

**VCM 44 A/1**  
Universal Machine

Technical Documentation  
U1300348



Exemplary illustration. Delivery item can vary!

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## Information Page

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Machine type	Universal machine
Type designation	VCM 44 A/1
Serial number	U1300348
Year of manufacture	2013
Manufacturer	Stephan Machinery GmbH Stephanplatz 2 31789 Hameln
Service / Sales	+49 5151 583-0
Manual version	A.1

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This documentation is an original edition.

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### Fitted Modifications

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Title Model number	Made modifications   Operator	Date

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# 1. General Notes

## 1.1 Table of Abbreviations

Term	Definition
Emulsion O/W	Oil-in-water emulsion A mixture of water and oil, however, there is more water present. See also definition of <b>emulsion</b> .
Emulsion W/O	Water-in-oil emulsion A mixture of water and oil, however, there is more oil present. See also definition of <b>emulsion</b> .
HV	Manual version
IP	International Protection The abbreviation IP and a further two digit figure specify the type of protection of a housing. See also definition type of protection IP 54 [► 7].
LED	Light Emitting Diode
MMC	Multimedia Card A digital storage medium.
pabs	The absolute pressure is expressed as pabs. One assumes the absolute pressure as 0 bar. This is also the maximum (theoretical) negative pressure possible. Atmospheric pressure measured at sea level is 1 bar. All measuring instruments and values in engineering display the relative pressure. This is based on the atmospheric pressure. pabs>1bar = overpressure pabs<1bar = underpressure
at	describes a pressure indication in relation to the ambient pressure.
GLRD	Axial face seal. A seal is used to seal the shafts protruding from the machine housing or product container.
WDR	Shaft sealing ring. A seal is used to seal the shafts protruding from the machine housing or product container.

## 1.2 Definition of Terms

Term	Definition
Specialist	Due to their professional training, knowledge and experience as well as their knowledge of the respective guidelines, a specialist is a person that can evaluate work assigned and individually recognise any possible dangers.
Authorised specialist	An authorised specialist is a specialist that has been trained by an authorised service dealer or a company that has been ordered by the manufacturer.
Instructed person	An instructed person is a person who has been instructed on the possible risks resulting from improper behaviour when carrying out the assigned task as well as on the neces-

Term	Definition
	sary protective equipment and protective measures and trained if necessary.
Cursor	Marks the current position being processed. Shows the position on the screen where input can be entered.
Disinfection	Killing off pathogenic bacteria or other harmful microorganisms using chemical agents and/or heat treatment.
Pressure Equipment Directive	The European Pressure Equipment Directive 97/23/EC. The directive regulates the technical dimensioning and documentation of containers, pipelines, equipment parts with safety function and pressure-retaining parts that are exposed to an allowable overpressure of more than 0.5 bar.
Emulsion	Emulsion means a finely distributed mixture of two or more immiscible liquids. In doing so, one liquid is dispersed in the other in the form of small droplets. Droplets are broken down by intensive shearing; both liquids are dispersed by stirring vigorously.
F insulation	Classification of the insulation classes
H insulation	F stands for the normal version with a limit excess temperature of 105 °K and a maximum permissible constant temperature of 155 °C. H stands for the tropic-proof version with a limit excess temperature of 125 °K and a maximum permissible constant temperature of 180 °C.
Contamination	The contamination of rooms, objects, foodstuffs, ground, air and water by microorganisms and other contaminants.
Machine safety	The term of machine safety means all the measures used to avert injury to a person. The basis for this are national as well as EC wide directives and laws for protecting users of technical devices and systems.
Microorganisms	Microorganisms are microscopically small unicellular lifeforms. Microorganisms are also referred to as germs.
pH value	The pH value describes the acid content of substances. The range between pH 0 and pH 6 describes acid substances and the range between pH 8 and pH 14 describes basic (alkaline) substances. Water with a pH value of about pH 7 is neutral.
Production safety	The term of production safety defines measures that are necessary to guarantee adequate safety of the quality when processing with systems and machines. Furthermore, the term of production safety includes measures for safety of consumers of these products.
Sterilisation	The aim of the sterilisation is to destroy or neutralise all microorganisms that are capable of reproducing in or on a substance.
Viscosity	The term viscosity designates the resistance of liquids, semifluid or pasty masses against their rotating movement. Generally, viscosity determines the behaviour of the liquid in pipelines when pumping, stirring and filling.
Cyclone principle	The principle of cyclonic separation is a method of removing particulates from a gas by establishing a high speed rotating flow and therefore increasing the centrifugal force affecting the particles. This accelerates them radially outwards and separates them from the gas flow that is sucked inwards.



### 1.2.1 Type of Protection IP

The abbreviation IP is for International Protection. The protection type of a housing is determined by the abbreviation IP plus a two digit figure.

1. Figure (protection against contact and ingress of foreign objects)
2. Figure (protection against ingress of water)

The first figure: Protection against solid foreign objects		The second figure: Protection against water	
0	No protection against contact, no protection against ingress of solid foreign objects	0	No protection against water
1	Protection against large-area contact with the hand, protection against foreign objects with a diameter >50 mm	1	Protection against vertically falling water drops
2	Protection against contact with fingers, protection against foreign objects with a diameter >12 mm	2	Protection against diagonally falling water drops (angle of up to 15° from the vertical)
3	Protection against contact with a tool, wires, etc. with a diameter >2.5 mm, protection against foreign objects with a diameter >2.5 mm	3	Protection against water at any angle up to 60° from the vertical
4	Protection against contact with a tool, wires, etc. with a diameter >1 mm, protection against foreign objects with a diameter >1 mm	4	Protection against splash water from all directions.
5	Protection against contact. Protection against dust deposits in the interior.	5	Protection against water jet (nozzle) at any angle
6	Complete protection against contact, protection against penetration of dust	6	Protection against temporary flooding
		7	Protection against water penetration during temporary immersion
		8	Protection against water under pressure during long-lasting immersion

The protection type provided for this machine can be extracted from the table in the Technical data [► 22].

### 1.3 Orientation Guide

Front: the main operating side or the main work area

Rear: the opposite side of the operating side.

Top and bottom: derived from the main operating position also described as starting position. The lid in its closed position covering the bowl referred to as the basic position. Further meanings of "top" and "bottom" are derived from the basic position.

### 1.4 Notes on Use of the Manual

This manual is structured in functional and task-oriented chapters.

Facts that have been previously explained are not repeated, unless the repetitions are important for safety.

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## 1.5 Notices and Illustrations Used in Chapters

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### DANGER

#### Brief description of hazard



There is a high risk to life and limb of the user and/or third parties when the instructions are not followed in detail or the circumstances described are not taken into account.  
The type of hazard is marked by a symbol and described in more detail in the accompanying text.

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### WARNING

#### Brief description of hazard



There is a moderate risk to life and limb of the user and/or third parties when the instructions are not followed in detail or the circumstances described are not taken into account.  
The type of hazard is marked by a specific symbol and described in more detail in the accompanying text.

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### CAUTION

#### Brief description of hazard



There is a low risk of injuries or a risk of damage to property or a threat to the hygiene requirements when the instructions are not followed in detail or the circumstances described are not taken into account.  
The type of hazard is marked by a specific symbol and described in more detail in the accompanying text.

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### IMPORTANT NOTICE

#### Brief description of important additional information

Attention is drawn to special conditions or additional important information on the respective subject.

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### NOTICE

#### Brief description of additional information

Contains additional information on work assisting features or recommendations on the respective subject.

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## 1.6 Warning Symbols Used

Respective parts on the VCM 44 A/1 are marked with symbols when life and limb of the system / machine user and / or third parties are threatened or could be threatened when carrying out activities.

Symbols are also used in these operating instructions to provide notice of hazards that may result from operating steps or maintenance procedures. In both cases, the symbol provides information about the type and condition of the hazard.

The following symbols are used:

	General hazardous area
	Hazardous electrical voltage
	Risk of hand injuries
	Warning of automatic start-up
	Danger of heavy loads
	Danger of hazardous substances
	Risk of cutting injuries
	Warning of hot surfaces
	Do not spray with water

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## 2. Safety Instructions

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The following safety instructions are intended to make the use of the machine safer for the operating and maintenance personnel. If carefully followed, these instructions should prevent errors beforehand and allow an optimal working process.

### 2.1 Technical Changes

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**IMPORTANT  
NOTICE****Technical Changes to the Machine**

If the operator or a third party carries out any modifications to the machine without the manufacturer's prior consent, the manufacturer is not liable for any resulting consequences.

If the operator carries out any technical modifications that may cause new hazards, the CE marking becomes invalid. If it is a "significant modification", the modified equipment is treated as a new one. This requires a new CE mark. The person making the significant modifications becomes the manufacturer and becomes liable for the product.

Any modifications on the safety equipment may be carried out only by the manufacturer.

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### 2.2 Safety Instructions for General Machine Safety

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The following points must be observed to comply with the machine safety requirements:

- The safety instructions contained in these operating instructions must be observed.
- Optimum safety during the operation of the machine can only be achieved if the details and contents of the operating instructions, such as local legal guidelines and in-house safety guidelines have been read, understood and are complied with.

### 2.3 Safety Instructions for General Production Safety

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Please pay attention to the following points to ensure production safety:

- Optimum production safety can only be achieved if the details and contents of the operating instructions, such as applicable local legal guidelines and in-house safety guidelines have been read, understood and are complied with. Hygiene is a decisive factor of the quality of foodstuffs. Each person involved in the production process makes a significant contribution to the production safety by careful behaviour and compliance with regulations and guidelines.
- All modifications or retrofits of the machine are only permitted in consultation with the manufacturer.
- The use of substances that have not been specified in these operating instructions may lead to a significant safety hazard for users and the machine.

## 2.4 Handling and Operating Safety Instructions

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Pay attention to the following points when operating the machine:

- The machine should only be operated by personnel that have the respective qualifications or after a training course given by professional staff.
- The safety instructions of this machine should not be deactivated. Safety equipment protects against accidents and injuries.
- Reaching in to the bowl can lead to severe injuries caused by machine tools with sharp edges.
- Tools and parts of the machine that have not been fixed correctly or partially fitted increase this risk of safety. Rotating knives may loosen and can be a risk.
- When switching on the machine, no foreign objects are allowed to be located in the machine. This may cause damage to machine parts.
- The limit values listed in the machine data must be observed and should not be exceeded in any case.
- Make sure there is provided adequate ventilation on the blind double jackets. It is not permitted to fill blind double jackets with liquids (e.g. for the purpose of insulation), because due to heating of the product a non-permissible high pressure can be built up in the double jacket.

## 2.5 Safety Instructions on Maintenance and Care

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The following points must be observed during maintenance and care work:

- During maintenance work and care procedures, care must be taken that the machine and the periphery device are switched off and separated from the mains supply.
- Never spray the machine with water, even after this has been separated from the mains supply. Only clean the machine frame using a cloth moistened with cleaning agent.
- Reaching in to the bowl can lead to severe injuries caused by machine tools with sharp edges.
- Use only soft mechanical cleaning aids, such as brushes and soft scraper that do not cause damages.
- Do not use intensive corrosive cleaning solvents.

## 2.6 Safety Instructions on Troubleshooting

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Please pay attention to the following points when troubleshooting:

- All inspection and maintenance work is to be carried out by authorised professionals only.
- When performing maintenance and troubleshooting work, make sure that the machine and peripheral devices are switched off. The machine must be separated from the power supply and secured against reactivation when working on the electric system.
- Avoid standing in the working area of the bowl and lid.
- Pressure states must be checked and observed. No over-pressure should be at hand in the product container before opening the lid.
- Close the on-site media feed when troubleshooting.
- The local applicable guidelines for accident prevention must be observed during inspection and maintenance work.
- Observe the fault messages of the machine.
- All safety and protection equipment must be checked for completeness and functionality after eliminating any faults.
- The instructions for commissioning must be observed and a functional check must be carried out before the production operation is released.

