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DU144

Automatic Bypass Valve

For Hydronic Heating Systems

APPLICATION

The automatic bypass and differential pressure valve controls water flow in the heating circuit according to the water pressure across it and is used to maintain a minimum flow rate through the boiler and to limit circulation pressure when other water paths are closed. A bypass circuit must be installed if the Boiler manufacturer requires one, or specifies that a minimum flow rate has to be maintained whilst the Boiler is firing. The use of automatic bypass valves becomes particularly important when heating systems include large numbers of thermostatic radiator valves (TRVs) - whilst the TRVs are open the automatic bypass valve remains closed, however, as the TRVs start to close, the automatic bypass valve starts to open maintaining the required water flow through the boiler.

Using an automatic bypass valve is also likely to reduce noise in systems caused by excess water velocities. It also helps to reduce the corrosion caused by flue gas condensation as the boiler return temperature is raised.

SPECIAL FEATURES

- Maintain minimum flow through a boiler
- Minimises flow noise
- Hinders boiler corrosion
- Differential pressure finely adjustable using indicator scale
- Presetting covered by a protection cap
- No external controls required

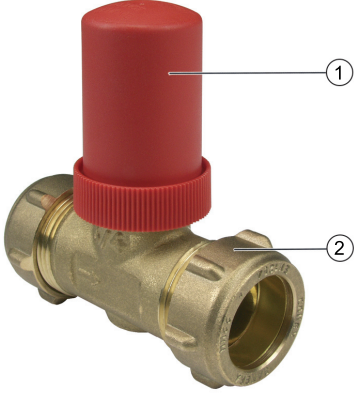


TECHNICAL DATA

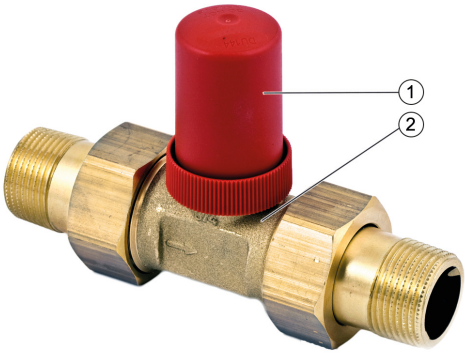
Media	
Medium:	Water or water-glycol mixture, quality to VDI 2035
pH-value:	8 - 9.5
Operating temperatures	
Max. operating temperature medium:	2 - 110 °C (36 - 230 °F)
Pressure values	
Max. operating pressure:	10 bar (145 psi)
Differential pressure presetting range:	0.1 - 0.6 bar (1.45 - 8.7 psi)
Specifications	
k_{vs} (c_v)-values:	2.3 (2.7)
Factory setting:	0.2 bar (2.9 psi)

CONSTRUCTION

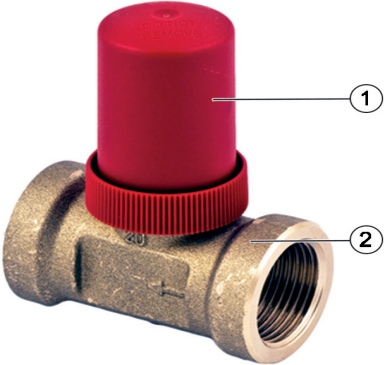
DU144A1001

Overview	Components	Materials
	1 Protection cap	Red plastic
	2 Housing with fittings	Brass
Not depicted components:		
	Handwheel to preset differential pressure	Brass
	Bonnet with differential pressure setpoint marking	Brass
	Spindle and spring	Stainless steel
	Seals	NBR, EPDM
	Valve Plug	High-quality synthetic material

DU144A1002

Overview	Components	Materials
	1 Protection cap	Red plastic
	2 Housing with fittings	Brass
Not depicted components:		
	Handwheel to preset differential pressure	Brass
	Bonnet with differential pressure setpoint marking	Brass
	Spindle and spring	Stainless steel
	Seals	NBR, EPDM
	Valve Plug	High-quality synthetic material

DU144A1003

Overview	Components	Materials
	1 Protection cap	Red plastic
	2 Housing with internal threads	Brass
Not depicted components:		
	Handwheel to preset differential pressure	Brass
	Bonnet with differential pressure setpoint marking	Brass
	Spindle and spring	Stainless steel
	Seals	NBR, EPDM
	Valve Plug	High-quality synthetic material

METHOD OF OPERATION

The automatic bypass and differential pressure valve is installed between the supply and return mains pipeline. The differential pressure is set according to the minimum flow required for the boiler and the available pump head. When the differential pressure is reached, for example because of closing TRVs, the valve starts to open. As the differential pressure increases across the valve the valve is further opened and the flow increased. When the differential pressure decreases, for example because TRVs are opening again, the valve closes and the flow is redirected from the bypass to the heating loop.

