hauff technik | UNITED KINGDOM



KES cable entry systems

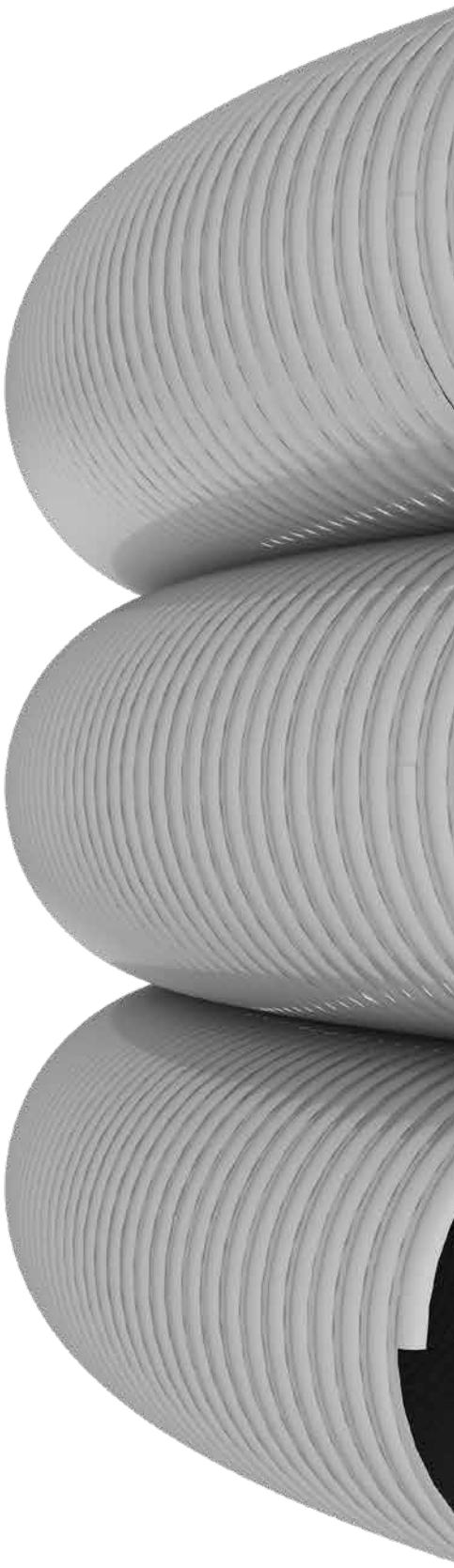
KES cable entry systems

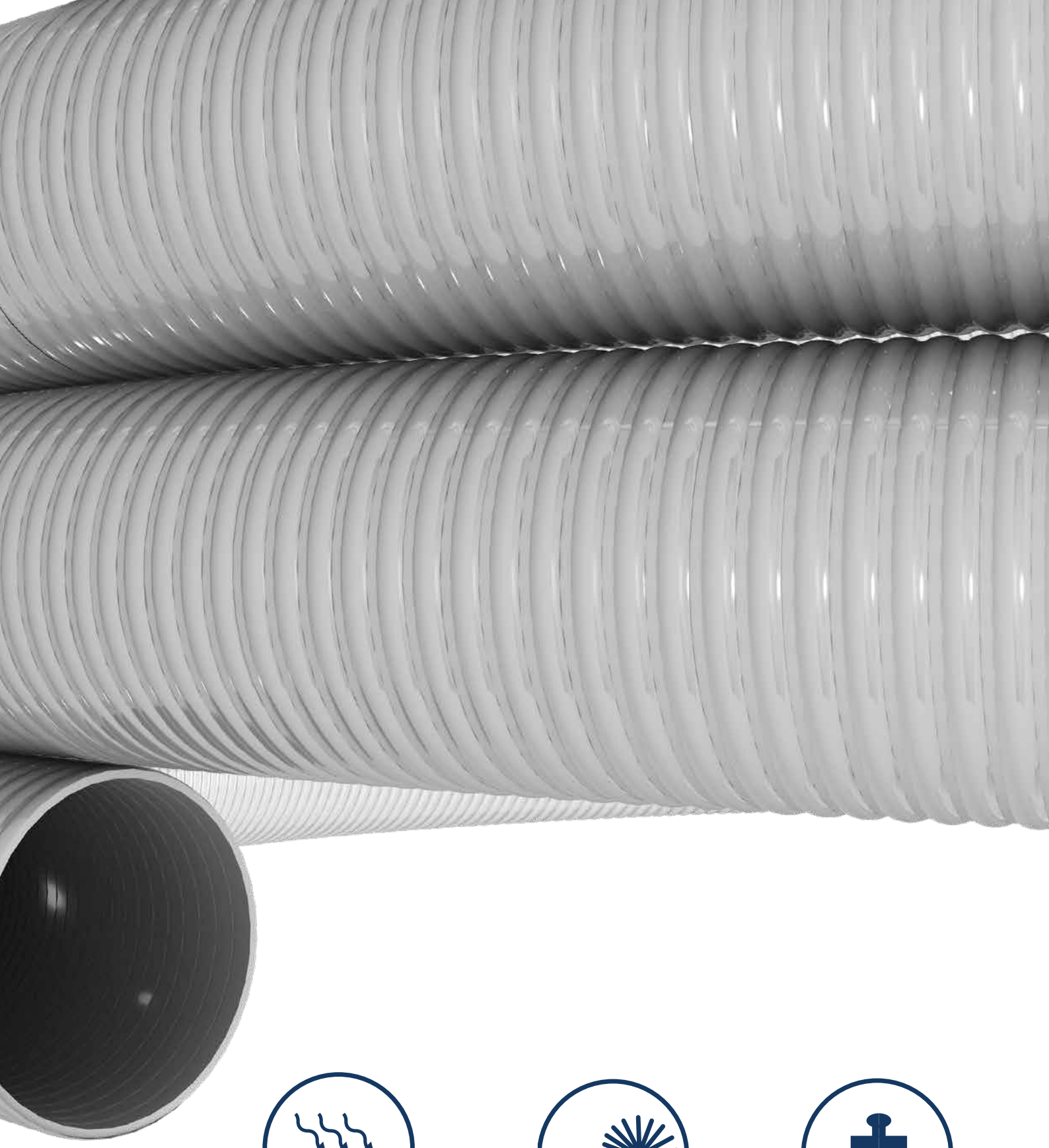
Over the course of its life, a building frequently undergoes renovation or refurbishment. In most cases, however, these activities only take place in the parts of the building located above ground level. Nonetheless, the requirements for the cable infrastructure in a building can also change significantly over time.

