

As easy as setting your watch

AB-QM – Perfect control and balance in one valve

Are you always searching
for the perfect solution?

The perfect functionality? The perfect installation?
Just the perfect business?

To find what you are searching for ...

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look inside ...

» The future is now

The goal of any HVAC system is clear: Create a comfortable indoor environment for working and living and do this at minimal cost. It's not only the construction expenses that are important; the environmental impact also needs to be taken into account. This means installations need to be easy to build and maintain and use as little energy as possible.

A time for change

The control and hydronic balance of installations is often based on concepts developed more than thirty years ago. These concepts are not able to comply with modern demands for comfort and energy efficiency. Danfoss has created a valve that reduces the amount of time spent on calculations, installation and com-

missioning. This valve, the Danfoss AB-QM, does all that for you while optimising the system to give maximum comfort and minimum energy consumption.

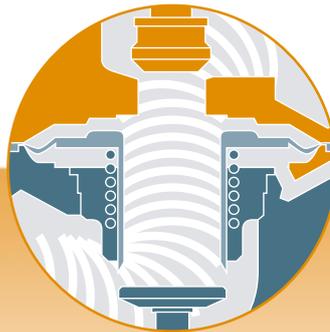
Full range

The Danfoss AB-QM pressure independent balancing and control valve (PIBCV) was introduced a few years ago and enjoyed significant success, as our long list of references and success stories shows. The AB-QM product range has been extended and the range now covers DN 10 up to DN 100. The AB-QM can now handle all applications, whatever their size.

Follow this 6-step guide and find out how the AB-QM can help you reduce costs and your workload too.



Control valve



Flow limiter



1 Reduce costs and balance your business

Your clients are your business, so everybody wins if you can reduce your and their costs.

The Danfoss AB-QM is a money-saving device:

- Fewer products, so less installing to do
- Easy sizing, so fewer calculations
- Set and forget, so no commissioning
- Better comfort, so fewer complaints and less service required
- Always the right flow, so no energy wasted

Often reducing costs means a trade-off: You have to sacrifice something, like comfort or quality, in order to make the savings. The Danfoss AB-QM reduces the costs and raises the quality of the installation, it's a real win-win situation.

Example 1 – Installation

In a traditional system you would use a 2-way control valve and a manual balancing valve to limit the flow and control the room temperature. The AB-QM PIBCV can replace the control valve and the manual balancing valve. While at lower loads the balancing valve is static and loses its function, the AB-QM realises the ideal flow for all loads.

AB-QM conclusion:

Fewer products, fewer problems, lower costs.

2 Control – We've done the maths for you

Controlling the right flow and temperatures is the central function of an HVAC installation. This means the control valves are crucial and they need to be precisely calculated to achieve optimal working conditions. The AB-QM eliminates the need for sizing calculations for control valves.

The **k_v** value of the valve doesn't need to be calculated anymore because if the required flow is within the setting range of the AB-QM it can be applied instead. This also means greater flexibility because several different sizes of AB-QM can be used to realise the same flow. The easy setting procedure of the AB-QM makes late changes in the design or subsequent system refits a breeze to implement.

The **authority** of the valve doesn't need to be calculated anymore because the AB-QM PIBCV has a unique design that ensures 100% authority with all settings and all differential pressures. This increases the control quality and precision, creating better comfort in the building.

Example 2 – Sizing

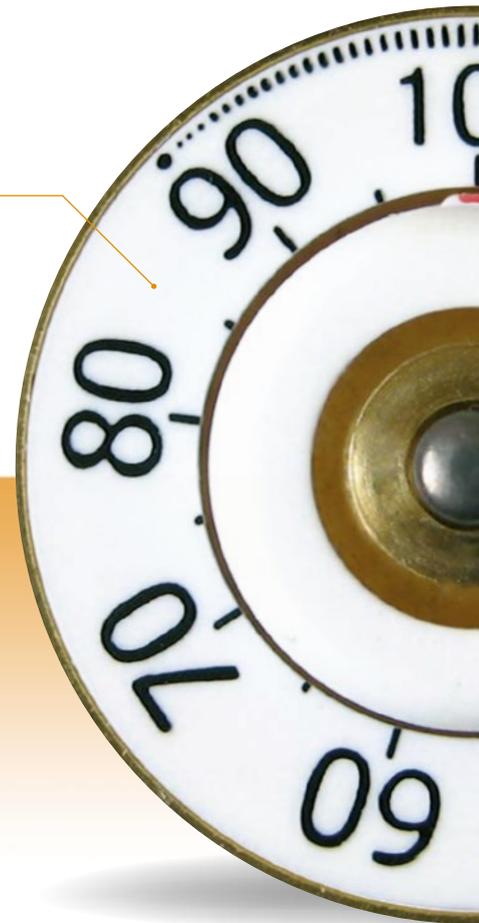
To properly size a traditional 2-way valve you would need to know the required flow, the pump head and the resistance in the rest of the installation. For the AB-QM you only need to know the flow.

