MAKING MODERN LIVING POSSIBLE

Technical brochure

Pilot valves
for servo operated main valves

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Contents

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Introduction

Pilot valves for direct mounting in main valves

The range of pilot valves consists of:

- Constant-pressure pilot valve, type CVP (LP) and CVP (HP)
- Differential-pressure pilot valve, type CVPP (LP) and CVPP (HP)
- High pressure pilot valve, type CVP (XP) ideal for CO_2 hot gas defrosting
- Pressure-operated pilot valve with reference pressure connection, type CVC
- Electronically operated constant-pressure pilot valve, type CVQ (pressure-dependent)
- Solenoid pilot valve, type EVM (NC)
- Solenoid pilot valve, type EVM (NO)
- Housing, type CVH for pilot valves, for mounting in external pilot lines

Features

- Applicable to all common non flammable refrigerants including R 717 and non corrosive gases/liquids dependent on sealing material compatability.
- The pilot valves can be screwed direct into the main valve, thus avoiding the necessity of welding, soldering and separate pilot lines.
- The pilot valves can be mounted direct in a ICS or PM main valve or be connected via an external pilot line and a CVH housing.
- All pilot valves can be used on all sizes of main valves.
- Extremely accurate pressure and temperature control.
- Several pilot valves can be connected in series or in parallel to provide many functions in the same ICS or PM main valve.

Design

Each pilot valve is designed to give the optimum control accuracy within the specific function range of the valve.

Several pilot valves can be mounted in series and/or in parallel on a ICS or PM main valve to give a very large number of functions.

Mounted in a CVH housing, the pilot valves can be used in external lines, either as independently operating valves or as external control valves for the main valve.

The pilot valves can be used for all sizes of ICS or PM main valves.

Technical data

- *Refrigerants*
  Applicable to all common non flammable refrigerants including R 717 and non corrosive gases/liquids dependent on sealing material compatability.

  For further information please see installation instruction for ICS valves or PM valves.

  Flammable hydrocarbons are not recommended. For further information please contact your local Danfoss Sales Company.
- Temperature and pressure ranges are given separately for the specific pilot valve.

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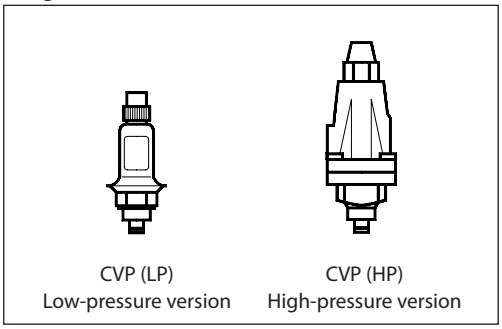
Constant-pressure pilot valve, type CVP (LP) and CVP (HP)

Design and function



CVP (LP) Low-pressure version | CVP (HP) High-pressure version

CVP is a constant-pressure pilot valve available in low-pressure and high-pressure versions.

The pilot valve is used to maintain a constant pressure on the ICS or PM main valve inlet side. The low-pressure version (LP) must not be subjected to pulsation.

When a CVP is mounted in a CVH housing, it can be used as a separate constant-pressure valve or a pressure relief valve (e.g. to prevent hydraulic overpressure in an entrapped liquid).

MWP: Maximum working pressure.

The k_v/C_v value is measured with the pilot valve mounted in a CVH housing for external pilot lines. The value can vary slightly, depending on the setting value.

When CVP (HP) is used at a temperature lower than –50°C (–58°F) the bolts must be replaced with stainless steel bolts (type 4, quality 80).

*Technical data, **SI units***

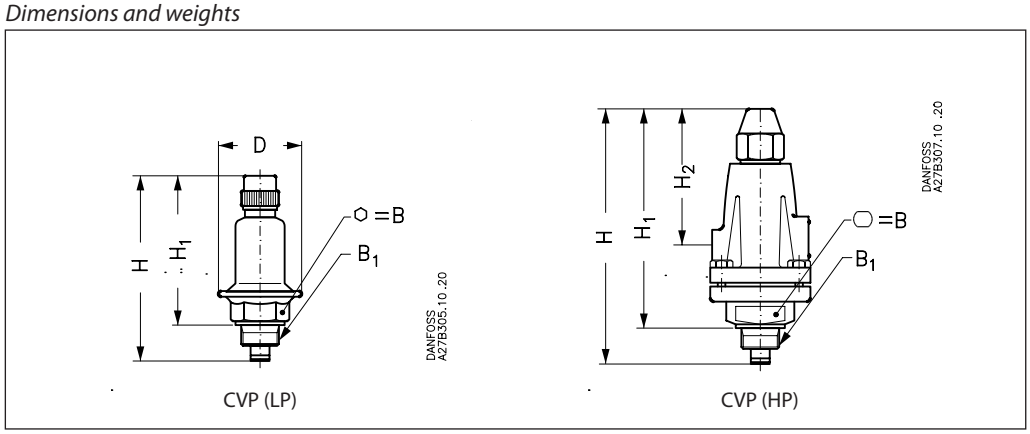
Valve type	MWP	k_v-value	Temperature range	Pressure range	**Code no.**
Low-pressure version					
CVP (LP)	17 bar g	0.40 m³/h	–50 to 120°C	0 bar g to 7 bar g	**027B1100**
CVP (LP)	17 bar g	0.40 m³/h	–50 to 120°C	–0.66 bar g to 2 bar g	**027B1101**
High-pressure version					
CVP (HP)	28 bar g	0.40 m³/h	–50 to 120°C	4 bar g to 22 bar g	**027B1160**
CVP (HP)	28 bar g	0.40 m³/h	–50 to 120°C	4 bar g to 28 bar g	**027B1161**
CVP (HP)	28 bar g	0.40 m³/h	–50 to 120°C	–0.66 bar g to 7 bar g	**027B1164**

