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

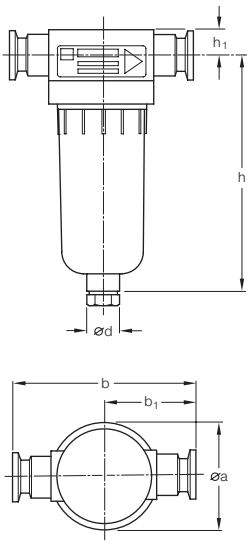
- Can be connected to either the intake or the exhaust side
- Protects against condensate forming from sucked in vapors or gases (intake line)
- Protects against backstreaming liquids (exhaust line)
- Emptying via drain screw/drain tap

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.

Type		a	b	b_1	d	h	h_1
AF 8 / AK 8	mm	66.4	115	57.5	20	145	15.5
	in.	2.61	4.53	2.26	0.79	5.71	0.61
AF 10 / AK 10	mm	90	140	70	20	200	22
	in.	3.54	5.51	2.76	0.79	7.87	0.87
AF 16 / AK 16	mm	115	165	82.5	20	210	30
	in.	4.53	6.50	3.25	0.79	8.27	1.18
AF 25 / AK 25	mm	115	165	82.5	20	250	30
	in.	4.53	6.50	3.25	0.79	9.84	1.18



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^{-1}	≤ 1 x 10^{-5}	≤ 1 x 10^{-5}	≤ 1 x 10^{-5}	≤ 1 x 10^{-5}	≤ 1 x 10^{-5}	≤ 1 x 10^{-5}	≤ 1 x 10^{-5}	≤ 1 x 10^{-5}
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	**190 50**	**–**	**190 51**	**–**	**190 52**	**–**	**190 53**	**–**
Exhaust filter drain tap	**190 95**	**190 95**	**190 95**	**190 95**	**190 95**	**190 95**	**190 95**	**190 95**
Condensate trap	**–**	**190 60**	**–**	**190 61**	**–**	**190 62**	**–**	**190 63**
Replacement filter element (pack of 5)								
FE 8	**ES 190 80**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
FE 10	**–**	**–**	**ES 190 81**	**–**	**–**	**–**	**–**	**–**
FE 16	**–**	**–**	**–**	**–**	**ES 190 82**	**–**	**–**	**–**
FE 25	**–**	**–**	**–**	**–**	**–**	**–**	**ES 190 83**	**–**
Reducer DN 25/16 KF [1)] Aluminium (if necessary)	**183 86**	**183 86**	**183 86**	**183 86**	**183 86**	**183 86**	**183 86**	**183 86**
Elbow (1x) Aluminium	**184 36**	**184 36**	**184 37**	**184 37**	**184 37**	**184 37**	**184 37**	**184 37**
Centering ring with O-ring (2x)								
aluminium / NBR	**183 26**	**183 26**	**183 27**	**183 27**	**183 27**	**183 27**	**183 27**	**183 27**
stainless steal / FPM (FKM)	**883 46**	**883 46**	**883 47**	**883 47**	**883 47**	**883 47**	**883 47**	**883 47**
Clamping ring (2x)	**183 41**	**183 41**	**183 42**	**183 42**	**183 42**	**183 42**	**183 42**	**183 42**

[1)] When using the reducer, an elbow is required

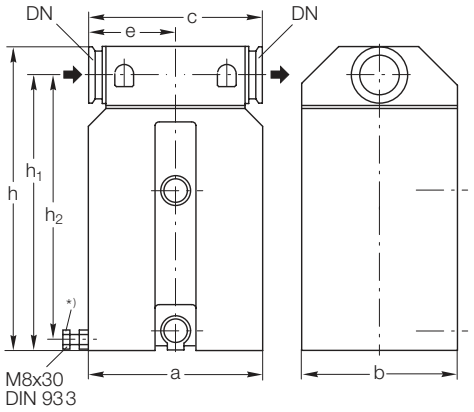
Exhaust Filters
AF 4-8 to AF 40-65
AF 16-25 DOT and AF 40-65 DOT

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



Type	DN		a	b	c	e	h	h_1	h_2
AF 4-8	16 KF	mm	90	90	120	60	194	178	–
		in.	3.54	3.54	4.72	2.36	7.64	7.01	–
AF 16-25 (DOT)	25 KF	mm	110	125	142	71	214	193	–
		in.	4.33	4.92	5.59	2.80	8.43	7.60	–
AF 40-65 (DOT)	40 KF	mm	170	157	170	85	300	272	261
		in.	6.69	6.18	6.69	3.35	11.81	10.71	10.28

