BOLLFILTER
Protection Systems

BOLL Automatic Filter
TYPE 6.64

The Compact Design Multichamber Filter

THE TASK

Uninterrupted Filtration without Pressure Loss

When it comes to guaranteeing long-term trouble-free operation of internal combustion engines or processing plants, consistent operating conditions are an important factor in both cases. By protecting moving parts against wear and tear you maximize their service life. At the same time it is also important to keep wastage of operational fluids to an absolute minimum. Two aspects that play a key role here are the cleanliness of the liquid fuels, lubricants or coolants used and maintenance of a constant operating pressure. Automatic high performance filters are used in industry today to guarantee both these factors. Key requirements that such filters have to meet are:

- Adequate filtering capacity
- Guarantee of purity for the filtrate
- Guaranteed integrity of system pressure
- Unsupervised 24/7 operation
- Minimum waste maximum efficiency
- Minimal maintenance and low running costs

The BOLL Automatic Filter TYPE 6.64 *can be used for a wide range of purposes, e.g. for filtering diesel engine lubricants,*

... for filtering fuels or

... for filtering coolants in machining plants and transfer lines

(The illustration shows a plant of the Bürener Maschinenfabrik GmbH)

THE CONCEPT

Several filters in one

The BOLL Automatic Filter TYPE 6.64 is conceived to fill all these criteria to the full. The key to solving the task is in the concept, the filter is designed to enable simultaneous filtering and backflushing independently of one another and without interrupting operation. The compact filter body houses a number of individual filter chambers. Each chamber is fitted with its own filter element assembly providing a large filtration surface area and high free cross-sections giving a very low clean pressure drop. Due to their robust construction the filter elements will withstand high operating differential pressure and the individual filter chambers with different filter elements work together as an integrated unit providing consistent quality and security. The concept of the multi-chamber filter resulted in a cyclic mode of operation during the filtration process - the chamber containing a dirt loaded filter is isolated from the process and backflushed whilst simultaneously a filter chamber with clean elements (earlier backflushed and held in reserve) takes over the task of the isolated chamber. The individual

filter chambers are subjected to the filtering and backflushing process one after the other in sequence. As a result, filters never reach critical contamination levels.

Backflushing can be actuated in accordance with differential pressure and/or time. The cleaning (backflushing) process is extremely fast, thorough and places less pressure on the fabric used for the mesh by utilizing compressed air. System pressure remains constant throughout and the unit only requires a minimal amount of cleaning fluid.

THE SERIES

The right size for all needs

Nominal specifications and configurations

Series BOLL Automatic Filter TYPE 6.64

Inlet/outlet		DN 100	DN 125	DN 150	DN 200	DN 250	DN 400
Pressure stage		PN 16	PN 16	PN 16	PN 16	PN 10	PN 10
Number of chambers	Total	4	6	8	4	6	10
	In operation	3	5	7	3	5	9
Total no. of filter candles		32	48	64	124	186	310
Filtration area in use in cm^2		8832	14720	20608	34224	57040	102672
Volume flow with Δp^{clean} < 0,3 bar, oil 40 cSt, filter fineness 48 µm		88 m^3/h	147 m^3/h	206 m^3/h	342 m^3/h	570 m^3/h	1027 m^3/h

