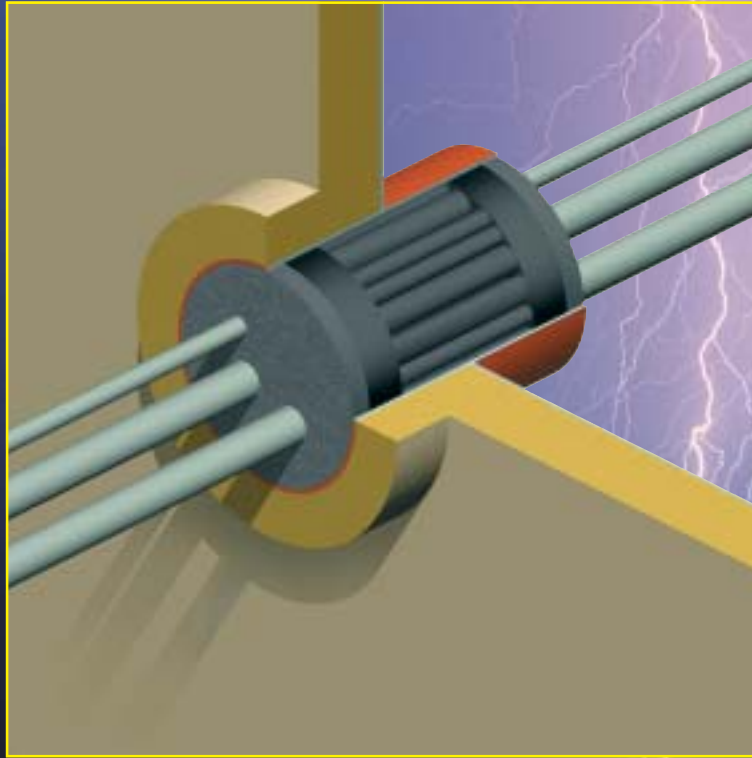


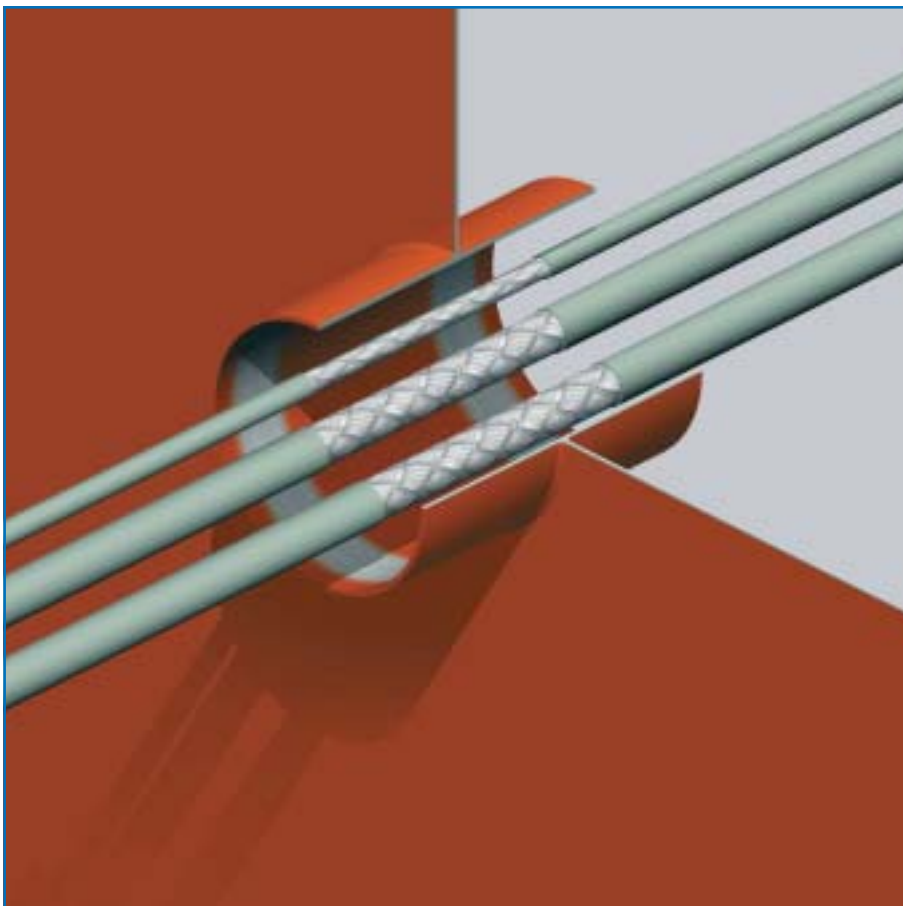
RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES



INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES

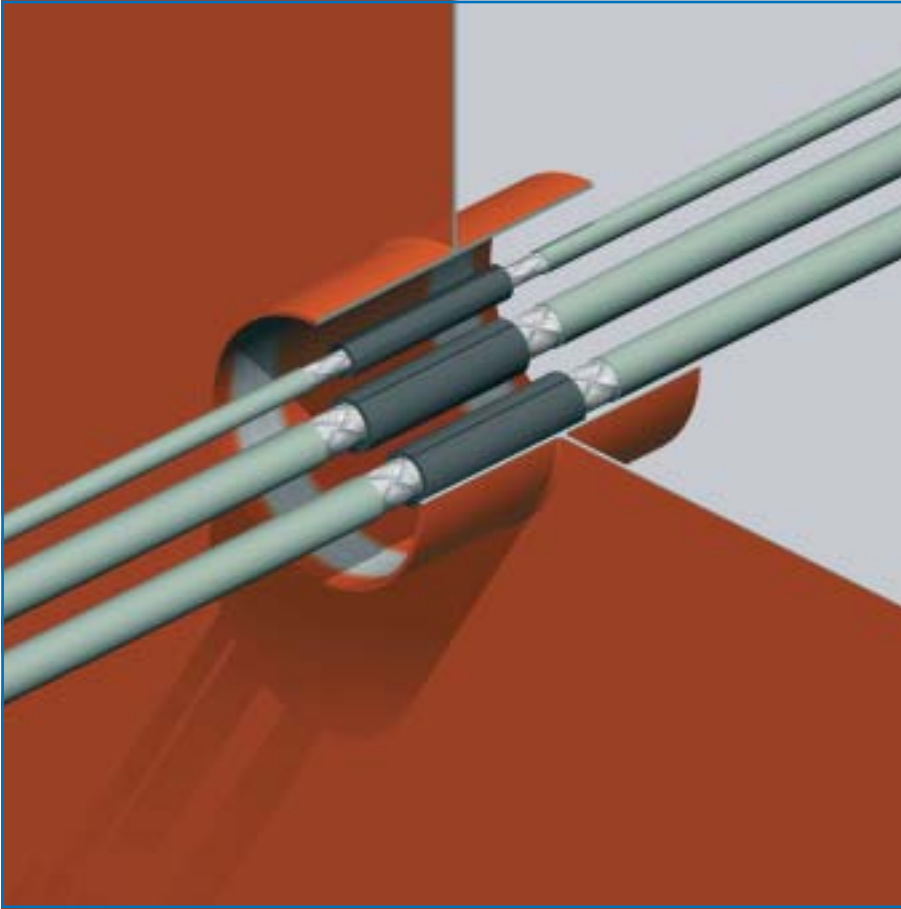


1) At the place where the CONDUCTON[®] kneadable compound is to be applied later, the penetration should be made thoroughly bare and clean in order to ensure effective connection to earth.



