No.

Secret!

Operating Instructions for the "Enigma" Cipher Machine

Berlin 1930

These operating instructions are secret. Misuse is punishable under the Law of June 3, 1914, concerning the betrayal of military secrets, unless other penal provisions apply.

Berlin, May 1930.
The Chief of the Army Command.

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Preparation of the cipher machine.

1. Before putting the cipher machine into operation, it must be checked for correct operation. For this purpose, the wooden protective box is opened, the holding device (Figure I, 1) by lifting the spring buttons (I, 2) dissolved, the retaining levers (I, 3) are pivoted around, whereupon the top plate (I / II, 4) can be opened and the dials (II / IV, 5) releases.

2. Turn the dials (II / IV, 5) several times against each other, this should make the contacts on the cipher rotors bare.

3. To clean the key contacts, press successively all keys (II, 6) four to five times then depress and release fast. In this case, a key is held in depressed state to avoid unnecessary indexing of the rotors.

4. Turn the battery lever (II, 7) from "off" to "dark" or "bright" and set the appropriate light intensity by pressing a few buttons.

5. In sunshine and to protect the eyes, it is advisable, the blue-green Zellon plate (I / II, 8) by lifting and turning the holding springs (I / II, 9) from the wooden cover to solve and by means of the same device on the Letters Transparent (I, 10). The Zellon plate dampens the glare of incandescent lamps and hides all letters so that only the flashing letter becomes visible.

6. For a shot against dazzling sunlight, the machine can be shaded by pulling the hinges of the lid hinges (I, II) forward and folding the wooden lid halfway down.

Key setting

7. The key setting is done by

a) Removing and holding the cipher rotors (III / IV, 12),

b) Adjusting the number rings (III / IV, 13) on the three ciphering rotors,

c) Changing the plug connections by means of double leather cords (II, 30) --- cords, which carry at each end a double plug (II, 14) --- in the plug board (II, 15),

d) Adjusting the numbers in the windows (II, 16).

8. To open the door, open the metal lid (II / III, 17) of the machine. After the cover plate (I / II, 4) is found again, the two retaining screws (II, 18) are loosened by turning, the cover is pulled up by the screws and unfolded.

9. To remove the ciphering rotors (III / IV, 12) --- according to item 7a --- the retaining lever (III, 19) located in the left rear corner is folded forward to the stop, the reflector (III, 20) pushed sharply to the left and compressed the ciphering rotors (III / IV, 12) on the adjusting wheels (II / IV, 5) with the right hand and lifted with the axle.

10. The rotors marked with the numbers I, II, III on the right side (with the contact pins) and with 1,2 or 3 black points on the bare middle part, will be put on the axle in the order indicated by the key (IV, 21) pushed and set again. When inserting it is important to ensure that the rotors are sharpened at the axis collar (IV, 21a), which is stored next to the reflector (III, 20), and the smooth contact surfaces are always facing the reflector. The retaining lever (III, 19) should then be put back.

11. The removal and refining of the ciphering rotors must be done with care so that the protruding contact pins of the reflector (III, 20) are not bent with the left pivot of the axle.

12. To adjust the number rings (III / IV, 13) --- according to Section 7b --- after reinserting the cipher rotors, the retaining springs (IV, 22) of the number rings (III / IV, 13) on the button sitting on each retaining spring button (IV, 23) with the right hand raised and the rings with the left hand turned until the spring pin (IV, 24) snaps into the hole next to the number prescribed by the key. The metal lid (II / III, 17) is closed and screwed on.

13. To change the plug connections in the plug board (II, 15) --- according to paragraph 7c --- the harbor (III, 26) holding the front wall (I / III, 25) is loosened and the front wall folded down. As a result, 26 pairs of sockets (II, 31) are released, which are marked with the letters -A- to "Z" and at the same time with the numbers 1 to 26.

14. The double plug cords are pulled out one at a time (do not tear out!). Then, according to the information contained in the key, a number of pairs of sockets are connected to each other by double-lanyard cords. It is necessary that the plugs are pressed firmly into sockets to prevent simultaneous illumination of several lamps. Sockets and pairs of plugs are unmistakable.

15. To set the window numbers --- according to section 7d --- the cover plate (I / II, 4) is opened. Then, by means of the dials (II / IV, 5), the ciphering rotors (III / IV, 12) are adjusted so that the numbers prescribed by the key in the windows (II, 16) become visible.

