ENGINEERING
TOMORROW

Danfoss

Danfoss *Dynamic Valve*™

The **simple solution** to a daily challenge

Optimal temperature control and automatic hydronic balancing for two-pipe heating systems – all in a single valve.

2-in-1

valve design. Combines a thermostatic radiator valve and a pressure controller in a single product.

dynamic.danfoss.com

Automatic hydronic balancing made very simple

Dynamic Valve™ from Danfoss puts all the advantages of automatic hydronic balancing within reach of anyone aiming to optimize the performance of two-pipe heating systems.

The ability to accurately balance and control the radiators in two-pipe systems at any load is the key to achieving better performance, reduced energy use and increased user satisfaction.

Simple to fit, easy to use and extremely durable, the innovative *Dynamic Valve*™ instantly eliminates common problems like noisy radiators, uneven heat distribution and high levels of energy waste.

One product. One solution. One long list of benefits.

Fast planning, trouble-free installation and easy commissioning

Whether your project involves a renovation or a new-build, *Dynamic Valve*™ creates an extremely efficient system and makes your life easier at all stages. From specification to commissioning and handover, each step is easy and intuitive.

Simplicity all the way

Using *Dynamic Valve*™ means fast and easy system diagnostics. A simple design approach and fewer components that need dimensioning means faster planning. This adds flexibility to your project and workflow management. Simply calculate the required flow level at each radiator and prepare your commissioning documents.

Once the valves have been installed, commissioning is as easy as setting the scale to its correct preset value.

Increased energy efficiency

Improved temperature control leads to increased user comfort and lower energy consumption. The valve reduces heat loss and provides full control of the system delta T, resulting in improved boiler or district heating efficiency.

Furthermore, less water circulates through the system, making it possible to optimize pump settings or even reduce pump size.

Reliable system operation

With *Dynamic Valve*™, the system will be permanently optimized to respond to changing weather conditions or user behavior.

Even when users adjust the radiator thermostat or valve settings, they cannot disturb the system balance. Together with the proven long-lasting quality of Danfoss sensors, reliable system operation will increase tenant satisfaction and lead to fewer installer call backs.

Innovative *Dynamic Valve*™

– the 2-in-1 temperature control and automatic balancing valve

Simple to work with

- 2-in-1 valve design
- Fewer system components
- No Kv or authority calculations
- Simple pressure verification

Efficient as never before

- Improved temperature control
- Increased user comfort
- Reduced energy consumption via pump optimization
- Greater boiler or district heating efficiency

Reliable operation

- Permanently optimized system
- Users cannot influence the system balance
- Fewer call backs
- Reduced comfort complaints

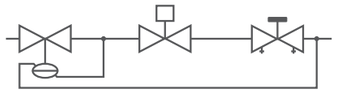
A new approach to system balancing

For heating technicians, the main challenges in existing solutions result from variable system conditions due to pressure fluctuations. The key to the simple automatic solution provided by the *Dynamic Valve*™ is the way it combines a regular thermostatic valve with a built-in differential pressure controller.

Dynamic Flow Control
ensures a constant maximum flow regardless of pressure fluctuations.

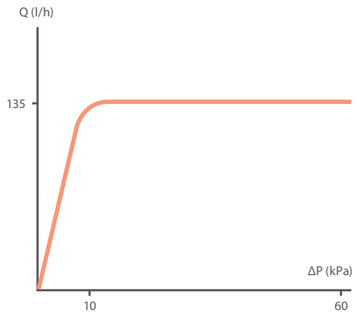
As a result, pressure fluctuations are eliminated, removing the cause of typical heating system complaints. In addition, *Dynamic Valve*™ establishes a stable and comfortable system that cannot be affected by any radiator adjustments that tenants may make.

How *Dynamic Valve*™ works
The secret of *Dynamic Valve*™ lies deep inside. The small built-in differential pressure controller ensures constant pressure across the control valve. Normal pressure fluctuations no longer affect flow through the radiators.



Dynamic Valve™ principle

Using a simple 1-7+N scale, each valve can be quickly set to any maximum flow between 10-135 liters per hour. By appropriately setting each valve, flow through the system is restricted to a maximum level. In addition, the heating system is commissioned and optimized to its full energy-saving potential.



