

Fixed Orifice Double Regulating Valve



Flow Data and Installation Instructions

Technical Data

The Albion ART 255 is a fixed orifice double regulating valve used to regulate and measure the flow passing through it.

Flow Coefficient

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

$$K_v = \frac{Q \cdot 36}{\sqrt{\Delta P}} \quad K_{vs} = \frac{Q \cdot 36}{\sqrt{\Delta P_s}}$$

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)

ΔP_s = differential pressure across tapings (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 the fixed orifice double regulating valve is the combined loss attributable to the orifice plate and double regulating valve in the fully open position.

K_v Values

Size	DN50	DN65	DN80	DN100	DN125	DN150
K_v	45.6	73.7	98.9	188.3	305.9	446.4

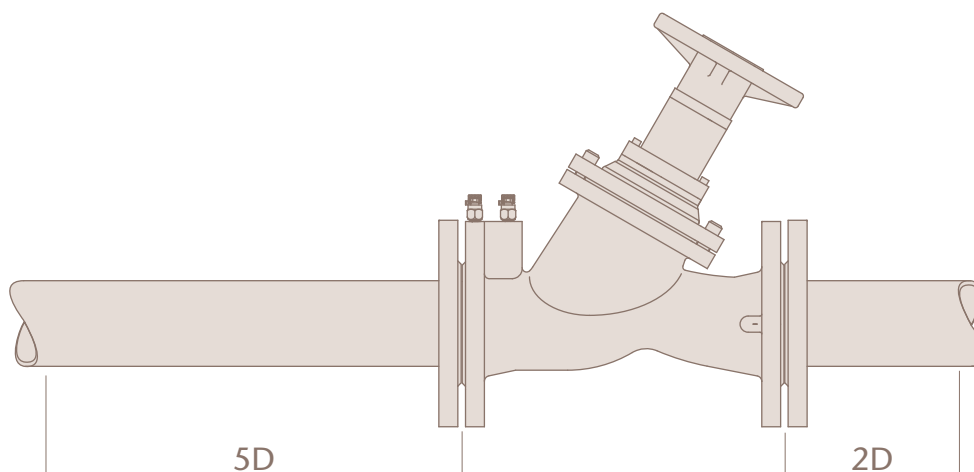
Size	DN200	DN250	DN300
K_v	671	1037	1603

Technical Data

Installation

Fixed orifice double regulating valves must always be installed with a minimum of 5 pipe diameters of straight pipe, without intrusion, upstream of the orifice plate.

Downstream of the valve a minimum of 2 pipe diameters of straight pipe are 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.

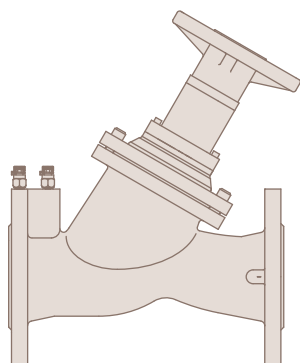
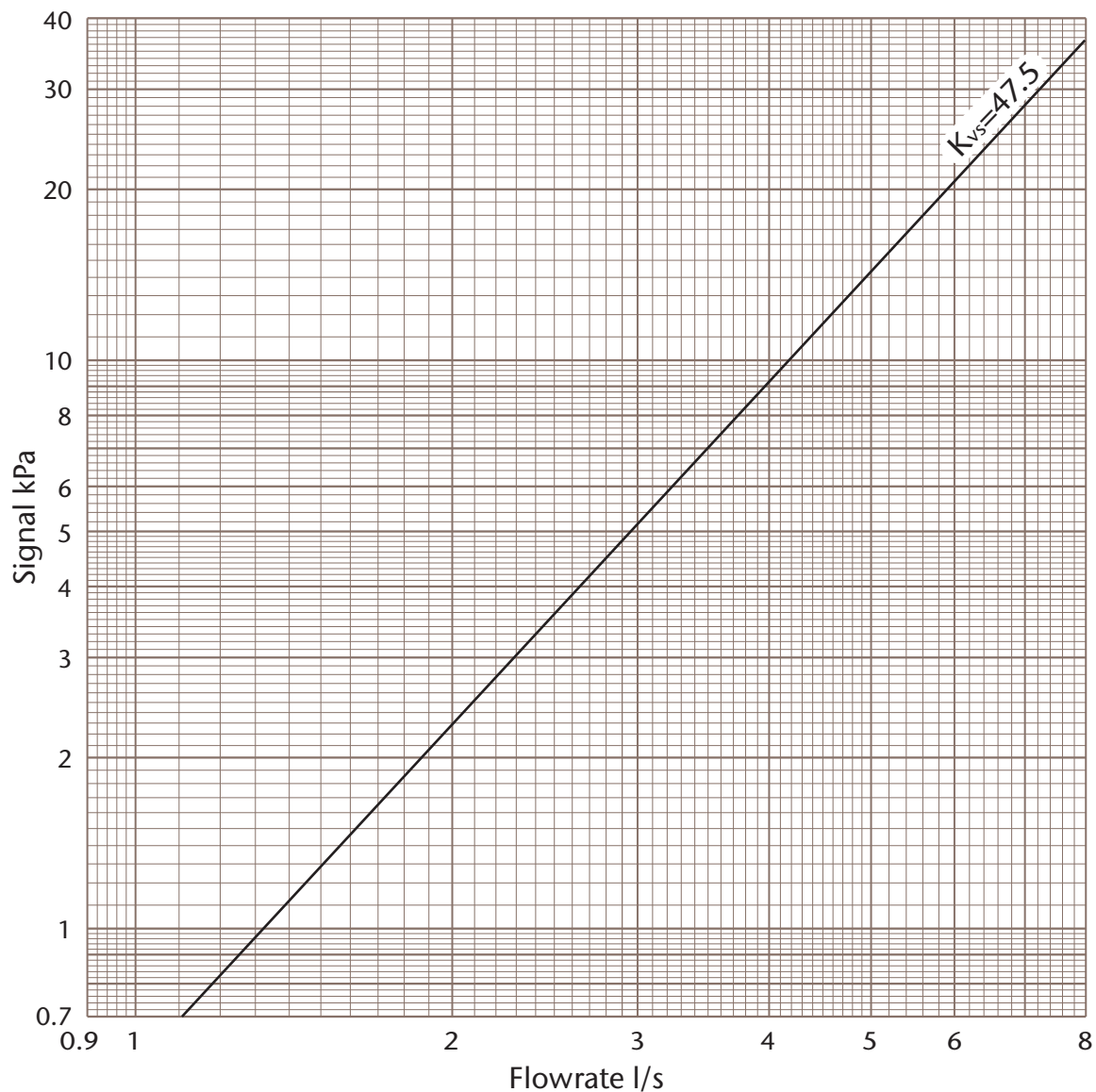
For minimum pressure loss, a maximum signal of 4.7 kPa, which corresponds to the maximum differential pressure range of a fluorocarbon manometer.

