Instruction Manual

HOTWATER PARTS WASHING MACHINE

Article number:

Serial number:

Subject to technical modifications. We assume no liability for misprints.

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TABLE OF CONTENTS

MAINTENANCE INSTRUCTIONS
Daily
Weekly
Monthly
Lubrication instructions
SOLVING BREAKDOWNS
ORDERING SPARE PARTS
SPARE PARTS LIST

INTRODUCTION:

This Operations and User manual contains all Information regarding Safety regulations, Hazardous advice, Setup and Installation, first time startup and handling of unit, as well as general Maintenance and lubrication instructions.
The selectively chosen content is to help the operator with the efficient handling of the Hotwater Parts Washing Machine and to extend the live span of the unit for many years by following the proper maintenance guidelines.
It may happen that some of the pictures and descriptions differ from the delivered Hotwater Parts Washing Machine because of the update cycle of this manual. Custom editions and user variations to the standard unit are not considered and are not scope of this manual.
Prior of any operation with the new unit, it is advisable that the operating staff and the supervisor are getting acquainted with this manual.
For any further information on specific technical details you can directly contact our head office or the main distributor in your region.

The manufacturer has the right to make changes to this manual without prior notice and takes no responsibility for any mistakes and the completeness of this manual.

Bio-Circle Surface Technology GmbH

Department: Documentation
2012

EG-Konformitätserklärung

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

CE Declaration of Conformity

according to the EC Machinery Directive 98/37/EC, appendix II A

Déclaration de conformité CE

au regard de la directive européenne relative aux machines 98/37/CE, annexe II A

Dichiarazione di conformità CE

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

Wir / We / Nous / Noi: Bio-Circle Surface Technology GmbH
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erklären hiermit, dass die Produkte / declare that the products / déclarons que les produits / dichiariamo che i prodotti

Heißwasser-Teilewaschmaschine (HTW-II 800, 1000, 1200)

folgenden einschlägigen Bestimmungen entsprechen / comply with the following directives / sont conformes aux dispositions des directives des produits / sono conformi con le relative disposizioni delle direttive CE

Richtlinie / directive / directive / direttiva:

2006/42/EG (EEC)
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:
Normes nationales, directives et spécifications appliquées, en particulier:
Norme nazionali, direttive e specifiche applicate, in particolare:

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The declaration loses its validity if the device is not used as intended or if changes in the product are made that are not discussed with the manufacturer.
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La dichiarazione perde la sua validità quando il prodotto non è utilizzato come previsto e in caso di modifiche non concordate con il costruttore.

Für die Zusammenstellung der technischen Unterlagen ist bevollmächtigt:
Institution authorized for compiling the technical documents:
Institution autorisée à constituer le dossier technique :
Istituzione autorizzata a mettere insieme i documenti tecnici:
Bio-Circle Surface Technology GmbH, Berensweg 200, D-33334 Gütersloh

Gütersloh, Oktober/October/octobre/ottobre 2014 **Birgit Große (Managing Director)**

SAFETY INSTRUCTIONS

01 The Machine is build following the newest technical and Safety standards recognized by the International Mechanical Engineering Association. As to the remaining danger upon operating such equipment trough a single person and / or personnel to bodily Injuries and / or lives as such, and damages to other equipment within the vicinity and the Hotwater Parts Washing Machine itself, it is important to operate such Machine only in perfectly technical condition and according to the Instructions in the operating Manual. Further more, it is important to remedy any errors that may have a direct or indirect effect on any of the Safety guidelines and may occur during the operation of the cleaning machine.

02 Damages that may result because of improper operation of the Hotwater Parts Washing Machine and / or by not following the guidelines set forth in the operating Manual are not covered by any kind of Warranty from the Manufacturer. The usage of the Hotwater Parts Washing Machine is exactly defined within this manual including all Maintenance guidelines which are an integral part of the proper operation. All risks to damages and / or Injuries that may accrue, not following those guidelines and Instructions are within the users and / or Customers scope and responsibility.

03 We, the Manufacturer of the Hotwater Parts Washing Machine assume, that only selectively chosen operating personnel and / or persons will handle the operation of the Cleaning Machine. Fore ease of compliance to the Safety Regulations only such personnel and /or person should be within the direct vicinity of the Cleaning Machine, to lower the Risk of any harm to others.

04 Any Person and / or Personnel that are in training for the operation of the Hotwater Parts Washing Machine should always be under supervision, prior of operating and handling the Hotwater Parts Washing Machine themselves.

05 The operator shall read all instructions and guidelines in the Operating and Users Manual and study them carefully. For later reference the Manual should always be close to the Cleaning Machine, like the electrical compartment or any other suitable place.

06 Personnel and / or Person that is appointed to operate the Hotwater Parts Washing Machine shall be required to read the Instruction Manual prior of performing any work with the cleaning machine; especially to study the chapter about Safety Regulations and Hazardous advice and to prepare for any kind of operation with or on the Cleaning Machine. To study the manual while operating the Hotwater Parts Washing Machine would be considered to late, as it could cause further Hazardous situations and / or conditions. A supervisor should check from time to time the knowledge of the operating Stuff in regard to the use and handling as well as the Maintenance of the Cleaning Machine.

07 All labels and plates that are attached to the Hotwater Parts Washing Machine like Safety advice, Hazard advice, Maintenance advice etc. shall be acknowledged.

08 At a minimum of one time per shift, the Hotwater Parts Washing Machine should be checked for damages and defects visible from the outside of the Cleaning Machine. Any changes to the structure and / or behavior of the Hotwater Parts Washing Machine should be noted on an operating (performance) paper and submitted immediately to a Supervisor and / or a Person in charge of the Plant.

09 The main electrical power connection for the Hotwater Parts Washing Machine to the Electrical Compartment has to be in accordance to the specifications of the Hotwater Parts Washing Machine that is visible on the Model plate. Regional regulation set forth by the Electricity Company or any other Department need to be considered and complied by.

10 Main Electrical power connection to the Electric cabinet shall be placed in suitable floor duct system etc. and should be in compliance with local regulations and conform with the UVV – Accident Prevention Regulations according to general Electrical Cabling.

11 The main power switch is to be turned of and secured by a lock for all Maintenance work on the Cleaning Machine. In addition for Cleaning Machines with pneumatically operated Lift-Door the main cutoff valve for the air supply needs to be closed.

12 When working inside the Hotwater Parts Washing Machine use only Battery operated lightning.

13 When performing Maintenance and Repair works use suitable clothing.

14 When preparing the Wash and Rinse medium for cleaning operation (adding the relevant Detergents, Rust Inhibitors, Preservation substances etc) follow the main instructions provided by the Manufacturer of such. (Safety and Awareness Instructions and Guidelines regarding clothing, skin and eye protection etc).

15 Performing Maintenance and / or cleaning work on the outside of the Hotwater Parts Washing Machine it is not allowed to use any high pressure Aquarius cleaning devices.

16 When opening and removing Safety covers electrical conducting parts can be exposed and could cause next to other Risks Bodily harm by means of an Electrical Shock!

17 Qualified Electricians or persons that are under supervision of such may only do maintenance and Repair work on the electrical components of the Cleaning Machine.

18 Structural and / or Technical changes that are performed by the Customer relieves the Manufacturer of all constituted Warranty and Guaranty obligations. Exceptions to these terms are changes that are in compliance with the Manufacturer and confirmed in writing prior of implementation.

19 Maintenance and repair work on the supply Pumps for the Wash cycle may only be done by qualified Service Technicians of the Manufacturer of Pump (KSB; GRUNDFOS or VOGEL etc.). Manufacturer is indicated on the product Model Plate!