## 2.7 Notes on Specific Hazards

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### Electrical energy

- Disconnect the machine immediately from the mains by the main switch when disturbances with the electrical energy supply occur.
- All work on electrical systems or equipment is to be carried out only by a certified electrician or by trained personnel under supervision and monitoring of a certified electrician according to the electro-technical regulations.
- All parts of the machine where inspection, maintenance work or fault elimination should be carried out should be switched volt-free when voltage is not required for this type of work.

## 3. Machine Hygiene

### 3.1 Microorganisms

#### 3.1.1 Definition

Microorganisms are defined as microscopically small, usually unicellular lifeforms. Microorganisms are also referred to as germs.

One differentiates between:

- Bacteria
- Fungi (yeasts)
- Viruses.

Typical for microorganisms is the rapid multiplication by means of cell division. Under certain conditions, bacteria can divide approximately every 20 minutes. This means that by the division of a single bacterium the number of bacteria can grow to over 8 million in 8 hours (exponential growth of  $2^{23}$ ).

#### 3.1.2 Factors for Multiplication of Microorganisms

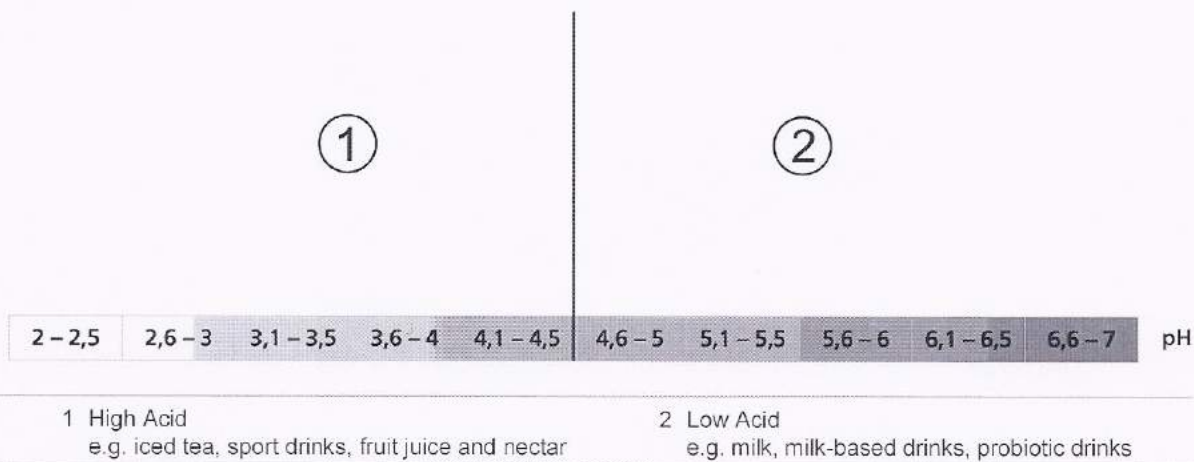
The following factors are important for the multiplication of microorganisms:

- high level of moisture
- temperature (20 °C to 60 °C)
- pH value

#### 3.1.3 Effect of pH value on the growth of microorganisms

Microorganisms prefer a very specific environment. Most germs feel particularly good in a slightly acidic or neutral environment (pH value 4.5 to 7). These conditions are found for example, in milk, meat, poultry or even fresh fish and many types of vegetables. In contrast, only few bacteria grow in strongly acidic environments (pH value below 4.5) such as those found in many fruits and juices. On the contrast, yeasts and fungi develop optimally at pH value of 4.5. This is the reason that fruits usually decay as a result of mould formation or fermentation.

Various products that can be processed have different pH values.



Microorganisms react to changes in the pH value (the pH value changes to deterioration of the conditions for survival) with growth inhibition. This characteristic is used to destroy the microorganisms by passing through the entire pH range of values during the cleaning process.

## 3.2 Production Hygiene

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### 3.2.1 Likely Sources of Risk for the Production

Germs can either be present or introduced:

- as a result of improper hygiene of the operating and maintenance personnel
- by the product
- by packaging materials
- by insects
- via rinsing water
- by unrestricted entry of external air
- in the supply or exhaust air
- in the supply lines
- in the waste disposal lines (contamination against the flow direction)
- owing to leakage spots (damages caused during operation)

Germs can multiply particularly well:

- in hollow spaces
- in accumulated liquids (condensate)
- on coarse surfaces
- in cracks and cavities of all types
- on or in product residues and miscellaneous impurities

## 3.3 Cleaning, Disinfection and Sterilisation

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The prerequisite for proper and qualitatively high-value production is the absolute cleanliness of the VCM 44 A/1 and the production environment. Both at the commencement and termination of the production, bowls, covers and tools of the VCM 44 A/1 as well as the production area must be absolutely clean and free from germs.

The following steps must be carried out for optimal cleaning:

1. Physical cleaning (rinsing with water and removing loosely stuck impurities at the surfaces).
2. Chemical cleaning (removing visible and microscopically small residues, fats and proteins using cleaning agents).
3. Bacteriological cleaning (disinfection).
4. Sterile cleaning (killing all microorganisms).

By means of this division in individual steps it is ensured that no contamination takes place as a result of cleaning agents already used such as sponges, brushes or washing solutions and that optimal cleaning and sterilisation can be achieved.



### 3.3.1 Basic Information on Cleaning

This cleaning procedure serves to dissolve large and fine impurities even in those spots that are difficult to reach. To aid the cleaning one can make use of materials such as brushes, scrapers or sponges provided that they do not damage the surfaces of the machine.

#### CAUTION

#### Recontamination through contaminated tools and materials



Cleaning with the help of brushes, scrapers or sponges is associated with the risk of hygiene by possible contamination with germs.

Do not use brushes or scrapers that have already been used before in the remaining steps.

Use sponges and cleaning cloths only once and replace them afterwards.

The following points must be observed when cleaning:

- The water used for cleaning must have drinking water quality.
- The addition of commercially available rinsing agents reinforces the cleaning effect.
- Rinse out the bowl in flowing water to remove loosely stuck product residues. Clean the production environment using water in accordance with the given conditions.
- Loosen impurities that are stuck persistently using a brush or a scraper.
- Rinse subsequently with hot water (75 °C to 85 °C or 167 °F to 185 °F).

### 3.3.2 Basic Cleaning Procedure

A high degree of effectiveness is achieved by using specific cleaning agents and the recommended level of concentration. Manual cleaning using sponges, cleaning cloths and brushes is associated with hygiene risks owing to possible contamination.

Manual cleaning is generally suitable only for surfaces that do not come into contact with the product. Exceptions to this are smaller machines and machine parts, which are cleaned in connection with the use of chemical cleaning agents (sponge cleaning).

The following points must be observed when cleaning:

- All equipment and rooms must be cleaned after the end of the production process.
- The water used for cleaning must have drinking water quality.
- Cleaning agents and disinfection agents must not be used at the same time. The effect of the disinfection agent may be reduced by the cleaning agent.
- Rinse subsequently with hot water (80° to 85 °C / 176 °F to 185 °F)
- Use cleaning cloths only once for manual cleaning and drying (contamination).

The type of impurities is decisive when selecting the cleaning procedure. Cold milk, for example, can be rinsed off relatively easily from surfaces. In contrast, product residues that have been burnt in or are dried up cannot be removed that easily. Heating the product has a great impact on deposits. The higher the temperature, the higher is the probability that product residues get deposited. However, high temperatures alone are not responsible for deposits.

A few examples that can lead to deposits:

- Heating speed (Heating is done as fast as possible in order to avoid burning in etc. Local over-heating must be prevented in the process.)
- Flow speed (the slower the product is churned the sooner can deposits be formed)
- Surface roughness (the rougher the surfaces, the better can deposits get stuck)
- Viscosity (the thicker the product, the faster is the formation of deposits)

Deposits are primarily dependent on the composition of the product. High temperatures or specific processes can increase deposits.

Various impurities of the machine are also subjected to different cleaning procedures. The basic elements of the cleaning procedures are explained in the following table.

<b>A) Cleaning procedure</b>	<b>Can be used with/on</b>
Manual cleaning (cleaning done by hand)	Remove coarse and fine impurities, even at locations difficult to reach. Cleaning is effective even on rough surfaces. The additional use of suitable cleaning agents enhances the cleaning effect.
Machine-aided cleaning (stirring the cleaning liquid in the container with the help of a mixing baffle*)	Bowl cleaning, Standard – Cleaning procedure for cleaning the bowl daily
<b>B) Cleaning process (in principle)</b>	<b>Can be used with/on</b>
Rinse with water 50 °C to 60 °C / 122 °F to 140 °F*	Removal of coarse impurities. At water temperatures >50 °C / 140 °F Removal of fatty substances
Leaching (for heavy deposits)	Highly adhesive product residues (soak and dissolve) Dissolving fats (emulsify and harden the fatty constituents)
Intermediate rinse with water 50 °C to 60 °C / 122 °F to 140 °F*	Removal of cleaning agents and dissolved product residues *
Acid rinsing (for heavy deposits, lime etc.)*	Hard product remains and product residues (e.g. milk stone)
Final rinsing with water *	Removal of cleaning agents and dissolved product residues

\* depending on the production process

### 3.3.3 Basic Information on Cleaning Agents

Various impurities in the machine require different cleaning agents. As high a degree of effectiveness as possible of chemical cleaning is achieved by using specific cleaning agents in their recommended levels of concentration.

#### WARNING

#### Hazardous substances



Improper concentration of the cleaning agent may lead to residues in food-stuffs and to health hazards for consumers and personnel. Please follow the instructions on safety and usage provided by the respective manufacturer. Please comply with the specifications regarding the concentrations and residence times.

Various impurities of the machine are also subjected to different cleaning agents. Various cleaning procedures are listed in the following table:

Impurity	Group	Agent
Proteins	Leaches	Caustic soda
Fats	Soaps	Soft soap
	Tensides	Rinsing agent
Mineral product remains (e.g. milk stone, lime)	Acids	Hydrochloric acid, vinegar, tartaric acid

The following points must be observed during chemical cleaning:

- Use chemical cleaning agents only within the specifications provided.
- Remove persistently stuck impurities using a brush.
- Rinse subsequently with hot water (75 °C to 85 °C or 167 °F to 185 °F).

#### CAUTION

#### Contamination



Cleaning with brushes, scrapers or sponges is associated with hygiene risks through the possible contamination with germs. Do not use brushes or scrapers that have already been used before in the next steps. Use sponges and cleaning cloths only once and replace them afterwards.

### 3.3.4 Basic Information on Disinfection

Disinfection is effective only after thorough cleaning has been done. Disinfection agents react with left-over impurities, which reduce or even cancel the effect of the disinfecting agent.

#### WARNING

#### Hazardous substances



Improper concentration of the cleaning agent may lead to residues in food-stuffs and to health hazards for consumers and personnel. Please follow the instructions on safety and usage provided by the respective manufacturer. In particular, please comply with the specifications regarding the concentrations and application times.

The following points must be observed during the disinfection process:

- Cleaning agents and disinfection agents must not be used at the same time. The effect of the disinfection agent may be reduced by the cleaning agent.
- Please comply with the concentration and residence times of the disinfecting agent.
- Rinse off with water only after the required residence time.
- Refrain from drying off the surfaces with cloths as far as possible (contamination).
- The surfaces can be dried quickly by rinsing with hot water.

