

CLEANING SYSTEMS FOR THE RAILROAD

MAKING GREEN WORK.



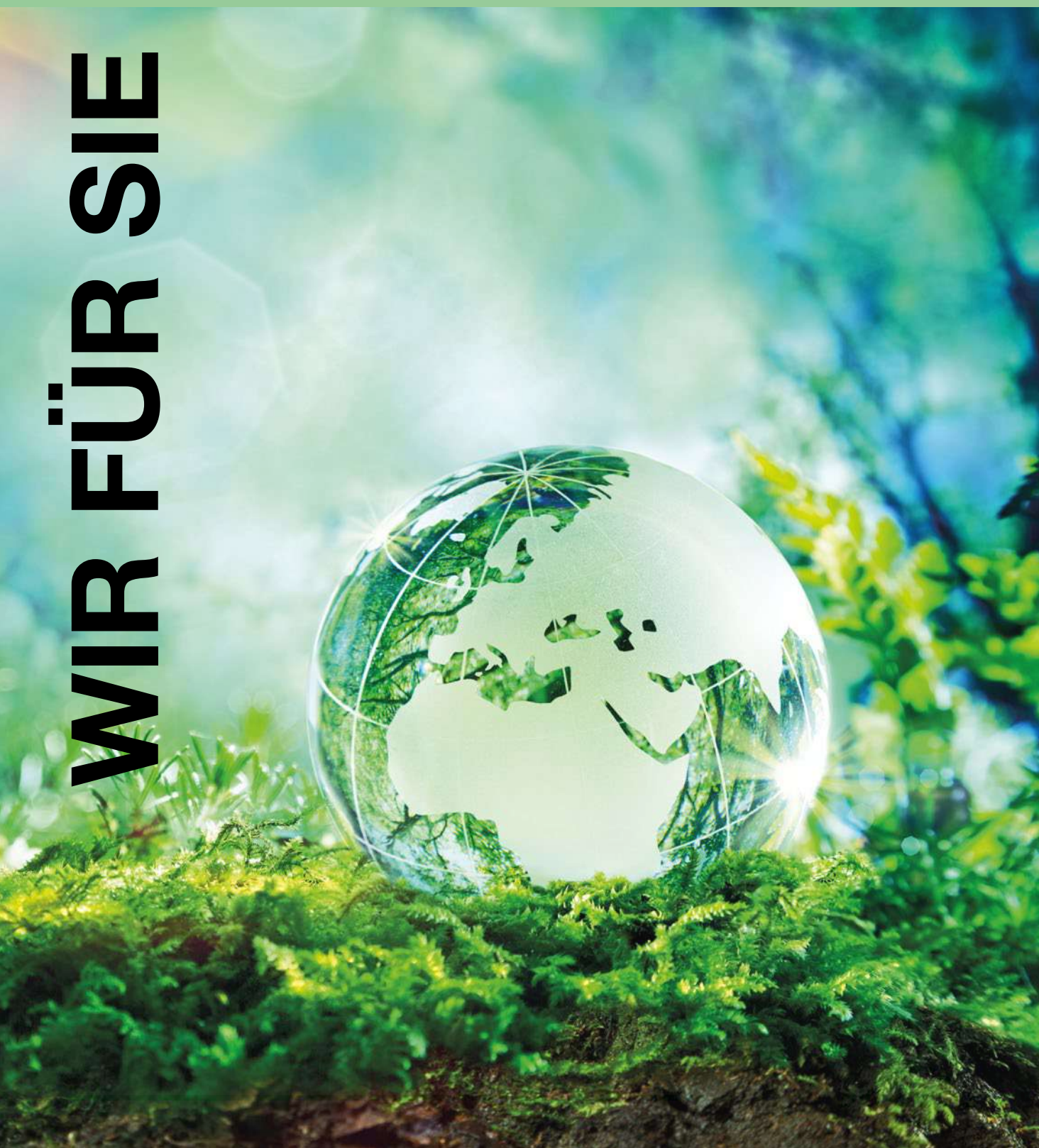
Bio-Circle Surface Technology GmbH • Railroad AL03 2026 EN
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bio-circle.com

VISION

WIR FÜR SIE



STRAIGHT AHEAD WITH SUSTAINABILITY

Think holistically. Act sustainably.

Bio-Circle Surface Technology GmbH – your reliable partner for industrial products for cleaning, welding, protecting, and lubricating.

Environmentally friendly and user-friendly. For manual and automatic parts cleaning. With 40 years of know-how and experience in research, product development, process optimization, sales, and service.

With a global network and with production sites and partners.
With around 190 employees, the Gütersloh site is the Bio-Circle headquarters.
All products are developed and manufactured here for Germany, Europe and beyond.
Made in Germany.



SET HIGH STANDARDS!

The way the company works is reflected in the six building blocks of the circle. They are constantly reviewed and optimized. Transparency and sustainability are the basis of all these building blocks that interlock like cogwheels. Bio-Circle products cannot save the world, but they can contribute to the conscious treatment of the environment and our fellow human beings.

A clean world with you at the centre – this vision has shaped the company's thoughts and actions for 40 years. Especially nowadays there is a lot of talk about sustainability. But the only thing that counts is to act sustainably.



Sustainable raw materials

As a manufacturer of industrial cleaners and cleaning systems, Bio-Circle has a great responsibility. After all, these products have a high value in the maintenance of machines, plants, and components. They are an important part of the production chain in every industry. We take a close look and use sustainable raw materials to produce **environmentally friendly and user-friendly industrial cleaners**.



Innovative products

Bio-Circle has always been committed to sustainability in an industry where the harmful effects of solvents on the environment, humans and animals are still being glossed over. Our innovative products for the cleaning sector stand for **safe application** in manual and automatic parts cleaning.

We are pioneers, we do things differently and we walk a straight path. We formulate and produce industrial cleaners that are non-labelled and low-labelled. In our own laboratory and in our own production facilities.



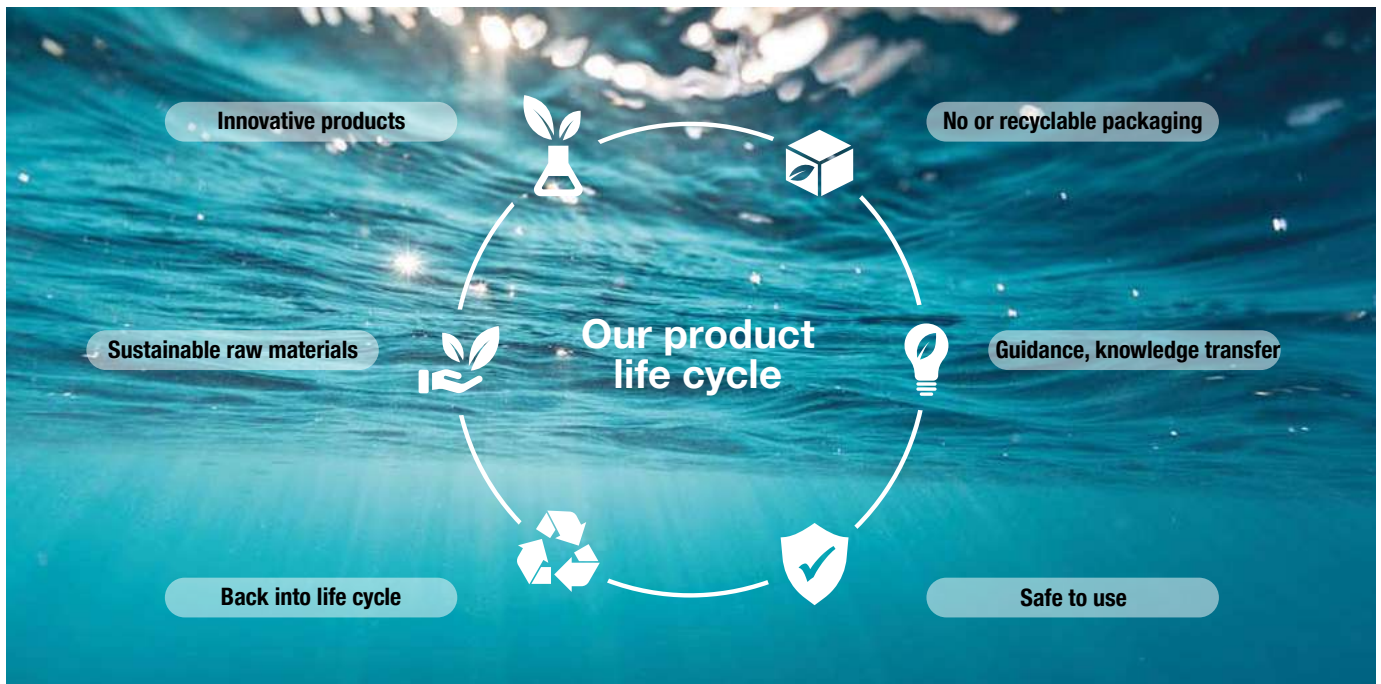
No or recyclable packaging

The piles of rubbish are getting higher and higher, the plastic vortices in the oceans are getting bigger and bigger. These are just two problems – we all know that. When it comes to packaging, Bio-Circle is constantly moving forward and developing.

The best bottle is no bottle, because refillable application systems are the solution – they make bottles dispensable! And if there's no other way, we have recyclable 500 ml PET bottles made from **100% recycled material**.

To make your work easier, cleaners in IBCs and 200-litre drums can be transferred into 20-litre jerrycans with hand pump. Of course, the IBCs, drums and jerrycans are made of the **easily recyclable** plastic HDPE.

In **shipping**, only **recycled and recyclable paper** that has been awarded the 'Blue Angel' eco-label is used as filling material. In addition, we ship **CO₂-neutral** through our parcel service provider and our freight forwarder.



Sound advice and knowledge transfer

We share our experience and know-how with you so that you can clean easily, quickly, safely, cost-efficiently and in an environmentally friendly way.

You have questions, we provide answerp. If you are satisfied with the cleaning performance and with your work, if we have been able to optimise your work processes – then we are satisfied too.



Safe to use

Working with non-labelled and low-labelled industrial cleaners and recirculating cleaning equipment can trigger a domino effect:

For the company, the longer service lives, the reduced health and safety measures and the increased productivity are just a few reasons to be happy about savings because **costs are reduced**.

The user, who has **more fun and motivation at work**, feels fitter because they are exposed to far fewer pollutants and toxic fumes, and they are happy about a better quality of life. For both sides, there is also the **time saving**. Not only thanks to the effectively cleaning industrial cleaners, but also because of the energy-saving, recirculating parts washers.



Back into the life cycle

At Bio-Circle, we live and breathe life cycle thinking. **We place great emphasis on sustainability in production and application.** Longer service lives and VOC-free or VOC-reduced cleaners reduce your disposal effort and make it safer.

MAKING GREEN WORK.

