

High Voltage Cable Accessories



GIS/Transformer plug in terminations type TFD

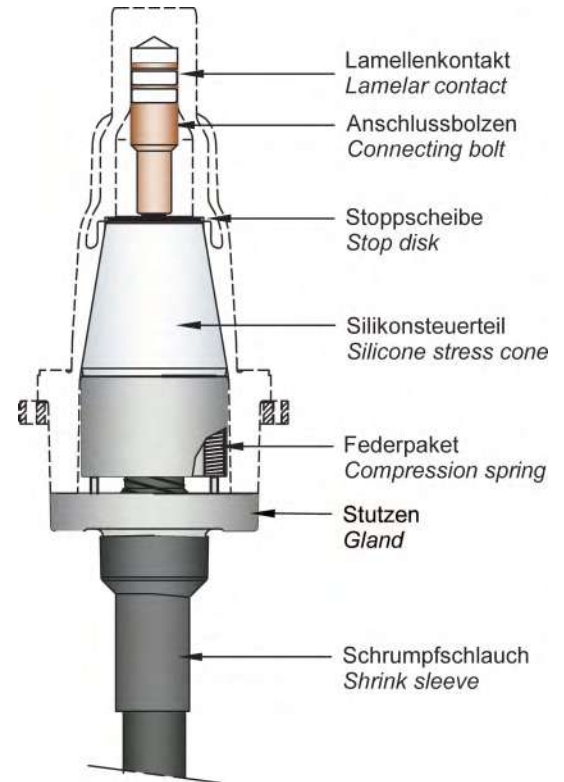
Dry type plug-in terminations For polymeric cables up to 550 kV

Brugg dry type plug-in terminations offer highest quality and application flexibility as GIS or Transformer cable termination for system voltages up to 550 kV. Based on the outstanding properties of the prefabricated and electrically tested slip on stress cones, the reliable modular construction of the TFD terminations allow its application to all types of polymeric insulated cables independently of the cable manufacturer. Thanks to the dry type insulation the cable terminations can be easily installed in any position.

All Brugg dry type plug in terminations are type tested according to the international standards IEC 60840 (≤ 170 kV) and IEC 62067 (> 170 kV). For the long-term reliability of the termination plug in part, each unit of stress cones produced are electrically routine tested in our factory.

Product main features

- For all polymeric cables
- Easy installation in any position
- Adjustable spring tension force
- Application range per stress cone up to 6 mm
- Factory tested silicone rubber stress cone
- Cable screen connection without plumbing



Technical data

Type	Drawing	Max. operating voltage U_m kV	Max. operating current A	Range of diameter over prepared cable insulation, min. - max. mm	Equivalent cable cross-section (Cu/Al) ¹ mm ²	for sockets size
TFD 1.72-11	S2048	72.5	2500	34 - 86	150 - 2000	0 / 0L
TFD 1.145-10	S2047	145.0	2500	34 - 86	150 - 1600	1 / 1L
TFD 1.170-11	S1867-4	170.0	4000	45 - 106	240 - 2500	2 / 2L
TFD 1.245-11	S1870-4	245.0	4000	70 - 130	400 - 2500	3 / 3L
TFD 1.300-11	S1897-4	300.0	4000	70 - 130	400 - 2500	3 / 3L
TFD 1.420-11	S2021	420.0	4000	70 - 130	400 - 2500	4 / 4L
TFD 1.550-11	S2022	550.0	4000	70 - 130	400 - 2500	4 / 4L

¹ Values for reference only. The exact application depend on the diameter over the prepared cable insulation.

Note: Insulator not scope of delivery. Insulator sets to be ordered separately.

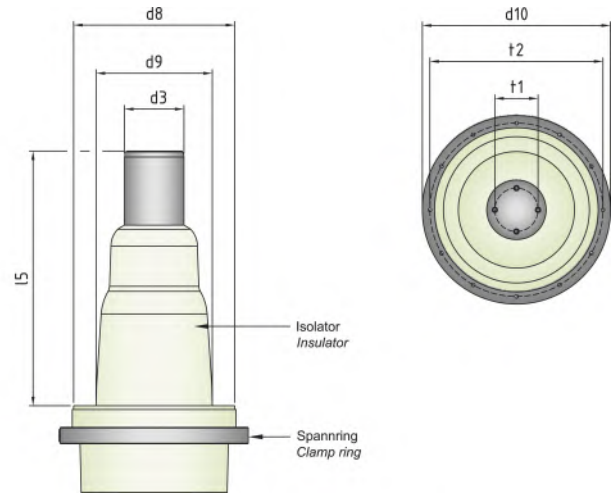
GIS Sockets type TFD

Sockets up to 550 kV

Brugg dry type sockets offer high flexibility to SF6 insulated switchgears for system voltages up to 550 kV. Regardless of whether the required dimensions of the cable compartment are for a dry type or a fluid filled type termination as per IEC 62271-209, each socket is provided with all necessary elements for the fast and easy installation to any switchgear independently of the manufacturer. For the long-term reliability all sockets are factory tested as per EN 50089 requirements. All materials used are UV and corrosion resistant thus allowing the terminations to be applicable for both indoors and outdoors installations.

