'Liliput'

Country of origin: GDR

Based on an article written by
Günther Fietsch, DL9WSM.

DATA SUMMARY

Organisation: Kazernierte Volkspolizei (KVP) and Gesellschaft fur Sport und Technik (GST).

Developer/maker: Funkwerk Zittau, VEB, RFT.

Year of production: 1953/54.

Purpose: Short range communication.

Transmitter/receiver:

Circuit features: Superregenerative receiver; Hartley type transmitter. AM voice and MCW. Both valves were used for receive and transmit.
Frequency: 42-45MHz.(4 tunable 'channels').
RF output: 0.6W.
Aerial: Foldable blade, length 124cm.
Range: 1km.

Valves: DL192 2x.

Power supply: 2.8V LT (two x 1.4V 'D' cells in series), and two 75V HT batteries connected in parallel.

Size (mm): Height 130, length 95, width 200.

Weight: 1.5kg.

Accessories: Carried in a canvas pouch: Handset, two spare valves in a small wooden box, screwdriver, spare 'D' and HT batteries, and a blade type aerial.

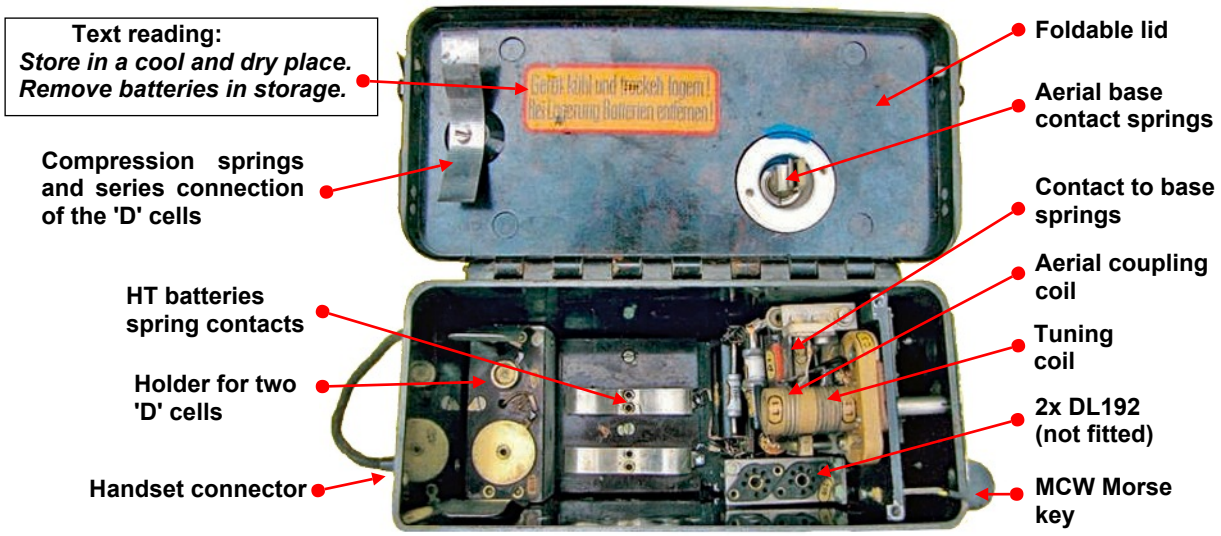
Remarks.

The 'Liliput' (Funkstation Liliput U-101) was a small, portable VHF transmitter-receiver developed and produced in the former German Democratic Republic (East Germany) for the 'Kasernierte Volkspolizei' (KVP), (English = Barracked People's Police), the precursor to the Nationalen Volksarmee (NVA) (English = National People's Army). A complete set comprised a 'Liliput' transmitter-receiver with internally carried LT and HT batteries, a handset with a headband, a blade-type vertical aerial, and a canvas accessories pouch.

Housed in a pressed composite material casing with a foldable lid locked by two tension springs, it was splash-proof. The ceramic aerial insulator was positioned on top of the lid, into which the blade aerial was inserted. Two clamping springs under the aerial insulator established contact between the aerial and the coupling coil of the RF stage. Additionally, two compression springs on the underside of the lid securely held two type 'D' cell batteries for the filaments, ensuring a firm connection even during rough handling.