TRANSPORTATION AND STORAGE

Keep parts in their original packaging and unpack them shortly before use.

The following parameters apply during transportation and storage:

Parameter	Value
Environment:	clean, dry and dust free
Min. ambient temperature:	0 °C
Max. ambient temperature:	40 °C
Max. ambient relative humidity:	75 % *

*non condensing

INSTALLATION GUIDELINES

Setup requirements

- Commission and balance the Heating System – take note of the selected pump speed.
- Using the Boiler manufacturer’s instructions, find the minimum flow requirement for the Boiler.
- Using the Pump manufacturer’s Pump curves determine the available Pump head when operating at the required minimum flow and the selected Pump speed.
- Using the DU144 Setting chart, the calculated Pump Head and the minimum Boiler Flow to find the optimum setting for the DU144.

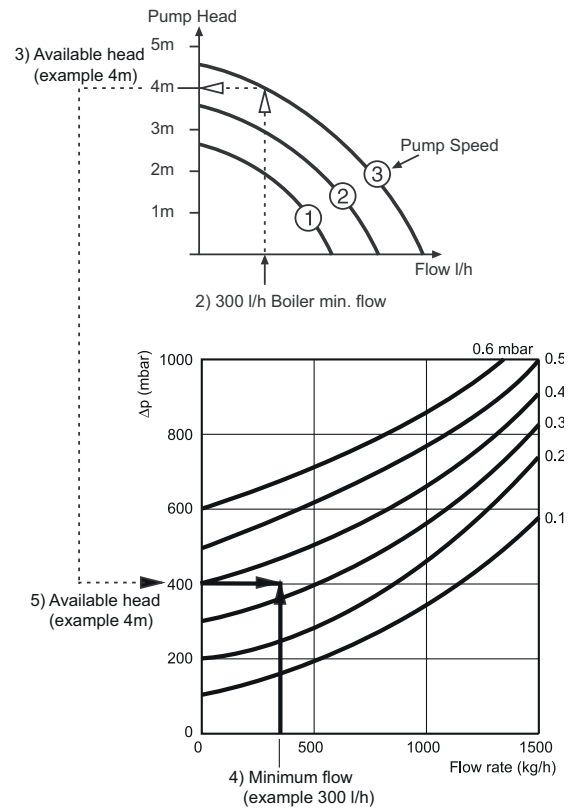
Note: To set the DU144, remove the protective cap and turn the setting handle until the bottom of the handle crosses the corresponding line on the DU144 stem.

Note: The cap is internally fixed with sealing wax during assembly. Turn firmly to break the seal.

Should persistent water velocity noise occur in the Heating System, gradually turn the DU144 to a lower setting until the noise is eliminated.

Example:

Minimum flow 300 l/h - Pump speed 3.
Pump chart indicates 4 m head (Use Pump Manufactures chart).



Using DU144 Setting Chart:

4m Head / Minimum Flow 300 l/h
Result = Set DU144 to setting 0.35

Fig. 1 Example: Minimum flow 300 l/h - Pump speed 3. Pump chart indicates 4 m head (Use Pump Manufactures chart).

Using DU144 Setting Chart:

