

A History of the Telephone Kiosk in Jersey

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Public Telephone Kiosks In Jersey

Introduction

Before the Great War there were few public call offices. Under the National Telephone Company up to 1912 and thereafter under General Post Office (GPO) control, there were public phones provided at many locations including the railway company stations, post offices and telephone exchanges but no kiosks. There is only one record of a kiosk before 1923, which was erected at the Weighbridge in 1902, but survived for just a few months from May to December. The picture in Figure 1 may possibly show this kiosk, other than there is no other documented reason for it in the Société Jersiaise¹ records.



Fig 1.

It was not until after the States took over the telephone system in 1923 that public street kiosks began to appear. These were of individual design and were constructed from wood and glass. Local building firms were commissioned to construct them on an *ad hoc* basis.

Public Telephone Kiosks

Following the acquisition of the entire local telephone system from the GPO, the newly formed States Telephone Department set about a comprehensive programme of installing public telephone kiosks in convenient locations around the island. Table 1 below shows the development of this programme between 1923 and the German occupation in 1940.

Kiosk Location	Lighting on opening	Exchange	Original Number	Date Open
Broad Street (cab rank)	Electric	Central	1003	June 1923
Central Market (cab rank)	Electric	Central	1004	June 1923
New North Quay (GWR)		Central	1008	July 1923
Pierson Road	Electric	Central		July 1923
Beaumont Railway Station		Central	1029	July 1923
Snow Hill Bus Terminus	Electric	Central	1010	July 1923
Albert Pier (Southern Railway)	Gas automatic	Central	1007	August 1923
Vegetable Market (Minden Pl)		Central	1012	August 1923
West Park		Central	1011	? 1923
Parade – Elizabeth Place		Central	1014	? 1923
Caledonia Place (Moved to opposite Railway Terminus April 1940 see below)	Electric	Central	1013	December 1923
Greve D'Azette		Central	1027	December 1923
Springfield (Oxford Road)		Central	1015	March 1924

¹ <http://www.societe-jersiaise.org>

Green Street (slip)		Central	1016	April 1924
Ouassine ("The Rest")		St Aubin	158	August 1924
Beresford Street (West)		Central	1017	August 1924
Royal Square (opp Church)		Central	1018	August 1924
Gorey Pier Station		Gorey	146	December 1924
St Catherine		Gorey	115	December 1924
Le Hocq Station		La Rocque		January 1925
78 Colomberie		Central	1019	April 1925
Millbrook Railway Station		Central	1256	April 1925
Fauvic Railway Station		La Rocque	86	May 1925
Verona Stores (Miss Hamon)		Gorey	163	May 1925
Victoria Street / David Place		Central	1020	June 1925
West's Arcade Guiton Stores		Central	1021	April 1926
Gorey Village Station		Gorey	2	May 1926
Carrefour Selous PO		St Lawrence	51?	June 1926
La Mare Slipway		Central	2133	July 1933
Airport (inside terminal)		St Peter	181	December 1936
Fauvic		La Rocque	163	January 1938
Victoria Stores'		Five Oaks	15	January 1938
Wellington Park		Central	639	January 1938
St Peter's crossroads?		St Peter	10	January 1938
Albert Street		Central	1377	January 1938
Georgetown		Central	1009	January 1938
Trinity Hill		Central	1494	January 1938
Clubley Estate		Central		January 1938
Clos de Paradis		Central	311	June 1938
Red Houses		St Aubin	400	June 1938
Devonshire Place		Central	915	June 1938
Mont Millais		Central	433	June 1938
St Saviour's Road		Central	1170	September 1938
St Martin's Public Hall		Five Oaks	151	September 1938
St Peter's Barracks		St Peter	221	November 1938
Rouge Bouillion		Central	1022	January 1939
Harvre des Pas		Central	1029	February 1939
St Lawrence Church		Millbrook	38	October 1939
First Tower		Millbrook	316	?
Elizabeth Place		Central	1013	April 1940

Table1

An example of a pre-war kiosk is shown in Figure 2, which was taken by L Le Moignan during the occupation of an ominous looking tank (background) the kiosk was incidental to the picture. Note the round roof design.

The kiosks that were supplied with electric lighting prior to the opening of the Jersey Electricity Company public mains supply in July 1925 were supplied from one of the many private electricity supplies operated by companies or individual private houses in and around St Helier at the time.



Fig 2

No less than 28 kiosks were installed between 1923 and 1926 all around the island (table 1). Most kiosks were of individual design being constructed on an *ad hoc* basis.

