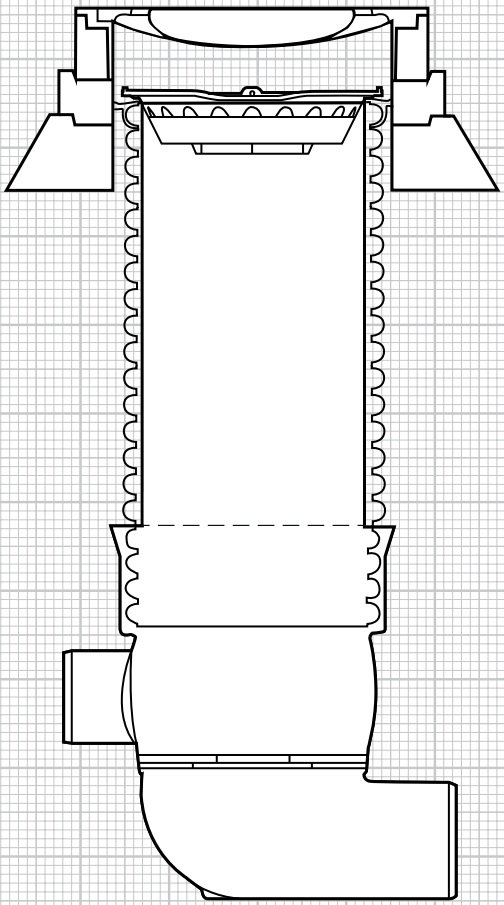
FRÄNKISCHE

Installation and maintenance manual

Rigo®Limit V – throttle shaft



Vortex throttle shaft with exchangeable orifice

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Rigo®Limit V overview

RigoLimit V is a throttle shaft for the controlled discharge of stormwater from stormwater retention systems such as Rigofill inspect, SickuPipe, MuriPipe or ground basins.

Due to the operation principle of vortex technology coupled with a large cross-sectional outlet opening and a self-cleaning effect, RigoLimit V is ideal for systems with very high demands concerning operating reliability and with the need for high discharge performance through all operating stages. RigoLimit V is self-activating without external power supply, and it has no moveable parts.

RigoLimit V is a plastic shaft with an extension pipe, black outside and yellow inside for optimum inspectability.

- Inlet diameter:
  DN 200 KG, spigot
- Outlet diameter:
  DN 250 KG, spigot

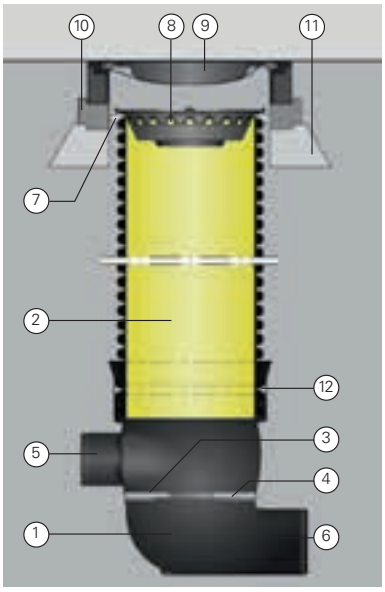
The throttle outlet range depends on the head and can be selected between 0.5 l/s and 80 l/s.

The difference in height between inlet and outlet is 0.33 m.

NB

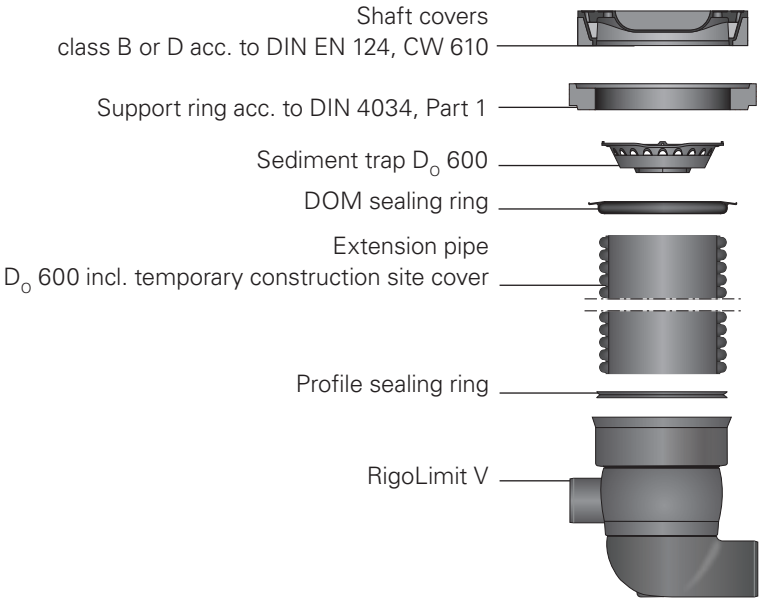
Please read this installation manual carefully and follow our instructions.

