The Original Aseptic Seat Valve

ARC Aseptic Remote-Controlled Valve with PTFE Diaphragm

Application

ARC is an aseptic seat valve with PTFE diaphragm. It is available as a stop- or change-over valve.
The valve is suited for aseptic operating conditions such as high sterilisation temperatures. ARC is characterised by excellent cleanability.

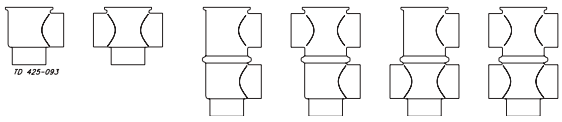
Working principle

ARC is operated by means of compressed air and can be supplied with or without spring return.
Sterile stem sealing towards the atmosphere is ensured by a special designed PTFE/rubber diaphragm unit. The PTFE diaphragm does not allow product residues to build up on the product contact surface.

Standard design

ARC is based on the SRC valve design. It consists of actuator, bonnet, stem with diaphragm unit and valve bodies. The change-over version is a two body design.
The valve is assembled by means of clamp rings and a stem clip system for easy maintenance.

Valve body combinations



20 30 21 22 31 32

Actuator function

- Pneumatic downward movement, spring return (NO).
- Pneumatic upward movement, spring return (NC).
- Pneumatic upward and downward movement (A/A).

Other valves in the same basic design

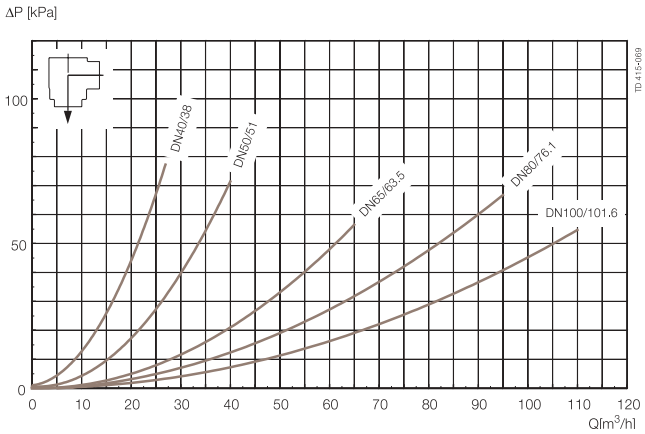
Sanitary Remote-Controlled valve, type SRC.
Sanitary Long-Stroke valve, type SRC-LS.
Sanitary Manual valve, type SMO.
Aseptic Remote-Controlled Valve with steel bellows, type ARC-SB.
See also PD 60019, PD 65142, PD 60789 and PD65432.

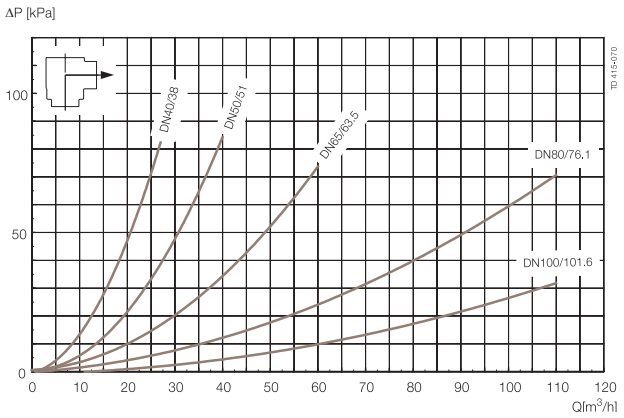
Fig. 1. ARC with valve body combination 20

Fig. 2. ARC diaphragm stem seal.