Pressure Equipment Directive

Under the Pressure Equipment Directive (PED) these fixed orifice 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 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

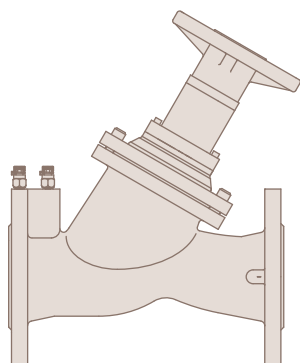
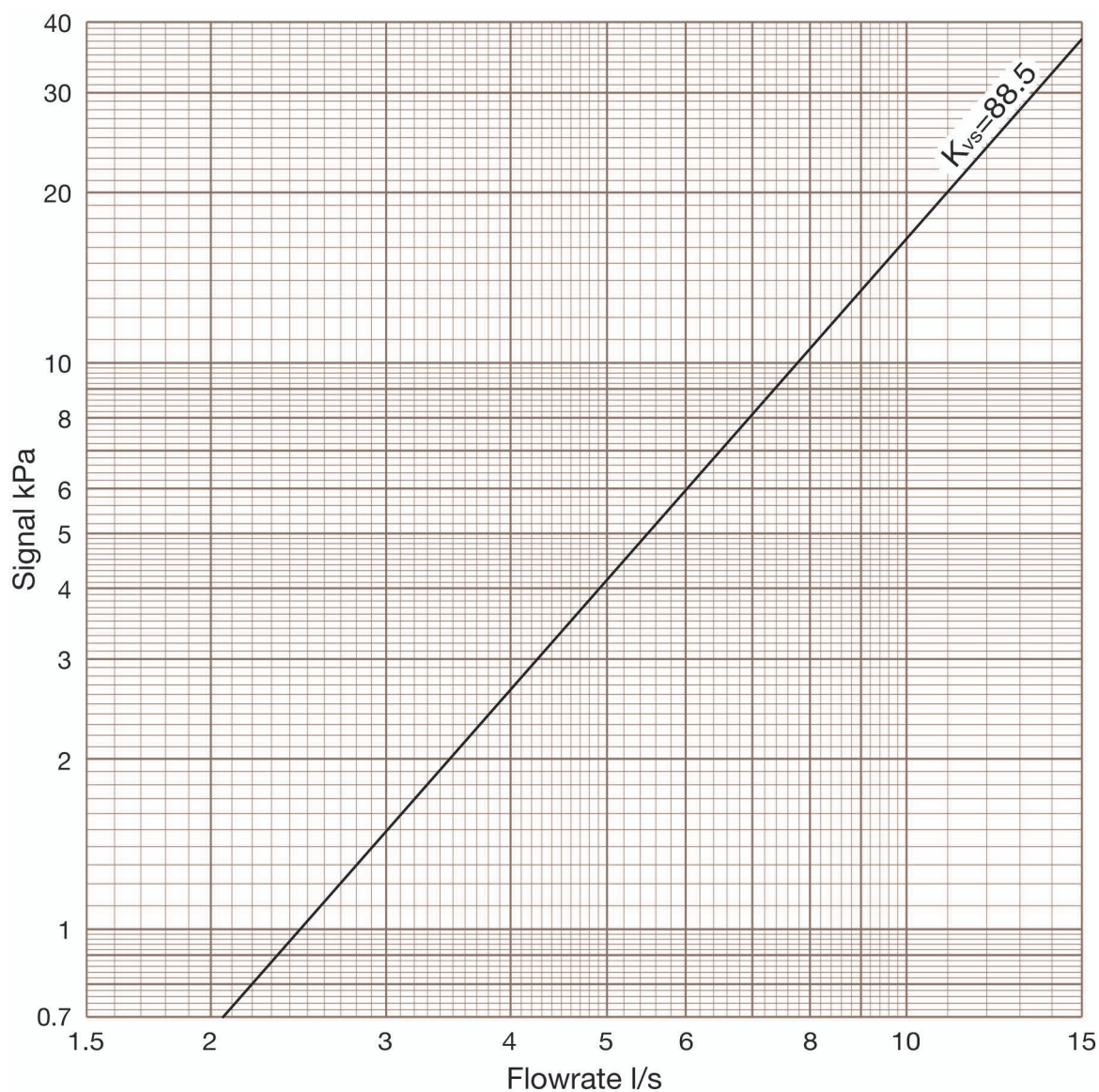
Where

