

# TECHNICAL DOCUMENTATION AND INSTRUCTION MANUAL

## BIO-CIRCLE Turbo Stainless Steel Parts Washer 800, 1000, 1200



Art. - No.:

Serial No.:

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# Attention!



**Don't reach into the machine during automatic washing process!**



Thank you for purchasing the BIO-CIRCLE Turbo.

This operating instruction has been designed to give you all information on the BIO-CIRCLE Turbo. To ensure perfect functioning of your BIO-CIRCLE Turbo, carefully read this operating instruction before using the machine. Familiarize yourself with this unit's operation, its particular features, applications and limitations. You will also find useful tips on safety and maintenance.

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## CE Declaration of Conformity

Letter A Directive 98/37/EG, appendix II A

### EG-Konformitätserklärung

im Sinne der EG-Richtlinie Maschinen 98/37/EG, Anhang II A

### Déclaration de conformité CE

À la norme produits 98/37/EG, appendix II A

### Dichiarazione di conformità CE

ai sensi della direttiva macchine CE 98/37/CE, allegato II A

Wir / We / Nous / Noi:

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Deutschland / Germany / Allemagne / Germania

erklären hiermit, dass die Produkte / declare that the products / déclarons que les produits / dichiariamo che

#### **BIO-CIRCLE Turbo**

folgenden einschlägigen Bestimmungen entsprechen / Confirm the following directives / Sont conformes aux dispositions des directives des produits / sono conformi con le relative disposizioni della direttiva CE

**Richtlinie / directive:**

**2006/42/EG (EEC)**

**Direttiva:**

**EG – Maschinenrichtlinie / EEC – Machinery Directive /**

**Directive relative aux machines / Direttiva relativa alle macchine**

**2006/95/EG (EEC)**

**Niederspannungsrichtlinie / Directive Low Voltage / directive**

**"basse tension" / direttiva "bassa tensione"**

**2004/108 (EEC)**

**Elektromagnetische Verträglichkeitsrichtlinie / Directive on the Electromagnetic Compatibility / Compatibilità Elettromagnetica**

und harmonisierte Normen / and harmonised reference standards / et les normes harmonisées / e norme armonizzate

**EN ISO 12100 -1**

**EN ISO 12100 -2**

**EN ISO 3746**

**EN ISO 13850**

**DIN EN ISO 13857**

**EN 60204-1/A1**

Angewendete nationale Normen, Richtlinien und Spezifikationen insbesondere:

Employed national standards, directives and specifications, in particular:

Applicquent des normes nationales, les directives et les spécifications, en particulier:

Norme nazionali, direttive e specifiche, in particolare:

#### **DIN 45 635, DIN EN ISO 13857**

Die Erklärung verliert ihre Gültigkeit bei nicht bestimmungsgemäßer Verwendung und bei Änderungen an dem Produkt, die nicht mit dem Hersteller abgesprochen werden.

The declaration loses its validity if the device is not used as intended or if changes in the product are made, which are not discussed with the manufacturer.

La déclaration perd sa validité lorsqu'elle n'est pas utilisée comme prévu et en cas de modification qui ne sont pas convenues avec le fabricant.

La dichiarazione perde la sua validità quando non è utilizzata come previsto e se le modifiche non sono d'accordo con il costruttore.

Für die Zusammenstellung der technischen Unterlagen ist bevollmächtigt:

Institution authorized for compiling the technical documents:

La présentation des résultats des documents techniques est habilité par

Istituzione autorizzata a mettere insieme i documenti tecnici:

Bio-Circle Surface Technology GmbH, Berensweg 200, D-33334 Gütersloh



Gütersloh, July 2011

**Birgit Große (CEO)**



## 1. General Points

The Instruction Manual contains important information for the installation, usage and maintenance of the BIO-CIRCLE Turbo stainless steel.

Read thoroughly and carefully the instruction manual before initiating any work on or with the washing machine.

The BIO-CIRCLE Turbo is an industrial washing machine designed, in accordance with the instruction manual, for the fast, effective and environment-friendly washing of greasy and oily part with **BIO-CIRCLE Turbo Liquid**.

No modifications or alterations are be made to the product without prior authorisation from the manufacturer. The manufacturer will not be liable for any modifications made without its authorisation, otherwise the guarantee will then expire and cease to be valid.

For more information please call our service hotline ++49 (0)5241 9443-0

The machine has been constructed in accordance with the provisions of the prescribed safety regulations.

The CE marking has been issued under application of the following directives:

- EU – Directive 73/23/EEC
- EU – Directive 89/336/EEC
- EU – Directive 98/37/EC



## 2. Safety Regulations

Use the BIO-CIRCLE Turbo only according to the safety instructions. Pay attention for the prevention of possible causes for accidents and risks for the machine and the maintaining personnel!

We inform you on eventual risks during the machine usage, but you and your employees bear the responsibility for their avoidance.

- The machine installation is to be carried out only by the qualified personnel.
- The machine is to be commissioned only if free of faults. If such is suspected, the required repairs are to be carried out only by the qualified personnel.
- Do not install additional devices without the prior consent of the manufacturer.
- Respect the recommended maintenance periods.
- The user/owner of this washing machine should acquaint the cleaning and maintenance personnel and the machine operators with all instructions.
- The washing machine is suitable only for the usage specified in the order.
- It must be ensured that no person comes into contact with the electrical current.
- The servicing personnel is to be provided with protective shoes with special anti-slipping soles, gloves as well as protection glasses are required. When choosing the protection clothing for the servicing personnel have in mind the detergents and processing agents used.
- Due to the temperature of the cleaner, avoid skin contact with the cleaner.
- Respect the recommendations for machine maintenance.
- Before any repair or maintenance work, which must always be performed by authorized personnel, the machine must be switched-off and has to cool down.
- Any fault is to be reported immediately to the responsible person.
- The machine should not be switched on if the safety systems are partially or fully switched off or missing.
- The BIO-CIRCLE Turbo is designed for the use of BIO-CIRCLE Turbo Liquid. The machine should never work with inflammable liquids, other cleaning liquids, such as cleaner solvents, disinfectants, acidic and alkaline cleaner are not be used!
- The manufacturer does not bear any responsibility for incompetent or unspecified in this manual use of the machine.

**Caution: Never turn off the BIO-CIRCLE Turbo unless for servicing or longer periods of non-use (more than four weeks). Make sure the surface of the liquid is not covered with oil. If necessary skim off or absorb any accumulation of oil.**

Should there be any questions regarding the function, operation, or the provision of spare parts, please contact us.