AB-QM conclusion:

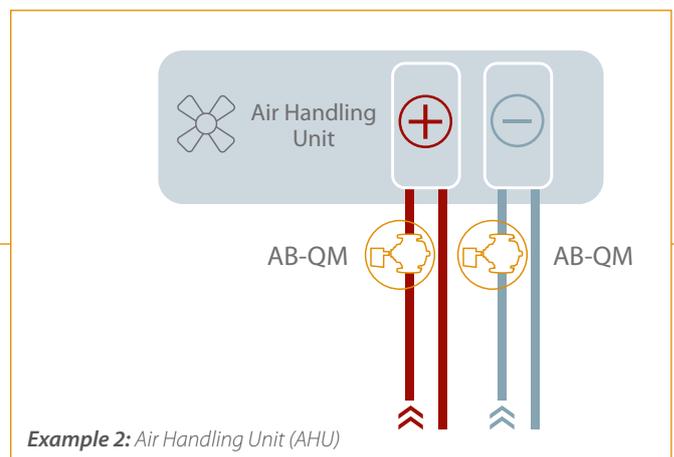
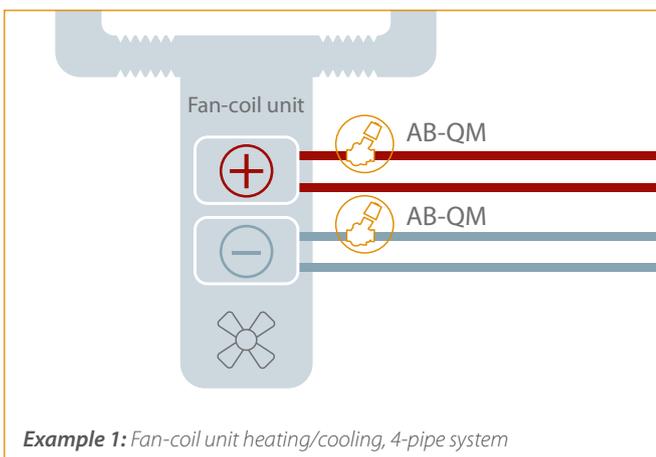
Easy sizing, 100% authority, perfect control.



Lift and turn. And the required flow is set!



3 Where to use the AB-QM





1.



2.



3.

4 How does it work?

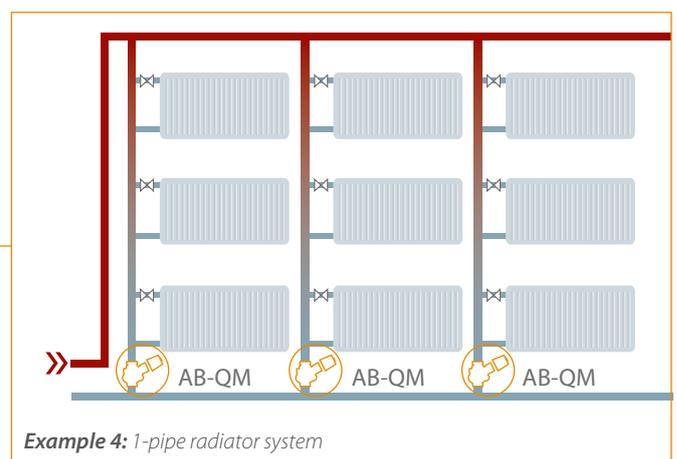
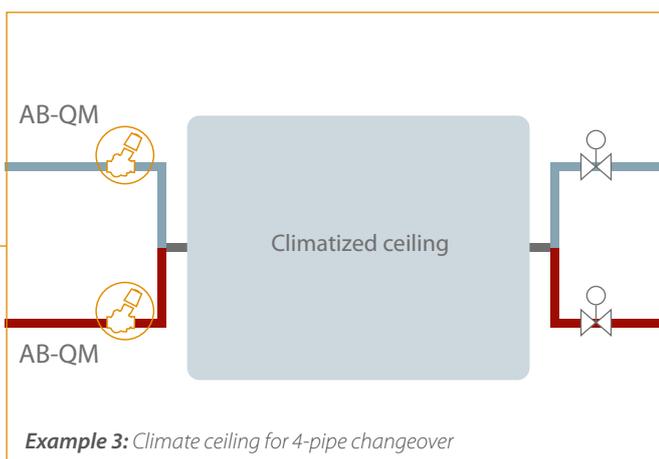
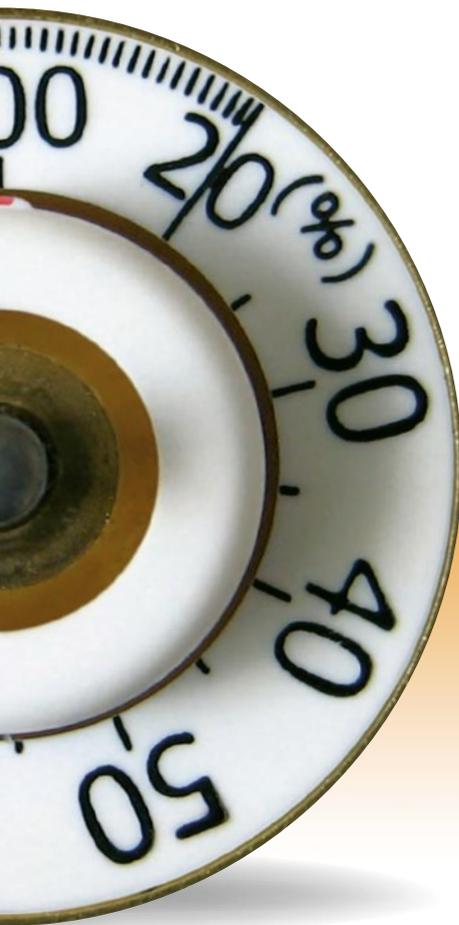
The working principle is as simple as it is effective. The AB-QM consists of two different parts: the control valve (orange) and the differential pressure controller (blue). The integrated membrane of the pressure controller maintains a constant differential pressure across the control valve. The flow through a valve is determined by the k_v value and the differential pressure across the valve. Because the differential pressure is now constant, overflows are prevented and the authority of the AB-QM to control the flow is ensured.

