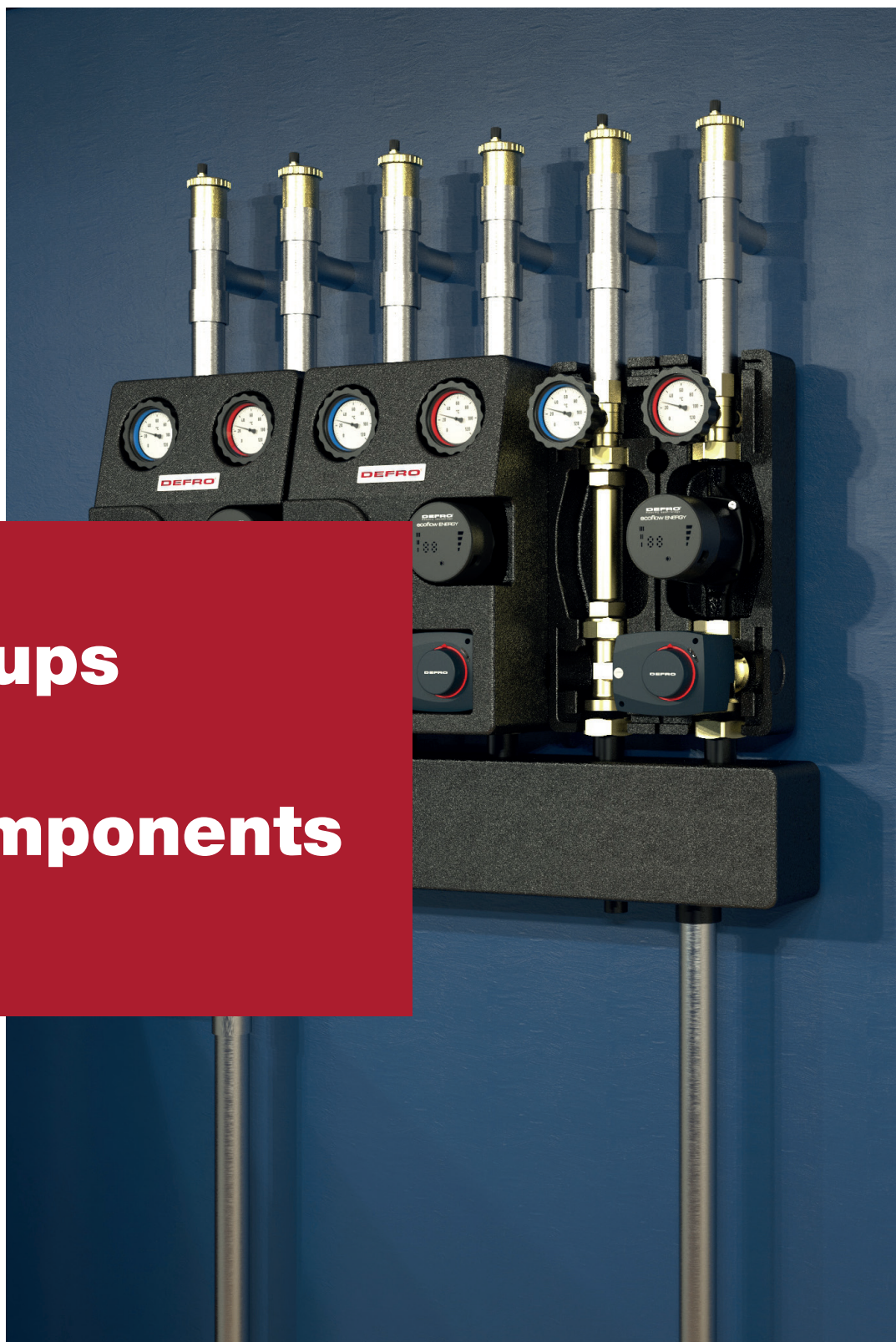
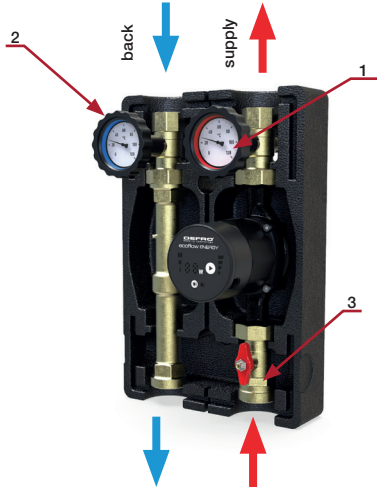


**Pump groups**  
**Manifolds**  
**Piping components**



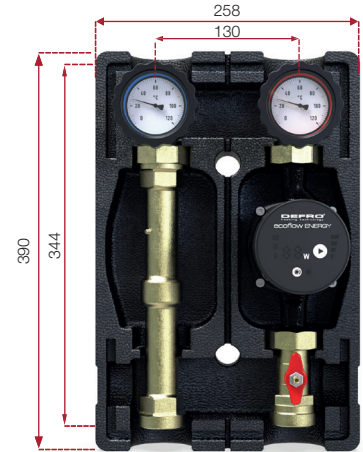
# PUMP GROUP DGP-25/180

## Design



- 1. Ball valve with a thermometer on the supply of the system
- 2. Ball valve with non-return valve and thermometer on return from the system
- 3. Ball valve

