# BIRCOlight | Installation Instructions

## A number of details must be observed when installing BIRCOlight. For a comprehensive description please read here.

To guarantee smooth operation and compliance with the requirements of DIN EN 1433, the following general valid installation instructions must be observed:

1. Prior to installation, the correct load class in accordance with DIN EN 1433 must be selected.

2. Thanks to the high level of stability, laying the BIRCO channels is conducted on an earth-moist C 25/30 strip of foundation concrete at least 15 cm high which must be tapered in a conical shape on both sides. No additional encasing or reinforcement on the sides is required[(1)]. Begin laying the channel line following the outfall unis with the highest channel at the drain and form the channel line with the next-smallest number.

3. All adjoining pavement surfaces must run **permanently at a level of some 3 to 5 mm higher than the upper edge of the channel . In order to achieve this, we recommend laying the first two to three rows of pavement surfacing in the mortar bed.** Because there is no concrete encasing, the surface pavement can run right up to the channel without any problems.

4. For installation in concrete surfaces or reinforced concrete constructions, running joints must be provided on both sides to compensate horizontal forces that emerge. These joints should be planned at an interval of some 0.2 to 0.5 metres from the channel. In sealing the adjacent areas it must be ensured that there is no mechanical damage to the channel units. Joints running diagonally to the channel line must be arranged every 5 – 6 metres in the adjacent concrete surfaces (in-situ concrete) so that they run through a channel joint.

5. BIRCO drainage units are fitted with a safety seam on the channel end. In accordance with DIN EN 1433, once laying has been completed this safety seam can be further treated with a plastic modified mortar or a permanently elastic sealing material (for example SF-Connect).

6. Proceed analogously when installing the gully.

7. Local particularities can require special installation methods that have to be examined and taken into account by the planner(s). The installation must comply with the latest regulations and guidelines such as ZTVT, ZTV concrete, ZTV bit and RStO.

+ Construction in accordance with the Construction Tendering and Contract Regulations (VOB) Part C, DIN 18318 “Transport Route Construction”.
+ Additional technical regulations and guidelines for pavement surfaces in road construction (ZTVT-StB) and ZTV Asphalt.
+ Additional technical regulations and guidelines for ground work in road construction (ZTVE-StB).
+ Guidelines for the standardisation of the pavement of public thoroughfares (RSTO).
+ Preparation of the ATV DIN 18299 performance description “General Regulations for Construction Work of all Types”.
+ The respectively correct load class in accordance with DIN EN 1433, “Drainage channels for vehicular and pedestrian areas”.

(1) Exception:
When using BIRCOlight for load class D 400/E 600 in heavy-duty areas with frequent traffic, it may be necessary to encase the channel with concrete on the sides to compensate for the high levels of horizontal forces that could potentially emerge.

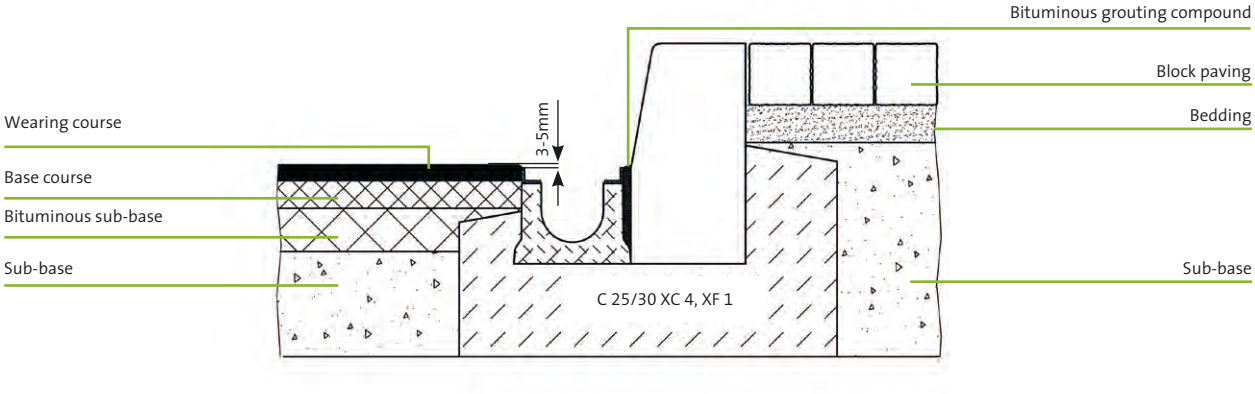
**Fast, safe installation** | Efficient time and cost management

+ Channel panel NW 100 and 150 with bloating guard guarantees long-lasting positional stability.

