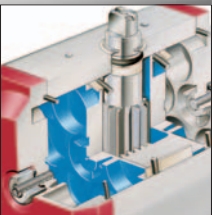
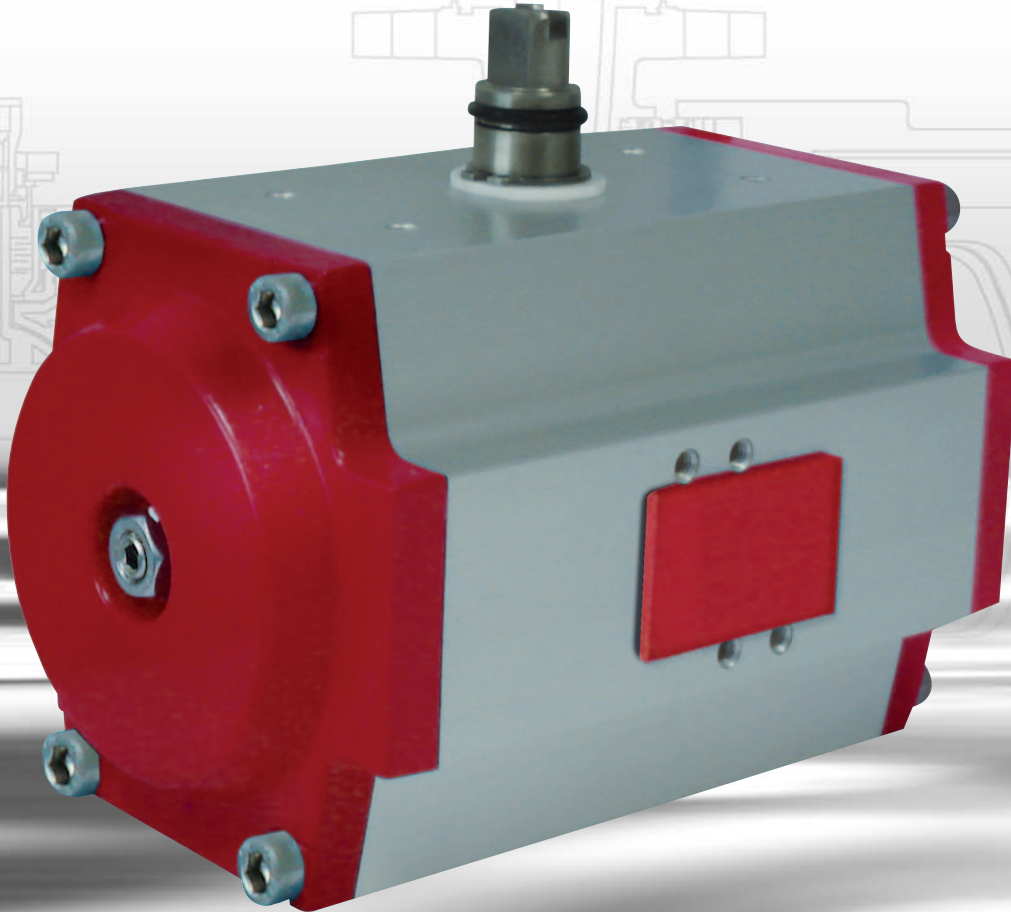


# Richter Twin Piston Quarter-turn Actuators



Compact  
Powerful  
Maintenance-free



**RICHTER**  
Process Pumps & Valves

**INEX**  
FLUID & METERING

# Double-acting quarter-turn actuators

The actuators are the optimum automation units in technical and commercial terms for Richter control ball and butterfly valves.

They are fully refined and satisfy the high quality requirements of chemical and industrial process engineering. The interfaces to the valve or control valves and signalling units comply with DIN/EN ISO 5211 or VDI/VDE 3845/NAMUR.

