



INSTALLATION



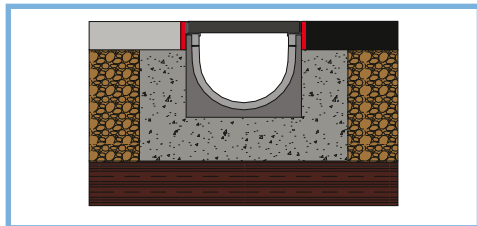
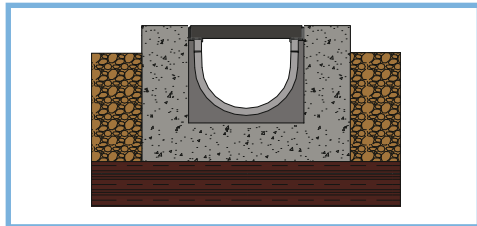
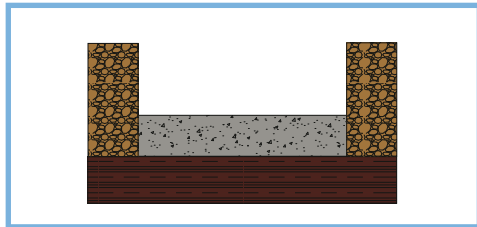
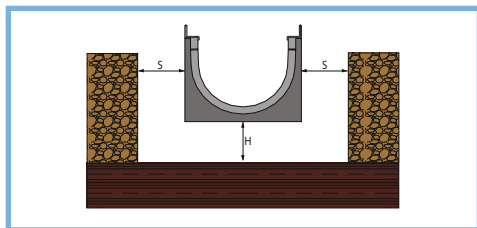
“For all the drainage channels the manufacturer shall supply written instructions for general installation” (Ref. § 7.17 EN1433)

The installation instructions enclosed in the present technical section are given only as an example in order to supply the main guide lines to the final fitter.

Any particular installation must be evaluated/ agreed between MufleSystem srl and the project maker.

The correct installation is necessary to guarantee the proper loads resistance of the drainage system (channel and grating) to static and dynamical traffic which is subjected to.

The correct installation involves a longer operational length of the drainage system itself as well as its better hydraulic function.



NEW FEATURE:
The channels can be installed with preassembled gratings.

Step 1

HOLE SIZE

The hole needed to lay the MufleDrain channel must allow not only for the size of the channel and the drain piping but also for adequate space for the base H and the side concrete props S. The dimensions to be followed are shown in the Summary Table. In this step make sure the underlying layer is suitable to the load it is expected to support.

Step 2

CONCRETE BASE

Cast the concrete base H up to the height specified, allowing for any inclination in the drainage line. In case that cycles of loading and unloading are often (for example: periodic transit of vehicles) or the loads are particular heavy (E600 - F900), we recommended to reinforce the concrete base with a electro-welded net or with or beaded mouldings Ø 8 with mesh 15x15 cm. At this stage it is needed to arrange possible slopes of the drainage line.

Step 3

CHANNEL ARRANGEMENT

Lay the channels starting from the flow outlet and block them at basis in order to avoid any floating or misalignment during the concrete casting for the side prop.

Allow for the drains required and build the side prop S up to the maximum height allowed by the final coating. Shape it according to the needs based on the drawing. Introduce and fix the grating required beforehand in order to prevent any deformation of the channel due to the thrust of concrete and to speed up installation.

As well as the step 2, also for the side prop concrete arrange the reinforcement.

Step 4

FINAL COATING

When applying the final coating, make sure its upper profile reaches up to minimum 3/5 mm above the grating's flow plane.

