



NASSENHEIDER
CAPTURE THE GOLDEN ESSENCE

MANUAL

FILL UP 2



FILL-Systems GmbH
Leipziger Str. 33
01097 Dresden
Germany

TEL
+49 351 89 66 91-00

FAX
+49 351 89 66 91-99

MAIL
info@fill-systems.com

WEB
www.fill-systems.com

Fill up 2

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1 Foreword

Congratulations,

with the FILL-Systems product **Fill up 2** you have chosen a proven and robust machine from our high-quality product line for filling technology. The decision to include a machine from FILL-Systems in your equipment fleet will facilitate the filling of your products significantly and measurably increase productivity.

For many years now, all machines and devices bearing the NASSENHEIDER® product brand name have been developed, designed and built exclusively by us in Dresden with an international team. With passion and specialist engineering expertise, we adhere to high quality objectives for our unique products and consistently integrate all the current requirements set forth by the safety and environmental regulations into our manufacturing processes. On the basis of quality, reliability and closeness to our customers, we have developed into a leading global technology company with great innovative strength and enjoy a high level of trust.

Sustainability and maximum efficiency are two of our most important principles. All our machines are extremely energy-efficient and work without compressed air-supported systems that unnecessarily increase energy consumption. Any maintenance and extension of the machines can be very easily implemented due to our intelligent modular system. When production volume increases, your machine park grows through meaningful system extensions and extension options from FILL-Systems without any problems.

Should a defect occur, each machine part can be repaired or replaced promptly and with pinpoint accuracy. Likewise, the durability of our machine designs on the basis of the long-term supply guarantee for spare parts has shown itself to be effective thousands of times and all over the world. Moreover, we have the necessary components / parts manufactured by partners in the region according to our quality standards. This means that transportation routes are short while we are simultaneously strengthening regional economic cycles.

In the interests of maximum functionality of our developments we do not use unnecessary or superfluous features, in order to maintain the serviceability and reliability of our products at the highest possible level.

Our website will provide you with all product-related information and a variety of options relating to enhancements and innovations. We are also available for personal consultation.

We thank you for your confidence in us and look forward to a long and happy collaboration with you, wishing you every success with your new FILL-Systems product.

Your FILL-Systems team from Dresden.

2 Manufacturer

FILL-Systems GmbH

Leipziger Str. 33
01097 Dresden
Germany

Office: +49 351 89 66 91 00
Technical support: +49 351 89 66 91 05
Fax: +49 351 89 66 91 99

Email:
• Office: info@fill-systems.com
• Technical support: support@fill-systems.com

Website: www.fill-systems.com

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District court Dresden: HRB 38264

VAT No.: DE 320 995 937



3 About this manual

This manual contains important information and is therefore an essential part of your new FILL-Systems product. To ensure an optimal and safe use of your product, read this manual carefully before putting into operation and the use of the product.

If you have any technical questions or doubts regarding the details given in the explanations, our support team will be glad to help you via email or over the phone. You can find the relevant contact details in the chapter **Manufacturer**. We always welcome and appreciate comments and suggestions for improvement, too.

For quick help, we have provided a wide selection of helpful answers on our website under the menu item **Service: Answers to frequently asked questions FAQ**.



Please note that the figures contained in this manual are schematic diagrams. Due to the continuous advancement of our devices, photos and details may differ from the design of your device.

Definitions

The term **viscosity** refers to the resistance of the product to flow. The thicker (lower flowability) the product, the higher the viscosity (**highly viscous**). The thinner (greater flowability) the product, the lower the viscosity (**slightly viscous**). For example: honey is highly viscous, while water is slightly viscous.

The products to be filled (honey, syrup, etc.) are called **product** or **products** in this manual.






The containers to be filled (bottles, glasses, etc.) are called **jars** in this manual.

The keys to be pressed are shown in square brackets, e.g. **[+]** and **[-]**, or as small symbols, e.g.  .

Article numbers (**Art. 012345**, for example) indicated in this manual refer to our company's internal article numbers.

Symbols

The following symbols are used in this manual:

-  Important information and helpful tips for correct use.
-  Warning about situations posing a hazard to personal safety and/or to the product.
-  Warning about electric shocks.
-  Warning about injuries.
-  Note on damage resulting from external devices.

4 General safety instructions

The safety instructions generally apply to all FILL-Systems products.



Danger of hand injuries

Make sure that during operation of the machine, your hands (as well as hair, clothing, etc.) do not get caught in rotating parts (gears, driving shafts) or other moving parts.

In case of dismantling (e.g. when removing the pump head) or cleaning, turn the power off and unplug from the power supply.



Risk of injury from electrical current

Protect the electronic connections to the power adapter against moisture. Please ensure that all electrical cables / wires are installed in such a way they cannot be damaged, crushed or can impair the insulation.

Never open the driving module, the power adapter or a plug.

In the case of disassembly (e. g. when removing the pump head) or cleaning, the device must be disconnecte from the mains!



Risk of contamination of the product by damaged wear parts

Carry out a subsequent cleaning and visual inspection of the following components after each finished filling process (or at least once daily):

1. gears / impeller rotor / hoses of the pump head
2. filling nozzles
3. gaskets
4. seals
5. hoses.

Damaged parts must be replaced immediately.



Special comments

This type of machine is electronically controlled by a microcomputer. Faults / malfunctions during further operation under the influence of strong electrical or electromagnetic fields cannot be ruled out completely even though such events are highly unlikely.

Should this happen, please proceed as follows:

- turn off the machine,
- wait at least 10 seconds,
- restart the machine,
- if necessary perform a factory reset.

