

### 1. Description :

DP 23 is a SG Iron pilot operated pressure reducing valve suitable for steam or compressed air.

### 2. Available Sizes & Pipe Connections :

15,20,25,40 & 50 NB

Screwed : BSPT / NPT for 15,20,25NB

Flanged : BS10 table "F/H" for 40& 50NB

### 3. Limiting Conditions :

PMO - Maximum allowable Pressure : 17 bar g

TMO - Maximum allowable Temperature: 232° C.

Cold hydraulic test pressure : 34 bar g

Spring range : 0.3 to 17 bar g

### 4. Pressure Sensing Pipe :

The DP23 controls the pressure by sensing the downstream pressure through a pressure sensing pipe taken to the union (item L) or through the internal sensing pipe (item M). Fitting of the external pressure sensing pipe is described in the User Manual supplied with the valve.

**Note :** Capacity is reduced and there is a possibility of hunting if an external pressure sensing pipe is not fitted.

### 5. Installation :

The valve should be installed in a horizontal pipeline with direction of flow as indicated by the arrow on the valve body. Full instructions are supplied in the User Manual.

### 6. KV values

The Kv values are full capacities and should be used for safety valve sizing purpose only

SIZE	DN15	DN20	DN25	DN40	DN50
KV	2.8	5.5	8.1	17	28

For conversion Cv (UK)=Kv x 0.963

Cv (US)=Kv x 1.156

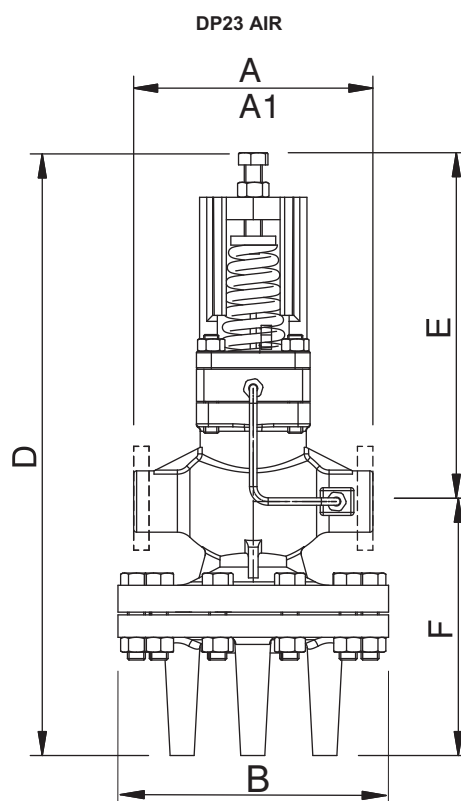
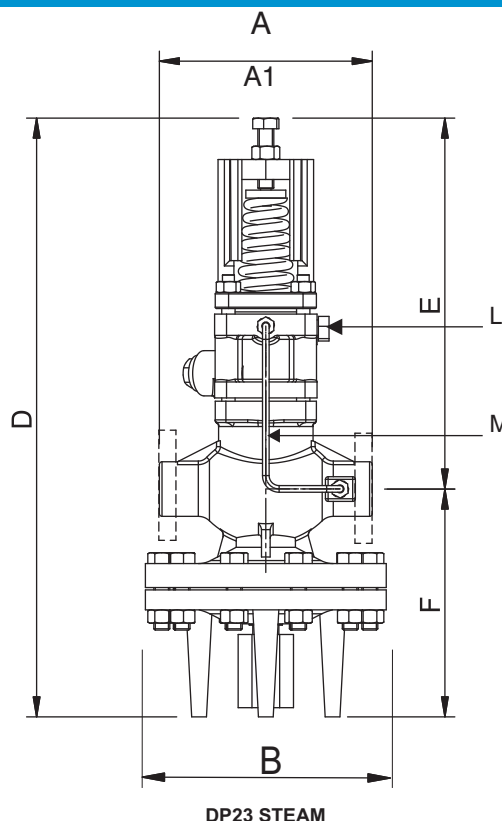
### Approximate dimensions in mm

