

# Accessories

For TRIVAC E, B and BCS

Exhaust Filters AF 8 to AF 25  
Condensate Traps AK 8 to AK 25



Exhaust filter (left) and condensate trap (right)

## Exhaust-Filter

Oil mists and aerosols are retained in the exhaust filter.

### Advantages to the User

- Filtering of the exhaust gas by removal of entrained lubricant particles
- Emptying via drain screw or exhaust filter drain tap
- Separation efficiency > 99%
- Filter elements (made of glass fiber) are exchangeable

## Condensate Trap

Condensate traps prevent the formation of condensate in the pump as well as the backstreaming of fluids.

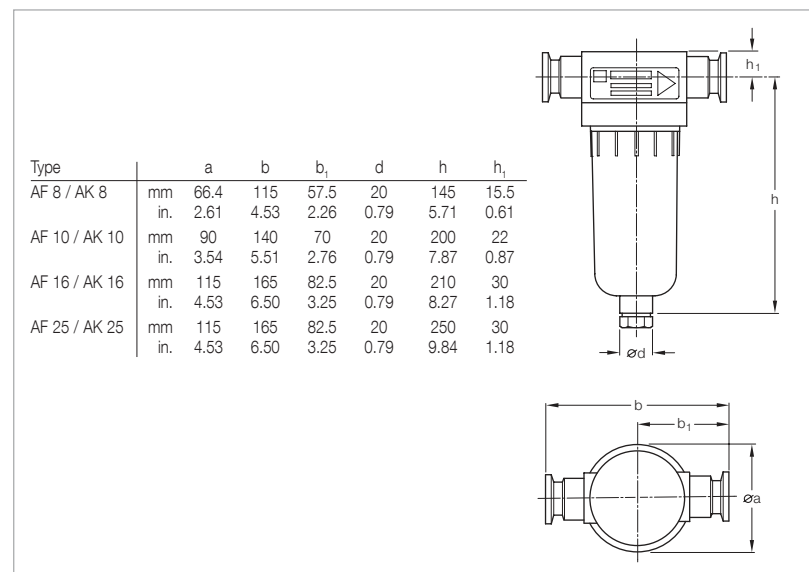
### Advantages to the User

- Can be connected to either the intake or the exhaust side
- Protects against condensate forming from sucked in vapors or gases (intake line)
- Protects against backstreaming liquids (exhaust line)
- Emptying via drain screw/drain tap

## Technical Information

The exhaust filter is not capable of retaining toxic and/or aggressive gases. For such applications we recommend the use of an exhaust gas line (e.g. a gas washer).

Since the material is not resistant to all gases and solvents, a materials compatibility chart is available upon request.



Dimensional drawing for the AF exhaust filter and AK condensate trap

**Technical Data****AF 8 AK 8 AF 10 AK 10 AF 16 AK 16 AF 25 AK 25**

Connection to pump (required accessories for TRIVAC E: elbow)	TRIVAC	D 2,5 E D 4 B D 8 B	D 2,5 E D 4 B D 8 B	D 16 B	D 16 B	D 16 B	D 16 B	D 16 B D 25 B	D 16 B D 25 B
Connection flanges	DN	16 KF	16 KF	25 KF	25 KF	25 KF	25 KF	25 KF	25 KF
Max. filling level (for vertical installation)	ml	60	60	145	145	285	285	285	285
Permissible leak rate	mbar x l x s <sup>-1</sup>	≤ 1 x 10 <sup>-5</sup>	≤ 1 x 10 <sup>-5</sup>	≤ 1 x 10 <sup>-5</sup>	≤ 1 x 10 <sup>-5</sup>	≤ 1 x 10 <sup>-5</sup>	≤ 1 x 10 <sup>-5</sup>	≤ 1 x 10 <sup>-5</sup>	≤ 1 x 10 <sup>-5</sup>
Max. continuous temperature	°C (°F)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)
Material		Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6

**Ordering Information****AF 8 AK 8 AF 10 AK 10 AF 16 AK 16 AF 25 AK 25**

	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
Exhaust filter	<b>190 50</b>	-	<b>190 51</b>	-	<b>190 52</b>	-	<b>190 53</b>	-
Exhaust filter drain tap	<b>190 95</b>	<b>190 95</b>	<b>190 95</b>	<b>190 95</b>	<b>190 95</b>	<b>190 95</b>	<b>190 95</b>	<b>190 95</b>
Condensate trap	-	<b>190 60</b>	-	<b>190 61</b>	-	<b>190 62</b>	-	<b>190 63</b>
Replacement filter element (pack of 5)								
FE 8	<b>ES 190 80</b>	-	-	-	-	-	-	-
FE 10	-	-	<b>ES 190 81</b>	-	-	-	-	-
FE 16	-	-	-	-	<b>ES 190 82</b>	-	-	-
FE 25	-	-	-	-	-	-	<b>ES 190 83</b>	-
Reducer DN 25/16 KF <sup>1)</sup>								
Aluminium (if necessary)	<b>183 86</b>	<b>183 86</b>	<b>183 86</b>	<b>183 86</b>	<b>183 86</b>	<b>183 86</b>	<b>183 86</b>	<b>183 86</b>
Elbow (1x)								
Aluminium	<b>184 36</b>	<b>184 36</b>	<b>184 37</b>	<b>184 37</b>	<b>184 37</b>	<b>184 37</b>	<b>184 37</b>	<b>184 37</b>
Centering ring with O-ring (2x)								
aluminium / NBR	<b>183 26</b>	<b>183 26</b>	<b>183 27</b>	<b>183 27</b>	<b>183 27</b>	<b>183 27</b>	<b>183 27</b>	<b>183 27</b>
stainless steel / FPM (FKM)	<b>883 46</b>	<b>883 46</b>	<b>883 47</b>	<b>883 47</b>	<b>883 47</b>	<b>883 47</b>	<b>883 47</b>	<b>883 47</b>
Clamping ring (2x)	<b>183 41</b>	<b>183 41</b>	<b>183 42</b>	<b>183 42</b>	<b>183 42</b>	<b>183 42</b>	<b>183 42</b>	<b>183 42</b>

<sup>1)</sup> When using the reducer, an elbow is required

# Exhaust Filters

## AF 4-8 to AF 40-65

### AF 16-25 DOT and AF 40-65 DOT

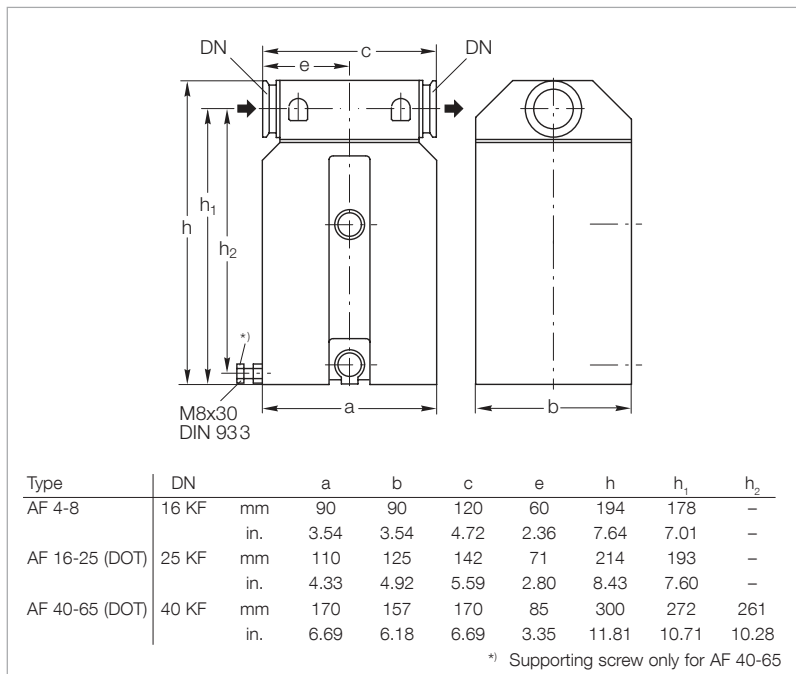


AF 4-8 exhaust filter

Exhaust filters retain oil mists and aerosols.

#### Advantages to the User

- Can be fitted without additional accessories
- Separation efficiency over 99 %
- Exchangeable filter inserts
- Built-in over-pressure relief valve (threshold at about 1.5 bar (7.2 psi, differential))
- Sight glass for checking of the quantity of collected oil
- Resistant against solvents
- Seals for
  - AF made of FPM (FKM)
  - AF-DOT made of EPDM
- Easy to clean and use
- Retains dirt and cracked products



Dimensional drawing for the AF exhaust filters

#### Typical Application

- Improvement of oil separating capacity

#### Technical Information

An exhaust line must be connected in case of hazardous exhaust gases.