In the mid 1930's the Telephone Department bought a number of kiosks from the GPO. One such GPO type K3 kiosk (Figure 3), which was first introduced by the GPO in 1929, was installed next to the beach slipway at the bottom of Green Street, St Helier replacing one established in 1924. This kiosk was removed (along with many others elsewhere) by the German occupying forces on 1 December 1942² to make way for a narrow gauge railway.

There was also a K3 installed outside the National Provincial Bank in Library Place, St Helier, where it remained until building alterations in 1969 necessitated its removal.



Fig 3

The Jersey Evening Post reported in January 1938 that 'new



Fig 4

kiosks of a local design' were being installed instead of the 'heavy concrete types', which certainly indicates that several K3 kiosks had been used in the early part of the decade. However, the K3 at Green Street slipway appears to have been reinstalled in a similar location shortly after the war with a new number (1618). This kiosk was also the first to be upgraded ready for automatic working in April 1959 when a Formica backboard and directory shelf was fitted together with an A-B type coin collecting box. At the same time this box was also experimentally painted in maroon and cream, although this appears to have been the only one so treated. This was part of a comprehensive programme to refurbish all 45 kiosks then on Central exchange for automatic working. This example survived until perhaps the 1970s when its seaside location eventually affected the reinforced concrete structure and the box began to crumble.

Just prior to the war as part of a drive to provide additional communications for air raid patrol (ARP) officers and for the convenience of the general public under possible war conditions, the States of Jersey Telephone Department commissioned their own standard telephone kiosks, loosely based on the dimensions of the K3.

² Jersey Archive B/A/W31/8/31 Removal of a telephone box and pole at Hotel de la Plage 01/12/1942 - 01/12/1942

These kiosks were supplied by two local building firms; Farley's and Le Selleur's.



Fig 5

Figure 4 illustrates the original design in a photo taken at La Rocque Harbour around 1974.

Incidentally, this kiosk achieved temporary notoriety in the local press when a telephone bill was addressed to it in November 1974 as a result of an administrative error! There were slight variances in the designs between the two builders, since these boxes were built to order over time. The basic design was made in hardwood, probably oak, with an eight or fifteen-pane steel windows made to order by Crittal Glass of Birmingham. The sides were all of equal dimension so that the door could be mounted on any aspect.

The doors were fitted, depending on supplier, either with a recessed handle or a bow-shaped handle both in brass, and a hydraulic closer was fitted. The windows were initially fitted with 4mm clear glass as in Figure 3. A lantern roof was fitted and waterproofed in dressed lead sheet. The boxes were

finished in green paint with white paint detailing around the door and sides. Internally they were equipped with a plywood backboard on which was fitted standard GPO instruction card frames (visible in Figure 4), but the mirror fitted to GPO boxes (apparently as a psychological deterrent to vandalism, based on the premise that if the user was looking at their face they would be too engrossed to do any damage) was not included. Before the advent of STD, one of the frames contained local advertising while the others contained user instructions. A small shelf to hold the local telephone directory was also included. Early versions were fitted with button A-B type coin collecting boxes for automatic working after 1959 (Figure 6)³, although these were not of the GPO type but rather a proprietary version supplied by GEC of Coventry.



Fig 6

These mechanisms included a switchhook to the left hand side of the box for the receiver, rather than the shelf-mounted telephone type 232 used by the GPO. The A-B box local call charge was 4d while all other calls were made via the operator. Interior lighting was by a bulkhead light and this was controlled by a Venner time-switch mounted near the roof. The switch was occasionally reprogrammed for the time of year during the

³ Picture kindly supplied by Laurence Rudolf

maintenance engineers visits. A few of these kiosks survived into the 21st century, although they were modified sometime during the 1980s or 1990s, the number of panes were reduced in some cases to 5 panes per side or to 2 large Perspex panes, as in Figure 5 taken at Mont Millais in 1998. This box, as well as being replaced by a later model, has also been relocated away from the rather precarious position on the busy corner. The boxes were refinished in the now standard yellow paint with white detailing to the window beadings. Perspex was considered more vandal-proof and safer, although it could be badly damaged by cigarettes.

In the late 1950s the Telephone Department experimented with kiosks made from fibreglass by the local company Precision Plastics Limited. They looked in some ways similar to the GPO K8 kiosk (Fig 7) except that the sides and door consisted of two panes of glass. They were manufactured from laminated glass fibre assembled around a square tubular steel frame. Three examples were installed on selected sites (one such site being Princess Close, Greve D'Azette). They were painted green and cream and contained all the usual furniture. However, in use they proved to be impractical, being of light construction, they easily succumbed to wind damage. None survived beyond the 1960's. Unfortunately, no pictures are available although it is known that Precision Plastics also sold some of these boxes to the South African Post Office.



