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Printing systems for medical devices, components, drug dispensers and delivery systems

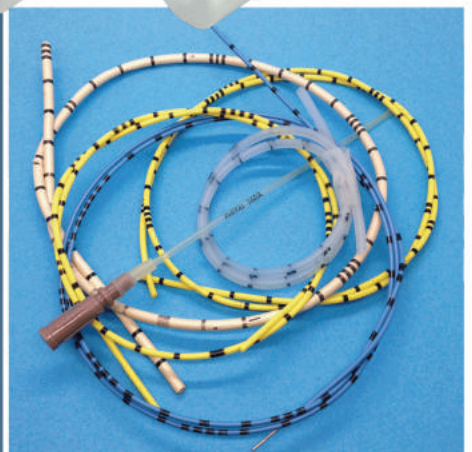
Medical & Pharmaceutical Device Printers

Custom engineering, manufacturing of specialist machinery and turn-key solutions for the medical and pharmaceutical industry sectors are areas where Apex has a track record of success at the leading edge of development. Our ability to provide solutions for critical components where accuracy, repeatability and quality are paramount, has placed Apex as a first choice supplier for leading household names in the industry for many years.

We routinely provide turn-key systems in this market area, working together with major suppliers in the fields of plastic injection molding, complex parts assembly systems, vision systems and others, as appropriate, to provide ideal solutions for our customers. Typically our involvement with projects may commence at the planning and design stages, where we are often able to provide input regarding suitability of parts for handling and printing. We regularly conduct trials for customers to establish the suitability of both parts and materials for compliance with the printing, marking or decoration methods that may be envisaged.

Our corporate aim is to work with customers in this industry area as long-term partners, acting not only as a machinery solutions provider but also as a development arm to assist with projects where our expertise is relevant.

The range of products covered is extensive and includes items like Blood Collection Tubes, Cryule Vials, Pipettes, Syringes, Dental Needle Holders, Centrifuge Tubes, Dosage Tubes, Dispensers, Pill Cases, Pill Dispensers, Pill Jars, Pills, Safety Components, Stents/Catheters, Thermometers and components for insulin and other drug dispensing devices.



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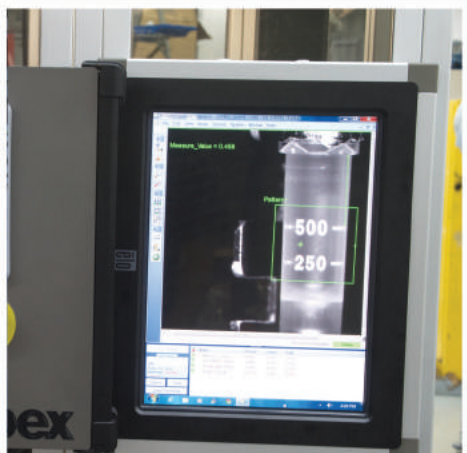
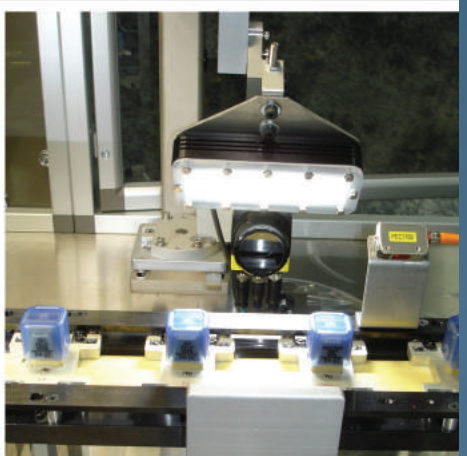




IQ, PQ & OQ Services

Apex Machine Company has worked with many major manufacturers of medical and pharmaceutical products and is thoroughly conversant with the requirements and procedures for IQ, PQ and OQ related to the verification and validation of product handling, printing and vision inspection equipment. Our in-house specialist department is available to assist customers with the validation processes, documentation and specifications.

Vision Systems

Vision systems form an important part of many of the modern machines designed and built by Apex for customers in the medical, pharmaceutical and other related industries.

