

ENGINEERING
TOMORROW



February 2024 | Danfoss Climate Solutions for cooling

TECH INSIDER



Introduction

Danfoss Tech Insider keeps you updated with the latest news on the cooling and industrial products portfolios from Danfoss Climate Solutions. The content is intended to give a quick overview of core technical news and updates in our product portfolio, including links to relevant documentation and more information.

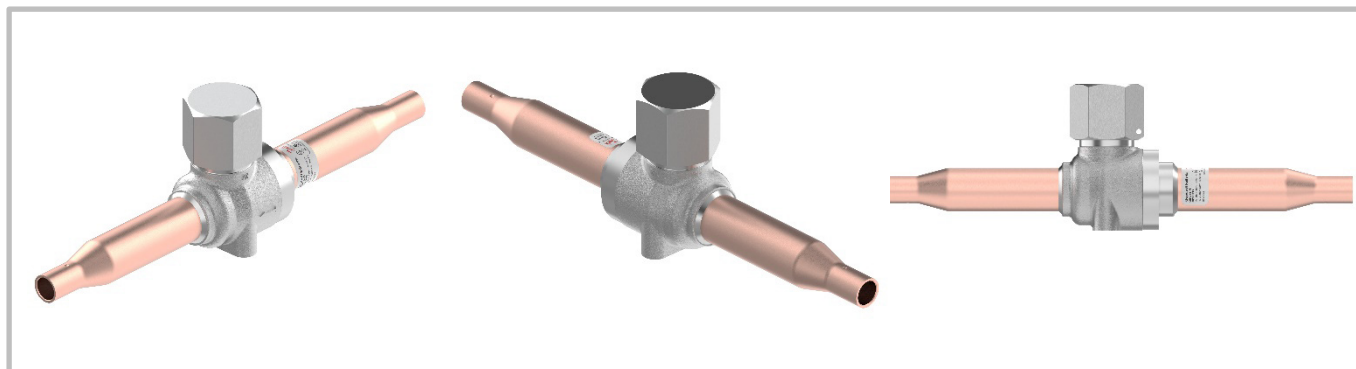
Danfoss Tech Insider is sent out, on a monthly basis, to ensure you are always up to date with the latest innovations and changes made to Danfoss products and solutions.

We hope you will enjoy reading Danfoss Tech Insider!

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New GBC 90 bar Ball Valves Released to Market



Danfoss is introducing a new GBC 90 bar ball valve design for CO₂ applications. We're pleased to inform you that production of new GBC 90 bar has begun and the product is released.

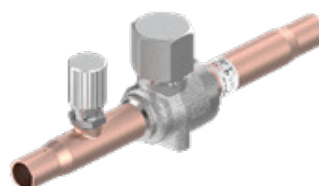
This new design will replace the GBC 45 bar and GBCH 90 bar for CO₂. They feature stainless steel as the primary base material, providing customers with enhanced performance and reliability. The new models are similar in dimensions and connections to the GBCH; therefore, they are an exact drop-in of former models for easy replacement in existing system design. The new range is extended with solder connections up to 1 5/8 in. (42 mm) to fit more market needs. New code numbers will be created for this range.

The existing CO₂ GBC 45 bar and GBCH 90 bar will be phased out. Below are more details regarding the launch plan and benefits of the new design.

Launch Plan:

The new GBC 90 bar will be released in two waves (see migration table):

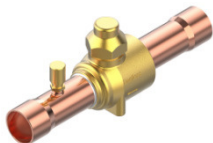
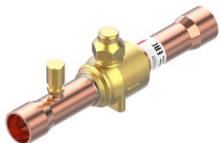
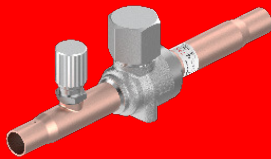
- 1st wave covers size 6s to 16s, release planned in Jan. 2024.
- 2nd wave covers size 18s to 42s, release planned in Jul. 2024.



The old CO₂ GBC 45 bar and GBCH 90 bar will be available for order until March 31st, 2024, for the first wave and until the end of August for the second wave.