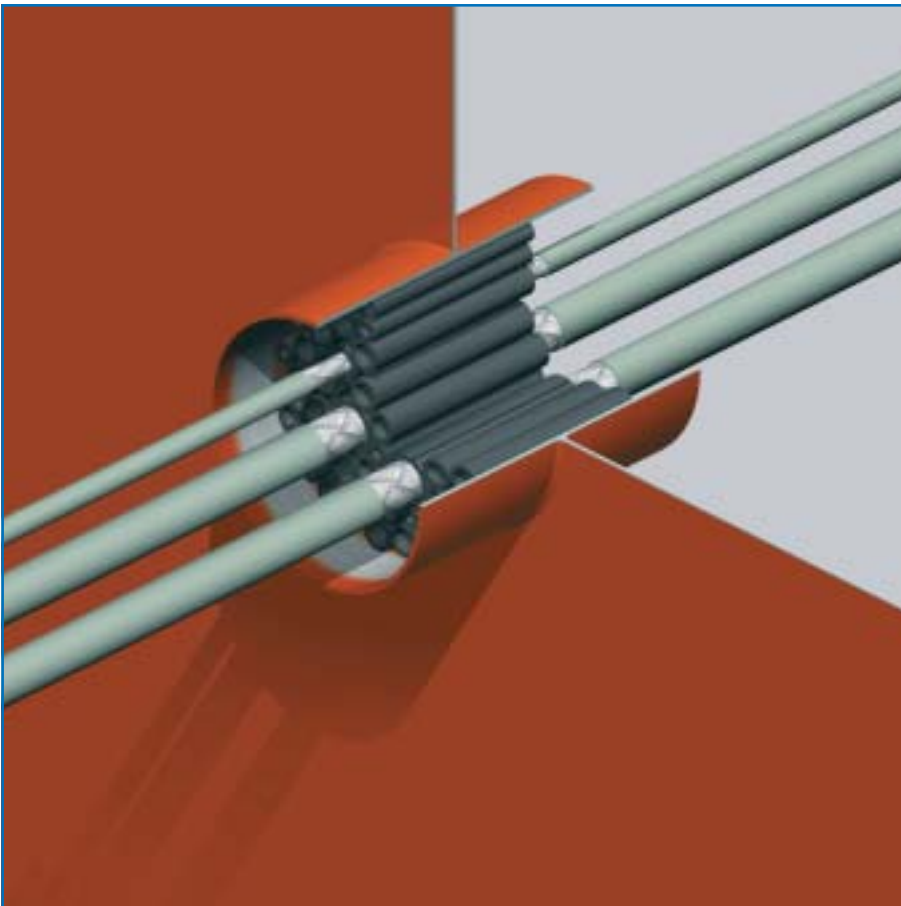
2) Remove the cable sheathing over a length that is 40 mm shorter than the length of the penetration, in such a way that the front face of the exposed braiding is situated about 20 mm inside the conduit at both sides.
Do not pull the cables too tight.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES



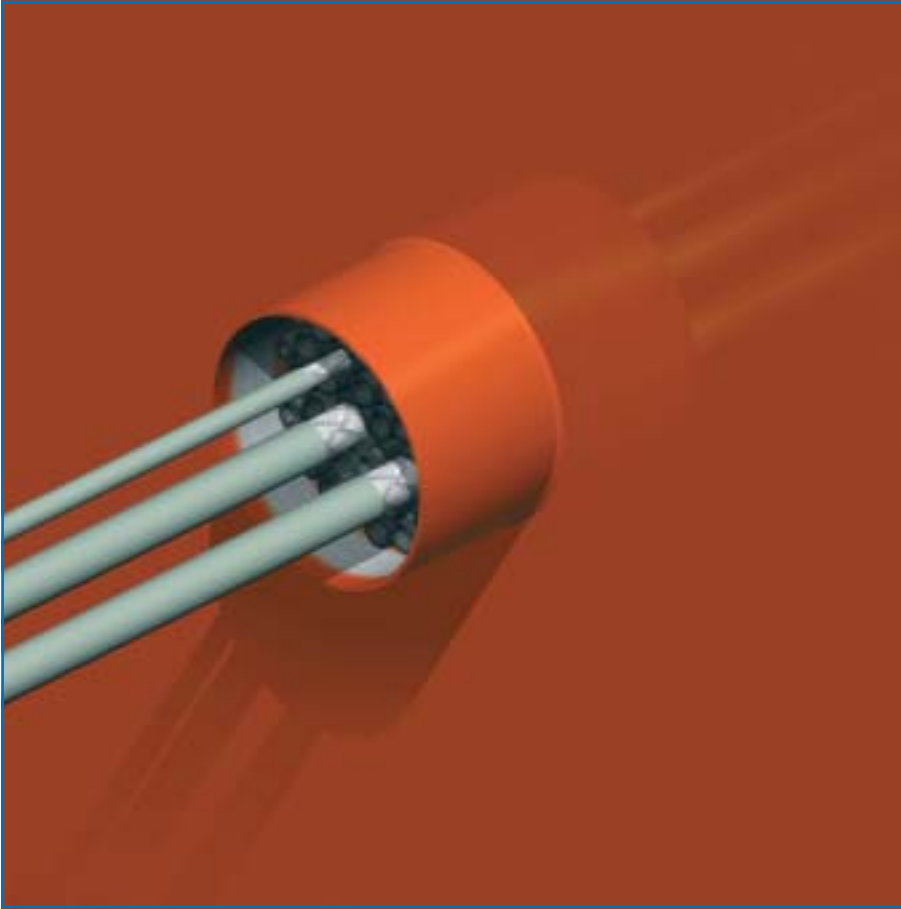
3) RISE[®] sleeves 120 mm shorter in length than the penetration are then fitted around the ducted cables and pushed into the penetration.

The exposed braiding should extend 40 mm outside the sleeves at each side.

