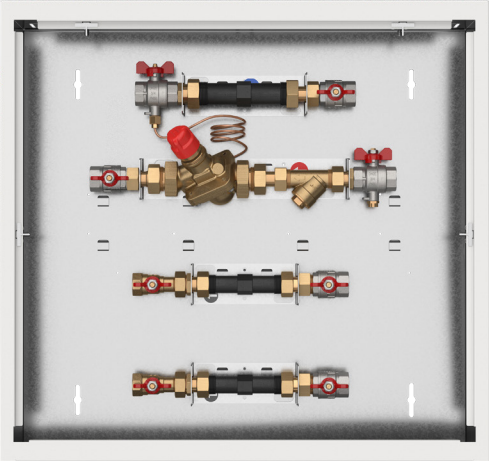
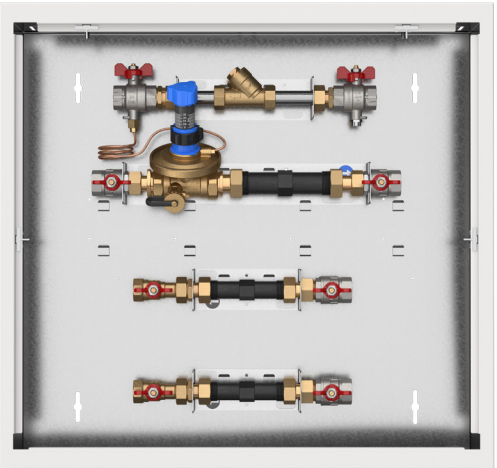
ENGINEERING
TOMORROW

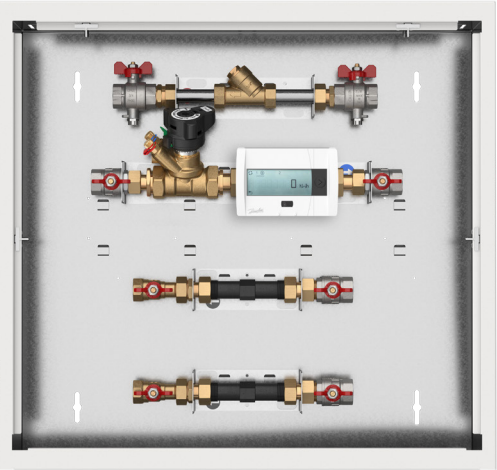
Data sheet

Metering Unit PM / PV / BD

Description







Danfoss Metering Unit is a heating and cooling unit, which can be used for metering, balancing, and controlling of individual apartments in centralized heating and domestic hot water systems. The Metering Unit comes pre-assembled, which will decrease the overall installation time significantly.

Features:

- Fast and easy installation
- Pre-designed modules for different applications
- Reliable dynamic hydronic balancing
- Compact design – fits even the smallest places
- Flow rates for wide application range

Articles

Domestic water line includes a spacer for 110 mm water meter

Article	Includes	Code nr.
Metering Unit PM DN15	• AB-PM DN15 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0021
Metering Unit PM DN20	• AB-PM DN20 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0022
Metering Unit PM DN25HP	• AB-PM DN25HP • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0023
Metering Unit PV60 DN15	• ASV-PV DN15 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0024
Metering Unit PV60 DN20	• ASV-PV DN15 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0025
Metering Unit PV60 DN25	• ASV-PV DN25 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0026
Metering Unit PV60 DN32	• ASV-PV DN32 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0027
Metering Unit PV25 DN15	• ASV-PV DN15 5-25 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0028

Article	Includes	Code nr.
Metering Unit PV25 DN20	• ASV-PV DN20 5-25 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0029
Metering Unit PV25 DN25	• ASV-PV DN25 5-25 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0030
Metering Unit BD DN15	• MSV-BD DN15 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0031
Metering Unit BD DN20	• MSV-BD DN20 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0032
Metering Unit BD DN25	• MSV-BD DN25 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer • 2 × DN20 Domestic water line • Inwall recess box	267B0033

Accessories and spare parts

Article	Includes	Code nr.
Heating set PV25 DN15 110 MMU	• ASV-PV DN15 5-25 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0040
Heating set PV25 DN20 110 MMU	• ASV-PV DN20 5-25 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0041
Heating set PV25 DN25 110 MMU	• ASV-PV DN25 5-25 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0042
Heating set BD DN15 110 MMU	• MSV-BD DN15 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0043
Heating set BD DN20 110 MMU	• MSV-BD DN20 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0044
Heating set BD DN25 110 MMU	• MSV-BD DN25 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0045
Heating set PM DN15 110 MMU	• AB-PM DN15 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0046
Heating set PM DN20 110 MMU	• AB-PM DN20 • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0047
Heating set PV60 DN15 110 MMU	• ASV-PV DN15 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0048
Heating set PV60 DN20 110 MMU	• ASV-PV DN20 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0049
Heating set PV60 DN32 110 MMU	• ASV-PV DN32 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0050
Heating set PM DN25HP 110 MMU	• AB-PM DN25HP • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0051
Heating set PV60 DN25 110 MMU	• ASV-PV DN25 20-60 kPa • Heat meter spacer for 110mm DN15 meter • DN20 Ball valves with M10 connection for heat meter sensor • DN20 Strainer	267B0052
Domestic water line MMU	• One domestic water line for hot or cold water • Spacer for 110 mm water meter	267B0000
Recess box 604 × 596 MMU	• Recess box sized 604 × 596 × 140 (W × H × D)	267B0005
Frame and door for recess box 267B0005	Spare part	267B0008
Strainer DN20 MMU	Spare part	267B0010

