



INTERNAL TECHNICAL STANDARDS

6.21 Stable pressure tanks

Amended: 2019-12-09

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Technical conditions for pressure vessels stable and their equipment in ŠKODA AUTO a.s.

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Therefore, we strongly recommend that everyone regularly review the ITS. These documents shall become valid on the date of their most recent update. The ITS version that was valid at the time of issuance of the order is decisive for contracts already entered into.

Notes: In the event of any differences between the Czech, English and/or German versions of this ITS, the Czech version shall be decisive. The Czech version is available at <http://cts.skoda-auto.com/>.

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Change – No.:	Date:	Note:
1.	01/02/2002	Font Arial, logotype ŠkodaAuto
2.	07/07/2008	addition of Paragraph 1.2
3.	21/12/2010	complete rewrite
4.	20/06/2011	complete rewrite
5.	28/02/2012	adjustment of standards
6.	2019-12-09	adjustment due to changes in legislation



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1. General Requirements, Summary

These regulations apply to "pressure vessels stable" (hereinafter referred to as "tlakové nádoby stabilní" (TNS) and are compiled on the basis of laws, directives, government regulations, decrees and standards valid in the Czech Republic and the EU.

Definition of the Term "TNS"

TNS are (within the meaning of Decree No. 18/1979 Coll.) vessels whose maximum permissible pressure exceeds 0.07 MPa and which contain gases, vapors or corrosive, toxic and explosive liquids of any temperature, or any liquid with a temperature exceeding their point boiling at 0.07 MPa. TNS, according to this decree, are not:

- pressure vessels in use with radioactive substances or pressure vessels placed in a neutron flux environment;
- pressure receptacles up to and including 10 liters, where the safety calculation (result) does not exceed "10" (the product of the TNS volume in liters and the maximum allowable TNS pressure in MPa);
- pressure receptacles made up of tubes and non-circular sections with maximum internal dimensions up to and including 100 mm without pantographs; or, with pantographs, if the tube and non-circular pantograph has an internal dimension of not more than 150 mm (inclusive);
- piping (tube) lines, extensions thereof and pressure receptacles incorporated therein (for example, for pressure relief or as reservoirs) having an inside diameter (D) not exceeding three times the inside diameter (d) of the largest pipe connected ($D < 3d$), as well as all expanded parts of the pipeline and pressure receptacles built into it, provided that they serve only for the conveyance of the working medium (for example, distributors, separators, collectors).

Each TNS must be provided by its manufacturer with a nameplate (label plate) and accompanying documentation in the form of a passport according to ČSN 69 0010-7.2. Exceptions may be assessed and, where appropriate, approved by the TNS Review Technician of the PSZ Department. The data (information) on the nameplate (label plate) must be durable and legible and be able to remain so, throughout the intended period of use of the TNS.

1.2 Supplier's Obligation(s)

1.2.1 Occupation Health and Safety Requirements

Professional (state-sponsored) supervision of the safety of the specified (reserved) technical equipment is performed by the government's professional safety supervision organizations established exclusively for this purpose by the Ministry of Labor and Social Affairs pursuant to Act No. 174/1968 Coll. on state professional supervision of safety at work, as amended, and the related Decree No. 18/1979 Coll. on dedicated pressure equipment.

The government's professional [work place] supervision organizations are subordinate to the State Labor Inspection Office, which manages regional labor inspectorates (Act 251/2005 Coll. on labor inspection). The State Labor Inspection Office and the inspectorates are authorized to carry out inspections of compliance with the obligations arising from the legal regulations applicable to the respective technical equipment. In situations in which there is either a failure to comply with or a violation of these regulations, they may impose sanctions in the a fine of the TNS operator, or they may stop the respective TNS operation or the use of the equipment.

In particular, the Supplier shall comply with the following:

Act 174/1968 Coll., on state professional supervision of occupational [health and] safety

Act 309/2006 Coll., ensuring other conditions of occupational health and safety.

Act No. 102/2001 Coll., on general product safety.

Act No. 90/2016 Coll., on conformity assessment of specified products when they are delivered to the market

Act No. 22/1997 Coll. on technical requirements for products.