Recommendations for installation

1. In case that channels watertightness is requested, MufleSystem is purposely recommending the use of a bituminous silicone sealant “SHELL TIXOPHALTE”: after carrying out the side prop, apply a thin and homogeneous sealant strip on each slot between the channels and the following one (clean the eventual exceeding sealant). It is strongly advised not to apply the strips of “SHELL TIXOPHALTE” inside the slots in the female joint of the channels before coupling them. Eventually a through and long- lasting guarantees to avoid any leakages can be obtained by welding the joints; this requires welding machines and experienced technicians.
2. While carrying out the phase 2 and 3, protect the gratings with a PVC film so that no final cleaning must be carried out to remove any concrete residues.
3. In case the drainage line is subjected to horizontal loads (for example concrete casting for industrial paving, private car parks and parking decks), it is necessary to arrange effective expansion joints for both direction, parallel and perpendicular to the channels. These joints shall be placed according to the norm standards in force and shall not be placed close to drainage line.
4. In case the drainage line shall be installed on roofs or terraces, it is obligatory to arrange a waterproof sheet according to specific projects.



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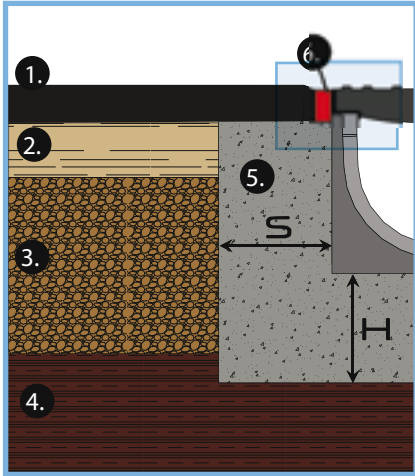


INSTALLATION

WING

Case 1

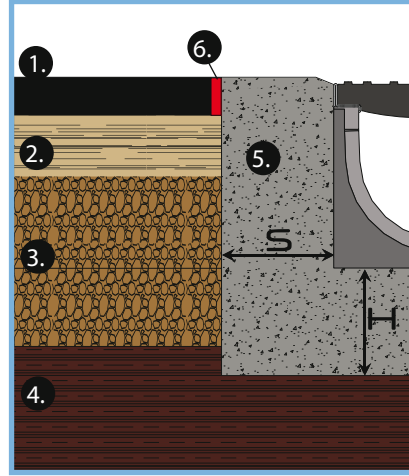
Asphalt
(C250)



1. Sheet asphalt
2. Lower layer (binder)
3. Bearing layer
4. Subfloor
5. Concrete reinforcement layer
6. Bitumen joint

Case 2

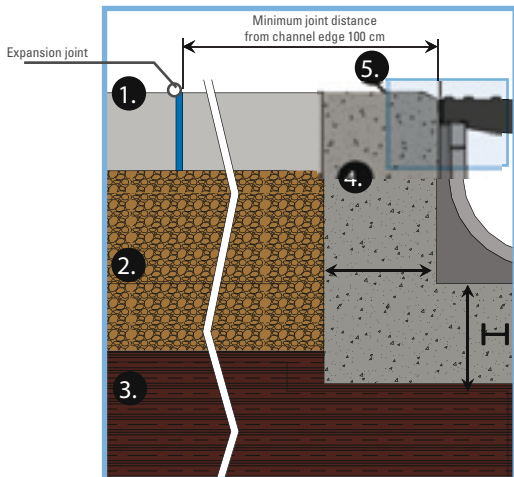
Asphalt
(D400-E600-F900)



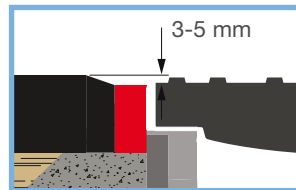
1. Sheet asphalt
2. Lower layer (binder)
3. Bearing layer
4. Subfloor
5. Concrete reinforcement layer
6. Bitumen joint

Case 3

Concrete screed for streets and roads
(from C250 to F900)



1. Concrete flooring
2. Bearing layer
3. Subfloor
4. Concrete reinforcement layer
5. Bitumen joint



This Sheet is only aimed to give advice on the installation of channels mod. MufleDrain. In any case, always:

- check the carrying capacity characteristics of the underlying layer
- we recommend using Class S4 concrete (EN 206-1) and stone aggregate with maximum diameter 8 mm.
- comply with the height of the installation surface and the thickness of the prop as specified according to the load classes.

