

Installation and operating instructions

Grease separation systems

Section A: Installation

Section B: Operation



Section A: Installation

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1 Target group

These instructions on how to install the separating plant are intended for specialist companies who have the relevant experience in the fields of drain construction and the installation of waste water treatment plants. As well as providing the necessary construction equipment, the company must also employ qualified and trained staff (e.g. qualified civil engineering staff with experience in drain construction work).

2 Area of validity

These installation instructions apply to all Neutra separating plants for grease made of reinforced concrete, which are designed for underground installation. These installation instructions do not cover the connection of optional electrical systems (e.g. the NeutraStop warning system).

3 Notes on these installation instructions

Read these instructions carefully and in full. They contain important information on how to handle the product. Take note of the information and in particular, observe the safety and warning notices.

Failure to observe them means that

- people are put at risk from mechanical impact,
- harm may be caused to the environment through liquids exiting the plant,
- damage may occur to the product,
- the correct functioning of the separating plant cannot be ensured,
- accessibility may not be sufficient for operating the plant (client checks, maintenance, general inspection),
- warranty and damage compensation claims no longer apply.



Once the separating plant has been installed, these instructions should be handed over to the plant operator.

These instructions must be stored carefully and it must be ensured that they are accessible at all times and can be read by the operator of the product.

3.1 Warnings and notifications used

These instructions include warnings that must be observed.

Information is also provided on the individual sections, which can be used as a practical aid when performing the tasks.

 <p>WARNING</p>	<p>This symbol is used to indicate hazards that can lead to death or severe injury.</p>
 <p>NOTE</p>	<p>Indicates recommendations that are intended to make work easier or provide information for this purpose.</p>

4 Installation

4.1 Items to be clarified prior to installation

The following list contains the items that must be clarified prior to starting work, so that the installation and the subsequent operation of the plant can be conducted correctly.

Aspect	by	No	Yes
Plant measurement	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Channel connection/fed wastewater	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Elevation	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Backflow/lifting unit	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Flotation safety	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Frost-proof depth of conduits	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Load-bearing capacity of the subsoil	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Framework conditions as per type static	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Installation drawing	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Activation approval/notification	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Warning system	Planner	<input type="checkbox"/>	<input type="checkbox"/>
Access road	Installer	<input type="checkbox"/>	<input type="checkbox"/>
Loads and extension arm lengths	Installer	<input type="checkbox"/>	<input type="checkbox"/>
Necessary fastening means	Installer	<input type="checkbox"/>	<input type="checkbox"/>
Suitability of conduits	Installer	<input type="checkbox"/>	<input type="checkbox"/>

4.2 Excavation pit



Incorrect excavation works or unsuitable construction pit walls

These lead to the collapse of the pit walls and to severe accidents due to soil burial.

The construction pit must be dug in a manner appropriate to the dimensions of the construction part and taking into account DIN 4124 (lateral working area: min. 50 cm, slope inclination, etc.). The edge of the pit must be safeguarded in accordance with the regulations.

The base areas on which the tanks will stand must be levelled and must comprise approximately 10 to 20 cm of compacted gravel sand (max. grain 16 mm). The possibility of pressure occurring on edges and specific areas must be excluded.

If the subsoil does not have sufficient load-bearing capacity, it may be necessary to replace the soil or to install a foundation slab. The approximate sealing requirement is: proctor density $D_{pr} = 1.0!$

The base of the excavation pit must be free of groundwater and stratum water. If necessary, a water evacuation facility must be provided ready for use until the construction works have been completed.

If groundwater does occur, the flotation safety of the tanks must be checked once installation has been completed. If necessary, measures against buoyancy (anti-float collar aligned with the base plate) must be provided.

4.3 Delivery

A hard, level, obstacle- and hazard-free access road must be provided prior to delivery to the construction site.

Delivery must be checked against the delivery note for completeness and damage. Any faults that are identified must be confirmed on the delivery note by the recipient and the freight carrier and then forwarded immediately.

