



Global Appliance

NIDEC GLOBAL APPLIANCE

PED - Pressure Equipment Directive

DIRECTIVE 2014/68/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 15 MAY 2014

ON THE HARMONIZATION OF THE LAWS OF THE MEMBER STATES RELATING TO THE MAKING AVAILABLE ON THE MARKET OF PRESSURE EQUIPMENT
(RECAST)
(TEXT WITH EEA RELEVANCE)

Technical Trainings

10/04/2020

Scope

The Directive fixes essential safety requirements for making available on the market of pressure equipment.

This Directive shall apply to the **design, manufacture and conformity assessment** of **pressure equipment and assemblies** (1) with a maximum allowable pressure **PS greater than 0,5 bar**.

The essential safety requirements laid down in this Directive are compulsory:

The manufacturer is under an obligation to **analyse the hazards and risks in** order to identify those which apply to his equipment on account of pressure; he shall then **design and construct** it taking account of his analysis.

(1) (**'pressure equipment'**: vessels, piping, safety accessories and pressure accessories,

*'vessel': a housing designed and built to contain fluids under pressure including its direct attachments up to the coupling point connecting it to other equipment.
Hermetic compressors are considered vessels.*

When placing their pressure equipment or assemblies on the market or using them for their own purposes, manufacturers **shall**:

- **ensure** that they have been **designed** and **manufactured** in accordance with **the essential safety requirements** set out in PED
- **draw up the technical documentation file**
- **carry out the relevant conformity assessment procedure**
- **draw up an EU declaration of conformity**
- **affix the CE marking**
- **Issue instruction and safety information**

The following pressure equipment shall satisfy the essential safety requirements set out in PED:

Article 4(1)(a)(i), first indent:

For fluids in **Group 1**, **vessels** with a **volume greater than 1 L** and a product of **PS and V greater than 25 bar·L**, or with a **pressure PS greater than 200 bar** (see PED Annex II, table 1),

Article 4(1)(a)(i), second indent:

For fluids in **Group 2**, **vessels** with a **volume greater than 1 L** and a product of **PS and V is greater than 50 bar·L**, or with a pressure PS greater than 1 000 bar, (see PED Annex II, table 2);

Group 1: Flammable gas

Group 2: practically all the other gases

'Volume (V)' means the internal volume of a chamber: the volume of the mechanical parts is to be excluded from the volume to be taken into account but not the volume of the oil contained.

Source: PED

Pressure equipment shall be classified by category.

Category classification is base on:

1. Volume (V) of the vessel
2. Maximum allowed pressure PS of the vessel
3. Gas Group

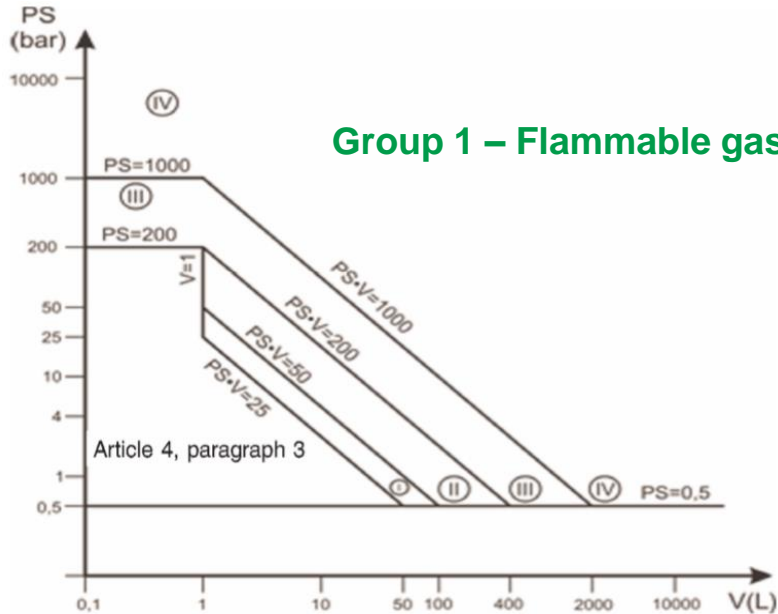


Table 1

Vessels referred to in Article 4(1)(a)(i), first indent

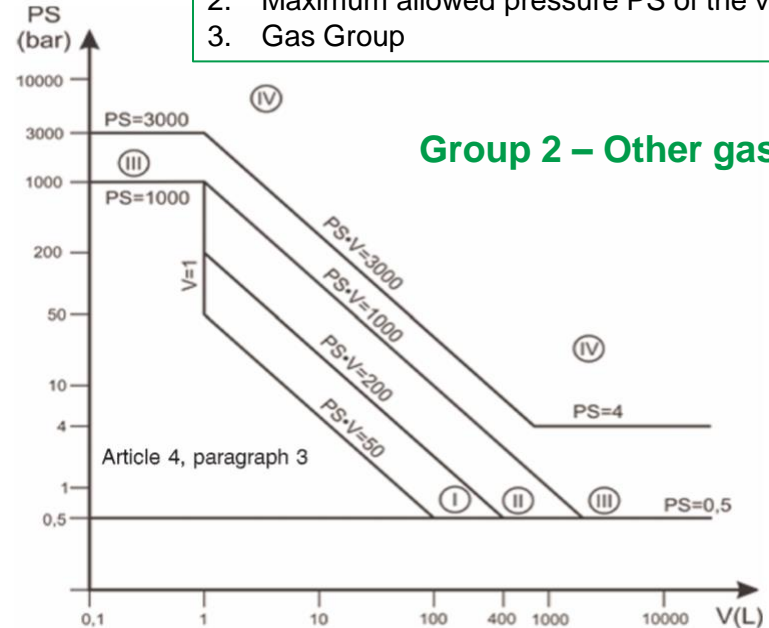


Table 2

Vessels referred to in Article 4(1)(a)(i), second indent

Source: PED

The procedures (*) is **determined by the category of** the equipment and using specific “Module” indicated for the various categories.

Embraco Nidec, base the conformity assessment and marking (**) on its **Full Quality System approved by a Notification Body**.

This is evidenced by the **Module H** reported on the declaration of conformity of Cat II compressors.

Note: MODULE H: CONFORMITY BASED ON FULL QUALITY ASSURANCE . Module H is a module for Cat III: the manufacturer may also choose to apply one of the procedures which apply to a higher category, however the marking has to be according to category of the equipment

() the manufactures may choose the procedure among those laid down in the category of the equipment.
(**) Marking: Cat I: CE; Cat II: CE followed by Notification Body code, PS (maximum pressure for which the equipment is designed) and PT (test pressure)*

Pressure equipment or assemblies which are in **conformity with harmonized standards (*)** shall be presumed to be in conformity with the PED

The materials used for the manufacture of pressure equipment which are in **conformity with European approvals for materials**, shall be presumed to be in conformity with the PED.
This conformity is requested for equipment Cat II.

(*) 'harmonized standard' means harmonised standard as defined in point (c) of Article 2(1) of Regulation (EU) No 1025/2012;

Legislation reference	ESO (*)	Reference number of the standard	Title of the standard	Date of start of presumption of conformity	OJ reference for publication on OJ journal
2014/68/EU	CEN	EN 378-2:2016	Refrigerating systems and heat pumps - Safety and environmental requirements - Part 2: Design, construction, testing, marking and documentation	17-11-2017	OJ C 389, 17-11-2017
2014/68/EU	CEN	EN 764-5:2014	Pressure equipment - Part 5: Inspection documentation of metallic materials and compliance with the material specification	12-08-2016	OJ C 293, 12-08-2016

(*) ESO: European Standardization Organizations

Source: EU Commission

The equipment manufacturer shall take appropriate measures to **ensure:**

- **That the material used conforms with the required specification**
- **Keep their traceability**

For the main pressure-bearing parts of equipment in categories II, this shall take the form of a certificate of specific product control.

Where a material manufacturer has an appropriate quality-assurance system, certified by a competent body established within the Union and having undergone a specific assessment for materials, certificates issued by the manufacturer are presumed to certify conformity with the relevant requirements of this point

- **operating procedures and personnel shall be approved by a competent third party (*)** which, at the manufacturer's discretion, may be:
 - a notified body,
 - a third-party organization recognized by a Member State as provided for in Article 20.

() In Cat I the personnel shall be suitably qualified according to suitable operating procedures.*

Note: Embraco design for use at max 43 ° C ambient temperature → NJX is Category II; OEMs may design their pressure assembly for a lower temperature that may allow to classify the assembly as Category I even using Cat II compressors

MINIMUM ALLOWABLE PRESSURE FOR SYSTEMS AND COMPONENTS

The EN 378 standard specifies, based on ambient temperature, the minimum design temperatures for high and low pressure side of system.

