

## ► Pressure Drop Charts for Brunata Thermostatic Radiator Valves

### Flow rate and pressure drop charts

The charts show the flow rate and pressure drop characteristics for a thermostat valve. For this function the characteristic is seen as the straight lines –1K and –2K

The normal flow rate qmN equals –2K without using the presetting device.

The straight line (marked MAX) shows the flow rate through a fully open valve.

The charts are only valid when no presetting of the valves has been made.

### Calculation of pressure drop:

If calculations are preferred in order to know the pressure drop  $\Delta p$  (kPa), given the flow rate (l/h) and the Kv value of the valve, the following formula may be used:

$$\Delta p = \left( \frac{0,01 * q}{Kvn} \right)^2$$

The pressure drop of a thermostat valve using the combination 131U 3/8" + 148 at a flow rate of 80 l/h equals:

$$\Delta p = \left( \frac{0,01 * 80}{0,68} \right)^2 = 1,38 \text{ kPa}$$



**Kv value for angular valve type 130 and thermostat type 148**

Part	Diameter	Kvn	qmN (l/h)
130U + 148	3/8"	0,73	233
130U + 148	1/2"	0,74	236
130U + 148	3/4"	0,79	251

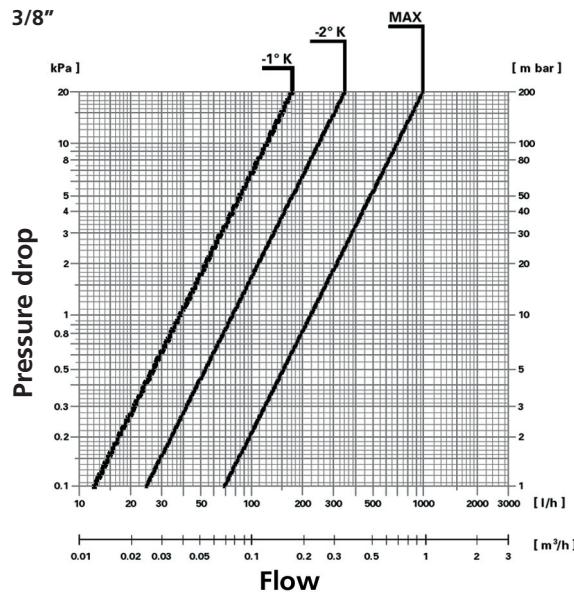


**Kv value for straight valve type 131 and thermostat type 148**

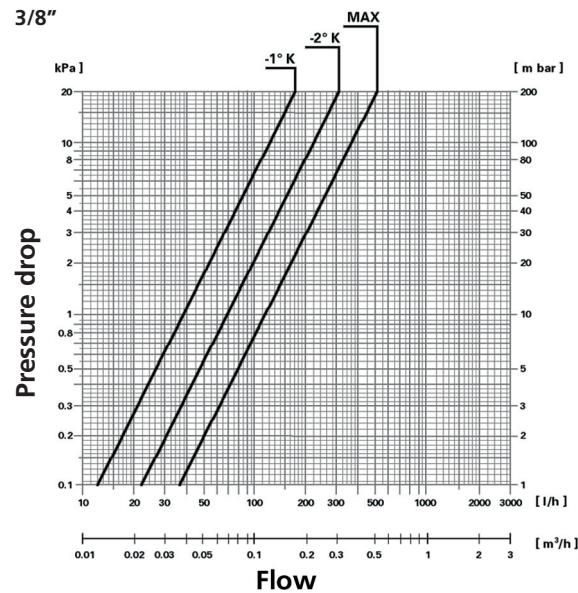
Part	Diameter	Kvn	qmN (l/h)
131U + 148	3/8"	0,68	215
131U + 148	1/2"	0,74	235
131U + 148	3/4"	0,78	246

Brunata is a 100 % Danish owned company. We have more than 85 years experience within developing and producing heat cost allocators and heating accounts. Brunata has implemented a quality system in accordance with EN ISO 9001. Please contact us for further information on our products!

## Angular valves



## Straight valves



The graph illustrates the relationship between pressure drop and flow for a 1/2" pipe. The vertical axis represents the pressure drop in kPa, ranging from 0.1 to 20. The horizontal axis represents the flow rate in liters per hour (l/h), ranging from 0.01 to 3000. Three distinct curves are plotted, corresponding to different temperatures:  $-1^{\circ}\text{K}$ ,  $-2^{\circ}\text{K}$ , and  $\text{MAX}$ . The  $-1^{\circ}\text{K}$  curve shows the highest pressure drop for a given flow rate, while the  $\text{MAX}$  curve shows the lowest.

The graph plots Pressure drop [kPa] (y-axis, 0.1 to 20) against Flow [l/h] (x-axis, 0.01 to 3000). Seven curves represent different valve positions: pos 1 Kv 0.25, pos 2 Kv 0.65, pos 3 Kv 0.88, pos 4 Kv 1.12, pos 5 Kv 1.30, pos 6 Kv 1.46, pos 7 Kv 1.57, and A Kv 1.90. The curves show that pressure drop increases with flow rate and decreases as the valve position Kv value increases.

The graph plots Pressure drop (kPa) on the left y-axis (0.1 to 20) and [m bar] on the right y-axis (1 to 200) against Flow ([m³/h]) on the bottom x-axis (0.01 to 3). Eight curves are shown, each labeled with its KV setting and corresponding pressure drop values:

KV Setting	Flow ([m³/h])	Pressure drop (kPa)	[m bar]
pos 1 Kv 0.25	~0.015	~0.15	~1.5
pos 2 Kv 0.64	~0.02	~0.2	~2
pos 3 Kv 0.92	~0.03	~0.3	~3
pos 4 Kv 1.23	~0.05	~0.5	~5
pos 5 Kv 1.50	~0.08	~0.8	~8
pos 6 Kv 1.72	~0.1	~1	~10
pos 7 Kv 1.93	~0.15	~1.5	~15
A Kv 3.4	~0.3	~3	~30