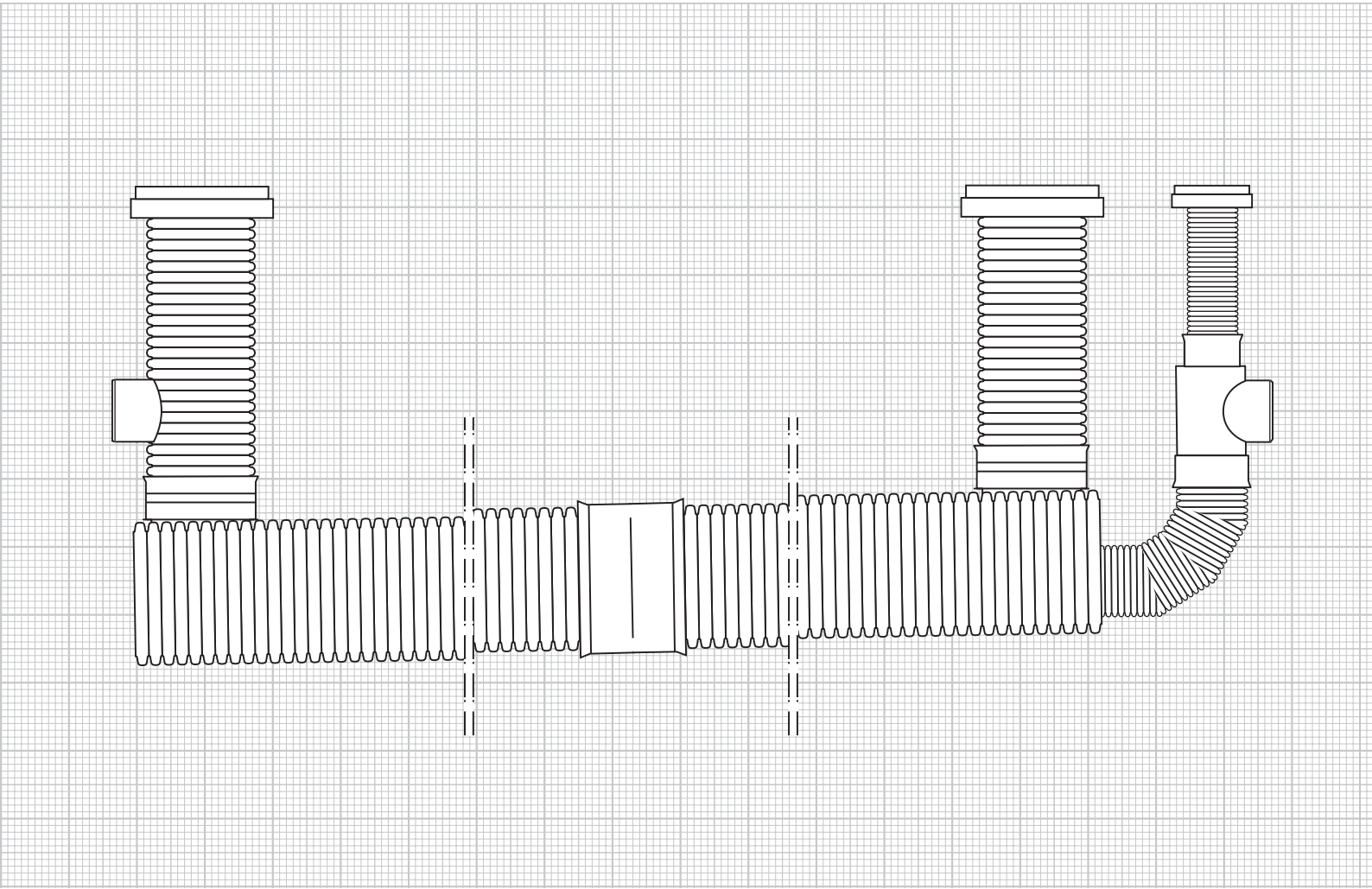
FRÄNKISCHE

Installation and maintenance manual

SediPipe® 800



Stormwater treatment

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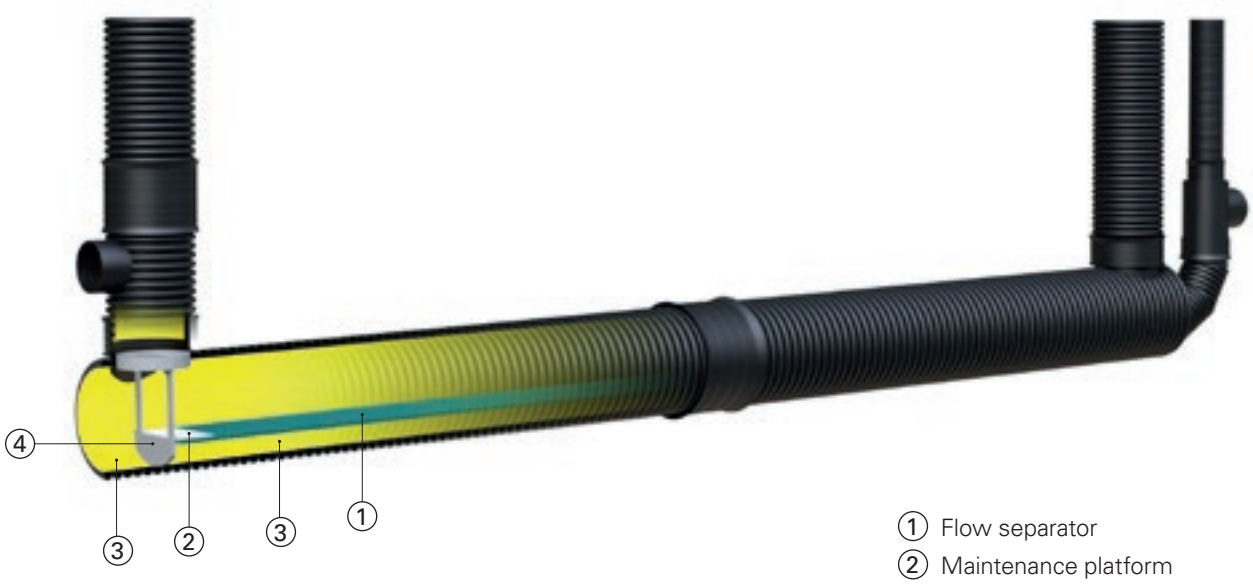
NB

Please read this installation manual carefully and follow our instructions.

The relevant safety provisions of the building industry apply.

2 SediPipe® 800 at a glance

① Start segment DN 800
② Target segment DN 800
③ Inlet DN 400, rotatable
④ Outlet DN 400, rotatable
⑤ Extension pipe inlet DN 600
⑥ Extension pipe target segment DN 600
⑦ Extension pipe outlet DN 300



① Flow separator
② Maintenance platform
③ Mud chamber
④ Maintenance plate

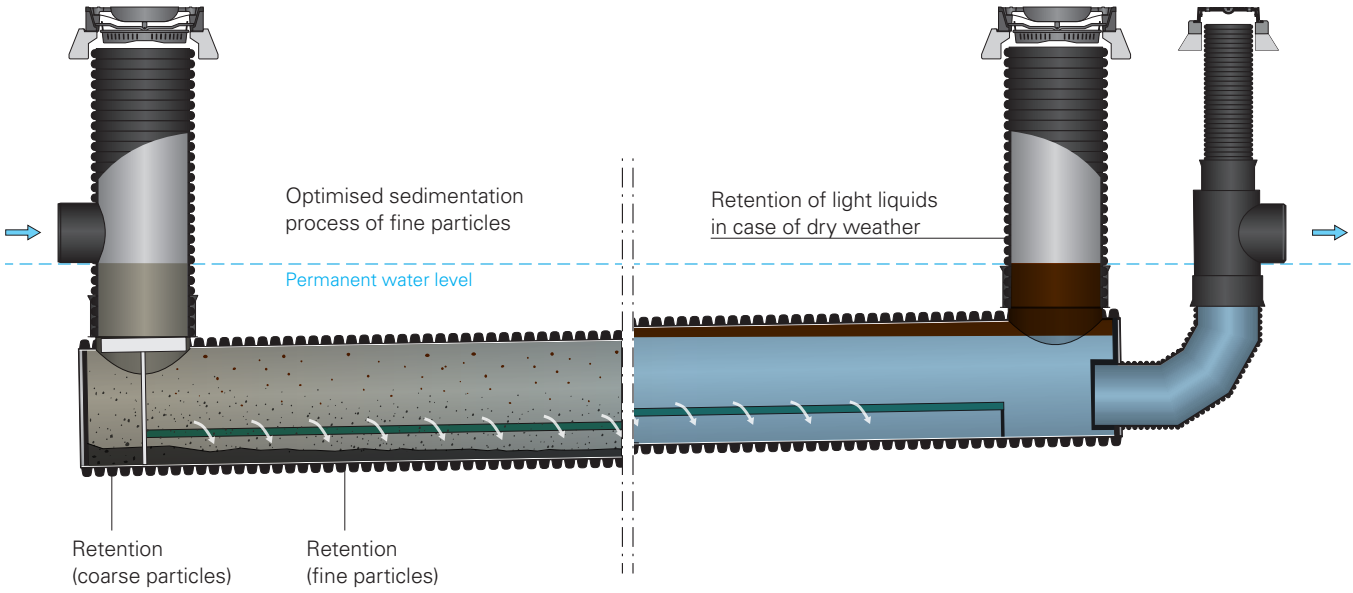
3 System description

3.1 Application

SediPipe 800 is a stormwater treatment system for polluted stormwater runoff, e.g., from traffic areas. The systems separate washed-up particles and light liquids (oil) from stormwater and reliably retain these materials in the system, even in case of spills in dry weather.