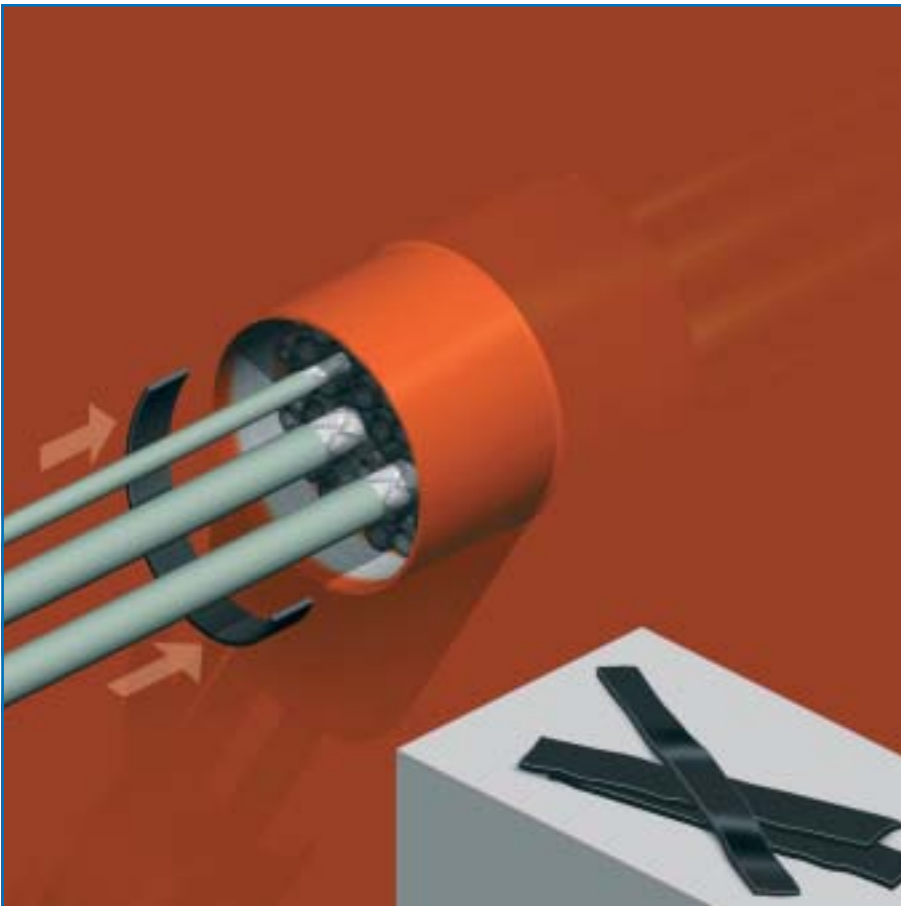


4) The remaining space inside the penetration is then packed with RISE[®] filler sleeves. Push the filler sleeves into the penetration in the same way as the sleeves fitted around the cables. Make sure that the sleeves fit tightly.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES

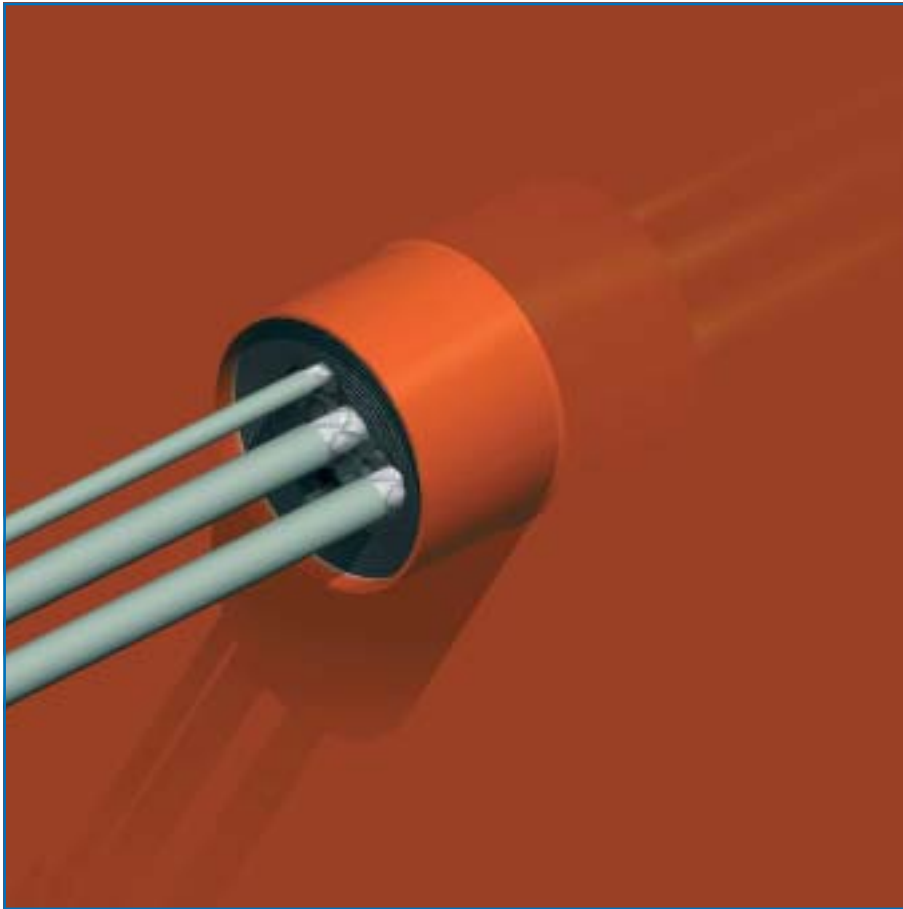


5) Push the insert/filler sleeves into the penetration in such a way as to leave about 60 mm free space at both sides. Take care that the exposed braiding extends 40 mm outside the sleeves at each side.

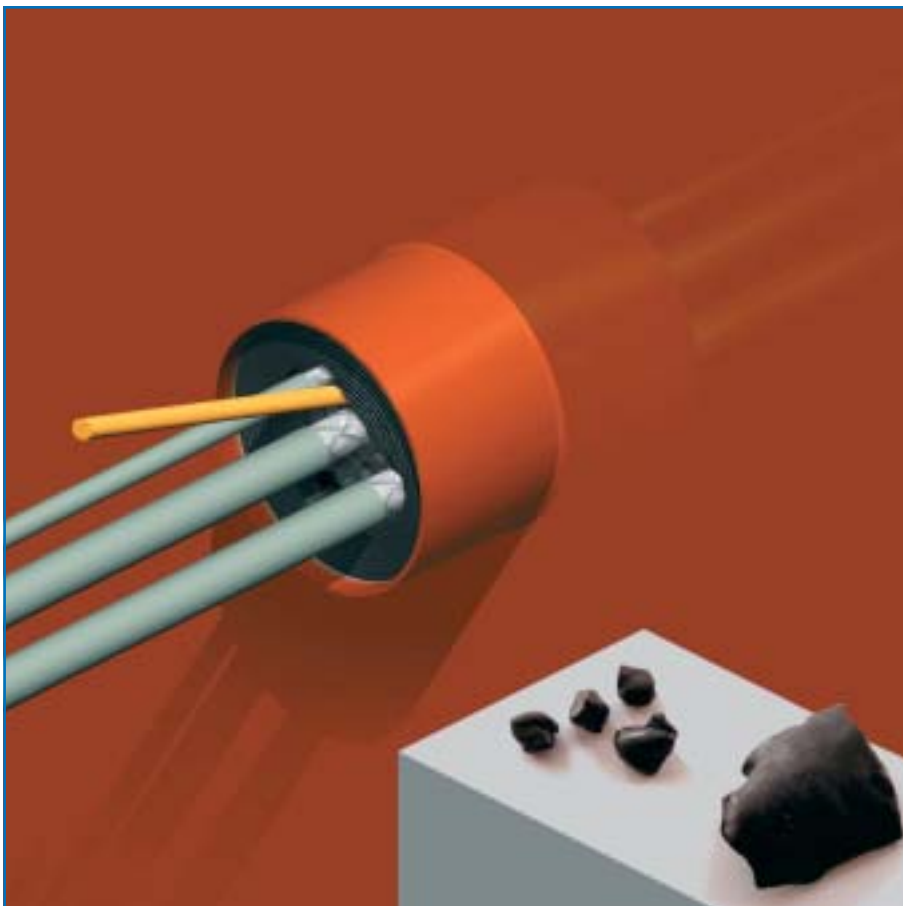


6) Then apply layers of CONDUCTON[®] flexible rubber strips 40 mm wide against the wall of the penetration.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES



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.