*) Supporting screw only for AF 40-65

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

Technical Data

		AF 16-25 DOT	AF 40-65 DOT
Connection to pump	TRIVAC –	D 16/25 B-DOT	D 40 B-DOT

Ordering Information

	AF 16-25 DOT Part No.	AF 40-65 DOT Part No.
Exhaust filter DOT	**–**	**101 15**
Replacement filter element	**–**	**–**
FE 16-25 DOT	**200 10 304**	**200 39 840** [1]
FE 40-65 DOT	**–**	

[1] 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

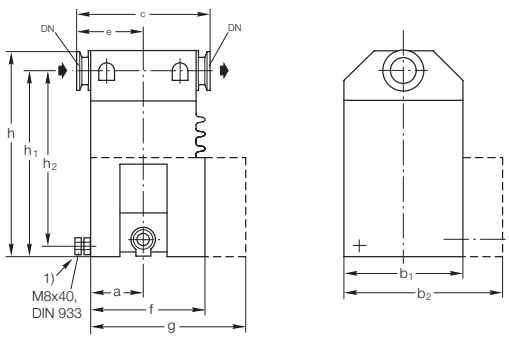
- Filtering the exhaust air of entrained lubricant particles
- Lubricant return with the aid of a float-controlled valve back into the intake port
- No operating costs caused by lost lubricant
- Hardly any oil consumption
- Standard filter element
- Built-in over-pressure relief valve
- Resists solvents
- 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.



Type	DN		a	b_1	b_2	c	e	f	g	h	h_1	h_2
AR 4-8	16 KF	mm	45	90	136	120	60	100	113	194	179	167
		in.	1.77	3.54	5.35	4.72	2.36	3.94	4.37	7.64	7.05	6.57
AR 16-25	25 KF	mm	55	125	167	142	71	120	–	214	194	182
		in.	2.17	4.92	6.57	5.59	2.80	4.72	–	8.43	7.64	7.17
AR 40-65	40 KF	mm	70	156	–	170	85	152	195	300	271	261
		in.	2.76	6.14	–	6.69	3.35	5.98	7.68	11.8	10.7	10.3

[1] Supporting screw only for AR 40-65

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 cm³ (qt)	–	430 (0.45)	510 (0.54)	760 (0.80)
LEYBONOL LVO 400 cm³ (qt)	–	350 (0.37)	430 (0.45)	700 (0.74)
Remaining amount of oil				
LEYBONOL LVO 100 cm³ (qt)	–	290 (0.31)	340 (0.36)	420 (0.44)
LEYBONOL LVO 400 cm³ (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	**140 065**	**189 20**	**189 21**	**189 22**
Replacement filter element				
FE 8	**190 80**	**–**	**–**	**–**
FE 4-8	**–**	**189 71**	**–**	**–**
FE 16-25	**–**	**–**	**189 72**	**–**
FE 40-65	**–**	**–**	**–**	**189 73**

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)

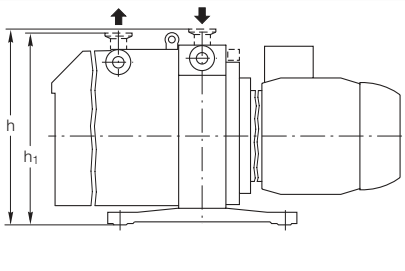
Typical Application

- 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.



Type		b	b_1	h	h_1
ARS 16-25	mm	≈ 360	176	282	264
	in.	≈ 14.2	6.93	11.1	10.4
ARS 40-65	mm	≈ 468	234	381	356
	in.	≈ 18.4	9.21	15.0	14.0

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).

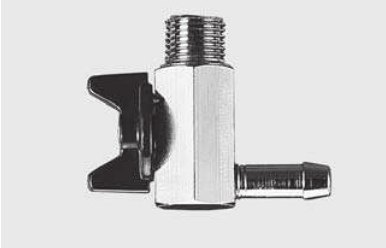
Technical Data

		ARS 16-25	ARS 40-65
Connection to pump	**TRIVAC**	D 16/25 B D 16/25 BCS (-PFPE)	D 40/65 B D 40/65 BCS (-PFPE)
Connection flanges	**DN**	25 KF	40 KF
Amount of oil required for opening the float-controlled valve			
LEYBONOL LVO 100	**cm³ (qt)**	510 (0.54)	760 (0.80)
LEYBONOL LVO 400	**cm³ (qt)**	340 (0.36)	420 (0.44)
Remaining amount of oil			
LEYBONOL LVO 100	**cm³ (qt)**	430 (0.45)	700 (0.74)
LEYBONOL LVO 400	**cm³ (qt)**	300 (0.31)	390 (0.41)
Weight with intermediate flange, tubing and filter, without lubricant	**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	**189 56**	**189 57**
Replacement filter element		
FE 16-25	**189 72**	**–**
FE 40-65	**–**	**189 73**

Exhaust Filter Drain Tap

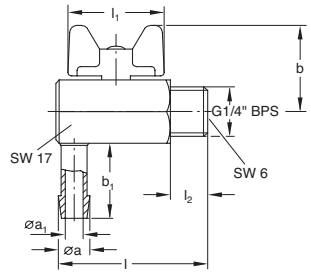


The exhaust filter drain tap simplifies draining of the oil from the exhaust filter.

