Danfoss CTM 1
Multi Ejector

Danfoss CTM 1 Multi Ejector Installation Guide

Contents

Danfoss CTM 1 Multi Ejector

Specifications

- Refrigerant: R744 with oil
- Max. Working Pressure: 140 bar / 2031 psi
- Max. OPD: 90 bar / 1305 psi
- Min. OPD: 0.1 bar / 1.45 psi

Product Usage Instructions

Installation
Mount the CTM Multi Ejector valve with coils upwards fixed to the rack frame using 2 holes in the aluminum block to avoid stress on the connectors.

Brazing and Welding
Follow the recommendations for brazing and TIG welding provided by Danfoss. Use the specified materials and precautions to ensure proper installation.

Starting up/Operation

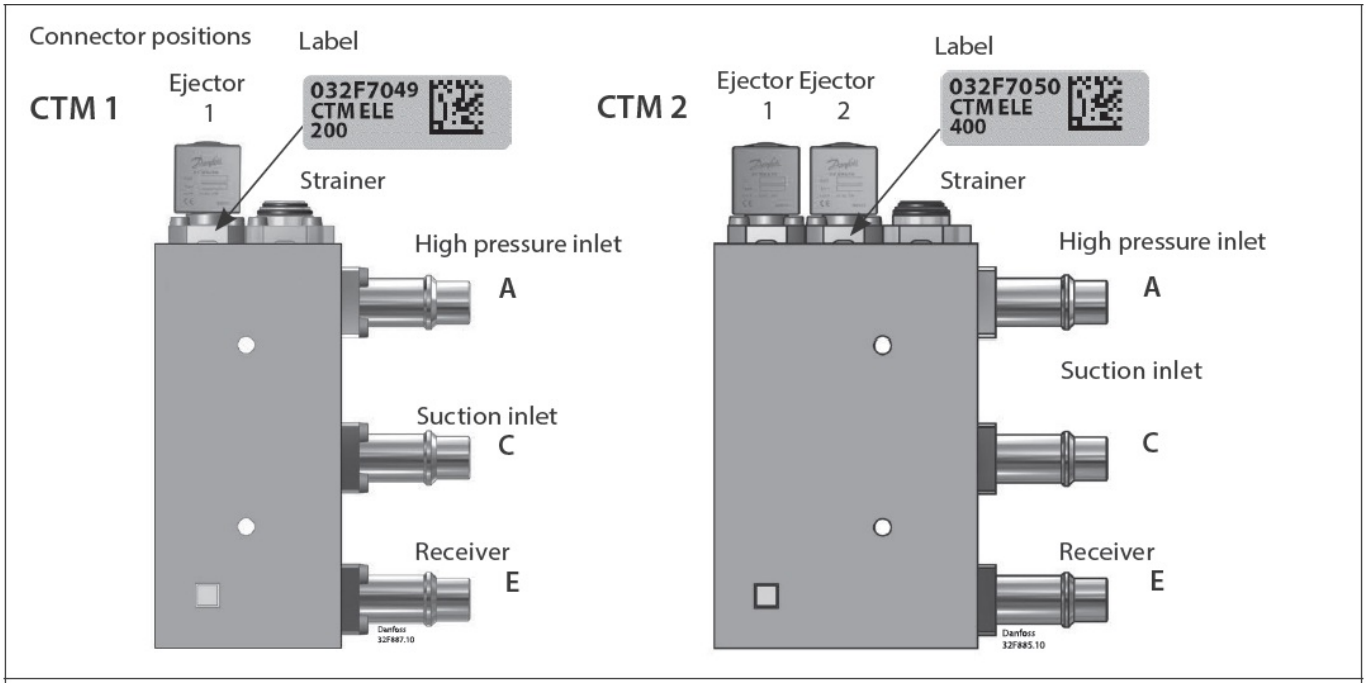
1. Open connector A
2. Open connector C
3. Open connector E

Follow this sequence to avoid excessive NRV differential pressure.

