

RISE®: MOST FLEXIBLE SYSTEM FOR A- AND H-CLASS PIPE TRANSITS ACTIVE FIRE SAFETY GAS AND WATERTIGHT



RISE

RAPID

**SUCCESSFULLY TESTED ACCORDING TO
IMO RESOLUTION A.754(18);
FIRE RESISTANCE A0-A60
EC CERTIFICATE 10035/B0 ISSUED BY BV**



MAXIMUM SIMPLICITY OF USE OPTIMUM FLEXIBILITY OUTSTANDING PERFORMANCE

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

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Edition

: September 2008

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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.

®

: ACTIFIRE, ACTIFOAM, AQUASTOP, BEEBLOCK, BEELE, BEESEAL, CONDUCTION, CRUSHER, CSD, CSD THE SIMPLE SEAL SYSTEM, DRIFIL, DYNATITE, FIRSTO, FIRUB/NOHAL, FITEFIRE, FIWA, FRR, LEAXEAL, LUMIREFLEC, NOFIRNO, RAPID TRANSIT SYSTEM, RIACNOF, RISE, RISWAT, \$, SLIPSIL, flanges SLIPSIL plugs, ULEPSI and YFESTOS are registered trade marks of BEELE Engineering BV.

brochure code

: RISEpipe/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 35 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 is 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-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

***RISE® (multi-) pipe penetrations:
based on high-tech ACTIFIRE® technology***

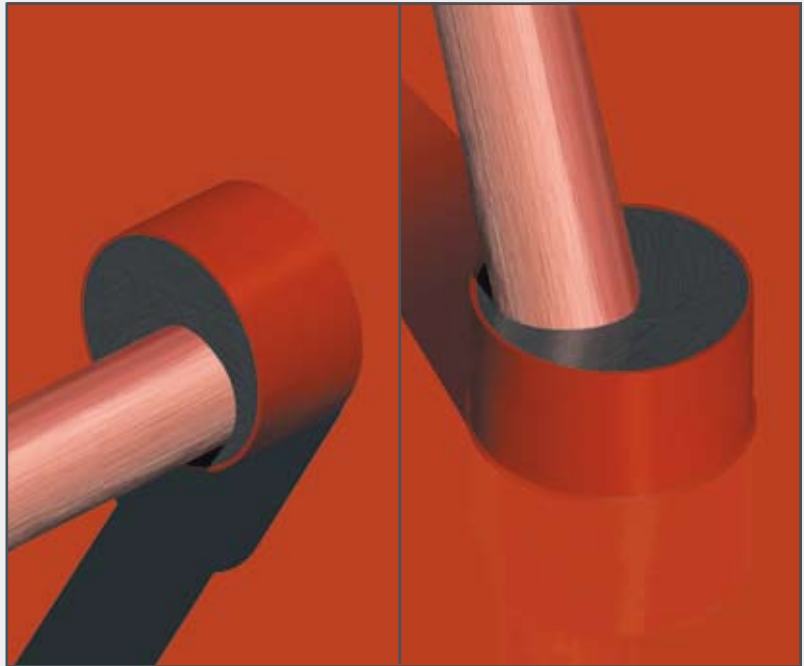
The RISE® pipe sealing system is a most adaptive system for sealing excentrical and angled pipe penetrations in fire-rated/watertight bulkheads and decks.

Very easy to install.

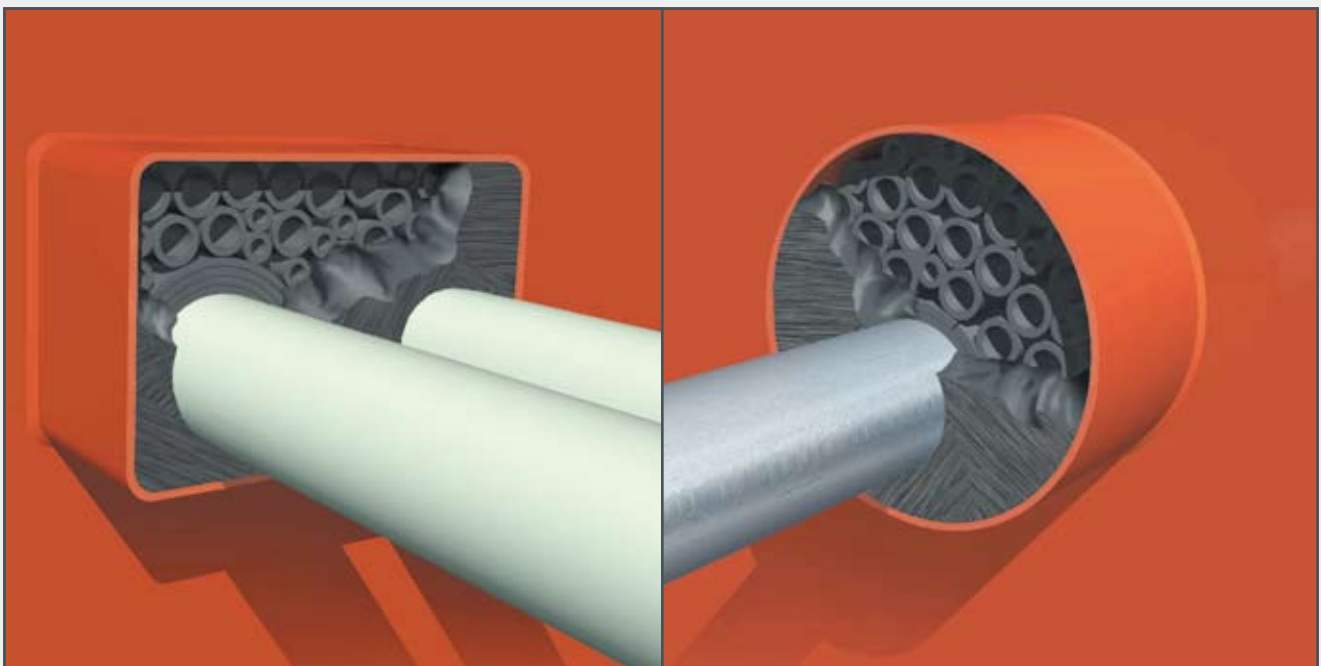
Use is made of RISE® filler sleeves type 18/12 and 27/19 made of FRR/LEHF (fire resistant rubber/low grade of expansion, halogen free) to fill the space around the ducted pipe inside the transit. In case of plastic pipes RISE® rubber strips are wrapped around the ducted pipe and the remaining space is filled with RISE® filler sleeves. The RISE® rubber expands to 5-10 times its original volume.

On both sides of the penetration a layer of FIWA® sealant (fire resistant, water repellent) is applied.

Only halogen free components.



***RISE® single and multi-pipe penetrations:
ultimate flexibility, maintenance friendly***



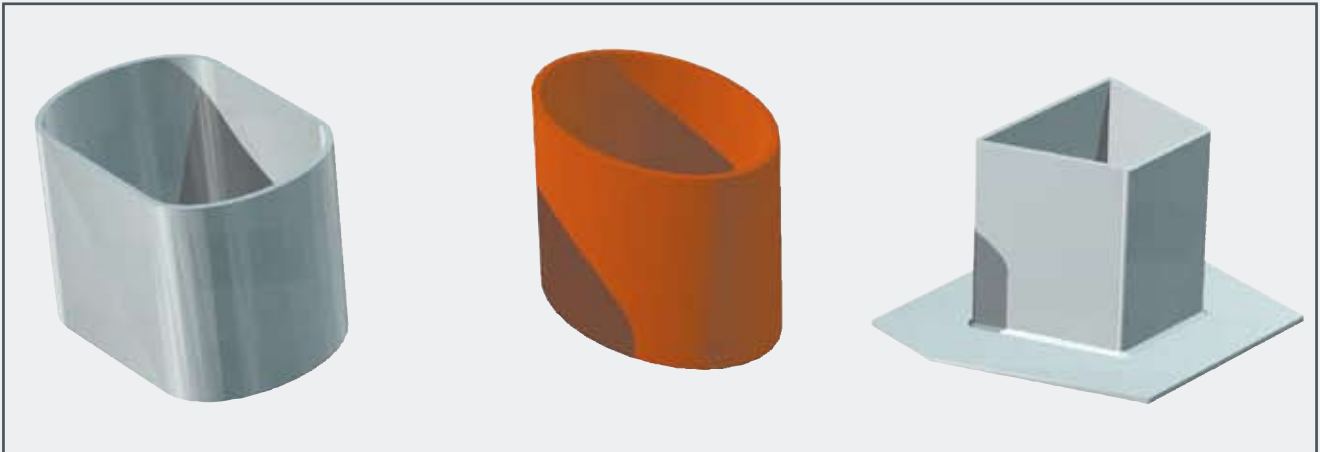
RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

***RISE® (multi-) pipe 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
NO MECHANICAL STRESSES TRANSFERRED TO THE DIVISION
UP TO 50 YEARS SERVICE LIFE
CAPABLE OF ABSORBING TEMPERATURE CHANGES
WEATHERING, UV AND OZONE RESISTANT
PROVIDES CATHODIC PROTECTION
ALLOWS LONGITUDINAL/RADIAL MOVEMENT
FOR METALLIC AND PLASTIC PIPES
APPROVED FOR MULTI-PIPE AND MULTI-MIX PENETRATIONS
EXTREMELY SIMPLE TO INSTALL
INSULATION ONLY AT THE INSULATED SIDE OF THE DIVISION
SHORTEST POSSIBLE CONDUIT LENGTH
CAN BE USED FOR CABLE AND PIPE ENTRIES
APPROVED FOR STEEL AND ALUMINIUM PARTITIONS
MAINTENANCE FRIENDLY

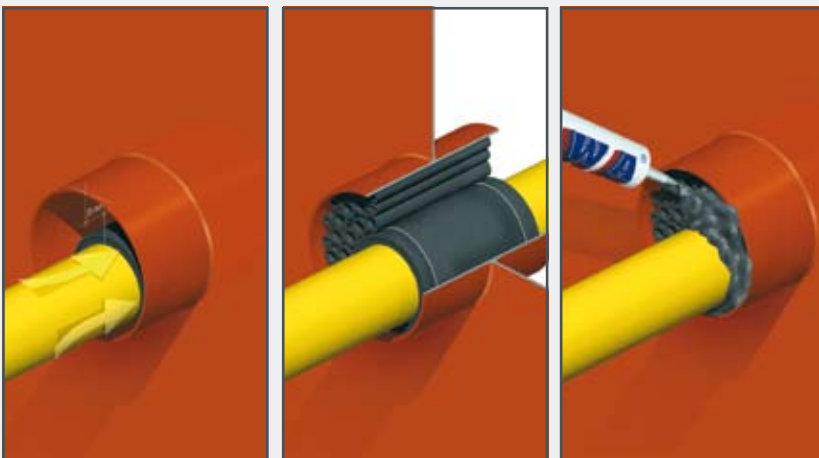
RISE[®] (MULTI-) PIPE TRANSITS: THE RAPID[®] SEALING SYSTEM

*no special conduit sleeves needed for a
RISE[®] (multi-) pipe penetration*



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

*time-saving installation of
RISE[®] (multi-) pipe penetrations*



It's so simple.

Just place a lengthwise split insert sleeve around the plastic pipe and fill up any spare space with the filler sleeves or only place filler sleeves around the ducted metallic pipe. Then seal it off on both sides.

No work for specialists. What could be easier! Calculate the right way, save time and money.

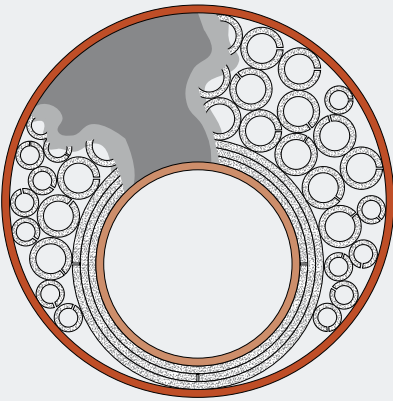
Ask for the installation video showing the ease of installation.

Substantial cost-savings.

*no bolts, no nuts, no precise fitting work
with RISE[®] pipe penetrations*

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

*similar system, similar installation for
RISE® single and multi-pipe penetrations*

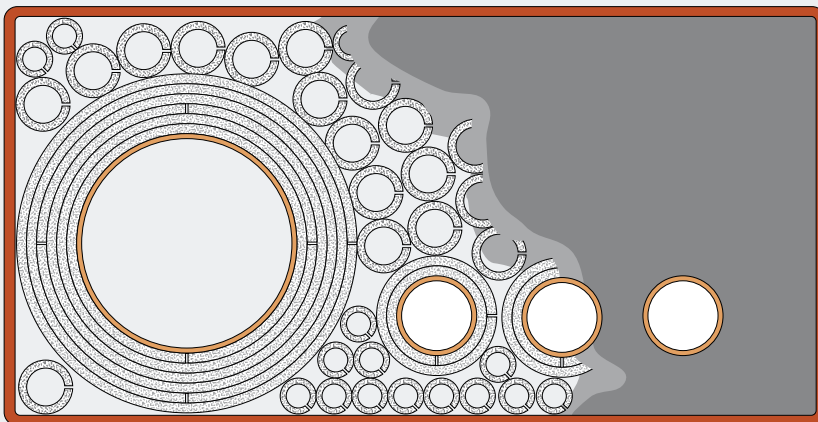


For ducting pipes through prefabricated penetration systems the work has to be precise. The pipes should be exactly at the centre of the frame or at the right spot for fitting the parts. For RISE® it doesn't matter where the pipes are ducted through the sleeve. Besides, the RISE® multi-pipe penetrations can seal a wide variety of different sizes and types through a single opening.

