

# SEPAR FILTER

## SEPAR 2000



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The SEPAR 2000 is a water separator and fuel filter for light diesel fuel. An entirely new multistage centrifugal system ensures a 100% solution to the problem of water and particulate in fuel.

SEPAR 2000 offers:

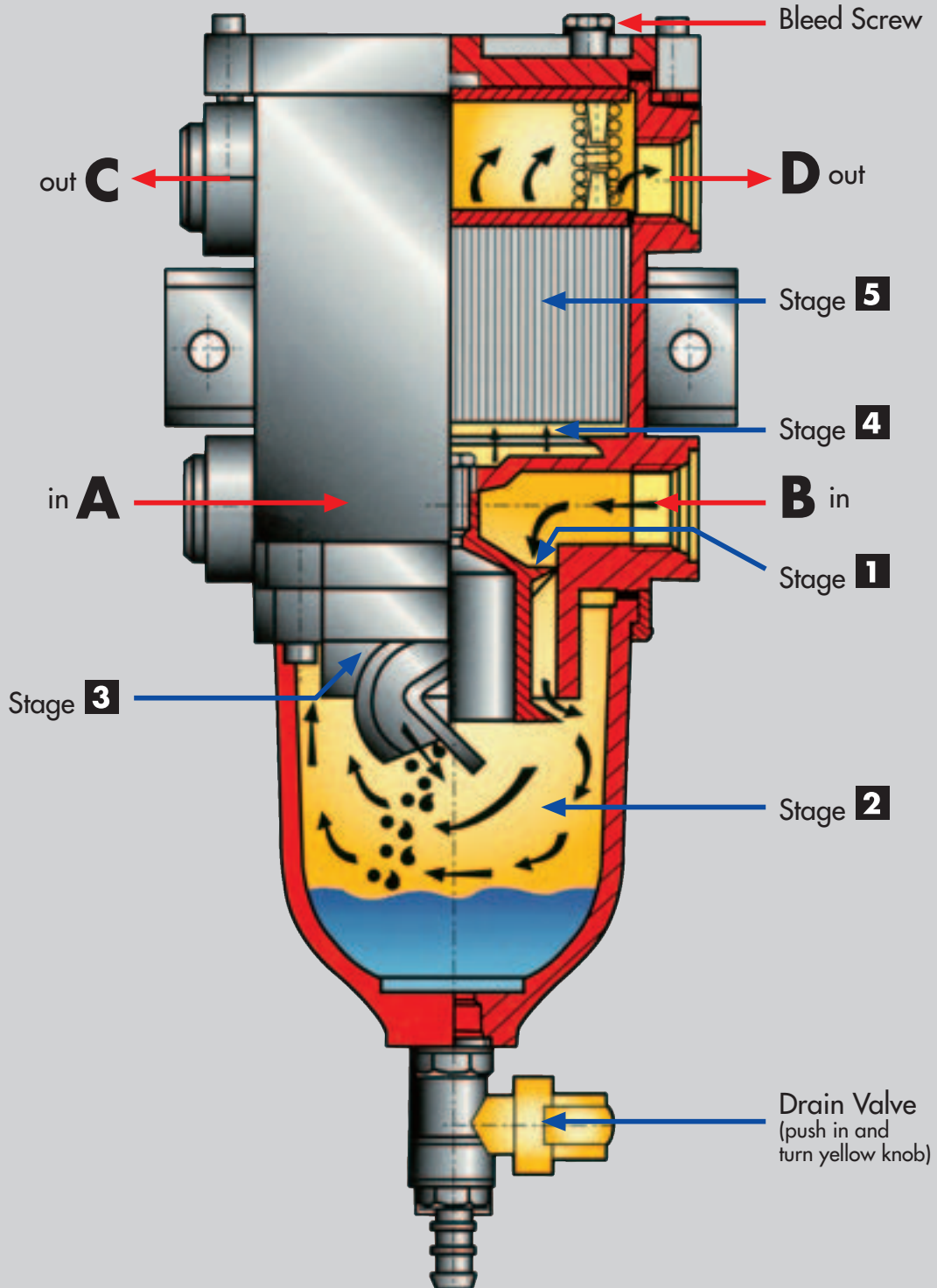
- 1** Most compact design
- 2** High efficiency
- 3** Low flow restriction
- 4** Long life filter element
- 5** Easy installation
- 6** Simple maintenance