Fig 7.

In 1980 the States of Jersey Telephone Department ordered 12 GPO Kiosks K8 from the GPO supplies department. The first such example installed in February 1980 is shown in Figure 7, taken at Georgetown in 1998. This was the only large purchase of GPO standard kiosks ever made by the States of Jersey. These were installed mainly around St Helier. All were the first boxes to be finished in the new standard yellow livery. All were fitted with the standard STD design backboards and POA coin boxes.



Fig 8

The call office in the Central Market (Figure 8) originally installed in June 1923 near the taxi rank, then located on the corner of Beresford Street and Halkett Place, shortly after the States took over the telephone system. This box was the last remaining of the unique designs employed in that era. It remained in situ until February 1970 when the site was required for an electricity sub-station. This box, being greatly used by the adjacent cabbies for both incoming and outgoing calls, was temporarily relocated during market alterations in 1963 to the nearby gentlemen's toilet in order to provide continuance of

service. Subsequently, more call boxes were installed, first next to the Weights and Measures Department then on the Halkett Place entrance, in each case using proprietary acoustic hoods.

A new "standard" design was developed by Charles Le Quesne Limited, building contractors. These new boxes first came into service during the spring of 1963. Subsequently, the construction of new boxes to this design was undertaken in the Department's own carpentry shop by Stan Le Feuvre assisted by Arthur Payn. As a result, the design evolved slightly with time, the most noticeable variance being the roof pitch. This new product was made entirely of sapele hardwood with two glass panels per side (Figure 9). The glass panels were originally laminated from plain and wired glass with a transfer of a picture of a telephone handset sandwiched between the upper panels. A single and double version was made to suit individual locations. The interior was installed with Formica in simulated dark wood laminated to a block-board rear panel to conceal wiring. The usual GPO information panels were fitted: a small directory shelf, a Venner time switch which operated the bulkhead light and a door closer. The roof was of the lantern design made from plywood with rubberized felt waterproofing. A pelmet or valance was fitted around the roof to provide a pleasing finished look. The original finish on completed kiosks was natural wood protected by clear yacht varnish. Later versions had plain safety-glass panels. As weathering took its toll, they were later repainted in yellow and white (as illustrated in the photo). The kiosks were installed on cast concrete plinths with metal anchors at each corner and all services provided through conduits. They could be assembled with the door on any aspect for utility. The first examples were a double configuration installed at Broad Street in 1963. The last of these boxes survived until 2003.



Fig 9



Fig 10

During 1967, all coin boxes on automatic telephone exchanges were converted to STD and Pay-On-Answer (POA) working using GPO Telephone 705 coin collecting boxes (figure 10) with strengthened coin retainers.

In 1972 the States of Jersey finally agreed to take over the monopoly for provision of telecommunications on the island with the introduction of the Telecommunications (Jersey) Law 1972 and the States Telephone Department became the States

Telecommunications Board on 1 January 1973.

Call collecting boxes underwent a number of changes as the POA boxes were replaced by more intelligent devices. In July 1982, most public kiosks were upgraded to electronic payphones using the Post Office CT22B model. This allowed ISD calls to be made for the first time. Many versions of these mechanisms have been used following the phasing out of the POA box.

A brief experiment was initiated in December 1979 with some public phone standards imported from the US. These were of the open type aluminium kiosk type as shown in Figure 11 taken at Gorey Village in 1996. This example is fitted with a card telephone. Four were installed but proved unsuccessful in the northern European weather conditions experienced in the Channel Islands. At the same time an aluminium



Fig 11

kiosk (similar to Fig 12) but with a bi-fold door was experimentally installed in Don Street, St Helier.



Fig 12

There have since been a number of different types of kiosks used, including some of plain aluminium, an example of which is shown in Figure 12 taken at Bel Royal in 1997. The Telecommunications Board also deployed some kiosks finished in brown anodized aluminium and used smoked laminated safety glass in all sides. These kiosks, which were manufactured in Ireland, were available in two formats. A single version of this design is shown in an example taken at St Mary in 2001 is shown in Figure 13. These boxes were deployed fairly widely by States

Telecommunications Board during the late 1980s and early 1990s although many of the older designs were in service concurrently. A double version was also available and an example is shown in Figure 16 below which was taken in Broad Street around 2003 where two such units were installed to cater for the busy town centre, replacing similar configurations of the 1963 kiosk type. At the time of the photograph these boxes had been recently converted from



Fig 13

card operation to cash and the word 'Card' has been masked out with black tape as a temporary expedient measure.