Technical Note

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

	a	a_1	b	b_1	l	l_1	l_2
mm	8.5	5	23	20	41	26	10
in.	0.33	0.20	0.90	0.79	1.61	1.02	0.39



Dimensional drawing for the exhaust filter drain tap

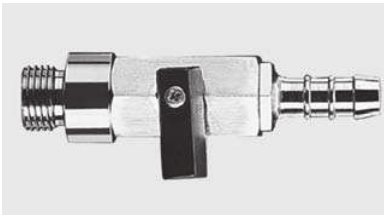
Technical Data — Exhaust Filter Drain Tap

Leak rate	mbar x l x s^{-1}	≤ 10^{-5}

Ordering Information — Exhaust Filter Drain Tap

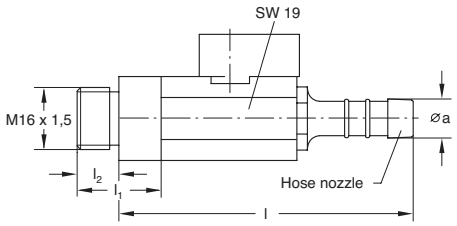
	Part No.
Exhaust filter drain tap	**190 95**

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.

	a	l	l_1	l_2
mm	10.5	76	22	11
in.	0.41	2.99	0.87	0.43



Dimensional drawing for the oil drain tap

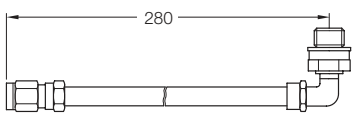
Technical Data — Oil Drain Tap

Leak rate	mbar x l x s^{-1}	≤ 10^{-5}

Ordering Information — Oil Drain Tap

	Part No.
Oil drain tap	**190 90**

Oil Drain Kit



l = 280 mm = 11 in.

Dimensional drawing for the oil drain kit

Technical Data — Oil Drain Kit

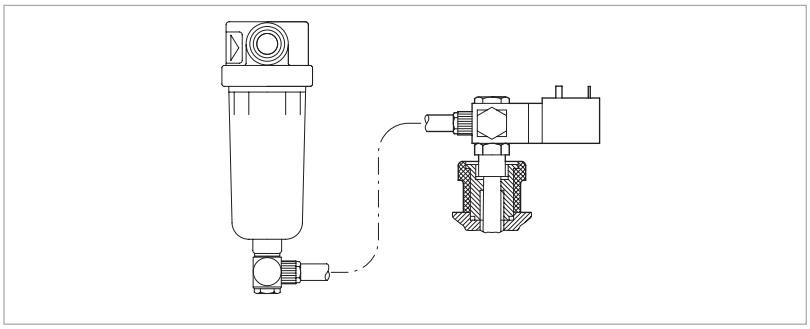
Length	mm (in.)	280 (11)
Leak rate	mbar x l x s^{-1}	≤ 10^{-5}

Ordering Information — Oil Drain Kit

	Part No.
Oil drain kit	**190 94**

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

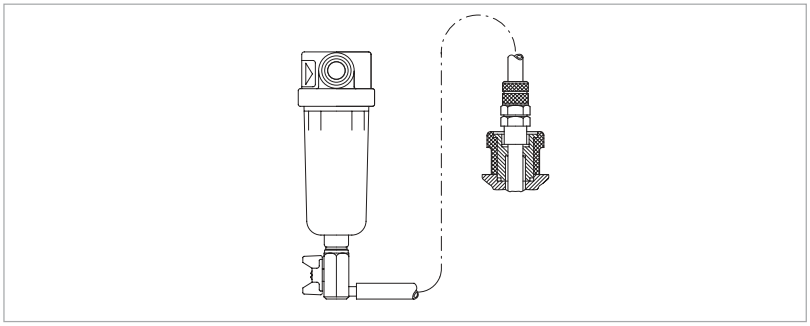
		AR-V Oil Suction Facility Controlled by Solenoid Valve
Leak rate	mbar x l x s^{-1}	≤ 10^{-5}

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	**190 92**

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^{-1}	≤ 10^{-5}

Ordering Information

	AR-M Manually Operated Oil Suction Facility
	Part No.
AR-M manually operated oil suction facility	**190 93**

