

2] Screened Cables:  $\rightarrow$  These cables are used upto 33kV to 66kV. There are two types of screened cables -

a] H-type cables.

b] S.L type cables.

a] H-type Cables:  $\rightarrow$

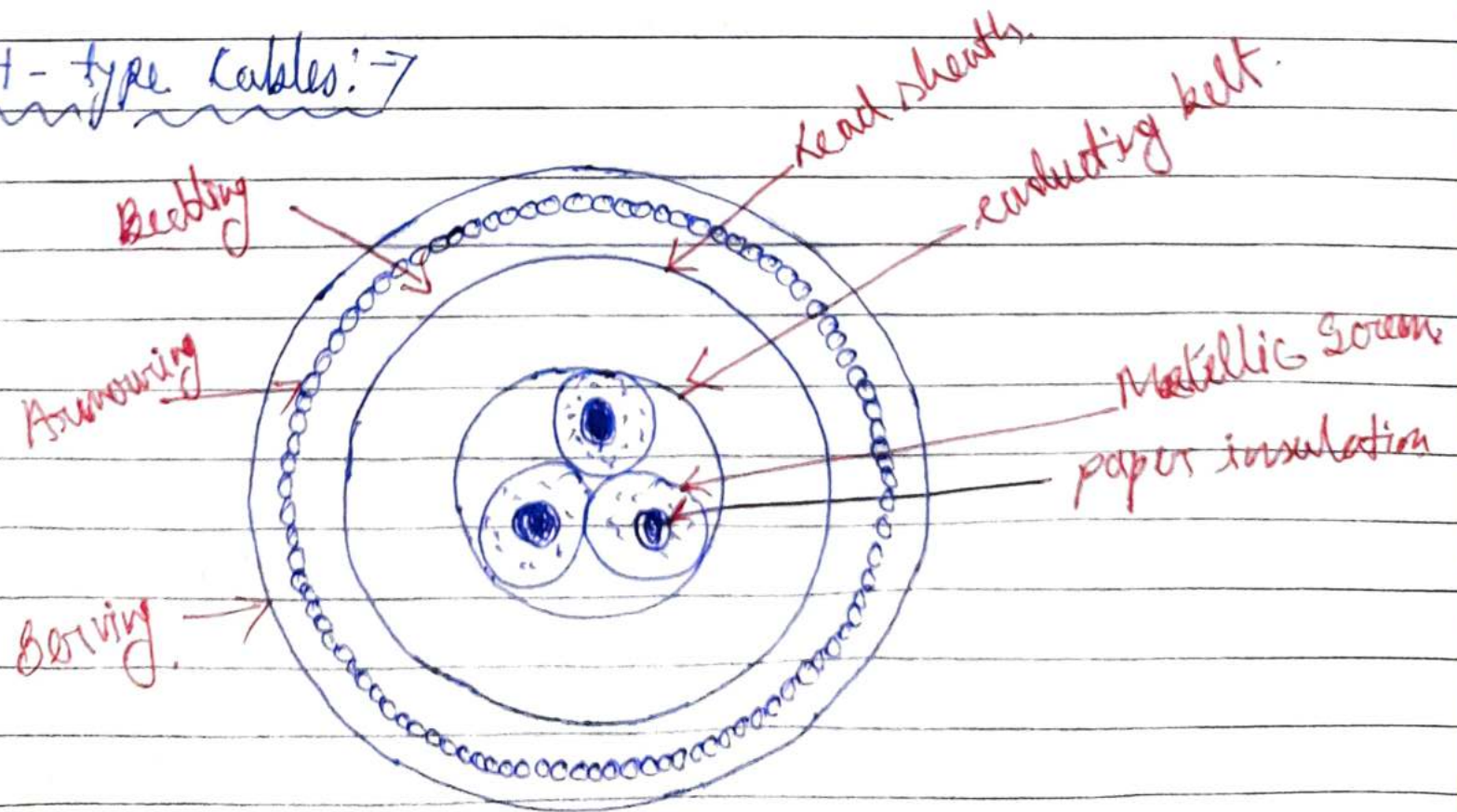


Fig. shows the constructional details of H-type cable. Each core is insulated by layers of impregnated paper. The insulation on each core is covered with a metallic screen which usually consist of aluminium foil. An additional conducting belt is wrapped round the three cores. The cable has no insulating belt but lead sheath, bedding armouring and serving follow as usual.

