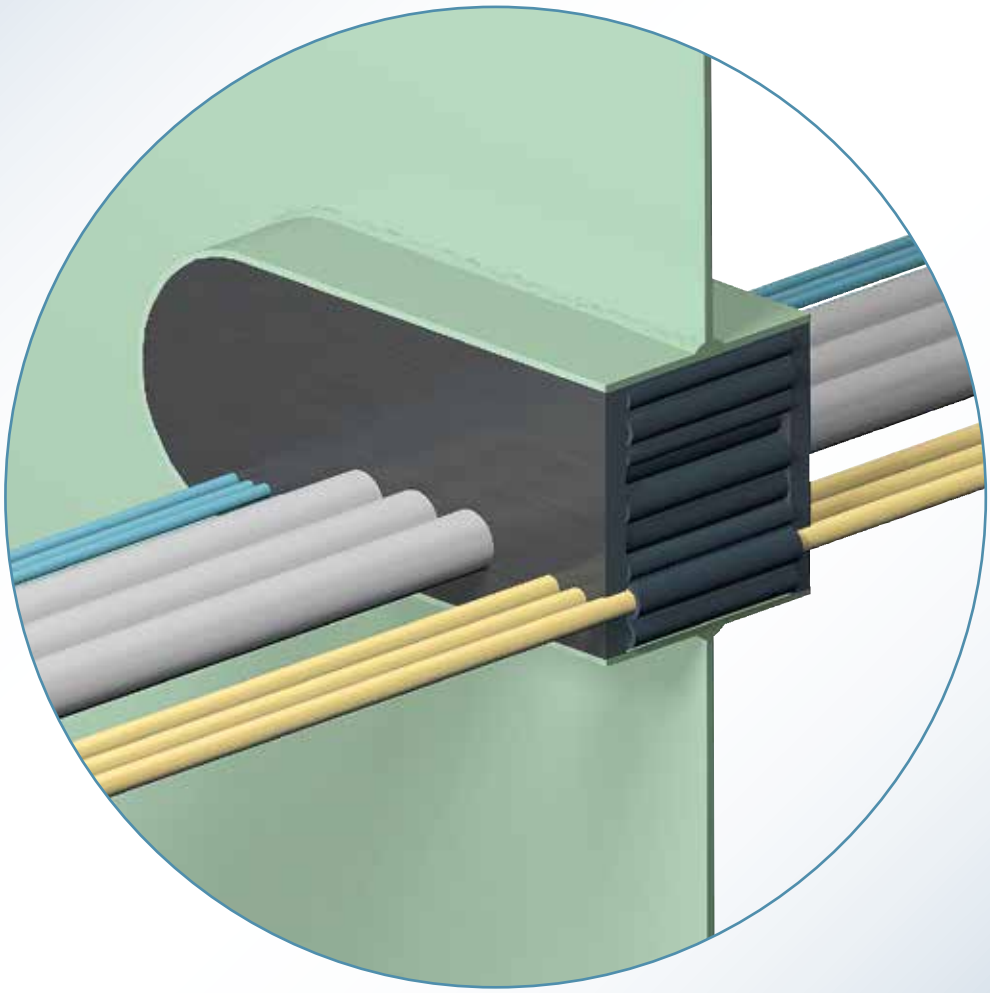
BEELE
SAFETY SEALING SYSTEMS

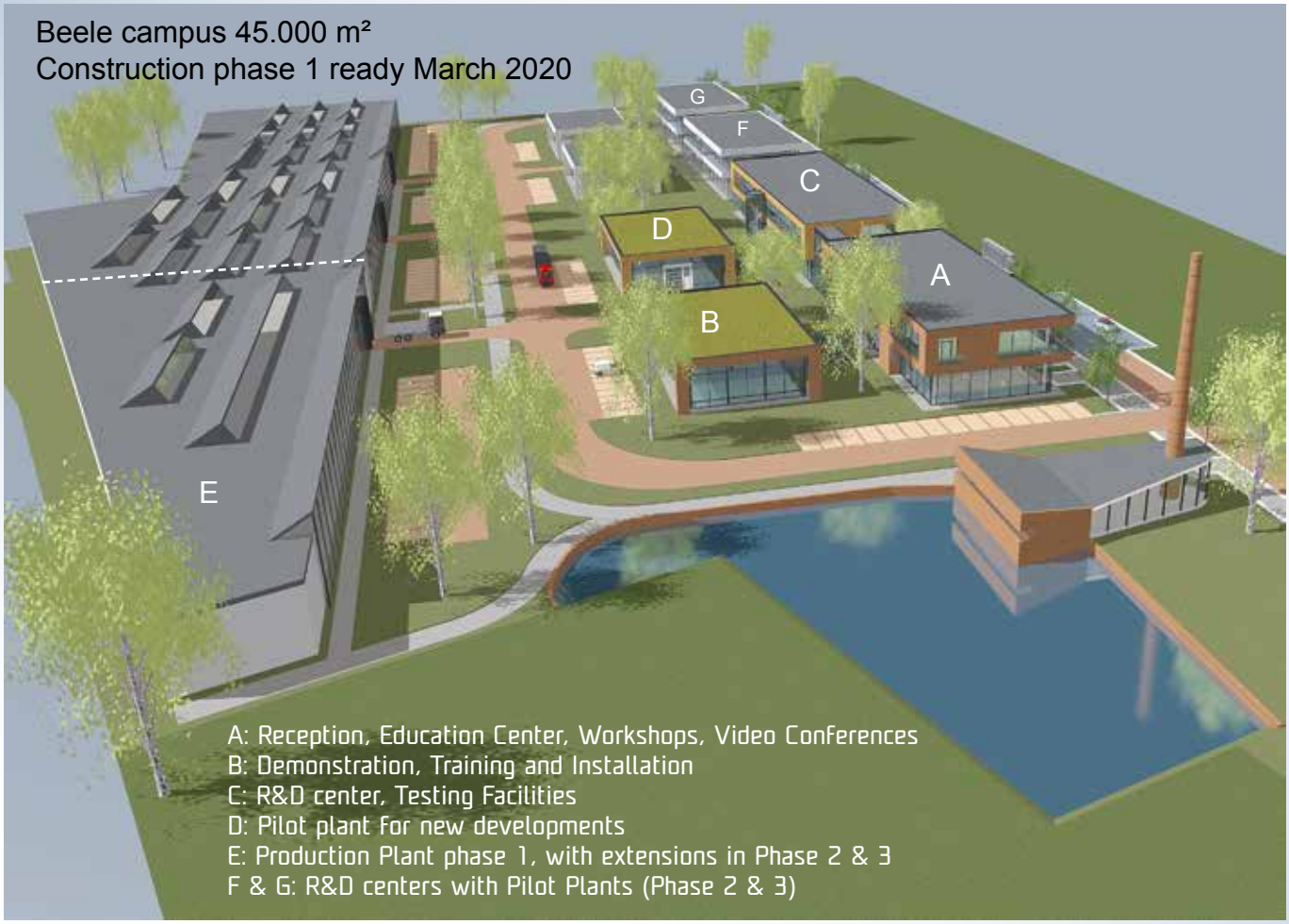
INSTALLATION INSTRUCTIONS RISE® SEALING SYSTEM (SLEEVES AND SEALANT) FOR (MULTI-) CABLE TRANSITS



RISE®

SEALING VALLEY

KNOWLEDGE TRANSFER, EDUCATION AND TRAINING



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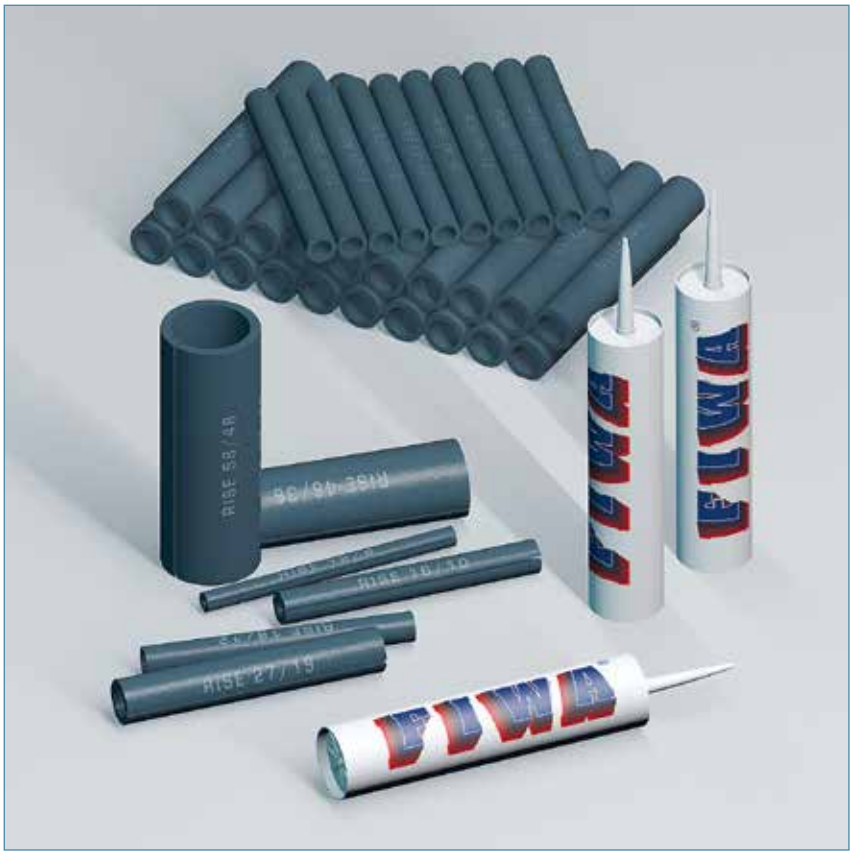
Research & Development : BEELE Engineering BV, Aalten, the Netherlands.

Note : The manufacturer reserves the right to make dimensional and design modifications without prior notification.

brochure code : installation RISE

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO®
MULTI-CABLE TRANSIT SEALING SYSTEM



INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

PRODUCT INFORMATION SEALANT

01)	colour	red brown, blue, black, white, grey
02)	specific gravity	1.40 ± 0.03 g/cm^3
03)	curing of top layer	0.5 - 1 hour depending on temperature and air humidity
04)	service temperature	-50 °C up to +180 °C
05)	tensile strength	1.5 MPa
06)	elongation at break	200%
07)	hardness	45 Shore A
08)	elastic deformation	approx. 50%
09)	resistance	UV, Ozone, arctic conditions
10)	ageing	more than 20 years
11)	supplied in	310 ml cartridges
12)	storage	to be stored cool and dry min/max temperature = +5/+30° C
13)	storage life	12 months when stored properly. Since we have no control on storage, we can only guarantee for 6 months. when applied later than 6 months after date of manufacturing, curing and adhesive properties have to be checked before application

NOFIRNO® is absolutely HALOGEN FREE with zero VOC (volatiles organic compounds) according to TÜV report 89206405-01. Furthermore NOFIRNO® has a low smoke index and a high oxygen index (ISO 4589-2: 1996), and low flame spread characteristics according to IMO Resolution A.653(16). NOFIRNO® is a paste-like compound which is simple to use. NOFIRNO® has a balanced viscosity and can be applied overhead.

article number 50.0107

PRODUCT INFORMATION SEALANT

01)	colour	dark grey
02)	specific gravity	1.30 ± 0.03 g/cm^3
03)	curing of top layer	0.5 - 1 hour depending on temperature and air humidity
04)	service temperature	-50 °C up to +180 °C
05)	tensile strength	1.15 MPa
06)	elongation at break	125%
07)	hardness	35 Shore A
08)	elastic deformation	approx. 25%
09)	resistance	UV, Ozone, arctic conditions
10)	ageing	more than 20 years
11)	supplied in	310 ml cartridges
12)	storage	to be stored cool and dry min/max temperature = +5/+30° C
13)	storage life	12 months when stored properly. Since we have no control on storage, we can only guarantee for 6 months. when applied later than 6 months after date of manufacturing, curing and adhesive properties have to be checked before application

FIWA® is absolutely HALOGEN FREE (tested according to Naval Engineering Standard NES 713: Issue 3). Furthermore FIWA® has a low smoke index (NES 711: Issue 2: 1981) and a high oxygen index (ISO 4589-2: 1996), and low flame spread characteristics according to IMO Resolution A.653(16). FIWA® is a paste-like compound which is simple to use. FIWA® has a balanced viscosity and can be applied overhead

article number 80.0902

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

RISE® MULTI-CABLE INSERT SLEEVES

RISE® cable sleeves

cable sleeves are supplied split lengthwise

Note: maximum continuous service temperature of the RISE® sleeves not to exceed 70 °C. Consult our technical support department in case of higher operating temperatures.

RISE® sleeve	cable diameter	sleeve length	article number
12/6	5 - 7	140	80.0051
14/8	7 - 9	140	80.0052
16/10	9 - 11	140	80.0053
18/12	11 - 13	140	80.0054
20/14	13 - 15	140	80.0055
22/16	15 - 17	140	80.0056
27/19	17 - 21	140	80.0057
31/23	21 - 25	140	80.0058
35/27	25 - 29	140	80.0059
39/31	29 - 33	140	80.0060
46/36	33 - 39	140	80.0061
52/42	39 - 45	140	80.0062
58/48	45 - 51	140	80.0063
64/54	51 - 57	140	80.0064
70/60	57 - 63	140	80.0065

all dimensions in mm

RISE® sleeve	cable diameter	sleeve length	article number
12/6	5 - 7	160	80.0100
14/8	7 - 9	160	80.0101
16/10	9 - 11	160	80.0102
18/12	11 - 13	160	80.0103
20/14	13 - 15	160	80.0104
22/16	15 - 17	160	80.0105
27/19	17 - 21	160	80.0106
31/23	21 - 25	160	80.0107
35/27	25 - 29	160	80.0108
39/31	29 - 33	160	80.0109
46/36	33 - 39	160	80.0110
52/42	39 - 45	160	80.0111
58/48	45 - 51	160	80.0112
64/54	51 - 57	160	80.0113
70/60	57 - 63	160	80.0114

all dimensions in mm

RISE® sleeve	cable diameter	sleeve length	article number
12/6	5 - 7	210	80.0200
14/8	7 - 9	210	80.0201
16/10	9 - 11	210	80.0202
18/12	11 - 13	210	80.0203
20/14	13 - 15	210	80.0204
22/16	15 - 17	210	80.0205
27/19	17 - 21	210	80.0206
31/23	21 - 25	210	80.0207
35/27	25 - 29	210	80.0208
39/31	29 - 33	210	80.0209
46/36	33 - 39	210	80.0210
52/42	39 - 45	210	80.0211
58/48	45 - 51	210	80.0212
64/54	51 - 57	210	80.0213
70/60	57 - 63	210	80.0214

all dimensions in mm

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

RISE® & NOFIRNO® FILLER SLEEVES SINGLE & MULTI

RISE® filler sleeves

filler sleeves are supplied non-split

Note: split sleeves 18/12 and 27/19 can also be used as filler sleeves.

RISE® multi-filler sleeves

Note: maximum continuous service temperature of the RISE® sleeves not to exceed 70 °C. Consult our technical support department in case of higher operating temperatures.

filler sleeves are supplied in multi-sets of 10 sleeves

RISE® filler sleeve	sleeve length		article number
18/12 single	140	all dimensions in mm	80.0323
18/12 single	160		80.0313
18/12 single	210		80.0303
27/19 single	140		80.0326
27/19 single	160		80.0316
27/19 single	210		80.0306

RISE® multi-filler sleeve	sleeve length		article number
18/12 multi	140	all dimensions in mm	80.0324
18/12 multi	160		80.0314
18/12 multi	210		80.0304
27/19 multi	140		80.0327
27/19 multi	160		80.0317
27/19 multi	210		80.0307

NOFIRNO® filler sleeves

filler sleeves are supplied non-split

NOFIRNO® multi-filler sleeves

Operating temperatures:
-50 °C up to +180 °C

filler sleeves are supplied in multi-sets of 10 sleeves

NOFIRNO® filler sleeve	sleeve length		article number
18/12 single	140	all dimensions in mm	80.5002
18/12 single	160		80.5003
18/12 single	210		80.5004
27/19 single	140		80.5012
27/19 single	160		80.5013
27/19 single	210		80.5014

NOFIRNO® multi-filler sleeve	sleeve length		article number
18/12 multi	140	all dimensions in mm	80.5052
18/12 multi	160		80.5053
18/12 multi	210		80.5054
27/19 multi	140		80.5062
27/19 multi	160		80.5063
27/19 multi	210		80.5064
22/15 multi	140		80.5072
22/15 multi	160		80.5073
22/15 multi	210		80.5074

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

The RISE® multi-cable transit sealing system is composed of RISE® insert (cable) sleeves in 15 different sizes, two sizes of RISE® filler sleeves and FIWA® sealant.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

For applications with higher fire and tightness ratings (H-class and Jet Fires) the RISE®/NOFIRNO® sealing system is used. The RISE®/NOFIRNO® multi-cable transit sealing system is composed of RISE® insert (cable) sleeves in 15 different sizes, NOFIRNO® filler sleeves (a type 22/15 available as an alternative for the combination of 18/12 and 27/19) and NOFIRNO® sealant.
The use of NOFIRNO® filler sleeves contributes to ease of installation and makes the sealing system even faster to install than with the RISE® filler sleeves.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

The tools needed for the installation are a steel brush, a tie-wrap cutter, a cutter for the nozzles of the sealant cartridges, flat nose pliers to adjust the set of fillers, a filler set adjuster, a tool for pressing the sealant layer in between the cables, cloths for cleaning and compression of the sealant layer, a cable cleaner, wet soap, a bucket with water and a professional sealant dispenser.

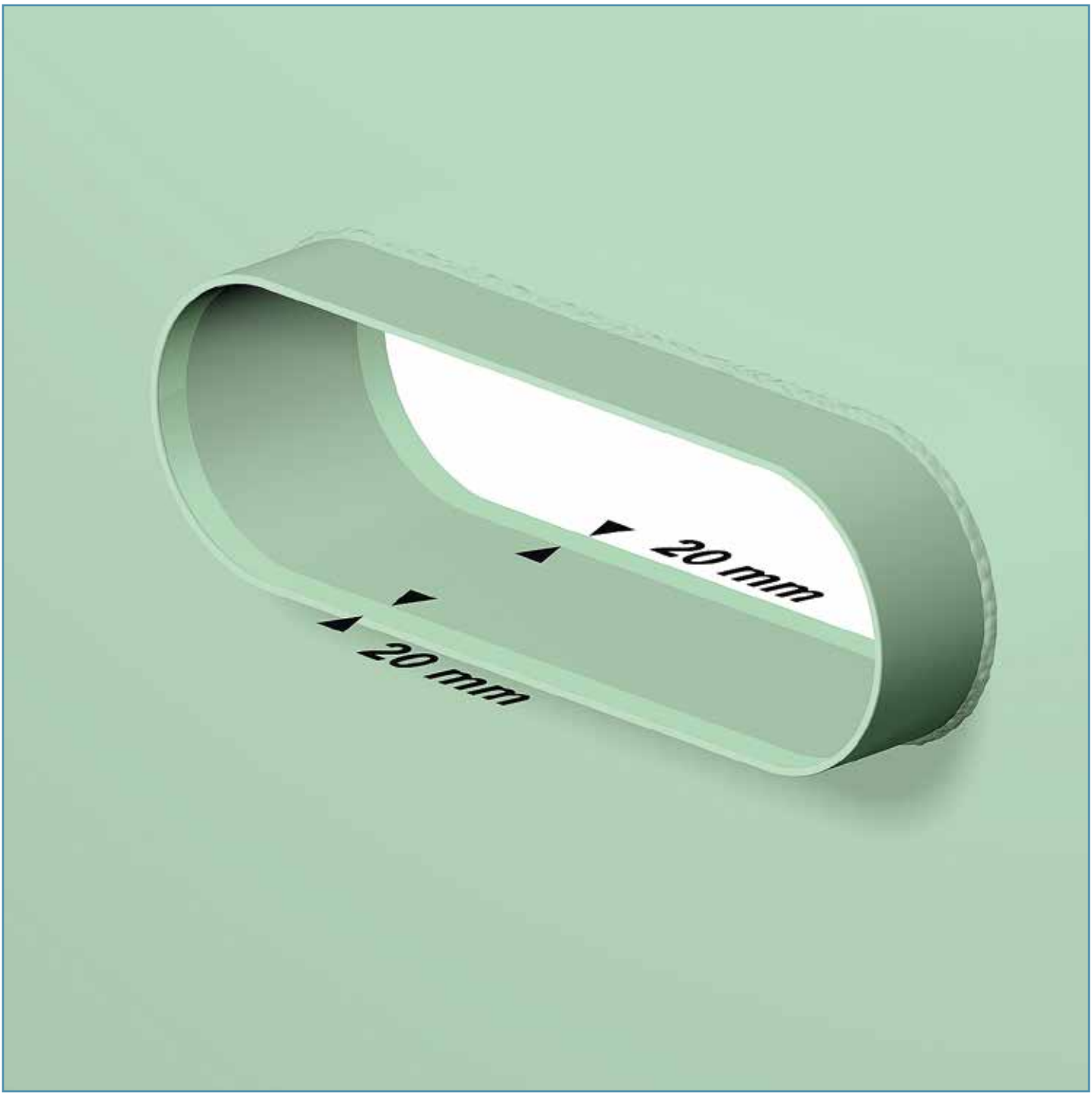
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

The transit frames might be welded into the partition long before cable pulling will start. For this reason, the condition of the inside of the frame has to be checked when starting cable pulling. Before insertion of the RISE® cable and filler sleeves, the inside of the transit frames has to be cleaned, and any dirt, oil, grease and other residues or corrosion should be removed from the inside of the transit frame.
Note: for fire resistant penetrations the max. size of the transit frame is 600x300 mm or equivalent of 1800 cm².

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

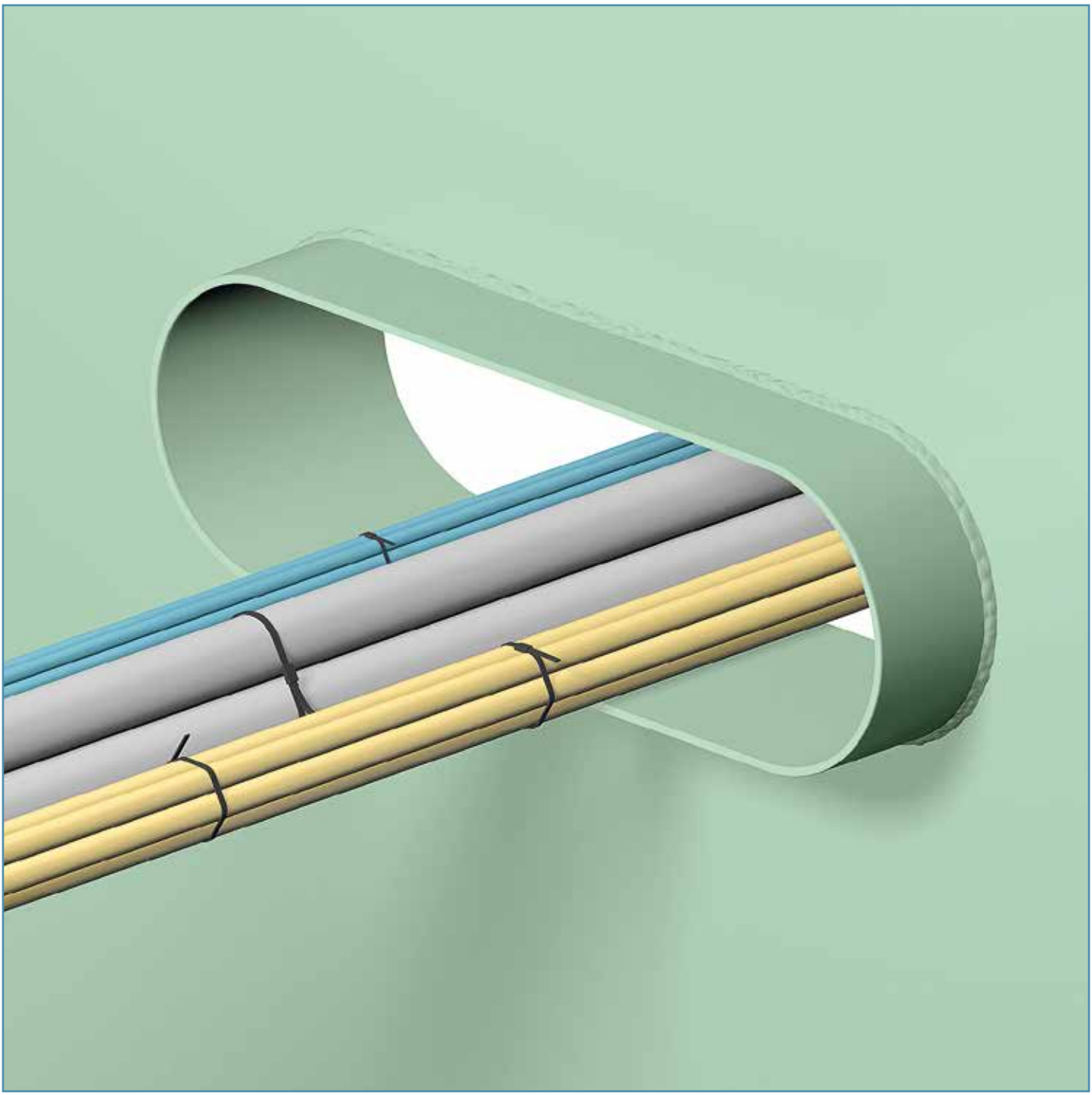
With a steel brush or by blasting, the corroded inner surface of the transit frame should be treated to remove these corroded spots. The excellent adhesive properties of the sealing system will be diminished by corroded surfaces.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



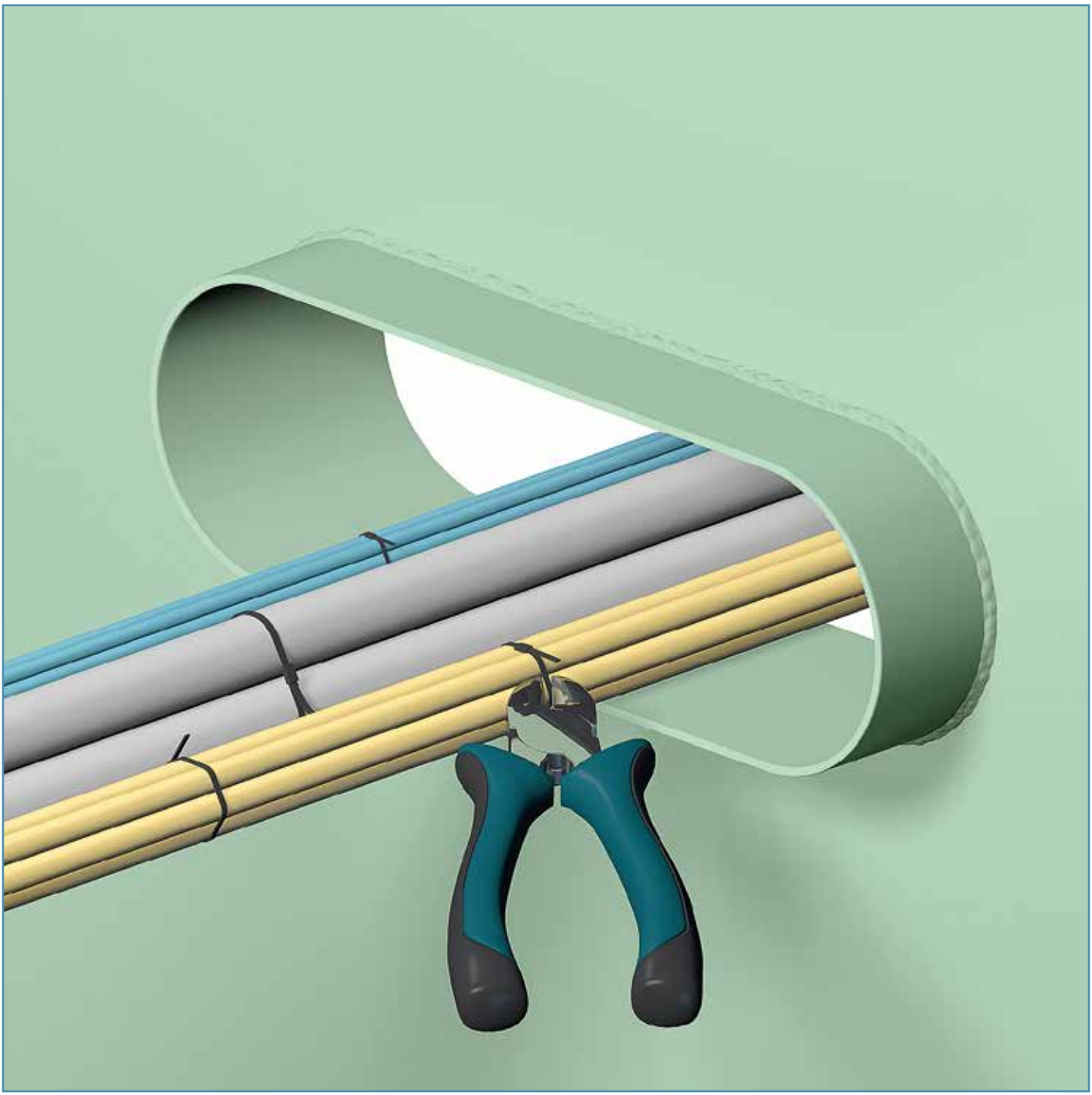
The RISE® sealing system is composed of cable and filler sleeves, and layers of sealant. The sleeves are the backing on which the sealant is going to be applied. A 20 mm thick layer of sealant is applied at both sides of the penetration. Before welding the transit frame into the partition, check if the transit frame is deep enough to be in line with the certification of the sealing system. The RISE® sleeves are 40 mm shorter in length than the depth of the transit frame.
Note: for high rated watertight penetrations, the transit frame should be either of a limited size or partitions should be placed inside the larger transit frames to divide the frame in smaller sections.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



