



AUTOMATION AND DIGITALIZATION

NAF UNEX BUTTERFLY VALVES

TECHNICAL BULLETIN



ANDRITZ

ENGINEERED SUCCESS

Primary characteristics

NAF Unex is a butterfly valve available with either a metal or a soft sealing ring. It can be used as both control valve and shut-off valve, and is made of stainless steel as standard.

The NAF Unex valve:

- is available as wafer body design for clamping between pipe flanges, with drilled holes for correct location
- can be installed in either vertical or horizontal pipework, regardless of the direction of flow
- is insensitive to pipe forces
- has a one-piece valve body to minimize the risk of leakage
- has an offset butterfly bearing arrangement to give an unbroken sealing line at the sealing ring
- has maintenance-free stub shaft seals
- has the NAF standard for mounting the actuator, which simplifies installation and results in a compact valve/actuator unit.

CE-marked according to Pressure Equipment Directive (PED 97/23/EG) module H, category III.

Design

The valve has an annular body without its own connecting flanges and is clamped in position between pipe flanges. In the case of through bolt holes (tapped blind holes in DN >700 mm valves), space is available for nuts for securing the valve to either pipe flange, if required.

The valves are available with four alternative sealing rings - EPDM, FPM or PTFE soft sealing rings, or stainless steel metallic sealing rings.

Connections

The valves are of clamped type and are designed for clamping between pipe flanges using through bolts. If loose flanges for welding are to be used, they should be to DIN 2632 (SS 2023). The valves can also be drilled with holes for clamping between flanges ANSI class 150.

TABLE 1: SELECTION TABLE

NAF No.	DN	Material	
		Sealing ring	Stub shaft seals
228234	450-700	EPDM	EPDM
228235	450-700	FPM	FPM
228236	450-700	Rst	EPDM
228238	450-700	PTFE	EPDM
228224	800-1000	EPDM	EPDM
228225	800-1000	FPM	FPM
228226	800-1000	Rst	EPDM
228228	800-1000	PTFE	EPDM

Applications

NAF Unex butterfly valves can be used both as control valves and as shut-off valves in the process industry, such as for pulp suspensions and liquors in the cellulose industry.

TECHNICAL SPECIFICATION

Material	EN 1.4408
Size range	DN 450, 600 - 1000
Pressure class:	PN 10
Max. differential pressure:	DN 450: 10 bar DN 600 - 700: 6 bar DN 800 - 1000: 10 bar
Face to Face length	DN 450 - 700: EN 558-1, series 20 DN 800 - 1000: EN 558-1, series 16
Valve design:	ANSI B 16.34 and EN 12516
Connection type:	For clamping between flanges
Temperature range:	EPDM: up to 130°C FPM: up to 90°C (150°C for oil) PTFE: up to 200°C Metallic sealing ring: up to 200°C
Test pressure:	1.5 x PN with valve open 1.1 x max. differential pressure with valve closed
Sealing class:	Testing medium is water. EPDM, FPM soft seal: EN 12266-1 Rate A PTFE soft seal*: EN 12266-1 Rate D Metallic seal*: NAF Class 4A

*With the pressure from the stub shaft side



Sizing of control valves

We have a user friendly valve calculation program which can be ordered through your NAF representative. The program is based on calculating formula according to the standards IEC 60534 and ISA S75.01.

TABLE 2: FLOW CAPACITIES

DN	Kv at an opening angle of								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
450	294	481	1068	1865	3130	5225	7845	10850	13345
600	567	927	2060	3595	6030	10020	14740	20710	25475
700	781	1278	2840	4955	8315	13845	20725	28720	35330
800	1029	1683	3740	6530	10950	18260	27585	38010	46760
900	1309	2142	4760	8310	13935	23285	34335	47705	59660
1000	1623	2655	5900	10300	17275	28900	43585	59090	74055

Operating torque

The adjacent table specifies the torque necessary for closing the valve to the specified tightness, with the pressure acting on the stub shaft side of the butterfly disc. To achieve the specified tightness of a valve fitted with a metallic sealing ring, the lowest design torque is that corresponding to a differential pressure of 6 bar for sizes DN 600 - 1000 and that corresponding to 10 bar for size 450.

At high flow velocities and high differential pressures when the valve is in the open position, the butterfly disc will be subjected to a dynamic torque which may be the decisive parameter in the selection of the actuator. In the event of doubt, do not hesitate to ask NAF for the torque that should be used in selecting the actuator.