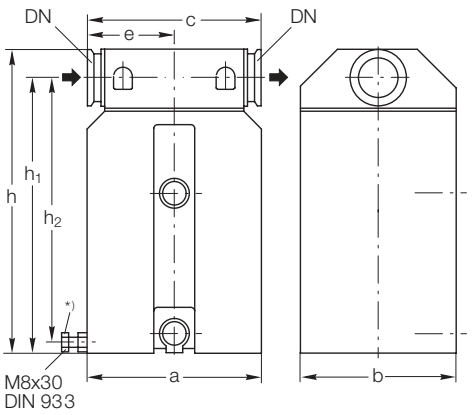
Condensate Separators
AK 4-8 to AK 40-65

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



Type	DN		a	b	c	e	h	h_1	h_2
AK 4-8	16 KF	mm	90	90	120	60	194	178	–
		in.	3.54	3.54	4.72	2.36	7.64	7.01	–
AK 16-25	25 KF	mm	110	125	142	71	214	193	–
		in.	4.33	4.92	5.59	2.80	8.43	7.60	–
AK 40-65	40 KF	mm	140	156	170	85	300	271	261
		in.	5.51	6.14	6.69	3.35	11.8	10.7	10.3

*) Supporting screw, only for AK 40-65

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 Part No.	AK 16-25 Part No.	AK 40-65 Part No.
Condensate separator	**188 06**	**188 11**	**188 16**
Oil drain tap M 16 x 1.5 (vacuum-tight)	**190 90**	**190 90**	**190 90**
Adaptor DN 16 KF – hose nozzle DN 7	**182 90**	**–**	**–**

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.

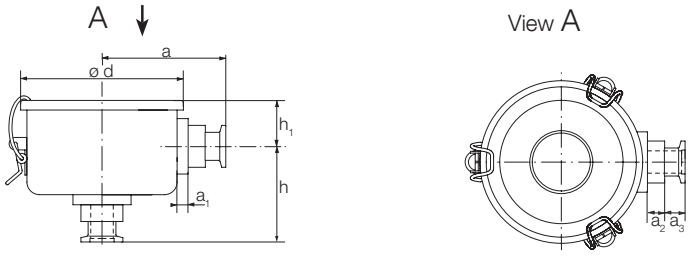
Advantages to the User

- 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.



Type	DN		a	a_1	a_2	a_3	d	h	h_1
FH 16	16 KF	mm	96	11	12	15	133	65	46
		in.	3.78	0.43	0.47	0.59	5.24	2.56	1.81
FH 25	25 KF		96	11	12	15	133	65	46
		in.	3.78	0.43	0.47	0.59	5.24	2.56	1.81
FH 40	40 KF		123	11	12	15	176	106	76
		in.	4.84	0.43	0.47	0.59	6.93	4.17	2.99

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

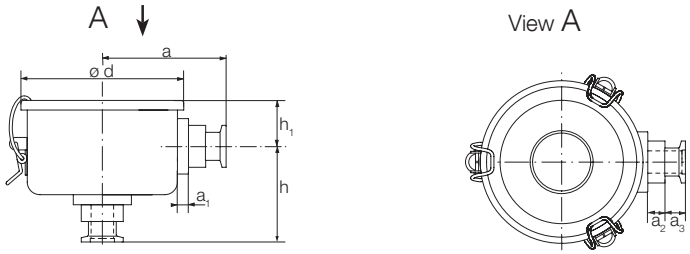
	Dust Filter		
	DN 16 KF	DN 25 KF	DN 40 KF
	Part No.	Part No.	Part No.
Dust filter			
filter housing FH [1]	140 116T	140 125T	140 140T
dust filter insert			
DF 16-25	140 117S	140 117S	–
DF 40-65	–	–	140 141S

[1] 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.



Type	DN		a	a_1	a_2	a_3	d	h	h_1
RF 16	16 KF	mm	96	11	12	15	133	65	46
		in.	3.78	0.43	0.47	0.59	5.24	2.56	1.81
RF 25	25 KF	mm	96	11	12	15	133	65	46
		in.	3.78	0.43	0.47	0.59	5.24	2.56	1.81
RF 40	40 KF	mm	123	11	12	15	176	106	76
		in.	4.84	0.43	0.47	0.59	6.93	4.17	2.99

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

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 absorbent, please consult us.

