Lightning Arrester

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How to install lightning arrester on

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Lightning arrester rods, surge arresters, or lightning conductors are metal rods installed on a building for lightning protection. They protect structures or substations from the travelling waves of lightning and divert the abnormally high voltage to the ground. They are made from copper and brass alloy which are good conductors of electricity and has very high ground coverage (up to 60 meters.) A lightning arrester generally has three parts:

First Part- A rod of about 3ft in length and 12 to 16 mm in diameter.
Second Part – A spiked ball/receiver which makes it easy to attach one end of the rod.
Third part – A copper-coated brass plate that is screwed to the ground and on which the rod is easily fitted.

Install Lightning Arresters on Building for Ensuring Safety!

The primary reason to install lightning arresters on buildings is to protect them from the hazardous impacts of lightning. Lightning arresters or rods intercept this voltage and provide a safe path for the lightning current into the ground. While it does not decrease the likelihood of a building being struck by lightning, it gives a direct trail to the ground, preventing the structure from fire, explosion, and electrical surges resulting from lightning strikes.

Lightning preferentially strikes the arrester instead of passing through the structure where it could start a fire or cause electrocution. The arrester conducts the current to the ground through a wire. Lightning rods are also called finials, air terminals, or strike termination devices.

The arresters are designed and developed following UL (Underwriter Laboratories) standards. While choosing lightning arresters, these standards must be verified.

The lightning arresters can be:

1. A simple rod or with a triggering system. It is a metallic capture tip placed at the top of the building. It is earthed by one or more conductors (often copper strips).

2. With taut wires stretched above the structure to be protected. They are used to protect particular locations/structures such as rocket launching areas, military applications, and the protection of high-voltage overhead lines.

3. A lightning conductor with a mesh cage (Faraday cage) in this type, numerous down conductors/tapes are symmetrically placed all around the building.

This kind of lightning protection system is for highly exposed buildings, housing sensitive installations such as computer rooms.

Installation

The arresters installations are as per the international standards as followed in a region or country.
Lightning arresters are part of the external lightning protection installation and are installed on the roof of the building to intercept any lightning before it strikes the structure. IEC 62305 PART 1 to 4 has defined guidelines for lightning protection conductors and lightning rods.

As a single component of lightning protection, lightning arresters require a connection to the earth to ensure protective function. They come in various forms, including hollow, solid, pointed, rounded, flat strips, or bristle brush-like. These rods have one main common attribute, they are all made of conductive materials such as copper and aluminium. Copper and its alloys are the most common materials used in lightning protection.

Installation process

The lightning arresters are installed at the highest elevation (roof) of the building. They are placed on the four corners and one between the two corners. A 16 mm bare grounding cable is connected to the base of the lightning arrester and dropped to the ground floor main panel board grounding terminal. Here is the basic installation process as per UNE guidelines.

1. The top of the light terminal should be installed at least two meters over the area so it can protect equipment (including antennas, refrigerating towers, roofs and tanks, and such).

2. The lightning protection devices should have their chassis grounded to the same ground near the building's entrance.

3. The primary and secondary lightning protection should be as close to the building's entrance as possible. Wherever feasible, it should be mounted on the grounding plate itself.

4. Each lightning rod should connect at least two down conductors.

5. The antennas (TV, radio and telephone) should connect directly or through an SPD or an isolated spark gap to the lightning protection system with a suitable conductor.

6. A surge protective device should protect the coaxial cable of the antennas. The cable's shield should connect to a grounding plate at the building's entrance.

7. The metallic elements rising above the roof should be connected to the closest down conductor.

8. The routing of the down-conductor must be kept as straight as possible, following the shortest path and avoiding sharp bends or upward sections.