FAQ

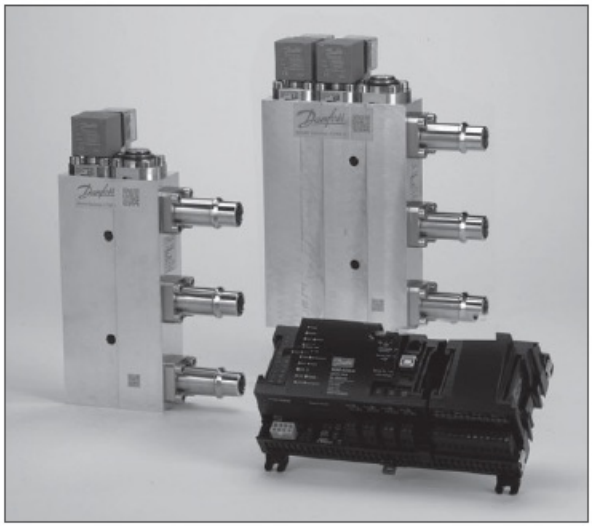
Q: Can I use the CTM Multi Ejector valve with any controller?
A: No, the CTM Multi Ejector valve is approved for use only with Danfoss controller types AK-PC 78x, AK-CC 550A, AK-CC 750A, and AK-SM 8xx. The use with other controllers is not recommended and may void warranty.

- **Refrigerant:** R744 with oil
- **Max. Working Pressure:** 140 bar / 2031 psi
- **Media temp. range:** -10 °C – +50 °C / 14 °F – 122 °F
- **Ambient temp. range:** -10 °C – +50 °C / 14 °F – 122 °F
    - Max. OPD: 90 bar / 1305 psi
    - Min. OPD: 0.1 bar / 1.45 psi



WARNING!
The CTM Multi Ejector valve is approved for use only with Danfoss controller type AK-PC 78x, AK-CC 550A or AK-CC 750A and AK-SM 8xx.

DISCLAIMER
Danfoss expressly disclaims, and any responsibility or liability, whether based on contract, breach of warranty, tort, statute or otherwise, shall be excluded, if the CTM Multi Ejector valve is used with any controller other than a Danfoss controller type AK-PC 78x, AK-CC 550A or AK-CC 750A and AK-SM 8xx.
For further information on AK-PC, please see separate document.



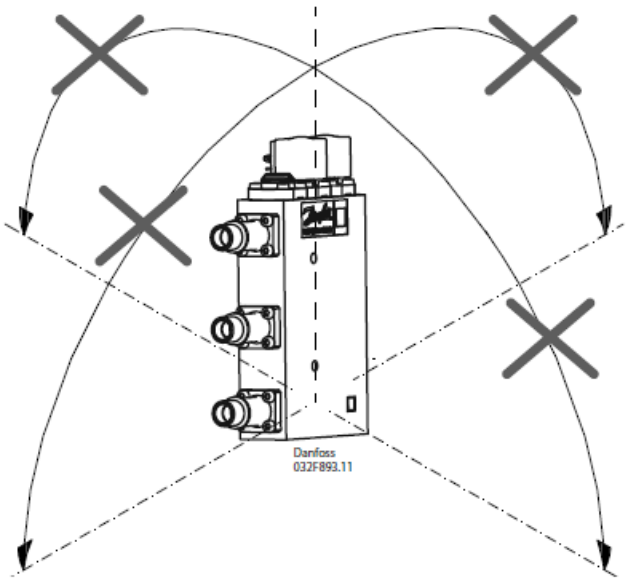
WARNING!

- Do not disassemble / assemble the parts unnecessarily to avoid risk of breaking the O-ring, dirt in the valve etc.
- Avoid high mechanical stress in connection with tube mounting / welding.
- Do not remove connectors during welding / brazing.

General installation

- Always place the ejector with the coils upwards so the check valve inside can use gravity to close.
- Coils available in 110 -120V AC and 230V AC, 50/60Hz.
- It is recommended to place shut-off valves on all 3 connections.
- Evacuating the ejector is recommended to do on the outlet and on the high pressure side.
- Pressurizing the ejector should be done from the suction side first (Suction inlet C).
- It is recommended to install ejector after suction filter (Suction inlet C).