Technical Data

		Adsorption Trap		
		DN 16 KF	DN 25 KF	DN 40 KF
Use for	TRIVAC	D 4/8 B	D 16/25 B	D 40/65 B
Conductance				
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
Filling quantity				
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)
Filling volume	l (qt)	0.3 (0.3)	0.3 (0.3)	1.2 (1.3)
Weight with adsorption trap insert	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 [1]	140 116T	140 125T	140 140T
adsorption trap filter insert			
RF 16-25	140 118A	140 118A	–
RF 40-65	–	–	140 142A
Active charcoal, un-dried, 5 kg	178 10	178 10	178 10
Zeolite, 1 kg	854 20	854 20	854 20
Aluminium oxide, 1.2 kg	854 10	854 10	854 10
Baffle ring 15 x 15 x 0.3, 1 liter Stainless steel 1.4301	390 26 126	390 26 126	390 26 126

[1] 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

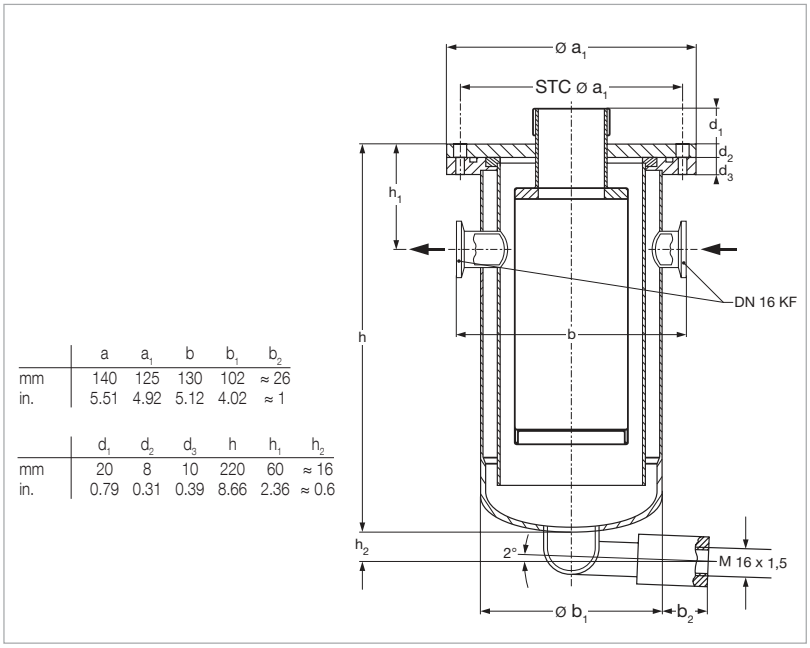
The cold trap protects the pump against damaging vapors.

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_2) 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



	a	a_1	b	b_1	b_2
mm	140	125	130	102	≈ 26
in.	5.51	4.92	5.12	4.02	≈ 1

	d_1	d_2	d_3	h	h_1	h_2
mm	20	8	10	220	60	≈ 16
in.	0.79	0.31	0.39	8.66	2.36	≈ 0.6

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	**188 20**
Drain tap for the intake side, vacuum-tight	**190 90**
Elbow (1x)	**184 36**
Centering ring	
aluminium/NBR (2x)	**183 26**
stainless steel/FPM (FKM) (2x)	**883 46**
Clamping ring (2x)	**183 41**

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 µm

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

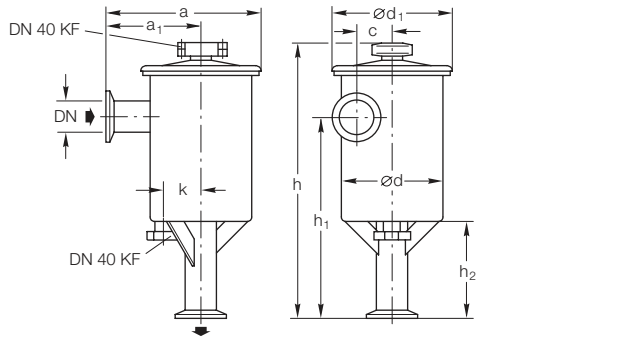
	AS 8-16	AS 30-60	MF 8-16	MF 30-60

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	**186 11**	**186 16**	**–**	**–**
Molecular filter	**–**	**–**	**186 12**	**186 17**
Replacement filter insert	**–**	**178 43**	**–**	**–**
Replacement active charcoal insert	**–**	**–**	**178 07**	**178 08**
Active charcoal, undried, 5 kg (11 lbs)	**–**	**–**	**178 10**	**178 10**



Type	DN		a	a_1	c	⌀d	⌀d_1	h	h_1	h_2	k
AS/MF 8-16	25 KF	mm	181	100	43	133	162	247	150	37	–
		in.	7.13	3.94	1.69	5.24	6.38	9.72	5.91	1.46	–
AS/MF 30-60	40 KF	mm	310	190	70	205	234	530	395	190	75
		in.	12.2	7.48	2.76	8.07	9.12	20.9	15.6	7.48	2.95

Dimensional drawing for the AS dust separators and MF molecular filters

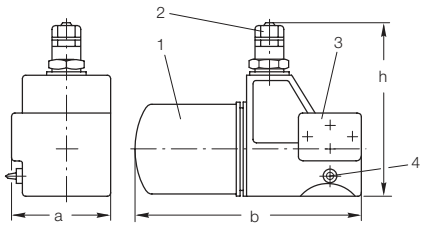
Mechanical Oil Filters OF 4-25 and OF 40-65 / Chemical Oil Filters CF 4-25 and CF 40-65

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.