Fig 14

In the 1990s the States Telecommunications Board started trading first under the name Jersey Telecoms (and then later just Jersey Telecom) in preparation for incorporation, which finally occurred when the Telecommunications (Jersey) Law 2002 came into full force on 1 January 2003 and Jersey Telecom Limited was created as a wholly States of Jersey owned private limited liability company, licensed by the Jersey Competition Regulatory Authority (JCRA).

In 1988 Jersey Telecoms introduced card operated call boxes and operated almost all its public kiosks as card only from 1994 up until 2004. These GPT Diamond Prepay Payphones (see figure 14) used a plastic card (figure 15, depicting the inaccurate 100th anniversary

of telecommunications, it having originally started in September 1858 with the opening of the Channel Islands Telegraph Company and the first telephone exchange opened in 1888) similar to a credit card with pre-paid call units embedded in a magnetic strip on the reverse.

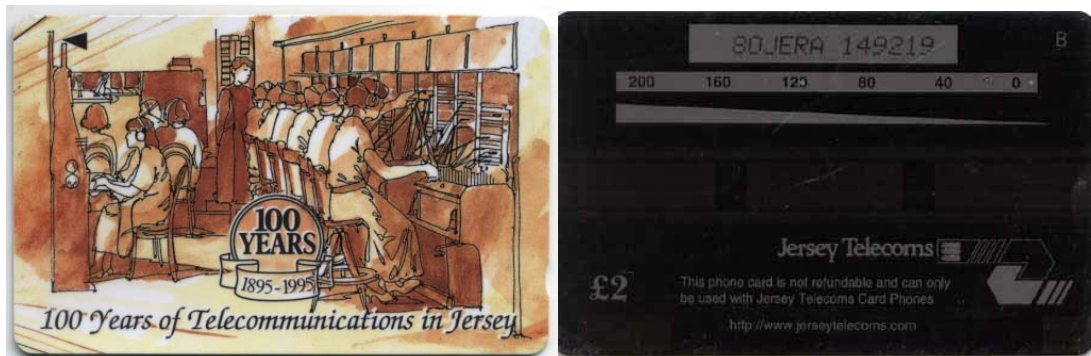


Fig 15

These cards were available in a number of denominations £2, £5 and £10. Various pictures were printed on the card fronts and these soon became collectables. Consequently, Jersey Telecoms frequently issued new designs as often collectors would never use the available call credits. Users could assess the number of remaining units on a card as the mechanism indented the card at intervals corresponding to the current credit. Inserting the card into the box displayed the number of call units remaining on the calling display panel. Phone card telephones were introduced to both combat vandalism and to allow users a more flexible way to make calls, particularly long distance calls which would otherwise have required a large amount of coins. In addition, the maintenance of

call boxes was significantly reduced as no coin collecting was needed but it continued to provide cash collecting call boxes at the ports and airport.

Card phones fell out of favour when the number of calls being made from public telephones declined with the advent of pre-pay mobiles at the beginning of the 21st century and the growth in use of by-pass numbers for long-distance calls, such as 0800 or 0845 pre-pay credit call providers.

In 1994 the Telecommunications Board announced its intention to withdraw the remaining old wooden and K8 kiosks, out of a total of 156 around the island, and replace them with aluminium versions. This was to be done on grounds of poor all-round visibility and access for wheelchairs. However the Island Development Committee, then the planning authority, disapproved of the present design for some locations. Consequently negotiations on a suitable design began with consulting firm Urban Profile Ltd and its director Chris Bolton. In 1997 a new style kiosk, known as the JT97, was introduced and a trial was begun to test its suitability and popularity with the public. The original design only had 4 glass panels but was revised to 5 circa 2001 before full deployment. Jersey Telecoms began a comprehensive upgrade of all its telephone kiosks in the year 2000 with the initial replacement of 40 existing kiosks with this new design.

All variations of telephone kiosks have now been replaced by the latest Jersey Telecom Limited (Jersey Telecom) standard kiosk as shown in Figure 17 photographed at Havre des Pas in 2003. This is another anodized aluminium design, this time finished in all yellow. The new kiosk was manufactured by Prosider Prodotti Siderurgici SPA, Viale dei Romagnoli 1167, Ostia Antica, ROMA, Italy, with which Urban Profile had previously worked, is slightly wider than previous designs, this being to enable easier access by wheelchair users. To further facilitate this access the kiosk is installed on a flat stainless steel plate with anti-slip patterning as can be seen in the illustration.

