

RISE® MULTI-CABLE TRANSITS: THE RAPID SEALING SYSTEM



APPROVED FIRESTOP
WATER AND GAS TIGHT



CABLE JOINTS, CABLE TERMINATIONS, CABLE GLANDS, CABLE CLEATS
FEEDER PILLARS, FUSE LINKS, ARC FLASH, CABLE ROLLERS, CUT-OUTS

11KV-33KV CABLE JOINTS & CABLE TERMINATIONS
FURSE EARTHING
www.cablejoints.co.uk
Thorne and Derrick UK
Tel: 0044 191 490 1547 Fax: 0044 191 477 5371
Tel: 0044 117 977 4647 Fax: 0044 117 977 5582

RISE

**MAXIMUM SIMPLICITY OF USE
OPTIMUM FLEXIBILITY
OUTSTANDING PERFORMANCE**

**Websites: <http://www.actifoam.com>, www.beele.com, www.csdplugs.com, www.firsto.com,
www.rise-systems.com, www.riswat.com, www.slipsil.com and www.yfestos.com**

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- brochure code** : RISEcable/hb/en/mar

BEELE ENGINEERING BV CSD INTERNATIONAL BV

BEELE Engineering and CSD International have been working in the field of water and gas tight and fireproof sealing of conduits for pipes and cables for more than 30 years. In the field of passive fire prevention, we have invested substantial amounts of money in the development of systems which are capable withstanding fires for extended periods of time. Passive fire prevention is a very complicated matter due to the fact that cable and pipe penetrations have to be designed to the actual circumstances at site and not for a laboratory test. In case of a catastrophe penetrations are subject not only to flame erosion and very high temperatures, but also

to mechanical loads due to collapsing cableways and possibly a jet of fire-fighting water. This means that the performance in actual situations can differ dramatically from that in a regular fire test. In fact, the systems could only be applied as tested to guarantee the required fire safety.

And this means discussions and limitations!

We have ensured that our systems will function under all circumstances, and the classification societies have awarded us signed and stamped installation drawings of our sealing systems. Approved for steel and aluminium partitions. Guaranteed safety in your installation will be the result.

The R&D department of BEELE Engineering is constantly working in the field of rubber and systems techniques to optimize the existing systems and to develop new concepts for cable and pipe conduits on board of vessels and offshore installations. Although installation of the CSD sealing systems is in fact an easy matter, a full training programme can be given in-house by our engineers. Because the advantages and possibilities of passive fire prevention and evacuation signposting can most effectively be discovered in an environment that matches the practical situation as closely as possible, we have constructed an unique research and development centre. As far is known, this R&D centre is the only institute world-wide where visitors can experience for themselves all the aspects of fire prevention and evacuation signposting systems.



Above an impression of the research and development centre with a training and schooling institute for passive fire prevention products and systems and for the improvement of evacuation signposting systems in buildings and on board ships. The centre consists of a presentation theatre seating up to 45 persons, and a mock-up covering about 500 square metres in which various evacuation signposting systems are installed to enable their effectiveness to be

determined in the dark.

The behaviour of escaping persons inside the test facility are recorded from a separate technical area (with an associated showroom) by means of infra-red cameras and an audio-video system.

In addition the centre comprises three laboratories with a total surface area of about 300 square metres in which, respectively, large-scale fire tests, mechanical tests, and light emission investigations are performed.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

***RISE® multi-cable penetrations:
based on high-tech ACTIFIRE® technology***

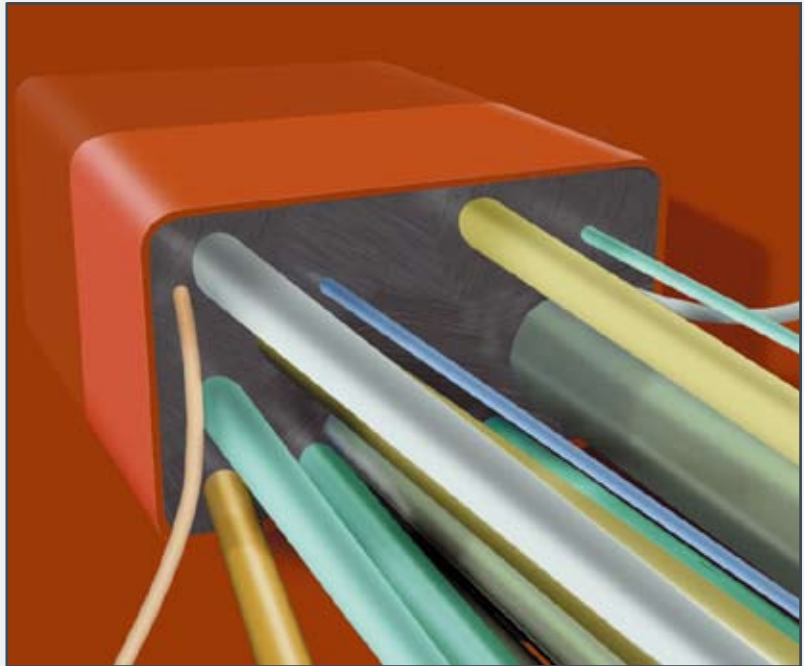
RISE® multi-cable penetrations are an alternative for the casting compounds and block systems used in fire-rated/watertight bulkheads and decks.

Very easy to install.

Time saving, space saving, weight saving.

The very limited amount of different parts makes this system easy to handle on site. Use is made of rubber inserts (placed around the cables) and filler sleeves. The FRR/LEHF (fire resistant rubber/low grade of expansion, halogen free) rubber of the sleeves expands 5-10 times its original volume when exposed to fire. On both sides of the penetration a layer of FIWA® sealant (fire resistant, water repellent) is applied.

Only halogen free components.



***RISE® multi-cable penetrations:
ultimate flexibility, maintenance friendly***



RISE® multi-cable penetrations offer a most simple way of installation. No precise positioning of the cables in the transit needed.

The RISE® sealing system allows cables to be ducted through conduit openings in a bent, curved or oblique way without any adverse impact on sealing performance.

The RISE® sealing system gives easy access to add or remove cables in a later stage without the necessity to disassemble the whole penetration. Just cut away a piece of the FIWA® layer at both sides of the penetration, pull the cable through and refill the opening in the sealant layer.

It is that simple!

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

***RISE® multi-cable penetrations:
based on high-tech ACTIFIRE® technology***

SYSTEM WILL BE ACTIVATED WHEN EXPOSED TO FIRE

ALL COMPONENTS ARE TOTALLY HALOGEN FREE

IN CASE OF FIRE: NON-TOXIC, LOW SMOKE INDEX

CE (MED) CERTIFICATES FOR A-0 UP TO A-60

CERTIFIED FOR H-0 UP TO H-120

APPROVED WATER TIGHT UP TO 2.5 BAR

APPROVED GAS TIGHT UP TO 1 BAR

CAN BE USED IN ARCTIC CONDITIONS

HIGH LEVEL OF EMC AND SOUND DAMPING

SHOCK AND VIBRATION PROOF

UP TO 50 YEARS SERVICE LIFE

CAPABLE OF ABSORBING TEMPERATURE CHANGES

WEATHERING, UV AND OZONE RESISTANT

NO PRE-ENGINEERING NEEDED

NO SPECIAL CONDUIT FRAMES

MINIMIZED NUMBER OF STRUCTURAL COMPONENTS

MOST COMPACT INSTALLATION

EXTREMELY SIMPLE TO INSTALL

NO INSULATION IN FRONT OF THE PENETRATION

SHORTEST POSSIBLE CONDUIT LENGTH

LESS OVERALL INSULATION NEEDED

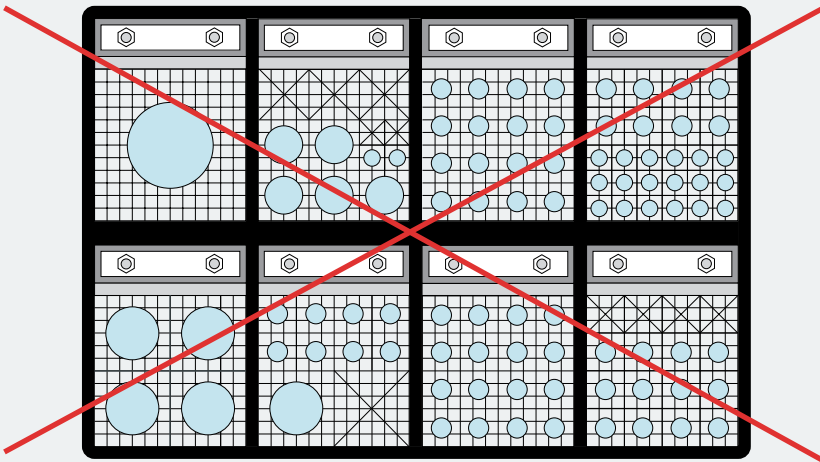
CAN BE USED FOR CABLE AND PIPE ENTRIES

APPROVED FOR STEEL AND ALUMINIUM PARTITIONS

MAINTENANCE FRIENDLY

RISE[®] MULTI-CABLE TRANSITS: THE RAPID[®] SEALING SYSTEM

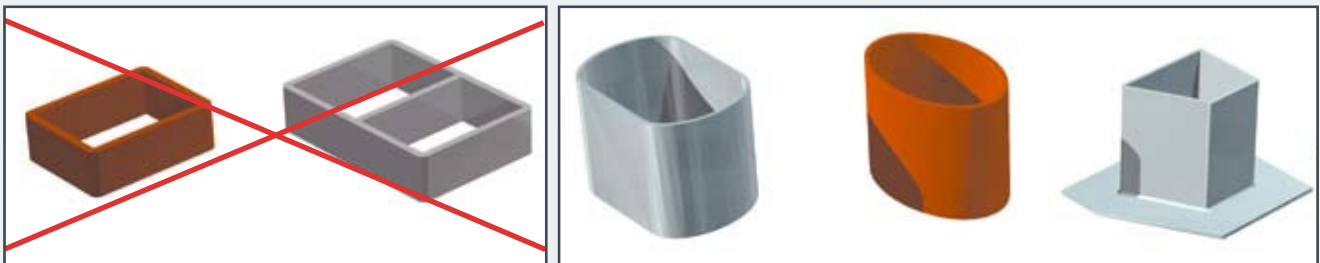
*no time-consuming lay-outs for a
RISE[®] multi-cable penetration*



Since the cables can be ducted in random order through the conduit frame or sleeve it is not necessary to create lay-outs for the installers to be sure that the cables are ducted at the right spot in the conduit. We have a software program available for calculating the size of the conduit opening and the amount of insert sleeves and sealant for each RISE[®] penetration. All penetrations can be put in a database to calculate the total amount for a project (see page 39). Could it be easier?

*no time-consuming lay-outs for a
RISE[®] multi-cable penetration*

*no special conduit frames needed for a
RISE[®] multi-cable penetration*

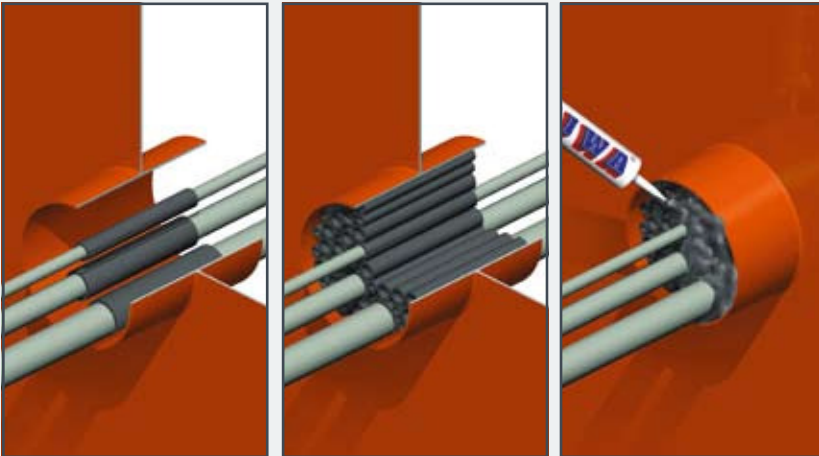


An important benefit of being able to use round sleeves instead of square or rectangular ones is the exclusion of welding stresses in the corners and for the improved overall mechanical strength! The coamings can be made by the yard/installer: more benefits and cost-savings.

*whatever conduit sleeve you have around
will do for a RISE[®] multi-cable penetration*

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

*time-saving installation of
RISE® multi-cable penetrations*



It's so simple. Just place the length-wise split insert sleeves around the cables, fill up any spare space with empty sleeves and seal it off on both sides. No work for specialists. What could be easier!

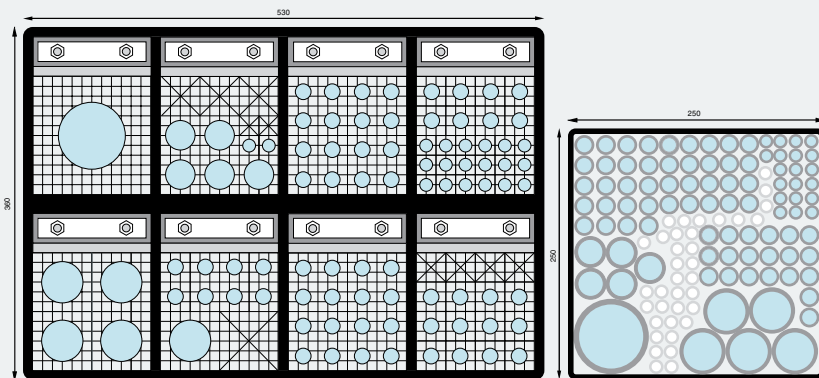
Calculate the right way, save time and money.

Ask for the installation video showing that a transit measuring 450x130 mm with 63 cables is sealed within 40 minutes.

Substantial cost-savings.

*no bolts, no nuts, no precise fitting work
with RISE® cable penetrations*

*space and weight saving properties of
RISE® multi-cable penetrations*



same amount of cables in less than half the conduit size with RISE®

Prefabricated sealing systems are sealed with solid rubber parts. Due to the block sizes a substantial separation of the cables might occur. Fire resistant rubbers are highly filled and therefore heavy. Totally different with RISE®. The conduit opening can be substantially reduced when compared to block systems, due to the high fill capacity of RISE®, and any spare space in the conduit is filled with hollow filler sleeves. Scarcely any weight is added to the penetration even if the conduit is a bit oversized.

*substantial overall time-savings with
RISE® multi-cable penetrations*

RISE[®] MULTI-CABLE TRANSITS: THE RAPID[®] SEALING SYSTEM

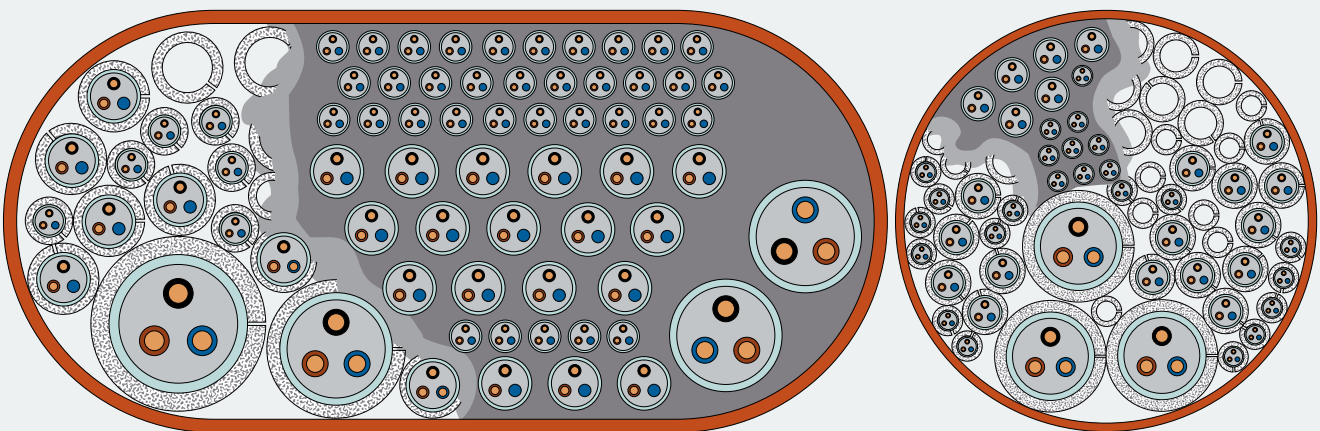
*fire tested on full scale bulkhead and deck
in accordance with IMO Res. A.754(18)*



Generally, multi-cable transits have to be installed as tested. It will be clear that a transit tested with only a couple of small cables will not meet an A60 classification when fully packed with heavy conductor cables. RISE[®] multi-cable penetrations are tested with all types of cables, from communication to power cables with small dimensions, up to cables with a dimension of 85 mm, armoured and non-armoured, at full load and according to the latest IMO Resolution A.754(18).

*RISE[®] is successfully tested with a wide variety
of cable types and sizes up to 85 mm OD*

*RISE[®] is successfully tested with more than
100 cables to enable a high cable fill capacity*

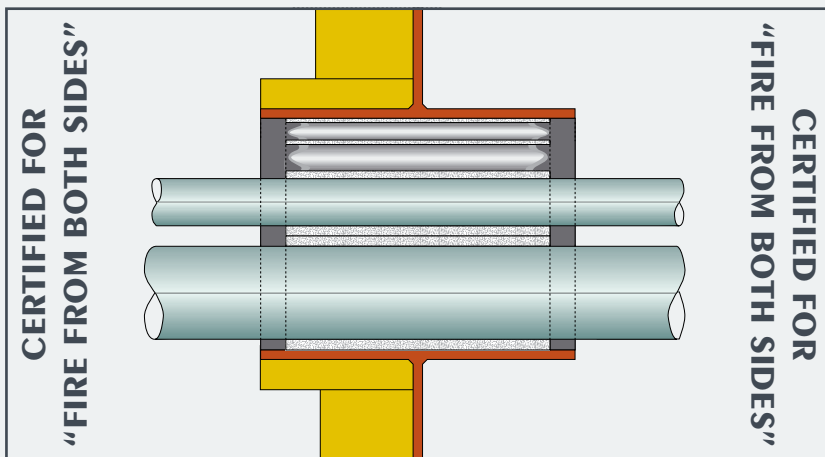


RISE[®] is designed to duct the maximum allowable filling rate of 40% as defined in the IMO Res. A.754(18).

