COPELAND ADKS-Plus Filter Dryer Shells Instruction Manual

Contents

COPELAND

COPELAND ADKS-Plus Filter Dryer Shells

FAQs

Q: Can I attempt to dry out a used filter-drier core?

A: No, do not attempt to dry out a used filter-drier core.

Q: What should be done before performing maintenance on the refrigeration system?

A: Ensure refrigerant is pumped out of the system and the room is well-ventilated to prevent any refrigerant from being trapped inside the part.

Q: What are the fluid groups that this product is compatible with?

A: The product is compatible with Fluid Group I and II refrigerants as indicated in the specifications section.

General information

COPELAND filter dryer shells with replaceable core/filter are for new installation or for integration into the system for clean-up purposes after compressor motor burnout.

Safety instructions

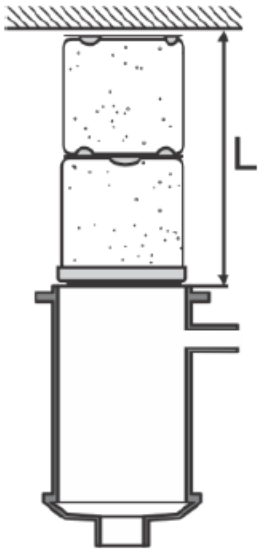
- Read operating instructions thoroughly. Failure to comply can result in device failure, system damage, or personal injury.
- This product is intended for use by qualified personnel having the appropriate knowledge and skills like trained according to EN 13313 or a specific training for flammable refrigerants.
- flammable refrigerants require special handling and care due to their flammability. Sufficient ventilation is required during service of the system. Contact with rapidly expanding gases can cause frostbite and eye damage. Proper protective equipment (gloves, eye protection, etc.) has to be used.
- Ensure that the system is correctly labeled with the applied refrigerant type and a warning for explosion risk.
- In a severely contaminated system, avoid breathing acid vapors and avoid contact with skin from contaminated refrigerants/lubricants. Failure to do so could result in injury.
- Before opening any system make sure pressure in the system is brought to and remains at atmospheric pressure.
- Do not release any refrigerant into the atmosphere!
- Do not exceed the specified maximum ratings for pressure and temperature.
- Observe and avoid mechanical damage to component housing.
- Do not use any other fluid media without prior approval of COPELAND. Use of fluids not listed could result in:
- Change of hazard category of product and consequently change of conformity assessment requirement for product in accordance with European Pressure Equipment Directive 2014/68/EU.
- Chemical deterioration of desiccants of core in the shell.
- ensure that design, installation, and operation comply with European and national standards/regulations.
- For flammable refrigerants only use accessories approved for it!

Mounting location

- Allow sufficient space from the flanged end to permit removal of the shell's entire internal components assembly (see Fig. 1)
- Protect the shell against sunrays and vibration.

Fig. 1:

Type	L
ADKS-Plus	170 mm
FDS-48	170 mm
ADKS-96	310 mm
ADKS-144	450 mm
ADKS-192	590 mm
FDS-24	220 mm



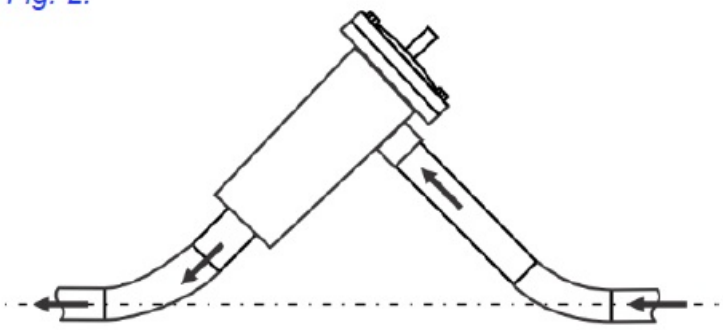
Liquid line

- Locate the shell as close as possible to the inlet of the expansion valve. If the solenoid valve and sight glass are incorporated, the arrangement will be in the following sequences in the flow direction of refrigerant and as close as possible: – Filter dryer shell, solenoid valve, sight glass, and expansion valve.

2) Clean-up after compressor motor burnout

- Shell must be as close as possible to the compressor in the suction line but upstream of any vibration adsorber that might be presented.
- Filter dryer shell shall be installed vertically with an upside flange/quick cap or as shown in Fig. 2 which it will permit the return of oil to the compressor.
- For detailed clean-up procedures and recommendations, consult the system/compressor manufacturers or contact the Copeland Application Engineering Department.