Q = Flowrate l/s

Δp = Signal kPa

K_{vs} = Signal Co-efficient

DN65 ART 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

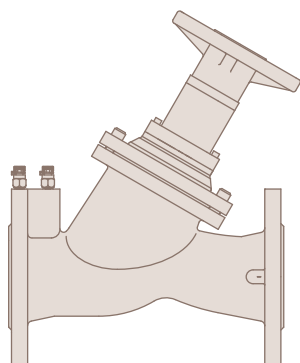
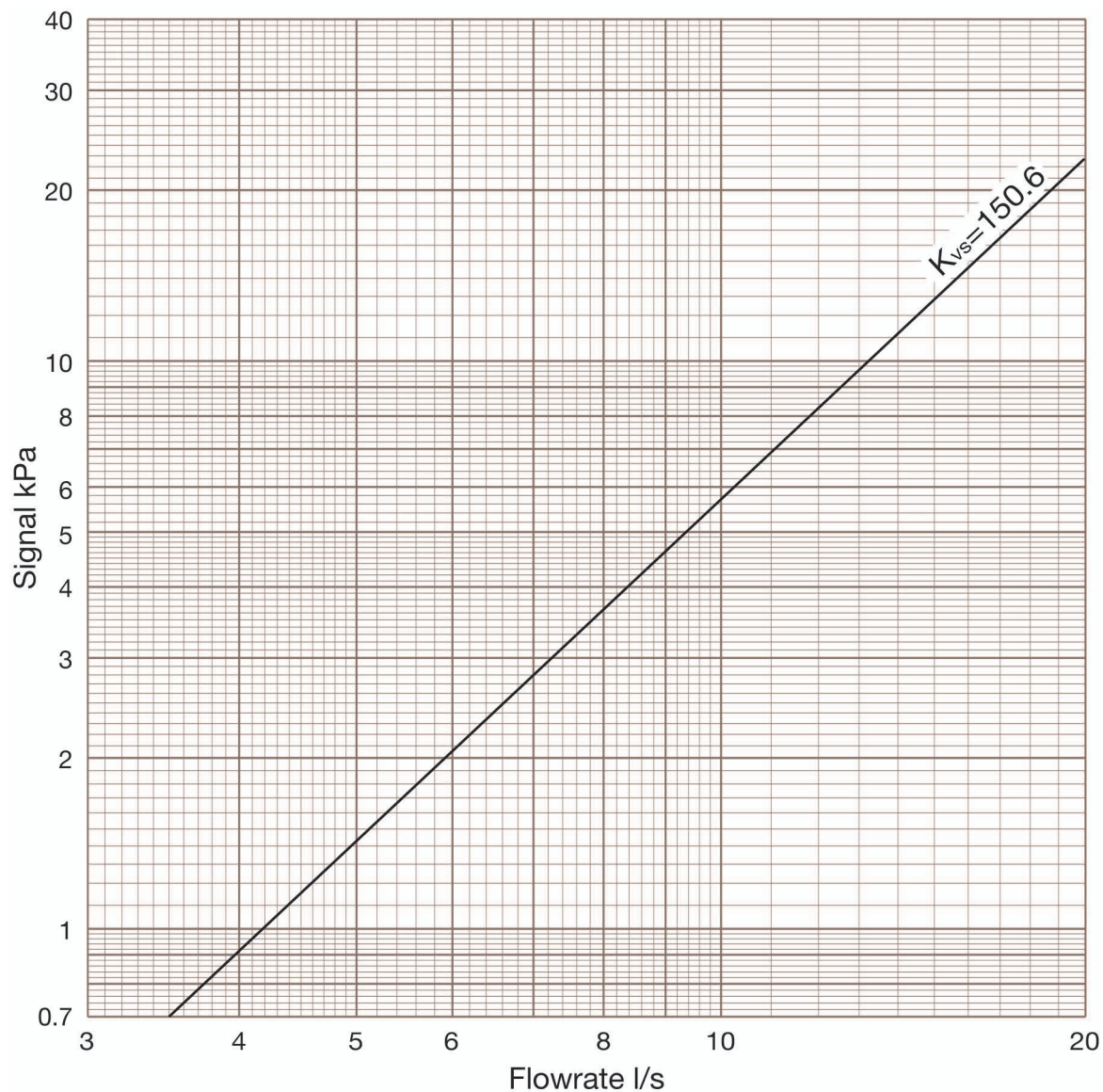
Chart used to determine flowrate from signal measured across orifice

