RE 51474
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rexroth
A Bosch Company

Oil treatment system ABVCM

Type ABVCM

- Size 50
- Component series 2X

CE

Features

The ABVCM oil treatment system removes dirt, oil ageing products, gases as well as free and dissolved water from hydraulic and lubricating oils in a bypass flow. The effectiveness of the system is ensured by multi-stage filtration and the very low pressure within the vacuum chamber evacuated by the water ring vacuum pump.
During the process the water evaporates from the oil even at low temperatures. The separated water is used to lubricate the vacuum unit.

- PLC-controlled operation with automatic monitoring and automatic shut-off in case of fault
- Oil volume variable adjustable 10 l/min up to the nominal value 50 l/min
- Variably adjustable to most different scenarios of use
- Large viscosity range can be processed
- Fast cleaning and very low residual humidity thanks to powerful vacuum pump
- Low-maintenance, straightforward operation
- Due to the use of a water-lubricated vacuum pump with capacitor, no cooling water need as well as oil-free and dry exhaust air

Contents

Type codes

Oil treatment system

01	02		03		04		05		06		07		08
ABVCM	**50**	**–**	**2X**	**/**		**–**	**M**	**–**		**–**	**S**	**–**	

Series

01	ABVCM, mobile (stationary versions with transport frame on request)	**ABVCM**

Size

02	50 l/min	**50**
03	Component series	**2X**

Filter rating

04	Pre-filter 20 µm / main filter 6 µm	**A**
	Pre-filter 10 µm / main filter 3 µm	**B**

Seals

05	Mineral oil-resistant	**M**

Monitoring

06	Water content measurement	**W**
	Water content and particle measurement	**P**

Electrical connection

07	400VAC/ 50Hz with 32A CEE Phase Inverter (5pin 6h)	**S**
	More variants upon request	

Heater

08	Without heating	**O**
	Heating, 3 kW, 400VAC	**H**

Preferred types

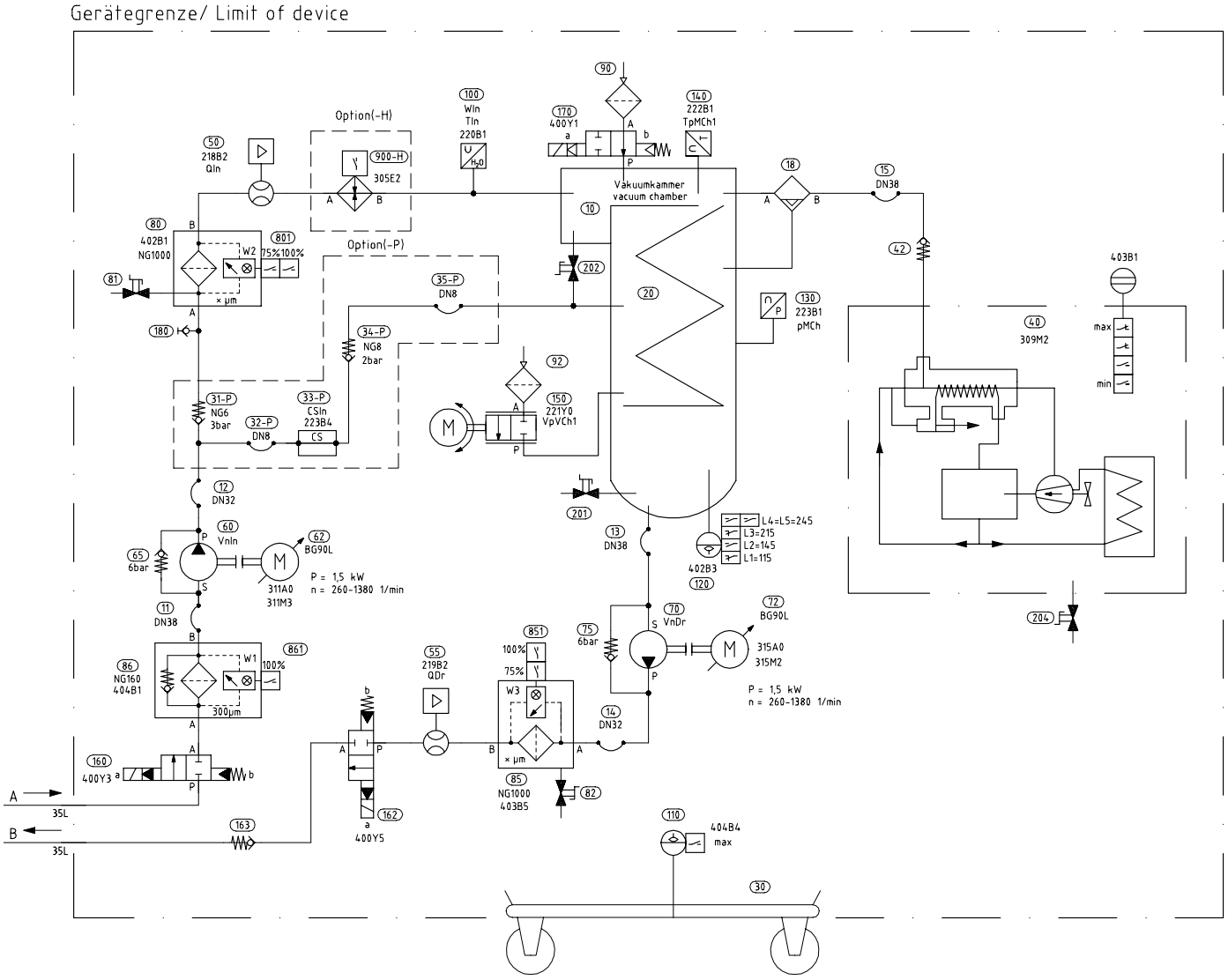
Type	Material no.
ABVCM50-2X/A-M-W-S-O	R928053122
ABVCM50-2X/B-M-W-S-O	R928052869

