

System brochure

Kabuflex®



Conduit systems buried underground and building lead-throughs

General information

Did you know that? All our products are REACH compliant!

REACH is a regulation of the European Union adopted to improve the protection of human health and the environment against the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry. It also promotes alternative methods for the hazard assessment of substances in order to reduce the number of tests on animals.

Source: www.echa.europa.eu/de/regulations/reach/understanding-reach



Sustainability

FRÄNKISCHE has conducted calculations of the carbon footprint of selected product groups over their entire life cycle. The aim is to determine environmentally relevant process steps, and to open up potential for improvement.

The process steps with high impact on the carbon footprint have been identified, and the potential for development regarding the materials and energy used has been shown. Another objective of the study is to boost the environmental awareness of the employees, and to convincingly demonstrate to our sales partners and end customers that FRÄNKISCHE systematically determines the values of the greenhouse gases of all process modules in order to identify the major sources of these emissions.

The study was carefully reviewed and certified by TÜV Rheinland LGA Products GmbH with regard to the DIN EN ISO 14040:2006 and DIN EN ISO 14044:2009 standards.



Initiatives – together for quality, reliability and service





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Building lead-through for buildings with and without basements

Application examples

Supply lines for power and communication cables are generally required for every building connection. Without them, there can be no electrical infrastructure in the building. Access to the building is provided via a building lead-through. However, cable network operators specify stringent standards regarding connections to the low voltage system and demand standard-compliant systems for building penetrations. In order to meet the requirements for proper sealing, FRÄNKISCHE ensures gas-tight and water pressure-tight building lead-throughs using the Kabuflex system. Power and communication cables can thus be connected quickly and according to TAB 2019. The individual components are perfectly matched and can withstand high pressures up to 1.5 bar. This allows power and data to be transmitted safely, and builders to look ahead confidently.

Be it wall or foundation slab lead-through, FRÄNKISCHE proves its electrical installation system competency with the perfect combination of cable conduit, sealings and feed-throughs.

NB

The building lead-throughs are suitable according to TAB 2019, and comply with VDE-AR-N 4100 (low voltage technical connection regulations) valid as of April 2019.

Foundation slab lead-through for buildings without basement

For installation in concrete buildings yet to be built.
Tightness tested according to DVGW VP 601.

Approved products

Kabu-FESH Set Elektro B building lead-through:

- Kabuflex R *plus type 750*
- Wall collar set
- Kabu-IN DD
- SD end cap



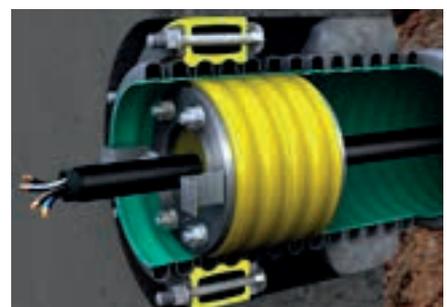
Application:
 Waterproof concrete wear class 1 and 2
 W1-E according to DIN 18533

Wall lead-through for buildings with basements

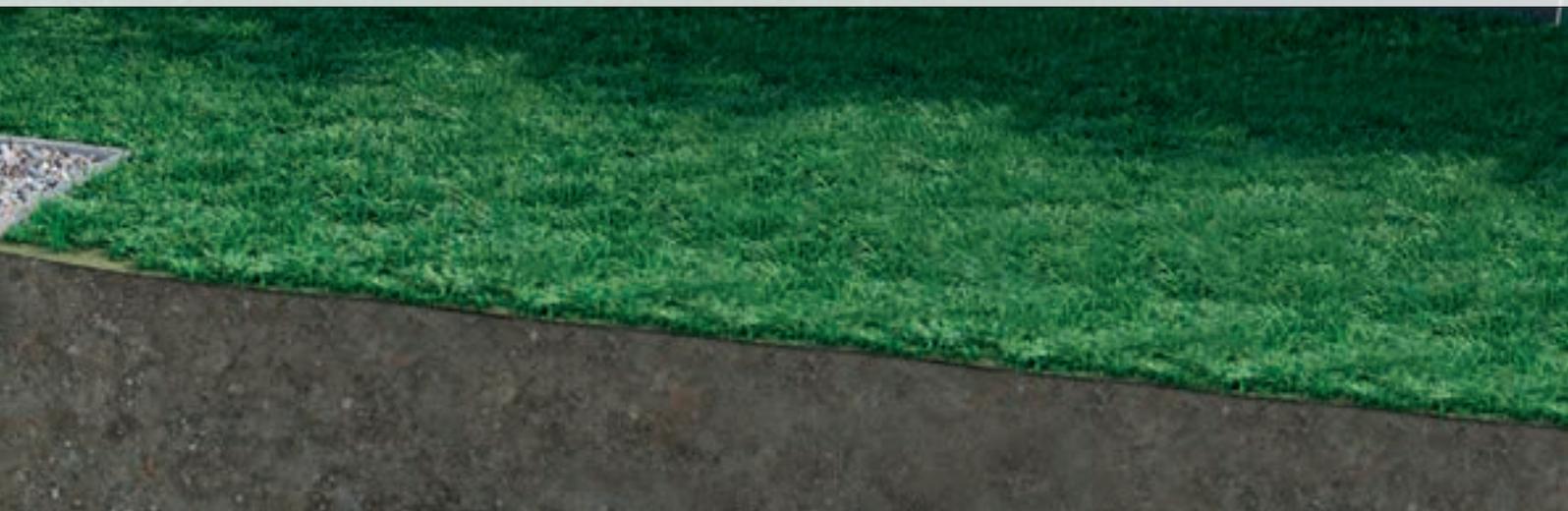
For installation in core drill holes or casings.
Tightness tested according to DVGW VP 601.

Approved products

- Kabuflex R *plus type 750*
- Kabu-Seal
- Kabu-IN DD
- SD end cap



Application:
 Waterproof concrete wear class 1 and 2



Properties and advantages

Kabu-FESH Set Elektro B one-use building lead-through

The Kabu-FESH Set Elektro one-use building lead-through for the floor is used for buildings without basements. Kabuflex R plus type 750 included in the set is manufactured/tested according to DIN EN 61386-24 and features N750 classification.

Therefore, the cable conduit for underground cable protection is suited for safe building lead-throughs and embedding in concrete.

When combined with the Kabu-IN DD system components, the wall collar set, or Kabu-Seal, the system features an approval mark confirmation of the DBI GTI Institute for Gas Technology (DBI-Gastechnologisches Institut GmbH Freiberg). The DVGW energy test laboratory has successfully tested the tightness according to the VP 601 test regulation.

NB

Network operators, e.g., Bayernwerk Netz GmbH, recommend Kabu-FESH Set Elektro B for standard-compliant building lead-throughs.



Easy and quick installation without requiring special tools

The installation of the FRÄNKISCHE building lead-through guarantees the reliable sealing of the conduits through the ground up to the building and is also suited for feeding through the concrete foundation slab.

The continuous conduit connection up to the property line allows a flexible lead-through of the supply line irrespective of the construction progress. Power or communication cables can be exchanged at any time without requiring complicated excavation.

Additional advantages are the space-saving installation of the building and network connections and the associated connection equipment, and the easy and flexible height adjustment to the finished floor level.





Road construction using Kabuflex® R plus

Application examples

Sound underground cable protection requires first and foremost safe and absolutely reliable products. In addition to the simple mechanical protection of media, the cable conduits also serve as unused conduits. This offers another handy advantage especially in electrical installations, because it allows subsequent feeding of cables and wires.

Installation underground or under roads and squares as well as building lead-throughs are the main applications for Kabuflex conduits. Additionally, the energy requirement for outdoor facilities has changed significantly over the past years.

NB

According to VDE 0100-520, cables must be installed at least 0.6 m underground, under roads at least 0.8 m. Lower depths are possible when cable conduits are used.

Underground conduits must be marked using marking tape.

Kabuflex R plus type 450

- Reliable protection of underground cables with normal pressure loads
- Under roads and squares
- For house and building lead-throughs in a system with annexes
- Increased requirements on outdoor facilities and landscaping



Kabuflex R plus type 750

- Reliable protection of underground cables with minimum cover
- Under roads and squares when installed through concrete and in case of increased pressure loads
- For house and building lead-throughs in a system for the connection to the low voltage system of the network operator
- Increased requirements on outdoor facilities and landscaping





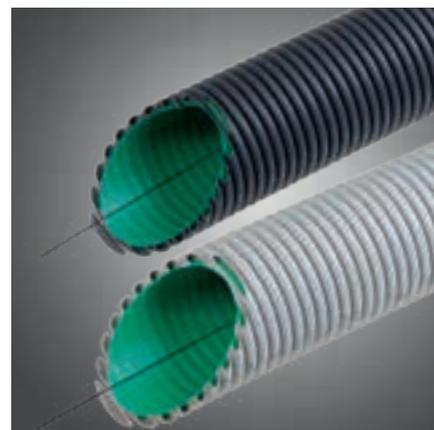
Properties and advantages

Structured-wall design and PE – two invincible advantages

Kabuflex conduits are manufactured according to DIN EN 61386-24 and monitored consistently, thus guaranteeing a consistent quality standard.

