MODULA

SYRINGE ASSEMBLY MACHINE

IMA LIFE

Aseptic Processing & Freeze Drying Solutions

MODULA SYRINGE ASSEMBLY MACHINE

ASSEMBLING AND LABELLING PRE-FILLED SYRINGES IS A DELICATE PROCESS THAT HAS TO PRESERVE THE INTEGRITY OF THE SYRINGE AND THE DRUG IT CONTAINS.

Recently developed by IMA Life, Modula syringe assembly machine ensures your syringes flow smoothly through the process, protecting your pharmaceutical products from any potential damage.

Modula makes your process modular through the configurations that can be achieved thanks to the combination of its three operating units capable of performing:

- Plunger rod insertion and/or screwing
- Label application
- Backstop assembly

The machine features continuous rotary motion and mounts a main transport carrousel which moves the syringes through the various stations.
Modula can be easily integrated in complete syringe production lines, with upstream denester or inspection machine and with downstream equipment for secondary packaging up to end-of-line.

Work area overview

Labelling area

MAIN FEATURES

- Four models to cover low-medium output requirements.
- Positive transport for extremely precise operations.
- No syringe - no application of plunger rod, label or backstop.
- Wide range of syringes handled.
- High degree of automation.
- Compact and essential design.
- Excellent visibility of the whole process and great accessibility to the working area for immediate maintenance.

MODULA WORKFLOW

Syringe feeding from denester

Syringe feeding

SYRINGE FEEDING SYSTEM

Upstream equipment or a vibratory bowl feeds the syringes in line and a scroll indexes the containers as they are transferred to the infeed starwheel. The syringes are then moved to the main carrousel which transports them through the various operating units, whose sequence can be customised.

Plunger rod feeding

Rod inserting

PLUNGER ROD STATION

The plunger rods are loaded in bulk into an external soundproof vibratory bowl and are then vertically oriented into a linear track for transfer to the machine carrousel.
The rods are picked up by the grippers fitted on the upper side of the central carrousel and are placed in axis with the syringes running underneath. While the syringes are turning, the rods are screwed into the plunger. Rods are inserted directly into the plunger in the case of syringes with a 0.5 ml capacity. A photocell checks that the operation has been carried out correctly.
A brushless motor drives the winding belt rotating the syringe and a mechanical torque limiter avoids plunger damage.

Plunger rod feeding

MODULA WORKFLOW

Labelling unit

LABELLING STATION

The labelling station applies self-adhesive labels with flat configuration onto the syringes while they are turning on themselves.
The unit is composed of a horizontal labelling head, a label unwinding unit with support plate and a label peeling plate, removable for cleaning. A brushless motor with encoder synchronises the label winding unit and the central carrousel. Two sensors are fitted on the machine to check the application of the label and flying labels on the carrousel with machine stop.
Many types of overprinting devices and camera vision systems can be easily installed to read and check data. An ultrasonic sensor is also available for transparent labels.