Type	Material no.
ABVCM50-2X/A-M-W-S-H	R928054357
ABVCM50-2X/B-M-W-S-H	R928054358

Type	Material no.
ABVCM50-2X/A-M-P-S-O	R928052870
ABVCM50-2X/B-M-P-S-O	R928052868

Type	Material no.
ABVCM50-2X/A-M-P-S-H	R928054373
ABVCM50-2X/B-M-P-S-H	R928023917

Function



The ABVCM system removes dirt, oil aging products, gases as well as free and dissolved water from hydraulic andlubricating oils in a multi-stage process.

A gear pump delivers the medium into the system. After the pre-filter, the oil is degassed and allowed to settle in the rotor recess. Afterwards, the medium is transferred into a laminar flow via the spiral in the evacuated process chamber. The integrated fresh air transports the leaking water steam to the suction system in a directed manner In the capacitor, the water is separated and used to lubricate the oil-free water ring vacuum pump. Excessive water is discharged via a line. The exhausted air is then discharged in an oil- and steam-free form.
After passing through the process, the dewatered oil is led through a low pressure-resistant gear pump to the main filter and pumped back into the tank. Solenoid valves in the inlet and outlet will immediately lock the system in case of fault in order to prevent leakage.

The two-stage filtration consisting of coarser pre-filtration and the downstream fine filter also allows for very good cleaning results in case of high viscosities and flows with long service life of the filter elements.
In the vacuum chamber evacuated by the high-performance vacuum pump, the pressure is reduced so that free oil and oil dissolved in the water even evaporates at low temperatures.
At the some time, gases dissolved in the oil as well as other liquid contamination such as oil acids are removed.

Technical data

(For use of the device outside the stated values, please ask us!)

Dimensions (width x height x depth)		1.100 x 1.700 x 1.770 mm
Weight		710 kg
Temperature range	– Operating	+20 ... +70 °C
	– Ambient	0 ... +35 °C
	– Storage	–20 ... +60 °C (Anti-freezing protection water ring vacuum pump necessary)
Relative humidity		max 90 %, non-condensing
Protection class EN 605297IEC529		IP 54
Pump type	– Vacuum pump	Water ring vacuum pump
	– Hydraulic pumps	Gear pump
Material seals		FKM
Admissible medium		Hydraulic and lubricating oil
Minimum oil quantity required for operation		100 l
Viscosity range		15 ... 1000 mm^2/s
Operating pressure for process chamber		0,1 ... 1 bar abs.
Admissible pressure at suction port		0,4 ... 1,5 bar abs.
Conveying capacity (adjustable)		10 ... 50 l/min
Electrical connection		50Hz: 3~ 360-415V 60Hz: 3~ 360-480V (Rated voltage according to DIN EN 60 034 / DIN IEC 34-1 + 10%)
Power consumption		max. 8 kW
Cable length		10 m
Connection Inlet/outlet		1 1/4“ L35 fitting
Length hose		5 m
Reachable residual humidity / residual water content		< 10 % (corresponds approximately to 50 PPM at ISO VG32)

