

CE/Testing/Spare cables/Cir-13

Date: 30/08/2020

CIRCULAR NO-13

Subject: Guidelines for connecting HV spare cables in parallel with the Main cable.

In MSEDCL there is more than 10000 Ckt-Km HV underground power cables distribution network. You are aware that, in Under Ground cable system, the power gets transferred from one point to another through underground cables laid in the ground. As these cables are not exposed to the air/ atmosphere, this makes the U/G cabling system less susceptible to outages due to various atmospheric conditions like high wind, storm, thunder storms etc. As these cables are not visible on ground, these provide an aesthetic look to the area. However, the U/G cables take more restoration time in case of any fault i.e. for finding of fault, replacement of faulty cable etc. To avoid this in MSEDCL at many locations especially at crossings, spare cables have been provided which are laid side by side of the Main cable. So that, in case of failure of main cable we can shift load of the faulty cable on the spare cable.

However, many times at the time of charging of the spare cable, we observed that, such cable is also found faulty which results in high restoration time and unrest among consumers thereof.

Electrical faults get developed in the spare cables due to various reasons such as –

1. The major reason for failure of the cable is improper laying of cable.
2. Damage due to brittleness of outer sheath
3. Ingress of water in the insulation/ link boxes
4. External mechanical stress, thermal stress, improper clamping / mounting
5. Improper ground work of joints & terminations.
6. Third party damage
7. Deterioration of insulation due to ageing

These causes are getting observed too late by us i.e. at the time of charging of spare cables after failure of Main cables which is resulting into loss of revenue of MSEDCL. In order to avoid such situations in future the competent authority has directed as follows:-

- a. HV spare cables installed at crossings (Road, Railway etc) shall be kept in charged conditions in parallel with the Main cable henceforth. So that the spare cable will remain in healthy working condition.
- b. Spare HV cables laid for charging of Substation (except Switching Station) shall be kept in charged condition as per prevailing practice.
- c. In case of HT consumer, spare cable may be kept in charged condition, however, local authorities shall decide in the matter after observing all safety measures. Parallel operation of cables may be done by installation of RMUs.
- d. Following precautions shall be taken while paralleling these cables-
 1. Cables of the same cross-sectional-area, the same length, same Voltage/ current and of the same specifications, shall be connected in parallel.
 2. Suitable connectors shall be used for paralleling the cables with standard spacing between them.

3. Both the cables shall be connected back to back at both the ends so that both the cables remain charged and load is shared by both the cables.
 4. While connecting the cables back to back, following care shall be taken-
 - i. The cables shall be connected in parallel at both the ends by using Three holes (One holes at the center and one hole each at the end of the Al strip of 50x10x250 mm size) Aluminum strip and not directly back to back.
 - ii. Cable no (Cable no.1 /2) as well as phase indicator (R/Y/B) on each core of the cables at both the ends shall be provided.
 - iii. While connecting the cables in parallel at both the ends, phasing out of both the cables shall be done so that R-R, Y-Y, B-B continuity ensured.
 - iv. Whenever there is fault in the cable and a straight through joint is required to be done, phase to phase continuity of both the cable shall be done.
 - v. The cable shall be earthed properly at both the ends.
 5. All the safety pre-cautions shall be followed as per CEA safety guidelines/regulations.
 6. Protection against overload and short-circuits shall be identical to that for a single-cable circuit.
 7. Standard practices shall be followed for installation of the cables.
- e. Ensure that spare cable shall not be charged/commissioned in any case if it is not found feasible in safety point of view.

In addition to the above, the maintenance schedule for paralleled cables shall be followed scrupulously to avoid failures.

This circular shall come in force with effect from the date of issuance. This circular is available on MSEDCL website i.e. www.mahadiscom.in. So hard copy of the same shall not be issued.


(Dr. Manish Wath)
Chief Engineer (Testing)