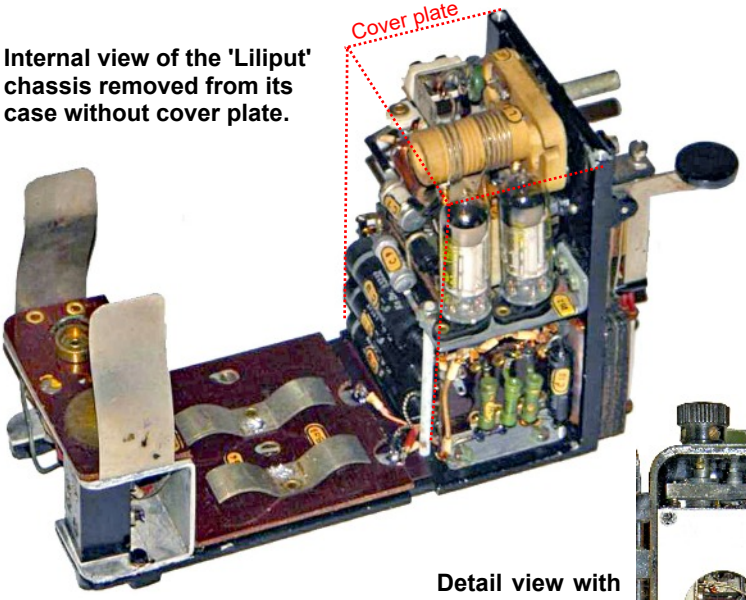
The controls (channel tuning, receiver fine tuning, mode switch, and the Morse key) were located on the control panel on the right-hand side of the case. Above this was a nameplate with the type designation 'U-101,' serial number, and the number '1503,' believed to be the code for the Zittau radio factory. The production year 1953/54 was indicated on the components; considering the known serial numbers of radios which survived, possibly 2000 units were produced.

On the left-hand side of the housing, below a movable locking plate, was a recess with a four-pin socket to connect the handset. Two leather loops, riveted vertically to the rear side wall of the housing, allowed carrying the set on the belt.

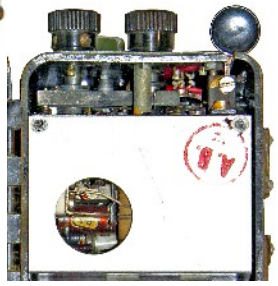


Explanation of components of the 'Liliput' transceiver.

With a leather tab and a leather strap on the same side wall, an additional fastening option for the 'Liliput' was provided. The components and control elements of the transmitter-receiver, as well as the audio frequency part located at the front, and the batteries at the rear, were mounted on a common chassis—a lightweight metal angle. The front part was shielded with a removable aluminium cover plate. To change valves, this plate had to be removed. The headset consisted of a lightweight handset made of pressed material with a push-to-talk button, a headband with padding, and a connecting lead with a 4-pin plug. The blade aerial was constructed from multiple riveted steel strips, with its thickness decreasing towards the top, and a length of 1.24 meters. The flexibility of the steel strips allowed folding the aerial for transport in the accessory pouch, a canvas bag with loops for attachment to the belt, worn on the right hand side by the radio operator.



Internal view of the 'Liliput' chassis removed from its case without cover plate.



