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Pegler Yorkshire

PRECISE BALANCING AND COMMISSIONING

PUTTING YOU IN CONTROL

Ballorex

Pegler Yorkshire

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Diverse industry expertise combined with cutting-edge technological innovation mean Pegler Yorkshire's Control solutions help you overcome unique challenges and meet the highest standards in both performance and system aesthetics.

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Pegler Yorkshire's **Control** products enable you to balance precision flow control, energy efficiency and comfort through innovative products and systems that ensure building performance criteria are met and the resulting installation is easy, efficient and economical to operate.

Our comprehensive **Terrier**, **Meibes** and **Ballorex** product ranges offer proven energy saving solutions, exceptional accuracy and optimised system performance – so, whatever your project or challenge, you can be sure you'll always be in control.

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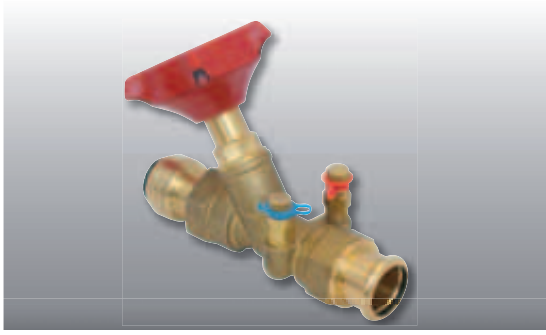
With over 100 years of manufacturing and innovation combined with extensive industry knowledge and worldwide market experience, Pegler Yorkshire offers the most advanced and complete **Connect & Control** systems on a global scale.

As one of Britain's largest and most respected manufacturers and suppliers of products for the plumbing and heating industries, Pegler Yorkshire is confident we can provide you with all the controls, connections and support your project requires.

For more information visit www.pegleryorkshire.co.uk

INVESTORS IN PEOPLE

BS 8537



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CONTENTS

Pegler Yorkshire is pleased to be associated with several influential industry organisations:

Association of Plumbing and Heating Contractors

The Bathroom Manufacturers Association

The UK Copper Board

Heating and Ventilating Contractors Association

The Brass Page for specifiers, designers, engineers and manufacturers

British Plumbing Employers Council

British Electrotechnical Allied Manufacturers Association

Construction Products Association

The Copper Development Association

Scottish and Northern Ireland Plumbing Employers Federation

Builders Merchants Federation

Institute of Plumbing

The UK District Energy Association

The Chartered Institution of Building Services Engineers

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BALLOREX COMMISSIONING VALVE SOLUTIONS INTRODUCTION TO THE RANGE

At Pegler Yorkshire we are constantly striving to develop system solutions that meet the changing needs of installers, contractors and specifiers alike. The Pegler Yorkshire range of commissioning valves comprises a number of products for a broad spectrum of applications across the commercial sector.

Pegler Yorkshire valves provide one of the most comprehensive ranges of products on the market today. Users of Pegler Yorkshire valves can be confident that they are purchasing an established product range with a proven reputation for quality and reliability.

BALLOREX FIXED COMMISSIONING AND BALANCING VALVES

Ballorex fixed commissioning double regulating valves incorporate a fixed plate orifice for accurate flow measurement and regulation. The design includes an oblique pattern body and easily accessible test points for use during commissioning. The range includes combined commissioning, double regulating valves and metering stations.

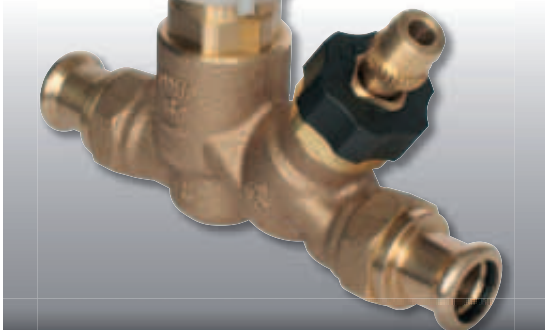
BALLOREX VENTURI

Ballorex Venturi offers a unique solution to commissioning modern heating and chilled water systems. The concepts incorporated into Ballorex Venturi provide significant benefits to consultants, contractors and commissioning engineers, enabling systems to be designed, installed and handed over without complications.

BALLOREX MODULAR

Ballorex Modular is a bespoke system made up of a variety of interlinked multi-functional valves and components manufactured from DZR brass. These are assembled into a complete unit that allows connection, regulation, isolation, flushing and draining, for fan coils and chilled beams.

Connections are made via female BSP, Tectite Pro or compression joints to the main pipework system; and via flat face male connections suitable for adaption to the terminal unit.



BALLOREX DYNAMIC (PICV)

Ballorex Dynamic (PICV) is a combined pressure independent flow limiter and control valve. The valve operates independently of changes in system pressure in water-based cooling or heating systems.

BALLOREX DELTA – DIFFERENTIAL PRESSURE CONTROL VALVES

The Ballorex Delta is a differential pressure control valve used in hydronic heating or cooling systems. By ensuring a constant differential pressure across motorised or static balancing valves, the Ballorex Delta valve provides the conditions necessary to achieve the desired flow distribution in a system.

BALLOREX THERMO

The Ballorex Thermo is used to maintain a selected temperature in a hot water circulation line. Valve features include automatic disinfection control, temperature selection dial, isolation and drain functions.

GLOSSARY OF TERMS

Fixed Orifice (FO)

The part of the flow measurement device which induces the pressure differential for flow measurement and is of a fixed dimension and geometry.

Double Regulating Valve (DRV)

A valve for flow rate regulation with established characteristics, allowing a set point to be maintained independently of the isolation function.

Differential pressure or signal (Dp or ΔP)

The difference in the pressure between the upstream and downstream pressure tapping points over the measurement device. Normally measured in kPa or mmH20.

Loss factor

The loss factor is a non-dimensional parameter which expresses the total head loss across the valve as a percentage of the signal when the valve is fully open.

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BALLOREX FIXED COMMISSIONING AND BALANCING VALVES

Ballofix fixed double regulating valves are used for manual balancing of water distribution systems.

Double regulating globe and oblique pattern valves are used in heating and chilled water applications and include one and two valve commissioning products and metering stations (fig. 1260 series FODRV).

Commissioning valves are an oblique design and have built-in fixed orifice plates, measuring/metering test points and a double regulating feature.

Commissioning sets are made up by specifying a flanged valve (V952) and a metering station (V953). These are closed coupled on installation. The V952 valve includes the double regulation feature for flow setting and the V953 provides the measurement and fixed orifice.

V952

V953

Double regulating valves for balancing only are featured in the Fig 1200 series DRV, with metering stations being available in the Fig 1250 series. These cannot be closed coupled to provide a commissioning set. Fig 1250 metering stations include Fig 1260 design fixed orifice plate and offers the same level of accuracy as the commissioning valve.

1260

1200

An option for installation is a VODRV commissioning valve V952V and is normally selected with an acceptability of a lower performance accuracy that FODRV.

- Water Supply (Water Fittings) Regulations 1999.
- Fig 1260, 1200 and 1250 are WRAS approved for use in drinking water applications.
- This WRAS approval extends to cover end connections for threaded, compression, XPress and Tectite jointing.

Flow charts are available and may be downloaded from the Pegler Yorkshire website: **www.pegleryorkshire.co.uk**

TEST POINTS

A range of Test Points are available in standard and extended length options as part of the Ballorex Fixed range.

BALLOREX FIXED FEATURES – 1260, 1200, 1250

- DZR brass bodies
- PN20 rated valves
- Non-rising stem
- Hand wheel incorporating position indicate 00 – 79
- Double Regulating feature on spindle
- WRAS Approved
- Available for connections:-
  - Threaded ends, parallel, ISO228:2003
  - Tectite Push-Fit Connections
  - Tectite Push-Fit x XPress Press-Fit
  - XPress Press-Fit
  - XPress Union x Press-Fit
  - Henco Multi-Layer
  - Compression Kuterlite Pro.

BALLOREX FIXED FEATURES – V952, V953

V952

- Cast iron body with flanged ends
- Non-rising stem
- Hand wheel and position indicator
- Double regulating feature
- PN16 rated
- Flanged to BSEN1092 – PN16.

V953

- Stainless steel metering stations
- Fixed orifice
- Extended test points
- Flow direction indication on the valve edge
- PN16 rated
- Flanged to BSEN 1092-1 PN16.

BALLOREX VENTURI COMMISSIONING VALVES

CONNECT ✚ CONTROL

The Ballorex Venturi valve provides an ideal solution for commissioning modern heating and chilled water systems in commercial applications. The range incorporates both static and dynamic commissioning valves and a variety of accessories.

At the heart of all Ballorex Venturi valves is the integrated fixed orifice Venturi. The Venturi principle was first demonstrated in 1797. Applied in the Ballorex Venturi valve, water is accelerated through a waisted orifice which increases the velocity of the flow and the pressure differential, proportionally amplifying the signal generated. The signal from a Venturi can be increased or decreased by enlarging or reducing the waisted orifice in relationship to the pipe diameter (Beta ratio). The benefit of the Venturi over the traditional orifice plate is that the signal developed is not a direct loss. Significant pressure drop is recovered after the water has passed through the venturi nozzle.

The Ballorex Venturi uses a quarter turn ball valve for isolation and a needle valve for regulation in the same body. This unique design feature enables the valve to be used for isolation purposes without altering the setting on the regulation needle.

The Ballorex Venturi is easy to regulate, isolate install and operate.

All commissioning stations require a certain length of straight pipeline, excluding fittings, upstream from the valve to ensure correct flow conditions for accurate flow measurement. This length varies between five and ten pipe diameters depending on the manufacturers' recommended guidelines, e.g. if the valve size is 50mm, the length required is between 250mm and 500mm. The dimension is increased if the valve is fitted immediately after a pump. Some commissioning stations also require a downstream straight length.

The Ballorex Venturi technology means that, except for immediately after a pump, no straight lengths are required up or down stream. This also applies to the steel Ballorex Venturi 900XSL and is advantageous in a tight plant room.

The Ballorex Venturi is easy to use because the unique design enables it to be installed in any orientation, even with the test points facing down.

The DRV (double regulating valve), which does not include test points, may be used in the system for bypass duties.

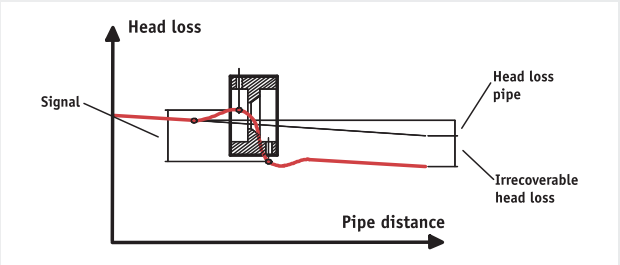
RELIABILITY

The Ballorex Venturi has been developed from proven technology by the Broen Valve Group – an ISO 9001 accredited company.

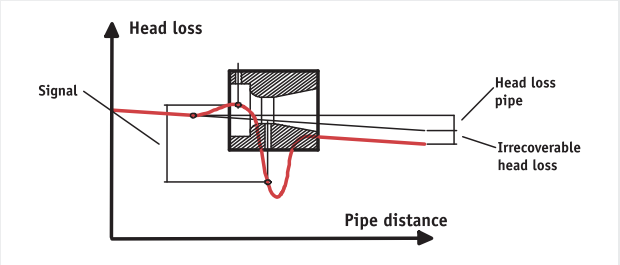
BENEFITS

- Higher signal range 0-100 kPa. Typical 10-60 kPa
- Built in upstream and downstream lengths
- May be fitted in any orientation
- Independent regulation and isolation functions
- Quarter turn isolation function
- "Quickset" digital precision handle
- Valve information easily visible when insulated
- Suitable for connecting to most steel,copper or plastic pipe systems
- Handle drilled to allow valve tagging and locking
- Accuracy +/-3%.

COMPARISON BETWEEN HEADLOSS IN FIXED ORIFICE AND FIXED VENTURI ORIFICE



Traditional orifice plate cartridge



Orifice Venturi cartridge

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BALLOREX VENTURI VALVES DN15 TO DN50

BALLOREX VENTURI DN15 TO DN50

The Ballorex Venturi is available as a double regulating valve (DRV) or a commissioning station (FODRV) with a choice of compression or female BSP connections. Other connections are available – please contact us for details.

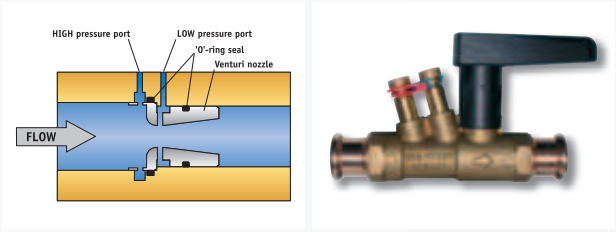
Both the Ballorex Venturi commissioning station and the Double Regulating Valve incorporate a characterised regulating needle combined with an isolation ball valve. The double regulating feature allows the valve to be isolated without movement of the set regulation point. The needle is adjusted to the required set point by using the Allen key, which is supplied with the Ballorex Venturi valve.

Commissioning station

The flow rate is measured using a fixed venturi orifice cartridge with test points inserted into the valve body. The functions are incorporated into a single fitting which contains the up and down stream lengths required for accurate flow readings except when installed within close proximity to a pump (when 5 x tube diameter of straight upstream pipeline is required). The commissioning valve produces a signal between 10–60 kPa. The valves are suitable for mounting in any orientation, including with the test points pointing down. The commissioning station has an accuracy of +/-3%.

Double regulating valve

It is not possible to measure the flow through the valve.



Cross section of Ballorex Venturi

The Venturi groove system

The Ballorex Venturi has been designed for installation in any orientation. This feature is possible due to the creation of a cylindrical chamber around the outside of the venturi cartridge and another chamber in the housing. Two pilot holes from the high and low pressure sides of the venturi feed the pressure differential in to the chambers, on the outside of which are located the test points. The pilot holes from the venturi to the chamber are positioned at 3 and 9 'o' clock positions when the valve is positioned upright. Therefore, should either pilot hole fill with debris (when positioned pointing down) the other will be pointing up allowing the signal to be measured.

"Quickset" digital precision handle

To complement the high accuracy of the Ballorex Venturi the "Quickset" Digital Precision Handle is fitted to all commissioning stations and double regulating valves in sizes up to 54mm/2". With 100 individual positions and clear scales, the handle ensures easy and accurate flow rate setting even after the application of thermal insulation.

To set the regulating spindle an Allen key is inserted through the handle. This is rotated to increase or decrease the flow. Due to the unique construction using the integrated ball valve and separate regulating spindle the Ballorex Venturi can be isolated with a quarter turn rotation of the handle without moving the regulated point. This feature removes the need for a memory stop.

Regulation

- Allen key operated (DN15-25 and ½" to 1": 3mm, DN32-50 and 1¼" to 2": 5mm)
- Two digit set point indication
- Digits are reflective to improve visibility
- Number of set points: 100.

Valve identification

All handles are labelled to identify valve size, Kvs value and Venturi cartridge type i.e. low flow, standard flow.

Security

To prevent unauthorised isolation, the handle can be wired to the pipe in the open or closed position. Adjustment of the regulating needle can only be made with an Allen key.

SIGNAL COEFFICIENTS

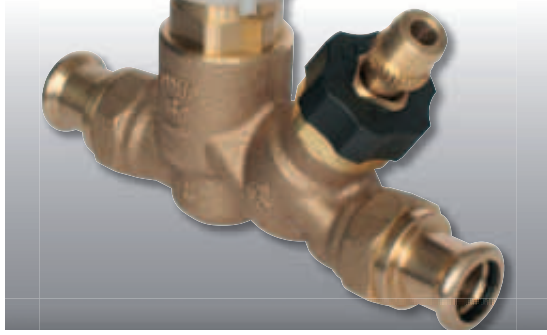
Kv

The flow of water through a flow measurement device or double regulating valve at a temperature between 5°C and 40°C measured in cubic metres per hour, that will induce a pressure loss of 1 bar.

Kvs

The flow of water through a fixed flow measurement device at a temperature between 5°C and 40°C measured in cubic metres per hour, that will induce a differential pressure, or a signal of 1 bar across the tapping points.

The Kvs is printed on the valve handle.



BALLOREX VENTURI STATIC DATA DN15 TO DN50

CONNECT + CONTROL

Flow ranges Ballorex Venturi press and push connections

Valve size	Connection size	Description	Flow (l/s)
DN15	15mm	Ultra low flow Low flow Standard flow High flow	0.0076-0.035 0.0172-0.074 0.036-0.148 0.074-0.330
DN15	18mm	Ultra low flow Low flow Standard flow High flow	0.0076-0.035 0.0172-0.074 0.036-0.148 0.074-0.325
DN20	15mm	Low flow Standard flow High flow	0.036-0.148 0.074-0.325 0.0142-0.603
DN20	18mm	Low flow Standard flow High flow	0.036-0.148 0.074-0.325 0.0142-0.603
DN20	22mm	Low flow Standard flow High flow	0.036-0.148 0.074-0.325 0.0142-0.603
DN25	28mm	Standard flow High flow	0.0142-0.603 0.29-1.250
DN32	35mm	High flow	0.29-1.250
DN40	42mm	High flow	0.44-1.880
DN50	54mm	High flow	0.82-3.510

Flow ranges Ballorex Venturi threaded and compression connections

Valve size	Connection size	Description	Flow (l/s)
DN15	½"	Ultra low flow Low flow Standard flow High flow	0.0076-0.035 0.0072-0.074 0.036-0.148 0.074-0.330
DN20	¾"	Low flow Standard flow High flow	0.036-0.148 0.074-0.325 0.142-0.600
DN25	1"	Standard flow High flow	0.142-0.603 0.29-1.250
DN32	1¼"	High flow	0.29-1.250
DN40	1½"	High flow	0.44-1.880
DN50	2"	High flow	0.82-3.510

Flow ranges – Ballorex Venturi – DRV

Valve size	Connection size	Description	Kv (m^3/h)
DN15	½" BSP	Low flow Standard flow	0.083-1.62 0.261-2.11
DN20	¾" BSP	Low flow Standard flow	0.094-4.26 0.325-4.81
DN25	1" BSP	Standard flow	0.921-9.94
DN32	1¼" BSP	High flow	1.95-13.3
DN40	1½" BSP	High flow	2.6-23.3
DN50	2" BSP	High flow	5.37-35.3

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BALLOREX STEEL VENTURI COMMISSIONING VALVES DN65 TO DN300

STEEL BALLOREX VENTURI DN65 TO DN300

The steel Ballorex Venturi is available as a commissioning station (FODRV) with flanged connections, as a regulating valve or as a fully lugged double regulating valve (DRV).

Both the Ballorex Venturi commissioning station and the Double Regulating Valve incorporate a characterised regulating butterfly valve with fixed liner. All steel valves in the Ballorex Venturi range are operated by means of a manual gear with memory stop, which is used to allow operation only between set point and closed position. This double regulating feature provided by a memory stop in the gear box allows the disc setting to be locked in position (using an Allen key) and guarantees it will return to the exact same position after isolation.

Commissioning station

The flow rate can be measured using a fixed venturi orifice steel pipe with test points. The commissioning station is suitable for mounting in any orientation with the venturi test points positioned between 8 and 4 o'clock.

Regulating valves (DRV type)

It is not possible to measure the flow through the valve. The butterfly valve is suitable for mounting in any direction.

Standard pattern

The up and down stream lengths are included. However when the valve is installed within close proximity to a pump the upstream straight pipe must be 10 x tube diameter.

Extended pattern

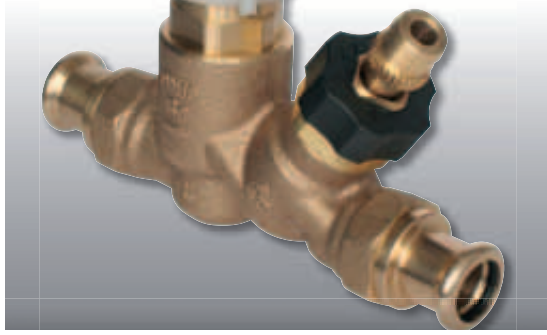
The assembly incorporates the up and down stream lengths required for highest accuracy in flow measurement, except when installed within close proximity to a pump, when 5 x tube diameter straight pipe is required upstream.

Flow rates

The table below indicates the flow rates of steel Ballorex Venturi valves.

Flow ranges – Ballorex Venturi

Nominal size	Flow (l/s)
DN65	1.8-7
DN80	3.5-15
DN100	6.2-26
DN125	9-40
DN150	16.8-57
DN200	28-100
DN250	41-157
DN300	72-226



INTRODUCTION TO BALLOREX MODULAR

CONNECT + CONTROL

Ballorex Modular is a bespoke system made up of a variety of interlinked multi-functional valves and components manufactured from DZR brass. These are assembled into a complete unit that allows connection, regulation, isolation, flushing and draining, for fan coils and chilled beams.

Connections are made via female BSP, Tectite Pro or compression joints to the main pipework system; and via flat face male connections suitable for adaption to the terminal unit.

ADVANTAGES OF BALLOREX MODULAR

The primary advantage of the Ballorex Modular system is its ability to be supplied in a wide variety of configurations in line with the specifiers' particular needs. Any component combination can be requested, and will be assembled specifically to meet individual requirements.

Other advantages of Ballorex Modular include:

Operational capabilities

- Can carry out any water flow control function required by a terminal unit – forward flush, bypass or backflush.
- The flow rate can be adjusted and set through the Ballorex Venturi commissioning valve.

Installation

- Installation planning is straightforward as all functions are contained within one unit.
- Requires no on-site or in situ adaptation prior to installation.
- A compact system, due to the valves' multi-functional capabilities and the ability to specify the flow and return centre spacing.

Maintenance and practicalities

- Valves with extended spindles contain a unique integral non-rotating outer spindle. This ensures that the vapour seal is maintained once insulation is applied and the valve opened or closed.
- Ball valve handles are colour coded red or blue to indicate heating or chilled water respectively.
- Colour coded test points throughout the unit allow temperature and pressure measurements to be taken.
- Strainers can easily be removed without the need to drain water from the installation.

BALLOREX MODULAR COMPONENTS

Each Ballorex Modular system is made up of a number of components, each with a particular function. Following specification these components are factory configured, tested and packaged as a complete unit.

TUBE AND PIPE COMPATIBILITY

Ballorex Modular valves can be used with copper tube to BS EN 1057, carbon steel tube to EN 10305PB, steel tube to BS 1387 and stainless steel tube to EN 10312, EN 10816 part 2.

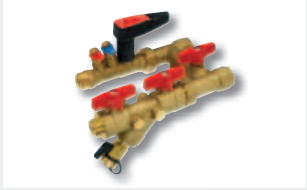
INSTALLATION

Each Ballorex Modular unit is supplied pre-assembled or with the specified individual components for self-assembly. Jointing instructions can be made available from our technical department.

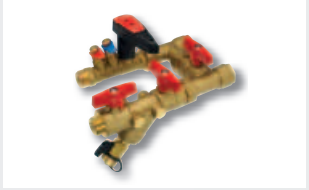
PRE-COMMISSIONING

Pre-commissioning the Ballorex Modular system can be carried out in three simple steps – bypass operation, forward flush operation and backflush operation. Together, these flushing operations clear any debris which could have potentially entered the system during its assembly (refer to the adjacent illustrations and handle positions).

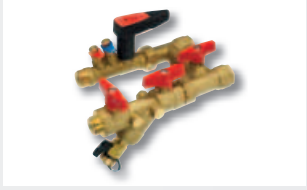
The strainer basket will need to be emptied of debris following prolonged use of the forward flush operation. However, an in-built design feature means this is not necessary for the backflush operation.



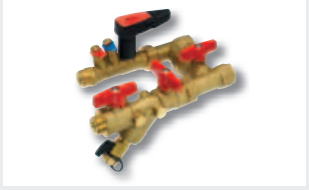
Normal operation



Bypass operation



Forward flush operation



Backflush operation

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BALLOREX VENTURI SYSTEM DESIGN

TUBE AND PIPE COMPATIBILITY

Ballorex Venturi valves with compression ends can be used with copper tube to BS EN 1057, and, in sizes up to 28mm with PEX and PB pipe (with appropriate liner). Ballorex Venturi valves with threaded ends can be used with steel tube to BS 1387 and male iron connection fittings. Steel Ballorex Venturi valves should be assembled with the appropriate flanges and tube. For full details of tube and pipe specifications, please see pages 68, 69 and 70.

CALCULATIONS

Pressure loss

Dp FODRV = ΔP x loss factor

where

Dp FODRV = Head/pressure loss created by FODRV (kPa)

ΔP = signal (kPa)

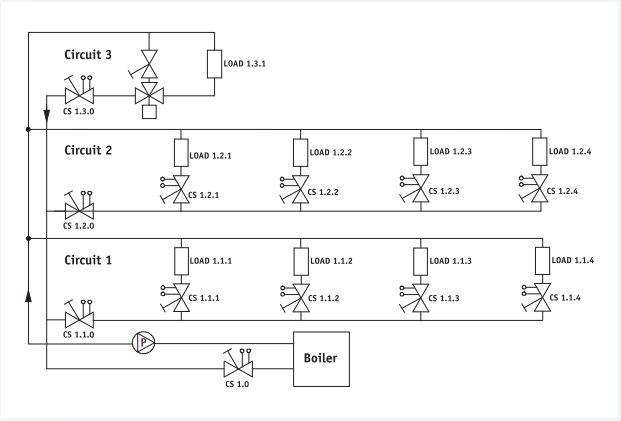
Loss factor for fully open valve – see values in the product tables.

