Stainless Steel Metering Stations

Flow Data

and

Installation Instructions

HosesDirect
www.hoses.co.uk

Technical Data

The Albion ART 270 is a fixed orifice metering station used to measure the flow passing through it, which can be used close coupled to a double regulating valve to form a commissioning set.
This flow data can also be used for the Albion ART 280 metering station manufactured from 316 stainless steel.

Flow Coefficient

The flow rate can be calculated using the K_v value and a measured signal.

$$K_v = \frac{Q*36}{\sqrt{\Delta P}} \qquad K_{vs} = \frac{Q*36}{\sqrt{\Delta Ps}}$$

where K_v & K_{vs} = flow coefficient (m^3/hr at 1 bar differential)
Q = flow rate (l/s)
ΔP = headloss attributable to valve (kPa)
ΔPs = differential pressure across tappings (signal) (kPa)

K_{vs} Values

Size	DN50	DN65	DN80	DN100	DN125	DN150
K_{vs}	47.5	88.5	150.6	281.1	328.8	477.5

Size	DN200	DN250	DN300
K_{vs}	826	1218	1794

Pressure Loss

The pressure loss across a metering station is less than signal differential pressure indicated on the flow charts. The pressure loss is obtained by using the K_v values given below.

This applies to when the metering station is used in a stand alone application or close coupled to a double regulating valve.

K_v Values for Calculating the Pressure Loss

Size	DN50	DN65	DN80	DN100	DN125	DN150
K_{vs}	71.6	145.5	295.4	702	572	807

Size	DN200	DN250	DN300
K_{vs}	1416	1975	2990

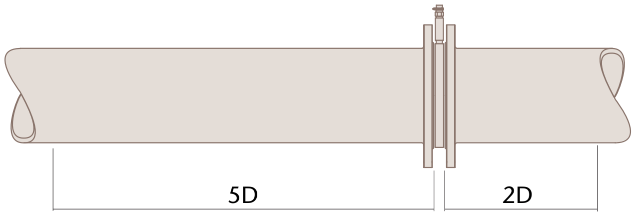
Technical Data

Installation

Metering stations must always be installed with a minimum of 5 pipe diameters of straight pipe, without intrusion, upstream of the metering station.

Downstream of the metering station a minimum of 2 pipe diameters of straight pipe are required.

When close coupled to a double regulating valves only the straight pipe upstream of the metering station is required.



Sizing

Once the required flow rate has been calculated, the size of the metering station can be determined based on the following:

The minimum signal at the design flow rate of 1 kPa.

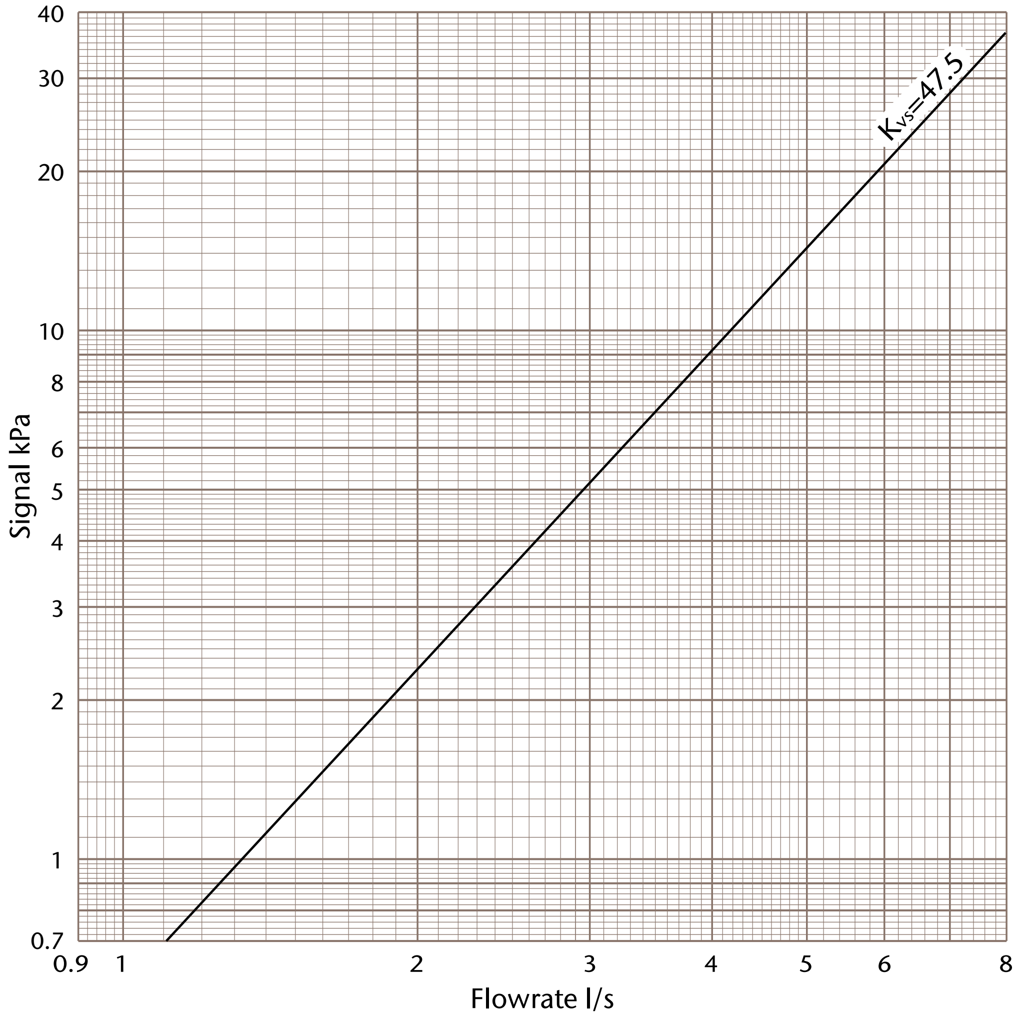
For minimum pressure loss, a maximum signal of 4.7 kPa, which corresponds to the maximum differential pressure range of a fluorocarbon manometer.