Manufactured in structured-wall design: corrugated outside welded together with a smooth inside. State-of-the-art technology turns this strong, pliable conduit into a homogeneous unit.

- Its material-saving design is a reasonable alternative to common PVC and PE solid-wall conduits.
- The polyethylene (PE) material combined with this technology provides Kabuflex with high compressive strength and a high degree of impact strength.
- The impact strength and breaking resistance of PE makes loading, backfilling, etc. also possible in subzero temperatures.
- Kabuflex made of PE is resistant to acids and bases according to DIN 8075, supplementary sheet 1.



Kabuflex R plus type 450 and Kabuflex R plus type 750

Simple installation

Kabuflex can be cut and sawed easily and is also easy to install due to its high pliability.

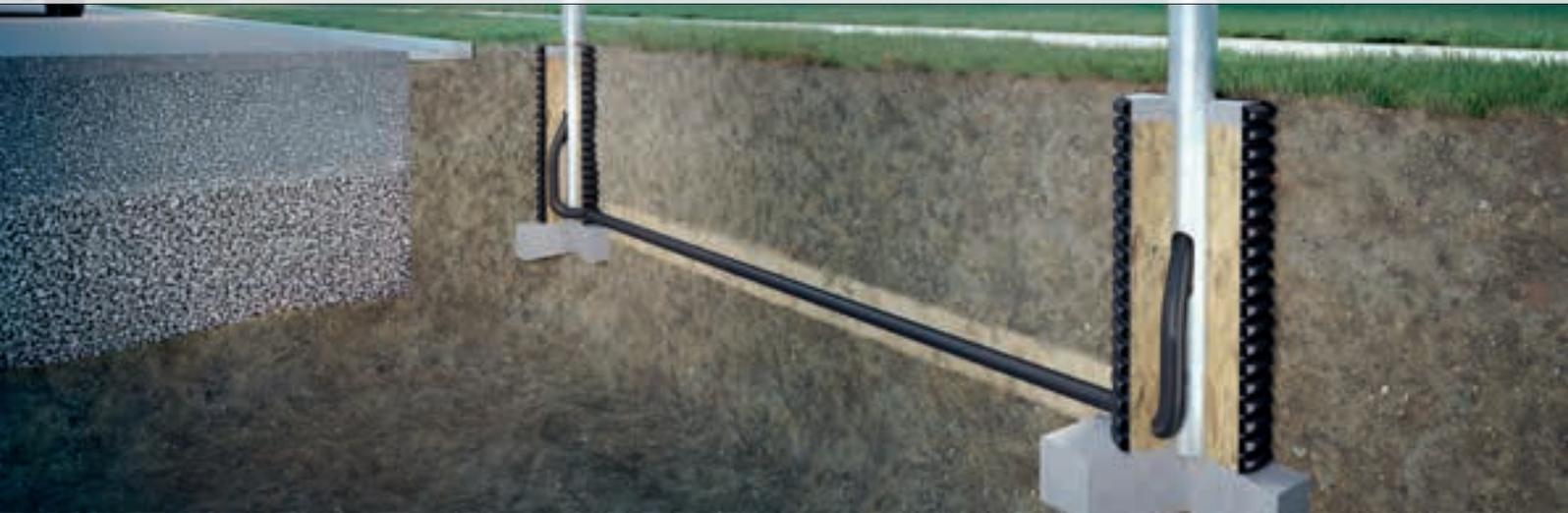
Therefore, it ensures effortless, quick and rational working in addition to easiest-possible loading, transport and storage properties.

Couplings allow combinations with common cable conduits.

The low friction inner surface with optimized insertion characteristics facilitates inserting wires and cables.



Bend radius Kabuflex R plus, type 110



Outdoor facilities using Furowell

Application examples

Furowell firmly secures rods and masts in the ground.

If you want to build foundations for playground equipment such as swings or climbing frames, or erect a pole for the flag of your favourite club, you will be on the safe side with FRÄNKSCHE's Furowell pole foundation conduit. Other installation situations are the installation of traffic signs, lamp posts and poles of any kind. Furowell is also used in landscaping, since the requirements on outdoor facilities have increased significantly over the past years.

Furowell with end cap

- Increased requirements on outdoor facilities and landscaping
- For the installation of all types of poles, masts and rods



Characteristics

Furowell is a structured-wall pole foundation conduit made of PE-HD. The conduit has a corrugated outside, a smooth inside, and is halogen-free.

Advantages are its light weight and easy installation and handling as compared to concrete pipes and concrete foundations.

Due to its structured-wall design, Furowell is very robust and can be installed in no time by experts: Pole foundation conduits are installed and secured from the outside, e.g., by backfilling with tamped concrete up to the height of the lateral cable connection. After the mast or pole has been inserted, the annular space and gaps are backfilled and compacted.

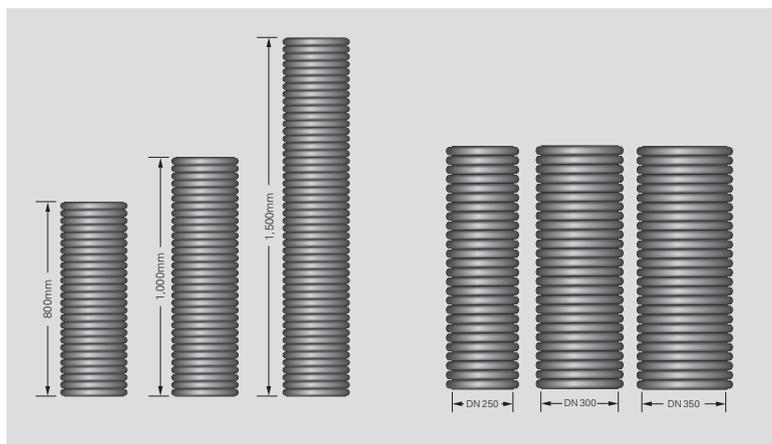
To connect electrical lines, installers can laterally drill a hole in the pole foundation conduit using a commercially available hole saw and thus receive a connection for Kabuflex conduits. A 68 mm core bit provides, e.g., a fitting connection for Kabuflex conduit types 63.

Protective covers are used for temporary sealing and covering during the construction phase.

Furowell is available in different practice-oriented heights (can be cut easily, if required).

Advantages

- Quick and easy installation thanks to low weight
- Ideal embedding thanks to outside corrugation
- Different heights available to meet specific needs
Can be cut to length, if necessary
- High stability thanks to structured-wall design
- Protective cover for temporary sealing and covering during the construction phase
- Easy lateral drilling for connections



Application (lamp post)

Secure the Furowell pole pipe from the outside with tamped concrete up to the height of the lateral cable connection. Afterwards, insert the lamp post.

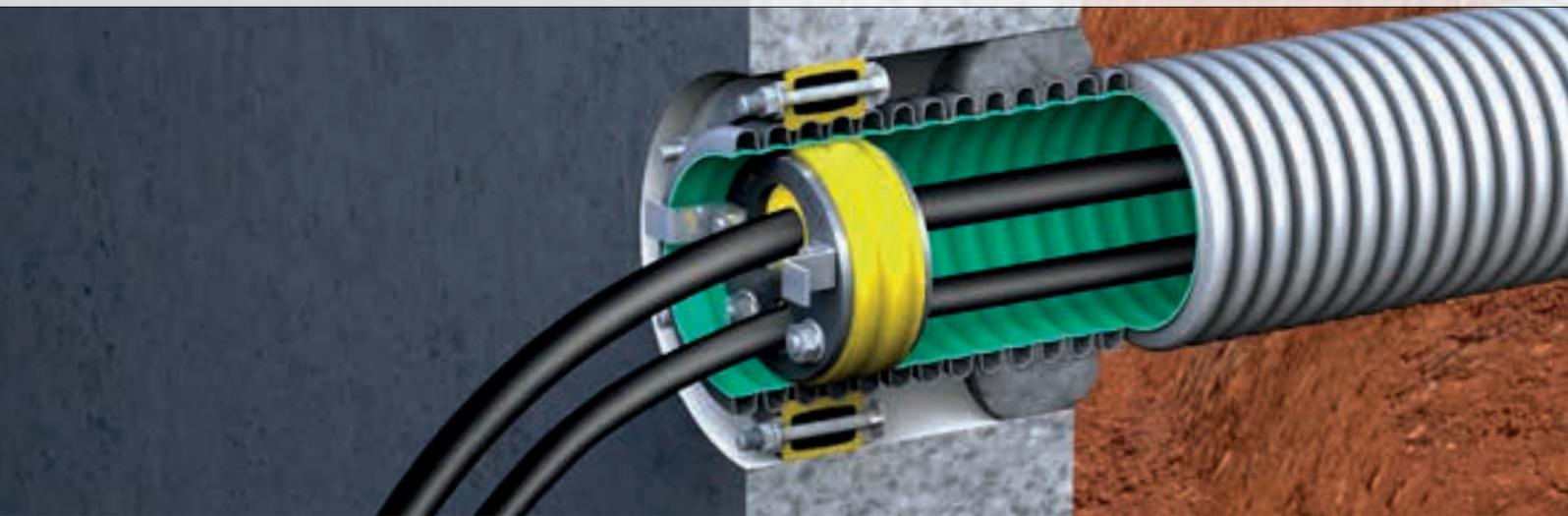


Then, fill the annular space in the pole foundation conduit with sand. Backfill the upper area of the annular space with tamped concrete for lateral adjustment and to prevent water ingress.



