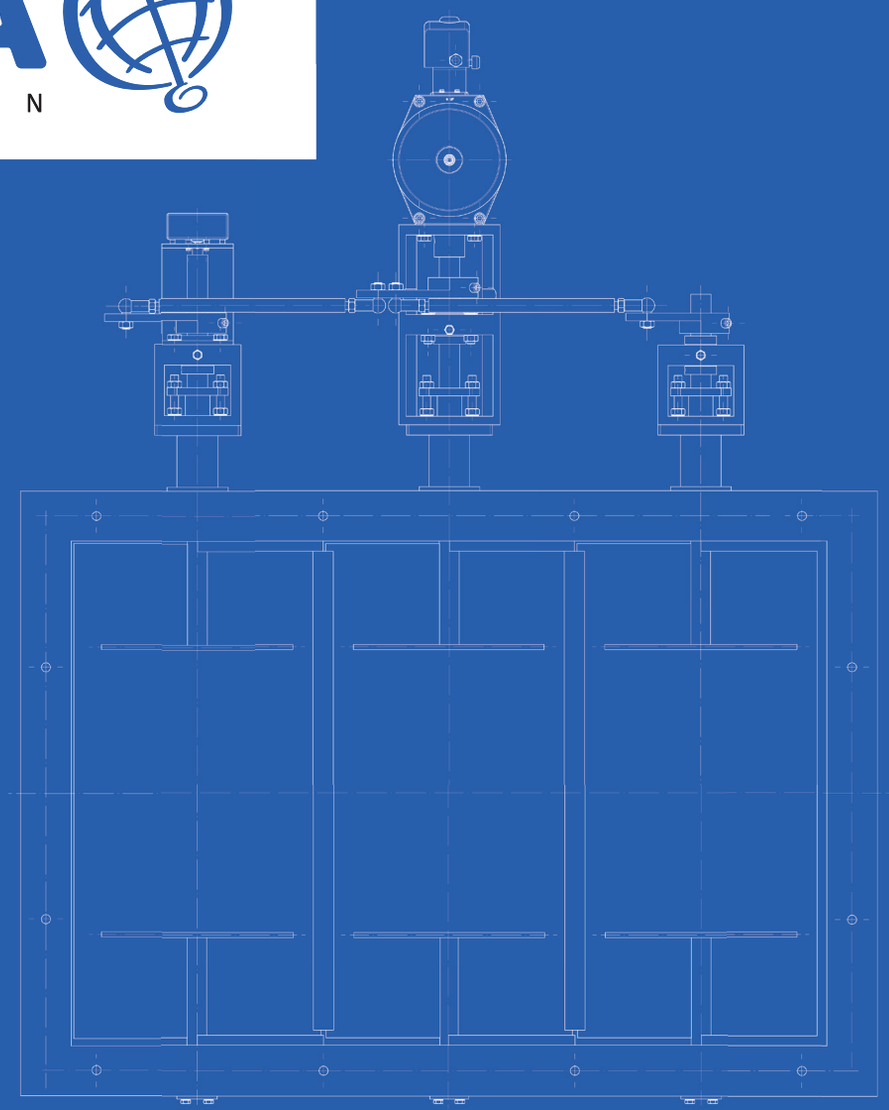