## Product features

- Rugged design
- Maintenance-free
- Long service life due to wear-resistant components
- High degree of safety during conversion and repairs of single-acting actuators thanks to the safety springs
- Blow-out proof pinion shaft
- Pivoting angle limit can be set from +5 to -5°
- Comprehensive package of accessories and materials

## Fields of application

- Pneumatic remote actuation of rotary valves
  - Richter shut-off ball and butterfly valves
- Flow control in conjunction with appropriate control valves and mounted positioners
  - valves NKP, NKSP, NKLP
  - Richter control ball valves KNR, KNAR

## Branches

Chemical, pharma-ceutical and general industries, petrochemicals, water/waste water engineering, pulp production, power plant technology, metal processing, food technology, waste disposal/recycling

## Design

- Pneumatic twin piston quarter-turn actuator
- Single-acting with spring return type RA-1
- Double-acting type RA-2
- Drive pinion shaft accord. to EN ISO 5211 with female square
- Rack-and-pinion principle with self-centering piston guide
- Pivoting angle 90°, +5°/-5° can be set

## Operating range

- control air pressure 2-10 bar (29-145 psi)
- ambient temperatures of -50 to +70 °C (-58 to +158 °F)  
optional -15 to +160 °C (-5 to +320 °C)
- highly corrosive atmosphere: special design on request
