REMOTE CONTROL OF FIREMEN'S CALL-BELLS AND SIRENS

System G

Control via Manual Exchange Lines

1. Introduction. This system provides for the remote control of firemen's call-bells and sirens via the public exchange network. The terms used in this instruction are in accordance with B 0003. The field trials of System D (see B 3023) have shown the need for overcoming various difficulties which have arisen in service. Accordingly, two new systems are being introduced for new work. One, known as System G, is for use where ring-out points are connected to manual exchanges, and is described in this instruction; the other is for use with ring-out points connected to automatic exchanges and known as System DX, and is dealt with in B 3028.

2. Facilities of System G:-

(a) Provision is made for the operation of a system of fire call-bells and/or siren from a remote call-out point, via P.O. exchange lines.

(b) No special apparatus is required at the call-out point. The exchange line from which the call is made may be connected to any type of exchange.

(c) The apparatus at the ring-out point operates in response to ringing current from the manual exchange to which it is connected. No signal of any kind is extended from the call-out point to the ring-out point.

(d) To obviate false operations of the system, the exchange line associated with the ring-out point apparatus will be reserved for "Urgent Fire Calls" and "Routine Test Fire Calls". The multiple jack should be marked as directed by the Traffic Division.

Although it is possible to make outgoing calls from the special exchange line, it is expected that the Fire Service will not normally do so but will usually rent a separate exchange line for use at the ring-out point.

(e) When the system operates, the exchange line is looped and a supervisory signal is received by the operator at the manual exchange to which the ring-out point is connected.

(f) A low-pitched "ring-back" tone, interrupted at the same periodicity as the ringing of the call-bells, is returned to the caller as an indication that the system has been satisfactorily operated.

(g) When the bells and siren have been set in operation they continue to sound automatically for one minute under the control of a synchronous motor at the ring-out point.

(h) The bells are rung intermittently, three seconds ON and two seconds OFF.

(j) The siren sounds a continuous note for one minute; it is normally disconnected at night by the renter's automatic time switch.

(k) Under mains failure conditions at the ring-out point, an incoming call causes the call-bells to sound in synchronism with the ringing current from the exchange; the siren does not operate.

(l) An additional remote control circuit to the siren can be provided when the siren is remote from the ring-out point.

(m) If the connexion has not been cleared when the first fireman arrives at the ring-out point, he may use the telephone associated with the special exchange line to ascertain the particulars of the fire.

(n) An optional "Running Call" facility can be provided whereby members of the public may initiate the operation of the siren and call-bells by pressing a button outside the fire station.

(o) Means are provided for operating the call-bells and siren independently of the remote control in the event of a fault or for testing purposes.

(p) Means are provided for disconnecting the call-bells and siren so that the system can be routine tested without giving a call-out to the firemen's houses or sounding the siren.

3. Field of use. System G may be used whenever the ring-out point is associated with a manual exchange line; in such circumstances System G will usually be more economical than systems using private circuits.

4. Mains supplies. A 50 c/s. A.C. mains supply of 200/250V. or 100/110V. is necessary at the ring-out point only.

5. Apparatus. The apparatus required at the ring-out point is shown on Dgm. FA 257. The main item is the Control-unit FA 256; its construction and wiring are shown on Drg. 90095 and Dgm. FA 256 respectively. The components are assembled on a steel-mounting plate 19½ in. x 15¾ in. and enclosed by a removable cover 6 in. deep. The weight is approximately 45 lb.

6. The mains supply to the unit is connected via a plug and socket interlocking with the cover so that the mains supply must be disconnected before the cover can be removed. As a further protective measure, all components carrying mains voltage are separated from the remainder by an earthed screen.

A "Frequency-changer No. 5" and a "Relay-switch No. 101 A/2" or "201 A/1" are also provided when the siren is remote from the ring-out point.

