BÖWE PASSAT

BÖWE-PASSAT "Fifth Generation" Dry cleaning machines

P520
P525
P532
P540

INTELLIGENT TECHNOLOGY

5.

Hi-tech design and environmental protection

BÖWE fifth generation machines are setting new standards world-wide:

- in performance and economy
- in environmental protection and safety
- in ease of use and engineering excellence.

This state-of-the-art range of machines is the product of an innovative and hi-tech approach to systems desing.

With integrated BÖWE CONSORBA, this machine technology is the key to environmentally safe dry cleaning.

Technology and environmental protection must go hand in hand

Outstanding advantages of the 5th generation

Hermetically sealed, environmentally safe

- Hermetically sealed during the entire processing sequence. Fluctuations in pressure during the operating cycle are fully contained by the machine. The result is virtually no solvent emission to atmosphere or residue in the processed garments.

Comprehensive environmental package

Observance of specific government requirements with:

- BÖWE CONSORBA
- BÖWE P.M.S. 2000 perc measuring system
- Emission-free still rake out
- ECO filter
- Lint drying
- Emission-free machine filling
- Integrated process water separator
- Safety limit switches
- Solvent safety trough
- Emission-free SPRAYMATIC
- Still tank rinsing
- Back plate flushing

Personnel savings

- Computer control automates routine operating and maintenance tasks
- Less machine down time and service work due to built in fault diagnostic system
- Easier finishing due to low garment temperature and optimum humidity of load

Two-fold quality improvement in garments processed

- Cleaning results visibly improved
- Garments are easier to finish

Great economy

- Optimisation of drying with P.M.S. 2000 (perc measuring system)
- Automated maintenance programs
- Perc consumption greatly reduced
- Advanced refrigeration technology reduces cooling water and energy consumption
- With ECO filter no use of filter powder
- Low disposal costs due to use of BÖWE's emission free still rake out system. Perc content in still residue greatly reduced
- Energy saving distillation and drying system
- Heat reuse during drying
- Modular construction allows 2 cleaning machines to be connected to a single still

Reliable and safe

- Easier operation and maintenance
- Sensors and safety limit switches reduce solvent emissions
- Sequence of operations monitored by sensors and displayed on computer
- Fixed programs give wide choice
- Computer allows user to simply and quickly write those "special" programs

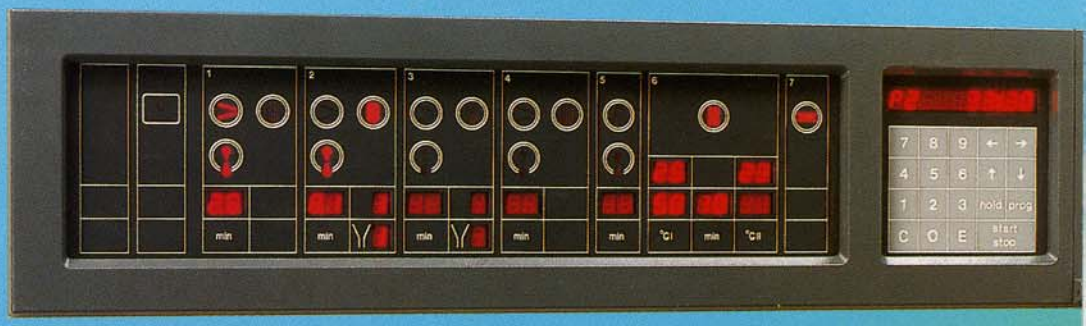
The BÖWE Computer Control

Because the BÖWE computer automatically controls many operating and maintenance functions, operator involvement (and therefore margin for human error) is dramatically reduced. In addition, the computer control offers an unlimited variety of processes to allow specific treatment of all types of textiles. Operation is easy, special training is not required.

The BÖWE computer control is a marriage of practical experience and sophisticated electronics. Important cleaning processes are permanently stored in memory. In addition there are sufficient free programming slots available for individual program generation. Manual operation is particularly simple. After entering, a manual program is automatically stored and can be transferred to a vacant program slot at any time. Rather than completely write those "special" programs from scratch, it is possible to simply adapt an existing program in seconds and store it permanently for future use.

The unique user friendly design is well illustrated by the variety of preprogrammed maintenance routines. At the push of a button the computer automatically takes over such important functions as filter and still maintenance, automatic still rake out, filling the Spraymatic, preparing stock solutions, solvent neutralisation, etc. Also included is a "Deodorise" programme which removes vapour build up after long periods of inactivity and after maintenance routines. A graphic display with easy to read symbols gives an overall view of the program in progress, with step-by-step details of temperature, times, program number, load count, etc. In addition, more than 100 diagnostic codes help to locate errors.

This saves valuable down time and servicing costs. Program changes are made easy by the use of a cursor. Cleaning and drying times, for example, can be changed in seconds as can temperatures and the injection of detergents or other additives. An important element of the new control system is the sensor network which monitors drying and distillation temperatures, liquor levels in the drum, condensate return and other functions.



Outstanding cleaning quality

BÖWE's 5th generation machines allow you to set new standards in cleaning quality. Quality that can lead to extra profits! The design of the drum and the integral beaters in conjunction with different liquor levels, rotational speed and temperature control determine the cleaning effect. The controlled interplay of all these variables in conjunction with computer control and sensor technology leads to a quality of cleaning that was unobtainable until now.

Thanks to optimum temperature control of the load and low moisture loss (an effect of the new BÖWE drying concept) garments have fewer creases and the expenditure on finishing is significantly less. Precise control of the liquor level has an important influence on the cleaning result as well. Therefore the machines are fitted with precision sensors instead of traditional level switches.

The efficient tank cooling coils minimise any tendency of the solvent to get warmer during the working day – a valuable feature when handling delicate fabrics or garments prone to colour bleeding.

P520/P525

The "Fifth Generation"– Technology of the future

BÖWE's 5th generation of dry cleaning machines sets new international standards in cleaning technology.

Innovative mechanical design coupled with intelligent computer control provides the optimum in performance, economy and cleaning quality. It also guarantees the highest degree of safety and protection of the environment!

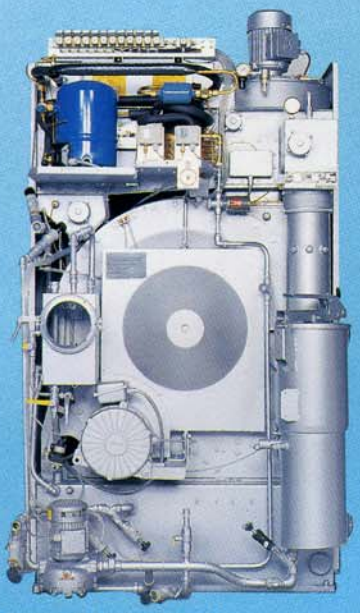
All models in the range are the same in construction and function and have the same control system. They merely differ in size and deign of specific components. If you know how to operate or maintain one model you can handle any model in the range – saving in time, training costs and spare parts!

