WIKA TÜREN

PILOT OPERATED PRESSURE REDUCING VALVES WITH SG IRON BODIES

Model: DP 27
DP 27E

INTERNAL STRAINER

DESCRIPTION

Available types

CARBON STEEL

DP 27, DP 27E, Pilot operated pressure reducing valves have bodies manufactured using SG iron.
These products are not suitable for oxygen service.

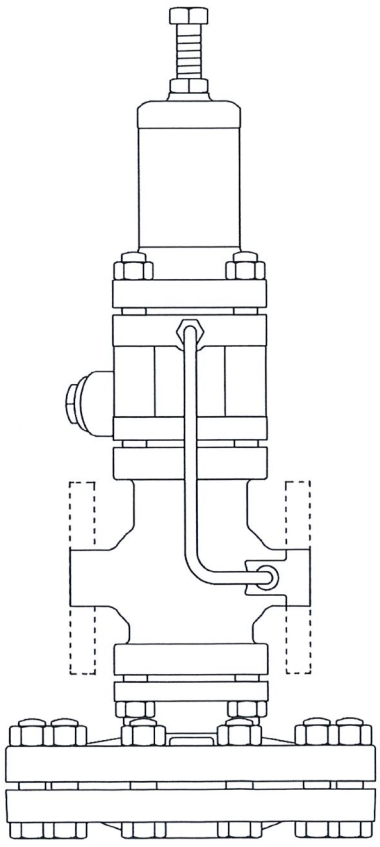
DP 27 Suitable for steam or compressed air applications.
DP 27E Suitable for steam applications. It incorporates an electrical solenoid valve in the pipe assembly allowing remote closure by means of a switching or timer device.

Standards

This product fully complies with the requirements of the EU Pressure Equipment Directive/UK Pressure Equipment (Safety) Regulations and carries the CE mark when so required.

Certification

This product is available with a manufacturer's Typical Test Report.
Note: All certification/inspection requirements must be stated at the time of order placement.



DP 27 shown

SIZES AND PIPE CONNECTIONS

Screwed

BSP (BS 21 parallel) or NPT (DN15 to DN25 only)

Standard flanges:

DN15 - DN50 EN 1092 PN16 and PN25
DN25 - DN50 BS 10 Table H and ASME 300

Flanges available on request:

DN15 • DN15 to DN40 JIS 10/16
• DN50 JIS10 and JIS16
• DN15 to 50 ASME 150 ANSI.
DN15 • DN20 BS 10 Table F
DN15 • ASME 300 ANSI.

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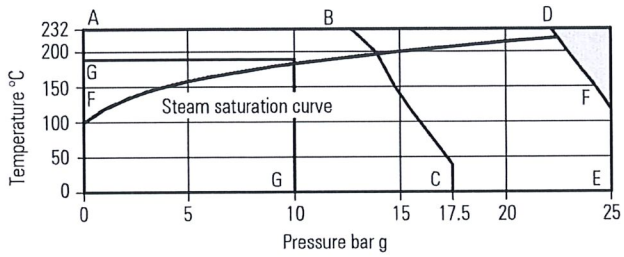
PRESSURE/TEMPERATURE LIMITS

DP 27, DP 27E



The product **must not** be used in this region.

A-D-E Screwed and flanged EN 1092 PN25, ASME 300 and BS 10 Table H.

A-B-C Flanged ASME 150.

G-G The DP 27E is limited to 10 bar g @190°C.