TABLE 3: OPERATING TORQUE, NM

DN	Differential pressure, bar				
	2	6		10	
	Soft	Soft	Hard ¹⁾	Soft	Hard ¹⁾
450	980	1300	-	1650	2300
600	2100	2800	3900	²⁾	²⁾
700	3100	4200	5900	²⁾	²⁾
800	4300	5800	8100	7000	9800
900	4800	8000	11200	9600	13400
1000	7500	10500	14700	12500	17500

Soft = Soft sealing ring (EPDM, FPM, PTFE)

Hard = Metallic sealing ring

¹⁾ The minimum design torque for a metallic seal is corresponding to the differential pressure of 10 bar for sizes DN 450 and of 6 bar for sizes DN 600 - 1000.

²⁾ The maximum differential pressure is 6 bar

TABLE 4

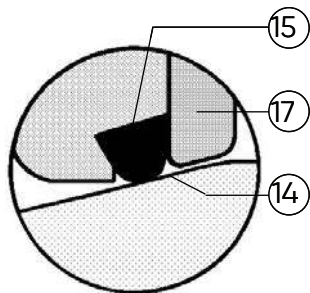
Pin	Qty.	Part	Material
1	1	Cover	EN1.44408 / CF8M
2	4	Screw	A4
3	1	Body	EN1.4408/CF8M
4	4	Bush	Rst + PTFE
5	1	Stub shaft, driven	EN1.4460
6	1	Butterfly disc	EN1.4408/CF8M
7	1	Stub shaft, lower	EN1.4460
8	3	Screw	A4
9	1	Cover	EN1.4408/CF8M
10	4	Screw	A4
11	2	Washer	PTFE

Pin	Qty.	Part	Material
12	1	O-ring	EPDM or FPM
13	1	O-ring	EPDM or FPM
14	1	Seat	Machined in body
15	1	Sealing ring	Alt. EPDM, FPM or PTFE
16	1	Screw	A4
17	1	Clamping ring	EN1.4460
18	3	Pin	EN1.4460
20	1	O-ring	EPDM or FPM
21	1	Sealing ring	EN1.4460
22	1	Gasket	High-pressure plate

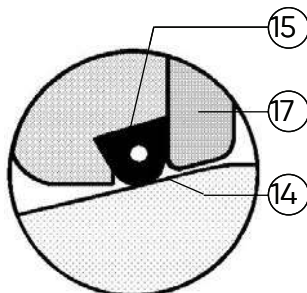
¹⁾ The number is dependent on the DN size



