

## **1. Reference standard**

UNE-EN 124 “Gully tops and manhole tops for vehicular and pedestrian areas. Design requirements, type testing, marking, quality control”.

## **2. Objective of the guideline**

Define the test procedure for the products under UNE-EN-124:1994 manufactured by FUNOSA, and distributed by COFUNCO. The compulsoriness of defining the mentioned procedure by the manufacture is indicated in the standard (point 8, *Tests*).

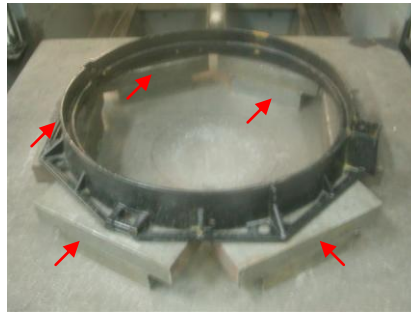
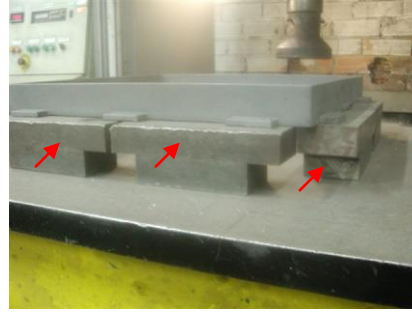
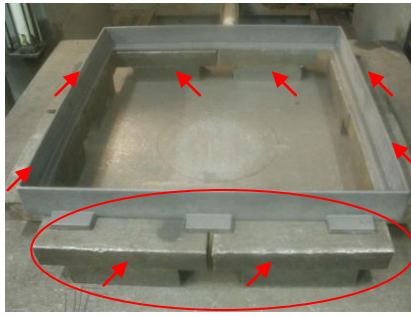
## **3. Test Devices**

- Hydraulic press according to point 8.2.1 of the standard. The maximum allowed error of the control force for the press is  $\pm 3\%$ . The model used and the applied load speed should be defined in the laboratory report.
- Digital comparator to measure the residual flexing and support tool for the same. The use of an alternative system for measuring the residual flexing, according to point 8.3.1 of the standard, should be documented in the laboratory report.
- Tape measure.
- Piece of 20 mm softwood that acts as a separating piece between the product to be tested and the rammer (point 8.2.3 of the standard).
- Steel blocks for supporting the samples to be tested. In the specific case of welded or screwed frames use a spacing piece between the load plate and the support (point 8.2.3 of the standard. For alternative devices a previous agreement is necessary with the manufacturer).

## **4. Preparation of the test: Placement and supports of the samples**

The samples for testing are placed on the testing press table, supporting the frame on calibrated solid steel blocks so that the manhole top cannot be supported directly on the table when it flexes. The minimum surface of the frame should remain unsupported, to avoid its deforming, and it should be at the same level above all its supports.

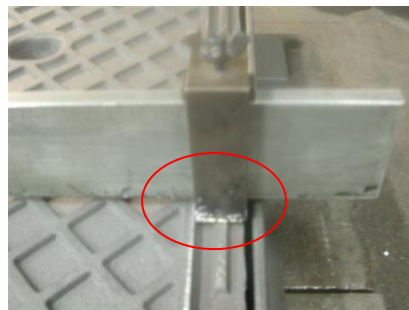
In the case of round frames the maximum amount of blocks are used creating a pentagonal or hexagonal figure according to the dimensions of the same. Never use wooden supports or angle profiles as these will deform and cause false results. If two frames are available and they are tall enough, one can be placed without manhole and upside down so that the test sample is supported in its entire surface by the other frame.



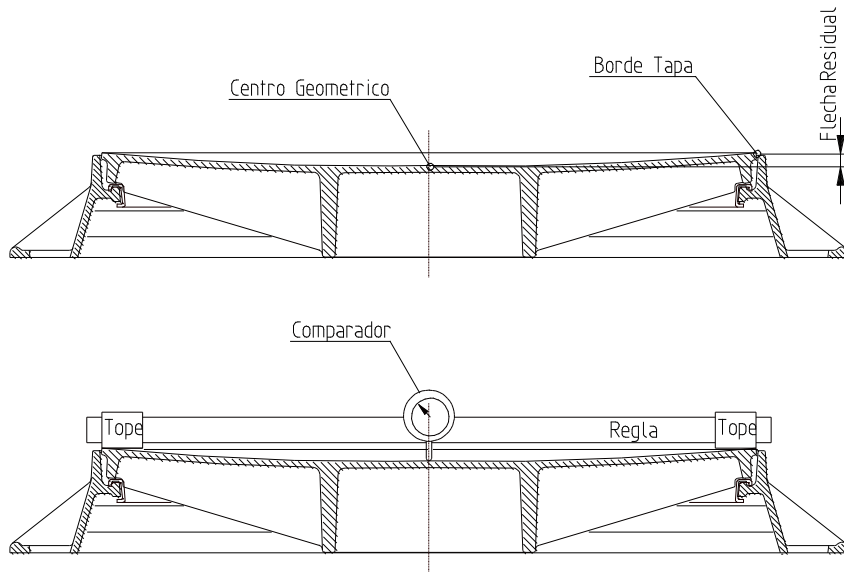
The test will be made always with the gasket.