Fig. 2:



Installation

- Do not remove seal caps until ready for installation in order to minimize entering of moisture and dirt.
- WARNING: Avoid damaging the connections!
- The direction of refrigerant flow must match with arrow on the label.

- Removal of the internal components of the shell is not required before and during brazing.

Brazing

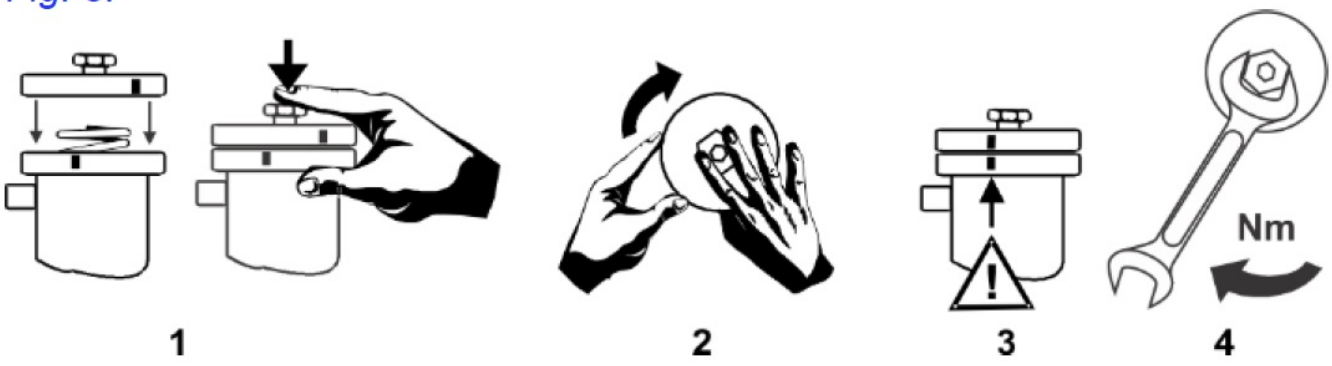
- Perform the brazing joint as per EN 14324.
- Before and after brazing clean tubing and brazing joints.
- Minimize vibrations in the piping lines with appropriate solutions.
- Fittings: ADKS-Plus/ FDS: Copper; FDH: Steel Do not exceed the max. surface temperature of 120 °C Do not exceed the max. flame temperature of 675 °C

Installation/Replacement of Filter Cores:

- Before opening the Filter Drier Shell pump down the system and shell completely!
- Do not remove cores from the bag until just prior to installation. Early removal could result in contamination of the desiccant from the surrounding atmosphere.

FDS – Opening quick cap (Fig. 3, 5)

Fig. 3:

