

ENGINEERING
TOMORROW

Danfoss

Catalogue | ADAP-KOOL®

Energy efficient solutions designed to ensure **food safety**

Discover the full range of ADAP-KOOL® control and monitoring systems.



Achieve
33%
energy savings with
the total monitoring
solution from
ADAP-KOOL®

www.food-retail.danfoss.com



The strongest link in the chain

AKV electronic expansion valve

Simple

Proven

Evolving

The simplicity and robustness of Danfoss AKV electronic expansion valve reduce possible failures and ensure optimum performance in the field, benefiting both end-users as well as your business.

Efficiency and serviceability that meets the needs of your end-users

The Danfoss AKV valve has been designed for optimum tightness to ensure minimum leakage while still being serviceable, allowing your end-users to replace functional parts without dismantling the valve. In this way, servicing is made as easy and time saving as possible, keeping maintenance costs at a minimum – and operational performance at a maximum.

Offer your end-users superior reliability and robustness

Compared to the complex TXV (thermostatic expansion valve) technology, the expansion device and solenoid (on/off)

valve function of the AKV valve is in one simple unit. This is why a cooling system with the AKV valve has fewer connections, as only one valve is needed, ensuring lower refrigerant cost compared to the complex TXV technology.

Owing to the simplicity of its construction, the AKV valve runs flawlessly for years with no to little maintenance. It has an impressively low leak rate, and the solenoid design ensures that the valve always closes during power failure. The AKV valve not only offers your end-users the longest valve lifetime and maximum reliability – it also guarantees the highest possible food quality in their supermarket.



Danfoss AKV – in it for the long run

Several elements need to be taken into consideration when choosing the most economic valve for a refrigerant system:

- Number of valves needed in the cooling system
- Average valve lifetime
- Valve cost

Only one valve is needed when choosing Danfoss AKV compared to the complex TXV technology. On top of this, it has an impressive minimum lifetime of 10 years. Altogether, this contributes to the favourable total cost of ownership of the Danfoss AKV valve.

Full product overview, data sheets and more at:

akv.danfoss.com



Build your business on proven technology

AKV electronic expansion valve

Simple

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Evolving

Danfoss AKV electronic expansion valve was the first electronic valve for retail refrigeration and today accounts for more than 2 million active valves. Its track record is second to none – and so is its quality and reliability.

Uniform quality and reliability for you to pass on

During production, each Danfoss AKV valve is subject to various pressure tests combined with internal and external leakage tests to minimise the risk of possible failures in the field. This is your guarantee that every single valve lives up to the quality standards that Danfoss has been delivering since 1933 and provides your end-users with a minimum of failures and industry leading food safety.

Trusted by leading case manufacturers worldwide

With a minimum lifetime of 10 years and more than 50 million cycles, the AKV electronic expansion valve is extremely durable. This is also one of the main reasons why it is the most used electronic expansion valve within food retail and continues its dominance as the most reliable solution for modern retail cooling.

2+ million active AKV valves

27+ years of proven track record

Minimum 10 years lifetime
(longest lasting valves have a lifetime of 20+ years)

50+ million cycles

0.00001% leakage rate

Largest install-base and longest track record

Thoroughly tested through numerous different tests



Food safety
made it **no. 1**

See all your options for offering the best within food safety at:

akv.danfoss.com



The perfect match giving you unbeatable TCO

AKV electronic expansion valve



Simple

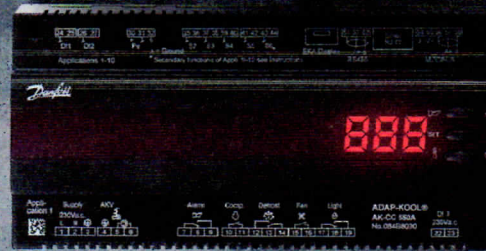


Proven



Evolving

Ever since the ADAP-KOOL® controllers were introduced almost three decades ago, the system has been refined and perfected to continuously drive energy enhancement and ROI.

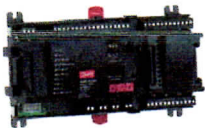


Energy efficiency and savings for end-users worldwide

Today more than 50,000 supermarkets are equipped with ADAP-KOOL® control systems. This allows their cooling systems to work optimally with Danfoss AKV valves, providing up to 10% lower energy consumption compared to best in class TXV (thermostatic expansion valve) solutions also delivered by Danfoss. Energy consumption can be lowered by up to 33% if taking advantage of the full ADAP-KOOL® system using suction (PO) and condensing (PC) pressure optimization.