3.2 Function description

SediPipe 800 is a stormwater treatment system which keeps a permanent water level. Coarse particles are already retained in the first section of the start segment. Fine particles are retained in the sedimentation path. The lower flow separator prevents remobilisation and therefore discharge of sediment also during heavy rain.



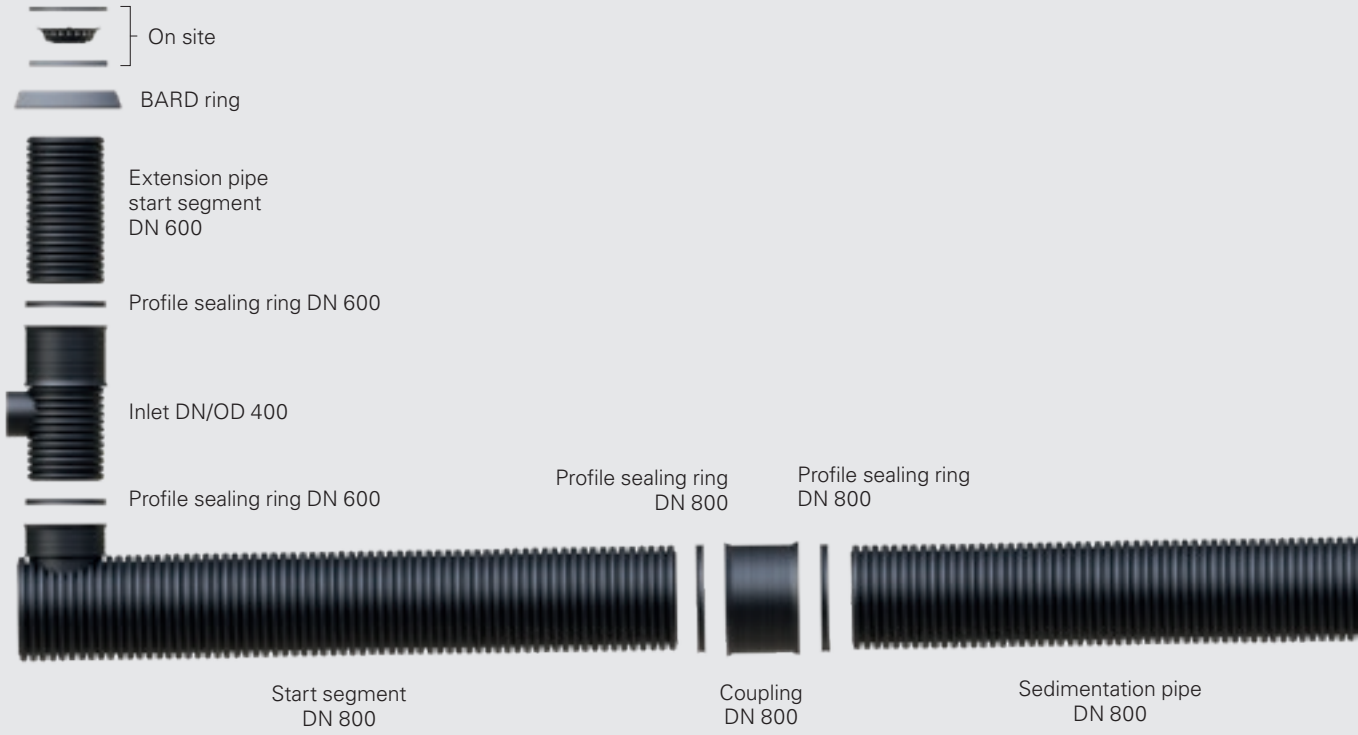
3.3 Sizes

3.4 System description

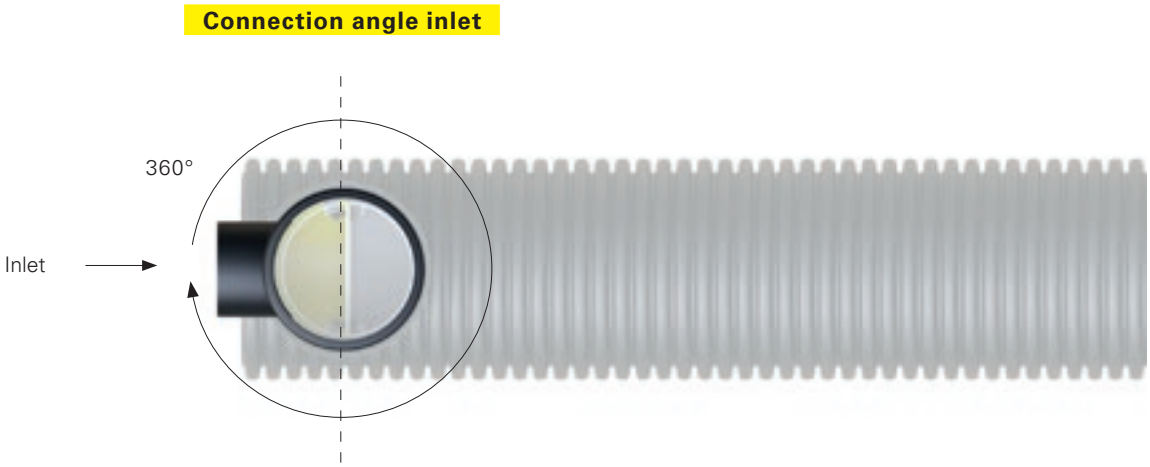
SediPipe 800 systems feature a start segment, a target segment and, depending on the size, additional sedimentation pipes.

The inlet is 360 degrees rotatable. The inlet and outlet diameter is DN/OD 400. Smaller diameters can be achieved using conventional KG reducers. The flow direction can be adjusted to a desired angle between 90° and 270° on site. The system can therefore be easily adapted to on-site requirements.

The total length of the sedimentation path depends on the system type and varies between 12 m and 48 m. The sedimentation path features a construction-related gradient when installed.