When constructing a building, it is advisable to provide for spare openings and lay the robust, durable duct route which can be used to replace or install new lines without having to dig up the entire conduit route every time.

For this purpose, Hauff-Technik offers the KES150 pressure-tight cable entry system, which is compatible with the Hateflex14150 and Hauff-Flex 150 spiral ducts, as well as various options for cable sealing. This system can be relied upon to provide optimum protection for the cables that are being laid.

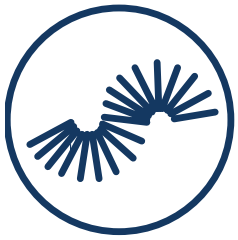
The main areas of application for pressure-tight cable entry systems are building entries, substations, converter stations or cable shafts.







Pressure-tight



Flexible



Stable

Duct routes with Hauff-Flex and Hateflex

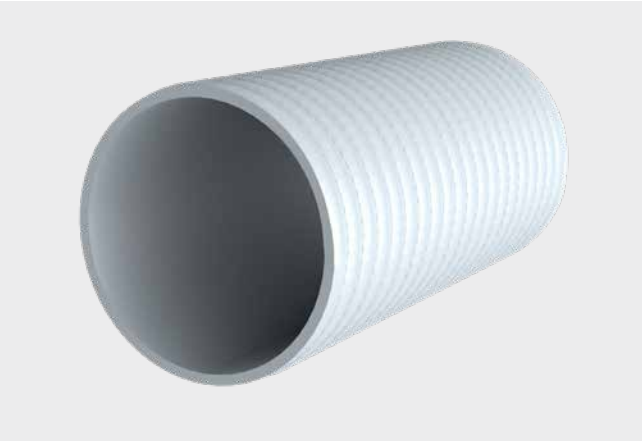
Features and benefits

The Hateflex and Hauff-Flex 150 polymer spiral duct are developed and optimised for civil engineering applications. They are made of UV-stabilized soft PVC, reinforced with spiral of hard PVC. The smooth inside ensures easy and gentle cable feeding thanks to minimal frictional forces. The break resistance of the materials ensure a save loading and transport even at low temperatures.

Thanks to their flexibility, Hateflex and Hauff-Flex 150 are simple and easy to install. They are available up to a length of 25 m and can be extended with the aid of connecting sleeves. At the end of the duct, transition and end sleeves allow sealing to installed cables and combination with conventional cable conduits.

The Hateflex14150 is a flexible and very stable polymer spiral duct for use under heavy compression stress, **Type 450N**.

