90.17 - Drawing, marking-out or mathematical calculating instruments (for example, drafting machines, pantographs, protractors, drawing sets, slide rules, disc calculators); instruments for measuring length, for use in the hand (for example, measuring rods and tapes, micrometers, callipers), not specified or included elsewhere in this Chapter.

9017.10 - Drafting tables and machines, whether or not automatic

9017.20 - Other drawing, marking-out or mathematical calculating instruments

9017.30 - Micrometers, callipers and gauges

9017.80 - Other instruments

9017.90 - Parts and accessories

This heading includes drawing, marking-out or mathematical calculating instruments. It also includes instruments for measuring length, for use in the hand.

This heading **does not**, however, **include** :

(a) Mitre boxes and tools used in the graphic arts (e.g., chisels, gouges, etching needles) (**Chapter 82**).

(b) Graphic tablets and digitizers (**heading 84.71**).

(c) Pattern generating apparatus designed to produce masks and reticles from photoresist coated substrates (such as optical, E-beam, focused ion beam, X-ray or laser beam apparatus) (**heading 84.86**).

(d) Co-ordinatographs of a type used for photogrammetrical purposes (**heading 90.15**).

These include :

(A) **Drawing instruments**.

(1) **Pantographs and eidographs** for smaller, larger or same scale reproductions of maps, plans, drawings, parts to be machined, etc. The heading includes such instruments used for course plotting in navigation.

(2) **Drafting machines** generally using a system of parallelograms, with or without drawing boards or tables.

The heading also covers drafting machines incorporating automatic data processing machines or working in conjunction with such machines.

(3) **Drawing compasses**, dividers, reduction compasses, spring bows, mathematical drawing pens, dotting wheels, etc., whether in a case (e.g., drawing sets) or separately.

(4) **Set squares** (standard, hatching, wood or metal working), **adjustable squares, T squares** (standard or articulated), **drawing curves, rulers** (flat, square, hatching (parallel rules), standard, etc.).

(5) **Protractors**, from the ordinary protractors found in drawing sets to the complex protractors as used, for example, in engineering.

(6) **Stencils** of a kind clearly identifiable as being **specialised as drawing instruments**. Stencils not so specialised are classified according to their constituent material.

(B) **Marking-out instruments.**

(Marking-out consists in marking construction lines, etc., on the surface of a part to be machined, sawn, etc.).

(1) **Beam compasses** (marking, carpenters', etc.) with plain or divided laths.

(2) **Scribers and centre punches.**

(3) **Surface plates** used as a datum plane for marking-out or for checking plane surfaces, etc. **Straight-edges and squares** (of cast iron, stone, etc.) with a true plane surface.

(4) **V-blocks and X-blocks** for supporting cylindrical workpieces.

The heading **does not cover** engraving tools for working in the hand with self-contained motor (**heading 84.67**).

(C) **Mathematical calculating instruments.**

Slide rules, disc calculators, cylindrical calculators and other calculating instruments based on the slide rule or other mathematical calculating principle including, for instance, pocket-type adding and subtracting devices operated by the selection of numbers with a stylus according to a given procedure. This group also includes rules and discs for calculating photographic exposure times on adjustment by reference to the condition of the sky, time of day, aperture setting, type of subject and sensitivity of emulsion.

Calculating or accounting machines, however, are **excluded** (**heading 84.70**).

(D) **Instruments for measuring length, for use in the hand.**

These instruments are capable of indicating the length, i.e., linear dimensions, of the object to be measured, for example a line drawn or imaginary (straight or curved) on the object. The instruments are therefore capable of measuring dimensions such as diameters, depths, thicknesses and heights which are indicated as a unit of length (e.g., millimetres). These instruments must also have characteristics (size, weight, etc.) which enable them to be held in the hand to carry out the measurement.

Instruments specially designed to be used permanently mounted on a stand or other support or connected to machines or other apparatus by means of flexible tubing, cables, etc., to carry out the measurement are **excluded** (**heading 90.31**).

This group includes :

(1) **Micrometers**; instruments having a micrometric head , either of the screw- or screwless-type (the screwless-type incorporate a slide action and are usually electronic). They are used to measure, for example, outside or inside diameters, thicknesses, screw thread pitch. The measurement may be read on the screw itself, on a dial or on a digital display.

(2) **Callipers** (vernier, dial indicating or electronic), for measuring, e.g., diameters, depths, thicknesses.

(3) **Gauges**, having an adjustable measuring device.

Gauges without adjustable devices, used only for sizing parts or checking angles, forms, etc. (for example, plug gauges, ring gauges), are **excluded** (**heading 90.31**).

(4) **Comparators (dial type)**, used to check the inside or outside tolerance of dimensions (e.g., reaming or rectification checks). They incorporate a measuring rod, amplifying dial and transmission system (rack, gear, lever, spring, pneumatic, hydraulic, etc.).

(5) **Measuring rods** (plain or divided, straight or folding) and **measuring tapes** (e.g., spring rules, riband-rules, drum wound bands), including standard rods, measuring sticks and the like.

The heading **excludes** measuring devices specially designed for surveying (land chains, levelling staves, ranging poles, etc.) and winch-type measures for mine shafts (**heading 90.15**).

(6) **Divided scales** (school rulers, etc.), including V-shaped rules for measuring the diameter of convex bodies and vertical measuring apparatus with movable crossheads.

(7) **Map measurers** (opisometers); small instruments with or without a dial, used for measuring distances on maps, plans, etc.

PARTS AND ACCESSORIES

Subject to the provisions of Notes 1 and 2 to this Chapter (see the General Explanatory Note), the heading also covers parts and accessories identifiable as being suitable for use solely or principally with the machines, apparatus and instruments described above, e.g., micrometer extension anvils; stands for slip gauges; micrometer stands; hinges or joints for folding rules.