Some of these kiosks were initially fitted with an additional 'finial' on the roof peak. This housed a small mobile radio aerial, used for the provision of GSM 900 micro-cells which Jersey Telecom deployed to fill 'gaps' in its GSM coverage. Later boxes, while still housing the transmitter equipment in the roof for



Fig 16



Fig 17

the micro-cells, are not provided with this addition, the transmitter aerials being housed below the glass fibre roof.

Call box usage continues to decline all around Europe as the mobile phone takes over as the preferred means of communication and this is also the case in Jersey. Nevertheless, Jersey Telecom is obliged to maintain public access call boxes as part of its Universal Service licence requirements under the Telecommunications Law.

Jersey Telecom has also deployed some proprietary telephone hoods and stands for public telephones, particularly in public buildings. A four point kiosk installed in the Central Market, Halkett Place is shown in figure 19 (using only 3 of the 4 positions) and the proprietary hood is shown in figure 18. Both are equipped with the Marconi Net 200 type coin telephones utilized by Jersey Telecom following the withdrawal of card phones.



Fig 18



Fig 19

Finally, there is a single example of a preserved AA Box, No. 687 (figure 20), located opposite Trinity Church. This box is constructed from hardwood and when in use it contained a telephone to connect to the AA emergency switchboard. These boxes were often fitted with subscriber type coin collecting boxes, although earlier some simply contained a single telephone that was connected via a private circuit directly to the AA offices. Access was only available to AA members, who were provided with a Yale type key to enable access. Originally a number of these boxes were installed around the island during 1953 including number 686 at St Ouen's Bay, at Gorey on the corner of Rue a Don and Gorey Village, and at St John near the church. Some of these were replaced by steel pillar style telephone mounts starting in February 1977. This latter type became favoured by the AA needing

lower maintenance before being finally abandoned by the organization in 2002 because of the rise in mobile telephone usage by motorists. The Trinity box was saved as a result of a campaign by local residents in April 1988.



Fig 20

As far as is known, no equivalent RAC boxes were installed in Jersey, although they were widely deployed in the UK by that organization and the members' access keys were compatible with both.

In 1997 the States Telecommunication Board issued individual Class Licenses for the private provision of payphones as part of a general loosening of its statutory monopoly. A number of private providers installed payphones on business premises, mostly in the hospitality industry. This provision has subsequently been covered by the JCRA General Class Licence and no charges are now levied for this provision.

Police Boxes

In June 1896 a tender was invited for the provision of police telephone boxes to be installed around the town of St Helier. This was to enable the police to report back to the police station, then located at St Helier Town Hall, during their patrols or if specific help was needed. The contract for supply and installation was awarded to an electrician, Mr F A Jubel. It is not known whether these boxes were connected to the police switchboard by private circuits erected by the electrician or via the National Telephone Company facilities. The first of eight cast-iron wall boxes enclosing the telephone was installed at the Harbour Master's office, Albert Pier on 1 October that year. The boxes were cast by the local iron foundry company Grandin Limited of Commercial Buildings, St Helier. Each box contained a magneto telephone with detachable earpiece and a small writing shelf.

The remaining boxes were installed around the town, including one at the corner of Val Plaisant and David Place, this being the last surviving box, No 2 (Figure 21), which is now mounted for display in the Royal Square, St Helier. These boxes were also accessible by the public as the keys needed to



Fig 21

access them were often available from nearby shops. This system of communication was abandoned in 1923 following the takeover of the telephone system by the States of Jersey.

Technical Details of Call Boxes

Coin Collecting Boxes

Early public telephones were usually provided at attended sites, typically at National Telephone Company offices, shops, railway stations and other publicly accessible places. In these cases the monetary transactions were conducted between the user and the attendant at the location. The hours of availability were, therefore, limited to the times of opening of the establishment. This was no major hardship as at the time the number of telephones was small and then mostly belonging to business subscribers.

As the network developed demand for longer hours of attendance gave way to more automated means of collecting the payment for the calls. The first coin collecting boxes (CCB) were fairly simple devices. Their main requirements were to check the coins entered, usually by means of a code utilizing bells and gongs that could be interpreted by the operator, and a secure money container.

The Button A and Button B box

With the arrival of automatic working, a more sophisticated device was required. The British Post Office utilized a CCB that comprised two buttons marked A and B as illustrated in Figure 5 (above). The caller was required to insert a fee into the box before making a call. The mechanism in the box was designed to disable the dial unless the correct fee was inserted. The coin mechanism was fairly basic and carried out a few checks on the correct weight and size of the coins. In Jersey the call fee for a local call (no trunk calls were possible from this type of box) was 4d (approximately 2p). The box also contained coin slots for 6d (2.5p) and 1/- (5p), but these coins would not enable activation of the dial and were used only when a call was being set up via a trunk operator. This meant that if a caller had no change it was necessary to call the operator in order to make a local call.

