Roxtec

Cable and pipe transits

FOR ONSHORE OIL, GAS AND PETROCHEMICAL APPLICATIONS

We Seal Your World™

ABOUT ROXTEC

- The world's leading provider of multi-cable and pipe transits
- Founded in Sweden in 1990
- Inventor of Multidiameter™
- Local support in more than 70 countries
- Certified according to ISO9001/14001 and EN 13980
- More than 250 product certifications and safety listings

Specify a complete sealing solution

Project owners who specify Roxtec cable and pipe transits will ensure reliability, simplify expansion and reduce maintenance costs. Engineering, procurement and construction companies will benefit from the flexible system and be able to provide certified safety solutions.

One system for safety

Roxtec products cover the most simple as well as the most complex cable and pipe sealing requirements for oil, gas and petrochemical projects. Our systems are designed to meet diverse safety needs around the world and also to deliver the most cost-effective solution.

Certified for international projects

International projects and investments have to meet many different local safety regulations. Roxtec sealing solutions are approved by all major classification societies in order to ensure that you can meet varying requirements for protection of life and assets.

Manage high cable density

Roxtec solutions provide the ability to seal more cables in a smaller area than any cable gland system. Reduce the need for multiple knock-outs in cabinets or cut-outs in the walls and floors of your buildings. Cut costs instead of holes, and eliminate errors due to cutting and reattaching pre-terminated connectors.

Fit-for-purpose solutions

As your expert partner, we help you find the optimal solution for your specific needs. If you have a unique requirement for your project, Roxtec has R&D and design resources standing by to develop simple solutions that deliver superior results.

Cost-savings in design

Whether you choose to use our complimentary design services or our Roxtec Transit Manager (RTM) software, Roxtec will significantly reduce your design time and bring safety and flexibility to your project.

Roxtec in action

Discover some of the applications where Roxtec is used to protect people and sensitive equipment in oil, gas and petrochemical facilities.

Additional products are available for use in EMC applications (EMC product family), in hazardous locations (Ex product family) and for bonding of metal clad (MC) and steel wire armor (SWA) cable types as well as for grounding protection, including lightning strikes (BG product family).

Motor Control Centers (MCC) and substations: High cable density, gas-tight, rodent-proof seals in the floor replace cable glands and compounds.

Wall penetration in process building: Roxtec G frame solution for cables and pipe entries through walls.

Floor penetrations: Roxtec G frames are welded or bolted to floors as a space-saving solution for large quantities of cables and/or pipes.

Pre-fabricated/modular buildings: Roxtec G frame solutions provide weather-tight and gas-tight cable sealing for insulated and corrugated panel walls.

Concrete walls: Roxtec frames can be cast into or bolted to concrete walls to provide protection from the most harsh operating environments.

Remote Instrument Enclosures/ Buildings (RIE/RIB): Roxtec G frame solution for cable entries into pressurized and temperature controlled buildings.

Electric Heat Trace (EHT) cabinets: Roxtec CF products for high cable density applications, a space-saving alternative to traditional cable glands.

Safety Instrumented Systems (SIS) and Emergency Shut-down Systems (ESD): Roxtec solutions are certified for sealing critical cables.

Fire and Gas Detection Systems: Roxtec CF products provide protection of the most critical equipment.

Blast resistant buildings: Roxtec G frame solutions are rated to withstand the building blast load requirements within oil and gas.

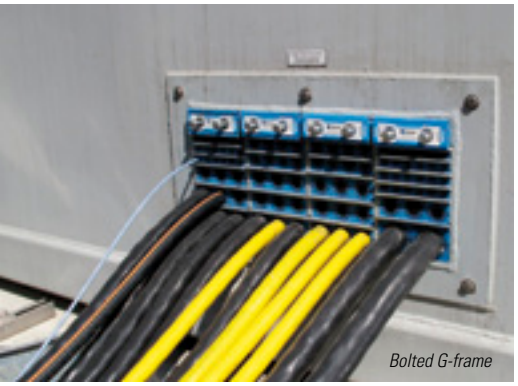
DCS/PLC and I/O Marshalling cabinets: Roxtec solutions reduce required cabinet space, increase functionality and provide capacity for additional cables.

Round or core-drilled openings: Roxtec RS and R make it easy to properly seal pipe, tubing or cables through core-drilled or other round openings.

Junction boxes and control cabinets: Roxtec CF32/32 provides for IP67 and NEMA 4 certifications, sealing up to 32 cables in a single small cut-out.