*most compact installation ever with a
RISE[®] multi-cable penetration*

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

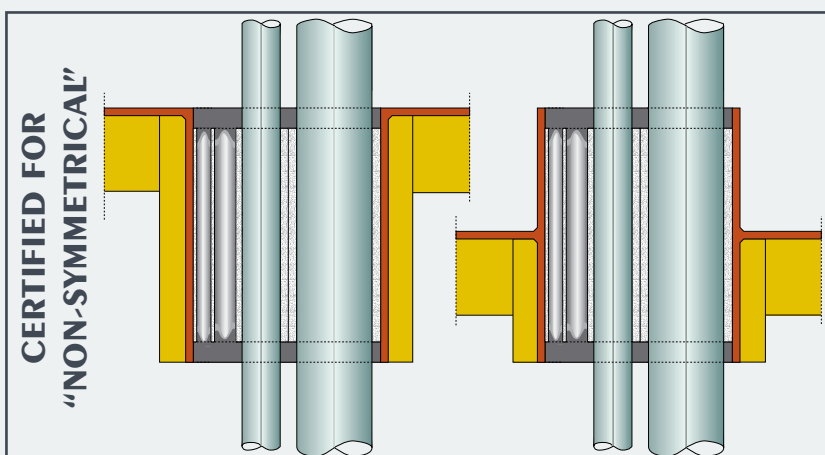
*fire tested with insulation at one side only
in accordance with IMO Res. A.754(18)*



Section A.IV/2.2.1 of IMO Res. A.754(18) states "A bulkhead which includes the cable transit should be constructed in accordance with 2.1.1 of the recommendation and *should be insulated to class A-60 on the stiffened side, which should be the face which is not exposed to the heating conditions of the test*". Systems tested with insulation at the exposed side have a limitation in the application. The bulkhead must then be totally insulated at both sides! This is not the case with RISE®.

*shortest possible conduit length, less
insulation with RISE® multi-cable penetrations*

*fire tested in worst case scenarios
in accordance with IMO Res. A.754(18)*

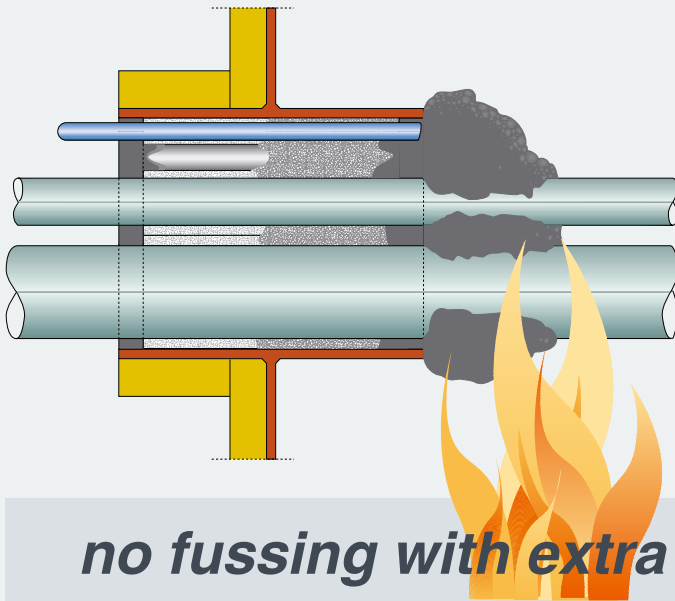


The easiest way to pass a deck test is to place the transit totally above deck. **Worst case for deck penetrations is to place the transits totally below deck.** And that is exactly the way the penetrations generally are installed! Cable penetrations should be applied as tested. This means that penetrations tested only above deck should not be placed totally below deck. RISE® multi-cable penetrations are tested "worst case" and can be welded in above, below, midway.

*any position of the transits will do for
a RISE® multi-cable penetration*

RISE[®] MULTI-CABLE TRANSITS: THE RAPID[®] SEALING SYSTEM

RISE[®] is based on ACTIFIRE[®] technology and will be activated when exposed to fire



All classes above A-0 or H-0 must have a T-rating (not exceeding 180 °C/400 °F at the unexposed side). **For every technician it will be clear that when ducting cables containing a lot of copper, the length of the penetration is a determining factor here.** RISE[®] cable penetrations have been tested with heavy conductor cables. The length of the conduit could be minimized by the use of the expanding sealant/rubber, which lengthen the penetration when exposed to fire. For A-class penetrations the conduit sleeve/frame needs to be insulated only at the insulated side of the bulkhead or at the lower side of the deck.

no fussing with extra insulation in front of the penetration and in between the cables

RISE[®] materials expand massively when exposed to heat or flames



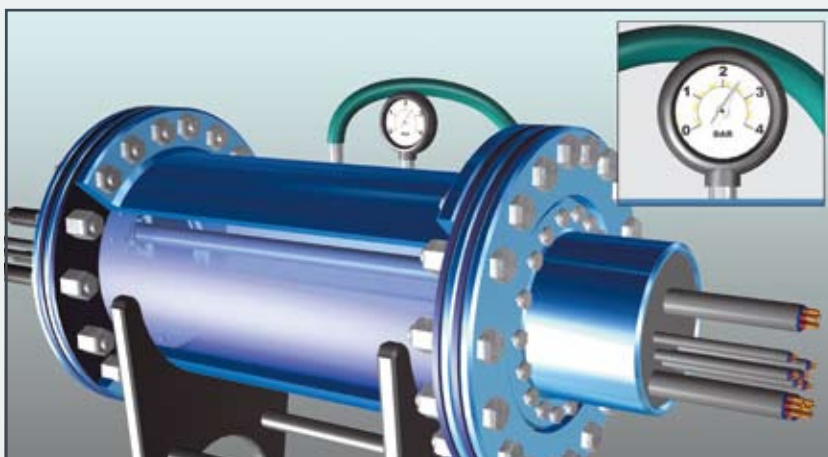
Generally, rubbers used for multi-cable transit systems are made of a more or less self-extinguishing compound. The drawback, however, is that these rubbers will start charring under heat and slowly but surely will shrink due to the loss of the water content in the rubber. **Not with RISE[®]!**

The rubber starts vulcanizing when exposed to heat, forming a solid rubber mass inside the penetration and an expanding char on all exposed surfaces.

all gaps will be filled automatically by the “self-correcting” RISE[®] cable penetration

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

*approved gas and water tight
RISE® multi-cable penetration*



Due to the high bonding strength and flexibility of the FIWA® sealant, the penetrations could be subjected to certified pressures up to 2.5 bar (35 Psi) without any leakage. Where rubber parts have to be strongly compressed to obtain water tightness, they will soon show permanent deformation. Also, the cable sheathings are exposed to this heavy load and will creep. This is not the case with RISE®. **Tight stays tight, with no compressive forces on the cables! CERTIFIED.**

*no compression needed to obtain a watertight
RISE® multi-cable penetration*

*RISE® cable penetrations are artificially
aged for a service life up to 50 years*



What will the performance of a fire safe multi-cable penetration be after years of service? **Remember that safety is at stake here.** This is the reason why the RISE® system has been artificially aged up to 50 years, after which the expanding properties of the rubber and the sealant were compared with new material. Only minor changes were noted! Temperature cycle on the RISE® system from -40 °C to ambient to +120 °C, and back, showed that the adhesion of FIWA® holds the system tight!

*RISE® multi-cable penetrations are exposed
to thermal cycling tests with positive results*

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

additional safety with RISE® multi-cable penetrations

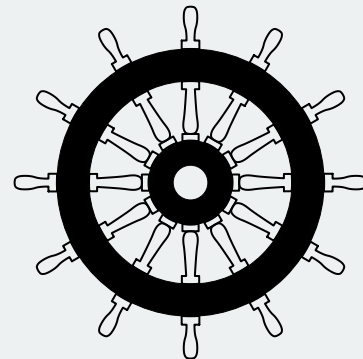
| | |
|--|-----------|
| * Naval Engineering Standard 711: Issue 2: Determination of the smoke index | passed |
| * Naval Engineering Standard 713: Issue 3: Determination of the toxicity index | passed |
| * ISO 4589 - 2 : 1996 Determination of the oxygen index | passed |
| * ISO 4589 - 3 : 1996 Determination of the temperature index | passed |
| * IMO Resolution A.653(16) Determination of low flame spread characteristics | passed |
| * Artificial ageing test Determination of properties after 25-50 years | passed |
| * Thermal cycling test Determination of adhesion at +120 °C / ambient / -40 °C (+212 °F / ambient / -40°F) | passed |
| * Naval Engineering Standard 510: Issue 2, Draft B: Shock (100 g _n) and vibration test (5-350 Hz) combined with 1 bar leak test afterwards | passed |
| * Naval Engineering Standard 814: Shock test, acceleration level 8378/s/s in two directions combined with 6.9 bar leak test afterwards | passed |
| * Naval Engineering Standard 510: Issue 2, Draft B: Leak test after a one hour fire test | passed |
| * General classification Helium gas leak test up to 1 bar | passed |
| * Nordtest method NT ELEC 030, modified for conducted attenuation | 20-100 dB |
| * Sound damping test According to EN ISO 717-1:1996 | 70 dB |
| * Rapid rise fire test According to Mil-P-24705 of the US Navy | passed |
| * Dynamic cycling test Displacement 10 mm, 100,000 cycles, frequency 0.5 Hz | passed |

To prove the outstanding quality and safety of the RISE® cable and pipe penetrations, the basic materials (FIWA sealant and FRR/LEHF rubber) have been subjected to additional tests. These tests have been carried out by official institutes: Warrington Fire Research and RAPRA Technologies in the United Kingdom, the Fire Technology Institute of the University of Ghent in Belgium and TNO Laboratories in The Netherlands. The RISE® cable and pipe penetrations have also been subjected to additional tests at official institutes such as DELTA Danish Electronics, Light and Acoustics Testing in Denmark, QinetiQ in England, South West Research Institute in USA and in-house under survey of the classification societies. To name some: sound tests, shock and vibration tests, rapid temperature rise tests, leak tests after a one hour fire test, EMC tests, A-0 test without insulation, dynamic cycling test, several configurations on watertightness and a helium gas leak test.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM



EC (MED) certificates according to EUROPEAN UNION COUNCIL DIRECTIVE 96/98 EC on MARINE EQUIPMENT have been issued by BUREAU VERITAS, certificates N° 09156/B0 EC for multi-cable penetrations and extended multi-cable penetrations, N° 11301/A2 EC for EMC multi-cable penetrations, N° 11302/A2 EC for busbar penetrations and certificates N° 10035/B0 EC and N° 10710/A6 EC for single and multi-pipe penetrations for metallic and plastic pipes.



Approval certificate according to Defence Standard 07-225/1, Number S&DU/BCC/30/13/003 has been issued by QinetiQ/UNITED KINGDOM.

US Navy Approval Letter 9300 9342/Ser085 issued by Naval Surface Warfare Center, Carderock Division, based on fire tests performed in accordance with MIL-P-24705.

AMERICAN BUREAU of Shipping
BUREAU VERITAS
CHINA CLASSIFICATION SOCIETY
CHINA CORPORATION REGISTER of SHIPPING
DET NORSKE VERITAS
GERMANISCHER Lloyd
KOREAN REGISTER of SHIPPING
Lloyd's REGISTER of SHIPPING
Nippon Kaiji Kyokai
RUSSIAN MARITIME REGISTER of SHIPPING
TRANSPORT CANADA
US COAST GUARD

RISE
CERTIFIED BY
THE MAJOR
CLASSIFICATION
SOCIETIES

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

*only two different components for a
RISE® cable penetration: sleeves and sealant*



| sleeve type | cable diameter | sleeve length (standard) | sleeve length (standard) | wall thickness |
|-------------|----------------|--------------------------|--------------------------|----------------|
| 12/6 | 5 - 7 | 160 | 210 | 3 |
| 14/8 | 7 - 9 | 160 | 210 | 3 |
| 16/10 | 9 - 11 | 160 | 210 | 3 |
| 18/12* | 11 - 13 | 160 | 210 | 3 |
| 20/14 | 13 - 15 | 160 | 210 | 3 |
| 22/16 | 15 - 17 | 160 | 210 | 3 |
| 27/19* | 17 - 21 | 160 | 210 | 4 |
| 31/23 | 21 - 25 | 160 | 210 | 4 |
| 35/27 | 25 - 29 | 160 | 210 | 4 |
| 39/31 | 29 - 33 | 160 | 210 | 4 |
| 46/36 | 33 - 39 | 160 | 210 | 5 |
| 52/42 | 39 - 45 | 160 | 210 | 5 |
| 58/48 | 45 - 51 | 160 | 210 | 5 |
| 64/54 | 51 - 57 | 160 | 210 | 5 |
| 70/60 | 57 - 63 | 160 | 210 | 5 |

* filler sleeves are supplied non-split for ease of filling dimensions in mm

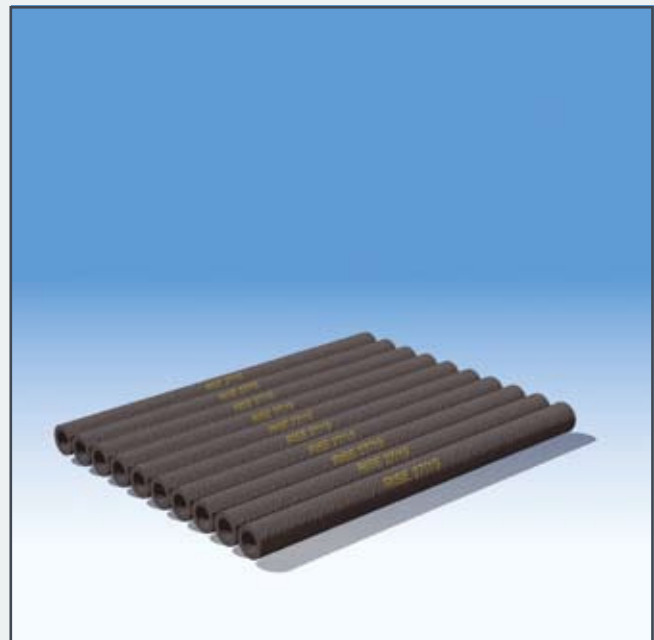
RISE® cable penetrations: non-toxic, halogen free components

For the RISE® insert and filler sleeves, a special rubber compound was developed known as FRR/LEHF (fire resistant rubber/low grade of expansion, halogen free). When this rubber is exposed to fire or temperatures in excess of 200 °C it expands five to ten times its original volume. During the expansion of the rubber a carbonized mass is formed, which has good properties of thermal insulation.

The FRR/EHF rubber is absolutely HALOGEN FREE (tested according to Naval Engineering Standard NES 713: Issue 3). Furthermore the FRR/LEHF rubber has a low smoke index (NES 711: Issue 2: 1981) and a very high oxygen index (ISO 4589-2: 1996).

The wall thickness of the sleeves is so chosen as to satisfy the requirements governing adequate separation of the cables.

Sometimes conduits are extremely oversized. For ease of filling of larger remaining spaces the filler sleeves 18/12 and 27/19 can be supplied as non-split multi-units of 10 pieces bonded together.



RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

*only two different components for a
RISE® cable penetration: sleeves and sealant*



FIWA® is a fire-resistant sealant based on a single component silicone compound.

FIWA® is also water-repellent

High bonding strength

Weathering, UV and Ozone resistant

In the event of fire or at temperatures in excess of 200 °C the sealant expands to about five to ten times its original volume. During this process a porous mass is formed, which has excellent thermal insulation properties. In contrast to conventional materials that swell under severe heat exposure, the expansion of FIWA® sealant is not caused by intumescence, but by a chemical process (Intumescence means the occurrence of volume enlargement under the effect of heat, caused by the surface structure being inflated by fumes originating from the product). The advantage of this is that the expansion of FIWA® is not accompanied by formation of large amounts of fumes.

*optimum combination of viscosity, flow and
bonding capacity of FIWA® sealant*

PRODUCT INFORMATION

| | |
|-------------------------|---|
| 01) colour | dark grey |
| 02) specific gravity | 1.26 ± 0.03 g/cm ³ |
| 03) curing of top layer | 1 - 2 hours |
| 04) service temperature | -60 °C up to +160 °C |
| 05) tensile strength | 0.80 MPa |
| 06) elongation at break | 80% |
| 07) hardness | 40 Shore A |
| 08) elasticity | approx. 25% |
| 09) fire class | IMO Res. A.653(16) |
| 10) ageing | up to 50 years service life |
| 11) supplied in | cartridges, containing 310 ml |
| 12) storage | to be stored cool and dry min/max temperature = +5/+30° C |
| 13) storage life | approx. 9 months |



**FIWA is absolutely
HALOGEN FREE
(tested according to
Naval Engineering
Standard NES 713:
Issue 3).**

**Furthermore FIWA
has a low smoke in-
dex (NES 711: Issue 2:
1981) and a high
oxygen index (ISO
4589-2: 1996),**

**and low flame spread
characteristics accor-
ding to IMO Resolution
A.653(16).**

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

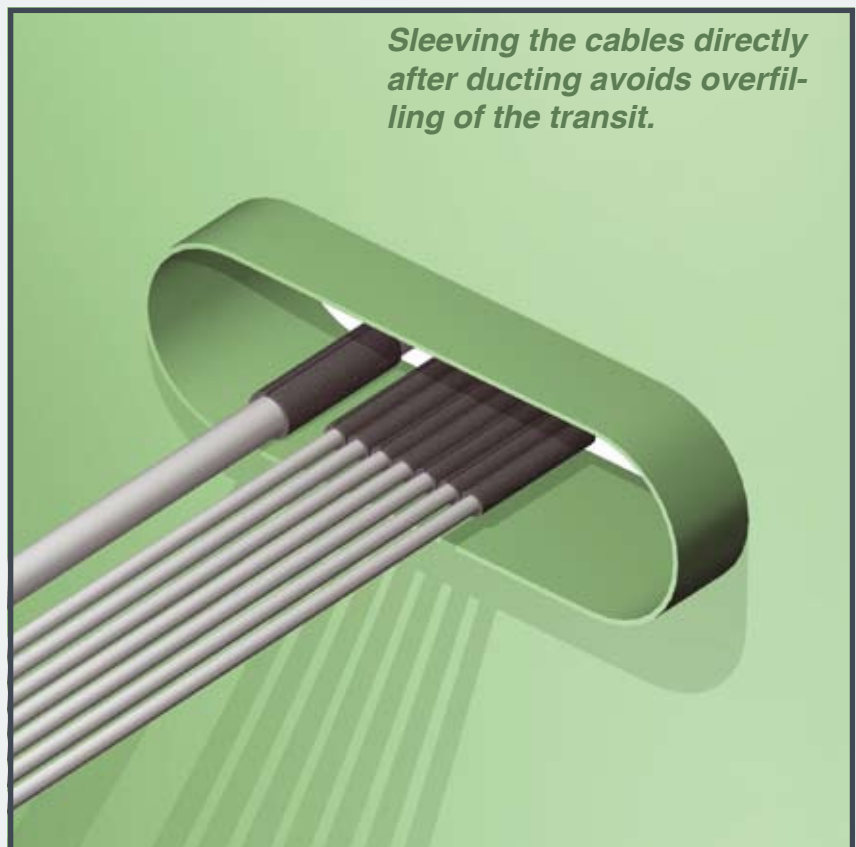
1) The cables can be ducted through the conduit sleeve/frame in random order. It is most important that they are not pulled too tight in order not to hamper their separation when RISE® insert sleeves are inserted. Ask for our free installation video.



