# Installation & Operating Manual

# ART 22
# Fixed Orifice Double Regulating Valve

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ART 22 Rev 1

***Contents***



## 1. Introduction

- Albion Valves (UK) Ltd ART 22 is a Fixed Orifice Double Regulating Valve (FODRV) used to regulate and measure the flow of media passing through it.
- The ART 22 has been classified in accordance with PED 2014/68/EU.

## 2. Technical Data

| Valve Type | Size Range | Connection Type | Temperature Rating | Pressure Rating (Max) |
|---|---|---|---|---|
| ART 22 PN25 | DN 15 – DN 50 | ISO 228/1 | -10°C – 120°C | 25 bar |
| ART 22 PRS | 15mm – 54mm | Universal M & V 15mm – 35mm / Dedicated M & V 42mm & 54mm | -10°C – 120°C | See individual datasheet for confirmation |

**Flow Coefficient**
The flow rate can be calculated using the Kv value and a measured signal.

$Kv = Q*36 / \sqrt{\Delta P}$  $Kvs = Q*36 / \sqrt{\Delta Ps}$

Where Kv & Kvs = flow coefficient (m3/hr at 1 bar differential)
Q - Flow rate (l/s)
ΔP - Head loss attributable to valve (kPa)
ΔPs - Differential pressure across tappings (signal) (kPa)

**Kv Values**

| Size | ½" L | ½" ML | ½" | ¾" | 1 | 1 ¼" | 1 ½" | 2" |
|---|---|---|---|---|---|---|---|---|
| Kv | 0.53 | 0.74 | 2.0 | 3.9 | 7.3 | 13.4 | 18.7 | 30.1 |

**Kvs Values**

| Size | ½" L | ½" ML | ½" | ¾" | 1 | 1 ¼" | 1 ½" | 2" |
|---|---|---|---|---|---|---|---|---|
| Kvs | 0.62 | 1.1 | 2.3 | 5.3 | 9.2 | 19.0 | 22.1 | 42.3 |

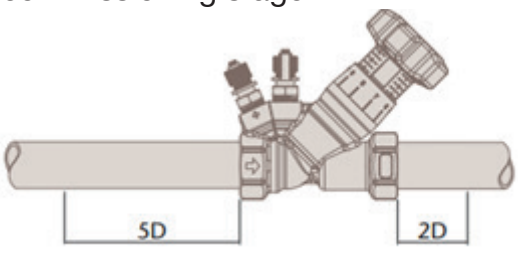
Albion Valves (UK) Ltd recommend that any ART 22 FODRV are sized prior to installation to ensure the correct valve selection.

## 3. Valve Features

- The ART 22 FODRV is manufactured in accordance with BS 7350.
- The ART 22 is used for balancing the flow in heating, cooling and domestic water systems.
- The ART 22 is a combined manual pre-setting valve with the following features:
  - Fixed measurement orifice;
  - Supplied with 2 measuring binder points;
  - Handwheel with shut-off function and clear 360° reading;
  - Digital scale with lock function.
- Made of "DZR" (Dezincification Resistant) brass.
- This article is made in compliance with the quality management requirements of ISO 9001 standard.
- All articles are tested in accordance with the EN 12266-1 standard.
- It can be used in a wide variety of sectors: heating, air conditioning, water, sanitary systems and generally with any non-corrosive liquid.

## 4. Valve Installation

- The valve should be sited to ensure ease of access.
- It is the responsibility of the installer to ensure the valve is suitable for service conditions e.g., temperature, pressure, and service media.
- Where fitted, remove flange protectors / dust caps and all other packaging material.
- Care should be taken to ensure the surface finish of the valve is protected during installation.
- The valves may be installed in horizontal or vertical pipework.
- The valve is uni-directional and should only be used for flow in the direction shown on the valve.
- Suitable gaskets / sealing material should be used during installation.
- ART 22 FODRV should be installed with a minimum of 5 pipe diameters upstream and 2 pipe diameters downstream as per the image below, this is to ensure flow accuracy is maintained during the commissioning stage.



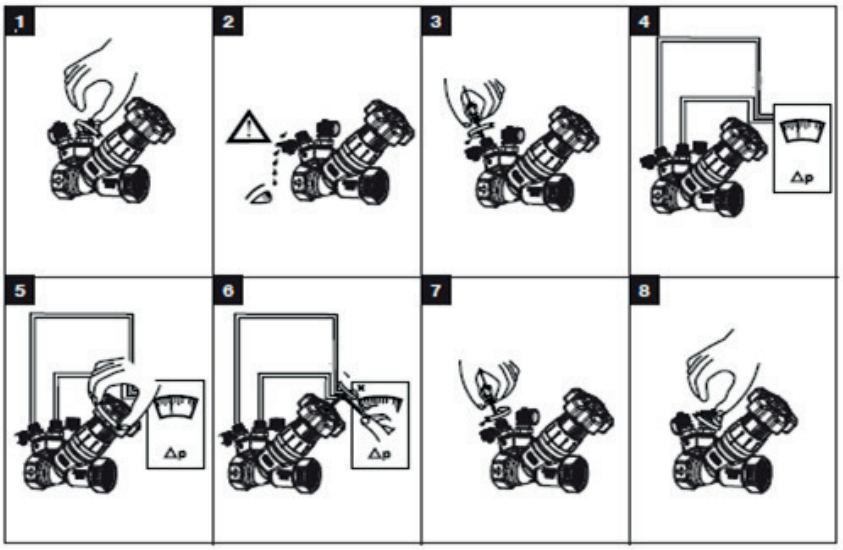
- When the regulated position is achieved the double regulating feature is set by rotating a 3mm allen key in a CCW direction until resistance is met. The regulating feature is now set and the valve can be closed for isolation and then reopened to the previously set position.
- This flow rate can be measured using a suitable differential manometer. This interfaces with the balancing valve through two sensors inserted in the binder test points placed before and after the valves fixed orifice plate.

