

DSPRV41 (Patent Pending)

Double Seated Pressure Reducing Valve

Description

The Forbes Marshall Double Seated Pressure Reducing Valve, DSPRV41 (Patent Pending) is a SG iron pilot operated pressure reducing valve designed for steam applications with improved turndown

Available Sizes and Pipe Connections

DN 40 and DN 50 Flanged : BS10 table "F/H", PN 10, PN 16, Class 150 & Class 125

Limiting Conditions

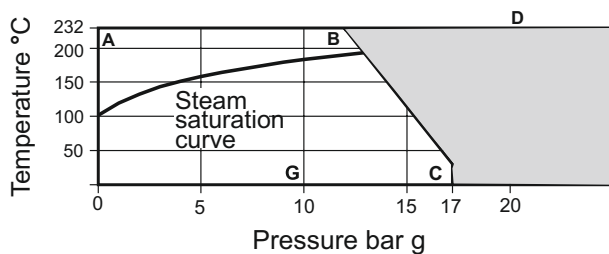
PMO - Maximum operating pressure	17 barg
TMO - Maximum operating temperature	232°C
Cold hydraulic test pressure	25.5 barg
Spring range	0.2 to 17 barg

Pressure Sensing Pipe

The DSPRV41 controls the pressure by sensing the downstream pressure through a pressure sensing pipe taken to the union (item L in Fig.1) or through the internal sensing pipe (item M in Fig.1). 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.

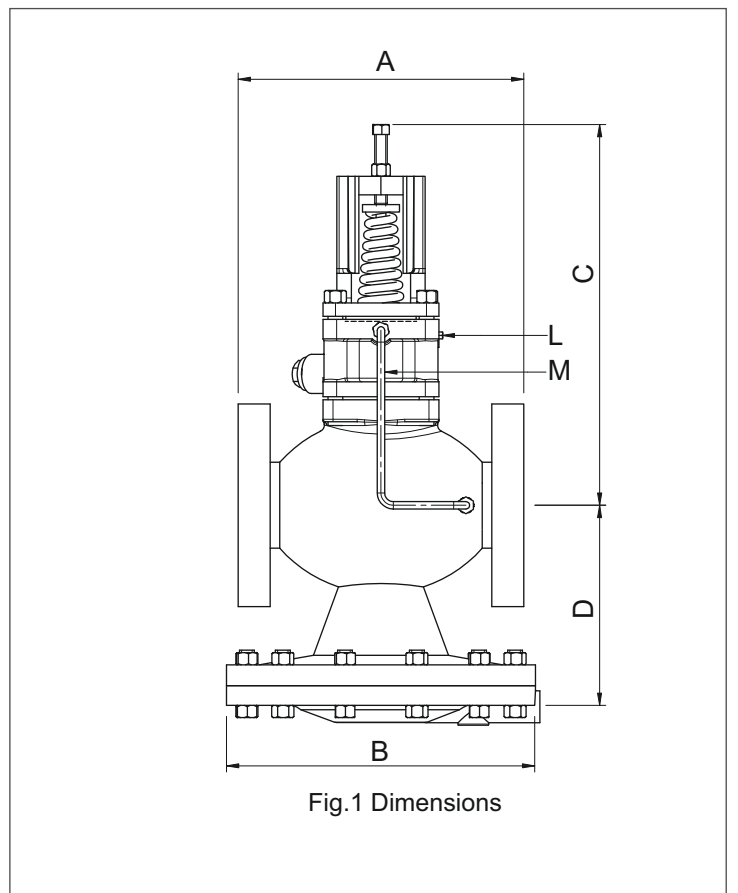
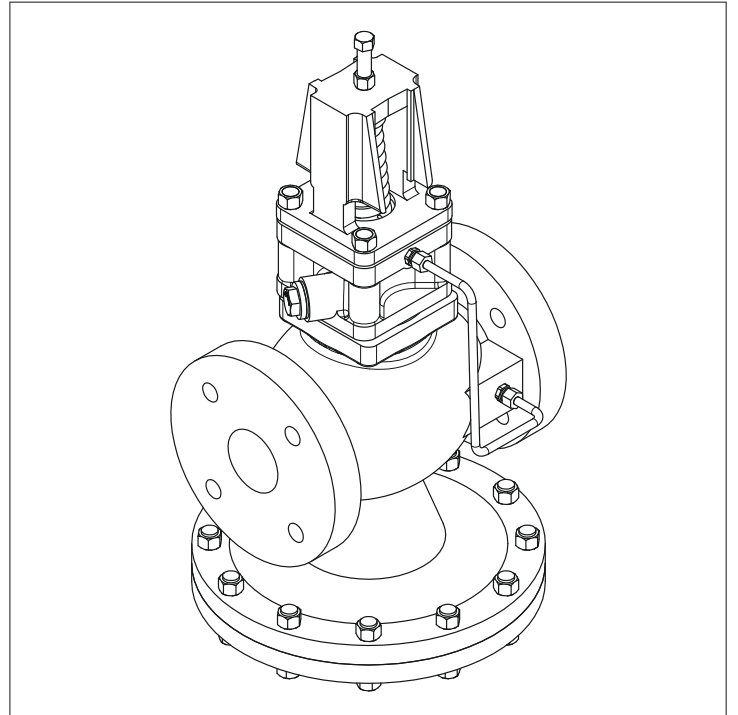
Operating Range