Roxtec transits in walls

Roxtec systems are used in many different types of wall penetrations to provide safe and certified transitions for cables, pipes and tubing. When your project requires multiple cables and pipes through a wall, and the wall must meet certain ratings, Roxtec is your one-source solution. The cable and pipe transit system simplfies planning and design, speeds up installtion work and provide built-in spare capacity for cost-efficient maintenance and upgrades.



Bolted G-frame

Core drilled RS-seal

Welded S-frame

Tested and certified

The most common requirements for wall installations are listed, but if your project requires additional safety certificates, please contact your local Roxtec representative.

- Fire rating, including jet-fire
- Blast load protection
- Hazardous locations (Ex)
- Watertight
- Dust-tight

Wall types

Roxtec has standard solutions for most wall types. Ask your local Roxtec representative about our wall kit solutions to provide your project with a turn-key solution.

- Pre-fabricated/insulated
- Corrugated metal
- Concrete
- Steel (bulkhead)
- Gypsum board
- Block

Cable, pipe and tubing

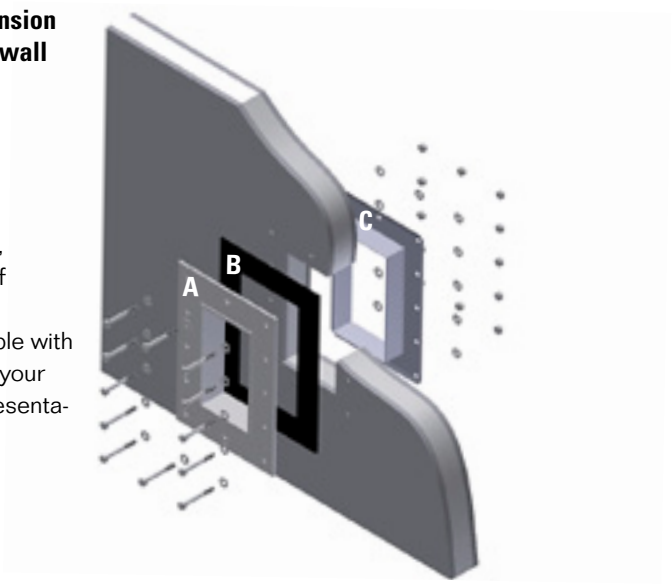
With Roxtec you can seal most items that are required to penetrate a wall, including Teck and other corrugated metal-clad cables (MC), steel wire armor cables (SWA), braided cables, piping, conduit and tubing.

- Power cable
- Instrumentation and control cables
- Pre-terminated cables
- Fire rated cables
- Process and transmission piping
- Conduits and tubing

Roxtec GHM frame and GE extension frame bolted to a prefabricated wall

A. GHM frame
B. Gasket
C. GE extension frame

- Roxtec frames can be bolted, welded or casted into a variety of building structures.
- Pre-configured kits are available with all components required to meet your demands. Ask your Roxtec representative for more information.



To achieve safety ratings, the following Roxtec components must be installed:

RM modules

Wedge

Stayplate

Frame

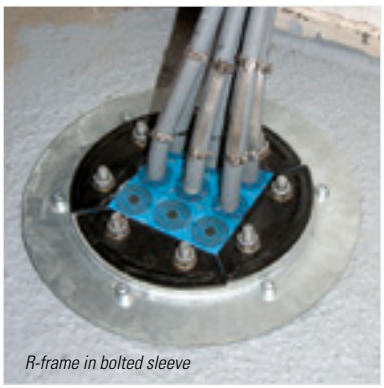
Lubricant

Recommended wall installation tools

- Pre-compression wedge or large eccentric tool to aid with proper mechanical compression
- Stayplate clips to assist with holding stayplates and cables

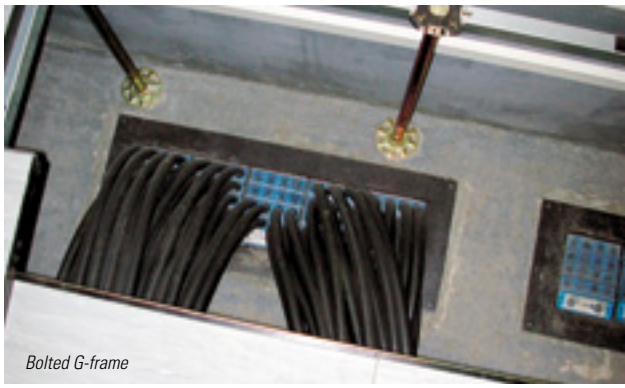
Roxtec transits in floors

Our modular-based solutions for multiple cables and pipes require less space than traditional cable glands and provide more flexibility for expansion and maintenance than all other sealing methods. We deliver advanced engineering solutions for motor control centers, remote instrument enclosures, sub-stations and for other buildings that have multiple cables and/or pipes entering through floors.