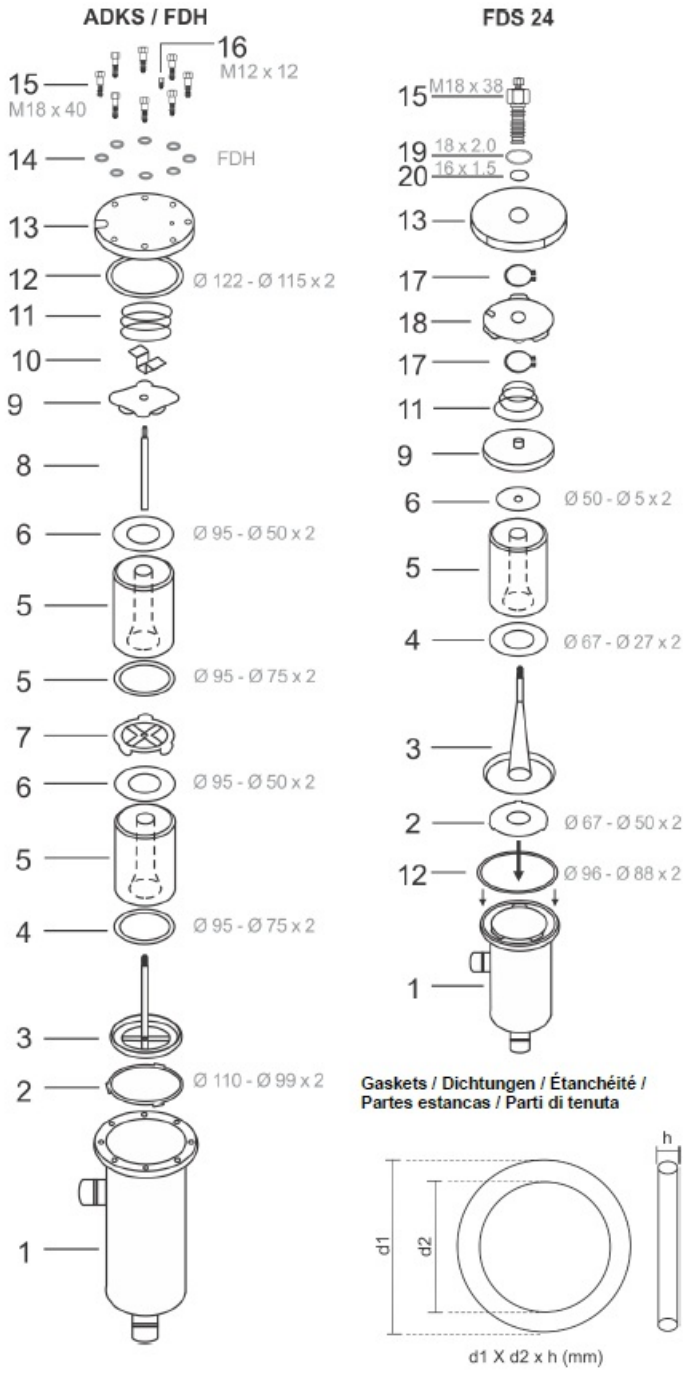


- Lose the nut by two turns.
- Rotate the quick cap counterclockwise and lift the quick cap from the shell.
- Withdraw the entire internal assembly by pulling on spring.

ADKS/ FDH – opening flange cap (Fig. 5):

- Remove flange bolts and flange cover. Withdraw the entire internal assembly by pulling on the handle.
- Unscrew the inlet block retainer.
- Remove and dispose of used filter drier blocks.
- Clean all internal parts thoroughly.
- Remove blocks from packaging.
- Cores must be mounted by all means with the tapered inside diameter against the outlet retainer. Assemble all parts and new gaskets acc. to Fig. 5 and screw the handle on the outlet retainer.
- Carefully insert the assembled unit into a shell.

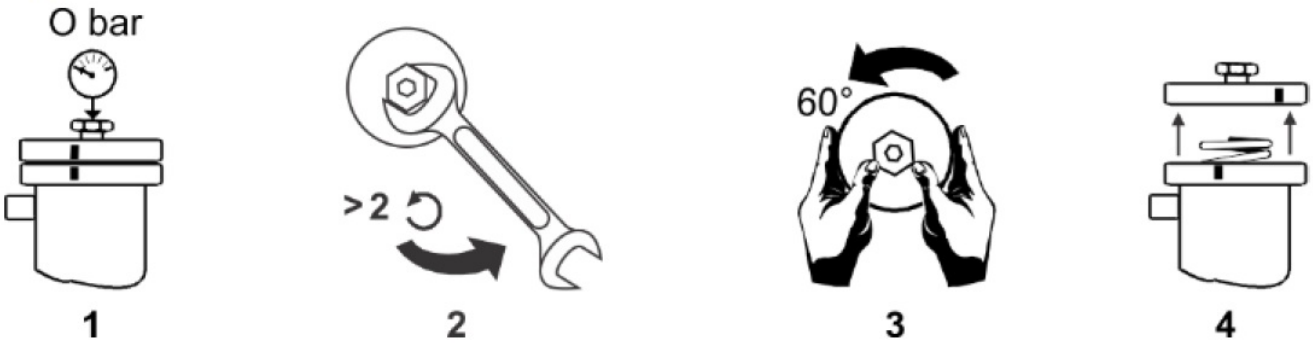
Fig. 5:



FDS – Closing quick cap (Fig. 4, 5)

- After replacement of Filter Cores always check cover and shell O-rings for damage. The O-ring set has to be ordered separately.
- Place the quick cap on the shell, push it against the shell, and rotate the quick cap clockwise until the red marks are next to each other. Fasten nut with 27 Nm for FDS-24

Fig. 4:



ADKS/ FDH – Closing flange cap (Fig. 5)

- Make sure that the flat gasket has been properly incorporated into the round groove of the flange cap.
- After the replacement of Filter Cores always use the new cover gasket. Lightly coat the new gasket with refrigeration oil on both surfaces.
- Screw the first bolt (for FDH with washer) in a few turns to assist with the mounting of the cap.
- Place the cap onto the shell ensuring the cut-out is aligned under the first screw (and washer for FDH). Hand-tighten first bold. Insert the remaining bolts and hand-tighten. Torque the bolts to 35 Nm using a crisscross pattern to apply pressure evenly.

