The standard is obligatory for all Company departments and the external organisations that order, receive and supply industrial valves. It does not apply to the Litvínov and Kralupy Refinery unit.

The Company departments are obliged to familiarise with the standard all the external organisations that carry out these activities for them and for which the standard is also obligatory.

Table of Contents:

1. General Provisions

1.1 **Validity Scope**

This standard applies for ordering, reception and supply of low pressure valves that are peculiar either due to their design or due to use in respect of their mediums etc. The standard elaborates on and specifies in greater detail the relevant provisions of the basic standard N 11 740.

1.1.1 Any changes and deviations from the TDR are only possible after mutual agreement between the vendor and the customer.

1.2 **Orders**

1.2.1 The following technical data is to be stated in orders:

a) The number of valves of the same type.
b) The type of the valve and the number of the relevant dimension standard or technical conditions. If no standard or technical specifications are developed for the relevant valve, registration number as per a catalogue can be stated.
c) Nominal pressure (PN).
d) Nominal internal diameter (DN).
e) The type of process liquid (medium). With non-standard mediums, their chemical composition must be stated.
f) Operation overpressure (the highest – the lowest) in MPa, or underpressure in kPa.
g) Operation temperature (the highest – the lowest) in °C.
h) In case of welded-on valves: the data on the material, outside diameter and wall thickness of the connected pipeline as per the relevant ČSN standards etc.
i) The requested scope of acceptance/reception tests and the requested documentation type. This to be stated pursuant to ČSN 13 3060, Part 2, and ČSN 13 3060, Part 4. At the same time, it must be stated if the ordering party is to be present during acceptance tests.
j) Additional identification as per ČSN 13 3005-1, if so requested.
k) Other important technical data or differing data (e.g. the manner and position of the installed valve – layout sketch with the main data; modification of the sealing surfaces of the flange nozzles; location of bypass, data on the electric servo-motor – environment characteristics for the electrical equipment as per ČSN 33 0300).
l) Advice stating that this standard applies for supply of valves.
m) Special arrangements between the ordering party and the manufacturer/vendor. This concerns special requirements, such as:
   - Different arrangement/modification of the sealing surfaces.
   - Changes in the material of the body or parts of the valve.
   - Modification of the seat – material.
   - Different type of sealing of the packings spaces taking into account the medium and operation parameters.
   - Surface modification (special)
     a) External
     b) Internal (rubber surface application etc.)
   - Prospective other requirements or arrangements

1.3 **The Manner and Scope of Manufacture**

The manufacturer selects the manner of manufacture. Valves are manufactured in the scope of nominal internal diameters, nominal pressures and operation temperatures as per the relevant dimension standards or technical conditions stipulated for individual valve types.

1.4 **Identification of Valves**

1.4.1 The obligatory identification, which every valve must be provided with, must be pursuant to ČSN EN 19 (13 3004) and ČSN 13 3005-1.
The basic obligatory identification data on valves:

a) Nominal internal diameter (DN)
b) Nominal pressure (PN)
c) Body material
d) Manufacturer's logo or trademark
e) Flow direction (arrow)

1.4.2 Labels as per ČSN 13 3007 serve for identification of valves. This standard specifies the scope of the technical data to be on the label.

1.4.3 The design of the obligatory and additional identification is as per ČSN 13 3005-1.

1.4.4 Identification of relief valves is stated in ČSN 13 4309-2. Identification of control valves is stated in ČSN 13 3005, Part 2.

1.4.5 Each valve must have its manufacture number punched on a label made of class 17 material – for the purpose of easy identification in the field.

2. Technical Requirements

Industrial valves must comply with the requirements of the ČSN 13 3060, Part 1, Part 2 and ČSN 13 3060-4.

2.1 **Material**

The material of the bodies, or the main parts of the valves, is stated in the relevant dimension standards of valves, technical specifications of valves or the manufacturer's catalogue list.