20 When handling different kinds of Oil, Grease and other chemical substances always read the product description and handling information!

SAFETY INSTRUCTION – MECHANICAL PARTS:

Safety Instruction: **GENERAL**

For better recognition of Hazardous Parts and Zones, the Hotwater Parts Washing Machine has Labels following the International standards and Symbols according to DIN 4844. The different Symbols refer to the danger at different zones and correspond to the kind of danger expected and precautions that should be considered. In some cases it may happened, that not all of the listed Labels are present on the Cleaning Machine, but should still be read and recognized!

Forklift Prohibited (When tank is filled)

Acid Substances

Harmful and Irritating Substance

Eye Protection Required

Gloves Required

Attention Slip Danger

Attention Automatic Start

Keep Out

Attention Trip Danger

Hazard Advice: **SUPERVISOR OPERATOR**

The Manufacturer assumes that only selected operating Personnel will work with the Hotwater Parts Washing Machine and those shall be trained to the safety regulations and operating instructions. To lower the risk of Injuries any other Personnel not involved in the operating process should stay outside the immediate periphery of the Cleaning Machine.

Hazard Advice: **OPERATING PESONNEL**

The basic outfit for the Operator shall include proper Foot Wear (Safety Shoes) that are slip resistant, water proofed Safety Clothing, proper Eye protection and work Gloves. It is also recommended to have running freshwater with sink available close by for flushing purposes, in case some of the Wash medium gets in contact with skin or Eyes. **Important, read First Aid instruction of the chemicals being used**.

The operating Stuff of the Hotwater Parts Washing Machine shall be present during the introduction and training of the Hotwater Parts Washing Machine for proper operation, and to acquire the necessary information on Handlings and Safety Instructions from the Manufacturer or his representatives. In case that some one cannot attend this training they still can study and train them using the Operating and Instruction Manual.

Hazard Advice: **DETERGENT AND CHEMICALS FOR TREATMENT MEDIUM**

After the Hotwater Parts Washing Machine is properly setup and installed and all piping and other connections are completed including the electrical connection to the electrical Cabinet the main power switch is put to ON (1) position. Now the tank for the Wash medium can be filled either manually or with the integrated Level control system, depending on the chosen options, to the working level settings. When the working water level is reached the electrical heating system can be turned on to heat up the wash medium to approximately 70 °C.

As soon as the treatment medium for the wash cycle has reached the temperature settings you can start with the preparation of the wash medium. Therefore it is necessary to lift the maintenance lids from the wash tank. Now you can add detergents, rust prohibitory chemicals, and conservation chemicals that are suitable for Spray Wash Units. The amount to be added depends on grade of dirt and other criteria's. For most parts 1,5 – 3% of the tank volume should be more than sufficient

It is important prior of adding the Chemicals to the wash tank to read the product information sheet regarding the Safety regulations, to take necessary steps in regard of clothing, eye protection, gloves etc. The chemicals can be either liquid or solid and their behavior may differ in regard to the handling options. The operating Personnel will have to find a safe and solid footing when adding the chemical from its container into the wash and / or rinse tank.

Especially when adding solid Chemical, it is important to add them in smaller quantities approximately 1 – 2 kg at each step, watching the behavior of the wash medium absorbing those chemicals and not building clumps.

When the process of adding the chemicals is finished, and the concentration thereof is reached, than the maintenance lids of the wash tank needs to be closed. Now the Hotwater Parts Washing Machine is ready for its operation after inserting the wash load.

Hazard Advice: **MACHINE COVER**

The dimension and weight of the manually operated machine cover changes according to the dimension of the equipment. (opening for loading or unloading

of equipment) To keep standard limits for operating staff, machine cover is supplied with gas shocks for easy operation. To guarantee the supporting function of gas shocks during opening and closing, it is necessary to observe working conditions. Damaged gas shocks have to be replaced immediately.

Hazard Advice: **STEAM EXHAUST SYSTEM**

The Hotwater Parts Washing Machine can additionally be supplied with a Steam Exhaust system that is available as Accessory. In case of such Steam exhaust system, the customer needs to have an existing exhaust duct in place, and is responsible for the connection to the cleaning machine. Any connection between the Duct system and the outlet of the Steam exhaust is to seal with proper sealing material to prevent any condensation dripping on to the roof of the Hotwater Parts Washing Machine and causing eventual corrosion.

The functionality of the Steam exhaust system is to extract prior of opening the Lid any remaining steam out of the treatment chamber, and exhausting them through the Duct system into the open Atmosphere.

ATTENTION - ATTENTION - ATTENTION
The Steam exhaust system shall not be operated without a connected Duct line since it would be a Safety Hazard and some one could riche into the opening of the Exhaust outlet.

Warranty Issues regarding the Steam Exhaust System and corrosion are pending on proper Installation and may be disqualified in case of misconduct.

Hazard Advice: **ANTIFREEZ PROTECTION:**

If the Hotwater Parts Washing Machine is operated in an environment where the temperature can get below 0 °C (like outside, unheated workshop etc.) measures need to be taken to the wash medium (add suitable Antifreeze etc). Any damages resulting out of freezing are not covered by the warranty.

Hazard Advice: **NOT ALLOWED CLEANING AGENTS:**

This Hotwater Parts Washing Machine is only suitable to work with waqterbased based cleaning agents with. (pH levels 9 – 12). This means no other cleaning agent like petrol based chemicals, degreasers and others that fall under the category A I, A II and A III are allowed to be used within this cleaning machine.
In case there are still detergents being used that are not within the scope of our Hotwater Parts Washing Machine you will loose ay claims on warranty and liability.
As ***special petrol*** cleaner determent are cleaning agents that consist mainly out of saturated carbon hydrate with 5 (five) to 8 (eight) carbon atoms and a flash point at and below 21 °C. (Hazard Classification A I / VbF) (Room temperature is enough to reach flash point) not suitable for metal parts cleaning environments.
Same for petrol based agents with a flash point of 21 °C to 55 °C (considered Hazard Classification A II / VbF) and petrol based agents with a flash point of 55 °C to 100 °C (considered Hazard Classification A III / VbF)

PRIOR OF USING THE HOTWATER PARTS WASHING MACHINE

UNIT TRANSPORT
The Hotwater Parts Washing Machine shall only be lifted manually or with a suitable forklift. Make sure that there is a certain safety distance between the forklift unit and the Hotwater Parts Washing Machine to avoid possible damages. Furthermore, you have to assure that the forks have the correct length to move the equipment. (*Attention, drain line is placed in center position on bottom*).

UNPACKING AND CHECK FOR TRANSPORT DAMAGES
After delivery unpack the machine and accessories and check entire unit for any damages and completeness of ordered package.

ATTENTION – ATTENTION - ATTENTION
Damages must be reported to the forwarding agent, the shipping company, the insurance company and the manufacturer immediately.
(***Within 24 hours after delivery!!***)

INSTALLATION
The cleaning equipment has to be installed on leveled ground supporting the weight of the unit including any applied load. Now attaché any accessories to the unit and connect the main water supply and drain line. Last attaché your power connection to get your unit ready for operation.

PRIOR TO YOUR FIRST STARTUP
Do not operate the cleaning equipment until you have read the operating instructions carefully, and you are sure that the equipment is correctly connected.

DRAIN LINE
The tank of the Hotwater Parts Washing Machine is fitted with a 1” ball valve to connect to a drain line. It is to assure that none of the saturated wash medium could enter the main sure system at any time.