Then, backfill and compact the remaining gap around Furowell with native non-cohesive soil and provide a cover layer.





Sealings for conduit and cable feed-throughs

Application examples

DIN 18012 with its general planning criteria for service connections for buildings and VDE-AR-N 4223, dealing with building penetrations and their sealing for buried cables, must be observed when sealing conduit and cable feed-throughs:

Thus, building lead-throughs must be gas-tight and water pressure-tight.

In this regard, FRÄNKISCHE offers different designs to meet these requirements on feed-through options.

Kabu-Seal conduit feed-throughs and wall collar set

- Installation in core drill holes or casings
- Application in concrete foundation slabs
- Conduit connection between buildings



Kabu-IN and Kabu-IN DD cable feed-throughs

- Connection of garages, annexes or for landscaping
- Supply of industrial and commercial buildings
- Sealing of unused Kabuflex conduits



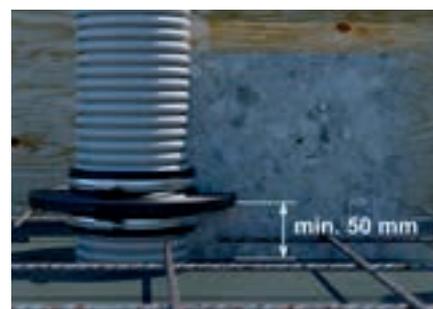


Properties and advantages

Kabu-Seal conduit feed-throughs and wall collar set

Kabu-Seal is a pressure sealing ring which can be used for all Kabuflex conduits. Its soft surface offers sealing of the cable conduit and core drill hole up to 1.5 bar water pressure. Installation is possible via visual indication without special tools.

The wall collar set features an EPDM wall collar including tightening straps and tightening locks; this wall lead-through is used for the absolutely tight lead-through of Kabuflex conduits into buildings through the foundation slab. When installed properly, the wall collar can withstand water pressures of 3.0 bar.

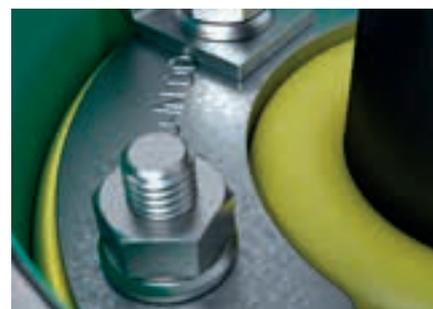


Kabu-IN and Kabu-IN DD cable feed-throughs

Kabu-IN and Kabu-IN DD are rubber pressure sealing rings for the feed-through of power and communication cables. Their two-piece design makes subsequent installation possible. Kabu-IN seals Kabuflex pipes gas-tight and water pressure-tight up to 0.5 bar, and Kabu-IN DD, since it has twice the sealing width, seals up to a pressure of 1.5 bar.

Due to the soft outside material (PUR), the Kabu-IN and Kabu-IN DD internal sealings ideally adapt to the conduit.

No torque spanner is required for the installation of the rubber pressure sealing rings, since tightening the nuts will lead to the formation of a bead for visual inspection.

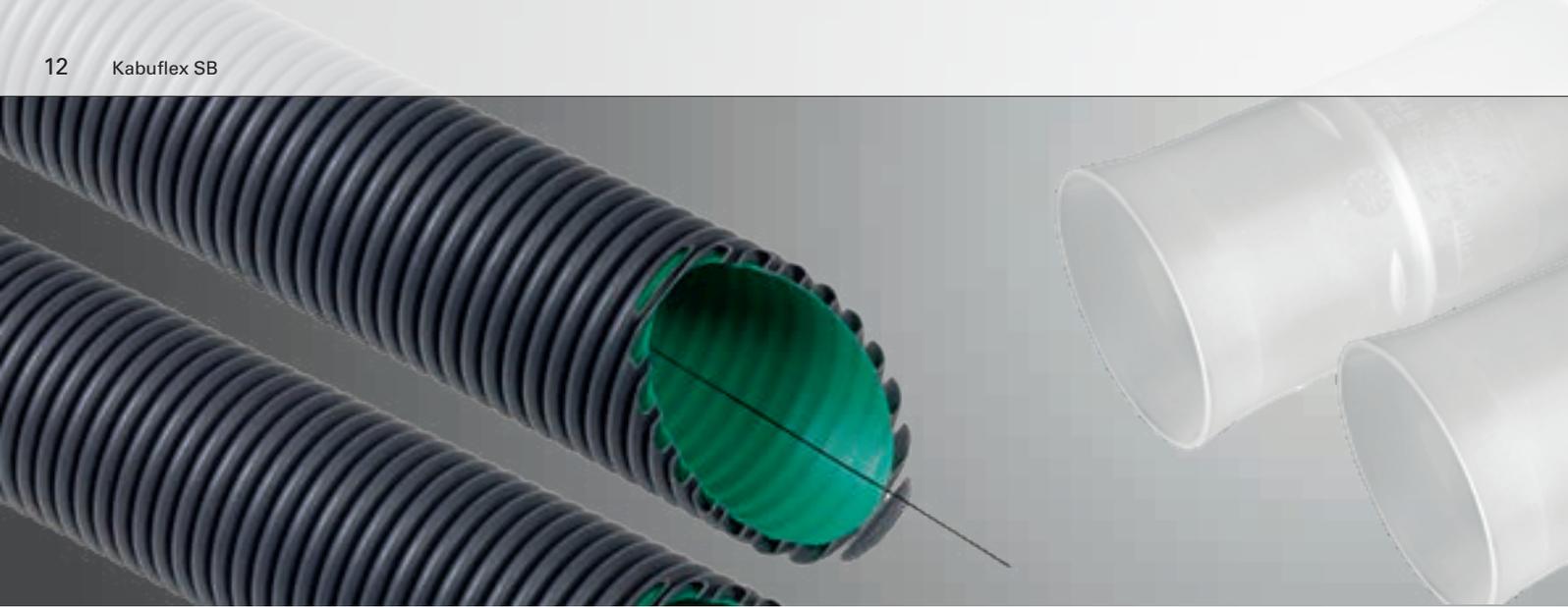


Kabu-BV end plug

When the precise use of a conduit is not specified yet, the Kabu-BV end plug will provide a gas-tight and water pressure-tight sealing up to 0.5 bar until cable installation.

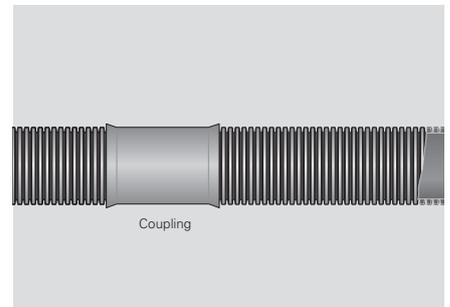
Due to the soft outside material (PUR), the internal sealing ideally adapts to the conduit. Installation can be effected without tools, since tightening the wing screw results in an optical visual indication.





Installation instructions for Kabuflex® conduits

The applicable standards and regulations such as DIN EN 1610, ZTV A-StB 12, DWA-A 139, A 515 and A 535a/b by the Plastic Pipe Association KRV, and the additional provisions of utility companies must be observed.



1. Transport and storage of the conduit components

Avoid dropping, dumping as well as hitting the pallets, conduits and accessories hard against each other!

DIN EN 1610 applies apart from that. Check the conduit components for defects before installation.

Store on even ground! Do not stack loose conduits higher than 1.5 m. You may stack packeted conduit pallets on top of each other (do not stack more than 2 pallets).