Technical information of each component

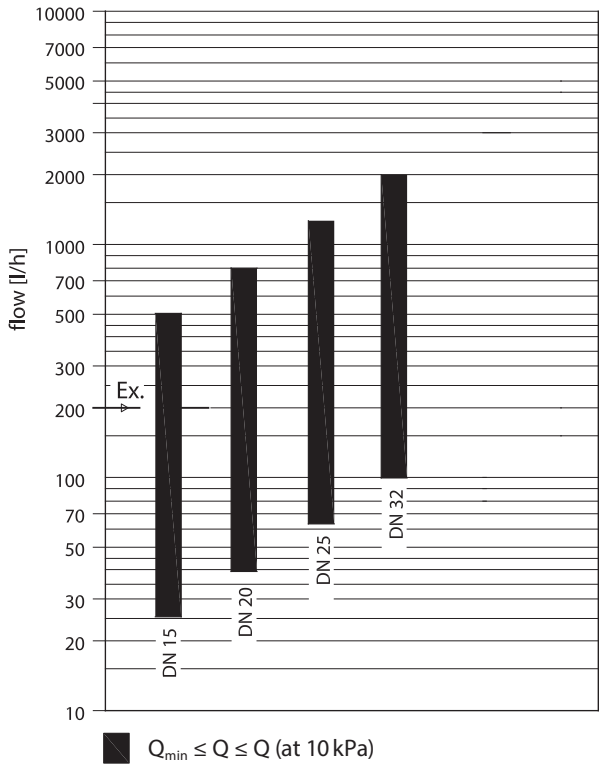
ASV-PV DN 15-32

ASV valves are automatic balancing valves. Together with Danfoss presetting thermostatic valves they are part of the Danfoss two-pipe solution and are perfect for creating optimal hydronic balance in residential two-pipe heating and cooling systems.

Type		ASV-PV
Nominal diameter	DN	15 – 32
Max. pressure (PN)	bar	16
Test pressure		25
Differential pressure over the valve	kPa	10 – 250
Shut off leakage		No visible leakage *
Working tempearature	°C	0 ... 120
Staorage and transport temperature		–40 ... 70
Δp setting range	kPa	5 – 25 or 20 – 60

** ISO 5208*

Chart with flow rates



Column diagram for sizing Q = required design flow ASV valves at Δp_v = 10 kPa.

AB-PM DN 15, DN 20, DN 25 HP

AB-PM is a combined automatic balancing valve. It features three function in compact valve body:
1. Differential pressure controller
2. Control valve with linear characteristic
3. Flow limiter

Benefits:
- Reliable heating system resulting in:
  - proper heat distribution even at partial loads
  - noise free operation based on stable low Δp over thermostatic radiator valves even in installation where higher pump head is needed
- Lower heating cost
- Better indoor temperature control
- Faster in simpler installation with less installation space needed

Nominal diameter		**DN**	**15**	**20**	**25 HP**
Q_{nom} (at 100% setting)		l/h	300	600	1200
Max. pressure at zero load		kPa	22		35
Max. differential pressure (Δpa)			400		
Min. differential pressure (Δpa)			18		28
Nominal maximal pressure		bar	16 (PN16)		
Control valves characteristic			Linear		
Shut-off leakage rate			Acc. to ISO 5208 class A – no visible leakage		
Medium temperature		°C	–10 … +120		
CV stroke		mm	2,25		4,5
Connection	Ext. thread ISO 228/1		G ¾ A	G 1 A	G 1¼ A
	Actuator		M 30 × 1.5		
Δp setting range		kPa	5 – 15		10 – 25

Sizing

AB-PM is to be based on needed flow (Q) and needed differential pressure drop for the loop (Δpr). Max flow data are presented in table 1. Q is proportional to the setting on AB-PM while upper limit differential pressure (Δpr) is kept the same.