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

Where

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

DN80 ART 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

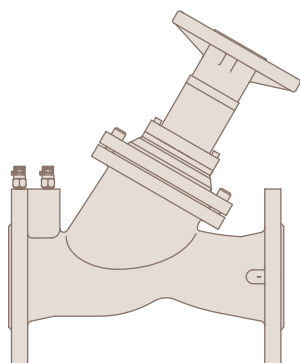
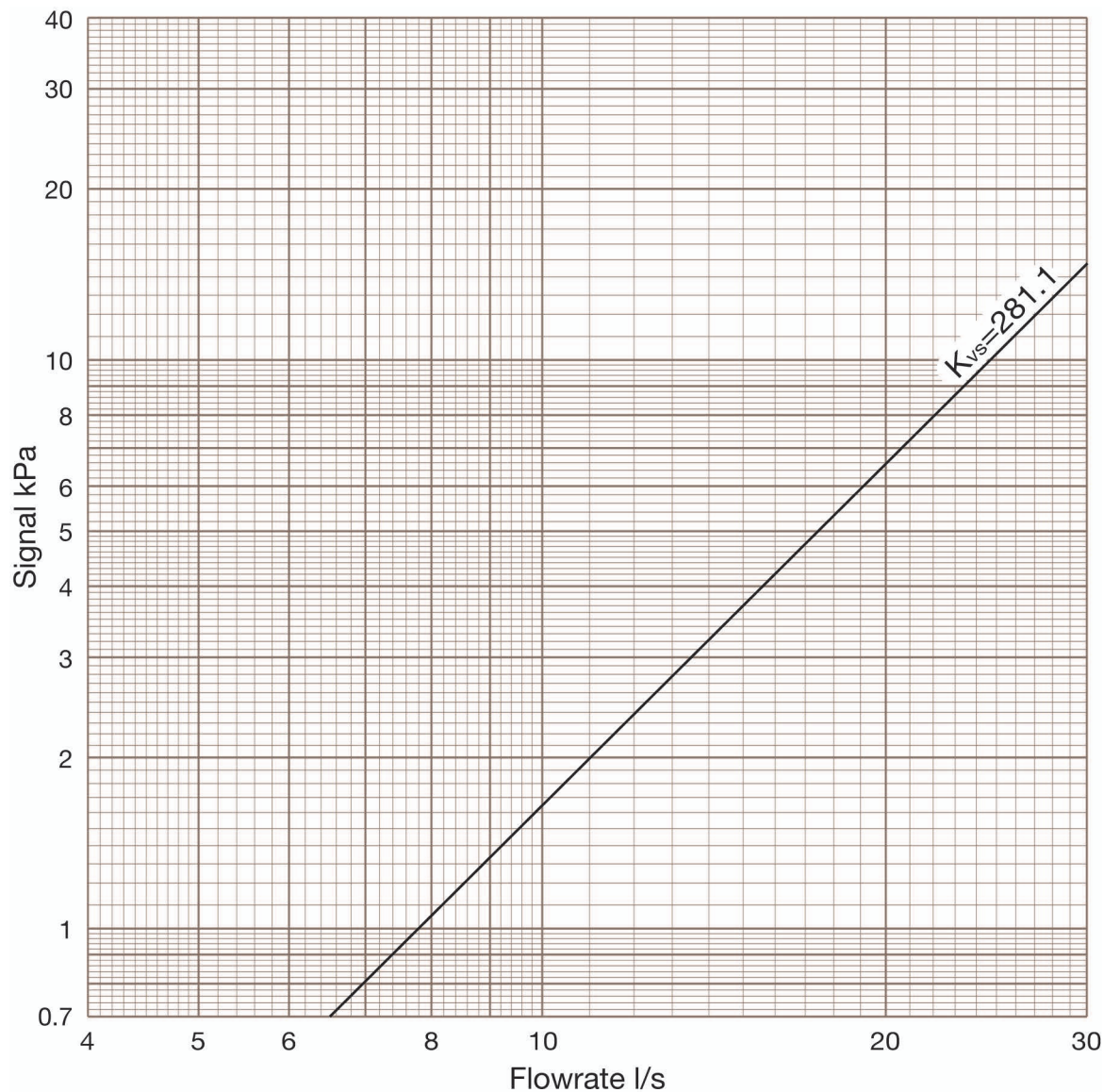
Where