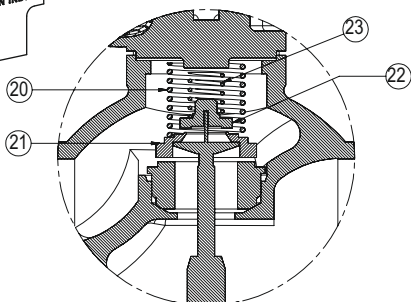
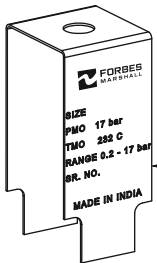
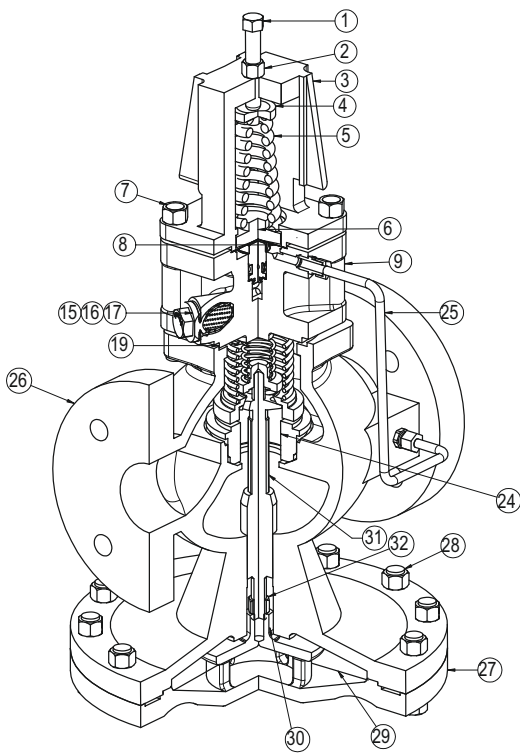
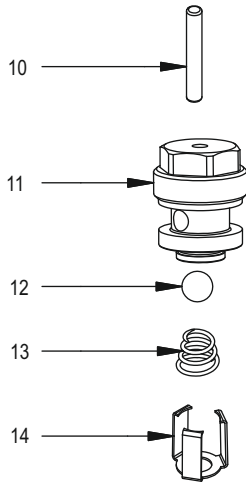


The product must not be used in this region.

Dimensions (approx.) in mm and kg

Size	Flange A	B	C	D	T	Weight(kg)
DN 40	212	251	310	173	22	40
DN 50	232	251	310	173	25	42





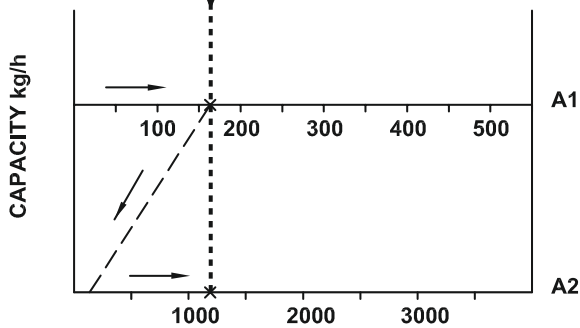
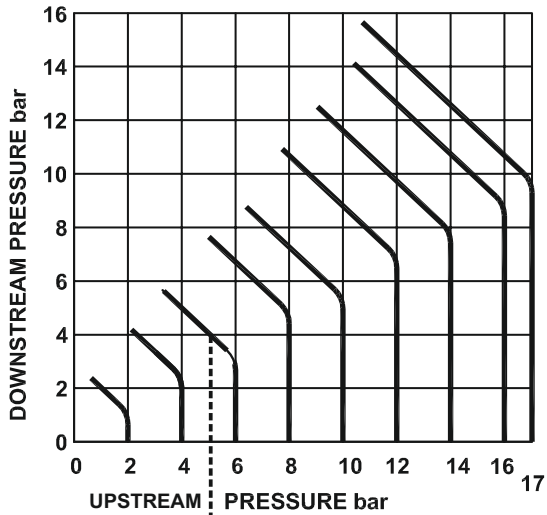
Materials

