

INSTRUCTIONS TO INSTALL THE ARTICULATED MANHOLE COVERS AND GRATINGS D400 - F900

1.- WARRANTY CONDITIONS

The instructions must be followed carefully, and the installer must be aware of these instructions, because they are necessary for the product warranty. They are available on the non-restricted public web site www.cofunco.es

2.- INSTALLATION PROCESS

Use a suitable product for the manhole: if the hole is round, it needs a round frame; if it is square, it needs a square frame. Under no circumstances must traffic run over the product if it has not been fully installed.

PREPARING A SUPPORT SURFACE

- Prepare a support surface that corresponds to the dimensions of the manhole.
- Clean down to the solid concrete at the bottom and prevent gravel falling inside the hole.
- Clean the support surface face; remove dust, residues or grease.
- Hollow bricks must not be used as a support surface for the frame.

PLACING THE FRAME, LEVELING AND FORMWORK

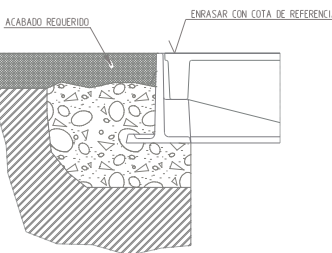
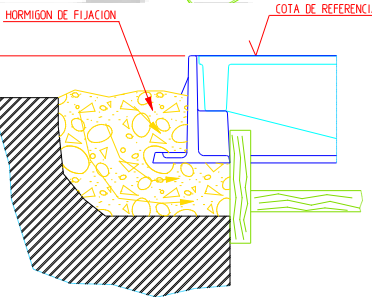
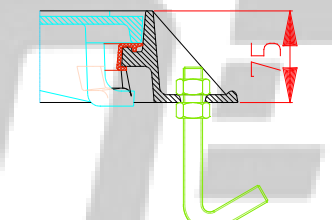
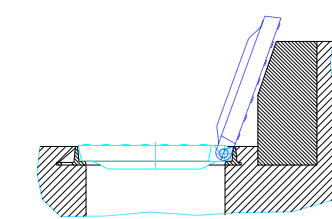
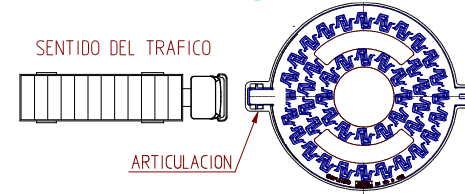
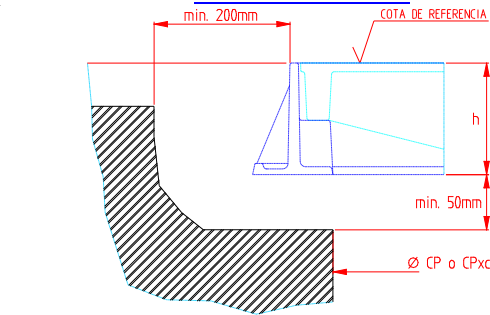
- The covers must be placed following the direction of the traffic, as shown in the picture.
- Place a layer of fine mortar, 2-6 cm thick, on the frame bed.
- Put the frame on that layer and centre the clear openings of the frame and hole.
- Level the frame with a mallet. Level it according to the slope of the road, with wedges, hanging, or with another system that will keep it stable in the following steps. The frame must be 0 to 1 cm under the final level of the road.
- Put formwork inside of the frame, to prevent the concrete getting into the hole.
- We recommend levelling with the covers installed.
- The lower height frames at 100 mm must be installed with suitable anchoring devices.

SETTING WITH CONCRETE

- Prepare the concrete according to the Spanish Structural Concrete Code (quality, treatment, setting time).
- Pour the concrete on the outside of the rim.
- Vibrate it so it penetrates in the frame's cells.
- Fill up the clear openings until the required height, according to the required type of finish.
- Make sure measures are taken to avoid a non-desired setting.
- There should be no mortar or concrete inside the frame in the closing area or the hinge area. Remove it before closing the cover.
- 3 cm must be free of mortar and concrete under the joint profile. In no case must the concrete/mortar touch the joint or make it difficult to put it down.