A pressure-tight cable entry system for up to **2.5 bar external pressure** can be created using the associated connection components.



Hateflex14150

The Hauff-Flex 150 is a very flexible and stable polymer spiral duct for use under normal compressive stress, **Type 450N**.

A pressure-tight cable entry system for up to **1.0 bar external pressure** can be created using the corresponding connection components.



Hauff-Flex 150

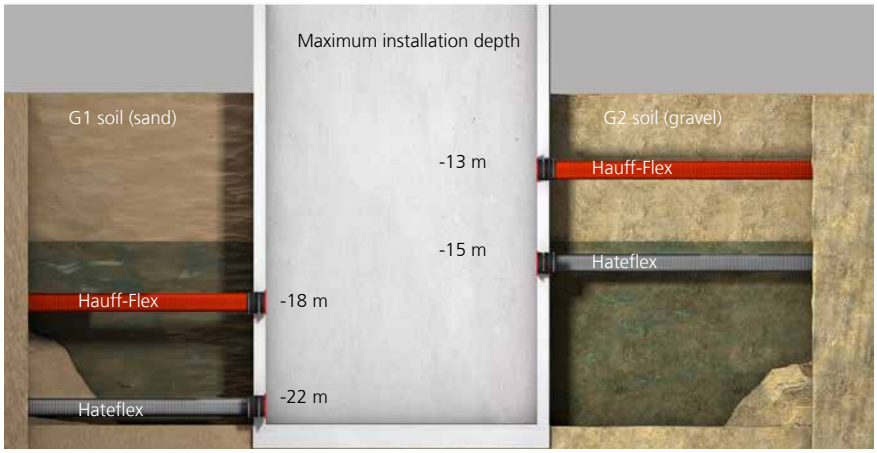
Peak compressive strength according to DIN EN 50626-1

An important property of cable ducts is their mechanical load capacity. This is calculated and classified according to the pressure test described in DIN EN 50626-1. The test describes the maximum vertical force that needs to be exerted on the pipe apex for its inner diameter to be deformed by 5%.



Figure shows peak compressive strength

Routing depth of cable ducts



Maximum routing depth of cable ducts

The installation depth of cable ducts is defined by the earth coverage above the pipe apex. It depends on the earth and traffic load and varies according to soil type G1 and G2.
The soil types are classified according to worksheet ATV-DVWK-A 127. G1 corresponds to non-cohesive soils, i.e. coarse sand or gravel. G2 corresponds to low-cohesive soils, incl. fine sands, in some cases silt.

Heavy load traffic (heavy trucks)

Various road traffic loads are classified and used to determine static load capacity. Here, a distinction is made between trucks of 12 tons (minimum load), and heavier trucks with loads of 30 and 60 tons. The last-mentioned truck represents a total load of 600 kN, around 60 t.

The Hateflex und Hauff-Flex cable ducts are suitable for heavy trucks with a weight of up to 60 tons from a minimum earth coverage of 0.5 m.