### ii) S.L type cables:->

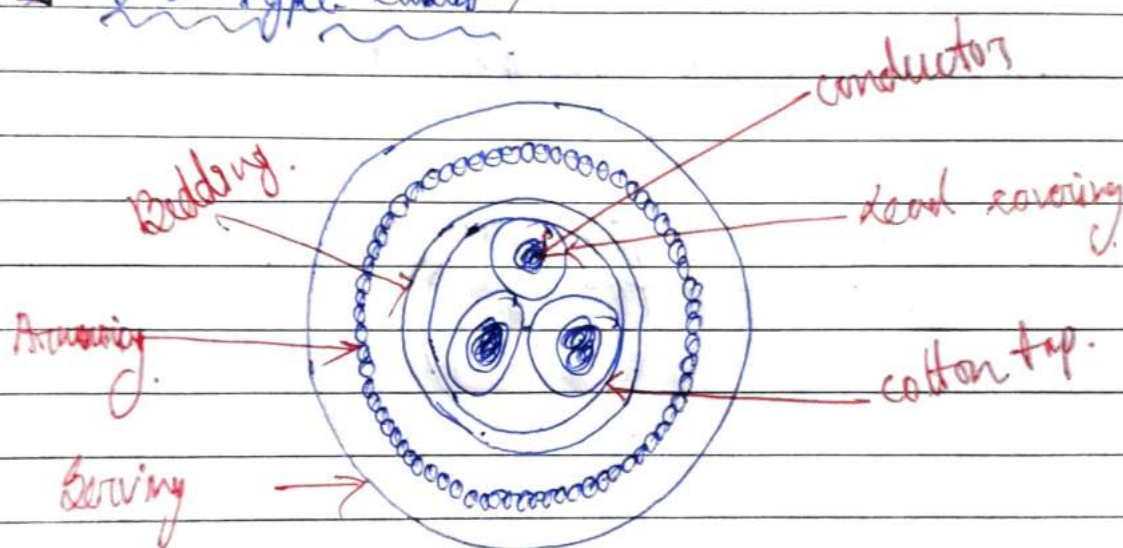


Fig. shows the constructional details of S-core S.L (separate lead) type cable. It is basically H-type cable but the screen round each core insulation is covered by its own lead sheath. There are no overall lead sheath but only armouring and serving.

Advantages of S-L over H-type are -

- i] Separate sheaths minimise the possibility of core-to-core breakdown.
- ii] Bending of cables becomes easy due to diminution of overall lead sheath.



