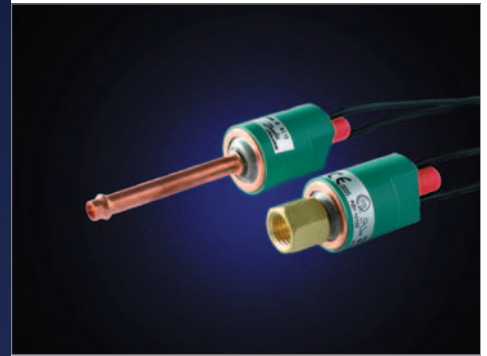


New perspectives with  
**Danfoss Saginomiya Cartridge Controls**



Reliable and consistent



**ACB / LCB Cartridge Controls**

- **Wide range**
  - -0.5 to 45 bar pressure range
  - Normally Closed, Normally Open or SPDT contact system
  - automatic or manual reset
  - various port fittings for soldering or direct mounting
  - spades or cables
  - stripped ends or customer specific electrical plug
- **Open or water-proof IP 65 version**
- **CE, TUV, VDE, UL and C-UL approvals**

ACB / LCB is a small disc type pressure control for use in refrigeration and air conditioning systems. As standard, it is equipped with a 6A contact system having automatic or manual reset.

The control is robust and reliable in operation in many types of units.

The small size, lightness and high degree of protection means that it can be mounted directly on the refrigeration systems where pressure regulation is required.

The control is available with different pressure settings and pressure connections to suit customer requirements.

All these features reduce installation costs and save space.



## APPLICATION

ACB / LCB cartridge controls are used in refrigeration and air conditioning systems with CFC, HCFC, HFC as high and low pressure safety cut in and cut out as well as fan cycling.

## FUNCTION

ACB / LCB contains one or more stainless steel discs. Each disc reverses its curvature when pressurized to a customer specified value.

When the disc „snaps”, electrical contacts open (or close) by means of a push shaft. The pressure control resets automatically when pressure drops below (or rises above) a preset value.

## TYPICAL TECHNICAL DATA

Media	CFC, HCFC, HFC
Range	-0,5 bar to 45 bar
Reset	Automatic, Manual
Contact function	SPST-NO, SPST-NC, SPDT
Electrical connections	AWG18 cables
Cable length	150 cm (black)
Contact load	6A @ 250V AC for SPST 4A @ 250V AC for SPDT
Pressure connections	1/4" ODM solder 6 mm ODM solder 1/4" SAE female flare with depressor pin
Max. working pressure MWP	45 bar
Burst pressure	300 bar
Media temperature	-35 to 135°C
Ambient temperature	-30 to 85°C
Enclosure	Cable version: IP65
Approvals	CE TUV, VDE UL & C-UL

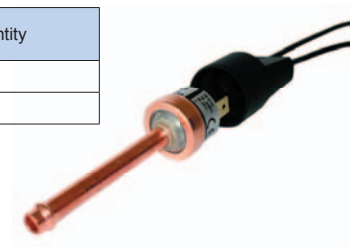
Customer specific features are available in a wide selection. Please refer to Specification Build-up on page 6.

## SPECIAL ACCESSORIES

A selection of open type cartridge controls with IP40 enclosure is available from Danfoss Saginomiya. For these switches a water-proof rubber plug has been specially designed. When the plug is installed on the switch a water-proof seal IP65 is obtained. The water-proof rubber plug is available with many different cable lengths.

Code no.	Standard cable length [m]*	Packing quantity
061F1301	1	100
061F1302	2,5	100

\* other cable lengths available upon request



## STANDARD FEATURES

- Electrical rating: 6A (SPST), 4A (SPDT)
- Electrical connection: 1,5 m (59") cable AWG18
- Cable colour: black
- Packing quantity: 20 pcs (industry pack)
- Weights: automatic (0,073 kg/pc), manual (0,082 kg/pc)
- Excellent set point repeatability and stability
- Tamper-proof, factory preset setpoint
- Hermetically sealed: IP65
- Corrosion resistant housing
- Small size and light weight suitable for direct mounting
- CE (category IV), TUV, VDE, UL & C-UL approvals \*