Minimum routing depth of cable ducts for heavy load traffic for heavy trucks

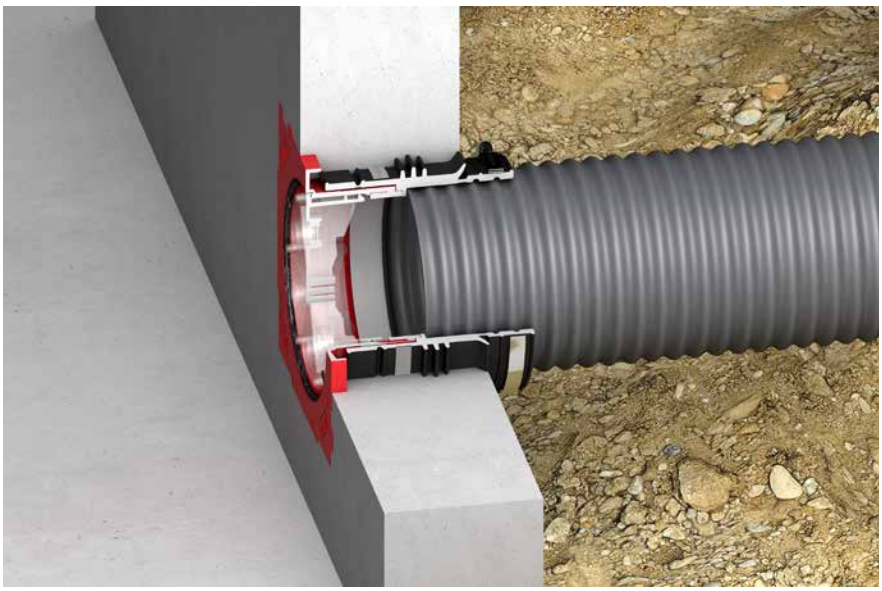
Inserts for wall and floor slab

Features and benefits

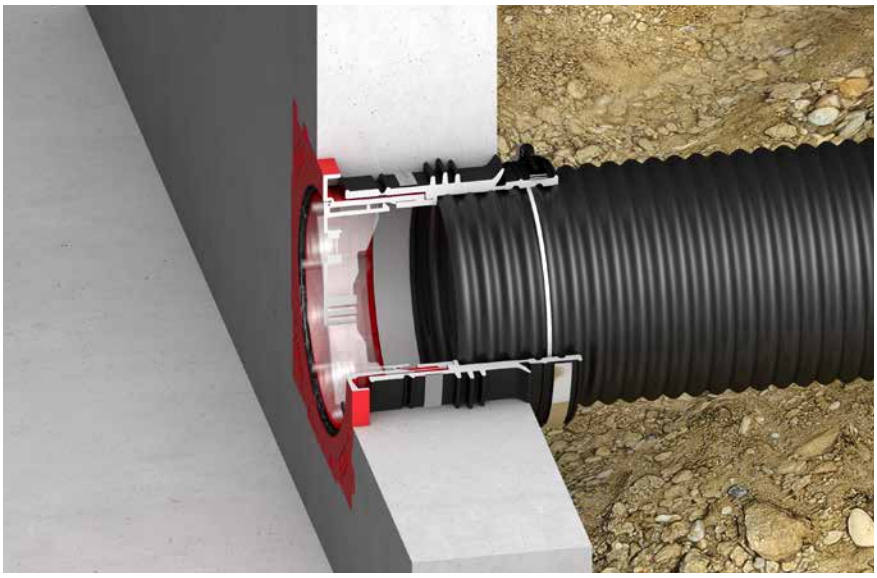
The inserts for cable entry systems impress above all through their simplicity. With the rubber plug-in and rubber folding method on the outside of the building, no additional pipe components are necessary. Installation is performed by attaching the duct together without using any tool. Due to the defined insertion depth to the stop within the sleeve, a stable, elastic connection can be created within the concrete wall. Settlement of the soil or other forces acting on the ducts can therefore be compensated without difficulty. This is where the folding sleeve method offers an additional pull-out protection through an attached clamping strap.

On the inside of the building, a pressure-tight closing cover ensures gas-tightness and water-tightness, even after connecting ducts. During cable feeding, various system seals can be inserted here.

Wall connection in new buildings



HSI150 KMA with connected Hateflex14150 cable duct



HSI150 KMA with connected corrugated pipe

Single wall insert with plug-in socket

for setting in concrete and connecting smooth cable ducts



HSI150 GSM

For the one-sided connection of system seals for cables (inside) and for connecting cable ducts (outside).

Figure	Wall thickness (mm)	Pipe OD (mm)	Article code	Article number	GTIN
	180 mm	160 mm	**HSI150 1x1 GSM160/180**	2120209180	4052487131230
	200 mm		**HSI150 1x1 GSM160/200**	3030303292	4052487222860
	240 mm		**HSI150 1x1 GSM160/240**	3030303417	4052487223102
	250 mm		**HSI150 1x1 GSM160/250**	3030303419	4052487223119
	300 mm		**HSI150 1x1 GSM160/300**	3030303421	4052487223126
	365 mm		**HSI150 1x1 GSM160/365**	3030303423	4052487223133
	400 mm		**HSI150 1x1 GSM160/400**	3030303425	4052487223140
	500 mm		**HSI150 1x1 GSM160/500**	3030303427	4052487223157

Single wall insert

with foldable rubber sleeve



HSI150 KMA

For setting in concrete and connecting cable ducts. For the direct connection of cable ducts (exterior) and for connecting system seals for cables (interior).

