The Future of Payphones!
Charge-A-Call or Coin-less Payphones
A Failed History

Overview

Special thank you to Jim Engle, who's expertise and pictures made finishing this history possible.

There is still a lot of internet information on payphones, such as Semi-Post-Pay vs Post-Pay vs Prepay types. And there seems to be a lot of collectors keeping their history alive. Collectors are also picking up the Millennium and other later payphones that could take credit cards and smart "chip" cards and every payphone in between. But there is a small area of payphone history that seems to be wholly forgotten. These are the coin-less payphones that went from about 1978 – 2005. And their information is just about lost. The common name for these types of phones is Charge-A-Call payphones. And that's what I'll refer to them as in this document

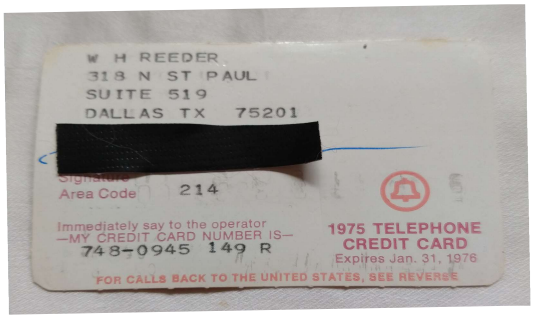
In 1989 AT&T had a promotional video about the 100th anniversary of the payphone. (See Links section) It quickly shows pictures of payphones and other related phone advances from the payphone's beginnings, to 1989. This advancing history of the payphone, ends with the AT&T calling card and a Charge-A-Call payphone. Indicating that the future of the payphone was to be using calling cards and not cash. And an Oklahoma news article I found online mentions at the 1984 roll out in that state that the roll out was just the beginning. So its funny that not only did this cashless payphone world of the future not come to pass, it is probably the most forgotten and least understood of the payphone's very long history.

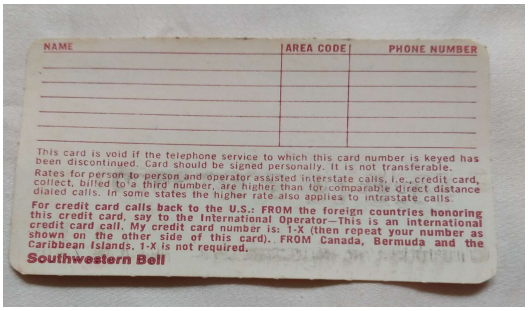
It could be no one cares but me about all this. But as I was introduced to this area of payphones, when I bought my first R-TEC payphone on ebay, I've been very frustrated by the lack of information in this area. So, I just thought I'd write this up in case someone besides me would be interested. And to maybe get more info on these phones before they totally disappear.

I am, by no means an expert on this. The problem is almost all the experts have moved on to other jobs and it seems that the information and history of these phones is just about gone. So until a real expert steps up to write something, I guess my assumptions and understanding in this document are going to have to do.

Terminology

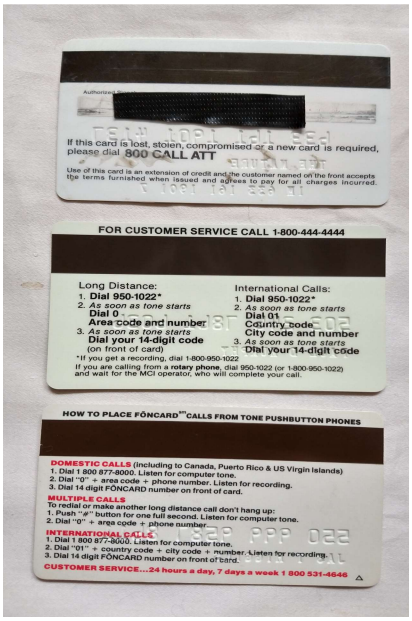
Calling Card or Phone Card - This term meant something very different back in the 1980's. And could probably have a history all its own.



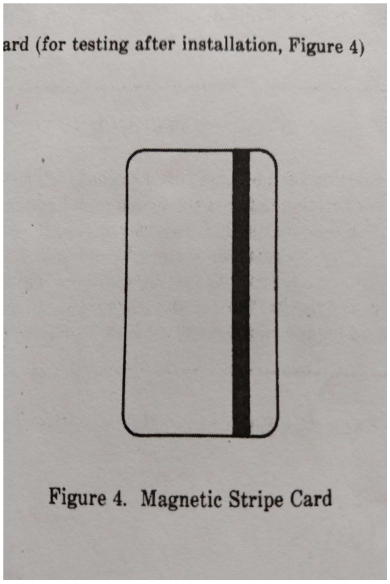


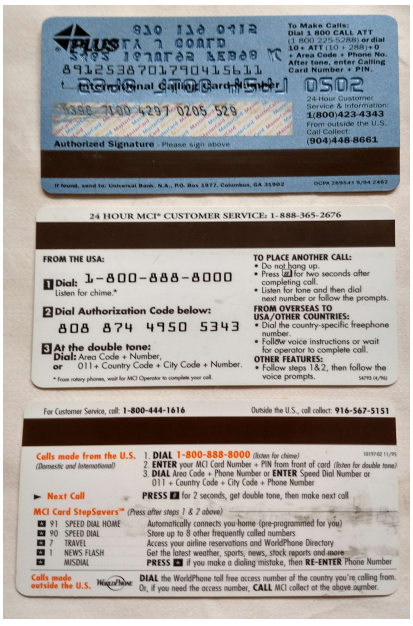
They started out as a paper card with a number on it that you could key into a phone or tell to an operator. In the 1950's to 1970's they were issued by the Bell System and allowed you to charge a call

from a payphone or other phone. And the charge would be added to your phone bill. In the 1980's the credit card had just begun to come into common use in the plastic form we know now, with a magnetic strip on the back.



The big three long distance providers of the time, AT&T, MCI and Sprint, started issuing calling cards in this format as well around 1984. With the idea that from a Charge-A-Call payphone you could just swipe your card.





Eventually AT&T took this one step further and came out with their AT&T Universal card. This combined a credit card and a calling card into one card. And your bill would come out of your Master Card account this time. MCI seems to have come out with several variations of their calling card including a type of gold card. Their gold card seems to blur the line between a credit card and a calling card. I'm not sure what perk the gold calling card gave the user. But you can see from the pictures it later had American Airlines miles attached to it. But these gold cards were not credit cards. They have

no expire date on them or embossed lettering. The embossed lettering were still important at that time for manual copying of your card information. And the gold cards didn't have a provider bank like the Universal card. So they appear to be calling cards pretending to be credit/calling card combos. Besides the Universal card, AT&T had a few variations on their original calling card that included the "Call Me" and "Corporate" cards, to name a few. Also, some baby Bells started issuing there own calling cards in this format as well.

