

B2KL: 6-way ball valve with male thread, PN 16

How energy efficiency is improved

Efficiency means precise control and low actuating forces

Features

- 6-way ball valve for changeover or steady control of heating and cooling circuits in a 4-pipe system
- Body made of moulded brass CW602N (dezincification-resistant) or CW617N
- With male thread as per ISO 228
- K_{VS} selection with exchangeable orifice plates
- In combination with valve actuators AKM 115(S) and AKF 112, 113(S) as a control unit
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035



B2KL015F400



Technical data

Parameters

| | |
|-------------------------|---------------------------|
| Nominal pressure | PN 16 |
| Valve characteristic | Quasi-linear |
| Leakage rate | Class A as per EN 12266-1 |
| Total angle of rotation | 90° (valve closed at 45°) |

Ambient conditions

| | |
|-----------------------|-----------|
| Operating temperature | 5...90 °C |
|-----------------------|-----------|

Standards and directives

| | |
|-------------------------------|--|
| Pressure and temperature data | EN 764, EN 1333 |
| Flow parameters | EN 60534 |
| PED 2014/68/EU | Fluid group II, liquid No CE label as per article 4.3 |

Overview of types

| Type | Nominal diameter | Connection | K_{VS} value without orifice plate | Material | Weight |
|-------------|------------------|--------------------|--------------------------------------|-------------------------|--------|
| B2KL015F401 | DN 15 | G $\frac{3}{4}$ "B | 1.25 m ³ /h | Moulded brass CW602N | 980 g |
| B2KL015F400 | DN 15 | G $\frac{3}{4}$ "B | 1.25 m ³ /h | Moulded brass CW617N | 980 g |
| B2KL020F411 | DN 20 | G $\frac{3}{4}$ "B | 2.8 m ³ /h | Moulded brass CW602N | 1870 g |

 K_{VS} value without orifice plate. K_{VS} values can be adapted using orifice plates.

Orifice plates for setting the K_{VS} value

| Orifice plate set for B2KL DN15 | Part number |
|---------------------------------|------------------------------------|
| K_{VS} value | 0589540001 |
| 0.25 m ³ /h | Supplied with the 6-way ball valve |
| 0.4 m ³ /h | |
| 0.63 m ³ /h | |
| 1 m ³ /h | |

| Orifice plate set for B2KL DN20 | Part number |
|---------------------------------|------------------------------------|
| K_{VS} value | 0589540002 |
| 0.7 m ³ /h | Supplied with the 6-way ball valve |
| 1 m ³ /h | |
| 1.6 m ³ /h | |
| 2.1 m ³ /h | |



Accessories

| Type | Description |
|------------|---|
| 0378133015 | 1 threaded sleeve, R $\frac{1}{2}$ ", flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$ - R $\frac{1}{2}$ |
| 0378134015 | 1 solder nipple, \varnothing 15, flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$ |
| 0580240002 | Insulation shell for 6-way ball valve DN 15 |
| 0580240003 | Insulation shell for 6-way ball valve DN 20 |
| 0560284015 | Screw fitting of brass, flat-sealing, female thread/male thread for DN 15 |
| 0560284020 | Screw fitting of brass, flat-sealing, female thread/male thread for DN 20 |
| 0580090001 | Pliers for changing orifice plate on 6-way ball valve DN 15 and DN 20 |
| 0580240001 | Fitting bracket for 6-way ball valve DN 15 and DN 20 |
| 0560332015 | Strainer in gun metal, -10...150 °C, mesh aperture 0.5 mm, DN 15 |
| 0560332020 | Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20 |
| 0560332025 | Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 25 |

i *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*

i *Definition of Δp_s : Maximum admissible pressure drop in the event of a malfunction (pipe break after the ball valve) at which the actuator reliably closes the ball valve using the return spring.*

i *Definition of Δp_{max} : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

| Actuator | AKM115F120 | AKM115F122 | AKM115SF132 |
|-------------------|------------|------------|----------------------|
| Rotational torque | 8 Nm | 8 Nm | 8 Nm |
| Control signal | 2-/3-point | 2-/3-point | 2-/3-point, 0...10 V |
| Running time | 120 s | 120 s | 35/60/120 s |
| Operating voltage | 230 V~ | 24 V~ | 24 V~/V= |