Calculation of flow rate, signal and size

$$Q = \frac{Kvs \times \sqrt{\Delta p}}{36} \text{ or } \Delta p = \left(36 \frac{Q}{Kvs}\right)^2$$

Example

Given:	Flow (Q) = 0.11 l/s Pipe size = 15mm E.g. => Ballorex Venturi DN15H female with Kvs = 0.746 and loss factor = 0.24
Wanted:	Signal (Dp) and pressure loss (Dp FODRV)
Signal (Dp):	$\Delta p = \left(36 \frac{0.11}{0.746}\right)^2$ = >Signal = 28.2 kPa
Pressure loss:	Dp FODRV = 28.2 x 0.24 (kPa) = 6.76 = >Pressure loss = 6.76 kPa



Typical installation

ACCESSORIES

Test point inserts

Test point inserts are fitted as standard to all Ballorex Venturi commissioning stations, and have a weight of 26g. The integral EPDM seals are resistant to glycol, alcohol, phosphates, esters, ketones and detergents.

Extension tube

Extension tubes are available to allow valves to be insulated to a thickness of 50mm without the test points being covered.

Up and down stream lengths are not required for DN 15-300 – only after direct connection to a pump.

BALLOREX DYNAMIC (PICV) COMMISSIONING VALVES DN15 TO DN50

CONNECT ✚ CONTROL

TECHNICAL SPECIFICATION

The Ballorex Dynamic (PICV) valve provides a combined pressure independent flow limiter and control valve in one body.

This innovative new range of dynamic valves operate independently of changes in system pressure in heating and cooling water systems within commercial applications.

At the heart of the Ballorex Dynamic (PICV) is an integrated, in line fixed orifice Venturi. This allows direct verification of pre-setting and actual flow in operation, taking the guess work out of measuring the flow further down stream to verify or adjust the setting.

The Ballorex Dynamic (PICV) carries with it many of the benefits of the Ballorex Venturi Static valve:

- Direct flow measuring
- Measuring accuracy within +/-3%
- Easy valve selection
- Accurate and easy setting of maximum flow
- Installation can be done in any desired position
- Can be installed directly onto bends, reducers and flexible hoses
- Will save time, space and money
- PICV, Pressure Independent Control Valve.

FEATURES

- Commissioning is no longer needed – operates independently from pressure changes
- Full control authority means perfect flow control
- Different inserts are colour coded and easily identified.

DN15 to DN50 product range

Nominal size	Flow (l/s)
DN15L	0.01 – 0.033
DN15S	0.025 – 0.125
DN15H	0.083 – 0.39
DN20S	0.089 – 0.245
DN20H	0.232 – 0.617
DN25S	0.240 – 0.65
DN25H	0.485 – 0.925
DN32H	0.530 – 1.220
DN40S	1.015 – 2.095
DN50H	1.435 – 3.495

Ballorex Dynamic (PICV) DN15–DN50 specification

Temperature range	-20°C to 120°C
Pressure range	20 – 400ka
Measuring accuracy	+/- 3%
Pressure class	PN25
Valve stroke	3.5mm
3 modes of operation	1. Modulating valve with automatic flow limiter 2. On/off modulating control valve with automatic flow limiter 3. Automatic flow limiter
Suitable for	Water, propylene or ethylene glycol mixture
Housing material	DZR Brass
Sealing material	EPDM
Stroke	3.5mm

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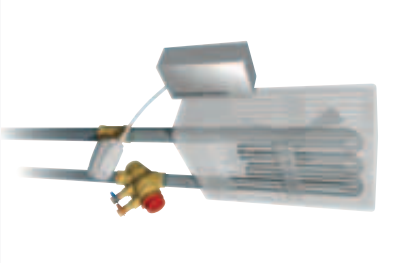
BALLOREX DYNAMIC (PICV) DN15 TO DN50 INSTALLATION OPTIONS

PERFECT FLOW WITH DYNAMIC BALANCING

Automatic flow regulator

Without actuator the valve is an automatic flow limiter. With direct flow measuring the designed maximum flow is easily preset with a unique accuracy of +/- 3%. The Ballorex Dynamic (PICV) will ensure that the maximum preset flow rate is not exceeded at any point.

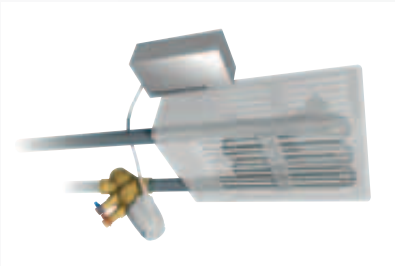


Differential pressure controller

An integrated differential pressure valve maintains a constant differential pressure over the valve opening. In that way the required flow is kept constant regardless of pressure changes in the system.

Automatic flow regulator and control valves

Installed with an actuator the Ballorex Dynamic (PICV) combines automatic flow limiter and 2-way control valve in one. With full control authority the valve reacts instantly and adjusts the flow as signalled by the Building Management System (BMS).



Direct flow measuring

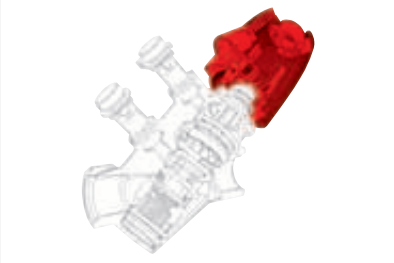
An integrated Venturi nozzle enables direct flow reading. When pre-setting the valve, the flow can be read directly on a flow meter. This ensures that the valve is set precisely to the designed flow within the +/-3% tolerance.

Pre-setting

The required flow rate is simply and easily adjusted on the underneath of the actuator.

Full control authority

The actuator has 100% control authority and thus reacts promptly to the signal from the BMS and adjusts the flow accordingly.



Know the flow with direct measuring

Ballorex Dynamic (PICV) valve is unique compared to other dynamic valves offered in the market. It is the only valve having a built-in Venturi, with a fixed Kv-value allowing direct flow measurement using a flow meter.

The actual system flow can be checked and compared to the designed flow. There is therefore no longer any reason to assume that the flow is correct, it can now be verified.

With the direct flow measurement, commissioning documentation of actual flow rates can be provided. This is often required by legislation and recommended by design guides.

Accurate setting is easily done using a flow meter. Adjusting the required flow while monitoring the actual flow provides a very precise setting of the valve.

Finally the direct flow measurement can help in general maintenance of the system. Either in service checks or detecting and identifying system errors.

Complicated commissioning is history

The often complicated, time and cost consuming process of commissioning balancing valves is no longer needed.

Forget the time consuming valve selection and commissioning procedures. Just select the Ballorex Dynamic (PICV) valve suitable for the designed flow and set the valve. Pre-setting the Ballorex Dynamic (PICV) valve is precise and easily done, simply by turning the pre-setting tool on top of the valve until the required flow is set. The required flow and the balance in the system is hereafter provided by the Ballorex Dynamic (PICV) valve.

Once installed, verification of the pre-setting can be undertaken by connecting a flow meter.

Total flow control

The Ballorex Dynamic (PICV) valve has full control authority.

With the built-in regulator and the precise and directly acting actuator the Ballorex Dynamic (PICV) will react instantly to the signals from the BMS. This provides constant and precise indoor thermal comfort under all conditions.

The precise flow control of the Ballorex Dynamic (PICV) valve will optimise cost savings since the system can be set and controlled without any over-flow and excess pump load conditions.

The result is optimal comfort while saving precious energy.

Ballorex

BALLOREX DELTA DIFFERENTIAL PRESSURE CONTROL VALVES DN15 TO DN50

PERFECT BALANCE

The Ballorex Delta is a differential pressure control valve which is installed in the return line. The supply line pressure is received above the membrane through a capillary tube.

When pressure increases, the rising pressure above the internal membrane forces the spindle downwards closing the valve gradually, whereby a constant pressure drop is obtained across the system.

Simple way of commissioning

The Ballorex Delta ensures the required differential pressure in a system under all loads. This allows partial project handovers due to zone balancing, saving both time and money spent on re-commissioning. In practice, parts of a building can be gradually taken into use as it is completed, ensuring an effective handover of the entire project.

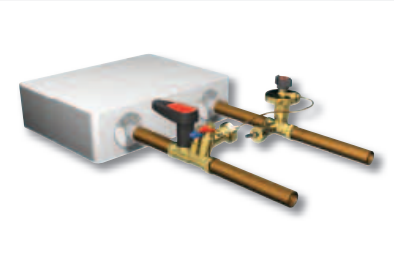
Partial close-downs are also done easily without influencing other parts of the system and noise problems caused by the increased pressure in other parts of the system are eliminated when using the Ballorex Delta.

All in all, Ballorex Delta eliminates overflows which cause unnecessary energy consumption, it eliminates noise problems and provides a perfectly balanced system.

Easy regulation

Ballorex Delta is factory preset at 10 kPa (5-25 kPA version) or 30 kPa (20-40 kPa version). By using an Allen key any setting within the differential pressure range is easily made.

When used in combination with the Ballorex Venturi manual balancing valve as a partner valve, the capillary tube is connected to the Ballorex Venturi installed in the supply line. The presetting of the differential pressure is made as mentioned before, while the design flow is easily and precisely set while measuring the actual flow directly – the unique feature of Ballorex Venturi.

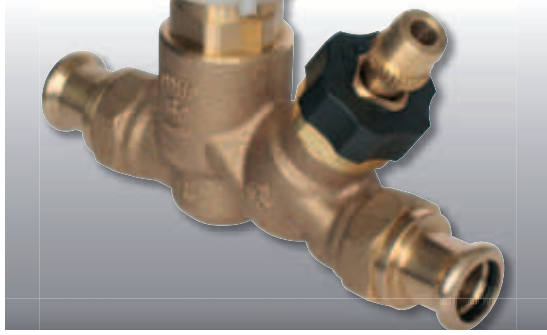


Wide range of applications

Depending on the application, Ballorex Delta can be either used as a zone valve placed in risers or branches controlling a constant pressure across multiple terminal units, or it can be used as a terminal valve ensuring the required pressure drop across each terminal unit at all loads.

BENEFITS

- Wide setting range for different applications: 5-25 kPa, 20-40 kPa, 35-75 kPa, 60-100kPa
- Ensures correct balance regardless of pressure fluctuations in the system
- Eliminates noise problems
- Shut-off and draining functions
- Can be installed directly onto bends and reducers
- Compact design ensures flexible installation
- Robust construction, pressure class PN25
- Accurate and easy setting of designed flow in combination with Ballorex Venturi or Ballorex Vario
- Possible to do project handovers in stages due to zone balancing
- Partial close-downs can be done easily without influencing other parts of the system
- Easy commissioning saves time and money
- No overflows, no unnecessary energy consumption, better thermal comfort.

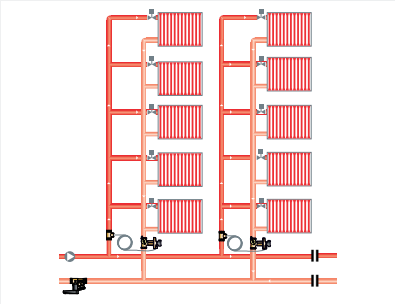


KEEP IT CONSTANT

The Ballorex Delta can be used in all hydronic heating or cooling systems where a constant differential pressure is required for a specific section of a system. Ballorex Delta eliminates noise nuisance caused by high differential pressure across radiator thermostats, 2-port control valves and other components in the system.

Presetable TRV heating systems

The differential pressure across sections in presetable TRV heating systems is stabilised with Ballorex Delta.



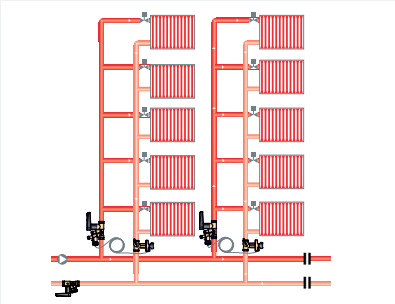
The stabilised differential pressure ensures optimum conditions to control the room temperature. By presetting the TRV the flow is limited and overflow situations are avoided.

It is recommended to install Ballorex Delta in combination with the Ballorex Venturi partner valve on the supply side. This makes isolation, measuring and maximum flow limiting of the system's flow possible.

Non-presetable TRV heating systems

Old systems can be equipped with non-presetable radiator valves (TRV). Such installations are hard to regulate properly and significant overflow situations occur.

Ballorex Delta stabilises differential pressure across a section for proper conditions to control the room temperature. When installed with Ballorex Venturi as a partner valve in the supply line, the maximum flow can be limited to the design flow rate, and overflow situations are avoided.

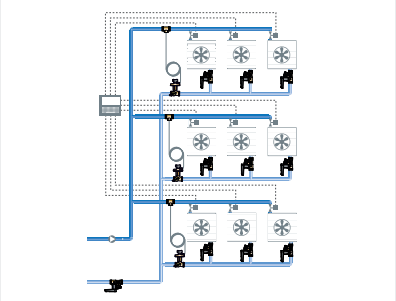


This regulation will not give the correct distribution of flow among the radiators, but it will improve the performance in the system substantially.

2-port valve cooling systems

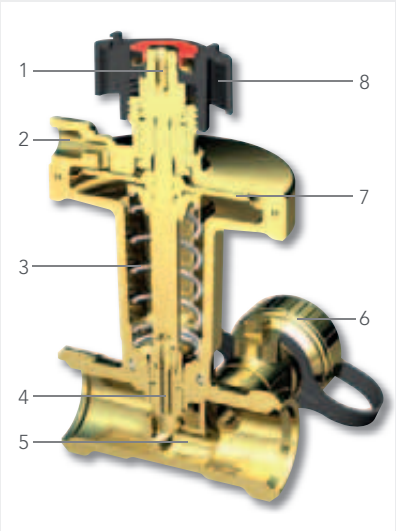
In a system with a high concentration of small terminal units, the differential pressure across a section of a group of terminal units can be stabilised with the Ballorex Delta.

The Ballorex Venturi valve on each terminal unit limits the flow to the designed flow rate enabling the 2-port control valves to have optimum operating conditions.



Ballorex Delta design

The Ballorex Delta is installed in the return line. The supply line pressure is channelled above the diaphragm of the Ballorex Delta valve through a capillary tube, connected to a partner valve like the Ballorex Venturi, Ballorex Vario or, in some instances, just to a T-piece in the system. When the system pressure increases, it also increases above the internal diaphragm of the Ballorex Delta, forcing the spindle downwards and thereby closing the valve gradually. As a a result, a constant pressure drop is obtained across the circuit controlled by the Ballorex Delta.



1. Spindle for setting (Allen key)
2. Connection of capillary tube
3. Variable ΔP spring
4. Pressure relieved valve cone
5. Valve seat
6. Drain valve and pressure measuring
7. Rolling diaphragm
8. Handle for system isolation

Ballorex

BALLOREX THERMO

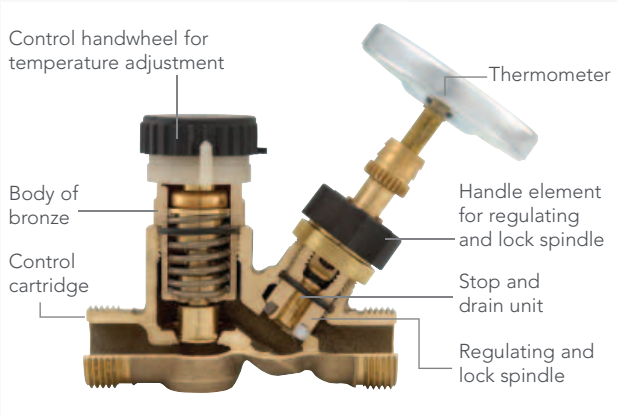
Domestic hot and cold water systems can, if not properly monitored and regulated by a circulation valve, be a breeding ground for the Legionella bacteria.

WHAT IS LEGIONELLA BACTERIA?

Legionella bacteria – the cause of Legionnaire's disease – occur naturally in the sources from which mains water is derived (namely lakes, rivers, surface and ground waters).

In the UK the problem is most often associated with hot and cold water systems in hospitals, hotels and other large multi-outlet buildings.

But domestic systems can also provide a breeding ground for the bacteria. This can then be transmitted into the occupants' lungs through, for example, the water spray created by a shower.



CIRCULATION VALVES

The Ballorex thermostatically-controlled circulation valve is a powerful ally in the battle to defeat the health dangers posed by legionella. By automatically achieving thermal balancing and high-temperature disinfection of the hot water system, it denies the bacteria the optimum conditions for growth (between 22-43°C).

Then there are other significant benefits, including system protection against the build-up of limescale, preventing scalding, and helping to minimise both hot water costs and water consumption.

Ballorex is a brand long associated with the many market-leading qualities for which the Pegler Yorkshire name and reputation are renowned throughout the world.

FEATURES

- DIN-DVGW approved
- For warm water circulation pipes according to DVGW norm W551, W552 and W553
- Medium touching parts made of bronze
- Automatic thermal disinfection in the temperature ranges above 65°C
- Maximum flow rate over a separate valve cone adjustable and lockable
- Range also includes thermometer and insulation jackets
- Water Supply (Water Fittings) Regulations 1999
- Fig P605 series circulating valves are WRAS approved for use in drinking water applications.

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INSTALLATION AND MAINTENANCE

Each circulation valve is delivered with a set of instructions.

1. Ensure that the circulation valve is installed with regard to the flow directional arrow on the valve body.
2. When using the Insulation jackets, ensure that there is enough space to allow for their fitting when the valve is in place.
3. The circulation temperature is selected by turning the numbered dial in line with the pointer on the valve mechanism.
4. The valve contains an isolating feature that is used when the thermal element needs to be inspected or replaced.
5. A drain valve is incorporated in the isolating valve; this in turn has a hollow stem that is used to house the bi metallic thermometer for temperature measurement.

Circulation valves are supplied without thermometers. These can be purchased separately as accessories.

When servicing is completed, ensure that the insulation box is re-fitted correctly.

If there are significant pipe losses in the circuit then a valve of the next highest diameter may be used.

Thermal disinfection

The valve mechanism is designed to allow for an increase in temperature above the maximum set position. This thermal disinfection mode permits hot water to circulate at temperatures above 70°C and may reach 75°C before re-stabilising at the pre-selected temperature. This high temperature disinfection will kill bacteria such as Legionella, but also presents a risk of scalding at the draw off outlets. It is strongly recommended that a risk assessment is carried out prior to thermal disinfection and duty of care exercised.

Valve settings

There is a choice of valves with different temperature ranges. Each one is preset at a default setting.

The valves with a 30°C to 45°C range of temperature settings are preset at approximately 43°C and those with a 50°C to 60°C range are preset at approximately 57°C. The circulation valve can be adjusted to settings within these ranges by altering the dial position on the valve headwork.

Pegler Yorkshire circulation valves incorporate a stop valve and drain valve unit. This allows for some flow adjustment via a manual control, as well as providing an isolating facility when repair or maintenance is required. The drain valve also allows for upstream pipe lengths to be drained for servicing. The hollow drain off spindle also allows for the fitment of the bi-metallic thermometer for temperature reading.

Regulating cartridges are available as spares if required.

Insulation jackets will need to be stored safely during servicing and then refitted after the valve has been adjusted and set at the correct commissioned temperature.

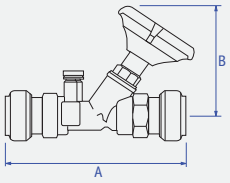
Performance

Technical data	
Maximum operating temperature	90°C
Maximum admissible operating pressure	16bar
Nominal bore	DN15/DN20/DN25
Design	Sleeve/sleeve or external thread/ external thread
Control range	30°C - 50°C, 50°C - 60°C
Default setting	approx. 43°C, approx. 57°C
Thermal disinfection	>65°C

Ballorex Fixed DZR push-fit commissioning valves

PT1260 Ballorex Fixed commissioning valve with test points (FODRV)

Tectite push-fit ends for copper, carbon and stainless steel tube. DZR body



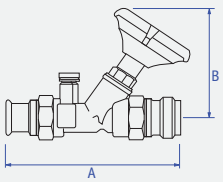
WRAS APPROVED PRODUCT

Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
DN15L	15mm	136	106	0.620	0.40	0.41	126100
DN15S	15mm	136	106	0.610	1.86	2.15	126101
DN15S	18mm	139	106	0.610	1.86	2.15	126107
DN20S	22mm	152	106	0.710	2.27	4.78	126102
DN25S	28mm	180	113	1.080	6.11	8.11	126103
DN32S	35mm	242	120	1.840	12.65	15.41	126104
DN40S	42mm	260	123	2.393	19.00	22.23	126105
DN50S	54mm	303	138	3.874	28.42	48.21	126106

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

XT1260 Ballorex Fixed commissioning valve with test points (FODRV)

XPress inlet x Tectite push-fit ends for copper, carbon and stainless steel tube. DZR body



WRAS APPROVED PRODUCT

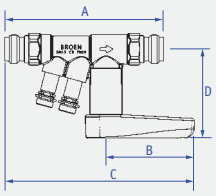
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
DN15L	15mm	130	106	0.61	0.40	0.41	126200
DN15S	15mm	130	106	0.61	1.86	2.15	126201
DN15L	18mm	132	106	0.60	0.40	0.41	126202
DN15S	18mm	132	106	0.60	1.86	2.15	126203
DN20S	22mm	143	106	0.69	2.27	4.78	126204
DN25S	28mm	167	113	1.05	6.11	8.11	126205
DN32S	35mm	210	120	1.67	12.65	15.41	126206
DN40S	42mm	226	123	2.18	19.00	22.23	126207
DN50S	54mm	267	138	3.61	28.42	48.21	126208

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

Ballorex Venturi Static DZR push-fit commissioning valves

PT900S Ballorex Venturi Static commissioning valve (FODRV)

Tectite push-fit ends for copper, carbon steel and stainless steel tube. With regulation, isolation and flow measurement functions

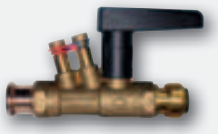


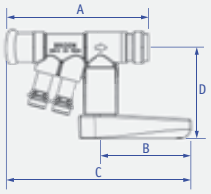
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m^3/h	Kv m^3/h	Loss factor	Code
PT900SUL	DN15	15mm	143	75	162	76	0.48	0.163	0.23	0.46	16383
PT900SL	DN15	15mm	143	75	162	76	0.48	0.359	0.629	0.33	15584
PT900SS	DN15	15mm	143	75	162	76	0.48	0.749	1.62	0.21	15585
PT900SH	DN15	15mm	143	75	162	76	0.48	1.56	2.49	0.39	15586
PT900SUL	DN15	18mm	143	75	162	76	0.48	0.163	0.23	0.46	16384
PT900SL	DN15	18mm	143	75	162	76	0.48	0.359	0.629	0.33	15587
PT900SS	DN15	18mm	143	75	162	76	0.48	0.749	1.62	0.21	15588
PT900SH	DN15	18mm	143	75	162	76	0.48	1.56	2.49	0.39	15589
PT900SL	DN20	15mm	143	75	166	79	0.52	0.746	1.43	0.27	15590
PT900SS	DN20	15mm	143	75	166	79	0.52	1.56	2.82	0.31	15591
PT900SH	DN20	15mm	143	75	166	79	0.52	2.95	5.72	0.27	15592
PT900SL	DN20	18mm	143	75	166	79	0.52	0.746	1.43	0.27	15593
PT900SS	DN20	18mm	143	75	166	79	0.52	1.56	2.82	0.31	15594
PT900SH	DN20	18mm	143	75	166	79	0.52	2.95	5.72	0.27	15595
PT900SL	DN20	22mm	149	75	166	79	0.52	0.746	1.43	0.27	15596
PT900SS	DN20	22mm	149	75	166	79	0.52	1.56	2.82	0.31	15597
PT900SH	DN20	22mm	149	75	166	79	0.52	2.95	5.72	0.27	15598
PT900SS	DN25	28mm	179	75	177	83	0.85	2.95	7.54	0.15	15599
PT900SH	DN25	28mm	179	75	177	83	0.85	6.01	12.1	0.25	15600
PT900SH	DN32	35mm	229	122	237	109	1.78	6.01	13.2	0.21	15601
PT900SH	DN40	42mm	251	122	240	113	2.40	9.2	22	0.17	15602
PT900SH	DN50	54mm	280	122	265	120	3.26	17.1	36	0.23	15603

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

XT900S Ballorex Venturi Static DZR commissioning valve (FODRV)

XPress press ends x Tectite push-fit ends for copper, carbon steel and stainless steel tube. With regulation, isolation and flow measurement functions





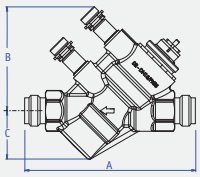
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
XT900SUL	DN15	15mm	141	75	162	76	0.49	0.163	0.23	0.46	16385
XT900SL	DN15	15mm	141	75	162	76	0.49	0.359	0.629	0.33	15620
XT900SS	DN15	15mm	141	75	162	76	0.49	0.749	1.62	0.21	15621
XT900SH	DN15	15mm	141	75	162	76	0.49	1.56	2.49	0.39	15622
XT900SUL	DN15	18mm	142	75	163	76	0.49	0.163	0.23	0.46	16386
XT900SL	DN15	18mm	142	75	163	76	0.49	0.359	0.629	0.33	15623
XT900SS	DN15	18mm	142	75	163	76	0.49	0.749	1.62	0.21	15624
XT900SH	DN15	18mm	142	75	163	76	0.49	1.56	2.49	0.39	15625
XT900SL	DN20	15mm	147	75	161	79	0.52	0.746	1.43	0.27	15626
XT900SS	DN20	15mm	147	75	161	79	0.52	1.56	2.82	0.31	15627
XT900SH	DN20	15mm	147	75	161	79	0.52	2.95	5.72	0.27	15628
XT900SL	DN20	18mm	148	75	166	79	0.52	0.746	1.43	0.27	15629
XT900SS	DN20	18mm	148	75	166	79	0.52	1.56	2.82	0.31	15630
XT900SH	DN20	18mm	148	75	166	79	0.52	2.95	5.72	0.27	15631
XT900SL	DN20	22mm	153	75	167	79	0.53	0.746	1.43	0.27	15632
XT900SS	DN20	22mm	153	75	167	79	0.53	1.56	2.82	0.31	15633
XT900SH	DN20	22mm	153	75	167	79	0.53	2.95	5.72	0.27	15634
XT900SS	DN25	28mm	171	75	177	83	0.88	2.95	7.54	0.15	15635
XT900SH	DN25	28mm	171	75	177	83	0.88	6.01	12.1	0.25	15636
XT900SH	DN32	35mm	219	122	237	109	1.71	6.01	13.2	0.21	15637
XT900SH	DN40	42mm	239	122	249	113	2.25	9.2	22	0.17	15638
XT900SH	DN50	54mm	256	122	264	120	3.37	17.1	36	0.23	15639