AT A GLANCE

Your page overview

This table provides an overview of the possible applications for various cleaners, along with the relevant data and product information. We will, of course, visit your premises to provide on-site advice and demonstrations.

	pH value* – Values from MSDS	VOC content in %	Flashpoint in °C	BIO-CIRCLE GT-I	BIO-CIRCLE HP, HP Vigo	PROLAQ	Parts washer	Ultrasonic	RWR	Steel/Stainless steel	Aluminium	Non-ferrous metals	Plastics	Painted surfaces	Zinc-coated surface	Hazardous substance symbol	VOC-free	VOC-reduced	NSF	Label-free	Page
AF Clean	9.6	10.4	53													-	-	VOC-reduced	-		28
ALUSTAR 500	7	-	-													☠	VOC-free	-	-	-	21
ALUSTAR 300	13 – 14	-	-													☠	VOC-free	-	-	-	30
BIO-CIRCLE L	8.5	-	-													-	VOC-free	-	NSF		23
BIO-CIRCLE L Evo	8	-	-													-	VOC-free	-	NSF		22
BIO-CIRCLE L Ultra	8.5 – 9.5	-	-													-	VOC-free	-	NSF		23
CB 100 Alu	8.6	-	-													-	VOC-free	-	NSF		26
CB 100 V	10.0	1.2	-													-	-	VOC-reduced	-		27
Defoamer HT	10.6	0	-													☠	VOC-free	-	-	-	34
FT 300	10.8	18.9	40													-	-	VOC-reduced	-		25
GS 200	-	19	118													-	-	VOC-reduced	NSF		32
Corrosion Protection	8.6	-	-													-	VOC-free	-	-		33
Neutraliser	14	-	-													☠	VOC-free	-	-	-	33
OMNI	-	5	100													☠	-	VOC-reduced	-	-	32
Power Cleaner DB	<1	2.6	-													☠	-	VOC-reduced	NSF	-	33
PROLAQ L 400	-	44	63													-	-	-	-		24
PROLAQ L 500	-	20	61													☠	-	VOC-reduced	-	-	24
Smoke Resin Remover DB	14	-	-													☠	VOC-free	-	-	-	29
STAR Future V	11.4	-	-													☠	VOC-free	-	-	-	20
STAR Future V Strong	14	1.5	-													☠	-	VOC-reduced	-	-	20
Stripper	12.5	2.3	-													☠	-	VOC-reduced	-	-	25
UNO W	13	-	-													☠	VOC-free	-	-	-	31
Air Force																					28
AUTRASYS																					27
CLEAN BOX Max																					25
Stainless-Steel Foam Sprayer 24 L																					18
PROLAQ conversion kit																					15
Foam Injector																					18
Service																					17

 recommended
  limited use
  not usable

System solution for the railway: sustainable – innovative

Safe and convenient cleaning

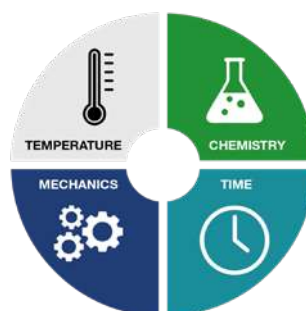
Bio-Circle cleaning systems offer a wide range of cleaning machines, using water-based cleaning agents, for safe and convenient cleaning and degreasing. The areas of application could not be more diverse. Whether for components or machines, these cleaning systems enable you to carry out your tasks efficiently. Take advantage of our regular maintenance of the cleaning system and the cleaning agent carried out by our service engineers.

MANUAL

 BIO-CIRCLE parts washer Systems for natural, biological parts cleaning  P. 8	 BIO-CIRCLE HP The parts washer with flow brush yet the cleaning power of high-pressure cleaning  P. 10	 HP Vigo Manual high-pressure cleaning for all needs P. 10
 CLEAN BOX The mobile solution for parts cleaning P. 13	 PROLAQ Compact Cleaning of painting tools and spray guns P. 15	 Stainless steel foam sprayer Foam injector Manual foam application for large surfaces P. 18

AUTOMATIC

 BIO-CIRCLE Turbo 2-in-1 – automatic and manual cleaning P. 9	 HTW Robust, fully automatic hot-water parts washers P. 11	 RWR Cleaning system for pipes and tanks in the railway's fresh and waste water systems P. 12
 RWR Multi-channel Cleaning of brake pipe systems P. 12		 PROLAQ Auto Automatic and manual cleaning of paint application and finishing tools P. 14



- Spray application methods
- Ultrasonic
- Brush

- Type: neutral / acidic / alkaline
- Low-foaming
- Corrosion inhibitor
- Concentration

Bio-Circle Parts Cleaning

Naturally safe and convenient



The award-winning BIO-CIRCLE brush-washing stations are true specialists. They clean without solvents or cold cleaners, thereby protecting staff and the environment from volatile fumes. With its convenient, well-designed and easy-to-use features, as well as its wide range of accessories, the BIO-CIRCLE offers you a long-term solution for effective, natural parts cleaning.

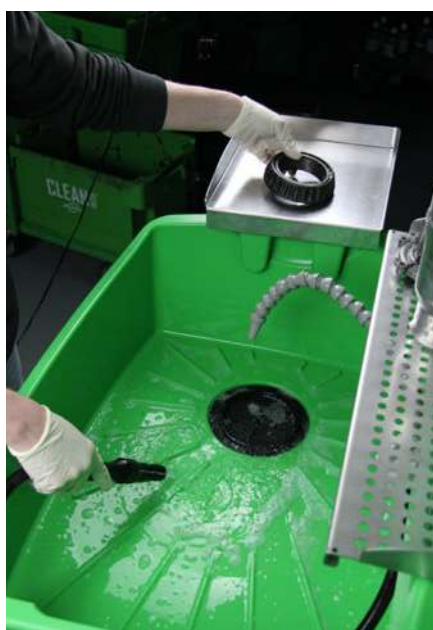
- ▶ 8-year BIO-CIRCLE unit warranty*
- ▶ Double-walled liquid tank – energy efficiency
- ▶ Manual or automatic – the choice is yours
- ▶ System comprising machine, cleaning agent and



Difference between the two units: size and load capacity

- ▶ BIO-CIRCLE-iSi technology, integrated as a high-performance chip in the control box of the BIO-CIRCLE GT-i and BIO-CIRCLE For U parts washing unit
- ▶ Easy to transport using a pallet truck
- ▶ Optimal basin depth for good splash protection
- ▶ Filter system in the basin drain (coarse, fine and bag filters, plus a magnet)
- ▶ Drainage system
- ▶ 8-year BIO-CIRCLE equipment warranty
- ▶ Available to book separately:
 - Filter housing with various filter inserts
 - Rail system with castors for mobility
 - and much more

	BIO-CIRCLE For U	BIO-CIRCLE GT-i Maxi
Dimensions (W x H x D)	840 x 1030 x 560 mm	980 x 1110 x 705 mm
Worktop (W x D)	720 x 510 mm	810 x 520 mm
Load capacity	100 kg	250 kg
Working height	800 mm	860 mm
Operating temperature	bis 41 °C	bis 41 °C
Heating	650 W	650 W
Pump	40 W	40 W
Optimum capacity	100 l	120 l
Material	LDPE	LDPEf
Weight (empty)	45 kg	60 kg
Electrical connection	230 V. 50 Hz	230 V. 50 Hz



BIO-CIRCLE TURBO

2-in-1 – automatic and manual cleaning

The perfect combination of the precision of manual cleaning and the efficiency of an automatic washing system.

In manual cleaning mode, the rotating brush can be used to clean hard-to-reach areas of the part.

In automatic mode, the system cleans fully automatically.

It is possible to retrofit existing systems to the Turbo Bio.

Please get in touch with us.

- ▶ 2-in-1 – combination of manual and automatic cleaning
- ▶ with access for manual cleaning whilst the hood is closed
- ▶ Precise, manual cleaning with a rotating brush or nozzle
- ▶ Compressed air gun, max. 6 bar, in the cleaning chamber
- ▶ Automatic cleaning pressure: 4 bar
- ▶ Insulation of the entire body
- ▶ Long service life of the cleaner thanks to microorganisms: integrated oxygen supply via compressor/oxygen pump



BIO-CIRCLE Turbo 800

Optional equipment: high-pressure module.

The module includes a high-pressure gun including hoses, up to a maximum of 60 bar

	BC Turbo 800	BC Turbo 1000	BC Turbo 1200	BC Turbo 1500
Overall width x overall depth (mm)	1220 x 1255	1420 x 1350	1630 x 1580	2080 x 1810
Height, lid open with exhaust elbow (mm)	2010	2175	2350	2760
Machine dimensions (WxDxH) (mm)	1730 x 2010 x 2010	1925 x 2015 x 2175	2140 x 2340 x 2350	2590 x 2770 x 2760
Internal diameter of wire basket, approx. (mm)	775	975	1175	1495
Maximum usable height (mm)	400	450	650	700
Maximum payload (kg)	350	350	350	350
Useful volume of washing fluid tank – min./max. capacity (L)	130/170	200/260	300/380	375/475
Total weight of the cleaning system excluding tank contents, payload and optional extras approx. (kg)	350	420	430	610
Total electrical power consumption, excluding optional extras, approx. (kW)	7.7	9	9	16
Power supply – three-phase current (V)/frequency (Hz)	400/50	400/50	400/50	400/50
Plug	16A CEE 5-pin 6-pole	32A CEE 5-pin 6-pole	32A CEE 5-pin 6-pole	63A CEE 5-pin 6-pole
Air connection min. – max. (bar)	5–8	5–8	5–8	5–8
Compressed air hose diameter (mm)	10	10	10	10
Automatic pump cleaning: Flow rate (m³/h)	12	12	12	14.4
Manual pump cleaning: Flow rate (m³/h)	4.8	4.8	4.8	4.8
Electric heater in the wash tank (kW)	4.5	6	6	2 x 6
Treatment temperature (guide value) (°C)	45	45	45	45

BIO-CIRCLE HP



Manual cleaning with the lid open or closed

- ▶ Manual cleaning with a through-feed brush with the lid open or closed
- ▶ Cleaning temperature 45 °C
- ▶ Insulated tank prevents heat loss
- ▶ Operating pressure 20–60 bar; optimal handling via a high-pressure gun
- ▶ Extendable step
- ▶ Payload up to 350 kg; can be loaded by crane
- ▶ Significantly longer bath service life thanks to microorganisms
- ▶ A manually operated turntable is available as an option



ROSTFREI
Edelstahl

HP Vigo

Manual cleaning with the hood closed

- ▶ Cleaning temperature adjustable up to 45 °C
- ▶ Operating pressure adjustable up to 80 bar, optimum handling via a high-pressure nozzle
- ▶ Compressed air gun for drying parts
- ▶ Payload up to 150 kg
- ▶ Significantly longer bath service life thanks to microorganisms
- ▶ Shuts off automatically when the liquid level is too low via a float switch (to protect the heater and pump)



	BIO-CIRCLE HP	HP Vigo
Dimensions (W x D x H) mm	1150 x 1229 x 1800 / 2430	1348 x 857/1334 x 1574/1953
Worktop (W x D) mm	860 x 580 x 480	1200 x 800 x 450
Load capacity	350 kg	150 kg
Working height (mm)	950 / 1210	950 / 1050
Operating temperature	45 °C	45 °C
Heating	0.65 kW	2 kW
Pump	1.6 kW, working pressure = up to 60 bar	1.85 kW, AD = up to 80 bar
Optimal filling capacity	100 l	125 l
Material	Stainless steel	Stainless steel
Weight (empty)	235 kg	125 kg
Electrical connection	230 V, 50 Hz	230 V, 50 Hz

HTW Hot Water Parts Washer

Bio-Circle HTW II

Robust, fully automatic cleaning machine
for single-stage cleaning and degreasing of small parts

A low-maintenance high-pressure spray system, fitted with a special nozzle system, ensures thorough cleaning and degreasing of tools and other parts. Thanks to the driven rotating basket and the spray pressure, the Bio-Circle cleaning agents in the hot water parts washer act optimally on the items being cleaned.

