

Data sheet

# Electric expansion valve

## Type AKV 10P, AKV 10PS



AKV 10P and AKV10PS are electric operated expansion valves designed for refrigerating plants.

The AKV 10P and AKV 10PS valves are normally controlled by a controller from Danfoss range of ADAP- KOOL® controllers, that ensures a precise liquid injection into evaporators.

The AKV 10P and AKV 10PS valves are supplied as a part program, as follows:

- Separate valve
- Separate coil with terminal box, DIN plug or cable
- Spare parts in the form upper part, orifice and filter

The orifice assembly is replaceable.

The AKV 10P and AKV 10PS valves cover a wide capacity range.

### Features

#### Precise control of liquid injection

- Optimum utilization of the evaporator
- Increased energy efficiency and COP
- Improved overall system performance
- Enables energy saving minimum stable superheat and adaptive defrost algorithms due to turbulent flow
- Provides excellent distribution and oil return
- Repetitive operation of the valve at all conditions

#### Superior valve technology

- Soft pulse operation makes possible to have a low noise valve that guarantees precise flow control and increased energy efficiency of the system

#### Fully Serviceable valve

- Fast troubleshooting during system diagnostics
- Replaceable filter and orifice assembly
- Special Service coil available for installation and servicing

#### Fast opening/closing within sec.

- Quick reaction to the operating condition.
- Minimizes the risk of liquid refrigerant flowing into the compressor at shut down and low pressure cut out at start up
- Normally closed Solenoid tight shut-off valve
- Prevents migration of the refrigerant during stand-still
- Reduced complexity by reducing number of components in the system

#### Supports variety of refrigerants with wider regulation range

- Wide application scope
- #### Compact, lightweight design
- Flexible and easy integration in any system
- #### Wider selection range
- Wider range of coils AC/DC coils with various cable length

#### Valve construction

- Internal and external corrosion resistant
- #### Protecting the environment and climate
- Manufactured according to ISO/TS16949
  - Second – to – none quality and reliability

**Approvals (valves)**

Pressure Equipment Directive (PED) 2014/68/EU



(Refrigerant valve) 53RO



**Technical data**

Refrigerant

R744, R22, R23, R134A, R404A, R407A, R407C, R407F, R410A, R422B, R422D, R448A, R449A, R449B, R450A, R452A, R507, R513A.  
For other refrigerants, please contact Danfoss.

*Direct operated Valve*

|  |                              |
|--|------------------------------|
| Valve type                             | AKV 10P0 to AKV 10P7         |
| Working principle                      | PWM (Pulse-width modulation) |
| Recommended period of cycle time       | 6 Seconds                    |
| Regulation range (Capacity range)      | 10 – 100%                    |
| Connection type                        | Solder                       |
| Evaporating temperature                | -60 – 60 °C / -76 – 140 °F   |
| Ambient temperature                    | -50 – 50 °C / -58 – 122 °F   |
| MOPD, AKV 10P0 to AKV 10P6             | 35 bar / 508 psig            |
| MOPD, AKV 10P7                         | 18 bar / 261 psi             |
| Min. OPD, AKV 10P0 to AKV 10P7         | 0 bar / 0 psi                |
| Filter, replaceable                    | Internal 100 µm              |
| Max. working pressure                  | 90 barg / 1305 psig          |
| MAP (Max. Abnormal Pressure)           | 1305 psig                    |
| COT (Continuous Operation Temperature) | 140 °F                       |

*Servo operated Valve*

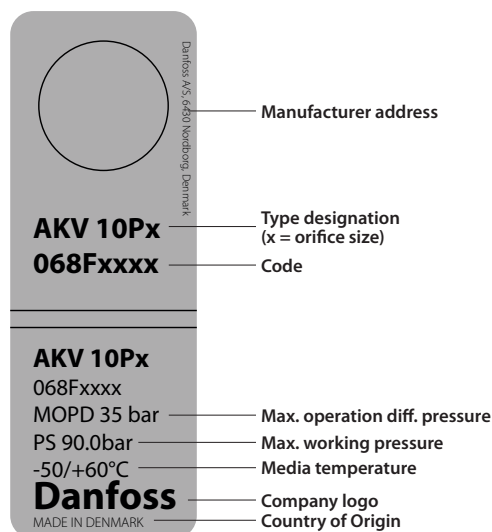
|  |  |
|--|--|
| Valve type                             | AKV 10PS4 to AKV 10PS7                             |
| Working principle                      | PWM (Pulse-width modulation)                       |
| Recommended period of cycle time       | 6 Seconds  |
| Regulation range (Capacity range)      | 10 – 100%  |
| Connection type                        | Solder   |
| Evaporating temperature                | -60 – 60 °C / -76 – 140 °F                         |
| Ambient temperature                    | -50 – 50 °C / -58 – 122 °F                         |
| MOPD                                   | 35 bar / 508 psig                                  |
| Min. OPD, AKV 10PS4 to AKV 10PS7       | 0.1 bar / 1.45 psi                                 |
| Filter, replaceable                    | Internal 53 µm                                     |
| Max. working pressure                  | 90 barg / 1305 psig                                |
| MAP (Max. Abnormal Pressure)           | 1305 psig  |
| COT (Continuous Operation Temperature) | 140 °F   |
| Recommended Danfoss Filter             | ELIMINATOR® Hermetic filter drier, type DML / DMSC |



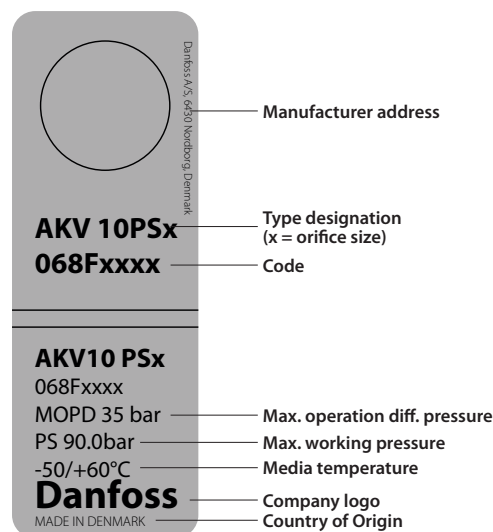
**Note:** It is recommended to selected Servo operated AKV 10PS valves for those application where higher MOPD (with low coil power) and high dampening is required.

