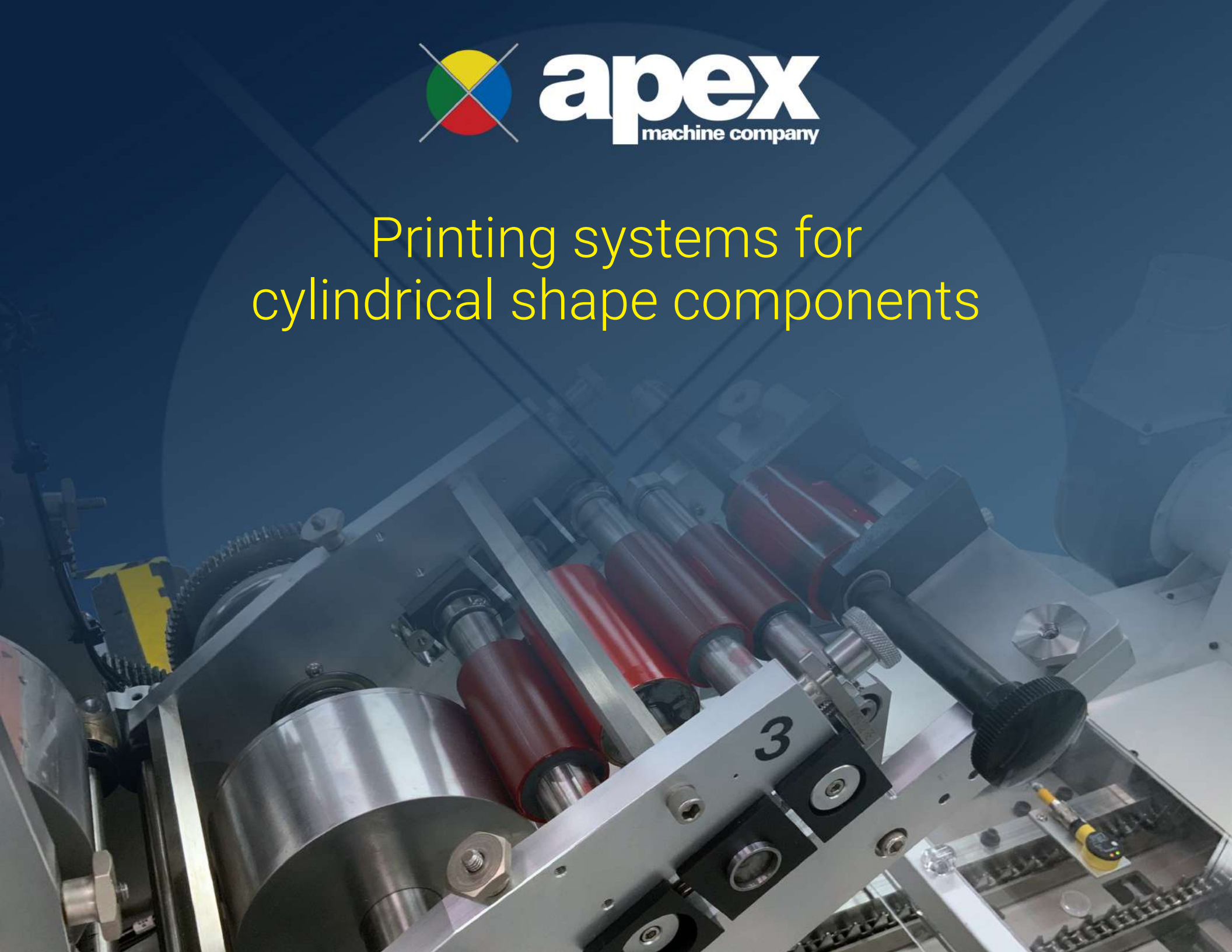
apex machine company

Printing systems for cylindrical shape components



Apex Machine Company

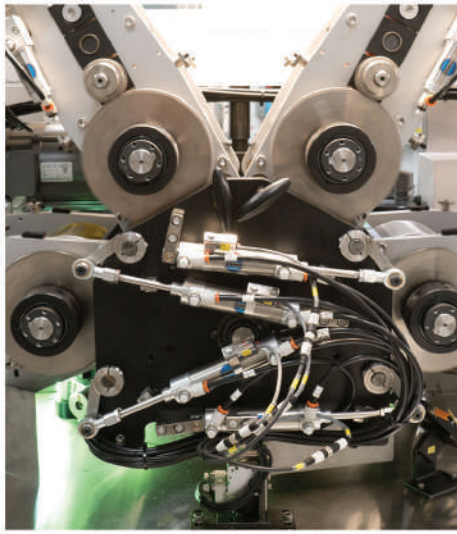
Apex Machine Company has been engineering and building specialized machinery for printing and decorating three-dimensional products since the start of the 1900's. The company has built a worldwide reputation for engineering innovation and excellence in the handling, printing, and decorating of rigid and semi-rigid products. The company's headquarters and main manufacturing base is situated in Fort Lauderdale, Florida, U.S.A.