Note: A variable rate conical pressure adjustment spring is fitted providing a downstream pressure range of 0.2 - 17 bar g.
~~For the downstream pressure range is 0.2 - 3 bar g.~~

Body design conditions		PN25
Maximum design pressure	A-D-E	25 bar g @ 120°C
	A-B-C	17.2 bar g @ 40°C
Maximum design temperature		~~232~~ 280°C @ ~~21~~ 12 bar g
Minimum design temperature		-10°C
Maximum upstream pressure for saturated steam service	DP 27	~~17~~ 12 bar g
For ASME 150, see A-B-C above	DP 27E	10 bar g
Minimum operating temperature	DP 27	~~232~~ 280°C @ ~~21~~ 12 bar g
For ASME 150, see A-B-C above	DP 27E	190°C @ 10 bar g
Minimum operating temperature Note: For lower operating temperatures consult WIKATUREN		0°C
Maximum differential pressure	DP 27	17 bar (AIR), 12 bar (STEAM)
	DP 27E	10 bar
Designed for a maximum cold hydraulic test pressure of		38 bar g
Note: With internals fitted, test pressure must not exceed		25 bar g

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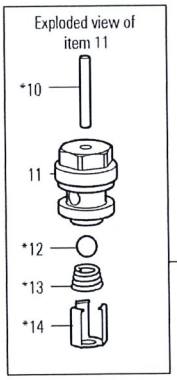
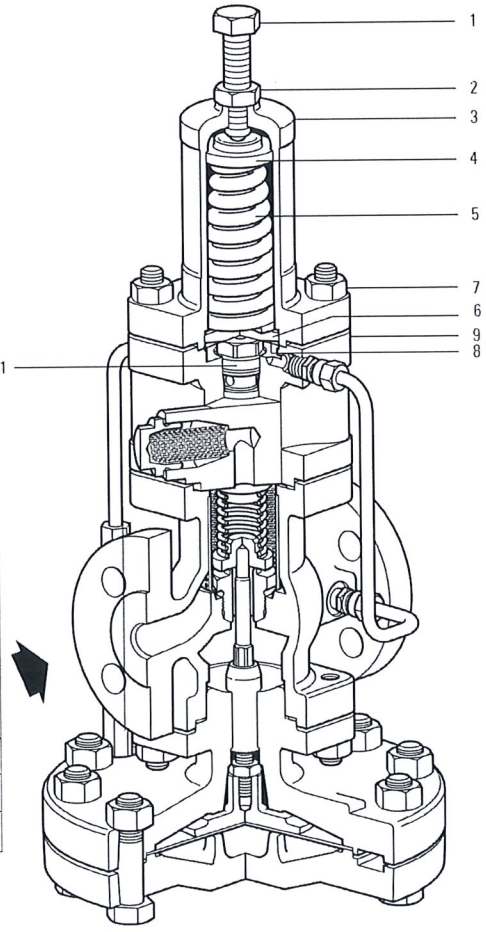
MATERIAL DP 27

NO.	PART NAME	MATERIAL		
1	Adjustment screw	Steel		BS 3692 Gr. 8.8
2	Adjustment lock-nut	Steel		BS 3692 Gr. 8
3	Spring housing	~~SG iron~~ CARBON STEEL		~~DIN1693 GGG 40.3~~ A 216-WCB
4	Top spring plate	Stainless steel		ASTM A351/A351M CF8M
5	Pressure adjustment spring	Stainless steel		BS EN 10270-3:2001 302 S 26
6	Bottom spring plate	Hot brass stamping		BS EN 12165 CW617N
7	Spring housing	Securing nuts	Steel	BS 3692 Gr. 8
		Securing studs	Steel	BS 4439 Gr. 8.8
			DN15 to DN32	M10 x 95 mm
			DN40 and DN50	M12 x 95 mm
8	Pilot diaphragms	Phosphor bronze		BS 2870 PB102 1980
9	Pilot valve chamber	~~SG iron~~ CARBON STEEL		~~EN JS 1025~~ A216-WCB.





* Note:
Items 10, 12, 13 and 14 are shown on the exploded view, as they are hidden by the pilot filter on the main illustration.