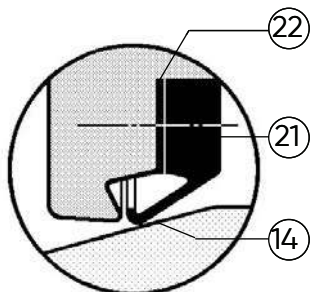
Material specification



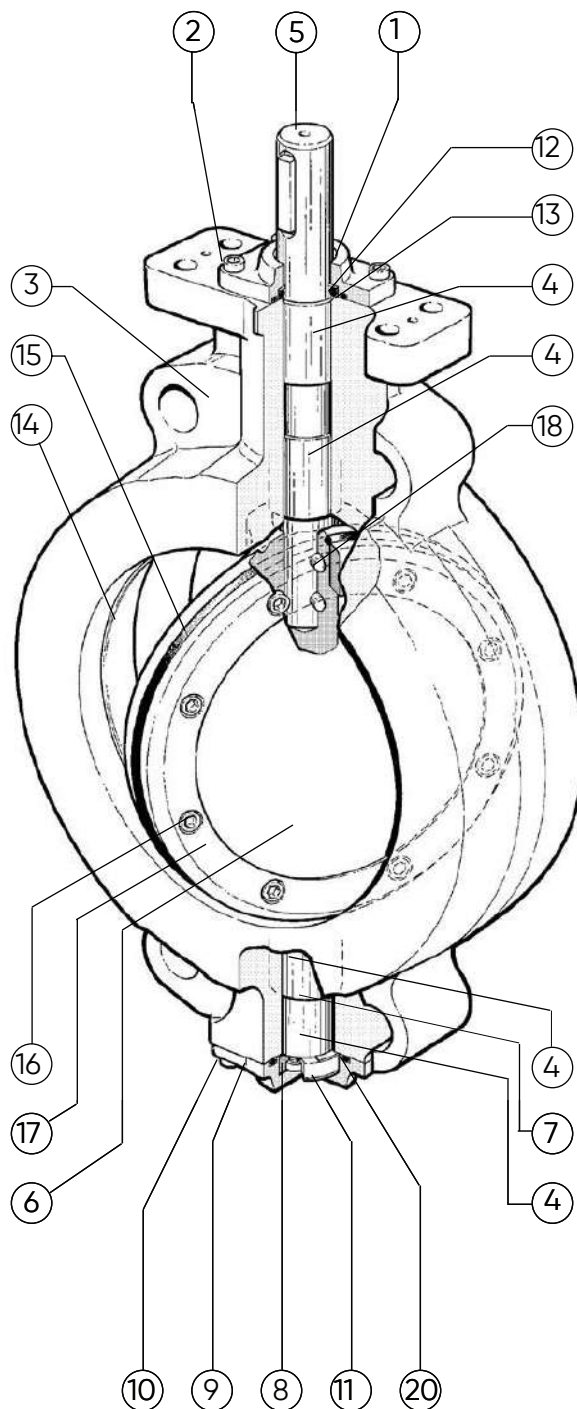
PTFE sealing ring



EPDM or FPM sealing ring



Metallic sealing ring



Dimensions and mass

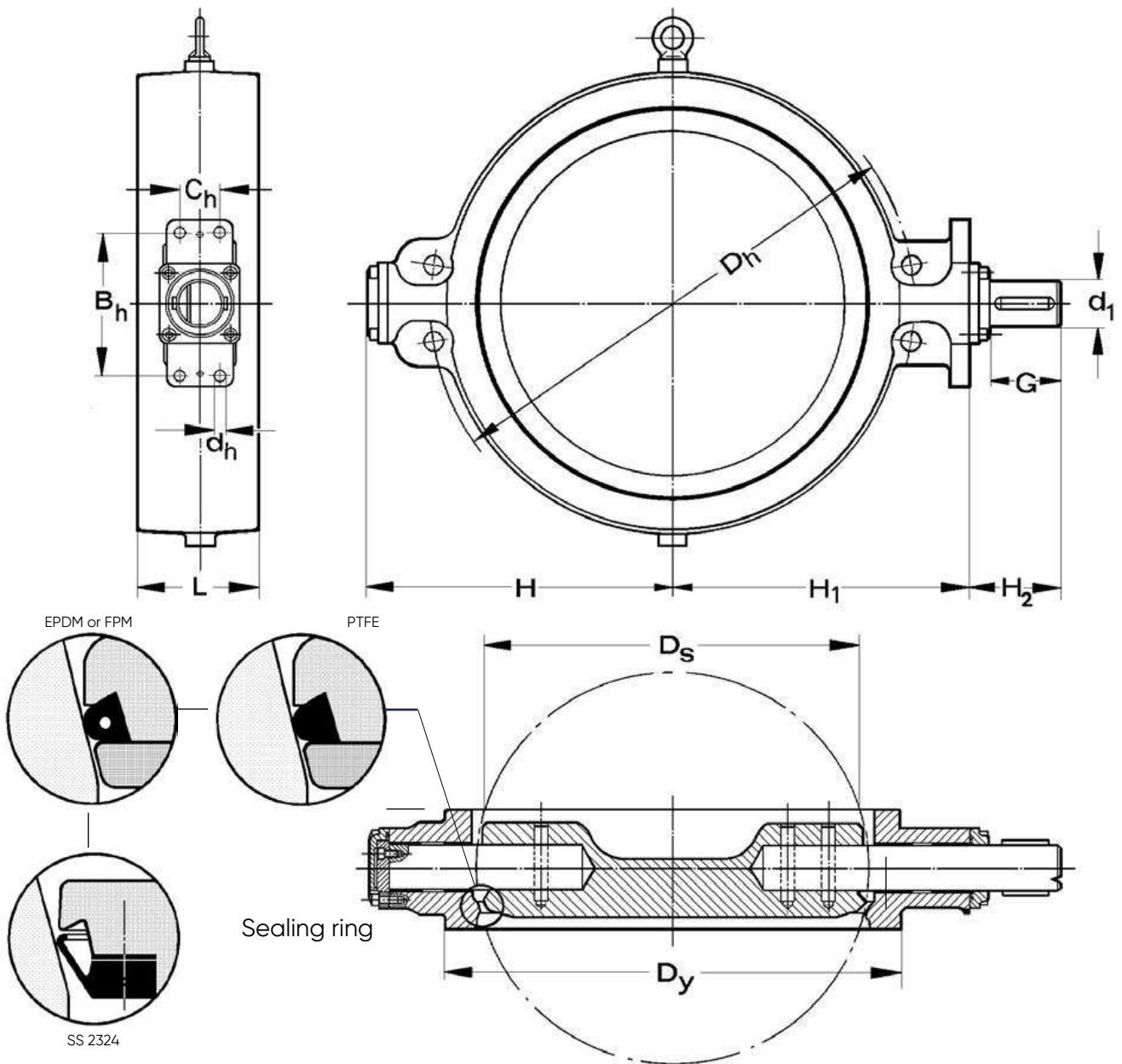


TABLE 5

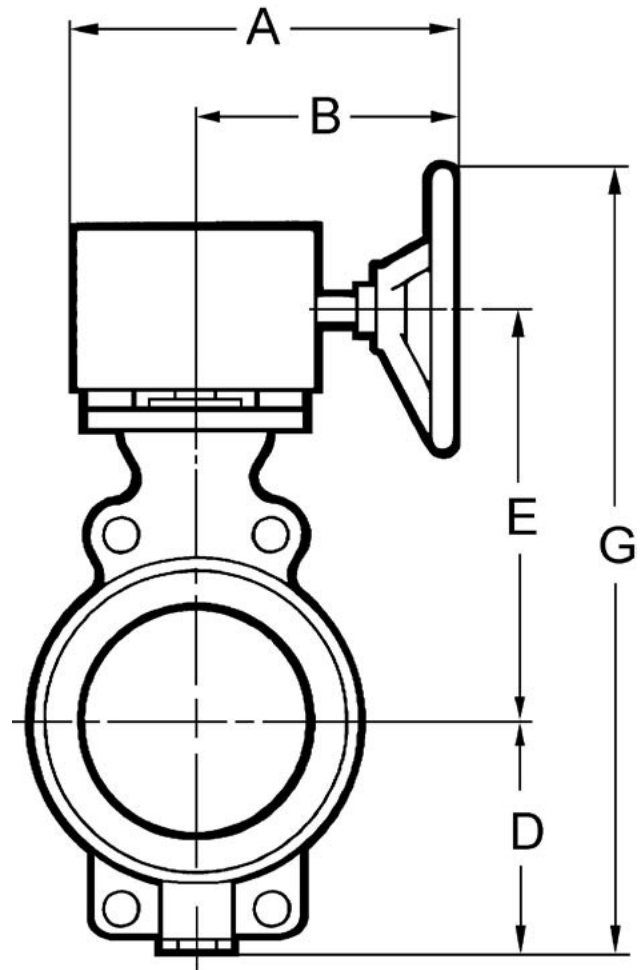
DN	D_h	D_y	D_s^1	L	H	H_1	H_2	B_h	C_h	d_h	G	d_1	Mass kg
450	565	527	414	114	360	340	125	214	60	18	100	50	130
600	725	685	560	154	450	445	140	214	60	18	105	55	270
700	840	790	660	165	545	530	140	214	60	18	110	70	340
800	950	897	760	241	637	615	165	240	100	26	130	80	650
900	1050	990	856	241	705	655	180	277	115	33	142	100	850
1000	1160	1110	950	300	774	720	180	277	115	38	142	100	1150

All dimensions in mm
¹ Space required by the disc movement

Actuators

NAF Unex is available with hand levers or with pneumatic or electric actuators and accessories. Use the following tables for selecting the hand levers and standard pneumatic actuators.

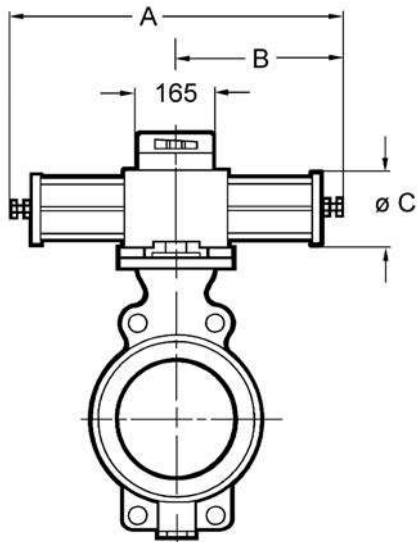
If other pneumatic or electric actuators are required, consult your NAF representative.