SUMMARY TABLE

Load class (EN 1433)		C 250	D 400	E 600	F 900
Applicable load (EN 1433)	kN	250	400	600	900
Minimum height H of concrete laying bed	mm	150	200	200	250
Minimum thickness S of the concrete flanking	mm	150	200	200	250
Concrete compression strength class (EN 206-1)		C 25/30	C 25/30 ¹⁵	C 30/37	C 35/45
Concrete compression strength class ⁷ (EN 206-1)		C 30/37 XF4	C 30/37 XF4	C 35/45 XF4	C 40/50 XF4

7- If concrete can be affected by frost and thaw cycles.

15- If installation is in road crossings subject to heavy traffic (especially trucks), Class C30/37 concrete should be used.

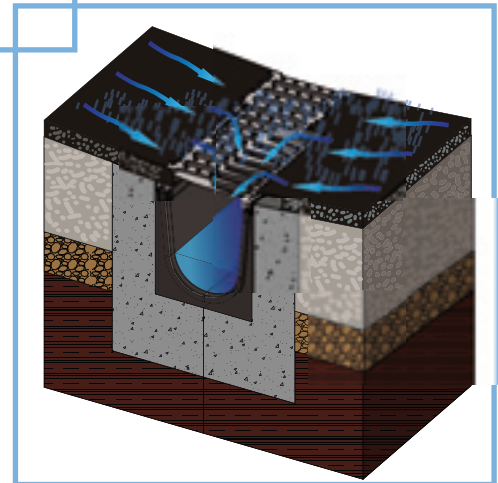
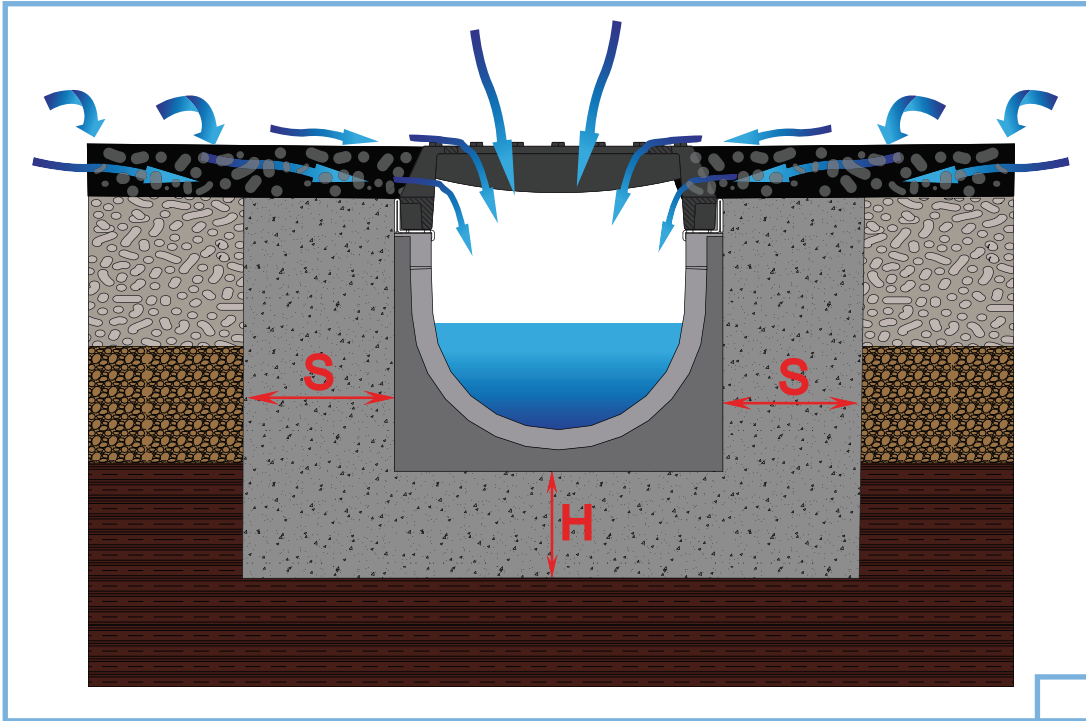
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N.B. Sizes and weights are subject to usual manufacturing tolerance values.