ATTENTION – ATTENTION - ATTENTION
Regulations to waste water treatment have to be in accordance with the local laws and Authorities and are entirely the responsibility of the customer!

MAIN WATER CONNECTION FOR AUTOMATIC LEVEL CONTROL
The connecting water line should be fitted with a cutoff valve ahead of the unit’s connection to allow eventual maintenance and repair work on the unit. (In case of clogged solenoid valve)

TYPE PLATE
The machine plate is placed on the front of the electrical compartment and contains all information about manufacturer, type, serial number and technical data about electrical wiring (voltage, frequency, kW and A - see also chapter: electrical wiring with reference to electrical safety instructions and local laws of (EVV) electric supplier instructions).

ELECTRICAL CONNECTIONS
All electrical components are completely installed by the manufacturer and ready for supply connection at your facility by a qualified electrician according to your local regulations and safety instructions.
(All electrical requirements can be read on the machine plate)

ATTENTION! ATTENTION! ATTENTION!
MAKE SURE THAT BRAKER FUSE AND SUPPLY CABLES ARE CONFORM TO DIMENSION OF EQUIPMENT
(Regulations of local electric suppliers)
MAKE SURE THAT MOTORS ROTATE IN PROPER DIRECTION
(See red rotation arrows)
PUMPS MAY ONLY RUN BRIEFLY WITHOUT WATER (max. 3 sec.)

OPERATING AND USER INSTRUCTIONS

After the completed setup of the Bio-Circle Surface Technology Hotwater Parts Washing Machine and the installation of all Fittings, Exhaust Duct lines, Compressed Air supply line and Electrical Wiring to the electrical cabinet, the main power switch can be turned on. (Pos 1) Depending on the outfit you have chosen with your Hotwater Parts Washing Machine the filling of the tank can start either by means of a hose, or with an integrated level control system that is connected to a fresh water supply. As soon as the water level reaches the optical full mark, (bottom tank covers) or the setting adjusted by the level control system, the electrical heating unit can be turned on. The heating system will heat up the wash medium to the preset temperature on the thermostat (0 - 70°C) depending on the settings. With proper operating temperature, start adding detergents and other chemicals in small quantities while turning on the Pump for short periods of time to saturate the wash medium equally with required chemical concentration for your cleaning operation.
The Hotwater Parts Washing Machine operates as Spray-Wash-Unit with a closed spraying system. As such it is equipped wit a 360° rotating turntable inside the wash chamber where the wash parts are placed into a basket and sprayed by the hot wash medium from all sides. A low-pressure pump does the transport of the wash medium from the Tanks to the spray nozzle system. The returning wash medium passes through two removable filter baskets back into the medium tank. (Filter baskets with ø 2 mm hole perforation removing all larger particles).
The temperature setting for the wash cycle depends on the guidelines for the used detergent (approx. 70 °C) adjustable from 0 - 70 °C and degree of dirt on the wash parts. The settings and the current temperature of the wash medium are displayed on the temperature gage on the control panel. The heat up cycle for the wash medium with a cold machine is approximately 1.5 – 2 hours. The washing machine is ready for operation as soon as the treatment temperature is reached.

For loading and unloading the washing machine with wash parts open the top lid manually. Push upper nozzle pipe backward to the side and start loading the free wash basket with wash parts. On the wash part placement it is important to watch for good visibility of all surfaces toward the spray pattern as well as an equal placement inside the wash basket. With the wash basket fully loaded pull back the upper nozzle pipe to its center position, check that none of the parts extend beyond the wash basket and close the top lid. Now set the wash cycle length on the timer (Accessory) on the control panel (electrical cabinet) and start the wash process. Treatment cycle length depends on grade, quantity and type of dirt and with an average of (5 – 8 min).

The drive system for the Turntable consists of a geared motor that is placed on the backside of the cleaning machine, a shaft that leads up into the treatment chamber with a wave shaped gear wheel engaging with the turntable. With the flexible mounting of the drive unit the geared motor applies a smooth torque action during startup. The drive wheel itself is made of a special PVC material for long lasting durations. During the rotation of the Turntable the nozzle pipe system sprays hot treatment medium (ca. 70 °C) from three sides (top, bottom and side) on to the wash parts, cleaning them effectively.

As soon as the preset treatment cycle for the wash process is over the wash Pump and the turntable drive is cutoff and the steam exhaust system (Accessory) starts to extract the remaining steam vapors inside the treatment chamber (cycle time 0 – 3 min).

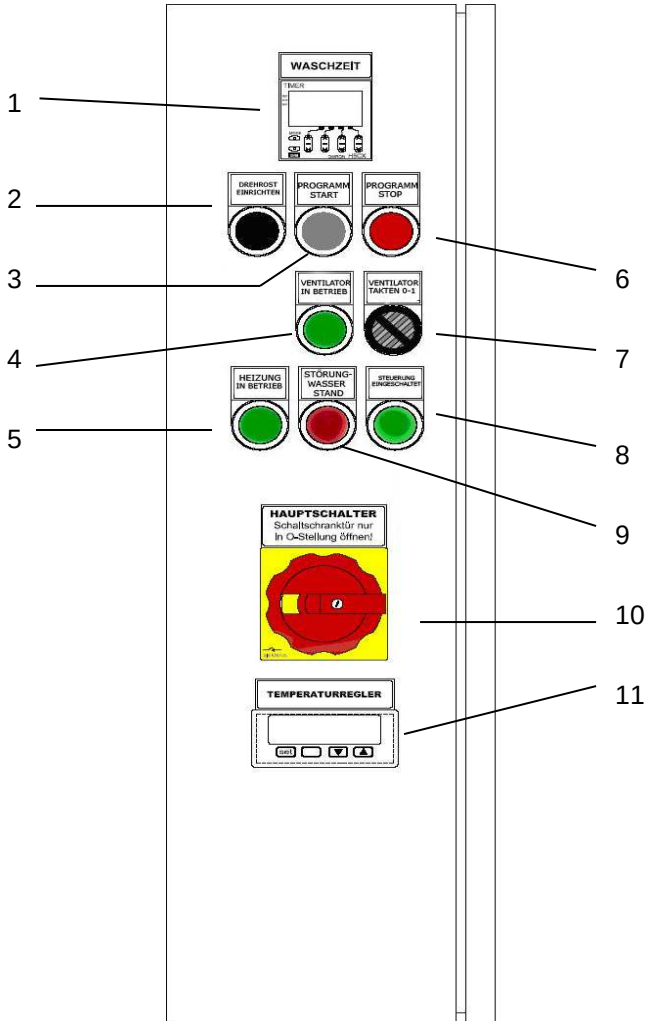
After finishing steam extraction, open the top lid and push the upper nozzle pipe toward the right hand side. Remove the washed parts from the wash basket and reload with new parts. Now the Hotwater Parts Washing Machine is ready for a new wash cycle.
The removed parts capture enough heat during the wash cycle to dry up rather quickly.

