ENGINEERING
TOMORROW

Danfoss

October 2021 | Danfoss Climate Solutions for cooling

TECHI 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 Oil Level Sensor Electrical Part Release

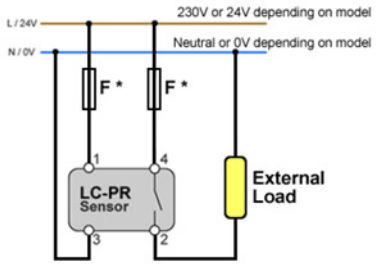
The Danfoss oil level sensor is used for monitoring compressor oil level and outputs a signal. VZH models - manifolding, unified or OLS versions - are preinstalled with a prism on the compressor shell. You get access to this oil level sensing function by ordering an oil level sensor electrical part and assemble it to the prism.

To provide a better user experience, Danfoss will release a new oil level sensor electrical part - LC-PR - which can output relay signal. This new oil level sensor electrical part is available for A2L refrigerants.

Compared with the current oil level sensor electrical part (LC-XN), this new sensor (LC-PR) outputs a relay signal instead of a solid-state signal. Due to this update, please refer to the below diagram.

New oil level sensor electrical part LC-PR

Electrical connections diagram



Wiring diagram example
**External fuses required, especially for applications with flammable gas refrigerants (i.e. A2L)*

Do not connect 24V sensor to 230V power supply or 230V sensor to 24V power supply.

Check the diagram for proper wiring.

Any error can cause permanent damage to the sensor.

The new oil level sensor also has an LED which indicates working status

LED GREEN (fixed)
Normal Level condition
(relay output contact closed)

LED RED (fixed)
Level Alarm condition
(relay output contact open)

LED RED (blinking)
Diagnostic Alarm condition.
(relay output contact open)
Please proceed replacing the electronic part.

The oil level sensor prism is preinstalled on the compressor. To use this function, customers need to order one of the new accessory kits with electrical part found below.

Acessory kits with new oil level sensor			
24 V AC/DC		**230 V AC**	
Sales code	Description	Sales code	Description
120Z0803	Oil level sensor 24 V	120Z0804	Oil level sensor 230 V

Tandem kits (VZH Gen3 + DHS) with new oil level sensor			
24 V AC/DC		**230 V AC**	
Sales code	Application	Sales code	Application
120Z0805	VZH410/465H	120Z0806	VZH410/465H
120Z0807	VZH208H/301H	120Z0808	VZH208H/301H
120Z0809	VZH178H/257H/278H	120Z0810	VZH178H/257H/278H
120Z0811	VZH354H	120Z0812	VZH354H

The new oil level sensor electrical part LC-PR does not provide mating connector (female). Customers may order 2 m or 8 m prewired connectors using the below sales codes:

Connector with cable	
Sales code	Description
034G7073	2 m cable
034G7074	8 m cable

New oil level sensor electrical part LC-PR was implemented in July 2021.

If you need additional information regarding the new oil level sensor electrical part release, please contact Danfoss technical support.

Single Type KP Pressure Switches, Changes Front and Top Covers Color

Due to the current global supply issues our supply of front and top covers for the KP pressure switches temporally will change to dark grey from light grey.

As soon as the situation stabilizes Danfoss will switch back to standard light grey colors again.

No form, function or code numbers are affected.

Existing grey colour

Front cover

Top cover

Temporary period dark grey colour

Front cover

Top cover

Semi-Hermetic Filter Drier - One Core Shell UL 207 Approved for A2L Refrigerants

Danfoss is launching a new range for semi-hermetic filter driers DCR E 48 with one core. The shell body made from steel, coupled with copper connectors are designed specifically for flammable refrigerants classified under A2L (i.e., R32, R444A, R444B, R445A, R446A, R447A, R451A, R452B, R454B, R455A, R1234yf, etc.). This product is now approved under UL 207. Visit the **datasheet** for more information.

DCR E 48 shell can withstand a **Maximum Working Pressure of 50 Bar (725 psi)** and a working temperature range of **-40 °C to 70 °C (-40 °F to 160 °F).** The DCR E shells should be used for flammable refrigerants only like: R32, R444A, R444B, R445A, R446A, R447A, R451A, R452B, R454B, R455A, R1234yf, it can be used in the liquid line and it meets with UL 207 requirements.