	2024						
	Jan	Feb	Mar	Apr	May	Jun	Jul
Wave 1, 6s - 16s							
Old design 6s -16s	Last Buy, 2024 Mar.31						
New design 6s -16s	Customer Orders from 2024 Jan.15						
Wave 2, 18s - 42s							
Old design 18s -42s					Last Buy, 2024 June 30		
New design 18s -42s						Customer Orders from 2024 June.01	

Design comparison table

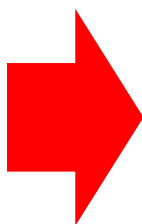
		CO ₂ GBC 45 bar (to be phased out) 	GBCH 90 bar (to be phased out) 	NEW GBC 90 bar NEW code numbers 
Material				
1	Housing	Brass	Brass	Stainless steel
2	Tube	Copper tube	6~22s with copper tube 28~42s with stainless steel tube	SS tube with Cu plating
3	Cap	Brass	Brass	Aluminium, anodized
4	Access port	Brass	Brass	Stainless steel
Operation condition				
1	MWP	6s - 42s: 5 bar	6s - 28s: 90 bar 35s - 42s: 75 bar	6s - 42s: 90 bar
2	MWT	-40 °C to 100 °C	-40 °C to 100 °C	Same
Design				
1	Connection	6s – 42s: Solder connection, copper • 1/4" - 1 5/8", ODF • 6 mm - 42 mm, ODF	6s – 22s: Solder c connection, copper • 1/4" - 7/8", ODF • 6 mm to 22 mm, ODF 28s – 42s: Welding connection, SS tube 28 mm, 35 mm, 42 mm	6s – 42s: Solder connection, SS tube with Cu plating. • 1/4" - 1 5/8", ODF (add 1") • 6 mm to 42 mm, ODF SS tube is not available, select GBCT 140 bar or reach out to Danfoss for details
2	Access port	6s - 42s: with & without AP	6s – 22s: with & without AP 28 – 42s: without AP	6s – 42s: with & without AP
3	Ball design	with bleed function	with bleed function	Same
4	Stem design	Internal load/mount	Internal load/mount	Same
5	O-ring	O-ring for CO ₂	O-ring for CO ₂	Same
6	Mounting Pannel	Yes	Yes	Not available, reach out to Danfoss in case of need.
7	Laying length	Same	Same	Same
8	Access port	6s - 42s: with & without AP	6s – 22s: with & without AP 28 – 42s: without AP	6s – 42s: with & without AP
Function				
1	Bi-isolation	Uniflow isolation	Bi-isolation	Bi-isolation
Reliability				
1	Corrosion	500 hrs salt spray resistance	500 hrs salt spray resistance	700 hours salt spray resistance
Certificates				
1	Safety & Regulation	CE / UL / RoHS (with exemption)	CE / UL / RoHS (with exemption)	CE / UL / RoHS (without exemption, Schrader valve excluded)

Affected products

The existing CO₂ GBC 45 bar and GBCH 90 bar will be phased out and replaced by the new GBC 90 bar for CO₂.

Please, find below the cross-reference list for equivalence.