### 3.3.5 Basic Information on Sterilisation

In contrast to disinfection, sterilisation is more comprehensive, i.e. almost all cells including spores and viruses are killed, for example, by the effect of heating. A maximum of 1 germ out of 100,000 survives after disinfection. After sterilisation, a maximum of 1 germ of 1 million survives.

This is a standard procedure, which is not a substitute for the other mandatory procedures!

## 3.4 Impact of Operating Personnel Behaviour

### 3.4.1 Notes on Hygiene Criteria

The correct behaviour of the operating staff is decisive for optimal hygiene.

- Please comply with the hygiene regulations applicable locally.
- Before each new work procedure and of course after every visit to the toilet, please thoroughly wash your hands with soap under flowing water. Please use disposable cloths for drying your hands.
- Please ensure that your fingernails are short and clean.
- Remove your finger rings and wristwatches prior to commencing work.
- Please wear clean protective gear (head cover, smock, gloves, indoor shoes).
- Please do not cough or sneeze on the product, its preliminary stages and/or surfaces coming in direct contact with these substances.
- Please cover wounds on the hands and arms with water-proof plaster.
- All persons must be adequately informed regarding the hygiene criteria and must comply with them.

### 3.4.2 Impact of Non-Compliance with Hygiene Criteria on Production

Harmful microorganisms may spread across the entire production batch. Microorganisms are not visible, and what appears to be clean must not necessarily be harmless from the health point of view. The risk to health does not lie in the mere presence of a low number of microorganisms, but, above all, in the fact that they multiply exponentially under favourable conditions.

## 3.5 Effects Caused by Machine Cleaning and Maintenance

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### 3.5.1 Correct Behaviour during Cleaning and Maintenance Work

Please ensure that the working environment is clean when undertaking cleaning and maintenance work. Even impurities that are not present directly on the machine (unclean floors, dust deposits etc.) can get introduced in the production loop under certain circumstances. Impurities have a detrimental effect on the production. This is why the machine and its environment must always be kept clean.

During maintenance, please clean those areas that are kept free for maintenance work, but are otherwise difficult to reach.

## 4. Technical Data and Brief Description

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### 4.1 Brief Description

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The VCM 44 A/1 is a universal machine particularly for the manufacture of foodstuffs, pharmaceuticals and cosmetics. Processes such as mixing, chopping, emulsifying or kneading are possible with the help of appropriate tools. The VCM 44 A/1 complies with the current hygienic guidelines and the applicable technical regulations.

All product-carrying parts are made of stainless steel or from other physiologically harmless materials.

The process vessel with working tools driven directly can be swivelled and are mounted in the machine stand, the tipping of the bowl and lid opening are carried out manually.



### 4.2 Intended Use

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The VCM 44 A/1 is intended for the commercial and industrial production of products. The intended use includes the specified process, the adherence to the specified specifications as well as the use of the original accessories that are provided or can be ordered separately. Damage caused by non-intended use will lead to the loss of liabilities and guarantee claims.

#### 4.2.1 Improper Use

Use is deemed to be improper, when:

- The modification and / or deactivation of safety equipment such as switches, locking mechanisms, covers, locking, seals, etc.
- Improper or the unintended use of the machine.
- Use of parts that are not original.
- Modifications of the performance parameters beyond the confirmed values.
- Processing of products that have not been agreed.
- Processing of highly flammable and explosive materials.
- Processing of substances that belong to the fluid group 1 (dangerous fluids) according to 67/548/EEC
- Operating the machine beyond the inspection and maintenance cycles.

#### 4.3 Use and Ambient Conditions

The dead weight and the vibration reduced run of the machine allow a the machine to be set up standing free.

The following ambient conditions are necessary for the machine:

- The machine must be installed on a stable floor space.
- The floor space must be level.
- The machine must be installed in closed rooms.
- The premises must be clean.
- The installation location suites the machine vibrations, the size of lateral loads can achieve 30% of the machine weigh and have an effect in any direction.
- The installation area must be able to absorb all the machine vibrations and loads and conduct them directly away to the foundations.

#### 4.4 Machine Data

Designation	Unit	Value
Bowl volume	l	45
Batch size - depending on the production (max.)	l	up to approx. 30
Maximum operating temperature	°C (°F)	95 (203)
Main motor speed	n / min	1800
Operating voltage	V / Hz	220 / 60
Control voltage	V / Hz	110 / 60
Security at 220 V	A (slow)	35
Total weight of the machine (net.)	kg	approx. 150
Dimensions	mm (L x W x H)	590x860x1090

## 4.5 Performance Data

### 4.5.1 Energy Requirement

Designation	Unit	Value
Motor	kW	5.5
Machine total power	kW	5.5

### 4.5.2 Electric Data

Designation	Unit	Value
Supply voltage	V/Hz	220 / 60
Control voltage	V	110 AC
Rated current	A	25
Security at 220 V (slow)	A	35

### 4.5.3 Emissions

Designation	Unit	Value
Acoustic pressure level	dB(A)	70

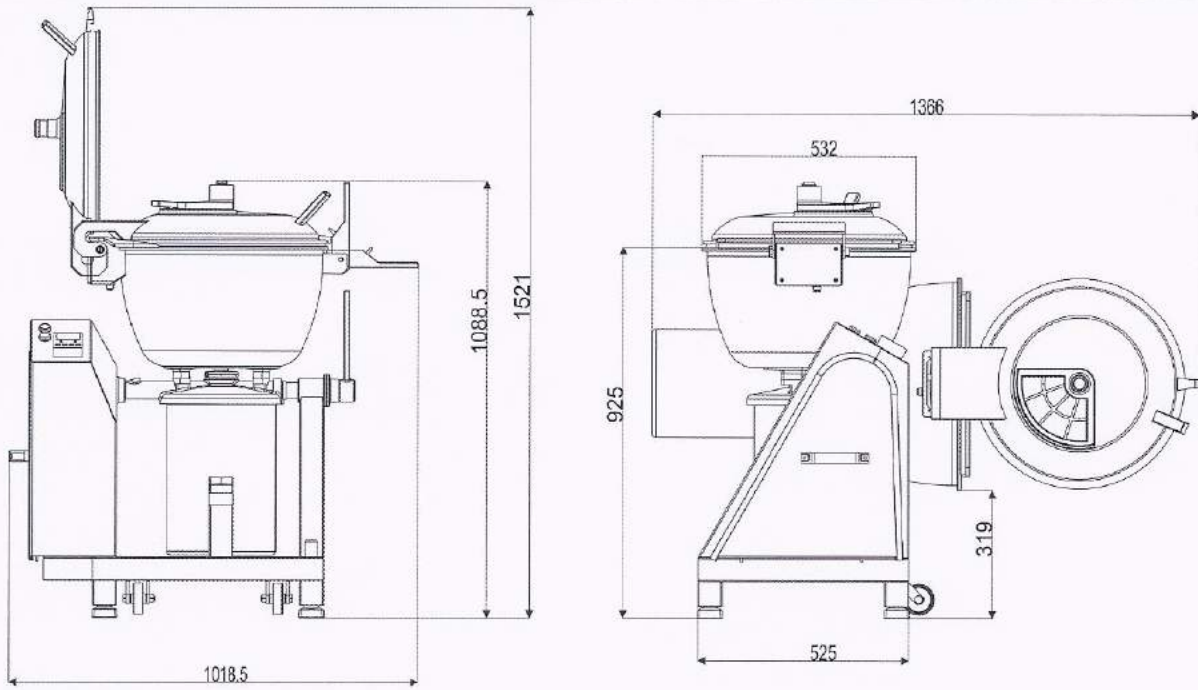
## 4.6 Operating Materials

Specifications and legal requirements for lubricating substances and oils are to be taken from the relevant data sheets of the respective manufacturers. If substances are used that do not comply with these specifications, these have to be clarified with the machine manufacturer.

Operating Materials	Component	Specification
Oil	Additional transmission	DIN 51517 Part 3 ISO CLP PG VG
Oil	Vacuum pump	DIN 51506
Oil	Drive for mixing operation	DIN 51517 Part 3 ISO VG 220
Oil	Reduction gear	DIN 51517 Part 3 ISO VG 220
Oil	Mixing blade drive	DIN 51517 Part 3 ISO VG 220
Grease	Seals	Foodstuff suitability (e.g. according to NSF H1) Soap-aluminium based  Flow pressure: DIN 51805 at - 30 °C, <1000 mbar  Water resistance, DIN 81 807 3 h at 50 °C Evaluation level 1-50 3 h at 90 °C Evaluation level 1-90  Consistency, NLGI Class, DIN 51 818 / 1

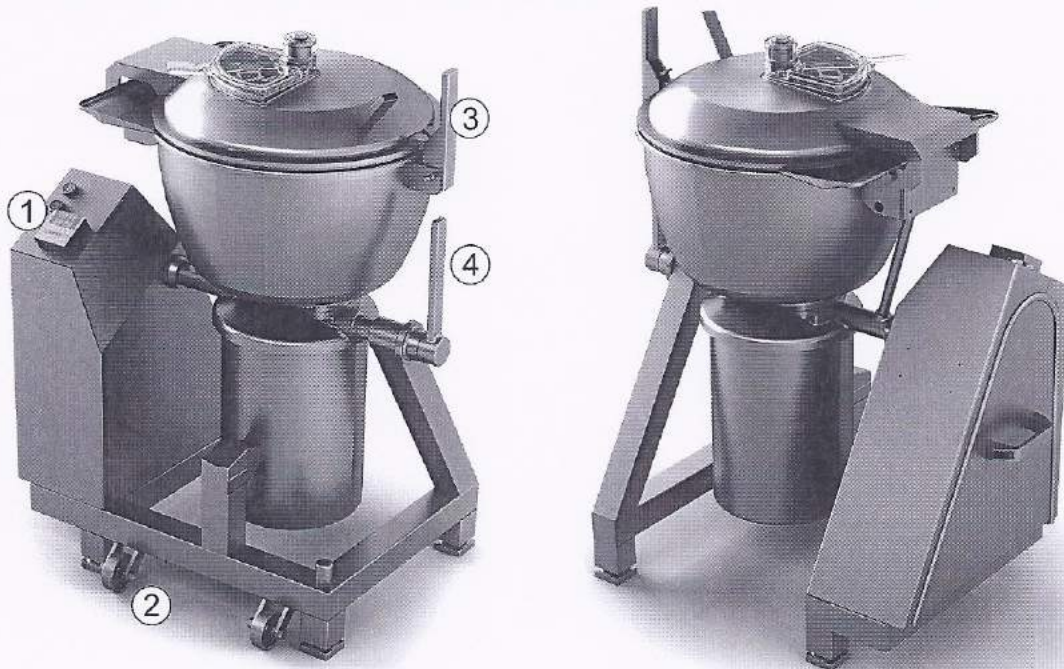


### 4.7 Dimensions and Configuration



## 5. Technical Description

### 5.1 Arrangement of Assembly Groups and Operating Controls



- 1 Timer
- 2 Locking lever

- 3 Transport rollers
- 4 Lid Latch

### 5.2 Technical Description

#### 5.2.1 Functional Description

The VCM 44 A/1 is a universal machine particularly for the manufacture of foodstuffs. Processes such as mixing, chopping, emulsifying or kneading are possible with the help of appropriate tools. During processing, the product is churned optimally through the tools.

#### 5.2.2 Constructional Description

The VCM 44 A/1 consists of the machine frame, the drive and the bowl with lid. The extended motor shaft of the motor protrudes in the bowl and serves as a holder and drive for the working tool. All parts of the VCM 44 A/1 that come into contact with the product are made of stainless steel rust free or other physiologically harmless materials.