3. Pressure cables:  $\rightarrow$  These cables used for beyond 66kV. There are two types -

a) Oil-filled cables:  $\rightarrow$

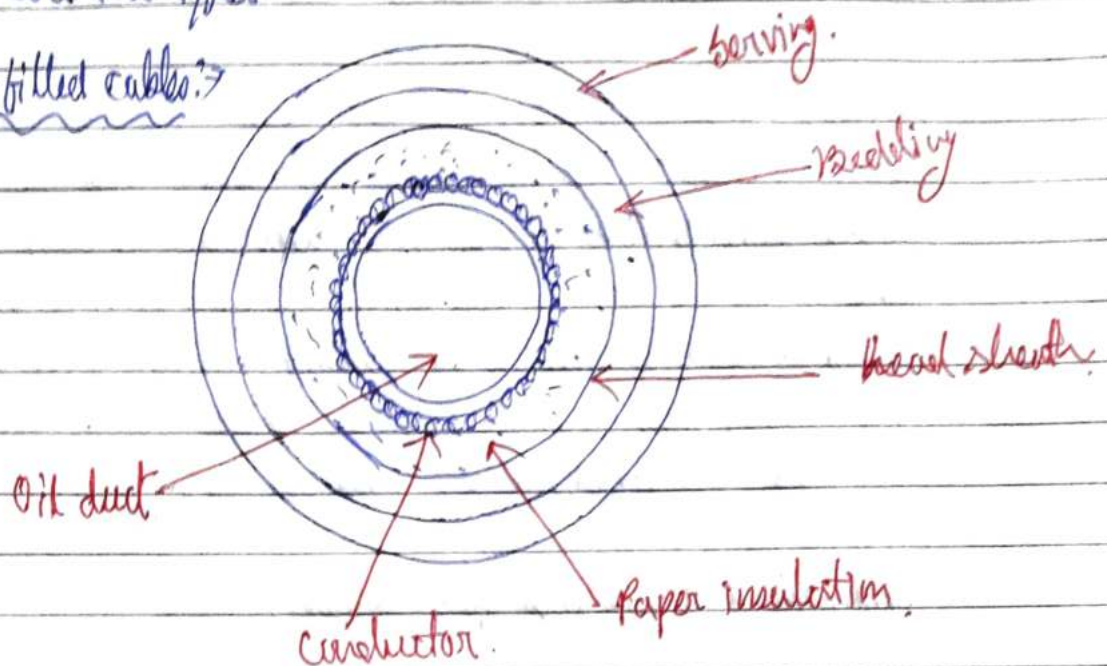


Fig. shows the constructional details of an oil filled cable. The oil channel is formed at the exterior. The oil is supplied to the channel by means of external reservoir. The oil pressure compresses the layers of paper insulation and prevents the possibility of void formation. The system is so designed that when the oil gets expanded due to increase in cable temperature, the extra oil collects in the reservoir. & when cable temp<sup>n</sup> falls during light load, the oil from the reservoir flows to the channel.

b) Gas pressure cables:  $\rightarrow$

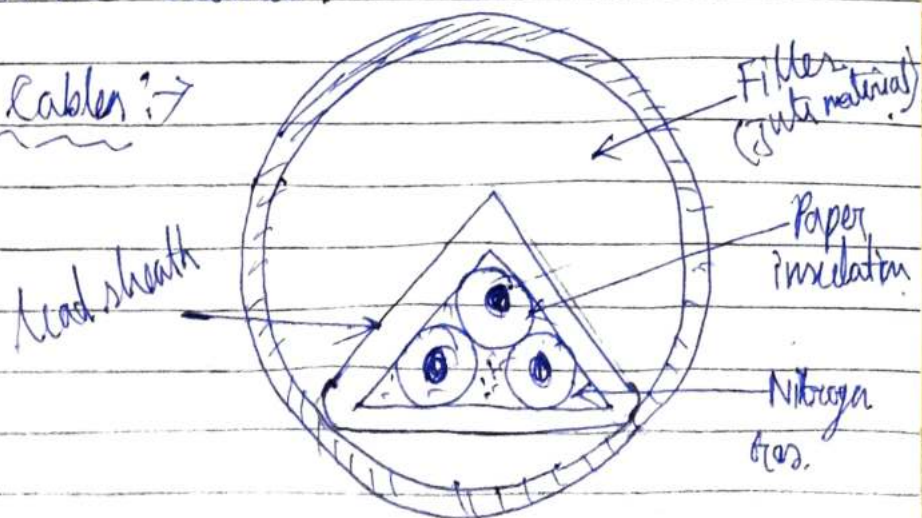




Fig. shows the constructional details of gas pressure cable. The construction of the cable is similar to that of an ordinary solid type except that it is of triangular shape and thickness of lead sheath is 75% that of solid cable. The cable is laid in a gas-tight steel pipe. The pipe is filled with dry nitrogen gas. The gas pressure produces radial compression and closes the voids that may have formed bet<sup>n</sup> layers of paper insulation. Such cable can carry more load current & operate at higher voltage than normal cable.

### Insulating Materials for Cables:

The insulating materials used in cables should have the following properties -

i] High insulation resistance to avoid leakage current.

ii] High dielectric strength to avoid electrical breakdown of the cable.

iii] High mechanical strength to withstand the mechanical handling of cables.

iv] It should not absorb moisture from air or soil. The moisture tends to decrease the insulation resistance.

v] Non inflammable.

vi] Low cost so as to make the underground system ~~it~~ <sup>it</sup> ~~is~~ <sup>is</sup> viable properties.

vii] Unaffected by acids and alkalis to avoid any chemical action.