ART 250

Variable Orifice Double Regulating Valve

Flow Data and Installation Instructions

Issue 1

ART 250

Technical Data

The Albion ART 250 is a variable 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.

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

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

The K_{vs} values are given on each flow chart at various positions from 25% to fully open.

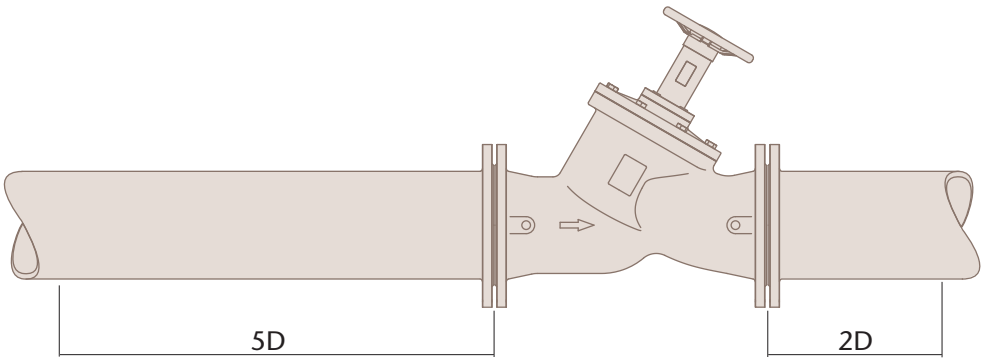
Pressure Loss and Kv Value

The pressure loss across a variable orifice double regulating valve is the same as the differential pressure (signal) measured across the body seat.

The K_v value is therefore the same as the K_{vs} value used to calculate flow rate.

Installation

Variable orifice double regulating valves must always be installed with a minimum of 5 pipe diameters of straight pipe, without intrusion, upstream of the valve and a minimum of 2 pipe diameters downstream.



Technical Data

Sizing

Once the required flow rate has been calculated, the size of the variable orifice double regulating valve can be determined based on the following:

With the valve fully open, a minimum signal at the design flow rate of 1 kPa. The maximum signal is normally less than 5 kPa but can be up to 10 kPa.

For sizing the flow velocity should not exceed 3 m/s at the design flow rate.