Encrypt.

16. After setting the key, the plain text is written "letter by letter" letter by letter down as on a typewriter. The letters that light up when you press the key make up the encrypted phrase, are read and written down in five-digit groups.

17. If the encryption is made by a person, it is useful to enter with his left hand the plain text and write down the encrypted spell with his right hand. If there are two people available for encryption,

One will handle the machine, while the other writes down the lit letters.

18. For spelling of punctuation marks, numbers, etc, applies to the regulations in the "Instruction on the Army cipher".

Decryption.

19. After setting the key, the encrypted message is keyed letter by letter on the machine. The flashing letters result in the plain text and are written down.

Prescribe and failure.

20. If encryption has occurred during encryption or decryption by pressing wrong keys, omitting or double typing of letters or failure in the machine (failure to list lamps), the encryption or decryption must be repeated. The key is set again as it was at the beginning. However, in order to avoid repetition in the event of an error occurring towards the end of the encryption or decryption, it is sufficient to press any key until the letter before the error has been reached. For example, when encrypting the 32nd letter incorrectly, so after resetting the key in the window, any letter is keyed 30 times, then the 31st letter of the plain text keyed to the control and compared with the outgoing at the first encryption letters. Then continue with the 32nd letter in the manner described.

21. The improvement of existing procedures for encryption and decryption is made much easier if, for example, every 50th letter, the three numbers appearing in the windows is written down. It is then enough to eliminate errors, to return to the last letter thus written down, to set the corresponding numbers in the windows and to repeat the work only from there on.

Disorders.

22. Diagram (II, 32) and operating instructions for you operating the cipher machine (II, 33) are mounted in the lid of the machine.

23. When the battery is exhausted in the box (III, 27) attached to the right rear corner, it is taken out to open the metal lid and the other band around the band is the same as that used for the lamp 17 in the flashing mode. They are kept in stock at the issuing offices and can be obtained from there.

24. If there is no spare battery, connect any power source (flashlight battery, collector) of 4 Volt voltage to the two terminals (II, 28) and set the selector lever (II, 7) to position - collector. It is recommended to the news organizations to carry backup batteries.

25. Incandescent bulbs are unscrewed and replaced by reserve lamps. There are 12 spare lamps, 10 pieces in a metal strip on the upper edge of the wooden lid, 2 pieces (the leftmost and the rightmost) in the middle row of the incandescent field. When replacing with standard incandescent lamps, please note that they must comply with the following conditions: hemispherical, 12 mm, 3.5 Volt, 0.2 Ampere.

26. Defective Double Fastener Ropes may be exchanged for "Spare Double Fastener Ropes" (I, 34) located inside the machine 's lid.

27. Other malfunctions that can be remedied by the keys are contact malfunctions, the detection and detection of which is described below.

28. To determine if bulbs and contacts are OK, --- with any key setting --- the A key is depressed,
whereby any letter is illuminated, e.g. the Letter Z. Holding down the depressed A key, the Key of the * corresponding * lamp, in which case the Z key, lower pressed, which after releasing the A button, the letter "A" must light up. The W key continues to be held down and

the B key depressed, again lighting a letter, e.g. "R". Now release the Z key, press the R key, release the B key, and the letter "B" lights up; then the C key is pressed, etc. In this way - without changing the key setting in the window - the whole alphabet is checked.

29. If two "corresponding" lamps do not burn, then check:
a) The contact pins of the ciphering rotors and the reverse rotor by rotating the rotors or blank rubbing on contact lugs, by turning over a friction surface or by clamping a rotor contact pin by cleaning with purified gasoline.

b) The lamp contacts by depressing the lamp contact with the lamps unscrewed and by re-tightening the concerning both lamps,

c) The two lamps themselves, by being unscrewed and brought into direct contact with the two poles of the battery or replaced by new lamps,

d) The double-fender leash in question by replacing it with spare double-fuselage cords, and the contacts of the sockets by pressing off the resilient contact laminae attached to the back of the pairs of sockets;

e) The two contacts concerned by repeatedly pressing the two keys.