NO.	PART NAME	MATERIAL	
10 *	Pilot valve plunger	Stainless steel	BS 970 321 S 31
11	Pilot valve seat with integral seal	Stainless steel +PTFE	BS 970 431 S 29
12 *	Pilot valve ball	Stainless steel	AISI 420
13 *	Pilot valve spring	Stainless steel	BS 2057 302 S 26
14 *	Pilot valve clip	Stainless steel	BS EN 10088-2 1995 1.4310

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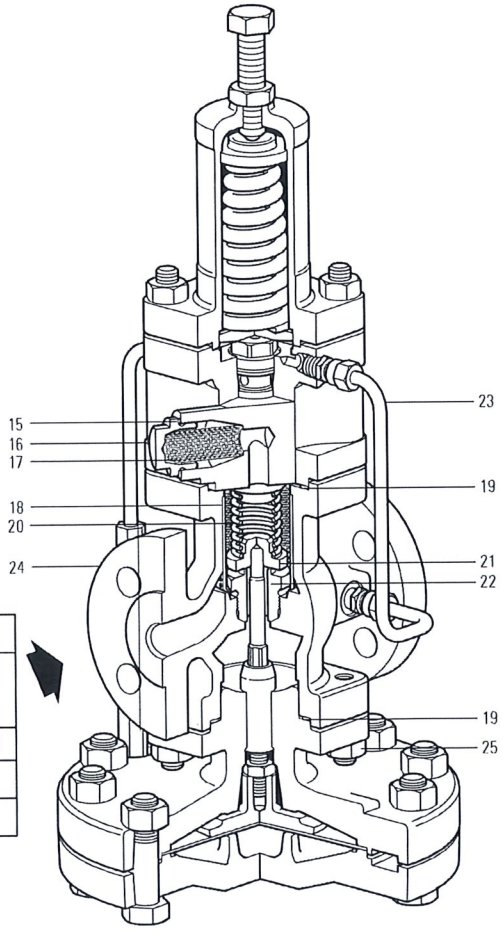
MATERIAL DP 27

NO.	PART NAME	MATERIAL	
15	Pilot filter cap gasket	Stainless steel	BS 1449 316 S 11
16	Pilot filter cap	Stainless steel	BS 970 431 S 29
17	Pilot filter element	Brass	
18	Internal strainer	Stainless steel	ASTM A240 TP 304
19	Body gasket	Stainless steel reinforced exfoliated graphite	
20	Main valve return spring	Stainless steel	BS 2056 302 S 26
21	Main valve	Stainless steel	BS 970 431 S 29
22	Main valve seat	Stainless steel	BS 970 431 S 29
23	Balance pipe assembly	Copper	BS 2871 C 106 ½H
24	Main valve body	~~SG iron~~ CARBON STEEL	~~DIN 1693 GGG 40.3~~ A216-WCB



NO.	PART NAME	MATERIAL		
25	Main body	Securing nuts	Steel	BS 3692 Gr. 8
		Securing studs	Steel	BS 4439 Gr. 8.8
			DN15 to DN32	M10 x 25 mm
			DN40 and DN50	M12 x 30 mm