 Δp [bar]

| | Δp_{max} | Δp_{max} | Δp_{max} |
|---|------------------|------------------|------------------|
| B2KL015F401 B2KL015F400 B2KL020F411 | 2.0 | 2.0 | 2.0 |

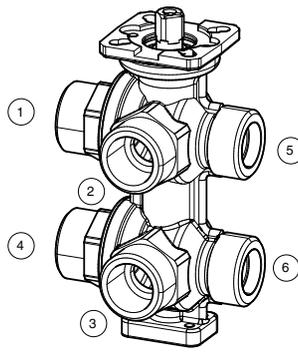
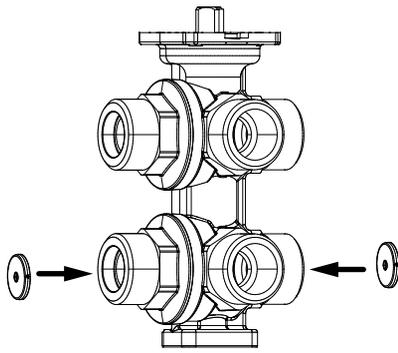
| Actuator | AKF112F120 | AKF112F122 | AKF113F122 | AKF113SF122 |
|-------------------|------------|------------|------------|-------------|
| Rotational torque | 7 Nm | 7 Nm | 7 Nm | 7 Nm |
| Control signal | 2-point | 2-point | 3-point | 0...10 V |
| Running time | 90 s | 90 s | 90 s | 90 s |
| Operating voltage | 230 V~ | 24 V~/V= | 24 V~/V= | 24 V~/V= |

 Δp [bar]

| | Δp_{max} | Δp_s |
|---|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|
| B2KL015F401 B2KL015F400 B2KL020F411 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |

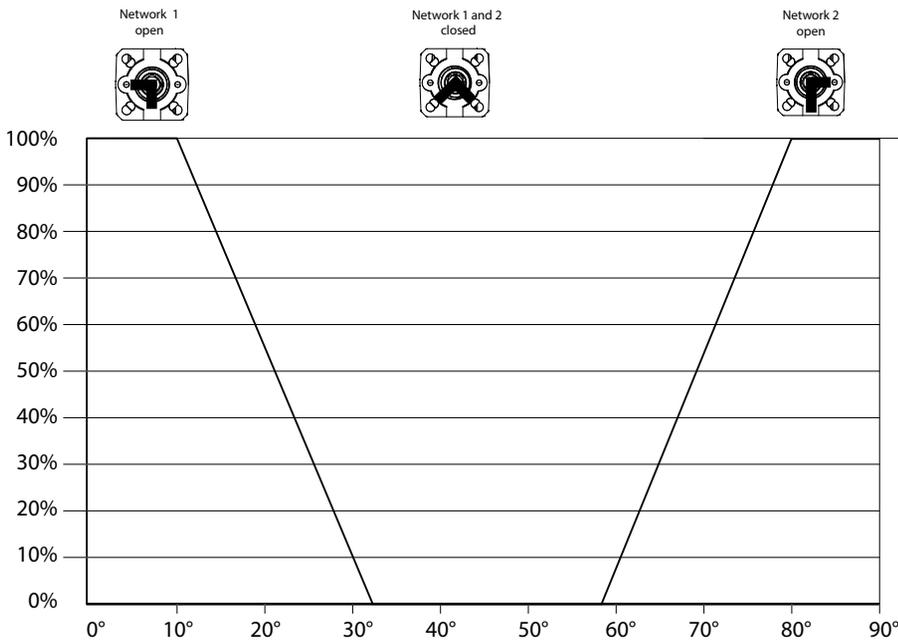
Description of operation

The 6-way ball valve from SAUTER is a compact and precise alternative for regulating heated/chilled ceilings and fan coils in four-pipe systems. It can be used as a regulating valve or a changeover valve. Conventional solutions with up to four 2-way valves, four actuators and two or three controller outputs now only require a 6-way ball valve and an actuator. With a rotation of 90°, the 6-way ball valve can go through both sequences for heating and cooling. The two holes arranged at right angles for the balls ensure that the heating and cooling systems can be separated without leakage. The ball valve can be fitted or selected with different orifice plates for the K_{vs} value for heating and cooling, according to the design specifications.