5 Delivery

5.1 Scope of delivery

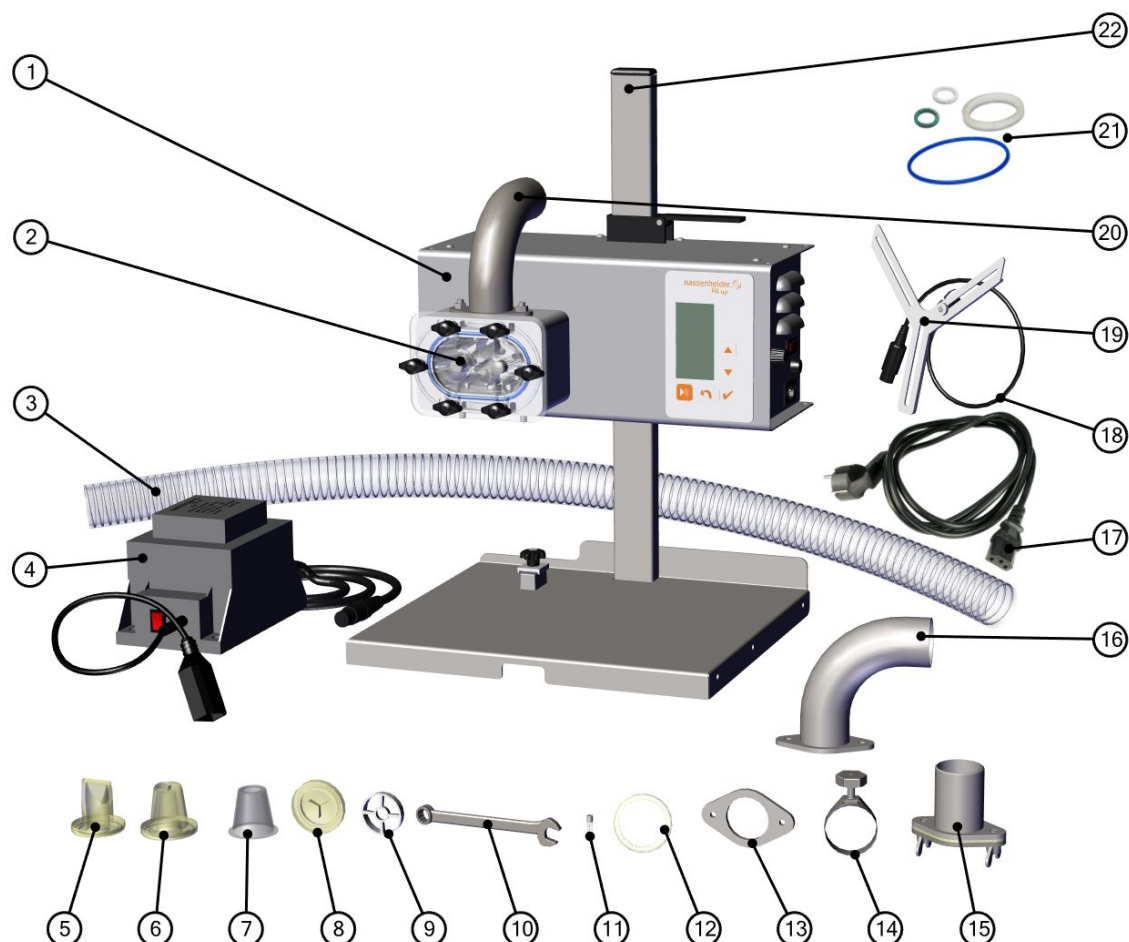


Fig. 1: Scope of delivery
Art. 301001

Item	Quantity	Description	Art.	Wear part
1	1 pc.	Driving module Fill up 2/100 (inc. item 4)	301002	
2	1 pc.	Gear pump head L, with pair of gears; individual parts, see chapter Putting into Operation: Pump head	302001	x
3	4 m	priming hose Ø 40 x 3 mm	304002	x
4	1 pc.	Power adapter 230 V, AC primary: 230 V, 50/60 Hz, secondary: 24 V DC/10 A, unregulated or optional: 115 V/24 V (Art. 307044)	307127 or: 307044	
5	2 pc.	Wedge nozzle, hard	306015	x
6	1 pc.	Conical filling nozzle, hard	306002	x
7	1 pc.	Support for conical filling nozzle	306005	x

8	1 pc.	Filling nozzle, flat	306001	x
9	1 pc.	Limitation cross for flat filling nozzle	306006	x
10	1 pc.	Combination wrench, SW 10 mm	307007	
11	2 pc.	Micro fuse, 8A, medium time lag, inscription: M8/250	307009	x
12	2 pc.	Gasket for clamping flange	307004	x
13	1 pc.	Clamping flange Ø 37 for filling nozzles, preassembled	306007	
14	3 pc.	Hose clamp, for hose Ø 40 mm, size 48	304066	
15	1 pc.	Check valve for hose Ø 40 mm (inkl. item 14)	306038	
16	1 pc.	Pipe bend 90°, bended aside, for pumping, for hose Ø 40 mm (incl. item 12, 14)	304001	
17	1 pc.	Network cable/power cord, EU plug	307022	
18	1 pc.	Microswitch, 5-pin plug	307039	
19	1 pc.	Y-bracket	307034	
20	1 pc.	Pipe bend 90°, for hose Ø 40 mm (incl. item 12, 14)	304034	
21	1 pc.	Set of seals (replacement for pump head)	307043	x
22	1 pc.	Stand 50 cm (incl. item 19)	303012	



Without exception, wear parts are not covered by the warranty.

All wear parts must be checked regularly for damage and wear and replaced if necessary. Porous, leaking or worn parts must be replaced immediately. Operation with defective parts can be harmful to the life, electronics, mechanics and functionality of the machine as well as to the quality of your product to be filled.

Among other things, the service life of the wear parts depends on the respective products to be filled, the duration and nature of use and on environmental conditions (temperature, corrosive fumes etc.). The inactivity of the machine can also negatively affect the service life of the wear parts due to the different ageing processes of individual components.

5.2 Content control

During our outgoing controls, all our deliveries are carefully checked for completeness and intactness. Nevertheless, we recommend that, after unpacking the machine, you check the delivery immediately for completeness according to your **delivery note** and using **Fig. 1**.

In case of missing or damaged parts, please inform the company FILL-Systems GmbH immediately in writing, at the latest within two working days after receiving the delivery. We request you to note that upon expiry of this deadline, we can no longer guarantee any replacement/subsequent delivery of parts at the company's expense.

6 Technical details of the machine

6.1 Intended use

The Fill up 2 is designed for the filling of honey.

With additional accessories it is also possible to fill propolis and royal jelly.

Decisive for an accurate filling is the viscosity of the product.



When filling non-flowable products, the pump head and the driving module can be damaged. The manufacture assumes no liability for this.

The Fill up 2 ist designed for single-shift operation.

6.2 Technical data

Nominal voltage	24 V DC
Rated current	2,0 A
Power consumption motor	approx. 200 VA
Motor/pump speed	14-100/min (regulated with the rotary knob righthandside of the machine)
Tightening torque	90 Nm
Nominal torque	9,5 Nm
Noise emission	< 70 dB
Set up area	width = 33 cm x depth = 32 cm
Overall height	50-100 cm (according to design)
Height below filling nozzle	5-30 cm, stand 50 cm (Art. 303012)
	5-50 cm, stand 70 cm (Art. 303006)
	5-80 cm, stand 100 cm (Art. 303023)
Weight	approx. 16 kg (basic configuration)
Dosing quantities	5 ml - 65 l or 5 g - 32.5 kg
Repeat accuracy/ filling accuracy	approx. 1-2 g (depending on dosing quantity, viscosity and filling speed, up to a jar size of 500 g)
Pumping data for honey	
Max. priming height	up to 4.9 ft / 1.5 m
Max. conveyor height pressure side	up to 13 ft / 4.0 m
Max. pump capacity per hour	up to 420 kg/h, 300 l/h

6.3 Fuses

Software

To protect the mechanics and the motor, the machine is equipped with an overload protection. If there is a blockage in the mechanical part, the machine switches off and the message **Overpump** appears on the display.



In this event, it is absolutely necessary to find the root cause of the blockage and to remove it.

If the root cause is rectified, the machine can be put into operation by confirming with the ☒ key.

Electrics

The electronic parts and power supply are protected via a **micro fuse** in the form of a melting-fuse type (see chapter ***Delivery: Scope of delivery***). The fuse acts on short-circuit/over voltage in the power supply and becomes defective after it has fulfilled its function and can **no longer** be used. After the source of the fault has been identified and rectified, the micro fuse must be replaced.

To do this, the fuse holder is unscrewed, the defective micro fuse is removed and the fuse holder is inserted again with a new micro fuse (see chapter ***Technical Details of the Machine: Connections and controls on the driving module***). Normally, the machine can now be restarted.



**Never attempt to repair a fuse or bypass - danger to life.
There are two replacement fuses among the components included in the delivery.
If the newly installed micro fuse breaks immediately, please contact our Technical Support.**

Electronics

If the machine is exposed to an extreme, continuous load due to unfavourable conditions (high room or outside temperature), a **thermal fuse** is activated when a temperature of the motor of approx. 70 °C is reached. In this case, the machine switches off to protect against overheating, and the message **T-Error** appears on the display. After a cool-down phase of approx. 15 minutes, the machine can be put into operation mode again by pressing the ☒ key. For a faster cool-down leave the machine switched on that the fan accelerates the cool-down phase.