9. The bend radius should not be less than 20cm.

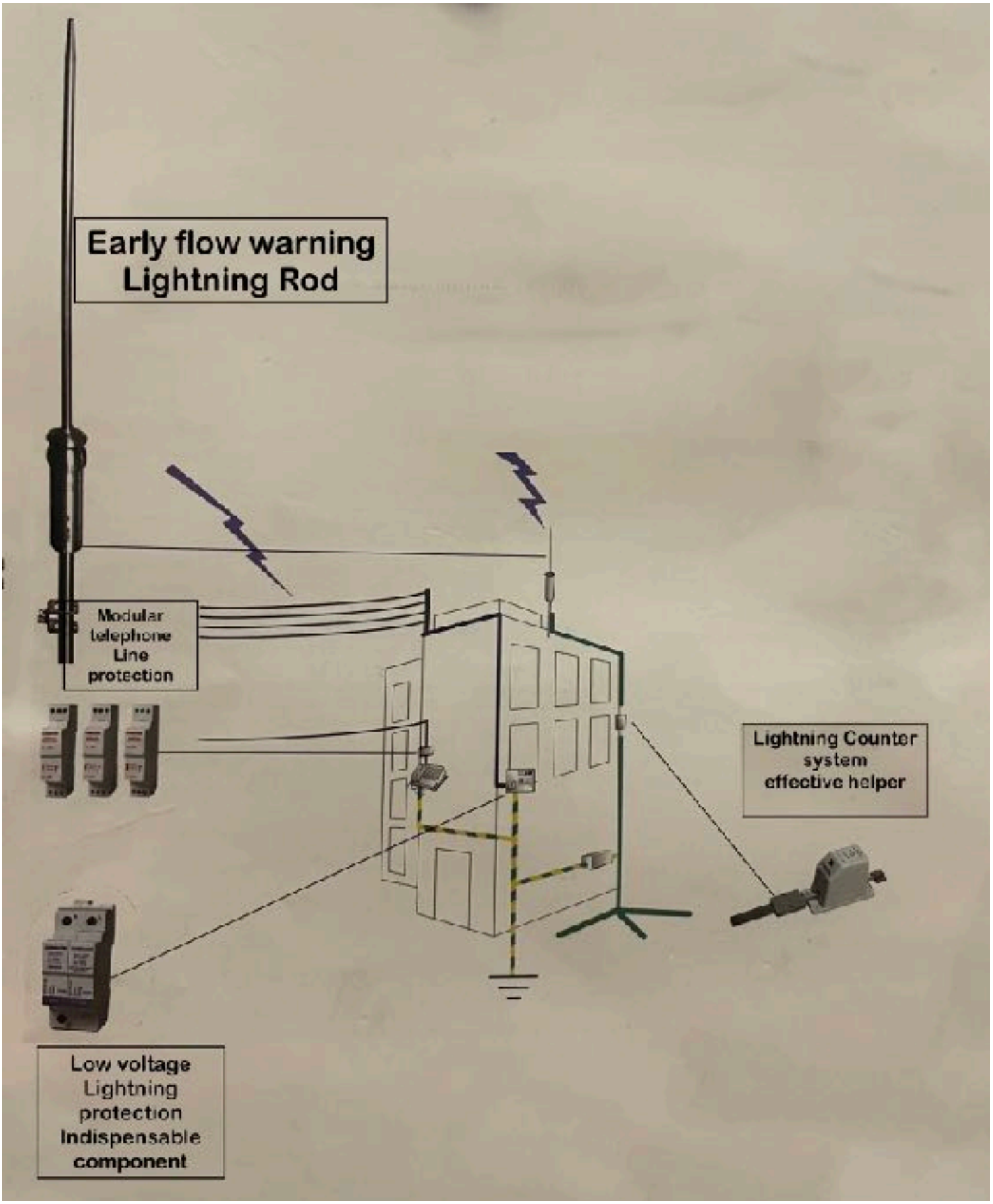
10. Down-conductors should be placed preferably at the external part of the structure (wherever possible) avoiding proximity to electrical or gas conductors.