Structure



Legend

① RigoLimit V shaft bottom
② Extension pipe and sealing ring
③ Exchangeable orifice, removable
④ Bearing ring to support the orifice
⑤ Inlet DN 200 KG spigot
⑥ Outlet DN 250 KG spigot
⑦ DOM sealing ring (optional accessory)
⑧ Sediment trap, large (optional accessory)
⑨ Shaft cover with ventilation openings CW 610 (to be supplied on site)
⑩ Concrete support ring h = 100 mm (to be supplied on site)
⑪ Bearing without stationary loads (to be supplied on site)
⑫ Profile sealing ring (included in delivery)



Inspection of components prior to installation

Prior to installation, all components must be checked for possible damage. Undamaged parts may be used only.

Creating excavation pit and bearing

Create the excavation pit according to the design specifications. The provisions of DIN 18300 "Earthworks" *(Erdarbeiten)* and DIN 4124 "Excavations and trenches" (*Baugruben und Gräben)* apply.
When installing the shaft, comply with DIN EN 1610 "Construction and testing of drains and sewers" *(Verlegung von Abwasserleitungen)*. Create and compact the shaft bearing with 10 to 15 cm of stoneless, compactable material.

Installing the base shaft

The shaft, initially with the temporary construction site cover of the shaft opening (foil) and without exchangeable orifice, must be placed onto the prepared planum at the appropriate height and secured against shifting. Make sure no backfill material enters the shaft. **The factory-provided foil on the shaft serves this purpose.** The shaft must be aligned upright to ensure the throttle function!

Connect the supply pipe and drainage pipe according to planning specifications. Appropriate lining is of particular importance in the case of tangential inlets.

Embedding the pipe

DIN EN 1610 forms the basis for the entire installation. Bedding and side filling must be created by means of stoneless, compactable material. Compact material layer by layer.

Installing the exchangeable orifice

Remove the temporary construction site foil cover from the shaft bottom. To do so, unpack the separately packaged orifice and place it on the metal ring in the shaft.

NB

To do so, the labelled TOP of the orifice must face upwards, otherwise the magnets will not stick!

The metal bearing ring is tightly connected to the shaft. The safety instructions regarding the magnets (page 10) are of particular importance here. Please make sure that the metal bearing ring is clean in order to provide optimum adhering force of the exchangeable orifice.

Mounting the extension pipe

The shafts can be seen better during the construction period if the extension pipes protrude from the planum. The extension pipes feature a cover in order to prevent backfill material from entering the system. This cover is neither accessible nor resistant to static loads! Do NOT remove it until the backfill material has been added.

The extension pipe must be inserted into the upper area of the shaft base body. Place the profile sealing ring into the second corrugation trough of the extension pipe. Evenly apply a sufficient amount of FRÄNKISCHE lubricant to the profile sealing ring and the inside of the insertion area. Do not use oils and greases.

Afterwards, insert the extension pipe all the way into the insertion area. The extension pipe must be aligned upright when backfilling. The upright alignment of the shaft is crucial to ensure its throttle function!

ATTENTION

Mind upright alignment

Shortening and cutting the extension pipe

If necessary, extension pipes can be cut to length in the middle of corrugation troughs with a fine-toothed saw or a pipe cutter. Remove edges and irregularities on the cutting surfaces with a grater, file or another suitable tool. Extension pipes can also extended using couplings and sealing rings.