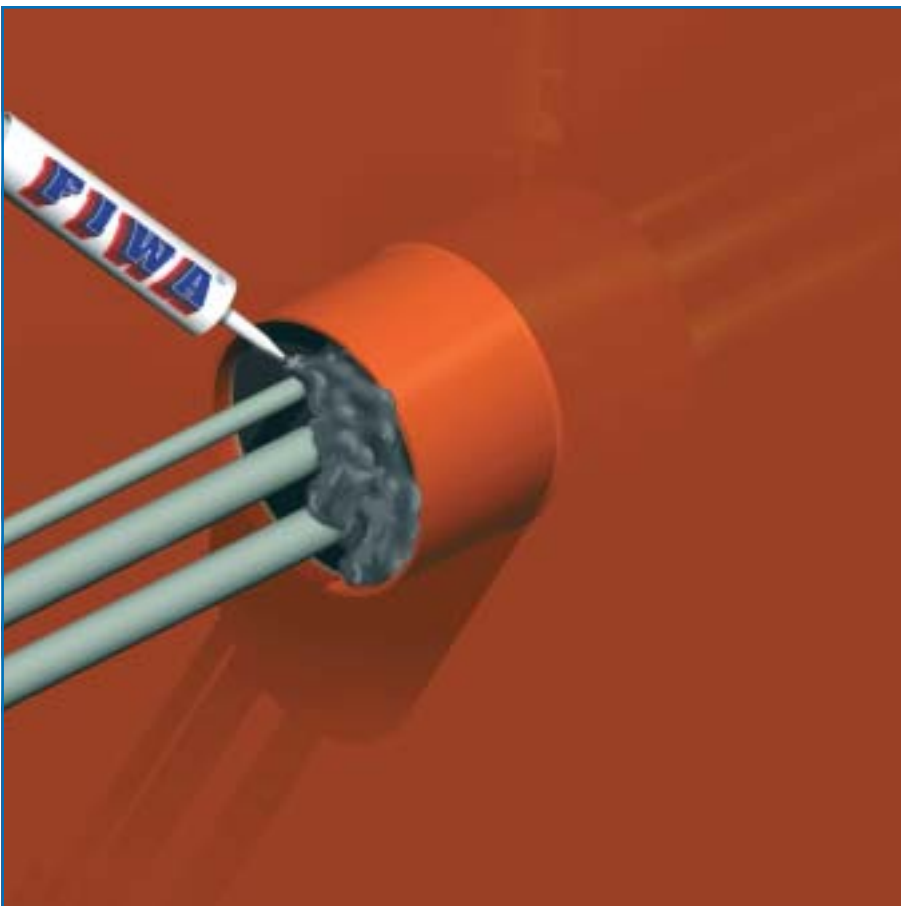


8) Pack the remaining small spaces around the cables with spare pieces of CONDUCTON[®] flexible rubber strip. Then press them down firmly with a piece of wood in order to obtain a good contact with the braiding.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES

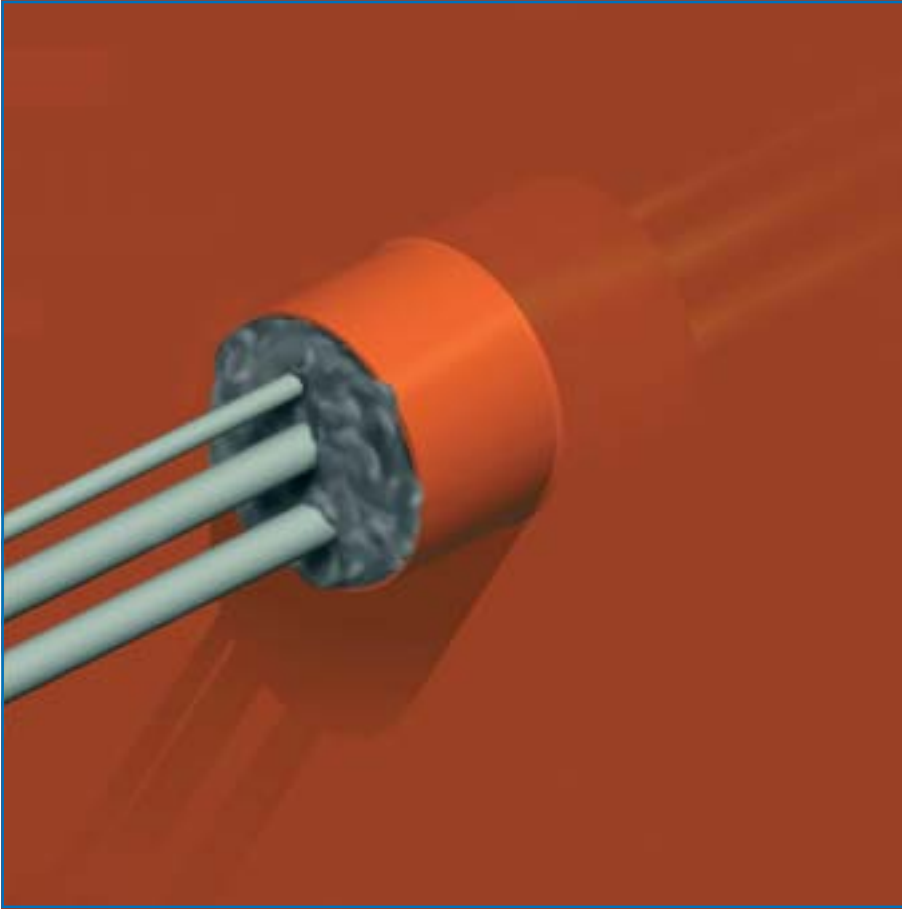


9) When the penetration has been completely filled with CONDUCTON[®] flexible rubber around the exposed cables, firmly press down the mass once more by hand. This is extremely important in particular to ensure effective conductivity. Then apply the CONDUCTON[®] flexible rubber at the other side of the penetration.