Example: SediPipe 800/18

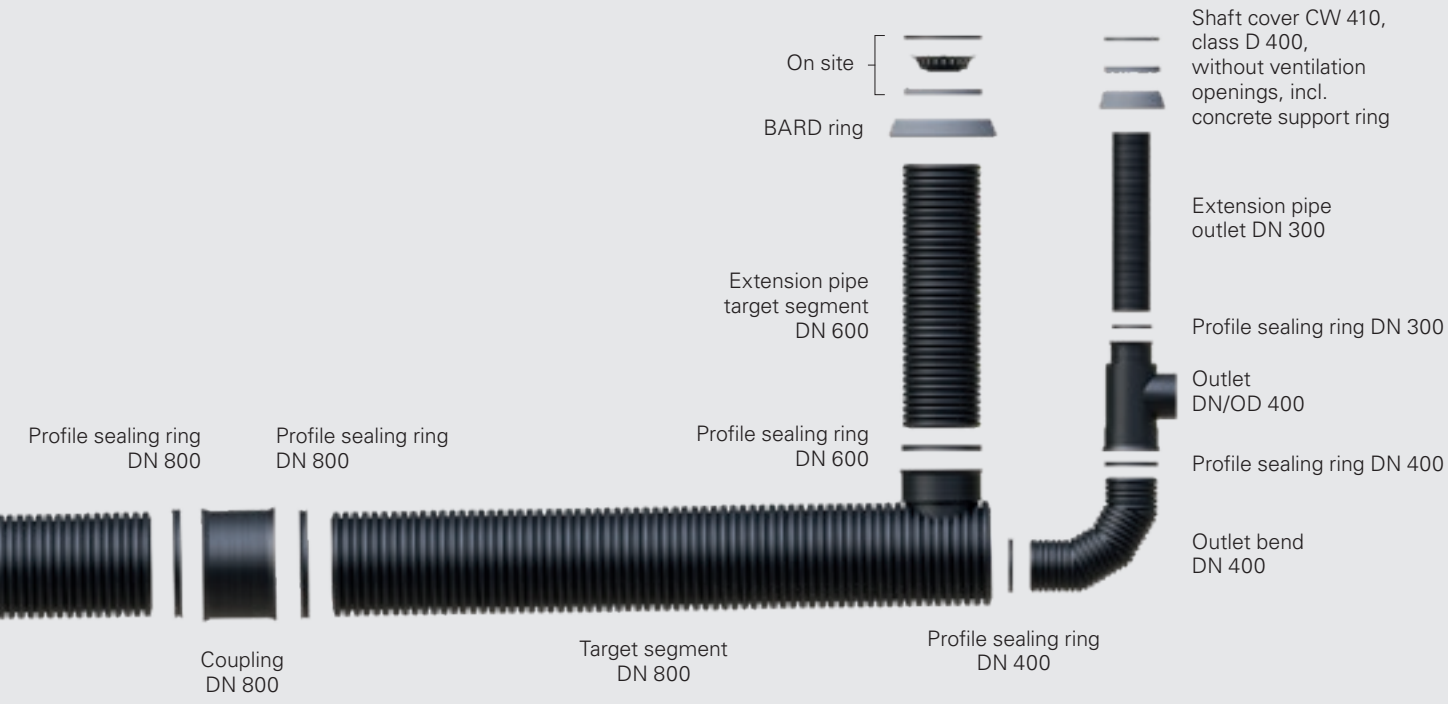


Installation depths

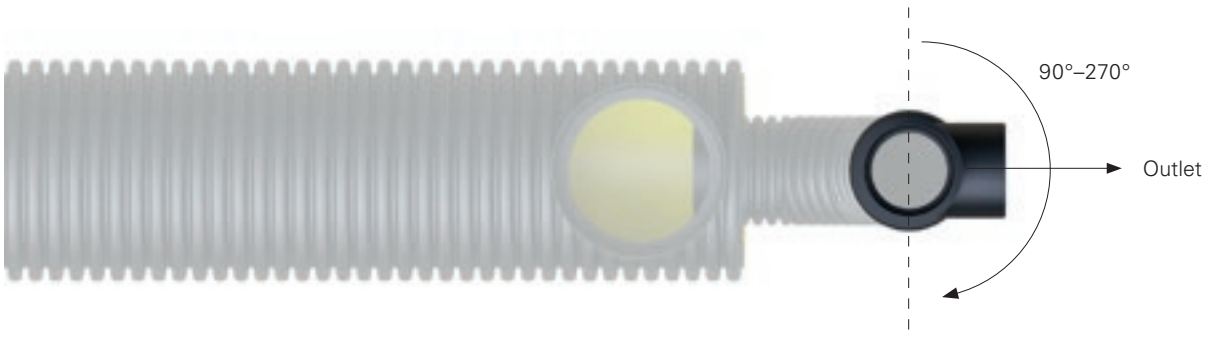
The maximum installation depth of the system from the top edge of terrain to the pipe invert of the start segment is 6 m depending on the installation parameters, also with a groundwater level of 5 m over pipe invert (soil temperature ≤ 23 °C).

The minimum depth of the system derives from the minimum required distance between the pipe crown of the inlet channel and the bottom edge of the BARD ring of 35 cm.

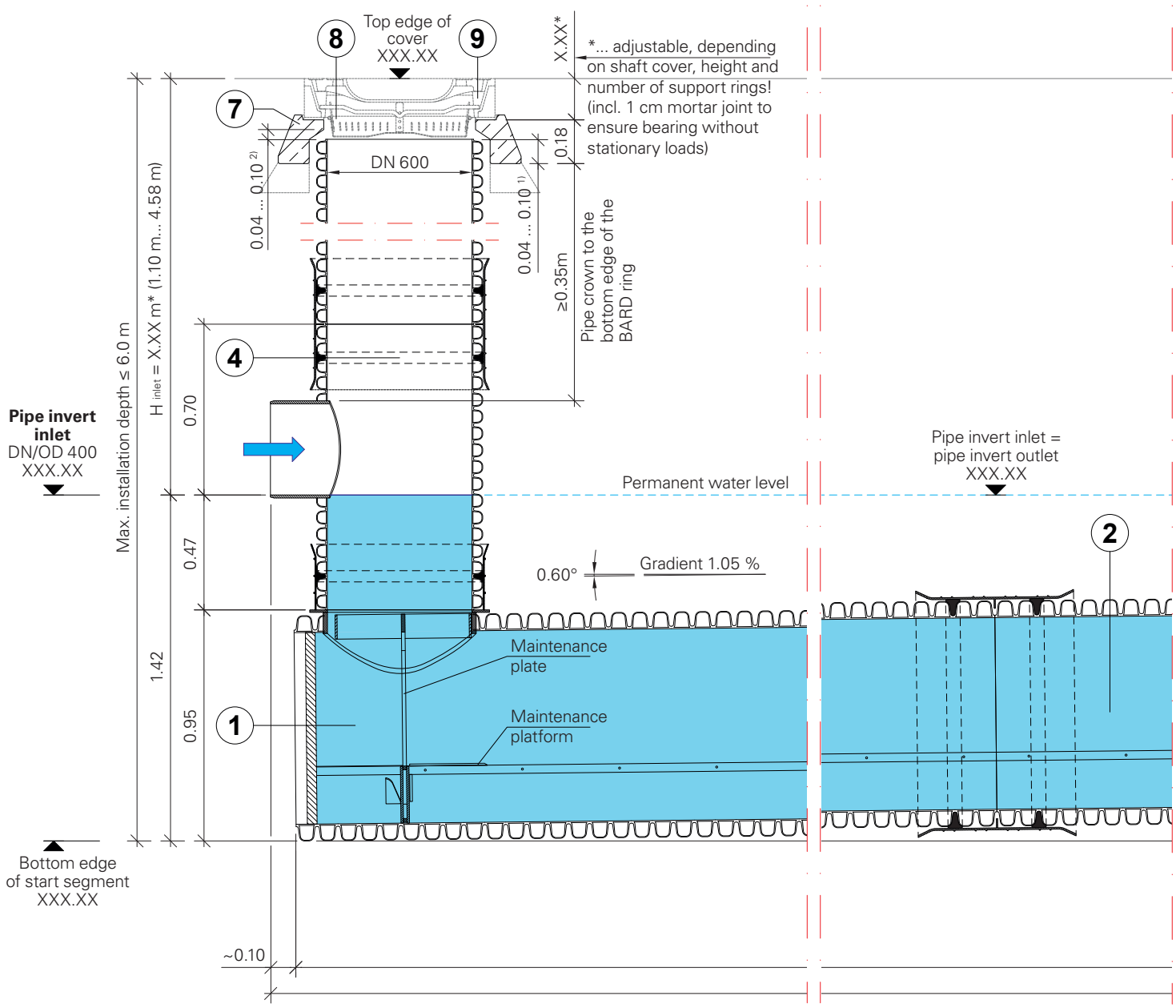
When using a conventional class D cover without equalisation ring with a connection DN/OD 400, this corresponds to an inlet channel soil depth of 1.10 m.



Connection angle outlet



3.5 Technical specifications



Section SediPipe 800/18

① **Start segment DN 800** with lower flow separator, maintenance plate and maintenance platform

② **Sedimentation pipe DN 800** (L ~6 m) with lower flow separator

③ **Target segment DN 800** with lower flow separator

④ Inlet set for start segment with extension pipe DN 600

⑤ Extension pipe for target segment DN 600

⑥ Outlet bend DN 400 with outlet DN/OD 400 and extension pipe DN 300

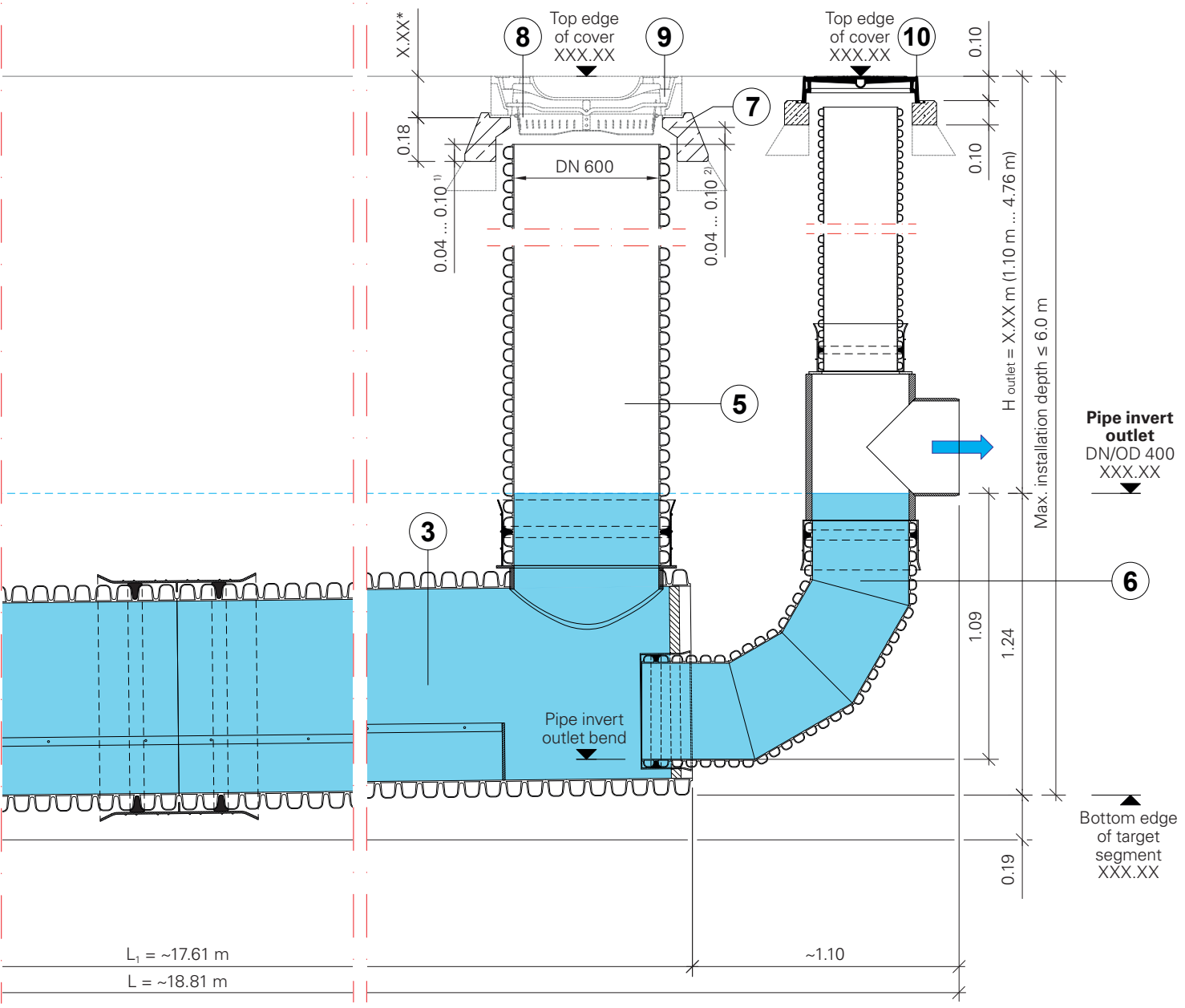
⑦ BARD ring (concrete support ring class D, inside Ø 745 mm)

