The Original Manual Seat Valve

SMO and SMO-R Sanitary Manual Valves

Application

The sanitary and flexible design of the SMO valve can be used in a wide range of applications , eg. as a stop valve with two or three ports or as a change-over valve with 3-5 ports.
SMO-R is a regulating valve used for manual control of pressure and flow.

Working principle

The valves permit gradual opening and the few and simple moving parts result in very reliable valves easy to dismantle.
Operating the SMO-R, the plug can be fixed in the adjusted position with a lock screw.

Standard design

SMO and SMO-R are manually operated versions of the pneumatic remote-controlled SRC valve.
The SMO can easily be converted to a SRC valve by replacing the crank mechanism with an SRC actuator. The other parts are identical.
As an optional extra (except for 25mm/DN25) the valves can be fitted with the same diaphragm stem seal as the ARC-valve thus forming an aseptic manually-operated valve, type AMO/AMO-R.

Fig.1. SMO and SMO-R stop valves.

Valve body combination

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TD 425-093
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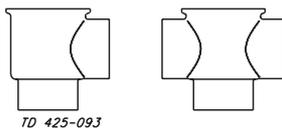
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Other valves in the same basic design:

- Sanitary Remote-Controlled valve, type SRC.

Dimensions (mm) - SMO-R

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	170	182	217	232	304	168	181	214	233	303
A_2	202	214	249	264	336	200	213	246	265	335
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	1.6	1.6	1.6	2	2	1.6	1.6	2	2	2
E	49.5	61.5	82.3	87.3	133.5	49.5	61.5	82.3	87.3	133.5
F	32	32	32	32	32	32	32	32	32	32
H	80	80	80	80	80	80	80	80	80	80
M/ISO clamp	21	21	21	21	21					
M/ISO male	21	21	21	21	21					
M/DIN male						22	23	25	25	30
M/SMS male	20	20	24	24	35					
M/BS male	22	22	22	22	27					
Weight (kg)	2.5	3.0	3.5	7.5	9.5	2.5	3.0	3.5	7.5	9.5

TD 422-009
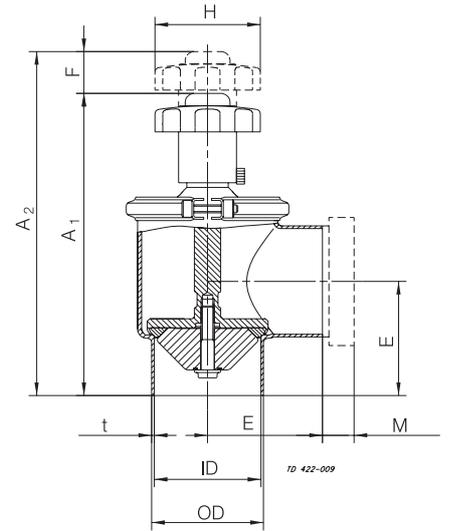
Fig. 2. Dimensions

Dimensions (mm) - SMO

| Size	25 mm	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm	25 DN	40 DN	50 DN	65 DN	80 DN	100 DN
A_1	226.8	268	278	312	329	401	226.4	266	277	309	330	400
A_2	195.8	237	247	281	298	370	195.4	235	246	278	299	369
A_3	289.3	347	372	425	458	564	288.9	345	371	422	459	566
A_4	258.3	316	341	394	427	533	257.9	314	340	391	428	535
C	55.6	79	94	113	129	163	55.6	79	94	113	129	160
OD	25.2	38.1	50.8	63.5	76.1	101.6	29	41	53	70	85	104
ID	22.2	34.9	47.6	60.3	72.1	97.6	26	38	50	66	81	100
t	1.5	1.6	1.6	1.6	2	2	1.5	1.5	1.5	2	2	2
E	57	50	62	82	87	134	57	50	62	82	87	134
F	22.5	31	31	31	31	31	22.5	31	31	31	31	31
H	105	105	105	105	105	105	105	105	105	105	105	105
M/ISO clamp	21	21	21	21	21	21						
M/ISO male	21	21	21	21	21	21						
M/DIN male							22	22	23	25	25	30
M/SMS male	20	20	20	24	24	35						
M/BS male	22	22	22	22	22	27						
Net weight Stop valve (kg)												
SMO	2.6	2.5	3.0	3.5	7.5	9.5	2.6	2.5	3.0	3.5	7.5	9.5
AMO	-	3.6	4.5	5.1	8.6	11.0	-	3.6	4.5	5.1	8.6	11.0
Net weight Change-over valve (kg)												
SMO	3.4	3.5	4.1	4.9	9.7	12.4	3.4	3.5	4.1	4.9	9.7	12.4
AMO	-	4.1	5.0	5.6	12.1	14.0	-	4.1	5.0	5.6	12.1	14.0
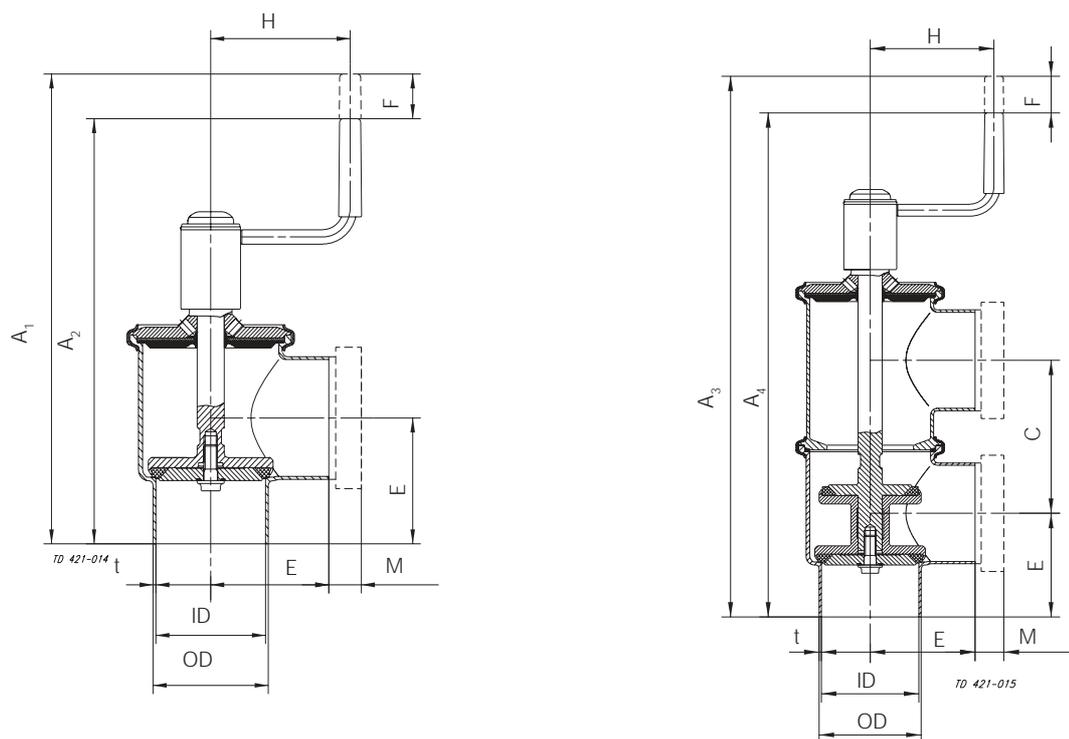
Fig. 3. Dimensions.　　　　a. Stop valve.　　　　　　　　　　　　　　　　　　b. Change-over valve.