10) At the front and rear of the penetration about 20 mm free space should be present to enable the application of the FIWA[®] fire safe, gas and water tight sealing compound. First clean the wall of the penetration very thoroughly, and then apply the FIWA[®] sealant in the penetration.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES

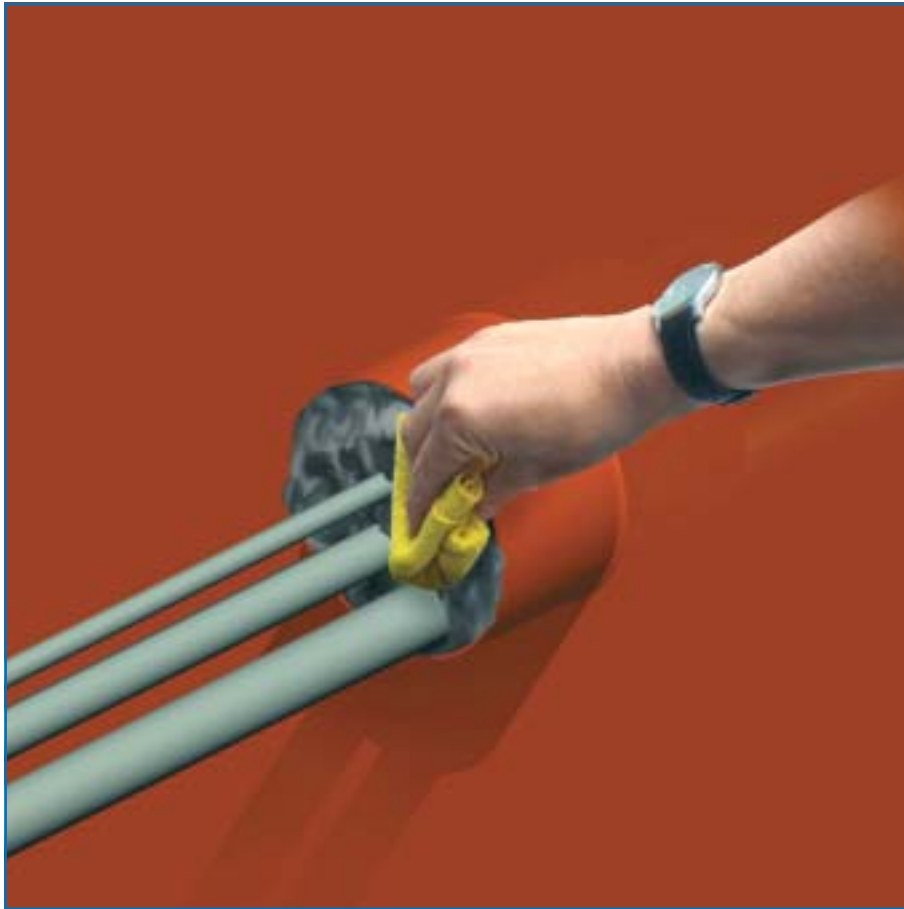


11) The conduit should be slightly “overfilled” with the FIWA[®] sealant.



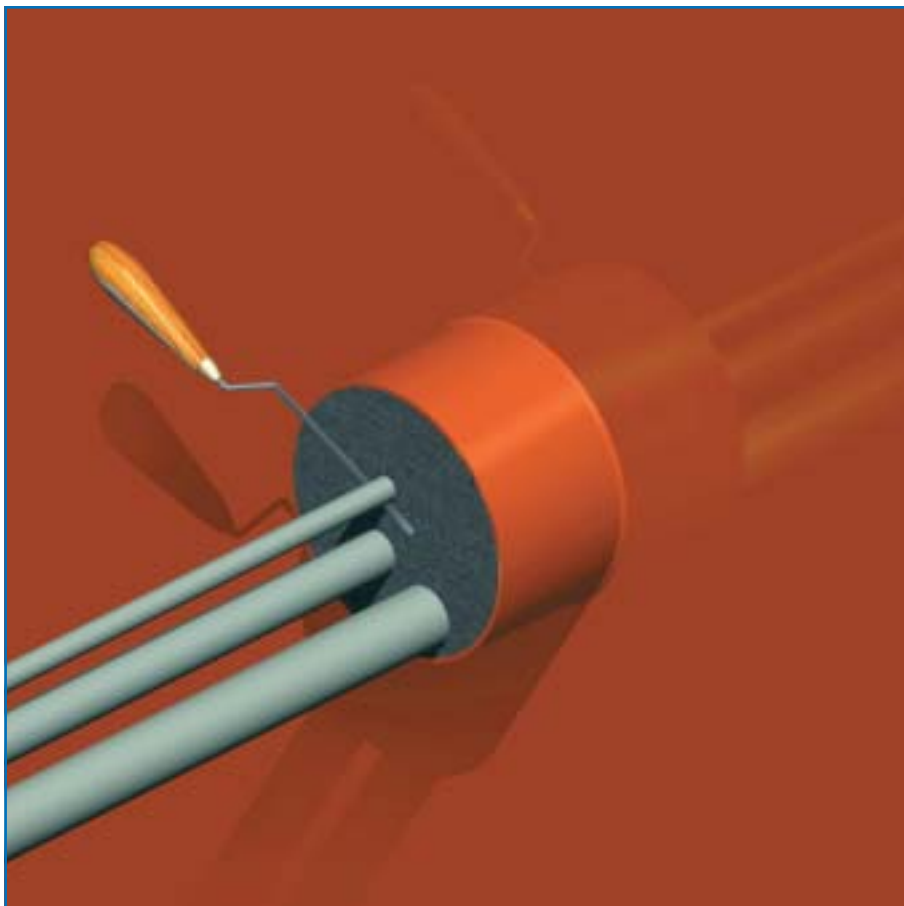
12) To smooth the surface of the FIWA[®] sealant layer, a cloth is sprayed with soapy water. This prevents the sealant from sticking to the cloth.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES