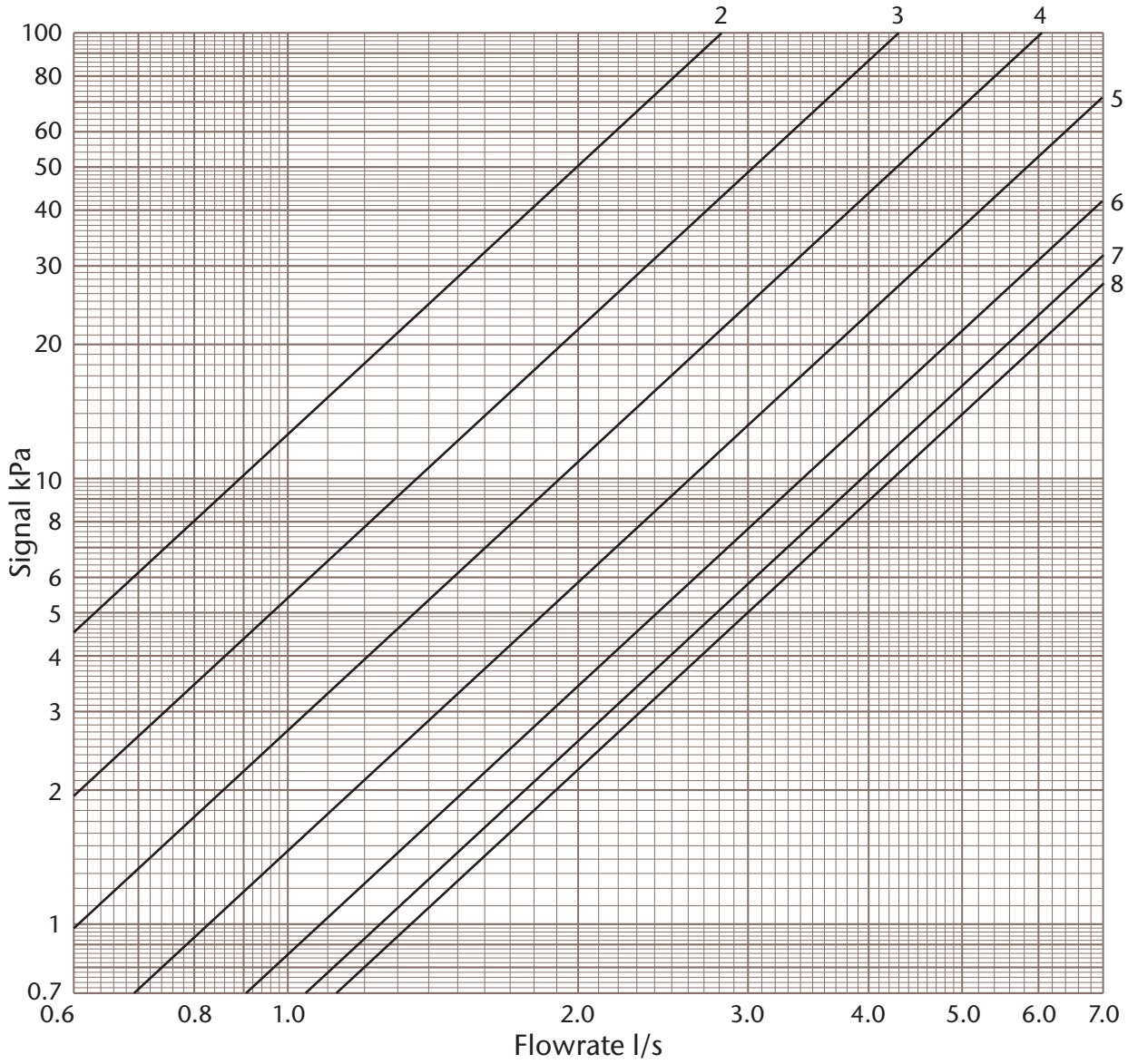
Pressure Equipment Directive

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

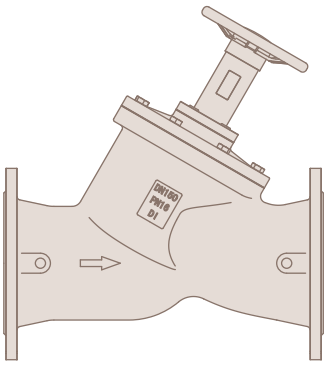
Sizes DN50 to DN80 are classified as SEP (Sound Engineering Practice)

