

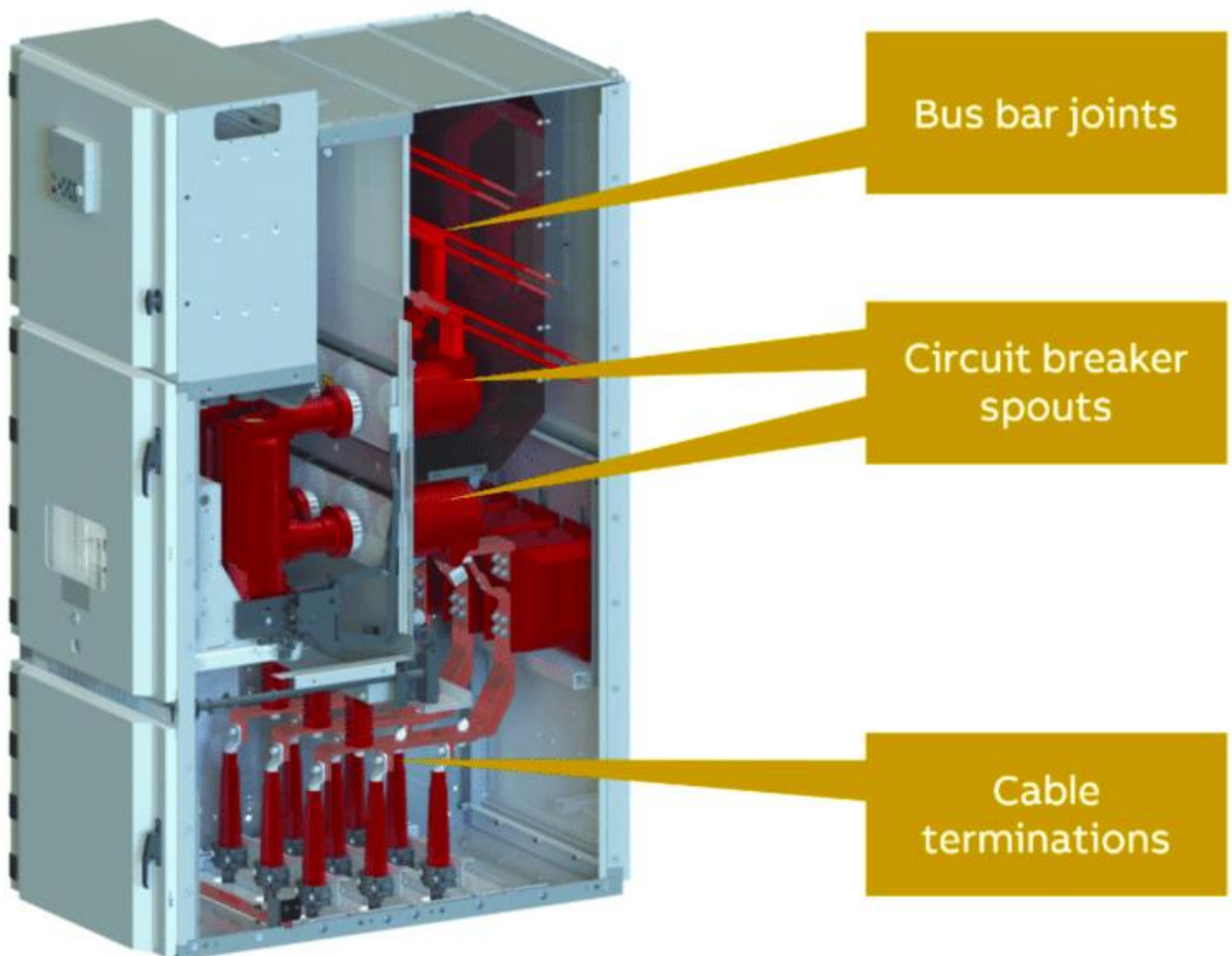
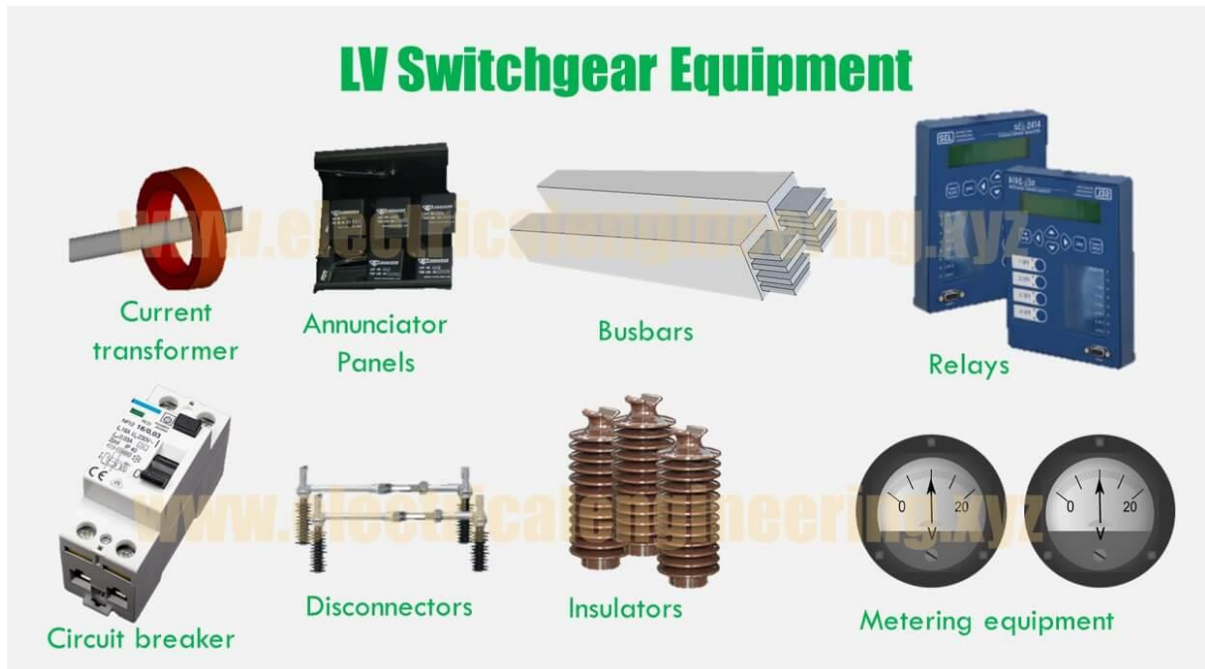