- (1) Supply for network 1
- (2) Supply for heated/chilled ceiling
- (3) Return for heated/chilled ceiling
- (4) Return for network 1
- (5) Supply for network 2
- (6) Return for network 2

Network open/closed circuit



Pressure relief function

The 6-way ball valves are equipped with an internal pressure relief function. A change in the media temperature (closed valve position, 45°) in the heated/chilled ceiling can cause positive pressure or negative pressure. This could possibly damage the heated/chilled ceiling. The pressure relief function prevents this damage because the pressure in the heated/chilled ceiling is balanced with the pressure in the supply line.

Material numbers as per DIN: B2KL015F401, B2KL020F411

| | DIN material no. | DIN designation |
|-------------------------------|------------------|--------------------------------------|
| Body | CW602N | Cu Zn 36 Pb2/As according to EN12167 |
| Stem | CW614N | Cu Zn 39 Pb3 according to EN12164 |
| Ball, polished, chrome-plated | CW614N | Cu Zn 39 Pb3 according to EN12164 |
| Seat | PTFE | – |
| O-ring | EPDM | – |

Material numbers as per DIN: B2KL015F400

| | DIN material no. | DIN designation |
|-------------------------------|------------------|-----------------------------------|
| Body | CW617N | Cu Zn 40 Pb2 according to EN12164 |
| Stem | CW614N | Cu Zn 39 Pb3 according to EN12164 |
| Ball, polished, chrome-plated | CW614N | Cu Zn 39 Pb3 according to EN12164 |
| Seat | PTFE | – |
| O-ring | EPDM | – |

Slide rule and supplementary technical documents

| | |
|--|------------|
| SAUTER slide rule for valve sizing | P100013496 |
| Technical manual on control units | 7000477001 |
| Fitting instructions: | |
| B2KL, DN15 | P100015803 |
| B2KL, DN20 | P100015846 |
| B2KL020F411 | P100016291 |
| AKM 115(S) | P100001578 |
| AKF 112/113(S) | P100002659 |
| Declaration on materials and the environment | MD 58.001 |

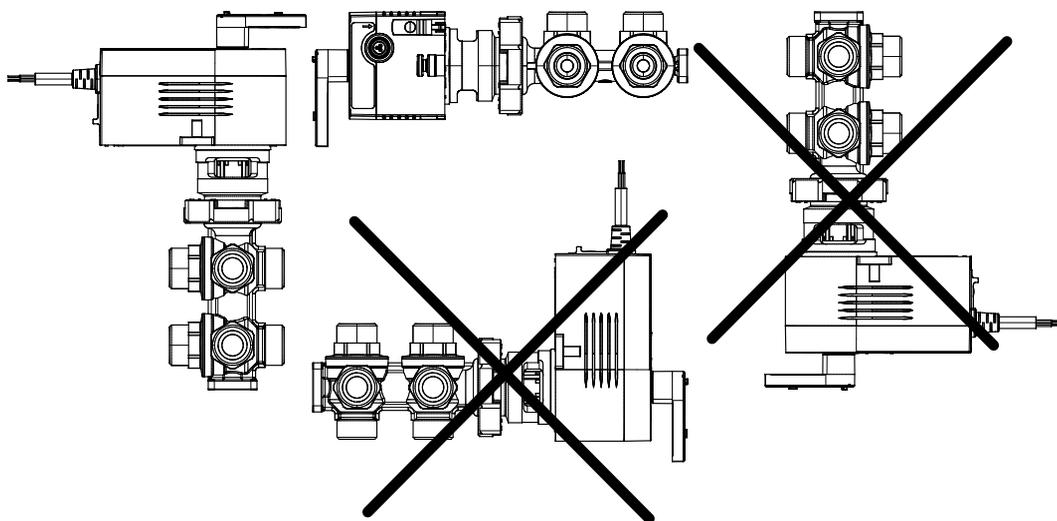
Fitting position



CAUTION!