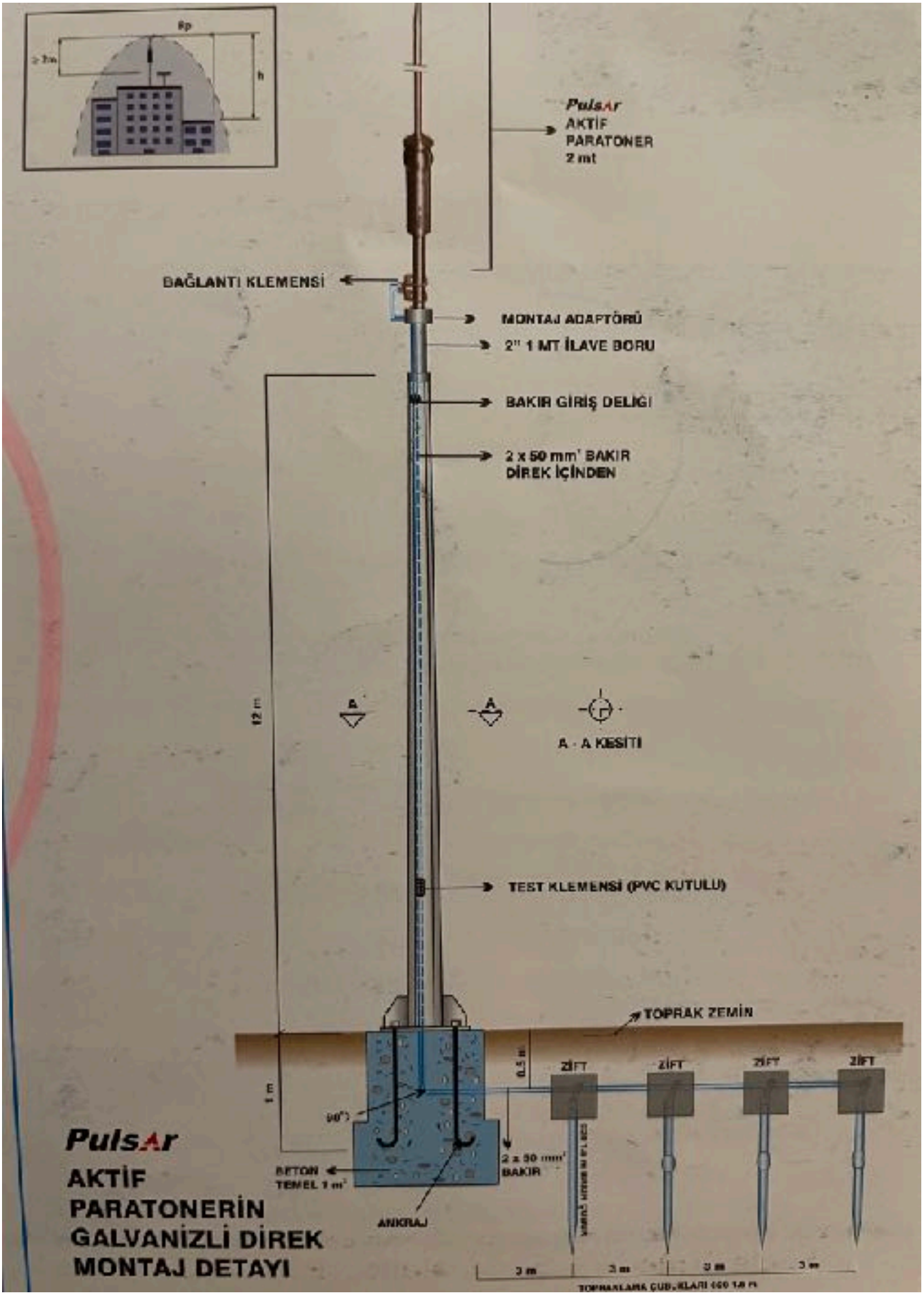
11. The grounding system should be placed in a registry cage for periodical inspections.

12. The registry cage, if present, should be provided with a test joint to disconnect the earth termination system for enabling measurements. In the absence of a registry cage, the down conductors should be in the same way.

13. The resistance value measured using conventional equipment should be the lowest possible (less than 10 Ω). This resistance must be measured on the Earthing termination insulated from any other conductive component.