Government Regulation No. 20/2003 Coll. (directive 2009/105 / ES) laying down technical requirements for simple pressure vessels (until 19.4.2016).

Government Regulation No. 119/2016 Coll. (directive 2014/29 / EU), on conformity assessment of simple pressure vessels when they are made available to the market (from 20.4.2016).

Government Regulation No. 26/2003 Coll. (directive 97/23 / EG) on technical requirements for pressure equipment (until 18.7.2016).

Government Regulation No. 219/2016 Coll. (Directive 2014/68 / EU) on the assessment of conformity of pressure equipment when it is made available to the market. (from 19.7.2016).

Government Regulation No. 208/2011 Coll. (2010/35 / EU) on technical requirements for transportable (movable) pressure equipment.

Government Regulation No. 378/2001 Coll. on the requirements for the safe operation and use of machinery.

Decree No. 18/1979 Coll. on reserved [specified types of] pressure equipment.



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Decree No. 48/1982 Coll. on the basic requirements for insuring the safety of work and technical equipment - Part 7 - Pressure equipment § 168 - Common Provisions, § 173 - Pressure Vessels Stable.

1.2.2 Acceptance of a TNS, Commissioning

The Supplier must always supply each TNS with the following:

- a passport for the container, which has been composed in accordance with the requirements of the standard ČSN 690010-7-2 in the Czech language and respectively, a second language, in accordance with Article 5 of this ITS
- a preliminary (initial) update of TNS prepared in accordance with the requirements of the standard ČSN 690012 by TNS update technician
- a safety valve certificate
- an EU Declaration of Conformity
- an EU Declaration of Conformity for Pressure Equipment Assembly (if applicable as an assembly)
- [a list of] authorized organizations and individuals doing business in the manufacture, assembly and/or repair of TNS as issued by the organization of state professional supervision according to Act No. 174/1968 Coll., Section 6a, Paragraph 1, (c)
- the operating manual containing information on the operation, assembly, inspection, repair and maintenance of the device, the nature (type) of the container and the requirements for its safe operation

1.3 Technical Documentation

The technical documentation for the TNS shall include the calculations showing the strength of the vessel and the individual pressure components, a drawing of the vessel and, where appropriate, the drawings of important components of the pressure vessel, along with other data necessary for proper safety assessment of the structural integrity of the equipment.

The drawing shall contain the following information:

- name of container
- the name of the working substance(s) (material(s)) in all work areas (operations, work environments)
- TNS material name and strength data
- the value of the maximum allowable pressure in all work areas (operations, work environments) in MPa (bar)
- the value of the highest and, if necessary, the lowest permissible media temperature for all work areas (operations, work environments) (°C)
- the value (size, amount) of allowance for corrosion or erosion of the body of the container (mm)
- the type and location of any welded joints
- data on the heat treatment of the vessel
- test conditions
- the location of the label (plate)



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2. TNS - Production, installation, location (placement or position)

Pressure cylinders shall be as simple as possible and rotational in shape in order to support a cost-effective production technology and [high] reliability.

The vessel should be able to be installed (i.e. installed, fitted and wired), based on its intended particular use (i.e. the project) without any changes requiring any new approvals for the vessel; and, this installation work should be able to be carried out by organizations whose personnel have been properly instructed, trained, designated and knowledgeable about the work they are going to be asked to perform and any related requirements (relevant provisions).

The pressure vessels are to be placed in such a location as to permit safe access to all parts of the vessel, both internally and externally and to the rating plate.

3. Operations & Maintenance of the TNS

Pressure vessels may be put into service if:

- a) their condition will not jeopardize the safety of persons and their surroundings
- b) they have successfully passed the prescribed construction and first pressure tests and initial revisions (modifications) and have documentation prepared in accordance with the requirements of the ČSN 690010 standard
- c) the equipment and any related parts and components (accessories) is complete, as described in the related documentation and the valid related standards and all have been tested and all meet the applicable requirements
- d) all revisions (modifications) and tests have been carried out within the established deadlines

4. TNS Operating Personnel

The only employees allowed to use (operate) the TNS equipment are those who meet the following requirements:

- a) are at least 18 years of age
- b) are fit for this work by his / her mental and physical condition
- c) have been properly acquainted with the provisions of the applicable regulations and relevant instructions for the operation of the TNS, practically trained in working with (the operation of) the TNS and properly and verifiably tested in such operations and use.