#### DP23 STEAM

Size	Screwed A	Flanged A1	D	E	F	B
15NB	160	.....	451	277	174	181
20NB	160	.....	451	277	174	181
25NB	180	.....	501	283	218	203
40NB	.....	212	517	297	220	251
50NB	.....	232	517	297	220	251

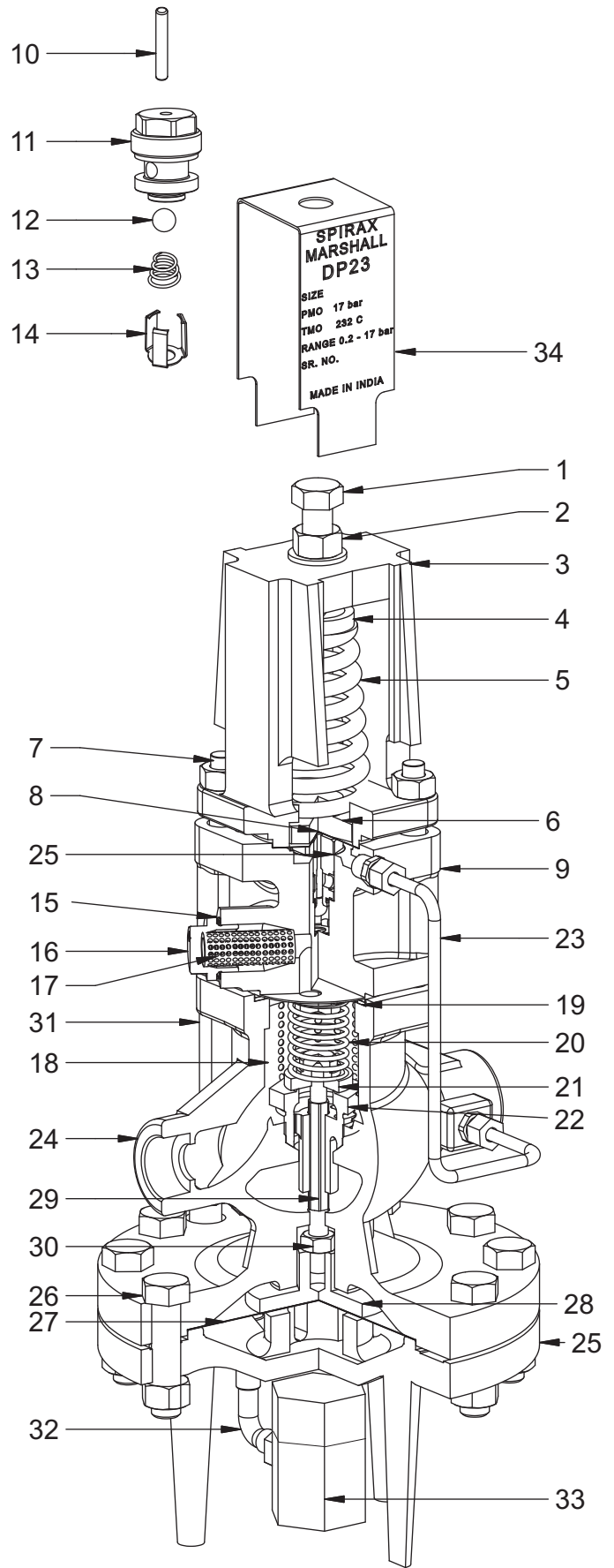
#### DP23 AIR

Size	Screwed A	Flanged A1	D	E	F	B
15NB	160	.....	409	235	174	181
20NB	160	.....	409	235	174	181
25NB	180	.....	460	242	218	203
40NB	.....	212	475	255	220	251
50NB	.....	232	475	255	220	251



