

THE RELIABLE, LONG-LASTING CHOICE IN FAILSAFE SECURITY

Electromagnetic locks are highly reliable and long-lasting compared to other electric locking devices because there are no moving parts involved in their operation. Life safety reliability is ensured because there is no mechanism that can cause sticking or binding. The versatility of electromagnetic locks allows them to be used almost anywhere electric strikes and electric bolt locks are used, but with these feature advantages:

- Cost effective retrofit installations
- Durability – no moving parts
- Voltage tolerance
- Minimal maintenance
- Adaptable to door misalignment

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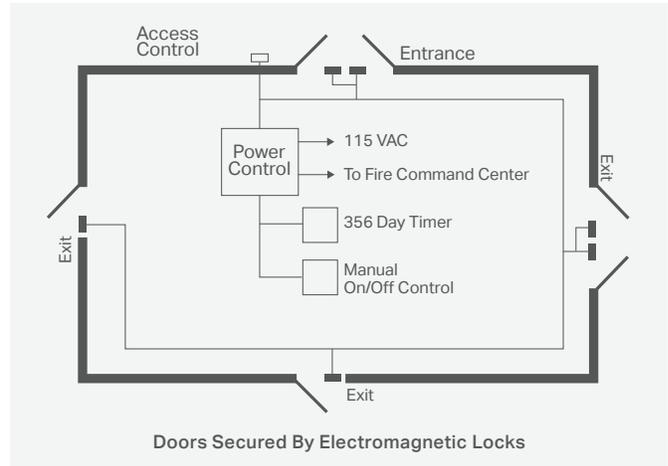
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Electromagnetic Locks

How Electromagnetic Locks Came into Existence

Prior to the 1970's it was illegal to lock perimeter exit doors from the interior side. All that was permitted was an exit device to insure uninhibited egress at all times while locked on the exterior. This left facilities vulnerable to employee theft and also to breaking and entering by simply using a clothes hanger to unlock the exit device from the exterior. It was not uncommon to find exit devices on perimeter doors illegally chained and/or padlocked during certain times of the day or after hours.



for fire life safety applications that require the assurance of trouble-free release during normal operation, a power outage or by a signal from the fire life safety system.

However it took a while for this concept to be accepted by distributors for several reasons. It required a lot of current, had low holding force and required a special power supply to eliminate residual magnetism. Eventually improvements were made to eliminate these issues and several more companies, including SDC, began manufacturing electromagnetic locks.

1969

In 1969, our founder, Arthur V. Geringer, visited the California State Fire Marshal in Sacramento to discuss the creation of a failsafe bolt lock for perimeter doors to provide security and to automatically unlock when the power was removed, thereby allowing immediate egress in an emergency and maintaining fire life safety code compliance. He invented SDC's FS23 Series electric bolt lock in 1971 – the world's first failsafe electric lock for after-hours locking of perimeter doors – and patented the design in 1972. With patent and approval of the Fire Marshal in hand, SDC was founded and helped to usher in the modern era of electronic access control door hardware.

Also in 1969, Locknetics founder Irving Saphirstein designed the first electromagnetic lock that received approval for locking perimeter doors after business hours. Unlike an electromechanical lock, the electromagnetic lock had no moving parts to bind or wear, making it ideal

Holding Force, Security and Application

Electromagnetic locks are appropriate for interior doors, perimeter exit doors and entrances that require failsafe emergency release capability. Depending on the level of security required they usually come in several levels of holding force. Electromagnetic shear locks are available in concealed, semi-concealed and surface mount



models to provide high security with a failsafe locking mechanism for openings that require an architecturally superior appearance.

Electromagnetic Locks

Types of Electromagnetic Locks

Traditional electromagnetic locks are exposed (surface mount), whereas electromagnetic shear locks may be concealed, semi-concealed or surface mounted. Regardless of the configuration, careful concern should be given to the choice of holding force and the need for battery back-up when using electromagnetic locks for many access control applications. Manufacturers provide many choices available in different holding force and design applications.

Holding Force and Security Level

Holding Force	Mag Type	Security Level
650 lbs	Traditional	Traffic Control
1200 lbs	Traditional	Medium Security
1650 lbs	Traditional	High Security
2000 lbs	Shear	High Security
2700 lbs	Shear	High Security

Battery Backup

Battery backup is recommended to compensate for the inherent failsafe operation in applications with higher security requirements, particularly on interior doors. When installed on perimeter doors, building and safety codes require magnetic locks to release during a building power loss and signal from the life safety system command center.