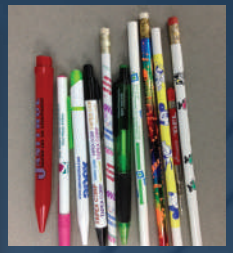
Cylindrical Parts Printers

Apex supplies machines, for printing and decorating cylindrical shaped parts and components, into a wide variety of industry sectors and provides turn-key printing solutions for literally hundreds of different types of three-dimensional products. Our various machine types are capable of handling and decorating items as small as paper sticks for lollies, all the way up to large size Buckets and Pails, printing high qualty graphics in up to 6 colors.

We supply solutions for sidewall printing onto many common types and sizes of Plastic tubes, tubs, cups, caps, closures, cans, aerosols, cartridges, bottles, containers and barrels across a wide spectrum of industry sectors including food, medical, hardware, drinks, stationery and many others. We also provide solutions for Metal products like oil filters, cigar tubes, cans and aerosols; wooden products like pencils, golf tees and sucker sticks; Paper and Cardboard products including lolly sticks, spools, shotgun shells, etc. and Ceramics like spark plugs and electrical insulators.

In short, if we haven't already handled and printed the exact item you need to find a decorating solution for, you can rest assured we will have done something similar, perhaps in another industry or product area, and will have the expertise and know-how to propose the right solution for your particular requirements. The well-proven range of Apex printing and decorating machines is highly customizable to suit specific product and decoration requirements. At Apex, every machine is unique, as product handling and printing characteristics are specifically engineered to suit each customer's product.





C-400 Cylindrical Parts Printer

For Rigid components less than 16" (406.4mm) in length and 6" (152.4mm) diameter.

The heart of the C-400 is an indexing or continuous motion chain assembly that carries the rigid component throughout the system. Integrated within the handling system would be the appropriate feeder, pre-treater, cleaning system, decoration unit, dryer, coater, and unloader. Optional automation to assist in the assembly of your component can be interfaced within the system as well.

Feeder/Loader

The feeding of your components to the system can be simple or sophisticated, depending on the product speed required. Typically, hoppers and bowl feeds are utilized for smaller components, and inline conveyors and chutes are utilized for larger parts.

Pre-Treaters

Gas treaters and corona discharge units are most often used to pretreat your plastic components for the highest quality print and adhesion. Either can be integrated within the C-400, and both are available in many different formats and types to suit every customer's unique requirements.

Decoration Unit

A wide variety of decoration technologies can be integrated within the C-400. For multicolor applications, we suggest either a dry offset print station or Flexapex® offset, which can be supplied in different widths in up to six color head configurations. For one color requirements or overcoating applications, we suggest the utilization of either Flexapex® offset, rotary hot stamping, letterflex, or flexographic printing.

Dryers

Forced hot air, infrared, convection, and UV (ultraviolet) drying methods can be supplied to cure the appropriate inks for each customer's individual demands and requirements.

Parts that are commonly printed on the C-400 are:

- Assembled or Unassembled Writing Instruments
- Pens, Pencils and Marker Barrels
- Cartridges
- Catheters
- Cosmetic tubes/containers
- Gas Springs
- Golf Tees
- Hoses
- Pipettes/syringes
- Shotgun Shells

Technical Data

The C-400 range encompasses 12 machine types offering a variety of possibilities to handle different product diameters and lengths. The dimensions below indicate the possible range of sizes depending on machine type. Please inquire for specific machine details.

