

**MILITARY CHARACTERISTICS OF A CRYPTOGRAPHIC MACHINE FOR USE IN
MESSAGE CENTERS OF THE LARGER FIXED AND SEMI-FIXED HEADQUARTERS**

1. This machine should be designed for the fundamental purpose of enciphering and deciphering messages with speed, accuracy, and the highest degree of cryptographic security. Secondary to these characteristics, there should be a minimum number of switches, keying elements, etc., which must be set before proper operation can begin.
2. The cryptographic operations should be controlled by an external element which is variable and is not an intrinsic part of the mechanism itself, such as a perforated tape similar to that employed in printing telegraph apparatus. The underlying cryptographic principle should be that of a continuous, nonrepeating, unintelligible or random-mixed key sequence of characters governing the encipherment of successive letters.
3. The machine should consist of two units, (1) a cryptographic unit hereinafter called the "cryptograph", provided with a standard typewriter keyboard, and (2) a recording unit suitable for making a printed record of the work done by the machine, preferably an electrically operated typewriter, hereinafter called the "typewriter". The cryptograph is the part of the mechanism in which the enciphering and deciphering operations occur; the typewriter is electrically associated with the cryptograph and is to print the cipher text, in case of encipherment, in 5-letter groups, 10 groups per line; in the case of decipherment, the typewriter is to print the plain text, preferably in their original word lengths with proper spacing between words.
4. The minimum speed of operation should be 30 words per minute.

5. The cryptograph and the typewriter should be mounted upon the same base with fixed electrical connection between the two units. A side-by-side arrangement of these two units is preferable to a tandem arrangement, so that the keyboard of the cryptograph as well as the keyboard of the typewriter are both immediately in front of the operator.

6. The apparatus should be designed to operate on 110 volt, D.C. power source.

7. The weight of the cryptograph including its carrying case should not exceed 50 pounds; that of the typewriter including its carrying case 60 pounds. Both units should be rugged in construction and capable of withstanding jarring incident to transportation.

8. The entire assembly should be so constructed that in case the typewriter is out of commission for any reason, cryptographic operations may be continued by means of electric light-bulb indicators on a lamp board on the cryptograph.

9. There must be incorporated features to suppress interference with radio receivers operated in the vicinity of the machine.

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