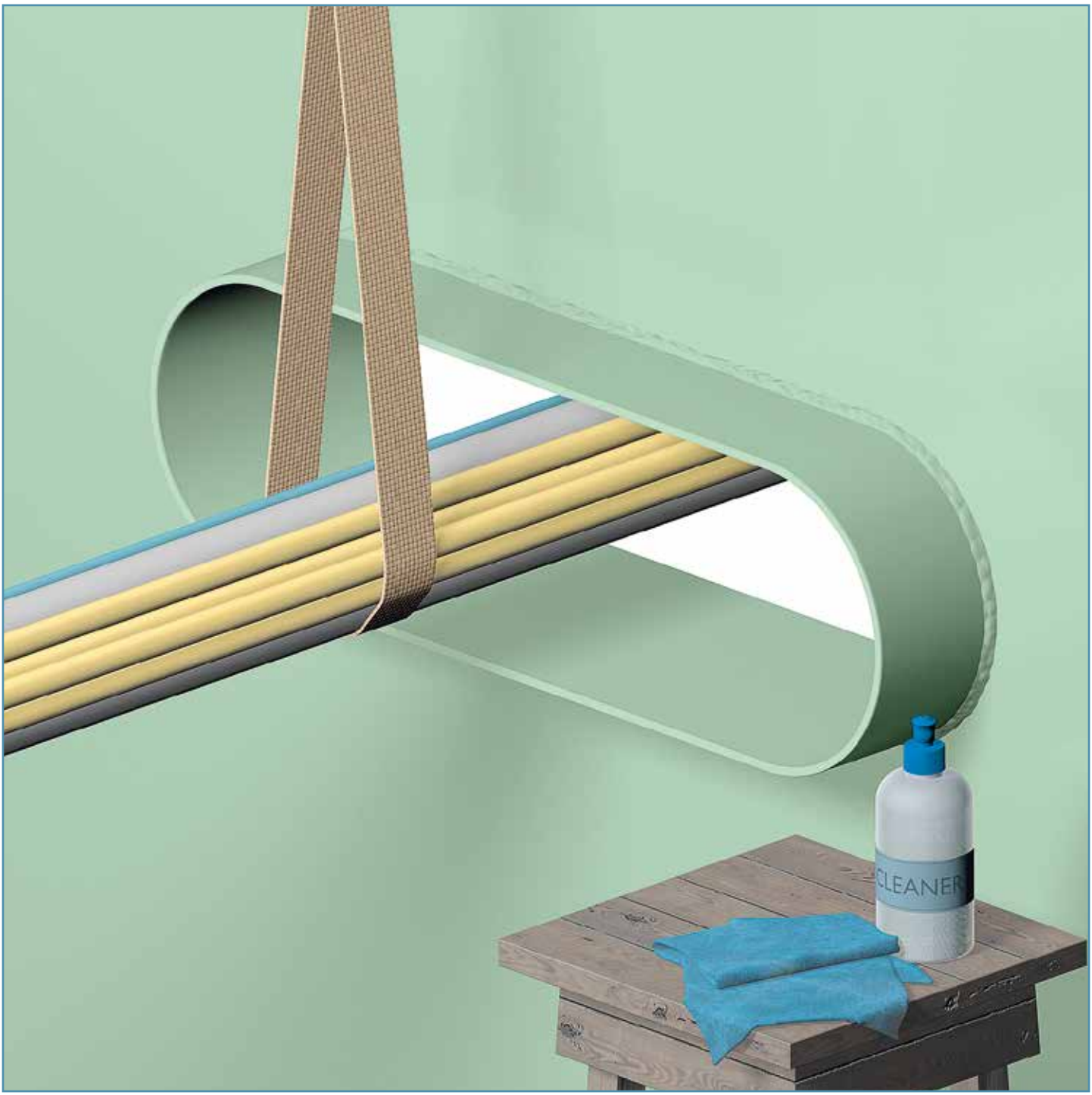
The cables can be ducted through the transit frame in random order. It is most important that they are not pulled too tight so as not to hamper their separation when RISE® insert sleeves are inserted. Open transits at site allow for pulling more cables through than planned. Sealing the multi-cable penetration will then be difficult or not possible at all. Tangled cable sets can make the installation of the sealing system extremely difficult. Ease of installation starts with organized pulling of the cables through the transit frames.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



The cable tie-wraps have to be removed to create enough play in between the cables to enable cleaning of the cables and to allow insertion of the RISE® cable sleeves in a later stage.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

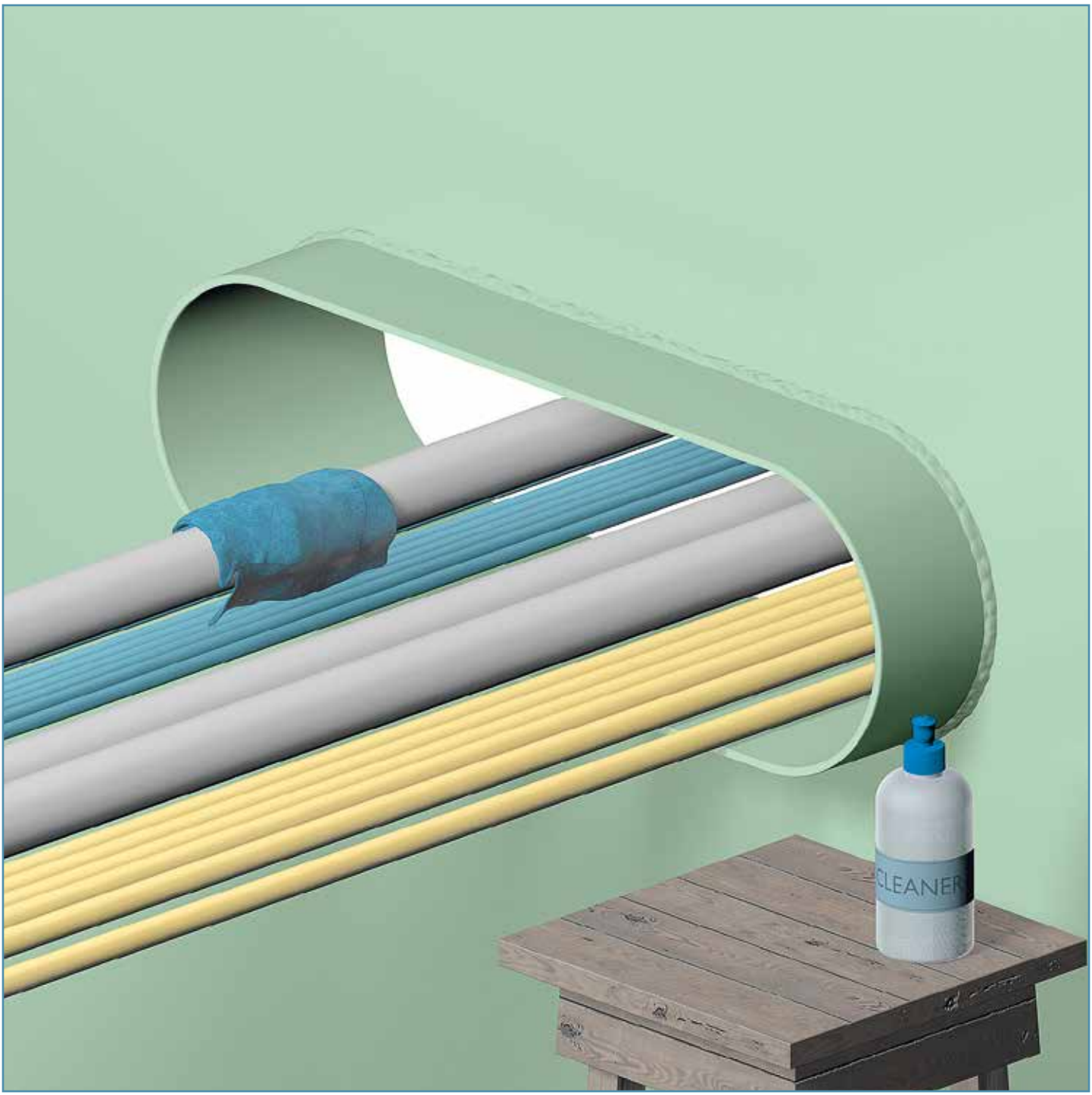


For adequate cleaning purposes (it is a must to do), the cables could be lifted with a band to create sufficient access to the inner wall of the transit frame.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

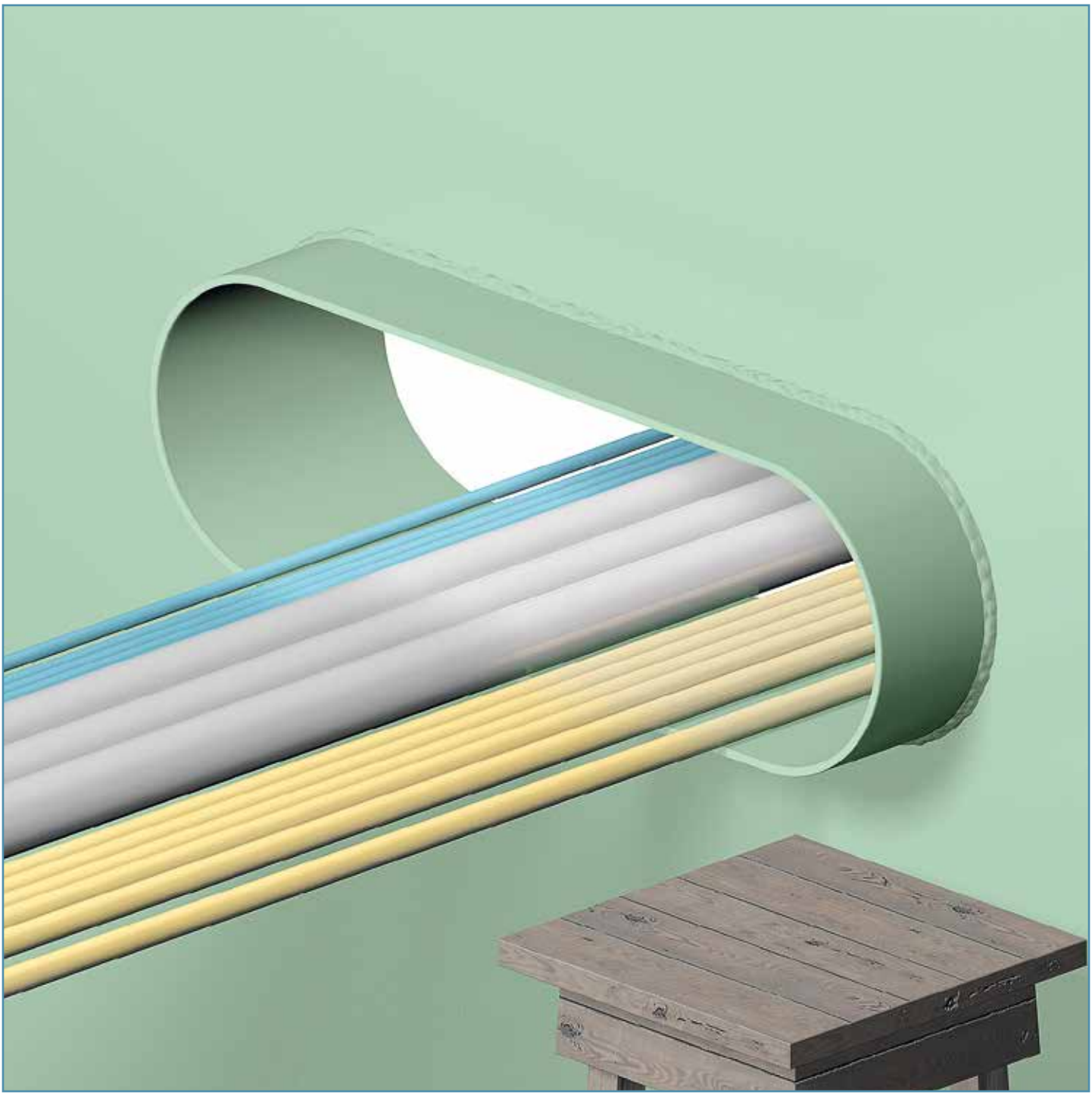
Final sealing of the cable penetration can be quite some time after cable pulling. In such a situation, the status of the inside of the transits frames has to be checked again when starting with the installation of the sealing system. Clean the inside of the transit frames thoroughly and remove any dirt, oil, grease and other residues or corrosion from the inside of the transit frame.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



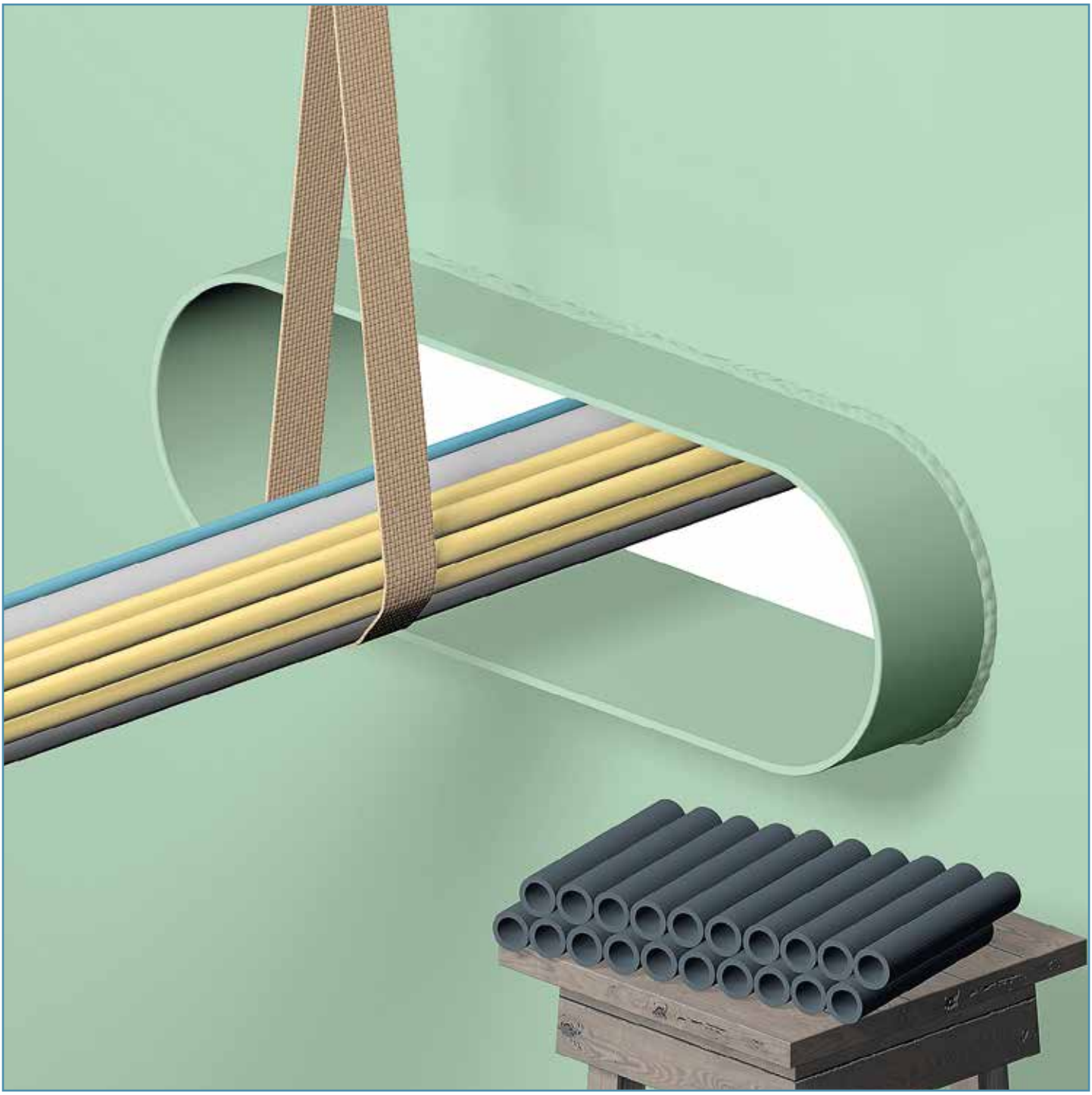
Clean and dry the cables thoroughly in a similar way. Any moisture, dirt or oil residues will have a negative impact on the adhesive properties of the FIWA® or NOFIRNO® sealant to be applied after filling the transit frame.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



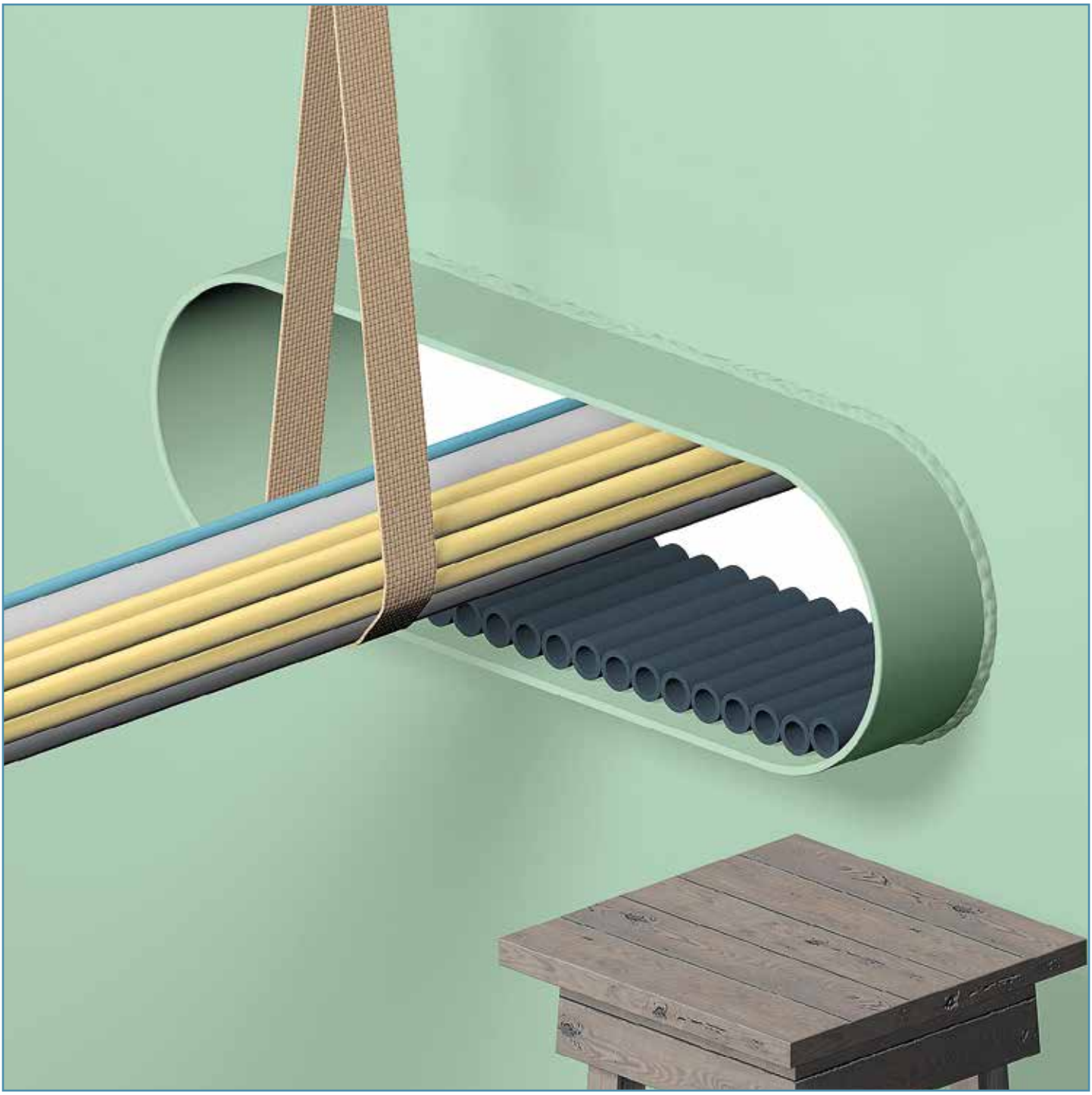
The cables have to be cleaned at the spot where the sealant is applied in a later stage. This means 20 mm at both sides of the transit. If feasible it is of course easier to clean the cables over their full length inside the transit.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



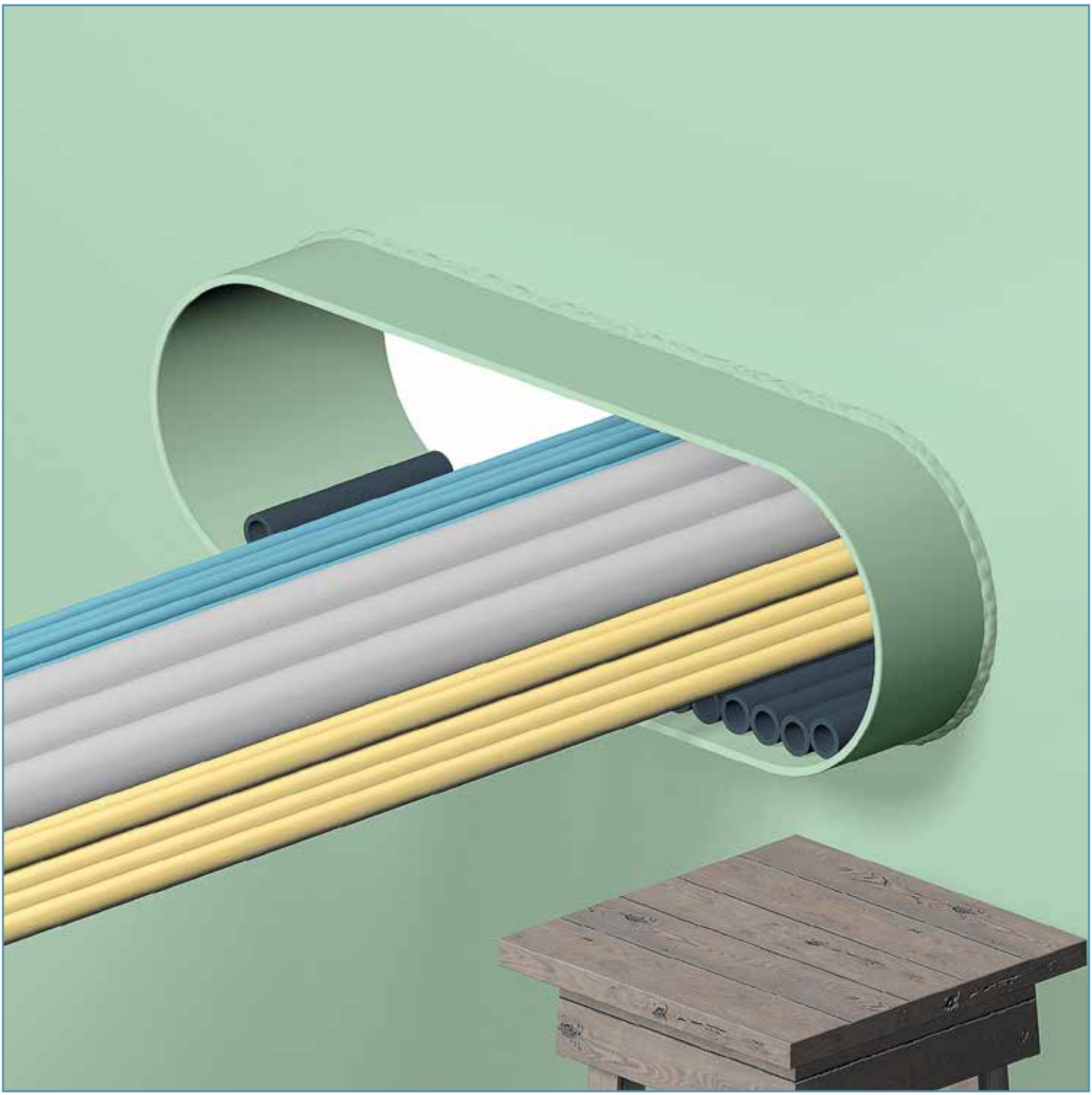
Although the system is tested with the cables separated from the wall of the transit frame by the thickness of the RISE® cable sleeves, it is advisable to have a layer of RISE® multi-sleeves at the bottom of the transit frame to spread out the cables.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



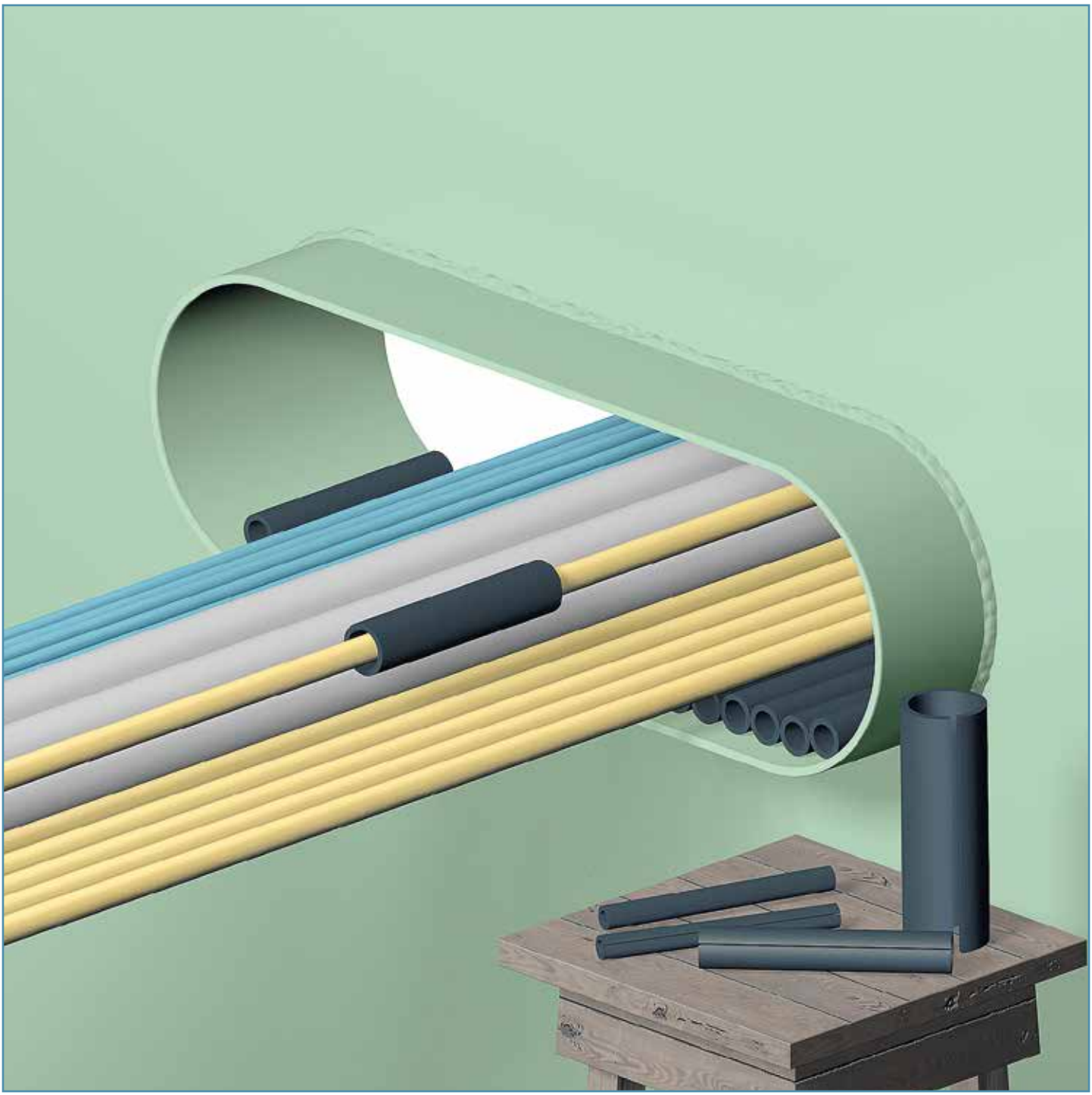
By lifting the cables the set(s) of RISE® multi-filler sleeves can be easily placed inside the transit frame.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



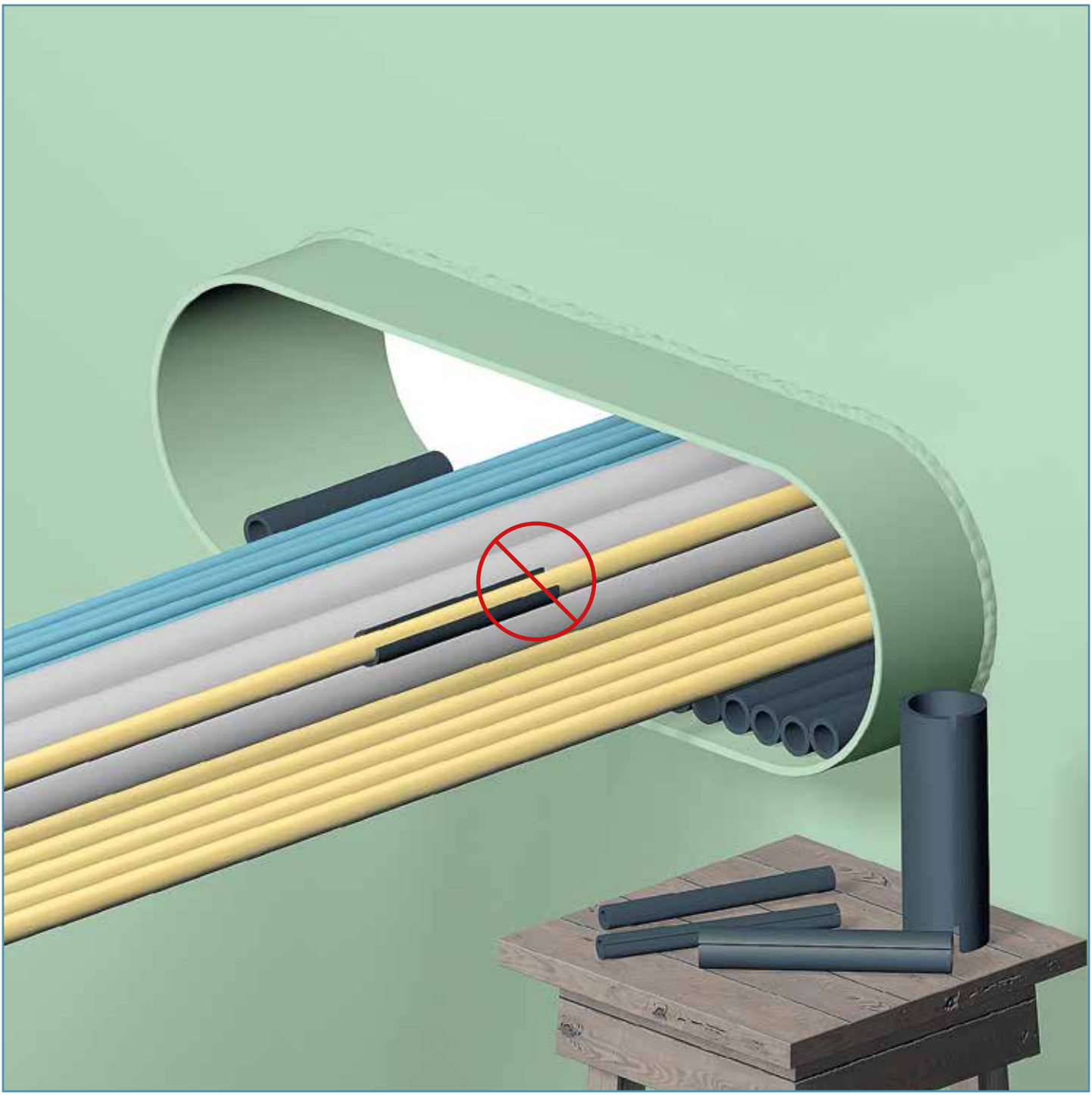
The cables are then separated as far as possible on top of the RISE® (multi) filler sleeves. The application of the RISE® multi-filler sleeves underneath the cables makes the application of the sealant for final finishing at the bottom of the transit not only easier but also more effective. RISE® multi-filler sleeves also prevent the cables from touching the steel frame, which can lead to shaving and damaging the cables.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



