

# MODULA

Direct-series, DN15

## Description

MODULA Direct-series is a compact and versatile valve system that combines the Frese range of dynamic flow, pressure and temperature control valves with isolation, flushing, draining and measurement components within a prefabricated, tested and ready to install terminal bypass unit.

MODULA Direct-series integrates Frese valve solution:

- OPTIMA Compact PICV (Pressure Independent Control Valve)

Each unit can be supplied with isolation valves, strainer, drain & P/T plug.

The MODULA Direct-series has been designed in accordance with the design guidelines from BSRIA for terminal unit installations.



## Benefits

### Design benefits

- Fitted with OPTIMA Compact PICV
- Venturi metering station for flow measurement

### Installation benefits

- Compact design for limited space availability
- Minimized installation and commissioning costs
- Allows easy flushing and coil isolation
- Fits directly over standard drip trays

### Operation benefits

- High comfort with minimized operation and maintenance costs
- Efficient flow, temperature and pressure control
- 5 modes of operation

For further information on the OPTIMA Compact please refer to the relevant Technotes.

## Features

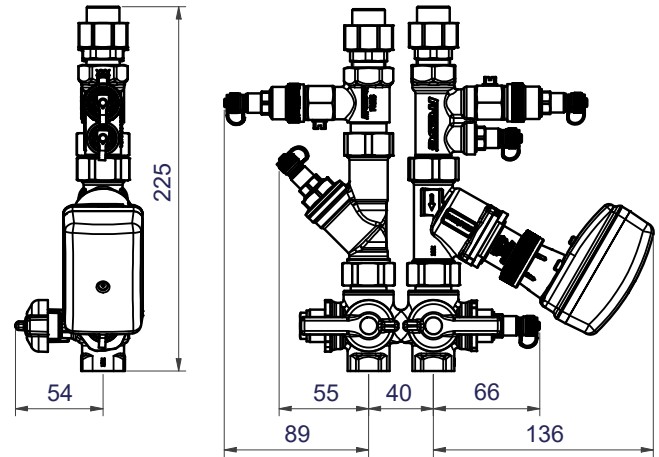
- Integral Venturi metering station for accurate flow verification. Kv-signal values: 0.198 - 0.598 - 1.394 - 2.361
- Available in DN15
- Compact 40 mm supply/return centres
- Strainer on the flow side optional
- Integrated union joints for easy valve alignment
- Two T-handle isolation valves for flow, return and bypass
- Full flow ball valves on flow and return
- Drains on the flow and return
- PT plugs across the PICV to measure DP
- P/T plug on the flow for measuring the DP across the terminal unit
- Manufactured in DZR brass, CW602N
- M6 thread for mounting threaded bar support to the MODULA bypass unit

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## Technical data

<b>Material:</b>	DZR Brass, CW602N
<b>O-rings:</b>	EPDM
<b>Pressure class:</b>	PN25
<b>Strainer filter:</b>	
<b>Mesh:</b>	32 (0.5 mm)
<b>Strainer material:</b>	Stainless steel AISI304
<b>Ball valves:</b>	
<b>Ball material:</b>	DZR Brass, CW602N nickel plated
<b>Seat ring material:</b>	PTFE
<b>Medium temperature range:</b>	0°C to 120 °C



## KV values for flow measurement and pump dimensioning

KV values

KV-signal* for flow measurement	KV total for pump dimensioning
0.198	0.307
0.598	0.601
1.394	1.909
2.361	2.667

\*Accuracy KV-signal: +/- 5%

### Example pump dimensioning:

Flow: 0.90 m³/h (0.250 l/s)

MODULA Direct with Venturi Metering Station KV 1.394

- KV total 1.909

Pressure loss MODULA: (without OPTIMA Compact)

- $\Delta P = (Q/KV_{total})^2$

- $\Delta P = (0.9/1.909)^2 = 0.22 \text{ Bar} \Rightarrow \mathbf{22 \text{ kPa}}$

