GKF 1400 | GKF 1400 L | GKF 1400 ASB | GKF 1400 ASB 100%

GKF 1400 – Capsule Filling Machine

Packaging Technology

BOSCH
Invented for life

GKF 1400 – Production flexibility and security

The GKF series of capsule filling machines have been demonstrating their reliability and robustness for the last 6 decades with installations around the globe.

The **GKF 1400** offers great filling versatility through its flexible and modular design, allowing it to fill a large variety of product types. The Bosch patented slide-gate system guarantees gentle and efficient pellet or powder filling.

The **GKF 1400** includes all of our experience and know-how on secure capsule filling and closing of capsules. Like all of the GKF-series machines, it works with intermittent motion and doses powder via the proven tamping pin principle. Of course the machine is also capable of filling other types of products or combinations of products into hard gelatine capsules or gelatine free capsules. Thanks to the modular assembly of the capsule filler, the machine can be changes over to fill liquids in a short amount of time.

Optimal Design

With a focus on ergonomics and cleanability, our Engineers have developed a machine type that minimizes changeover and cleaning time and there by maximizes its productivity.

The cGMP-compliant design of the production area guarantees an easily accessible and simple-to-use operation and cleaning of the machine. Furthermore, our stations and sub-assemblies are simple and quick to remove, for example during format change. All stations are designed so that they can be disassembled into small and light units without tools. The design of these same stations ensures that they can only be re-assembled in the correct way.

Ergonomic and secure Handling

The machine is comfortably controlled via the touch-screen monitor. The easy to learn menu-driven control software is icon based and the HMI is ergonomically situated.

Control of the machine and measurement data collection is handled via an industrial PC. All production data is also saved and managed on the industrial PC. The windows-based software complies with the data security guidelines of 21 CFR part 11.

The **GKF 1400 L** is equipped with a servo-driven liquid pump that allows for continuous fill level control and an optional drip-retract function. All machine settings can be controlled via the user-friendly touch-screen HMI.

The **GKF 1400 ASB 100%** is equipped with an integrated checkweigher. Every capsule produces on the capsule filler is individually and precisely weighed. Only capsules with a weight within the pre-set tolerances are accepted and make it into the good capsule container.Overweight and underweight capsules are removed and separated into the bad capsule container.

Quick and Easy Cleaning

The machine table-top is seamlessly machined as one piece. This allows for large-radius contours without undercuts according to cGMP design. Furthermore, only FDA-approved materials are used. A high-end coating smoothly seals the surface with no pores. Specially-designed shaft seals separate the production and drive cabins so that no foreign particles can get into the product. The vacuum system removes any product or capsule waste from the production cabin. Two separate vacuum channels allow for a separate product and capsule waste transfer. Your advantage: the ability to easily reconcile your controlled substance products after a batch. Thanks to the complete separation of the drive cabin, it is ensured that lubricants don't migrate into the production cabin. The maintenance-free main drive allows for quiet operation of the machine, reduces wear, and extends the machine lifetime.

- Highly accurate dosing
- Simple operation
- cGMP-compliant design
- Flexible dosing possibilities
- Low-maintenance operation
- Data security
- Reliability
- Optimal accessibility