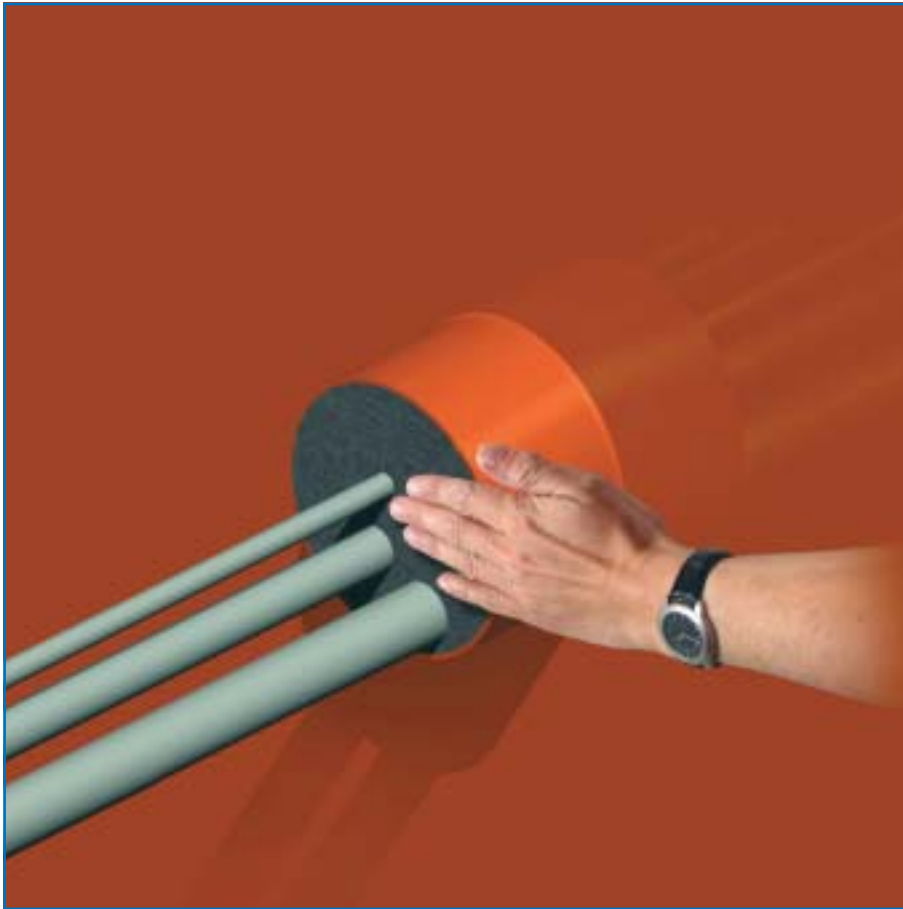
13) The cloth is then used to press down the sealant layer.

People with sensitive skin should use gloves when working with the FIWA[®] sealant.



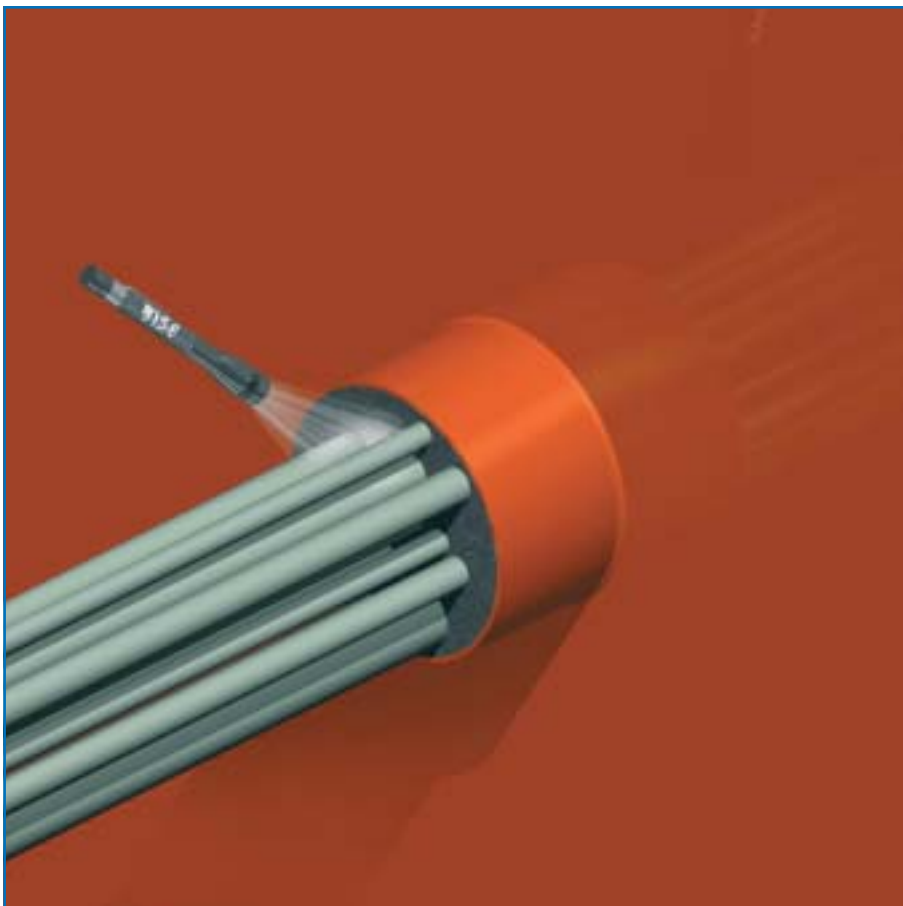
14) The FIWA[®] sealant between the cables is pressed down and smoothed with a spatula or putty knife. This is essential to obtain an effective gas- and water tightness.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES



15) The surface can also be smoothed by hand. Just wet the hand thoroughly with soapy water.

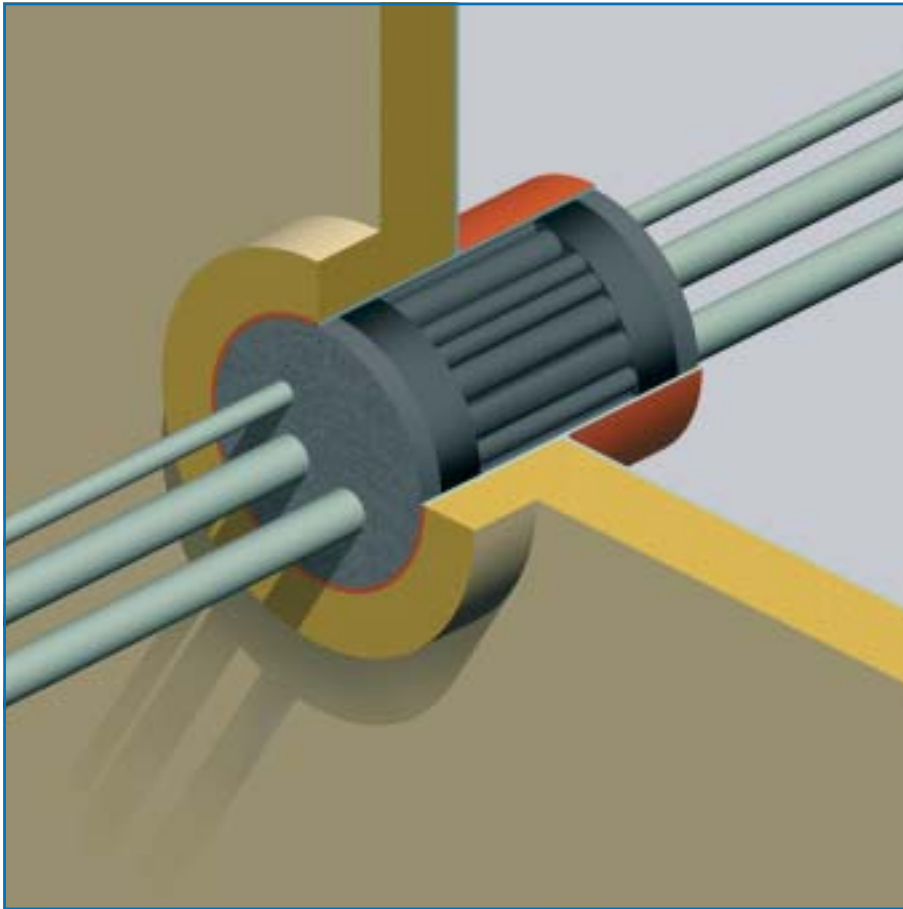
People with sensitive skin should use gloves when working with the FIWA[®] sealant.



