

# Pressure Reducing Valve

DP 143

### Limiting Conditions

Maximum Working Condition  $26 \text{ kg / cm}^2$  at  $300^\circ \text{ C}$ .  
 Body design Conditions  $42 \text{ kg / cm}^2$  at  $427^\circ \text{ C}$ .  
 Cold Hydraulic test pressure without internals  $52 \text{ kg/cm}^2$

Three colour coded pressure adjustment springs are available for the following downstream pressure ranges:

Yellow :02 to 3 bar  
 Blue :2.5 to 7 bar  
 Red :6.0 to 17.3 bar  
 Grey :16.0 to 24.4 bar

### Sizes:

NB 15,20, 25,40, 50 and 80.  
 Std. Accessories: Pr. Gauge, syphon & Gauge cock

### Pipe Connections:

Flanged to -  
 BS10 table - 'J' \* & 'K' ANSI - 300' \* & '600' DIN -  
 ND - '25' & \* '40'

\*Note - 80 NB has these flanges only.  
 Available with IBR certificate  
 Also available for air applications.

### Pressure Sensing Pipe:

The DP 143 valve controls the downstream pressure by sensing the down stream pressure through an external sensing pipe taken from down stream to the pilot valve chamber (10) Fitting of this external pressure sensing pipe is described in the User manual

If the external sensing pipe is not provided then the valve controls by internal pressure sensing pipe (19). However the capacity in this case will be reduced.

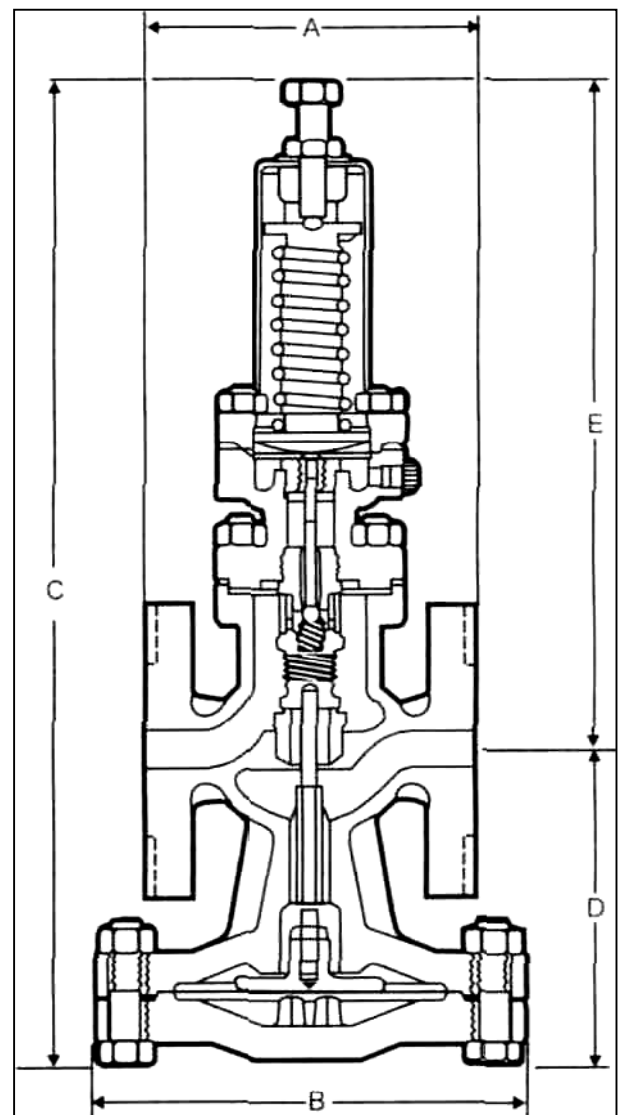
### Installation:

See User manual supplied with the valve.

### How to specify:

Example 1) 20 NB SPIRAX MARSHALL DP -143 FOR STEAM FLANGED TO BS 10 TABLE 'K' IBR (OR NIBR).