Dynamic Valve™ operation

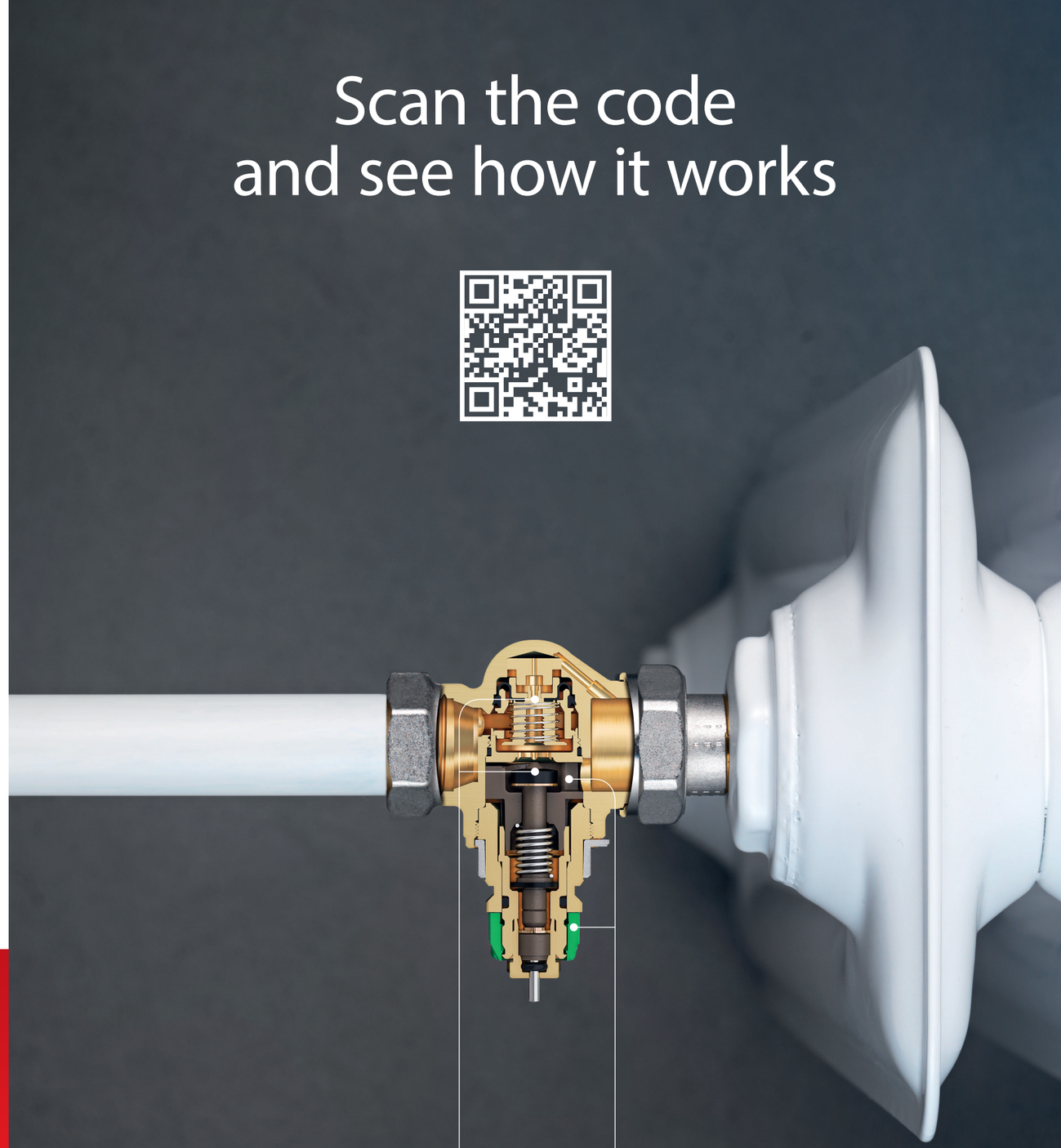
Everybody wins

Good for building owners, good for tenants
Many of your customers will have experienced complaints about uneven heat distribution, noise from the heating system and high energy bills. With *Dynamic Valve*™, you can quickly and cost-effectively solve their issues.

Indoor comfort will be greatly increased by the even heat distribution and faster start-up times while noise in the heating system will be eliminated. The energy efficiency increase and reliable system operation will reduce both energy consumption and the number of service visits. The result is a more efficient heating system with lower costs for everybody involved.

Benefits for your customers
- Fast, consistent and comfortable heating
- Minimal disturbance during renovation
- Silent heating
- Reduced costs

Scan the code and see how it works



Understanding the challenges

In unbalanced or manually balanced systems, problems occur because of simple science: water always follows the path of least resistance, resulting in poor balance.

Manual balancing solutions help to achieve better balancing, but only under design, full-load conditions. In practice, a heating system runs outside the design conditions in partial load most of the time.

Tenant issues

- Uneven heat distribution and differences in start up times
- Noise from the heating system
- Difficulty of controlling temperature

80-90%

of all two-pipe heating systems are not properly balanced and work inefficiently.