Old Codes	Description
009L7395	GBCH 6s CO2 90 bar Ball Valve M/25
009L7396	GBCH 10s CO2 90 bar Ball Valve M/25
009L7397	GBCH 12s CO2 90 bar Ball Valve M/25
009L7399	GBCH 18s CO2 90 bar Ball Valve M/25
009L7406	GBCH 28s CO2 90 bar Ball Valve M/5
009L7410	GBCH 35s CO2 75 bar Ball Valve M/5
009L7411	GBCH 42s CO2 75 bar Ball Valve M/4
009L7415	GBCH 6s CO2 90 bar Ball Valve M/25
009L7416	GBCH 10s CO2 90 bar Ball Valve M/25
009L7417	GBCH 12s CO2 90 bar Ball Valve M/25
009L7418	GBCH 16s CO2 90 bar Ball Valve M/25
009L7419	GBCH 18s CO2 90 bar Ball Valve M/25
009L7420	GBCH 22s CO2 90 bar Ball Valve M/25
009L7580	GBCH 6s CO2 90 bar Ball Valve M/25 with AP
009L7581	GBCH 6s CO2 90 bar Ball Valve M/25 with AP
009L7583	GBCH 10s CO2 90 bar Ball Valve M/25 w AP
009L7582	GBCH 10s CO2 90 bar Ball Valve M/25 w AP
009L7584	GBCH 12s CO2 90 bar Ball Valve M/25 w AP
009L7585	GBCH 12s CO2 90 bar Ball Valve M/25 w AP
009L7586	GBCH 16s CO2 90 bar Ball Valve M/25 w AP
009L7587	GBCH 18s CO2 90 bar Ball Valve M/25 w AP
009L7588	GBCH 18s CO2 90 bar Ball Valve M/25 w AP
009L7589	GBCH 22s CO2 90 bar Ball Valve M/25 w AP
009L7520	GBC 6s CO2 45 bar Ball Valve M/25
009L7521	GBC 10s CO2 45 bar Ball Valve M/25
009L7522	GBC 12s CO2 45 bar Ball Valve M/25
009L7523	GBC 16s CO2 45 bar Ball Valve M/25
009L7524	GBC 18s CO2 45 bar Ball Valve M/25
009L7525	GBC 22s CO2 45 bar Ball Valve M/25
009L7526	GBC 28s CO2 45 bar Ball Valve M/5
009L7528	GBC 35s CO2 45 bar Ball Valve M/5
009L7529	GBC 42s CO2 45 bar Ball Valve M/4
009L7553	GBC 6s CO2 45 bar Ball Valve with AP M/25
009L7554	GBC 6s CO2 45 bar Ball Valve with AP M/25
009L7555	GBC 10s CO2 45 bar Ball Valve with AP M/25
009L7556	GBC 10s CO2 45 bar Ball Valve with AP M/25
009L7557	GBC 12s CO2 45 bar Ball Valve with AP M/25
009L7558	GBC 12s CO2 45 bar Ball Valve with AP M/25
009L7534	GBC 16s CO2 45 bar Ball Valve M/25 with AP
009L7563	GBC 18s CO2 45 bar Ball Valve with AP M/25
009L7564	GBC 18s CO2 45 bar Ball Valve with AP M/25
009L7536	GBC 22s CO2 45 bar Ball Valve M/25 with AP
009L7565	GBC 28s CO2 45 bar Ball Valve with AP M/5
009L7566	GBC 28s CO2 45 bar Ball Valve with AP M/5
009L7567	GBC 35s CO2 45 bar Ball Valve with AP M/5
009L7568	GBC 42s CO2 45 bar Ball Valve with AP M/4
009L7569	GBC 42s CO2 45 bar Ball Valve with AP M/4
009L7570	GBC 6s CO2 45 bar Ball Valve M/25
009L7571	GBC 10s CO2 45 bar Ball Valve M/25
009L7572	GBC 12s CO2 45 bar Ball Valve M/25
009L7574	GBC 18s CO2 45 bar Ball Valve M/25
009L7576	GBC 28s CO2 45 bar Ball Valve M/5
009L7579	GBC 42s CO2 45 bar Ball Valve M/4