## STANDARD CARTRIDGE CONTROLS SELECTION

Application	Reset	Cut out bar	Cut in bar	Contact system SPST SPDT	Connection			Code no.	Type	Description
					Solder		1/4" for flare with depressure pin			
					6mm	1/4"				
High pressure cut out	automatic	18 ± 0.7	13 ± 1.2	SPST-NC	x			061F7504	ACB-2UB504W	ACB HP aut 6mm solder
	automatic	18 ± 0.7	13 ± 1.2	SPST-NC		x		061F7505	ACB-2UB505W	ACB HP aut 1/4" solder
	automatic	18 ± 0.7	13 ± 1.2	SPST-NC			x	061F7506	ACB-2UB506W	ACB HP aut 1/4" F flare
	automatic	18 ± 0.7	13 ± 1.2	SPDT			x	061F9057	ACB-2UC59W	ACB HP aut SPDT 1/4" F flare
	automatic	23 ± 0.7	19 ± 1.2	SPST-NC			x	061F8494	ACB2UB465W	ACB HP aut SPST 1/4" F flare
	automatic	23 ± 0.7	19 ± 1.2	SPDT			x	061F9056	ACB-2UC58W	ACB HP aut SPDT 1/4" F flare
	manual	23 ± 0.7	19 ± 1.2	SPDT			x	061F9243	ACB-PC62M	ACB HP man SPDT 1/4" F flare
	automatic	26 ± 1.0	20 ± 1.5	SPST-NC	x			061F7507	ACB-2UB507W	ACB HP aut SPST 6mm solder
	automatic	26 ± 1.0	20 ± 1.5	SPST-NC		x		061F7508	ACB-2UB508W	ACB HP aut SPST 1/4" solder
	automatic	26 ± 1.0	20 ± 1.5	SPST-NC			x	061F7509	ACB-2UB509W	ACB HP aut SPST 1/4" F flare
	manual	26 ± 1.0	20 ± 2.0	SPST-NC	x			061F9703	ACB-2UB803MW	ACB HP man SPST 6mm solder
	manual	26 ± 1.0	20 ± 2.0	SPST-NC		x		061F9714	ACB-2UB814MW	ACB HP man SPST 1/4" solder
	manual	26 ± 1.0	20 ± 2.0	SPST-NC			x	061F9713	ACB-2UB813MW	ACB HP aut SPST 1/4" F flare
	manual	26 ± 1.0	20 ± 1.5	SPDT			x	061F9055	ACB-2UC57W	ACB HP aut SPDT 1/4" F flare
	automatic	28 ± 1.0	21 ± 1.5	SPST-NC	x			061F7510	ACB-2UB510W	ACB HP aut SPST 6mm solder
	automatic	28 ± 1.0	21 ± 1.5	SPST-NC		x		061F7513	ACB-2UB513W	ACB HP aut SPST 1/4" solder
	automatic	28 ± 1.0	21 ± 1.5	SPST-NC			x	061F7514	ACB-2UB514W	ACB HP aut SPST 1/4" F flare
	manual	28 ± 1.0	21 ± 1.5	SPST-NC			x	061F9522	ACB-2UB327MW	ACB HP man SPDT 1/4" F flare
	automatic	28 ± 1.0	21 ± 1.5	SPDT			x	061F9054	ACB-2UC56W	ACB HP aut SPDT 1/4" F flare
	manual	28 ± 1.0	21 ± 1.5	SPDT			x	061F9242	ACB-PC61M	ACB HP man SPDT 1/4" F flare
	automatic	31 ± 1.0	24 ± 1.5	SPST-NC	x			061F8493	ACB-2UB464W	ACB HP man SPST 6mm solder
	automatic	31 ± 1.0	24 ± 1.5	SPST-NC			x	061F8492	ACB-2UB463W	ACB HP aut SPST 1/4" F flare
	automatic	31 ± 1.0	24 ± 1.5	SPDT			x	061F9053	ACB-2UC55W	ACB HP aut SPDT 1/4" F flare
	automatic	42 ± 1.2	33 ± 2.0	SPST-NC	x			061F7515	ACB-2UB515W	ACB HP man SPST 6mm solder
automatic	42 ± 1.2	33 ± 2.0	SPST-NC		x		061F7516	ACB-2UB516W	ACB HP aut SPST 1/4" solder	
automatic	42 ± 1.2	33 ± 2.0	SPST-NC			x	061F7517	ACB-2UB517W	ACB HP aut SPST 1/4" F flare	
manual	42 ± 1.2	33 ± 2.0	SPST-NC			x	061F9575	ACB-2UB461MW	ACB HP man SPST 1/4" F flare	
automatic	42 ± 1.2	33 ± 2.0	SPDT			x	061F9052	ACB-2UC54W	ACB HP aut SPDT 1/4" F flare	
Low pressure cut out	automatic	0.5 ± 0.4	1.5 ± 0.3	SPST-NO	x			061F7518	ACB-2UA518W	ACB LP aut SPST 6mm solder
	automatic	0.5 ± 0.4	1.5 ± 0.3	SPST-NO		x		061F7519	ACB-2UA519W	ACB LP aut SPST 1/4" solder
	automatic	0.5 ± 0.4	1.5 ± 0.3	SPST-NO			x	061F7520	ACB-2UA520W	ACB LP aut SPST 1/4" F flare
	automatic	0.7 ± 0.5	1.7 ± 0.4	SPST-NO	x			061F7521	ACB-2UA521W	ACB LP aut SPST 6mm solder
	automatic	0.7 ± 0.5	1.7 ± 0.4	SPST-NO		x		061F7522	ACB-2UA522W	ACB LP aut SPST 1/4" solder
	automatic	0.7 ± 0.5	1.7 ± 0.4	SPST-NO			x	061F7523	ACB-2UA523W	ACB LP aut SPST 1/4" F flare
	automatic	0.7 ± 0.5	1.7 ± 0.4	SPDT			x	061F9058	ACB-2UC60W	ACB LP aut SPDT 1/4" F flare
	automatic	1.7 ± 0.5	2.7 ± 0.4	SPST-NO	x			061F7524	ACB-2UA524W	ACB LP aut SPST 6mm solder
	automatic	1.7 ± 0.5	2.7 ± 0.4	SPST-NO		x		061F7525	ACB-2UA525W	ACB LP aut SPST 1/4" solder
	automatic	1.7 ± 0.5	2.7 ± 0.4	SPST-NO			x	061F7526	ACB-2UA526W	ACB LP aut SPST 1/4" F flare
Fan control	automatic	8.5 ± 1.2	11 ± 0.8	SPST-NO			x	061F8490	ACB-2UA392W	ACB fan aut SPST 1/4" F flare
	automatic	8.5 ± 1.2	11 ± 0.8	SPST-NO	x			061F8491	ACB-2UA393W	ACB fan aut SPST 6mm solder
	automatic	13 ± 1.5	16 ± 1.0	SPST-NO			x	061F8333	ACB-2UA305W	ACB fan aut SPST 1/4" F flare
	automatic	13 ± 1.5	16 ± 1.0	SPST-NO	x			061F8334	ACB-2UA306W	ACB fan aut SPST 6mm solder