6.4 Connections and controls on the driving module

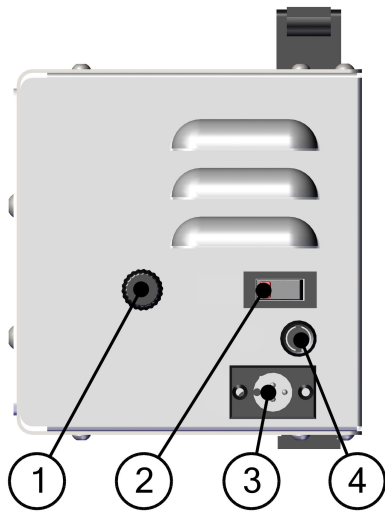


Fig. 2: Right side of the driving module

Fig. 2:

- 1** - Rotary knob for stepless speed regulation
- 2** - ON/OFF toggle switch/main switch (without LED)
- 3** - 3-pin socket connector for 24 V power supply
- 4** - Fuse holder (contains the micro fuse)

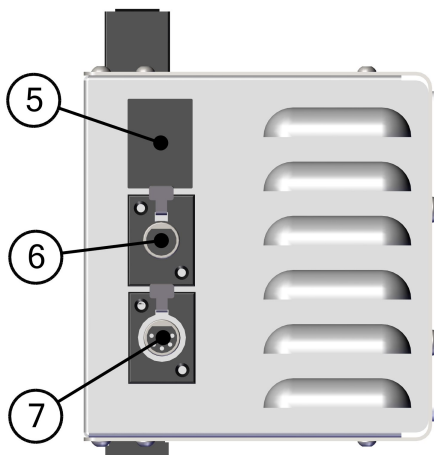


Fig. 3: Left side of the driving module

Fig. 3:

- 5** - Blank cover for optional installation of a port for additional devices
- 6** - 3-pin port for connecting a turntable
- 7** - 5-pin port for external switches/sensors

7 Putting into operation

7.1 Unpacking and installation

After unpacking remove the protective cover from the stainless steel sheets (see **Fig. 4**).

To ensure optimum operation of your machine we recommend:

- placing the machine on a table or a stable worktop
- a room temperature between 15 °C and 35 °C
- allowing the machine to acclimatize prior to putting it into operation for about 1 hour to prevent damage caused in the electronics by condensation (e.g. due to high temperature or climatic differences during transport)
- operating the machine only with tested and proper power connections.



Fig. 4: Removing the protective cover



The machine must neither be operated nor stored in places with unfavorable environmental conditions such as high humidity, water vapor, aggressive or acidic vapors, extreme heat, extremely dusty air etc.

7.2 Cleaning



For hygienic reasons, we recommend that all parts coming in direct contact with the product should be cleaned before first use and after each use. The parts can be cleaned by hand or in the dishwasher. For cleaning by hand, you can use commercial dishwashing detergent.

Cleaning these parts after each use is important and necessary to maintain the proper functioning of the machine.

7.3 Adjustment to the jar height and size

The height below the filling nozzle can be adjusted between 5 and 30 cm for the stand 50 cm. For filling taller jars, a high stand can be purchased, if required (see chapter **Technical details of the machine: Technical data**). The height adjustment takes place by means of the locking lever at the driving module (see **Fig. 5**).



When releasing the lever, the driving module must be held tightly in place from below, so that it does not slip suddenly downwards on the stand rod (see Fig. 5).



Fig. 5: Height adjustment

Generally, the filling nozzle should be fitted as tightly as possible over the jar opening.

Installation and adjustment of Y-bracket and microswitch, see Fig. 6:

1. By means of the star grip and the guide plate, the Y-bracket is attached to the stand and positioned so that an adjacent jar is located centrally under the filling nozzle.
2. By means of the knurled nut, the microswitch is positioned that a pressed on jar actuates the microswitch.

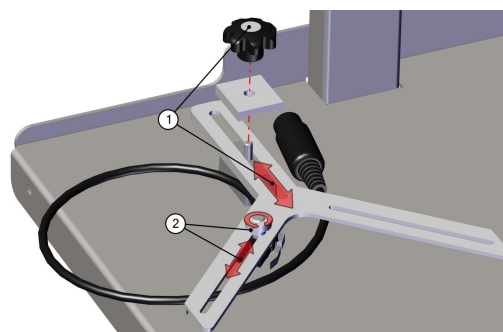


Fig. 6: Y-bracket and microswitch

7.4 Suctioning of the medium

To prime in the product into the pump head and fill it into the jar, proceed as follows:

1. Fill the pump head with 2-4 table spoons of the product, depending on the viscosity (see **Fig. 7**). In this way, the pump head is greatly vented, sealed and lubricated, and the product can be primed.
2. Replug the pipe bend, including the priming hose, into the top opening of the pump head.
3. Place a collection container under the filling nozzle.
4. Prime the product until it emerges from the filling nozzle without bubbles.
 - Operation mode used: Manual mode – Forward interval
 - using the black rotary knob on the right side of the driving module set the motor speed (filling speed) to maximum (100/min)
 - fill up until the hose and pump head are filled with the product without bubbles.



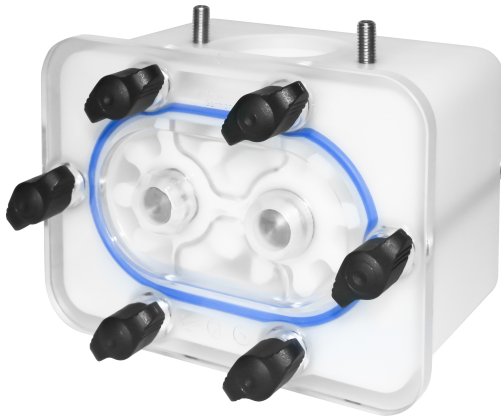
Fig. 7: Filling the pump head



The product should have reached the pump head after 15 seconds. If this does not occur, the pump head should again be filled with product and the hose connections checked for leaks. Prolonged priming without further addition of product to lubricate the gears can destroy the pump head.

7.5 Pump head

7.5.1 Gear wheel pump head L



*Fig. 8: Gear pump head L
(Art. 302001)*

Fillable products

The gear pump head L is designed for the filling of honey.

To prevent temperature differences and segregations, we strongly recommend that the product is thoroughly stirred. Honey should not be heated above 40 °C.

The volume flow of the gear pump head L is approx. 5 liters/minute at the maximum delivery rate.

Cleaning

In order to clean the pump head, it (we recommend including pipe bend and priming hose) can be removed from the driving module and be disassembled.

To do this, proceed as follows (see **Fig. 9**):

- empty the pump head as far as possible
- remove the pump head from the driving module by unscrewing the two wing screws M6 x 90 mm (**2**)
- remove the pipe bend and the clamping flange including the filling nozzle and the flange seal by unscrewing the nuts (**8**) at the top and the bottom of the pump head
- remove the cover (**3**) by unscrewing the wing screws M6 x 20 mm (**1**)
- remove the cover gasket (**7**) from the groove and the pair of gears (**4**) from the housing (**9**)

Attention: The pair of gears sit tightly on the shafts due to their very precise fitting. To facilitate removal, these can be lifted with a flat screwdriver through the openings for the nozzles.

- Strictly avoid force and scraping etc.

Attention! Do not lose small parts.

Pump head housing (incl. shafts), pair of gears and cover can now be cleaned, e.g. in the sink by hand (small parts) or in the dishwasher. Recesses can be brushed out or wiped with a small brush or a sponge respectively. Only commercially available dish washing / cleaning agents should be used for this purpose.

The assembly then takes place in reverse order.



The ball bearing of the driving shaft is pressed into the housing. A thorough cleaning is also possible without its dismantling.



When assembling the pump head it is important to fix the wing screws (1, 2) and the nuts (8) only hand-tight.