## Dimensions in mm



## Technical data

Parameter	DGP-25/180 (discount group F)
Nominal diameter	DN 25
Maximum operating pressure	10 bar
Maximum operating temperature	110°C
Insulation material	EPP
Connectors	system side - GW 1" boiler side - GZ 1½"
Length of pump installation	180 mm
Maximum heating power/flow	50 kW (ΔT=20K) / 2150 l
KVS value of the valve	8,0

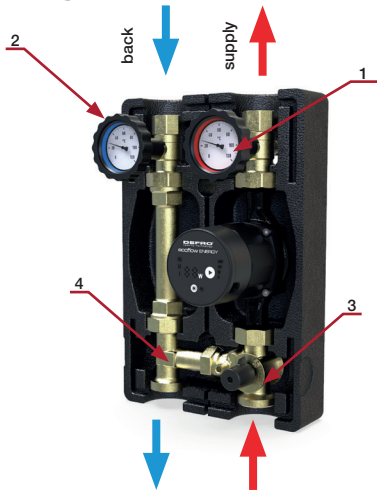
## Non-return valve - 20 mbar



Ball valve with non-return valve (2) prevents natural circulation of the liquid as a result of temperature differences (gravitational circulation). The non-return valve can be locked in the open position by turning the knob by 45°.

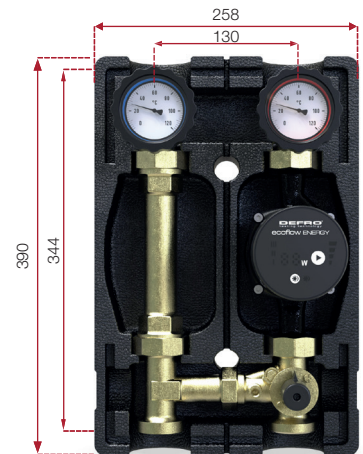
# PUMP GROUP WITH 3-D MIXING VALVE DGP-Z-25/180

## Design



- 1. Ball valve with a thermometer on the supply of the system
- 2. Ball valve with non-return valve and thermometer on return from the system
- 3. Three-way valve
- 4. Recirculation pipe

## Dimensions in mm



## Technical data

Parameter	DGP-Z-25/180 (discount group F)
Nominal diameter	DN 25
Maximum operating pressure	10 bar
Maximum operating temperature	110°C
Insulation material	EPP
Connectors	system side - GW 1" boiler side - GZ 1½"
Length of pump installation	180 mm
Maximum heating power/flow	35 kW (ΔT=20K) / 1500 l
KVS value of the valve	6,0

## Temperature sensor

An access chamber intended for temperature sensor is located at the rear side of the ball valve with a thermometer (1).



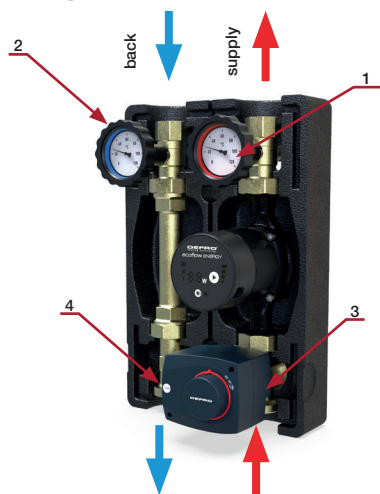
## Non-return valve - 20 mbar

Ball valve with non-return valve (2) prevents natural circulation of the liquid as a result of temperature differences (gravitational circulation). The non-return valve can be locked in the open position by turning the knob by 45°.



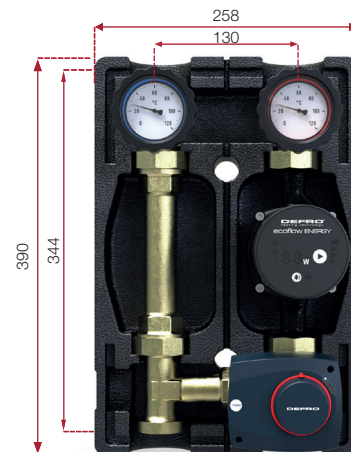
# PUMP GROUP WITH 3-D MIXING VALVE AND ACTUATOR DGP-ZS-25/180

## Design



- 1. Ball valve with a thermometer on the supply of the system
- 2. Ball valve with non-return valve and thermometer on return from the system
- 3. Three-way valve with actuator
- 4. Recirculation pipe

## Dimensions in mm



## Technical data

Parameter	DGP-ZS-25/180 (discount group F)
Nominal diameter	DN 25
Maximum operating pressure	10 bar
Maximum operating temperature	110°C
Insulation material	EPP
Connectors	system side - GW 1" boiler side - GZ 1½"
Length of pump installation	180 mm
Maximum heating power/flow	35 kW (ΔT=20K) / 1500 l
KVS value of the valve	6,0

## Temperature sensor

An access chamber intended for temperature sensor is located at the rear side of the ball valve with a thermometer (1).

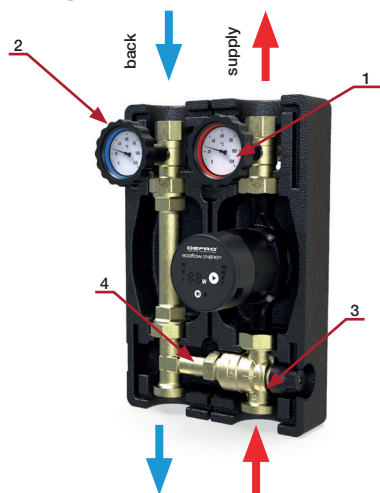


## Non-return valve - 20 mbar

Ball valve with non-return valve (2) prevents natural circulation of the liquid as a result of temperature differences (gravitational circulation). The non-return valve can be locked in the open position by turning the knob by 45°.