OPERATING CONDITIONS IN STEPS

(S H O R T D E S C R I P T I O N)

- Open Top Lid manually
- Push upper nozzle pipe to the right hand side
- Load basket with the items to be cleaned
- Pull upper nozzle pipe into middle position
- Check clearance of basket and turntable (visual)
- Adjust wash temperature
- Adjust wash cycle time on timer (Accessory)
- Start cleaning cycle
- Wash-pump cuts off after cycle time
- Steam extraction initiates (Accessory)
- Open Top Lid
- Unload cleaned parts
- The equipment is ready for next wash cycle

Control Panel



	Spare parts		**ORDER NUMBER**
1	Timer digital 0-60 min.	1	G12739B
2	Push button for rotatin of the basket	1	G43327
3	Push button for program start	1	
4	Control light ventilation	1	G45027
5	Control light heating	1	G45027
6	Push button for program stop	1	G43327
7	Switch for ventilation	1	G45227
8	Control light for control panel	1	G45027
9	Control light for level	1	G45127
10	Main switch	1	G12714B
11	Electronic thermostat EVK 401, 230V Thermostat incl. turning knob (Standard)	1 1	G44327 G12716B

DETAILED DESCRIPTION OF UNIT:

WASH – MEDIUM - PUMP:

Horizontal mounted Standardized close-coupled Pump in stainless steel design with a rated output according to DIN 24 255 and replaceable mechanical seal. The shaft of the motor is solid connected with the Pump shaft and is enclosed within a housing DIN EN 294 and the ball Bearings are grease lubricated. The shaft Seal is mechanical according to DIN 24 960 and the Pump motor is a surface cooled KSB-IEC AC-motor or other western European Brand Name model; Safety class IP 54, Insulation class F, **Material**: Housing, Pressure-Lid, Impeller, Ring and Shaft are made of stainless steel MtNr. 1.4301,

TREATMENT MEDIUM:

The wash tank is filled either manually with hose, or a hose / line connected from the main water supply line to the automatic level control system with an integrated solenoid valve (Accessory).
(The customer must place a cutoff valve ahead of the connection to the level control system for eventual maintenance and repair work)
The automatic level control with freshwater supply is considered a safety device for the pump and heating elements to prevent a dry run of the pump and the bur out of the heating elements.
Thereby three electrodes with a max. /min. setting control the solenoid vale to open the water supply if necessary.

ATTENTION - ATTENTION - ATTENTION

Treatment for the Recycling process of the wash and rinse medium prior of flushing it into the local sure system or other holding facilities is subject to the local sure and water Department regulations and therefore the responsibility of the customer. It is also important, that none of the drain valves can open and dump uncontrolled into such system!

WASH – MEDIUM DETERGENTS AND OTHER CHEMICALS:

Depending on the kind and grade of dirt the best suitable detergent should be chosen for the cleaning process. Main criteria's are detergents compatibility with spray wash units, which must be non-foaming and water based. Respectively to the experience with similar parts (1.5 – 3%) detergent should be added based on the tank volume. It is suggestible to use detergents with integrated corrosion protection to avoid adding separate additive and still protect the washed parts. For detailed information on Detergents and Additives it is advisable to contact the manufacturer of such.
After adding the detergent and corrosion protections the standard electrical heating system for the wash cycle can be turned on to heat up the medium to (0 – 70 °C) respectively to the temperature setting.(suggested 70 °C) As soon as the medium reaches the set temperature the unit is ready for operation.

ELECTRICAL HEATIN SYSTEM:

In its basic concept (Standard) the BIO-CIRCLE SURFACE TECHNOLOGY Hotwater Parts Washing Machine is fitted with an electrical heating system for the wash cycle. For the electrical heating system a burn-out prevention control monitors the heating elements which can also be integrated into a automatic level control with freshwater supply (Accessory). The Electrical heating system can be additionally controlled with an optional weekly timer (Accessory) including a battery backup for 72 hours to program the heat-up period ahead of time and working thereby more efficiently.

Based on a new o refill of the Hotwater Parts Washing Machine (cold) the average heat-up cycle is approximately 1.5 – 2 hours. Efficiency and heat-up time are also pending on environmental conditions and location of the cleaning machine.

In case of failure of one or more heating elements, especially after a long operating time, it is advisable to exchange the complete heating register instead of a single broken one.

ATTENTION - ATTENTION - ATTENTION

Prior of changing one of the heating elements it is important to cutt-off main power and lock the main power switch.
(View Safety Instructions!!)

Open electrical connection box for the heating elements and loosen the wires, next step is to undo the lock nuts and pull out the heating element. Before reinstallation of new element, make sure the surface is cleaned and old gasket fragments are removed. When tightening the nuts from the new heating element you have to use a wrench to hold against it from the tank side. Redo the cables and close the connection box. Now you can unlock the main switch and turn on the power and rerfill the unit.

Cleaning machines that are without automatic level control and freshwater supply are equipped with a safety feature against burn-out of the heating elements which dose not prevent the wash pump from running dry.

TIMER WASH CYCLE
(Optional)

The Hotwater Parts Washing Machine can be equipped with a timer for the treatment cycle.
With a preset treatment time set on the timer module the Hotwater Parts Washing Machine starts the cycle after pushing the start putton. As soon as the treatment cycle is over, the wash pump and the turntable drive is cut off and the unit stops automatically

TURN-TABLE BEARING:

The turntable bearing mount in the center of the cleaning chamber holds the main bearing and should not have any / or up to minimal play when lifting the turntable on its outer side. In case the play gets to extensive, the bearing needs to be replaced by a new one. To disassemble the turntable undo the (3) three metric screws in the center and lift out the table, next is to loosen the (4) four metric nuts on the bearing mount and lifting the mount of the bolts. Now you have access to the bearing and can disassemble the unit.
Go to your spare parts list and identify the correct part and place your order. The assembly is the same in reverse operation.

TURN-TABLE DRIVE:

The turntable is driven by means of a wave shaped gear wheel that is connected with a shaft to the electrical geared motor that is mounted on the back side underneth of the unit. The shaft leading up into the wash chamber and connecting to the special drive wheel has a flexable mounting and engages with the turntable. With the flexible mounting the torque is absourbed during start and stop operation.

MAXIMUM LOAD OF CLEANING MACHINE:

The listed maximum load capacity assumes that the load is evenly spread on the turntable and inside the basket.

TANK COVERS WASH MEDIUM:

The wash medium tank is covered by two separated lids to isolate the wash chamber from the wash tank. Within the lids are integrated filter baskets that are easily removable to emty the collected dirt particles (basket filter with ø 2,0 mm hole perforation).
Check and clean filter basket on a regular bases and assure that the vents for the tank are not clogged. Renew damaged filters immediately, by loosening the 3 (three) bolts in the center of the turntable and lifting the turntable out of the unit. Now you can pull out the the basket filters and lids clean them, or renew them if necessary.
After removing the turntable (3 srews), it is easy to remove cover sheets for cleaning.

ATTENTION:

It is not allowed to start treatment cycle without the lids and filters in place.
If you do so, you may damage the pump.

JET-PIPE SYSTEM WASH-CYCLE:

The Jet-pipe system including jets and pressure gages should be checked on a routine maintenance schedule for damages and wear. To flush the jet pipes, open the top and bottom cap and turn on the pump for 3 seconds max.
The drilled jet holes need to be cleaned every so often with a ø 2,0 punch to reopen the holes from any clogging particles and calcium. The required wash results can only be achieved with a full functional jet system. In case the wear of the jets gets to extensive (several years) they need to be welded closed and new jet holes ø 2,0 mm need to be drilled next to it. A good indicator for malfunction of the jet pipe system is the pressure that can be read of the gages. (Low-wear, high-clogged)

DESCRIPTION OF CLEANING MACHINE:

TECHNICAL DATA (without Accessories)**:**

MAIN SIZES APPROXIAMETLY	**HTW-II 800**		**HTW-II 1000**		**HTW-II 1200**	
Total width	1050	mm	1280	mm	1480	mm
Total depth	900	mm	1330	mm	1530	mm
Height with closed Lid	1050	mm	1200	mm	1400	mm
Height with open Lid	1700	mm	2000	mm	2250	mm
Opening angle of Lid	60	Grad	60	Grad	60	Grad
Loading height (top edge washing chamber)	830	mm	800	mm	800	mm
Basket diameter	775	mm	975	mm	1175	mm
Basket height	100	mm	120	mm	150	mm
Max. loading height	400	mm	450	mm	650	mm
Max. loading weight	100	kg	250	kg	350	kg
Capacity wash tank	120	Liter	300	Liter	430	Liter
Total weight of Hotwater Parts Washing Machinewithout filling, Accessories and load.	300	kg	350	kg	400	kg