R-frame in bolted sleeve

Welded G-frame



Bolted G-frame

Tested and certified
With Roxtec you are covered with more than 250 product certifications. Listed here are the most common requirements for floor installations. Please contact us if your project requires additional safety certificates.

- Fire rating, including jet-fire
- Blast load protection
- Hazardous locations (Ex)
- Watertight
- Dust-tight

Floor types
We have a Roxtec solution to meet the construction and protection requirements for the floor entries of your project. Some of the most common floor applications include:

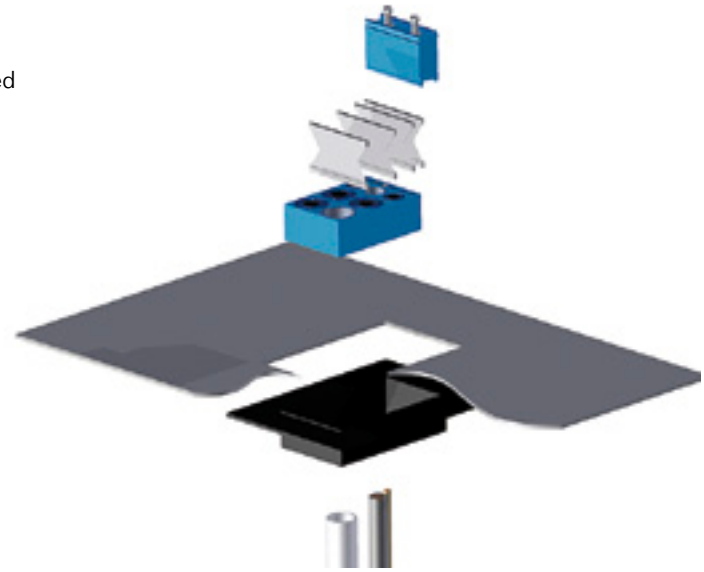
- Steel (modular or pre-fabricated buildings)
- Raised (data and communication centers)
- Concrete (fixed location buildings)
- Containment (processing buildings)

Cable, pipe and tubing
Most floor penetrations can be sealed with a Roxtec solution, including Teck cables and other corrugated metal-clad (MC) cables, steel wire armor cables (SWA) and braided cables. Other examples are:

- Power cables
- Instrumentation and control cables
- Pre-terminated cables
- Fire rated cables
- Process and transmission piping
- Conduits and tubing

Roxtec G frame in a steel plate floor

- Roxtec frames can be bolted, welded or casted into a variety of building structures. The frames can be installed from the top side or the bottom side of the floor.
- Extensions to Roxtec floor entries (drop boxes) are available to provide additional working space and allow for cable bend radius.



To achieve safety ratings, the following Roxtec components must be installed:

RM modules

Wedge

Stayplate

Frame

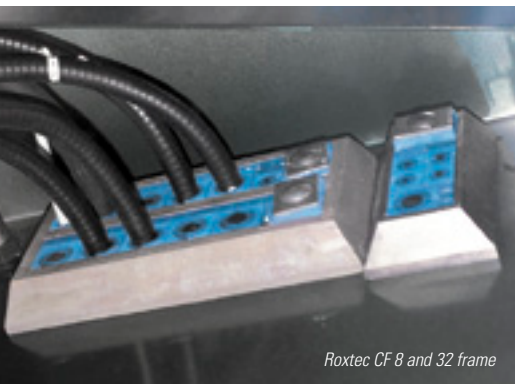
Lubricant

Recommended floor installation tools

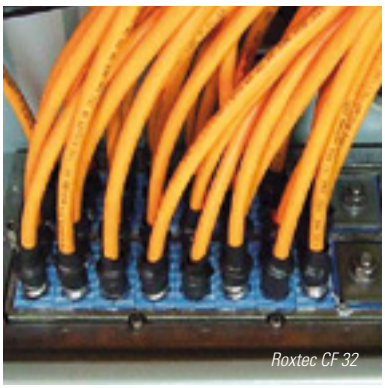
- Pre-compression wedge or large eccentric tool to aid with proper mechanical compression
- Stayplate clamps to assist with holding stayplates and cables

Roxtec transits in cabinets and enclosures

Use Roxtec multi-cable glands for control cabinets, junction boxes and other electrical and instrumentation enclosures. Roxtec solutions often pay for themselves by allowing for high cable density which enables designers to reduce the size and weight of the cabinets. The flexible Roxtec solutions further reduce time and labor since they are ready for last minute changes. You can easily add new cables or change cables in your cabinets.