QUALITY SYSTEM APPROVAL
SMS.W.I.CE.D/2357/B2 AND
ISO 9001:2001 CERTIFICATE
NLDGNG003470 ISSUED
BY BUREAU VERITAS



2) After the cables have been ducted, RISE® insert sleeves are applied around each cable. The insert sleeves are split length-wise and can therefore be fitted around the cables in front of the conduit. See above.

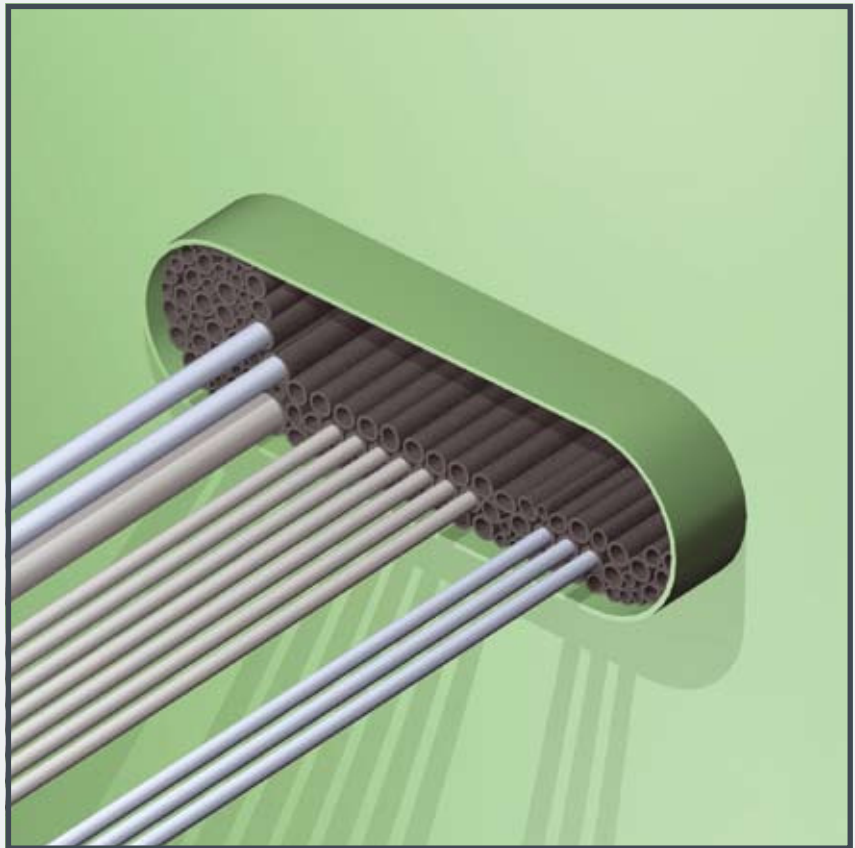


Sleeving the cables directly after ducting avoids overfilling of the transit.

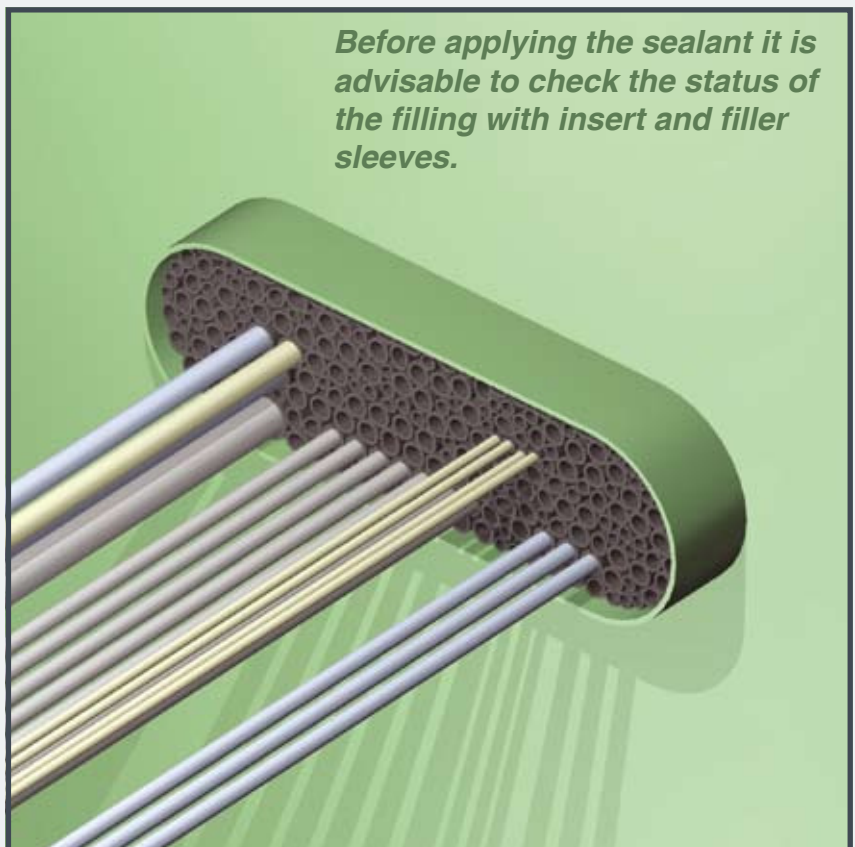
RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

3) The remaining free space in the conduit is filled with RISE® filler sleeves type 27/19 and 18/12.

For ease of filling the RISE® filler sleeves are delivered non-split. The ratio 27/19 to 18/12 should be about 2:1.



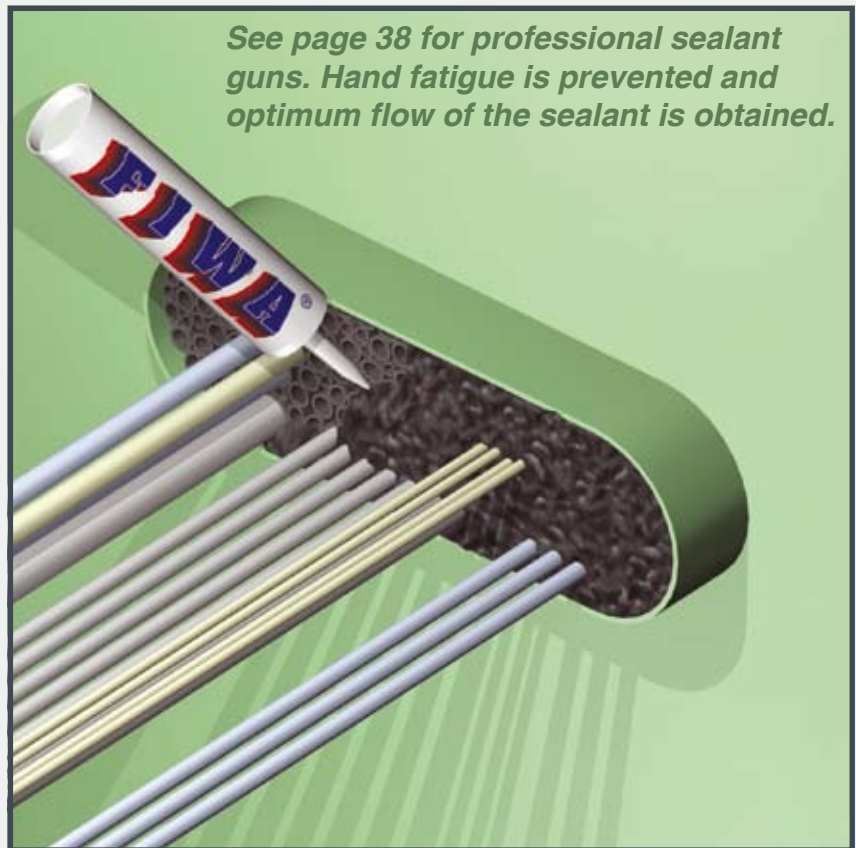
4) Push the insert/filler sleeves into the conduit in such a way as to leave about 20 mm free space at the front. The whole set of insert and filler sleeves should tightly fit into the conduit to offer sufficient mechanical stability.



RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

5) A 20 mm thick layer of FIWA® sealant is applied at each side of the conduit. Clean and dry the conduit opening and the cables thoroughly and remove any dirt, rust or oil residues before applying the sealant.

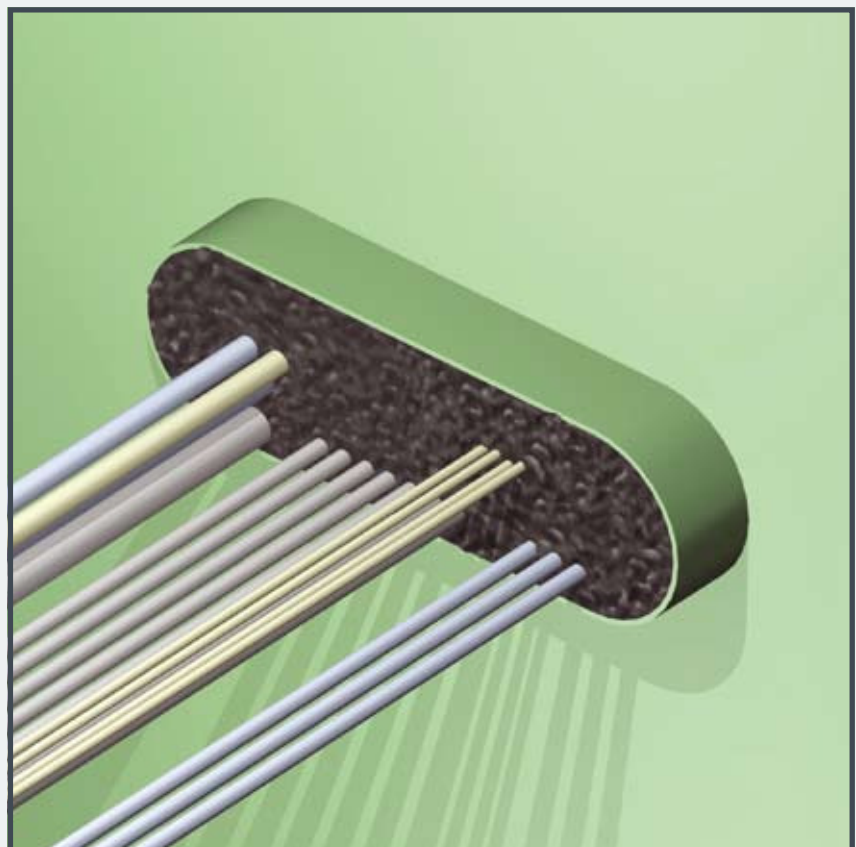
RISE



CSA

6) The conduit should be overfilled with FIWA® sealant, because some sealant will be pushed between and into the empty insert sleeves during further finishing. This will contribute to obtain higher tightness ratings.

RISE



RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

7) 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 soapwater!

The logo for RISE, featuring the word "RISE" in a stylized, bold, sans-serif font. The letters are white with a red-to-orange gradient and a black outline. The "R" and "S" are larger and more prominent.The logo for CSA, consisting of the letters "CSA" in a bold, blue, sans-serif font. The letters are interconnected, with the "C" and "S" sharing a vertical stroke.

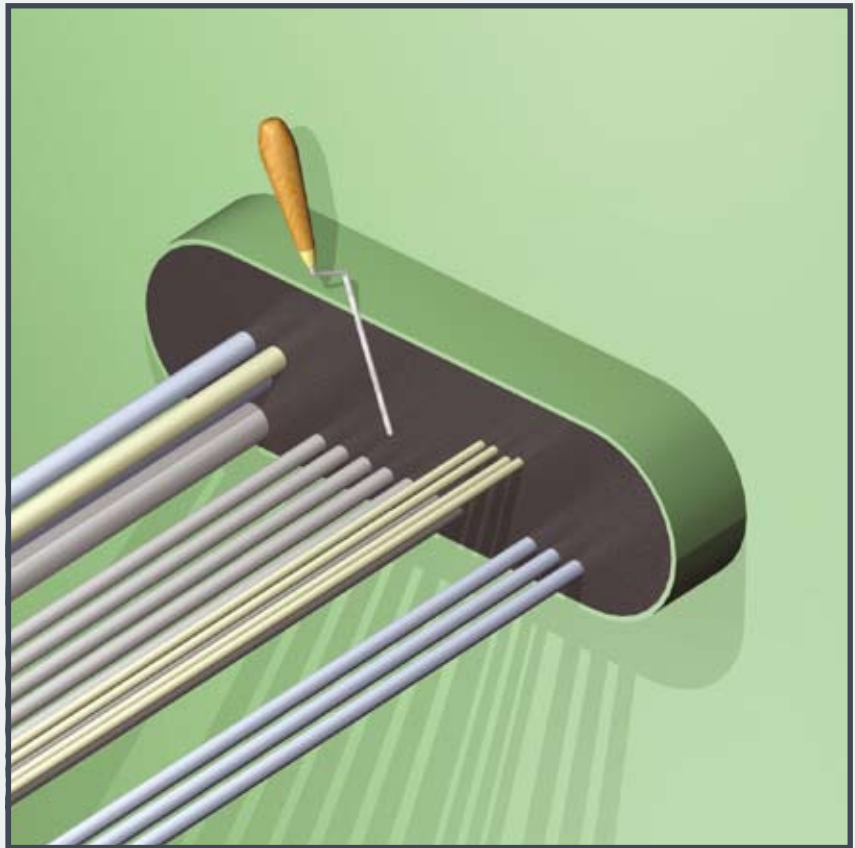
8) The cloth is then used to press down the sealant layer. People with sensitive skin should use gloves when working with the FIWA®. Please refer to the Safety Data Sheet for more information.

The logo for RISE, featuring the word "RISE" in a stylized, bold, sans-serif font. The letters are white with a red-to-orange gradient and a black outline. The "R" and "S" are larger and more prominent.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

9) The FIWA® sealant between the cables is pressed down and smoothed by hand or with a spatula or putty knife.

This is essential to obtain an effective gas- and water tightness.

The logo for RISE, featuring the word "RISE" in a stylized, bold, sans-serif font. The letters are white with a red-to-orange gradient and a black outline. The "R" and "S" are particularly large and prominent.The logo for CSA, consisting of the letters "CSA" in a bold, blue, sans-serif font. The letters are white with a blue outline and a slight shadow effect.

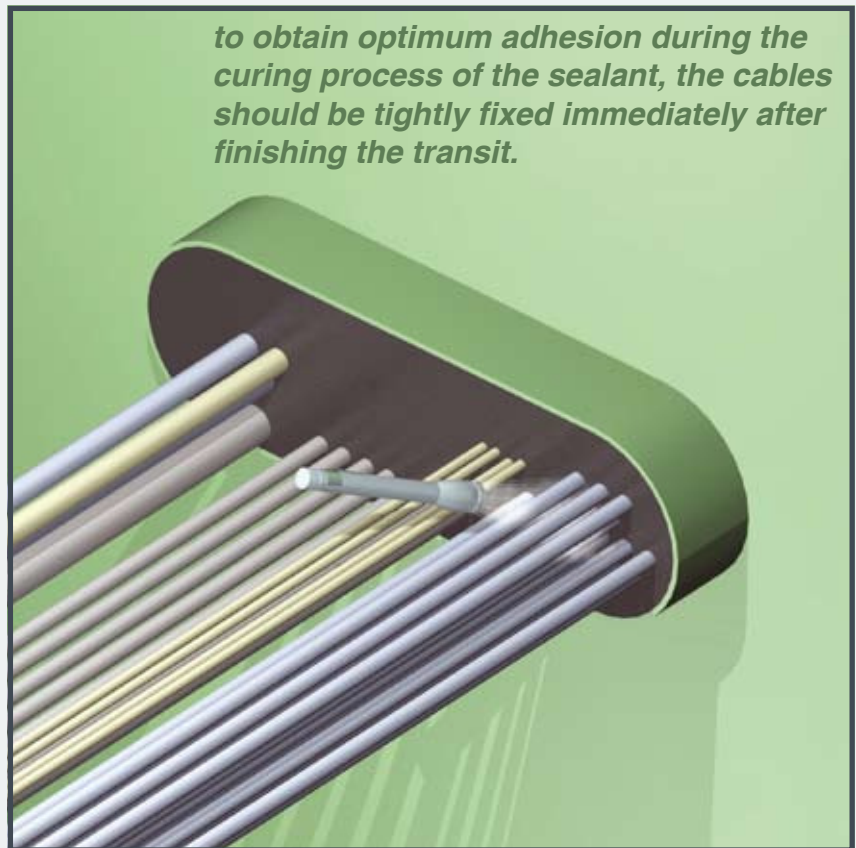
10) The surface can also be smoothed by hand. Just wet the hand thoroughly with soap and water.