*Technical data, **US units***

Valve type	MWP	C_v-value	Temperature range	Pressure range	**Code no.**
Low-pressure version					
CVP (LP)	247 psi g	0.46 US gal/min	–58 to 248°F	0 psi g to 102 psi g	**027B1100**
CVP (LP)	247 psi g	0.46 US gal/min	–58 to 248°F	19.5 in. Hg to 29 psi g	**027B1101**
High-pressure version					
CVP (HP)	406 psi g	0.46 US gal/min	–58 to 248°F	58 psi g to 319 psi g	**027B1160**
CVP (HP)	406 psi g	0.46 US gal/min	–58 to 248°F	58 psi g to 406 psi g	**027B1161**
CVP (HP)	406 psi g	0.46 US gal/min	–58 to 248°F	19.5 in. Hg to 102 psi g	**027B1164**

P-band for a valve system regulated by CVP and ICS or PM main valve: < 0.2 bar g (2.9 psi g)

Dimensions and weights



CVP (LP) | CVP (HP)

Valve type		H	H_1	H_2		D		B	B_1	Weight
Low-pressure version										
CVP (LP)	mm	122	98			53		32	M 24 × 1.5	0.4 kg
	in.	4.80	3.86			2.09				0.88 lb.
High-pressure version										
CVP (HP)	mm	170	146	90				32	M 24 × 1.5	1.7 kg
	in.	6.69	5.75	3.54						3.75 lb.

Weights are approximate values only

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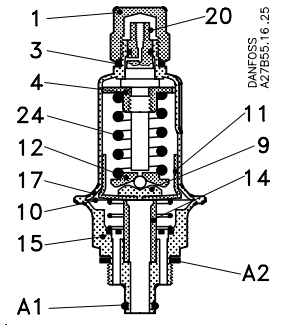
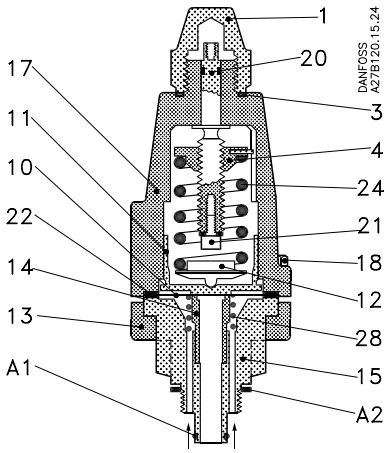
Constant-pressure pilot valve, type CVP (LP) and CVP (HP)

(continued)

Material specification



CVP (LP)



CVP (HP)

CVP (LP)

No.	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Cloroprene (Neoprene)
4	Nut	Stainless steel
9	Ball socket	Stainless steel
10	Diaphragm	Stainless steel
11	Thrust pad	Steel
12	Spring guide	Stainless steel
14	Orifice	Stainless steel
15	Base	Steel
17	Valve bonnet	Low temperature cast iron (spherical)
20	Setting spindle	Stainless steel
24	Spring	Steel

CVP (HP)

No.	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Non-asbestos
4	Nut	Stainless steel
10	Diaphragm	Stainless steel
11	Thrust pad	Stainless steel
12	Spring guide	Stainless steel
13	Flange	Low temperature cast iron (spherical)
14	Orifice	Stainless steel
15	Base	Steel
17	Valve bonnet	Low temperature cast iron (spherical)
18	Cover bolt	Steel
20	Setting spindle	Stainless steel
21	Screw (M6 × 10)	Steel
22	Cover gasket	Non-asbestos
24	Spring	Steel
28	Spring	Steel

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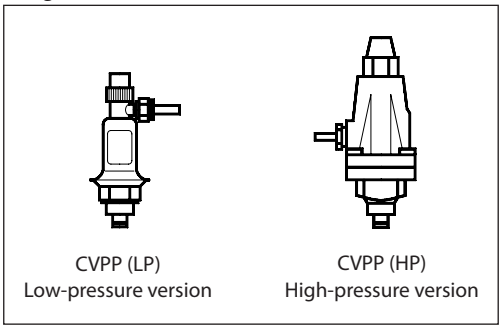
Differential-pressure pilot valve, type CVPP (LP) and CVPP (HP)

Design and function



CVPP (LP)
Low-pressure version

CVPP (HP)
High-pressure version

CVPP is a differential-pressure pilot valve available in low-pressure and high-pressure versions.