7. Renter's responsibilities. In addition to providing suitable dry accommodation for the P.O. equipment at the ring-out point, the renter will also be responsible for providing

(a) a 5-amp. 3-pin switch socket to B.S. 546 (equivalent to a "Socket-outlet No. 8") on which should be terminated a suitable mains supply (see par. 4) and an effective earth connexion

(b) the siren and contactor, associated wiring and power supply for operation of the siren

(c) the wiring between the "Control-unit FA 256" (or the P.O. Relay-switch when the siren is remote from the ring-out point) and the renter's apparatus; all the renter's wiring must be kept well clear of P.O. wiring

(d) a suitable isolating switch or fuses which will enable the operation of the contactor to be checked during routine testing without operation of the siren

(e) siren cut-off and emergency-operate switches as shown in Dgm. FA 257, Figs. 6 and 9

(f) a time switch to disconnect the siren contactor and so prevent the operation of the siren during the night

(g) a suitable weatherproof housing for the "Press Button S", when the running call facility is required.

8. Installation. The remote control equipment at the ring-out point should be associated with an exclusive ex-directory manual exchange line to be used for remote control purposes only. Before any new System G is handed over for use, it should be confirmed with the Traffic Divn. that satisfactory arrangements have been made for the handling of calls, etc. The "Control-unit FA 256" (and "Frequency-changer, No. 5", if required) may be mounted on a 19 in. rack if available; alternatively, the apparatus should be wall-mounted on battens or on a suitable wallboard, care being taken to space the units away from the wall or wallboard so as to leave adequate space for running the wiring to the cable-entry holes.

All apparatus associated with the call-bells (and emergency siren cut-off switches when the siren is remote) should be mounted on a suitable wallboard in a convenient position. When the running-call facility is provided outside the ring-out point station the "Press Button S" should be fitted in a suitable weatherproof housing provided by the renter.

9. Remote siren point. The "Relay Switch No. 101A/2" or "No. 201A/1" should be mounted as rigidly as possible to obviate false operation due to mechanical shock. The frame of the switch should be connected to mains earth.

10. Wiring. The wiring provided by the P.O. should be as follows:-

(a) Mains wiring should be "Cord, Flexible, E.L., 250V., Class C3, 0.0010 sq. in." and "Cable, E.L., 250V., 0.0020 sq. in." where indicated on Dgm. FA 257.

(b) All other wiring should be "Cable, I.R.V., and C.B., 1 pair/12½" or "Cable, I.R.V., and P.V.C., 1 pair/12½" or "Cable, E. and C. Core, 1 pair/10". This wiring should be well separated from all mains-voltage wiring.

11. Maintenance testing of the exchange line. Before any maintenance test is made of the exchange line, the engineering officer must first advise the renter so that the siren and call-bells may be made inoperative during the period of the test.

12. Functional test of system. The renter will be responsible for the frequency and nature of the functional routine tests and for arranging for them to be made. It is to be expected that there will normally be a daily test of the call-bell system and a weekly test of the siren and 'Running Call' press button. A key is provided for disconnecting the call-bells as necessary during testing. When this key is operated, only the station call-bell will ring when a test call is made from the call-out point. A switch for disconnecting the siren circuit is also provided either by the renter or by the P.O., according to whether the siren is local or remote.

13. Operating procedure. Detailed instructions on the operation of the remote control equipment will be issued by the Fire Service to their personnel. If it is necessary for engineering officers to make test calls to the equipment at the time of installation, or subsequently for maintenance purposes, the prior authority and co-operation of the renter should be obtained to ensure that the firemen do not respond to the call. Having taken this precaution, the following operating procedure should be adopted:-

(a) Make a telephone call from any convenient telephone to the special exchange number. When making this call the operator should be asked for a "Routine Test Fire Call" to the required number

(b) Note that the special "ring-back" tone is returned to the caller for approximately one minute. This tone has a fundamental frequency of 100 c/s. and is interrupted at the same intervals as the call-bells are rung, i.e. three seconds ON, two seconds OFF. The receipt of this tone indicates that the control-unit is operating and that the relays controlling the siren and call-bells are functioning correctly.

(c) The connexion should be released when the "ring-back" tone is no longer heard.

14. Diagram Notes for Dgm. FA 257 give a description of the functioning of the apparatus and should be requisitioned in the normal manner.

References:- B 0003, B 3023, B 3028
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