5. TNS Passport - CSN 690010 - 7-2

For each pressure vessel stable (TNS), the Supplier shall supply a basic document of compliance with the technical documentation - i.e. a pressure vessel passport stable - in accordance with the description (definition) of the TNS according to Paragraph 1.1 of this ITS.

The format of the TNS passport is specified in the annex: "Technical Regulation - TNS Passport".

6. TNS review

The TNS must always be updated:

- before and after rebuilding or after major repairs
- if the vessel has been out of service for more than two years and is to be put back into service
- before changing the working fluid or if the quality of the fluid has been degraded over time
- a leak test must be carried out after each internal revision (change) to the TNS
- for new vessels (this is carried out by the RT organization that carried out the assembly or the installation of the vessel)
- for vessels that are rebuilt or repaired



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- for vessels (containers) in which the use or location has changed, except for vessels (containers) that are mobile, transportable and/or portable

7. Legally Required Fittings - TNS Equipment

7.1 Vessels must be provided with:

- shut-off and drain fitting
- a pressure gauge fitted with a three-way fitting
- safety devices
- a venting cap
- with a thermometer, if working. medium exceeds 50° C
- a level gauge where the working substance is a liquefied gas or where the working level of the fluid must be monitored in order to make sure that the required permissible working conditions are not exceeded

7.2 Labeling, Other Data Required on the Body of the Vessel (Container)

The manufacturer must affix each vessel (container) with a data plate which must be permanently visible and accessible.

The data plate must contain at least the following information and its size must be at least

37 mm x 74 mm:

- manufacturer's identification
- serial number
- year of manufacture
- maximum allowable pressure in MPa (bar)
- maximum and minimum permissible wall temperature in °C
- volume in liters in m3

The following information shall be stamped on the container body near the product plate:

- manufacturer's identification
- serial number
- year of manufacture
- manufacturer's brand name

The data on the container must be the same as that on the product label plate and will be bordered with a durable colored paint.

8. Spare parts

For at least 5 years after commissioning of the vessel, the Supplier is obligated to have available a set of spare parts for hydraulic pressure accumulators, including spare rubber bags.



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9. Release List of Manufacturers of Pressure Vessels

This list of pressure vessel (container) manufacturers is valid for the supply of new equipment. Should it be necessary, for technical reasons, to choose a manufacturer that is not included in this list of suppliers, the written consent of ŠkodaAuto is required.

Supply Conditions

Compliance with ITS 6.21 ŠkodaAuto.

Certification of the manufacturer's compliance with the standards ČSN 690010 and 690012.

Types according to the manufacturer's catalog.

Manufacturer:

Jihlava a.s. Jihlava
 Vítkovice Cylinders a.s..
 Step Trutnov - pressure equipment
 Vanek, s.r.o.
 Plastmetal Engineering s.r.o.
 KPS Moravske Budejovice
 TOS Aš
 Kovofiniš a.s. Ledec n. Sázavou
 CKD Dukla Trutnov
 ČKD Praha
 Ferox a.s. Děčín
 Strojón a.s. Pardubice
 1. brněnská strojírna a.s. Brno
 Šmeral. Brno a.s.
 TOS a.s. Čelákovice
 ZVVZ a.s. Milevsko
 Roučka Slévárna a.s.
 ŽDAS a.s. Žďár n. Sázavou
 HYDAC – ŠKODA Parts Center
 OLAER
 BOSCH
 Reflex CZ s.r.o.
 Drukov
 Schneider Bohemia, spol. s r.o.
 Pumpa a.s.
 EPE – ŠKODA Parts Center
 Varem
 ROTH HYDRAULICS

10. Pressure Vessel Stable (TNS) Passports

TECHNICAL REGULATION (STANDARD) - ČSN 69 0010 - 7-2

1. The basic document certifying the characteristics of the vessel and its compliance with the required technical documentation shall be the passport of the vessel, which shall include the documents referred to in this technical regulation (standard).