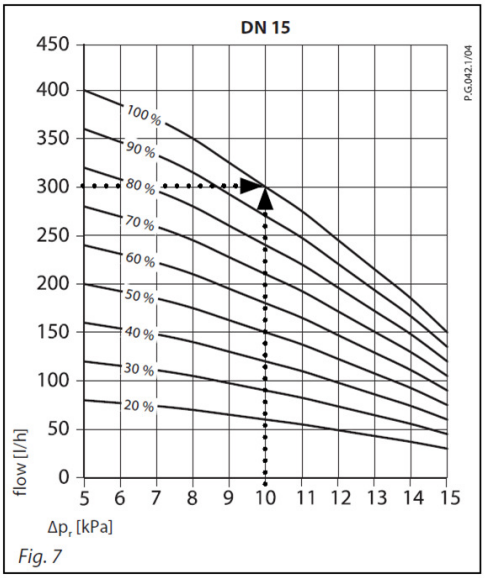


Fig. 7

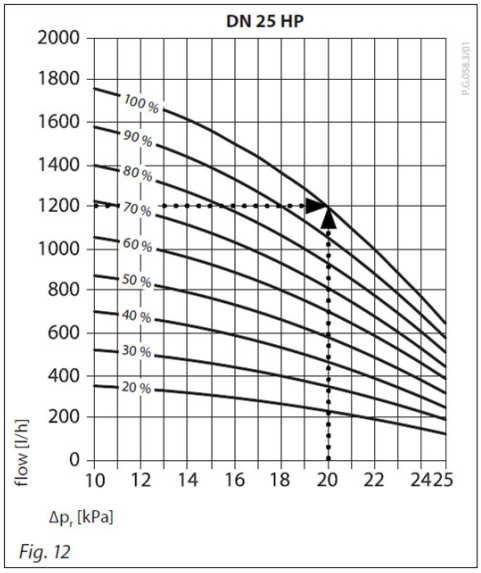


Fig. 12

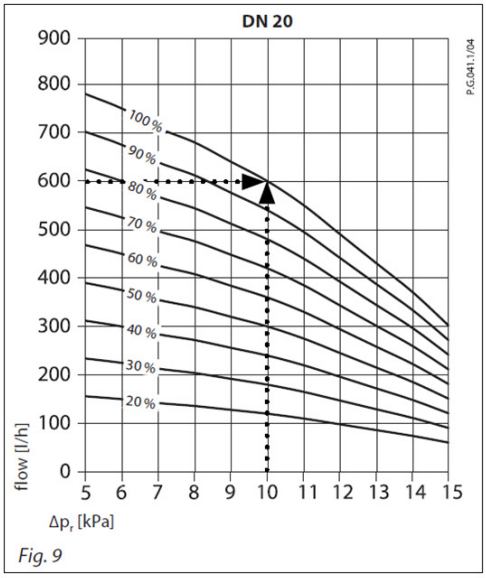


Fig. 9

Nominal diameter	DN	15		20		25 HP	
Q max.	l/h	300	400	600	780	1200	1800
Max. pressure drop available for system at max. flow	kPa	10	5	10	5	20	10
Max. pressure at zero load		22		22		35	
Min. differential pressure (Δp_a)		18		18		28	

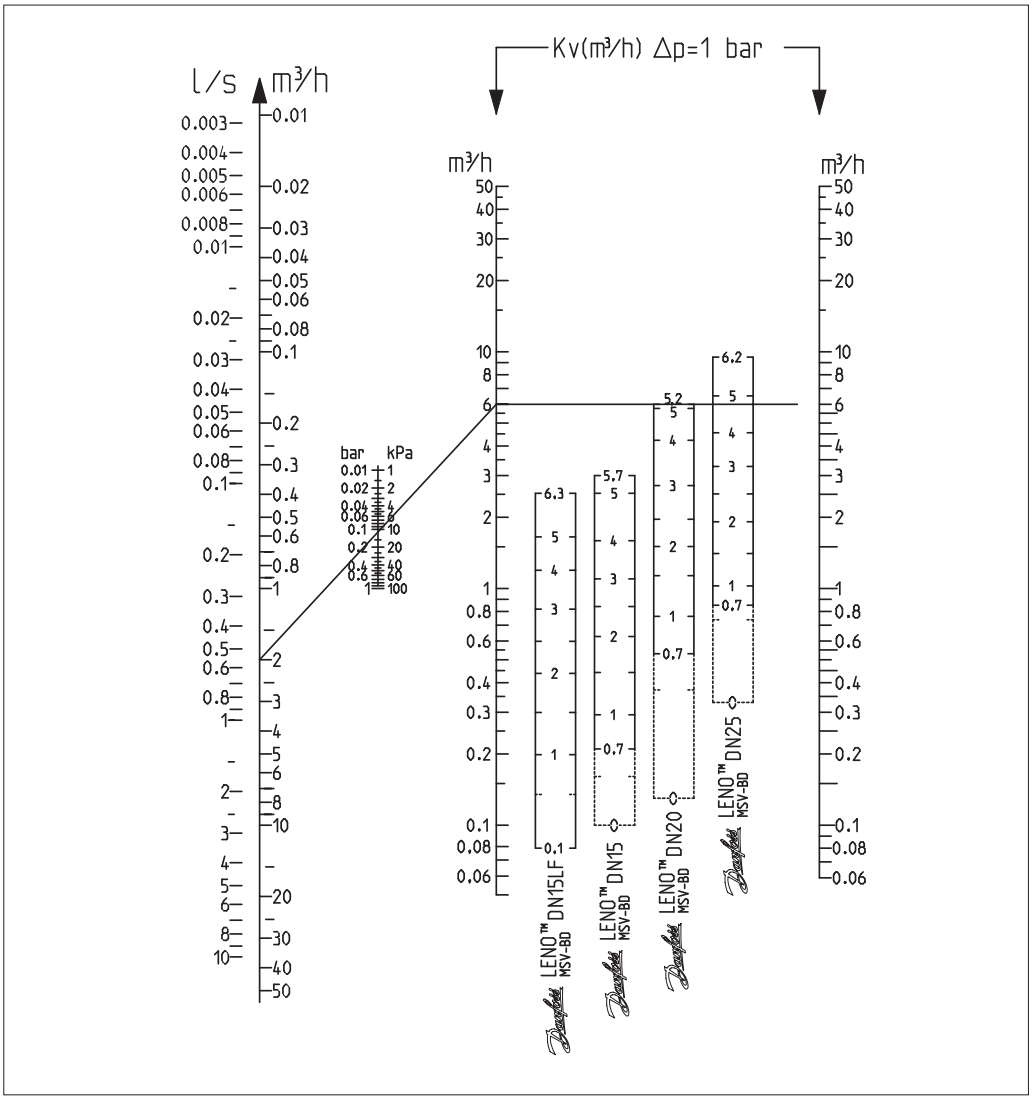
MSV-BD (DN 15-DN 25)

