

ARCATORQUE®



New  
perspectives in  
control technique

# Pneumatic Diaphragm Rotary Actuator

for 0-90° Md 46-2600 Nm

**ARCA**  
VALVES

Main target at the development of the ARCATORQUE diaphragm rotary actuators was to design an actuator for on/off and control purposes with rotary control valves. We succeeded in achieving decisive improvements concerning operational safety and maintenance (maintenance-free!).

The ARCATORQUE diaphragm rotary actuators combine two advantageous design features: the precise control characteristics of a spring-roll-diaphragm and the torque capacity of the piston rotary actuator. Thanks to this combination the ARCATORQUE rotary actuator is suited for nearly any application in process automation. Designing the ARCATORQUE actuator, we considered all typical maintenance aspects. Coated and maintenance-free bearings allow a low frictional coefficient. Unique is the emergency hand-wheel which is available for all actuator sizes.

## Design features

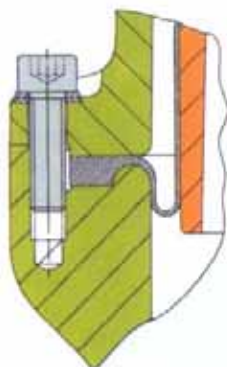
## Your advantage

- |  |   |
|--|---|
| ● <b>Rolling diaphragm design</b> , proven in thousands of the most versatile industrial applications.                         | ● High reliability and power with high positioning speed and neglectably low friction.  |
| ● <b>Direction of action easily reversible</b> by symmetric structure of mounting bracket.                                     | ● Reversible without special tools and without dismantling of the body, simple handling and low costs for stock-keeping.  |
| ● <b>Integrated air supply</b>   | ● Unique safety of operation  |
| ● <b>Waste air scavenging</b> of position pick-up and of complete spring chamber as option with integrated positioner mounting | ● Maintenance-free stroke pick-up is protected against accidental contact and external influence and corresponds to the German UVV-rules for accident prevention. |
| ● <b>Available in different</b> forces and rotary angles   | ● individual sizing possibilities   |
| ● <b>Manifold hub diameter</b>   | ● direct coupling free of play without linkage  |
| ● <b>Splash-proof special de-aerator</b>   | ● mounting in any position  |
| ● <b>protected spring package</b>  | ● exchange of diaphragm without use of any special tools  |
| ● <b>hand-wheel</b> , on request 841-843   | ● Universal and expandable  |
| ● <b>body</b> made of aluminum   | ● low weight  |
| ● <b>all parts</b> protected against corrosion   | ● long service life.  |

# ARCATORQUE® - The pneumatic diaphragm rotary actuator

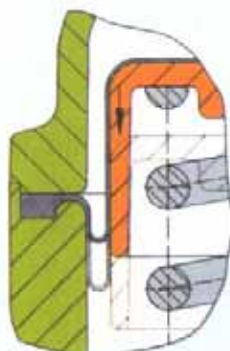
## The innovative ARCATORQUE® design

### Diaphragm clamping

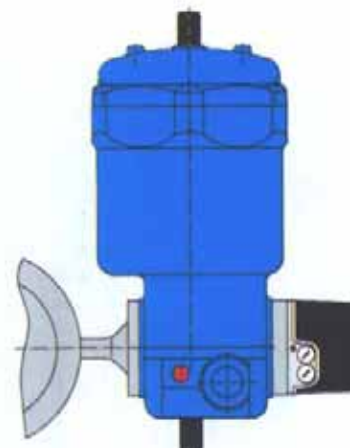


Defined pressing (clamping) of the proven diaphragm in power bypass mode. High availability by defined motion of diaphragm.

### Rolling diaphragm



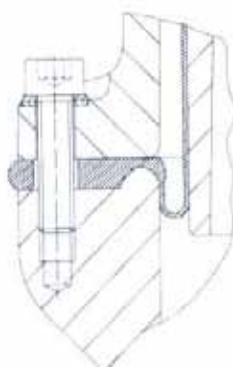
Durable and maintenance-free through even rolling of the diaphragm at micro finished surfaces of piston and body.