**Technical Data****AF 4-8****AF 16-25****AF 40-65**

Connection to pump	TRIVAC	D 4/8 B	D 16/25 B/BCS	D 40/65 B/BCS
Max. capacity for condensate, approx.	l (qt)	0.4 (0.45)	0.5 (0.57)	1.0 (1.14)
Weight	kg (lbs)	1.9 (4.1)	3.2 (7.1)	6.5 (14.3)

**Ordering Information****AF 4-8****AF 16-25****AF 40-65**

	Part No.	Part No.	Part No.
Exhaust filter	<b>189 06</b>	<b>189 11</b>	<b>189 16</b>
Replacement filter element			
FE 4-8	<b>189 71</b>	-	-
FE 16-25	-	<b>189 72</b>	-
FE 40-65	-	-	<b>189 73</b>
Oil drain tap M 16 x 1.5 (vacuum-tight)	<b>190 90</b>	<b>190 90</b>	<b>190 90</b>

**Technical Data****AF 16-25 DOT****AF 40-65 DOT**

Connection to pump	TRIVAC	-	D 16/25 B-DOT	D 40 B-DOT
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**Ordering Information****AF 16-25 DOT****AF 40-65 DOT**

	Part No.	Part No.	Part No.
Exhaust filter DOT	-	<b>124 16</b>	<b>101 15</b>
Replacement filter element		<b>200 10 304</b>	-
FE 16-25 DOT	-	-	<b>200 39 840 <sup>1)</sup></b>
FE 40-65 DOT			

<sup>1)</sup> 2 pieces are required

# Exhaust Filters with Lubricant Return

## ARP 4-8 and AR 4-8 to AR 40-65



AR 4-8 exhaust filter with lubricant return



ARP 4-8 exhaust filter with lubricant return

This combination of an exhaust filter with a float-controlled valve considerably extends the maintenance intervals for the TRIVAC pumps.

### Advantages to the User

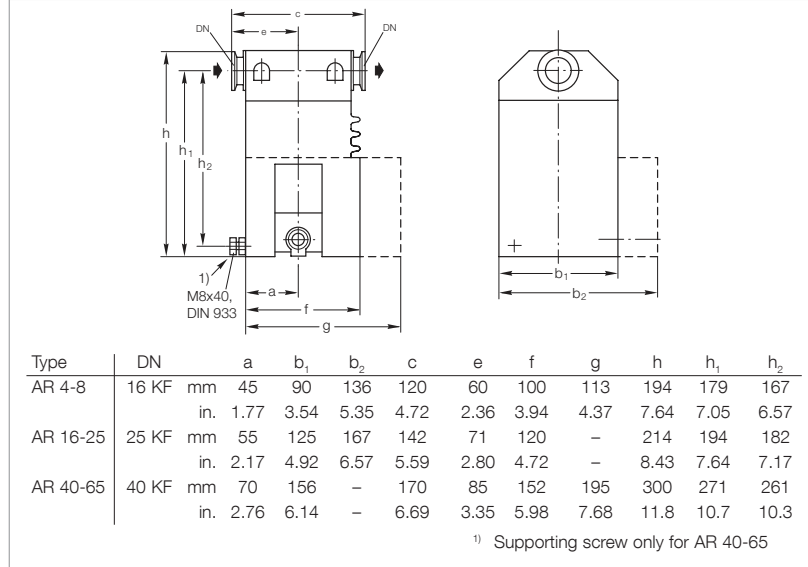
- Filtering the exhaust air of entrained lubricant particles
- Lubricant return with the aid of a float-controlled valve back into the intake port
- No operating costs caused by lost lubricant
- Hardly any oil consumption
- Standard filter element
- Built-in over-pressure relief valve
- Resists solvents
- All seals made of FPM (FKM)
- Easy change of the return port for horizontal or vertical connection

### Typical Application

- Extending the maintenance intervals

### Supplied Equipment

Intermediate flange, connecting lines with hollow screws, required gaskets as well as mounting screws for the intake flange.



Dimensional drawing for the AR exhaust filters with lubricant return  
(dimensions for the ARP exhaust filter with lubricant return upon request)

### Technical Data

**ARP 4-8 AR 4-8 AR 16-25 AR 40-65**

Connection to pump	TRIVAC	D 4/8 B	D 4/8 B	D 16/25 B/BCS	D 40/65 B/BCS
For opening the float-controlled valve required amount of oil					
LEYBONOL LVO 100	cm <sup>3</sup> (qt)	-	430 (0.45)	510 (0.54)	760 (0.80)
LEYBONOL LVO 400	cm <sup>3</sup> (qt)	-	350 (0.37)	430 (0.45)	700 (0.74)
Remaining amount of oil					
LEYBONOL LVO 100	cm <sup>3</sup> (qt)	-	290 (0.31)	340 (0.36)	420 (0.44)
LEYBONOL LVO 400	cm <sup>3</sup> (qt)	-	250 (0.26)	300 (0.32)	390 (0.41)
Weight	kg (lbs)	1.7 (3.8)	3.1 (6.89)	4.7 (10.4)	8.5 (18.7)

### Ordering Information

**ARP 4-8 AR 4-8 AR 16-25 AR 40-65**

	Part No.	Part No.	Part No.	Part No.
Exhaust filter with lubricant return	<b>140 065</b>	<b>189 20</b>	<b>189 21</b>	<b>189 22</b>
Replacement filter element				
FE 8	<b>190 80</b>	-	-	-
FE 4-8	-	<b>189 71</b>	-	-
FE 16-25	-	-	<b>189 72</b>	-
FE 40-65	-	-	-	<b>189 73</b>

### Technical Information

The AR is connected to the exhaust port of the TRIVAC B, the return line is connected at the intermediate flange under the intake port. An exhaust line must be connected in case of hazardous exhaust gases.

The ARP and AR filters are factory cleaned to such an extent, that they may be operated either with mineral oil (e.g. LEYBONOL LVO 100) or perfluoropolyether (PFPE) (e.g. LEYBONOL LVO 400).

# Exhaust Filters with Lubricant Return ARS 16-25 and ARS 40-65



ARS 40-65

This combination of an exhaust filter with a float-controlled valve considerably extends the maintenance intervals of the TRIVAC BCS.

The ARS is part of the TRIVAC SYSTEM.

### Advantages to the User

- Lubricant return with the aid of a float-controlled valve back into the intake port
- The intake port may be easily exchanged (either vertical or horizontal orientation)
- No operating costs caused by lost lubricant
- Hardly any oil consumption
- Visual indication of the differential pressure
- Standard filter element
- All aluminium parts are surface protected
- Built-in over-pressure relief valve
- Resists solvents
- All seals made of FPM (FKM)

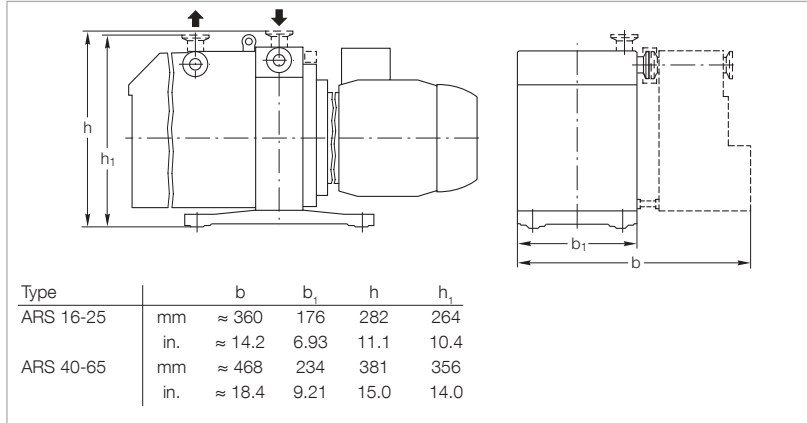
### Typical Application

- Filtering the exhaust air of entrained lubricant particles

### Supplied Equipment

Intermediate flange, connecting lines with hollow screws, required gaskets as well as mounting screws for the intake flange.

Wrapped in foil for shipping.



Dimensional drawing for the ARS mounted on a TRIVAC BCS

### Technical Information

An exhaust line must be connected in case of hazardous exhaust gases. The ARS is connected to the exhaust port of the TRIVAC BCS, the return line is connected at the intermediate flange under the intake port.

The ARS is factory cleaned to such an extent, that it may be operated either with mineral oil (e.g. LEYBONOL LVO 100) or perfluoropolyether (PFPE) (e.g. LEYBONOL LVO 400).