### 5.3 Description of the Assembly Groups

#### 5.3.1 Machine Frame

The machine frame made of stainless steel holds the drive of the VCM 44 A/1. The drive can be swivelled towards the front along with the product container lying above it.

Rollers have been provided at the bottom of the side of the machine frame. By tilting the VCM 44 A/1 these rollers serve as a transport aid.

#### 5.3.2 Drive

Motor, shaft, shaft bearing and clear view screen make up the drive unit of the VCM 44 A/1. The motor is a three-phase, low wear motor designed with insulation class F/H. A safety device prevents the motor from overheating. The clear view screen protects the motor from ingress of foreign bodies.

The main motor is fitted with a disc brake. The brake pads are pressed on to the brake disc with the help of pressure springs. The brake is actuated electro-magnetically.

#### 5.3.3 Tools

##### WARNING

**Risk of injury when working with the tools owing to their sharp cutting edges**



There is risk of injury when working with the tools owing to their sharp cutting edges.  
Please handle the tools with care and do not touch the cutting edges of the tools.

The shape and size of the tools has been adapted optimally to the shape of the bowl. Depending on the tool, various processes can be carried out and the product can be processed optimally. The product can be chopped, cut, mixed, emulsified or kneaded.

##### CAUTION

**Risk of damage**



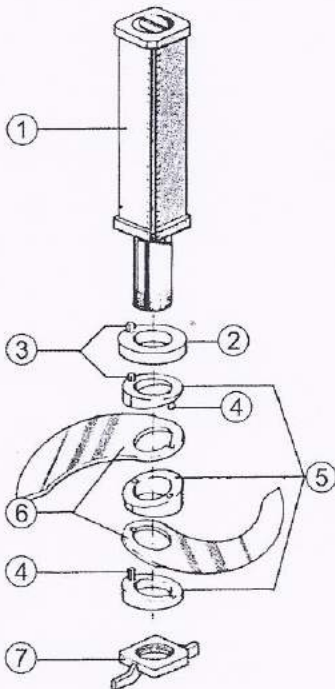
If the tools are not installed properly in the machine or if they have been assembled incorrectly, then this leads to considerable damage to the bowl and the tool itself.  
Please ensure that the tools are installed properly in the machine.  
Please also always assemble the tools correctly.

### Cutter insert

The sequenced described must be maintained when assembling the cutter insert. The cutter insert consists of two knives that vary in their shape and size. The bevelled polished area of the knife must be positioned to the base of the bowl so that the product is agitated optimally.

You can fit the thrust washer either on the knife shaft or immediately before the wing nut. In the result, you will get different installation heights of the knives.

The following processes are possible:

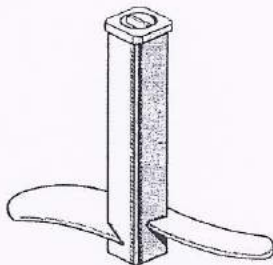


- Chopping
- Cutting
- 1 Knife shaft
- 2 Thrust washer
- 3 Upper guide pins
- 4 Lower guide pins
- 5 Bevelled washer set
- 6 Knife
- 7 Wing nut

### Mixing Insert

The mixer insert has been optimised for products that are mixed. Processes such as, for example, cutting and grating are not possible with this tool. The two slanted mixer blades are arranged at different heights. In this manner the products are agitated well and the processing time is reduced.

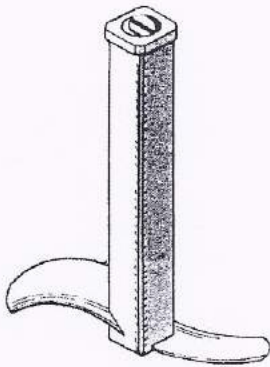
The following processes can be carried out using the mixer insert:



- Mixing
- Stirring
- Homogenisation
- Emulsifying

### Stirrer and Kneader Insert

The working insert made of stainless steel is such that the wings operate at a particularly low level above the base of the bowl. Thus, this tool is specially suitable for processing small quantities. The following processes can be carried out using the stirrer and kneader insert:



- Stirring
- Kneading
- Homogenisation
- Emulsifying
- Mixing

#### 5.3.4 Product Container

The product container consists of the bowl and lid. The detailed description is given in the following sections.

##### Lid

The lid locks the bowl. A silicone seal in the lid seals the bowl in a pressure-tight manner. A safety mechanism prevents the machine from being switched on when the lid is open. A safety switch scans the lid to check whether it is in the open or closed condition.

The lid is equipped as follows:

- Rotating side glass cover

#### 5.3.5 Electrical Engineering

##### NOTICE

##### Description of assembly groups of the electrical system

Partially, the assembly groups falling under the category of electrical systems have been described in other parts of this documentation in accordance with their function.

The electrical equipment conforms to the Directive UL 508A. The control cabinet and the machine are pre-wired and ready for connection.

The mains connection to the control cabinet must be laid and connected by a locally certified electrician in accordance with the circuit diagrams. The installation of the motor, control and pneumatic lines is included in the scope of supply of the VCM 44 A/1.

## 6. Installing, Commissioning and Decommissioning

### 6.1 Transport

#### WARNING

#### Use suitable means of transport



The machine has considerable weight. In order to prevent accidents when working and risk to health when transporting the machine, please use aids such as carrying straps, transport rollers or platform carriages.

During transport of the VCM 44 A/1 please pay attention to the following points:

- Lift the VCM 44 A/1 only at the machine frame.
- Do not use the bowl to lift it.
- Do not use any handles to lift it.
- Do not use the mixing baffle to lift it.
- Tighten the conveyor belts in such a manner that the bowl and the lid are not loaded.

The VCM 44 A/1 has two transport rollers fixed to the machine frame. For easier transport the VCM 44 A/1 can be tilted so that the weight of the machine is supported on both the rollers.

### 6.2 Installation

Place the VCM 44 A/1 on a hard and level surface. A separate fastening of the VCM 44 A/1 is not necessary.

#### IMPORTANT NOTICE

#### Installation may only be carried out by a trained specialist

All measures required for the installation and initial commissioning must be carried out only by technically qualified and certified personnel. This applies especially to all electrical work.

Please pay attention to the following points:

- Please read the Operating Instructions, particularly the Chapter Safety Instructions [► 12].
- Observe the ambient conditions described in the section 'Use and Ambient Conditions' [► 23].
- Remove any foreign objects from the bowl.
- Before connecting the machine to the mains supply, please check that the connected values are suitable for operation of the machine.
- Connect the power supply line.

## 6.3 Commissioning

### 6.3.1 Functional Checks

#### IMPORTANT NOTICE

**Commissioning may only be carried out by a trained specialist**

All commissioning work must be carried out only by specialists. This applies especially to all electrical work.

The basic functions of the VCM 44 A/1 have already been checked at the factory prior to delivery. However, under certain circumstances it is possible that the machine may have got damaged in transit during its transport. In order to detect these well in time, the VCM 44 A/1 should be subjected to functional checks. Moreover, the functional checks subsequent to commissioning provide information regarding the effects of the power and medium supplies on-site. The functional checks cover also other faults arising on account of local conditions and functional limitations well in time.

When carrying out the functional checks the sequence listed must be complied with and executed right up to the last step. Only in this manner can the functional checks be completed successfully.

#### a Preparing for Functional Check

Before the VCM 44 A/1 is subjected to the respective functional checks, the notes and instructions on handling given below must be followed.

- Please read and follow the Operating Instructions, specially the chapter Safety Instructions [► 12] and the section on Commissioning of this chapter.
- Please ensure that the connections of the supply lines are secure and proper. Check the water supply lines to ensure that there are no leakages.

#### WARNING

#### Risk of damage



Remove all loose parts from the bowl!  
Loose parts may become risks for both human beings and the machine when it is switched on.

- Remove any foreign objects from the bowl.
- Place the tool over the motor shaft (Operating: Assembly / Disassembly of working inserts [► 36]) and close the lid.

### b Direction of rotation check of the motor

#### DANGER

#### Hazardous electrical voltage



If it is necessary to change the polarity of the mains supply, this must be done only by electrical technicians.  
Hazard through electric shock.  
Electric work on the machine must be done only by skilled electrical technicians.

Procedure for checking the direction of rotation:

1. Allow the drive to run for a short time.
2. The direction of rotation is to be checked at the motor shaft / at the clear view screen below the base of the bowl.
3. If the rotation is clockwise it means that the machine has been connected correctly.
4. If the rotation is anti-clockwise then the polarity of the mains supply has to be changed.
5. Switch off the drive.

#### NOTICE

#### Orientation aid

The direction of rotation is always specified viewing the machine from above.  
An arrow on the bearing bracket indicates the desired direction of rotation.

### c Check safety shut-down

#### WARNING

#### Automatic start



The machine can start running in case of a fault! Serious hand injuries can occur. Never put your hand in the bowl!

Procedure for checking the safety shut-down:

1. Power on the drive.
2. Open the lid.
3. Try to switch on the main motor.
4. The drive may not start running.

#### WARNING

#### In case of faulty safety equipment



Immediately switch off the machine and disconnect the power supply line from the mains. The machine may no longer be put in operation.  
Please contact the service department.



#### d Test run

In order to ensure that no damage has occurred during the transport and installation of the VCM 44 A/1 a test run should be conducted immediately after the VCM 44 A/1 has been installed.

Before starting the machine, make sure that the VCM 44 A/1 is connected correctly and the tools are inserted appropriately. (Assembly / Disassembly of working inserts). The cutters must fit absolutely tightly. The bevelled polished area of the cutter must be positioned to the base of the bowl so that optimal material agitation is achieved.

Fill the bowl up to  $\frac{3}{4}$  with warm water (about 50 °C or 122 °F).

Close and lock the lid.



Switch on the main motor and allow it to run for 5 minutes.

Open slightly the inspection lid in order to compensate the pressure in the machine.

Disengage the lid lock and then open the lid. Tilt the container to empty it.

#### e End functional checks

At the end of the checks remove all tools and other equipment objects not belonging to the machine. Wipe the outer surfaces of the VCM 44 A/1 dry.

#### 6.3.2 Check List

This check list sums up the functional checks. Please mark all steps carried out correctly during the commissioning for inspection purpose.

Check List	O.K. (in order)
Check the direction of rotation of the motor (clockwise)	o
Check the safety shut-down (switching off) when the lid is open	o

## 6.4 Storage, Utilisation

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### 6.4.1 Storage

In order to maintain the functionality of the VCM 44 A/1 the following points must be observed during storage:

- Store the machine in a closed room.
- The premises must be as clean and dry as possible.
- The storage temperature should not lie below 0 °C / 32 °F and should not exceed 50 °C / 122 °F
- Protect the machine against dust using suitable packing material.
- Liquids in lines and containers lead to bursting of the lines under frosty conditions
- For longer storage periods, place a collection container under the machine in order to collect any liquid medium being discharged.
- If the machine is stored for a short period in an open space, it must be placed on a solid and level surface and protected from the impact of atmospheric conditions.

### 6.4.2 Disposal

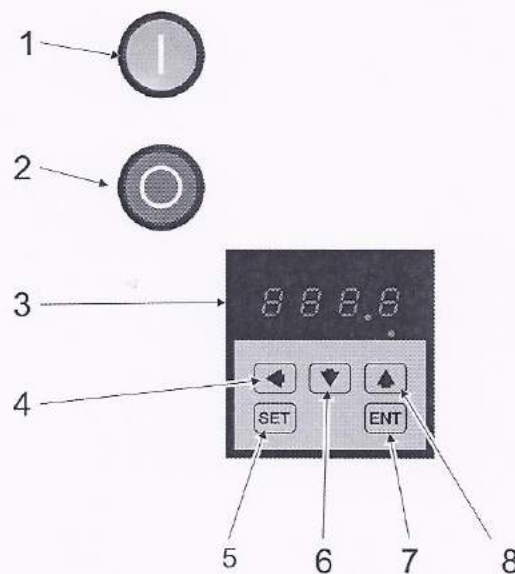
During the disposal, various materials and substances must be separated from each other. Information regarding the disposal of hazardous substances is to be taken from the relevant data sheets of the respective manufacturers. During disposal substances may be discharged, which can be hazardous to human beings. Safety tips and legal requirements pertaining to substances that could be a risk for human beings, the environment and the machine are also provided in the data sheets of the respective manufacturer.

