FMPRV53

Forbes Marshall Pilot Operated Pressure Reducing Valve

Description

The Forbes Marshall Pilot Operated Pressure Reducing Valve, FMPRV53, is a pilot operated cast steel pressure reducing valve suitable for steam or compressed air.

Sizes and Pipe Connections

DN 15, 20, 40, 50 and 80

Flanged to BS table – J and K*

ANSI 300 and 600

DIN - PN 25* and 40

Note : *DN 80 has these flanges only.

Available with IBR certificate.

Flange thickness as per Dimension Table.

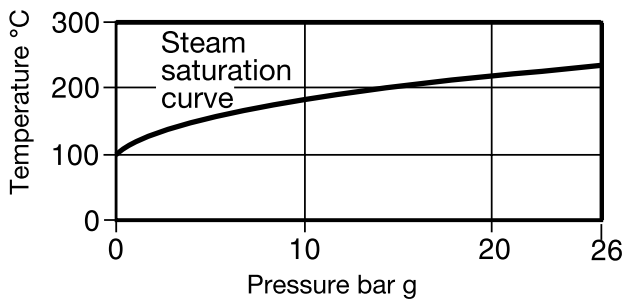
Limiting Conditions

Maximum working conditions	26 bar g at 300°C
Body design conditions	42 bar g at 425 °C
Cold hydraulic test pressure without internals	52 bar g

Two colour coded pressure adjustment springs are available for the following down stream pressure ranges

Natural	0.2 to 17.0 bar g (conical spring)
Grey	16.0 to 24.0 bar g

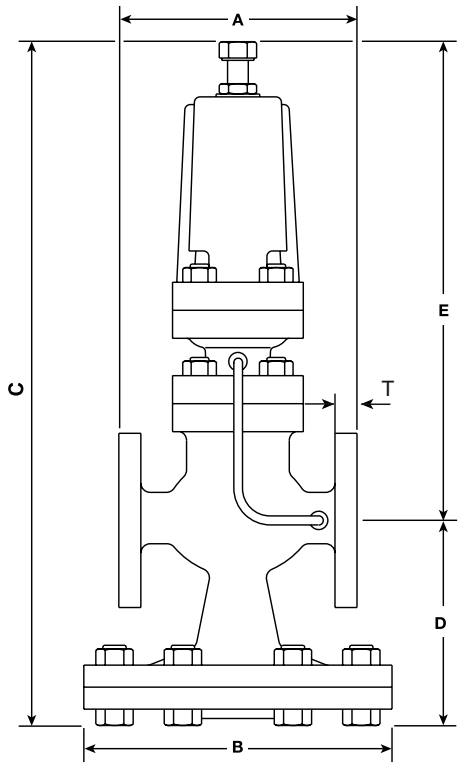
Operating Range



Pressure Sensing Pipe

The FMPRV53 valve controls the downstream pressure by sensing the downstream pressure through an external sensing pipe taken from downstream to the pilot valve chamber (10). Fitting of this external pressure sensing pipe is described in the user manual.

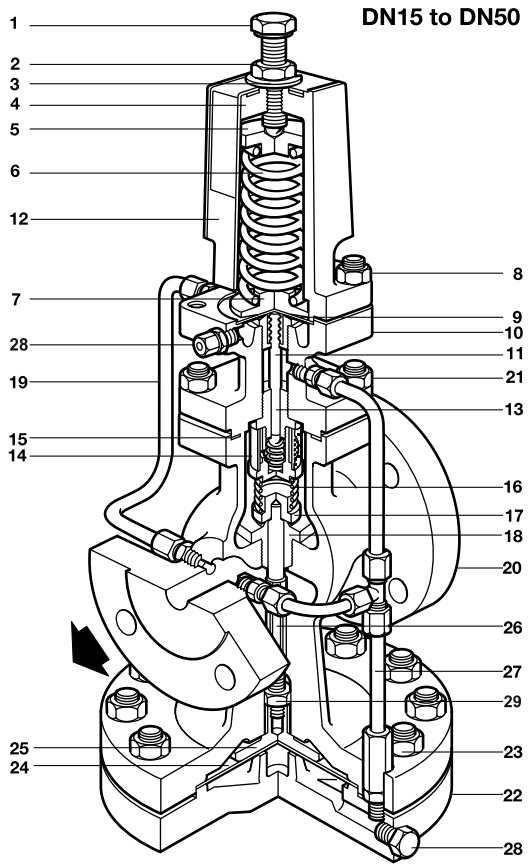
If the external sensing pipe is not provided then the valve controls by internal pressure sensing pipe (19). However the capacity in this case will be reduced.

