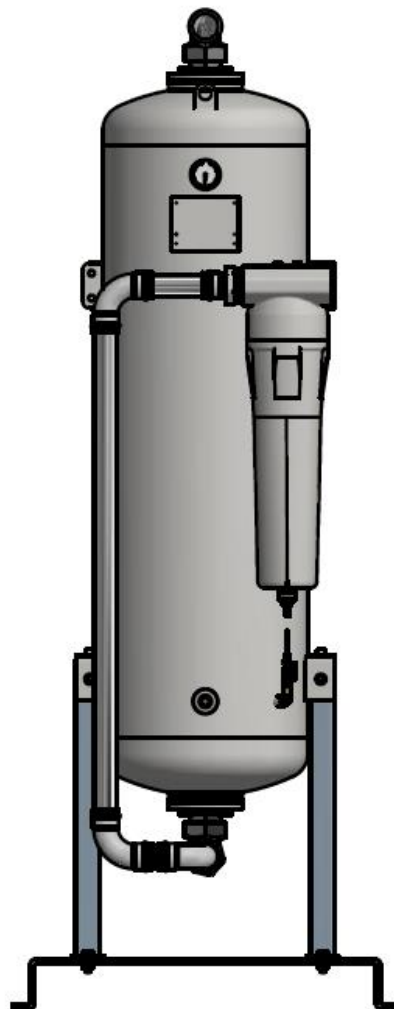


# **PUREBERG® Z0150-1200**

## **Operating manual**

### **oil vapour adsorber**



R00: 12/2022



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# 1. General information

Please complete the following information according to the type plate, vessel plate and contract documents. This enables the manufacturer to identify clearly the dryer and makes it easier to give advice if there are queries. It also simplifies the provision of spare parts and support. This may correspond to separate pieces of equipment for the individual devices.

## **1.1 System data**

Model:

Order No.:

Serial No.:

Year of manufacture:

## **1.2 Contact data**

Manufacturer of this unit is the company:

Manufacturer of this unit is the company:

**BERG Kompressoren GmbH**

Speditionstraße 21

40221 Düsseldorf

Germany

Internet: [www.berg-kompressoren.de](http://www.berg-kompressoren.de)

### **1.3 Accompanying documents**

Applicable documents which are not included with this documentation:

- Container documents
- Installation drawing
- Documentation for additional equipment parts

### **1.4 Warranty notes**

For the conditions necessary for compliance with the warranty, please refer to our "General Terms of Sale and Delivery".

The warranty shall be void if:

- The oil vapour adsorber is used for anything other than its intended use.
- The instructions in this operating manual are not observed.
- External influences (e.g. aggressive substances) cause damage to the oil vapour adsorber.
- Maintenance intervals are not adhered to.
- Damage is caused due to incorrect or defective maintenance.
- The oil vapour adsorber is operated although defects are evident.
- An unfavorable or incorrect installation is selected.

### **1.5 Operating Manual**

This operating manual will help to clarify any outstanding questions concerning the setup, installation, operation, maintenance, repair and disposal of the adsorber. It contains useful tips and advices.

It is not only written for the operator who is responsible for monitoring the daily operation of the device, but also for the service personnel who performs the installation and service. Maintenance and repair work may only be carried out by qualified personnel!

This operating manual must be read before any installation and maintenance work is started. All safety instructions must be considered!

The operating manual must be accessible any time when operating the adsorber.

As already mentioned in the warranty notes, the manufacturer accepts no liability for damages resulting from ignoring the instruction in the operating manual.

## 1.6 Signs and symbols used

The following symbols are listed in this manual and/or are affixed to the adsorption dryer:



Tip

This symbol indicates tips for the efficient use of the adsorption dryer!



Note

This symbol indicates instructions for the safe handling of the adsorption dryer.



Caution / Warning

This symbol indicates general hazards or dangerous situations.



Danger! Compressed air

This symbol warns of dangers due to compressed air.



Danger! High voltage

This symbol warns of dangers due to electric voltage.



Slip hazard

This symbol warns of the risk of slipping.



Wear ear protectors



Wear breathing protection



Wear safety glasses

These three symbols point out the necessity to wear safety equipment.

## 2. Intended purpose / use

The oil vapour adsorber is designed to be used to reduce the oil vapour fractions in the compressed air and reduce odorous and aromatic substances in industrial compressed air systems. It requires the supply of compressed air from a supply source.

The main task is to reduce vaporous oil fractions in the compressed air. Upstream filters and dryers ensure that only particles and drop shapes are separated.