A RISE® pipe penetration is super flexible in its installation.

*material management as simple as can be
for RISE® pipe penetrations*

*multi-metallic and plastic pipes, even mixed,
through RISE® pipe penetrations*



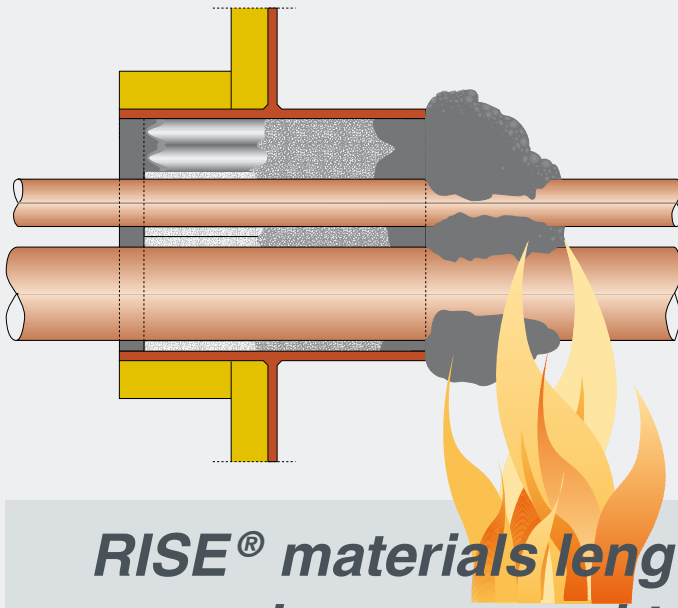
most compact installations with RISE® multi-pipe penetrations

The only difference between RISE® penetrations for metallic and plastic pipes is the use of RISE® insert sleeves to be placed around the plastic pipe(s). We have a software program available for calculating the size of the conduit opening and the amount of insert sleeves, filler 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 35). Could it be easier?

*no time-consuming lay-outs for a
RISE® (multi-) pipe penetration*

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

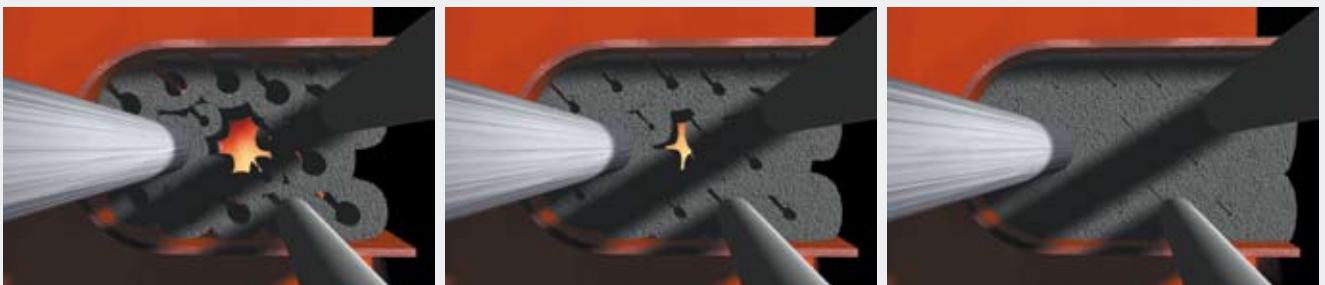
RISE® is based on ACTIFIRE® technology and will be activated when exposed to fire



RISE® pipe penetrations have been tested with steel, stainless steel, copper and plastic pipes. The length of the conduit could be minimized by the use of the expanding sealant/rubber, which lengthen the penetration when exposed to fire. Metallic pipes transfer a lot of heat from the fire side to the unexposed side. Due to the fact that the RISE® rubber vulcanizes during exposure to heat, an enormous amount of new fire resistant material is created, keeping the penetration tight. 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.

RISE® materials lengthen the penetration when exposed to heat or flames

RISE® materials expand massively when exposed to heat or flames



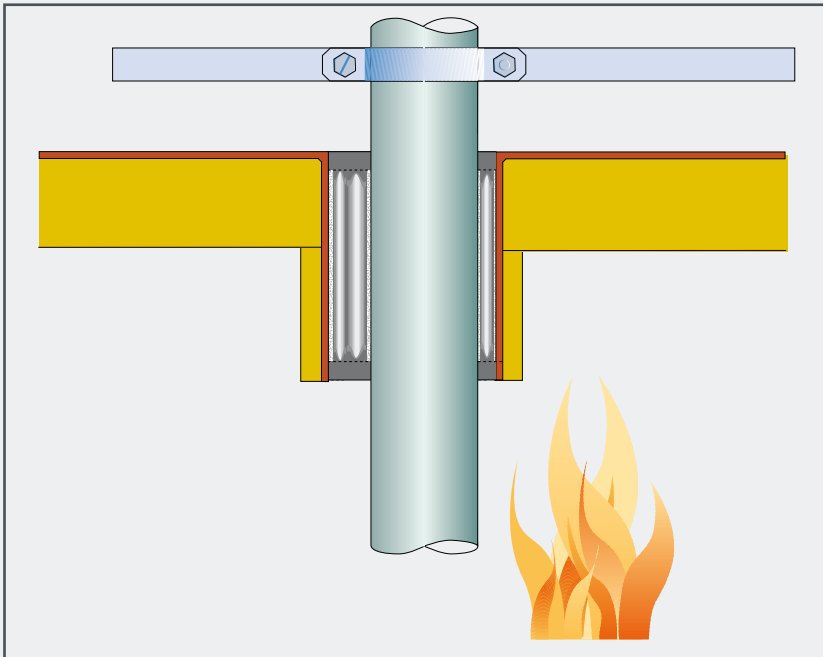
Generally, rubbers used for cable and pipe transit systems are made of a more or less self-extinguishing compound. The drawback, however, is that these rubbers will start charring under heat and slowly but surely will shrink due to the loss of the water content in the rubber. **Not with RISE®!**

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® pipe penetration

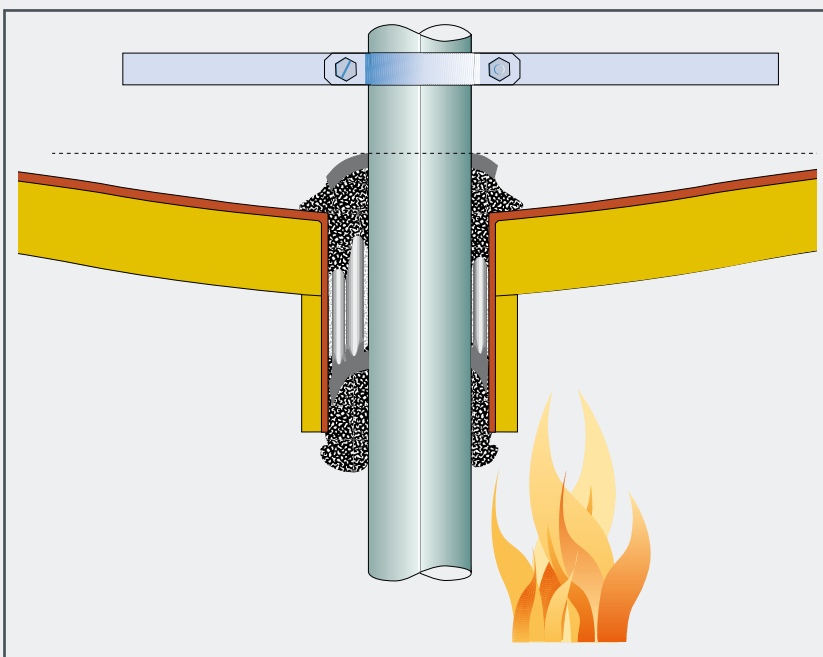
RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

RISE® (multi-) pipe penetrations have been successfully tested to IMO Res. A.754(18)



According to the IMO Resolution A.754(18), the pipes are to be fixed independently of the bulkhead/deck in order to prove whether the sealing material of the penetration is capable of compensating for the total deformation of the bulkhead/deck during exposure to a fire. This is with reason, because the bulkhead is not insulated at the fire side, which means that the steel bulkhead will deform vigorously towards the fire. Although the deck is insulated at the fire side, the steel deck will also sag to a considerable extent. During the fire tests carried out on the RISE® sealing system, a deformation of up to 100 mm occurred to the bulkhead, and up to 75 mm to the deck structure.

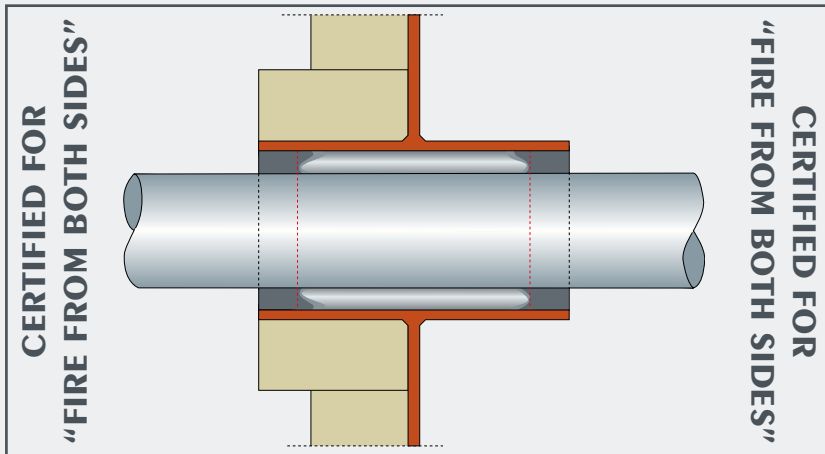
RISE® expands massively when exposed to heat or flames, following any deformation



The sealing system is exposed to severe forces by the movement of the conduit sleeve against the fixed service pipe. Taking into account that almost half the length of the penetration is displaced, it will be obvious that only a self-correcting sealing system such as RISE® is able to follow these displacements. RISE® single and multi-pipe penetrations meet the IMO requirement with ease, due to the expanding properties of the RISE® rubber and FIWA® sealant. In addition, because of the vulcanization process which occurs when exposed to heat, RISE® bonds itself again and again to the inner wall of the conduit sleeve and the outer wall of the ducted pipe.

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

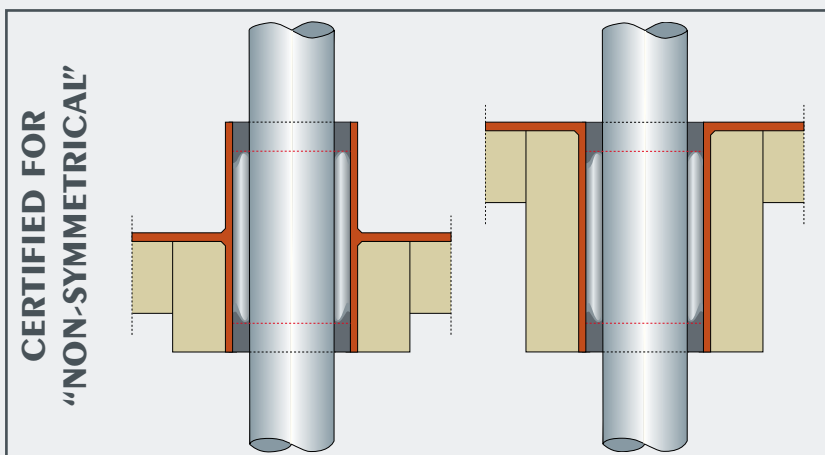
*fire tested with insulation at one side only
in accordance with IMO Res. A.754(18)*



Section A.III/2.2.1 of IMO Res. A.754(18) states "A bulkhead which includes the pipe penetration 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 than be totally insulated at both sides! This is not the case with RISE®.

*shortest possible conduit length, less
insulation with RISE® pipe penetrations*

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

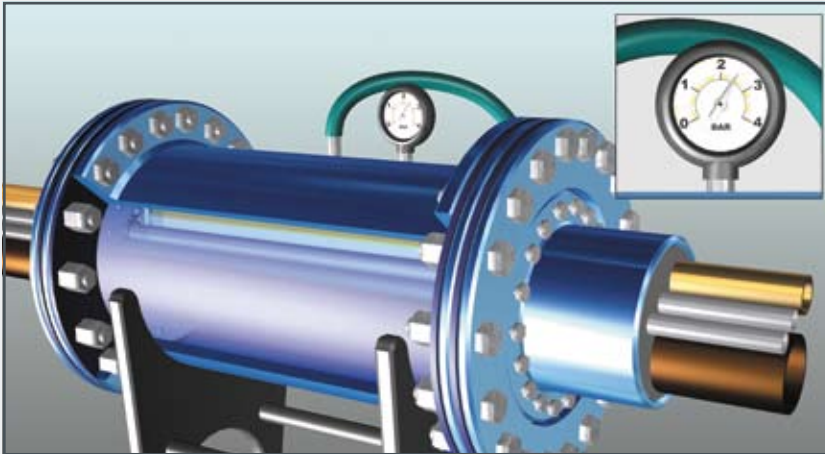


The easiest way to pass a deck test is to place the transit totally above deck. ***Worst case for deck penetrations is to place the transits totally below deck.*** And that is exactly the way the penetrations are generally installed! Pipe penetrations should be applied as tested. This means that penetrations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

*any position of the transits will do for
a RISE® pipe penetration*

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

*approved gas and water tight
RISE® (multi-) pipe 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. The flexibility of the FIWA® sealant even allows displacement of the ducted pipes without losing tightness. It is not necessary to compress the RISE® system to obtain water tightness. This means that ducted plastic pipes will not be exposed to mechanical forces. Possible damages caused by creep are avoided.

