Telecommunications Heritage Journal

Issue number 82 Spring 2013 ISSN 1353-0097

THG

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Introduction

Figure 1: Images of the remarkable ATEA phone

One ATEA phone has been manufactured in slightly different versions from the mid-1930s up to the mid-1960s, almost 30 years. Since a lot of these phones are offered internationally by resellers, some background information might be interesting for our readers.

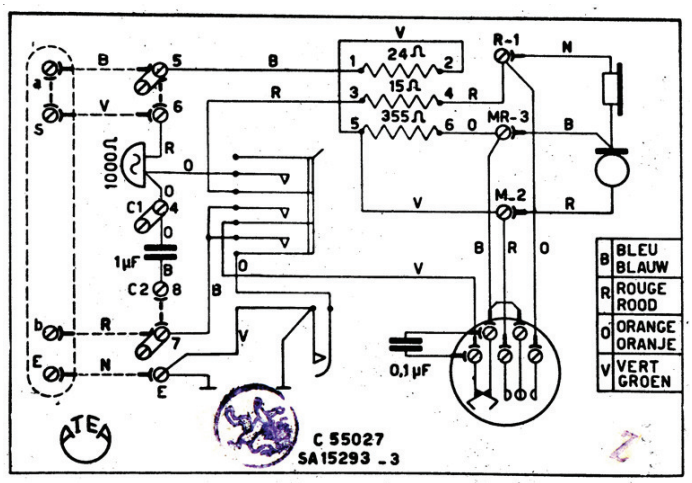


Figure 2: Circuit diagram, version 1957

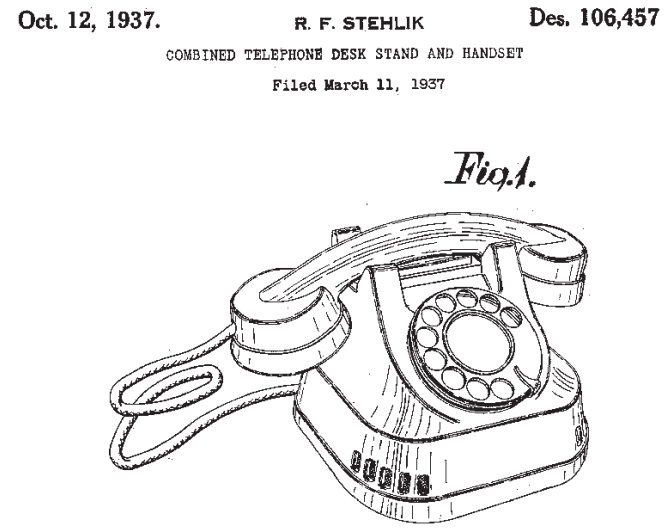
Origin: Mid 1930s

Figure 3: Automatic Electric monophone AE34

The origin of the model dates from the mid-1930s. Either because of the spirit of the times or because of the connection with the American mother company Automatic Electric, there is a marked similarity with the AE Monophone AE34.

The ATEA design was patented in Belgium in November 1936, and filed for patent in the US in March 1937, see Figure 4.

R.F. Stehlik was an American citizen (coming from Automatic Electric, but residing in Belgium), who was Chief Development Engineer at ATEAin Belgium in the 1930s.


Oct. 12, 1937. R. F. STEHLIK Des. 106,457

COMBINED TELEPHONE DESK STAND AND HANDSET

Filed March 11, 1937

Fig.1.

Figure 4: US patent request 106,457 in March 1937 by R.F. Stehlik

The model was manufactured in Zinc alloy (also known as "Zamac") ; more about that later.

The standard colour was black, but in Belgium it was also available in white. Figure 5 shows that the RTT (Régie de Télégraph & Téléphones) offered its clients a small home network consisting of two white models of this special ATEA telephone. The company name "Automatique Electrique de Belgique" is proof that this model dates from before June 1939.

The white version was intended to be used in a medical environment, where everything was white.

The Bakelite handset, with his typical shape dates back even earlier. It appears for the first time in 1928 , and is used in different designs afterwards. It was nicknamed "the hambone phone" by ATM people in the 1930s, because of its shape!

US Patent 1,751,255 was filed on March 6, 1928 by R.F. Stehlik, an American engineer working on ATEA. The patent was entitled "A cradle type telephone desk set".