\* SPDT manual reset type only with CE approval



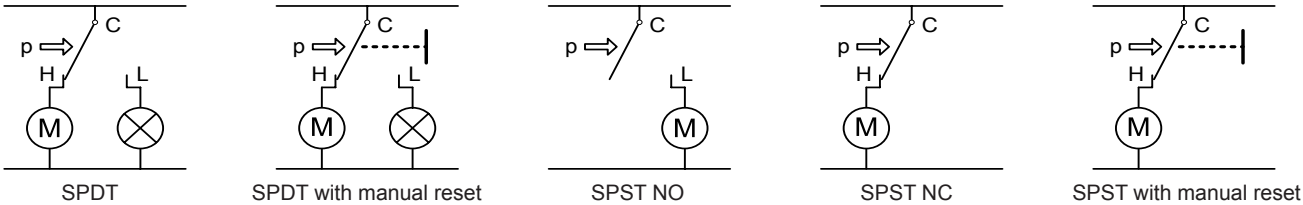
**PRINCIPLES OF OPERATION**

As pressure is applied through the connection on to the diaphragm, the diaphragm is pushed up against the operation shaft.

When the operation shaft rises, it pushes up the contact plate, so that H contact and C contact become disconnected (in Normally Closed switches) or H contact and L contact become connected (in Normally Open switches).

As the pressure in the connection decreases, the diaphragm returns to its original state, and the operation shaft lowers, causing the contact plate to return to its original position.

