नाम
Name : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

अनुक्रमांक | प्राप्तांक
Roll No : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ | Marks Awarded :

पाठ्यक्रम
Course : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

दिनांक | अनुदेशक के आद्यक्षर
Date : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ | Instructor Initial :

TESTING OF SIGNALLING CABLES

Signalling cables develop in due course faults which hamper the safe functioning of circuits. The signaling cables are become faulty in transportation or during cable laying process. So old cable shall be periodically meggered and new cables shall be meggared before and after lying. The cables are tested for insulation test, breakage test and earth/armature faults. All main cables are to be meggered once in a year and all tail cables to be meggered once in a six months.

Various faults develop in cable are

a) Earth faults
b) Open circuit fault and
c) Contact fault

Methods of testing generally the following methods are used for testing of cables.

a) Megger method
b) Volt meter method
c) Testing lamp method

Among the above megger method prefers for signalling cable testing meggering requires a) 500 V insulation tester. b) good earthing arrangement and c) communication arrangement.

Procedure

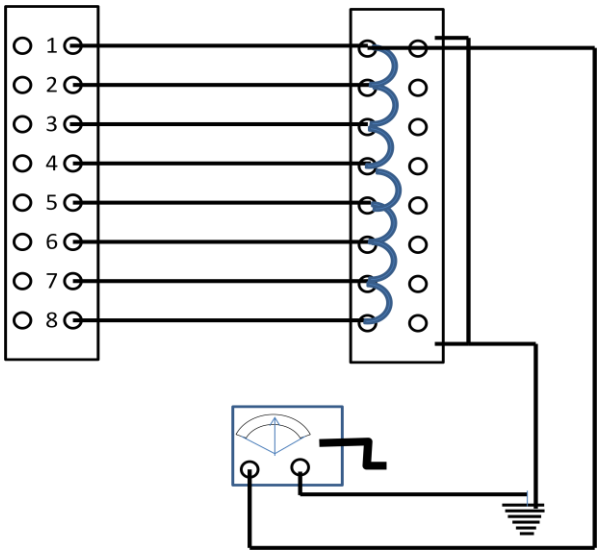
A) EARTH FAULT one end of the conductor under test shall be connected to 'L' terminal on megger other 'E' shall be connected to good earth rotation of meggar at 80RPM
   Result: i) Good conductor- no deflection
   ii) Defective conductor- deflection

B) OPEN CIRCUIT FAULT: One end of the good conductor is connected to 'E' terminal and conductor under test shall be connected to 'L' terminal on the megger and at the far end loop both the conductor. Rotation of megger at uniform at 80RPM.
   Result ; i) Good conductor – deflection
   ii) Defective conductor – no deflection

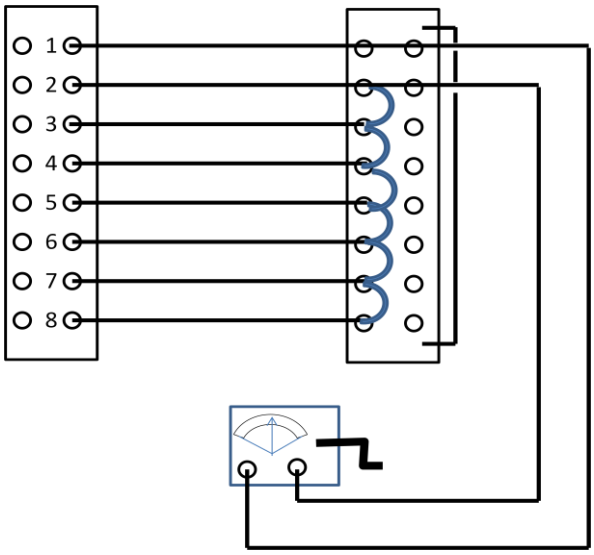
C) CONTACT FAULT: The conductor to be tested are connected to 'L' &'E' terminals on the megger and at the other end of these conductors are kept open i.e. without any loop . Rotation of megger at uniform at 80RPM.
   Result i) Good conductor – no deflection
   ii) Defective conductor – deflection

Note: Deflection of megger is less than 5 mega ohms per KM then that cable/conductor considered as defective. While doing meggering work of working cables, a great care to be taken, as to not to interchange the circuits, or combined the circuits etc, which may lead to highly dangerous conditions in trains working. Sufficient man power & equipments tools are to be ensured before taking up servicing cables meggering.

PROCEDURE FOR MEGGERING A CABLE :



Meggering of cable - Conductor to Earth



Meggering of cable - Conductor to conductor

PROCEDURE FOR MEGGERING

General requirement for meggaring the cable is as follows

1. Obtained the disconnection memo for meggering the cable from station master
2. Arrange sufficient man power, communication equipment, megger, multi-meter and tool kit.
3. Short all megger terminals to earth
4. Reconnect and tighten the terminals open for the meggering and test the circuit available in the tested cable and issue reconnection memo

PROCEDURE FOR MEGGERING A CABLE : Conductor to Earth

Above procedure consumes more time so alternate method is as follows.
Disconnect all links of conductors of cable in the location as well as in the relay room. All the conductors of the cable shall be shorted at one end. Connect the line wire of megger to shored conductor and other wire to earth, note down the reading. If reading is less than stipulated value (5M ohms/ KM) then megger individual conductor one by one with respective earth and identify the faulty conductor. Remove the faulty conductor from the circuit by replacing with spare working conductor.

PROCEDURE FOR MEGGERING A CABLE : Conductor to conductor

All the conductors of the cable except conductor no.1 and connect the line wire of megger to conductor no.1 and other wire to shorted conductors and note down the reading. If reading less than stipulated value (5M ohms/ KM) then megger individual conductor one by one with respective other conductor and identify the faulty conductor. Remove the faulty conductor from the circuit by replacing with spare working conductor. if reading is more than stipulated value (5M

ohms/ KM) then continue the meggering. Remove the conductor no.2 from shorted conductor and repeat above procedure. Repeat the similar procedure for all other conductors.

Execrcise-1
Megger the cable between location no.1 and relay room and identify the faults.

_____Railway

Station_____

Cable Insulation Resistance test sheet Main/Tail*Cables

1 Location From_____To_____

2 Cores_____

3 Size_____

4 Grade 250/440/650/1100 V*

5 Length_____

6 Type Unscreened/Screened/Power*

7 Insulation PVC

8 Date of installation/commissioning_____ _____

9 Name of the manufacturer

Conductor No or designation	With respect to		Remarks
	Earth	Conductor	
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

	Earth	1	2	3	4	5	6	7	8
1		X							
2		X	X						
3		X	X	X					
4		X	X	X	X				
5		X	X	X	X	X			
6		X	X	X	X	X	X		
7		X	X	X	X	X	X	X	
8		X	X	X	X	X	X	X	X

Table to be used for individual testing of conductor

Date; Signature of trainee