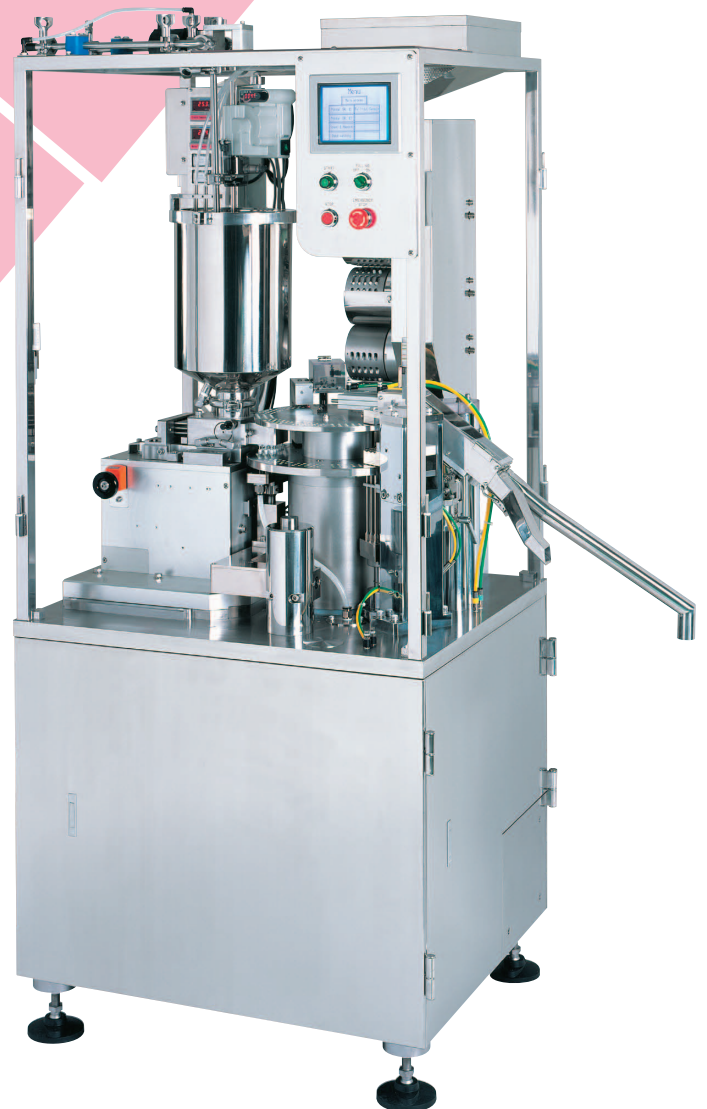


Full-Automatic Capsule Filling Machine

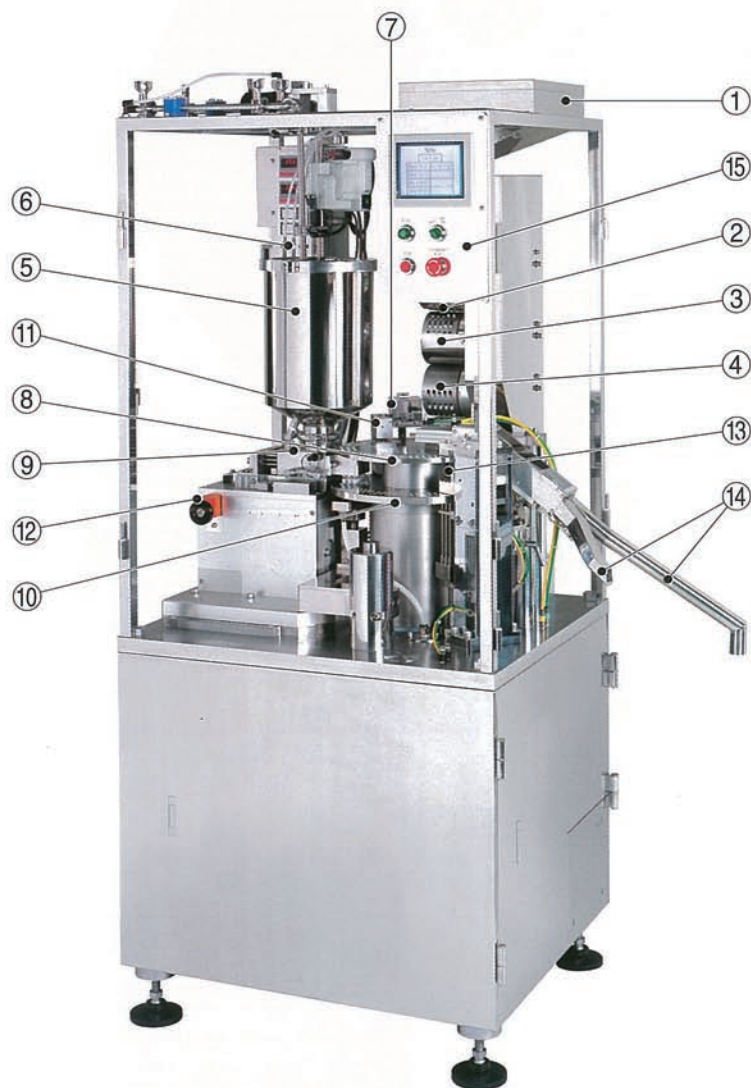
F-40



F-40

Full-Automatic Capsule Filling Machine

Qualicaps is a world-class manufacturer of both empty two-piece capsules and related encapsulation equipment- specializing in fully-automatic, high-speed capsule filling machinery. All equipment features a patented rotary rectification system, innovative dosing design geared towards maximizing output and filling accuracy, and the flexibility to handle various dosage forms.



F - 40 - Liquid Filling Unit

Name of Components

- ① Capsule Hopper
- ② Feed Drum
- ③ Rectifier Roller
- ④ Transfer Roller
- ⑤ Oil Hopper
- ⑥ Oil Level sensors [Option]
- ⑦ Elimination of Unseparated Capsules
- ⑧ Cap Disc
- ⑨ Oil filling Unit
- ⑩ Body Disc
- ⑪ Sensor for capsule presence [Opaque / Transparent]