### Technical Data

#### ARS 16-25

#### ARS 40-65

	TRIVAC	D 16/25 B D 16/25 BCS (-PFPE)	D 40/65 B D 40/65 BCS (-PFPE)
<b>Connection to pump</b>			
<b>Connection flanges</b>	DN	25 KF	40 KF
<b>Amount of oil required for opening the float-controlled valve</b>			
LEYBONOL LVO 100	cm <sup>3</sup> (qt)	510 (0.54)	760 (0.80)
LEYBONOL LVO 400	cm <sup>3</sup> (qt)	340 (0.36)	420 (0.44)
<b>Remaining amount of oil</b>			
LEYBONOL LVO 100	cm <sup>3</sup> (qt)	430 (0.45)	700 (0.74)
LEYBONOL LVO 400	cm <sup>3</sup> (qt)	300 (0.31)	390 (0.41)
<b>Weight with intermediate flange, tubing and filter, without lubricant</b>	kg (lbs)	4.7 (10.4)	8.5 (16.7)

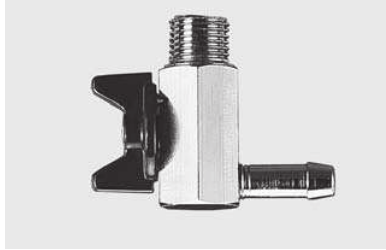
### Ordering Information

#### ARS 16-25

#### ARS 40-65

	Part No.	Part No.
Exhaust filter with lubricant return	<b>189 56</b>	<b>189 57</b>
Replacement filter element		
FE 16-25	<b>189 72</b>	-
FE 40-65	-	<b>189 73</b>

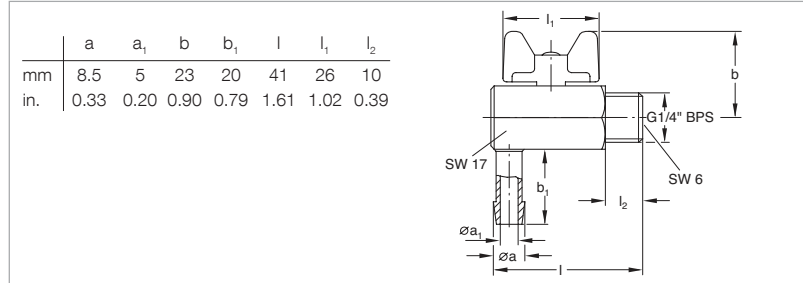
# Exhaust Filter Drain Tap



The exhaust filter drain tap simplifies draining of the oil from the exhaust filter.

### Technical Note

May also be used in connection with the condensate separator AK.



Dimensional drawing for the exhaust filter drain tap

### Technical Data

Leak rate	mbar x l x s <sup>-1</sup>	≤ 10 <sup>-5</sup>
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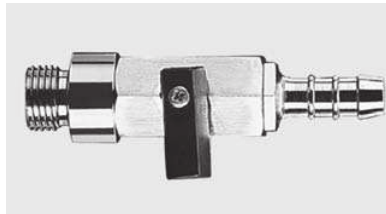
### Exhaust Filter Drain Tap

### Ordering Information

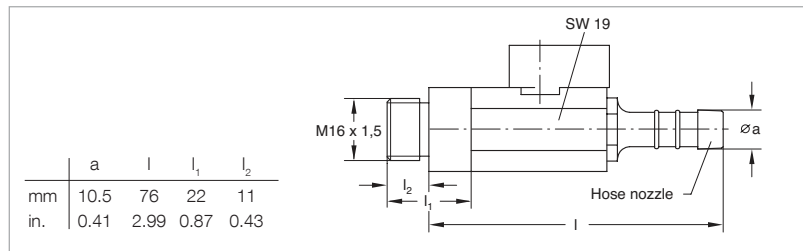
	Part No.
Exhaust filter drain tap	<b>190 95</b>

### Exhaust Filter Drain Tap

# Oil Drain Tap



This oil drain tap may be screwed into the oil drain when wanting to change the oil in the rotary vane pumps. It is also suited for the condensate separators and exhaust filters of the TRIVAC B series.



Dimensional drawing for the oil drain tap

### Technical Data

Leak rate	mbar x l x s <sup>-1</sup>	≤ 10 <sup>-5</sup>
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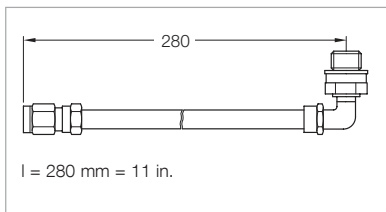
### Oil Drain Tap

### Ordering Information

	Part No.
Oil drain tap	<b>190 90</b>

### Oil Drain Tap

# Oil Drain Kit



Dimensional drawing for the oil drain kit

### Technical Data

Length	mm (in.)	280 (11)
Leak rate	mbar x l x s <sup>-1</sup>	≤ 10 <sup>-5</sup>

### Oil Drain Kit

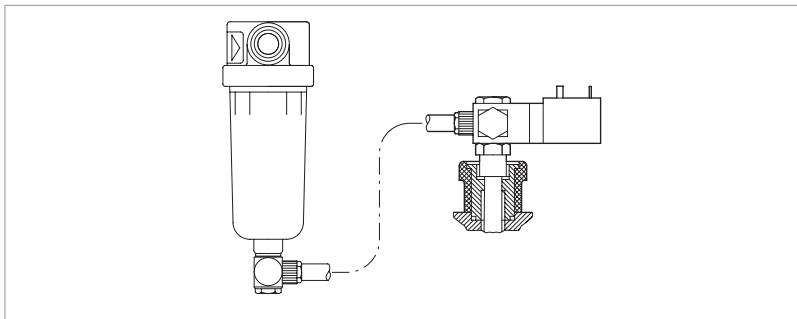
### Ordering Information

	Part No.
Oil drain kit	<b>190 94</b>

### Oil Drain Kit

## Oil Suction Facility AR-V Controlled by Solenoid Valve

Suited for the AF 8 or AK 8 when connected to the D 2.5 E the oil suction facility AR-V with its solenoid valve allows the removal of oil via the gas ballast which has collected in the exhaust filter. When the valve is closed the gas ballast remains fully operational. For this, a hose link is provided between the exhaust filter and the gas ballast.



AR-V oil suction facility controlled by solenoid valve (kit without exhaust filter)

### Technical Note

If oil which has collected in the exhaust filter is to be removed, the solenoid valve is opened briefly.

### Technical Data

#### AR-V Oil Suction Facility Controlled by Solenoid Valve

Leak rate	mbar x l x s <sup>-1</sup>	≤ 10 <sup>-5</sup>
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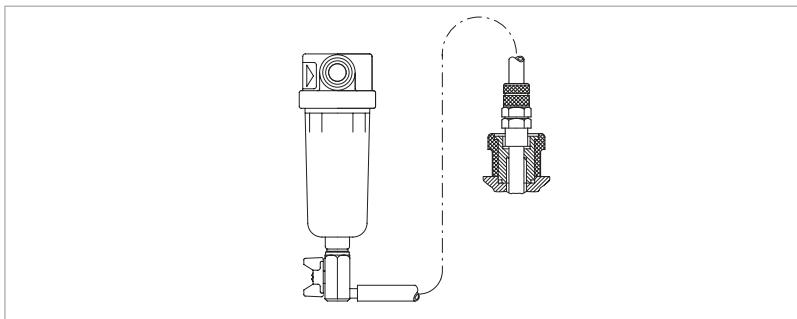
### Ordering Information

#### AR-V Oil Suction Facility Controlled by Solenoid Valve

	Part No.
AR-V oil suction facility controlled by solenoid valve 24 V DC, 4 W, normally closed	<b>190 92</b>

## Manually Operated Oil Suction Facility AR-M

Suited for the AF 8 or AK 8 when connected to the D 2,5 E the oil suction facility AR-M allows the removal of oil via the gas ballast which has collected in the exhaust filter, whereby the gas ballast remains fully operational as long as the angled ball valve remains closed. For this, a hose link is provided between the exhaust filter and the gas ballast.



AR-M manually operated oil suction facility (kit without exhaust filter)

### Technical Note

If oil which has collected in the exhaust filter is to be removed, the angled ball valve is manually opened briefly.

