84.43 - Printing machinery used for printing by means of plates, cylinders and other printing components of heading 84.42; other printers, copying machines and facsimile machines, whether or not combined; parts and accessories thereof (+).

- Printing machinery used for printing by means of plates, cylinders and other printing components of heading 84.42 :

8443.11 - - Offset printing machinery, reel-fed

8443.12 - - Offset printing machinery, sheet-fed, office type (using sheets with one side not exceeding 22 cm and the other side not exceeding 36 cm in the unfolded state)

8443.13 - - Other offset printing machinery

8443.14 - - Letterpress printing machinery, reel fed, excluding flexographic printing

8443.15 - - Letterpress printing machinery, other than reel fed, excluding flexographic printing

8443.16 - - Flexographic printing machinery

8443.17 - - Gravure printing machinery

8443.19 - - Other

- Other printers, copying machines and facsimile machines, whether or not combined :

8443.31 - - Machines which perform two or more of the functions of printing, copying or facsimile transmission, capable of connecting to an automatic data processing machine or to a network

8443.32 - - Other, capable of connecting to an automatic data processing machine or to a network

8443.39 - - Other

- Parts and accessories :

8443.91 - - Parts and accessories of printing machinery used for printing by means of plates, cylinders and other printing components of heading 84.42

8443.99 - - Other

This heading covers (1) all machines used for printing by means of the plates or cylinders of the previous heading, and (2) other printers, copying machines and facsimile machines, whether or not combined.

The heading includes machines for printing a repetitive design, repetitive wording or overall colour on textiles, wallpaper, wrapping paper, rubber, plastics sheeting, linoleum, leather, etc.

(I) PRINTING MACHINERY USED FOR PRINTING BY MEANS OF PLATES, CYLINDERS AND OTHER PRINTING COMPONENTS OF HEADING 84.42

The most common of these machines are rotary presses. In their simplest form, these presses usually consist of a cylinder with two semi-cylindrical plates (letter press), or of cylinders which may be either engraved (gravure printing) or impressed (offset printing); rotary presses for colour-printing are equipped with several printing cylinders, their inking rollers being placed side by side. Since all the printing, pressing and inking mechanisms are rotary, these presses can be used for both continuous printing and sheet by sheet printing, in black or in colour, on single sides or on both sides of the paper. Rotary presses can be divided into two sub-categories :

(1) **Reel-fed presses**, in which some large rotary presses combine several printing units on a single frame, and which enable all the pages of a newspaper or periodical to be printed in one sequence of operations, so that, in the final result, all the pages are delivered, cut, folded, assembled, stapled and stacked by various ancillary machines working in conjunction with the printing machine.

(2) **Sheet-fed presses**, in which the sheets are transported through the printing units by grippers. Sheet-fed presses have a feeder, one or more printing units, and a delivery mechanism. In the feeder the sheets are taken from a pile, aligned, and forwarded to the printing unit. In the delivery mechanism the printed sheets are collected in a pile.

This group also includes printing presses using a movable plate (or platen), and cylinder printing machines.

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The above printing presses (particularly the small or medium-sized rotary presses) can be fitted with a series of making-up units arranged side by side with the printing units, so that, starting from a single reel of paper, complex products (e.g., box shapes, packagings, labels, railway tickets) can be completed in one single and continuous operation.

In addition to the typical types of printing machines, this heading also covers special machines such as :

(i) Machines for printing tin foil boxes or other containers.

(ii) Machines for printing clock or watch dials or other articles of special shapes.

(iii) Machines for printing on corks, tubes, candles, etc.

(iv) Machines for marking clothing.

(v) Machines for printing book page signatures.

(vi) Numbering, dating, etc., machines (**other than** hand-operated date and similar stamps of **heading 96.11**) operating with irons, bands of letters or figures, etc., whether or not inked.

(vii) Certain small office printing machines which operate by means of printing type or by the offset process, and which are improperly referred to as "duplicating machines" because their operating principles and appearance are similar to those of duplicating machines.

This group also includes **colour printing machines**, used to colour, after they have been first printed in black and white, special art editions, playing cards, children's illustrations, etc., by means of stencils or stencil-plates, the colour being applied by brushes, rollers or by spraying.

Machines for printing a repetitive design, repetitive words or overall colour on textiles, wallpaper, wrapping paper, linoleum, leather, etc., include :

(1) **Block printing machines** in which blocks engraved with the design, generally in relief, are repeatedly pressed on the cloth, wallpaper, etc., as it passes through the machine, thus producing a continuous design; the same machines are also used for printing separate designs (e.g., on scarves or handkerchiefs).