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

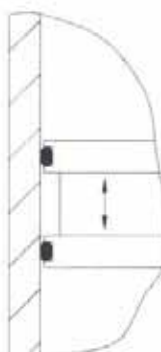
## The usual design

### Diaphragm clamping

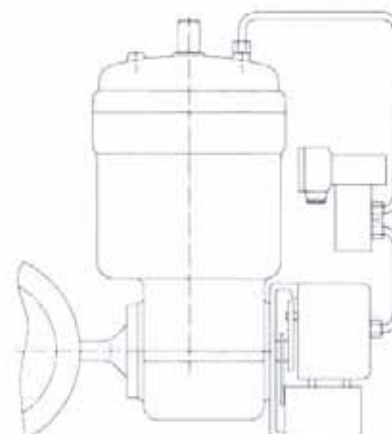


Risk of uncontrolled pressing of diaphragm and of creases. Reduced lifetime of diaphragm by uncontrolled motion and flexing work.

### Piston actuator with sealing elements



O-Ring sealings are basically suitable for static load and sensitive against dirt. Fulling and different adhesion of friction (stick-slip effect) cause higher wear and high hysteresis.



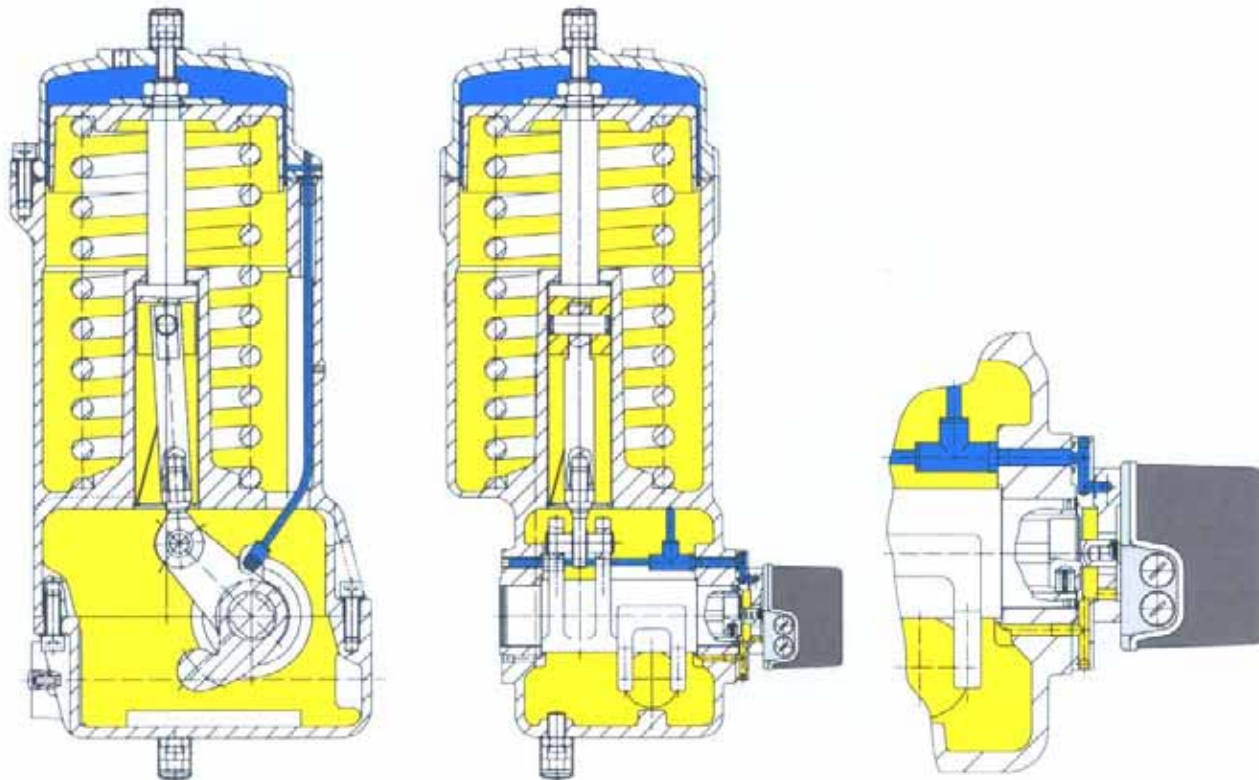


## Positioner mounting - Flexible concept for rotary control units

The ARCATORQUE® diaphragm rotary actuator can be equipped with any ARCA positioner or with other brands and various accessories as limit switch and indicator.