**Valve identification**

**Direct operated valve  
AKV 10P0 - AKV 10P7**



**Servo operated valve  
AKV 10PS4 - AKV 10PS7**



**Capacity and ordering**
**AKV 10P - Rated capacity**

| Valve type / orifice no. | R744 <sup>2)</sup> |          |         |          | R407A <sup>1)</sup> |      | R404A/ R507 <sup>1)</sup> |      | k <sub>v</sub> value<br>[m <sup>3</sup> /h] | C <sub>v</sub> value <sup>3)</sup><br>[gpm] | Connection size<br>Solder ODF/ODF |         | Code no.<br>Single pack | Code no.<br>Industrial pack<br>16 pcs. pr. pack |
|--------------------------|--------------------|----------|---------|----------|---------------------|------|---------------------------|------|---|---|-----------------------------------|---------|-------------------------|---|
|                          | Refrig.            | Freezing | Refrig. | Freezing | [kW]                | [TR] | [kW]                      | [TR] |   |   | [in]                              | [mm]    |                         |   |
|                          | [kW]               | [kW]     | [TR]    | [TR]     |                     |      |                           |      |   |   |                                   |         |                         |   |
| AKV 10P0                 | 0.44               | 0.69     | 0.13    | 0.20     | 0.34                | 0.10 | 0.21                      | 0.06 | 0.003                                       | 0.0035                                      | 3/8 × 1/2                         | –       | 068F5210                | 068F5230  |
| AKV 10P0                 | 0.44               | 0.69     | 0.13    | 0.20     | 0.34                | 0.10 | 0.21                      | 0.06 | 0.003                                       | 0.0035                                      | –                                 | 10 × 12 | 068F5200                | 068F5220  |
| AKV 10P1                 | 1.17               | 1.84     | 0.33    | 0.53     | 0.90                | 0.26 | 0.8                       | 0.23 | 0.09  | 0.104                                       | 3/8 × 1/2                         | –       | 068F5211                | 068F5221  |
| AKV 10P1                 | 1.17               | 1.84     | 0.33    | 0.53     | 0.90                | 0.26 | 0.8                       | 0.23 | 0.09  | 0.104                                       | –                                 | 10 × 12 | 068F5201                | 068F5221  |
| AKV 10P2                 | 2.06               | 3.25     | 0.59    | 0.93     | 1.59                | 0.45 | 1.3                       | 0.37 | 0.016                                       | 0.021                                       | 3/8 × 1/2                         | –       | 068F5212                | 068F5232  |
| AKV 10P2                 | 2.06               | 3.25     | 0.59    | 0.93     | 1.59                | 0.45 | 1.3                       | 0.37 | 0.016                                       | 0.021                                       | –                                 | 10 × 12 | 068F5202                | 068F5222  |
| AKV 10P3                 | 3.14               | 4.97     | 0.90    | 1.41     | 2.43                | 0.69 | 2.0                       | 0.57 | 0.024                                       | 0.028                                       | 3/8 × 1/2                         | –       | 068F5213                | 068F5233  |
| AKV 10P3                 | 3.14               | 4.97     | 0.90    | 1.41     | 2.43                | 0.69 | 2.0                       | 0.67 | 0.024                                       | 0.028                                       | –                                 | 10 × 12 | 068F5203                | 068F5223  |
| AKV 10P4                 | 6.10               | 9.64     | 1.74    | 2.75     | 4.71                | 1.34 | 3.1                       | 0.88 | 0.046                                       | 0.053                                       | 3/8 × 1/2                         | –       | 068F5214                | 068F5234  |
| AKV 10P4                 | 6.10               | 9.64     | 1.74    | 2.75     | 4.71                | 1.34 | 3.1                       | 0.88 | 0.046                                       | 0.053                                       | –                                 | 10 × 12 | 068F5204                | 068F5224  |
| AKV 10P5                 | 8.49               | 13.4     | 2.42    | 3.82     | 6.55                | 1.87 | 4.9                       | 1.39 | 0.064                                       | 0.074                                       | 3/8 × 1/2                         | –       | 068F5215                | 068F5235  |
| AKV 10P5                 | 8.49               | 13.4     | 2.42    | 3.82     | 6.55                | 1.87 | 4.9                       | 1.39 | 0.064                                       | 0.074                                       | –                                 | 10 × 12 | 068F5205                | 068F5225  |
| AKV 10P6                 | 15.1               | 23.9     | 4.31    | 6.81     | 11.7                | 3.32 | 7.8                       | 2.22 | 0.114                                       | 0.132                                       | 3/8 × 1/2                         | –       | 068F5216                | 068F5236  |
| AKV 10P6                 | 15.1               | 23.9     | 4.31    | 6.81     | 11.7                | 3.32 | 7.8                       | 2.22 | 0.114                                       | 0.132                                       | –                                 | 10 × 12 | 068F5206                | 068F5226  |
| AKV 10P7                 | 24.6               | 39.3     | 7.00    | 11.1     | 18.9                | 5.39 | 12.5                      | 3.55 | 0.185                                       | 0.214                                       | 1/2 × 5/8                         | –       | 068F5217                | –   |
| AKV 10P7                 | 24.6               | 39.3     | 7.00    | 11.1     | 18.9                | 5.39 | 12.5                      | 3.55 | 0.185                                       | 0.214                                       | –                                 | 12 × 16 | 068F5207                | –   |

<sup>1)</sup> Rated capacities are based on:  
 Condensing temperature t<sub>c</sub> = 38 °C / 100 °F  
 Liquid temperature t<sub>l</sub> = 37 °C / 98 °F  
 Evaporating temperature t<sub>e</sub> = 4 °C / 39 °F

<sup>2)</sup> Rated capacities are based on:  
 Condensing temperature t<sub>c</sub> = 0 °C / 32 °F  
 Evaporating temperature Refrig. t<sub>e</sub> = -10 °C / 14 °F  
 Evaporating temperature Freezing. t<sub>e</sub> = -30 °C / -22 °F  
 Subcooling = 1 °C / 1.8 °F

<sup>3)</sup> C<sub>v</sub> value is calculated from K<sub>v</sub> value in above table