By applying the pretreatment process of the active carbon which is specifically designed for this purpose, the long-chain hydrocarbons from the compressed air are stored in the open pores of the active carbon and the oil fraction of the compressed air is reduced to a minimum. Compressor oils are perfectly absorbed by the active carbon. Should you want to absorb other substances, please contact the manufacturer.

### 2.1 Intended use

The oil vapour adsorber is exclusively designed for cleaning compressed air! If the oil vapour adsorber is to be used with other gases, this must be agreed with the manufacturer. Other safety guidelines may apply here!

The oil vapour adsorber must be set up at a site indoors:



- suitable for the weight,
- weatherproof (exposure to sun should be avoided),
- dry,
- frost-free,
- vibration-free,
- not in potentially explosive atmospheres,
- can be accessed for maintenance and servicing.



The oil vapour adsorber must only be operated within the allowable operating conditions. These are defined on the type plate and vessel plate. Any other use is considered improper and the manufacturer accepts no liability.

The oil vapour adsorber must not be converted in any way and its components must not be modified. The use of components other than the original ones from the manufacturer is not permitted, unless this has been agreed with the manufacturer.

The values shown on the vessel plate are the maximum permissible values as per the pressure equipment directive. These values are not directed at the operating conditions. The maximum operating conditions can be found on the type plate of the oil vapour adsorber.

For the nominal performance data of the oil vapour adsorber, please refer to the Section "Performance data".

Exceeding or even significantly undercutting the design data can lead to bad residual oil contents!

The compressed air supplied to the device must be of the following quality:

- Free from aggressive and corrosive substances
- Free from particles and solids
- Dry (technically dry)
- Must be within the temperature conditions for the design.



In principle, the oil vapour adsorber can also be operated without any pre-treatment, but this may be detrimental to the service life of the active carbon. Moisture and particles are stored in the open pores and reduce the adsorption capacity of the active carbon.



Where temperatures are above 55°C, previously collected oil can be released again!

## 2.2 Performance data

The performance data of the individual types of devices is shown in the table below. The data is based on the operating conditions of the compressed air temperature +35°C and 7bar operating pressure and a moisture content <30%.

Type	Nominal volumetric	Connection
PUREBERG® Z150V	150	1"
PUREBERG® Z180V	180	1"
PUREBERG® Z210V	210	1"
PUREBERG® Z340V	340	1 ½"
PUREBERG® Z480V	480	1 ½"
PUREBERG® Z600V	600	1 ½"
PUREBERG® Z820V	820	2"
PUREBERG® Z1000V	1000	2"
PUREBERG® Z1200V	1200	2"

Refers on 1 bar (a) and 20°C



Routine inspections must be carried out on the pressure vessels. The operator is solely responsible for the registration. Regional or national regulations may apply in addition. Please also refer to the additional vessel documentation!

## 3. Safety notes

The oil vapour adsorbers have been built according to state-of-the-art technology and the latest safety regulations. However, there is still a risk of danger during operation, maintenance, installation and servicing, and during transport and setup. In particular, the disregard of safety regulations when handling compressed air may result in serious injury or death. Expertly trained personnel and those trained in safety should therefore only use the system.






- Observe the safety notes in this manual and on the adsorber.
- Observe all safety notes, even those in the individual chapters.
- Observe all legal guidelines and safety regulations according your region!
- Observe all local site regulations which are stipulated for the field of application.



### 3.1 Signs and symbols

The following sign can be found on the adsorption dryer:

- **Type plate** (on the right side of the vessel)  
It shows details of the type, year of manufacture, serial number of the device, performance data, weight and filters installed.

Typ / Type		max. Druck / max. Pressure	16 bar
S-Nr. / S-No.	08/21-1208	Spannung / Voltage	
Leistung / Capacity	480 m³/h bei / at 7 bar g	Vorfilter / Prefilter	<
Baujahr / Built	2021	Nachfilter / Final filter	
Gewicht / Weight (kg)	176 kg		
 Vor Inbetriebnahme und Service das Handbuch lesen. Read the manual before operation and service.		 Made in Germany  Gefahr durch Druckluft! Danger! Compressed	

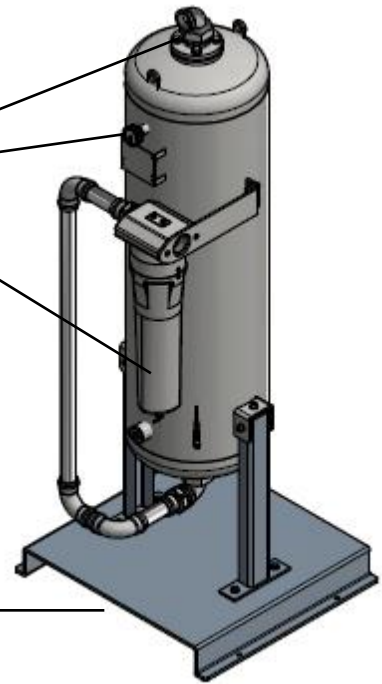
The type plates on the device show important information. Please make sure that they are always legible and that they can be accessed.