The positioner is mounted acc. to the best proven pipeless ARCA mounting system, either acc. to NAMUR or VDI/VDE 3845.

As preventive action for best protection in corrosive surroundings the body is made of seawater resistant aluminum.



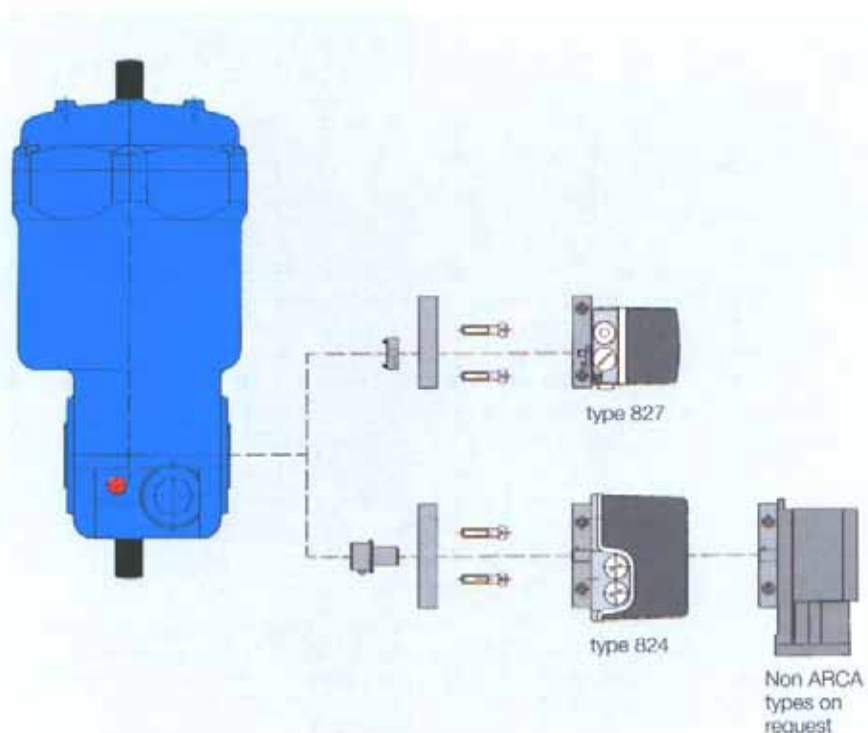
### ▲ Integrated positioner mounting type 824 with diaphragm rotary actuator type 844

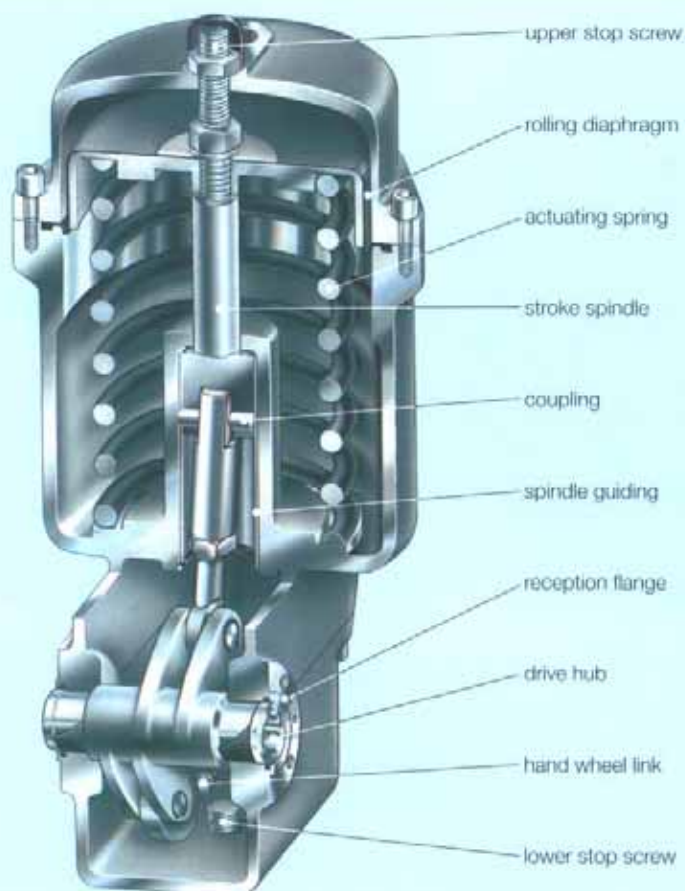
- no external piping
- protected against spraywater
- protected rotary lever
- air scavenging of all inner parts

### 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, connecting air supply and the stroke pick-up simultaneously, in one step.