ART 250

DN50 ART 250 Variable Orifice Double Regulating Valve



Position	2	3	4	5	6	7	8
Kvs	10.2	15.2	21.9	29.7	38.9	44.7	48.2



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

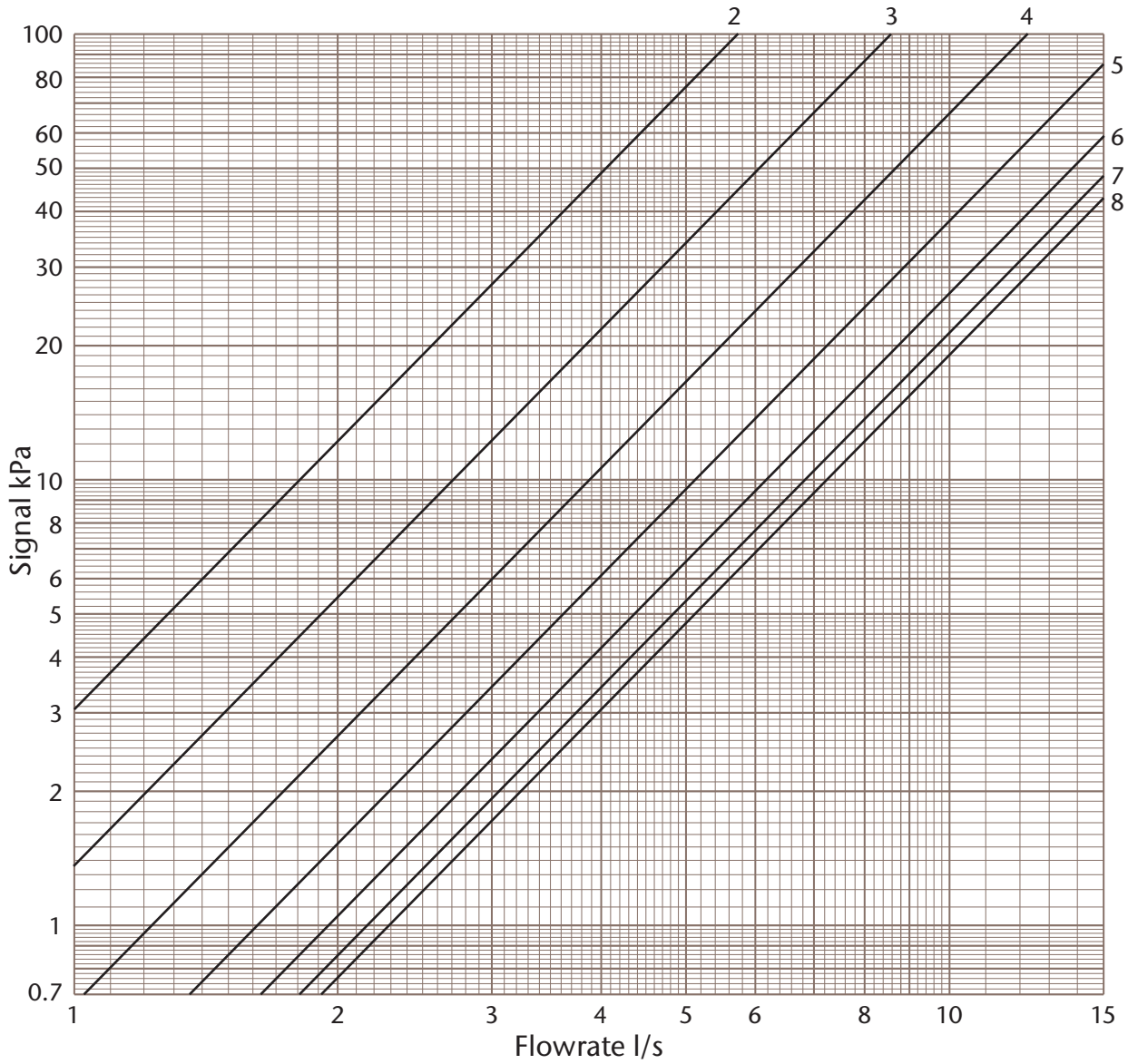
Where

Q	=	Flowrate	l/s
Δp	=	Signal	kPa
Kvs	=	Signal Co-efficient	

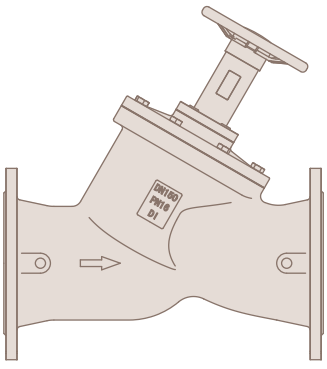
Issue 1

ART 250

DN65 ART 250 Variable Orifice Double Regulating Valve



Position	2	3	4	5	6	7	8
Kvs	20.6	30.9	44.0	58.3	70.3	77.8	82.6



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

