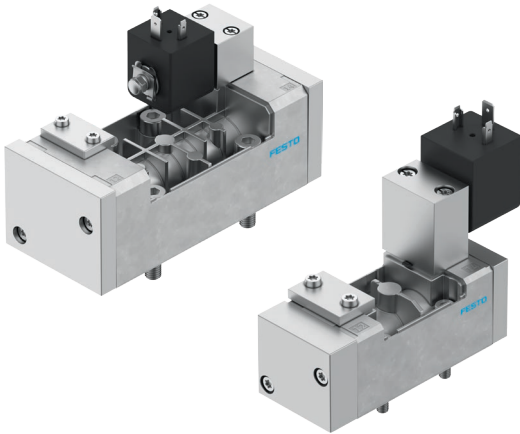
The cylinders, which range in size from 50 to 80 mm, are powerful, efficient and durable as well as technically advanced thanks to standard P or PPV cushioning and lots of optional features in the modular system. Suitable for use at temperatures up to 150 °C, both solutions are truly impressive.

Technical details

- Feeder cylinders based on ISO 15552
- Piston diameters of 50, 63 and 80 mm
- Temperature range up to 150 °C
- Heavy-duty tie rod design
- Double-acting
- Optionally with protection against rotation
- Extensive range of accessories for mounting in almost all installation situations
- End-position cushioning
- Modular product system for individual configuration of numerous variants
- Direct mounting of pilot valves through standardized ISO 5599-1 interface
- Refurbishment made easy with orderable wear parts.

Efficient thanks to reliable cylinder control

Valves



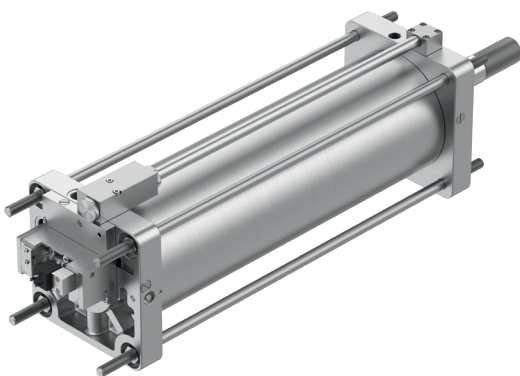
We can offer you application-specific solutions based on the tried-and-tested design of our 5/2-way valves (single solenoid, electrically actuated and with spring return).

These can include optimisations such as a hermetically sealed housing for harsh environments and unidirectional exhausting to prevent the ingress of aluminium oxide during valve switching.

Technical details

- ISO 1 and ISO 3 valves
- Valves designed based on ISO 5599-1
- 5/2-way single solenoid valves
- Electrically or pneumatically actuated
- Operating voltage: 24 V DC, 110 V AC and 230 V AC or pneumatic pilot signal
- Resistant to ambient temperatures up to 150 °C
- Hermetically sealed housing
- Refurbishment made easy with orderable wear parts.

Cylinder/valve combinations



Both crust breaker and feeder cylinders can be supplied directly with flange-mounted pilot valves. The end-position lock is realised with a pneumatically piloted check valve. This reliably holds the chisel in the upper position in case the compressed air fails.

Plenty of combination options

Optional functions for the crust breaker cylinder

Tailored to the ambient conditions, further features can be integrated into the cylinder housing. These can include, for example, an energy-saving

function, electrical contacts for bath sensing and end-position detection.

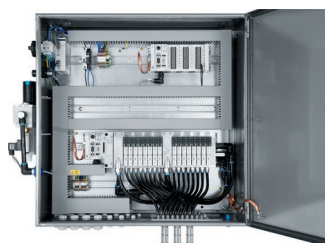
		D	VL	HGL	-	160	-	995	-	PPVS16	-	EK	*
Type													
D	Double-acting cylinder												
Cylinder/valve combination													
VL	With flange-mounted, pneumatically actuated valve												
MD	With flange-mounted solenoid valve												
HGL	With pneumatic locking												
Size													
125	Piston diameter												
160	Piston diameter												
200	Piston diameter												
Stroke													
	300 – 995 mm												
Drive function													
PPVS16	Pneumatic end-position cushioning, piston rod ø 50, heat-resistant design												
Options													
EK	Bath sensing												
AS	Air-saving device integrated into the end cap												
SD	Detection of the lower end position												
ST	Detection of the upper end position												
SR	Pneumatic pulse control for a complete cycle												

* Not all combinations are possible

Your system partner

Have you found the optimum automation solution for your application? The Festo pneumatic product range includes many more components and modules, including for peripheral areas of primary aluminium plants.

Control cabinet solutions



With control cabinet solutions from Festo, you can virtually eliminate the complex processes associated with designing a pneumatic subsystem. We design, order, assemble, test and deliver pre-assembled

control cabinets for the pneumatic actuation of your systems. They are tailored to your needs, ready to install and protected from external influences, contributing to long-term process reliability.

Regulators for compressed air supply



MS series



Filter regulator PCRP



Filter regulator LFR-EX4

- MS series: universal, complete product series, individual configurations, safety functions, high flow rates, Ex certificates

- PCRP: corrosion-resistant stainless steel version
- LFR-EX4: sturdy design in full metal

Smartenance maintenance software



Smartenance is a paperless, digital maintenance management system that manages data centrally in the cloud and updates it in real time. Maintenance tasks can be scheduled easily and flexibly.

Once you have scheduled them, you can immediately evaluate the results and view them directly in Production on the mobile app. Intelligent user management ensures fast collaboration within the team,

thus increasing the efficiency of your maintenance management.

Find out more at
→ www.festo.com/smartenance

Interested in finding out more?

We look forward to hearing from you and will be happy to advise you. Just contact your sales consultant at Festo.