P520
Drum capacity: 200 litres

P525
Drum capacity: 250 litres

P525 (P520) o-Model

The front and rear aspects of both the P520 and P525 are identical. The machines differ only in size.



P525 (P520) o-Model

Keys to safety

BÖWE's 5th generation machines are particularly environmentally friendly with performance criteria second to none. Although many manufactures claim their equipment is "closed circuit", BÖWE machines are truly hermetically sealed and work reliably and safely with minimum residual solvent concentrations in the load.

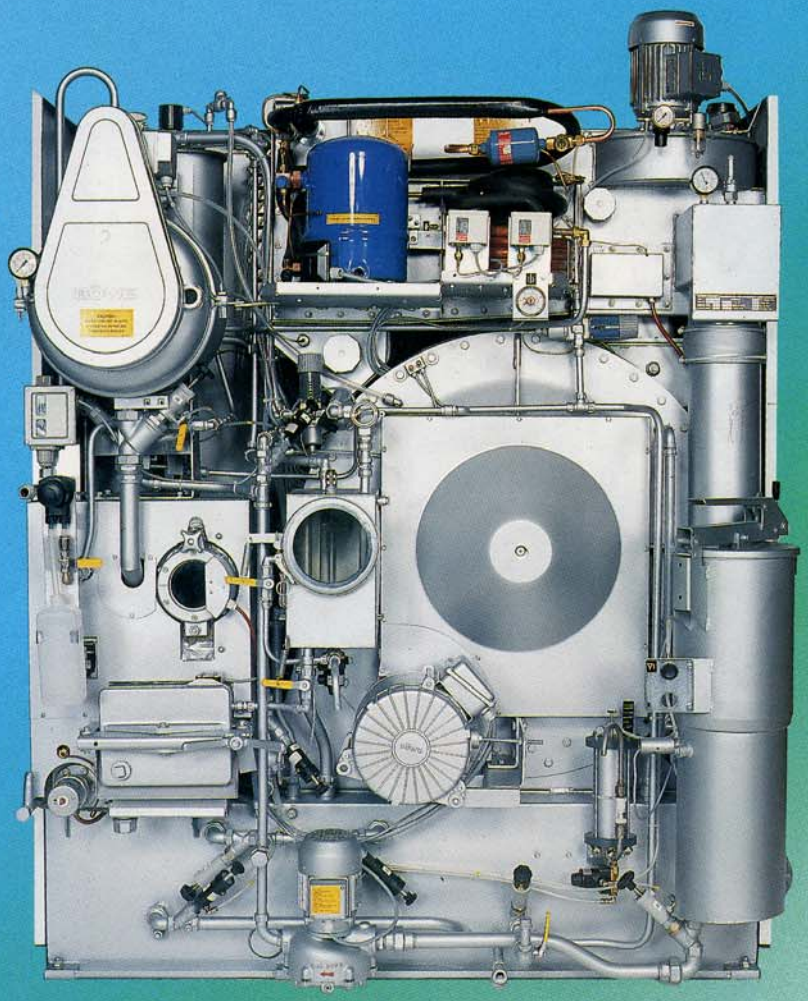
All environmentally relevant aspects of the cleaning process have been painstakingly investigated. In cooperation with dry cleaners, research institutes and government authorities, solutions have been worked out which have resulted in quite distinctive and standard-setting developments in environmental protection:

The whole drying concept has been fundamentally reappraised in order to bring solvent emissions to a minimum.

The latest sensor technology used extensively for the first time in conjunction with computer controls meet even the strictest legislation envisaged in the next decade – BÖWE has become the yardstick by which others are judged!

o-Models

This compact and low cost option is a standard machine without a still. However, it can be combined with a complete standard machine and share its still. Alternatively several modules can be connected to one central still unit.



P525 (P520) Standard configuration without CONSORBA

Environmental safety

With the machines designed for use anywhere in the world, features and retrofittable options have been developed to meet the increasingly stringent requirements of all the developed nations:

Consorba for reducing the residual solvent concentration in accordance with current and planned legislation.

BÖWE P.M.S. 2000 for preventing access through the loading door until the perc concentration in the drum at the end of the cycle is below 2 g/m^2 and for monitoring ambient solvent vapour levels.

Emission-free solvent filling.

Emission-free still rake out system will fully automatic discharge waste into a waste drum.

The environmentally friendly ECO filter filters undisolved dirt from the liquor without the use of filter powder.

Drying of the lint in each batch ensures its emission free removal during daily maintenance.

Process water safety separator includes collection drum for later transfer to purification unit.

"Black plate flushing" after each load prevents build up of lint deposits on the rear wall of the drum housing and so saves wasted energy on drying cycle.