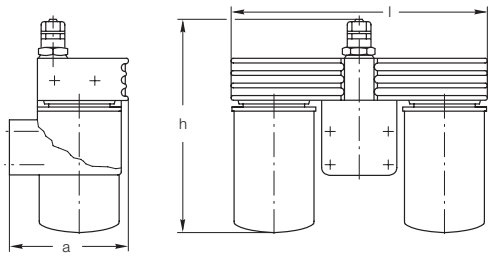
These filters are available either for mechanical filtering (OF types) or combined chemical/mechanical filtering (CF types).

OF/CF 4-25



1 Interchangeable filter
2 Maintenance indicator
3 Connection flange
4 Pin for protection against twisting

OF/CF 40-65



Type		a	b	h	l
OF 4-25	mm	≈ 100	200	150	–
	in.	≈ 4.0	7.87	5.91	–
CF 4-25	mm	≈ 100	315	160	–
	in.	≈ 4.0	12.4	6.30	–
OF 40-65	mm	135	–	239	296
	in.	5.31	–	9.41	11.7
CF 40-65	mm	135	–	307	296
	in.	5.31	–	12.1	11.7

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
- 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

Typical Application

- Separation of fine particles from the pump's oil (sizes between 5 and 10 µm (OF))

Technical Data

		OF 4-25	CF 4-25	OF 40-65	CF 40-65
Connection to pump	TRIVAC	D 4/8 B, D 16/25 B	D 4/8 B, D 16/25 B	D 40/65 B	D 40/65 B
Nominal throughput	l x h^{-1}	900	900	2000	2000
Separation					
mechanical oil filter	µm	5 to 10	5 to 10	5 to 10	5 to 10
chemical oil filter	µm	to 3	to 3	to 3	to 3
Permissible operating pressure	bar (psig)	2.5 (21.7)	2.5 (21.7)	2.5 (21.7)	2.5 (21.7)
Opening pressure,					
non-return valve	bar (psid)	0.12 (1.7)	0.12 (1.7)	0.12 (1.7)	0.12 (1.7)
bypass valve	bar (psid)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)
Topping up amount during					
first time installation	l (qt)	1.0 (1.1)	1.0 (1.1)	2.5 (2.6)	2.5 (2.6)
filter exchange	l (qt)	1.0 (1.1)	1.0 (1.1)	2.0 (2.1)	2.0 (2.1)
Weight, ready for operation, dry	kg (lbs)	4.0 (8.8)	4.0 (8.8)	10.0 (22.1)	10.0 (22.1)

Ordering Information

	OF 4-25	CF 4-25	OF 40-65	CF 40-65
	Part No.	**Part No.**	**Part No.**	**Part No.**
Mechanical oil filter	**101 91**	–	**101 92**	–
Chemical oil filter	–	**101 96**	–	**101 97**
WF 4-25 interchangeable filter, paper, 0.5 l (0.5 qt)	**189 91**	–	–	–
WF 40-65 interchangeable filter, paper 0.75 l (0.8 qt)	–	–	**189 92** [1]	**189 92** [1]
WF Alu 4-65 interchangeable filter, paper and Al_2O_3, 1 l (1.1 qt)	–	**189 96**	–	**189 96** [1]

[1] 2 pieces are required

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

CFS 40-65

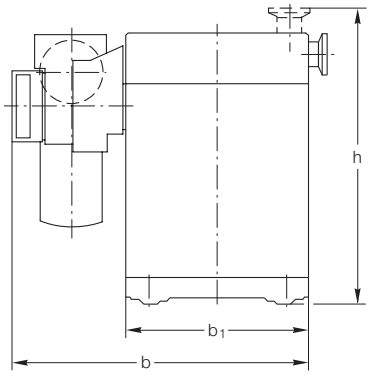
The CFS chemical filters with safety isolation valve are main flow oil filters for the TRIVAC B and BCS pumps.