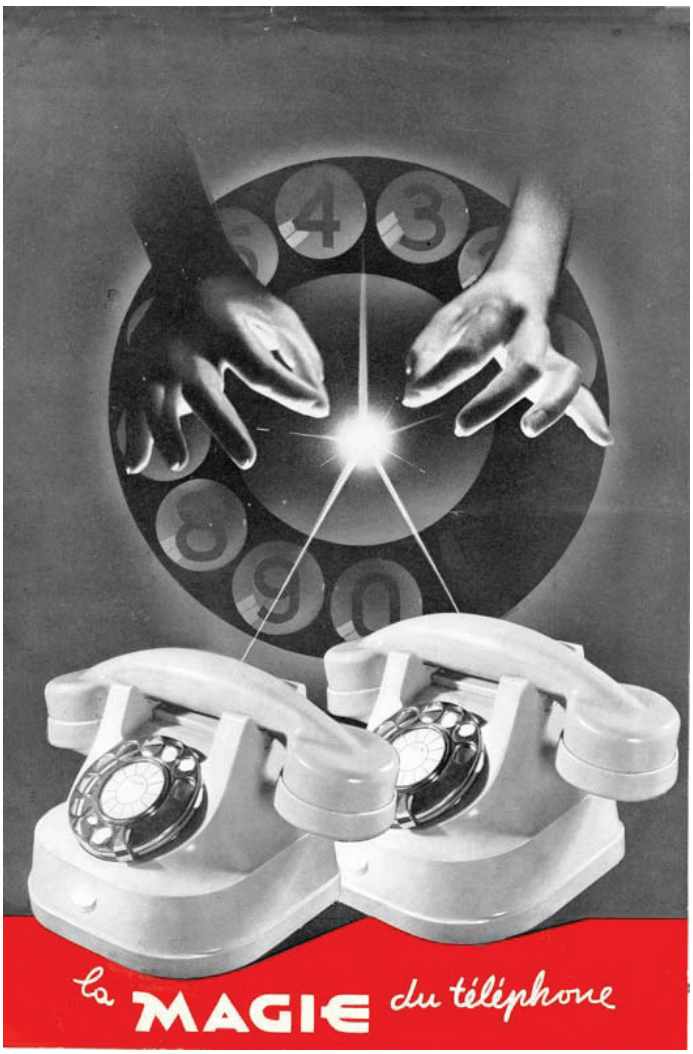


Figure 5: "The magic of the telephone" ATEA leaflet, late 1930s.

The AE Type 24 Dial as a Component

Figure 6: AE type 24 dial, a basic component

A basic component for this model was the "type 24 dial", a rotary dial designed by Automatic Electric in the 1920s. The rotary dial was implemented by various companies until the early 1960s:

- Automatic Electric, Chicago, USA
- Eugene Philips Electrical Works, Canada (later became Automatic Electric)
- ATM Liverpool, UK
- Autelco, Milan, Italy (later became GTE Telecommunicazioni)
- Atea, Berchem, Belgium

Whenever I see the blueprint for this component (see Figure 24) , I can't help but admire the specimen of elec-

tromechanical ingenuity that it involves.

Figure 7: The ATEA phone in a 1940 calendar

During World War II

An ATEA calendar published during the Second World War illustrates that this is a standard model. The page for December 1940 shows a diagram of a PABX in which this model is used.

Telephone in Use by the "Wehrmacht"

In May 2008 what appeared to be a standard ATEA telephone like that above was put on auction on eBay. However, there was an eagle on the bottom of the phone! (See Figure 8).

That revealed that the telephone must have been in the possession of the "Wehrmacht", in other words, the German Armed Forces during World War II. The seller provided the following additional information:

"I unscrewed the base to have a further look and there is a multilingual wiring diagram and in the top corner is the name ATEA C20020 and TIET under that."

This model has the same circuit as the pre-war model (C20020) and also has multi-lingual notes (in French and Dutch). It is therefore most likely a standard RTT model that was used by the "Wehrmacht" for the Belgian telephone network. I imagine that the stamp on the bottom was added, considering that the German Armed Forces had the habit of identifying everything that was "theirs". They probably did not realize that the RTT did not sell, but only rented, telephones. Or was this some regulation during the war? The meaning of the circuit code "TIET" is unknown to us.

Figure 8: "Wehrmacht" telephone, bottom view, showing eagle

A Version for Siemens

During the Second World War ATEA reported to Siemens. On April 1, 1942 a Siemens manager, Eugen Merkel, was named general manager. In that period ATEA telephones were produced for Siemens. German collector Dietrich Arbenz has such a phone.