### 3.2 Danger zones

Risk from pressure-bearing parts



Risk of slipping due to spilt active carbon on the floor



- Never operate the oil vapour adsorber outside of the load limits shown on the vessel plate.
- Never carry out work as long as the oil vapour adsorber is under pressure.
- Do not modify the structure of the oil vapour adsorber or change its function.
- Only use the oil vapour adsorber for its intended purpose.
- Do not climb onto the device.
- Do not carry out welding work on pressure-bearing parts.
- Wear respiratory protection and eye protection when changing the active carbon.
- Risk of slipping due to spilt active carbon.
- Always check that the indicator pipe is secure before you open the needle valve and remember to wear eye protection.
- Never operate the device if there is apparent damage.
- Avoid sparks and naked flames in the vicinity of the active carbon as it is combustible.
- Never lift the oil vapour adsorber by the equipment parts, only use the lifting lugs.

## Active carbon

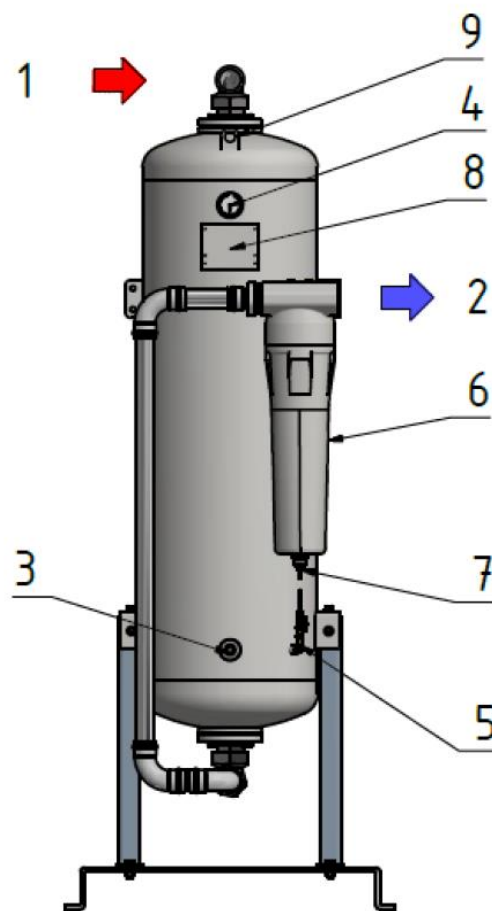
The active carbon used does not fall into the hazardous substances group and is therefore not subject to labelling requirements. Nevertheless, please observe all common safety measures with regard to using chemicals. Please also note that the material accumulates contaminants, in particular oil. This can cause additional dangers.

Should you require further information, contact the manufacturer to obtain a copy of the safety datasheet.

## 4. Technical product data

### 4.1 Equipment overview

1. Compressed air inlet
2. Compressed air outlet
3. Filling and draining nozzle
4. Pressure gauge
5. Oil check indicator
6. Final filter
7. Manual drain
8. Vessel plate
9. Lifting lugs



## 4.2 Function description



From the filled adsorbent material, (active carbon in this case), oil vapours and odorous and aromatic substances are stored in the open pores of the active carbon, thus reducing its content in the compressed air.

Through the joining pipe and possible pre-treatment, the compressed air is fed via the inlet into the diffuser (flow distributor and sieve). The compressed air is hereby distributed over the whole vessel cross-section for optimum efficiency. Based on the laws of physics and a predetermined contact time, the abovementioned contaminations are stored in the open pores of the active carbon. The cleaned air then exits the vessel again through a sieve on the outlet.

As the temperatures rise, the performance of the active carbon is reduced since the hydrocarbon chains (oils) become shorter and shorter and cannot be absorbed as effectively.