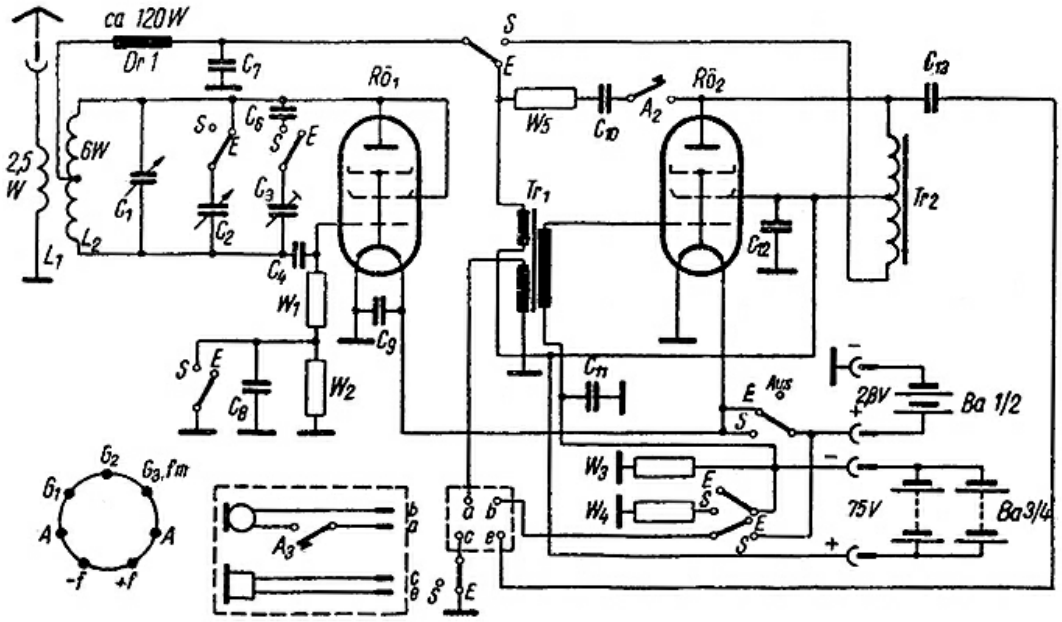
Detail view with cover plate in position (right).

Right hand side panel with control panel and a panel with type, serial number and (believed to be) the code number of the maker.

Tuning control: top left.
Rec. fine tuning: top right.
System switch: bottom right.
A= Aus (Off).
E= Empfangen (Receive).
S= Senden (Transmit).

Circuit Description

The circuit was simple compared to the high level of development in military radio technology achieved by the German Wehrmacht in small radio devices (e.g., the 'Dorette'). The 'Liliput' was equipped with only two DL192 valves. In transmit mode, the first DL192 functioned as a self-excited Hartley oscillator, and the second as a modulation amplifier, using combined anode-screen grid amplitude modulation. In telegraphy (MCW) mode, the modulation amplifier simultaneously functioned as a self-excited tone generator, with the transmitter also being modulated through anode-screen grid modulation. The telegraphy audio frequency signal was generated by operating the built-in small Morse key located on the right-hand top side of the set. In receiving mode, the first DL192 functioned as a super-regenerative circuit, and the second DL192 served as an AF amplifier.



Circuit diagram of the 'Liliput' drawn in receive position.

Component	Value
C1, C2	10 pF
C3	6-25 pF
C4	50 pF
C6	6.5 pf
C7, C9	5 nF
C8	30 pF
C10	10 nF
C11, C12	0,1 µF
C13	0,1 µF
W1	10 kΩ
W2	200 kΩ
W3	1 kΩ
W4	100Ω
W5	100kΩ
Ro 1, Ro 2	DL192
Ba1, Ba2	1.4V
Ba3, Ba4	75V

Tuning with settings to four channels was accomplished by C1. In the receive position, fine-tuning was by C2. Frequency offset compensation in transmit mode was done by C3.

Development and production in secrecy.

The paramilitary units of the Kasernierte Volkspolizei (KVP) in the GDR depended on various small radios, which were not available in sufficient numbers from the remnants of the former Wehrmacht or Soviet stocks. Therefore, the KVP leadership initiated an accelerated development of troop radio stations to establish a signal corps.
The 'Bureau for Development and Construction (Büfek),' under the control of the KVP, collaborated with the 'Central Nachrichtenwerkstatt' of the Kasernierte Volkspolizei in Niederlehme near Berlin to undertake the development and prototype construction of a small radio set, later named 'Liliput.' The starting point for this development was based on features and functionality of the 'Dorette,' a former Wehrmacht radio.
Due to the Potsdam Agreement, the development and production of goods suitable for military purposes, including military technology, were prohibited in Germany. Consequently, these activities took place covertly in highly secured production facilities with selected personnel bound by strict confidentiality.
After building a prototype and conducting a brief test, a producer was identified at the time in the Zittau-Olbersdorf radio factory. Following the construction of an initial series and a presumably successful practical test, production was then scaled up in large quantities and delivered to the Kasernierte Volkspolizei (KVP).
It should be noted that several components for the production of 'Liliput' were procured under cover in West Germany.