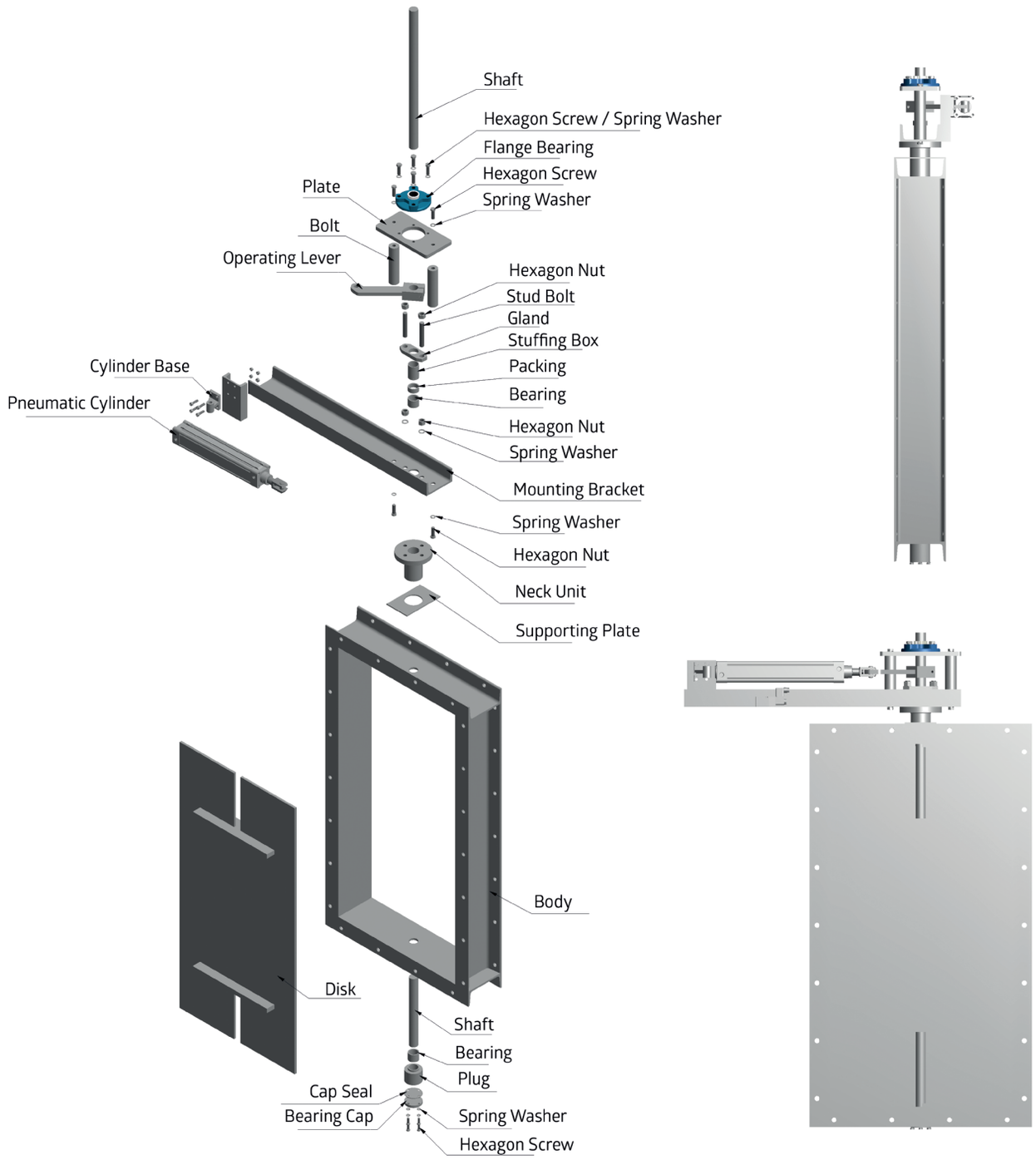
JASTA ARMATUREN