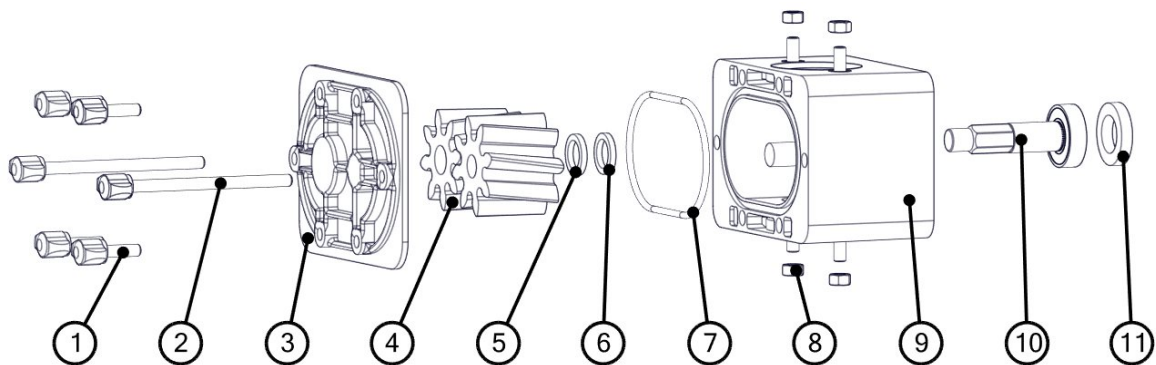


Fig. 9: Pump head L, exploded view drawing

Item	Number	Description	Art.
1	4 pc.	Wing screws M6 x 20 mm	
2	2 pc.	Wing screws M6 x 90 mm	307063
3	1 pc.	Cover	307092
4	1 pc.	Pair of gears, helical cut	302017
5	1 pc.	Shaft seal, red/blue	307026
6	1 pc.	Shaft seal, green/blue	307027
7	1 pc.	Cover gasket	307003
8	4 pc.	Nut M6	307002
9	1 pc.	Pump head housing with passive shaft	
10	1 pc.	Driving shaft with ball bearing	307079
11	1 pc.	Plastic ring	

The shaft seals (**5** and **6**, either red and green or both blue) are generally to be replaced after 20,000 kg, at least once a year. For the exchange of all seals on the pump head, we offer seal sets in different materials: Art. 307043 (food grade), Art. 307061 (chemical-resistant).



The pump head must never be operated in a dry state, i.e. without product. Without the lubricating effect of the product, the synthetic gears would rub against one another and could thereby be damaged or destroyed. On the other hand, no lubrication is necessary with all other parts of the filling equipment.

7.5.2 Changing shaft seals

Be careful when changing the shaft seals, not to damage any part of the pump head.

The shaft seals for the exchange may both be blue. In this case pay attention only to the installation direction.

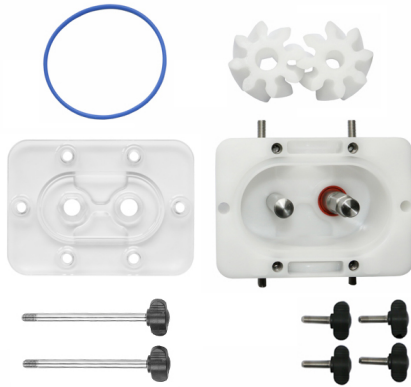


Fig. 10: Gear pump head L, disassembled

Disassemble the gear pump head as described in chapter **Putting into Operation: Pump head** (see **Fig. 10**).



Fig. 11: Knock out the driving shaft

Knock the hexagonal driving shaft (including ball bearing) and the white plastic ring out of the housing with a suitable rubber hammer (see **Fig. 11**).



Fig. 12: Remove the red/blue shaft seal



Fig. 13: Remove the green/blue shaft seal

Remove the red/blue and the green/blue seal shaft after each other with a suitable tool from the housing (see **Fig. 12** and **Fig. 13**).

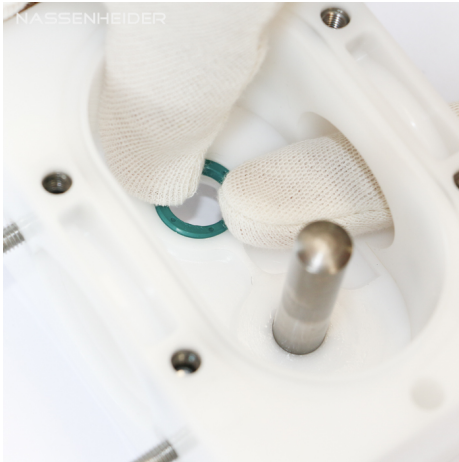


Fig. 14: Insert the green/blue, greased shaft seal



Fig. 15: Insert the red/blue, greased shaft seal

Lubricate the new shaft seals with food grade grease (e.g. vaseline) and insert them into the housing (see **Fig. 14** and **Fig. 15**):

Press the two shaft seals carefully, straight and completely into the provided drilling hole.

First the green/blue shaft seal with the groove downwards, then the red/blue one with the groove upwards. The two flat sides of the shaft seals have to face each other.



Fig. 16: Insert the driving shaft

Grease the driving shaft, insert it into the housing from behind by using the rubber hammer (see **Fig. 16**).

Be careful not to damage the shaft seals.

Press the white plastic ring over the ball bearing, so that it is flush with the housing (knock if necessary). Then insert the pair of gears, put the cover gasket into the specific groove, place the cover and tighten (hand-tight) all the screws.

7.6 Filling nozzles

Wedge nozzle outside Ø 26 mm, hard (Art. 306015)
(see **Fig. 17**)

Put directly into the pump head with a the clamping flange.
Application: for highly viscous honey

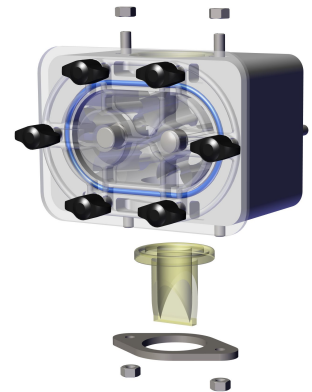


Fig. 17: Wedge nozzle on pump head

Conical filling nozzle with support (Art. 306002 and 306005)
(see **Fig. 18**)

Application: especially for slightly viscous honey and filling into small jar sizes

Assembly:

- insert conical filling nozzle into the pump head
- put the support onto the filling nozzle
- fix the nozzle with the clamping flange
- fasten the clamping flange with nuts.

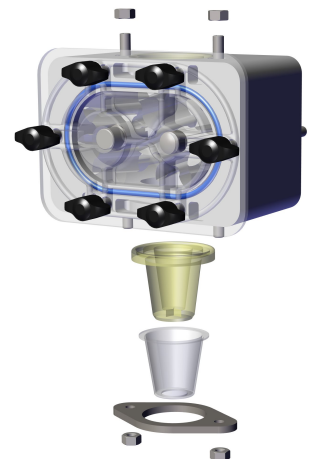


Fig. 18: Conical filling nozzle on pump head

Filling nozzle, flat, hard with limitation cross
(Art. 306001 and 306006)

(see **Fig. 19**)

Application:

- **Position 1:** When filling with a funnel or direct connection to a container, the upper gasket in the pump head can be exchanged for pressure reduction against the flat filling nozzle.
In the case of very slightly viscous products, this prevents flow through the pump head and dripping from the filling nozzle by the pressure from above.
In the case of highly viscous and non-dripping products, the flat filling nozzle is not necessary as a pressure reducer.
- **Position 2:** The flat filling nozzle can also be used for filling in large jars. For this purpose, the limitation cross and the flat filling nozzle are inserted into the pump head at the bottom and fixed by means of the clamping flange.

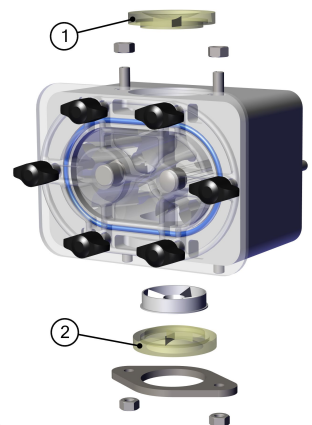



Fig. 19: Flat filling nozzle on pumpe head

7.7 External switches

7.7.1 Microswitch



Fig. 20: Microswitch (Art. 307039)

The microswitch is to be adjusted at the Y-bracket so that it triggers the filling process when the jar is pressed. It is active only in **Auto mode**. The key  can also be used instead of the microswitch. The key is due to increased wear not suitable for continuous operation.


We recommend the microswitch only for filling jars with an opening Ø from 30 mm. To avoid accidental triggering of the filling process, the microswitch should be connected only when all preparations for the filling (priming and calibration) are completed.

7.7.2 Foot switch

Optionally available as accessory.