4m Head / Minimum Flow 300 l/h Result = Set DU144 to setting 0.35

Installation Example

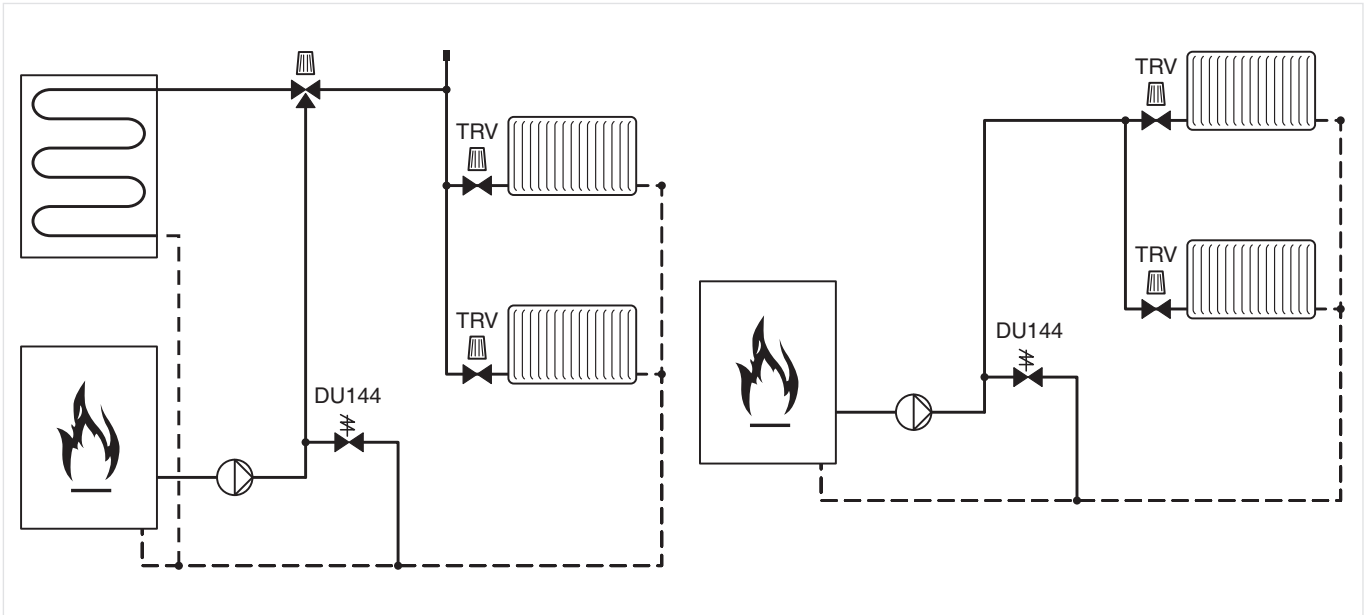


Fig. 2 DU144 in system with stored hot water (left).

Fig. 3 DU144 in system with combi boiler (right).

