REMOTE CONTROL OF FIREMEN'S CALL-BELLS AND SIREN

System K

Control via P.O. Private Circuits

1. General.—System K provides for the remote control of firemen's call-bells and siren via a P.O. private circuit, independently of mains power supply at the call-out point. Remote control is effected over a private circuit between the call-out and ring-out points by positive pulses of generator ringing current. These pulses operate the control-unit at the ring-out point, which controls the firemen's call-out apparatus.

★**2.** System K is now standard for the remote control of firemen's call-bells and renter's siren via P.O. private circuits and, as such, supersedes Systems B, B modified and C for new work. The firemen's call-bell system should continue to be provided in accordance with B 1001, B 1010 and B 3001.

3. The terms used in this instruction are in accordance with B 0003.

4. Facilities.—System K provides the following facilities:—

(*a*) The operation of the system of firemen's call-bells and siren from a remote point via a P.O. private circuit.

(*b*) A continuous answer-back signal from the ring-out point to the call-out point, operating the answer-back lamp at the latter while the siren relay is operated.

(*c*) Control of the call-bells and siren, once they have been set in operation, by a synchronous motor which cannot be stopped from the call-out point.

(*d*) Intermittent ringing of the call-bells (three seconds on and two seconds off) for a period of approximately one minute.

(*e*) The sounding of a continuous note by the siren for approximately one minute.

(*f*) Bothway speech over the P.O. circuit between the call-out point and ring-out point using bothway generator signalling.

(*g*) Running-call facility from the ring-out point to the call-out point by removing the telephone handset from the telephone rest. The telephone is provided in a suitable box outside the ring-out point station. (Such a call is indicated at the call-out point by a flashing red lamp and an intermittently ringing bell.)

(*h*) Continuous line testing of the private circuit between the call-out and ring-out points.

(*j*) Indication at the call-out point of mains supply failure at the ring-out point.

(*k*) An additional remote control circuit to the siren if the siren is remote from the ring-out point.

(*l*) Operation of the call-bells and siren independently of the remote control, in the event of a fault, or for testing purposes.

(*m*) Disconnexion of the call-bells and siren so that the control units can be routine tested without giving a call-out to the firemen's houses or sounding the siren.

5. Field of use.—System K should be used for the remote control of firemen's call-bells and siren over P.O. private circuits. This system should be used instead of Remote Control Systems B and C for new installations of firemen's call-out remote control systems via P.O. private circuits.

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

APPARATUS

7. Call-out point.—The apparatus required at the call-out point is shown on Dgm. FA 218, and is described below:—

(*a*) *Control-unit FA 226.*—This unit is the main item of apparatus at the call-out point; its construction and wiring are shown on Drg. 90039 and Dgm. FA 226 respectively. It is assembled on a steel mounting plate 1 ft. 7½ in. by 5$\frac{7}{32}$ in., and is fitted with a removable cover 6 in. deep. It weighs approximately 9 lb.

(*b*) *If only one ring-out point is controlled from the call-out point,* the display lamps used are Lamps No. 12—22V fitted in a Lamp-fitting No. 3, and the CONTROL SIGNAL and RUNNING-CALL CUT-OFF key (KA) and BELL CUT-OFF key (KB) are fitted in Key Mountings NAA on the side of the switchboard keyshelf.

(*c*) *If two or more ring-out points are controlled from the call-out point,* the display lamps used are Lamps No. 2—17V fitted in Jacks, Lamp, No. 19A. The CONTROL SIGNAL and RUNNING-CALL CUT-OFF keys (KA) and BELL CUT-OFF keys (KB) are fitted on Key Mountings KAF. The Jacks, Lamp, No. 19A and Key Mountings KAF are fitted in a Case, Switch and Indicator D 9735, the layout of which is shown on Dgm. FA 218, Fig. 5.

★**8. Ring-out point.**—The apparatus required at the ring-out point is shown on Dgm. FA 219, and is described below:—

(*a*) *Control-unit FA 228.*—This unit is the main item of apparatus at the ring-out point; its construction and wiring are shown on Drg. 90736 and Dgm.

FA 228 respectively. It is assembled on a steel mounting plate 1 ft. 7½ in. by 1 ft. 3¾ in., and is fitted with a removable cover 6 in. deep. It weighs approximately 55 lb. The mains supply is connected via a plug and socket interlocking with the cover, so that it must be disconnected before the cover can be removed. As a further protective measure, all components carrying mains supply voltage are separated from the remainder by an earthed screen.

(*b*) *If the siren is remote from the ring-out point*, a Frequency-changer No. 5 is required at the ring-out point, and a Relay-switch No. 101A/2 or No. 201A/1 is required at the remote siren point.

★9. Renter's responsibilities.—In addition to providing suitable accommodation for the P.O. equipment at the call-out point and ring-out point, the renter will also be responsible for providing the following at the ring-out point:—

(*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. 6), and an effective earth connexion.