INSTALLATION OF DRAINING ASPHALT GRATING WING 200

WING



This Sheet is only aimed to give advice on the installation of channels mod. MufleDrain. In any case, always:

- check the carrying capacity characteristics of the underlying layer
- we recommend using Class S4 concrete (EN 206-1) and stone aggregate with maximum diameter 8 mm.
- comply with the height of the installation surface and the thickness of the prop as specified according to the load classes.

SUMMARY TABLE

Load class (EN 1433)		D 400
Applicable load (EN 1433)	kN	400
Minimum height H of concrete laying bed	mm	200
Minimum thickness S of the concrete fl anking	mm	200
Concrete compression strength class (EN 206-1)		C 25/30 ¹⁵
Concrete compression strength class ⁷ (EN 206-1)		C 30/37 XF4

7- If concrete can be affected by frost and thaw cycles.

15- If installation is in road crossings subject to heavy traffic (especially trucks), Class C30/37 concrete should be used.

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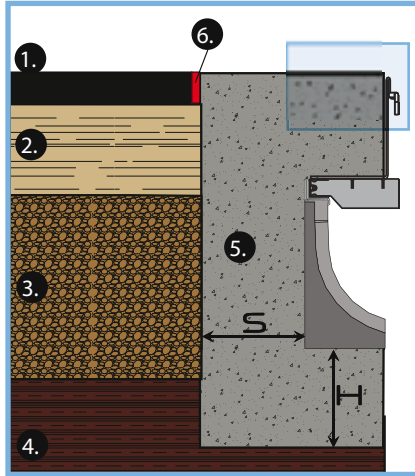


INSTALLATION OF DRAINING ASPHALT GRATING WING 200

WING

Case 1

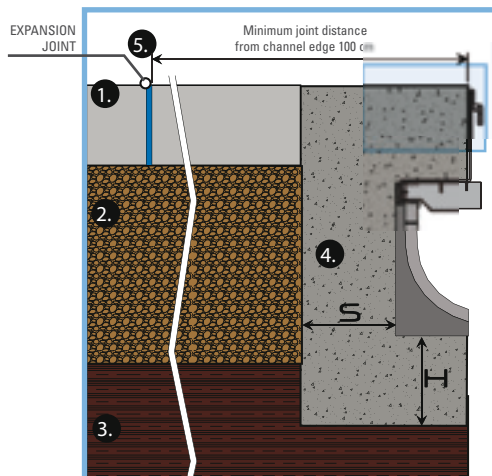
Asphalt
(from B125 to D400)



1. Sheet asphalt
2. Strato di allettamento
3. Bearing layer
4. Subfloor
5. Concrete reinforcement layer
6. Safety joint (if required)

Case 2

Concrete flooring
(from B125 to D400)



1. Concrete flooring
2. Bearing layer
3. Subfloor
4. Concrete reinforcement layer
5. Expansion joint

This Sheet is only aimed to give advice on the installation of channels mod. MufleDrain. In any case, always:

- check the carrying capacity characteristics of the underlying layer
- we recommend using Class S4 concrete (EN 206-1) and stone aggregate with maximum diameter 8 mm.
- comply with the height of the installation surface and the thickness of the prop as specified according to the load classes.