Upon the customer's request (which must be stated in the relevant order and embodied in the contract) the manufacturer/vendor can use different suitable material, unless this compromises the function and reliability of the relevant valve.

2.1.1 The material of individual parts of the valves must be stated in the commercial-technical documentation.

2.2 **Connection Dimensions**

2.2.1 Flange Design

The connection dimensions of the flange nozzles of valves must comply with ČSN EN 1092-1 (13 1170), or ČSN 13 1060 (of 1984), with arrangement of the sealing surfaces as per ČSN EN 1092-1 (13 1170), or ČSN 13 1061 – (of 1984) or DIN2526 and DIN2501.
The parameter of the relevant modification shall be stated in individual orders.

2.2.2 Welded-On Design

The modifications of the ends of the nozzles of welded-on valves for the installation weld must comply with ČSN 13 1075 or, on the basis of a request, with ČSN 13 1070 (of 1984) (where the connection size will be punched on the valve body.

2.3 **Construction Lengths of Valves**

The construction lengths of metal valves, including their tolerances are based on ČSN EN 558-1 (13 3031) for valves identified as PN or ČSN EN 558-2 (13 3032) for valves identified as "Class", or ČSN 13 3041.

2.3.1 For welded-on valves the construction lengths, including their tolerances, are based on ČSN EN 12 982 (13 3034), or ČSN 13 3051, parts 1-3, ČSN 13 3041, ČSN 13 3052, Part 1 and ČSN 13 3053, Part 1. Prospective deviations must be mutually agreed to and stated in the relevant order.
The construction lengths are stated either in the relevant dimension standard of the valve, if it has been developed, or in the Catalogue List of Valves.

2.4 **The Surface of Valves**

If so needed, the surface of valve or its parts is treated by jet-application of crushed cast iron upon clean (deprived of metal debris) surface as per ČSN ISO 8501-1 (03 8221) – purity degree Sa 2 ½. Testing of valve is carried out using the testing liquid (water) including corrosion inhibitor (3% solution of DIOL), which temporarily prevents

corrosion damage. Before painting, the residual water is removed by drying in drying oven at temperature of 50°C maximum, whilst the time of this treatment must take into account the mass of the relevant valve.

2.4.1 For the purpose of transportation and storage the valves are provided with protective paint (save the function surfaces) in agreed shade, which paint is 1-layer paint and the material of the paint must be such that it can be diluted in water and its thermal resistance must be up to 150°C (for paints with resistance up to 400°C RAL 9006 (aluminium-white) shall be used for valves made of alloy materials).
The checks of adhesiveness of the painting material as per ČSN ISO 2409 (67 3085) using screen method, including the protocol on the surface protection, can be requested separately in the relevant order.

2.4.2 The surfaces that are not painted are preserved with water-expulsion means guaranteeing storage lifetime of 12 months.

2.4.3 The movable parts (depending on the type of load: spindles, spindle nuts, axial bearings etc.) are preserved with plastic lubricants identified as per international classification NLGI 2 K3 F-30, or NLGI 2 KP F2 N-25.

2.5 **Sealing Surfaces and Packings Spaces**

2.5.1 The Sealing Seats of Valves

The function sealing surfaces must have the prescribed roughness of surface (e.g. final treatment by lapping), may not be damaged and must be preserved and guarantee the requested tightness.

2.5.1.1 Inserted or screwed-on seats of valves must have the sealing weld if the DN is 100 or more.

2.5.2 Packings Spaces

The diameters and sizes of packings spaces (chambers) must be as per ČSN 02 9012 or DIN 3780. It is also possible to request that the size design of packings and their tolerances be as per the Chemopetrol Litvínov standard N 13 020-1 (this must be stated in order or contractually agreed to).

2.5.2.1 The packings spaces must be sealed with asbestos-free flex made of expanded graphite to avoid or minimise emergence of pitting corrosion of the surfaces of spindles.
It is recommended that the appropriateness of graphite flexes is testified through the SAFE certificate as per API607 or API589.