- ▶ Tank with sloping base for rapid emptying
- ▶ Digitally adjustable thermostat (up to 90 °C), digital timer controls the duration of the cleaning cycle
- ▶ Machine body, basket insert, spray system and control box made of V2A
- ▶ Electric rotating basket drive



	HTW-II 800	HTW-II 1000	HTW-II 1200	HTW-II 1500
Overall width x overall depth (mm)	1180 x 1145	1370 x 1210	1580 x 1505	2080 x 1681
Height of closed/open lid with exhaust air bend (mm)	1361/1790	1524/2005	1580/2200	1840/2700
Internal diameter of wire basket, approx. (mm)	775	975	1175	1500
Maximum usable height (mm)	400	450	650	700
Maximum payload (kg)	350	350	350	350
Washing fluid tank – capacity (L)	150	300	485	770
Total weight of the cleaning system without tank contents, payload (kg)	280	350	350	550
Total electrical power consumption / electric heating approx. (kW)	6/ 4.5	8.5/ 6	11.5/ 9	21.5/ 2 x 9
Automatic cleaning pump: flow rate (m³/h/bar)	4.8/3.8	12.0/3.8	12.0/3.8	14.5/4.5



RWR Pipe and Vessel Cleaning System

Cleaning system for pipes, tanks and heat exchangers

The RWR pipe and tank cleaning system, manufactured entirely from stainless steel, is specially designed for cleaning and flushing contaminated pipework, sewage tanks, fresh water pipes and tanks, heat exchangers and coolers. The Power Cleaner DB cleaning agent used effectively removes contaminants such as urine scale, limescale and corrosion. Grease, oils and oil sludge can be reliably removed using the CB 100 Alu cleaning agent.

- ▶ Cold and hot operation (thermostat adjustable up to 90 °C – factory-set to an optimum 60 °C)
- ▶ Easy to operate thanks to PLC control
- ▶ Stainless steel filter protects the pump from solids
- ▶ Collection tray for hoses with a drain for easy emptying
- ▶ Mobile – the unit is mounted on a trolley and can therefore be taken directly to the point of use – for all units, this can also be done using a forklift via a guide rail or with our RWR-Mover
- ▶ Available in sizes with a usable volume of 300, 500 and 1000 litres



	RWR multi-channel	RWR-500 DB-A SPS	RWR-500 DB-F SPS
Dimensions	2410 x 1200 x 1335 mm (L x W x H)	2495 x 1100 mm (L x W)	2495 x 1100 mm (L x W)
Media tank capacity	300 l	500 L with drain for easy emptying	500 L with drain for easy emptying
Feed pump	up to max. 12 m³/h	up to max. 12 m³/h	up to max. 12 m³/h
Return pump	-	Vogelsang-Pump, up to max. 12 m³/h	up to max. 12 m³/h
Electrical connection	400V, 16A, 16 kW/Heating: 2 x 6kW	400V, 32A, 17 kW/Heating: 2 x 7,5kW	400V, 32A, 17 kW/Heating: 2 x 7,5kW
VA heating	factory-set to an optimum 60 °C	factory-set to an optimum 60 °C	factory-set to an optimum 60 °C
Hose connections	Supply: 8 x ½' Return: 8 x ½'	Supply: 1' Return: 1½'	Supply: 1' Return: 1'
Total weight	160 kg	440 kg	350 kg



CLEAN BOX

Your washing station

The **CLEAN BOX Max** and **Flex** are the perfect washing stations for large parts and extremely bulky workpieces. This makes them suitable for use in many workshop and production areas, such as maintenance, mechanical engineering and industrial construction. The CLEAN BOX units are characterised by their ease of use and the use of low-temperature cleaning agents.

Due to the built-in pump, they are only suitable for aqueous alkaline cleaning agents:

CLEAN BOX Max

- For large, bulky workpieces
- Through-feed gun with integrated washing brush
- Grating on the work platform
- Available in two sizes (Max 1 and Max 2)
- Feed pump for cleaning fluid
- Electropneumatic foot switch for switching the pump on and off

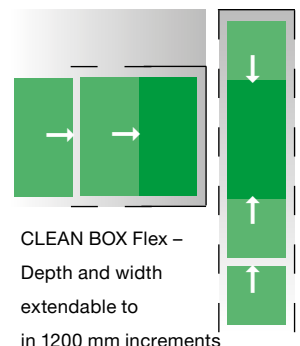


CLEAN BOX Flex

- Expandable modular design
- Available to order in standard sizes with a feed pump for cleaning agents
- Integrated collection tray in accordance with the German Water Resources Act (WHG) with leak detection and a tank with a lid



	CLEAN BOX Max 1	CLEAN BOX Max 2	CLEAN BOX Flex
External dimensions W x D x H (mm)	1420 x 1420 x 520	2400 x 1420 x 740	Standard 2725 x 1505 x 390 variable work surface (1.2 m modules) available to order only
Usable area W x D (mm)	1220 x 1220	2250 x 1220	variable
Material	PE	PE	PE-HD
Load capacity	1000 kg	1000 kg	1000 kg
Net volume min./max.	200 L / 300 l	700 L / 1000 l	250 L / 350 l
Total usable volume	590 l	1400 l	355 l
Working pressure	0,2 bar	0,2 bar	0,2 bar
Weight	100 kg	160 kg	250 kg
pH operating range	4,5–12	4,5–12	4,5–12
Rated input voltage	230 V / 1,3 A / 50 Hz	230 V / 1,3 A / 50 Hz	230 V / 1,3 A / 50 Hz
Power consumption	330 W	330 W	330 W
Operating temperature	Room temperature	Room temperature	Room temperature
Max. operating pressure	2 bar	2 bar	2 bar
IP	68	68	68



PROLAQ Auto

Manual and automatic cleaning for all paint application and finishing tools

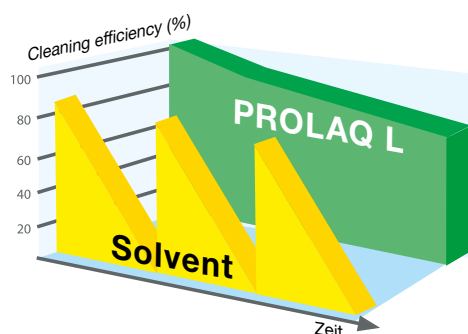
The PROLAQ Auto is a compact cleaning station for paint spray guns and tools. Cleaning in explosion-protected areas can be carried out manually or automatically. Flow cups and suction cups can be cleaned automatically.

The cleaned components can then be dried using an air shower. The integrated extraction system and hood effectively minimise odours and ensure a clean working environment.

- Manual and automatic cleaning, even in explosion-protected areas
- Automatic cleaning of 2 guns simultaneously
- For suction and flow cup guns
- Follow-up air flushing
- Manual cleaning with a through-feed brush is also possible
- Lockable by means of a cover
- Sedimentation and filtration unit included



Cleaning performance



	PROLAQ Auto
Dimensions (W x H x D)	857 x 1554 x 508 mm
Manual work surface (W x D)	415 x 415 mm
Working height	1040 mm
Pump	Compressed air diaphragm pump with PTFE diaphragm
Pump flow rate	12 l/min
Air consumption of pump	58 l/min
Filling capacity	60 l
Material	Steel/stainless steel
Weight (empty)	94 kg
Air pressure	5 – 6 bar
Automatic cleaning	14 nozzles; cleans 2 guns
Noise level	<70 dB
Exhaust pipe diameter	76 mm
ATEX	Zones 1 und 2



PROLAQ Compact

Manual cleaning system for all paint application and paint processing tools

The mobile PROLAQ Compact offers the user a high degree of flexibility. It can clean a wide range of paint application tools such as nozzles, squeegees, stencils or hose-fed airless systems. The robust cleaning unit, made of plastic (PE), is powered by compressed air. It is operated via a foot switch. A high-quality through-feed brush ensures optimum cleaning results. A compressed air gun on the side provides a quick way to dry the cleaned parts.

- Compressed air-powered
- Integrated hopper
- Mobile set
- High-quality flow-through brush, optionally available in various degrees of stiffness
- Lid with splash guard (optional)
- Accessory box (optional)
- Mount for accessories box (optional)



Gefördert durch:



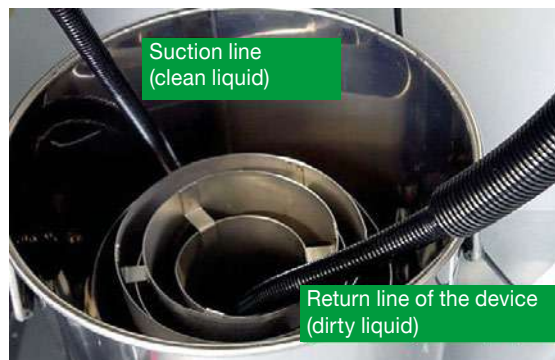
Bundesministerium
für Wirtschaft
und Energie

aufgrund eines Beschlusses
des Deutschen Bundestages

	PROLAQ Compact
Dimensions (W x H x D)	840 x 1060 x 600 mm
Worktop (W x D)	740 x 450 mm
Load capacity	100 kg
Working height	980/840 mm
Pump	Compressed air diaphragm pump with PTFE diaphragm
Optimum filling capacity	40 – 60 l
Material	LDPE
Weight (empty)	50 kg
Air pressure	max. 6 bar

PROLAQ conversion kit

The **PROLAQ conversion kit** for existing systems can be installed quickly and easily in all spray gun cleaning systems. For example, the label-free paint remover **PROLAQ L 400** replaces conventional solvents, and **cleaned micro-particles are separated from the medium by sedimentation**.