The pilot valve is used to maintain a constant differential pressure between the CVPP valve reference pressure connection and the ICS or PM main valve inlet pressure.

CVPP incorporates a diaphragm so that the reference pressure and the refrigerant in the valve are physically separated. The pilot valve can therefore also be used as a pneumatic control valve either to control a ICS or PM main valve or as a separate pneumatic valve mounted in a CVH housing.

MWP: Maximum working pressure.

The k_v/C_v value is measured with the pilot valve mounted in a CVH housing for external pilot lines. The value can vary slightly, depending on the setting value.

When CVPP (HP) is used at a temperature lower than –50°C (–58°F) the bolts must be replaced with stainless steel bolts (type 4, quality 80).

*Technical data, **SI units***

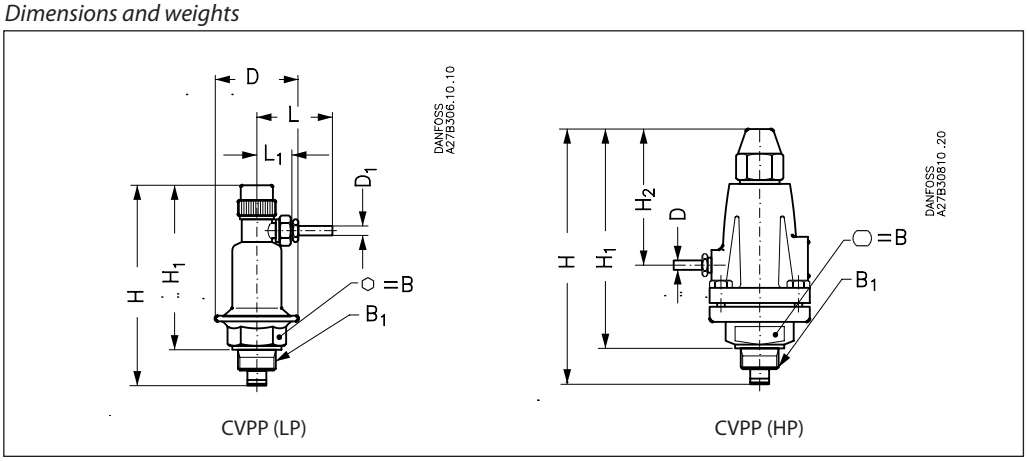
Valve type	MWP	k_v-value	Temperature range	Pressure range (Δp)	**Code no.**
Low-pressure version					
CVPP (LP)	17 bar g	0.40 m³/h	–50 to 120°C	Δp = 0 to 7 bar g	**027B1102**
High-pressure version					
CVPP (HP)	28 bar g	0.40 m³/h	–50 to 120°C	Δp = 0 to 7 bar g	**027B1162**
CVPP (HP)	40 bar g	0.40 m³/h	–50 to 120°C	Δp = 4 to 22 bar g	**027B1268**

*Technical data, **US units***

Valve type	MWP	C_v-value	Temperature range	Pressure range (Δp)	**Code no.**
Low-pressure version					
CVPP (LP)	247 psi g	0.46 USgal/min	–58 to 248°F	Δp = 0 to 102 psi g	**027B1102**
High-pressure version					
CVPP (HP)	406 psi g	0.46 USgal/min	–58 to 248°F	Δp = 0 to 102 psi g	**027B1162**
CVPP (HP)	580 psi g	0.46 USgal/min	–58 to 248°F	Δp = 58 to 319 psi g	**027B1268**

P-band for a valve system regulated by CVPP and ICS or PM main valve: <0.2 bar g (2.9 psi g).

Dimensions and weights



CVPP (LP)

CVPP (HP)

Valve type		H	H_1	H_2	L	L_1	D	B	B_1	Weight
Low-pressure version										
CVPP (LP)	mm	136	112		53	26	53	32	M 24 × 1.5	0.5 kg
	in.	5.35	4.41		2.09	1.02	2.09			1.1 lb.
High-pressure version										
CVPP (HP)	mm	170	146	90			6	32	M 24 × 1.5	1.7 kg
	in.	6.69	5.75	3.54			0.24			3.7 lb.

