

Locking Cylinders – Introduction

Comprehensive cylinder ranges for all applications

Cylinder lockcases

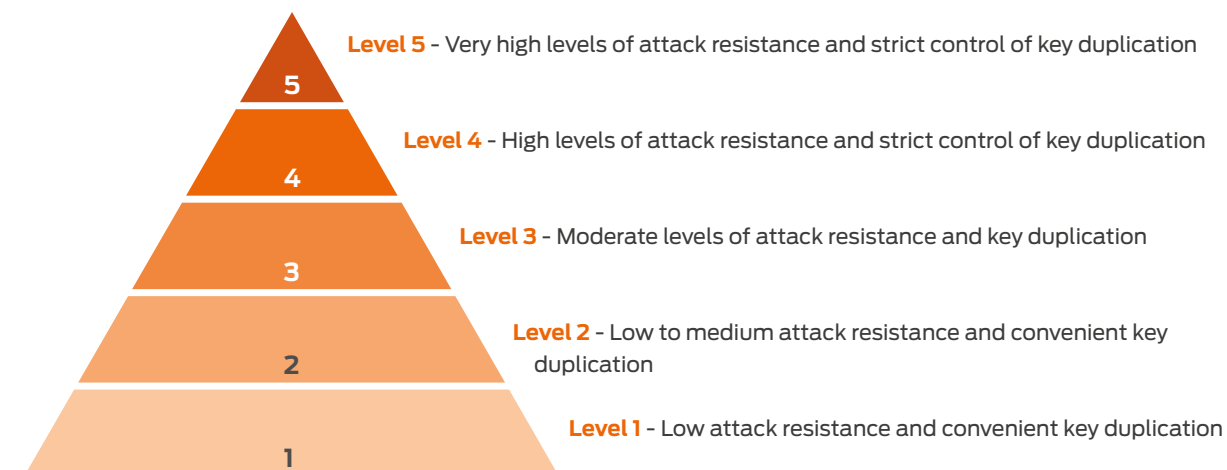
Cylinder locks are a very flexible and sophisticated means of providing security on most doors. The two part assembly uses a lockcase, which is usually morticed into the door, and a locking cylinder which is used to lock and unlock the lockcase. The cylinder lock has a number of advantages over other methods of door locking.

- Ability to select the most appropriate combination of lockcase and cylinder function
- Match the level of security to the precise needs of each door in the building
- Upgrade security as the needs of the building or its occupants change
- Enable sophisticated masterkeying and key control capabilities where access to multiple doors can be allowed or restricted to varying personnel



Performance Levels

Our multi-level approach to cylinder security ensures there is a solution for all projects, door applications and budgets.



Combining cylinders with lockcases

The operating characteristics of each lockcase can be adapted by the selection of the cylinder.

A single cylinder will, for example, provide key operation only from one side of the door. Whilst this might be suitable for a small store room in conjunction with a deadlock, it could result in a person being locked in. A cylinder with thumbturn however would provide a means of unlocking or locking a door from inside for convenience and privacy. In some cases, in a secure facility for example, such a feature may not be advantageous. When selecting the locking solution therefore it is important to consider the combined effect of the lock case and the cylinder.

Locking Cylinders – Standards

Measuring Security

The security of any door application is a combination of many factors, including the door construction and physical environment surrounding the door.

However, the cylinder, is probably the most vulnerable element in the assembly and is therefore subject to severe requirements of resistance to physical attack and other aspects of security such as key control.

EN 1303:2005 is the European Standard which establishes assessment and test criteria for each cylinder to quantify its durability, key security and resistance to physical attack.



Kitemark in Practice

The BSI Kitemark is one of the most respected and trusted product certification marks throughout the world as it represents a symbol of quality and safety. To achieve Kitemark certification, a manufacturer is required to have a comprehensive quality management system combined with initial product type testing and regular audit testing.

Although the scheme is voluntary, Allegion is very supportive, believing that the Kitemark is a show of commitment to safety and quality and offers peace of mind to the customer.