TECHNICAL CHARACTERISTICS

Flow Chart

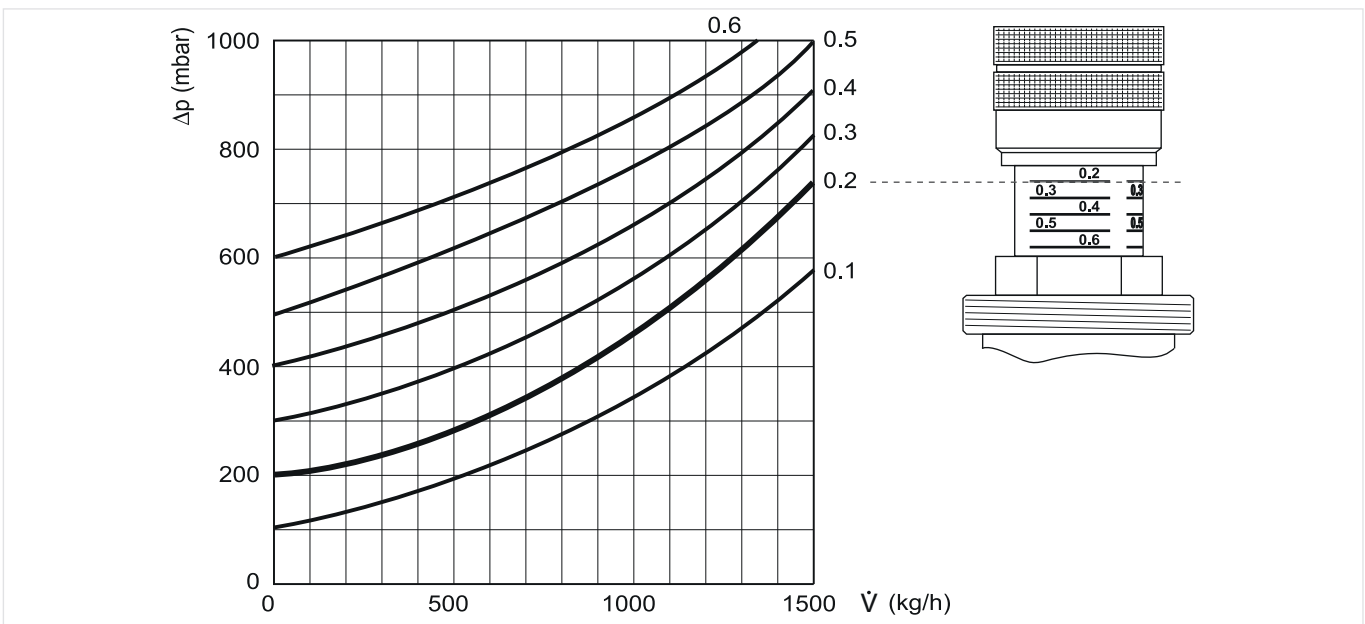
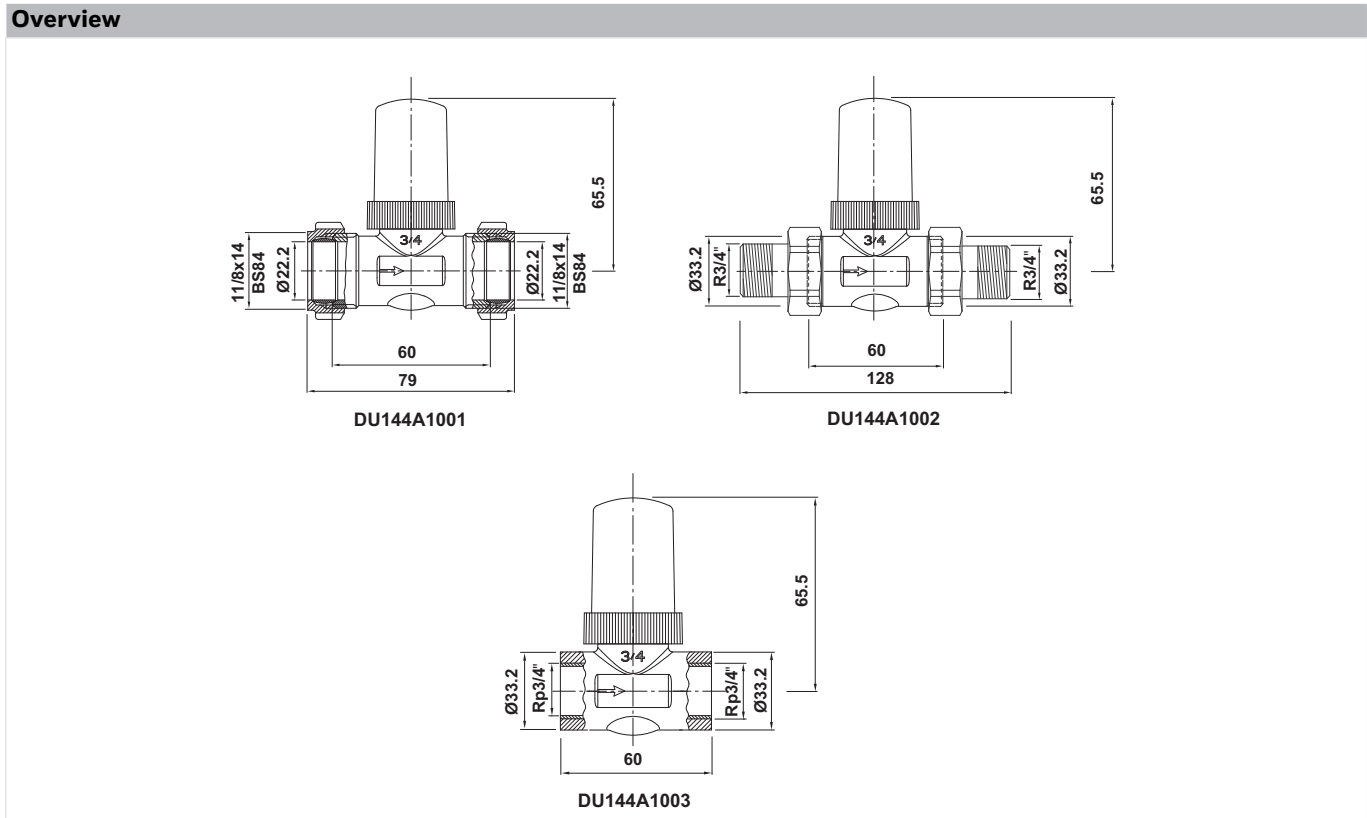


Fig. 4 Pressure drop in dependency on the flow rate.

DIMENSIONS



ORDERING INFORMATION

The following tables contain all the information you need to make an order of an item of your choice. When ordering, please always state the type, the ordering or the part number.

Options

The valve is available in the following sizes: 3/4"

- standard
- not available

		DU144A1001	DU144A1002	DU144A1003
Connection sizes:	Compression fittings for 22mm copper pipes	•	–	–
	3/4" external threads	–	•	–
	3/4" internal threads	–	–	•

Pre-setting range: 0.1...0.6 bar (1.45...8.7 psi)

For more information

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Subject to change

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