Traditional Electromagnetic Lock Application

Traffic Control

Any magnetic lock with a holding force less than 1200lbs should only be used for traffic control, as would a light or medium duty electric strike. A holding force of 650lbs is typical for most magnetic locks fit for traffic control, as they may be easier to defeat. However, this is a benefit compared to the use of light duty electric strikes, as the electric strike may break when forced. A low holding force magnetic lock will release without damage and the door will simply relock when closed.

Medium Security

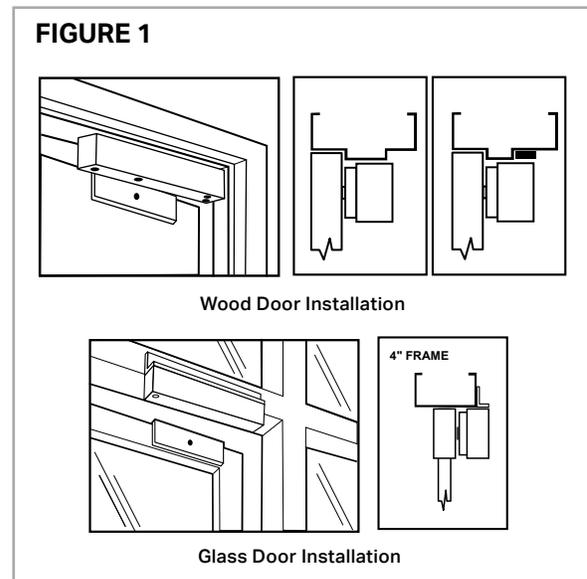
Magnetic locks mounted on an aluminum glass door are capable of providing medium security because the glass door is more likely to shatter before a lock with 1200 lbs.

(see **figure 1**) of holding force will release. For this reason, a lock with 1200lbs of holding force is sufficient for aluminum and glass openings as well as many commercial interior installations where aggressive attacks are not expected.

High Security

It is important to note that the term "high security" is used only in the context of a failsafe magnetic door lock application, which cannot compare to the integrity provided by electromechanical locking devices, such as failsafe and failsecure electrified locksets, electric deadbolts or heavy-duty electric strikes.

For most commercial and industrial high security applications with Herculite glass doors or hollow metal frames with wood or hollow metal doors (see **figure 1**), an electromagnetic door lock with at least 1500lbs of holding force is recommended. When attacked with extreme force, these doors may not release, but may sustain damage.



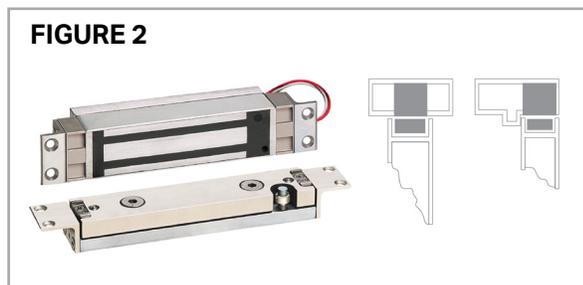
While many installers may feel that 1200lbs of holding force is ample for any installation, it must be noted that when these locks are overcome with force, the door will simply close and relock, with no one the wiser about the security breach.

Electromagnetic Locks

For example, in psychiatric facilities, aggressive patients have been known to force open doors equipped with 1200lbs holding force magnetic locks. It is not uncommon for some facilities to upgrade to a 1650lbs holding force electromagnetic lock after experiencing more than one breach.

Concealed Electromagnetic Shear Lock Application

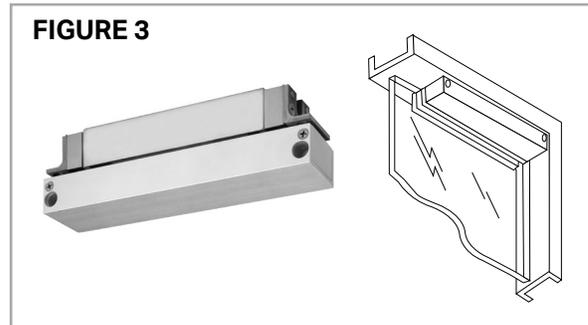
Concealed magnetic shear locks (see **figure 2**) are generally used for openings that require an architecturally superior appearance. When installed on openings with hollow metal frames and wood or hollow metal doors, a magnetic shear lock with a holding force of 2000lbs or more is capable of withstanding a force that will deform or destroy the door beyond repair before it is released.