In order to enable emergency calls without the need for inserting coins, a specially adapted dial was used that enabled the digits 9 (for '999' calls) and the digit 0 to enable the caller to access the operator services without any fee. The mechanism of the box is shown in Figure 22⁴. The coin slots are at the top right of the picture and the coins travel to the left. The bell (top) and gong (the coiled spring below the bell) enabled signals to be sent to the trunk operator to

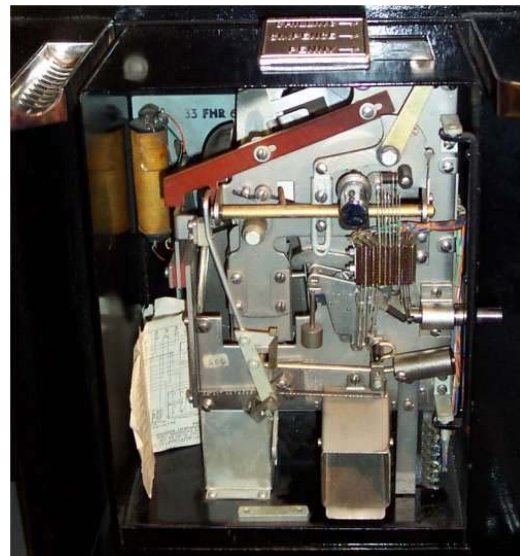


Fig 22

⁴ http://www.telephonesuk.co.uk/images/A-B_box_inside.jpg

enable differentiation of coins, pennies hit the gong during transit while the 6d hit the bottom of the bell sending one 'ding' and a shilling hit both the top and bottom sending two 'dings'. These signals were transmitted to the operator using a small microphone mounted between the bell and the gong.

When a local call was required the fee was inserted which operated the spring contacts shown at the top. This disconnected the handset microphone and enabled the caller to dial the required number. On answer the caller pressed button 'A' and the springs restored reconnecting the speech path and disabling the dial. At the same time the coins would be released into the cash box at the base. If the call was unanswered or failed for other reasons the caller could obtain a refund by pressing button 'B' which released the coins into the chute on the front. Pressing either button reset the coin mechanism back to the normal state ready for the next call.

It should be noted that Figure 20 illustrates the CCB used by the British Post Office and not those deployed by the States of Jersey Telephone Department. The CCB used in Jersey had the dial mounted on the top left hand side of the box angled to the right, and the handset was mounted on a switch-hook that was mounted to the top left of the box which also contained the telephone speech circuit and the incoming call bell (see Figure 6). This proprietary CCB was supplied by Messrs GEC of Coventry.

These boxes were, however, quite open to fraud and many ingenious methods were used. The most frequently used 'tricks' were as follows:

- Number tapping: Using the switch-hook to simulate dial pulses, an experienced fraudster could easily connect to local numbers.
- Back-dialling: Using the digit 0 and measuring the number using fingers to mark the right place on the dial it was possible to dial for free utilising the feature that enabled dialling '0' for the operator.
- Using the coin microphone: A caller could shout up the coin return chute to communicate to the called line.
- Wire hammer: More sophisticated users used spring wire inserted either through the coin slots or up the return chute to tap the bell the appropriate number of times when calling the operator for a trunk or even local call.

These simple frauds led the British Post Office to abandon pre-pay call boxes when it embarked on its trunk dialling plan.

STD Coin Boxes

As noted above, with the introduction of Subscriber Trunk Dialling (STD) the Post Office embarked on a new method of controlling calls made from CCBs. When STD was

introduced into Jersey in 1966, the Post Office was still responsible for the trunk network under the existing legislation and thus it was necessary that the Jersey authorities adopted the same solution for CCB trunk dialling.