No dirty hands when working with FIWA® and a very neat surface is the result. People with sensitive skin should use gloves when working with FIWA®.

The logo for RISE, featuring the word "RISE" in a stylized, bold, sans-serif font. The letters are white with a red-to-orange gradient and a black outline. The "R" and "S" are particularly large and prominent.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

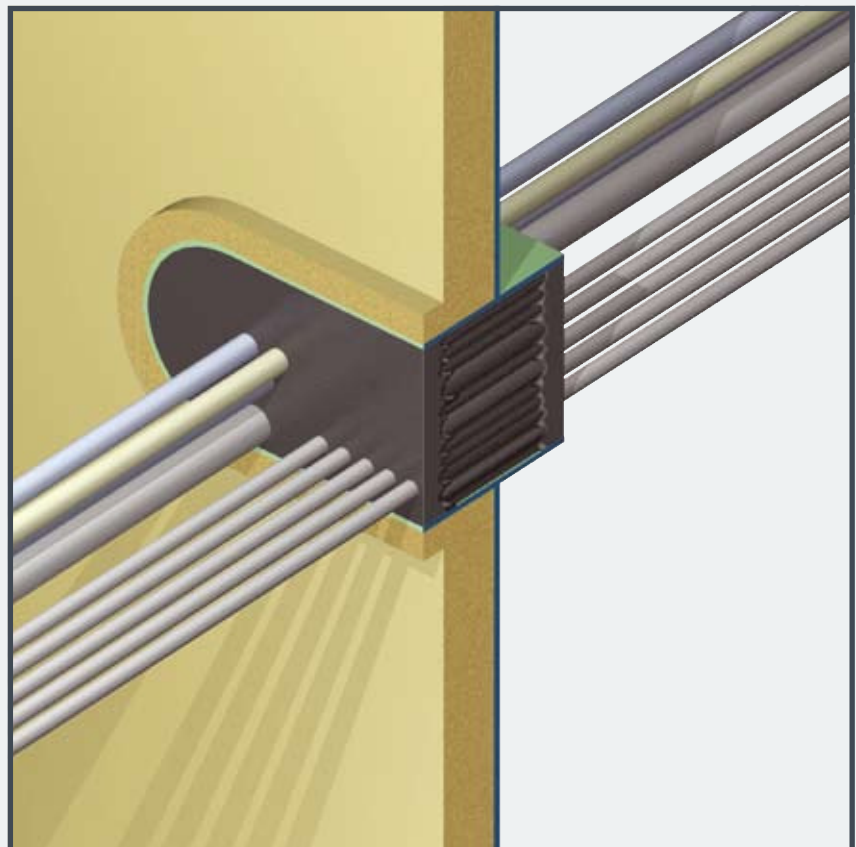
11) After smoothing is finished a last check should be taken if sufficient sealant is applied in between the cables especially at penetrations with larger amounts of cables. This is most important specially for water and gastight penetrations



to obtain optimum adhesion during the curing process of the sealant, the cables should be tightly fixed immediately after finishing the transit.



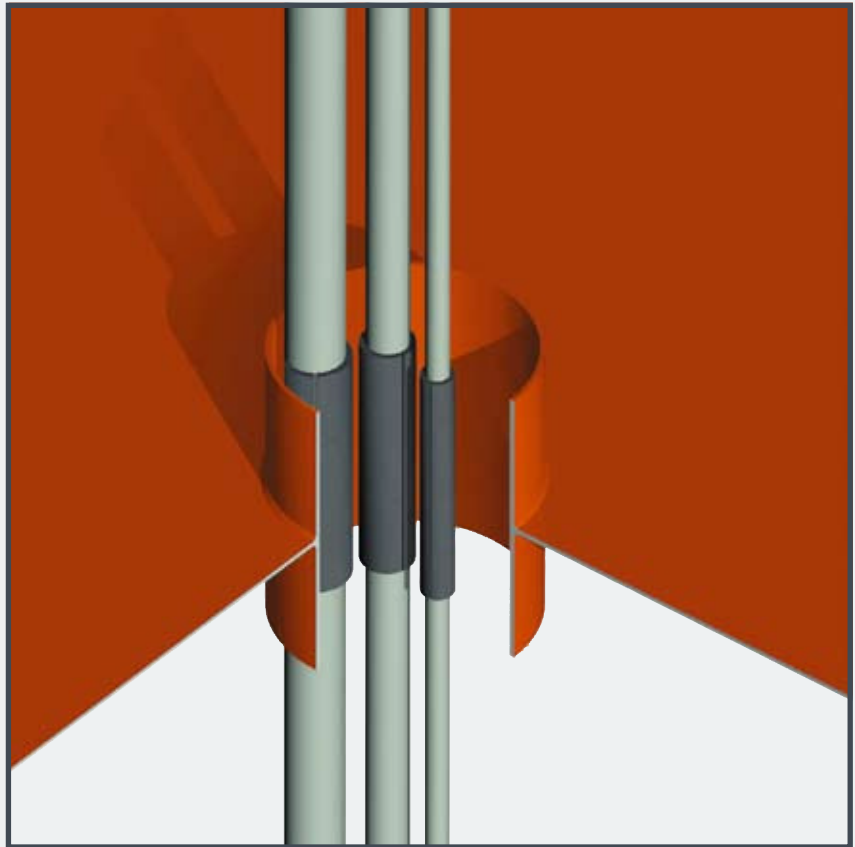
12) For A-class penetrations the conduit sleeve/frame needs to be insulated only at the insulated side of the bulkhead or at the lower side of the deck. No extra insulation needed in front of the penetration and/or in between the cables.



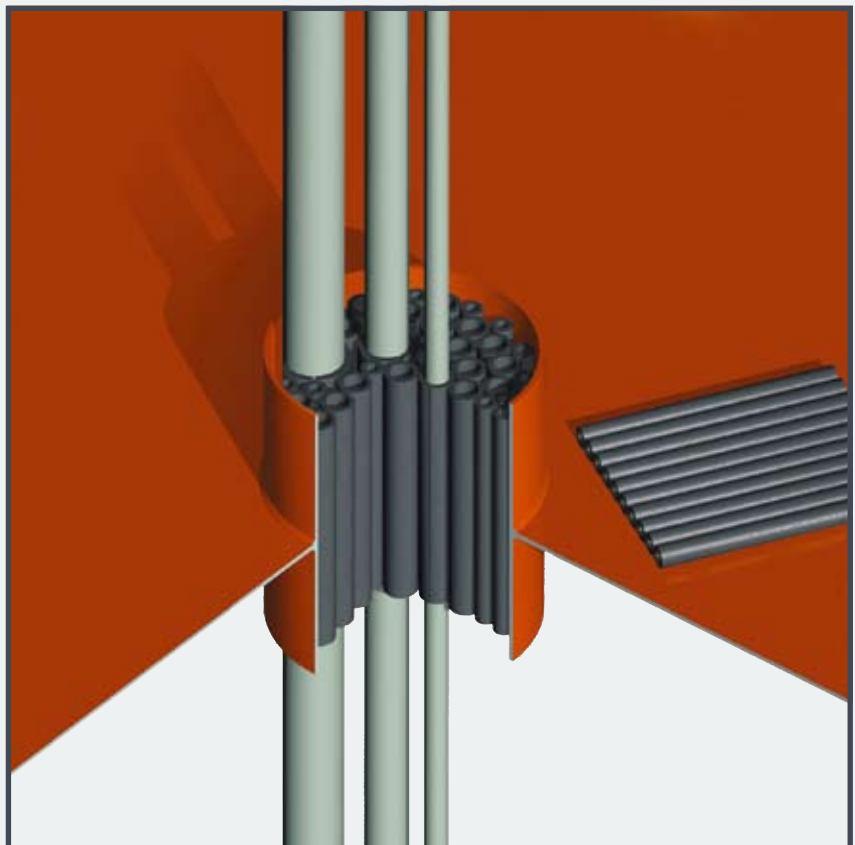
RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

13) For vertical conduits it is advisable to select the insert sleeves a bit under-sized.

They will then cling to the ducted cables in such a way that they are prevented from sliding down.

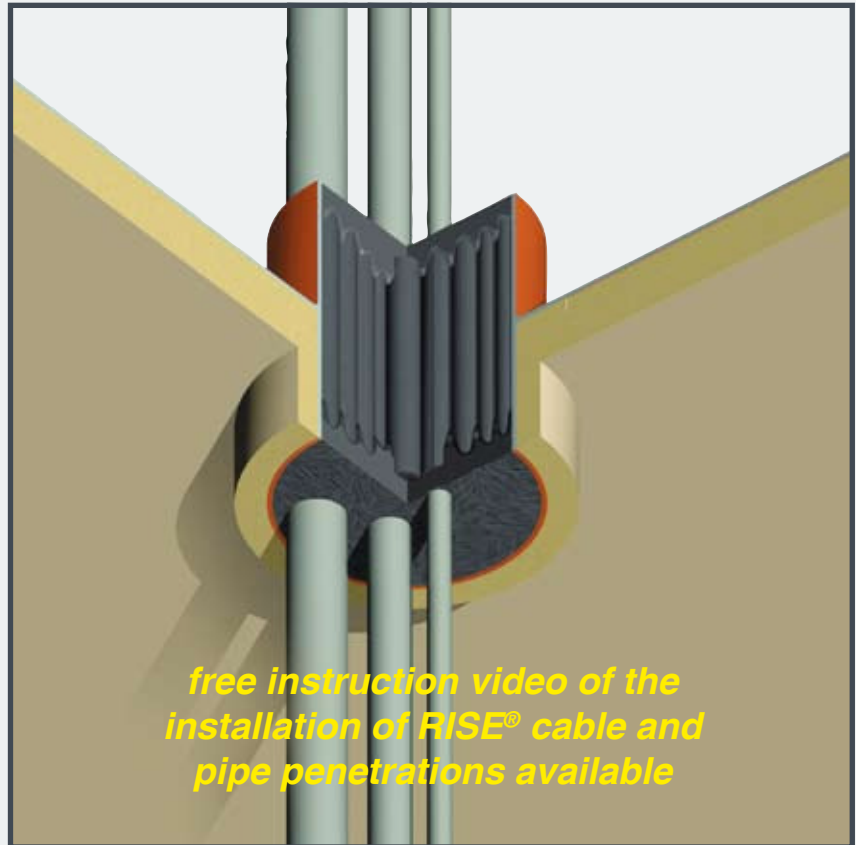


14) To prevent the filler sleeves from falling out of the conduit sleeve/ frame, they are bundled together to form a compact bundle. They are available in bundles of ten pieces. Contrary to the insert sleeves, filler sleeves are delivered in a non-split version.

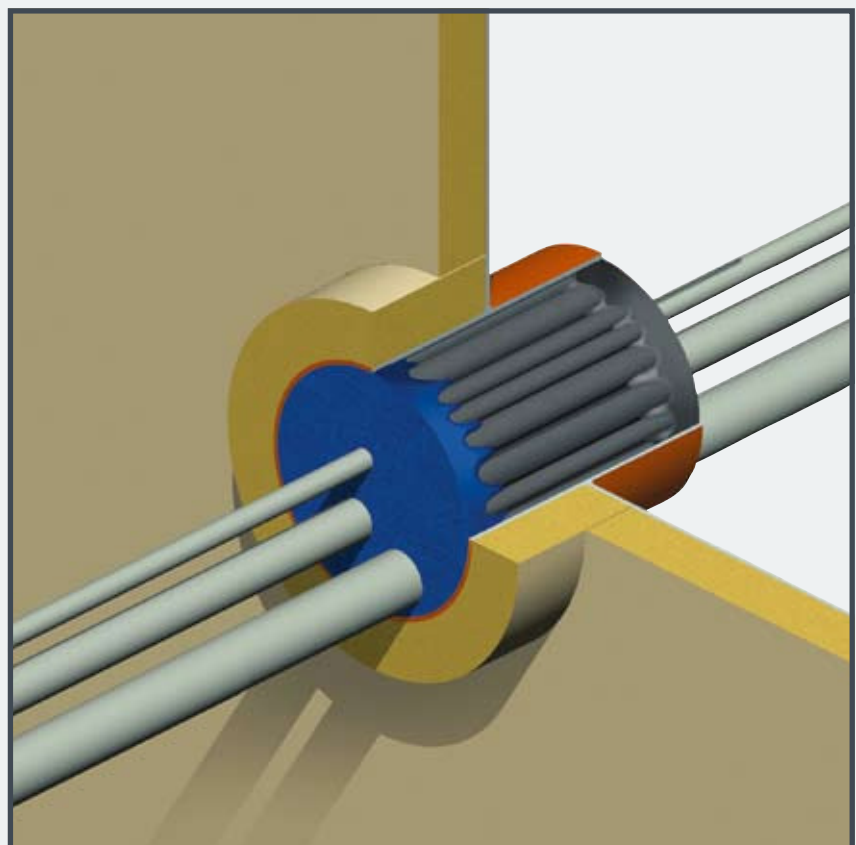


RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

15) The optimized viscosity and the superb adhesion properties of the FIWA® sealant make applying the sealant overhead an easy matter. FIWA® sealant does not sag and will not drip off.

The logo for RISE, featuring the word "RISE" in a stylized, bold, red and grey font with a vertical line through the letter "I".The logo for CSA, consisting of the letters "CSA" in a bold, blue, sans-serif font.

A layer of FIWA® sealant can be substituted at one of both sides of the penetration with DRIFIL® sealant to optimize tightness. DRIFIL® sealant is even more adhesive than FIWA® and also has more flexibility when fully cured. *Certified system.*

The logo for RISE, featuring the word "RISE" in a stylized, bold, red and grey font with a vertical line through the letter "I".

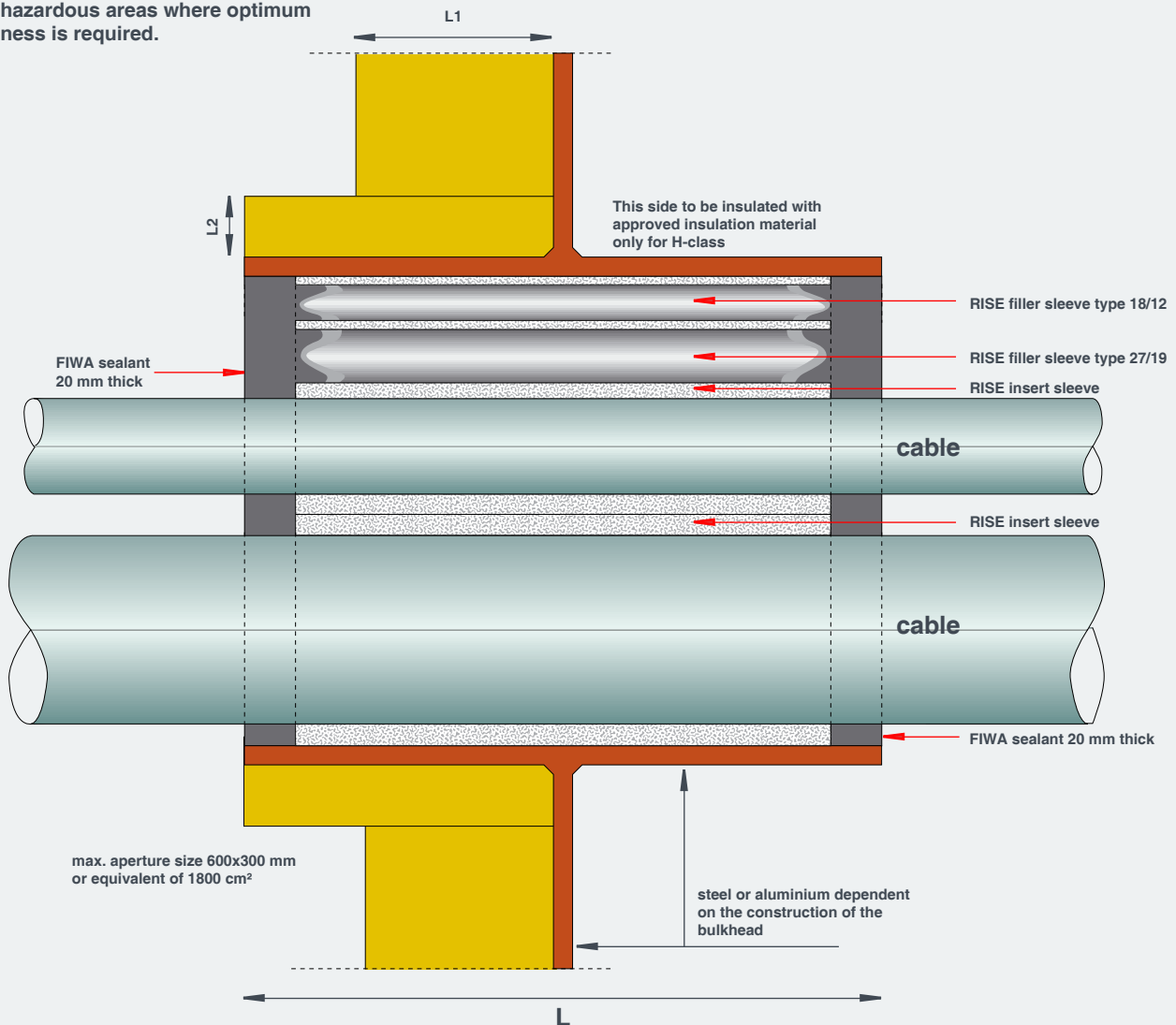
RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

- L1: A-60/H-120 approved bulkhead insulation.
L2: mineral wool minimum 25 mm, density 110 kg/m³ for A-class penetrations or equivalent; for H-class penetrations ceramic fibres 128 kg/m³ or equivalent as used for the bulkhead insulation.

The FIWA layer may be substituted at one side of the penetration with DRIFIL sealant. This configuration has been tested for use between hazardous and non-hazardous areas where optimum tightness is required.

**- NO EXTRA INSULATION
REQUIRED AT THE FRONT
OF THE PENETRATION
AND/OR IN BETWEEN THE
CABLES**



non-fire rated conduits which should only be gas or water tight can be shorter in length. for ease of installation it is advisable the length of the coaming not to make shorter than 100 mm.