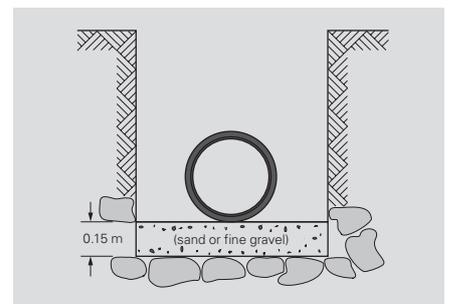


2. Conduit swale and bearing

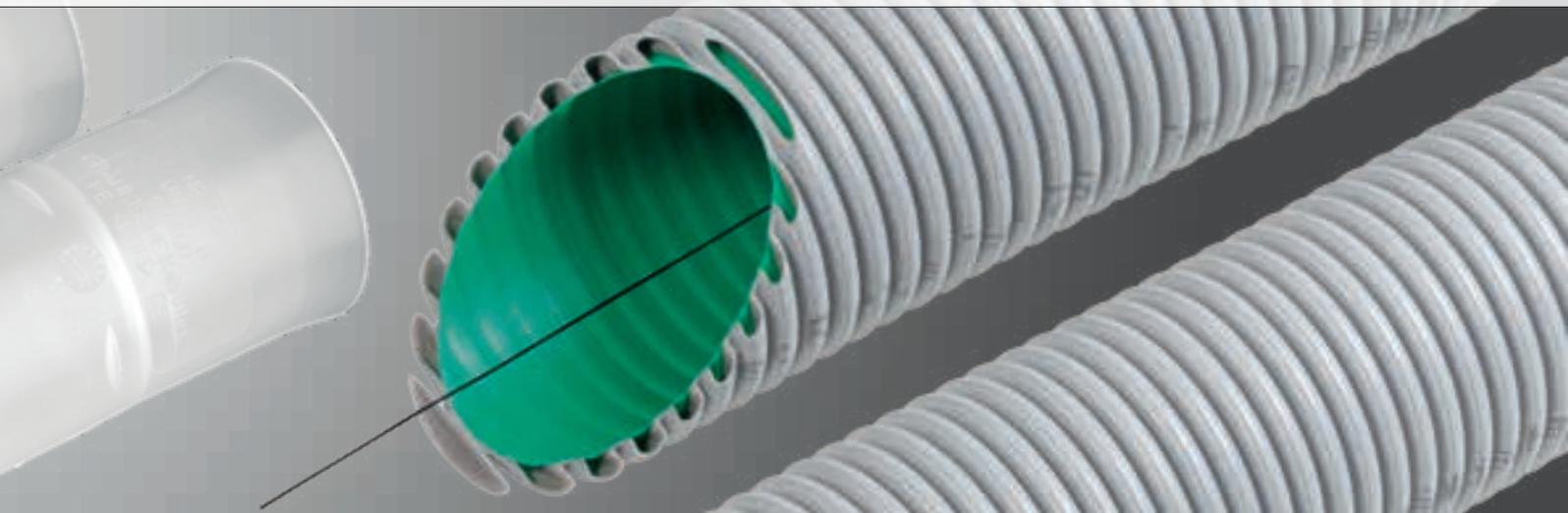
The provisions of DIN 18300 "Earthworks", DIN 18303 "Timbering to trenchwork", DIN 4124 "Excavations and trenches", and DIN EN 1610 apply.

NB

The bedding and embedding of conduits (stoneless, compactable soil!) are of decisive importance for possible conduit deflection! Execute carefully according to DIN EN 1610, DWA-A 139 and KRV A 535a/b!



In case of rocky, consolidated or stony ground: 0.15 m of stoneless cover (sand, fine gravel) required as lower bedding (see DIN EN 1610 and KRV A 535a/b)



3. Straight or consistently bent installation

- Place the conduits in a straight line on the conduit bedding avoiding meandering, and secure them at the sides.
- Meandering installations significantly reduce possible insertion lengths later on.

In addition, make sure you excavate a head hole for the couplings in order to ensure an even bearing.

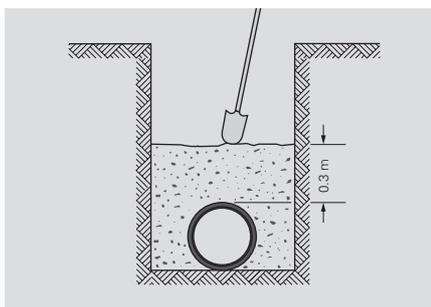
4. Backfilling and compacting

Fill up to 30 cm of the stoneless, compactable soil (20 mm maximum grain size) in layers on both sides of the conduit. Compact the cover right above the conduit by hand. Mechanically compact the main backfilling right above the conduit only after adding a layer with a minimum thickness of 30 cm above the conduit crown.

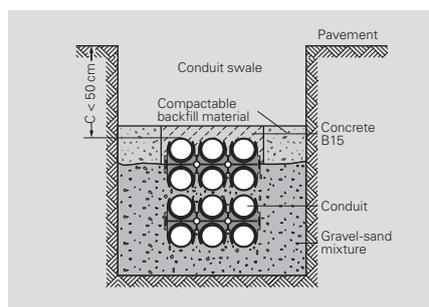
- The total thickness of the layer right above the conduit required before mechanical compacting depends on the type of compaction equipment.
- Do not shift conduits sideways during embedding.
- If required, secure the conduit heights during embedding.
- In case of multiple-layer installations in the conduit swale, embed every conduit layer individually (backfilling and compacting); only then can you place the next layer! Afterwards, backfill and compact as described above.
- Arrange for measures of load separation (e.g., embedding in concrete) in traffic areas with less than the minimum cover of 50 cm, e.g., backfilling the conduit swale with a mixture of sand and cement.
- When embedding in concrete, make sure that conduit connections are watertight (with profile sealing rings, mounted onto the second corrugation trough) and secure against uplift! Select securing equipment which does not damage the conduits.
- Set mounting spans in a way which avoids inadmissible deflection (spans approx. 1.5 m).

NB

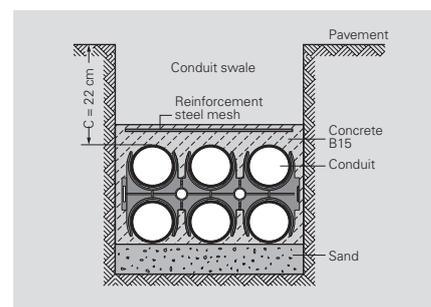
Kabuflex is not suited for installations in tunnel vaults!



Backfill and compact conduit up to 30 cm above the conduit crown by hand with stoneless, compactable soil



Conduit layer installed in concrete with minimum cover (example see also KRV A 515/A 535a/b)



Protection of the conduit layer against deflection and mechanical damage when going below the minimum cover (example see also KRV A 515)



5. Spacer

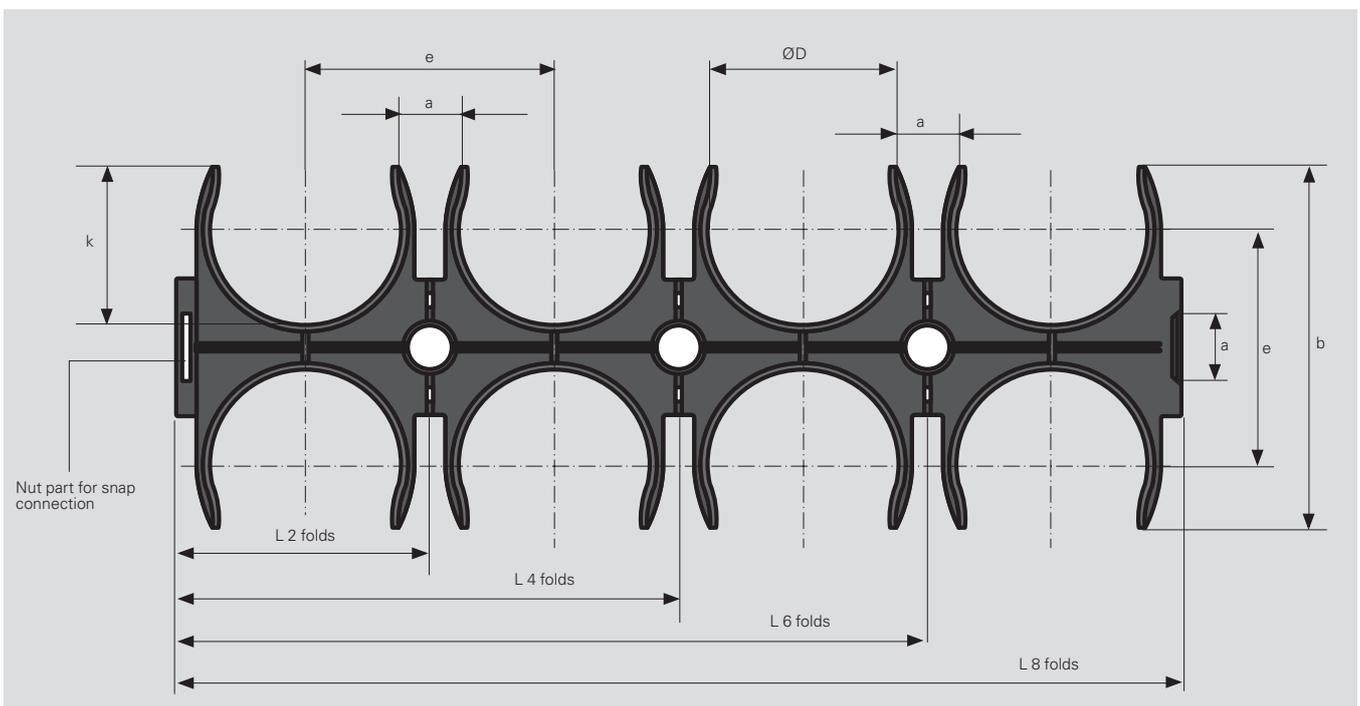
Install spacers to secure conduits in multiple-layer installations in the conduit swale.