Shear locks have more critical alignment issues than typical surface mount magnetic locks. A valuable tip for trouble free shear lock installation is the use of a Positive Centering or Heavy Duty door closer for double acting aluminum glass and Herculite doors. Standard duty double acting door closers may tend to swing back and forth before resting and eventually become misaligned, requiring frequent adjustment servicing. To eliminate this problem, the installation of a heavy duty closer causes the doors to quickly rest in the center position and greatly reduce service calls. This is something that can be installed easily by most locksmiths or door professionals.

Semi-Concealed Electromagnetic Shear Lock Application

Semi-concealed magnetic shear locks (see **figure 3**) accommodate offset hung glass doors, plus they provide a high security alternative to standard surface mount magnetic locks when used on hollow metal frames with wood or hollow metal doors. At the same time,

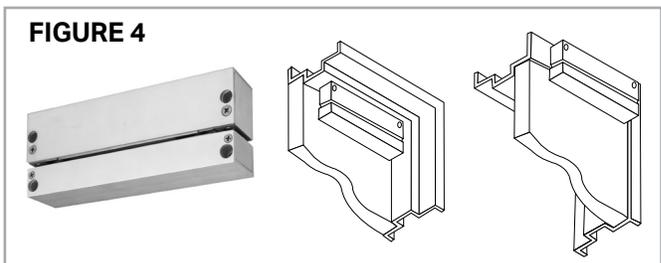


they still provide superior appearance while the magnet is concealed in the frame and only the small armature housing is surface mounted to the top of the door.

Surface Mount Electromagnetic Shear Lock Application

Almost half the size of a typical surface mount electromagnetic lock, surface mount magnetic shear locks (see **figure 4**) provide a higher level of security for glass doors or metal doors and frames.

Electromagnetic locks are virtually problem-free. Typically, problems arise right after installation. Ninety-five percent of the time, the problem is either improper voltage input or an improperly mounted armature. Be sure to follow the manufacturer's installation instructions and, in most cases, allow the armature to be free to float.



The overall benefits of electromagnetic locks versus other electric locking devices are that they allow fire safety requirements to be easily met while providing security and access control for a building's occupants. As always, consult the local Authority Having Jurisdiction (AHJ) for compliance requirements governing your door project.

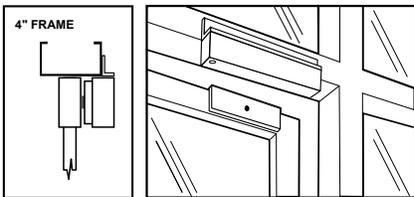
Electromagnetic Locks

Premuim EMLocks® have a variety of easy mounting features and do not require any special tools, nuts, screws or mounting hardware - making it possible for them to be installed by only one technician. They are also field upgradeable without removing them from the frame.

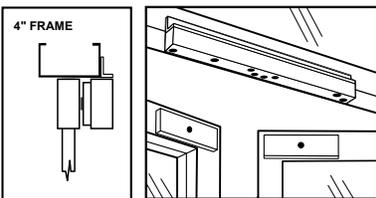
Application Attributes:

EMLock® 1510/1570/1580 Series

- Aluminum Frame/Aluminum Door – aluminum frame glass doors utilizing angle brackets for push side mounting for either a single or double door

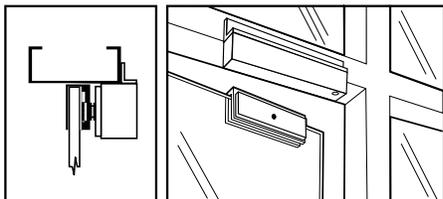


Single Swing Door Push-Side Mounting

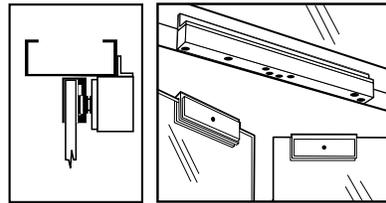


Double Swing Doors Push-Side Mounting

- Hollow Metal or Aluminum Frame/Glass Door Without Top Rail – hollow metal or aluminum frame glass doors without a top rail would utilize our glass door mounting kits and angle brackets for push side mounting on a single (more common) or double door (less common)