New Codes	Description
009L5395	GBC 6s H Ball Valve 90 bar 6 mm M/30
009L5396	GBC 10s H Ball Valve 90 bar 10 mm M/30
009L5397	GBC 12s H Ball Valve 90 bar 12 mm M/30
009L5399	GBC 18s H Ball Valve 90 bar 18 mm M/25
009L5406	GBC 28s H Ball Valve 90 bar 28 mm M/5
009L5410	GBC 35s H Ball Valve 90 bar 35 mm M/5
009L5411	GBC 42s H Ball Valve 90 bar 42 mm M/4
009L5415	GBC 6s H Ball Valve 90 bar 1/4 in M/30
009L5416	GBC 10s H Ball Valve 90 bar 3/8 in M/30
009L5417	GBC 12s H Ball Valve 90 bar 1/2 in M/30
009L5418	GBC 16s H Ball Valve 90 bar 16 mm M/25
009L5419	GBC 18s H Ball Valve 90 bar 3/4 in M/25
009L5420	GBC 22s H Ball Valve 90bar 7/8 in M/25
009L5580	GBC 6s H Ball Valve 90 bar AP 6 mm M/30
009L5581	GBC 6s H Ball Valve 90 bar AP 1/4 in M/30
009L5583	GBC 10s H Ball Valve 90 bar AP 10 mm M/30
009L5582	GBC 10s H Ball Valve 90bar AP 3/8 in M/30
009L5584	GBC 12s H Ball Valve 90bar AP 12 mm M/30
009L5585	GBC 12s H Ball Valve 90 bar AP /2 in M/30
009L5586	GBC 16s H Ball Valve 90 bar AP 16 mm M/25
009L5587	GBC 18s H Ball Valve 90 bar AP 18 mm M/25
009L5588	GBC 18s H Ball Valve 90 bar AP 3/4 in M/25
009L5589	GBC 22s H Ball Valve 90 bar AP 7/8 in M/25
009L5415	GBC 6s H Ball Valve 90 bar 1/4 in M/30
009L5416	GBC 10s H Ball Valve 90 bar 3/8 in M/30
009L5417	GBC 12s H Ball Valve 90 bar 1/2 in M/30
009L5418	GBC 16s H Ball Valve 90 bar 16 mm M/25
009L5419	GBC 18s H Ball Valve 90 bar 3/4 in M/25
009L5420	GBC 22s H Ball Valve 90 bar 7/8 in M/25
009L5526	GBC 28s H Ball Valve 90 bar 1 1/8 in M/5
009L5410	GBC 35s H Ball Valve 90 bar 35 mm M/5
009L5529	GBC 42s H Ball Valve 90 bar 1 5/8 in M/4
009L5581	GBC 6s H Ball Valve 90 bar AP 1/4 in M/30
009L5580	GBC 6s H Ball Valve 90 bar AP 6 mm M/30
009L5582	GBC 10s H Ball Valve 90 bar AP 3/8 in M/30
009L5583	GBC 10s H Ball Valve 90 bar AP 10 mm M/30
009L5585	GBC 12s H Ball Valve 90 bar AP /2 in M/30
009L5584	GBC 12s H Ball Valve 90 bar AP 12 mm M/30
009L5586	GBC 16s H Ball Valve 90 bar AP 16 mm M/25
009L5588	GBC 18s H Ball Valve 90 bar AP 3/4 in M/25
009L5587	GBC 18s H Ball Valve 90 bar AP 18 mm M/25
009L5589	GBC 22s H Ball Valve 90 bar AP 7/8 in M/25
009L5565	GBC 28s H Ball Valve 90 bar AP1 1/8 in M/5
009L5566	GBC 28s H Ball Valve 90 bar AP 28 mm M/5
009L5567	GBC 35s H Ball Valve 90 bar AP 35 mm M/5
009L5568	GBC 42s H Ball Valve 90 bar AP 1 5/8 M/4
009L5569	GBC 42s H Ball Valve 90 bar AP 42 mm M/4
009L5395	GBC 6s H Ball Valve 90 bar 6 mm M/30
009L5396	GBC 10s H Ball Valve 90 bar 10 mm M/30
009L5397	GBC 12s H Ball Valve 90 bar 12 mm M/30
009L5399	GBC 18s H Ball Valve 90 bar 18 mm M/25
009L5406	GBC 28s H Ball Valve 90 bar 28 mm M/5
009L5411	GBC 42s H Ball Valve 90 bar 42 mm M/4

QR Code for Optyma™ Package Condensing Units

As part of the continuous improvement of our products, we will now be implementing a QR product finder code sticker on all our Optyma package condensing units.

Customer Impact

Better access to all local language documentation from the customer's mobile phone.

Implementation date

All products will get this sticker on week 04 / 2024 for all package units beginning from serial number 06411CG0424, but the functionality in **Ref Tool App** is already available: [Product Finder \(danfoss.com\)](https://danfoss.com)



1. Labelling will be stucked on an easily accessible place.
2. The QR code is giving access to **Ref Tools App** product search.
3. You only need to add the 114X____ code to reach out to all local language documentation, instruction guideline, piping, wiring etc... [Product Finder \(danfoss.com\)](https://danfoss.com)

Change in Brightness of ERC 11X Blue LED Variants

There has been a change in blue LED chip and a component supplier change. So, there is a change in brightness on all ERC 11X variants (ERC 111A, 112C, 112D & RDI 107A) blue LED versions.

This modification is aiming to overcome end of life of existing blue LED chip, and we are replacing it with a new blue LED chip. There is also a change of component supplier because of above reason.

To overcome the possible stop in production due to end-of-life components, we have evaluated, tested, and approved new blue LED to be used in ERC 11X.

There is a change in the brightness of the LED, which is much brighter than the current one. It is not a change in product code and function.

Technical difference current/new blue LED chip

Before	After
Luminous Intensity: min. 20, max. 30 mcd	Luminous Intensity: min. 30, max. 45 mcd

Please Note:

ERC has a feature where in you can adjust display intensity through a parameter din. din - Display Intensity. The controller can have its display intensity (brightness) set in one of two ways:

- A) With a Danfoss ambient light sensor attached, the brightness of the display is adjusted automatically according to the ambient light level (see the assignments section in the user guide).
- B) When no ambient light sensor is attached, the display intensity can be set to a fixed intensity.