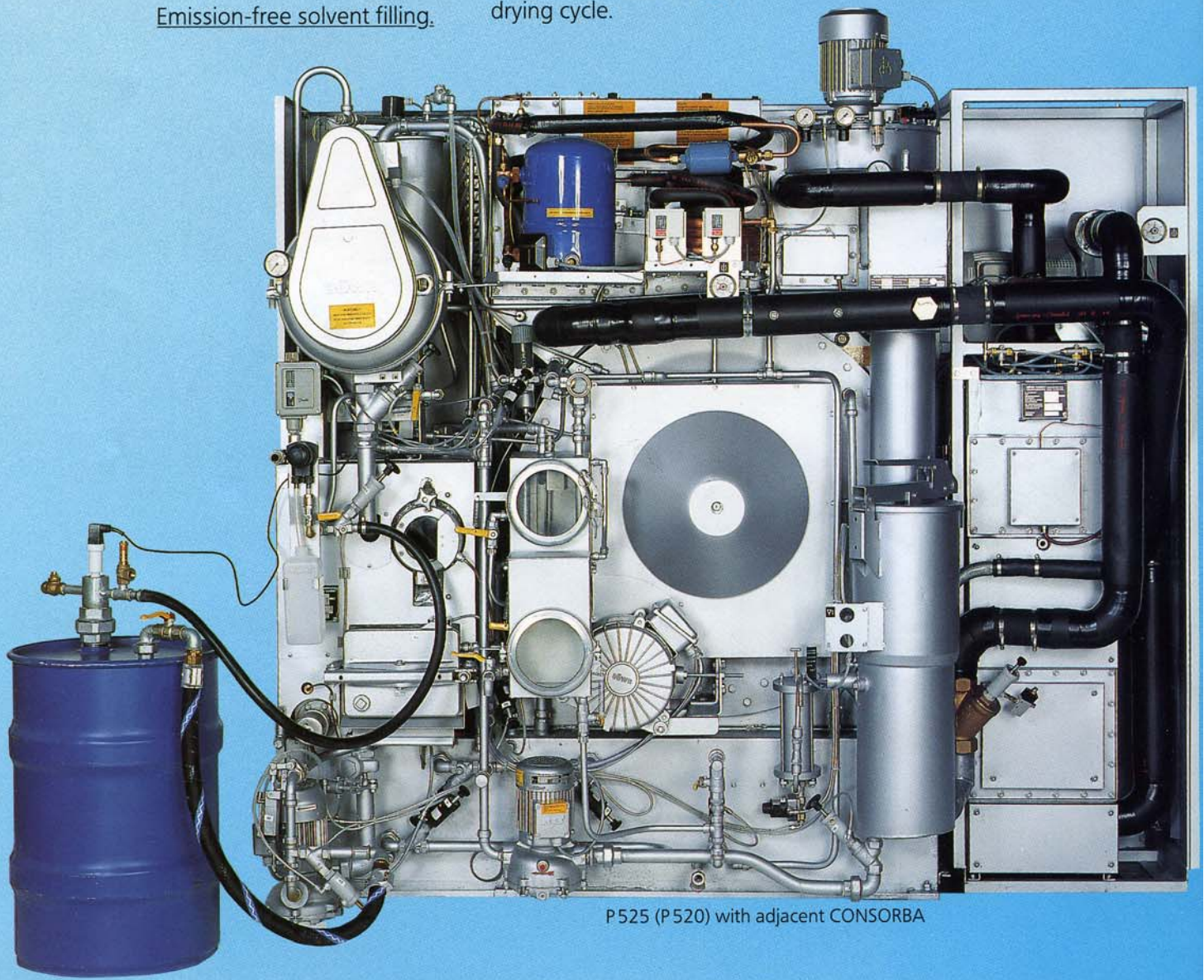
Safety limit switches prevent escape of solvent in the event of incorrect operation.

Solvent safety trough. Protects soil and ground water from contamination.

Emission-free Spraymatic for spraying suede oil, water proof finishes, etc. The machine's computer controls the complete sequence of mixing and spraying without any solvent emission. Special versions of the Spraymatic are available for various neat products which must be applied undiluted.

"Deodorising Program" automatically removes vapour build up before start of work and after longer machine downtimes.

The BÖWE "Drystat" optimises drying times and minimises residual solvent in garments.



P 525 (P 520) with adjacent CONSORBA

P525 (P520) with adjacent CONSORBA

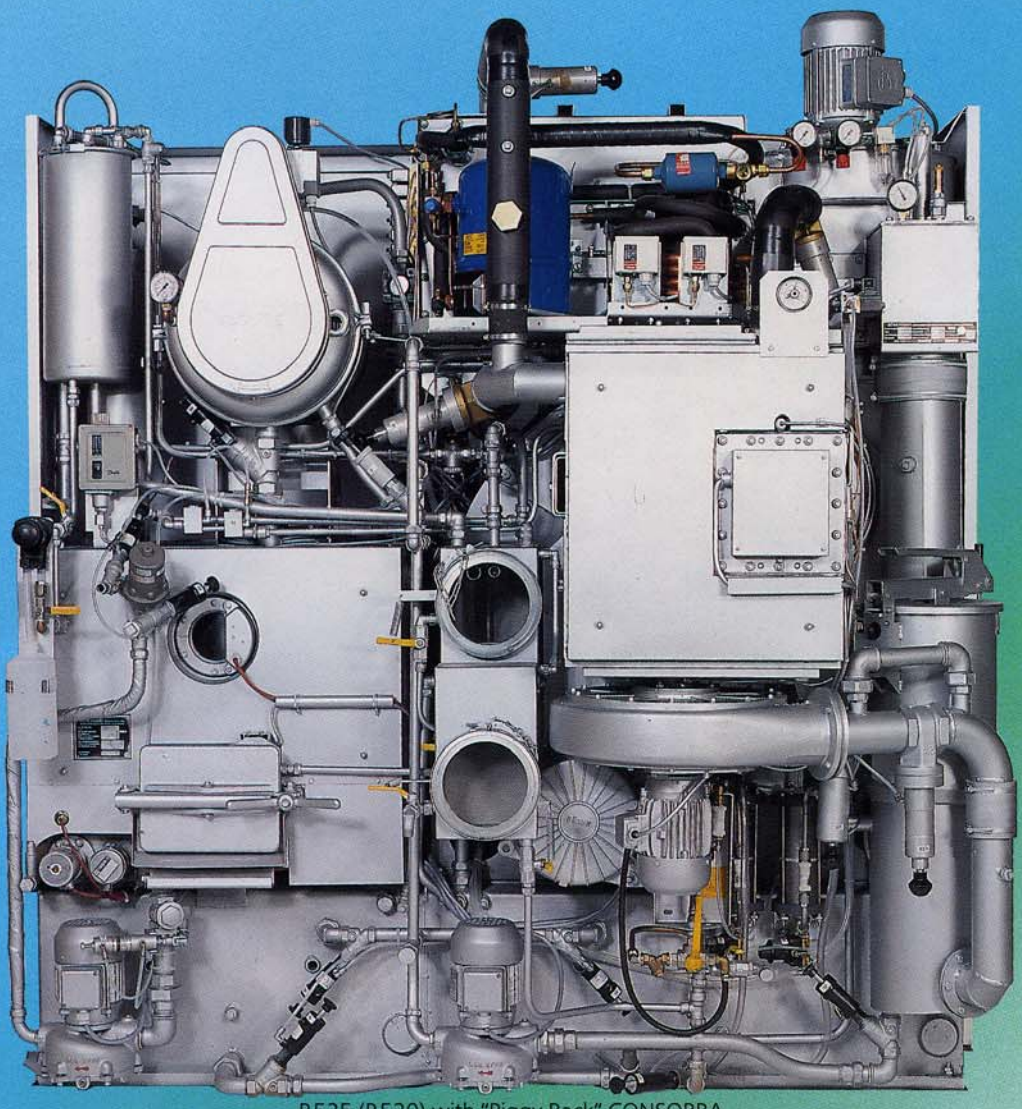
CONSORBA – the key to environmentally friendly cleaning

By combining the best points of both condensation and adsorption technology (hence the name "CON-SORBA"), the BÖWE CONSORBA reduces the residual gas concentration at the end of the cycle to below 2 g/m^3. Garments are left almost totally free of solvent and the air in the workroom is kept fresh. What is more, this all happens as part of the normal machine process. Even regeneration of the carbon filters by hot air is part of the process cycle.

