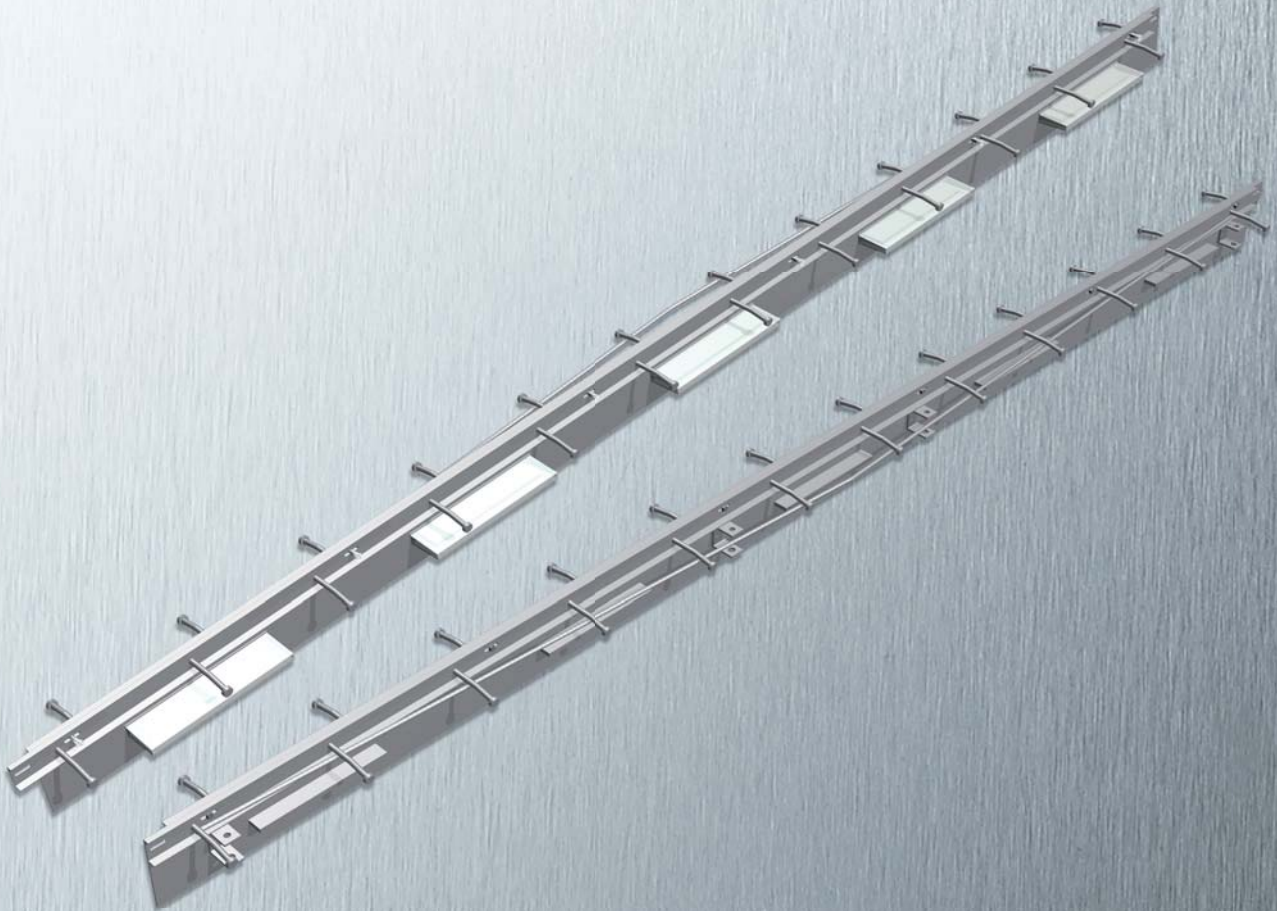


# HALFEN HLJ LOAD JOINT SL

## TECHNICAL PRODUCT INFORMATION



HALFEN LOAD JOINT

HLJ-SL 10-E

CONCRETE



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YOUR BEST CONNECTIONS

# HALFEN HLJ LOAD JOINT SL

## Introduction

### Industrial floors with HALFEN HLJ Load joint SL

#### Expansion joints and construction joints

Large-area concrete floor slabs in industrial buildings and logistic centers need expansion joints to reduce the forced stresses and construction joints to define the daily sections between concrete casting.