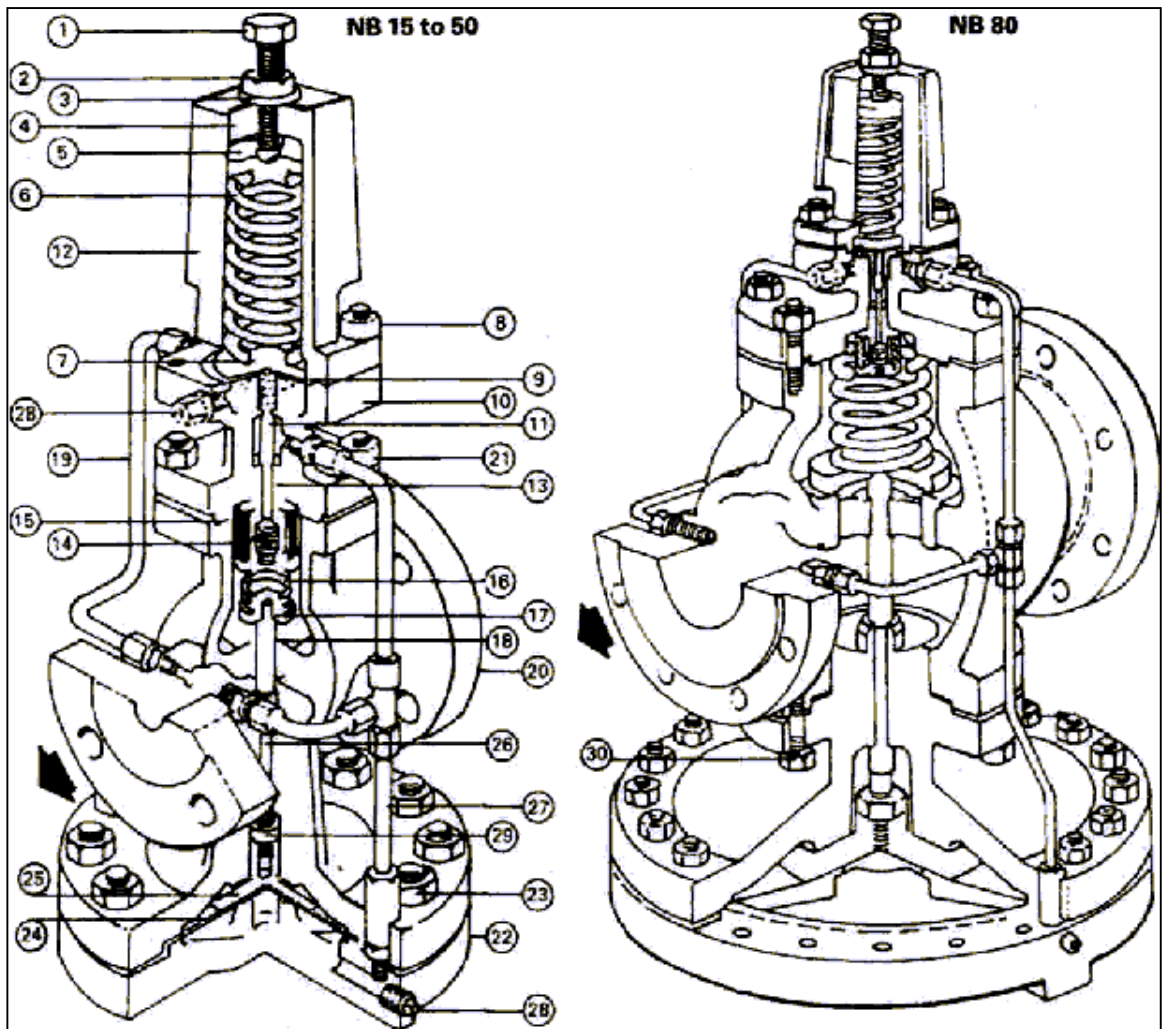
2) 40 NB SPIRAX MARSHALL DP 143 FOR AIR FLANGED TO ANSI 300 NIBR.



Dimensions :(approx.) mm.

SIZE NB	A	B	C	D	E
15	147	175	400	130	270
20	167	175	410	130	280
25	184	216	425	154	271
40	255	280	490	185	305
50	253	280	490	185	305
80	330	350	580	258	322