Minimum Part Diameter - from 0.175" (4.445mm) to 2.50" (63.5mm)

Maximum Part Diameter - from 0.875" (22.22mm) to 4.50" (114.3mm)

Minimum Part Length - from 0.750" (19.05mm) to 2¼" (57.15mm)

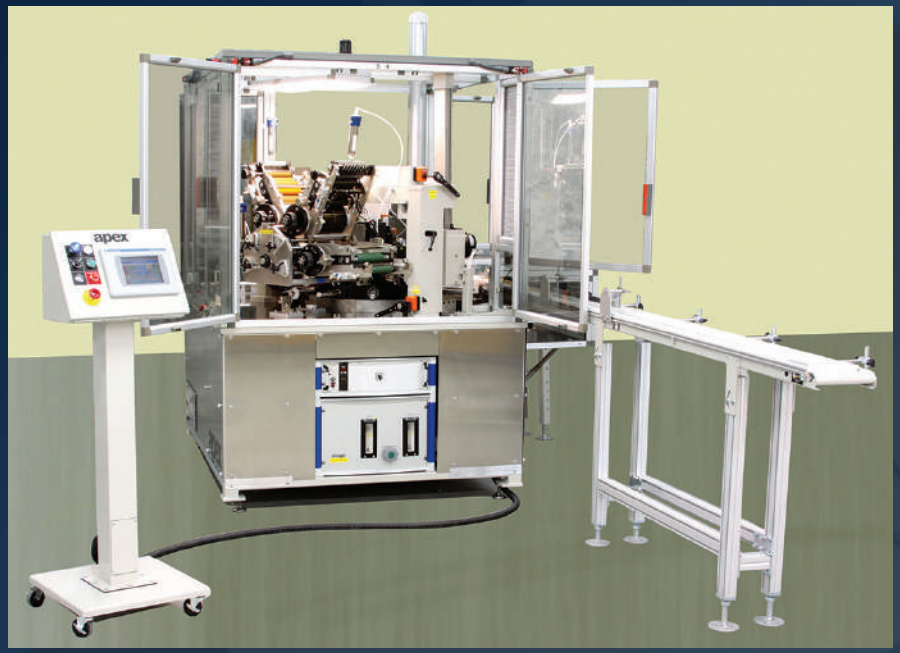
Maximum Part Length - from 9" (228.6mm) to unlimited

Maximum Copy Length - from 6" (152.4mm) to 12" (304.8mm)

¼" (6.25mm) is required on each end to support the components during the handling and printing processes.

apex machine company

Rigid Cylinder Printers



C-50 Rigid & Semi-Rigid Tube Printers

The C-50 has a servo driven horizontal index motion part handling system with 8 or 12 stations to provide the flexibility for handling a wide variety of tubular and cup shaped products. The C-50 is Ideal for printing onto rigid or semi rigid hollow parts such as syringe barrels, vials, medical tubes and dosage cups.

The C-50 can be integrated with a wide range of feeding and parts handling systems to provide full automation at speeds from 70 to 140 parts per minute, depending on specification and handling systems.

Options are available for pre-treaters, a variety of print technologies up to 4 colors, UV curing and other special functions.

C-500 & C-5000 Barrel and Tube Printers

The C-500 utilizes mandrels to support and decorate flexible or rigid parts on their full length 360° around. The heart of the machine is a 8, 12, or 16 station servo driven index table with quick change horizontal or vertical mandrels mounted at centers around the machine to provide a high degree of capability and flexibility for handling all types of tubular shaped products. The C-5000 model has a 24 station servo driven index table to allow the installation of additional functions such as capping, clear coating, etc.

The machine is ideal for printing onto rigid or semi-rigid tubes including syringes, vials, centrifuge tubes and similar items. It can be integrated with feeders and parts handling systems to provide full automation at speeds up to 120 ppm. Options are available for pre-treaters, various print technologies from 1 to 5 colors, lacquer coating, curing, hot foiling and other special functions such as orientation, vision systems, capping and sub-assembly.

The C-500 / C-5000 is one of our most widely specified mandrel based printers, with applications across a broad selection of tubular and barrel shaped products, and is used in different industry sectors around the globe. As with all Apex machines, we tailor each one to suit your specifications. We look forward to the receipt of your specifications so that we can quote the Apex machine that best meets your requirements.

Feeder/Loader

The feeding of your components to the system can be simple or sophisticated, depending on the product speed required. Typically, hoppers and bowl feeds are utilized for smaller components, and inline conveyors and chutes are utilized for larger parts.

apex machine company

Rigid Cylinder Printers

Pre-Treaters

Gas treaters and corona discharge units are most often used to pretreat your plastic components for the highest quality of print and adhesion. Either can be integrated within the C-500, and both are available in many different formats and types to suit every customer's unique requirements.

Decoration Unit

Any decoration technology can be integrated within the C-500. For multi-color applications, we suggest either a dry offset print station, or FlexApex® which can be supplied in different widths in up to six color head configurations. For single color requirements or overcoating applications, we also offer rotary hot stamping, letterflex, or flexographic printing, with each type specifically designed and interfaced to suit your requirements.