- Installation: any position

## Operating medium/Quality

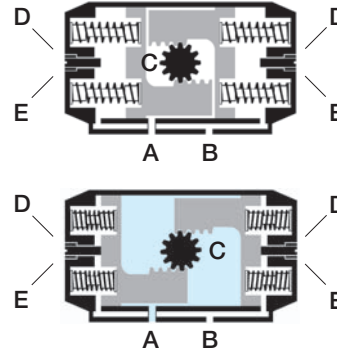
filtered air (residual oil, dust and water at least accord. to DIN ISO 8573-1 class 4)

## Type code

Twin piston quarter-turn actuator	RA - ...	Size	Pivoting angle 90°	No. of springs (only in RA-1)
single-acting	.... - 1/XXX-090-XX			
double-acting	.... - 2/XXX-090			

## Single-acting function

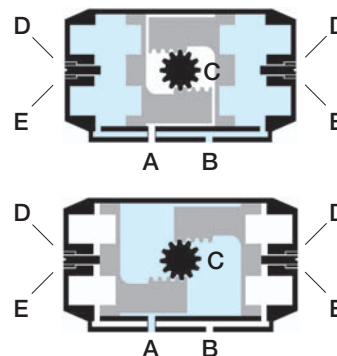
In the single-acting version the pistons are returned to their basic positions by springs when the connection "A" is vented. 2 to 16 springs can be adapted to suit the operating conditions.



## Double-acting function

If the two outer chambers are pressurised via the connection "B", the two pistons move towards each other into their basic positions (0°). The force of both pistons is transmitted via the racks to the pinion shaft "C". If connection „A“ is pressurised and connection "B" is vented, the pistons move apart into the 90° position.

In this position the pivoting angle can be set by +/-5° in the depressurised condition with the two end position setscrews "D" and secured with the lock nut "E".



### ① Actuator housing

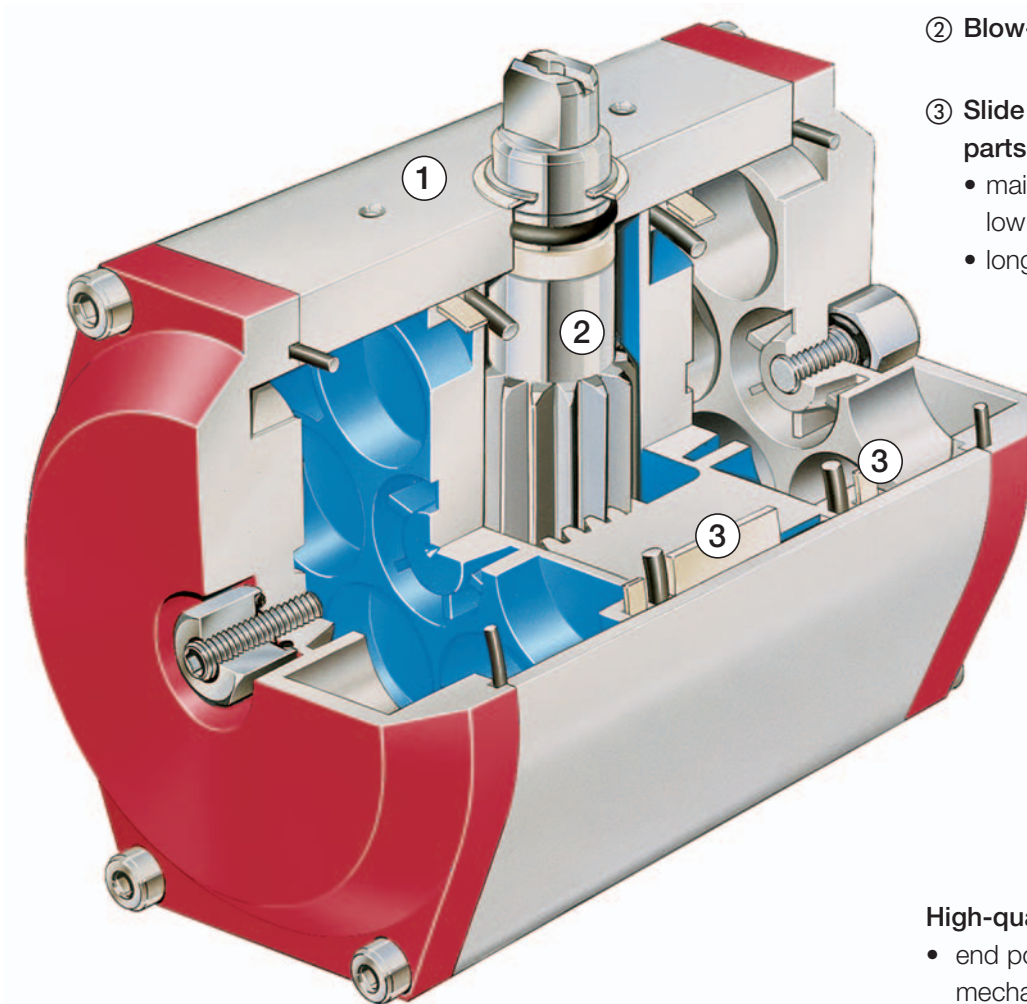
- housing of anodised aluminium alloy. Optionally hard anodised and teflonised
- cap aluminium alloy epoxy-coated