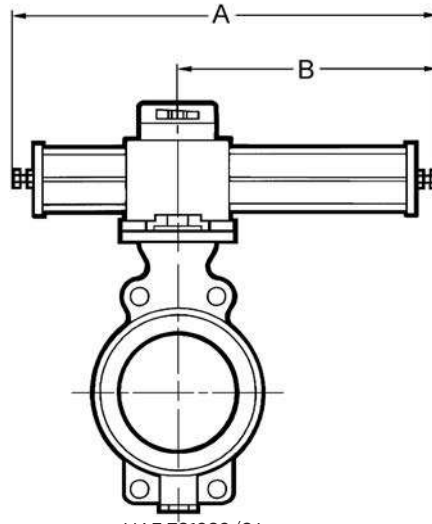
NAF 791009/791003

TABLE 6: NAF UNEX WITH WORM GEARS

DN	Max dp bar		NAF No.	Dimensions, mm					Mass kg
	Hard seat	Soft seat		A	B	D	E	G	
450	10	10	791051-43050	507	337	360	430	1040	162
600	6	6	791051-43055	507	337	450	545	1245	302
700	6	6	791051-53070	591	421	545	627	1372	378
800	10	10	791051-64080	697	487	637	734	1671	717
900	6	10	791051-65100	697	487	705	789	1794	917
900	10	10	791051-75100	747	537	705	789	1794	931
1000	-	6	791051-75100	747	537	774	854	1928	1231
1000	10	10	791051-85100	848	593	774	865	1989	1342



NAF 791290/791390



NAF 791292/94
NAF 791392/94

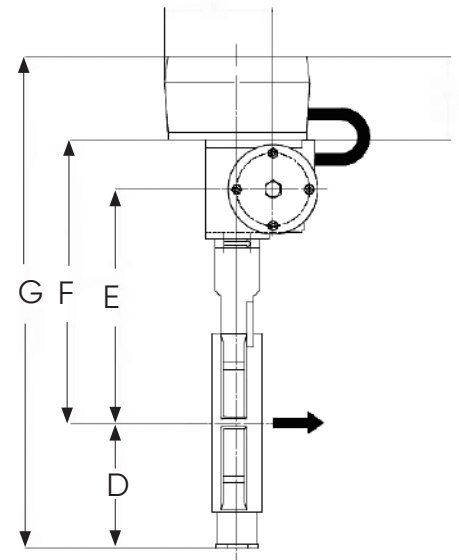


TABLE 7: NAF UNEX WITH PNEUMATIC ACTUATORS

The below stated dP apply for clean media type water.
For other media contact NAF, see also page 2.

DN	Max. dP bar at supply of						NAF No.	Dimensions, mm								Mass kg
	4 bar		5 bar		6 bar			A	B	C	D	E	F	G ¹⁾	H	
	Hard seat *	Soft seat	Hard seat *	Soft seat	Hard seat *	Soft seat										
Double-acting as per Fk 74.59																
450	-	3	-	6	-	10	791290-3150	820	410	200	360	472	572	1027	75	160
450	-	10	10	10	10	10	-3250	820	410	200	360	472	572	1027	75	160
600	-	2	-	5	-	6	791390-4155	1110	555	260	450	605	737	1282	100	315
600	6	6	6	6	6	6	-4255	1110	555	260	450	605	737	1282	100	315
700	-	6	-	6	6	6	-4270	1110	555	260	545	690	822	1462	100	386
700	6	6	6	6	6	6	-5170	1600	800	395	545	744	957	1597	150	560
800	-	-	-	4	-	6	-4280	1110	555	260	637	814	946	1678	100	695
800	6	10	10	10	10	10	-5180	1600	800	395	637	868	1081	1813	150	870
900	-	6	-	10	8	10	-5100	1600	800	395	705	837	1050	1850	150	1070
900	10	10	10	10	10	10	-5200	1600	800	395	705	837	1050	1850	150	1070
1000	-	2	-	5	-	8	-5100	1600	800	395	774	902	1115	1984	150	1370
1000	-	10	10	10	10	10	-5200	1600	800	395	774	902	1115	1984	150	1370

* Hard seat = Metal and PTFE-seat
¹⁾ Including NAF valve positioner

(TABLE 8)

The below stated dP apply for clean media type water.
For other media contact NAF, see also page 2.