BIO-CIRCLE Turbo Ventricle

Cleaning of vacuum ventricles, WC modules and WC components in a single cleaning system

- ▶ Made entirely from stainless steel
- ▶ Transportable using a pallet truck
- ▶ A wide variety of WC components – one machine
- ▶ Basket diameter 1,000 mm or larger
- ▶ Height-adjustable nozzle assembly with fan nozzles
- ▶ 4 bar centrifugal pump for the nozzle assembly or for special use in ventricle cleaning
- ▶ 4 bar centrifugal pump for manual cleaning using an adjustable jet nozzle or brush
- ▶ Compressed air gun for blowing off components in the enclosed cleaning system
- ▶ Connections for ventricle cleaning using the flush-through method
- ▶ Filter unit for ventricle cleaning with filter pressure monitoring
- ▶ Digital temperature and time control
- ▶ Powerful steam vapour extraction with condensate recovery elbow
- ▶ Connections: compressed air max. 6 bar and electricity 400 V/32 A
- ▶ DB AG-approved cleaning system
- ▶ Approved 'Power-Cleaner DB' cleaner for toilet module cleaning



Suitable for WC modules, vacuum ventricles and WC components of a wide range of sizes. Can also be used for cooler cleaning via the flush-through method and for external cleaning, with a cleaner suited to the application.

	BC Turbo 1000 Ventricle
Dimensions (W x H x D) with steam vapour extraction	1418 x 1815 x 1345 mm
Machine dimensions (W x D x H)	2018 x 2225 x 2175 mm
Opening angle for the lid	60°
Loading height (top edge of wash chamber)	1005 mm
Internal wire basket diameter, approx. / wire basket height	975 mm/ 115 mm
Max. usable height	400 mm
Distance from basket base to nozzles	480 mm
Max. payload	350 kg
Liquid tank usable capacity	min 200 l/max 260 l
Total weight of the car wash (empty)	approx. 550 kg
POWER SUPPLY	
Protection class	IP 55
Total electrical power rating	11,1 kW
Power supply – three-phase	400V, 32A, 50 Hz
Electric heating in the wash tank	6 kW
CONNECTIONS	
Ball valve for draining the wash liquid tank	1 ¼"
SPRAY NOZZLE SYSTEM	
Number of compartment nozzles	23 pcs.
Spray pressure approx.	4 bar
Flow rate	12 m³/h



MACHINE SERVICE AND CLEANING

- ▶ Thorough internal and external cleaning
- ▶ Inspection of the machine to check the functionality of its components
- ▶ Cleaning and, where necessary, free replacement of parts (excluding wear parts)
- ▶ Removal of sediment accumulated on the floor
- ▶ Refill the table with the cleaned BIO-CIRCLE Liquid or top it up, depending on the cleaner and mixing ratio

ALSO AVAILABLE AS AN ADDITIONAL SERVICE:

- ▶ UVV inspection
- ▶ Inspection in accordance with DGUV-V3

PLEASE NOTE:

- ▶ The replacement of consumables (such as freshly refilled BIO-CIRCLE Liquid, filters and brushes) is subject to a charge.
- ▶ In the event of malfunctions, the machine will be repaired within a few working days; however, we reserve the right to provide spare parts for you to fit yourself. All prices include call-out charges.
- ▶ We'd be happy to provide you with contact details for local disposal services for used liquid and sediment.



BIO-CIRCLE GT-i Parts Washer 8 years warranty!

During this period, we will provide you with any necessary spare parts free of charge for you to fit yourself. This excludes consumables and wear-and-tear items, such as brushes, filters and aerators.

Maximum reliability – low running costs over the service life.

Book your service package

To ensure your **BIO-CIRCLE GT-i brush washing unit** runs like clockwork, it should also be cleaned and serviced regularly. Our service technicians, who operate throughout Germany, will be with you on site promptly

BIO-CIRCLE GT-I COMPACT OR MAXI

- ▶ One-off service: no contractual commitment
- ▶ SP3: 3 maintenance sessions *
- ▶ SP4: 4 maintenance units
- ▶ SP6: 6 maintenance units
- ▶ SP10: 10 maintenance units

PROLAQ COMPACT OR AUTO

- ▶ One-off service: no contractual commitment
- ▶ SP4: 4 maintenance units

BIO-CIRCLE HP

- ▶ One-off service: no contractual commitment
- ▶ SP4: 4 maintenance units
- ▶ SP10: 10 maintenance units

HP VIGO

- ▶ One-off service: no contractual commitment
- ▶ SP4: 4 maintenance units
- ▶ SP10: 10 maintenance units



*Our maintenance units are valid for a period of 12 months.

STAINLESS STEEL FOAM SPRAYER

Compressed air-powered foam sprayer with a 3 m compressed air hose. Easy to use and safe to operate thanks to a stainless steel housing, safety valve and air pressure control.

For applying aqueous, foaming cleaners, pH 2–12, such as FOR CLEAN V and CB 100 Alu.



Apply the cleaner using the compressed air foam lance



- ▶ Compressed air: max. 8 bar
- ▶ Adjustable compressed air
- ▶ With handle and castors
- ▶ Efficiency: 7.3 m² per minute

FOAM INJECTOR

The foam injector is easy to use, virtually maintenance-free and comes with a 10 m hose and foam lance – the perfect tool for cleaning large areas. The thick, long-lasting foam breaks down stubborn dirt, even on vertical surfaces, depending on the cleaner's mode of action.



- ▶ Compressed air: 5 bar
- ▶ Efficiency: 3.1 m² per minute
- ▶ With compressed air diaphragm pump
- ▶ Includes adapter for attaching an IBC or 200-litre drum
- ▶ Suitable for foaming cleaners with a pH of 0 to 14, e.g. FOR CLEAN, UNO X, STAR FUTURE V and STAR FUTURE V STRONG
- ▶ 10 m or 20 m hose
- ▶ 20 m hose with stainless steel reel



“CLEANING? BUT SAFELY!”

(Employee at Bio-Circle Surface Technology GmbH)



VOC-free, VOC-reduced

The European VOC Solvents Directive (1999/13/EC) aims to considerably reduce the use of solvents and VOC emissions into the environment, thus protecting human health. In the development and manufacturing of our products we pay close attention to developing and manufacturing VOC-free or VOC-reduced products. In plenty of applications, the water-based Bio-Circle products can replace solvents completely.



Non-labelled

With the aid of efficient systems and non-labelled products we succeed in optimizing the processes at our customers'. The cleaning quality is maintained although the cleaning is done without labelled products. The laborious handling of hazardous substances is obsolete. HAZMAT storages, HAZMAT trainings, and the preparation of operating instructions are a thing of the past. The employees' health and the environment are protected. Even trainees and apprentices are allowed to handle the products.



NSF – Cleaning in the foodstuffs industry

The NSF-certified water-based Bio-Circle cleaners are completely miscible with water, and because of their residue-free rinsability they are suitable for applications in the foodstuffs industry according to sec. 31 LFGB (German Food, Consumer Goods and Feed Code).



Water-miscible

Many of our cleaners are concentrates. They are easy to mix with water and hence very economical. Please make sure the mixing ratio corresponds to the application and the contamination.



Clean Blue – for low-temperature cleaning only

The Bio-Circle low-temperature cleaners – Clean Blue – have been developed for mechanical and manual use. They save energy and efficiently remove strong contaminations already at ambient temperature.



Ready to use

These cleaners are applied ready for use. Depending on the cleaner, their application is manual or mechanical. The user is relieved of one work step, as calculating the mixing ratio is no longer necessary.

STAR Future V SAP 1125 212



STAR Future V is a water-based, phosphate- and solvent-free cleaner for removing oil, grease and soot deposits. The cleaner is applied either in highly concentrated form or diluted with water up to a ratio of 1:10, before being removed with a high-pressure cleaner after a short contact time. The cleaner has a slightly viscous consistency to ensure it adheres to vertical surfaces. This viscosity prevents the cleaner from drying out or running off the components. **Available in 20 L, 200 L und 1000 L.**

- ▶ Biodegradable in accordance with the EU Directive
- ▶ VOC-free
- ▶ Non-flammable, can be used up to 90°C
- ▶ Viscous, adheres to vertical surfaces

APPLICATIONS: • The cleaner is used on bogies, for locomotive cleaning, in maintenance work and on all large oily and greasy components, freight wagons and passenger carriages



STAR Future V Strong SAP 1173 271



STAR Future V STRONG is a gel-like, foaming, aqueous, solvent-free cleaner for removing environmental contaminants, oils, greases and soot from bogies and similarly soiled steel components. The cleaner is applied using the foam injector, either in highly concentrated form or diluted with water up to a ratio of 1:10. All other application systems are unsuitable for this purpose. As the cleaner is formulated to be viscous and foaming, it adheres very well to vertical surfaces. Due to the very low level of aerosol formation, this cleaner does not cause irritation to the respiratory tract.

Available in 20 L, 200 L und 1000 L.

- ▶ Biodegradable in accordance with the EU Directive
- ▶ VOC-reduced
- ▶ non-flammable, can be used up to 90°C
- ▶ Viscous and foaming, adheres to vertical surfaces
- ▶ Very low aerosol formation – protects staff

APPLICATIONS: • Bogie cleaning
• Under-floor cleaning (carcass pit)
• Brake dust and environmental contaminants can be easily removed
• Oils, greases and soot are no problem for the cleaner

EMPLOYEE-FRIENDLY

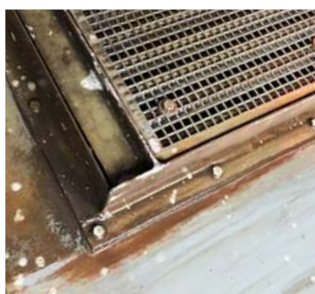
- ▶ No aerosol formation due to the foam
- ▶ Viscous – does not run off like liquid cleaner

COST-EFFECTIVE

- ▶ Gel-like foam, adheres to the component
- ▶ Easy to dispose of

ENVIRONMENTALLY FRIENDLY

- ▶ VOC-reduced
- ▶ Biodegradable in acc. with the EU Directive



ALUSTAR 500 SAP 1358 603



ALUSTAR 500 is a water-based, low-foaming neutral cleaner designed for use in fully automatic spray cleaning machines. It removes inorganic contaminants such as brake dust and biomass of all kinds, as well as very heavy grease and oil contamination. Depending on the level of contamination, ALUSTAR 500 can be diluted with water. Thanks to its neutral pH value, not only can steel and iron components be cleaned fully automatically, but also those made of aluminium, non-ferrous metals or composites containing these materials. The service life can be extended when using standard coalescing separators (e.g. plate phase separators) due to the demulsifying properties of the cleaning agent.

Available in 20 L, 200 L und 1000 L.

- ▶ **Biodegradable in acc. with the EU Directive**
- ▶ **VOC-free**
- ▶ **Non-flammable, can be used at temperatures up to 90 °C**
- ▶ **viscous, adheres to vertical surfaces**

APPLICATIONS: • Automatic cleaning of bogie components on freight wagons and passenger carriages that are heavily contaminated with brake dust and grease.

