

POST OFFICE TELECOMMUNICATIONS HEADQUARTERS

SPECIFICATION OF REQUIREMENTS

FOR

TELEPHONE 786CONTENTS

1. GENERAL
2. CONSTRUCTION
3. PERFORMANCE
4. APPROVAL
5. MARKING
6. REFERENCES
7. HISTORY

1. GENERAL

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

1.2 The Telephone 786 is based on the Telephone 2/722 Mk 2 except that a 12 button push-button unit and a line powered oscillator replaces the rotary dial. No recall switch is fitted as standard. The oscillator generates MF₄ tones and is unregulated, ie the level of signalling tones is essentially independent of line current. During signalling the telephone transmission circuit is either shorted out or disconnected such that the signal tones are not distorted by the transmission circuit. However, the receiver shall be a.c. coupled such that a Confidence Tone is returned. The telephone is suitable for connection to the public and private networks.

1.3 All components used in the oscillator shall be to the relevant PO specifications where appropriate or, if no PO document exists, the relevant BS 9000 specification. All oscillator components shall be of the type approved by the Director of Telecommunications Development (TD7.1.1).

All other components shall be of a type approved for use in the dial version, the Telephone 2/722 Mk 2.

1.4 The Telephone 786 shall be capable of completely replacing the Telephone 2/722 Mk 2 (Diagram SA/SAW 101710) without changes to cabling, strapping and any other connexion on all relevant extension plan arrangements.

2. CONSTRUCTION

2.1 The telephones shall be assembled in accordance with the relevant SM Specification.

2.2 Push-Button Unit. The push-button unit shall meet the requirements of Specification S 1161A paragraphs 3, 4 and 5.

2.3 The push-button unit and oscillator shall be mounted in such a way that all add-on units designed for the dial equivalent telephones as listed in Diagram N 822 can be fitted in the normal way. The wires leading from the oscillator board shall be terminated on the transmission board using Tags 201A terminated as shown in 13/SD77.

2.4 Handset Cord. When viewed from the front of the telephone, the handset cord shall emerge from the left hand side in such a way that the helix leads out naturally to the front of the telephone.

2.5 Gravity Switch Mechanism

2.5.1 With the handset removed from its rest, a force of 90 gms ($3\frac{1}{2}$ ozs) applied vertically and centrally to the plunger bar shall be capable of depressing that bar until its lower edge is uniformly in contact with the cover of the telephone.

2.5.2 With handset removed from its rest and the plunger bar depressed as in 2.5.1 that bar shall restore, unaided, to the upper limit of its travel against a force of 20 gms ($\frac{5}{4}$ oz) applied vertically and centrally.

2.6 The handset, line, tone ringer and oscillator connexions shall be formed so as not to foul the gravity microswitch or the operation of the gravity switch plunger mechanism.

3. PERFORMANCE

3.1 Insulation Resistance. The resistance measured between metallic points which are required to be electrically isolated shall be not less than 5 megohms when measured with 250 volts d.c.

3.2 Transmission Performance. The completely assembled telephone shall be capable of passing a simple transmission test to prove the correct connexion of components and freedom from gross component faults.

3.3 Signalling Resistance

3.3.1 Conditioning. Starting horizontally face downwards, ie the normal 'on-hook' position, the handset shall be rotated smoothly through an angle of more than 180° about a horizontal axis central along the lower face of the body and returned to its starting position.

3.3.2 After conditioning the handset the resistance of the telephone with the transmitter in the quiet condition shall not exceed 220 ohms when measured in a circuit having a 50 V d.c., 30 mA short-circuit source.

3.4 MF4 Signalling Performance

3.4.1 The telephone shall conform to the requirements of POR 1151 Issue 3 Section 2 paragraph 3. Where information in this specification differs from POR 1151 this specification shall take precedence.

3.4.2 Environment

3.4.2.1 The telephone shall function correctly over the temperature range -10°C to $+50^{\circ}\text{C}$.

3.4.2.2 The telephone shall function correctly after 6 cycles of Damp Heat (Cyclic) to BS 2011 Part 2Db with an upper temperature of 40°C .