ICIM Certified cylinder conforming to EN1303

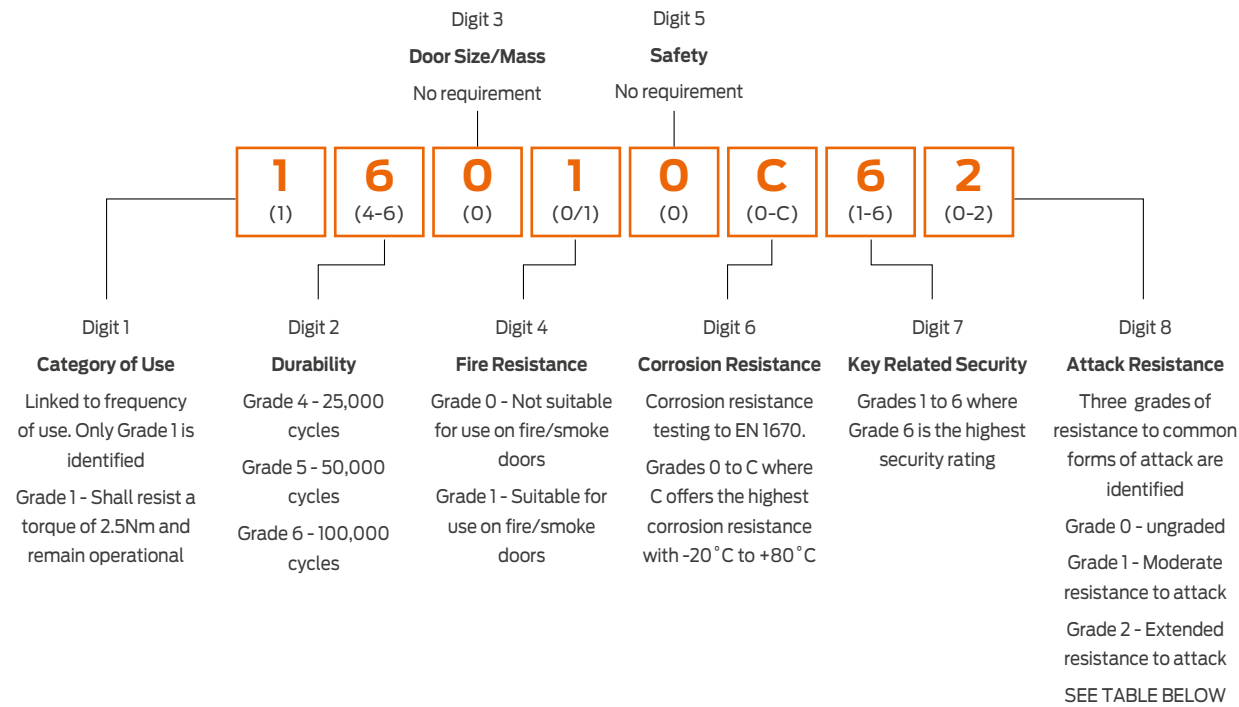
In July 2003, CISA became the very first company in Italy to obtain EN1303 based ICIM certification. Certification guarantees cylinder performance ascertained through documental checks of the technical specifications, in-company inspections to control production process, taking of samples to test either in the company or on the market and, most importantly, annual inspections.

This is so much more than a simple test report which determines the performance of only a few cylinders at one specific time.



BS EN 1303:2005

EN 1303:2005 classifies cylinders for locks using an 8 digit coding system. Features assessed include durability, fire resistance, key related security and attack resistance. The resulting 8 digit code can be used to directly compare the performance of one cylinder range against another.



Attack Resistance to EN1303

Type of attack	Digit 8 - Attack Resistance		
	Grade 0	Grade 1	Grade 2
Resistance to drilling (nett drilling time)	-	3 mins	5 mins
Resistance to chisel attack (number of defined blows)	-	30	40
Resistance to twisting attack (number of defined twists)	-	20	30
Resistance to plug/cylinder extraction (pull load)	-	15kN	15kN
Torque resistance of plug/cylinder	-	20Nm	30Nm

Locking Cylinders – Performance

Guide – Selecting the right cylinder in the right place

Selecting the right cylinder system

In selecting the most appropriate cylinder system for any given application, a few simple factors should be considered:

- The need for physical security from forced entry.
- The balance between the convenience of getting duplicate keys cut and the security of strict key control whereby keys can only be obtained from the manufacturer under a letter of authority.
- The size of the system and the need for complex masterkeying capabilities.



Addressing physical security

An intruder seeking to break open a door will in most cases choose to “attack” the lock cylinder using the tools of the trade: drills, pliers, lock picks and other lock-forcing tools. Methods of protecting against forced entry are ‘defensive’ features of passive security.

1 - Push resistance

A projecting cam on the cylinder can prevent it from being forced out of the lockcase by a hammer blow.

2 - Drill resistance

The incorporation of steel pins within the cylinder are designed to resist or delay attacks from drilling.

3 - Pick resistance

Special pin configurations can resist the manipulation of the pins in an attempt to simulate the key.