L = 200 mm for A-class and 250 mm for H-class

length of the RISE® insert and filler sleeves 160 mm for A-class and 210 mm for H-class.

specifications for A-class according to CE certificate 09156/B0 EC and for H-class to Type Approval Certificate 11908/A0 BV both issued by Bureau Veritas also approved for busbar penetrations: CE certificate 11302/A2 EC issued by Bureau Veritas

A0-A60 / H0-H120 CABLE TRANSIT BULKHEADS

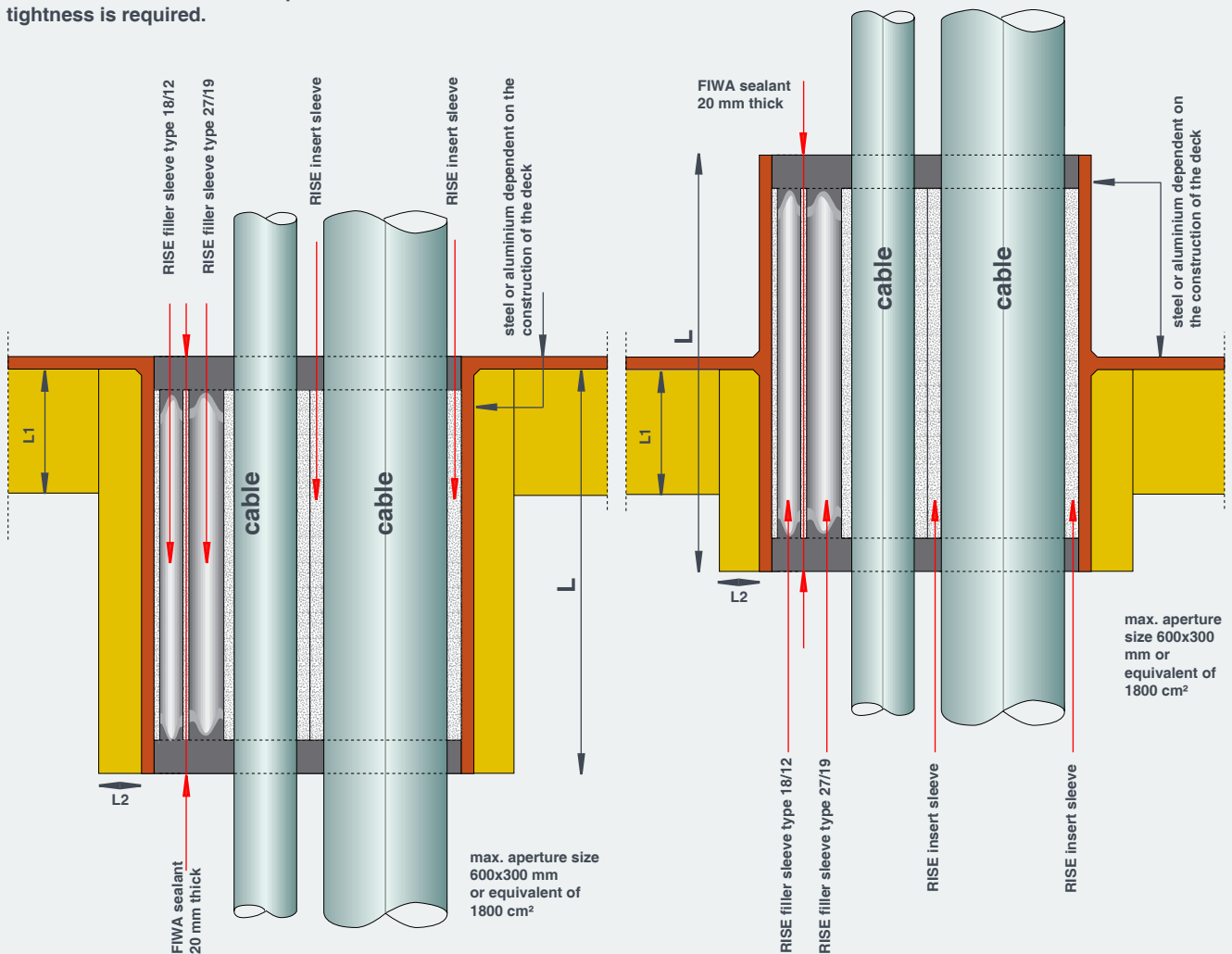
RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

- L1: A-60/H-120 approved deck insulation.
- L2: mineral wool minimum 25 mm, density 110 kg/m³ for A-class penetrations or equivalent; for H-class penetrations ceramic fibres 128 kg/m³ or equivalent as used for the deck insulation.

The FIWA layer may be substituted at one side of the penetration with DRIFIL sealant. This configuration has been tested for use between hazardous and non-hazardous areas where optimum tightness is required.

**- NO EXTRA INSULATION
REQUIRED AT THE FRONT
OF THE PENETRATION
AND/OR IN BETWEEN THE
CABLES**



non-fire rated conduits which should only be gas or water tight can be shorter in length. for ease of installation it is advisable the length of the coaming not to make shorter than 100 mm.

L = 200 mm for A-class and 250 mm for H-class

length of the RISE® insert and filler sleeves 160 mm for A-class and 210 mm for H-class.

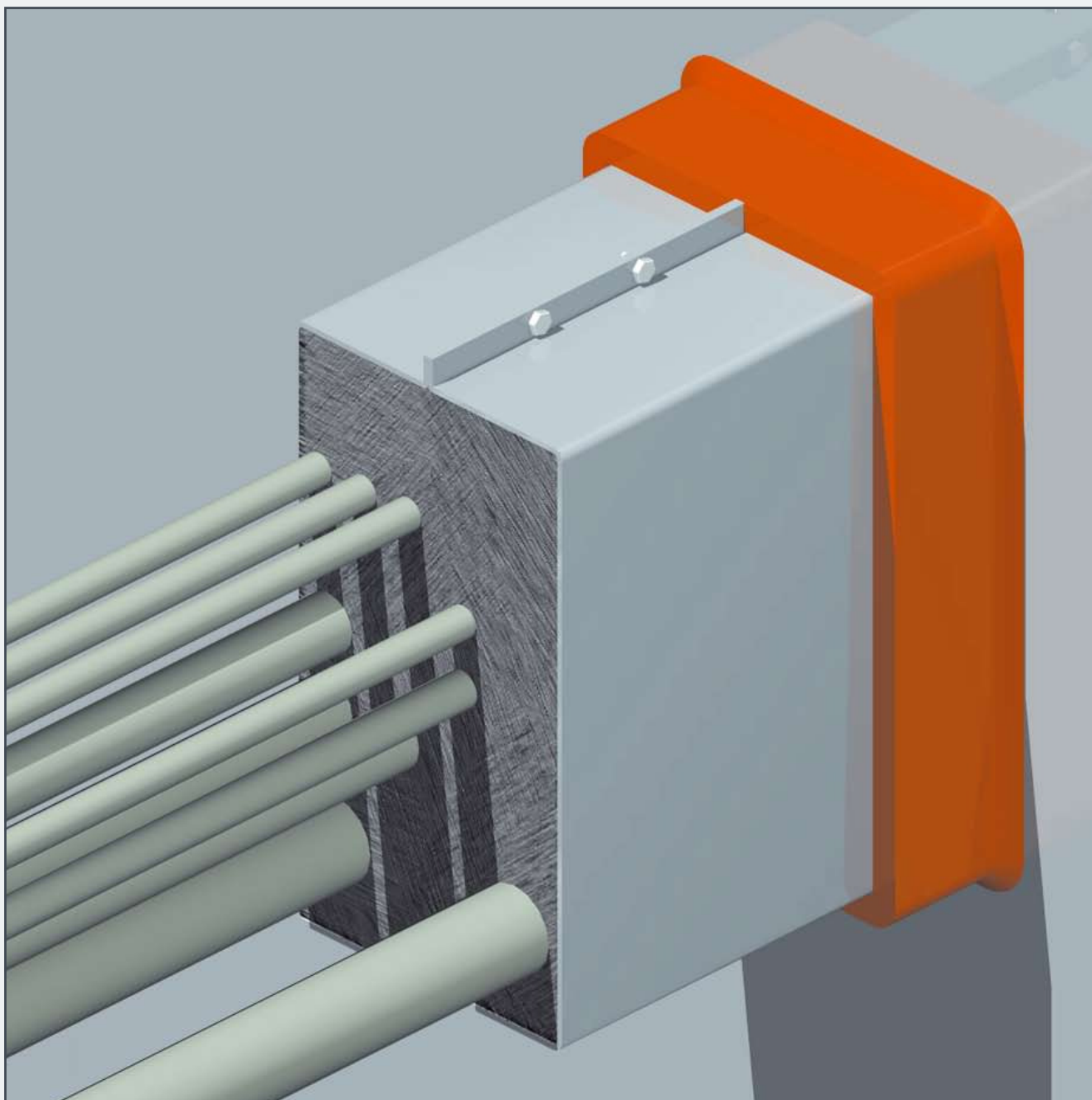
specifications for A-class according to CE certificate 09156/B0 EC and for H-class to Type Approval Certificate 11908/A0 BV both issued by Bureau Veritas also approved for busbar penetrations: CE certificate 11302/A2 EC issued by Bureau Veritas

A0-A60 / H0-H120 CABLE TRANSIT DECKS

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

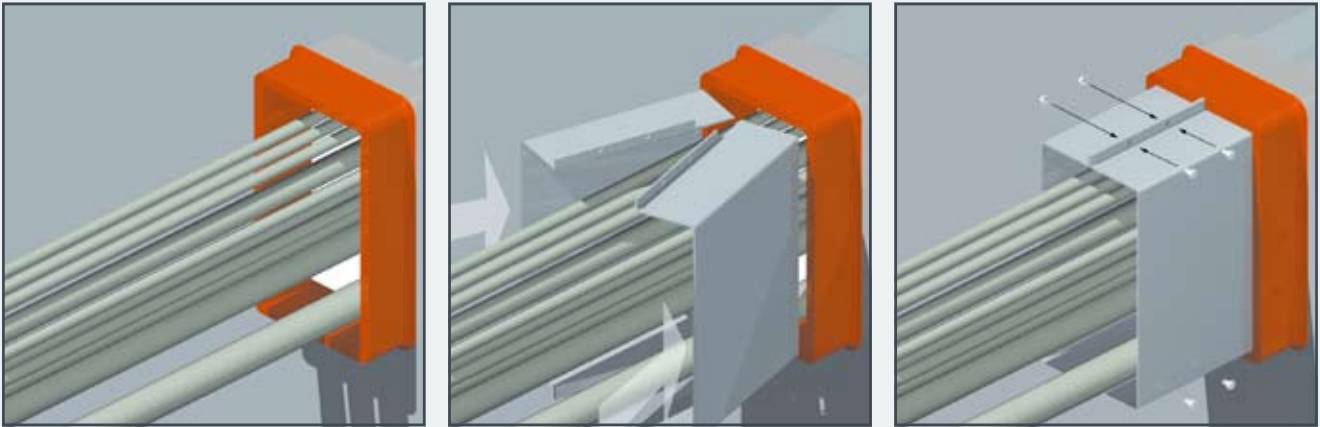
Existing installations can easily be upgraded to the RISE® sealing system using extension frames. Generally the depth of the transit frames is too short to offer the required thermal insulation during a fire.

To fulfil this criterion for all types of cables a minimum depth of 200 mm is an absolute must. Otherwise the transit and the front side of the penetration have to be totally insulated. By making use of extension frames the required depth can easily be obtained.

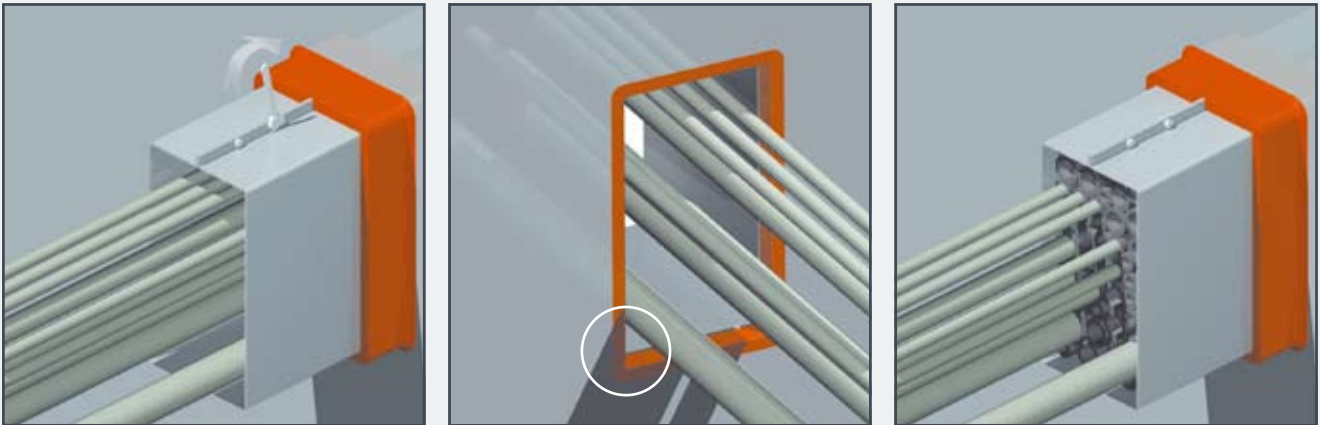


The advantage of upgrading with RISE® is not only an improvement of the fire rating, but it also gives the option to acquire more available space for ducting extra cables. The extended RISE® penetration filled with the same configuration of cables as tested with the normal RISE® penetrations and with the same sizes, has been successfully tested according to IMO Resolution A.754(18) for use in both A0 - A60 class bulkheads and decks. CE (MED) certificate N° 09156/B0 EC.

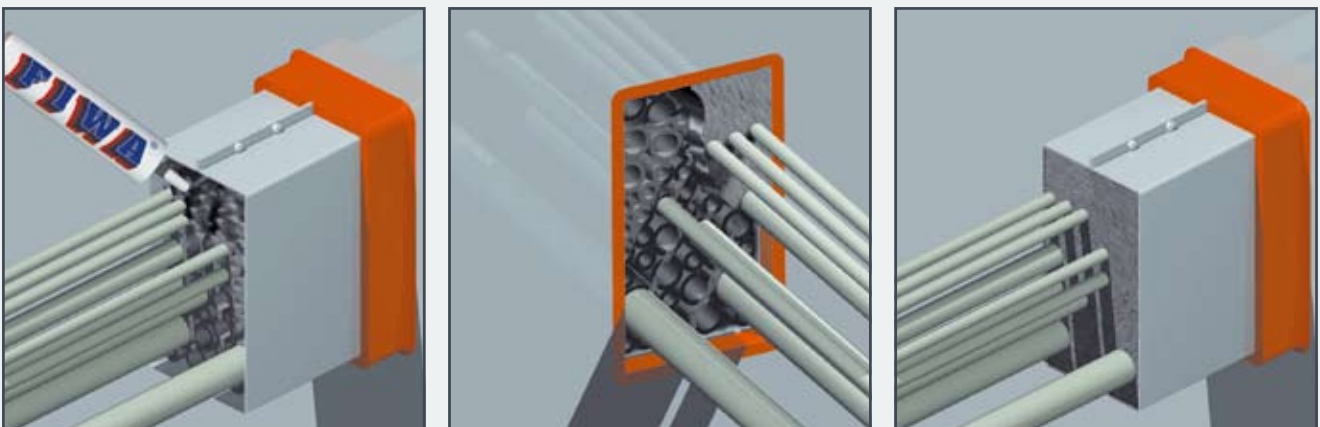
RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM



Remove all block components from the transit frame, if any. Remove any dirt or grease from the inside of the frame. Position the two halves of the EXTEND-A-FRAME around the bundle of cables, then push the EXTEND-A-FRAME into the transit frame. The fitting must be very tight for stability reasons. The flanges on the top and bottom of the EXTEND-A-FRAME must be firmly seated against the transit frame. Install the bolts and nuts on the top and bottom flanges. Tighten the bolts on top and bottom flanges.



The flanges are 10 mm high, corresponding with the wall thickness of the block system transits. This enables the EXTEND-A-FRAMES to fit in multi-transit units without any problems. The EXTEND-A-FRAME, positioned in the transit frame, leaves 20 mm free at the back of the transit frame for the bonding of the FIWA® sealant to that transit frame. This is necessary to obtain a tight seal. Place a RISE® insert sleeve around each cable. Any empty space is filled with RISE® filler sleeves.



Center the RISE® sleeves within the conduit so as to leave 20 mm free space at the front and the back of the transit. A 20 mm layer of FIWA® sealant is applied at both sides of the transit. Refer to the step by step installation instructions for RISE® multi-cable penetrations for final finishing of the transit.

For optimum stability, the EXTEND-A-FRAME should be spot welded or bolted to the existing frame. For larger frame configurations an option is to install a frame around the existing transit frame spot welded to the deck or bulkhead.