It was decided that the management of payment for the call would be conducted at the exchange rather than at the CCB itself. Therefore a sophisticated solution that required the counting of payment against the call charge was conceived. This was called the Coin and Fee Checking (C&FC) system and was realized with a complex relay logic circuit. In some ways this was the single most complex circuit to be found in a local exchange and

because of the complexity a large number of relays were required for each circuit. The first version required two relay set mounts with an additional 5 PO type 2 uniselectors. This configuration only permitted 15 individual controlling circuits to be mounted on a standard Strowger exchange 4' 6" rack. A later version substituted the uniselectors with specially adapted combinations of ratchet relays and thus a standard rack could accommodate 30 units (see figure 23⁵). Nevertheless, at that time the popularity of public telephone boxes required a large number of these devices and thus a large amount of local exchange floor space was dedicated to only a relatively small number of lines. The same principle was implemented on the Telephone Department's Pentaconta crossbar exchanges. However, the Italian manufacturer FACE Standard spa decided to implement the logic using only relays of the standard Pentaconta type. This design was unique to Jersey,



Fig 23

its UK sister company, Standard Telephones and Cables, opting to adapt the Strowger version to its equipment mounting practice. The CFC principle was also adapted for use on the Department's Philips PRX exchanges. In this case the design was integrated into the exchange system software using a simple bridge adapter located in the exchange's Sender/Receiver cabinet and designated Receiver Coin Box (RCB) by the Philips design team.

The coin box itself was relatively simple as illustrated in Figure 10 (above). The coin mechanism was designed to send pulses of 5k ohm pulses forward to the exchange to transmit the coin value, the number of pulses representing the coin, thus, for example, 1 pulse for 2p, and 5 pulses for 10p. The coin slots were also opened and closed by signals

⁵ Thanks to Jonathan Kay

from the exchange to prevent users inserting coins when not required by the control. This type of CCB was called the Pay-on-Answer (POA) type, which meant that all calls could be dialled without the need to insert coins first.

A detailed description of the workings of this device would be impossible without a circuit diagram, but the basic elements of the logic are shown in Figure 24. The CFC was designed within guidelines provided by the then Board of Trade which required that the user would not be penalized by the control mechanism by the use of large timing intervals, thus it would be necessary to control all the functions to the nearest second.

The coin detector in the early versions was transistorized but the later version used biased carpenter relays of the type used in many other signalling systems such as AC9. The coin box transmitter sent 5,000Ω pulses, one for each coin value representation. At the end of this pulse train an open circuit was sent to conclude the train. The purpose of this was to differentiate between possible line faults and genuine pulses. The later version did not bother with the open circuit for confirmation for some reason.

The coin Slot Control was simply a line reversal which operated a polarized relay in the CCB which unlocked the coin slots.

The transmission bridge was able to be split when the first meter pulse was detected. This was a later feature since the initial theory of Pay-on-Answer was that the caller could confirm that the called number was correct before inserting coins, however, it was later found that this could lead to lost revenue as short messages could be sent without payment.

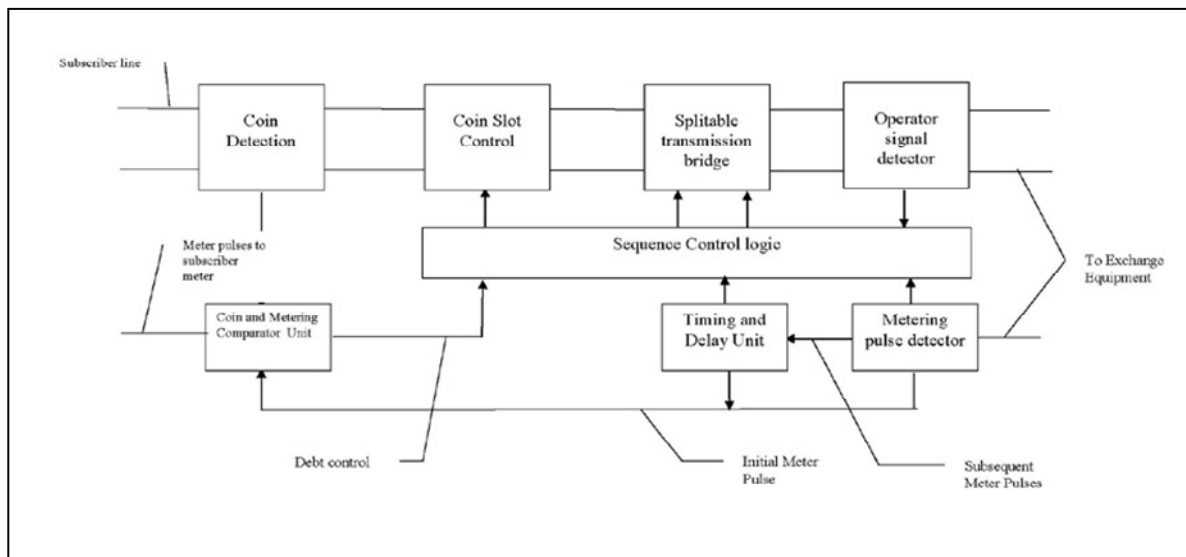


Fig 24

The operator signal detector enabled the trunk operator to control the coin slots from the switchboard supervisory keys. It also detected when the operator answered the call and

sent pay tone forward to alert the operator. This pay tone was not sent to the caller as the transmission path was split.

