

PROCEDURE FOR INSTALLING THE BARRIER

This document describes the procedure required to install the N2 barrier with posts every 6 metres. The installation consists of the following stages:

1. Material distribution and preparation.
2. N2 barrier assembly.
3. 12 m end section assembly.
4. Barrier disassembly.

1.- Material distribution and preparation.

1. Unload the barrier materials lengthwise along the section that has to be installed.
2. Post driving machine guided by barrier elements:
 - a. Place the elements face up and overlapping so that the drill holes of the 2-waves beams coincide with the edge of the road to be protected and at least 40 cm and at the most 70 cm away from the post driving line.
 - b. Align the beams on the ground

Post driving machine with automatic guiding system:

Lay out the post driving line according to the final position of the barrier on the ground plan.

2.- Driving the posts and assembling the components

1. Place the guide wheels of the post driving machine in the previously aligned beam.
2. Lay out the post driving distance in accordance with the ground plan position of the barrier on the road: 200 mm from the rear face of the post.
3. Drive the C120x68x18x4x1500 mm posts every 6000 ± 25 mm at a height of 673 mm measured from the level of the road.
4. Assemble the overlapped 2-waves beam. The final position of the beam overlaps will be such that the beam seen from the direction of the traffic flow must overlap the one immediately after it and there are no protrusions in the safety barrier.
5. Fasten the central mounting hole of the post with an M10x40 8.8 hexagonal head bolt, two 100x35x5 rectangular plates (one placed horizontally between the head of the bolt and the beam and the other vertically between the post and the nut), an M10 class 8 nut with a tightening torque of 20 ± 4 Nm.

6. Attach the overlap (without tightening) using 8 M16x30 8.8 round head bolts and M16 class 8 nuts + 17x35x4 rear washers. The height of the top of the barrier must be 700+50/ 0 mm from the level of the road.
7. Level the beam and tighten the M16x30 bolts with a torque of 150±20 Nm.

3.- **12 m end section assembly.**

1. Drive the posts so that they are at a distance of approximately 2 m from each other and their height is such that the top of the buffer end piece is at the road level.
2. Assemble the buffer end piece at the end of the last beam using 8 M16x30 8.8 round head bolts and M16 class 8 nuts + 17x35x4 rear washers with a tightening torque of 150±20 Nm.
3. Fasten the beams with 8 M16x30 8.8 round head bolts and M16 nuts class 8 + 17x35x4 rear washers with a tightening torque of 150±20 Nm.
4. Excavate the ditch at the end of the section to house the buffer end piece and part of the last beam.
5. Place the beams on the ground and fasten to the posts with M16x30 8.8 round head bolts and M16 class 8 nuts + 17x35x4 rear washer with a tightening torque of 150±20 Nm.

4.- **Barrier disassembly**

1. Disassemble all nuts and bolts from the overlap of the beams (M16x30).
2. Unfasten the bolts and nuts that join the beams to the posts.
3. Remove the beams.
4. Take the posts out of the ground.