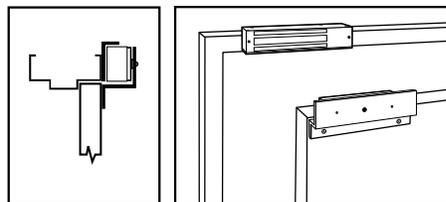


Single Swing Door Push-Side Mounting

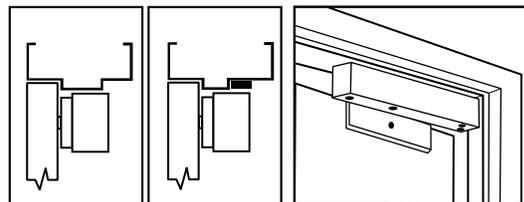


Double Swing Doors Push-Side Mounting

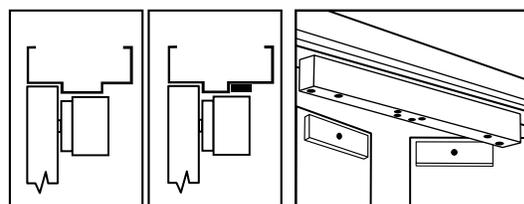
Hollow Metal Frame/Wood or Hollow Metal Door – a hollow metal frame with either a wood or hollow metal door would not need any additional hardware for push side mounting



Single Swing Door Pull-Side Mounting



Single Swing Door Push-Side Mounting



Double Swing Doors Push-Side Mounting

Application Attributes:

Excel™ E1200/E600

- E1200 and E600 are economically priced alternatives to low-cost imports
- They offer quality and flexibility for commercial applications

Electromagnetic Locks

Application Attributes:

E6200

- Weatherized, epoxy sealed stainless steel industrial housing for interior doors or outdoor gates
- Retrofits Securitron M62 and Locknetics 70

Traditional Electromagnetic Locks Specifications Summary



	1510	1570	1580	E1200	E600	E6200
Maglock Type	Standard	Standard	Standard	Standard	Standard	Standard
Trademark	EMLock®	EMLock®	EMLock®	Excel™	Excel™	-----
Warranty	Lifetime	Lifetime	Lifetime	5 Year	5 Year	5 Year
Holding Force	1,650 lbs	1,200 lbs	650 lbs	1,200 lbs	600 lbs	1,200 lbs
Single	1511	1571	1581	E1200	E600	E6200
Double	1512	1572	1582	-----	-----	-----
Monitoring	Optional or Field Upgrade Kits	Optional or Field Upgrade Kits	Optional	Standard	Standard	Standard

Specialty Electromagnetic Locks

Our specialty electromagnetic locks are designed to meet a variety of application requirements including:

- High profile openings
- Pedestrian and vehicle gates
- Sliding or swinging doors
- Keyless security for drawers, cabinets, lockers
- Security in hazardous environments



350V



352V



1591U



1575U



1576U



E300



EP17624



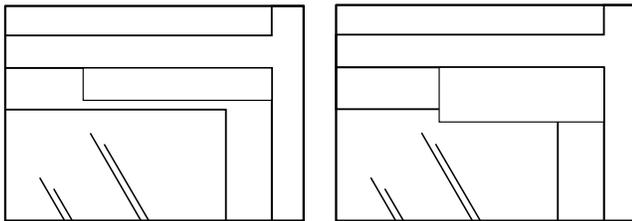
EP17624TJ

Electromagnetic Locks

Application Attributes:

350 Series

- Narrow housing for narrow frames to maintain architectural appearance in high profile openings
- Narrow housing meets 6'8" height requirements for perimeter entrances on a 7'0" door
- Retrofits discontinued Locknetics 350+



350 Series

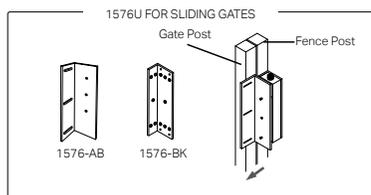
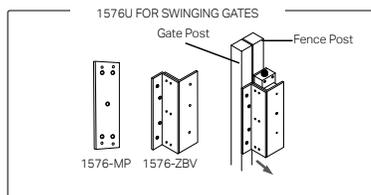
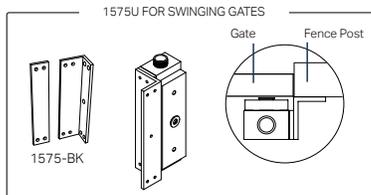
Conventional Magnetic Locks

Application Attributes:

1575/1576 Series

- 1200lbs of holding force and enable the access and egress control of pedestrian and vehicle gates
- Compatible with manual and automatic, swinging and sliding, as well as tubular and iron gates

GATE APPLICATIONS



The use of a hydraulic gate closer is highly recommended for swing gate applications.