### Technical Data

#### AR-M Manually Operated Oil Suction Facility

Leak rate	mbar x l x s <sup>-1</sup>	≤ 10 <sup>-5</sup>
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### Ordering Information

#### AR-M Manually Operated Oil Suction Facility

	Part No.
AR-M manually operated oil suction facility	<b>190 93</b>



# Condensate Separators AK 4-8 to AK 40-65

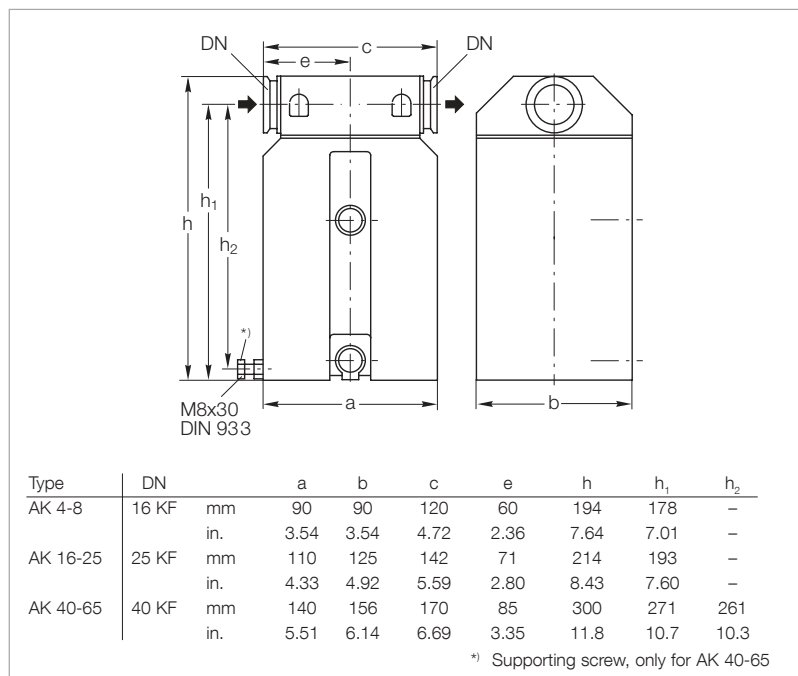


AK 4-8 condensate separator

Separators protect the pump against condensate.

## Advantages to the User

- May be installed without accessories
- May be used either on the intake or the exhaust side
- Independent of the direction of flow
- Condensate level check via inspection glass
- Resists solvents
- All seals made of FPM (FKM)
- Simple to clean
- Easy to use
- Drained via drain screw or drain tap



Dimensional drawing for the AK condensate separators

## Typical Application

- Prevention of the collection of liquids in the intake line

## Technical Information

Depending upon the layout and pipe run of an exhaust line, it may be necessary to install a separator to prevent condensate draining back to the pump.

## Technical Data

### AK 4-8

### AK 16-25

### AK 40-65

Connection to pump	TRIVAC	D 4/8 B	D 16/25 B D 16/25 BCS (-PFPE)	D 40/65 B D 40/65 BCS (-PFPE)
Capacity for condensate	l (qt)	0.66 (0.7)	1.2 (1.3)	3.0 (3.2)
Weight	kg (lbs)	1.7 (3.7)	2.4 (5.3)	5.5 (12.1)

## Ordering Information

### AK 4-8

### AK 16-25

### AK 40-65

	Part No.	Part No.	Part No.
Condensate separator	<b>188 06</b>	<b>188 11</b>	<b>188 16</b>
Oil drain tap M 16 x 1.5 (vacuum-tight)	<b>190 90</b>	<b>190 90</b>	<b>190 90</b>
Adaptor DN 16 KF – hose nozzle DN 7	<b>182 90</b>	-	-

# Dust Filters DN 16 KF to DN 40 KF



Filter housing FH 16 to FH 40 for dust filter insert DF

Dust filters protect the pump against sucked in dust. They are suited for oil sealed and also for dry compressing pumps.

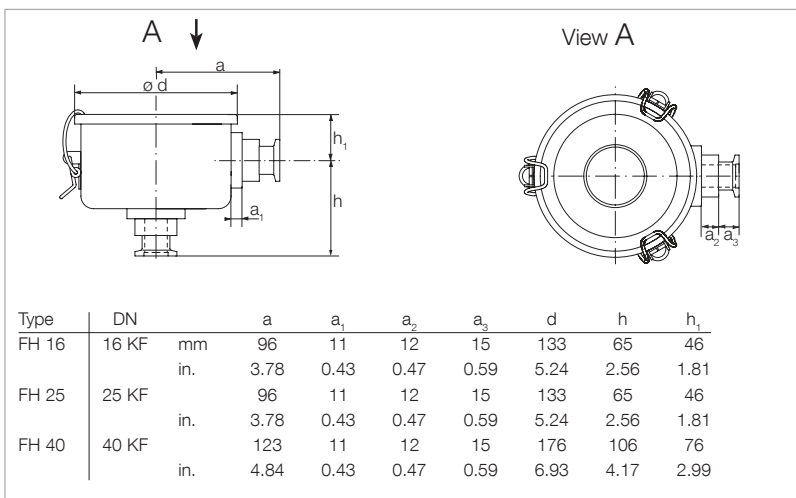
## Advantages to the User

- Easy to disassemble
- Vacuum-tight steel housing
- Easily exchangeable replacement filter
- High filter capacity

## Technical Information

Installing a dust filter in the intake line of the pump throttles its pumping speed at lower intake pressures much more than at higher intake pressures. Throttling reference values are stated in the Technical Data. These must be taken into account when dimensioning the vacuum system.

Since the collection capacity of dust filters is limited, we recommend the two-stage dust filters AS when larger quantities of dust are involved.



Dimensional drawing for the filter housings FH 16 to FH 40 for dust filter inserts DF

## Technical Data

### Dust Filter

		DN 16 KF	DN 25 KF	DN 40 KF
Use for	TRIVAC	D 4/8 B	D 16/25 B	D 40/65 B
Share of filtered out particles > 5 µm	%	98	98	98
Throttling of pumping speed	at 10 mbar (7.5 Torr)	3	3	3
	at 1 mbar (0.75 Torr)	6	6	6
Weight with dust filter insert	kg (lbs)	1.3 (2.9)	1.3 (2.9)	2.3 (5.1)

## Ordering Information

### Dust Filter

	DN 16 KF	DN 25 KF	DN 40 KF
	Part No.	Part No.	Part No.
Dust filter			
filter housing FH <sup>1)</sup>	140 116T	140 125T	140 140T
dust filter insert			
DF 16-25	140 117S	140 117S	-
DF 40-65	-	-	140 141S

<sup>1)</sup> The filter housing is supplied without filter cartridge (dust filter insert) since it may also be used in connection with the adsorption trap or dust filter insert

# Adsorption Traps DN 16 KF to DN 40 KF



Filter housing FH 16 to FH 40  
for adsorption trap filter inserts RF

Adsorption traps are containers with a stainless steel insert which can be filled with a number of different adsorbents thereby offering a high adsorbing capacity for vapors, water vapor in particular.

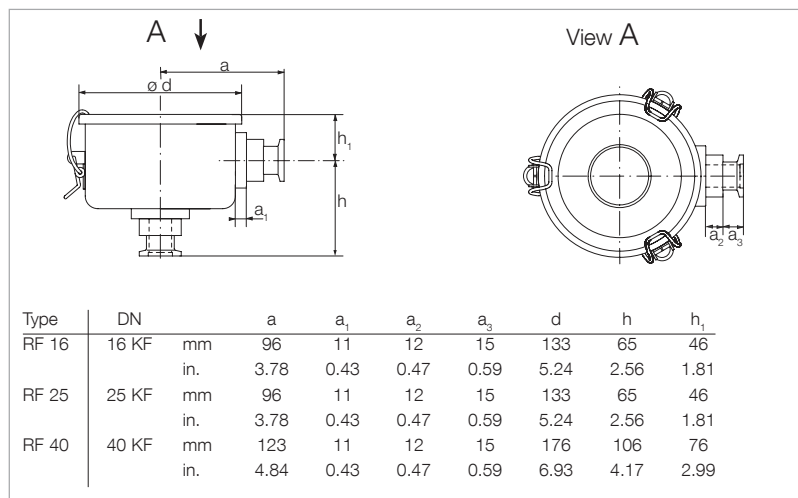
## Advantages to the User

- Vacuum-tight steel housing
- Stainless steel, degassable up to 300 °C (572 °F)
- Different adsorbents and separating elements can be used
- Quick to replace
- Easy to disassemble

## Technical Information

The adsorption traps have been developed specially for use in connection with oil sealed pumps. They are capable of retaining oil vapors discharged from forevacuum pumps and are at the same time in the position to separate vapors (water vapor) coming from the side of the process. Through the use of adsorption traps and a suitable adsorbent, a vacuum free of hydrocarbons can be produced. The stainless steel inserts with the corresponding adsorbent can be heated in a drying cabinet at 300 °C (572 °F) for regeneration. Depending on the type of adsorbent and operating pressure, the pumping speed of the pumps is reduced.

As to any questions relating to the selection of a suitable adsorbent, please consult us.