*no compression needed to obtain a watertight
RISE® (multi-) pipe penetration*

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



What will the performance of a fire safe pipe or 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® pipe penetrations are exposed to
thermal cycling tests with positive results*

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

additional safety with RISE® (multi-) pipe 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-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

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MARINE DIVISION

17 rue Place des Reflets - La Défense 2
92400 Courbevoie - France

Tel. 33 1 42 91 52 91
Fax. 33 1 42 91 28 94
www.veritas.com

Certificate number: 10719B1 EIC

File number : ACI 4010/02/008

Annex A1 Item number : A.1.0.200

USCG approval category : 164.136

This certificate is not valid when presented without the full attached schedule composed of 7 sections

EC TYPE EXAMINATION CERTIFICATE

as per Module B of European Union Council Directive 90/269/EEC on machine equipment
as last amended by Commission Directive 2007/75/EC of 2 September 2007

This certificate is issued to

BEELE ENGINEERING

Aalst - NETHERLANDS

for the type of product

PENETRATIONS THROUGH 'A' CLASS DIVISIONS: PIPE, DUCT, TRUNK, etc
PENETRATIONS

RSE single PLASTIC pipe, MULTI PLASTIC pipe and MULTI-MIX pipe penetration.

Regulations and standards :

COLAS 74 Convention, as amended, Paragraphs 3.1 - IMO Resolution MSC. 61(67) (FTP Code) Annex 1, Part 3 and Annex 2 -
IMO Resolution A.754 (18).

This certificate is issued under the French Maritime Authority to attest that BUREAU VERITAS did undertake the relevant type-examination procedures for the product identified above which was found to comply with the relevant requirements of the Council Directive 90/269/EEC of 20 December 1989 as amended

This certificate is valid until : 01 Feb 2011

At Paris la Défense, on : 18 Oct 2008

For BUREAU VERITAS, Notified Body N°003

By order of the Secretary

Approval office

Local office : BV ROTTERDAM

Surveyor : J. Haas

[Signature]
J. BENOIST

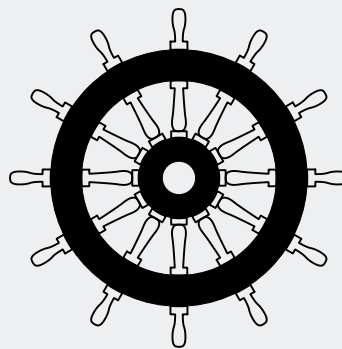
This certificate does not allow to issue the Declaration of Conformity and to affix the mark of conformity (conformity) to the products corresponding to this type. To this end, the production-control phase remains (S. 8 or 11 of Annex B of the Directive) to be completed with and controlled by a written inspection agreement with a notified body.

This certificate remains valid and its date stated above, unless corrected or revoked, provided the conditions indicated in the subsequent paragraph are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes in modifications to the approved product, which have not been notified in, and agreed in writing with the General Committee of BUREAU VERITAS. Should the approved regulations or standards be amended during the validity of this certificate, the product must be re-assessed prior to affixing being placed on listed vessels, to which the approved regulations or standards apply. BUREAU VERITAS S.A. is designated by the French Maritime Authority as a 'notified body' under the terms of the French Regulations Decree 140 Chapter 140-0. This certificate is issued under the terms of the General Conditions of BUREAU VERITAS Marine Division. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in such documents, or for errors of judgement, fault or negligence committed by personnel of the body acting in its capacity as establishment or institution of this document, and in connection with any activities for which it claims approval.

BV mod. A/E 508 August 2005

This certificate consists of 4 pages

EC (MED) certificates according to EUROPEAN UNION COUNCIL DIRECTIVE 96/98 EC on MARINE EQUIPMENT have been issued by Det Norske Veritas certificates N° MED-B-4906 for RISE/ULTRA and N° MED-B-4908 for RISE/NOFIRNO multi-pipe and multi-all-mix penetrations and by Bureau Veritas certificates N° 09156/B2 EC for RISE, RISE/NOFIRNO and RIACNOF multi-cable penetrations and extended multi-cable penetrations, N° 11301/B0 EC for RISE-EMC multi-cable penetrations, N° 11302/A2 EC for RISE busbar penetrations and certificates N° 10035/B0 EC and N° 10710/B1 EC for RISE single and multi-pipe penetrations for metallic and plastic pipes.



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 via DNV CERTIFICATES
USCG via MED CERTIFICATES

The logo for RISE features the word "RISE" in a bold, stylized font. The letters are primarily dark brown with a red-to-orange gradient fill. Each letter has a thick, metallic-looking grey outline. The 'R' and 'I' are solid, while the 'S' and 'E' have a horizontal line pattern on their right sides.

CERTIFIED BY
THE MAJOR
CLASSIFICATION
SOCIETIES

Note: configurations may differ per classification society.

RISE[®] (MULTI-) PIPE TRANSITS: THE RAPID[®] SEALING SYSTEM

*only three different components for a
RISE[®] pipe transit: sleeves, strips and sealant*



For pipe penetrations the non-split filler sleeves type 18/12 and 27/19 are used. 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 glued together.



RISE[®] pipe 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 are exposed to fire or temperatures in excess of 200 °C it expands 5-10 times of its original volume. During the expansion of the rubber a carbonized mass is formed, which has good properties of thermal insulation.

For metallic pipes the filler sleeves sizes 18/12 and 27/19 are non-split in lengths of 160 mm.

For plastic pipe sizes split insert sleeves are available in a length of 210 mm with the required wall thickness as an alternative for wrapping the strips around these pipes. For larger plastic pipes rubber strips are supplied in 1 meter lengths, 5 mm thick and 210 mm wide.

Filler sleeves are then also 210 mm long.

The FRR/LEHF 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).



RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

*only three different components for a
RISE® pipe transit: sleeves, strips 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 | 1.30 ± 0.03 g/cm³ |
| 03) curing of top layer | 0.5 - 1 hour depending on temperature and air humidity |
| 04) service temperature | -50 °C up to +160 °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 | guaranteed 6 months; when applied later than 6 months after date of manufacturing, curing and adhesive properties have to be checked before application |



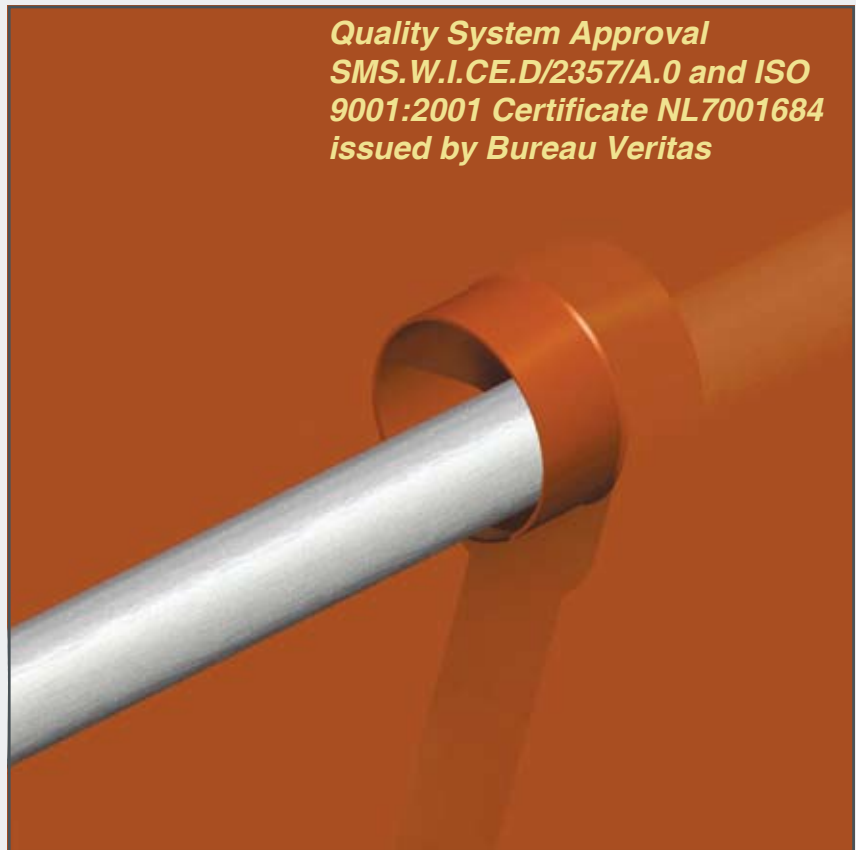
**FIWA is absolutely
HALOGEN FREE
(tested according to
Naval Engineering
Standard NES 713:
Issue 3).**

**Furthermore FIWA
has a low smoke 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-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

1) The metallic pipe can be passed through the conduit sleeve in any position, provided there is enough space between the sleeve and the ducted pipe (see 2). The conduit sleeve can be only 200 mm deep. Ask for our free installation video.



*Quality System Approval
SMS.W.I.CE.D/2357/A.0 and ISO
9001:2001 Certificate NL7001684
issued by Bureau Veritas*



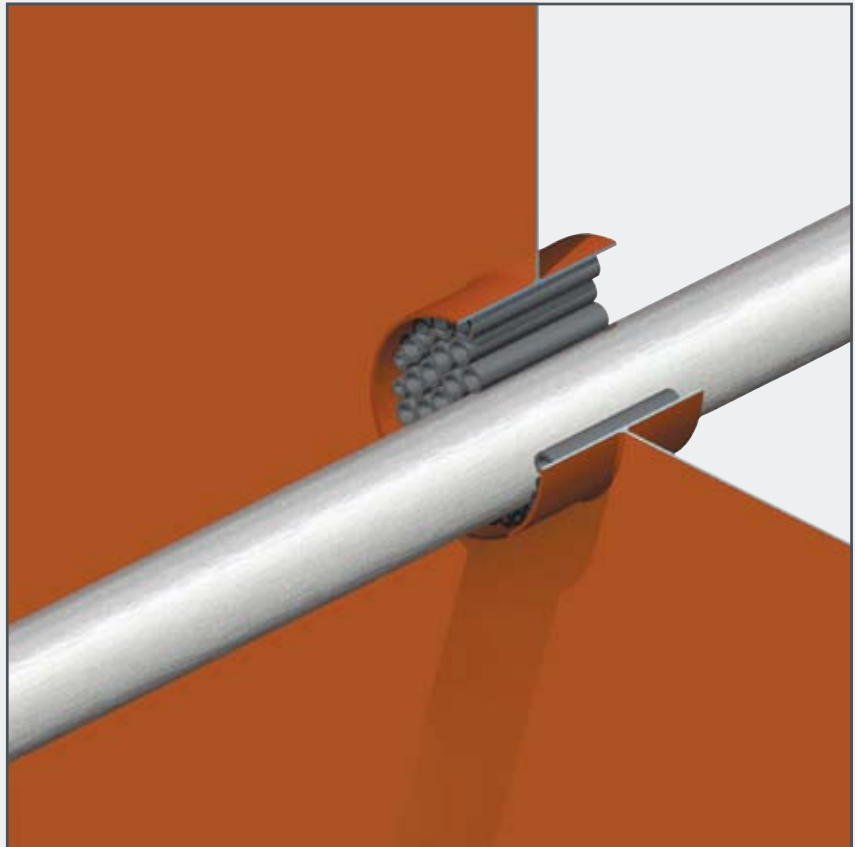
2) Make sure that the minimum space between the pipe and the wall of the conduit sleeve is in accordance with the minimum allowed distance as certified. See the specifications on pages 22 and 23.



RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

3) The 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.

Note: some societies are still requiring the use of RISE® strips.



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.



Before applying the sealant it is advisable to check the status of the filling with insert and filler sleeves.

RISE® (MULTI-) PIPE 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 pipe thoroughly and remove any dirt, rust or oil residues before applying the sealant.



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® (MULTI-) PIPE 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!



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.