- ⑫ Weight Adjustment
- ⑬ Joining
- ⑭ Product Discharge Chute [Sorting out non-filled capsules]
- ⑮ Operation Switch

• Ability to Handle Various Dosage Forms

The F - 40 is versatile in its ability to fill various dosage forms. Powders, two layer granules, liquids of oil and paste, tablets, and mini-tablets are all types of products that can be successfully encapsulated.

• Compact Size

While offering an output of 40,000 capsules per hour, the F - 40 is efficiently designed to measure 78cm (W) x 68 cm (D), therefore minimizing valuable manufacturing space required.

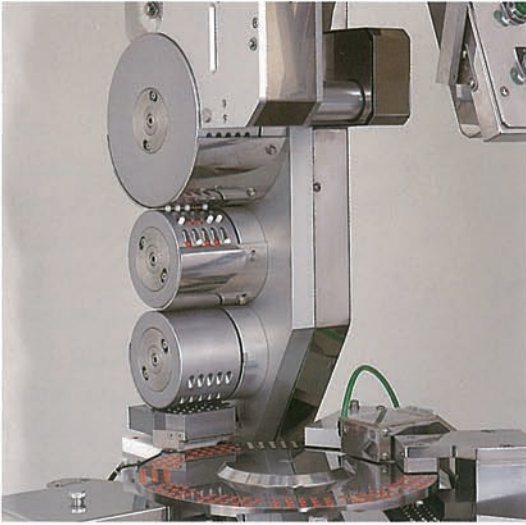
• Easy Conversion

The cap and body disc are components that can be easily separated from the filling section. This straightforward method reduces downtime and provides easier re-assembly after parts changeover and cleaning.