⑧ Dirt trap acc. to DIN 1221 [3)]

⑨ Shaft cover CW 610 [3)]

⑩ Shaft cover CW 410, class D, without ventilation openings, incl. concrete support ring

[1)] Insertion area
[2)] Compensating area
[3)] to be ordered/supplied on site



SediPipe 800	800/12	800/18	800/24	800/30	800/36	800/42	800/48
Total length "L" [m]	12.94	18.81	24.67	30.54	36.41	42.28	48.15
Min. height inlet H_{inlet} / outlet H_{outlet} [m]	≥ 1.10	≥ 1.10	≥ 1.10	≥ 1.10	≥ 1.10	≥ 1.10	≥ 1.10
Max. height inlet H_{inlet} [m]	≤ 4.65	≤ 4.58	≤ 4.51	≤ 4.44	≤ 4.37	≤ 4.30	≤ 4.23
Max. height outlet H_{outlet} [m]	≤ 4.76	≤ 4.76	≤ 4.76	≤ 4.76	≤ 4.76	≤ 4.76	≤ 4.76
Height difference start/target segment ΔH [m]	0.12	0.19	0.25	0.32	0.39	0.46	0.53
Diameter of the sedimentation path [mm]	800	800	800	800	800	800	800
Length of the sedimentation path "L_1" [m]	11.74	17.61	23.47	29.34	35.21	41.08	46.95
Sedimentation path gradient [%]	0.98	1.05	1.09	1.10	1.12	1.13	1.13
Sedimentation path gradient as angle [α]	0.56°	0.60°	0.62°	0.63°	0.64°	0.65°	0.65°
Collecting volume of light liquids [litres] 1)	1,770	2,200	2,440	2,510	2,530	2,550	2,570
Collecting volume of the mud chamber [litres]	1,030	1,590	2,140	2,700	3,260	3,810	4,370
Permanent water level volume [litres]	6,020	8,890	11,750	14,610	17,480	20,340	23,200

1) Retention of light liquids in case of spills in dry weather

3.6 Overview of system component sets

In the ordering process, each system is comprised of a basic set and a connection set and the covers CW 610 with ventilation openings to be supplied on site.

The basic set includes the start and target segments as well as the outlet bend DN 400.
From size 800/18 with additional sedimentation pipes.

The connection set includes the inlets and outlets as well as the extension pipes for different sewer depths.

The sets are available in different designs to perfectly adapt the complete system to the project-specific requirements. You can select as follows depending on the desired system size, installation depth, nominal diameter and number of inlets.

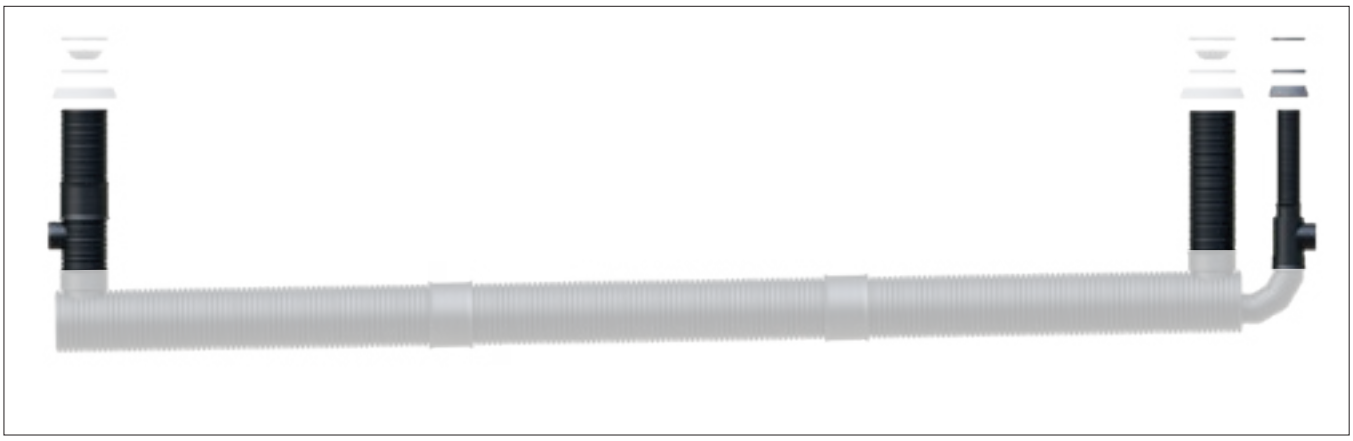
SediPipe® 800 basic set

System size	**800/12**	**800/18**	**800/24**	**800/30**	**800/36**	**800/42**	**800/48**
Set	Basic set SediPipe 800/12	Basic set SediPipe 800/18	Basic set SediPipe 800/24	Basic set SediPipe 800/30	Basic set SediPipe 800/36	Basic set SediPipe 800/42	Basic set SediPipe 800/48
Cat. no.	51596812	51596818	51596824	51596830	51596836	51596842	51596848
	pc(s).	pc(s).	pc(s).	pc(s).	pc(s).	pc(s).	pc(s).
Start segment DN 800 with lower flow separator	1	1	1	1	1	1	1
Target segment DN 800 with lower flow separator	1	1	1	1	1	1	1
Sedimentation pipe DN 800 with lower flow separator, installation length of 6 m each	0	1	2	3	4	5	6
Outlet bend DN 400	1	1	1	1	1	1	1
Coupling DN 800	1	2	3	4	5	6	7
Profile sealing ring DN 800	2	4	6	8	10	12	14
Profile sealing ring DN 400	2	2	2	2	2	2	2
Lubricant, 500 ml tube	3	4	5	6	7	8	9

Example: SediPipe 800/18 basic set

SediPipe® 800 connection set

Inlet channel soil depth	**up to 2.5 m**		**greater than 2.5 m**	
Inlet and outlet connection	DN/OD 400	Inlets DN/OD 400 and 2x DN/OD 315 Outlet DN/OD 400	DN/OD 400	Inlets DN/OD 400 and 2x DN/OD 315 Outlet DN/OD 400
Cat. no.	51597862	51597864	51597865	51597867
	pc(s).	pc(s).	pc(s).	pc(s).
Inlet set DN 600 with connection DN/OD 400, incl. coupling DN 600 with profile sealing ring	1	-	1	-
Inlet set DN 600 with connections DN/OD 400, DN/OD 315 and DN/OD 315, incl. coupling DN 600 with profile sealing ring	-	1	-	1
Extension pipe DN 600, 1.6 m length	1	1	-	-
Extension pipe DN 600, 2.5 m length	1	1	-	-
Extension pipe DN 600, 3.8 m length	-	-	1	1
Extension pipe DN 600, 4.8 m length	-	-	1	1
Extension pipe DN 300, 2.0 m length	1	1	-	-
Extension pipe DN 300, 4.1 m length	-	-	1	1
BARD ring DN 600, class D	2	2	2	2
Shaft cover CW 410, class D 400 without ventilation openings, incl. concrete support ring	1	1	1	1
Profile sealing ring DN 600	3	3	3	3
Profile sealing ring DN 300	1	1	1	1
Lubricant, 500 ml tube	3	3	3	3



Example: SediPipe 800/18 connection set

4 Installation

4.1 Overview of installation steps

1

Target segment
Section 4.5

2

Outlet segment
Section 4.6

3

Sedimentation pipes
Section 4.7

4

Start segment
Section 4.8

5

Inlet
Section 4.10

6

Extension pipes
Section 4.11

4.2 Transport and construction site storage

Storage on sleepers

The components must be specifically prepared for transport and lifting. Use one or two wide hoisting slings or round slings for this purpose.

NB

Store all components on plain ground using sleepers and secure against shifting. Damaged parts must NOT be installed. Do NOT throw components! Only install and lift components at temperatures above freezing point.

4.3 Temporary construction site cover

The start and target segments are delivered with temporary construction site covers.

Make sure that no dirt, e.g., backfill material, enters the system during the construction period. Do NOT remove the temporary construction site covers before installing extension pipes and/or shaft covers. Additionally protect inspection openings against earth slides until final installation of shaft covers.

NB

Shafts must NOT be accessed before installing the cover.
If necessary, the required load transfer to the native soil must be ensured, e.g., using a wide steel plate.

4.4 Excavating pit and creating embedding

In addition to the regulations of DIN EN 1610, observe the specifications of DIN 18300 (*Erdarbeiten*) in the latest version regarding excavating the pit and creating the lower embedding for SediPipe 800. If the native soil is not made up of stoneless, compactable material G1 (GE, GW, GI, SE, SW, SI) or G2 (GU, GT, SU, ST), create an embedding according to DIN EN 1610. The embedding shall generally be created with a consistent degree of compaction of $D_{Pr} \geq 95$ % and a load-bearing capacity of $E_{V2} \geq 45$ MN/m².