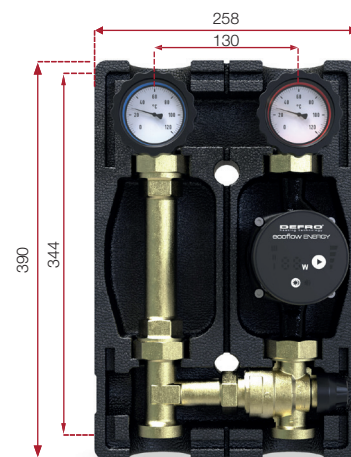
# PUMP GROUP WITH 3-D THERMOSTATIC MIXING VALVE DGP-T-25/180

## Design



- 1. Ball valve with a thermometer on the supply of the system
- 2. Ball valve with non-return valve and thermometer on return from the system
- 3. Thermostatic valve
- 4. Recirculation pipe

## Dimensions in mm

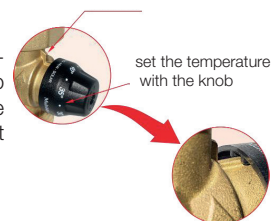


## Technical data

Parameter	DGP-T-25/180 (discount group F)
Nominal diameter	DN 25
Maximum operating pressure	10 bar
Maximum operating temperature	110°C
Insulation material	EPP
Connectors	system side - GW 1" boiler side - GZ 1½"
Length of pump installation	180 mm
Maximum heating power/flow	35 kW (ΔT=20K) / 1500 l
KVS value of the valve	3,3

## Temperature sensor

To set the opening temperature of the thermostatic valve it is required to turn the knob with temperature scale ensuring that the required value of the temperature is present at the indicator on the body of the valve.



## Non-return valve - 20 mbar

Ball valve with non-return valve (2) prevents natural circulation of the liquid as a result of temperature differences (gravitational circulation). The non-return valve can be locked in the open position by turning the knob by 45°.



## Temperature sensor

An access chamber intended for temperature sensor is located at the rear side of the ball valve with a thermometer (1).



# MANIFOLD FOR PUMP GROUPS: DR 2S / DR 3 S

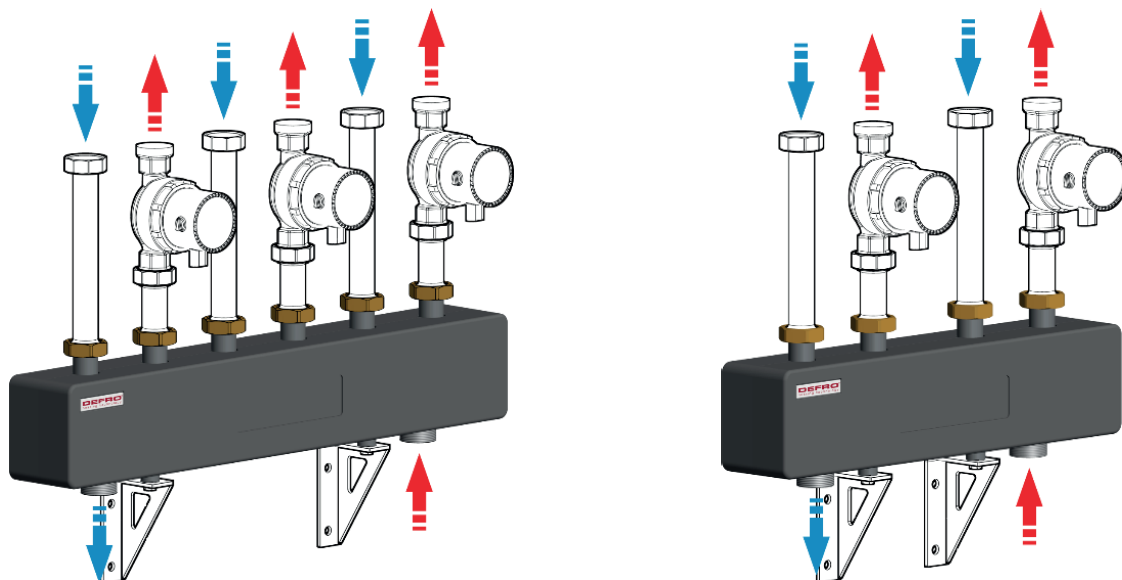
## COUPLING-MANIFOLD FOR PUMP GROUPS: DSR 2S / DSR 3S

The manifold is used to divide the heating medium between two or three DEFRO pump groups. Connectors of the manifold on the boiler side have external thread G 1½". Connectors from the system side (pump groups) have nuts with flat sealing G 1½". DSR manifold is additionally equipped with integrated hydraulic coupling intended for hydraulic balancing of the system. DR and DSR manifolds are equipped with wall brackets and polypropylene insulation, which is used also as a transport packaging. Furthermore, the manifolds are equipped with connectors with thread RP ½" intended for assembly of e.g. drain valve or immersion sleeve for the temperature sensor (they are not part of the manifold's equipment). All manifolds are subject to factory leakage tests.