POWER SUPPLY:						
Total connection without Accessories	6,0	kW	8,5	kW	11,5	kW
AC Power supply - three phase current	**3 x 400**	**V + MP + PE**	**3 x 400**	**V + MP + PE**	**3x400**	**V + MP + PE**
Frequency	50	Hz	50	Hz	50	Hz
CONNECTIONS:						
Drain (ball valve)	1"	R	1"	R	1"	R
Freshwater supply with autom. level control - electrode sensors (Accessories)	1/2"	R	1/2"	R	1/2"	R
SPRAY REGISTER - WASHING:						
Fixed spray register with nozzles pipes (3 levels, top, bottom and side)	ø 2,0	mm	ø 2,0	mm	ø 2,0	mm
Number of jets	44	Pieces	46	Pieces	48	Pieces
Spray pressure	2,5	bar	4	bar	4	bar
TECHN. PUMP DATA:						
Flow rate	4,8	m³/h	12,0	m³/h	12,0	m³/h
Pumping head	27	mWS	38	mWS	38	mWS
Pump motor	0,55	kW	2,2	kW	2,2	kW
Motor speed (r.p.m.)	2900	r.p.m.	2900	r.p.m.	2900	r.p.m.
PUMP MATERIAL:						
Pump housing (stainless steel)	V2A	**1.4301**	V2A	**1.4301**	V2A	**1.4301**
Pressure cover (stainless steel)	V2A	**1.4301**	V2A	**1.4301**	V2A	**1.4301**
Impeller (stainless steel)	V2A	**1.4301**	V2A	**1.4301**	V2A	**1.4301**
Labyrinth sealing ring (stainless steel)	V2A	**1.4301**	V2A	**1.4301**	V2A	**1.4301**
Shaft (stainless steel)	V2A	**1.4301**	V2A	**1.4301**	V2A	**1.4301**
Drive lamp	V2A	**1.4301**	V2A	**1.4301**	V2A	**1.4301**
ELECTRIC HEATING - WASH TANK:						
Electric heating	4,5	kW	6,0	kW	9,0	kW
Recommended medium temperature	70°	C	70°	C	70°	C
Heat-up time	**1,5 - 2**	h	**1,5 - 2**	h	**1,5 - 2**	h

DESCRIPTION OF ACCESSORIES:

WEEKLY TIMER ELECTRICAL HEATING SYSTEM:
(Accessory)

The heating system for the wash and rinse cycle are controlled with programmable timer which can be programmed for one week ahead. Thereby the heat up cycle (operating condition) can start prior of any shift begin and allows the operating personnel to use the washing machine as soon as work starts.

AUTOMATIC LEVEL CONTROL WITH FRESHWATER SUPPLY:
(Accessory)

The Hotwater Parts Washing Machine can be equipped with a level control system for the wash tank with a freshwater supply feature. It is used to prevent the heating elements from burning out and the pumps to run dry by keeping a certain water level maintained

BURNOUT PREVENTION HEATING ELEMENTS:
(Accessory)

Cleaning Machines without automatic level control are equipped with a censoring unit mounted directly above the heating elements to protect them from burnout. This feature does not cover any protection for the pump units which still could run dry.

THREE STAGE OIL-SEPARATIONS UNIT EXTERNAL MOUNTED:
(Accessory)

The three stage oil separation unit is used to separate non emulsifying oils from the wash and rinse medium and extracts them into a separate container.

CONSTRUCTION AND FUNCTION OF UNIT:
(Coalescence principal)

The units function is to separate lighter and heavier liquids as well as solid parts out of the wash and rinse medium. To achieve this effect a combination of gravitational force and Coalescence principal can resolve most of the unwanted parts (98%) cleaning the treatment medium to a high degree. At the same time the heavier parts are caught by the plate's surface and lead through a funnel to the bottom into holding chambers

Chemically stable oils and liquids that dissolve within the medium can not be filtered out.

First the medium is pulled in through an intake line by the air membrane pump into the outer chamber where it is spread by means of a guide plate, slowing the motion of the liquid. This causes a gravitational separation of larger drops before the medium enters the plate package. From the outer chamber the medium streams over a gate into the plate package where the main separation takes place.
The small droplets from the discontinuing phase are than caught by the surface of the angled plates forming a layer while the medium flows through them. Because of the angel of the plates and the streaming action larger drops form and brake loose to climb on the inside holes up on top. There, another gate holds back the collected Oil till it passes through a funnel into a container. The heavier clean medium passes below and over the gate into the return passage to the tank.

MATERIALS FOR OIL SPARATOR:

All materials like tank, plate packages and gussets are made of stainless steel Nr. 1.4301, membrane pump special PVC material, Float assembly with riser stainless steel and PVC. The membrane pump is to be supplied with 6 – 8 bar compressed air.

WEEKLY PROGRAMM FOR OIL SEPARATOR UNIT:
(Accessory)

The external three stage oil-separating unit can be equipped with a programmable timer. Thus it is possible to set operating cycles during night time and or while the Hotwater Parts Washing Machine is not in operation and to be more efficient.

STEAM EXHAUST SYSTEM:
(Accessory)

To remove the remaining steam vapors after a cleaning process and before opening the Hotwater Parts Washing Machine a steam exhaust system is placed on the roof of the machine.
This steam extractor is controlled with a settable timer (0 – 3 minutes) and starts to exhaust the remaining steam prior of opening the Lid. Adjustments to the duration of the exhaust cycle are made on the timer placed in the control cabinet. The exhausted steam needs to be guided trough an existing duct system that connects to the outlet of the steam extractor into the open atmosphere or a central collecting facility. It is important to connect the exhaust line to the inside of the extractor outlet and to assure a sealed connection against condensation. The connection of the exhaust outlet can be rotated 360 degree to adjust it as necessary and to remove any tension between the connections.

ATTENTION – ATTENTION - ATTENTION

It is not allowed to operate the Steam Exhaust unit without an Exhaust Duct connection, since the opening is big enough to reach in by hand and get caught by the exhaust wheel!!!

MANUAL POWER WASHER WITH COMPRESSED AIR:
(Accessory)

The Hotwater Parts Washing Machine can be equipped with a manual power washer for pre-clean operation.
Thereby a manual spry gun connected to an existing compressed air supply and a line to the wash tank is used to work according to the injector principal. By pulling the trigger compress Air forces the 70 °C hot wash medium trough the orifice of the gun on to the wash parts, removing the adhered dirt. The drainage of the wash medium passes than trough the filter system back into the wash tank.

ATTENTION – ATTENTION – ATTENTION

Use of the manual power wash unit only within the treatment chamber and with proper clothing, gloves and safety goggles!
(Wash medium temperature. *70 °C*)

MAINTENANCE INSTRUCTIONS:

Maintenance and inspection work on the Hotwater Parts Washing Machine shall be done only by trained operating personnel following all safety instructions and guidelines herein.