Dimensional drawing for the filter housings FH 16 to FH 40 for adsorption trap filter inserts RF

## Technical Data

### Adsorption Trap

Use for	TRIVAC	DN 16 KF	DN 25 KF	DN 40 KF
		D 4/8 B	D 16/25 B	D 40/65 B
<b>Conductance</b>				
at 10 mbar (7.5 Torr) for				
aluminium oxide	l/s	2	6	14
zeolite	l/s	2	6	12
active charcoal filling	l/s	2	6	16
baffle ring filling	l/s	2	7	18
at 1 mbar (0.75 Torr) for				
aluminium oxide	l/s	1	4	5
zeolite	l/s	1	6	5
active charcoal filling	l/s	2	6	6
baffle ring filling	l/s	2	6	16
<b>Filling quantity</b>				
aluminium oxide	kg (lbs)	0.3 (0.7)	0.3 (0.7)	1.0 (2.2)
zeolite	kg (lbs)	0.2 (0.4)	0.2 (0.4)	0.7 (1.5)
active charcoal filling	kg (lbs)	0.1 (0.2)	0.1 (0.2)	0.5 (1.1)
baffle ring filling	kg (lbs)	0.1 (0.2)	0.1 (0.2)	0.3 (0.7)
<b>Filling volume</b>				
	l (qt)	0.3 (0.3)	0.3 (0.3)	1.2 (1.3)
<b>Weight with adsorption trap insert</b>				
	kg (lbs)	1.3 (2.9)	1.3 (2.9)	2.3 (5.1)

## Ordering Information

### Adsorption Trap

	DN 16 KF	DN 25 KF	DN 40 KF
	Part No.	Part No.	Part No.
Adsorption trap			
filter housing FH <sup>1)</sup>	<b>140 116T</b>	<b>140 125T</b>	<b>140 140T</b>
adsorption trap filter insert			
RF 16-25	<b>140 118A</b>	<b>140 118A</b>	-
RF 40-65	-	-	<b>140 142A</b>
Active charcoal, un-dried, 5 kg	<b>178 10</b>	<b>178 10</b>	<b>178 10</b>
Zeolite, 1 kg	<b>854 20</b>	<b>854 20</b>	<b>854 20</b>
Aluminium oxide, 1.2 kg	<b>854 10</b>	<b>854 10</b>	<b>854 10</b>
Baffle ring 15 x 15 x 0.3, 1 liter Stainless steel 1.4301	<b>390 26 126</b>	<b>390 26 126</b>	<b>390 26 126</b>

<sup>1)</sup> The filter housing is supplied without filter cartridge (dust filter insert) since it may also be used in connection with the adsorption trap or dust filter insert

# Cold Trap TK 4-8



TK 4-8 cold trap

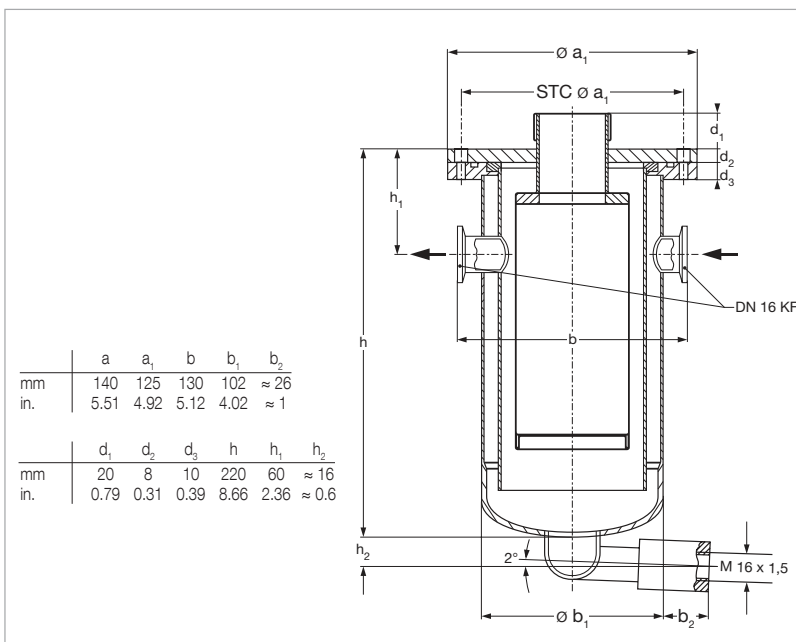
The cold trap protects the pump against damaging vapors.

## Advantages to the User

- Rugged and implosion resistant
- May be fitted directly on the flange of the pump
- Safe draining of the condensate without problems
- Casing made of corrosion resistant stainless steel
- Simple filling with refrigerant (liquid nitrogen (LN<sub>2</sub>) or a mixture of acetone and carbon di-oxide ice)

## Typical Applications

- Prevention of oil from backstreaming into the vacuum system when operating at ultimate pressure
- Freezing of gases and vapors in the laboratory



Dimensional drawing for the TK 4-8 cold trap

## Technical Data

## TK 4-8

Connection to pump	TRIVAC	D 2,5 E / D 4/8 B
Capacity for refrigerant, approx.	l (qt)	0.4 (0.42)
Connections	DN	16 KF
Weight	kg (lbs)	4 (8.8)

## Ordering Information

## TK 4-8

	Part No.
Cold trap	<b>188 20</b>
Drain tap for the intake side, vacuum-tight	<b>190 90</b>
Elbow (1x)	<b>184 36</b>
Centering ring aluminium/NBR (2x)	<b>183 26</b>
stainless steel/FPM (FKM) (2x)	<b>883 46</b>
Clamping ring (2x)	<b>183 41</b>

# Dust Separators AS 8-16 and AS 30-60 / Molecular Filters MF 8-16 and MF 30-60



AS 30-60 dust separator  
(MF 30-60 molecular filter is similar)

**Dust separators** protect pumps against contamination and damage by sucked-in dust.

## Advantages to the User

- Dust separators for large quantities of dust
- Two-stage, thus hardly any throttling
- Cyclone (for coarse dust) and wet filter (for fine dust)
- Dust separator and molecular filter have the same housing (for easy conversion)

## Typical Application

- Separation of coarse and medium size dust starting at a grain size of 2  $\mu\text{m}$

## Technical Information

Installing a dust filter in the intake line of the pump will throttle its pumping speed at low intake pressures more than at higher intake pressures. This must be taken into account when designing a vacuum system.

Even when large quantities of dust are deposited, the throttling effect will hardly increase.

## Supplied Equipment

Blanked off drain port.

**Molecular filters** are used to separate vapors of a high molecular weight (i.e. monomers, vapors from resins).

## Advantages to the User

- Molecular filter and dust separator have the same housing (for easy conversion)
- Separation of high-molecular weight vapors
- Protection of the pump's oil against damaging vapors

## Technical Information

Installing a molecular filter in the intake line of the pump will throttle its pumping speed at low intake pressures more than at higher intake pressures. This must be taken into account when designing a vacuum system.

## Supplied Equipment

Blanked off drain port.

**Technical Data**

**AS 8-16**

**AS 30-60**

**MF 8-16**

**MF 30-60**

Connection to pump	TRIVAC	D 16 B	D 25 B	D 40 B	D 65 B	D 16 B/BCS	D 25 B/BCS	D 40 B/BCS	D 65 B/BCS
Throttling of the pumping speed at 1 mbar (0.75 Torr) intake pressure, approx.	%	10	15	8	16	10	15	8	16
at 10 mbar (7.5 Torr) intake pressure, approx.	%	5	7	4	9	5	7	4	9
Capacity for dust	l (qt)	0.6 (0.63)	0.6 (0.63)	2.0 (2.11)	2.0 (2.11)	-	-	-	-
Capacity for resin vapors or similar	kg (lbs)	-	-	-	-	0.15 (0.3)	0.15 (0.3)	0.35 (0.8)	0.35 (0.8)
Impact ring filling	l (qt)	0.5 (0.53)	0.5 (0.53)	3.5 (3.70)	3.5 (3.70)	-	-	-	-
Active charcoal filling	kg (lbs)	-	-	-	-	0.6 (1.3)	0.6 (1.3)	1.4 (3.1)	1.4 (3.1)
Weight	kg (lbs)	4.5 (9.9)	4.5 (9.9)	18.4 (40.6)	18.4 (40.6)	4.5 (9.9)	4.5 (9.9)	18.4 (40.6)	18.4 (40.6)

**Ordering Information**

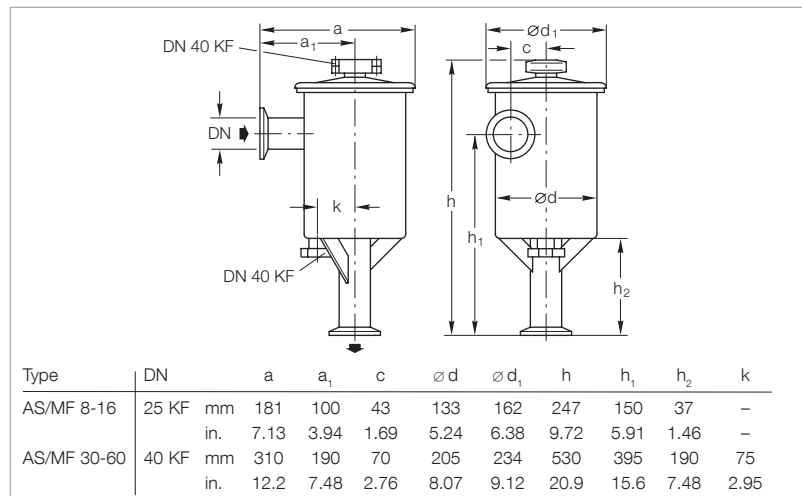
**AS 8-16**

**AS 30-60**

**MF 8-16**

**MF 30-60**

	Part No.	Part No.	Part No.	Part No.
Dust separator	<b>186 11</b>	<b>186 16</b>	-	-
Molecular filter	-	-	<b>186 12</b>	<b>186 17</b>
Replacement filter insert	-	<b>178 43</b>	-	-
Replacement active charcoal insert	-	-	<b>178 07</b>	<b>178 08</b>
Active charcoal, undried, 5 kg (11 lbs)	-	-	<b>178 10</b>	<b>178 10</b>