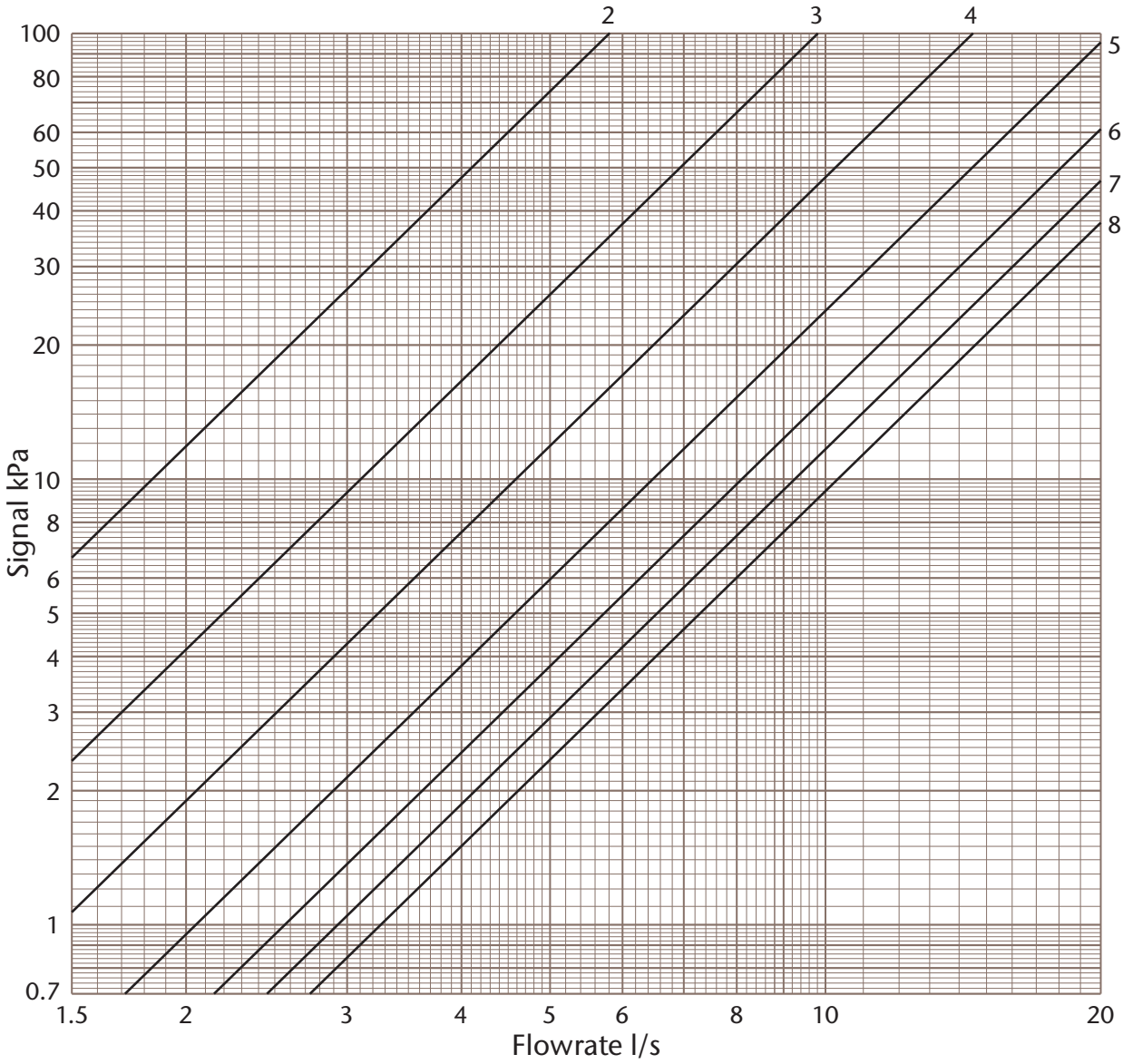
Δp = Signal kPa

Kvs = Signal Co-efficient

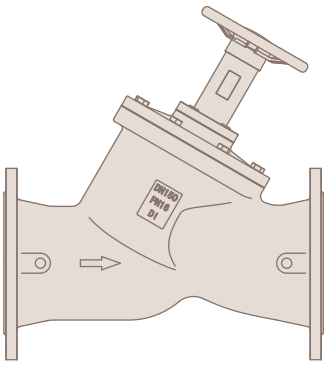
Issue 1

ART 250

DN80 ART 250 Variable Orifice Double Regulating Valve



Position	2	3	4	5	6	7	8
Kvs	20.9	35.4	52.1	73.7	92.1	105.6	117.4



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

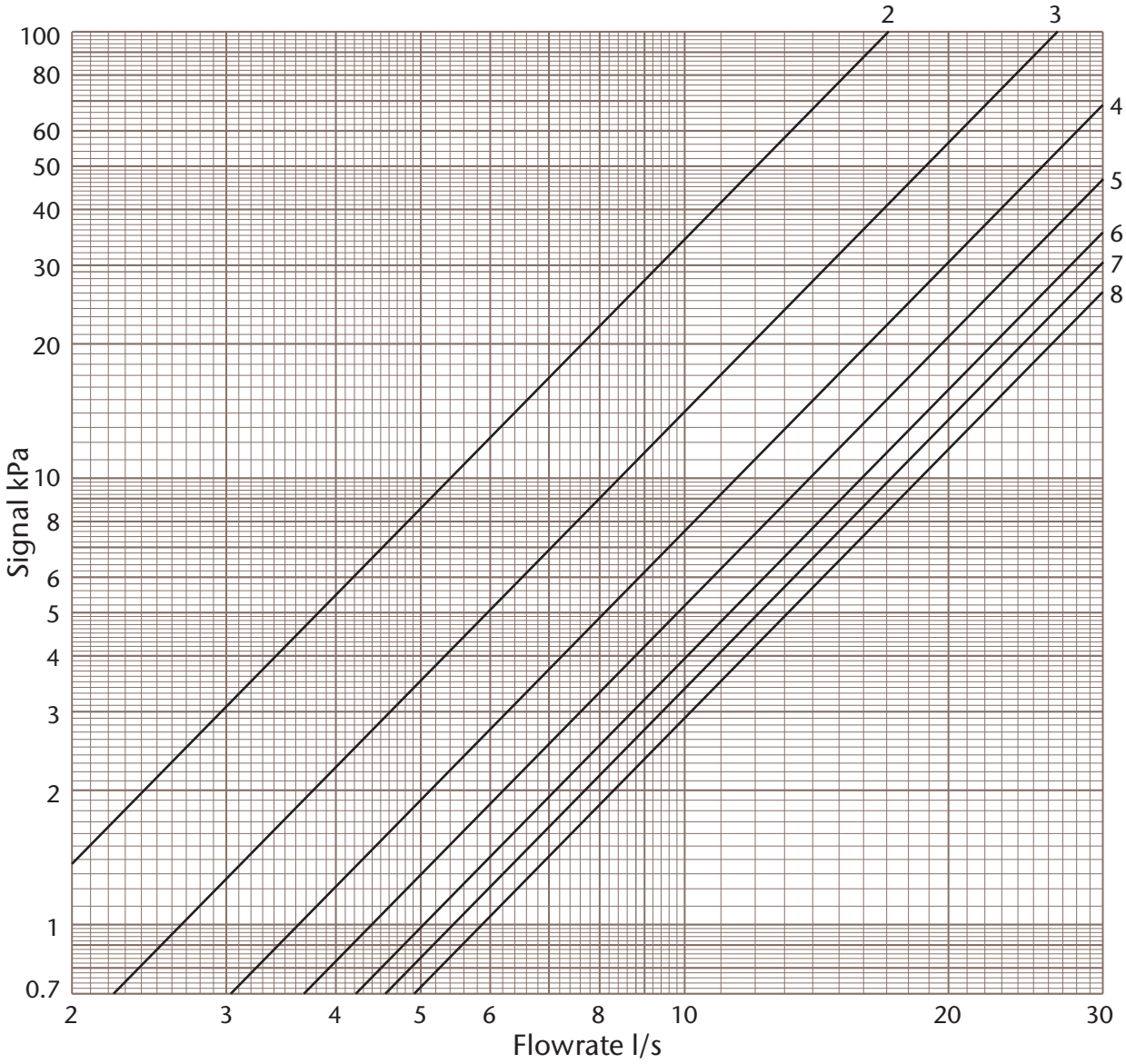
$$Q = \frac{K_{vs}\sqrt{\Delta p}}{36}$$

Where

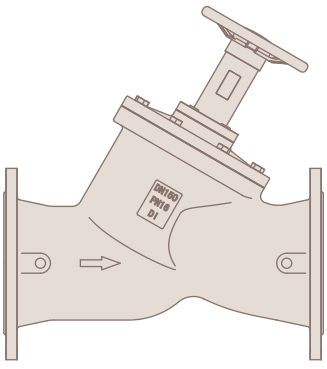
Q	=	Flowrate	l/s
Δp	=	Signal	kPa
Kvs	=	Signal Co-efficient	