2.5.3 Valve Bonnet/Cover Sealing Connections (Systems)

The principles of selection of dimensions for the cover sealing connection with the modification of the sealing surface of the collar-recess type or groove and tongue type must be pursuant to ČSN EN 1092-1 (13 1170), or ČSN 13 1061 (year of 1984) or DIN 2526.

2.5.3.1 Gaskets must be made of expanded graphite without metal insert within pressure PN40, whilst for pressure PN40 and higher pressure metal inserts must be present.

2.5.4 The vendor guarantees that all seals and sealing connections are asbestos-free, that each valve is duly tested and provided with test protocol.

3. Testing

Testing of valves is carried out as per ČSN 13 3060, Part 2. The scope of tests: 100% of provided valves.

3.1 **Types of Tests**

3.1.1 As per the purpose: manufacturing check
reception/acceptance

3.1.2 As per type: strength and impermeability
seizing
tightness of closure

3.1.3 As per manner: under cold conditions
under hot conditions
special

3.2 If, as per pre-agreed arrangement, a customer's representative takes part in manufacturing test of finished valves, such test is also considered to be reception test.

3.3 Valves must be checked concerning strength and impermeability with water under cold conditions using the testing overpressure for the relevant nominal pressure as per ČSN 13 0010.

3.4 The tests concerning the tightness of the closure and seizing under cold conditions must be carried out applying the testing overpressure that is equal to the highest operation overpressure for the relevant nominal PN pressure of the valve as per ČSN 13 0010.

3.5 The tests under hot conditions are carried out applying the testing overpressure equal to the highest operation overpressure for the relevant nominal PN pressure as per ČSN 13 0010 at the relevant highest operation temperature.

3.6 Valves earmarked for flammable, explosive, toxic and other dangerous mediums (of any pressures and temperatures) must be tested using air or other equivalent testing liquid.

3.7 The tests using air are carried out at test overpressure equal to the highest operation overpressure for the relevant scope of operation temperatures and the nominal pressure of the relevant valve as per ČSN 13 0010, unless other testing overpressure has been agreed to in the contract. Namely; overpressures to test the following:

a) Impermeability of the body, lid and other connections of the valves, packings etc.
b) Tightness of the valve closure.

3.8 Evaluation of the tightness of the valves is carried out as per ČSN 13 3060, Part 2 or as per the technical delivery conditions of the valves specified through the relevant ČSN standard (e.g. block valves as per ČSN 13 3501, relief valves as per ČSN 13 4309-2, gate valves as per ČSN 13 3701 etc.).

3.9 The delivery must also include testing protocol as per ČSN 13 3060-4.

3.10 Based on the customer's request (which request must be included in the relevant order) the valves can be tested pursuant to DIN, BS or API standards.

3.11 Testing Liquids

Whenever possible, valves are tested using the testing mediums for which they are earmarked. If they are not available, they are tested using such liquids that will prove best the appropriateness of the valve for the requested use. I.e. the mediums may not feature lower permeability than the medium for which the valve is earmarked.
Usual testing liquids are: cold water, hot water, steam, air, nitrogen, kerosene etc.

3.11.1 If the customer requests testing the valves with special testing liquid to check the potential of health damage of some dangerous liquids, he must agree with the manufacturer/vendor the manner, procedure and conditions of testing and must state these in the relevant order.

3.12 Checks of dimensions and external inspections of the valves are carried out as per ČSN 13 3060, Part 2, Article 5.

3.12.1 Non-prescribed dimensions are determined as per ČSN ISO 2768-1 (01 4240) for non-prescribed limit deviations of length and angle dimensions in “m” (medium) precision class.

4. Reception and Supply

4.1 Reception of valves is carried out as per ČSN 13 3060, Part 2.

4.1.2 Participation of the customer’s responsible representative during reception (reception tests) is to be stated in the order – see 1.2.1 – i of this standard.

4.2 Supply of valves is carried out as per ČSN 13 3060, Part 2. The valves must be supplied in complete state (with relevant documentation) – in accordance with the wording of the purchase contract.