If the unloading or positioning in the construction pit is to be conducted using the vehicle's own crane on the delivery vehicle, the possible extension arm lengths and loads must be agreed in advance with the supplier.

4.4 Unloading and lifting

Suspended loads

Standing under suspended loads can lead to severe accidents and even death.

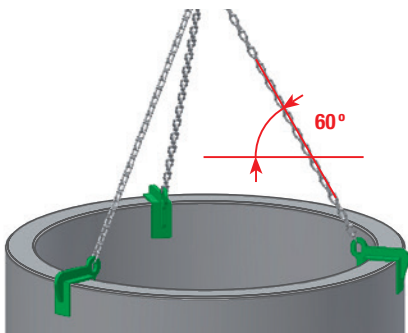


Figure 1: Angle to the horizontal

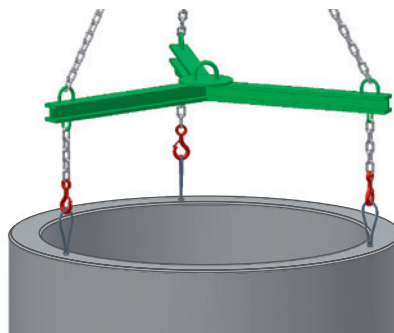


Figure 2: Cable loops and cross bars



Figure 3: Shaft suspension gear with claws

The following aspects must always be taken into account when transporting the construction parts:

- Construction part weights and loads must be checked, taking the extension arm lengths into account.
- The maximum permitted loads of the fastening means must be taken into account.
- Only permitted, undamaged fastening means may be used.
- The angle of the chain to the horizontal must be greater than 60° (see Figure 1).
(Rule of thumb: the chain length must correspond at least to the shaft diameter.)
- Diagonal pulling must be avoided. If necessary, use a lifting beam (Figure 2) or a long chain.
- Make sure that the crane hook is of a suitable size and roundness for the suspension gear used in each case.
- Under no circumstances should persons be standing beneath swaying loads.

4.4.1 Construction parts with cable loops

- The inner thread of the sleeves and the outer thread of the loops may not be contaminated.
- The condition of the cable eyelets must be checked. The cable loop may not be used if strand breaks, pinching, bends, corrosion or loosening is detected.
- First, twist in the cable loop until it reaches a stop. Then, a maximum of one thread turn may protrude from the sleeve.
- After it has been twisted in, untwist the cable loop back out by half a turn to prevent the load from becoming stuck.

4.4.2 Construction parts with shaft claws

- The claws must be positioned around the circumference of the construction part at an equal distance from each other.
- The claws must be pushed down until they reach a stop.
- For all shaft construction parts – aside from shaft throats – the movable bracket of the claw must be positioned on the inner side of the construction part (see Figure 3).
- In the case of shaft throats, the movable bracket of the grabber must be positioned on the outer side of the construction part.
- With off-centre shaft throats, the horizontal suspension must be found by lifting them briefly and setting them down again multiple times.
- The concrete components must not be iced, oily or saturated with water.

4.5 Assembly of the construction parts



WARNING

Danger of crushing

Do not reach your hands between the construction parts.

4.5.1 Lifting the reinforced concrete tanks

The reinforced concrete tanks must be set down onto the prepared subsurface in the construction pit in the correct position and at the correct height.



NOTE

Do not confuse the inflow side with the outflow side.

The conduit connections are labelled as inflow and outflow connections.

4.5.2 Transition plate / shaft throat with Neutra sleeve (ø2000 und ø2500)

- Untwist the cable loops on the reinforced concrete tank.
- Insert the supplied round cord sealing ring into the cleaned groove on the upper side of the reinforced concrete tank.
- From above, insert the three screws supplied, together with the washers, into the recesses provided for the purpose in the transition plate or shaft throat.
- Using suitable lifting gear, lift the transition plate/cone at a low vertical distance over the reinforced concrete tank and maintain the height.
- Turn the transition plate/cone in such a way that the markings on the plate and the tank are positioned opposite each other, and then, as an interim measure, twist the screws that have already been twisted into the plate into the thread sleeves in the tank by several turns.
- Setting down the transition plate/shaft throat
- Tighten the screws hand tight (max. 40 Nm torque).