Product main features

- Designs according to IEC 62271-209
- Factory tests according EN 50089
- Complete set ready for installation
- Easy adaptation to all GIS
- Operating current 4000 A
- Short circuit current up to 50 kA, 3 sec



Main dimensions according to IEC 62271-209

Type	l5 mm	d3 mm	d8 mm	d9 mm	d10 mm	t1 mm	t2 mm
TFD 72.5 kV	310	110	259	195	299	80	270
TFD 72.5 kV ext.	583	110	259	195	299	80	270
TFD 145 kV	470	110	298	195	350	80	320
TFD 145 kV ext.	757	110	298	195	350	80	320
TFD 145/170 kV	470	110	298	215	348	80	320
TFD 145/170 kV ext.	757	110	298	215	348	80	320
TFD 245/300 kV	620	150	454	331	500	110	475
TFD 245/300 kV ext.	960	150	559	331	500	110	582
TFD 420/550 kV	960	150	617	385	690	110	640
TFD 420/550 kV ext.	1400	150	617	385	690	110	640

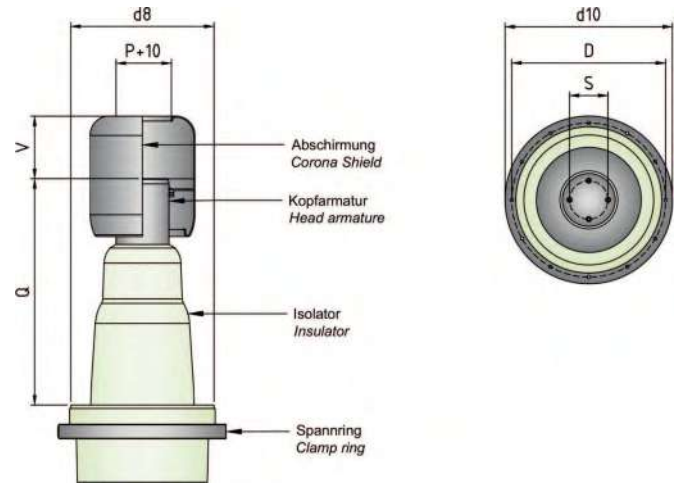
Technical data

Type	Insulator size	Drawing	Part no	Description	l5 mm
TFD 72.5 kV	G0	S2034	80156	dry type, fixing ring cylindrical	310
TFD 72.5 kV ext.	G0-L	S2036	80158	dry type, fixing ring cylindrical	583
TFD 145 kV	G1	S2035	80157	dry type, fixing ring cylindrical	470
TFD 145 kV ext.	G1-L	S2037	80159	dry type, fixing ring cylindrical	757
TFD 145/170 kV	G2	S1779-4	89385	dry type, fixing ring cylindrical	470
TFD 145/170 kV	G2	S1779-4	89387	dry type, fixing ring V-shaped	470
TFD 145/170 kV ext.	G2-L	S1938-4	89446	dry type, fixing ring cylindrical	757
TFD 145/170 kV ext.	G2-L	S1938-4	89447	dry type, fixing ring V-shaped	757
TFD 245/300 kV	G3	S1843-4	89386	dry type, fixing ring cylindrical	620
TFD 245/300 kV ext.	G3-L	S1908-4	89395	dry type, fixing ring cylindrical	960
TFD 420/550 kV	G4	S2023	80074	dry type, fixing ring cylindrical	960
TFD 420/550 kV ext.	G4-L	S2024	80118	dry type, fixing ring cylindrical	1400

Transformer Sockets type TTD

Sockets up to 550 kV

Brugg dry type sockets offer high flexibility to oil insulated transformers for system voltages up to 550 kV. Regardless of whether the required dimensions of the cable compartment are for dry type terminations according to EN 50299-2 or fluid filled terminations according to EN 50299-1, each socket is provided with all necessary elements for the fast and easy installation to any transformer independently of the manufacturer. For the long-term reliability all sockets are in addition factory tested as per EN 50089 requirements. All materials used are UV and corrosion resistant thus allowing the terminations to be applicable for both indoors and outdoors installations.