Due to the high vehicle-impact (e.g. by forklift trucks), these joints represent weak points in the floor slab area and have to be planned, dimensioned and executed carefully. Very efficient dimensioning and construction of the floor slab is made possible by load transmission with the HALFEN Load joint system through the joint to the adjacent floor areas.



HALFEN Load joint for defining daily sections. TWINTEC logistics building in Liverpool.



Detail HALFEN Load joint in the column area. NIKE sales center in Laakdal, Belgium.

The HALFEN Load joint system is an innovative joint system for industrial floors, so that:

- effects due to shrinking and expansion of the concrete can be controlled
- loads can be transmitted safely into the floor slab
- the floor slab can also withstand high loads at the joints
- defining daily sections is made possible and construction joints can be created.

#### The advantages of the HALFEN Load joint system at a glance

- Prevents crack formation – enables free expansion and contraction of the floor slabs
- Absolute flush surface – no irregular edging even with uneven settlement in the subsoil
- Efficient edge protection of the floor slabs and very good transfer of punctual loads into the concrete due to specially shaped edge protection profiles
- High load-bearing capacities
- Reduction in the construction heights
- Low dead weight
- Suitable for both, steel-fiber reinforced as well as conventional reinforced floor slabs
- Joint layout freely selectable due to combination of T and X junction elements
- Quick and precise installation



Well-planned joints prevents vehicle-impact problems and benefit efficiency.



Random cracks and visual imperfection are things of the past.



Fast and high-quality assembly for greater efficiency and customer satisfaction.

# HALFEN HLJ LOAD JOINT SL

## Introduction and product description

### Industrial floors with HALFEN HLJ Load joint SL

#### Optimized edge protection

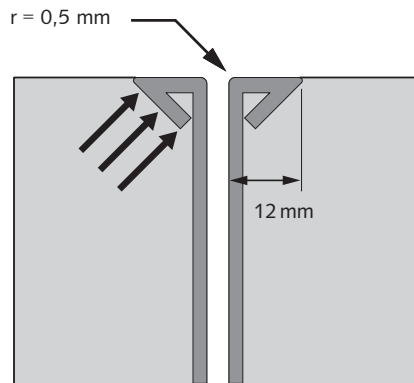
The wide steel edges of the HALFEN HLJ System ensure durability, even with large joint widths and transfer the load safely into the concrete by their special edge shape.

#### Optimal joint width

The joint opens during the concrete drying process – as a result the joint width is kept to a minimum whilst potential horizontal plate movement in the joint is unhindered.

#### High load bearing capacities

The flat anchors with a thickness of 8 or 10 mm enable load transfer while preventing reciprocal vertical displacement of the joint edges.



Vehicle-impact loads are kept to a minimum with a reduction in stresses to the floor-slabs' corner and edge areas.

For the table with bearing capacities for C30/37 and C35/45 → see page 6.