LENO™ MSV-BD is a range of manual valves for balancing flow in heating and cooling systems. It is a combined presetting and shut off valve with a range of unique features:

- Removable hand wheel for easy mounting.
- 360° turnable measuring station for convenient measuring and draining.
- Numeric presetting scale, visible from more angles.
- Easy locking of presetting.
- Built-in test plugs for Ø 3 mm needles.
- Drain connection with separate draining of inlet and outlet side of valve.
- Open-close with Allen key for extra force.
- Open-closed colour indicator.

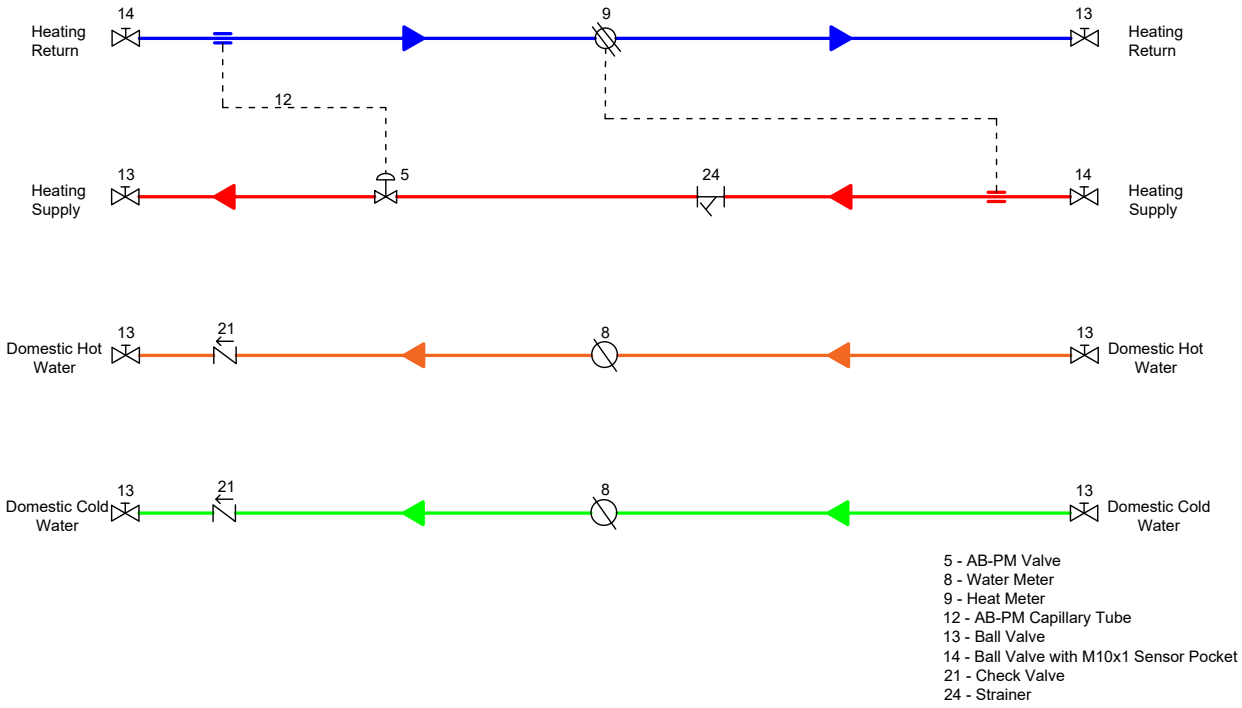
It is recommended to use LENO™ MSV-BD in constant flow systems. The valve is mounted in return line.