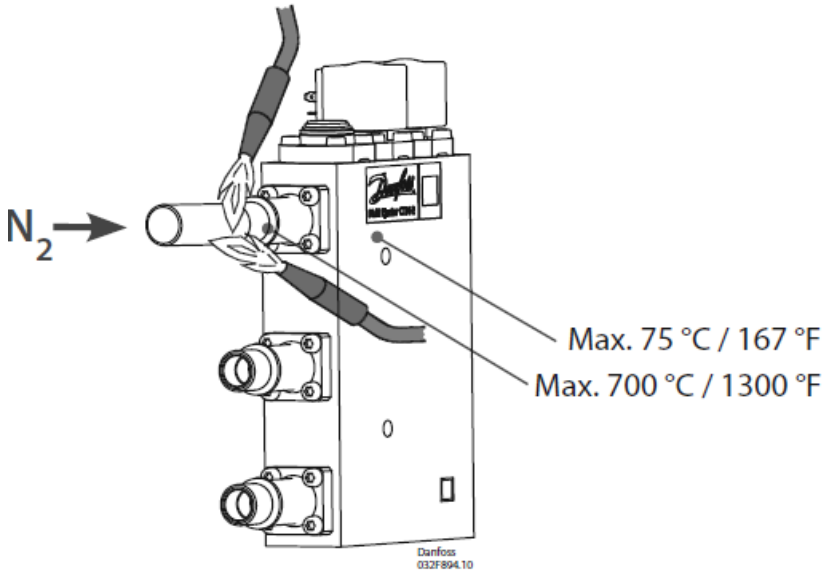
Mounting: With coils upwards
CTM Multi Ejector needs to be fixed to the rack frame using 2 holes in the aluminum block do avoid stress on the connectors



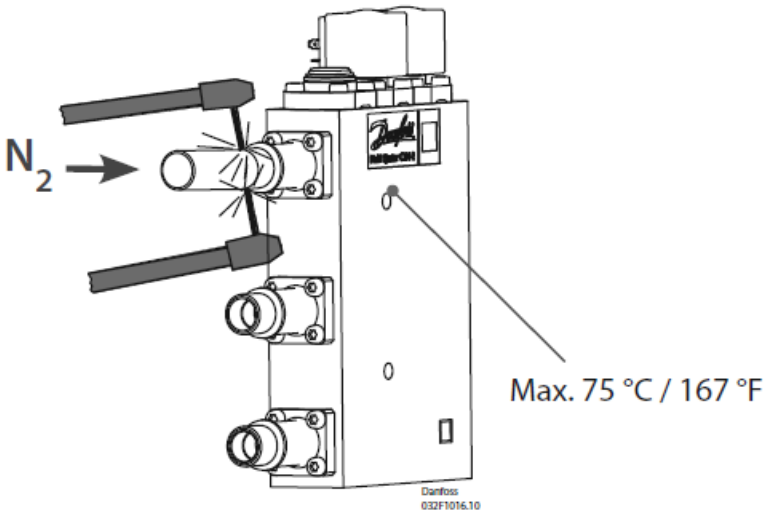
Brazing

Recommendation for brazing
Recommendation: brazing nozzle 4 – 6 mm (5/32 in – 15/64 in) Materials used for brazing:

- Flux: Metal Li tenacity No. 5 Powder or Braze Tec special h paste.
- Filler: Silver-Flo 55 (BS:AG 14/ DIN L-Ag55 Sn) or Silver-Flo 56 (AWS B Ag-7).



Welding

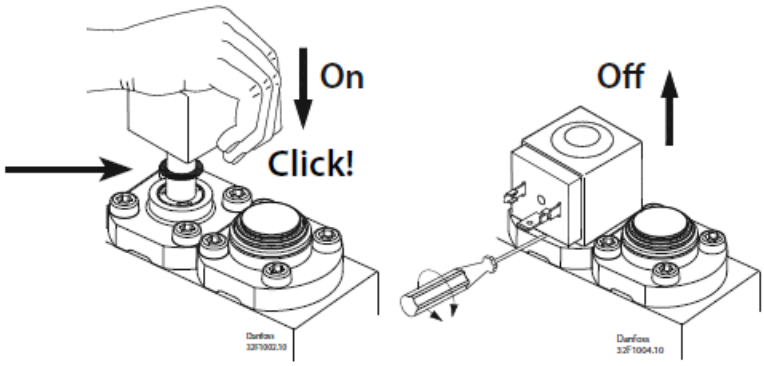


Recommendation for TIG welding

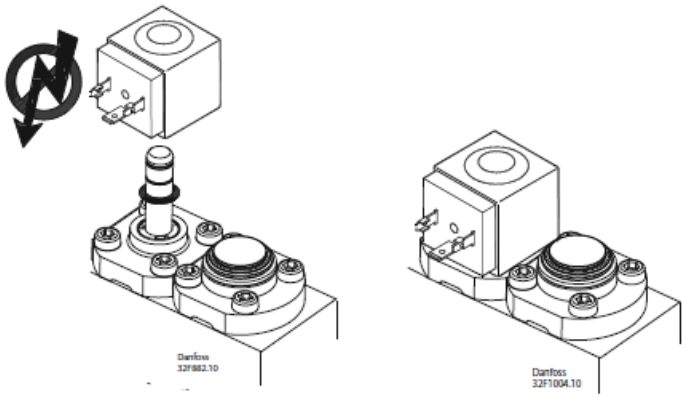
- Power approximately 60 A.
- Use Shield gas charge – Argon.
- Material for welding – approximately 2 mm thick stainless steel alloy.