• Highly Accurate Filling

Highly accurate filling can be accomplished for any of the chosen dosage forms. Due to the innovative design of the intermittent operation, capsules dwell for a longer period in the filling section of the machine, therefore increasing the filling accuracy.

Features



① Rectification and Transportation of Capsules

Qualicaps developed its unique capsule rotary rectification system that has been patented in 10 countries around the world.

During rectification, no external pressures are applied to the capsules. This eliminates potential capsule defects such as deformation, and scratches and peeling of the imprinted logo.

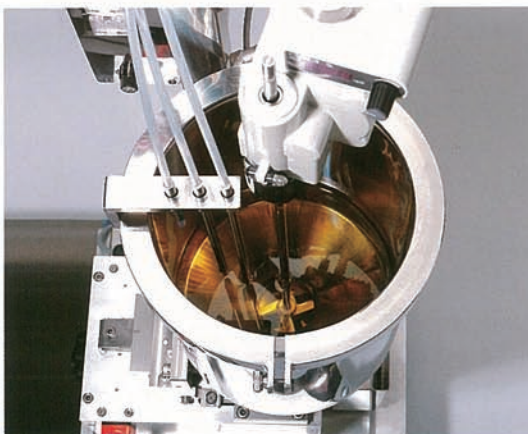
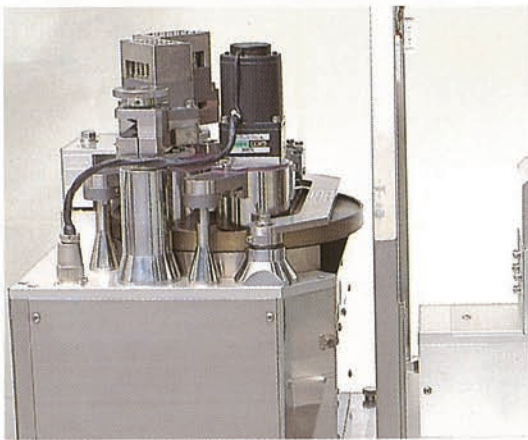
After cleaning, highly accurate positioning pins are used to easily realign both the cap and body disc, thereby shortening the time for reassembly.

The cap and body cavities are manufactured to rigid specifications to minimize any effects from capsule handling. This technology was applied based on knowledge gained from our history of quality capsule manufacturing.



② Separation of Capsules

Each capsule body is seated in the body disc by a vacuum shoe equipped with an O-ring. This O-ring serves as a shock-absorber preventing cracking of the capsule shoulders as it is placed in the bottom of the capsule disc by way of vacuum.



③ Feed and Filling of Drug Substances

- Powder Filling

- Mechanical Vibration filling Method

This dosing method is able to fill a wide variety of powders by using mechanical vibration to transfer the product into the capsules. A level sensor located in the powder supply chute maintains a stable powder layer that fills directly into the capsule body. The accuracy of the filled powder is improved by use of a spring plunger to remove air from the powder and provide equal density. The plunger strength is adjustable to adapt to various filling requirements.

- Compressed filling method

This filling method utilizes a two-step tapping process that compresses and molds a slug from the powder in a weight adjustment plate. Weight adjustment is achieved by raising the molded slug above the plate at a set height and scraping away surplus powder. The finished slug is then placed into the capsule body.

- Oil Filling

- ① Heating

Hot water is circulated around the product hopper and the pumping unit to maintain the heated temperature of the product.

- ② Stirring

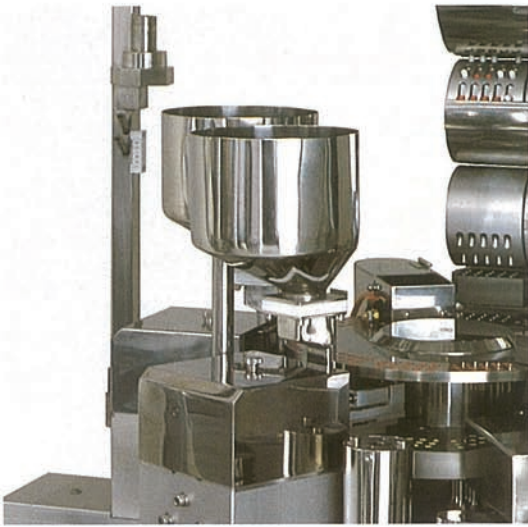
An agitator is provided to maintain a uniform and homogenous solution within the product hopper.