#### Variable product range

For slab thicknesses of 150 to 350 mm, product overview → see page 4

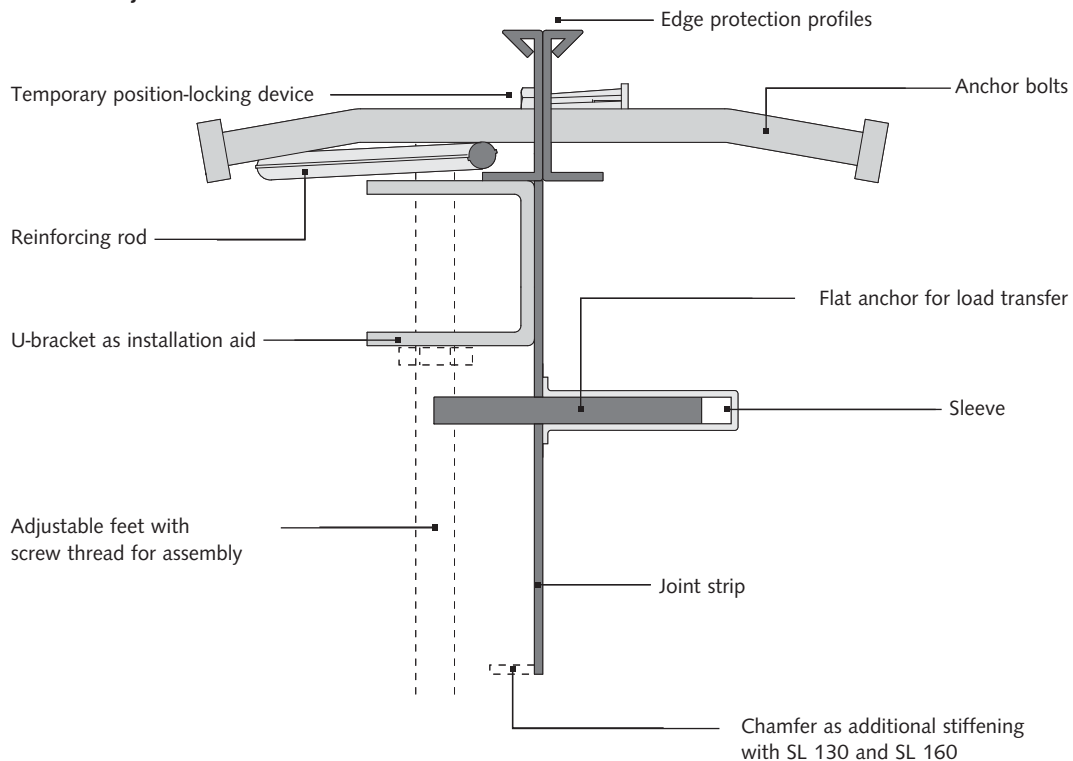
#### Quick and precise installation

With large floor-areas it is necessary to work in sections (daily sections). To achieve this HALFEN Load joints are used at the edges of each segment/section in the formwork.

Junction elements and adjustable feet ensure easy and efficient assembly. Accessories → see page 7

### Product description HALFEN HLJ Load joint SL

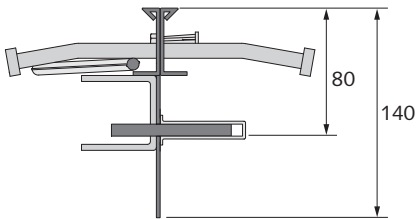
#### Cross-section HLJ Load joint SL



# HALFEN HLJ LOAD JOINT SL

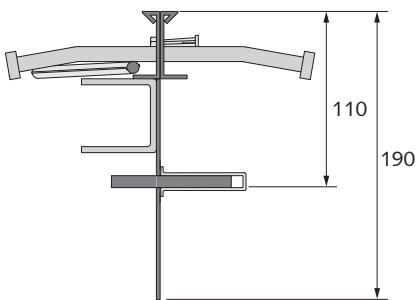
## Product range

### Standard profiles



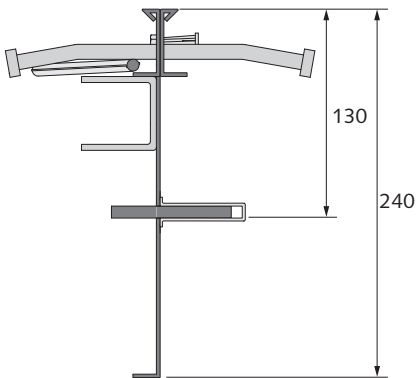
Article name	Order No.	Geometry
HLJ SL - 80	0880.010-00001	For slab thicknesses from 150 to 200 mm Total height 140 mm Position of flat anchors 80 mm Length of element 2.98 m Weight 8.1 kg/m <sup>Ⓢ</sup>

① Incl. 4 assembly brackets



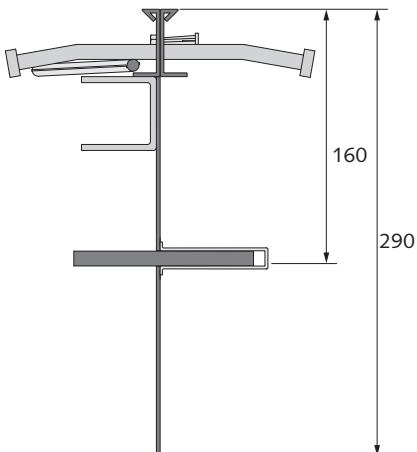
Article name	Order No.	Geometry
HLJ SL - 110	0880.010-00002	For slab thicknesses from 200 to 250 mm Total height 190 mm Position of flat anchors 110 mm Length of element 2.98 m Weight 8.9 kg/m <sup>Ⓢ</sup>

