THE
Telecommunication Journal OF AUSTRALIA

THIS ISSUE INCLUDES

Vol. 22 No. 3

OCTOBER, 19

A NEW WALL TELEPHONE

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INTRODUCTION

The 800 series colorfone was introduced in 1961 (Ref. 1), but a wall mounting version was not developed at the time, as none of the many suggested samples and designs were considered to be an adequate advance on the existing 400 type design.

In 1967, the A.P.O. decided to take advantage of the development in materials and techniques which had occurred since 1961, and the following design targets were established:

(a) The new telephone would have the same performance as the 800 series.
(b) The telephone would suit modern decors and be available in colours that would promote its use as a second telephone, particularly in domestic kitchens.
(c) Standard 800 series components would be used where practicable.
(d) The telephone would be made in Australia.
(e) Provision would be made for limited facilities so as not to prejudice the design.
(f) A 'park' position for the handset would be provided, as on most modern wall telephones.
(g) It would be easy to install and maintain.

DESIGN CONCEPTS

The aid of a departmental Industrial Designer was enlisted. After preliminary discussions and investigations it was decided that the design would be based on the standard handset and dial, and that vertical cradling of the handset over the dial offered most potential for reducing the bulk of the instrument. In addition, this method ensured a simple direct gravity switch linkage and provided a 'park' position.

Several balsa wood and fibreglass models were constructed, with the earliest of these (Fig. 1) using an external dial number ring similar to the 801 table telephone. However, with this design a moving cradle was necessary to give adequate clearance when dialling and this caused prob-

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Fig. 1. — Early Model.