GANDHI SCHOOL OF  
ENGINEERING, BHABANDHA, BERHAMPUR

**SUBJECT: SWITCH GEAR AND  
PROTECTIVE DEVICES  
SEMESTER: 6<sup>TH</sup>**

**SUBMITTED BY:-ER.AMARESH CHOUDHURY &ER.SIBANI  
SENAPATI**

# CHAPTER-1:INTRODUCTION TO SWITCHGEAR



## CHAPTER-3: FUSES



Cartridge Fuse



Rewireable Fuse



Switch Fuse



Drop Out Fuse



MOV Fuse

### DIFFERENT TYPES OF FUSES



Resettable POLYFUSE

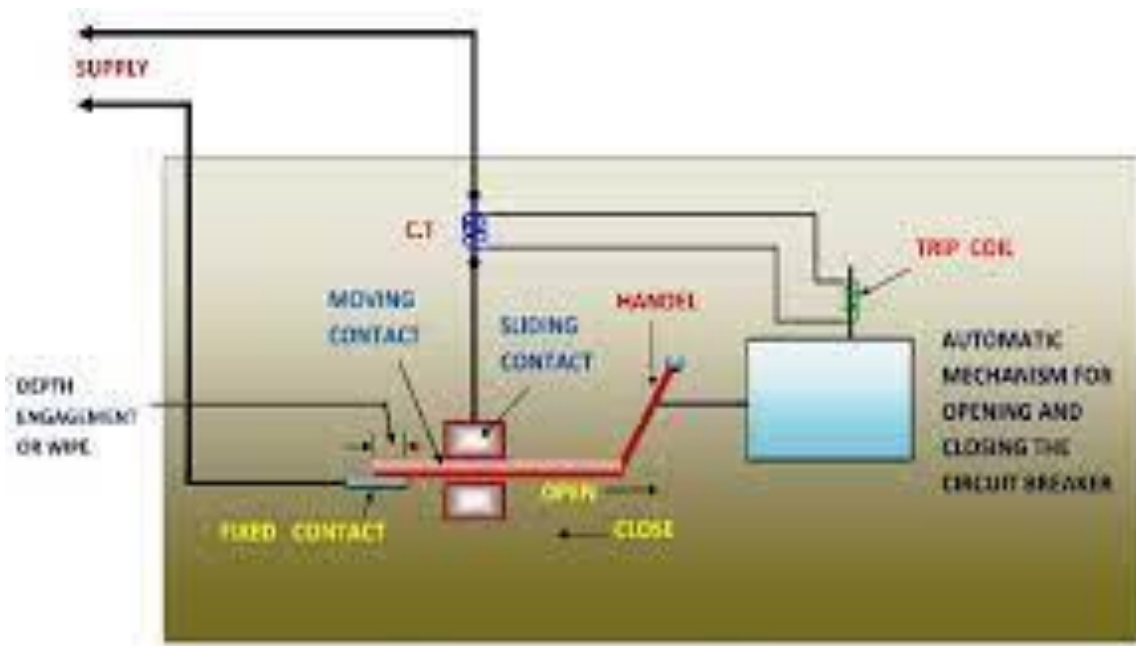


Automotive Fuse



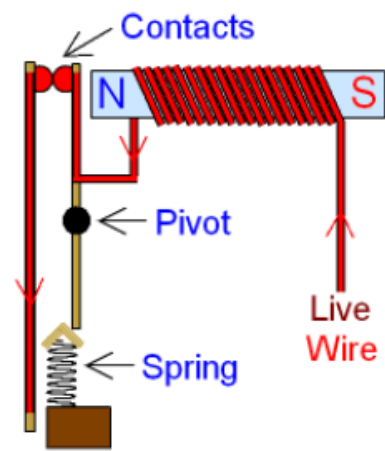
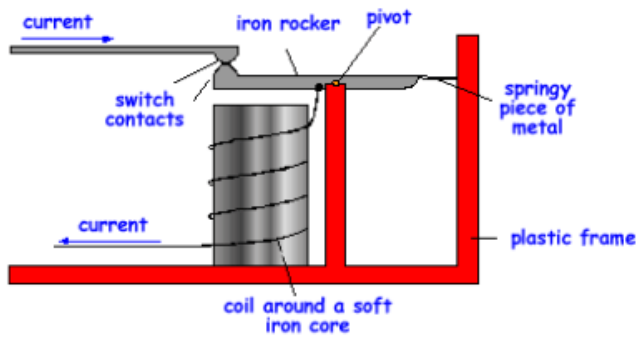
Expulsion Fuse