Weights are approximate values only

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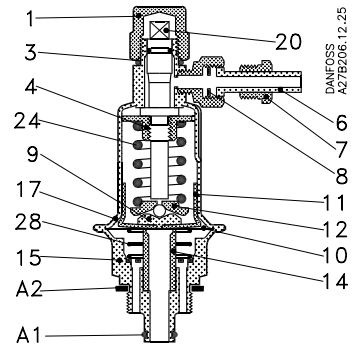
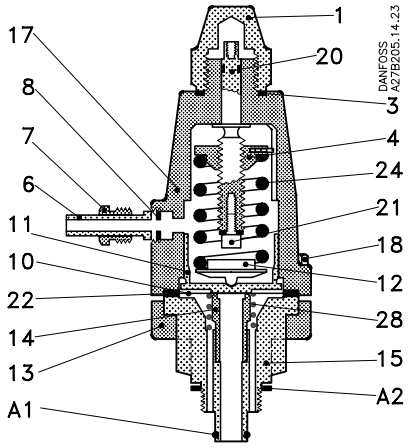
Differential-pressure pilot valve, type CVPP (LP) and CVPP (HP)

(continued)

Material specification



CVPP (LP)



CVPP (HP)

CVPP (LP)

No.	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Cloroprene (Neoprene)
4	Nut	Stainless steel
6	Nipple	Steel
7	Union nut	Steel
8	Seal	Aluminium
9	Ball socket	Stainless steel
10	Diaphragm	Stainless steel
11	Thrust pad	Steel
12	Spring guide	Stainless steel
14	Orifice	Stainless steel
15	Base	Steel
17	Valve bonnet	Low temperature cast iron (spherical)
20	Setting spindle	Stainless steel
24	Spring	Steel
28	Spring	Steel

CVPP (HP)

No.	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Non-asbestos
4	Nut	Stainless steel
6	Nipple	Steel
7	Union nut	Steel
8	Seal	Aluminium
10	Diaphragm	Stainless steel
11	Thrust pad	Stainless steel
12	Spring guide	Stainless steel
13	Flange	Low temperature cast iron (spherical)
14	Orifice	Stainless steel
15	Base	Steel
17	Valve bonnet	Low temperature cast iron (spherical)
18	Cover bolt	Steel (8.8)
20	Setting spindle	Stainless steel
21	Screw (M6 × 10)	Steel
22	Cover gasket	Non-asbestos
24	Spring	Steel
28	Spring	Steel

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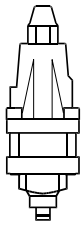
High pressure pilot valve, type CVP (XP)

Design and function



CVP (XP)
High pressure pilot valve

CVP (XP) is a constant-pressure pilot valve available in high-pressure version. The CVP (XP) ensures an efficient and stable CO_2 hot gas defrost process.

The pilot valve is used to maintain a constant pressure on the ICS or PM main valve inlet side.

When a CVP is mounted in a CVH housing, it can be used as a separate constant-pressure valve or a pressure relief valve (e.g. to prevent hydraulic overpressure in an entrapped liquid).

*Technical data, **SI units***

MWP: Maximum working pressure.

The k_v/C_v value is measured with the pilot valve mounted in a CVH housing for external pilot lines. The value can vary slightly, depending on the setting value.

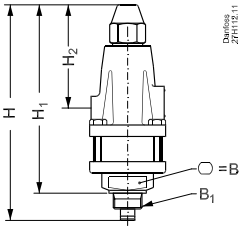
Valve type	MWP	k_v-value	Temperature range	Pressure range	**Code no.**
High-pressure version					
CVP (XP)	52 bar g	0.45 m³/h	–50 to 120°C	25 bar g to 52 bar g	**027B0080**

*Technical data, **US units***

Valve type	MWP	C_v-value	Temperature range	Pressure range	**Code no.**
High-pressure version					
CVP (XP)	754 psi g	0.52 USgal/min	–58 to 248°F	363 psi g to 754 psi g	**027B0080**

P-band for a valve system regulated by CVP and ICS or PM main valve: < 1.6 bar g (23.2 psi g)

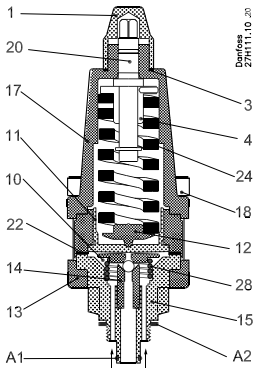
Dimensions and weights



CVP (XP)

Valve type		H	H_1	H_2	B	B_1	Weight
CVP-XP	mm	190	166	90	32	M24 × 1.5	1.9 kg
	in.	7.48	6.54	3.54			4.2 lb

Material specification



CVP (XP)

CVP (XP)