**ELECTRICAL CONNECTIONS**



SPST = Single Pole Single Trough  
 SPDT = Single Pole Double Trough

(NO) = Normally Open  
 (NC) = Normally Closed

**CONSTRUCTION**

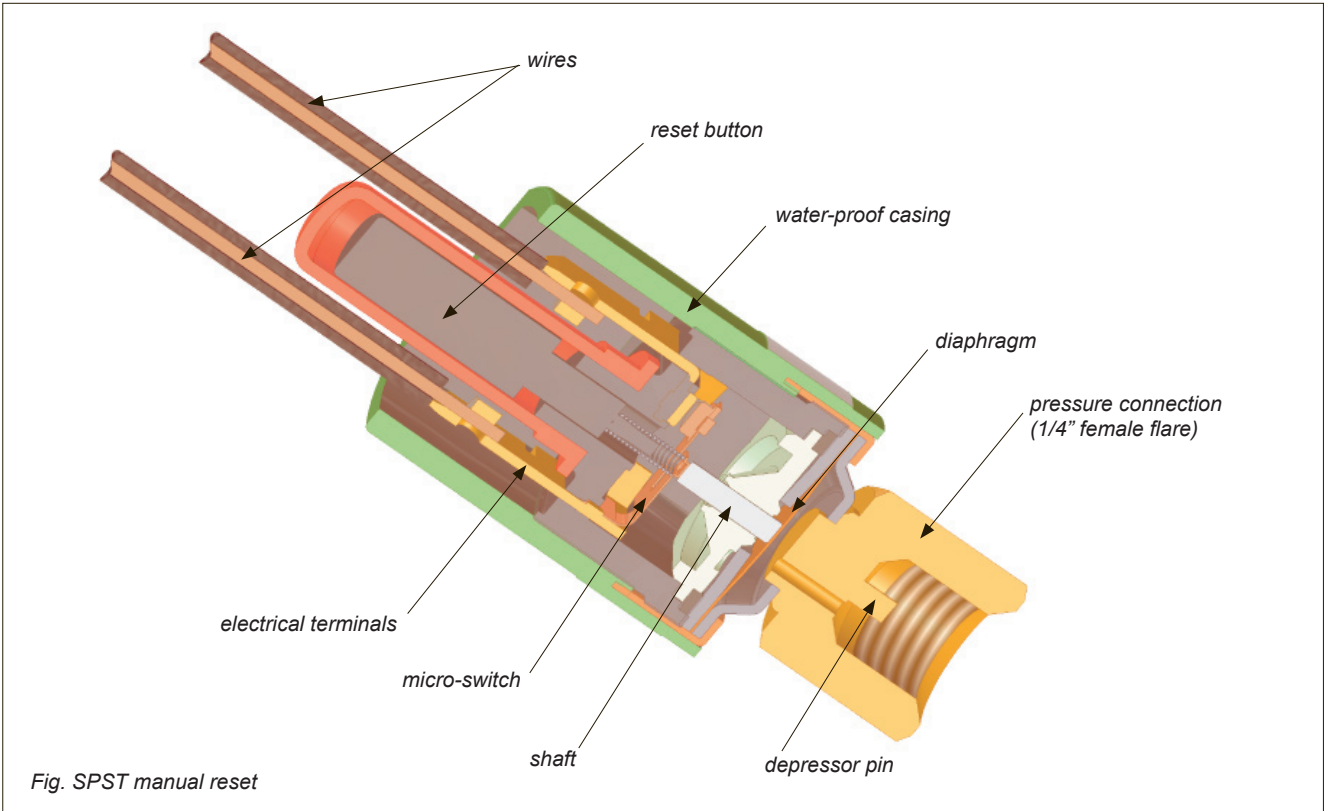
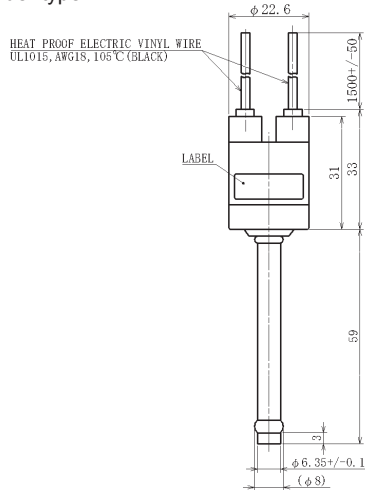