Damage to property

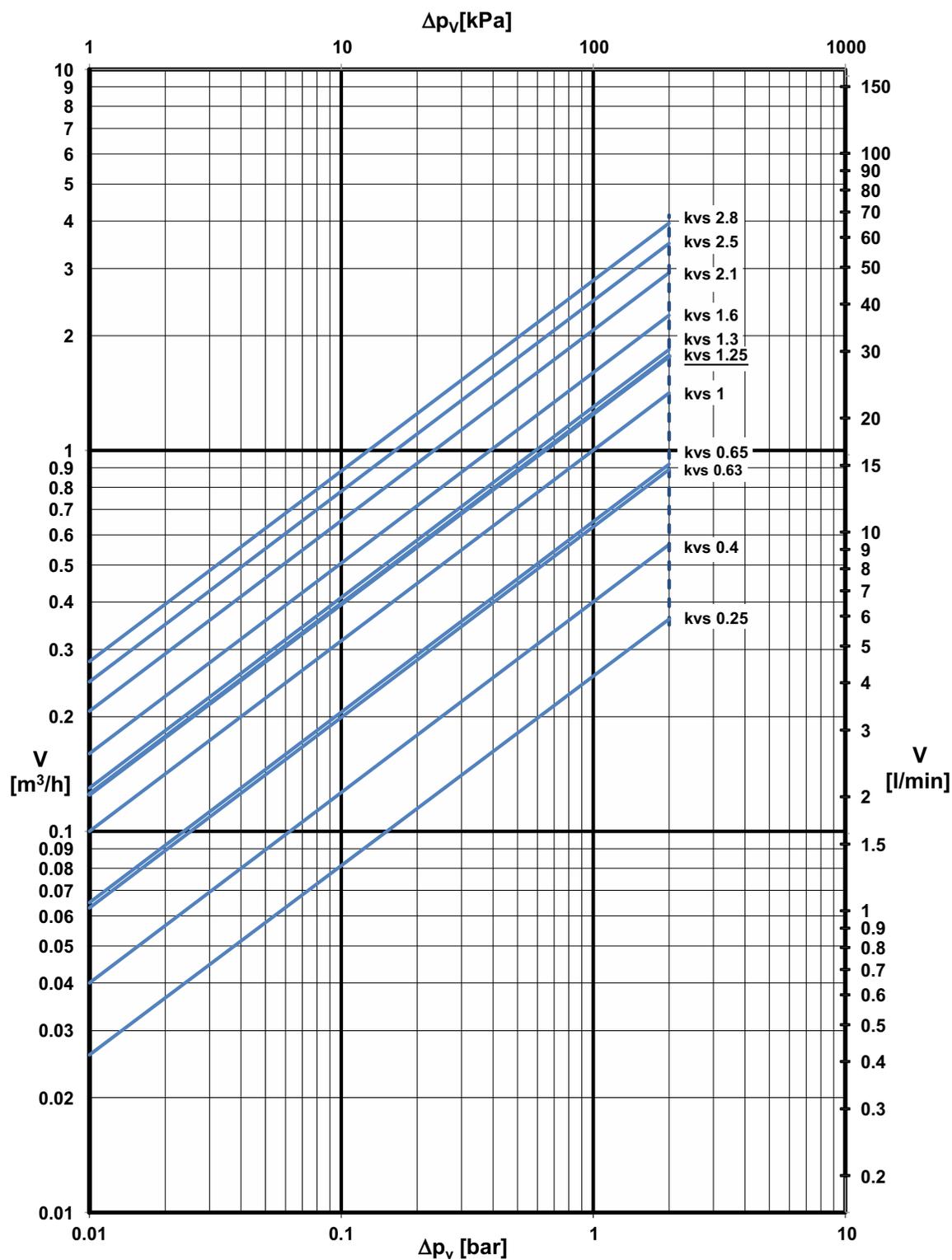
- ▶ Do not install the 6-way ball valve in a suspended position. Penetrating condensate or dripping water can damage the actuator.