4 - Snap resistance

The inclusion of hardened steel laminates within the body of the cylinder can prevent violent twisting and snapping of the cylinder.

5 - Bump resistance

Bumping of cylinders is becoming more of an issue throughout Europe, particularly as there is no sign of forcible entry for homeowners to claim on insurance.

Anti-barricade function

In some circumstances, such as secure institutions, care homes and psychiatric facilities it is desirable to prevent the inside thumbturn being used to forcibly hold the deadbolt in the locked position. A clutch mechanism within the cylinder isolates the thumbturn from the keyway so that in an emergency the key will override the thumbturn if it is being held.

Classroom function

If a teacher needs to leave a room full of pupils for a short while, they can lock the door from the outside to prevent unauthorised personnel from entering whilst being reassured the door can always be opened from the inside, even when locked. The cylinder can never be locked by the thumbturn from the inside.

Construction Keying

During the construction process, keys can easily become lost or stolen which can lead to loss of security. If Construction Keying is specified the building contractor will be issued with specific contractors keys for each of the cylinders. At the point of ‘hand-over’ the building owner/occupier inserts the proper ‘system’ keys into each cylinder and in the process renders the contractors keys inoperative.

Masterkeying

Masterkeying is the organisation of a keyed locking system where a hierarchy of access is produced. As the level of authority rises, so the ability to access cylinders in the system increases until access to all the cylinders in a system is available to a single Grand Masterkey.



Patent protection

Since copyright protection on keys was abolished in 1999, it is now possible for anybody to produce and sell most types of keys. The only systems that can truly protect against illegal keyblank duplications are patented key systems. Manufacturers are able to take legal action against any authorized third parties who distribute copies of patented keys without permission.

Security Card

Offers a high level of service personalisation, giving further protection to the end user. The CISA authorised duplication system is the perfect solution for ensuring that keys can only be duplicated with the owner's consent on production of the security card. Supplied only with CISA standard differ products.



Locking Cylinders – Keying & Sizing

Keying – What keying arrangement do you need?

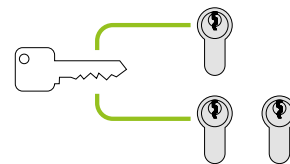
Keyed to Differ (KD)

All our cylinders are supplied “Keyed to Differ” as standard. This means each cylinder is operated by its own individual key (or keys) and no other keys will pass it.



Keyed Alike (KA)

A number of cylinders can be “Keyed Alike” so that the same key can be used to operate all locks, reducing the number of keys required to access different doors. Keyed Alike cylinders are ideal for areas where minimal key control is required.

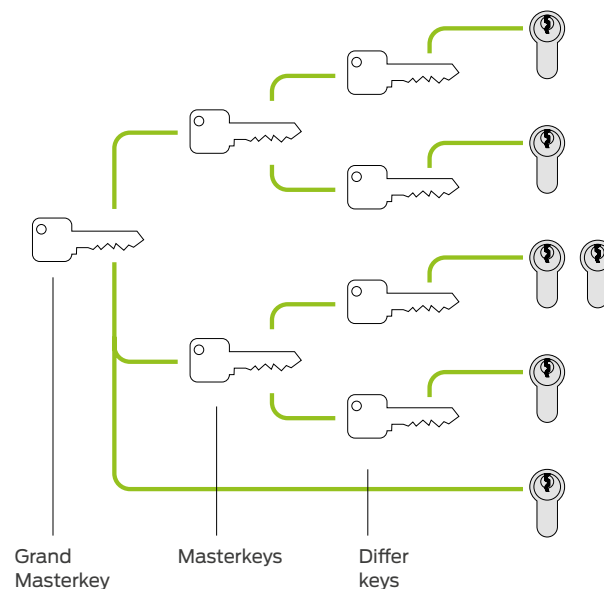


Masterkeying (MK)

The term “Masterkeying” is used generally to identify any system of cylinders in which a hierarchy of access has been established. In such a system certain keys will operate more than one cylinder.

In many larger buildings or groups of buildings such as a university campus, school or hospital it would be impractical to provide a different cylinder for each and every door. Even within a single department, authorised users could become the custodian of hundreds of keys.

By the careful design and organisation of cylinder pinning and key profiles, a hierarchy of keys can be developed which allows access to individual doors, groups of doors, all the doors on one floor or ultimately all the doors in the building using just one key.