## 7. Operation

### 7.1 Layout and function of the operating controls

#### 7.1.1 Electric Timer

The built-in timer is a microprocessor-based device that is installed into a housing together with an LED display.



1 'Start' key	5 'SET' key
2 'Stop' key	6 'Arrow down' key
3 Display	7 'ENT' key
4 'Arrow left' key	8 'Arrow right' key

When the 'Start' key has been pressed the machine will start and the timer initiates a countdown. The machine will stop once the set time period comes to an end.

The machine can be stopped at any time by pressing the 'Stop' key, even before the timer finishes its countdown.

The timer is pre-set to 90 seconds in the factory. This time value can be changed. To set a different value on the timer, proceed as follows:

- Push the 'SET' key. The number on the right-hand side of the display will start to flash. The 'Arrow up' and 'Arrow down' key functions become active.
- You can use the 'Arrow up' and 'Arrow down' keys to change the flashing numbers to a new value. If you change the number from 9 to 0, the left-hand number, the tens, will increase by one. If you change the number from 0 to 9, the left-hand number, the tens, will decrease by one.
- Use the 'Arrow left' key to change to the number on the left. The number will start to flash. To change back to the right-hand number, press the 'Arrow left' key until the right-hand number starts flashing.

- You can use the 'Arrow up' and 'Arrow down' keys to change the flashing numbers to a new value. If you increase the number from 9 to 0, the left-hand number, the tens, will increase by one. If you change the number from 0 to 9, the left-hand number, the tens, will decrease by one.
- Repeat the process for the other numbers.
- Once the required value is reached, press the 'ENT' key to save the value. The 'Arrow up' and 'Arrow down' key functions become active.

The set value is shown on the display when the machine is idle. When the machine is operating, the display indicates the current value reached at the moment in time in question.

If the set value is modified when the machine is in operation, the new value does not become active until the timer is reset.

The set value can be displayed when the machine is in operation by pressing the 'SET' key. The current value can be displayed again by pressing the 'ENT' key again.

## 7.2 Operation

### WARNING

#### Risk of bursting



Significant pressure differences can occur in the bowl during production. If you exceed the permitted operational pressure, the bowl can burst. This can result in severe injuries.  
Operate the machine only at the permitted operational pressure and with intact safety equipment.

### 7.2.1 Assembly / Disassembly of Working Inserts

### WARNING

#### Risk of injury when working with the tools owing to their sharp cutting edges



There is a risk of injury when working with the tools owing to their sharp cutting edges.  
Please handle the tools with care and do not touch the cutting edges of the tools.

### WARNING

#### Insert the working tools properly



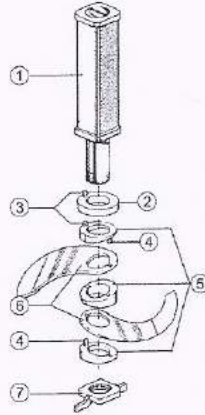
Working tools that are not inserted and installed correctly can lead to considerable damage of the machine and the tools. The bevelled polished area of the knife must always point to the base of the container.  
The wing nut must always be tightened.

### NOTICE

#### Use only sharp cutters

Cutters that have become blunt can affect the working process disadvantageously. Thus, the product would not be cut properly and thus, under certain circumstances, changes its structure and appearance.

The cutter holder consists of the knife shaft (1), the knife set (6), consisting of two knives, the thrust washer (2), the bevelled washer set (5) and the wing nut (7).



The sequence illustrated must be observed when assembling the cutter insert: The guide pins (3+4) must fit in bore holes provided for them.

The correct sequence of the bevelled washer set (5) can be read off the digits engraved on them. The digits engraved on the individual bevelled washers specify the sequence for their assembly (starting from 1).

Place the working tool on the motor shaft. In the process care must be taken to see that the carrier of the motor shaft grips in the notch of the working tool, otherwise the machine or the working tool can get damaged.

### 7.2.2 Loading the Machine

#### WARNING

#### Risk of explosion



Explosion by a self-igniting product. Thermal energy is produced as a result of mechanical product processing that can easily ignite inflammable substances. This can lead to explosion of the product container.  
Do not process any easily combustible substances.  
Do not fill the machine with combustible or explosive products.

#### CAUTION

#### Do not operate when empty.



To prevent damage to the shaft seals, do not operate the machine when it is empty. Before switching on the main motor please always check to see if there is any product in the bowl.

#### CAUTION

#### Please observe the filling level!



Exceeding the maximum batch amount leads to damages to the machine. Do not exceed the maximum filling amount.

**CAUTION****Non-stirrable product**

A non-stirrable product can impede the rotation of the mixing baffle. This can result in damages to the mixing baffle and the mixing baffle drive. Chop the non-stirrable product sufficiently before you switch on the mixing baffle drive.

In order to fill the VCM 44 A/1 first equalise the pressure in the product container. Depending on the configuration, the VCM 44 A/1 is equipped with a ventilation cock or a transparent dosing cover, using which the pressure can be equalised.

To open the VCM 44 A/1 release the lid fastening and open the lid. The machine can now be filled.

To close the VCM 44 A/1 press the lid lightly against the container, hang the locking hook and pull the latching lever upwards.

### 7.2.3 Switching On and Off

The VCM 44 A/1 is filled and closed. There is a working insert on the motor shaft.

### 7.2.4 Production

#### a Tips for product manufacture

For optimal agitation:

- First fill the bowl with liquid constituents
- Then add the more solid constituents

For all products:

- Use only those working inserts that are suitable for the product
- It is possible to stop the machine any time, e.g. to add other recipe constituents

### 7.2.5 Draining the Machine

To empty the VCM 44 A/1 first equalise the pressure in the product container. Depending on the configuration, the VCM 44 A/1 is equipped with a ventilation cock or a transparent dosing cover, using which the pressure can be equalised.

Switch off the main motor.

To open the VCM 44 A/1 pull the latch on the right side of the container downwards. The lid is lifted slightly by the torsion springs built in and can now be opened.

The product container is secured by means of an arresting mechanism on the right side of the machine. First loosen the arresting mechanism to empty out the contents of the bowl. The bowl can now be tilted towards the front.

### 7.2.6 Cleaning

#### NOTICE

#### Clean the machine after completion of production

After the end of production the machine must again be brought to a clean condition having only a low level of germs. A clean machine is the basic requirement for each production. Thorough cleaning enhances the life span of the machine and seals.

#### IMPORTANT NOTICE

#### Clean working inserts separately

Working inserts as knives or cutting plates are hardened and have low corrosion resistance. Dismantle completely and clean manually the working inserts after a cleaning procedure.  
After the cleaning is finished, dry all the parts thoroughly.

The following points must be observed when cleaning:

- The water used for cleaning must have drinking water quality.
- The addition of commercially available rinsing agents reinforces the cleaning effect.
- Rinse out the bowl in flowing water to remove loosely stuck product residues. Clean the production environment using water in accordance with the given conditions.
- Loosen impurities that are stuck persistently using a brush or a scraper.
- Rinse subsequently with hot water (75 °C to 85 °C or 167 °F to 185 °F).
- Clean the machine surfaces only with a moist cloth.

After the machine has been cleaned, the working tools must be disassembled and cleaned manually.

The following table specifies the sequence for cleaning the bowl:

Step	Cleaning procedure	Effect
1	Rinse	Rinsing with water at a temperature of minimum 75 °C to release fats and grease
2	Manual Cleaning	using brushes (small metallic brushes) plastic scrapers, sponges
3	Leaching (for thick deposits)	To soak and release the product residues deposited To emulsify and harden the fatty constituents in product residues
	Acid rinsing	To dissolve e.g. milk stone
4	Intermediate rinsing	Removing the residues
5	Disinfection or sterilisation	Using heat or chemicals
6	Final rinsing	With clear water

The cleaning must be done prior to disinfection since the smallest of product residues have a negative impact on the disinfection. Thus, cleaning is not a substitute for disinfection under any circumstances.

### a Separate cleaning of the working tools and lid seals

#### WARNING



#### Risk of injury when working with the tools owing to their sharp cutting edges

There is a risk of injury when working with the tools owing to their sharp cutting edges.

Please handle the tools with care and do not touch the cutting edges of the tools.

All working tools can also be cleaned separately. They are suitable for washing machines and can be sterilised up to 130 °C.

The procedure for separate cleaning is explained in the following table:

Step	Procedure
1	If working under a vacuum equalise the pressure by opening the vent cock
2	Unlock the lid and open it.
3	Remove working tools from the motor shaft.
4	Clean the working tools separately. Clean the opening using a flat brush.
5	Remove the lid seal from the lid groove and clean it under flowing water.
6	Replace the working tool and the lid seal in dry condition in the cleaned machine



## 8. Fault Description and Troubleshooting

### 8.1 Information on STEPHAN Service and Customer Services

Our customer service department is available if questions or problems arise during troubleshooting work.

We require the following data when queries are made:

- the type of machine
- the serial number of the machine
- customer number

These details avoid inquiries through our service department and speed up the processing. These details can be obtained in the chapter Machine information and can also be read-off from the name plate of the machine.

In case of questions regarding your machine, we are at your service:

Stephan Machinery GmbH  
Service division

Stephanplatz 2  
31789 Hameln  
Germany

Phone: +49 5151 583-0  
Fax: +49 5151 583-110

E-mail: [info@stephan-machinery.com](mailto:info@stephan-machinery.com)  
[service@stephan-machinery.com](mailto:service@stephan-machinery.com)

### 8.2 Notes on Troubleshooting

All maintenance and repair work must be carried out only by qualified technical personnel. This applies especially to all electrical work.

#### DANGER

#### Hazardous electrical voltage



Hazard through electric shock.  
All work on electrical systems is to be carried out only by certified electricians.

#### WARNING

#### Risk of injury when working with the tools owing to their sharp cutting edges



There is risk of injury when working with the tools owing to their sharp cutting edges.  
Please handle the tools with care and do not touch the cutting edges of the tools.

**IMPORTANT  
NOTICE****Safety interlock of individual functions**

In case of an overpressure in the bowl and/or temperatures above 95°C the individual functions of the machine get blocked.  
If you can't start any functions, unpressurise first the bowl and allow it cool down to the temperature below 95°C.

### 8.3 Recommissioning after Emergency Stop

**DANGER****Reset the safety equipment**

Generally, the safety equipment gets triggered when there is a hazardous situation. Recklessly reset safety equipment can result in hazard to life and limb of the user and damages to the machine.  
Before resetting safety equipment, make sure the reason for triggering the safety equipment has been really eliminated. Never reset safety equipment recklessly.

If you have pressed an Emergency Stop button, it snaps and you must unlock it to be able to bring the VCM 44 A/1 back into operation. After an Emergency Stop has been initiated, proceed as follows:

- Make sure that the reason for the Emergency Stop has been eliminated and the machine can be safely operated.
- Unlock the Emergency Stop button.
- Put the machine back into operation.

## 8.4 Table of Faults and Measures

The following tables of faults and measures contain information for possible faults, causes and their rectification.

