

TR - 121

Description :

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

Available Sizes and pipe connections :

TR-121 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 :

Direct and reverse acting 'SB' & 'NS'

Limiting Conditions :

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 :

Sr. No.	Part	Material	Standard
1	S B Valve Body	GM	BS 1400 LG 2
1 A	S. B. Valve Trim	S. S.	ASTM-A-276
	N. S. Valve Body	G. M.	BS 1400 LG 2
	N. S. Valve Trim	G. M.	BS 1400 LG 2

How to Order :

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

Installation :

THERMOSTAT :

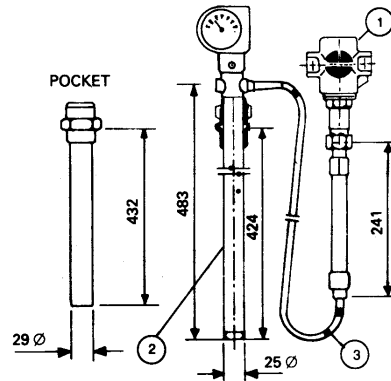
The type 121 Thermostat is supplied with an union adapter screwed 1" B.S.P. The union adapter consists of an union nipple, compression ring and glandnut. When supplied with pocket the top of the pocket forms the union nipple.

POCKET :

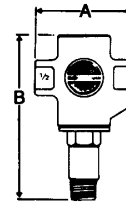
Stainless steel pocket with union nipple screwed 1" B.S.P. available.

CAPILLARY TUBE :

Standard Length 2 M.
 3, 4, 6 & 8 M. lengths are supplied on request.



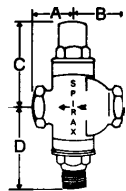
S.B. VALVE



Dimensions :

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

N.S. VALVE



Dimensions :

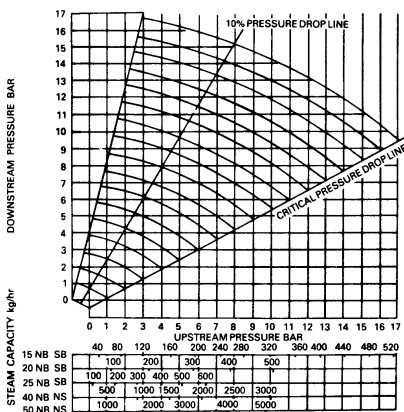
SIZE	A	B	C	D	Weight scr
40 NB	55	65	105	105	3.1 kg
50NB	68	87	145	142	6.3 kg

General tolerance ± 4

TEMPERATURE RANGE :

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

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.

- 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

Sizing Spirax Marshall Valves For Water :

CV values :

Liquid Metric CV = $0.185 \text{ QLM} \sqrt{\frac{G}{Mdp}}$

QLM = Flow in litres min.
G = Specific Gravity
dpM = Pressure drop through valve in m.

CV values

Steam Metric CV = $2.31 \text{ QSM} \sqrt{\frac{VM}{dpM}}$

QSM = Flow in kg/min
VM = Specific Volume in m³/kg at upstream pressure
dpM = Pressure drop through valve in bars
Note : If steam pressure drop across valve exceeds 42 per cent of absolute pressure take dpM as 42 per cent of upstream pressure.
e.g. upstream pressure 7 bar
downstream pressure 2.5 bar
dpM = $0.42(7+1.013)$ = say, 3.4 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

downwards it will be seen that 20 NB 'SB' valve is too small where as 25 NB 'SB valve will easily pass the flow co nditions.

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 labeled 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.

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