14. All Earthing systems for the same structure need to be interconnected.


Early flow warning
Lightning Rod
Modular
telephone
Line
protection
Lightning Counter
system
effective helper
Low voltage
Lightning
protection
Indispensable
component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PulsAr
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MONTAJ ADAPTÖRÜ
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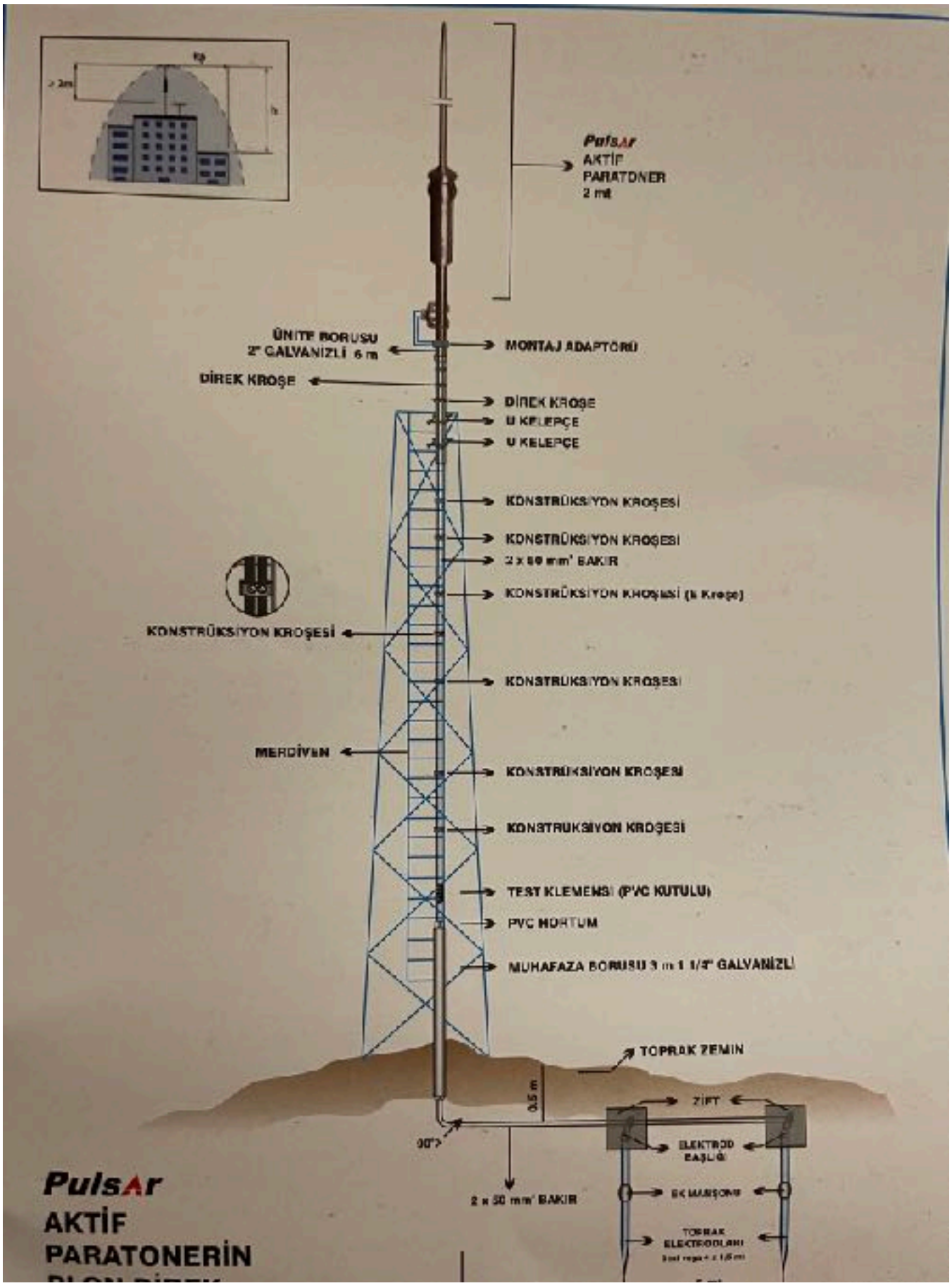
AKTİF
PARATONERİN
GALVANİZLİ DİREK
MONTAJ DETAYI


PulsAr
AKTİF
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MONTAJ ADAPTÖRÜ
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DİREK KROŞE
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KONSTRÜKSİYON KROŞESİ
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KONSTRÜKSİYON KROŞESİ
KONSTRUKSİYON KROŞESİ
MERDİVEN
KONSTRÜKSİYON KROŞESİ
KONSTRUKSİYON KROŞESİ
TEST KLEMENSİ (PVC KUTULU)
PVC HORTUM
MUHAFAZA BORUSU 3 m 1 1/2" GALVANİZLİ
TOPRAK ZEMİN
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TOPRAK ELEKTRODLARI
90°
2 x 50 mm² BAKIR
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AKTİF
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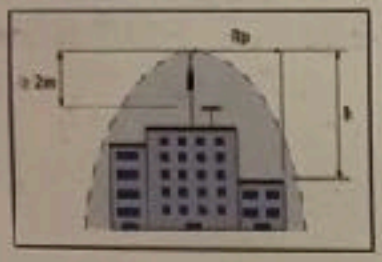