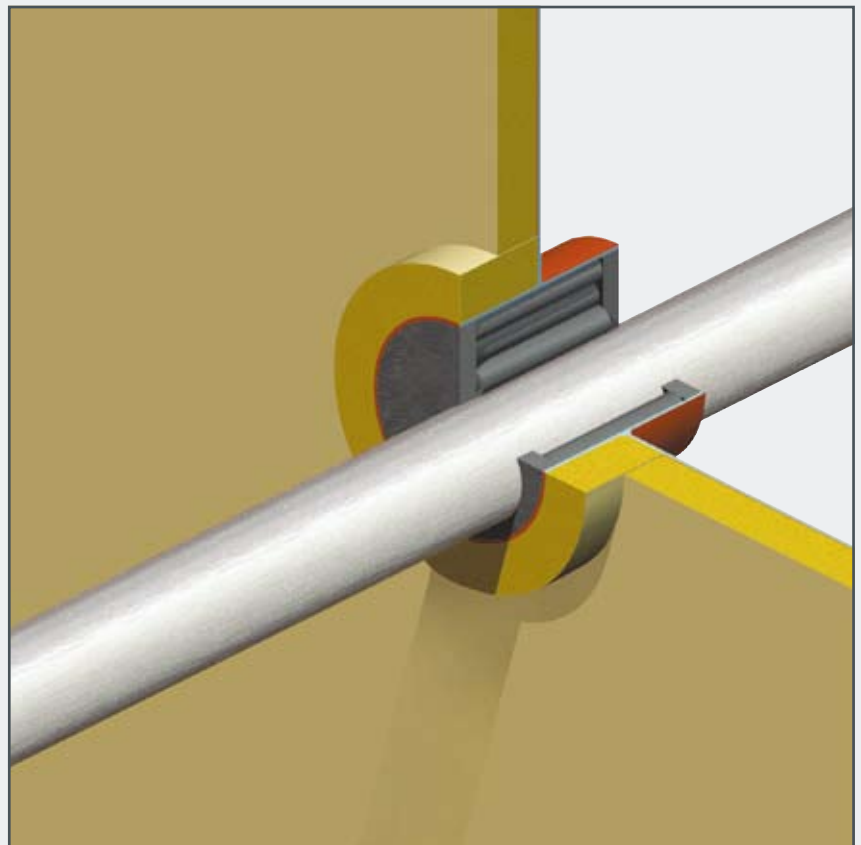


RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

9) The surface can be further smoothed by hand. Just wet the hand thoroughly with soap and water. No dirty hands when working with FIWA®. People with sensitive skin should use gloves when working with the FIWA®.

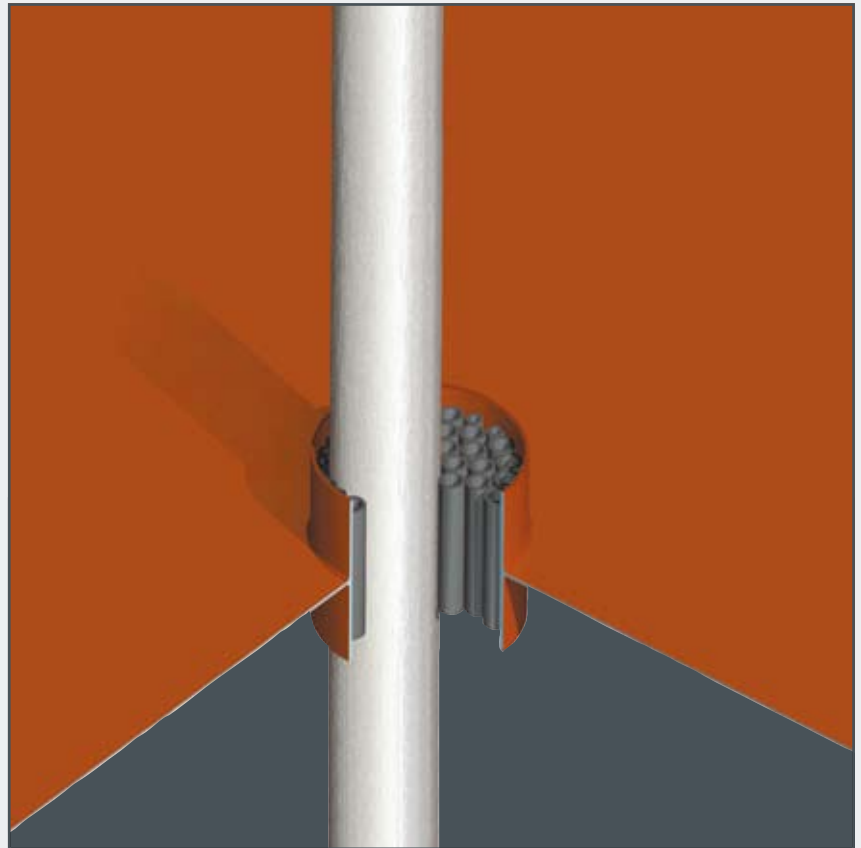


10) For A-class penetrations the conduit sleeve/frame needs to be insulated only at the insulated side of the bulkhead. The ducted pipe has to be insulated according to the specifications on pages 22 and 24.



RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

11) Vertical transits are easy to install as well. To prevent the filler sleeves from falling out of the conduit sleeve/frame, they should be bundled together to form a compact bundle. They also are available in bundles of ten pieces. Filler sleeves are delivered in a non-split version.



12) 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.

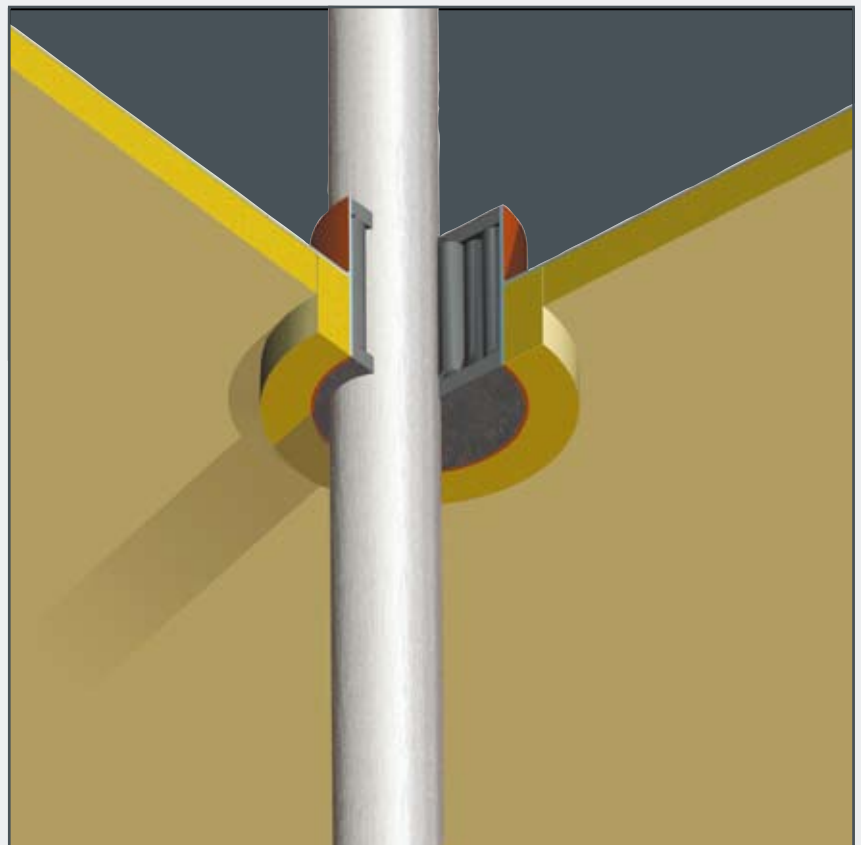


RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

13) 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.

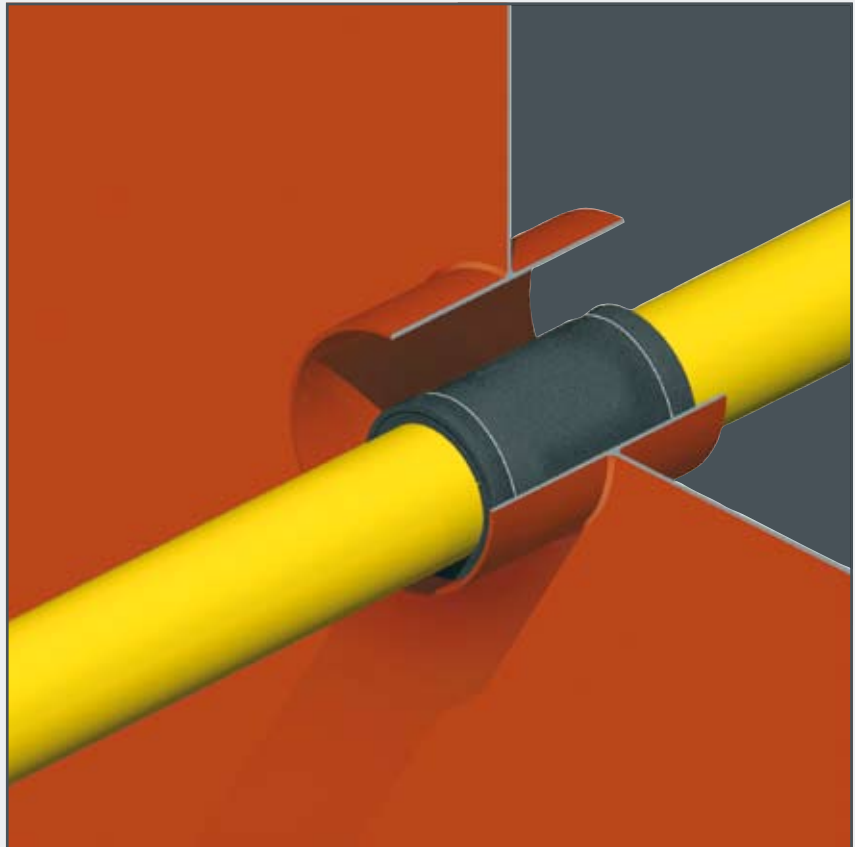


14) For A-class penetrations the conduit sleeve/frame needs to be insulated only at the lower side of the deck. The ducted pipe has to be insulated according to the specifications on pages 23 and 25.

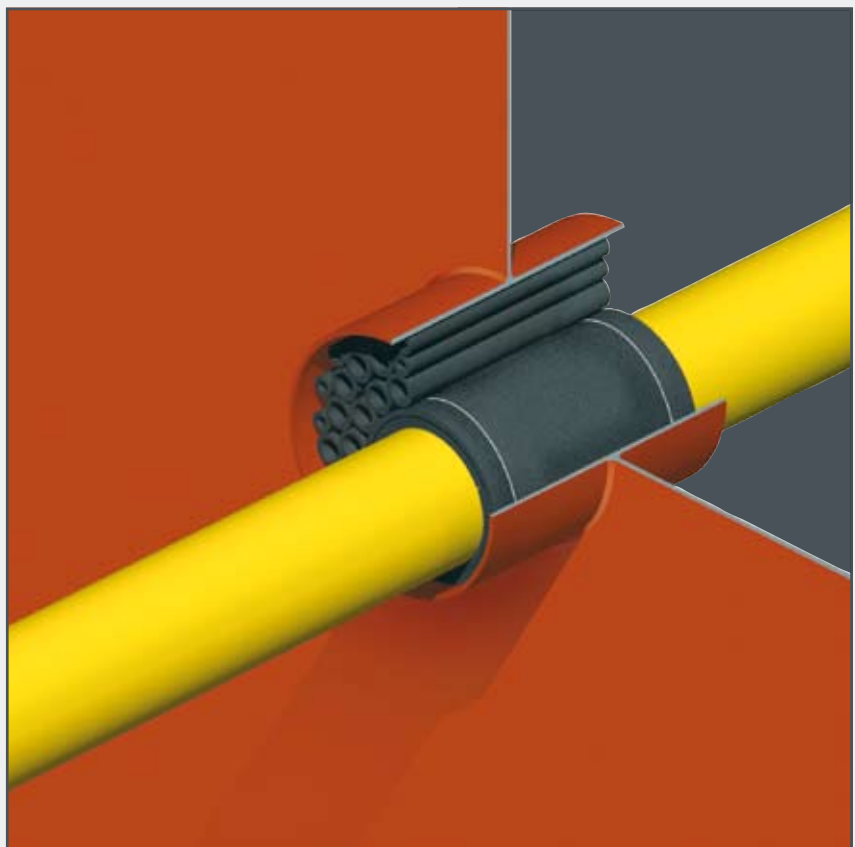


RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

15) Plastic pipes have to be wrapped with RISE® rubber strips with a thickness of $1/4 \times D$ of the ducted plastic pipe. For smaller pipes up to 42 mm RISE® insert sleeves in the required thickness are available. For plastic pipes above 160 mm OD SLIPSIL® plugs can be used.



16) The 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. Take care for a tight fit. Conduit depth 250 mm.