EMPLOYEE-FRIENDLY

- ▶ pH-neutral
- ▶ odourless

COST-EFFECTIVE

- ▶ sehr lange Bad-Nutzungsdauer
- ▶ Easy disposal

ENVIRONMENTALLY FRIENDLY

- ▶ VOC-free
- ▶ Biodegradable in acc. with the EU Directive



BIO-CIRCLE LIQUIDS

A real spectacle

CLEANING AT THE HIGHEST LEVEL: SIMPLE, FAST, SAFE.

The water-based, alkaline BIO-CIRCLE Liquids are solvent-free and do not require labelling, whilst offering excellent cleaning performance. User-friendly and environmentally friendly, they provide an alternative to solvents. Their use ensures greater workplace safety and lower operating costs, benefiting both users and business owners alike. BIO-CIRCLE Liquids, when used in conjunction with BIO-CIRCLE brush-washing stations, contain microorganisms* that break down the removed oil, thereby guaranteeing a long service life. A consistently good cleaning result is achieved even as the level of contamination increases.

BIO-CIRCLE Liquids are ready to use, offer temporary corrosion protection and have an ideal cleaning temperature of 41 °C.

BIO-CIRCLE L Evo



Available in 20 L, 200 L und 1000 L.

- ▶ VOC content below 1%
- ▶ The most versatile of the BIO-CIRCLE Liquids
- ▶ For medium to heavy soiling
- ▶ Environmentally friendly and safe
- ▶ For manual and machine use:
 - in BIO-CIRCLE brush washing stations, parts washers and high-pressure parts washers
- ▶ VOC-free and exempt from labelling requirements in accordance with the CLP Regulation
- ▶ Cleans materials such as:
 - aluminium, galvanised surfaces and non-ferrous metals, as well as steel/stainless steel and plastic

Manual use

	Everyday soiling*	TOP SELLER The right choice for your applications.		Persistent soiling*
	BIO-CIRCLE L	BIO-CIRCLE L EVO	BIO-CIRCLE L Ultra	
Mechanics	parts washer with flow brush	parts washer with flow brush, parts washing machine, high-pressure parts washer	parts washer with flow brush	
Operating temperature	41 °C	41 – 45 °C	41 °C	
Residues	virtually residue-free	virtually residue-free	forms a light protective film	
Aluminium protection	-	ALU	-	
Food areas	NSF	NSF	NSF	
Corrosion protection	temporary	temporary	temporary	
Environmental aspect of raw material	Surfactants based on renewable raw materials; label-free according to the CLP Regulation, VOC-free according to 2010/75/EU			
Labelling				

* Everyday soiling: oils, greases

* Persistent soiling: bitumen, anti-corrosion wax, burnt-in grease and oil, oil carbon, paint

Cleaning with BIO-CIRCLE L Evo



*The microorganisms used are non-pathogenic bacteria of risk group 1 (classified according to BioStoffV 2000/54/EC, TRBA 466).
Risk group 1: Substances that are unlikely to cause disease in humans.



BIO-CIRCLE L

SAP 935 968

Available in 20 L, 200 L und 1000 L.

- The everyday choice among BIO-CIRCLE liquids
- Suitable for the food industry



BIO-CIRCLE L Ultra

SAP 1135 664

Available in 20 L, 200 L und 1000 L.

- For heavy soiling
- Suitable for the food industry
- Can be used in BIO-CIRCLE brush wash basins, parts washers and high-pressure parts washers



BIO-CIRCLE Liquids clean a wide variety of contaminants, depending on requirements and the cleaning system: grease, oil, release agents, smoke, soot, abrasion residues and grinding dust. In some cases also: baked-on organic contaminants, rust, oxidation and tarnish, bitumen and anti-corrosion waxes.

Materials: stainless steel, steel, plastic, painted and galvanised surfaces. In some cases also: aluminium, non-ferrous metals.

APPLICATIONS: Maintenance of components, workpieces and engines. Across various sectors: automotive, food, metalworking/CNC, rail transport, and the skilled trades.

Do you already have a cleaning system and would like to use our innovative products? Get in touch – we'd be happy to advise you!
www.bio-circle.de

PROLAQ L RANGE

Make a new choice!

With the unique **PROLAQ Liquids**, we offer you an alternative to nitro-based thinners: **VOC-reduced and labelling-friendly paint strippers** for removing paints, varnishes, inks and printing inks.

Recyclable. Lower costs. Optimal cleaning performance. User-friendly. Environmentally friendly.

Fewer safety precautions, reduced operating costs and a healthier workplace. Systematic cleaning: The ready-to-use PROLAQ paint removers are specially designed for use in the PROLAQ Compact and PROLAQ Auto cleaning systems, as well as in ultrasonic cleaning units.

Available in 20 L, 200 L und 1000 L Containers.

PROLAQ L 400 SAP 1358 955



Labelling-exempt, solvent-based paint remover

- ▶ Effectively removes undried paints, varnishes and printing inks from spray guns, rollers, pumps, etc.
- ▶ Leaves minimal residue
- ▶ Exempt from labelling requirements in acc. with the CLP Regulation
- ▶ VOC content (EU: < 45 % VOC content; CH: 16 % VOC content)
- ▶ Suitable for both machine and manual use
- ▶ Suitable for recycling
- ▶ Non-flammable
- ▶ Removal of graffiti



Hose system cleaning with PROLAQ

PROLAQ L 500 SAP 1215 293



VOC-reduced paint stripper

- ▶ Primarily for solvent-based varnishes and paints
- ▶ Suitable for both machine and manual use
- ▶ VOC-reduced (EU: 20% VOC content; CH: 36 % VOC content)
- ▶ Cleans brushes, rollers and filters
- ▶ For cleaning various paint systems
- ▶ Cleans suction inlets, filters, paint lines, spray guns, hoses and rollers
- ▶ Suitable for recycling
- ▶ Non-flammable



Graffiti removal

Die **PROLAQ Liquids** dissolve paints, varnishes, ink, printing inks and pigmented inks.

Materials: All paint application and finishing tools, as well as stainless steel, steel and aluminium, are cleaned.

In some cases also: non-ferrous metals and galvanised surfaces

APPLICATIONS: across all industries, wherever paints and coatings are used; cleaning of paint application tools, hoses, printing rollers, stencils, etc.; manual and machine use in PROLAQ cleaning systems, immersion baths and ultrasonic cleaning units.

YOUR BENEFITS

- ▶ High cleaning power
- ▶ Reduced solvent use
- ▶ Safe working environment
- ▶ Professional cleaning system

Stripper

Available in 20 L, 200 L und 1000 L.

- Removes paints and coatings, graffiti, adhesive residues, varnishes, etc.
- Suitable for use on stainless steel, steel, tiles, stone, concrete, etc.

Materials: stainless steel, aluminium, non-ferrous metals, steel and galvanised surfaces

APPLICATIONS: Immersion baths, hot-water parts washers, ultra-sonic baths, paint stripping systems



Shock absorber before



Shock absorbers afterwards

FT 300 SAP 1442 115

Leaves no residue



The quick-drying FTs are residue- and streak-free cleaners for surface preparation and final cleaning. Perfect for manual cleaning, such as degreasing prior to painting or for removing adhesive residues, machining oils, fingerprints and dust. They are label-free and VOC-reduced, making them user-friendly and environmentally friendly.

Available in 20 L, 200 L und 1000 L.

- Residue-free and streak-free
- Evaporates more quickly than water-based cleaners
- Suitable for use on all surfaces

The FTs remove oil, release agents, grease, fingerprints, abrasion marks, grinding dust and adhesive residues.

From: stainless steel, steel, tiles, aluminium, non-ferrous metals and galvanised surfaces. In some cases also from wood, plastic, rubber and painted surfaces, amongst others.

APPLICATIONS: across all sectors, metalworking / CNC, automotive, 3D printing, plastics processing, rail transport, trades.



CB 100 Alu SAP 1125 344



This water-based cleaner is formulated using natural ingredients, which give it its powerful cleaning properties. It removes carbon deposits, soot, sealants and adhesives, oil residue, bitumen and protective waxes. CB 100 Alu is gentle on materials and does not damage metallic surfaces.

Available in a user-friendly 500 ml spray bottle, refillable from 20 L, 200 L and 1000 L containers.

APPLICATIONS: • Universal for the manual and automatic removal of the most stubborn contaminants across all industrial sectors

- Cleaning of roller and ball bearings
- Maintenance of engines
- Replacement for petroleum in cleaning
- Suitable for use in ultrasonic cleaning systems
- Suitable for use in HTW and BIO-CIRCLE Turbo
- Degreasing prior to painting



EFFICIENT

- ▶ Extreme cleaning power
- ▶ Can be used cold or warm

ENVIRONMENTALLY FRIENDLY

- ▶ VOC-free
- ▶ No labelling required
- ▶ Free from hazardous substances

SUSTAINABLE

- ▶ Very long service life
- ▶ Based on renewable raw materials



CB 100 V

Salt- and residue-free foam cleaner



CB 100 V has been developed for cleaning electrical equipment such as electric motors, switch cabinets, insulators and more. **The major advantage:** CB 100 V is salt-free and therefore does not impair functionality or insulation values to earth. **The cleaner produces a very rich lather** and penetrates even the smallest gaps in windings, components and surfaces.

- ▶ **Maximum cleaning performance** – reliably removes dust, oil, carbon deposits and conductive contaminants
- ▶ **Salt-free** – no disruptive residues, ideal for electrical components
- ▶ **No mechanical reworking required** – saves time and reduces maintenance effort
- ▶ **Active foam** – long contact time, reaches even hard-to-access areas
- ▶ **Gentle on materials** – insulation varnishes and sensitive components remain intact
- ▶ **Environmentally friendly** – no labelling required and biodegradable
- ▶ **Energy- and cost-efficient** – fewer drying cycles and no need for a second cleaning stage

APPLICATIONS:

In addition to electrical engineering, wherever foam cleaning is used, on vertical surfaces, in industrial maintenance and servicing, and for surface preparation.



Accessories for perfect foam.

AF Clean SAP 1451 191



The perfect combination with Air Force

AF Clean is the perfect partner for the refillable Air Force aluminium spray bottle! This alkaline, labelling-free cleaner is a must-have for your manual surface cleaning, as it **delivers powerful cleaning performance whilst leaving minimal residue.**

Available in 3-litre refill canisters, 20 L, 200 L und 1000 L containers.

- ▶ **REMOVES** oils, greases, abrasion marks, grinding dust, release agents and adhesive residues
- ▶ **CLEANS** steel, stainless steel, aluminium, plastic and painted surfaces
- ▶ **Safe:** no labelling required, VOC-reduced in accordance with the CLP Regulation
- ▶ **Non-foaming**
- ▶ **Pleasant menthol scent**

APPLICATIONS: Metalworking/CNC, automotive, plastics processing, trades, maintenance

Spray on – leave to take effect – wipe off



AIR FORCE

Sustainably good: the refillable spray can!

