

## The Siemens Hell 80

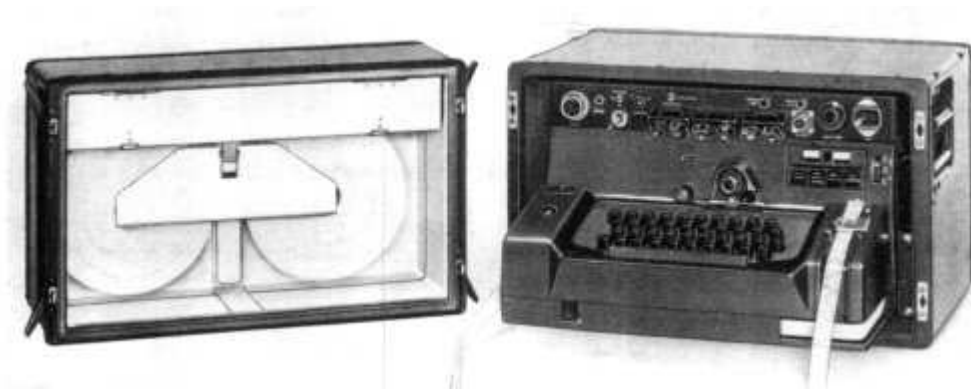
The Hell 80 is a more modern replacement for the wartime Feldfernschreiber, compact, versatile and fast. It was introduced in the mid 1960's and intended for military, diplomatic and other agencies requiring robust portable equipment. It operates over the temperature range -20°C to +50°C. The unit operates from 24V DC or a wide range of AC voltages, and is fully solid state. It is about 500mm x 500mm x 300mm high, and weighs 28kg, so is no lightweight! It is in a standard Nato case, with Nato connectors provided for power and line or radio.

The Hell 80 was the last of the Hellschreiber machines and operated in both synchronous and asynchronous (Start-Stop) modes. It provides switchable 2-wire and 4-wire phone line operation, a telephone connector, special radio connector and switchable line levels.



The Hell 80 ready for action

The Hell 80 can be operated in its protective metal shell, simply by removing the front cover. All connections are at the front. Spare paper rolls (15mm wide), spare ink rollers and the power cables are stored inside the cover.



The Hell 80 and its cover

Several major differences are incorporated in the Hell 80. For example:

- AC and DC operation
- A new 9x7 font
- Asynchronous and Synchronous operation
- FSK transmission
- 315 baud operation
- ITA2 paper tape reader standard

### **AC and DC Operation**

The Hell 80 will operate from 24V at about 1.6A, or from 100 to 240V at 40 to 60 Hz. In standby the consumption is minimized, and when the signalling tone is received the motor and the rest of the electronics start.

### **The Font and Speed**

The font is no longer the 7x7 dot matrix. An all new 9 row, 7 column (63 dot) character field is used, of which 7x5 dots actually form the characters, so there are two columns of white dots between characters, and two rows of white dots above or below the characters. The characters are generated from an electronic memory - a magnetic core memory - and the keyboard consists of switches - no mechanical parts. The font contains only upper case letters and numbers. A shift key is used to provide a modest range of punctuation. To compensate for the increased size of the character dot field (63 instead of 49 dots) the baud rate is increased. The text speed is 5 characters/second.

SO SCHREIBT DER SIEMENS-HELLSCHREIBER 80  
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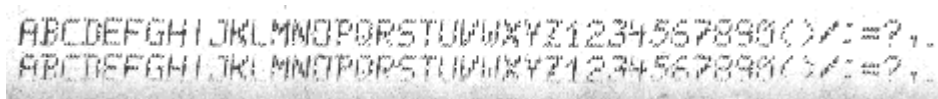
### **Synchronous and Asynchronous**

For maximum versatility, this machine will operate in either mode. The asynchronous mode, similar to that of the GL-Hell machines, allows unattended operation and reduces paper use. Combined with the auto-answer and line signalling, the machine is then as simple to

use as a FAX machine. In synchronous mode, the machine is ideal for radio applications where noise quickly causes synchronism errors. The speed of the motor is electronically controlled, and a simple thumbwheel sets the correct speed. The reception system is a dual tone AM system for maximum sensitivity and good noise rejection. The printing mechanism is very similar to the older machines, with an inked helical scan and print hammer. The tape is double printed like the Feldschreiber.

