

Commercial refrigeration applications

# Move on from R404A to R452A

In stationary systems with remote condensing units and self-contained units. We are ready when you are.

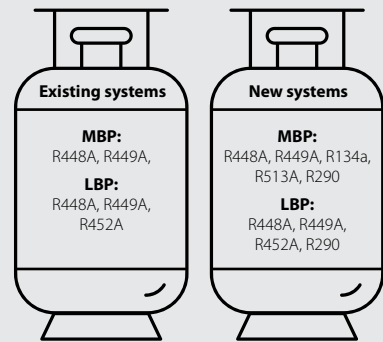
**+** **New installations**

**✎ Redesign and retrofit**  
If the condensing unit is not qualified for alternative refrigerants.

**↻ Drop-in**  
If the condensing unit is already qualified for alternative refrigerants. No major changes in the system.

## Possible replacements for R404A

Main refrigerants in play – non-exhaustive list.



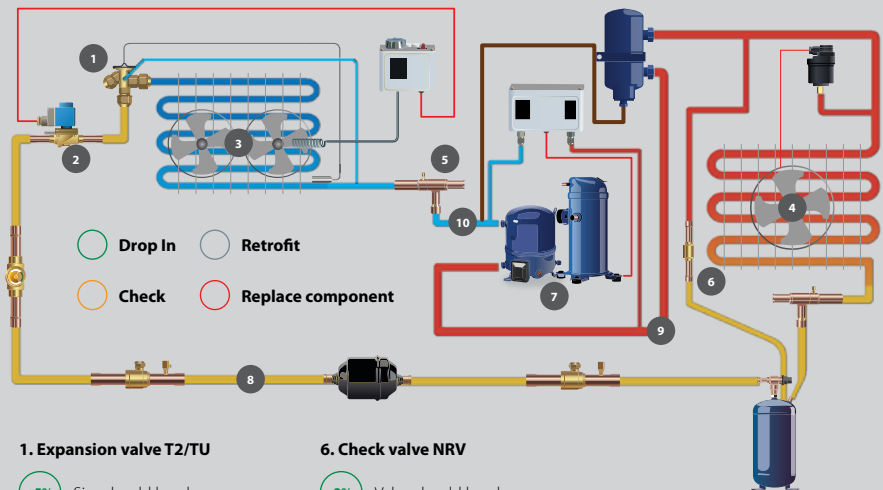
You can view a detailed log(p)-h diagram for your chosen refrigerant in **Coolselector<sup>®2</sup>**

For potential charge limitation of A2L refrigerants, please refer to your local regulations.

1. Use **Coolselector<sup>®2</sup>** to select a new condensing unit, compressor, and other system components.
2. Use the **Coolselector<sup>®2</sup>** commercial applications module to calculate cold room loads and find all Danfoss solutions for a specific refrigerant.
3. Pay close attention to Ecodesign level of the condensing unit.

1. Ensure that the compressor or condensing unit operating map with new refrigerant fits with your application.
2. Adjust settings for expansion valves, safety switches, and the controller, if any.
3. Clean the system and change the filter drier and sight glass for a longer lifetime.

## Impact on system performance with R452A



**1. Expansion valve T2/TU**

- +5% Size should be ok
- 3K Superheat settings must be corrected

**2. Solenoid valve EVRv2**

- +2% Valve should be ok

**3. Evaporator (Te = -30°C)**

- +7% Check dimensioning

**4. Condenser MCHC (Tc = 40°C)**

- 11% Check dimensioning

**5. Pressure regulator KVP**

- 5% Valve should be ok

**6. Check valve NRV**

- 2% Valve should be ok

**7. Compressor MTZ/NTZ/MLZ/LLZ and Optyma™ condensing units**

- 7K Discharge temperature change
- 3% Heating capacity
- 7% Cooling capacity should be ok
- +3% Power
- 9% COP; lower efficiency

**8. Liquid line**

- +6% Pipe should be ok

**9. Discharge line**

- 4% Pipe should be ok
- +92°C Discharge temperature

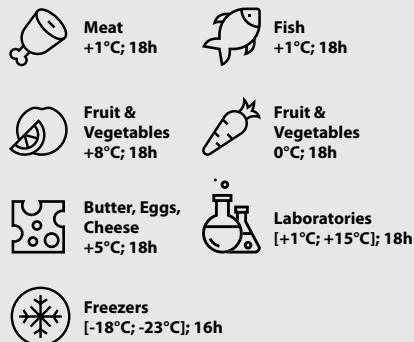
**10. Suction line**

- 8% Pipe should be ok

**Other components**

DML, DCL filter driers, SGP sight glass, GBC ball valves, KP pressure switches, XGE fan speed controller are qualified for this refrigerant. No resize is needed.

## Typical operating temperatures and times in cold rooms



Access our online resources 24/7

[Coolselector<sup>®2</sup>](#) [Refrigerant Slider](#) [Retrofit guidelines](#) [Refrigerants.danfoss.com](#)

**Tested and approved**  
All new and upgraded Danfoss products undergo extensive testing to qualify for new refrigerants.

Source: Danfoss, example for a medium temperature application operating at -10°C with 35°C condensation temperatures