4.5.3 Shaft parts DIN 4034-1 with spigot end and sleeve

- With a hand brush, clean the spigot end of the lower construction part and the sleeve of the construction part to be set down. The area around the joints must be free of loose and separating elements (see Figure 4).

For shaft parts in which the seal is not integrated into the sleeve ex works:

- Pull the face seals supplied onto the spigot end

For shaft parts in which the seal is integrated into the sleeve ex works:

- Apply an even, thick coating of the lubricant supplied to the spigot end and sleeve. While doing so, ensure that the entire surface is covered and that a sealed lubricant film area is created (see Figure 5).
- Place on the load compensation ring supplied. The ring may not be twisted and must lie flat on the construction part (see Figure 6).



Figure 4: Cleaning the connecting surfaces



Figure 5: Applying the lubricant



Figure 6: Load compensation ring

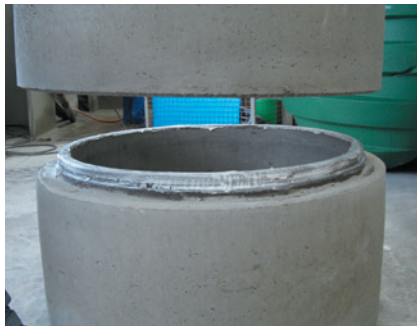


Figure 7: Central placement

At low temperatures, we recommend that you keep the shaft seals, the lubricant and the load transfer ring warm prior to installation.

i NOTE

- Suspend the following shaft part on the shaft ring suspension gear, push on the grabber until it reaches a stop and make sure that the construction part is hanging safely and horizontally.
In contrast to shaft rings, with shaft throats, the movable bracket is positioned outside, since the cone would otherwise be destroyed.
- Set down the construction part on the spigot end. While doing so, make sure that you place it down centrally and without tilting (see Figure 7). The full surface of the construction part must lie on the load compensation ring.

With reinforced concrete plates with off-centre openings, when placing the next part over the opening, the forces exerted during the process can be evenly distributed over the circumference.

i NOTE

4.5.4 Fold connection as per DIN 4034-1 for cover support rings and frame

i NOTE

To ensure accessibility, for separating plants, the height of a shaft structure with a diameter < 800 mm may not exceed 600 mm (see DIN EN 476).

- The connection between the construction parts must be full-surface.
- MG III (cement mortar) applies as a minimum standard.
- The possibility of pressure occurring on edges and specific areas must be excluded.
- After transferral, the joint areas must be carefully tightened flush on the inside and outside and grouted, and any protruding material must be removed.
- The entire shaft structure (including the support rings and the cover frame) of separating plants must be created in such a way that it is permanently sealed.

i NOTE

We recommend the use of 2-component adhesive with epoxy resin base in order to ensure a permanent seal. A sealing set compiled by Mall can be purchased for this purpose.

4.6 Pipe connections

Suitable seals are pre-mounted to the tanks ex-works for connecting the inflow and outflow conduits (see Figure 8). This ensures a sealed, flexible connection. Here, it must be ensured that the angle between the axis of the connected pipe and the axis of the bore hole in the tank is not greater than 50 mm/m. This also applies for all other pipe connections (e.g. cable ducts or ventilation lines).

The pipe diameters that match the pipe connection provided ex-works are listed in the table below. Transitions to other pipe types and diameters can be created using the standard available adapters.

Dimensions of the matching outer pipe diameters

Nominal size	Outer diameter of the pipe
DN 150	160 mm
DN 200	200 mm
DN 250	250 mm
DN 300	315 mm
DN 400	400 mm



Figure 8: Creating the pipe connections

- Chamfer and de-burr the pipe to be connected.
- Mark the insertion depth on the pipe piece to be inserted.
- Apply the standard available lubricant onto the outer side of the pipe and the sealing element.
- Place on the pipe and push into the elastomer seal using even pressure.

With tanks on which an installation part is mounted on the inner side, the insertion depth is determined by this part.