Figure 9: German version of the phone

This phone is the same phone as shown on Figure 1. The "styling" of this telephone followed the standard ATEA styling of the period. The notes on the built-in circuit diagram are in German. On the bottom (Figure 9, right image) is a Siemens part number. Dietrich Arbenz explains:

regarding " Fg. Sk. P. 54 S 258 9/Y":*(this is absolutely typical for Siemens)*

- "Fg" stands for "Fernsprechgerät" i.e. any telephone station and switching material.
- "SK" stands for "Sammelkarte" - a Sammelkarte lists every detail to produce a specific phone, including color of the housing, length of line cord etc.
- "54" was till recently the number indicating within all Siemens, that this unit is a telephone (on newer phones, you find instead "S30054").
- the "258" is a sequential number.
- The letter "P" in its position is totally unknown to me; it may be an indication that this phone was not produced in a regular Siemens factory.
- 9/Y (actually, in Siemens code, 9/Y stands for Sept. 1943).

Figure 10: Explanation of the Siemens part number for the ATEA phone

As a rule such a number was only placed on telephones that were produced for Siemens PABXs and private business networks.

Note: The circuit diagram inside the telephone bears the circuit number C20021, which can also be found in the early 1950s phones. This illustrates that:

- the telephone for the Siemens market needed no circuit modifications
- this telephone's circuit was "stable" for years.

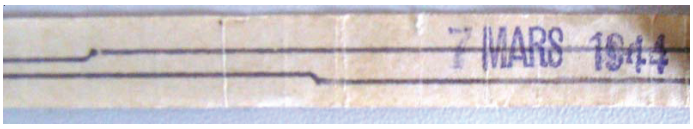


Figure 11: Dial test report on paper tape , a standard Siemens practice

Each phone manufactured for Siemens had an inspection paper tape inside, indicating the dial worked well (see Figure 11). This was standard Siemens practice in the 1940s and 1950s.

Consideration of the Siemens Design

In 2006 Christoph A. Hoesch's book entitled "Siemens Industrial Design, 100 Years of Continuity in Flux" [Ref 2] was published in a bilingual version, German and English. On pages 328 and 329 of this book there is an illustration of "our" telephone incorrectly labelled as a 1941 Siemens design, the so-called M41, as successor to the Siemens W38, with the following wording:

"With the conversion of Siemens production to meet the needs of the wartime economy, telecommunication and the new fields associated with it were once again placed in the service of the military. This did not mean that design activity ceased immediately, however. As late as 1941, Siemens developed a telephone known as design model 41. However, no serious efforts were made to develop the prototype of this model, with its markedly rounded corners and narrow horizontal edges."

This information was purely speculative by the author, and no supporting documentation could be found in Siemens archives nor be provided by the book's author. To the contrary, it is now clear, that the origin of the telephone dates back before 1941, as shown in this document.

Siemens Use?

It is not very clear for what purpose Siemens used this telephone, or how many were manufactured.

Dietrich explains: "The German 'Reichspost' never offered this model as a standard telephone, nor was it produced to fill orders from the 'Wehrmacht'." Was this telephone used by the German administration in the occupied countries?

Whatever the case, in 2011 there were four specimens of this telephone with the Siemens stamp known to German telephone collectors. The telephones were normally furnished with this Siemens stamp only if they were sold for use within Siemens PABXs.

From 1940 to 1955: RTT and Private Networks

Figure 12: The phone in a 1940 catalogue

We find the same telephone in a 1940 catalogue under the name "ATEAPHONE 50" but — true to ATEA tradition — in several versions. One could choose:

- a "body" in Bakelite or Zamac (zinc alloy)
- with or without an earth button
- with or without rotary dial, eventually to be installed on site
- adjusted or not adjusted to the tropics (Belgian Congo, etc.)

In the beginning of the 1950s this telephone was quite popular with the RTT. When my parents applied for a telephone for their newly-built house in 1951, this was the telephone that they received. The RTT always ordered partially from ATEA, and partially from Bell Telephone, both Antwerp firms. In the 1955 Service Manual for RTT technicians, both manufacturers' telephones stood next to each other like brothers.