Inside the industry, payphone installers also used special test cards to test the installation of the phones that used these cards. They were simple blank cards with some writing on them. There is a line drawing example of one in the center between the pictures above. But a consumer would never use these types of cards. There were two types of test cards used. A card that would cause some phone to go into a diagnostic routine of some kind. A second type of test card was actually a full calling card with the installer as the billing party. Except it would be billed to the installers phone company's phone bill and not the installers phone bill. There were stories in the day of installers getting in a bit of trouble for using their test card for private calls.

Ironically, as time went on, the term "calling card" changed back to paper cards again. This time for cut rate international long distance carriers and then finally to the paper cards for prepaid cell service today.

Card Reader – This reads the magnetic strip on a card by having the user push the card into the slot till it stops. Then they quickly pull it out again. This is the type of reader used on gas pumps at the time I'm writing this.

Card Swipe – This is a card reader that requires the operator to put their card in a slot and then manually slide their card down the slot. Some retail stores use this type of reader today, if the chip on the customer's card is not working.

Long Distance Provider or Carrier- This is the company that is providing the long distance service. For most people in the US that was AT&T when AT&T was the Bell System. After the break up of the Bell System, AT&T became one of a few different long distance providers. The "big 3" of the time were AT&T, MCI and Sprint. Now days, even the idea of a "long distance" is almost meaningless.

Call Processor – The back-end computer system in the central office or other location, that would receive input from one or more Charge-A-Call payphones and would calculate and collect the phone charges as well as route the call. They could also provide other extra services, like a "New Call" option.

DTMF – Dual Tone Multi Frequency. These are the tones produced on a land line when you press the buttons to dial your number. The tones represent 0-9, "#" and "*". The full definition also covers four other tones that are not normally seen on a phone's keypad. They are usually labeled A, B, C and D. For more information see "Links' section.

EPROM – Erasable Programmable Read Only Memory is a specialized computer memory chip that will keep the data of its memory even if it has no power. And will do so until it is erased and replaced with new data.

Back Story

There are two big differences between Charge-A-Call payphones and the credit card handling payphones that came during and after them.

First, although these payphones allowed you to pay for the call with a credit card, they were mainly setup for using plastic calling cards with magnetic strips. Credit cards were just icing on the cake.

Second, They did not take any cash at all. (With the exception of the Public Phone 2000i.)

History

The Charge-A-Call payphone came from AT&T just before the breakup. The idea was to use the new credit card technology that had just become widely available, to make a payphone that didn't hold any coins. To do this they would need a suitable phone and a centralized call processor. The call processor was a necessary part of the setup at the beginning. Because, at the time computers powerful enough to do all that was needed for call processing were about half the size of a dishwasher. The idea had a lot of advantages for AT&T. Because the phone would not have any money stored in it, it would need far less armor and be cheaper to make. There were probably marketing advantages too that looked promising due to the breakup.

In the following I mention you enter your calling card number first. If you didn't have a calling card you could enter your credit card number instead. There seems to be a question of order. It appears that most call processors wanted the phone number entered first and then the card second, if you were using a calling card. If you were using a credit card you would enter the credit card number first, and then the phone number. (See picture of 40A phone) This seems born out by the instructions on the calling cards I have. (See Terminology section) The three calling cards follow this order. But the two MCI gold cards follow the credit card order. And what throws this whole idea off is the AT&T Universal card. Its instructions are in phone card order. So it is possible the order of these two steps didn't really matter. I will be using the calling card order for consistency.

10A Payphone

The first iteration of this system came in 1978 with the introduction of the venerable 10A payphone. This was basically a standard phone in a blue armored case that had the Bell System logo embossed on it on the bottom right. Many phone collectors seem to have at least one of these. There is a fine example of a 10A on the Mike's Vintage Telephones web site. (See Links section)

The AT&T version was in a black armored case with the model number 11A. It is functionally identical to the 10A.

There was also a desk top version of the 10A. This was for airport lounges and hotel front desks. To installers this was known as the “Executive Charge A Call or ECAC. This model of phone was the first to have a reversible bottom panel. If you put it on one way, it would allow the phone to sit on a desk or table at a nice slant to see the dial pad and, in this case the instructions, easily. Turn the back around and the phone would be at the right angle to mount it vertically on the wall. This eliminated the need for the Bell System to make two models of the phone, one for desks and one for wall mount. Since all the 10A was was a normal phone in an armored case, it wasn’t hard to put those same insides into a desk phone since the same components were already in many desk phones any way. So they just used one of their business models with a different cover panel that contained the Charge A Call branding and instructions on it. These phones also use an RJ11 plug at each end of the cord to the receiver. So there was a chronic problem with people steeling the receiver cord off the phone. The installers got around this by cutting a chunk off the plug’s locking clip before plugging it into the jack. This gave enough of the locking clip to hold the plug into the jack, but not enough that someone could use their fingers to push the clip up and pull it out. If people went on to start cutting the cord after that, then the installer would replace it with a hard wired, armored cord.

There was also the 20A. But this was just a 10A resisted into a panel so that it was flush with the wall.

This was a good first step because at the time it appears the business model the Bell System was working under was that of the store card. Before credit cards as we know them today credit was issued by stores, not banks. The card would be for the issuing store’s products only. They were usually either metal or paper cards. And that’s what the Bell System issued, wallet sized paper calling cards with the number you needed to enter into the phone, or quote to the operator, printed on the front of it. Perfect for the 10A phone and its desktop cousin.

A Charge-A-Call payphone gets its name from the specialized phone line that was originally required by a 10A for them to work correctly. The Charge-A-Call line was issued by the phone company and blocked toll free numbers among others. So despite popular belief, the 10A didn't have any formal call processor. It was just a normal phone making a call on a special Charge A Call trunk line instead of a normal line. This was a very simple setup.