Roxtec CF 8 and 32 frame


Roxtec CF 32


Roxtec CF 32

Tested and certified
Some of the most common applications for Roxtec cable glands include enclosures that require the following local and international ratings:

- NEMA 4, 4X, 12, 13
- IP 67
- Hazardous locations (see page 13 for EX products)
- Bonding or grounding – see page 14 for BG products)

Common applications
Roxtec secures, seals and protects equipment within stainless steel, metal, plastic and composite enclosures. Some of the most common applications are:

- DCS/PCS enclosures
- Electric heat trace cabinets
- Safety instrumented systems
- Fire and gas detection equipment cabinets
- Control cabinets
- Communication equipment enclosures

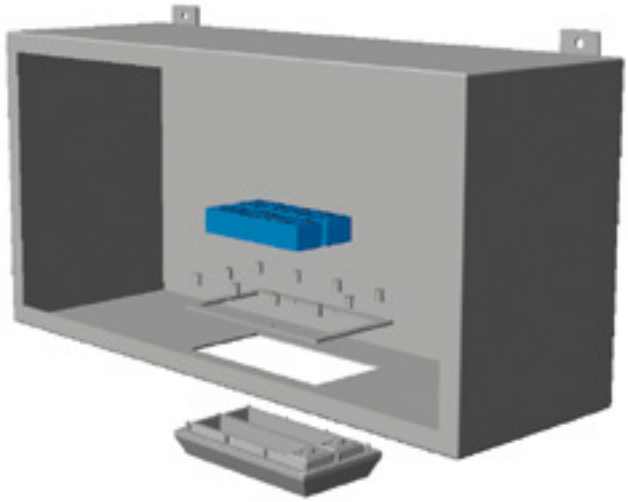
Cable types
Roxtec provide cable gland solutions for power, control and instrumentation cables. Some examples are:

- Tray cables
- Metal clad cables including MC-HL
- Teck cables
- Fiber optic cables
- Steel wired armor (SWA) and braided cables
- Pre-terminated connectors

Roxtec CF 32 frame in an electrical or control cabinet

■ Thanks to the area efficiency and compact design of the Roxtec cabinet solutions, it is also possible to reduce the size of the cabinet.

■ More cable, less cabinet: seal up to 32 cables (up to 16.5mm, 0.65 in) within a single cut-out. Available in nickel-plated aluminum.



To achieve safety ratings, the following Roxtec components must be installed:

Frame

CM modules

Lubricant

Recommended cabinet (CF) installation tools

■ Small pre-compression wedge or small eccentric tool

Efficient sealing of round openings

Roxtec round transits are available for multiple cable and pipe penetrations as well as for single cables or pipes. Our solutions are easy to install and developed for various applications and materials. You can use our seals for plastic pipes, metal pipes and conduit. Our round frames also accomodate the largest cables including metal clad, steel wire armor and Teck cables.

Roxtec round transits are truly flexible. They are developed for use in a wide range of demanding environments and designed to protect against common hazards such as fire, gas and water. We supply round sealing solutions consisting of frames, adaptable sealing modules and integrated compression units. These are ideal for area efficient sealing of multiple cables and pipes penetrating a wall or a floor.

Fits any cable or pipe

We also supply round seals for single cables or pipes where the adaptability feature is integrated in the rubber body of the seals. All Roxtec transits features Multidiameter™, our unique solution based on modules with removable layers.

Common applications:

- Process piping and tubing
- Sprinkler systems
- Hydraulic and pneumatic lines
- Water supply and waste water lines
- Cables – power, instrumentation and control

Approved for hazardous locations (Ex)

The Roxtec Ex product family protects people, equipment and operations in hazardous locations, or potentially explosive atmospheres. We recognize that projects are often engineered and designed in countries different from the country of final construction, and our products meet or exceed international requirements for hazardous locations around the world.