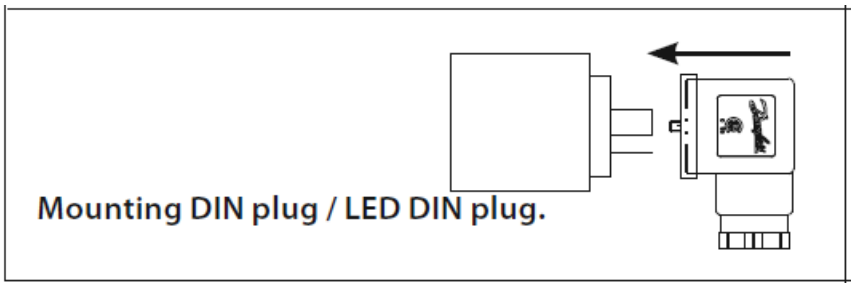
Warning: Filler metals containing Phosphor i.e. BS: CP 1/ DIN L-Ag 15P or BS: CP 3/ DIN L-Ag P7 must not be used.

Coil



Warning
Be sure that the O-ring is in place.





Armature tubes are sensitive and have to be protected during the installation:

- do not damage the armature tubes with strokes or forces
- do not lift or handle the block by lifting the armature tubes etc.
- avoid pull-forces on the wires connected to the coils

Starting up /Operation

Opening sequence:

1. – connector A
2. – connector C
3. – connector E

Follow the opening sequence to avoid too high NRV differential pressure.

Starting up the system: open all connection ball valves slowly (avoiding liquid hammer that can damage internal check valve (NRV) and build-in strainer.
It is mandatory to clean the strainer after 2 days of running the system. O-rings needs to be replaced with the two

new ones placed on the strainer top. Removed O-rings to be placed on the strainer top and reused after return to initial shape during next strainer maintenance. Strainer cleanliness is important for proper operation of Multi Ejector and the cleaning shall be repeated if necessary every 2-3 weeks to remove the dirt circulating in the system.

Service

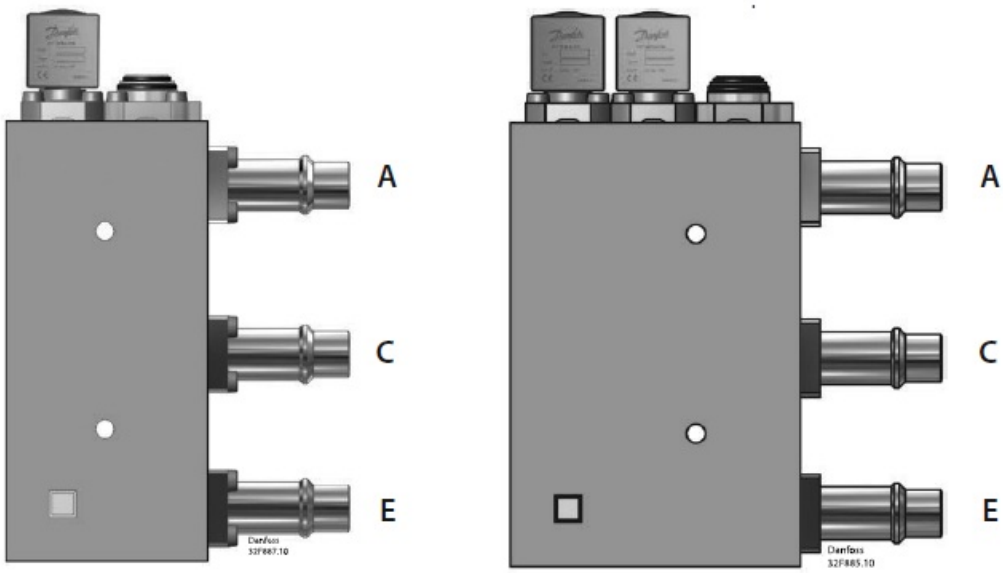
Mounting and service of ejectors
Ejectors with the highest capacities (longest ejectors) must be placed closest to the suction connector C.