3.5 Transients

3.5.1 Peak Voltages. The peak voltage of transients generated during the operation and release of any button shall not significantly increase the level of impulse noise applied to the telephone network and shall in no case exceed that produced by Telephone SA 4258.

3.5.2 Acoustic Shock. The level of acoustic shock generated during the operation and release of any button shall be no worse than that from Telephone SA 4258.

NOTE: A sample of Telephone SA 4258 can be supplied on request.

3.6 Confidence Tone. When any button is operated with the handset lifted and normalised, the transmission circuit shall be rendered inoperative and the appropriate tones sent to line. A 'Confidence Tone' composed of the same frequencies as those sent to line shall be a.c. coupled into the receiver. The combined levels of these tones measured across a 150 ohm resistor inserted in place of the Receiver 4T shall lie between -40 dB and -52 dB relative to 1 V. This requirement shall be met with any length of artificial cable between zero and 6 km.

3.7 Signal Levels

3.7.1 Signal send levels measured on a zero length line shall be within the limits defined in POR 1151 Issue 3 Section 2 paragraph 3.6 using the test circuit in POR 1151 Section 2 Figure 1.

3.7.2 Signal send levels over the line length range zero to 6 km shall be maintained within the limits of paragraph 3.7.1 such that the signal receive level, measured at the exchange termination using the test circuit and artificial cable in POR 1151 Issue 3 Section 2 Figures 1 and 2, shall be determined substantially by the line attenuation. In no case shall either frequency component level fall below -21 dBm nor shall the difference between them exceed 3 dB.

3.8 Artificial Cable. The artificial cable in POR 1151 Issue 3 Section 2 Figure 2 shall be constructed from discrete sections each representing no more than 1 km of line length.

4. APPROVAL

4.1 A manufacturer wishing to supply, for the first time, apparatus designed to meet this specification is required to submit two prototypes to the Telecommunications Development Department (TDD) for approval. (Definition:- A prototype is a model embodying the completed mechanical and electrical design from which design the manufacturer proposes to manufacture production items.) Comprehensive tests will be carried out by the PO on the prototypes to determine that all specification requirements are met.

4.2 On any subsequent supply contract for approved items the requirement for submission of samples, as defined in Specification D 1000, will be determined by Purchasing and Supply Department.

4.3 The prototypes, when submitted, must be accompanied by the following:-

4.3.1 A copy of the drawings, diagrams and specifications from which the prototypes were made and from which the manufacturer proposes to manufacture production items.

4.3.2 A certified copy of the test results taken by the manufacturer to satisfy himself that all specified requirements have been met.

4.3.3 A list of all electrical components used in the prototypes and any alternatives which might be used in subsequent production. Where codes are used, a conversion list to normal proprietary terms shall be supplied.

4.4 When tests have been satisfactorily concluded TDD will produce an SM specification for the approved item. This will include the prefix or suffix (as appropriate) to be used in the marking and will identify the item by reference to the relevant issues of the manufacturer's documents.

4.5 Following the approval of the prototype, it will be the manufacturer's responsibility to ensure that subsequent production items correspond with the agreed documentation.

4.6 After Approval has been granted by TD7.1.1 no design changes shall be made to the item, or alterations made to the documentation listed in the SM specification, without the prior agreement of TDD, TD7.1.1.

5. MARKING

The telephone shall be marked on the base with the PO abbreviated title, the approved letters identifying the manufacturer, and the last 2 figures of the year of manufacture followed by the mark number, eg 786 FHB 99/1. The letters FHB are typical and shall be replaced by the approved letters allocated to the manufacturer.

6. REFERENCES

Specifications

BS 2011
BS 9000
D 1000
S 1161A
POR 1151

Diagrams

N 822
SA/SAW 101710

7. HISTORY

Date	Issue	Details
September 1977	Open	
August 1978	A	Confidence Tone added (Clause 3.6).

END OF SPECIFICATION

August 1978
TD7.1.1/DJH
4673/18 and 4673/19

Post Office Telecommunications Headquarters
Telecommunications Development Department
TD7.1.1
Procter House
100/110 High Holborn
LONDON
WC1V 6LD

X 23188/TD