Modern camera systems can be programmed to inspect every aspect of the marking and decoration of a component, checking a variety of print parameters such as positional accuracy, density, integrity and color of image. Additional checks for part concentricity, presence of assembled parts, etc., can also be performed. The camera systems are typically interfaced with the PLC of the Apex line to ensure that 'bad parts' are rejected from the system. Linked computer systems can be custom programmed to provide complete traceability and other functions for quality control purposes.

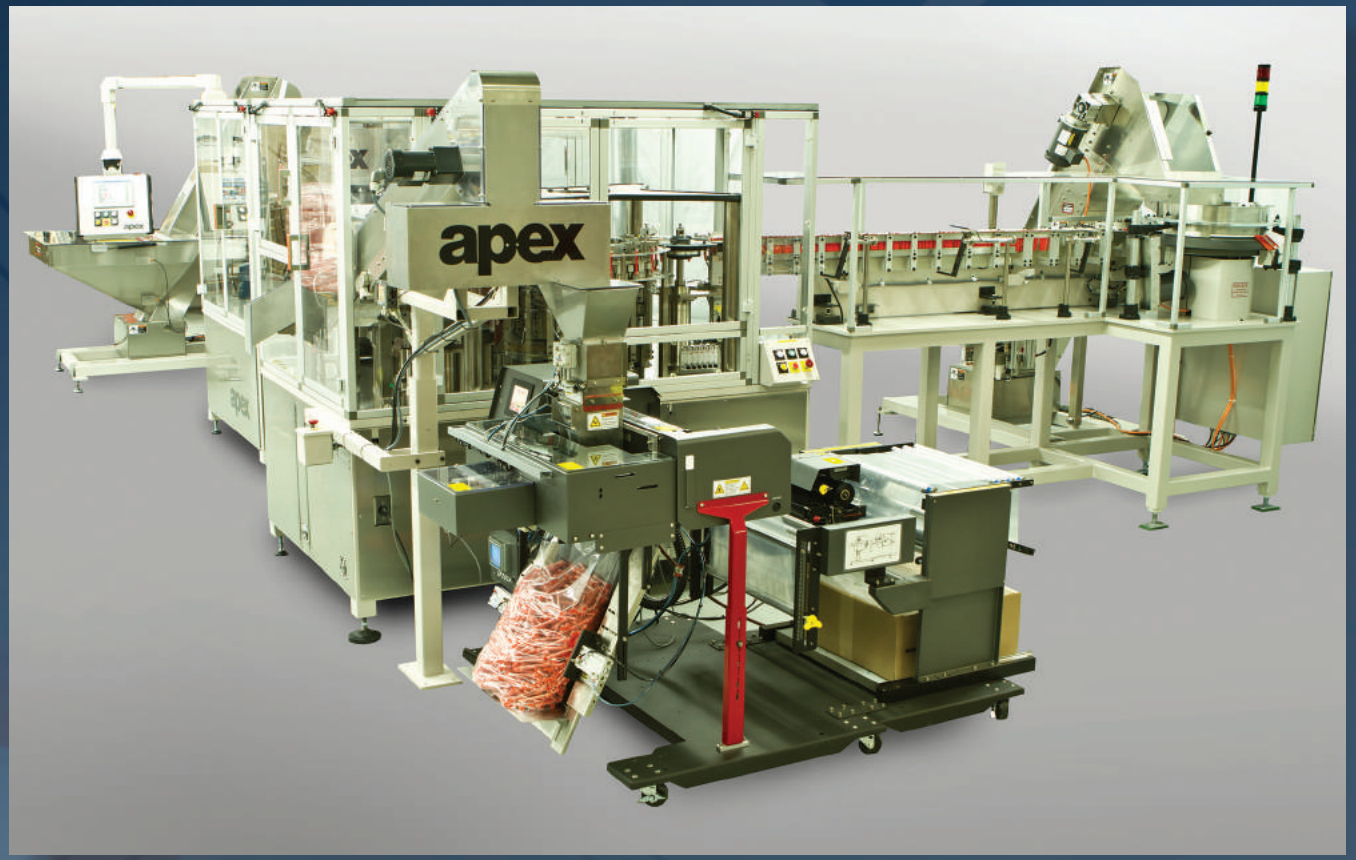
Many Apex machines are now available with 'intelligent' print systems where the images captured by vision cameras trigger automatic adjustment of ink flows and other printing parameters through the machine PLC, based on what the cameras are sensing. This monitoring enables machines to run operator free for much of the time with systems notifying any requirement for attention and, if necessary, slowing or stopping production automatically.