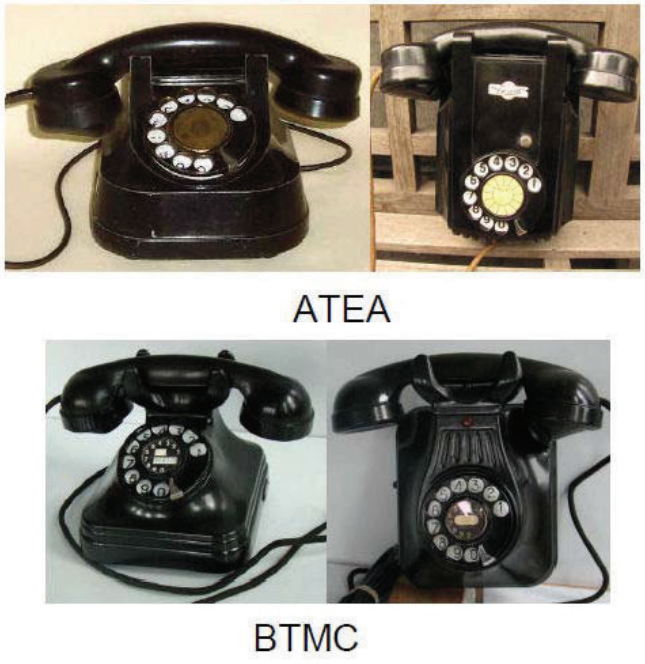


Figure 13: RTT phones early 1950s, supplied by ATEA and BTMC

The Temporary Association BTMC/ ATEA

The RTT rented the telephones shown in Figure 13 to its customers. On the top of each, the name and logo of the manufacturer were clearly visible, and the telephones differed from each other. Furthermore, both suppliers had a wall unit in their collection. The different phones with their own brand names must have been a nuisance to the RTT. A need for a uniform telephone developed, with the RTT profiled as the supplier to the end customer. This was accomplished by the so-called "temporary association BTMC/ATEA", which presumably was founded in 1955.

Politics?

In the wake of the establishment of this association, both BMTC and ATEA realized that, with a company only in Flanders, it was no longer politically feasible to land national contracts. Each of the companies built a factory in the neighbourhood of Colfontaine (South Part of Belgium) where, for the most part, telephones were made. It was most likely no coincidence that both companies chose to establish a Walloon branch in the Minister of Telecommunications' electoral district.

The 1956 "poste nationale"

The above-mentioned temporary association designed the 1956 "poste nationale" based on the ATEA telephone that we have described above, but with a few changes:

- the typical ATEA handset was substituted by one with more slender ends
- a metal handle was added
- a RTT sign or lion was added on the front
- See Figure 14 for details.

This telephone, which was known by the RTT and the suppliers as the "U56", was supplied by both manufacturers, without the manufacturer's logo, even though they were identical. Consequently, there was no difference between them to the end customer. Insiders know that there was an "A" stamped on the bottom of the ATEA telephones, and a "B" on the BTMC telephones (see Figure 15). On the front there was either a lion or the RTT logo.

It existed in both black and white.

Figure 14: The 1956 "poste nationale" , known as "U56"

Figure 15: Label RTT-56 : ATEA assembly , Label RTT-56B: BTMC assembly

Version for Private Networks

As agreed by contract, both manufacturers supplied the RTT with the uniform "poste nationale" without their logo. ATEA still supplied its earlier phone with the typical ATEA handset and the ATEA logo on the back for Private Network customers. See Figure 10. I have a specimen that was made in 1957.

Raw Material: Zinc Alloy (Zamac)

The raw material for telephones has typically evolved from (approximate dates):

- wood (1880-1930)
- metal (1925-1935)
- Bakelite (1930-1960)
- thermoplastics in various forms (after 1955)

When the aforementioned telephone was developed, the somewhat different "zamac" (sometimes referred to as "zinc alloy" in English) was used as raw material. [See Ref 3 for more information]

ATEA's parent company "Automatic Electric" of Chicago used zinc alloy to make the cradle on monophones from 1925. This continued until the early 1930s when the alloy was dropped in favour of Bakelite. The zinc alloy cradle became optional after the change to Bakelite. In a 1934 AE catalogue we find an such an optional zinc alloy cradle on Dial Monophone Desk Sets, Types I•A and II•A. Around 1938 the wallphone AE 43 was designed, and this one used zinc alloy for the telephone body. Its successor in the 1950s, the AE 83, did too. The Model 43 Spacemaker was first introduced in 1938. These unique phones were designed specifically for cramped environments like small apartments.

