

INSTRUCTIONS ON PROTECTING CABLES

Instructions on protecting buried telecommunications cables and installations belonging to Telekom Deutschland GmbH when work is being carried out by third parties



Produced and issued by Telekom Deutschland GmbH

The underground telecommunications cables and installations belonging to Telekom Deutschland GmbH are part of the company's telecommunications network. They can easily be damaged when work is being carried out either on or under the ground in their vicinity. If they are damaged, the important telecommunications service provided by Telekom Deutschland GmbH for the public will be severely affected. Damage to telecommunications cables / installations is punishable under Article 317 of the StGB. (the German town and district act), including if it is the result of negligence. Furthermore, the person responsible for causing the damage will have to compensate Telekom Deutschland GmbH, accordingly. It is therefore in the interest of everyone who carries out such work to exercise extreme care, and, in particular, to comply strictly with the following rules, in order to prevent the occurrence of any damage.

1. There is always the danger that telecommunications cables / installations belonging to Telekom Deutschland GmbH will be damaged when any type of work is being carried out on or under the ground. This applies in particular to digging, paving and surfacing work, boring, excavating, the erecting of masts and poles, pile-driving, drilling, and spiking.

2. Telecommunications cables / installations belonging to Telekom Deutschland GmbH are not just found on or along public rights of way; they also run through private property (such as, for example, fields, meadows, and woods). The telecommunications cables / installations are normally laid on a trench bottom of 60 cm (40 cm in some cases) to 100 centimeters; systems laid using a trenching process are located at an installation depth of 20 cm or more (see page 5). But this depth may vary in case of groups of pipe ducts/cable conduits due to crossings with other systems, a change of the surface cover as a result of roadworks and such like, or for other reasons. Cables may run through conduits; they may be covered with a protective layer of clay or building stones or something similar; they may be marked with route warning tape made of plastic or by electronic markers; or they may be laid loosely in the ground. Conduits, covering, and route warning tape made of plastic do not, however, protect telecommunications cables / installations against mechanical damage. They are merely intended to draw the attention of anyone carrying out excavation work that there are telecommunications cables / installations nearby. (That is to say, they simply serve as a warning.)


If telecommunications cables / installations¹ belonging to Telekom Deutschland GmbH are damaged, the life of anyone coming into contact with them may be put at risk.

¹ The following types of cable are used:

- Telephone cables
- Telephone cables with remote power feed


If, however, telecommunications cables / installations belonging to Telekom Deutschland GmbH have an insulating outer cover and are undamaged, they pose no risk along their route.

Ground electrodes and unearthed cables (cables with a metallic outer cover) can be particularly dangerous during thunderstorms. Under DIN VDE (Association of German Electrical Engineers) 0105 Part 100, section 6.1.2 *Weather Conditions*, work on such installations must be suspended during a thunderstorm.

Optical fiber cables are marked with a  symbol on their outer cover. Anyone looking into the optical fiber may suffer damage to the eyes.

Whenever telecommunications cables / installations are damaged, the following rule must be followed: All workers must leave the danger area where the cable is damaged, and Telekom Deutschland GmbH must be informed without delay by the fastest possible means, so that the damage can be eliminated.

3. Before work of the type mentioned in paragraph 1 is started on or under the ground, therefore, steps must be taken to establish whether there are any telecommunications cables / installations belonging to Telekom Deutschland GmbH in the vicinity that could be damaged by the work being carried out at the site. If there are, their position must be confirmed. This can be done either by going to <https://trassenauskunft-kabel.telekom.de> on the Internet, or by checking with the branch office (phone: 0800/3301000) that is responsible for the cable network concerned.

The design of the telecommunications cables / installations is partially free from metal and provided with electronic markers. These markers (frequencies of the passive oscillating circuits according to 3M industrial standard 101.4 kHz) are also shown in the layout plan as  and can be safely localized with appropriate commercial detectors.

4. If there are telecommunications cables / installations belonging to Telekom Deutschland GmbH, in the area of the worksite, the responsible branch office must be informed in writing well in advance that the work is going to be carried out. In urgent cases, the information must be passed by telephone. If necessary, a representative can then be sent to the site so that further details about the position of the cables or installations can be provided.

5. If telecommunications cables / installations belonging to Telekom Deutschland GmbH are unintentionally exposed, the branch office concerned must be informed without delay by the fastest possible means. If a direct contact is not known, a damage can also be reported under 0800/3301000 or online https://trassenauskunft-kabel.telekom.de/static-content/doc/Kabelschaeden_melden.pdf. Exposed telecommunications cables / installations must be made safe, and they must be protected from damage and theft. The excavation work being carried out at a site where there are exposed cables must be suspended until a representative of Deutsche Telekom arrives.