Max. static working pressure	20 bar
Static test pressure	30 bar
Max. differential pressure across valve	2,5 bar (250 kPa)
Max. flow temperature	120 °C
Min. temperature	–20 °C
Cooling liquids	Ethylene glycol / propylene glycol and HYCOOL (max. 30%)



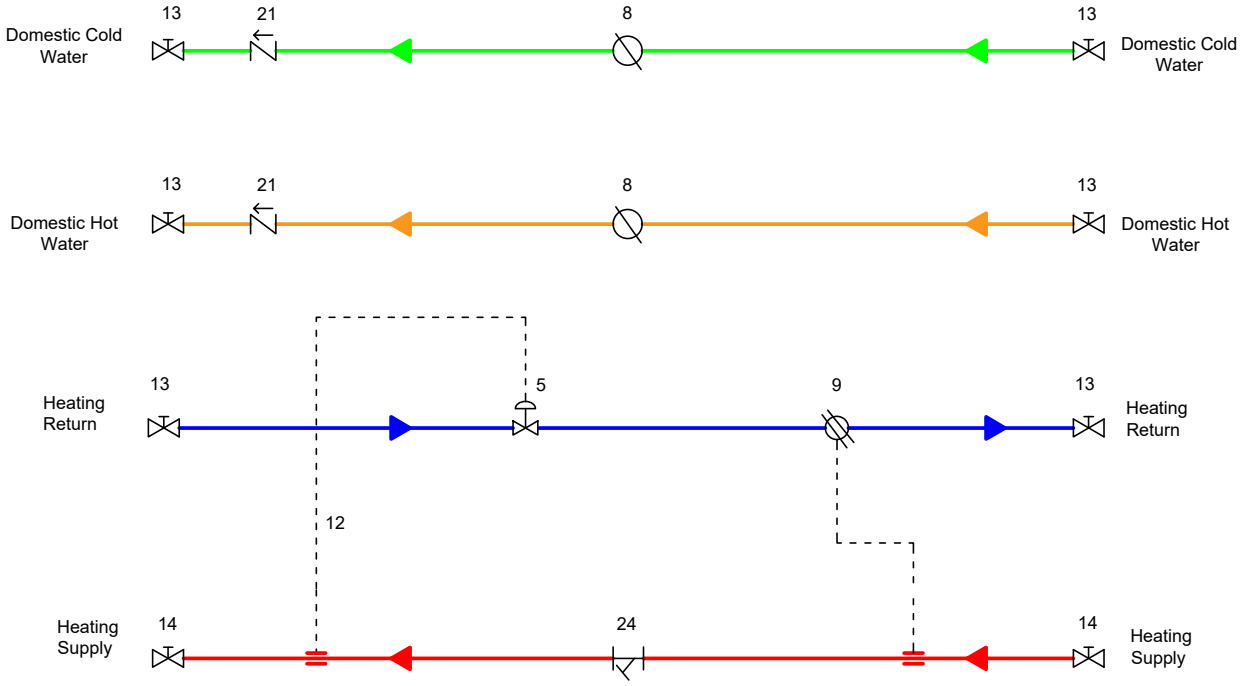
Flow chart

With AB-PM valve



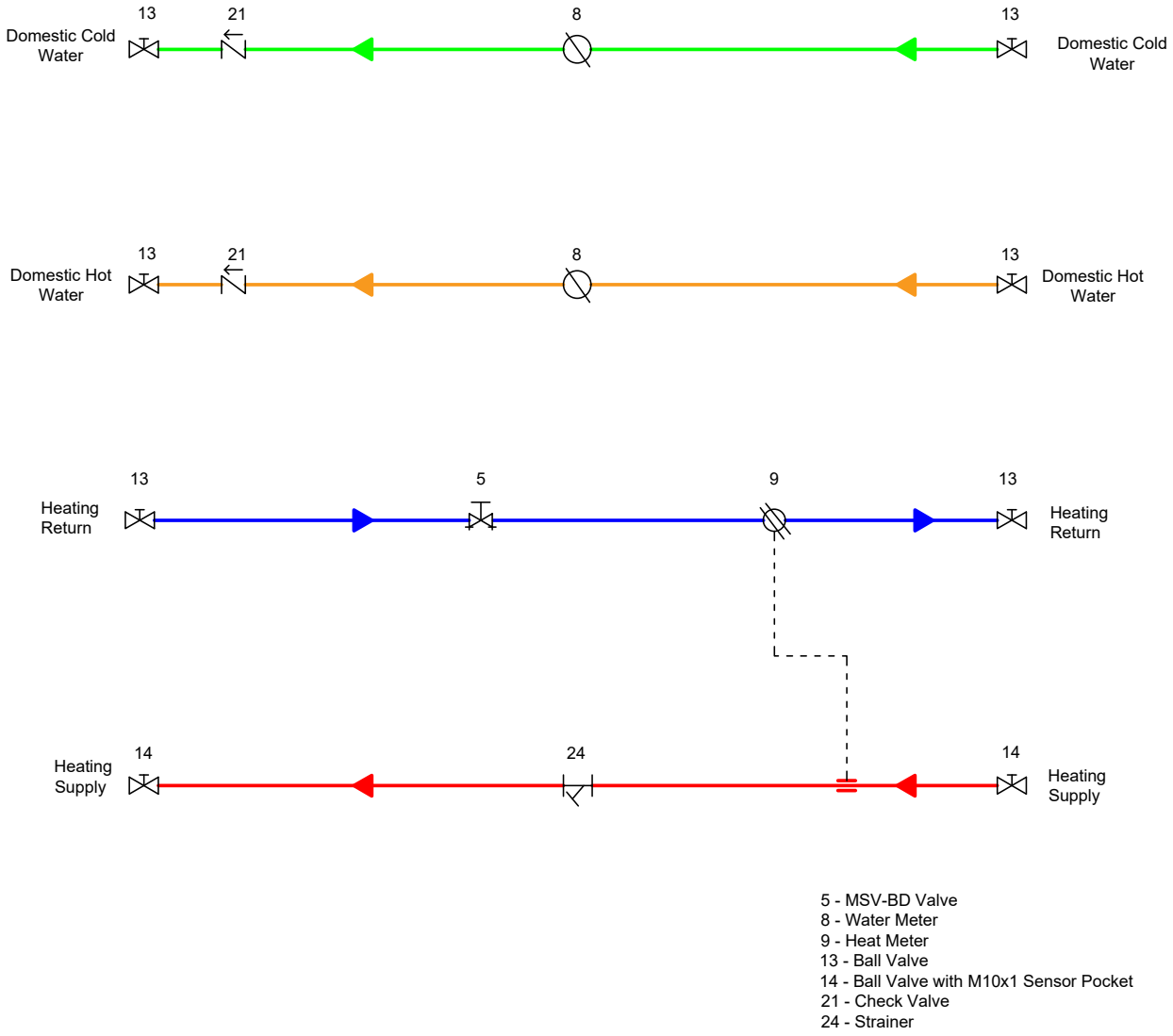
5 - AB-PM Valve