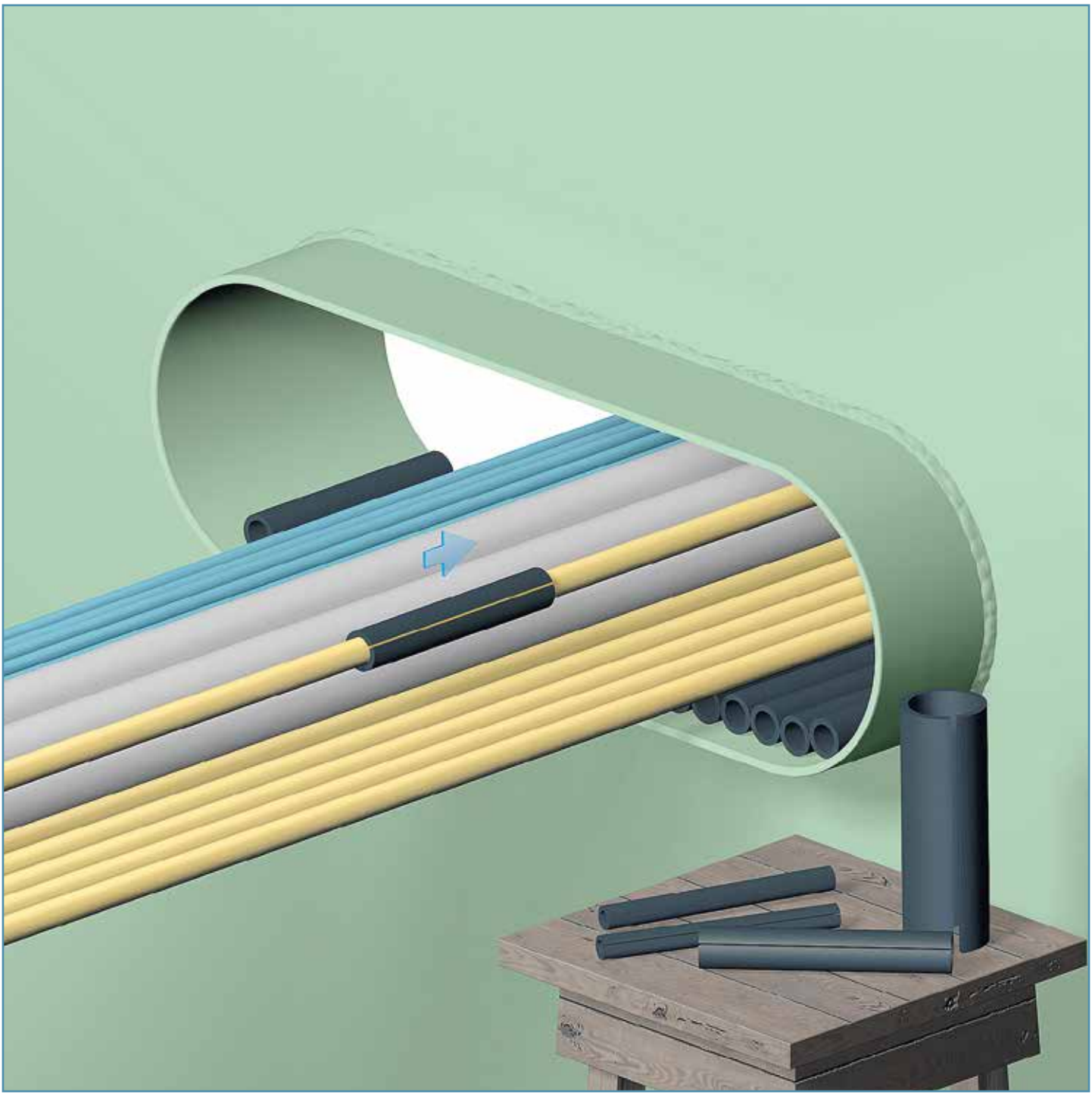
RISE® insert (cable) sleeves are separators and not precise filling parts. Applying oversized sleeves around the cables will reduce the filling capacity of the sealing system. Due to the fact that the RISE® rubber will expand under fire exposure, this will however not have an influence on the fire rating as long the sleeves are not extremely oversized.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



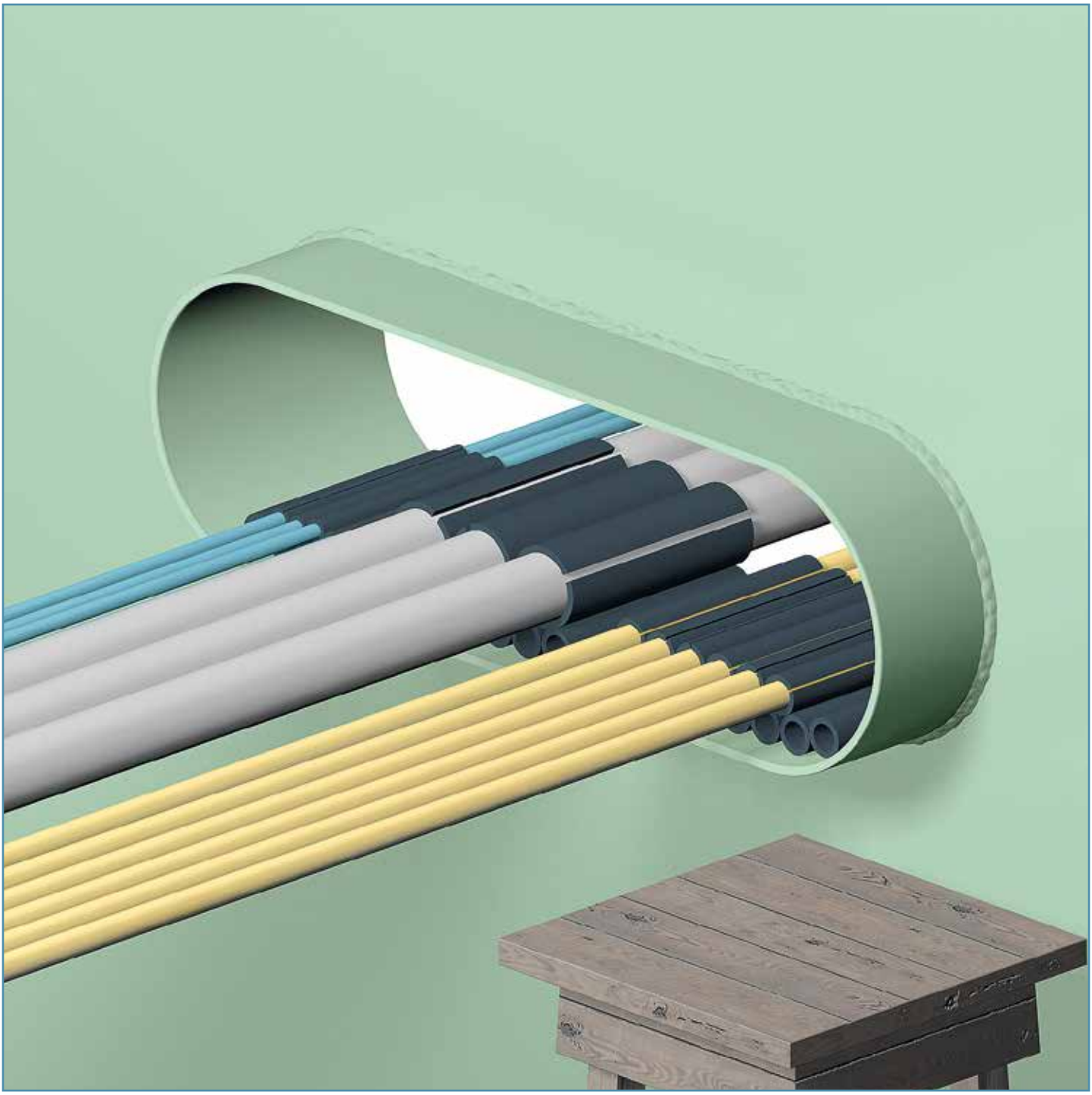
A precise fit of the RISE® cable sleeves around the cables is not required, however it is not allowed to use undersized cable sleeves leaving a larger open space around the cable.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



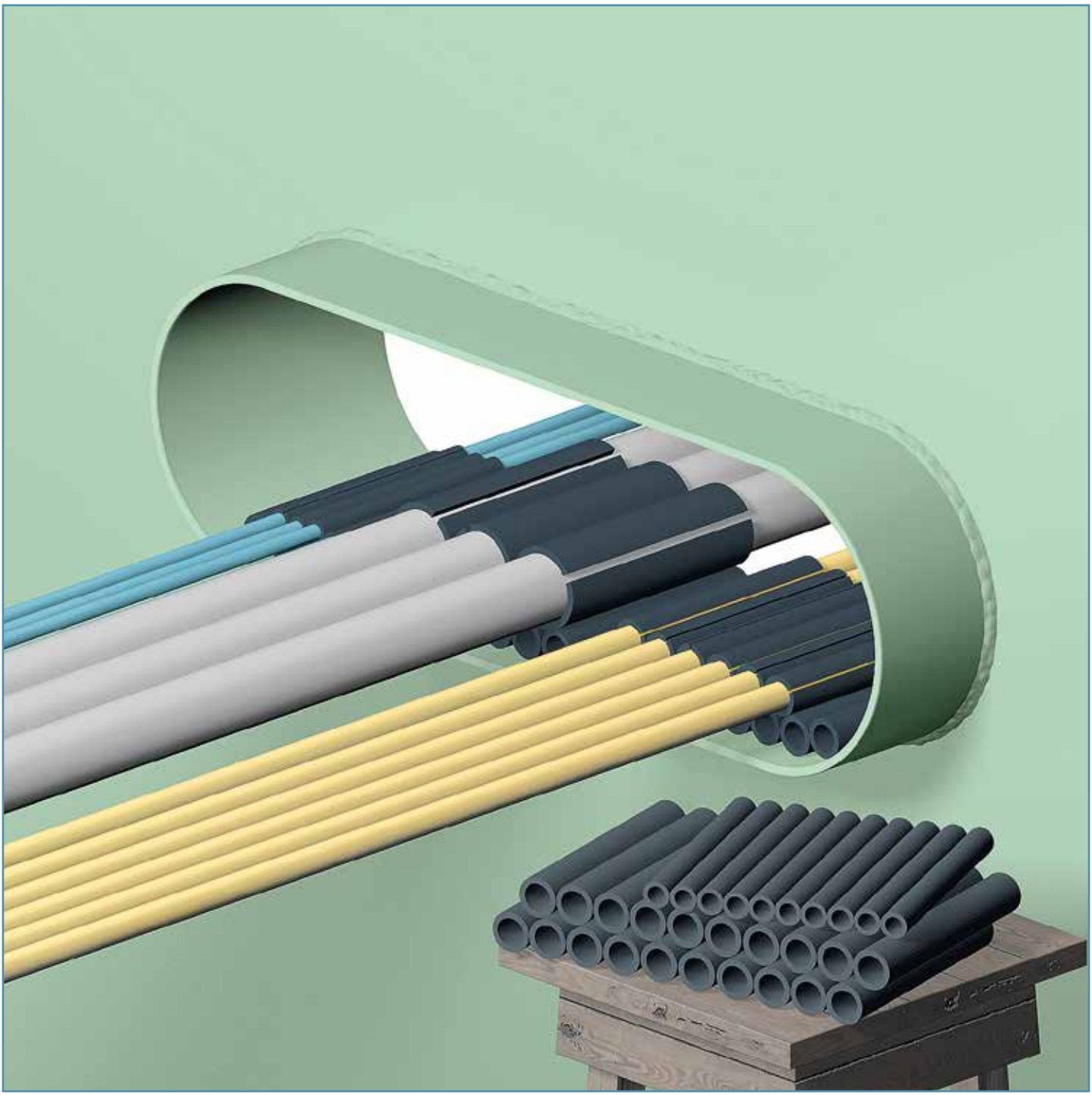
RISE® cable sleeves are applied around each cable. The cable sleeves are split lengthwise and can therefore be placed around the cables in front of the conduit.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



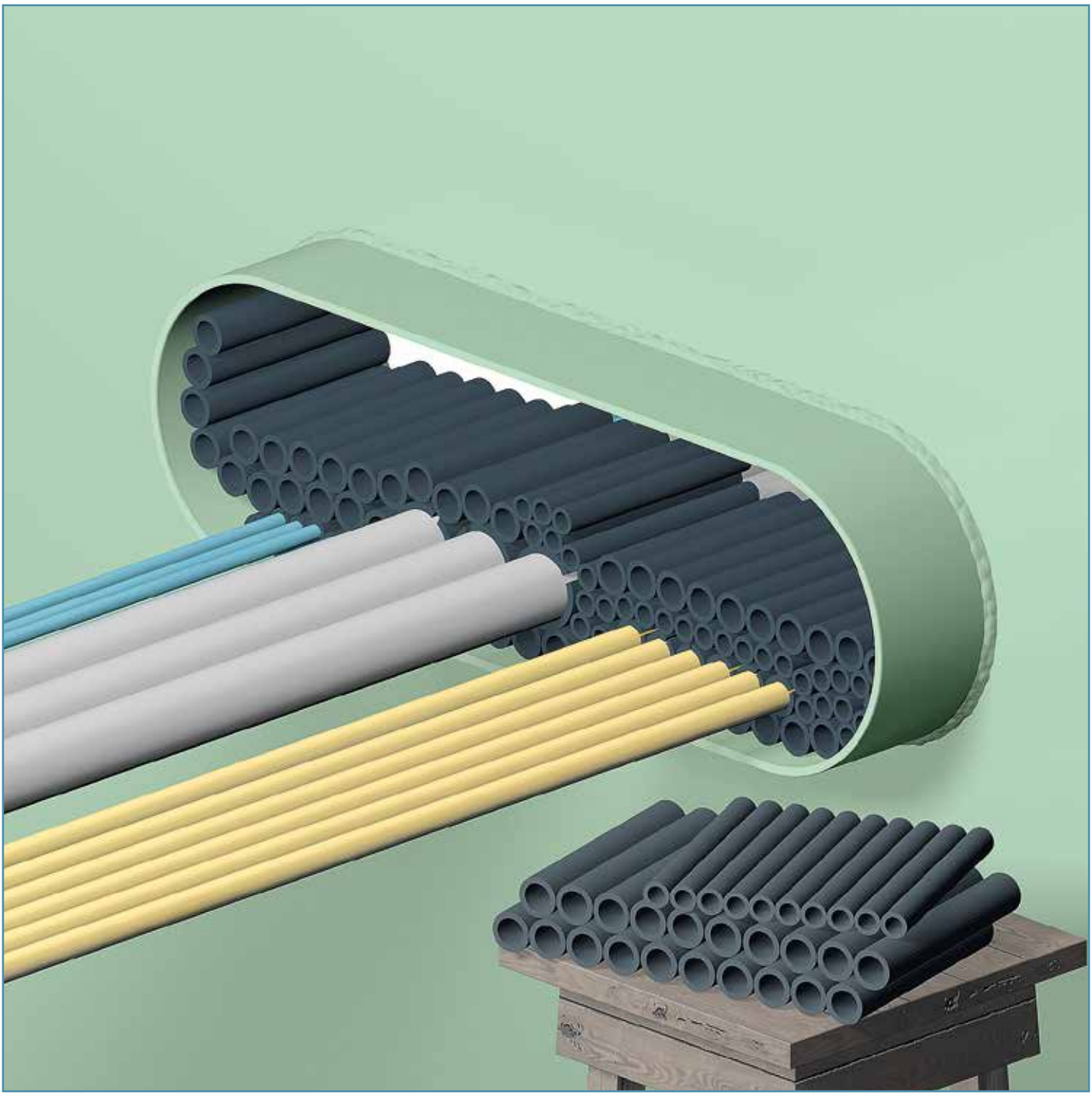
Push the insert sleeves into the transit frame in such a way as to leave about 20 mm free space at the front and the back. At this stage, and certainly with a low filling rate of cables, the insertion does not have to be precise in this regard. Adjustment of the set of sleeves to the 20 mm recess can be carried out just before applying the sealant. However, with higher filling rates it might be difficult to correct afterwards.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



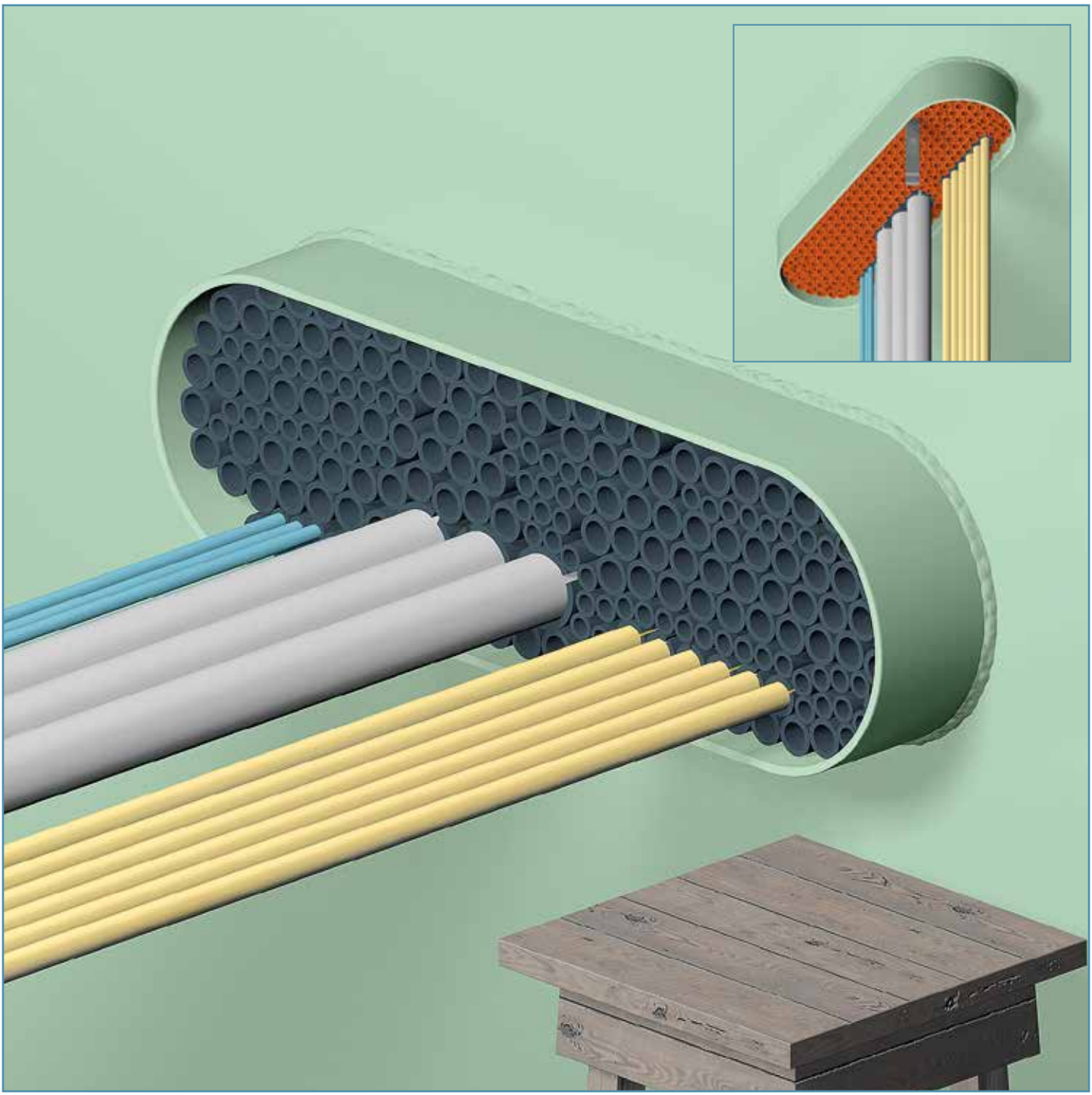
The remaining free space in the transit frame is filled with RISE® filler sleeves type 18/12 and 27/19. For ease of filling, the RISE® filler sleeves are supplied non-split. Multi-filler sleeves (set of 10) are available for filling larger empty spaces. Cable sleeves 18/12 and 27/19 can be used also for filling the empty spaces. However, filling with cable sleeves will need more of the cables sleeves compared to the non-split filler sleeves.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



For later extensions, it is advisable to use RISE® single filler sleeves, since they are easier to remove when a new cable has to be ducted. Conversely, using single sleeves to fill the larger open spaces is not only time consuming, but it may also diminish the clamping properties of the set of filler sleeves.
The max. ratio 27/19 to 18/12 should be 2:1. Use of filler sleeves type 27/19 only is not permitted. This would reduce the amount of expanding RISE® rubber needed to fill in case of fire the transit with a solid rubber mass.

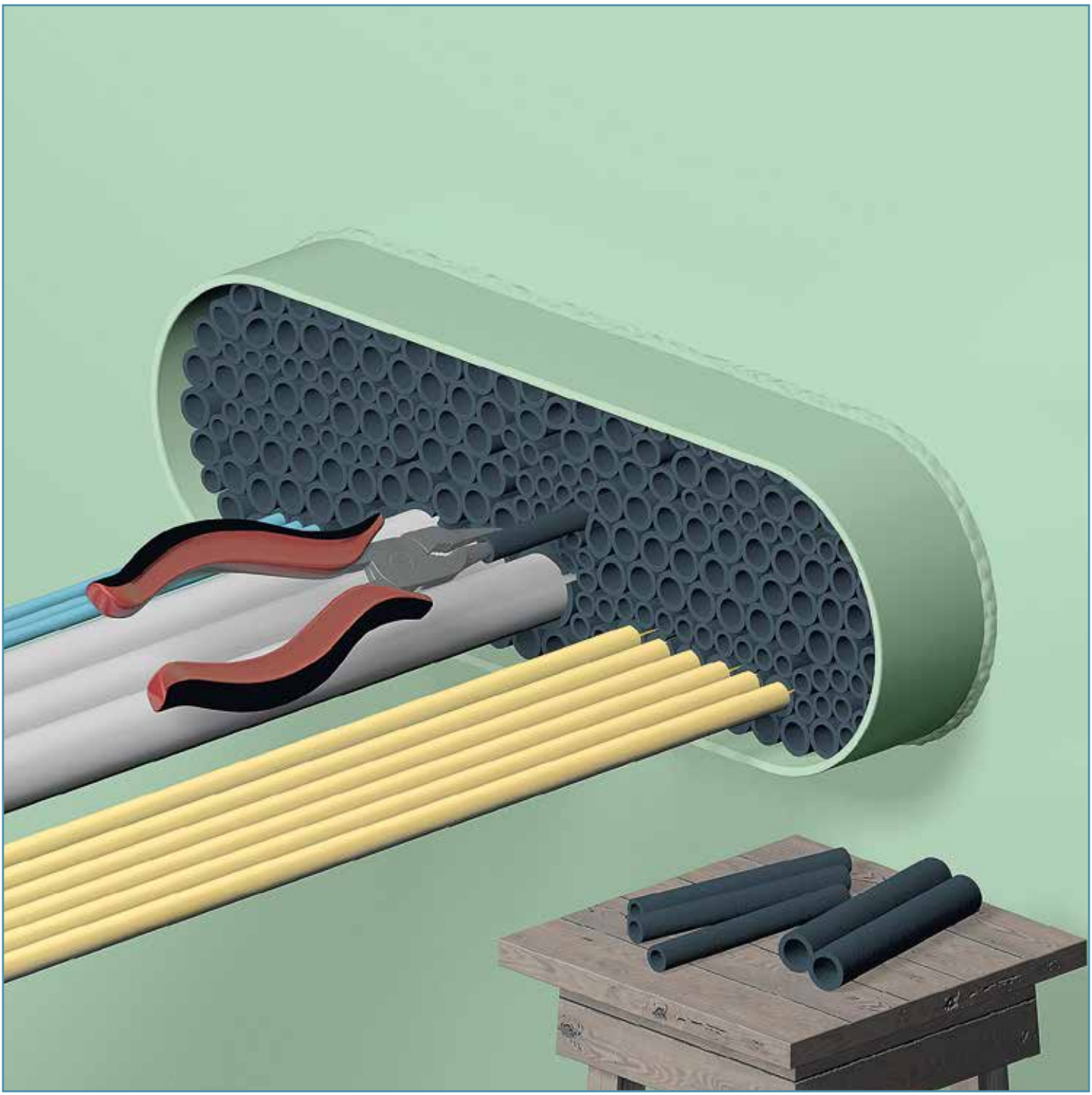
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



Although a ratio of the filler sleeves 27/19:18/12 of 2:1 has been tested officially, it is advisable to use a lower ratio, for instance 1:1, to improve overall mechanical stability. Especially in the case of watertight penetrations.

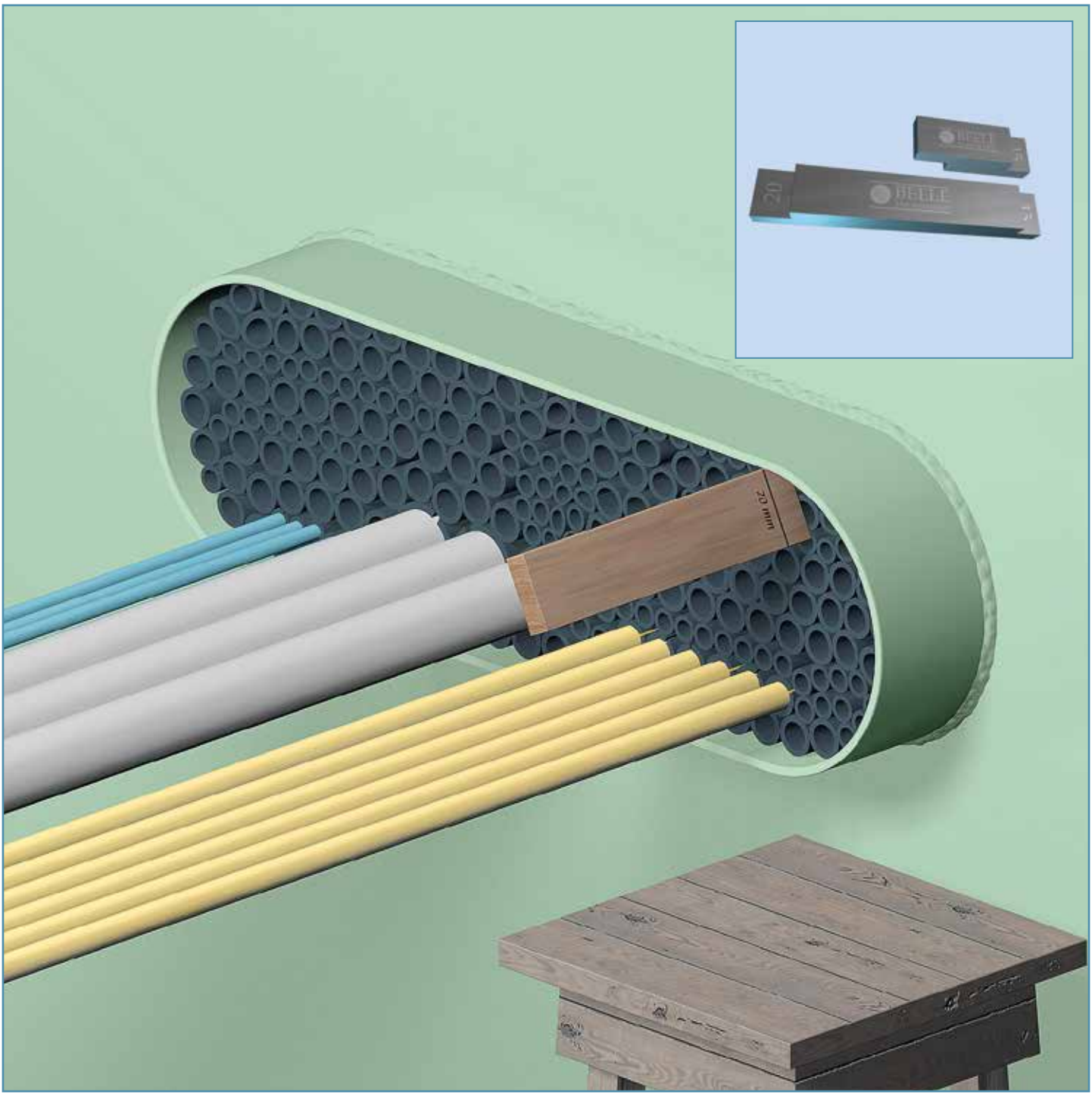
To prevent any mistakes with the filling ratio alternatively NOFIRNO® (multi-) filler sleeves type 22/15 could be used. The use of this size of sleeve will cover the ratio 27/19:18/12 as required for the RISE® sleeves. The multi-sleeves 22/15 are not available in the RISE® rubber grade.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