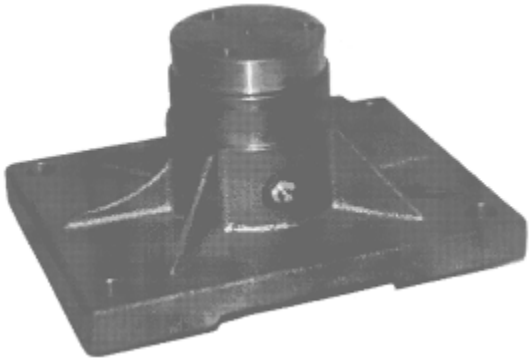
DAILY:	Backflow filter basket for wash cycle back-flow control system) remove any dirt and residues, clean basket.
	Medium level wash tank.
WEEKLY:	Wash medium change (if necessary) dends on wash results
	Check Pump (Pressure gage wash pump).
	Clean entire machine
MONTHLY:	Check Jets on the spry nozzles (clogged or worn openings). Backflush the nozzle pipe system
	Complete checkup of cleaning Machine, watch lubrication instruction
	Turntable bearing

MAINTENANCE – INSPECTION AND CLEANING ACTION:

All Maintenance, Inspection and cleaning work shall be done only by trained operating personnel that are familiar with the instruction manual and the components of the Cleaning Machine. It is also important to follow a strict schedule to improve the life time and wash results of the facility.

LUBRICATION INSTRUCTION FOR TURNTABLE BEARING:

To lubricate the bearing only Lithium-grease with a corrosion inhibitor of penetration class 3 shall be used. Attention needs to be paid that grease is not pushed to fast into the bearings grease nipple since damage could accrue to the upper shaft seal.



Suggested lubricants for CB Chemie und biotehcnologie Hotwater Parts Washing Machines are:

ARAL:	**Grease FD 0**
BP:	**Energrease HT EP 00**
MOBIL:	**Gargoylegrase 1200 W**
SHELL:	**Fließfett H**
TEXACO:	**Marfak 00**

OPERATING MALFUNCTIONS
(Troubleshooting)

SYMPTOM:	CAUSE AND/OR SOLUTION:
Spray pressure below sugested setting	Check rotation of pump motor, jet openings on spray register 2.0 mm (jets wear out over time). In case of worn drilled jet holes weld them closed and re-drill next to it, otherwise exchange jets.
Leckage at the pump	Check pump for leakage mainly the slide gasket. Call service department of pump manufacturer with detailed information to pump Type and Model for service repair work. (KSB, GRUNGFOS or VOGEL)
Cleaning result not sufficiant	Check position of wash parts; make sure they are accessible by wash pattern. Hidden surfaces that are not exposed are not cleaned sufficiently.
	Check wash medium for saturation and exchange if necessary, following local regulations of disposal.
	Check concentration (quantity) of detergent and add if necessary.
	Check duration of wash cycle and prolong if necessary.
	Check pump pressure (compare: required - actual)
	Check jets: (cogged / worn)
	Check filter basket for sediments and residues (empty if necessary).
Turn table is not spinning	Check wash parts position (not to extend behind basket)
	Check position of load (equally spread)
Jets clogg up after minimal usage	Empty backflow filter baskets more often (floating particles from rags or such can get into the jet pipes)
	Check caps on jet pipe that they are sealed tight. (to flush the jet pipes, remove the caps and turn on the pump for 3 seconds)

TO ORDER SPARE PARTS:

Only use original spare parts for the BIO-CIRCLE SURFACE TECHNOLOGY Hotwater Parts Washing Machine in order to guaranty full functionality and desired wash results. With all orders of spare parts and or Accessories place the exact Type and Model number on your request sheet:

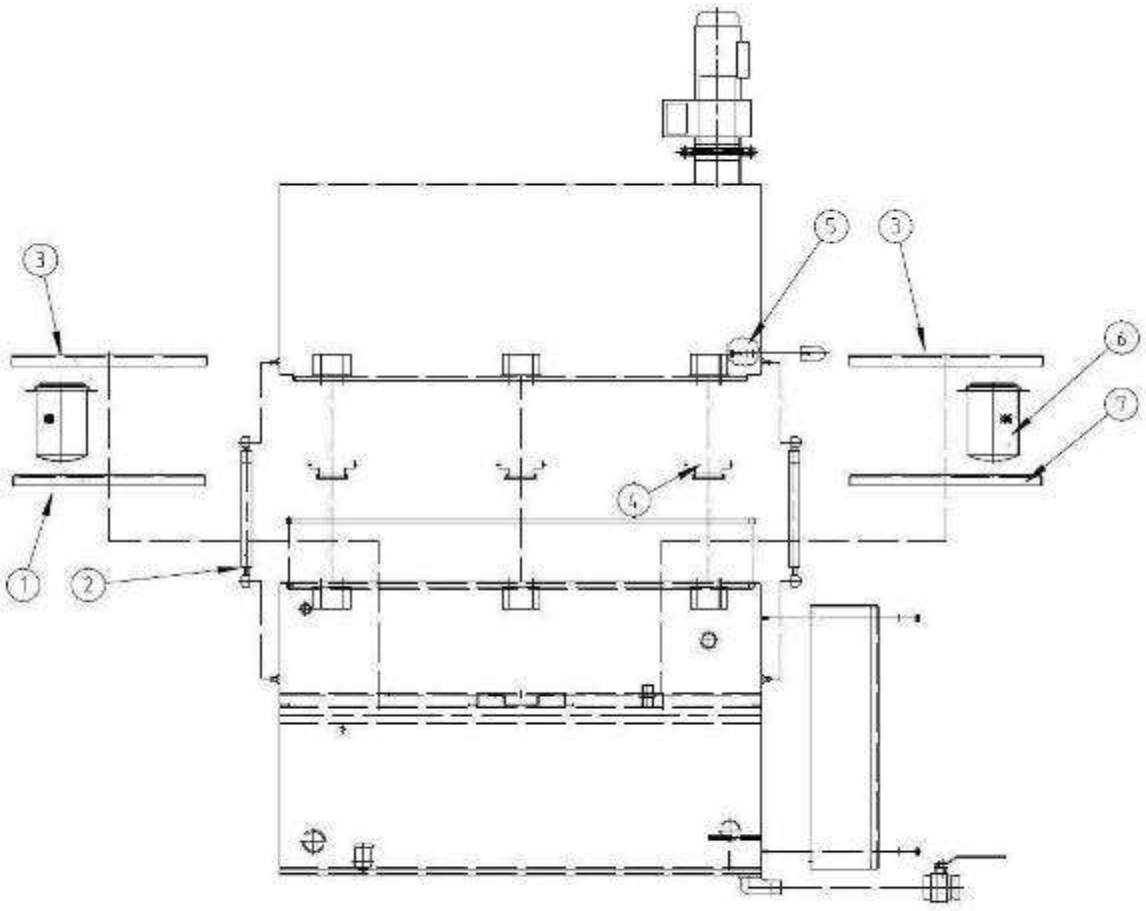
T Y P E :	
M A C H I N E - N U M B E R :	
V O L T A G E :	400 V
F R E Q U E N C Y :	50 Hz
P O S I T I O N - N U M B E R :	
P A R T N A M E :	
S P A R E P A R T N U M B E R :	