Economic issues

- • High level of energy waste
- • High heating bills
- • High complaint-handling costs

Automatic balancing overcomes the challenges

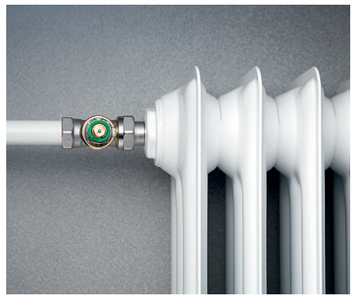
To cope with the reality of constantly fluctuating system conditions, pump pressure is sometimes increased. This can lead to even bigger problems.

A far more effective solution is automatic balancing, with the goal of taking full control of the main challenge: securing system pressure at all loads.

Ever since the 1980s, Danfoss has offered the ASV automatic balancing solution for installation in system risers. *Dynamic Valve*™ provides an alternative solution for installation at the radiators instead.

Achieving instant benefits

Automatic balancing provides instant benefits under all conditions. It is quick and easy to achieve and is a one-off investment with a fast payback time.
Eliminating pressure fluctuations is the key to both successful balancing and removing the source of user complaints about over- or under-heating, noise and excessive energy costs.



At the same time, the temperature sensors will benefit from the optimized system conditions, making temperature control more stable and precise.

Increasing awareness with great potential

Energy wasted by inefficient heating systems is a major issue worldwide. Within the EU, the need to reduce energy use in older residential buildings in particular has moved to the top of the political agenda in recent years.

As these issues continue to gain in importance and regulations change to reflect them, they will create excellent business opportunities for system specifiers and installers alike.

Automatic balancing solutions like the Danfoss ASV and *Dynamic Valve*™ are not just a highly effective way of exploiting this potential. Simplicity, minimal disruption during installation and short payback times make them an excellent investment for both renovations and new builds.

In short, there has never been a better time to choose a Danfoss automatic hydronic balancing solution.

Find out more about our automatic balancing solutions:
twopipesolutions.danfoss.com