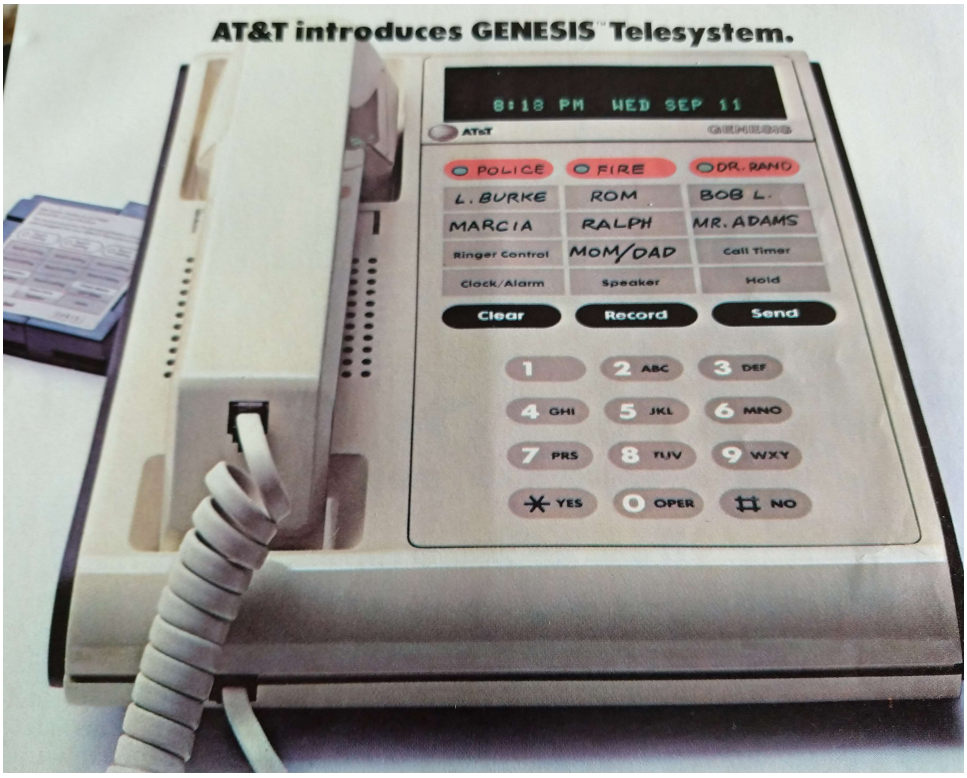
1. You picked up the receiver.
2. The central office would detect an open line with the Charge A Call id.
3. You got a dial tone on the trunk line, just as you would on a normal phone call.
4. You would dial the number you wanted to call.
5. The CO would route the switching to basically standard long distance switching. And it would process your number.
6. It would generate a "bong" signal to you.
7. This was your prompt to tell you to start entering in your calling card number.
8. You would key in the number on your calling card.
9. The long distance switch would validate your calling card just as it would with any long distance number. But in this case it wouldn't have to be a long distance number.. If it was valid, then it would move on to the next step. If it was invalid, you would get a fast busy signal and that would be the end of your call.
10. The switch would go on to grab a regular out going line. This line would have no Charge A Call restrictions. And it would complete the call to the phone number you requested. When the line was answered and you began your conversation, the long distance switch had the ability to time the call.
11. When you disconnected from the call, The switch would close out your lines and would calculate the charge based on the call length and the rate band used by the phone number you dialed and send the charge to bill processing.

Thanks to the then new electronic switching and ACCS all this was possible. But it all relied on DTMF tones. If you were using your card from a pulse dial phone you still needed to talk to an operator.

Since this was more or less just a switching operation, the bong tone was actually just a courtesy. You didn't have to wait for it. You could just enter all the numbers at once and the call would go through if your calling card number was valid.

Many third-party companies wanted to jump on this new band wagon as well. FAB, Gladwin, Navitel, CeeCo and many, many more popped up all over the US and Canada to make regular telephones that were armored. In fact there are still some companies making them today. But they are usually for other uses than payphones.

Genesis Telesystem Telephone



Around 1983 AT&T introduced a desk phone for the consumer/small business market. This phone was customizible through cartridges similar to video games of the time. You can see an example of the cartridge in the background of the picture. The phone had an internal timer for timing calls and some other features that the cartridges could combine together for different situations. It used a blue, florescent matrix display. So it required a lot of power to operate. To do this it had a power cord between the phone and the wall AC, instead of an AC adapter. It also had a 9v battery backup. The left panel could be removed to expose the cartridge ports. The right panel of the phone could be removed to expose a port for optional modules to expand the phone's control and memory options. So you are probably wondering what this has to do with Charge A Call phones.

Well, in 1984 AT&T was going to have the big roll out of there new calling card and a fancy new wall mount payphone to make the most of using the new card's magnetic strip. It appears that the roll out also needed a desktop version as well. But they didn't have one ready yet. So AT&T developed a special cartridge for the Genesis phone to turn it into a Charge A Call phone. This was never released to the public and was never meant to be. But it allowed AT&T to install these phones as CAC payphones. In the installer's instructions these phones were referred to as CSTM or custom phones. Besides the cartridge the phone had a different top panel for the dial pad and around the florescent display as you can see in the picture. The CSTM's cover panel haad none of the extra function buttons of the base Genesis set. And it didn't have an instruction card. It just had the following list of supported services:

CALLING SERVICES
AT&T CARD
CARRIER CARD
COLLECT
EMERGENCY

Even with its new configuration, the Genesis never had a card reader or card swipe option. So the caller still needed to key in their card number. The Genesis had a port on the right side for side car modules to plug into. So it seems like they could have made a card reader module for this phone. But there was probably a concern that people would unplug the module and try and hack the phone for free calls. Or maybe that's why they didn't have a purpose built desktop phone yet. They were having problems finding or making a small enough card reader for a desk phone. Who knows.

The bigger question may be, why they needed this phone when they already had ECAC phones for the same purpose. No way to know for sure, but it could be as simple as they just wanted a fresh look to go with the roll out. But it seems like this was a very smart phone for just using it as a Charge A Call phone like the ECAC before it. So I'm wondering if this phone was meant to work with the same call processor that was to be used with the upcoming Card Caller payphone that would be released with the roll out. The only difference being that the CSTM phone only has one line. So I'm guessing that the CSTM phone worked something like this:

1. The caller picked up the receiver and dialed their number
2. The phone would use the same tone it had for doing answering machine options. This would stand in for the bong tone.
3. Then the caller would key in their calling card number.
4. The phone would call out to the call processor to have it validate the card number.
5. If the call processor sent back an invalid DTMF tone (0), the phone wold end the call. If the processor sent back a valid tone (1) the call would progress.
6. With the card validated, the phone would hang up with the call processor and dial the callers number.
7. When the call was answered the phone would begin timing the call.
8. After the caller hung up the phone, the phone would call back the call processor and pass it the card number, phone number, the length of the call and the time and date.
9. The call processor would send all that to billing.
10. Then the phone would disconnect with the call processor and be ready for another call.