Both options are on a scale of 1 to 10, where 10 is the brightest.

din was set at 10 in ERC at the time of testing on both old and new blue chip.



Affected products

ERC 11X variants (ERC 111A, 112C, 112D & RDI 107A) blue LED versions.

Part code	Description
080G3216	ERC 112C, BLUE LED, CFF, BUZ
080G3206	DEL ERC 112C, BLUE LED, GDM
080G3419	ERC 112D, BLUE LED, CFF, BUZ
080G3233	DEL ERC 112C, BLUE LED, CFF, BUZ
080G3496	ERC 112C, BLUE LED, CFF, BUZ. STM32
080G3207	DEL ERC 112D, BLUE LED, GDM
080G3218	ERC 112C, BLUE LED, GDM, BUZ
080G3226	DEL ERC 112C, BLUE LED, GDM, Pepsico
080G3223	DEL ERC 112C, BLUE LED, GDM, BUZ, IP
080G3413	ERC 112D, BLUE LED, BUZ
080G3275	DEL ERC 112C, BLUE LED, GDM
080G3217	DEL ERC 112D, BLUE LED, CFF, BUZ
080G3494	ERC 112C, BLUE LED, CFF, BUZ. STM32
080G3276	ERC 112C, BLUE LED, GDM
080G3418	ERC 112C, BLUE LED, GDM, BUZ, IP
080G3421	RDI 107A, BLUE LED, CFF, BUZ
080G3491	ERC 112C, BLUE LED, GDM. STM32
080G3499	ERC 112D, BLUE LED, CFF, BUZ. STM32
080G3277	ERC 112C, BLUE LED, CFF, BUZ
080G3492	ERC 112D, BLUE LED, GDM. STM32
080G3403	ERC 112C, BLUE LED, CFF, BUZ
080G3414	ERC 112D, BLUE LED, CFF, BUZ (VSD)
080G3278	ERC 112C, BLUE LED, CFF, BUZ
080G3404	ERC 112C, BLUE LED, CFF, BUZ
080G3417	ERC 112C, BLUE LED, CFF, BUZ
080G3246	RDI 107A, BLUE LED, CFF, BUZ
080G3401	ERC 112C, BLUE LED, CFF, BUZ

Part code	Description
080G3272	ERC 112C, BLUE LED, CFF, BUZ
080G3271	ERC 112C, BLUE LED, CFF, BUZ
080G3405	ERC 112C, BLUE LED, CFF, BUZ
080G3279	ERC 112C, BLUE LED, CFF, BUZ
080G3415	DEL ERC 112D, BLUE LED, CFF, BUZ
080G3274	DEL ERC 112D, BLUE LED, GDM
080G3402	ERC 112C, BLUE LED, CFF, BUZ
080G3273	DEL ERC 112D, BLUE LED, GDM
080G3227	ERC 111A, BLUE LED, GDM, Pepsico
080G3495	ERC 112C, BLUE LED, GDM, STM32
080G3220	DEL - ERC 112C, BLUE LED, CFF, BUZ
080G3225	DEL - ERC 112D, BLUE LED, CFF, BUZ
080G3241	RDI 107A, BLUE LED, GDM
115G0104	ERC 112C, BLUE LED GDM - BOM 3491
080G321603	KIT ERC 112C, BLUE LED, CFF, BUZ 090-163
080G320600	KIT ERC 112C, BLUE LED GDM
080G323100	KIT ERC 111A, BLUE LED
080G3422	ERC 112C, BLUE LED, CFF, BUZ
080G3224	DEL ERC 112C, BLUE LED, CFF
080G3228	DEL - ERC 112D, BLUE LED, CFF, BUZ
080G3436	RDI 107A, BLUE LED, GDM
080G3424	RDI 107A, BLUE LED, CFF, BUZ
080G3438	RDI 107A, BLUE LED, CFF, BUZ
080G3426	ERC 111A, BLUE LED, CFF, BU
080G3237	ERC 111A, BLUE LED, GDM
080G3231	ERC 111A, BLUE LED, GDM
080G3236	ERC 111A, BLUE LED, CFF, BUZ

Implementation date

Week of implementation is week 06 January 2024.

Controller with new blue chips can be traced only with year and week of manufacturing.

Change in brightness of ERC 11X blue LED's







Week of manufacture: **ww** Two digit number ranging from 01 - 53

Year of manufacture: **y** Last digit of the year

AK-PC 772B and AK-PC 781B Pack Controllers: New Product Versions



New product versions of the AK-PC 772A and AK-PC 781A named respectively as AK-PC 772B and AK-PC 781B are now available, with the intention to support communication over IP towards AK-SM 800A series and overcome component scarcity of the LON chip for the existing AK-PC 772A and AK-PC 781A.