### 3. Installation

#### 3.1. *Mechanical Installation*

- The BIO-CIRCLE Turbo is designed for stationary work conditions.
- The site where the washing machine is to be installed must be freezing-protected. The machine is designed to work between 4° to 40° C ambient temperature.
- The floor of the premises where the machine shall be installed must not be slippery and must be easy to clean.
- The washing machine is to be installed **horizontally** and levelled during the assembly.

**Caution: If the washing machine is installed in premises without heating or, in special circumstances, in the open, you should undertake measures to protect the machine from freezing. If this important condition has not been observed, the guarantee ceases to apply.**

#### 3.2. *Current supply*

The installation has to be carried out only by appropriately qualified personnel. The incorrect installation may result in injuries of the personnel and damages of the machine. In such cases the manufacturer bears no responsibility.

The supply and control unit of the BIO-CIRCLE Turbo has level of protection IP-65 e.g. it can work in humid premises as well.

Connect the washing machine to the electric installation at site via cable 5Gx4mm<sup>2</sup>.

**Caution Please ensure that the current entry provided by the customer is furnished with an ELCB (Earth Leakage Circuit Breaker – FI switch).**

**Caution: Make sure the motor rotates in the correct direction (observe the black arrows to determine the correct direction).**

**Caution: Only qualified personnel is to supply the BIO-CIRCLE Turbo with electricity.**

#### 3.3. *Cleaner supply*

Fill the machine with the specially designed **BIO-CIRCLE Turbo Liquid**. Due to the high working pressure the liquid is designed specially foamless and the used micro organisms are resistant against mechanical impact.

The optimal temperature for the activity of micro-organisms and therefore for the breakdown of oil is approximately 50 °C. Therefore leave the apparatus **switched on** all the time. For optimal activity of microorganisms and thus of the breakdown of oil, it is essential that the microorganisms have a constant supply of oxygen. This is why an air pump is permanently switched on, which guarantees the required oxygen supply for the microorganisms. If the unit is switched off, or fails because of a defect, the result is that the microorganisms become inactive.

**The BIO-CIRCLE Turbo is designed for the use of BIO-CIRCLE Turbo Liquid. The machine should never work with inflammable liquids, such as cleaner solvents, disinfectants or other acidic and alkaline cleaner are not be used!**

### 3.4. *Water drainage*

Connect the drain tank pipe ( $\varnothing$  33.7mm) to the plant internal drain system.

### 3.5. *Compressed air supply*

Connect the air hose of the BIO-CIRCLE Turbo with the quick-release coupling, diameter 10, maximum air pressure must not exceed 8 bar.

### 3.6. *Notes for Waste disposal*

For this product, no waste disposal key, according to the European Waste Catalogue (EWC) can be determined, as only the purpose of application defined by the user enables an allocation. The waste code number has to be determined in accordance with the local waste disposer. Take unused BIO-CIRCLE Liquid to a sewage plant in accordance with federal, state and local environmental regulations. Consider pH-value.

## 4. **Start up**

After installing the BIO-CIRCLE Turbo correctly, you can proceed with the machine start up.

- Turn on the main switch to position “I” (a green signal lamp “Control on” lights). Fill up the washing machine with BIO-CIRCLE Turbo Liquid till the required level has been reached.
- Once the tank is filled, the heating element starts heating the cleaner. The heating element switches on automatically and a green signal lamp “Heating on” lights. The heating remains on until the temperature of the cleaner reaches the set temperature (50° C) on the temperature controller. If the liquid level in the tank falls beneath the level sensor (due to losses during working or evaporation), the heating switches off and a red lamp lights. When the necessary quantity of cleaner has been added, the red lamp goes out and the heating is resumed. The optimal temperature for the activity of micro-organisms and therefore for the breakdown of oil is approximately 50 °C. When the pre-set temperature is reached, the heating turns off automatically and the green signal lamp “Heating on” goes off.
- Check whether the rotating basket rotates freely e.g. there should be no small details sticking out of it. For easier loading of the rotating basket (in case of models with bigger basket diameter), the machine is equipped with an additional button “Rotating Grid Adjustment”. With that button, the rotating basket (with the lid open) can be rotated to any desired position.
- Move the top arm in the middle, next to the stop and close the lid.
- Enter the desired washing duration (see item “**Settings**”)
- Start the cleaning process by pushing the “PROGRAMM START” button.

Test the machine functioning.

The BIO-CIRCLE Turbo is now ready to be commissioned.



## 5. Mode of Operation

The BIO-CIRCLE Turbo operates as a combination of an automatic hot water washer and a manual high pressure parts cleaner unit. It has a rotating basket, where the parts rotate and are sprayed simultaneously with washing solution.

For a fast and precise manual cleaning the flow-through brush or the nozzle can be used. For switching between manual and automatic use, turn the two-position-switch on the control board.

BIO-CIRCLE Turbo makes use of natural powers to create a user/environmentally-friendly and economical cleaning solution for small parts. Processing oils, cutter coolants, corrosion protection products, light greases and other particles are removed by the cleaning agent BIO-CIRCLE Turbo L. Oil and grease are then immediately and biologically transformed by the microorganisms. Inorganic impurities are separated by a filter system, small particles are accumulated at the bottom of the tank.

It is recommended that your BIO-CIRCLE Turbo is inspected and cleaned regularly to perform at optimal efficiency. Depending on the application non-digestible matter can accumulate as sludge at the bottom of the tank over time, which can negatively affect the bioremediation activity.

## 6. Assembly

### 6.1. Tank and heating

The tank maximum fill-up quantity you see on page 20 in this instruction.

#### **Electric heating**

A heating element is installed in the washing tank. The installed level sensor protects the heaters from working in the dry.

**Caution! Before attempting to change the electric heaters (see the Safety Regulations), make sure the electric supply has been disconnected from the main switchboard!**

### 6.2. Air supply

The air supply, consisting of an air compressor, hoses and two air sprinklers, make sure a consistent supply of oxygen for the microorganism.

### 6.3. Level control

The filling level is monitored by an installed level sensor, in case of low level the machine is shut off.

### 6.4. Pump

The technical data of the pump on page 20 in this instruction. A metal filter is installed to protect the pump from damage by solid particles.



## 6.5. *Inside light*

Two adjustable lamps are installed at the back part of the work chamber.