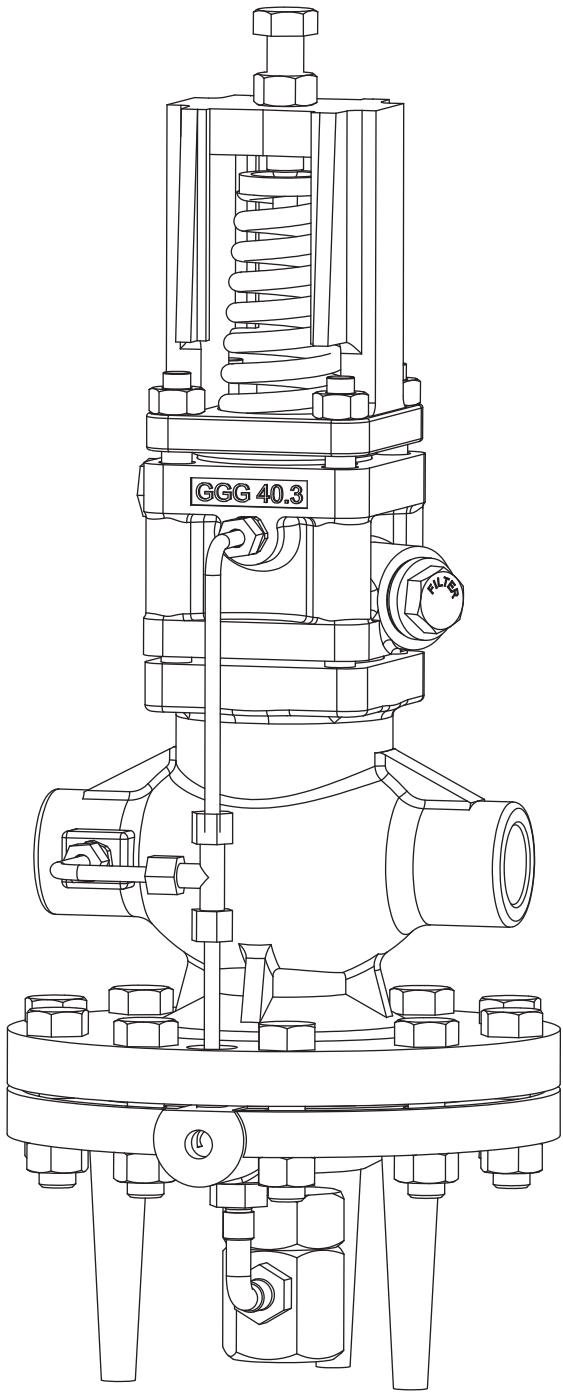
## 7. Materials DP23

No	Part	Material
1	Adjustment screw	Carbon steel IS 1367 Gr 14
2	Adjustment lock-nut	Stainless steel type 304
3	Spring housing	SG iron EN-JS 1025 DIN EN 1563
4	Top spring pad	C-20 IS 2062
5	Pressure adjustment spring	Stainless steel Type 302 IS 4454 Part IV Gr. 1
6	Bottom spring pad	Stainless steel Type 304 ASTM A 276
7	Spring housing	Securing nuts carbon Steel HT IS 1367
		Securing studs Carbon Steel HT IS 1367 DN15 to DN32 M10 x 95 mm DN40 and DN50 M12 x 95 mm
8	Pilot diaphragms	Stainless steel Type 304 ASTM A 240
9	Pilot valve chamber	SG iron EN-JS 1025 DIN EN 1563
10	Pilot valve plunger	Stainless steel Type 304
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 ASTM A 240 type 301
15	Pilot filter cap gasket	Stainless steel BS1449-304-S16
16	Pilot filter cap	Stainless steel ASTM A 743 Gr. CA 40
17	Pilot filter element	Bronze
18	Internal strainer	Stainless steel ASTM A240 type 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 ASTM A 276 type 420
22	Main valve seat	Stainless steel ASTM A 276 type 420
23	Balance pipe assembly	Stainless steel ASTM A 213 type 304
24	Main valve body	SG iron EN-JS 1025 DIN EN 1563
25	Lower diaphragm Chamber	SG iron EN-JS 1025 DIN EN 1563
26	Lower diaphragm Chamber	Securing nuts Carbon steel IS 1367
		Securing Bolts Carbon steel IS 1367 DN15 to DN25 M12 x 50 mm DN40 and DN50 M12 x 50 mm
27	Main diaphragms	Stainless Steel ASTM A 240 type 304
28	Lower diaphragm pad	Stainless Steel ASTM A 276 type 304
29	Push rod	Stainless Steel ASTM A 276 type 304
30	Lock-nut	Stainless Steel type 316
31	Control pipe assembly	Stainless steel ASTM A 213 type 304
32	Trap Pipe	Stainless steel ASTM A 213 type 304
33	Thermodynamic Trap	Stainless steel AISI 420
34	Name plate	Stainless steel