Product main features

- Designs according to EN 50299-1/ -2
- Factory tests according EN 50089
- Complete set ready for installation
- Easy adaptation to all transformers
- Operating current 4000 A
- Short circuit current up to 50 kA, 3 sec

Main dimensions according to EN 50299-1 / -2

Type	Q mm	V mm	d8 mm	P+10 mm	d10 mm	S mm	D mm
TTD 72.5 kV	310	120	259	120	299	80	270
TTD 72.5 kV ext.	583	120	259	120	299	80	270
TTD 145 kV	470	120	298	120	350	80	320
TTD 145 kV ext.	757	120	298	110	350	80	320
TTD 145/170 kV	470	120	298	110	348	80	320
TTD 145/170 kV ext.	757	120	298	110	348	80	320
TTD 245/300 kV	620	160	451	160	500	110	475
TTD 245/300 kV ext.	960	160	559	150	500	110	582
TTD 420/550 kV	960	160	617	160	690	110	640
TTD 420/550 kV ext.	1400	160	617	160	690	110	640

Technical data

Type	Insulator size	Drawing	Part no	Description	Q mm
TTD 72.5 kV	T0	S2038	80168	dry type, fixing ring cylindrical	310
TTD 72.5 kV ext	T0-L	S2041	80166	dry type, fixing ring cylindrical	583
TTD 145 kV	T1	S2039	80167	dry type, fixing ring cylindrical	470
TTD 145 kV ext	T1-L	S2040	80169	dry type, fixing ring cylindrical	757
TTD 145/170 kV	T2	S1940-4	89448	dry type, fixing ring cylindrical	470
TTD 145/170 kV ext.	T2-L	S1939-4	89449	dry type, fixing ring cylindrical	757
TTD 245/300 kV	T3	S2043	89451	dry type, fixing ring cylindrical	620
TTD 245/300 kV ext.	T3-L	S1909-4	89396	dry type, fixing ring cylindrical	960
TTD 420/550 kV	T4	S2025	80072	dry type, fixing ring cylindrical	960
TTD 420/550 kV ext.	T4-L	S2026	80070	dry type, fixing ring cylindrical	1400

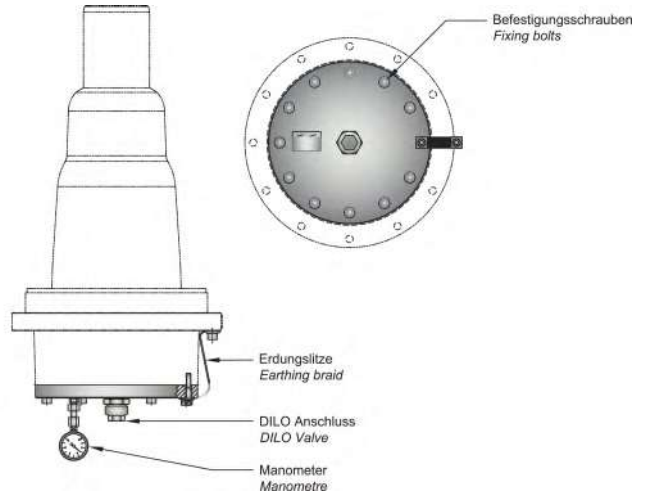
Testing-plate set type TFD / TTD

For Insulators up to 550 kV

The testing-plates allow the performance of electrical tests onto pre-installed female sockets type TFD onto SF6 gas-insulated switchgears or TTD onto oil-immersed transformers up to 550 kV. In addition the testing-plate can be used as a blind cover until male plug in cable terminations are connected to the equipment.

Product main features

- Complete set ready for installation
- Manometer indication -1 bar to 8 bar
- For SF6 or N2 insulating gas
- Compatible to all TFD and TTD sockets
- Free of grease
- Fully reusable



Electrical data

Type	AC withstand voltage kV / 1 min	Partial discharge pC / kV	BIL kV	SIL kV
TFD/TTD 72.5/145kV	275	< 5 / 114	650	-
TFD/TTD 145/170 kV	325	< 5 / 114	750	-
TFD/TTD 245/300 kV	460	< 5 / 240	1050	850
TFD/TTD 420/550 kV	680	< 5 / 435	1550	1175

Technical data

Type	Drawing	Part no	for sockets
TFD/TTD 72/145 kV	S2050	80119	G0 / G0L / G1 / G1L / T1 / T1L
TFD/TTD 145/170 kV	S1879-4	89444	G2 / G2L / T2 / T2L
TFD/TTD 245/300 kV	S1842-4	89438	G3 / G3L / T3 / T3L
TFD/TTD 420/550 kV	S2027	89441	G4 / G4L / T4 / T4L

Note: Insulating gas not scope of delivery.