Fig. 21: Foot switch (Art. 303029)

The foot switch is connected parallel to the key  of the keypad in all operating modes, and has therefore exactly the same functionality. The key is due to increased wear not suitable for continuous operation.

It is suitable for filling all jar types.

To avoid any accidental triggering of the filling process, the foot switch should be connected only when all preparations for the filling (priming and calibration) are completed.

7.7.3 Float switch

Optionally available as accessory.



Fig. 22: Float switch
(Art. 303004)

The float switch is used for pumping from one container to another one. For this purpose, the switch is fixed to a container with the help of the vertically-adjustable bracket.

Depending on the situation, the switch is attached straight up or upside down on the bracket (see **Fig. 23** and **Fig. 24**). Separate instructions are provided with the float switch.

The **manual mode** is used for operation of the float switch. The float switch operates as in the pump options **forward** and **backward interval**.

Use upside down (see **Fig. 23**)

- use in container which is to be emptied by pumping
- when the falling product level in the tank reaches the switch, the float is pressed down and the motor is switched off.
- the motor runs until the tank is emptied.
- it must be ensured that the container to be filled can accommodate the pumped quantity.



Fig. 23

Use upside down (see **Fig. 24**)

- use in the container to be filled
- when the rising product level in the container reaches the switch, the float is pushed up and the motor is switched off. the motor runs until the container is full.
- overflowing of the container to be filled is prevented.



Fig 24

8 Processing of honey

8.1 Preparing the machine for filling

Assemble of the hose using a bent pipe

- put the hose clamp onto the priming hose
- dip the end of the hose and the bent pipe into hot water (approx. 80-95 °C / 176-203 °F) (see **Fig. 25**)
- after assembly immediatly pull the hose clamp tight, making sure that the hose does not get damaged



There is a **risk of scalding** when using hot water.

Assembly the check valve to the hose

(see **Fig. 26** and **Fig. 27**)

- ensures that the honey does not flow back out of the hose
- ensures that the opening does not adhere to the container bottom, position
- fix the check valve with the hose clamp (see **3**).

Priming of honey

- before assembly of the upper bent pipe, pour approx. 2 tablespoons of honey into the pump head, position **(1)**
- this way the pump head becomes sealed and coated and able to draw the air out of the hose

When set up in the way described above, the machine is in position to fill honey into jars, to a priming height of 1.5 m and without air bubbles.

After disassembly for cleaning, the check valve is reassembled as follows (see **Fig. 26)**

- the rough side of the membrane must point towards the hose
- Tighten the wing screws similarly hand-tight, otherwise the membrane is squeezed and won't seal properly

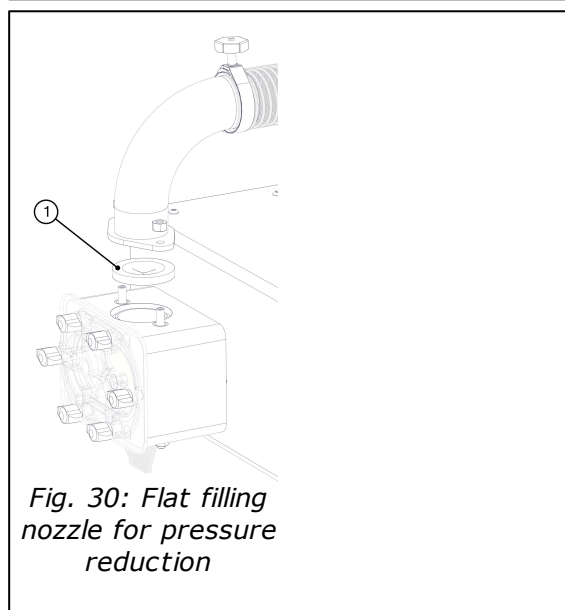
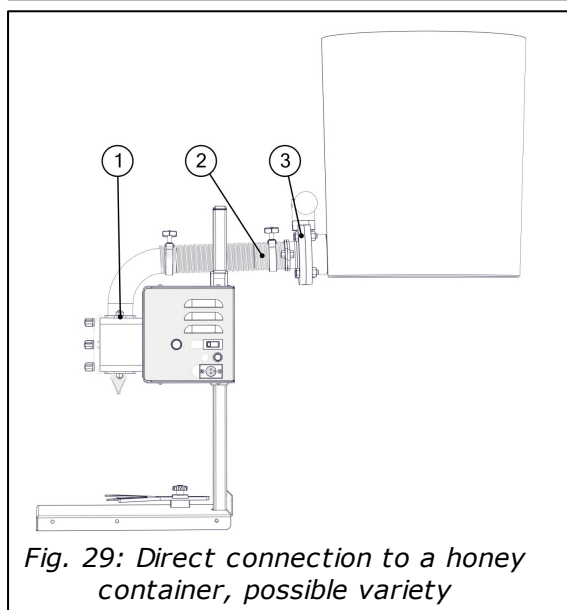
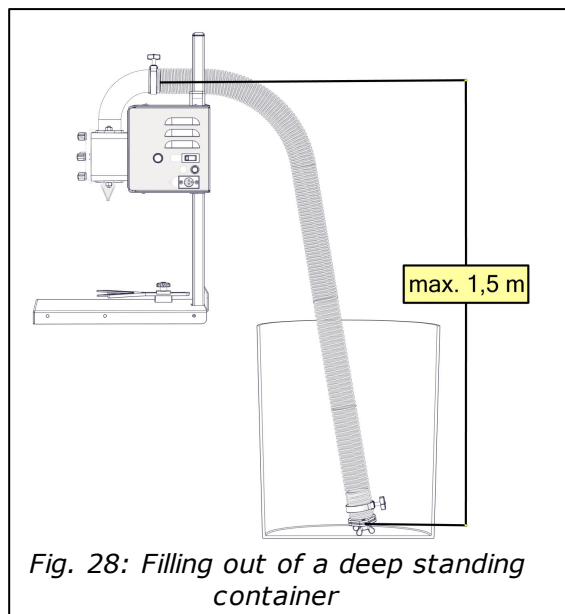
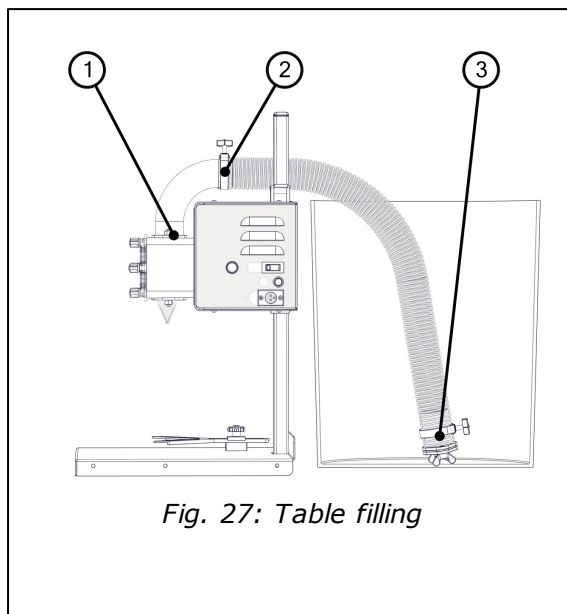


Fig. 25: Heating of hose and pipe bend



Fig. 26: Check valve (Art. 306038)

Assembly suggestions for filling



Direct connection to a honey container (see **Fig. 29** and **Fig. 30**):

- recommended: installation of a disk valve (**3**)
- if the honey drips from the filling nozzle, the flat filling nozzle (**1**) is inserted for pressure reduction (see chapter **Putting into operation: Filling nozzles**)
- priming is not required if the outlet of the container is higher than the pipe bend.

Options:

- Direct connection by means of a connection pipe (**2**) (Art. 304013 - 304015) and disk valve (**3**) (Art. 304010 or 304012). The container should then be raised accordingly.
- Connection by hose with hose connector, swivel nut (Art. 304011) and disk valve (Art. 304010 or 304012).



priming problems are solved as follows:

Leaks

In the case of priming problems, honey can also be sealed at the following parts (see **Fig. 27**):

- gasket for clamping flange (**1**)
- connection between pipe bend and hose (**2**)
- connection between check valve and hose (**3**)
- filling nozzle.