Rigid Tube Printers

C-90 Syringe & Tube Printer

At the heart of the Apex Machine range of medical parts 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 and can be supplied either as a stand-alone system or interfaced with both upstream and downstream production lines where required.



Rigid Tube 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 100 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.

- Fully Automatic
- In-feed
- Auto Orientation
- Pre-treater
- 2-Color Capability
- Ultraviolet Cure
- 80 to 100 ppm (subject to exact specifications, No. of print colors, validation systems, special handling, etc.)

C-900 Disposable Syringe Printer

The C-900 is the fastest disposable syringe printing machine in the world. This system can be supplied with or without mandrels to automatically feed, pre-treat, orientate, print, cure and exit a range of different disposable syringes at production speeds in excess of 800 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 disposable syringe printing applications the C-900 is clearly the industry leader. Large numbers of this machine type can be found in production, on a 24/7 basis, with the top syringe manufacturers in the world.

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Other Medical & Pharmaceutical Product 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

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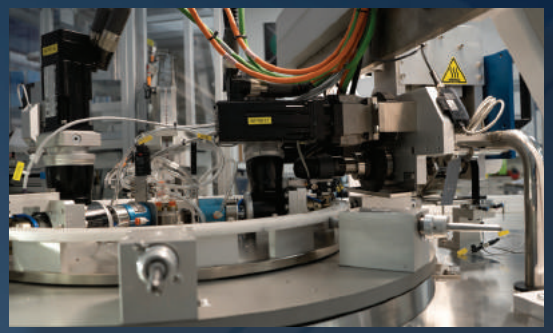
Other Medical & Pharmaceutical Product Printers

C-500 & C-5000 Syringe & 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.

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.

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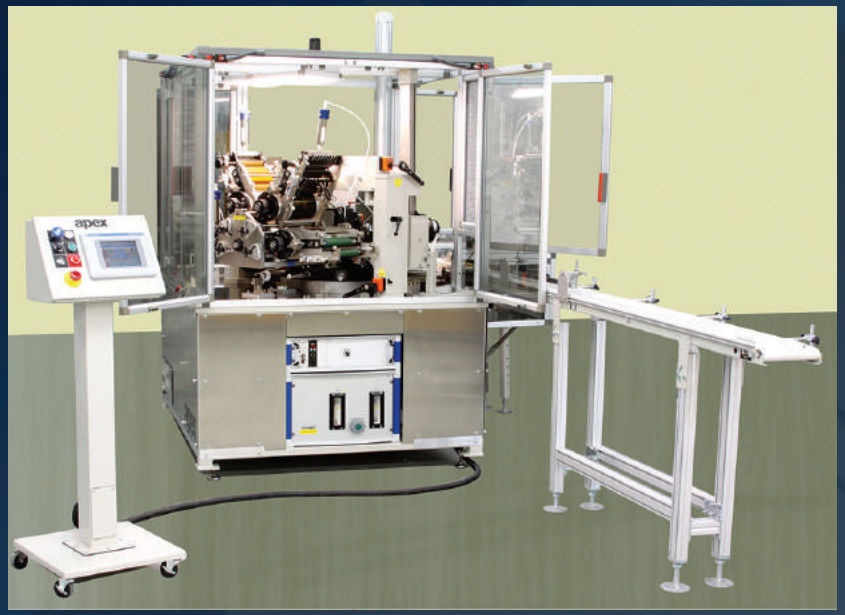
Other Medical & Pharmaceutical Product Printers



C-50 Syringe & Tube Printer

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 or round 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-40 Desiccant Canister & Cryule Vial Printer

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

The vials or cannisters are then singulated, orientated and fed into the printing system for pre-treatment, printing, curing and capping prior to delivery into a bag, part accumulation system or automatic packaging station.

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.