"Piggy Back" CONSORBA

This is a space saving variant for CONSORBA installation.

Permanently integrated into the rear of the machine, there is no need for floor space beside the machine. All that is required is space behind the machine for maintenance work.

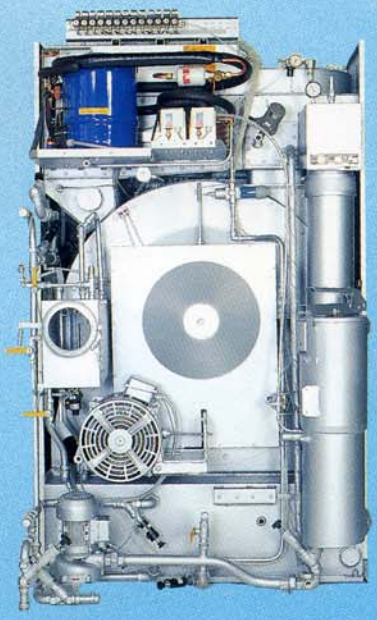

P525 (P520) with "Piggy Back" CONSORBA

P532/P540

All machines in the range are the same in configuration and function and have the same control system. They merely differ in size and design of specific components. If you know how to operate or maintain one model you can handle any model in the range – savings in time, training costs and spare parts!

P532
Drum capacity: 320 litres

P540
Drum capacity: 400 litres



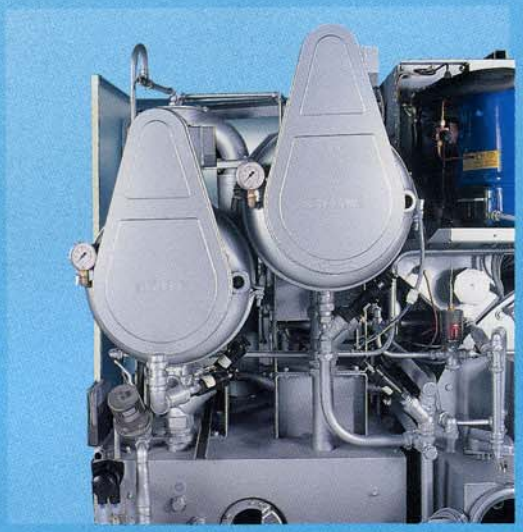
P540 (P532) o-Model

The font and rear of both the P532 and P540 are identical. The machines differ only in size.

BÖWE State-of-art-filters

The ECO filter is a regeneratable filter system that works on the same principle as the centrifugal filter. A large filter surface makes for a longer service life and good filtration, the faster soil removal minimising the risk of greying.

The ECO filter can be used either with or without filter powder. However, filter powder must not be used in conjunction with the emission-free, automatic still rake out system. The functions or filter draining, filling and precoating are combined in a fully automatic filter maintenance program.

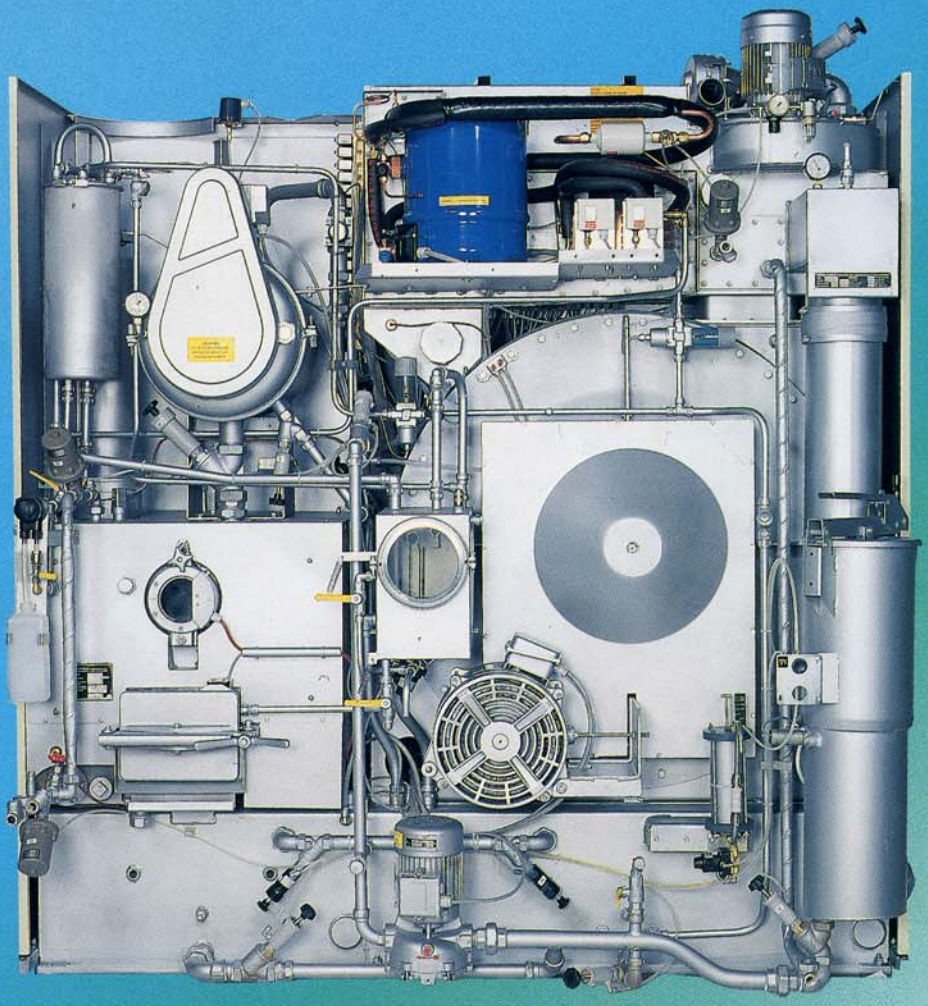


Still module with 2 filters

Second filter

A second filter may be fitted if required. This may be to extend the process options or when combining c- and o-models or two o-models with a single, central still.

For separate filtration when processing light and dark coloured garments, the machine can be fitted with a 2nd filter and an additional built in tank.