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

Ballorex Dynamic DZR push-fit commissioning valves

PT902S Ballorex Dynamic DZR valve – excluding actuator (PICV)

Tectite push-fit ends for copper, carbon steel and stainless steel tube. Direct flow measuring



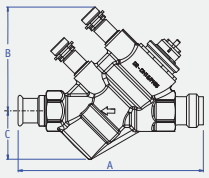
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	Weight kg	Venturi Kv	Flow range l/h	l/s	Code
PT902SL	DN15	15mm	152	76	35	0.63	0.23	36-118	0.07-0.033	15288
PT902SS	DN15	15mm	152	76	35	0.63	0.78	90-450	0.025-0.125	15289
PT902SH	DN15	15mm	152	76	35	0.63	2.50	300-1400	0.83-0.39	15290
PT902SL	DN15	18mm	155	76	35	0.66	1.90	36-118	0.07-0.033	15291
PT902SS	DN15	18mm	155	76	35	0.66	4.70	90-450	0.025-0.125	15292
PT902SH	DN15	18mm	155	76	35	0.66	5.05	300-1400	0.83-0.39	15293

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

Ballorex Dynamic DZR push-fit commissioning valves

XT902S Ballorex Dynamic DZR valve – excluding actuator (PICV)

XPress press-fit ends x Tectite push-fit ends for copper, carbon steel and stainless steel tube. Direct flow measuring



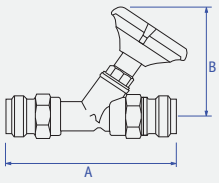
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	Weight kg	Venturi Kvm	Kv m³/h	Code
XT902SL	DN15	15mm	146	76	35	0.63	0.23	0.62	15924
XT902SS	DN15	15mm	146	76	35	0.63	0.78	0.62	15926
XT902SH	DN15	15mm	146	76	35	0.63	2.50	0.62	15928
XT902SL	DN15	18mm	148	76	35	0.66	1.90	0.62	15925
XT902SS	DN15	18mm	148	76	35	0.66	4.70	0.62	15927
XT902SH	DN15	18mm	148	76	35	0.60	5.05	0.62	15929

Temperature range: -10°C to +110°C

Ballorex Fixed DZR push-fit commissioning valves

PT1200 Ballorex Fixed double regulating valves (DRV)

Tectite push-fit ends for copper, carbon and stainless steel tube. DZR body



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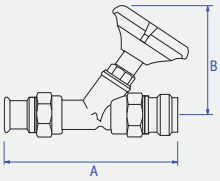
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
DN15	15mm	136	106	0.57	–	0.40	126051
DN20	22mm	152	106	0.66	–	2.98	126052
DN25	28mm	180	113	1.70	–	7.15	126053
DN32	35mm	242	120	1.75	–	15.08	126054
DN40	42mm	260	123	2.36	–	20.84	126055
DN50	54mm	303	138	3.79	–	28.89	126056

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

XT1200 Ballorex Fixed double regulating valve (DRV)

XPress inlet x Tectite push-fit ends for copper, carbon and stainless steel tube. DZR body



WRAS APPROVED PRODUCT

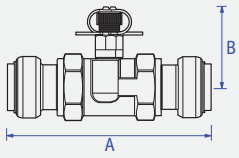
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Code
DN15	15mm	130	106	0.560	0.40	126209
DN15	18mm	132	106	0.560	2.30	126210
DN20	22mm	143	106	0.650	2.48	126211
DN25	28mm	167	113	1.000	7.15	126212
DN32	35mm	210	120	1.610	15.08	126213
DN40	42mm	226	123	2.120	20.84	126214
DN50	54mm	267	138	3.540	28.89	126215

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

Ballorex Fixed DZR push-fit metering stations

PT1250 Ballorex Fixed metering station with test points

Tectite push-fit ends for copper, carbon and stainless steel tube. DZR body



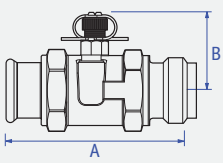
Valve size	Valve size	Connection size	Dimensions in mm A	Dimensions in mm B	Weight kg	Kv m³/h	Kvs m³/h	Code
PT1250LF	DN15	15mm	105	40	0.330	0.40	0.41	126060
PT1250SF	DN15	15mm	107	40	0.330	1.86	2.15	126061
PT1250LF	DN15	18mm	108	40	0.330	0.40	0.41	126136
PT1250SF	DN15	18mm	108	40	0.330	1.86	2.15	126137
PT1250SF	DN20	22mm	117	42	0.360	2.27	4.78	126062
PT1250SF	DN25	28mm	140	46	0.500	6.11	8.11	126063
PT1250SF	DN32	35mm	188	52	1.000	12.65	15.41	126064
PT1250SF	DN40	42mm	204	52	1.250	19.00	22.23	126065
PT1250SF	DN50	54mm	221	57	1.910	28.42	48.21	126066

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

Ballorex Fixed DZR press-fit x push-fit metering stations

XT1250 Ballorex Fixed metering station with test points

XPress inlet x Tectite push-fit ends for copper, carbon and stainless steel tube. DZR body

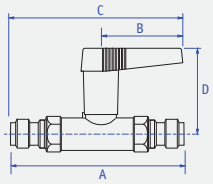


Cat no.	Valve size	Connection size	Dimensions in mm A	Dimensions in mm B	Weight kg	Kv m³/h	Kvs m³/h	Code
XT1250LF	DN15	15mm	99	40	0.330	0.40	0.41	126216
XT1250SF	DN15	15mm	99	40	0.330	1.86	2.15	126217
XT1250LF	DN15	18mm	101	40	0.330	0.40	0.41	126218
XT1250SF	DN15	18mm	101	40	0.330	1.86	2.15	126219
XT1250SF	DN20	22mm	108	42	0.400	2.27	4.78	126220
XT1250SF	DN25	28mm	127	46	0.600	6.11	8.11	126221
XT1250SF	DN32	35mm	156	52	0.980	12.65	15.41	126222
XT1250SF	DN40	42mm	170	52	1.180	19.00	22.23	126223
XT1250SF	DN50	54mm	185	57	1.640	28.42	48.21	126224

Ballorex Venturi DZR push-fit commissioning valves

PT901S Ballorex Venturi DZR double regulating valve (DRV)

Tectite push-fit ends for copper, carbon steel and stainless steel tube. With regulation, isolation and flow measurement functions



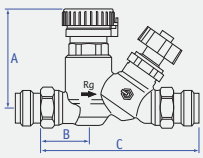
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
PT901SL	DN15	15mm	106	75	126	76	0.300	–	1.62	–	15604
PT901SS	DN15	15mm	106	75	126	76	0.300	–	2.10	–	15605
PT901SL	DN15	18mm	106	75	126	76	0.300	–	1.62	–	15606
PT901SS	DN15	18mm	106	75	126	76	0.300	–	2.10	–	15607
PT901SL	DN20	15mm	121	75	128	79	0.400	–	4.26	–	15608
PT901SS	DN20	15mm	121	75	128	79	0.400	–	4.79	–	15609
PT901SL	DN20	18mm	121	75	128	79	0.400	–	4.26	–	15610
PT901SS	DN20	18mm	121	75	128	79	0.400	–	4.79	–	15611
PT901SL	DN20	22mm	121	75	128	79	0.400	–	4.26	–	15612
PT901SS	DN20	22mm	121	75	128	79	0.400	–	4.79	–	15613
PT901SS	DN25	28mm	121	75	140	83	0.650	–	12.08	–	15614
PT901SS	DN32	35mm	142	122	95	109	1.520	–	13.28	–	15615
PT901SS	DN40	42mm	209	122	198	113	1.980	–	23.30	–	15616
PT901SS	DN50	54mm	239	122	198	113	2.690	–	35.30	–	15617

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

Ballorex Thermo bronze push-fit circulation valve

PT605 Ballorex Thermo bronze circulation valve. 50°C - 60°C adjustable range

Tectite push-fit ends for copper, carbon and stainless steel tube. Bronze body



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Valve size	Dimensions in mm A	B	C	Weight kg	Code
15mm DN15 50°-60°C	75	35.5	98	0.706	16525

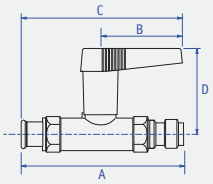
Temperature range: -10°C to +110°C

BALLOREX PRESS-FIT COMMISSIONING VALVES

Ballorex Venturi Static DZR press-fit x push-fit commissioning valves

XT901S Ballorex Venturi Static commissioning valve (DRV)

XPress press -fit ends x Tectite push-fit ends for copper, carbon steel and stainless steel tube. With regulation and isolation functions



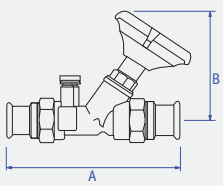
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
XT901SL	DN15	15mm	104	75	126	76	0.310	–	1.62	–	15910
XT901SS	DN15	15mm	104	75	126	76	0.310	–	2.10	–	15911
XT901SL	DN15	18mm	105	75	127	76	0.310	–	1.62	–	15912
XT901SS	DN15	18mm	105	75	127	76	0.320	–	2.10	–	15913
XT901SL	DN20	15mm	109	75	127	79	0.390	–	4.26	–	15914
XT901SS	DN20	15mm	109	75	127	79	0.390	–	4.79	–	15915
XT901SL	DN20	18mm	110	75	128	79	0.390	–	4.26	–	15916
XT901SS	DN20	18mm	110	75	128	79	0.390	–	4.79	–	15917
XT901SL	DN20	22mm	115	75	129	79	0.400	–	4.26	–	15918
XT901SS	DN20	22mm	115	75	129	79	0.400	–	4.79	–	15919
XT901SS	DN25	28mm	134	75	140	83	0.680	–	12.08	–	15920
XT901SS	DN32	35mm	177	122	195	109	1.350	–	13.28	–	15921
XT901SS	DN40	42mm	197	122	207	113	1.770	–	23.30	–	15922
XT901SS	DN50	54mm	225	122	223	120	2.810	–	35.30	–	15923

Temperature range: 15mm to 28mm -10°C to +110°C, 35mm to 54mm -10°C to +90°C

Ballorex Fixed DZR press-fit commissioning valves

PS1260 Ballorex Fixed commissioning valve with test points (FODRV)

XPress press-fit ends for copper, carbon and stainless steel tube. DZR body



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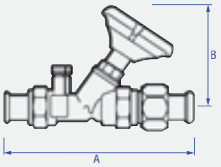
Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
PS1260LF	DN15	15mm	125	106	0.610	0.40	0.41	126029
PS1260SF	DN15	15mm	125	106	0.600	1.86	2.15	126030
PS1260LF	DN15	18mm	125	106	0.610	0.40	0.41	126134
PS1260SF	DN15	18mm	125	106	0.600	1.86	2.15	126135
PS1260SF	DN20	22mm	134	106	0.680	2.27	4.78	126031
PS1260SF	DN25	28mm	155	113	1.040	6.11	8.11	126032
PS1260SF	DN32	35mm	178	120	1.500	12.65	15.41	126033
PS1260SF	DN40	42mm	192	123	1.960	19.00	22.23	126034
PS1260SF	DN50	54mm	232	138	3.360	28.42	48.21	126035

Temperature range: -10°C to +110°C

PSU1260 Ballorex Fixed commissioning valve with test points (FODRV)

XPress outlet union x XPress press-fit ends for copper, carbon and stainless steel tube. DZR body



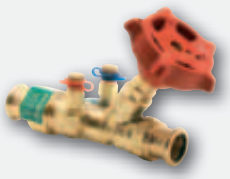
WRAS APPROVED PRODUCT

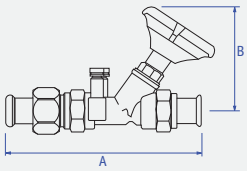
XPRESS UNION ON OUTLET

Valve size	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
PSU1260LF	DN15	15mm	148	106	0.701	0.40	0.41	126230
PSU1260SF	DN15	15mm	148	106	0.691	1.86	2.15	126231
PSU1260LF	DN15	18mm	148	106	0.704	0.40	0.41	126232
PSU1260SF	DN15	18mm	148	106	0.694	1.86	2.15	126233
PSU1260SF	DN20	22mm	165	106	0.817	2.27	4.78	126234
PSU1260SF	DN25	28mm	184	113	1.248	6.11	8.11	126235
PSU1260SF	DN32	35mm	204	120	1.749	12.65	15.41	126236
PSU1260SF	DN40	42mm	222	123	2.256	19.00	22.23	126237
PSU1260SF	DN50	54mm	266	138	3.867	28.42	48.21	126238

PSU1260 Ballorex Fixed commissioning valve with test points (FODRV)

XPress inlet union x XPress press-fit ends for copper, carbon and stainless steel tube. DZR body





WRAS APPROVED PRODUCT

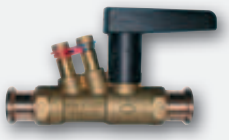
XPRESS UNION ON INLET

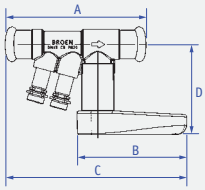
Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
PSU1260LF	DN15	15mm	148	106	0.701	0.40	0.41	126247
PSU1260SF	DN15	15mm	148	106	0.691	1.86	2.15	126248
PSU1260LF	DN15	18mm	148	106	0.704	0.40	0.41	126249
PSU1260SF	DN15	18mm	148	106	0.694	1.86	2.15	126250
PSU1260SF	DN20	22mm	165	106	0.817	2.27	4.78	126251
PSU1260SF	DN25	28mm	184	113	1.248	6.11	8.11	126252
PSU1260SF	DN32	35mm	204	120	1.749	12.65	15.41	126253
PSU1260SF	DN40	42mm	222	123	2.256	19.00	22.23	125254
PSU1260SF	DN50	54mm	266	138	3.867	28.42	48.21	126255

Ballorex Venturi DZR press-fit commissioning valves

PS900S Ballorex Venturi DZR Static commissioning station (FODRV)

XPress press-fit ends for copper, carbon steel and stainless steel tube. With regulation, isolation and flow measurement functions



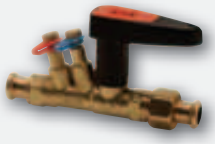


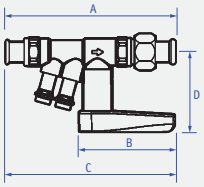
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
PS900SUL	DN15	15mm	138	75	162	76	0.49	0.163	0.23	0.46	16381
PS900SL	DN15	15mm	138	75	162	76	0.49	0.359	0.629	0.33	15550
PS900SS	DN15	15mm	138	75	162	76	0.49	0.749	1.62	0.21	15551
PS900SH	DN15	15mm	138	75	162	76	0.49	1.56	2.49	0.39	15552
PS900SUL	DN15	18mm	138	75	162	76	0.49	0.163	0.23	0.46	16382
PS900SL	DN15	18mm	138	75	162	76	0.49	0.359	0.629	0.33	15553
PS900SS	DN15	18mm	138	75	162	76	0.49	0.749	1.62	0.21	15554
PS900SH	DN15	18mm	138	75	162	76	0.49	1.56	2.49	0.39	15555
PS900SL	DN20	15mm	143	75	166	79	0.51	0.746	1.43	0.27	15556
PS900SS	DN20	15mm	143	75	166	79	0.51	1.56	2.82	0.31	15557
PS900SH	DN20	15mm	143	75	166	79	0.51	2.95	5.72	0.27	15558
PS900SL	DN20	18mm	143	75	166	79	0.51	0.746	1.43	0.27	15559
PS900SS	DN20	18mm	143	75	166	79	0.51	1.56	2.82	0.31	15560
PS900SH	DN20	18mm	143	75	166	79	0.51	2.95	5.72	0.27	15561
PS900SL	DN20	22mm	147	75	166	79	0.52	0.746	1.43	0.27	15562
PS900SS	DN20	22mm	147	75	166	79	0.52	1.56	2.82	0.31	15563
PS900SH	DN20	22mm	147	75	166	79	0.52	2.95	5.72	0.27	15564
PS900SS	DN25	28mm	165	75	177	83	0.88	2.95	7.54	0.15	15565
PS900SH	DN25	28mm	165	75	177	83	0.88	6.01	12.1	0.25	15566
PS900SH	DN32	35mm	188	122	237	109	1.62	6.01	13.2	0.21	15567
PS900SH	DN40	42mm	194	122	240	113	2.18	9.2	22	0.17	15568
PS900SH	DN50	54mm	243	122	265	120	3.38	17.1	36	0.23	15569

Temperature range: -10°C to +110°C

PSU900S Ballorex Venturi Static commissioning station (FODRV)

XPress outlet union ends x XPress press-fit ends for copper, carbon steel and stainless steel tube. With regulation, isolation and flow measurement functions





XPRESS UNION ON OUTLET

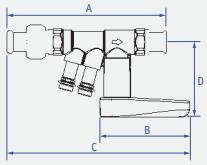
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
PSU900SUL	DN15	15mm	163	75	162	76	0.58	0.163	0.23	0.46	16387
PSU900SL	DN15	15mm	163	75	162	76	0.58	0.359	0.629	0.33	15950
PSU900SS	DN15	15mm	163	75	162	76	0.58	0.749	1.62	0.21	15951
PSU900SH	DN15	15mm	163	75	162	76	0.58	1.56	2.49	0.39	15952
PSU900SUL	DN15	18mm	164	75	162	76	0.58	0.163	0.23	0.46	16388
PSU900SL	DN15	18mm	164	75	162	76	0.58	0.359	0.629	0.33	15953
PSU900SS	DN15	18mm	164	75	162	76	0.58	0.749	1.62	0.21	15954
PSU900SH	DN15	18mm	164	75	162	76	0.58	1.56	2.49	0.39	15955
PSU900SL	DN20	22mm	183	75	166	79	0.66	0.746	1.43	0.27	15956
PSU900SS	DN20	22mm	183	75	166	79	0.66	1.56	2.82	0.31	15957
PSU900SH	DN20	22mm	183	75	166	79	0.66	2.95	5.72	0.27	15958
PSU900SS	DN25	28mm	200	75	177	83	1.04	2.95	7.54	0.15	15959
PSU900SH	DN25	28mm	200	75	177	83	1.04	6.01	12.1	0.25	15960
PSU900SH	DN32	35mm	245	122	237	109	1.79	6.01	13.2	0.21	15961
PSU900SH	DN40	42mm	272	122	240	113	2.26	9.2	22	0.17	15962
PSU900SH	DN50	54mm	307	122	265	120	3.50	17.1	36	0.23	15963

Temperature range: -10°C to +110°C

BALLOREX PRESS-FIT COMMISSIONING VALVES

PSU900S Ballorex Venturi commissioning valve (FODRV)

XPress inlet union x XPress press-fit ends for copper, carbon steel and stainless steel tube. With regulation, isolation and flow measurement functions



XPRESS UNION ON INLET

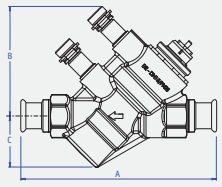
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
PSU900SUL	DN15	15mm	163	75	180	76	0.58	0.163	0.23	0.46	16361
PSU900SL	DN15	15mm	163	75	180	76	0.58	0.359	0.629	0.33	16362
PSU900SS	DN15	15mm	163	75	180	76	0.58	0.749	1.62	0.21	16363
PSU900SH	DN15	15mm	163	75	180	76	0.58	1.56	2.49	0.39	16364
PSU900SUL	DN15	18mm	164	75	179	76	0.58	0.163	0.23	0.46	16365
PSU900SL	DN15	18mm	164	75	179	76	0.58	0.359	0.629	0.33	16366
PSU900SS	DN15	18mm	164	75	179	76	0.58	0.749	1.62	0.21	16367
PSU900SH	DN15	18mm	164	75	179	76	0.58	1.56	2.49	0.39	16368
PSU900SL	DN20	22mm	183	75	188	79	0.65	0.746	1.43	0.27	16369
PSU900SS	DN20	22mm	183	75	188	79	0.65	1.56	2.82	0.31	16370
PSU900SH	DN20	22mm	183	75	188	79	0.65	2.95	5.72	0.27	16371
PSU900SS	DN25	28mm	200	75	181	83	0.77	2.95	7.54	0.15	16372
PSU900SH	DN25	28mm	200	75	181	83	1.03	6.01	12.1	0.25	16373
PSU900SH	DN32	35mm	245	122	231	109	1.79	6.01	13.2	0.21	16374
PSU900SH	DN40	42mm	272	122	235	113	2.32	9.2	22	0.17	16375
PSU900SH	DN50	54mm	307	122	198	120	3.49	17.1	36	0.23	16376

Temperature range: -10°C to +110°C

Ballorex Dynamic DZR press-fit commissioning valves

PS902S Ballorex Dynamic DZR valve – excluding actuator (PICV)

XPress press-fit ends for copper, carbon steel and stainless steel tube. Direct flow measuring.



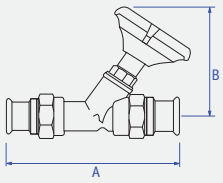
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	Weight kg	Venturi Kvm	Flow range l/h	l/s	Code
PS902SL	DN15	15mm	141	76	35	0.62	0.23	36-118	0.01-0.033	15282
PS902SS	DN15	15mm	141	76	35	0.62	0.78	90-450	0.025-0.125	15283
PS902SH	DN15	15mm	141	76	35	0.62	2.50	300-1400	0.083-0.390	15284
PS902SL	DN15	18mm	141	76	35	0.62	0.23	36-118	0.01-0.033	15285
PS902SS	DN15	18mm	141	76	35	0.62	0.78	90-450	0.025-0.125	15286
PS902SH	DN15	18mm	141	76	35	0.62	2.50	300-1400	0.083-0.390	15287

Temperature range: -10°C to +110°C

Ballorex Fixed DZR press-fit regulating valves

PS1200 Ballorex Fixed double regulating valve (DRV)

XPress press-fit ends for copper, carbon and stainless steel tube. DZR body



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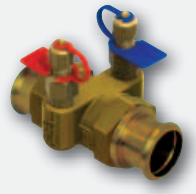
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Code
DN15	15mm	127	106	0.560	2.30	126009
DN15	18mm	127	106	0.580	2.30	126131
DN20	22mm	136	106	0.640	2.48	126010
DN25	28mm	157	113	1.000	7.15	126011
DN32	35mm	181	120	1.480	15.08	126012
DN40	42mm	195	123	1.890	20.84	126013
DN50	54mm	235	138	3.290	28.89	126014

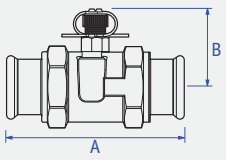
Temperature range: -10°C to +110°C

Ballorex Fixed DZR press-fit metering stations

PS1250 Ballorex Fixed metering station with test points

XPress press-fit ends for copper, carbon and stainless steel tube. DZR body





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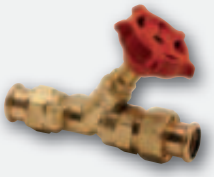
Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
PS1250LF	DN15	15mm	94	40	0.290	0.40	0.41	126070
PS1250SF	DN15	15mm	94	40	0.290	1.86	2.15	126071
PS1250LF	DN15	18mm	94	40	0.290	0.40	0.41	126132
PS1250SF	DN15	18mm	94	40	0.290	1.86	2.15	126133
PS1250SF	DN20	22mm	99	42	0.340	2.27	4.78	126072
PS1250SF	DN25	28mm	115	46	0.540	6.11	8.11	126073
PS1250SF	DN32	35mm	124	52	0.760	12.65	15.41	126074
PS1250SF	DN40	42mm	136	52	0.890	19.00	22.23	126075
PS1250SF	DN50	54mm	150	57	1.320	28.42	48.21	126076

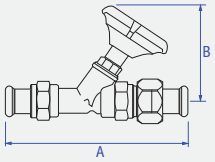
Temperature range: -10°C to +110°C

Ballorex Fixed DZR press-union x press-fit regulating valves

PSU1200 Ballorex Fixed double regulating valve (DRV)

XPress union outlet x XPress press-fit ends for copper, carbon and stainless steel tube. DZR body





WRAS APPROVED PRODUCT

XPRESS UNION ON OUTLET

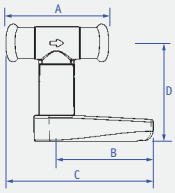
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Code
DN15	15mm	148	106	0.651	2.30	126240
DN15	18mm	148	106	0.654	2.30	126241
DN20	22mm	165	106	0.777	2.48	126242
DN25	28mm	184	113	1.208	7.15	126243
DN32	35mm	204	120	1.699	15.08	126244
DN40	42mm	229	123	2.196	20.84	126245
DN50	54mm	263	138	3.310	28.89	126246