2. The passport shall be drawn up by the manufacturer of the vessel and shall bear the required information on the parts subject to excess pressure.

3. One (1) copy of the passport is to be supplied with the pressure vessel (container) in the A4 format. For the supply of this document to ŠkodaAuto, the data must be in the Czech language or it can be bilingual (including a Czech version). Depending on the parameters (internal volume, working overpressure, working temperature) of the vessel, the data to be included in the passport may be reduced by omitting data that does not apply to the vessel - i.e. an abbreviated passport. The manufacturer can produce an abbreviated passport for single-space vessels (containers), which are produced in a repeated manner with working overpressures up to 1.6 MPa and working temperatures from 0 to 200 °C, with non-corrosive working



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fluids (substances) and a diameter up to 800 mm. The abbreviated passport need not include tables 7, 8, 9, 10, 11 and a sketch of the markings to identify the nondestructive testing points of welded joints. It is permissible to change the sheet dimensions and to modify the columns provided the prescribed information is maintained and to replace the tables with copies of the certificates if they contain the necessary information.

4. For vessels that are delivered in pieces, which are to be assembled at the delivery location, the Supplier shall provide the customer with all of the documentation required to be able to perform the required assembly and inspection work. After the delivery is completed, the passport is to be delivered in its entirety. For the work to be carried out during assembly by the installer, an appropriate document, drawn up in the form of this passport, shall be provided and shall be attached to the basic passport of the vessel.

5. Documents drawn up and supplied by the manufacturer of the vessel (container) in the form of an annex to the passport shall contain:

5.1. Vessel (container) drawings: showing the overall assembly and the details necessary to check the calculated dimensions.

5.2. A sketch showing the identification markings where the nondestructive testing was done of the welded joints.

5.3. The strength calculations for the pressurized parts, indicating the standards used to determine the strength characteristics necessary to determine the permissible stress.

5.4. A safety valve certificate (or a copy) including all relevant drawings and data. If the vessel is fitted with other safety devices, the necessary documentation must be provided to confirm the reliability of its operation. Tables 3, 4, 5 shall be completed and supplemented with the relevant documentation from the vessel manufacturer, if these devices are part of the delivery of the pressure vessel and in other cases by the assembly or supplying organization before commissioning the vessel.

5.5 Instructions for the use, assembly, [initial] inspections, repair and ongoing service inspections during operation, if required by the nature of the vessel for its safe operation.

6. Requirements for the categorization of vessels in relation to the nature of the working fluids (substances) and working parameters:

6.1. For the design, manufacture, inspection, acceptance and delivery requirements, the vessels shall be categorized according to Table 1 and Figure 1.

6.2. Vessels with parameters falling within the boundary lines shall be assigned to the adjacent category which has less stringent requirements.

6.3. Containers in Categories 2, 3 and 4, working with environmentally hazardous substances and not having any secondary protection, shall be classified in a category one step higher.

7. An integral part of the passport shall be the results of the initial inspection of the pressure vessel, which the Supplier of the equipment is required to submit at the time of the acceptance of the vessel.

8. The vessel's passport shall consist of the documents shown in Model A - Passport Contents (including the list of documents accompanying the passport, Model B).



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Table 1 - Categorization of Vessels

Identification of Vessels (containers) - Uses	Vessel (container) Categories
For the processing and storage of explosive and highly toxic substances (independent of working temperature of the wall) at working overpressures above 0.07 MPa	1
For the processing and storage of products not considered in Group 1 at operating pressures above 0.07 MPa, including containers operating with a vacuum	2, 3, 4 see Figure 1, depending on operating parameters
Non-pressurized or working with internal or external overpressures up to 0.07 MPa	5 ČSN 690010 does not apply to this category, but ČSN 690015 does apply.

Note: For Category 5 vessels (containers), the passport does not need to be in accordance with this Regulation.