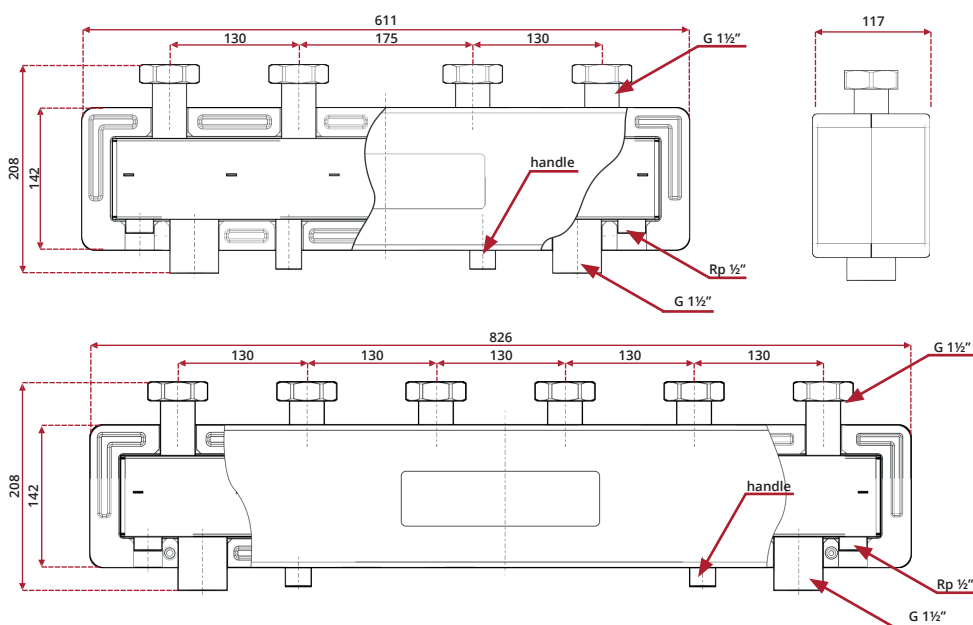
Parameter	DR 2S, DSR 2S, DR 3S, DSR 3S
Maximum operating pressure	10 bar
Maximum operating temperature	110°C
Insulation material	EPP
Connectors	system side - GW 1½" boiler side - GZ 1½"
Flow	3,44 m³/h
Maximum heating power/flow	80 kW (ΔT=20K)

The manufacturer provides a 36-month warranty from date of purchase for the system made in compliance with the assembly and operation manual.

**DR - manifold, DSR - coupling-manifold**  
**2S - 2 sections, 3S - 3 sections**



Dimensions in mm



# ECOFLOW ENERGY / ENERGY PLUS PUMP



**ECOFLOW ENERGY**



**ECOFLOW ENERGY PLUS**

## ADVANTAGES OF THE ECOFLOW ENERGY PUMPS

- the highest efficiency due to the EC permanent magnet drive motors
- min. power from 3W
- menu navigation by the One Touch function
- adjustment modes: constant rotational speed, variable pressure difference
- blocking preventing function
- integrated motor protection
- high safety during start-up

## ADVANTAGES OF THE ECOFLOW ENERGY PLUS PUMPS

- the highest efficiency due to the EC permanent magnet drive motors
- min. power from 3W
- menu navigation by the One Touch function
- adjustment modes: constant rotational speed, variable pressure difference, constant pressure control
- blocking preventing function
- “back compatible” pump connector
- night reduction
- integrated motor protection
- adjustable range of pump power (4, 5 or 6 m)
- high safety during start-up
- the pump meets the BAFA requirements

## QUALITY OF EXECUTION

ECOFLOW ENERGY and ECOFLOW ENERGY PLUS pump is made from a cast, coated by cataphoresis process, and chromium-nickel steel. Use of the above-mentioned materials ensures unique strength. ECOFLOW ENERGY pump in standard equipment is delivered with EPP insulation, gaskets and plug.

## ENERGY SAVING

Standard pumps consumed from 10 to 20% of electrical energy in average households. Use of the efficient ECOFLOW ENERGY and ECOFLOW ENERGY PLUS pumps allows reducing energy consumption to approx. 80% in comparison to the conventional circulating pumps.

## MANY SETTINGS

Using One Touch function you can select seven power curves: two curves, operating on the proportional pressure basis, two curves for constant pressure control, three curves with constant velocity characteristics. Night mode allows further reduction of energy consumption. LED display shows actual power consumption, selected characteristic curve and reduction during the night. Moreover, the ECOFLOW ENERGY PLUS pump can change the delivery head from 4 to 6 metres.

## INTENDED USE

Energy-saving ECOFLOW ENERGY and ECOFLOW ENERGY PLUS pumps are intended to support the flow of hot water flow in the central heating systems. They are also adapted to use with a solar system.