Temperature range: -10°C to +110°C

Ballorex Venturi DZR press-fit commissioning valves

PS901S Ballorex Venturi DZR Static commissioning valve (DRV)

XPress press-fit ends for copper, carbon steel and stainless steel tube. With regulation and isolation functions

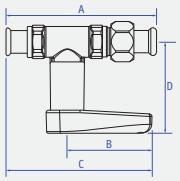


Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
PS901SL	DN15	15mm	101	75	126	76	0.310	–	1.62	–	15570
PS901SS	DN15	15mm	101	75	126	76	0.310	–	2.10	–	15571
PS901SL	DN15	18mm	101	75	126	76	0.310	–	1.62	–	15572
PS901SS	DN15	18mm	101	75	126	76	0.320	–	2.10	–	15573
PS901SL	DN20	15mm	105	75	128	79	0.390	–	4.26	–	15574
PS901SS	DN20	15mm	105	75	128	79	0.390	–	4.79	–	15575
PS901SL	DN20	18mm	105	75	128	79	0.390	–	4.26	–	15576
PS901SS	DN20	18mm	105	75	128	79	0.390	–	4.79	–	15577
PS901SL	DN20	22mm	109	75	128	79	0.400	–	4.26	–	15578
PS901SS	DN20	22mm	109	75	128	79	0.400	–	4.79	–	15579
PS901SS	DN25	28mm	128	75	140	83	0.680	–	12.08	–	15580
PS901SS	DN32	35mm	146	122	195	109	1.350	–	13.28	–	15581
PS901SS	DN40	42mm	170	122	198	113	1.770	–	23.30	–	15582
PS901SS	DN50	54mm	202	122	198	113	2.810	–	35.30	–	15583

Temperature range: -10°C to +120°C

PSU901S Ballorex Venturi Static commissioning valve (DRV)

XPress union outlet ends x XPress press-fit ends for copper, carbon steel and stainless steel tube. With regulation and isolation functions



XPRESS UNION ON OUTLET

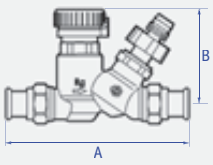
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kv m³/h	Code
PSU901SL	DN15	15mm	126	75	147	76	0.395	1.62	15970
PSU901SS	DN15	15mm	126	75	147	76	0.395	2.10	15971
PSU901SL	DN15	18mm	127	75	148	76	0.40	1.62	15972
PSU901SS	DN15	18mm	127	75	148	76	0.40	2.10	15973
PSU901SL	DN20	22mm	145	75	159	79	0.54	4.26	15974
PSU901SS	DN20	22mm	145	75	159	79	0.54	4.79	15975
PSU901SS	DN25	28mm	163	75	164	83	0.84	12.08	15976
PSU901SS	DN32	35mm	203	122	221	109	1.53	13.28	15977
PSU901SS	DN40	42mm	230	122	234	113	1.90	23.30	15978
PSU901SS	DN50	54mm	266	122	252	120	2.84	35.30	15979

Temperature range: -10°C to +110°C

Ballorex Thermo DZR press-fit circulating valves

PS605 Ballorex Thermo circulating valve 50°C - 60°C

XPress press-fit ends for copper, carbon and stainless steel tube. Bronze body



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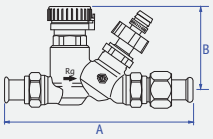
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Code
DN15	15mm	144	75	0.70	16530
DN15	18mm	144	75	0.71	16529
DN20	22mm	189	75	0.92	16531

PSU605 Ballorex Thermo circulating valve 50°C - 60°C

XPress union outlet x XPress press-fit ends for copper, carbon and stainless steel tube. Bronze body



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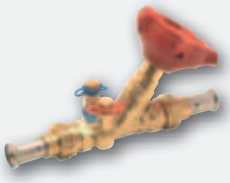
XPRESS UNION ON OUTLET

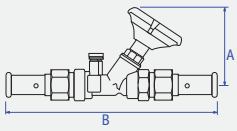
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Code
DN15	15mm	162	75	0.80	16533
DN15	18mm	162	75	0.80	16534
DN20	22mm	220	75	1.06	16535
DN20	28mm	226	75	1.30	16536

Ballorex Multi-layer press-fit commissioning valves

MLH1260 Ballorex Fixed commissioning valve (FODRV)

Henco PVDF range, flat face union connections for multi-layer tube. DZR body with test points





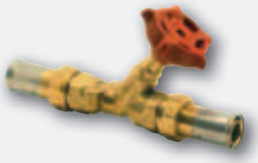
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kvs m³/h	Code
DN15L	16mm	106	203	0.765	0.41	134100
DN15S	16mm	106	203	0.765	2.15	134101
DN15S	20mm	106	203	0.783	2.15	134102
DN20S	26mm	106	228.5	1.025	4.78	134103
DN25S	32mm	113	269	1.485	8.11	134104

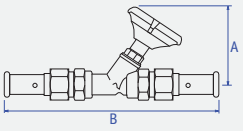
Temperature range: -10°C to +95°C

Ballorex Multi-layer press-fit regulating valves

MLH1200 Ballorex Fixed double regulating valve (DRV)

Henco PVDF range, flat face union connections for multi-layer tube. DZR body





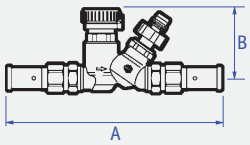
Valve size	Connection size	Dimensions in mm A	Dimensions in mm B	Weight kg	Kv m³/h	Code
DN15S	16mm	106	203	0.725	2.30	134110
DN15S	20mm	106	203	0.743	2.30	134111
DN20S	26mm	106	228.5	0.985	2.48	134112
DN25S	32mm	113	269	1.445	7.15	134113

Temperature range: -10°C to +95°C

Ballorex Multi-layer press-fit circulation valves

MLH605 Ballorex Thermo bronze circulation valve. 50°C - 60°C adjustable range

Henco PVDF range, flat face union connections for multi-layer tube. Bronze body

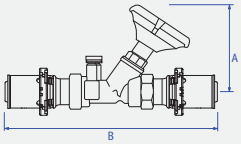


Valve size	Dimensions in mm A	Dimensions in mm B	Weight kg	Code
20mm DN15 50°-60°C	195	75	0.82	134140
26mm DN20 50°-60°C	212	75	1.06	134141
32mm DN25 50°-60°C	244	75	1.29	134142

Ballorex Multi-layer press-fit commissioning valves

MLC1260 Ballorex Fixed commissioning valve (FODRV)

Henco Brass range, flat face union connections for multi-layer tube. DZR body with test points



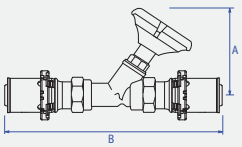
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
DN15L	16mm	106	188	0.580	0.40	0.41	135101
DN15S	16mm	106	188	0.620	1.86	2.15	135102
DN15S	20mm	106	188	0.642	1.86	2.15	135103
DN20S	26mm	106	206	0.778	2.27	4.78	135104
DN25S	32mm	113	227	1.374	6.11	8.11	135105
DN32S	40mm	120	254	2.165	12.65	15.41	135106

Temperature range: -10°C to +95°C

Ballorex Multi-layer press-fit regulating valves

MLC1200 Ballorex Fixed double regulating valve (DRV)

Henco Brass range, flat face union connections for multi-layer tube. DZR body



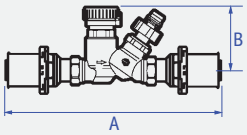
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Code
DN15	16mm	106	188	0.580	2.30	135111
DN15	20mm	106	180	0.602	2.30	135112
DN20	26mm	106	206	0.738	2.48	135113
DN25	32mm	113	227	1.334	7.15	135114
DN32	40mm	120	254	2.125	15.08	135115

Temperature range: -10°C to +95°C

Ballorex Multi-layer press-fit circulation valves

MLC605 Ballorex Thermo circulation valve. 50°C - 60°C adjustable range

Henco brass range, flat face union connections for multi-layer tube. Bronze body

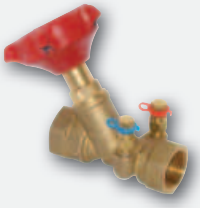


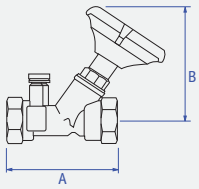
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Code
DN15	20mm	198	75	0.772	135141
DN20	26mm	246	75	1.151	135142
DN25	32mm	258	75	1.546	135143

Ballorex Fixed DZR threaded commissioning valves

1260 Ballorex Fixed commissioning valve with test points (FODRV)

ISO 228 Parallel threads, female x female





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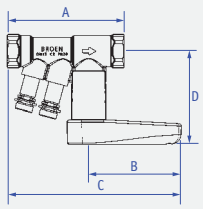
Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
1260LF	DN15	½"	79	106	0.540	0.40	0.41	126022
1260SF	DN15	½"	79	106	0.530	1.86	2.15	126023
1260SF	DN20	¾"	86	106	0.590	2.27	4.78	126024
1260SF	DN25	1"	103	113	0.900	6.11	8.11	126025
1260SF	DN32	1¼"	121	120	1.290	12.65	15.41	126026
1260SF	DN40	1½"	127	123	1.680	19.00	22.23	126027
1260SF	DN50	2"	157	138	2.970	28.42	48.21	126028

Temperature range: -10°C to +110°C

Ballorex Venturi threaded commissioning valves

900S Ballorex Venturi Static commissioning valve (FODRV)

Female thread to ISO7/1 parallel. With regulation, isolation and flow measurement functions

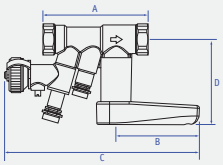


WRAS APPROVED PRODUCT

Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
900SUL	DN15	½"	94	75	140	76	0.41	0.163	0.23	0.46	15008
900SL	DN15	½"	94	75	140	76	0.41	0.359	0.629	0.33	15006
900SS	DN15	½"	94	75	140	76	0.41	0.746	1.620	0.21	15000
900SH	DN15	½"	94	75	140	76	0.41	1.560	2.490	0.39	16404
900SL	DN20	¾"	100	75	144	79	0.41	0.746	1.430	0.27	15007
900SS	DN20	¾"	100	75	144	79	0.41	1.560	2.820	0.31	15001
900SH	DN20	¾"	100	75	144	79	0.41	2.950	5.720	0.27	16405
900SS	DN25	1"	112	75	150	83	0.67	2.950	7.540	0.15	15002
900SH	DN25	1"	112	75	150	83	0.67	6.010	12.100	0.25	15181
900SH	DN32	1¼"	130	122	208	109	1.27	6.010	13.200	0.21	15003
900SH	DN40	1½"	140	122	213	113	1.66	9.200	22.000	0.17	15004
900SH	DN50	2"	156	122	221	120	2.37	17.100	36.000	0.23	15005

900PD Ballorex Venturi Static commissioning valve

Threaded female ends ISO7/1 parallel. With regulation, isolation, flow measurement functions and drain valve. Connection for use as a partner valve with Ballorex DP valves



WRAS APPROVED PRODUCT

Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
900PDUL	DN15	½"	94	75	174	76	0.550	0.163	0.23	0.46	272021
900PDL	DN15	½"	94	75	174	76	0.550	0.359	0.629	0.33	272022
900PDS	DN15	½"	94	75	174	76	0.550	0.746	1.620	0.21	272023
900PDH	DN15	½"	94	75	174	76	0.550	1.560	2.490	0.39	272024
900PDL	DN20	¾"	100	75	174	79	0.640	0.746	1.430	0.27	272025
900PDS	DN20	¾"	100	75	174	79	0.650	1.560	2.820	0.31	272026
900PDH	DN20	¾"	100	75	174	79	0.650	2.950	5.720	0.27	272027
900PDS	DN25	1"	112	75	175	83	0.650	2.950	7.540	0.15	272028
900PDS	DN25	1"	112	75	175	83	0.892	6.010	12.100	0.25	272029
900PDH	DN32	1¼"	130	122	228	109	1.450	6.010	13.200	0.21	272030
900PDH	DN40	1½"	140	122	234	113	1.750	9.200	22.000	0.17	272031
900PDH	DN50	2"	156	122	238	120	2.33	17.100	36.000	0.23	272032

Temperature range: -10°C to +110°C

Ballorex Modular Valve Systems

Ballorex MVS

DZR brass, right hand, with strainer, extended blue handles

Valve size	Connections Inlet	Outlet	Centres	Kvs m³/h	Code	Ballorex reference
DN15L Low flow	½" BSP	¾" flat face	99mm	0.359	16856	43730I0-LR1031
DN15S Standard flow	½" BSP	¾" flat face	99mm	0.746	16857	43730I0-SR1031
DN20L Low flow	¾" BSP	¾" flat face	99mm	0.746	15794	44730I0-LR1131
DN20S Standard flow	¾" BSP	¾" flat face	99mm	1.56	15796	44730I0-SR1131
DN20H High flow	¾" BSP	¾" flat face	99mm	2.95	15798	44730I0-HR1131

BALLOREX THREADED COMMISSIONING VALVES

Ballorex MVS

DZR brass, right hand, with ball valves, red handles

Valve size	Connections		Centres	Kvs m³/h	Code	Ballorex reference
	Inlet	Outlet				
DN15UL Ultra low flow	½" BSP	¾" flat face	99mm	0.163	16858	43730C0-UR0031
DN15L Low flow	½" BSP	¾" flat face	99mm	0.359	15673	43730C0-LR0031
DN15S Standard flow	½" BSP	¾" flat face	99mm	0.746	16851	43730C0-SR0031
DN20L Low flow	¾" BSP	¾" flat face	99mm	0.746	15758	44730C0-LR0131
DN20S Standard flow	¾" BSP	¾" flat face	99mm	1.56	15760	44730C0-SR0131
DN20H High flow	¾" BSP	¾" flat face	99mm	2.95	16860	44730C0-HR0131

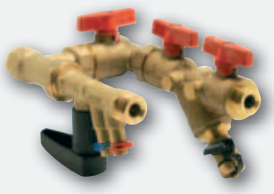
Ballorex MVS

DZR brass, right hand, with ball valves, extended blue handles

Valve size	Connections		Centres	Kvs m³/h	Code	Ballorex reference
	Inlet	Outlet				
DN15L Low flow	½" BSP	¾" flat face	99mm	0.359	16852	43730D0-LR1031
DN15S Standard flow	½" BSP	¾" flat face	99mm	0.746	16853	43730D0-SR1031
DN20L Low flow	¾" BSP	¾" flat face	99mm	0.746	15770	44730D0-LR1131
DN20S Standard flow	¾" BSP	¾" flat face	99mm	1.56	15772	44730D0-SR1131
DN20H High flow	¾" BSP	¾" flat face	99mm	2.95	15774	44730D0-HR1131

Ballorex MVS

DZR brass, right hand, with strainer, red handles

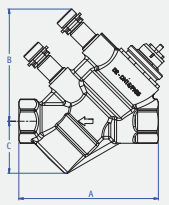


Valve size	Connections		Centres	Kvs m³/h	Code	Ballorex reference
	Inlet	Outlet				
DN15UL Ultra low flow	½" BSP	¾" flat face	99mm	0.163	16859	43730H0-UR0031
DN15L Low flow	½" BSP	¾" flat face	99mm	0.359	16854	43730H0-LR0031
DN15S Standard flow	½" BSP	¾" flat face	99mm	0.746	16855	43730H0-SR0031
DN20L Low flow	¾" BSP	¾" flat face	99mm	0.746	15782	44730H0-LR0131
DN20S Standard flow	¾" BSP	¾" flat face	99mm	1.56	15784	44730H0-SR0131
DN20H High flow	¾" BSP	¾" flat face	99mm	2.95	15786	44730H0-HR0131

Ballorex Venturi DZR Dynamic threaded commissioning valves

902S Ballorex Dynamic DZR valve – excluding actuator (PICV)

Threaded female ends, ISO7/1 Parallel.
Direct flow measuring



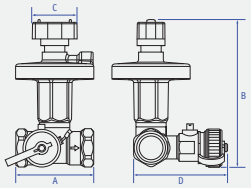
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	Weight kg	Venturi Kv	Flow range l/h	l/s	Code
902SL	DN15	½"	95	76	35	0.55	0.23	36-118	0.01-0.033	15230
902SS	DN15	½"	95	76	35	0.55	0.78	90-450	0.025-0.125	15231
902SH	DN15	½"	95	76	35	0.55	2.50	300-1400	0.083-0.390	15232
902SS	DN20	¾"	120	83	49	0.90	1.90	320-882	0.089-0.245	15240
902SH	DN20	¾"	120	83	49	0.90	4.70	835-2220	0.232-0.617	15241
902SS	DN25	1"	127	81	56	1.30	5.05	865-2340	0.240-0.650	15221
902SH	DN25	1"	127	81	56	1.30	8.25	1750-3330	0.485-0.925	15222
902SH	DN32	1¼"	154	87	72	1.80	8.35	1910-4400	0.530-1.220	15223
902SS	DN40	1½"	189.5	122	85	3.56	17.50	3670-7560	1.02-2.10	15224
902SH	DN50	2"	195	122	85	3.80	29.50	5180-12600	1.44-3.50	15225

Temperature range: -10°C to +110°C

Ballorex Delta threaded differential pressure controllers

925 Ballorex Delta DP differential pressure controllers

Female Threads to ISO7/1 parallel. Setting range 5-25kPa with drain and capillary connection

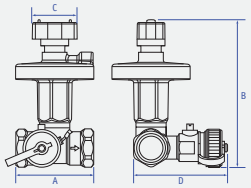


Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kv m³/h	Code
925	DN15	½"	61	101	62	60.5	0.63	1.60	272001
925	DN20	¾"	71	105	62	62	0.66	2.50	272002
925	DN25	1"	84	146	96	65	1.75	4.00	272003
925	DN32	1¼"	96	148	96	69	1.96	6.30	272004
925	DN40	1½"	99.5	194	138	73	3.40	10.00	272005
925	DN50	2"	135	206.5	138	76.5	4.20	20.00	272006

Temperature range: -10°C to +120°C

926 Ballorex Delta DP differential pressure controllers

Female Threads to ISO7/1 parallel. Setting range 20-40kPa with drain and capillary connection

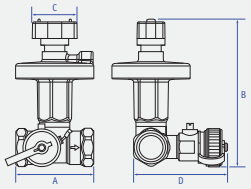


Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kv m³/h	Code
926	DN15	½"	61	101	62	60.5	0.63	1.60	272011
926	DN20	¾"	71	105	62	62	0.66	2.50	272012
926	DN25	1"	84	146	96	65	1.75	4.00	272013
926	DN32	1¼"	96	148	96	69	1.96	6.30	272014
926	DN40	1½"	99.5	220	138	73	3.40	10.00	272015
926	DN50	2"	135	232	138	76.5	4.20	20.00	272016

Temperature range: -10°C to +120°C

927 Ballorex Delta DP differential pressure controllers

Female Threads to ISO7/1 parallel. Setting range 35-75kPa with drain and capillary connection

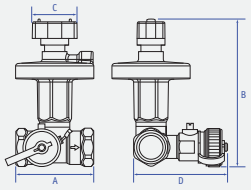


Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kv m³/h	Code
927	DN40	1½"	99.5	235	138	73	3.40	10.00	272017
927	DN50	2"	135	247.5	138	76.5	4.20	20.00	272018

Temperature range: -10°C to +120°C

928 Ballorex Delta DP differential pressure controllers

Female Threads to ISO7/1 parallel. Setting range 60-100kPa with drain and capillary connection



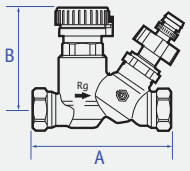
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kv m³/h	Code
928	DN50	2"	135	286	138	76.5	4.20	20.00	272019

Temperature range: -10°C to +120°C

Ballorex Thermo threaded circulation valves

P605 Ballorex Thermo bronze circulation valve. 50°C - 60°C adjustable range

ISO 228-G parallel thread, female x female



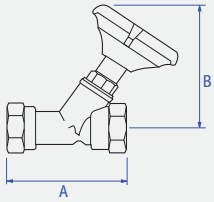
WRAS APPROVED PRODUCT

Valve size	Dimensions in mm A	B	Weight kg	Code
½" DN15 fxf 50°-60°C	98	75	0.63	16502
¾" DN20 fxf 50°-60°C	125	75	0.82	16503
1" DN25 fxf 50°-60°C	136	75	0.96	16504

Ballorex Fixed DZR threaded double regulating valves

1200 Ballorex Fixed double regulating valve (DRV)

ISO 228 Parallel threads, female x female



WRAS APPROVED PRODUCT

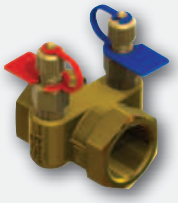
Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Code
DN15	½"	79	106	0.490	2.3	126002
DN20	¾"	86	106	0.550	2.48	126003
DN25	1"	103	113	0.860	7.15	126004
DN32	1¼"	121	120	1.240	15.08	126005
DN40	1¼"	127	123	1.620	20.84	126006
DN50	2"	157	138	2.900	28.89	126007

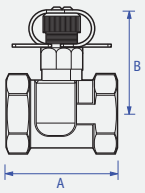
Temperature range: -10°C to +120°C

Ballorex Fixed DZR threaded metering stations

1250 Ballorex Fixed metering station with test points (FODRV)

ISO 228 Parallel threads, female x female





WRAS APPROVED PRODUCT

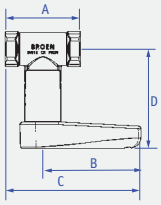
Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Code
1250LF	DN15	½"	48	40	0.220	0.41	126090
1250SF	DN15	½"	48	40	0.220	2.15	126091
1250SF	DN20	¾"	51	42	0.250	4.78	126092
1250SF	DN25	1"	63	46	0.390	8.11	126093
1250SF	DN32	1¼"	67	52	0.540	15.41	126094
1250SF	DN40	1½"	71	52	0.590	22.23	126095
1250SF	DN50	2"	75	57	0.920	48.21	126096

Temperature range: -10°C to +120°C

Ballorex Venturi threaded commissioning valves

901S Ballorex Venturi Static commissioning valve (DRV)

With regulation and isolation functions.
Female Threads to ISO7/1 parallel



Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kv m³/h	Code
901SL	DN15	½"	57	75	104	76	0.23	1.620	15042
901SS	DN15	½"	57	75	104	76	0.23	2.100	15036
901SL	DN20	¾"	62	75	106	79	0.29	4.260	15043
901SS	DN20	¾"	62	75	106	79	0.29	4.790	15037
901SS	DN25	1"	75	75	113	83	0.47	12.800	15038
901SS	DN32	1¼"	88	122	166	109	1.01	13.280	15039
901SS	DN40	1½"	98	122	171	113	1.24	23.300	15040
901SS	DN50	2"	115	122	180	120	1.80	35.300	15041

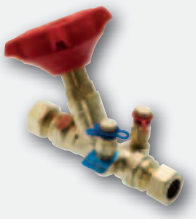
Temperature range: -10°C to +120°C

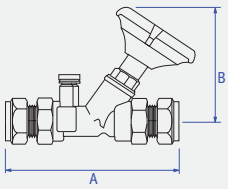
BALLOREX COMPRESSION COMMISSIONING VALVES

Ballorex Fixed DZR compression commissioning valves

1260C Ballorex Fixed commissioning valve with test points (FODRV)

Kuterlite Pro Compression ends for copper tube.
DZR body





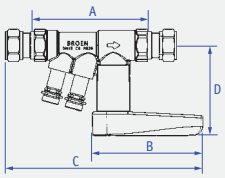
WRAS APPROVED PRODUCT

Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Kvs m³/h	Code
1260C LF	DN15	15mm	133	106	0.500	0.40	0.41	126036
1260C SF	DN15	15mm	133	106	0.490	1.86	2.15	126037
1260C SF	DN20	22mm	148	106	0.550	2.27	4.78	126038
1260C SF	DN25	28mm	171	113	0.860	6.11	8.11	126044
1260C SF	DN32	35mm	217	120	1.240	12.65	15.41	126045
1260C SF	DN40	42mm	235	123	1.620	19.00	22.23	126046
1260C SF	DN50	54mm	267	138	2.900	28.42	48.21	126047

Temperature range: -10°C to +120°C

900SC Ballorex Venturi Static commissioning valve (FODRV)

Kuterlite Pro compression ends to EN1254/2. With regulation, isolation and flow measurement functions



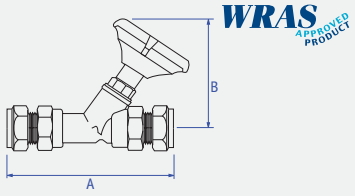
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
900SCL	DN15	15mm	99	75	164	76	0.540	0.359	0.629	0.33	15015
900SCS	DN15	15mm	99	75	164	76	0.540	0.746	1.620	0.21	15009
900SCH	DN15	15mm	99	75	164	76	0.540	1.56	2.490	0.39	16406
900SCL	DN20	22mm	105	75	170	79	0.720	0.746	1.430	0.27	15016
900SCS	DN20	22mm	105	75	170	79	0.720	1.56	5.720	0.27	15010
900SCH	DN20	22mm	105	75	170	79	0.720	2.95	2.820	0.31	16407
900SCS	DN25	28mm	118	75	177	83	1.000	2.95	12.100	0.25	15011
900SCH	DN25	28mm	118	75	177	83	1.000	6.01	7.54	0.15	15183
900SCH	DN32	35mm	135	122	241	109	1.810	6.01	13.200	0.21	15012
900SCH	DN40	42mm	149	122	253	113	2.510	9.2	22.000	0.17	15013
900SCH	DN50	54mm	167	122	265	120	3.820	17.1	36.000	0.23	15014

Temperature range: -10°C to +120°C

Ballorex Fixed DZR compression regulating valves

1200C Ballorex Fixed double regulating valve (DRV)