The ARCATORQUE actuator is a spring suspensive actuator for rotary valves. Standard range is 90°, adjustable at  $\pm 3^\circ$  in the final positions. A reinforced rolling diaphragm guarantees frictionless conversion of pneumatic admission into stroke movement of the actuating spindle. The spindle guiding, ball- and hub bearing are made of maintenance-free PTFE materials and guarantee high precision at conversion of stroke into rotary movement.

Operating Pressure	max. 7 bar ue
Operating Temperature	-50 up to +100° C
Internal Piping	-35 up to +100° C

Material:	
Body	3.2341/3.2371.61
Hub	0.7040/0.7033
Rolling diaphragm	Nitril, reinforced
screws	cadmited steel
bearing and guidings	PTFE / graphite

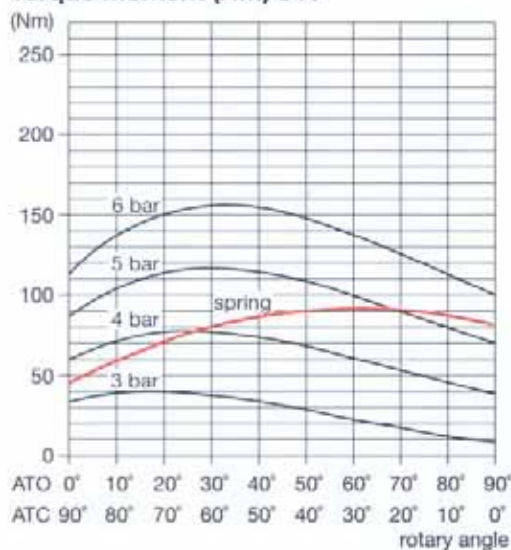
				841	.22	-09	-0	-1	-1	-0	-0	-0	-0
<b>Series</b>	841	diaphragm area	103.87 cm <sup>2</sup>										
<b>Size of actuator</b>	842	diaphragm area	362.17 cm <sup>2</sup>										
	843	diaphragm area	471.20 cm <sup>2</sup>										
	844	diaphragm area	778.92 cm <sup>2</sup>										
<b>* Hub diameter (mm)</b>													
<b>Rotary angle</b>	09 0°-90°	06 0°-60°	39 30°-90°										
<b>Standard spring</b>	0 yes	1 no											
<b>Internal piping</b>	0 no	1 yes	2 only aeration										
<b>hand wheel</b>	0 no	1 yes											
<b>position indication</b>	0 no	1 yes											
<b>special options</b>	0 without	1 big screwing											
<b>painting</b>	0 standard	1 special	2 hard-coated										
<b>Execution</b>	0 standard	E hub diameter in inch	T low temperature execution										