Figure 16: Automatic Electric Model 43 Spacemaker with zinc alloy body

However, in the same period there were two other telephone manufacturers that did use zinc alloy:

- Western Electric used zinc alloy as raw material for its WE302 from 1936 to 1941. However, when the USA became involved in the Second World War after December 1941 (Pearl Harbor), metal became an important commodity for the military, and a switch was made to thermoplastics.
  - "The WE302 continued in production as a metal zinc alloy based phone until December 7, 1941, Pearl Harbor Day. With the entry of the United States into World War II, metal would become an important commodity, and so Western Electric had to turn to another durable material for a telephone base - Thermoplastic" [Ref 4]
- Stromberg Carlson also used zinc alloy for its 1243 in 1940, but had to switch over to Bakelite for the same reason.
  - "Steel Stromberg Carlson automatic styles were rather parallel amongst manufacturers through the years between telephone manufacturers with automatic styling. To compete, Stromberg Carlson

came out with the 1243 in 1940. It was similar to the W.E. 300 except for "sawed off " corners. It is one of the few, if not the only phone ever made of a strong, zinc alloy. This was designed to ward off rust. However, when subject to moisture, it produces corrosion all its own."

This was before the war. During the war ATEA continued to favour Zamac, also for the Siemens telephone. The mystery is how they could continue to find this raw material in war conditions.

Zinc Alloy or Bakelite?

- In the 1940s ATEA offered the choice: zinc alloy or Bakelite but, in addition, other phones, such as the system 600 phone (a group of telephones for the self-employed and for small businesses), were also made in zinc alloy. See Figure 17.
- When the "poste nationale" U56 was designed in 1955, zinc alloy was chosen, whereas all the other telephone suppliers already worked with Bakelite or thermoplastics. Why?
- When Siemens attempted to sell its phones to the RTT in the 1950s, they made a special version of their standard Bakelite telephone. This phone, known as Fgtist 274a, "Zinkausführung für Belgien" and expressly intended for the Belgian market, was in zinc alloy. It is included in a summary listing of Siemens phones (so Dietrich Arbenz told me). Very likely Siemens never supplied this telephone in quantity.

Figure 17: System 600 ATEA phone also made of zinc alloy

Was the choice of material an RTT requirement? The RTT was without question the largest customer for the "system 600 phone". Did the RTT perhaps opt for robustness? Or was the choice determined by the "old" RTT specifications?

The use of Zamac (zinc alloy) had advantages in certain cases. One was a "Faraday Cage" shield effect. Later phones in ABS (plastic) had to be weighted with a metal plate for stability, which made them more expensive.

Finding source people who can comment on the decision regarding choice of material in the 1950s is a problem because the persons who were directly involved with the telephony division at that time are no longer with us.

Figure 18: 1950s door loudspeaker, ATEA

Zamac was also used at ATEA:

- as material for the frame of the Strowger switch
- as raw material for the 1950s door loudspeakers
- even the renowned "tiretten" (zippers) of the Ritz brand, manufactured at ATEA from 1929 to 1965, were made of this material

The supplier of the material was Schippers-Podevyn of Hoboken, Belgium. They made these semi-manufactured articles based on an ATEA drawing. We find the following about this supplier :

"About 1922 the Schippers Podevyn foundry laid the first foundation of what is now the MGG Antwerp location. This foundry was engaged in all sorts of cast work, such as sand-, coquille-, low pressure- and high-pressure casting, all in diverse non-ferrous alloys such as bronze, copper, magnesium, zinc, and aluminium ranging from very accurately measured casting parts of a few grams to simple street manhole covers. From the moment that the new location was in operation in 1924 until now, not only cast work has been the major output offered on the market, but also quite a few finished products. These activities continued until 1977 when Lennerz took the company over." [Ref 5]

Overview of the Telephones

Although this telephone was produced for almost 30 years, (from mid-1930s to the mid-1960s) the number of versions is relatively limited.

Model	Figure	Material	Color	Circuit no	Company logo	Manufacturer	Period	Hand set	Notes
Telephone w/o front button	Figure 12	Zinc alloy; sometimes bakelite	Black or white	C20020 or C20021 (1)	ATEA on the back (2)	ATEA	1936-1966	Typical ATEA	Typical RTT
Telephone with large button in front, with a red dot inside	Figure 1	Zinc alloy; sometimes bakelite	Black or white	C20020 or C20021 (1)	ATEA on the back	ATEA	1936-1966	Typical ATEA	Typical for Private Networks
Telephone with white button and carrying handle	Figure 14	Zinc alloy	Black or white	??	RTT or little lion on the front	BTMC and ATEA	1956-1966	"Stylized receiver"	RTT U56

(1) C20021 certainly from 1943 to 1954. A 1957 telephone has circuit C55027, which is electrically the same

(2) ATEA company name on the logo depending upon the year of production:

- "Automatique Electrique de Belgique" until June 1939.
- "Automatique Electrique" as of June 1939.

