



Pneumatic Diaphragm Actuator

with unique reliability

The new, pneumatically operated multi-spring diaphragm actuator, Type ARCAPAQ, series B12, is the result of our more than 75 years of experience in the development, production, maintenance, and repair of complete high-quality control valves for the most versatile industrial applications.

Design Features:

- **Rolling diaphragm design**, proven in thousands of the most versatile industrial applications.
- **Direction of action easily reversible**, even on site, without special tools and without dismantling the actuator.
- **Low volume** between diaphragm and housing.
- **Integrated air-supply and Waste air scavenging** of the spring chamber, as an option on request.
- **Compact design** with reduced height.
- **The specially shaped spindle-coupling** is also used as stroke indicator, and is safeguarded (conforming to UIV).
- Versatile **selection of actuating power** by variable number and type of the helical springs.
- Splash-proof **special de-aerator**.
- Solid yoke made of spheroidal graphite iron, **conforming to NAMUR**-standard.
- Extensive material selection.
- Pressure-loaded housing parts and springs completely **protected against corrosion**.

Your Advantages:

- High reliability and power with high positioning speed and neglectably low friction.
- Simple handling and low costs for stock-keeping.
- Short reaction time.
- Unique safety of operation.
- Reduced space requirement makes it possible to install ARCAPAQ-valves also in plants with limited space, maintaining their easy maintenance.
- Protection against accidents.
- Individual adaption to requirements.
- Mounting in any position.
- Universal modes for the installation of additional equipment.
- Wide field of application.
- Long service life.

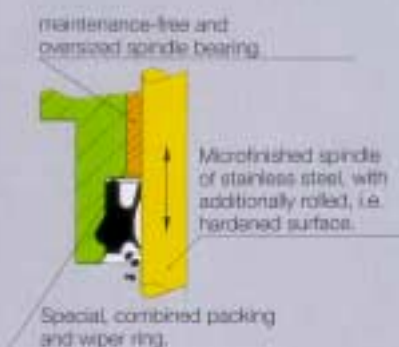
The innovative ARCAPAQ design

Diaphragm clamping

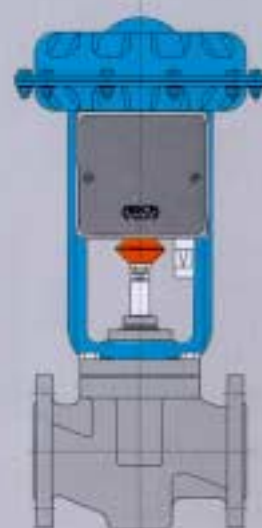


Definit pressing (clamping) of the proven diaphragm in the power-bypass mode. High availability by defined motion of diaphragm.

Spindle bearing and sealing



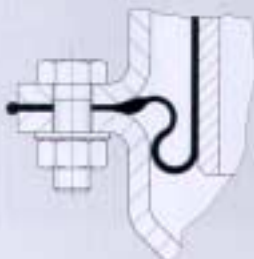
Durable and maintenance-free, even in dusty and dirty environment. Wearing particles are wiped off before they reach gasket or bearing, thus avoiding friction of wearing particles between spindle and bearing.



Compact design with unique safety of operation, e.g. by integrated air supply. Accessories (limit switches, solenoid valve etc.) mounted in the positioner.