8 - Water Meter
9 - Heat Meter
12 - AB-PM Capillary Tube
13 - Ball Valve
14 - Ball Valve with M10x1 Sensor Pocket
21 - Check Valve
24 - Strainer

With ASV-PV valve



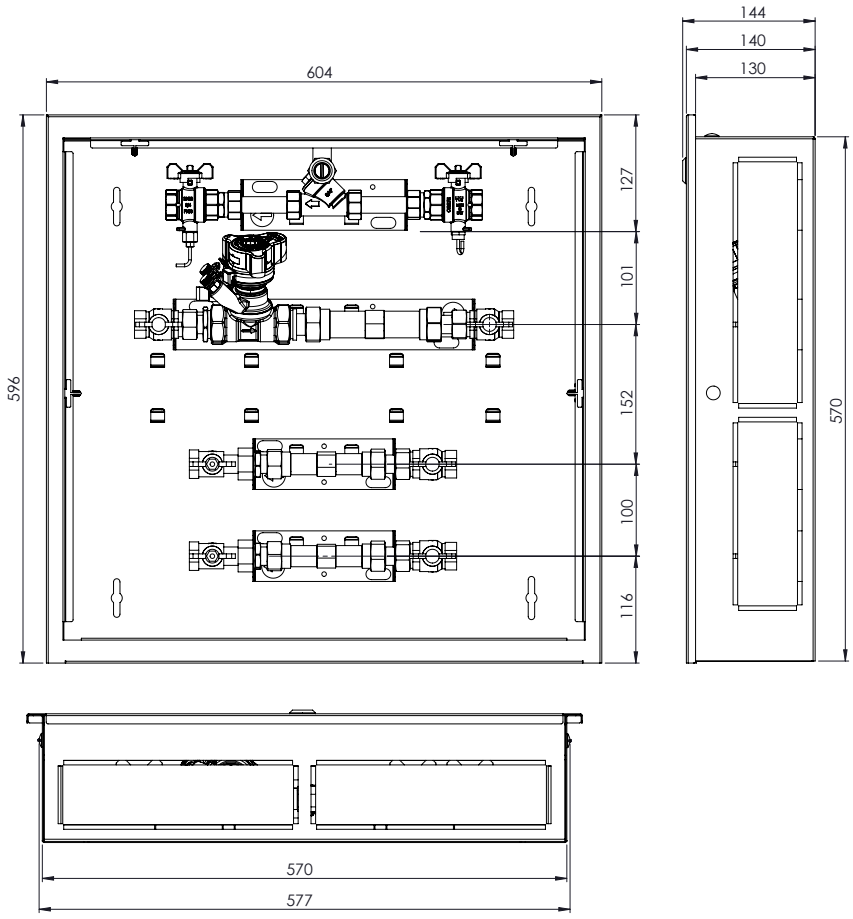
5 - ASV-PV Valve
8 - Water Meter
9 - Heat Meter
12 - ASV-PV Capillary Tube
13 - Ball Valve
14 - Ball Valve with M10x1 Sensor Pocket
21 - Check Valve
24 - Strainer