Kuterlite Pro Compression ends for copper tube.
DZR body



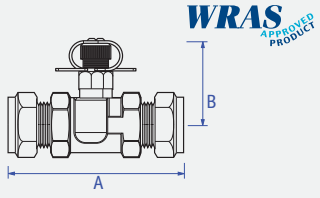
Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kv m³/h	Code
1200C SF	DN15	15mm	133	106	0.530	2.3	126016
1200C SF	DN20	22mm	148	106	0.590	2.48	126017
1200C SF	DN25	28mm	171	113	0.900	7.15	126018
1200C SF	DN32	35mm	217	120	1.290	15.08	126019
1200C SF	DN40	42mm	235	123	1.680	20.84	126020
1200C SF	DN50	54mm	267	138	2.970	28.89	126021

Temperature range: -10°C to +120°C

Ballorex Fixed DZR compression metering stations

1250C Ballorex Fixed metering station with test points (FODRV)

Kuterlite Pro Compression ends for copper tube.
DZR body



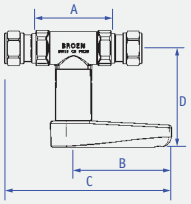
Cat no.	Valve size	Connection size	Dimensions in mm A	B	Weight kg	Kvs m³/h	Code
1250C LF	DN15L	15mm	102	65	0.35	0.41	126080
1250C SF	DN15S	15mm	102	65	0.35	2.15	126081
1250C SF	DN20S	22mm	113	68	0.5	4.78	126082
1250C SF	DN25S	28mm	131	78	0.71	8.11	126083
1250C SF	DN32S	35mm	163	83	1.06	15.41	126084
1250C SF	DN40S	42mm	179	89	1.45	22.23	126085
1250C SF	DN50S	54mm	185	103	2.43	48.21	126086

Temperature range: -10°C to +120°C

Ballorex Venturi DZR compression commissioning valves

901SC Ballorex Venturi Static double regulating valve (DRV)

(DRV) Kuterlite Pro compression ends to EN1254/2.
With regulation and isolation functions



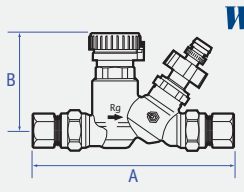
Cat no.	Valve size	Connection size	Dimensions in mm A	B	C	D	Weight kg	Kv m³/h	Code
900SCL	DN15	15mm	62	75	128	76	0.370	1.62	15050
900SCS	DN15	15mm	62	75	128	76	0.370	2.10	15044
900SCL	DN20	22mm	67	75	132	79	0.510	4.26	15051
900SCS	DN20	22mm	67	75	132	79	0.510	4.79	15045
900SCS	DN25	28mm	81	75	140	83	0.800	12.80	15046
900SCS	DN32	35mm	93	122	199	109	1.550	13.28	15047
900SCS	DN40	42mm	107	122	211	113	2.120	23.30	15048
900SCS	DN50	54mm	126	122	224	120	3.250	35.30	15049

Temperature range: -10°C to +120°C

Ballorex Thermo compression circulation valves

P605C Ballorex Thermo bronze thermal circulation valve

50°C - 60°C adjustable range. Compression ends



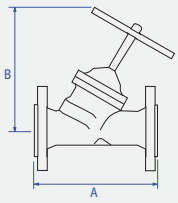
WRAS APPROVED PRODUCT

Valve size	Dimensions in mm A	B	Weight kg	Code
15mm DN15 cxc 50°-60°C	154	75	0.79	16520

Ballorex Fixed cast iron flanged commissioning valves

V952 Ballorex Fixed cast iron double regulating valve

With regulating and isolating functions



Valve size	Dimensions in mm A	B	Weight kg	Code
DN50	230	260	12.00	15530
DN65	290	293	18.00	15531
DN80	310	305	23.00	15532
DN100	350	323	33.50	15533
DN125	400	353	49.00	15534
DN150	480	388	62.00	15535
DN200	600	453	96.00	15536

Kv values

$m^3/h@1kg/cm^2$ pressure drop

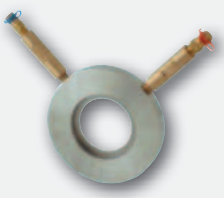
Size	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DN50	7.10	16.80	24.70	30.20	34.10	37.40	40.90	42.10	-	-	-	-	-	-
DN65	12.10	19.70	28.00	39.40	51.70	64.70	74.00	80.90	-	-	-	-	-	-
DN80	20.60	28.70	39.60	53.50	71.50	86.60	97.40	108.40	-	-	-	-	-	-
DN100	25.70	55.00	78.90	112.30	145.20	170.90	192.50	210.30	-	-	-	-	-	-
DN125	42.80	60.00	77.60	99.80	129.50	155.50	172.00	196.20	213.20	233.60	256.20	278.00	298.20	310.40
DN150	45.50	77.90	94.30	110.90	133.50	163.80	201.40	233.90	261.90	293.00	326.50	361.30	414.30	414.30
DN200	64.40	134.00	171.80	219.80	286.00	329.30	389.80	441.30	483.90	542.10	595.60	650.60	711.30	753.80

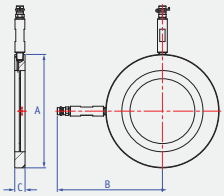
Temperature range: -10°C to +120°C

Ballorex Fixed stainless steel flanged metering stations

V953 Ballorex Fixed metering station

304 stainless steel, flanges BS EN 1092-1 PN16, complete with test points and stainless steel extensions with flow measurement function



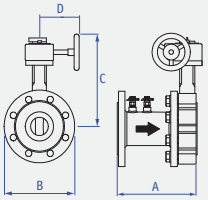


Valve size	Dimensions in mm A	B	C	Weight kg	Kvs m³/h	Loss factor	Code
DN50	109	148	20	1.40	47.5	1.27	15540
DN65	129	158	20	1.90	100.7	1.55	15541
DN80	144	166	20	2.20	133.8	1.52	15542
DN100	164	176	20	2.40	237.7	1.27	15543
DN125	194	191	20	3.10	339	1.19	15544
DN150	220	204	20	3.40	511	1.52	15545
DN200	275	232	20	4.70	858	1.30	15546
DN250	358	273	20	6.08	1235	–	15547
DN300	386	287	20	7.60	1793	–	15548

Temperature range: -10°C to +120°C

Ballorex Venturi flanged commissioning valves

900XS Ballorex Venturi steel commissioning station (FODRV) – flanged

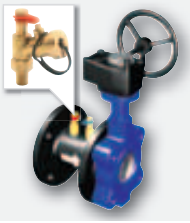


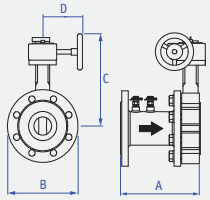
Cat no.	Valve size	Dimensions in mm A	B	C	D	No. of holes	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
Standard pattern											
900XSS	DN65	182	185	285	100	4	13.3	37.4	78.2	0.23	15028
900XSS	DN80	249	200	295	100	8	16.2	72.9	169	0.19	15029
900XSS	DN100	325	220	310	160	8	23.0	129	360	0.13	15030
900XSS	DN125	341	250	325	160	8	30.0	190	502	0.14	15031
900XSS	DN150	354	285	340	160	8	36.0	348	1010	0.12	15032
900XSS	DN200	378	340	430	200	12	55.0	586	1910	0.09	15033
900XSS	DN250	411	405	465	200	12	78.0	861	2540	0.11	15034
900XSS	DN300	465	460	535	250	12	105	1513	4850	0.10	15035

Temperature range: -10°C to +120°C

ballorex delta cast iron flanged partner valves

900PDXS Ballorex Venturi partner valve with drain connection, cast iron



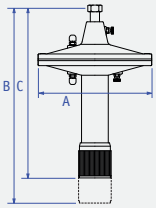


Cat no.	Valve size	Dimensions in mm A	B	C	D	No. of holes	Weight kg	Kvs m³/h	Kv m³/h	Loss factor	Code
900PDXS	DN65	182	185	285	100	4	13.584	37.40	78.20	0.23	14990
900PDXS	DN80	249	200	295	100	8	16.484	72.90	169	0.19	14991

Temperature range: -10°C to +120°C

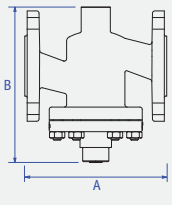
Ballorex Delta flanged differential pressure controllers

929TD66 Ballorex Delta DP differential pressure control valve actuator, cast iron



Cat no.	Valve sizes	Dimensions in mm A	B	C	Weight kg	Code
929 TD66 ACTUATOR 20-80kPa	–	240	508	400	13.000	272040
929 TD66 ACTUATOR 70-130kPa	–	240	430	240	13.000	272041

930 Ballorex Delta DP differential pressure control valve, cast iron

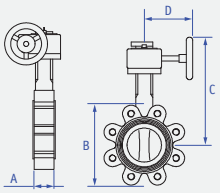


Cat no.	Valve sizes	Dimensions in mm A	B	Weight kg	Code
930PN16	DN65	290	264	23.000	272050
930PN16	DN80	310	279	38.000	272051

Temperature range: -10°C to +120°C

Ballorex Venturi flanged double regulating valves

901XS Ballorex Venturi steel double regulating valve (DRV) – flanged

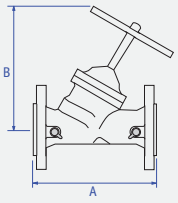


Cat no.	Valve size	Dimensions in mm A	B	C	D	No. of holes	Weight kg	Kv m³/h	Code
901XS	DN65	45	185	285	100	4	6.1	148	15056
901XS	DN80	46	200	295	100	8	6.3	237	15057
901XS	DN100	52	220	310	160	8	10.6	603	15058
901XS	DN125	55	250	325	160	8	12.6	888	15059
901XS	DN150	56	285	340	160	8	14.1	2341	15060
901XS	DN200	60	340	430	200	12	23.2	2845	15061
901XS	DN250	68	405	465	200	12	33.7	4549	15062
901XS	DN300	78	460	535	250	12	48.7	7761	15063

Temperature range: -10°C to +120°C

V952V Ballorex Vario VODRV cast iron variable orifice double regulating valve

With regulating, isolating and measurement functions



Valve size	Dimensions in mm A	B	Weight kg	Code
DN50	230	260	12.00	15503
DN65	290	293	18.00	15504
DN80	310	305	23.00	15505
DN100	350	323	33.50	15506
DN125	400	353	49.00	15507
DN150	480	388	62.00	15508
DN200	600	453	96.00	15509

Kv values

$m^3/h@1kg/cm^2$ pressure drop

Size	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DN50	7.10	16.80	24.70	30.20	34.10	37.40	40.90	42.10	-	-	-	-	-	-
DN65	12.10	19.70	28.00	39.40	51.70	64.70	74.00	80.90	-	-	-	-	-	-
DN80	20.60	28.70	39.60	53.50	71.50	86.60	97.40	108.40	-	-	-	-	-	-
DN100	25.70	55.00	78.90	112.30	145.20	170.90	192.50	210.30	-	-	-	-	-	-
DN125	42.80	60.00	77.60	99.80	129.50	155.50	172.00	196.20	213.20	233.60	256.20	278.00	298.20	310.40
DN150	45.50	77.90	94.30	110.90	133.50	163.80	201.40	233.90	261.90	293.00	326.50	361.30	414.30	414.30
DN200	64.40	134.00	171.80	219.80	286.00	329.30	389.80	441.30	483.90	542.10	595.60	650.60	711.30	753.80

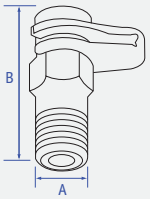
Temperature range: -10°C to +120°C

BALLOREX VENTURI ACCESSORIES

Ballorex Venturi accessories

910TP Ballorex Venturi red and blue test points

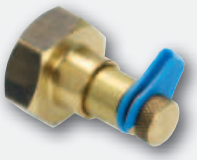
Male taper thread

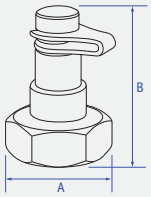


Valve size	Dimensions in mm A	B	Weight kg	Code
¼"	14	38	0.03	15201

Ballorex Delta accessories

Ballorex Delta DP cap with test point





Size	Dimensions in mm A	B	Weight kg	Code
¾"	30	46	0.060	272010

Ballorex Delta PD combination drain valve

Drain valve with measuring point

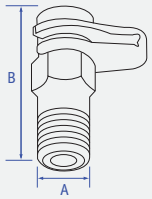
Size	Connection size	Weight kg	Code
DN8 ¼"	R¼"	0.27	272033

Temperature range: -10°C to +110°C

Ballorex Fixed accessories

Ballorex Fixed DZR red and blue self seal test points

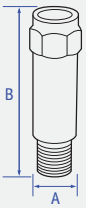
Male taper thread. (As used on 1260/1250 series).



Valve size	Dimensions in mm A	B	Weight kg	Code
¼" x 36mm	14	36	0.03	126041
¼" x 75mm	14	75	0.06	126042

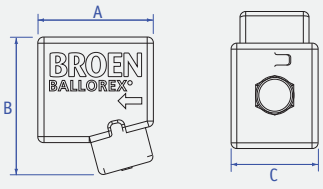
920EX Ballorex Venturi test point extension kit

Male taper thread



Valve size	Dimensions in mm A	B	Weight kg	Code
¼" x 50mm	17	65	0.09	15205

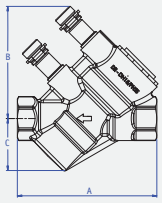
Ballorex Venturi insulation jackets for Ballorex Venturi valves



Valve size	Dimensions in mm A	B	C	Code
½"	92	112	70	15250
¾"	98	118	75	15251
1"	110	124	80	15252
1¼"	128	133	94	15253
1½"	138	140	100	15254
2"	153	152	118	15255

Ballorex Dynamic accessories

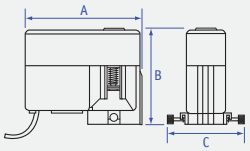
902 Body housing



Valve size	Connection size	Dimensions in mm A	B	C	Code
DN15	½"	95	76	35	15197
DN20	¾"	120	83	49	15198
DN25	1"	127	81	56	15184
DN32	1¼"	127	81	56	15185
DN40	1½"	189.5	122	85	15186
DN50	2"	195	122	85	15187

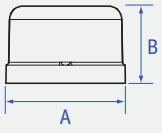
Ballorex Dynamic actuator for Dynamic valves DN40 and DN50

24V ON-OFF Actuator



Cat no.	Valve sizes	Dimensions in mm A	B	C	Weight kg	Code
AVUX5202	DN40/DN50	101	76	80	0.32	15208

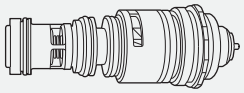
Ballorex Dynamic shut off cap for 902 Dynamic valves



Cat no.	Dimensions in mm A	B	Weight kg	Code
Shut off cap	40	20	0.01	15209

LF902 Ballorex Dynamic cartridge

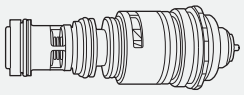
Direct flow measuring



Valve size	Connection size	Colour	Weight kg	Flow range l/h	Flow range l/s	Code
DN15	15mm	White	0.12	36-118	0.01-0.033	15192

SF902 Ballorex Dynamic cartridge

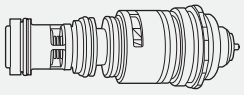
Direct flow measuring



Valve size	Connection size	Colour	Weight kg	Flow range l/h	Flow range l/s	Code
DN15	15mm	Red	0.12	90-450	0.025-0.125	15193
DN20	15mm	White	0.12	320-882	0.089-0.245	15195

HF902 Ballorex Dynamic cartridge

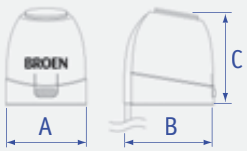
Direct flow measuring



Valve size	Connection size	Colour	Weight kg	Flow range l/h	Flow range l/s	Code
DN15	15mm	Black	0.12	300-1400	0.083-0.39	15194
DN20	15mm	Black	0.21	835-2221	0.232-0.617	15196

Ballorex Dynamic actuator specification

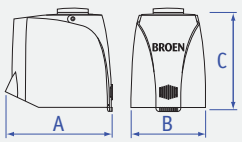
Actuator ON-OFF



Cat no.	Valve size	Dimensions in mm A	B	C	Weight kg	Power supply	Standard position	Protection	Adaptor	Code
902	DN15	44	47	54	0.14	24v	Normally closed	IP54	M30 x 1.5	15202
AT01	DN15	44	47	54	0.12	230v	Normally closed	IP54	M30 x 1.5	15280
902	DN15	44	47	54	0.14	24v	Normally open	IP54	M30 x 1.5	15203

Ballorex Dynamic actuator specification

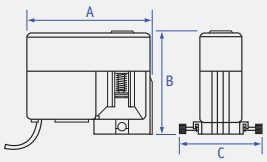
Actuator modulating



Cat no.	Valve size	Dimensions in mm A	B	C	Weight kg	Power supply	Control voltage input	Standard position	Protection	Adaptor	Code
AE01	DN15	64	44	55	0.14	24v AC	0-10v DC	Normally closed	IP54	M30 x 1.5	15281

Ballorex Dynamic actuator for Dynamic valves DN40 and DN50

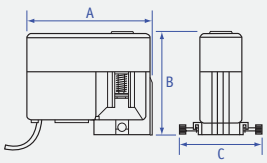
24V Modulating Actuator



Cat no.	Valve sizes	Dimensions in mm A	B	C	Weight kg	Code
AVE5304	DN40/DN50	101	76	80	0.333	15206

Ballorex Dynamic actuator for Dynamic valves DN40 and DN50

230V ON-OFF Actuator



Cat no.	Valve sizes	Dimensions in mm A	B	C	Weight kg	Code
AVUM5601	DN40/DN50	101	76	80	0.4	15207

Ballorex Delta accessories

¾" Ballorex Delta DP capillary adaptor

Size	Dimensions in mm A	B	Weight kg	Code
¾"	34	21	0.08	272009

Ballorex Thermo circulation valve accessories

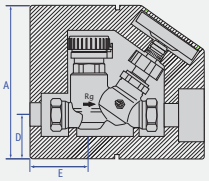
PCV1 Ballorex Thermo circulation valve regulation cartridge 30°C - 50°C

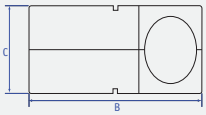
Size	Code
DN15	16510
DN20	16511

PCV2 Ballorex Thermo circulation valve regulation cartridge 50°C - 60°C

Size	Code
DN15	16512
DN20	16513
DN25	16514

Ballorex Thermo insulation jacket





Valve size	Dimensions in mm A	B	C	D	E	Code
For circulation valve DN15	143	162	82	41	54	16515
For circulation valve DN20	143	162	90	41	54	16516
For circulation valve DN25	157	162	110	55	54	16517

Ballorex Thermo bimetallic thermometer for circulation valves

Code
16518

Ballorex Thermo stop and drain unit for circulation valves

Code
16519

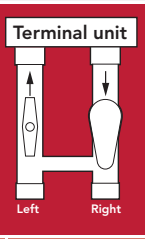
Ballorex

BALLOREX MODULAR SPECIFICATION OPTIONS

Simply select the required components from left to right. The corresponding codes will make up the unique order references as illustrated.

Column	A	B	C	D	E	F	G	H	I
Option	43	733	E	1-	L	L	0	0	31

- 31 ½" male flat face
- 0 ¾" BSP female inlet
- 0 Handle colour red
- L Ballorex Venturi left
- L Ballorex Venturi low flow
- E Air vent left
- 1- Ball valve with test point
- 733 H module with 145mm centre distance
- 43 DN15 unit size



A Size		B H module		C Valve module		D Accessory module		E Ballorex module		F Venturi left/right		G Handle colour		H Pipework connections		I Terminal unit connections	
43	DN15	730	H module 99mm	C	Ball valve	0-	None	U	Ultra low flow	L	Left	0	Red	0	½" BSP female	31	¾" male flat face
44	DN15		H module 145mm	D	Ball valve with extended spindle	1-	Air vent left	L	Low flow		Right		Blue	1	¾" BSP female	59	15mm Tectite Pro
53	Dynamic DN15	735	H module 99mm hanger extension left	E	Ball valve with test point	2-	Test point left	S	Standard flow					2	15mm Tectite Pro	60	22mm Tectite Pro
54	Dynamic DN20	736	H module 145mm hanger extension left	F	Ball valve with test points and extended spindles	3-	Drain left	H	High flow					3	22mm Tectite Pro		
63	Dynamic DN15 Mod. Act	740	H module 99mm hanger extension right	G	Ball valve with extended test points and extended spindles	4-	Air vent right	UL	Ultra low flow					6	15mm Press end		
73	Dynamic DN15 On/Off Act	741	H module 145mm hanger extension right	H	Y-Strainer		Test point right								22mm Press end		
64	Dynamic DN20 Mod. Act	745	H module 99mm hanger extension both	I	Y-Strainer with extended spindles	6-	Drain right							8	18mm Press end		
74	Dynamic DN20 On/Off Act	746	H module 145mm hanger extension both	J	Y-Strainer with test points	7-	Air vent both										
				K	Y-Strainer with test points and extended spindles	8-	Test point both										
				L	Y-Strainer with extended test points and extended spindles	9-	Drain both										

KEY

43 Venturi FODRV Static commissioning valve DN15
44 Venturi FODRV Static commissioning valve DN20
53 Dynamic commissioning valve - no actuator DN15
54 Dynamic commissioning valve - no actuator DN20
63 Dynamic commissioning valve - with modulating actuator DN15
64 Dynamic commissioning valve - with modulating actuator DN20
73 Dynamic commissioning valve - with on/off actuator DN15
74 Dynamic commissioning valve - with on/off actuator DN20

NB For connections to multi-layer tube please contact Pegler Yorkshire.
NB As per BSRIA guidelines all Dynamic MVS are fitted with an isolation ball valve after the Dynamic valve.

BALLOREX MODULAR SYSTEM COMPONENTS

CONNECT + CONTROL

The exploded photograph below illustrates a typical Ballorex Modular combination. The basic H format is always retained and can be customised according to particular system design requirements. Where alternative components are available, options are illustrated to demonstrate the high level of flexibility provided by this system.

H MODULE

Centre distances

For maximum flexibility any one of five different centre extensions can be selected to suit the flow and return pipework centre spacing. The following pipework centre spacings are available; 99mm, 145mm.

Hanger extensions

Optional hanger extensions (with a set length of 110mm) can be used on either side of the unit when there is a requirement for additional support.

Connections to main

The flow and return pipework connections are selected from the following options: female BSP in ½" and ¾", Tectite Pro and in 15mm, 18mm and 22mm.

Ball valve

The H module quarter turn ball valve is available with either blue or red handles and with standard or extended spindles.

Size

The size is determined by the internal diameter of the Ballorex Venturi and is available in either DN15 or DN20 nominal diameter (flow rate specified opposite, under the "Ballorex Venturi Valve" section).

Ballorex

BALLOREX MODULAR SYSTEM COMPONENTS

VALVE MODULE

Options

The valve module is available as either a quarter turn ball valve or a Y-Strainer.

Ball valve

The quarter turn ball valve includes a drain off facility and can be selected with either red or blue handles with a further option for extended spindles. Test points can be added and extended if required.

Y-Strainer

The Y-Strainer is available with red or blue handles which can be closed to prevent water loss when cleaning the strainer. Extended spindles are available for use with the handles. The Y-Strainer contains an integral stainless steel mesh of 0.8mm diameter. The addition of test points on either side of the strainer provides an easy method of measuring the pressure differential and determine whether it is blocked. Test points can also be extended if required.

BALLOREX VENTURI VALVE

The unique Ballorex Venturi commissioning valve is the key component within the module and precisely measures and regulates the flow.

Flow specifications

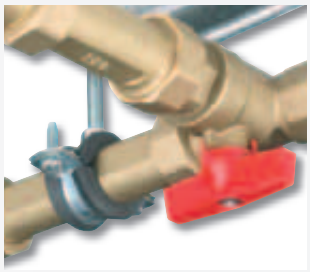
Ballorex Venturi commissioning valves are available in ultra low flow, low flow and standard flow options.

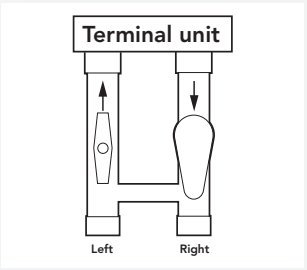
Left hand or right hand options

The Ballorex Venturi can be positioned on either side of the unit according to the requirements of the system. See diagram below for orientation definition.

HANGER EXTENSION

The hanger extension is specified as a component of the H module.





Modular orientation

CONNECTIONS TO TERMINAL UNIT

For connecting to the terminal unit, flat face male or Tectite Pro can be selected. For other connections refer to Pegler Yorkshire.

ACCESSORY MODULE

The accessory module is optional and provides the following additional features on one or both sides of the system if required: test point, drain off facility or air vent.

BALLOREX VENTURI AND MODULAR PERFORMANCE

BALLOREX VENTURI

Ballorex Venturi commissioning valves perform to the following working temperatures and pressures. The working temperature and pressure is dictated by the component with the lowest performance rating, so for example a Ballorex Venturi (compression ends), connected with PEX or PB pipe would perform to a lower level than the figures indicated below for copper tube. Ballorex Venturi valves are designed and manufactured to Article 3, Section 3, to Sound Engineering Practice (S.E.P.) under the P.E.D.