- ③ Filling

A positive displacement piston pump is used to draw in product from the hopper and dispense the solution into the capsule body through a set of changeable nozzles. Weight adjustment is achieved by varying the piston stroke of the pump.

- ④ Level Sensors (Option)

This option provides level control of the product during operation and prevents low product level or overflow conditions.

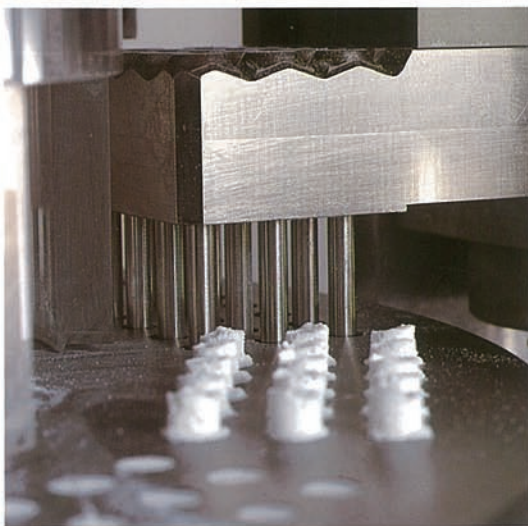


- **Granule Filling**

Granules are measured and dispensed by use of an upper and lower measuring box utilizing an upper and lower shutter system. Individual two-layer granule filling can be provided by use of two filling heads.

- **Tablet Filling**

Qualicaps can provide tablet filling for a variety of tablets by exclusively designing a unit for your application. For acceptable customer specifications, methods for filling mini-tabs, fast-dissolving, sustained-release, tablets, or combinations of the above can be designed.



- ④ **Joining**

Joining is achieved by using pusher pins to raise the capsule body upwards from the body disc into the capsule cap, which is held in place by a joining block above the cap disc.

Mechanism

- ① Capsules in the hopper are continuously rectified by three rollers, and then intermittently fed into the cap disc by the transfer plate.
- ② The capsules are fed into the body disc through a set of tubes. The capsules are separated using vacuum to draw the body of the capsule into the body disc. The vacuum shoe under the body disc is provided with an o-ring, serving as a shock absorber, to prevent shoulder damage to the capsule as it seats in the bottom of the cavity.
- ③ Unseparated or double-capped capsules are automatically discharged prior to the filling section.
- ④ Versatility and ease of changing the filling section enables a wide variety of substances to be efficiently and accurately filled.
- ⑤ At the joining station, pusher pins raise the capsule body into the cap. The cap is held into place by a joining block which allows the capsule to be locked.
- ⑥ Joined capsules are lifted up over the cap disc by pusher pins and discharged from the machine.