With MSV-BD valve



5 - MSV-BD Valve
8 - Water Meter
9 - Heat Meter
13 - Ball Valve
14 - Ball Valve with M10x1 Sensor Pocket
21 - Check Valve
24 - Strainer

Dimensions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596
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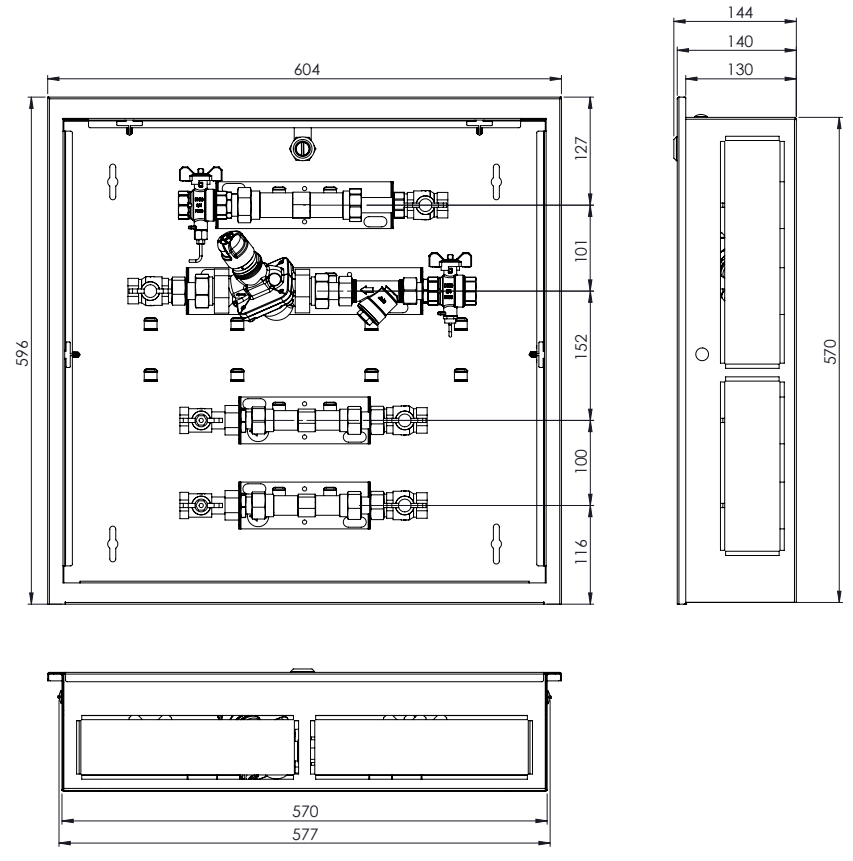
152
100
116
570
570
577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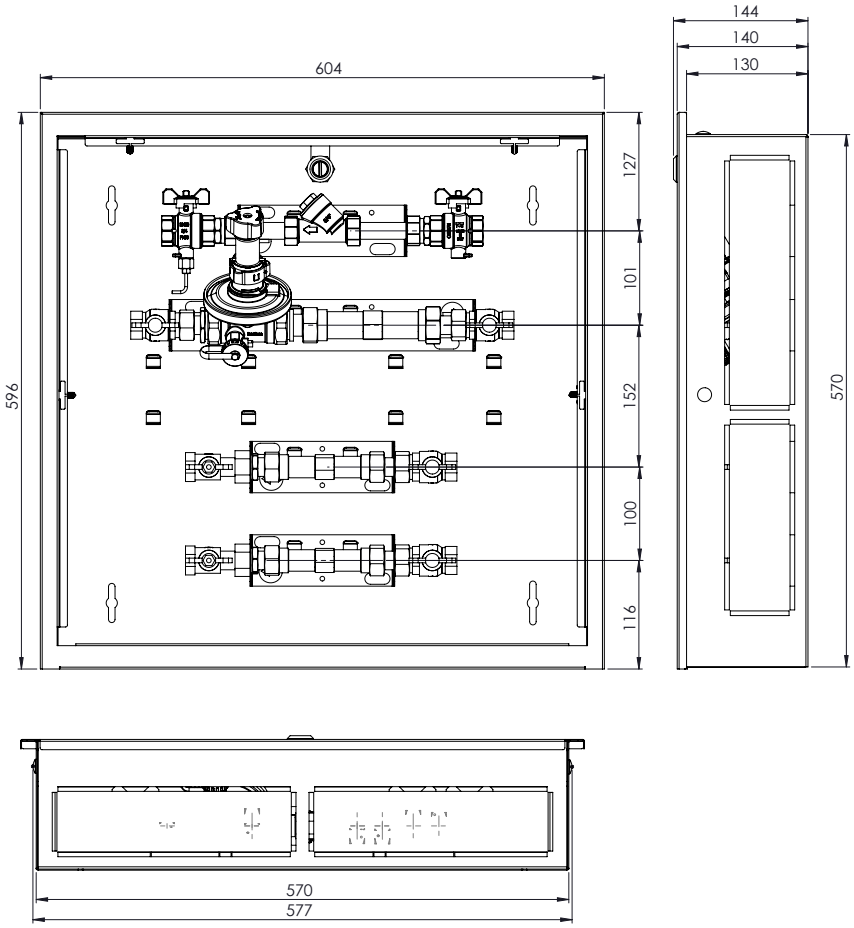