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

Type		b	b_1	h
CFS 16-25	mm	≈ 327	176	264
	in.	≈ 12.9	6.9	10.4
CFS 40-65	mm	≈ 390	234	356
	in.	≈ 15.4	9.21	14.0



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^{-1}**	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_2O_3	Al_2O_3
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	**101 76**	**101 77**
WF Alu-Part combination filter, paper and Al_2O_3, 1.6 l (1.7 qt)	**189 99**	**189 99** [1]
WF particle filter, paper, 1.6 l (1.7 qt)	**200 09 804**	**200 09 804** [1]
WFG particle filter, paper with support mesh, 1 l (1.1 qt)	**189 90**	**189 90** [1]

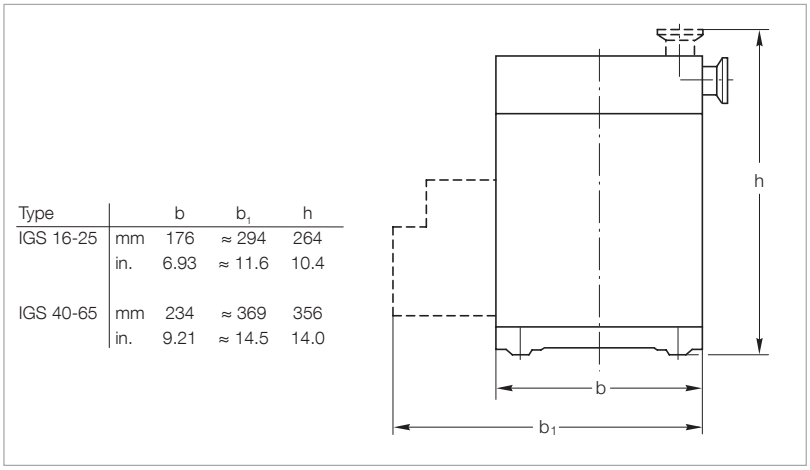
[1] 2 pieces are required

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.



Type		b	b_1	h
IGS 16-25	mm	176	≈ 294	264
	in.	6.93	≈ 11.6	10.4
IGS 40-65	mm	234	≈ 369	356
	in.	9.21	≈ 14.5	14.0

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

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^{-1}
- 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

Technical Information

The amount of inert gas ballast is restricted by a nozzle to 200 l x h^{-1}. 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^{-1}**	200	200
Max. amount of admitted gas at a reservoir pressure of 6.0 bar (72.5 psig)	**l x h^{-1}**	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	**161 76**	**–**
Inert gas system, UL conform	**–**	**161 68V**

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.

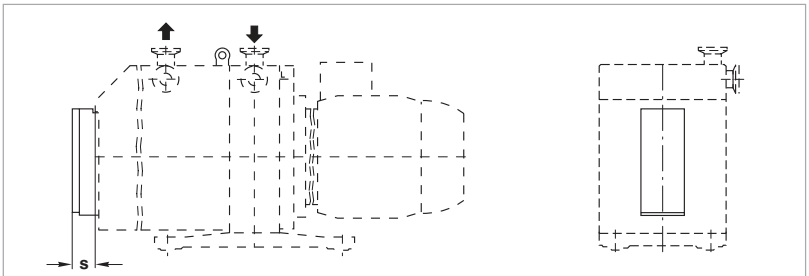
The LSS is part of the TRIVAC SYSTEM.

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



Type		s
LSS 16-25	mm	55
	in.	2.17
LSS 40-65	mm	51
	in.	2.01

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

Typical Application

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

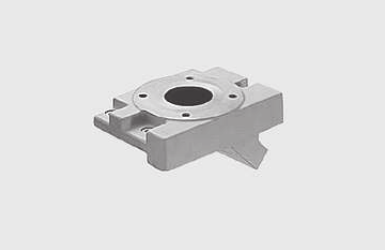
Supplied Equipment

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

Technical Data		LSS 16-25	LSS 40-65
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	**161 06**	**161 07**