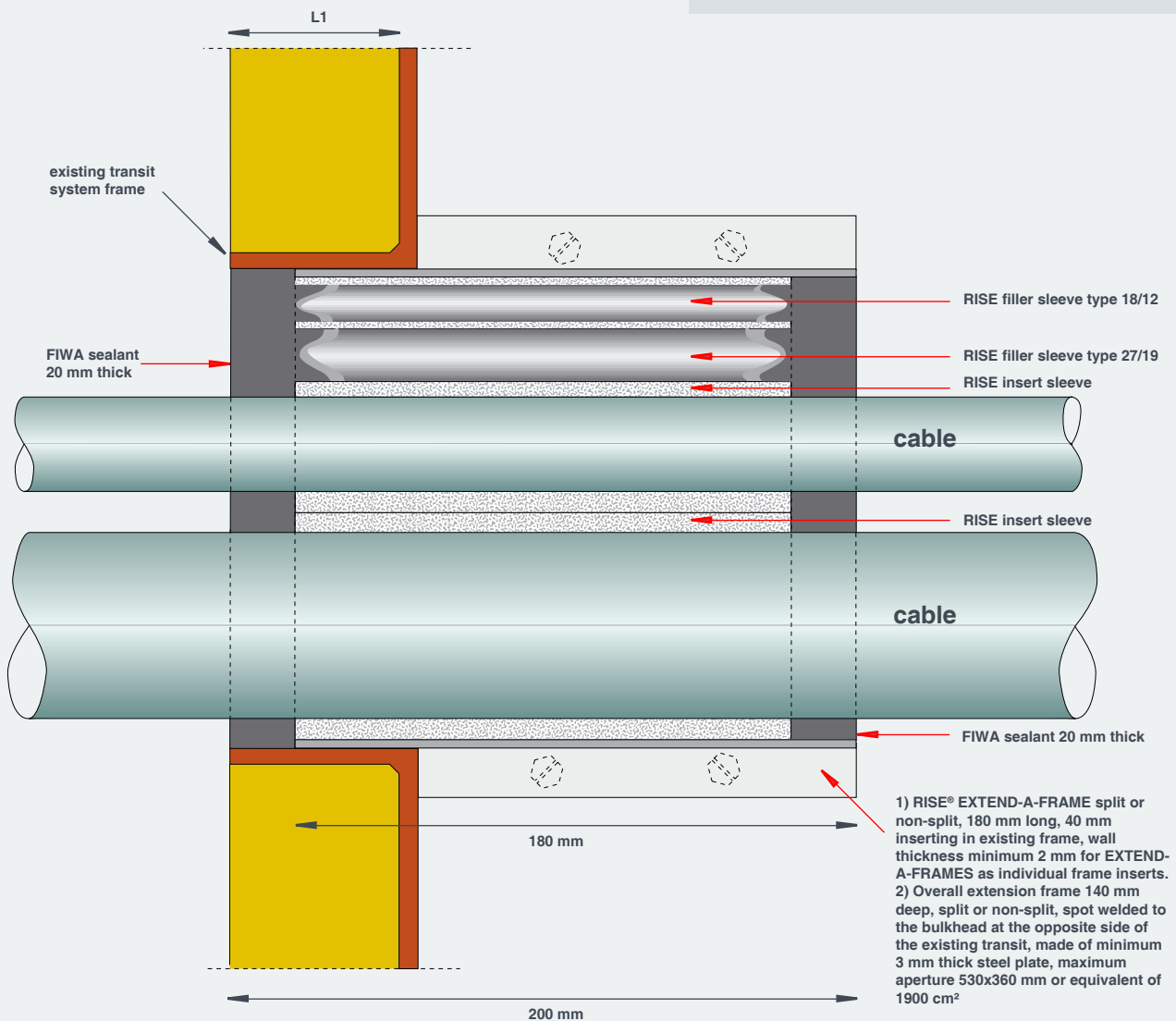
RISE® instantly doubles the usable space inside any block system transit frame

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A-60 approved bulkhead insulation.

**- NO EXTRA INSULATION
REQUIRED AT THE FRONT
OF THE PENETRATION
AND/OR IN BETWEEN THE
CABLES**



specifications for A-class according to CE certificate 09156/B0 EC issued by Bureau Veritas

For optimum stability, the EXTEND-A-FRAME should be spot welded to the existing frame. For larger frame configurations an option is to install a frame around the existing transit frame spot welded to the bulkhead.

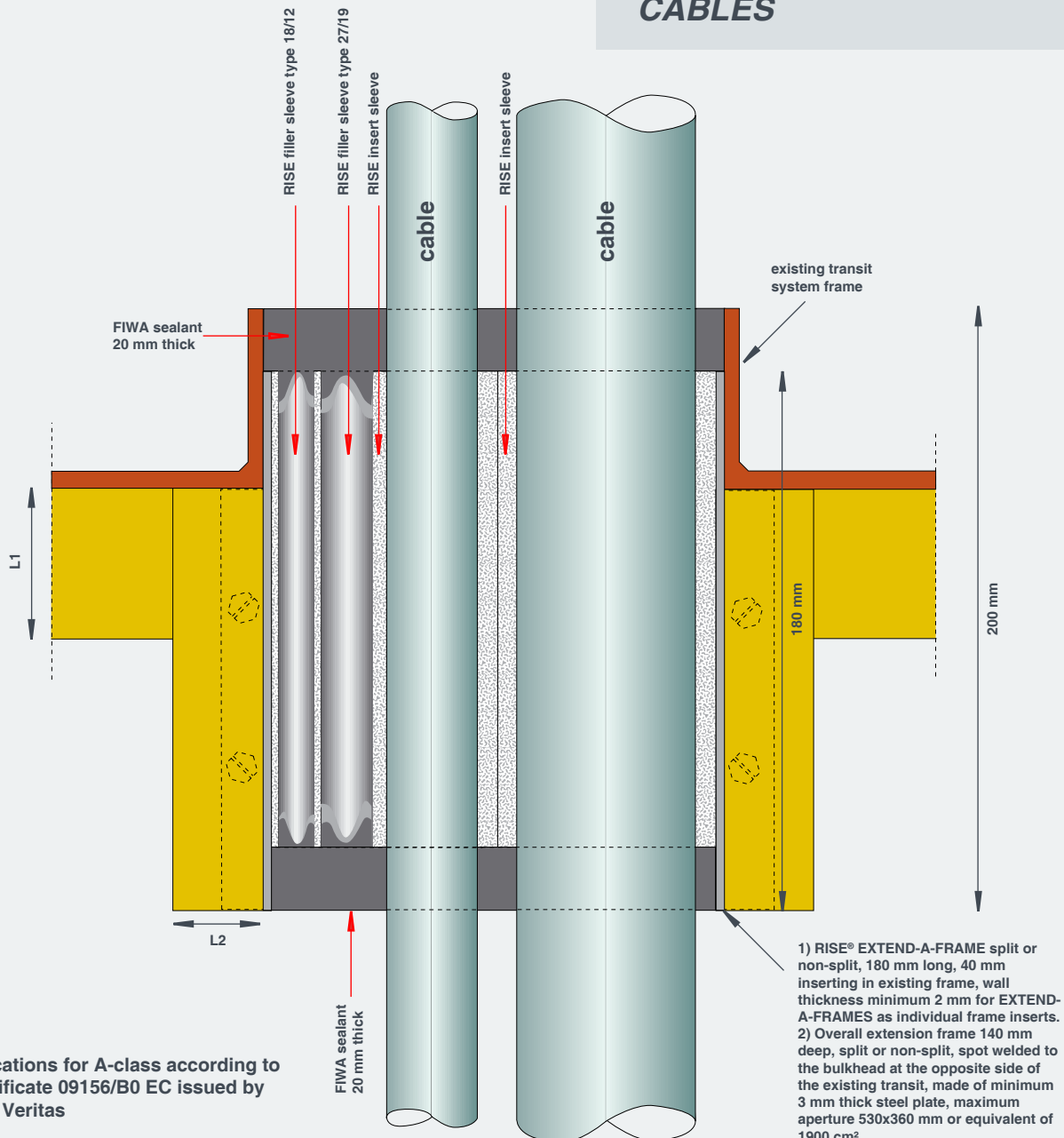
A0-A60 CABLE TRANSIT BULKHEADS

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A-60 approved deck insulation.
L2: mineral wool minimum 25 mm,
density 110 kg/m³ or equivalent.

**- NO EXTRA INSULATION
REQUIRED AT THE FRONT
OF THE PENETRATION
AND/OR IN BETWEEN THE
CABLES**



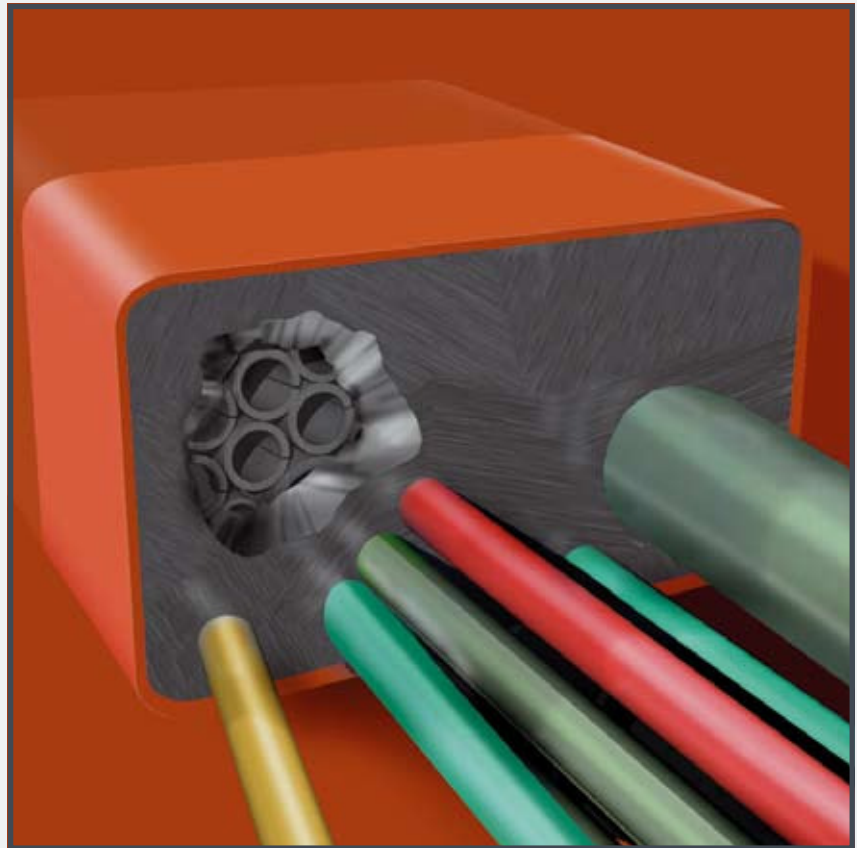
specifications for A-class according to CE certificate 09156/B0 EC issued by Bureau Veritas

For optimum stability, the EXTEND-A-FRAME should be spot welded to the existing frame. For larger frame configurations an option is to install a frame around the existing transit frame spot welded to the deck.

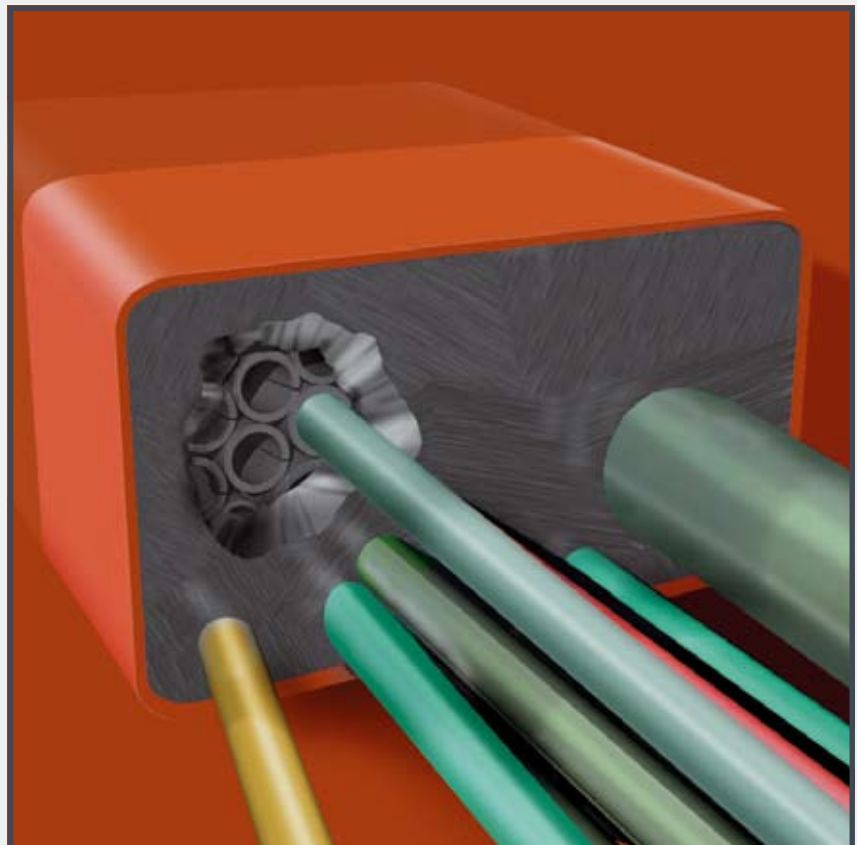
A0-A60 CABLE TRANSIT DECKS

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

Adding extra cables is an easy job. Cut away the sealant layer at both sides of the penetration with a knife or a hollow punch in a tapering shape as shown above. This creates a good foundation for the sealant mass to be applied later.

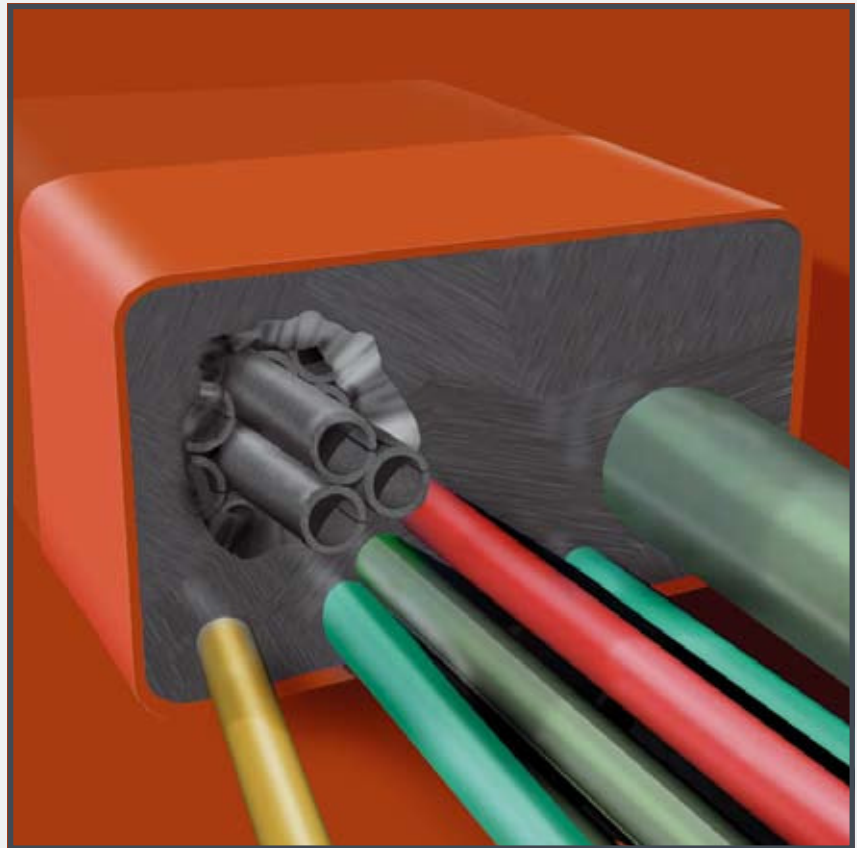


Pull the cable through one of the empty filler sleeves with an inner diameter more or less corresponding to the outer diameter of the cable. Refill the opening in the sealant layer at both sides of the penetration with sufficient FIWA® sealant.

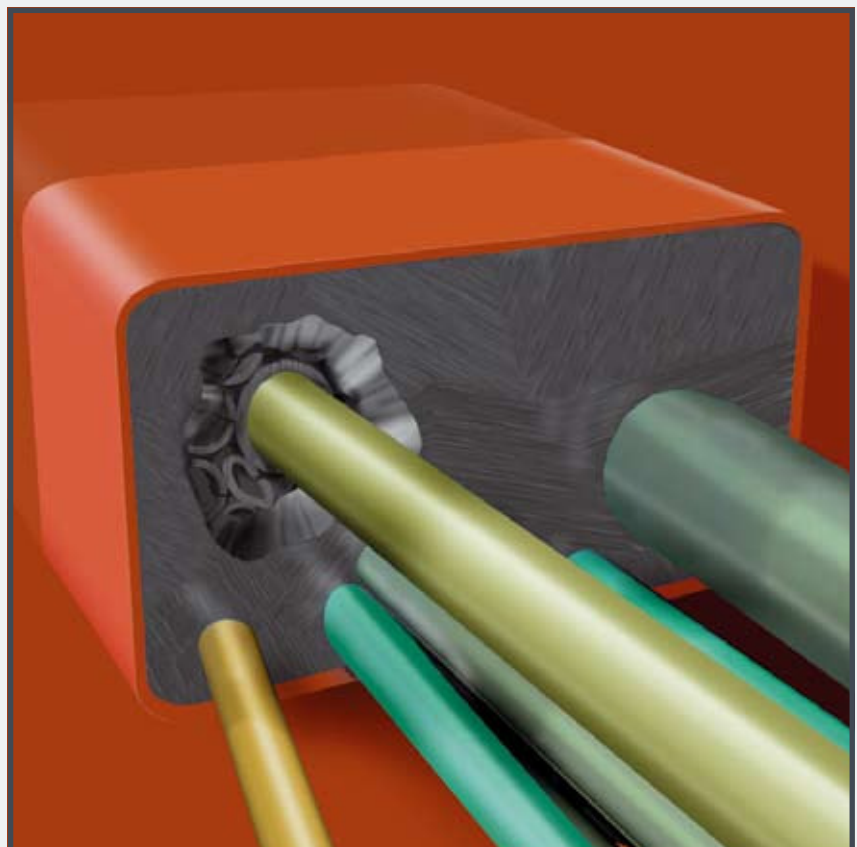


RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

If the empty filler sleeves are not fitting to the size of the cable to be ducted, a number of these insert sleeves must be removed from the penetration. Install a fitting insert sleeve (with some filler sleeves if necessary) in the open space in the penetration.



Pull the cable through the fitting insert sleeve that has now been installed. Refill the openings cut in the sealant layer at both sides of the penetration with sufficient FIWA® sealant. The FIWA® sealant is pressed down firmly and smoothed with a damped cloth.