The minimum widths according to DIN EN 1610 must be strictly adhered to when creating pipe swales. Please observe any deviating minimum widths in the area of the shafts according to local specifications.

ATTENTION

Create the bearing for SediPipe 800 (height and longitudinal incline) considering required gradients and, if necessary, required height differences according to planning provisions (see 3.5 Technical specifications).

4.5 Installing the target segment

1. Mount the profile sealing ring DN 800 onto the second corrugation trough of the target segment while still outside the excavation pit. Keep the pipe, profile sealing ring, and the coupling clean. Apply a sufficient amount of lubricant to the profile sealing ring and the coupling and install the coupling. Make sure that the sealing area is free of dirt.
2. Move the target segment to the installation position using lifting equipment. The crown marking must face upwards! The flow separator integrated in the pipe must face downwards!
3. Secure the pipes to prevent shifting during installation.

ATTENTION

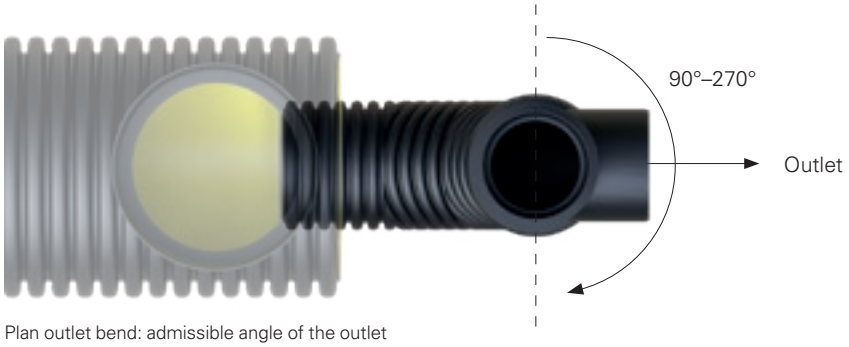
The crown marking of the pipe section must face upwards. The flow separator integrated in the pipe must face downwards and must be aligned horizontally at right angles to the pipe axis.

4.6 Installing the outlet segment

Install the outlet segment without the extension pipe at first. To do so, connect the outlet bend to the coupling of the outlet tee as shown. Turn the connecting tee to establish the outlet angle. The direction of the outlet channel defines the direction.

ATTENTION

Keep the pipe, profile sealing ring, and the coupling clean. Mount the profile sealing rings onto the second corrugation trough. Then apply a sufficient amount of lubricant to the profile sealing ring and coupling. Make sure that the sealing area is free of dirt.



Plan outlet bend: admissible angle of the outlet is realised at the tee

Mount the profile sealing ring DN 400 onto the second corrugation trough of the outlet bend while still outside the excavation pit. Keep the pipe, profile sealing ring, and the coupling clean. Then apply a sufficient amount of lubricant to the profile sealing ring and coupling. Make sure that the sealing area is free of dirt. Connect the outlet bend with the target segment as shown.

4.7 Installing the sedimentation pipes

NB

This step is relevant for all systems larger than 12 m and, depending on the size, must be carried out several times.

1. Mount the profile sealing rings onto the second corrugation trough of the sedimentation pipe while still outside the excavation pit. The pipe must be clean.
2. Install the coupling.
3. Move the sedimentation pipe to the installation position using lifting equipment. The crown marking must face upwards! The flow separator integrated in the pipe must face downwards!
4. Keep the pipe, profile sealing ring, and the coupling clean. Then apply a sufficient amount of lubricant to the profile sealing ring and coupling. Make sure that the sealing area is free of dirt. Deepen the embedding in the area of the couplings as required. In order to prevent the profile sealing ring from resting on the bearing, the pipe end to be installed can rest on square timber.
5. Use a long lever to install the pipe. Place a board or square timber under the unattached pipe end to prevent damage to the pipe. Pipes must be installed horizontally. Mark the insertion depth on the pipe beforehand. When completing the lower embedding by means of tamping, make sure that the bottom side of the pipes rests completely on the compacted foundation.
6. Secure the pipes to prevent shifting during installation.

ATTENTION

The crown marking of the pipe section must face upwards. The flow separators of the individual pipe segments then form a continuous level surface and must be aligned horizontally at right angles to the pipe axis.

4.8 Installing the start segment

1. Mount the profile sealing ring onto the second corrugation trough while still outside the excavation pit. The pipe must be clean.
2. Move the start segment to the installation position using lifting equipment. The crown marking must face upwards! The integrated flow separator must face downwards!
3. Keep the pipe, profile sealing ring, and the coupling clean. Then apply a sufficient amount of lubricant to the profile sealing ring and coupling. Make sure that the sealing area is free of dirt. Deepen the embedding in the area of the couplings as required. In order to prevent the profile sealing ring from resting on the bearing, the pipe end to be installed can rest on square timber.
4. Use a long lever to install the pipe. Place a board or square timber under the unattached pipe end to prevent damage to the pipe. Pipes must be installed horizontally. Mark the insertion depth on the pipe beforehand. When completing the lower embedding by means of tamping, make sure that the bottom side of the pipes rests completely on the compacted foundation.
5. Secure the pipes to prevent shifting during installation.

ATTENTION

The crown marking of the pipe section must face upwards. The flow separators of the individual pipe segments then form an overall consistently level surface.

4.9 Creating lateral backfilling

The specifications of the latest version of DIN EN 1610 must be adhered to when creating the lateral backfilling and cover up to the top edge of the start segment/target segment. If country-specific regulations or deviating specifications conflict with this, these must be agreed upon with FRÄNKISCHE, if necessary.

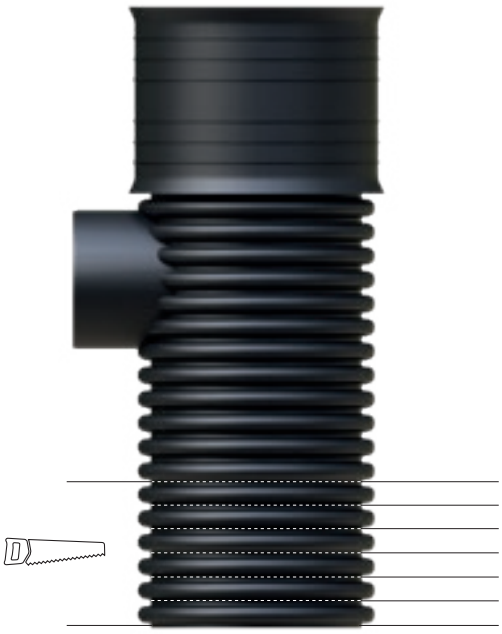
Create the backfilling with stoneless, compactable material G1 (GE, GW, GI, SE, SW, SI) or G2 (GU, GT, SU, ST) according to DIN EN 1610 and create a consistent degree of compaction of $D_{Pr} \geq 95\,\%$ and a load-bearing capacity of $E_{V2} \geq 45\,MN/m^2$.

Make sure that the components do not shift during backfilling of the excavation pit.

ATTENTION

Do NOT remove the temporary construction site covers before finishing main backfilling!

4.10 Installing the inlet



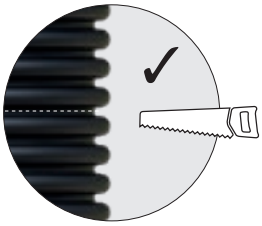
ATTENTION

The lower, longer spigot end of the inlet must be cut in the corrugation trough depending on the length of the system. If the system has a length of 48 m, the inlet must be inserted without cutting it to length.

NB

You must always cut the pipe in the corrugation trough.

SediPipe 800/12 (cut 6 corrugation crowns)
SediPipe 800/18 (cut 5 corrugation crowns)
SediPipe 800/24 (cut 4 corrugation crowns)
SediPipe 800/30 (cut 3 corrugation crowns)
SediPipe 800/36 (cut 2 corrugation crowns)
SediPipe 800/42 (cut 1 corrugation crown)
SediPipe 800/48 (do not cut to length)



Remove the start segment's temporary construction site cover and subsequently place it on the coupling DN 600 of the inlet. Install the inlet in the top coupling of the start segment.

Keep the end of the inlet, the profile sealing ring and the coupling clean. Mount the profile sealing ring onto the second corrugation trough. Then apply a sufficient amount of lubricant to the profile sealing ring and coupling. Make sure that the sealing area is free of dirt.

The coupling factory-mounted to the connection pipe (for later installation of the extension pipe) must be at the top.

Turn the connecting tee to establish the inlet angle.

4.11 Installing the extension pipes

Now, place the extension pipes over the couplings DN 600 and DN 300. Keep the pipe, the profile sealing ring, and the coupling clean. Mount the profile sealing rings onto the second corrugation trough. Then apply a sufficient amount of lubricant to the profile sealing ring and coupling. Make sure that the sealing area is free of dirt.

4.12 Tests before backfilling and impermeability test

Before backfilling the excavation pit, check the system for proper installation and leak-tightness.

The following tests must be performed in particular:

1. Height of the start and target segment incl. inlet and outlet heights according to design specifications
2. Check for damage, foreign objects, or coarse contamination
3. Axial direction of the complete system
4. Total insertion depth at the couplings
5. Position and matching of crown markings (top)
6. Impermeability test

NB

We recommend approval of the system by site management before backfilling.

4.13 Completing cover and creating main backfilling

Backfilling work is finished after installing the extension pipes. Provide a soil cover of at least 30 cm for the sedimentation path. The materials for main backfilling must be filled and compacted according to design specifications. Make sure that the components do not shift during backfilling of the excavation pit. Accessing is only permitted after main backfilling has been completed.