(*b*) The siren, contactor and associated switches in accordance with the relative Home Office diagram. For explanatory purposes only, the general arrangements are shown on Dgm. FA 284.

(*c*) The wiring between the Control-unit FA 228 (or P.O. relay-switch if 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 weatherproof box for housing a telephone if the running-call facility is required.

INSTALLATION

10. Line circuit.—A P.O. private circuit must be provided between the call-out point and ring-out point. The line limit for this circuit is given by the following formula:—

$$\frac{10 \times L}{10 + W}$$

where L is the length of the circuit in miles, and W is the weight of the conductor in lb. per mile.

The circuit will work satisfactorily if the value given by the above formula is 10 or less.

11. Call-out point apparatus.

(*a*) *The Control-unit FA 226* may be mounted on a 1 ft. 7 in. rack if available; alternatively, the unit may be wall mounted on battens or on a suitable wallboard, care being taken to space the unit away from the wall or wallboard so as to leave adequate space for running the wire to the cable-entry holes.

(*b*) *If a Case, Switch and Indicator* is used [see par. 7 (*c*)], the equipment required is ordered, assembled, and wired locally. The complete item may be mounted on the top of the P.B.X. switchboard.

12. Ring-out point apparatus.

(*a*) *The Control-unit FA 228 (and Frequency-changer No. 5 if required)* may be mounted on a 1 ft. 7 in. rack if available; alternatively, the unit may be wall mounted on battens or on a suitable wallboard, care being taken to space the unit away from the wall or wallboard so as to leave adequate space for running the wiring to the cable-entry holes.

(*b*) All apparatus associated with the call-bells (and emergency and siren cut-off switches when the siren is remote) should be mounted on a suitable wallboard in a convenient position.

(*c*) *If a running-call telephone* is provided outside the ring-out point station, the telephone should be fitted in a suitable weatherproof housing provided by the renter.

13. Remote siren point.—The Relay-switch No. 101 A/2 or No. 201 A/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 the mains earth.

★14. Renter's wiring.—The renter is responsible for the wiring between the Control-unit FA 228 and the mains-operated apparatus. The connexion of this wiring to terminals M4, M5 and M6 should, however, be made by P.O. staff.

★15. P.O. wiring.—Wiring installed by the P.O. should be of the following types:—

(*a*) *Mains connexions* in Cord, Flexible, 250V, T.R.S. 3-core, 0·0010 sq. in. and Cable, 250V, P.V.C., 0·0020 sq. in. as shown in Dgm. FA 284, Fig. 3 (*a*).

(*b*) *All other wiring* should be in Cable, P.V.C., No. 1, and should be well separated from all mains voltage wiring.

TESTING

16. Maintenance testing of the private circuit.—Before any maintenance test is made of the private circuit the engineering officer must first advise the renter so that the siren and call-bells may be made inoperative during the period of test.

17. Functional test of system.—The renter will be responsible for the frequency and nature of the functional routine testing and for arranging for the tests to be made. It is expected that there will

normally be daily tests of the call-bell system and a weekly test of the siren (and running-call telephone when provided). A key is provided for disconnecting the call-bells as necessary during testing. If this key is operated, only the station call-bell will ring when a test call-out signal is sent 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.

18. Operating procedure.—Detailed instructions on the operation of the remote control equipment will be issued by the Fire Service authorities to their personnel. If it is necessary for engineering officers to make test call-outs from the call-out point 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-out. Having taken this precaution, the following operating procedure should be adopted:—

(*a*) Operate the key KA at the call-out point to CONTROL SIGNAL position.

(*b*) Turn the switchboard generator handle until the answer-back lamp glows.

(*c*) When the answer-back lamp glows, release key KA and cease turning the switchboard generator handle.

(*d*) When the answer-back lamp glows, the motor unit at the ring-out point is running and will continue to run under the control of one of its spring-sets for approximately 59 seconds.

(*e*) When the answer-back lamp darkens, the remote control has restored to normal.

References:—B 0003, B 1001, B 1010, B 3001 (S3/1)

19. Running-call telephone.—When a running-call telephone is provided at the ring-out point, this should be tested as follows:—

(*a*) Arrange for a test call to be made from the running-call telephone.

(*b*) Observe that the red lamp flashes at the call-out point and that an interrupted bell signal is received.

(*c*) Insert an answering cord in the switchboard jack associated with the remote control system.

(*d*) Operate key KA to the RUNNING-CALL CUT-OFF position. Observe that the red lamp glows continuously and that the interrupted bell signal ceases.

(*e*) Speak to the user of the running-call telephone. Request that the handset be restored to the telephone rest.

(*f*) Restore the key KA to the normal position and note that the red lamp darkens.

(*g*) The remote control system is then in the normal idle condition.

20. Line fault indications.—The diagram notes relating to Dgm. FA 218 list the various line fault indications. The satisfactory functioning of these indications should be tested on the completion of an installation.

21. Diagram notes relating to Dgms. FA 218 and 219.—These notes give a description of the functioning of the remote control system, and should be requisitioned in the normal manner.

END

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