Using with water

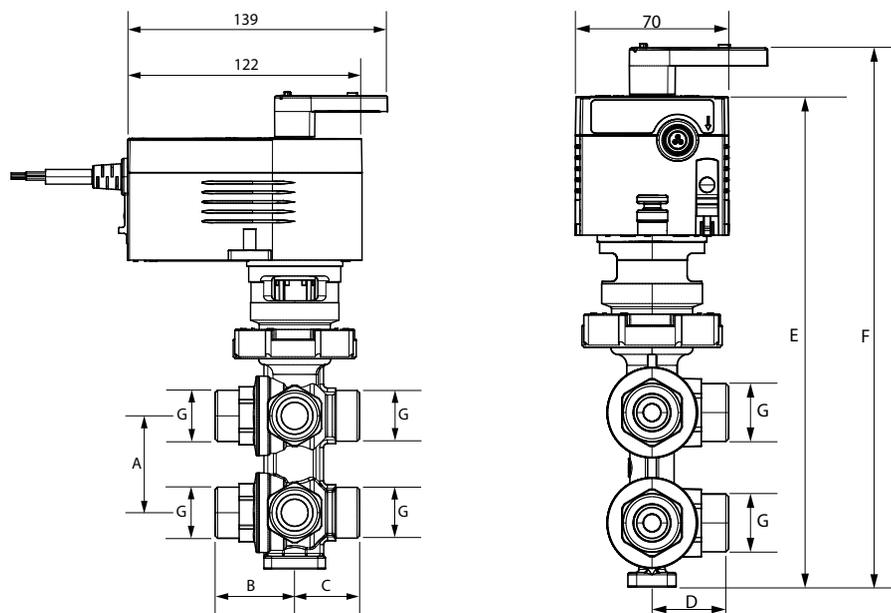
When using water mixed with glycol or an inhibitor, the compatibility of the materials and seals used in the 6-way ball valve should be clarified with the manufacturer. The material list shown below may be used here. When using glycol we recommend a concentration of 20% to 50%.

Flow-rate chart



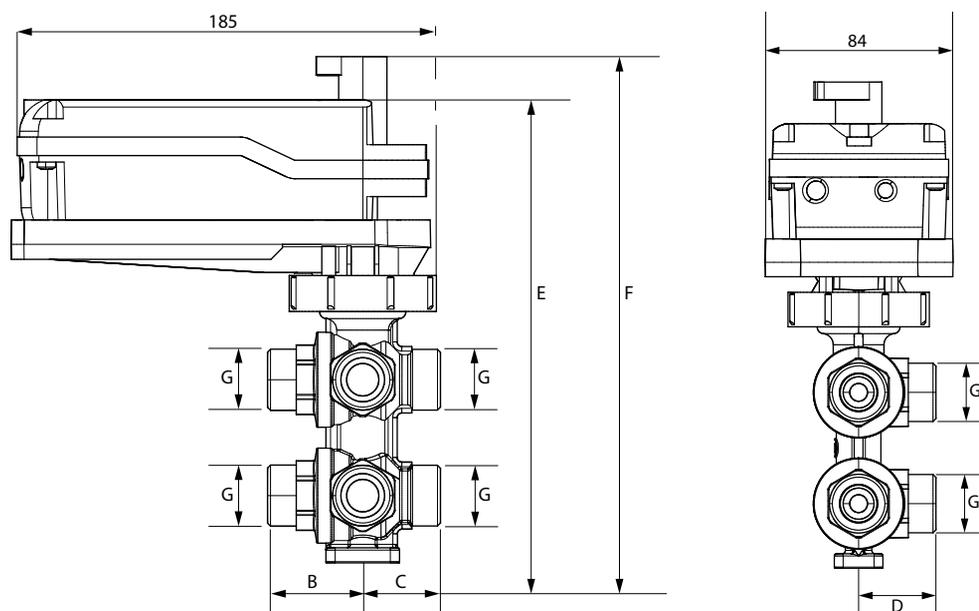
Dimension drawings

Combination with AKM 115(S)



