

LOCKS FOR ACCESS CONTROL

Classification of locks

We may classify locks into two large groups:

1) Fail Secure:

- a. They remain locked even if there is an electrical power loss.
- b. The only model available through BioTrack is the Fail Secure electric strike (receiver). Other types –not distributed by us– include the electric bolts easily available at any hardware store. We will explain each type further ahead.
- c. These are used for exterior doors or doors that require a high degree of security.



2) Fail Safe:

- a. They remain locked as long as there is electrical power. In the case of a power loss, they immediately open.
- b. Available models are electromagnetic locks, electric bolts, and Fail Safe electric strikes (receivers). We will explain each type further ahead.
- c. These are used for internal doors where security is not essential.



When choosing a lock, you need to ask yourself which of the two groups you are looking for, and then select among the different options within each group.

Types of Locks

We have three types of locks available:

1. Electromagnetic locks
2. Electric strikes or receivers
3. Electric bolts

Now we offer a detailed explanation of each of these:

Electromagnetic Locks

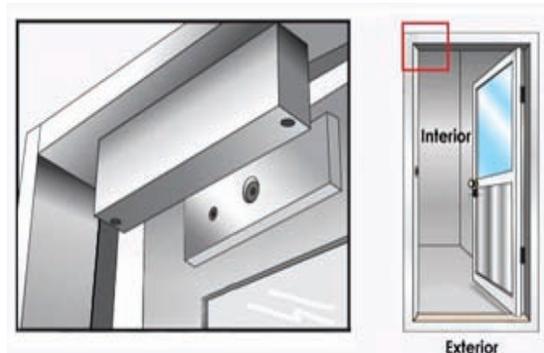
An electromagnetic lock has two parts: a plate made of a magnetic material and a metallic plate wrapped in a coil. When electric current flows through the coil, the metal plate becomes magnetized and it strongly attracts the magnetic plate, thus closing the door.

All electromagnetic locks are “Fail Safe” and they come in different degrees of force exerted by the magnet. We have models that exert 400lb (180kg) or 700lb (350kg) of force.

They are designed for doors with a 90° opening angle. They are ideal for internal doors, like in offices, emergency doors, etc., that do not require a high level of security. With the adequate accessories they may be used in wooden, glass, and metal doors.

• Types of Electromagnetic Locks

- **Simple:** This is the most common one. For regular doors that open inward, as shown in the following figure, the magnet faces the exterior. If we want the magnet to face the interior, we must use a ZL and an L bracket (which will be explained later). If the door opens outward, then the magnet will face the interior.



- **Double:** This one is used in double doors.



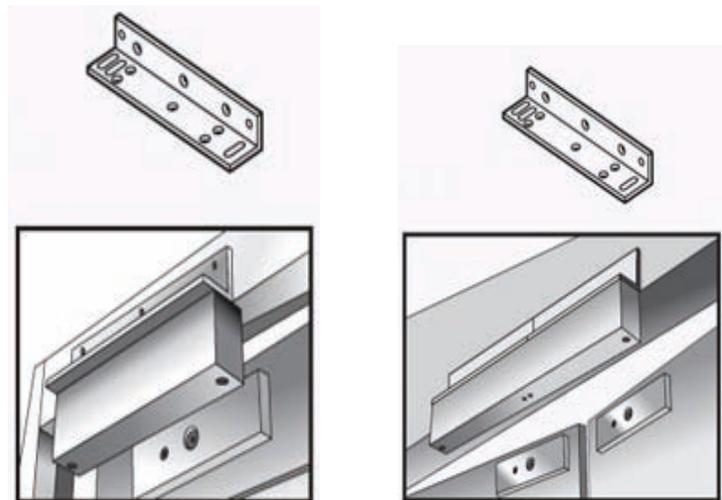
- **Embedded:** This is used when we don't want the lock to remain exposed and we can make small holes to embed it in the door and the frame.



● Brackets:

We might need to use a bracket depending on the material of the door and the direction in which it opens. There are three types:

- **L Bracket:** It is used if the frame is very thin (under 1.7" (42mm) of free space with the door closed) and we cannot affix the magnet directly to the frame. For double locks we must use two L brackets:

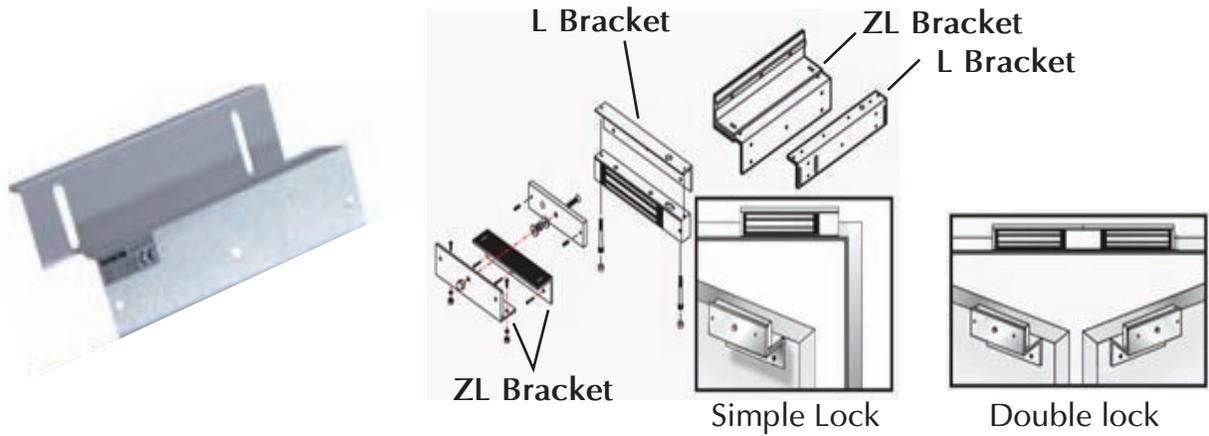


Simple lock

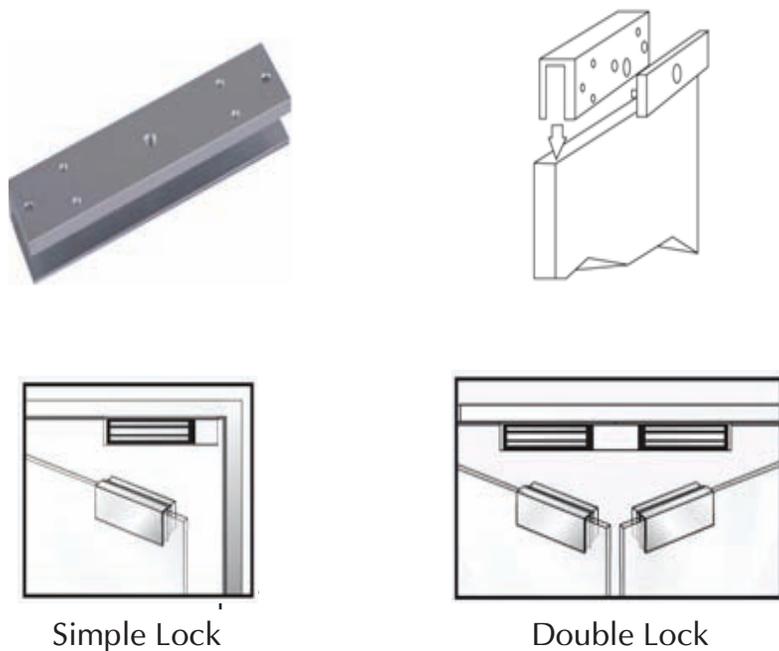
Double lock

- ZL Bracket:** It is used for doors that open inward and we want the magnet to face the interior (since the regular installation for the corresponding type of door makes the magnet face the exterior). For double locks we must use two ZL brackets:

NOTE: Whenever we want to use a ZL bracket, we must complement it with an additional L bracket to place the magnet over the door frame. This extra L bracket must be purchased separately.



- U Bracket:** It is used for glass doors 0.31-0.59'' (8-15mm) thick. For double locks we must use two U brackets:



Electric Strikes (Receivers)

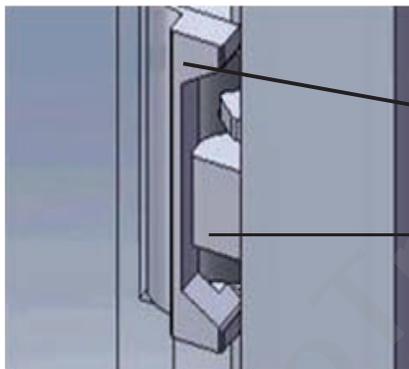
Electric strikes are also known as receivers. They work together with any other lock or bolt whose throw is no more than 0.47" (12mm) wide. They are often used if we do not want to change any mechanical lock already in use.

The receiver is installed on the door frame. There are both "Fail Secure" and "Fail Safe" models.



We may summarize their operation in three steps:

Step 1: Close the door. The door closes normally and the throw goes into the receiver.



Receiver. It is installed on the door frame.