Label overprint control

Label application and folding

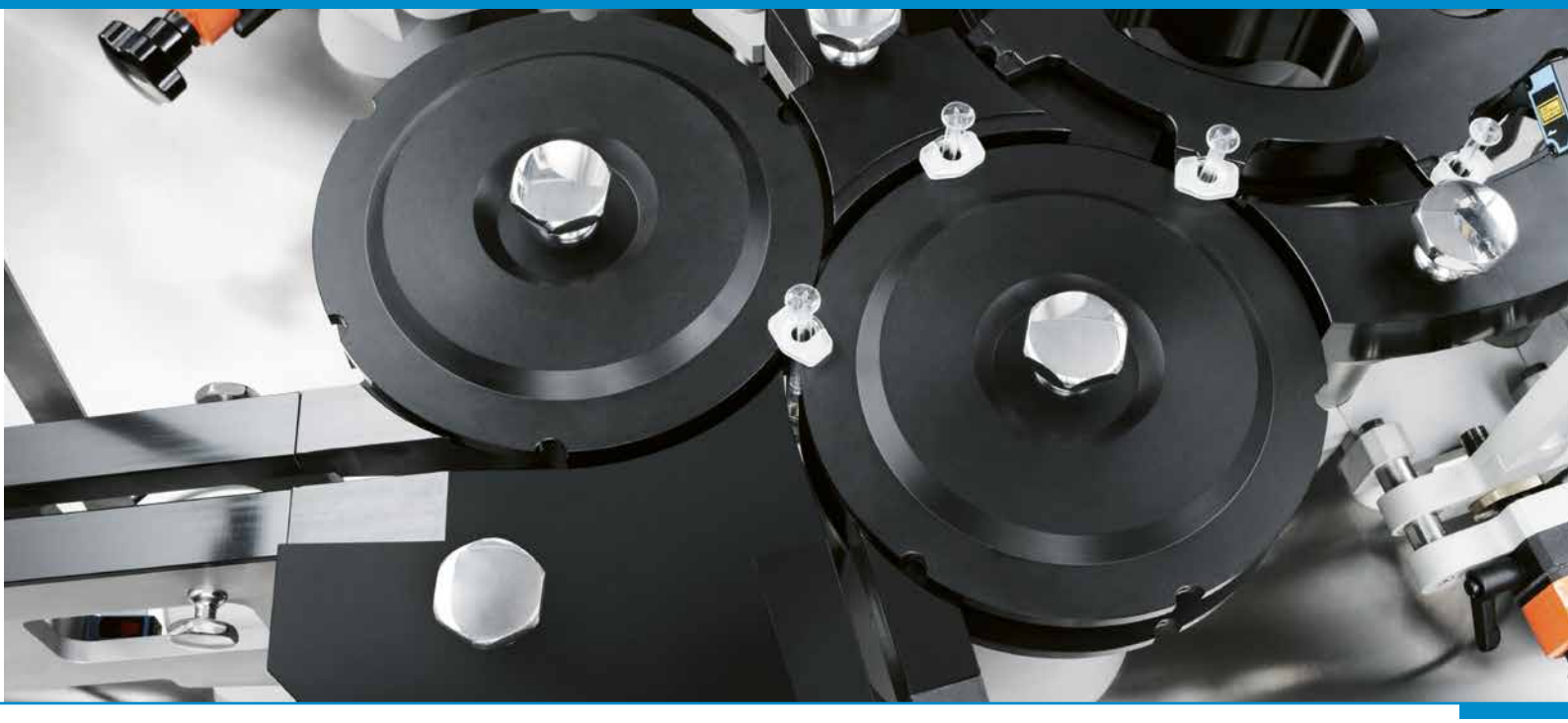
MODULA WORKFLOW

Backstop feeding

BACKSTOP ASSEMBLY STATION

The backstops (or finger grips) are loaded in bulk into a vibratory bowl which orientates and feeds them in linear fashion into the machine before pick-up and application on each syringe flange. Two sensors check backstop presence and application.

Backstop transport and inserting



Product exit

PRODUCT EXIT OR REJECTION

After having completed all the operations and after having checked with sensors all the assembled syringes, the machine guides them to the exit or to the discharge/rejection station.
Good products exit in a single track, ready to be picked up by downstream equipment while non-conforming syringes are collected in a rejection bin.
Rejection is done in the case of a missing plunger rod or its incorrect position, missing label or incorrect overprint, missing backstop. The machine stops after three consecutive rejections caused by the same error.