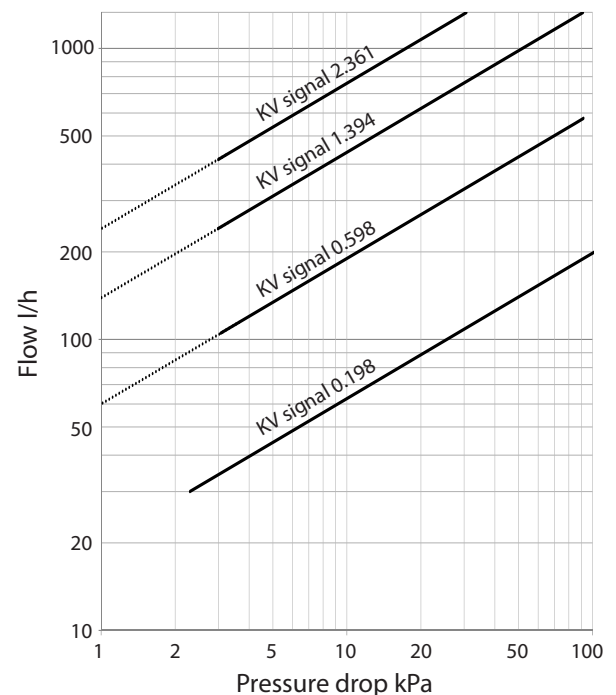
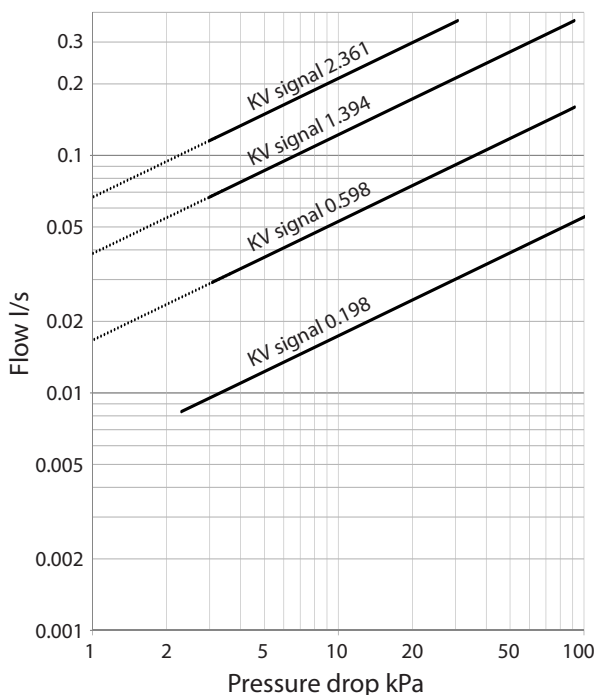
OPTIMA Compact DN15 HF 5.0

- Min  $\Delta P$  at 0.9 m³/h: **20 kPa\***

Total pump pressure required : 22 kPa + 20 kPa = **42 kPa**

\*See OPTIMA Compact Technote or use the Frese APP

## Flow graphs for Venturi Metering station



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## Product Code Builder

							61	MODULA Direct-series
							1	Right hand version
							2	Left hand version
							A	DN15 LF 2.5 (Item no. 53-1302)
							B	DN15 LF 5.0 (Item no. 53-1310)
							C	DN15 HF 2.5 (Item no. 53-1304)
							D	DN15 HF 5.0 (Item no. 53-1305)
							N	No strainer
							S	With Strainer
							0	No 4-port valve
							1	4-port valve ver. 1 (0.4)
							2	4-port valve ver. 2 (0.63)
							3	4-port valve ver. 3 (1.0)
							4	4-port valve ver. 4 (1.6)
							5	4-port valve ver. 5 (2.5)
							1	Venturi Metering Station KV-signal value : 0.198*
							2	Venturi Metering Station KV-signal value : 0.598*
							3	Venturi Metering Station KV-signal value : 1.394*
							4	Venturi Metering Station KV-signal value : 2.361*
							X	No end fittings
							A	1/2" x 15 Compression Unions
							B	1/2" x 15 Solder Unions
							D	1/2" x 22 Compression Unions
							H	1/2" x 3/4" M/M Coupling
							G	1/2" x 1/2" Hex Nipple
							F	1/2" x 3/4" Union Threaded
							J	1/2" x 15 Compression Unions Female
61	X	X	X	X	X	X		
MODULA Direct-series	Version	Valve type	Strainer on flow side	4-port valve	Venturi Metering Station	Couplings		
							*) When using the KV-signal for flow measurement, the accuracy is ±5%	