From the canister into the spray can – that's the new approach to manual surface cleaning. No more spray can waste; use as usual at the touch of a button.



Spray over large areas – apply precisely where needed



The perfect combination – Air Force & AF Clean!

With compressed air and cleaner, you can do without flammable propellants.

- ▶ **Unscrew the spray can – pour in the cleaner – screw it back on – fill with compressed air – done!**
- ▶ **at the touch of a button**
 - Fine spray mist for large areas
 - Flush and rinse with a precision capillary tube
- ▶ **Precise, accurate, overhead, ideal for blind holes**
- ▶ **AF Clean: no labelling required, low residue**
- ▶ **Spray on – leave to work – wipe away**
- ▶ **For all non-labelled products from Bio-Circle**



APPLICATIONS: Metalworking, plastics processing, trades, rail maintenance and, in general: as a substitute for brake cleaner, pre-treatment and final cleaning, cleaning large surfaces, components such as engine blocks with narrow gaps, overhead work and much more.

To top up the compressed air, a tyre inflator with an adapter (for cars) is required; recommended pressure: up to 6.3 bar

Smoke Resin Remover DB SAP 667 836



Phosphate- and solvent-free **intensive cleaner with germ-reducing properties** for cleaning and degreasing (highly concentrated, dilutable with water up to a ratio of 1:100). For removing the most stubborn soiling, such as resinified and cracked greases and oils, and ball and roller bearing greases. Raising the cleaning temperature to the optimum 60°C shortens the cleaning time. The cleaner contains a corrosion inhibitor for components susceptible to corrosion. **Available in 20 L, 200 L und 1000 L.**

- APPLICATIONS:**
- Cleaning of air filters, roller bearings and gearbox housings
 - Removal of caked-on greases and oils from steel and castings
 - Professional
 - For the mechanical removal of the heaviest soiling, such as rolling element and roller bearing greases – approved by Deutsche Bahn AG

COST-EFFECTIVE

- ▶ High cleaning performance
- ▶ Can be diluted

ENVIRONMENTALLY FRIENDLY

- ▶ VOC-free
- ▶ Biodegradable in accordance with EU directives

PROFESSIONAL

- ▶ Approved by DB AG
- ▶ System application



ALUSTAR 300

SAP 799 125



Professional, liquid, highly concentrated **cleaner and degreaser for the mechanical cleaning and degreasing of parts**. Suitable for use as a highly alkaline cleaner in maintenance and repair work, as well as a substitute for solvents. Suitable for use on aluminium and brass components.

Available in 20 L, 200 L und 1000 L Containers.

- ▶ **Compatible with oil separators**
- ▶ **Demulsifying – entrained oil and grease can be removed by mechanical methods (e.g. plate-type phase separators)**
- ▶ **Very low application concentrations (from 1 per cent)**
- ▶ **Formulated to minimise foaming**
- ▶ **High dirt-carrying capacity**
- ▶ **Optimum cleaning temperature is 60°C**

APPLICATIONS: • universell – manuell und Machinell einsetzbar (z. B. in Hochdruckreinigern, Teile-Reinigungsanlagen und Ultraschall-Reinigungsgeräten)

Note:

We will be happy to send you titration instructions and curves for determining concentration we will be happy to send to you!



UNO W SAP 816 650



Aqueous, phosphate-free, alkaline workshop cleaner containing selected low-foaming surfactants (highly concentrated, dilutable with water up to a ratio of 1:40) for cleaning and degreasing machinery, tools, workshop equipment, floors, chassis, vehicles, etc. (Corrosion inhibitors guarantee temporary corrosion protection). Powerfully removes oils, greases, resins, waxes, nicotine, insect residue, food residues, soot, bitumen and tar splashes, etc. from metal, plastic, tiles, wood, rubber, coated floors, etc. (gentle on materials and non-abrasive).

Available in 1 L, 20 L, 200 L und 1000 L Containers.

- ▶ **Non-flammable, can be heated to 90°C, speeds up the cleaning process**
- ▶ **Universal cleaner for workshops**
- ▶ **Product description in accordance with ÖNORM**
- ▶ **Aqueous, alkaline, phosphate-free surfactant cleaner**
- ▶ **Suitable for manual use**
- ▶ **For cleaning and degreasing machinery, tools, etc.**
- ▶ **Dissolves greases, resins, waxes, nicotine, insect residue, soot, bitumen and tar splashes, etc.**
- ▶ **Compatible with oil separators**

APPLICATIONS: • Can be used not only for manual cleaning but also in floor cleaning machines, high-pressure washers, spray-extraction machines and hot-water parts washers



Use UNO W					
Recommended application concentration	1:40	1:30	1:20	1:10	concentrated
Aluminium parts	●				
Work pits				●	
Car headliners				●	
Bitumen splatter					●
Buses		●			
Chrome		●			
Diesel residues				●	
Stainless steel degreasing		●	●	●	●
Grease					●
Fly droppings				●	
Forklift		●			
Hard floors				●	
Plastic parts		●			
Plastic flooring		●			
Lorry				●	
Lorry tarpaulins				●	
Machinery				●	
Nicotine				●	
Oil				●	
Oil residues				●	
Oil-contaminated engines				●	
Spare parts	●	●	●	●	
Soot					●
Steel degreasing			●		●
Gates		●	●	●	●
Workshop equipment		●			
Tools		●	●	●	
Machine tools		●			
Tent tarpaulins	●				
High-pressure cleaners			3 – 5 %		
Floor cleaning machines			3 – 10 %		
HTW			3 – 10 %		
High-pressure cleaners			3 – 5 %		

GS 200

GS 200 is an alternative to VOC-containing cleaners for removing bitumen, waxes, bearing grease, tar, resins and rubber residues from surfaces. The cleaner does not attack steel, aluminium or painted surfaces. It even removes burnt-on oil deposits from gearboxes and engines. The cleaner is not subject to labelling requirements, is extremely economical to use and has a flash point of over 100°C.

Available in 500 ml spray bottle (for manual application), as well as in 20 L, 200 L und 1000 L containers.



EFFICIENT

- ▶ Extremely economical when applied to surfaces
- ▶ Slow evaporation – long contact time

ENVIRONMENTALLY FRIENDLY

- ▶ No labelling required
- ▶ VOC-reduced
- ▶ Reduced use of hazardous substances

OMNI SAP 687 107



High-yield, multi-purpose spray with excellent capillary action. Forms a lubricating, non-resinous anti-corrosion film. Dissolves rust and graphite, removes hardened greases and oils, lubricates everything from hinges to pneumatic components, and protects against rust and stray currents.

Available in 500 ml, 20 L, 200 L und 1000 L containers.

APPLICATIONS:

- Indispensable for everyday use in maintenance, production and workshops
- Can also be used in immersion tanks for dewatering
- For efficient pre-cleaning of heavy resin, grease and oil contamination in the BIO-CIRCLE

EFFICIENT

- ▶ Extreme cleaning power
- ▶ Can be used cold or warm

ENVIRONMENTALLY FRIENDLY

- ▶ VOC-free
- ▶ No labelling required
- ▶ Free from hazardous substances

SUSTAINABLE

- ▶ Very long service life
- ▶ Made from renewable raw materials

Power Cleaner DB SAP 155 4581



Water-based, phosphate- and hydrochloric acid-free **intensive cleaner** (highly concentrated, can be diluted with water up to a ratio of 1:40). When used cold, it removes cement and limescale deposits, urine scale, moss and algae, rust, as well as deposits on brass and copper, water marks and black fungal stains, whilst simultaneously reducing germs and disinfecting. The cleaner can be heated to 90 °C.

Available in 20 L, 200 L and 1000 L containers.

- APPLICATIONS:**
- Toilet pipe and cistern cleaning
 - Vacuum toilet cleaning
 - Greywater tank cleaning
 - Fresh water pipe and tank cleaning
 - Radiator cleaning

PROFESSIONAL

- ▶ Developed for railway-specific applications
- ▶ System applications for the entire toilet module

COST-EFFECTIVE

- ▶ Cleaning tasks can be repeated countless times
- ▶ One cleaner for many applications

EMPLOYEE-FRIENDLY

- ▶ Safe handling in accordance with AA



Neutraliser SAP 729 798



Used to neutralise acidic cleaning baths (HTW, US, RWR). Mainly used for vacuum toilet cleaning and for cleaning pipes and containers.

Available in 20 L and 200 L containers.

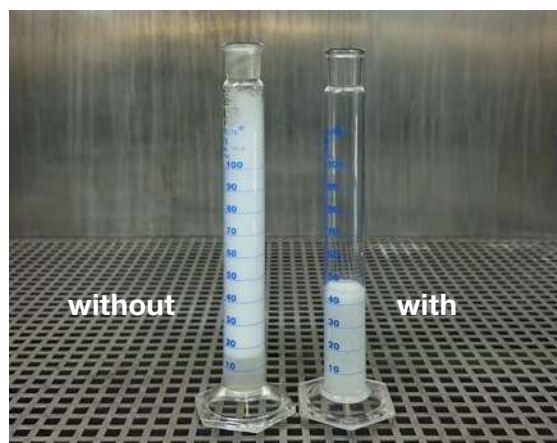
- ▶ **Highly concentrated**
- ▶ **environmentally friendly design**
- ▶ **very economical; one litre of neutraliser neutralises 2.35 L of Power Cleaner DB**

REFILL FOR MACHINE CLEANERS

Defoamer HT



- ▶ Rapid and permanent foam elimination
- ▶ Contains only readily biodegradable substances
- ▶ For use in hot-water parts washers, etc.



Important:

Mix with 2 litres of process medium and add to the system.
See label for mixing ratio

Corrosion protection for aqueous systems

SAP 699 606

Low-foaming corrosion inhibitor for neutral and alkaline Bio-Circle cleaning agents. Contains 100% active ingredient and effectively protects bare iron and steel surfaces against corrosion. Can also be used as a rinsing medium in two-chamber systems.
Available in 1 l, 20 L and 120 L containers.



- ▶ Free from mineral oil, nitrite, PTBB and secondary amines
- ▶ Easily miscible with water and very economical; low application concentration
- ▶ Exempt from labelling requirements under the CLP Regulation

APPLICATIONS: • particularly suitable as a replacement for nitrite-containing corrosion protection formulations in neutral and alkaline solutions

Bio-Circle – the system solutions

For rail-specific types of soiling, we have the ideal cleaning system for you.

Bio-Circle technical consultants work with you – and, if required, with your suppliers – to develop cleaning solutions for specific applications. Here, the Bio-Circle technical consultants benefit from their many years of experience with a wide range of industrial applications. Everything from the planning of system solutions and machine development right through to the documentation of the systems takes place in close consultation between the railway staff involved and the Bio-Circle technical advisers.