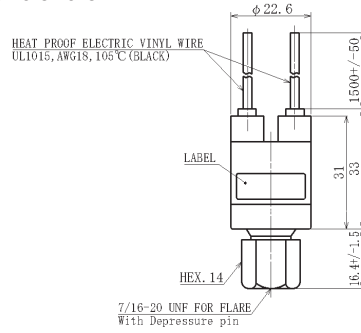
Fig. SPST manual reset

## DIMENSIONS OF STANDARD CARTRIDGE CONTROLS

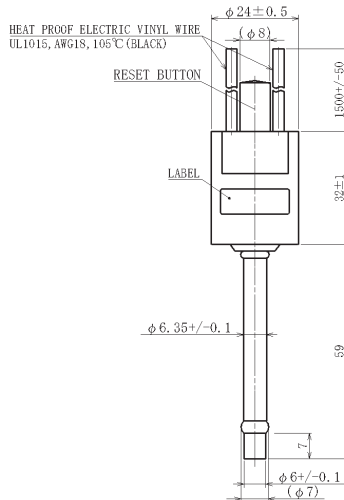
SPST water-proof with automatic reset 1/4" solder type



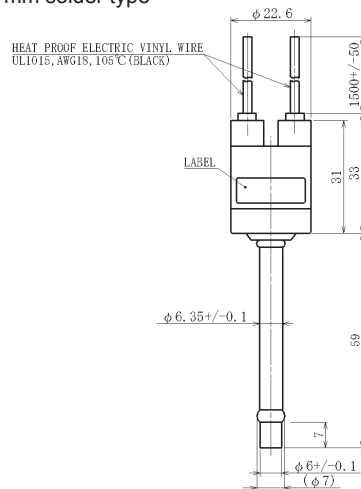
SPST water-proof with automatic reset female flare



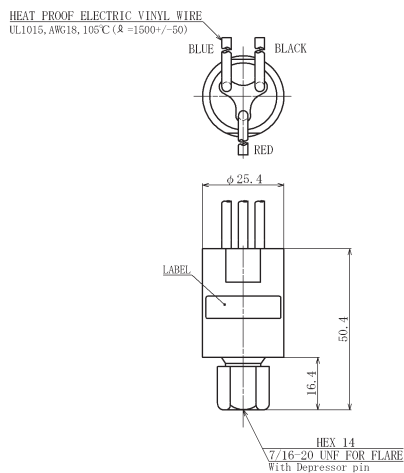
SPST water-proof with manual reset solder type



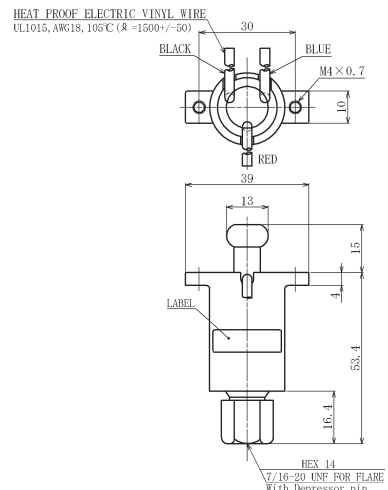
SPST water-proof with automatic reset 6 mm solder type