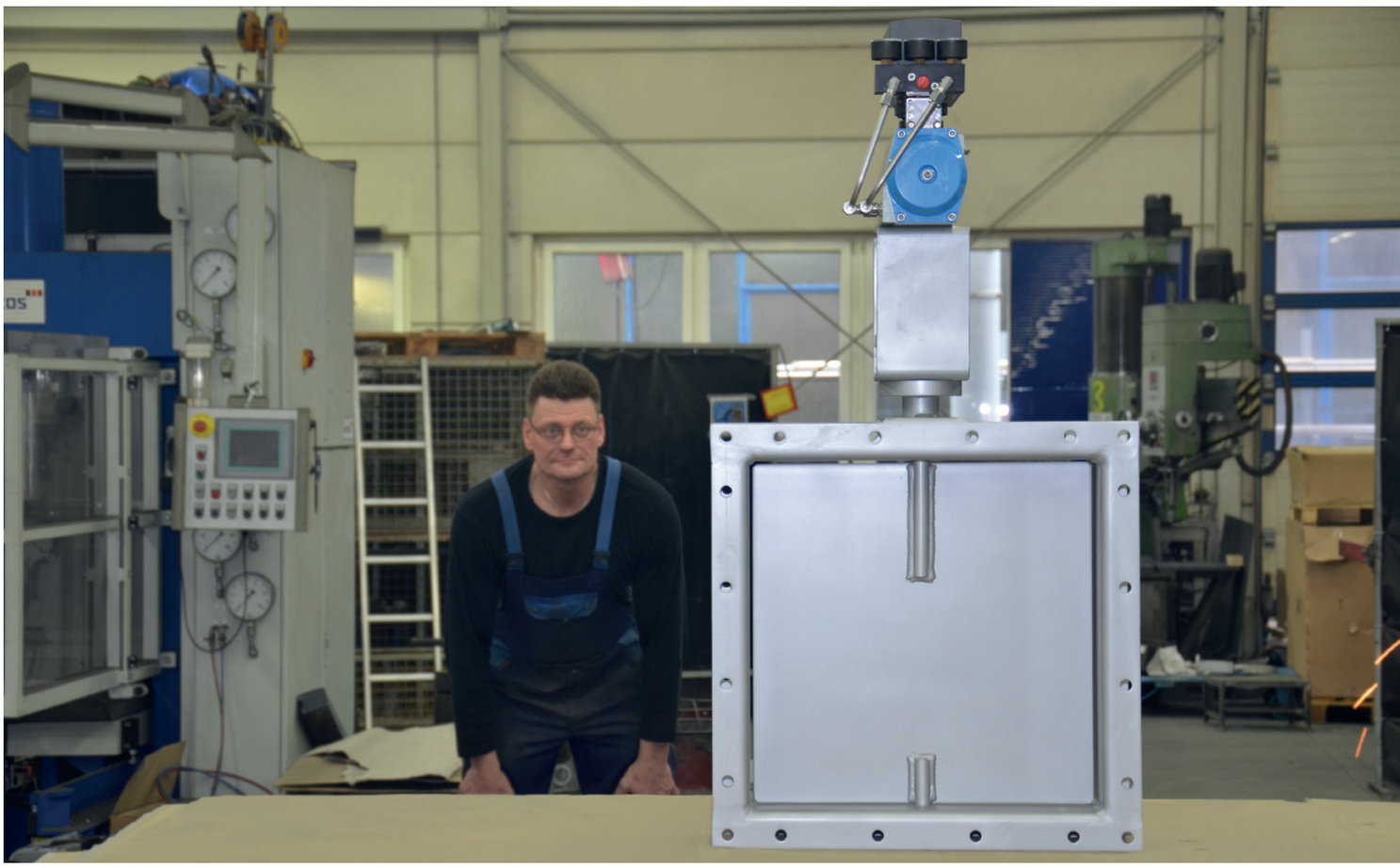
Rectangular Valve

Type RA

Rectangular Valve Type RA with flanges drilled according to DIN 24193 T3 and pneumatic cylinder



Exploded view of a standard RA with a swing through steel disk and pneumatic operation.



General Description of the Rectangular Valve Type RA

The rectangular valve type RA has a flange connection based on DIN 24193 T3. It is mounted in rectangular ducts and serves for shutting off or regulating the volume flows. Depending on the application (temperature, medium, pressure), we can customize this valve of any steel available on the market.

According to your requirements we build the valve as single- or multi-wing for improved control.
We have implemented for example a rapid-closing valve with drop weights and one lined with refractory concrete for temperatures up to 1100°C.

With our three sided coated sealing gasket we can offer an impermeability of at least 99,95% as compared to the fully opened disc. To achieve a leakage rate of 0%, the valve will be charged with sealing air.
We do not only offer our valves with free shaft ends, but can also upon request offer the valves either as manually operated (with grid handle or continuously variable fine adjustment) or an actuator.
Any actuator available on the market, whether electric or pneumatic, can be fitted with our standardized mounting kit. The mounting position of the valve standardly is provided with horizontal shaft, but upon request customized solutions are available.

Advantages at a glance

Handling	Easy, depending on the accessories
Impermeability	99%, 99,5% and 99,95% compared to fully opened disk
Operating Temperature	-100°C to +1100°C
Medium Compatibility	Design and material selection according to your medium and further operating conditions, including: (aggressive) flue gas, dust-laden mediums, biogas or exhaust gases from biomass burning
Reliability	Very low possibility of failure
Maintenance Characteristics	Low maintenance

Basic Information

Sizes: DN 63x63 bis 5000x5000 (intermediate sizes viable)

RA as a flange valve with flanges drilled according to

- DIN 24193 T3
- Every pattern of drilling available upon request

Operation

- With free shaft-ends
- Manual operation with a grid handle with locking mechanism or continuously variable fine adjustment
- A corresponding shaft adaption with the DIN ISO 5211 mounting kit
- With a mounted actuator (pneumatic, electric or hydraulic)