No.	Part	Material
1	Protective cap	Steel
3	Seal	Cloroprene (Neoprene)
4	Nut	Stainless steel
10	Diaphragm	Stainless steel
11	Thrust pad	Steel
12	Spring guide	Stainless steel
13	Flange	Low temperature cast iron (spherical)
14	Orifice	Stainless steel
15	Base	Steel
17	Valve bonnet	Low temperature cast iron (spherical)
18	Cover bolt	Stainless steel
20	Setting spindle	Stainless steel
22	Cover gasket	Non-asbestos
24	Spring	Steel
28	Spring	Steel
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos

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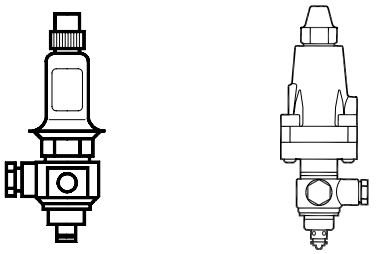
Pressure-operated pilot valve with reference pressure connection, type CVC

Design and function



CVC (LP)
Low-pressure version

CVC (XP)
High-pressure version

CVC is a pressure-operated pilot valve with a connection that can be used to obtain an indication of the system reference pressure. CVC valves are used:

- together with a PMC main valve to regulate capacity using hot gas bypass;
- together with a ICS or PM main valve to regulate max. suction pressure, e.g. as a compressor crankcase pressure regulator;
- together with a ICS or PM main valve as a pressure limiter, e.g. for hot gas defrost of hot gas lines.

The maximum working pressure (MWP)

refers to the high-pressure side of the valve (28/52 bar); the reference pressure (17/28 bar) refers to the low-pressure side of the system.

The reference pressure must be connected to the low-pressure side of the system.

The k_v/C_v value is measured with the pilot valve mounted in a CVH housing for external pilot lines. The value can vary slightly, depending on the setting value.

*Technical data, **SI units***

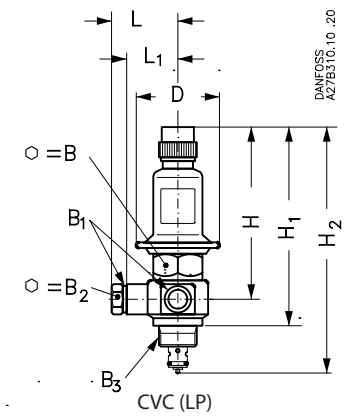
Valve type	MWP	k_v-value	Temperature range	Pressure range	**Code no.**
Low-pressure version					
CVC	28/17 bar g	0.20 m³/h	–50 to 120°C	–0.45 bar g to 7 bar g	**027B1070**
High-pressure version					
CVC	52/28 bar g	0.20 m³/h	–50 to 120°C	4 bar g to 28 bar g	**027B0087**

*Technical data, **US units***

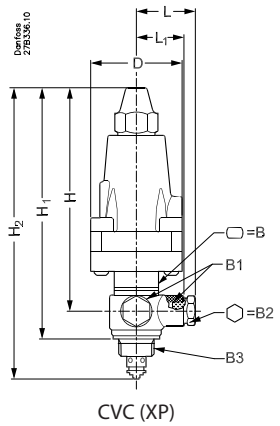
Valve type	MWP	C_v-value	Temperature range	Pressure range	**Code no.**
Low-pressure version					
CVC	406/247 psi g	0.23 USgal/min	–58 to 248°F	13.3 in. Hg to 102 psi g	**027B1070**
High-pressure version					
CVC	754/406 psi g	0.23 USgal/min	–58 to 248°F	58 psi g to 406 psi g	**027B0087**

P-band for a valve system regulated by CVC and ICS/PM/PMC: < 0.3 bar g (4.4 psi g)

Dimensions and weights



CVC (LP)



CVC (XP)

Valve type		H	H_1	H_2	L	L_1	D	B	B_1	B_2	B_3	Weight
Low-pressure version												
CVC	mm	110	129	153	43	33	53	32	G 1/4	19	M 24 × 1.5	0.7 kg
	in	4.33	5.08	6.02	1.69	1.30	2.09					1.5 lb.
High-pressure version												
CVC	mm	158	178	206	41	33	65	32	G 1/4	19	M 24 × 1.5	2.0 kg
	in	6.22	7.00	8.11	1.61	1.30	2.56					4.4 lb.