If I'm right, this calling the call processor twice was probably a bit slow when it came to being set up for the next caller. This is probably why the Card Caller used two lines.

The Card Caller (30A) and the 40A Payphones

You might have already guessed that the user experience had some flaws. Keying in 20+ numbers through a 3 x4 keypad was error prone. And each time you made a mistake you had to hang up and start all over again. This flaw wasn't lost on AT&T either.

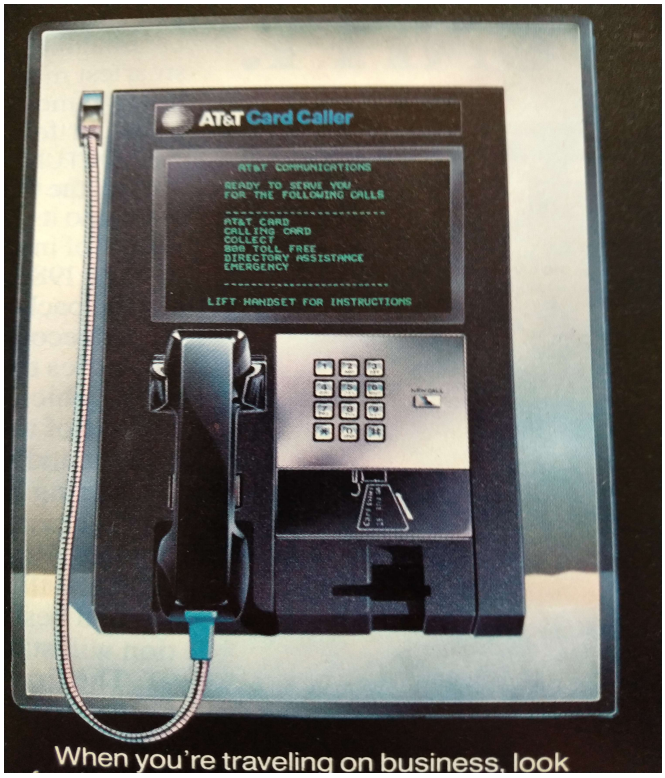
And about the same period the 10A was released in the 1970's, Bank of America released the first credit card in the form we are use to today, including a magnetic strip that automated entering the card's numbers. By 1980 the credit card idea was becoming widely adopted by people and other banks.

At about this same time other long distance carriers like MCI, and Sprint had won their court battle with AT&T for equal access to AT&T's lines. This started a small boom in long distance carriers popping up all over the place. But it increased the numbers to key in greatly. If your preferred carrier

was not AT&T, you had to key in your carrier's phone number, the number you wanted to call and then you had to key in the number on your carrier's calling card.

Another problem is that dedicated Charge A Call line from the CO was expensive and not very flexible in all use cases.

In 1984 AT&T was heavily marketing their AT&T Calling Card and a line of phones to make use of it. For the transition over the plastic card, holders of the paper version were issued plastic cards that just had the same number as their paper card. The combination of card and phone was hoped to start a new future of coin-less payphones.



AT&T knew that their immediate market would be business travelers. So their first release was the Card Caller. The AT&T model was the 30A. This phone had an eye catching, green screen, CRT text display. As you progressed through your call the screen display would change to step you through the process. Among help screens and other information it could display, it was probably here that it could list a menu of the other long distance carriers you could select from and instructions on the keys to type to select your carrier of choice. The phone also had a dedicated button to press for next call. This allowed you to hit that button instead of hanging up and then going back through the whole process again to validate your card for any second, or more, calls you had to make. It also had a loudness control under the receiver hook. For the card it used a card reader. You can see a quick look at the 30A towards the end of the 100 years payphone video. (See Link section)

The 30A had a special wall mount frame around it that had vents. This was because its CRT display produced a lot of heat and was often the reason for the phone to fail. The 30A was the first phone designed from the ground up to use a call processor. It was the introduction of the call processor that made the "next call" button possible. But it was connected to its call processor very differently than the phones after it. It was hard wired to its call processor. And the connection would pulse to makes sure the phone was there and working at all times. It is unknown what the format of the data was on this

special line. It was probably DTMF tones like the other phones of this time period of the history. Or it may have been digital data. And this phone required a second line that was a standard phone line. So instead of the call processor placing the call, the processor validated the payment and gave permission to the 30A to make the actual call. And the 30A would dial your number. An interesting first design of the call processor connection. This is what makes me think that this was heavily influenced by the CSTM phone and/or the other way around.

The 30A was not programmed by the installer. It was initialized through the call processor and just started running from there. So any actual options that were set inside the phone are probably lost to history. But the 30A was the first phone with sensitive electronics in it. A habit many installers had was to keep extra screws in the phone's body when they were done with repairs or installations. This practice didn't usually cause any major problems on the regular payphones of the time. But with the 30A and phones after it, this practice was disastrous. When the phone was moved loose screws would move around and lodge in power supplies or short circuit connections. When the phone was powered up it would fry.

In December of 1985, AT&T released the 40A payphone. This is based on the date on the phone's instruction manual. Unlike the 30A, the 40A did not have any CRT screen or any other display. As a result it was smaller and could fit in the same spaces a 10A or even standard payphones. I guess the marketing plan was to get people interested in Charge-A-Call payphones through the business travelers with fancy 30A payphones in airports and hotels. Then that excitement would spill over to the rest of us. So the 40A was the 30A for the rest of us.

The 40A was black with 9 white carrier select buttons at the bottom left. The dial keypad was on the bottom right. Between the bottom and the middle was a secondary instruction card area for international dialing instructions. Above that, the receiver was on the middle, left and a long card swipe

on the middle right. At the top was the large, main instruction card area for local dialing instructions with a title card above that.

The blue instructions card you see in the picture is not what you would have seen on a phone in actual use. This appears to be the factory default card. And the owner of the phone would have replaced it with their area's dialing instructions before putting it into operation.

In July 1985, a Texas company call Reliance R-TEC Systems was able to beat AT&T to market with their release of their phone with very similar functionality to the 40A. It must have been cheaper than the 40A as well, because I only know of one 40A. But I've seen several R-TECs . Some even used by baby Bells. Like the 40A, I've based the release date on the date found on the phone's instructions. The dates inside the phones very widely.

The R-TEC was either blue, tan or black and they did have a chrome version for out door use as well as a desktop version. But I've only seen the blue or tan wall mount versions. At the bottom were 12 chrome, carrier select buttons. In the middle left were the keypad and receiver. And the middle right had a card swipe and a tiny space for an instruction card. Then a space at the top for a Charge-A-Call title card. Like the 40A they were designed to fit into the same spaces as 10As and regular payphones.