With sludge traps and other tanks, the insertion depth must be determined such that the pipes end flush with the inner side of the tank walls.

With sampling shafts, the inflow pipe must protrude approx. 10 cm into the lower section of the shaft in order to ensure that samples can be taken in the proper manner.



4.7 Type plate

After completion of the shaft construction, the type plates delivered with the tanks must be mounted in the upper section of the shaft in such a way that during subsequent operation, they are clearly legible when pulled out on the fastening chain after the shaft cover has been removed.

4.8 Filling the construction pit

Due to the high stability of the concrete parts, the previously excavated material can generally be used as backfill. The subsidence sensitivity (or traffic load) of the surfaces above should be taken into account, however. The loads applied to the tanks by (heavy) compactors must not exceed the guaranteed load profile. With plate vibrators and light compactors of up to 2.5 t the prefabricated elements can be driven over without restrictions.

In the area of the connected lines, it must be ensured that the lines are not damaged by the seal (correct embedding).

5 Commissioning

No wastewater may be fed to the separating plant during the construction period.

The plant must be cleaned following completion of the installation works.

Before commissioning the plant, a general inspection must be conducted by a specialist certified in the field of separating technology.

To commission the separating plant, it must be filled with dischargeable water until the water overflows into the sewer.

Installation and operating instructions

Grease separating systems

Section B: Operation



Section A: Installation

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1 Target group

These instructions cover the operation and maintenance of grease separation systems by qualified persons. Those persons are considered qualified who due to their training, knowledge and experience gained through working with such plants can ensure that the evaluations or inspections in this area are conducted correctly. The knowledge required to operate and maintain separating plants can be acquired through a training programme with subsequent on-site initiation, such as that offered by the relevant manufacturers, professional associations, chambers of trades etc., and by expert organisations operating in the field of separating technology.

2 Notes on these operating instructions

Read these instructions carefully and in full. They contain important information on how to handle the product. Take note of the information and in particular, observe the safety and warning notices.

Failure to observe them means that

- persons are put at risk of falling, mechanical and chemical hazards or explosions,
- harm may be caused to the environment through substances exiting the plant,
- damage may occur to the product,
- the correct functioning of the grease separating plant cannot be ensured,
- warranty and damage compensation claims no longer apply.



These instructions must be given to the operator of the separating plant. They must also be passed on when new persons become responsible for the plant.

These instructions must be stored carefully and it must be ensured that they are accessible at all times.

2.1 Warnings and notifications used

These instructions include warnings that must be observed.

Information is also provided on the individual sections, which can be used as a practical aid when performing the tasks.

 WARNING	This symbol is used to indicate hazards that can lead to death or severe injury.
 NOTE	Indicates recommendations that are intended to make work easier or provides tips for this purpose..

3 Area of validity, identification of the product

These installation instructions apply to all Neutra separation plants for grease made of reinforced concrete, which are designed for underground installation.

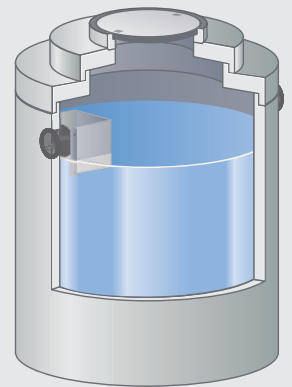
Optional electrical systems (e.g. the NeutraStop warning system) and other optional product supplements (e.g. the NeutraProof shaft sealing system) are not covered by these operating instructions.

The products are listed below for identification purposes.