Pipe OD	Wall thickness (mm)	Article code	Article number	GTIN
160-172	120 mm	**HSI150 1x1 KMA172/120**	3030476250	4052487242103
160-172	140 mm	**HSI150 1x1 KMA172/140**	3030477593	4052487242127
160-172	150 mm	**HSI150 1x1 KMA172/150**	3030477595	4052487242134
160-172	180 mm	**HSI150 1x1 KMA172/180**	3030491597	4052487242677
160-172	200 mm	**HSI150 1x1 KMA172/200**	3030476251	4052487242110
160-172	250 mm	**HSI150 1x1 KMA172/250**	3030477597	4052487242141
160-172	300 mm	**HSI150 1x1 KMA172/300**	3030477598	4052487242158
160-172	350 mm	**HSI150 1x1 KMA172/350**	3030477599	4052487242165
160-172	400 mm	**HSI150 1x1 KMA172/400**	3030477600	4052487242172
160-172	450 mm	**HSI150 1x1 KMA172/450**	3030477601	4052487242189
160-172	500 mm	**HSI150 1x1 KMA172/500**	3030477602	4052487242196

Other wall thicknesses available on request.
Additionally, 2 profile seals from the corrugated pipe manufacturer are required for each pipe connection.

Cement-coated wall sleeve with sleeve

floor entry for Hateflex spiral duct



KES MA150 ZVR150/500

For use in waterproof concrete. The Hateflex 14150 spiral duct can be connected using a sleeve. The seal with the cables is created with a press seal that is not included in the scope of delivery.

Wall sleeve ID (mm)	Wall sleeve OD (mm)	Length (mm)	Article code	Article number	GTIN
150 mm	167 mm	500 mm	**KES MA150 ZVR150/500**	2125502000	4052487139991





Wall connection for waterproof concrete tank in stock

Connection set for cable duct system

for retrofit installation

KES150 MA KB SET



For connecting the Hateflex spiral duct 14150 to core drills or wall sleeves. The pipe socket is connected to the duct with a sleeve. Sealing is done with the two press seals (included in scope of delivery).

Article code	Article number	GTIN
KES150 MA KB SET	2125818508	4052487217552
KES150 MA KB SET[1)]	2125818500	4052487140409

[1)] Other variants available, see www.hauff-technik.com

Wall connection for black tank and fresh concrete composite systems in stock

Polymer flange

for retrofit installation

HSI150 DFK



For retrofit bolting to concrete walls or for screwing onto steel housings. Used for the gastight and watertight connection of system seals for cables and cable ducts.

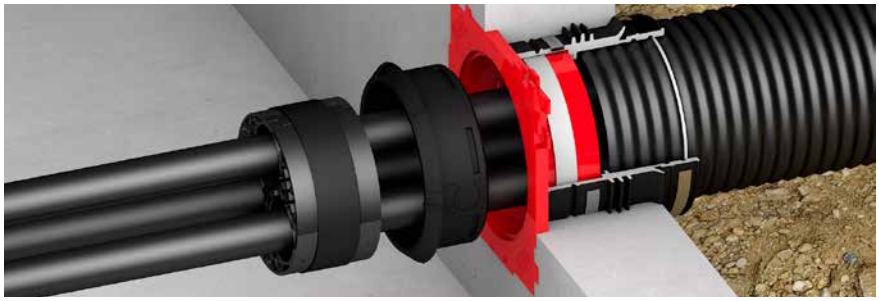
Article code	Article number	GTIN
HSI150 DFK	2118010020	4052487156264
HSI150 DFK OB[1)]	2118010022	4052487162555

[1)] without fastening elements

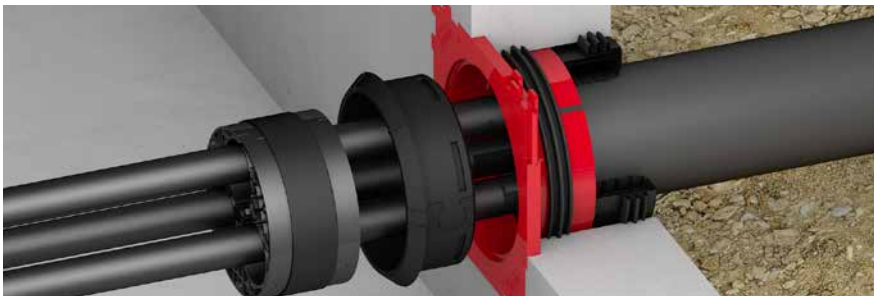
Other combination options according to application

Hauff-Technik offers the optimal cable entry system for every requirement. The individual components, cable duct, installation parts and end sleeves are perfectly matched so that power and data can flow securely. Depending on the load and application conditions, the components can be combined in various ways to form a system.

