
n Electromagnetic Lock – Definition

An electromagnetic lock is a device used to control the access through a door. It consists of an electromagnet mounted in or on the door frame and a matching plate that is affixed to the door. When energized, the electromagnet holds the plate with a retention force that may exceed 1000 lbs., thus effectively locking the door.

They are typically controlled through security systems, keypads, key switches, card access systems, “request to exit” buttons, and/or by special devices worn by persons whose safety could be compromised by uncontrolled egress.

n Regulations Governing Electromagnetic Locks

One of the fundamental requirements of the Manitoba Building Code (MBC) is that occupants be allowed to promptly evacuate any room, floor area, or building in the event of an emergency, unless they are under legal restraint. MBC Sentence 3.4.6.16.(4) is reprinted on this page. Conductors and electrical equipment shall be installed in accordance with the Winnipeg Electrical By-law. In addition, all conductors must meet the flame spread requirements (FT rating) of the Manitoba Building Code.

n Restrictions on the Use of Electromagnetic Locks

Due to the possible life safety hazard that is inherent in a restricted means of egress, electromagnetic locks are not permitted on doors serving high hazard (Group F, Division 1) industrial occupancies or on doors that are required to be equipped with “panic” style hardware. In addition, the MBC states that electromagnetic locks “are not intended for indiscriminate use as alternative locking devices.”

In order to prevent unauthorized egress, one option would be the use of alarms that are activated when the door is opened, or other similar means that permit free egress under emergency conditions, while discour-

aging unauthorized use of the door. Where it is desired to prevent unauthorized entry, the use of an electric strike is an acceptable option, providing that the door is manually openable in the direction of exit travel through a latch that is mechanically linked to the door handle, lever, push bar, etc.

n Permits for the Installation of Electromagnetic Locks

Building and electrical permits are required for the installation of electromagnetic locks and may be obtained from the Zoning and Permits office, Unit 31, 30 Fort Street (fax to 204-986-6347). Applications must be accompanied by two sets of floor plans, an assessment of building exiting and egress requirements, a description of how the electromagnetic locks are to be controlled, and a completed Electromagnetic Locks checklist (available from the City of Winnipeg Electrical Info. Centre www.winnipeg.ca/ppd/electrical_info.stm). Electrical permits will be issued only to electrical contractors licensed by the City of Winnipeg.

n Manitoba Building Code Sentence 3.4.6.16.(4)

Electromagnetic locks that do not incorporate latches, pins or other similar devices to keep the door in the closed position are permitted to be installed on *exit* doors other than doors leading directly from a *high hazard industrial occupancy*, provided

- a) the *building* is equipped with a fire alarm system,
- b) the locking device, and all similar devices in the *access to exit* leading to the *exit* door, release upon actuation of the fire *alarm signal*,
- c) the locking device releases immediately upon loss of power controlling the electromagnetic locking mechanism and its associated auxiliary controls,
- d) the locking device releases immediately upon actuation of a manually operated switch readily accessible only to authorized personnel,

- e) a force of not more than 90N applied to the door opening hardware initiates an irreversible process that will release the locking device within 15 s and not relock until the door has been opened.
- f) upon release, the locking device must be reset manually by the actuation of the switch referred to in Clause (d), and
- g) a legible sign is permanently mounted on the *exit* door to indicate that the locking device will release within 15 s of applying pressure to the door-opening hardware.

*except that Clauses (e), (f) and (g) do not apply to a Group B, Division 2 occupancy where patient safety may be compromised by uncontrolled means of egress. (See Appendix A)

**Manitoba Building Code amended*

NOTES

1. Clause (c) means that electromagnetic locks must release if both the normal and emergency power supplies to the fire alarm system fail. Electromagnetic locks must also release when de-energized. Battery back-up power for electromagnetic locks is not permitted; locks must release if power to the building is disrupted.
 2. The switch referred to in Clauses (d) and (f) must release and reset all electromagnetic locks in the building simultaneously.
 3. The requirement for manual reset described in Clause (f) need only be applied where an electromagnetic lock is released under emergency conditions such as during a fire alarm or a power outage. Where the lock is released under non-emergency conditions, automatic relocking is permitted.
 4. The lettering on the signs referred to in Clause (g) should be at least 25 mm high with a 5 mm stroke.
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PLANNING, PROPERTY
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DEPARTMENT

PLAN EXAMINATION

Every effort has been made to ensure the accuracy of information contained in this booklet. However, in the event of a discrepancy between this booklet and the governing City of Winnipeg By-law, the By-law will take precedence.

For more information on this bulletin or other requirements, please contact:

Commercial Plan Examination Branch
Phone: 204-986-5268
Fax: 204-986-3045

City of Winnipeg
Planning, Property and Development Department
Commercial Plan Examination Branch
Unit 83 - 30 Fort Street
Winnipeg, Manitoba
R3C 4X7

www.winnipeg.ca/ppd

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Electromagnetic Locks

***A guide to the electrical
and building by-law
requirements for the
installation of
electromagnetic locks***

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