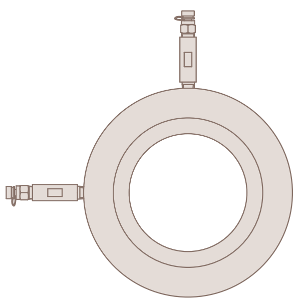
Pressure Equipment Directive

Under the Pressure Equipment Directive (PED) these metering stations and double regulating valves have been specified for Group 2 Liquids i.e. non-hazardous

Sizes DN50 to DN300 are classified as SEP (Sound Engineering Practice)

DN50 ART 270 Stainless Steel Metering Station





Signal / Flowrate

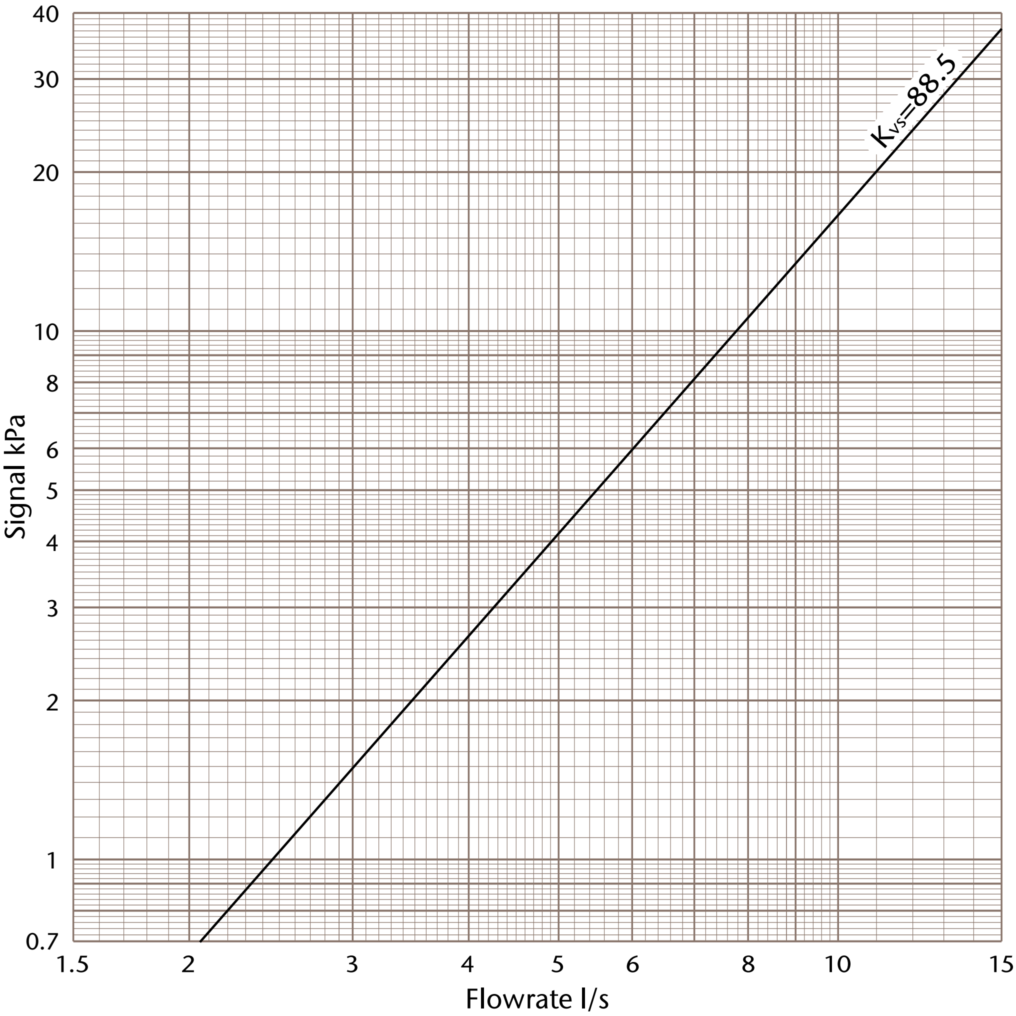
Chart used to determine flowrate from signal measured across orifice