### Fastened pre-loaded springs

- simple and quick conversion from double-acting to single acting and vice versa
- high safety during conversion and repair work

### Standardised connections

- to the valve with female thread to DIN/EN ISO 5211
- to control valves to NAMUR resp. VDI/VDE 3845
- to signalling units to VDI/VDE 3845 (NAMUR)



### ② Blow-out proof pinion shaft

### ③ Slide bearing for the moving parts

- maintenance-free and low-wearing operation
- long service life

### High-quality range of accessories

- end position feedback, electro-mechanical or inductive, various switch designs (Standard: Pepperl + Fuchs SJ 3,5 N) and body materials.
- Solenoid valves (Standard: Herion 5/2-3/2 NAMUR No. 9710002.3039 EEx ia IIC T6 and 3/2 NAMUR 24V DC IP65 (not Ex))
- Positioner according to specific requirements



Limit switch Rotech



5/2-way or 3/2-way solenoid valve



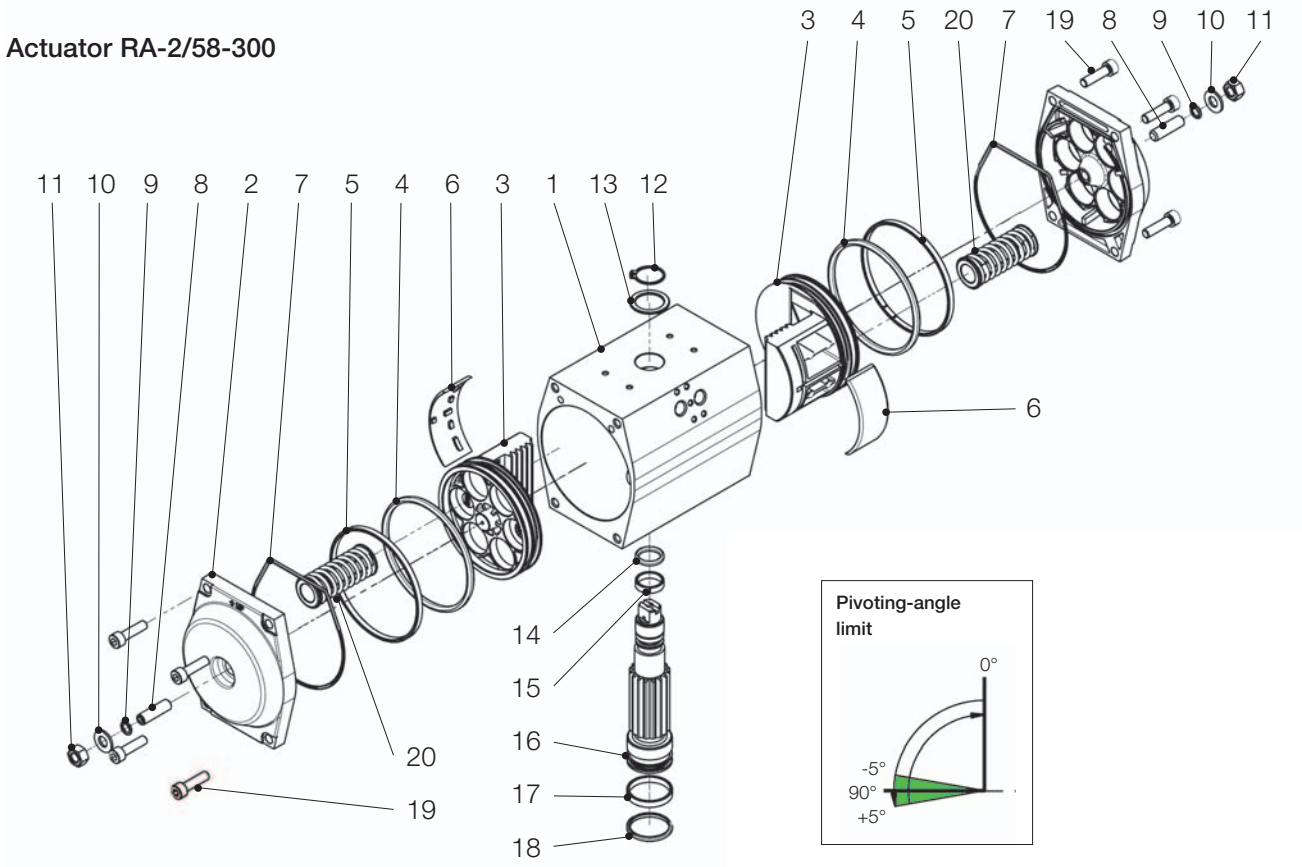
Siemens Positioner



Signalbox

# Components and materials

## Actuator RA-2/58-300



### Spare parts kits

- No. 1, 4 Cap complete, consisting of 2, 7, 8, 9, 10, 11, 19
- No. 2 Piston complete, consisting of 3, 4, 5, 6
- No. 3 Pinion complete, consisting of 12, 13, 14, 15, 16, 17, 18
- No. 5 Seal kit complete, consisting of 4, 7, 9, 14, 18
- No. 6 Guide kit complete, consisting of 5, 6, 15, 17

Item	Designation	Standard	Option
1	Actuator body	Aluminium alloy, anodised	Aluminium alloy, anodised, additionally hard anodised and teflonised
2	Actuator end cap	Aluminium alloy epoxy-coated	Stainless steel
3	Standard piston	Aluminium alloy	
4, 7, 9, 14, 18	O-Ring	Nitrile rubber (NBR, e. g. Perbunan)	Fluor caoutchouc (e. g. Viton®)
5	Piston guide ring	Delrin	
6	Piston guide skate	Delrin	
8	External travel stops crew 90°	Stainless steel	
10	O-ring stop washer 90°	Stainless steel	
11	External stop nut 90°	Stainless steel	
12	Pinion stop circlips	AISI 420	
13	Upper pinion washer	Delrin	
15	Upper pinion guide ring	Delrin	
16	Pinion	Steel, hard nickel-plated	Stainless steel
17	Lower pinion guide ring	Delrin	
19	End cap screws	Stainless steel	
20	Spring catridges	SiCr DIN-A-223	

# Torques

## Torques of single-acting actuators RA-1

Minimum torques (Nm) at control air pressure  $P_{st}$  min and actuator type (in brackets: no. of springs)