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## SEPAR 2000

FLOW SCHEME

# SEPAR 2000



## SEPAR 2000

### WATER SEPARATOR AND FUEL FILTER

In 1992 Willibrord Lösing Filter-Technik designed the next generation of SEPAR Filters called the SEPAR 2000 Series of fuel filters, as an effective system for the separation of water and particulate from fuel. Both water and particulate matter can result in high wear and tear of fuel pumps and injectors, resulting in reduced reliability and expensive engine repairs.

### FUNCTION OF THE SEPAR 2000

The separation and filtration process takes place according to a unique and patented concept, which is applied throughout all of the range. The SEPAR 2000 series is outstanding due its small physical size in relation to the effective flow rate.

The SEPAR 2000 should be installed on the suction side of the fuel system, between the fuel feed tank and the engine mounted fuel lift pump.

Fuel enters the filter through either port A or B depending which is more convenient for installation, and using the plug provided to seal off the unused port.

#### Stage 1

From the inlet port, fuel flows through the interior vane system which imparts a circular motion to the fuel.

#### Stage 2

Still in the circular motion fuel reaches the bowl section, where, due to this centrifugal motion water droplets and heavier particles (down to 30 microns in size) are forced to the wall of the bowl, eventually settling in the bottom of the bowl.

#### Stage 3

In this stage the fuel has to pass the vane system positioned on the "outside" of the central housing. Due to the differing length of the vanes and the twofold rapid chan-

ge of fuel flow direction, smaller water droplets and finer particles will settle on the vanes. These settlements will agglomerate and when heavy enough fall to the bottom of the bowl. Already at this point the major portion of any contaminants in the fuel have been separated.

#### Stage 4

Just below the filter element the flow area of the filter is increased significantly thus reducing the fuel flow rate. This calming effect allows even smaller water droplets and particulate to fall out settling on the inner surfaces of the housing, forming larger droplets which eventually fall into the bottom of the bowl by gravity.

**Due to the before described pre-separation process, the major portion of water and particulate present in the fuel will be in the bowl or on the inner surfaces of the filter, thus greatly extending the filter element life.**

#### Stage 5

The final filtration of the remaining water and particulate still contained in the fuel will be effected by a replaceable filter element. These filter elements are produced from a special filter media and are available in different pore sizes.

The clean fuel leaves the filter via outlet ports C or D (the outlet port not required should be sealed with the plug provided).

## SEPAR 2000

### BACKFLUSHING PROCESS

Switch off the engine. Open the bleed valve on top of the filter lid (note: If fuel tank is above the top of the SEPAR filter close the fuel feed valve if fitted) then open the drain valve fitted to the bowl. The clean fuel between the filter lid and the clean side of the element will flush back through the filter element and "wash off" the collected water droplets and particles from the filter media. At the same time

fuel that is draining from the bowl is carrying contaminants out with it. Close the drain valve open the fuel feed valve and close the bleed valve. Prime the fuel system. Now the engine can be re-started.

If the engine is not able to reach maximum revolutions then repeat the process or the element requires to be replaced.

### INSTALLATION OF THE FILTER

The SEPAR 2000 can be easily installed. The SEPAR 2000 should be installed on the suction side of the fuel system, between the fuel feed tank and the engine mounted fuel lift pump.

- Install the SEPAR 2000 filter in an accessible position. (Any other primary filter has to be removed from the suction line.)
- The SEPAR 2000 housing has two inlet and two outlet ports to give options on installation position.
- The ideal position for the filter is at the same height as the lift pump. However if the top of the fuel tank is above this position a "full flow" ball valve should be fitted, before the filter so that the fuel flow can be shut off to allow filter maintenance.
- In application where the fuel level is below the filter it is still advisable to install a "full flow" ball valve to prevent fuel draining back into the fuel tank. After filter installation on the fuel supply system prime the fuel system.
- Avoid sharp 90-degree bends on the fuel system piping as these increase system pressure drop, as does any reduction in the internal diameter of fuel piping.