Issue 1

DN100 ART 250 Variable Orifice Double Regulating Valve



Position	2	3	4	5	6	7	8
Kvs	61.5	95.7	130.4	158.1	181.3	195.6	211.4



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

Where

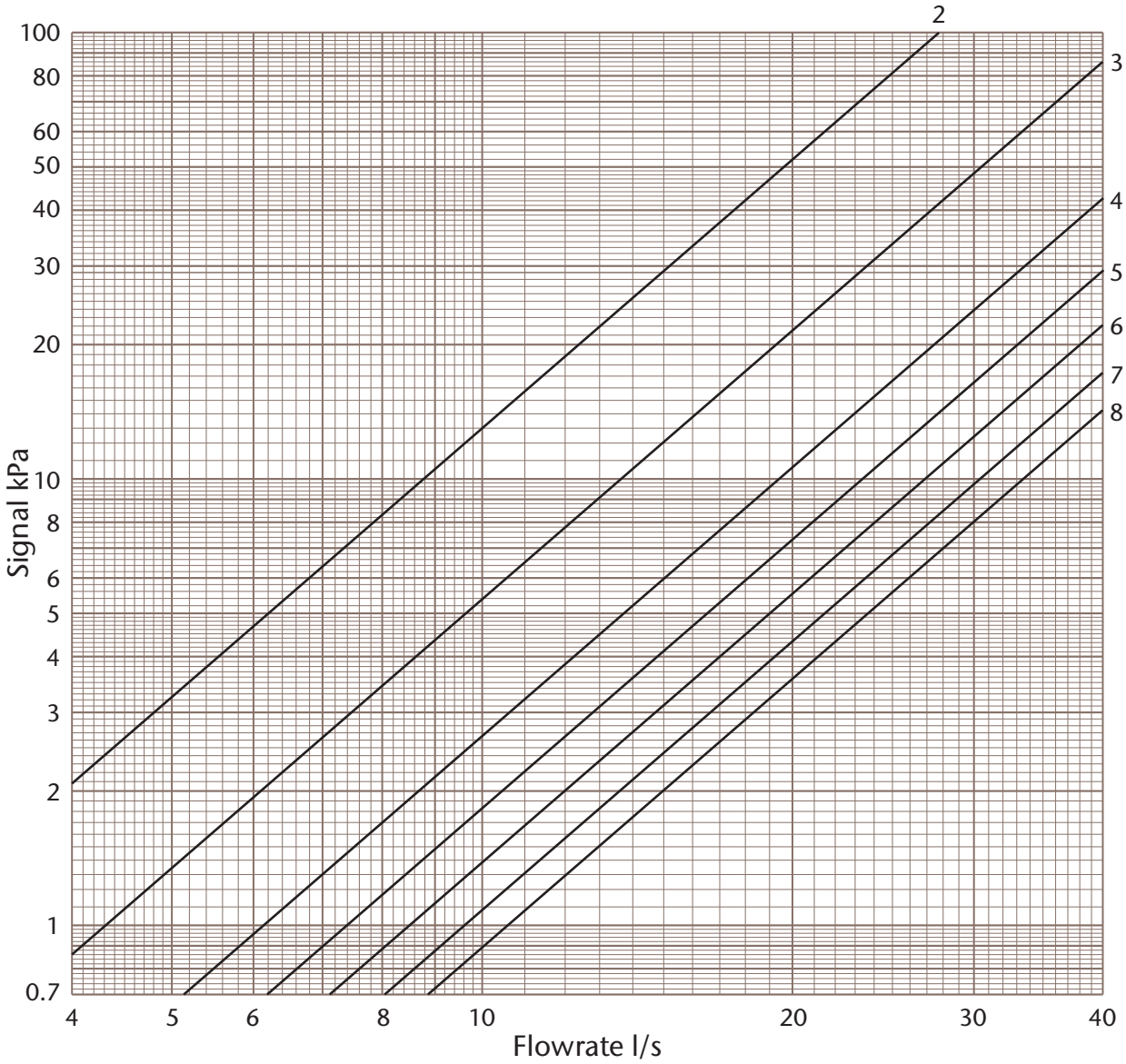
Q = Flowrate l/s

Δp = Signal kPa

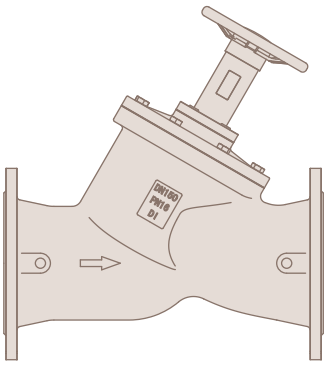
Kvs = Signal Co-efficient

Issue 1

DN125 ART 250 Variable Orifice Double Regulating Valve



Position	2	3	4	5	6	7	8
Kvs	99.9	155.3	221.0	266.5	305.9	346.6	381.5



Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

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