(2) **Roller printing machines**, usually consisting of a large central cylinder (pressure bowl) around the periphery of which is placed a series of engraved colour rollers, each with its colour trough, furnisher roller, doctor blades, etc.

(3) **Screen printing machines**. The material to be printed passes through the machine together with a stencil-screen band, the colour being applied through the stencil.

(4) **Warp printing machines** which, before weaving, print a design on the sheet of parallel warp yarns unrolled from the warp beam.

(5) **Yarn printing machines**. These produce colour effects on the yarn (or sometimes on the roving before it is spun into yarn).

(II) OTHER PRINTERS, COPYING MACHINES AND FACSIMILE MACHINES, WHETHER OR NOT COMBINED

This group covers :

(A) **Printers**.

This group includes apparatus for the printing of text, characters or images on print media, other than those that are described in Part (I) above.

These apparatus accept data from various sources (e.g., automatic data processing machines, flatbed desktop scanners, networks). Most incorporate memory to store that data.

The products of this heading may create the characters or images by means such as laser, ink-jet, dot matrix or thermal print processes. The two most common types of printers are :

(1) **Electrostatic printers**, which employ a process that involves electrostatic charges, toner and light. A light source (e.g., a laser, a light-emitting diode (LED)) is used to cancel the charge at specific points on a positively charged photoconductive surface (usually a drum) leaving a positively charged replica of the image. The negatively charged toner is electrostatically attracted to the photoconductive surface, reproducing the original image. The toner is electrostatically transferred to the print medium, which has a stronger positive charge than the photoconductive surface, and the image is then fused to the print medium by applying pressure and heat.

(2) **Inkjet printers**. These machines place drops of ink onto a print medium to create an image.

This heading includes printers presented separately for incorporation in or connection to other products of the nomenclature (e.g., receipt printers of cash registers of heading 84.70).

(B) **Copying machines**.

This group includes apparatus for the production of copies from original documents, such as :

(1) **Digital copiers** in which the original document is scanned and a photosensitive surface (e.g., a charge-coupled device (CCD) or photo-diode sensing array) converts the optical image into digitally coded electrical signals that are stored in memory. The print engine, which operates in the same manner as the printers described in Part (II) (A) of this Explanatory Note, then uses that data to produce the required number of copies. Original documents need only be scanned once to produce multiple copies, as the digital representation of the image is stored in memory. Part (D) below describes such apparatus when capable of connecting to an automatic data processing machine or to a network.

(2) **Photocopiers** in which the optical image of the original document must be projected onto the photosensitive surface for each copy. The most common types are :

(a) Electrostatic photocopying apparatus which operates either by reproducing the original image directly onto the copy (direct process) or by reproducing the original image via an intermediate onto the copy (indirect process).

In the direct process the optical image is projected onto a substrate (usually of paper) coated with, for example, zinc oxide or anthracene, charged with static electricity. After the latent image has been developed by means of a powdered dye, it is fixed to the substrate by heat treatment.

In the indirect process, the optical image is projected onto a drum (or plate) coated with selenium or other semiconducting substance charged with static electricity. After the latent image has been developed by means of a powdered dye, it is transferred onto ordinary paper by applying an electrostatic field and fixed to the paper by heat treatment.

(b) Apparatus using chemical emulsion coatings in which the photosensitive surface consists of an emulsion usually containing silver salts or diazo compounds (the latter being designed for exposure to light with a high ultraviolet content). The developing and printing processes vary according to the nature of the emulsion and the type of apparatus (wet or dry developers, heat treatment, ammonia vapour, transfer techniques, etc.).

This group also includes contact type photocopying apparatus and thermo-copying apparatus.

(C) **Facsimile machines**.

Facsimile (or fax) machines are for the transmission and reception of text or graphics over a network and for the printing of a reproduction of the original text or graphics. Part (D) below describes such apparatus when capable of performing a copying function.

(D) **Combinations of printers, copying machines or facsimile machines.**

Machines which perform two or more of the functions of printing, copying or facsimile transmission are generally referred to as multi-functional machines. These machines are capable of connecting to an automatic data processing machine or to a network.

The criterion "capable of connecting to an automatic data processing machine or to a network" is described in the Subheading Explanatory Note below.

PARTS AND ACCESSORIES

Subject to the general provisions regarding the classification of parts (see the General Explanatory Note to Section XVI), the heading also covers parts and accessories of the machines of this heading.

This would include, for example, machines (whether or not presented separately) for uses ancillary to printing exclusively designed to operate with printing machines and used during or after the printing operation for feeding, handling or further working the sheets or rolls of paper. Such machines, which are usually separate from the printing machine itself, include :

(1) **Stock or pile elevators and paper trays or drawers**, which hold the blank sheets ready to be printed.