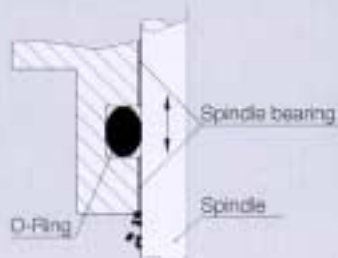
The usual design

Diaphragm clamping

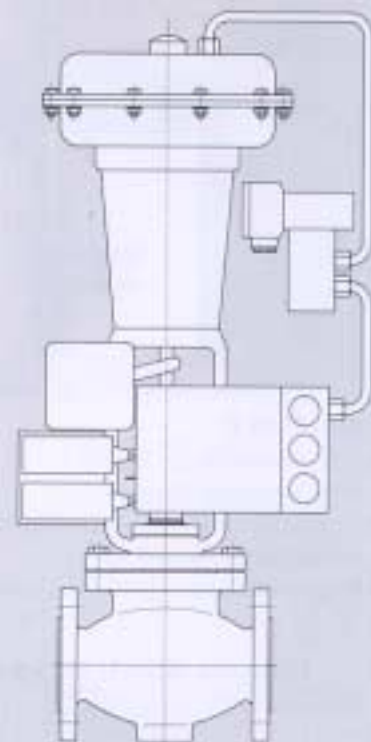


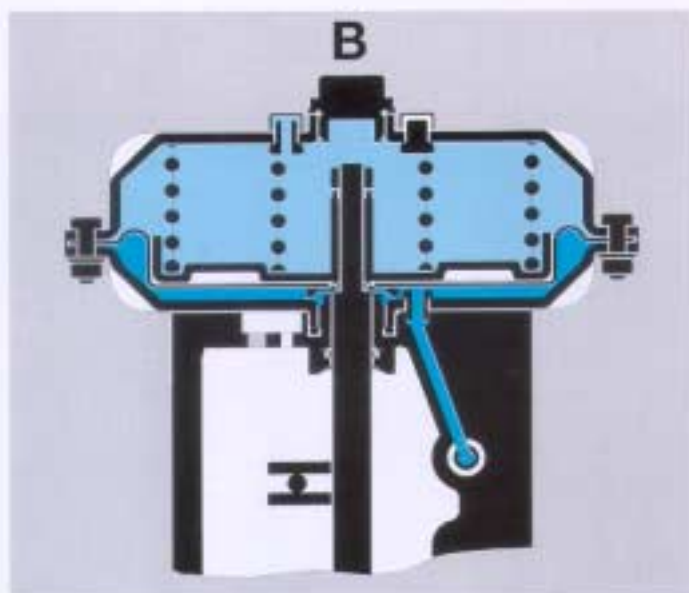
Risk of uncontrolled pressing of diaphragm and of creases. Reduced lifetime of diaphragm by uncontrolled motion and flexing work.

Spindle bearing and packing



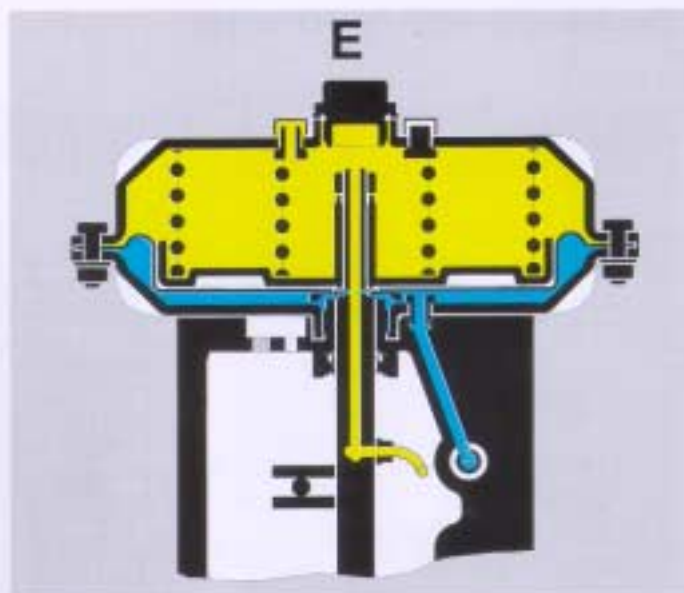
O-Ring seal, basically suitable for static load. Sensitive against dirt. Possible transport of wearing particles between bearing and spindle with resulting damage to sealing surface (leakage).