Pressure Test:

After completion of installation, a pressure test must be carried out as follows:

- according to EN 378 for systems that must comply with the European Pressure Equipment Directive 2014/68/EU.
  to maximum working pressure of the system for other applications.

Tightness Test:

Conduct a tightness test according to EN 378-2 with appropriate equipment and methods to identify leakages from joints and products. The allowable leakage rate must be according to the system manufacturer's specifications.

WARNING:

- Failure to pressure test or tightness test as described could result in loss of refrigerant, damage to property, and/or personal injury.
- The tests must be conducted by skilled personnel with due respect to the danger related to pressure.

Operation

- After the Pressure and tightness test, start the system and after sufficient running time, check the color of the moisture indicator. The color calibration of the indicator provides a precise indication of the system's moisture condition.
- In systems with excessive moisture, it may be necessary to replace core(s) several times in order to bring

moisture in the system to a safe level.

- WARNING: During the operation of the system, the shell may have a high surface temperature.

Service Maintenance

- The external surface of shells is coated by epoxy powder paint for optimum protection against corrosion. The external surface of the shell shall be checked as per EN 378 during routine/periodic inspection/service.
- Before any debrazing ensure that the flammable refrigerant is pumped out of the system and the room around the system is well vented so no refrigerant is left.
- When disposing or removing the component or part from the refrigeration system, ensure that no refrigerant remains ed trapped inside of the part.
- According to EN 378-4 during each periodic maintenance, tightness tests shall be carried out at the relevant part of the refrigerating system. This shall apply where appropriate following any repair.

WARNING: Do not attempt to dry out a used filter- drier core.

Parts

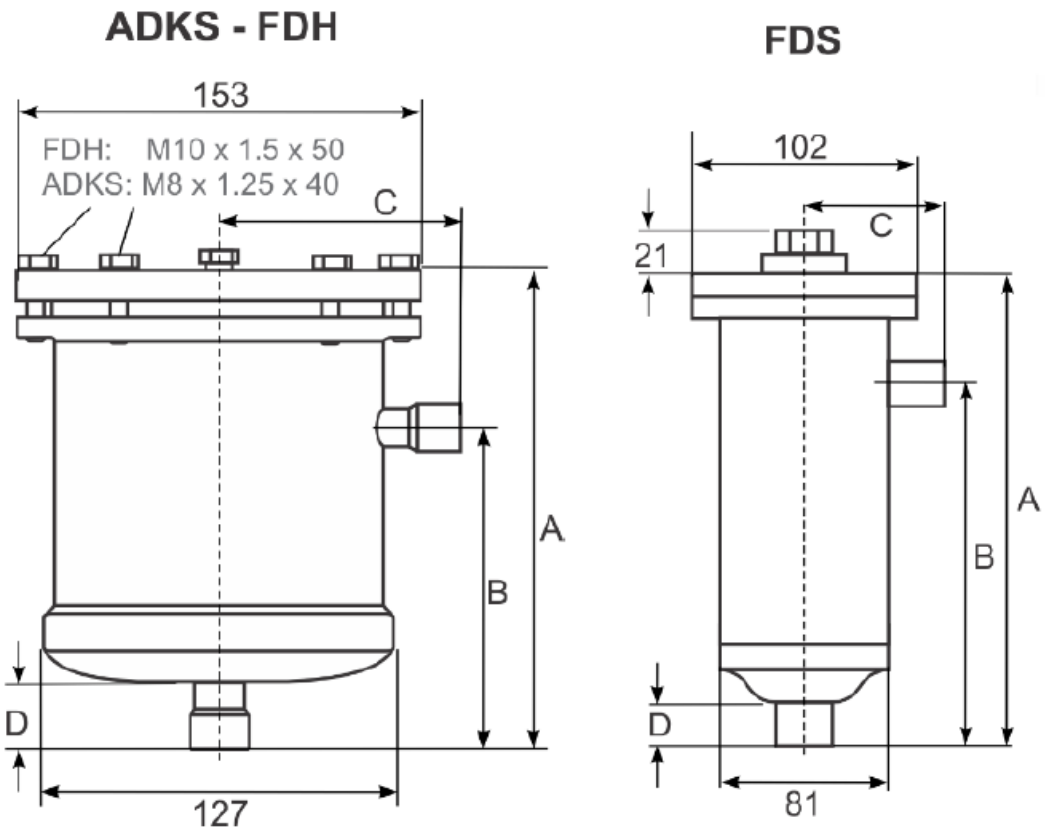
(Fig. 5)

