



INSTRUCTIONS FOR INSTALLING MANHOLE COVERS

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1. INTRODUCTION


The aim of this document is to provide all the necessary instructions for the proper installation and bedding of the manhole covers, intended to be used in both vehicle and pedestrian areas, in order to ensure the effectiveness and the durability of the product while being transited upon safely.

For this reason the guaranteed capacity can be respected only for manholecovers/frames which are installed according to the instructions prescribed and therefore they must not bear any load under any other different conditions than the ones for which they are destined (i. e. while storing or during the installation).

It is strongly recommended to comply with the safety regulations valid for each country, especially for what concerns the personal protective equipments (P.P.E.) and the compliance with the norms of all the tools used. May any part of this document not be clear enough, our Customer Care Department is available and will provide all the necessary information.

In addition to these instructions, it is strongly recommended to comply with all regulations and information, contained in the following documents, where applicable:

Ref.	File name	Description
MAN01-00	Elenco personale e attrezzature	List of staff and equipment
MAN04-00	Ricevimento movimentazione e stoccaggio	Receiving, handling and storing

	M.M. declines any responsibility in case of any damage caused by the non-compliance with the information and/or requirements during operations.
	Respect all safety measures currently in force in the specific country and comply with all safety plans regarding the work site (e.g. the Risk Assessment Document, other risks resulting from interference, access to confined spaces, etc.).

2 LEGISLATIVE REFERENCES

UNI EN 124-1:2015 - "Gully tops and manhole tops for vehicular and pedestrian areas - Part 1: Definitions, classification, general principles of design, performance requirements and test methods."

UNI EN 124-5:2015 - "Gully tops and manhole tops for vehicular and pedestrian areas - Part 5: "Gully tops and manhole tops made of composite materials"

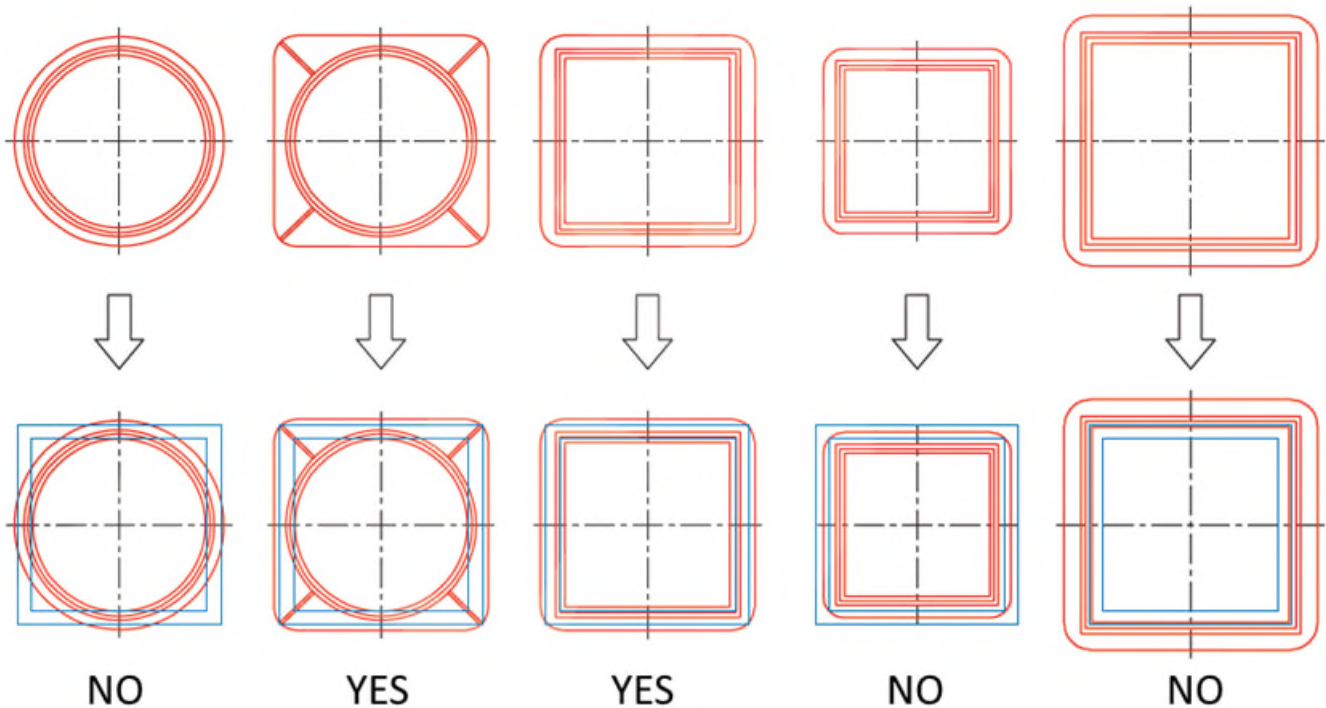
UNI/TR 11256:2007 - "Gully tops and manhole tops for vehicular and pedestrian areas (manhole covers and gratings for drainage).

This specific item conceived for cast-iron manhole covers, can also be applied to manhole covers made of composite material.

3. TYPE OF MANHOLE COVER

Manhole cover selection depends on its class, considering the place of installation, on the loads to be borne and their types.

The type of frame must have the same shape as the inspection chamber and the clear opening must be more or less the same shape, as long as the frame is correctly laid on the top of the chamber and the maximum of 7.5 N/mm² contact pressure is respected.



