IS 6343 (1982): Specification for Door Closers (Pneumatically Regulated) for Light Doors Weighing up to 40 kg [CED 15: Builder Hardware]

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Indian Standard

SPECIFICATION FOR DOOR CLOSERS (PNEUMATICALLY REGULATED) FOR LIGHT DOORS WEIGHING UP TO 40 kg

(First Revision)

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INDIAN STANDARDS INSTITUTION
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Indian Standard

SPECIFICATION FOR DOOR CLOSERS (PNEUMATICALLY REGULATED) FOR LIGHT DOORS WEIGHING UP TO 40 kg

(First Revision)

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Indian Standard

SPECIFICATION FOR DOOR CLOSERS (PNEUMATICALLY REGULATED) FOR LIGHT DOORS WEIGHING UP TO 40 kg

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 29 January 1982, after the draft finalized by the Builder's Hardware Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Pneumatic door closers are being increasingly used at present in buildings, particularly in air-conditioned hospitals, offices, restaurants and also for screen doors in living rooms and kitchens of residential buildings where doors are very frequently used and where automatic closing of the door becomes essential. This type of door closers can be profitably utilized in the case of light doors to avoid the heavy initial investments for hydraulic door closers. This standard has been prepared with a view to laying down the requirements for the manufacture and performance of pneumatically regulated door closers. The requirement for hydraulic door closers has been covered in IS : 3564-1975*.

0.3 This standard was first published in 1971. This revised version has been prepared after taking into consideration various recommendations received from the users as well as the manufacturers. In this version, additional alternative materials suitable for manufacture of different component parts of the closers have been indicated and reference has been made to latest Indian Standards. The construction of the closer has been dealt with in detail and the performance requirement has been modified.

0.4 While issuing the standard, the Sectional Committee took note of the acute scarcity of materials like brass, copper, zinc and other alloys in the country and the need for conserving the use of the same in national interest. However, in view of the demand for items made of these materials in the

*Specification for door closers (hydraulically regulated) (*second revision*).

overseas market, the Sectional Committee has retained them specifically to meet the requirements of export trade. For all indigenous uses, it is recommended that items made out of these materials should not be used.

0.5 This standard contains clauses **5.1** and **6.7** which permit the purchaser to use his option for selection to suit his requirements.

0.6 This standard is one of a series of Indian Standards on builder's hardware. Other standards published so far in the series are given on page **11**.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for door closers (pneumatically regulated) for use on light doors weighing up to 40 kg.

2. TERMINOLOGY

2.1 Door Closer (Pneumatically Regulated) — A pneumatic door closer (hereinafter called closer) is an equipment for automatic closing of doors and also for regulation of closing speed.

2.2 Anti-Clockwise Door (Right Hand Door) — A door, which when viewed from above, rotates in anti-clockwise direction about its hinges while opening.

2.3 Clockwise Door (Left Hand Door) — A door, which when viewed from above, rotates in clockwise direction about its hinges while opening.

2.4 A Right Closer — A closer which is required to be used on an anti-clockwise door.

2.5 A Left Closer — A closer which is required to be used on a clockwise door.

2.6 Universal Closer — A closer which is suitable for both anti-clockwise and clockwise doors without any change in its parts.

*Rules for rounding off numerical values (*revised*).

3. MATERIALS

3.1 The materials to be used for the main component parts of door closers are given in Table 1.

TABLE 1 MATERIALS FOR COMPONENT PARTS OF DOOR CLOSERS (PNEUMATICALLY REGULATED)

Sl No. (1)	Component Part (2)	Suitable Material (3)	Ref to Indian Standard (4)
i)	Cylinder	Brass tube/Mild steel tube/ Aluminium tube	IS : 407-1966[1] IS : 3601-1966[2] IS : 738-1977[3]
ii)	Piston/Piston Rod	Steel/Cast iron/Aluminium alloy/Zinc alloy	IS : 7283-1974[4] IS : 210-1978[5] IS : 617-1975[6] IS : 742-1966[7]
iii)	Brackets and Fittings	Mild steel/Cast iron/ Aluminium alloy/Zinc alloy/Cast brass	IS : 226-1975[8] IS : 210-1978[5] IS : 617-1975[6] IS : 742-1966[7] IS : 1264-1965[9]
iv)	Spring	Steel	IS : 2507-1975[10] IS : 4454 (Part I)-1975[11]
v)	Regulating Screws	Brass/Bronze/Aluminium alloy/Steel/Zinc alloy	IS : 292-1961[12] IS : 28-1975[13] IS : 617-1975[6] IS : 226-1975[8] IS : 742-1966[7]