Q = Flowrate l/s

Δp = Signal kPa

K_{vs} = Signal Co-efficient

DN100 ART 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

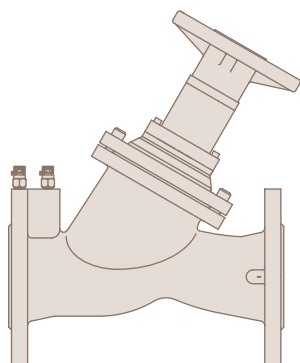
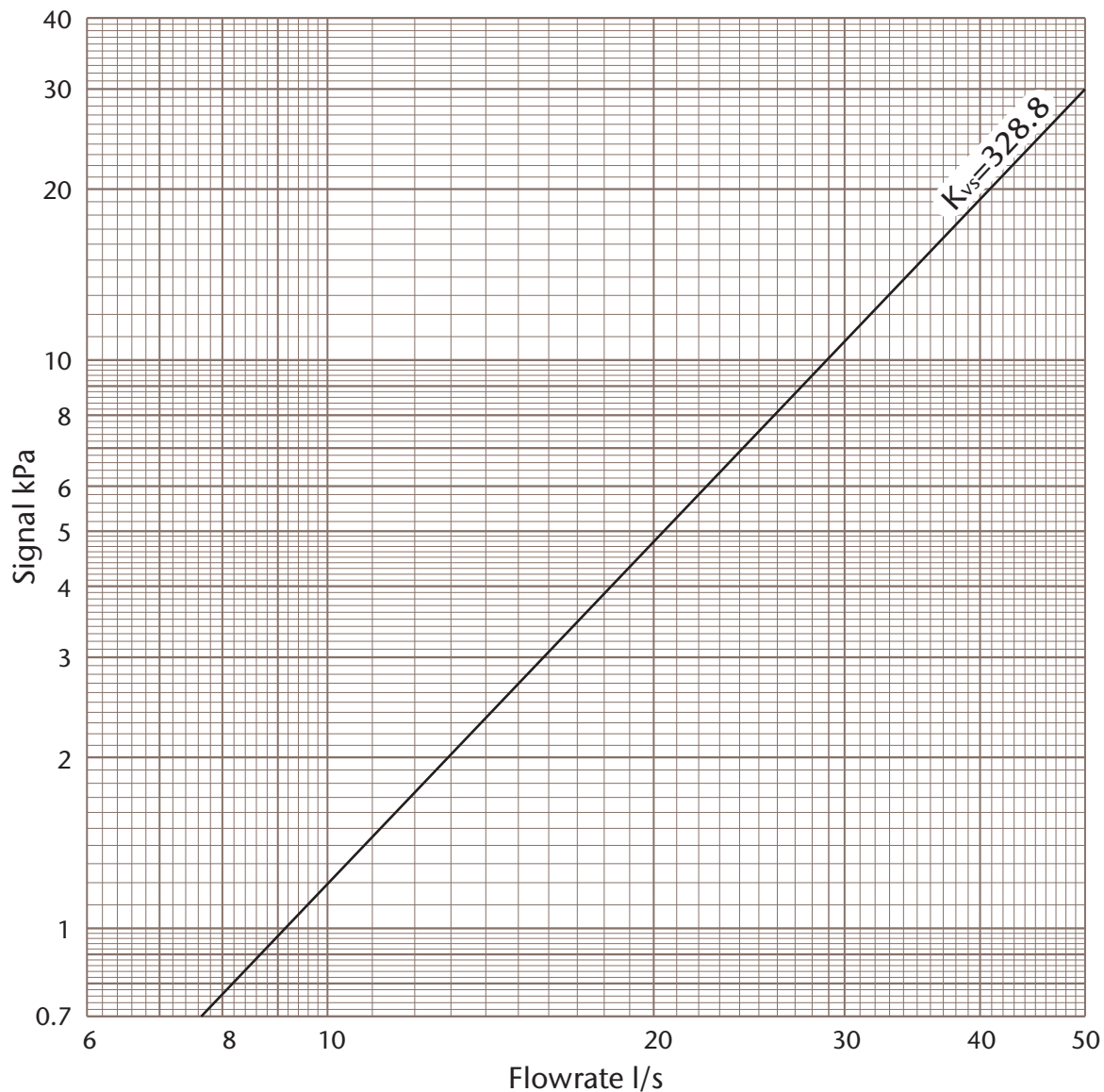
Where

