POST OFFICE ENGINEERING DEPARTMENT

SPECIFICATION FOR

HANDSET TELEPHONES

(NON ANTI-SIDE TONE)

ENGINEER-IN-CHIEF'S DRAWING 62853

Note: Specification D 1000 shall be taken as forming part of this specification.

*1. GENERAL

All moulded parts shall be in accordance with Specification S 116.

The twin contacts of the springs shall be of silver of not less than 99.9% purity, and shall be adjusted so that they make simultaneously.

The construction, finish and methods of fitting all parts not covered by separate drawings as detailed in the relative specification shall be exactly as in the pattern.

When fully depressed the plunger shall raise a weight of 6½ ozs. released steadily, from a position where the spring-set is normal to the position where all springs are operated. A weight of 12 ozs. released steadily, shall depress the plunger from the fully operated position to the position where all springs are normal. The make and break of the springs shall be determined electrically.

The pressure between the contacts 1-2 and 3-4 of the spring set shall be from 40 to 60 grams on Telephones 196 and 1/196 type the pressure between the contacts 5-6 of the spring set shall be 20 to 40 grams and there shall be perceptible follow on spring No.7 when contacts 6 and 7 are closed.

The minimum contact opening on all springs shall be 10 mils except in the case of springs 6 and 7 on Telephones 196 and 1/196 types where the break clearance shall be 7 to 12 mils.

The receiver switch springs Nos.3 and 4 shall be so adjusted that they break first.

The dial cord, where required, shall be fitted on the telephone terminal strip before the fitting of any other cord to be connected to the same terminals.

All piece parts of the same type and dimensions shall be interchangeable with the pattern instrument.

2. TELEPHONES IN COLOURS OTHER THAN BLACK

The following exceptions of the relative specifications for black telephones will apply in the case of telephones in colours other than black.

Cords.

All external cords will be of the same colour as the telephone instrument. The stock list titles of the cords are the same as the corresponding cords used with the equivalent black instrument with the alteration of the colour. For example, the equivalent black instrument to Telephone, No.196 LB, ivory, is Telephone No. 196 LB, Black. The external cords used with the latter are Cords, Inst., No. 5/14B, Brown, 54 in. and No. 3/63, A, Brown, 42 in. The corresponding cord for the ivory instrument will therefore be Cords, Inst., No. 5/14B, Ivory, 54 in. and No. 3/63, A, Ivory, 42 in.

Telephones of the No. 162 and 196 types.

The Telephones, No.164 or 184, cradle, plunger, case and baseplate shall be of the required colour.

Telephones of the No. 1/162 and 1/196 types.

The Telephones, No.164 or 184, cradle, plunger, case, baseplate and Tray D 62076 shall be of the required colour.

*3. WIRING

The electrical connexions between the various points shall be made by means of Bare Annealed Tinned Copper Wire to British Standard Specification No. 125 - 1929, covered with insulating sleeving of a quality and grade approved by the Engineer-in-Chief, or by coloured wire, switchplate, enamelled to Specification CW 45, and connected in accordance with the diagrams stated in the relative Table of Components.

A miniature diagram, approved by the Engineer-in-Chief, showing the electrical connexions up to and including the bell set terminals and bearing the stock list title and mark number shall be securely fixed on the inside of the base and varnished.

Alternatively the diagrams may be directly painted on the base plate by an approved photographic process and need only be varnished over when painted on a moulded surface.

4. INSULATION RESISTANCE

The insulation resistance between any two points that are not required to be electrically connected shall be not less than five megohms, when tested with 250 volts D.C.

5. TESTS

(a) Volume Efficiency. (Sending)

This will be tested in the circuit shown in Diagram EX 22363.

The volume efficiency of any individual telephone shall be not greater than 1 db. worse than that of a standard Telephone No. 162, shown in Diagram TL 2690 used in a similar position, the conditions of test being the same for both instruments.

The average efficiency of a batch of instruments passing this test shall be at least equal to that of the standard telephone.

These figures to apply to Voice-Ear tests but the actual acceptance tests will normally be made by means of a Telephone Instrument Efficiency Tester, approved by the Engineer-in-Chief.

In using this, the microtelephone is held, with the axis of the handle horizontal (both the mouthpiece opening and the transmitter diaphragm being in the vertical plane) in a sound field of suitable intensity, the sound used being of a modulated rhythmic character supplied by a loudspeaker.