## 6.6 *Support of the rotating grid*

The support for the rotating grid is situated in the middle of the work chamber. It has to move freely and easily and when the grid is lifted from one side, the resultant clearance should be very small. If not, the support has to be dismantled and substituted with a new one, or respectively the whole running-in of the rotating grid or some of the components have to be substituted. The grid is equipped with a lubricator and should be lubricated regularly, to do so, the basket has to be removed (see also 10.3 maintenance)

## 6.7 *Driving of the basket*

Inside the work chamber the basket is driven via a plastic cogwheel, driven in its turn by a gear-motor with flexible connector mounted on the bottom side. The required pressure to get friction between the cogwheel and the rotating grid is achieved via the integrated elastic rubber pad.

## 6.8 *Spraying system*

The spraying system consists of a nozzle pipe 3/4" with openings Ø 2mm.

## 6.9 *Cover sheets for the washing solution tank*

The tank for the washing solution is separated from the work chamber by two cover sheets. The cover sheets have an opening and a filter system (a perforated iron sheet, with openings d=2.00mm) through which the used washing solution flows through; the openings serve to clean the washing solution by removing the big soils.

**Caution! The washing machine should not be commissioned without the filter system for used washing system. If that warning is not observed, the pump may break down due to incoming soils.**

## 6.10 *Machine lid*

There are two vision panels on top and front of the lid. For manual cleaning there are two round openings for the fastening of chemical and temperature resistant gloves.

**Caution! The gloves must be removed from the work chamber during automatic use of the BIO-CIRCLE Turbo.**

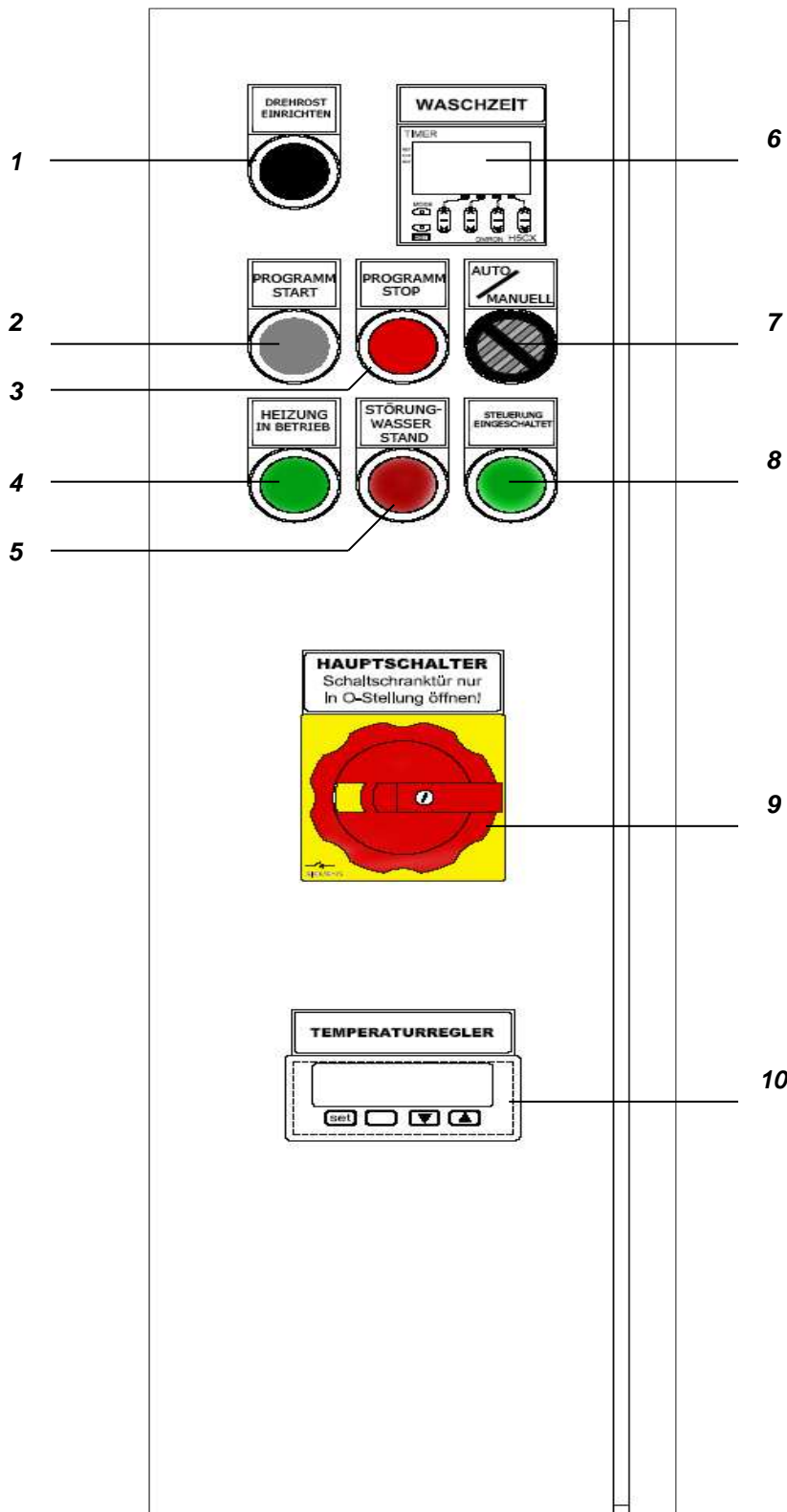
In order to protect the servicing personnel from lifting too heavy weights, the machine lid is equipped with air-cushions.

## 6.11 *Workload*

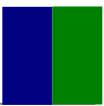
The maximum workload of the machine you see on page 20 of this instruction. The workload stated is for evenly distributed load e.g. the small details must be placed evenly onto the whole surface of the basket.



## 6.12 Control panel



- 1 set up of rotating basket
- 2 program **Start**
- 3 program **Stop**
- 4 control-light heater
- 5 control-light level
- 6 set up timer
- 7 shift automatic or manual use
- 8 control-light controller
- 9 main power switch
- 10 temperature regulation



## 7 Detergents

The BIO-CIRCLE Turbo is an environmentally sound piece of equipment designed to efficiently clean machine parts, motors, casing or other parts covered in oil and fat with the aid of **BIO-CIRCLE TURBO L (Liquid)**, a biological cleaning liquid. For more information and delivery please contact Bio-Circle Surface Technology GmbH.

**Attention:** The optimal temperature for the activity of microorganisms and therefore for the breakdown of oil is approx. 50°C. Therefore leave the unit always switched on.