Very slightly viscous honey runs back and at the same time air enters the filling nozzle

- use the check valve
- fill slightly viscous honey as cool as possible (approx. 15-20 °C)
- increase storage tank. If the honey drips out of the filling nozzle, the storage tank has to be lowered for pressure reduction.

priming problems with highly viscous honey

Convert the check valve to an intake cage by removing the flange and the membrane. The wing screws are reassembled as priming protection (see **3, Fig. 27**). Keep the hose as short as possible.

Attention: In the case of very slightly viscous honey the filling nozzle will begin to drip if the filling level in the storage tank is higher than the filling nozzle. Then the storage tank must be correspondingly lowered.

Alternatively the flat filling nozzle can also be inserted in the pump head instead of the gasket for clamping flange (see **Fig. 30**).

8.2 Preparation of the honey for the filling

- Filter wax from honey in a cleaning basin
- honey must be in liquid form
- honey must be freshly stirred, in order to prevent possible temperature differences (density variations) in the container.

Processing temperatures of the honey

- slightly viscous honey freshly extracted: 20-25 °C/ 68-77 °F
- creamed honey with low water content (approx. < 16 %): 26-35 °C/ 79-95 °F
- maximum temperature: 40 °C/ 104 °F

Using the machine at higher temperatures can clog the gears due to an expansion in the pump head.



Density variations cause filling inaccuracies.

If the honey gets colder during the bottling/pumping, the machine could be damaged - for that we assume no liability!

8.3 Pumping to make creamy honey

Preparation

- instead of the clamping flange and the filling nozzle the pipe bend (bended aside) for pumping with priming hose is installed at the bottom of the pump head:
 - put the hose clamp onto the priming hose
 - heat the end of the priming hose and the pipe bend, after assembly immediately pull the hose clamp tight, making sure that the hose does not get damaged
 - insert the gasket for the clamping flange into the pump head and mount the pipe bend
- operating modes: **Manual mode** or **Time switch**.



There is a **risk of scalding** when using hot water.

Pumping from one container to another one

- temperature of the honey: approx. 20-35 °C (68-95 °F)
- the use of a float switch is recommended. Depending on the type of installation, the machine switches off when the source container is empty or when the second container is full (see chapter **External switches: Float switch**).

Pumping to make creamy honey (suitable for max. 300 kg)

- temperature of the honey: approx. 18-20 °C (64-68 °F)
- add approximately 5-10 % fine-crystalline honey (briefly mixed by hand) to the honey to be stirred, or wait until the honey automatically begins to crystalize.
- insert the priming hose into a second container and pump the prepared honey (during the pumping process the crystals are reduced to small fragments that are finely distributed throughout)
- leave the honey for one day, then pump it back again by changing the pump direction (see chapter **Operation: Setup Menu**)
- the honey can also be pumped into a large container that is circulated (the honey is drawn from below and returned from above)
Attention: there is a danger that part of the honey gets out of the circulation cycle
- the pumping process should be carried out approx. 3-8 times a day with a break of a few hours up to one day between the procedures.



A single pumping or filling is not enough to change the mechanical structure of the honey.

9 Operation

9.1 Operating the keypad



Display and keypad should not be operated with fingernails or hard objects as this could cause scratches and surface damage. Moreover, aggressive cleaning agents or abrasives should never be used.

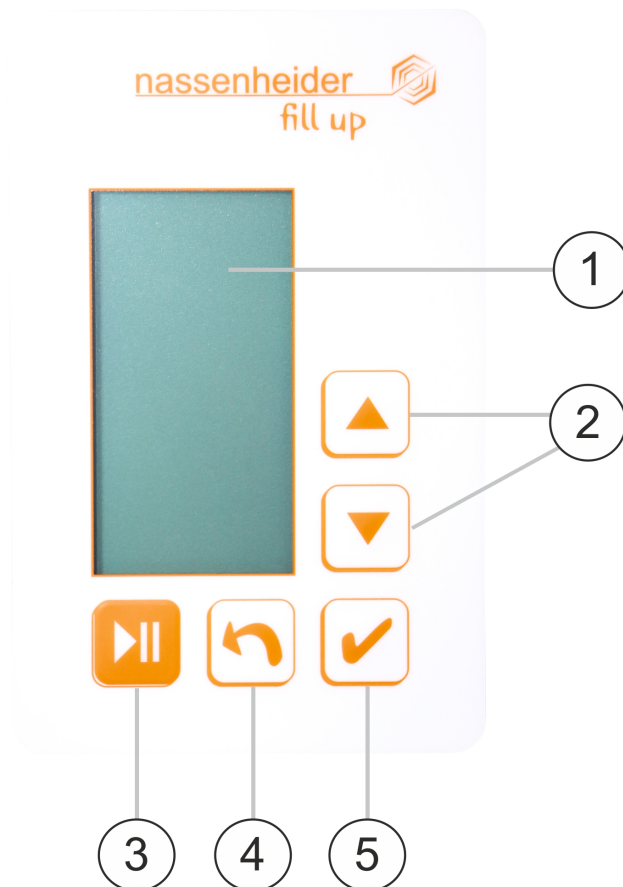


Fig. 31: Keypad and display

Fig. 31:

- | | |
|-----------------------------|---------------------------------------------------|
| 1 - Display | - display of the current menu level |
| 2 - Arrow keys | - selection up / down |
| 3 - Start / Stop key | - start / stop motor or the filling process |
| 4 - Back key | - switch to the previous / next higher menu level |
| 5 - OK key | - highlight selection / confirm |

General Operation

- Select the line with the ▲▼ keys.
- Highlight the line with the ✓ key. The values to be changed are then displayed inversely (white on black).
- Adjust the value using the ▲▼ keys.
- Save the desired value using the ✓ key.

9.2 Operating modes

In the **main menu**, two operating modes and the setup menu are available:



AUTO



SETUP

Manual mode

Auto Mode









Time switch

Setup Menu

- priming / pumping of the product
 - automatic fine dosing
 - time-controlled pumping/making creamy honey
 - settings.
-

9.2.1 Manual mode

This mode of operation is used to prepare for the filling (to prime the product in order to fill the priming hose and the pump head) and for continuously pumping (e.g. pumping from one container to another one).

	<p>Forward continuously</p> <p>Pressing the  key briefly will start the filling process. Pressing a second time will stop it. The product is pumped from above through the pump head.</p>
	<p>Forward interval</p> <p>The product is pumped as long as the  key is pressed. Without pressing anymore the motor stops. The product is pumped from above through the pump head.</p>
	<p>Reverse continuously</p> <p>Pressing the  key briefly will start the filling process. Pressing a second time will stop it. The product is pumped from below through the pump head.</p>
	<p>Reverse interval</p> <p>The product is pumped as long as the  key is pressed. Without pressing anymore the motor stops. The product is pumped from below through the pump head.</p>



The filling nozzles must be removed for both reverse pump options. They would offer too much resistance in the pumping process and would thereby be damaged. There is also the risk of overloading the motor.

9.2.2 Auto mode/dosage

The Auto mode (**dosing**) is used to repeatedly fill a fixed quantity (batch filling).

General procedure:

1. select nominal filling quantity (jar size) - Select from the settings (see **Fig. 32**) - this can be specifically programmed in the setup menu
2. test filling in a jar
3. weigh the actually filled quantity using a calibrated scale
4. correct the filling quantity on the machine (calibrate)
5. repeat the points 2-4 (this is usually required two or three times)
6. perform batch filling.



Fig. 32

Overview of the functions in the Auto mode



Fig. 33:
Functions in
the Auto mode

1: Selection / display of the net volume / net quantity

2: Progress bar / filling level

3: Calibration / fine adjustment

If the filled quantity deviates from the nominal fill quantity, the weighed quantity is entered here and confirmed with the ☒ key. The machine then automatically performs the correction in the next filling.