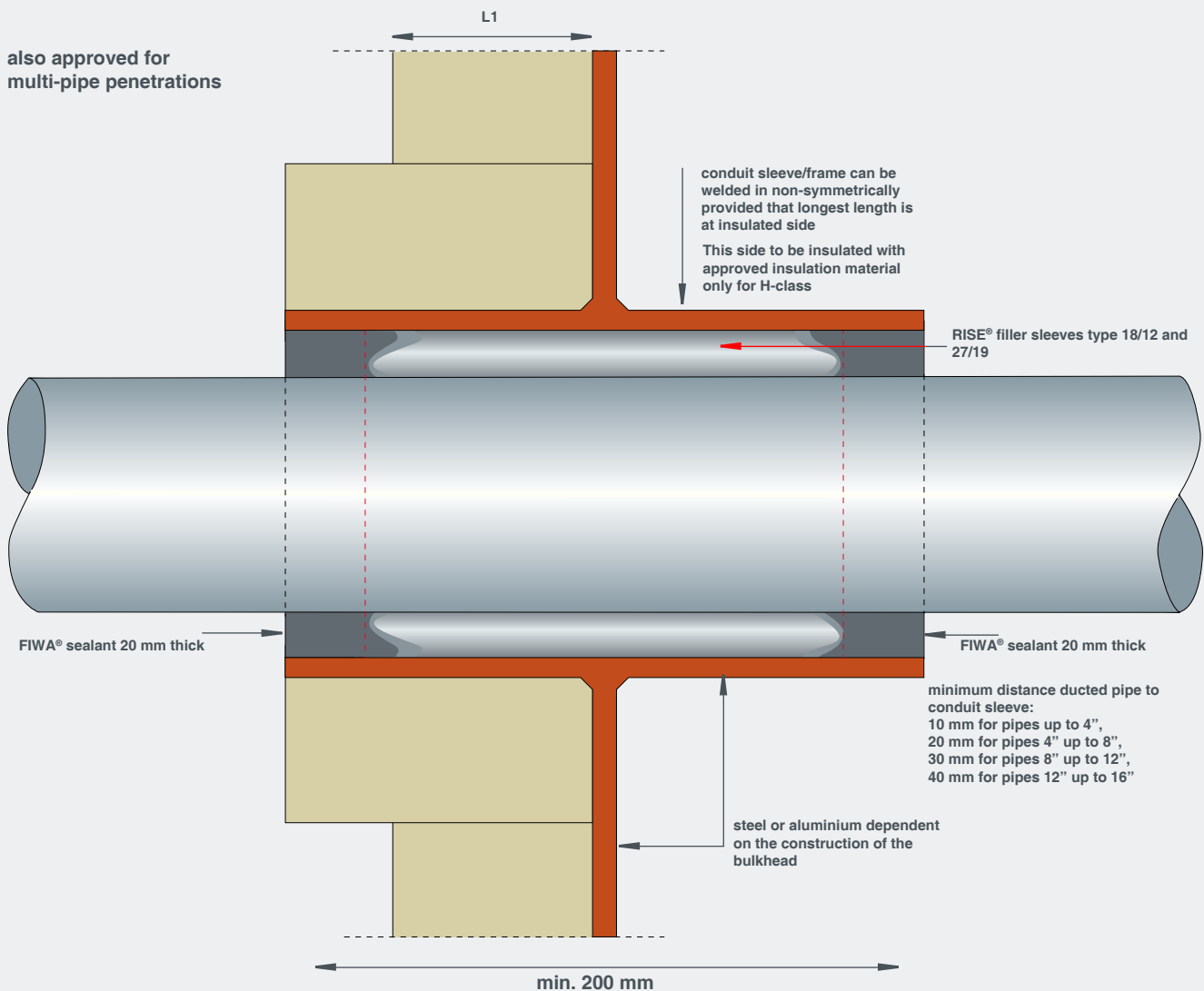


RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A or H-class approved bulkhead insulation.

- CAN BE USED FOR OFF CENTRE, EXCENTRICALLY AND ANGLED DUCTED PIPES
- FOR METALLIC AND GRP PIPES



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

For steel/stainless steel pipes up to 408 mm, copper/CuNi pipes up to 419 mm and GRP pipes up to 222 mm.
See for length of insulation of the ducted pipes certified drawings R0140E, R0141E, R0142E, R196E, R0197E and R0198E

specifications for A-class according to EC (MED) certificate 10035/B0 EC issued by Bureau Veritas
Note: some classification societies still require the use of RISE strips. Conduit length in these cases is 250 mm. See page 24.

A0-A60 METALLIC AND GRP PIPE TRANSIT

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

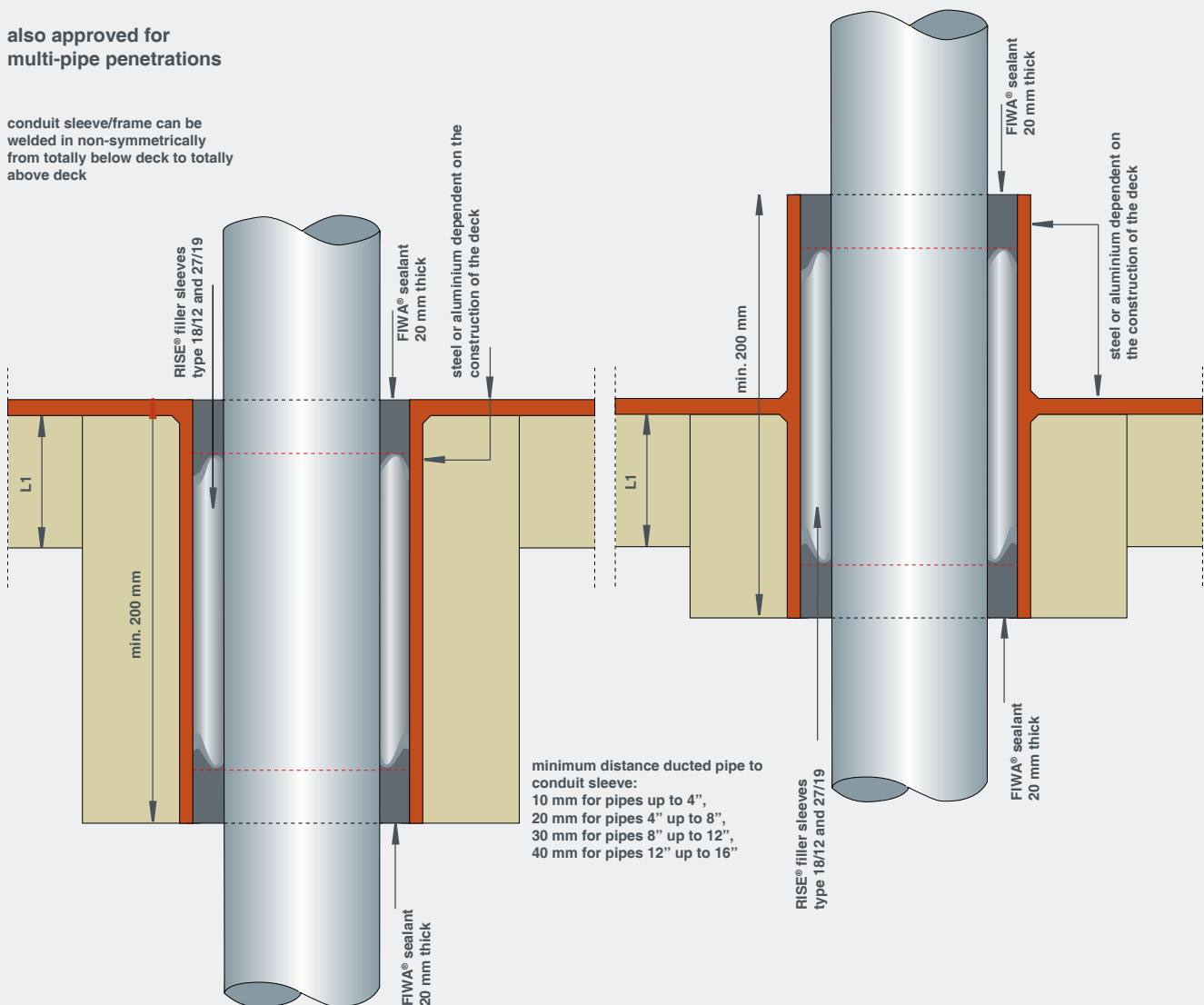
DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A or H-class approved deck insulation.

- CAN BE USED FOR OFF CENTRE, EXCENTRICALLY AND ANGLED DUCTED PIPES
- FOR METALLIC AND GRP PIPES

also approved for
multi-pipe penetrations

conduit sleeve/frame can be
welded in non-symmetrically
from totally below deck to totally
above deck



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

specifications for A-class according to EC (MED) certificate 10035/B0 EC issued by Bureau Veritas
Note: some classification societies still require the use of RISE strips. Conduit length in these cases is 250 mm. See page 24.

For steel/stainless steel pipes up to 408 mm, copper/CuNi pipes up to 419 mm and GRP pipes up to 222 mm.
See for length of insulation of the ducted pipes certified drawings R0140E, R0141E, R0142E, R196E, R0197E and R0198E

A0-A60
METALLIC AND
GRP PIPE TRANSIT

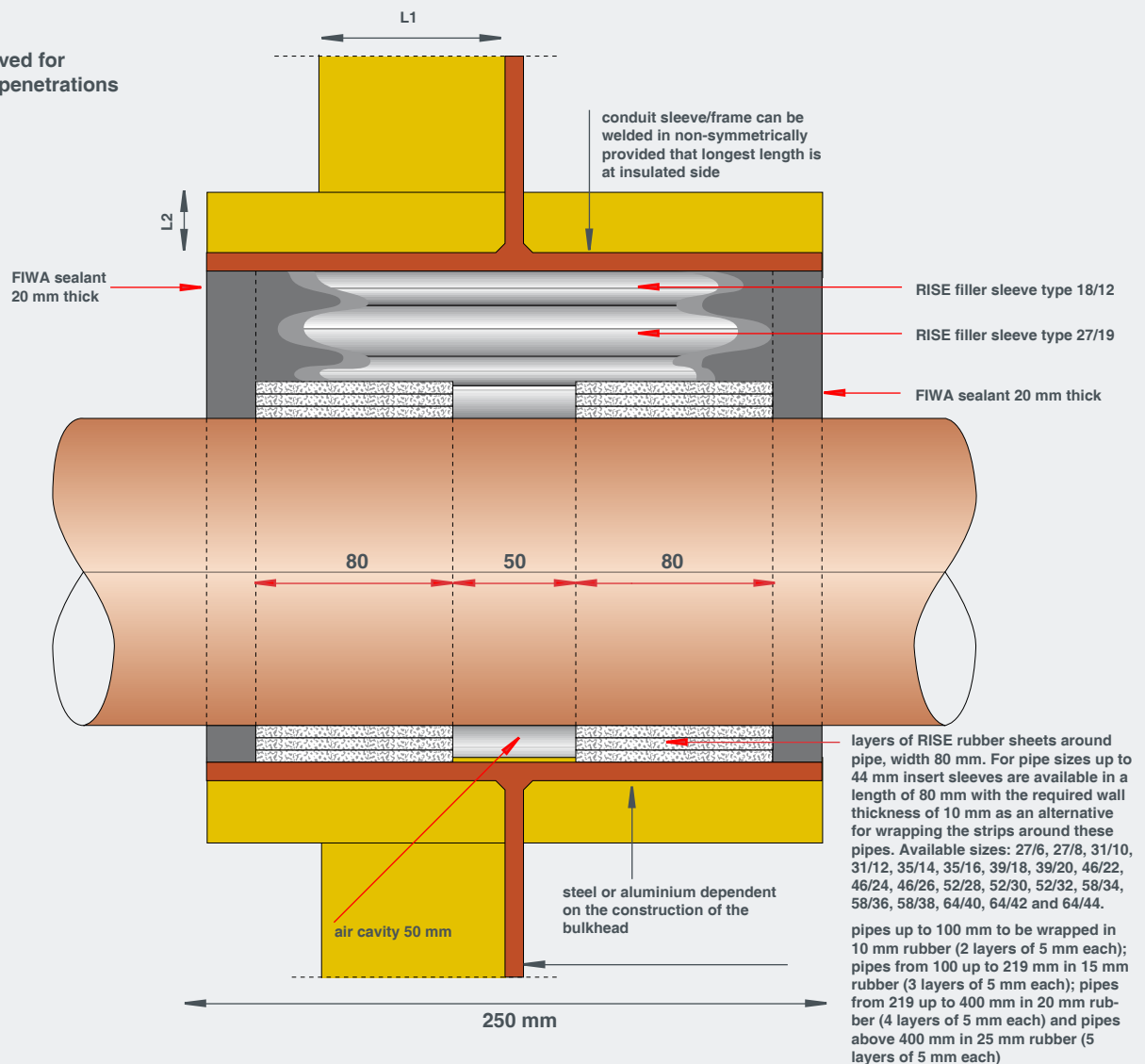
RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A-60/H-120 approved bulkhead insulation.

- CAN BE USED FOR OFF CENTRE, EXCENTRICALLY AND ANGLED DUCTED PIPES
- FOR METALLIC PIPES

also approved for multi-pipe penetrations



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.

specifications for A-class according to EC (MED) certificate 10035/B0 EC issued by Bureau Veritas For H-class Type approval certificate 11909/A0 BV issued by Bureau Veritas
Note: configurations may differ per society.

For steel/stainless steel pipes up to 1016 mm and GRP pipes up to 408 mm for H-class. See for insulation of the ducted pipes certified drawings R0107E and R0235E.