Roots Pump Adaptor



Roots pump adaptor

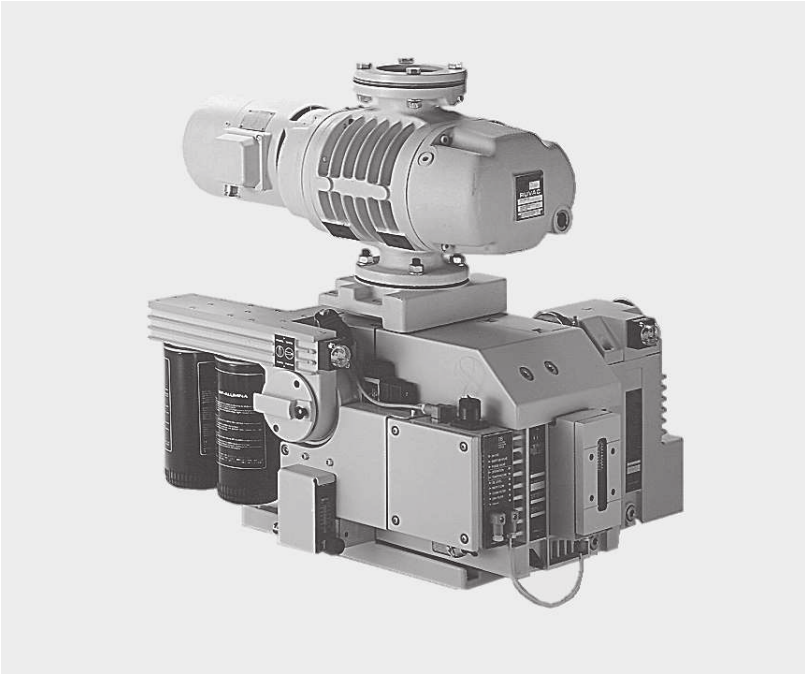
The Roots pump adaptor allows the direct installation of a Roots pump on a TRIVAC D 40/65 B/BCS.

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	**168 30**

Only available for purchase in North and South America

RST Refillable Traps

RST refillable trap

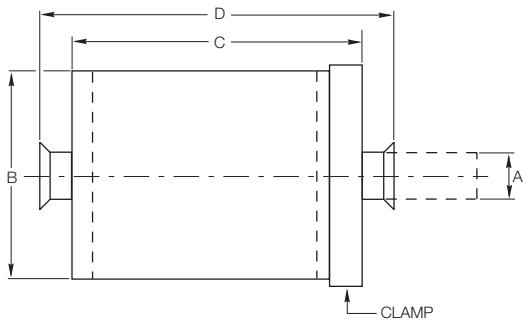
The RST traps are made from 304 stainless steel, and when specified with stainless steel filtration media, are fully suited for corrosive applications. The media is inserted directly into the trap. This ensures direct contact with the trap walls. There is no oil path between the trap wall and the retainer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



Model	Flange	Dimension	⌀A	⌀B	C	D
RST16KF	DN 16 KF both ends	mm	KF 16	63	83	133
		in.		$2^1/_2$	$3^1/_4$	$5^1/_4$
RST25KF	DN 25 KF both ends	mm	KF 25	76	108	171
		in.		3	$4^1/_4$	$6^3/_4$
RST40KF	DN 40 KF both ends	mm	KF 40	102	102	178
		in.		4	4	7

Dimensional drawing for the RST

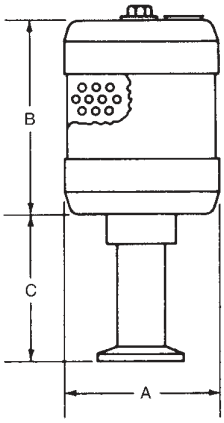
Technical Data		**RST16KF**	**RST25KF**	**RST40KF**
Connection to pump	TRIVAC	D 4/8 B/BCS	D 16/25 B/BCS	D 40/65 B/BCS

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



Model	Flange	Dimension	A	B	C
SE 2-4	DN 16 KF	mm	64	76	70
		in.	$2^1/_2$	3	$2^3/4$
SE 8-16	DN 25 KF	mm	127	152	51
		in.	5	6	2
SE 30-60	DN 40 KF	mm	267	121	57
		in.	$10^1/_2$	$4^3/_4$	$2^1/_4$

Dimensional drawing for the SE

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

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	**99 171 125**	**99 171 126**	**99 171 127**
Replacement element			
RE 2-4	**99 171 128**	**–**	**–**
RE 8-16	**–**	**99 171 129**	**–**
RE 30-60	**–**	**–**	**99 171 130**

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.

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.

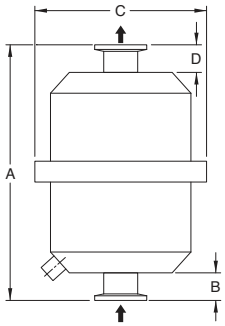
Eventually, after about a year's normal operation, the coalescing element will become totally saturated and oil fog will be apparent when high inlet pressures are prevailing. The low cost coalescing element can be easily replaced.

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



Model		A	B	⌀C	D
DN 25	mm	196.85	22.23	133.35	22.23
	in.	7 3/4	7/8	5 1/4	7/8

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^3/h)**	20 (34)
Element rating	**scfm (m^3/h)**	20 (34)
Weight, approx.	**kg (lbs)**	1 (2.2)

Ordering Information — Compact Oil Mist Exhaust Filter

	Part No.
Compact oil mist exhaust filter	**721 87 113**
Replacement filter insert filter	**180 102**