Figures 1-3 (shown above)

In the illustrations you can see the membrane in action. If the differential pressure across the valve increases, the membrane will immediately be pushed down and close the pressure controller (2). If the differential pressure decreases, the membrane will instantly move up again (3).

AB-QM conclusion:

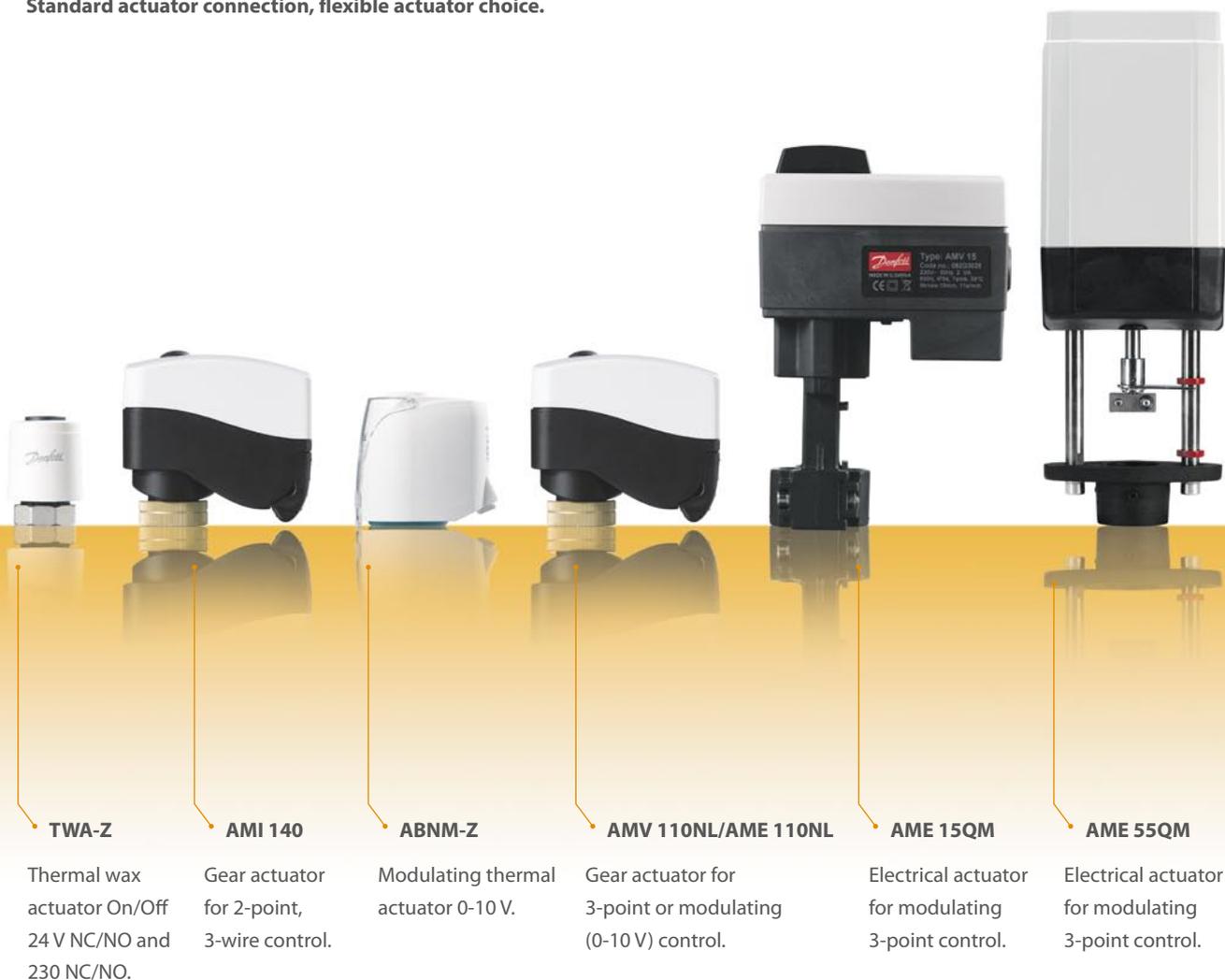
Constant Δp across the control valve, resulting in accurate flow limitation and 100% authority.