Over the last 15 years, numerous projects have been successfully implemented in collaboration with Deutsche Bahn AG. These projects involve solving cleaning tasks that require a combination of machinery, cleaning agents, maintenance, service and, where necessary, the treatment of process water or baths.

This also requires contact with railway suppliers, who provide Bio-Circle's specialist consultants with information on the technology and the materials used.

Projects developed in collaboration with the client Deutsche Bahn AG:

- ▶ Cleaning and disinfection of vacuum toilet components using hot-water parts washers
- ▶ Bogie cleaning using a viscous, foaming cleaner
- ▶ Semi-automated cleaning and disinfection of fresh water tanks and pipes
- ▶ Removal of limescale deposits and urine scale from toilet pipework and tanks
- ▶ Cleaning of expanded metal filters made of stainless steel and aluminium in the hot-water parts washer
- ▶ Cleaning of displays and sensitive surfaces using the FT 300
- ▶ Filling and filtering of coolants in radiators
- ▶ Replacing brake cleaner with AF Clean
- ▶ Graffiti and tag removal with PROLAQ 400
- ▶ Automatic cleaning of paint spray guns with a VOC-reduced cleaner
- ▶ Cleaning of brake line systems using a recirculation process
- ▶ Cleaning and removal of old paint and brake dust using a stripper



Tip:

If you require further information on system application, please contact the Bio-Circle technical advisers directly on 05241 9443-770

The cleaning agents used in these systems have been approved by Deutsche Bahn AG and have an SAP number. All products within the system solutions are included in the framework agreement.



Vakuum-WC tube before



and after System cleaning

Pipe and tank cleaning of toilet facilities

In the pipework leading from the vacuum toilet to the waste tank, the build-up of limescale and urine scale reduces the internal diameter of the pipes. This can lead to blockages in the pipework, which then have to be cleared manually.

In the waste tanks, deposits of limescale, paper and urine scale frequently build up in the inlet area. These are difficult to remove manually as there are internal fittings within the tanks.

The tanks are often difficult to access.

The following business units and employees played a key role in the design of the modern SPS systems:

Karl-Heinz Hederer (DoSto product line manager), Bernd Buggenhagen (DB Systemtechnik), Ralph Gärtner (Siemens Mobility), Monika Maluche (DB Fernverkehr AG)

and Olaf Schmeichel (Bio-Circle Surface Technology GmbH).

We would like to thank the various rolling stock maintenance companies for their kind support.

Project description

This project brief was set for us following the development of the small 80-litre pipe and heat exchanger cleaning system and the RWR 500 DB. The cleaning of toilet pipes and waste tanks is to be carried out in a single operation and, where possible, automatically.

Task

Feeding the cleaning agent through the toilet pipework, extracting the medium via the drain connection (often fitted with a Roediger valve). The cleaning medium is to be filtered and recirculated.

An initial prototype of the RWR 500 DB was delivered to DB Regio AG in Magdeburg in 2009.

From 2020, the RWR systems have been fitted with a SPS. The SPS-equipped RWR cleaning systems are designed for use in the toilet modules and galley areas within the waste water system. Programming the system ensures a tamper-proof cleaning process. The member of staff performs a monitoring role and comes into contact only with clean water when connecting and disconnecting the fittings. There is no contact with the cleaning agent throughout the entire cleaning process. The 'Power Cleaner DB' and the 'Neutraliser' are each used in concentrated form. Both cleaning agents have an SAP number and are specified in the framework agreement.

The RWR 500 DB A-SPS system is manufactured and distributed by Bio-Circle Surface Technology GmbH in accordance with these specifications. **All systems come with a 10-year warranty and are serviced annually.**

Einige Referenzen für RWR 500 DB Anlagen

Aachen	Cologne
Cottbus	Magdeburg
Dresden	Neumünster
Frankfurt	Nürnberg
Hamburg	Munich
Krefeld	Stuttgart
Kassel	Wittenberge

Now over 100 plants.

Requirements for the cleaning process

Flushing the toilet pipework and the waste tank is intended to remove urine and limescale deposits, as well as faecal matter and paper residues. Another function of the cleaner is to kill microorganisms and bacteria. The neutraliser is used to dispose of the entire medium, enabling the contaminated medium to be discharged via the public sewage treatment works. Disposal is only necessary if the cleaning medium exceeds a pH value of 3, or if it no longer meets the application requirements in terms of appearance.

Workflow

Faecal matter is extracted using the railway's own disposal system. The faecal tank must be completely emptied and rinsed with 200 litres of water. The cleaning system is checked for the correct level of cleaning medium, then connected to the mains and switched on. The inlet hose is connected to the toilet pipe. The toilet pipe and the faecal tank are automatically flushed with water and then emptied. The tightness of the connections must be checked at this stage. The system forms a circuit and can now be filled with Power Cleaner DB once the cleaning solution has been heated to the preset temperature of 60 °C. Once the waste tank is approximately 85 per cent full, the drain pump switches on. In this way, the system circulates the cleaner through the circuit. Once cleaning is complete and the waste tank has been emptied, the system is flushed with water via the inlet hose. This flushing water is then automatically extracted and sent for separate disposal.

All hoses and connectors are disconnected. There is no risk to the employee here, as they do not come into contact with hot cleaning fluids.

The cleaning system is ready for the next cleaning task. The user is provided with a manual containing a detailed description of the system. The technical advisers at Bio-Circle Surface Technology GmbH carry out the initial training of staff on the RWR.

Chemicals

In order to offer a comprehensive system solution, a cleaning agent has been selected that is used for similar tasks (cleaning of vacuum toilet systems) at Deutsche Bahn AG.

- Effective descaling (deposit-removing) and cleaning action
- Surfactants are biodegradable in accordance with the EU Directive; can be disposed of via the public sewerage system after neutralisation (see neutralisation instructions; local regulatory discharge conditions must be observed)
- Contains no additional disinfectants; disinfects via pH value and temperature (60 °C)
- Does not corrode the materials and components of pipework and tanks, including fittings
- Approved by Deutsche Bahn AG for the Power Cleaner DB (SAP 155 4581) and for the neutraliser (SAP 729 798)
- Complies with the Biological Agents Ordinance and the hygiene regulations of DB AG

Machine

The cleaning system is characterised by the following parameters:

- SPS-controlled cleaning sequence, vehicle-specific
- All parts in contact with the medium, platform trolleys, control box and components are made of V2A steel
- Cleaning temperature preset to 60 °C
- Can be moved by hand, using the RWR-Mover or with a forklift
- Dry-run protection for heating and pumps
- Integrated filter systems
- Compact design, also suitable for plants with limited manoeuvring space
- Hose and cable holders
- Various connection adaptors available



Before



Toilet pipe and cistern cleaning with

Power Cleaner DB SAP 155 4581

- ▶ Approved by Deutsche Bahn AG for the cleaning of waste water and drinking water pipes and tanks
- ▶ Highly concentrated, low-foaming
- ▶ System cleaning – the cleaner and machine are designed to work together
- ▶ Approved by Deutsche Bahn AG
- ▶ Very good material compatibility
- ▶ Very effective disinfection
- ▶ Recommended for pipe and tank cleaning systems

After



Before



Application:

The toilet pipework is disconnected downstream of the toilet; this is where the cleaning agent is fed in. Standardised RWR connections are fitted. The return flow is routed externally on the vehicle via the standard 3" Kamlok coupling. Cleaning is carried out by circulating the cleaning agent, heated to 60°C. The total cleaning time is 120 minutes. After cleaning, the connections are re-established and the pipe is ready for use again.

Your benefit:

The use of an RWR SPS requires only minimal staff involvement, as the machine operates autonomously. Connecting and disconnecting the system takes just a few minutes. Disposal of the cleaning solution can be simplified through neutralisation. The neutralised cleaning solution can then be discharged into the public sewage treatment works.

After



Neutralisator DB SAP 729 798

Application:

1 litre of Neutraliser neutralises 2.35 litres of unused Power Cleaner DB (concentrate). This neutraliser has been designed with the environment in mind and can be discharged into the sewage treatment plant provided the discharge regulations are observed.

Your benefit:

You save on the disposal costs of the highly acidic cleaning agent. Easy to use, as the neutraliser is a liquid product and mixes easily.



Cleaning of vacuum toilets with

Power Cleaner DB SAP 155 4581

- ▶ Highly concentrated, low-foaming
- ▶ System cleaning – the cleaner and machine are designed to work together
- ▶ High cleaning power
- ▶ Very effective disinfectant
- ▶ Easy disposal
- ▶ Ideal for use in ultrasonic cleaning units and spray washers



Application:

Place the toilet to be cleaned into the cleaning unit. The toilet parts washer is a system tailored to the requirements of Deutsche Bahn AG. (For further information, simply give us a call.) At a concentration of 5% and a cleaning temperature of 60 °C, the washing time is 10 minutes. Turning the toilet over after 5 minutes improves the cleaning result. Spray extremely soiled areas with undiluted Power Cleaner DB. After dismantling, soak the internal parts of the toilet in undiluted Power Cleaner DB or clean them in the cleaning system.

Your benefit:

You can use Power Cleaner DB in a variety of ways.
You save on water and energy costs through efficient recirculation.



Neutralisator DB SAP 729 798

Application:

1 litre of Neutraliser neutralises 2.35 litres of unused Power Cleaner DB (concentrate). This neutraliser has been designed with the environment in mind and can be discharged into the sewage treatment plant provided the discharge regulations are observed.

Your benefit:

You save on the disposal costs of the highly acidic cleaning agent.
Easy to use, as the neutraliser is a liquid product and mixes easily.

Pipe and tank cleaning in fresh water systems

In fresh water tanks and pipework leading to washbasins or toilets, temperature fluctuations cause limescale precipitation as well as deposits of iron and manganese. This can lead to blockages in the supply to the wash-basin or toilet.

The tanks are often difficult to access and consist of between one and three tanks made from a wide variety of materials. Copper, stainless steel and plastic tanks are used, as well as copper, brass and plastic pipework.

The following business units and employees were involved in this project:

Herr Karl-Heinz Hederer, Design Manager for DoSto, DB Regio AG Nürnberg

Herr Olaf Schmeichel, Bio-Circle Surface Technology GmbH

Frau Monika Maluche, DB Fernverkehr AG

Herr Ralph Gärtner, Siemens Mobility GmbH

We would like to thank Deutsche Bahn AG for its kind support.

Project description

We were tasked with this project following the development of the RWR 500 DB wastewater pipe and tank cleaning system. This system is used in many Deutsche Bahn AG depots for the cleaning and disinfection of pipes and tanks in the wastewater system of a vehicle. Eight years after the first generation of RWR fresh water systems was introduced, a redesign was carried out and a RWR was programmed – the RWR 500 DB F-RWR. As a result, the system regulates itself automatically, tailored to the specific vehicle.

Task

Supplying the cleaning agent via the fresh water fill line, returning the cleaning agent via the second fill line or via the frost drain or the tank bottom outlet. The cleaning medium is filtered and recirculated. An initial prototype of the RWR 500 DB-F RWR was delivered to DB Regio AG in Bremen in 2017. Fresh water RWR systems have been supplied to our customers since 2010.