FINISHING AND PUTTING INTO CIRCULATION

- Remove the formwork.
- Before using a road roller, make sure that the cover does not project above the frame, that there are not stones or gravel on the joint and that the frame does not project above the level of the final road surface.
- Finish off the final road surface (mortar, asphalt, tiling). The frame must be 0 to 1 cm at most below the final level of the final road surface.
- Close the cover; make sure it rests properly on the frame. Scrape the places where the cover and frame sit.
- Brush the joint in the place where it sits (above and underneath) and get rid of any gravel.
- For any other specifications, the appropriate tests will be carried out.
- Once the affected area is clear, traffic circulation can be resumed.



3.- IMPORTANT NOTES

- The covers must be handled carefully and be placed without being banged.
- It is not necessary to remove the cover from the frame to install it.
- If you remove the cover, handle it carefully and avoid banging it when closing it (spring).
- Under no circumstances must the elastic gasket which is placed in the frame be removed whilst the cover and frame set is being installed.
- Under no circumstances must cement get inside the frame, and especially not in the lock or hinge joint. There must be no residues of cement left in either areas. See photo 1.
- Under no circumstances must cement get under the joint. It could alter the correct position of the elastic gasket or make it harder to be replaced in the future. See photo 2.
- Once the cover and frame set have been installed and the surrounding road surface finished, any remains left on the joint support area of the cover must be cleaned, as well as the hinge and lock joint. See photo 3 and 4.
- Under no circumstances should the upper face of the cover be paved or worse, go over the cover and frame set with a vibrating asphalt plate compactor. This can cause an incorrect frame fitting and internal structural damage affecting the proper functioning of the cover and frame set during its lifetime. See photo 5-6.
- If the cover and frame set is subjected to excessive vibrating machinery then the concrete manhole rings, which are under the cover, could possibly be damaged forcing the constructor to replace all the prefabricated sanitation and drainage elements. See photo 7
- It must be avoided in all cases, that the cover be subjected to traffic passing over it at the same time in indifferent directions. See photo 8
- In certain areas where the slope of the street is excessively elevated, it is necessary to install a cover and frame set that is adequate to withstand the strains that the cover will endure and maintain the position and centering of the cover and frame set during its lifetime.
- No vehicle must pass over the cover and frame without it being installed with the surrounding road surface finished, and without the base of the frame resting on a 2 - 3 cm fine layer of mortar (between the lower part of the frame and the upper part of the hole).
- In order to avoid the asphalt layer from sticking to the surface of the cover, we recommend putting sand on the top of the cover. And then remove any excess asphalt that has stayed on top.
- In the event that any remaining material from the installation process (cement, asphalt etc) remains on the cover it should be removed immediately without letting it solidify, therefore leaving the surface layer in good condition.
- It is forbidden to use any pneumatic or manual tool to remove remains of solidified material from the cover. In extreme cases, these actions can damage the cover or the existing support joint.
- We recommend that the asphalt layer in the area around the frame be about +0 - +1 cm higher than frame. This precaution prevents the movement of the road roller from damaging the frame, the soundproofing joint of the product or the actual concrete manhole rings.
- Under no circumstance must the frame be placed on hollow bricks. When the road roller goes over the asphalt, the surface around the frame may break and begin to deteriorate.
- It is totally forbidden to throw and / or drop the cover + frame set from heights above 1.5m.
- It is prohibited to use heavy machinery on the cover & frame set during pre-installation or in the installation phase, paying special importance to any of the sets which protrude from the surface during the construction phase. See photo 9

4.- TABLE OF MINIMUM DIMENSIONS OF THE SHUTTERING, ACCORDING TO THE REFERENCE.

Reference	INTERIOR FORMWORK	A x B
1160, 1164, 1174, 2160, 2164, 1184, 2184, 1178, 1187, 1186, 1122, 6184		1300 x 1300
2130, 1168		1400 x 1400
1108		1500 x 1500
1165		1200 x 1200
1164-POL, 1173		1000 x 1000