**AKV 10PS - Rated capacity**

| Valve type / orifice no. | R744 <sup>2)</sup> |          |         |          | R407A <sup>1)</sup> |      | R404A/ R507 <sup>1)</sup> |      | k <sub>v</sub> value<br>[m <sup>3</sup> /h] | C <sub>v</sub> value <sup>3)</sup><br>[gpm] | Connection size<br>Solder ODF/ODF |         | Code no.<br>Single pack | Code no.<br>Industrial pack<br>16 pcs. pr. pack |
|--------------------------|--------------------|----------|---------|----------|---------------------|------|---------------------------|------|---|---|-----------------------------------|---------|-------------------------|---|
|                          | Refrig.            | Freezing | Refrig. | Freezing | [kW]                | [TR] | [kW]                      | [TR] |   |   | [in]                              | [mm]    |                         |   |
|                          | [kW]               | [kW]     | [TR]    | [TR]     |                     |      |                           |      |   |   |                                   |         |                         |   |
| AKV 10PS4                | 6.10               | 9.64     | 1.74    | 2.75     | 4.71                | 1.34 | 3.1                       | 0.88 | 0.046                                       | 0.053                                       | 3/8 × 1/2                         | –       | 068F4044                | 068F5184  |
| AKV 10PS4                | 6.10               | 9.64     | 1.74    | 2.75     | 4.71                | 1.34 | 3.1                       | 0.88 | 0.046                                       | 0.053                                       | –                                 | 10 × 12 | 068F4034                | 068F5174  |
| AKV 10PS5                | 8.49               | 13.4     | 2.42    | 3.82     | 6.55                | 1.87 | 4.9                       | 1.39 | 0.064                                       | 0.074                                       | 3/8 × 1/2                         | –       | 068F4045                | 068F5185  |
| AKV 10PS5                | 8.49               | 13.4     | 2.42    | 3.82     | 6.55                | 1.87 | 4.9                       | 1.39 | 0.064                                       | 0.074                                       | –                                 | 10 × 12 | 068F4035                | 068F5175  |
| AKV 10PS6                | 15.1               | 23.9     | 4.31    | 6.81     | 11.7                | 3.32 | 7.8                       | 2.22 | 0.114                                       | 0.132                                       | 3/8 × 1/2                         | –       | 068F4046                | 068F5186  |
| AKV 10PS6                | 15.1               | 23.9     | 4.31    | 6.81     | 11.7                | 3.32 | 7.8                       | 2.22 | 0.114                                       | 0.132                                       | –                                 | 10 × 12 | 068F4036                | 068F5176  |
| AKV 10PS7                | 24.6               | 39.3     | 7.00    | 11.1     | 18.9                | 5.39 | 12.5                      | 3.55 | 0.185                                       | 0.214                                       | 1/2 × 5/8                         | –       | 068F4047                | –   |
| AKV 10PS7                | 24.6               | 39.3     | 7.00    | 11.1     | 18.9                | 5.39 | 12.5                      | 3.55 | 0.185                                       | 0.214                                       | –                                 | 10 × 16 | 068F4037                | –   |

<sup>1)</sup> Rated capacities are based on:  
 Condensing temperature t<sub>c</sub> = 38 °C / 100 °F  
 Liquid temperature t<sub>l</sub> = 37 °C / 98 °F  
 Evaporating temperature t<sub>e</sub> = 4 °C / 39 °F

<sup>2)</sup> Rated capacities are based on:  
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 Evaporating temperature Refrig. t<sub>e</sub> = -10 °C / 14 °F  
 Evaporating temperature Freezing. t<sub>e</sub> = -30 °C / -22 °F  
 Subcooling = 1 °C / 1.8 °F

<sup>3)</sup> C<sub>v</sub> value is calculated from K<sub>v</sub> value in above table

**Coolselector®2**

**Valve sizing using calculation software**

It is strongly recommended to use **Coolselector®2** to find the correct valve for your application. The software can be downloaded from the Danfoss website. When using the calculation software it is recommended to choose a valve that is between 50% and 75% loaded at the nominal capacity. In addition, the liquid velocity in the line leading to the valve should not exceed 1m/s (3ft/s).

You can download it from <http://coolselector.danfoss.com>

Data sheet | Electric expansion valve, type AKV 10P, AKV 10PS

Standard coil for AKV 10P/ AKV 10PS



Solenoid coil with terminal box



Solenoid coil with DIN spade and protection cap



Solenoid coil with cable



Solenoid coil with DIN spade

Approvals (coils)

Low Voltage Directive (LVD) 2014/35/EU



Technical data

**Design**  
In accordance with IEC 60335

**Insulation of coil wire**  
Class H according to IEC 85

**Power supply**  
Alternating current (AC)

**Connection**  
Terminal box, DIN spade or cable

**Permissible voltage variation**  
Alternating current (AC):  
50 Hz and 60 Hz: -10% – 15%  
50/60 Hz: ± 10%

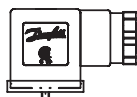
**Enclosure, IEC 60529**  
IP20, IP65 or IP67

**Ambient temperature**  
-40 °C – 50 °C / -40 °F – 122 °F

Ordering coils

| Coil type | MOPD (Max. Operation Pressure Differential) |           |                   |              |                     |                          |               |
|-----------|---|-----------|-------------------|--------------|---------------------|--------------------------|---------------|
|           | Voltage                                     | Frequency | Power consumption | Connection   | Multi pack Code no. | Industrial pack Code no. |               |
|           | [V AC]                                      | [Hz]      | [W]               |              |                     | Code no.                 | Pcs. per pack |
| BE230CS   | 230   | 50        | 17                | terminal box | 018F6732            | -                        | 50            |
| BE230CS   | 230   | 50        | 17                | DIN plugs    | 018F6193            | -                        | 50            |
| BF230CS   | 230   | 50        | 17                | 1 m cable    | 018F6282            | 018F8232                 | 24            |
| BF230CS   | 230   | 50        | 17                | 3 m cable    | -                   | 018F8290                 | 12            |
| BF230CS   | 230   | 50        | 17                | 8 m cable    | 018F4961            | 018F8291                 | 6             |
| BE240CS   | 240   | 60        | 15                | terminal box | 018F6713            | -                        | -             |
| BE240CS   | 240   | 60        | 15                | terminal box | 018F6814            | -                        | -             |
| BE240CS   | 240   | 60        | 15                | 1 m cable    | 018F6264            | -                        | -             |
| BG110BS   | 110   | 60        | 15                | terminal box | 018F6813            | -                        | -             |

Accessories (coil)



Plug for DIN spade connection

| Type     | Voltage  | Frequency | Quantity | Code no.   |
|----------|----------|-----------|----------|------------|
|          | [V]      | [Hz]      | [Pcs]    | Multi pack |
| DIN plug | Max. 250 | 50 / 60   | 100      | 042N0156   |

Single pack = 1 product in a box with installation guide  
Multi pack = box with x pieces single pack (can be split)  
Industrial pack = x pieces in one box (cannot be split)

Coil identification

Example:

|                  |          |                                       |           |  |              |                   |                     |                 |                      |
|------------------|----------|---------------------------------------|-----------|--|--------------|-------------------|---------------------|-----------------|----------------------|
| Type designation | Code no. | Voltage, frequency, Power consumption | Approvals |  | Company logo | Country of Origin | Ambient temperature | Production date | Manufacturer address |
|------------------|----------|---------------------------------------|-----------|--|--------------|-------------------|---------------------|-----------------|----------------------|

Data sheet | Electric expansion valve, type AKV 10P, AKV 10PS

UL coil for  
AKV 10P / AKV 10PS



Junction box NEMA 2



Conduit boss NEMA 4

Approvals (coils)