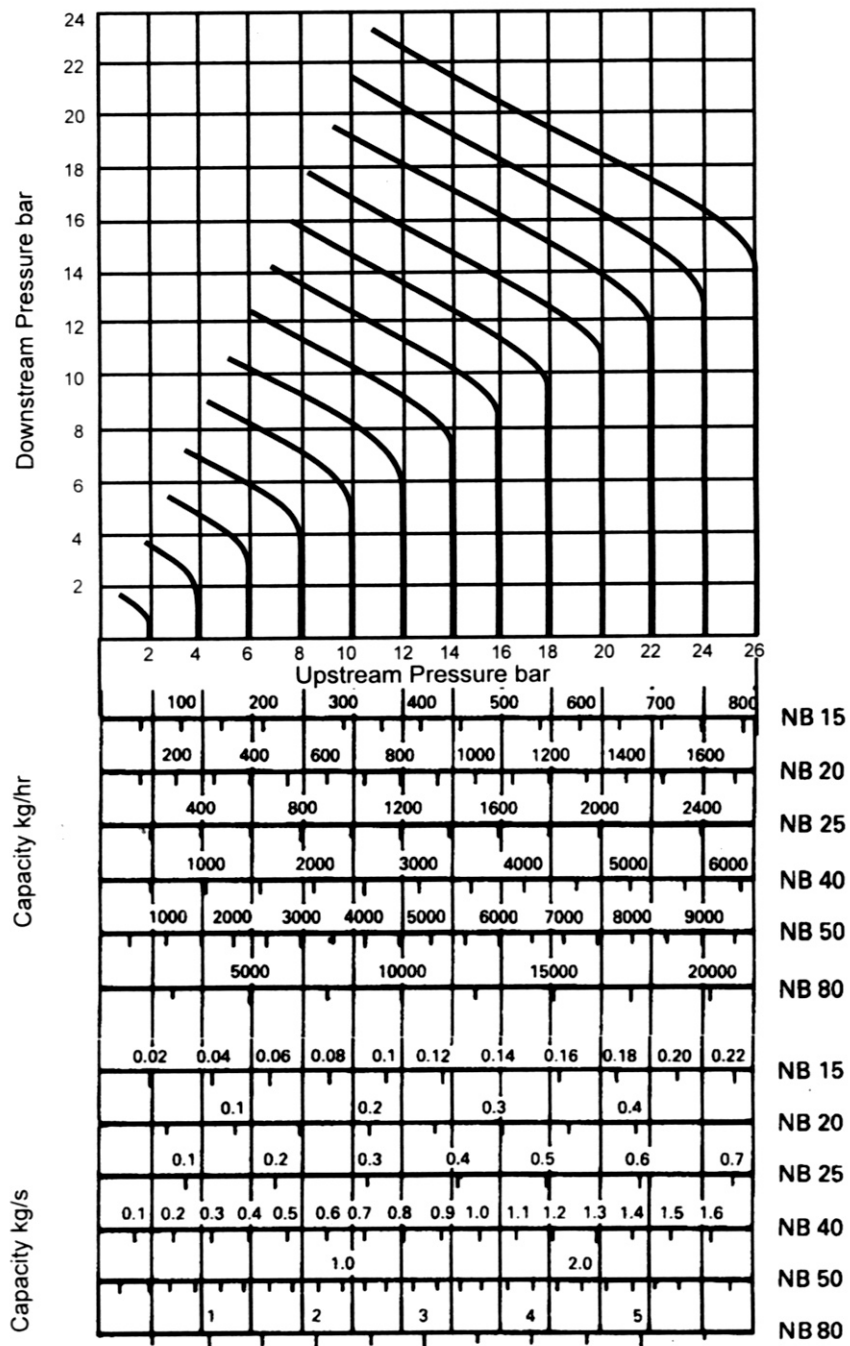
General tolerance up to 25 NB  $\pm 4$   
 Above 25 NB  $\pm 7$



NO.	DESCRIPTION	MATERIAL	STANDARD
1	Adjustment Screw	C Steel	HT IS 1367Gr 8.8
2	Adjustment Lock nut	C Steel	HT IS 1367 Gr 80
3	Washer	S S Type 304	ASTM A-240
4	Spring Housing	C I	IS 210 FG 260
5	Top Spring Plate	C-20	IS 2062
6	Pressure Adjustment Spring	Spring Steel	IS 4454 Part IV Gr 1
7	Bottom Spring Plate	S S Type 304	ASTM A 276
8	Spring Housing Securing Studs Nuts	Cast steel Cast steel	H T IS 1367 Gr88 H T IS 1367Gr 8
9	Pilot Diaphragm	S S Type 304	ASTM A -240
10	Pilot Valve Chamber	Cast Steel	ASTMA-216Gr WCB
11	Pilot Valve Plunger	S S Type 304	ASTM A -276
12	Spring Housing Cover	S S Type 304	ASTM A -240
13	Pilot Valve & Seat Unit	S S Type 304	ASTM A -276
14	Internal Strainer	S S Type 304	ASTM A -240
15	Body Gasket	Reinforced exfoliated graphite	
16	Main Valve Return Spring	Spring Steel	IS 4454 Part IV Gr 1

NO	DESCRIPTION	MATERIAL	STANDARD
17	Main Valve	S Steel Type 304	ASTM A 276
18	Main Valve Seat	S Steel Type 420	ASTM A -276
19	Pressure Sensing Pipe	S Steel Type 304	ASTM A-213
20	Main Valve Body	Cast Steel	ASTMA-216Gr WCB
21	Pilot Valve Securing studs Nuts	C Steel C. Steel	H T IS 1367Gr 88 H T IS 1367Gr 8
22	Main Diaphragm Chamber	Cast Steel	ASTM A-216 Gr WCB
23	Main Diaphragm Securing Studs Nuts	C Steel C Steel	HT. IS 1367Gr 88 HT IS 1367Gr 8
24	Main Diaphragms	S S Type 304	ASTM A - 240
25	Main Diaphragm Plate	S S Type 304	ASTM A . 276
26	Push Road	S S Type 304	ASTM A - 276
27	Pipe Assembly	S S Type 304	ASTM A-213
28	Plug 1/8 BSP	C Steel	ASTM A - 105
29	Lock Nut	S S Type 304	HT IS 1367Gr 8
30	Body Stud Nut	C Steel C Steel	H T IS 1367Gr 88 HT IS 1367 Gr 8