Dimensional drawing for the AS dust separators and MF molecular filters

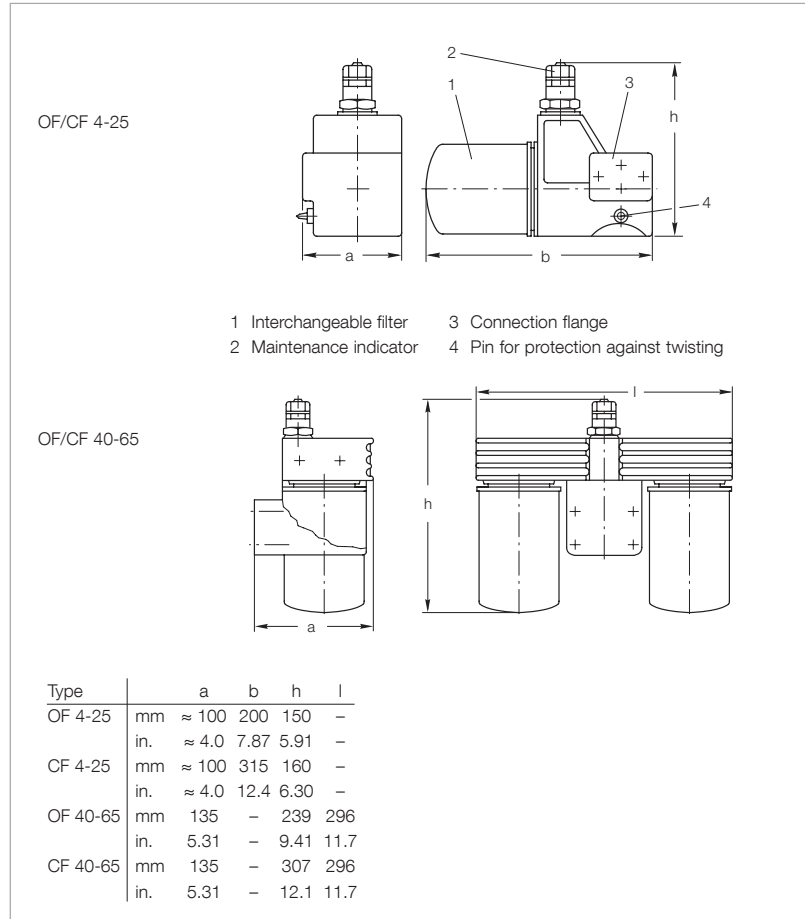
# Mechanical Oil Filters OF 4-25 and OF 40-65 / Chemical Oil Filters CF 4-25 and CF 40-65



OF 4-25 mechanical oil filter

Since there is a pressure-lubrication system with an oil pump in every TRIVAC B, it is possible to connect main flow oil filters.

These filters are available either for mechanical filtering (OF types) or combined chemical/mechanical filtering (CF types).



Dimensional drawings for the OF mechanical oil filters and CF chemical oil filters

## Advantages to the User

- Main flow oil filter
- Longer service life for the oil depending on the type of application
- Can be installed without problems to the TRIVAC B
- Hose connections are not required
- Easily interchangeable filters
- Only a small amount of oil needs to be added when changing the filters
- Expansion of the range of applications in case of special requirements

## Typical Application

- Same casing for OF and CF types
- Greater reliability by standard maintenance indicator
- Built-in bypass valve
- Owing to the highly effective adsorbent for polar substances, an up to ten-fold adsorption effect is attained over normal bleaching earth (CF)
- Prevents mechanical damage to the pump
- Separation of fine particles from the pump's oil (sizes between 5 and 10  $\mu\text{m}$  (OF))





# Chemical Filters with Safety Isolation Valve CFS 16-25 and CFS 40-65



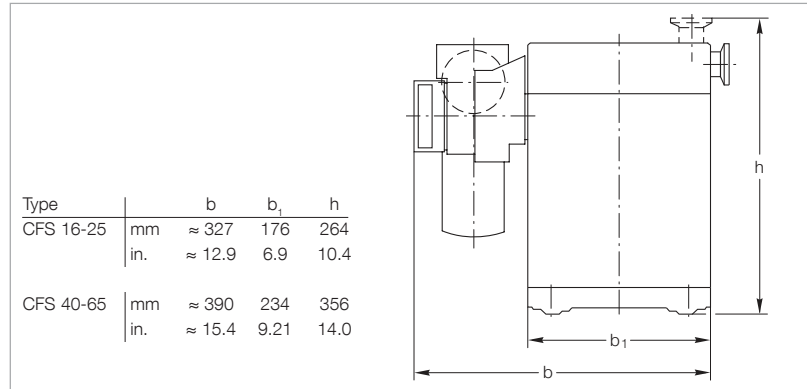
CFS 40-65

The CFS chemical filters with safety isolation valve are main flow oil filters for the TRIVAC B and BCS pumps.

The CFS is part of the TRIVAC SYSTEM.

## Advantages to the User

- The CFS is included in the main lubricant flow
- Rapid filter exchange
  - the pump may continue to operate while changing the filters
- Visual indication of the filter's condition through a maintenance indicator
- Aluminium component with isolation valve for one or two interchangeable filters
- All aluminium parts are surface protected
- May be operated with different interchangeable filters
- Over-pressure relief valve in the interchangeable filters
- Prepared for connection of a differential pressure switch and an oil pressure switch
- May also be used on the TRIVAC B pumps



Dimensional drawing for the CFS (mounted on a TRIVAC BCS)

## Technical Information

The CFS is cleaned in the factory to such an extent, that it may be operated either with mineral oil (e.g. LEYBONOL LVO 100) or perfluoropolyether (PFPE, e.g. LEYBONOL LVO 400).

## Supplied Equipment

All gaskets and mounting parts required for installation.

Aluminium particle filters (WF Alu-Part) sealed for shipping are included separately.

## Technical Data

### CFS 16-25

### CFS 40-65

Connection to pump	TRIVAC	D 16/25 B D 16/25 BCS (-PFPE)	D 40/65 B D 40/65 BCS (-PFPE)
Nominal throughput	l x h <sup>-1</sup>	900	2000
Permissible operating pressure	bar (psig)	2.5 (21.7)	2.5 (21.7)
Opening pressure			
Non-return valve	bar (psid)	2.5 (21.7)	2.5 (21.7)
Bypass valve	bar (psid)	2.5 ± 0.3 (21.7 ± 4.3)	2.5 ± 0.3 (21.7 ± 4.3)
Filter medium		Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>
Lubricant filling when using WF Alu-Part	l (qt)	1.4 (1.5)	3.3 (3.5)
Weight, ready for operation, dry	kg (lbs)	7.0 (15.4)	15.5 (34.1)

## Ordering Information

### CFS 16-25

### CFS 40-65

	Part No.	Part No.
Chemical filter with safety isolation valve	<b>101 76</b>	<b>101 77</b>
WF Alu-Part combination filter, paper and Al <sub>2</sub> O <sub>3</sub> , 1.6 l (1.7 qt)	<b>189 99</b>	<b>189 99 <sup>1)</sup></b>
WF particle filter, paper, 1.6 l (1.7 qt)	<b>200 09 804</b>	<b>200 09 804 <sup>1)</sup></b>
WFG particle filter, paper with support mesh, 1 l (1.1 qt)	<b>189 90</b>	<b>189 90 <sup>1)</sup></b>

<sup>1)</sup> 2 pieces are required

# Inert Gas System

## IGS 16-25 and IGS 40-65



IGS

This accessory, which is controlled via solenoid valves, permits the controlled admission of special gases into the TRIVAC BCS.