Technical data

**Design**  
In accordance with UL 429

**Insulation of coil wire**  
Class H according to IEC 85

**Power supply**  
Alternating current (AC)

**Connection**  
Junction box or Conduit boss

**Permissible voltage variation**  
Alternating current (AC):  
50 Hz and 60 Hz: -10% – 15%  
50/60 Hz: ± 10%

**Enclosure, IEC 60529**  
Junction box NEMA 2 ~ IP 12-32  
Conduit boss NEMA 4 ~ IP 54

**Ambient temperature**  
-40 °C – 50 °C / -40 °F – 122 °F

Ordering  
BJ and BX Coils

| Coil type   | Wire length |      | Voltage<br>[V AC] | Frequency<br>[Hz] | Power consumption<br>[W] | Multi pack<br>Code no. |
|---|-------------|------|-------------------|-------------------|--------------------------|------------------------|
|   | [in]        | [cm] |                   |                   |                          |                        |
| <i>Junction box NEMA 2 for AKV 10P / AKV 10PS</i> |             |      |                   |                   |                          |                        |
| BJ024CS   | -           | -    | 24                | 50 / 60           | 14                       | 018F4100               |
| BJ120CS   | -           | -    | 110               | 50                | 16                       | 018F4110               |
| BJ120CS   | -           | -    | 120               | 60                | 15                       |                        |
| BJ240CS   | -           | -    | 208 – 240         | 60                | 14                       | 018F4120               |
| BJ240CS   | -           | -    | 230               | 50                | 17                       |                        |
| <i>Conduit boss NEMA 4 for AKV 10P / AKV 10PS</i> |             |      |                   |                   |                          |                        |
| BX024CS   | 18          | 46   | 24                | 50 / 60           | 14                       | 018F4102               |
| BX024CS   | 71          | 180  | 24                | 50 / 60           | 14                       | 018F4103               |
| BX024CS   | 98          | 250  | 24                | 50 / 60           | 14                       | 018F4104               |
| BX120CS   | 18          | 46   | 110               | 50                | 16                       | 018F4112               |
| BX120CS   | 18          | 46   | 120               | 60                | 15                       |                        |
| BX120CS   | 36          | 91   | 110               | 50                | 16                       | 018F4113               |
| BX120CS   | 36          | 91   | 120               | 60                | 15                       |                        |
| BX120CS   | 71          | 180  | 110               | 50                | 16                       | 018F4114               |
| BX120CS   | 71          | 180  | 120               | 60                | 15                       |                        |
| BX120CS   | 98          | 250  | 110               | 50                | 16                       | 018F4115               |
| BX120CS   | 98          | 250  | 120               | 60                | 15                       |                        |
| BX240CS   | 18          | 46   | 208 – 240         | 60                | 14                       | 018F4122               |
| BX240CS   | 98          | 250  | 230               | 50                | 17                       |                        |
| BX240CS   | 18          | 46   | 208 – 240         | 60                | 14                       | 018F4123               |
| BX240CS   | 98          | 250  | 230               | 50                | 17                       |                        |

Coil Identification

Example:

The diagram shows a rectangular label with the following text and callouts:

- Company logo:** Danfoss
- Country of Origin:** MADE IN DENMARK
- Type designation:** Type BJ024CS
- Code no.:** Spare part no. 018F4100
- Voltage, frequency, Power consumption:** 24V 60Hz 14W, 24V 50Hz 14W
- Approvals:** UL US logo
- Additional text:** To be used with listed valve body EVR-EVRH-EVRC-EVRP-EV2xx series AKV-AKVA, See armature tube or label

Ordering spareparts

For Direct operated AKV 10P

| AKV 10P0 – AKV 10P3<br>Orifice kit 1 | AKV 10P4 – AKV 10P7<br>Orifice kit 2 | AKV 10P0 – AKV 10P7<br>Armature kit 3   | AKV 10P0 – AKV 10P7<br>Filter kit 4 |
|--------------------------------------|--------------------------------------|---|-------------------------------------|
| Code no.<br>068F5151                 | Code no.<br>068F5152                 | Code no.<br>068F5153  | Code no.<br>068F5154                |
|                                      |                                      | <p>Retrofit kit for converting AKV 10-1 - AKV 10-7 and AKVH 10-0 - AKVH 10-6 to AKV 10P0 AKV 10P7</p> |                                     |

For servo operated AKV 10PS

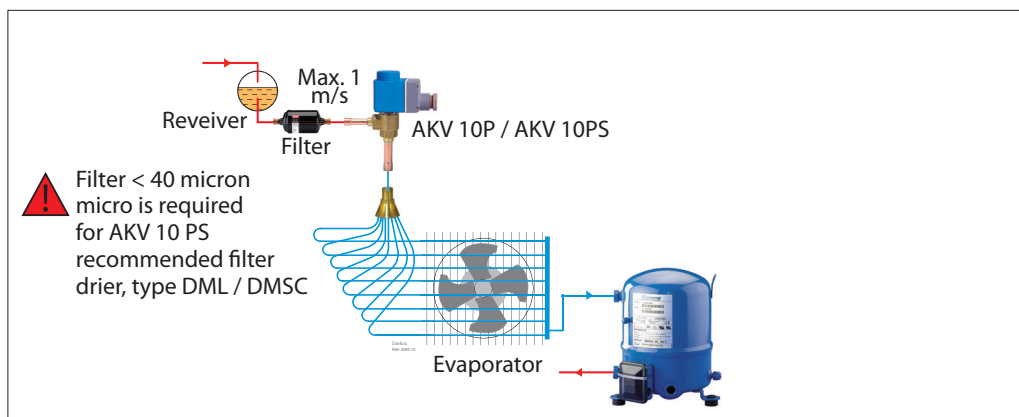
| AKV 10PS4 - AKV 10PS7<br>Orifice kit 5 | AKV 10PS4 - AKV 10PS7<br>Filter Kit 6 | AKV 10PS4 - AKV 10PS7<br>Armature kit 7  |
|--|---------------------------------------|--|
| Code no.<br>068F5155                   | Code no.<br>068F5156                  | Code no.<br>068F5161   |
|  |                                       | <p>Retrofit kit for converting AKV 10-1 AKV 10-7 and AKVH 10-0 AKVH AKVH 10-6 to AKV 10PS4 AKV 10PS7</p> |

Accessories



| Product               | Description  | Code no. |
|-----------------------|--|----------|
| Solenoid valve Tester | Permanent magnet for AKV 10P and AKV 10PS (for installation and testing purpose) | 018F0091 |