Application Attributes:

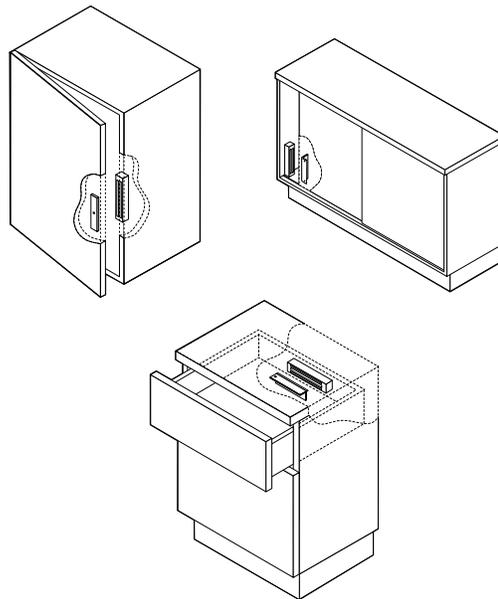
1590 Series

- For securing sliding or swinging, manual or automatic doors subject to high frequency use
- Compact lock in a small steel mortise case with 850lbs of holding power

Application Attributes:

E300 Series

- Eliminate keys and expand the reach of access control systems to drawers, cabinets, and lockers
- Provides a connected access control solution with 300lbs of holding force
- Satisfy HIPA Privacy rule requirements



Application Attributes:

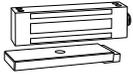
EP17624 Series

- For applications where flammable vapors are cause for concern
- Hazardous locations class 1, division 2 - clean rooms, chemical plants and refineries



Electromagnetic Locks

Specialty Electromagnetic Locks Specifications Summary



	350	1590	1575 / 1576	E300	EP17624
Maglock Type	Specialty	Specialty	Specialty	Specialty	Specialty
Application	Narrow	Sliding Doors	Outdoor Gates	Cabinets	Hazardous
Weatherized	-----	-----	Yes	-----	Explosion Proof
Holding Force	1,200 lbs	850 lbs	1,200 lbs	300 lbs	600 lbs
Single	350V	1591U	1575U, 1576U	E300	EP17624, EP17624TJ
Double	352V	-----	-----	-----	-----
Monitoring	Standard	Optional	Standard	Standard	Standard

Electromagnetic Shear Locks

SDC's HiShear® electromagnetic shear locks are designed, engineered and built in America for openings that require an architecturally superior appearance. Long recognized as a cut above alternatives on the market, SDC HiShear® electromagnetic shear locks are available in concealed, semi-concealed and surface mount models. They provide high security with a failsafe locking mechanism to meet a variety of door opening applications using commercial grade hollow metal and wood doors, metal frames, and Herculite doors with top rails.

The patented HiShear® design incorporates a floating armature assembly and special alloy steel locking tabs on both the lock and armature assemblies, that may be adjusted both vertically and laterally to compensate for wide door gaps and warped or misaligned doors. Advanced electronic circuitry incorporates a door static, alignment and timed relock sensor as well as an automatic sensing dual voltage input. Noise dampeners greatly reduce the noise associated with locking and unlocking of other shear locks on the market. sdcsecurity.com/shearlocks



1560 Series



1562SC Series



1561S Series



1561TJ Series

Application Attributes:

HiShear® 1560 Series

- Fully concealed
- Available with 2000lbs or 2700lbs holding force
- For standard 1³/₄" to 2" frames with internal electronics, as well as narrow 1¹/₄" to 1¹/₂" frames with external electronics

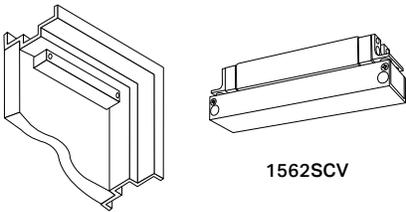
Electromagnetic Locks

Application Attributes:

HiShear® 1562SC Series

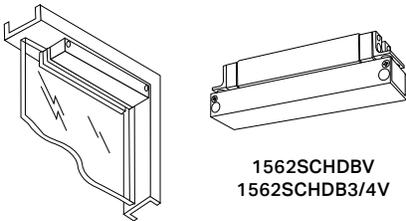
- Concealed mortise magnet
- Surface mount armature
- Available with 2000lbs holding force
- 1562SC models concealed the magnet in the top rail and 1562SCHDB models incorporate Herculite door brackets to conceal the magnet in the frame when no top rail is present