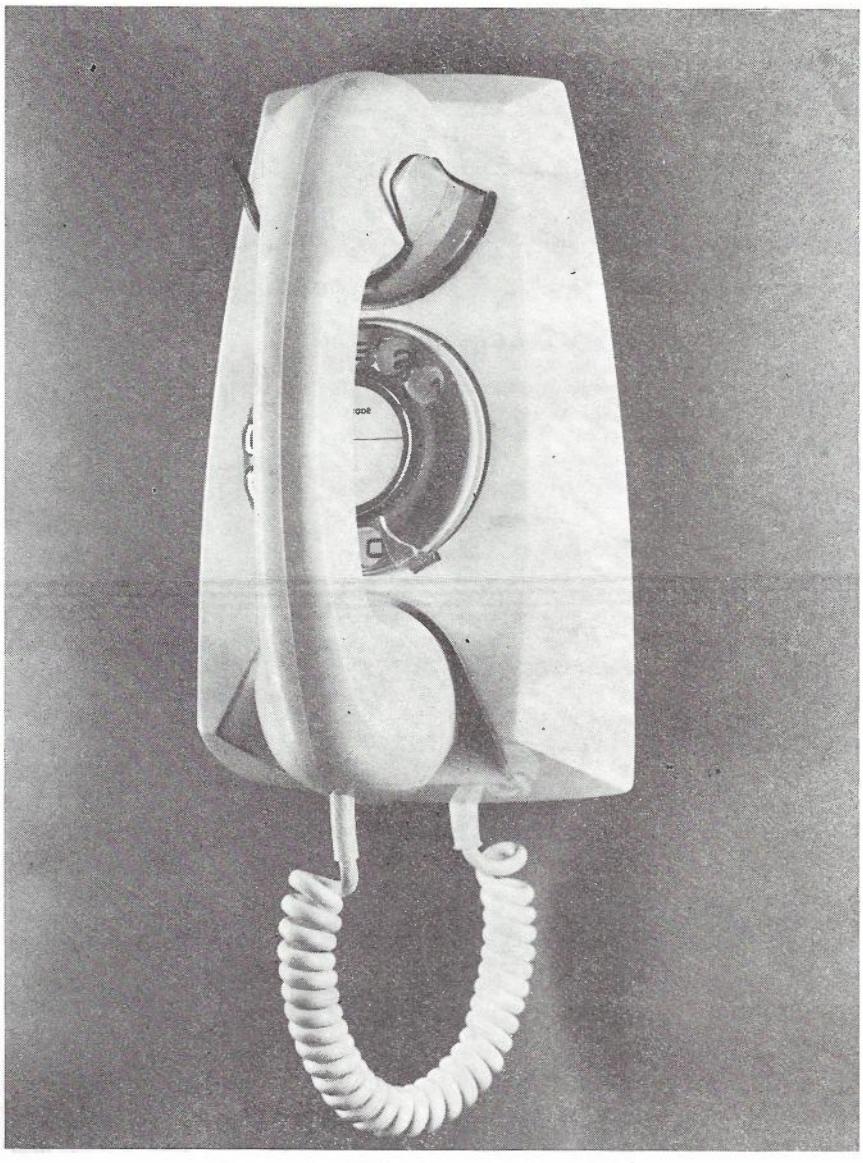

Fig. 2. — General View of Wall Telephone.

lems of rigidity. It was decided to used a fixed cradle without the dial number ring, as this was a more compact overall design and also lowered costs by eliminating a separate component.

The design was further refined and several non-working models were constructed and used for a customer survey by the Telecommunications Division in three States. A range of wall telephones was shown to new telephone applicants, who were asked to record their preference. Of 680 persons surveyed, 85 per cent. preferred the proposed design.

A development and supply contract was placed with A.W.A. Ltd. for the supply of the initial A.P.O. requirements. Although the external appearance and main component features of the telephone were specified by the A.P.O., it was left to the contractor to determine detailed layout and design of the internal components. The success of the final design is due to a large extent to the close co-operation between the A.P.O. and A.W.A. Ltd.

GENERAL FEATURES

The new wall telephone (Fig. 2) uses the same basic components as the 801 table telephone, but the overall design has resulted in a slimmer telephone suitable for installation in a wide variety of situations. The cover and base of the case are moulded from acrylonitrile butadiene styrene (A.B.S.), which is the same material as used in the 801 telephone and has proven high impact strength together with good resistance to scuffing, marking, abrasion and scratching. Full advantage of the properties of this material is taken by designing the base moulding to accommodate all the major components without the need for a separate metal base plate. The base and cover interlock to give a mechanically strong assembly. With this method of construction the wall thickness has been reduced to 0.080 in., as part of the overall cost minimisation programme, without any significant reduction in strength of the assembled unit. Furthermore, being wall mounted, the telephone is not subject to accidental dropping from desks, etc.

Fig. 3. — Wall Telephone with Handset in the 'Park' Position.

The handset is normally cradled vertically over the dial by means of a cradle moulded from polycarbonate and welded to the cover moulding. Clear polycarbonate ensures that the cradle does not detract from the clean lines of the design, yet has adequate strength. The cradle accepts the handset horizontally to provide a 'park' position (Fig. 3), where the handset may be temporarily placed without operating the gravity switch. This eliminates the need to leave the handset hanging on the handset cord, and if the handset is dropped to the floor, the risk of damage is reduced by a shorter handset cord with a nominal 28 convolutions instead of the 48 used in the 801 telephone. Resulting from experience with the 801 telephone, small 'teardrops' are incorporated in the cover moulding to minimise scuffing, which tends to occur where the handset rests on the case.

The instrument is initially available in the following colours:

Appliance white.
Powder blue.
Black.

The appliance white version has a brown base moulding to accentuate the slim line. The appearance is further improved by a brown tinted handset cradle and dial number ring instead of clear plastic, as used on all other telephones .

In the future the telephone is expected to be available in additional colours yet to be determined.