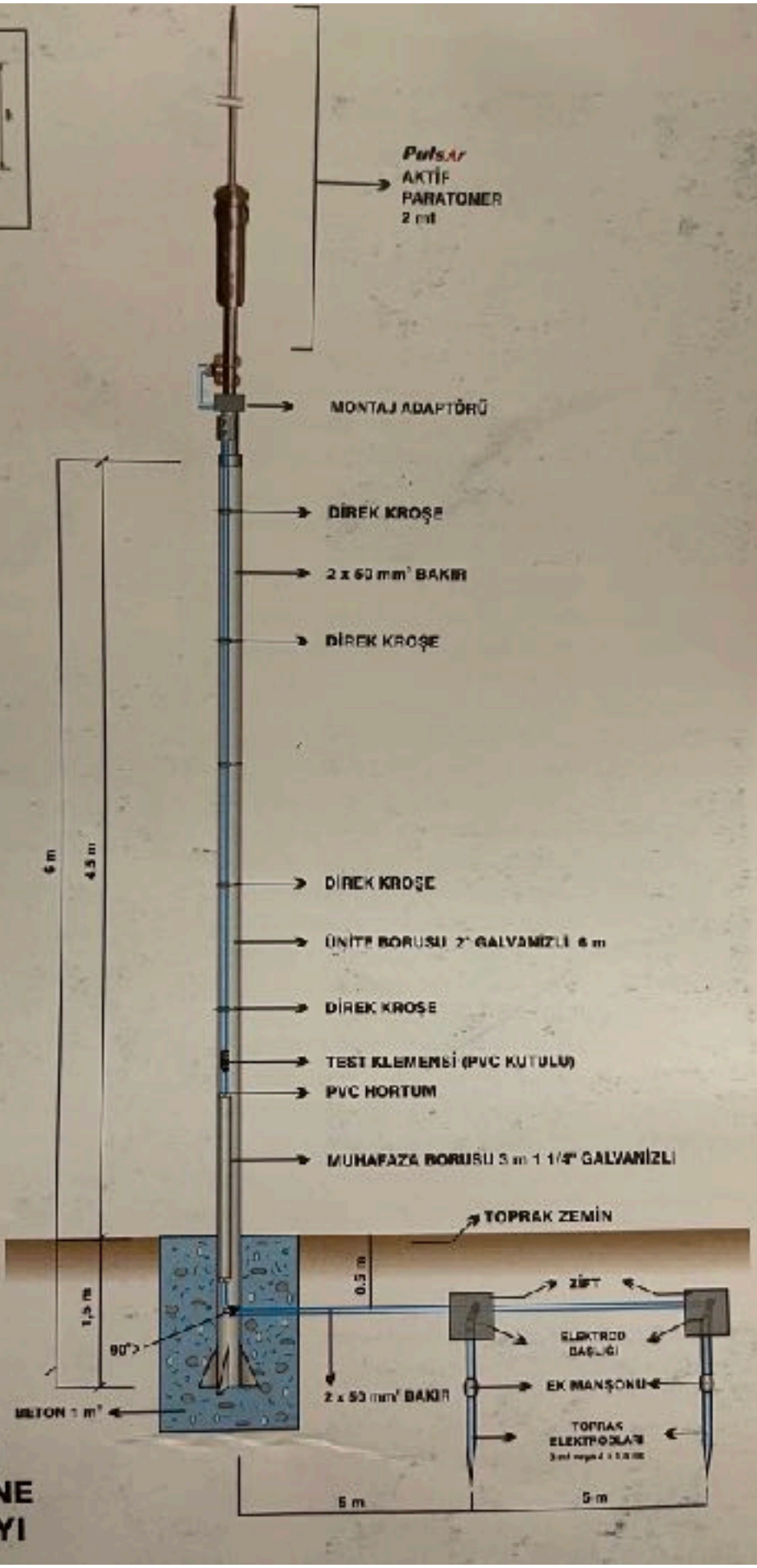

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AKTİF PARATONERİN TOPRAK ZEMİNE MONTAJ DETAYI