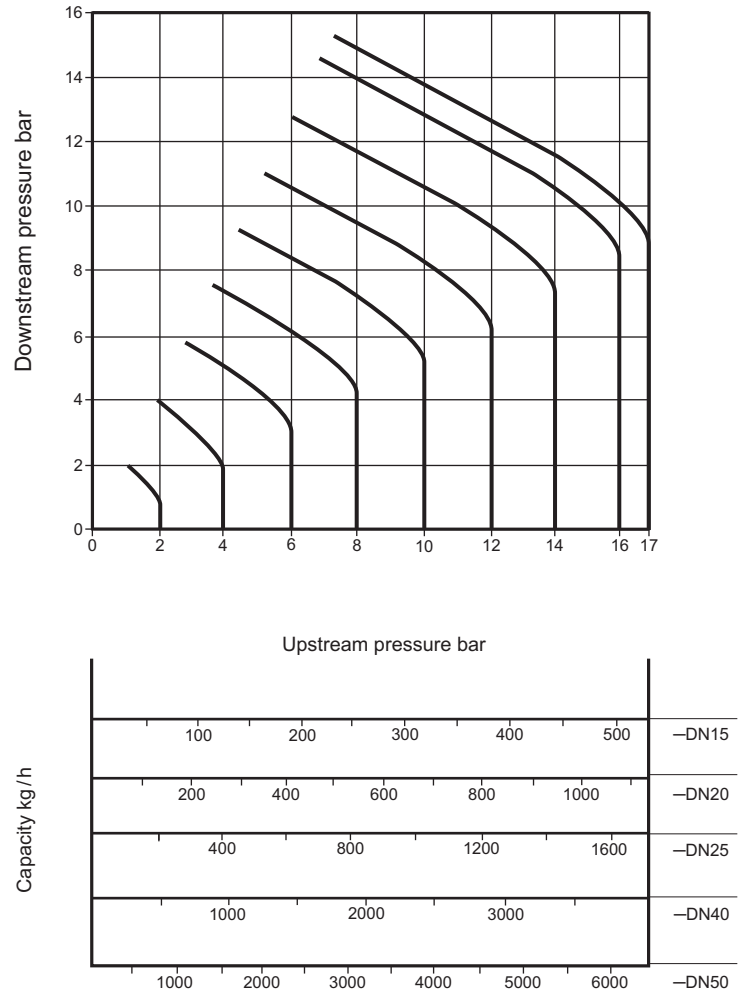


DP23 STEAM

\* Note: Items 10, 11, 12, 13 and 14 are shown on the exploded view, as they are hidden by the pilot filter on the main illustration.