Top Rail



1562SCV

No Top Rail - Herculite Bracket



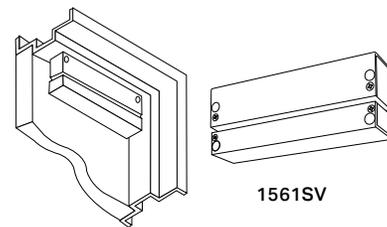
1562SCHDBV
1562SCHDB3/4V

Application Attributes:

HiShear® 1561S/1561TJ Series

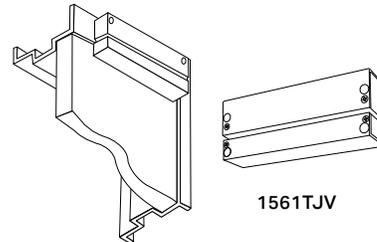
- Surface mount
- Available with 2000lbs holding force
- 1561S models for the push side of an outswing door or 1561TJ models for the pull side of an inswing door

Push Side of an Outswing Door



1561SV

Pull Side of an Inswing Door



1561TJV

Electromagnetic Shear Locks Specifications Summary

Series	1560	1562SC	1561S	1561TJ
Trademark	HiShear®	HiShear®	HiShear®	HiShear®
Type	Concealed	Semi-Concealed	Surface	Surface Top Jamb
Integrated Electronics	1561 1565	-----	1561S	1561TJ
External Electronics	1562 1566	1562SC 1562SCHDB 1562SCHDB3/4	-----	-----

Electromagnetic Locks

Listing and Performance Specifications

ABOUT ANSI AND BHMA

When choosing a quality electromagnetic door lock, look for the proper listing and performance specifications. The American National Standards Institute (ANSI) has adopted design and performance standards established by the Builders Hardware Manufacturers Association (BHMA).



ANSI/BHMA Standard A156.23 for Magnetic Locks

This standard details minimum mechanical, electrical and holding force requirements for magnetic locks. These rigorous standards also place electromagnetic door locks in three categories based on cycle performance capability. All SDC EMLocks® are ANSI/BHMA A156.23 Grade 1 Compliant.

- ANSI/BHMA Grade 1 – 1,000,000 Cycles (SDC)
- ANSI/BHMA Grade 2 – 500,000 Cycles
- ANSI/BHMA Grade 3 – 250,000 Cycles

BHMA CERTIFICATION

The BHMA Certification indicates that the magnetic door lock complies with all ANSI and BHMA performance criteria, and that it has passed an independent static pull test, and a dynamic impact test for holding force. To maintain BHMA Certification, locks are periodically re-tested and evaluated by Intertek Laboratories to ensure they continue to meet ANSI/BHMA A156.23 and A156.5 standards. This is the only certification in the industry that verifies that the magnetic door lock design and holding force continues to meet ANSI/BHMA standards.

REQUIRED UL LISTINGS

 The UL Listing confirms that the magnetic lock design is electrically safe and has been tested for the purpose the product was intended. All magnetic locks should meet the following applicable UL test requirements.

UL Listed - GWXT Auxiliary Lock: Indicates the magnetic lock has been tested for electrical safety and the purpose for which it was intended.

UL Listed – CVXJ Burglary Resistant Electrically Operated Door Lock

 Look for this listing on all locks with 1200 lbs. or more holding force. This listing indicates that the lock has passed UL test criteria for tampering.

UL 10C “Positive Pressure Compliant” and Classified in accordance with Uniform Building Code (UBC) “Fire Test for Door Assemblies”

 This verifies that the lock does not have negative impact on the integrity of fire rated openings. The description will be found on the official UL Listing Auxiliary Lock document.

Canadian Listing: The C preceding the listing symbol indicates that the product is also UL Listed for use in Canada.

The World of Difference Between UL ‘Listed’ and UL ‘Recognized’

UL’s Component Recognition Service covers the testing and evaluation of individual components that are incomplete or restricted in performance capabilities. These components will later be used in complete end-products or systems listed by UL. These UL recognized components are not intended for separate installation in the field, they are intended for use as components of complete equipment submitted for investigation and subsequent UL Listing.

US CITY AND STATE LISTINGS

MEA Listed: Required for the City of New York by the building department Materials & Equipment Acceptance Division.



California State Fire Marshal Listed



This listing is required for California installations. The State of California is well known for consistently setting the highest standards for fire life safety in the world.