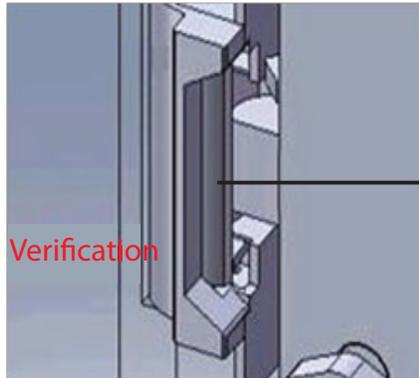
Throw of the lock already in use. Under 0.47" (12mm) wide.

Step 2: The door locks. The receiver is now blocked, which impedes the throw from moving, thus locking the door.



When the receiver is blocked, the throw cannot move, and the door is now locked.

Step 3: Verification and door opening. When a positive verification is completed on the fingerprint reader, it sends a signal that releases the receiver, allowing the throw to pass through by simply pushing the door.



When the receiver is released, it rotates, allowing the throw to pass through by pushing the door.

An important detail to notice is that the mechanism of the bolt already in use is never activated. It is the receiver that, by being released and rotating, allows the throw to pass through just by pushing the door, without ever having to open the bolt manually.

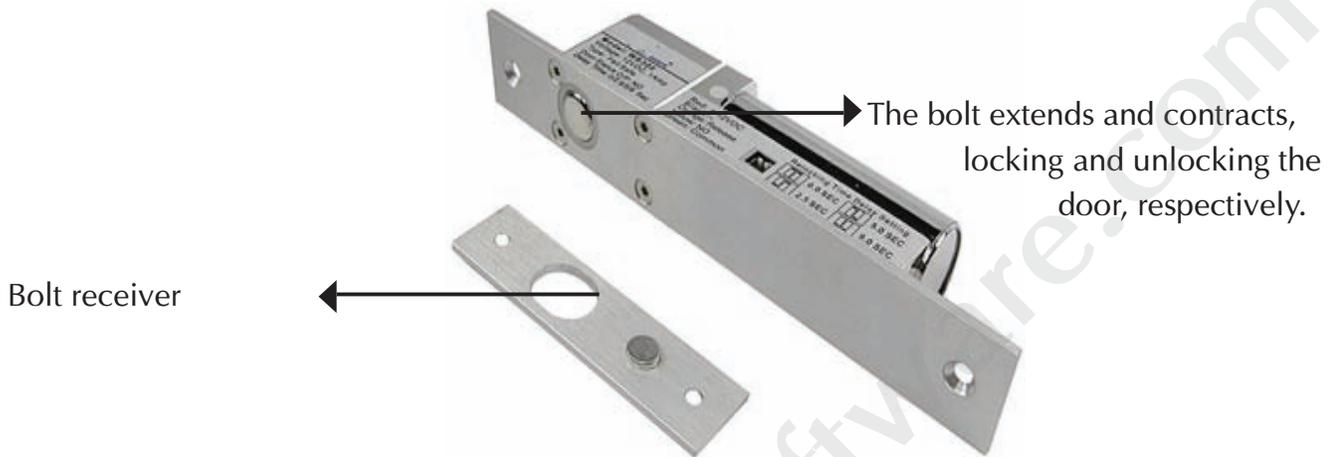
Alternatively, if the bolt can be opened with a key, we may also open it directly without releasing the receiver.

If we don't have a key, however, we can use the fingerprint reader to release the receiver and open the door. In this case, the bolt is never unlocked, and the receiver just lets it through.

For that reason, this type of lock is excellent for main doors (the "Fail Secure" model), as we don't need to change the main lock and we may keep using it as we normally did (with a key). This lock would offer a new way of opening the door.