① Incl. 4 assembly brackets



Article name	Order No.	Geometry
HLJ SL - 130	0880.010-00003	For slab thicknesses from 250 to 300 mm Total height 240 mm Position of flat anchors 130 mm Length of element 2.98 m Weight 10.0 kg/m <sup>Ⓢ</sup>

① Incl. 4 assembly brackets



Article name	Order No.	Geometry
HLJ SL - 160	0880.010-00004	For slab thicknesses from 300 to 350 mm Total height 290 mm Position of flat anchors 160 mm Length of element 2.98 m Weight 12.6 kg/m <sup>Ⓢ</sup>

① Incl. 4 assembly brackets



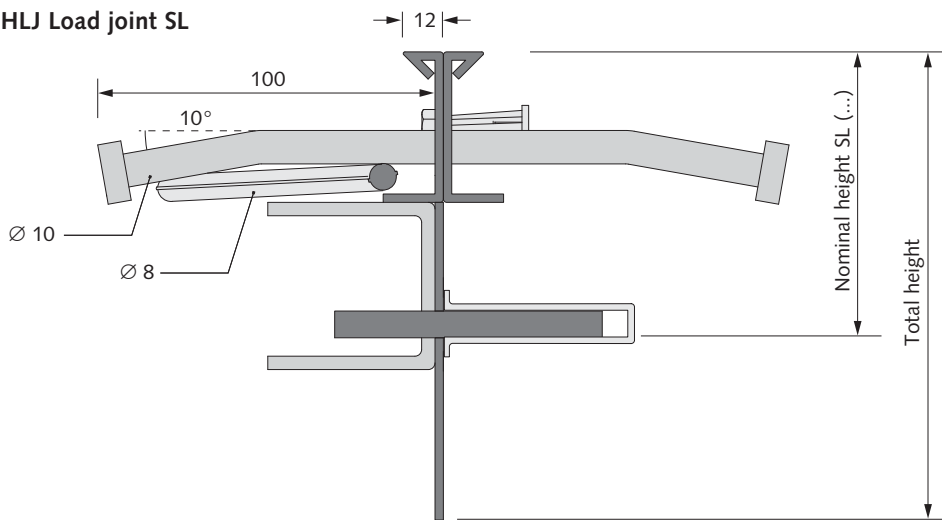
# HALFEN HLJ LOAD JOINT SL

## Design and dimensioning

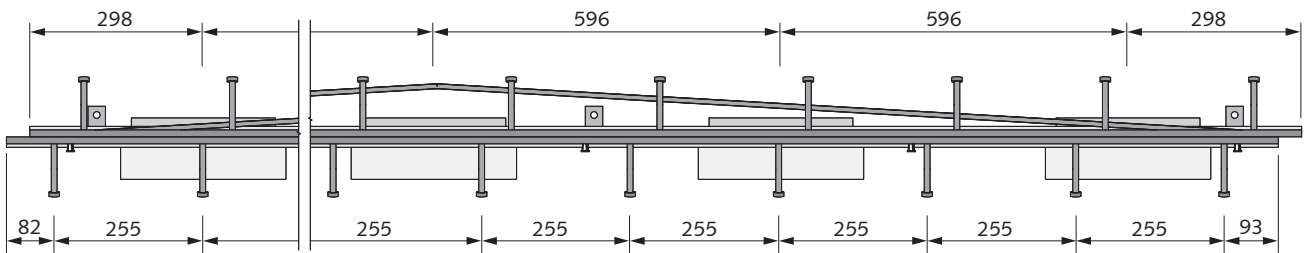
### Geometry

- Length of element 2.98 m
- Width of edge protection 12 mm
- Screw connection by means of 6 slot holes per element
- Standard joint widths up to 20 mm are possible
- 5 flat anchors transfer vertical load
- 5 sliding sleeves made of propylene enable horizontal floor movements  $\pm 15$  mm parallel to the joint
- 24 anchor bolts per element
- Diagonal reinforcing rod
- Dimension of load-carrying flat anchor 247 x 80 x 8 mm S 235 JR,
- or 247 x 120 x 10 mm S 235 JR for S-line 160
- 4 U-brackets for assembly with adjustable feet  $\rightarrow$  for accessories see page 7