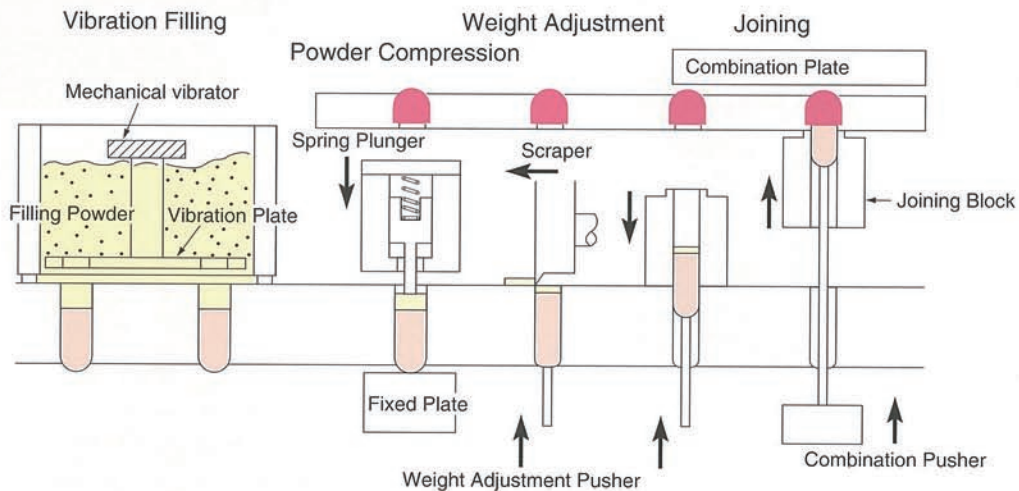
Specifications

- Dimensions: 775 mm Width × 685 mm Depth × 1845 mm Height (Excluding a hopper)
- Total weight: 700 kg
- Production capacity: 40,000 capsules/hour
- Capsule to be filled: Hard capsule size: 00, 0, 1, 2, 3, 4, 5
- Utility
 - Power source: 3 phase 200 ~ 220 V, 50/60 Hz, 2.1 kVA
 - Vacuum: 20 kPa (2000 mmHg, 150 mmHg, 200 mbar, 2.9 psi), 4.5 m³/min (4500 L/min)
 - Compressed air: 0.5 MPa (5 kgf/cm²G, 72.5 psi), 0.3 m³/min (300 L/min)
- Options: 1. Automatic weight control system with capsule joined length Measuring device
2. Capsule weight inspection machine