Allow for spacing according to the local installation conditions.

Recommendation

**1.5 m max. spacing,
for Kabuflex R plus shorter spacing!**

Type		75	110	120 / 125	160
D	[mm]	75	110	120	160
L _{2 folds}	[mm]	105	142	175	225
L _{4 folds}	[mm]	208	284	336	445
L _{6 folds}	[mm]	305	426	497	665
L _{8 folds}	[mm]	408	568	658	885
a	[mm]	25	30	38	60
b	[mm]	125	190	210	313
Thickness	[mm]	12	15	20	33
e	[mm]	100	140	158	220
k	[mm]	50	80	88	126

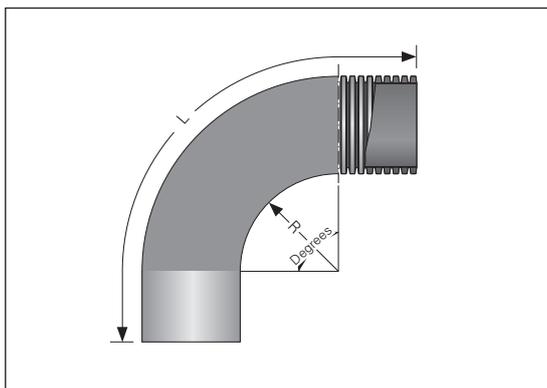


Drawing type 110

6. Change of direction in the conduit route

Avoid small bend radii theoretically possible with Kabuflex R *plus* coiled lengths as to not impede or prevent inserting wires and cables.

The finished 45°/90° bends for Kabuflex S straight lengths serve as an orientation for the smallest possible installation radii (see table).



45° and 90° conduit bends, nominal diameter, and radius R of the conduit bend (inside of bend)

DN		R [m]
DN 75	45°	0.75
	90°	0.75
DN 90	45°	0.75
	90°	0.75
DN 110	45°	0.90
	90°	0.90
DN 120	45°	0.90
	90°	0.90
DN 125	45°	1.00
	90°	1.00
DN 145	45°	1.00
	90°	1.00
DN 160	45°	1.00
	90°	1.00
DN 175	45°	1.00
	90°	1.00

Kabuflex dimensions and bend radii

Kabuflex S – rigid cable conduit		D _o [mm] ¹⁾	D _i [mm] ¹⁾	R _{min} [m] ²⁾
Kabuflex S	DN 75	75	63	2.0
	DN 110	110	94	2.8
	DN 120	117	99	3.0
	DN 125	125	108	3.2
	DN 145	145	125	3.6
	DN 160	160	137	4.0
	DN 175	173	149	4.5

Irrespective of that: include the installation of a cable chute after small curves!

Kabuflex R <i>plus</i> – pliable cable conduit		D _o [mm] ¹⁾	D _i [mm] ¹⁾	R _{min} [m] ²⁾
Kabuflex R <i>plus</i> type 450 / type 750 ³⁾	DN 40	40	31	0.35
	DN 50	50	40	0.35
	DN 63	64	52	0.35
	DN 75	75	62	0.35
	DN 90	90	75	0.35
	DN 110	110	93	0.50
	DN 125	125	106	0.60
	DN 160	160	137 / 136	0.75

¹⁾ Production-related dimensional tolerances

²⁾ Minimum bend radius applies to an ambient temperature of 20 °C. In lower temperatures, we recommend that the minimum bend radii be increased as follows: by a factor of ≥ 1.5 x at approx. 10 °C, by a factor of ≥ 2 x at approx. 0 °C.

³⁾ Kabuflex R *plus* type 750 only available in DN 75, 110, 125 and 160

7. Feed cord and insertion of wires and cables, insertion lengths

Feed cord – Kabuflex R *plus*

The feed cord delivered with Kabuflex R is used to insert the cable feed wire and/or cord, not for inserting cables! The feed cord has a tensile strength of approx. 30 kg.

Always release the cord ends attached to the conduit before installing conduits.

Do not install conduit ends and couplings while the cord ends are still attached. If you do not need the feed cord, remove it from the conduit before installation!

Before uncoiling the conduit, remove the cord fastening and open the ball at the conduit end with the long excess cord (ball) only and tie the cord end to the conduit outside profile. Then, uncoil the conduit.

Inaccurate positioning and curves in the conduit route increase insertion forces and limit the possible insertion length with the feed cord.

If you need the feed cord for inserting the cable feed wire, knot the cord ends together.

NB

Inserting wires and cables in Kabuflex S and Kabuflex R *plus*

The following factors determine possible insertion lengths:

- Cable (type/weight/flexibility)
- Course of the conduit (height profile, number/position/curve radii/inaccuracies)
- Friction coefficient and admissible tensile forces (cable/conduit wall)
- Lubricant (type/amount)
- Insertion method and speed (also surface temperature)
- Ratio of inside conduit diameter to cable diameter
- Installation quality (bedding/compacting of the embedding material = influences conduit deflection, backfilling/compacting of embedding around conduit bends/curves = important also to absorb mechanical stress when inserting wires and cables)

Observe careful installation and narrow distances of spacers (insertion forces) in particular with Kabuflex R *plus*. You can achieve greater insertion lengths under specified conditions using Kabuflex S straight length conduits.

Due to a number of factors which cannot be determined exactly, the manufacturer cannot make a definite statement regarding maximum insertion lengths.

Always use a sufficient amount of appropriate lubricant!

8. Cutting the Kabuflex® conduit

If necessary, cut to length with a fine-toothed saw or an appropriate knife; cuts must be made in corrugation troughs and at right angles!

Cutting the corrugation trough at right angles is required to ensure that the pull-out protection in the coupling snaps in exactly!

Use grater, planer or file to remove rough edges and burrs on the cutting surface.

9. Establishing connections with conduits and fittings

Sandtight:

- Clean dirt off spigot and coupling.
- Insert spigot all the way into the coupling.

Watertight:

- Clean dirt off spigot, coupling inside and sealing ring.
- Mount profile sealing ring onto the spigot (onto the second corrugation trough).
- Apply lubricant to the profile sealing ring and the coupling.
- Insert spigot all the way into the coupling.

10. Building connections

House and building lead-throughs must be implemented according to the rules and provisions of (E) VDE-AR-N 4223. This VDE application rule pools the accepted technical practices in terms of building penetrations. Generally, penetrations must be gas-tight and water pressure-tight and the functionality of the building sealing must not be compromised.

Approved products

- Kabuflex R plus type 750
- Kabuflex R plus type 450
- Wall collar set or Kabu-Seal
- Kabu-IN or Kabu-IN DD

11. Conduit fill and conduit dimensioning for cable occupation

Select conduit fill and/or minimum diameter of the cable conduit depending on the installation conditions, cable type and diameter (see in particular Chapters 6 and 7).

Conduit type	Conduit fill	Ratio of inside conduit diameter to cable diameter for occupation with 1 cable
Kabuflex S	≤ 35 %	≥ 1.70
Kabuflex R plus	≤ 25 %	≥ 2.00

Kabuflex R plus type 450 / type 750	Kabuflex S	Conduit fill	Constant a
R plus	S	20 %	2.24
R plus	S	25 %	2.00
–	S	30 %	1.83
–	S	35 %	1.70

This information on possible applications and installations is provided to the best of our knowledge. Our application department must be consulted when installation situations and installation techniques deviate from our recommended uses.

FRÄNKISCHE, however, is not responsible to check the suitability of the product for the intended purpose. Before product use, customers must check the product for suitability. Also observe our general terms of delivery.

Observe the following formula for dimensioning when occupying the conduit with several cable strands:

$$d_{Ri} = a \cdot \sqrt{d_1^2 + d_2^2 \dots + d_n^2}$$

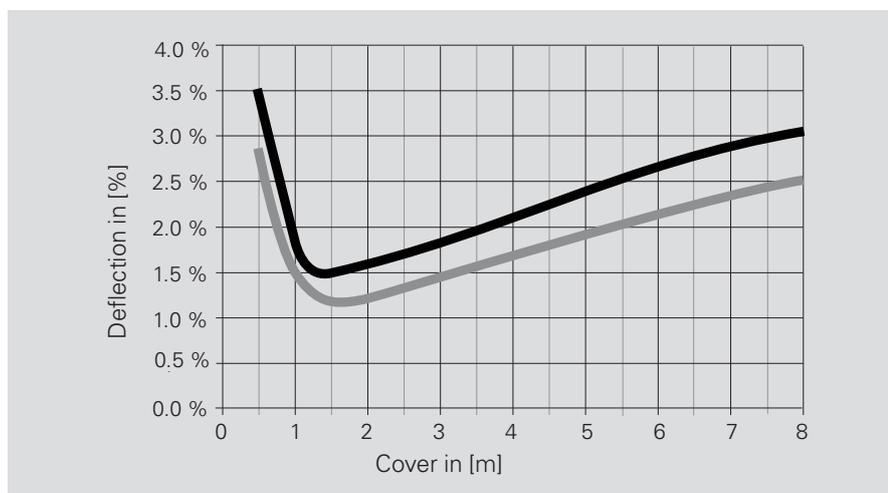
d_{Ri} : Kabuflex inside diameter of conduit
 d_n : outside diameter of cable
 a: constant depending on conduit fill

High static load capacity

The diagram shows the deflection of Kabuflex R plus type 450 and Kabuflex R plus type 750, DN 110 (individual conduit installation) with an increasing depth of cover and takes into consideration the installation conditions next to the chart. For this purpose, professional installation according to relevant provisions is assumed.