- A: Inlet connector

  Gas cooler outlet – Ball valve – inlet connector Combi brazing 7/8 inch ODF – weld 3/4 inch (EN10220)
- C: Suction connector

  MT evaporator outlet – Ball valve – suction connector Combi brazing 7/8 inch ODF- weld 3/4 inch (EN10220)
- E: Outlet connector

  Outlet connector – Ball valve – Receiver Combi brazing 7/8 inch ODF- weld 3/4 inch (EN10220)

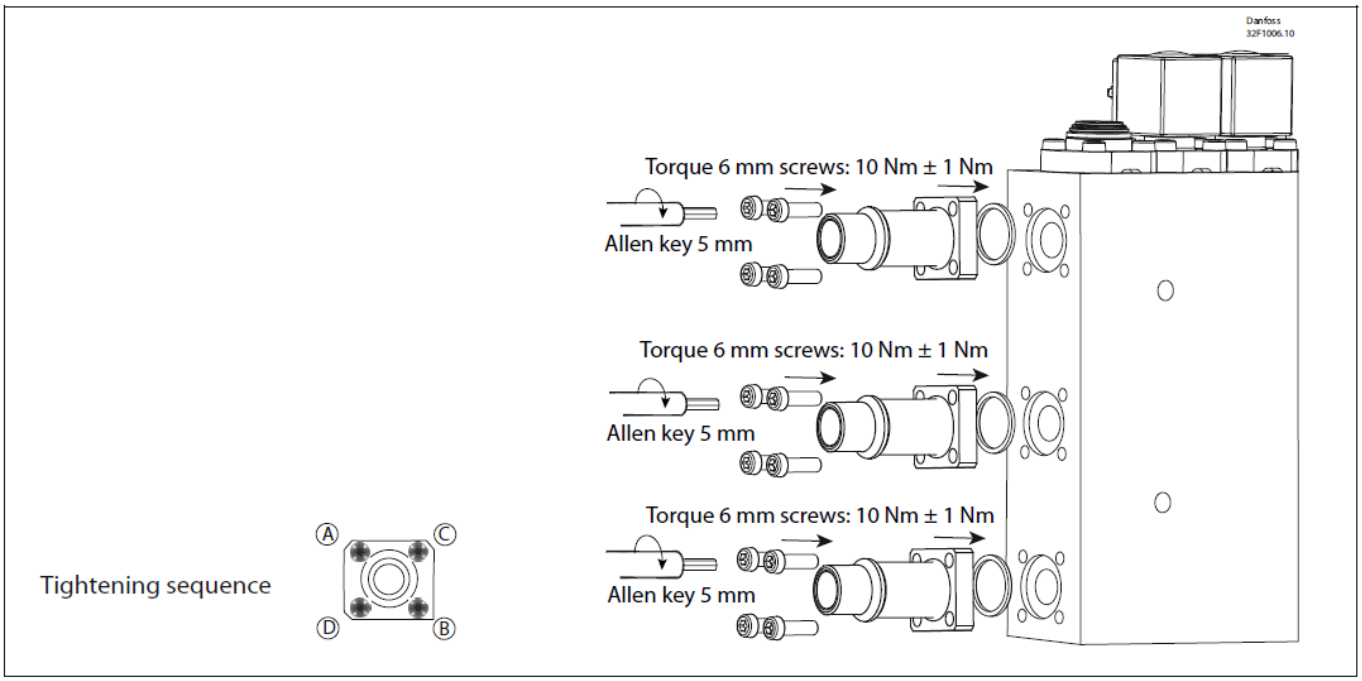


Warning:
Do not disassemble / assemble the parts unnecessarily to avoid risk of breaking the O-ring, dirt in the valve etc.