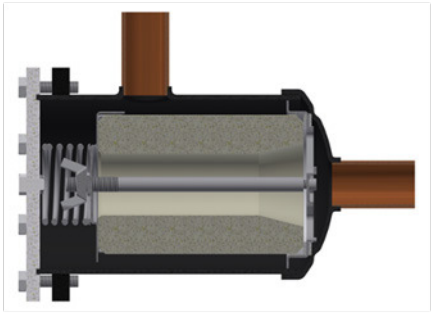
There is no change in the core specifications and the same existing core can be used in either of the DCR vessel categories. The DCR E 48 shell comes with a new internal design (the main differences explained below). The new shell will come with all major connector options as per the below schedule than can meet with UL 207 specifications.

Phase 2 includes UL approvals and solder copper connector sizes: 1 $^{3}/_{8}$ and 1 $^{5}/_{8}$ → Released until wk 48 (Nov. 2021)

Approvals

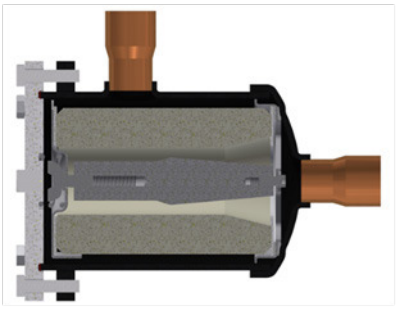
- PED directive 2014/68/EU of the European parliament and of the council, Category a4p3
- Australian registration No. PV 6-238702/19
- RoHS directive 2011/65/EU, including amendment 2015/863/EU applying the exception 6(a)
- ATEX directive 2014/34/EU
- CSA
- UL 207 **(New update from 2021)**

DCR Standard (Current)



- Inner free vol. 1,49 liters
- Group 2 refrigerants, non-flammable, none toxic (A1)
- PED category I, CE mark required

DCR E Flammable (Updated)



- Inner free vol. 0,88 liters, and connector with inner diameter less than 25 mm
- Group 1 (A2L) and 2 refrigerants
- PED category A4P3 due is less than 1 L, CE mark not required
- Approved according UL 206
- New copper connectors 1 3/8 and 1 5/8

New Code Numbers

Phase 1

Object	Description	Type	Core Size	Connection material	Conn Solder size [in.]	Conn Solder size [mm]	Cover
023U7606	DCRE Filter 0487s Assy.	DCRE	48 cu.in.	Copper	$^{7}/_{8}$ in.	22.00 mm	Plug
023U7607	DCRE Filter 0489s Assy.	DCRE	48 cu.in.	Copper	1 $^{1}/_{8}$ in.		Plug