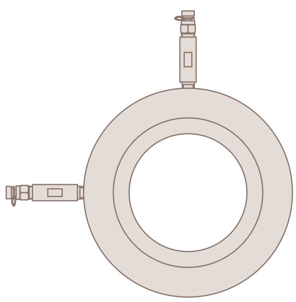
$$Q = \frac{K_{vs} \sqrt{\Delta p}}{36}$$

Where

Q	=	Flowrate	l/s
Δp	=	Signal	kPa
K_{vs}	=	Signal Co-efficient	

DN65 ART 270 Stainless Steel Metering Station





Signal / Flowrate

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$$Q = \frac{K_{vs} \sqrt{\Delta p}}{36}$$

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Q	=	Flowrate	l/s
Δp	=	Signal	kPa
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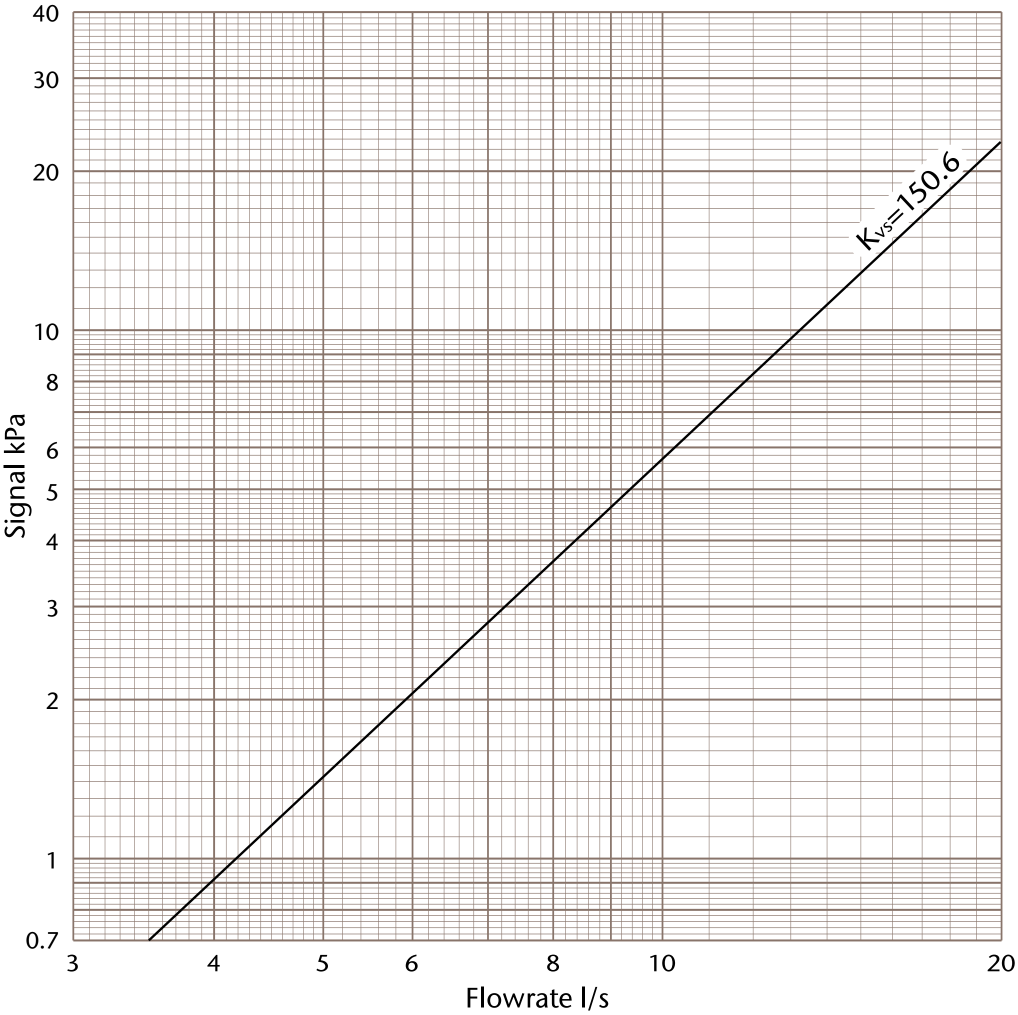
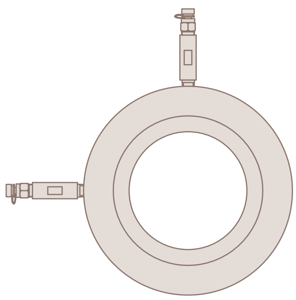
DN80 ART 270 Stainless Steel Metering Station