Shaft Seal

- Gland seal
- O-Rings or shaft seals (EPDM, FPM, NBR, PTFE)
- Smooth running seal
- TA-Luft

Shaft Bearing

- Friction bearing (RG7, Rhyolite, PTFE, DU)
- External fitting through flange bearings for smooth operating
- External fitting over a friction bearing (EN-GJL-250CrNi) for high temperatures up to 1100°C

Impermeability Classes

- Approx. 99% impermeability in a disk swing through design
- Approx. 99,5% impermeability (metallic sealing) compared to fully opened valve disk in a design with a stop bar in the body
- Approx. 99,95% impermeability (with flexible seal) in designs with a stop bar and three sided jacketed gasket in the body

Operating Temperature

- From -100°C bis +1100°C

Material

- Steel (e.g. S235JR, S355JR)
- Stainless steel (e.g. X5CrNi18-10, X6CrNiTi18-10, X6CrNiMoTi17-12-2, NiMo16Cr16Ti)
- Heat resistant steel (e.g. X15CrNiSi20-12, X15CrNiSi25-21)

Closing Types

Disk swing through	99% impermeability compared to fully opened disk
With a stop bar in the body	99,5% impermeability compared to fully opened disk
With stop bar and gasket seal	99,95% impermeability compared to fully opened disk
With sealing air	Up to 100% impermeability

Material Combinations

Temperature	up to 350°C / 450°C	up to 550°C	up to 850°C	up to 1100°C
Body	S235JR; P265GH	X5CrNi18-10; 16Mo3	X15CrNiSi20-12	X15CrNiSi25-21
Disk	S235JR; X5CrNi18-10	X5CrNi18-10; 16Mo3	X15CrNiSi20-12	X15CrNiSi25-21
Shaft	S235JR; X20Cr13	X8CrNiS18-9; X6CrNiTi18-10; X20Cr13	X15CrNiSi20-12	X15CrNiSi25-21
Subject to modification				

Note: The material combinations listed here are standard combinations. The exact selection is made for customized designs and special requests in accordance with specifications or after consulting with you.

Actuators and Actuator Accessories

Operation	Accessory
Manual operation	Grid handle, fine adjustment, worm gear
Pneumatic actuator	Magnet valve, electro-mechanical end switch, inductive proximity switch positioner 4...20mA, PROFIBUS, HART, etc.
Elektric actuator	End switch, revolution off-switch, position encoder 4...20mA, positioner, PROFIBUS, HART
Security functions	Fast closing and opening <1 sec through express airing or drop weights
Cylinder	Magnet valve, End position control
Subject to modification	

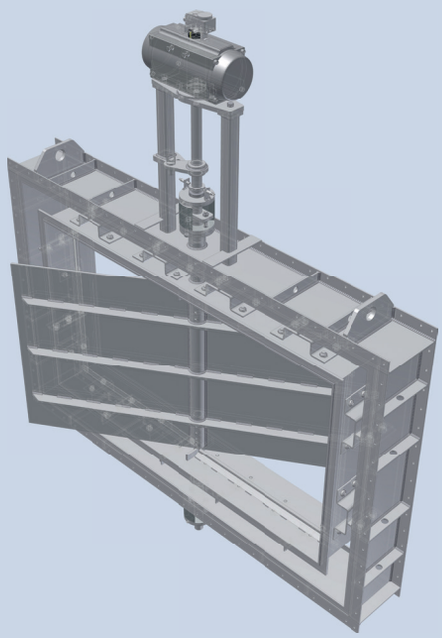
Advantages of the RA

- Our valves are individually produced according to your needs. They are adjusted one hundred percent according to the operational conditions. That includes the specifications, material choice and operation.
- The RA can be manufactured in any dimension you need.
- The rectangular valve type RA is produced with flanges, drilled according to DIN 24193 T3 or upon request. This ensures quick and safe installation into an existing pipeline.