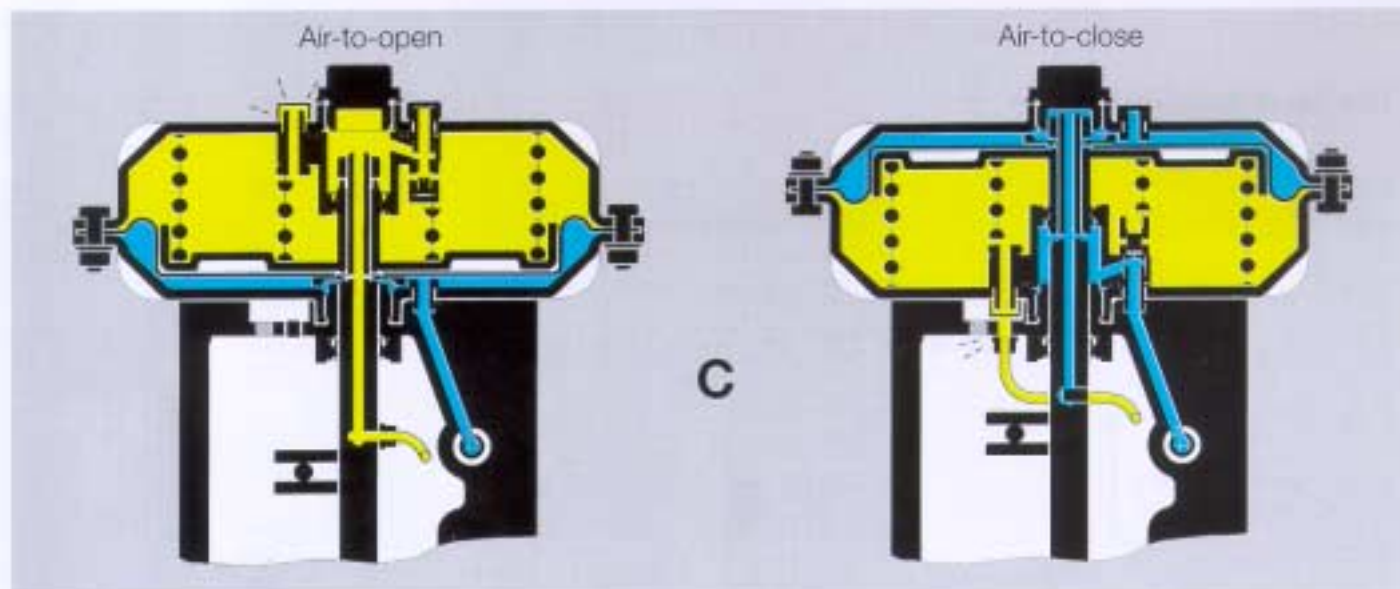
**Execution B**

- Reversible without dismantling the housing
- air-to-open: without external piping
- air-to-close: with external piping
- integrated mounting of valve positioner
- spraywater-proof,
- corrosion-resistant

Options: ● transport eye-bolt ● stroke limitation ● stainless steel diaphragm chamber (see Type 813)

**Execution E**

- E = B + air scavenging system
- spring chamber protected by exhaust air scavenging*

**Execution C**

- Fully reversible, by means of air reversing sleeve
- air-to-open and air-to-close actions without external piping
- integrated mounting of valve positioner
- spraywater-proof,
- corrosion-resistant
- spring chamber protected by exhaust air scavenging*

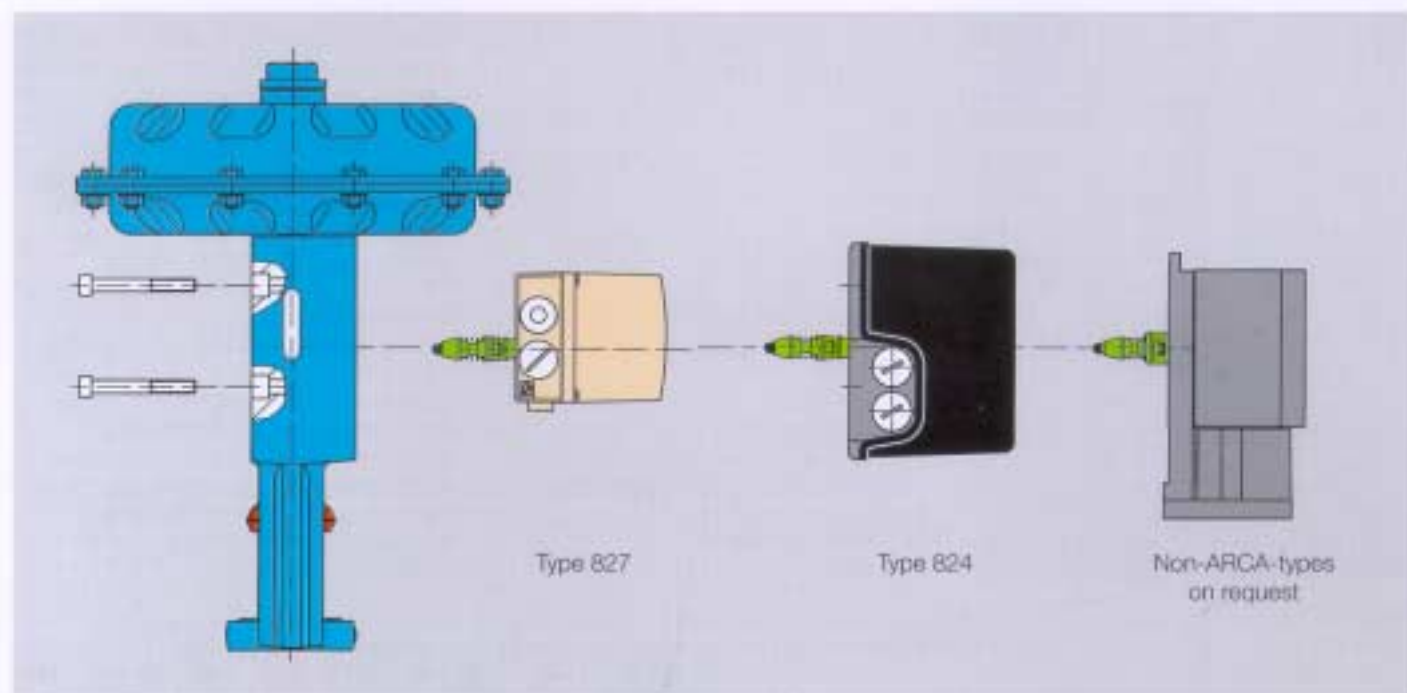
Options: ● transport eye-bolt ● stroke limitation ● stainless steel diaphragm chamber (see Type 813)