Both the 40A and R-TEC would have a default long distance carrier. If you didn't have a preference you picked up the receiver, dialed your phone number and waited for the "bong" tone. When you heard it you swiped your calling card and waited for your call to answer.

If you did have a carrier preference, each of the usable carrier select buttons would have had a label over the top of the button with the carrier's name and logo. As before, you would pick up the receiver. But then you would have pressed the carrier select button of your carrier. Then you would dial your phone number. At the "bong" tone you would swipe your calling card. Much easier.

Unlike the 30A, the installer would program the options on these phones. For example, you could define the codes generated by the carrier select buttons. And many other options.

Yet another advantage of these phones was that you could get rid of the dedicated Charge A Call line to the call processor if you wanted. The phones had a program option that would silence the receiver, wait for a dial tone and then dial a phone number to the call processor. And these used just one line for the call processor and the phone call. It appears AT&T rethought the interaction between the phone and its call processor by this time. And realized that they could save one of the calls out to the call processor if they let the call processor dial the callers phone number instead of having the phone do it, like the 30A did.

When it came to programming the phones, this was done by opening up the phone, using a switch inside the phone to switch it to program mode, picking up the receiver, calling a quiet line, press the "#" key on the dial pad and then entering in option values from the dial pad. The 40A also had an optional, portable computer you could plug into a port inside the phone that would allow you to enter in options more easily. The R-TEC didn't have any optional device. But it did have a feature where by you could program the carrier select keys by having their values copied on to line 2 of the magnetic strip of a card. Then you would swipe the card to program them.

Seeing what was previously programmed, or checking what you entered, was another matter. On the 40A, if you were using the optional computer, it had a display on it to show you the digits entered. But if you didn't you could still enter option values from the dial pad. But there was no way to get the phone to tell you what was already set for an option. AT&T meant for you to do most of the programming with the optional computer. The key pad was just for small, quick changes. So they didn't have any way to hear existing values. The portable computer could have pre-programmed files on it that would be downloaded to the phone as well as direct commands to put in from the computer's keyboard.

On the other hand the R-TEC was designed for it to be done through the key pad as the main programming option. So they also had a way to get the phone to play back the currently selected option values. But this required a device that would translate the DTMF tones pumped out by the phone into digits on a display. Installers called it a digit grabber. The grabber also had the option to listen to the line as well as display digits.

When it came to the actual process of programming, that's where the similarities between the 40A and the R-TEC ended. AT&T gave the 40A a comparatively more elegant way to program options. Each option had its own 3 digit address. You would enter the address of the option and then the value or values for that option. If you made a mistake on an option, you could enter "#" twice to erase the line. To end the option change you would press "*" twice. When you were done changing all options you needed to, you entered the address for the save command and pressed "*" twice. This would save the changes. This process included audio signals to let you know your change was received. It also had full error checking for invalid values for each option. This allowed you to enter in just the things you wanted to change. The phone also had a full diagnostics routine you could run to find problems. Also, this idea of each option having its own address made this setup extremely flexible for future expansion. There were many addresses that were not defined that were there just for future options as needed.

On the other hand, the R-TEC lumped everything into a 64 digit bucket. (For full info on programming the R-TEC, see Links section.) There was no error checking and the only feedback you received was

the corresponding DTMF tone for each key pressed. You had to enter in all option values, one right after another, until they were all in. The last bits of information were the options for the 12 carrier select keys. So when you got to that point you had the option of swiping your pre-programmed mag-card or entering in the values on the key pad. That may sound small, but each carrier select button option contained 3 digits. So you were looking at a savings of 36 digits. And to make things more interesting, six of the total options the phone offered, used 1 digit each as their option value. But each of those digits was setting a combination of 4 different options in the phone. For a total of 48 different combinations of options. So when you were decoding the tones for those 6 values you had to turn to a printed table to decipher the options covered by each of the single digits. The result of all this is, that if you wanted to change one option, unless that option was the first one in the list of digits, you had to reenter all the previous digits leading up to that option before you entered in your change.

So, for example, let us say you just wanted to change the number of digits dialed for the call processor. That is the 6th option from the beginning. So you entered the following:

First option:	1 digit	Same value it already had.
Second option:	1 digit	Same value it already had.
Third option:	1 digit	Same value it already had.
Fourth option:	7 digits	Same values as they already had.
Fifth option:	10 digits	Same values as they already had.
Sixth option:	1 digit	This is your change.

You could stop there and the phone would remember all your options after your change. Just to keep you on your toes, besides all the options that could be entered in by the dial pad, 3 of the possible options were set by changing the position of three switches inside the phone. Not by selecting values on the dial pad. Not the most convenient, but the R-TEC was probably cheaper to buy. (And its kind of nice it was so primitive. As a result they needed to print a flow chart that stepped the installer through each process of the phone call and interaction with the call processor. This became the outline for this history. Without it what little we have about these phones probably would have been gone by now.)

The R-TEC has one bit of a mystery. There are six of the programmable options that have legal values of 0-9, “*” and “#”. But they also include the full DTMF tones of A, B, C and D. These are the same 6 options I mentioned above, where 1 digit sets 4 different options. As mentioned before, there is no optional computer to connect to the phone or any port on the phone for such a device. The phone’s keypad is a standard dial keypad that does not include the A-D keys. DTMF tones generated through the receiver during programming are ignored. The digits put on the mag-card only change the carrier select key values. The 12 carrier select buttons act the same as if they were the 0-9, * and # keys in program mode. So how did the installer of an R-TEC phone enter the A-D values into these options when needed? We may never know know.

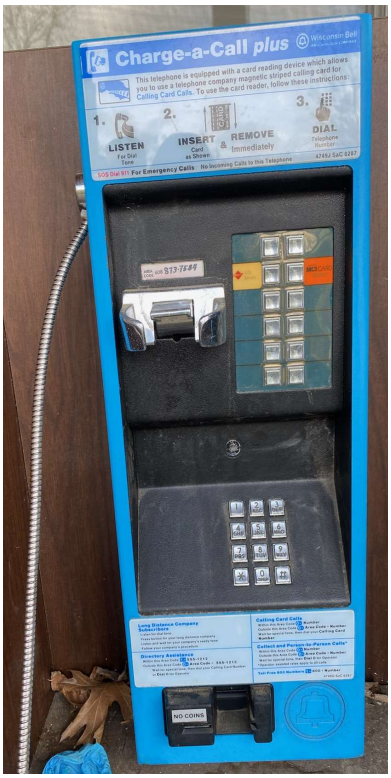
As far as checking your settings with the DTMF decoder, instead of pressing the “#” key after switching into program mode, you pressed the “*” key. The phone would start pumping out tones for each digit, starting at the beginning through the first 32 digits. Then you would have to press the “*” key again to get the last 32 digits. I’m not sure if this 32 digit limitation was due to the little computer being used in the phone, or if it was a limit of the digit grabbers of the time. Besides not being the most convenient way to set options, it wasn’t very flexible for future upgrades. Any future option changes would break it. This is probably why this phone was the last phone produced by R-TEC.