# Installation Examples BIRCOlight

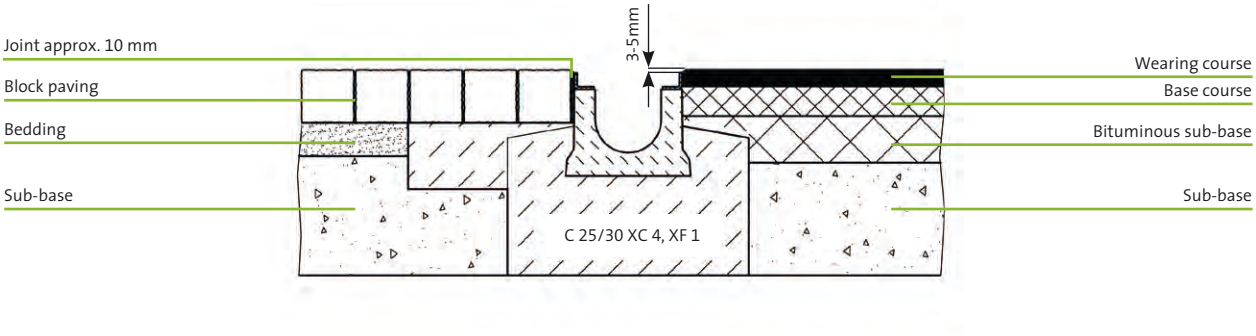
## BIRCOlight NW 100 AS, class A 15 to C 250, Type M

**Drawing No. 8617**



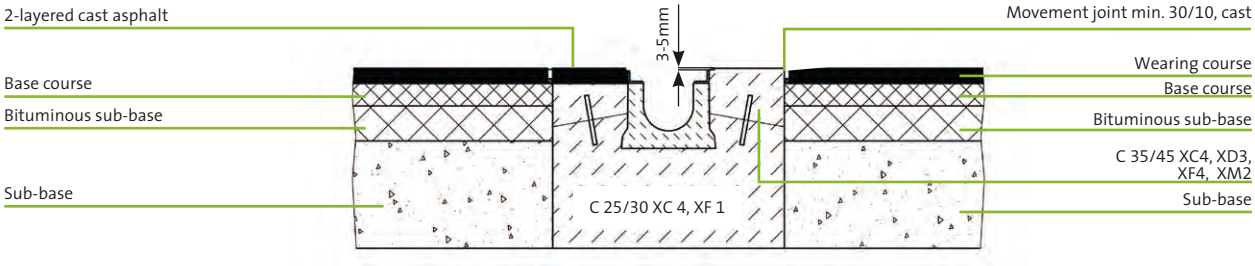

## BIRCOlight NW 100 AS / NW 150 AS, class A 15 to C 250, Type M

**Drawing No. 8617, 8618**




## BIRCOlight NW 100 AS / NW 150 AS, class D 400 to E 600, Type M

**Drawing No. 8617, 8618**



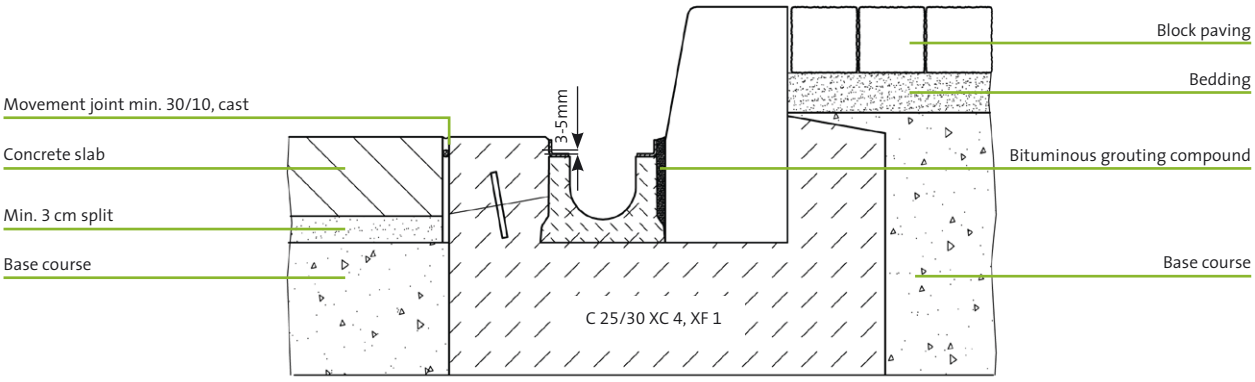

For information on cleaning, maintenance and jointing instructions see Page 125.
See Page 31 for installation dimensions.
Constructed in accordance with RSTO using non-settling frost-free sub-bases.
Exception up to D 400: Not for use across the carriage- way of highways or motorways.