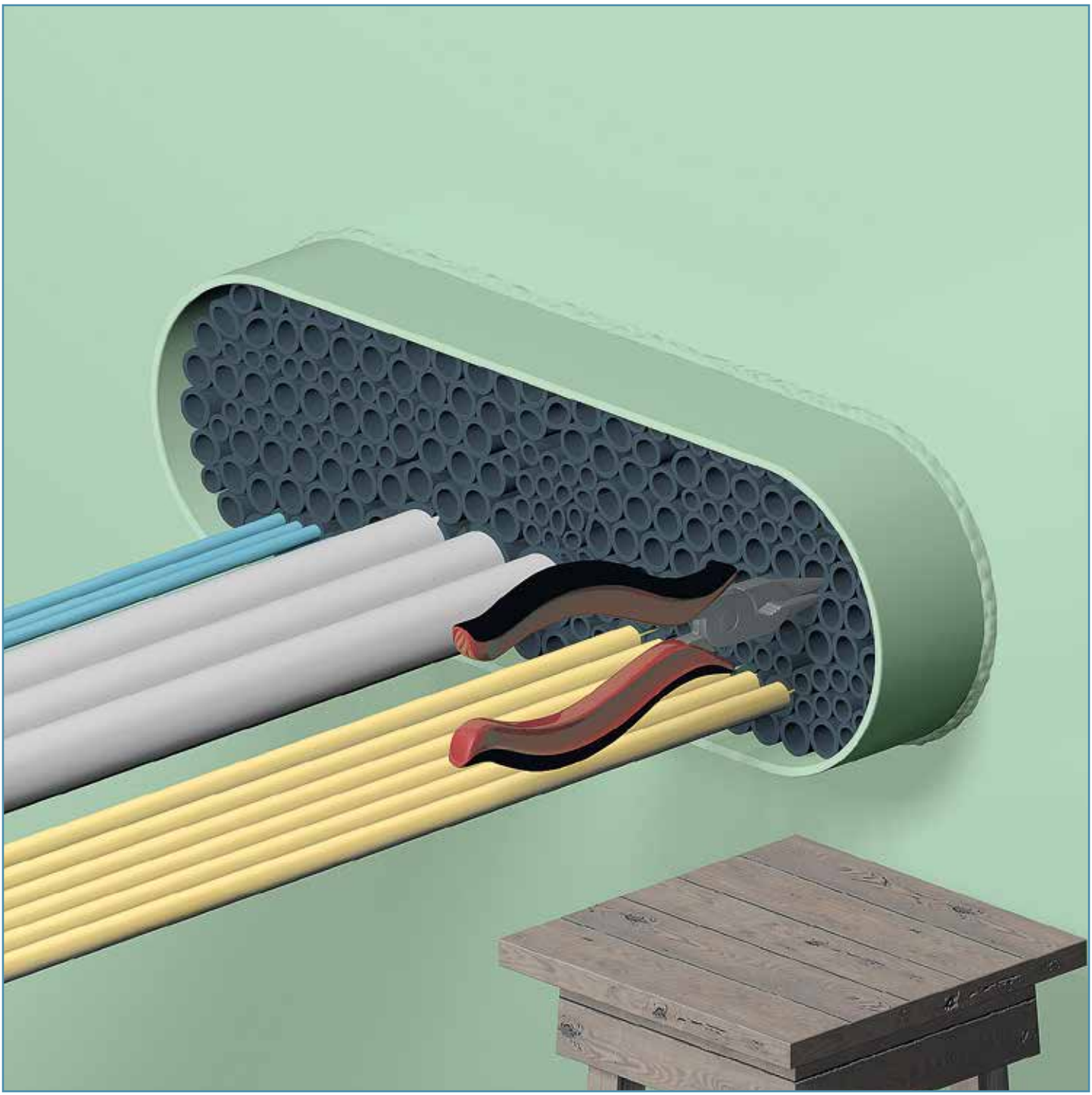
With a flat nose pliers, RISE® single filler sleeves are inserted in the remaining smaller open spaces in the set of fillers. A very tight fit of the filling is vital to the performance of the sealing system.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



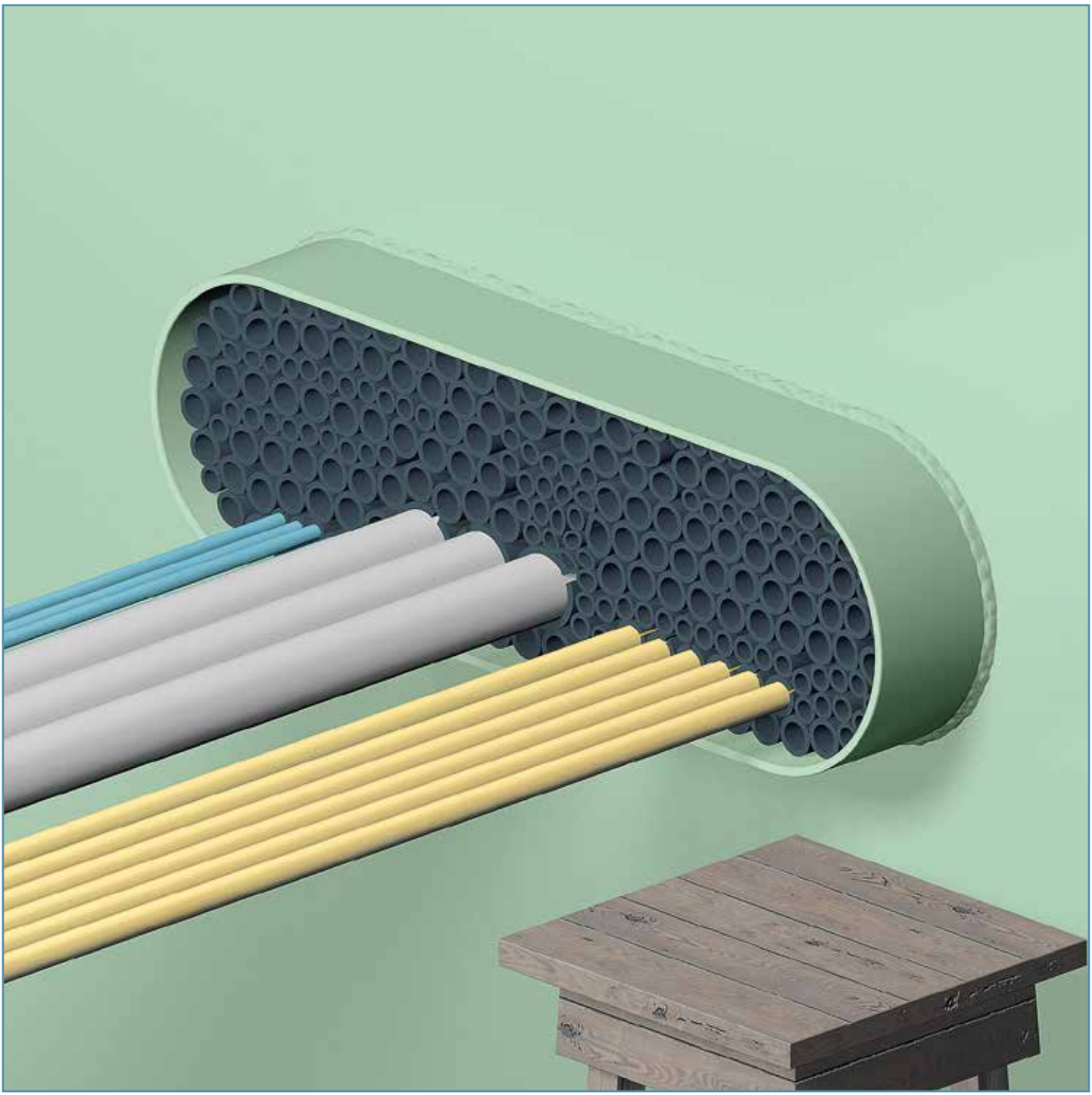
With a piece of wood marked with the required 20 mm depth, or with the by BEELE Engineering developed aluminum adjuster, the set of fillers can be adjusted to the required 20 mm recess inside the transit.
Use a plastic hammer to adjust the set of filler sleeves with the RISE® adjuster.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



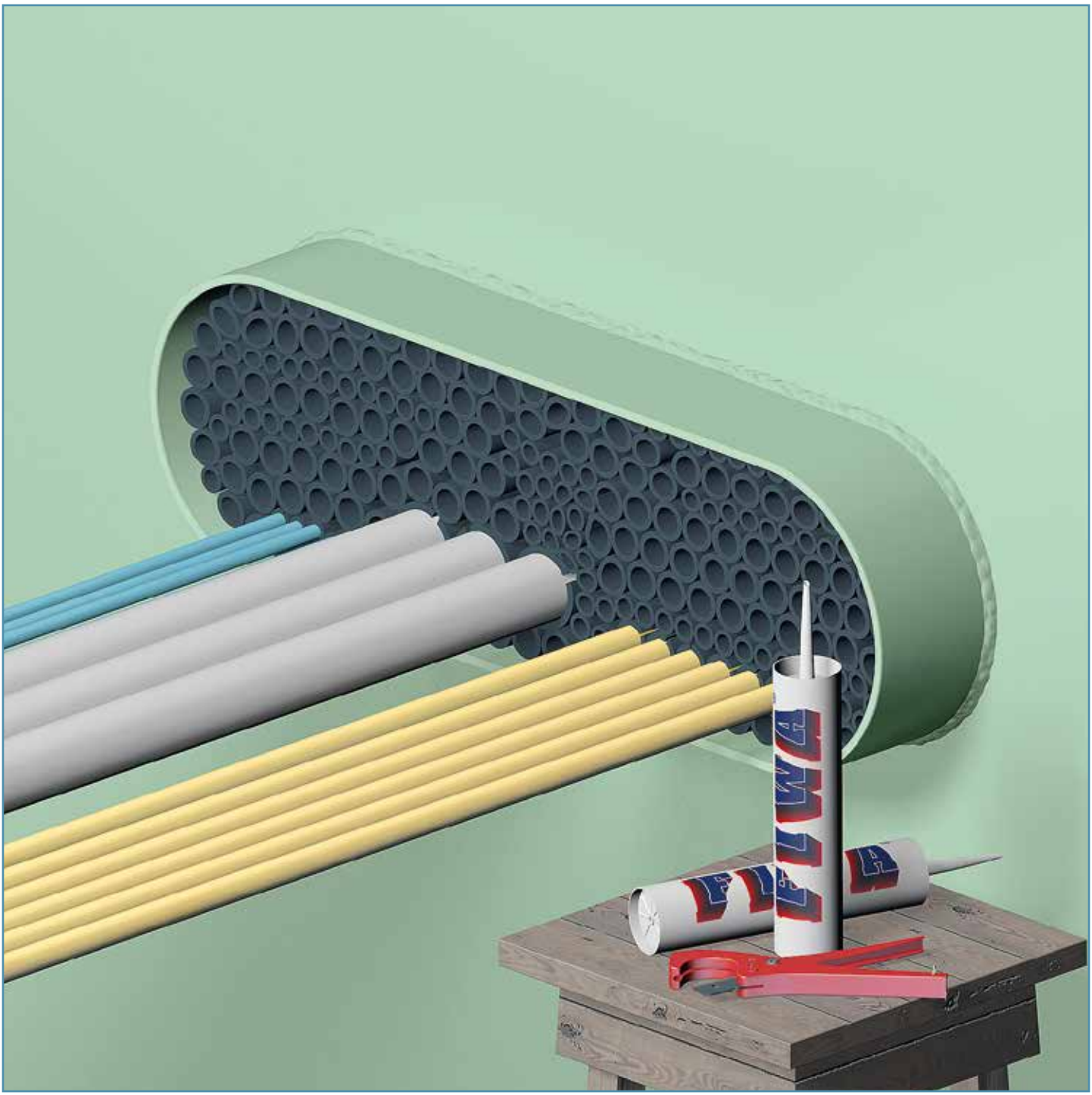
The filler set can be further corrected with the aid of a flat nose pliers. Single filler sleeves sometimes might be inserted too deep. A ca. 20 mm free space at the front and back of the sealing system (+/- 2 mm tolerance is acceptable) is a must to obtain optimum sealing capacity of the sealing system.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



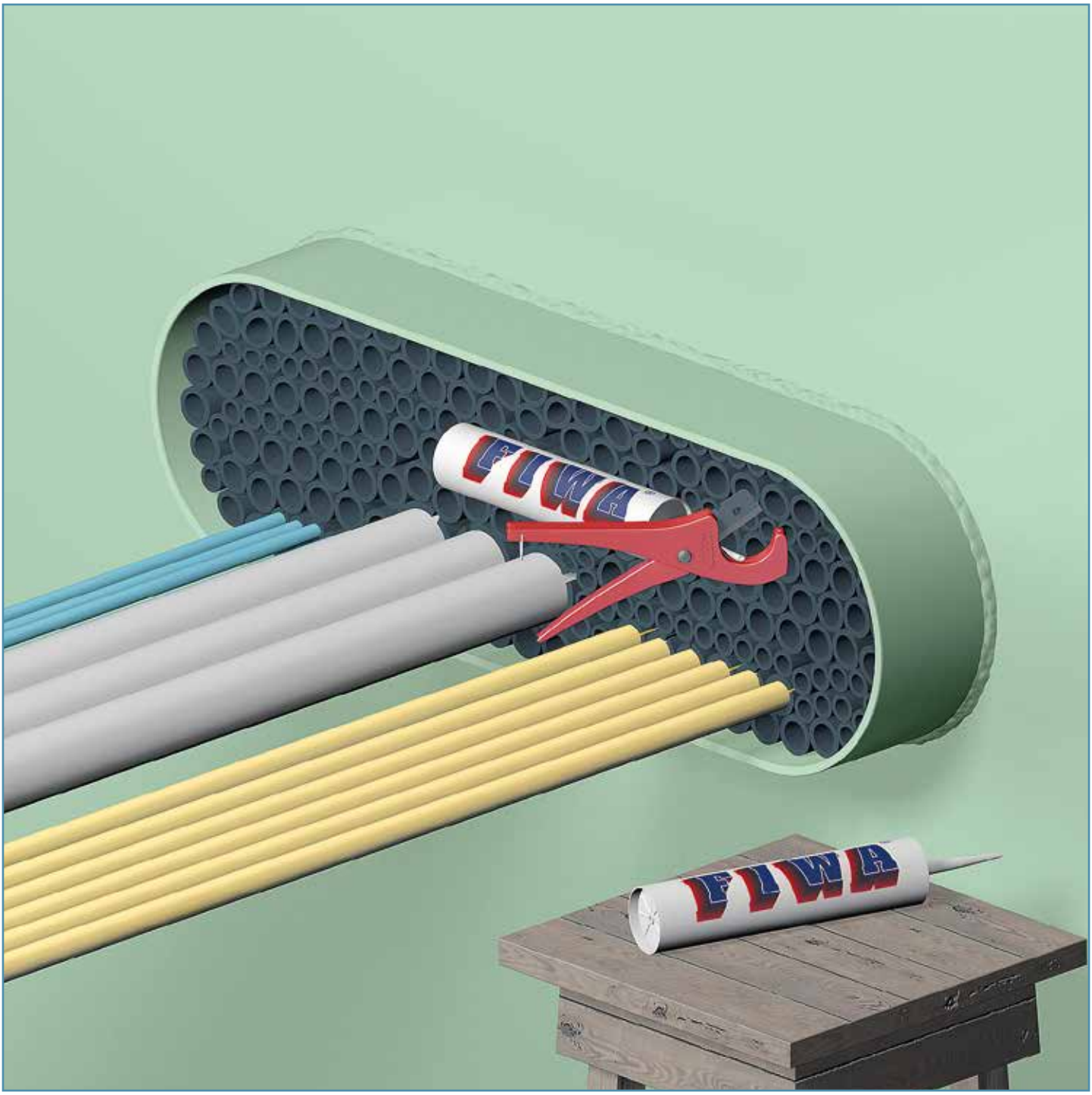
Before applying the FIWA® sealant, it is advisable to perform a final check on the packing of insert and filler sleeves. A tight fit of the whole set of sleeves in the required ratio is not only vital for the mechanical stability of the sealing system, but also for the fire stopping properties.
A final check should therefore be a part of quality control.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



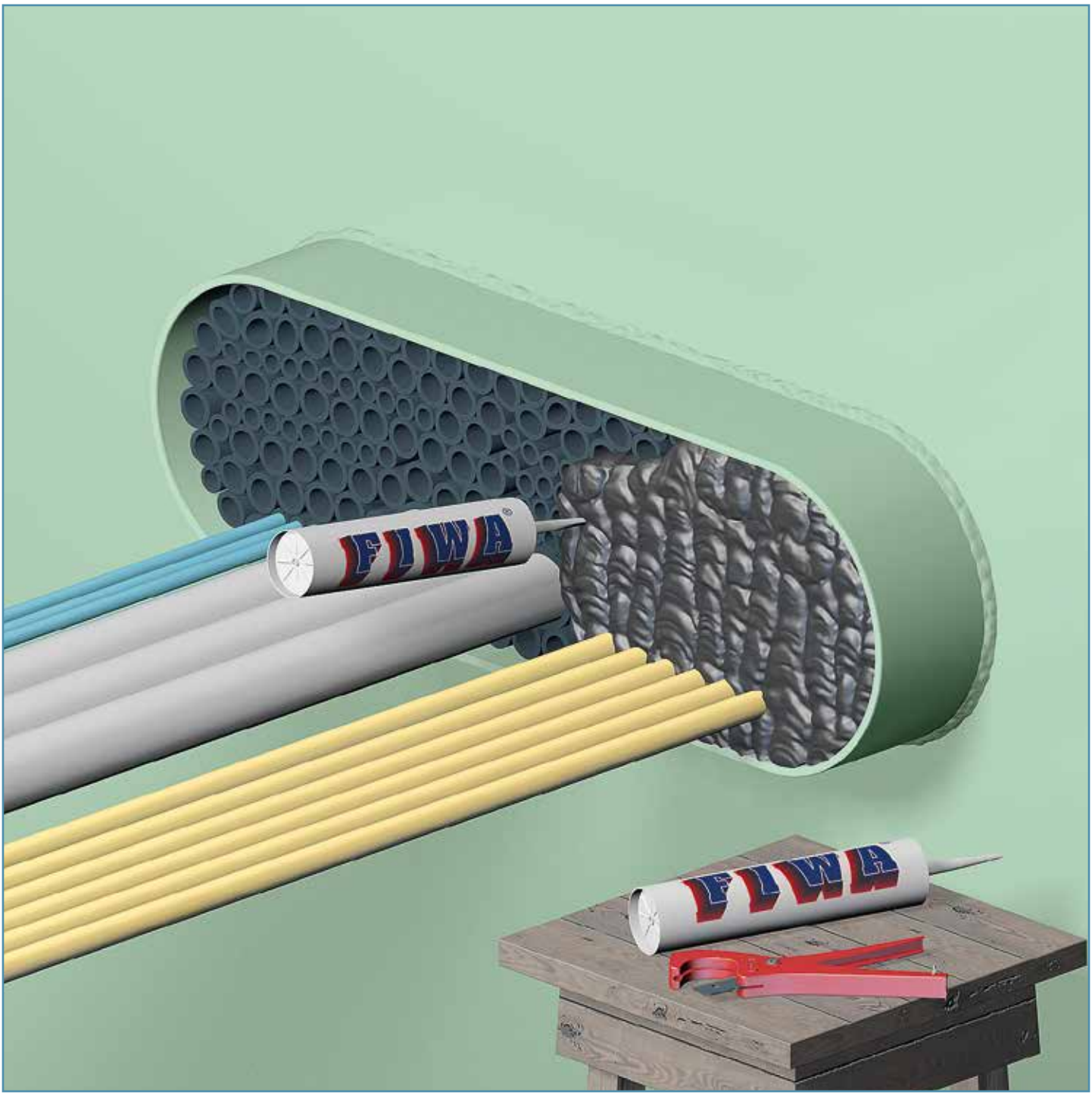
Final smoke, gas and watertight sealing of the RISE® multi-cable transits is achieved with the application of FIWA® sealant. FIWA® sealant has proven excellent performance with regard to mechanical and fire resistance requirements. The RISE® sealing system has been successfully exposed to severe pressure, shock and vibration tests.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



Cut the injection nozzles of the cartridges in an angled way to create a medium sized dispersing opening. This will improve the flow of the sealant in between the set of cables. Furthermore, it is advisable to use professional sealant guns. Hand fatigue is prevented and an optimum flow of the sealant is obtained. For larger penetrations electric or pneumatic dispensers should be used.

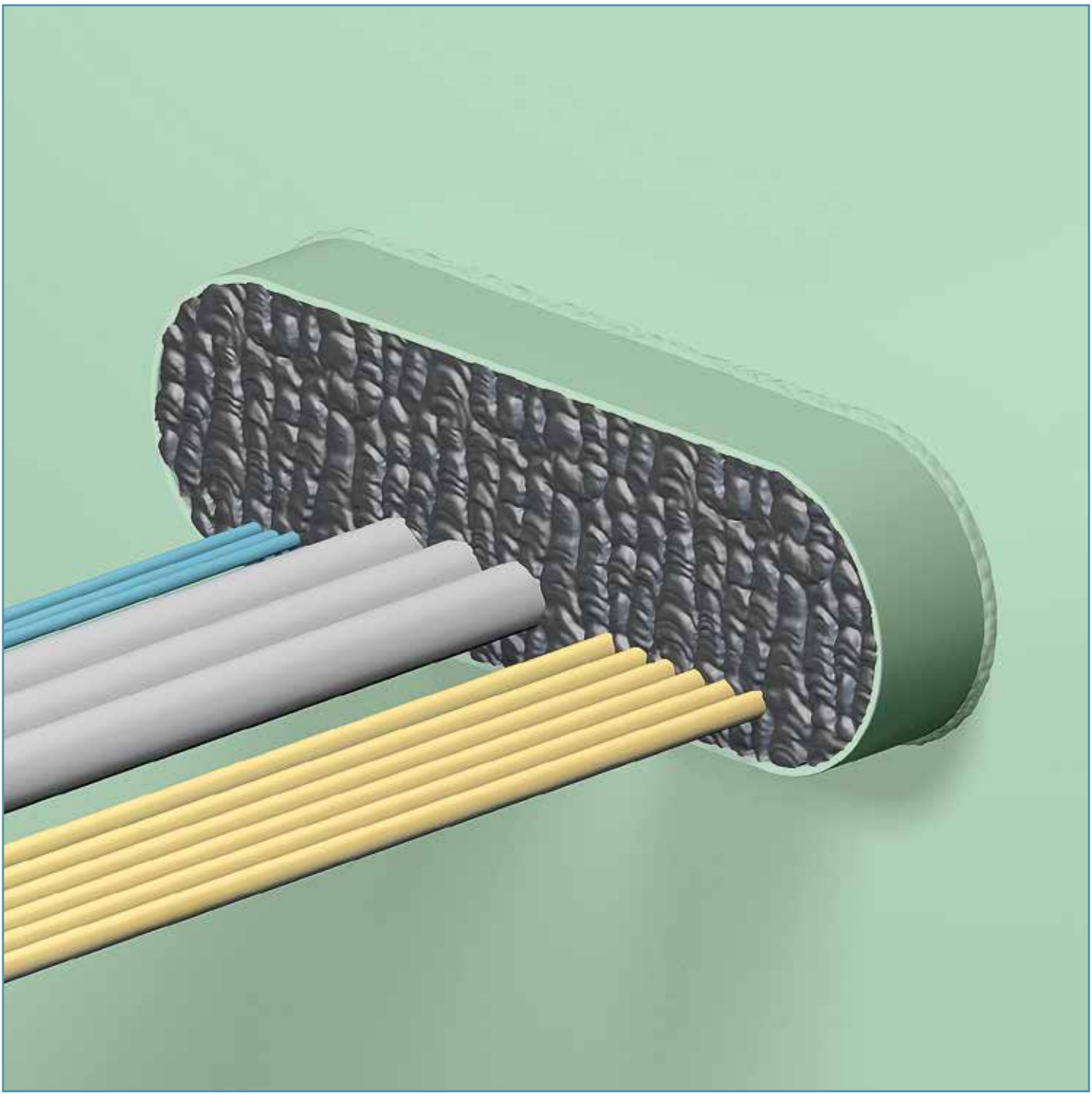
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



A 20 mm thick layer of FIWA® sealant is applied at each side of the RISE® multi-cable transit. FIWA® sealant has an engineered viscosity, preventing the sealant from sagging and also allowing for a perfect flow of the sealant between the cables during injection. For multi-cable transits with a high filling rate, longer nozzles are available for the sealant cartridges.

Please refer to the Safety Data Sheet for more information about the working environment.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



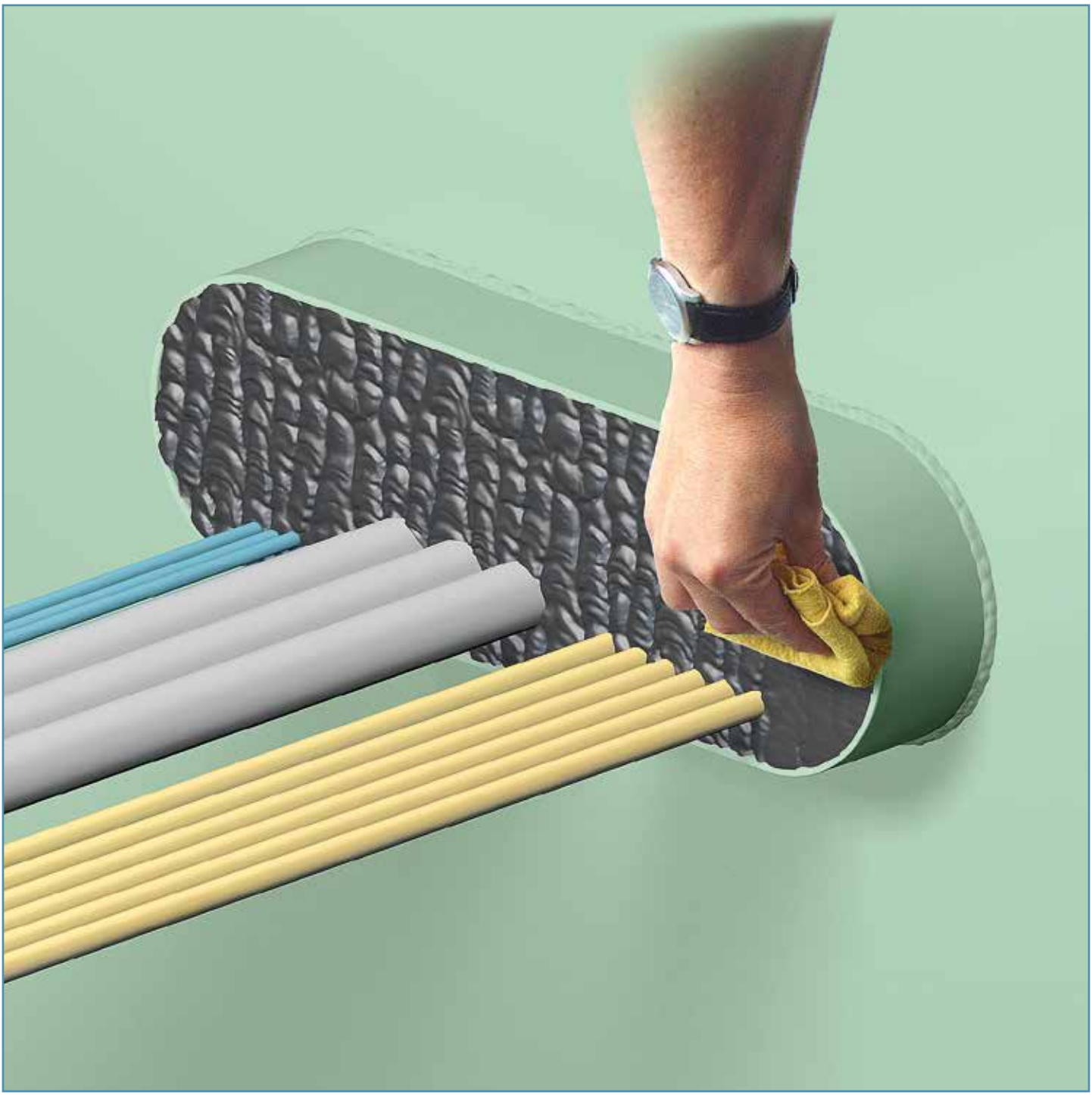
The multi-cable transit should be overfilled with FIWA® sealant, because some sealant will be pushed into the empty spaces between the RISE® sleeves and into the hollow RISE® (multi) filler sleeves during further finishing. This will contribute also to obtain higher tightness ratings.
Skin formation of the sealant takes place after ca. 10-15 minutes. In case of larger transits with a low cable filling rate, do not apply more sealant than can be finished within this time-frame.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

To smooth the surface of the FIWA® sealant layer, a cloth is sprayed with water. This prevents the sealant from sticking to the cloth.