\*) When using the KV-signal for flow measurement, the accuracy is  $\pm 5\%$

### Example of product code: **612D-S-0-4-B**

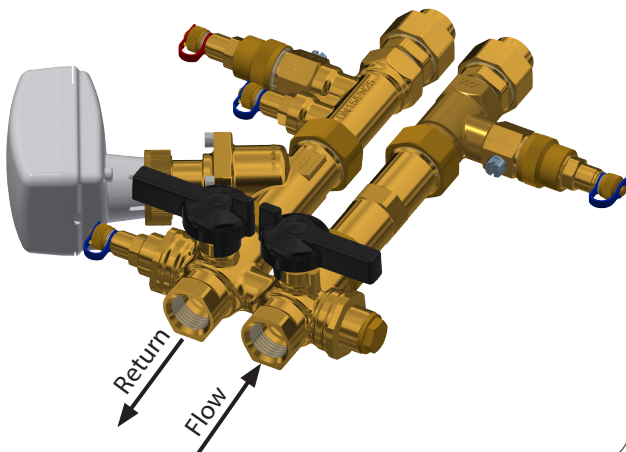
- MODULA Direct-series
- Left hand version
- OPTIMA Compact DN15 HF 5.0
- With strainer
- No 4-port valve
- Venturi Metering Station Kv-signal value : 2.361
- 1/2" x 15 Solder Unions

## MODULA

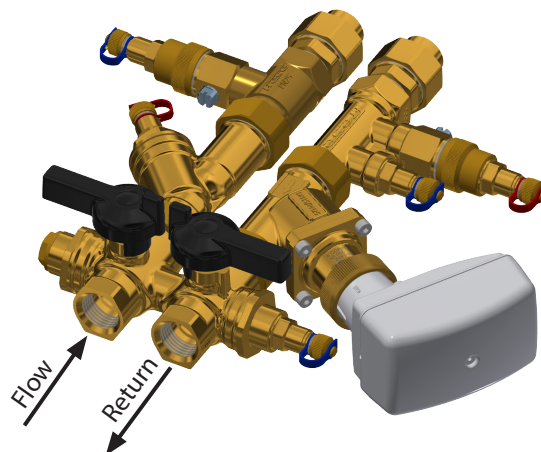
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Versions: Right or Left

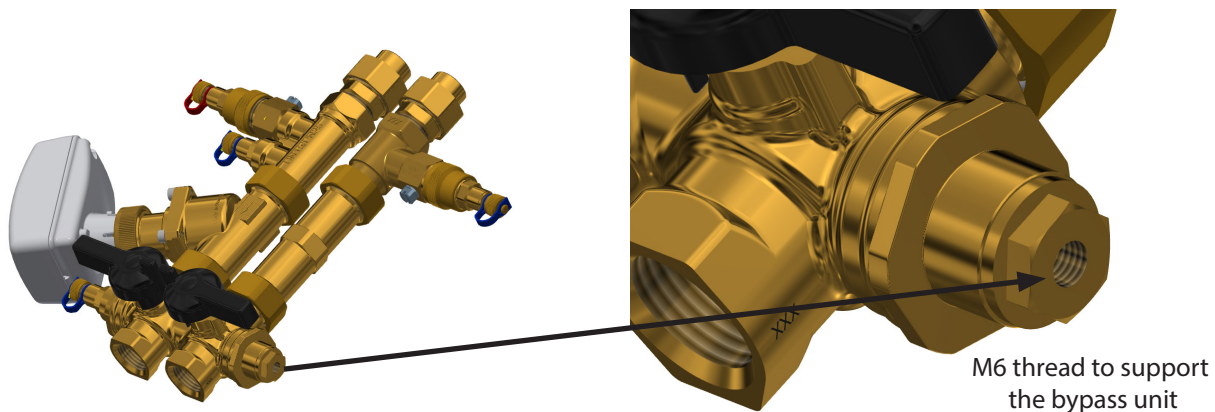
Right hand version (Example without strainer)



