

KV pressure regulators

REFRIGERATION AND
AIR CONDITIONING

Fitters notes

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Application

Type KV pressure regulators will control the low and high pressure sides of the system under varying load conditions:

- KVP is used as an evaporating pressure regulator.
- KVR is used as a condensing pressure regulator.
- KVL is used as a crankcase pressure regulator.
- KVC is used as a capacity regulator.
- KVD is used as a receiver pressure regulator.
- NRD is used as a differential pressure regulator.



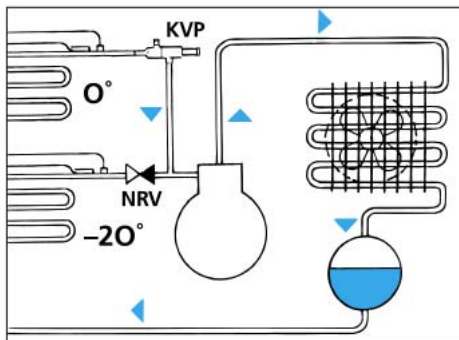
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KVP evaporating pressure regulator

The evaporating pressure regulator is installed in the suction line after the evaporator to regulate the evaporating pressure in refrigeration systems with one or more evaporators and one compressor.

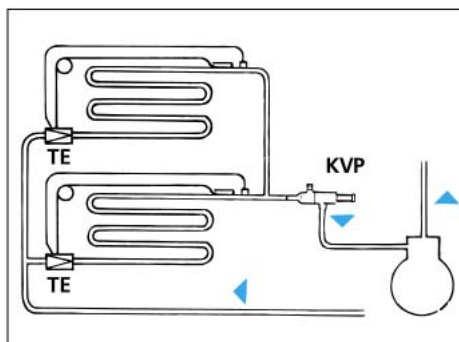
In such refrigeration systems (operating on different evaporating pressures) KVP is installed after the evaporator with the highest evaporating pressure.

To prevent refrigerant migration during standstill, remember to install an NRV check valve in the suction line after the evaporator with the lowest evaporating pressure.



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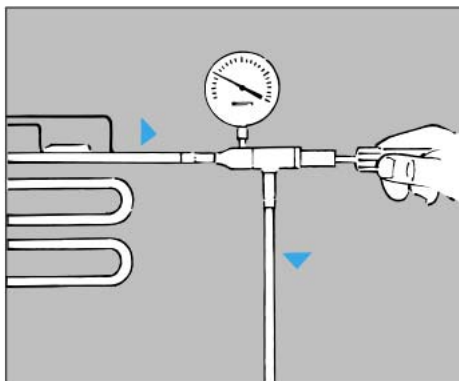
In refrigeration systems with parallel coupled evaporators and common compressors, and where the same evaporating pressure is required, KVP must be installed in the common suction line.



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The KVP evaporating pressure regulator has a pressure gauge connection for use when setting the evaporating pressure. KVP maintains constant pressure in the evaporator.

KVP opens on rising inlet pressure (evaporating pressure).

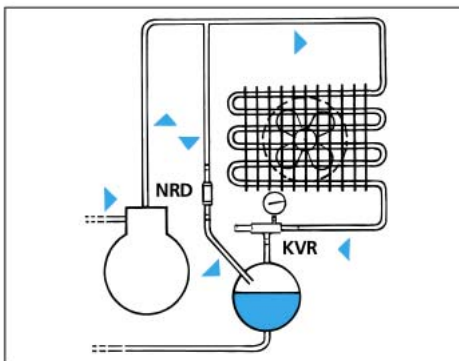


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KVR condensing pressure regulator

KVR is normally installed between the air-cooled condenser and the receiver. KVR maintains constant pressure in air-cooled condensers. It opens on rising inlet pressure (condensing pressure).

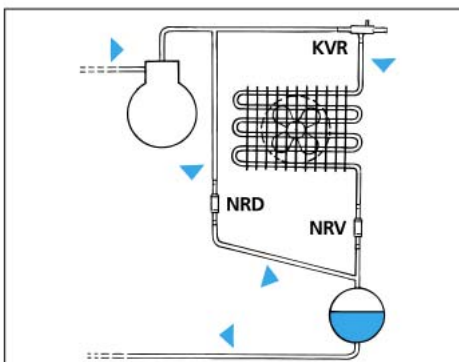
KVR together with a KVD or an NRD ensures a sufficiently high liquid pressure in the receiver during varying operating conditions. The KVR condensing pressure regulator has a pressure gauge connection for use when setting the condensing pressure.



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In situations where both the air-cooled condenser and the receiver are located outdoors in very cold surroundings it can be difficult to start the refrigeration system after a long standstill period.