Custom Designs

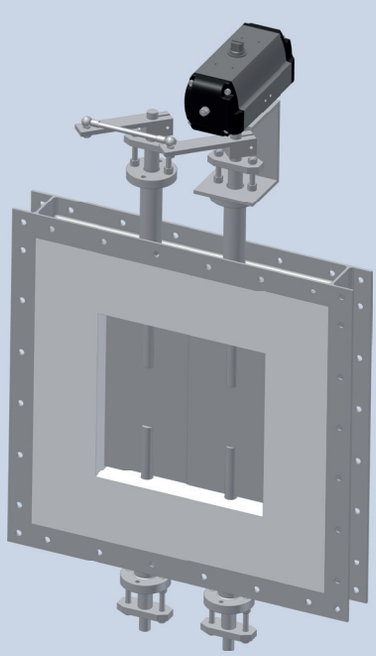
According to your individual needs, we produce the RA in different material combinations and for different actuators and applications.

Flange rectangular valve Type RA-S (LB), single-wing



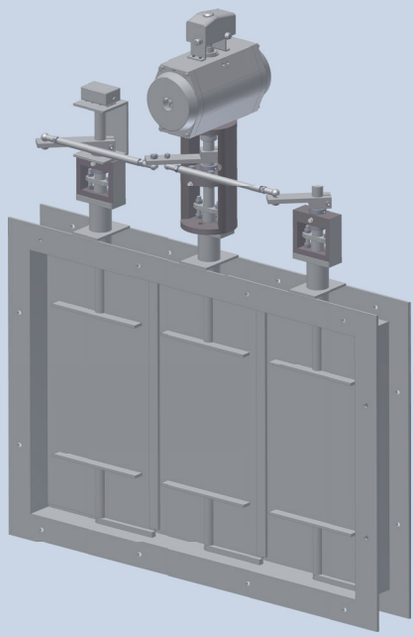
Floated bearing of the inner body made from X15CrNiSi20-12 for temperatures up to 900°C to compensate the thermal expansion. Outer body made from P265GH. Space between inner and outer body is lined with a fireproof insulation. Valve is equipped with a pneumatic actuator for safety position “closed”. With mechanical locking in the mounting kit to block the disk during maintenance.

Flange rectangular valve Type RA-S (LB) with double-sided shaft feedthrough



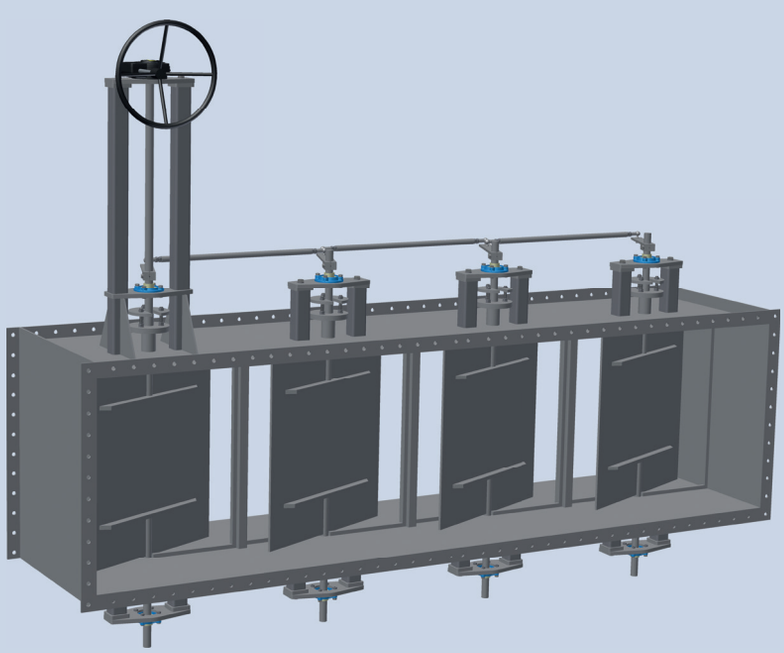
Internal lining with refractory concrete. Disk in two parts for improved control characteristics.
Valve is suitable for high to very high temperatures (max. 1100°C).
The valve is equipped with a single-acting pneumatic actuator in order to ensure a defined safety position.