Approved for hazardous areas

Class/Zone/Division	
Zone 1 (gases)	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation between 10-1000 hrs per year.
Zone 21 (dust)	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation between 10-1000 hrs per year.
Zone 2 (gases)	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for less than 10 hrs per year.
Zone 22 (dust)	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for less than 10hrs per year.

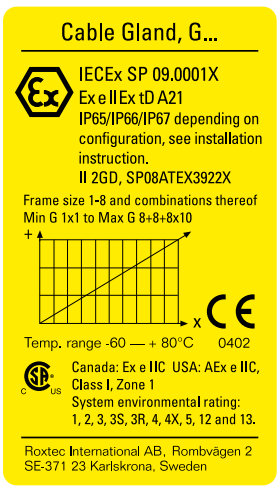
Roxtec in potentially explosive atmospheres/hazardous locations

Remember that all Roxtec products to be used in hazardous locations must be specified and ordered as hazardous location or Ex labeled products. We will work with your team and local inspectors to provide proper product selection and installation support based on applications.

Approved for global electrical schemes

- IECEx
- ATEX
- CEC

Also national Ex certifications in Russia and Croatia.



All Roxtec Ex products are clearly marked in accordance with international directives. They are easily identified by the yellow Ex label.

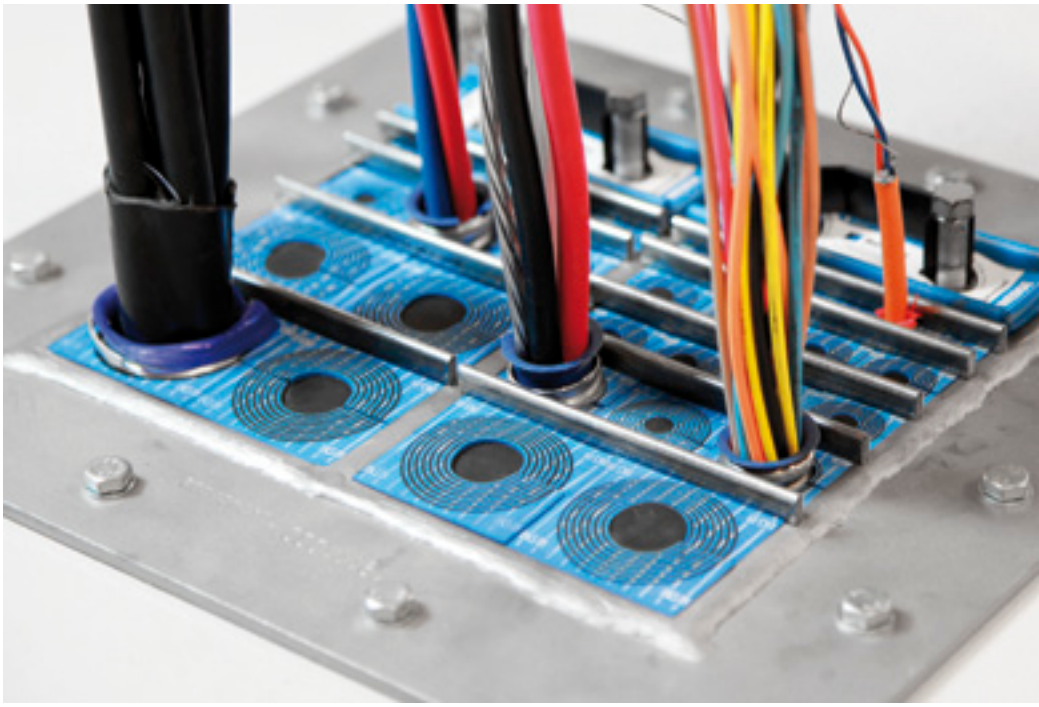
Roxtec BG™ solutions for bonding and grounding

The Roxtec BG™ (Bonding & Grounding) product family is a cable entry system for sealing large quantities of metal clad or armor cables in the least amount of space. Use it in building structures, cabinets and enclosures to ensure electrical safety and protect people and equipment.

Roxtec BG™ solutions help you save time, space and money. The seals are a direct replacement to glands. With each one, you can seal single or multiple cables of different sizes while ensuring a certified bonding or grounding termination.