Pressure tightness up to 0.5 bar

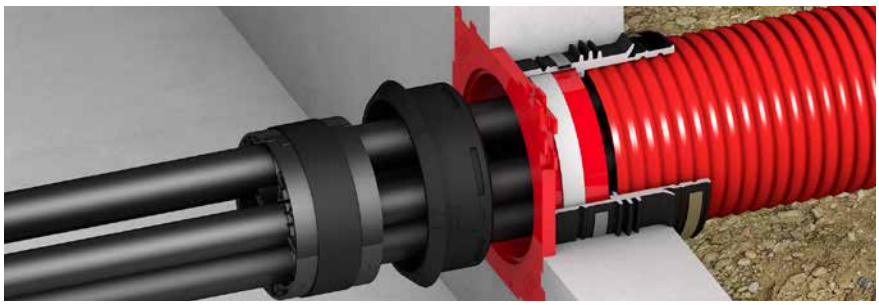


The HSI150 KMA WR can be used for connecting conventional corrugated pipes. With this cable entry system, the pressure-tightness depends on the corrugated pipe, but is generally up to 0.5 bar.



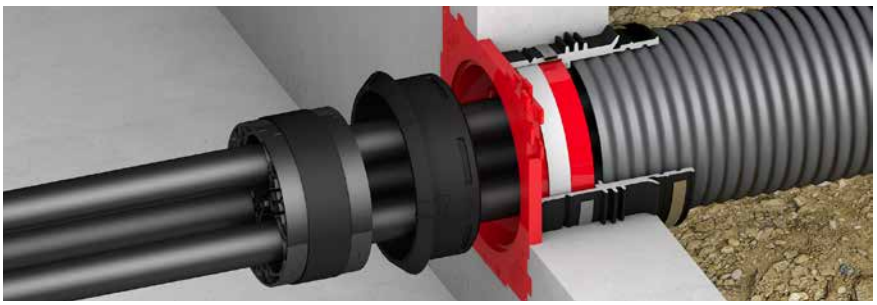
At a required pressure-tightness up to 0.5 bar, the HSI150 GSM can be used for the connection of smooth cable ducts. An HSI150 DG system cover is installed on the inside of the building for cable sealing.

Pressure tightness up to 1 bar



At a required pressure-tightness up to 1 bar, the Hauff-Flex 150 cable duct hose can be used. Connection to the building is via the HSI150 KMA. An HSI150 DG system cover is installed on the inside of the building to ensure a save cable sealing.

Pressure tightness up to 2.5 bar



For a cable entry system with a pressure-tightness up to 2.5 bar, use the Hateflex14150 cable duct hose. The connection to the building is via the HSI150 KMA. To ensure save cable sealing on the inside of the building, use an HSI150 DG system cover.

Notes on compression

In order to prevent damage to the pipes, system seal inserts and cable entries (HSI90 und HSI150), the fill material in the area of the cable entries should always be handled using light compression devices.

The use of medium to heavy-duty pounding and vibrating devices is not permitted in the case of soil coverage of less than 1 metre in a compressed state!

The following regulations and guidelines must be observed:

- Guideline ZTVE-StB 94/97 (Additional technical terms of contract and guidelines for earthworks in road construction)
- DIN standards regarding the classification of soils

The following factors determine the potential feed lengths:

- cable (type/weight/flexibility)
- route layout (height profile)
- number/position/radiuses of curves/inaccuracies
- friction coefficient (cable/pipe wall)
- lubricant (type/quantity)
- feed method and speed (also surface temperature)
- ratio of internal pipe diameter to cable diameter
- Quality of the installation, e.g. pipe support/compression of embedding material = influence on pipe deformation/filling/ compression of the bed around pipe bends/curves = important for absorbing mechanical loading when feeding in cables.

Bending radiuses

The following minimum radiuses apply to Hateflex systems at an installation temperature of 20° C.

- Hateflex14150 – 900 mm
- Hauff-Flex 150 – 900 mm

Transport, storage and disposal

When unloading and transporting packaging items, please proceed with care and observe the symbols on the packaging. Avoid throwing or dropping the pallets, pipes and accessory parts, or subjecting or allowing them to impact heavily against each other.

Inspect the delivery for completeness and transport damage immediately on receipt. In the event of transport damage being visible from the outside, proceed as follows. Do not accept the delivery or only do so subject to reservations. Make a note of the extent of damage in the transport documentation or delivery note provided by the transporter. Submit a claim for every defect as soon as it has been identified. Please note that claims for damages can only be asserted within the applicable claim period.

The polymer spiral ducts must be stored in such a way that they are not exposed to low temperatures (<5° C), high temperatures (>50° C) or direct sunlight. Protect the spiral ducts from damage, damp and soiling prior to installation. Only undamaged parts may be installed.

If no return or disposal agreement has been concluded, recycle dismantled components after they have been properly dismantled. Dispose of packaging material, polymer, elastomers and metals according to the applicable environmental regulations.