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$$Q = \frac{K_{vs} \sqrt{\Delta p}}{36}$$

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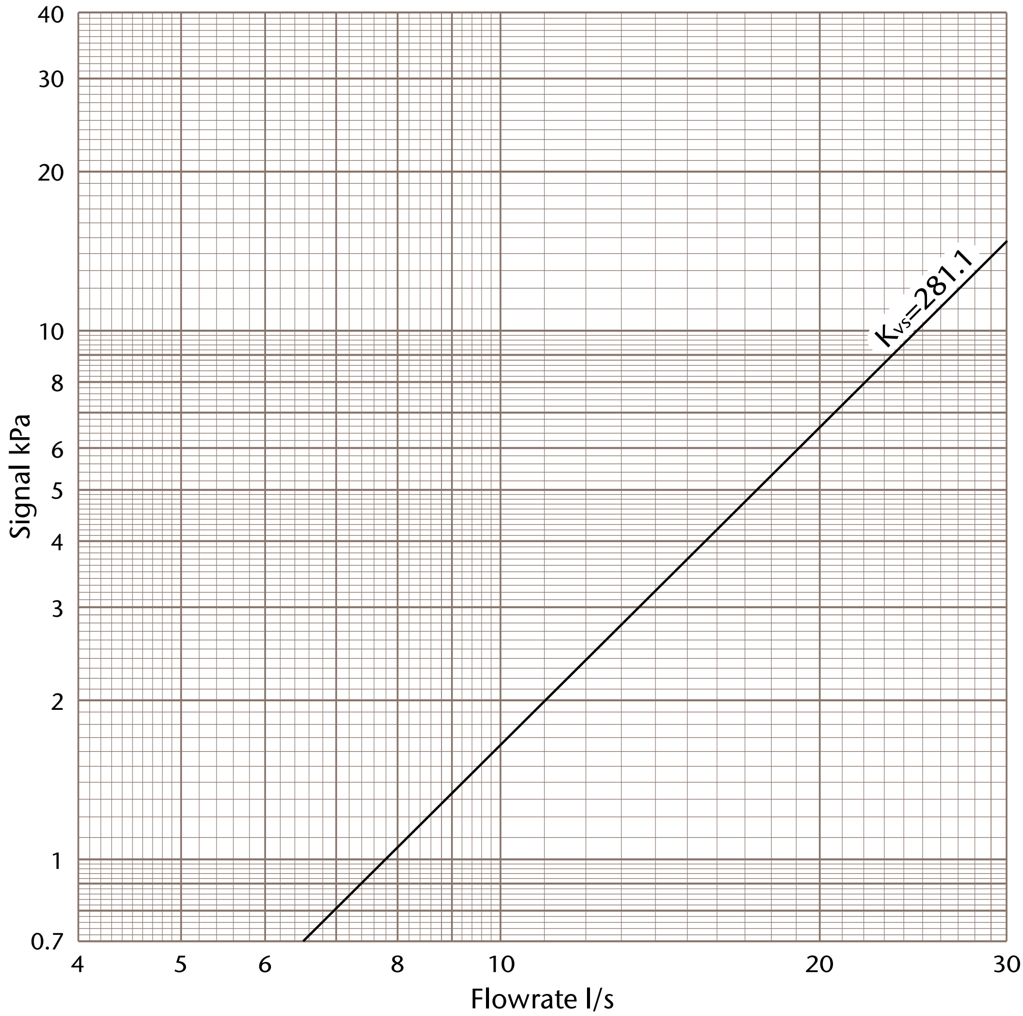
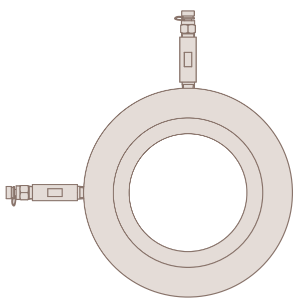
DN100 ART 270 Stainless Steel Metering Station





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$$Q = \frac{K_{vs} \sqrt{\Delta p}}{36}$$