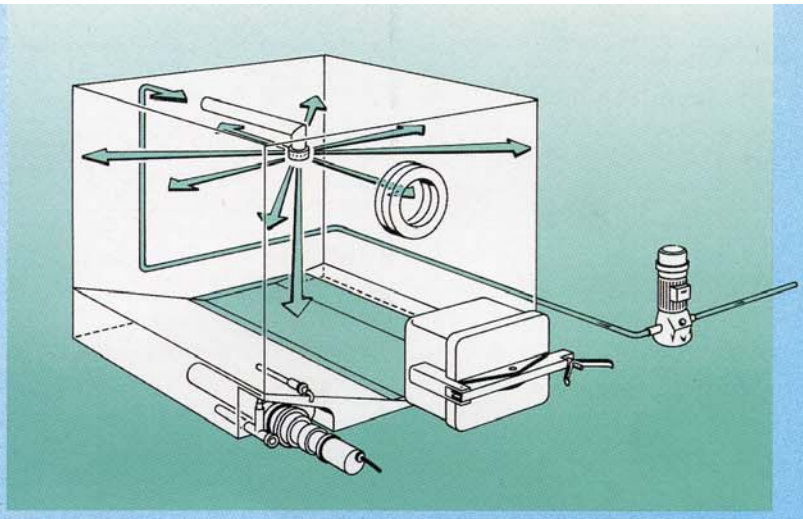


P 540 (P 532)
Standard configuration
without CONSORBA

Energy-saving high-performance still

The still is the heart of the dry cleaning machine because availability of fresh clean solvent on demand is fundamental to quality cleaning. High grade stainless steel, a large capacity, high distillation rates and low energy consumption are typical features. Important new innovations offer further additional advantages: integral, energy saving electric heating elements within the steam jacket. Sensors accurately monitor the flow of solvent into the still to prevent "blacking over" and thermal breakdown or "cracking" of the solvent.

To avoid the build up of lint the still tank is automatically flushed with each load.

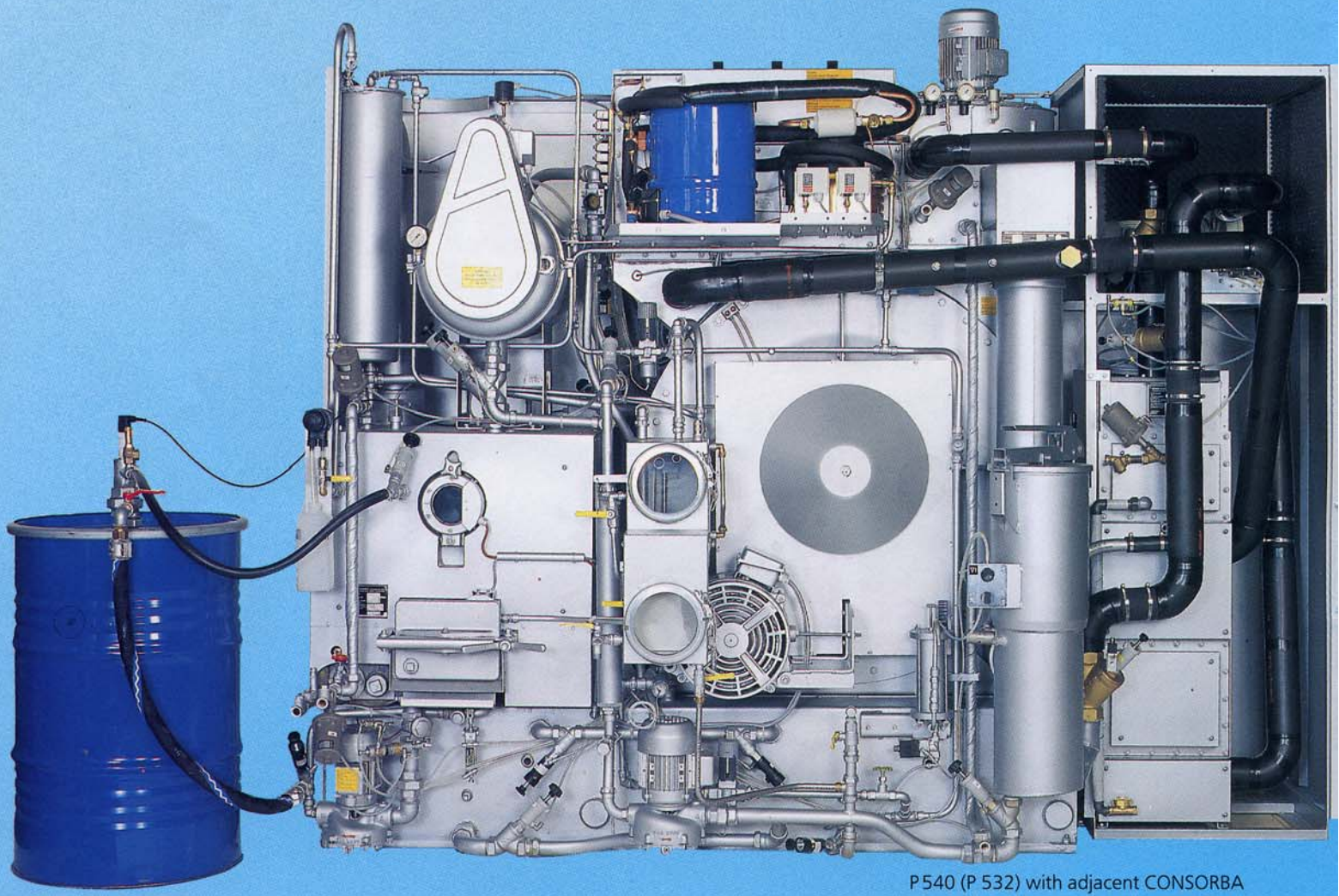


Still tank Rinsing

- ► Self cleaning of the still tank with every pumping-in operation.
- ► Reduced risk of corrosion at corners and edges.
- ► No burning in of residues
- ► Uniformly high still output due to clean heating surfaces.
- ► Always clear view due to automatic sight glass rinsing

A large illuminated sight glass allows visual inspection and automated live steaming further assists the distillation process and minimises the perc content in the still residue.

There is a special dosing device for the injection of anti-foam additives and neutralising agents if required and the specially contoured still bottom ensures the smooth operation of the automatic still rake out system.



P 540 (P 532) with adjacent CONSORBA

Energy costs can be still further reduced by fitting the "pre-heater for still" option (the heat of the still's solvent vapour is used to preheat the solvent to be distilled). This can result in savings of about 35% in heating energy and 25% in cooling water, Electrically heated machines only.

The floor which slopes toward the large rake-out door, the large illuminated sight glass and the new solvent feed system, facilitate and shorten the cleaning process.

The new, closed water separator is equipped with a large sight-glass. An additional safety device for protecting the environment is the process water safety separator.