NB

Do NOT remove the temporary construction site covers or protective covers of the extension pipes before finishing main backfilling!

4.14 Cutting the extension pipes

Cut the extension pipes such that they reach the support ring. Cut the pipes to length in the middle of the corrugation trough and align upright to the pipe axis using a fine-toothed saw or other appropriate tools.

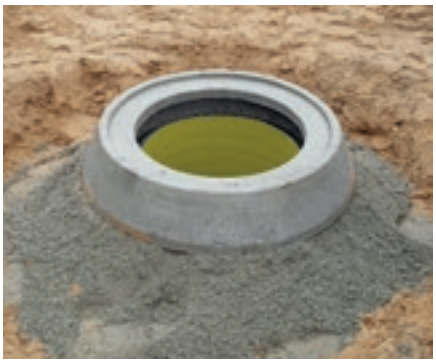
You might have to cut the coupling as well in case of minimum covers. The BARD ring has a sufficient diameter and can be pushed over the coupling.

NB

Height adjustment extension pipe per corrugation crown ~7 cm

Remove edges and irregularities on the cutting surfaces with a grater, file or another suitable tool.

4.15 Installing the shaft covers



Covers CW 610

The BARD ring (class D concrete support ring by FRÄNKISCHE) transfers traffic loads into the soil. There must be no direct load transfer between BARD ring and shaft. The bearing area of the BARD ring must be flat and without stationary loads, and it must achieve an E_{V2} module of at least 100 MN/m². Create the bearing from compacted bearing layer material (E_{V2} module larger than or equal to 100 MN/m²) or in-situ concrete C 16/20 with similar load-bearing properties. Avoid interlocking of the bearing with the corrugations of the extension pipe. Provide and use a casing aid on site!

Vertical loads may only be transferred to the load-bearing underground. The BARD ring must be placed centrally without affecting the bearing.

Shaft covers, equalisation rings, gully gutters, bucket handles and buckets are not included in the scope of delivery of FRÄNKISCHE and must be supplied on site.

Install shaft covers according to DIN EN 124, CW 610, installation according to design specifications. Optionally, place equalisation rings according to DIN 4034 under the shaft cover/gully gutter on the BARD ring. The shaft cover and/or equalisation ring(s) must be placed on a 1-cm-thick mortar joint to prevent stationary loads between the BARD ring, the equalisation ring and the shaft cover.

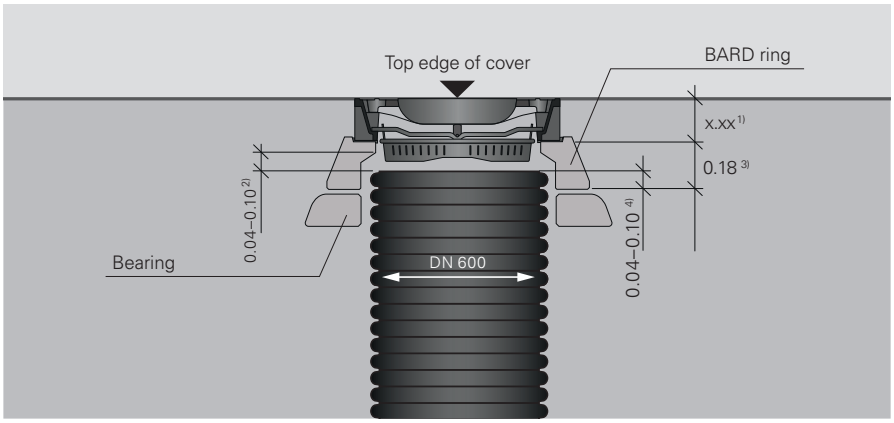
Use common dirt traps under the shaft covers. If the extension pipe at the top of the start segment must feature a gully gutter according to design specifications, a bucket handle (or feed hopper), and a bucket according to DIN 4052-A4 must be installed.

[1] The height of the shaft cover is variable, depending on class B or D shaft cover and use of additional support rings (incl. mortar joint to ensure a bearing without stationary loads)

[2] Compensating area: 4 cm to 10 cm

[3] BARD ring, inside Ø 745 mm, h = 180 mm

[4] Insertion area: extension pipe in BARD ring 4 cm to 10 cm, height adjustment in the insertion area accurate to within the last centimetre possible.



NB

Height adjustment extension pipe per corrugation crown ~4 cm

Covers CW 410

The cover of the outlet set is included in the set. Use appropriate and approved lifting equipment, operating wrenches, and means of transport for transporting and opening/closing the cover only.

Observe the maximum load of the shaft cover also during the construction period.

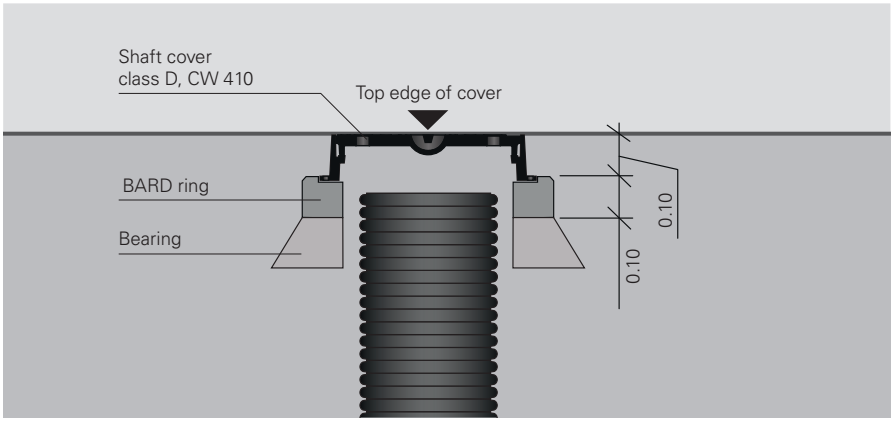
Cover and extension pipe are generally load separated, i.e., the extension pipe is not subject to vertical forces from the free cover bearing. The free bearing transfers loads from the surface to the cover directly to the load-bearing underground.

The cast iron cover can be integrated in the road surface without any problems. As soon as the road superstructure is being prepared, the bearing for the shaft cover must be created. Prepare a lean concrete bearing of min. 10 cm for a safe and free load transfer from the cover to the building ground. Include an expansion joint between the bearing and extension pipe.

The bearing surface for the frame must be even. The frame of the shaft cover must rest on the bearing with its entire contact area.

If the cover is outside the road, the bearing for the cover must be prepared separately at least from non-cohesive, compactable material. The professional compaction with appropriate equipment is essential (compaction 98 % D_{Pr} according to ZTV StB).
If required, a bearing made of lean concrete makes sense in this case, too.
Using plate compactors or vibrating rollers on the shaft covers is not permitted.

Clean the covers, in particular the contact surfaces, after the work has been completed and/or after every opening.



4.16 Filling the system

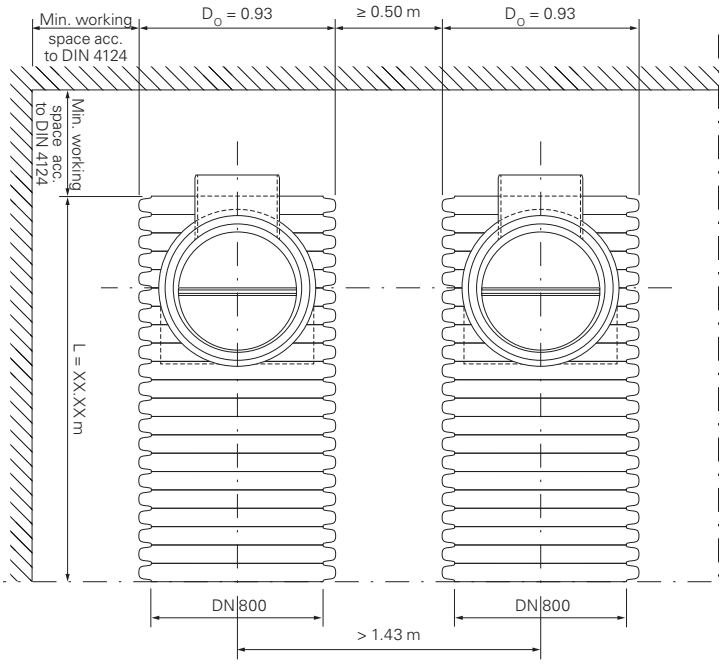
After the work has been completed, the system must be filled with water up to the permanent water level. This is required to ensure the retention of floatables and light liquids in the target segment. The system may already be filled with water due to the impermeability test (see Section 4.12).

The system must be filled with water (e.g., drinking water, service water, treated wastewater from system cleaning) complying with the local discharge conditions.

NB

For permanent water level volume, see Section 3.5 Technical specifications

4.17 Arrangement of multiple systems



The above sections of the installation manual describe the standard installation as individual system. The following describes the recommendations for the arrangement of multiple systems and the required minimum distances.

We draw your attention to the fact that for installation clearances between distribution and combining units and the treatment system, the respective fitting dimensions of the connection pipes and their space requirements must be considered for the installation in addition to the general minimum clearances specified by standards.

NB

Make sure that the system components are not damaged during backfilling or compacting. Observe the installation instructions for individual systems.

4.18 Commissioning

ATTENTION

Observe Section 8 Safety instructions.