**Flushing**

Control valves are sized to give good control over the system water and have therefore been designed with small, convoluted flow paths. These water ways may not allow adequate water velocities needed for flushing the system during the pre-commissioning stages of water treatment, even when fully open. In line with BSRIA recommendations, suitable consideration needs to be made as to how the removal of system debris can be achieved during the system flushing process.

## 5. Regulating

- To close the valve rotate the handle clockwise until it stops. Using the data reported in the attached diagrams, the flow can be regulated by rotating the handle counter-clockwise until the required flow rate is reached.
- This flow rate can be measured using a suitable differential manometer.
- This interfaces with the balancing valve through two sensors inserted in the binder points (Kvs) placed before and after the valve's gauged diaphragm.
- The main scale with values from 0 to 4 on the handle, indicates the turns for opening the obturator, while the second circular scale from 0 to 9 records the tenths of one turn.
- The position of the handle at the required flow rate can be memorized using a 3 mm Allen Key.



## 6. Approvals Classification

- The valve is WRAS approved.
- The valve is classified in accordance with PED 2014/68/EU as Sound Engineering Practice (SEP).

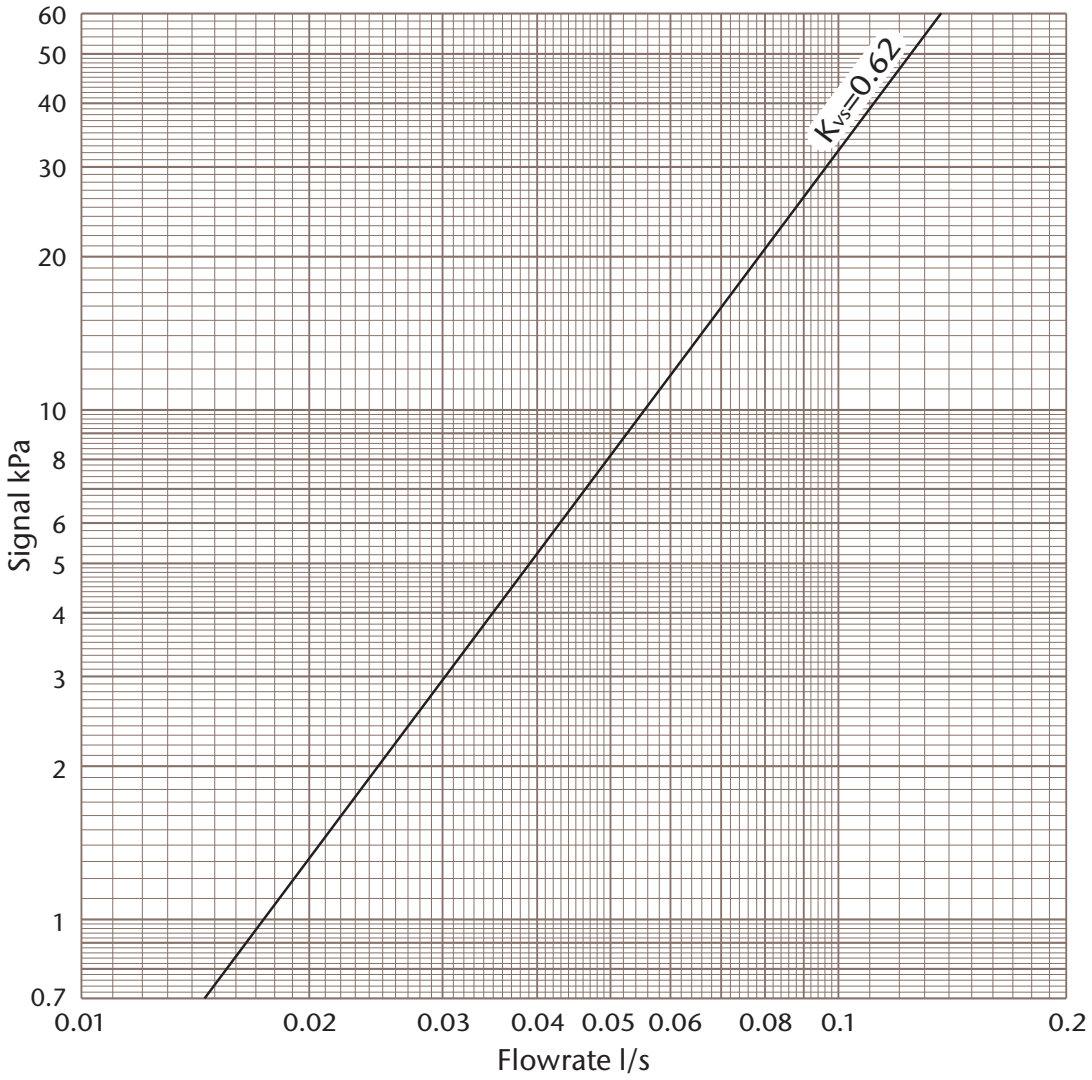
## 7. Troubleshooting

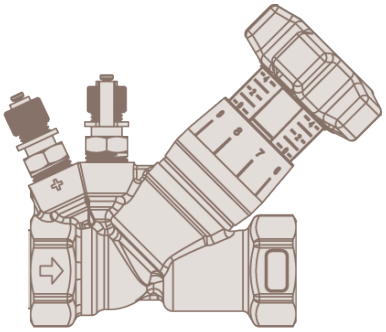
- If any maintenance is to be undertaken on the valve it is the responsibility of the installer to ensure the system is adequately drained and depressurized.
- A full risk assessment should be undertaken prior to any works taking place.