H0-H120 METALLIC AND GRP PIPE TRANSIT

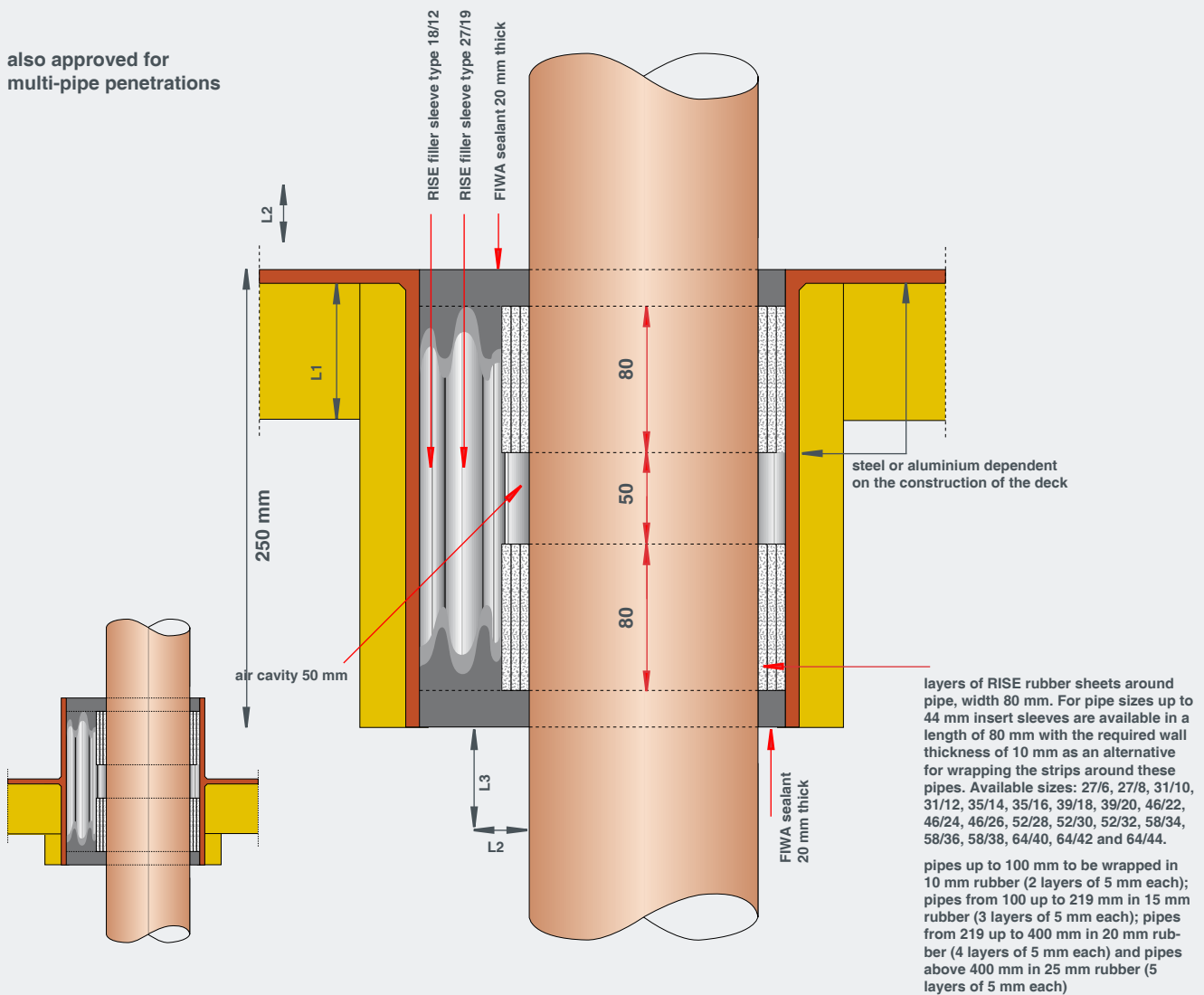
RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

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; for H-class penetrations ceramic fibres 128/96 kg/m³ as used for the deck insulation.

- CAN BE USED FOR OFF CENTRE, EXCENTRICALLY AND ANGLED DUCTED PIPES
- FOR METALLIC PIPES

also approved for multi-pipe penetrations



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.

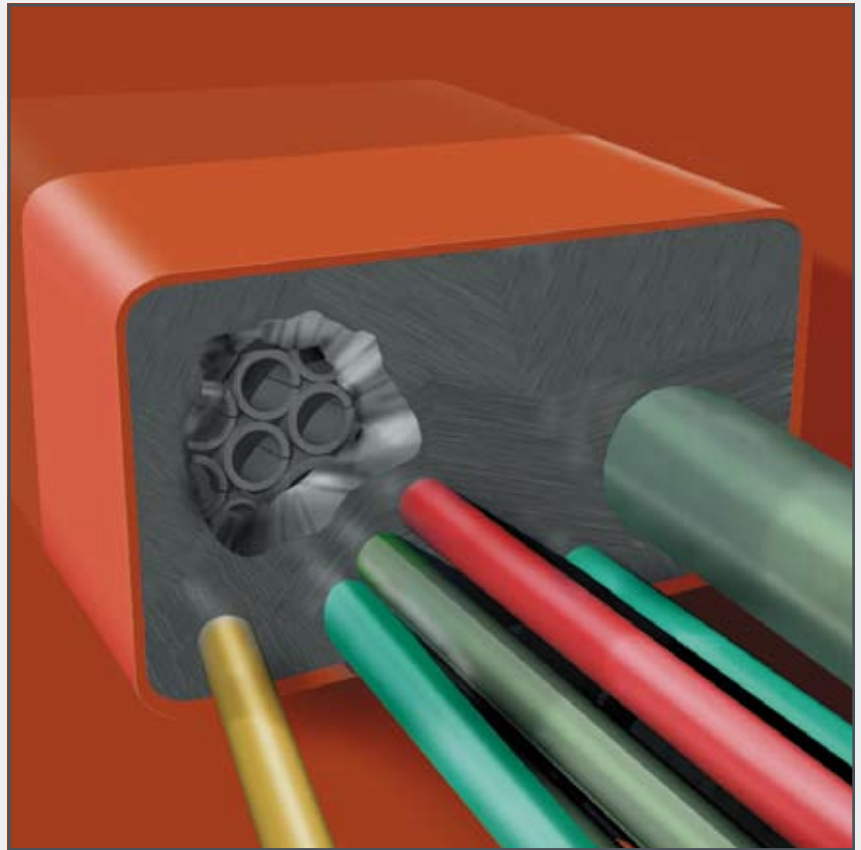
specifications for A-class according to EC (MED) certificate 10035/B0 EC issued by Bureau Veritas
For H-class Type approval certificate 11909/A0 BV issued by Bureau Veritas
Note: configurations may differ per society.

For steel/stainless steel pipes up to 1016 mm and GRP pipes up to 408 mm for H-class. See for insulation of the ducted pipes certified drawings R0108E, R0109E, R0236E and R0237E.

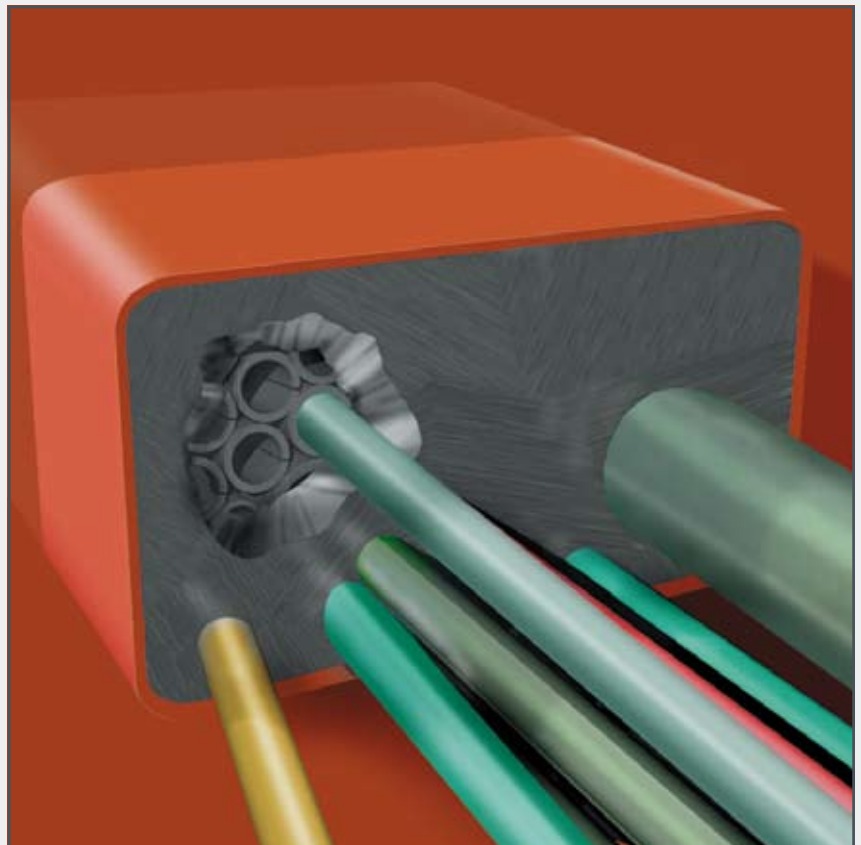
H0-H120 METALLIC AND GRP PIPE TRANSIT

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

Adding extra pipes 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.

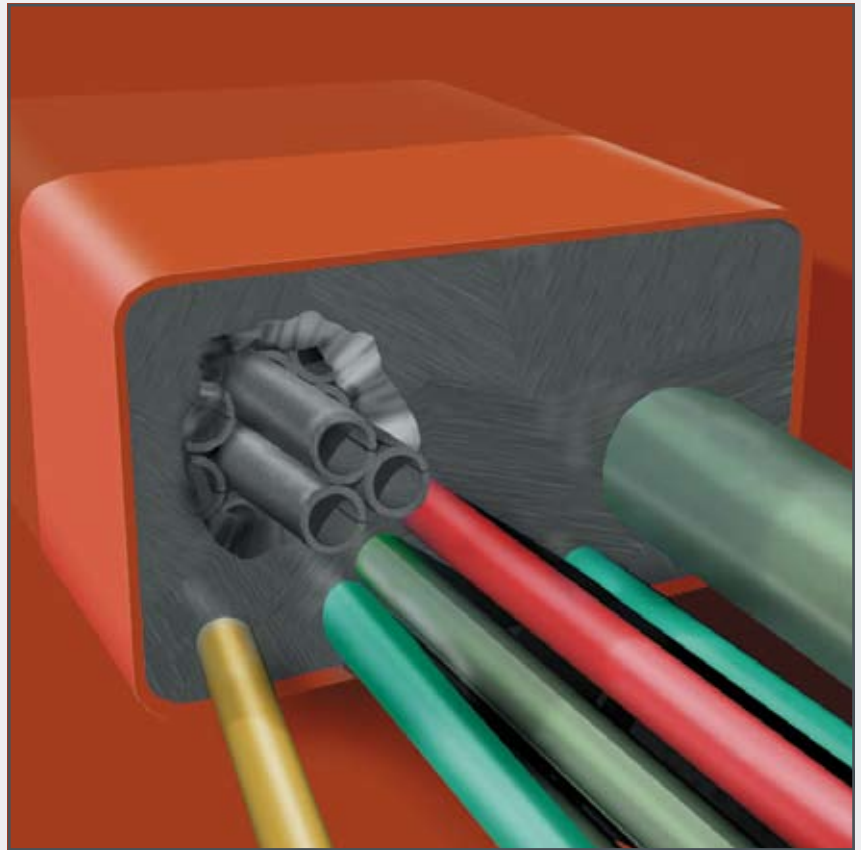


Pull the pipe through one of the empty filler sleeves with an inner diameter more or less corresponding to the outer diameter of the pipe. Refill the opening in the sealant layer at both sides of the penetration with sufficient FIWA® sealant.

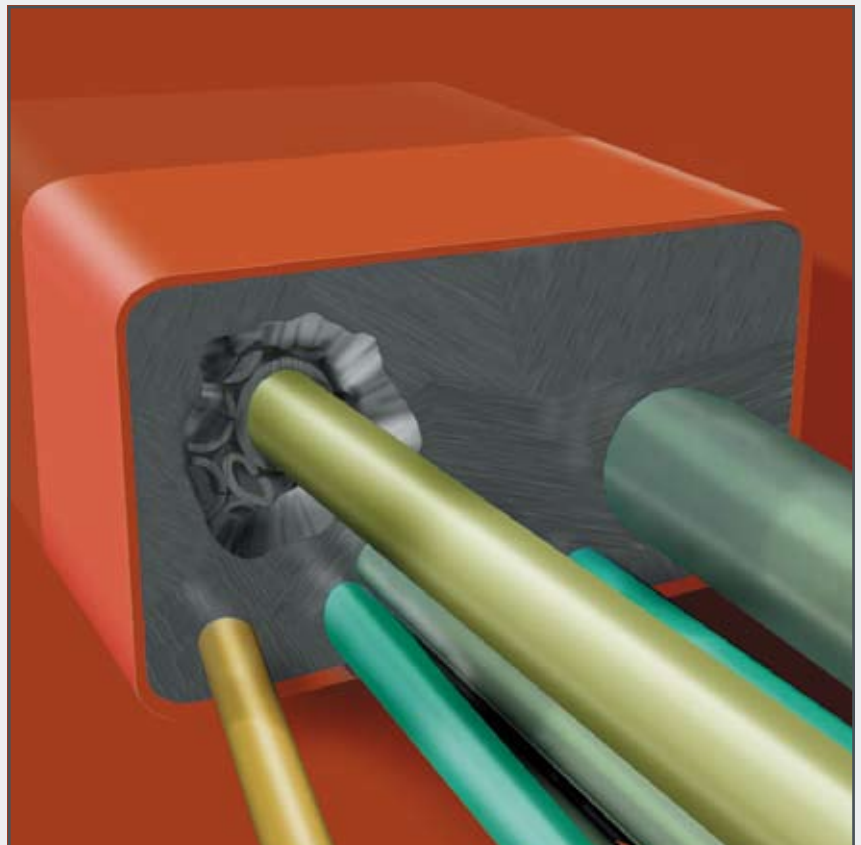


RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

If the empty filler sleeves are not fitting to the size of the pipe to be ducted, a number of these filler sleeves must be removed from the penetration. Pull the pipe through the opening created by removing filler sleeves.