Where

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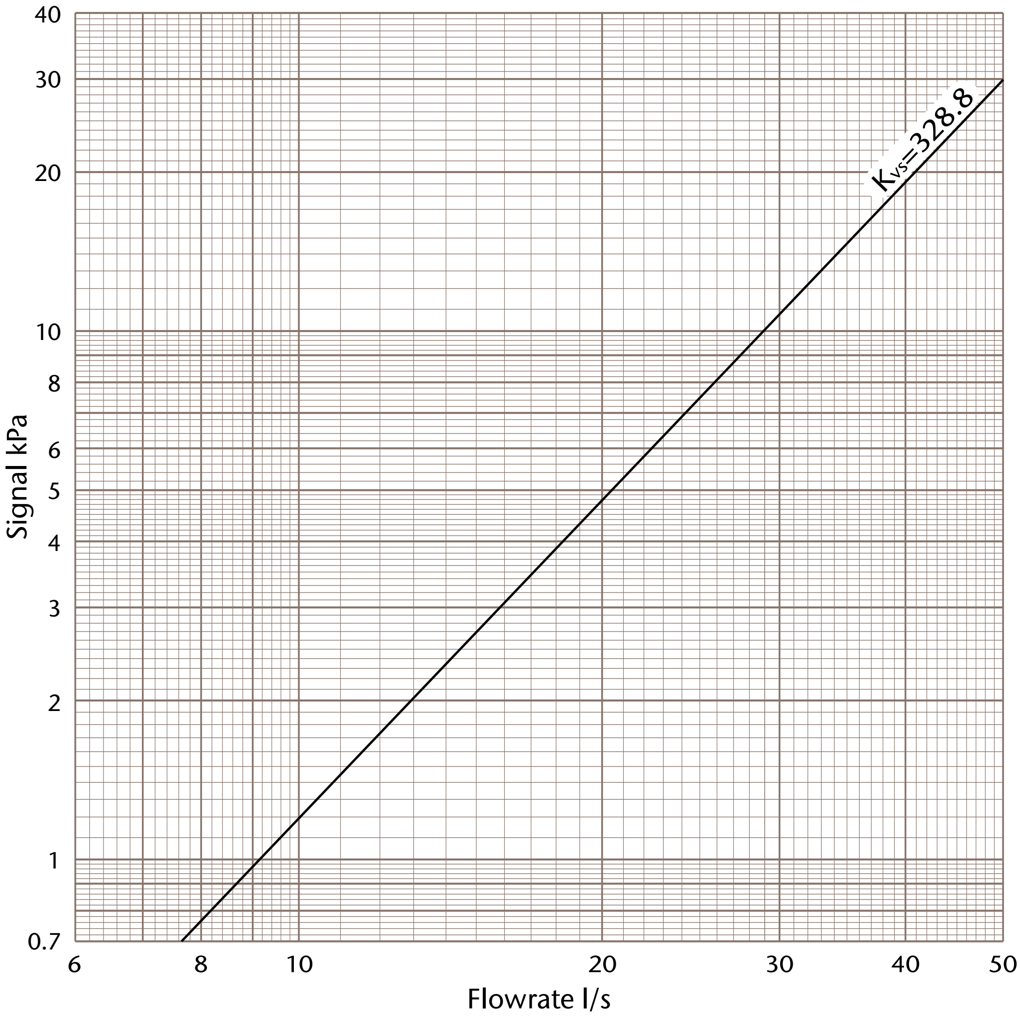
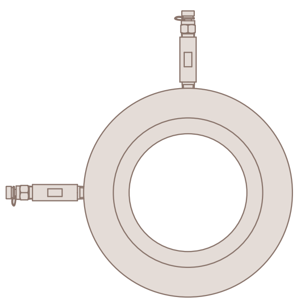
DN125 ART 270 Stainless Steel Metering Station