[1]Specification for brass tubes for general purposes (*second revision*).
[2]Specification for steel tubes for mechanical and general engineering purposes.
[3]Specification for wrought aluminium and aluminium alloy drawn tube for general engineering purposes (*second revision*).
[4]Specification for hot rolled bars for production of bright bars.
[5]Specification for grey iron castings (*third revision*).
[6]Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes (*second revision*).
[7]Specification for zinc base alloy die castings (*first revision*).
[8]Specification for structural steel (standard quality) (*fifth revision*).
[9]Specification for brass ingots for gravity die castings and brass gravity die castings, (including naval brass) (*revised*).
[10]Specification for cold rolled steel strip for springs (*first revision*).
[11]Specification for steel wires for cold formed springs: Part I Patented and cold drawn steel wires – unalloyed (*first revision*).
[12]Specification for brass ingots and castings (*revised*).
[13]Specification for phosphor bronze ingots and castings (*third revision*).

4. MANUFACTURE

4.1 The closer shall essentially consist of a cylinder made out of brass, aluminium or steel having a smooth drawn finish. The wall thickness shall not be less than 1 mm and one end of the cylinder shall permit access to the piston for servicing. An expanding member of a suitable material shall be provided for the piston to be maintained in positive contact with the tube for checking, and for sealing of the leakage. The speed of closing the door shall be controlled by means of a covered helical torsion spring having adjustable tension. The closer shall be mounted on brackets having holes for not less than four attaching screws. Bearing pins and screws when assembled shall be secured in place.

5. DIMENSIONS AND TOLERANCES

5.1 The dimensions and tolerances on all the component parts of the door closer shall be as agreed upon between the purchaser and the manufacturer.

6. GENERAL REQUIREMENTS

6.1 The door closer shall be suitable for fixing to doors weighing up to 40 kg, excluding the weight of additional accessories. The surface of the closer shall be clean, without sharp edges, free from cracks, dents, burrs or any other visible surface defects.

6.2 After fixing, the closer shall operate smoothly and quietly without any undue play during the opening and closing operation.

6.3 The closer shall work satisfactorily at all temperatures between 40°C and 10°C without requiring any other change except by the adjustment of the regulating screw.

6.4 The speed of closing the door shall be adjusted by increase or decrease in the tension of the helical spring.

6.5 The closer shall not show any sign of leakage in the air pressure.

6.6 Each closer shall be furnished with clear, detailed instructions for installation and regulation of the closer.

6.7 A typical illustration of the door closer is given in Fig. 1.

NOTE — The figure is intended to show the component parts only and is not intended to limit the design of shape.

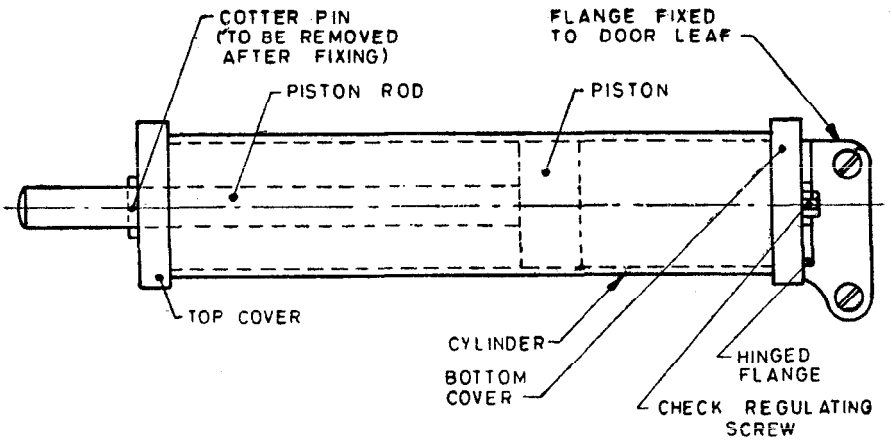

FIG. 1 TYPICAL ILLUSTRATION OF DOOR CLOSER (PNEUMATICALLY REGULATED)

7. PERFORMANCE REQUIREMENTS

7.1 After being fitted in its position, when the door is opened through 90° and released, it shall swing back to an angle of $20 \pm 5°$ with normal speed, but thereafter the speed shall get automatically retarded till a smooth, final close is reached.