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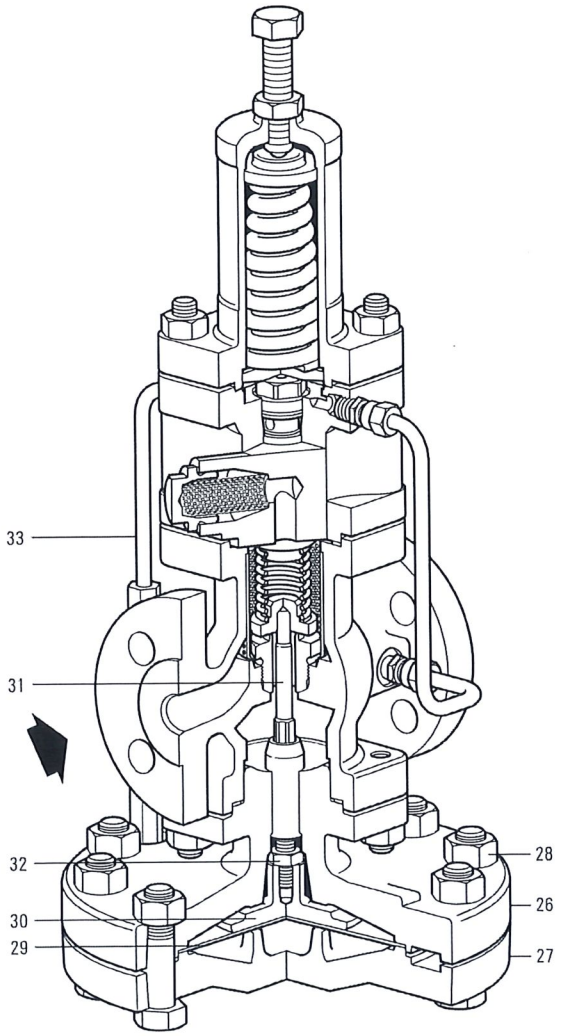
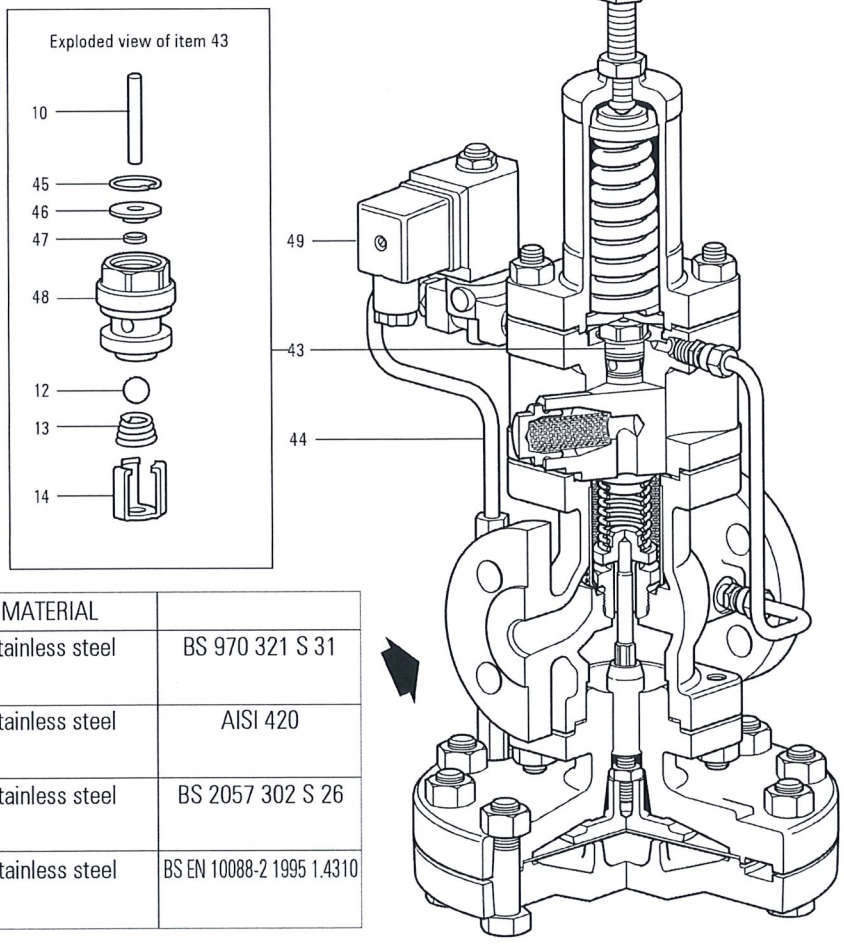
MATERIAL DP 27

NO.	PART NAME	MATERIAL		
26	Main diaphragm chamber - upper	SG iron CARBON STEEL		DIN 1693 GGG 40.3 A216-WCB
27	Main diaphragm chamber - lower	SG iron CARBON STEEL		DIN 1693 GGG 40.3 A216-WCB
28	Main diaphragm	Securing nuts	Steel	BS 3692 Gr. 8
		Securing bolts	Steel	BS 3692 Gr. 8.8
			DN15 to DN32	M12 x 50 mm
			DN40 and DN50	M12 x 55 mm
29	Main diaphragms	Phosphor bronze		BS 2870 PB 102 1980
30	Main diaphragm plate	Hot brass stamping		BS EN 12165 CW617N
31	Pushrod	Stainless steel		BS 970 431 S 29
32	Lock-nut	Steel		BS 3692 Gr. 8
33	Control pipe assembly	Brass and copper		
34	Plug 1/8"	Steel		Note: This item is hidden from view