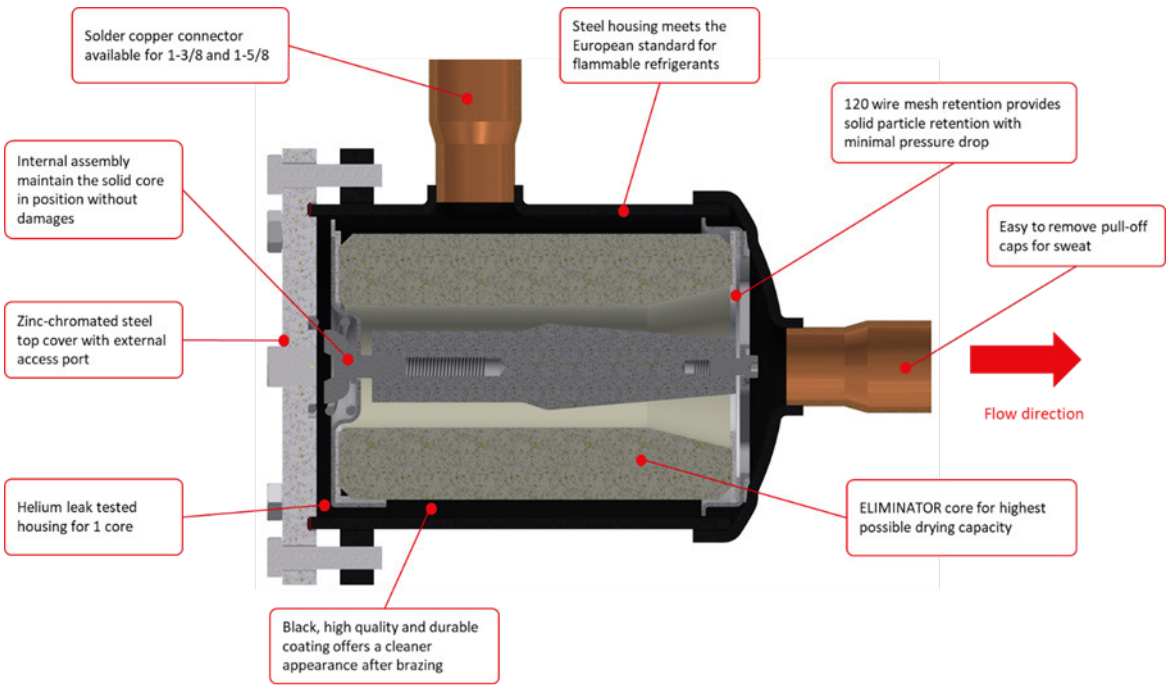
Phase 2

Object	Description	Type	Core Size	Connection material	Conn Solder size [in.]	Conn Solder size [mm]	Cover
023U7610	DCRE Filter 04811s Assy.	DCRE	48 cu.in.	Copper	1 $^{3}/_{8}$ in.		Plug
023U7611	DCRE Filter 04813s Assy.	DCRE	48 cu.in.	Copper	1 $^{5}/_{8}$ in.		Plug

Ready to order Nov 2021.

Salient features:

- Increased steel thickness to meet with the pressure requirements for flammable refrigerants.
- Increased cover thickness from 12 to 15 mm **(New update from 2021).**
- Change bolts to M10 **(New update from 2021).**
- Torque changed to 50 Nm **(New update from 2021).**
- The same approved material specification as in existing DCR range.
- A4P3 PED category - no need of CE mark.
- UL 207 approvals **(New update from 2021).**
- RoHS Directive 2011/65/EU including amendment 2015/863/EU applying the exception 6(a).
- Available in pure copper connectors for quick brazing.
- The same benefits as existing DCR semi-hermetic filter drier product line: internal cleanliness, solid core, particles retention larger than 120-micron, helium leak test, plastic caps, and proven reliability.
- New copper connector sizes of 1-3/8 and 1-5/8 **(New update from 2021).**



Additional replaceable DCR core inserts codes as a finish good have been created for these specific DCRE shells, these new codes are included the new gasket dimension:

Object	Description	Type	Qty per packing	Gasket included	Packing format
023U1399	Filter drier core 48DM M/3 (DCRE)	48-DM	3 pc	Yes	Multi pack
023U4388	Filter drier core 48DC M/3 (DCRE)	48-DC	3 pc	Yes	Multi pack

Pressure Switches RT Type - New Bellows Design Implementation

This is an update of previous communication regarding production stoppage of selected RT products (6AB/6AS/6AW/6B/6S/6W/ 6AEB/6AES/6AEW,19B/19S/19W).

The reason for production stoppage was non-compliance with PED requirement regarding burst pressure why the settings was restricted to max. 24 bar to maintain compliance to PED.

RT6:
After detailed evaluation, we found that the root cause of the problem was mix of challenges related to bellows production process and tough specification requirements for the current bellows design. The challenges regarding the process have already been addressed by the bellows factory, and design changes of the bellow is ongoing. Until then, the production will continue to deliver for the customers who do not need PED compliance as well as for those who need PED compliance and will accept the setting restriction to max. 24 bar.

RT19:
We have managed to solve the problem without any design change. Production with full PED compliance was restarted on September 27, 2021.

The complete list of the affected RT products:

Product type	Code no.
RT19B Pressure Switch M/15	**017-518266**
RT19S Pressure Switch M/15	**017-518366**
RT19W Pressure Switch I/12	**017-142666**
RT19W Pressure Switch M/15	**017-518166**
RT6AB Pressure Switch M/15	**017-503566**
RT6AB Pressure switch M/15	**017-513366**
RT6AEB Pressure Switch M/15 ATEX	**017-513466**
RT6AES Pressure Switch M/15 ATEX	**017-502166**
RT6AEW Pressure Switch M/15 ATEX	**017-513866**
RT6AS Pressure Switch M/15	**017-507666**
RT6AS Pressure Switch M/15	**017-514666**
RT6AW Pressure Switch M/15	**017-503266**
RT6AW Pressure Switch M/15	**017-513166**
RT6B Pressure Switch M/15	**017-503466**
RT6S Pressure Switch M/15	**017-507566**
RT6W Pressure Switch M/15	**017-503166**

We apologize for any inconvenience caused by this issue. Should you have any questions not addressed here, please contact your local Danfoss sales representative.

Air Purger IPS 8, Early Warning

Important information to observe before start-up of Air Purger, Type IPS 8

We have experienced two important issues both related to start-up of Danfoss Air Purger, Type IPS 8.