SUMMARY TABLE

		B 125	C 250	D 400
Load class (EN 1433)				
Applicable load (EN 1433)	kN	125	250	400
Minimum height H of concrete laying bed	mm	100	150	200
Minimum thickness S of the concrete flanking	mm	100	150	200
Concrete compression strength class (EN 206-1)		C 25/30	C 25/30	C 25/30 ¹⁵
Concrete compression strength class ⁷ (EN 206-1)		C 30/37 XF4	C 30/37 XF4	C 30/37 XF4

7- If concrete can be affected by frost and thaw cycles.

15- If installation is in road crossings subject to heavy traffic (especially trucks), Class C30/37 concrete should be used.

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SPECIFICATIONS

WING

1. Supply and installation of MufleDrain WING type HD-PE drainage channel with external stiffening ribs and male-female coupling system allowing the assembly between one channel and the next with the relevant pre-assembled gratings. The channel will have 3/4 drainage diaphragms at pre-determined points. Galvanised (stainless) steel upper profile equipped with M8 threaded insert to which a screw can be secured to fix the gratings, 4 mm-thick drive-over edge, 2 mm-thick contact surface with height not smaller than 25 mm, connection through prearranged coupling to the channel structure. The channel surface will be perfectly smooth and have a low roughness coefficient to allow the best water flow. It will also be perfectly water-tight and devoid of any connection points with the outside. The channel will have the following dimensions: length 1,000 mm, internal net gap ___mm, internal height ___ mm.
2. Supply and installation of MufleDrain WING type HD-PE drainage channel with external stiffening ribs and male-female coupling system allowing the assembly between one channel and the next with the relevant pre-assembled gratings. The channel will have 2 drain diaphragms at pre-determined points and it will be designed to house a HD-PE drain gate (diameter 100 mm - 110 mm) on the bottom through 4 screws. Galvanised (stainless) steel upper profile equipped with M8 threaded insert to which a screw can be secured to fix the gratings, 4 mm-thick drive-over edge, 2 mm-thick contact surface with height not smaller than 25 mm, connection through prearranged coupling to the channel structure. The internal surface of the channel will be perfectly smooth and have a low roughness coefficient to allow water flow. It will also be perfectly water-tight and devoid of any connection points with the outside. The channel will have the following dimensions: length 1,000mm, internal net gap 100 mm, internal height ___ mm.
3. Supply and installation of MufleDrain WING type HD-PE drainage channel with external stiffening ribs and male-female channel coupling system. The channel will have 4 drainage diaphragms at pre-determined points. Ductile cast-iron upper profile equipped with M10 screw to which a nut can be secured to fix the gratings, 6 mm-thick drive-over edge, 9 mm-thick contact surface with height not smaller than 35 mm, connection through a nut and bolt system to the channel structure. The channel will have the following dimensions: length 1,500mm, internal net gap 300mm, internal height 300 mm.
4. Supply and installation of ductile iron GJS 500/7 covering gratings according to EN 1563-2004 for MufleDrain WING drainage channels with screw fixing system, load class C250 (D400, E600, F900) according to EN 1433-2008, slot width 20 mm, length 498 mm, width ___mm.
5. Supply and installation of ductile iron GJS 500/7 covering gratings according to EN 1563-2004 for MufleDrain WING drainage channels with screw fixing system, load class D400 according to EN 1433-2008, square mesh, length 498 mm, width ___mm.
6. Supply and installation of ductile iron GJS 500/7 covering gratings according to EN 1563-2004 for MufleDrain WING drainage channels with screw fixing system, load class E600 according to EN 1433-2008, slot inclined 30° to the longitudinal axis, width 6mm, length 498mm, width 148 mm.
7. Supply and installation of ductile iron GJS 500/7 covering gratings according to EN 1563-2004 for MufleDrain WING 300 drainage channels with nut fixing system, load class C250 according to EN 1433-2008, length 498 mm, width 376 mm.
8. Supply and installation of ductile cast- iron GJS 500/7 mesh gratings according to EN 1563-2004 for MufleDrain WING 300 drainage channels with nut fixing system, load classes C250 (D400, E600) according to EN 1433-2008, length 748 mm, width 376 mm.
9. Supply and installation of ductile iron covering gratings for MufleDrain WING drainage channels with nut fixing system, load class F900 according to EN 1433-2008, slot length 24 mm, length 748 mm, width 376 mm.
10. Supply and installation of ductile iron GJS 500/7 blind covers according to EN 1563-2008 with mesh for MufleDrain WING drainage channels with screw fixing system, load class E600 according to EN 1433-2004, length 498 mm, width ___mm.
11. Supply and installation of ductile iron GJS 500/7 blind covers according to EN 1563-2004 with mesh for MufleDrain WING drainage channels with nut fixing system, load class E600 according to EN 1433-2004, length 498 mm, width 376 mm.
12. Supply and installation of ductile iron GJS 500/7 perforated cover Air System according to EN 1563-2004 for composting systems with slots for screw fixing. The cover will have 12 holes (Ø 10) to allow the passage of the air needed for composting. The holes will have a truncated-cone section with the smaller base upwards in order to prevent any clogging due to residues. The load class of the cover will be E600 according to EN 1433-2008, usable length 500 mm, width 198 mm.
13. Supply and installation of galvanised (stainless) steel square-mesh or anti-heel covering gratings for MufleDrain WING drainage channels equipped with screw fixing slots, load class C250 according to EN 1433-2008, length 998 mm, width ___mm. A similar grating will be available upon request with length 498 mm. The dimensions will be 30 x 30 mm in the square mesh and 30 x 10 mm in the anti-heel mesh.
14. Supply and installation of T-shaped longitudinal-slot gratings made from galvanised steel for MufleDrain WING drainage channels with male-female coupling system between one grating and the next, load class D400 according to EN 1433-2008, length 998 mm, width ___ mm, height of "T" ___mm.
15. Supply and installation of L-shaped longitudinal-slot gratings made from galvanised steel for MufleDrain WING drainage channels with male-female coupling system between one grating and the next, load class D400 according to EN 1433-2008, length 998mm, width ___ mm, height of "L" ___mm.
16. Supply and installation of galvanised steel blind cover for MufleDrain WING drainage channels with screw fixing system, load class C250 according to EN 1433-2004, length 998 mm, width ___mm. A similar cover will be available upon request with length 498 mm.
17. Supply and installation of HD-PE end caps for MufleDrain drainage channel with coupling system into the special channel housing.
18. Supply and installation of HD-PE open cap with drainage hole diameter ___mm for MufleDrain drainage channel with coupling system into the special channel housing.
19. Supply and installation of (open) end cap made from galvanised steel (galvanised steel and PVC tube) for MufleDrain drainage channel with coupling system into the special channel housing.



