

MASTER AND SLAVE CLOCK SYSTEMS
INSTALLATION

1. CANCELLATIONS. POWER Bldg Svs H 3210

2. GENERAL.

2.1 This Instruction gives details of the installation of master and slave pulse clock systems in Post Office buildings.

3. INSTALLATION OF MASTER CLOCK.

3.1 The master clock is a timekeeper of high precision and long-term reliability and is capable of controlling any number of slave clocks.

3.1.1 Master clocks are to be mounted on walls which are perpendicular, free from shock, vibration, and wide variations in temperature.

3.1.2 They must not be mounted directly over radiators nor located in positions where they would be subjected to considerable heat or high humidity.

3.1.3 They must be fixed vertically and the use of a plumb line joining the hours of 12 and 6 is to be used for this purpose. Alternatively, if the clock is fitted with a pointer in the bottom of the case, the pointed end of the pendulum, when at rest, is to hang immediately over the pointer.

4. INSTALLATION OF SLAVE CLOCKS.

4.1 Slave clocks are to be mounted so that the clock casing covers the connection to the clock. T.V. aerial plug and socket connections are satisfactory.

4.1.1 All slave clocks are to be lubricated and checked for satisfactory operation before installation. The operation can be checked by connecting a 1.5-volt cell to the clock, which should operate satisfactorily as contact is made and broken. See BLDG SVS Time D 5210 for details of lubrication.

5. WIRING.

5.1 The system is to be installed in accordance with the Electrical Wiring Regulations 1976.

5.1.1 The wiring of the installation is to be carried out in TPS cable or alternatively in PVC or steel conduit and conduit wire.

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5.1.2 All TPS and conduit wiring must be concealed wherever possible and shall be distinct and separate from all other electrical services.

5.1.3 The wiring for a pulse clock system is to be a series circuit, or circuits.

5.1.4 No polarity need be recognised in the wiring of this type of system.

6. CIRCUITRY.

6.1 As the master and slave are wired in series the battery voltage is determined by the number of clocks in the circuit. The total resistance of clocks and wiring multiplied by .22 can be taken as a guide to the voltage required.

6.1.1 The following figures are to be used in calculations required for pulse clock systems:

C6 master clock	Gents	29 ohms
C7 master clock	Gents	33 ohms
9 in. slave clocks		4 ohms
12 in. slave clocks		6 ohms

6.1.2 The operating current is to be within the range 170-270 mA and a current of 220mA is the normal figure expected. The variable resistors in the master clock can be used to make the final adjustment to this figure.

6.1.3 The maximum number of clocks to be installed on any one circuit is 20. However, all clocks in any one room are to be on the same circuit.

6.1.4 In multi-storey buildings separate circuits are to be installed for each floor. This is achieved by the use of sub-transmitting units. See para. 8 below.

7. POWER SUPPLY.

7.1 Power for master and slave clock systems is to be derived from one of the following sources.

- (1) A telecommunication battery, - i.e., exchange or PABX battery.
- (2) A rectifier supply with a primary battery standby.
A rectifier, 24V 2.5A is available from stock
(See AD stock list)
- (3) A primary battery.

7.2 Circuit voltage is not to exceed 50 volts and where the number of clocks in the system is such that a voltage in excess of this figure would be required, a sub-transmitting unit is to be used.

8. SUB-TRANSMITTING UNITS.

8.1 These units are available from stock (See BD stock list) and are used to relay master clock pulses to sub-circuits.

8.1.1 The units are to be installed so that a system containing a large number of clocks may be divided into circuits, each with an allowable number of clocks (See para. 7.2). Clocks on each floor of a multi-storey building are to be on separate circuits.

8.1.2 Figure 1 shows a schematic diagram for an installation with sub-transmitting units used to repeat the master clock pulses to sub-circuits. This arrangement enables the clocks to be arranged in groups and controlled from a central distribution panel.

8.1.3 When pulses are to be transmitted some distance via underground cable two transmitting units are required, one at the position of the master clock and the other at the distant end. (See figure 2)

8.1.4 The pulse transmitted by the first unit along the cable should be adjusted to conform with the requirements of E.I. LINES General Z 4500.