**Attention:** For optimal activity of microorganisms and thus of the breakdown of oil, it is essential that the micro-organisms have a supply of oxygen. This is why an air sprinkler has to be permanently switched on, which guarantees the required oxygen supply for the microorganisms. If the unit is switched off, or fails because of a defect, the result is that the microorganisms become inactive. For longer periods of times where the BIO-CIRCLE Turbo will be switched off, make sure that the surface of liquid is not covered with oil.

**Attention:** Make yourself familiar with the technical data of BIO-CIRCLE TURBO L (Liquid) and follow the directive.

**Attention:** Do not introduce disinfectants, solvents, brake fluid, engine coolant, chlorinated, acidic or alkaline solutions into this system.

## 8 Description of the work process

**Attention:** The main switch of the unit has to be on all time, to maintain the optimal condition for the break down of oil and grease of the micro-organism.

**Attention:** If a grease layer builds up on the liquid surface it has to be removed, as it inhibits the normal function of the microorganisms.

**Attention:** A possible fall-out on the tank bottom has to be removed regularly via the tank drain valve.

### 8.1 Automatic washing process

1. Open the machine lid and turn aside the upper collector pipe.
2. Put the parts to clean within the basket; make sure they are distributed evenly onto the whole surface of the basket.
3. For an easy loading the rotating grid may be positioned via the button "Drehrost einrichten" (Basket rotation). Check whether the rotating grid rotates freely and easily by pushing and holding button "Basket rotation", no parts have to protrude out of the grid.
4. Turn the upper collector pipe to medium position.
5. Close the lid and locks.
6. Enter the washing duration (see item "**Settings**") and push button "Start program".
7. When the pre-adjusted washing duration has elapsed, the pump and the driving of the rotating grid switch off automatically.
8. After the program has ended, or having pushed the stop-button, you can open the lid. The washed details dry partially due to their own heat.

9. Push the upper collector to one side and take out the clean details.
10. The washing machine is now ready for the next process.

As some of the washing solution evaporates during the washing process its level decreases. Then the machine switches off and a red signal lamp "Low liquid level" lights. It is necessary to refill the tank until the required liquid level has been reached. Push the start button again to activate the program. The washing duration and the temperature can be reentered

Attention: If the lid will be opened during the washing process, the pump will be switched off automatically and the timer will be re-set.

## 8.2 Manual parts washing

The parts may be cleaned or finished manually. To do so, switch from automatic to manual operation (switch 7 on picture 1).

Press the button (basket rotation) to turn the grid in the requested position.

Two chemical and temperature resistant gloves are fixed to the BIO-CIRCLE Turbo lid. Putting them on, parts can be cleaned with the aid of flow-through brush or jet-nuzzle and can be dried with the compressed air pistol.

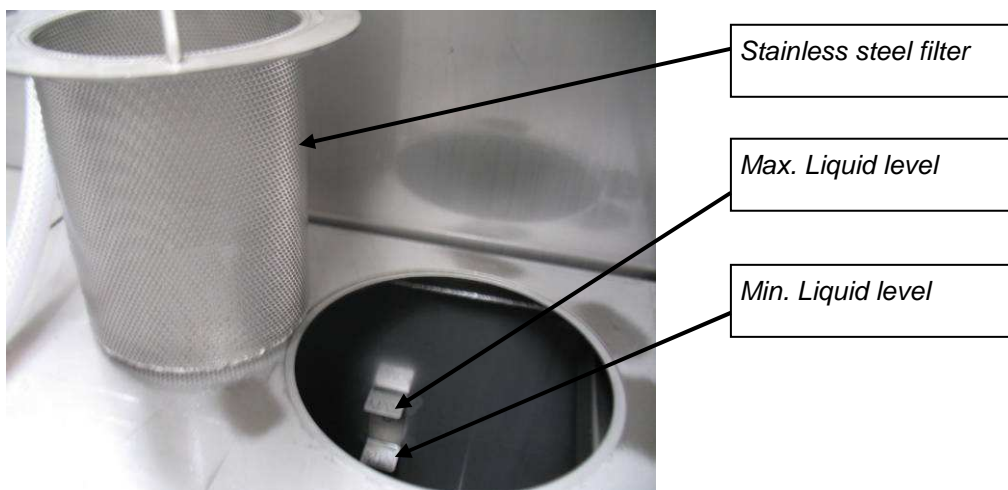
After cleaning place flow-through brush, jet-nuzzle and air pistol back to there holder and take the gloves out of the work chamber and put them to there holder.

Attention: to avoid premature wearout of the pump, turn switch 7 (Auto/manual) back to auto position after manual cleaning.

## 9. Settings

### 9.1. Level of the Washing Solution in Tank

The level of the washing solution in the tank is controlled via a level sensor so as to prevent the pump from dry-running.





If the level of the washing solution falls beneath a certain minimum, the machine switches off automatically and the lamp “**WATER CONTROL**” (“STÖRUNG-WASSERSTAND”) lights. The tank for the washing solution has to be refilled and then the machine resumes work again.

If the machine is designed with automatic filling, the level of the washing solution in the tank is controlled by two sensors – one for max. and one for min. level.

## 9.2. *Temperature of the Washing Solution*

The pre-set working temperature is 50°C, at this temperature cleaning and oil-degradation results are optimal.

In consultation with Bio-Circle Surface Technology GmbH it is possible to adjust the Temperature between 40°C and 60°C. For this change the setting on the digital display (picture 2). In order to achieve the best cleaning result, the washing solution should be set to 50°C.

**Attention:** a change of the pre-set temperature range is only possible after entering of the requested password.



**picture 2:** Digital display for adjusting the temperature of the washing solution, located on the machine control panel

The temperature of the solution in the tank is displayed all the time. If you want to see the last setting, press the “set” button. If you want to enter a new temperature for the solution in the tank, press simultaneously the “set” button and

the ▲ button – if you want to increase the temperature;  
the ▼ button – if you want to decrease the temperature.

When the temperature falls beneath the pre-set value, the thermostat automatically switches on the heating element.

## 9.3. *Washing Duration*

The washing duration is adjusted via a digital clock.

By pressing buttons from 1 to 4 you can adjust the duration of the work cycle in minutes and seconds - starting from 00 min. 01 sec. to 99 min. 59 sec.:

- pressing the upper part of the button increases the value in the respective field;
- pressing the lower part of the button decreases the value in the respective field.