Flange rectangular valve Type RA-S (LB/2) customized as triple-wing for improved control characteristics



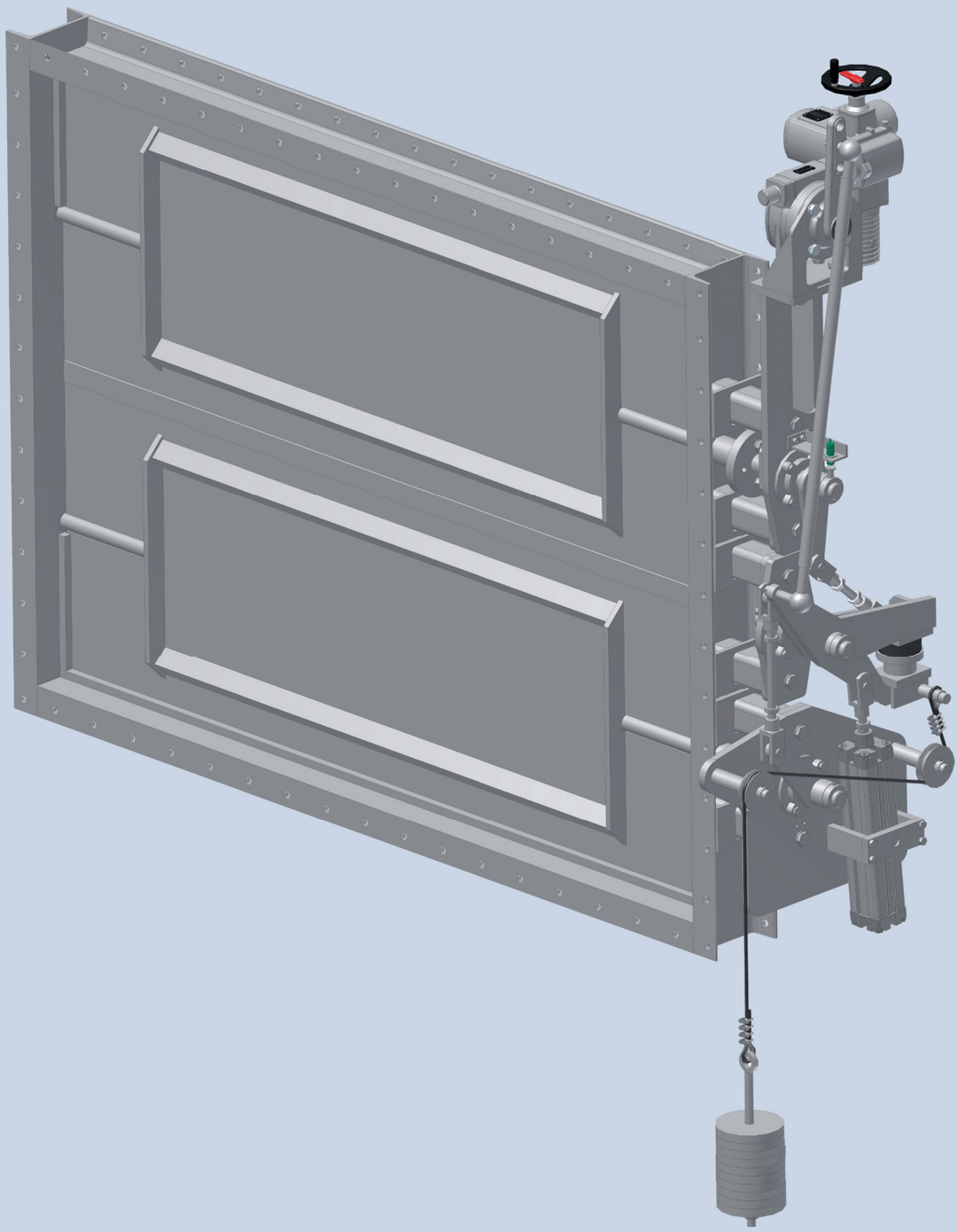
With single external bearing. For temperatures up to 780°C. The valve is equipped with a pneumatic actuator and an electro-pneumatic positioner. This combination is suitable for a precise control of the flow rate. An input signal 4-20mA is standard. With add-on modules a 4-20 mA output signal, mechanical end positions and much more can be provided.

Flange rectangular valve with manually operated worm gear DN 4000x1000x500



4-winged for adjustment of the volume flow. Extended actuator bracket, since the valve is actuated from a higher-located platform. Stuffing boxes with deep packing for dust-laden mediums. Disks with flanged external bearings on both sides for smooth running and long service life.