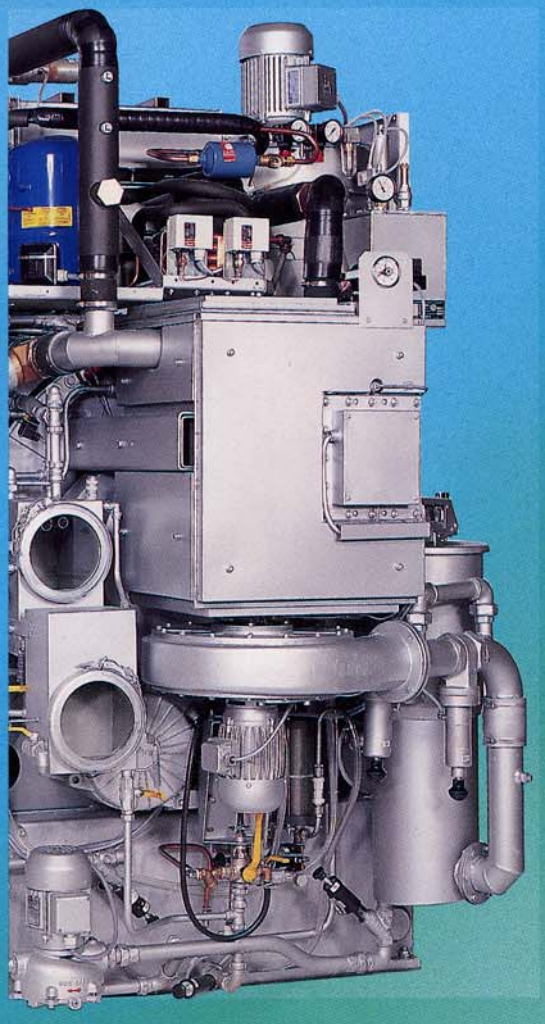
P 540 (P 532) with adjacent CONSORBA

In conjunction with the "ECO-filter" BÖWE offers a fully automatic, emissionfree still rake out system which allows the residues to be pumped directly into a waste drum. The expanding gasses are channelled back into the machine via a gas displacement line.

BÖWE CONSORBA

With the BÖWE CONSORBA there are practically no more emission problems in the unit shop leading to a safe and healthy working environment.

Unlike many so called "closed circuit" machines, a BÖWE machine fitted with a CONSORBA is totally hermetically sealed during the operating cycle. The BÖWE CONSORBA works on the single charge principle and regenerates in every single load. This means that the carbon bed cannot become inefficient due to oversaturation with solvent. What is more, there is no loss of production time because regeneration of the carbon beds is automatic and an integral part of the process cycle. Because the computer-controlled regeneration of the special carbon is done with hot air, the CONSORBA produces no processing water, does not result in "damp garment odour" and can be fitted to standard electrically heated machines.



P 540 (P 532) with "Piggy Back" CONSORBA

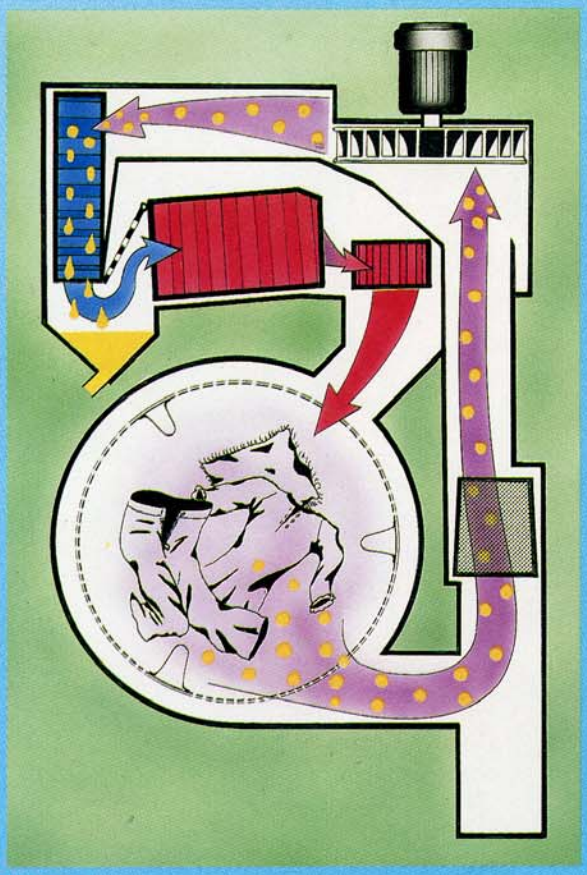
The New BÖWE Drying Concept

The complex processes of drying and recovering solvent have been optimised using the latest scientific methods. With and integrated CONSORBA all the most stringent requirements regarding emission control are met at the same time as the solvent concentration in the cage at the end of the drying cycle is reduced to below 2 g/m^3.

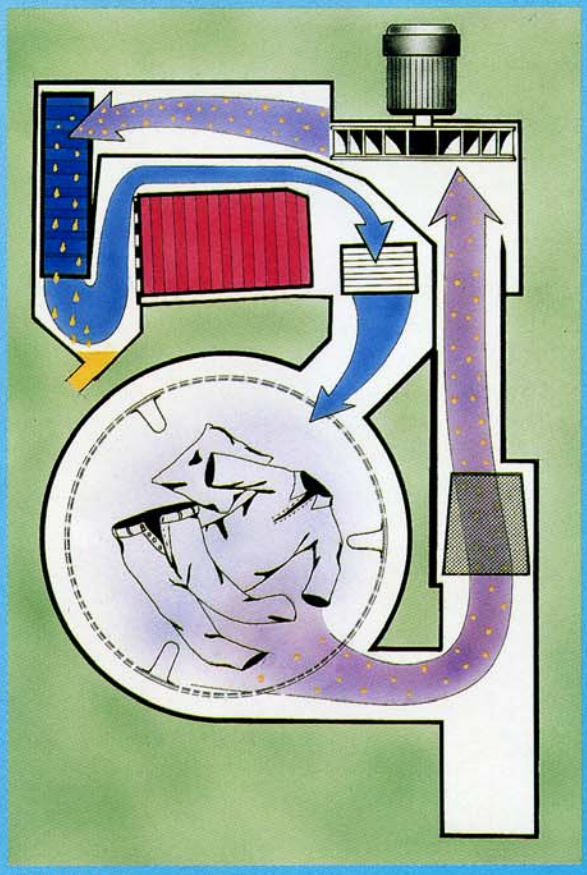
First, the BÖWE drying system reduces the residual solvent concentration in the drum at the end of the batch using particularly high air flow rates. The diagonal flow of air through the garments ensures the best possible removal of solvent.