Tips on installation

Pipe trench and support

The dimensions prescribed by the specifications or structural calculation must be observed.
The depth of the trench is based on the height of the installed cable ducts and the pipe coverage to be achieved.

Single row installation, filling and compression

1. The pipe trench should be excavated to the necessary depth; the trench bottom must be compressed in such a way that subsidence is ruled out.

2. The trench bottom should be levelled free of stones and kept free of foreign objects. A sand bed of approx. 10 cm should be added.

3. The Hateflex duct system should be covered with 10 cm of sand and compressed by hand. The remaining pipe trench should be filled in 30-cm layers with stone-free fill material and compressed.
   The following clearances should be taken into account.

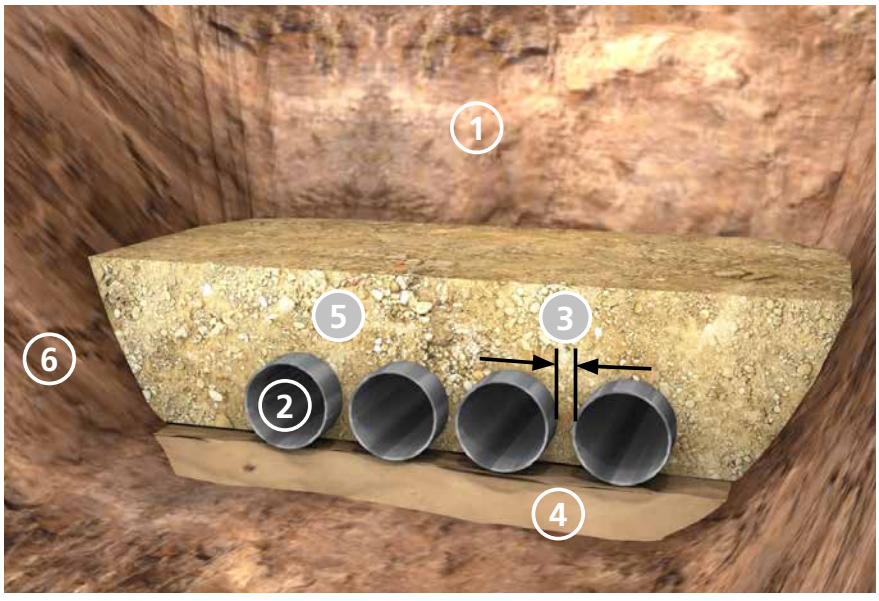
   - Hateflex14150 – min. clearance of 40 mm
   - Hauff-Flex 150 – min. clearance of 40 mm.

Finally, a warning tape should be set up.

Excavated material deposited next to cable trenches may not be left to fall back in, nor may it endanger structural stability.

Pipe installation must be carried out according to the currently valid regulations.

While they are being compressed, the pipes may no longer be shifted to the side.

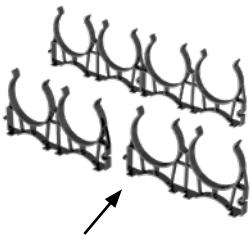


Single-layer Hateflex duct system

1. Duct trench
2. e.g. 4 x Hateflex14150
3. Clearance (C)
4. Trench bottom: stone-free or 10 cm compressed sand bed
5. Compression of Hateflex hoses with 10 cm coverage
6. Compressed soil

Multiple row installation, filling and compression

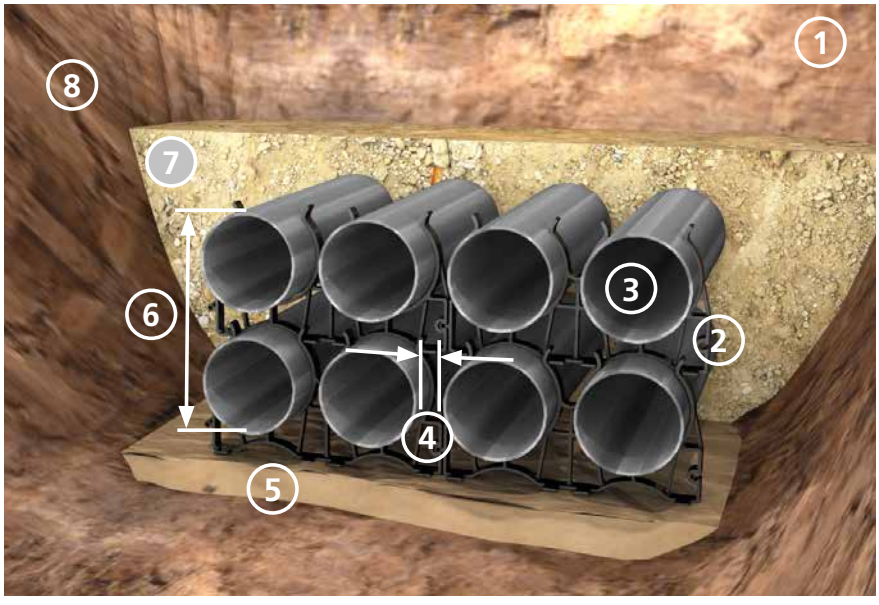
1. If more than two hoses are being installed, connect the spacers together. Slot the eyelet onto the pin for this purpose.





