



SLOVENSKI STANDARD
SIST EN 12570:2001

01-december-2001

Industrijske ventilne naprave - Metod za določanje velikosti delovnega elementa

Industrial valves - Method for sizing the operating element

Industriearmaturen - Verfahren für die Auslegung des Betätigungselementes

Robinetterie industrielle - Méthode de dimensionnement de l'organe de manoeuvre

Ta slovenski standard je istoveten z: EN 12570:2000

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ICS:

23.060.01 Ventili na splošno Valves in general

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12570

May 2000

ICS 23.060.01

English version

Industrial valves - Method for sizing the operating element

Robinetterie industrielle - Méthode de dimensionnement de l'organe de manoeuvre

Industriearmaturen - Verfahren für die Auslegung des Betätigungselementes

This European Standard was approved by CEN on 9 April 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 69 "Industrial valves", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2000, and conflicting national standards shall be withdrawn at the latest by August 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. This European Standard is considered to be a supporting standard to those application and product standards which in themselves support an essential safety requirement of a New Approach Directive and which make reference to this European Standard.

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Introduction

The manual forces which a person can apply to an operating element (handwheel or lever) are basically independent of the type of the valve and depend on the person operating the valve, his position to the operating element, etc.

This European Standard specifies the manual forces and the calculation method to be used in sizing the operating element for all industrial valve types.

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1 Scope

This European Standard specifies the requirements for establishing the minimum size of the operating element supplied with an industrial valve having regard for the force applied by one person to operate the valve under specified working conditions.

This standard applies to manual operating elements of sizes from 100 mm to 1 000 mm :

- directly mounted on valves ;
- mounted on valve reduction gearboxes ;
- used for manual operation of power actuated valves.

This standard does not apply to :

- impactor handwheels ;
- T-keys ;
- chainwheels.

2 Normative References

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporate in it by amendments or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 736-1, *Valves - Terminology - Part 1: Definition of types of valves.*

EN 736-2, *Valves - Terminology - Part 2: Definition of components of valves.*

EN 736-3, *Valves - Terminology - Part 3: Definition of terms.*

3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 736-1, EN 736-2 and EN 736-3 apply.

4 Symbols

The symbols used in this standard are as follows :

- D is the diameter of the handwheel, expressed in millimetres (mm) ;
- L is the length of the lever or radius of the crank circle, expressed in millimetres (mm) ;
- T is the torque, under specified conditions, to operate the valve, expressed in Newton metres (Nm) ;
- T_s is the maximum torque, under specified conditions, to seat or unseat the obturator or to overcome temporary intermediate dynamic conditions, expressed in Newton metres (Nm) ;
- F is the operating manual force to size the manual operating element, expressed in Newton (N) ;
- F_s is the maximum manual force to size the manual operating element, expressed in Newton (N).

5 Requirements

5.1 Manual force

The value of the operating manual force F and the maximum manual force F_s used to calculate the size of the operating element according to 5.2 shall be as given in Table 1.

Table 1 - Manual force

Force	D and L mm											
	100	125	160	200	250	315	400	500	630	720	800	1 000
F N	250	300	300	350	400	400	400	400	400	400	400	400
F_s N	500	600	600	700	800	800	1 000	1 000	1 000	1 000	1 000	1 000

For intermediate values of D and L the applicable values of F and F_s shall be calculated by linear interpolation of the tabulated values.

The force F is the assumed manual force which one person is capable of applying to the operating element under the following conditions :

- operator in standing position ;
- operating element at approximately waist level ;
- no space restrictions ;
- firm footing ;
- operating time no longer than 5 min.

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The force F_s is the assumed manual force which one person is capable of applying to the operating element under the same conditions as force F except that the time period is short.

If other conditions apply the values of F and F_s to be used shall be subject to an agreement between the manufacturer and the customer.

5.2 Sizing of the operating element

The size of the operating element (see Figures 1 and 2) shall be calculated to comply with the following conditions:

- a) handwheel

$$D \text{ shall be equal to or greater than } \frac{2000 \times T}{F} \text{ and } \frac{2000 \times T_s}{F_s} ;$$

- b) lever or crank

$$L \text{ shall be equal to or greater than } \frac{1000 \times T}{F} \text{ and } \frac{1000 \times T_s}{F_s} .$$