Ballorex Venturi (compression) valve performance when correctly assembled with copper tube to BS EN 1057

Size	Service temperature	
	Min. -1°C	Max. 120°C
15mm to 54mm	5 bar	5 bar

Ballorex Venturi performance (female BSP connections), when correctly assembled with the appropriate union fittings and tube

Size	Service temperature			
	Min. -1°C	100°C	120°C	Max. 135°C
½" to 2"	20 bar	20 bar	16 bar	16 bar

Ballorex Venturi steel valve performance (flanged connections) when correctly assembled with appropriate fittings/flanges and tube

Size	Service temperature	
	Min. -1°C	Max. 120°C
65mm to 300mm	16 bar	16 bar

Ballorex Venturi test point performance when correctly assembled

Size	Service temperature		
	Min. -1°C	60°C	Max. 120°C
All sizes	69 bar	69 bar	69 bar

Test pressures

Test pressures for all Ballorex Venturi valves comply with ISO 5208: 1993 E. For Ballorex Venturi in sizes 15mm to 54mm and ½" to 2", both shell, seal and spindle perform at 6 bar (gas). For Steel Ballorex Venturi in sizes 65mm to 300mm, the shell performs at 24 bar hydrostatically.

BALLOREX MODULAR

The working temperature and pressure performance of Ballorex Modular is dependent on the connection configuration selected.

The tables below indicate the relevant working temperatures and pressures of Ballorex Modular and the various connection options. In all instances, the working temperature and pressure capabilities of the connecting pipework should also be considered, by referring the to the relevant manufacturers specifications.

Ballorex Modular contains a Ballorex Venturi commissioning valve. These are designed and manufactured to Article 3, Section 3, to Sound Engineering Practice (S.E.P.) under the P.E.D.

The performance of the Ballorex Modular unit is dictated by the part – the unit itself, the connections or the pipework – with the lowest performance rating.

Inlet connections performance

The following Tables 5-7 indicate the performance of Ballorex Modular inlet connections.

BSP female connection performance

Size	Service temperature			
	Min. -20°C	30°C	65°C	Max. 110°C
½", ¾"	16 bar	16 bar	10 bar	6 bar

Tectite Pro connection performance

Size	Service temperature			
	Min. -20°C	30°C	65°C	Max. 114°C
15mm, 54mm	20 bar	20 bar	16 bar	10 bar

Compression connection performance

Size	Service temperature			
	Min. -15°C	30°C	90°C	Max. 120°C
15mm, 54mm	20 bar	20 bar	10 bar	7 bar

Ballorex

BALLOREX VENTURI AND MODULAR PERFORMANCE

Performance ratings

In all instances, the working temperature and pressure is dictated by the component with the lowest performance rating. An example for Ballorex Modular is given below:

Configuration: A Ballorex Modular unit with a BSP female inlet connection to the pipework end, and a Tectite Pro connection to the terminal unit end, jointed to copper tube to BS EN 1057.

The unit would perform to the component with the lowest performance rating. For operation at 65°C this would be the female BSP inlet, with a performance of 10 bar. For operation at 30°C it would be the Tectite connection, with a performance of 20 bar.

Terminal unit connections performance

Male flat face connections perform as shown in the table below. However, the performance of the component used to connect the flat face connector to the pipework should also be considered.

Male flat face connection performance

Size	Service temperature			
	Min. -20°C	30°C	65°C	Max. 110°C
¾"	16 bar	16 bar	10 bar	6 bar

Test pressures

Test pressures for all Ballorex Modular valves comply with ISO 5208:1993E.

Pressure Equipment Directive (P.E.D.)

From 30th May 2002 most pressure equipment and assemblies on the market in the United Kingdom must comply with the Pressure Equipment Directive (P.E.D.) 1999.

For a detailed explanation of the P.E.D. visit our website **www.pegleryorkshire.co.uk**.

Antifreeze

For products used in water systems, working temperatures of less than 4°C can only be achieved if antifreeze is added to the system. Antifreeze should not be added to potable water systems.

QUALITY AND GUARANTEES

Pegler Yorkshire operates a Quality Management System for the development, manufacture and supply of fittings, tube, valves and accessories which complies with the requirements of BS EN ISO 9001: 2000.

GUARANTEES

Our policy of continuously and rigorously testing Ballorex products means we are confident they will give you years of trouble free service. To demonstrate the total confidence we have in our products and our commitment to customer service, all Ballorex valves carry extensive guarantees against manufacturing defects when installed in accordance with our instructions on specified tube materials and applications, as shown in the table below.

Ballorex valves guarantees when correctly assembled with stated tubes and pipes

Valve	Length of guarantee
Ballorex Venturi	5 years
Ballorex Modular	5 years

STANDARDS AND APPROVALS, AND MATERIALS SPECIFICATIONS

We at Pegler Yorkshire are dedicated to designing, developing and manufacturing products of the highest quality. We are members of numerous standards committees and take an active part in their development. Ballorex valves all comply with the relevant British, European and International standards and approvals. The Ballorex range meets the following standards:

BALLOREX VENTURI CONNECTIONS

Ballorex Venturi sizes 15mm to 54mm – press, push and compression ends

BS EN 1254 Part 2. Specification for copper and copper alloy fittings with compression ends for copper tubes.

Ballorex Venturi sizes ½" to 2" – female threaded ends and test points

ISO 7/EN 10226-1 (formerly BS 21/ISO 7). Specification for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions).

Steel Ballorex Venturi – flange connections

BS EN 1092-1 (formerly BS 4504-3.1). Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated. Steel flanges.

BALLOREX MODULAR CONNECTIONS

Ballorex Modular – compression ends

BS EN 1254 Part 2. Refer to Ballorex Venturi.

Ballorex Modular – female threaded ends

ISO 7/EN 10226-1 (formerly BS 21/ISO7).
Refer to Ballorex Venturi.

BALLOREX VENTURI MATERIALS

The materials used in Ballorex Venturi valves are manufactured to the following specifications.

Ballorex Venturi sizes 15mm to 54mm and ½" to 2"

Venturi, ball, needle: Chrome plated DZR brass to BS EN 12163 (CW602N). Specification for copper and copper alloy rod for general purposes.

Valve body, spindle, compression rings, measure outlet: DZR brass to BS EN 12163 (CW602N).

Nuts: Brass to BS EN 12163 (CW602N).

Seals: PTFE.

'O' rings, rubber packings: EPDM.

Handles: PA6.6 (Nylon Polyamide), 30% glass reinforced.

Steel Ballorex Venturi

Valve body: Cast iron, fully lugged to ASTM A126 Class B.

Venturi: Carbon steel to St.37.

Disk: Stainless steel to ASTM A351 CFB.

Shaft: Stainless steel to ASTM 276 GR416.

Seat: EPDM, bonded.

Drive pin: Stainless steel to ASTM A276 GR316.

Shaft seal: Nitrile to NBR 1.

Bearing: Lubricated bronze to ASTM B62 (flanged) or ASTM B52 (grooved).

Test points

Body, retaining ring, cap, extension tube: DZR brass to BS EN 12163 CZ 132.

Seal and cap seal: EPDM.

Tie: Polypropylene.

BALLOREX MODULAR MATERIALS

The materials used in Ballorex Modular are manufactured to the following specifications.

Body, pipe and components, nipples, spindles, ball, draining tap, measure outlet: DZR brass to BS EN 12163 CZ602N.

Strainer: AISI304, stitch size 0.8mm. thread 0.4mm.

Seals: PTFE.

'O' rings, rubber packings: EPDM.

Handle (red/blue): Die cast zinc BS1004A, ZA3

Spindle extension: PA6.6 (Nylon Polyamide), 10% glass reinforced; DZR brass to BS EN 12163 CZ602N.

Handle screw: Steel 4.8 electro-galvanised.

The Ballorex Modular valve system incorporates a Ballorex Venturi commissioning valve. The materials in a Ballorex Venturi valve are indicated opposite and above.

Ballorex

BALLOREX VENTURI TECHNICAL DATA

TUBE AND PIPE COMPATIBILITY

Ballorex Venturi valves with compression ends can be used with copper tube to BS EN 1057, and, in sizes up to 28mm with PEX and PB pipe (with appropriate liner). Ballorex Venturi valves with threaded ends can be used with steel tube to BS 1387 and male iron connection fittings. Steel Ballorex Venturi valves should be assembled with the appropriate flanges and tube. For full details of tube and pipe specifications, please see pages 69 and 70.

Ballorex valves with XPress adapted ends can be used with stainless steel 316 System tube, manufactured from BS 316 531/ DIN 1.4401 stainless steel strip conforming to BS 10088 Part 2.

Ballorex valves with XPress adapted ends are suitable for use with galvanised carbon steel System tube, manufactured in accordance with DIN 2394/NEN 1982. The tube material has a very low carbon content and has a thin walled profile making, it lightweight and easier to handle.

Ballorex valves with Tectite adapted ends are suitable for use with copper tube to BS EN 1057, PEX and PB pipe (with an appropriate liner), galvanised carbon steel System tube to DIN 2394/NEN 1982 (up to 28mm), stainless steel 316 System tube and Tectite Flexible Metal tube (with liners).

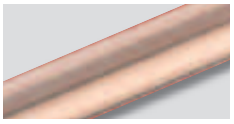
Ballorex valves with Henco adapted ends are suitable for use with Henco PE-Xc/AL/PE-Xc Multi-layer tube.

TUBE AND PIPE COMPATIBILITY

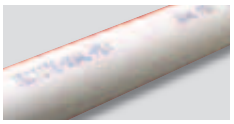
Ballorex valves are suitable for connecting to a variety of tubes and fittings – refer to the information for each particular product for details. There are specific standards the tube and pipe must achieve to be suitable for connection with Ballorex valves.

Selected Ballorex valves are compatible with the following tubes and pipes. Refer to information on each product brand for further details.

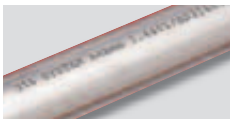
Copper tube
Copper tube to BS EN 1057.



PEX and PB pipe
PEX pipe to BS 7291 Part 3 and PB pipe to BS 7291 Part 2 in sizes up to 28mm, in conjunction with the correct pipe support liner.

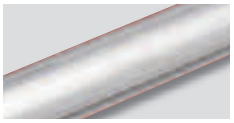


Stainless steel tube
XPress Stainless System tube and other stainless steel tube to BS EN 10312, DVGW GW541.

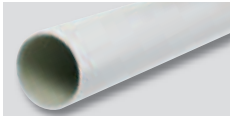


Carbon steel tube
XPress Carbon Steel System tube and other carbon steel tubes to DIN 2394/NEN 1982.

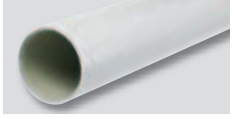
Steel tube
Steel tube to BS 1387.



Tectite Flexible Metal tube
PE-Xe/AL/PE-Xc.



Henco Multi-layer tube
PE-Xe/AL/PE-Xc.



A small selection of other tubes and pipe are compatible with selected Ballorex products. In many cases the appropriate adaptor should be used. Contact us for specific information.

COPPER TUBE

Copper tubes used with Ballorex valves must meet the requirements of BS EN 1057.

BS EN 1057 Specification for copper and copper alloy – seamless round copper tubes for water (and gas) in sanitary and heating applications.

R250 Half hard condition with a tensile strength of 250N/mm² supplied in straight lengths and suitable for connection by push-fit, press-fit, capillary and compression fittings. Can be bent with suitable bending tools.

STAINLESS STEEL SYSTEM TUBE

Yorkshire manufactures a thin-walled stainless steel System tube, available from our XPress range. It is compatible with a selection of our Ballorex products – see the individual product pages for details. Stainless steel tube is available in 6m straight lengths in sizes from 15mm to 108mm. The tube is manufactured from BS 316 S31/DIN 1.4401 stainless steel strip conforming to BS 10088 Part 2 and thanks to its thin-walled geometry, is stiff, lightweight and easy to handle.

CARBON STEEL SYSTEM TUBE

Yorkshire manufactures galvanised carbon steel System tube, available in two different specifications from our XPress range. It is compatible with a selection of our Ballorex products – see the individual product pages for details. Galvanised carbon steel System tube is available in sizes from 15mm to 108mm, and plastic (polypropylene) coated galvanised carbon steel System tube in sizes from 15mm to 54mm.

Galvanised carbon steel System tube is manufactured in accordance with DIN 2394/NEN 1982 from material with a very low carbon content and has a thin walled profile resulting in a lightweight easier to hand product. The galvanised coating (external only) has a minimum thickness of 7 microns and is thermally applied, providing a superior bond to the tube.

In sizes up to 28mm, carbon steel System tube is suitable for bending using proprietary bend formers.

PEX AND PB TUBE

Selected Ballorex valves (see individual product pages for details) are compatible with PB and PEX pipes to BS 7291 Parts 2 and 3 respectively. One such PEX pipe is our Tectite System PEX.

Ballorex

TUBE AND PIPE COMPATIBILITY

HENCO MULTI-LAYER TUBE

Selected Ballorex valves (see individual product pages for details) are compatible with PE-Xc/Al/PE-Xc tube from our Henco range.

TECTITE FLEXIBLE METAL TUBE

Ballorex valves are suitable for use with PE-Xc/AL/PE-Xc tube from the Tectite Flexible Metal tube range. This is restricted to 15mm and 22mm valve sizes and requires the use of the TMLCP3PS Tectite tube liner.

BS EN 1057 Copper tube compatible with Ballorex valves

Outside dia.	Wall thickness (mm)								
	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5
6mm	R220 R250	-	R220 R250	-	-	-	-	-	-
8mm	R220 R250	-	R220 R250	-	-	-	-	-	-
10mm	R250	R220	R220 R250	-	-	-	-	-	-
12mm	R250	-	R220 R250	-	-	-	-	-	-
15mm	-	R250	-	-	R220 R250	-	-	-	-
22mm	-	-	-	R250	-	R220 R250	-	-	-
28mm	-	-	-	R250	-	R220 R250	-	-	-
35mm	-	-	-	-	R290	R250/ R290	R250	-	-
42mm	-	-	-	-	R290	R250/ R290	R250	-	-
54mm	-	-	-	-	R290	R250/ R290	-	R250	-
67mm	-	-	-	-	-	R220 R250	-	R250	v
76mm	-	-	-	-	-	-	R290	R250	v
108mm	-	-	-	-	-	-	R290	-	R250

XPress Stainless Steel tube specification

Outside dia.	Wall thickness (mm)		
	316 System tube	EN 10312 Table 1 GW541 Table 2 (formerly BS 4127)	EN 10312 Table 2 GW541 Table 3
15mm	0.5mm	0.6mm	1.0mm
18mm	0.6mm	0.7mm	1.0mm
22mm	0.6mm	0.7mm	1.2mm
28mm	0.8mm	0.8mm	1.2mm
35mm	1.0mm	1.0mm	1.5mm
42mm	1.0mm	1.1mm	1.5mm
54mm	1.0mm	1.2mm	1.5mm

XPress Carbon Steel System tube specification

Outside dia.	Wall thickness (mm)	
	Galvanised tube	Including plastic coating
15mm	1.2mm	2.2mm
18mm	1.2mm	2.2mm
22mm	1.5mm	2.5mm
28mm	1.5mm	2.5mm
35mm	1.5mm	2.5mm
42mm	1.5mm	2.5mm
54mm	1.5mm	2.5mm
76mm	2.0mm	-
89mm	2.0mm	-
108mm	2.0mm	-

Henco Multi-layer tube

Outside dia.	Wall thickness (mm)	
	Galvanised tube	Including plastic coating
16mm	0.4mm	2mm
20mm	0.4mm	2mm
26mm	0.5mm	3mm
32mm	0.7mm	3mm
40mm	0.7mm	3.5mm

Tectite Flexible Metal tube

Outside dia.	Wall thickness (mm)	
	Aluminium tube	Including polyethylene coating
15mm	0.4mm	2mm
22mm	0.4mm	2mm

SYSTEM DESIGN CONSIDERATIONS

Here are details of some of the specific design considerations it is important to take account of when designing and installing pipework systems containing systems containing Ballorex valves.

INSULATION

For all installations, we recommend you adhere to the insulation requirements as specified by The Water Supply (Water Fittings) Regulations 1999. These can be downloaded from www.hmso.gov.uk.

PHENOLIC FOAM

When using rigid phenolic foam (or other thermal insulation) to lag pipework, always refer to the lagging manufacturer's fixing instructions. To avoid the risk of external corrosion of copper pipework the European Phenolic Foam Association recommends that such insulation products be installed with a moisture barrier, such as Densopaste or a plastic covering applied by the tube manufacturer. If you need to add a barrier product, we recommend that all Yorkshire fittings are fully installed and are completely coated before these are applied.

THERMAL MOVEMENT

Thermal movement is a major consideration when designing and installing plumbing and heating systems, and should be taken into account. Pipework systems expand and contract with changes in temperature. If they are fixed too rigidly and their movement restricted the installation will be subject to stress. Stress concentrations between "fixed points" – typically found at radiators, valves and other fittings – should be avoided.

TUBE AND PIPE EXPANSION

Tubes and pipes compatible with selected Ballorex valves have linear expansion as detailed in the text and Tables 1 to 4.

- Copper has a coefficient in linear expansion of 17 x 10-6/°C. Refer to Table 1.
- Tectite System PEX has a coefficient of linear expansion of 1.5 x 10-4/°C at 20°C to approximately 2.8 x 10-4/°C at 82°C. Refer to Table 2.
- For details of the expansion of PB pipe refer to the manufacturer's instructions.
- Stainless Steel tube has a coefficient of linear expansion of 16 x 10-6/°C. Refer to Table 3.
- Carbon Steel System tube has a coefficient of linear expansion of 12 x 10-6/°C. Refer to Table 4.
- Henco Multi-layer tube has a coefficient of expansion that is the same for all pipe diameters; 0.025mm/mk. Refer to Table 5.
- Tectite Flexible Metal multi-layer tube has a coefficient of expansion that is the same for all pipe diameters; 0.025mm/mk. Refer to Table 6.

Table 1

Copper tube expansion

Temperature change	Tube length 3m	4m	5m	6m	7m	8m	9m	10m
10°C	0.5mm	0.7mm	0.9mm	1.0mm	1.2mm	1.4mm	1.5mm	1.7mm
20°C	1.0mm	1.4mm	1.7mm	2.0mm	2.4mm	2.7mm	3.0mm	3.4mm
40°C	2.0mm	2.7mm	3.4mm	4.1mm	4.8mm	5.4mm	6.1mm	6.8mm
60°C	3.1mm	4.1mm	5.1mm	6.1mm	7.1mm	8.2mm	9.2mm	10.2mm
80°C	4.1mm	5.4mm	6.8mm	8.2mm	9.5mm	10.9mm	12.2mm	13.6mm

Table 2

Tectite System PEX expansion

Upper working temperature	Lower working temperature 0°C	10°C	20°C	40°C	60°C	80°C
80°C	15.0mm	13.8mm	12.5mm	9.0mm	4.8mm	0.0mm
60°C	10.2mm	9.0mm	7.7mm	4.2mm	0.0mm	
40°C	6.0mm	4.8mm	3.5mm	0.0mm		
20°C	2.5mm	1.3mm	0.0mm			
10°C	1.2mm	0.0mm				
0°C	0.0mm					

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SYSTEM DESIGN CONSIDERATIONS

Table 3

XPress Stainless Steel System tube expansion

Temperature change	Wall thickness (mm)							
	3m	4m	5m	6m	7m	8m	9m	10m
10°C	0.5mm	0.6mm	0.8mm	1.0mm	1.1mm	1.3mm	1.4mm	1.6mm
20°C	1.0mm	1.3mm	1.6mm	1.9mm	2.2mm	2.6mm	2.9mm	3.2mm
40°C	1.9mm	2.6mm	3.2mm	3.8mm	4.5mm	5.1mm	5.8mm	6.4mm
60°C	2.9mm	3.8mm	4.8mm	5.8mm	6.7mm	7.7mm	8.6mm	9.6mm
80°C	3.8mm	5.1mm	6.4mm	7.7mm	9.0mm	10.2mm	11.5mm	12.8mm

Table 4

XPress Carbon Steel System tube expansion

Temperature change	Tube length							
	3m	4m	5m	6m	7m	8m	9m	10m
10°C	0.4mm	0.5mm	0.6mm	0.7mm	0.8mm	1.0mm	1.1mm	1.2mm
20°C	0.7mm	1.0mm	1.2mm	1.4mm	1.7mm	1.9mm	2.2mm	2.4mm
40°C	1.4mm	1.9mm	2.4mm	2.9mm	3.4mm	3.8mm	4.3mm	4.8mm
60°C	2.2mm	2.9mm	3.6mm	4.3mm	5.0mm	5.8mm	6.5mm	7.2mm
80°C	2.9mm	3.8mm	4.8mm	5.8mm	6.7mm	7.7mm	8.6mm	9.6mm

Table 5

Henco Multi-layer tube expansion

Temperature change	Tube length							
	3m	4m	5m	6m	7m	8m	9m	10m
10°C	0.75mm	1.00mm	1.25mm	1.50mm	1.75mm	2.00mm	2.25mm	2.50mm
20°C	1.50mm	2.00mm	2.50mm	3.00mm	3.50mm	4.00mm	4.50mm	5.00mm
40°C	3.00mm	4.00mm	5.00mm	6.00mm	7.00mm	8.00mm	9.00mm	10.00mm
60°C	4.50mm	6.00mm	7.50mm	9.00mm	10.50mm	12.00mm	13.50mm	15.00mm
80°C	6.00mm	8.00mm	10.00mm	12.00mm	14.00mm	16.00mm	18.00mm	20.00mm

Table 6

Tectite Flexible metal tube expansion

Temperature change	Tube length							
	3m	4m	5m	6m	7m	8m	9m	10m
10°C	0.75mm	1.00mm	1.25mm	1.50mm	1.75mm	2.00mm	2.25mm	2.50mm
20°C	1.50mm	2.00mm	2.50mm	3.00mm	3.50mm	4.00mm	4.50mm	5.00mm
40°C	3.00mm	4.00mm	5.00mm	6.00mm	7.00mm	8.00mm	9.00mm	10.00mm
60°C	4.50mm	6.00mm	7.50mm	9.00mm	10.50mm	12.00mm	13.50mm	15.00mm
80°C	6.00mm	8.00mm	10.00mm	12.00mm	14.00mm	16.00mm	18.00mm	20.00mm

COVERED PIPEWORK

Making provision for thermal movement is vital where pipework of any material is installed under screed or plaster, or passes through brick or blockwork.

The preferred practice is to pass tubes and pipes through sleeves or conduits or to lay them in ducts surrounded by loose, non-rigid material such as vermiculite or glass wool. For further information, consult the standard BS 6700:1997.

CHEMICALS

Some contracts may require the use of proprietary chemicals to cleanse and flush pipework before full commissioning. Ballorex valves are compatible with a selection of products – contact us to find out more.

CORRECT ANCHORING

Always ensure the spur used to anchor the branch of a tee or connect to a radiator is long enough to allow normal thermal movement. Not doing this can lead to installation failure.

PIPEWORK ACCESSIBILITY

It's wise to take advice from the local water authority when it comes to pipework accessibility.

BALLOREX SIZING SOFTWARE

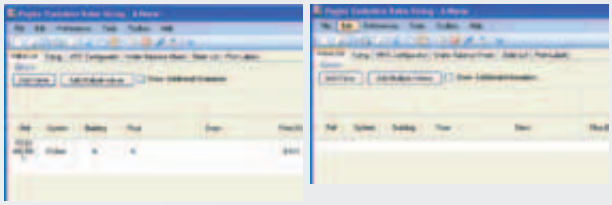
CONNECT ✚ CONTROL

This class-leading, free to use software is a powerful tool in selecting, providing signal data for Ballorex Venturi valves and, cross checking pipe sizes all in one simple intuitive program.

FEATURES INCLUDE:

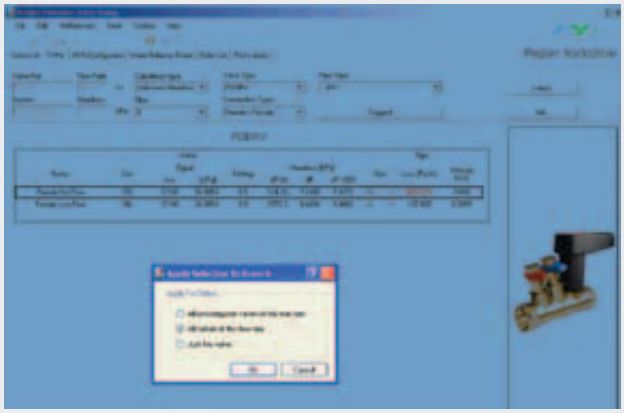
- System and branch set up to easily distinguish between two or multiple circuit duties and set operating conditions. Resolve signal data with respect to temperature and inhibitor concentrations as they effect specific gravity.

- Input an individual flow rate or multiple flows rate data from a spreadsheet.



- Pictorial confirmation of the valve selected as confirmation of the type of valve required.

- Apply a sizing to all valves that possess the same flow rate within a system.