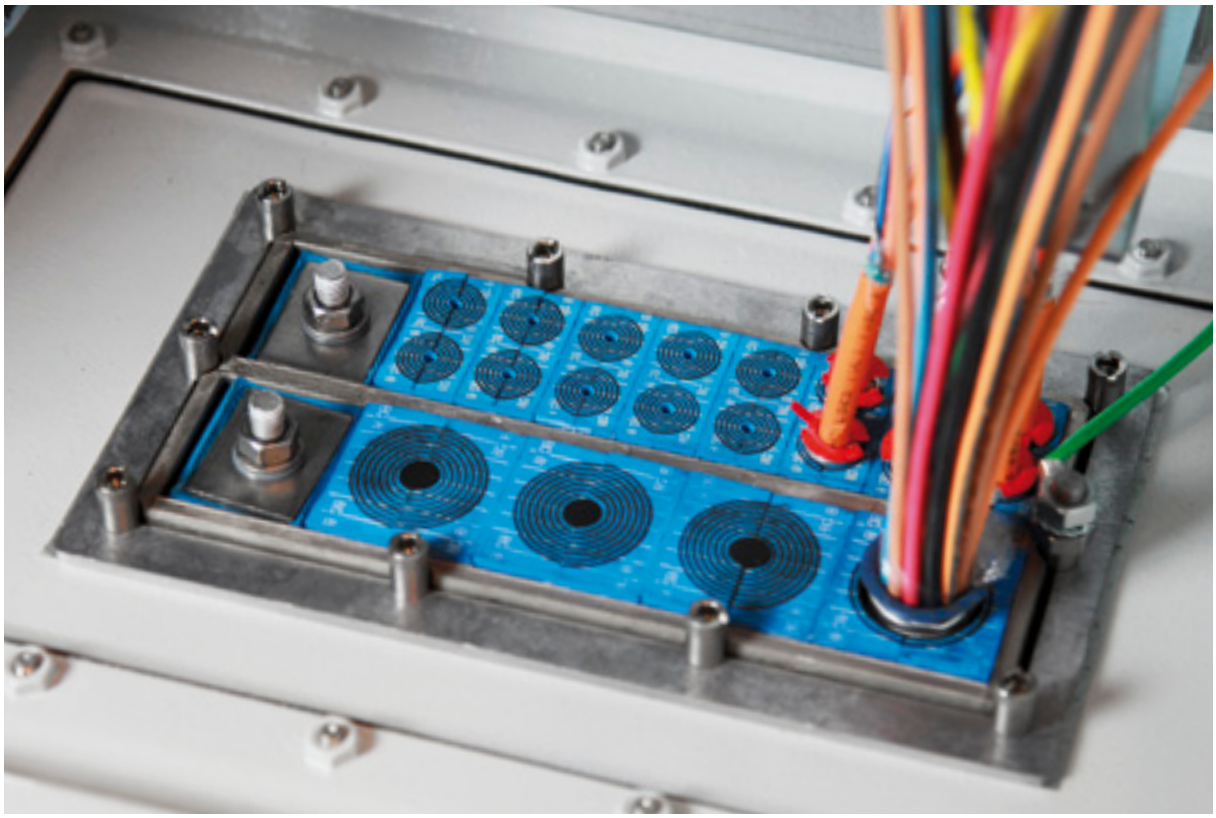
Specify for walls and floors
Only a single cut-out is required for a Roxtec frame. Then your complete cable load can be installed – with each cable secured and grounded to electrical standards. You can design a solution in no time if you know your material and rating requirements. Roxtec frames for BG™ are available in stainless steel, galvanized steel and primed mild steel. Seven different module sizes accommodate cable dimensions from 3.0mm (0.118 in) to 99.0mm (3.898 in).

More cables… less cabinet
Roxtec BG™ solutions allow for the size and weight of cabinets and electrical enclosures to be reduced. A single cut-out for a standard Roxtec CF 32 BG™ B kit (110mm x 216mm or 4.33 in x 8.5 in) can accommodate up to 32 cables, which drastically reduces the amount of space required when compared to 32 individual cable glands.



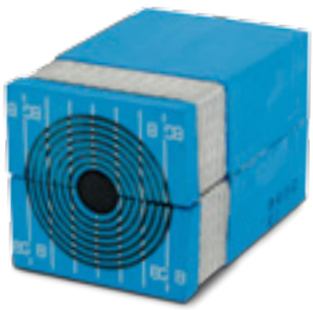
Efficiency and flexibility
Roxtec BG™ solutions provide added flexibility to design while improving timing of project and equipment delivery. The Roxtec adaptability to the cable armor as well as to the cable sheath, allows you seal, bond and ground cables of varying shapes. If the cable schedule changes in the field, the installer simply adjusts the modules for a perfect fit.