Control function - SMO-R

The Kv factor states the flow in m³/h at a pressure drop of 1 bar over a completely open valve.

The plugs have linear characteristics. This means that a certain amount of throttling, by reducing the stroke, results in a proportional reduction of the flow if the pressure drop remains unchanged.

Example:

51 mm valve, Kv 72.

The flow through the valve is 72 m³/h if the pressure before the valve is 1 bar and the outlet after the valve is free, or for example, 3 bar before the valve and 2 bar after.

When the valve is throttled to half open (50% of the full stroke) the flow will be reduced by 50% to 36 m³/h provided the pressure drop is 1 bar.

Materials

Product wetted steel parts: 1.4401 (316L)
Other steel parts: 1.4301 (304)
Plug stem: .... 1.4401 (316L) with
                                                       chromium plated
                                                       surface
Product wetted seals: .... EPDM
Other seals: .... NBR and FPM
Finish: .... Semi bright

Technical data

Max product pressure: .... 1000 kPa (10 bar).
Min. product pressure: .... Full vacuum.
Temperature range: .... -10°C to +140°C (EPDM).

Kv-Factors

Valve size	Kv
38mm/DN40	17*/43
51mm/DN50	72
63.5mm/DN65	114
76.1mm/DN80	155
101.6mm/DN100	160

* Kv 17 is optional

For other pressure drops than 1 bar the flow can be calculated with the following formula:

$$Q = Kv \times \sqrt{\Delta p}$$

Where Q = Flow in m³/h.
       Kv = See above.
       D p = Pressure drop in bar over the valve.

Example:

Plug Kv 72
Q to be calculated: $Q = 72 \times \sqrt{2} = 100$ m³/h
D p = 2 bar   or at 50% stroke:
                             $Q = 0.5 \times 72 \times \sqrt{2} = 50$ m³/h

Conversion factors:

Kv = m³/h at a pressure drop of 1 bar.
Cv = US gall/min at 1 psi pressure drop.
Kv = Cv x 0.85.
Cv = Kv x 1.18.

Pressure drop/capacity diagram for SMO-R:
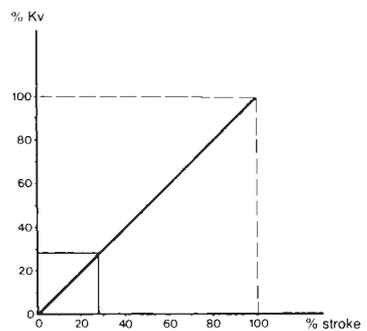
Fig. 2. The flow in % of the total flow at a pressure drop of 1 bar.

Pressure drop/capacity diagrams for SMO:

The same as SRC or ARC valves.

Options

A) Male parts or clamp ends in accordance with required standard.
B) Stainless steel disc replacing standard lip seal.
C) Product wetted seals and lip seal of Nitrile (NBR), Fluorinated rubber (FPM) or PTFE.

Ordering

Please state the following when ordering:
- Connections if not welding ends.
- Size.
- Valve body combination.
- Options.