(2) **Automatic feeders**, used for sheet by sheet printing. Their function is to feed sheets one by one, perfectly centred, into the machine.

(3) **Sheet delivery mechanisms**, similar in design to feeders, but carrying out the reverse process (i.e., they deliver and pile the printed sheets).

(4) **Sorters**, which stack and collate printed sheets of multi-page documents.

(5) **Folders, gummers, perforators and staplers**. These are often used, at the delivery end of the printing machine, to fold and staple or stitch printed pages (of newspapers, folders, periodicals, etc.).

If, however, they are not designed **exclusively** for use in conjunction with a printing machine, they are **excluded (heading 84.40** or **84.41**, as the case may be).

(6) **Serial numbering machines**, small accessory machines operating with rolls of figures.

(7) **Bronzing machines for the printing industry**. These deposit metal powder on sheets as they emerge from the printing machine in which they have just been mordant-printed.

This heading also includes drums and plates used in electrostatic photocopying apparatus, guide rollers and mounted oil supply pads.

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The heading also **excludes** :

(a) Cylinder blankets and covers of textile fabric, rubberised textile fabric, felt, rubber, etc. (classified according to the constituent material).

(b) Machinery for labelling bottles, cans, boxes, bags or other containers, and wrapping machinery (**heading 84.22**).

(c) Machines with an ancillary printing device, e.g., certain bag filling or packing machines (**heading 84.22**); certain machines for making up paper or paperboard (**heading 84.41**). If presented separately, the printing device remains classified in this heading **provided** it prints by one of the processes of the machines of this heading.

(d) Anti-smudging spraying machines (**heading 84.24**).

(e) Hectographic and stencil duplicating machines, and addressing machines (**heading 84.72**).

(f) Pattern generating apparatus (**heading 84.86**).

(g) Cameras for recording documents on microfilm, microfiche or other microforms (**heading 90.06**).

(h) Ordinary photographic printing frames (**heading 90.10**).

(ij) Drawing instruments of **heading 90.17**.

(k) Hand-operated label embossers of **heading 96.11**.

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Subheading Explanatory Notes.

Subheadings 8443.11, 8443.12 and 8443.13

These subheadings cover printing machinery in which the impression is obtained by means of a printing plate on which the design is reproduced in the flat, i.e., in neither intaglio nor relief (offset printing process). The formation of the image to be printed is based on the principle of the mutual repulsion of water and fatty substances. The printing, always performed on a rotary machine, is not obtained by direct contact of the printing medium on the material to be printed, but by intermediate transfer onto a rubber cylinder called a blanket which, in turn, transfers the image onto the matter to be printed. The machinery of these subheadings is characterised by the presence of the blanket and of a device used to continuously dampen the non-printing parts of the printing plate which is fixed to a metal cylinder. Offset printing machines can be fed by rolls or sheets.

Subheadings 8443.14 and 8443.15

Letterpress printing is a process whereby the ink is transferred under pressure to the printing surface from the raised parts of the type. The type consists of individual characters, lines or image-bearing plates, all of the same height.

These subheadings **do not**, however, **cover** flexographic printing machinery.

Subheading 8443.16

Flexographic printing is a process employing the letterpress principle for simple work (printing of packaging, forms, leaflets, etc.), and in which the printing plate is of rubber or thermoplastic material bonded directly to the impression cylinder. These machines are simpler and lighter than other printing presses; they print continuous webs of paper in one or more colours, using an ink based on alcohol or other volatile solvents.

Subheading 8443.17

In gravure printing, the ink accumulated in different volumes in engraved or etched parts of the printing plate is transferred by pressure onto the surface to be printed. This form of printing has its origins in line engraving and etching, where a graver or an acid is used to incise lines of different depths in a polished copper plate. The surface of the plate remains free of ink, which collects in the lines in sufficient quantity to yield an impression.

The principle of gravure printing is similar to that of line engraving and etching. A rotary cylinder is used instead of the plate. The image or signs are transferred onto a cylindrical plate electroplated with copper by mechanical or photochemical means.

Subheadings 8443.31 and 8443.32

The criterion "capable of connecting to an automatic data processing machine or to a network" denotes that the apparatus comprises all the components necessary for its connection to a network or an automatic data processing machine to be effected simply by attaching a cable. The capability to accept the addition of a component (e.g., a "card") that would then allow the connection of a cable is not sufficient to meet the terms of these subheadings. Conversely, that the component to which a cable would be connected is present but inaccessible or otherwise unable to effect a connection (e.g., switches must first be set) is not sufficient to exclude goods from these subheadings.