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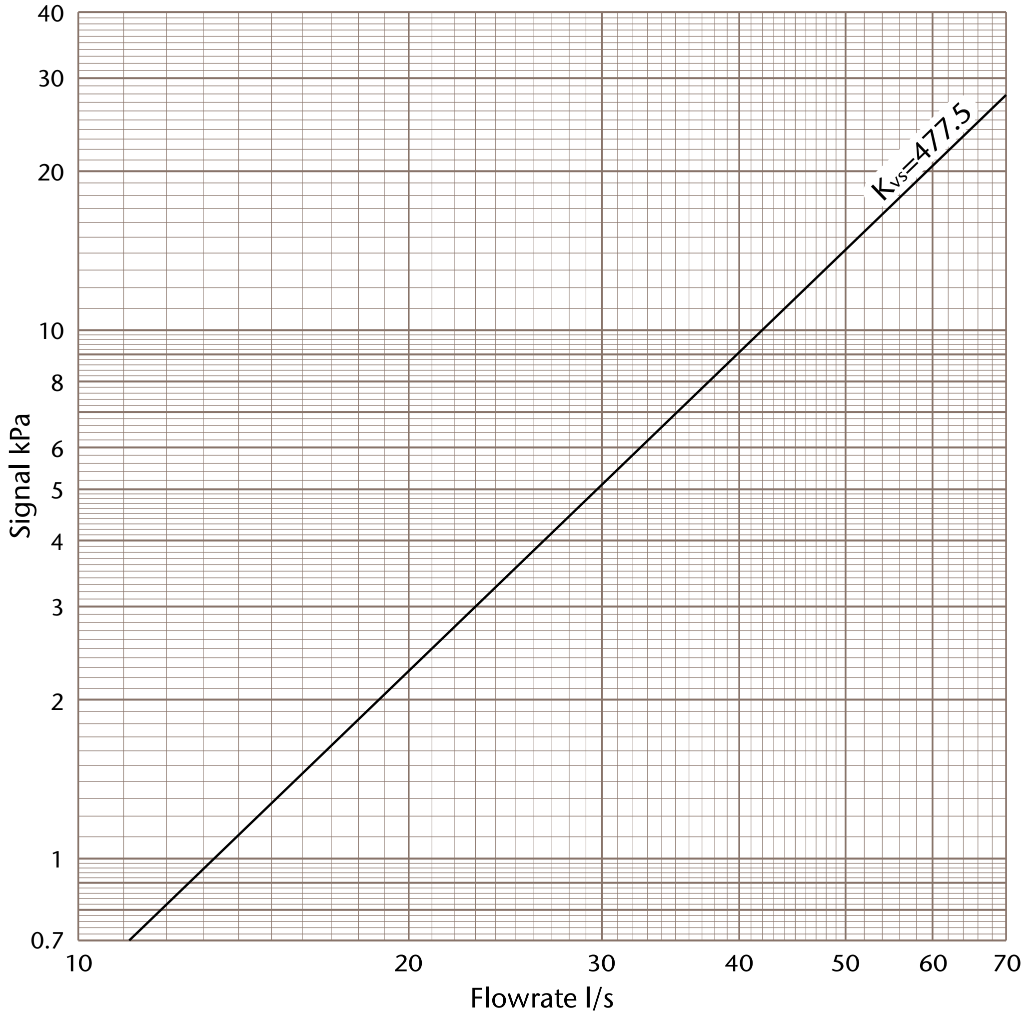
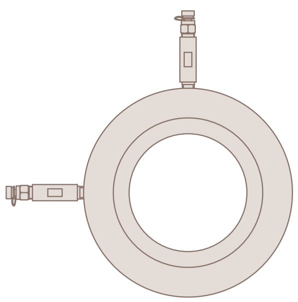
DN150 ART 270 Stainless Steel Metering Station





Signal / Flowrate

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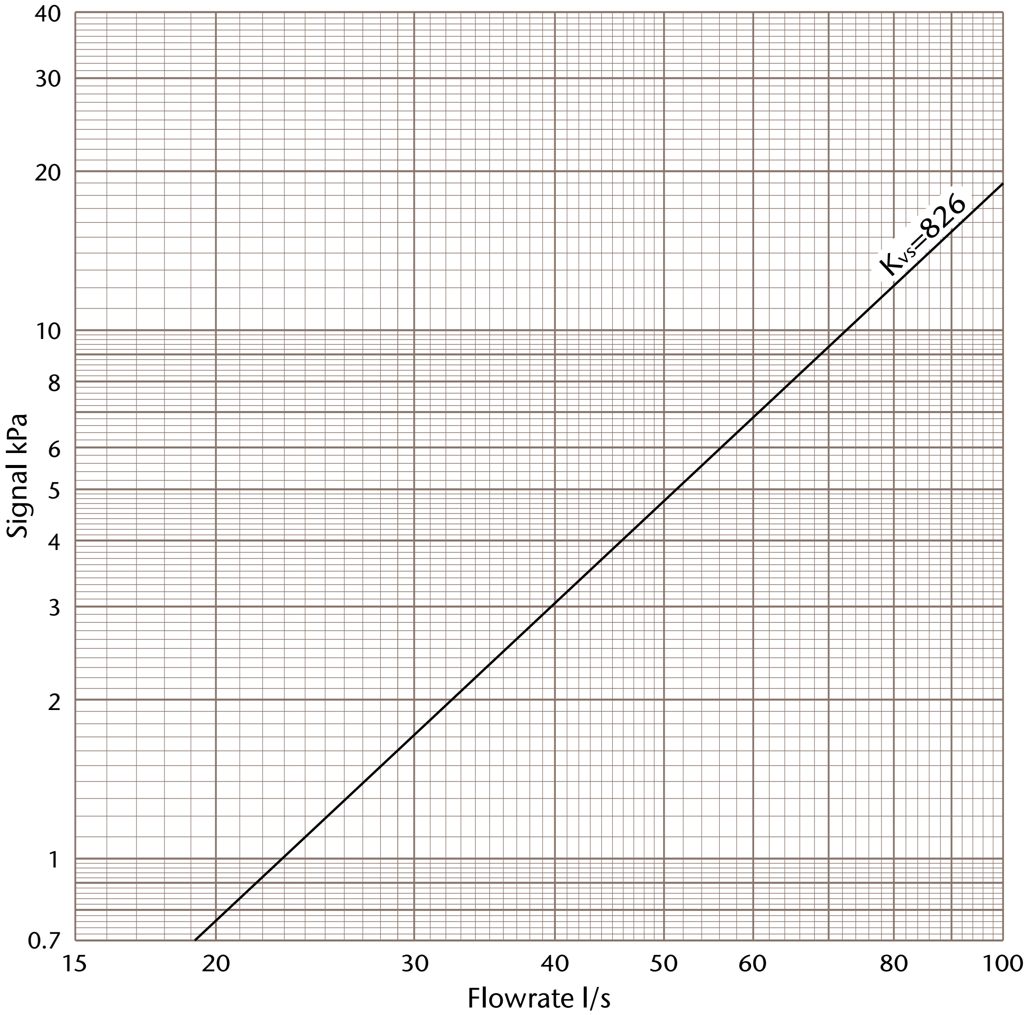
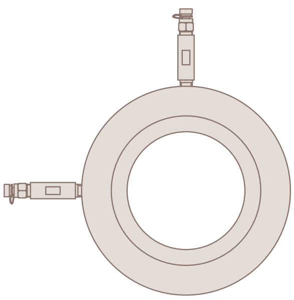
DN200 ART 270 Stainless Steel Metering Station