(b) Volume Efficiency. (Receiving)

This will be tested in the circuit shown in Diagram EX 22363 except that the transmitter of the telephone under test may be replaced by a resistance of 70 ohms.

The volume efficiency of any individual telephone shall be not greater than 2 db. worse than that of the standard telephone.

The average efficiency of a batch of instruments passing this test shall be not inferior to that of the standard telephone.

These figures shall apply to Voice-Ear tests but the actual acceptance tests will normally be made by means of the Telephone Instrument Efficiency Tester previously referred to. The receiver will be fitted with a dummy ear and operated upon through the ear as though it were a transmitter.

(c) Transmitter Resistance.

Neither the "Talking" nor "Quiet" resistance of the transmitter (measured in parallel with the primary of the Transformer, No. 35A (anti-sidetone transformer) shall exceed 60 ohms under condition (a). The above combined resistance shall be not greater than 85 ohms when the plane of the receiver diaphragm is moved into any position up to 45° to the vertical in any direction.

(d) Articulation.

The average articulation, sending or receiving, shall be not inferior to that of a standard telephone.

(e) Side Tone.

The side tone of each Telephone, No. 162 or 1/162 shall be not greater than that of the standard Telephone, No. 162.

(f) Transmitter Packing.

The transmitter shall be not inferior to the standard telephone in respect of loss of volume due to packing of the granules.

(g) Frying.

When the instrument, connected as in (a), but with a local line of 35 ohms instead of 300 ohms, is placed in a silent room free from vibration, there shall not be, in the receiver associated with it, a greater dissipation of energy than at the rate of 0.000075 microwatt. This will be measured by the voltage across a non-inductive resistance of approximately the same impedance as the receiver at 800 c/s., the resistance replacing the receiver for the test. Diagram EX. 21041 shows a suitable form of voltmeter for this measurement.

For this test the microtelephone may be inclined to the vertical by any angle up to 45° in any direction.

The transmitter may be stabilized by being spoken into in a normal manner, and five seconds grace given before commencing observation, which should take from 3 to 5 minutes.

The transmitter also shall pass the test after being subjected to preliminary blowing into or whistling into or similar treatment.

Momentary values in excess of 0.000075 microwatt or those in excess for a duration of less than 3 sec. will be ignored unless of frequent occurrence.

The frying test may also be made on the standard local battery circuit, in a Telephone, No. 164 tilted 45° from the vertical, fed with three "new" cells. On this circuit, with the line winding terminated with 600 ohms, there shall not be a greater dissipation of energy in the receiver than at the rate of 0.00015 microwatt.

(h) Howling.

The Telephone, when used in the circuit shown in Diagram EX 22363 shall not "howl" under any condition, even when the local line is reduced to zero.

(i) Advance and Priority Sample and Bulk Supply Tests.

Advance samples, priority samples, and batches of samples from production taken at the discretion of the Department's Inspecting Officer, will be tested for compliance with all parts of this specification.

Bulk supplies will be subjected only to a transmission test, for sending and receiving efficiency as described above.

(j) Rejection.

Individual items will be rejected if they fail to conform to the above requirements as regards sending or receiving efficiency.

The Postmaster General shall also be entitled to reject the whole or any portion of a delivery if tests made on samples taken at random indicate that more than 1% of the items fail to conform completely to this specification. The number of samples taken for this purpose will be left to the discretion of the Department's Inspecting Officer.

6. LINKS BRASS

Where a Link Brass is used, it shall be fitted under any cord instrument ends which may be connected to the same terminals.

All apparatus covered by this specification shall be fitted to the telephone by the contractor although in some instances certain parts may be supplied by the Department.

7. MARKINGS.

Each Telephone shall be marked with the P.O. stock list code, the approved code letters identifying the manufacturer, year of manufacture and the mark number.

These markings shall be indelibly marked in an approved manner on the base or, when stated in the relative specification on the inside of the case in the position shown in the drawing.

The appropriate suffix letter or letters, B, CB, F, L, LB, or S shall be painted or stencilled after and in line with 1/162, etc.

SCHEDULE OF DRAWINGS, DIAGRAMS AND SPECIFICATIONS REFERRED TO IN THIS SPECIFICATION

Drawing	Diagrams	Specifications
62853	EX 21041 " 22363 TL 2690	CW 45 D 1000 S 116 B.S.S. 128 - 1929

END OF SPECIFICATION

File Reference:- S 1000/196

Subscribers' Apparatus & Miscellaneous Services Branch,

Engineer-in-Chief's Office, G.P.O.,

London E.C.

October, 1951.