MATERIAL DP 27E

NO.	PART NAME	MATERIAL	
43	Pilot valve assembly with integral seal		
44	Pipe assembly	Brass and copper	
45	Circlip	Stainless steel	1.4116
46	Retainer	Stainless steel	BS 970 431 S 29
47	Variseal	Composite elastomer/stainless steel	Turcon T40/AQISI 302
48	Pilot seat	Stainless steel + PTFE	BS 970 431 S 29
49	Solenoid assembly		



NO.	PART NAME	MATERIAL	
10 *	Pilot valve plunger	Stainless steel	BS 970 321 S 31
12 *	Pilot valve ball	Stainless steel	AISI 420
13 *	Pilot valve spring	Stainless steel	BS 2057 302 S 26
14 *	Pilot valve clip	Stainless steel	BS EN 10088-2 1995 1.4310

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PILOT OPERATED PRESSURE REDUCING VALVES WITH INTERNAL STRAINER

Model: DP 27
DP 27E

TECHNICAL DATA (Solenoid valve)

Voltages available	220/240 ±10% Vac or 110/220 ±10% Vac (others available on request)
Frequency	50/60 Hz
Power consumption	**Inrush** 45 VA
	Holding 23 VA

K_V VALUES

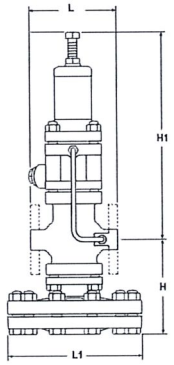
The K_v maximum values shown below are full capacities and should be used for safety valve sizing purposes only.

DN	15	20	25	32	40	50	65	80	100	125	150	200	For conversion: C_v (UK) = K_v x 0.963 C_v (US) = K_v x 1.156
K_v	2.8	5.5	8.10	12.00	17.0	28.0	45.50	60.10	93.30	146.00	186.00	260	

Note: Where the internal balance pipe is used the valve capacity will be reduced.

DIMENSIONS

(approximate) in mm
DP 27, DP 27E



DN	PN16 Main Connection Size									
	L	H1	H	L1	D	D1	D2	b	f	n-Ød
15	147	235	145	185	95	65	45	16	2	4-Ø14
20	154	235	145	185	105	75	58	18	2	4-Ø14
25	160	235	145	207	115	85	68	18	2	4-Ø14
32	180	235	145	207	140	100	78	18	2	4-Ø18
40	200	240	180	255	150	110	88	18	3	4-Ø18
50	230	240	183	255	165	125	102	20	3	4-Ø18
65	250	295	200	320	185	145	122	20	3	4-Ø18
80	310	232	230	350	200	160	138	20	3	8-Ø18
100	350	320	240	380	220	180	158	20	3	8-Ø18
125	400	352	315	430	250	210	188	22	3	8-Ø18
150	450	364	334	455	285	240	212	22	3	8-Ø22
200	500	384	354	510	340	295	268	24	3	12-Ø22

DN	PN25 Main Connection Size									
	L	H1	H	L1	D	D1	D2	b	f	n-Ød
15	147	235	145	185	95	65	45	16	2	4-Ø14
20	154	235	145	185	105	75	58	18	2	4-Ø14
25	160	235	145	207	115	85	68	18	2	4-Ø14
32	180	235	145	207	140	100	78	18	2	4-Ø18
40	200	240	180	255	150	110	88	18	3	4-Ø18
50	230	240	183	255	165	125	102	20	3	4-Ø18
65	250	295	200	320	185	145	122	22	3	8-Ø18
80	310	232	230	350	200	160	138	24	3	8-Ø18
100	350	320	240	380	235	190	162	24	3	8-Ø22
125	400	352	315	430	270	220	188	26	3	8-Ø26
150	450	364	334	455	300	250	218	28	3	8-Ø26
200	500	384	354	510	360	310	278	30	3	12-Ø26