Second, the temperature of the load is optimised. Because the air preheater is by-passed during the second drying phase, garment temperature is kept low and in addition the moisture loss from the load is kept to the barest minimum because there is no refrigeration below 0°C, (Other manufacturers frequently cool to below 0°C in an effort to improve solvent recovery but in the process dehydrate the garments making finishing difficult and creating static problems). Apart from reducing the cost of finishing, the new drying system also saves energy and cooling water costs.

Third, the computer controls the drying time and this can be automatically monitored with the BÖWE DRYSTAT electronic drying controller. This new thermistor device is sealed for life, totally maintenance free and reliably controls the drying time allowing for type of garments, level of loading, etc. (e.g. drying time automatically extended for thick garment such as anoraks). As if this were not enough, BÖWE have achieved all the above with the minimum possible consumption of energy and cooling water – truly the "meanest machine" around!



DRYING



DEODORISING

Simple Service and Maintenance

The unique user-friendly design is well illustrated by the variety of maintenance programs. At the push of a button the computer automatically takes over such important functions as filter and still maintenance, automatic still rake out, filling the SPRAYMATIC, preparing stock solutions, solvent neutralisation, etc. Also included is a "Deodorise" program which prevents solvent emissions after long periods of not working and after maintenance routines.

An important element of the new control system is the sensor system which monitors drying and distillation temperatures, liquor levels in the drum, condensate return and other functions.

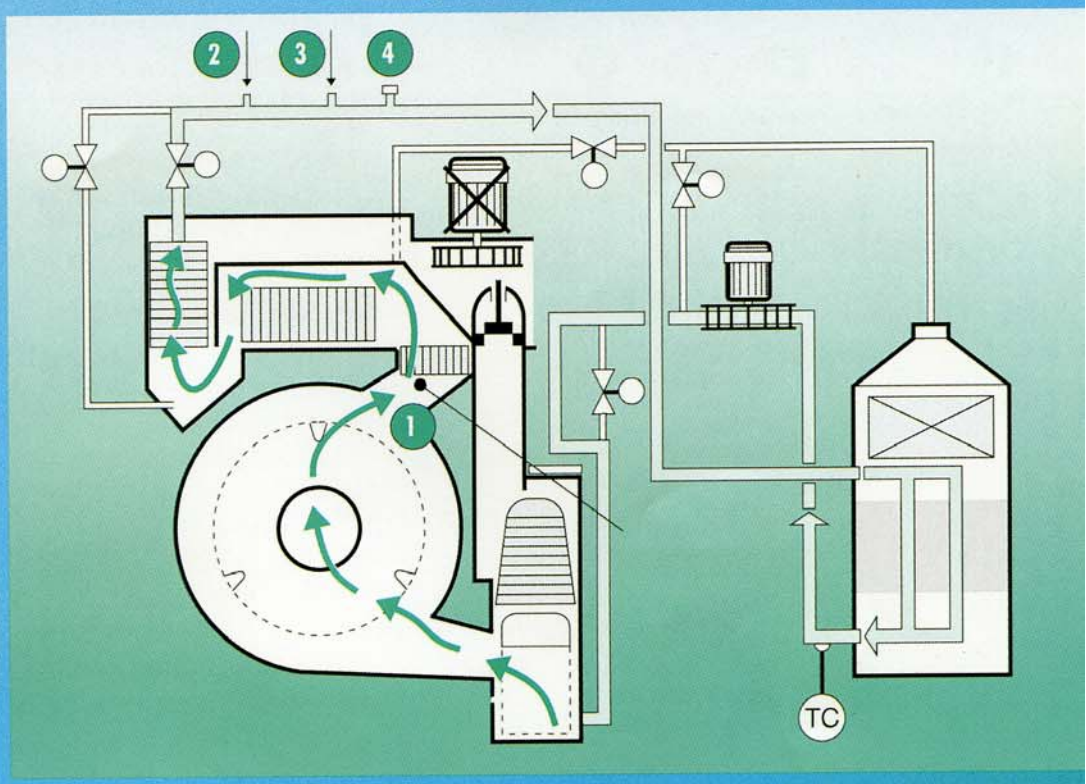
Service and down time is now cut to a minimum – more than 100 diagnostic hints help to identify faults and save maintenance time and cost.

Solvent Monitoring

► Measuring as required by German legislation
- Measurement at drum exit
- Drum rotating
- Fan running

► Automatic lengthening of drying time to just below limit value

► Signal and release of loading door when measured



- Loading door closed
- Load temperature over 35°C
- Air replacement rate 2 – 5 m^3/kg an hour

► Fully automatic sequence of operations

value less than 2 g/m^3

► Precise measured value in g/m^3 displayed on the P.M.S. 2000

► All connections available for official control measurements

❶ Test gas recirculation (BÖWE / authorities)
❷ Test gas recirculation (Authorities)
❸ Test gas recirculation (BÖWE)
❹ Measurement point for air flow (BÖWE / authorities)

A tradition of Excellence

The high standard of materials used and careful workmanship reduce the cost of spare parts and service during the machine's life and are your guarantee of quality for which BÖWE has always been renowned. The extraordinarily high proportion of BÖWE machines still in regular use after 15,20 or even 25 years service is testimony to the quality of their construction. The greatest attention is paid to selection of materials and for that reason all key components are made of high-quality special stainless steel. Parts which are particularly susceptible to corrosion are also given a proven temperature and solvent-resistant, nonporous coating.

Strong, solidly built supports ensure stability and freedom from vibration of the whole machine system.

All pipes and valves are clearly arranged, visible at a glance and are easily accessible for operators and service engineers alike.

Everything You Need!

Optional components plus a wide variety of accessories increase productivity and cleaning quality. They give the dry cleaner extra versatility.

All-electric version

Machines are available in the all electric version. They offer advantages in certain locations as well as independence from a centralised steam supply.

Heat recovery/still for electrically heated P 532 and P 540

Hot solvent vapours from the still are used to preheat the solvent to be distilled. This saves about 25% cooling water and approximately 35% heating energy. Very short pay back time.

Second dosing unit

The unit expands the number of process options. It can be used to reduce or eliminate prespotting altogether. Most additives in common use can be injected.

SPRAYMATIC SP 5/SPP 1

This new development is for waterproofing or suede oiling. The preparation of the mixture and the whole spraying process (all emission free), is fully automatic and controlled by the machine computer. The SPP 1 version allows spraying of neat, undiluted additives directly on to the garments.

Emission-free solvent filling

To prevent high solvent emissions during filling, the 5th generation machines offer filling from the barrel with a gas displacement pipe via the machine's own integral pump.

DRYSTAT drying time controller

Using thermistor technology, this new development reliably supervises and controls the drying time according to the quality and type of work being processed.