16) 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.

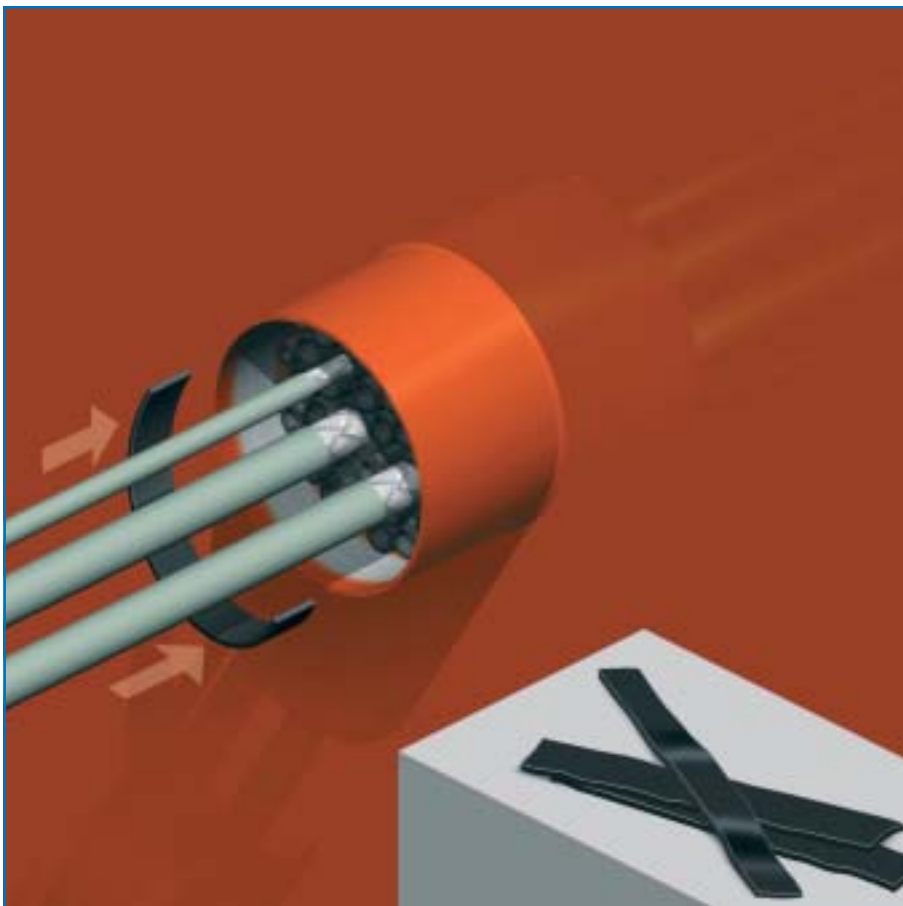
This is essential to be certain that an effective gas- and water tightness is obtained.

INSTALLATION INSTRUCTIONS FOR RISE®-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES



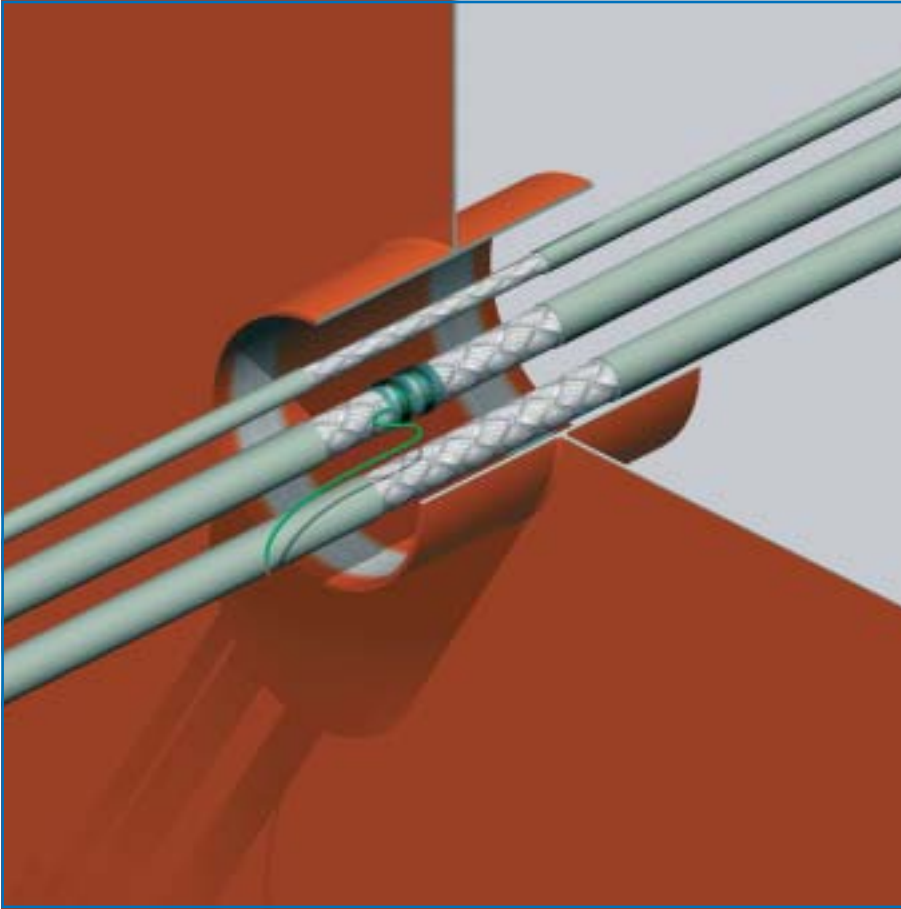
17) For A-class penetrations the conduit sleeve/frame needs to be insulated only at the insulated side of the bulkhead or at the lower side of the deck.

No extra insulation needed in front of the penetration.