The new products are:

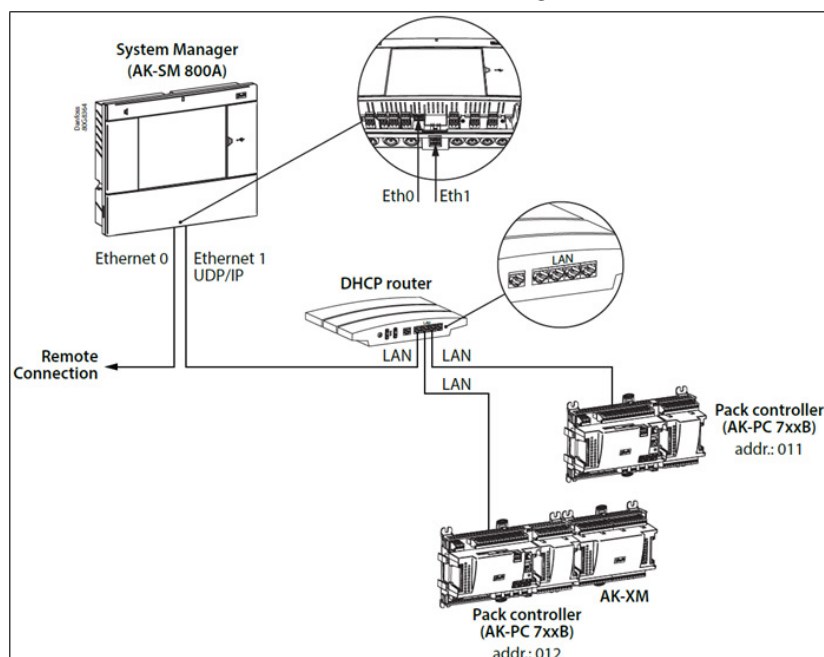
- **AK-PC 772B, 080Z0195**
- **AK-PC 781B, 080Z0194**

AK-PC 772B with SW rel. 1.5 will present the same features and functionalities of the existing AK-PC 772A with SW rel. 1.3, with the only difference of having communication over IP towards AK-SM 800A series and the support of Bock compressors.

AK-PC 781B with SW rel. 2.5 will present the same features and functionalities of the existing AK-PC 781A with SW rel. 2.31, with the only difference of having communication over IP towards AK-SM 800A series and the support of Bock compressors.

The AK-PC 772B is compatible with SW rel. 1.5 and onwards. The AK-PC 781B is compatible with SW rel. 2.5 and onwards. **Note that these new devices are NOT compatible for use with software releases prior to the one implemented from the factory. Incorrect software download can permanently damage the device.**

You should expect to have to set up a new network configuration for communication between the AK-PC 772B and AK-PC 781B towards the AK-SM 800A System Manager as per below drawing. In the network configuration they will need to use a DHCP router for Pack IP addressing.



The new AK-PC 772B and AK-PC 781B will be available in stock for sale from week 04/2024.

If you have any questions regarding this information, please contact your local Danfoss sales representative.

Videos and Infograms

- Watch our Q&A series to get the answers to common refrigerant questions:
 - Can I retrofit from a non-flammable A1 refrigerant to a flammable A2L or A3 refrigerant? - [LINK](#)
 - Do I need to change refrigerants in existing systems because of F-gas phase-down regulations? - [LINK](#)
 - Do I need to change the filter dryer during retrofit? - [LINK](#)
 - After a retrofit from R22 to an alternative refrigerant, why did the system start to leak? - [LINK](#)
 - Can I retrofit from non-flammable A1 refrigerant to flammable A2L refrigerants? - [LINK](#)
- Setting of KP pressure switches:
 - How to set different KP pressure switches: an intro - [LINK](#)
 - How to efficiently do the setting of a KP dual type pressure switch - [LINK](#)
 - How to efficiently set a KP dual type pressure switch with convertible reset - [LINK](#)
 - How to efficiently set a KP low pressure switch - [LINK](#)
 - How to efficiently set a KP high pressure switch - [LINK](#)
- ICAD B actuator: a step-by-step introduction - [LINK](#)
- Infogram: Expert cold room design tips - [LINK](#)



Details for Additional Information

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