7.2 Endurance Test — The closer shall be fitted to the door of maximum permissible weight and shall be subjected to 50 000 operations. One opening and closing shall constitute one operation. The test shall be conducted at the rate of a maximum of 6 to 8 operations per minute. The number of operations that shall be carried out continuously at any time during the test shall not be less than 3 000. At the end of the test, the closer shall show no defects, failure, or deterioration in its working.

8. FINISH

8.1 The exposed surface of the door closer shall be polished or painted as agreed upon between the purchaser and the manufacturer. In the case of aluminium body, it may be anodized. The thickness of anodic coating shall not be less than Grade AC 10 of IS : 1868-1968*.

8.2 Mild steel parts shall be given the treatment as given in **8.2.1** and **8.2.4**.

*Specification for anodic coatings on aluminium (*first revision*).

8.2.1 All dents, burrs and sharp edges shall be removed from various components and they shall be pickled, scrubbed and rinsed to remove grease, rust, scale or any other foreign element.

8.2.2 After pickling, all the mild steel parts shall be given phosphating treatment in accordance with IS : 3618-1966*.

8.2.3 Putty, if necessary for filling and smoothening the surface, may be applied. This shall conform to IS : 110-1968†.

8.2.4 Two coats of enamel paint shall then be applied as follows:

a) Undercoat, and

b) Finish coat with synthetic stoving enamel conforming to IS : 2932-1974‡.

8.2.4.1 The components shall, thereafter, be baked at a specified temperature in an oven heated uniformly. The finish shall be smooth and uniform with a hard and tough film of enamel strongly adhering to the surface. The finish shall be free from all visible defects and the film shall not chip, when tapped lightly with a pointed instrument.

8.3 All components shall be finished in colour as agreed upon between the purchaser and the manufacturer.

9. MARKING

9.1 Each door closer shall be stamped with the following information:

a) Manufacturer's name or trade mark, if any; and

b) Serial number of the closer or manufacturer's batch number.

9.1.1 The door closer may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

*Specification for phosphate treatment of iron and steel for protection against corrosion.

†Specification for ready mixed paint, brushing, grey filler for enamels, for use over primers (*first revision*).

‡Specification for enamel, synthetic, exterior (a) undercoating, (b) finishing (*first revision*).

10. PACKING

10.1 Each door closer shall be wrapped in suitable craft paper or polyethylene sheet and packed in cardboard boxes. Each cardboard box shall bear a label showing the following:

a) Manufacturer's name or trade mark, if any;
b) Quantity in the package; and
c) Serial number of the closers or manufacturer's batch number.

11. ACCESSORIES

11.1 Each closer shall be supplied with screws, and other tools for proper fitting and regulation.

12. GUARANTEE

12.1 Each closer shall be accompanied by a guarantee against any manufacturing defect or functioning failure within one year of the use of the closer during which the manufacturer/supplier shall be under obligation to rectify the defect or replace the closer free of charge.

13. SCALE OF SAMPLING AND CRITERION FOR CONFORMITY

13.1 Lot

13.1.1 All the door closers of the same nominal size and shape and from the same batch of manufacture, in one consignment, shall constitute a lot.

13.2 Sample Selection

13.2.1 The number of door closers to be selected at random from a lot shall depend upon the size of the lot and shall be in accordance with Col 1 to 4 of Table 2.

13.2.2 The door closers shall be selected at random from the lot. For random selection of the door closers, the procedure for simple random sampling or systematic sampling, as given in IS : 4905-1968*, may be adopted.

13.3 Number of Tests and Criteria for Conformity

13.3.1 *For Manufacture, Finish, Dimensions, General Requirements and Performance Tests* — All the door closers drawn in accordance with **13.2.1** and Table 2 shall be examined for manufacture, finish, dimensions, general

*Methods for random sampling.

requirements and tested for performance. Any door closer failing in any one or more of these characteristics shall be considered as defective. If in the first sample, the number of defective door closers is less than or equal to the corresponding acceptance number, the lot shall be declared as conforming to the requirements of these characteristics. If the number of defective door closers is greater than or equal to the rejection number, the lot shall be deemed as not meeting the requirements of these characteristics. If the number of defectives is greater than the acceptance number, but less than the rejection number, a second sample of the size equivalent to that of the first shall be taken to determine the conformity or otherwise of the lot. The number of defective door closers found in the first and the second samples shall be combined and if the combined number of defectives thus obtained is less than or equal to the corresponding acceptance number, the lot shall be declared as conforming to the requirements of these characteristics, otherwise not.

