BRITISH STANDARD

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Industrial valves — Actuators

Part 1: Terminology and definitions

ICS 01.040.23; 23.060.20

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British Standards

National foreword

This British Standard is the UK implementation of EN 15714-1:2009.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Foreword

This document (EN 15714-1:2009) 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of an identical text or by endorsement, at the latest by April 2010, and conflicting national standards shall be withdrawn at the latest by April 2010.

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1 Scope

This document defines specific terms and definitions used for industrial valve actuators not included in EN 736-2 and EN 736-3.

2 Normative references

Not applicable.

3 Common terms and definitions used for electric, pneumatic and hydraulic valve actuators

Table 1 — Common terms and definitions

Term	Definition
ambient temperature	environmental temperature of the location where the actuator is working
blistering	formation of bubbles or pimples on a coated surface, caused by the local loss of adhesion and lifting of the film from the underlying substrate (see EN ISO 4628-2)
emergency closing/opening	overriding operation allowing the actuator to be closed or opened under emergency conditions
emergency shut down ESD	specific function of an actuator designed to perform a pre-determined operation (open/close/stayput) in an emergency situation
end of travel	predefined position related to a fully open or a fully closed condition
end stop	mechanical part, designed to stop the actuator drive train at an end position
end torque/thrust	actuator maximum output torque/thrust available at the end of the stroke
fail-safe actuator	multi-turn, part-turn or linear actuator which is able to operate in a defined pre-determined way on loss of external power
fail-safe position	defined pre-determined position in which the actuator operates on loss of external power
indicating arrangement	device, externally visible, showing the position of the actuator/valve obturator
limit switch	contact that changes status when the stroking position of the actuator reaches a preset position
linear actuator	actuator which provides thrust for a defined linear stroke
manual override	device designed to operate manually the valve when required
motive energy	energy used to operate the actuator which can be electric, pneumatic or hydraulic
operating cycle	one complete opening and one complete closing stroke of the valve, including the stopping phases
operating/stroking/moving time	duration of a complete stroke of the actuator NOTE For pneumatic and hydraulic actuators, the duration includes the pressurisation and/or de-pressurisation times and the movement of the actuator.

Table 1 *(continued)*

Term	Definition
output torque/thrust	torque/thrust delivered by the actuator
position transmitter	device transmitting a signal proportional to the actuator position
rated torque/thrust	characterising figure indicated by the actuator manufacturer used to define the maximum actuator operating torque/thrust capability NOTE Units: — torque in Newton metres (Nm); — thrust in Newton (N).
test room temperature	ambient air temperature where the actuator is tested
run torque/thrust	actuator output torque/thrust developed between the seating/unseating positions
seating/unseating torque	actuator output torque required to seat/unseat the valve
start torque/thrust	actuator output torque/thrust at the beginning of the stroke, in the direction of the motive force defined
stroke	single and complete movement from one end of travel to the other
torque/thrust characteristics	values which may vary through the actuator stroke
travel limitation	any device integrated in the actuator and designed to limit the travel/stroke
travel	value of actuator output turns, angular or linear movement between ends of travel

4 Terms and definitions specific for pneumatic and/or hydraulic valve actuators

Table 2 — Terms and definitions for pneumatic and/or hydraulic valve actuators

Term	Definition
displacement volume	volume displaced to operate the pneumatic/hydraulic actuator in one stroke
dead volume	part of the actuator volume which does not change during stroking and which is the difference between the total pressurized volume and the displacement volume of the piston(s), vane or diaphragm
dew point	temperature to which the compressible fluid is cooled for water vapour to condense
diaphragm actuator	fluid-powered device in which the media acts upon a flexible membrane to provide linear motion
double acting actuator	pneumatic or hydraulic actuator which requires the supply of motive energy to operate in both travel directions
external leakage	leakage of the operating medium from the actuator to the external environment
maximum allowable pressure	pressure not to be exceeded for the supply to the pneumatic or hydraulic actuator
minimum moving pressure	minimum pressure required to initiate the movement of the output shaft/stem of a double acting actuator without load, at ambient temperature
nominal supply pressure	pressure applied at the actuator (pneumatic or hydraulic) inlet, allowing the nominal torque/thrust to be delivered

Table 3 *(continued)*

Term	Definition
operating pressure	pressure applied to the actuator to guarantee the performances on a specific application
piston actuator	fluid-powered device in which the media acts upon a movable cylindrical member, the piston, to provide linear motion
pilot (solenoid) valve	electrical (or other) ancillary device which controls the motive energy to the actuator and which may be locally or remote mounted
rack and pinion actuator	actuator where a rack and pinion is used to change linear motion into rotary motion, and which produces a constant output torque
safety device	device added to an actuator to protect it against danger, risk or injury
scotch yoke actuator	actuator which uses a mechanism where a roller tracks in a slot on a crank arm to change linear motion into rotary motion, and which produces a variable output torque
single acting actuator	pneumatic or hydraulic actuator which requires external power to operate the valve in one direction only, the return stroke being powered by an alternative form of stored energy
spring return actuator	specific version of a single acting actuator with energy stored by springs
spring return direction	operating direction under spring return
vane actuator	fluid-powered part-turn actuator in which the media acts upon a rotable vane to produce direct part-turn motion

5 Terms and definitions specific for electric valve actuators

Table 4 — Terms and definitions specific for electric valve actuators

Term	Definition
controller	device that, on response to an external command, reverses the direction of rotation of the motor and allows the actuator to perform defined control functions
de-rating factor	factor by which the actuator performance may be reduced in order to meet the duty performance class
duty	performing action required from the actuator to meet the required function
"ESD" command	dedicated emergency command used as priority control input to drive the valve obturator to a pre-defined position
gearbox	self contained gear arrangement for torque/speed modification that may be coupled to the electric actuator output
nominal motor current	value, expressed in ampere (A), indicated by the actuator manufacturer, characterising the motor under specified actuator performances
nominal motor power	value, expressed in kilowatt (kW), indicated by the actuator manufacturer, characterising the motor under specified actuator performances
nominal voltage	supply voltage applied at the electric actuator allowing the nominal torque/thrust to be delivered
output drive	actuator output component necessary to transmit torque/ thrust to the valve in order to cause its operation
terminal compartment	dedicated compartment of the actuator for electrical connection of power and/or control and/or signalling wiring
thermal protecting device	temperature sensing device used to stop motor operation at a defined temperature

Bibliography

[1] EN 736-2:1997, *Valves — Terminology — Part 2: Definition of components of valves*

[2] EN 736-3:2008, *Valves — Terminology — Part 3: Definition of terms*

[3] EN ISO 4628-2, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering (ISO 4628-2:2003)*

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