Pay Tone (PT) was generated within each C&FC relay set by a self interrupting relay pulsing the exchange Number Unobtainable (NU) tone at 5 pulses per second. A one second control pulse was also generated using a similar relay arrangement. The one second pulse controlled the Sequence Control (SU) and Timing and Delay Unit.

On the initial meter pulse the Coin and Metering Comparator Unit advanced the meter count thus causing the unit to show a debt. This started the SU which opened the coin slots, split the transmission bridge and sent PT to both the caller and called line. PT was continued for about 7 seconds before closing the coin slots while at the same time advancing the delay count. A further delay of 2 seconds was allowed to check for a late coin passing through the coin mechanism. Finally NU tone would be returned to the caller and the forward part of the call released.

If a coin was correctly detected, then the coin count would advance to be equal or greater than the meter count, thus removing the debt condition. The coin pulse(s) would also be registered on the subscribers call meter. Subsequent meter pulses were not sent directly but via the delay and timing unit. On detection of a meter pulse, the timer would count off the delay seconds before advancing the meter count. Each subsequent coin inserted after initial PT would also advance the timer count by one unit. Should a meter pulse arrive during the timer count and before the accumulated delay had been reached, then the delay units would be reduced to the difference between the two counts. A maximum delay was also set because of the restrictions applied by the mechanical counters.

When the meter count subsequently produced a debt condition, the SU would again apply PT but only for 2 seconds. The slots would normally remain open unless the coin count reached a critical number, this being the maximum difference between the meter and coin mechanisms that would prevent the coin count 'overtaking' the meter count.

At the time that STD was introduced, the States Telephone Department introduced Local Call Timing onto CCBs but not ordinary subscriber lines. This latter decision was made as a combination of cost and political considerations. The PO charge from A-B boxes had been 3d and when STD was introduced this charge was carried forward, although the call would be limited to 3 minutes. The States Telephone Department had charged local calls up to this point at 4d for an unlimited time but, with the introduction of STD, it decided not to use the available 3d slot on the new boxes and instead blanked it. The new charge for a timed local call of 3 minutes was thus increased to 6d. The coin box user was thus faced with the double whammy of increased cost and reduced time, the only plus side was that the call could now be dialled directly!

When a local call was dialled through a C&FC controlling relay set, in the absence of further meter pulses from the trunk exchange, the timing and delay unit took control of the call, based on timing pulses derived from the Multi-Phase Pulse Supply (MPPS) which was a necessary addition to local exchanges to enable local call timing. Pulses were

distributed to all C&FC racks and used to measure the local call length. The first pulse was absorbed by the mechanism to avoid overcharging, thus the 3 minute interval could be extended by up to the maximum equivalent length of two timer pulses. The sequencing was the same as for a metered call as described above.

All this complex logic was developed using only telephone relays (and some uniselectors) in the late 1950s, at a time when large scale integrated circuits had not been developed. However, despite their development in the 1960s, the PO continued to manufacture relay based systems until the end of the POA era.

Post POA CCBs

In 1982 the Board started a programme of upgrading from POA to pre-payment call box telephones to enable international dialling from public kiosks. The replacement selected was the Post Office CT22B telephone which was able to accept 5p, 10p and 50p coins.

Call boxes post the POA era relied on different signals from the telephone exchange to manage the call payment. The signalling used initially in the UK was that of the Subscriber Private Meter (SPM) equipment which provided a longitudinally induced 50Hz signal pulse into the subscriber line that was synchronized to the trunk meter pulses. In other jurisdictions other methods have been used including line polarity reversal and higher frequencies of signal such as 12 kHz and 16 kHz.

The 50Hz for the SPM was derived from the public mains supply at the exchange (supported by the exchange standby generator) and depended on a reliable earth connection at the subscriber equipment. This involved a wholesale change of equipment in the existing telephone exchanges, removing the elaborate electromechanical CFCs and replacing them with the simpler and more compact SPM equipment.

Some intelligent boxes needed external power but special arrangements were made to ensure that emergency calls could be completed under mains failure conditions.

Modern phone boxes do not require any special tariff signalling from the main exchange as they are configured to work using basic rate Integrated Services Digital Network (ISDN). These telephones also enable built-in alarm functions operated over the data path of the ISDN User Part (ISUP).