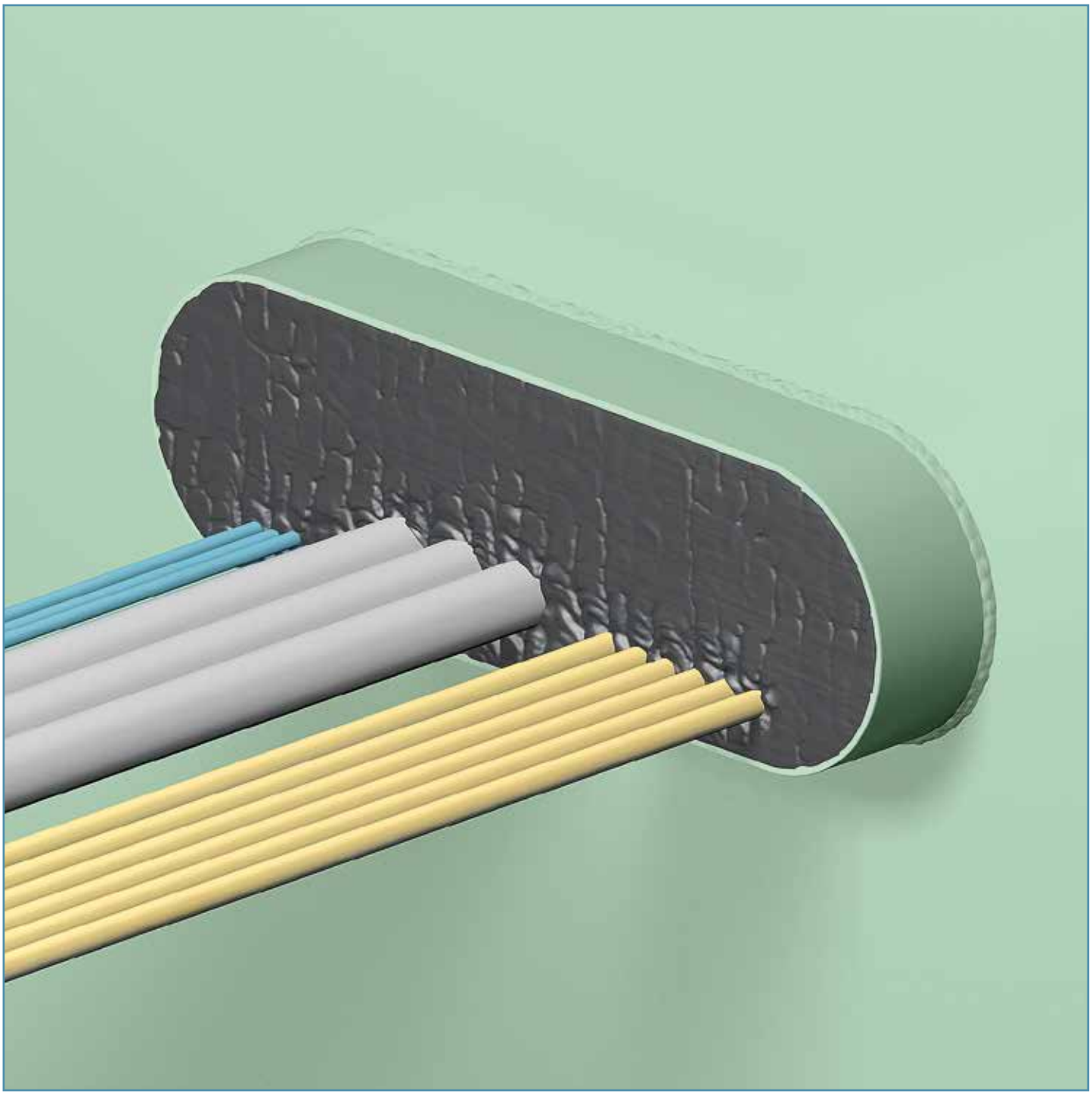
Please refer to the Safety Data Sheet for more information about the working environment.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



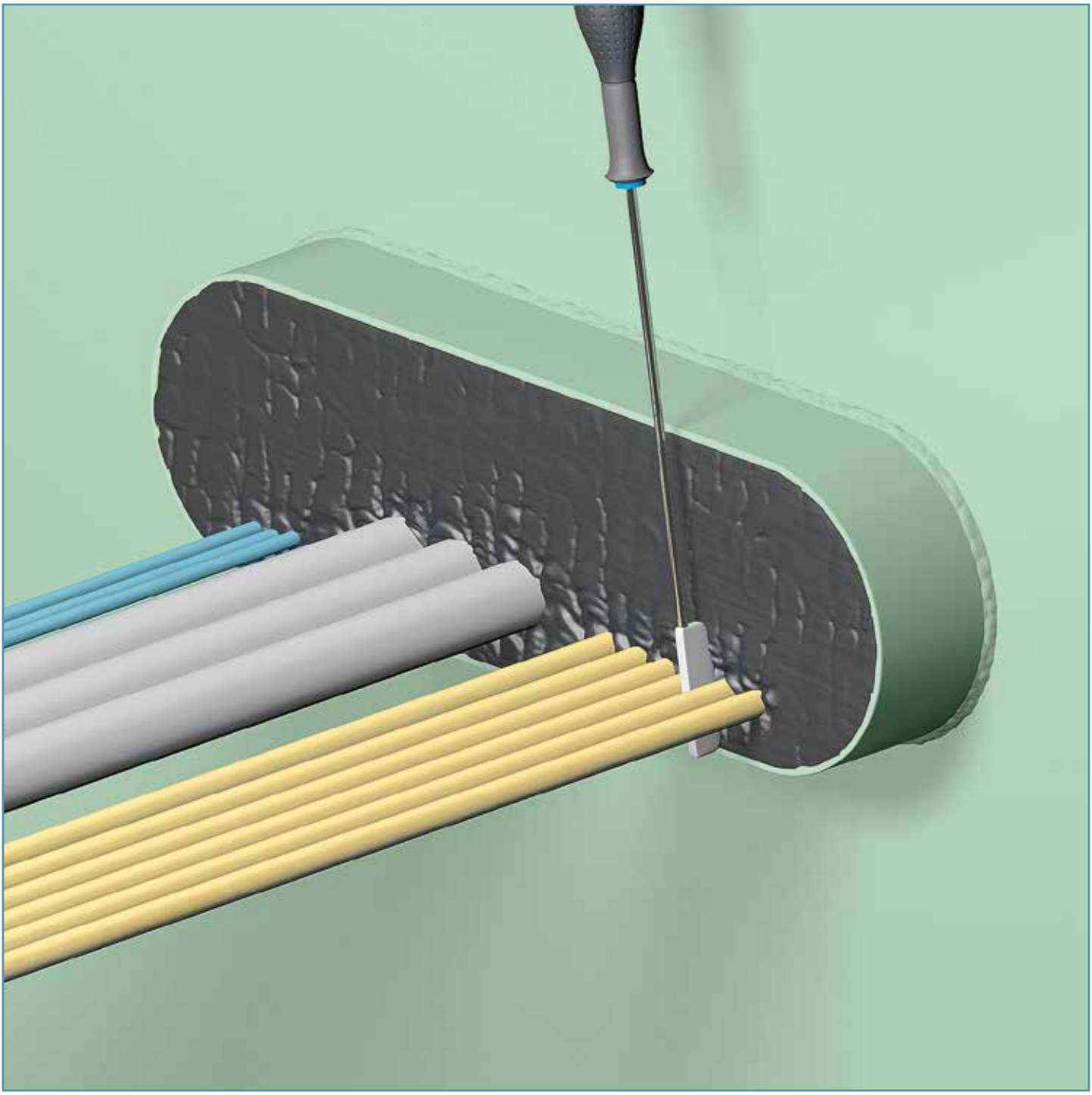
The cloth is then used to press down the sealant layer flush with the end of the transit frame. It is of utmost importance to ensure that the sealant is compressed very tightly so that the sealant is compressed into all empty spaces of the RISE® sleeve set, including partially into the hollow filler sleeves. The larger the adhesive surfaces of the sealant, the higher the performance of the system.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



Due to the rapid skin formation of the sealant, smoothing should take place directly after compression of the sealant layer. As soon as skin formation takes place, a very neat smoothing of the sealant layer is not possible anymore.
Note: the FIWA® and NOFIRNO® sealants are water repellent so that water will drip off. Neat smoothing is helpful in this respect.

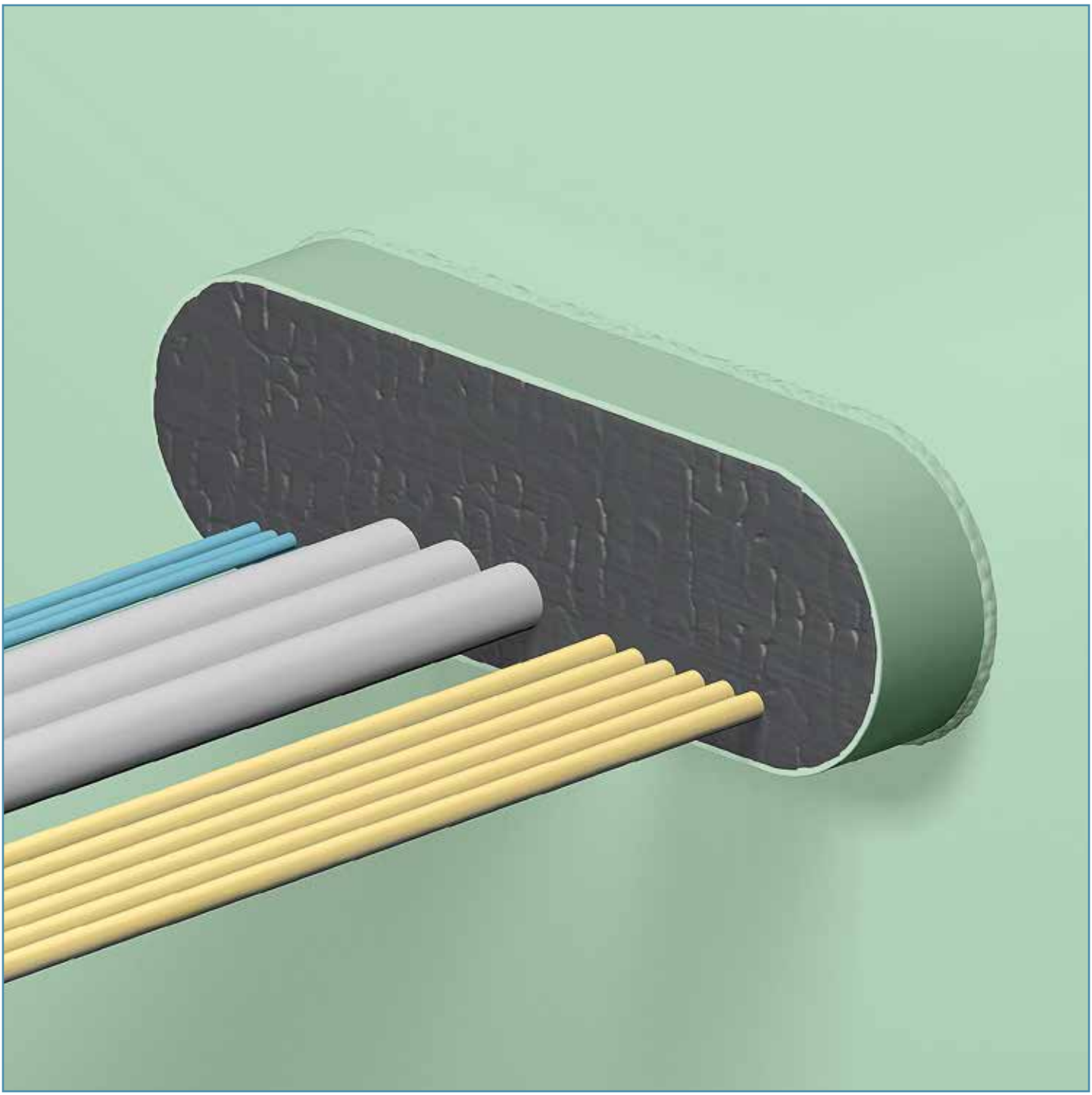
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



The FIWA® sealant between the cables is pressed down and smoothed by hand or with a spatula or putty knife. A special tool, developed by BEELE Engineering, with a PTFE compression/ smoothing part is available. The sealant will not stick to the PTFE.

Compression and smoothing, especially in between the cables, is essential to obtain an effective gas and water tightness.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



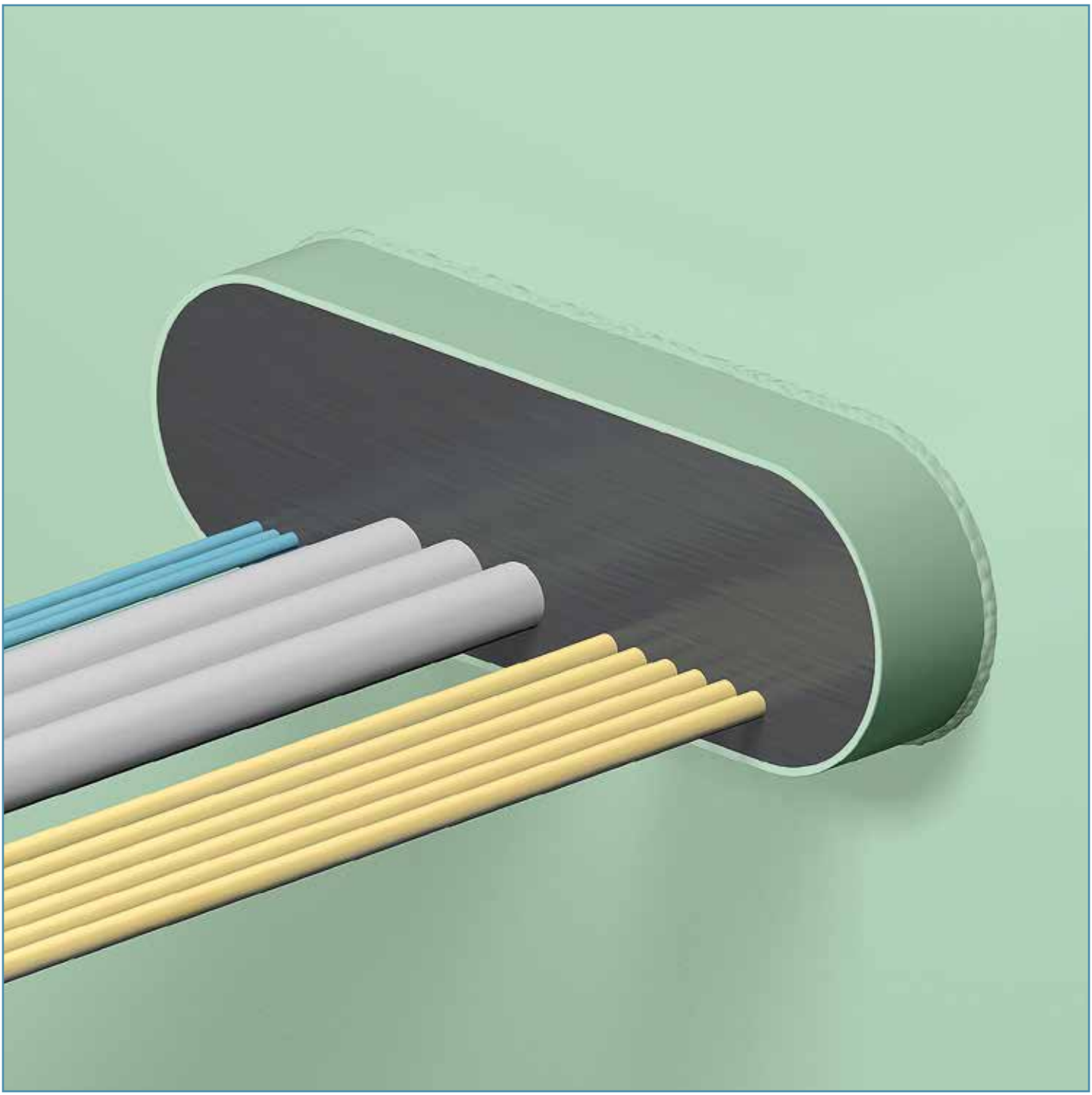
A last check should be made to ensure that the sealant layer is pressed down tightly and that no larger open holes are visible. Air enclosure in the sealant layer should be prevented during finishing, because this would have a negative impact on the performance of the sealant layer under fire exposure.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

The surface can be smoothed by hand. Just wet the hands thoroughly with water.
No dirty hands when working with FIWA® and a very neat surface is the result.
Note: this should only be a smoothing procedure. Do not pack or compress the sealant further when using soap water.

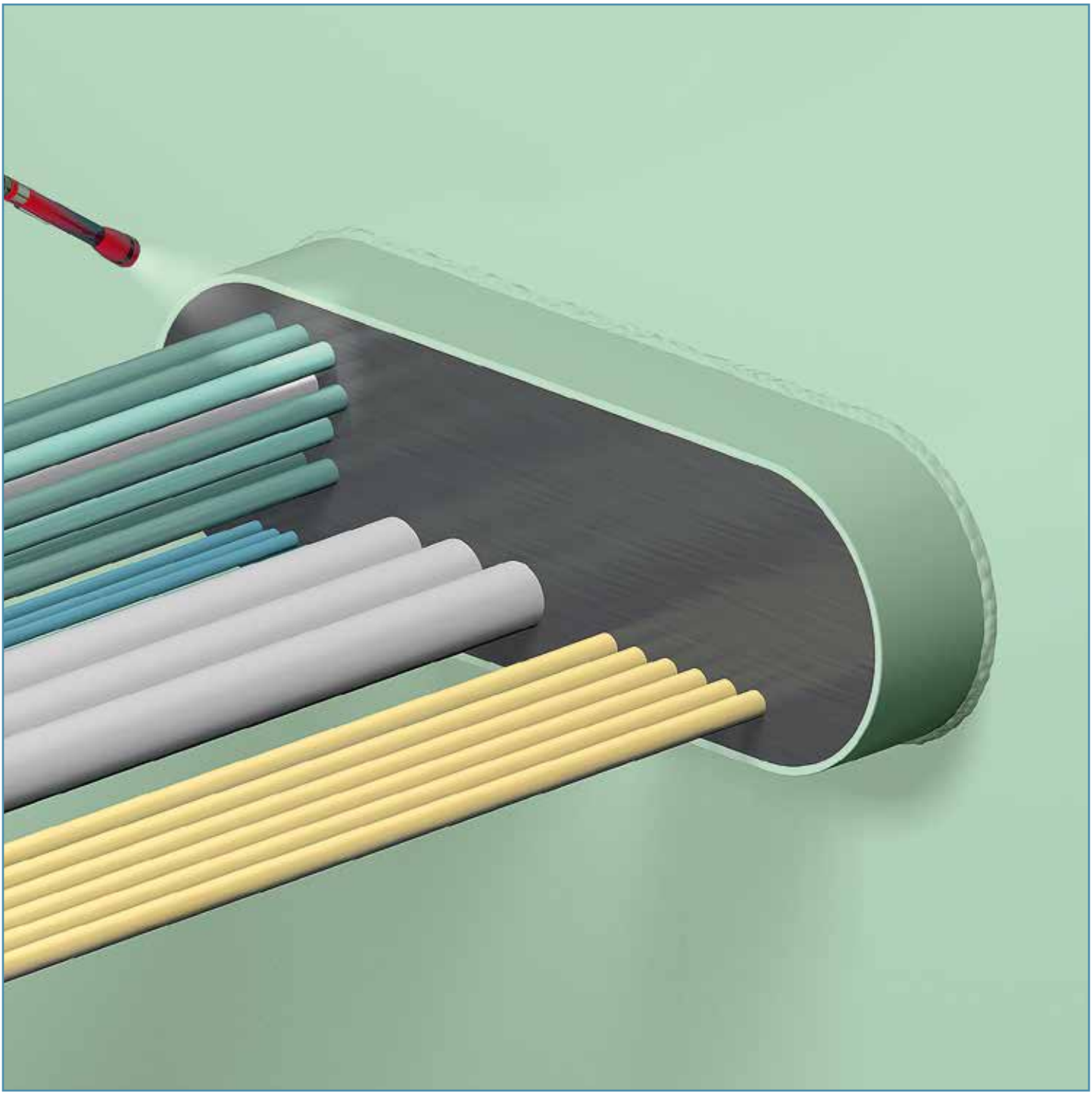
Wear protective gloves when working with FIWA® sealant. Please refer to the Safety Data Sheet for more information.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



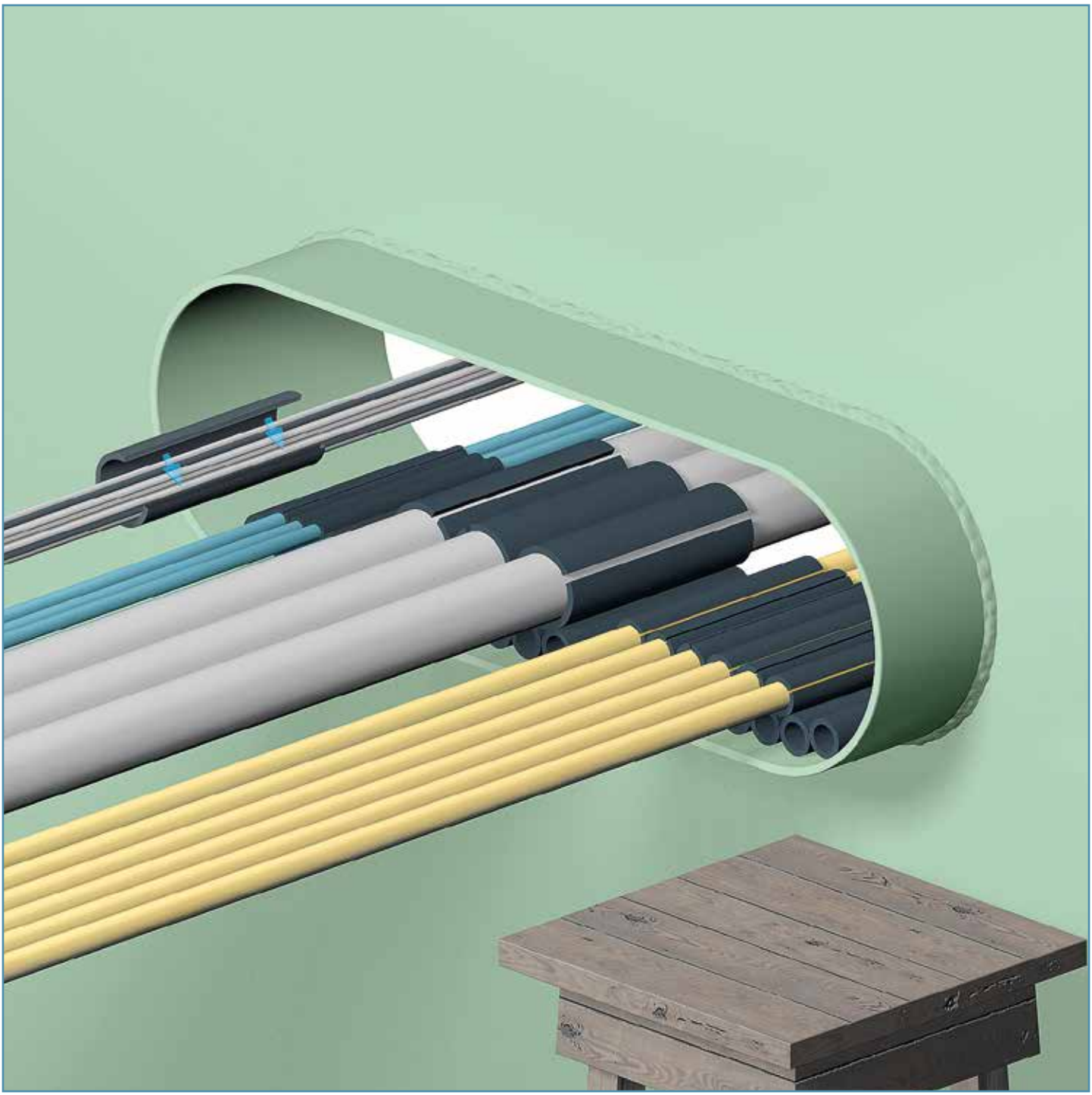
To obtain optimum adhesion during the curing process of the sealant, all the cables should be tightly fixed at both sides of the transit, as close as possible to the transit and immediately after finishing the transit. Movement of the cables during the curing process will impair the adhesion process to the cable sheathings.
Note: time needed for curing of the sealant is dependent on air humidity in combination with the environmental temperature. It is advisable to place a sticker near the finished transit, stating that the transit has been recently installed, and should not be touched or damaged.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



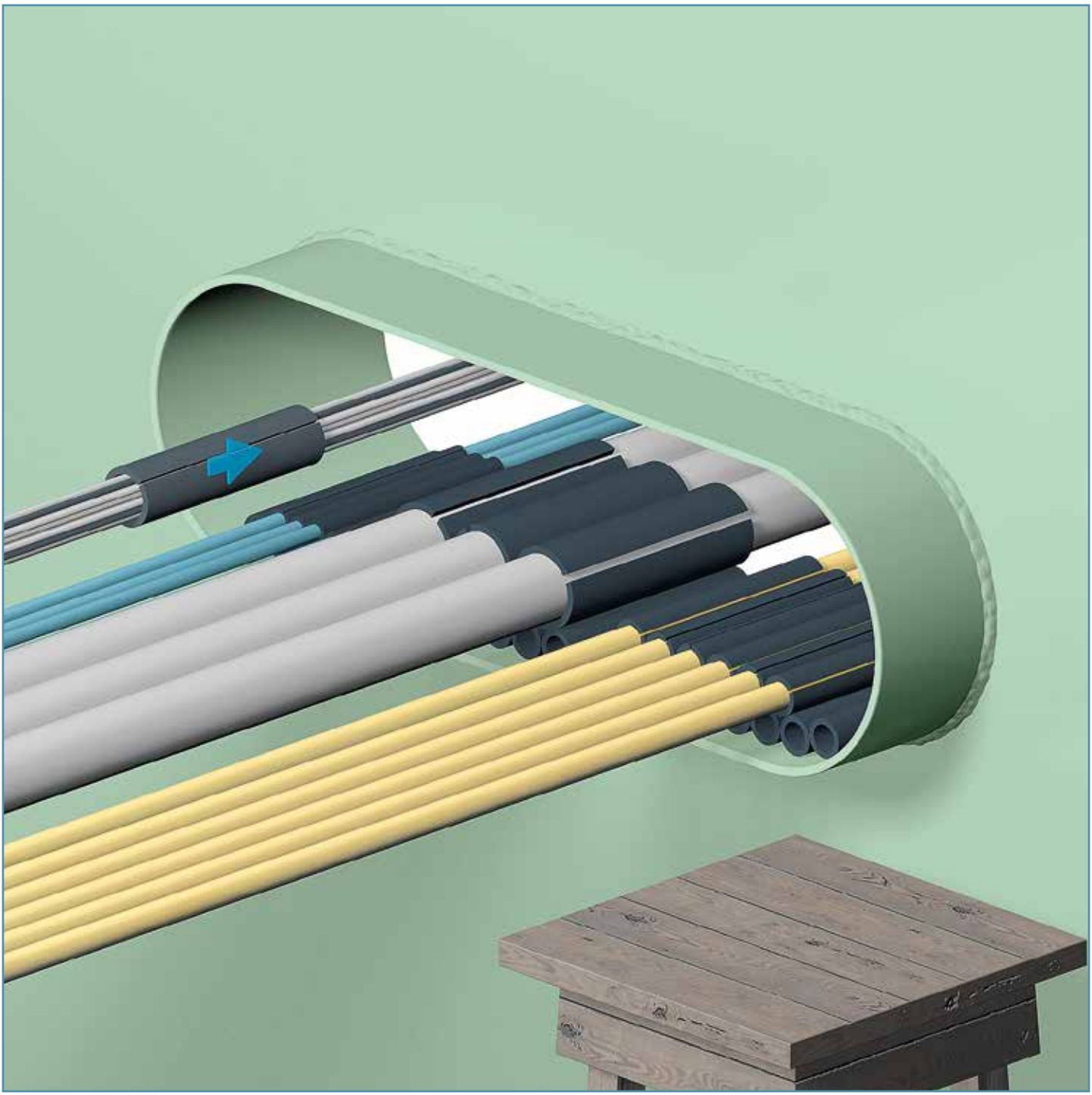
Additional information: applying the sealant on highly filled multi-cable transits can be quite complicated. The sealant can be applied in layers from the bottom to the top after cable pulling. Regardless, checking if sufficient sealant is applied in between sets of cables close to each other is a must. Water and gas tightness is dependent on the quality of the final sealing. As is the case with any system, workmanship has a direct impact on the performance of the sealing system.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



Additional information: bundled cable sets are allowed in the RISE® multi-cable sealing system, using only a single RISE® insert sleeve around the bundle of cables.
Note: see the approved installation drawings for details. Bundling is limited to approved maximum dimensions.

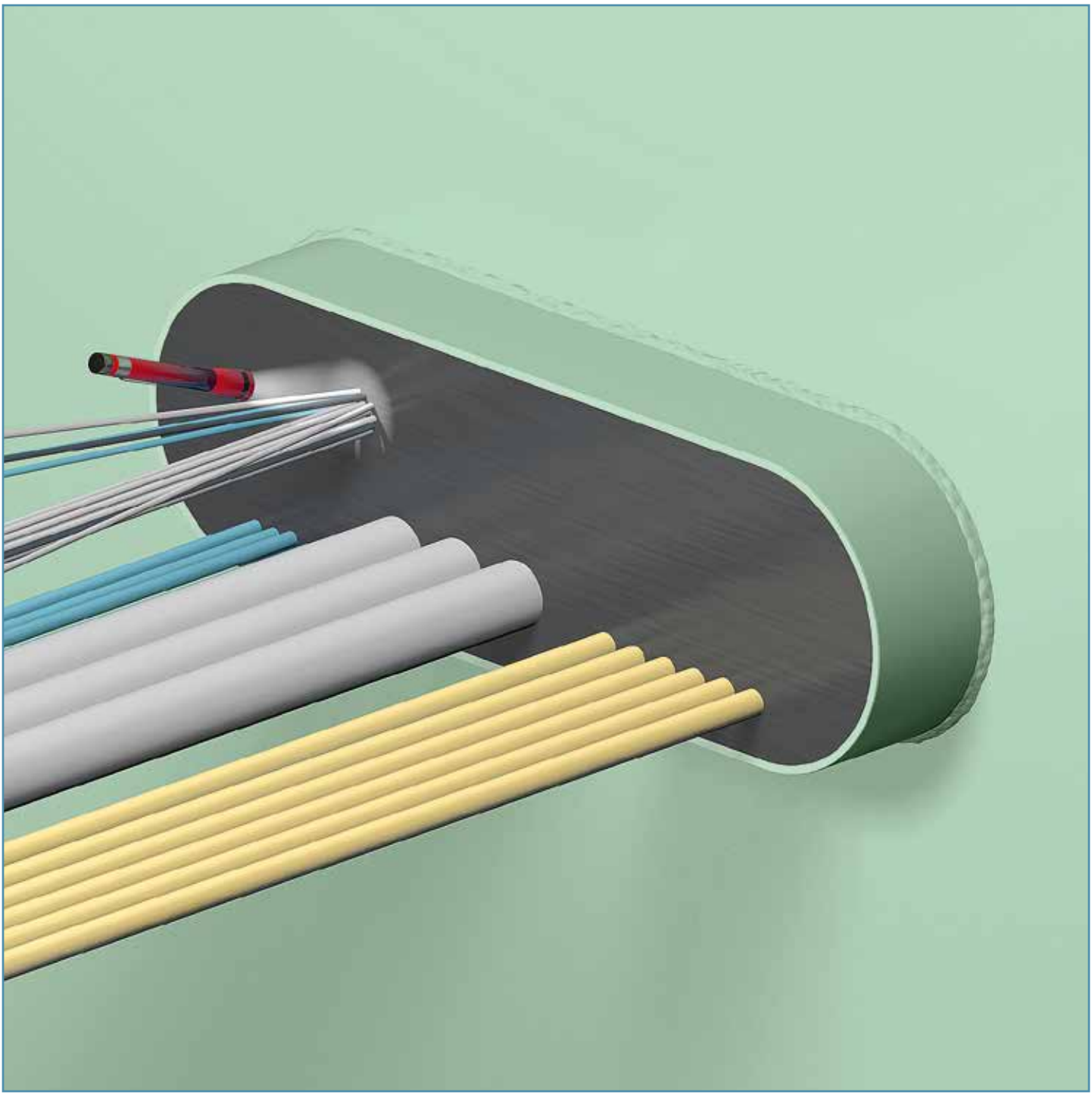
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



The sleeve is then pushed into the transit leaving 20 mm free at front and backside.

