



Abbreviations and units

→ ABBREVIATIONS

ARI	Air conditioning and Refrigeration Institut.
BSP	British Standard Pipe, defines the cylindrical «gas» threading, «Whitworth» profile.
NPT	National Pipe Taper, defines the taper threading with which air-tightness is ensured metal on metal, and the link by NPT and NPTF taper threads.
ODF	Outside Diameter Female.
ODM	Outside Diameter Male.
SAE	Society of Automotive Engineers, deals with flare connections.
UNF	Unified pipe thread, defines the threading of a part in compliance with the international refrigerating industry Standard (STANDARD DIN 8904) and is equivalent to the SAE threading.
PTFE	Polytetrafluoroethylene.
T_o	Evaporation temperature.
T_k	Condensation temperature.
Q_o	Refrigerating capacity.
ΔP	Pressure drop or pressure differential.
F_{ct}	Correction factor.
Q_k	Condensation capacity.
ΔT₁	Condensation temperature - water inlet temperature.
TL₁	Water inlet temperature.

■ Refrigerants

HFC	Hydrofluorocarbon
HCFC	Hydrochlorofluorocarbon
CFC	Chlorofluorocarbon
HFO	Tetrafluoropropen
HC	Hydrocarbons
R1..., R2..., R3...	Pure refrigerants
R4... : 4	Zeotropic refrigerant (e.g. R404A: «A» defines the mixture)
R5... : 5	Azeotropic refrigerant (e.g. R507)
R6... : 6	Hydrocarbon (e.g. R600)
R7... : 7	Inorganic refrigerant (e.g. R717: 17 = molar mass of NH ₃ refrigerant) (e.g. R744: 44 = molar mass of refrigerant)

■ Oils

Mineral oils: Paraffinic or naphtenic oils, used with CFCs, HCFCs, NH₃, HC, HFO, HFC

Semi-synthetic oils: Mixture of mineral and synthetic oils, used with CFCs, HCFCs, NH₃

Synthetic oils:

AB	Alkylbenzenes, used with CFCs, HCFCs, NH ₃
PAO	Polyalphaolefines, used with CFCs, HCFCs, NH ₃
PAG	Polyalkyleneglycols, used with R134a and NH ₃
POE	Polyolesters, used with HFCs
PVE	Polyvinylether, used with HFCs
TAN	Total Acid Number (mg of potash/g of oil)



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■ Lengths

Unités A	Unité SI	Coefficient de conversion
Inch (in) (pouce)	m	0,254
Foot (ft) (pied)	m	0,3048
Yard (yd)	m	0,9144

$Unit_{SI} = Unit_A \times F_{ct}$
 $Unit_A = Unit_{SI} / F_{ct}$

■ Volumes

Unités A	Unité SI	Coefficient de conversion
Cubic inch (cu.in)	m ³	16,387.10 ⁻⁶
Cubic foot (cu.ft)	m ³	0,02832
US-Gallon	m ³	0,003785
Imperial-Gallon	m ³	0,004546

$Unit_{SI} = Unit_A \times F_{ct}$
 $Unit_A = Unit_{SI} / F_{ct}$

■ Masses

Unités A	Unité SI	Coefficient de conversion
lb (pound)	kg	0,4536
short ton	kg	907,2
long ton	kg	1016

$Unit_{SI} = Unit_A \times F_{ct}$
 $Unit_A = Unit_{SI} / F_{ct}$

■ Mass concentration

ppm Part per million in mass, i.e. 1 milligram of water per kilogram of refrigerant.



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■ Pressures

Unités A	Unité SI	Coefficient de conversion F _{ct}
bar	Pa	100 000
kg/cm ²	Pa	98 070
lb/sq.ft	Pa	47,9
lb/sq.in	Pa	6 895
atm	Pa	101 325
Torr	Pa	133,33
hPa	Pa	100
Mpa	Pa	1 000 000

$$Unit_{SI} = Unit_A \times F_{ct}$$

$$Unit_A = Unit_{SI} / F_{ct}$$

- Les pressions annoncées dans les données techniques sont exprimées en valeurs relatives de la pression atmosphérique.
- Exemple::
 Une pression working pressure de 42 bar à 2 bar est en fait une surpression de 40 bar au-dessus de la pression atmosphérique.

■ Temperatures

SI Units:	Kelvin (K) or degree Celsius (°C) 0 °C = 273 K
Fahrenheit Degree (°F)	0 °C = 32 °F Conversion of °C in °F: $t_{oF} = 9/5 t_{oC} + 32$ Conversion of °F in °C: $t_{oC} = 5/9 (t_{oF} - 32)$



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■ Energetics

Unités A	Unité SI	Coefficient de conversion F _{ct}
kcal/h	W	1,163
Btu/p.hr	W	0,293
Br.u.r (British theoretical unit of refrigeration)	W	5615
Br.ton (British commercial ton of refrigeration)	W	3888
ton (Standard commercial ton of refrigeration)	W	3513
PS (cheval vapeur)	W	735,5
h.p (horse power)	W	745,7
m.kg/s	W	9,804

$$Unit_{SI} = Unit_A \times F_{ct}$$

$$Unit_A = Unit_{SI} / F_{ct}$$

■ Flow rates

Kv coefficient of a valve

$$Kv = \frac{Qv}{\sqrt{\Delta P}}$$

with

Qv: Liquid volume flow rate (m³/hr)

ΔP: Pressure drop (bar)

Kv represents the volume flow rate of water running through the device for a pressure drop of 1 bar.

■ Electrical power

VA	Volt Ampere
V	Volt
Ac	Alternating current
Hz	Hertz
A	Ampere
W	Watt