DN	Max. dP bar at supply of						NAF No.	Dimensions, mm								Mass kg
	4 bar		5 bar		6 bar			A	B	C	D	E	F	G ¹⁾	H	
	Hard seat	Soft seat	Hard seat	Soft seat	Hard seat	Soft seat										
Single-acting, spring to close as per Fk 74.59																
450	-	2	-	2	-	2	791292-3250	1050	640	200	360	472	572	1027	75	173
450	10	10	10	10	10	10	791392-4250	1520	965	260	360	504	632	1087	100	230
600	6	6	6	6	6	6	-5255	2210	1370	395	450	640	807	1352	150	795
700	6	6	6	6	6	6	-5270	2210	1370	395	545	744	957	1597	150	865
800	6	10	6	10	6	10	-5280	2210	1370	395	637	868	1081	1813	150	1195
900	-	7	-	7	-	7	-5200	2210	1370	395	705	837	1050	1850	150	1425
1000	-	3	-	3	-	3	-5200	2210	1370	395	774	1050	1115	1984	150	1845
Single-acting, spring to open as per Fk 74.59																
450	-	-	-	-	-	6	791294-3250	1050	640	200	360	472	572	1027	100	173
450	-	-	-	10	10	10	791394-4250	1520	965	260	360	504	632	1087	100	230
600	4	6	6	6	6	6	-5255	2210	1370	395	450	640	807	1352	150	795
700	-	-	6	6	6	6	-5270	2210	1370	395	545	744	957	1597	150	865
800	-	-	4	10	6	10	-5280	2210	1370	395	637	868	1081	1813	150	1195
900	-	-	-	5	-	7	-5200	2210	1370	395	705	873	1050	1850	150	1425
1000	-	-	-	-	-	3	-5200	2210	1370	395	774	1050	1115	1984	150	1845

* Hard seat = Metal and PTFE-seat

¹⁾ Including NAF valve positioner

ACCESSORIES

NAF's pneumatic actuators, see data sheet Fk74.59 can be equipped with a large number of accessories. The following are included in NAF's standard programme and are suitable for direct mounting to NAF pneumatic actuators.

VALVE POSITIONER

Pneumatic and electro-pneumatic valve positioner, see data sheet Fk41.82.
Intelligent valve positioner, see data sheet Fk41.85.
Intelligent On/Off controller, see data sheet Fk41.86.

SOLENOID VALVES

See data sheet Fk79.17.

FILTER REGULATOR

Can be delivered (part no. 79-SMC-AW20K-F02CE-C).

ELECTRICAL POSITION INDICATION

See data sheet Fk79.10.

TERMINAL BOX

The actuator can be equipped with a junction box (part No. 349 20 930) of cast aluminium containing terminal blocks for connecting the solenoid valve and position sensors.

Product Code

Example:

	<u>22</u>	<u>8</u>	<u>0</u>	<u>34</u> -	<u>0450</u>
Code	1	2	3	4	5

1. Valve type

22 NAF Unex

2. Material¹⁾

8 Stainless steel

3. Pressure class ¹⁾

2 PN10

4. Seals

	Seat ring	Steam seal	
24	EPDM	EPDM	(DN 800-1000)
25	FPM	FPM	(DN 800-1000)
26	Stainless steel	EPDM	(DN 800-1000)
28	PTFE	EPDM	(DN 800-1000)
34	EPDM	EPDM	(DN 450-700)
35	FPM	FPM	(DN 450-700)
36	Stainless steel	EPDM	(DN 450-700)
38	PTFE	EPDM	(DN 450-700)

5. Size

	DN
0450	450
0600	600
0700	700
0800	800
0900	900
1000	1000

¹⁾ Can also be drilled with holes for clamping between flanges ANSI Class ¹⁵⁰.

The standards for the counter flanges are in this case:

ANSI B^{16.5} class ¹⁵⁰, size ⁴⁻²⁴,

MSS SP-⁴⁴, size ²⁸⁻⁴⁰





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