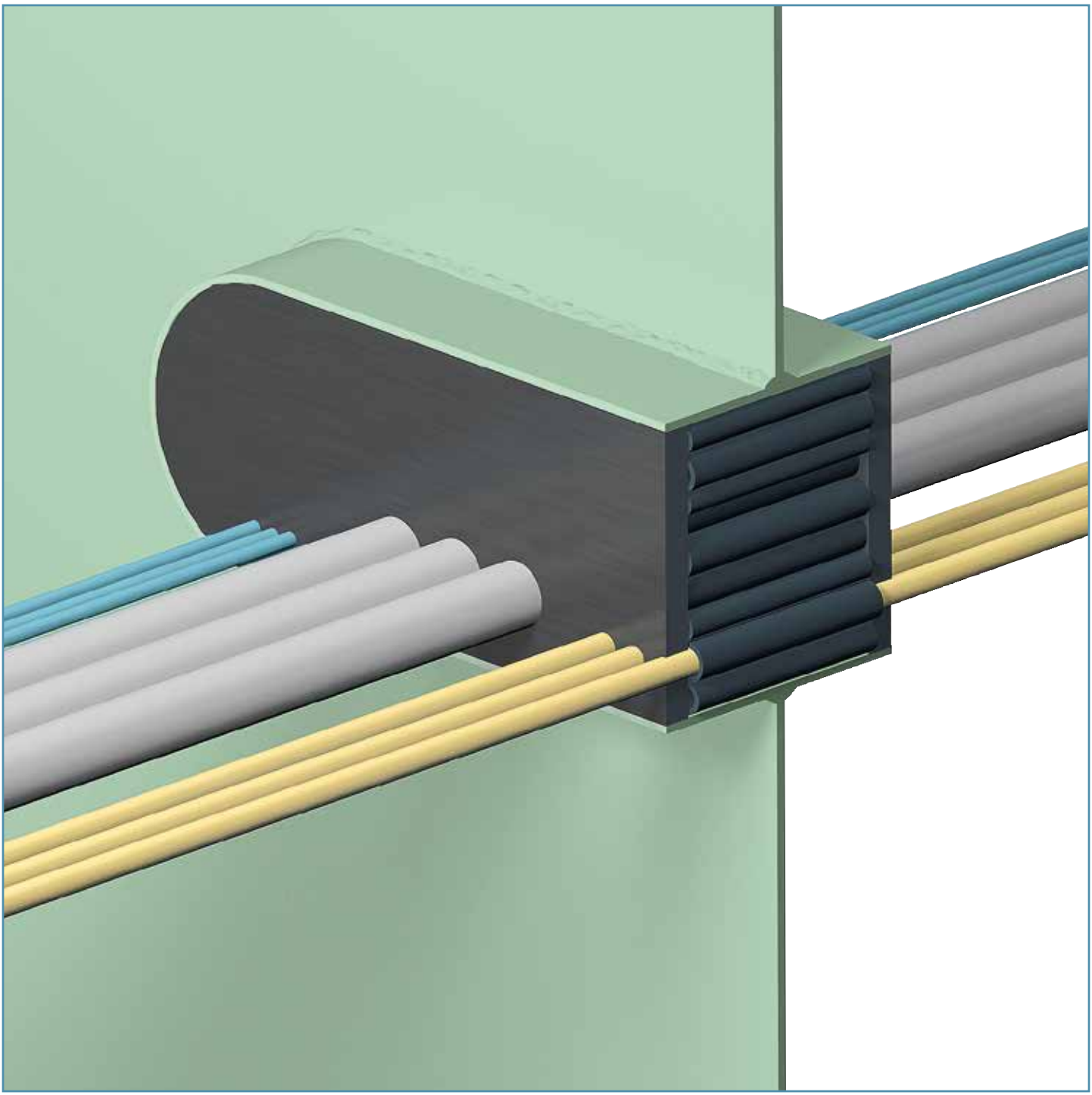
Note: RISE® multi-cable transits with bundled cables are not approved for watertight partitions.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



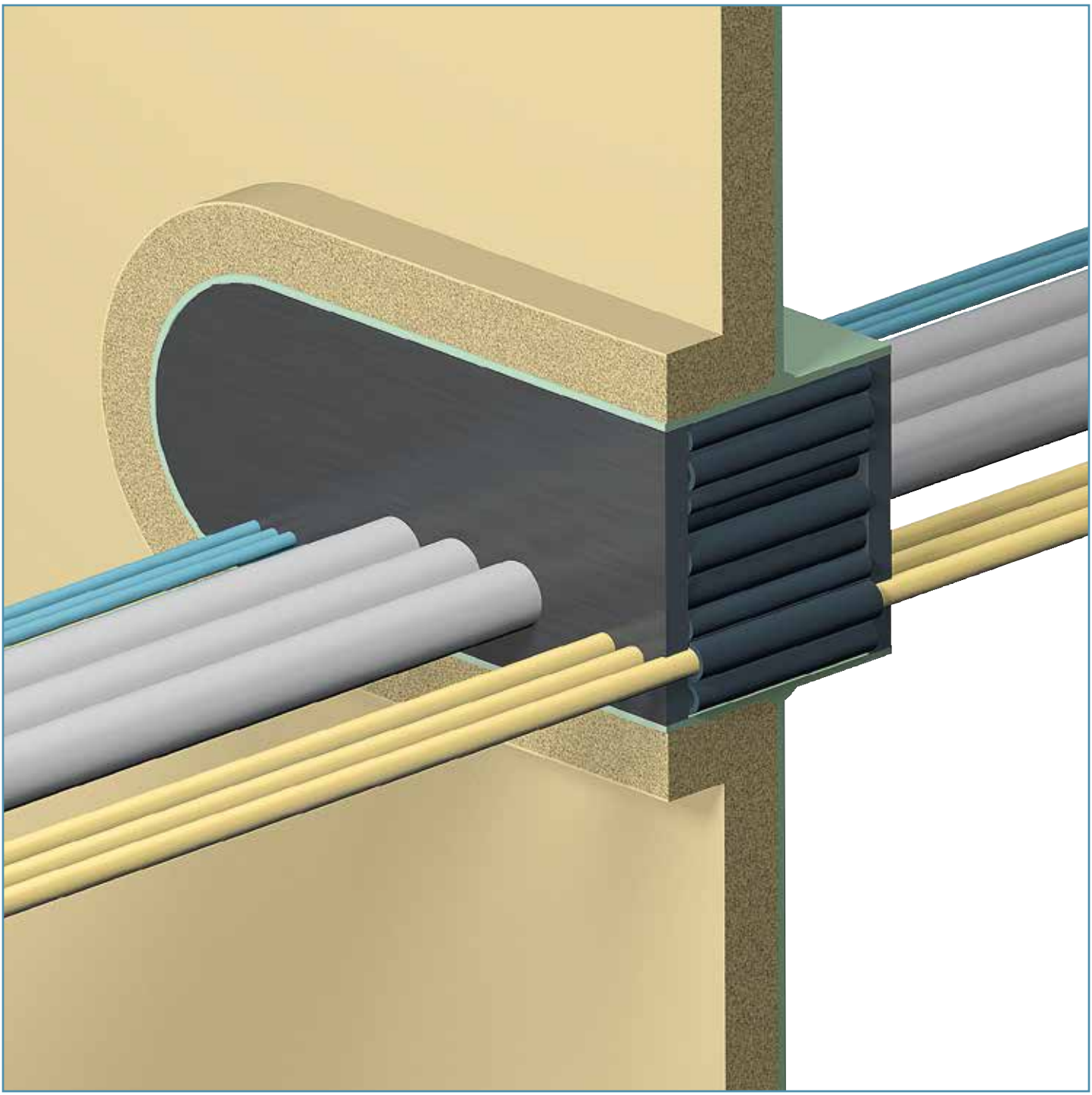
Check for all certainty that the bundle of cables is really tight to ensure a fair degree of cold smoke tightness. When exposed to fire and/or heat, the RISE® rubber will immediately react and fill the openings in between the cables and prevents passage of smoke from the fire side.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



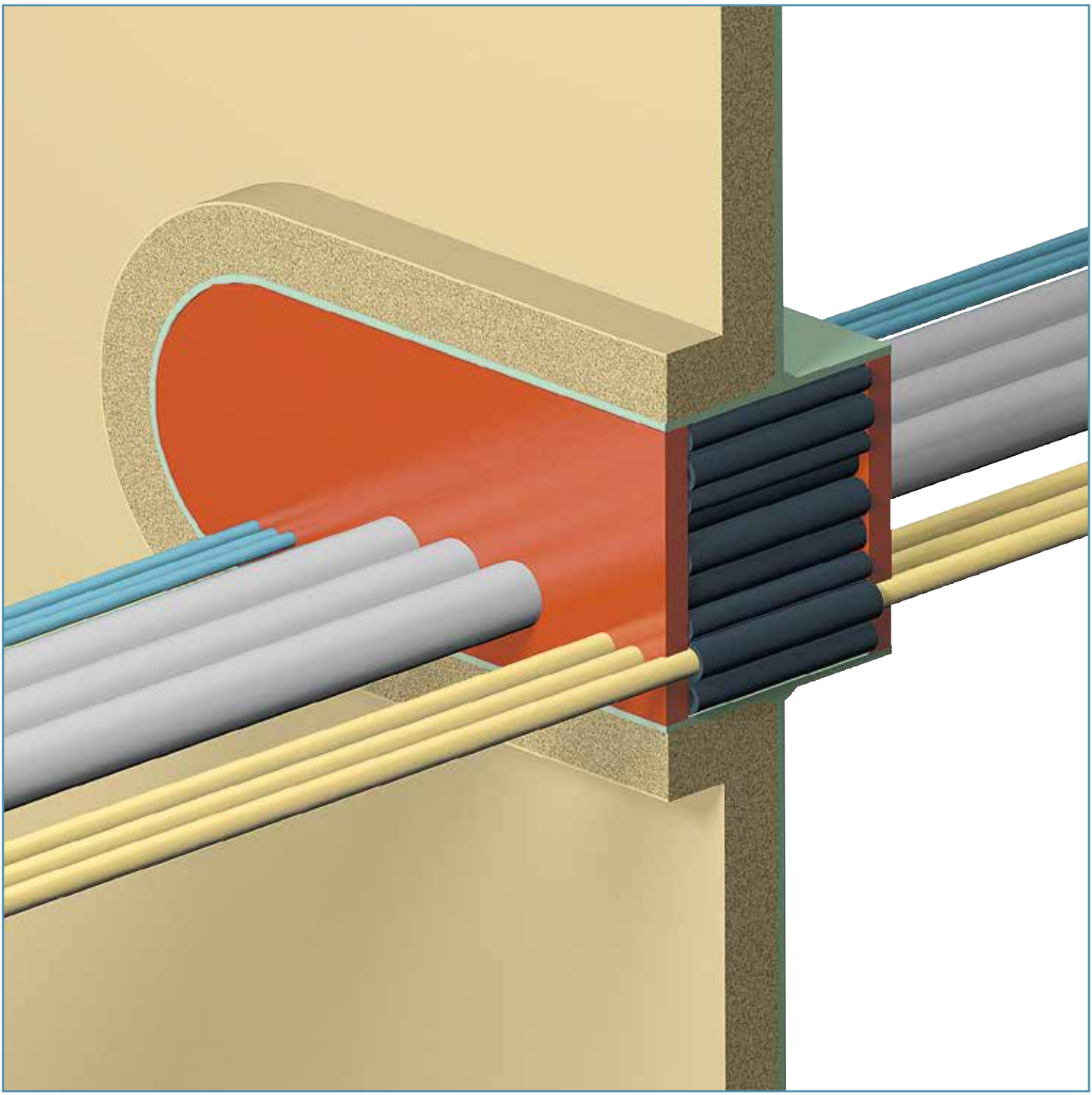
The RISE® rubber grade of the sleeves and the FIWA® sealant, which are compounded under strict conditions in our factory, are suitable for gas and water tight ducting, and for fire rated applications as well. The FIWA® sealant stays flexible at temperatures of -50 °C, allowing application in arctic environments. The components of the RISE® multi-cable transits immediately expand up to 5-10 times their original volume when exposed to fire. The RISE® multi-cable transits have excellent resistance to seawater, UV, ozone and weather. Based on the use of the high tech silicone composition of the FIWA® sealant, the system offers excellent durability.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



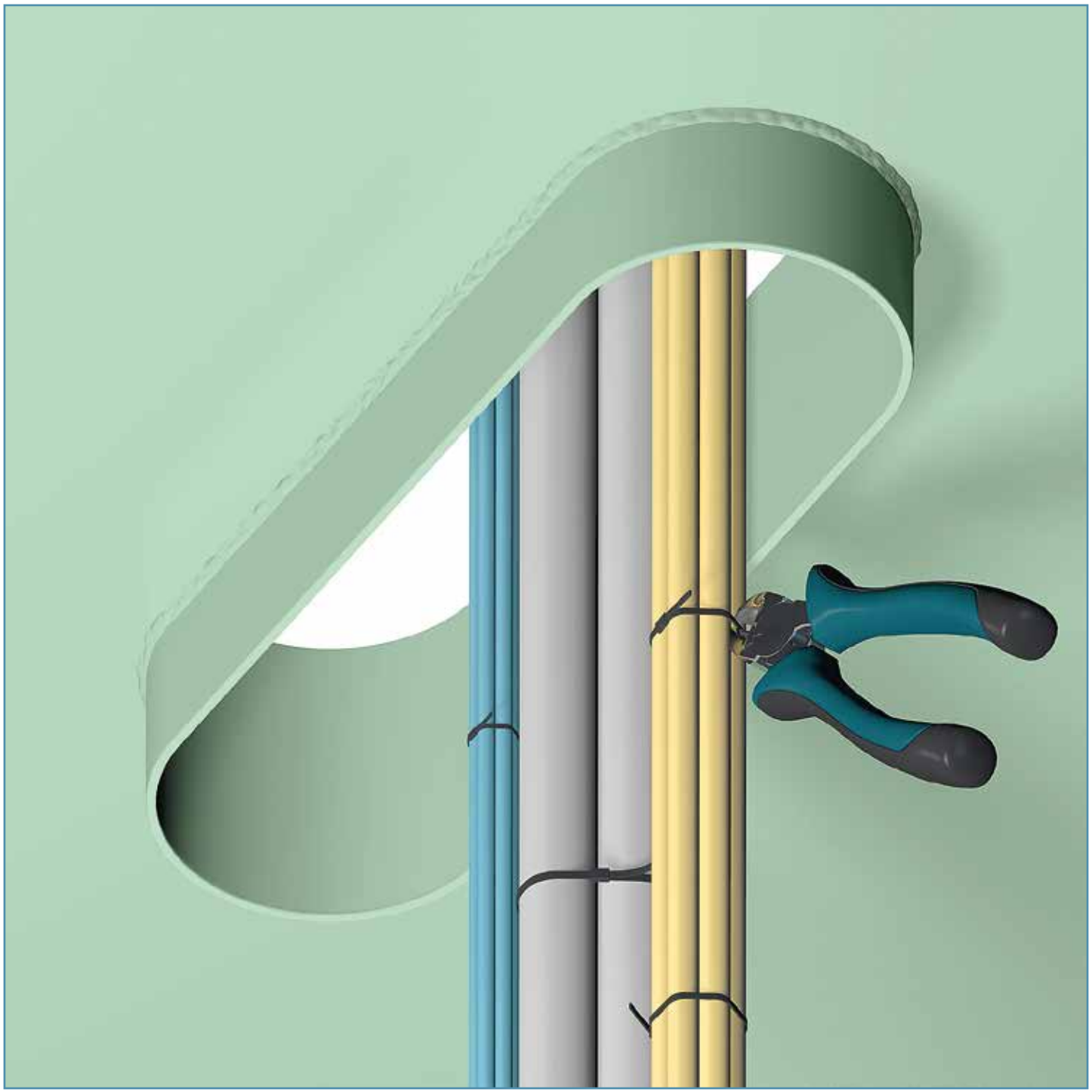
For A-class penetrations (which are insulated), the RISE®/NOFIRNO® multi-cable transit frame needs to be insulated only at the insulated side of the bulkhead. No extra insulation needed in front of the transit and/or in between the cables. Tested with larger amounts LAN data cables (bundled as well), up to CLX high voltage cables up to 3 x 380 mm^2 with an OD of 105 mm. Note: for the larger cable sizes, RISE® cable wraps have to be used.
No metal parts are incorporated in the sealing system. The conduit frames cannot corrode inside due to the tight sealant layers at both sides of the transit. No CUI (Corrosion Underneath Insulation).

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



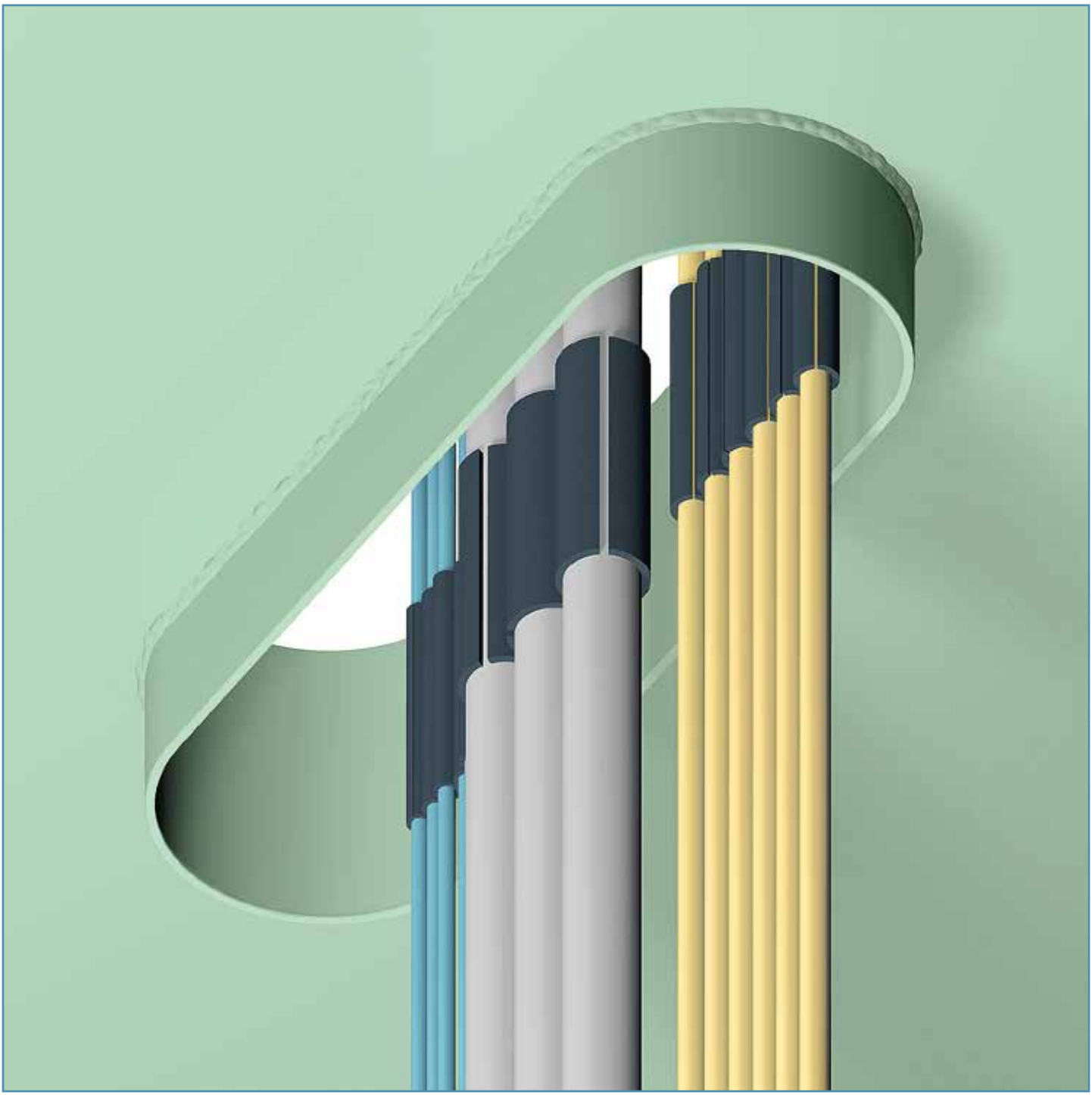
NOFIRNO® sealant can be applied instead of the FIWA® sealant. When exposed to fire, the NOFIRNO® sealant immediately creates a protective layer at the fire side, will not be consumed under fire exposure and prevents smoke emission. Furthermore, the NOFIRNO® sealant has higher mechanical properties than the FIWA® sealant and improves in this way the tightness ratings of the sealing system.
Note: RISE® and RISE®/NOFIRNO® sealing systems are non-compressive sealing systems. They are based on the adhesive strength of the sealants used. Cold creep on cable sheathings and stress relaxation of rubber parts, which might cause loss of sealing capacity, will not take place.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



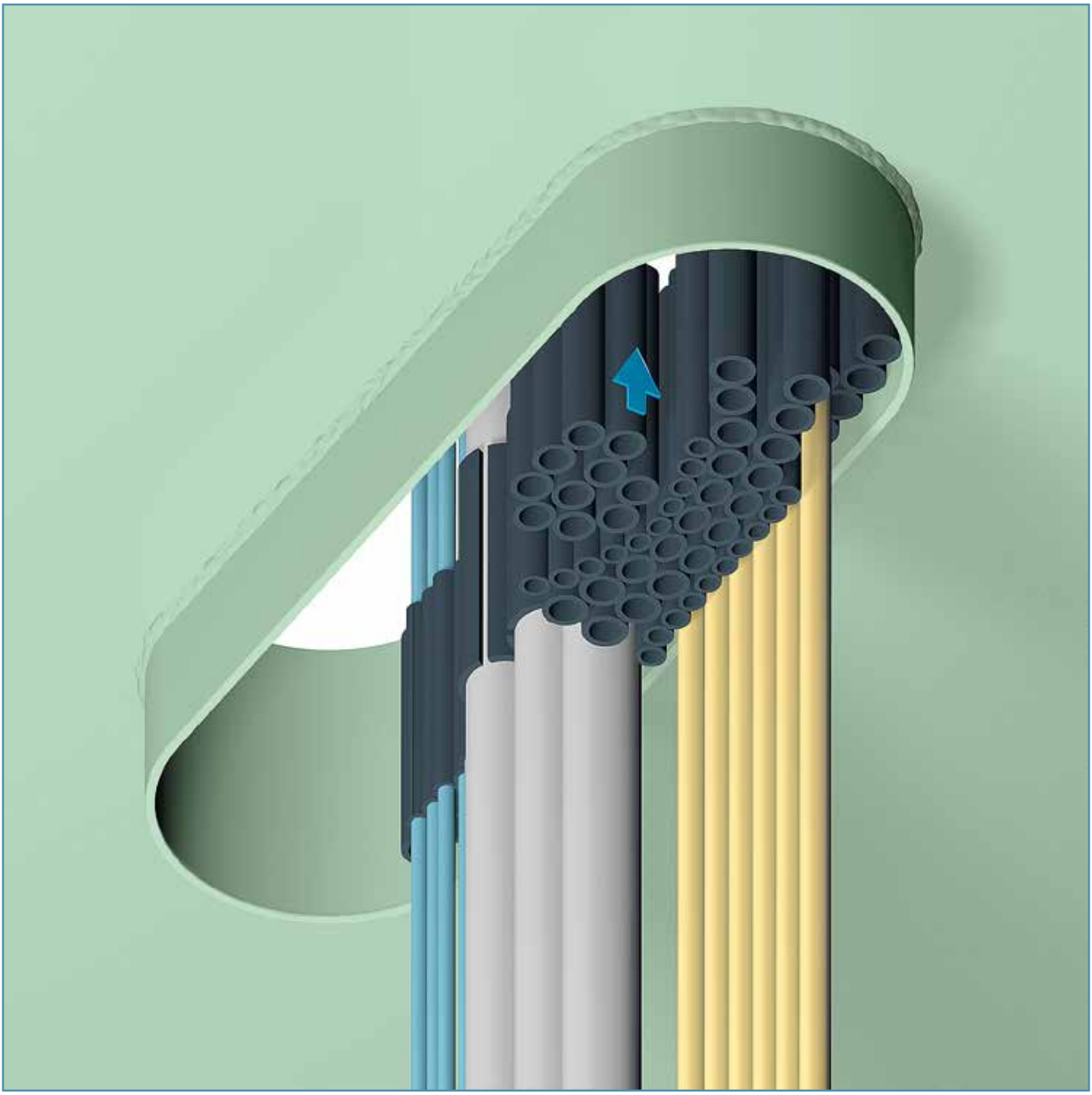
Deck penetrations are also easy to install with the RISE® system. Remove any cable tie-wraps to provide sufficient play of the cable set.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



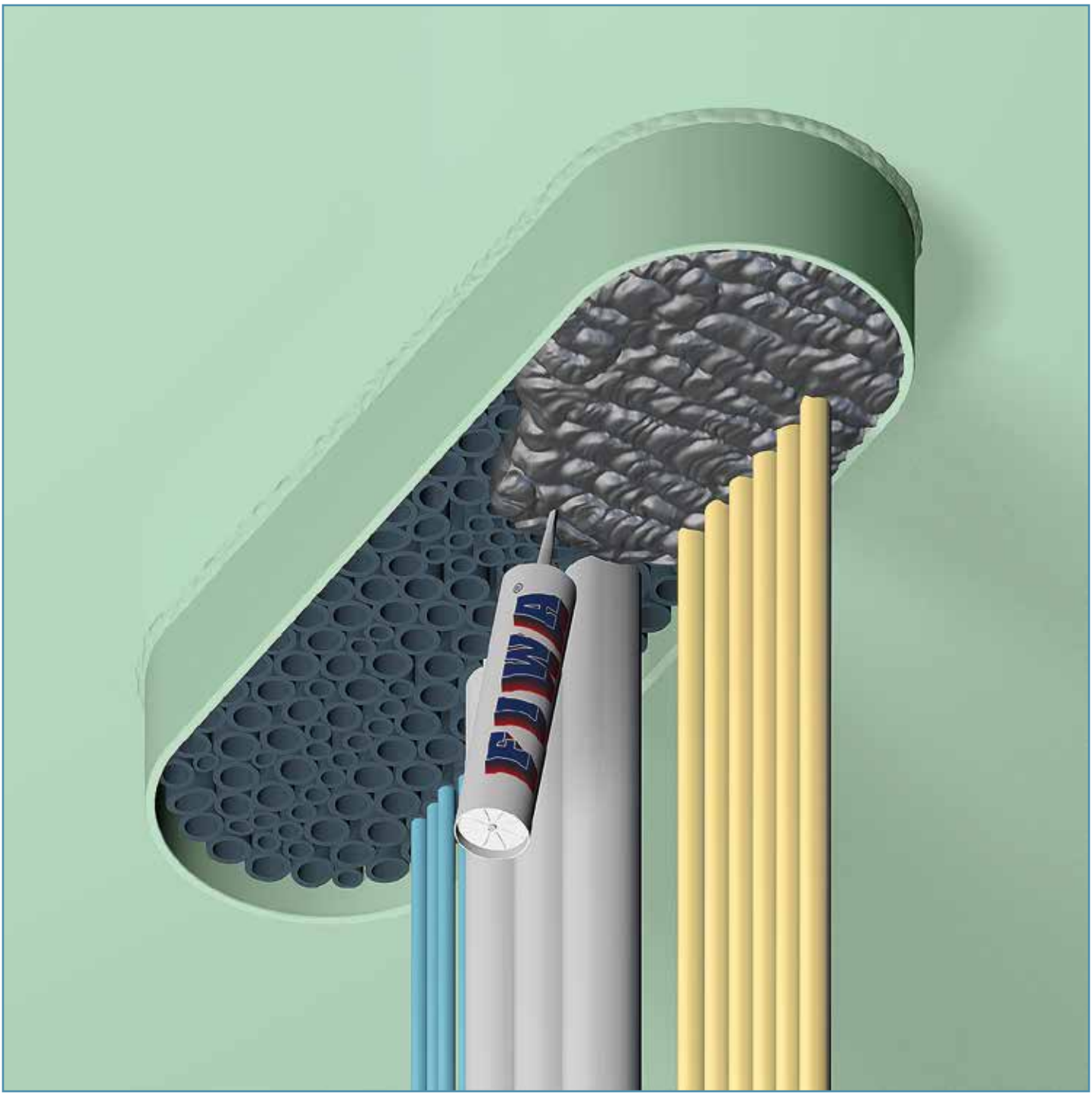
To prevent the RISE® sleeves from sliding down the cables, the sleeve should be a bit undersized to the cable. This allows the sleeves to cling to the cables, preventing them from sliding down. The inner surface structure of the RISE® cable sleeves will hold the sleeves in place as well.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



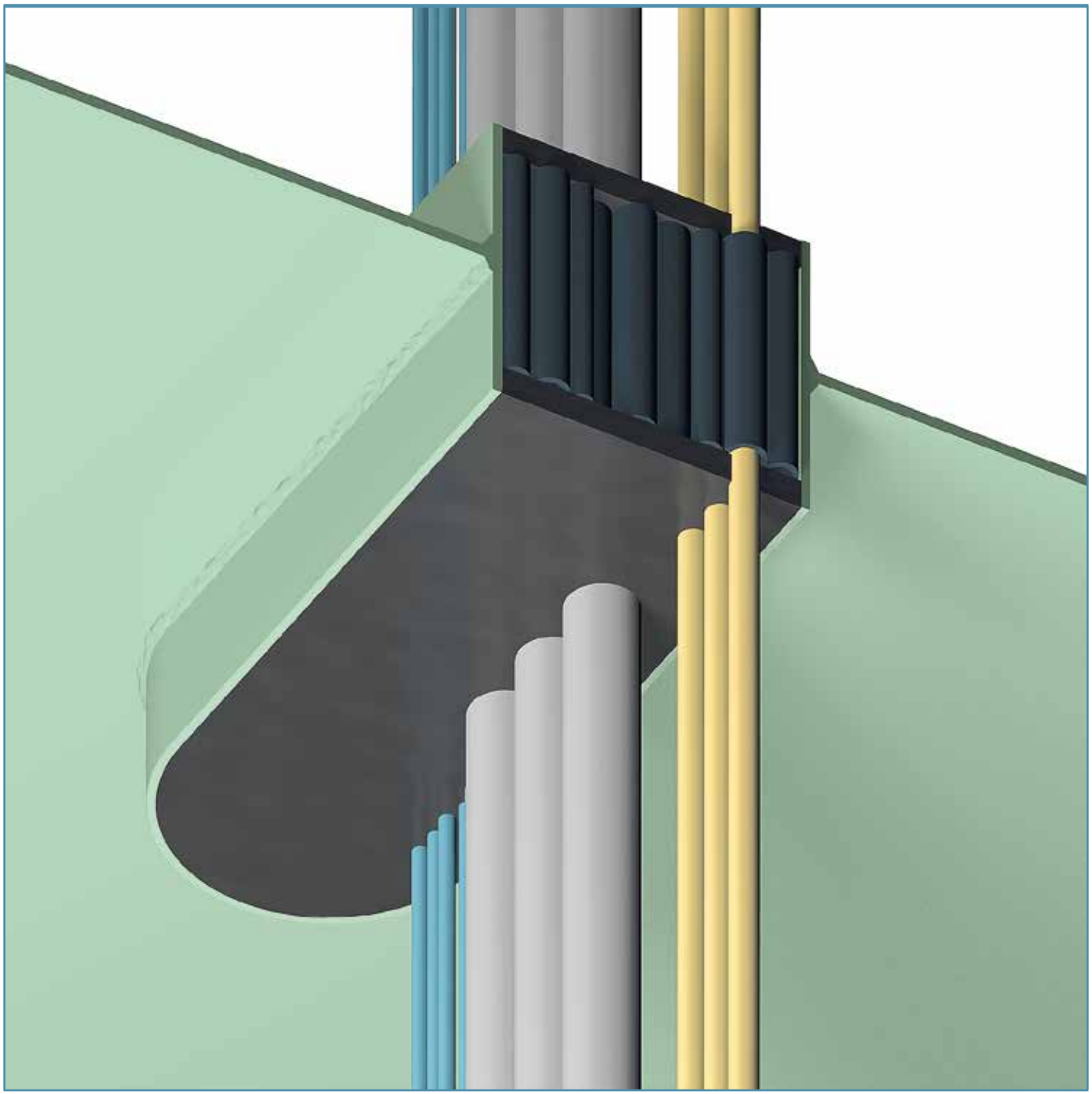
By making use of the RISE® multi-filler sleeves, sets and bundles can be made to ensure tight fitting inside the transit. With RISE® single filler sleeves, the filling of larger vertical transits will be more difficult.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



The FIWA® sealant can be applied overhead for deck/floor transits without dripping or sagging. For cable transits with a high filling rate, longer nozzles for the sealant cartridges are available.