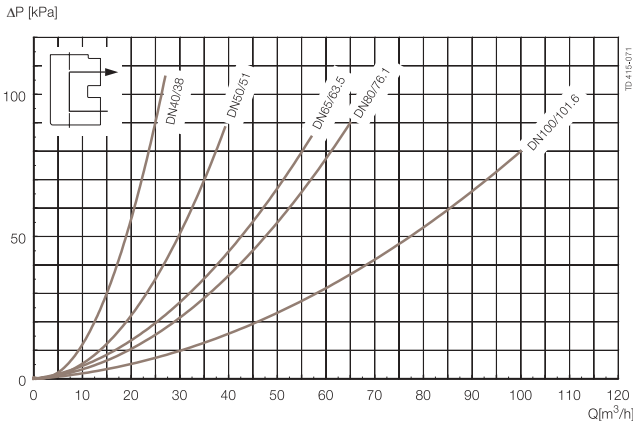
Pressure drop/capacity diagrams

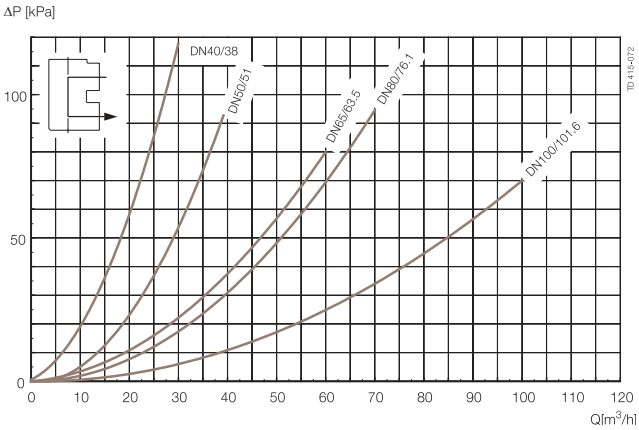
Stop valve

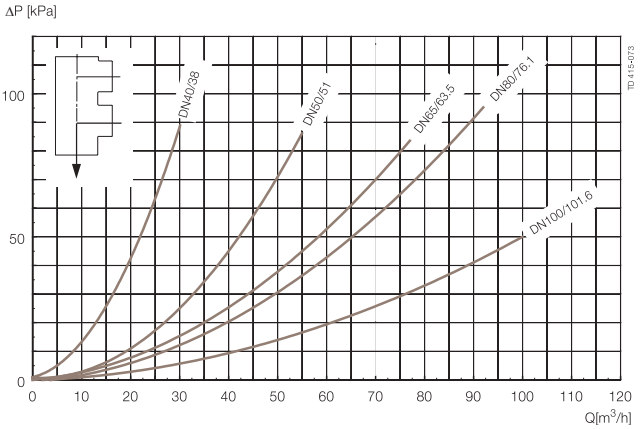


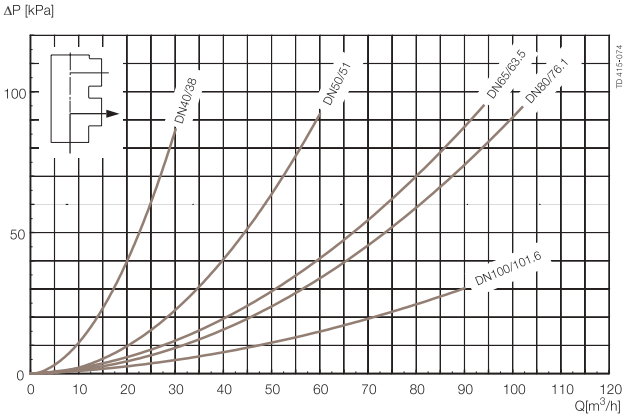


Change-over valve









Pressure data for ARC

Actuator type / function

10. Pneumatic downward movement, spring return (NO-lower seat).
20. Pneumatic upward movement, spring return (NC-lower seat).
30. Pneumatic upward and downward movement (A/A).
60. Three-position (NO-lower seat).
70. Three-position (NC-lower seat).

Table 1: Standard Valves - Max. static pressure in bar without leakage, valve seat fully closed.