Intelligent ADAP-KOOL® control and monitoring system

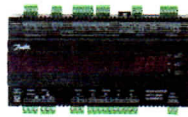
Danfoss AKV controllers have been designed to match any modern supermarket needs.



AK-CC 750 controls up to 4 evaporators in a case line-up or a room. The fully flexible in- and output definition makes it adaptable to almost any application.

They minimise energy costs with suction pressure, condensing pressure, and our self-learning control functions and patented minimum stable superheat (MSS) algorithm. Our intelligent defrost control enables the highest possible level of food quality with minimum energy consumption, and due to advanced energy balance calculation, defrost is initiated only when energy consumption starts rising.

The ADAP-KOOL® controller portfolio offers safe refrigeration control from the most simple to the most advanced applications in the industry. The controller communication network including FDD technology (Fault Detection and Diagnosis) further provides your end-users with food safety.



AK-CC 550 features energy optimisation of the complete case and predefined application types for quick adaptation to different cases or cold room setups.

Why choose Danfoss for your cooling system?

- Industry leading combination of premium components and cutting-edge technology
- Patented MSS algorithm ensures 10% energy savings over TXV technology and 33% savings with full ADAP-KOOL® system
- Longest valve lifetime and value for money

Full refrigerant compatibility

Together with the ADAP-KOOL® system, the AKV valve is extremely flexible and available for both low global warming potential refrigerants as well as all other common refrigerants.

Since 2009, the AKV line-up has been optimised for CO₂ and high standstill pressures and is now the most widely used expansion valve for CO₂ in food retail.

Find all our controllers, energy optimisation and more at:

akv.danfoss.com

AKVA 10 AKVA 15, AKVA 20

The AKVA valves are electrically operated expansion valves designed for ammonia refrigeration systems. They are usually operated by a controller from the Danfoss line of ADAP-KOOL® controllers.

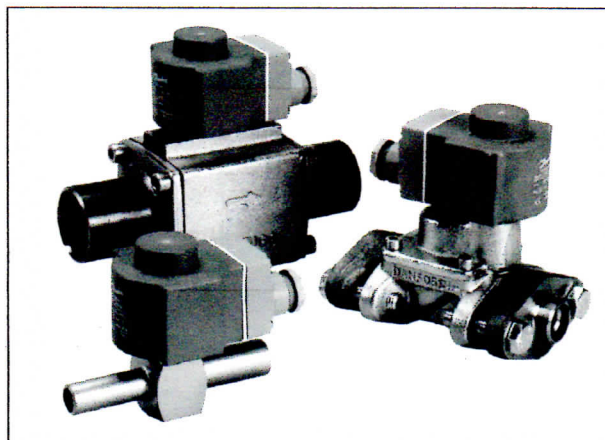
AKVA valves are available as individual components as follows:

- Valve only
- Coil only with terminal box or cable
- Spare parts: upper part, orifice and filter

The individual capacity is indicated by a number forming part of the type designation. This number represents orifice size of the associated valve.

For example, an AKVA 10 valve with a size 3 orifice is designated AKVA 10-3.

The orifice assembly is replaceable.



Features

- For ammonia (R 717), R744, HCFC, and HFC
- It cannot be used with flammable hydrocarbons.
- No adjustment necessary
- Wide control range
- Replaceable orifice assembly
- Can be used as a combined expansion and solenoid valve in some applications
- Wide range of coils for d.c. and a.c. operation

Approvals

DEMKO (Denmark)

SETI (Finland)

SEV (Switzerland)



UL listed for US and Canadian standards
(separate code numbers)

AKVA 20 is CE certified in accordance with Pressure Directive 97/23

Technical data

Valve type	AKVA 10	AKVA 15	AKVA 20
Coil voltage tolerance	+10/-15%		
Enclosure rating (IEC 529)	Max. IP 67		
Operating principle	PWM (pulse width modulation)		
Recommend period	6 seconds		
Capacity (R717)	4 to 100 kW	125 to 500 kW	500 to 3150 kW
Control range (capacity range)	10-100%		
Connection	Weld		
Media temperature	- 50 to 60°C	- 40 to 60°C	- 40 to 60°C
Ambient temperature	- 50 to 50 °C	- 40 to 50 °C	- 40 to 50 °C
Valve seat leakage	< 0.02% of Kv value		
MOPD	18 bar	22 bar	18 bar
Filter, replaceable	Internal 100 µm, replaceable	External 100 mm	External 100 mm
Allowable operating pressure	Ps = 42 bar gauge	Ps = 42 bar gauge	Ps = 42 bar gauge