Lili-kaputt

However, after a short period, the devastating verdict was pronounced: 'Not suitable for troop service!' This ultimately led to the transfer of the radios to the 'Gesellschaft für Sport und Technik' (GST). Starting in 1955, the 'Liliput' radios were introduced into the radio training groups of this organization. There was no documentation, neither operating instructions, nor any visual material about the 'Liliput' from the KVP. Additionally, there were no records from the secure production at the Zittau radio factory.
The Central Board of the GST, Department of 'Communications Sports,' reluctantly created documentation for the 'Liliput' to be used in GST radio groups. This documentation included circuit descriptions, operating instructions, maintenance guidelines, as well as troubleshooting tips. The magazine 'Funkamateur' published a series of user experiences with the 'Liliput' over the next years. While the GST praised this radio device for training, users often referred to it as 'Lili-kaputt.'

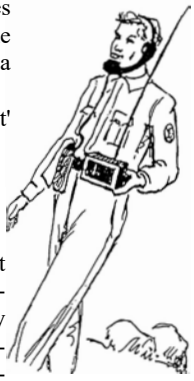
In retrospect

The failure of the 'Liliput' to achieve reliable radio communication based on the experiences from the brief trial deployment with the KVP and the numerous experiments in the training groups of the GST, the following reasons may be identified from today's perspective:
- Too simple mechanical and circuitry design, resulting in extremely low frequency stability and imprecise frequency setting, as well as difficulties in locating the counterpart.
- Insufficient transmitter power for the intended purpose, coupled with inadequate receiver sensitivity or insufficient audio volume.
- Poor quality of the dry batteries available at that time, especially 1.4V LT type 'D' dry batteries.
- In addition, the DL192 valves were not suitable for rough, portable operations, which caused filament breaks and dissolved electrode connections.

Although the first attempt by the East German radio industry to provide a usable handheld radio for police or military use was not successful, from historical prospect the 'Liliput' was an interesting project.

GST

A 'Liliput' was carried by a member of the Gesellschaft für Sport und Technik (GST) (English = Society for Sport and Technology) in walking (right) and prone positions (above). The 'Liliput' was usually carried on the belt, along with a canvas pouch containing spares and accessories. Shown in these drawings is the carrying of the headset, which was primarily a lightweight handset with a padded headband. (Both drawings were taken from the 'Liliput' GST user booklet).



The East German GST (Gesellschaft für Sport und Technik) was a paramilitary youth organisation affiliated with the Socialist Unity Party from 1952 to 1990. It combined physical education, military training, and socialist indoctrination. After German reunification in 1990, the GST was disbanded.

The 'Liliput' was designed based on the functionality and features of the WW2 German Wehrmacht 'KlFu Spr d' (Klein Funk Sprech 'd'), also known as 'Dorette.'

Acknowledgements:

With many thanks to Günther Fietsch, DL9WSM, (Author of two books on signal equipment of the Nationalen Volksarmee) for kind permission to scans of drawings and circuit diagram taken of his 'Liliput', and for using information from his original article.
High-resolution photographs taken from his collection were kindly provided by Siegfried Droese, Germany.
I am grateful to Reinhard Glogowski, Germany, who drew my attention to the existence of the 'Liliput'; otherwise, this 'WftW Various' chapter would not have been realised.

References:

- Booklet with description and use of the 'Liliput', compiled and published by the Central Board of the GST: 'Beschreibung der Funkstation 'Liliput'. n.d.
- Funkamateur, Issue 8 - 1957, pp10.
- Funkamateur, Issue 6 - 1960, pp183.
- Eine 'tragisch-komische' Entwicklung, Günther Fietsch, Funkgeschichte GFGF, No. 232, 2017, pp66-70.