Flange rectangular valve Type RA-S with safety function



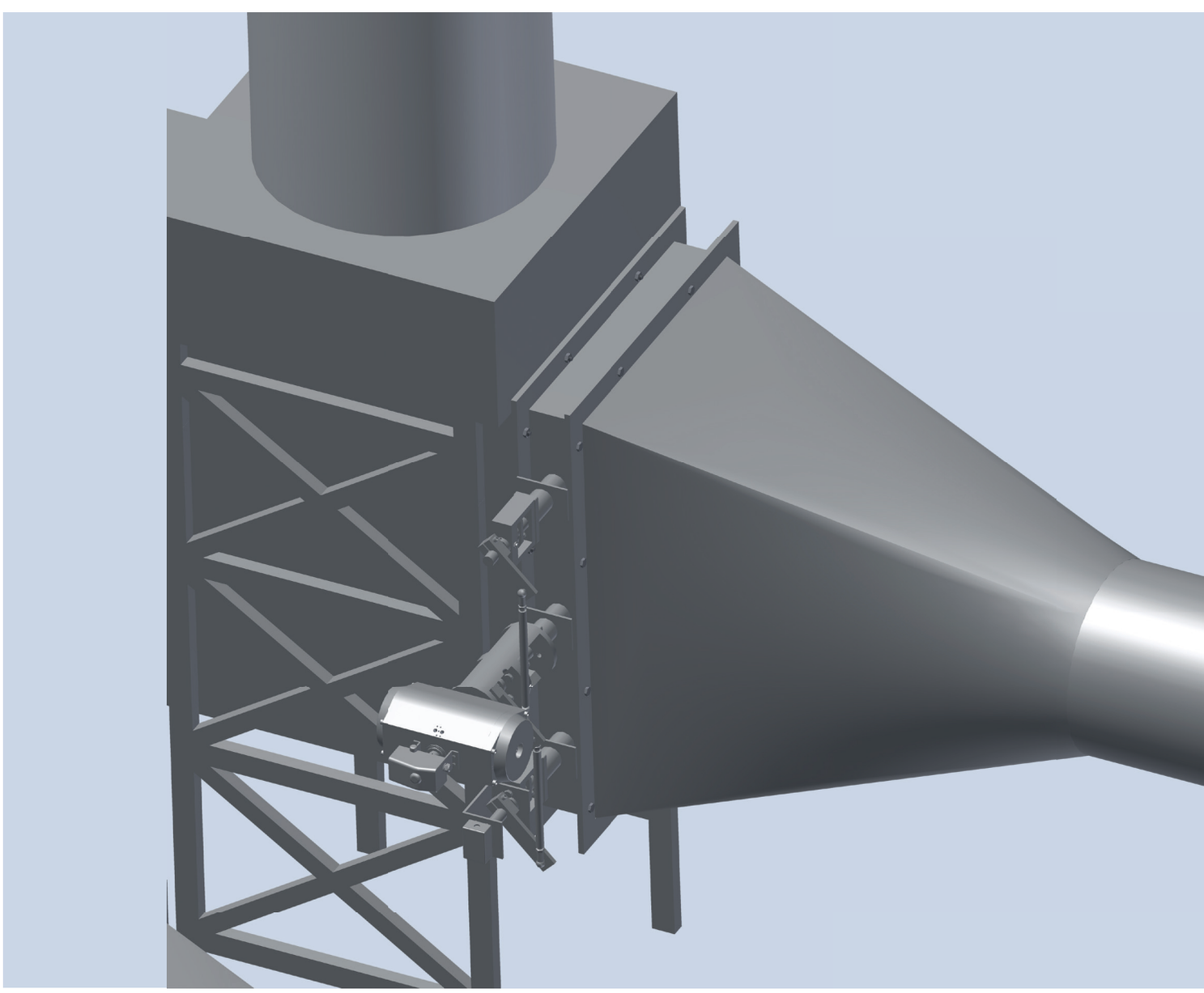
Valve with a stop bar for impermeability of 99,5% in comparison to fully opened disk. Operated with side-mounted electric actuator by manufacturer Auma. Disk coupled with actuator via an electrical holding magnet.
In case of power failure, the magnet releases and the valve is closed by the side-mounted drop weight.
The attached pneumatic cylinder serves as cushioning to prevent the disk from driving into the seal at full speed.
Once the power is turned on again, the drive moves to the holding magnet and couples. The valve is then operated normally again.