Both of these phones were made to mix and match to various different call processors, including backwards compatibility to the setup used with the 10A phones. The 40A had programming options that would allow it to be used standalone, without a call processor or a Charge A Call line, as well as direct CAC line or call processor and dial up to the call processor. The standalone option wasn't for using the 40A as a payphone. This option was for using the phone in a kiosk where you could select a hotel from several options and the phone would dial that hotel. Once connected you could talk to the desk clerk to reserve a room. Or for a rent a car kiosk. The R-TEC had the options for direct line to the call processor and dial up the call processor as well and it had its version of a standalone option. But with that option it needed a Charge A Call line as well as CO features like next call and speed dial. So it wasn't really totally standalone. It also had a 4th option that allowed for a special switch code to be tacked on before the call processor's phone number so you could open the switch and then connect to the call processor. Otherwise it was just the same as the dial up option.

The call processors that made full use of these phones had a bit more going on than the simple call out the 10A's did. The following is for these phones only. Currently there is no detailed information on how the 30A worked with its call processor. Here is the process. This will use a dial up connection to the call processor. If the processor was a direct line, the first 5 steps would be skipped.

1. You would pick up the phone.
2. The phone would silence the receiver so you could not here it open the line, wait for a dial tone, and then dial the call processor.
3. With the receiver still silenced, the call processor would let the phone know it had answered the call to it, by generating a 380 Hz sine wave tone.
4. Upon receiving the tone, the phone would pump out its own phone number to the call processor using DTMF tones. Remember, caller ID was not out every where yet. And if you had more than one payphone calling into your call processor, this was the best way to uniquely identify each phone.
5. The call processor would acknowledge that it had received the phone number by sending a second 380 Hz sine wave tone to the phone. And then it would begin to generate a fake dial tone.
6. Upon receiving the second tone, the phone would stop muting the receiver so you could hear the fake dial tone. So you would key in the phone number you wanted to call.
7. The call processor would detect the phone number and then give you the "bong" tone.
8. This would prompt you to swipe your calling card.
9. The phone would then pump out the calling card digits as DTMF tones to the call processor.
10. The call processor would validate your card. If it failed you would get a fast busy signal and that would end your call. If the card validated, then it would continue to the next step.
11. The call processor would open a line and dial the number you want to call. When it detected the line is connected, then it began timing the call.
12. When you hung up the call, the call processor would use the time of the call and the correct rate band for the call to calculate the total charges for the call and send it to billing.

If you decided to make your call with your preferred carrier, steps 1 – 5 would be the same. On step six, instead of keying in the number you wanted to call, you would press the carrier select button for your carrier. This would generate a 2 to 3 digit code. This code would be sent as DTMF tones to the call processor. This code tells the call processor which carrier's phone number to dial. The processor would dial the carrier. Once the carrier's call processor answered you would enter in the number you wanted to dial and the preferred carrier's call processor would handle steps 7-12 and the original call processor would just act as a pass through between the phone and the other carrier.



Honorable Mention

And then there's this guy. This seems to be a phone that was either done or contracted to be done for Wisconsin Bell. It is very cleaver! They took a 10A case and made carrier select keys that could fit in the instruction card window of the 10A. Then they cut a rectangular hole in the bottom left of the case for a hefty card reader. Slap some stickers as instruction cards on the top and above the card reader and you have a new payphone. Past that, not much is currently known about this phone. It seems like it should have all the same functionality as the 40A and R-TEC. But currently there is no information on this.

Public Phones The End of the Line

In the 1990's cell phone contracts required monthly payments as now. But you were charged for each call you sent or received as well. Same for texting, although it was cheaper than voice calls. In Europe this is how people's landline service was billed as well. So cell phones were growing faster there than in the US. Here we were having a hard time moving to a system that was going to charge us for each call on top of our monthly bill. As a result it was growing much slower here.

So you think that payphones that allow you to pay with a calling card and billing it on your home phone's monthly bill would be pretty popular while you're out and about. Instead of the other option of being sure you always had change around to drop into a standard payphone when you needed it. The problem is that the calling cards were treated very similar to regular credit cards. They had an annual fee on top of the cost of the phone calls. I know this because, as a struggling collage student at the time, I thought I'd apply for one. But I had to pass because I didn't have enough payphone calls to justify the annual fee. Only people that had a large volume of payphone usage, used them. So the only people frequenting these types of payphones were traveling business people and truck drivers. As a result it never caught on outside that group.

With this reduced audience, only AT&T was the major player here. There is a second player. But they were contracted through AT&T to make their phone. From a consumer point of view you wouldn't know the difference. Though there were still other little companies that were slapping together phones and fax machines and other combinations to work in this business traveler market. But they are not relevant to this history because they didn't work with phone cards. They were credit card only. So by this time AT&T is the only player standing.

It seems that AT&T didn't like people getting a hold of their used payphones back then either. And would destroy them rather than sell them. Which is probably another reason we don't have much on these phones and why they are so rare.

Around 1988 AT&T seems to have decided that "Card Caller" wasn't the best marketing name for their new phones. They started calling the phones after the 30A, "Public Phones". They even went so far as to re-brand there older equipment. If you look at the 11A earlier in this history you can see that its title card says "Public Phone".

But the first new phone to receive this new name was the payphone in this picture.. This phone was not made by AT&T. It was contracted by AT&T through Norand Data Systems. Norand called it the DMC. And installers referred to it as the DMC set.. But the name to consumers was the Public Phone. It was only in a desktop model. They didn't have a wall mounted model that I know of. So this would have been found in airport lounges and hotel desks only. But, interestingly, this phone had the option to mount it vertically on the wall too. I guess this phone was to replace the CSTM phone. And that AT&T still hadn't gotten around to making their own desktop phone.