BÖWE P. M. S. 2000 perc monitoring system

This device monitors and measures solvent concentrations. The dry cleaning machine's door can only be opened when solvent concentration falls below 2 g/m^3.

Emission-free still rake out

To prevent solvent emission while cleaning the still, the residue is first pumped through a closed circuit and live steam (or water on electric models) is added to flash off remaining solvent. The sludge is then pumped emission free into a sealed waste drum.

Variable speed drive

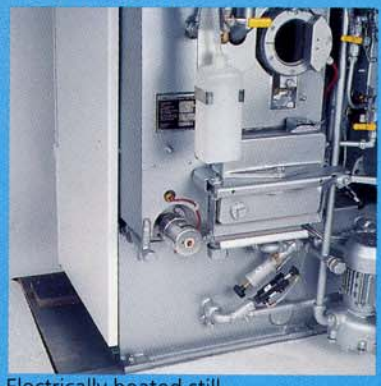
Free choice of the ideal speed precisely matched to the type of garments being cleaned results in more gentle treatment of garments, quiet machine running and reduced current peaks.

P. M. S. 2000 Perc monitor


DRYSTAT-Drying controller


Process water separator


SPRAYMATIC SPP 1


Electrically heated still

Features and options

New solvent cooling

In addition to the machine's standard cooling coils an optional water cooled heat exchanger in the pump/filter circuit can reduce solvent temperatures even further.

For the ultimate in solvent cooling (for example to prevent colour bleeding and when handling delicates) BÖWE offer the option of a refrigerant cooled heat exchanger. This latest BÖWE "first" uses the "waste" energy from the heat pump to cool the solvent during the wash cycle when the heat pump is not in use.

Computer control	●
Steam heated version (da)	●
Electric heating (el)	○
ECO filter	●
2nd filter	○
Dosing unit	●
2nd dosing unit	○
Dosing unit for antifoaming agent/still	●
SPRAYMATIC SP 5	○
SPRAYMATIC SPP 1	○
Cooling water shortage regulator	●
Structured finish panelling	●
High-gloss panelling	○
Process water safety separator	Ⓓ ○
Heat recovery/still (electric models only) P 532, P 540	○
Overfill preventer/still	Ⓓ ○
Tank cooling	●
Solvent cooling with refrigerant P 525 – P 540	○
Loading door venting (without CONSORBA)	○
DRYSTAT drying time controller	Ⓓ ○
Gentle drying	●
Adjacent CONSORBA	○
"Piggy Back" CONSORBA P 525 – P 540	Ⓓ ○
Emission-free solvent filling	Ⓓ ○
Safety trough with front panelling	○
Sound insulation refrigeration unit/CONSORBA	○
Perc Concentration measuring devices BÖWE P. M. S. 2000/G.W.P. 2000	○
Emission-free still rake out	Ⓓ ○
o-Model (without still)	○
Variable speed drive	○
Back plate flushing (standard with CONSORBA)	○
Still rinsing	●

● Standard
○ Optional
Ⓓ Standard in Germany

Owing to our commitment to continued innovation and improvement we reserve the right to update the above specification without notice.

Technical data

		P 520	P 525		P 532		P 540	
				o-model		o-model		o-model
Solvent		Perchloroethylene						
Loading (1:20)	kg	10	12.5	12.5	16	16	20	20
Drum Capacity	l	200	250	250	320	320	400	400
Drum diameter	mm	850	850	850	970	970	970	970
Drum depth	mm	360	440	440	430	430	540	540
Cleaning speed	rpm	40	40	40	36	36	36	36
Spin speed	rpm	375	375	375	360	360	360	360
Tank volumes								
Tank I	l	95	120	–	125	–	175	–
Tank II	l	200	160	160	195	195	240	240
Still I/II	l	120	220	–	220	–	310	–
ECO filters I/II	l	40	50	50	65	65	75	75
Operating load max.								
steam heating	kW	4.4	4.8	4.8	6.6	6.6	7.3	7.3
– with adjacent CONSORBA	kW	5.5	5.9	5.9	7.7	7.7	8.4	8.4
– with "Piggy Back" CONSORBA	kW	–	5.2	5.2	7.0	7.0	7.7	7.7
electric heating	kW	12.4	14.8	8.8	20.6	11.6	23.3	13.3
– with adjacent CONSORBA	kW	17.0	19.9	14.9	26.7	17.7	30.4	19.4
– with "Piggy Back" CONSORBA	kW	–	19.2	14.2	26.0	17.0	29.7	18.7
Still capacity:								
Steam heating	l/h	95	130	–	130	–	150	–
Electric heating	l/h	50	110	–	130	–	150	–
Machine dimensions								
Length	mm	1670	1940	1150	2110	1320	2110	1320
– with adjacent CONSORBA	mm	2275	2545	1755	2815	2025	2815	2025
– with "Piggy Back" CONSORBA	mm	–	1940	1150	2110	1320	2110	1320
Width	mm	1200	1200	1200	1290	1290	1385	1385
– with "Piggy Back" CONSORBA	mm	–	1455	1455	1550	1550	1650	1650
Height	mm	2180	2180	2180	2340	2340	2340	2340
– with 2 filters	mm	–	2650	–	2750	–	2750	–
Dismantled (max):								
Width	mm	910	990	990	970	970	1210	1210
Height	mm	1980	1995	1995	2165	2165	2165	2165
Weight								
without solvent	kg	1000	1150	870	1380	1040	1400	1060
– with adjacent CONSORBA	kg	1210	1405	1080	1635	1295	1655	1315
– with "Piggy Back" CONSORBA	kg	–	1270	990	1500	1160	1520	1180
Weight								
with solvent	kg	1400	1555	1125	1850	1330	2015	1410
– with adjacent CONSORBA	kg	1610	1810	1335	2105	1585	2270	1665
– with "Piggy Back" CONSORBA	kg	–	1675	1245	1970	1450	2135	1530
Floor loading								
(static + dynamic)	N/m^2	17800	15325	19800	17280	21300	15815	19450
– with "Piggy Back" CONSORBA	N/m^2	–	16100	21600	18000	23800	16400	21400

Owing to our commitment to continued innovation and improvement we reserve the right to update the above specification without notice.

BÖWE PASSAT

BÖWE-PASSAT Reinigungs- und Wäschereitechnik GmbH
Rumplerstr. 2 · D-86159 Augsburg · Germany
Tel. 08 21/57 07-0 · Fax 08 21/5 70 73 51 · Telex 5 36 480 boe d

P · P 520/525/532/540 · 1 e · 0695 · Printed in the Federal Republic of Germany by Farbdrucke Bayerlein, Augsburg