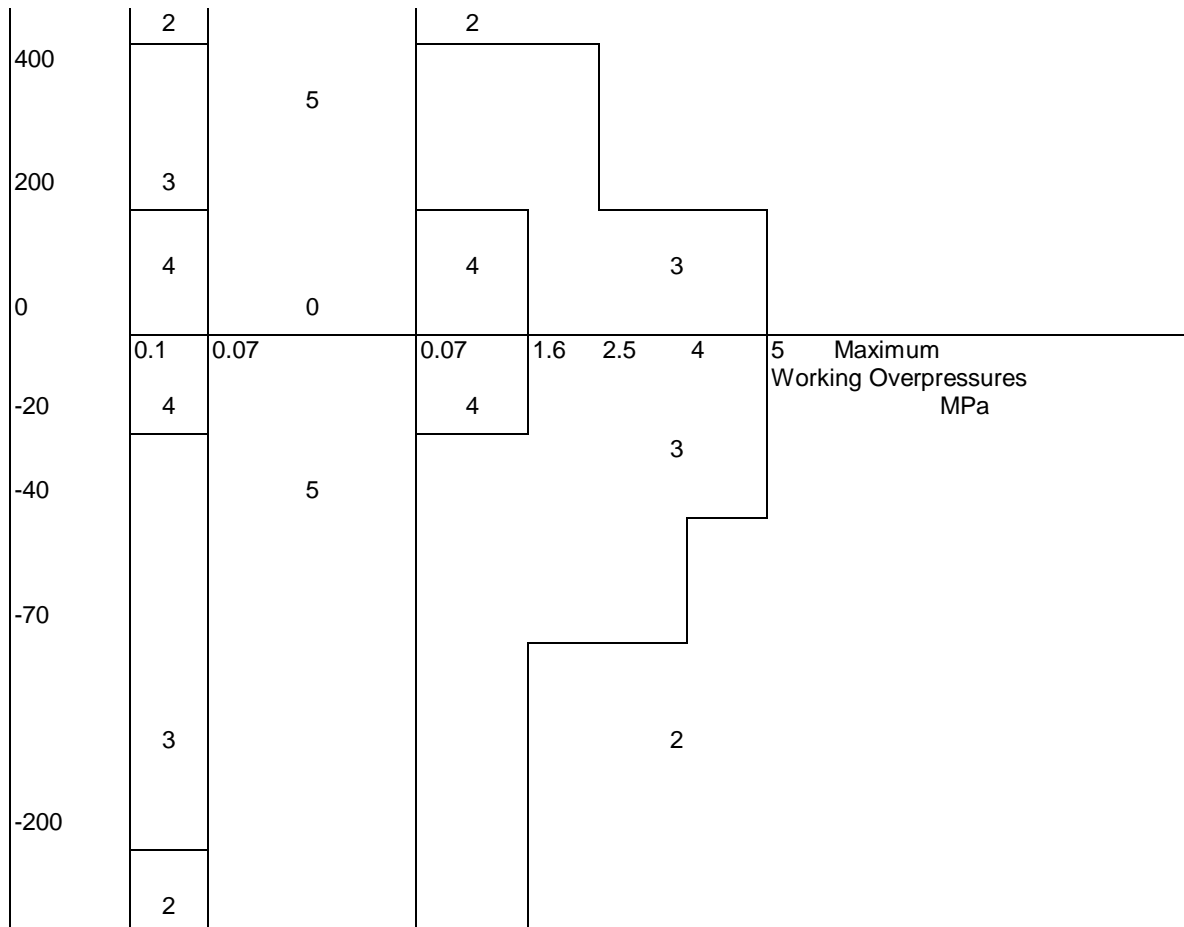
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Figure 1 - Categorization of Vessels (Containers)

Wall operating temperature
°C





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MANUFACTURER'S VESSEL (CONTAINER) PASSPORT ČÍSLO – ŠKODA Parts Center

PASSPORT CONTENTS

Order Number	Title of the Document	Quantity Sheets
1	2	3



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Note: Example of completing this form - Annex / MODEL A

List of Documents Attached to the Vessel's (container's) Passport			
Production No.			
Order Number	Title of the Document	Number or Other Identification of the Document	Quantity Sheets
1	2	3	4

Note: Example of completing this form - Annex / MODEL B