Flexible and Simple Operation with the **GKF 1400 Liquid**

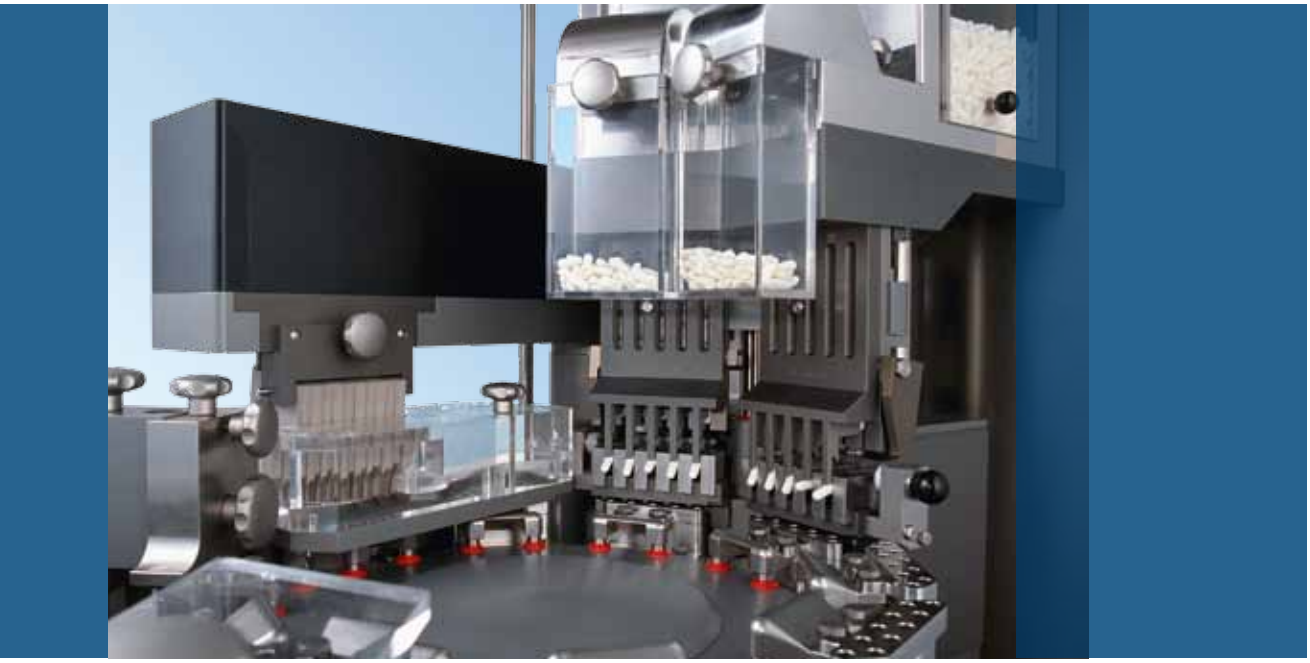
The **GKF 1400 L** is a machine type that is full of small detail solutions that come together to fulfil 100% of your requirements. Convincing technology like trend-setting and ergonomical design guarantees pharmaceutical security and economical operation.

The heart of the **GKF 1400 L** is its servo-driven liquid pump, distinguished by its innovative technology. Simple control of the stepless fill level regulation and the drip-retract feature is handled via the ergonomic, touch-screen HMI. Product heating systems – a water bath or a complete hot water circuit – are controlled via machine HMI. This allows for constant and gentle product temperature regulation.

Thanks to the modular design of this capsule filler, the machine can be converted to powder filling in a short amount of time. The entire liquid station can be disassembled and transferred to a mobile electrical cabin and carted away. Thereafter, the assembly of the powder station is a simple matter. This type of flexibility ensures that your investment will pay dividends for years to come.

The Bosch Service package as well as our qualification and validation services round out our complete offer to you.