			Minimum value of allowable pressure Bar (abs) (rounded)			
			HCs refrigerants		HFCs refrigerants	
Minimum design temperature per EN378		Ambient temperature	R290	R600a	R134a	R404A
High side	63 °C	≤ 43 °C	22.5	9.3	18.0	30.6
Low side	43 °C	≤ 43°C	14.6	5.7	11.0	19.5

For the low pressure side, (the case of Embraco reciprocating compressors) the minimum allowed pressure corresponds to the standstill saturated pressure of the ambient temperature foreseen for the design temperature (43 ° C)

Source:
EN378-2:2016

PED REQUIREMENT SUMMARY

PED Requirements	Hazard Category		
	--	I	II
Hazards and risks analysis	SEP Sound Engineering Practice (PED art. 3.3)	X	X
Material Documentation: (EN 102024 – Test report 2.2)		X	
Material Documentation: (EN 102024 – Inspection Certificate 3.1)			X
Materials: characteristics and traceability requirements		X	X
Design under manufacturer responsibility		X	X
Design approved by notified body			
Quality system under manufacturer responsibility		x	
Quality system approved by notification body			X
Welding/brazing operators approval by notified body			X
Welding/brazing procedure approved by notified body			X
Requirement for labelling of products		X	X
Requirement for installation and operation instruction		X	X
Technical docs (before start prod. and kept 10 yr after Prod. Stop)		X	X
CE marking (with Notification Body code for Cat II)		Not allowed	X
Declaration of conformity	Possible	X	X

Embraco reciprocating compressors are in Category I, except NJX for R290 (Category II)

Source: Elaborated from PED

EMBRACO NIDEC – DECLARATION OF CONFORMITY AND LABEL CAT II

Manufacturer: Embraco Slovakia s.r.o.
Odorínska cesta 2, 052 01 Spišská Nová Ves, Slovakia
tel. +421 53 4172 110, 111

declares under its sole responsibility that the following Products: **Hermetic motor Compressors** series (including electrical parts)

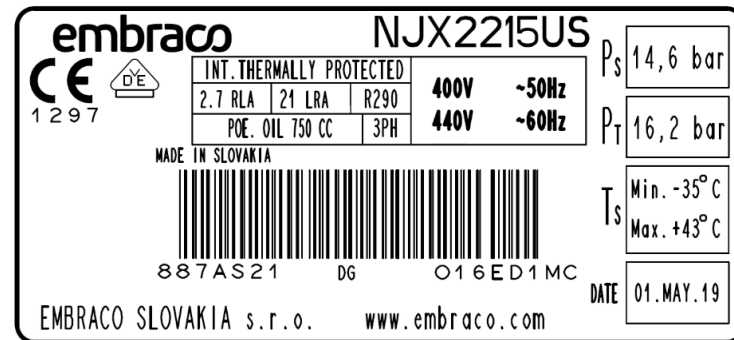
Series	Refrigerant Fluid
NJX	R290

are in conformity with the following Directive(s):

- | | |
|---------------|--------------------------------------|
| 2014/35/EU | Low Voltage Directive (LVD) |
| 2006/42/EU | Machinery Directive |
| 2011/65/EU | RoHS II Directive |
| (EU) 2015/863 | RoHS3 Commission Delegated Directive |
| 2014/68/EU | Pressure Equipment Directive (PED): |
- Product category: II
 - Evaluation module: Module H, No. 030/1297/1/2018, Annex III, point 11
 - Notified Body: Welding Research institute (VUZ-PI SR), Račianska 71, 832 59 Bratislava, Slovak Republic
 - Products are marked with CE 1297 conformity mark

following standards were applied:

IEC 60335-1	Safety of household and similar electrical appliances – General
IEC 60335-2-34	Safety of household and similar electrical appliance - Particular requirements for motor compressors
EN 14276-1	Pressure equipment for refrigerating systems and heat pumps – Part 1: Vessels – General requirements
EN 50581	Technical documentation for the assessment of electrical and electronic equipment with respect to the restriction of hazardous substances



NB 1297 [VYSKUMNY USTAV ZVARACSKY](#) Slovakia

(From EU Notification Body list)

Source: Embraco

Thank You!