**picture 3:** Digital clock for adjusting the washing duration

## 10. Maintenance

### 10.1 Cleaning of the BIO-CIRCLE Turbo

For an optimal cleaning result and life time of the BIO-CIRCLE Liquid, the BIO-CIRCLE Turbo and its separate parts have to be cleaned regularly. Therefore the upper filters have to be cleaned and a possible grease or oil layer has to be removed. Sediment from the tank bottom can be removed via drain valve.

To clean the machine proceed as follows (recommended once or twice a year):

- Press red button “PROGRAM STOP”
- Switch off the electric supply from the main switch
- Take out the upper filter and clean it
- Take out the cover plates
- Remove a possible grease or oil layer
- Decant the BIO-CIRCLE Liquid into clean suitable container (in case it will be reused)
- Remove the sediment from the tank bottom via the drain valve
- Remove rough soilings by hand
- Clean the intake filter of the pump
- Clean thoroughly the tank, the heating element and the temperature- and level-controlling sensors.
- The system of collectors should also be cleaned and checked regularly. The best way to do this is to unscrew the caps on both sides of the pipe and to turn on the pump for a little while. Thus the pipe is rinsed through. If the system of collectors is with nozzles – remove the nozzles and clean them with pressurised air.

**Caution: Regularly clean the openings with pin  $\varnothing$  2mm as the well-cleaned openings are a must for the optimum cleaning results.**

- **Never use** high pressure for cleaning this machine and its separate parts. **Never use** detergents containing **chlorine** when cleaning the stainless parts.
- Switch on the electric supply.
- Check the machine for correct function.

Now the machine is ready for work.

**Caution: After cleaning always check all machine parts for possible damages, correct functioning and good sealing.**

## 10.2. *Maintenance and Checking Plan*

The relevant plan for control and maintenance should be observed for each machine. If the machine is not cleaned and oiled regularly the machine will not function properly and may break down.

The control and maintenance plan specified underneath is only advisable, not obligatory.

The obligatory plan for maintenance and control must be made by the machine user, according to the functioning, working hours and the level of contamination of the details to be washed.

Maintenance / Control	Recommended interval
Filter basket and cover iron sheets cleaning	Daily
Liquid level checking	Daily
Lubrication of the bearing of the rotating grid (observe the instructions for lubrication)	Monthly
Exchange of BIO-CRCLE Liquid	Yearly
Machine cleaning, pump and intake filter check	Yearly
Pipes flushing	Yearly
System of spray nozzles	Yearly

**Caution: Any and all repairs and maintenance of the equipment are to be done only by the qualified and authorized personnel!**

**Caution: During all and any repair and maintenance work, the machine must be SWITCHED OFF FROM THE MAIN SWITCH or disconnected from the power supply and ensured against incompetent or accidental activation.**

## 10.3. *Instructions for Lubricating the Bearing of the Rotating Grid*

For extra lubrication use lithium soap lubricant, penetration class 3. The lubricant should not penetrate too quickly as the sealings may get damaged.

For the BIO-CRCLE Turbo we recommend the following types of lubricants (the sequence is of no importance):

<b>ARAL:</b>	<b>Fett FD 0</b>
<b>BP:</b>	<b>Energrease HT EP 00</b>
<b>MOBIL:</b>	<b>Gargoylefett 1200 W</b>
<b>SHELL:</b>	<b>Fließfett H</b>
<b>TEXACO:</b>	<b>Marfak 00</b>



## 11. Decommissioning and Commissioning

If the BIO-CRCLE Turbo needs to be decommissioned for a prolonged period of time, e.g. when it is to be transported, proceed as follows:

### Decommissioning of the equipment

The machine is decommissioned as follows:

- Press red button "PROGRAM STOP"
- Switch off the electric supply from the main switch
- Take out the upper filter and clean it
- Take out the cover plates
- Remove a possible grease or oil layer
- Decant the BIO-CRCLE Liquid into clean suitable container (in case it will be reused)
- Remove the sediment from the tank bottom via the drain valve
- Clean the machine as described in item "**Cleaning**".

If the BIO-CRCLE Turbo is to be transported, the decommissioning procedure may only be performed by a qualified expert.

Observe the refuse disposal information of the detergent manufacturer.

**Caution: In case of low ambient temperature, the decommissioning of the machine for a prolonged period should be performed only after the water has been entirely removed from all the pipes and the pump.**

### Commissioning

To commission the BIO-CRCLE Turbo again, follow the instructions in chapter 4 "Start up".

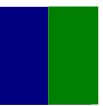


## 12. Troubleshooting

Fault	Cause	Remedy
1. Machine does not start	Main switch 1S1 not turned on  Automatic circuit-breaker QF1, QF2 or motor protection QM1 switched off	Turn on main switch 1S1  Switch on automatic circuit-breaker QF1, QF2, QM1 or QM2
2. Heater not heating	Automatic circuit breaker QF1 switched off  Low level of the washing solution  Blown heater	Switch on automatic circuit breaker QF1  Fill the tank  Replace heater
3. The rotating grid and basket do not start rotating when the machine is switched on	The rotating basket is incorrectly loaded with details    Blown fuse F2	Check for details sticking out of the rotating basket  Check whether the load is distributed evenly on the whole work surface of the rotating basket.  Replace fuse F2
4. Air compressor does not work	Main switch 1S1 not turned on  Blown fuse F1  Air compressor defect	Turn on main switch 1S1  Replace fuse F1  Replace air compressor
5. Lights in the washing chamber do not light	Halogen lamp HL5 or HL6 defect  Blown fuse F3  Blown transformer TC2	Change lamp  Replace fuse F3  Replace transformer TC2
6. The washing jet nozzles do not spray	Blocked nozzles	Clean or replace nozzles
7. The pump does not work	Automatic circuit-breaker QF1, QF2 or motor protection QM1, QM2 switched off  Broken electric lock of lid  Low level of the washing solution  Pump defect	Switch on automatic circuit-breaker QF1, QF2 or motor protection QM1, QM2  Check / replace electric lock  Fill the tank  Replace pump

In case of failures, defects or ordering of spare parts, please supply following data:  
Article-No. and serial no. of the BIO-CRCLE Turbo, you will find these on the rating plate of the machine or on the first side of this manual.

In case of misuse or use not according to the intended purpose, it may cause injuries of the personnel or breakdown of the machine.

