



Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

**ILNAS-EN 15714-5:2022**

**Industrial valves - Actuators - Part 5:  
Pneumatic linear actuators for  
industrial valves - Basic requirements**

Robinetterie industrielle - Actionneurs -  
Partie 5 : Actionneurs linéaires  
pneumatiques - Prescriptions de base

Industriearmaturen - Antriebe - Teil 5:  
Pneumatische Antriebe -  
Grundanforderungen

**05/2022**



## National Foreword

This European Standard EN 15714-5:2022 was adopted as Luxembourgish Standard ILNAS-EN 15714-5:2022.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

### **THIS PUBLICATION IS COPYRIGHT PROTECTED**

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

ILNAS-EN 15714-5:2022

EUROPEAN STANDARD **EN 15714-5**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2022

---

ICS 23.060.20

English Version

**Industrial valves - Actuators - Part 5: Pneumatic linear actuators for industrial valves - Basic requirements**

Robinetterie industrielle - Actionneurs - Partie 5 :  
Actionneurs linéaires pneumatiques - Prescriptions de  
base

Industriearmaturen - Antriebe - Teil 5: Pneumatische  
Antriebe - Grundanforderungen

This European Standard was approved by CEN on 20 April 2022.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

---

## Contents

Page

European foreword .....	4
<b>1 Scope.....</b>	<b>5</b>
<b>2 Normative references.....</b>	<b>5</b>
<b>3 Terms and definitions.....</b>	<b>5</b>
<b>4 Classification/designation.....</b>	<b>7</b>
4.1 Duty classification .....	7
4.1.1 General.....	7
4.1.2 On-off duty.....	7
4.1.3 Modulating duty .....	7
4.2 Action .....	8
4.2.1 Double acting (DA) .....	8
4.2.2 Single acting (SA) .....	8
<b>5 Motive energy.....</b>	<b>8</b>
5.1 Operating medium.....	8
5.2 Quality.....	8
5.3 Pressure .....	8
<b>6 Actuator performance data.....</b>	<b>9</b>
6.1 Minimum moving pressure .....	9
6.2 Operating time .....	9
6.3 Displacement volume.....	9
6.4 Dimensions and performances for double acting version.....	9
6.5 Dimensions and performances for single acting version.....	11
<b>7 Basic design requirements.....</b>	<b>12</b>
7.1 Safety requirements .....	12
7.2 Linear actuator attachment .....	12
7.3 Nominal stroke .....	13
7.4 Endurance of linear actuators.....	13
7.5 Leakage.....	14
7.6 Environmental conditions.....	15
7.6.1 Ambient temperature.....	15
7.6.2 Enclosure protection .....	15
7.6.3 Corrosion protection .....	15
7.7 Pressure connections.....	17
7.7.1 General.....	17
7.7.2 Remotely mounted pilot valves .....	17
7.7.3 Direct mounted pilot valves.....	18
7.8 Structural safety factors .....	19
<b>8 Optional equipment.....</b>	<b>20</b>
8.1 Ancillaries.....	20
8.2 Manual operation device.....	20
8.3 Mechanical end stop adjustment.....	20
8.4 Position indication .....	21
8.5 Bracket.....	21
8.6 Anti-rotation device.....	21

<b>9</b>	<b>Conformity assessment .....</b>	<b>21</b>
<b>9.1</b>	<b>General .....</b>	<b>21</b>
<b>9.2</b>	<b>Type tests.....</b>	<b>21</b>
<b>9.3</b>	<b>Control of production process .....</b>	<b>22</b>
<b>10</b>	<b>Marking .....</b>	<b>24</b>
<b>10.1</b>	<b>Mandatory marking .....</b>	<b>24</b>
<b>10.2</b>	<b>Optional marking.....</b>	<b>24</b>
<b>11</b>	<b>Documentation .....</b>	<b>25</b>
<b>12</b>	<b>Linear actuator selection guidelines .....</b>	<b>25</b>
	<b>Annex A (normative) Endurance test procedure .....</b>	<b>26</b>
	<b>Annex B (informative) Actuator selection guidelines .....</b>	<b>28</b>
	<b>Bibliography .....</b>	<b>31</b>

## European foreword

This document (EN 15714-5:2022) 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 November 2022, and conflicting national standards shall be withdrawn at the latest by November 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This document provides basic requirements for piston type pneumatic linear actuators for industrial valve, both double acting and single acting, used for on-off and modulating control duties.

It includes criteria, method and guidelines for design, qualification, corrosion protection, control and testing.

It does not apply to diaphragm actuators and to pneumatic actuators which are integral parts of control valves.

Other requirements, or conditions of use, different from those indicated in this document, are subject to agreement, between the purchaser and the manufacturer/supplier, prior to order.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 286-2, *Geometrical product specifications (GPS) - ISO code system for tolerances on linear sizes - Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts (ISO 286-2)*

EN ISO 5210:2017, *Industrial valves - Multi-turn valve actuator attachments (ISO 5210:2017)*

EN 12570, *Industrial valves - Method for sizing the operating element*

EN 15714-1, *Industrial valves - Actuators - Part 1: Terminology and definitions*

EN 60529, *Degrees of protection provided by enclosures (IP Code)*

ISO 5599-2, *Pneumatic fluid power — Five-port directional control valves — Part 2: Mounting interface surfaces with optional electrical connector*

ISO 8573-1:2010, *Compressed air — Part 1: Contaminants and purity classes*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15714-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **stroke**

single and complete movement from one end of travel to the other

### 3.2

#### **end stop**

mechanical part, designed to stop the actuator drive train at an end position

Note 1 to entry: End stop can be fixed or adjustable.

### 3.3

#### **output thrust**

minimum guaranteed output thrust capability of the actuator, in both directions, at specified supply pressures conditions as provided by the manufacturer/supplier

Note 1 to entry: Where the output thrust varies with the stroke, in a linear or nonlinear relationship with pressure, tabulated data and/or thrust versus stroke diagram shall be provided at significant pressure values for each direction of movement.

#### 3.3.1

##### **rated thrust**

characterizing figure, indicated by the actuator manufacturer/supplier, used to define the maximum actuator operating thrust

Note 1 to entry: The rated thrust corresponds to the maximum thrust value developed by the actuator when powered with maximum allowable pressure.

#### 3.3.2

##### **nominal thrust**

##### 3.3.2.1

##### **double acting version (4.2.1)**

minimum guaranteed output thrust of the actuator, at any point of the stroke, with nominal supply pressure 0,55 MPa (5,5 bar)

##### 3.3.2.2

##### **single acting version (4.2.2)**

guaranteed output thrust of the actuator with pneumatic nominal supply 0,55 MPa (5,5 bar) at the beginning of the stroke in the direction to compress the spring

#### 3.3.3

##### **start thrust**

actuator output thrust at the beginning of the stroke in the direction of movement

#### 3.3.4

##### **maximum operating thrust**

##### **MOT**

for double acting version, output thrust of the actuator when the pressure of the power supply corresponds to the maximum allowable pressure; for single acting version the maximum output thrust between the thrust at the beginning of the stroke when the pressure of the power supply corresponds to the maximum allowable pressure and the thrust generated by the spring at the end of specified compression stroke

Note 1 to entry: The maximum thrust value shall be indicated by the manufacturer/supplier; the value shall be not lower than 1,45 times the nominal thrust.