Fault	Cause	Rectification
The motor does not start	The supply line is either not connected or connected incorrectly	Check the voltage at the supply line. Connect the supply line or correct the error found
	The supply line has a loose contact	Replace the supply line
	The motor protection has triggered	Allow the motor to cool down
	The motor contactor is not switching on The controller is defective	Have it checked and rectified by qualified technical personnel
	The lid does not have any contact with the safety switch	Open the lid and close it again
	The end switch is not mounted correctly	Check the position of the end switch
The motor does not run smoothly	The voltage of the machine does not match that of the mains supply	Check the voltage
	The voltage or the frequency deviates considerably from the rated value when switching on	Rectify the circuit
	Please refer to the technical data of the machine	
The fuse blows or the motor protection gets triggered immediately	The winding is defective	The motor must be sent for repair
	There is a short-circuit in the motor or the line (cable)	The motor must be sent for repair
	The motor has an earth fault or a winding short-circuit	Have it checked and rectified by qualified technical personnel
The motor runs in the wrong direction of rotation	The motor has been connected incorrectly. Please refer to Direction of rotation check	Change the two phases
The motor is getting too warm (can only be determined by measurements)	The mains voltage deviates by more than 5% from the rated motor voltage. Higher voltages have an unfavourable effect on multi-polar motors. In such motors, even at normal voltage the current at idling speed is close to the rated current. Please refer to the technical data of the machine	Ensure that the correct rated voltage is fed
	The motor is getting overloaded	Reduce the filling quantity
	The motor is too weak	Involve Stephan Service to determine the correct drive
	The quantity of cool air is too low The cool air paths are blocked.	Ensure unhindered inflow and outflow of the cool air

<b>Fault</b>	<b>Cause</b>	<b>Rectification</b>
		Clean the cooling fins
	The cool air is pre-heated	Ensure availability of fresh air
The motor hums	The motor has been connected incorrectly	Have it checked and rectified by qualified technical personnel
	The bearings are defective	Have it checked and rectified by qualified technical personnel
	One has been connected incorrectly	Have it checked and rectified by qualified technical personnel
The system does not switch on	The safety switch is activated	Close the lid
	The operating voltage is incorrect	Check the operating voltage
	The control fuse is defective	Replace the fuse with a new one
Individual functions do not operate	The over-current protection has triggered	Have the switchgear checked by qualified technical personnel reset the over-current protection

### 8.5 Faults in the Switchgear

<b>Fault</b>	<b>Cause</b>	<b>Rectification</b>
The system does not switch on	Safety switch is activated	Close lid
	Operating voltage is incorrect	Check the operating voltage
	Control fuse is defective	Replace the fuse
Individual functions do not operate	Over-current protection is triggered	Reset the over-current protection. Have the switchgear checked by qualified electricians.

## 9. Service and Maintenance Work

### 9.1 Information on Customer Care and Service

Our customer service department is available if queries or problems arise during service and maintenance work. Information on services is provided in the chapter Troubleshooting and fault elimination [▶ 41].

### 9.2 Safety Measures

#### DANGER

#### Hazardous electrical voltage



Hazard through electric shock.  
All work on electrical systems is to be carried out only by certified electricians.

#### WARNING

#### Mechanical hazards



Hazards due to incorrect handling of mechanical components. All maintenance and repair work carried out on the machine may be performed only by professionally suitable and trained personnel.

#### WARNING

#### Risk of injury when working with the tools owing to their sharp cutting edges



There is risk of injury when working with the tools owing to their sharp cutting edges.  
Please handle the tools with care and do not touch the cutting edges of the tools.

### 9.3 Servicing and Maintenance Schedule

Only by regular servicing and maintenance are the safety of the VCM 44 A/1 and its function guaranteed. Special attention must be made that the maintenance cycle is observed. The service schedule provides an overview of all servicing measures and maintenance activities that can be planned.

Only by regular servicing and maintenance are the safety of the VCM 44 A/1 and its function guaranteed. Special attention must be paid to ensure that only qualified technical personnel carry out the maintenance and that the maintenance cycle is observed. The service schedule provides an overview of all servicing measures and maintenance activities that can be planned.

Interval	Measure	Contents	Carried out by
Daily	Visual checks, service	Visual check of the assembly groups, checking of filling levels, cleaning	Operator
Weekly	Visual checks, service, maintenance	Intensive Visual check of the assembly groups, checking of filling levels, cleaning, checking the condition of hygiene	Specialist / Service
Monthly	Visual checks, maintenance	Intensive visual checks of the assembly groups, replacement of parts / lubricants	Specialist / Service
Semi-annual	Assembly group testing, maintenance	Intensive visual checks of the assembly groups, replacement of parts / lubricants	Specialist / Service
annually	Maintenance	Replacement of parts / lubricants	Specialist / Service

#### 9.3.1 Daily Inspection During Operation

Assembly group/ part	Action	Result / Measure
Overall machine	Pay attention to any unusual noise generation	Excessive noise generation or unusual noises often indicate that defects are starting to take place. If such symptoms are found then a specialist must be involved for further assessment.

### 9.3.2 Weekly Maintenance

#### NOTICE

#### Carrying out maintenance work

These maintenance measures must be performed by specialists. Please observe the description of the maintenance measures.

Assembly group/ component	Action	Result / Measure
Safety Equipment	Inspection	Inspect the cover, insulation and protective grates for damage. Check that the warning and instructions labels are legible.
Machine in general	Inspection	Check all accessible assembly groups for visible signs of damage.
	Inspection	Pay attention to any unusual noise generation during operation.
	Inspection	Assess the state of hygiene of the assembly groups, especially the surfaces coming into contact with the product
Operating controls	Inspection	Check the screens and other operating controls for damage and incorrect display. Check lamps and LEDs to see that they are working.
Shaft seal, main drive	Dismantling, inspection	Dismantle, clean and check for damages. Replace the damaged shaft seals.
	Assembly	Grease and assemble.
Lid seal	Cleaning, inspection	Dismantle it, check for damages and replace damaged lid seals.
Tools	Inspection	Check cutting tools for bluntness, deformation and breakages.
	Inspection	Check the remaining tools for deformation and breakages
Steam Transfer Station	Cleaning, inspection	Check the steam filter for impurities. Replace very dirty and worn filters.

## 9.4 Specific Maintenance Instructions

### 9.4.1 Clean / Replace Lid Seal

1. Open the lid and remove the lid seal from the lid slot by hand.
2. Clean the lid seal using a grease-dissolving cleaning agent (rinsing agent) and finally rinse the seal with clear water.
3. Check the lid seal for traces of wear. If there are signs of wear then the lid seal must be replaced with a new one.
4. Insert the covers seal in the lid slot. In the process, ensure that the seal does not twist and is inserted smoothly.

### 9.4.2 Sharpening the Knives

Ground cutters may not be allowed to become warm and wear out when regrinding them. Always use wet grinding for this purpose.

The grinding burr must be removed in the wet condition using a water stone.

#### WARNING

**Risk of injury when working with the tools owing to their sharp cutting edges**



There is risk of injury when working with the tools owing to their sharp cutting edges. Please handle the tools with care and do not touch the cutting edges of the tools.

#### CAUTION

**Have the grinding work done only by qualified technical personnel**



The cutters may be ground only on cutter grinding machines, which are suitable for the cutter type and material without any limitations.

The cutters should be ground exclusively by specialists or the manufacturer.

#### NOTICE

**Maintenance work on tools**

Depending on the conditions of use and the product condition the cutters of the tool would become blunt. An optimal work process is guaranteed only with sharp cutters.

### 9.4.3 Maintenance of the Shaft Seal

The product contained is sealed against the motor shaft with the help of a flange seal. To replace the seals the entire flange with assembled seals is replaced.

1. Remove the working tools.
2. Using the special spanner provided loosen the sealing flange and unscrew it.
3. Remove the old flange.
4. Grease the shaft and the seals in the new flange carefully.
5. Slide the new sealing flange carefully over the shaft and screw it on by hand. In the process ensure that the flange does not twist and the threads get damaged.
6. Using the spanner tighten the flange such that it is totally in place.



## 10. Spare Parts

The chapter Spare Parts is arranged according to the assembly groups and includes:

- Handling notes
- Figures and bills of materials for identifying spare parts, tools and accessories.
- Notes for the applicable documents for the components.

### IMPORTANT NOTICE

#### Notes on use of spare parts and operating materials

The manufacturer is liable for damages only if the machine has been properly operated, i.e. as specified in the operating instructions. There is no liability, when either the manufacturer or the operator has installed assembly parts or used auxiliary or operating materials that do not conform to the quality requirements that have been agreed.

The contents of bills of materials have the following meaning:

Pos.	Designation	Model	Item no.	QTY	Dim.	OI	Other	E&V
1	2	3	4	5	6	7	8	9

1 = Position number in the figure

2 = Item name / designation

3 = Further item specifications

4 = Item number

5 = Quantity of items in this assembly group

6 = Unit/Dimension

7 = Link to the operating instructions of selected components, if provided

8 = Link to other documents for selected components, if provided

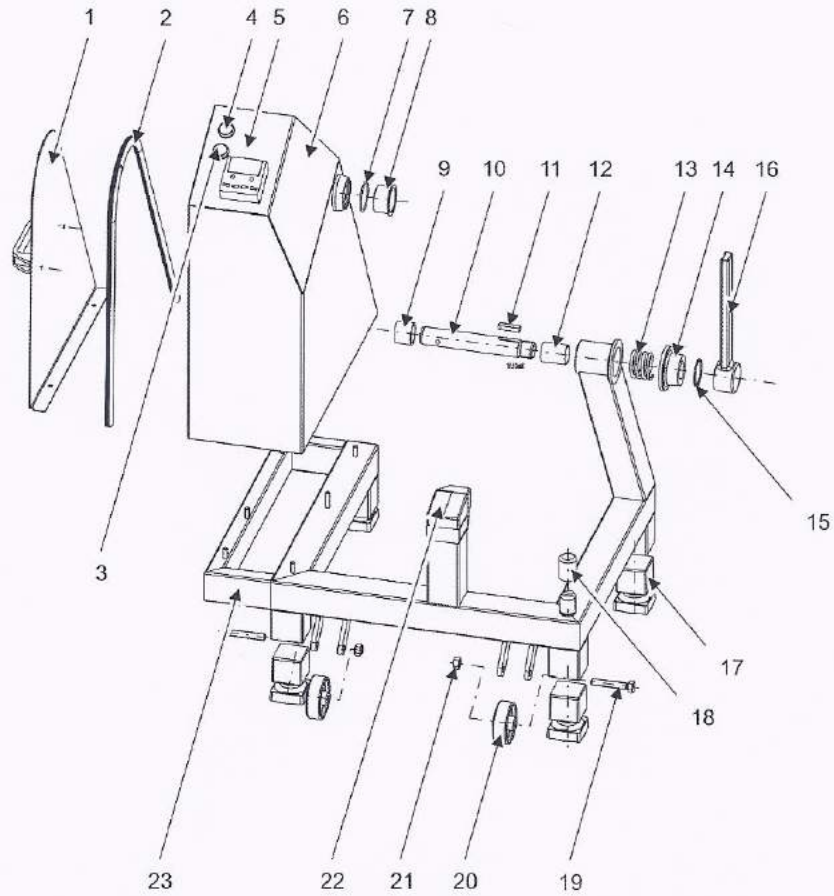
9 = Spare part (E) and wearing part (V) abbreviation

When ordering spare parts, please indicate the following details:

- the machine number (commission number)
- the type designation
- the item designation
- the item number
- the number of required items