Oddly the DMC had no instruction card. The dialing instructions were painted right on the phone at the factory, similar to the cover panel on the ECAC. But it had one programmable function button. Above this button is a window similar to those the local phone number is put into. But in this case it is the function of the function button. In the picture it has been defined for Hilton hotel reservations. For

all other information it had a scrolling LCD display at the top. It used a card reader to make sure of that magnetic strip, and had the dedicated new call button as the 30A did. And a loudness button. The receiver cradle is off picture to the left.

This phone probably used a similar setup to the 40A and the R-TEC phones. It would call the call processor and pass it the information. Then the call processor would connect the outside line and dial the person's number.

The program options for this phone were done by AT&T's computer calling this phone and setting up the features. So what program options were available for this phone have been lost to history. The messages displayed on the LCD display were setup else where too. When it was time for a message change, the installer wold be sent an EPROM. They would pull the existing chip out of the phone and replace it with the new one.

Finally, just 2 years after the DMC, AT&T released their own desk top phone as the Public Phone 1000 Plus. I believe that the AT&T model may be 50A. But I don't know. As with all desk top versions, it was meant for use in airport lounges and hotel desks. It was similar in appearance to the DMC. But the LCD display was replaced with a blue LED display. The "L-1402" sticker in the picture would not normally have been there. The painted on instructions were replaced with a more reasonable, removable instruction card. It included the same "Next Call" dedicated button but added a "Speed Dial" button. This was for special numbers that could be advertised on the LED display. This allowed the phone to have more than one choice for special numbers instead of the single function button the DMC had. The "Loud" button was replaced with up/down volume. AT&T also threw in a mute button on this phone. And it included a data port for using your laptop's 56K modem or a portable fax machine. And the card reader was replaced with a card swipe.

This was the first phone in the Charge A Call line that was independent. For this phone and the 2000 and 2000i the call processor was relegated to just being called by the phone to validate cards. By this

time computers were small and smart enough to handle almost all call processes on their own. So not only were these phones becoming “smart” payphones, but just about all payphones were moving that way. So the call and billing info were kept on the phone. AT&T had software on their computer and a modem. This allowed them to call the phone periodically. Or the phone could call them. When they did, the phone would download its information to the calling computer. And that calling computer would handle billing and collections.

This was the first time AT&T had a data port too. It took quite a bit of engineering to pull this off back then. They had to figure out a way of doing it so that the port was dead until you entered payment.

The top of the Charge-A-Call payphone line was the Public Phone 2000. The AT&T model number was 60A. Released towards the end of 1991, it had a card reader, dial keypad and a receiver with an armored cord as all the wall mounted phones before it did. But it reintroduced the CRT display. This time in color and with graphics. And it had a built in, full QWERTY keyboard. You don’t see the keyboard in this picture because when you bought these, you bought the keyboard module separate from the phone unit. This is just the phone unit. You can see units with keyboards on the Links section. It did not have a 10 key keypad though. It still included the data port from the 1000 and It had some advertisements on it. No, not web based, at that time the World Wide Web was just getting started. But it could offer web-like features like database access. But the big selling point for this phone was you could send and receive email from it. Email had caught on like wild fire at this time for the traveling business folk. AT&T went back to a card reader for this phone. But the trusty “Next Call” button is there just to the left of the card reader. There is an instruction card window just above the receiver cradle. And they have 4 selection buttons to the right of the CTR display. Menu selections would line up on the display, parallel to these buttons. So you could make your choices. The square recess below the receiver cradle, with Styrofoam balls stuck in it is just where the bottom of the receiver rests.

The case was a high impact plastic instead of metal. And there was a clear plastic cover over the CRT screen that could be cheaply replaced if it was vandalized. Internally the little single chip computer had

grown into pretty much a full IBM PC clone that was running some form of Unix. The operating system was graphical looking kind of like Microsoft Windows. Probably some version of X-Windows. But was not mouse driven. Internally the CRT display was armored in a metal case as was the phone's hard drive. I only know this because I use to own one. The phone came in black or tan. It was wall mounted. Like the 1000 before it, the 60A was independent of a call processor.

A few years later AT&T came out with the Public Phone 2000i, "i" for internet. It's model number is unknown. This phone had everything the 60A had plus a touch pad for mouse control and full web access. It also had a touch screen that was a bit larger than the 60A. And it introduced an IR port to support Infrared devices. This time the operating system was Windows NT 4. And the phone could accept dollars as well as cards. The first, and only, Charge A Call phone to take money as well. So presumably it was armored better than the 60A. I have been unable to find any pictures of this phone. But there is a complete description in the Links section.

You would think that this story would end like all other payphone stories with cell phones killing them off. But in this case that's not true. Everything seems to indicate the 2000 and 2000i were very popular with the business travelers. What finally killed the Charge-A-Call line of phones was data service providers. The web was still trying to get traction. But at the time their were data services offering web-like features like chat rooms and other things. The big ones were The Source, America On Line (AOL), and Compuserve. And the biggest money maker for these services was email. And the biggest segment of that was business travelers. These data providers took exception to AT&T offering the same services and they filed a law suite. And AT&T stopped making any more Charge-A-Call phones from that time on. The dream of coin-less payphones of the future died then and there. Existing units languished for a while. But eventually they disappeared. But if not for the service providers, these phones probably could have lasted several more years before cell phones would be up to supplying these same features to business travelers.

That ended this small pocket of payphone history that, even in the payphone industry, people have forgotten about. Which is sad. Because these phones seemed to always be pressing what technically could be done before anyone else.

Links

AT&T Archives: 100th Anniversary of the Payphone
YouTube Video
https://www.youtube.com/watch?v=3m8hPm4YqxI

Mike's Vintage Telephones
10A Payphone Picture.
http://www.mvtelonline.com/items/Single%20Slot%20Payphones/10A%20Charge%20NOS

Telephone Tribute, Pay Phones & Phone Booths Page
From the former AT&T web site at ***http://www.att.com/press/1091/911002.csa.html*** This link is no longer operational. But its text is reproduced on the Telephone Tribute phage.
http://www.telephonetribute.com/payphones.html

The Oklahoman News Article: AT&T Unveils New Card Caller Phones at Airport
Article talks about the first roll out of the phones in the Oklahoma area in 1984.
https://oklahoman.com/article/2086656/att-unveils-new-card-caller-phones-at-airport

Pictures of the Public Phone 2000 Pictures
Also contains pictures of competing, credit card only devices.
https://www.google.com/search?q=public+phone+2000&source=lmns&bih=625&biw=1366&hl=en&ved=2ahUKEwjb--3U8ZPpAhUEb80KHUulD0wQ_AUoAHoECAEQAA