1 Making system ready for operation

- Clean system of coarse dirt
- Remove auxiliary constructions
- Fill system with water
- Close shaft covers

✓

2 Instruction

1. The following people should be present during handover:

- Persons authorised by the principal to perform the acceptance
- Planner/engineering office
- Construction contractor
- Specialist/expert

We also recommend participation of operating staff.

✓

2. Instruction

- Explain function of the system
- Explain maintenance
- Provide information regarding cleaning and disposal
- Information about FRÄNKISCHE partner companies

✓

3 Documentation/handover

- Hand over maintenance and installation manuals
- Hand over system documentation including operating log
- Proof of system leak-tightness
- Optional: documentation of thorough visual inspection

✓

5 Cleaning

5.1 Emptying and cleaning the system

All the emptying and cleaning work of the system described in this section must generally be made from the surface.

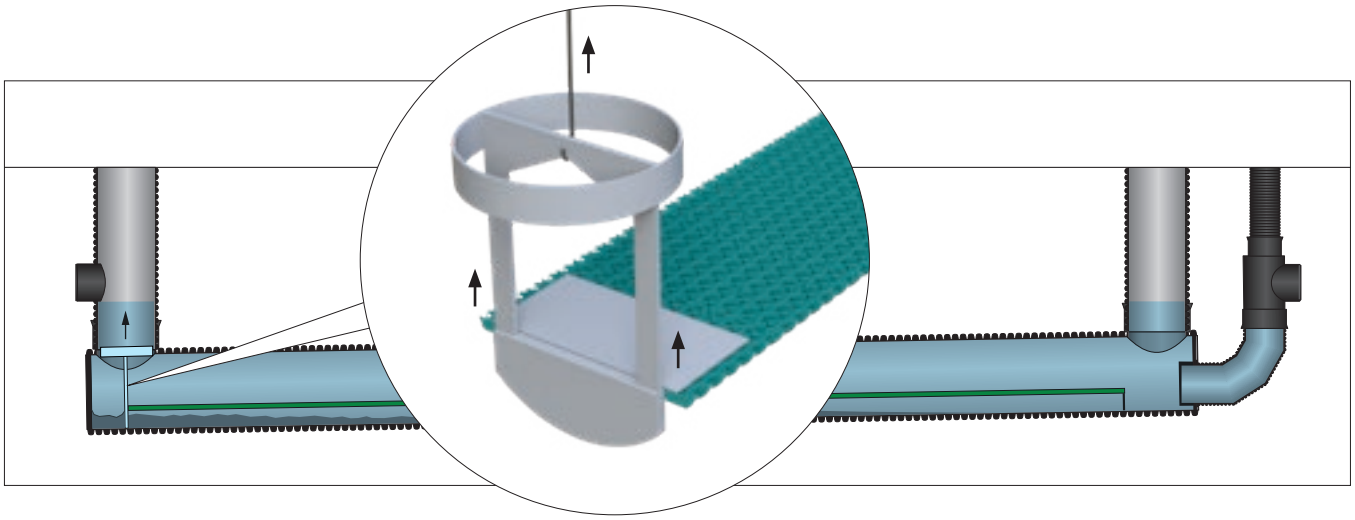
Use a high-pressure cleaning/vacuum vehicle to empty the system and remove the contained water and mud fractions.

ATTENTION

In the event of an oil spill, the system must be immediately maintained by a specialist and the washed matter must be disposed of appropriately. Vacuum light liquids via the inspection access in the target segment. Otherwise, subsequent rain may lead to a discharge of light liquids!

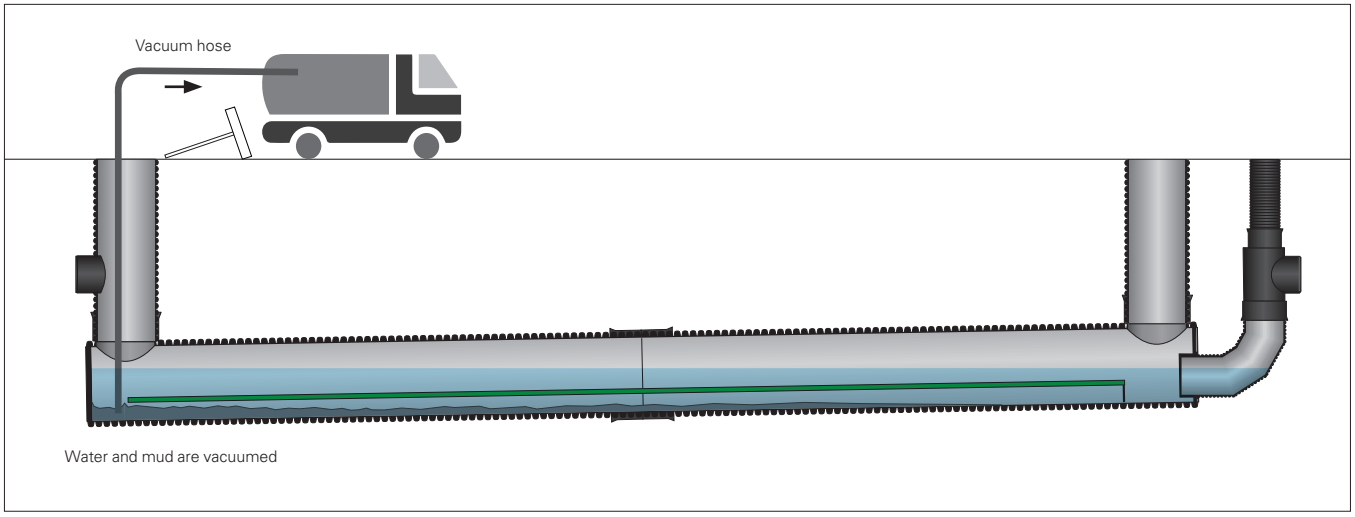
1. Remove the maintenance plate from the start segment

First, you need to remove the maintenance plate via the inspection access of the start segment.



2. Empty using a vacuum hose

Second, vacuum the complete contents. Due to the upward gradient of the sedimentation section, most of its mud chamber will be emptied of its contents into the front section of the start segment.



3. Cleaning with vacuum and flush hose

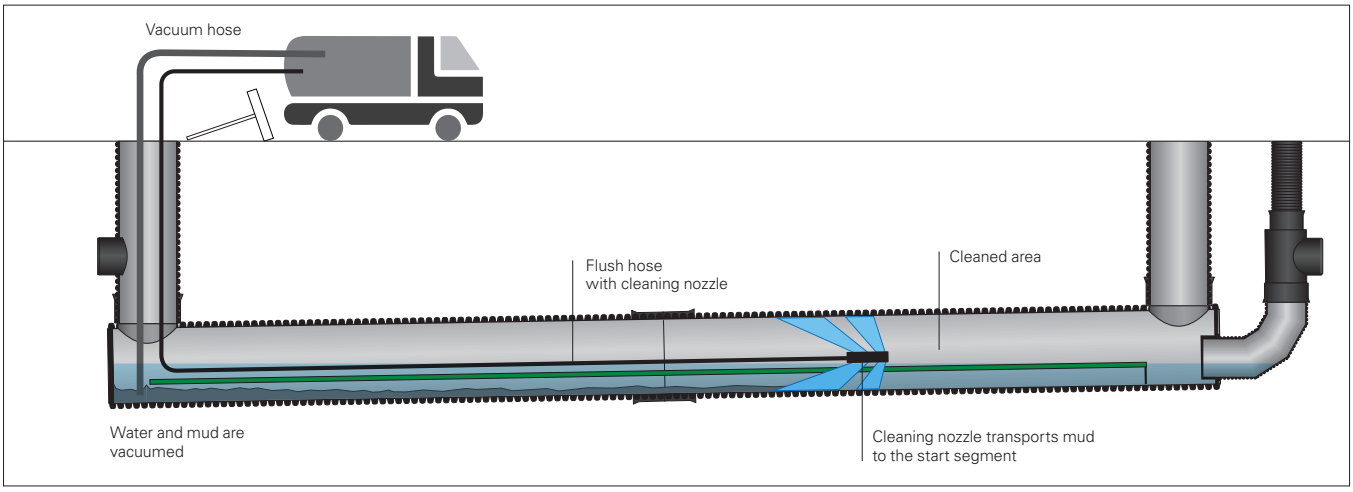
When empty, the maintenance console mounted at the height of the flow separator is visible in the start segment. The maintenance console facilitates inserting and guiding the flush hose during high-pressure cleaning.

Guide the flush hose through the maintenance console on the flow separator. Guide the cleaning nozzle up to the end of the target segment during high-pressure cleaning. Make sure that the nozzle does not go beyond the area of the flow separator. The efficiency of the vehicle and the cleaning and nozzle parameters must be selected depending on the pipe section, pipe material and degree of pollution to be expected.

Use deflection pulleys to avoid damage to the system.

NB

Combined flushing-vacuum vehicles with water recovery shall be preferably used. This minimises disposal expenses and the treated water can be used to refill the system.



5.2 Filling the system with water

After completing the work, put the maintenance plate back and fill the system with water up to the permanent water level. This is required to ensure the retention of floatables and light liquids.

The system must be filled with water (e.g., drinking water, service water, treated wastewater from system cleaning) complying with the local discharge conditions.

NB

For permanent water level volume, see Section 3.5 Technical specifications

6 Self-inspection, maintenance and examination

6.1 General information

To ensure functionality of the SediPipe 800 system, its condition must be ensured through recurring self-inspections and maintenance.
All work and findings must be documented in the operating log.