Various modifications to this RWR 500 DB-F SPS model were discussed and implemented during further tests. Additional tests were carried out in Düsseldorf and Dortmund. The galley area is also cleaned using the RWR 1000 DB-F SPS. All modifications that were technically feasible were discussed with the users and project staff at Deutsche Bahn AG and implemented. Comprehensive documentation of the system and the cleaning process was drawn up. This was adapted in accordance with the criteria and using the technical terminology of Deutsche Bahn AG. Once the technical modifications to the cleaning system and the documentation had been finalised, the system was approved. The 'Power-Cleaner DB' cleaner is mixed with water at a ratio of 1:4, whilst the 'Neutraliser' is used in concentrated form. Both cleaners have an SAP number and are included in the framework agreement.

The RWR 500 DB-F SPS system is manufactured and distributed by Bio-Circle Surface Technology GmbH in accordance with these specifications.

Some references for RWR 500 DB-F SPS systems

DB Regio AG Bremen

DB Regio AG Dortmund

DB Fernverkehr Frankfurt

DB Fernverkehr Berlin

DB Fahrzeuginstandhaltung GmbH Cottbus

DB Fahrzeuginstandhaltung GmbH Krefeld

and over 25 first-generation systems in operation.



Requirements for the cleaning process

The cleaner is used to remove contaminants from the tank and pipework and to disinfect the system. After rinsing with drinking water, no residues of the cleaner are detectable. Another function of the cleaner is to remove algae and to kill microorganisms and bacteria. The neutraliser is used to dispose of the entire cleaning medium so that the contaminated medium can be discharged via the public sewage treatment works. Disposal is only necessary if the cleaning medium exceeds a pH value of 3, or if it no longer meets the application requirements in terms of appearance.

Workflow

The drinking water tank must be completely emptied. The cleaning system is connected to the mains and switched on. The level of the cleaning medium is monitored electronically. The inlet hose is connected to the fresh water inlet. Return hose 1 is connected to the fresh water tank and return hose 2 to the opposite inlet. The system forms a circuit and can be filled with Power-Cleaner DB once the cleaning solution has been heated to the preset temperature of 60 °C. The cleaning process begins with a so-called 'bottom flush', during which the cleaning solution is fed in via the inlet and returned to the system via the return line. Following this initial flush, which rinses out loose particles, the system is flushed whilst full. This is carried out by feeding water through inlet connection 1 and returning it via the frost drain. In this way, the system circulates the cleaning agent. The RWR automatically switches between the cleaning agent and water for flushing. The system is flushed with water via the inlet hose. This rinse water is then discharged. Once the pH value of the drinking water matches that of the supplied drinking water, the rinsing can be stopped. The inlet is disconnected. There is no risk to the operator here, as they do not come into contact with hot cleaning fluids. The RWR 500 DB-F SPS is ready for the next cleaning task.

Chemicals

In order to offer a comprehensive system solution, a cleaning agent has been incorporated which is used by Deutsche Bahn AG for similar tasks (cleaning of vacuum toilet systems and waste water pipes and tanks).

- Effective descaling (deposit-removing) and cleaning action
- Biodegradable in accordance with the EC Directive; may therefore be disposed of via the public sewerage system after neutralisation (see neutralisation instructions)
- Contains no additional disinfectants; disinfects via pH value and temperature (60 °C)
- Does not corrode the materials and components of pipework and tanks, including fittings
- Approved by DB AG: SAP 155 4581 for the Power Cleaner DB and SAP 729 798 for the neutraliser

Machine

The cleaning system is characterised by the following parameters:

- All parts in contact with the medium, platform trolleys, control box and components are made of V2A steel
- SPS-controlled cleaning cycle, vehicle-specific
- Cleaning temperature preset to 60 °C
- Can be moved manually, using the RWR Mover or a forklift
- Dry-run protection for heating and pumps
- Integrated filter systems
- Compact design, also suitable for plants with limited manoeuvring space
- Hose and cable holders
- Various connection adaptors and return systems available





Cleaning oily and greasy components with the BIO-CIRCLE

BIO-CIRCLE L Ultra SAP 1135 664

COST-EFFECTIVE

- ▶ Recirculation system
- ▶ Consistent cleaning quality

ENVIRONMENTALLY FRIENDLY

- ▶ VOC-reduced
- ▶ Biodegradable

EMPLOYEE-FRIENDLY

- ▶ No labelling required
- ▶ Special sizes available
- ▶ quick and easy

Application:

Clean heavily soiled, oily and greasy parts with a brush, applying light pressure. The contaminants are quickly and easily loosened and washed away by the flow of the cleaner. The cleaning time is between 2 and 5 minutes. Many other types of contaminants, such as greases, oils, resins and environmental pollutants, can be easily cleaned in this way.

Your benefit:

Simple and quick cleaning of components with various types of contamination, such as oils, greases, soot and even rubber abrasion, can be removed from metals and plastics. Long service life thanks to microbiological oil degradation. A cleaning system that is safe for staff and the environment, for which we offer a special Bio-Circle maintenance service.

Note:

High-gloss aluminium surfaces should only be cleaned very gently or with our soft brush, and then rinsed with demineralised water!

Cleaning of oil-contaminated parts in the BIO-CIRCLE GT-i



Stainless steel attachment
G60030-18-i
Optional extra: with two
brush connections



Cleaning bearing and gearbox components – manually and automatically

CB 100 Alu SAP 112 5344

ENVIRONMENTALLY FRIENDLY

- ▶ VOC-free
- ▶ Long bath service life
- ▶ Based on renewable raw materials

EMPLOYEE-FRIENDLY

- ▶ No labelling required
- ▶ Pleasant odour

COST-EFFECTIVE

- ▶ Recirculation system
- ▶ Cleaning at 55 °C



Application:

Effectively clean and protect contaminated components from corrosion in the Bio-Circle BIO-CIRCLE Turbo wash basin or in the hot-water parts washer. The grease is liquefied by the cleaner and drains out of the roller bearing, even from behind the cage. A liquid film of grease forms on the cleaning bath in the cleaning system; this can be extracted and disposed of.



ROSTFREI
Edelstahl



Cleaning of components with brake dust deposits and the heaviest oil contamination

ALUSTAR 500 SAP 1358 603



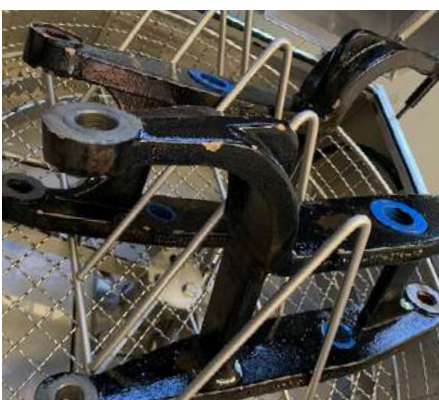
- ▶ Biodegradable in accordance with the EU Directive
- ▶ Not classified as a hazardous substance
- ▶ Can be cleaned at low washing temperatures
- ▶ Miscible with water
- ▶ pH-neutral
- ▶ Compatible with aluminium



vorher



nachher



Application:

Place the components to be cleaned into the Bio-Circle Turbo to allow the first stage of cleaning to run automatically. Following the cleaning cycle, which lasts approx. 30–60 minutes, the deeper channels and blind holes are cleaned in the Bio-Circle Turbo using the spot jet nozzle. After this manual cleaning, the components are blown dry with compressed air inside the unit. This is followed by a final cleaning cycle of approx. 30 minutes in the ultrasonic cleaning bath. All cleaning steps are carried out using the same cleaning agent at the same concentration. The components are then blown dry with compressed air.

Your benefit:

Less manual cleaning with brake cleaners, some of which are hazardous.
Energy cost savings through cleaning at 55 °C
Long service life of the cleaner thanks to our machine maintenance service.

45



SMALL CO₂ FOOTPRINT in industrial cleaning

**We'll make sure of that:
Of course!**

TRANSPORT

- Short distances
- CO₂-neutral forwarders
- Preferably regional suppliers

PRODUCTION

- Consciously sustainable selection of raw materials
- Focus of product development on recycling management
- Self-generated energy

PACKAGING

- Refill
- Recycled packaging
- Preferably regional suppliers

Cleaning process with you:

**Up to 75 % of the CO₂ footprint
of your cleaning process consists
only of the pure application!**

**We reduce the footprint
of your application through:**

Application consulting ✓

Process optimisation ✓

Bio-Circle products ✓

Bio-Circle Surface Technology – the team of experts
with more than 35 years of experience.

References: Deutsche Bahn AG*

Vacuum toilet cleaning

Dortmund
Hamburg
Köln
München
Wittenberge

Cleaning and protecting pneumatic components in doors

München
Neumünster

Cleaning of toilet pipework and cisterns

Aachen	Magdeburg
Cottbus	München
Hamburg	Münster
Kaiserslautern	Neumünster
Köln	Ulm
Krefeld	Wittenberge

BIO-CIRCLE Parts Washer

Braunschweig	Krefeld
Cottbus	Neumünster
Hannover	Nürnberg
Hamburg	

Cleaning of bogies and engines

Bremen
Cottbus
Krefeld

Cleaning of fresh water pipes and tanks

Cottbus	München
Frankfurt a.M.	Neumünster
Hamburg	Nürnberg
Kassel	

Cleaning of roller bearings

Cottbus
Hamburg

Vacuum ventricle cleaning

DB FZI Wittenberge
DB Regio München

Cleaning of paint spray guns

Cottbus
Hamburg
Krefeld

* Only a few locations are listed here.

SAP Numbers

AF-Clean	SAP 1451 191
ALUSTAR 300	SAP 799 125
ALUSTAR 500	SAP 1358 603
BIO-CIRCLE Liquid	SAP 935 968
BIO-CIRCLE Liquid Evo	
BIO-CIRCLE Liquid Ultra	SAP 1135 664
CB 100 Alu	SAP 1125 344
Defoamer, silicone-free	SAP 1438 965
FT 300	SAP 1442 115
GS 200	

Corrosion protection f. water systems	SAP 699 606
Neutraliser	SAP 729 798
OMNI	SAP 687 107
Power Cleaner DB	SAP 155 4581
PROLAQ L 400	SAP 1358 955
PROLAQ L 500	SAP 1215 293
Smoke Resin Remover DB	SAP 667 836
STAR Future V	SAP 1125 212
STAR Future V Strong	SAP 1173 271
UNO W	SAP 816 650

A STRONG GLOBAL PARTNER:



- ▶ CLEANING
- ▶ PROTECTING
- ▶ LUBRICATING
- ▶ WELDING

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Present around the globe

Our products are sold and used in 63 countries.
We have a global network of own subsidiaries,
production sites, and trade partners.



www.bio-circle.de • www.bio-circle.com