NB

The pipe stress analysis procedure according to ATV-DVWK-A 127 generally applies to individual conduit installations only! For conduit bundles, observe the information in our installation manual and A 535a/b by the Plastic Pipe Association KRV!



The following installation conditions apply:

- Kabuflex R plus type 450, DN 110
- Kabuflex R plus type 750, DN 110
- Permissible deflection 6 %
- Individual conduit installation
- Embanking
- Soil cover 0.5–8.0 m
- HGV 60 traffic loads
- Conduit zone: soil group G1/non-cohesive soils, 180° bedding angle, loose bedding
- Native soil and backfill G3 with 95 % D_{Pr}

Compression test according to DIN EN 61386-24



Kabuflex R plus type 450 = 45 kg



Kabuflex R plus type 750 = 75 kg

Kabuflex® sandtight (SD) – IP code 54

Marking according to EN 60529

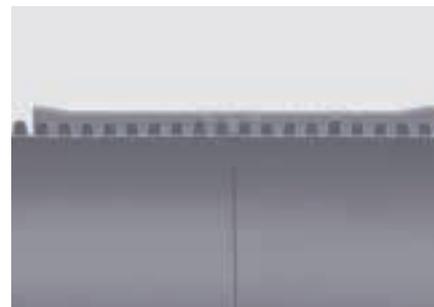
Reference number:

5 = dust proof

4 = splash proof

The SD coupling guarantees absolutely reliable connections of Kabuflex. It is used wherever it is sufficient to protect against soil particle ingress.

It is sandtight and can be installed easily and quickly.



SD = sandtight

Kabuflex® watertight (WD) – IP code 68

Marking according to EN 60529

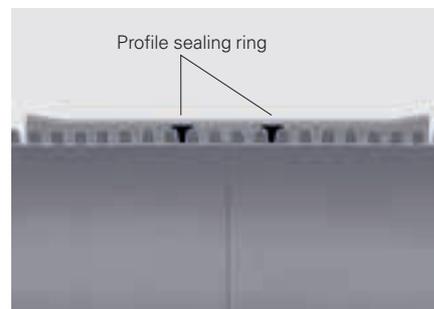
Reference number:

6 = dust tight

8 = watertight in case of continuous immersion in water

Certified leak-tightness of 0.5 bar for Kabuflex with sealing ring following inspection specifications according to DIN EN 1610 for underground installations.

The SD coupling in connection with the profile sealing ring ensures watertight connections (WD).



WD = watertight

Mount the profile sealing ring onto the second corrugation trough (visual check of position with transparent coupling)!

Use lubricant to mount the sealing ring. The profile sealing ring is used when the conduit system must be sealed against water pressure (0.5 bar) according to DIN EN 1610.

NB

Observe the installation conditions for special applications or constructive engineering (e.g., tunnel engineering).

Products system overview

Kabu®-FESH Set Elektro B



DIN EN 61386-24 (VDE 0605-24)
Compressive stress type 750



Cat. no.	Type	Coil content [m]	for cable diameter [mm]	Pallet content	Packing unit [pcs.]
19241075	75	6	9-24	6	1
19242075	75	10	9-24	4	1
19241110	110	6	9-48	4	1
19242110	110	10	9-48	2	1

Kabuflex® R plus type 450

N450



VDE 0605
DIN EN 61386-24
Compressive stress type 450



Cat. no.	Type	Outside Ø* [mm]	Inside Ø [mm]	Coil content [m]	Coil weight [kg]	Bend radius ¹⁾ ≥ [mm]	Colour
19210040	40	40.0	31	50	7.3	350	Black
19210050	50	50.0	40	50	9.6	350	
19210063	63	63.0	52	50	13.6	350	
19210075	75	75.0	62	50	16.6	350	
19210090	90	90.0	75	50	21.7	350	
19210110	110	110.0	93	50	27.2	500	
19210125	125	125.0	106	25	18.0	600	
19210160	160	160.0	137	25	28.9	750	

* Production-related dimensional tolerances acc. to DIN EN 61386-24

¹⁾ Valid for an ambient temperature of 20 °C. In lower temperatures, we recommend that the minimum bend radii be increased as follows: by a factor of ≥ 1.5 x at approx. 10 °C, by a factor of ≥ 2 x at approx. 0 °C.

Suitable accessories: spacer, transparent Kabuflex coupling, Kabuflex coupling, profile sealing ring, SD end cap, WD end cap, reducer, Kabu-Seal, Kabu-IN, Kabu-IN DD, Kabu-BV, wall collar set.

Kabuflex® R plus type 750

N750



VDE 0605
DIN EN 61386-24
Compressive stress type 750



Cat. no.	Type	Outside Ø* [mm]	Inside Ø [mm]	Coil content [m]	Coil weight [kg]	Bend radius ¹⁾ ≥ [mm]	Colour
19230075	75	75.0	62	50	26.5	350	Grey
19230110	110	110.0	93	50	47.5	500	
19230125	125	125.0	106	25	27.7	600	
19230160	160	160.0	136	25	41.2	750	

* Production-related dimensional tolerances acc. to DIN EN 61386-24

¹⁾ Valid for an ambient temperature of 20 °C. In lower temperatures, we recommend that the minimum bend radii be increased as follows: by a factor of ≥ 1.5 x at approx. 10 °C, by a factor of ≥ 2 x at approx. 0 °C.

Suitable accessories: spacer, transparent Kabuflex coupling, Kabuflex coupling, profile sealing ring, SD end cap, WD end cap, reducer, Kabu-Seal, Kabu-IN, Kabu-IN DD, Kabu-BV, wall collar set.

Kabuflex® R – UV

N450



DIN EN 61386-24
Compressive stress type 450

Cat. no.	Type	Outside Ø* [mm]	Inside Ø [mm]	Coil content [m]	Coil weight [kg]	Bend radius ¹⁾ ≥ [mm]	Colour
19140110	110	110.0	93	50	27.2	500	Black

* Production-related dimensional tolerances acc. to DIN EN 61386-24

¹⁾ Valid for an ambient temperature of 20 °C. In lower temperatures, we recommend that the minimum bend radii be increased as follows: by a factor of ≥ 1.5 x at approx. 10 °C, by a factor of ≥ 2 x at approx. 0 °C.

Suitable accessories: spacer, transparent Kabuflex coupling, Kabuflex coupling, profile sealing ring, SD end cap, WD end cap, reducer, Kabu-Seal, Kabu-IN, Kabu-IN DD, Kabu-BV, wall collar set.

Kabuflex® S

N450



DIN EN 61386-24
Compressive stress type 450

Cat. no.	Type	Outside Ø* [mm]	Inside Ø [mm]	In bundles of [m]	Bundle weight [kg]	Bend radius ¹⁾ ≥ [mm]	Pallet content [m]	Colour
3 m straight lengths with coupling (SD)								
19021075	75	75.0	63	15	5.7	2000	630	Black
19021110	110	110.0	94	15	9.0	2800	300	
19021120	120	120.0	99	15	11.0	3000	270	
19021125	125	125.0	107	15	11.6	3200	231	
19021145	145	145.0	125	15	13.7	3600	180	
19021160	160	160.0	137	15	17.3	4000	138	
19021175	175	175.0	149	15	19.8	4500	126	

6 m straight lengths without coupling								
19040075	75	75.0	63	30	11.3	2000	1260	Black
19040110	110	110.0	94	30	17.9	2800	600	
19040120	120	120.0	99	30	21.9	3000	540	
19040125	125	125.0	107	30	23.1	3200	462	
19040145	145	145.0	125	30	27.3	3600	360	
19040160	160	160.0	137	30	34.5	4000	276	
19040175	175	175.0	149	30	39.5	4500	252	

* Production-related dimensional tolerances acc. to DIN EN 61386-24

²⁾ Valid for an ambient temperature of 20 °C. In lower temperatures, we recommend that the minimum bend radii be increased as follows: by a factor of ≥ 1.5 x at approx. 10 °C, by a factor of ≥ 2 x at approx. 0 °C.

Suitable accessories: Kabuflex bend, transparent Kabuflex coupling, Kabuflex coupling, profile sealing ring, SD end cap, WD end cap, reducer, Kabu-Seal, Kabu-IN, Kabu-IN DD, Kabu-BV, wall collar set.