* Requires positioner 827

Simple Plug-on-Principle encased and with air scavenging

Mounting of Valve Positioner

The valve positioner can easily be mounted in the simple plug-on mode by which the air supply connection and the stroke pick-up are realised simultaneously.



Encased ARCAPLUG stroke pick-up



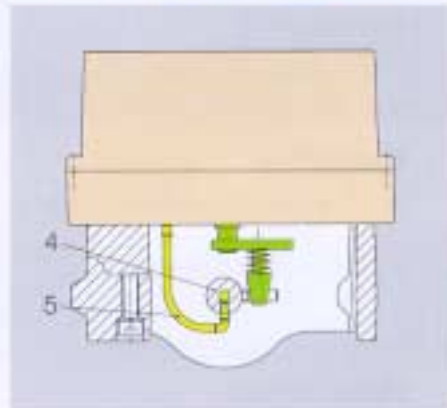
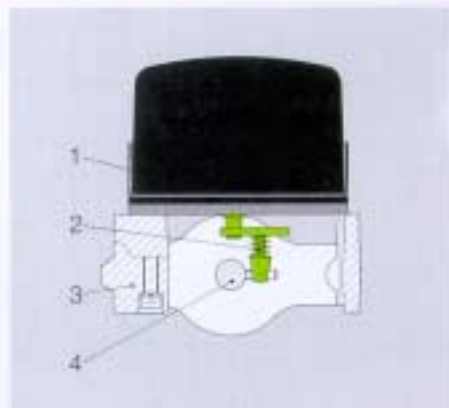
Left:

The elements for the stroke pick-up (2) of the positioner (1) are protected within the yoke (3) of the actuator. A self-adjusting tapered roller „ARCAPLUG“ provides for a stroke transmission of the actuator spindle (4) without any backlash. The picture on the left shows the actuator size MF III with standard torsion lock.



Right:

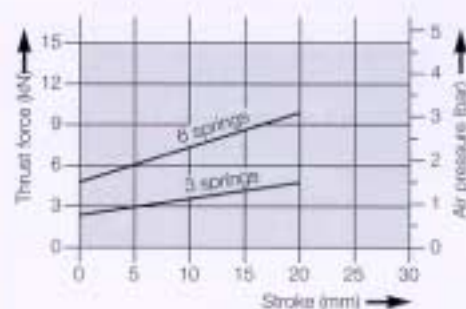
Mounting of smart positioner type 827 on actuator type 812 execution C (ATO) and execution E. The positioner exhaust air is conducted in the actuator spindle (4) through a high flexible pipe (5) and from there gets into the spring chamber of the actuator. The cleaned and dried positioner exhaust air takes care for that damages caused by humidity, which till now could occur in the spring chamber, are avoided to the greatest possible extent.



