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Temperature Regulator TR 121-N

Description :

The self acting temperature controller TR-121N offers cost effective temperature control for steam & water.

Available Sizes and pipe connections :

TR-121N with 15, 20 & 25 NB 'SB' valve
 40 & 50 NB 'NS' valve
 Screwed : BSPT & NPT
 Note : Also available with ASA-150 & Table 'H' Screwed on nipples & flanges on request.

Available Types :

TR-121N is available with direct or reverse acting 'SB' or 'NS' valve.
 SB (all sizes) & NS valve (40 NB only) available with IBR certificate on request.

Limiting Conditions : (for 'SB' / 'NS' valve)

Body design condition
 Max. allowable pressure 17.5 kg/cm²
 Max. allowable temperature 220°C.

Size NB	Max. Differential Pressure kg/cm ²
15	17.5
20	10.5
25	7.0
40	10.0
50	10.0

Material :

No.	Part	Material	Standard
1	SB Valve	G.M.	BS 1400 LG 2
1	NS VALVE	G.M.	BS 1400 LG 2
2	THERMOSTAT	BRASS	-
3	CAPILLARY TUBE	COPPER WITH PVC OUTER COVER	-

How to Order :

Example : SPIRAX MARSHALL TR-121N with 15 NB SB Valve direct acting along with capillary tube length 2 m.

Installation :

THERMOSTAT :

The type TR - 121N Thermostat is supplied with an union adapter screwed 1" B.S.P. The union adapter consists of an union nipple, compression ring and glandnut. When supplied with pocket the top of the pocket forms the nipple.

POCKET :

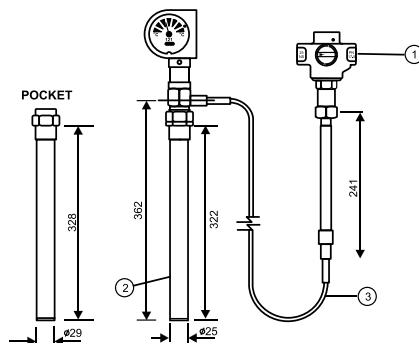
Stainless steel pocket with union nipple screwed 1" B.S.P. available.

CAPILLARY TUBE :

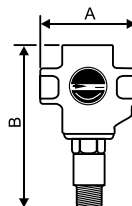
Standard length 2 mtr.
 3,4,6 and 8 mtr lengths can be supplied on request.

TEMPERATURE RANGE (for TR - 121N) :

Range	°C.
1	-15 To 50
2	40 To 105
3	95 To 160



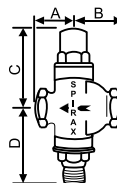
S. B. VALVE



Dimensions :

SIZE	A	B	Weight
15 NB	80	134	1 Kg
20 NB	95	134	1.3 Kg
25 NB	108	134	1.5 Kg

N. S. VALVE

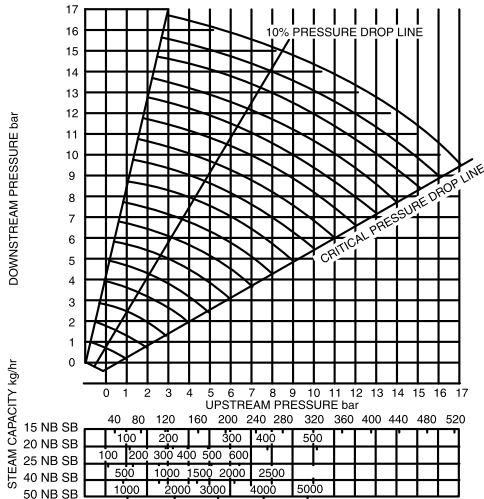


Dimensions :

SIZE	A	B	C	D	Weight
40 NB	55	65	105	105	3.1 Kg
50 NB	68	87	145	142	6.3 Kg

General tolerance ± 4

Sizing Spirax Marshall Valves For Steam



How to Use the Chart :

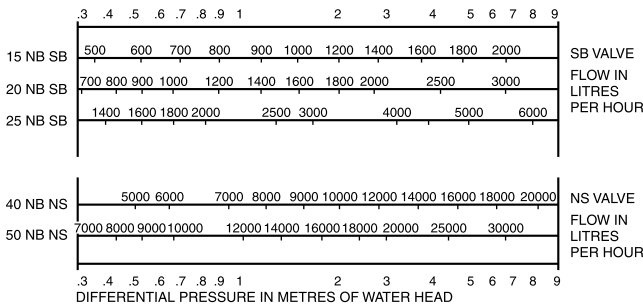
The capacity of a control valve varies according to the pressure drop across the valve. This chart enables the capacity of valves to be read for different pressure drops - maximum capacity occurs when the downstream pressure is at or below 58% of the absolute upstream pressure (critical pressure drop), but unless it is known that a high pressure drop will give acceptable conditions in the plant it is safer to size the valve nearer to the 10% pressure drop line.

The limiting pressures which apply to the Spirax 'SB' and 'NS' valves are shown overleaf. This chart can be used in different ways as shown in the following examples.

- 1) To find the size of a control valve required to pass 91 kg/hr with an operating pressure of 1 bar, and a permissible pressure drop of 0.3 bar (Down-stream pressure 0.7 bar)

Find the point at which the curved 1.0 bar Upstream pressure line, intersects the horizontal 0.7 bar downstream pressure line and read vertically downwards it will be seen that 20 NB 'SB' valve is too small where as 25 NB 'SB' valve will easily pass the flow conditions.

Sizing Spirax Marshall Valves For Water :



Cv values

$$\text{Steam Metric } C_v = 2.31 Q_{SM} \sqrt{\frac{V_M}{dp_M}}$$

Q_{SM} = Flow in kg/min

V_M = Specific Volume in m^3/kg at upstream pressure

dp_M = Pressure drop through valve in bar (g)

Note : If steam pressure drop across valve exceeds 42 percent of absolute pressure take dp_M as 42 percent of upstream pressure.

e.g. upstream pressure 7 bar

downstream pressure 2.5 bar

$dp_M = 0.42 (7+1.013) = \text{say, } 3.4 \text{ bar}$

Spirax Marshall Valve Cv Values :

SB	15 NB	2.5
	20 NB	3.75
	25 NB	6.6
NS	40 NB	23
	50 NB	38

- 2) Alternatively the chart can be used to find the pressure drop under any given set of conditions. For example, a 25 NB 'SB' valve is operating on an upstream pressure of 7 bar and is required to deliver a steam flow rate of 410 kg/hr. It is required to know the downstream pressure and hence the pressure drop across the valve, when fully open.

The flow rate of 410 kg/hr is read off on the horizontal line labelled 25 NB 'SB' towards the bottom of the chart. Using the vertical guide lines read upwards from the 410 kg/hr figure until you strike the curved 7 bar. Upstream pressure line and at this point read horizontally to the left to meet downstream pressure scale.

This is at 5.8 bar. Therefore the pressure drop across a 25 NB 'SB' valve in passing 410 kg/hr is 1.2 bar giving a downstream pressure of 5.8 bar.

Cv values

$$\text{Liquid Metric } C_v = 0.185 Q_{LM} \sqrt{\frac{G}{dp_M}}$$

Q_{LM} = Flow in litres/min

G = Specific Gravity

dp_M = Pressure drop through valve in m.

Spirax Marshall Valve Cv Values :

SB	15 NB	2.5
	20 NB	3.75
	25 NB	6.6
NS	40 NB	23
	50 NB	38