- Full range of viscosity
- Economical operation
- Security

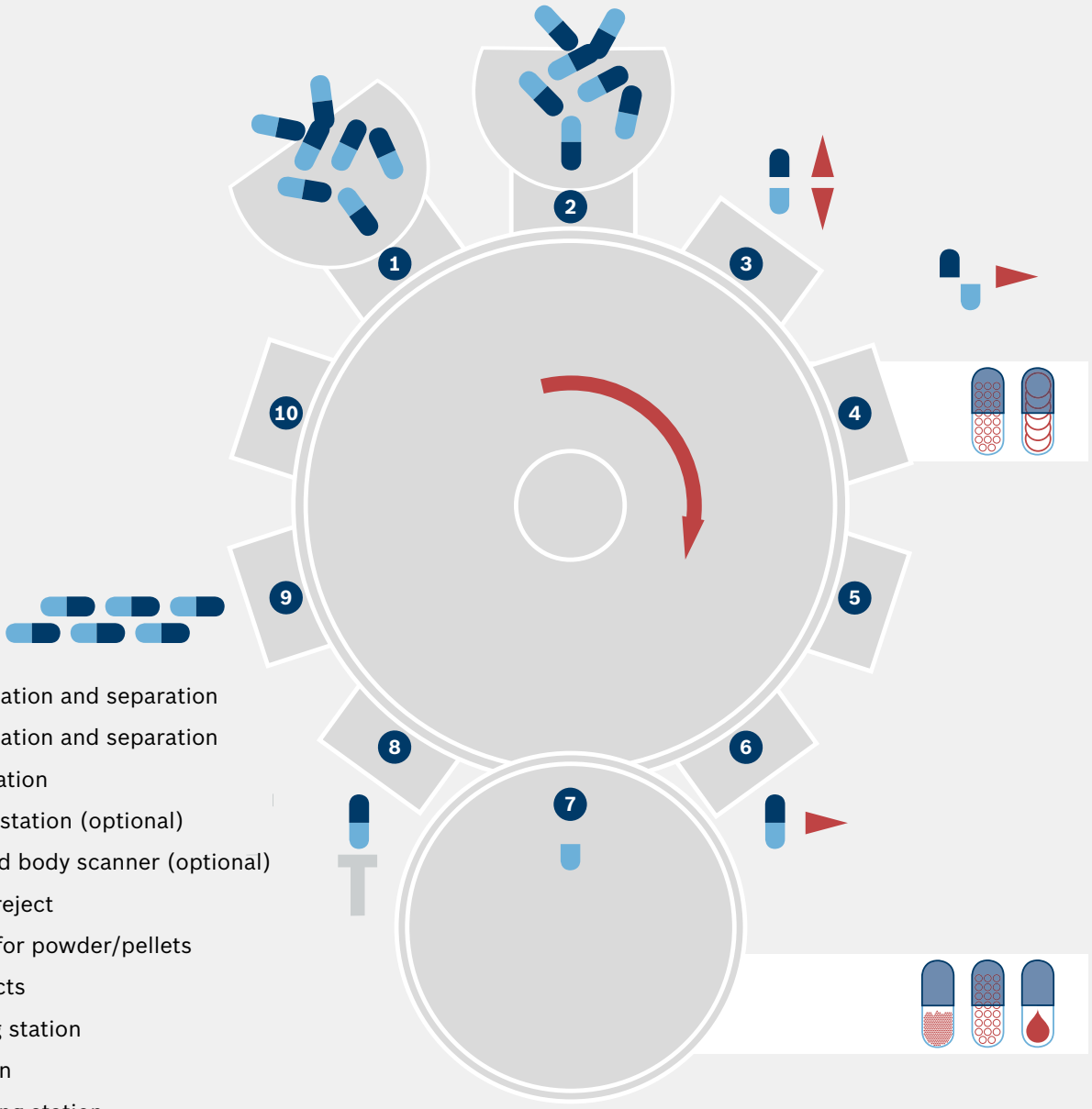


Versatile Dosing Possibilities

The dosing of powder with the tamping pin principle via a dosing disk has been proven on Bosch machines for many decades and can be found in operation worldwide. Through continuous improvement, the efficiency of these systems has been dramatically improved. Pellets and other non-tamp able products can now also be gently filled via the dosing disk.

Further fill options including tablets, dragées, pellets, or liquid products can be dosed via additional filling stations. We would be glad to consult you on an appropriate solution to fulfil your dosing requirements.