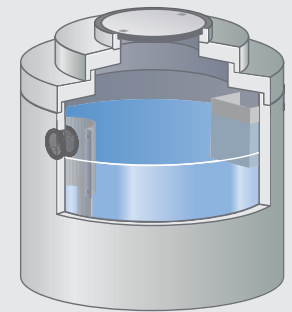
**Sludge trap
NeutraSed**

Content 200 l – 6000 l



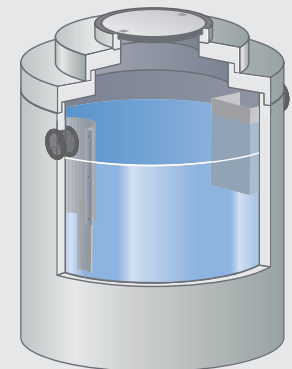
**Grease separators
NeutraSept**

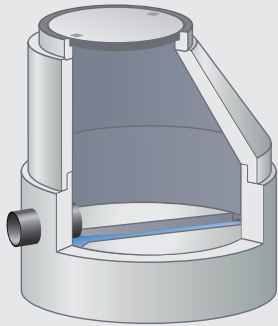
Nominal sizes 2 – 30



**Grease separators
NeutraTip**

Nominal sizes 2 – 30





**Sampling shaft
NeutraCheck**

DN 150 – DN 250



4 General safety information

During normal operation, it is not necessary for persons to enter the separating plant. Only experts in the field of separating technology are permitted to enter the separating plant during the course of a general inspection or to conduct servicing work.

Risk of falling when shaft covers are left open.

While work is being conducted on the plant, the area must be cordoned off and secured.



Contact with grease.

While work is being conducted on the plant, personal protective gear must be worn (non-slip shoes, protective clothing, protective gloves).



Possible increased risk of explosion in the area of the separating plant due to the separated substances and their degradation products and the open connection to the sewer.

Smoking, open fires and activities that may cause sparks are not permitted in the area surrounding the plant.



The relevant statutory work safety regulations must be observed during all work on the separating plant. Prior to starting work in the plant structures, hazards such as those arising from dangerous substances, electrical systems and explosive atmospheres, must be assessed and the necessary measures must be taken to ensure work safety and to protect health.

5 Operation

5.1 General

DIN EN 1825-2, DIN 4040-100 and if necessary, the relevant official notifications, must be applied for the operation, client checks, maintenance, emptying and general inspection of the separating plant.

Furthermore, any statutory provisions and water legislation regulations relating to checks by the client, maintenance and general inspection (type and scope of activities, the necessary qualifications for conducting the activities) must be observed.

5.2 Correct use

Substances that lead to impairment of the separating system, such as crushed coarse and solid substances, as well as substances from wet waste disposal plants contained in wastewater, may not be introduced into the separating plant.

The normative standards do not permit the use of biologically active agents (bacteria and enzymes) for the conversion of the solid substances introduced to the plant.

Washing, rinsing, cleaning, disinfection and ancillary agents fed to the separating plant may not form stable emulsions. Separation-friendly cleaning agents must be used.

The substances used may not contain or release chlorine.

Rinsing and cleaning agents should be handled in a systematic way in order to avoid impairing the effectiveness of the separation.

5.3 Commissioning

If the plant is not ready for operation (e.g. during the construction period or repair works), no wastewater may be fed to the separating plant.

Before commissioning the plant, a general inspection must be conducted by a specialist certified in the field of separating technology.

To commission the separating plant, it must be filled with dischargeable water until the water overflows into the sewer.

5.4 Operational log book

An operational log book must be kept on this plant, in which all checks and events relating to the plant are recorded in writing.

NOTE

A ready prepared operational log book, in which all data relating to the plant are recorded, is available from Mall GmbH. For more information, see www.mall.info

5.5 Checks by the client

Checks should be conducted by an expert in the field at least once a month to ensure that the separating plant is functioning correctly and is in good condition:

- A visual inspection of the inflow and outflow areas of the sludge trap and the separator, as well as of the technical systems for any unusual occurrences
- Measurement of the layer thickness and determination of the volume of the separated oils and grease in the grease separator, and inspection of the position of the sediment level in the sludge trap, in order to specify shorter emptying intervals if necessary

If faults are detected, they must be reported immediately and rectified.

The checks must be documented in the operational log book.

All devices and ancillary equipment needed to conduct the checks by the client are included in the practical NeutraTool maintenance kit.

For more information, see www.mall.info

 **NOTE**

Since both disposal and the client checks are conducted on a monthly basis, we recommend that an agreement is also reached with the disposal company to conduct the client checks.

