

## Cosiderations for Determining the Minimum Holding Force for Electromagnetic Lock Applications

First, it is important to understand that magnetic locks were designed to meet fire/life safety applications by providing an auxiliary locking mechanism that has no moving parts to bind or wear out for trouble-free operation. This feature assures uninhibited release at all times. Because of the trouble-free operation, they have become extremely prevalent in applications other than fire/life safety. Additionally:

1) Any magnetic lock with a holding force of less than 1000 lbs. should only be used for traffic control. The same as a light duty electric strike, a 650 lb. magnetic lock can be overcome by force with good effort. A 500 lb. lock could be overcome even easier.

Unlike light duty electric strikes which would break, a magnet may release when subjected to excessive force but the door will simply close and relock.

2) A magnetic lock with a holding force of 1000 lbs. to 1400 lbs. could be considered medium security and a magnetic lock with a holding force of greater than 1500 lbs. could be considered high security. When mounted to a steel door and frame, or to a wood door and steel frame, a magnetic lock provides a good amount of security and integrity. These doors and frames can suffer significant damage when forced entry is attempted. When mounted to a narrow style aluminum door and frame, the door will shatter before the lock even begins to release.

3) Shear locks, which are concealed in the frame header, have up to 2700 lbs. of locking strength and provide the highest level of security. Even a steel hollow metal door and frame may be damaged beyond repair before the shear lock releases.

Because of the physical exposure a shear lock has when mounted to a Herculite door and in particular the basic lack of integrity that narrow style glass doors may have, a shear lock may not necessarily provide high security in such an application. A heavy duty bolt lock may provide better security provided fire/life safety considerations do not prohibit such a lock. SDC does have a bolt lock approved by the California State Fire Marshall for fire/life safety applications.

BHMA (Builders Hardware Manufacturers Association) has recently put together criteria to be adopted by ANSI (American National Standards Institute). According to BHMA/ANSI standards, there are three grades of electromagnetic locks. See grades below.

The types of door and frame have much to do with the amount of integrity an electromagnetic lock can provide. It is also important to remember that wherever possible, the lock should be mounted on the opposite side of the opening from which a break-in would be attempted unless it is simply a traffic control application.

In essence, a low integrity door may degrade a high security lock to a medium or light security level.

Basically, magnetic lock integrity may be summarized as follows:

<b>BHMA/ANSI Grades</b>	<b>Locking Strength</b>	<b>Application</b>
<b>Grade 3</b> - 500 lbs.	Minimum 500 - 900 lbs.	Light Security Traffic Control
<b>Grade 2</b> - 1000 lbs.	Minimum 1000 - 1400 lbs.	Medium Security
<b>Grade 1</b> - 1500 lbs.	Minimum 1500 - 2700 lbs.	High Security