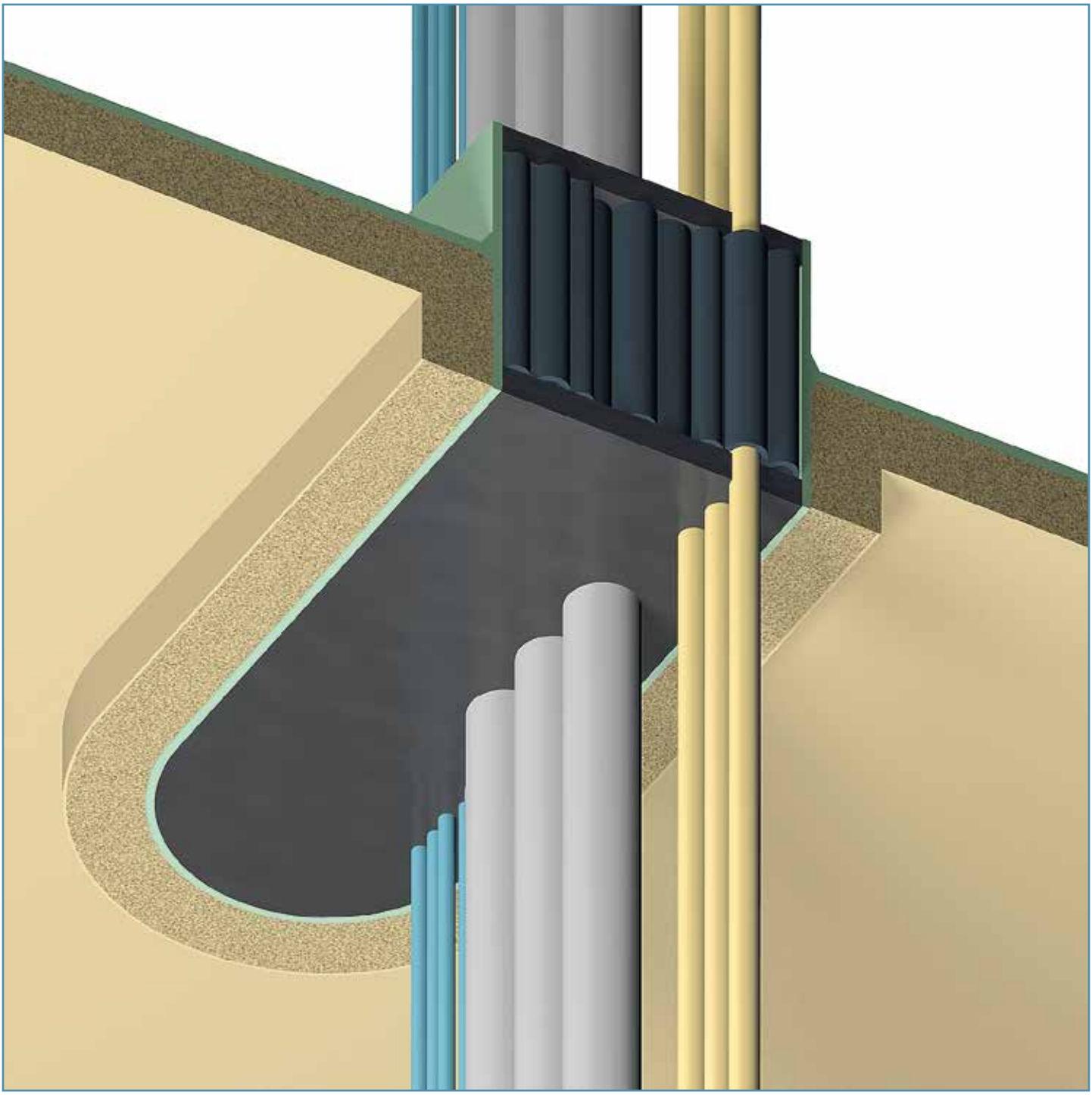
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



To smooth the surface of the FIWA® sealant layer, a cloth is sprayed with water. This prevents the sealant from sticking to the cloth.
Note: do not use soap water! Soap water will have a negative impact on the adhesive properties of the sealant.

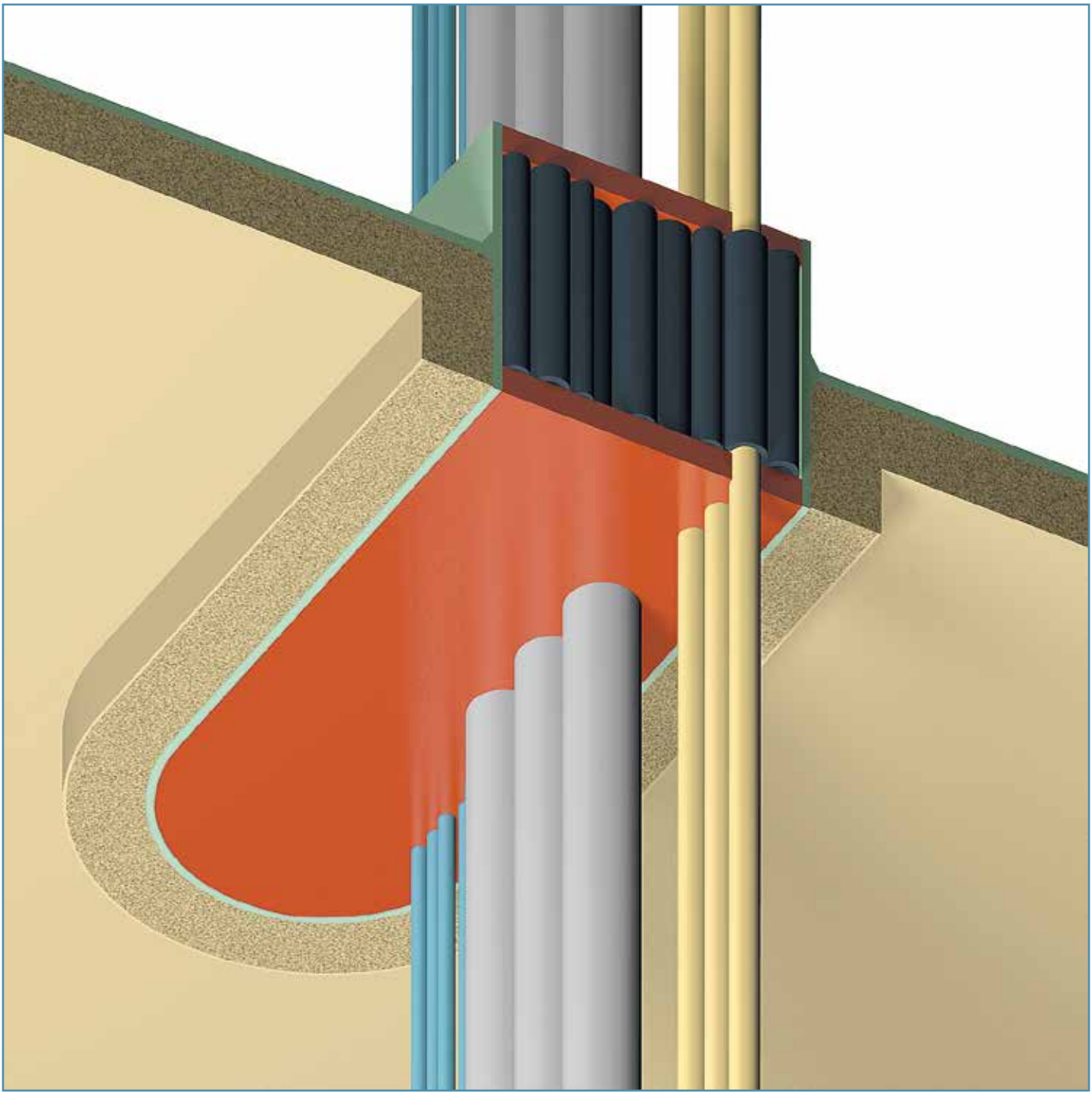
Use protective gloves when working with FIWA® sealant. Please refer to the Safety Data Sheet for more information.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



For A-class penetrations (which are insulated), the RISE® multi-cable transit frame needs to be insulated only at the at the lower side of the deck.
No extra insulation needed in front of the penetration and/or in between the cables. Tested with larger amounts LAN data cables (bundled as well), up to CLX high voltage cables with conductors up to 3 x 380 mm^2 with an OD of 105 mm.
Note: for the larger cable sizes, RISE® cable wraps have to be used.

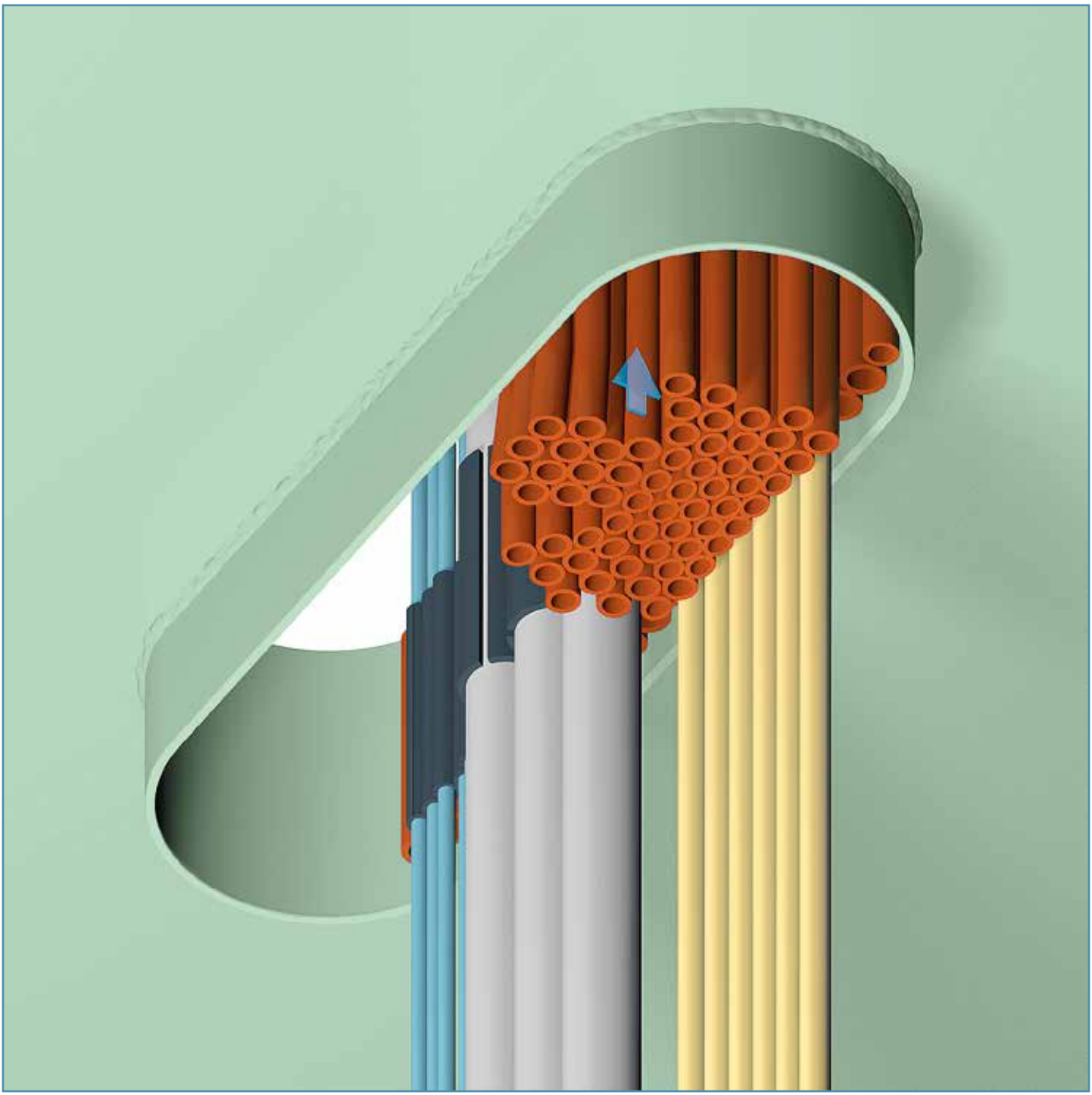
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



NOFIRNO® sealant can be applied instead of the FIWA® sealant.
The reflective colour of the NOFIRNO® has the additional advantage that visual inspection of the sealant application in between cables is easier to perform.

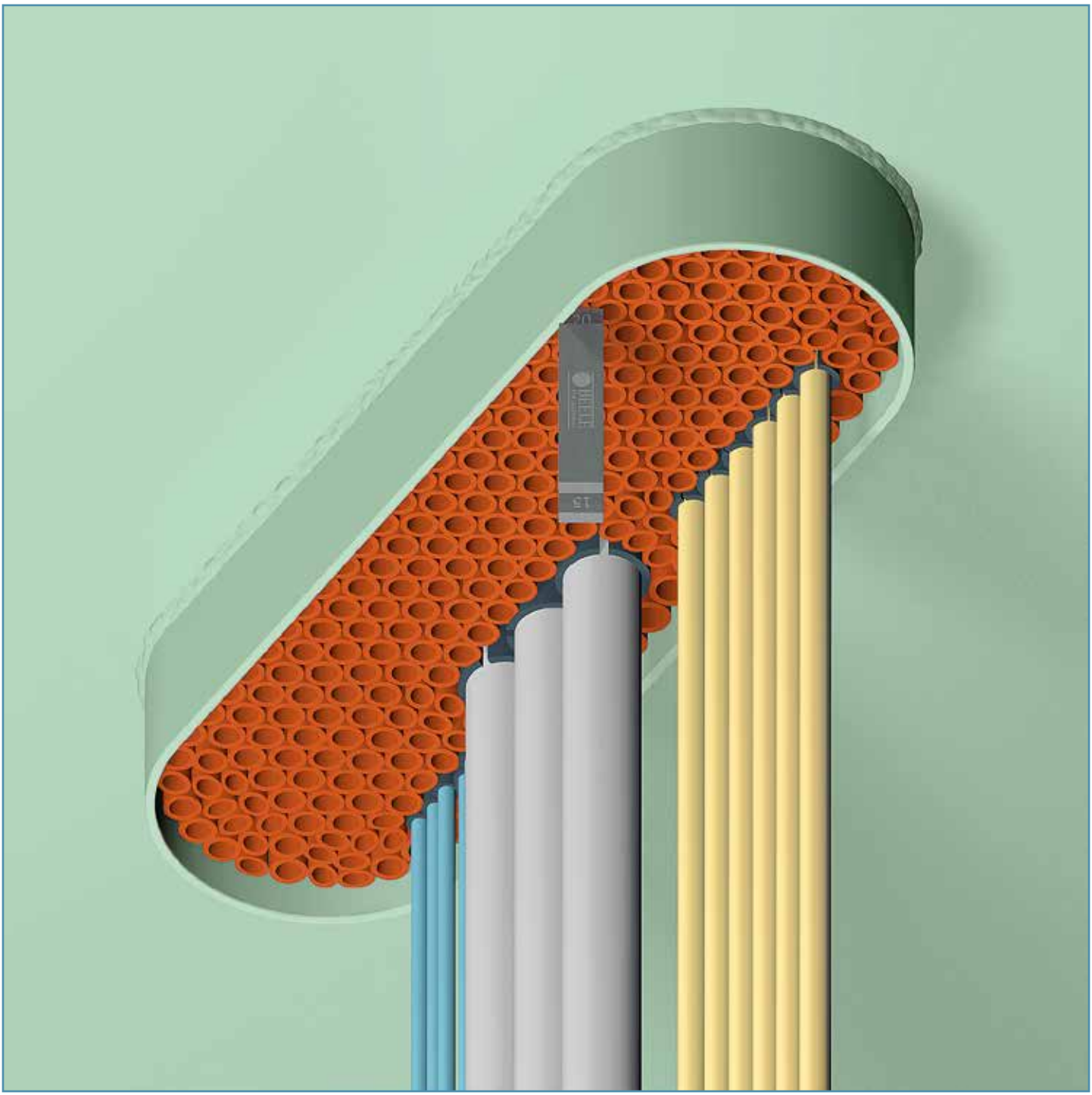
Use protective gloves when working with NOFIRNO® sealant. Please refer to the Safety Data Sheet for more information.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



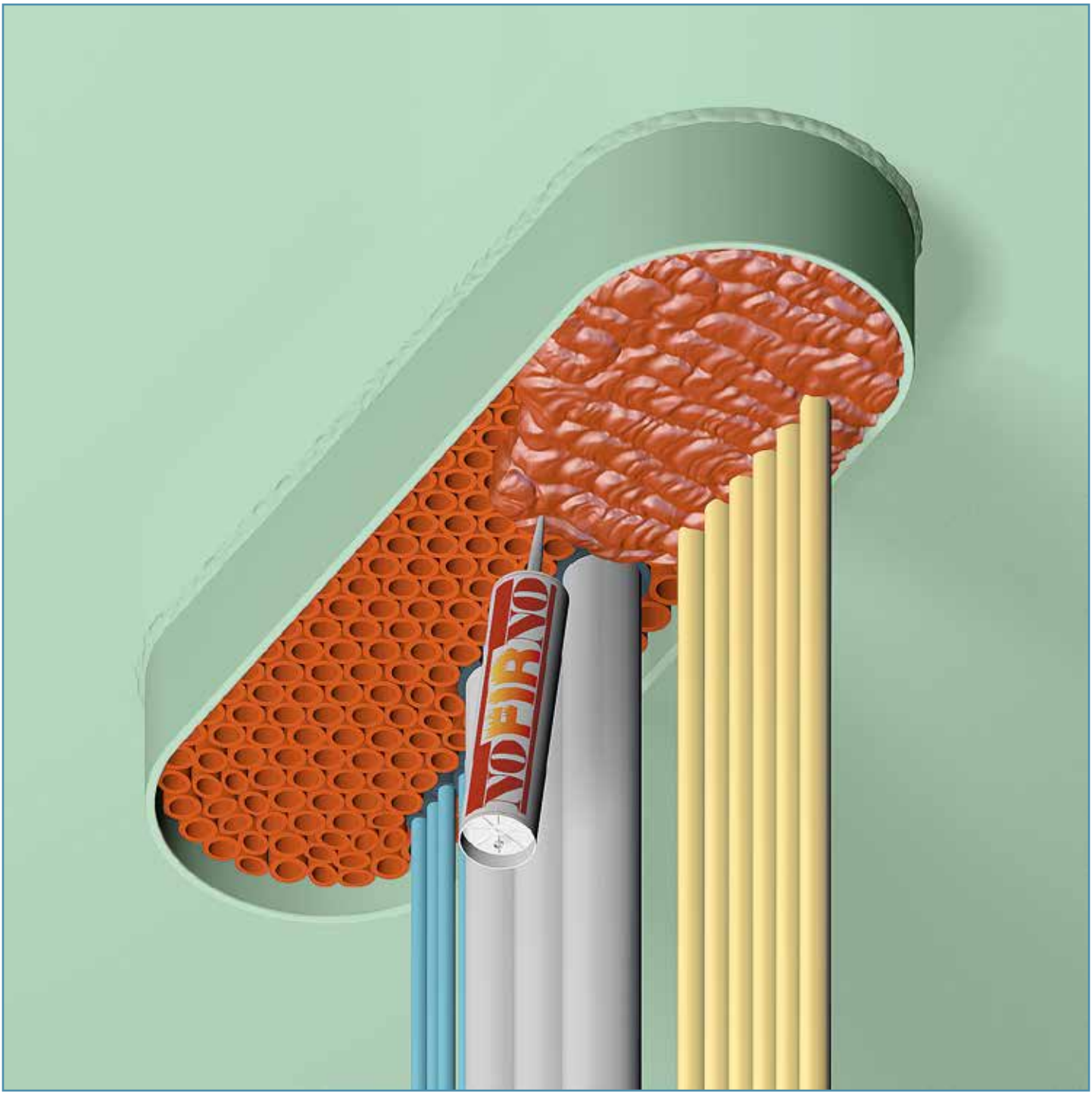
NOFIRNO® multi-filler sleeves will speed up installation substantially, due to their high flexibility which allows for rolling up the bundles. The RISE® multi-filler sleeves are less flexible and stiff.
The clamping forces of the vulcanized NOFIRNO® rubber of which the NOFIRNO® multi-filler sleeves are made are also higher than those of the RISE® filler sleeves.
Especially with deck penetrations the use of the NOFIRNO® single and multi-filler sleeves contributes substantially to ease of installation.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO®
MULTI-CABLE TRANSIT SEALING SYSTEM



With the Beele® adjuster or a marked piece of wood, the set of fillers is adjusted inside the transit. The NOFIRNO® rubber grade and the NOFIRNO® sealant, which are compounded under strict conditions in our factory, are suitable for gas and water tight ducting, and for highest fire rated applications as well. NOFIRNO® sleeves and sealant stay flexible at temperatures of -50 °C, allowing application in arctic environments even better than RISE®, and can be exposed to temperatures up to +180 °C as well.

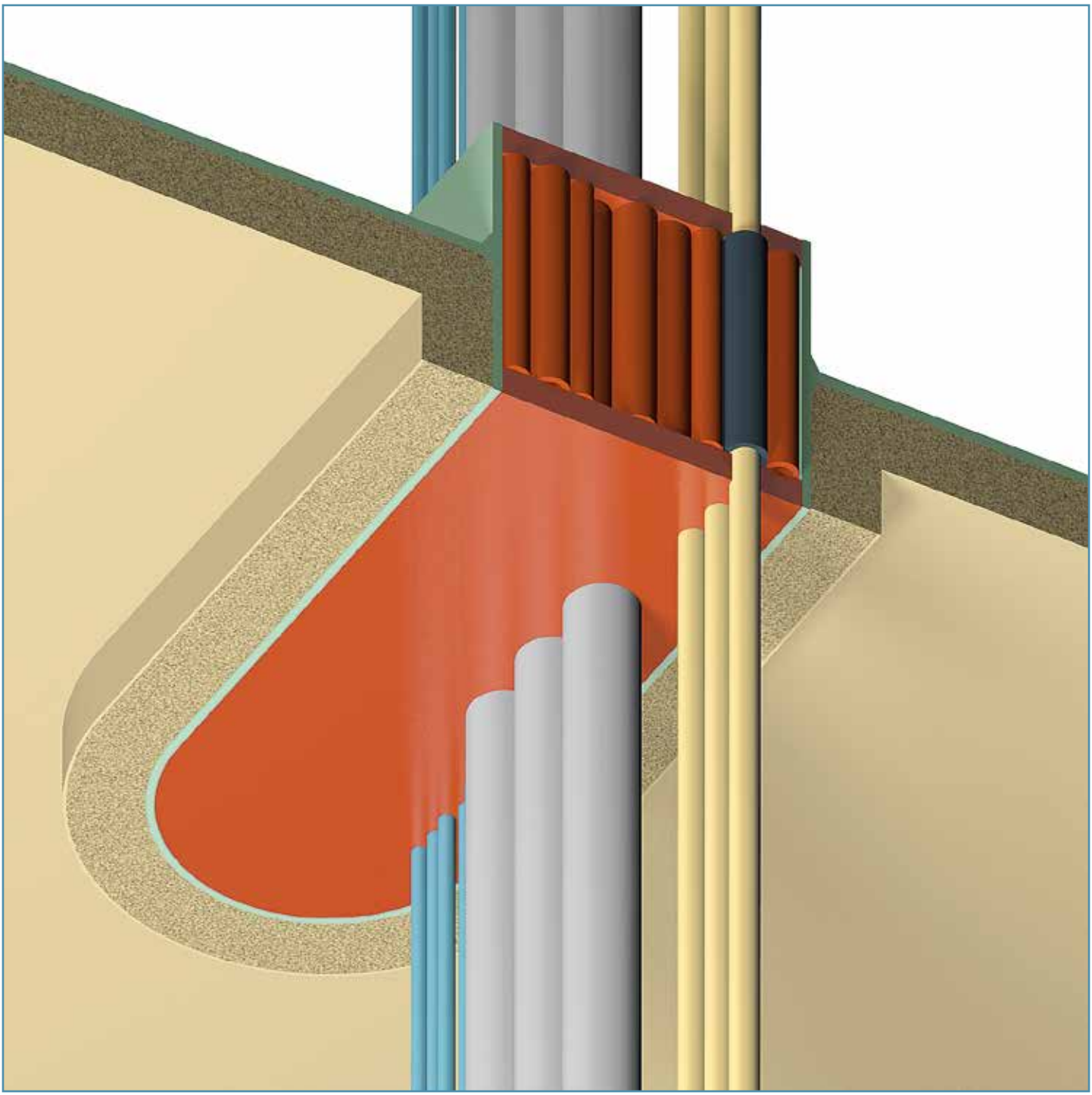
INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO®
MULTI-CABLE TRANSIT SEALING SYSTEM



The NOFIRNO® sealant can be applied overhead for deck/floor transits without dripping or sagging. For cable transits with a high filling rate, longer nozzles for the sealant cartridges are available.