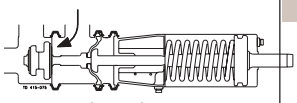
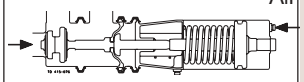
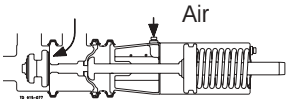
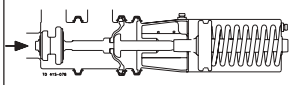
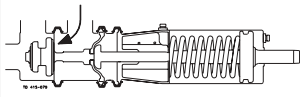
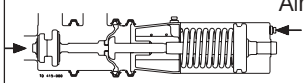
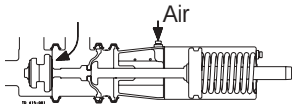
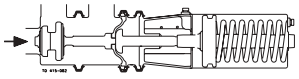
Actuator / Valve body combination and direction of pressure	Air pressure (bar)	Actuator type/ function	Type	Valve size DN40 38 mm	DN50 51 mm	DN65 63.5 mm	DN80 76.1 mm	DN100 101.6 mm	Air consumption (Litres free air per stroke) 38-63.5 mm	76-101.6 mm
 Spring closes		10(NO) 60(NO)		10.0	10.0	10.0	10.0	8.0	0.2 x Air pressure (bar)	0.7 x Air pressure (bar)
Air  Air closes		10(NO) 60(NO)								
	5		ISO	7.0	4.0	3.0	4.0	2.5		
	5		DIN	6.0	3.6	3.0	3.2	2.5		
	6		ISO	10.0	5.5	4.0	6.0	4.0		
	6		DIN	8.5	5.0	4.0	4.8	4.0		
Air  Air closes		20(NC) 70(NC)								
	5			10.0	10.0	10.0	10.0	6.0		
	6			10.0	10.0	10.0	10.0	9.5		
 Spring closes		20(NC) 70(NC)								
			ISO	7.0	4.0	2.5	5.0	3.5		
			DIN	7.0	3.4	2.3	5.0	3.5		

Table 2: Valves with reinforced spring or larger actuator - max. static pressure in bar without leakage, valve seat fully closed.

Actuator/valve body combination and direction of liquid pressure	Air pressure (bar)	Actuator type/ function	Type	Reinforced spring Valve size DN40 38 mm	DN50 51 mm	DN65 65 mm	DN80 76 mm	DN100 101.6 mm	Larger actuator Valve size 38 mm	51 mm	63.5 mm
 Spring closes		10(NO) 60(NO)		10.0	10.0	10.0	10.0	8.0	9.0	9.0	6.0
Air  Air closes		10(NO) 60(NO)									
	5		ISO	2.0	0.0	0.0	0.0	0.0	10.0	8.5	6.0
	5		DIN	1.7	0.0	0.0	0.0	0.0	8.5	7.7	6.0
	6		DIN	1.7	1.8	1.0	0.8	1.0			
	6		ISO	2.0	2.0	1.0	1.0	1.0			
Air  Air closes		20(NC) 70(NC)									
	5			2.0	2.0	2.0	0.0	0.0	10.0	10.0	10.0
	6			10.0	10.0	10.0	10.0	9.5			
 Spring closes		20(NC) 70(NC)									
			ISO	9.0	5.5	3.5	7.0	4.5	10.0	9.0	6.0
			DIN	7.7	4.6	3.5	5.6	4.5	8.5	8.2	5.9

Pressure data for ARC

Max. pressure in bar for ARC standard valves.
Max. pressure in bar for ARC with reinforced spring.
Max. pressure in bar for ARC with larger actuator.

Table 3: The valve is in the closing phase. Approx. max. product pressure in the valve body at which the valve plug can close by means of the spring or air pressure.

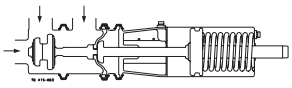
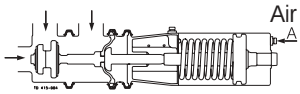
Actuator/valve body combination and direction of pressure	Actuator type/function	Valve size DN40 38 mm	DN50 51 mm	DN65 63.5 mm	DN80 76 mm	DN100 101.6 mm
 Spring closes	20(NC)	3.1	4.0	4.8	10	10
		4.8	6.7	6.9	10	10
	70(NC)	7.4	8.4	9.6		
 Air closes (6 bar)	10(NO)	4.6	5.4	6.5	10	10
		2.0	2.5	2.9	10	10
	60(NO)	8.5	9.0	9.4		

Table 4: Standard valves - Approx. static pressure in bar against which the valve plug can open by means of the spring or air pressure.

