

3M™ Electronic Marking System (EMS) Extended Range (XR) Ball Marker

Installation Instructions

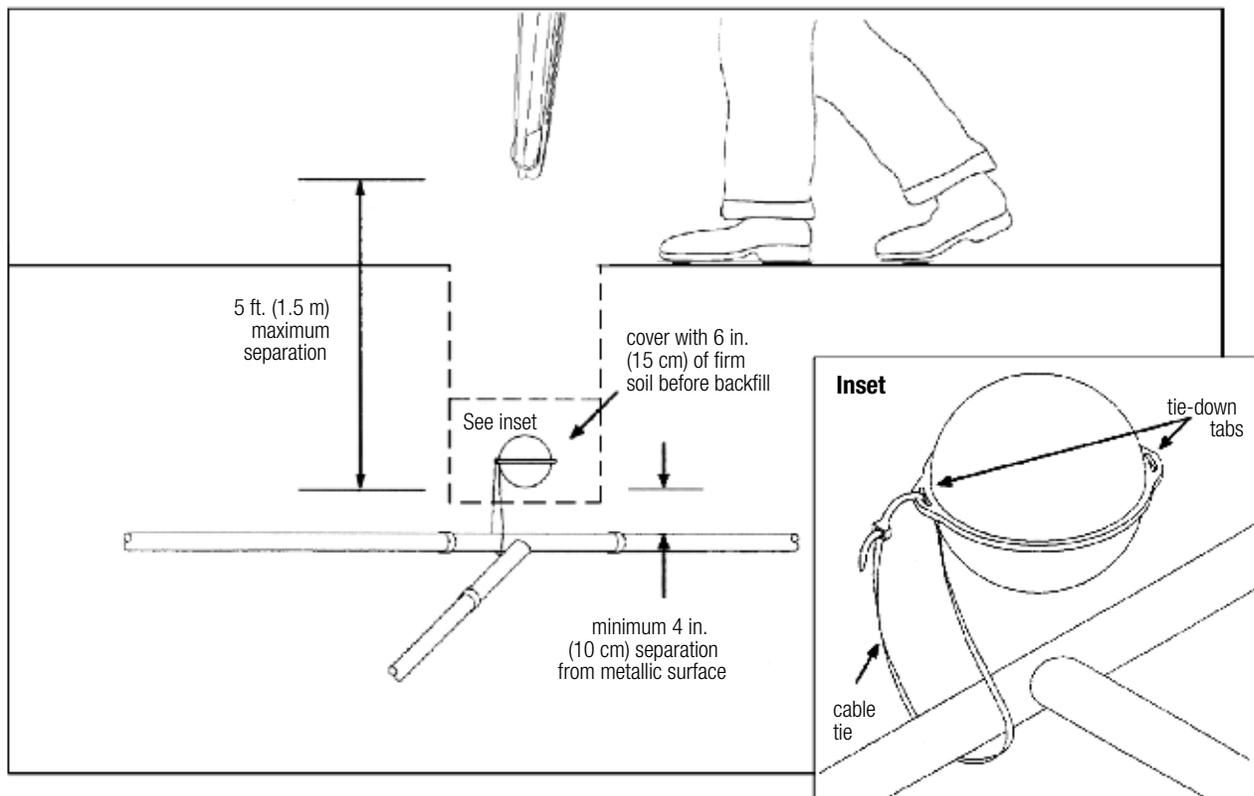
1.0 Introduction

1.1 3M™ Extended Range (XR) Ball Markers provide an accurate, convenient, long lasting method of marking underground facilities during construction or maintenance. They also make the job of precisely locating underground facilities easier. Other buried markers can be disturbed by backfill dirt or installed improperly so they don't stay positioned correctly. The 3M XR Ball Markers unique self-leveling design ensures the marker is in an accurate, horizontal position regardless of how it is placed into the ground. 3M markers enable you to return to the exact location of the marked underground feature. Unlike surface markers such as stakes, flags or paint, the XR Ball Marker cannot be inadvertently moved or worn away by weather.

2.0 Installing the XR Ball Marker

- 2.1 Before placing the XR Ball Marker over the key point of the facility, decide if a tie down procedure is necessary to keep it in place. If so, secure the marker by inserting a cable tie through one, or both, tie down tabs on the Marker and the key point (for example, pipe, cable or splice).
- 2.2 If the key point is metallic, it is recommended that the marker be separated from it by a minimum distance of 4 inches (10 cm) of clean fill dirt.
- 2.3 If the key point is non-metallic, place the marker over the desired location.

IMPORTANT: *The XR Ball Marker cannot reliably re-radiate the locator's signal at a depth greater than 5 feet (1.5 m). This is the maximum allowable distance between Ball Marker and the locator tip.*



2.4 Hand fill at least 6 inches (15 cm) of soil over the marker to prevent movement, or damage, during backfill.

2.5 Backfill the hole.

3.0 Specifications

Specifications

Read Depth (max)	
Locator, US-Version	5 ft (1.5 m)
Locator, E-Version	5 ft (1.5 m)
Vertical Separation from Facility (min)	4 in* (10.4 cm)
Horizontal Separation from Facility (min)	4 in* (10.4 cm)
Distance Between iD Markers (min)	3.5 ft (1.06 m)
Marker Diameter, Sphere	4 in (10.4 cm)

* Target size and material dependent. Depth estimation may be adversely affected when placing the marker above a large metallic object, such as a manhole cover. To improve depth estimation accuracy, increase the vertical separation from the metal object or perform a field test for depth accuracy.

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Track and Trace Solutions

6801 River Place Blvd.
Austin, TX 78726-9000
1-800-426-8688
www.3M.com/dynatel

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