The height of the frame, compatibly with the legislation requirements, must be equal or lower than the bedding place (the highest part of the chamber, in consideration with the level of the street), so that, when the work is done, the frame and the cover/grating are even with the paving. Otherwise, a spacer must be used.

It is preferable that the seating depth is higher than 2 - 4 cm regarding the height of the frame so that there is enough space for laying the concrete to ensure the correct distribution of the loads on surface.

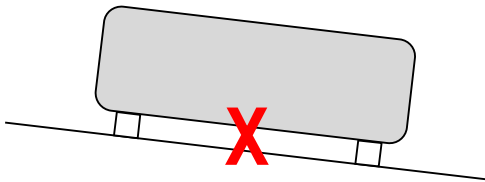
The fixing material chosen must meet the characteristics and compatibility between the cover and the chamber. Curing times as indicated by the manufacturer must be respected accordingly, considering the time available for the intervention. It is of great importance that workers who carry out the installation be qualified and trained to reach the standard parameters required.

4 STORAGE

4.1. ENVIRONMENTAL CONDITIONS

If they are not installed immediately, manhole covers must be stored in a covered, clean and dry area, with a temperature between - 10 and + 50 °C and maximum relative humidity of 80%, away from heat sources and open flames.

4.2. SUPPORT SURFACE



Pallets must be stored on a horizontal surface of adequate capacity.

5 INSTALATION OF MANHOLE COVERS

	 
<p>As for handling, follow the instructions in document: “MAN02-00 - Receiving, handling and storing”.</p>	

4.1 BEDDING MATERIAL

Regarding bedding materials, if road closure can be provided, the cement mortar to be used must be prepared following the manufacturer instructions, respecting its composition and curing time.

If it is necessary to set the street back to traffic quickly, the manhole covers must be installed using quick setting cement mortar with a maximum granulometry of 4 mm and compressive strength no lesser than 50 N/mm².

The materials for the embedding at special temperature conditions must be chosen consequently according to the use conditions, considering their mixing and laying features.

May it be necessary to raise the level of the manhole frame seating at the top, a shimming material can be used, provided it is durable and compatible with the selected bedding materials.

Generally, shimming materials are made of cast iron, steel, or concrete. Hollow bricks, shattered material, wood or plastic cannot be used.

4.2 BEDDING

Firstly, it is necessary to check that the seating area for the frame and cover are clean and that the surface is even.

Seating depth must be calculated considering the height of the elements to be installed in order to avoid, if possible, the use of shimming materials. Seating width must be 1.6 times the maximum outer size of the frame in order to be able to make a thick and uniform concrete curb around it.

The frame must be positioned quickly after the bedding material has been laid, paying attention to make the center of the cover and that of the chamber coincide perfectly. The appropriate pressure must be exercised onto the bedding area to ensure the frame is firmly set. Positioning the frame directly on the upper part of the chamber is not allowed.

The frame must be positioned on the bedding surface so that it is perfectly supported by the upper part of the chamber.

The frame must be positioned at road surface level by using proper reference points and it must be aligned with the surrounding surface.

It is important to make sure in this phase that no gaps are left between the frame and the upper part of the chamber; it is also very important to pay special attention to prevent extra bedding material to deposit near the cover support area.

Furthermore, it is necessary to check that bedding material covers frame flanges by a minimum of 1cm thickness and that it comes out of the frame holes and slots, if the case, thus ensuring perfect fitting.

Whenever the embedment thickness is greater than 4 cm, the layers must be applied in two times: the first one should be 2 to 4 cm thick, while the following one must be laid after a suitable primer is applied, paying attention to leave a residual thickness sufficient for road surface finishing.

The eventual use of rebar and fixing plugs will be approved by the Project Management Department.

Exposed embedment surfaces, inside or outside the frame, must be smoothed and made uniform. Any possible loose elements must be eliminated.

The cover must be inserted with caution into the frame (for example, by using a mechanical lifting device or a long-shaft lifter key) once the material has set sufficiently and it is strong enough for compression, and only after conducting an accurate check and cleaning of the supporting areas and gaskets, if any, as well as for

the hinges and blocking systems or any other items which may interfere with opening and closing mechanisms.

Before opening the area to traffic, make sure that adequate curing time has elapsed as recommended by the concrete or equivalent product manufacturer: unless otherwise recommended, wait for 72 hours at least.

6 MAINTENANCE

During the period of use, it is necessary to conduct controls with the aim of checking the state and functioning of the manhole covers. Therefore, it is essential that the following operations a

Therefore, it is important to check that there are no cracks at the base of the frame and paying attention to the conditions of the surrounding area to detect any failure of the support or if the top may not be aligned to the road as it should be.

Every time the cover is opened it is essential to check and substitute the gaskets, if any, as well as the cover hinge, may they not be in perfect conditions.

One more thing to ensure the perfect functioning of the device is to keep the frame and the support area of the cover clean.

7 DISPOSAL

6.1 DISPOSAL

The disposal of the packaging material (wood, plastic, etc.) must comply with the legal requirements.

6.2 DISPOSAL AFTER PRODUCT END OF LIFE

The analytical assessments regarding disposal done on a sample have made it possible to classify it as special waste, NON HAZARDOUS and NON-HARMFUL OR TOXIC.

The European Waste Catalogue: CER 07.02.13 – Plastic waste.

The disposal must comply with the current legal requirements.