THE SOLUTION

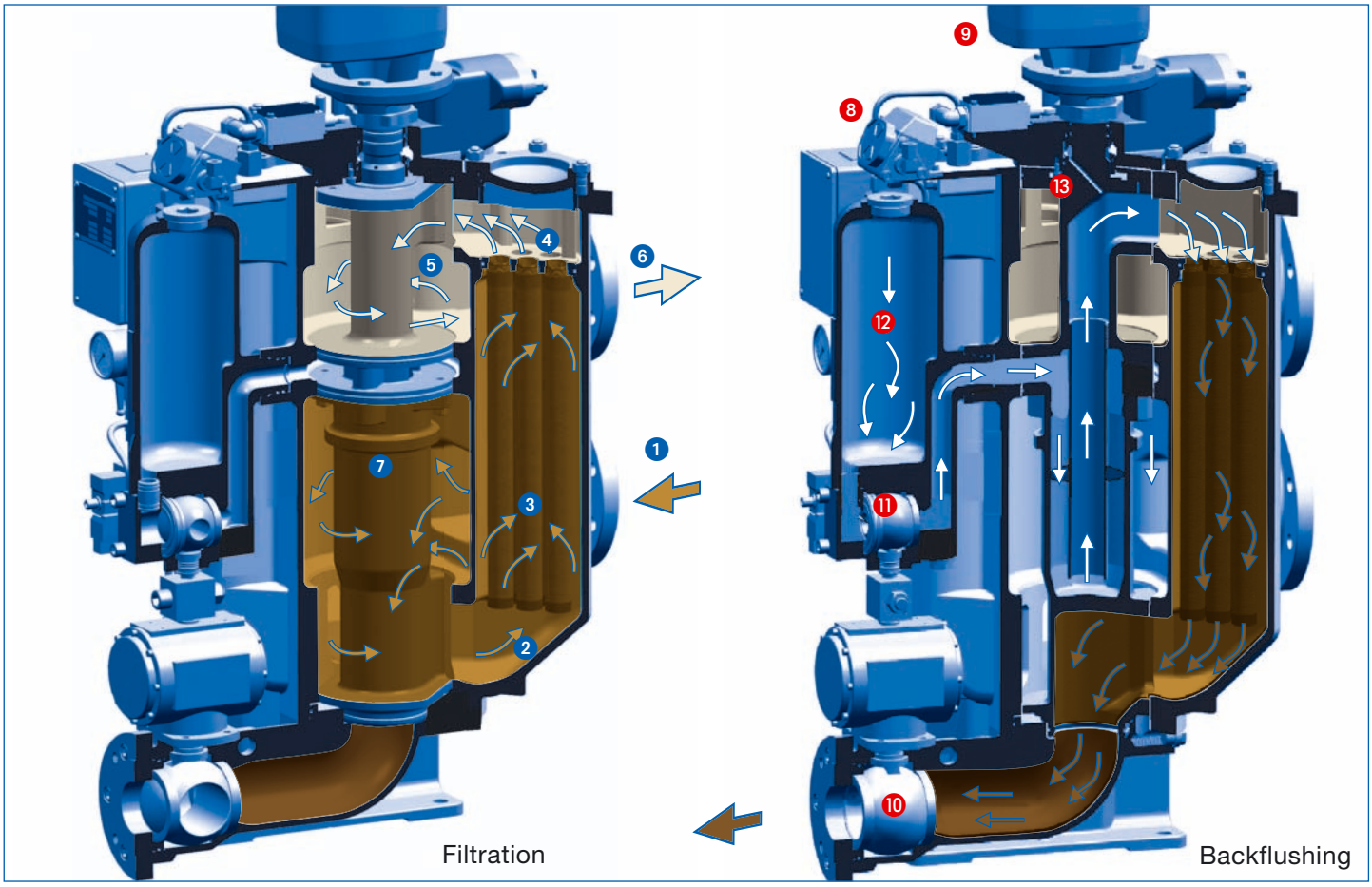
Backflushing in tandem with filtration

In filtration mode the fluid to be filtered enters **the lower inlet connection** 1 of the filter housing, then flows into the individual **filter chambers** 2 from the open underside of the chamber before passing from the outside of the suspended cylindrical **filter elements** 3 through to the inside. All contaminants larger than the specified filtration level are removed from the liquid and retained on the external surface of the elements. **The cleaned liquid** 4 emerges from the **clean side** 5 of the filter through the **upper outlet connection** 6.

One filter chamber is always isolated from this process, held in reserve and sealed by the **central selector mechanism** 7. After being backflushed the chamber, now with clean element is returned to system pressure and waits to be integrated into the operating system again.

When the differential pressure between the dirty and clean sides of the filter increases due to the amount of dirt particles that have collected on the filter elements, the **differential pressure indicator** 8 relays a signal to the control unit, which in turn automatically actuates the backflushing process. An **electric gear motor** 9 turns the selector mechanism to the next contaminated chamber and isolates it from flow simultaneously opening the freshly clean, at pressure chamber waiting in reserve. The backflush process is fast and efficient, the pneumatic drive unit activates the **backflush discharge** 10 and **air release** 11 valves, this releases a blast of compressed air from the **air reservoir** 12 into the isolated filter chamber via the selector mechanism. The backflush air drives a small volume of clean liquid through the filter element in reverse direction and blasts the entrained contaminants from the surface of the filter elements and out of the filter chamber via the backflush discharge valve.

Once this process has been completed the air and discharge valves close once again. The empty chamber is refilled with fluid via a **borehole on the clean side** 13 of the selector mechanism and automatically ventilated. Now this chamber takes on the role of reserve chamber waiting to be switched into the filtering process again.



THE SUPPLEMENT

Filtration of the backflushing liquid

An optional backflushing liquid recovery unit is available as a pre-fitted flanged-on option. The supplementary unit consists of a depth type cartridge filter, a backflushing liquid sump and differential pressure indicator/switch.
The size of the sump varies in accordance with the quantity of fluid discharged from a particular size of filter. After being backflushed, the fluid in the sump is forced through the cartridge filter by means of compressed air. The contaminants are filtered out by the cartridge and fully removed for the system by disposing of the maintenance-friendly filter cartridges. A differential pressure indicator indicates when the filter cartridge needs replacing.
The recovery and return of the cleaned fluid to the fluid circuit prevents production of large quantities of backflush discharge or sludge and removes the need to install a sludge tank.