SPECIFICATIONS

WING

20. Supply and installation of HD-PE boxes with siphon for MuffleDrain WING drainage channels with external stiffening ribs and coupling system. Upper profile of HD-PE with height not smaller than 20 mm. The upper section of the siphon built in the gully may be removed in order to allow inspection and cleaning work. The gully will have preformed drains on both sides with diameter up to 500 mm. The gully dimensions will be as follows: length 542 mm, net gap ___ mm, height 400 mm.
21. Supply and installation of inspection elements for MuffleDrain WING T-shaped gratings in galvanized (stainless) steel for MuffleDrain WING drain boxes with siphon. Every inspection element will be made of an external containment tank self-centered on bottom drain box with siphon and of an inspection element to be placed inside the containment tank that can be also pulled out after installation. Load classes until C250. The sizes of drain boxes shall be length 500 mm, width _____ mm, height _____ mm.
22. Supply and installation of inspection elements for MuffleDrain WING L-shaped gratings in galvanized (stainless) steel for MuffleDrain WING drain boxes with siphon. Every inspection element will be made of an external containment tank self-centered on bottom drain box with siphon and of an inspection element to be placed inside the containment tank that can be also pulled out after installation. Load classes until C250. The sizes of drain boxes shall be length 500 mm, width _____ mm, height _____ mm.