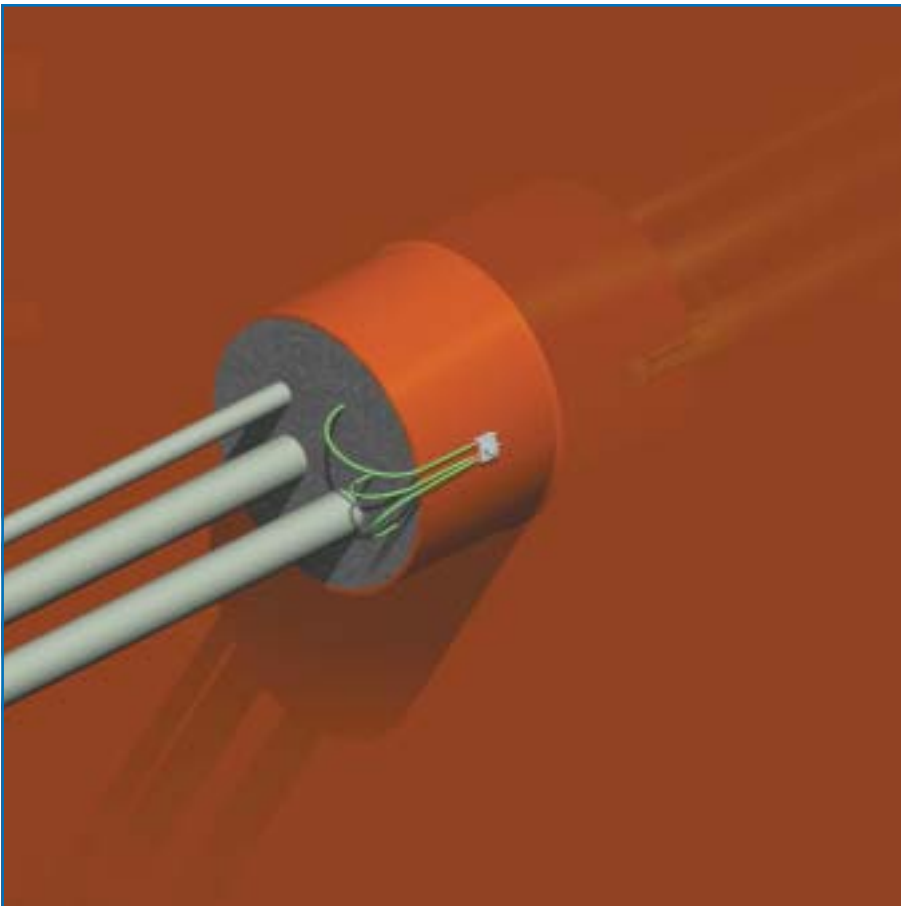


18) If the damping values are not required to comply with extremely high requirements, a 40 mm thick layer of CONDUCTON® flexible rubber at one side of the penetration will be sufficient. In this case the penetration can be 40 mm shorter in length.

INSTALLATION INSTRUCTIONS FOR RISE[®]-EMC MULTI-CABLE PENETRATIONS FOR EXTREMELY HIGH DAMPING VALUES



1a) For higher damping values in the lower frequency ranges up to 4.7 MHz, extra drain wires may be attached to the cable braidings. The drain wires should be located between the layers of CONDUCTON[®] flexible rubber.



1b) Take care to embed the drain wires in the CONDUCTON[®] flexible rubber mass in such a way that they do not touch the exposed braidings of the cables. Secure the drain wires at the outside of the steel conduit pipe/frame.

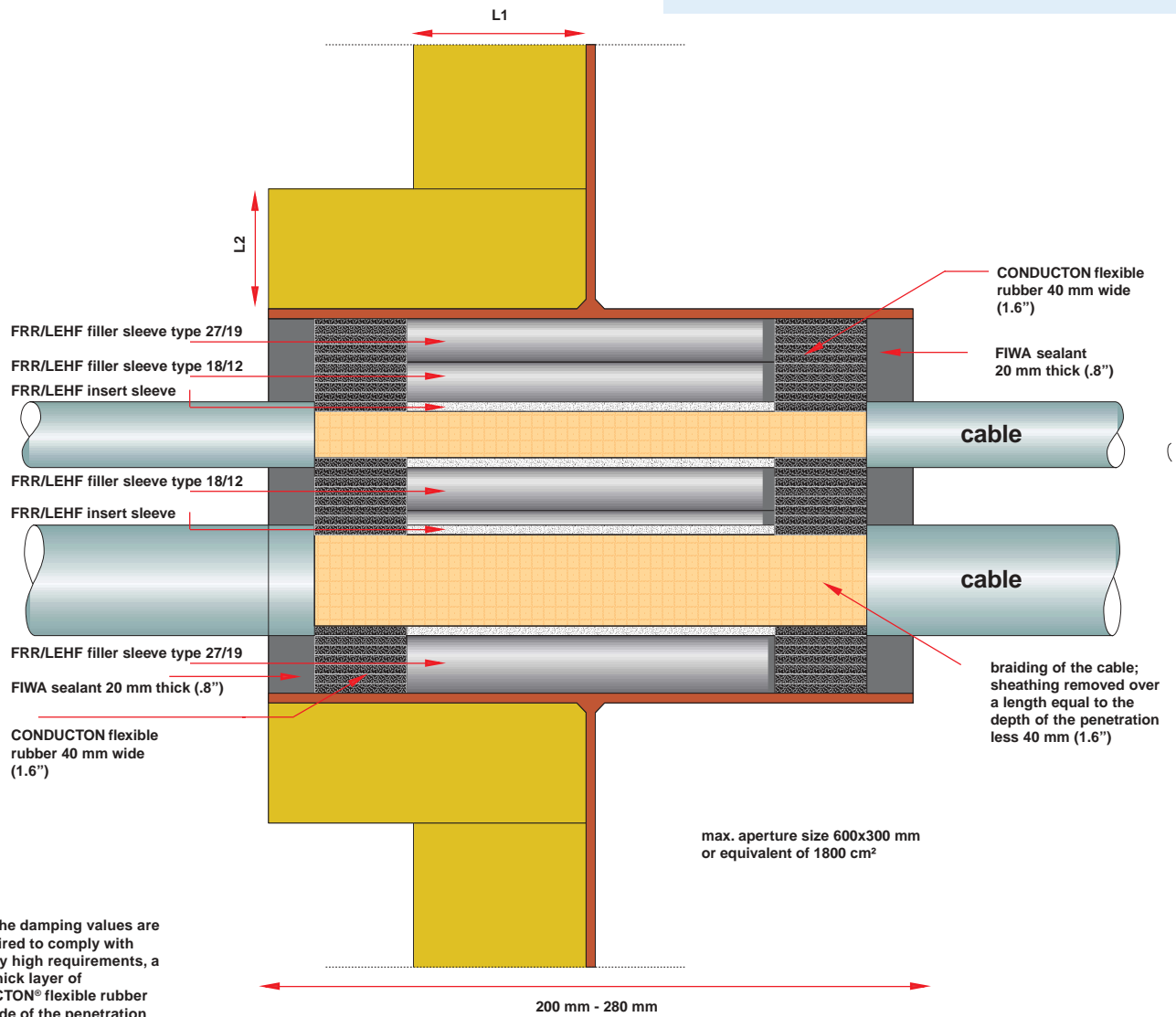
RISE[®]-EMC

MULTI-CABLE PENETRATIONS

DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/ OFFSHORE APPLICATIONS

- L1: A-60 approved bulkhead 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**



Note: If the damping values are not required to comply with extremely high requirements, a 40 mm thick layer of CONDUCTON[®] flexible rubber at one side of the penetration will be sufficient. In this case the penetration can be 40 mm shorter in length.

specifications for A-class according to CE certificate
11301/A0 EC issued by Bureau Veritas



A0-A60 CABLE PENETRATION BULKHEADS