Technical data (discount group F)					
Pump name	ECOFLOW ENERGY		ECOFLOW ENERGY PLUS		
Model	4	6	4	5	6
Maximum flow	2600 l/h	3200 l/h	2800 l/h	3200 l/h	3600 l/h
Input power	3-23 W	3-38 W	3-23 W	3-35 W	3-41 W
Delivery head	4 m	6 m	4 m	5 m	6 m
Maximum operating pressure	10 bar (Pn 10)				
Power supply	230 V, 50 Hz				
Electrical connection	plug				
IP rating of the housing	IP 42				
Adjustment	3 constant characteristics, -2 proportional characteristics, -2 constant pressure characteristics, -night reduction, -anti-lock function,		-3 constant characteristics, -2 proportional characteristics, -2 constant pressure characteristics, -night reduction, anti-lock function, -change of lifting range, - SMART ADAPT function		
Motor protection	external engine protection is not required				
Medium temperature	+5°C up to 110°C				
Ambient temperature	+0°C up to 40°C				
EEl Energy Efficiency Index	<0,20				
Standard connectors size	G 1½" - Rp1"				
Assembly length	180 mm				
Protection class	I				
Allowable pumped media	heating water acc. to VDI 2035, water-glycol mixture				
Weight	2,5 kg				
Noise level	< 40dB				
Thermal rating	F				
Equipment of the set	<ul style="list-style-type: none"> <li>• original assembly and operation manual</li> <li>• energy saving pump</li> <li>• 2 flat sealings</li> <li>• pump plug</li> <li>• insulation</li> </ul>				

## ECOFLOW CIRC PUMP

Ecoflow CIRC pump is the highly-efficient pump for hot water, with the reliable design of shaft-less spherical motor using ECM technology and permanent magnet. Such a design ensures the highest efficiency and low noise level with reasonable purchase costs.

Ecoflow CIRC pump is equipped with automatic venting mode, thermal shield and optional setting of clock and temperature.

The pump may be used both in single-family houses and multifamily buildings. It meets the regulations on drinking water and ensures efficient protection against Legionella by drinking water circulation. Hot water circulation ensures that hot water is available immediately after turning on the tap.

High-efficient circulation pump provides up to 90% savings of electrical energy costs in comparison to a standard 25 W pump.

A non-return valve is included in the set of the DEFRO ECOFLOW CIRC pump.

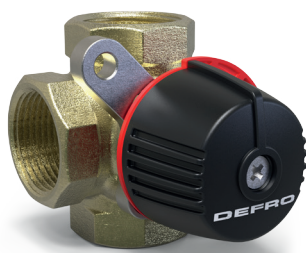
### ADVANTAGES OF THE ECOFLOW CIRC PUMPS:

- high efficiency
- high durability
- resistance to limescale deposits
- robust execution
- quiet operation
- compact dimensions
- easy installation

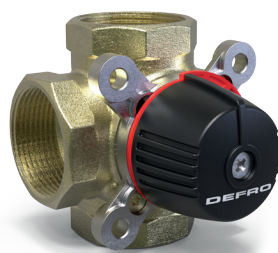


Technical data (discount group F)	
Type	DEFRO ECOFLOW CIRC 15-1/65
Medium temperature	up to +110°C
Efficiency	0,9 m³
Delivery head	up to 1,1 m
Maximum operating pressure	1,0 Mpa
Power supply	230-240 V, 50/60 Hz
Electrical connection	plug
IP rating of the housing	IP 44
Protection class	155 (F)
Power consumption	from 2 up to 8 W
Assembly length	65 mm
Connectors size	½"
DHW recommended temperature	from 2 °C up to 65°C
Protection class	I

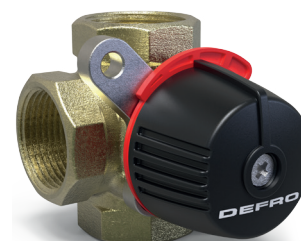
## PIPING COMPONENTS



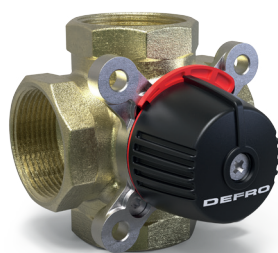
THREE-WAY VALVE DN25	
Connectors	Rp 1"
Kvs value	10 m³ / h
Max temp.	110°C
PN	10



THREE-WAY VALVE DN32	
Connectors	Rp 1 1/4"
Kvs value	16 m³ / h
Max temp.	110°C
PN	10



FOUR-WAY VALVE DN25	
Connectors	Rp 1"
Kvs value	10 m³ / h
Max temp.	110°C
PN	10



FOUR-WAY VALVE DN 32	
Connectors	Rp 1 1/4"
Kvs value	16 m³ / h
Max temp.	110°C
PN	10



VALVE ACTUATOR	
Adjustment	3-point
Torque	6 Nm
Rotation time	120 s
Power consumption	2,5 VA
Supply voltage	230 V

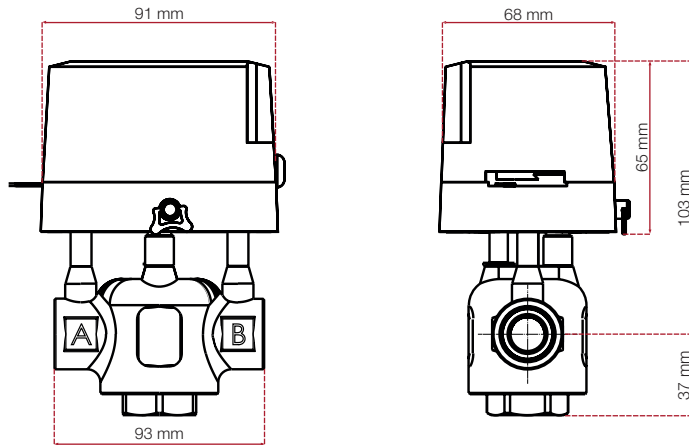
# ZRS 234 SWITCHING VALVE

ZRS234 is a three-way zonal valve with electric drive and return spring intended for heating and cooling systems. The actuator is controlled by a 2-point signal with a return spring function and is recommended for distribution; it is available for 230 V AC, 50/60 Hz power supply.