The contaminations collected in the active carbon gradually saturate the material. It cannot be regenerated in the process and must be replaced. With the appropriate compressed air quality at the inlet, it is possible for the service life to exceed 10,000 hours.

## 5. Monitoring the operation

The following components are provided for regular monitoring:

The pressure gauges display the operating pressure.



The oil test indicator is used to regularly measure the residual oil. The needle valve is only opened for the duration of the measurement. Based on the coloration, the indicator provides the information of the saturation of the active carbon.



## 6. Transport, storage and setup

### 6.1 Transport



Although great care is taken, please check immediately whether the adsorber has been damaged in any way. Any kind of transportation damage must be pointed out immediately to the deliverer and manufacturer.

- Suitable hoisting equipment must be provided for the transportation, loading and unloading process.
- The device must only be lifted at the designated points: crane hook or transport pallet.
- Take the weight of the adsorber into account and provide suitable assistive equipment.
- Secure the adsorber against tilting using suitable means.
- Do not remove the packaging material until the device is moved to its place of installation.
- Only appropriately qualified personnel may carry out the abovementioned tasks.
- Observe all regulations on accident prevention.

Lifting lugs



### 6.2 Storage



If the adsorber needs to be stored before being commissioned, ensure that the storage site fulfills the following requirements:

- Indoors only
- Dry
- Freezing-free
- Protected from weather.



If the device has to be stored after used, please proceed as follows:

- Depressurize the adsorber.
- Disconnect the adsorber from the compressed air system.
- Close the compressed air inlet and outlet.

## 6.3 Setup



Please refer to the setup conditions described in Section 2.1. The basic data required for the setup can be found in the Performance data in Section 2.2.

When setting up, make sure

- that the ground is level and capable of carrying the weight.
- there is enough space around the adsorber to carry out the servicing and maintenance work. We recommend at least 0.8m.
- that the adsorber can be reached and accessed by the lifting gear.
- that the adsorber must not be accessible to non-experts, or warning signs should be affixed for inexperienced persons.
- that the adsorber cannot be hit by haulage vehicles.
- that the safety signs are clearly visible at all times.

There are mounting holes in the base section of the adsorber. These should be used to anchor the device into the ground, as long as the ground allows it.

## 7. Installation

### 7.1 Recommendations for installation



Proper installation is the basic prerequisite for the safe and problem-free operation of the oilfree adsorber series.

We recommend the installation of shut-off devices both side upstream and downstream of the adsorber. So the adsorption dryer can easily be disconnected from the compressed air system during maintenance.

If operation cannot be interrupted during maintenance then a by-pass line must be provided. It should at least include an active carbon filter to prevent a contamination of oil downstream of the adsorber.



We recommend installation after a corresponding pre-treatment. The oil vapour adsorber is usually installed behind an air cauldron and dryer (compressed air refrigeration dryer or adsorption dryer).

A filter with a separation degree of 0.01  $\mu$  must be installed immediately in front of the oil vapour adsorber to collect any possible additional liquid drops and solids which would otherwise cause the active carbon to become saturated more quickly.

Installing the device behind an air cauldron also has the advantage in that pulsating compressed air is buffered and the temperature at the inlet of the adsorber is lower.

Choose a place of installation with the lowest possible compressed air temperature and with the highest level of dry air. This then increases the service life of the active carbon and the adsorber works most efficiently.

## **7.2 Demands on the installation**

Prior to installation, check the following points:



- The compressed air system and the adsorber must be pressure released.
- For compressed air systems which need to remain under pressure, shut-off devices have to be protected against unintentional opening.
- The operating pressure in the system cannot be higher than the maximum permissible operating pressure of the adsorber (Check the setting of the pressure of the pressure relief valves of the system). There must be no pressure surges in the system in the adsorber (e.g. from valves which open abruptly).
- The pipelines are designed for the operating pressure and the flow rate of compressed air.
- Vibration transmission or vibration are avoided.
- Nothing left in the pipeline from installation and welding process.

## **7.3 Elimination of hazards**

Prior to installation, check the following:



- Do not work on parts which are pressurized.
- The pipelines must be held in place by brackets; the adsorber is not designed to be used as a support for the pipes.
- The adsorber must only be used in the defined operating conditions (see vessel plate), it is the duty of the operator to observe these values.

## 8. Commissioning



All work on oilfree adsorbers and on the pipe and drainage systems must only be carried out by trained and experienced persons.

### 8.1 Commissioning requirement

The following must be checked prior to commissioning:



- The maximum operating conditions must not be exceeded.
- Upstream and downstream shut-off devices are closed.
- All connections are securely tighten.
- Complete visual check. Do not use the adsorber if it is damaged in any way.