Kabuflex® bend



Cat. no.	Type	Outside Ø* [mm]	Inside Ø [mm]	Length [m]	Bend radius [mm]	Packing unit [pcs.]	Colour
45° bend							
19085075	75	75.0	63	0.9	750	5	Black
19085110	110	110.0	94	1	900	5	
19085120	120	120.0	99	1	900	5	
19085125	125	125.0	107	1.1	1100	5	
19085145	145	145.0	125	1.2	1100	5	
19085160	160	160.0	137	1.2	1100	5	
19085175	175	175.0	149	1.2	1100	5	
90° bend							
19080075	75	75.0	63	1.5	750	5	Black
19080110	110	110.0	94	1.8	900	5	
19080120	120	120.0	99	1.9	900	5	
19080125	125	125.0	107	2	1100	5	
19080145	145	145.0	125	2.1	1100	5	
19080160	160	160.0	137	2.1	1100	5	
19080175	175	175.0	149	2.1	1100	5	

* Production-related dimensional tolerances acc. to DIN EN 60423

Spacer



8-fold

Cat. no.	Type	Packing unit [pcs.]	Colour
2-fold			
19942075	75	1	Black
19942110	110	1	
19942120 ¹⁾	120	1	
19942160	160	1	
4-fold			
19944075	75	1	Black
19944110	110	1	
19944120 ¹⁾	120	1	
19944160	160	1	
6-fold			
19946075	75	1	Black
19946110	110	1	
19946120 ¹⁾	120	1	
19946160	160	1	
8-fold			
19948075	75	1	Black
19948110	110	1	
19948120 ¹⁾	120	1	
19948160	160	1	

¹⁾ Also suitable for DN 125

Transparent Kabuflex® coupling



Cat. no.	Type	Packing unit [pcs.]	Colour
19250040	40	1	Trans- parent
19250050	50	1	
19250063	63	1	
19250075	75	1	
19250090	90	1	
19250110	110	1	
19250125	125	1	
19250160	160	1	

Kabuflex® coupling



Cat. no.	Type	Packing unit [pcs.]	Colour
19910040	40	1	Black
19910050	50	1	
19910063	63	1	
19910075	75	1	
19910090	90	1	
19910110	110	1	
19910120	120	1	
19910125	125	1	
19910145	145	1	
19910160	160	1	
19910175	175	1	

Kabuflex® profile sealing ring



Cat. no.	Type	Packing unit [pcs.]	Colour
19980040	40	1	Black
19980050	50	1	
19980063	63	1	
19980075	75	1	
19980090	90	1	
19980110	110	1	
19980120	120	1	
19980125	125	1	
19980145	145	1	
19980160	160	1	
19980175	175	1	

Furowell



Cat. no.	Technical data	Outside Ø* [mm]	Inside Ø [mm]	Length [mm]	Pcs. / pallet	Colour
29510250	DN250	293	253	800	22	Black
29510350	DN350	400	345	800	22	
29511250	DN250	293	253	1000	22	
29511300	DN300	346	300	1000	12	
29511350	DN350	400	345	1000	12	
29512250	DN250	293	253	1500	11	
29512350	DN350	400	345	1500	6	

Suitable accessories: Furowell end cap

Furowell end cap



Cat. no.	Technical data	Packing unit [pcs.]	Colour
29570250	DN250	1	Yellow
29570300	DN300	1	Black
29570350	DN350	1	

Kabu®-IN



NEW

NEW

NEW

Cat. no.	Type	Outside Ø [mm]	Cable Ø [mm]	Sealing width [mm]	For Kabuflex conduit type	Packing unit [pcs.]	Colour
1 cable							
19951063	63	50	9-18	30	63	1	Yellow
19951075	75	61	9-24	30	75	1	
19951110	110	92	9-48	30	110	1	
2 cables							
19952110	110	92	9-18; 9-36	30	110	1	Yellow
3 cables							
19953160	160	135	3 x 9-42	30	160	1	Yellow
4 cables							
19954110	110	92	4 x 9-18	30	110	1	Yellow
19954160	160	132	4 x 9-36	30	160	1	
6 cables							
19956160	160	135	6 x 9-30	30	160	1	Yellow

Kabu®-IN DD



Cat. no.	Type	Outside Ø* [mm]	Cable Ø [mm]	Sealing width [mm]	For Kabuflex conduit type	Packing unit [pcs.]	Colour
19961075	75	61	9-24	60	75	1	Yellow
19961110	110	92	9-48	60	110	1	

* Kabu-IN DD, in a system with Kabuflex R plus type 750, wall collar set or Kabu-Seal, pressure-tight up to 1.5 bar

Kabu®-BV



NEW

NEW

Cat. no.	Type	Outside Ø [mm]	Sealing width [mm]	For Kabuflex conduit type	Packing unit [pcs.]	Colour
19950063	63	50	30	63	1	Yellow
19950075	75	61	30	75	1	
19950110	110	92	30	110	1	
19950160	160	135	30	160	1	

Kabu®-Seal



Cat. no.	Type	Outside Ø* [mm]	Inside Ø [mm]	Core drill hole [mm]	For conduits Ø [mm]	Width [mm]	Packing unit [pcs.]	Colour
19965063	63	100	64	100	63	60	1	Yellow
19965075	75	122.8	76	125	75	60	1	
19965110	110	150	111	150	110	60	1	
19965160	160	198.3	162	200	160	80	1	

Wall collar set



Cat. no.	Type	Core drill hole [mm]	Colour
19960040	40	≈250	Black
19960050	50	≈250	
19960063	63	≈250	
19960075	75	≈250	
19960110	110	≈300	
19960120	120	≈300	
19960160	160	≈350	
19960175	175	≈350	

Kabuflex® SD end cap



Cat. no.	Type	Packing unit [pcs.]	Colour
19970040	40	1	Trans- parent/ yellow
19970050	50	1	
19970063	63	1	
19970075	75	1	
19970090	90	1	
19970110	110	1	
19970120	120	1	
19970125	125	1	
19970145	145	1	
19970160	160	1	
19970175	175	1	

Kabuflex® WD end cap



Cat. no.	Type	Packing unit [pcs.]	Colour
19971110	110	1	Black
19971120	120	1	
19971125	125	1	
19971160	160	1	
19971175	175	1	

Reducer



Cat. no.	Type	Packing unit [pcs.]	Colour
19995110 ¹⁾	110	1	Black
19995160 ²⁾	160	1	

¹⁾ For KG conduit 100 (push-fit KG coupling); ²⁾ For KG conduit 150 (push-fit KG coupling)

FRH round cable protectors



Cat. no.	Type	Cover width [mm]	Length [cm]	Pallet content [m]	Colour
18020040	40	40	50	1500	Red
18020050	50	50	50	1500	
18020060	60	60	50	1500	
18020080	80	80	50	1000	
18020100	100	100	50	1000	
18040040	40	40	100	1500	Red
18040050	50	50	100	1500	
18040060	60	60	100	1500	
18040080	80	80	100	1000	
18040100	100	100	100	1000	

FHA cable protectors



Cat. no.	Type	Cover width [mm]	Length [cm]	Pallet content [m]	Colour
18120110	110	110	50	1500	Red
18120120	120	120	50	1500	
18120160	160	160	50	1500	
18120180	180	180	50	1000	
18120200	200	200	50	1000	
18140110	110	110	100	1500	Red
18140120	120	120	100	1500	
18140160	160	160	100	1500	
18140180	180	180	100	1000	
18140200	200	200	100	1000	

FPL cable cover plates



Cat. no.	Type	Cover width [mm]	Length [cm]	Pallet content [m]	Colour
18220120	120	120	50	1500	Red
18220180	180	180	50	1500	
18220200	200	200	50	1500	
18220250	250	250	50	1000	
18220300	300	300	50	750	
18240120	120	120	100	1500	Red
18240180	180	180	100	1500	
18240200	200	200	100	1500	
18240250	250	250	100	1000	
18240300	300	300	100	750	

FTWB warning tape



Cat. no.	Spool content [m]	Width [mm]	Thickness [mm]	Colour
18410000	250	40	0.15	Yellow