The product is intended for use only in the closed systems.

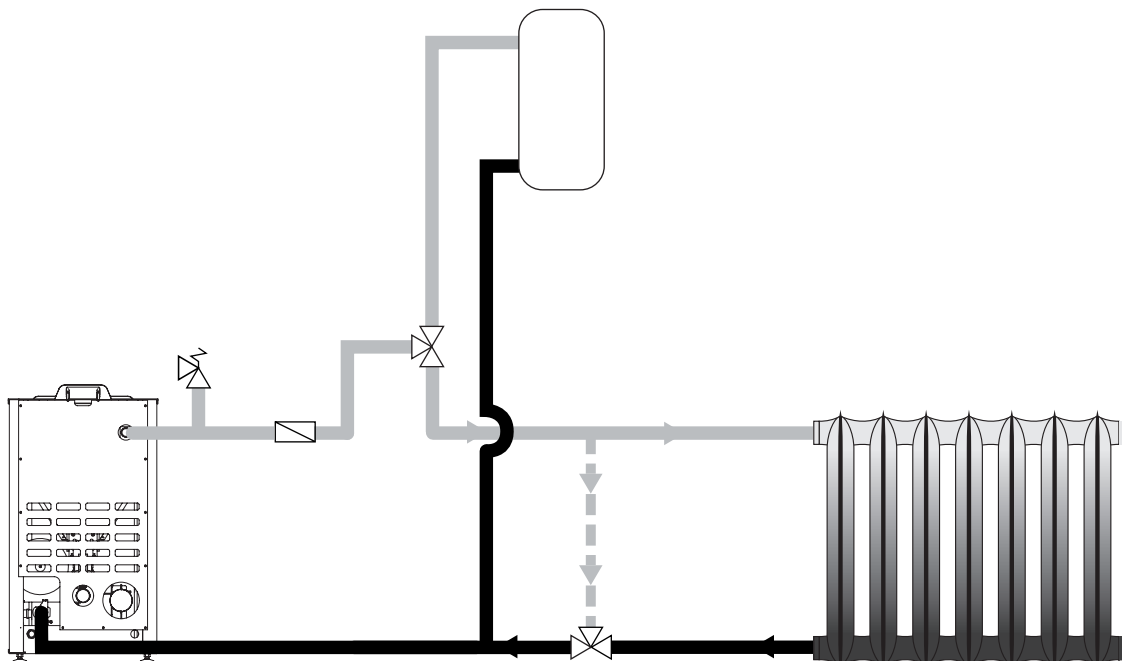
### ZRS 234 SWITCHING VALVE KEY ADVANTAGES:

- closing pressure to 150 kPa
- manual operation possible
- short rotation time
- flow direction without supply is from AB to B



Technical data (discount group F)	
Model	ZRS 234
Diameter	DN 25
Maximum static pressure	PN 16
Maximum liquid temperature	+ 94 °C
Minimum liquid temperature	+ 2 °C
Operating pressure	16 bar
Degree of protection of the enclosure	IP 44

### Hook-up diagram of ZRS 234 valve



# THERMOSTATIC VALVE DEFRO 11-200

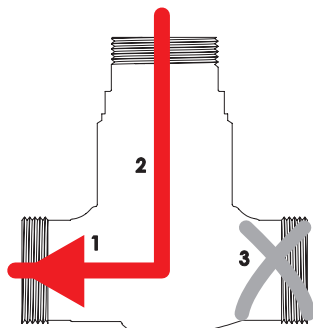
## BENEFITS RESULTING FROM USE OF THE DEFRO 11-200 THERMOSTATIC VALVE:

- quicker boiler burn-in;
- the uniform volumetric flow of heating medium;
- minimization of differences in temperature between supply and return;
- lower fuel consumption;
- design and control characteristics of the DEFRO thermostatic valve allows installing it in the system equipped with accumulator tank. Use of the DEFRO 11-200 valve in such system allows obtaining optimum thermal stratification of the buffer and increasing its heat storage capacity;
- longer boiler lifetime.

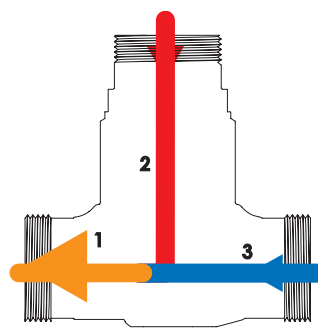


Technical data (discount group F)	
Model	DEFRO 11-200
Connectors	R32 / 1 1/4" GZ
Kvs value	12
Pressure class	PN 6
Minimum temperature	+ 5 °C
Maximum temperature	+ 100 °C
Opening temperature	53 °C

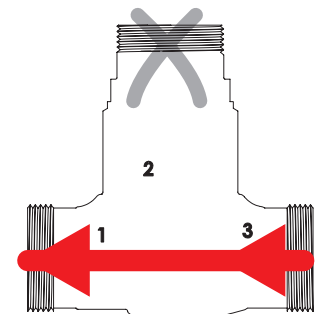
Additional equipment
EPP insulation



START-UP PHASE



OPERATING PHASE



END PHASE

# DBV 2 COOLING VALVE

The DBV 2 cooling valve is used to decrease the temperature of boiler fired with solid fuel, which is not equipped with cooling heat exchanger. The valve has two levels (upper and bottom). The bottom level is intended for discharging of hot water from the boiler and discharging it to the drainage system and the task of the upper level is the equalization of pressure in the system using cold water from water main system and cooling of the boiler's heat exchanger by the introduction of cold water into it. Both levels of the cooling valve are opened at the same time when the system temperature reaches 97°C.