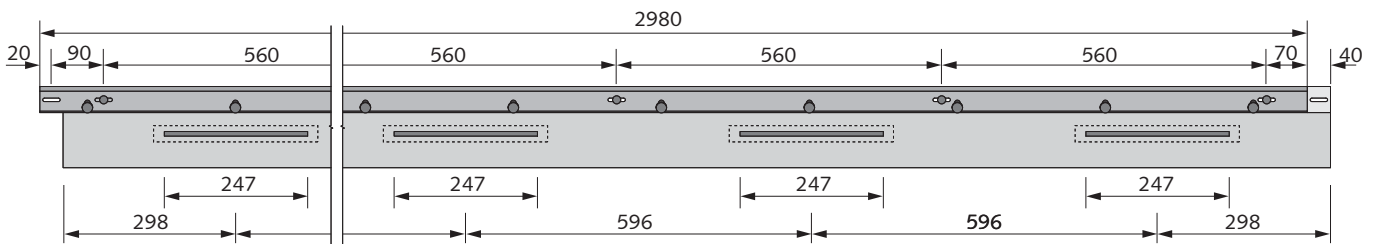
Cross-section HLJ Load joint SL



Top view of HLJ Load joint SL



Elevation of HLJ Load joint SL



# HALFEN HLJ LOAD JOINT SL

## Design and dimensioning

### Dimensioning and bearing capacities

Concrete floor slabs do not, as a rule, constitute load-bearing or reinforcing components of the local bearing structure and as such are not subject to the building code requirements. There are no specific standards that specially regulate this area.

It is, however, advisable to observe the regulations in other fields (e.g. concrete road construction) and the recommendations in other literature (e.g. German DBV-Merkblatt, Lohmeyer/Ebeling).

The stresses on the floor slab depend essentially, apart from the rigidity of the subsoil, on the position of the loads. Thus, significantly higher stresses occur in the edge and corner areas of the floor than in the center. With the ability to transfer force through the joint to the neighboring floor, the stresses can be reduced considerably. The HALFEN Load joint system enables shear-force transmission through the flat anchors and thus permits more economical dimensioning of the floor slab. As no specific design models are available for joint strips of this type, the bearing capacity of the HALFEN Load joint Systems was determined on the basis of the regulations of the "Concrete Society Technical Report No 34 (TR34) – Concrete Industrial Ground Floors – A Guide to Design and Construction, 3rd edition". The bearing capacities were also confirmed by tests at the University of Leuven in Belgium. The design model takes into account the bearing capacities of the steel and the adjacent concrete. However, no more than 50% of the load should be transferred through the joint strip, so as to ensure an adequate bearing capacity of the floor slab.

Relevant load bearing capacities $V_{Rd}$ [kN] per flat anchor					
		Joint width up to 20 mm			
HALFEN Load joint	Slab thickness [mm]	Normal concrete C30/37	Normal concrete C35/45	Steel fiber concrete <sup>①</sup> C30/37	Steel fiber concrete <sup>①</sup> C35/45
HLJ SL - 80	150	31.0	33.5	53.3	57.5
	160 – 200	32.3	34.9	55.6	60.0
HLJ SL - 110	200	35.3	38.2	60.9	65.8
	210 – 250	37.3	40.3	63.8	68.9
HLJ SL - 130	250	42.6	46.0	71.7	77.5
	260 – 300	43.2	46.6	72.6	78.4
HLJ SL - 160	300	48.9	52.8	81.0	87.5
	310 – 350	51.9	56.1	85.6	92.5

① Steel fiber concrete 40 kg/m<sup>3</sup>

When joint strips are used in the outside area, larger joint openings are to be expected due to the greater temperature fluctuations. You will obtain upon request the bearing capacities that are relevant to your situation. Addresses → see the backside of the catalog.

Relevant load bearing capacities $V_{Rd}$ [kN] per meter of joint					
		Joint width up to 20 mm			
HALFEN Load joint	Slab thickness [mm]	Normal concrete C30/37	Normal concrete C35/45	Steel fiber concrete <sup>①</sup> C30/37	Steel fiber concrete <sup>①</sup> C35/45
HLJ SL - 80	150	52.0	56.2	89.4	96.5
	160 – 200	54.2	58.6	93.3	100.7
HLJ SL - 110	200	59.2	64.1	102.2	110.4
	210 – 250	62.6	67.6	107.0	115.6
HLJ SL - 130	250	71.5	77.2	120.3	130.0
	260 – 300	72.5	78.2	121.8	131.5
HLJ SL - 160	300	82.0	88.6	135.9	146.8
	310 – 350	87.1	94.1	143.6	155.2