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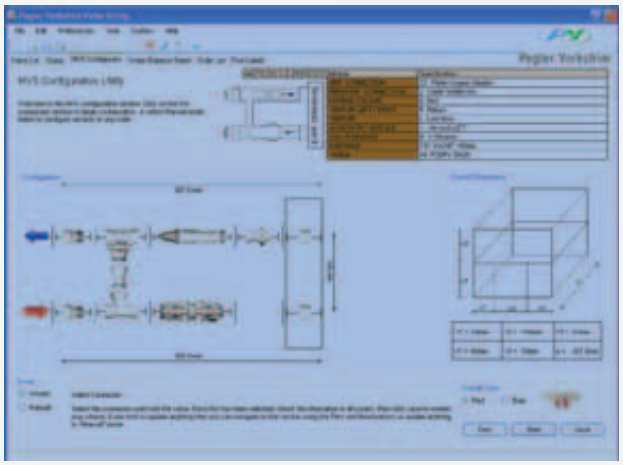
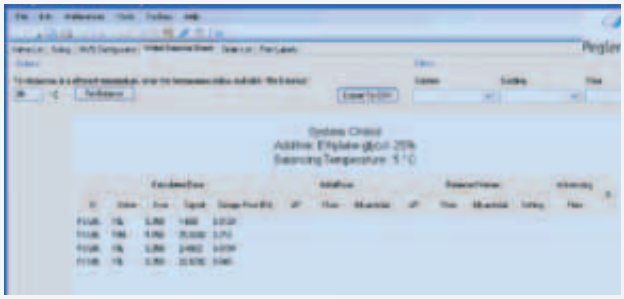
BALLOREX SIZING SOFTWARE

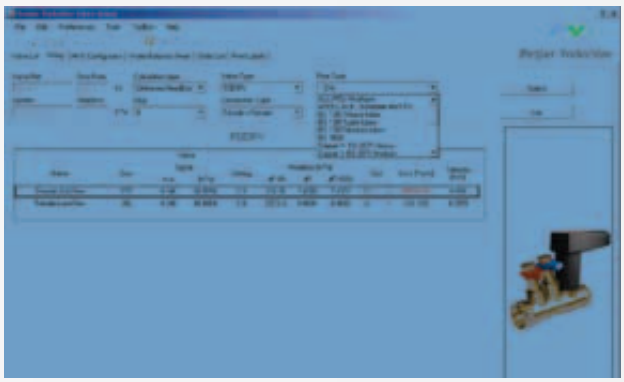
- Configure Modular Valve Systems (MVS) to individual or multiple valve sizing's on the fly using either manual or wizard based tools.

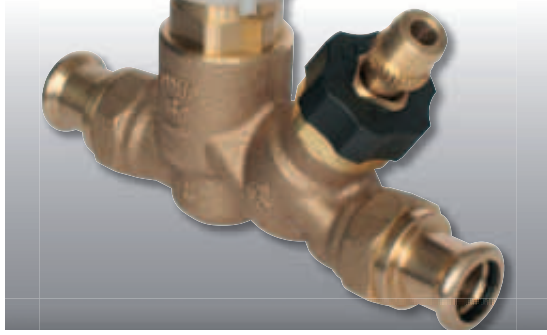


- Correct signal data both for temperature and additive effects on water and produce water balance sheets for the commissioning engineer. The program also permit easy recalculation of signal data with respect to the actual temperature at the time of commissioning.



- A comprehensive pipe database to easily cross check pipe sizes of the most popular types in mechanical services.
- Bundled with a tool box of CAD files and catalogues all automatically updated (requires internet connection) to ensure the most up-to-date information.





TECHNICAL DATA PRESSURE AND TEMPERATURE RATINGS

CONVERSION FORMULAS

Temperature:

Celsius to Fahrenheit	Fahrenheit to Celsius
$°F = \frac{(9 \times °C)}{5} + 32$	$°C = \frac{5 \times (°F - 32)}{9}$

Pressure:

Bar to psi	psi to bar
x 14.5038	+ 14.5038

PUSH-FIT VALVES

All push-fit valves

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		Test pressure (psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
Push-fit valves	DN15 to DN50	30°C max	16	up to 95°C	6	up to 86°F	232.1	up to 230°F	87	24	17.6	348	255.3

PRESS-FIT VALVES

All press-fit valves

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		Test pressure (psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
Press-fit valves	DN15 to DN54	30°C max	16	up to 110°C	16	up to 86°F	232.1	up to 230°F	232.1	24	17.6	348	255.3

XT PRESS-FIT X PUSH-FIT VALVES

All XT press-fit x push-fit valves

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		Test pressure (psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
Press-fit x push-fit valves	DN15 to DN50	30°C max	16	up to 95°C	6	up to 86°F	232.1	up to 230°F	87	24	17.6	348	255.3

THREADED VALVES

Commissioning valves and metering stations

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		Test pressure (psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
1260, 1200, 1250	½" to 2"	100°C	20	120°C	16	212°F	290.1	275°F	232.1	30	22	435.1	319.1
900S, 900PD	½" to 2"	100°C	20	135°C	16	212°F	290.1	275°F	232.1	30	22	435.1	319.1
902S	DN15 to DN50	100°C	20	120°C	16	80°F	232.1	243°F	754	24	17.6	348	255.3
Ballorex MVS Static	DN15 to DN20	100°C	20	136°C	16	212°F	290.1	275°F	232.1	30	22	435.1	319.1
Ballorex MVS Dynamic	DN15 to DN20	100°C	20	120°C	16	80°F	232.1	243°F	754	24	17.6	348	255.3
901S	½" to 2"	100°C	20	135°C	16	212°F	290.1	275°F	232.1	30	22	435.1	319.1

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TECHNICAL DATA PRESSURE AND TEMPERATURE RATINGS

THREADED VALVES – CONTINUED

Differential pressure controllers

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		(psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
925, 926, 927, 928	DN15 to DN50	120°C	25	120°C	25	308°F	363	308°F	363	37.5	27.5	344	399

Maximum pressure differential 250kPa.

Circulation valves

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		(psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
P605	½" to 1"	90°C	16	90°C	16	231°F	232	231°F	232	24	17.6	348	255.3
P605C	15mm	90°C	16	90°C	16	231°F	232	231°F	232	24	17.6	348	255.3

COMPRESSION VALVES

Commissioning valves, metering stations and regulating valves

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		(psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
1260C, 900SC, 901SC, 1200C, 1250C	DN15 to DN50	30°C	16	110°C	6	77°F	232	230°F	87	24	17.6	348	255.3

FLANGED VALVES

Commissioning valves, metering stations and partner valves

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		(psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
V952	DN50 to DN200	120°C	16	120°C	16	308°F	232	308°F	232	24	17.6	348	255.3
V953	DN50 to DN300	120°C	16	120°C	16	308°F	232	308°F	232	24	17.6	348	255.3
900XS	DN65 to DN300	120°C	16	120°C	16	308°F	232	308°F	232	24	17.6	348	255.3
900PDXS	DN65 to DN80	120°C	16	120°C	16	308°F	232	308°F	232	24	17.6	348	255.3
901XS	DN65 to DN300	120°C	16	120°C	16	308°F	232	308°F	232	24	17.6	348	255.3
V952V	DN50 to DN200	120°C	16	120°C	16	308°F	232	308°F	232	24	17.6	348	255.3

Differential pressure controllers

		Max. working pressure (bar)				Max. working pressure (psi)				Test pressure (bar)		(psi)	
Product	Size	Temp	bar	Temp	bar	Temp	psi	Temp	psi	Shell	Seat	Shell	Seat
930, 929TD66	DN65, DN80	120°C	16	120°C	16	308°F	232	308°F	232	24	17.6	348	255.3

TECHNICAL DATA
TECHNICAL SUITABILITY

BALLOREX COMMISSIONING VALVES AND METERING STATIONS

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
PT1260, XT1260, PT1250, XT1250, PS1260, PSU1260, PS1250, PSU1250, MLH1260, MLC1260, 1260, 1250, 1260C, 1250C, V952, V953	✗	✓	✗	✗	✗	✗	✗	✗

BALLOREX VENTURI COMMISSIONING VALVES

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
PT900S, XT900S PS900S, PSU900S 900S, 900PD, 900SC, 900XS, 900PDXS	✗	✓	✗	✗	✗	✗	✗	✗

BALLOREX VENTURI DYNAMIC VALVES

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
PT902S, XT902S, 902, PS902S, 902S	✗	✓	✗	✗	✗	✗	✗	✗

BALLOREX VENTURI DOUBLE REGULATING VALVES

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
PT901S, XT901S, PS901S, PSU901S, 901S, 901SC, 901XS, V952V	✗	✓	✗	✗	✗	✗	✗	✗

BALLOREX DOUBLE REGULATING VALVES

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
PT1200, XT1200, PS1200, MLH1200, MLC1200, 1200, 1200C	✗	✓	✗	✗	✗	✗	✗	✗

Ballorex

TECHNICAL DATA
TECHNICAL SUITABILITY

BALLOREX THERMO CIRCULATION VALVES

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
PT605, PS605, PSU605, MLH605, MLC605, 603, P605, P604, P606, P605C	✗	✓	✗	✗	✗	✗	✗	✗

BALLOREX MODULAR VALVE SYSTEMS

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
Ballorex MVS	✗	✓	✗	✗	✗	✗	✗	✗

BALLOREX DELTA DIFFERENTIAL PRESSURE CONTROLLERS

Valve suitability								
Product	Steam	Water	Oil	Air	Gas Inert	Gas Combustible	Gas Corrosive	Gas Oxygen
925, 926, 927, 928, 929TD66, 930	✗	✓	✗	✗	✗	✗	✗	✗

TECHNICAL DATA
MATERIALS SPECIFICATION

Ballorex commissioning valves

Component	PT1260, XT1260, PS1260, PSU1260, 1260, 1260C
Body	GDCBr. BSEN 1982, CC 752S
Bonnet	EBB. BSEN 12164, CW 617N
Spindle	EBB. BSEN 12164, CW 617N
Disc	EBB. BSEN 12164, CW 617N
Gland	Packing Piece EBB. BSEN 12164, CW 617N
'O' rings	EPTO
Orifice plate	EBB. BSEN 12164, CW 617N
Circlip	Carbon spring steel
Adjustment screw	EBB. BSEN 12164, CW 617N
Test points	DZR brass
Seals	EPTO
Handle	30% Glass filled nylon 66
Set screw	Brass
End connection	DZR (PT1260)
End connection 'O' ring	EPDM (PT1260)
End connection	Gunmetal body (PS1260)
End connection 'O' ring	EPDM (PS1260)
Compression nut	Forged brass (1260C)
Compression cone	Brass (1260C)

Ballorex Venturi commissioning valves

Component	PT900S, XT900S, PS900S, PSU900S, 900S, 900PD, 900SC
Body	DZR brass
Spindle	DZR brass
Venturi, ball, needle	DZR brass, chrome plated
Seals	PTFE
'O' rings	EPDM
Handle	Polyamide
Measuring P/T plug	DZR brass
End connection	DZR brass body (PT900S)
End connection 'O' ring	EPDM (PT900S)
End connection	Gunmetal body (PS900S)
End connection 'O' ring	EPDM (PS900S)
Grab ring	Stainless steel, SS316 (PT900S)
Compression nut	Forged brass, chrome plated (900SC)
Compression cone	Brass (900SC)

Ballorex Venturi dynamic valves

Component	PT902S, XT902S, PS902S, 902S
Body	DZR brass
Spindle	DZR brass
Venturi	DZR brass
End connection	(PT902S)
End connection 'O' ring	(PT902S)
End connection	Gunmetal body (PS902S)
End connection 'O' ring	EPDM (PS902S)

Double regulating valves

Component	PT1200, XT1200, PS1200, PSU1200, 1200, 1200C
Body	GDCBr. BSEN 1982, CC 752S
Bonnet	EBB. BSEN 12164, CW 617N
Spindle	EBB. BSEN 12164, CW 617N
Disc	EBB. BSEN 12164, CW 617N
Gland	Packing Piece EBB, BSEN 12164, CW 617N
'O' rings	EPTO
Circlip	Carbon spring steel
Adjustment screw	EBB. BSEN 12164, CW 617N
Seals	EPTO
Handle	30% Glass filled nylon 66
Set screw	Brass
End connection	(PT1200)
End connection 'O' ring	EPDM (PT1200)
End connection	Gunmetal body (PS1200)
End connection 'O' ring	EPDM (PS1200)
Compression nut	Forged brass (1200C)
Compression cone	Brass (1200C)

Ballorex

TECHNICAL DATA
MATERIALS SPECIFICATION

Metering stations

Component	PT1250, XT1250, PS1250, 1250, 1250C
Body	GDCBr. BSEN 1982, CC 752S
Test point	DZR brass
Seals	EPDM
Orifice plate	
End connection	DZR brass body (PT1250)
End connection 'O' ring	EPDM (PT1250)
Grab ring	Stainless steel, SS316 (PT1250)
End connection	Gunmetal body (PS1250)
End connection 'O' ring	EPDM (PS1250)
Compression nut	Forged brass, chrome plated (1250C)
Compression cone	Brass (1250C)

Ballorex Venturi double regulating valves

Component	PT901S, XT901S, PS901S, PSU901S, 901S, 901SC, 901XS
Body	DZR brass
Spindle	DZR brass
Ball adjusting screw	DZR brass, chrome plated
Gaskets	PTFE
'O' rings	EPDM
Handle	Polyamide
End connection	DZR brass body (PT901S)
End connection 'O' ring	EPDM (PT901S)
Grab ring	Stainless steel, SS316 (PT901S)
End connection	Gunmetal body (PS901S)
End connection 'O' ring	EPDM (PS901S)
Compression nut	Forged brass, chrome plated (901SC)
Compression cone	Brass (901SC)

Ballorex Thermo circulation valves

Component	PT605, PS605, PSU605, P603, P605, P604, P606, P605C
Body	Bronze
End connection	DZR (PT605)
End connection 'O' ring	EPDM (PT605)
End connection	Gunmetal body (PS605)
End connection 'O' ring	EPDM (PS605)
Compression nut	Forged brass (P605C)
Compression cone	Brass (P605C)

Ballorex Fixed Multi-layer commissioning valves

Component	MLH1260, MLC1260
Body	GDCBr. BSEN 1982, CC 752S
Bonnet	EBB. BSEN 12164, CW 617N
Spindle	EBB. BSEN 12164, CW 617N
Disc	EBB. BSEN 12164, CW 617N
Gland	Packing Piece EBB. BSEN 12164, CW 617N
'O' rings	EPTO
Orifice plate	EBB. BSEN 12164, CW 617N
Circlip	Carbon spring steel
Adjustment screw	EBB. BSEN 12164, CW 617N
Test points	DZR brass
Seals	EPTO
Handle	30% Glass filled nylon 66
Set screw	Brass
End connection	Brass (MLH1260)
End connection 'O' ring	EPDM (MLH1260)
End connection	Brass (MLH1260)
End connection 'O' ring	EPDM (MLH1260)

Ballorex Fixed Multi-layer double regulating valves

Component	MLH1200, MLC1200
Body	GDCBr. BSEN 1982, CC 752S
Bonnet	EBB. BSEN 12164, CW 617N
Spindle	EBB. BSEN 12164, CW 617N
Disc	EBB. BSEN 12164, CW 617N
Gland	Packing Piece EBB, BSEN 12164, CW 617N
'O' rings	EPTO
Circlip	Carbon spring steel
Adjustment screw	EBB. BSEN 12164, CW 617N
Seals	EPTO
Handle	30% Glass filled nylon 66
Set screw	Brass
End connection	Brass (MLH1200)
End connection 'O' ring	EPDM (MLH1200)
End connection	Brass (MLC1200)
End connection 'O' ring	EPDM (MLC1200)

Ballorex Thermo Multi-layer circulation valves

Component	MLH605, MLH605
Body	Bronze
Spindle	DZR brass
End connection	Brass (MLH605)
End connection 'O' ring	EPDM (MLC605)
End connection	Brass (MLC605)
End connection 'O' ring	EPDM (MLC605)

Ballorex Modular valve system

Component	
Body	DZR brass

Ballorex differential pressure controllers

Component	925, 926, 927, 928
Body	DZR brass (DN50 only cast iron)
Valve seat	DZR brass
Membrane	EPDM
Control handle	PPS
Drain cap	DZR brass
Valve cone	DZR brass
Spring	Stainless steel
Top and bottom plates	EN-GJL-250 (EG25 DN 40+50)

Ballorex double regulating valves

Component	V952, V952V
Body	Ductile iron
Bonnet	Ductile iron
Disc	Ductile iron, EPDM Coated
Disc nail	Brass
'O' ring	EPDM
Stem	Stainless steel
Gasket	Graphite
Handwheel	Carbon steel (DN50-DN100)
Handwheel	Ductile iron (DN125-DN200)
Test point	DZR Brass (V952V)

Ballorex stainless steel metering station

Component	V953
Body	GDCBr. BSEN 1982, CC 752S
Test point	DZR brass
Seals	EPDM

Ballorex

TECHNICAL DATA
MATERIALS SPECIFICATION

Ballorex Venturi commissioning valves	
Component	**900XS**
Body	Cast iron, fully lugged
Disc	Stainless steel
Shaft	Stainless steel
Backing ring	EPDM
Drive pin	Stainless steel
Shaft seal	NBR 1
Bearing	Lubricated gunmetal

Ballorex Delta partner valves	
Component	**900PDXS**
Body	Cast iron
Disc	Stainless steel
Shaft	Stainless steel
Backing ring	EPDM
Drive pin	Stainless steel
Shaft seal	NBR 1
Bearing	Lubricated gunmetal

Ballorex Venturi double regulating valves	
Component	**901XS**
Body	Cast iron, fully lugged
Venturi pipe	Carbon steel
Measuring P/T plug	DZR brass
Rubber in P/T plug	EPDM
Disc	Stainless steel
Shaft	Stainless steel
Backing ring	EPDM
Drive pin	Stainless steel
Shaft seal	NBR 1
Bearing	Lubricated bronze

Ballorex Delta differential pressure controllers	
Component	**929TD66, 930**
Body	Cast iron
Disc	Stainless steel
Shaft	Stainless steel
Backing ring	EPDM
Drive pin	Stainless steel
Shaft seal	NBR 1
Bearing	Lubricated gunmetal

MATERIALS SELECTION

Avoiding stress corrosion cracking (SCC)

Pegler Yorkshire do not recommend the use of brass valves and fittings in chilled water applications.

SCC occurs occasionally in Brass valves and Compression fittings, where high levels of stress in the component combined with a corrosive environment can cause cracks to form and grow.

High stresses are most commonly introduced by over-tightening compression nuts and threaded connections and for this reason it is very important that joints are assembled exactly in accordance with the published instructions.

The most common corrosive environment for brass items contains ammonia, or ammoniacal compounds.

These can be found in cleaning fluids, refrigeration gases, sewage waste products, building materials, insulating materials (especially foams) and flame and smoke retardant treatments. In addition, the presence of moisture, particularly condensation, can further concentrate the corrosive effects of such an environment.

SCC can be avoided completely by selecting items made from copper or gunmetal. Where this is not feasible SCC can be avoided by ensuring joints are not over-tightened during assembly and are then isolated from a potentially corrosive environment by wrapping it in a vapour barrier or coating with impermeable paint

Installation

Unpack the valve.

Check that the valve is correct for its intended use.

Check that the flow paths are clear and that the threads are clean and free from debris.

Threaded valves

Ensure that the valve is fully open during installation.

Fix the threaded pipe into a vice and apply sealing compound on to the male pipe threads.

Use sealing compounds that do not over pack the threads. Preferred materials are PTFE thread tape or suitable liquid/ paste sealant.

Do not use hemp.

Screw the valve on to the pipe.

Use the spanner flats adjacent to the pipe joint being made. Do not use the flats at the opposite end of the valve.

Ensure that good quality, close fitting tools are used.

Avoid tightening to such an extent that the female end becomes permanently deformed.

Valves must not be over-tightened.

Use suitable hanger s close to both ends of the valve in order to remove stresses transmitted by the pipe.

Compression ended valves

The range is designed for use with copper tube to BS EN 1057:1996 (formerly BS 2871:Part 1), BS 2871:Part 2, or stainless steel tube to BS 4127:1994.

To make a joint:
Ensure that the fitting is the correct size for the pipe being used. Cut the pipe to length, making sure that the cut is square and the pipe is not deformed. Remove any burrs from the cut ends.

EITHER

Insert the pipe into the fitting without removing the cone, ensuring that the cone is in the correct position and that the pipe makes firm contact with the stop in the body of the valve.

OR

Unscrew the cap nut and cone from the fitting. Slide the cap nut and cone onto the pipe and insert the pipe into the fitting as far as the stop.

In both cases, tighten the cap nut onto the valve until the pipe cannot be rotated by hand. A drop of light machine oil on the threads will facilitate tightening- particularly on the larger size valves.

- Over tightening will not produce a better joint, and may lead to problems in service
- Jointing compounds or sealants are not necessary with Pegler Yorkshire compression ended valves; the use of these materials could impair the efficiency of the joint and may contravene water regulations
- **Use the spanner flats on the compression nuts adjacent to the joint being made. Do not use the flats at the opposite end of the valve**
- **Ensure that good quality close fitting tools are used**
- **Avoid tightening to such an extent that the compression nuts become permanently deformed**
- **Valve compression nuts must not be over tightened**
- Cap nuts are made from brass
- The valve should be operated from fully open to fully closed to test that it has been correctly installed
- Make sure that a ball valve is fully open during installation.

Ballorex

COMMISSIONING VALVE SOLUTIONS PRESSURE EQUIPMENT DIRECTIVE

THE PRESSURE EQUIPMENT DIRECTIVE 97/23/EC & CE MARKING

The Pressure Equipment Regulations 1999 (SI 1999/2001) have now been introduced into United Kingdom law. Valves with a maximum allowable pressure greater than 0.5 bar are covered by these new Regulations. Valves are categorised according to their maximum working pressure, size and rising level of hazard. The level of hazard varies according to the fluid being carried. Fluids are classified as Group 1 ,dangerous fluids or Group 2, all other fluids including steam. The categories designated are SEP (sound engineering practice). Valves up to and including 25mm (1") are designated SEP regardless of the fluid group. Those identified as having increased hazard are categorised as, I, II, III or IV. All valves designated as SEP do not bear the CE mark nor require a Declaration of Conformity. Categories I, II, III or IV carry the CE mark and require a Declaration of Conformity. Valves classified from the piping chart would not be included in Category IV.

VALVE SELECTION

Selection, storage and protection

Valves must be properly selected for their intended service conditions. Provided it is installed correctly and receives adequate preventative maintenance it should give years of trouble-free service. They must be compatible with the system design, pressure and temperature requirements and must be suitable for the fluids that they are intended to carry. Interactions between metals in the pipe system and the valve must be considered as part of the valve selection.

Valves should be stored off the ground in a clean, dry, indoor area. Where desiccant bags are included with the valve these should be changed after a period of 6 months.

Pegler valves are supplied in appropriate packing to give adequate protection from damage. Cast iron and steel valves may also have end protection caps.

When Pegler valves are fitted with pressure equipment or assemblies, suitable protective devices may be required.

PRESSURE AND TEMPERATURE RATING

Valves must be installed in a piping system whose normal pressure and temperature does not exceed the stated rating of the valve. The maximum allowable pressure in valves as specified in the standards is for non-shock conditions. Water hammer and impact should also be avoided.

If system testing will subject the valve to pressures in excess of the working pressure rating, this should be within the 'shell test pressure for the body' to a maximum of 1.5 times the PN rating and conducted with the valve fully opened.

It may be hazardous to use these valves outside of their specified pressure and temperature limitations and also when not used for the correct application.

LOCATION/END-OF-LINE SERVICE

To ensure ease of operation, adjustment, maintenance and repair, valve siting should be decided during the system design phase. To prevent imposing strain on the valve seat, pipework and valves they must be adequately supported.

Where valves are installed for end-of-line service a blanking plug must be fitted to the downstream end of the valve. Pegler Ball, Globe, Check, Flanged Gate and Butterfly valves are not suitable for end-of-line service.

PRE-INSTALLATION

Health & Safety

Before starting work on any installation a risk assessment must be made to consider the possibility of operational limits being exceeded and reduction or elimination of any potential hazards.

1. Protective clothing and safety equipment must be utilised as appropriate to the hazard presented by the nature of the process to which the valve is being installed or maintained.
2. Before installing or removing a valve the pipeline circulating pumps (when fitted) must be turned off. The pipeline must be depressurised, drained and vented. Valves must be fully opened to ensure release of any pipeline or valve pressure.
3. Fitters must be trained in manual and mechanical handling to enable them to safely lift and install Ballorex valves.
4. The valve selected must be suitable for the required service conditions. The pressure and temperature limitations are indicated on the valve nameplate, body or data plate. These must not be exceeded.
5. Valve seats, seals and internal components can be damaged by system debris. Protective devices may need to be fitted and system flushing may be required.
6. Any flushing fluid used to clean the pipeline must not cause any damage to the valve and its components.
7. Ballorex valves must not be misused by lifting them by their hand wheels, levers or stems.
8. Ballorex valves are not suitable for fatigue loading, creep conditions, fire testing, fire hazard environment, corrosive or erosive service, or for carrying fluids containing abrasive solids. There is no allowance for corrosion in the design of these valves. Designs for this valve do not allow for decomposition of unstable fluids and must not be used where this could occur.
9. Ballorex valves are not designed to withstand the effects of fire, wind, earthquakes and traffic.
10. All Health and Safety Rules must be followed when installing and maintaining valves.

INSTALLATION

Unpack the valve and check that the flow paths and valve connections are clean and free from debris. Check the body markings and nameplate to ensure that the correct valve has been selected for installation.

Butterfly valves

Butterfly valves should be assembled with the valve in a closed position to avoid damage to the disc edge. Butterfly valves are assembled between two mating flanges with the extended portion of the liner acting as a gasket. The flanges with the butterfly valve can be secured with the appropriate bolts and nuts to achieve a successful joint.

Butterfly valves are opened by depressing the spring loaded handle, rotating the spindle through 90° from closed to open position. Cast iron commissioning and double regulating have a 'memory stop' feature to enable a closed valve to return to a pre-set position. Gear operation is available in DN250 - DN300 sizes.