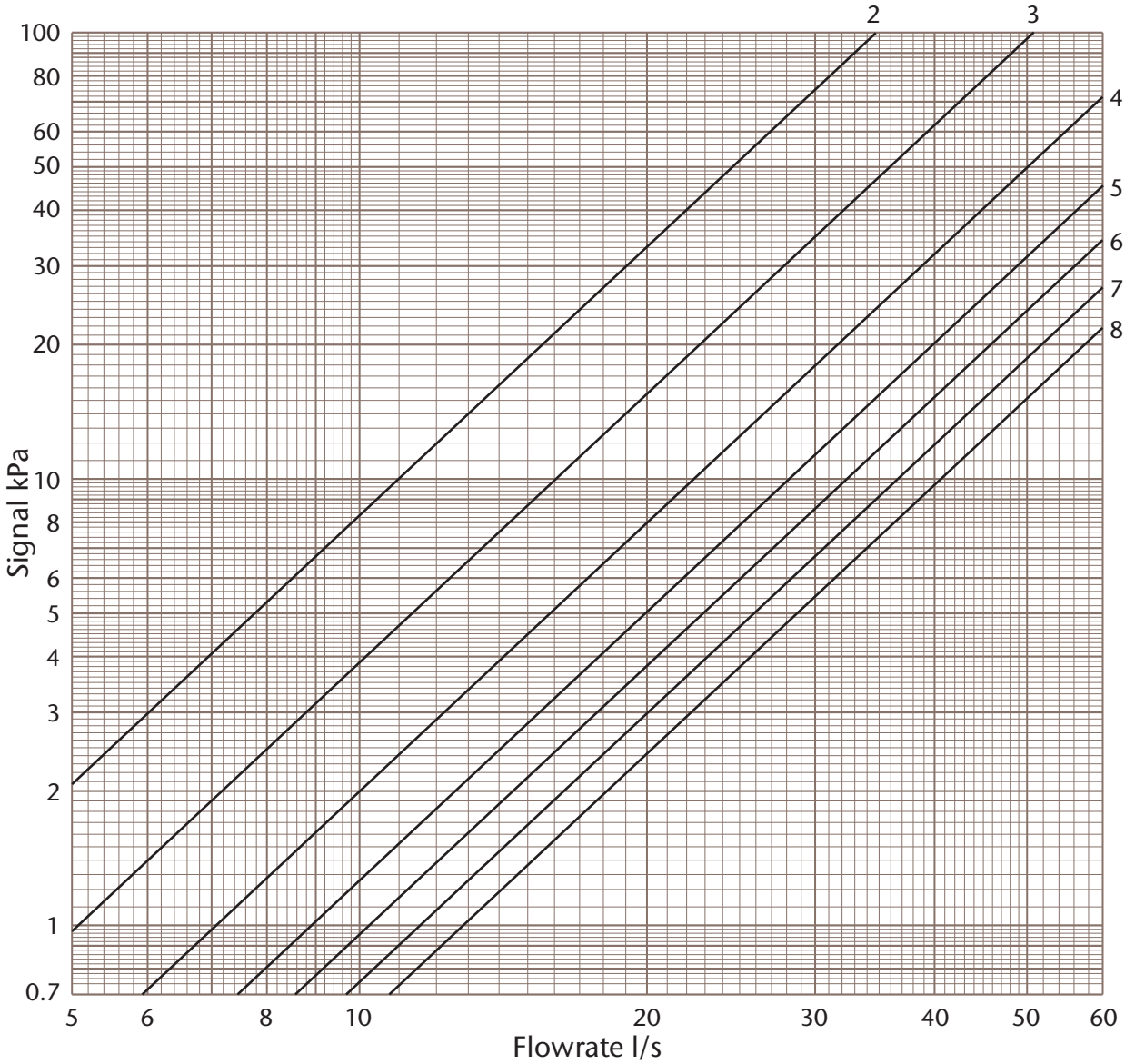
Where

Q = Flowrate l/s
Δp = Signal kPa
Kvs = Signal Co-efficient

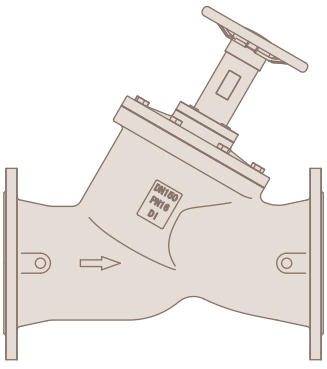
Issue 1

ART 250

DN150 ART 250 Variable Orifice Double Regulating Valve



Position	2	3	4	5	6	7	8
Kvs	125.1	183.3	254.9	320.5	369.2	418.0	462.4



Signal / Flowrate

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Where

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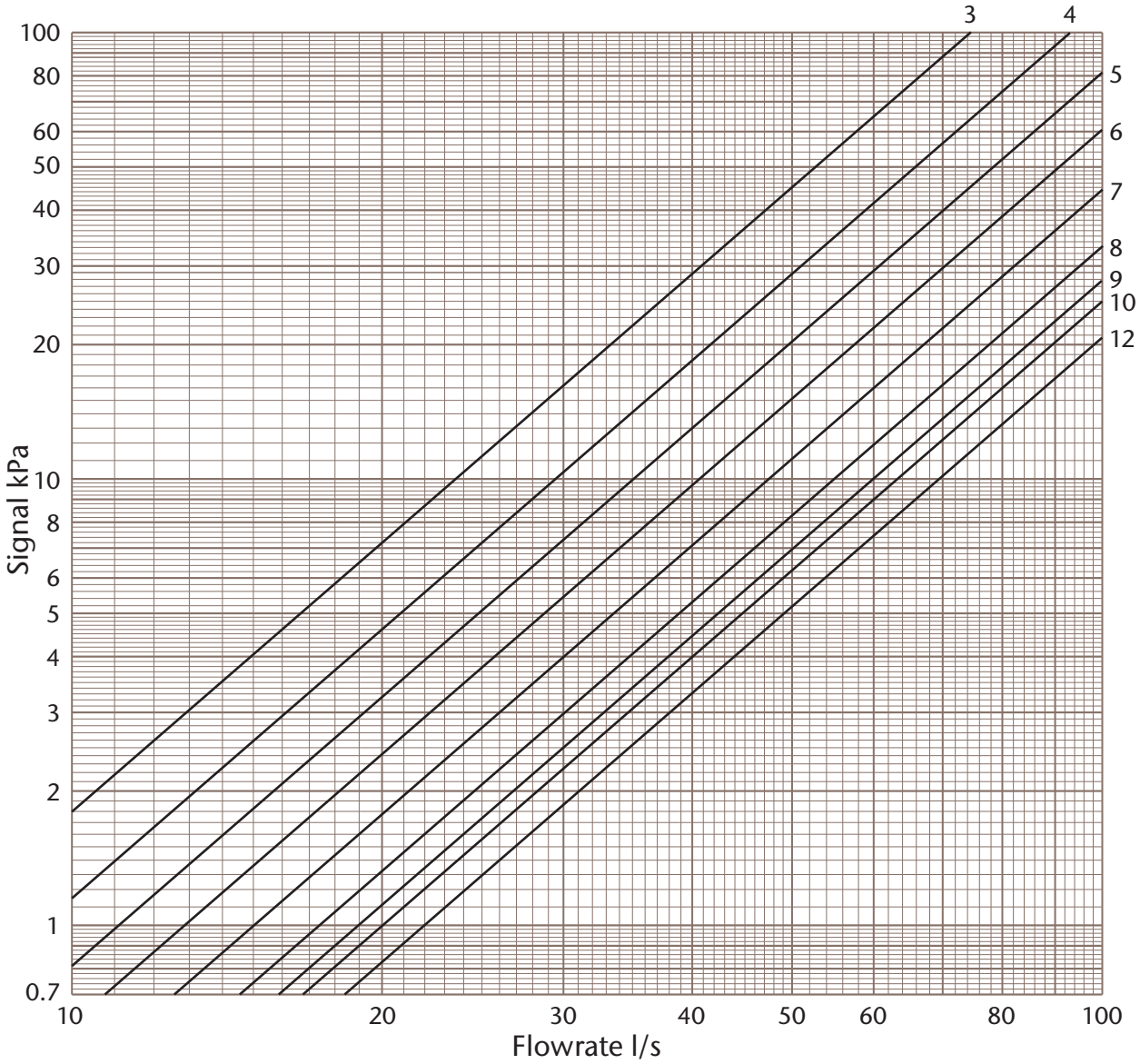
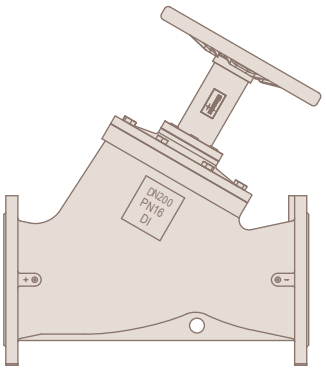
DN200 ART 250 Variable Orifice Double Regulating Valve