## 8. Warranty

- For further details of Albion Valves (UK) Ltd warranty period, please refer to Albion Valves (UK) Ltd “Conditions of Sale” available on our website.

## 1/2” ART 22L DZR Fixed Orifice Double Regulating Valve



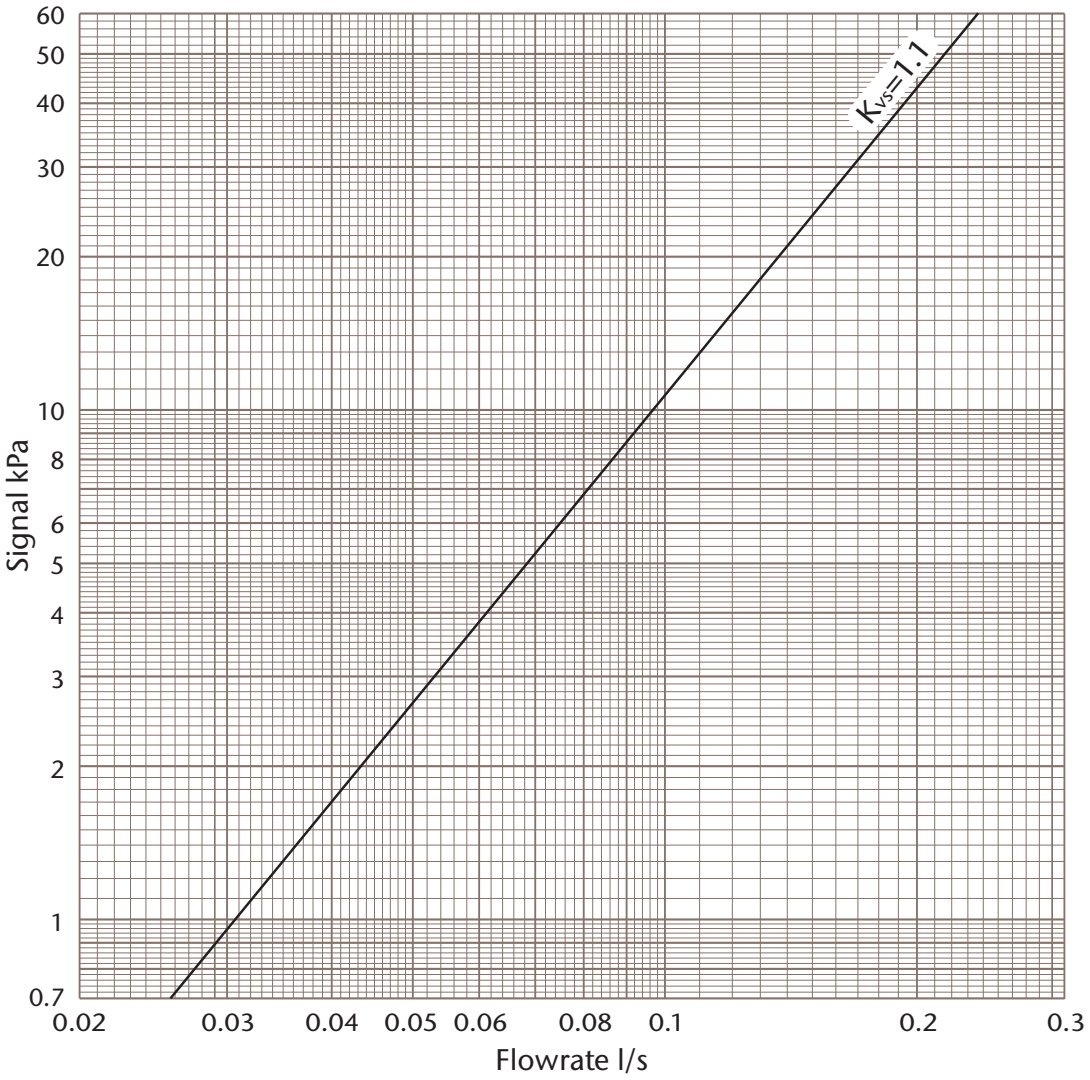
### Signal / Flowrate

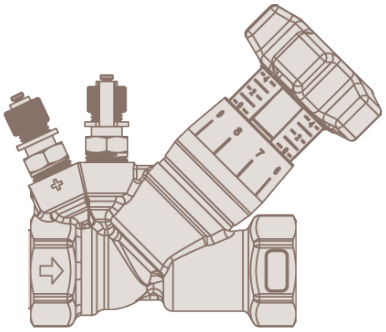
Chart used to determine flowrate from signal measured across orifice