Overview of standards

Regulation	Title
DIN 1610	Construction and testing of drains and sewers
DWA-A 139 (replaces ATV-DVWK-A 139)	Worksheet Construction and testing of drains and sewers
ZTV A-StB 12 (replaces ZTV A-StB 97)	Supplementary technical terms and conditions of contract and guidelines for earthworks in traffic areas (<i>Zusätzliche Technische Vertragsbedingungen und Richtlinien für Aufgrabungen in Verkehrsflächen</i>)
A 535a/b	Installation instructions for conduits and fittings made of high-density polyethylene (PE-HD) for underground cable conduits/telecommunication and microduct mono (<i>Einbauanleitung für Rohre und Formstücke aus Polyethylen hoher Dichte (PE-HD) für erdverlegte Kabelschutzrohrleitungen/Telekommunikation und Microduct Mono</i>)
A 515	Conduits and fittings made of unplasticized polyvinyl chloride (PVC-U) for cable protection (<i>Rohre und Formstücke aus weichmacherfreiem Polyvinylchlorid (PVC-U) für den Kabelschutz</i>)
DIN 18300	German construction contract procedures (VOB) – Part C: General technical specifications in construction contracts (ATV) – Earthworks
DIN 18303	VOB – Part C: ATV – Timbering to trenchwork
DIN 4124	Excavations and trenches – Slopes, planking and strutting breadths of working spaces
DIN EN 61386-1	Conduit systems for cable management – Part 1: General requirements
DIN EN 61386-24	Conduit systems for cable management – Part 24: Particular requirements – Conduit systems buried underground
DIN VDE 0100-520	Low-voltage electrical installations – Part 5-52: Selection and erection of electrical equipment – Wiring systems
VDE-AR-N 4100	Technical Connection Rules for Low-Voltage (TAR low voltage)
DIN 18012	Service connections for buildings – General planning criteria
(E) VDE-AR-N 4223	Building penetrations and their sealings for underground cables (<i>Bauwerksdurchdringungen und deren Abdichtungen für erdverlegte Leitungen</i>)
DIN 18322	German construction contract procedures (VOB) – Part C: General technical specifications in construction contracts (ATV) – Underground cable laying work
DAfStb directive	Watertight concrete structures (WU directive) of the DAfStb, German Committee for Reinforced Concrete (<i>Wasserundurchlässige Bauwerke aus Beton (WU-Richtlinie) des DAfStb, Deutscher Ausschuss für Stahlbeton</i>) Wear class 1: permanently or temporarily pressing water Wear class 2: soil moisture
DIN 18533	Waterproofing of elements in contact with soil W1-E: Soil moisture and non-pressing water

Material data

Characteristics	PE	Unit	
Density	approx. 0.95	g/cm ³	DIN 53 479
Tear resistance	23–30	N/mm ²	DIN 53 455
Elongation at break	300–1000	%	DIN 53 455
Ball indentation hardness	30–65	N/mm ²	DIN 53 456
Notch impact strength	> 5	mJ/mm ²	DIN 53 453
Crystalline melting point	125–140	°C	Pol. microscope
Thermal conductivity	0.40–0.46	W/m · K	DIN 52 612
Lin. thermal expansion coeff.	1.5 – 2.0 · 10 ⁻⁴	K ⁻¹	DIN 52 328
Disruptive strength	800–900	kV/cm	DIN 53 481
Specific flow resistance	approx. 10 ¹⁶	Ohm · cm	DIN 53 482

Contact

In-house technical consulting



Bodo Schmidt

Phone +49 9525 88-2472
bodo.schmidt@fraenkische.de



Florian Wolf

Phone +49 9525 88-2352
florian.wolf@fraenkische.de

Technical hotline



Phone +49 9525 88-8123
tfb.elektro@fraenkische.de

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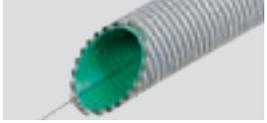
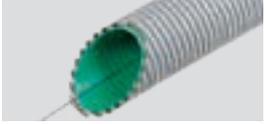
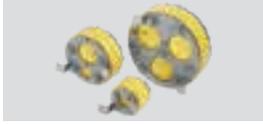
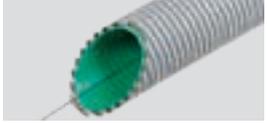
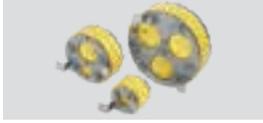
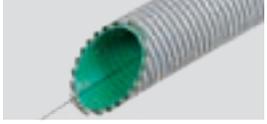


www.fraenkische.com
www.datalight-system.com

Kabuflex® R plus type 750



Classification N750
DIN EN 61386-24

1.5 bar	Wall lead-through according to VDE-AR-N 4100		+		+	
1.5 bar	Floor feed-through according to VDE-AR-N 4100		+		+	
0.5 bar	Wall lead-through		+		+	
0.5 bar	Floor lead-through		+		+	
0.5 bar	End plug		+			
0.5 bar	Sealing end cap		+			
0.5 bar	Coupling connection		+		+	
sandtight	Coupling connection		+			

Kabuflex® R plus type 450

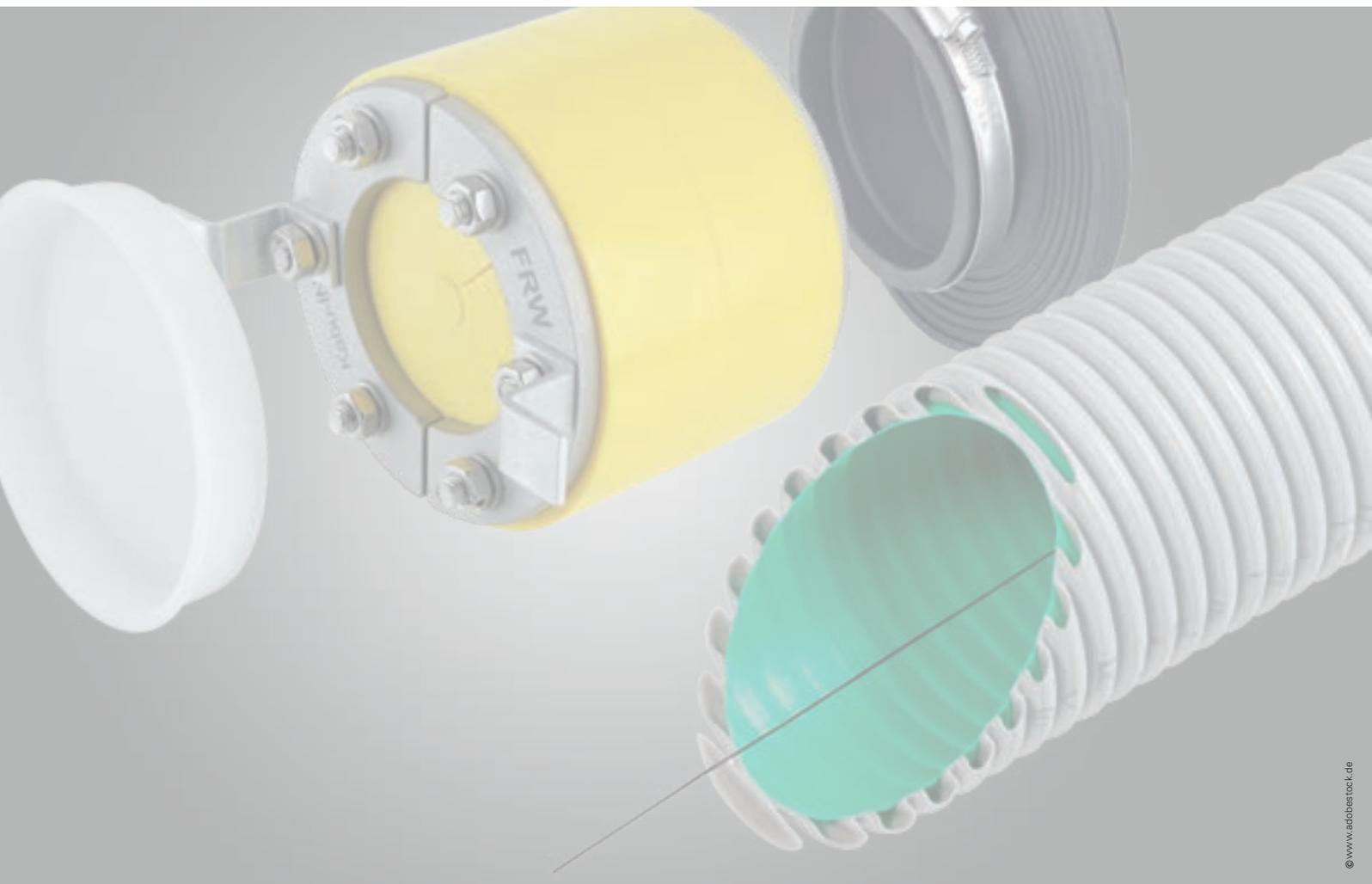


Classification N450
DIN EN 61386-24

0.5 bar	Wall lead-through		+		+	
		Kabuflex® R plus type 450		Kabu®-Seal		Kabu®-IN DD
0.5 bar	Wall lead-through		+		+	
		Kabuflex® R plus type 450		Kabu®-Seal		Kabu®-IN
0.5 bar	End plug		+			
		Kabuflex® R plus type 450		Kabu®-BV		
0.5 bar	Sealing end cap		+			
		Kabuflex® R plus type 450		Kabuflex® WD end cap		
0.5 bar	Coupling connection		+		+	
		Kabuflex® R plus type 450		Transparent Kabuflex® coupling		Kabuflex® profile sealing ring
sandtight	Coupling connection		+			
		Kabuflex® R plus type 450		Transparent Kabuflex® coupling		

Individual components

Up to 3.0		Wall collar set	Up to 1.5		Kabu®-IN DD		Kabu®-Seal	Up to 0.5		Kabu®-IN
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FRÄNKISCHE

Fränkische Rohrwerke Gebr. Kirchner GmbH & Co. KG | Hellinger Str. 1 | 97486 Königsberg/Germany
Phone +49 9525 88-2200 | Fax +49 9525 88-92200 | marketing@fraenkische.de | www.fraenkische.com

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