Dryers

Forced hot air, infrared, convection, and ultraviolet curing units can be supplied to cure the appropriate ink for each customer's individual demands and requirements.

Technical

A maximum length of 12 inches or 304mm of copy can be printed on parts from 1.875" (47.62mm) to 6 inches (152mm) in diameter.

Parts that are commonly printed on the C-500 are:

- Barrels
- Bottles
- Cartridges
- Closure sidewalls
- Containers
- Cups
- Syringes
- Tubes

apex machine company

Rigid Cylinder Printers

C-30 & C-60 Tube Printers

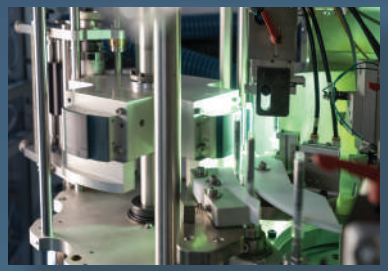
The C-30 and C-60 machines are semi-automatic horizontal index motion printers designed to handle syringe barrels, vials and other small tubes on mandrels.

Quick change mandrels, for different diameter parts, make this a very flexible machine for handling a range of different sizes when required. A range of infeed and outfeed options are available to suit specific requirements.

Parts are transported through the system on mandrels, thus allowing full 360° printing around the circumference in up to 3 colors (C-30) or up to 4 colors (C-60).

As standard the machines feature:

- Semi-Automatic feeding system
- Part escapement/loader
- Print station
- Print up to 3-colors (C-30) - 4 colors (C-60)
- Eject/reject unit
- Speeds of approx. 50 to 120+ parts ppm



apex machine company

Cork, Vial & Small Cylinder Printers

C-4000 Cork, Vial & Small Cylinder Printer

The C-4000 is normally supplied as a fully automatic system with synthetic or natural corks, canisters, cryule vials or other rigid tubular parts being fed into an appropriate bulk bin.

The parts are then singulated, orientated and fed in twin lanes into a double width printing system for pre-treatment, printing, curing and capping prior to delivery into a bag, part accumulation system or automatic packaging station. Options are available for capping of vials and for silicone coating for synthetic corks.

Parts are held in chucks in two lanes in a ferris wheel style index-motion transport sytem, thus allowing full 360° printing aroung the circumference in up to 4 colors. The printing system used is normally UV based dry offset. Other technologies are also available where required.

Production speed of up to 300 parts per minute, subject to handling options and charasteristics.

C-40 Cork, Vial & Small Cylinder Printer

The C-40 is normally supplied as a fully automatic system with synthetic or natural corks, canisters, cryule vials or other rigid tubular parts being fed into an appropriate bulk bin.

The parts are then singulated, orientated and fed into the printing system for pre-treatment, printing, curing prior to delivery into a bag, part accumulation system or automatic packaging station. Options are available for capping of vials and for silicone coating for synthetic corks.

Parts are held in chucks in a ferris wheel style index-motion transport sytem, thus allowing full 360° printing aroung the circumference in up to 4 colors. The printing system used is normally UV based dry offset. Other technologies are also available where required.

Production speed of up to 150 parts per minute, subject to handling options and charasteristics.

apex machine company

Rigid Cylinder Printers

C-9 Syringe & Tube Printer

The C-9 syringe and rigid-tube printer has been introduced to meet the requirement for a budget level continuous motion dial transport printer, designed for lower volume applications where higher speeds of production are not a requirement.

Typically supplied with one or two color print capability and running at speeds of up to 200 parts per minute, the C-9 offers the same quality of print and accuracy as our larger and faster C-90 and C-900 models.

As standard the machine features:

- Fully automatic
- In-feed
- Auto orientation
- Pre-treater
- 2-color capability
- Ultraviolet Cure
- 80 to 200 Parts Per Minute (subject to exact specifications, no. of print colors, validation systems, special handling, etc.)

C-90 Syringe, Tube & Sidewall Printers

At the heart of the Apex Machine range of tube printers is the world leading C-90 Rigid Tube printer. This workhorse machine utilizes a continuous motion dial transport system and can be fitted with a variety of different print technologies, pre-treatment options, orientation solutions, curing and additional functionality such as sub-assembly, vision inspection, counting and packaging, as required.