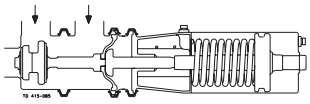
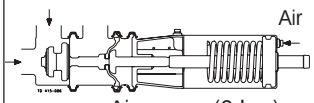
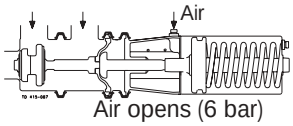
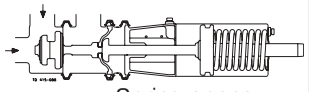
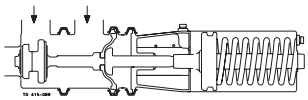
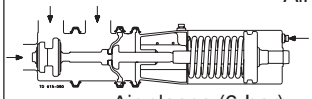
Actuator/valve body combination and direction of liquid pressure	Actuator type/function	Valve size DN40 38 mm	DN50 51 mm	DN65 63.5 mm	DN80 76 mm	DN100 101.6 mm
 Spring opens		10	10	10	10	10
	10(NO)	10	10	10	10	10
	60(NO)	10	10	10		
 Air opens (6 bar)		9.5	5.5	4.5	10	9.5
	10(NO)	7.5	7.5	5.5	10	10
	60(NO)	10	10	10		
 Air opens (6 bar)		10	10	10	10	9.5
	20(NC)	10	10	10	10	10
	70(NC)	10	10	10		
 Spring opens		10	10	8	10	9
	20(NC)	6	6	6	8.5	6
	70(NC)	10	10	10		

Table 5: The valve is closed - at these liquid pressures the valve will open.

Actuator/valve body combination and direction of pressure	Actuator type/function	Valve size DN40 38 mm	DN50 51 mm	DN65 63.5 mm	DN80 76 mm	DN100 101.6 mm
 Spring closes	20(NC)	5.9	10	10	10	10
		10	10	10	10	10
	70(NC)	10	10	10		
Air  Air closes (6 bar)	10(NO)	8	10	10	10	10
		3.5	8.5	10	10	10
	60(NO)	10	10	10		

Dimensions (mm)

Size	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm	40 DN	50 DN	65 DN	80 DN	100 DN
A_1	371	381	415	482	554	369	380	412	483	553
A_2	383	393	427	502	574	381	392	424	503	573
A_3	442	475	526	611	704	440	474	523	612	703
A_4	457	494	549	634	727	455	493	546	635	726
OD	38.1	50.8	63.5	76.1	101.6	41	53	70	85	104
ID	34.9	47.6	60.3	72.1	97.6	38	50	66	81	100
t	1.5	1.6	1.6	2.0	2.0	1.5	1.5	2.0	2.0	2.0
C	79	94	113	129	163	79	94	113	129	163
E	50	62	82	87	134	50	62	82	87	134
F_1	12	12	12	20	20	12	12	12	20	20
F_2	15	19	23	23	23	15	19	23	23	23
H	87	87	87	133	133	87	87	87	133	133
M/ISO clamp	21	21	21	21	21					
M/ISO male	21	21	21	21	21					
M/SMS male	20	20	24	24	35					
M/DIN male						22	22	25	30	30
M/BS male	22	22	22	22	22					
Weigth (kg): Stop	6.0	6.5	7.0	13.5	14.5	6.0	6.5	7.0	13.5	14.5
Change-over	6.5	7.0	7.5	17.0	17.5	6.5	7.0	7.5	17.0	17.5