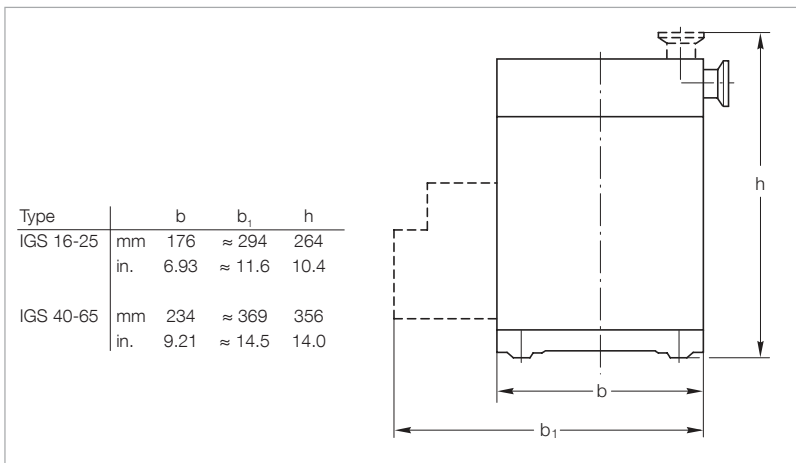
The IGS is part of the TRIVAC SYSTEM.

### Advantages to the User

- Ready for connection to an inert gas supply
- Solenoid valve for reduced gas ballast
- Solenoid valve for purging the oil box
- Float throughput gauge with throttling valve adjustable from 200 to 700 l x h<sup>-1</sup>
- The flowing quantity can be read directly
- System protection by a non-return valve (requires a reservoir pressure of at least 3 bar (29 psi, gauge)) – this reliably prevents the reservoir vessel from being evacuated
- Connects directly on to the TRIVAC BCS

### Typical Applications

- Reduction of the contamination levels in the lubricant
- Reduction in the dwell time of volatile substances within the pump



Dimensional drawing for the IGS (mounted on a TRIVAC BCS)

### Technical Information

The amount of inert gas ballast is restricted by a nozzle to 200 l x h<sup>-1</sup>. Larger quantities are used for purging.

### Supplied Equipment

Solenoid valves with connection cables and plugs, the required connecting pieces, mounting screws and cover panel.

### Technical Data

#### IGS 16-25

#### IGS 40-65

Connection to pump	TRIVAC	D 16/25 BCS (-PFPE)	D 40/65 BCS (-PFPE)
Min. amount of admitted gas at a reservoir pressure of 3.0 bar (29 psig)	l x h <sup>-1</sup>	200	200
Max. amount of admitted gas at a reservoir pressure of 6.0 bar (72.5 psig)	l x h <sup>-1</sup>	1450	1450
Supply voltage for the solenoid valves	V DC	24	24
Power consumption	W	10	10
Weight	kg (lbs)	1.0 (2.2)	1.4 (3.1)
Connection thread	G (BPS)	1/8"	1/8"

### Ordering Information

#### IGS 16-25

#### IGS 40-65

	Part No.	Part No.
Inert gas system	<b>161 76</b>	-
Inert gas system, UL conform	-	<b>161 68V</b>

# Limit Switch System

## LSS 16-25 and LSS 40-65



LSS

This accessory consists of a package of limit switches. It is used to monitor system functions.

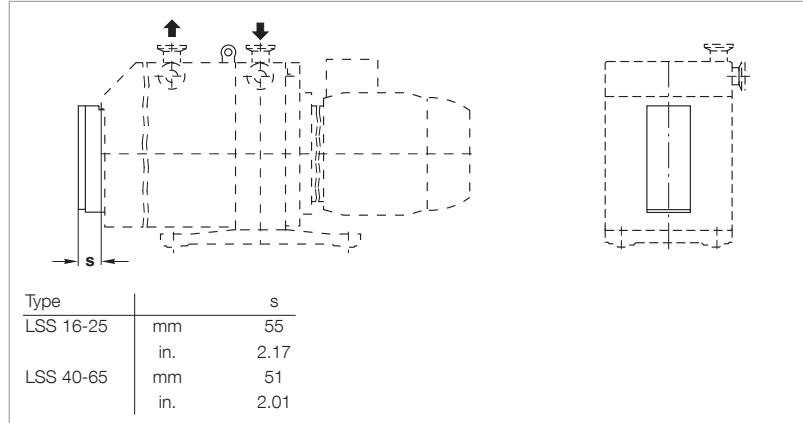
The LSS is part of the TRIVAC SYSTEM.

The package of limit switches includes:

- Differential pressure switch to monitor the CFS
- Oil pressure switch to monitor the operating pressure
- Flow switch to monitor the inert gas flow
- Pressure switch to monitor the pressure in the oil box of the pump
- Connection cable and plug for the temperature switch used for temperature monitoring
- Float switch with housing to monitor the oil level

### Advantages to the User

- Errors are indicated well in advance so that it will in most cases be possible to complete the process for the running batch
- The switching action is independent of the optical displays (for optimum reliability)
- The temperature switch is already present in the TRIVAC BCS



Dimensional drawing for the LSS (mounted on a TRIVAC BCS)

### Typical Application

- Changing the status in case operating conditions arise which are not permissible

### Supplied Equipment

Fully wired-up switches with plugs as well as all required gaskets and mounting parts.

### Technical Data

#### LSS 16-25

#### LSS 40-65

	TRIVAC	D 16/25 BCS (-PFPE)	D 40/65 BCS (-PFPE)
Connection to pump	TRIVAC	D 16/25 BCS (-PFPE)	D 40/65 BCS (-PFPE)
Operating voltage	V DC	24	24
Switching capacity	W / A	10.0 / 0.4	10.0 / 0.4
Type of protection	IP	54	54
Weight, approx.	kg (lbs)	2.5 (5.5)	2.5 (5.5)

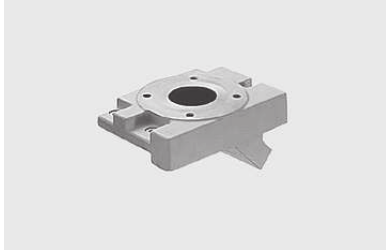
### Ordering Information

#### LSS 16-25

#### LSS 40-65

	Part No.	Part No.
Limit switch system	<b>161 06</b>	<b>161 07</b>

# Roots Pump Adaptor



Roots pump adaptor

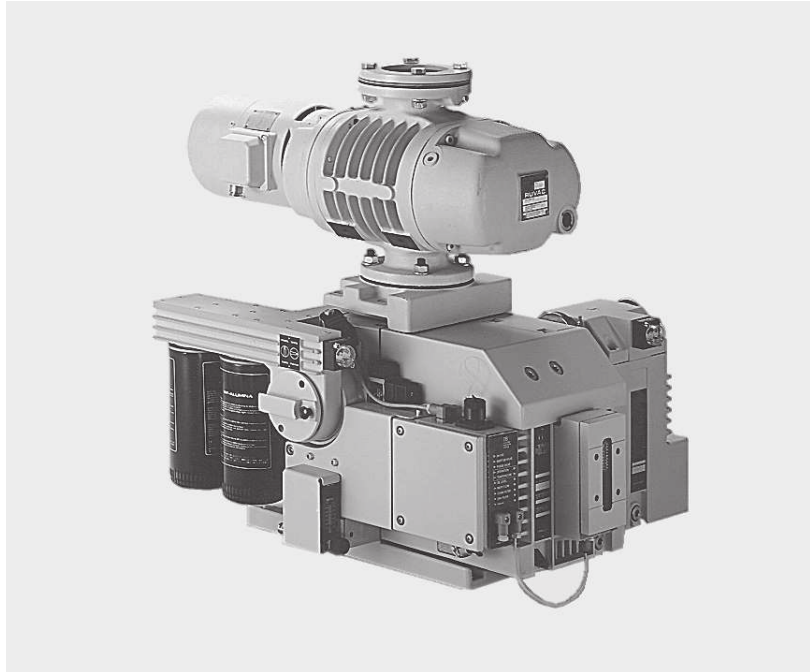
The Roots pump adaptor allows the direct installation of a Roots pump on a TRIVAC D 40/65 B/BCS.