$$Q = \frac{Kvs \sqrt{\Delta p}}{36}$$

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

## 1/2” ART 22ML DZR Fixed Orifice Double Regulating Valve



### Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

$$Q = \frac{Kvs \sqrt{\Delta p}}{36}$$

Where
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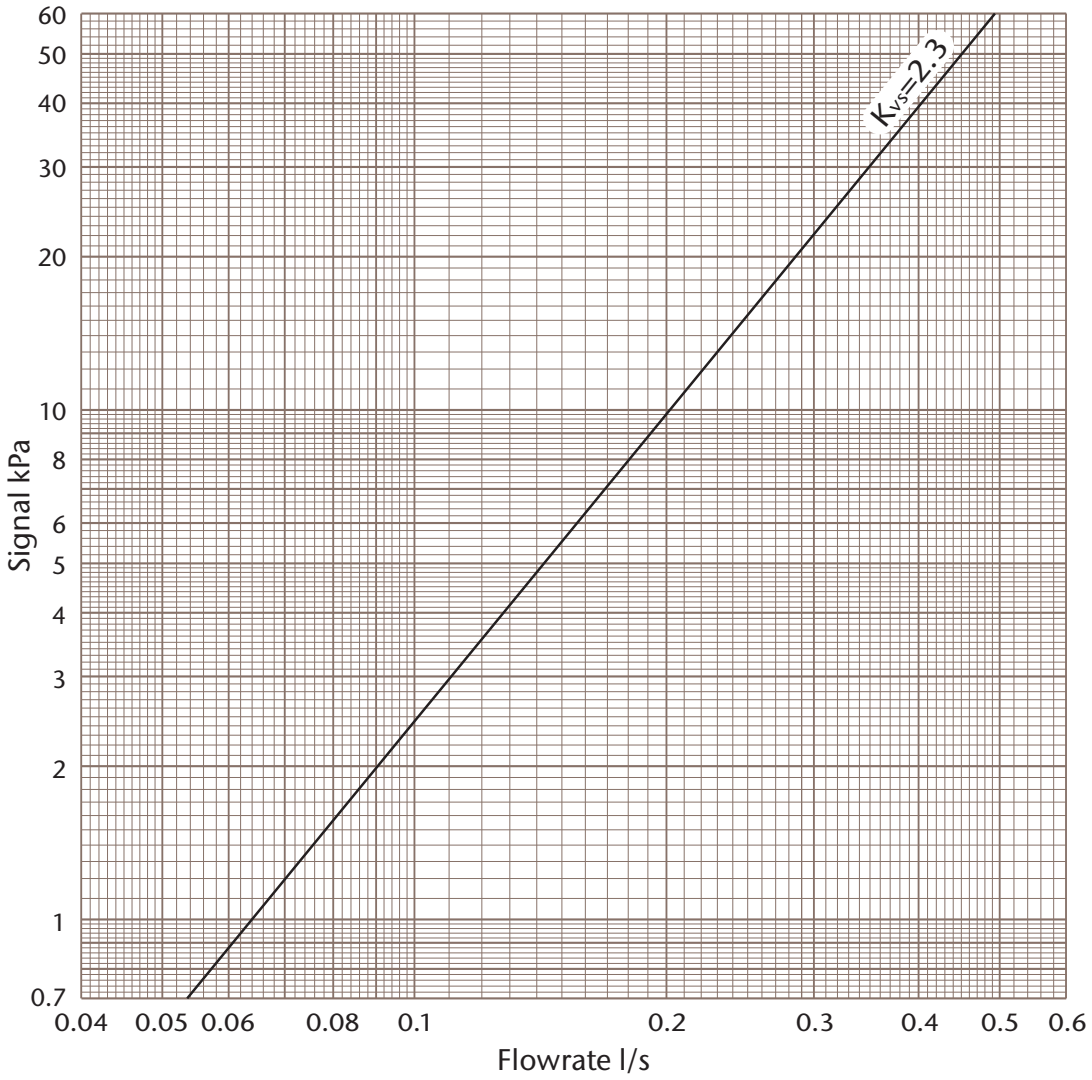
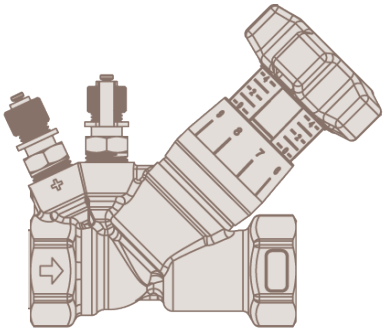
Δp = Signal kPa
Kvs = Signal Co-efficient

