BRITISH STANDARD

BS EN
12570:2000

Industrial valves — Method for sizing the operating element

The European Standard EN 12570:2000 has the status of a British Standard

ICS 23.060.01

National foreword

This British Standard is the English language version of EN 12570:2000.

The UK participation in its preparation was entrusted by Technical Committee PSE/7, Valves, to Subcommittee PSE/7/1, Valves - Basic standards, which has the responsibility to:

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— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 7 and a back cover.

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This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 August 2000

ISBN 0 580 34914 4

Amendments issued since publication

Amd. No.	Date	Comments

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

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EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 12570:2000 E

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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of an identical text or by endorsement, at the latest by August 2000, and conflicting national standards shall be withdrawn at the latest by August 2000.

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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.

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 Newtons (N);

F_s is the maximum manual force to size the manual operating element, expressed in Newtons (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
$\boldsymbol{F_s}$ 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.

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 shall be equal to or greater than $\frac{2\,000 \times T}{F}$ and $\frac{2\,000 \times T_s}{F_s}$;

b) lever or crank

L shall be equal to or greater than $\frac{1\,000 \times T}{F}$ and $\frac{1\,000 \times T_s}{F_s}$.

The maximum torque T_s is a greater torque than T and is applied during a short time. When specified by the customer the manufacturer shall quantify this short time in terms of a percentage of the valve travel.

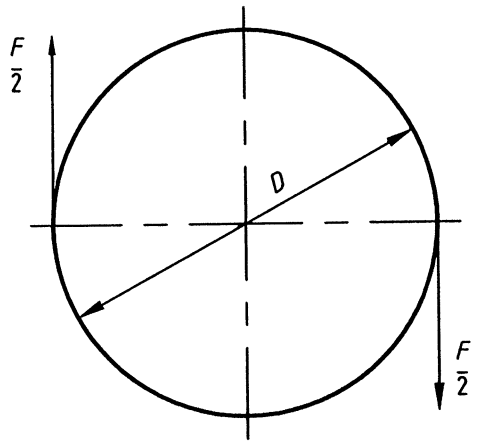

Figure 1 - Handwheel

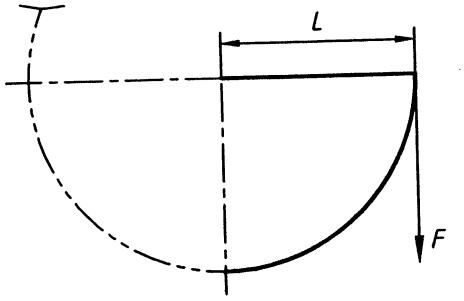

Figure 2 - Lever or handwheel with crank

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