### 5. Measurement of the residual flexing

A tool support with a digital comparator is used for this measurement which is placed supported on the manhole cover but never of the frame. Before applying  $2/3$  of the load indicated in the standard, we make a zero point mark in the geometric centre of the manhole cover (with a felt-tip), as well as the tool support points on the manhole cover, to assure that later we will use the same points and place the tool supports in the same position on the manhole cover.



Detalle apoyo sobre la  
tapa y no en marco



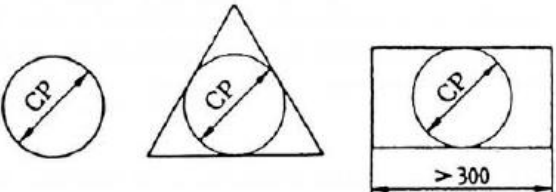
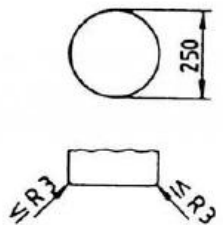
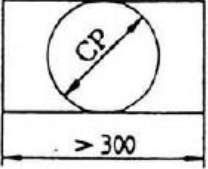
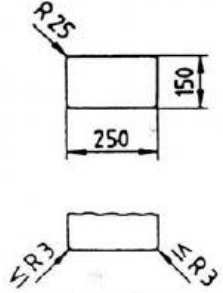
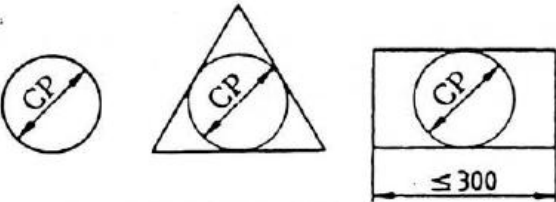
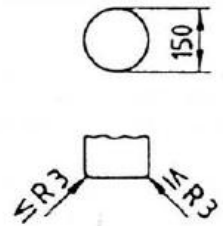
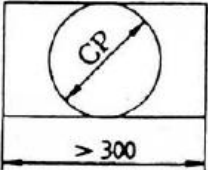
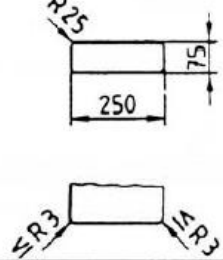
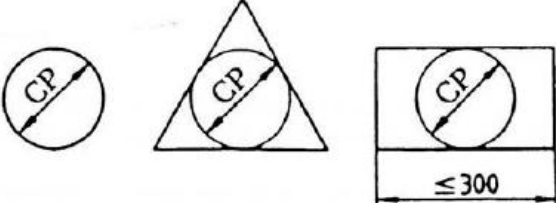
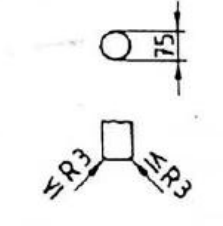
Remove the tool support and proceed as follows: place the rammer, with the dimensions as specified in table 7 of page 20 of UNE EN-124 (see following table), that gives the control force on the axis; between the rammer and the manhole cover place a piece of 20mm thick softwood (with same dimensions as the rammer). The piece of wood or the interface should not be permanently deformed in more than 10% of its total thickness. When that happens it should not be used.

On the other hand assure that the vertical axis of the load plate is aligned with the geometric centre of the manhole cover. This can be assured by verifying that the rammer (load plate) is equidistant from the external perimeter of the manhole cover.

Apply 2/3 of the control force on 5 occasions according to standard UNE EN-124.

After applying 2/3 of the control force on 5 occasions, we relocate the support tool with comparator on the same point where we had made the zero point mark (using the marks previously made before starting the test) and verify the deformation in mm of the manhole cover as indicated by the comparator.

Dimensions of the load plates (table 7 of standard EN-124)

Forma y cota de paso del dispositivo de cubrimiento o de cierre en mm	Dimensiones de los platos de carga (mm)
<p>300 &lt; CP ≤ 1 000</p> 	
<p>200 ≤ CP ≤ 300</p> 	
<p>200 ≤ CP ≤ 300</p> 	
<p>CP &lt; 200</p> 	
<p>CP &lt; 200</p> 	

## 6. Control force test

Once the deformation is measured, finish the test applying the load or control force according to the class the manhole cover belongs to without moving the series of its supports and placing spacing piece of wood under the rammer, according to the indications described in the previous section.

Calculate the control force according to the following table (table 6 of EN-124).

<b>Class</b>	<b>Control force kN</b>
A 15	15
B 125	125
C 250	250
D 400	400
E 600	600
F 900	900

When the hole size (CP) is lower than 250 mm the control force will be that indicated in this table multiplied by  $CP / 250$

The control force should be applied at the same speed as the residual flexing measure until it is reached. The Control force should stay at 30s (+2s) without observing cracks in the tested sample.