\* Further data independent, as required

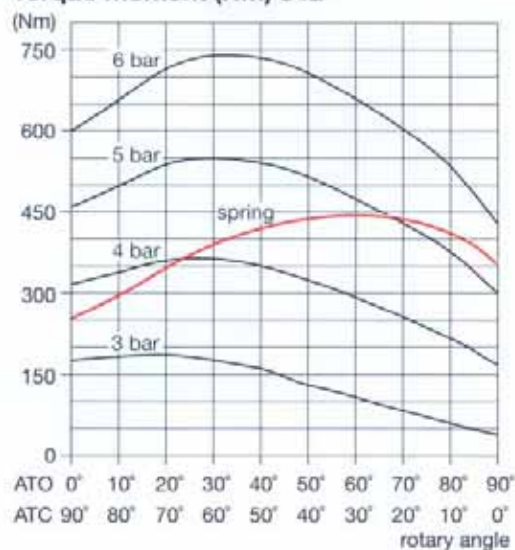


Actuator		841	842	843	844
Spring 0% stroke	(Nm) (bar)	46 1.75	253 1.75	714.2 1.75	1629 2.0
Spring 100% stroke	(Nm) (bar)	82 2.75	355 2.75	1183 2.75	2612 3.8
Air 0% stroke	(Nm) (bar)	87 5.0	460 5.0	1345 5.0	2295 5.0
air 100% stroke	(Nm) (bar)	68 5.0	298 5.0	855 5.0	872 5.0
rolling diaphragm cylinder Ø	(mm <sup>2</sup> ) (mm)	10387 120	36217 220	47120 250	77892 320
stroke volume	(dm <sup>3</sup> )	0.6	2.9	8.6	15.6
max. coupling-Ø	(mm)	22	25	40	50
mounting standard DIN/ISO 5211		F07	F10	F12	F14
air connection		G1/4	G1/2	G1/2	G1/2
weight	(kg)	8	30	52	140
hand-wheel	(kg)	1.5	2.5	3.5	15