2. In the first layer, place the spacers directly on the soil and clip in the hose.
3. Fill up space between and next to the pipes and compress.
4. In the case of multi-layer hose systems, the spacers are placed on the layer of hoses immediately below. The hoses can then be clipped in again (see graphic below).
5. Proceed with additional layers in the same way as with the previous ones.

If cable ducts are installed in multiple rows, the installation and fill work in the area of the cable ducts overlap. Refer to the following illustration for the work sequence. Skilled experts must be deployed in carrying out and monitoring the construction project.



Multi-layer Hateflex hose system

1. Duct trench
2. Spacer
3. Cable duct
4. Clearance (C)
5. Trench bottom: stone-free or 10 cm compressed sand bed
6. Height of pipe bundle
7. 10 cm: upper limit of line zone according to DIN EN 1610
8. Coverage

Sealing set interchangeable insert



for cable sealing at the end of the duct

KES150 MA WE160 SG SET

Sealing set with sleeve including split interchangeable insert with segment ring technology for sealing cables with rubber seal at the end of Hateflex spiral duct 14150.

Figure	Number of cables/ medium	Area of application cable OD (mm)	Article code	Article number	GTIN
	1	48-83	**KES150 MA WE160 SG 1x48-83 SET**	2125817103	4052487164764
	3	22-58	**KES150 MA WE160 SG 3x22-58 SET**	2125817102	4052487164757
	6	8-36	**KES150 MA WE160 SG 6x8-36 SET**	2125817101	4052487164740

Other variants available, see www.hauff-technik.com

Connection sleeve



for extending the spiral duct

KES150 MA150-172/150-172

Connection sleeve for duct extension or duct connection for the Hateflex spiral duct 14150.

Article code	Article number	GTIN
KES150 MA150-172/150-172	2128020000	4052487058407

Polymer spiral duct

for cable duct system



Hateflex14150

Flexible and very rugged duct A pressure-tight cable duct system can be created with the matching connection components.

Length (m)	Inner diameter (mm)	Outer diameter (mm)	Article code	Article number	GTIN
2.0	151	166	**Hateflex14150/2000**	3030589945	4052487247832
3.0	151	166	**Hateflex14150/3000**	3030589745	4052487247856
4.0	151	166	**Hateflex14150/4000**	3030589760	4052487247863
5.0	151	166	**Hateflex14150/5000**	3030589762	4052487247870
6.0	151	166	**Hateflex14150/6000**	3030589763	4052487247887
8.0	151	166	**Hateflex14150/8000**	3030589765	4052487247894
10.0	151	166	**Hateflex14150/10000**	3030589819	4052487247795
12.0	151	166	**Hateflex14150/12000**	3030589938	4052487247801
15.0	151	166	**Hateflex14150/15000**	3030589939	4052487247818
20.0	151	166	**Hateflex14150/20000**	3030589942	4052487247825
25.0	151	166	**Hateflex14150/25000**	3030589947	4052487247849

Other lengths on request

Polymer spiral duct

for cable duct system



Hauff-Flex 150/x

Flexible, stable cable duct hose. A pressure-tight cable duct system can be created with the matching connection components.

Length (m)	Inner diameter (mm)	Outer diameter (mm)	Article code	Article number	GTIN
15.0	151	165	**Hauff-Flex150/15000R**	3030369862	4052487234382
20.0	151	165	**Hauff-Flex150/20000R**	3030369865	4052487234375
25.0	151	165	**Hauff-Flex150/25000R**	3030369867	4052487234368

Accessories

Figure	Item	Article code	Article number	GTIN
	Spacer for the spiral duct 150	**KES150 1x2 AH PP**	3030361164	4052487233347
	Flexible socket wrench	**SLS 6G**	5200010040	4052487233491
		**SLS 6GD[1)]**	5200010041	4052487233484
	Spacer	**HSI AH40 SET2**	3030300093	4052487220156

[1)] for buildings with perimeter insulation

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