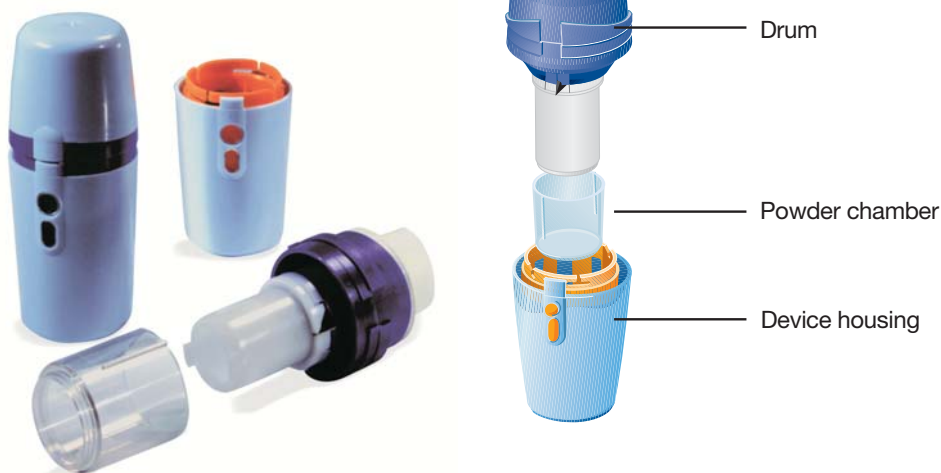


Filling and mounting of inhalers with dosed powder filling (MDPI's)

Individual high-precision filling of inhalers.



Inhalers for micronized powders are elaborately designed dosing dispensers. Exactly coordinated the many components of the inhaler are brought together in a complex assembly process.

Process sequence:

Top part and drum are fed into trays. After removal from the tray the top part of the filling and compressing station is infed. Before filling, tare weighing is performed. The powder chamber is removed, filling and the powder is compressed. The chamber is then put back on.

The filled top parts first of all pass through a gross weighing station and then, if the filling weight is correct, through the assembly machine. The drum is transferred to the assembly turntable by an aligning station. The top part is inserted into the drum and controlled by means of a camera.

The control of a test dosing operation is then performed. After attaching the cap the finished inhalers are then inserted into a tray.

Special features of the line:

- Individual powder dosing
- Special compression station for defined powder density
- Various protection zones stop only partial areas of the overall line in the event of a fault
- Elimination of electrostatic noise fields in the weighing zone
- Laser coding the top part with the number of the compression station
- Sample removal and function test of the inhaler
- Compact construction
- Weighing cells; disconnected from the machine frame

Technical data

Output: 8 products / minute
Dosing: up to 200 shots / product
Accuracy: +/- 0.05 mg



Tara - gross weighing with laser coding and fail-part removal



Feeding and orientation of the turntables for final assembly of the inhaler with a functional test



Powder filling and compaction in the powder chamber

Testing the liquid inhalers

After all, safety is everything.



The inhalers are subjected to comprehensive functional tests on this machine. The spray jet of the inhaler must proceed in an exactly specified corridor. Multiple triggering of the inhaler's dosing mechanism with a prespecified dosing amount verifies fault-free use with patients. In addition the distribution and the volume of the spray jet is controlled.

Process sequence:

The inhalers are removed from trays, transferred into a conveying system and equipped with test cartridges. A test liquid (ethanol) is dosed into these test cartridges.

A 12-fold functional test in the turntable and spray jet control by laser after leaving the turntable represent the core of the machine. The ethanol extraction and return of the test cartridges are performed subsequently.

The inhalers themselves are drained of any residue and the IPC samples and fail parts are then transferred outwards.

As a last step the loading of trays with pass parts is performed.

Technical data

Output: 45 Inhalers / minute
Feeding and discharge in stacked trays
96 pieces / tray



Conveyance of the inhalers in the turntable to be inspected



The laser controls the spray jet within a defined tolerance range



Transfer of the tested inhalers for product outfeed

Assembly of components for aerosol inhalers

Engineering that fits exactly.



For an inhaler the liquida cartridge has been used as a connection between the mouthpiece and meter.

Process sequence:

In an assembly solution developed specially for this changing unit the filled cartridges are assumed by an inspection segment and inserted into the bottom parts of the counter via an automatic turntable.

To do so robot grippers are used, which position 4 units of the components each in intermediate deposits.

The bottom parts are turned through 180° for the following production operations. After the transfer into the turntable the bottom parts go to the transfer station for cartridges.

Two consecutive duplex pressing-in stations press the cartridges firmly into the bottom parts. The pressing-in dimensions are checked in an ensuing control.

Another pick-and-place unit places the pass-parts onto the discharge belt. Faulty parts are unloaded separately.



You will find further informations in our "Pharma Brochure"

Technical data

Output: 120 units / minute
4-up product mounts
120 products / minute



Pressing of the cartridges into the bottom side of the counter



Checking of the assembled products to the correct pressing-in dimension



4-fold transfer of the bottom parts into the turntable