## Advantages to the User

- Compact and space-saving
- Short and direct connection between the pumps
- Minimal conductance loss
- Easy installation

## Typical Application

- Simple assembly of a small pump system



Pump system consisting of a TRIVAC D 65 BCS and a RUVAC WS 251

## Technical Data

## Roots Pump Adaptor

Connection to pump	TRIVAC	D 40/65 B/BCS (-PFPE) and RUVAC WA/WAU/WS/WSU 251
Weight, approx.	kg (lbs)	11.5 (25.4)

## Ordering Information

## Roots Pump Adaptor

	Part No.
Roots pump adaptor	<b>168 30</b>

# Only available for purchase in North and South America

## RST Refillable Traps



RST refillable trap

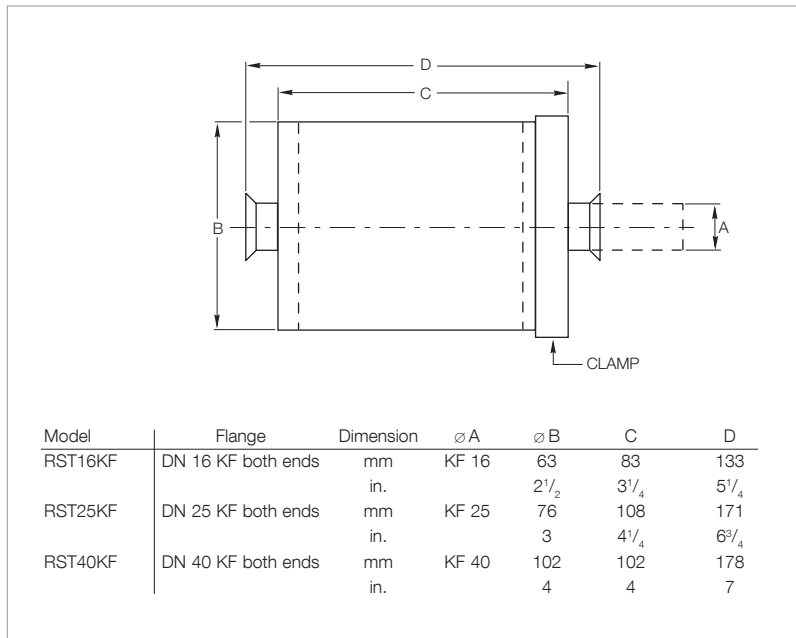
The RST traps are made from 304 stainless steel, and when specified with stainless steel filtration media, are fully suited for corrosive applications. The media is inserted directly into the trap. This ensures direct contact with the trap walls. There is no oil path between the trap wall and the retainer gasket to reduce trap effectiveness.

### Advantages to the User

- Refillable
- Two filtration media
- Easy to clean
- Easy to recharge
- KF flanges

### Applications

Foreline traps are utilized whenever long-term effects of mechanical pump oil back migration into the pumped chamber or higher vacuum (oil diffusion) pump may be undesirable. Copper wool for standard applications and stainless steel wool for corrosive applications are available.



Dimensional drawing for the RST

### Technical Data

### RST16KF RST25KF RST40KF

Connection to pump	TRIVAC	D 4/8 B/BCS	D 16/25 B/BCS	D 40/65 B/BCS
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### Ordering Information

### RST16KF RST25KF RST40KF

	Part No.	Part No.	Part No.
RST16KF 1.9 lb (0.9 kg)	99 171 135	-	-
RST25KF 2.6 lb (1.2 kg)	-	99 171 136	-
RST40KF 4.1 lb (1.9 kg)	-	-	99 171 137
Filtering media			
Stainless steel	99 171 141	99 171 141	99 171 141
Copper	99 171 145	99 171 146	99 171 147

# Only available for purchase in North and South America

## SE Smoke Eliminator



SE smoke eliminator

The Leybold SE smoke eliminator can be utilized on all TRIVAC B rotary vane vacuum pumps where pump fluid loss at the exhaust port must be eliminated. These filters consist of a replaceable two-stage

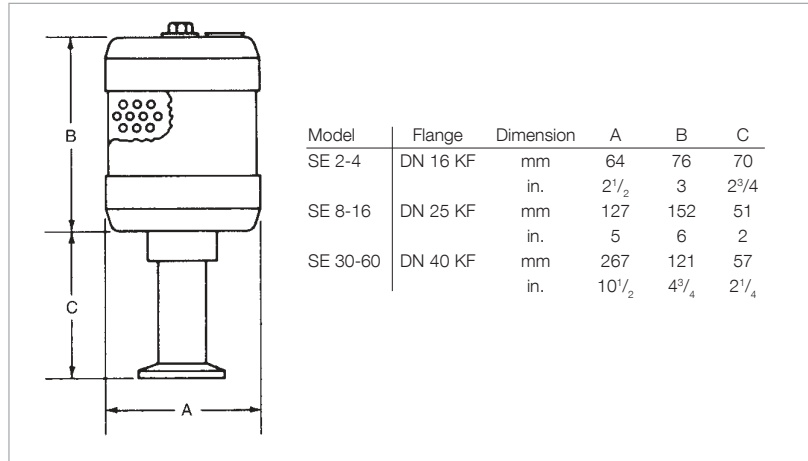
coalescing element mounted in a steel housing. For maintenance purposes, the top of the housing can be removed by loosening a single bolt. The filter assembly attaches to the exhaust port of the TRIVAC pump by means of a KF flange. Since three models are available, an SE smoke eliminator is available for each TRIVAC pump model.

### Advantages to the User

- Two stage design
- Three sizes for all TRIVAC models
- KF flanges

### Applications

When any oil sealed mechanical vacuum pump is used to pump a fixed volume from atmospheric pressure to some lower pressure or when a dynamic gas flow from a process stream is pumped, some mechanical pump fluid loss will occur at the exhaust of the pump. The more often a fixed volume is cycled from atmospheric pressure to a lower pressure or the longer a pump operates at a relatively high inlet pressure in a dynamic flow condition, the greater will be the fluid loss at the exhaust port of the pump.



Dimensional drawing for the SE

### Technical Data

**SE 2-4    SE 8-16    SE 30-60**

Connection to pump	TRIVAC	D 4/8 B	D 16/25 B	D 40/65 B

### Ordering Information

**SE 2-4    SE 8-16    SE 30-60**

	Part No.	Part No.	Part No.
Smoke eliminator	<b>99 171 125</b>	<b>99 171 126</b>	<b>99 171 127</b>
Replacement element			
RE 2-4	<b>99 171 128</b>	-	-
RE 8-16	-	<b>99 171 129</b>	-
RE 30-60	-	-	<b>99 171 130</b>

By utilizing a coalescing exhaust filter for these applications, the fluid and exhaust gases are separated, and in the case of the SE smoke eliminator, the coalesced fluid is allowed to drain back into the pump fluid reservoir. Annoying oil fog to the atmosphere is thus eliminated.

Eventually, after about a year's normal operation, the coalescing element will become totally saturated and oil fog will be apparent when high inlet pressures

are prevailing. The low cost coalescing element can be easily replaced.

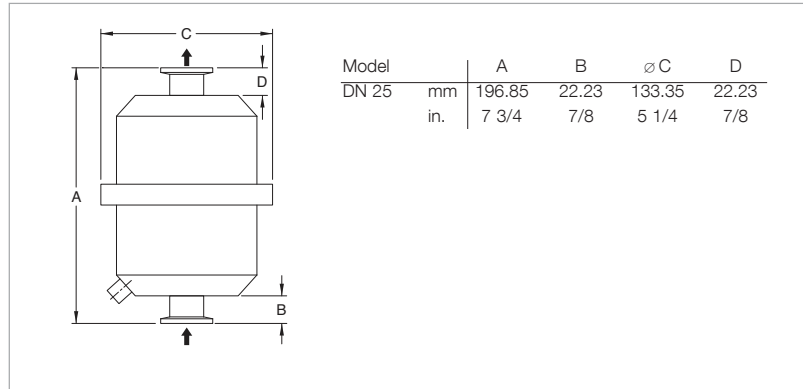
**Note:** For applications where toxic, corrosive, radioactive or precious gases are pumped, we highly recommend the use of our AF coalescing exhaust filters in-stead of the SE smoke eliminator. The AF is an in-line type coalescing filter and much more suitable for these applications.

# Only available for purchase in North and South America

## Compact Oil Mist Exhaust Filters



Compact oil mist exhaust filter



Dimensional drawing for the compact oil mist exhaust filters

### Applications and Equipment

- Rotary vane pumps
- Vacuum furnaces, ovens and degassing
- Refrigeration and air condition
- Vacuum freeze drying
- Vacuum metallizing
- Vacuum coating
- Laboratory furnaces, test stands
- Autoclaving, sterilization
- Leak detection

### Features and Specifications

- Minimum 99.97% D.O.P. on 3 micron particles
- Captures oil fog, mist or smoke from exhaust of oil lubricated vacuum pumps
- Compact, low profile design
- Stainless steel housing and internals
- Pleated filter element provides increased surface area for low back pressure
- Back pressure valve designed to release element at 7.35 PSI (0.5 bar) differential for pump safety
- 1/8" NPT oil drain
- Easy release V-band clamp
- Seamless drawn housings - no welds to rust or vibrate apart
- Easy field maintenance
- Operating temperature: 40 °F (4 °C) to 220 °F (104 °C)

### Technical Data

### Compact Oil Mist Exhaust Filter

Connection to pump	TRIVAC	D 16/25 B
Inlet and outlet	DN	25 ISO-KF
Nominal vacuum pump rating	scfm (m <sup>3</sup> /h)	20 (34)
Element rating	scfm (m <sup>3</sup> /h)	20 (34)
Weight, approx.	kg (lbs)	1 (2.2)

### Ordering Information

### Compact Oil Mist Exhaust Filter

	Part No.
Compact oil mist exhaust filter	<b>721 87 113</b>
Replacement filter insert filter	<b>180 102</b>