Steam capacities chart



**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.

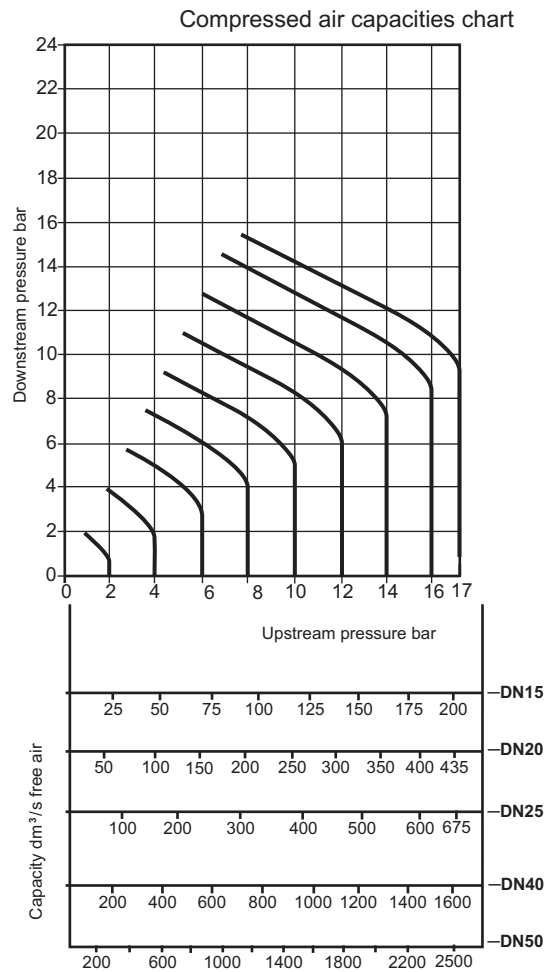
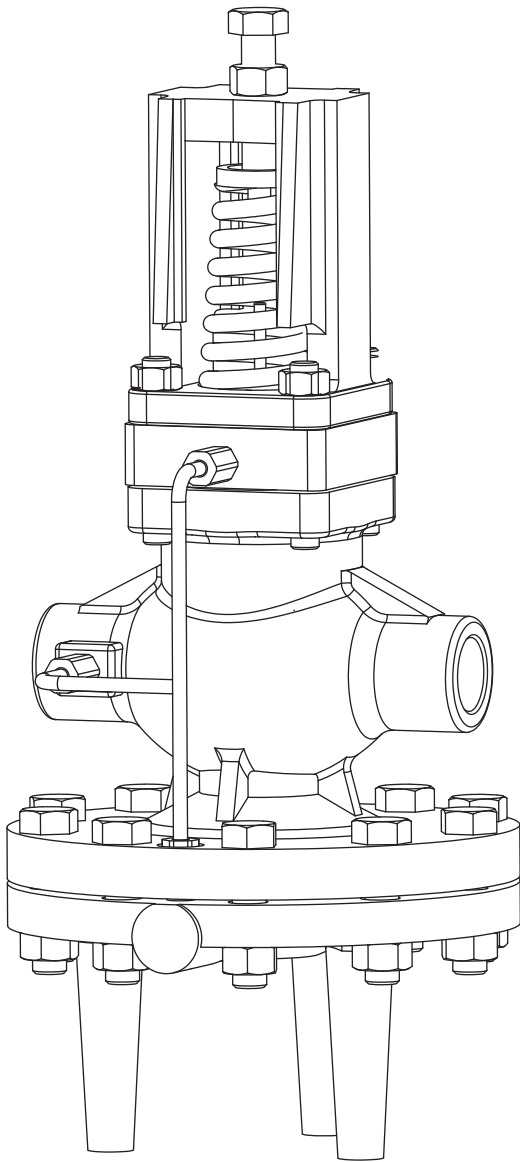
**8. How to use the chart (for steam application)**

**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.

**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 40NB valve would pass 1150 X 0.95 = 1092kg/hr if the steam had 55°C superheat. It is still big enough to pass the required load of 600kg/hr



### 9. How to use the chart(for air application)

Capacities are given in cubic decimetres of free air per second (dm<sup>3</sup>/s). The use of the capacity chart can be best explained by an example. Required, a valve to pass 100 dm<sup>3</sup>/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 a DN15 valve will pass approximately 120 dm<sup>3</sup>/s under these conditions and is the correct valve size to choose.

### 10. Safety information, installation and maintenance

For full details see the user manual 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 Spares

For spares refer user manual.

#### How to order example:

Spirax Marshall DN40 DP23 pilot operated pressure reducing valve having a 0.2 - 17 bar spring and flanged BS10 table "F/H" connections.

Manufactured and Marketed by :

## Spirax Marshall Limited

A Forbes Marshall Company

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