Left hand version (Example with strainer)



## Mounting

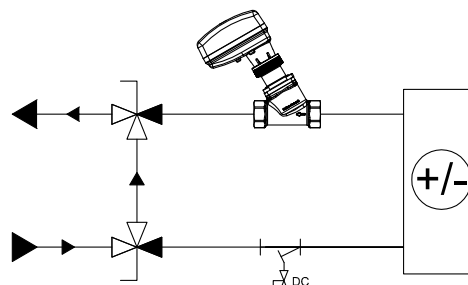
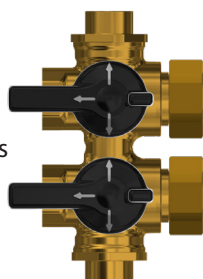


# MODULA

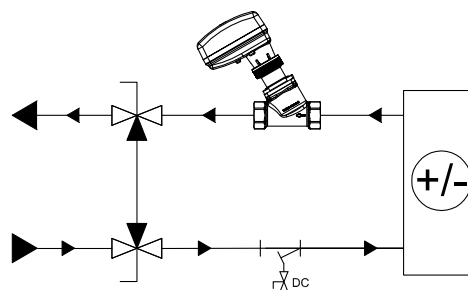
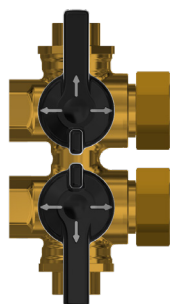
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## Modes of Operation - Right Hand Version

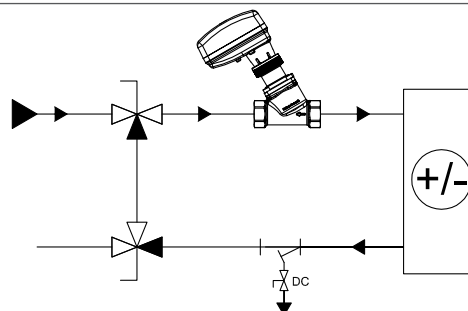
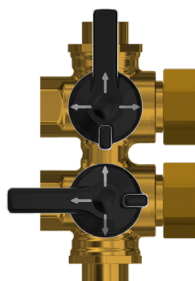
Mode 1  
Isolation & Flushing bypass



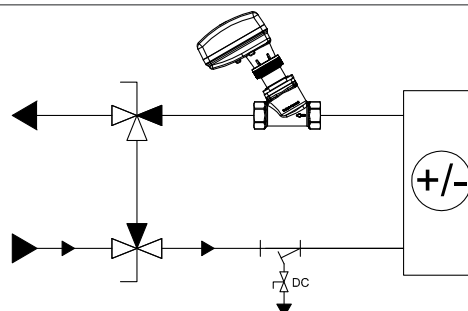
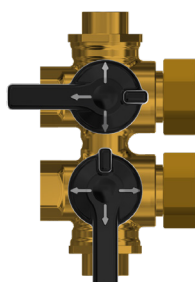
Mode 2  
Normal operation



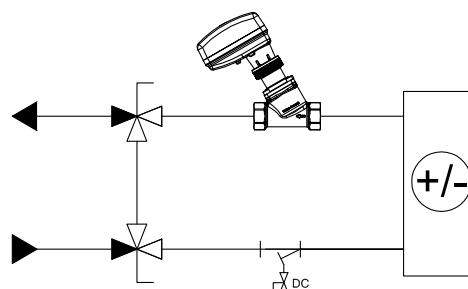
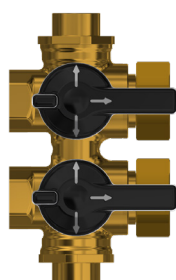
Mode 3  
Back flushing