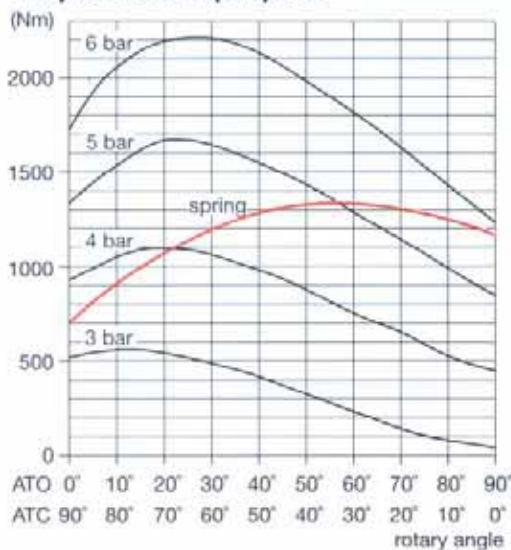
**Torque moment (Nm) 841**



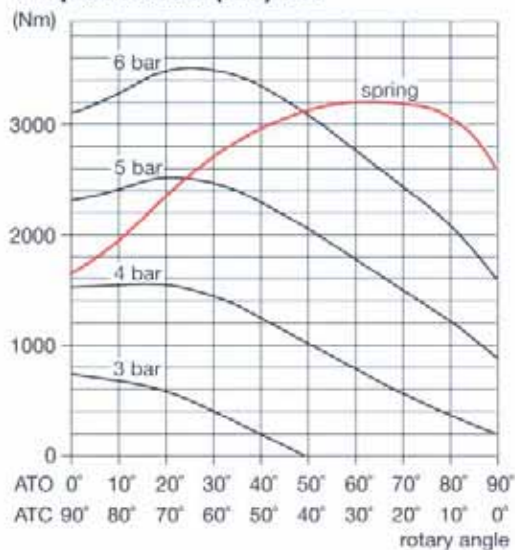
**Torque moment (Nm) 842**



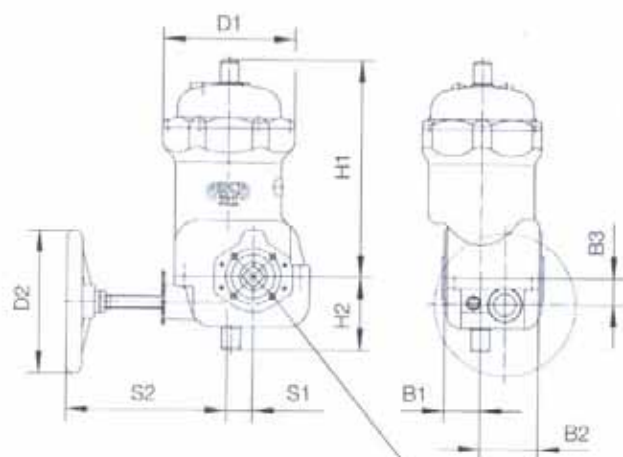
**Torque moment (Nm) 843**



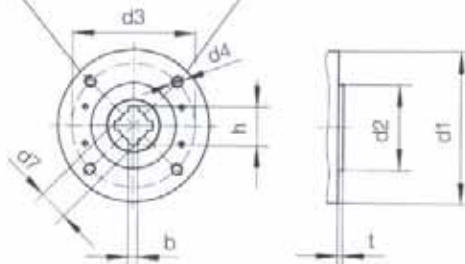
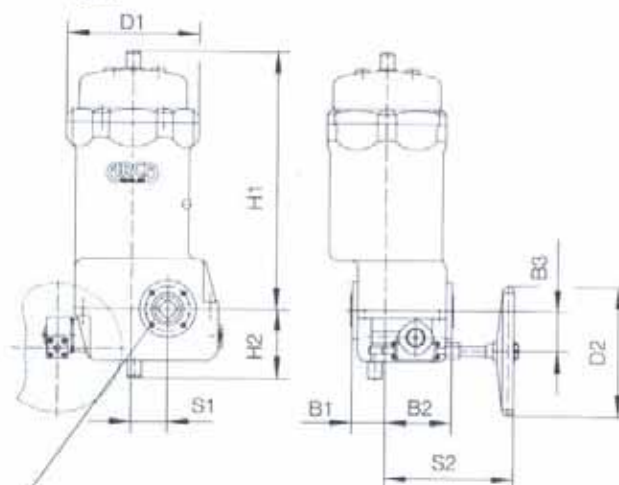
**Torque moment (Nm) 844**



841 - 842 - 843



844

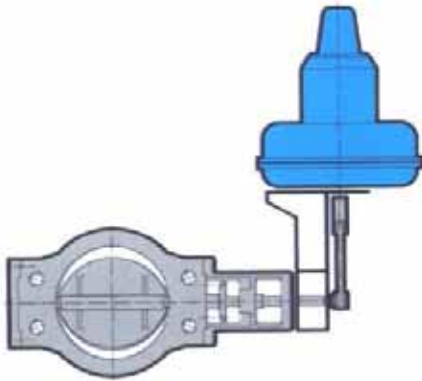


Type	Actuator									Mounting Group	DIN/ISO 5211 DIN 3337-F_S							
	D1	D2	H1	H2	B1	B2	B3	S1	S2		d1	d2 <sub>min</sub>	d3	d4	t	d7	h	b <sup>J99</sup>
841	168	180	273	93	46	77	33.5	33	125.5	F07	90	55	70	4xM8	3	15	19.4	5
																20	25.6	6
																22	27.6	6
842	284	225	429	132.5	66.5	105.5	44.5	44.5	177	F10	125	70	102	4xM10	3	15	19.4	5
																20	25.6	6
																22	27.6	6
																25	31.6	8
843	320	320	609	192	79	142	86	88	245	F12	150	85	125	4xM12	3	22	27.6	6
																25	31.6	8
																30	36.6	10
																35	41.6	10
																40	46.6	12
844	412	400	796	214	103	207	123.5	112.5	305	F14	175	100	140	4xM16	3	35	41.6	10
																40	46.6	12
																50	57.6	14

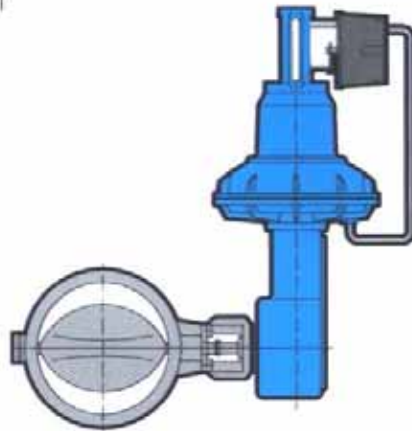


# ARCATORQUE® - The evolutionary development with versatile application possibilities

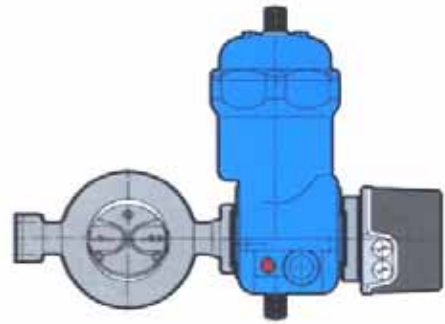
From the beginning ARCA Regler has been pace-maker in evolutionary, client-orientated solution of problems, resulting in technical high valued total problem solutions.



Until 1977  
Stroke movement of diaphragm actuator is transformed into rotary movement through outside linkage.



Until 1989  
Capsuled linkage and positioner mounting with outside piping.



-Today-  
ARCATORQUE rotary actuator, valve and pipeless mounted positioner with air scavenging melt to a compact and easy to service unity.



## 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. EN29001 was accredited by the Germanic Lloyd, as a neutral institution.

We reserve the right of technical alterations.