Both issues possible can lead to critical failure of the IPS 8 after start-up and are related to incorrect not sound engineering installation practice.
The issues can be divided into two groups:

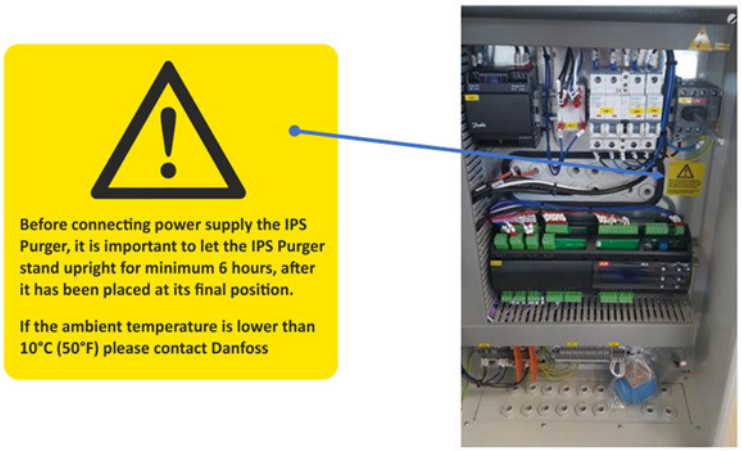
1. IPS 8 stand still period before start-up
2. Welding procedure

IPS 8 stand still period before start-up

Quite often the IPS 8 will be lifted to a roof or at a higher level from the ground floor. During the lifting, typical by a crane, the IPS 8 may tilt back and forth. Once the IPS is at its final location, there is a risk that the oil and liquid have been moved around inside the IPS 8.

For that reason, it is needed to secure that the IPS 8 stand-still for **minimum 6 hours** before switching on the power supply.

To notify the installer we have placed a yellow sticker inside the electrical box, near the MCB (Main Circuit Breaker)

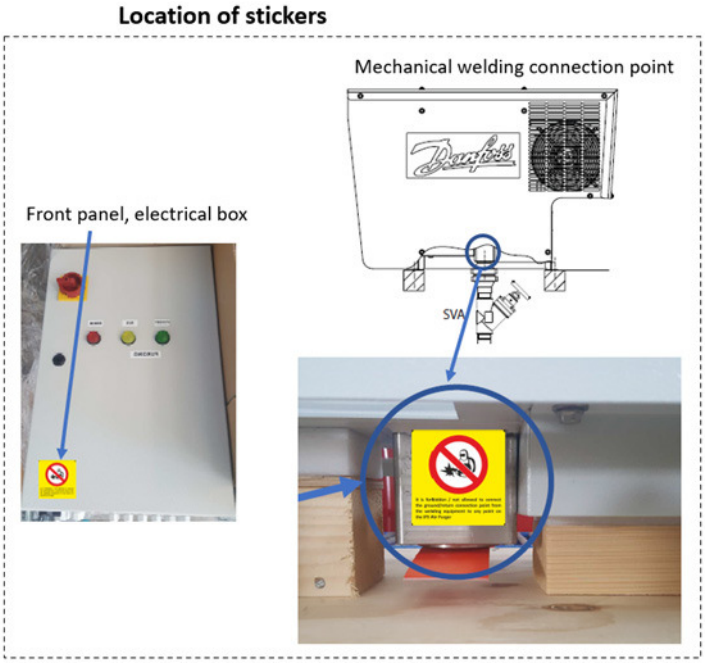


Welding procedure

Inside the electrical box in the IPS 8, we have experienced some ground/earth wire overheated with the outer isolation melted. This can only happen when a very high current runs through the affected wire. In some case the pressure/temperature mechanical switches have been damaged too.

The root cause for these failures is an incorrect applied welding procedure during installation when connecting the IPS 8 to the refrigeration system.

To secure a proper welding procedure we have mounted yellow stickers at different locations to notify the installer before the welding procedure takes place. It is very important that the ground/return connection point from the welding equipment, is **not** connected to any point on the IPS 8.



Affected products

- 084H5001, IPS 8, CE approved. 230 V AC, 1 ph, 50 Hz
- 084H5002, IPS 8, 230 V AC, 1 ph, 60 Hz
- 084H5003, IPS 8, UL approved 230 V AC, 1 ph, 60 Hz, Field coils 115 V AC 60 Hz

Learn more – and get in touch

To learn more about the Danfoss Air Purger, please contact your local Danfoss representative.

Videos in YouTube

- Oil and lubrication in refrigeration Q&A, livestream recroding – **LINK**
- A guide to safety valves for CO_2 and Ammonia cooling systems | SFA 10H – **LINK**
- What happens if the condensing unit has a larger capacity than the evaporator and vice versa? **- LINK**
- How to find the TXV Superheat Tuner tool in the Ref Tools app - **LINK**
- Troubleshooting a solenoid valve which only opens partially - **LINK**

Details for Additional Information

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