Thread joints

Confirm that the pipe threading length is correct to avoid excessive penetration of the pipe into the valve that would otherwise cause damage. Care should be taken to apply jointing compound to the pipe only and not in the valve threads. Surplus compound will then be forced outwards and will not enter the valve. Over use of compound can lead to valve failure on the body ends. Threads should be engaged correctly when tightening the valve onto the pipe. The wrench should always be fitted on the body end adjacent to the joint being made. Severe damage can occur to stems, valves and seats by the use of hand wheels or levers larger than those originally supplied by the manufacturer, and by wheel keys.

The Ballorex range of valves now includes both push and press ends suitable for different tube connections. Installation guidance is provided with the product or available on the Pegler Yorkshire website.

Any electrical component e.g. actuators, limit switches must be explosion proof and comply with the ATEX Directive and Standards as listed in BS EN 1127-1 clause 6.4.5.

MAINTENANCE

A regular maintenance program is the most efficient method of ensuring longer term operational efficiency of the selected valve. Such a program would need to include a risk assessment and a planned procedure of how the maintenance will be carried out. The possibility of operational limits being exceeded and the potential hazards ensuing must be considered as part of this assessment. This should be implemented to include visual checks on the valve's condition and any development of unforeseen conditions, which could lead to failure. The correct fitting tools and equipment should be used for valve maintenance work. Separate means of draining the pipework must be provided when carrying out any maintenance to valves. Where there may be any system debris this should be collected and/or filtered by installation of the appropriate protective device.

According to valve type, gland packing and valve discs may be replaced.

Installation, Operating & Maintenance Instructions are available from the Sales Office. Pegler recommended spares must be used. Refer to Pegler Technical Department for further information.

PRODUCT LIFE SPAN

When a valve is properly selected for its service conditions it should give years of trouble-free service provided it Is installed correctly and receives adequate preventative maintenance. By not considering the compatibility of the system design and the pressure and temperature requirements the life expectancy of the valves can be adversely affected and valve failure may occur. The nature of the fluid being carried through the valve could also affect the valve performance as this could lead to premature valve failure.

There may also be interactions between metals in the pipe system and the valve which need to be considered. Appropriate flushing and cleaning of the pipework installation should take place when commissioning the system as this would help extend the valve life.

Reference Material: Pegler Valves Package Brochure. A Technical File is held at Doncaster as part of the requirements for compliance to the European Pressure Equipment Directive (PED 97/23 EC).

For information on valve connections using Tectite, XPress and Henco ends please refer to our website: **www.pegleryorkshire.co.uk**

Ballorex

COMMISSIONING VALVE SOLUTIONS PRESSURE EQUIPMENT DIRECTIVE

BALLOREX FIXED COMMISSIONING VALVES AND METERING STATIONS

PED categorisation

Product	Sizes														
	15mm DN15 ½"	18mm DN15	22mm DN20 ¾"	28mm DN25 1"	35mm DN32 1¼"	42mm DN40 1½"	54mm DN50 2"	DN65 2½"	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"
PT1260, XT1260, PT1250, XT1250, PS1260, PSU1260, PS1250	SEP	SEP	SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-	-	-
1260, 1250, 1260C, 1250C	SEP		SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-	-	-
V953	-	-	-	-	-	-	SEP	SEP	SEP	SEP	SEP	SEP	SEP	SEP	SEP
900RM	-	-	-	-	-	-	-	SEP	SEP	SEP	SEP	SEP	SEP	SEP	SEP

BALLOREX VENTURI COMMISSIONING VALVE

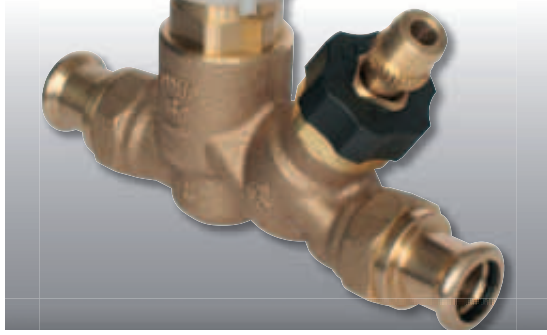
PED categorisation

Product	Sizes														
	15mm DN15 ½"	18mm DN15	22mm DN20 ¾"	28mm DN25 1"	35mm DN32 1¼"	42mm DN40 1½"	54mm DN50 2"	DN65 2½"	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"
PT900S, XT900S, PS900S, PSU900S	SEP	SEP	SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-	-	-
900S, 900PD, 900SC	SEP	-	SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-	-	-
900XS	-	-	-	-	-	-	-	SEP	SEP	SEP	SEP	SEP	SEP	SEP	SEP

BALLOREX VENTURI DYNAMIC VALVES

PED categorisation

Product	Sizes					
	15mm DN15 ½"	18mm DN20 ¾"	DN25 1"	DN32 1¼"	DN40 1½"	DN50 2"
PT902S, XT902S, PS902S	SEP	SEP	-	-	-	-
902S	SEP	SEP	SEP	SEP	SEP	SEP



BALLOREX FIXED DOUBLE REGULATING VALVES

PED categorisation

Product	Sizes												
	15mm DN15 ½"	18mm DN15	22mm DN20 ¾"	28mm DN25 1"	35mm DN32 1¼"	42mm DN40 1½"	54mm DN50 2"	DN65 2½"	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"
PT1200, XT1200, PS1200, PSU1200	SEP	SEP	SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-
1200, 1200C	SEP		SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-
V952, V952V	-	-	-	-	-	-	SEP	SEP	SEP	SEP	SEP	SEP	SEP

BALLOREX VENTURI DOUBLE REGULATING VALVES

PED categorisation

Product	Sizes													
	15mm DN15 ½"	18mm DN15	22mm DN20 ¾"	28mm DN25 1"	35mm DN32 1¼"	42mm DN40 1½"	54mm DN50 2"	DN65 2½"	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"
PT901S, XT901S, PS901S, PSU901S	SEP	SEP	SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-	-	-
901S, 901SC	SEP		SEP	SEP	SEP	SEP	SEP	-	-	-	-	-	-	-	-
901XS	-	-	-	-	-	-	-	SEP	SEP	SEP	SEP	SEP	SEP	SEP	SEP

BALLOREX THERMAL CIRCULATION VALVES

PED categorisation

Product	Sizes				
	15mm DN15 ½"	18mm DN15	22mm DN20 ¾"	28mm DN20	DN25 1"
PT605, P605C	SEP	-	-	-	-
PS605	SEP	SEP	SEP	-	-
PSU605	SEP	SEP	SEP	SEP	-
P605	SEP	-	SEP	-	SEP

BALLOREX MULTI-LAYER COMMISSIONING VALVES

PED categorisation

Product	Sizes				
	16mm DN15	20mm DN15	26mm DN20	32mm DN25	40mm DN32
MLH1260	SEP	SEP	SEP	SEP	-
MLC1260	SEP	SEP	SEP	SEP	SEP

Ballorex

COMMISSIONING VALVE SOLUTIONS PRESSURE EQUIPMENT DIRECTIVE

BALLOREX MULTI-LAYER REGULATING VALVES

PED categorisation					
	Sizes				
Product	16mm DN15	20mm DN15	26mm DN20	32mm DN25	40mm DN32
MLH1200	SEP	SEP	SEP	SEP	-
MLC1200	SEP	SEP	SEP	SEP	SEP

BALLOREX MULTI-LAYER CIRCULATION VALVES

PED categorisation			
	Sizes		
Product	20mm DN15	26mm DN20	32mm DN25
MLH605, MLC605	SEP	SEP	SEP

BALLOREX MODULAR VALVE SYSTEM

PED categorisation		
	Sizes	
Product	DN15 ½"	DN20 ¾"
	SEP	SEP

BALLOREX DELTA DIFFERENTIAL PRESSURE CONTROLLERS

PED categorisation								
	Sizes							
Product	DN15 ½"	DN20 ¾"	DN25 1"	DN32 1¼"	DN40 1½"	DN50 2"	DN65	DN80
925, 926	SEP	SEP	SEP	SEP	SEP	SEP	-	-
927	-	-	-	-	SEP	SEP	-	-
928	-	-	-	-	-	SEP	-	-
929TD66/930	-	-	-	-	-	-	SEP	SEP

BALLOREX DELTA PARTNER VALVES

PED categorisation		
	Sizes	
Product	DN65	DN80
900PDXS	SEP	SEP

TECHNICAL DATA
FLANGE TABLES

PN16 BS EN 1092-1:2007 DN65-DN300 – 900XS, 900PDXS, 900TD66, 930, 901XS, V952, V953, V952V								
	Flange diameter (mm)	Pitch circle diameter (mm)	No. of bolts	Bolt diameter (mm)	Hole diameter (mm)	Raised face diameter (mm)	Raised face height (mm)	Thickness of flange (mm)
DN65	185	145	4 (2)	M16	19	-	-	20
DN80	200	160	8	M16	19	-	-	22
DN100	220	180	8	M16	19	-	-	24
DN125	250	210	8	M16	19	-	-	26
DN150	285	240	8	M20	23	-	-	26
DN200	340	295	12	M20	23	-	-	30
DN250	405 (2)	355	12	M24	28	-	-	32
DN300	460 (2)	410	12	M24	28	-	-	32

Ballorex

COMMERCIAL VALVE SOLUTIONS CONNECTION INSTRUCTIONS

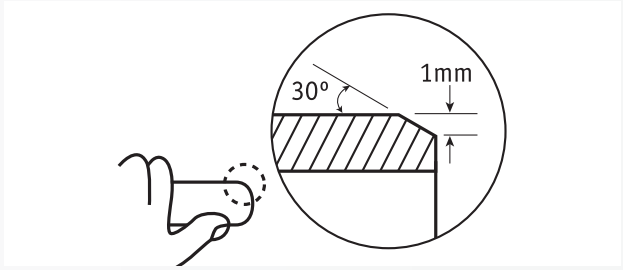
TECTITE PUSH-FIT CONNECTIONS

For joints 15 to 54mm

1. Always cut the tube square, using a rotary tube cutter whenever possible.

If you are using PEX or PB pipe cut the pipe using pipe shears. When using plastic coated carbon steel tube remove the coating using the S115 stripping tool.

Deburr the tube end, both internally and externally to create a 1mm chamfer on the outside of the tube.



Check the tube ends are free from damage and clean, wiping away any swarf to avoid damaging the 'O' ring on tube insertion. Tube end must also be free from stickers, tape and adhesive residues.

Where using PEX or PB you must use always insert a support liner ensuring it is the correct liner as specified by the pipe manufacturer. If the pipe has been used on previous installations you will need to cut it back to behind the teeth or score marks.

Mark the socket depth with a marker.

Fitting socket depths for Tectite

Size	Sprint	Copper/Stainless/Carbon
10mm	15mm	23mm
15mm	18mm	23mm
18mm	-	23mm
22mm	19mm	27mm
28mm	20mm	31mm
35mm	31mm	57mm
42mm	32mm	62mm
54mm	37mm	68mm

For chrome plated copper tube you must scribe the tube using the correct Tectite Scribing tool.

Select the correct type and size of fitting for pipework.

Push-fit solutions

The fitting should be kept in its bag until point of use to protect the 'O' ring.

2. Inspect the fitting ensuring that the grab rings/'O' rings have not been contaminated with grit or debits. Insert the pipe into the mouth of the fitting to rest against the grab ring.
3. Push the tube firmly with a slight twisting action until it reaches the tube stop.
4. Ensure the depth insertion mark corresponds with the mouth of the fitting and then pull firmly on the tube to ensure the fitting is secure.

35mm to 54mm sizes

The first thing to consider when it comes to installation of 35mm to 54mm fittings is whether you plan to demount any fittings in the system on a regular basis. If you do, then we recommend you replace the standard end cap with the appropriately sized TDX demounting end cap.

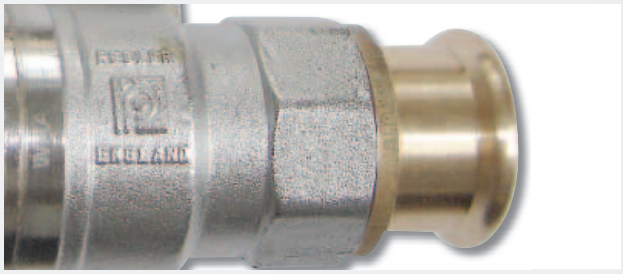
To ensure the fittings stay clean and the 'O' ring is protected from damage, never remove the fitting from its packaging until immediately prior to installation.

5. Insert the tube through the end cap to rest against the grab ring.
6. Now push the tube firmly with a slight twisting action until it reaches the tube stop.
7. Ensure the depth insertion mark corresponds with the mouth of the fitting, then pull firmly on the tube to ensure that the fitting is secure.

NOTE: We recommend all systems are thoroughly pressure tested to 1.5 times working pressure before the hand-over to the customer.

For full installation details refer to Tectite data book.

XPRESS PRESS-FIT CONNECTIONS



1. Select the correct size of tube and fitting for the job. Ensure that both are clean, in good condition and free from damage and imperfections.
2. Cut the tube square using a rotary tube cutter whenever possible. If a hacksaw is used to cut the tube, a fine toothed blade should be used, care must be taken to ensure that the tube is cut square and properly de-burred.

   When using plastic coated carbon steel tube, the coating must be removed to the exact socket depth of the fitting and the tube deburred.
3. The tube end should then be wiped clean of all swarf and debris, to avoid damage to the 'O' ring upon tube insertion.
4. To make a perfect joint, the tube must be fully inserted into the fitting until it meets the tube stop.
5. Ensure that the 'O' ring is seated correctly within the fitting socket.

Jointing

1. Assemble the joint, ensuring that the tube is inserted into the connection until it meets the tube stop. The mark on the tube made earlier should be used as a guide to ensure this is the case. For plastic coated carbon steel tube, the mouth of the fitting should be in contact with the plastic coating. Only when the tube reaches the tube stop should the pressing operation be undertaken.
2. With the correctly sized jaws inserted into the press tool, place them over the bead at the mouth of the fitting. A 90° angle between tube and jaws must be maintained to ensure a sound joint is made.
3. Depressing the trigger or button will commence the compression cycle of the tool, which is complete when the jaws fully enclose the mouth of the fitting. The jaws should then be released from around the fitting. Please refer to the tool manufacturers instructions for further detailed information.

Spacing

In order to make a joint correctly sufficient clearance around each fitting must be left to allow press-fit jaws to be attached without hindrance.

For full installation details refer to XPress data book.

Fitting socket depths for XPress

Size	Copper/Stainless/Carbon
15mm	20mm
18mm	20mm
22mm	21mm
28mm	23mm
35mm	26mm
42mm	30mm
54mm	35mm

Ballorex

COMMISSIONING VALVE SOLUTIONS CONNECTION INSTRUCTIONS

HENCO BRASS PRESS-FIT CONNECTIONS

For joints 16 to 32mm

When opening a coil of multi-layer pipe always use a SAFECUT cutter to open the packaging.

Never cut into the packaging with a sharp knife.

For pipe 16 to 26mm, cut the pipe square using guillotine cutter (RSPRESS) or rotary tube cutter (RS32/RS63). It is vital to select a rotary tube cutter with a cutting wheel suitable for multi-layer pipe.

For pipe 32mm and above a rotary tube cutter must be used, (RS32/RS63) or (Rems Cento) it is vital to select a rotary tube cutter with a cutting wheel suitable for multi-layer pipe.

All sizes of pipe need calibrating, and chamfering after been cut. Insert the correct size of Kalispeed tool into the pipe and then rotate clockwise until a chamfer is created internally and externally on the pipe end.

Check the pipe end is free from swarf and has been fully chamfered.

Jaws selection

To joint Henco Brass fittings you must use only the following jaw profiles:

16 - 26mm TH Profile jaws
32mm THL Profile sling jaws
40mm and above TH profile jaws

Jointing

The fittings should be kept in their bags until point of use to protect the 'O' ring.

Choose the correct size fitting for the pipework.

Push the prepared end of pipe firmly into fitting with a slight twisting action, until the pipe is visible in the socket depth window.

It is important to allow sufficient clearance around each joint to allow the press-fit jaws or sling to be attached without hindrance and to provide sufficient access for the press tool.

Make the tool safe by isolating it from the power supply.

When using power tools great care must be taken at all times. Always follow the tool manufacturer's instructions.

Select the correct jaws for the joint being made checking that they are free from damage. Attach to the press tool and reconnect the power supply when ready.

Take care to correctly position the jaws over the fitting socket making sure the Visio control ring sits in the profile of the jaws.

Maintaining a 90° angle to ensure the integrity of the joint, and to protect you from kickback, where there is a risk of the machine moving sideways.

With the tool fully supported and not hanging from the pipework, and with your hands safely away from the jaws, run a complete pressing cycle. Making sure that the jaws fully close around the fitting socket.

Release the jaws from the fitting and inspect the joint, checking that is has been fully crimped and the pipe is still visible in the socket depth window.

For joints 40mm and above

Select the correct size of fitting for the pipework. Remove the protective cap.

Push the prepared end of pipe firmly into fitting with a slight twisting action, until the pipe is visible in the socket depth window.

It is important to allow sufficient clearance around each joint to allow the press-fit sling to be attached without hindrance and to provide sufficient access for the press tool.

Select the correct sling jaws for the joint being made, checking that they are free from damage.

Mount the sling jaws over the fitting so that the Visio control ring sits in the profile of the sling correctly, taking care not to trap your fingers in the sling.

Check that the pipe is still visible in the socket depth window.

When using power tools great care must be taken at all times. Always follow the tool manufacturer's instructions.

Make the tool safe by isolating it from the power supply.

Select the correct adaptor and attach it to the press tool following the instructions for the press-tool, and reconnect the power supply when complete.

Attach the adaptor to the sling jaw with the tool fully supported and maintaining a 90° angle to pipework to protect you from kickback and to ensure the integrity of the joint.

With the tool fully supported and not hanging from the pipework, and with your hands safely away from the sling jaws, run a complete pressing cycle. Making sure that the sling fully close around the fitting socket.

Disconnect the adaptor and remove the sling jaw from the fitting.

Inspect the joint, checking that is has been fully crimped and the pipe is still visible in the socket depth window.

HENCO PVDF PRESS-FIT MULTI-LAYER PIPE CONNECTIONS

Pipe preparation

When opening a coil of multilayer pipe always use a SAFECUT cutter to open the packaging.

Never cut into the packaging with a sharp knife.

For pipe 16 to 26mm, cut the pipe square using guillotine cutter (RSPRESS) or rotary tube cutter (RS32/RS63). It is vital to select a rotary tube cutter with a cutting wheel suitable for multilayer pipe.

For pipe 32mm and above a rotary tube cutter must be used, (RS32/RS63) or (Rems Cento) it is vital to select a rotary tube cutter with a cutting wheel suitable for multi-layer pipe. All sizes of pipe need calibrating, and chamfering after been cut. Insert the correct size of Kalispeed tool into the pipe and then rotate clockwise until a chamfer is created internally and externally on the pipe end.

Check the pipe end is free from swarf and has been fully chamfered.

Jaws selection

To joint Henco PVDF fittings you must use only the following jaw profiles:

16 - 26mm BE or TH profile jaws
32mm and above BE profile jaws

Jointing

The fittings should be kept in their bags until point of use to protect the 'O'-ring.

Choose the correct size fitting for the pipework.

Push the prepared end of pipe firmly into fitting with a slight twisting action, until the pipe is visible in the socket depth window.

It is important to allow sufficient clearance around each joint to allow the press-fit jaws or sling to be attached without hindrance and to provide sufficient access for the press tool.

Make the tool safe by isolating it from the power supply.

When using power tools great care must be taken at all times. Always follow the tool manufacturer's instructions.

Select the correct jaws for the joint being made checking that they are free from damage. Attach to the press tool and reconnect the power supply when ready.

Take care to correctly position the jaws over the fitting socket making sure that the shoulder at the mouth of the fitting sits in the jaw profile.

Maintaining a 90° angle to ensure the integrity of the joint, and to protect you from kickback, where there is a risk of the machine moving sideways.

With the tool fully supported and not hanging from the pipework, and with your hands safely away from the jaws, run a complete pressing cycle. Making sure that the jaws fully close around the fitting socket.

Release the jaws from the fitting and inspect the joint, checking that is has been fully crimped and the pipe is still visible in the socket depth window.

THREADED CONNECTIONS

Ensure that threads are prepared correctly to provide a good and long lasting service.

Pipe compound should be applied to pipe ends only and not directly into the valve.

Valves should not be over tightened with a wrench.

Ensure the pipe is threaded to the correct type and length. If the pipe is threaded too short a leak may occur. If the pipe is threaded too long then damage may be made to the valve.

Ensure that good quality tools are used to provide an accurate joint and therefore avoiding the risk of leaking.

Thread tape may be used and applied to the external of the pipe thread after the threads have been cleaned.

Joining the valve and pipe

Fix the threaded pipe into a vice and then turn the valve on to the pipe.

A close fitting spanner should be applied to the valve hexagon/ octagon flats being fixed. By tightening the valve onto the pipe in this way, the valve avoids being distorted with the consequential damage to internal parts.

Ballorex

COMMISSIONING VALVE SOLUTIONS CONNECTION INSTRUCTIONS

COMPRESSION CONNECTIONS

1. Select the correct size of tube for the job. Ensure that it is clean, in good condition and free from damage and imperfections. If the tube is oval or damaged, use a re-rounding tool. Copper tube should be of half-hard (R250) or hard (R290) temper. Annealed soft temper tube (R220) can be used.
2. Cut the tube square using a rotary tube cutter wherever possible. If a hacksaw is used to cut the tube, a fine toothed blade should be used.
3. Remove any burr from the inside and outside of the tube ends using a fine toothed file or a S120 deburring tool from the XPress accessories range.

Connecting copper tube

There are two methods of making a compression joint.

1. Insert the tube firmly into the compression fitting, ensuring that the compression ring seats centrally and that the tube makes firm contact with the tube stop in the body of the fitting.
2. Remove the compression nut and compression ring, then put the nut and then the ring on the tube. Insert the tube end up to the fitting's tube stop. Slide the ring and the nut down to the fitting body.
3. Tighten the nut using your fingers until tight.
4. Tighten the nut further using high quality open ended or adjustable spanners. Spanner flats are incorporated into the design of the fitting bodies. The second spanner must be used to prevent the fitting rotating as the nut is tightened. For normal joint making, tighten the nut 1 turn (360°) for fittings in sizes from 6mm to 12mm, or ¾ turn (270°) for fittings in sizes from 15mm to 54mm. A few drops of light oil on the threads will assist, especially on sizes 35mm and above. When jointing stainless steel or R220 copper tube some variation may be needed – the nut may be tightened further if necessary. Take care not to over tighten the compression nut, as this will not result in a stronger joint and could lead to problems in service.

Connecting half-hard thick walled R250 copper tube

This copper tube is significantly thicker than other varieties and special care needs to be taken during installation.

1. Ensure pipework is supported during and after installation, as thick-walled copper tube is less tolerant of stress on the joints. The pipework should be clipped as close as possible to the fittings, particularly where long runs are involved.
2. Use spanners of the correct size and length. More torque is required to tighten fittings with thick walled copper tube, and care should be taken to ensure neighbouring joints are not disturbed.
3. Apply a light oil to the threads and chamfers where possible. This will reduce assembly torque and minimise the risk of damage. This is essential on sizes above 28mm.
4. If a sealant is required, use a suitable PTFE based compound, e.g. Loctite 577 or PTFE tape.

Connecting carbon steel and stainless steel tube

Stainless steel tube to BS EN 10312 (formerly BS 4127), DVGW GW541; and carbon steel tube to DIN 2394/ NEN 1982, can be jointed in sizes up to and including 28mm using Pegler compression fittings. Carbon steel tubes are for use on non potable closed circuit systems only. To achieve sound joints, the following precautions should be taken:

1. Ensure no flats or score marks are visible on the outside surface of the tube. The weld bead should not be visible.
2. A suitable jointing compound should be applied to the sealing faces prior to tightening of the compression nuts. Sealants with PTFE fillers are preferred, with PTFE tape as an alternative.

FLANGE CONNECTIONS

Flange components have their own design limitations and correct selection and compatibility is vital.

Flange material specification:

- Pressure and temperature must not exceed its rating.
- Gasket selection must be in line with the rating of the flange.
- The fluid being handled will affect the gasket selection.
- All bolts must be compatible with the flange being used.

Pipe and its mating flanges should be cleaned and made ready for assembly.

A clean and appropriate gasket should be selected for the flange type being used. Flat face and raised faces should not be mixed.

Piping should being properly supported with use of correctly sized hanging or securing brackets.

All pipes need to be aligned correctly to ensure that the valve integrity is maintained, avoiding twisting and distortion of the valve's structure and valve damage.

As the valve is assembled ensure that the bolts are placed and secured with nuts at hand tightness employing the crossover method of tightening to secure a sound joint.

Butterfly valves provide positive shut off in both flow directions. The disc profile is designed to give sealing properties at minimum torque. Raised seat profile provides positive flange seal.

Pegler Yorkshire

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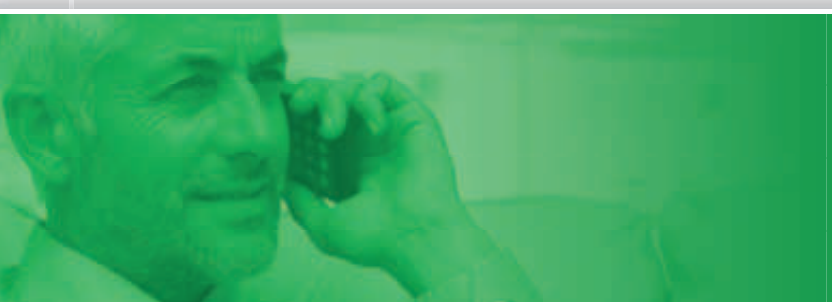

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