### 8.2 Pressurization



If section 8.1 is checked successfully, the following steps can be processed sequentially.



Wear ear protection for this, as the flow noise can get very loud.

1. Make sure that the compressed air system is under pressure upstream of the adsorber.
2. Slowly open the shut-off valve upstream of the adsorber until you hear the flow noise.
3. Keep an eye on the pressure gauge on the vessel. Pressure must rise slowly.
4. At 4 bar, close the shut-off device again at the inlet. Check all connections for leaks. If leaks are found, the adsorber must be depressurized again and the leaks must be eliminated.
5. If no further flow noises can be heard and if the pressure gauge does not indicate any further increase in pressure, the shut-off valve can be opened completely.



### 8.3 System operation

After pressurization has been successfully completed, check whether the compressed air system downstream of the adsorber can be opened safely. Then proceed as follows:

1. Slowly open the shut-off valve at the outlet of the adsorber until you hear the flow noise.
2. Keep an eye on the pressure gauge. Should the pressure suddenly drop, check whether any tapping points are still open.
3. If the pressure remains stable and the flow noise has stopped, the shut-off valve downstream of the adsorber can be opened completely.
4. The oil vapour adsorber is now ready for operation.



### 8.4 Disconnecting from the mains



Should you have to disconnect the oil vapour adsorber from the system, e.g. for maintenance work, make sure that this work is only carried out when the system is pressure released.

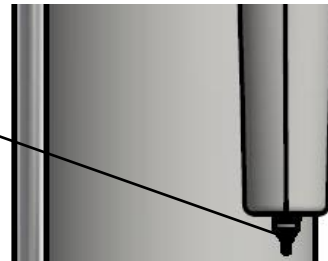


Wear your safety equipment. Proceed as follows:

1. Close the cut-off valves at the inlet and outlet of the adsorber.
2. Open the manual drain on the after-filter housing.



Manuel drain



3. Keep an eye on the pressure gauge and wait until it displays "0" bar before starting work.

## 9. Maintenance



Maintenance work may only be carried out by qualified personnel! Make sure that the device is pressure released before starting work and observe the safety regulations applicable at the place of installation!

### 9.1 Regular maintenance work

The following table gives an overview of the service intervals and scope of the maintenance work:

Maintenance of	Activity	Every day	Every month	Every year
Adsorber and filters	Visual check, functional check	X		
Oil check indicator	Residual oil content measurement		X	
Oil check indicator	Replace if discolored	if necessary		
Final-filter element	Replace the filter element			X
Active carbon	Replace			X
Seals	Replace			X
Sieves	Clean, replace if necessary			X

### 9.2 Daily checks

The following should be checked every day:

- The pressure difference (pressure drop) upstream and downstream of the adsorption dryer is not more than 0.5 bar.
- Open the manual drain slightly at the final filter. It must not drip any water.
- Check if you can hear any unusual noises.
- Check for leaks.
- Check that the condensate drain of the pre filter (if available) works properly.

### 9.3 Checking the residual oil content

The residual oil content should be measured on a regular basis. Proceed as follows:

1. Make sure the indicator pipe is secure.
2. Note the date and time when measurements start.
3. Record the operating pressure (it should be constant during the measurement).
4. Record the scale value where the obvious red discoloration can already be recognized. (ignore any slight pink-colored discoloration)
5. Open the needle valve completely.
6. Allow the measurement to run until a discoloration of at least 0.2 scale units. Use the following tables with the corresponding measurement pressure to determine the ppm content for the corresponding measurement time.
7. If your measurement value is between two table values (e.g. 0.5 scale units are discolored), please interpolate this value.
8. Multiply this value by 1.2 to obtain the residual oil content in  $\text{mg/m}^3$ .
9. Also analyze the discoloration rate by recording the values at regular intervals. This provides you with information about the life time of the activated carbon.
10. Use the test pipe until it is discolored completely, then it must be replaced.
11. An example at the end of the table clarifies the selection.
12. Close the needle valve again.



Replace the completely discolored test pipe only when the device is depressurized.