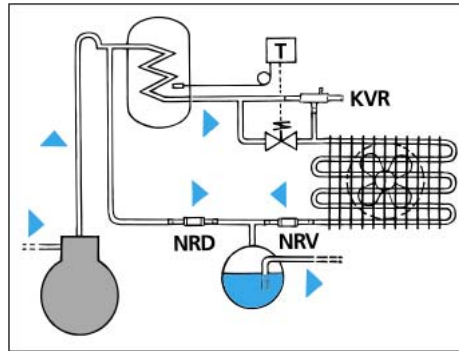
In such conditions, KVR is installed ahead of the air-cooled condenser, with an NRD in a bypass line around the condenser.



Ako_0027

KVR is also used in heat recovery. In this application, KVR is installed between the heat recovery vessel and condenser.

It is necessary to install an NRV between condenser and receiver in order to prevent back-condensation of the liquid in the condenser.

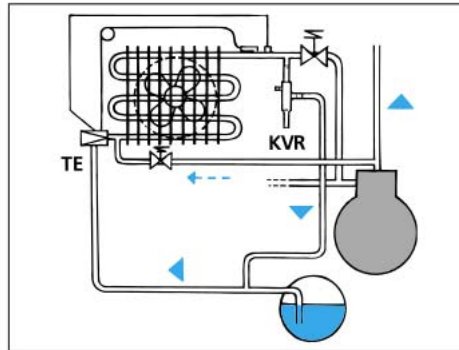


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KVR can be used as a relief valve in refrigeration systems with automatic defrosting. Here, KVR is installed between the outlet tube from evaporator and receiver.

Note!

KVR must never be used as a safety valve.



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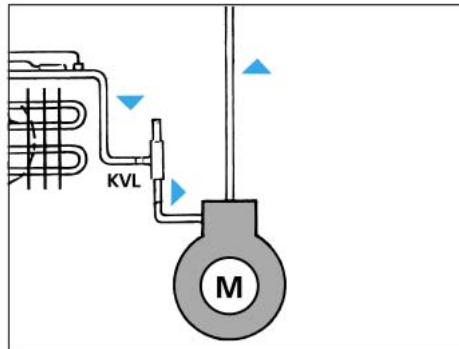
KVL crankcase pressure regulator

KVL crankcase pressure regulator limits compressor operation and start-up if the suction pressure becomes too high.

It is installed in the refrigeration system suction line immediately ahead of the compressor.

KVL is often used in refrigeration systems with hermetic or semihermetic compressors designed for low-temperature ranges.

KVL opens on falling outlet pressure (suction pressure).

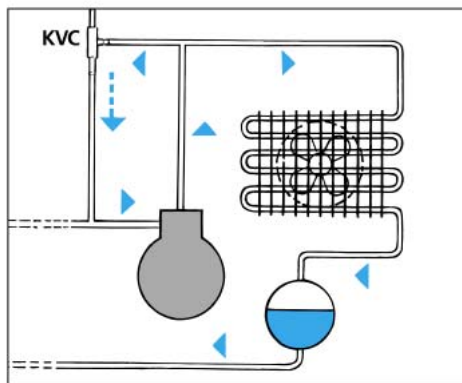


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KVC capacity regulator

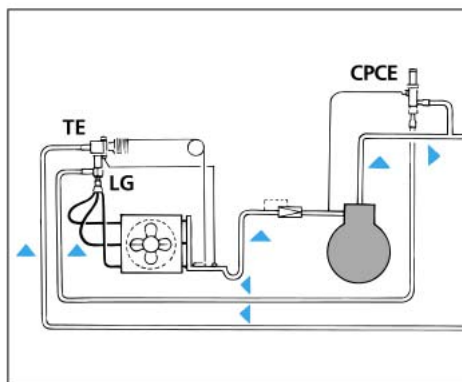
KVC is used for capacity regulation in refrigeration systems where low-load situations occur and where it is necessary to avoid low suction pressure and "compressor cycling".

Too low a suction pressure will also cause vacuum in the refrigeration system and thus create the risk of moisture ingress in refrigeration systems with open compressor. KVC is normally installed in a bypass line between compressor discharge tube and suction tube. KVC opens on falling outlet pressure (suction pressure).



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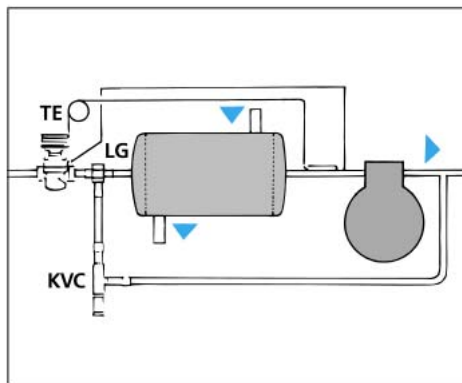
A CPCE capacity regulator can be used as an alternative to KVC if the requirement is greater accuracy in the regulation of low suction pressure.