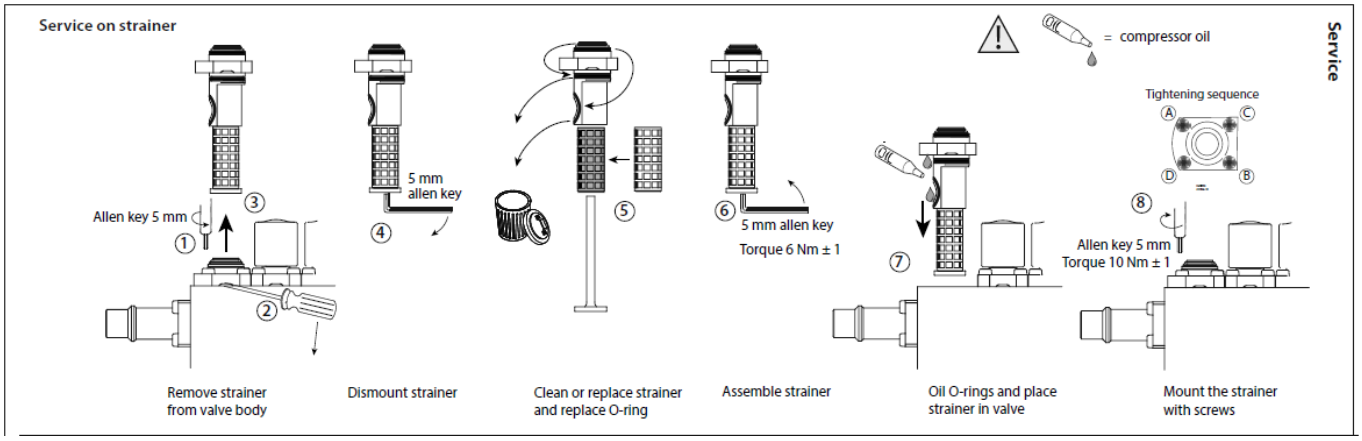
Insulation of Multi Ejector
Requirements for materials used for insulation:

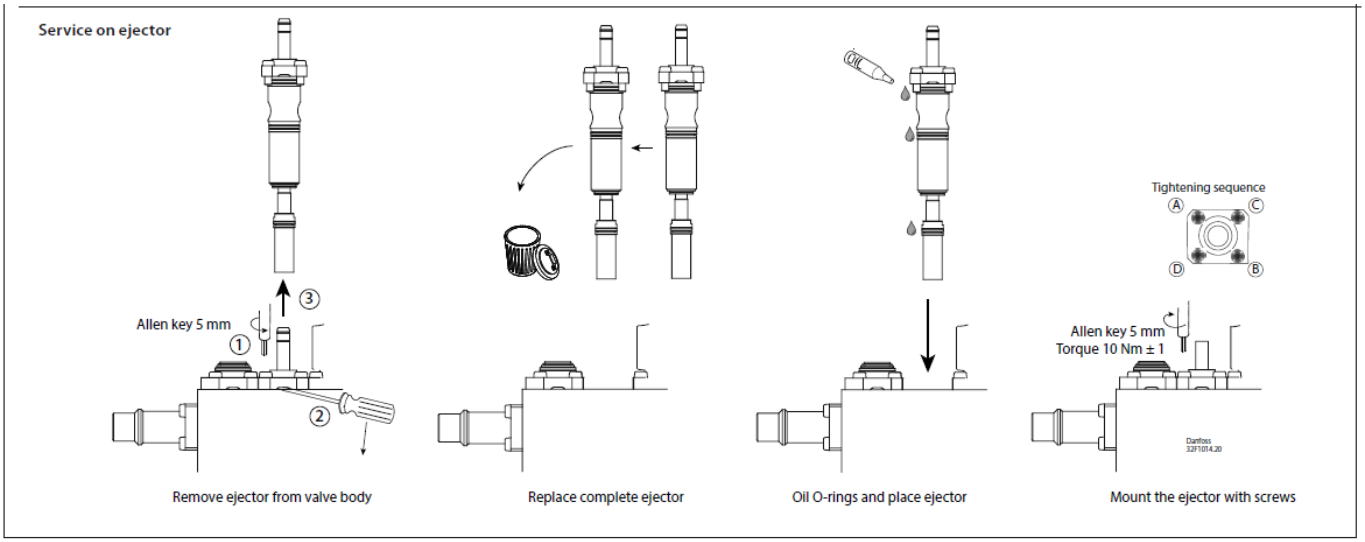
- has to be based on a synthetic rubber base or ex Polyurethane
- water vapor diffusion resistance number μ ≤7000
- thermal conductivity ≤ 0,033 W/(m·K)
- insulations material thickness ≥ 5 mm
- for use at low temperature -10°C or lower
- for use at high temperature +50°C or higher
- glue or adhesive made of Poly chloroprene or it is Silicone type Do not insulate the coils of Multi Ejector

Exchange of connectors and pressure transmitters

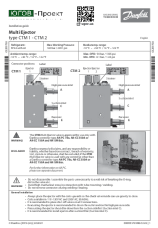


Service





Documents / Resources

	**Danfoss CTM 1 Multi Ejector** [pdf] Installation Guide CTM 1 Multi Ejector, CTM 1, Multi Ejector, Ejector

References

- **User Manual**