85.33 - Electrical resistors (including rheostats and potentiometers), other than heating resistors.

8533.10 - Fixed carbon resistors, composition or film types

- Other fixed resistors :

8533.21 - - For a power handling capacity not exceeding 20 W

8533.29 - - Other

- Wirewound variable resistors, including rheostats and potentiometers :

8533.31 - - For a power handling capacity not exceeding 20 W

8533.39 - - Other

8533.40 - Other variable resistors, including rheostats and potentiometers

8533.90 - Parts

(A) **Resistors (resistances).** These are conductors whose function is to provide a given electrical resistance in a circuit (e.g., to limit the current flowing). They vary greatly in size and shape, and in the materials of which they are made. They may be made of metals (in the form of bars, shapes or wire, often coiled in bobbins) or of carbon in the form of rods, or of carbon, silicon carbide, metal or metal oxide film. They may be obtained in the form of individual components by a printing process. Certain resistors may be fitted with a number of terminals allowing the whole or part to be included in the circuit.

The heading includes :

(1) **Oil immersed resistors**.

(2) **Carbon resistance lamps**, in the form of an electric light bulb but with a special carbon filament; however, carbon filament lamps for lighting purposes are **excluded (heading 85.39)**.

(3) **Barretters** consisting of iron filaments assembled in a glass tube filled with hydrogen or helium; these have the property of varying automatically within certain limits and so keeping the current constant.

(4) **Standard resistors** used for comparison and measuring purposes (e.g., in laboratories); also resistance boxes consisting of a number of such resistors assembled in a box with switching or terminal arrangements for connecting any required combinations of the resistors into the circuit.

(5) **Non-linear resistors** : depending on temperature (thermistors) with a negative or positive temperature coefficient (usually mounted in glass tubes), and non-linear resistors depending on voltage (varistors/VDR), but **not including** varistor diodes of **heading 85.41**.

(6) **Resistors known as "strain gauges"** being the sensitive elements of a strain measuring instrument.

The heading **excludes** :

(a) Heating resistors (heading 85.16 or 85.45).

(b) Light dependent resistors (**heading 85.41**).

(B) **Rheostats**. These are variable resistors with a sliding contact or other means enabling the value of resistance in the circuit to be varied at will. They include, slide wire rheostats with a cursor sliding over a resistance coil; step-by-step rheostats; hydro-rheostats with movable electrodes immersed in a liquid conductor; automatic rheostats (e.g., with minimum or maximum current or voltage operating mechanisms); and centrifugal rheostats.

Certain rheostats are designed for particular purposes (e.g., theatre dimmers used in a lighting circuit to extinguish the lighting slowly; and motor starters and controllers consisting of a number of resistors with the necessary switching arrangement for switching in or out one or more resistors in the motor circuit). Nevertheless, they remain classified here.

(C) **Potentiometers**. These consist of a fixed resistor between two contacts and a sliding tapping which can make contact on any point of the resistor.

PARTS

Subject to the general provisions regarding the classification of parts (see the General Explanatory Note to Section XVI), parts of the resistors of this heading are also classified here.