Q = Flowrate l/s

Δp = Signal kPa

K_{vs} = Signal Co-efficient

DN125 ART 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

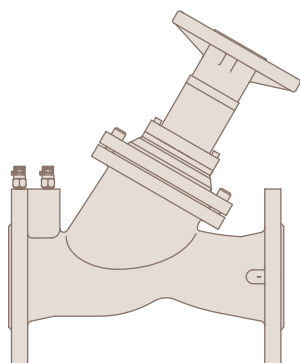
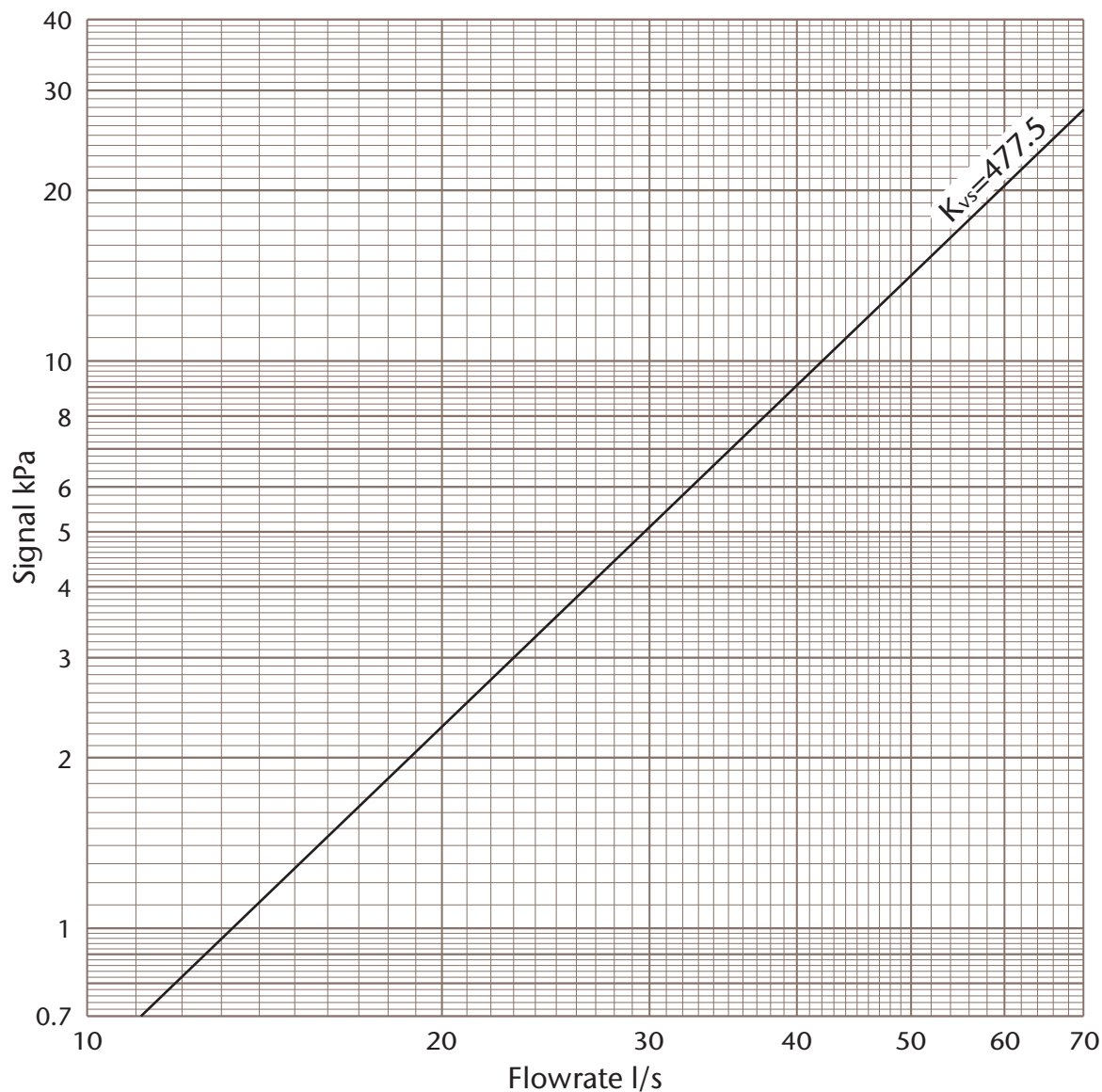
Where

Q = Flowrate l/s

Δp = Signal kPa

K_{vs} = Signal Co-efficient

DN150 ART 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

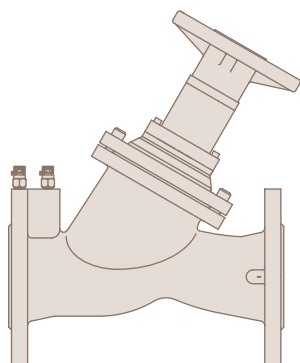
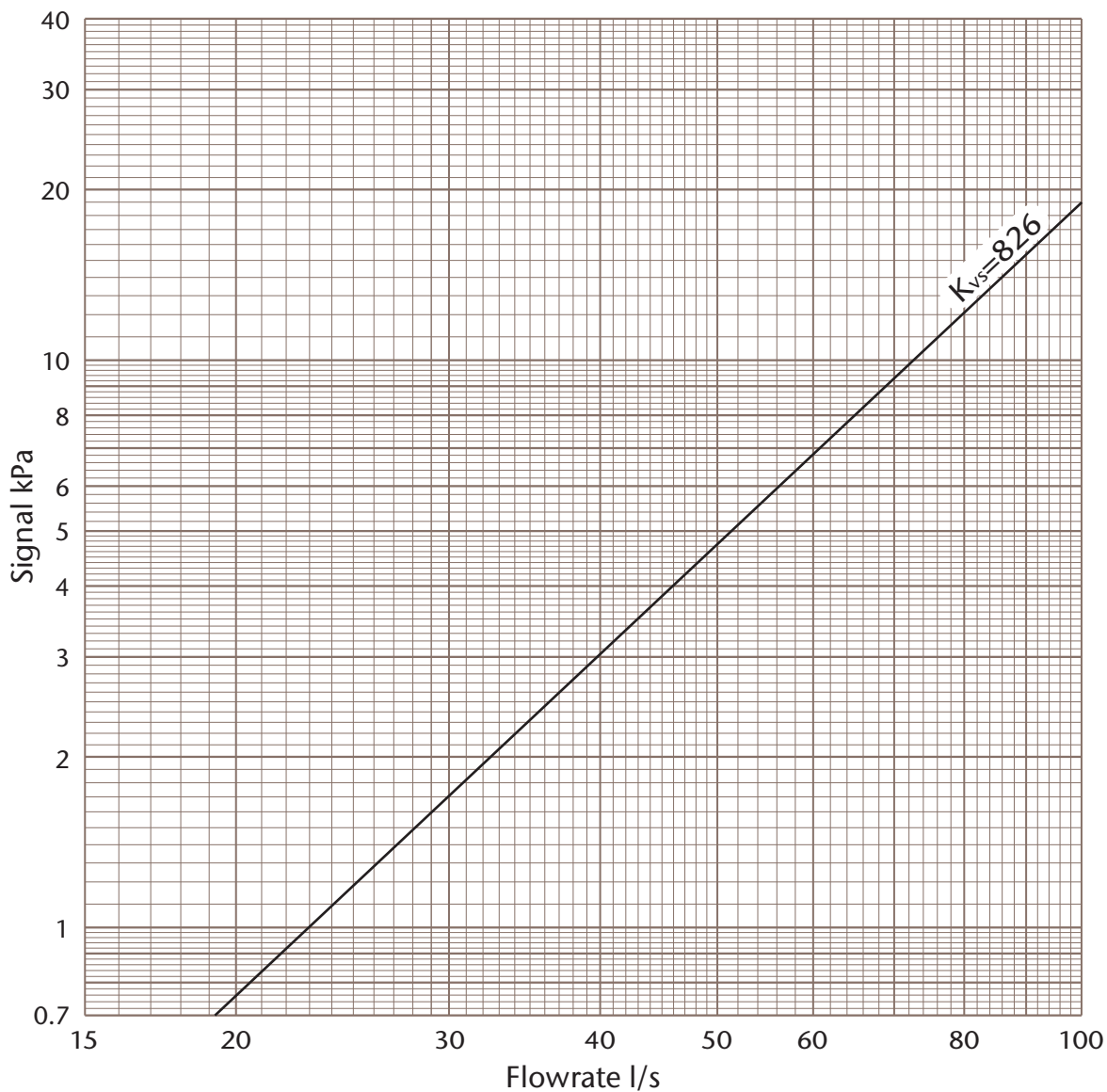
Where