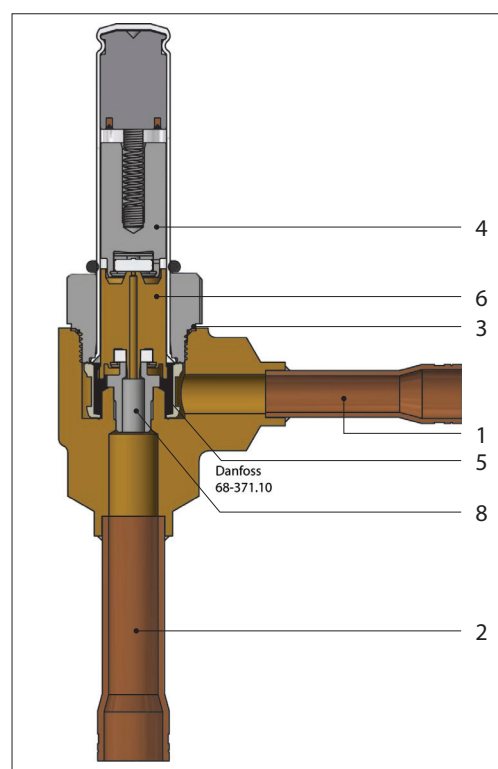
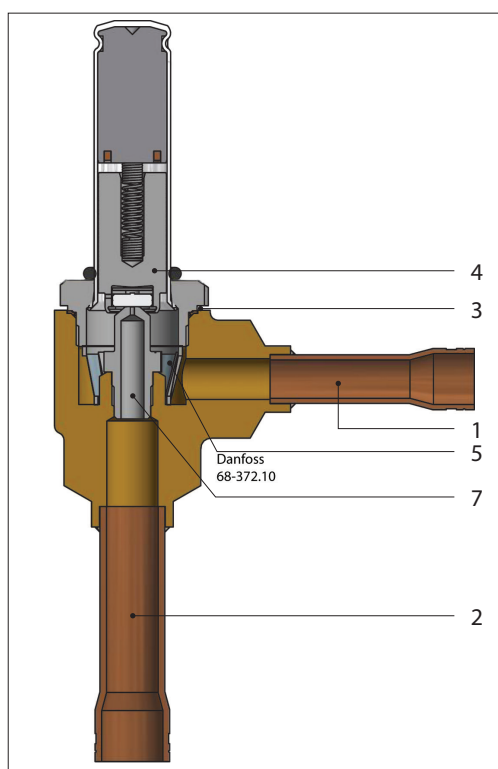
Typical Application



Design and function

AKV 10P0 – AKV 10P7

AKV 10PS4 – AKV 10PS7



Name

1. Inlet (connection)
2. Outlet (connection)
3. Copper gasket
4. Amature
5. Protection filter  
100 micron (AKV 10P) and  
53 micron (AKV 10PS)
6. Piston
7. Orifice ( AKV 10P)
8. Orifice (AKV 10PS)

Material

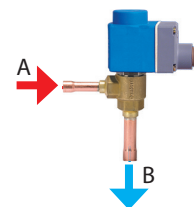
1. Copper
2. Copper
3. Cu/Ti
4. Stainless steel
5. Nylon/stainless steel
6. Brass
7. Stainless steel
8. Stainless steel

The valve capacity is regulated by means of pulse-width modulation. Within a period of six seconds a voltage signal from the controller will be transmitted to and removed from the valve coil. This makes the valve open and close for the flow of refrigerant. The relation between this opening and closing time indicates the actual capacity. If there is an intense need for refrigeration, the valve will remain open for almost all six seconds of the period. If the required amount of refrigeration is modest, the valve will only stay open during a fraction of the period.

The amount of refrigeration needed is determined by the controller. When no refrigeration is required, the valve will remain closed and thus function as a solenoid valve. AKV 10P0 - AKV 10P7 is a direct operated valve which can operate at 0 bar/0 psi differential pressure. AKV 10PS4 - AKV 10PS7 is a servo piston operated valve which needs a minimum differential pressure of 0.1 bar / 1.45 psi to open the valve and keep it open.

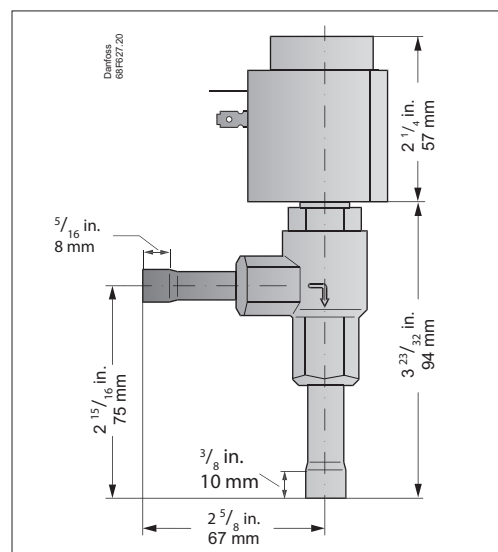
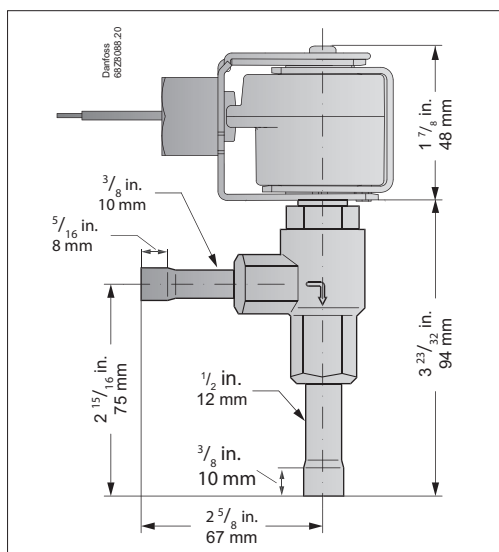
Flow direction

AKV 10P/10PS is designed for single flow direction and following pictures from A to B refers the normal flow.



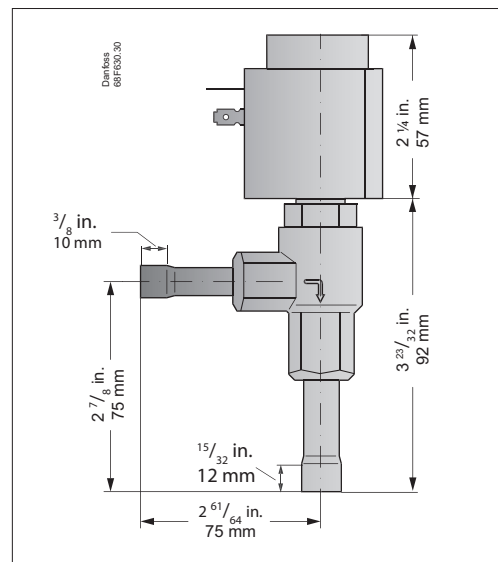
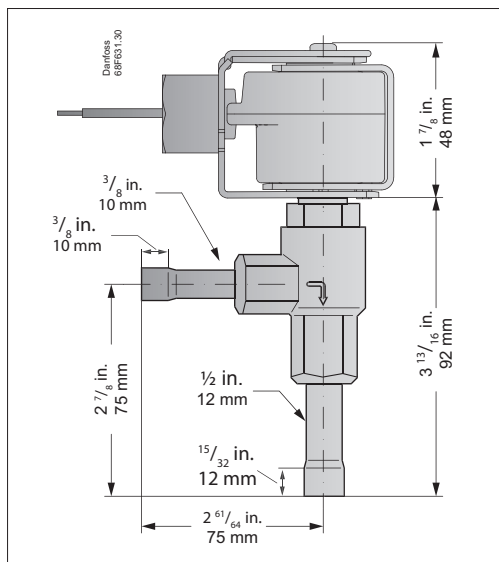
**Dimensions and weight  
AKV 10P valve**