This printer series offers a range of production speed capabilities from 200 to 400 parts per minute, in one to four colors, depending on the print technology used and on customer specifications. The printers can be tooled for a wide variety of different sizes of syringe, centrifuge, or other rigid tubes like marker barrels, and can be supplied either as a stand-alone system or interfaced with both upstream and downstream production lines where needed.

C-High Speed Rigid Tube Printers

C-900 Rigid Tube Printers

The C-900 is one the fastest tube printing machines in the world, ideal for high volume manufacturing applications like marker pen barrels, disposable syringes, closure sidewalls, etc. This system can be supplied with or without mandrels to automatically feed, pre-treat, orientate, print, cure and exit a range of different tube diameters at production speeds in excess of 600 parts per minute.

The C-900 can be supplied with a variety of feeding, pre-treating, and orientation systems, curing units, vision inspection systems, part accumulation and packaging modules to suit each customer's individual needs and requirements.

For high-speed tubular item printing applications the C-900 is an industry leader. Large numbers of this machine type can be found in production, on a 24/7 basis, with volume product manufacturers all over the world.

Apex Sidewall Printer Ranges include:

C-9001	600 ppm, 4 colors + base coat + clear coat
C-9000	600 ppm, 4 colors + clear coat
C-900	400 - 600 ppm, 4 colors
C-90	200 - 400 ppm, 4 colors
C-9	80 - 200 ppm, 2 colors
C-5000	120 - 150 ppm, 4 colors + base coat + clear coat
C-500	120 - 150 ppm, 4 colors + clear coat
C-50	70 - 140 ppm, 4 colors

C-9000 High-Speed Metal & Plastic Cap Printers

Apex cap sidewall printers decorate on the full length of most caps and closures, 360° around.

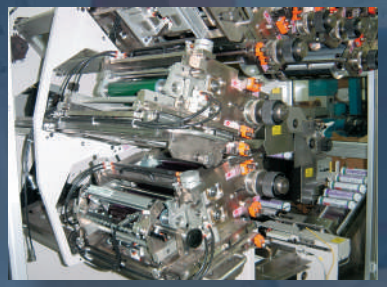
Whatever your requirement, whatever the size or height, whatever the material of your cap or closure, Apex and group company Desco Machine have printing and decorating solutions to suit. Apex has developed new and innovative continuous motion machinery for applying sidewall decoration to aluminum and plastic closures of all sizes, at speeds that are far in excess of current production levels. These machines, together with Apex's range of index motion models, offer manufacturers of caps and closures many more decorating options and production speed choices than ever before.

The C-9000 systems are modular in design and can include pre-treating, cleaning, a base coating station, a 4-color print station, over lacquering clear coating, with UV dryers after each print process. These machines are available with production speeds of 600 + parts per minute.

All Apex machines are highly customizable and are tailored to meet almost every product handling and decorating requirement, with a choice of printing technologies including dry offset, FlexApex®, rotary hot foiling, rotary silkscreen, and other processes. All machines can be supplied with appropriate gas or corona pre-treaters for PE, PP and other plastics where required. Apex can also supply all types of product feeding, handling, and delivery solutions including hoppers, bowl feeders, chutes, automatic screw cap applicators, and conveyors to suit almost every production requirement.

apex machine company

Rigid & Flexible Tube Printers



Unique Quick-Change Print Heads Slide Out for Easy Access

C-506 Cylindrical Parts Printer

Whether you are looking for high quality printing on metal or plastic cups, cans, containers or tubes, the Apex C-506 consistently delivers the solution.

Capable of printing flexible cylindrical parts with a copy length of up to 12 inches, from eyedroppers to medium sized buckets, the C-506 range has seen it all.

The C-506 can incorporate a range of feeders, pre-treaters, cleaning systems, decoration units, dryers, coaters and unloading systems. The system can also integrate automatic capping stations, side seam detectors as well as Quick Change features.

Feeder/Loader

The feeding of your components into the system can be simple or sophisticated, depending on your specific production requirements. Typically, hoppers and bowl feeds are utilized for smaller components with inline conveyors or chutes being preferred for larger parts.

Pre-Treaters

Gas treaters or corona discharge units are most often used to pretreat parts to remove any excess lubricants or contaminants that might hinder the highest print quality and adhesion. Cleaning systems such as deionized air jet systems can be integrated within the C-506 and each is available in a variety of formats to suit each customer's unique requirements.

Decoration Unit

Any decoration technology can be integrated within the C-506. For multi-color applications, we recommend a dry offset print station, which can be supplied in different widths in up to six color head configurations. For overcoating applications, we suggest rotary silk screening, rotary hot stamping, letterflex or flexographic printing, with each type specifically designed and interfaced to suit your requirements.