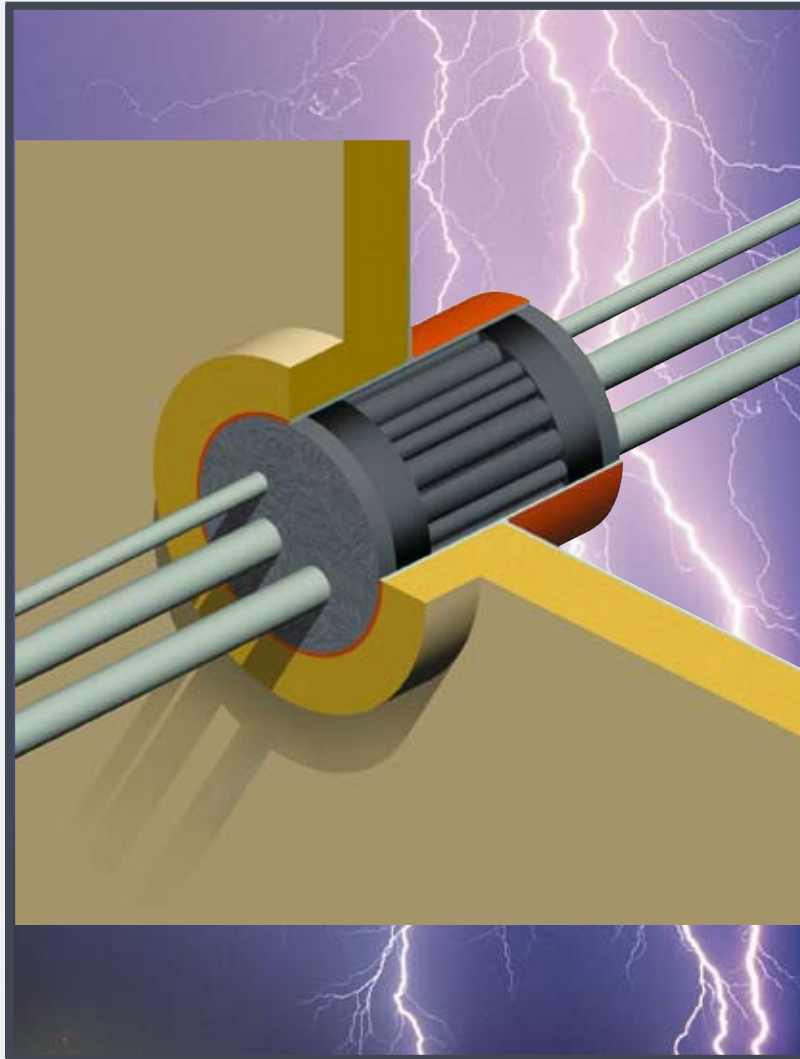


RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

For the EMC protection of cable penetrations entering shielded areas, an electrically conductive sealant/flexible rubber is developed for the RISE® multi-cable penetrations type EMC. Tests carried out in our laboratories have shown that the electrical resistance from braiding to mass is about 1-2 ohm.

Attenuation tests at DELTA Electronics Testing/Denmark have proven the outstanding damping properties of the RISE® EMC sealing system.

CONDUCTON®



CONDUCTON®

In case the penetrations have to be only EMC proof, the length of the conduit can be reduced substantially. Only 40 mm CONDUCTON® putty/flexible rubber for the conductive filling of the cavity in between the layers of FIWA® sealant can be used. The CONDUCTON® flexible rubber is most easy to apply. The attenuation with the flexible rubber is the optimum; the attenuation of the CONDUCTON® putty is less.

UV and ozone resistant. Gas and water tight. Fire safe. CE certificate 11301/A2 EC.

Attenuation tests at DELTA Electronics Testing/Denmark have proved the good attenuation values achieved by the RISE®-EMC system based on a single layer of CONDUCTON® flexible rubber.
Damping: **35-85 dB.**

The RISE®-EMC system based on 2 layers of 40 mm CONDUCTON® flexible rubber.
Damping: **52->100 dB.**
A RISE®-EMC penetration based on the conductive putty shows a lower value.
Damping: **10-30 dB.**

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

*two different solutions for a RISE®-EMC
cable penetration: rubber or putty*



CONDUCTON® flexible rubber is used to fill the cavity around the ducted cables in the conduit sleeve in stead of making use of the putty. This rubber can be modelled by hand and offers the highest attenuation.

CONDUCTON® flexible rubber is absolutely HALOGEN FREE and has a toxicity index of 0,00 (tested according to Naval Engineering Standard NES 713: Issue 3).

Furthermore CONDUCTON® has a low smoke index (NES 711: Issue 2: 1981), an oxygen index of 38,2% (ISO 4589-2: 1996), and a temperature index of 294 °C (ISO 4589-3: 1996).

CONDUCTON® flexible rubber fullfils the criteria for use on board of UK Navy vessels.

*very high attenuation values with RISE®-EMC
cable penetrations feasible*

PRODUCT INFORMATION

| | |
|-------------------------|---|
| 01) colour | black |
| 02) specific gravity | 1.4 ± 0.03 g/cm ³ |
| 03) curing of top layer | 1 - 2 hours |
| 04) service temperature | -60 °C up to +160 °C |
| 05) tensile strength | 0.80 MPa |
| 06) elongation at break | 40% |
| 07) hardness | 35 Shore A |
| 08) elasticity | approx. 25% |
| 09) resistance | < 100 Ω |
| 10) ageing | up to 50 years service life |
| 11) supplied in | cartridges, containing 310 ml |
| 12) storage | to be stored cool and dry min/max temperature = +5/+30° C |
| 13) storage life | approx. 9 months |



CONDUCTON® putty is an electrically conductive sealing putty based on a single component silicone compound.

The level of attenuation obtained with any of the RISE®-EMC transits is partly dependent on:

- a) *the distance between the ducted pipe and the penetration wall*
- b) *the contact surface with the conductive materials*
- c) *the compact filling of the conductive mass*
- d) *the condition of the contact surface in the conduit pipe*

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM



1) At the place where the CONDUCTON® flexible compound is to be applied, the penetration should be bare steel without primer and thoroughly cleaned to ensure effective connection to earth.



2) Remove the cable sheathing over a length that is 40 mm shorter than the length of the penetration, in such a way that the front face of the exposed braiding is situated about 20 mm inside the conduit at both sides.



3) RISE® sleeves 120 mm shorter in length than the penetration are then fitted around the ducted cables and pushed into the penetration. The exposed braiding should extend 40 mm outside the sleeves.



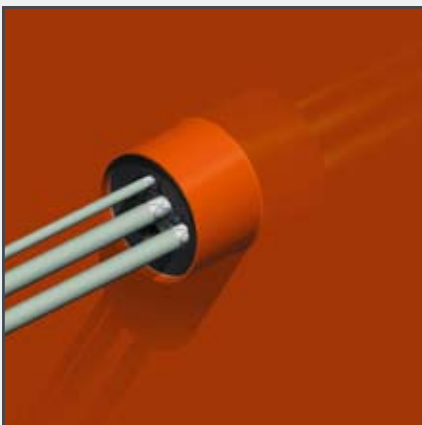
4) The remaining space inside the penetration is then packed with RISE® filler sleeves. Push the filler sleeves into the penetration in the same way as the sleeves fitted around the cables. Make sure that the sleeves fit tightly.



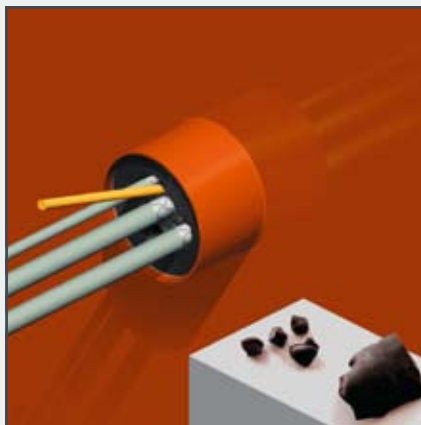
5) Push the insert/filler sleeves into the penetration in such a way as to leave about 60 mm free space at both sides. Take care that the exposed braiding extends 40 mm outside the sleeves at each side.



6) Then apply layers of CONDUCTON® flexible rubber strips 40 mm wide against the inside wall of the penetration.



7) Pack the free space inside the penetration with lengths of strip. Compress the filling from time to time firmly to obtain a solid mass of flexible rubber and a good contact with the coaming/sleeve.

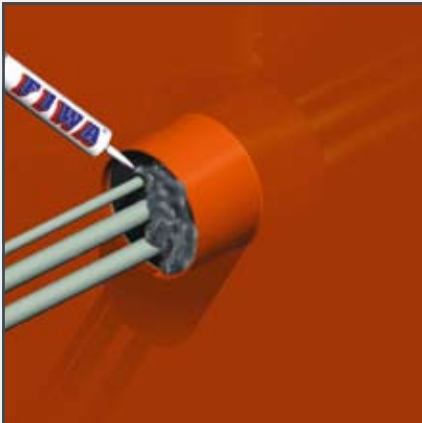


8) Pack the remaining small spaces around the cables with spare pieces of flexible rubber strip. Then press them down firmly with a piece of wood in order to obtain a good contact with the braiding.



9) Firmly press down the mass once more by hand. This is extremely important to ensure effective conductivity. Then apply the CONDUCTON® flexible rubber at the other side of the penetration in a similar way.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM



10) At both sides of the penetration about 20 mm free space should be present to enable the application of the FIWA® fire safe, water tight sealing compound. First clean the inside wall of the penetration very thoroughly.



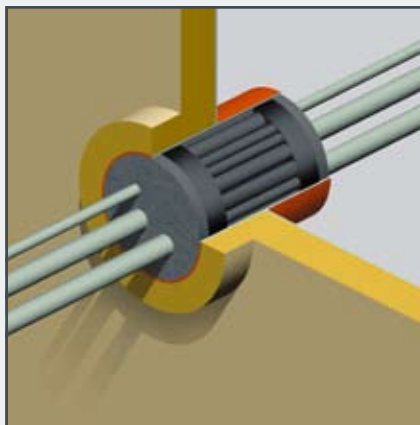
11) To smooth the surface of the FIWA® sealant layer, a cloth is sprayed with water. This prevents the sealant from sticking to the cloth.
Note: do not use soap water!



12) The cloth is then used to press down the sealant layer. People with sensitive skin should use gloves when working with the FIWA®.
Please refer to the Safety Data Sheet for more information.



13) The surface can also be smoothed by hand. Just wet the hand thoroughly with soap and water. People with sensitive skin should use gloves when working with the FIWA®.



14) For A-class penetrations the conduit sleeve/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.

CONDUCTION

The level of attenuation obtained is partly dependent on:

- a) the distance between the ducted cable and the penetration wall
- b) the contact surface with the conductive materials
- c) the compact filling of the conductive mass
- d) the condition of the contact surface in the conduit pipe

If the damping values are not required to comply with extremely high requirements, a 40 mm thick layer of CONDUCTION® flexible rubber at one side of the penetration will be sufficient. The penetration can be 40 mm shorter.



FOR RISE®-EMC MULTI-CABLE PENETRATIONS USE CAN ALSO BE MADE OF THE CONDUCTION® SEALING PUTTY. THE ATTENUATION IS LESS THAN WITH THE CONDUCTION® FLEXIBLE RUBBER.

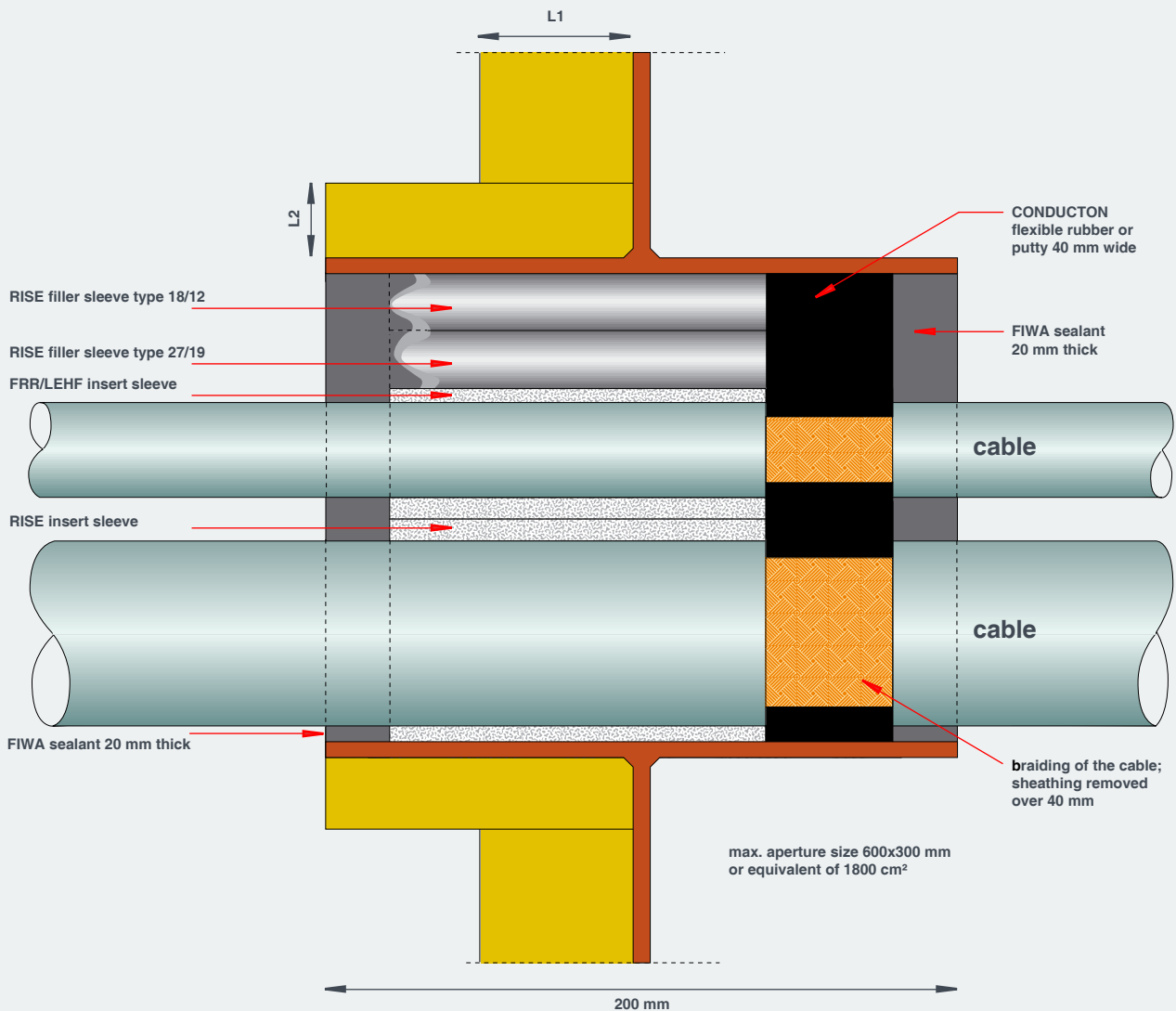
RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A-60 approved deck insulation.

non-fire rated conduits which should only be gas or watertight can be shorter in length.
The length of the coaming should not be shorter than 80 mm.

**- NO EXTRA INSULATION
REQUIRED AT THE FRONT
OF THE PENETRATION
AND/OR IN BETWEEN THE
CABLES**



specifications for A-class according to CE certificate 11301/A2 EC issued by Bureau Veritas

also approved for multi-cable transits:
CE certificate 09156/B0 EC issued by Bureau Veritas

also approved for busbar penetrations:
CE certificate 11302/A2 EC issued by Bureau Veritas

A0-A60 CABLE TRANSIT BULKHEADS

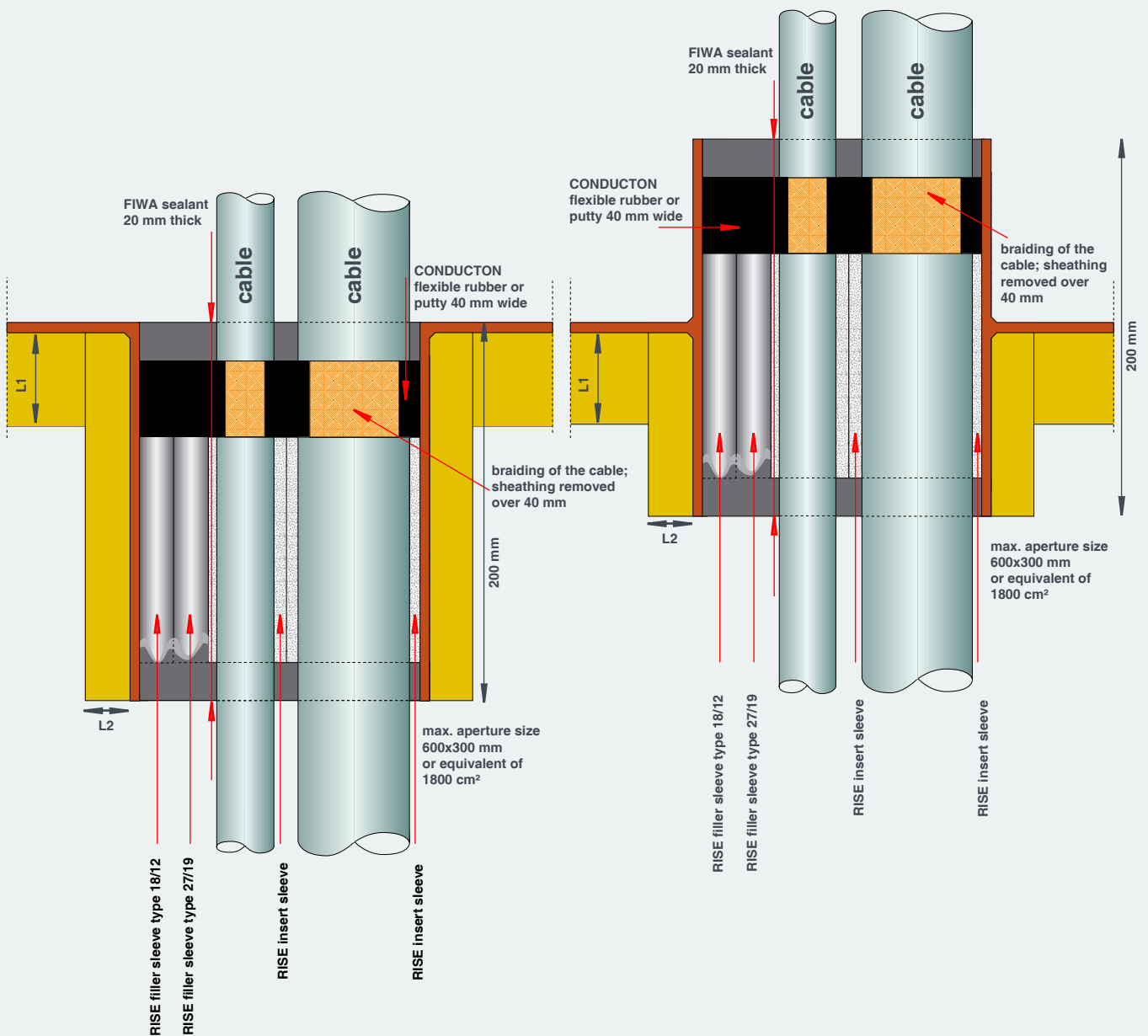
RISE[®] MULTI-CABLE TRANSITS: THE RAPID[®] SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A-60 approved deck insulation.
L2: mineral wool minimum 25 mm,
density 110 kg/m³ or equivalent.

non-fire rated conduits which should only be gas or watertight can be shorter in length.
The length of the coaming should not be shorter than 80 mm.