Q = Flowrate l/s

Δp = Signal kPa

K_{vs} = Signal Co-efficient

DN200 ART 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

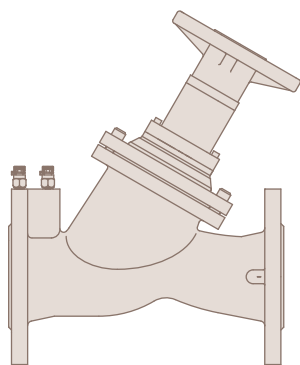
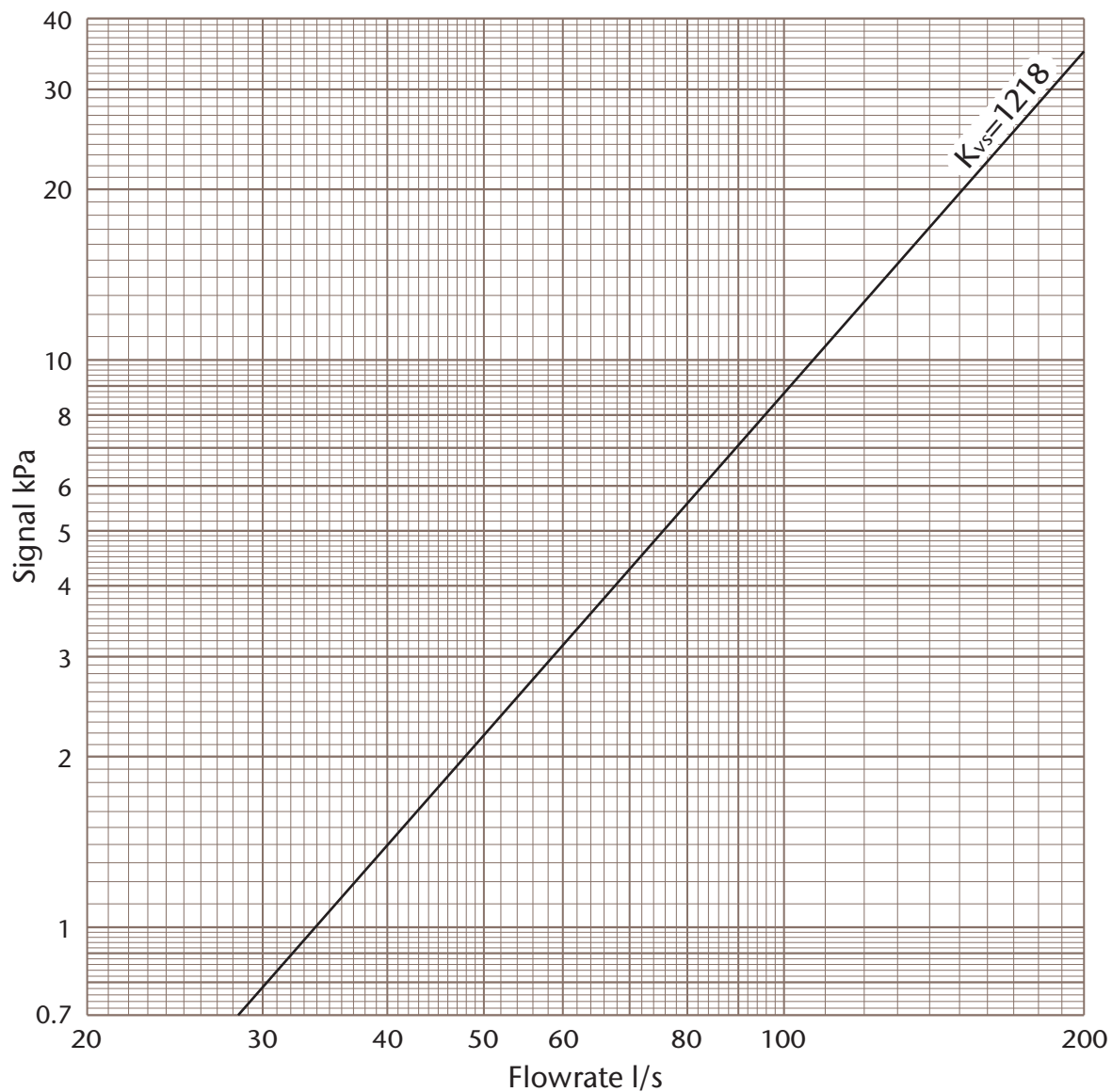
Where