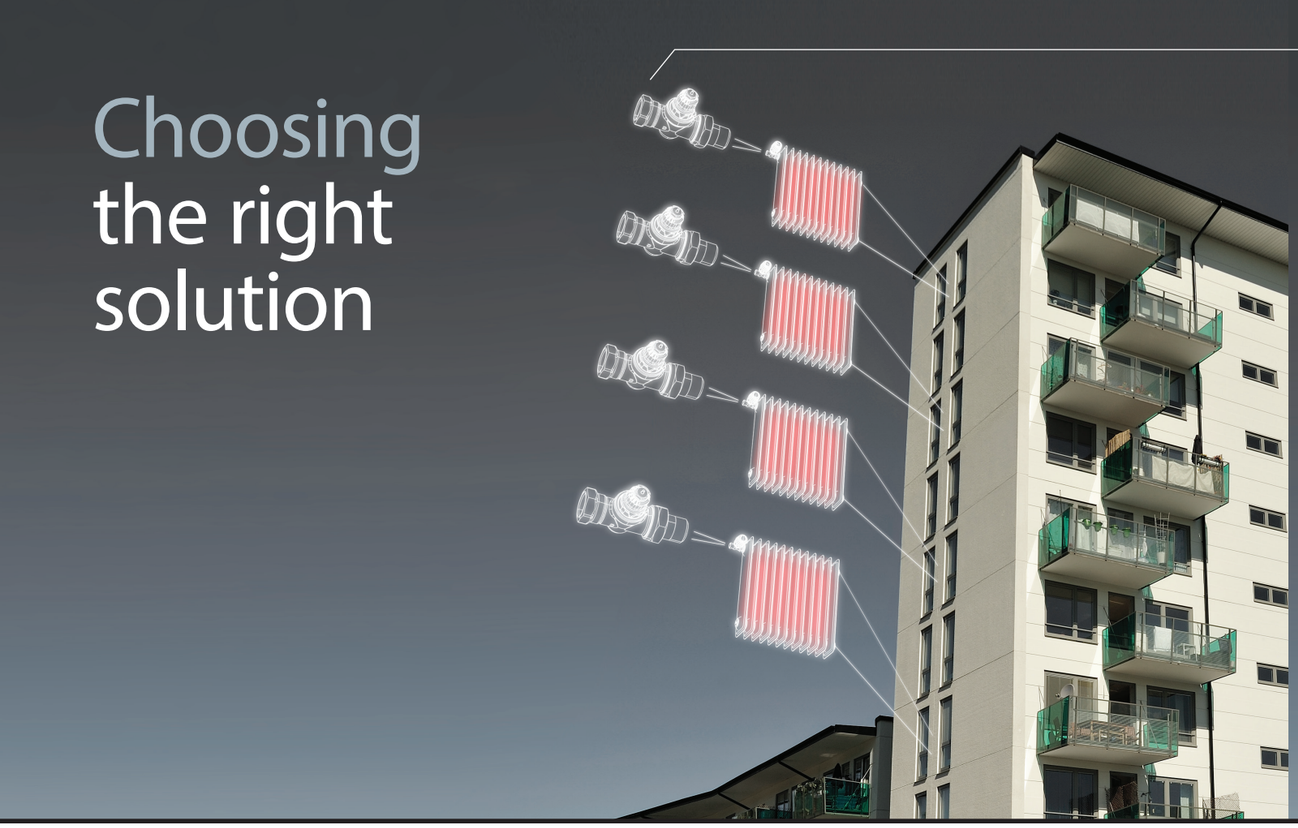
Renovation+ concept

Renovation+ is a dynamic Danfoss solution to the urgent need to reduce the huge amount of energy currently being wasted in buildings across Europe.

The Renovation+ concept provides integrated smart solutions for the renovation or retrofitting of both one- and two-pipe heating systems. Offering a wide range of products and solutions, it is mainly aimed at upgrading the energy efficiency of existing heating systems in residential buildings.

Both *Dynamic Valve*™ and the ASV solution are part of the Danfoss Renovation+ concept.

Choosing the right solution



Which solution is ideal for your project?

To help you make the correct choice to achieve a robust, automatically balanced heating system, we have grouped the most important topics together in the table to the right.

Dynamic Valve™ was specifically developed to offer a simple solution for a wide range of buildings using two-pipe radiator systems and a pump head capacity of up to 6 meters (60 kPa*). With a maximum flow capacity of 135 l/h, it is compatible with most existing radiators.

Technical versatility
For ultimate versatility, Danfoss ASV valves offer the ideal solution for riser installations in buildings with pump capacities higher than 6 meters (60 kPa). ASV has no real technical limitations.

Practical convenience
From a practical point of view, *Dynamic Valve*™ is the ideal solution for complex engineered systems, in which risers are difficult to access or where they are situated at some distance from each other.

In systems with well-functioning pre-setting radiator valves, the ASV solution is usually the best choice. This also applies for systems using radiators with built-in valves or in other situations where *Dynamic Valve*™ cannot be used, for whatever reason.

Cost efficiency
From an economic perspective, *Dynamic Valve*™ is the best choice for heating systems with few radiators per riser. In situations where there are a lot of radiators connected to each riser, the Danfoss ASV solution is more cost-effective.

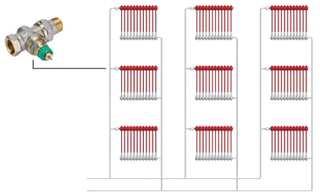
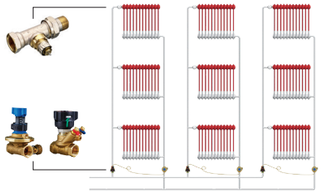
* In partial load conditions the pump head can be the same as the differential pressure over the nearest radiator valves. The maximum allowed differential pressure over the *Dynamic Valve*™ is 60 kPa.

Radiator-fitted
Dynamic Valve™

Fitted directly to each radiator, without the need for any additional components in the risers, it automatically ensures constant hydronic balancing throughout the system, no matter how conditions may change.

Riser-fitted
ASV solution

Fitted directly to the risers, ASV automatically ensures constant riser pressure, regardless of user behavior or sudden changes in the weather or other conditions. With radiator flow limited via regular Danfoss RA-N valves, the heating system is perfectly balanced.

SOLUTIONS	PRESSURE	RADIATOR	SYSTEM	ECONOMY
Radiator fitted RA-DV 	Max. differential pressure = **60 kPa**	**Max. flow = 135 l/h** P = 3140 W at ΔT = 20K P = 4700 W at ΔT = 30K	✓ Best choice for complex riser designs ✓ Best choice when main risers/return pipes are difficult to access ✓ Best choice when main riser/return pipes are distant from each other	✓ Best choice for risers with few radiators
Riser fitted ASV + radiator fitted RA-N 	Max. differential pressure = **250 kPa**	No flow (l/h) limitations	✓ Best choice if the max. differential pressure is unknown ✓ Best choice when well-functioning pre-setting valves are present ✓ Only choice for systems with built-in valves	✓ Best choice for risers with many radiators

Choosing the correct sensor for your project

Because the Danfoss *Dynamic Valve*™ uses the well-known RA sensor connection, you can choose from a wide range of sensors.