## Steam Capacities in Metric Units



**Note:**

The capacities quoted on the above charts are based on valves fitted with external pressure sensing pipes. 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**

Required a valve to pass 400 kg/h reducing from 6 bar to 4 bar Find point at which curved 6 bar upstream pressure line crosses horizontal 4 bar downstream pressure line. A perpendicular dropped from this point gives the capacities of all

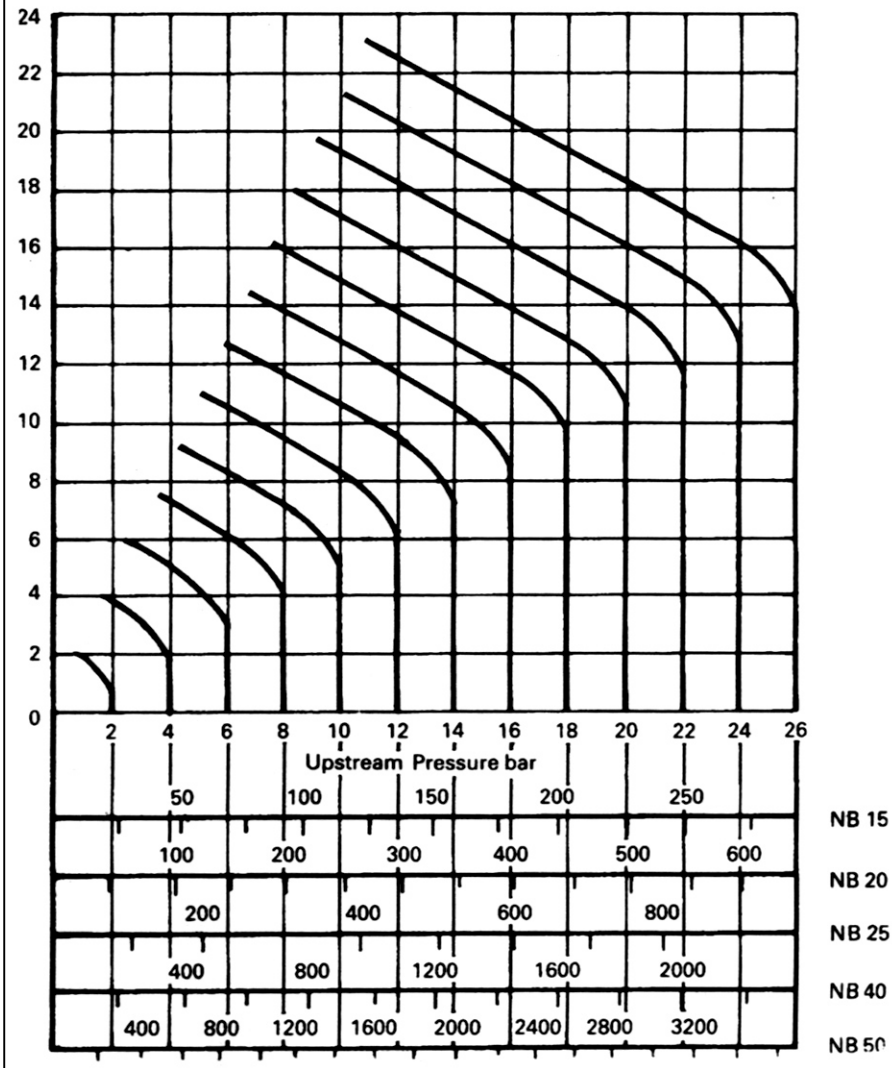
DP sizes under these conditions. A 25 NB valve is the smallest size, which will carry the required load.

**Superheated Steam**

Because of the higher specific volume of superheated steam a correction factor must be applied to the figure obtained from this chart. For 55° C of superheat the factor is 0.95 and for 100° C of superheat is 0.9

Using the example given for saturated steam, the 25 NB valve would pass 516 x 0.95 = 491 kg/hr if the steam had 55° C of superheat It is still big enough to pass the required load of 400kg/hr.

### Compressed Air Capacities in Metric Units



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 200 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 whereas a NB 15 valve will only pass 110 dm<sup>3</sup>/s and is therefore not large enough, a NB 20 valve will pass about 260 dm<sup>3</sup>/s under these conditions and is the correct valve.

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