# CHAPTER-4: CIRCUIT BREAKERS

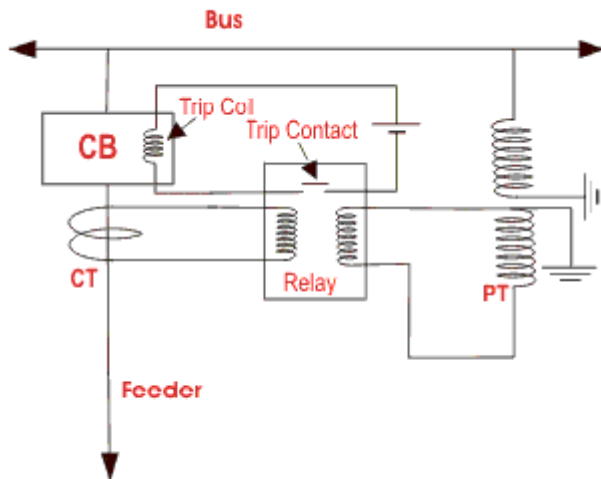


\*\*Schematic diagram of a circuit breaker\*\*

## What is a Circuit Breaker?

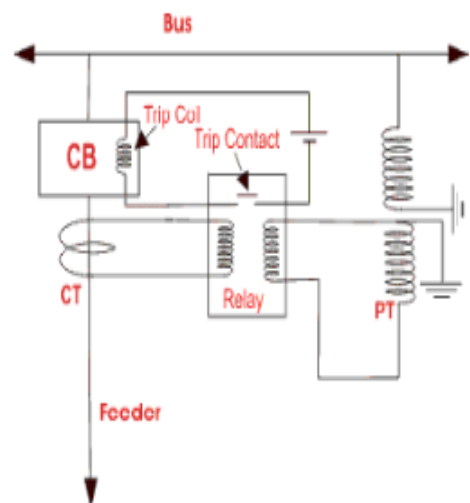
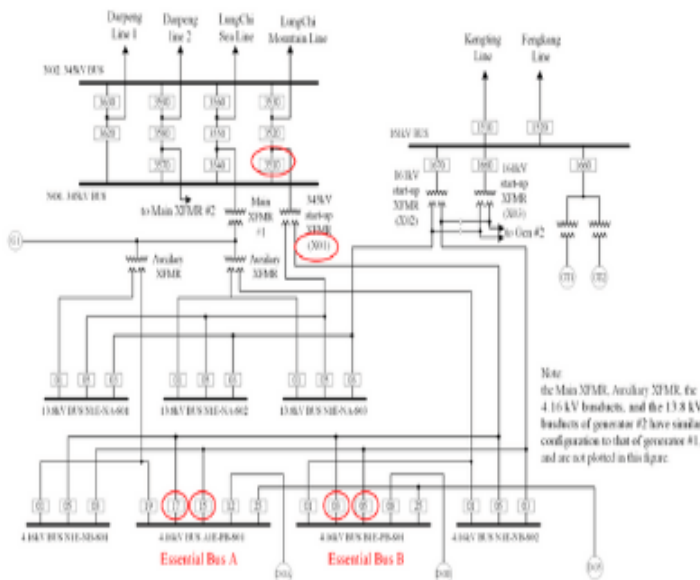