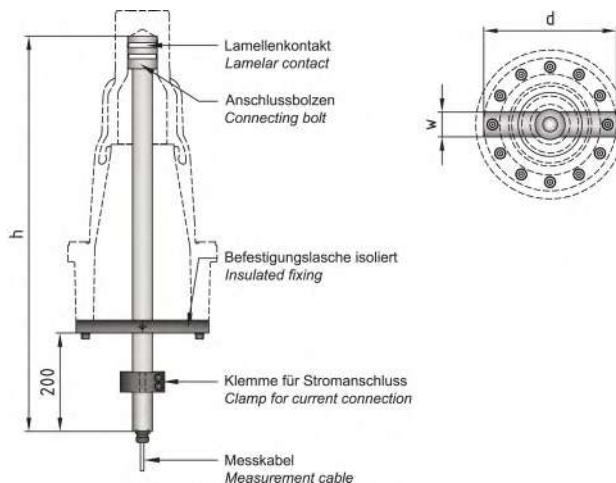
Contact resistance-meter type TFD / TTD

For female Sockets up to 550 kV

The contact resistance-meter allows determining the correct contact resistance between female sockets type TFD or TTD and SF6 gas-insulated switchgears or oil-immersed transformers up to 550 kV. Each set is provided with all necessary material for a fast installation.

Product main features

- Complete set ready for installation
- With measurement cable
- Easy adaptation to all sockets TFD and TTD
- Max. operating current up to 1000 A



Dimensions

Type	h mm	d mm	w mm
TFD/TTD 72/145 kV	580	230	50
TFD/TTD 145/170 kV	803	270	50
TFD/TTD 245-550 kV	986	364	50

Technical data

Type	Drawing	Part no	for sockets
TFD/TTD 72/145 kV	S2051	89452	0 / 0L / 1 / 1L
TFD/TTD 145/170 kV	S1937-4	89450	2 / 2L
TFD/TTD 245-550 kV	S1941-4	89440	3 / 3L / 4 / 4L

Spare parts

Part no	Type	for sockets
89442	Connecting bolt Ø 60 mm	3 / 3L / 4 / 4L
89443	Connecting bolt Ø 70 mm	2 / 2L
60287	Connecting bolt Ø 90 mm	0 / 0L / 1 / 1L
60385	Contact blade	0 / 0L / 1 / 1L

Note: Measurement equipment (e.g. voltmeter) not scope of delivery.

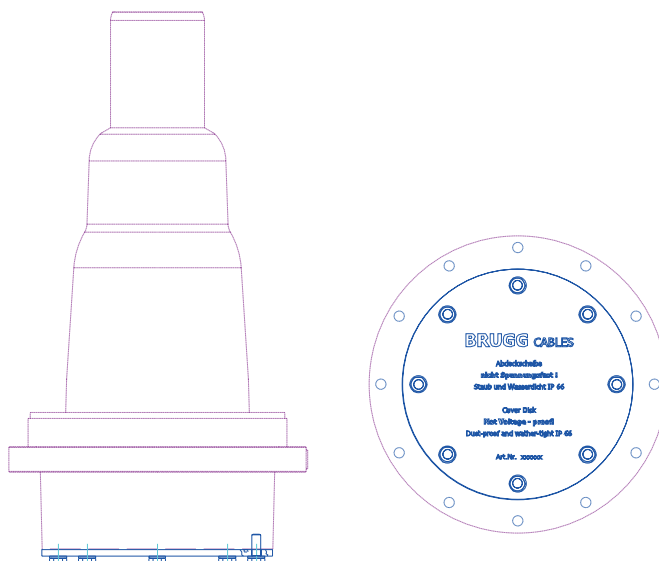
Cover plate type TFD / TTD

For Sockets up to 550 kV

The cover plate protects open sockets of dry type terminations type TFD and TTD. It protects against dust or humidity during transportation.

Product main features

- Complete set ready for installation
- Material hard PVC with 8 mm wall thickness
- Easy adaptation to all sockets TFD and TTD
- Recommended as transport protection
- Not voltage proof



Technical data

Type	Drawing	Part no	for insulators
TFD/TTD 72/145 kV	S2008	60135	G0, G1, T0, T1
TFD/TTD 145/170 kV	S2009	60136	G2, T2
TFD/TTD 245-550 kV	S2010	60137	G3, G4, T3, T4