Use

In the operational practice, more than 3/4 of all problems in fluid systems can be attributed to oil contamination. Here, the use of ABVCM allows for the reduction of operating and downtime costs considering economic observations. By means of the mobile oil cleaning device, it is possible to achieve multiplication of the hydraulic oil service lives with little expense and - by means of improvement of the oil condition - considerably reduced wear of the system components and thus lower operating costs.
Typical types of contamination in the hydraulic and lubricating oil are solid materials (particles), foreign liquids and air. Solid materials and particles may enter the system from the outside (fresh oil; breathing of the system) or by abrasion and component wear. Especially the hard particles will then again lead to an acceleration of component wear and finally to their failure.
Liquid contamination, mostly water in free or dissolved form, may have serious consequences and cannot be removed by the usual filtration of the medium. Water dissolved in oil or even free water leads to corrosion, impairment of the viscosity, deterioration of the lubrication properties and consequently to increased wear. Other problems result from chemical reactions of the fluid in the presence of water, air and metal particles resulting in oil aging and oil oxidation.
Gaseous contamination, usually air dissolving in the tank in the oil, impairs the response behavior of valves, cause foaming, energy loss and pump damage.

- Water preferably settles in fine cracks of balls and sliding surfaces where it causes corrosion.
- The oxidation (fluid aging) is greatly accelerated by the reaction with metal particles with catalytic effect
- Water increases the acid value (TAN) to four to ten times the value and in this way accelerates the fluid decomposition
- In dissolved and emulsified form, the viscosity and lubricating property of the fluid is changed. This leads to increased friction, heat development and wear.
- Due to its high dielectric constant, dissolved water attracts dust leading to fluid contamination and the formation of dust lumps which may, e.g. clog servo valves. Due to the low particle size of the individual dust particles, it is, however, very hard.
- to remove them again by means of filtration.
- Polarizable additives are dissolved from the fluid which further deteriorates its properties
- Water promotes the sludge formation
- Water deteriorates the filtrability of the fluid

The mobile oil cleaning system which is easy to handle allows for the cyclic or permanent cleaning of a complete hydraulic circuit in the bypass. The extensive filters with high dirt holding capacity can also be operated in a cost-effective manner with low pressure differentials in case of very high filter ratings.
Thanks to the underpressure reached in the evacuated vacuum chamber, effectively dissolved and also free water is already removed at low oil temperatures and during the process, the entire hydraulic system is dried.

Ordering Code Spare Parts

Filter elements

Designation	Description	Material no.
7.004 G25-S00-0-V	Filter element mesh 25 µm (Breathing filter tank)	R928051646
7.004 H10XL-S00-0-M	Filter element glass fibre 10 µm (Breathing filter tank)	R928035939
2.0160 G300-A00-0-V	Filter element mesh 300 µm (Pump protection filter)	R928048771
1.1000 PWR3-A00-0-V	Filter element glass fibre 3 µm (pre-/main filter)	R928006042
1.1000 PWR6-A00-0-V	Filter element glass fibre 6 µm (pre-/main filter)	R928006043
1.1000 PWR10-A00-0-V	Filter element glass fibre 10 µm (pre-/main filter)	R928006044
1.1000 PWR20-A00-0-V	Filter element glass fibre 20 µm (pre-/main filter)	R928006045

Filter element			
Non-woven glass fiber media PWR...		Single-use element on the basis of inorganic fiber	
		Filtration ratio according to ISO 16889 up to Δp = 5 bar [72.5 psi]	Achievable oil cleanliness class according to ISO 4406 [SAE-AS 4059]
Particle separation	PWR20	$\beta_{20(c)} \geq 200$	19/16/12 ... 22/17/14
	PWR10	$\beta_{10(c)} \geq 200$	17/14/10 ... 21/16/13
	PWR6	$\beta_{7(c)} \geq 200$	15/12/10 ... 19/14/11
	PWR3	$\beta_{5(c)} \geq 200$	13/10/8 ... 17/13/10

Directives and standardization

Product validation

Rexroth filters, the filter elements built into them and filter accessories are tested and quality-monitored according to different ISO test standards:

Pressure pulse test	ISO 10771:2015-08
Filtration performance test (multipass test)	ISO 16889:2008-06
Δp (pressure loss) characteristic curves	ISO 3968:2001-12
Compatibility with hydraulic fluid	ISO 2943:1998-11
Collapse pressure test	ISO 2941:2009-04

Rexroth products are developed, manufactured and assembled as part of a certified quality management system in accordance with ISO 9001:2000. The relevant standards and directives can be found in the CE Declaration of Conformity.

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