# CHAPTER-5: PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES



Basic connection diagram of protection relay

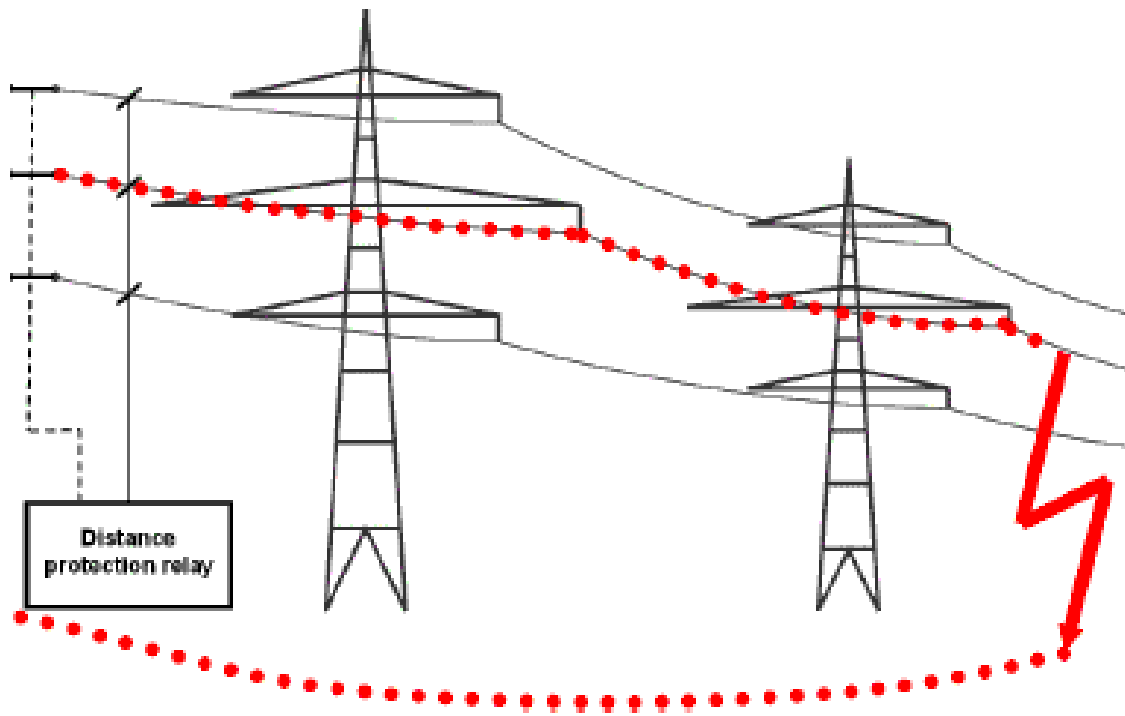
## Power System Protection Systems



Basic connection diagram of protection relay



Electrical 4 U



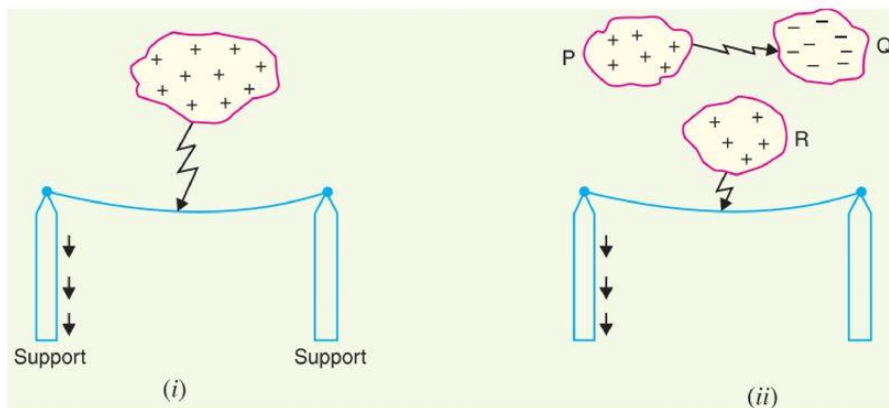
## CHAPTER-5: PROTECTION AGAINST OVER VOLTAGE AND LIGHTNING

### Types of Lightning Strokes

There are two main ways in which a lightning may strike the power system (e.g. overhead lines, towers, sub-stations etc.), namely;

- Direct stroke
- Indirect stroke

#### Direct stroke







Different types of lightning arrester



Horn Gap lightning arrester



Rod Gap lightning arrester



Multiple Gap lightning arrester

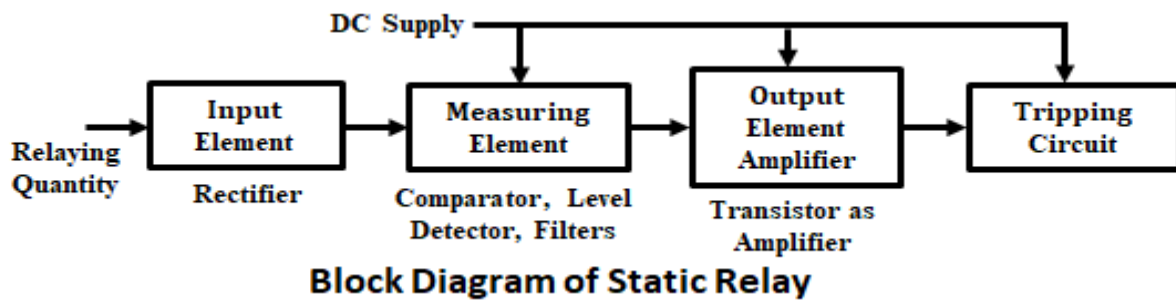


Oxide film lightning arrester



Thyrite lightning arrester

## CHAPTER-5: STATIC RELAY



EM

# Static Relay

The photograph shows a physical static relay unit with a digital display and various control buttons. The internal block diagram, titled "Static Relay", shows the following components in sequence: **Aux. CT/PT Sec**, **Rectifier**, **Relay Measuring Circuit**, **Amplifier**, **OutPut Device**, and **Trip Circuit**. A **DC Supply** is connected to the Relay Measuring Circuit, the Amplifier, and the Trip Circuit. A **CT/PT Secondaries** block is connected to the Aux. CT/PT Sec.

The relay which does not contain any moving parts is known as the static relay. In such type of relays, the output is obtained by the static components like magnetic and electronic circuit etc. The relay which consists static and electromagnetic relay is also called static relay because the static units obtain the response and the electromagnetic relay is only used for switching operation.



