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## Reconstruction of Manholes

Manholes perform important tasks in the field from water recovery to wastewater pumping stations and are therefore main components of a reliable water supply and wastewater disposal system. A long useful life is assumed thereby.

Inspection of manholes is necessary for control and maintenance in regular intervals. Though there are regulations for protection of the service staff, old manholes often lack even the basic requirements. Beside the risk of accidents, also the manhole's actual function or even the building's substance is often at risk.

Entrance is in most cases vertically from above. Minimum requirement is storm-water tightness, rain or snow may not get into the manhole. This can be achieved by sufficient elevation and sealing. Some manholes, however, do not even guarantee protection against insects or leaves. The resulting pollution is not only annoying but prohibited for installations with a free potable water surface. Flush fitting into the road requires additional constructive measures, but some manholes are even not pedestrian bearing without running the risk of collapsing.

Also the protection against burglary or damage is sometimes inadequate. Locks on the outside or even no locks at all encourage vandals and increase the risk of attempts. Effective object protection begins at the manhole's outer shell. Both the cover and ventilation elements must be of a stable design. Constructive details like covered hinges or protected locks increase the resistance class. The best solution is to use only certified products. Police advice is recommended for strategically important manholes and accident prevention regulations must be complied with for the safety of the operating staff. Safety begins already on opening of the manhole cover. A long enough and stable arresting device should be integrated to serve as a fixed point for the entering person. Old manholes without such entrance aids should be retrofitted as soon as possible. The open cover must be safely protected against possible wind pressure and unintentional closing.

Now, entrance can begin. Manholes which are deeper than 5 m must be equipped with a "device to protect against falling down of persons". Not every manhole, however, is able to comply with this accident prevention rule. The HUBER guard rails is easy to retrofit in such a case. Ladders must be broad enough and with appropriate spars, stairs must comply with the safety regulation regarding the risk of slipping, the slope and tread height. Most important is easy and safe entrance.

Corroded ladders or step irons are partially found in manholes. This appearance problem can become an accident risk if the static weight bearing capacity does no longer exist. Before it comes to this, however, in-time reconstruction is urgently recommended. Sometimes, the manhole atmosphere incorporates even deadly risks, which unfortunately proved already several times in the past. Toxic, explosive gases may collect there for very different reasons. The same applies if high carbon dioxide concentrations push the oxygen content below the permissible limits. A remedial measure is reliable exhaustion or ventilation, which is possible by various technical solutions, either stationary or mobile. Venting or ventilating chimneys support this. Precautionary, the air composition has to be measured prior to every entrance. If there is any risk of explosion, explosion-proof devices have to be used. As aluminium in contact with black steel may cause ignition sparks, e.g. when wearing safety shoes, this material is not suitable here.

The material stainless steel has proven its perfect suitability not only for technical reasons but especially in view of economic aspects. HUBER supplies a complete range of products for reconstruction of existing manholes. A lot of standardised products, but as well special solutions, are offered to ensure full safety of manholes.

### Check list for manholes - Does the manhole fulfil the following requirements?

- safe against falling down
- walkable / load bearing
- tight to protect against moisture / foreign substances / organisms
- increased security to prevent forced access
- no hygienic impairment
- protected against explosion
- prevents suffocation
- avoids injuries

#### Productos afín:

- [Boca de inspección prefabricada FGS 1](#)
- [Sistemas de elevación con seguridad](#)
- [Compuertas de acceso](#)

**Soluciones afín:**

- [HUBER Solutions for Water Storage](#)

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