

Do-It-Yourself Enigma Machine – Dave Reed, Creighton University, 2008

CONSTRUCTION: Cut out the shapes (spindle and three rotors) along the dotted lines. For each, roll the bottom over and tape to form a cylinder. Select the order of the rotors and slide them around the spindle. Set the initial positions of each rotor by aligning the desired letter at the top left of the rotor with rotor setting line (highlighted with arrows).

TO ENCODE A LETTER: Before each encoding, the rotors must be rotated appropriately: (1) If the notch on either the left or middle rotor is at the rotor setting line, then all three rotors rotate up one position. (2) If only the rightmost rotor has its notch at the rotor setting line, then the middle and right rotors rotate. (3) Otherwise, only the right rotor rotates. Once the rotation is complete, find the desired letter on the INPUT/OUTPUT panel and follow the connected wires across the 3 rotors, around the reflector, and back across the rotors to the corresponding letter on the INPUT/OUTPUT panel. The wires in the rotors are labeled with same letters on each side to make them easier to trace.

EXAMPLE: Suppose the rotors are positioned as in the original form: I-A, II-A, III-A. Before encoding, ROTOR III would be rotated so that B is aligned with the rotor setting line. The letter G would then be encoded as X, following the wires: INPUT-G, III-P, II-M, I-O, REFLECTOR-M, I-M, II-C, III-Q, OUTPUT-X.

This design was inspired by Mike Koss' Paper Enigma Machine (<http://mckoss.com/Crypto/Enigma.htm>).