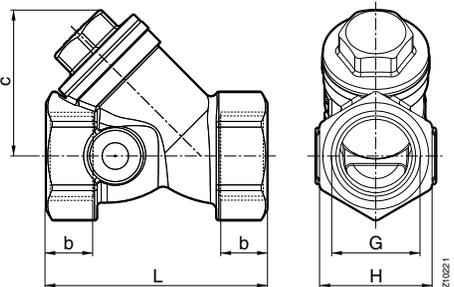
| Type | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (inch) |
|-------------|--------|--------|--------|--------|--------|--------|----------|
| B2KL015F400 | 50 | 41 | 32.5 | 35 | 223 | 247 | G ¾ |
| B2KL015F401 | 50 | 41 | 32.5 | 35 | 223 | 247 | G ¾ |
| B2KL020F411 | 60 | 47 | 42.5 | 41 | 247 | 271 | G ¾ |

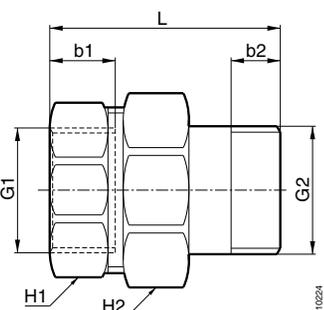
Combination with AKF 112, 113(S)

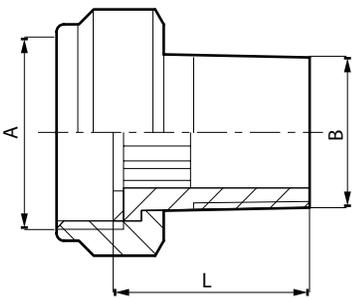


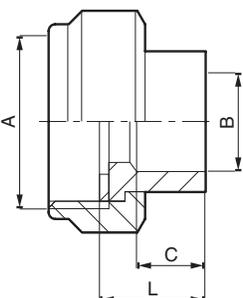
| Type | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (inch) |
|-------------|--------|--------|--------|--------|--------|--------|----------|
| B2KL015F400 | 50 | 41 | 32.5 | 35 | 200.5 | 221 | G ¾ |
| B2KL015F401 | 50 | 41 | 32.5 | 35 | 200.5 | 221 | G ¾ |
| B2KL020F411 | 60 | 47 | 42.5 | 41 | 224.5 | 245 | G ¾ |

Accessories

| 05603320** | DN | b (mm) | c (mm) | G (inch) ISO 228-1 | L (mm) | H (mm) |
|---|----|--------|--------|-----------------------|--------|--------|
|  | 15 | 12 | 38 | G ½ | 54 | 27 |
| | 20 | 15 | 43 | G ¾ | 67 | 34 |

| 05602840** | DN | b1 (mm) | b2 (mm) | G1 (inch) ISO 228-1 | G2 (inch) ISO 7-1 | L (mm) | H1 (mm) | H2 (mm) |
|--|----|---------|---------|------------------------|----------------------|--------|---------|---------|
|  | 15 | 10 | 10 | G ½ | Rp ½ | 46 | 26 | 30 |
| | 20 | 12 | 12 | G ¾ | Rp ¾ | 52 | 31 | 37 |

| 0378133015 | A (inch) | B (inch) | L (mm) |
|---|----------|----------|--------|
|  | G ¾ | R ½ | 27.5 |

| 0378134015 | A (inch) | B (mm) | C (mm) | L (mm) |
|---|----------|--------|--------|--------|
|  | G ¾ | Ø 15 | 10.6 | 17 |

0580240001

All dimensions in millimetres