4.2.1 Each supply must include declaration on compliance pursuant to the 22/1997 Act (an act on technical requirements on products).

4.2.2 The supplied valves must comply with the provisions of the 102/2001 Act (an act on general safety of products). Any changes or modifications carried out in excess of these technical supply conditions or assembly and operation regulations must be consulted within guarantee period with the vendor/manufacturer.

4.2.3 The assembly and operation regulations, which are part of the supply, must include the properties of the valve, installation manual, commissioning manual, manner of usage and repairs.

4.2.4 The relief valves are supplied as per ČSN 13 4309-2, including documentation.

4.2.5 Valve spares, such as spindles, plugs, sealings or gaskets etc., are not parts of the supply and must be ordered separately.

4.2.6 After mutual agreement to these TDR between the vendor and the customer, during the guarantee period the vendor/manufacturer has responsibility for proper function of the valve and, hence, reserves the right to ban the ordering party to carry out actions that influence the valve as a whole (save tightening the packings).

5. Documentation Handed Over

The manufacturer/vendor shall hand over the documentation concerning the valve pursuant to ČSN 13 3060-4, which shall be done in the following scope.

5.1 Certificates

- Document A: Certificate on the Quality and Completeness (for valves with manufacturing No.)

5.2 Accompanying Technical Documentation

- Document B: Sketch with breakdown of items and technical description with installation manual and operation manual.
- Document C: Protocol on tests.
- Document CA: Certificate on the material quality.
- Document D: Material specification.
- Document E: Record on the valve welds.

5.2.1 In the order the requirement on supply of the documents will be expressed through the letter identifying the document type (behind the hyphen, behind "ČSN 13 3060"). Unless contractually agreed otherwise, the vendor will only provide the Document A.
Example: The request to provide documents B, C and D will be as follows:
ČSN 13 3060-B,C,D.

5.2.2 The documentation for relief valves is developed and supplied as per ČSN 13 4309-2.

5.2.3 The valves with servo-drive will be delivered including the drive test protocol. If a valve with drive is modified and completed at the vendor's, the supply must include a certificate on the quality and completeness of the valve and the drive test protocol.

5.2.4 Certificate documentation as per the specification in the order shall be an inseparable part of delivery of the valves. Technical documentation as per ČSN 13 3060-B shall be added to each delivery.

5.2.5 Certificate on quality and completeness and the accompanying technical documentation will be supplied together with the supply of the valves by the manufacturer/vendor – one counterpart.

5.2.6 The manufacturer/vendor shall file for each documented valve agreed to in the contract the technical documentation including test certificates, metallurgy certificates, X-ray images etc.

6. Packaging, Protection and Transport

The manner of the packaging, protection and transport of valves shall be pursuant to ČSN 13 3060, Part 3.

6.1 Before dispatch the non-painted surfaces (sealing surfaces etc.) must be deprived of impurities, appropriately preserved and provided with cappings/caps, which will prevent entry of impurities and damage to these function surfaces of valves.

7. Appendix: List of Standards and Documents Referred

ČSN 13 3060 Par 1	Industrial Valves. Technical Regulations. General Provisions.
ČSN 13 3060 Part 2	Industrial Valves. Technical Regulations. Checks of Valves.
ČSN 13 3060 Part 3	Industrial Valves. Technical Regulations. Packaging, Transport, Storage, Assembly and Repairs.
ČSN 13 3060-4	Industrial Valves. Technical Regulations. Part 4: Documentation of Valves.
ČSN ISO 2768-1 (01 4240)	General Tolerances. Non-prescribed Limit Deviations of Length and Angle Dimensions.
ČSN 02 9010	Sealing. Diameters of Sealing Spaces.
ČSN ISO 8501-1 (03 8221)	Preparation of Steel Surfaces before Application of Paints and Similar Treatment. – Visual Evaluation of the Surface Purity. Part 1: The Degrees of Corrosion and the Degrees of Preparation of Steel Surfaces without Finishes and Steel Surfaces after Complete Removal of Previous Finishes.
ČSN 13 0010	Pipes and Valves. Nominal Pressures and Operation Overpressures.
ČSN 13 1060 - 1984	Pipes and Valves. Metal Flanges. Connection Dimensions.
ČSN 13 1061 - 1984	Pipes and Valves. Metal Flanges. Shapes and Dimensions of Sealing Surfaces.
ČSN 13 1070 (1984)	Modification of the Ends of the Parts of Pipelines for the Purpose of Welding.
ČSN 13 1075	Pipelines Modification of the Ends of the Parts of Pipelines for the Purpose of Welding.

