

## 301 Road Stud Installation Instructions

**The following must be read before any installation takes place.**

Using a vehicle-mounted vertical milling machine working depth and traverse control adjusted to suit the dimensions of the 310 and all tungsten carbide cutting tools fully installed into the cutting head it is possible to cut the appropriate shaped slot and accommodate the product into the asphalt.

**The procedure for installation with this equipment is as follows:**

After stabilizing the rig on its hydraulic jacks, the boring head, fitted with a 152mm diameter cutter is lowered to the surface and the required hole-depth (25mm) set at the control stop. The cutter is set in motion and cuts the first hole. It is then raised, indexed forward and a second hole cut to allow an elongated cavity of an overall length of 180mm.

On reaching full depth, the head is traversed back to the original hole position and raised. The action described will create a cavity of precise width 152mm, length 180mm and depth 25mm and with vertical sidewalls and a level base as required for this product. As a guide your placement of the casting into the cavity should show leading edges are level with the road surface. There should be no disturbance to the surrounding area.

### Cavity preparation

After formation of the cavity all surplus material must be removed, and any dust/fines completely removed with an air blast from a compressor or flame gun. The cavity must be free from dirt or any other material that may adversely affect the bond. If the surface is of concrete, the sides and the bottom of the cavity must be primed. Under no circumstances must excess primer be allowed to lie in the cavity. In frosty or damp conditions, the cavity walls and base must be prepared by flame gun to dry off any dampness and to raise the temperature of the surrounding road surface to a minimum of +5C before applying the primer coat or before bedding and grouting the stud.

### Bedding and Grouting

Pour the manufactures recommended filled bitumen adhesive (see Note 1), at a temperature of between 170C and 190C, into the cavity to within 12-15mm of the road surface. Immediately place the 301 casting into the cavity, which if cut at the correct depth will ensure leading edges are level with the road surface. Care should be taken to ensure no adhesive flows back over the reflective faces or the plate immediately in front of them. The cavity edges are now sealed around, and the adhesive left to cool and set before trafficking. Setting time depends on ambient and ground temperature.

### Complete removal of the 301 casting and reinstatement into existing cavity

Place the purpose made heat shroud over the casting, whilst holding the lance stand to one side of the shroud when heating the stud. Insert the lance into specific hole of the shroud to heat the centre of the casting until operative indicates is to the correct temperature to softened 20-30 seconds (not completely melted) is enough to soften the surrounding stud grout. Remove lance from shroud. Move onto the next stud, being aware the shroud will be hot. Place the chisel end of chipping or pry bar between the stud and side of the cavity and gently lever the casting out, being careful when handling the stud as it will be of a high temperature due to this method, place the stud to one side for later disposal. With a scraper remove any stud grout residue. Grout and install the replacement stud into the existing milled cavity. Repeat process as required. (Refer to note 9, page 2).

## Notes

1. It is recommended that to achieve optimum installation Polymer Modified Road Stud Adhesive is used. This is a specially designed material of superior chemical formulation, and offers a greater lifespan, with improved adhesion qualities and is less susceptible to shrinkage around the marker because of oxidisation of the bitumen content. Polymer Modified Road Stud Adhesive was used in the BSEN 1463 testing road trial.
2. In view of the temperature involved when handling the adhesive, normal protection measures should be taken during heating and application, i.e., suitable gloves, clothing etc. should be worn. If skin is splashed with hot adhesive, do not wipe, but should be treated immediately with copious quantities of cold water.
3. Care should be taken to avoid any contact between hot adhesive and water.
4. **UNDER NO CIRCUMSTANCES SHOULD THE ADHESIVE EXCEED 200C.** Heating above the recommended 190C for prolonged periods may affect properties and heating above 200C may lead to combustion.
5.  $\frac{3}{4}$  kilo of adhesive is sufficient for 1 x 301 stud depending on road surface texture.
6. If studs are installed in unfavourable conditions, optimum performance cannot be expected, i.e., Ensure that application instructions are adhered to and for best results use only supplied components.
7. The information contained in this document is given in good faith and is believed to be true and accurate. However, no guarantees are implied as conditions of application and use are beyond our control.
8. Technical assistance is available, for a demonstration of the application technique; watch our online video. If further assistance is required, please do not hesitate to contact us.
9. BSEN 1436 states that the road stud should always be fixed according to the manufacture's instructions. The 3M290 reflector is installed into the recess of the casting using a specialist two pack adhesive and although it can be replaced using polymer modified adhesive Roadcraft Safety Products cannot guarantee performance or longevity if this is attempted on site. Using the existing milled out cavity not only preserves the integrity of the surrounding carriageway but will allow for a factory fitted reflector in the casting to be used and all of the benefits that come with it i.e. less interventions, meaning fewer boots on the ground, less traffic management, and greater savings. The preferred and proven method is to replace the complete unit.