9. REFERENCES: BLDG SVS Time D 5210 LINES Gen Z 4500
Electrical Wiring Regulations 1976

(Figs 1 and 2 follow)

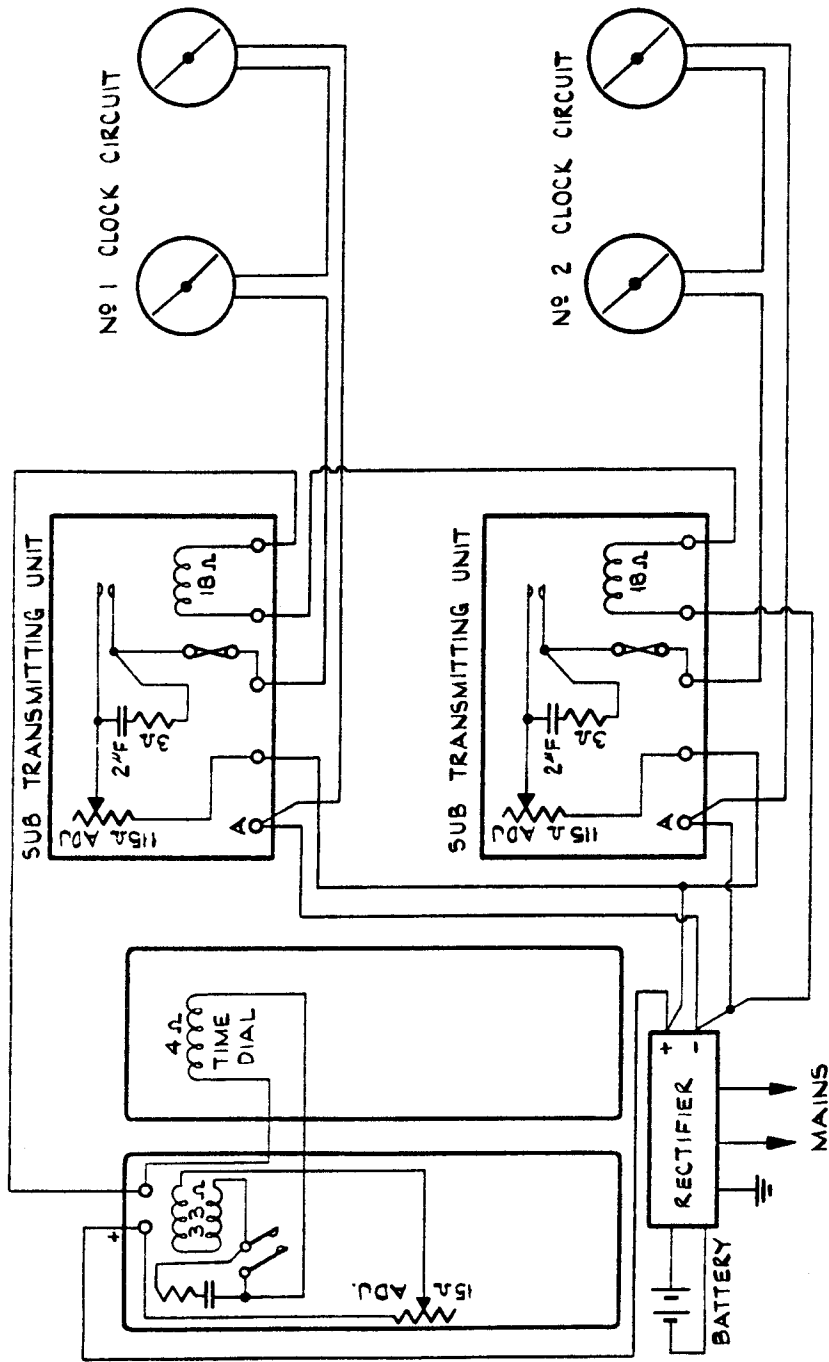
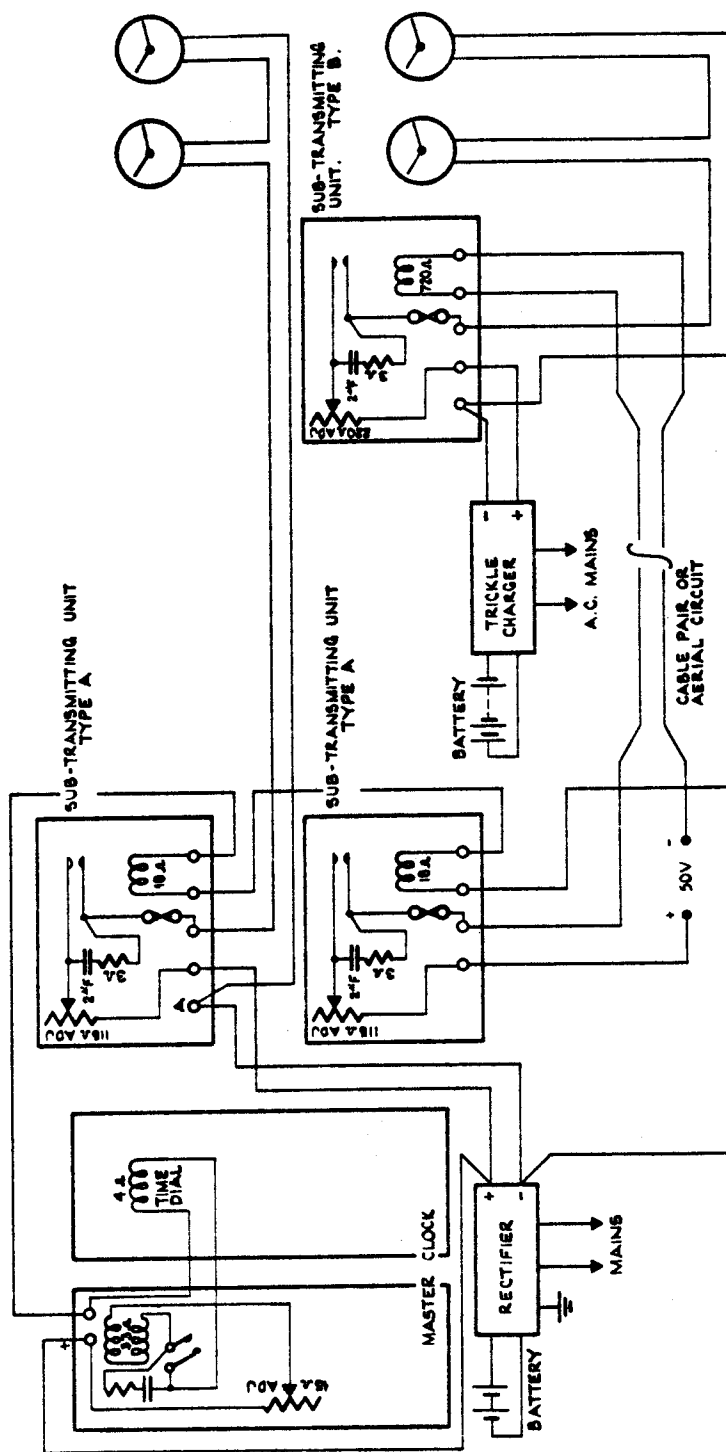


FIG. 1

CONNECTION OF A MASTER CLOCK
OPERATING SUB CIRCUITS
THROUGH 2 SUB TRANSMITTING UNITS

- NOTES**
1. WORKING CURRENT IN EACH CLOCK SUB-CIRCUIT 0.22 AMPS.
 2. WORKING CURRENT IN CABLE PAIR OR AERIAL CIRCUIT NOT TO EXCEED 0.050 AMPS
 3. RESISTANCE OF EACH SLAVE CLOCK MOVEMENT = 4 OHMS
 4. BATTERY VOLTAGES NOT TO EXCEED 50 VOLTS.
 5. TYPE A - FOR INTERNAL SUB-CIRCUITS
 6. TYPE B - FOR EXTERNAL SUB-CIRCUITS



CONNECTION OF A MASTER CLOCK
OPERATING A CLOCK SYSTEM IN AN
EXTERNAL BUILDING THROUGH
2 SUB TRANSMITTING UNITS

FIG. 2

END