References

- Bernd Münstermann GmbH & Co. KG, Telgte
- Hertwich Engineering GmbH, Braunau am Inn
- ANDRITZ Maerz GmbH, Düsseldorf

Application Areas

Smelters, foundries, cement factories, crematoriums, industrial furnaces (for iron, steel, aluminium and stainless steel), glass factories, factories (for Rockwool, autoclaved aerated concrete etc.), ceramic kilns, drying and dust extractors, gas turbines, heat treatment, and high temperature furnace construction, chemical plants



Glossary

Butterfly Valve	A butterfly valve consists of a body and is for flow regulation. Clamped between flanges.
Centering Aid	Lugs right and left of the operating side shaft outlet of the valve. They ensure easier and more precise installation into a pipeline.
Closing	Contact of the valve disk with the body. Possible seals: Striking, swing through, with stop bar and stop bar with seals.
Coupling	Connection between the actuator and the valve shaft.
Electric Operation	Electric operation of the valve. Control over 4 .. 20 mA-signal possible. Wide ranging optional accessories available.
Element	Element flowing through the valve. (Gas, liquid, etc.)
External Seal	Used at high temperatures to guarantee the turning of the valve at all operating conditions.
Fine Adjustment	Lever which has a free swing variance of 90° and is movable per wing screw or clamp lever into any position.
Fitting Key	Metallic adaption of the shaft to the actuator. This is a side connected metal lug on the shaft. Serves for power transfer from the actuator to the shaft.
Flange Bearing	Serves as transmission of high torques.
Four Cornered Shaft	Serves for the adaption of the shaft to the required connection of the actuator.
Grid Handle	Gear teeth on a nut screwed scale provides the possibility of a gradual adjustment of the valve disk. The catch of the hand lever locks into the teeth. 16 positions between 0 and 90 ° are fixed.
Hand Operation	With grid handle, fine adjustment or worm gear. Depending on installation.
Hydraulic Operation	Operates with a hydraulic cylinder. Special: Good power distribution in limited spaces.
Impermeability	Shows how impermeable the flow is inside the valve. (Dependant on construction, classified in leakage rates).
Inner Sizing	Internal flow area of the valve.
Installation Position	Describes the horizontal or vertical position of the shafts of the valve once installed.
ISO 5211	Norm regulates the attachment measurements for actuators to attachment parts onto valves.
Kv 90°	Flow in a fully open valve disk.
Lever System	It regulates two or more valves with an actuator.
Mounting Kit	Normed part for mounting actuators.
Nominal Size	Size of the inner measurement of the valve.
Operation	Operation of the valve. Possible operation: manual, pneumatic- und electric actuators (as standard). All further adaptions available as per customer needs.
Operating Pressure	Pressure in the pipeline which works on the valve.
Operating Temperature	Temperature of the medium in the pipeline.

Packing Gasket	Serves as the seal between the valve and shaft exit from the valve body. Can be produced in various ways. (EPDM, PTFE, TA-Luft eg.)
Pneumatic Operation	Opening of the disk in the valve with a pneumatic actuator. With or without a spring setting. Control possible with a positioner.
RDST-32	Infinitely adjustable fine adjustment for larger valves.
Safety Position	This is decided by the customer. Defines the position of the valve in an emergency.
Seal	Flexible material in the valve. To improve the impermeability.
Sealing Air	Used to seal the shaft up to 100%.
Service	Defines the regular necessary readjustments (readjustment of the packaging, etc.). For the maintenance plan please see operating and maintenance manual.
SFD-6	Infinitely adjustable fine adjustment with a manual handle, used in smaller valves.
Shaft Bearing	Bears of the shafts in the body.
Slide Bearing	Turned sleeve, e.g. from red brass.
Step-seated	Disk valve fitted in the body of the valve and stops the flow.
Stop bar	Metallic valve stop in the valve. Serves to seal the valve.
Swing-through	Valve without seals between the disk and body with defined ring gap.
TA-Luft	German Clean Air Act (§48 BImSchG). Using a TA-Luft packing ensures 100% seal of the shaft bushing to the outside.

Certificates

We are certified for the following processes:

- ISO 9001
- AD 2000 HP0
- EN 3834-2
- SIL
- ATEX

Services for the Valves

We are happy to support you with various services to optimize the use of the valve.

- Determination of sound level
- Expertise on earthquake safety
- Strength calculation
- FEM calculation
- Leakage calculation
- Flow simulations
- Assembly and test run of your actuator
- Lacquering to your liking

Test station at JASTA-ARMATUREN

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