Table for measurement pressure bigger **than 7 bar g**,  
residual oil content in **ppm**

Scale								
Duration in h	0,2	0,4	0,6	0,8	1,0	1,2	1,4	1,6
4	0,548	1,096	1,644	2,192	2,740	3,288	3,836	4,384
4,5	0,496	0,992	1,488	1,984	2,480	2,976	3,472	3,968
5	0,452	0,904	1,356	1,808	2,260	2,712	3,164	3,616
5,6	0,404	0,808	1,212	1,616	2,020	2,424	2,828	3,232
6,3	0,358	0,716	1,074	1,432	1,790	2,148	2,506	2,864
7,2	0,312	0,624	0,936	1,248	1,560	1,872	2,184	2,496
8,4	0,270	0,540	0,810	1,080	1,350	1,620	1,890	2,160
10	0,224	0,448	0,672	0,896	1,120	1,344	1,568	1,792
12,5	0,180	0,360	0,540	0,720	0,900	1,080	1,260	1,440
16,6	0,136	0,272	0,408	0,544	0,680	0,816	0,952	1,088
25	0,090	0,180	0,270	0,360	0,450	0,540	0,630	0,720
33	0,068	0,136	0,204	0,272	0,340	0,408	0,476	0,544
50	0,045	0,090	0,135	0,180	0,225	0,270	0,315	0,360
56	0,040	0,079	0,119	0,158	0,198	0,238	0,277	0,317
63	0,036	0,072	0,109	0,145	0,181	0,217	0,253	0,290
72	0,032	0,064	0,096	0,128	0,160	0,192	0,224	0,256
84	0,027	0,055	0,082	0,110	0,137	0,164	0,192	0,219
100	0,023	0,045	0,068	0,090	0,113	0,136	0,158	0,181
125	0,018	0,036	0,055	0,073	0,091	0,109	0,127	0,146
166	0,014	0,028	0,041	0,055	0,069	0,083	0,097	0,110
250	0,009	0,018	0,026	0,035	0,044	0,053	0,062	0,070
500	0,004	0,009	0,013	0,018	0,022	0,026	0,031	0,035
1000	0,002	0,004	0,006	0,008	0,010	0,012	0,014	0,016

Table for measurement pressure **6 bar g**,  
residual oil content in **ppm**

Scale	0,2	0,4	0,6	0,8	1,0	1,2	1,4	1,6
Duration in h								
4	0,640	1,280	1,920	2,560	3,200	3,840	4,480	5,120
4,5	0,580	1,160	1,740	2,320	2,900	3,480	4,060	4,640
5	0,524	10,48	1,572	2,096	2,620	3,144	3,668	4,192
5,6	0,454	0,908	1,362	1,816	2,270	2,724	3,178	3,632
6,3	0,416	0,832	1,248	1,664	2,080	2,496	2,912	3,328
7,2	0,364	0,728	1,092	1,456	1,820	2,184	2,548	2,912
8,4	0,312	0,624	0,936	1,248	1,560	1,872	2,184	2,496
10	0,266	0,532	0,798	1,064	1,330	1,596	1,862	2,128
12,5	0,210	0,420	0,630	0,840	1,050	1,260	1,470	1,680
16,6	0,160	0,320	0,480	0,640	0,800	0,960	1,120	1,280
25	0,105	0,210	0,315	0,420	0,525	0,630	0,735	0,840
33	0,078	0,156	0,234	0,312	0,390	0,468	0,546	0,624
50	0,053	0,106	0,158	0,211	0,264	0,317	0,370	0,422
56	0,047	0,093	0,140	0,186	0,233	0,280	0,326	0,373
63	0,042	0,083	0,125	0,166	0,208	0,250	0,291	0,333
72	0,037	0,074	0,110	0,147	0,184	0,221	0,258	0,294
84	0,032	0,064	0,096	0,128	0,160	0,192	0,224	0,256
100	0,027	0,054	0,080	0,107	0,134	0,161	0,188	0,214
125	0,020	0,041	0,061	0,082	0,102	0,122	0,143	0,163
166	0,016	0,032	0,048	0,064	0,080	0,096	0,112	0,128
250	0,011	0,021	0,032	0,042	0,053	0,064	0,074	0,085
500	0,005	0,010	0,016	0,021	0,026	0,031	0,036	0,042
1000	0,003	0,005	0,008	0,010	0,013	0,016	0,018	0,021