PRINTED CIRCUIT ASSEMBLY

Apart from the polarised bell, dial and handset, all electrical components are mounted and interconnected by means of a printed circuit card to form a circuit assembly (Fig. 4). The circuit assembly is located in the base

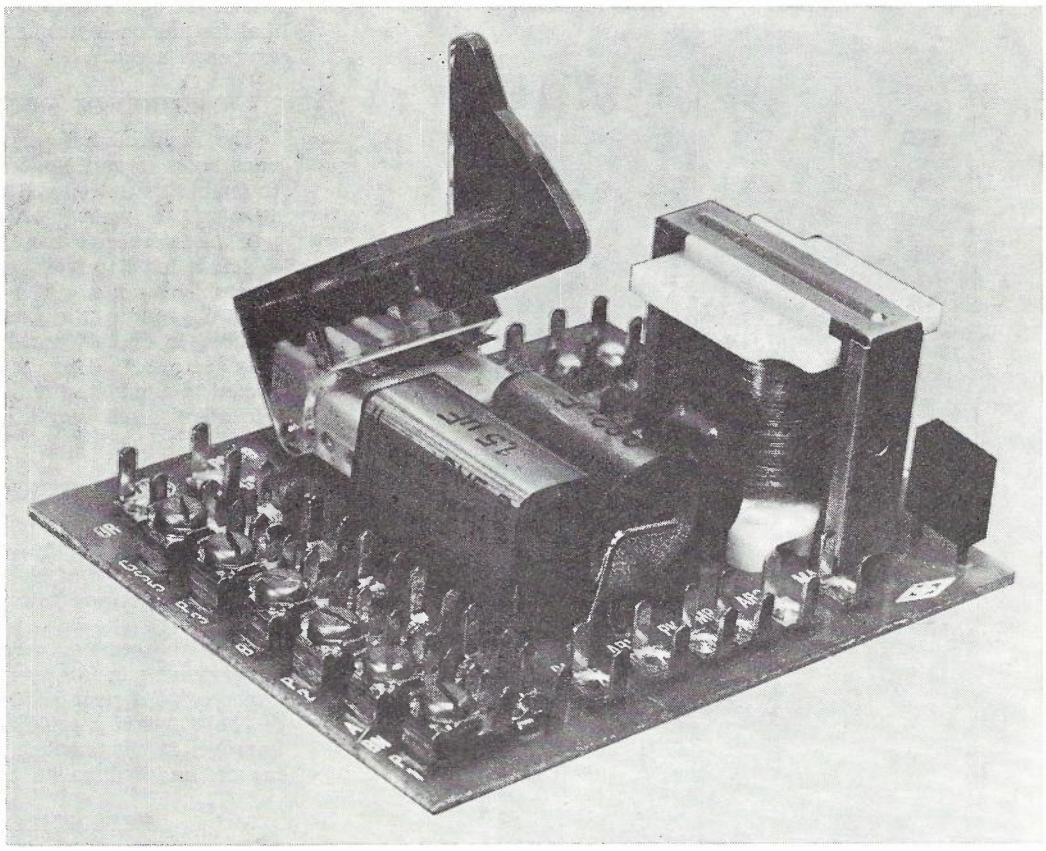

Fig. 4. — Printed Circuit Assembly.

of the telephone (Fig. 5) by moulded locating ribs, and is secured to the base by two screws which pass through the base of the induction coil. As this is the heaviest component, mechanical stressing of the circuit card is minimised.

PRINTED CIRCUIT CARD

As in the 801 telephone, the circuit is etched on a base of copper clad, glass reinforced, epoxy bonded laminate. This material, although relatively expensive, ensures a stable base for the mounting of circuit components. The component side of the circuit board carries silk screened designations adjacent to all tags. Some tags carry dual designations to facilitate field replacement of component assemblies and to minimise the risk of incorrect replacement of interconnecting links.

INDUCTION COIL

Although the turns ratio and electrical performance are equivalent to those of the 801 induction coil, a different grade of lamination steel is used and the moulding was redesigned to reduce cost. A redesigned clamp ensures firm attachment of the unit to the circuit board.

GRAVITY SWITCH AND LEVER

The special micro-switch has precious metal contacts, and the contact sequencing necessary for correct functioning of the spark quench circuitry is built into the operating pins of the switch. Because of its small size, simplified operation and cost advantages, it is possible that this type of switch will be used in other 800 series telephones.

CLICK SUPPRESSOR

Although electrically identical with the current standard unit, this item has solder pins instead of spade tags and is mounted on the printed circuit card.