Mode 4  
Forward flushing



Mode 5  
Isolation & Maintenance

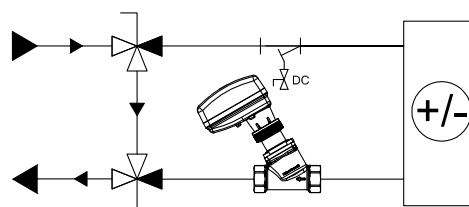
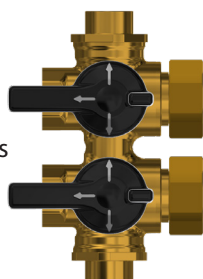


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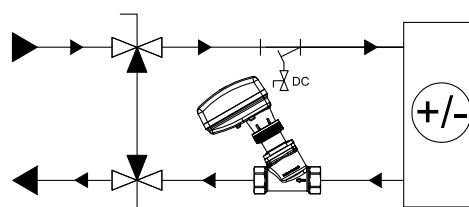
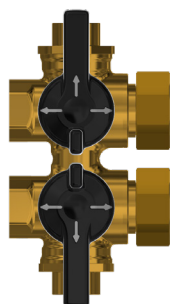
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## Modes of Operation - Left Hand Version

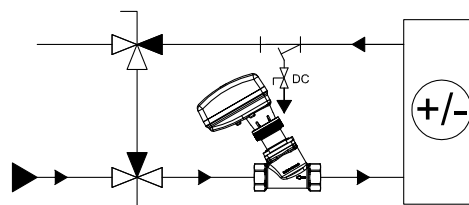
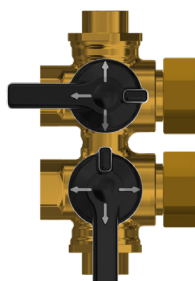
Mode 1  
Isolation & Flushing bypass



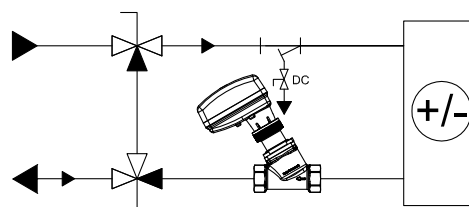
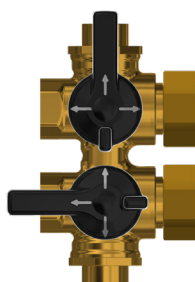
Mode 2  
Normal operation



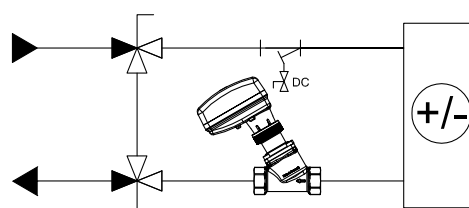
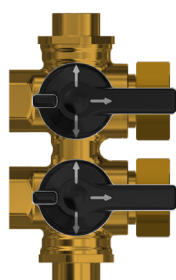
Mode 3  
Back flushing



Mode 4  
Forward flushing




Mode 5  
Isolation & Maintenance



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### Accessories

Frese Flexible Hose	Dimension	Lenght [mm]	Frese no.
	DN15	300	48-0050
		450	48-0051
		600	48-0052

For more details please refer to the Frese Flexible Hose Technote.

#### Please note:

In pumped systems, pump vibration is carried by the liquid, and also regenerated by liquid turbulence, and may reappear as noise at any location where there is a hard contact between the pipe and the structure.

Vibration transmission occurs along pipes and ducts, despite the use of flexible connectors so it is recommended to use flexible attachments to the structure and/or terminal unit as detailed in CIBSE Guide B4 Noise and Vibration Control for Building service systems.

Hose Connection	Dimension	Frese no.
	DN15	46-9012

### Specification Text - MODULA Direct-series

- The valve system shall combine a Frese OPTIMA Compact PICV with a fixed 40 mm distance supply/return component
- The bypass unit shall have two integral isolation valves and optional PT strainer/drain on the supply side
- The bypass unit shall have a pressure class of PN25
- The medium temperature range shall be 0°C to 120°C
- All material shall be DZR brass, CW602N

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