- Please use only fittings with o-ring seals (contained in our program of accessories). Do not use hollow bored screws with copper rings as they are difficult to seal and result in a high pressure drop.
- Please consider a clear space of 60 mm above the housing/filter lid to replace the filter element.

### Important:

Only clean diesel fuel should be used to clean the clear plastic bowls, certain cleaning materials can attack the plastic material and have a detrimental effect.

The following standard SEPAR models SWK-2000/5, -2000/5/50 and -2000/10 are resistant to biodiesel (Cannola). All other filter sizes are available with this facility by request.

## SEPAR 2000

### MAIN FEATURES

- Available with various flow rates from 1 to 260 l/min. Thereby offering fuel filters for an engine performance range of 5 to 10,000 kw.
- Compact size, various ports, simple installation
- High separation efficiency of water which is contained in the fuel. (No water could be proven acc. to RWTÜV testing.)
- Due to the backflushing extended service time of the filter elements.
- The SEPAR 2000 Filter protects the injection pump and injection nozzles.
- Easy maintenance of the SEPAR 2000 filter.

### APPLICATION OF THE FILTER

- Automotive industry - trucks, busses, mobile cranes, municipality vehicles etc.
- Construction equipment, compressor sets, agricultural equipment, fork lift trucks etc.
- Marine propulsion
- Stationary engines-generators, welding and pumping installations etc.
- Mining applications, railway locomotives
- Special versions for certain applications are available.

### MARINE APPLICATIONS

- For this purpose switchable filters are available. (except EVO) A water level indication can be supplied optionally.

### BIODIESEL APPLICATIONS

- For engines under operation with biodiesel (cannola) special versions are available.

### EXTREME TEMPERATURES

- For cold ambient temperatures SEPAR 2000 filters are available with an effective heating system.

### TEST AND CERTIFICATES

- Rheinisch-Westfälischer TÜV
- Krafftahrt-Bundesamt Flensburg
- German Technical Department for Army Ship and Marine Weapons
- Germanischer Lloyd Type Approval Certificate
- Lloyd Type Approval Certificate
- Bureau Veritas Type Approval Certificate
- RINA
- ABS

# SEPAR 2000

## DELIVERY PROGRAM

FLOW RATES		OPTIONS	
2000/5	= 5 l/min or 300 l/h	= Clear bowl	MK = Metal bowl with contacts
2000/5/50	= 5 l/min or 300 l/h	U = Switchable filter	S = Potentialfree probe for water level indication
2000/10	= 10 l/min or 600 l/h	D = Clear bowl with heat shield (RINA-version)	H = Heated filter 12V or 24
2000/18	= 18 l/min or 1080 l/h	K = Clear bowl with contacts for water level indication	
2000/40	= 40 l/min or 2400 l/h	KD = Clear bowl, heat shield, contacts for water level	
2000/130	= 130 l/min or 7800 l/h	M = Metal bowl	

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## AVAILABLE VERSIONS – DIESELFILTER