**AKV 10P0 - AKV 10P6**



Weight excluding coil: 0.30 kg / 0.66 lbs

**AKV 10P7**

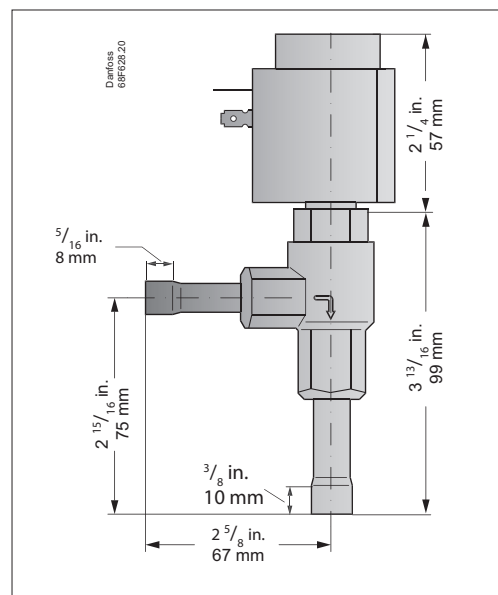
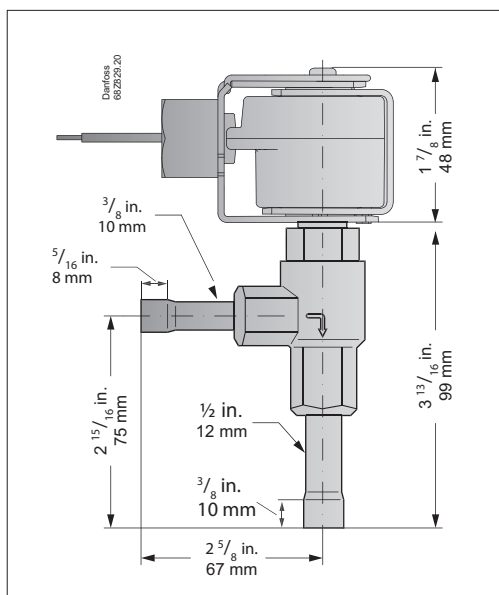


Weight excluding coil: 0.343 Kg / 0.76 lbs



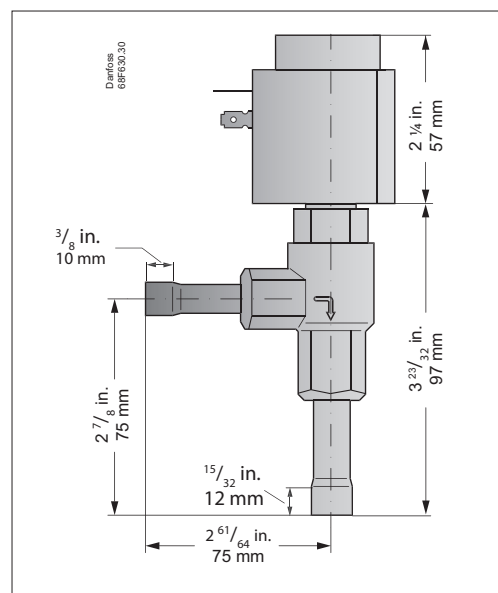
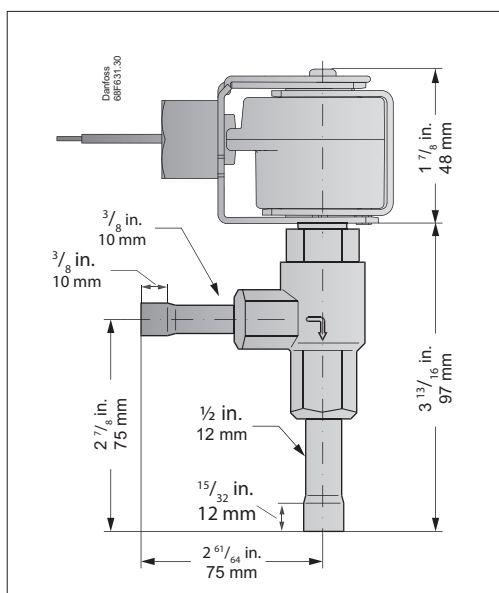
**Dimensions and weight  
AKV 10PS valve**

**AKV 10PS4 – AKV 10PS6**



Weight excluding coil: 0.335 Kg / 0.74 lbs

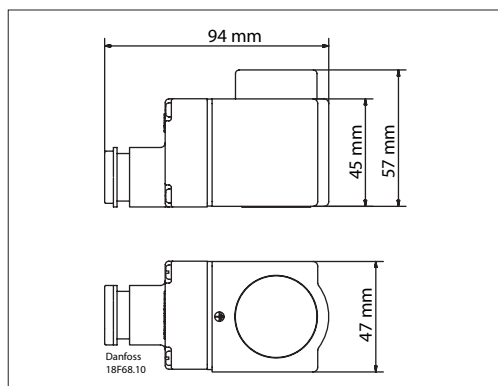
**AKV 10PS7**



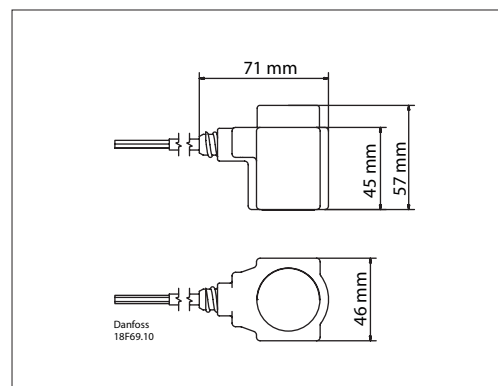
Weight excluding coil: 0.343 Kg / 0.76 lbs