ATTENTION

The respective periods and responsibilities are only a recommendation by FRÄNKISCHE and may differ from authority approvals. In these cases, the authorities' requirements are mandatory and must be observed!

6.2 Self-inspection

The operational capability of the system must be verified by the operator under dry weather conditions at least every three months. To do so, open the covers of the start and target segments and visually inspect from the top without accessing the system itself (simple visual inspection).

Check the following:

- structural condition of the system
- height of the permanent water level
- mud level in the start segment

ATTENTION

If a relevant deviation from normal conditions occurs which may impair the operational capability of the system, maintenance must be carried out in order to immediately eliminate the detected deficiencies.

6.3 Maintenance

Until there are no system-specific empirical values regarding the actual volume of mud, the SediPipe 800 system must be maintained according to the following guiding values. Maintenance comprises cleaning only.

The following work must be performed:

- Emptying and cleaning of the system (see Section 5.1)
- Refilling the system (see Section 5.2)

	Maintenance interval 1 year	**Maintenance interval 2 years**	**Maintenance interval 3 years**	**Maintenance interval 4 years**
System type	**Connectable area [m²]**	**Connectable area [m²]**	**Connectable area [m²]**	**Connectable area [m²]**
SediPipe 800/12	28850	14450	9600	7200
SediPipe 800/18	44450	22200	14800	11100
SediPipe 800/24	60000	30000	20000	15000
SediPipe 800/30	75550	37800	25200	18900
SediPipe 800/36	91150	45550	30400	22800
SediPipe 800/42	106700	53350	35550	26700
SediPipe 800/48	122300	61150	40750	30550

Basis average volume of pollution 500 kg/ha*a (dry matter)

Tip

Operators can schedule the system-specific maintenance interval as described in the following to reduce operating costs or in case of special areas with increased mud volumes:

Provided that the complete system was cleaned after finishing construction, emptying and cleaning of SediPipe can take place depending on the mud level. To do so, measure the mud level in the start segment during self-inspection. We recommend emptying when 80 % of the mud storage volume or the maximum mud level in the first section of the start segment have been reached. The storage volume can be obtained from the table (see Section 3.5 Technical specifications).

6.4 Disposal

Materials removed from the system such as mud and flushing water used to clean the system may contain hydrocarbons and heavy metals. Therefore, they must be disposed of in compliance with the applicable legal provisions.

Waste fractions occurring after spills with light liquids must be disposed of professionally as "oil/water separator contents" in compliance with the current waste catalogue. The statutory disposal and acceptance certificates must be included in the operating log together with the entries as evidence of proper disposal.

ATTENTION

Applicable waste disposal regulations must be observed when disposing of the matter extracted from the system.

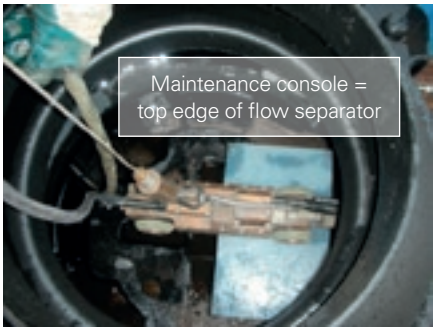
6.5 Thorough visual inspection

The structural condition and the current operating condition of the sedimentation path can be examined by thorough visual inspection using CCTV inspection technology.

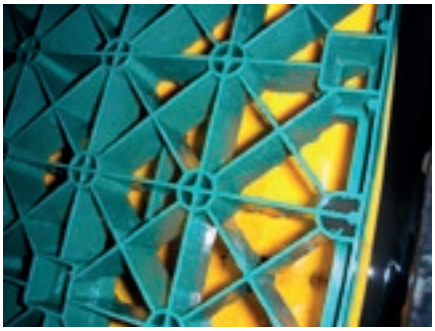
For this purpose, the upper flow area is accessed with a state-of-the-art pan and tilt camera. The lower sedimentation chamber can be inspected visually through the flow separator.

Here, the maintenance console facilitates inserting the dolly and guiding the camera cable. Use appropriate deflection pulleys.

Inspection equipment should be selected according to DWA worksheet and bulletin series DWA-A/M 149 "Conditions and Assessment of Drain and Sewer Systems Outside Buildings" (*Zustandserfassung und -beurteilung von Entwässerungssystemen außerhalb von Gebäuden*) and should be adjusted to pipe section and pipe material.



Inspection of flushing results with pan and tilt camera, camera on the maintenance console in the start segment of a SediPipe system



Cleaned, residue-free system; the area of the flow separator is displayed here

7 Overview – Who does what?

	Who	What	When	Documentation
Installation	Specialist	■ Installation, cleaning and CCTV inspection of the system ■ Filling the system with water from water recovery or with water complying with the local discharge conditions		Operating log
Self-inspection	Operator	Simple visual inspection ■ Structural condition of the system ■ Height of the permanent water level ■ Mud level in the start segment	At least every 3 months	Operating log
Maintenance	Specialist	■ Emptying and cleaning of the entire system using a sewer cleaning vehicle ■ Refilling the system with water from water recovery or with water complying with the local discharge conditions ■ Disposal of mud and solids ■ Applicable waste disposal regulations must be observed.	Immediately after oil spill, otherwise see guiding values in the maintenance documentation	Operating log
Disposal	Specialist/waste disposal company	■ Disposal of mud and solids ■ Applicable waste disposal regulations must be observed.	When the retention volume has been used up	Operating log disposal certificates
Repairs	Specialist	Only original parts or tailored parts explicitly approved by the manufacturer may be used.	As required	Operating log

8 Safety instructions

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 (*Bauarbeiten BGV C22*)
  - Technical wastewater systems GUV-V C5 (*Abwassertechnische Anlagen GUV-V C5*)
- Safety regulations for working in enclosed spaces of technical wastewater systems GUV-R 126 (*Sicherheitsregeln für Arbeiten in umschlossenen Räumen von abwassertechnischen Anlagen GUV-R 126*)
- Handling biological working materials in technical wastewater systems GUV-R 145 (*Umgang mit biologischen Arbeitsstoffen in abwassertechnischen Anlagen GUV-R 145*)
- Directives for working in tanks and narrow spaces BGR 117 (*Richtlinien für Arbeiten in Behältern und engen Räumen BGR 117*)
- Standards
  - Excavations and trenches – Slopes, planking and strutting, breadths of working spaces DIN 4124
  - Construction and testing of drains and sewers DIN EN 1610
- 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 psychological stress during work in deep, narrow and dark spaces
- And others

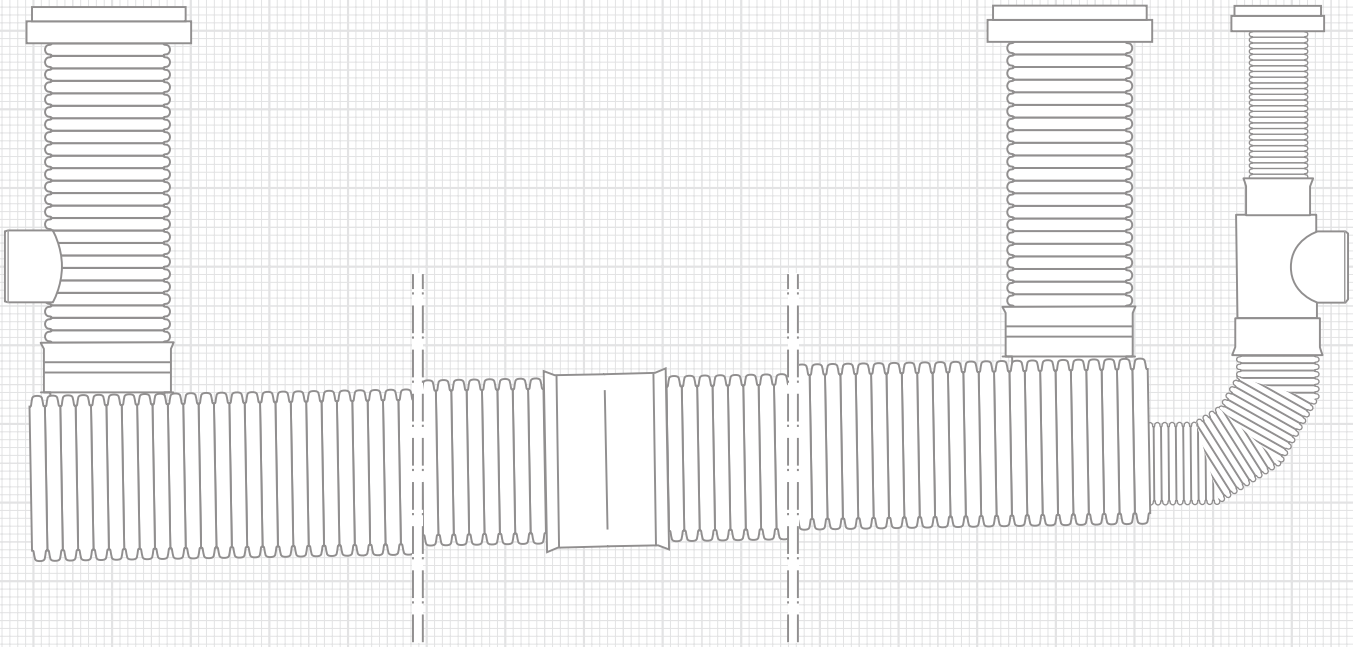
⚠ DANGER

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.



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