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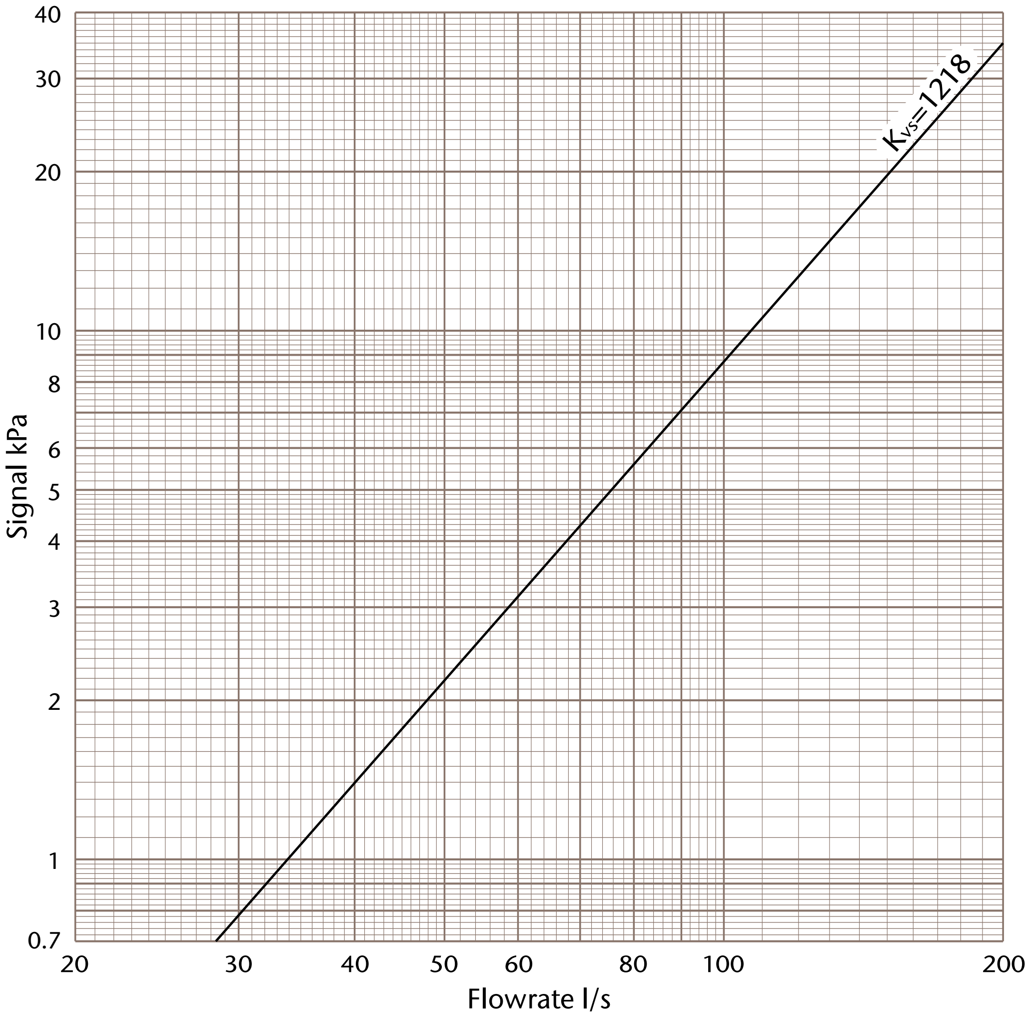
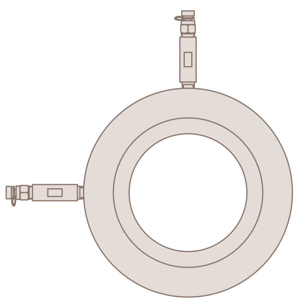
DN250 ART 270 Stainless Steel Metering Station