Functional Description

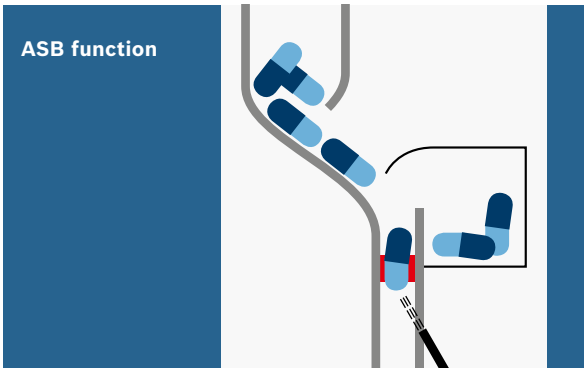


1. Capsule rectification and separation
2. Capsule rectification and separation
3. Segment separation
4. Pellet or tablet station (optional)
5. Capsule cap and body scanner (optional)
6. Faulty-capsule reject
7. Dosing station for powder/pellets or liquid products
8. Capsule closing station
9. Capsule ejection
10. Segment cleaning station

Reliable Operation with ASB

The automatic trouble-shooting system (ASB) automates your production and reduces your down-time.

The calibration strip in the empty capsule sorting magazines ensures that deformed or damaged empty capsules are removes even before the filling station.



The mechanical capsule cap scanner determines if there are blockages in the empty capsule infeed. A repeated missing capsule in a particular segment bore is recognized by the consecutive fault function. Deformed capsules in the capsule magazine are blown out via individual compressed air lines and routed to a separate deformed capsule container.

The capsule body scanner recognizes incomplete capsules already before the filling station. The servo-driven liquid fill station can even be turned off in order to avoid unnecessary product loss.

The capsules that have been determined to be faulty are individually rejected at the ten capsule ejection flaps. Product or capsule parts can therefore not end up in the good capsule production container.

The segment cleaning station with compressed air nozzles loosens sticky products and capsule fragments from the segment bores and reliably vacuums them away. This station ensures the cleaning of all the segments for the next filling cycle.

GKF 1400 ASB 100% with Online Weight Control

For the sake of your production quality and yield, every capsule is individually and highly accurately weighed on a gravimetric checkweigher. The integrated weight feedback system with pneumatic adjustment automatically regulates the tamping pin pressure of the powder dosing station. Thereby, it is ensured that the fill weight is held within the specified tolerance range for the entire production process.

The analysis software calculates an average fill weight from the checkweigher results and compares this average to the theoretical fill weight. If a capsule is outside the tolerance range, it is automatically rejected. The incident will then be documented in the production report. The highly-accurate gravimetric weigh cells determine a precise and absolutely reproducible capsule fill weight. The checkweigher automatically compensates for outside influences such as vibration and ensures the accuracy of the weight measurement.

Technical Data

Output
- 84,000 Caps/h for powder/pellet filling
- 6,000 Caps/h liquid filling

Machine cycles
- max. 140 cycles/min

Number of segments
- 10

Electrical connection for the machine
- 400 V, +/- 10 %, 50/60 Hz, 3 ph/PE, 3 kW, special voltages

Vacuum requirement
- 40 m³/h: 0.2 to 0.5 bar

Suction air requirement
- 200 m³/h

Utility Connections
- Compressed air supply Ø 13 mm
- Vacuum connection Ø 30 mm
- Electrical connection for vacuum
- Vacuum pump electrical connection
- Main electrical connection

Infeeds
- Powder infeed – Tri-clamp DN 150
- Pellet/tablet infeed – Tri-clamp DN 100
- Empty capsule infeed – Tri-clamp DN 100

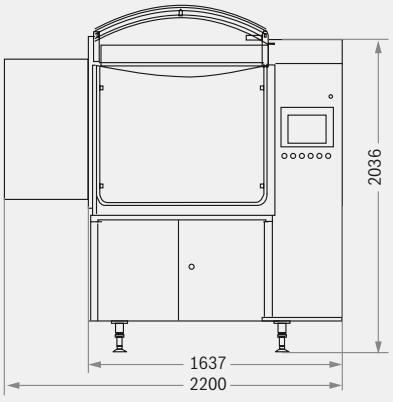
Standard equipment
- Base machine with integrated electrical cabinet and built-in HMI
- Machine control: industrial-PC
- Empty capsule hopper with minimum and maximum level control sensors
- Dosing station with product hopper for powder or liquid products
- Capsule closing station with concave closing pins
- Mechanical capsule rejection station
- Cleaning station with vacuum suction