Tender text for Metering Unit - PM

The recess box painted white (RAL 9016) and
596 mm in height, 604 mm in width and 140 mm in depth.

Heating return line with removable spacer for
110 mm heat meter, shut-off ball valves and impulse tube.

Heating supply line with differential pressure controller, shut-off ball valves and strainer with a basket.

The differential pressure controller should have following characteristics:

- Valve should keep differential pressure across the branch by membrane driven controller.
- Valve should have shut-off function.
- Valve should have possibility to mount actuator.
- Valve should have variable setting. Setting value should allow to set a combination of needed Δp and max flow limitation.
- Setting should be lockable to prevent unauthorized change.
- Valve should have metal to metal sealing to ensure sufficient performance of differential pressure control at low flows.
- Shut-off service function should be possible to do by hand / without a tool.

DN15-20:

- Δp setting range: 5 – 15 kPa
- Nom. flow at 10 kPa: 300 l/h (DN15), 600 l/h (DN20)
- Minimum Δp across valve and loop 18 kPa to ensure proper control
- Max Δp at zero flow: 22 kPa
- Max Δp across the valve: 4 bar

DN25 HP:

- Δp setting range: 10 – 25 kPa
- Nom flow at 20 kPa: 1200 l/h (DN25)
- Minimum Δp across valve and loop 28 kPa to ensure proper control
- Max Δp at zero flow: 35 kPa
- Max Δp across the valve: 4 bar

Tender text for Metering Unit - PV

Recess box painted white (RAL 9016) and 596 mm in height, 604 mm in width and 140 mm in depth

Heating supply line with strainer with a basket and shut-off ball valves with impulse tubes.

Heating return line with spacer for 110 mm heat meter,
shut-off ball valves and a differential pressure controller.

The differential pressure controller should have following characteristics:

- Valve should keep stable differential pressure across the branch by membrane driven controller
- Valve should have variable Differential pressure setting.
- Minimum needed differential pressure over the valve should not be higher than 10 kPa, independently from Dp setting
- Valve should have metal to metal (valve cone and seat) sealing to ensure optimal performance of differential pressure control at low flows
- Differential pressure setting should be linear via visual scale and without tool, locking function should be integrated to prevent unauthorized change of setting
- The setting range should be adaptable via spring replacement. Spring should be exchangeable under pressure
- Valve capacity per valve size should cover flow range according to VDI 2073 Standards (with water velocity of up 0,8 m/s)
- Valve should have shut-off function separated from the setting mechanism. Shut-off service function should be possible to do by hand / without tool
- Drain function should be integrated in valve
- Valve should have integrated flushing service function. Flushing can be done with flushing accessory
- Valve should be delivered with thermal insulation caps, up to 120°C
- Pressure class: PN 16
- Temperature range: 0 … +120 °C
- Connection size: DN 15 – DN 32
- Connection type: Internal thread ISO 7/1
- Δp setting range: 5 – 25 kPa or 20 – 60 kPa
- Max differential pressure across valve: 2,5 bar

Data sheet **Metering Unit PM / PV / BD**

Tender text for Metering Unit - BD

Recess box painted white (RAL 9016) and 596 mm in height, 604 mm in width and 140 mm in depth

Heating supply line with strainer with a basket and shut-off ball valves with impulse tubes.

Heating return line with spacer for 110 mm heat meter,
shut-off ball valves and a manual balancing valve.

The balancing valve should have following characteristics:

- Presetting
- Self-sealing test plugs
- Shut-off function
- Draining and filling on both sides of the valve
- Removable handle
- Allen key for ball valve
- Parallel test plugs
- 360° rotating measuring station (drain tap and test plugs)
- Valve size DN 15 – DN 25
- Pressure class PN20
- Static test pressure 30 bar
- Working temperature –20°C to 120°C
- Working area 10 – 100% of the kvs-value

Danfoss A/S
Climate Solutions • danfoss.com • +45 7488 2222