5 Always the perfect match

The AB-QM has a standard M30 x 1.5 connection and Danfoss offers a wide range of actuators that fit the AB-QM. As the differential pressure is limited by the controller integrated in the AB-QM, the actuators can be relatively small and economically priced. We can offer actuators for all control strategies, On/Off, pulse-width modulation, 0-10 Volt thermal and 0-10 Volt or 3-point gear motors.

AB-QM conclusion:
Standard actuator connection, flexible actuator choice.



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6 Making Modern Living Possible

The Danfoss Group is a leader in development and production of mechanical and electronic products and controls. Our products help to heat and cool homes and offices, refrigerate food and control production lines.

In short, Danfoss contributes to the conveniences of modern life as well as to a safer and cleaner environment.

If you are interested in hearing more about the success of AB-QM please contact Danfoss. Reference list can also be acquired.

Learn more on www.abqm.danfoss.com

AB-QM threaded (with test plugs)

Type	DN	Q _{max} (l/h)	External thread	Code No.
	10 LF	150	G ½ A	003Z0261
	10	275		003Z0211
	15 LF	275	G ¾ A	003Z0262
	15	450		003Z0212
	20	900	G 1 A	003Z0213
	25	1,700	G 1¼ A	003Z0214
	32	3,200	G 1½ A	003Z0215
	40	7,500	G 2 A	003Z0700
	50	12,500	G 2½ A	003Z0710

AB-QM threaded (without test plugs)

Type	External thread	Code No.
	G ½ A	003Z0251
		003Z0201
	G ¾ A	003Z0252
		003Z0202
	G 1 A	003Z0203
	G 1¼ A	003Z0204
	G 1½ A	003Z0205

AB-QM can not be upgraded to AB-QM with test plugs!

AB-QM – Flanged (with test plugs)

Type	DN	Q _{max} (l/h)	Flange connection	Code No.
	50	12,500	PN 16	003Z0711
	65	20,000		003Z0702
	80	28,000		003Z0703
	100	38,000		003Z0704
	125	90,000		003Z0705
	150	145,000		003Z0706

Combinations AB-QM with electrical actuators

Valve type	Stroke (mm)	TWA-Z**	AMI 140	ABNM-Z	AMV 110NL/AME 110NL	AME 15QM	AME 55QM
		Thermal actuator On/Off 082F1220 NO, 24 V 082F1224 NO, 230 V 082F1222 NC, 24 V 082F1226 NC, 230 V	Gear Actuator 2-point 3-wire 082H8048	082F1094 Thermal actuator 24 V (0-10 V) 082F1072 Adapter for AB-QM	Gear Actuator 082H8056 24 s/mm, 3-point Gear Actuator 082H8057 24 s/mm, 0-10 V	082H3075 0-10 V or 3-point	082H3078, 0-10 V or 3-point
DN 10 - 20	2.25	✓	✓	✓	✓	-	-
DN 25 - 32	4.50	✗*	✓	✗*	✓	-	-
DN 40/50	10	-	-	-	-	✓	-
DN 65 - 100	15	-	-	-	-	✓	-
DN 125 - 150	25	-	-	-	-	-	✓

* up to 60 % of Q_{max}

** Please be aware that only this type of TWA actuator is to be used with AB-QM

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