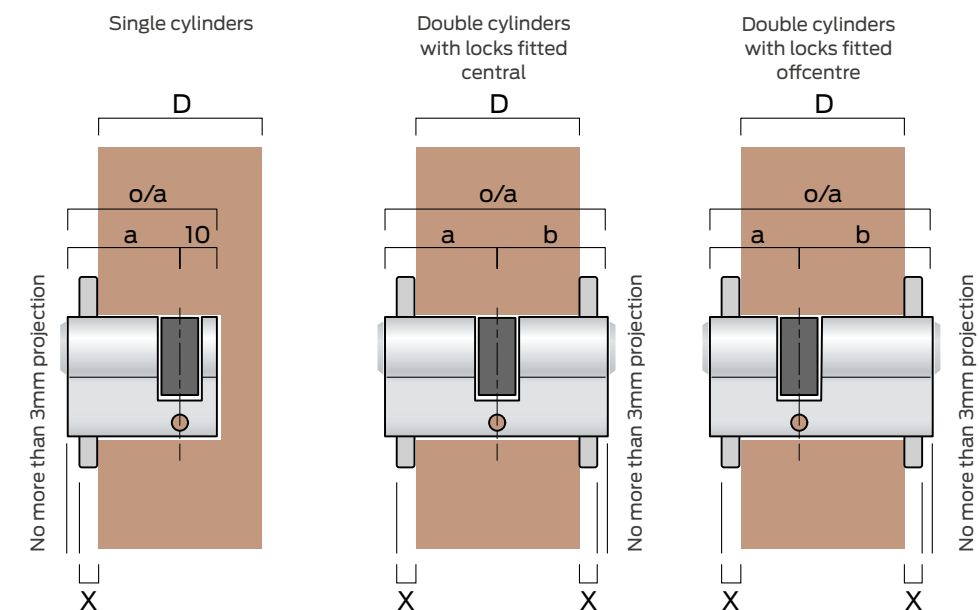


Sizing – Choosing the right cylinder length

The right length

Selecting the right length of cylinder is important not only for aesthetic reasons but also:

- To limit the amount of cylinder that projects from the face of the door hardware in order to protect it from attack by twisting and snapping
- To avoid the risk of hitting the cylinder with the hand when using lever handles



How to calculate

Crucial factors in establishing the correct length of cylinder are:

- Door thickness (D)
- Hardware thickness (X)
- Lock position in the door

For single cylinders

When ordering a single cylinder calculate the length from the lock centreline to the outer face of the hardware. This will be dimension ‘a’

For double cylinders

When ordering a double cylinder or cylinder with turn, calculate the length from the lock centreline to the outer face of the hardware on both sides. Remember, for locks which are fitted offcentre, dimensions a and b will differ.

In all cases you must select a cylinder which has the nearest dimensions to ensure that the cylinder lies flush or up to 3mm (max.) proud of the hardware.

Cylinders – Overview & Selector



Features and options	CISA Astral Tekno	CISA Astral S	CISA Astral	Briton C2000	Briton 75-29	Features and options
Performance Level	Level 4	Level 4	Level 3	Level 2	Level 3	
No. of pins	2 row 10 pin	10 pin	10 pin	5	6 + check pin	No. of pins
Push resistant projecting cam	■	■	■	■	■	Push resistant projecting cam
Anti-pick pins	■	■	■	■	■	Anti-pick pins
Anti-drill	■	■	■	■	■	Anti-drill
Bump resistant	■	■				Bump resistant
Snap resistant		■				Snap resistant
Patent protection	up to 2026				up to 2029	Patent protection
Protected key duplication	■	■	■		■	Protected key duplication
Code card required for key duplication	■	■	■			Code card required for key duplication
No. of differs	1.6 million	1.6 million	1.6 million	30,000	30,000	No. of differs
Masterkeying capacity	up to 63,000 keys	up to 63,000 keys	up to 63,000 keys	up to 1,000 keys	TBA*	Masterkeying capacity
EN 1303:2005 Classification	16 0 1 0 C 6 0	16 0 1 0 C 6 2	16 0 1 0 C 6 0	16 0 1 0 C 4 0	16 0 0 0 C 5 2	EN 1303:2005 Classification
Kitemarked TS007:2012		■				Kitemarked TS007:2012
Anti-barricade function	□	□	□		□	Anti-barricade function
Classroom function	□	□	□	□	□	Classroom function
Construction keying function	□	□	□		□	Construction keying function
Cylinder Types						Cylinder Types
Euro profile	■	■	■	■	■	Euro profile
Oval profile					■	Oval profile
Rim			■	■	■	Rim
Rim mortice/threaded			■		■	Rim mortice/threaded

* Dependent on the complexity of the masterkey system

■ Standard
 □ Available as an option/variant