30. If one of the "corresponding" lamps does not burn, check:
a) the relevant lamp contact itself (like 29b),

b) the lamp in question itself (like 29c),

c) the plug connectors and contacts of the plug sockets (as in 29d),

d) the two taffeta contacts in question (like 29e).

Avoid touching the contacts with your hands if possible.

31. All lamps will not burn when the battery is exhausted or the poles have no contact with the battery box springs. Fault rectification by inserting a spare battery (Nos. 23 and 24) or by bending the springs so that they get in touch.

32. If the faults can not be remedied after testing in the manner described above, further disassembly of the machine by the troop is prohibited. The machine is then to be delivered to the news department of the multi-circuit for repair.

Care of the machine.

33. Bearings of drive cams visible after removal of cipher rotors at a cost bottom, key-pins (III, 29), axes (IV, 21) of ciphering rotors are easy to oil with acid-free oil at intervals of 6 to 8 weeks. It must be embarrassingly avoided that oil comes to any contact point.

34. In the event of dust and rain, while working with the machine, keep the cover plate closed to keep the internal parts in place. As soon as the machine is no longer in use, set the battery lever (II 7) to "off" and close the lid of the wooden box.

Figure I

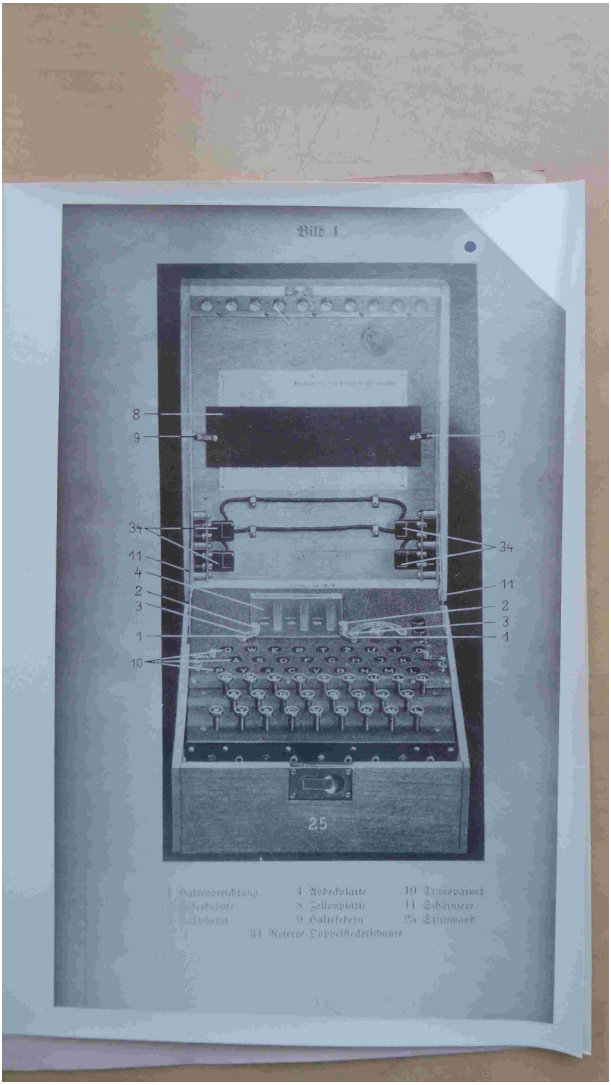
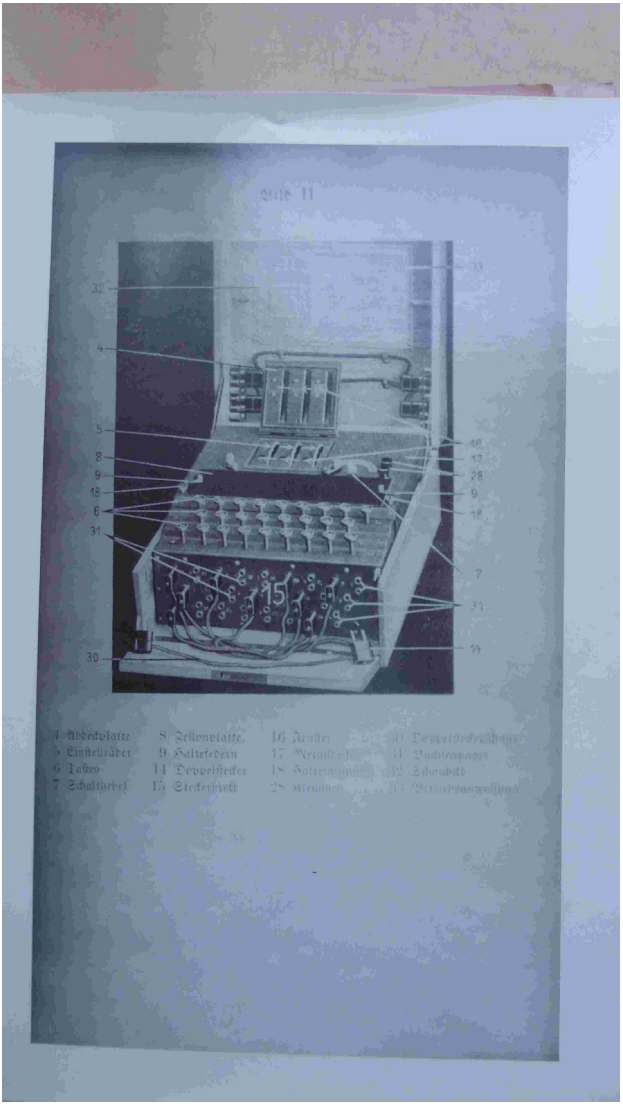