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KVC can also be installed in a bypass line from the compressor discharge pipe, with valve outlet led to a point between expansion valve and evaporator.

This arrangement can be used on a liquid cooler with several parallelcoupled compressors and where no liquid distributor is used.



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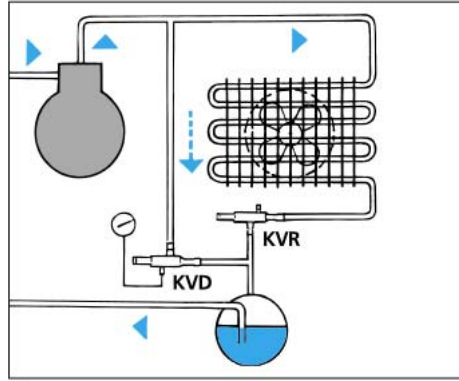
KVD receiver pressure regulator

KVD is used to maintain sufficiently high receiver pressure in refrigeration systems with or without heat recovery.

KVD is used together with a KVR condensing pressure regulator.

The KVD receiver pressure regulator has a pressure gauge connection for use when setting receiver pressure.

KVD opens on falling outlet pressure (receiver pressure).



Ak0_0004

Identification

All KV pressure regulators carry a label giving the valve function and type, e.g. CRANKCASE PRESS. REGULATOR type KVL.

The label also gives the operating range of the valve and its max. permissible working pressure (PS/MWP).

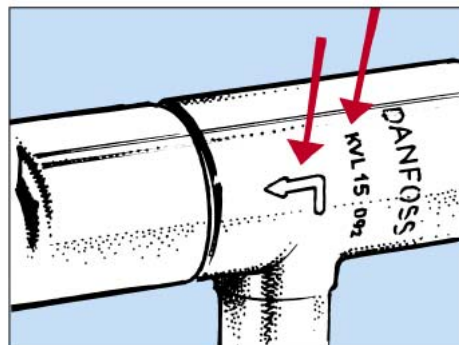
A double-ended arrow ("+" and "-") is printed on the bottom of the label. Direction "+" (plus) means higher pressure and "-" (minus) means lower pressure.

KV pressure regulators can be used with all existing refrigerants except ammonia (NH₃), provided valve pressure ranges are respected.

The valve body is stamped with the valve size, e.g. KVP 15, with an arrow to indicate valve flow direction.



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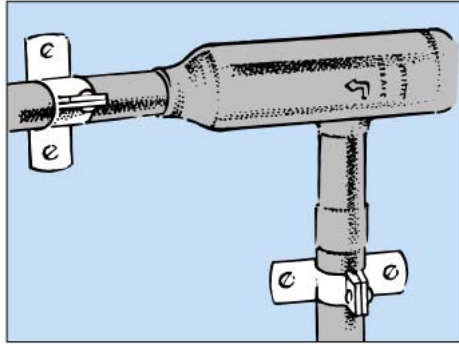
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Installation

Ensure that piping around KV valves is clean and well-secured. This will protect valves against vibration.

All KV pressure regulators must always be installed so that flow is in the direction of the arrow.

KV pressure regulators can otherwise be installed in any position, but they must never be able to create an oil or liquid lock.



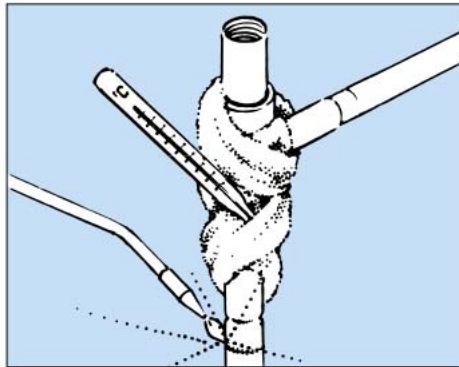
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Soldering/brazing

During soldering, it is important to wrap a wet cloth around the valve.

Always point the gas flame away from the valve so that the valve is never subjected to direct heat. When soldering, be careful not to leave soldering material in the valve as this can impair function.

Before soldering a KV valve, be sure that any pressure gauge insert has been removed. Always use inert gas when soldering KV valves.



Ak0_0007



Warning!

Alloys in soldering materials and flux give off smoke which can be hazardous to health. Please read suppliers' instructions and follow their safety precautions. Keep the head away from the smoke during soldering. Use good ventilation and/or an extract at the flame and do not inhale smoke and gases. It is a good idea to use safety goggles.

Soldering while refrigerant is present in the system is not recommended.

Aggressive gases might be created which can, for example, break down the bellows in KV valves or other parts in the refrigeration system.