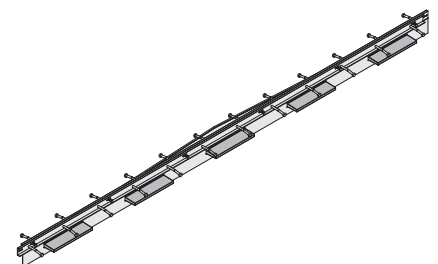
① Steel fiber concrete 40 kg/m<sup>3</sup>

When joint strips are used in the outside area, larger joint openings are to be expected due to the greater temperature fluctuations. You will obtain upon request the bearing capacities that are relevant to your situation. Addresses → see the backside of the catalog.

### Tender specification

HALFEN HLJ SL Load joint as edge protection in the joint area of floor slabs, suitable for shear force transmission, edge protection and borders of daily sections at the expansion joints of floor slabs under predominantly static and non-predominantly static stresses, type HLJ SL – 80, made of structural steel S235 JR, element length 2.98 m, 12 mm edge protection each on both sides, 5 flat anchors and 24 anchor bolts per element,

with 80 = nominal height in mm or equivalent, to be supplied and installed in accordance with the manufacturer's instructions.



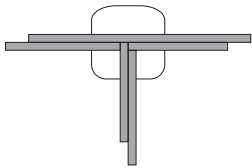
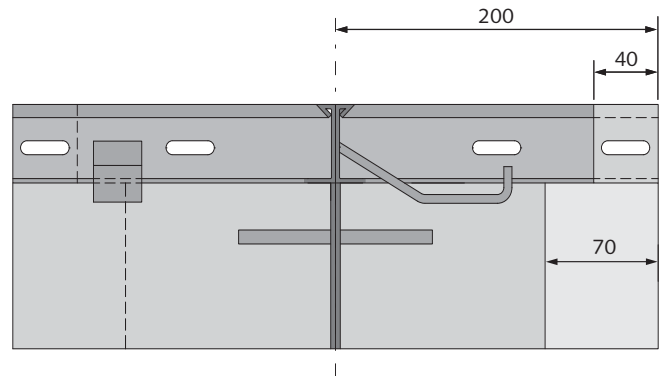
# HALFEN HLJ LOAD JOINT SL

## Product overview and accessories

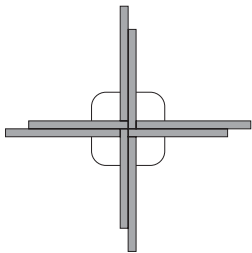
### Accessories

For quick and efficient installation, HALFEN offers T- and X- junction elements for the Load joint system, adjustable feet for installation and protective strips for the underside rim. The use of adjustable feet with preinstalled U-brackets considerably reduces the extend of welding on site.

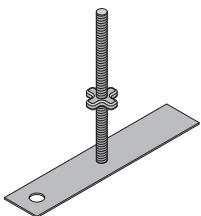
Elevation HLJ SL junction elements T and X [mm]



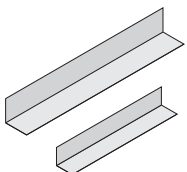
Topview HLJ SL T junction elements



Topview HLJ SL X junction elements



HLJ SL F adjustable feet



HLJ SL CA protective strips

T junction elements		
Article name	Order No.	Geometry
HLJ SL T - 80	0880.030-00001	For slab thicknesses from 150 to 250 mm
HLJ SL T - 130	0880.030-00002	For slab thicknesses from 250 to 350 mm

X junction elements		
Article name	Order No.	Geometry
HLJ SL X - 80	0880.040-00001	For slab thicknesses from 150 to 250 mm
HLJ SL X - 130	0880.040-00002	For slab thicknesses from 250 to 350 mm

Adjustable feet		
Article name	Order No.	Geometry
HLJ F 250 incl. set screw	0880.050-00001	For slab thicknesses $\leq 250$ mm thread M12
HLJ F 400 incl. set screw	0880.050-00002	For slab thicknesses from 250 to 350 mm thread M12

Protective strips		
Article name	Order No.	Geometry
HLJ CA - 60	0880.060-00001	Protective strip for the underside rim 60 x 60 x 4 mm, length 2.40 m
HLJ CA - 80	0880.060-00002	Protective strip for the underside rim 80 x 80 x 4 mm, length 2.40 m

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