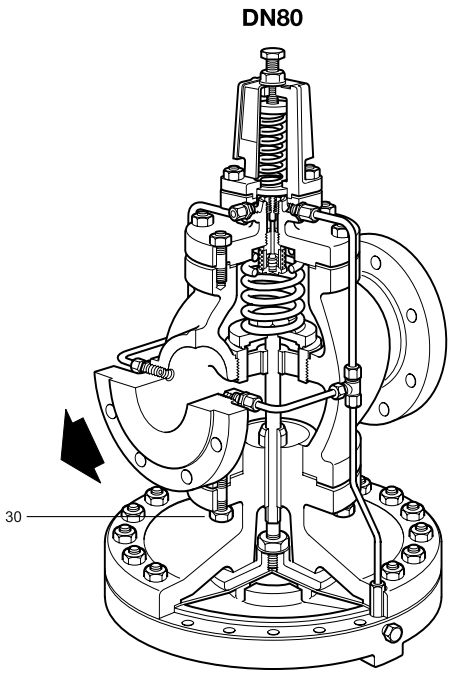


Dimensions (approx.) mm and kg

Size (DN)	A	B	C	D	E	T	Wt
15	147	175	400	130	270	20	15
20	167	175	410	130	280	23	15
25	184	216	425	154	271	24	23
40	225	280	490	185	305	29	40
50	253	280	490	185	305	32	42
80	330	350	580	258	322	35	103