## 1/2” ART 22 DZR Fixed Orifice Double Regulating Valve



### Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

$$Q = \frac{Kvs \sqrt{\Delta p}}{36}$$

Where
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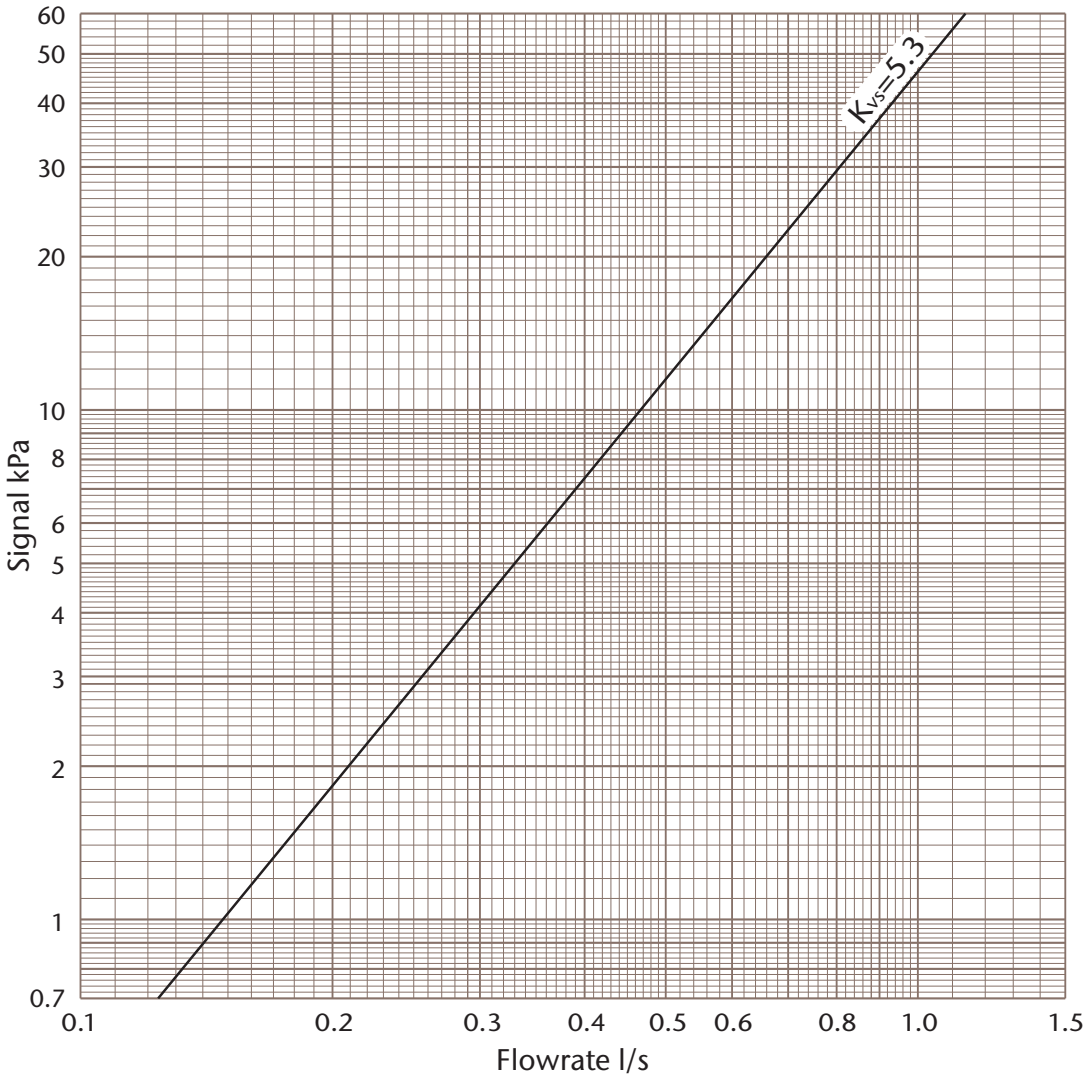
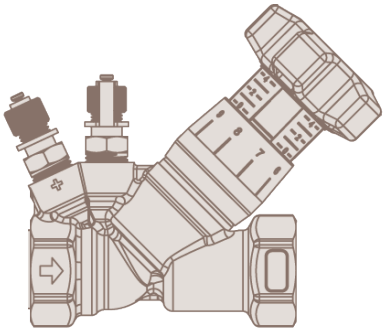
Kvs = Signal Co-efficient