# Installation examples BIRCOlight

## Additional installation examples for loose/sliding pavements, for example large-scale plates

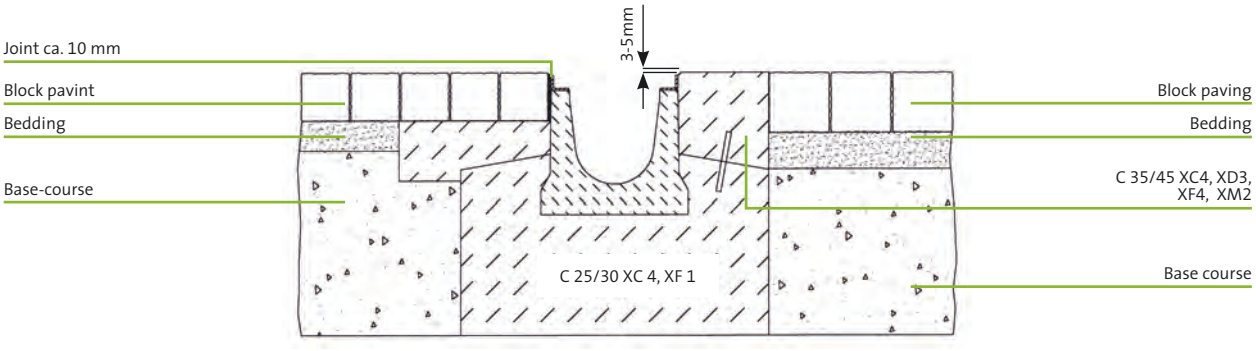
### BIRCOlight NW 100 AS, class D 400 to E 600, Type M

**Drawing No. 8617**




### BIRCOlight NW 100 AS / NW 150 AS, class D 400 to E 600, Type M

**Draing No. 8617, 8618**




**When pavement surfaces are being laid and pressed, it must be ensured that the pavement material is not forced against the channels.**

The dimensions of the concrete surround must be adapted to the circumstances on-site and must consist of at least 15 cm. If no bond can be created between the base and the surround, then dowel bars or flotation control made of Ø 8 mm reinforced bars are to be installed every 30 cm. The concrete qualities indicated are minimum values. Requirements related to the installation location according to DIN 1045-2 or DIN EN 206-1 regarding for instance resistance to frost and de-icing salt are to be taken into account in the choice of the concrete.

**Bolting connection note:**
Torque moments for screw fastening the gratings are to be set at M12 = 60 Nm. Exceptions: NW 100 Class B grated mesh = 50 Nm, BIRCOlight bar grate = 25 Nm, hand-tightened for perforated grating.

**The bolts on the gratings must be retightened at regular intervals.**

For information on cleaning, maintenance and jointing instructions see Page 125.
See Page 31 for installation dimensions.
Constructed in accordance with RSTO using non-settling frost-free sub-bases.
Exception up to D 400: Not for use across the carriage- way of highways or motorways.

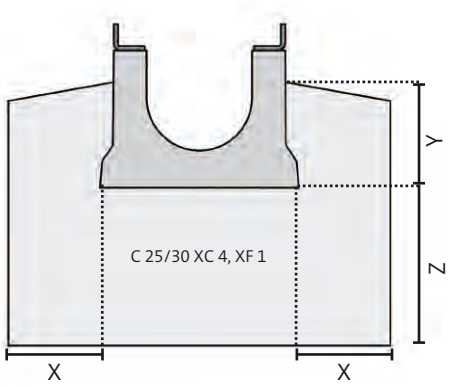
# BIRCOlight concrete surround overview

**The manufacturer's installation instructions must be followed in order to comply with the requirements stipulated by DIN EN 1433.**

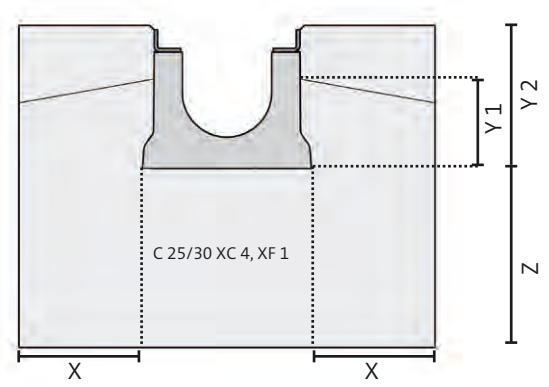
**BIRCOlight**

| NW | Type | Load-class | X | Y/Y 1 | Y 2 | Z | Drawing No. | Page |
|---|---|---|---|---|---|---|---|---|
| BIRCOlight 100 AS | M | A 15 – C 250 | ≥ 100 | ≥ 100 | – | ≥ 150 | 8617 | 29 |
| BIRCOlight 100 AS | M | D 400 – E 600 | ≥ 150 | ≥ 100 | Construction height + 5 mm | ≥ 200 | 8617 | 29/30 |
| BIRCOlight 150 AS | M | A 15 – C 250 | ≥ 150 | ≥ 100 | – | ≥ 150 | 8618 | 29 |
| BIRCOlight 150 AS | M | D 400 – E 600 | ≥ 150 | ≥ 100 | Construction height + 5 mm | ≥ 200 | 8618 | 29/30 |

## Schematic structure




Installation without concrete surround




Installation with concrete surround

# Horizontal and vertical bore holes

Depending on the circumstances on-site, drainage channels sometimes have to be fitted with a bore hole for connection to the sewage line. We can fit BIRCO channels with horizontal or vertical bore holes for directly fitting feed and drainage lines according to your plans. The connections available differ according to the nominal widths, extending in the standard range from DN 100 to DN 150. The diameters are matched with channel base pipes; different pipes are available upon request.