Placing shaft covers

As soon as the road superstructure is being prepared, the bearing for the shaft covers must be created. Common standard 625 mm covers according to DIN EN 124 with ventilation openings are used. Shaft covers and concrete support rings are not included in the scope of delivery of FRÄNKISCHE and must be supplied on site. Put a support ring h = 100 mm according to DIN 4034 under the shaft cover on an appropriate bearing. The shaft cover can be placed on a 10-mm-thick mortar joint to avoid stationary loads between equalisation ring and shaft cover. Create the bearing from in-situ concrete C 16/20. Avoid interlocking of the bearing with the corrugations of the extension pipe by any means (use casing aid!). Vertical loads may only be transferred to the load-bearing underground.

The gap between the support ring and the outside shaft wall can be closed using a DOM sealing ring. This guarantees a tight connection. Mount the sealing ring onto the last corrugation trough of the extension pipe. Place a sediment trap D_O 600 on the extension pipe.

Installation limits

Maximum shaft depth for infiltration systems without groundwater: **6.33 m**

Maximum shaft depth for installations with groundwater: **4.5 m**

Maintenance

Due to the operation principle of the vortex technology coupled with a large cross-sectional outlet and a self-cleaning effect, RigoLimit V is particularly maintenance-friendly thanks to the vortex energy.

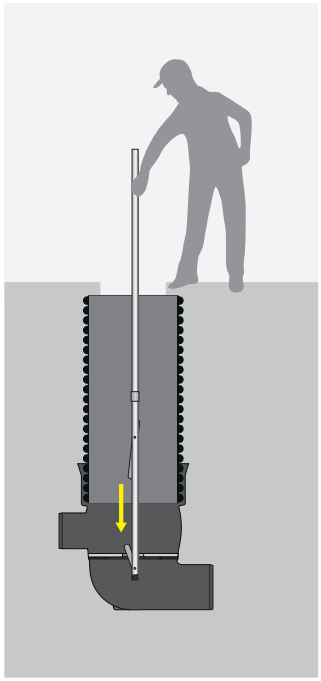
If blockages occur, e.g., in very small outlets with correspondingly small orifice diameters, these can be done away with by means of a water hose. If the exchangeable orifice needs to be removed from the shaft, the safety measures regarding its magnets given on page 10 must be observed.

Instructions for exchanging orifices in Rigo®Limit V

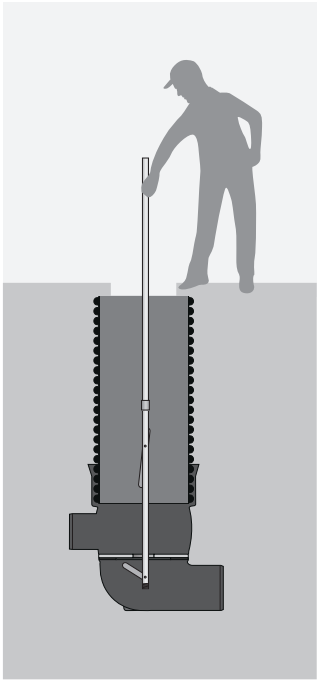
Removing the orifice

Mount the attachment piece onto the rod (according to the illustration) to remove the orifice from the throttle shaft. In this case, the short lifting aid must be placed at the bottom of the tool. Pass the lifting aid through the orifice opening. Afterwards, you can remove the orifice.

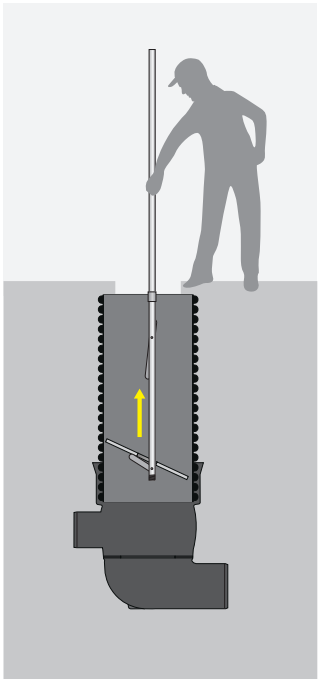
1 **Pass the lifting aid through the orifice opening.**