## 3/4” ART 22L DZR Fixed Orifice Double Regulating Valve



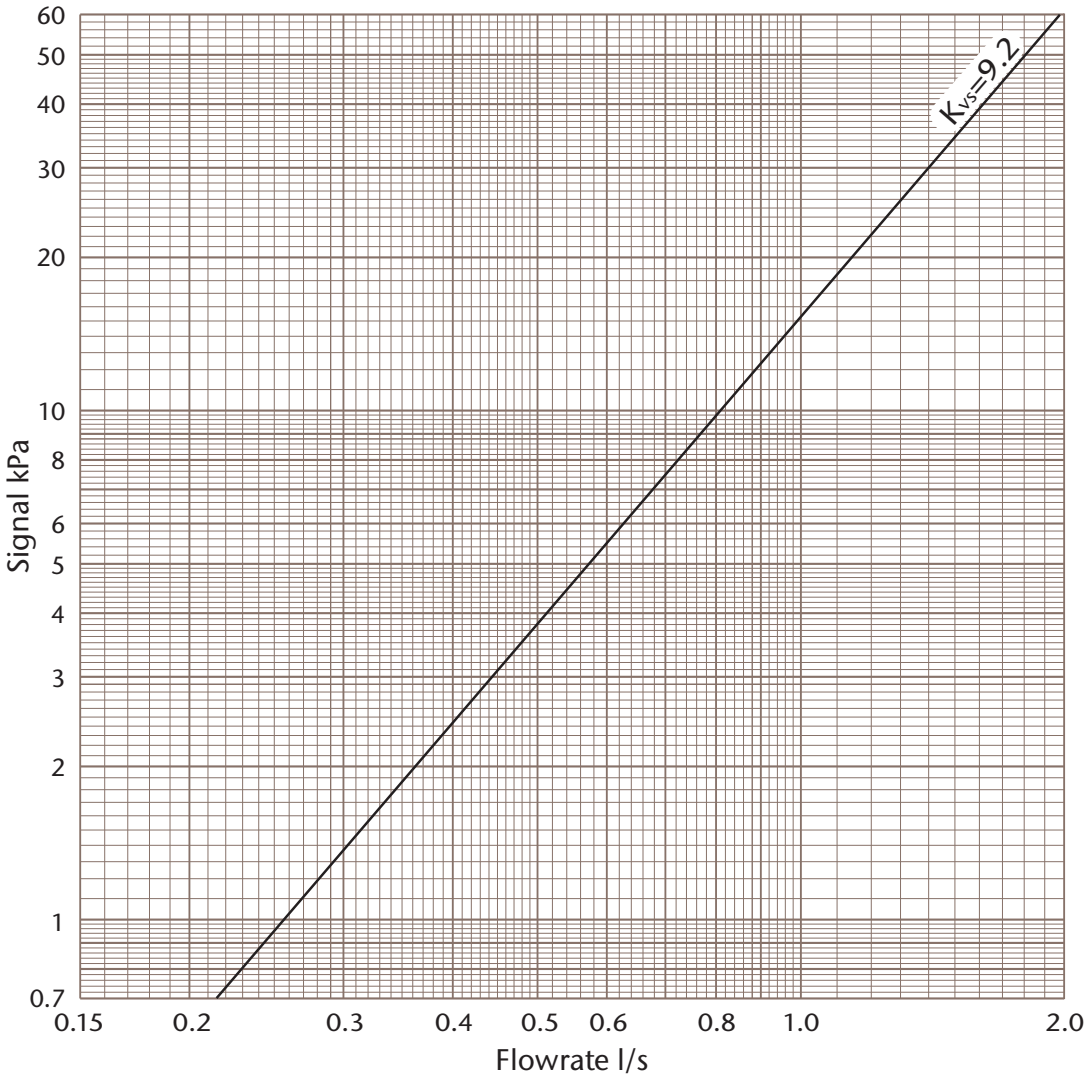
### Signal / Flowrate

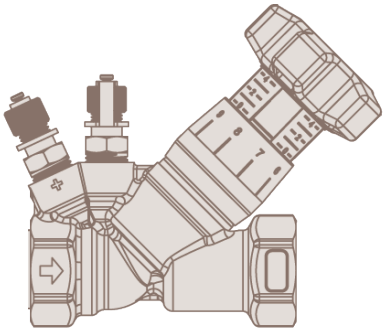
Chart used to determine flowrate from signal measured across orifice

$$Q = \frac{Kvs \sqrt{\Delta p}}{36}$$

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

## 1” ART 22L DZR Fixed Orifice Double Regulating Valve



### Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

$$Q = \frac{Kvs \sqrt{\Delta p}}{36}$$

Where
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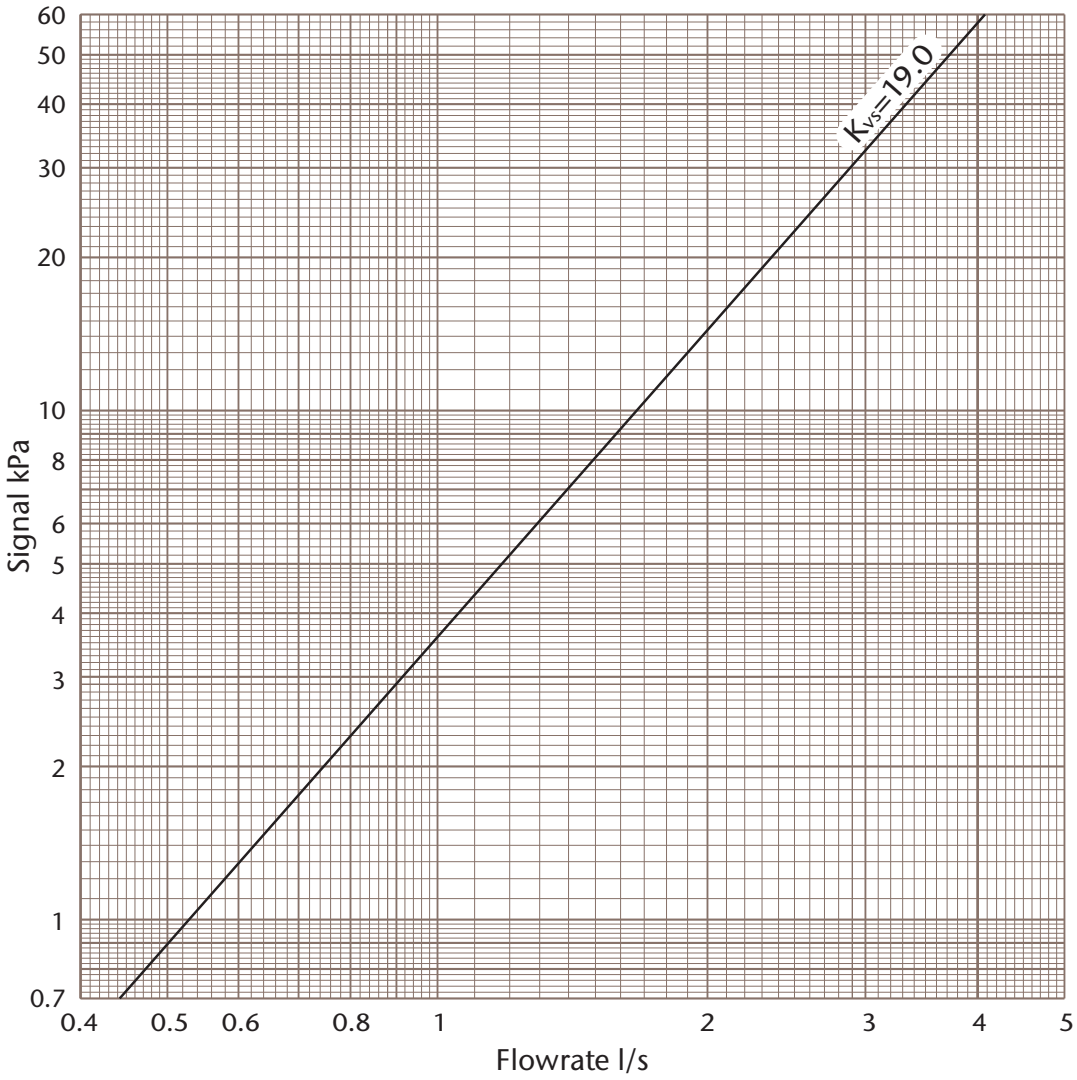
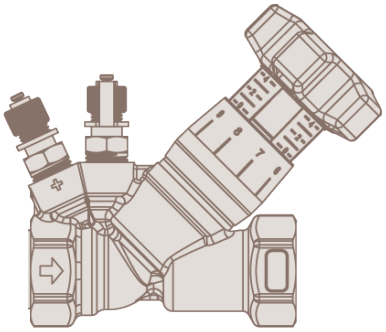
## 1.1/4” ART 22L DZR Fixed Orifice Double Regulating Valve