 **NOTE**

5.6 Removal and emptying

An interval period should be selected for emptying the grease separating plant whereby neither the storage capacity of the sludge trap nor that of the grease separator are exceeded.

This notwithstanding, the grease separating plant must be emptied and cleaned at least once a month.

This must be done since otherwise, degradation products from the separated grease and oils can cause damage to the working materials and the downstream sewer system.

Emptying and cleaning the tank involves the following steps:

- The inner surfaces must be checked for encrustation and deposits. If these are found, they must be removed.
- A check must be made of the odour-proof shaft cover, in particular, the seal, to ensure that it is in good condition and that the seal is sufficient. If necessary, it should be cleaned.
- Any sediment and grease emptying systems or emptying and rinsing devices must be checked for correct functioning.
- If appropriate, free outflow through to the at-rest water level (system separation) of the filling device must be checked.
- The sampling device must be cleaned as necessary.

5.7 Maintenance

Maintenance work must be conducted on the separating plant annually by the expert in the field (see Section 1).

The following must also be completed in addition to the clients own checks:

- A visual inspection of the visible interior areas, installation parts and coatings for any identifiable damage and unusual occurrences. If damage has occurred to the coating, it must be removed by a specialist company.
- Cleaning of the probes, any existing warning devices, and a functional check in accordance with the operating and maintenance instructions issued by the manufacturer

Any faults identified should be rectified immediately.

The work conducted and the findings made must be documented in the operational log book.

5.8 General inspection

Prior to commissioning, and at regular intervals of maximum five years following commissioning, the separating plant must be inspected by an expert in the field to ensure that it is in good condition and that it is being operated correctly (general inspection). The scope of the general inspection is determined by the DIN 4040-100 standard in its respective current version.

The client must request evidence that the expert is appropriately qualified to conduct the general inspection.

The following measures must be taken prior to conducting the inspection of the structural condition and the inspection of the seal:

- the plant must be completely emptied and cleaned thoroughly,
- it must be ensured that no water flows into the plant,
- all necessary documents relating to the separating plant (drainage plans, approvals, operational log book, disposal certificates, etc.) must be made ready for inspection.

If faults are detected by the expert during the course of the general inspection, they must be rectified within the time period specified, if any.

NOTE

We recommend using Mall GmbH for your general inspection.
Our experts know the plant best of all.
For more information, see www.mall.info