POLARISED BELL

The bell motor is the same as in the 801 telephone, but with a new bell base plate. The bell gongs are inverted to improve the sound output. Adjustment of the bell is improved by the use of more positive radial ribbing between the mating surfaces of the bell gongs and base. No external adjustment of the bell is provided.

DIAL

The dial is mechanically identical to the standard (DMS) dial (Ref. 2) used in 801 table telephones manufactured by A.W.A. Ltd., but because there is no external dial number ring, the dial finger plate carries embossed numerals of Microgramma type face. Also, as the interchangeable external number ring previously served as an adaptor for a variety of dials, only the standard dial configuration can be used with the wall telephone.

To improve the appearance of the dial, particularly when installed in the powder blue or appliance white wall telephone, the finger plate and dial gasket ring are white instead of ivory. Both the above innovations have been introduced to 800 series table telephones because of the improved appearance and cost savings.

HANDSET

The handset is identical to that used on the 801 telephone apart from a shorter cord and the absence of the click suppressor, which is now mounted in the printed circuit card.

ADDITIONAL ASSEMBLIES

A bracket is being developed to accommodate a recall button and a key control unit.

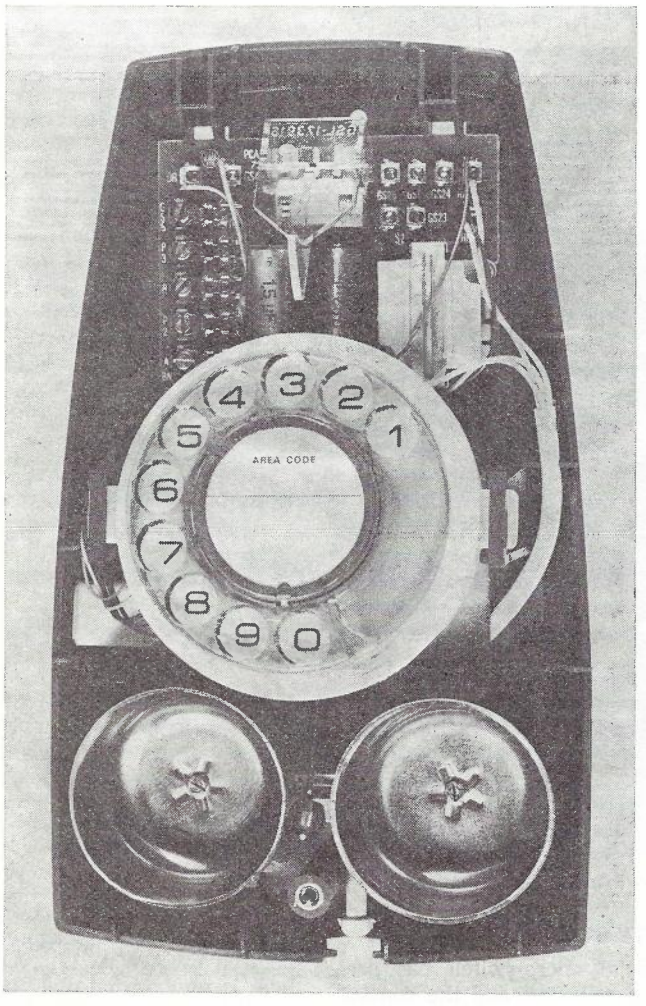

Fig. 5. — Interior View of Wall Telephone.

Also being developed is a dummy dial for use on instruments in manual exchange areas.

METHOD OF MOUNTING

The moulded base has four clearance holes to suit No. 8 wood screws to enable the telephone to be directly attached to walls. Also available will be a special metal back plate which is fixed to walls by power fasteners, bolts, etc. The telephone is then clipped to the back plate and secured by metal thread or self tapping screws. This feature is expected to eliminate the use of wooden backboards and simplify installation in difficult locations.

CONCLUSION

The new wall telephone incorporates many of the features and components of the 800 series range of instruments and fills a gap in the range of telephones available to Australian subscribers. Some of the developments in this telephone can be expected to appear in future versions of the 800 series table telephone, to improve its appearance and performance, and reduce its cost.

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