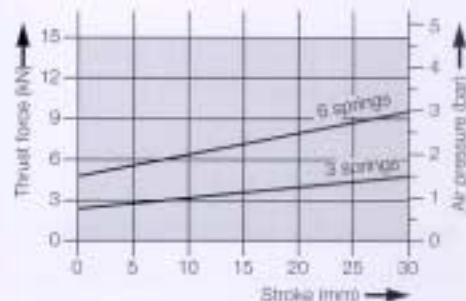
Function: Air to open

Size	Dia-phragm area (cm ²)	Type	No. of springs	Stroke (mm)	Air pressure range from (bar) to (bar)		Thrust force (kN)		
MFI-20	320	812.21(2)	3	20	0.75	1.5	2.4	I	
			6		1.5	3.0	4.8		
MFI-30		812.23	3	20	0.75	1.5	2.4	II	
			6		1.5	3.0	4.8		
MFIII-30	720	812.33	3	30	0.7	1.5	5	III	
			6		1.5	3.0	10		
			9		1.8	3.7	13		
			12		2.2	4.4	16		
MFIII-60		720	812.34	3	60	0.7	1.5	5	IV
				6		1.4	3.0	10	
				9		1.7	3.6	12	
				12		2.0	4.3	14	

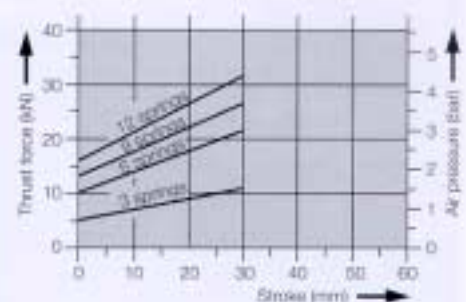
I Force diagram MFI-20



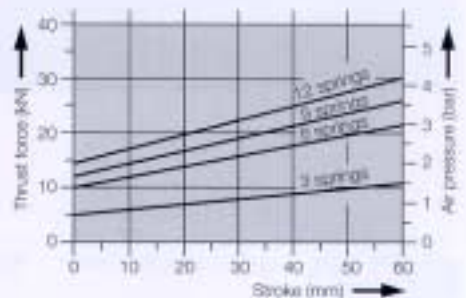
II Force diagram MFI-30



III Force diagram MFIII-30

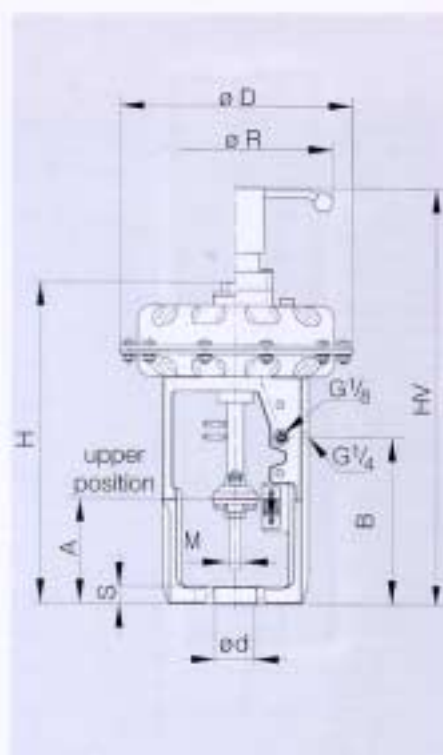


IV Force diagram MFIII-60



Function: Air to close

Size	Dia-phr. area (cm ²)	Type	No. of springs	Stroke (mm)	min. air pressure (bar)	Thrust force (kN) depending on air pressure					
						2.0 bar	3.0 bar	4.0 bar	5.0 bar	6.0 bar	
MFI-20	320	812.21(2)	3	20	1.5	1.6	4.8	8.0	11.2	14.4	
			6		3.0	—	—	3.2	6.4	9.6	
MFI-30		812.23	3	20	1.5	1.6	4.8	8.0	11.2	14.4	
			6		3.0	—	—	3.2	6.4	9.6	
MFIII-30	720	812.33	3	30	1.5	3.6	10.8	18	25.2	32.4	
			6		3.0	—	—	7.2	14.4	21.6	
			9		3.7	—	—	2.2	9.4	16.6	
			12		4.4	—	—	—	4.3	11.5	
MFIII-60		720	812.34	3	60	1.5	3.6	10.8	18	25.2	32.4
				6		3.0	—	—	7.2	14.4	21.6
				9		3.6	—	—	2.9	10.1	17.3
				12		4.3	—	—	—	5.0	12.2