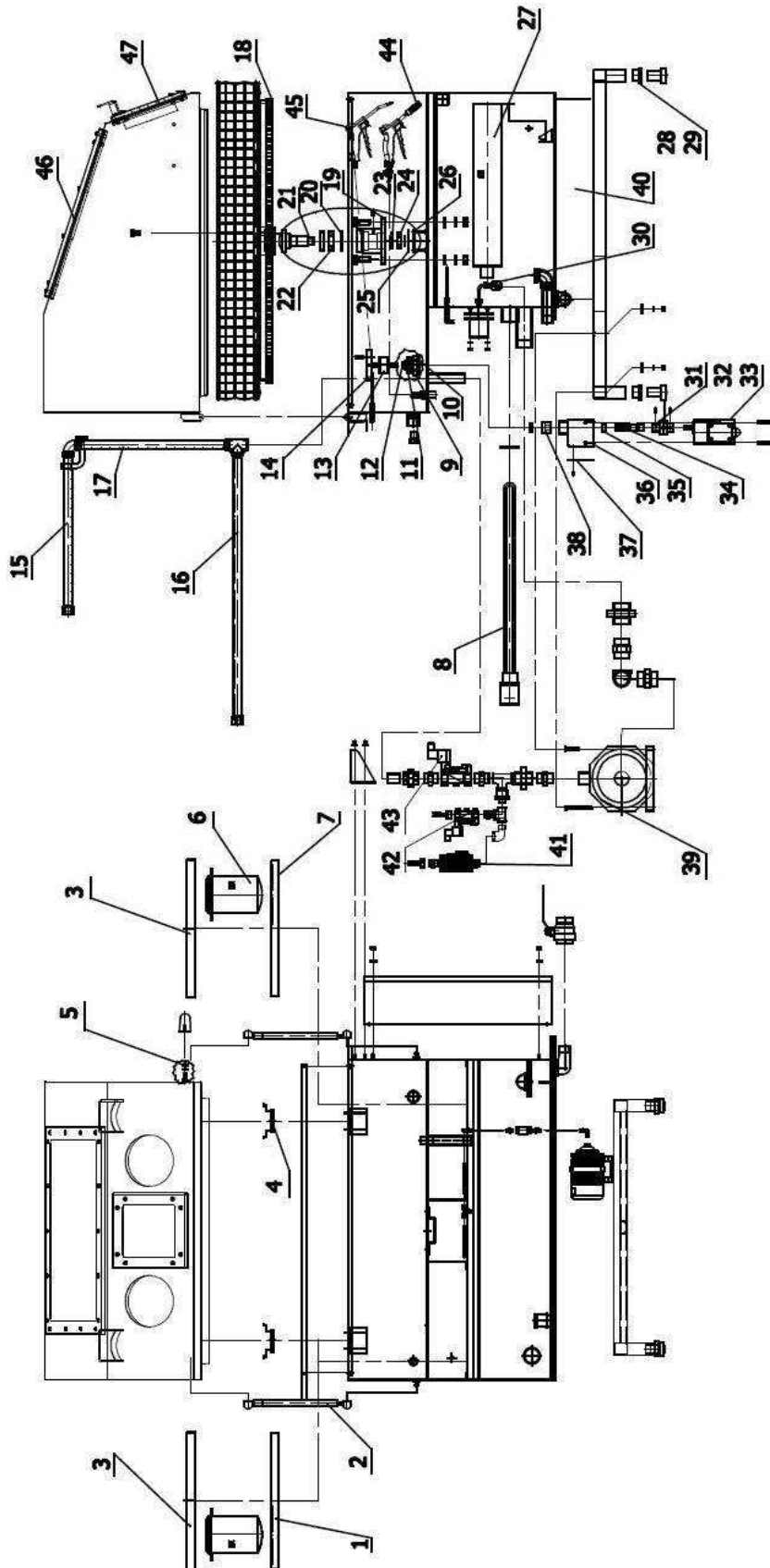


## 13. Technical Data

### 13.1. General Information

Approximate general dimensions	BC Turbo 800	BC Turbo 1000	BC Turbo 1200
Total width:	1060 mm	1250 mm	1470 mm
Total depth:	1140 mm	1340 mm	1575 mm
Height with closed lid:	1560 mm	1560 mm	1800 mm
Height with opened lid:	1965 mm	1965 mm	2300 mm
Lid opening angle:	60-65°	60-65°	60-65°
Loading height (upper edge of washing chamber):	1010 mm	1010 mm	1000 mm
Internal basket diameter, approximately:	775 mm	975 mm	1175 mm
Basket height:	115 mm	115 mm	115 mm
Max. pay height:	400 mm	450 mm	650 mm
Max. workload:	150 kg	250 kg	350 kg
Capacity of washing solution tank:	160 l.	240 l.	385 l.
Total weight of the washing machine with empty tank, payload and additional equipment:	ca. 330 kg	ca. 380 kg	ca. 430 kg
<b>Power supply</b>			
Electric connection without extra equipment:	5.5 kW	8.5 kW	9 kW
Power supply, three-phase current:	400 V	400 V	400 V
Frequency:	50 Hz	50 Hz	50 Hz
Cable to the electrical network:	5G x 4 mm <sup>2</sup>	5G x 4 mm <sup>2</sup>	5G x 4 mm <sup>2</sup>
<b>Air supply</b>			
Air hose Ø10:	max. 6 bar	max. 6 bar	Max. 6 bar
<b>Connection</b>			
Ball valve on the washing solution tank:	1"	1"	1"
<b>Nozzle system</b>			
Number of openings (nozzles):	48 pcs.	48 pcs.	54 pcs.
Approx. spraying pressure:	4 bar	4 bar	4 bar
<b>Pump technical data:</b>			
Debit:	4,8 m <sup>3</sup> /h	12 m <sup>3</sup> /h	12 m <sup>3</sup> /h
Pumping head:	27 mH <sub>2</sub> O	38 mH <sub>2</sub> O	38 mH <sub>2</sub> O
Pump motor:	0,55 kW	2,2 kW	2,2 kW
<b>Electric heating:</b>			
Electric heating in the washing tank:	4,5 kW	6 kW	6 kW
Processing temperature (approx. value):	50°C +/- 2°C	50°C +/- 2°C	50°C +/- 2°C