General tolerance: up to ±4mm



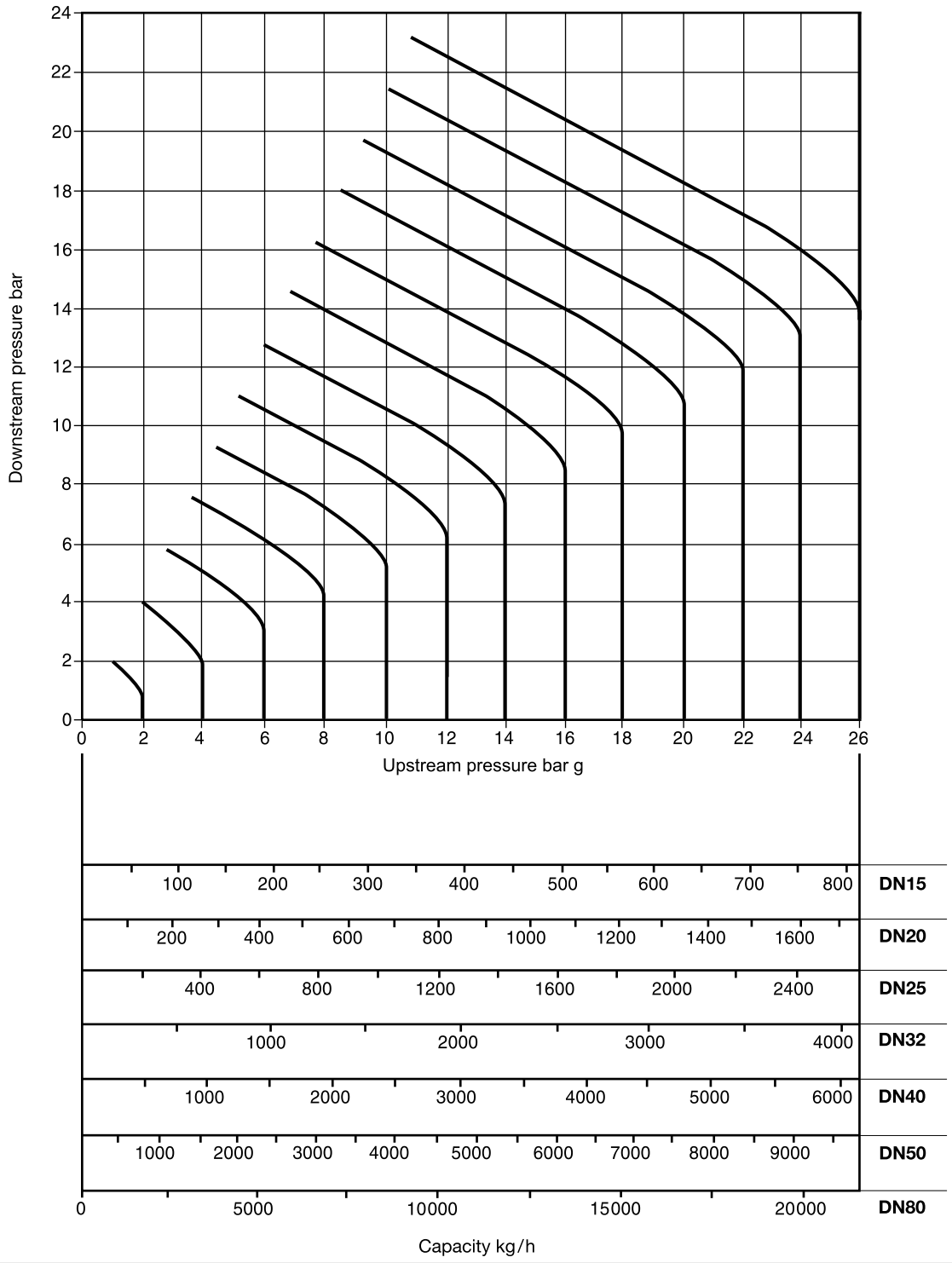


Material

Sr. No.	Description	Material	Standard
1	Adjustment screw	Carbon Steel	ASTM A 193,B7
2	Adjustment lock nut	Carbon Steel	ASTM A 194,2H
3	Washer	SS type 304	ASTM A 240
4	Spring housing	SG iron	EN-JS1025
5	Top spring plate	C-20	IS 2062
6	Pressure adjustment spring	Spring steel	IS 4454 Part IV Gr. 1
7	Bottom spring plate	SS type 304	ASTM A276
8	Spring housing securing studs nuts	Carbon Steel Carbon Steel	ASTM A 193,B7 ASTM A 194,2H
9	Pilot diaphragm	SS type 304	ASTM A240
10	Pilot valve chamber	Cast Steel	ASTM A216 Gr. WCB
11	Pilot valve plunger	SS type 304	ASTM A276
12	Spring housing cover	SS type 304	ASTM A240
13	Pilot valve and seat unit	SS type 304	ASTM A276
14	Internal strainer	SS type 304	ASTM A240
15	Body gasket	Reinforced exfoliated graphite	

Sr. No.	Description	Material	Standard
16	Main valve Return spring	Spring Steel	IS 4454 part IV Gr. 1
17	Main valve	SS type 304	ASTM A276
18	Main valve seat	SS type 420	ASTM A276
19	Pressure sensing pipe	SS type 304	ASTM A213
20	Main valve body	Cast Steel	ASTM A216 Gr. WCB
21	Pilot valve securing studs nuts	Carbon Steel Carbon Steel	ASTM A 193,B7 ASTM A 194,2H
22	Main diaphragm chamber	Cast Steel	ASTM A216 Gr. WCB
23	Main diaphragm securing studs nuts	Carbon Steel Carbon Steel Carbon Steel	
24	Main diaphragms	SS type 304	ASTM A240
25	Main diaphragm plate	SS type 304	ASTM A276
26	Push rod	SS type 431	ASTM A276
27	Pipe assembly	SS type 304	ASTM A213
28	Plug 1/8" BSP	Carbon Steel	ASTM A105
29	Lock nut	SS type 304	ASTM A 193,B7
30	Body stud nut	Carbon Steel Carbon Steel	ASTM A 193,B7 ASTM A 194,2H