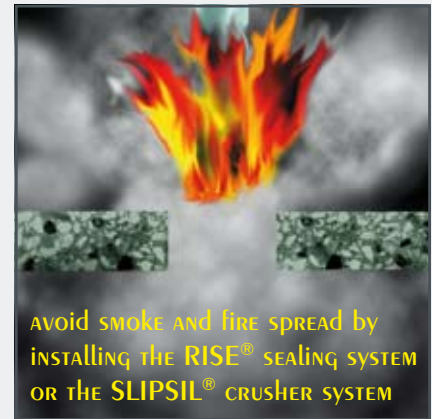
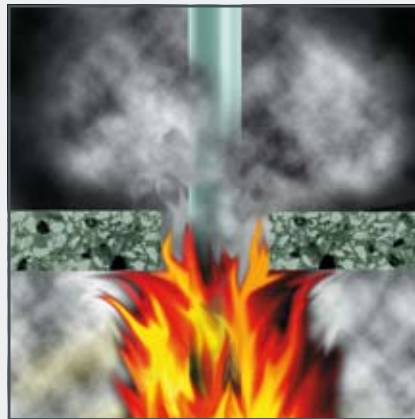
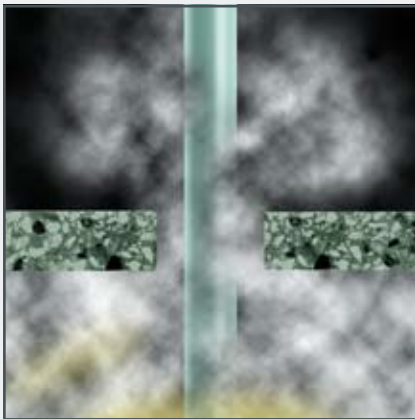


Fill the open space around the ducted pipe with filler sleeves. Refill the openings cut in the sealant layer at both sides of the penetration with sufficient FIWA® sealant. The FIWA® sealant is pressed down firmly and smoothed with a damp cloth.



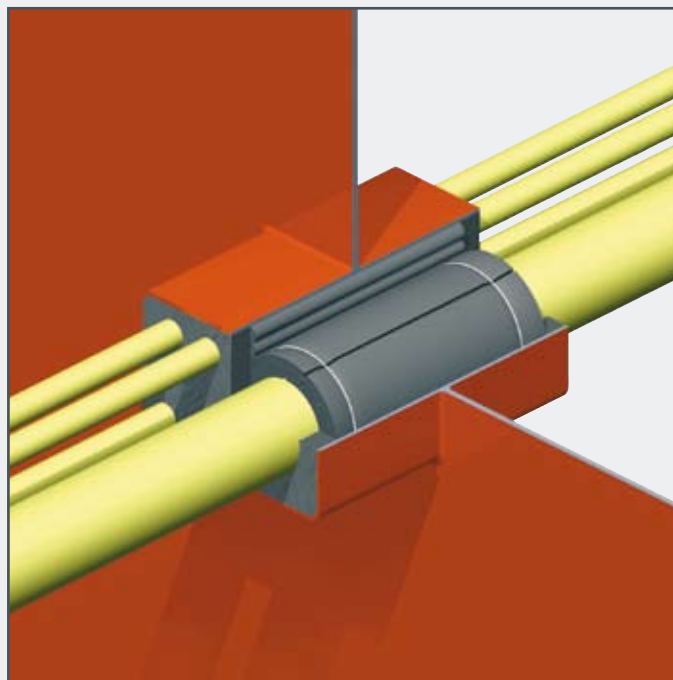
RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

Plastic pipes which pass through fire-rated bulkheads and decks as part of, for example, sanitation systems, are a potential source of serious problems in case of fire. Most plastic pipes start to soften at a temperature of about 75 °C and ignite at a temperature of about 140 °C. This means that, should a fire occur, a hole will be formed by the softened or combusted plastic pipe, allowing fumes and flames to spread freely. To meet this problem, BEELE Engineering has developed the crusher RISE® sealing system.



For this purpose a combination of the FRR/EHF (fire resistant rubber/expanding, halogen free) and the FRR/LEHF (fire resistant rubber/low grade of expansion, halogen free) is used in the same way as for the RISE® pipe penetrations for metallic pipes. When exposed to temperatures above 200 °C or flames, this rubber mass will expand vigorously with such a force that the plastic pipes will be crushed. This means that in case of a fire no opening will be left in the conduit for the passage of smoke and flames. The time to close off the opening left by the burned or softened plastic must be very short. Otherwise a chimney effect will occur causing the pipe at the unexposed side to melt. The RISE® rubber, however, will expand as soon as the conduit sleeve is subjected to heat and as a result it will in a very short time seal off the opening created by the softened or combusted plastic pipe.

The expanded RISE® rubber possesses good thermal insulation properties, ensuring that the softened pipe will re-harden after compression. In this way the spread of fumes and flames is prevented for an extended period of time.



Because the RISE® rubber compound is completely free from halogens and also contains no formaldehyde, phenol or other harmful substances, no toxic fumes are produced upon heating or exposure to fire.

The rubber compound also contains no asbestos or other fibres. In addition, the volume of fumes which are formed when exposed to fire is extremely limited.

Official fire tests, both on a full scale deck and bulkhead, according to IMO Resolution

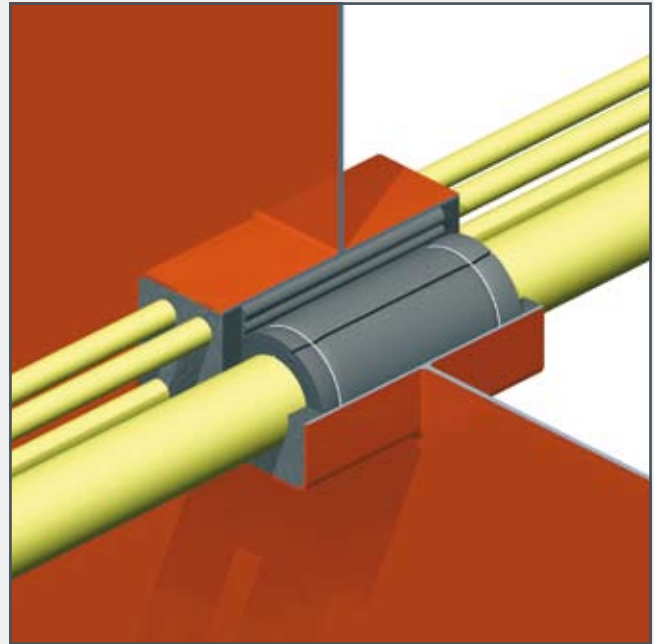
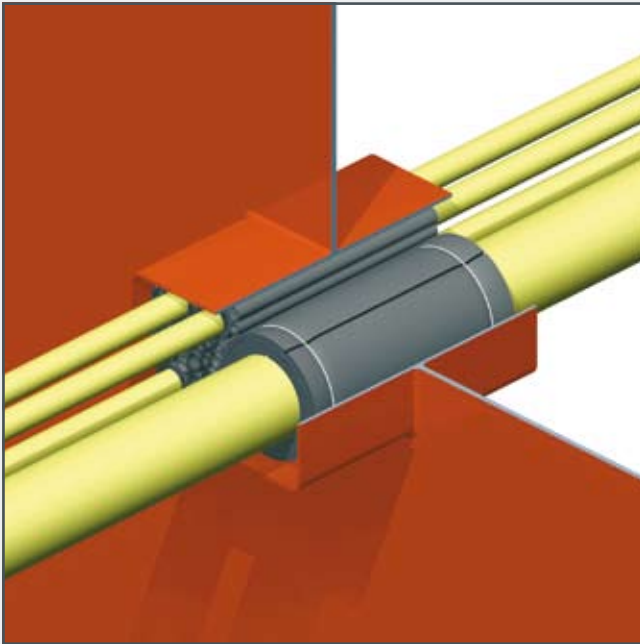
A.754(18) have successfully been carried out at the Warrington Fire Research Institute in England. Firesafe, gas and water tight.

EC certificate Bureau Veritas Nr. 10710/B1 EC.

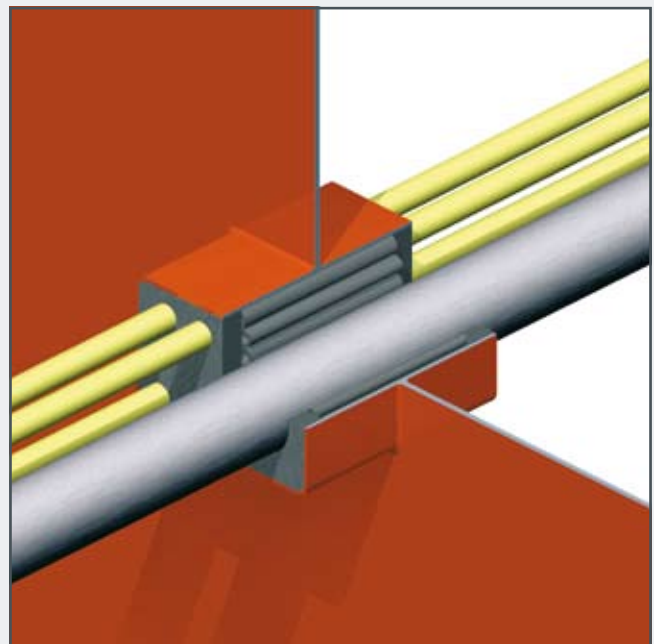
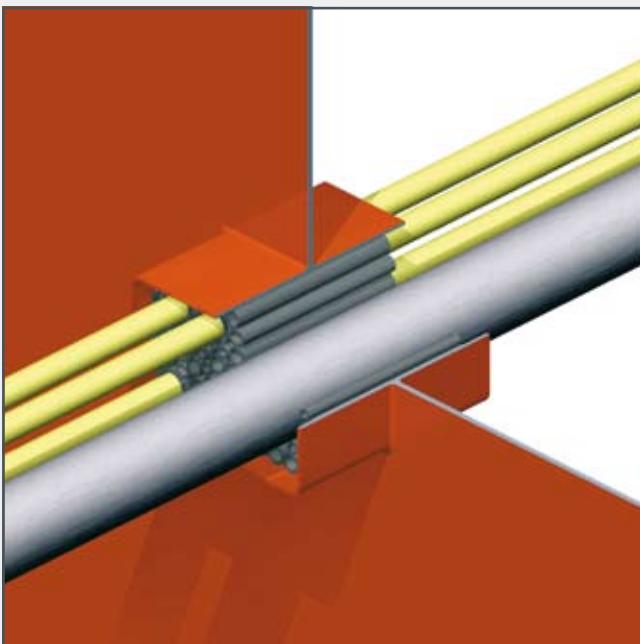
CRUSHER®

RISE[®] (MULTI-) PIPE TRANSITS: THE RAPID[®] SEALING SYSTEM

*RISE[®] (multi-) plastic pipe penetrations:
based on high-tech ACTIFIRE[®] technology*



*RISE[®] (multi-) mix pipe penetrations:
for steel and plastic pipes*

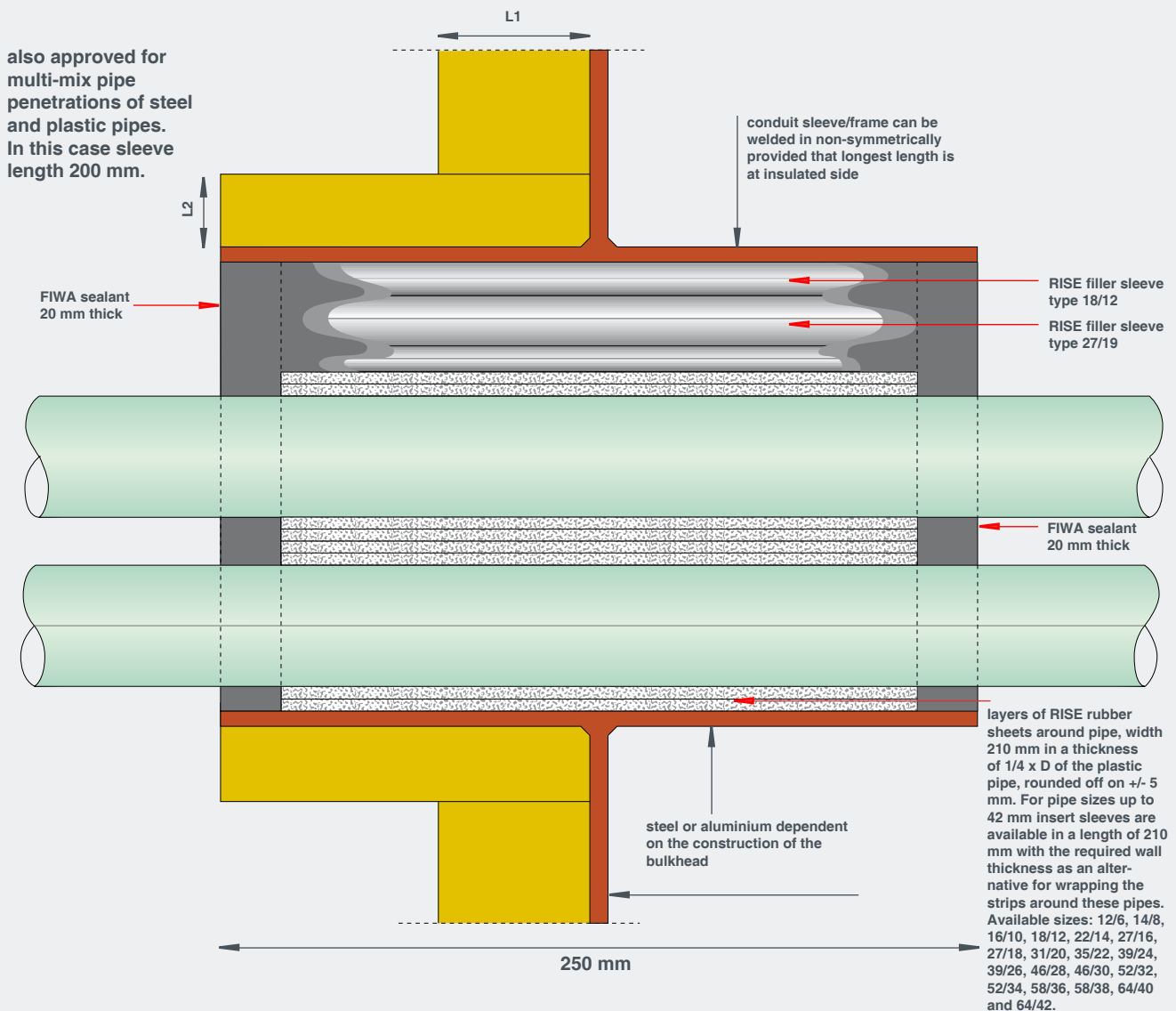


RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

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

- FOR SINGLE PLASTIC
PIPES UP TO 160 MM
- FOR MULTI-PLASTIC
PIPES UP TO 110 MM



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.

specifications for A-class according to EC (MED)
certificate 10710/B1 EC issued by Bureau Veritas

NO INSULATION REQUIRED AT THE FRONT
OF THE PENETRATION OR AROUND THE
DUCTED PIPE(S).