Technical Data

Material

Diaphragm- and spring cover: Steel ST W 22, mat. No. 1.0332
 Optional: Stainless steel mat. No. 1.4301 (see Type 813)
 Diaphragm plate: St W 22 chromitized
 Yoke: GGG-40, mat. No. 0.7040
 Spindle: Mat. No. 1.4122
 Springs: Mat. No. 1.1230 plastic-covered
 Diaphragm: NBR, fabric-reinforced, pre-shaped
 Gasket: High-quality, special polyurethane

Painting

Type: 2-component polyurethane covering
 Colour: light-blue, RAL 5012

Operating Data:

Operating medium: Compressed air, Nitrogen
 Control air pressure: max. 6 bar (gauge)
 Ambient temperature: -20 to + 80 °C
 Optional: -40 to + 80 °C
 Mounting position: Preferably vertical, with actuator above valve.

Series 812

Actuator	Diaphragm area (cm ²)	Type	Weight (kg)	No. of springs	Stroke (mm)	Ø D (mm)	M	Ø d (mm)	S (mm)	A (mm)	B (mm)	H (mm)	HV (mm)	Ø R (mm)						
MFI-20	320	812-21..	14	3	20	270	10	40	20	120	180	354	508	220						
				6																
		812-22..		3			14	56							25	142	203	398	551	220
				6																
MFI-30	720	812-23..	16	3	30	400	14	56	25	142	251	482	651	335						
			6																	
MFI-60	720	812-33..	42	3	60	400	20x1.5	72	30	192	309	618	888	335						
				6																
				9																
				12																
MFI-60	720	812-34..	47	3	60	400	20x1.5	72	30	192	309	618	888	335						
				6																
				9																
				12																

Series 812 Standard Actuators
Diaphragm chamber StW 22
Yoke GGG 40

Size Type	Mounting Ø mm ¹	Stroke mm ²	Spring set	Function ³	Execution		
					B	C ⁴	E ⁴
MFI-20 812.21	40	20	3	ATO	216071	216083	216095
				ATC	216072	216084	216096
			6	ATO	216073	216085	216097
				ATC	216074	216086	216098
MFI-20 812.22	48	20	3	ATO	215211	216087	215380
				ATC	216075	216088	216099
			6	ATO	216076	216089	216100
				ATC	216078	216090	216101
MFI-30 812.23	56	30	3	ATO	216079	216091	216032
				ATC	216080	216092	216102
			6	ATO	216081	216093	216103
				ATC	216082	216094	216104
MFIII-30 812-33	56	30	3	ATO	180237	178466	180275
				ATC	180254	180137	180279
			6	ATO	180251	180134	180276
				ATC	180255	180138	180280
			9	ATO	180252	180135	180277
				ATC	180256	180139	180281
			12	ATO	180253	180136	180278
				ATC	180257	180140	180282
MFIII60 812-34	72	60	3	ATO	180262	180206	180304
				ATC	180267	180210	180308
			6	ATO	180263	180207	180305
				ATC	180268	180211	180309
			9	ATO	180264	180208	180306
				ATC	180269	180212	180310
			12	ATO	180266	180209	180307
				ATC	180270	180213	180311

¹ Yokes with other mounting-Ø on request.

² The listed strokes are maximum values. Smaller strokes are possible.

³ ATO = Air to open
ATC = Air to close

⁴ The scavenging of the spring chamber requires positions-type 827

Operational safety and environmental protection

The combination ARCAPAQ and ARCASAFE bellows valve guarantees safety by high availability and total sealing to the outside. Thus it is an effective and economic contribution for the protection of mankind, environment and product.

Quality acc. to DIN/ISO 9001

Since many years we are producing acc. to a proven quality-securing-system, to grant a constant product quality with agreed characteristics. The certification of our QS-System acc. to DIN/ISO 9001 resp. EN 29001 was accredited by the Germanic Lloyd, as a neutral institution,



Quantity production and modular parts system

The ARCA modular parts system offers a surpassing multitude of standard valves and saves your money. An economical quantity production and a modern overhead shelf stock permit short delivery times and a high quantity of standard varieties.

We reserve the right of technical alterations.