Data sheet | Electric expansion valve, type AKV 10P, AKV 10PS

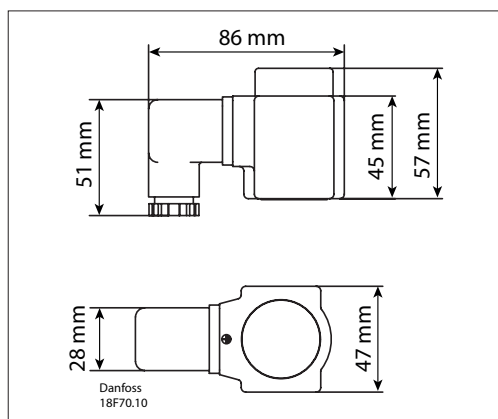
Dimension and weight standard coils



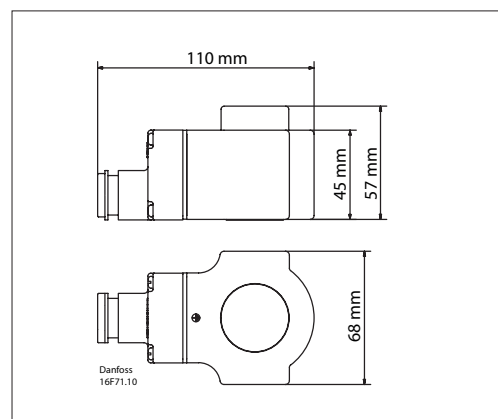
**Terminal box 10 W**  
Weight 0.29 Kg / 0.6 lbs



**Cable 10 W**  
Weight 0.29 Kg / 0.6 lbs

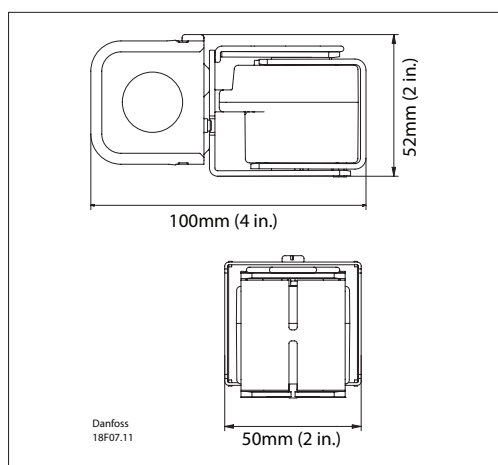


**DIN socket 10 W**  
Weight 0.24 Kg / 0.5 lbs

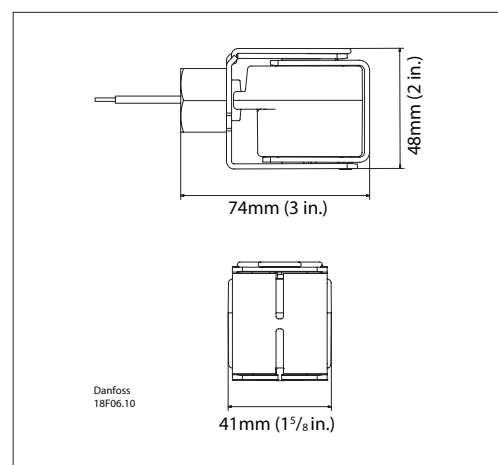


**Terminal box 12 - 20 W**  
Weight 0.55 Kg / 1.2 lbs

Dimensions and weight UL coils



**Junction box**  
Weight 0.860 lbs / 0.39 kg



**Conduit boss**  
Weight 0.717 lbs / 0.33 kg

**Troubleshooting**

| Symptom   | Possible Cause   | Remedy  |
|---|--|---|
| <b>Valve does not open</b>  | -Lack of proper electrical connection/Power  | •Check the connection between valve and a controller  |
|   | -Incorrect voltage/frequency   | •Check coil specification against measured operating voltage  |
|   | -Differential pressure too high/ low   | •Check differential pressure of valve against technical specification<br>•Replace with suitable valve and or coil   |
|   | -Impurities in the valve   | •Check dirt inside valve and clean out impurities   |
|   | -Burnt out coil  | •Never take the coil off the valve if voltage is applied. The coil can burn out<br>•Check the wiring diagram and wiring itself<br>•Check relay contacts, lead connections and fuses             |
|   | -Valve stuck open after being assembled  | •Check Instruction if all correct parts are used, and correctly assembled   |
|   | -Valve does not open after orifice has been exchanged to a larger capacity due to high differential pressure | •Replace with suitable valve and or coil  |
| <b>Internal leakage/ valve does not close or closes partially</b> | -Continuous voltage on coil  | •Do not remove powered coil off the valve   |
|   | -Impurities in the valve   | •Check dirt inside valve and clean out impurities   |
|   | -Pulsation in discharge line<br>-Differential pressure too high in open position                             | •Check pressure and flow conditions<br>•Check the supply voltage in the coil<br>•Replace with suitable valve  |
|   | -Valve capacity too small  | •Check refrigeration system capacity and compare with valve capacity<br>•Replace with larger valve if necessary<br>- larger capacity orifice in AKV 10P<br>- larger capacity piston in AKV 10PS |
| <b>Insufficient capacity</b>                                      | -Suction pressure too low<br>-Evaporator superheat too high  | •Check superheat performance, the settings SH min and SH max. in the super heat controller<br>•Check valve capacity<br>•Check coil excitation time<br>•Also check section "High Superheat"      |
|   | -Valve blocked with foreign material   | •Valve strainer blocked, replace strainer with a new one  |
|   | -Valve blocked with foreign material<br>-Also check "Insufficient capacity"                                  | •Replace valve strainer/filter<br>•De-ice evaporator  |
| <b>High superheat</b>   | -Lack of sub-cooling   | •Check refrigerant<br>•Also check section<br>•Also refer to section Insufficient capacity   |
|   | -Controller is not setup/tuned properly  | •Check the controller superheat settings and sensors connected to it<br>•Tune PID parameters in the controller  |
| <b>Flash gas</b>  | -Lack of sub-cooling ahead of valve  | •Check refrigerant for flash gas ahead of valve/external subcooler If the valve is placed much higher than condenser outlet<br>•Check pressure difference                                       |
|   | -Oversized valve selected  | •Limit max opening degree of the valve setting in controller<br>•Check refrigeration system capacity and compare with valve capacity<br>•Use proper valve size suitable for the system          |
| <b>Pulsations in liquid line</b>                                  | -High flow velocity, max. 1 m/s  | •Check flow velocity, using coolselector2<br>•Change to AKV 10PS for maximum dampening effect<br>•Use larger diameter pipes to reduce flow velocity   |
| <b>Overheating coil</b>   | -Armature is not moving when coil is energized<br>-Too high voltage supply, dirt in valve, too high MOPD)    | •Check section valve does not open  |