STEEL PIPE(S) MAXIMUM 60.3 MM OD AND
PLASTIC PIPE(S) MAXIMUM 90 MM OD
ALLOWABLE IN MULTI-MIX PENETRATIONS

A0-A60 PLASTIC PIPE TRANSIT BULKHEADS

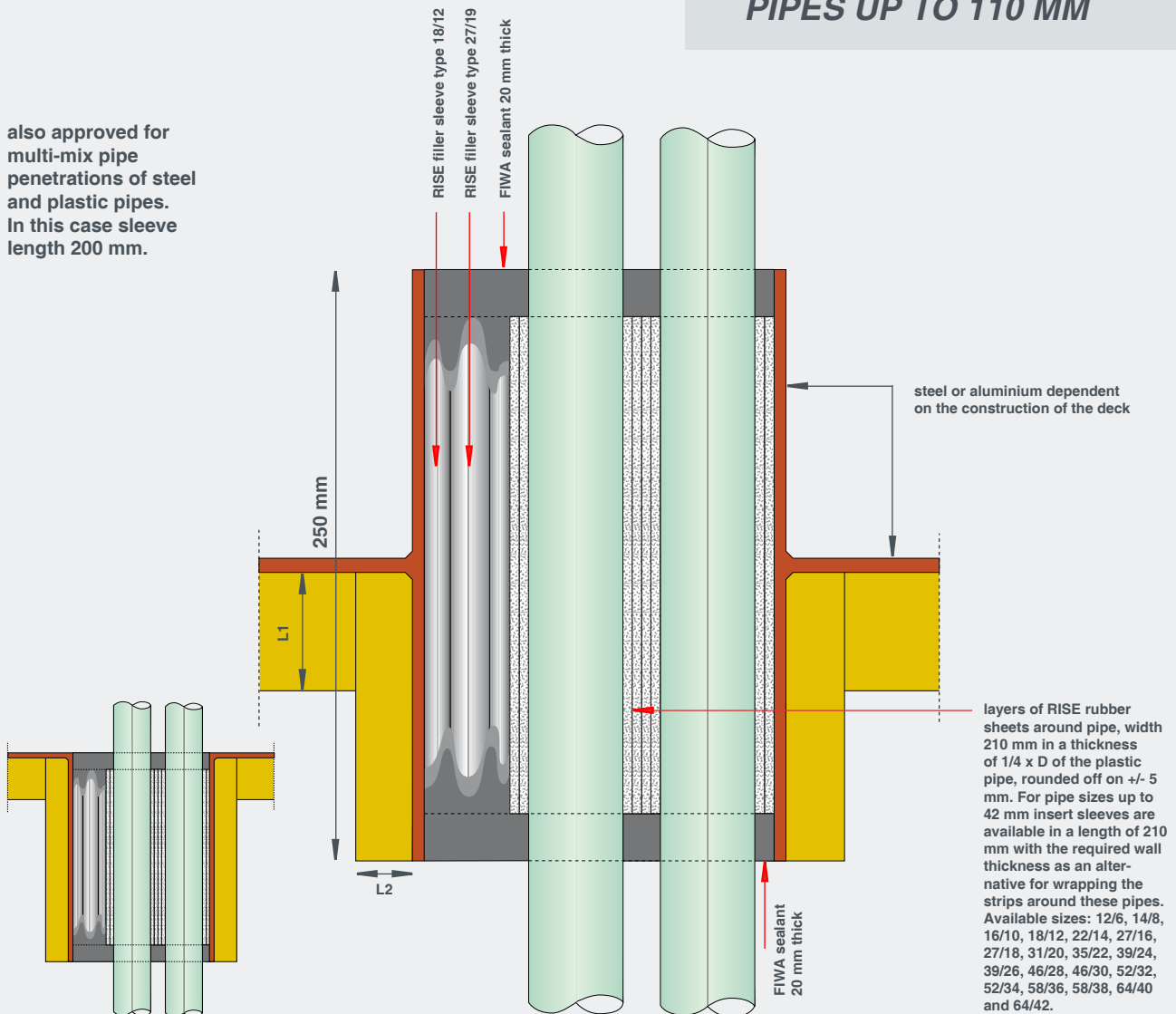
RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

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

also approved for
multi-mix pipe
penetrations of steel
and plastic pipes.
In this case sleeve
length 200 mm.

- FOR SINGLE PLASTIC
PIPES UP TO 160 MM
- FOR MULTI-PLASTIC
PIPES UP TO 110 MM



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.

specifications for A-class according to EC (MED)
certificate 10710/B1 EC issued by Bureau Veritas

NO INSULATION REQUIRED AT THE FRONT
OF THE PENETRATION OR AROUND THE
DUCTED PIPE(S).

STEEL PIPE(S) MAXIMUM 60.3 MM OD AND
PLASTIC PIPE(S) MAXIMUM 90 MM OD
ALLOWABLE IN MULTI-MIX PENETRATIONS

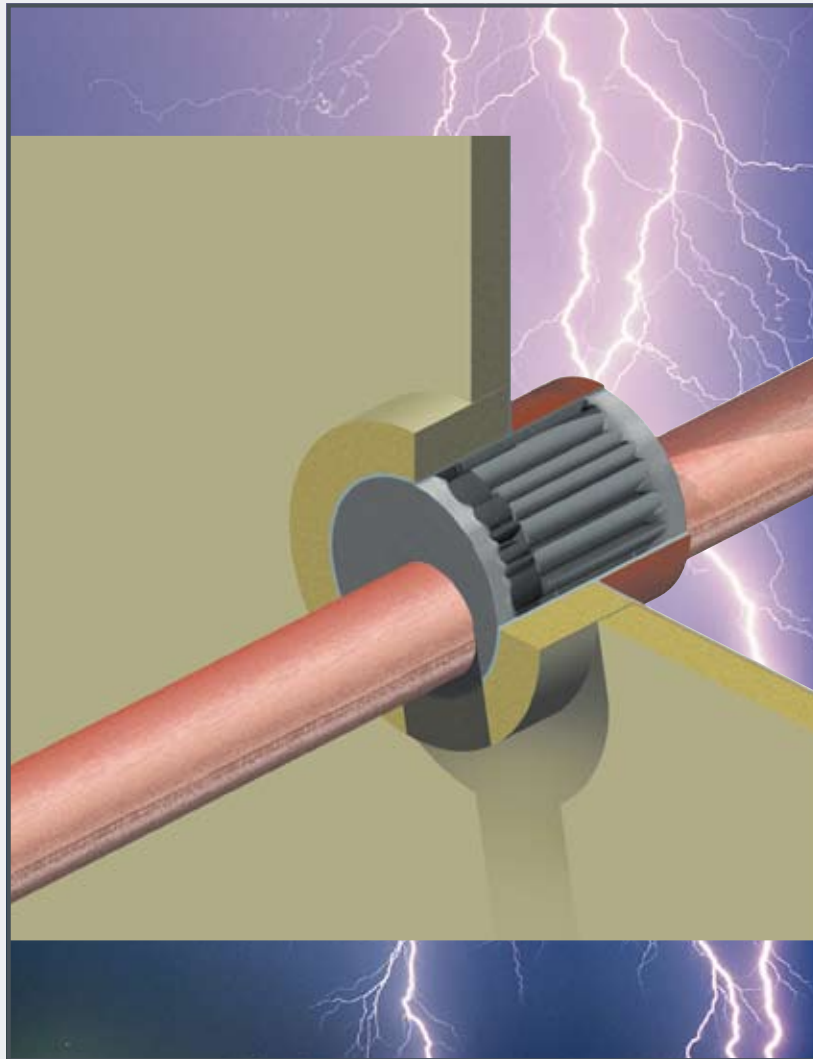
A0-A60 PLASTIC PIPE TRANSIT DECKS

RISE® (MULTI-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

For the EMC protection of cable and pipe penetrations entering shielded areas, an electrically conductive sealant/flexible rubber is developed for the RISE® (multi-)pipe penetrations type EMC. Tests carried out in our laboratories have shown that the electrical resistance from surface of the pipe 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. EC (MED) 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-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

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



CONDUCTON® flexible rubber is used to fill the cavity around the ducted pipe(s) 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 pipe penetrations feasible

PRODUCT INFORMATION

01) colour	black
02) specific gravity	1.30 ± 0.03 g/cm³
03) curing of top layer	0.5 - 1 hour depending on temperature and air humidity
04) service temperature	-50 °C up to +160 °C
05) tensile strength	0.80 MPa
06) elongation at break	40%
07) hardness	35 Shore A
08) elastic deformation	approx. 25%
09) resistance	< 100 Ω
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	guaranteed 6 months; when applied later than 6 months after date of manufacturing, curing and adhesive properties have to be checked before application



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-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM



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.



NOFIRNO® is a fire-resistant sealant based on a single component silicone compound. The numerous fire tests we have carried out with NOFIRNO® sealant has shown that the sealant is able to withstand fire and thermal loads without showing any dramatic colour change or carbonization at the unexposed side. At the exposed side the sealant will NOT be consumed by the fire due to the protective layer and char formed. This means that the sealant stays in place there. NOFIRNO® sealant is halogen free, does not harden during service life, has outstanding weathering properties, does not shrink during fire exposure, has an oxygen index of 45% (>30% is flame retardant) and a low smoke index. Can be used in a very wide temperature range.



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-) PIPE TRANSITS: THE RAPID® SEALING SYSTEM

*ease of calculation with
our cable and pipe penetrations*

TRANSIT CALCULATOR



**Calculate
your materials
requirements for our
fire safe and gas and
smoke tight sealing
systems**

**RISE
RISE/NOFIRNO
RISE/ULTRA
RISWAT
RIACNOF**

Free software. Can be downloaded from our website <http://www.rise-systems.com>.

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® or RIWAT® insert sleeves, the RISE®, RISWAT® or NOFIRNO® filler sleeves, the ACTIFOAM® spare filling sheets, the RISE® or RISE®/ULTRA crushers and the DRIFIL®, FIWA® or NOFIRNO® sealant.

It is easy to switch between the several systems and also between A-class, H-class, EMC and watertight penetrations.

After entry of the dimensions and amount and sizes of cables/pipes, a drawing appears on the screen showing also the remaining free space in the conduit opening. Furthermore the filling rate of the cable penetrations is shown.

Warnings appear for deviations of the certified configurations and for overfilling the transits or exceeding filling rates.

For a created project all calculated transits can be stored in a database. Order/calculation forms can be shown on screen for project totals and single transits. The material lists can be printed and/or exported to MS Word.

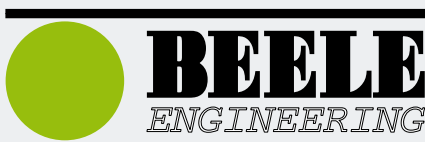
***we are there with full support for
our cable and pipe penetrations***

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) a complete line of compression moulding presses up to 300 tons for manufacturing larger type sealing plugs and ULEPSI rubber plates
- 6) processing installation for after-curing of rubber products to obtain the required compression set (long term behaviour)
- 7) extruder line including cooling system and cutting and slitting installation for manufacturing insert and filler sleeves for the RISWAT system
- 8) 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
- 9) extruder line for manufacturing luminescent profiles and hoses
- 10) 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
- 11) completely equipped die-making shop for the in-house production of all tooling for rubber and plastics manufacturing
- 12) modern laser equipment for engraving the type codes in the dies for rubber manufacturing and for marking products with bar and 2D-matrix codes
- 13) mixing and airless spraying facilities for the NOFIRNO boards

*Together with highly advanced systems and technologies
we offer highest quality products.*



**YOUR RELIABLE
PARTNERS**





MAXIMUM SIMPLICITY OF USE OPTIMUM FLEXIBILITY OUTSTANDING PERFORMANCE

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

ASK FOR THE SEPARATE BROCHURES ON OUR PRODUCT RANGES:

- * **RISE® MULTI-CABLE TRANSIT SYSTEM**
- * **RISE® SEALING SYSTEM FOR SINGLE AND MULTI-PIPE PENETRATIONS**
- * **RIACNOF® MULTI-CABLE TRANSIT SYSTEM**
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