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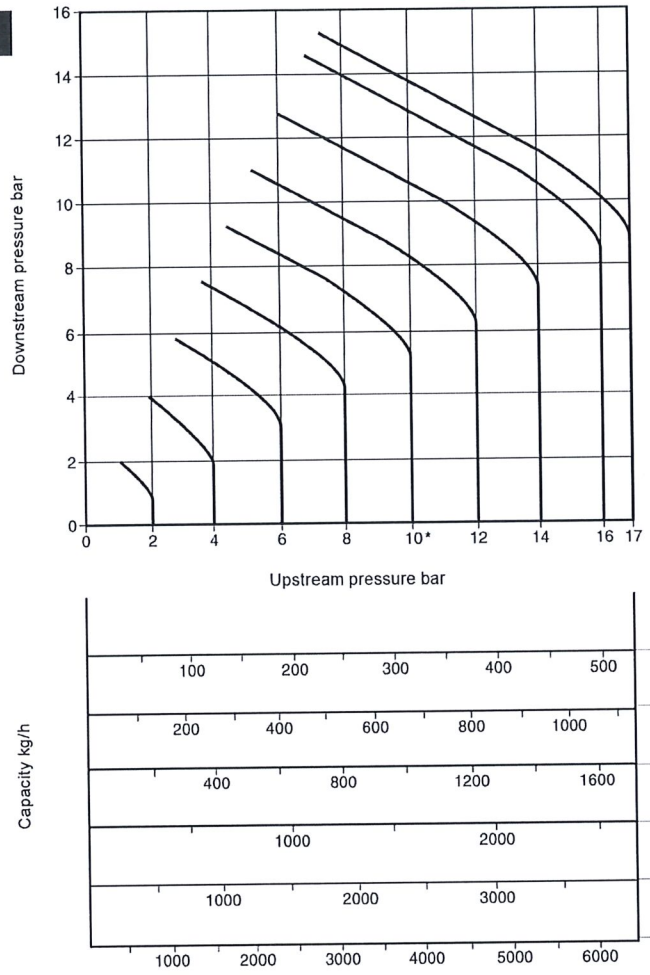
STEAM CAPACITIES CHART



*** Note:** The DP 27E is limited to 10 bar.

NOTE

The capacities quoted above are based on valves fitted with an external pressure sensing pipe. Reliance on the internal pressure sensing pipe will mean that capacities may be reduced. In the case of low downstream pressure this reduction could be up to 30% of the valve capacity.

HOW TO USE THE CHART

Saturated steam

A valve is required to pass 600 kg/h reducing from 6 bar to 4 bar. Find the point at which the curved 6 bar upstream pressure line crosses the horizontal 4 bar downstream pressure line. A perpendicular dropped from this point gives the capacities of all DP sizes under these conditions. A DN32 valve, is the smallest size which will carry the required load.

Superheated steam

Because of the higher specific volume of superheated steam a correction factor must be applied to the figure obtained from the chart above. For 55 °C of superheat the factor is 0.95 and for 100 °C of superheat the factor is 0.9.
Using the example given for saturated steam, the DN32 valve would pass 740 x 0.95 = 703 kg/h if the steam had 55 °C of superheat. It is still big enough to pass the required load of 600 kg/h.