SPDT with automatic reset



SPDT with manual reset



SPECIFICATION BUILD-UP

Field	Code	Explanation	Product	Electrical rating	Contact	Approvals	Enclosure	Reset	Housing	Port fitting	Upper activation setting [bar guage]	Tolerance on upper setting [bar]	Lower activation setting [bar guage]	Tolerance on low setting [bar]	Electrical connection	Cable length in cm	Cable plug	Mark if additional specifications	Details of special features (if any)
<b>Requested specs:</b>			Example: ACB - 2U B 1 W A R L 20,0 1,0 15,0 1,5 A 100 0																
<b>Product</b>	LCB	-0,5 bar to 7 bar																	
	ACB	-0,5 bar to 45 bar																	
	HCB	15 bar to 45 bar (max pressure 150 bar, automotive version)																	
<b>Electrical rating</b>	1U	1A @ 250V AC																	
	2U	6A @ 250V AC (SPST), 4A @ 250V AC (SPDT)																	
	3U	4A @ 250V AC (do not specify on new types)																	
	4U	0,05A @ 12/24V DC (gold contacts)																	
<b>Contact</b>	A	SPST-NO																	
	B	SPST-NC																	
	C	SPDT																	
<b>Approvals</b>	0	CE [category II] approval																	
	1	CE [category IV], TÜV, VDE, UL & C-UL approvals (only with ACB)																	
	2	UL & C-UL approvals (only with ACB)																	
	3	CE [category IV] approval (only with ACB)																	
<b>Enclosure</b>	O	Open IP40																	
	W	Waterproof IP65 (only with cables)																	
<b>Reset</b>	A	Automatic																	
	M	Manual (not SPST-NO; SPDT only in Panel mount housing)																	
<b>Housing</b>	R	Regular hot-melt																	
	E	Epoxy type																	
	V	Vacuum type housing																	
	P	Panel mount (mandatory for SPDT Manual reset versions)																	
<b>Port fitting</b>	M	1/4" SAE female flare w. deflator																	
	V	1/4" SAE female flare w. 1mm deflator																	
	H	1/4" SAE male flare																	
	P	1/4" solder Cu-tube (tip = 3 mm)																	
	X	1/4" solder Cu-tube (tip = 7 mm)																	
	L	6 mm solder Cu-tube																	
	E	1/8-27 NPT male																	
	Y	R (PT) 1/8"																	
	O	0,9 meter capillary tube w. 1/4" SAE flare nut																	
	C	0,4 meter capillary tube ø2,4mm																	
	U	0,6 meter capillary tube ø2,4mm																	
	F	0,7 meter capillary tube ø2,4mm																	
	G	1,0 meter capillary tube ø2,4mm																	
	W	0,9 meter capillary tube w. 1/4" solder Cu-tube																	
	N	3/8"-24UNF w. O-ring																	
	R	10mm x 1,25 w. O-ring																	
<b>Upper activation setting [bar guage]</b>	--,-																		
<b>Tolerance on upper setting [bar]</b>	--,-	+/- indicated value																	
<b>Lower activation setting [bar guage]</b>	--,-																		
<b>Tolerance on low setting [bar]</b>	--,-	+/- indicated value																	
<b>Electrical connection</b>	A	AWG18 cables																	
	B	AWG16 cables																	
	C	AWG18 (UL 3173) cables																	
	S	90 deg. spades																	
	D	Double insulated AWG18 cables																	
	V	Double insulated H05VV5-F 2-in-1 cable (on request only, E housing only, Automatic reset only)																	
	R	Double insulated H05RNF 2-in-1 cable (on request only, E housing only, Automatic reset only)																	
	P	AWG18 with PVC tube																	
	H	AWG18 halogen free (RoHS compliant, currently E housing only)																	
<b>Cable length in cm</b>	---	Please use one of standard lengths: 020, 050, 080, 100, 150, 200 & 250 cm																	
<b>Cable plug</b>		(Leave blank if no cable)																	
	0	Cut ends																	
	A	AMP #187																	
	B	AMP #250																	
	C	VHR 3N																	
	D	VHR 2N																	
	E	Molex 5557-02R																	
	F	AMP 350777-1																	
	G	JST FVDG M1,25-5																	
	H	Stripped ends l = 15mm																	
	I	Pin connector AMP 3200250 (A1-10)																	
	J	AMP #282080																	
	W	Wago connector																	
<b>Additional features</b>		Leave blank if no additional specifications																	
	X	Please specify (clear text attachment)																	
<b>Details of special features (if any)</b>																			



# Instruction ACB Cartridge Controls

060R9765

060R9765

**Media: HFC and HCFC refrigerants, oil, air, water**

Medium: Kältemittel HFCKW und HFKW, Öl, Luft, Wasser  
 Médias: HFC et HCFC, huile, air, eau  
 Aplicaciones: Refrigerantes fluorinados HFC/HCFC, aceite, aire, agua  
 Mezzo: HFC e HCFC refrigeranti, olio, aria, acqua

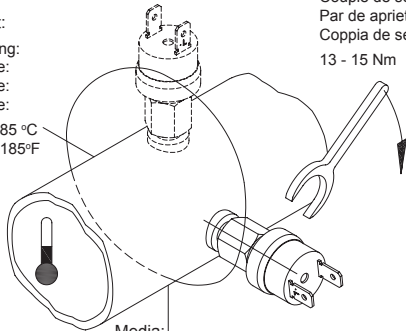
Type	Contact system	Ohmic	Inductive FLA	Starting LRA	Voltage
ACB-1UA	SPST-NO	1 A	1 A	6 A	120/240 AC
					250 AC
ACB-1UB	SPST-NC	1 A	1 A	6 A	120/240 AC
					250 AC
ACB-2UA	SPST-NO	8 A	8 A	48 A	120/240 AC
		6 A	6 A	36 A	250 AC
ACB-2UB	SPST-NC	8 A	8 A	48 A	120/240 AC
		6 A	6 A	36 A	250 AC
ACB-4UA	SPST-NO	0.075 A	0.075 A	0.075 A	120/240 AC and 30 DC
					250 AC and 30 DC
ACB-4UB	SPST-NC	0.075 A	0.075 A	0.075 A	120/240 AC and 30 DC
					250 AC and 30 DC
ACB-2UC	SPDT	8 A	8 A	48 A	120/240 AC
		4 A	4 A	24 A	250 AC