Weights are approximate values only

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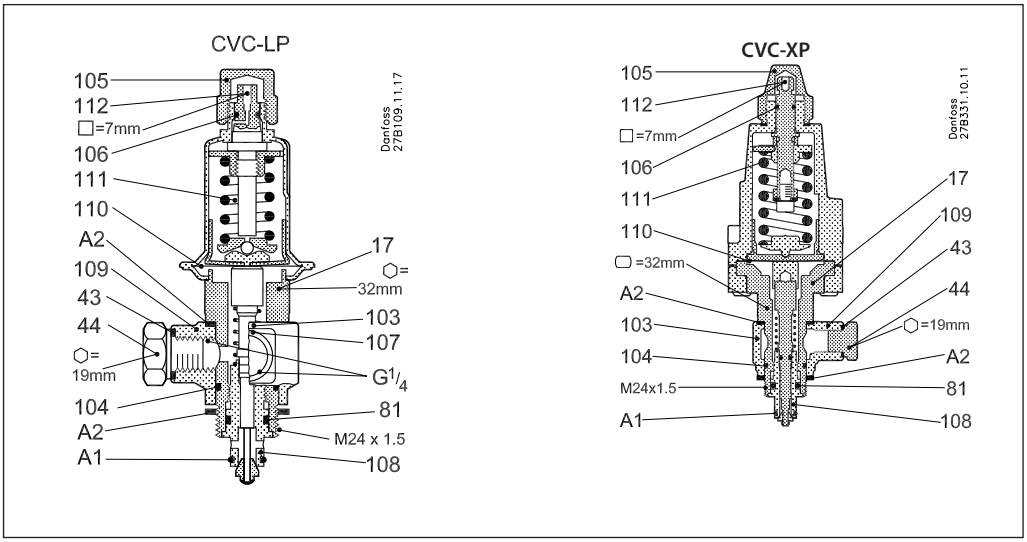
Pressure-operated pilot valve with reference pressure connection, type CVC

(continued)

Material specification



CVC-LP

No.	Part	Material
43	Seal	Aluminium
44	Blanking plug for pressure gauge connection	Stainless steel
81	O-ring	Cloroprene (Neoprene)
103	Banjo fitting	Steel
104	O-ring	Cloroprene (Neoprene)
105	Protective cap	Steel
106	O-ring	Cloroprene (Neoprene)
107	Signal connection	
108	Pilot orifice	Stainless steel
109	Connector on banjo fitting 103	Steel
110	Diaphragm	Stainless steel
111	Spring	Steel
112	Setting spindle	Stainless steel
17	Valve body	Steel
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos

CVC-XP

No.	Part	Material
43	Seal	Aluminium
44	Blanking plug for pressure gauge connection	Stainless steel
81	O-ring	Cloroprene (Neoprene)
103	Banjo fitting	Steel
104	O-ring	Cloroprene (Neoprene)
105	Protective cap	Steel
106	O-ring	Cloroprene (Neoprene)
107	Signal connection	
108	Pilot orifice	Stainless steel
109	Connector on banjo fitting 103	Steel
110	Diaphragm	Stainless steel
111	Spring	Steel
112	Setting spindle	Stainless steel
17	Valve body	Steel
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos

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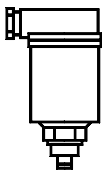
Electronically operated constant-pressure pilot valve, type CVQ (pressure-dependent)

Design and function



CVQ

CVQ is an electronically operated constant-pressure pilot valve that functions together with the EKC 361 electronic system or an EKC 366 controller.

CVQ enables the electronic (and thus the remote) control of a ICS or PM main valve.

The CVQ valve is used to maintain a constant pressure at the ICS or PM main valve inlet side and can, via suction pressure regulation, very accurately control the temperature of a medium from an air or liquid cooler, etc.

*Technical data, **SI units***

MWP: Maximum working pressure.

The k_v/C_v value is measured with the pilot valve mounted in a CVH housing for external pilot lines. The value can vary slightly, depending on the setting value.

Valve type	MWP	k_v-value		Pressure range	Code no.
CVQ	17 bar g	0.45 m³/h		–1 bar g to 5 bar g	**027B1139**
CVQ	17 bar g	0.45 m³/h		0 bar g to 6 bar g	**027B1140**
CVQ	17 bar g	0.45 m³/h		1.7 bar g to 8 bar g	**027B1141**

*Technical data, **US units***

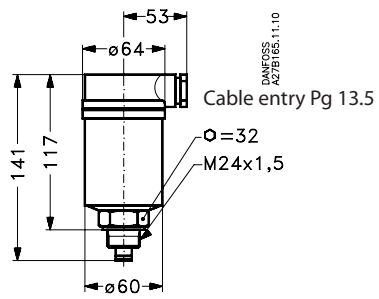
Valve type	MWP	C_v-value		Pressure range	Code no.
CVQ	246 psi g	0.52 USgal/min		–29.5 in. Hg to 72.5 psi g	**027B1139**
CVQ	246 psi g	0.52 USgal/min		0 psi g to 87 psi g	**027B1140**
CVQ	246 psi g	0.52 USgal/min		24.7 psi g to 116 psi g	**027B1141**

The P-band for a valve system regulated by CVQ and ICS or PM depends on the control parameters of the EKC 361 or EKC 366.