### Signal / Flowrate

Chart used to determine flowrate from signal measured across orifice

$$Q = \frac{Kvs \sqrt{\Delta p}}{36}$$

Where
Q = Flowrate l/s
Δp = Signal kPa
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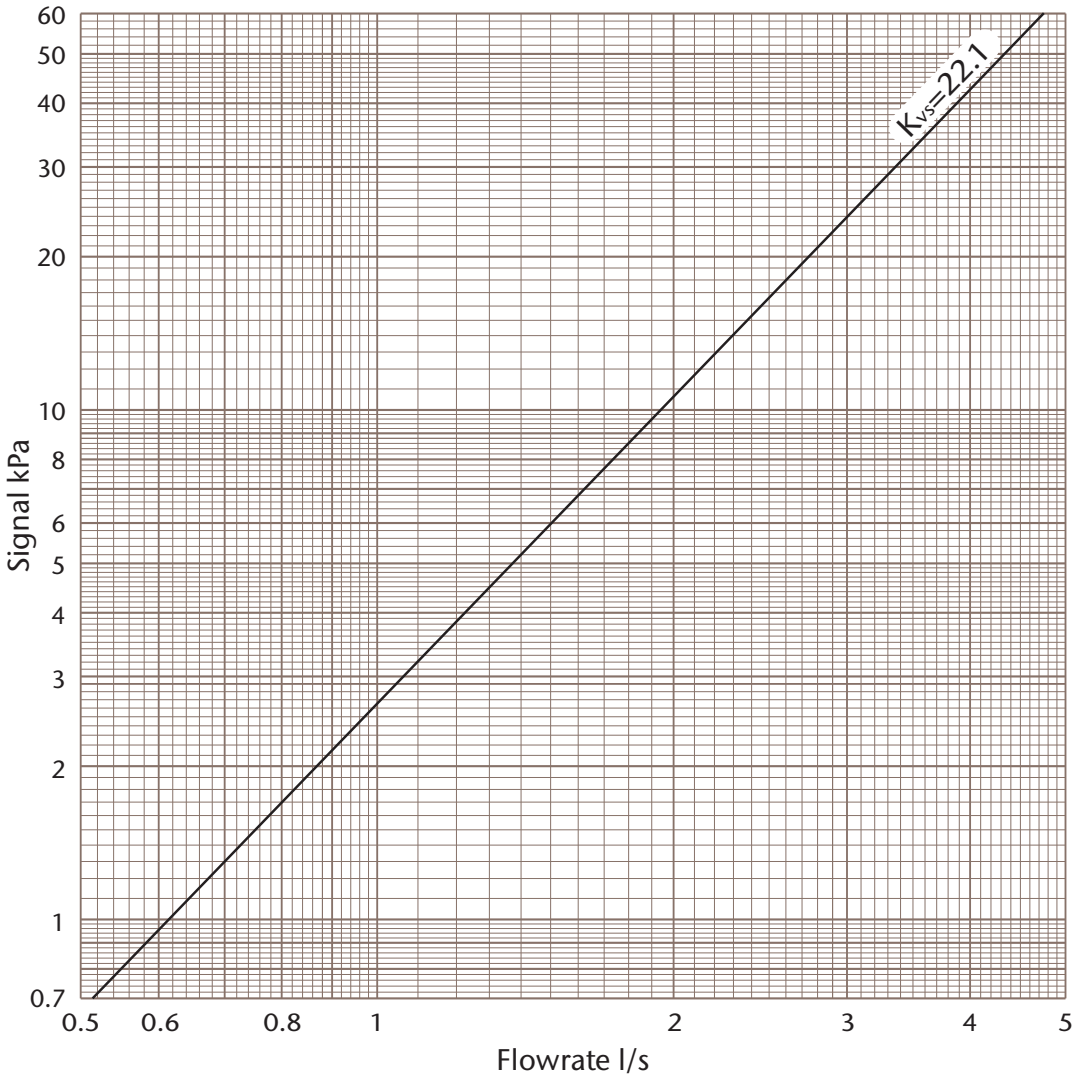
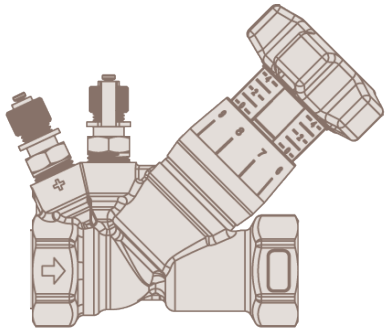
## 1.1/2” ART 22L DZR Fixed Orifice Double Regulating Valve