TABLE 2 SAMPLE SIZE AND CRITERION FOR CONFORMITY FOR MANUFACTURE, FINISH, DIMENSIONS, GENERAL REQUIREMENTS AND PERFORMANCE TEST

(*Clauses* 13.2.1 *and* 13.3.1)

No. of Door Closers in the Lot	Sample	Sample Size	Cumulative Sample Size	Acceptance Number	Rejection Number
(1)	(2)	(3)	(4)	(5)	(6)
Up to 100	First	8	8	0	2
	Second	8	16	1	2
101 to 300	First	13	13	0	2
	Second	13	26	1	2
301 to 500	First	20	20	0	2
	Second	20	40	1	2
501 to 1 000	First	32	32	0	3
	Second	32	64	3	4
1001 and above	First	50	50	1	4
	Second	50	100	4	5

13.3.2 *Endurance Test* — Two door closers in the case of lots of size 300 or less and five door closers in the case of lots of size more than 300 shall be selected from those already found satisfactory under **13.3.1**. These door closers shall be tested for endurance in accordance with **7.2**. If all the door closers tested for the endurance test satisfy the requirements of the standard, the lot shall be deemed as having satisfied the requirements of the endurance test, otherwise not.

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IS:

204 Specification for tower bolts:
(Part I)-1978 Ferrous metals (*fourth revision*)
(Part II)-1978 Non-ferrous metals (*fourth revision*)
205-1978 Specification for non-ferrous metal butt hinges (*third revision*)
206-1981 Specification for tee and strap hinges (*third revision*)
208-1979 Specification for door handles (*third revision*)
281-1973 Specification for mild steel sliding doors bolts for use with padlocks (*second revision*)
362-1975 Specification for parliament hinges (*third revision*)
363-1976 Specification for hasps and staples (*third revision*)
364-1970 Specification for fan-light catch (*second revision*)
452-1973 Specification for door springs, rat-tail type (*second revision*)
453-1973 Specification for double acting spring hinges (*second revision*)
729-1979 Specification for drawer locks, cupboard locks and box locks (*third revision*)
1019-1974 Specification for rim latches (*second revision*)
1341-1981 Specification for steel butt hinges (*fourth revision*)
1495-1970 Specification for mild steel dust-bins (*first revision*)
1823-1980 Specification for floor door stoppers (*third revision*)
1837-1966 Specification for fanlight pivots (*first revision*)
2209-1976 Specification for mortice locks (vertical type) (*third revision*)
2681-1979 Specification for non-ferrous metal sliding door bolts (Aldrops) for use with padlocks (*second revision*)
3564-1975 Specification for door closers (hydraulically regulated) (*second revision*)
3818-1971 Specification for continuous (piano) hinges (*first revision*)
3828-1966 Specification for ventilator chains
3843-1966 Specification for steel backflap hinges
3847-1966 Specification for mortice night latches
4621-1975 Specification for indicating bolts for use in public baths and lavatories (*first revision*)
4948-1974 Specification for welded steel wire fabric for general use (*first revision*)
4992-1975 Specification for door handles for mortice locks (vertical type) (*first revision*)
5187-1972 Specification for flush bolts (*first revision*)
5899-1970 Specification for bathroom latches
5930-1970 Specification for mortice latch (vertical type)
6315-1971 Specification for floor springs (hydraulically regulated) for heavy doors
6318-1971 Specification for plastic window stays and fasteners
6602-1972 Specification for ventilator pole
6607-1972 Specification for rebated mortice locks (vertical type)
7196-1974 Specification for hold fasts
7197-1974 Specification for double action floor springs (without oil check) for heavy doors
7534-1974 Specification for mild steel locking bolts with holes for padlocks
7540-1974 Specification for mortice dead locks
8756-1978 Specification for ball catches for use in wooden almirah
8760-1978 Specification for mortice sliding door locks, with lever mechanism
9106-1979 Specification for rising butt hinges
9131-1979 Specification for rim locks
9460-1980 Specification for flush drop handles for drawers
9899-1981 Specification for hat, coat and wardrobe hooks

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Definition*
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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