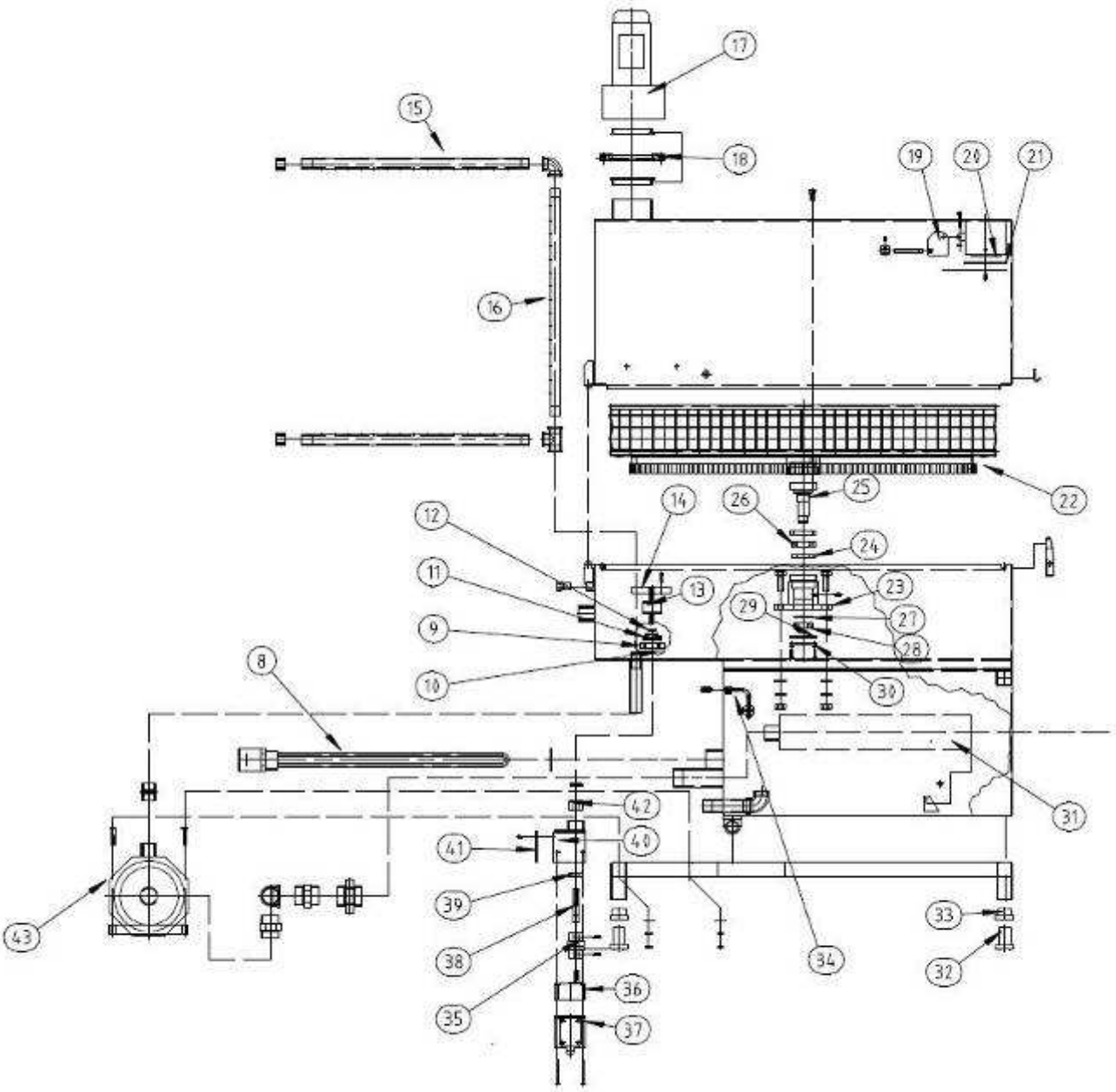
In case there are problems with your Hotwater Parts Washing Machine and/or any of the Accessories please consult the Manufacturer or his designated Agent:

MANUFACTURER:

Bio-Circle Surface Technology GmbH
Berensweg 200
D-33334 GUETERSLOH / GERMANY
Tel: 0049 - (0)5241 - 94430 0
Fax: 0049 - (0)5241 – 9443-44
E-mail: service@bio-circle.de

SPARE PARTS LIST:

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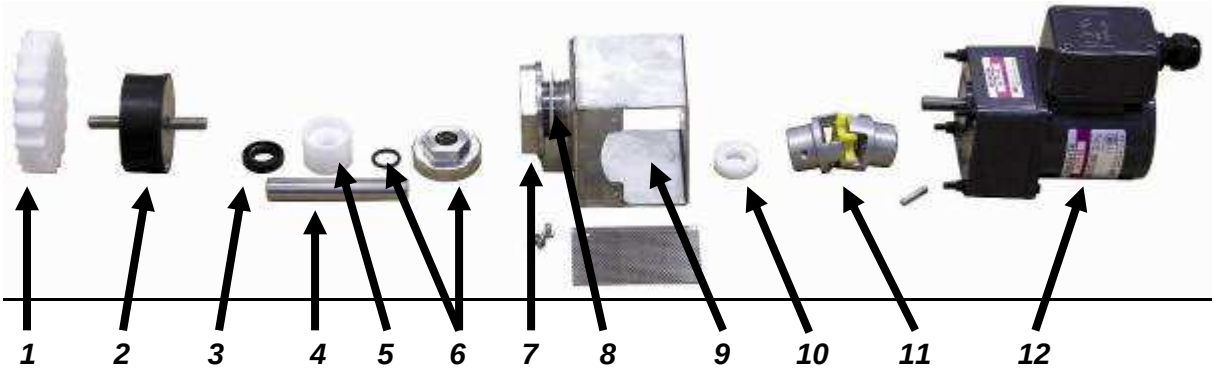
Spare Parts

Pos	Name	Quantity	HTW-II 800	HTW-II 1000	HTW-II 1200
1	Right lid for tank cover	1			
2	Gas pressure shock absorber	2	G12679B	G12780B	G12781B
3	Seperation lid for tank cover	2			
4	Lid hinge	1			
5	Flat gasket for handle	2	G12686B	G12686B	G12686B
6	Filter for tank cover 1,0 mm	2	G12617B	G12617B	G12617B
7	Left lid for tank cover	1			
8	Heating unit 1,5 "	1	G12672B	G12673B	G12674B
9	Lock nut for corpus VA	1	G45327	G45327	G45327
10	Flat gasket for friction wheel drive	1	G45427B	G45427B	G45427B
11	Cover plate VA for shaft seal with o-ring	1	G12615B	G12615B	G12615B
12	Radial shaft seal for friction wheel	1	G12710B	G12710B	G12710B
13	Vibration buffer	1	G12704B	G12704B	G12704B
14	Synthetic friction wheel	1	G12706B	G12706B	G12706B
15/16	Nozzle tube 3/4"	3	G40627B	G40627B	G40627B
17	Vapour Extraction with timing control	1	G13130B	G13130B	G13130B
18	Hose clamp D=100mm	1	G40227	G40227	G40227
19	Air flap VA, HTW-II and BC-Turbo	1	G12734B	G12734B	G12734B
20	Plate for air flap	1			
21	Flat gasket for air flap	1	G12675B	G12675B	G12675B
22	Basket (stainless steel)	1	G12682B	G12683B	G12684B
23	Complete bearing for basket	1	G12730B	G12750B	G12750B
24	Shaft seal / bearing for basket	1		G12722B	G12722B
25	Drive shaft / bearing for basket	1			
26	Top bearing, 6206 ZZ FAG	1		G12751B	G12751B
27	Shim ring HTW-II	1		G12719B	G12719B
28	Bottom bearing, 6205 2Z 25-52-15 KBS	1		G12752B	G12752B
29	Seeger ring / Bearing for basket	1			
30	Gasket for housing of basket bearing	1			