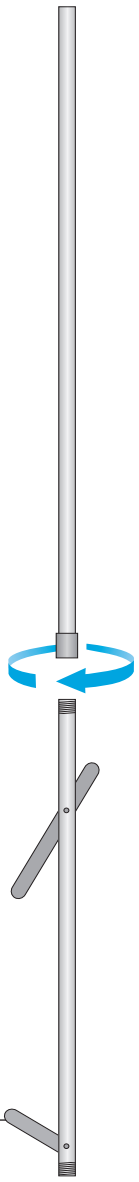


2 **The hook expands independently.**



3 **The orifice can be removed.**



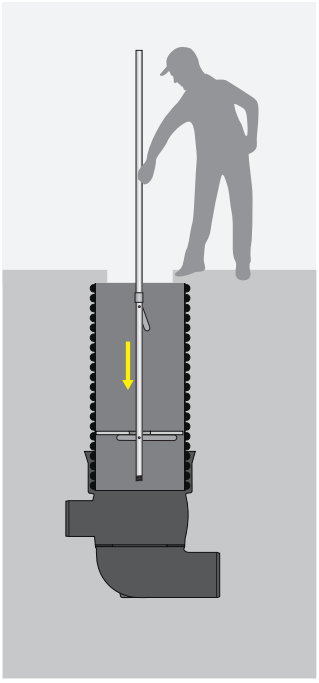


Short lifting aid at the bottom

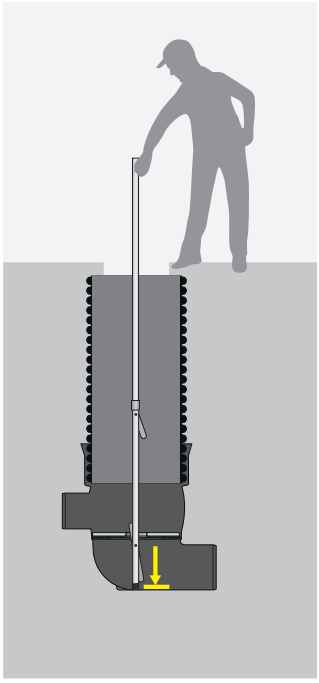
Inserting the orifice

Mount the attachment piece onto the rod (according to the illustration) to insert the orifice. In this case, the long inserting aid must be placed at the bottom of the tool. Pass the rod through the orifice according to illustration 4. After the orifice has been inserted, the tool must be lowered until it meets resistance from the shaft bottom. Hold the tool as upright as possible. This causes the pendulum to retract and you can remove the rod.

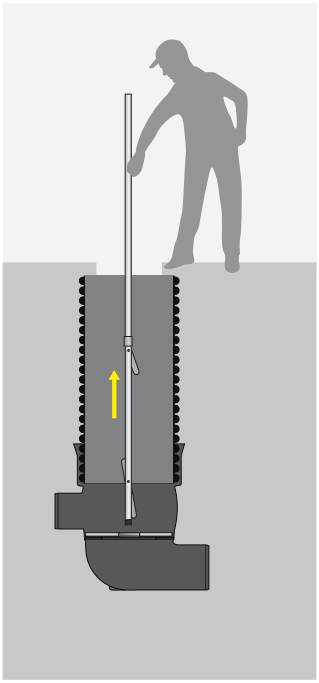
4 **Insert new orifice.**



5 **Lower until meeting resistance from the shaft bottom.**



6 **The inserting aid can be removed.**



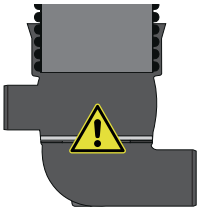
Safety instructions for Rigo®Limit V orifice exchange

Safety instructions regarding magnets

Magnets with high adhesive strength are integrated into the exchangeable orifice. These magnets hold the exchangeable orifice fixed on the metal bearing ring in the shaft. The exchangeable orifice is delivered separately from the shaft. It has safety labelling on it.

Magnets are potentially dangerous

Magnets with high adhesive strength are integrated into the orifice. These magnets hold the exchangeable orifice fixed on the metal bearing ring in the shaft. The orifice is delivered separately from the shaft. It has safety labelling on it.