## 10.1 Machine housing, assembly group

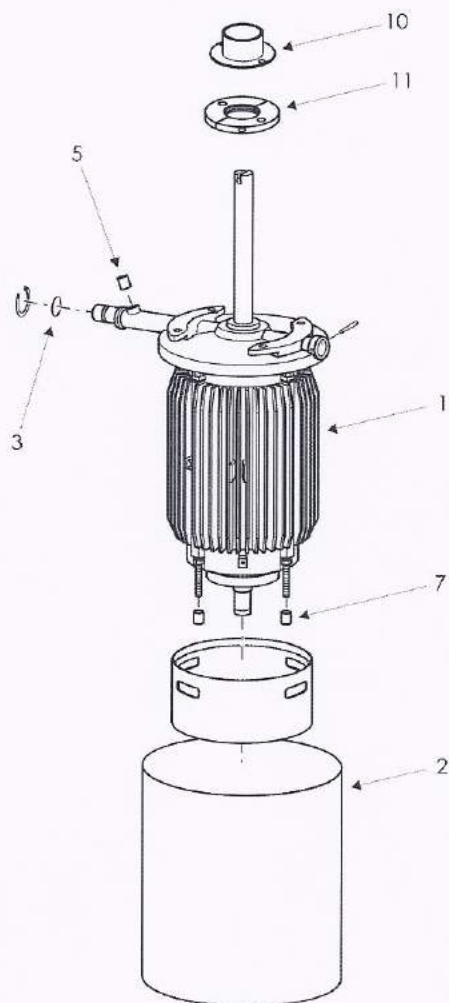
### 10.1.1 Frame



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Handle		3S2050-30	1	ST		E
2	Seal profile	Schaltschranktür	3T4011-06	1	MM		E
3	Pushbutton, green		3Q6073-02	1	ST		E
4	Pushbutton, red		3Q6073-01	1	ST		E
5	Counter	SX210	3Q4021-01	1	ST		E
6	Control cabinet		3F0030-08	1	ST		E
7	O-ring	2-136---50,47*2,62	3I0004-08	1	ST		V
8	Bushing		3K0540-76	1	ST		E
9	Bushing		3K0532-26	1	ST		E
10	Bolt		3K2591-01	1	ST		E
11	Feather key	10 x 8 x 40, DIN 6885	3S0284-02	1	ST		E
12	Bushing		3K0535-03	1	ST		E
13	Compression spring		3M6001-22	1	ST		E
14	Bushing		3K0738-01	1	ST		E
15	Washer		3K0200-44	1	ST		E
16	Lever		3M2450-02	1	ST		E
17	Rubber foot		3M4057-03	4	ST		E
18	Cap		3M4072-02	1	ST		E
19	Screw	M12* 70 A2 DIN 933	3S0005-10	2	ST		E
20	Conveyor roller		3S4004-07	2	ST		E
21	Hexagon nut	M12 A2 DIN 985	3S0205-07	2	ST		E
22	Limit stop		3M4065-02	1	ST		E
23	Stand		3A2010-07	1	ST		E

## 10.2 Drive, Assembly Group

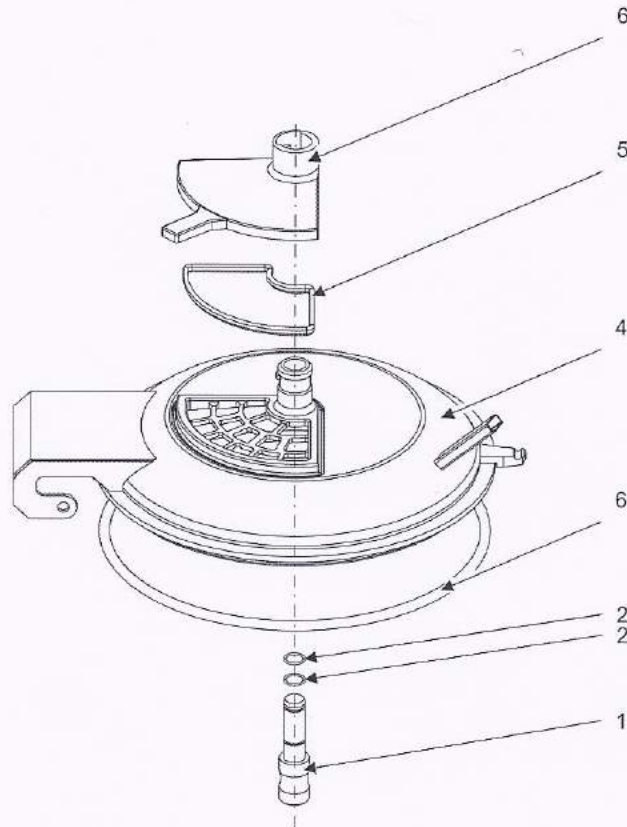
### 10.2.1 Main Drive



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Motor	132S 220 V 60 Hz 1800 U/min 5.5 kW	3C0133-17	1	ST	EMC000MUL	E
2	Covering hood		3L0003-01	1	ST		E
3	Washer		3K0200-33	1	ST		E
5	Bushing		3K0530-52	1	ST		E
7	Bushing	15*9*58	3K0530-86	1	ST		E
10	Cylinder sleeve		3K0502-01	1	ST		V
11	Centrifugal washer		3K1101-05	1	ST		E

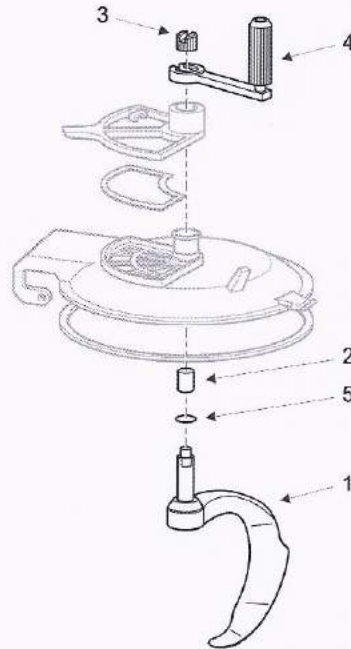
### 10.3 Container, Assembly Group

#### 10.3.1 Lid



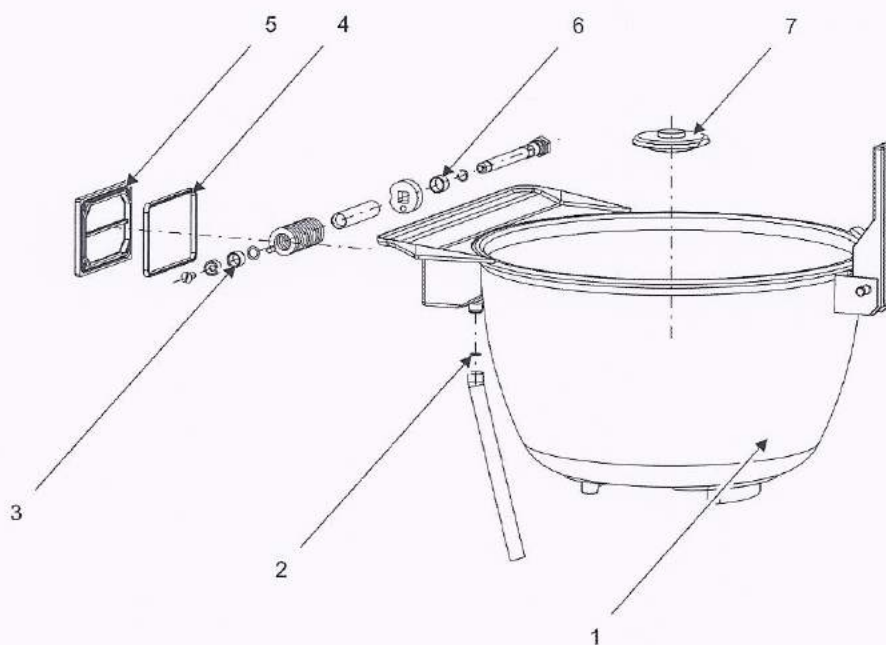
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Plug		3K2629-10	1	ST		E
2	O-ring	2-119	3I0003-30	2	ST		V
3	Lid seal		3I0100-01	1	ST		V
4	Lid		3B6220-02	1	ST		E
5	Sealing ring		3I0112-02	1	ST		V
6	Inspection lid		3M4023-03	1	ST		E

## 10.3.2 Mixing baffle



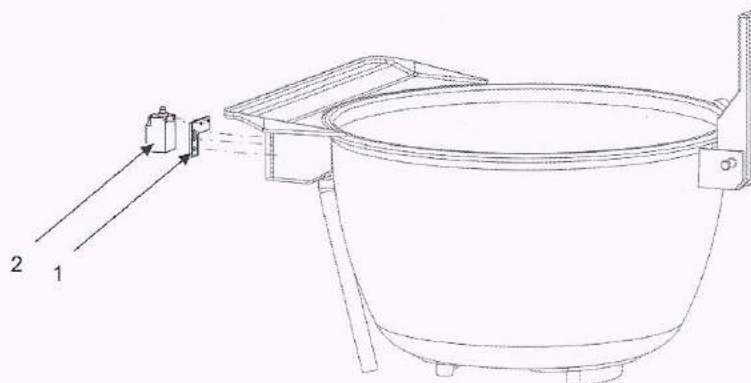
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Mixing baffle		3D2022-03	1	ST		E
2	Bushing		3K0535-02	1	ST		E
3	Knurled nut		3K0027-01	1	ST		E
4	Crank		3G0051-02	1	ST		E
5	O-ring	2-119	3I0003-30	2	ST		V

## 10.3.3 Bowl



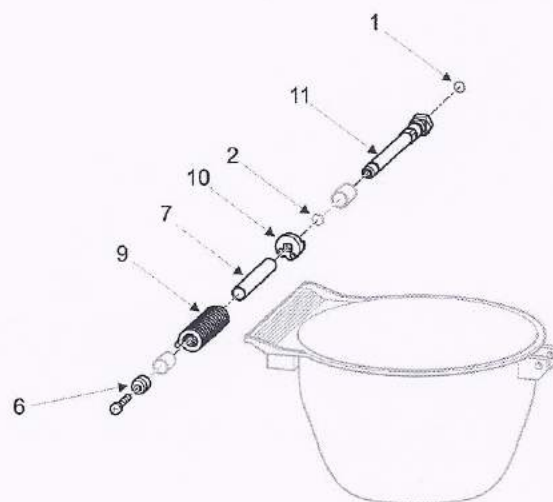
Pos.	Designation	Type	Item No.	No.	Dim.	Ol	Other
1	Bowl		3B0210-01	1	ST		E
2	O-ring	2-014---12,42*1,78	3I0001-06	1	ST		V
3	Bearing bush	Di15xDa20xL15	3K0401-03	1	ST		V
4	Seal	3,8x6,8x90x146	3I0115-01	1	ST		V
5	Lid, Terminal box		3M2282-02	1	ST		E
6	Bearing bush		3K0401-04	1	ST		V
7	Sealing flange		3KP000-21	1	ST		E

## 10.3.4 Switch



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Angle		3L0806-02	1	ST		E
2	Switch		3Q6021-03	1	ST		E