Drying

Forced hot air, infrared, convection and ultraviolet curing styles of drying can be supplied to cure the appropriate ink for each customer's specific needs.

Quick Change Features

Apex has developed industry revolutionizing technology that allows for a 6-color ink and plate change in minutes, thereby nearly eliminating downtime. With the market trend moving towards shorter and shorter production runs, this optional feature has proved to be decisive in justifying ROI's for our clients, many of whom have experienced high downtime percentages with conventional printing machines.

Production Speed

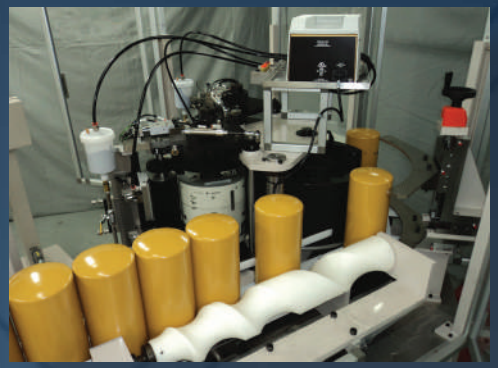
Variable up to 150 to 200 parts per minute, depending on product size, length and handling requirements.

Common components printed on the C-506

- Pill containers
- Rigid wall tubes
- Flexible tubes
- Aerosols
- Cans
- Containers
- Baby bottles

apex machine company

Other Cylindrical Parts Printers



ARC Convolute Path Cylinder Printers

Apex ARC convolute path printers have been developed to provide 360° around side-wall printing solutions for a wide range of rigid cylindrical products from car and truck oil filters through to bottles and other solid cylinders.

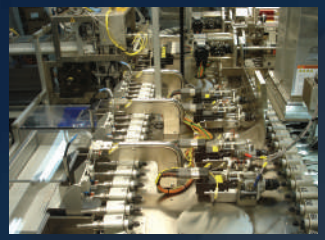
The range of Apex Oil and Fuel Filter printers has been especially developed in consultation with customers from around the world to provide the highest quality print capabilities, combined with speed and ease of operation to handle short run production efficiently and economically.

There are different types of printer available to suit most types of filter, from the very smallest, right up to lengths of 12" (304mm), and diameters up to 6" (152mm). Apex have solutions offering a variety of production speeds and print methods to suit most applications.

Machines typically operate in speed ranges up to 200 parts per minute. Developments in UV ink technology, combined with the Flexapex® printing system developed by Apex, now enable printing through a modified offset process to give near silkscreen density and quality at offset printing speeds. This system provides potential for substantial cost savings, compared to silkscreen or gravure (pad printing) systems, through lower origination costs, faster changeovers, and higher running speeds.

Further benefits include the use of inks that do not contain volatile solvents of the type used in air dry inks in gravure and pad printing processes - an increasingly important consideration in in the light of current trends in ecological and Health & Safety legislation - and the capability to print multi-color images in perfect register.

apex machine company



C-72 High Speed Syringe & Tube Printer

The C-72 is a high speed index-motion, mandrel based printer designed for syringe barrels and small tubes, with a machine layout enabling the installation of stations to provide a wide variety of functionality.

Parts are automatically fed (two at a time) onto mandrels, orientated, and fed into pre-treating, printing, UV drying and other functions prior to being exited from the machine. The machine can be supplied for stand-alone operation, or interfaced with upstream and downstream systems as required. A variety of different printing processes, in 1 to 4 color, are available to meet most requirements.

The C-72 is designed primarily for medical parts requiring internal support or full length / 360° print, but also has applications in other specialist tube areas .

Capabilities:

- Up to 300 units per minute
- Index motion procession transport system
- Two up handling
- Full vision system capability, inclusive intelligent vision
- Auto feed/load to suit requirements
- Auto eject/reject, with automatic part accumulation by counts/tote types
- Auto interface with assembly machines
- Designed for parts up to 4" (100mm) in length and 0.75" (19mm) in diameter

Worldwide Headquarters

Apex Machine Company
3000 N.E 12th Terrace
Fort Lauderdale
Florida 33334-4497
USA

Tel: +1 954 566 1572
Fax: +1 954 563 2844
Email: email@apexmachine.com
Web: www.apexmachine.com

PRINTING SYSTEMS FOR CYLINDRICAL SHAPE COMPONENTS