Figure II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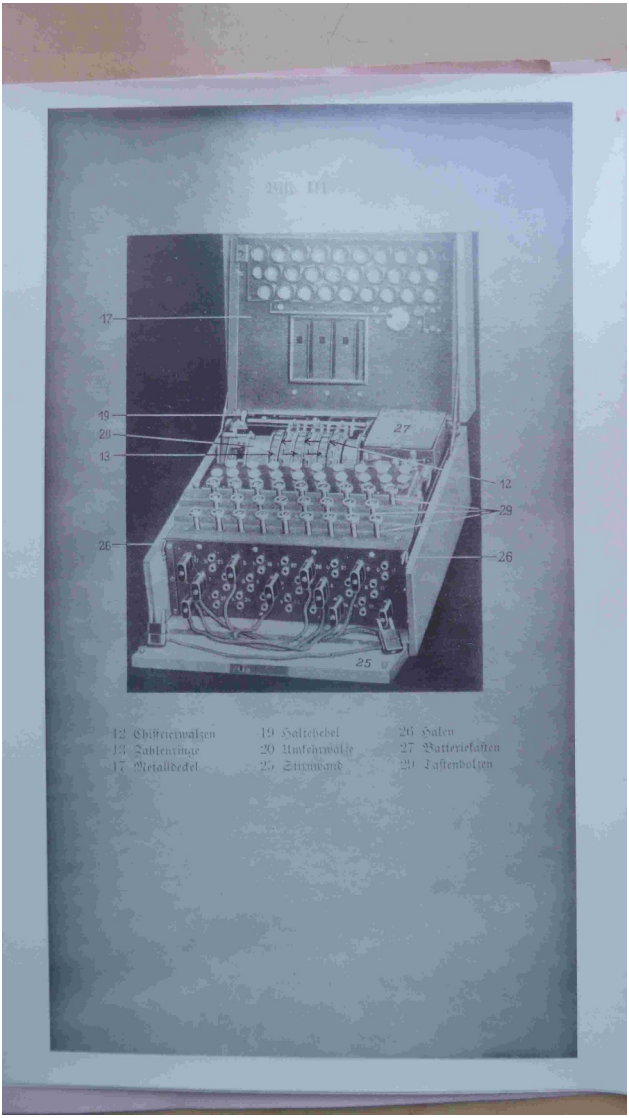
5 Einstellräder
6 Tasten
7 Schalthebel
8 Zellonplatte
9 Haltefedern
14 Doppelstecker
15 Steckerbrett
16 Fenster
17 Metallbeck
18 Haltesammlung
28 Klemmen
30 Doppelsteckerschnur
31 Buchsenpaare
32 Schaubild
33 Verstellsammelsammlung

Figure III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12 Chiffrierwalzen
13 Zahlenringe
17 Metalldeckel
19 Haltehebel
20 Umkehrwalze
25 Stirnwand
26 Halen
27 Batteriekasten
29 Tastenbolzen

Figure IV