Table for measurement pressure **5 bar g**,  
residual oil content in **ppm**

Scale	0,2	0,4	0,6	0,8	1,0	1,2	1,4	1,6
Duration in h								
4	0,700	1,400	2,100	2,800	3,500	4,200	4,900	5,600
4,5	0,700	1,400	2,100	2,800	3,500	4,200	4,900	5,600
5	0,636	1,272	1,908	2,544	3,180	3,816	4,452	5,088
5,6	0,568	1,136	1,704	2,272	2,840	3,408	3,976	4,544
6,3	0,500	1,000	1,500	2,000	2,500	3,000	3,500	4,000
7,2	0,438	0,876	1,314	1,752	2,190	2,628	3,066	3,504
8,4	0,380	0,760	1,140	1,520	1,900	2,280	2,660	3,040
10	0,316	0,632	0,948	1,264	1,580	1,896	2,212	2,528
12,5	0,254	0,508	0,762	1,016	1,270	1,524	1,778	2,032
16,6	0,190	0,380	0,570	0,760	0,950	1,140	1,330	1,520
25	0,126	0,252	0,378	0,504	0,630	0,756	0,882	1,008
33	0,096	0,192	0,288	0,384	0,480	0,576	0,672	0,768
50	0,062	0,124	0,186	0,248	0,310	0,372	0,434	0,496
56	0,057	0,114	0,172	0,229	0,286	0,343	0,400	0,458
63	0,050	0,101	0,151	0,202	0,252	0,302	0,353	0,403
72	0,044	0,088	0,132	0,176	0,220	0,264	0,308	0,352
84	0,038	0,076	0,114	0,152	0,190	0,228	0,266	0,304
100	0,032	0,064	0,096	0,128	0,160	0,192	0,224	0,256
125	0,026	0,051	0,077	0,102	0,128	0,154	0,179	0,205
166	0,018	0,037	0,055	0,074	0,092	0,110	0,129	0,147
250	0,013	0,027	0,040	0,054	0,067	0,080	0,094	0,107
500	0,006	0,012	0,018	0,024	0,030	0,036	0,042	0,048
1000	0,003	0,006	0,009	0,012	0,015	0,018	0,021	0,024

Example of determining the ppm rate:

The measurement is taken at an operating pressure of 6 bar over a period of 50 hours. 0.5 scale units of discoloration have been added.

Using table 6 bar, select 50 hours. To interpolate to 0.5 scale units, calculate:

$0.106 + 0.158 = 0.264 \text{ ppm} / 2 = 0.132 \text{ ppm}$  based on the measurement time of 10 hours

Converted into  $\text{mg/m}^3$ , this means:

$0.132 \times 1.2 \text{ (factor for compressor oils)} = 0.158 \text{ residual oil content in } \text{mg/m}^3$

## 9.4 Overview of maintenance parts

The following maintenance parts should be replaced every year:

Type	Component	Description	Quantity	Interval	Activity
PUREBERG® Z150V		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z150V	Activated carbon filling	1	12 months/ if required	Replace
<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z180V	Activated carbon filling	1	12 months/ if required	Replace
<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z210V	Activated carbon filling	1	12 months/ if required	Replace
<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z340V	Activated carbon filling	1	12 months/ if required	Replace
<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z480V	Activated carbon filling	1	12 months/ if required	Replace

<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z600V	Activated carbon filling	1	12 months/ if required	Replace
<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z820V	Activated carbon filling	1	12 months/ if required	Replace
<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z1000V	Activated carbon filling	1	12 months/ if required	Replace
<b>Fehler! Verweisquelle konnte nicht gefunden werden.V</b>		Final filter element	1	12 months	Replace
	INDI-ER	Oil test indicator	1	12 months/ if required	Replace
	AK-Z1200V	Activated carbon filling	1	12 months/ if required	Replace



## 9.5 Replacing the filter element

The after-filter removes any abrasion dust that has been generated from the activate carbon. Proceed as follows to replace these filter elements:

1. Close the shut-off valves upstream and downstream of the adsorber.
2. Open the manual drain on the filter in order to release the pressure and wait until the pressure gauge on the adsorber show "0" bar.
3. Turn the bottom part of the filter housing in clockwise direction to open it. Unscrew it completely and put it down carefully.
4. Now you can remove the filter element from the filter.
5. Use a damp cloth to clean the inside of the filter housing.
6. Check whether the O-ring in the filter head is OK. Replace it if necessary.
7. Please fit the new filter element into the three pockets at the filter head, inside of the filter bowl.
8. Screw the filter bed back and close the manual drain.
9. Slowly open the shut-off device at the inlet and check the system for leaks.
10. Once the pressure is back to normal again, slowly open the shut-off device at the outlet.

## 9.6 Replacing the active carbon



When replacing the active carbon, make sure to wear your safety equipment, especially the breathing protection and safety glasses.