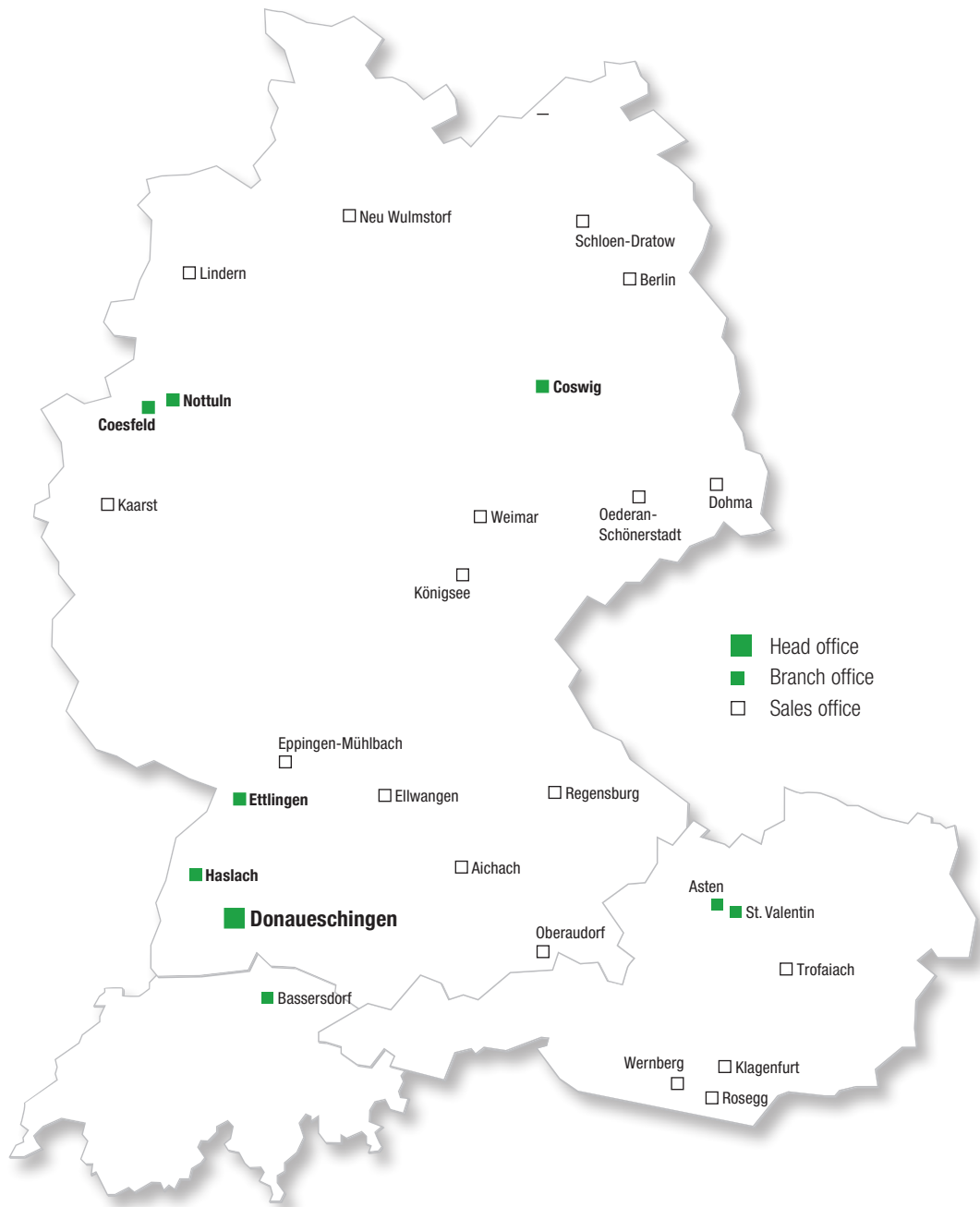
5.9 Repairs

Repairs on the separating plant must be conducted by persons who are appropriately qualified to conduct the work in a professional manner.

If repairs are required on the coating, a check should first be made as to whether full-surface coating is required, or whether corrections to partial areas are sufficient. In general, the substrate should be carefully pre-treated. We recommend using the coating material applied ex-works in order to ensure that the inner surface remains protected. Coating sets and materials are available to order from Mall. If replacement parts are required for the plant, these must be ordered from Mall GmbH in order to ensure continued correct functioning.

Contact the Service department at Mall GmbH for replacement parts deliveries.
You can also ask for qualified installers to carry out work on your plant.





 **Mall GmbH**
Hüfinger Straße 39-45
78166 Donaueschingen
Tel. +49 771 8005-0
info@mall.info
www.mall.info

Mall GmbH
Grünweg 3
77716 Haslach i. K.
Tel. +49 7832 9757-0

Mall GmbH
Industriestraße 2
76275 Ettlingen
Tel. +49 7243 5923-0

Mall GmbH
Roßlauer Straße 70
06869 Coswig (Anhalt)
Tel. +49 34903 500-0

Mall GmbH
Oststraße 7
48301 Nottuln
Tel. +49 2502 22890-0

Mall GmbH
Hertzstraße 18
48653 Coesfeld
Tel. +49 2502 22890-0

 **Mall GmbH Austria**
Bahnhofstraße 11
4481 Asten
Tel. +43 7224 22372-0
info@mall-umweltsysteme.at
www.mall-umweltsysteme.at

Mall GmbH Austria
Wiener Straße 12
4300 St. Valentin
Tel. +43 7224 22372-0

 **Mall AG**
Zürichstrasse 46
8303 Bassersdorf
Tel. +41 43 266 13 00
info@mall.ch
www.mall.ch