Position	3	4	5	6	7	8	9	10	12
K_{vs}	268.1	335.3	399.2	463	540	625	683	720	790



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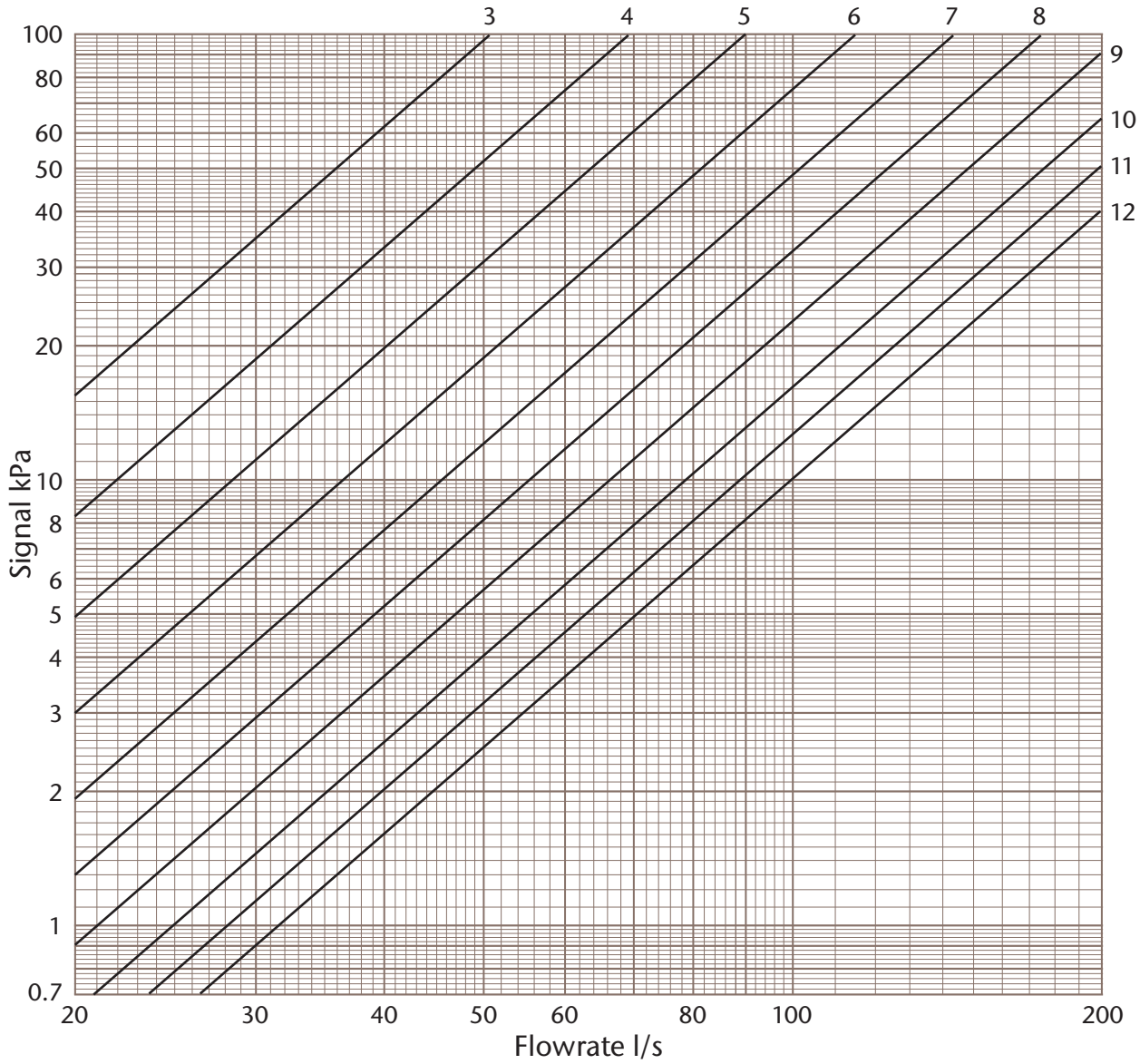
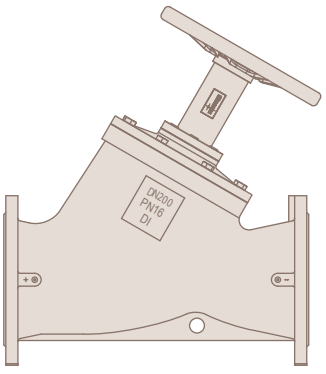
DN250 ART 250 Variable Orifice Double Regulating Valve