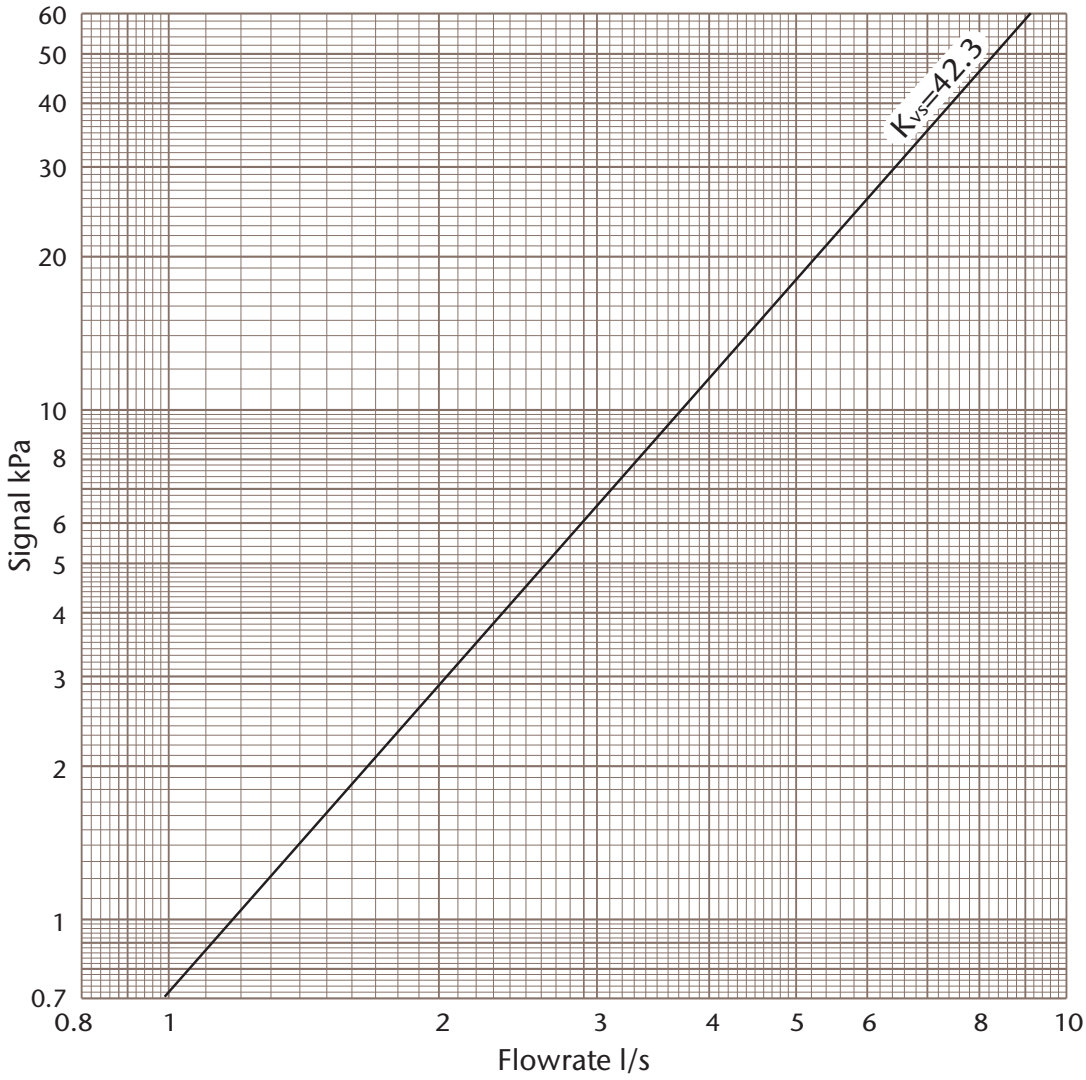
### Signal / Flowrate

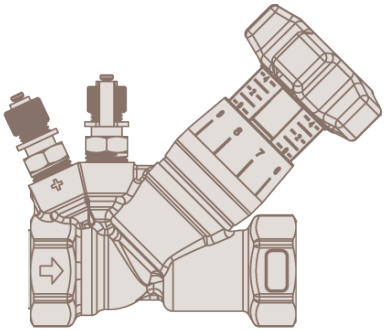
Chart used to determine flowrate from signal measured across orifice

$$Q = \frac{Kvs \sqrt{\Delta p}}{36}$$

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

## 2” ART 22L DZR Fixed Orifice Double Regulating Valve



### Signal / Flowrate

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Where
Q = Flowrate l/s
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Kvs = Signal Co-efficient

# About Albion Valves (UK) Ltd

Albion has been supplying valves and fittings to the building services and industrial markets for the past 40 years.

Albion was created with the sole purpose of providing quality products at an affordable price. With a growing reputation for quality and reliability, Albion is now an established brand providing the industry with a trusted alternative to premium-priced products.

Our commitment to setting the highest standards in all areas of our business means, if you're looking for quality, service, delivery and choice — you'll find it's all at Albion.

## Quality

Whatever you need, you can rest assured that if it comes from Albion it has been designed and manufactured to deliver optimum performance and is accredited with the necessary approvals. Our in-house quality department are always on hand too!

## Service

We pride ourselves on our customer service – we have even won awards for it! Our cradle to grave approach means you will never be on your own!

## Delivery

We know that time is money, and when a priority project depends on a part you can trust Albion to deliver – next day for all orders placed before 4:00PM.

## Choice

We may have started out with a single brass ball valve, but our range has grown substantially since and we now consider ourselves to be a 'One Stop Shop' with our comprehensive range. It is becoming more and more apparent to the industry, that it really is all at Albion.