RAW

When price is important, liquid-filled Danfoss RAW sensors offer excellent performance.

RA 2920

For public buildings or other 'heavy-duty' situations, this tamper proof sensor provides a robust solution.

***Danfoss Eco*™ / *Danfoss Link*™ Connect**

The stand-alone *Eco*™ or wireless Connect programmable thermostats can be used to increase energy savings.

Proven solutions

From small buildings to the very largest buildings, Danfoss offers you proven automatic balancing solutions for every size of project.

Although the *Dynamic Valve*™ is a recent product, we already have a great deal of evidence of its practical effectiveness and reliability via the many heating systems it has been installed in so far. The valve's innovative technical construction solved or prevented noise and uneven heat distribution issues in a simple way and to the full satisfaction of users.

Proven component quality
The currently applicable EU norm for radiator valves is the EN 215 standard. This certification system is your guarantee of high-quality products.

Danfoss offers a comprehensive range of radiator valves certified to EN 215. The *Dynamic Valve*™ is no exception and was the first pressure-independent radiator valve in the world to have achieved EN 215 certification.

EN 215 certified

***Dynamic valve*™ was the first of its kind to achieve EN 215 approval.**

Smart tool make things even simpler

The dP tool™ is an extremely useful, simple and unique tool used during commissioning. It measures the available differential pressure. Not via an additionally installed measuring orifice or manual balancing valve, but directly in the *Dynamic Valve*™.

Use it on the valve furthest from the pump to check whether the available differential pressure is the required 10 kPa. If it is, you can be sure of a correctly commissioned system.

The dP tool™ can also be used to see whether extra cost savings can be achieved by reducing the pump head setting. A pump can often provide the required differential pressure at lower than maximum setting.

The demounting tool makes it possible to exchange the valve insert and built-in pressure controller without needing to drain the system. Some building owners require the availability of such tool to ensure that heating remains available for all residents, even during servicing work.

Scan the QR code to see how the dP tool™ is operated.

Dynamic Valve™ product range

Description	Model	Connection	Flow (l/h)*	DIN Code number	NF Code number
RA-DV 10	Angle	3/8"	10-135	013G7721	013G7711
RA-DV 10	Straight	3/8"	10-135	013G7722	013G7712
RA-DV 10	Axial	3/8"	10-135	013G7709	013G7709
RA-DV 10	Angle Right	3/8"	10-135	013G7717	013G7717
RA-DV 10	Angle Left	3/8"	10-135	013G7718	013G7718
RA-DV 15	Angle	1/2"	10-135	013G7723	013G7713
RA-DV 15	Straight	1/2"	10-135	013G7724	013G7714
RA-DV 15	Axial	1/2"	10-135	013G7710	013G7710
RA-DV 15	Angle Right	1/2"	10-135	013G7719	013G7719
RA-DV 15	Angle Left	1/2"	10-135	013G7720	013G7720
RA-DV 20	Angle	3/4"	10-135	013G7725	013G7715
RA-DV 20	Straight	3/4"	10-135	013G7726	013G7716

*8-110 l/h including a liquid filled sensor. 9-130 l/h including a gas filled sensor

Demounting tool

For replacement of *Dynamic Valve*™ inserts and pressure controllers.

Code number: 013G7826
(only for *Dynamic Valve*™)

Code number: 013G7827
(for *Dynamic Valve*™ + RA-(U)N valves)

dP tool™

For simple verification of sufficient differential pressure and pump optimization.

Code number: 013G7855

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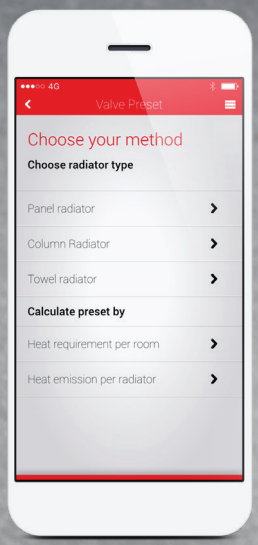
Connect with us online to **learn more**

At Danfoss, we engineer the most innovative HVAC solutions of tomorrow ... today. And we support these face to face, off-line and on-line to provide you the best possible information.

To learn more about the *Dynamic Valve*™ please visit
dynamic.danfoss.com



Danfoss Installer App

To determine Danfoss RA-N, RA-UN and *Dynamic Valve*™ pre-setting values download the Danfoss Installer App.

It is available in the App store and Google play or by scanning the below QR code.

To learn more about Danfoss ASV or the Renovation+ concept please visit
twopipesolutions.danfoss.com

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