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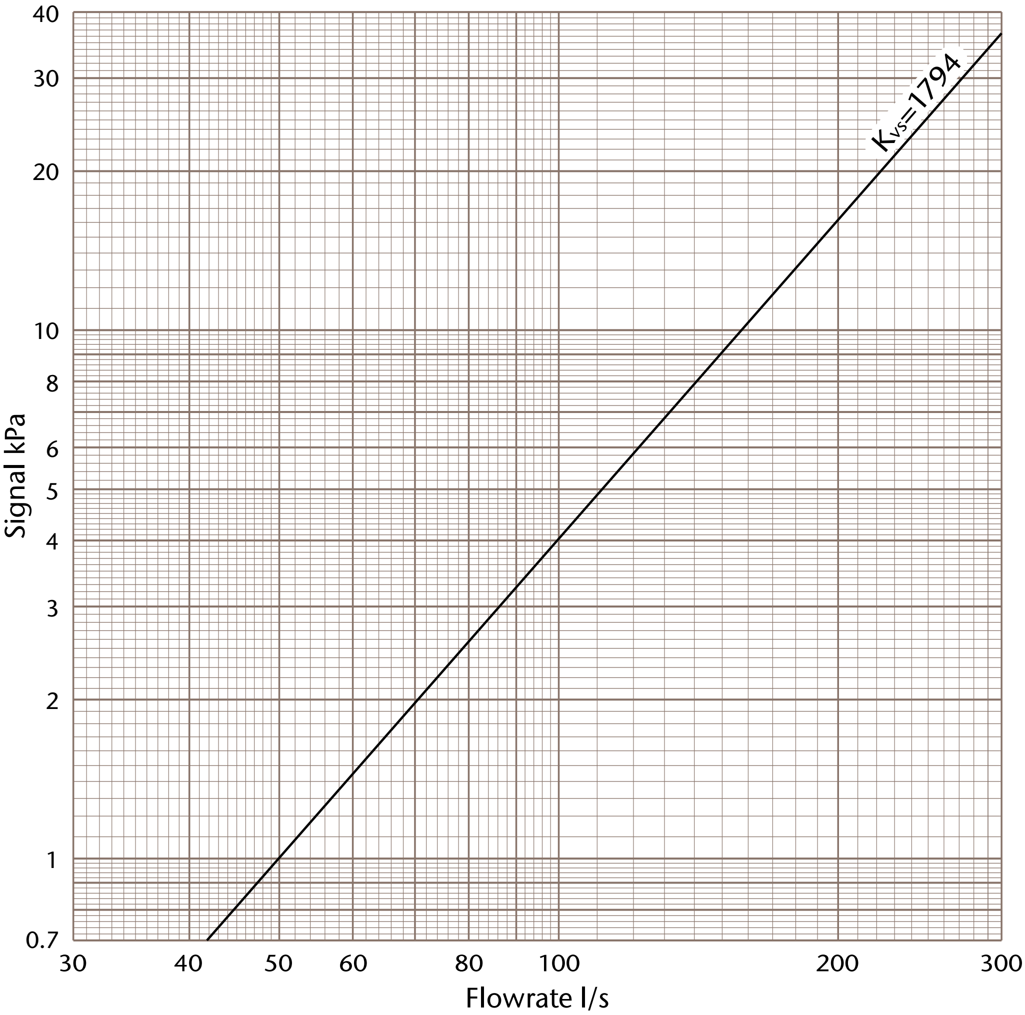
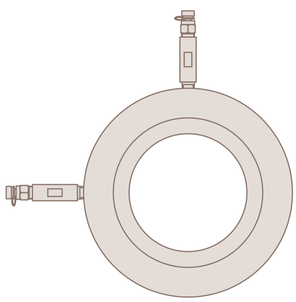
DN300 ART 270 Stainless Steel Metering Station





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