Refurbished Versions

The RTT had a monopoly on telephones in Belgium up to the 1990s. When old telephones were replaced, they did not want these telephones to be reconnected illegally to their telephone network. So RTT looked for resellers abroad, and sold them the U56 in big quantities.

One, or probably more, of these resellers started to refurbish these phones, and make their own modifications to create "unauthorized" versions.

Typical are:

- A copper version, such as Figure 19. I have seen on eBay also copper versions of the system 600 phone as of Figure 17 as well.
- A version with decorative letters, such as on Figure 20. Although these let-ters refer to Bell Telephone Manufacturing Company, I have seen on eBay a phone with the decorative BTMC letters at the side, and the ATEA logo as on Figure 1 at the back of the phone!
- Different colours. I presume the same reseller as the one of the decotprative letters refurbishes phones in different colours, see Figure 21 for an example.

Most of these refurbished phones look very nice, but are not authentic. So I don't want to "blame" a reseller, but just tell collectors these phones are not original manufactured like this.

Figure 19: Copper version of the Belgian phone (not authentic)

Figure 20: Version with decorative letters (not authentic)

Figure 21:Repainted version (not authentic)

Acknowledgements

Thanks to the following people for their assistance:

- Dietrich Arbenz (ex-Siemens, collector) from Munich, Germany for his infor-mation on the "German version" of this ATEA phone, and information of the Siemens Archives.
- Dick Beilke (ex-Automatic Electric) from Sycamore, IL, USA for his support in reviewing the final English version of this document.
- Jack Ryan (telephone historian) from Australia, for his information on the use of zinc alloy by Automatic Electric
- Joann Geybels from Edegem, Belgium, for her translation into English of my original Dutch article.
- The friends of the ATEA museum for their support in writing this document.

Appendix: additional leaflets and catalogue entries

FOR AUTOMATIC AND C. B. WORKING DESK TELEPHONES:

ATEAPHONES

TYPES 50 AND 51.

Desk telephones for automatic and C.B. working. The Type 50 is the standard desk set for regular central office connection. The Type 51 is of entirely similar construction but with the addition of a press button for use with ATEA and other P.A.B.X.'s (private automatic branch exchanges) employing the earthing button principle.

Both types of instruments are available with case of either moulded bakelite or die-cast Zamak (zinc alloy) stove enamelled. The bakelite set has the advantage of lightness and the metal the advantage of robustness.

The handset is of bakelite construction with moulded-in wires and both the transmitter and receiver elements are of the capsule type. The dial is the well-known AUTELCO Type 24 model and the ringer is of the latest ATEA high-power sensitive pattern with dual tone gongs.

TABLE OF STANDARD MODELS

TYPE	CODE	CASE	DIAL	RINGER	ROSETTE CORD	REMARKS
50	A.1084	Bakelite	3-Spring	1000 Ohm.	3 Cond.	Standard
50	A.1099	Bakelite	3-Spring	1660 Ohm. biassed	3 Cond.	Party Line.
50	A.1093	Zamak	3-Spring	1000 Ohm.	3 Cond.	Standard
51	A.1573	Bakelite	3-Spring	1000 Ohm.	4 Cond.	Standard
51	A.1572	Zamak	3-Spring	1000 Ohm.	4 Cond.	Standard

WEIGHT: Type A.1084 2 Kilograms (4 lbs. 6½ ozs)
Type A.1093 2.750 Kilograms (6 lbs. 2 ozs)

NOTES:
(1) If tropical finish is required this should be specified.
(2) If so specified 4-spring dials will be supplied in place of the standard 3-spring.
(3) All of the above types can be supplied less dials and with or without dial blank. C.B. sets are wired for eventual conversion for automatic working.
(4) Dial number plates and dial blanks are available in the alternative finishes: black enamel and chromium plate. Unless otherwise specified black enamel will be supplied.
(5) The standard instrument cord is 2 metres (6'-6") long. If longer cords are required particulars should be given.