6. When work is being carried out in the vicinity of buried telecommunications cables / installations, pointed or sharp tools (such as drills, pickaxes, spades, and crowbars) must only be used if steps are taken to ensure that they can only penetrate the ground to a depth of no more than ten centimeters above the telecommunications cable / installation in question. Blunt implements, such as shovels, must be used for any further work. They must be used with care, and they must be kept as close to the horizontal as possible. Pointed implements (such as spikes and stakes) must only be driven into the ground above telecommunications cables / installations if they

- Cables (power cables) that supply remote equipment with power

have a permanent fixed plate or crossbar to prevent a too deep penetration and thus safely exclude a damage of the telecommunications cables / installations. The position may vary, and groups of cable conduits may be wider than expected. For this reason, the same rules must be applied fifty centimeters to the right and left of the telecommunications cables / installations. When mechanical building equipment is being used in the vicinity of telecommunications cables / installations, care must be taken to ensure that it is kept at a safe distance from the telecommunications cables / installations so that they cannot be damaged. Special care must be taken if the position or the depth is not known. If necessary, a cross-section must be carefully cut out so that the route of the telecommunications cables / installations can be determined.

7. In trenches where cables have been exposed, the earth must first of all be replaced to no more than the height of the cable support, and it must then be firmly tamped down. When this is being done, care must be taken to ensure that the cable support is smooth and free of stones. The cables must then be covered with ten centimeters of loose earth that is free of stones, and this must also be tamped down. The tamping must be done very carefully, and wooden tampers must be used to begin with. If the earth that has been excavated is not suitable for filling in the trench, sand must be used instead. Cables can be easily damaged if stony ground immediately above them is tamped down.

8. When water ducts around which telecommunications cables / installations are laid are being cleaned, the equipment must be used with care so as to ensure that the telecommunications cables / installations are not damaged.











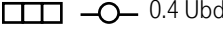







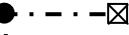




9. Any person or firm carrying out excavation work must take all necessary care. In particular, temporary staff drafted in to help with the work must be fully instructed and briefed in order to avert the risk of damage to telecommunications cables / installations that is always present during excavation work. Only in this way will they be able to avoid having to pay compensation for damage.

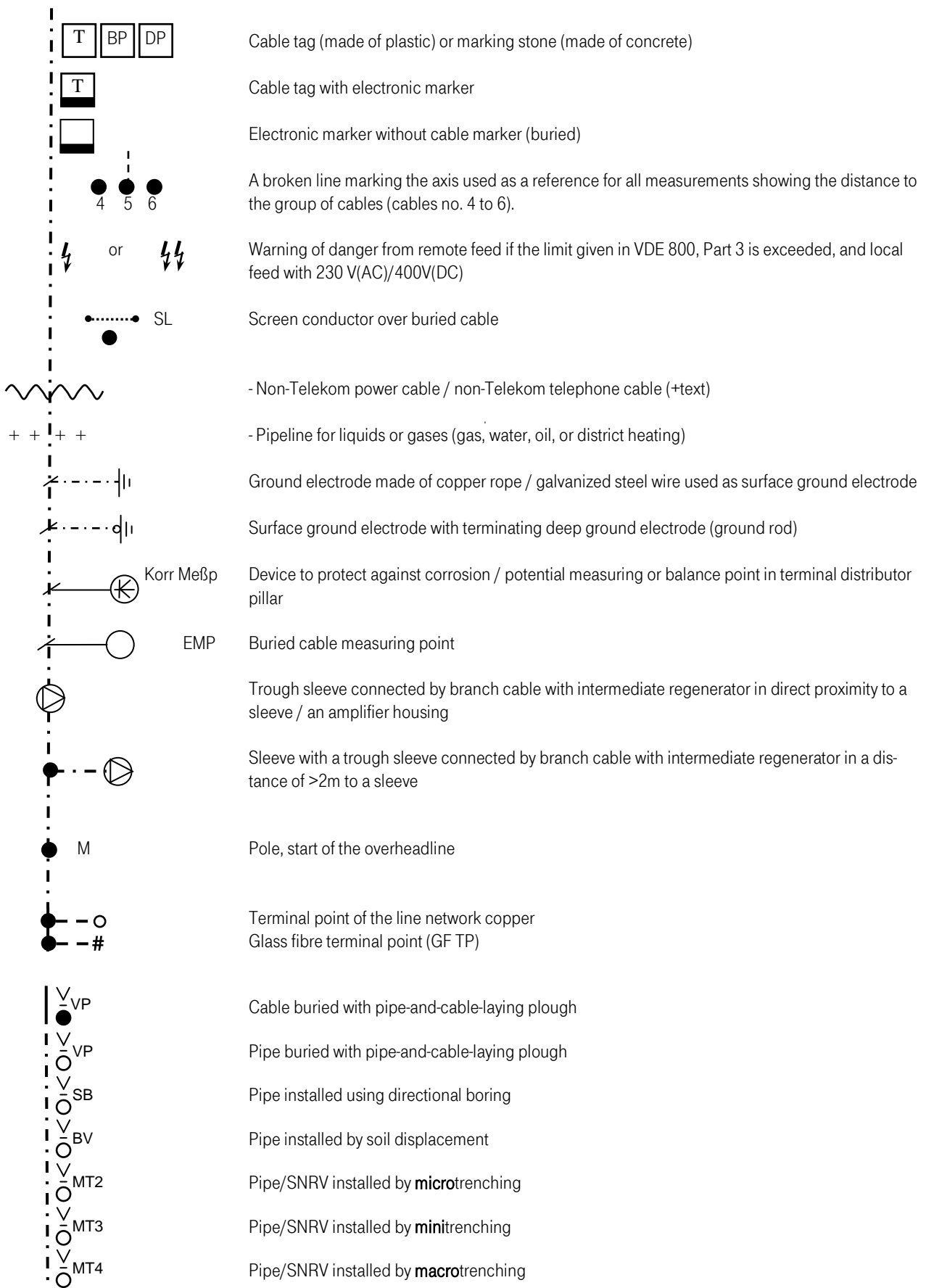
10. The fact that a representative of Telekom Deutschland GmbH is present at the excavation site will not affect the responsibility of those carrying out the excavation for any damage they have caused to telecommunications cables / installations belonging to Telekom Deutschland GmbH. The representative of Telekom Deutschland GmbH will have no authority to issue instructions to the employees of the firm carrying out the excavation work.