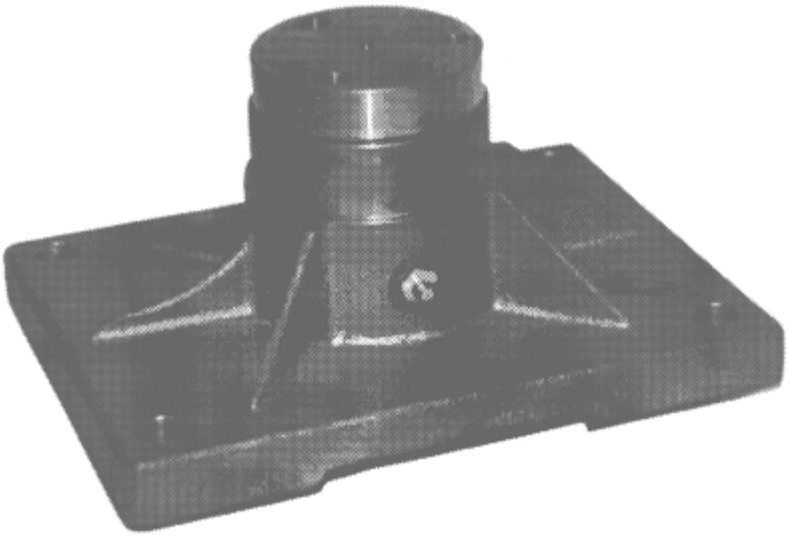
31	Stainless steel suction filter	1	G12702B	G12717B	G12721B
32/ 33	Screw foot complete 40x40 mm	4/6	G43527	G43527	G43527
34	Float switch	1	G12707B	G12707B	G12707B
35	Claw coupling	1	G12711B	G12711B	G12711B
36/ 37	gear Type S8KA 150B, i = 150:1 motor, Type S8125 GX-TCE	1	G12705B	G12705B	G12705B
38	Drive shaft	1	G12613B	G12613B	G12613B
39	Distance ring, plastic, white	1	G43627	G43627	G43627
40	Case for drive shaft	1	G12618B	G12618B	G12618B
41	Lid vor Corpus VA / Drive shaft	1			
42	Plastic shell for drive shaft	1	G12614B	G12614B	G12614B
43	Pump	1	G12676B	G12677B	G12678B
	Lid safety switch	1	G12715B	G12715B	G12715B
	Tension lock with clamps	1	G12713B	G12713B	G12713B

Friction gear motor



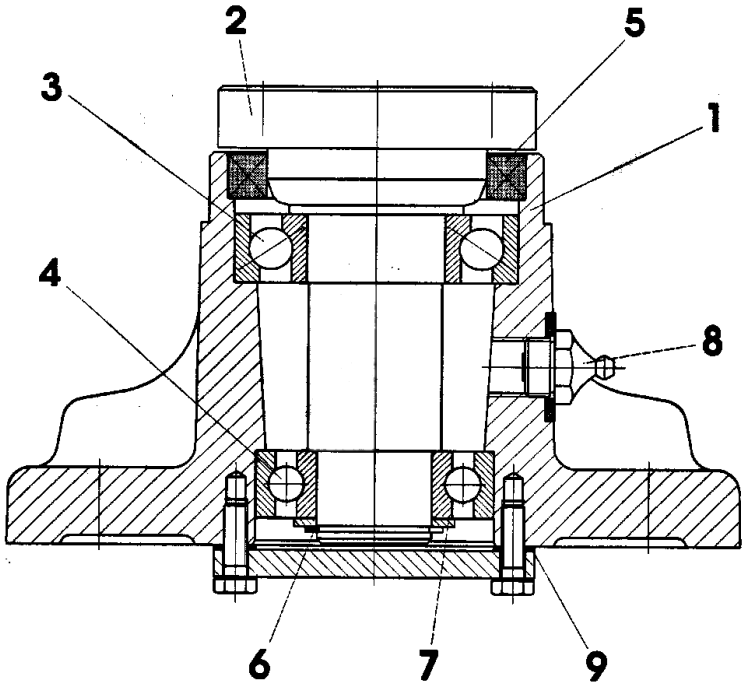
Pos	Description	Quantity	HTW-II 800	HTW-II 1000	HTW-II 1200
1	Friction wheel plastic	1	G12706B	G12706B	G12706B
2	Rubber buffer diameter: 70 mm, M10x28	1	G12704B	G12704B	G12704B
3	Shaft seal / friction gear	1	G12710B	G12710B	G12710B
4	Drive shaft	1	G12613B	G12613B	G12613B
5	Plastic sleeve for Drive shaft	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	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

BEARING FOR BASKET



DESCRIPTION:	TYPE:	ORDER NUMBER:
Turntable bearing compl.	HTW 8000	
	HTW 1000/120	G13050B

TURNTABLE BEARING



PART:	DESCRIPTION:	TYPE:
1	Bearing housing	HTW 1000 / 1200
2	Bearing shaft	HTW 1000 / 1200
3	Upper bearing	HTW 1000 / 1200
4	Lower bearing	HTW 1000 / 1200
5	Shaft seal	HTW 1000 / 1200
6	Shaft securing device	HTW 1000 / 1200
7	Spacer	HTW 1000 / 1200
8	Grease nipple	HTW 1000 / 1200
9	Gasket (Hausing)	HTW 1000 / 1200

PPT

01.02 ECONOMICAL:
With the sturdy construction of the PPT unit the treatment medium can be used for a log duration cycle. Keeping the wash medium within usable levels for a long period of time it safes costs of waste products, water and detergent consumption as well as energy. Further it helps to achieve always the same quality on the wash parts increasing the overall continuity.

01.03 USAGE:
The cleaning process in the metal industry is leaning more and more toward Aquarius based cleaning solutions. Not only is it more environmental friendly by eliminating CKW's and FCKW substances it is also more suitable with human interaction in the cleaning process. During the cleaning process, oils and other particles that attaché during the manufacturing process are washed off and congest the wash medium. For this reason the wash medium looses the ability to clean efficiently whenever saturation gets beyond a certain level. With the PPT system the washed off oils and particles are removed from the wash medium on a continuing bases extending the usability of a single fill far beyond a usage without.

Cutting oils are in the metal industry a very important part to guaranty longevity with their tooling and accuracy in mass production. Outside oils that cover raw materials for conservation purposes are washed off during the machining process and mix with the cutting/cooling fluids. The PPT system can help to remove those oils and keeping the cutting fluid free of such unwanted parts. The increased life span of such cutting fluids is a cost-effective way to reduce waste and recourses.

01.04 CONSTRUCTION:
The complete PPT unit is made out of Stainless Stell and can be supplaied in varies dimension.
With its low maintenance overhead and space saving design it can be implemented in almost any work inviorment. The plate packages are easy to remove and can be cleaned with power washer without dissasabling any parts.

01.05 STANDARD SIZES:

PPT	Type: Mini	Capacity:	50 - 100	l/h

02.00 STARTUP AND FIRST RUN:

• Place the PPT in a suitable location	• Fillup tank with water to check for leckage
• Connect hoses	• Level PPT unit
• Connect compressed air	• Now the PPT is ready for use. A complete tank filling is exchanged within 2 (two) hours by the PPT.

It will take some time till the layer of lighter liquids in the separating chamber is thick enough to runn off into the collecting container.

The rising time within the diffrent phases depends on the following conditions.

• Diffrence in density of lighter fluids (oils) and continuing phase (water)	• Viskosity oc continnuing phase (water)
• Size of oil particle	• Temperature
• Quantity of lighter phas / m^3	

03.00 USAGE AND MAINTENANCE:

• Cleaning of Plate-Package	• Emty and clean sludge tank
• Open cutoff valve to drain heavy phase	