There is high risk of slipping if material is spilt!

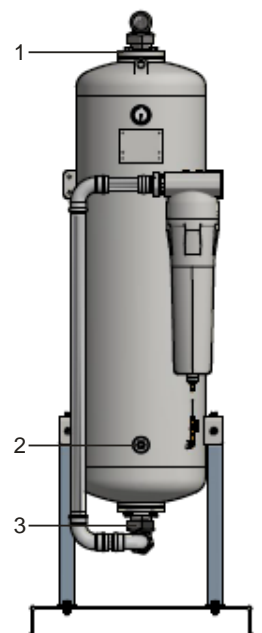


The service life of the active carbon does not need to be determined with accuracy as there are many factors which can reduce or increase the service life. In favorable conditions the service life time can reach much more than 10,000 hours.

Proceed as follows to replace the activate carbon:



1. Depressurize the adsorber.
2. First, open the sealing plug on the top (1).
3. Place a bucket underneath the bottom sealing plug (2) and remove it.
4. Collect the active carbon as it drains off.
5. Empty the vessel completely (you can also empty the vessel using a vacuum cleaner).



6. Clean the sieves inside the vessel.
7. Close the bottom sealing plug again and fill the new active carbon material through the top opening.
8. Fill in the activated carbon material to the lower edge of the upper diffuser.  
At higher filling may lead to increased dust content in the final filter.
9. Screw the top sealing plug back again.

We recommend to change the filter element of the final filter two weeks after the activate carbon change. The dust particles that accumulate during the operation are captured in the final filter element.

It can happen that the compressed air which has already been dried by an adsorption dryer, becomes moist again (rising pressure dew point). This is due to the moisture stored in the active carbon which is rinsed again after a few days.

Contaminated active carbon material must be disposed of in accordance with the local regulations! As a rule, the disposal code is:



"Used active carbon" with the disposal code number: 06 13 02

If other toxic or hazardous substances have been stored, then this must be determined by the operator and the active carbon must be disposed of taking the type of contamination into consideration!

## 10. Faults

The following faults may occur:

Error	Possible cause	Corrective action
Oil in the compressed air downstream of the adsorber	<ul style="list-style-type: none"> <li>- Volumetric flow via the adsorber exceeds the intended parameters</li> <li>- Inlet temperature is too high</li> <li>- Operating pressure is too low (reduction of flow rate)</li> <li>- Active carbon is saturated</li> <li>- Large quantity of oil has broken through the compressor</li> <li>- Pipes / consumer downstream of the adsorber were already contaminated with oil</li> <li>- By-pass line is open / not sealed</li> <li>- Highly pulsating compressed air</li> </ul>	<ul style="list-style-type: none"> <li>- Adapt to operating conditions</li> <li>- Upstream cooling</li> <li>- Replace active carbon</li> <li>- Close by-pass</li> <li>- Replace or clean pipes / consumer</li> </ul>
Significant differential pressure	<ul style="list-style-type: none"> <li>- Filter elements saturated</li> <li>- Cut-off valves not fully open</li> <li>- Dust fraction too high due to pressure shocks</li> <li>- Clogged pipes</li> <li>- High levels of turbulence at inlet</li> </ul>	<ul style="list-style-type: none"> <li>- Replace elements</li> <li>- Check shut-off devices</li> <li>- Stop pressure shocks</li> <li>- Remove active carbon from the vessel until the top dust sieve is exposed</li> </ul>

## 11.2 EU Declaration of conformity

We, the manufacturer,

BERG Kompressoren GmbH

hereby declare that for the systems listed below:

Activated carbon towers PUREBERG® Z0150V to Z1200V

the harmonised standards:

DIN EN ISO 12100-1: DIN EN ISO 14121-1 have been adhered to.

The conformity assessment procedure was completed in accordance with

Module A.

The pressure vessels which are part of these assemblies have been manufactured in construction and design conforming to the European Guideline 2014/68/EU Appendix I for pressure equipment as per the technical rules of the AD2000 instruction sheets.

Any modifications made to the equipment which has not been approved by the manufacturer will result in cancelation of this declaration.

01.09.2023

Signed:

A handwritten signature in blue ink, appearing to read 'M. Safari', is positioned to the left of a circular blue stamp. The stamp contains the text 'BERG Kompressoren GmbH' around the top inner edge, 'Krefeld - Germany' around the bottom inner edge, and a central logo with the word 'BERG' and a stylized mountain peak.

M.Safari  
Managing Director