4: Setting the draw back. This must be adjusted depending on the viscosity (see below).

If an accessory is activated, the specific settings are displayed here.

5: Indication of motor speed (filling speed). Can be modified by using the rotary knob on the right of the driving module.

6: Display motor ON / OFF

Selection of nominal filling quantity / jar size

The most common nominal filling quantities (jar sizes) are pre-programmed. They appear in the first line of the Auto mode (see **Fig. 34**) and can be selected as described in the chapter **Operation: Operating the membrane keypad**.



Fig. 34

Programming of new nominal filling quantities

If a desired jar size is not stored, it can be programmed manually. Select in the main menu: **SELECT: SETUP: FILLING** (see **Fig. 35**).

Here either a preprogrammed nominal filling quantity can be changed - as specified in chapter **Operation: Operating the membrane keypad** - or a new one can be created.

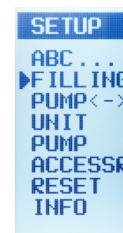



Fig. 35

Filling

A once-off filling process is started by pressing the  key (or external switch / sensor). After providing a new jar, the next filling operation can be performed.

Correction / calibration of the filling quantity

Due to the different density of the different batches and products, it is necessary to calibrate of the filling quantity using a weighing scale before filling any new batch or a new product or when using a new jar size. Proceed as follows:

- Place an empty jar on a weighing scale.

- Press TARE/0 (or in case of mechanical scales, note the weight or the mass of the empty jar).
 - Select nominal filling quantity (e.g. 20 g) on the machine and fill the jar.
 - Weigh the jars just filled.
 - If the weighed quantity deviates from the adjusted nominal filling quantity. (observe repeat / filling accuracy - see chapter **Technical Details of the Machine: Technical data**), calibration is carried out as follows:
 - Select the line **20.0** (nominal filling quantity) with the **▲▼** keys.
 - Highlight the line with the **☑** key.
 - Enter the exact weighed quantity (e.g. 26 g) with the **▲▼** keys.
 - Confirm the value by pressing the **☑** key.
 - The value relating to the nominal filling quantity (20 g) changes again; the control automatically calculates the exact density of the product and fills 6 g less in the next filling process.
- This is followed by a refilling of the jar and the control of the filled quantity.

Tips for calibration

- We recommend to use an oversized jar, e.g. a 500 g jar for the calibration of 250 g. This avoids possible overflow of the jar (especially when the machine is re-installed)
- When calibrating always note the technical accuracy of +/- 1-2 g. This means that exact values can only be achieved after the filling of approx. 10 jars and the calculation of the mean value.
- If each jar has to contain a nominal filling quantity of at least 500 g of honey, the mean value must be approx. 502 g. Then the filling quantity fluctuates between 500 g and 504 g. Because of that, the machine should not be calibrated exactly to 500 g, but to 502 g.
- The calibration depends amongst other things (see below) on the filling speed. That means: a change of the engine speed should be avoid after calibrating.
- The calibration always remains saved until it is overwritten - regardless of which jar size is filled. Different jar sizes can be filled with the same calibration.
- Nevertheless, checkweighings and possible adjustments are necessary.



In the event of larger deviations, it may be necessary to repeat the calibration more than once.

Generally, it is necessary to perform a calibration at every change, e.g. if the following sizes change significantly:

- **temperature**
- **installation height of the container**
- **filling level of the container**
- **filling rate**
- **hose lengths**
- **container change**

To ensure optimum quality standards, regular calibration is recommended even when conditions remain the same.



The mass of the empty jar is not always identical. Therefore, the mass of the filled jars may also differ at the same filling quantity.

During the very first use of the machine, the actual filling quantity may differ significantly from the nominal filling quantity. Therefore, for initial calibration, the selection of a small nominal filling quantity (e.g. 125 g) in a much larger jar (e.g. 500 g) is recommended to prevent overflowing.

Correlation between product and hardness of the filling nozzle

The exact closing of the filling nozzle after a filling operation depends on the set draw back and the hardness of the filling nozzle (see chapter **Putting into operation: filling nozzles**).

Draw back ↱

The draw back function guarantees a **drip-free filling**.

The last drop of the product is drawn back again into the filling nozzle through a reversal of the direction of rotation of the driving module after a filling process, and at the same time, the filling nozzle is closed.

The length of the draw back motion may be set from **0 to 50**. If it is too short, the filling nozzle will subsequently drip. If it is too long, then the air will be drawn in, can create air bubbles and cause inaccuracies in the filling during the next filling process.

The value is set using the   keys and is saved using the  key (see **Fig. 36**).



Fig. 36

The optimum value for the length of the draw back motion depends on the viscosity of the product and needs to be determined individually through trial and error.

The surfaces of the filling nozzles should close exactly, cut off the flow of the product without dripping and not take in any air.

Benchmarks for the draw back

4-6: for slightly viscous, fresh stirred honey

8-10: for creamy honey

9.2.3 Time switch


The time switch is very suitable to stir honey in order to make creamed honey (see chapter ***Processing of honey: Stirring to make creamy honey***).

Operating the time switch

- > Pump forwards inside the pump head (from above, downwards)
- <---- Pump backwards inside the pump head (from below, upwards)
- ↔ Pump into both directions (cycle alternates from above downwards, the next cycle from down upwards)
- START** Setting of the time between the pumping cycles (term + pause) (in hh:mm:ss)
- ON** Setting of the time between the pumping cycles (in mm:ss)



Fig. 37

When the  key is pressed, the pump begins to run immediately until the ON time is completed. The display indicates the remaining time.




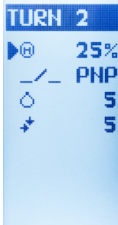

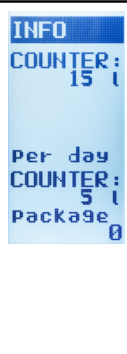


9.3 Setup Menu

Here the basic settings of the machine can be made for the filling (see **Fig. 38**). These include language, jar sizes (nominal filling quantities), accessories (e.g. turntable) or the used pump head. Where possible, the individual settings of the machine will already have been made in our factory.



Fig. 38

	Language selection - multiple languages are available here.
	<p>List of pre-programmed nominal filling quantities – the values of the nominal filling quantities can be altered here or new nominal filling masses can be created. Method:</p> <p>Select an storage space with the keys, highlight with the key and change the value with the keys. To save the value, press the key. For rapid adjustment of large numbers, one of the keys is held down.</p>
	Selection of pumping direction for the Auto Mode (general pumping direction) or .
	<p>Selection of the unit: gram (gr), milliliter (ml), ounce (oz). The filling is recommended in grams because the calibration with a weighing scale is easier by using the same unit (g). For filling liquids, the desired volume (e.g. 500 ml = 480 g) is weighed. This can then be stored in the nominal filling quantities (FILLING).</p>
	<p>Selection of the connected pump head: GEAR-L = Gear pump head L</p>

	<p>Selection of connectable accessories. The accessory works only in Auto mode.</p> <p>WITHOUT Select this when not using an accessory.</p> <p>TURN 1</p> <div data-bbox="432 450 550 629">  </div> <p>1: Sensor type (PNP is the standard for the sensors supplied by us)</p> <p>2: Delay drip (Pause after filling, before restarting the turntable)</p> <p>3: Stop delay (Pause after stopping of the turntable, before filling)</p> <p>Activation for the connection of Ø 65 cm turntable (Art. 303017). Functioning according to the above activation of the turntable (turntable is switched on only in Auto mode):</p> <ul style="list-style-type: none"> - press the  key in the AUTO menu to start the turntable - turntable rotates until the sensor detects a jar - turntable stops, the time of the stop delay runs out - machine fills the jar with the set quantity - the time of drip delay runs out - turntable starts again until the next jar is detected - turntable stops automatically after one minute of idle running. <p>In a few cases TURN 2 is selected for Ø 65 cm turntable (see turntable instructions).</p> <p>TURN 2</p> <div data-bbox="432 1160 550 1384">  </div> <p>Activation for the connection of Ø 100 turntable (Art. 303038 or 303039). The setting is made the same way as for TURN 1. Additionally, here the speed of the turntable can be set in % in the top line.</p>
	<p>Here, a factory reset can be performed to reset the software to its factory settings in the event of malfunctions. Individual settings (e.g. entered nominal filling quantities) are thereby erased.</p>
	<p>COUNTER This counter measures the total quantity filled/pumped by the device in liters. The recorded value is not resettable and can be compared with the records of an operating hour counter. The indicated value is only an approximate value because the different calibrations are not included in the calculation.</p> <p>per day COUNTER Batch counter (quantity in liters), resettable. Press  to reset.</p> <p>package Jar counter (number of pieces), resettable. Press  to reset.</p>

10 Maintenance and Support

10.1 Maintenance

In the pump head, the product undertakes the functions of lubrication and sealing. The built-in ball and slide bearings, however, are basically maintenance-free, as they are lubricated separately and sealed against the fluid-handling components.