<table>
<tr><th>No.</th><th>Description</th><th>No.</th><th colspan="2">Description</th><th>No.</th><th>Description</th></tr>
<tr><td>1</td><td>filter drier shell</td><td>6</td><td colspan="2">felt gasket ADKS-Plus/ FDH : Ø 95 – Ø 50 x 2 mm FDS: Ø 50 – Ø 5 x 2 mm</td><td>13</td><td>flange cover</td></tr>
<tr><td></td><td></td><td></td><td colspan="2"></td><td>14</td><td>washer (only FDH)</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">felt gasket ADKS-Plus/ FDH : Ø 110 – Ø 99 x 2 mm FDS: Ø 67 – Ø 50 x 2 mm</td><td>7</td><td>coupling</td><td rowspan="2">(only ≥ ADKS-Plus / FDH-96…)</td><td rowspan="2">15</td><td rowspan="2">flange bolts 8x ADKS-Plus/ FDH: M8 x 40 mm (hexagon)
1x FDS: M18 x 38 mm (2x Grooves)</td></tr>
<tr><td>8</td><td>support rod (Ø 9.5 x 155 mm)</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">outlet core retainer with support rod</td><td>9</td><td colspan="2">inlet core retainer</td><td rowspan="2">16</td><td rowspan="2">bolt squared head
1x ADKS-Plus/ FDH: M12 x 12 mm</td></tr>
<tr><td>10</td><td colspan="2">threaded handle</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">felt gasket ADKS-Plus/ FDH : Ø 95 – Ø 75 x 2 mm FDS: Ø 66 – Ø 27 x 2 mm</td><td rowspan="2">11</td><td colspan="2" rowspan="2">spring</td><td>17</td><td>2x security rings (only FDS)</td></tr>
<tr><td></td><td></td><td>18</td><td>spring retainer</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">core</td><td rowspan="2">12</td><td colspan="2" rowspan="2">flange gasket ADKS-Plus/ FDH : Ø 122 – Ø 115 x 2 mm FDS: Ø 96 – Ø 88 x 2 mm</td><td>19</td><td>O-Ring (white) 18 x 2.0 mm</td></tr>
<tr><td></td><td></td><td>20</td><td>O-Ring (black) 16 x 1.5 mm</td></tr>
</table>

Technical Data

Max. allowable pressure PS			
at Ts: -10 … +65 °C	ADKS-Plus / FDS: 34.5 bar FDH: 46 bar		
at Ts: -45 …-10 °C	ADKS-Plus / FDH / FDS: 25.9 bar		
Temperature range TS	-45…+65 °C		
Connections			
FDS	16…28 mm - Copper		
ADKS-Plus	16…54 mm - Copper		
FDH	16…42 mm - Steel		
Volume / No. of cores		Cores	
	Vol.	No.	Type
FDS-24…	1 l	1	S24 / W24 / F24
ADKS-Plus / FDH-48…	2.1 l	1	S48/ H48 / W48 / F48
ADKS-Plus / FDH-96…	3.8 l	2	
ADKS-Plus-144…	5.4 l	3	
ADKS-Plus-192…	7 l	4	
Fluid group	I + II (except ADKS-Plus -192)		
Released /compatible for			
Fluid Group II All types	R134a, R404A, R407C, R410A, R448A, R449A, R450A, R452A, R507, R513A, R1234ze*	A1	
only FDH	R744		
Fluid Group I except ADKS-192…	R32, R444B, R447A, R452B, R454B, R454A, R454C, R455A, R1234yf	A2L	
NOTE: Fluid groups acc. to PED 2014/68/EU. *) A2L acc. to ASHARE			
Marking			
FDS	CE (Cat. I, Mod.A)		
ADKS-Plus & FDH (acc PED V > 1 liter)	CE 0036 (Cat.II / Mod.A2)		
All types	c UL us LISTED		

Dimensions



Documents / Resources

	COPELAND ADKS-Plus Filter Dryer Shells [pdf] Instruction Manual ADKS-Plus Filter Dryer Shells, ADKS-Plus, Filter Dryer Shells, Dryer Shell, Shell

References

- User Manual