Electrical data

Supply voltage	24V a.c. ±10%
Frequency	50 to 60 Hz
Power consumption, operation start	50 VA 75 VA
Enclosure	NEMA 3 / IP 55
Cable entry	Pg 13.5
Ambient temperature, operation transport	–30 to 50°C (–22 to 122°F) –50 to 70°C (–58 to 158°F)
CE -marking	EMC-Directive 89/336/EEC, EMC-Directiv 89/336/ EN 50081-1 and EN 50082-1

Dimensions and weights



CVQ

Valve type		H	H_1	L		D	D_1	B	B_1	Weight
CVQ	mm	141	117	53		64	60	32	M 24 × 1.5	0.4 kg
	in.	5.55	4.61	2.09		2.52	2.36			0.9 lb.

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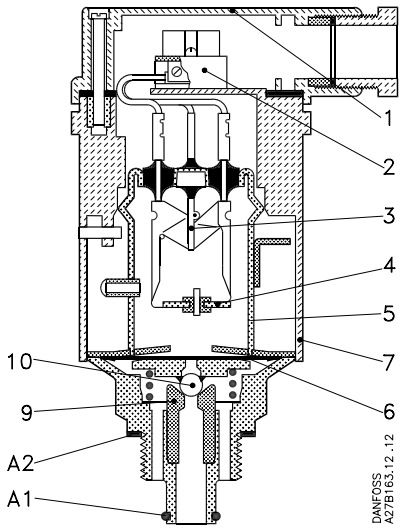
Electronically operated constant-pressure pilot valve, type CVQ (pressure-dependent)

(continued)

Material specification



CVQ

Design and function

CVQ consists of a reservoir containing a charge at a given pressure, a heating element and a temperature sensor.

When the temperature in the container is regulated, the corresponding and precise pressure change created changes the degree of opening of the orifice (9 and 10) and thus the control pressure sent by the CVQ valve to the connected ICS or PM main valve.

If pressure in the container becomes too high, an internal protection system short-circuits the heating element and thus stops pressure build-up.

CVQ

No.	Part	Material
1	Cover	Plastic
2	Connection terminals	
3	NTC resistor	
4	PTC resistor (heating element)	
5	Reservoir	Steel
6	Diaphragm	Stainless steel
7	Capsule	Plastic
9	Orifice	Stainless steel
10	Thrust pad with throttle ball	Stainless steel
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos

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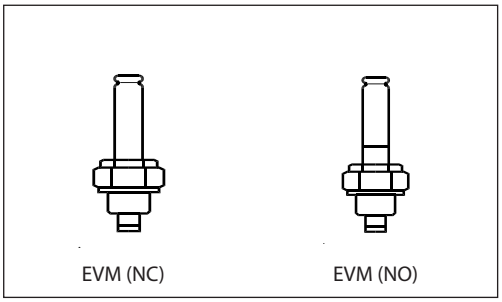
Solenoid pilot valve, type EVM (NC)

Solenoid pilot valve, type EVM (NO)

Design and function



EVM is a solenoid pilot valve for use when on/off operation of the ICS or PM main valve is required. EVM valves are intended for use with Danfoss solenoid valve coils ("Coils for solenoid valves", datasheet RD3JB).
Together with CVH, an EVM can also be used as an independent solenoid valve.

MWP: Maximum working pressure.

The k_v/C_v value is measured with the pilot valve mounted in a CVH housing for external pilot lines.

MOPD: Maximum opening differential pressure with a 10 W a.c. coil. With a 20 W d.c. coil 14 bar only.

MCPD: Maximum closing differential pressure with a 10/12 W a.c. coil or a 20 W d.c.coil.

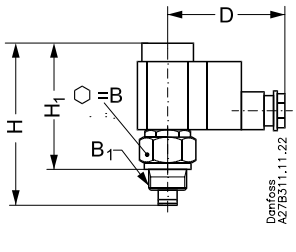
*Technical data, **SI units***

Valve type	MWP	k_v-value		Pressure range	**Code no.**
Normally closed					
EVM (NC)	45.2 bar g	0.37 m³/h		MOPD: 21 bar g	**027B1120**
EVM (NC)	65 bar g	0.37 m³/h		MOPD: 21 bar g	**032F8011**
Normally open					
EVM (NO)	45.2 bar g	0.12 m³/h		MCPD: 19 bar g	**027B1130**
EVM (NO)	52 bar g	0.12 m³/h		MCPD: 19 bar g	**027B1131**

