



Cert. No. LRQ 0963008

ISO 9001

Superheated Steam Sizing Chart

Introduction

TI-GCH-03 covers the sizing of steam control valve K_V values for use with saturated steam. However, should the steam supply have a degree of superheat, allowance must be made for the associated increase in specific volume that occurs. The effect of an increasing degree of superheat increases the desired K_V value. The chart shown overleaf applies a superheat correction factor when determining the required K_V of steam control valves.

How to use the chart

Example 1

How to find the K_V value for a critical flow application:-

Steam demand	700 kg/h
Steam supply pressure upstream of the valve	2 bar gauge 3 bar absolute
Steam condition	50°C superheat
Pressure drop across valve	Critical pressure drop

Refer to the selection chart opposite

1. Follow the 700 kg/h steam flow line until it intersects with the vertical 50°C superheat line. At this intersection draw a horizontal line.
2. Draw a horizontal line from 3 bar absolute to the critical pressure drop line. At this point of intersection drop a vertical line.
3. At the crossing point of these 2 lines read off the K_V value required, i.e. K_V is between 16 and 25.
4. Select the valve size required from the appropriate valve type Technical Information Sheet.

Example 2

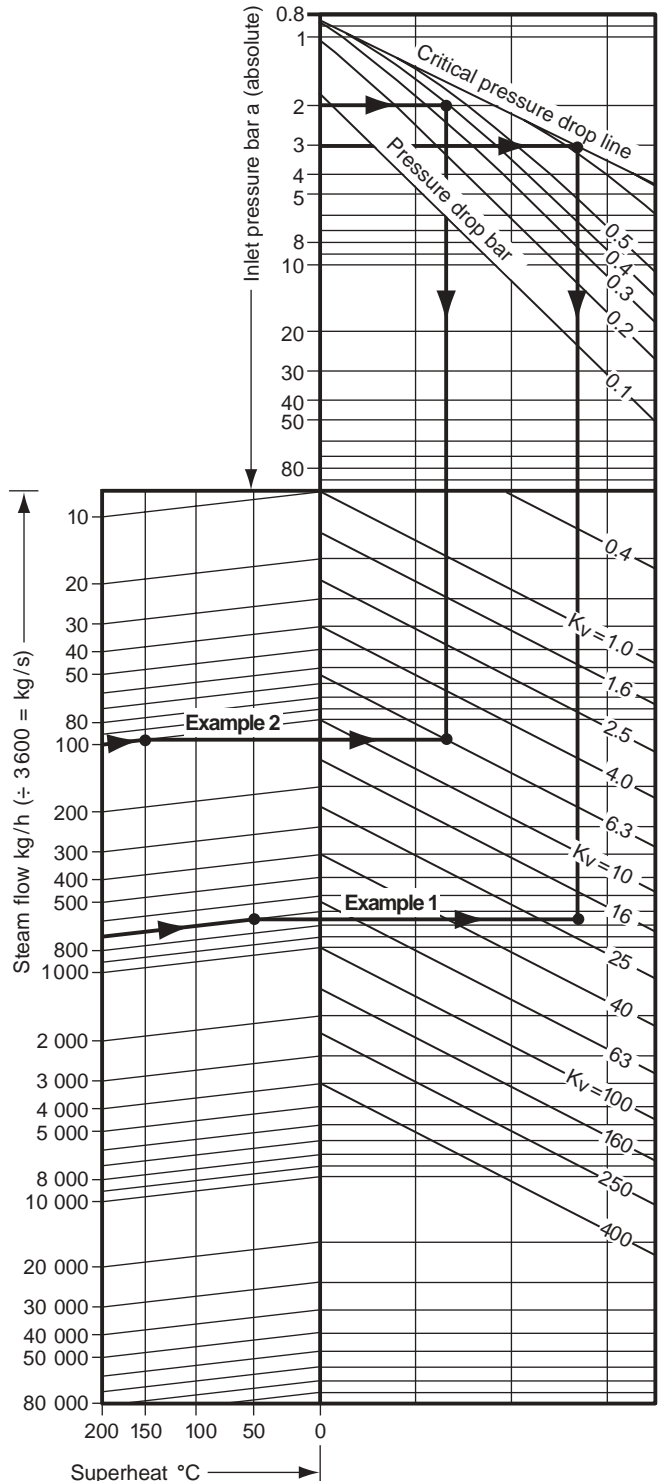
How to find the K_V value required for a non-critical flow application:-

Steam demand	100 kg/h
Steam supply pressure upstream of the valve	1 bar gauge 2 bar absolute
Steam condition	150°C superheat
Downstream steam supply pressure required	0.6 bar gauge 1.6 bar absolute
Pressure drop across valve	2 bar a - 1.6 bar a 0.4 bar

Refer to the selection chart opposite

1. Follow the 100 kg/h steam flow line until it intersects with the vertical 150°C superheat line. At this intersection draw a horizontal line.
2. Draw a horizontal line from 2 bar absolute inlet pressure. At the point of intersection with 0.4 bar pressure drop, draw a vertical line downwards.
3. At the crossing point with the 100 kg/h horizontal line read off the K_V value required, i.e. $K_V = 6.3$
4. Select the valve size required from the appropriate valve type Technical Information Sheet.

Note: This chart is for Examples 1 and 2 only. A complete chart for sizing is shown overleaf.



Superheated steam sizing chart

The sizing chart is empirical and should not be used for critical applications