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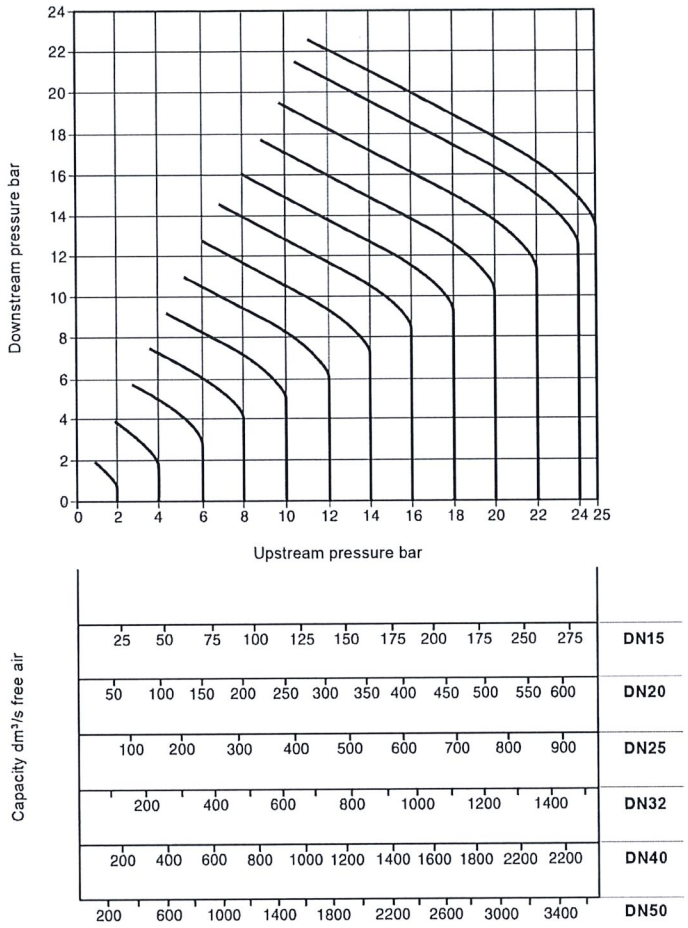
COMPRESSED AIR CAPACITIES CHART



HOW TO USE THE CHART

Capacities are given in cubic decimetres of free air per second (dm^3/s). The use of the capacity chart can be best explained by an example. Required, a valve to pass 100 dm^3/s of free air reducing from 12 bar to 8 bar.
Find the point at which the curved 12 bar upstream pressure line crosses the horizontal 8 bar downstream pressure line. A perpendicular dropped from this point shows that whereas a valve will only pass 57 dm^3/s and is therefore not large enough, a DN15 valve will pass approximately 120 dm^3/s under these conditions and is the correct valve size to choose.

SAFETY INFORMATION, INSTALLATION AND MAINTENANCE

For full details see the Installation and Maintenance Instructions IM-P470-03 for the DP 27E) supplied with the product.

Installation note:

The pilot operated pressure reducing valve should be installed in a horizontal pipeline, protected by a strainer and a separator, with the direction of flow as indicated by the arrow on the valve body.

HOW TO ORDER EXAMPLE

1 off WIKATUREN DN32 DP 27 pilot operated pressure reducing valve having a 0.2 - 17 bar spring and flanged EN 1092 PN25 connections.

SPARE PARTS

Available spares

Maintenance kit			
A stand-by set of spares for general maintenance purposes and covers all spares marked *			
Main diaphragm *	(2 off)		A
Pilot diaphragm *	(2 off)		B
Pilot valve assembly inclusive of filter element *			C
Pilot filter element and cap gasket *	(packet of 3 off each)		E, F
Main valve assembly			K, L
Internal strainer *			M
Main valve return spring			N
Pressure adjustment spring	DP 27, DP 27E	0.2 to 17 bar	O
Control pipe assembly *			P
Balance pipe assembly *			Q
Body gasket (3 off) *			R
Pilot valve block gasket			R1
Set of spring housing/actuating chamber cover securing studs and nuts	(set of 4)		S
Set of main body studs and nuts	(set of 4)		T
Set of diaphragm securing bolts and nuts	Valve sizes	½" - DN32 (set of 10) DN40 and DN50 (set of 12)	V
Pushrod and main diaphragm plate assembly			Y
Type DP 27E only			
Solenoid valve complete			W
Replacement coil			X1
Valve seat and core assembly			X2

HOW TO ORDER SPARES

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of pressure reducing valve.

Example: 1 - Main valve assembly for a 1" WIKATUREN Type DP 27 pressure reducing valve.

How to fit. See Installation and Maintenance Instructions supplied with the pressure reducing valve. Further copies are available on request.

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