Control pressure	3 bar/ 43,5 psi	3,5 bar/ 50,8 psi	4 bar/ 58 psi	4,5 bar/ 65,3 psi	5 bar/ 72,5 psi	5,5 bar/ 79,8 psi	6 bar/ 87 psi
RA-1-058	3,8 (4)	4,8 (5)	5,1 (6)	5,7 (6)	6,7 (7)	7,6 (8)	7,6 (8)
RA-1-068	6,0 (4)	7,5 (5)	9,0 (6)	9,0 (6)	10 (7)	12 (8)	12 (8)
RA-1-078	13 (5)	13 (5)	16 (6)	18 (7)	21 (8)	23 (9)	23 (9)
RA-1-088	18 (5)	18 (5)	22 (6)	25 (7)	29 (8)	32 (9)	32 (9)
RA-1-098	23 (5)	27 (6)	32 (7)	36 (8)	41 (9)	45 (10)	50 (11)
RA-1-110	32 (4)	39 (5)	47 (6)	47 (6)	55 (7)	63 (8)	71 (9)
RA-1-115	42 (4)	53 (5)	64 (6)	74 (7)	74 (7)	85 (8)	96 (9)
RA-1-127	60 (4)	75 (5)	90 (6)	105 (7)	105 (7)	120 (8)	135 (9)
RA-1-143	96 (4)	96 (4)	120 (5)	144 (6)	144 (6)	168 (7)	192 (8)
RA-1-163	112 (4)	140 (5)	168 (6)	196 (7)	223 (8)	223 (8)	251 (9)
RA-1-185	265 (5)	319 (6)	319 (6)	372 (7)	425 (8)	478 (9)	531 (10)
RA-1-210	285 (5)	342 (6)	400 (7)	400 (7)	457 (8)	514 (9)	571 (10)
RA-1-250	476 (4)	595 (5)	714 (6)	833 (7)	952 (8)	952 (8)	1072 (9)
RA-1-254	580 (5)	817 (6)	817 (6)	953 (7)	1089 (8)	1225 (9)	1361 (10)
RA-1-300	817 (6)	1089 (8)	1225 (9)	1361 (10)	1497 (11)	1633 (12)	1769 (13)

Data for lower and higher control pressure on request.

## Torques of double-acting actuators RA-2

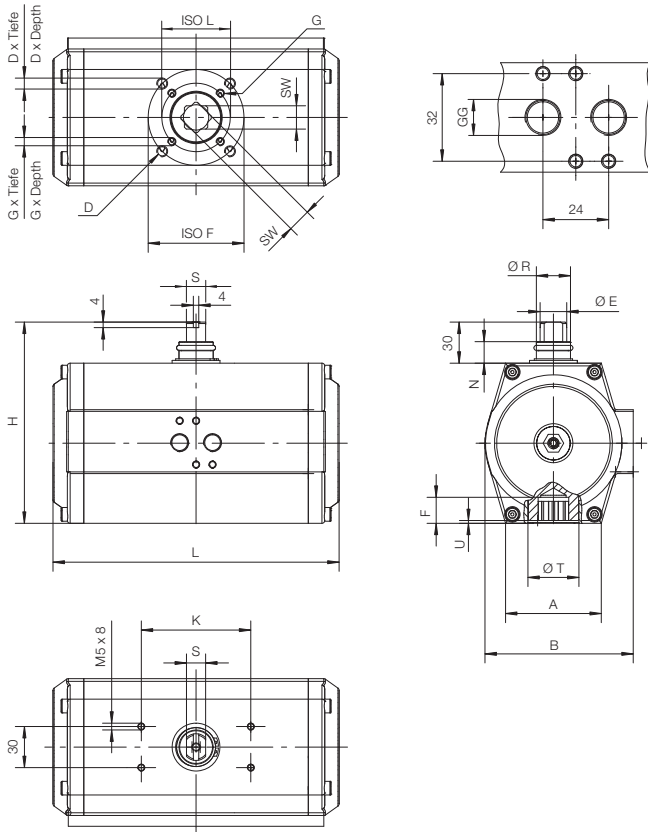
Minimum torques (Nm) at control air pressure  $P_{st}$  min and actuator type

Control pressure	3 bar/ 43,5 psi	3,5 bar/ 50,8 psi	4 bar/ 58 psi	4,5 bar/ 65,3 psi	5 bar/ 72,5 psi	5,5 bar/ 79,8 psi	6 bar/ 87 psi
RA-2-058	12	14	16	17	19	21	23
RA-2-068	17	20	23	26	29	31	35
RA-2-078	30	35	40	45	50	55	60
RA-2-088	43	51	58	65	72	79	87
RA-2-098	60	70	80	90	100	110	120
RA-2-110	87	101	116	130	145	159	174
RA-2-115	129	150	172	193	215	236	258
RA-2-127	174	203	232	261	290	325	348
RA-2-143	279	325	372	418	465	511	558
RA-2-163	345	402	460	517	575	632	690
RA-2-185	600	700	800	900	1000	1100	1200
RA-2-210	720	840	960	1080	1200	1320	1440
RA-2-250	1380	1610	1840	2070	2300	2580	2760
RA-2-254	1740	2030	2320	2610	2900	3248	3480
RA-2-300	2400	2800	3200	3600	4000	4400	4800

Data for lower and higher control pressure on request.