SYMBOLS AND ABBREVIATIONS USED IN THE TELEKOM DEUTSCHLAND GMBH GROUND PLANS

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	Cable pipeline routes with minimum one pipe
	Cable routes; all cables buried
	Cable routes laid above ground
	Operational building
	Group of cable conduits made of 2*3 cable ducts (external diameter of the cable ducts 110 mm)
	Cable shaft with 2 manholes
	Cable shaft with 1 manhole
	Cable duct made of purpose-made cable duct tiles, with 2 air vents
	Junction box with buried cable to the APL line termination point in the building
	Cross-section of the telecommunications installation along a route: In this case: 2 buried cables and 4 plastic conduits (external diameter 40 mm)
	In this case: 3 purpose-made concrete tiles and 1 double steel half pipe with a depth of cover of 0.4 m
	Breakpoint in the conduit
	Part of a disused cable shaft remaining in the ground, with buried cable not in operation and disused junction
	Breakpoint in the conduit bridged with half conduits or screw-clamp fittings
	Junction box / underfloor container with empty cable duct leading to the house
	Cable shaft, closed / cable shaft, closed and electrically protected
	Cable fanouts / glass fiber power distributor s/ feeding points 230VAC
	End of conduit, start of buried cabling
	T-joint with buried cable to the telephone cabin, booth, hood, pillar, tele-station
	Telekom cable laid straight in the ground; covered - with building tiles or cover plates, (may also have a double cover)
	- with cable cover
	- two cables with yellow route warning tape
	Two cable conduits made of plastic, steel, galvanized steel, or concrete; 6.5 m in length from the broken line in the direction of the arrow



Telecommunications cables / installations are shown as unifilar representation in the layout plan. The actual scope of the system is specified in the legend (cross section plan).

Only the measurements marked on the plans (not the drawing!) indicate the position of the telecommunications cables / installations that are shown. Lining-up on groups of cable ducts refers to the middle of the cable shaft covering. All measurements are in meters.

Please note that subsequent building work may change the depth at which the telecommunications cables / installations are laid. Large deviations in the position of the cables must be expected in the area of connecting sleeves, duct interruptions and cable groups. Special attention has to be paid to the area of cable entries from multi-function casing, cable branching devices and other distribution units.

Places where power cables and pipelines intersect or join have only been shown if they were found during work on the telecommunications cables / installations, or if they become known later in some other way.

Surface characteristics and their abbreviations can be found in DIN 18 702 "Symbols for survey sketches, large-scale maps, and plans".