— 2 —

Figure 23: Extract from a 1940 ATEA catalogue

AUTOMATIQUE ELECTRIQUE DE BELGIQUE S.A. ANVERS

C'est en effet
PURE MAGIE

que le fonctionnement des nouvelles installations automatiques

2 POSTES INTERIEURS - 1 LIGNE RESEAU

que la Régie des Télégraphes et des Téléphones loue à ses abonnés pour leurs services particuliers.

Pour les nommés qui n'ont besoin que de **2 POSTES** ces petites installations automatiques permettent:

1°) de répondre à un appel "Ville" de n'importe quel appareil sans plus; l'automatique fait le nécessaire à cet effet;

2°) l'appel direct de la ville, de n'importe quel poste, comme dans le cas d'un poste unique, grâce encore à l'automatique;

3°) étant en communication avec la Ville, de demander à votre correspondant d'attendre un instant pour vous permettre de vous renseigner à l'intérieur de chez vous sans course inutile: vous poussez sur le bouton rouge de votre poste, vous faites le numéro d'appel de votre second poste, et vous pouvez communiquer avec celui-ci sans être entendu par la Ville; la communication intérieure terminée, vous retournez à votre correspondant extérieur simplement en poussant à nouveau sur le bouton rouge;

4°) de transférer votre communication "ville" d'un poste à l'autre (cette manœuvre est illimitée);

5°) d'avoir autant de communications intérieures privées entre vos deux postes qu'il vous plaira.

Le coût:

Vous payez actuellement 80 frs. par trimestre pour votre raccordement si vous n'avez qu'un seul poste;
vous payez 115.— fr. par trimestre pour une installation avec une clé - deux postes;

mais...

vous ne payez que 180.— frs. par trimestre pour la nouvelle installation automatique et deux postes téléphoniques noirs!

Cette installation nouvelle vous intéresse certainement.

Avec ce nouveau type d'installation téléphonique automatique, vous pouvez obtenir les nouveaux appareils ATEA.

Figure 22: A 1938 ATEA leaflet

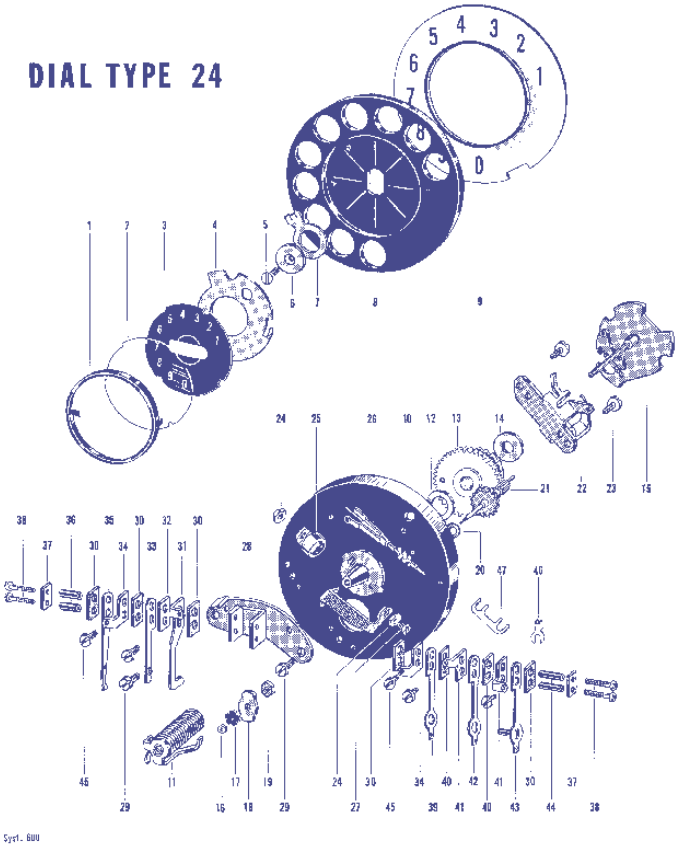


Figure 24: ATEA version of the AE24 dial

Figure 25: ATEA leaflet of the RTT U56 phone

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1. RTT & Belgacom: http://en.wikipedia.org/wiki/Belgacom
2. http://www.artbook.com/3775791817.html
3. http://en.wikipedia.org/wiki/Zamak
4. http://reviews.ebay.com/Buying-an-Antique-Western-Electric-302-Telephone?ugid=10000000000126973
5. http://www.mgg.nl/mgg/mgg_cms.nsf/files/publieksverslag2005MGGAntwerpen.pdf/$file/publieksverslag2005MGGAntwerpen.pdf