Regular cleaning after each filling batch or once daily of all product-touching parts is necessary to keep abrasive particles away from the pump head to maintain its efficiency and maintain the warranty and guarantee claims. For each cleaning, the user accessible seals and the gears and the pump head housing must be checked for damages and replaced if necessary. After a protracted machine standstill, thorough cleaning and visual inspection of functioning parts should also be carried out before further use.

If required, a replacement of single components is possible at any time and without any problems.

For the exchange of all seals on the pump head, we offer seal sets in different materials (see chapter ***Putting into Operation: Pump head***).

The driving module is basically **maintenance-free**.



Within the warranty period, the driving module may only be opened by the manufacturer or by qualified personnel authorized or appointed by him. Any unauthorized opening of the driving module (tampering of the warranty seal) will result in forfeiting of all guarantee and warranty claims with immediate effect.

10.2 Possible irregularities

Error	Possible reason	Solution
Malfunction of the software	Effect of strong electromagnetic fields (mobile phone, cordless telephones, or another motor was not screened off from the agitator)	Reset to factory settings Menu SETUP: RESET <input checked="" type="checkbox"/>
The product is filled with air bubbles	Some large air bubbles in the honey cannot be completely removed because the honey stream enters the jar in concentric circles and includes large air bubbles.	Place the driving module as far down as possible, so that the filling nozzle is very close to the edge of the jar. Fill the honey as liquid as possible (warm).
	Retract is too long, so that some air bubbles are always sucked back into the filling nozzle during retraction (applies mainly to slightly viscous honey)	Reduce draw back. Rule of thumb: 2-3: slightly viscous, freshly extracted honey 4-5: creamy honey
	Leakages in the priming connections	Check the bolt connections, seals and sensitive places at the problem area before applying with a honey coating
Pump motor is turned on, but does not turn easily, or does not turn at all. Fault warning: OVERPUMP	Blockage of the gears with hardened honey or some other foreign object: motor protection is activated. Can happen after long filling breaks (e.g. over night): - honey is too cold - honey has crystalized	Remove cause (clean machine, place in warm room etc.). Acknowledge with the <input checked="" type="checkbox"/> key
	If there is a foreign object in the pump head, the gears are blocked (e.g. nuts)	
Inaccuracies when filling	Air pockets	See above
	Product cannot flow through priming hose and pipe bend fast enough (especially a problem with rape honey). You can see this, when tiny vacuum pockets are building up in the upper part of the pump head (easily visible through the transparent pump head lid)	Use bigger priming hose-Ø and pipe bend
		Reduce viscosity of the product (e.g. through raise of temperature of the honey to 25 – 30 °C / 77 - 86 °F)
		Keep the priming hose as short as possible
		Slow down motor speed to approx. 40/min. That way the machine is adjusted to the rate of flow of the product inside the hose

10.3 Support

In the case of faults that can neither be resolved using this manual nor by our FAQs, please contact our technical support by phone, fax or email. We would be happy to support you.

If a problem cannot be solved in this way, our **send-in-service** will help you after consultation with our technical support. The repair work will be carried out as soon as possible upon receipt of the defective machine.

In order not to endanger your production processes, you can obtain a substitute machine while repairs are being carried out. If the defect is not covered under any claim or warranty, all applicable shipping and repair costs are to be paid by the buyer. In this case we reserve the right to charge a rental fee for the machine on hire. For this purpose, a rental contract shall be concluded for the machine on hire. For further information regarding this rental contract, please contact our technical support.

Our support:

Office: +49 351 89 66 91 00

Technical support: +49 351 89 66 91 05

Fax: +49 351 89 66 91 99

Email: support@fill-systems.com

Website: www.fill-systems.com



*Fig. 39: QR code to
our FAQ*



Under no circumstances should you return your machine to us before first consulting our technical support team and clarifying the situation. If it is absolutely necessary to return your machine to us, for example for repairs, this may be done only as described in the chapter *Maintenance and Support: Transport and storage* - in a cleaned, disassembled and securely packed state. In the case of machines that are not returned to us in a clean state, we shall charge an additional cleaning fee. This shall be calculated based on the required cleaning time and our applicable hourly rate for the same.

10.4 Transport and storage

In order to prepare the machine and its components for transportation, it must be dismantled as per the outbound delivery status - according to the diagram in chapter ***Delivery: Scope of delivery***.

To protect against damage during transport, all parts must be cleaned thoroughly of any filling remains and sufficiently secured against damage and slipping.

If the machine has not been used for a longer period, it is recommended that it be cleaned, packaged and stored – in order to protect it against damage and dirt.



We recommend to keep the original packaging for storage and possible return.

The manufacturer does not assume warranty for damage caused by improper transport or storage of the device.

10.5 Disposal of the old machine

The FILL-Systems product **Fill up 2** has been designed for long-term and sustainable use. All individual components can be replaced even after many years.

Of course, we will take back your old disused machine free of charge and guarantee professional and environmentally friendly disposal in accordance with the legal requirements.

11 Warranty

The warranty period for the functionality of the FILL-Systems product

Fill up 2 is 24 months from the date of delivery when used properly in accordance with this manual.

The warranty is limited to damage and disruption that are caused by defective workmanship on our part.

FILL-Systems GmbH does not accept any liability for damage arising from improper handling, inadequate / irregular cleaning, improper use, incorrect installation / maintenance by unqualified personnel, tampering with electrical, electronic or mechanical parts and improper transport or improper storage. If the warranty seal is destroyed, the guarantee and warranty claim shall automatically become void.

Liability is limited to damage to the device. We accept no liability for any subsequent damage. Claims for damages are excluded.

Wear parts are excluded from liability.

Warranties are provided by the manufacturer and include spare parts and labour. A withdrawal from the contract is possible only after assessment by the manufacturer.

12 EC declaration of conformity according to the machinery directive 2006/42/EC, annex II a

EC declaration

The manufacturer/distributor

FILL-Systems GmbH
Leipziger Str. 33
01097 Dresden



hereby declares that the following product

Product designation:	Fill up 2
Model name:	Fill up 2/100
Year of manufacture:	2019
Description:	Machine for filling honey

The following additional EU directives have been applied:

Directive 2006/42/EC
Directive 2014/30/EU
Directive 2011/65/EU

The protection objectives of the following further EU directives are observed:

Directive 2014/35/EU

The following provisions were applied in addition:

Commission Regulation (EU) No 10/2011
Regulation (EC) No 1935/2004

Name and address of the company authorized to compile the technical file:

FILL-Systems GmbH
Leipziger Str. 33
01097 Dresden

Place: Dresden
Date: May 01, 2019

FILL-SYSTEMS
FILL-Systems GmbH
Leipziger Str. 33
D-01097 Dresden
Tel: +49-351-89 66 91-00
Mail: info@fill-systems.com
www.fill-systems.com

Barbara Wandke