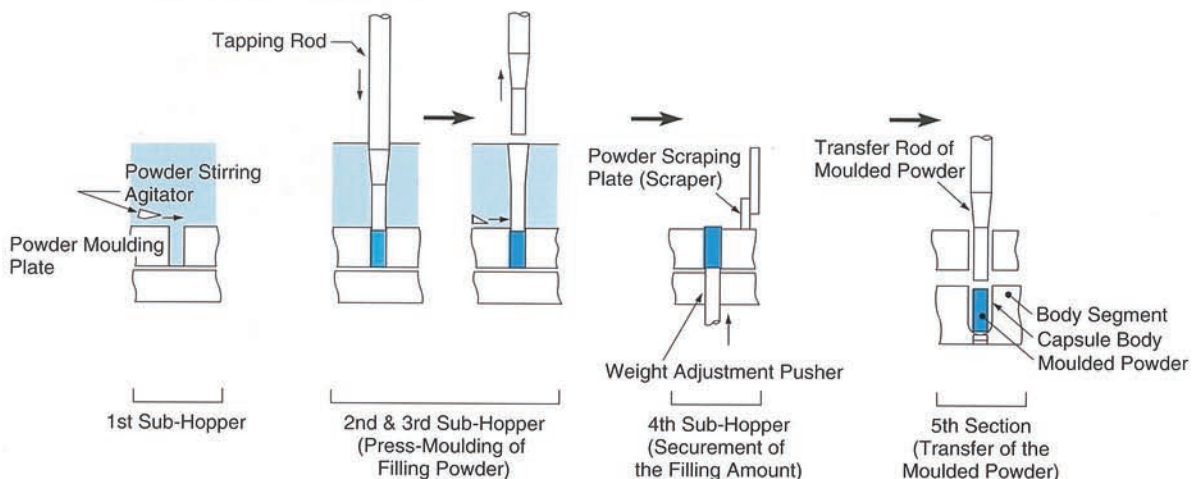
Filling Mechanism

1. Powder Filling

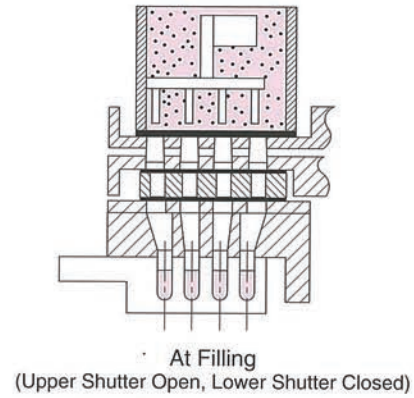
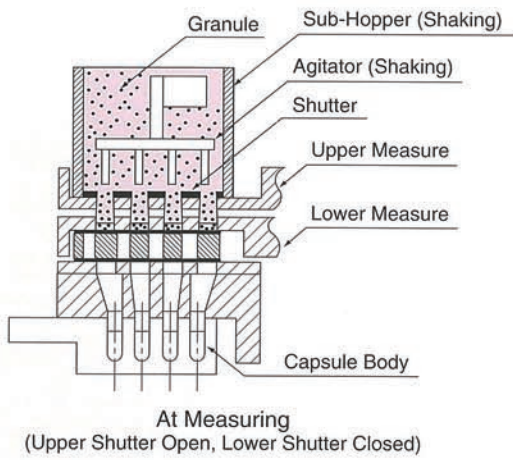
○ Mechanical Vibration Filling Method



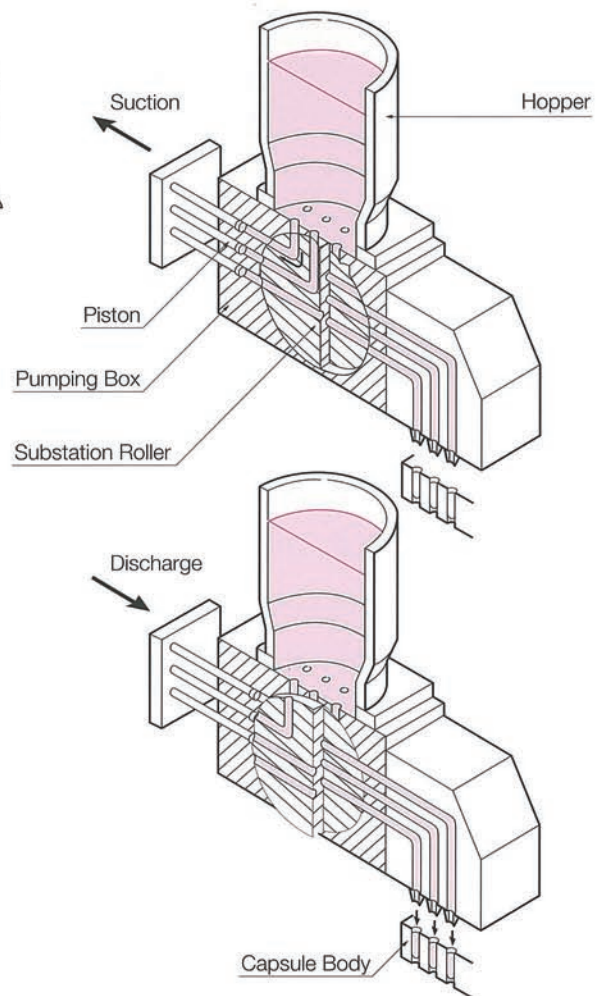
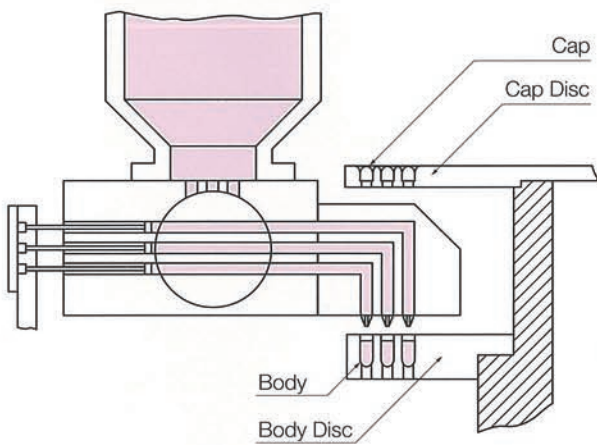
○ Compression Filling Method



2. Granule Filling



3. Oil Filling





GLOBAL NETWORK

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