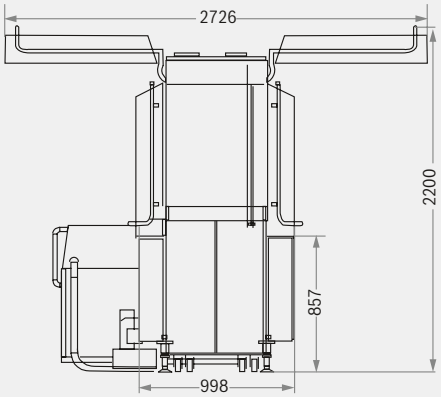
Formats
- Capsule format set for all standard capsule sizes (000 to 5, DB), optionally with fixed height dosing disks or height-adjustable dosing disks

Options
- Powder filling station
- Liquid filling station
- Pellet filling station
- Tablet filling station
- ASB function

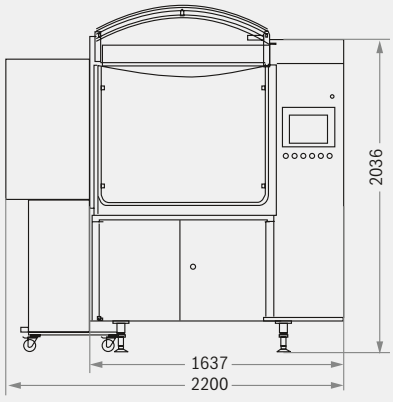
- Automatic product infeed
- Automatic empty capsule feeding
- Metal detector
- Capsule polisher

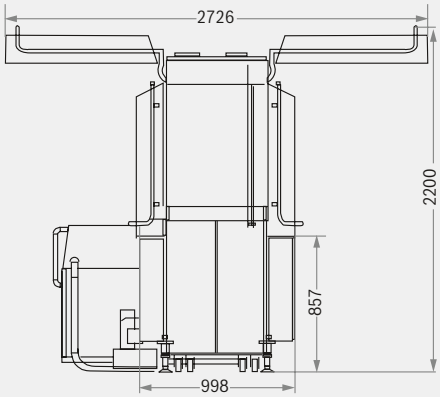
GKF 1400





GKF 1400 L





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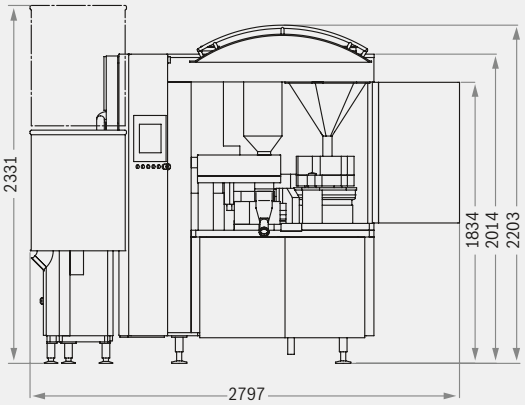

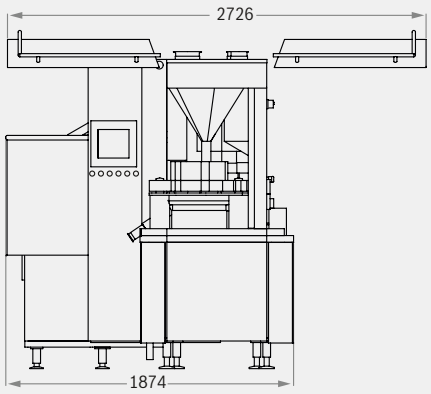

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