

1. General

Regulation (EU) No. 517/2014 on fluorinated greenhouse gases (EU F-gases regulation) is limiting use of refrigerants with high GWP values (GWP – Global Warming Potential). Nidec GA / Embraco offers a full product line of HC (Hydrocarbons) compressors as a final solution to meet EU F-gases regulation. A series of intermediate GWP blends were proposed in order to bridge the transition to the final situation.

Nidec GA / Embraco has already approved:

- R452A as an alternative refrigerant for both LBP (low back pressure) and MBP (medium back pressure) applications maintaining the original R404A operating envelope (*ECN R452A 2016*).
- R448A and R449A as alternative refrigerants for MBP applications with restricted operating envelope (*ECN R448A 2019 and ECN R449A 2018*).

Nidec GA / Embraco further evaluated limits to operate compressor platforms with refrigerants R448A/R449A for LBP applications resulting in declaration described in Item 2. The main physical properties are indicated in the table below:

Parameter	R 404A	R448A	R449A
Type	HFC blend	HFC blend	HFC blend
Safety Class	A1	A1	A1
Boiling Temp @ 1atm	-47 °C (-53 °F)	-45 °C (-49 °F)	-46 °C (-51 °F)
Critical Temp	72 °C (162 °F)	84 °C (183 °F)	82 °C (180 °F)
Temp Glide Bubble-Dew @1 bar(abs)	0.8 K	6.3 K	6.1 K
GWP (100y)	3920	1386	1397

2. Declaration

Nidec GA / Embraco approves R448A and R449A as alternative refrigerants for Embraco R404A compressor series NEU, NT, NJ and NJX for LBP application with a limitation of operating envelope defined in Figure 1. considering max 10K of superheat.

It is important to respect this restricted envelope while operating the compressor with R448A / R449A to guarantee its reliable operation because of a much higher thermal profile. Operation outside the restricted envelope may lead to shorter compressor life time or serious damage.

Please contact our Technical Support for further instructions.

EXTENSION OF USE OF EMBRACO LBP R404A COMPRESSORS TO R448A/R449A

Electrical components are the same as originally defined for R404A. The compressor unit label and nomenclature will not change. Safety compliance has to be performed on the complete appliance.

NEU / NT / NJ / NJX series: LBP (R448A / R449A) - Superheating 10K

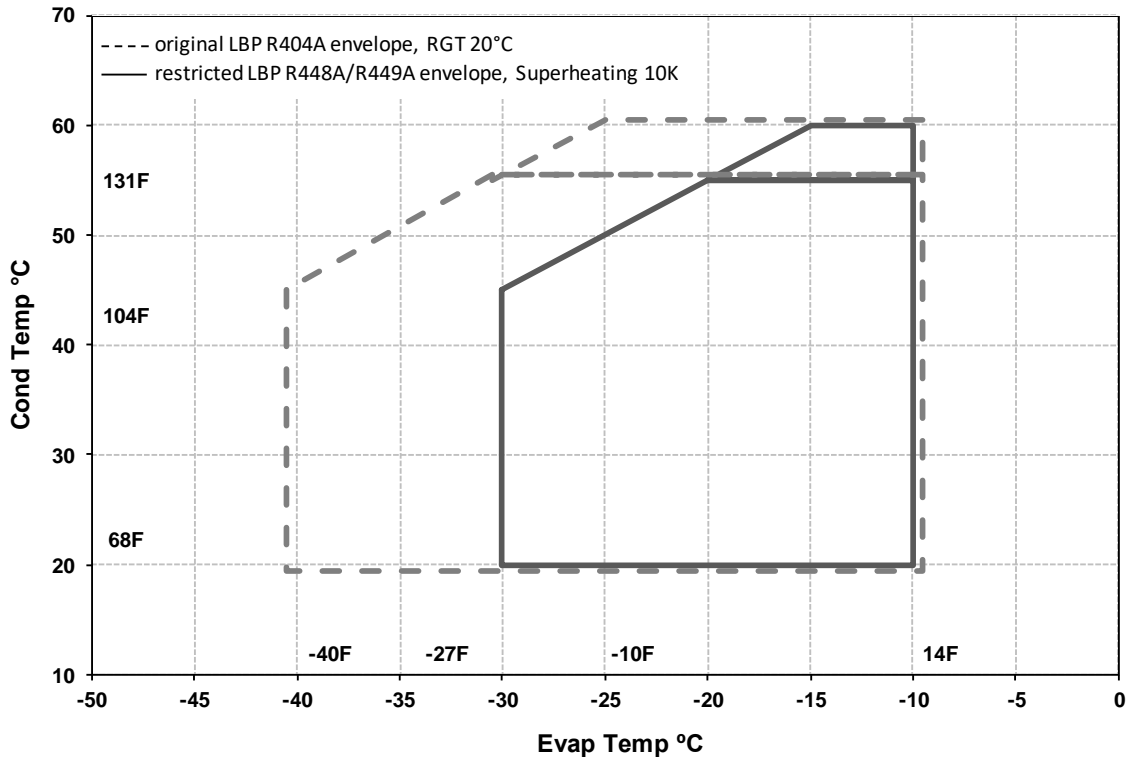


Figure 1. Limited LBP operating envelope R448A / R449A for Embraco R404A series NEU, NT, NJ, NJX; valid for superheating 10K

NOTE1:

The requested reduction of superheating in the appliance can potentially result in occurrence of liquid returning back to the compressor. Further countermeasures shall be taken in the final appliance to prevent these situations and avoid any impact on compressor life time.

NOTE2:

For application of models NJ2212GK, NEU2178GK, NEU2168GK CSIR and NEU2155GK CSIR (all 220-240V 50Hz), please contact Embraco Technical Support. NEK LBP R404A models did not pass approval criteria and shall not be used with R448A/R449A.

Manufacturing site: Embraco Slovakia, s.r.o., Spisska Nova Ves, SLOVAKIA