**- NO EXTRA INSULATION
REQUIRED AT THE FRONT
OF THE PENETRATION
AND/OR IN BETWEEN THE
CABLES**



specifications for A-class according to CE certificate
11301/A2 EC issued by Bureau Veritas

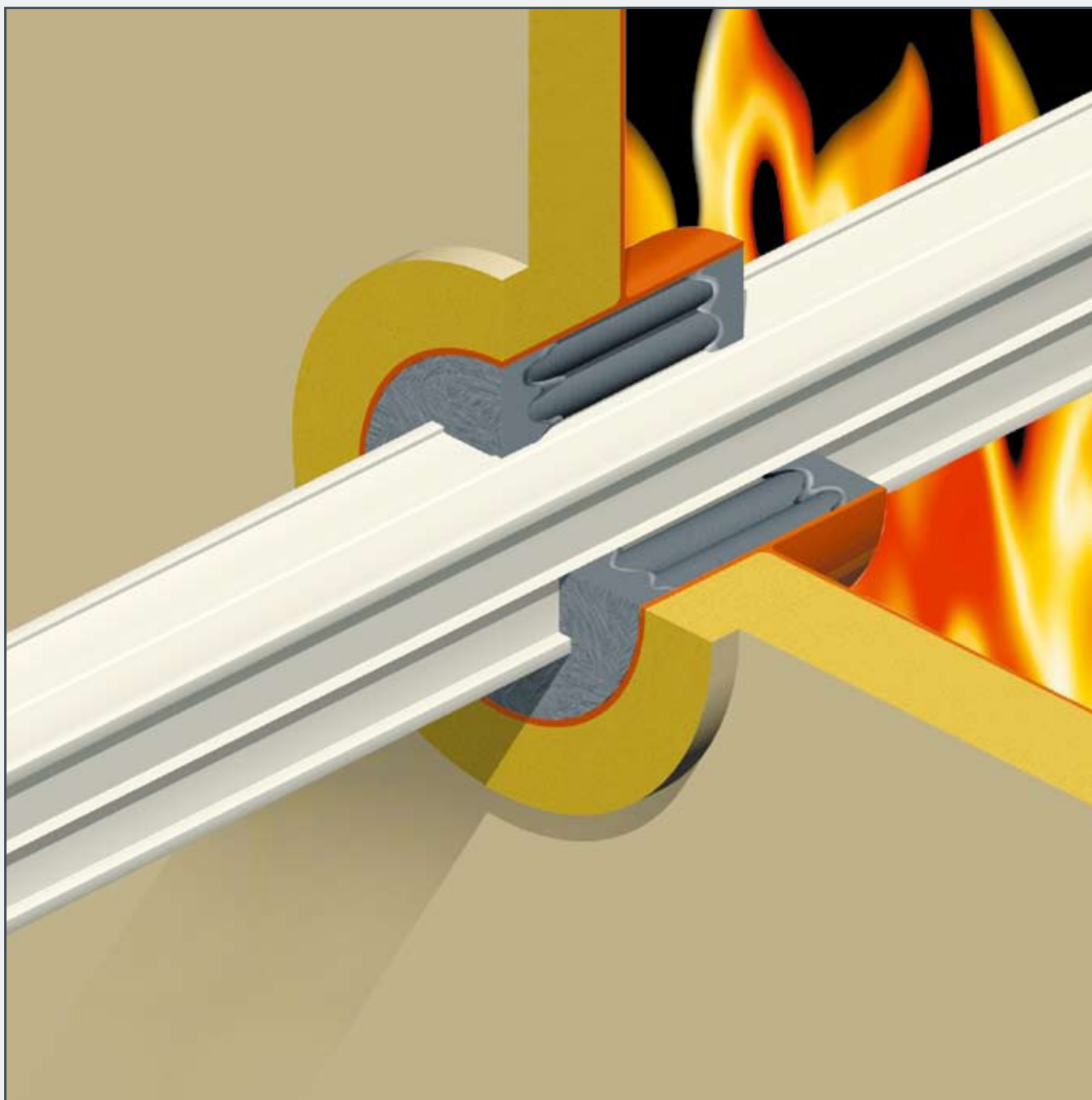
also approved for multi-cable transits:
CE certificate 09156/B0 EC issued by Bureau Veritas

also approved for busbar penetrations:
CE certificate 11302/A2 EC issued by Bureau Veritas

A0-A60 CABLE TRANSIT DECKS

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

Today in shipbuilding frequently busbar systems are used instead of heavy conductor cables. When penetrating divisions, the busbar conduits have to fulfill the requirements of the IMO Resolution A.754(18). A busbar as such is not specified in the IMO Resolution. Busbars can be regarded closer to pipes than cables. The RISE® sealing system can be easily applied for the fire safe sealing of such penetrations. Inside the busbar a firestop, as for instance ACTIFOAM®, should be installed to prevent flame and smoke spread through the inside of the busbar system.

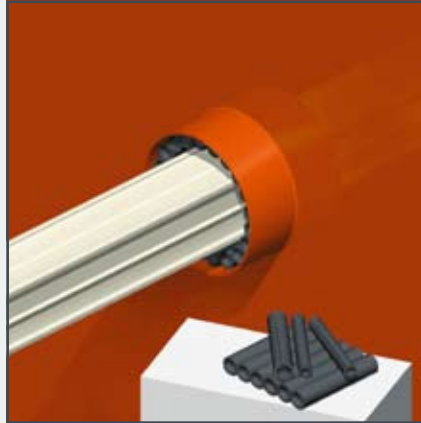


The RISE® sealing system also is used for metallic and plastic pipe penetrations. These type of penetrations have been successfully tested according to IMO Resolution A.754(18) for use in both A0 - A60 class bulkheads and decks. Based on the outcome of the fire tests with pipe penetrations, the RISE® sealing system can be used for busbar penetrations in a similar way. Officially tested according to IMO Resolution A.754(18). CE (MED) certificate N° 11302/A2 EC.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM



1) Contrary to the RISE® cable transits only filler sleeves type 18/12 and 27/19 are used for filling the space in the conduit. For ease of installation RISE® filler sleeves are supplied non-split. The ratio 27/19 to 18/12 should be about 2:1.



14) For larger openings in the conduit sleeve/frame, the filler sleeves are available bundled together to form a compact bundle. They are available in bundles of ten pieces. Bundled filler sleeves are always delivered non-split.



3) Push the filler sleeves into the conduit in such a way as to leave about 20 mm free space at the front. The whole set of filler sleeves should tightly fit into the conduit to offer sufficient mechanical stability.



4) At both sides of the penetration about 20 mm free space should be present to enable the application of the FIWA® fire safe, water tight sealing compound. First clean the inside wall of the penetration very thoroughly.



5) The conduit should be overfilled with FIWA® sealant, because some sealant will be pushed between and into the empty insert sleeves during further finishing. This will contribute to obtain higher tightness ratings.



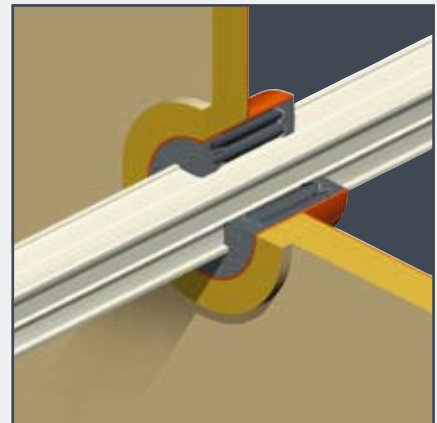
6) To smooth the surface of the FIWA® sealant layer, a cloth is sprayed with water. This prevents the sealant from sticking to the cloth.
Note: do not use soap water!



7) The cloth is then used to press down the sealant layer. People with sensitive skin should use gloves when working with the FIWA®. Please refer to the Safety Data Sheet for more information.

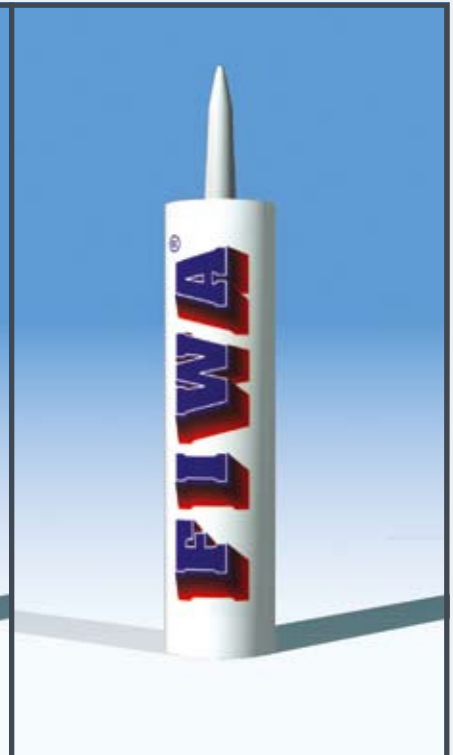


8) The surface can also be smoothed by hand. Just wet the hand thoroughly with soap and water. People with sensitive skin should use gloves when working with the FIWA®.



9) For A-class penetrations the conduit sleeve/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.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM



CONDUCTON® is an electrically conductive putty based on a single component silicone compound. CONDUCTON® is also water-repellent. The putty adheres well to metal subsurfaces and is reasonably elastic. CONDUCTON® contains components with a unique morphology to obtain the necessary high grade of conductivity. CONDUCTON® has a measured resistance of 50-60 Ohm. Optimum contact with the cable or structure to be shielded is essential for effective EMC protection. Measurements have shown that the attenuation is in the range of 10 - 30 dB, when applied with a surface contact of 40 mm for pipe and cable penetrations. CONDUCTON® is used for the RISE®/EMC and the SLIPSIL®/EMC systems.

DRIFIL® is a water-repellent sealant based on a single-component silicone compound. In developing DRIFIL® sealing compound, high priority was focused on its power of adhesion to subsurfaces as occurring in the construction sector, and to cable sheathing and metal and plastic pipes. In addition, special attention was given to the permanent flexibility of the sealant in order to permit minor settlements and movements of the cable/pipe bunch after the sealant has set. The purpose of this is to ensure that the seal remains intact in the longer term even in spite of possible mechanical loading.

DRIFIL® sealant has a very short setting time. The top layer is rapidly tack-free.

FIWA® is a fire-resistant sealant based on a single component silicone compound. FIWA® is also water-repellent. The sealant adheres well to most subsurfaces occurring in the building industry, and is permanently elastic. In the event of fire or at temperatures in excess of 200 °C the sealant expands to about five to ten times its original volume. During this process a porous mass is formed which has excellent thermal insulation properties. In contrast to conventional materials that swell under severe heat exposure, the expansion of FIWA® is not caused by intumescence, but by a chemical process.

The advantage of this is that the expansion of FIWA® is not accompanied by the formation of fumes.



For ease of application of very high viscosity sealants, we have selected a powerful manual applicator with a 26 : 1 trigger leverage. This means much easier dispensing and reduced fatigue. The applicator is equipped with the so-called Wear Compensating Device, which automatically removes free-play in the trigger to provide instant rod drive immediately when the trigger is pulled. Less full trigger strokes required to empty a cartridge. Extended working life of the applicator.

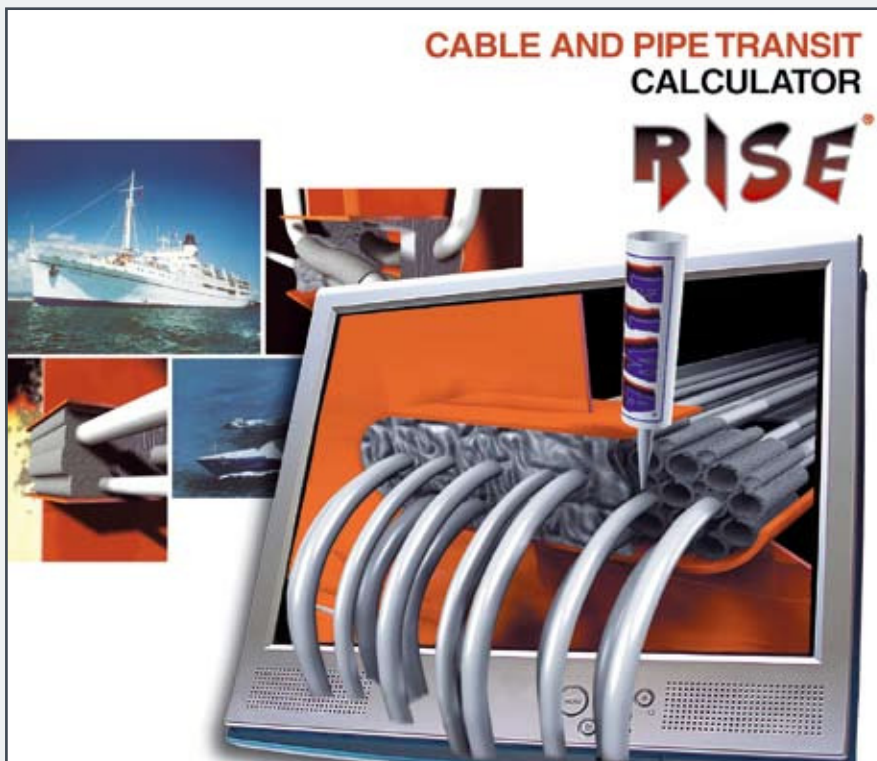


We have also selected a powerful pneumatic applicator for highest productivity.

Quiet operation (less than 70 dB). Air supply to suit most standard systems. Fast, easy pressure regulation for accurate flow control. High volume trigger valve for immediate sealant flow. Ergonomic design: comfort, minimal operator fatigue. Short, well balanced design, combined with lightweight engineering plastic and aluminium components. Also available for 1 liter cartridges.

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

*ease of calculation with
RISE® cable and pipe penetrations*



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Feature for automatic update
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program is started.

RISE: THE RAPID TRANSIT SYSTEM

After the entry of the dimensions of the conduit opening and the amount and outer diameters of the ducted cables or pipes, the software calculates the amount of RISE® sleeves and FIWA® sealant. A drawing appears on the screen showing also the remaining free space in the conduit opening. All calculated transits can be stored in a database. Prints order/calculation forms.

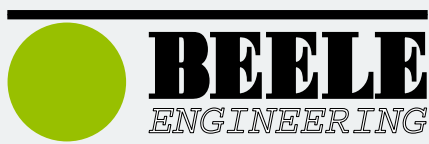
*we are there with full support for
RISE® cable and pipe penetrations*

ARTIST IMPRESSION OF THE FIRST PHASE OF THE NEW FACTORY NEXT TO OUR R&D CENTRE



- 1) machines specially developed for compounding and processing of rubbers under controlled conditions to obtain optimum quality
- 2) machines specially developed for compounding and manufacturing of all types of sealants under controlled processing
- 3) moisture treatment installation and processing equipment for manufacturing of electrically conductive sealants and rubbers
- 4) a complete line of injection moulding presses ranging from 40 tons up to 400 tons for manufacturing sealing plugs and other rubber components
- 5) processing installation for after-curing of rubber products to obtain the required compression set (long term behaviour)
- 6) extruder line including cooling system and cutting and slitting installation for manufacturing insert and filler sleeves for the RISWAT system
- 7) fully automatic extruder lines with a length of 20 meters, including cooling system and automatic cutting, slitting and sorting installation for manufacturing rubber insert and filler sleeves and rubber strips of the RISE system
- 8) extruder line to manufacture luminescent profiles and hoses
- 9) line of injection moulding machines ranging from 50 up to 200 tons for manufacturing plates of the ULEPSI tank supports and luminescent YFESTOS floor coverings
- 10) completely equipped die-making shop for the in-house producing of all tooling for rubber and plastics manufacturing
- 11) modern laser equipment for engraving the type codes in the dyes for rubber manufacturing and for marking products with barcodes and 2D-matrix codes
- 12) mixing and airless spraying facilities for the NOFIRNO boards

With most advanced systems and technologies we are able to offer highest quality products.



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ASK FOR THE SEPARATE BROCHURES ON OUR PRODUCT RANGES:

- * **RISE® MULTI-CABLE TRANSIT SYSTEM**
- * **RISE® SEALING SYSTEM FOR SINGLE AND MULTI-PENETRATIONS FOR PLASTIC AND METALLIC PIPES**
- * **RISWAT® GAS AND WATERTIGHT CABLE AND PIPE DUCTS**
- * **CSD® SEALING PLUGS FOR METALLIC AND PLASTIC PIPE ENTRIES**
- * **SLIPSIL® SEALING PLUGS FOR PIPE ENTRIES**
- * **BEESEAL® MULTI-PIPE AND CABLE PENETRATIONS**
- * **CSD®-SQ MULTI-CABLE TRANSITS**
- * **LEAXEAL® HIGH PRESSURE GRIP SEALS**
- * **ACTIFOAM® TEMPORARY SEALS**
- * **FIRSTO® FIRESTOPS FOR CABLE TRAY PENETRATIONS**
- * **ULEPSI® TANK SUPPORTS FOR BITUMEN TANKERS**



CONDUIT SEALING DEVICES OF AN AMAZING SIMPLICITY WITH AN OUTSTANDING PERFORMANCE

RISE

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