BOLL Automatic Filter TYPE 6.64.07 DN 400 with flushing liquid treatment unit.

Control and Monitoring

The fully automatic filter complies with, amongst other things, the regulations of the following Marine Standards Authorities (GL, LRS, NV, BV, ABS, RMRS, USCG etc.) for unsupervised operation onboard ship.
As standard, the backflushing filter is provided with the Electronic Control Box Type 2200 which comprises the following features and functions:

- Membrane keypad with three keys
- 2-line display
- Impact-resistant display cover
- Display of backflushing operation, number of backflushes and error messages

- Adjustable over current release
- CPU board with non-volatile EPROM and program memory
- I.O. board in the control box
- Main switch with interlocking system

THE DETAILS

Data and facts at a glance

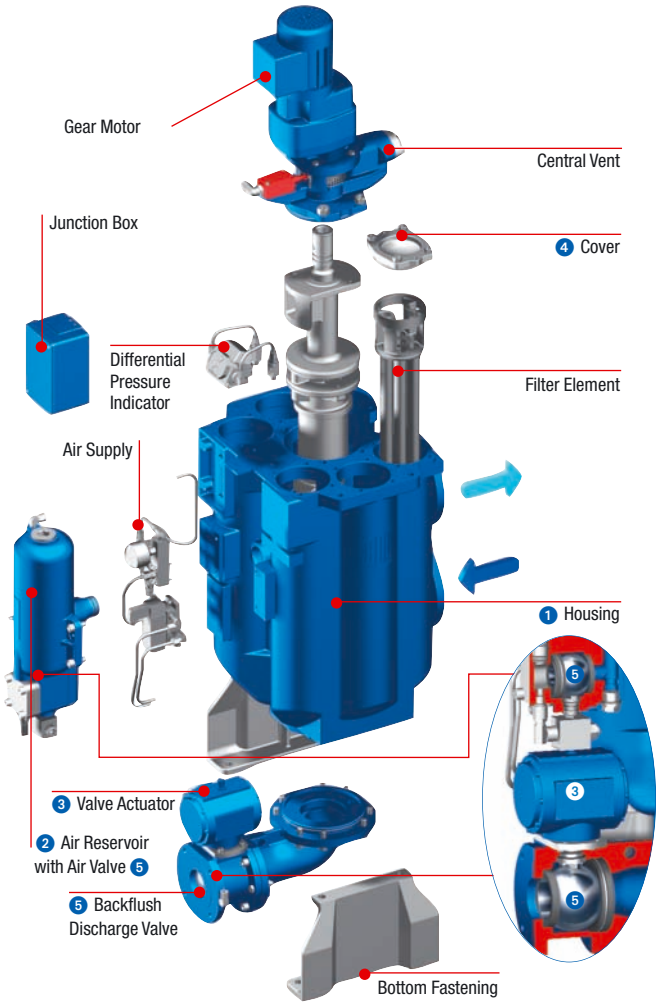
	BOLL Automatic Filter TYPE 6.64 Multichamber automatic filter with compressed-air backflushing
Range of application	Lubricating oil, diesel oil, heavy fuel oil, coolants, emulsions, industrial wash liquids
Differential pressure resistance	Up to operating pressure
Operating temperature	Up to 150 °C
Housing material	Grey cast iron or nodular cast iron
Grade of filtration	Up to 10 µm abs.
Filter candle type/ mesh type	Cylindrical screw-in candles or star candles with woven mesh
Cleaning method	Sequential reverse-flow backflushing, assisted by compressed air
Backflushing control	Differential pressure-dependent or time-dependent

THE BENEFITS

A persuasive tick list

A whole host of new innovative developments enable the BOLLFILTER TYPE 6.64 to deliver superior performance, reliability and economy. Key among these is:

1. Space savings due to the **one-piece cast housing**
2. More durable thanks to the reduced number of **assemblies, moving parts and piping**
3. Perfect **synchronization of the backflushing process due to component integration**
4. Easy access to the filter elements thanks to the **quick-release covers**
5. Less upkeep due to the use of virtually maintenance-**free ball valves** for the backflushing system.



SERVICE NETWORK

Maximum customer orientation for maximum satisfaction

BOLL & KIRCH continues to prove its strengths as a manufacturer and supplier of filters long after the product has been delivered. As a leading international supplier of marine and industrial filters for filtering fuels, lubricants, coolants and water with a global network of 28 sales and service centers in five continents, BOLL & KIRCH has at its fingertips the ideal logistical basis for providing perfect customer support. Naturally, users of the BOLL Automatic Filter TYPE 6.64 also benefit from the advantages this worldwide network provides – swift delivery, faster availability of technical support and a trouble-free supply of replacement parts.

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