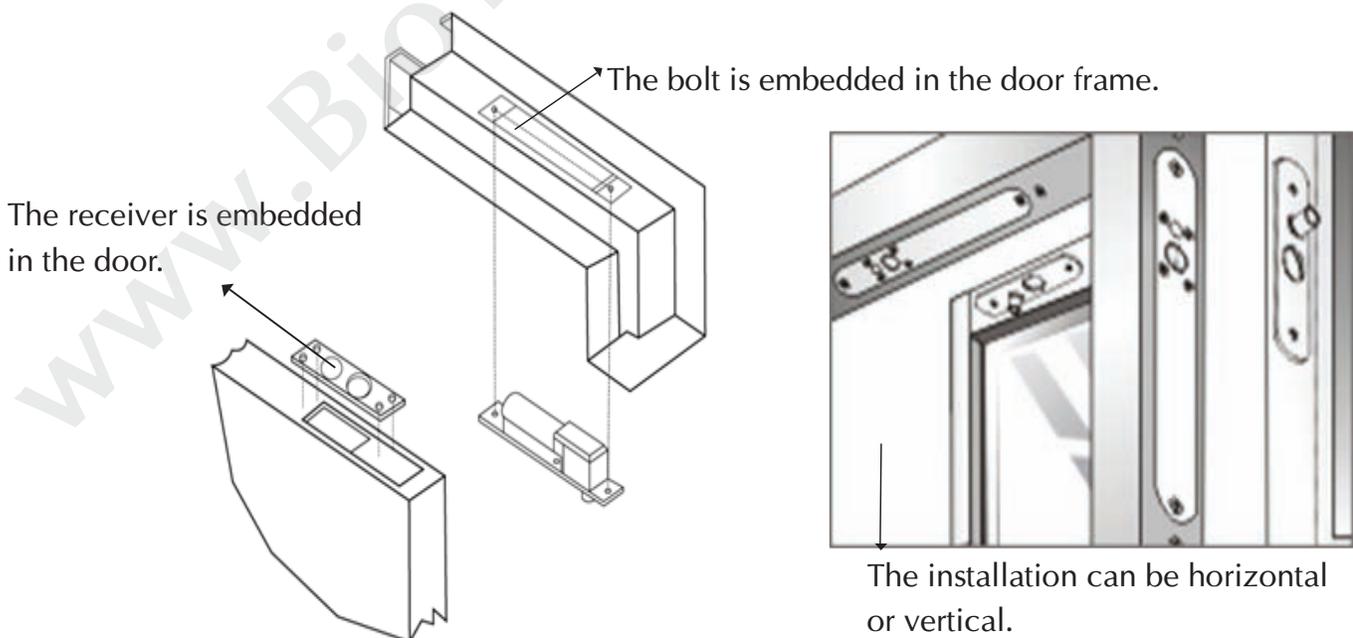
Electric bolts

The electric bolt consists of two parts: a piece that contains a bolt that extends and contracts (installed on the door frame) and a receiver for the bolt (installed on the door). When the bolt extends, it goes into the receiver, thus impeding the door from opening.



The electric bolt is "Fail Safe" and it can be used in doors with opening angles of both 90° and 180°. It can also be used in sliding doors.

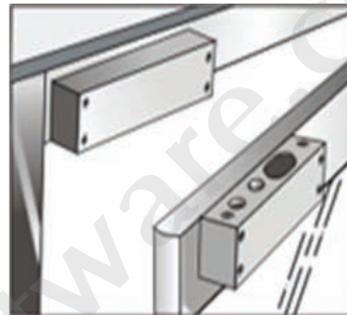
The two parts of the electric bolt are usually embedded in the door and the frame. For glass doors or doors and frames where it is not possible to make holes to embed the parts, we must use the appropriate brackets (explained later). The installation can be either horizontal or vertical, as shown on the next figure:



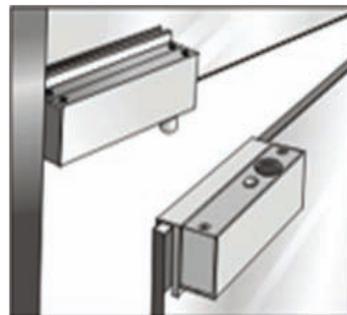
• Brackets:

In glass doors or doors where we may not embed the parts, we must use the appropriate brackets:

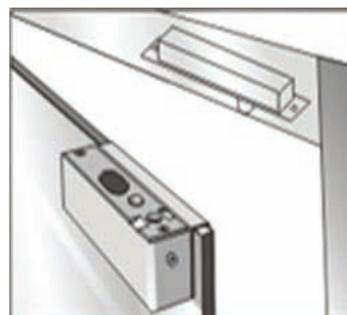
- **Bracket necessary to not embed the parts:** This bracket consists of two pieces, one to install the bolt without embedding it in the frame, and another one to install the receiver without embedding it in the door. It is used for thin doors or frames.



- **Long bracket to install the bolt in a glass frame or the receiver in a glass door:** We may use the same piece for both the bolt in glass frames and the receiver in glass doors. If both the frame and the door are made out of glass, we must use two of these brackets. This bracket consists of only one piece, which can be used in either part of the lock.



- **Short bracket to install the receiver in a glass door.**



Comparing the Locks

			
	Electromagnetic	Receiver	Electric bolt
Type of Lock	Fail Safe	Fail Safe, Fail Secure	Fail Safe
Door opening angle	90		90 , 180 , sliding
Door material	Wood, metal, glass		