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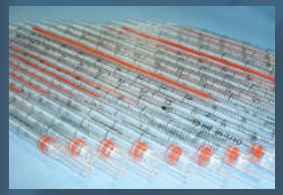
Other Medical & Pharmaceutical Product Printers

C-400 Cylindrical Part Printer

The C-400 uses an alligator transport chain to automatically capture rigid items like pipettes, cryule vials, surgeon's marker pens and other cylindrical parts, from a feeding station. Parts are transported through pre-treatment, printing, curing and capping stations (where appropriate) before exiting the machine. The C-400 offers a choice of print technologies and automation options to provide fully-automated turnkey solutions operating, either offline, or in-line with client's upstream and downstream machinery.



C-400P Pipette Printer

This model is specifically designed for pipettes to automatically feed, treat, print, cure and exit parts at up to 200 parts per minute. Capable of printing in up to 5 colors, 360° around, using either dry offset or FlexApex® technologies, or single color gravure, the C-400P can handle most styles and diameters of pipette. The system can be automated to provide full turn-key solutions where required.

S-40 Flat Part & Single Dosage Tube Printer

The S-40 printer range is primarily designed for printing onto flat surfaces and is widely used across a broad range of industry sectors for printing the tops and sides of boxes, caps, lids, etc., in up to 6-colors. The linear design of the S-40 machines allows multiple printing and curing stations to be positioned for printing onto tops, as well as onto one or more sides, in a single pass where required.

In the medical world S-40 machine versions provide fully automated systems for printing single dosage tubes, usually configured for up to 4 colors on one or both sides.

Machine variants for printing weekly pill dose containers and similar items are also available.

The S-40 systems can be configured with a range of parts handling options, pre-treaters, a choice of print technologies, curing systems, camera systems, in-line packaging, etc. as required for particular projects. A wide range of production speed options are possible depending on product type, handling parameters, number of lanes and other configurations.

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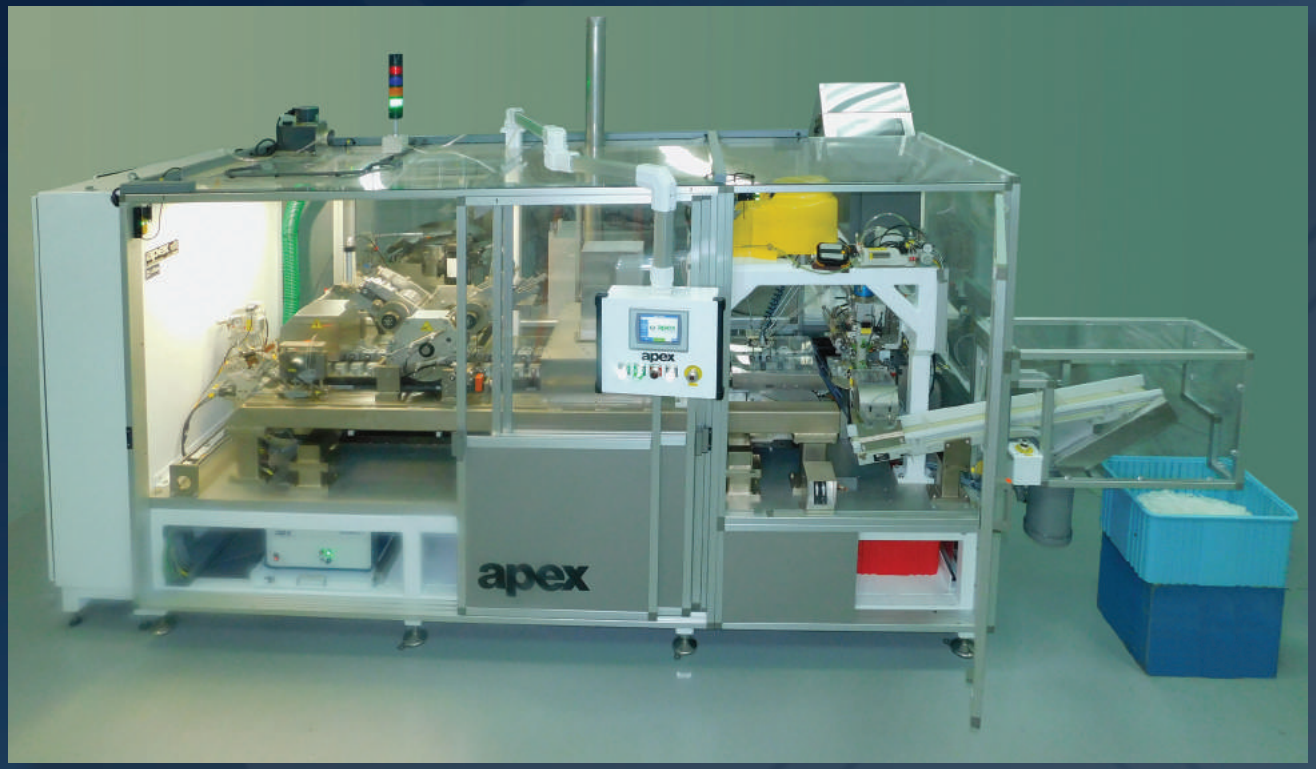
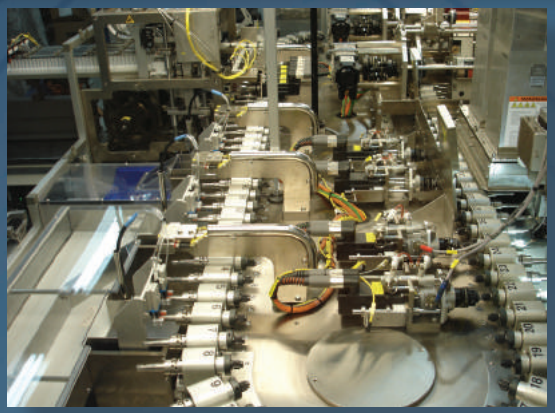
Other Medical & Pharmaceutical Product Printers