**BIRCOlight | Maximum bore hole diameter**

| NW | Bore hole, horizontal maximal | Bore hole, vertical maximal |
|---|---|---|
| 100 mm | DN 100/DN 150* | DN 100 |
| 150 mm | DN 150** | DN 150 |

* Starting from channel No. 15/0, ** Starting from channel No.
Bore holes must be a distance of least 100 mm away from the end of the channel

**BIRCOservice** Page 123

\+ BIRCO offers you an individual customisation and bore hole service ex-factory.

# BIRCOlight Drainage Capacities

**BIRCO channel systems provide outstanding drainage performance. BIRCO offers a calculation service in addition to this diagram.**

**BIRCOlight NW 100 AS | 0.5 % inbuilt fall**

| CL = 1000 mm | Drainage capacity at the channel end | Cross-sectional area at the channel end |
|---|---|---|
| No. 0/0 | 4.96 l/sec* | 89.0 cm² |
| No. 1 | 5.55 l/sec* | 94.0 cm² |
| No. 2 | 5.85 l/sec* | 99.0 cm² |
| No. 3 | 6.14 l/sec* | 104.0 cm² |
| No. 4 | 6.44 l/sec* | 109.0 cm² |
| No. 5 | 6.73 l/sec* | 114.0 cm² |
| No. 5/0 | 6.35 l/sec* | 114.0 cm² |
| No. 6 | 7.03 l/sec* | 119.0 cm² |
| No. 7 | 7.32 l/sec* | 124.0 cm² |
| No. 8 | 7.62 l/sec* | 129.0 cm² |
| No. 9 | 7.91 l/sec* | 134.0 cm² |
| No. 10 | 8.21 l/sec* | 139.0 cm² |
| No. 10/0 | 7.74 l/sec* | 139.0 cm² |
| No. 11 | 8.50 l/sec* | 144.0 cm² |
| No. 12 | 8.80 l/sec* | 149.0 cm² |
| No. 13 | 9.09 l/sec* | 154.0 cm² |
| No. 14 | 9.30 l/sec* | 159.0 cm² |
| No. 15 | 9.68 l/sec* | 164.0 cm² |
| No. 15/0 | 9.13 l/sec* | 164.0 cm² |
| No. 16 | 9.97 l/sec* | 169.0 cm² |
| No. 17 | 10.27 l/sec* | 174.0 cm² |
| No. 18 | 10.56 l/sec* | 179.0 cm² |
| No. 19 | 10.86 l/sec* | 184.0 cm² |
| No. 20 | 11.15 l/sec* | 189.0 cm² |

* Safety factor $\upsilon$ = 1,2

**BIRCOlight NW 150 AS | 0.5 % inbuilt fall**

| CL = 1000 mm | Drainage capacity at the channel end | Cross-sectional area at the channel end |
|---|---|---|
| No. 0/0 | 10.20 l/sec* | 183.6 cm² |
| No. 1 | 11.25 l/sec* | 191.0 cm² |
| No. 2 | 11.70 l/sec* | 198.5 cm² |
| No. 3 | 12.13 l/sec* | 205.9 cm² |
| No. 4 | 12.57 l/sec* | 213.4 cm² |
| No. 5 | 13.01 l/sec* | 220.8 cm² |
| No. 5/0 | 12.27 l/sec* | 220.8 cm² |
| No. 6 | 13.45 l/sec* | 228.3 cm² |
| No. 7 | 13.89 l/sec* | 235.7 cm² |
| No. 8 | 14.33 l/sec* | 243.2 cm² |
| No. 9 | 14.77 l/sec* | 250.7 cm² |
| No. 10 | 15.21 l/sec* | 258.1 cm² |
| No. 10/0 | 14.34 l/sec* | 258.1 cm² |
| No. 20/0 | 18.07 l/sec* | 325.2 cm² |

* Safety factor $\upsilon$ = 1,2

These diagrams can only provide the desired result in a few cases since the job definition is influenced in large part by the conditions on-site, i.e, the location of the existing drains, the number of drainage lines, etc. Therefore we recommend a hydraulic calculation from our personnel with a proposed design.