ČSN EN 1092-1 (13 1170)	Flanges and Flanged Connections. Round Flanges for Pipes, Valves, Fittings and Accessories with PN Identification – Part 1: Steel Flanges.
ČSN EN 19 (13 3004) - 1994	Identification of Industrial Valves for General Use.
ČSN EN 19 (13 3004)	Industrial Valves. Identification of Metal Valves.
ČSN 13 3005-1	Industrial Valves. Identification. Part 1: General Technical Requirements.
ČSN 13 3005 Part 2	Industrial Valves. Identification of Industrial Valves. Requirements Concerning Identification of Control Valves.
ČSN 13 3007	Industrial Valves. Valve Labels. Basic Provisions
ČSN EN 558-1 (13 3031)	Industrial Valves. Construction Lengths of Metal Valves for Use in Pipeline Systems. Part 1: PN-Identified Valves.
ČSN EN 558-2 (13 3032)	Industrial Valves. Construction Lengths of Metal Valves for Use in Pipeline Systems Connected with Flanges. Part 2: Class-Identified Valves.
ČSN EN 12 982 (13 3034)	Industrial Valves. Construction Lengths. ETE, CTE Valves with Ends for Welding on Using Butt Welds.
ČSN 13 3041	Industrial Valves. Flanged, Flanged-Free and Welded Valves. Determination of Construction Length and its Tolerance.
ČSN 13 3051 Part 1	Industrial Valves. Block and Check Valves – Straight - Welded-on – without Additionally Welded-on Nozzles. Construction Lengths.
ČSN 13 30 51 Part 2	Industrial Valves. Block and Check Valves – Straight - Welded-on — with Additionally Welded-on Nozzles. Construction Lengths.
ČSN 13 3051 Part 3	Industrial Valves. Block and Check Valves – Welded-On – Corner Ones – without Additionally Welded-On Nozzles. Construction Lengths.
ČSN 13 3052 Part 1	Industrial Valves. Check Valves Welded-On – without Additionally Welded-On Nozzles. Construction Lengths.
ČSN 13 3053 Part 1	Industrial Valves. Gate Valves Welded-On – without Additionally Welded-On Nozzles. Construction Lengths.
ČSN 13 35 01	Industrial Valves. Block Valves. Technical Delivery

	Regulations.
ČSN 13 4309-2	Industrial Valves. Relief Valves. Part 2: Technical Requirements.
ČSN 33 0300 (1988)	Electro-Technical Regulations. Types of Environment for the Electrical Equipment.
ČSN ISO 2409 (67 3085)	Painting Materials. Screen Test.
N 13 020-1	Repairs and Maintenance of Industrial Valves. (Providing with Appropriate Sealings).
DIN 2501 Blatt 1	Flanges. Connection Dimensions.
DIN 2526	Flanges. Shapes of Sealing Surfaces.
DIN 3780	Sealing. Diameters of Packings and Corresponding Thickness of Sealing. Construction Sheet.
The 22/1997 Act	An act on technical requirements on products.
The 102/2001 Act	An act on general safety of products.

……

English translation by Ing. Zbyněk Zeman, translator certified by the University of Cambridge (CPE – Certificate of Proficiency in English) and by the Czech Republic authorities (State Examination in English & Official Court Translator) & EC translator