Q = Flowrate l/s

Δp = Signal kPa

K_{vs} = Signal Co-efficient

DN250 ART 255 Fixed Orifice Double Regulating Valve



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

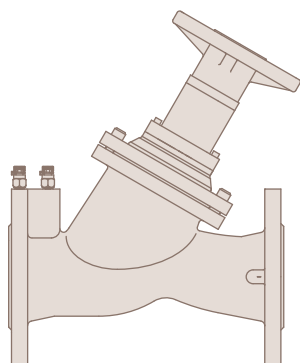
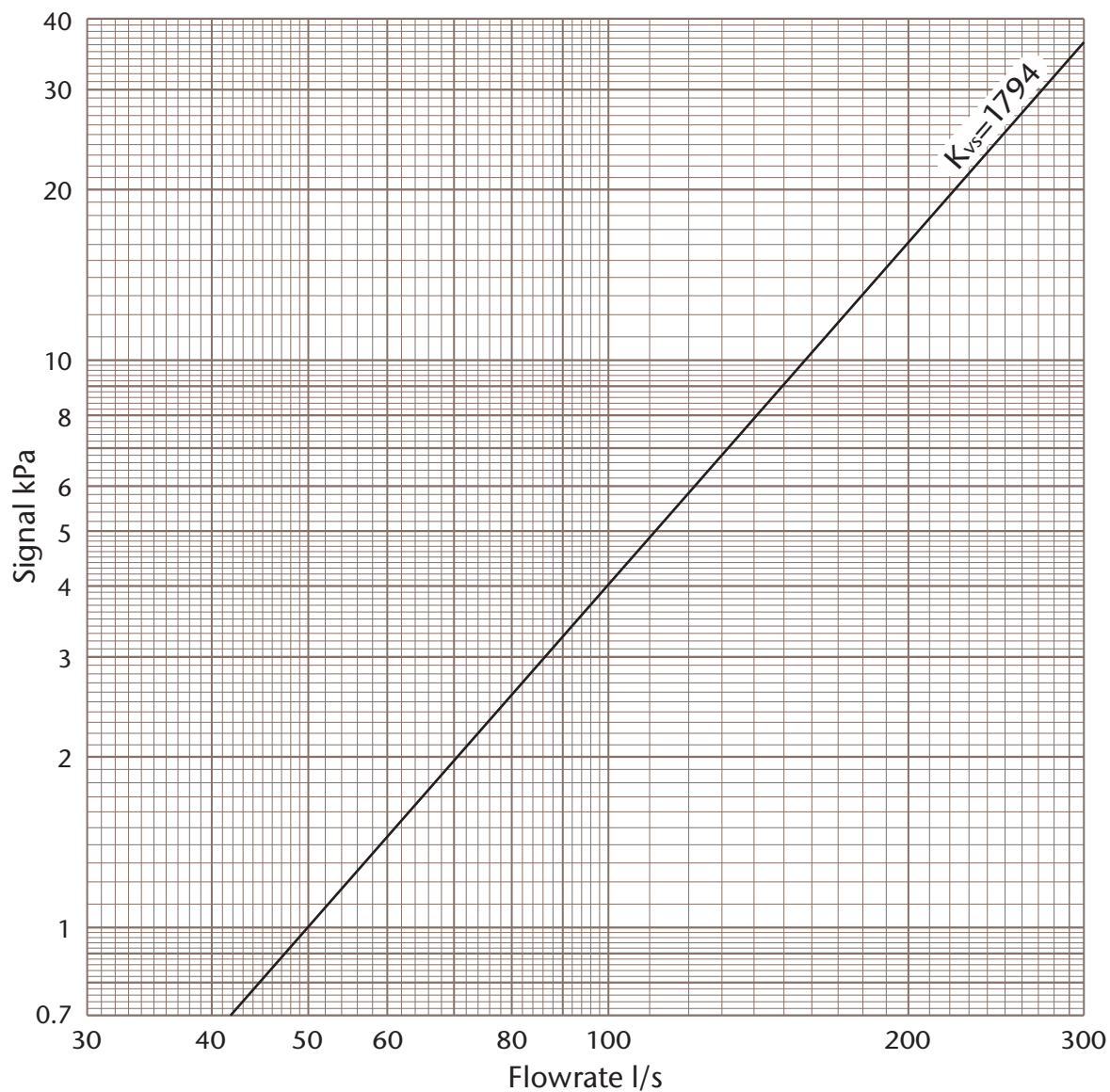
Where

Q = Flowrate l/s

Δp = Signal kPa

K_{vs} = Signal Co-efficient

DN300 ART 255 Fixed Orifice Double Regulating Valve



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