*Technical data, **US units***

Valve type	MWP	C_v-value		Pressure range	**Code no.**
Normally closed					
EVM (NC)	655 psi g	0.43 USgal/min		MOPD: 305 psi g	**027B1120**
EVM (NC)	942 psi g	0.43 USgal/min		MOPD: 305 psi g	**032F8011**
Normally open					
EVM (NO)	655 psi g	0.14 USgal/min		MCPD: 276 psi g	**027B1130**
EVM (NO)	754 psi g	0.14 USgal/min		MCPD: 276 psi g	**027B1131**

Dimensions and weights



EVM

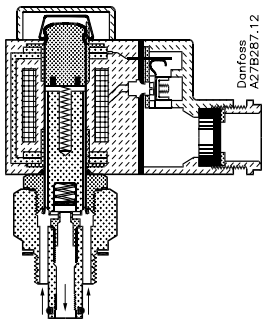
Valve type		H	H_1	B	B_1	D (12 Wa.c./d.c.)	D (10 Wa.c.)	Weight
EVM	mm	107	83	32	M 24 × 1.5	82	72	0.5 kg
	in.	4.21	3.27			3.23	2.83	1.1 lb.

Solenoid pilot valve, type EVM (NC)

Solenoid pilot valve, type EVM (NO)

(continued)

Material specification



EVM

EVM

No.	Part	Material
1	Coil	
2	Armature	Stainless steel
3	Armature tube	Stainless steel
A2	Seal	Non-asbestos
A1	O-ring	Cloroprene (Neoprene)
6	Seal	Aluminium
7	Spacing ring	
8	Nut	
9	Lock button	
10	Valve body	Steel
11	Valve seat	Teflon (PTFE)

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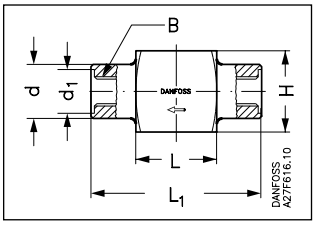
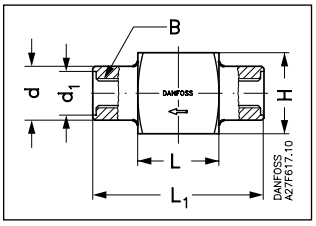
Housing for pilot valves, type CVH, for mounting in external pilot lines



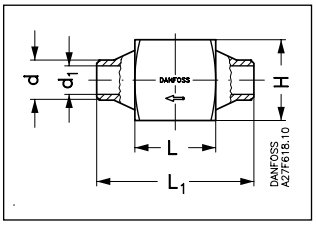
DN		d	d_1	H	L	L_1	B	Standard	Material	Code no.
Internal pipe thread										
6	mm	24	19.5	36	36	76	1/4 in. NPT	ANSI B1.20.1	DIN 9SMnPb 28 W no. 1.0718	**027F1159**
	in.	0.94	0.77	1.42	1.42	2.99				

Weight: 0.4 kg. (0.9 lb.)



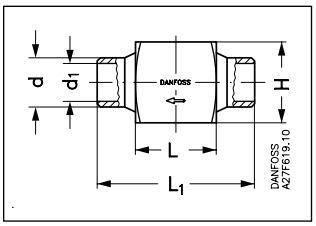
DN		d	d_1	H	L	L_1	B	Standard	Material	Code no.
Internal pipe thread										
6	mm	24	19.5	36	36	76	G 1/4 A	ISO 228-1	DIN 9SMnPb 28 W no. 1.0718	**027F1160**
	in.	0.94	0.77	1.42	1.42	2.99				

Weight: 0.4 kg. (0.9 lb.)



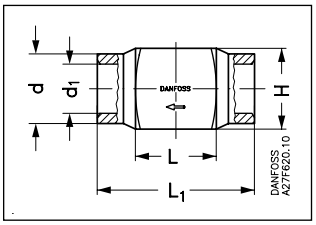
DN		d	d_1	H	L	L_1		Standard	Material	Code no.
3/8 in. butt weld										
10	mm	18	12.7	36	36	70		Weld connection DIN 2559 - 22	DIN. CK 15. W no. 1.1141	**027F1047**
	in.	0.71	0.5	1.42	1.42	2.76				

Weight: 0.4 kg. (0.9 lb.)



DN		d	d_1	H	L	L_1		Standard	Material	Code no.
1/2 in. butt weld										
15	mm	22	17	36	36	70		Weld connection DIN 2559 - 22	DIN. CK 15. W no. 1.1141	**027F1090**
	in.	0.87	0.67	1.42	1.42	2.76				

Weight: 0.4 kg. (0.9 lb.)



DN		d	d_1	H	L	L_1		Standard	Material	Code no.
1/2 in. socket weld										
15	mm	31	22	36	36	70		DIN 3259 - T2 ASME B.16.113M	DIN. CK 15. W no. 1.1141	**027F1091**
	in.	1.22	0.87	1.42	1.42	2.76				

Weight: 0.4 kg. (0.9 lb.)

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