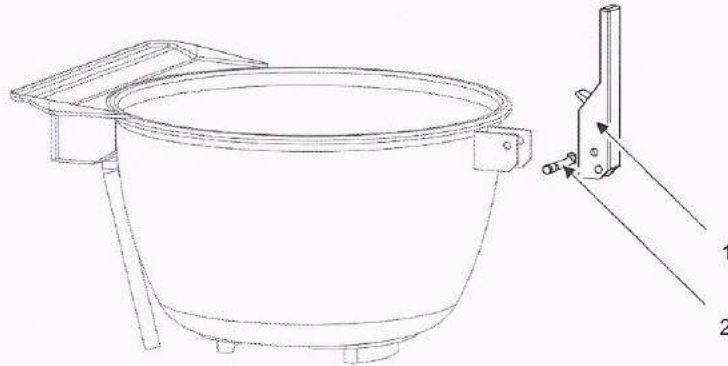
## 10.3.5 Lid Opening



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Lid axle		3K2426-01	1	ST		E
2	O-ring	2-014---12,42*1,78	3I0001-06	1	ST		V
3	Cam disc	15*43*23	5K0712-00	1	ST		E
4	Bushing		3K0531-02	1	ST		E
5	Spring		3M6003-04	1	ST		E
6	O-ring	2-112---12,37*2,62	3I0004-01	1	ST		V
7	Cap		3K0307-01	1	ST		E
8	Screw	M8x20	3S0094-02	1	ST		E



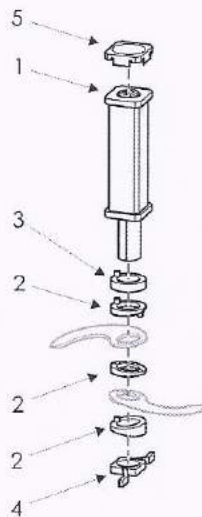
### 10.3.6 Fastening



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Lever		3G0025-01	1	ST		E
2	Bolt		3K2556-01	1	ST		E

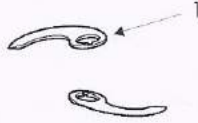
## 10.4 Machine Tools

### 10.4.1 Knife shaft



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Knife shaft		3D0150-02	1	ST		E
2	Slanted ring set		3K0315-01	1	ST		E
3	Thrust washer		3K0310-02	1	ST		E
4	Nut		3K0008-05	1	ST		E
5	Cap		3M4072-01	1	ST		E

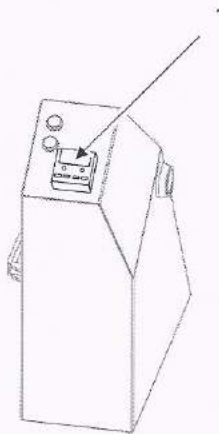
### 10.4.2 Knife Set



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Knife, wide blade		3D0007-05	2	ST		V

## 10.5 Electrical Engineering and Installation

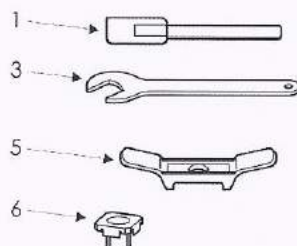
### 10.5.1 Electrical Parts



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Counter	SX210	3Q4021-01	1	ST		E

## 10.6 Accessories and Additional Parts

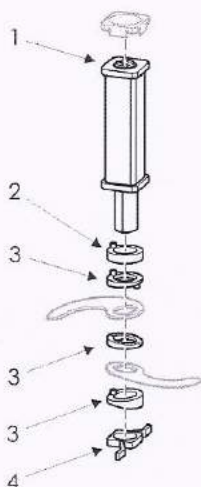
### 10.6.1 Tools



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Scraper		3H6000-01	1	ST		E
3	Open-end spanner		3H6002-02	1	ST		E
5	Bowl		3G6015-02	1	ST		E
6	Cap		3M4072-01	1	ST		E

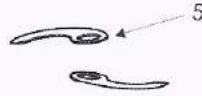
## 10.7 Optional Equipment

### 10.7.1 Knife Shaft, Assembly Group



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
1	Knife shaft		3D0150-02	1	ST		E
2	Slanted ring set		3K0315-01	1	ST		E
3	Thrust washer		3K0310-02	1	ST		E
4	Nut		3K0008-05	1	ST		E

## 10.7.2 Knife Set, Narrow Blades



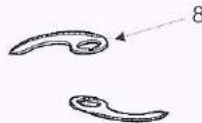
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
5	Knife, narrow blade		3D0006-07	1	ST		V

## 10.7.3 Hollow edge knife, narrow blade



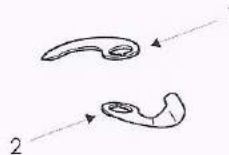
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
9	Hollow edge knife, narrow blade		3D0006-08	1	ST		V

## 10.7.4 Hollow edge knife, wide blade



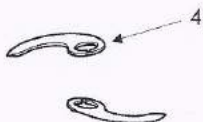
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
8	Hollow edge knife, wide blade		3D0007-07	1	ST		V

## 10.7.5 Knife, straight and cranked blade



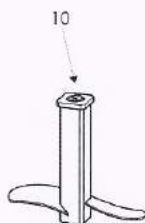
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
7	Knife, cranked blade		3D0115-05	1	ST		V

## 10.7.6 Knife Set, Wide Blades



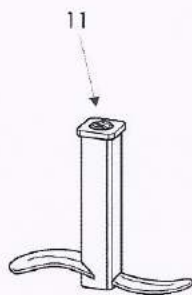
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
4	Knife, wide blade		3D0007-05	1	ST		V

## 10.7.7 Mixing insert



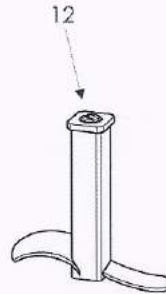
Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
10	Mixing insert		3D4038-03	1	ST		E

## 10.7.8 Stirrer and kneader insert



Pos.	Designation	Type	Item No.	No.	Dim.	OI	Other
11	Stirrer and kneader insert		3D4038-01	1	ST		E

## 10.7.9 Kneader element



Pos.	Designation	Type	Item No.	No.	Dim.	Ol	Other
12	Kneader element		3D4038-02	1	ST		E

## 11. Annex

### 11.1 Service Addresses

#### MAIN FACTORY

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[www.stephan-machinery.com](http://www.stephan-machinery.com)

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 fax +41 44 9550688  
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Representatives in more than 40 countries. Addresses provided upon request.

## 11.2 Declaration of Conformity



### Declaration of CE-Conformity

Object  
Universal Machine

Type  
UM

Serial Number/s

It is certified that the product/s described in detail before, conform/s to the requirements of the European Union directive/s listed in the following:  
2006/42/EC, 2006/95/EC, 2004/108/EC, 1935/2004/EC

Furthermore, the following harmonised standards have been applied:  
EN ISO 12100:2010, EN 60204-1:2006, EN ISO 13849:2008

Incidentally, it is certified that the product/s contain/s neither sources of disturbance nor components liable to disturbances according to the EMC directive.

Hamel, 05.08.2013

Franz Koop  
First name, Surname

Technical Director  
Position

Signature

Authorised representative for technical  
documentation  
Gunnar Schröter

Stephan Machinery GmbH

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This declaration of conformity is an original declaration of conformity in the German language and can contain identical translations in the other EU languages.

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# Test protocol

DIN EN 60204-1 / VDE 0113-1

**Commission no.:** U1300348

**Machine type:** VCM 44 A/1

**Electric connecting data:** 220V / 60Hz

**tested on:** 21.01.2014

**tested by:** C. Hubel

**Overall result:** iO

## TEST DEVICE

Schleich Safety Analyzer Type GLP1-e 60204 -V1 Series no. 6236

## TEST CONDITIONS

### Protective conductor resistor

Next to the visual inspection of each protective conductor, the continuous connection of each protective conductor is checked through the supplying a current for at least 1 second according to the standards. The measurement is carried out between the central PE terminal and the tested points of the protective conductor, the protective conductor resistance is not allowed to exceed the specified limit value in doing so.

### Insulation resistance

The insulation resistance has been tested by applying a test voltage of 500V DC.

The measurement is carried out between the central PE terminal and the tested main circuit, the insulation resistance is not allowed to fall below the specified limit value in doing so.

### High voltage stability

The high voltage stability has been tested by applying a test voltage of min.  $2 \cdot U + 1000 \text{ V AC} - 50\text{Hz}$ .

Between the protective system and the tested main circuit, the leakage current is not allowed to exceed the specified limit value in doing so.

**PE = Protective conductor resistor ISO = Insulation resistance HV = High voltage stability SPR = visual inspection**

Step	Method	Testing sequence designation	Limit value	Actual value	Test conditions	Actual value	Testing period	OK
1	SPR	Check the correct assembly of the device and wiring	--	--	--	--	--	iO
2	SPR	Test device is prepared and set	--	--	--	--	--	iO
3	PE	GND on the cover	0,500 Ohm	0,072 Ohm	10 A	10,8 A	1,0 s	iO
4	PE	GND on the bowl	0,500 Ohm	0,075 Ohm	10 A	10,8 A	1,0 s	iO
5	PE	GND on cableduct from bowl to bearing shield	0,500 Ohm	0,075 Ohm	10 A	10,8 A	1,0 s	iO
6	PE	GND on the hood of the main motor	0,500 Ohm	0,085 Ohm	10 A	10,7 A	1,0 s	iO
7	PE	GND on the frame	0,500 Ohm	0,084 Ohm	10 A	10,8 A	1,0 s	iO
8	PE	GND on the bearing shield	0,500 Ohm	0,065 Ohm	10 A	10,8 A	1,0 s	iO
9	PE	GND on the assembly plate	0,500 Ohm	0,080 Ohm	10 A	10,9 A	1,0 s	iO
10	PE	GND on the control cabinet	0,500 Ohm	0,074 Ohm	10 A	10,8 A	1,0 s	iO
11	ISO	ISO GND supply line to the L1 supply line	1,0 MOhm	> 30 MOhm	500 V	507 V	1,0 s	iO
12	ISO	ISO GND supply line to the L2 supply line	1,0 MOhm	> 30 MOhm	500 V	507 V	1,0 s	iO
13	ISO	ISO GND supply line to the L3 supply line	1,0 MOhm	> 30 MOhm	500 V	507 V	1,0 s	iO
14	ISO	ISO GND supply line to 1U	1,0 MOhm	> 30 MOhm	500 V	507 V	1,0 s	iO
15	ISO	ISO GND supply line to 1V	1,0 MOhm	> 30 MOhm	500 V	507 V	1,0 s	iO
16	ISO	ISO GND supply line to 1W	1,0 MOhm	> 30 MOhm	500 V	507 V	1,0 s	iO
17	SPR	Function of the cover end switch	--	--	--	--	--	iO
18	SPR	Timer function	--	--	--	--	--	iO
19	SPR	Test device is prepared and set	--	--	--	--	--	iO
20	SPR	Corresponding documentation at hand	--	--	--	--	--	iO
21	SPR	to build in control cabinet door	--	--	--	--	--	iO
22	PE	GND on the control cabinet door	0,500 Ohm	0,064 Ohm	10 A	10,8 A	1,0 s	iO

**Production Test Document Machine**

machine type : **VCM 44 A/1**

machine no. : **U1300348**

electrical supply data : 220V / 60Hz

high voltage test : O.K.

according to wiring diagram no.: **3F443205**

item: **3F4432-05**

**Keyboard:**

code: **VCM I0404001/00000000**

-

**VCM44A/1.2456.V08.13.12**

-

data main motor

test run

main motor no. : 7714239

direction of rotation : right

revolutions per minute : 1800 rpm

data gear motor

gear motor no. : -

direction of rotation : -

revolutions per minute : -

data hydraulic unit

hydraulic unit type : -

hydraulic unit no : -

pressure : 0 bar

oil :

data steam delivery station

filter type : -

filter chassis no. : -

cyclone no. : -

further technical data

safety pressure valve : -

blowing-off pressure : 0 bar

noise rating : 70 dB (A) DIN 45635

pneumatic pressure : max. 10 bar

vacuum pump : -

pressure / vacuum test : see pressure certificate

vibrations caused by working tools : o.k.

date : 21.01.2014

D. Linnemannstöns

