

# GOTHE & CO

PRODUKTE DIE VERBINDEN

## Junction box with separable elbow connectors



In the last years, the tunnel construction projects have increased significantly worldwide. Especially for the extension of existing transport infrastructures in the metropolitan areas tunnels are more and more required. Therefore, new tubes are e.g. drilled under existing underground tubes to meet the growing public transportation needs. The best example is the subway of London. For the football world cup 2022 a new subway is built in Doha, Qatar. Currently 25 tunnel boring machines are used to drill the tubes simultaneously. Moreover, due to a lack of space of the existing road constructions in the major cities of the United States, new roads are built in the underground more and more.

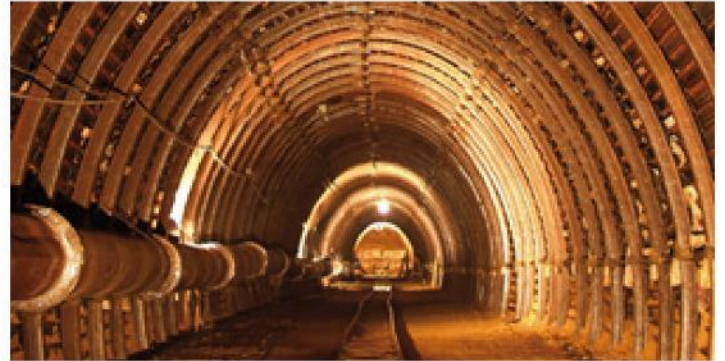


In addition, tunnels are also be used for railway lines, sewers and even ship passages. The pilot project „Stad Ship Tunnel“ in Norway is an example. In all these tunnel construction projects time is an essential resource and the projects has to be finished on time. Therefore, a simple, fast and flexible high-voltage connection technology for the energy supply of the tunnel machines plays a very important role. To fulfill these needs Gothe & Co. has developed a special junction box for the connection of separable elbow connectors. With this new type of junction box Gothe & Co. expanded the portfolio of tunnel connectivity equipment at the same time.



**Main application:**

**Tunnelling up to 24 kV**



**Wind energy up to 72 kV**



For fast, easy and flexible connections of already pre-finished high voltage cables with separable elbow connectors of tunnel boring machines and other tunneling equipments, as well as to connect high voltage cables of a wind turbine.

**Technical data:**

Rated voltage:	24kV AC, (36kV, 66kV, 72kV on request)
Rated current:	up to 630A
Frequency:	50Hz
Protection class:	IP54
Operating temperature:	-20°C to +80°C
Ambient temperature:	-20°C to +40°C
Cable entry frame:	customized (one supply cable, x-times electrical loads)
Type of elbow connectors:	1 x T- and x-times coupling connector
Material:	Sheet steel, stainless steel AISI 316Ti on request
Wall thickness:	3mm
cabel cross section:	up to 120mm <sup>2</sup>
Dimensions (W/D/H):	customized x 485 x 1666mm
Sealing:	EPDM
Surface treatment:	2K-PUR, RAL 3002, 60µm
Explosion protection:	Ex e or Ex tb on request



## Amenities:

Picture 1: Drawer with splittable and large surfaced cable entry sealing inserts

Picture 2: Applicable mounting rails

Picture 3: Solid cable clamps to guarantee an increased strain-relief

Picture 4: Support bar for the bracket of the insulating sockets

Picture 5: Inner earth bolts

Picture 6: Side box for the connection of either fiber optics or supervising and controlling cables

Picture 7: Lugs for transportation and wall installation

Not pictured: Removable cover with a hinge and locking lever

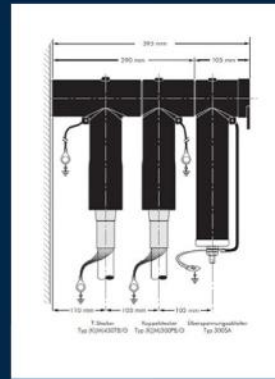
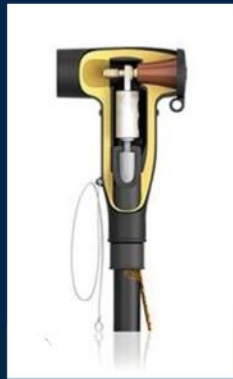
Not pictured: Solid rack (other designs on request)



## Installation:

Already with separable elbow connectors pre-finished high voltage cables have to be connected and have to be placed completely in the junction box from the front in the aftermath. Therefore, it is not required to move the cables inconveniently through a cable gland. Starting with the elbow connector of phase L3 the whole assembly has to be pulled down in a support bar until the insulating sockets in engaged in the bracket. Afterwards the cable has to be fixed with the cable clamp. Thereafter, the L2 and L1 have to be installed in the same way. The drawer with the splittable and large surfaced cable sealing inserts has to be pushed into the drawer guide and the cables have to be positioned centrally. Afterwards the drawer has to be fixed with screws. To fulfill the required strain-relief the different screws of the sealing insert construction have to be screwed to reach the necessary compression of the sealing material to the cables. Finally, the earth conductors have to be connected with the earth bolts. Carried along or separable monitoring and control conductors or optical fibers can be connected in the side box individually.

## Installation sequence of the separable elbow connectors:



1. Installation of the T-plug to the insulating socket (beforehand)
2. Assembly of the coupling plug to the T-plug
3. Assembly of possible other coupling plugs to the latest installed coupling plug
4. Mounting of the overvoltage arrester to the last coupling plug (in case of generator application)
5. Positioning of the insulating socket in the bracket of the support bar
6. Support bar is already welded on the left wall (fixed part of the enclosure)

### Your advantages at a glance:

- Fast installation
- Self-explaning and easy assembly
- Pre-finishing of the high voltage cables possible under clean conditions
- Self-adjustment of the insulating socket of the elbow connector assembly in the bracket of the support bar through its own weight and its slant
- Large sealing range from 48 to 70mm
- Open designed rack to enable an easy arrangement of the high voltage cables
- Double strain-relief because of using cable clamps and special large surfaced sealing inserts
- Minimal protruding locking system
- The rack can be equipped with skids
- Independent connection of fiber optics in a side box
- Multiple application of the junction box



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