No.	Part	Material	Standard
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	IS 4454 Part IV Gr.1
6	Bottom spring pad	SS Type 304	ASTM A 276
7	Spring housing securing nuts	Carbon steel	ASTM A194 Gr. 2H
	Spring housing securing bolts	Carbon steel	BS 970 EN9
8	Pilot diaphragm	SS Type 304	ASTM A 240
9	Pilot valve chamber	SG iron	EN-JS 1025 DIN EN 1563
10	Pilot valve plunger	SS Type 304	ASTM A 276
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	SS Type 301	ASTM A 240
15	Pilot filter cap gasket	Stainless steel	BS 1449-304-S16
16	Pilot filter cap	Stainless steel	ASTM A 743 Gr.CA 40
17	Pilot filter element	Bronze	
18*	Internal strainer screen	SS Type 304	ASTM A 240
19	Body gasket	Stainless steel Reinforced graphite	
20	Main valve head return spring	Stainless steel	BS 2056 302 S 26
21	Main valve head	SS Type 420	ASTM A 276
22	Auxiliary valve head	SS Type 420	ASTM A 276
23	Auxiliary valve head return spring	Stainless steel	BS 2056 302 S 26
24	Main valve seat	SS Type 420	ASTM A 276
25	Balance pipe assembly	SS Type 304	ASTM A 213
26	Main valve body	SG iron	EN-JS 1025 DIN EN 1563
27	Lower diaphragm chamber	SG iron	EN-JS 1025 DIN EN 1563
28	Lower diaphragm chamber Securing nuts	Carbon steel	ASTM A194 Gr 2H
	Lower diaphragm chamber Securing bolts	Carbon steel	ASTM A193 Gr B7
29	Main diaphragms	SS Type 304	ASTM A 240
30	Lower diaphragm pad	SS Type 304	ASTM A 276
31	Push rod	SS Type 431	ASTM A 276
32	Lock nut	SS Type 316	
33*	Control pipe assembly	SS Type 304	ASTM A 213
34	Name Plate	Stainless steel	

* Not shown in figure

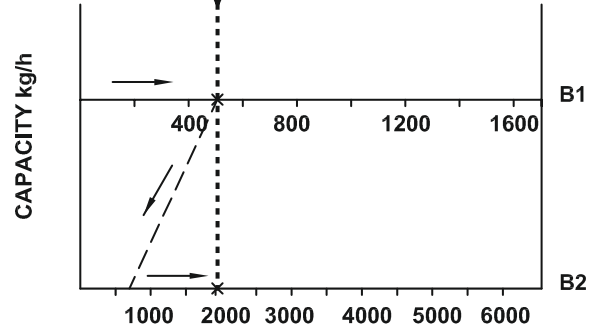
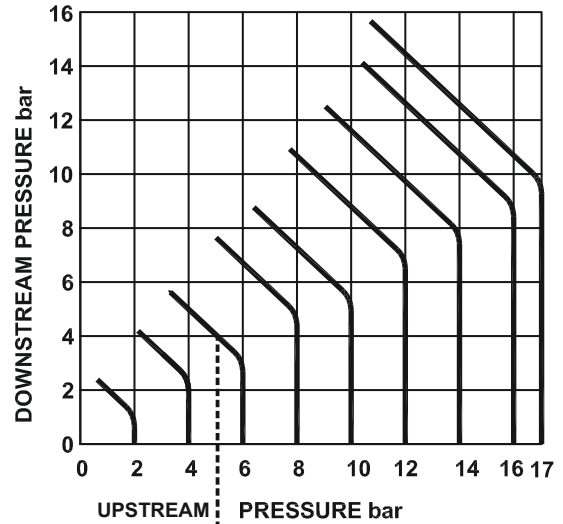
+ Note : Items 10, 11, 12, 13 and 14 are shown in the exploded view as they are hidden by the pilot filter on the main illustration.

Capacity Chart for DN 40 DSPRV41



A1-AUXILIARY VALVE HEAD DN40
A2-MAIN VALVE HEAD DN40

Capacity Chart for DN 50 DSPRV41



B1-AUXILIARY VALVE HEAD DN50
B2-MAIN VALVE HEAD DN50

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 (DN40)

Saturated steam

From the intersection point of required upstream and downstream pressures draw a perpendicular till it cuts horizontal line A2. This will give maximum capacity of the valve (approx 1200kg/hr), when both main and auxiliary valve head will be open.

In the said example to cater flow below 150kg/h (cutting the vertical with the horizontal line A1) auxiliary valve head will remain open and main valve head will be closed. Thus flow turndown improves.

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 DN 40 valve would pass $1200 \times 0.95 = 1140\text{kg/hr}$ if the steam had 55°C superheat.

Kv Values

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

Size	DN 40	DN 50
Kv	17	28

For conversion $C_v(\text{UK}) = K_v \times 0.963$

$C_v(\text{US}) = K_v \times 1.156$

How to Order

Example: 1 No. Forbes Marshall DN40 DSPRV41 double seated pressure reducing valve having a 0.2 - 17 bar spring and flanged BS10 table "F/H" connections.

Safety Information, Installation and Maintenance

For full details see the user manual supplied with the product.

Installation

The double seated 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 the user manual supplied with this product.

Recommended Tightening Torques

Size	Component	Torque
DN40 / DN50	M12 Nut	45-55 Nm
DN40	Main valve seat 30mmA/F	450-490 Nm
DN50	Main valve seat 41mm A/F	620-680 Nm



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