

PRELIMINARY CHECKS

The nozzles are mounted on the finished plate. If the plate is coated or painted, ensure that such coating is fully cured or dried. Make sure that the surface of the finished plate is perfectly flat, with no local unevenness that could affect the correct positioning and functioning of the nozzles. Also check that the nozzle's plate is on perfectly level; this is very important for a good distribution. After mounting the nozzles it is appropriate to manually check if all the nozzles have been screwed properly, especially in the case of large filters.

Warning: after the initial tightening the plastic material of the nozzles has an adjustment. Therefore, if the check is carried out with a torque wrench, you may find a value slightly lower than the set. In this case it is not necessary to tighten again, even this operation could prove counterproductive. In fact, if repeated a few times, it would produce deformation of the plastic material, with a consequent danger of breaking.

FILTERING MEDIA

Before placing the filtering media in the filter, a hydrostatic test should be performed to see if everything is in place, as well as a test of the backwashing. This particularly applies to the filters in which there is a backwash uses air and water. In this case an inspection from above during the air blowing makes it possible to see if the distribution is homogeneous over the entire surface, an indispensable condition to ensure an efficient backwashing.

Subsequently, the filter media it must be introduced in the filter half-filled with water intended for its exercise. For example for anionic filter in demineralization plant should not be used the raw water, but at least decationised (or better demineralized).

Warning: absolutely the filtering material must not be placed in empty filter without water

For sand filtration systems usually is used a support layer, above which is placed the finer filtering material, despite modern nozzles have slits and structure suitable for the placing of the finer material directly, without the interposition of supporting layers. If one support layer exist, it is appropriate to carry out a second check during backwashed after its placing, in order to level its surface and to make sure of good distribution. In fact, any irregularity in this layer will tend to remain as such over time, prejudicing a good filtration. The backwashing must be carried out to with a linear speed of about 40 m/h, obtaining a hydraulic reclassification of the material, expanding the layer upward and simultaneously ranging on the bottom the more coarse, while the finest is lead upwards. Subsequently lowering the water level up to a few cm below the layer can mechanically remove the scrap, which should be less than about 10% for fine shots (ex. from 2-3 mm to 3-6 mm) and about 15% for coarser grit (ex. from 6-8 mm to 13-26 mm).

The layer of sand must be introduced with care and leveled by backwashing after filling. Also in this case after filling and backwashing the scrap must be removed mechanically. This operation is important, as the fine particles, which otherwise would remain on the surface, would cause excessive losses of load during the exercise, compromising both the flow rate and the integrity of the underlying material. Depending on the grain size of the sand, the scrap should be less than 5% for fine sand (ex. from 0.4-0.8 mm to 0.7 to 1.25 mm) and about 10% to less fine sand (ex from 0.85 to 1.7 mm to 1.6 to 2.5 mm). The same care and the same operations should be used for the introduction of other materials, such as anthracite or activated carbon.

If the amount of material to be introduced into a filter is relatively limited, usually less than about 10 - 15 tons, the above operations can be performed manually, by emptying the individual packs directly into the filter containing the necessary quantity of water. In this case, the filter must be open and accessible from above. Higher volumes of materials requires the use of a crane, which is not very recommendable as it could damage the inner parts with a too violent discharge of the material. Higher volumes of materials may instead be easily introduced through an ejector. In this way it also prevents the formation of dust during the various operations. On the other hand this system requires high amounts of water, which must be available at relatively high pressure and which can hardly be recycled. Must be absolutely avoided the transfer of the filtering material with compressed air, because with this system the individual grains are broken and are not suited for optimal filtration.

For ion exchange systems usually is not used the support layer, except in special cases; the resins are placed directly on the drain system (nozzles, collectors, etc. ..). The removal of the scrap and the hydraulic reclassification are very important and are obtained in a better way proceeding first with backwashing with a linear speed of about 10-20 m / h, and then mechanically removing the scrap left on the surface after having lowered the level of water up to a few centimeters below the level of the resin layer. In general, the amount of resin to be transferred in a filter are more limited and, as they are usually supplied in bags or kegs, their transfer in the filter will be manual and therefore controlled easily.