 Standard actuator sizes

## Dimensions, weights, air consumption RA-1 and RA-2

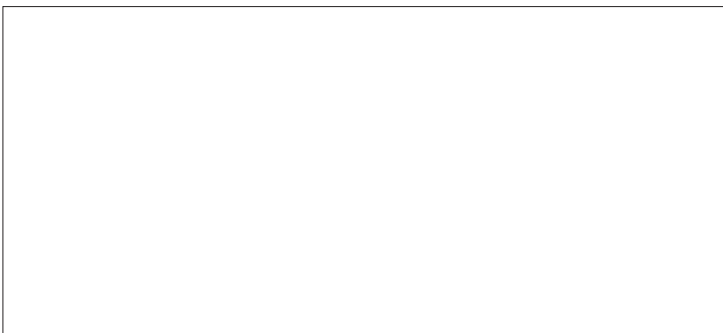


Size RA-1,-2	L	A	D x Depth	H	F	G x Depth	ØE	K	Flange abbreviation		N	ØR	S	SW	ØT	U	B	Weights (approx. kg)		Volume (l)/ double stroke 90°	
									ISO L	ISO F								RA-1	RA-2	RA-1	RA-2
058	133	50	M6x10	104	18	M5x8	14	80	F03 36	F05 50	16	12	10	14	23,8	2	72	1,00	0,90	0,13	0,25
068	137	60	M8x13	118	18	M6x10	14	80	F05 50	F07 70	16	12	10	14	25,3	2	82	1,62	1,45	0,21	0,40
078	161	65	M8x13	130	19	M6x10	14	80	F05 50	F07 70	16	18	10	17	29,3	2	94	2,45	2,10	0,32	0,60
088	180	65	M8x13	130	19	M6x10	14	80	F05 50	F07 70	16	18	10	17	32,3	2	100	2,95	2,50	0,45	0,88
098	209	70	M8x13	147	19	M6x10	19,5	80	F05 50	F07 70	16	25	14	17	37,3	2	108	4,00	3,40	0,62	1,20
110	221	90	M10x16	170	25	M8x13	19,5	80	F07 70	F10 102	16	25	14	22	40,3	2,5	-	6,20	5,20	0,98	1,90
115	291	90	M10x16	170	25	M8x13	28	80	F07 70	F10 102	16	40	20	22	53,3	2,5	-	8,35	7,10	1,40	2,70
127	298	103	M10x16	190	25	M8x13	28	80	F07 70	F10 102	16	40	20	22	53,3	3	-	10,7	9,00	2,00	3,65
143	332	110	M12x20	228	27	M10x16	28	130	F10 102	F12 125	16	40	20	27	53,3	3	-	15,8	12,4	2,86	5,50
163	374	110	M12x20	228	27	M10x16	36	130	F10 102	F12 125	11	45	28	27	66,3	3	-	20,1	16,4	3,80	7,00
185	422	135	-	285	40	M16x25	36	130	F14 140	- -	11	45	28	36	66,3	4	-	37,8	28,0	6,50	12,5
210	464	135	-	285	40	M16x25	40	130	F14 140	- -	11	60	32	36	79,3	4	-	39,6	31,8	8,00	15,0
250	603	160	-	332	50	M20x28	40	130	F16 165	- -	11	60	32	46	105,3	4	-	70,6	55,5	14,0	27,0
254	683	160	-	332	50	M20x28	40	130	F16 165	- -	11	60	32	46	134	4	-	84,3	69,2	17,0	32,0
300	683	160	-	420	62	M16x24	40	130	F25 254	- -	11	74	32	55	134	5	-	114,0	99,0	25,0	46,0

All dimensions in mm

Viton® = TM Du Pont  
Richter = TM Richter Chemie-Technik GmbH

Presented by:



**Richter Chemie-Technik GmbH**

Otto-Schott-Str. 2, D-47906 Kempen, Germany  
Tel. +49 (0) 21 52/146-0, Fax +49 (0) 21 52/146-190  
www.richter-ct.com, richter-info@idexcorp.com