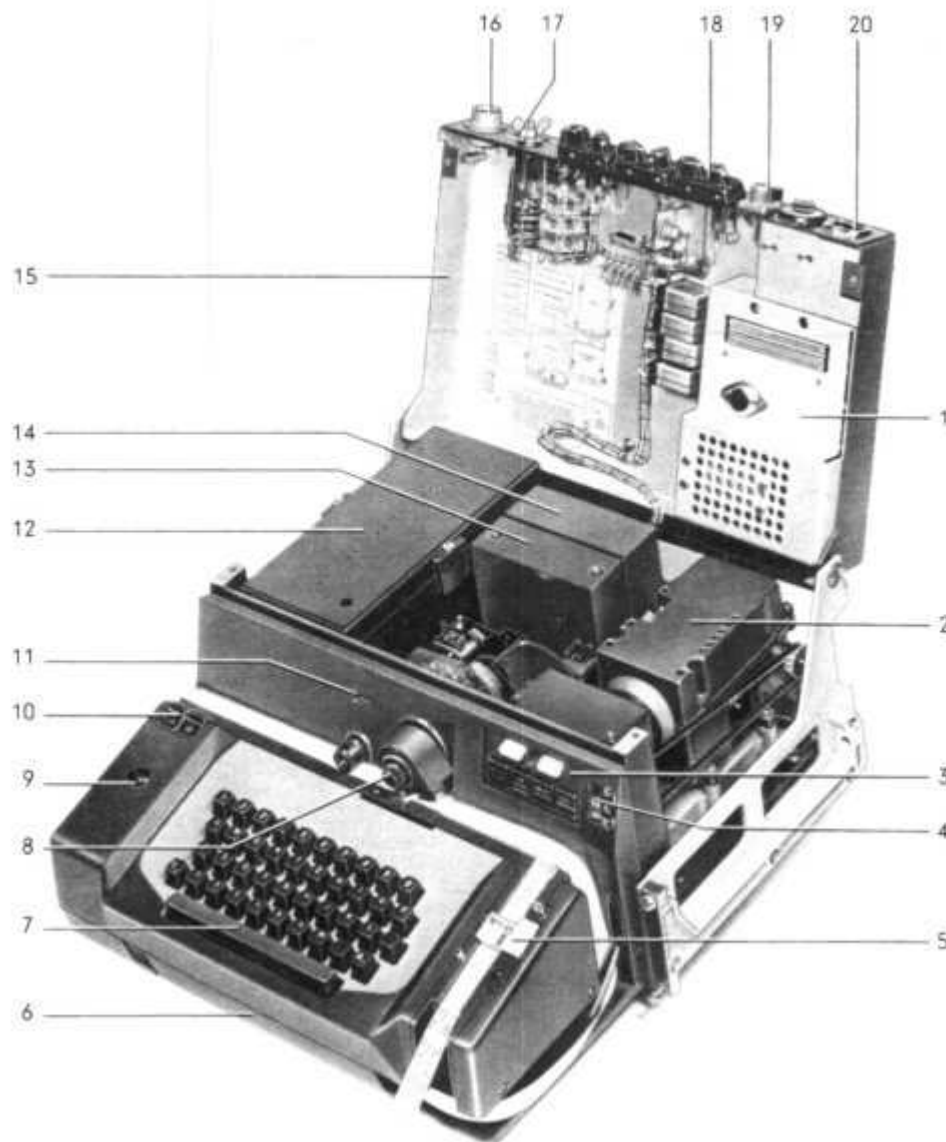
### FSK Transmission

The Hell 80 was the first Hellschreiber machine to transmit FSK, using 1625 Hz for white, and 1925 Hz for black. A 1260 Hz tone is used for line signalling. The machine is designed for unattended operation on a public switched telephone network, including automatic answering, startup and shutdown.



The Hell 80 character set

The next picture shows the Hell 80 out of its case with the electronics deck raised to show the interior.



The inner workings

- |                                 |  |
|---------------------------------|--|
| 1. AC supply components         | 11. Hour meter                             |
| 2. DC motor (brush type)        | 12. Electronics enclosure                  |
| 3. Switch assembly              | 13. Power supply regulator                 |
| 4. Speed control knob           | 14. Fork (reference) and filter            |
| 5. Punched tape reader          | 15. Connection assembly                    |
| 6. Paper tape holder (one roll) | 16. NATO radio connector                   |
| 7. Keyboard                     | 17. Earth terminal and telephone connector |
| 8. Printing assembly            | 18. Line connections                       |
| 9. Pilot lamp                   | 19. DC supply connector                    |
| 10. Power switches              | 20. AC supply connector                    |