Position	3	4	5	6	7	8	9	10	11	12
Kvs	183	250	324	415	518	630	756	894	1013	1135



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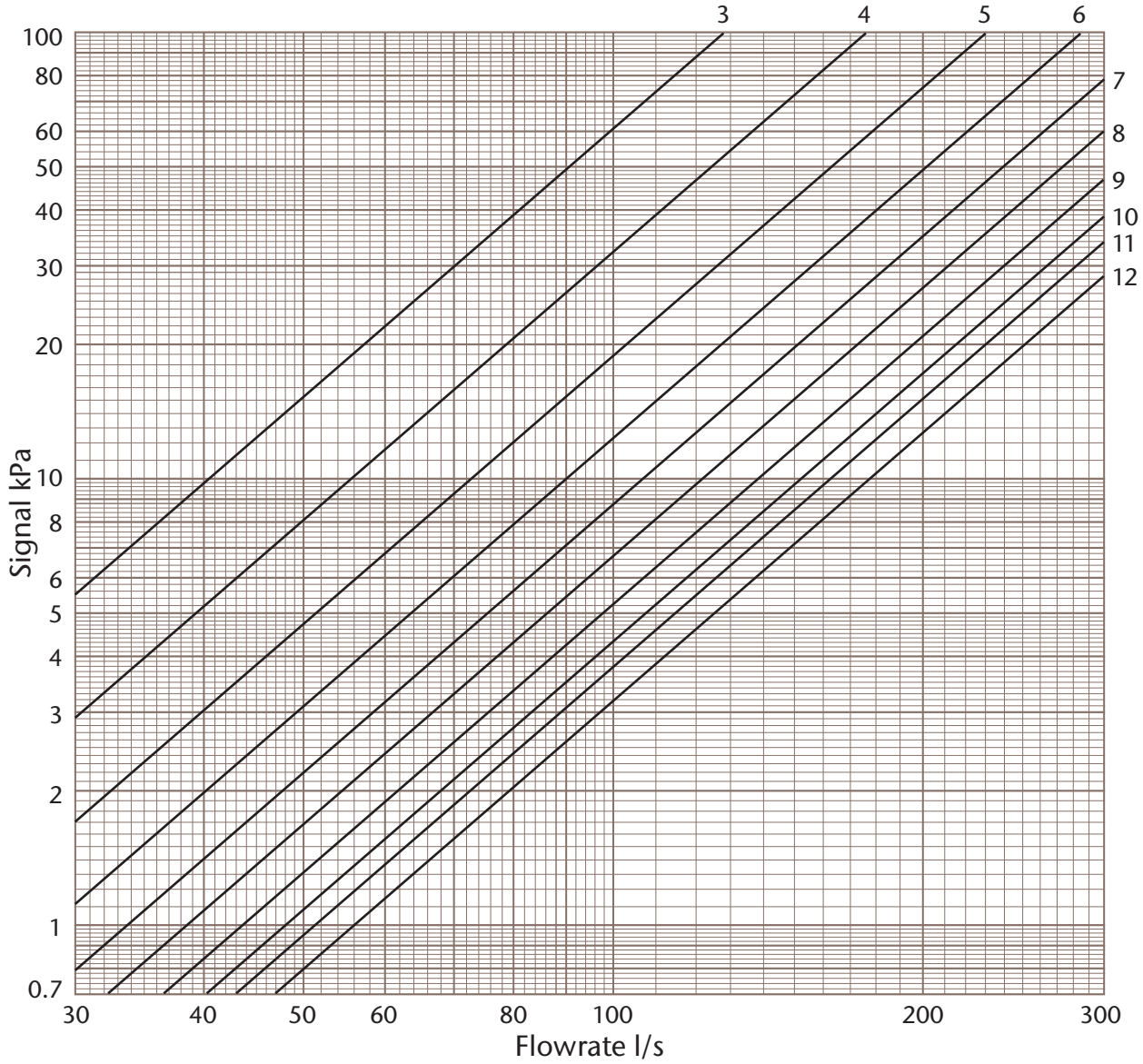
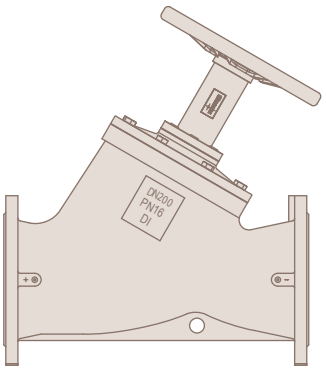
DN300 ART 250 Variable Orifice Double Regulating Valve



Position	3	4	5	6	7	8	9	10	11	12
K_{VS}	462	633	830	1025	1215	1393	1575	1730	1850	2022



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