### 13.2. Spare parts drawing



### 13.3. List of the Mechanical Spare Parts

Pos.	description	quantity	BC Turbo 800	BC Turbo 1000	BC Turbo 1200
1	sliding lid right side	1			
2	gas spring	2	G44927	G12780B	G12781B
3	separating lid	2			
4	hinge axis	2			
5	Lid hinge	2			
6	Filter for tank cover 1,0 µm	2	G12617B	G12617B	G12617B
7	sliding lid left side	1			
8	Heating unit	1	G12672B	G12673B	G12674B
9	nut 1/4"	1	G45327	G45327	G45327
10	flat gasket	1	G45427	G45427	G45427
11	cover plate	1	G12615B	G12615B	G12615B
12	Shaft seal / friction gear Ø 16x2,5mm	1	G12710B	G12710B	G12710B
13	rubber buffer 70 x 30 mm, M10 x 28	1	G12704B	G12704B	G12704B
14	gear	1	G12706B	G12706B	G12706B
15	flow-through brush	1	G42627	G42627	G42627
16	Compressed air gun, blue	1	G42427	G42427	G42427
17/18	spraying pipe 3/4 "	1	G40627B	G40627B	G40627B
19	Diaphragm compressor 24V	1	G42927	G42927	G42927
20	clamp DU 100	1	G45527	G45527	G45527
21	valve	1			
22	Washer window small 240 x 230 mm Washer window big 655 x 555 mm	1	G43227 G43127	G43227 G43127	G43227 G43127
23	Adhesive gasket 30 x 4 mm small 1000 mm, big 2600 mm	1	G40107	G40107	G40107
24	Door safety switch XCSZ12	2	G12715B	G12715B	G12715B
25	Rotating basket	1	G12682B	G12683B	G12684B
26	bearing	1	G12730B	G12730B	G12730B
27	Cover plate	1	G12719B	G12719B	G12719B
28	rotating basket shaft	1			
29	ball bearing 7206 B	1	G12751B	G12751B	G12751B
30	cover plate	1			
31	ball bearing W 6205/2Z	1	G12752B	G12752B	G12752B
32	flat gasket	1			
33	cap for bearing	1			

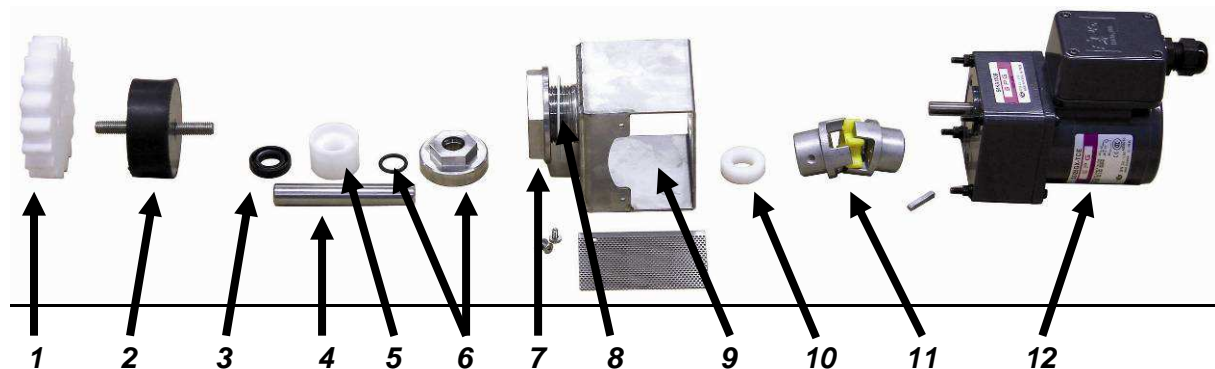
34	intake filter	1	G12702B	G12717B	G12721B
35	screw foot, M30, PVC	8	G43527	G43527	G43527
36	screw foot, 40× 40 mm, PVC	8			
37	level sensor, LCSFL - S 1.A.1SL 1/8"	1	G12707B	G12707B	G12707B
38	box for level sensor	1			
39	Claw coupling	1	G12711B	G12711B	G12711B
	Star-shaped insert for coupling	1	G12712B	G12712B	G12712B
40	gear Type S8KA 150B, i = 150:1	1	G12705B	G12705B	G12705B
41	motor, Type S8125 GX-TCE				
42	axis	1	G12613B	G12613B	G12613B
43	threaded spacer	1	G43627	G43627	G43627
44	gear case	1	G12618B	G12618B	G12618B
45	cover plate	1			
46	bearing bushing	1	G12614B	G12614B	G12614B
47	pump	1	G12676B	G12677B	G12678B
	Air sprinkler VA with ¼" fitting	1	G42327	G42327	G42327
	Magnetic Valve ½" 24V AC	1	G43827	G43827	G43827
	Magnetic Valve 1" 24V AC	1	G43927	G43927	G43927
	Flow controller, plastic ½"	1	G44027	G44027	G44027
	Gloves black	1	G42207	G42207	G42207
	Vario nozzle without quick-action coupling	1	G42527	G42527	G42527
	Coupling nipple 1/2" VA for BC Turbo Edelstahl	1	G42727	G42727	G42727
	Hose 1,2m 1/2" for flow through brush	1	G44127	G44127	G44127
	Air hose 8 x 1,0 , TF, 1,2 m	1	G44227	G44227	G44227
	<i>Lamp glass D=86 mm T=4 mm</i>	2	G44572	G44572	G44572
	<i>Sealing for lamp glass</i>	2	G44527	G44527	G44527
	<i>Bulb for lamp</i>	2	G44627	G44627	G44627
	Cover seal	1	G12736B	G12697B	G12698B
	Mechanical seal for pump	1	G12738B	G12741B	G12742B
	Handhold	1	G12703B	G12703B	G12703B
	Fastener with clamps	1	G12713B	G12713B	G12713B
	Gun for flow through brush	1	G46427	G46427	G46427



### **Spare parts control panel** (Picture on page 12)

Pos	Description	Quantity	BC Turbo
1	set up of rotating basket	1	G12701B
2	program <b>Start</b>	1	G43327
3	program <b>Stop</b>	1	G43327
4	control-light heater	1	G45027
5	control-light level	1	G45127
6	set up timer	1	G12739B
7	shift automatic or manual use	1	G45227
8	control-light controller	1	G45027
9	main power switch	1	G12714B
10	temperature regulation	1	G44327