**Min/Max Temperature**

Min/Max Temperatur  
 Min/Max Température  
 Min/Max Temperatura  
 Min/Max Temperatura

Ambient:  
 Umgebung:  
 Ambiente:  
 Ambiente:  
 Ambiente:

-30 → + 85 °C  
 -20 → + 185 °F

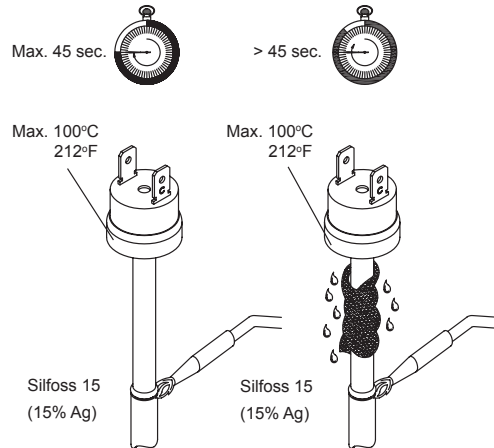


Torque:  
 Moment:  
 Couple de serrage:  
 Par de apriete:  
 Coppia de serraggio:  
 13 - 15 Nm

Media:  
 Medium:  
 Médias:  
 Aplicaciones:  
 Mezzo:  
 -55 → +135°C  
 -70 → + 275°C

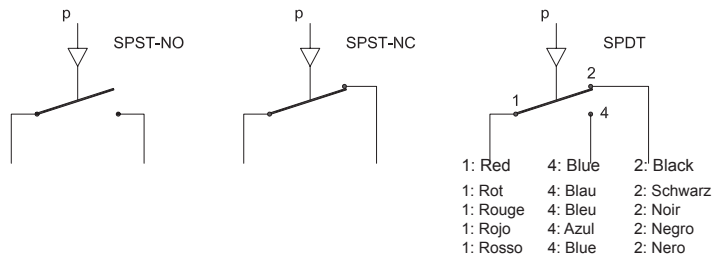
**Soldering**

Löten  
 Soudage  
 Saldatura  
 Soldadura



**Contact system**

Kontaktsystem  
 Système de contacts  
 Contactos eléctricos  
 Tipo di contatti



Danfoss Saginomiya product offer covers a wide range of automatic controls for Refrigeration and Air-Conditioning.

## 4 - WAY REVERSING VALVES (CHV/STF/VHV)

- wide application range
- one valve for all refrigerants
- instantaneous changeover at minimum pressure differential
- high reliability



## FAN SPEED CONTROLLERS (RGE)

- „All in one” pressure sensor and fan speed control
- single and three phase versions
- reliable sensing mechanism
- simple to install and easy setting



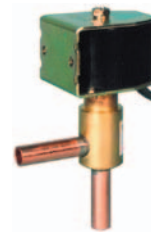
## PRESSURE SENSORS (NSK/XSK)

- compact, light-weight and high accuracy
- versatile application potential
- water-proof (IP66)
- different connection styles available



## SMALL SOLENOID VALVES (NEV/VPV)

- compact and light-weight design
- available for all refrigerants
- different pipe configurations
- space saving



## HIGH PRECISION PRESSURE SWITCHES (TB SERIES)

- high precision pressure control
- adjustable setting point
- high electrical rating
- ambient insensitive settings



## STEPPER MOTOR EXPANSION VALVES (KV SERIES)

- high precision expansion control
- high reliability
- compact and durable design



## FLOW SWITCHES (FQS)

- reliable flow control
- can be used for different pipe diameters



## PRESSURE ACTUATED WATER REGULATING VALVES (AWR/CWR)

- robust control for water-cooled condensers
- compact



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