SINGLE UNITS	SWITCHABLE UNITS	DESCRIPTION	L / MIN	SINGLE UNITS Thread In- and Outlet	SWITCH. UNITS Thread In- and Outlet
SWK-2000/5	SWK-2000/5/U	Clear bowl	5	M 16 x 1,5	12 mm Pipe Ø
SWK-2000/5/50	SWK-2000/5/50/U	Clear bowl	5	M 16 x 1,5	12 mm Pipe Ø
SWK-2000/5/50/K	SWK-2000/5/50/UK	Clear bowl, contacts	5	M 16 x 1,5	12 mm Pipe Ø
SWK-2000/5/50/D	SWK-2000/5/50/UD	Clear bowl, heat shield	5	M 16 x 1,5	12 mm Pipe Ø
SWK-2000/5/50/KD	SWK-2000/5/50/UKD	Clear bowl, contacts, heat shield	5	M 16 x 1,5	12 mm Pipe Ø
SWK-2000/5/50/M	SWK-2000/5/50/UM	Metal bowl	5	M 16 x 1,5	12 mm Pipe Ø
SWK-2000/5/50/MK	SWK-2000/5/50/UMK	Metal bowl, contacts	5	M 16 x 1,5	12 mm Pipe Ø
SWK-2000/5/50/H		Clear bowl, heated filter	5	M 16 x 1,5	
SWK-2000/10	SWK-2000/10/U	Clear bowl	10	M 22 x 1,5	15 mm Pipe Ø
SWK-2000/10/K	SWK-2000/10/UK	Clear bowl, contacts	10	M 22 x 1,5	15 mm Pipe Ø
SWK-2000/10/D	SWK-2000/10/UD	Clear bowl, heat shield	10	M 22 x 1,5	15 mm Pipe Ø
SWK-2000/10/KD	SWK-2000/10/UKD	Clear bowl, contacts, heat shield	10	M 22 x 1,5	15 mm Pipe Ø
SWK-2000/10/M	SWK-2000/10/UM	Metal bowl	10	M 22 x 1,5	15 mm Pipe Ø
SWK-2000/10/MK	SWK-2000/10/UMK	Metal bowl, contacts	10	M 22 x 1,5	15 mm Pipe Ø
SWK-2000/10/H		Clear bowl, heated filter	10	M 22 x 1,5	
SWK-2000/18	SWK-2000/18/U	Clear bowl	18	M 26 x 1,5	22 mm Pipe Ø
SWK-2000/18/K	SWK-2000/18/UK	Clear bowl, contacts	18	M 26 x 1,5	22 mm Pipe Ø
SWK-2000/18/D	SWK-2000/18/UD	Clear bowl, heat shield	18	M 26 x 1,5	22 mm Pipe Ø
SWK-2000/18/KD	SWK-2000/18/UKD	Clear bowl, contacts, heat shield	18	M 26 x 1,5	22 mm Pipe Ø
SWK-2000/18/M	SWK-2000/18/UM	Metal bowl	18	M 26 x 1,5	22 mm Pipe Ø
SWK-2000/18/MK	SWK-2000/18/UMK	Metal bowl, contacts	18	M 26 x 1,5	22 mm Pipe Ø
SWK-2000/40/M	SWK-2000/40/UM	Metal bowl	40	M 33 x 2,0	35 mm Pipe Ø
SWK-2000/40/MK	SWK-2000/40/UMK	Metal bowl, contacts	40	M 33 x 2,0	35 mm Pipe Ø
SWK-2000/40/MS	SWK-2000/40/UMS	Metal bowl, potential-free probe	40	M 33 x 2,0	35 mm Pipe Ø
SWK-2000/40/2/MK		Metal bowl, contacts	80	42 mm Pipe Ø	
SWK-2000/130/MK	SWK-2000/130/UMK	Metal bowl, contacts	130	2" Pipe	2" Pipe
SWK-2000/130/MS	SWK-2000/130/UMS	Metal bowl, potential-free probe	130	2" Pipe	2" Pipe
SWK-2000/130/2/MK		Metal bowl, contacts	260	3" Pipe	

# SEPAR EVO

## PLASTICFILTER

SINGLE UNITS	SWITCHABLE UNITS	DESCRIPTION	L / MIN	SINGLE UNITS Thread In- and Outlet	SWITCH. UNITS Thread In- and Outlet
EVO-10		Clear bowl	10	M 22 x 1,5	
EVO-10/H		Clear bowl/heated filters	10	M 22 x 1,5	

### • Sizing of the SEPAR 2000 filter:

- The flow rate l/min of the filter **has** to be higher than the maximum capacity of engine mounted fuel lift pump. F.i. Maximum flow rate of the fuel lift pump 8 l/min - corresponding filter SWK 2000/10 with a maximum flow rate of 10 l/min
- It is advisable to use switchable filters for marine applications, especially when a vessel is fitted with only one propulsion engine.
- Other versions could be supplied on request
- The SEPAR 2000 filter is available with different pore sizes of the filter media

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