Certified for electrical safety
- Hazardous (Ex) locations
- Bonding and grounding
- Lightning protection
- Fire rated, gas- and watertight



Most metal clad and armor cable types are accepted

- Cables with a circular cross-section, such as wire and braided armored cables (..WA, ..WB), smooth metal tubes and foil sheeted cables.
- Continuous welded and interlocking armored cables, such as MC, MC-HL, TECK, AC, ACWU and ACIC.



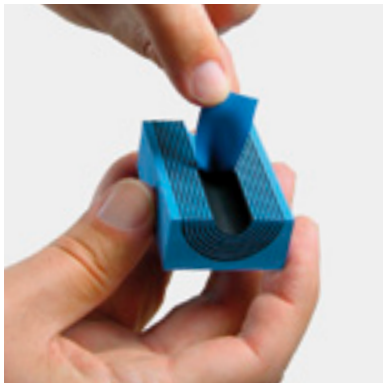
Easier design with the RTM software

The RTM (Roxtec Transit Manager) is a cost-reducing software for easy planning, designing and ordering of our cable and pipe transits. The RTM is a helpful tool in every step of transit design – from importing cable schedules to providing a detailed engineering drawing and a manufacturer validated bill of material for each transit. Just provide the very basic input – cable O.D, type and quantity – to have this efficient output!

RTM features and benefits

- Reduce design time
- Identify and track cables
- Generate automatic installation plans
- Import external cable lists
- Detailed bill of material for simplified purchasing
- Export drawings into .dxf or .pdf file formats

Multidiameter™ by Roxtec



Our invention for adaptability to cables and pipes of different sizes is based on sealing modules and rubber bodies with removable layers. You just peel off layers to enable a perfect fit to any cable or pipe. This solution simplifies design, and saves a lot of installation labor time. It is also logistically efficient; you can drastically reduce the number of inventory items. In all, it makes electrical installations and maintenance work easy and safe.

Better space management
Thanks to the modular-based seal, cables are neatly organized. A small, but proper space between each cable creates area efficiency and facilitates inspection and maintenance. The flexibility – and the fact that your stock of seals is already onsite – allows you to modify the installation and add cables of different dimensions later on. Using Roxtec is a small investment, but it provides a lot of opportunities for meeting future regulations and for performing upgrades.

Tips for design and engineering

- Let cable entries be a design/engineering function, not a field based decision.
- Plan for cut-out sizes to standard sized Roxtec frames.
- Remember that bolted frame installations should include a gasket.
- Request additional length of flange/plate if an opening is oversized for our frame.
- Choose materials and precise rating needs.
- Design Roxtec multi-cable transits for entries of cables to reduce the number and size of floor cut-outs or openings.
- Integrate Roxtec solutions at the time of floor and equipment layouts to properly size and place the transit frames. We work with building fabricators and architects to assure proper sizing.
- It is common to weld Roxtec frames into steel floors of prefabricated buildings.

Easy installation with Roxtec

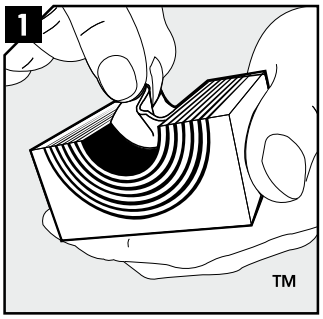
Installation training and tools
High safety standards require correctly installed and easily inspected products. On-site installation training for local contractors and post-installation inspection are part of our full line of service. In addition to our on-site training we have developed a range of practical tools to simplify quick and safe on-site installations and re-installations of Roxtec systems.

Include them in your specification bill of materials.

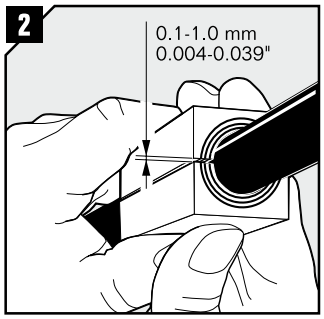
- Decrease installation time and labor costs
- Ensure quality installation
- Engineered specifically for Roxtec products
- Online instruction videos available

Basic steps

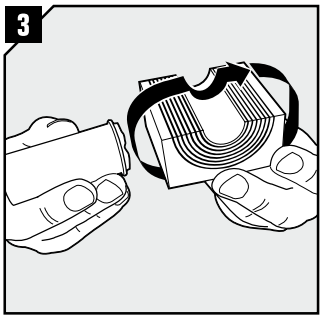
in the assembly of a modular-based Roxtec sealing solution



Adapt modules, which are to hold cables or pipes, by peeling off layers until you reach the gap seen in pic. 2. The halves may not differ by more than one layer.