Please refer to the Safety Data Sheet for more information about the working environment.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

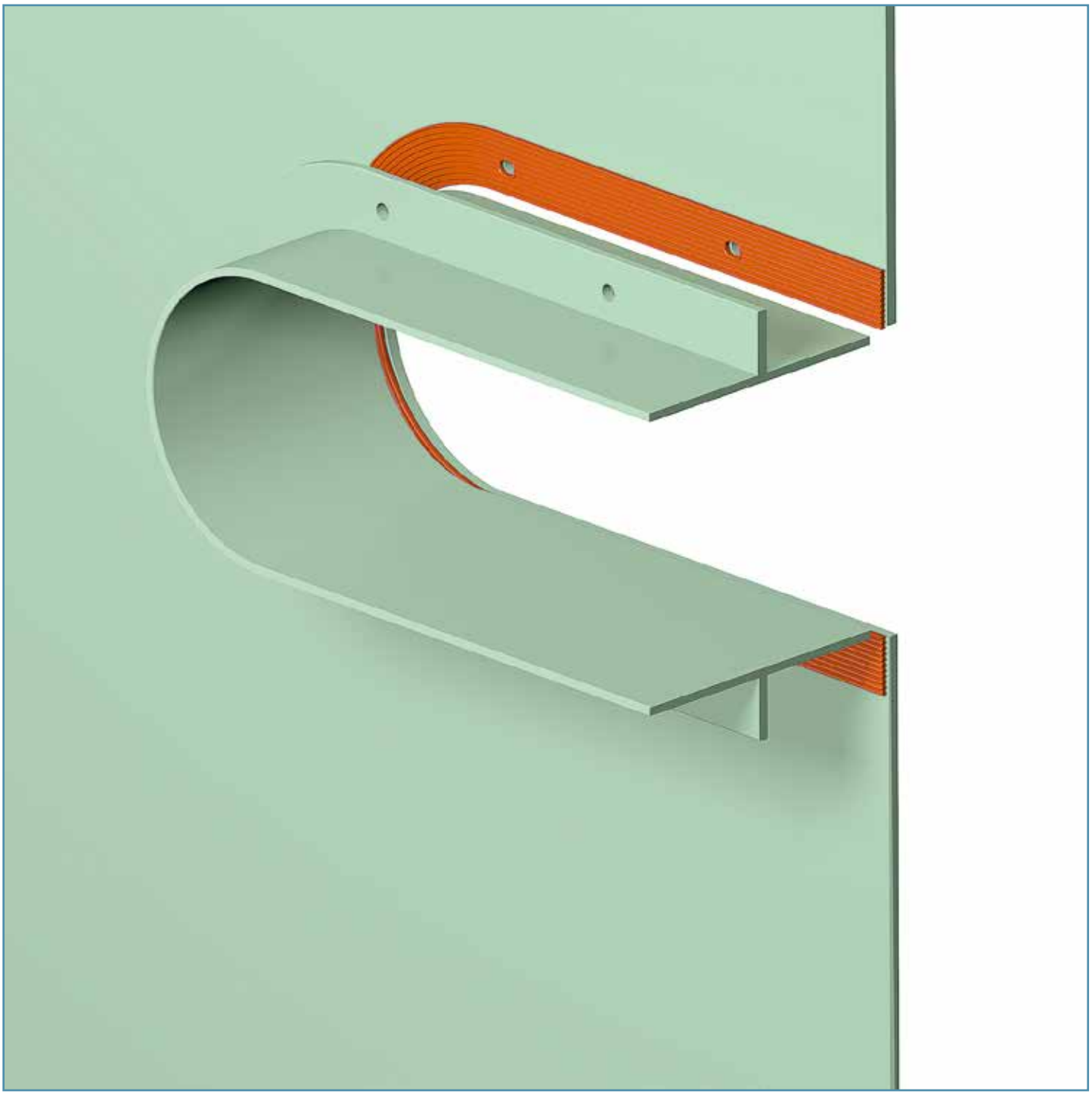


For A-class penetrations (which are insulated), the RISE®/NOFIRNO® multi-cable transit frame needs to be insulated only at the lower side of the deck. No extra insulation needed in front of the penetration and/or in between the cables. Tested with larger amounts LAN data cables (bundled as well), up to CLX high voltage cables with conductors up to 3 x 380 mm^2 with an OD of 105 mm.
Note: for the larger cable sizes, RISE® cable wraps have to be used.
Based on the use of high tech silicone compositions for the sleeves and the sealant, the system offers excellent durability even in extreme weathering and seawater conditions.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM

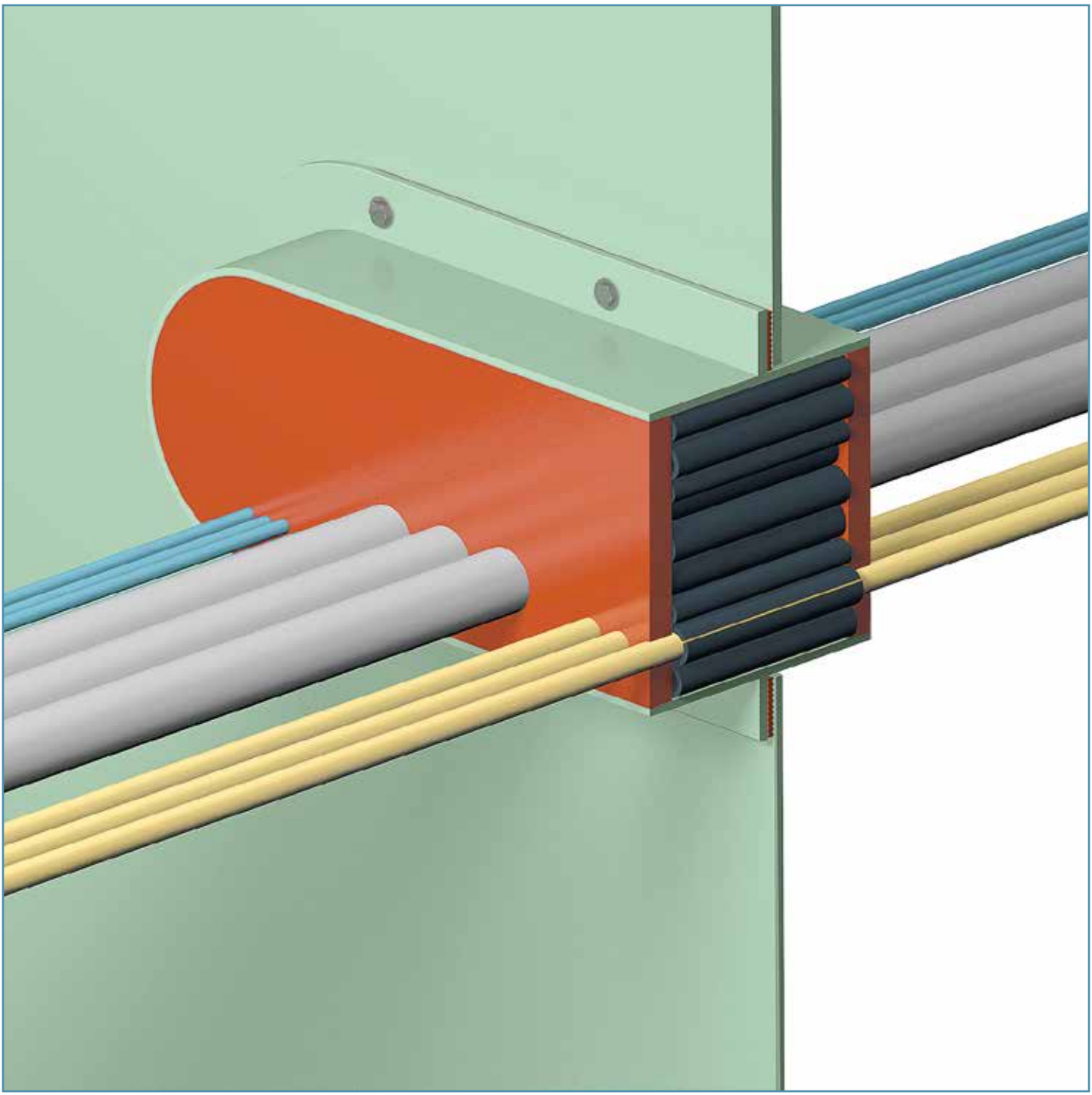
Flanged frames with a flange for bolting (60 mm wide and 6 mm thick) with a hole configuration for fixation can be used also for the RISE® and NOFIRNO® multi-cable sealing system.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO®
MULTI-CABLE TRANSIT SEALING SYSTEM



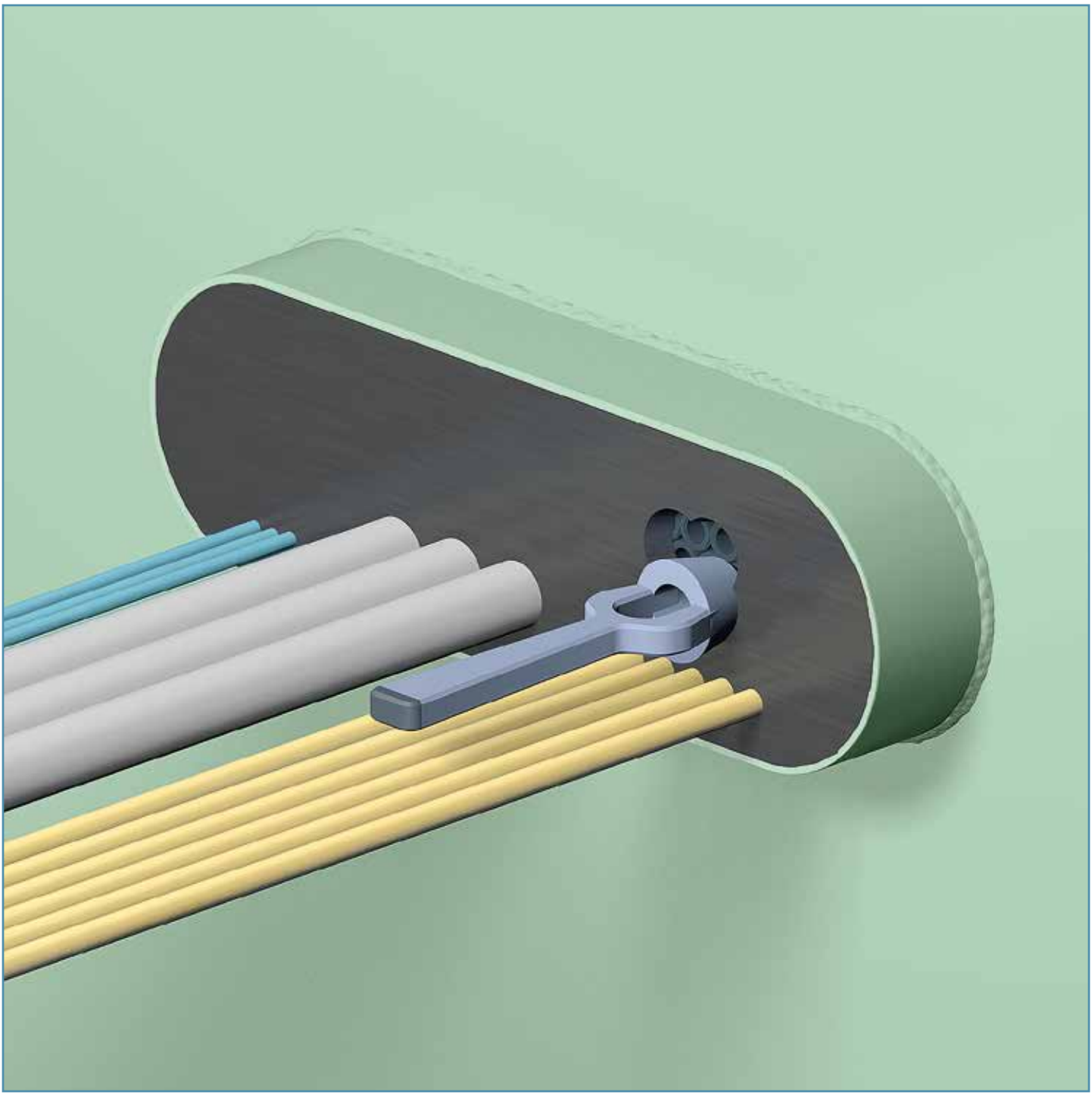
The flanged transit frames are bolted against the partition. A firesafe NOFIRNO® gasket has to be applied between the flange of the transit frame and the partition. The gaskets have a designed profiling to exclude the need for excessive compression (6-10 Nm is sufficient). The reduced forces on the profiled rubber make the usual need for retightening from time to time a thing of the past.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO®
MULTI-CABLE TRANSIT SEALING SYSTEM



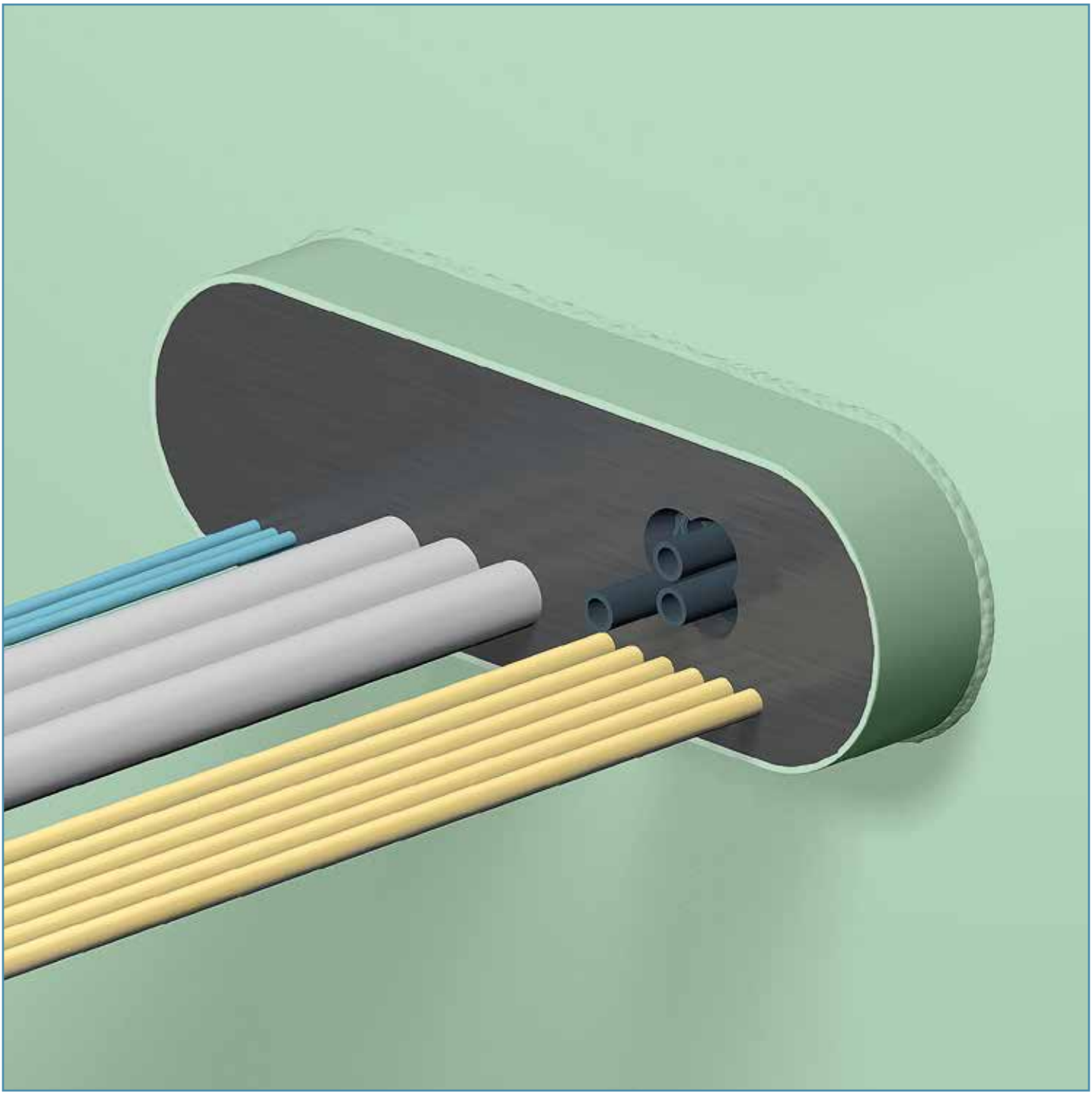
For A-class penetrations (which are insulated), the RISE®/NOFIRNO® multi-cable transit frame needs to be insulated only at the insulated side of the bulkhead or at the lower side of the deck. No extra insulation needed in front of the penetration and/or in between the cables. Tested with larger amounts LAN data cables (bundled as well), up to CLX high voltage cables with conductors up to 3 x 380 mm^2 with an OD of 105 mm.
Note: for the larger cable sizes, RISE® cable wraps have to be used.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



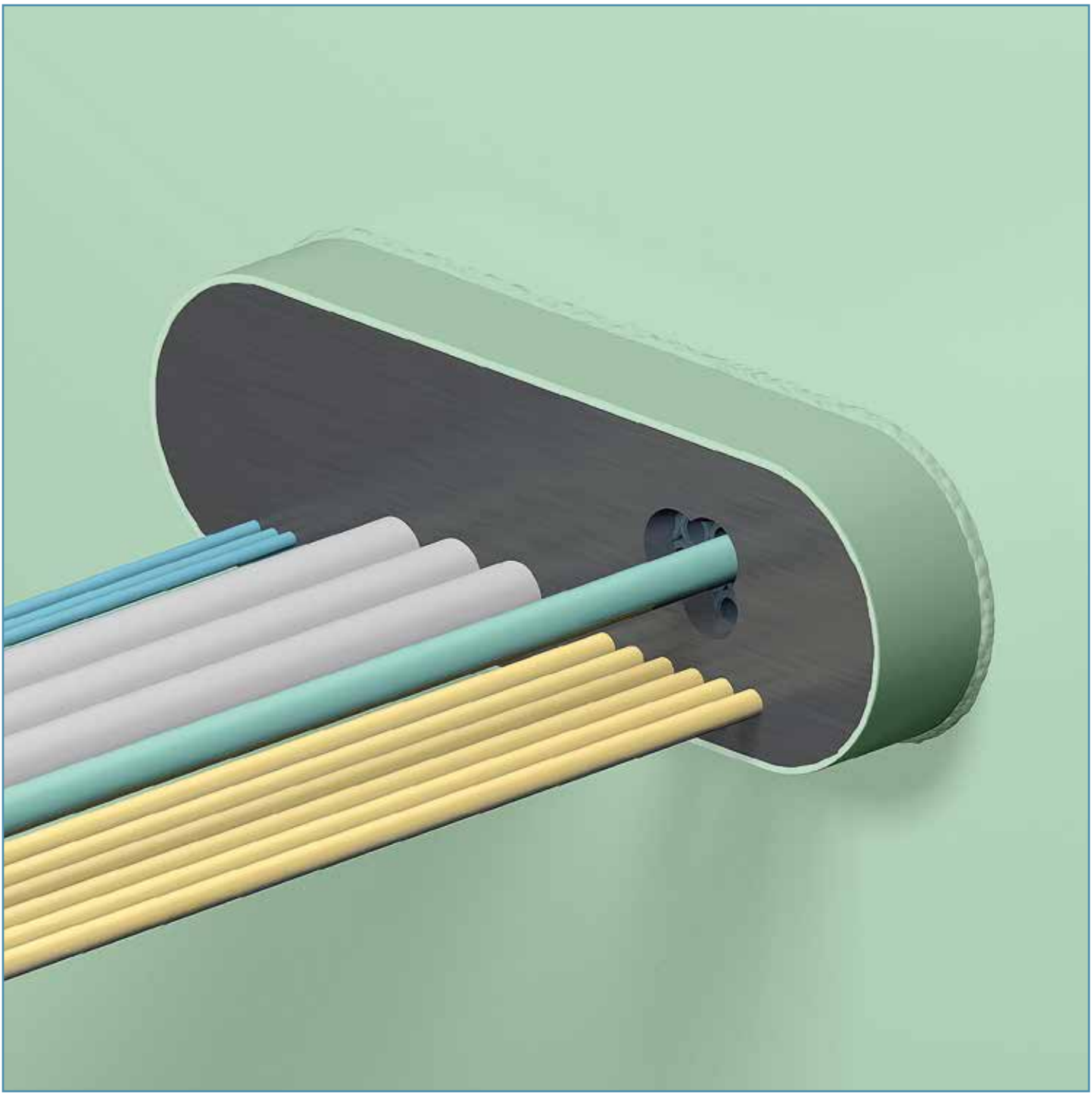
Adding extra cables through a finished RISE® or RISE®/NOFIRNO® multi-cable transit is an easy job. With the use of RISE® and NOFIRNO® sleeves as separators, no permanent deformation of the rubber parts will occur, and the cables are ducted individually. This means there is no need to disassemble the whole transit. Cut away the sealant layer at both sides of the penetration with a plastic knife or a hollow punch in a tapering shape, at a spot where there is sufficient spare space visible on the surface of the sealant layer.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



Remove one or more RISE® or NOFIRNO® filler sleeves to create a fitting opening for the cable to be ducted.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



A cable is pulled through the free passage opening in the RISE® or NOFIRNO® multi-cable transit. For adding cables, there is in fact no more disassembling needed than removing some filler sleeves. No extra costs for the extension of the cable set other than some new sealant to be applied.

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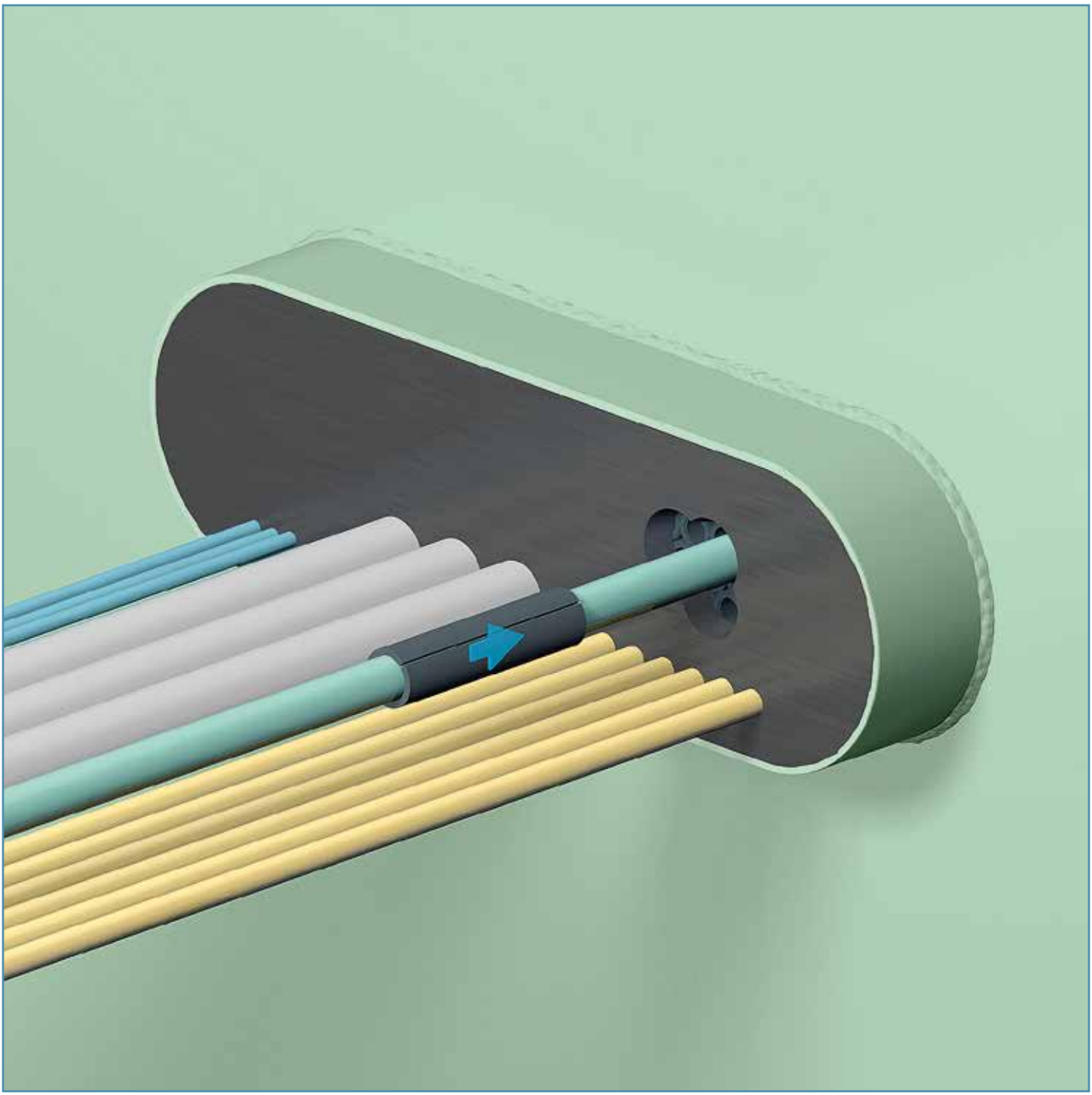

Place a RISE® sleeve around the newly ducted cable. Push the insert sleeve into the conduit so that it is even with the other sleeves.

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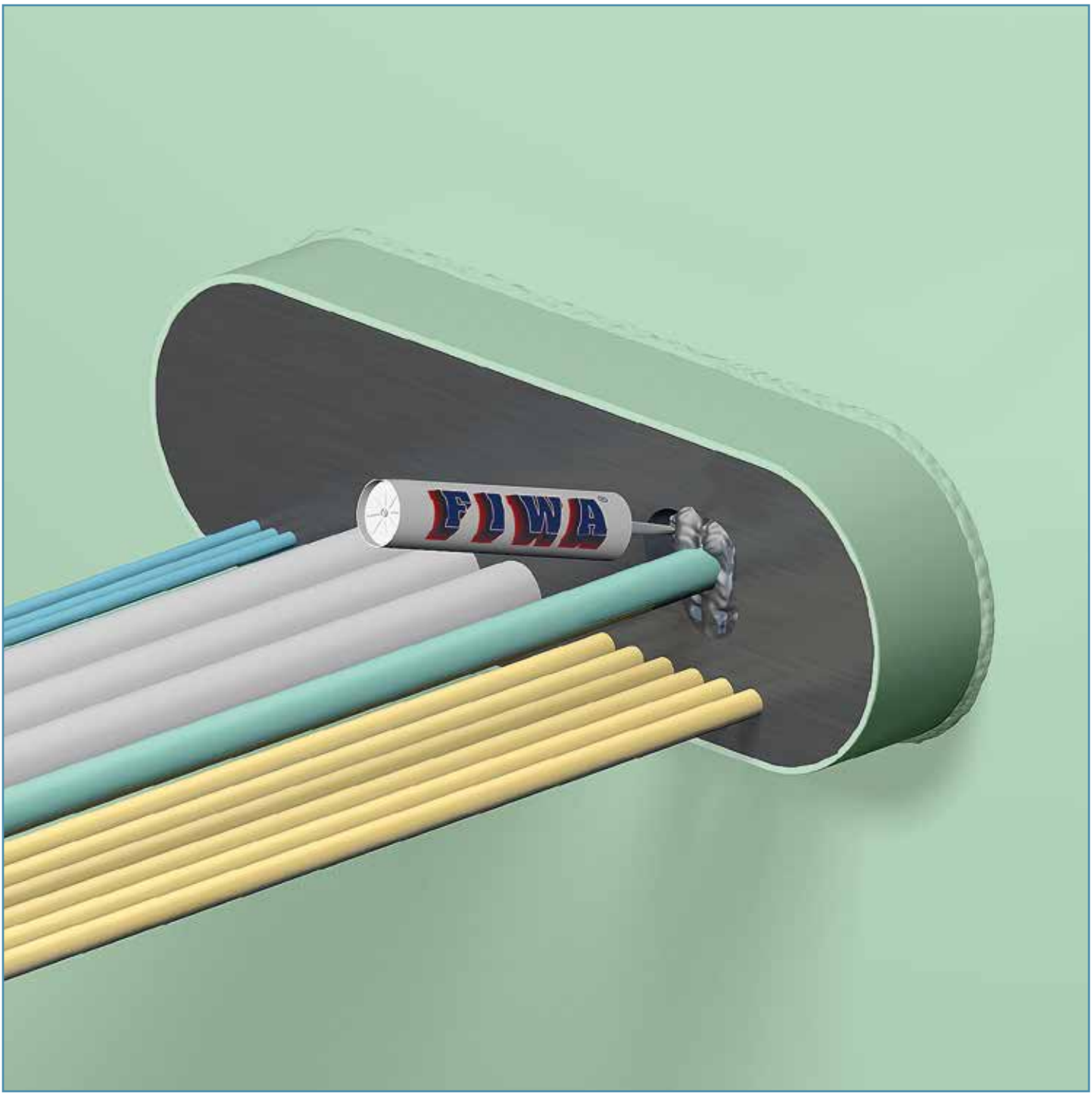
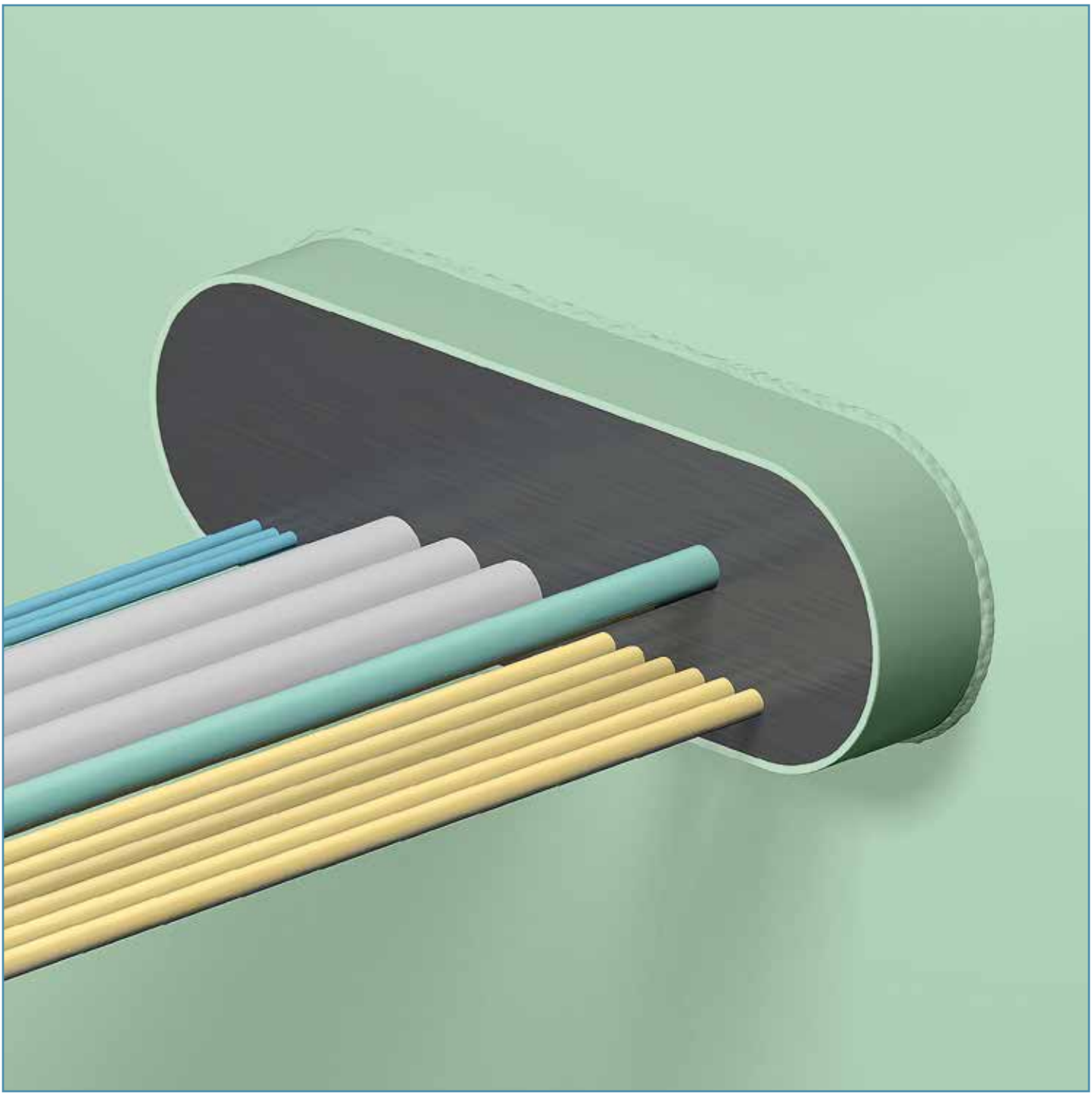


Clean and dry the newly ducted cable thoroughly and refill the opening in the sealant layer at both sides of the transit with FIWA® or NOFIRNO® sealant.
The fresh sealant adheres very well to the already cured sealant. Finish the new sealant layer in the same way as done for the initial sealant layer.

Please refer to the Safety Data Sheet for more information about the working environment.

INSTALLATION INSTRUCTIONS FOR RISE® & NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM



Note: time needed for curing of the sealant is dependent on air humidity in combination with the environmental temperature.

STATE-OF-THE ART MULTI-CABLE TRANSIT SEALING SYSTEMS

RISE®

- For fire, gas, smoke and watertight sealing of multi-cable penetrations.
- Compact system. No precise fitting parts.
- No metal parts, no corrosion.
- Most cost-effective way of installation.
- No pre-engineering or special conduit frames.
- No restrictions on cable types and sizes, no insulation in front of the penetration needed.
- Adding or removing cables an easy matter.
- RISE® EXTEND-A-FRAME for upgrading block systems - doubles the usable space!
- RISE® CONDUCTON® for EMC penetrations - high attenuation values - no galvanic corrosion - no aging.
- Proven - for new and upgraded installations.
- The system of choice in shipyards worldwide for more than 25 years!

NOFIRNO®

- System technology based on RISE®.
- Even easier installation.
- Even higher pressure ratings.
- Jet Fire tested for harshest applications.
- Bundled cable sets approved
- Breakthrough - A-class with 15 mm both sides.
- The system of choice for highest fire ratings and harshest environment!

CONTROFIL®

- Newest technology for cable ducting and sealing.
- Newest rubber technology - CRUSHNOF® rubber.
- Shorter conduit depths - flexible composition.
- Prevents overfilling of cable transits.
- Fire tight - watertight.
- Breakthrough - controlled filling of transits.
- The system of choice for neat cable routing in installations.

CET-A-SIL®

- Multi-gland system for electrical cabinets.
- Modular system - sealing plugs and modules.
- Suitable for IP 68 rated equipment.
- Watertight up to 4 meter water column.
- No compression on cable sheathings.
- No metal parts - no corrosion - no O-rings.
- Breakthrough - no disassembling to add cables.
- The alternative system for cable glands.

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