Steam Capacity Chart



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

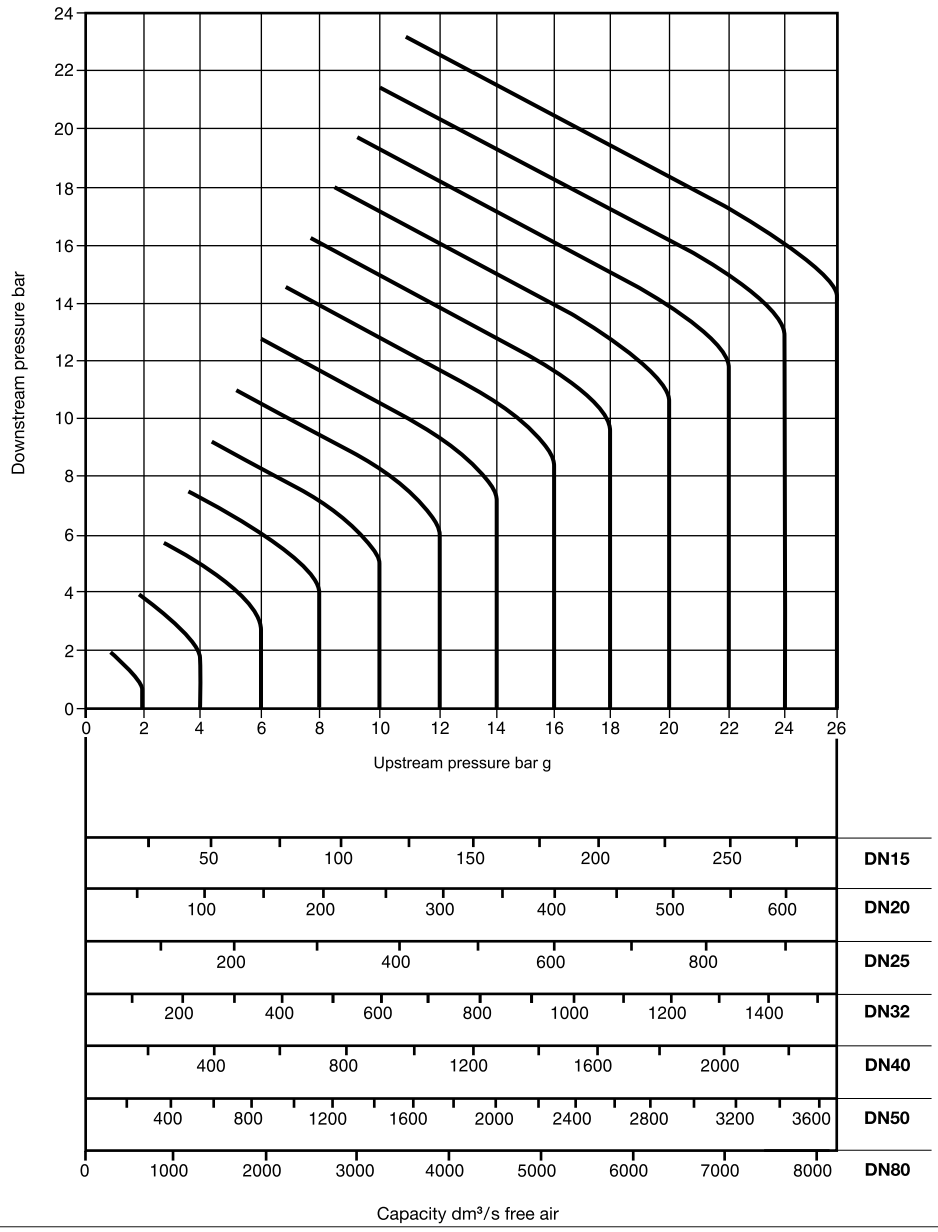
Required a valve to pass 400 kg/ h reducing from 6 bar g to 4 bar g. Find point at which curved 6 bar g upstream pressure line. A perpendicular dropped from this point gives the capacities of all FMPRV53 sizes under these conditions. A DN 25 valve is the smallest size which will carry the required load.

Superheated Steam

Because of the higher specific volume of superheated steam 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 DN 25 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 400 kg/ hr.

Compressed Air Capacity Chart



Compressed Air

Capacities are given in cubic decimeters 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 curve 12 bar upstream line crosses the horizontal 8 bar downstream pressure line. A perpendicular dropped from this point shows that DN 15 line will pass about 120 dm^3/s under these conditions and is the correct valve size.

How to Order

Example

1 No. DN 20 Forbes Marshall Pilot Operated Pressure Reducing Valve, FMPRV53, for steam, flanged to BS 10 table 'K' IBR (or NIBR)
With 17 bar spring **Or**

1 No. DN 40 Forbes Marshall Pilot Operated Pressure Reducing Valve, FMPRV53, for air, flanged to ANSI 300 NIBR
With 17 bar spring

Installation

See user manual supplied with the valve.

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