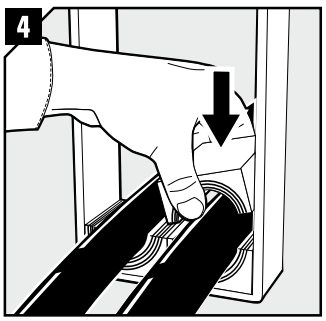


Achieve a 0.1-1.0 mm gap between the two halves when held against the cable/pipe.

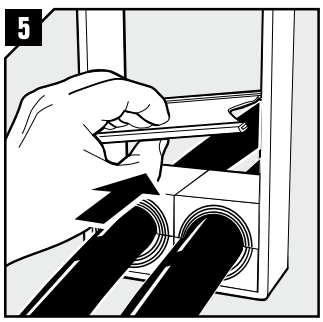


Lubricate all modules for the frame thoroughly, both the inside and the outside surfaces.

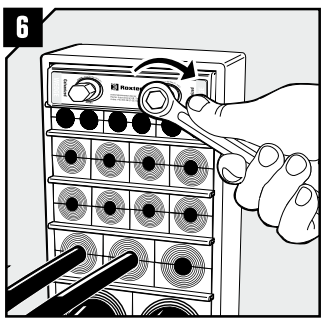
Roxtec onshore oil & gas references
Agip ENI, AMEC, BP, Chrevron, CNOOC, CNPC, ConocoPhillips, Daewoo E&C, ExxonMobil, Fluor, Foster Wheeler, Hyundai E&C, Imperial Oil, Kvaerner, Saipem, Samsung Engineering, Samsung Heavy Industries, Shell, SINOPEC, Statoil, Suncor, Technomare.



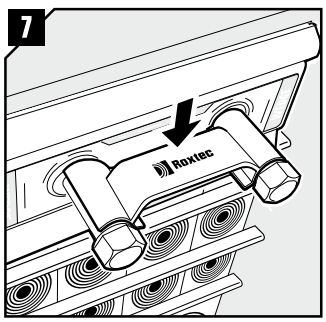
Insert the modules according to your installation plan (transit plan).
It is recommended to seal cables/ pipes at the bottom of the frame and put spare modules on top.



Insert a stayplate on top of every finished row of modules.



Insert the Roxtec Wedge and tighten the screws until full stop.



Attach the Wedge Clip to the wedge bolts to check that the wedge is properly tightened.

It is easy to purchase Roxtec products

Just send your bill of material to your local Roxtec representative. We ensure product availability from local stocks on more than 70 markets – and we are ready to support large and changing delivery requirements. Our presence worldwide allows us to offer complimentary services such as technical support, installation training and inspections.

Sweden, Roxtec International AB, HQ
Argentina, INGIAR Representaciones SRL
Australia, Roxtec Australia Ltd
Belgium, Roxtec b.v.b.a/s.p.r.l
Brazil, Roxtec Latin América Ltda
Chile, FACOR Ltda
China, Roxtec International Trading (Shanghai) Co. Ltd
Croatia, Roxtec d.o.o.
Czech Republic, Roxtec CZ s.r.o
Denmark, Roxtec ApS
Finland, Roxtec Finland Oy
France, Roxtec France
Germany, Roxtec GmbH
Hungary, Glob-Prot Trade and Service Ltd
India, Roxtec India Pvt Ltd
Italy, Roxtec Italia S.r.l
Japan, Roxtec Japan K.K
Kazakhstan, Company ECOS
Lithuania, SWELBALT
Mexico, Roxtec de México, S.A. de C.V
Nigeria, Structured Resource Business Ltd
The Netherlands, Roxtec BV
Norway, Roxtec AS
Peru, Synixtor S.A.C
Poland, Pionet Sp.zo.o
Portugal, Glacis, LDA
Russia, Roxtec RU
Romania, Roxtec RO s.r.l.
Singapore, Roxtec Singapore PTE Ltd
South Africa, Roxtec Africa (PTY) Ltd
South Korea, Roxtec Korea
Spain, Roxtec Sistemas Pasamuros S.L
Switzerland, Agro AG
UAE, Roxtec Middle East F.Z.E
UK/Ireland, Roxtec Ltd
USA/Canada, Roxtec Inc

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