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

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C-506 6-Color Printer

The C-506 can be supplied either as a mandrelized machine, or with a variety of chuck-support systems, to handle a range of different pill containers and tubes at speeds of up to 150 parts per minute. The machine can also be tooled for printing a variety of cups, bottles and other tubular shaped containers, such as baby feeders, etc.

Containers are fed into the machine in bulk from where they are captured, pre-treated, orientated and printed in up to 6 colors using either the FlexApex®, or Dry Offset print processes, UV cured, optionally Clear Coated, cured again and then exited into an automated packaging or part accumulation system.

The C-506 can incorporate a range of feeders, pre-treaters, cleaning systems, decoration units, dryers, coaters and unloading systems. Moreover, the system can also integrate automatic capping stations, side seam detectors as well as revolutionary 'Quick Change' features developed especially for short-run frequent artwork change applications.

Production speeds typically range from 70 to 150 parts per minute, depending on product size, length and specific handling requirements.

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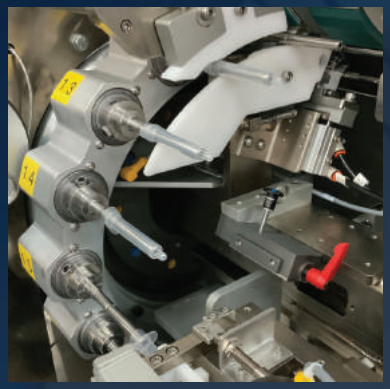

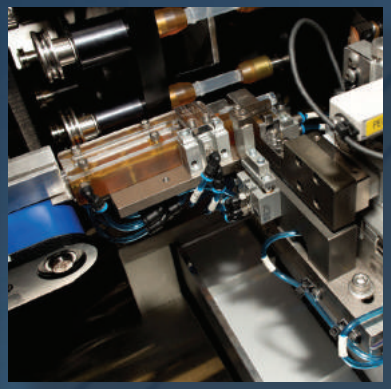
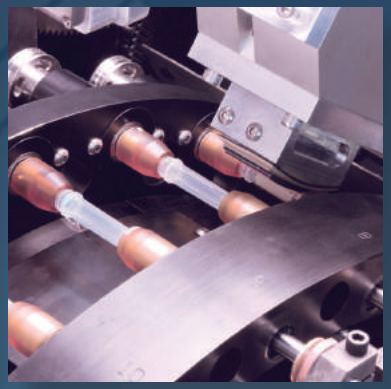

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