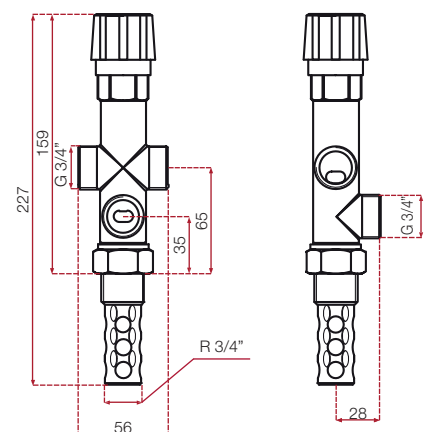
The DBV 2 cooling valve should be placed close to the boiler, in a location where the temperature reaches the highest value. Usually, it is a location in the upper part of the boiler near the hot water outlet.

Thermostatic element located directly in water immediately reacts to change of the temperature. The knob located at the valve allows manual starting (similarly as in the safety valves). The valve can be installed vertically and horizontally. During vertical assembly, it is necessary to pay attention to ensure that the hot water outlet is located downwards. It is forbidden to install the valve with head directed downwards.

Opening and closing of the valve are controlled by independent thermostatic elements - if one element fails, the valve will remove a sufficient amount of heat.



## Dimensions in mm



Technical data (discount group F)	
Model	DBV 2 valve
Opening temperature	97°C
Maximum operating temperature	110°C
Maximum pressure (boiler)	4 bar
Maximum pressure (water)	6 bar
KVS at temp. 110°C - opening of two units	2,0 m³ / h
KVS at temp. 110°C - opening of one unit	1,3 m³ / h



# DEFRO THERMOREGULATOR

Reliable equipment used in the central heating systems with buffer tanks. DEFRO thermoregulator has an impact on optimum charging of the buffer as energy storage and protects return of the boiler against the too low temperature of heating medium returning from the system and protects the boiler against low-temperature corrosion.

DEFRO thermoregulator extends the lifetime of your boiler and contributes to the reduction of the amount of combusted fuel. DEFRO thermoregulator allows protecting boiler return, optimum use of the boiler efficiency, hot water reception, limitation of the destructive action of the low-temperature corrosion and eliminates condensation phenomena.

It should be noted that layers of water in accumulation tank are not suddenly mixed what causes that heat is accumulated more quickly

## BENEFITS RESULTING FROM USE OF THE DEFRO THERMOREGULATOR:

- quicker boiler burn-in.
- DEFRO thermoregulator connected to the heating system improves the lifetime of the boiler increasing the temperature on return from the system and considerably reduces low-temperature corrosion of the boiler.
- to keep the heating system without a buffer tank should be started several times per day, which increases fuel consumption. Installation of the buffer tank in the heating system with DEFRO thermoregulator allows reducing the costs even by 50%.
- positive impact on the reduction of dust emission by maintaining high temperature on



▲ THERMOREGULATOR DEFRO 57



▲ THERMOREGULATOR DEFRO 53



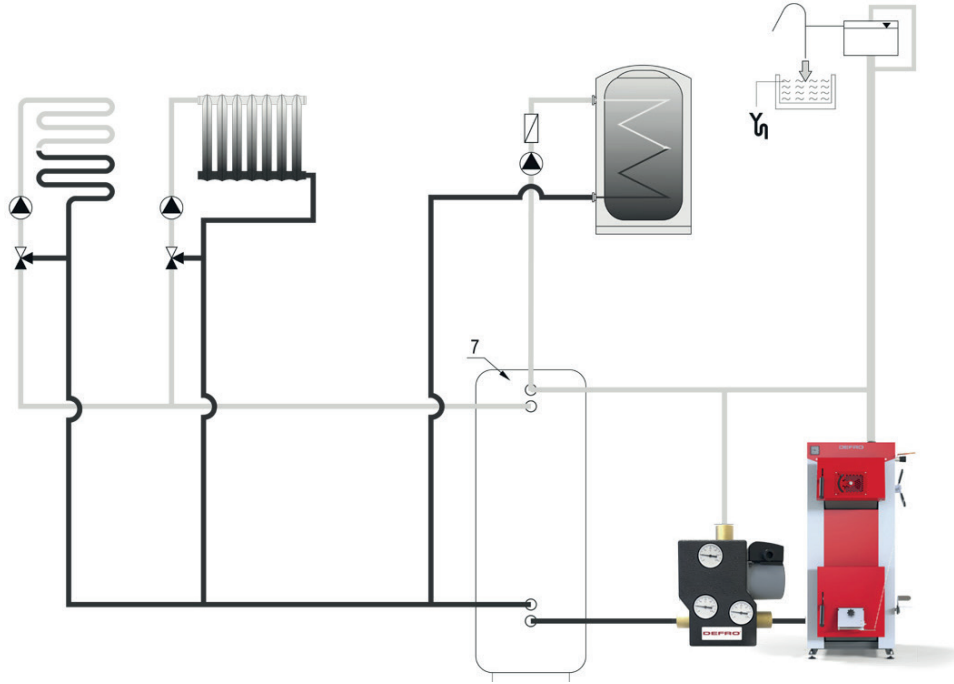
▲ THERMOREGULATOR DEFRO 53 BASIC

Technical data (discount group F)				
model	pump	connectors	thermostat opening temperature	maximum boiler power
DEFRO 57	LM6A Erp 2015	1", R25	57°C	45 kW
DEFRO 53		1 1/4", R32	53°C	60 kW
DEFRO 53 BASIC		1", R25	53°C	45 kW