The Payphone Project: Payphones of the Future, Y2K Style
Article contains a great picture of the Public Phone 2000 as well as good information on competing credit card only devices of the time.
https://www.payphone-project.com/payphones-of-the-future-y2k-style.html

AT&T Public Phone 2000i – Old Skool Phreak
No pictures of the 2000i, but a very detailed description of its features.
http://www.oldskoolphreak.com/tfiles/phreak/pp2ki.txt

Editor & Publisher: AT&T ROLLS OUT NET-ENABLED PHONES
Article on the roll out of the Public Phone 2000i
https://www.editorandpublisher.com/news/at-amp-t-rolls-out-net-enabled-phones/

Dual-Tone Multi-Frequency Signaling
More information on what DTMF is.
https://en.wikipedia.org/wiki/Dual-tone_multi-frequency_signaling

R-TEC Systems Payphone Manual
Contains exploded diagrams of all R-TEC phones and installation instructions. An extensive troubleshooting flow chart that was the inspiration for this history. Templates for instruction and title card spaces. And programming documentation on the original computer chip as well as REV B and all revisions after B.
http://vtda.org/docs/telephony/Reliance/R-TEC_Charge-Card-Phone.pdf

AT&T Genesis Telesystem Phone Parts
https://atcaonline.com/pictures/?id=528820919

AT&T Genesis Telesystem Phone Cartridge Port(s)
https://www.adsausage.com/electronics/phone/ad.cfm?id=34856

AT&T Genesis Telesystem
Discussion forum giving genera descriptions of the use and some features of this phone from a former owner. Doesn't cover using it as a Charge A Call though.
https://sundance-communications.com/forum/ubbthreads.php/topics/615345/at-t-genesis-telephone

Appendix A
How to Emulate a Call Processor with Modern Stuff

The following is how to emulate a call processor for your phone. This has only been tested with R-TEC phones. But should work for 40A phones as well.

Items You Will Need

- *1 or 2 Smart Cell Phones* This sounds expensive. But you don't need cell service or a GSM card. The phones just have to be able to work with WiFi. So if you don't have one or two old phones laying around, you can usually buy very cheap ones from Walmart.
- *Home WiFi system* - Any more, most homes already have this.
- *Telephone line (land line) Emulator* – This is the most expensive thing. The only functions it needs is to generate a dial tone and allow one phone to dial up the other. And then generate a ring to the other phone. So you should be able to find a deal on Ebay for one of these. Optionally, if you have a land line and a friend who also has a land line, you could use this real line ot do the same thing. But it will take a bit of coordination between the two of you to do it.
- *Tone Generator Phone App* – You can usually download one of these for free. I use Android phones and was able o get the "Hz Frequency Generator". It was free with streaming advertisements. Make sure the app can generate 380 Hz. And make sure that tone is a sine wave. Any old 380 Hz tone will not work. It must be a sine wave.
- *DTMF Decoder App* – Some of these apps have the option to generate DTMF tones as well as decode them. Your choice. I use an Android app simply called DTMF. It does both decoding and encoding (generating) DTMF tones.
- *Regular Land Line Telephone* – Any functional and even cheap phone will work. You can usually get them very cheap from your local thrift store.

Setup

1. Download the Tone Generator to one of the phones.
2. This is optional. If you want to decode the tones that will be generated by your Charge A Call phone, you will need this step. If you are good just hearing the tones or do not have a second smart phone to apply to the cause, skip this step. Download the DTMF decoder to the second phone.
3. Plug in and setup your telephone line emulator.
4. Plug the Charge A Call payphone into one line of the line emulator. If your emulator is not bi-directional, plug the payphone into the line that calls out.
5. Plug the regular phone into the second line of the line emulator.
6. Program the Charge A Call payphone is programmed for dial up operation. So that it dials up the call processor. And that the number call processor number programmed into it is the one that will work with your line emulator.
7. Lay the two smart phones out so that you can sit the receiver of the regular phone over both of them. The speaker of the phone with the tone generator should be set so that the part you talk into of the regular phone's receiver will be over it. And the mic of the second smart phone should be under the part of the receiver you listen to.
8. Hang up the regular phone and the payphone.
9. Make sure both smart phones are on and that the two apps are loaded and running on their respective smart phones. And theat the correct options are set on them.

The regular phone represents the call processor. The two smart phones represent the internal operations of the call processor.

Become a Human Call Processor

1. Pick up the payphone receiver.
2. The payphone will dial the regular phone and it will start ringing. Pick up the regular phone's receiver and place it between the two smart phones. If your line emulator also does a caller id signal, you might want to wait until after the second ring to pick up the phone.
3. Turn on the tone generator for a second or two. Then turn it off.
4. You will hear the payphone pump out it's local phone number you programmed into it. These digits will be captured by your DTMF decoder.
5. Once all the digits have been generated by the payphone, it waits for the second tone from the call processor. Turn on the tone generator again for a second or two and then turn it off.

At this point, if you want, you can swipe a calling card in the card reader or swipe of the payphone and the phone will pump out DTMF tones of the card's number. These can be captured on your DTMF decoder.

That's it. If you listen to the payphone at step 1 or step 4, the sound will be muffled. But listening again at step 5 all will be clear. This is because the payphone had done all it needed to. It is now all between you and the call processor. All the fake dial tone and bong signal and so on was generated by the call processor.

To do a carrier select, just press a carrier select key instead of swiping a card. The phone will generate the 1 or two digit code you programmed in as well as one or two special characters like a DTMF "C" and/or "#" before and/or after the code. Again, you can pick them up with your DTMF decoder.

In our modern times we see a computerized thing like these Charge A Call payphones, we think that they must have to use some kind of very complicated and hard to understand process to communicate with a call processor. But the phone company always tried to keep it as simple as possible.

The above is just one example on how to do this. Once you pick up the normal phone, the payphone is going to patiently wait until it hears the tone, you hang the payphone up, the power goes out or you die of old age. There is no time out delay or any other reason to rush. So you cold just pick up the receiver of the regular phone and calmly place the tone generator smart phone against the receiver and turn the tone on and then off, if trying to lay the receiver across two smart phones is too awkward for your. And there are other variations. You could try.

Security Wrench

You don't need an original security wrench to open your phone. They are easy to find at any ACE hardware store. I got my first one there. It was just a singe bit I was able to put into my reversible electric drill. I lost that one. So I went back to get a second one. That time they didn't have any single bits. But I was able to buy a nice securit screw bit set by DeWALT. It had the standard security screw size as well as all other sizes and several other types. It was only $15 US.