**Appendix 1:**  
**AKV 10P/10PS MOPD with various coils**

| Type     | B        | B        | B        | B        | B        | B        | B        |
|----------|----------|----------|----------|----------|----------|----------|----------|
| Voltag   | 230 A    | 230 A    | 230 C    | 230 A    | 230 C    | 220 G    | 240 B    |
| Watt     | 12       | 15       | 17       | 19       | 16       | 16       | 15       |
| Code no. | 018F6176 | 018F6801 | 018F6193 | 018F6905 | 018F6813 | 018F6814 | 018F6188 |
| MOPD at  | 50 Hz    | 50 Hz    | 50 Hz    | 50 Hz    | 60 Hz    | 60 Hz    | 60 Hz    |
| MOPD at  | 220 V    | 220 V    | 220 V    | 230 V    | 110 V    | 220 V    | 240 V    |
| AKV 10P0 | 25       | 35       | 35       | N/A      | 35       | 35       | 25       |
| AKV 10P1 | 25       | 35       | 35       | N/A      | 35       | 35       | 25       |
| AKV 10P2 | 25       | 35       | 35       | N/A      | 35       | 35       | 25       |
| AKV 10P3 | 25       | 35       | 35       | N/A      | 35       | 35       | 25       |
| AKV 10P4 | N/A      | 25       | 25       | 35       | 18       | 25       | 18       |
| AKV 10P5 | 18       | 25       | 25       | 35       | 30       | 35       | 25       |
| AKV 10P6 | N/A      | N/A      | 25       | 35       | 18       | 18       | 18       |
| AKV 10P7 | N/A      | N/A      | 14       | 18       | 14       | 14       | N/A      |

|           |    |    |    |     |    |    |    |
|-----------|----|----|----|-----|----|----|----|
| AKV 10PS4 | 25 | 25 | 35 | N/A | 35 | 35 | 30 |
| AKV 10PS5 | 25 | 25 | 35 | N/A | 35 | 35 | 30 |
| AKV 10PS6 | 25 | 25 | 35 | N/A | 35 | 35 | 30 |
| AKV 10PS7 | 25 | 25 | 35 | N/A | 35 | 35 | 30 |

| Type     | BJ / BX  |       | BJ / BX  |       |       | BJ / BX  |       |       | BJ / BX  | BJ / BX  | BJ / BX  |
|----------|----------|-------|----------|-------|-------|----------|-------|-------|----------|----------|----------|
| Voltag   | 24 C     |       | 120 CS   |       |       | 240 CS   |       |       | 120 BS   | 208 BS   | 240BS    |
| Watt     | 14       |       | 16       |       |       | 14       | 14    | 17    | 16       | 16       | 16       |
| Code no. | 018F4103 |       | 018F4113 |       |       | 018F4122 |       |       | 018F4130 | 018F4133 | 018F4135 |
| MOPD at  | 60 Hz    | 50 Hz | 50 Hz    | 60 Hz | 60 Hz | 60 Hz    | 60 Hz | 50 Hz | 60 Hz    | 60 Hz    | 60 Hz    |
| MOPD at  | 24 V     | 24 V  | 110 V    | 110 V | 120 V | 208 V    | 240 V | 230 V | 120 V    | 208 V    | 240 V    |
| AKV 10P0 | 25       | 35    | 35       | 25    | 35    | 18       | 35    | 35    | 35       | 35       | 35       |
| AKV 10P1 | 25       | 35    | 35       | 25    | 35    | 18       | 35    | 35    | 35       | 35       | 35       |
| AKV 10P2 | 25       | 35    | 35       | 25    | 35    | 18       | 35    | 35    | 35       | 35       | 35       |
| AKV 10P3 | 25       | 35    | 35       | 25    | 35    | 18       | 35    | 35    | 35       | 35       | 35       |
| AKV 10P4 | 18       | 25    | 30       | 18    | 18    | 14       | 25    | 30    | 30       | 30       | 30       |
| AKV 10P5 | 25       | 35    | 35       | 25    | 35    | 18       | 35    | 35    | 35       | 35       | 35       |
| AKV 10P6 | 14       | 25    | 25       | 18    | 18    | 14       | 18    | 30    | 25       | 25       | 25       |
| AKV 10P7 | N/A      | 18    | 18       | N/A   | 14    | N/A      | 14    | 18    | 14       | 14       | 18       |

|           |    |    |    |    |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|----|----|----|----|
| AKV 10PS4 | 25 | 35 | 35 | 30 | 35 | 25 | 35 | 35 | 35 | 35 | 35 |
| AKV 10PS5 | 25 | 35 | 35 | 30 | 35 | 25 | 35 | 35 | 35 | 35 | 35 |
| AKV 10PS6 | 25 | 35 | 35 | 30 | 35 | 25 | 35 | 35 | 35 | 35 | 35 |
| AKV 10PS7 | 25 | 35 | 35 | 30 | 35 | 25 | 35 | 35 | 35 | 35 | 35 |

The MOPD values provided in the table above are in bar.

MOPD table is based on:

- Nominal Voltage
- Max media temperature 60 °C (140 °F)
- Max ambient temperature 50 °C (122 °F)

**Appendix 2:  
Dimensioning of the liquid**

**Correctly dimensioned liquid line**

To obtain a correct supply of liquid to the AKV 10P/PS valve, the liquid line to the individual AKV 10P/PS valve must be correctly dimensioned.

Dimensioning of the liquid line must be based on the capacity of the valve at the pressure drop with which it is operating and not on the evaporator's capacity.

The liquid flow rate should not exceed 3 ft/s

**CO<sub>2</sub>**

| Type     | Pipe dimension |                |
|----------|----------------|----------------|
|          | Refrigeration  | Freezing       |
| AKV 10P0 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P1 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P2 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P3 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P4 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P5 | 3/8 in / 10 mm | 1/2 in / 12 mm |
| AKV 10P6 | 1/2 in / 12 mm | 5/8 in / 15 mm |
| AKV 10P7 | 5/8 in / 15 mm | 3/4 in / 18 mm |

**R407A**

| Type     | Pipe dimension |                |
|----------|----------------|----------------|
|          | Refrigeration  | Freezing       |
| AKV 10P0 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P1 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P2 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P3 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P4 | 3/8 in / 10 mm | 3/8 in / 10 mm |
| AKV 10P5 | 1/2 in / 12 mm | 1/2 in / 12 mm |
| AKV 10P6 | 1/2 in / 15 mm | 1/2 in / 15 mm |
| AKV 10P7 | 5/8 in / 16 mm | 5/8 in / 16 mm |

**Note!**

The conditions are the same as for the rated capacities.  
 Evaporating temperature is -10 °C for refrigeration and -30 °C for freezing.  
 The super heat is 8 K for both refrigeration and freezing.  
 Pipes are according ANSI or DIN-EN.  
 If conditions deviate from above, the pipe dimensions should be checked.

**Related products**

| AK-CC 550<br>case controller | AK-CC 750<br>case controller | EKC 315A<br>superheat controller | DML/DMSC Eliminator®<br>hermetic filter drier |
|------------------------------|------------------------------|----------------------------------|---|
|                              |                              |                                  |   |