Contusions

The magnets have utterly strong pull force. If handled carelessly, skin or fingers may be caught between components due to magnetic forces (contusions, bruises).

Pacemakers

Magnets may affect the function of implantable defibrillators and pacemakers. If you have a device like this, please maintain a sufficient distance from the exchangeable orifice.

Magnetic field

Magnets generate a strong and long-range magnetic field. The following devices and objects may be damaged, for instance: TV sets, PCs, laptops, hard drives, cash or credit cards, mechanical watches, hearing aid devices, loudspeakers.

Low temperatures

When stored outside, the lifting tools can be subjected to very low temperatures in winter. Wear protective equipment to prevent frostbite.

Risk of falling

Working near open shafts involves a risk of falling. If necessary, take fall protection precautions.

ATTENTION

Staff responsible for installation, assembly, operation, maintenance and repair must have appropriate qualifications required for this kind of work. The builder is responsible for organising in detail authority, responsibility and supervision of staff.

The operational safety of the system components supplied is only guaranteed in case of proper installation and correct use. Technical threshold values must not be exceeded.

Observe the accident prevention regulations and relevant standards and directives for installation, fitting, operation, maintenance and repair!

This includes (in extracts):

- Accident prevention regulations
  - Construction work BGV C22
  - Technical wastewater systems GUV-V C5
- Safety regulations for working in enclosed spaces of technical wastewater systems GUV-R 126
- Handling biological working materials in technical wastewater systems GUV-R 145
- Directives for working in tanks and narrow spaces BGR 117
- Standards
  - Excavations and trenches - Slopes, planking and strutting, breadths of working spaces DIN 4124 *(Baugruben und Gräben-Böschungen, Verbau, Arbeitsraumbreiten)*
  - Construction and testing of drains and sewers DIN EN 1610 *(Verlegung und Prüfung von Abwasserleitungen und -kanälen)*
- Tool for safety and health protection in technical wastewater systems

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⚠ WARNING

- Hazards from gases and vapours such as risk of suffocation, risk of poisoning and risk of explosion
- Risk of falling
- Risk of drowning
- Germ pollution and wastewater with sewage
- High physical and psychic strain during work in deep, narrow and dark spaces
- And others

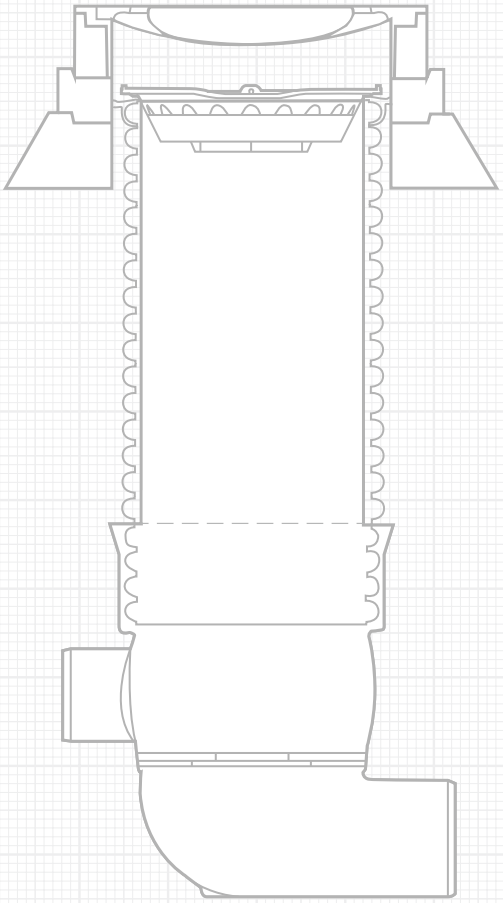
⚠ DANGER

Non-compliance with the operating manual may result in considerable property damage, injury or death.

⚠ CAUTION

The system is part of an entire network. During installation, maintenance, service and repair work on one component, always consider the entire system. Avoid work during rain.

Changes or modifications to the system may only be carried out with the agreement of the manufacturer. For safety reasons, use original spare parts and accessories approved by the manufacturer. The use of other parts voids the liability for any consequences arising therefrom.



FRÄNKISCHE

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