Image Sources

Fig 3 http://www.telephonearchive.com/phones/ae/ae34.html

Fig 6, 7, 12, 13, 14, 15, 17, 18 Archives "Friends of the ATEA Museum"
Fig 8, 19, 20 eBay
Fig 9, 10 Dietrich Arbenz
Fig 21 http://www.theoldtelephone.co.uk/Telephone_Pages/Belgian.htm

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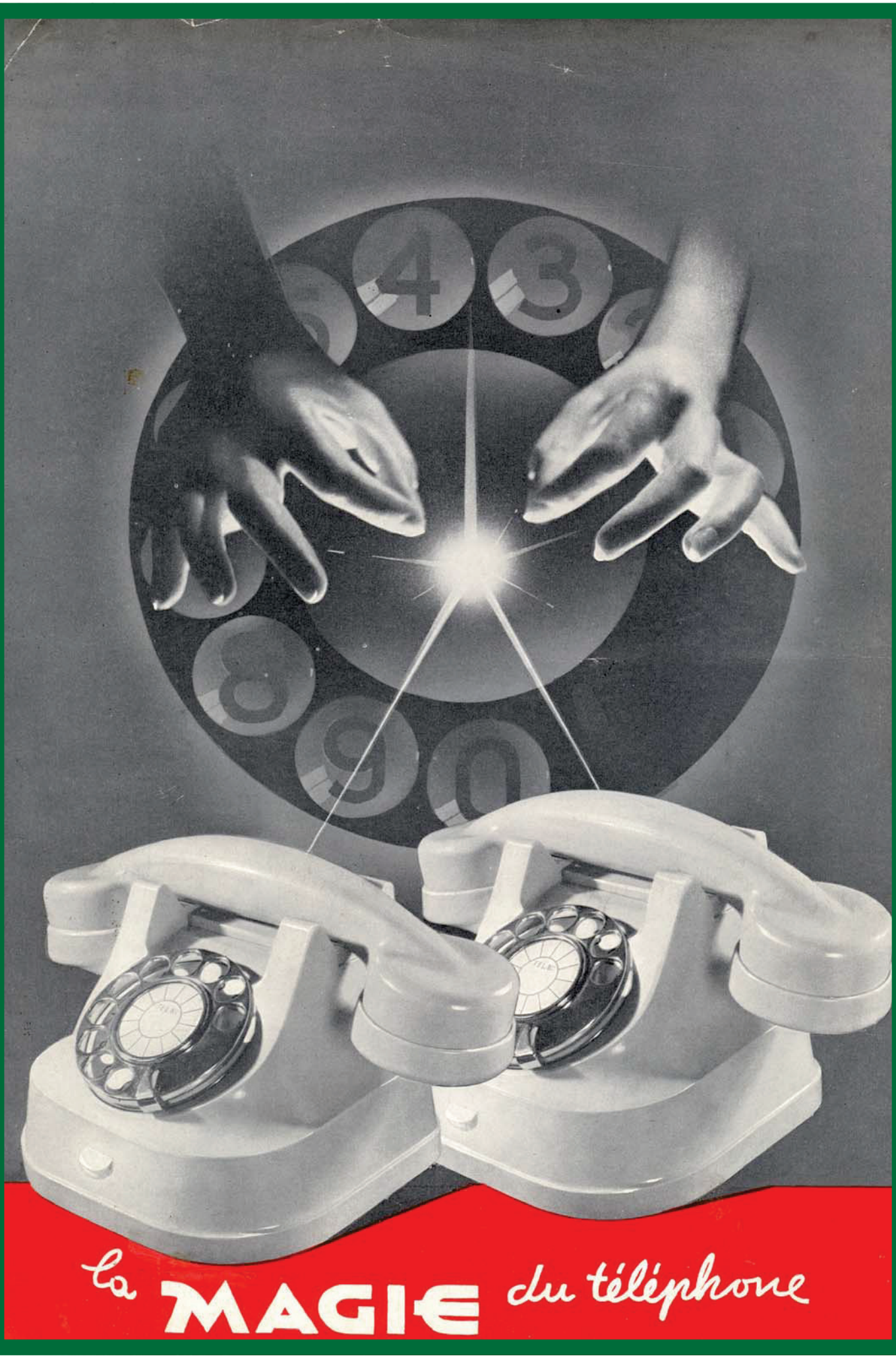
la MAGIE du téléphone