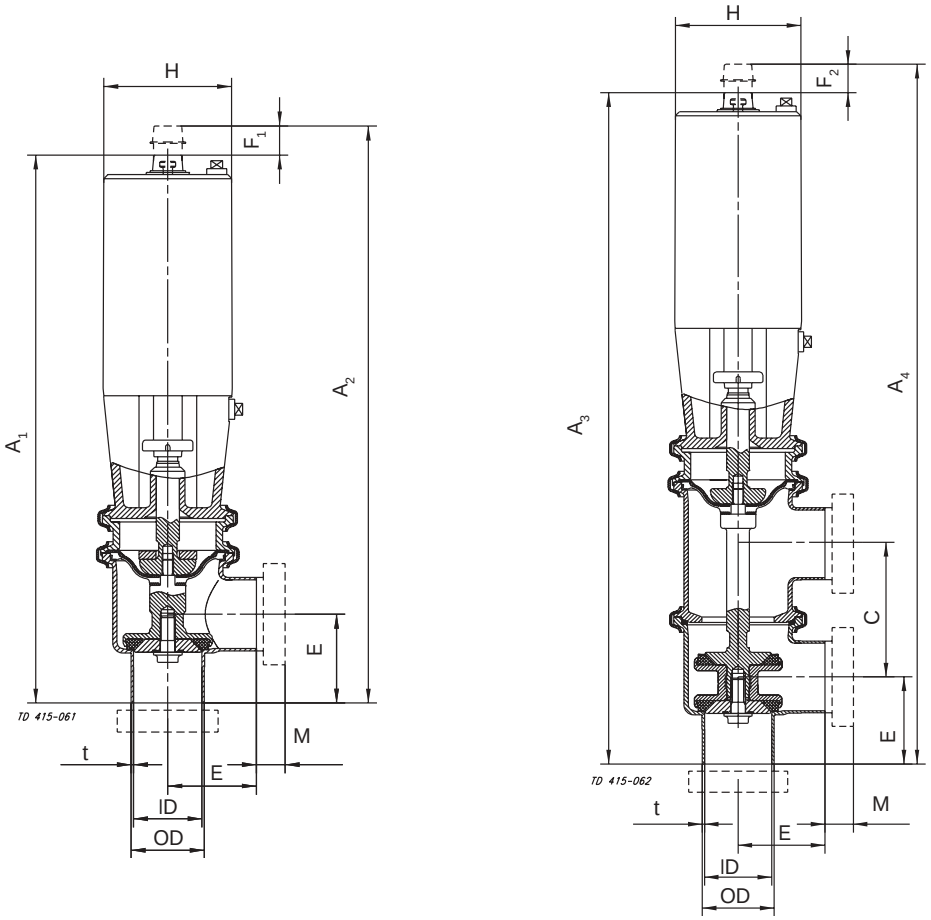


Fig. 3. Dimensions. a.Stop valve. b.Change-over valve.

Materials

Product wetted steel parts:	Acid-resistant steel 1.4404 (316L).
Other steel parts:	Stainless steel 1.4301 (304).
Finish:	Semi bright.
Product wetted seals:	EPDM, PTFE.
Other seals:	NBR, EPDM.

Technical data

Pressure range:	0-800 kPa (0-8 bar).
Temperature range:	-10°C to +140°C (EPDM).
Optimum process conditions:	>50 kPa (0.5 bar), >20°C.
Max. sterilization temperature (steam - short time):	150°C/380 kPa (3.8 bar).
Air pressure:	500-800 kPa (5-8 bar).

Note! Vacuum is not recommended in aseptic applications.

Expected lifetime of diaphragm unit under normal conditions: (no pressure shocks or cavitation).

Size/Type	Stop valve activations	Change-over valve activations
38mm/DN40	25.000	10.000
51mm/DN50	25.000	10.000
63.5mm/DN65	25.000	5.000
76.1mm/DN80	5.000	5.000
101mm/DN100	5.000	5.000

Note! Activating the valve without internal product pressure reduces lifetime of diaphragm unit.

Options

A) Male parts or clamp ends in accordance with required standard.
B) Control & Indication (see chapter in Product Catalogue).
C) Damper against water hammer.
D) Actuator with stronger spring.
E) Larger actuator for valve size 38 - 63.5 mm, DN 40-65.
F) Two-step or three-position actuator.
G) Tangential side port valve.
H) Product wetted seals of Nitrile (NBR) or Fluorinated rubber (FPM).
I) Service tool for actuator.

Ordering

Please state the following when ordering:
- Connections if not welding ends.
- Size.
- Valve body combination.
- Actuator function, NO, NC or A/A.
- Options.