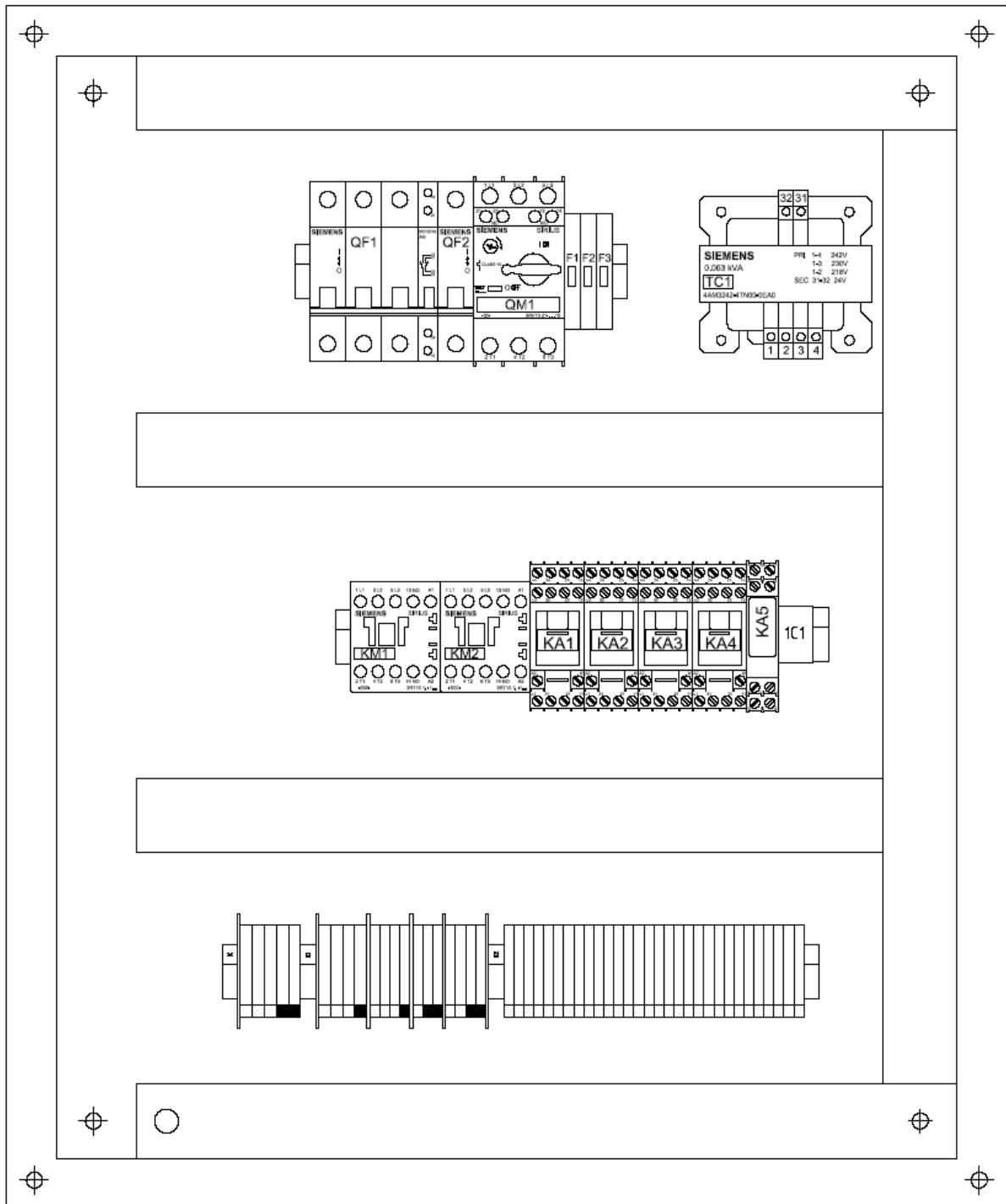
### **Friction gear motor**



Pos	Description	Quantity	BC Turbo 800	BC Turbo 1000	BC Turbo 1200
1	Friction wheel plastic	1	G12706B	G12706B	G12706B
2	Rubber buffer diameter: 70 mm, M10x28	1	G12704B	G12704B	G12704B
3	Shaft seal / friction gear	1	G12710B	G12710B	G12710B
4	Drive shaft	1	G12613B	G12613B	G12613B
5	Plastic sleeve for Drive shaft	1	G12614B	G12614B	G12614B
6	Cover plate VA with O-Ring	1	G12615B	G12615B	G12615B
7	Counter nut	1	G45327	G45327	G45327
8	Gasket	1	G45427	G45427	G45427
9	Drive shaft: Corpus VA for drive shaft	1	G12618B	G12618B	G12618B
10	Spacer disc	1	G43627	G43627	G43627
11	Claw coupling	1	G12711B	G12711B	G12711B
12	gear Type S8KA 150B, i = 150:1 motor, Type S8125 GX-TCE	1	G12705B	G12705B	G12705B



### 13.4. Wiring Diagram of the control cabinet



**All wiring diagrams are placed in the control cabinet of your machine!**



## 14. Environmental Protection

Here you will find tips on how to dispose of components from the BIO-CIRCLE Turbo in an environmentally friendly manner.

<u>Description</u>	<u>Material</u>	<u>Waste Disposal</u>
Machine corpus	Stainless steel	Scrap
Electric cables	Copper	Special treatment
Internal piping	Stainless steel	Scrap
Positioning feet	Plastic	Recycling
Motor corpus	Aluminium	Recycling
Valves	Brass	Recycling

## 15. Liability

The machine construction is based on the latest technology and has been performed in accordance with all safety regulations.

It remains our right to bring further changes to the machine at any time which are to the benefit of technical and ecological progress, without entering into any obligations regarding previous deliveries.

With the greatest of pleasures we remain at your disposal for further questions or explanations concerning the operation, guarantee or spare parts for the BIO-CIRCLE Turbo. Please, do not hesitate to contact Bio-Circle Surface Technology GmbH if necessary.



## 16. Warranty

The warranty, specified in the delivery conditions, is valid only if:

- The maintenance and servicing of the BIO-CIRCLE Turbo are implemented according to the instructions in this manual.
- All of the repairs are made by our specialized personnel or with our prior written agreement.
- Any and all changes to the machine are made with our written authorization.
- Only the specified detergent are used.
- The BIO-CIRCLE Turbo is used only in accordance with its purpose.
- All wearable parts are excluded from the warranty terms.

When the machine is delivered check the following:

- Transport damages. In case of such, contact the shipper immediately to prepare a damage protocol.
- If the delivered products correspond to the goods described in the bill of lading.

In case of discrepancies, contact Bio-Circle Surface Technology GmbH immediately

## 17. Contact Information

If you require help, or wish to order any spare parts for the machine, please be sure to state the article and serial number of the purchased washing machine. These are stated on a sign mounted on the washing machine and on the front page of this instruction manual.

The incompetent and improper use of the washing machine may lead to breakdowns of the machine or injuries of people.

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