

INSTALLATION OF SUBSTATION SERVICES.

TESTING COMPLETED INSTALLATIONS.

1. GENERAL.

1.1 This E.I. outlines the procedure to be observed in testing completed work. It will be supplemented as occasion demands by Instructions confined to a particular type of service and it shall be read in conjunction with such Instructions.

2. REASONS FOR TESTING.

2.1 Tests are carried out on all completed works to ensure that the service is left in a satisfactory condition for the subscriber. Most tests are carried out by the Testing Officer on the Exchange Test Desk and when he is satisfied that the service is satisfactory he will advise the installing Technician and give him a sequence number to record on the Telephone Order.

3. PRELIMINARY CHECK.

3.1 The installing Technician will examine the whole job to ensure that it has been done correctly and that no details have been overlooked. The main points to be covered in this check are -

- (i) Items of equipment neatly and securely fixed.
- (ii) Cabling or wiring neatly run and securely stapled or clipped.
- (iii) No movable building fittings which could damage the cable.
- (iv) Joints properly completed.
- (v) Connections to tags soldered securely and all terminations under screws correctly made and the screws tightened.
- (vi) Correct operation of moving parts of apparatus such as keys, switch-hooks, dials, etc.
- (vii) Entries on cable record cards and books made correctly.

When satisfied that the work has been completed and that it has been carried out in a proficient manner, the Technician shall pack away his tools, first checking to see that none are mislaid, and shall leave the location in a tidy condition.

Surplus apparatus or material, or scrap ends of wires, etc., shall not be left in subscribers' premises unless they are neatly wrapped or boxed for collection by Departmental transport. All such packages shall be labelled as required for identification in the Engineer's store. The Technician shall be directly responsible for implementing this instruction and for following up the collection of all packages left at subscribers' premises.

4. TESTS WITH THE TEST DESK.

4.1 The installing Technician will call the Test Desk over the newly completed line and will advise the Testing Officer of the type of equipment installed, the cable pair numbers, and the anticipated hours of attendance if the service is for a business. The Testing Officer will make out or amend the Master Card in the exchange.

The Testing Officer will then proceed with the necessary functional and electrical tests which include -

- (i) Insulation resistance of line, wiring and equipment. This test shall be made with the normal high volt scale on the Test Desk voltmeter. The 400 volt test shall not be applied to lines to which instruments are connected. This high voltage shall only be applied to open pairs when it is desired to check the effectiveness of the insulation resistance of the cable, and it shall not be used on instruments because of the damaging effect on capacitors which are only designed for 250V working.
- (ii) Loop resistance of line to the short-circuited terminals of the telephone, or protector if fitted, and the complete loop resistance with instrument connected and the receiver off the switch-hook.

When a 400 series telephone has been installed, the loop resistance of the line to the short-circuited terminals of the telephone must not be below 200 ohms.

NOTE: If the measured resistance falls below this value, it must be increased to a figure beyond the critical value by fitting a 330 ohms, 3 watt, radio type resistor in the S.29/27 terminal block and connecting it to the line sides of terminals 3 and 4 and connecting the line wires to terminals 1 and 4. E.I. TELEPHONE Substation I 2101 also refers.

- (iii) Resistance of protector earth. (Shall not exceed 25 ohms.)
- (iv) Operation of the calling device on the telephone, that is, the hand generator, dial, etc. Dials will be tested for impulse speed, ratio and count.
- (v) Operation of bells or signalling devices.
- (vi) Transmission test through 40 db.

The testing procedure for switchboards, intercommunication telephones, etc., is contained in the relevant instruction for these services.

Where necessary, the installing Technician will make adjustments to bells, generators, keys, etc., until the Testing Officer is satisfied that the service is functioning correctly. Installing Technicians are permitted to adjust dials for speed but not for the correction of impulse ratio. Where this ratio is not within the limits allowable, the dial shall be changed. Dials on all telephones placed in Stores stock have been checked for correctness of ratio and the only errors which should occur in the field are on removals. Any modern telephone on loops up to 500 ohms will show a ratio of 37 per cent but some older instruments with different circuit arrangements such as unquenched impulsing springs may be as low as 34 per cent.

The Testing Officer shall pass all dials with impulse ratio between 35 per cent to 39 per cent inclusive, and speed between 9 and 11 impulses per second.

On completion of the tests, the Testing Officer shall advise the installing Technician of the sequence number of the test and this number shall be recorded by the installing Technician on the 'M' copy of the Telephone Order in the space provided. The installation Technician shall advise the subscriber that the service is complete and he shall see that the subscriber is satisfied.

5. METER TEST.

- 5.1 Before a line is placed in service, Routine 177 should be performed on the associated meter. Two service test calls should also be made from the line and the meter checked for correct operation on each call.

6. NOTIFICATION TO TRAFFIC STAFF.

- 6.1 On completion of an external removal or a new installation at a manual exchange, the Technician shall notify the Traffic Staff stating the particulars of the work carried out on the Telephone Order. A sequence will be obtained and this will also be recorded on the Telephone Order.

E N D.