Rejection of non conforming syringes

MODULA

ADDITIONAL FEATURES

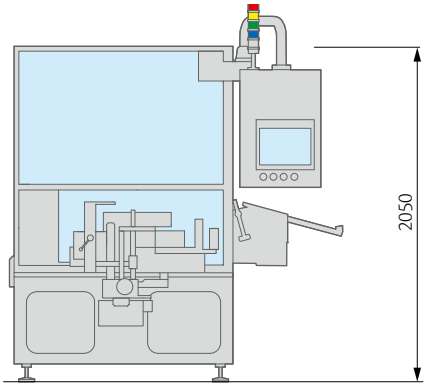
- Syringe presence check at machine inlet.
- Overload sensor for inlet scroll, carrousel and starwheels.
- Plunger rod presence and height check.
- Rod presence control in the vibrator.
- Rejection check.

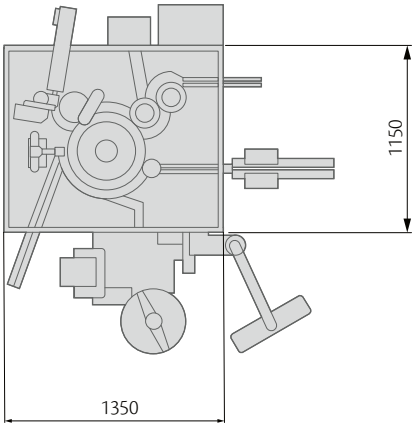
CONTROL SYSTEM

The machine is equipped with a control panel featuring PLC controlling and equipped with an HMI for the supervision and monitoring of machine status, recipe, speed, alarms and production data.

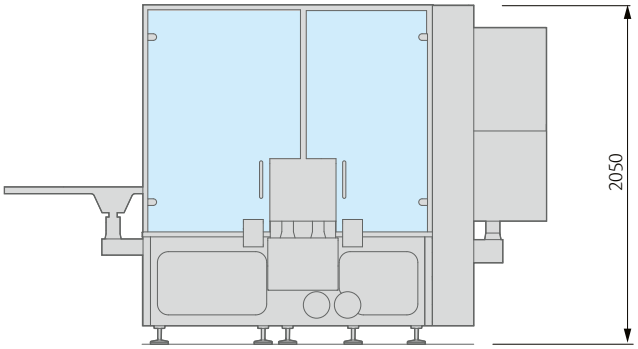
TECHNICAL DATA

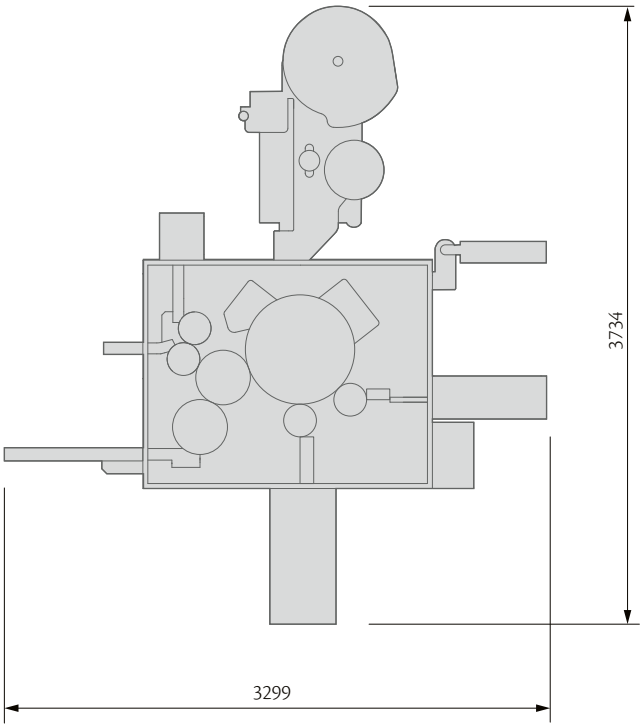
MODULA 50





MODULA 150 / 200 / 300





	MODULA 50	MODULA 150	MODULA 200	MODULA 300
Maximum output (syringes/minute)	50	150	200	300
Syringe size (ml)	0.5 - 20			
Installed power (kW)	6			
Standard voltage	400 V - 50 Hz			
Weight (kg)	1500	1800		

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