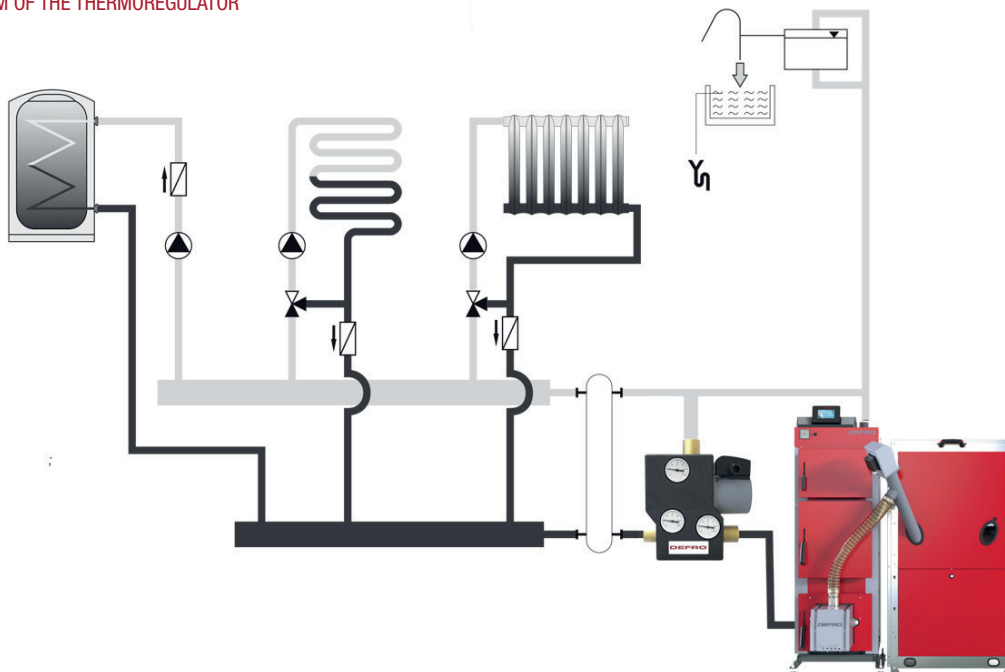
## HOOK-UP DIAGRAM BASED ON THE DEFRO 57 THERMOREGULATOR



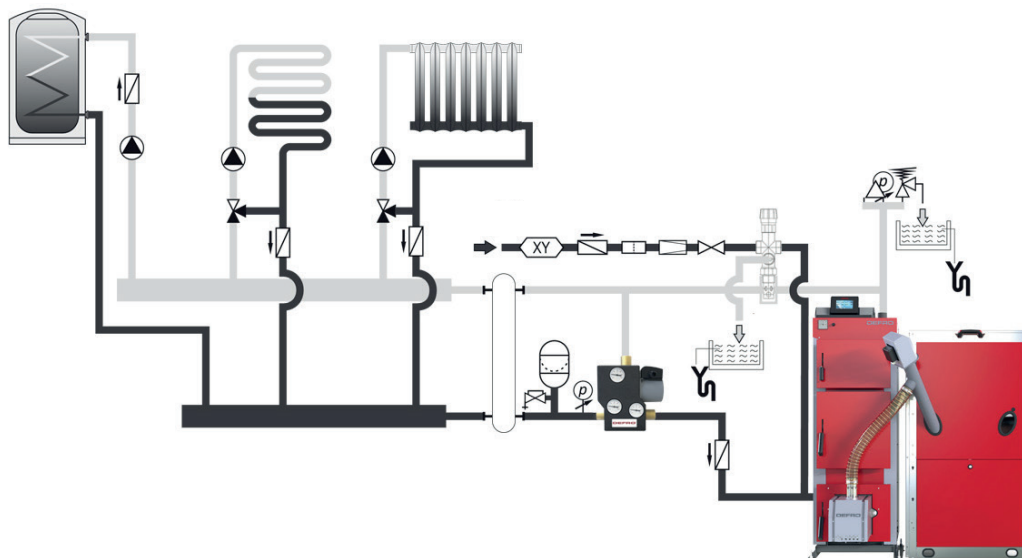
CONNECTION DIAGRAM OF THE THERMOREGULATOR  
FOR OPEN SYSTEM



CONNECTION DIAGRAM OF THE THERMOREGULATOR  
FOR OPEN SYSTEM



CONNECTION DIAGRAM OF THE THERMOREGULATOR  
FOR CLOSED SYSTEM







**DEFRO**<sup>®</sup>  
heating technology

DEFRO Spółka z ograniczoną odpowiedzialnością Spółka komandytowa  
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