

SOTRAS

Spin-on Separator User Instructions Manual, Safety & Warranty

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1. OVERVIEW

1.1. About this Manual

SOTRAS offers a wide variety of Spin-on separators compatible for a wide range of air and gas compressors. This document provides general information about the product description, product installation and replacement along with necessary safety guidance and warranty conditions.

This instruction manual is aimed at end customers who have purchased a SOTRAS Spin-on separator and wish to install it on an **air compressor**.

For the information regarding correct application please check the SOTRAS cross-references or ask your vendor.

This manual must be read carefully before use or handling the product. If a further clarification is needed please contact the product vendor or SOTRAS customer services *E-mail: info@sotras.com*.

This Instructions manual remains valid as long as the customer does not change anything on the product.

The spin-on separator is intended specifically for installation in rotary screw compressors or similar compressors and must be handled only by technically trained personnel. (*Please check the personnel requirement on the section 4.1 of this manual*)

1.2. Guide for reading and warning symbols

	IMPORTANT NOTE	Notes that are necessary to be taken into consideration with attention
	WARNING	Warns of damage to property and dangers to persons that could lead to moderate injuries.
	CAUTION	Warns of damage to property and dangers to persons that could lead to minor injuries

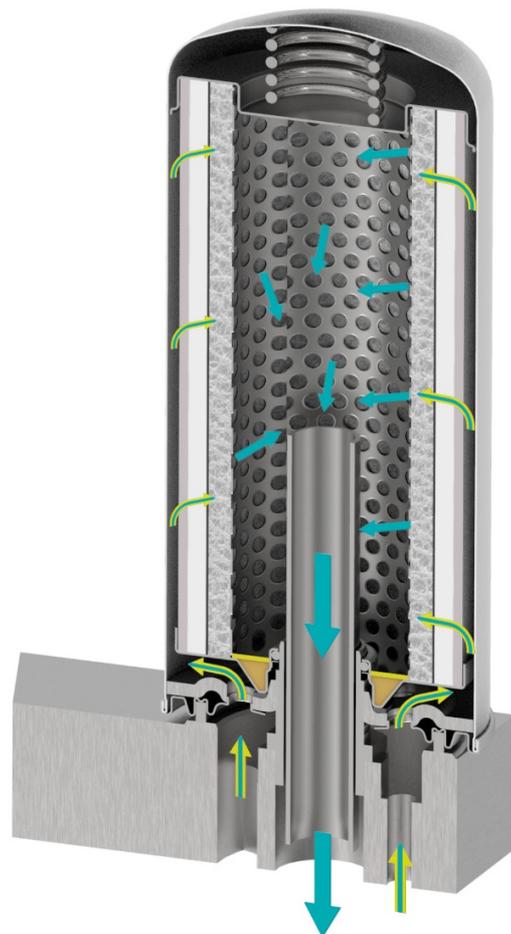
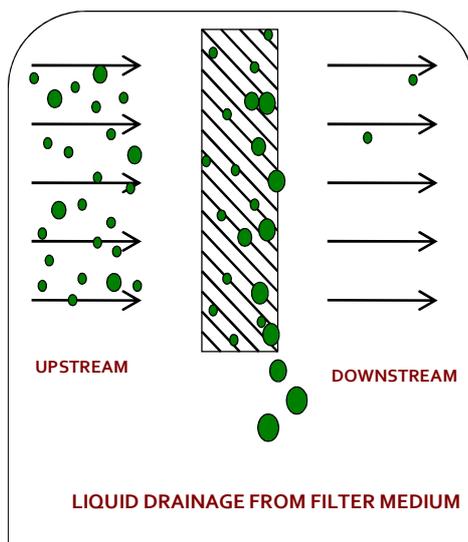


2. PRODUCT DESCRIPTION

2.1. How Spin-on separator works

The spin-on type separator is designed to separate and scavenge oil contained in the air or gas after the preliminary pre-separation step in a more efficient way by using coalescence technique. The oil in compressors is used to lubricate and cool the compression system. The filter media is designed to capture the oil droplets by holding the micro drops of oil which gradually join together in the dense mesh of the filter media and by coalescence they become increasingly larger drops.

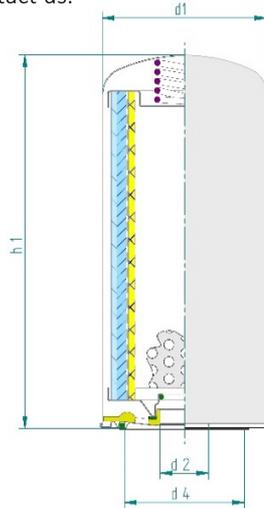
The large drops descend to the bottom of the separator due to the gravitational forces where they are redirected into the recovery paths and finally towards the compression system. In this way, at the separator outlet we will find clean air with almost no oil content.





2.2. Standard products and specifications

Sotras offers a wide range of spin-on separators for different compressor applications. Here in below some of the standard spin-on separators **for compressed air applications** are presented:
 For more information, please contact us.



Model	Nominal Flow Rate		Maximum Operation Pressure		Dimensions [mm]			
	[m3/min]	[cfm]	[bar]	[psi]	d1	d2	d4	h1
DF 5010	1	35	20	2,0	76	M22 X 1,5	62	123
DF 5033	1	35	20	2,0	76	M22 X 1,75	62	123
DF 5062	1,2	42	20	2,0	96	M24 X 1,5	62	148
DF 5022	1,5	53	20	2,0	96	M24 X 1,5	62	173
DF 5005	2	70	20	2,0	96	M24 X 1,5	62	210
DF 5019	2	70	20	2,0	96	M24 X 1,75	62	210
DF 5044	2	70	20	2,0	96	1"12 UNF	62	210
DF 5013	2,7	95	20	2,0	108	M32 X 1,5	93	180
DF 5006	3	105	20	2,0	136	M39 X 1,5	99	177
DF 5038	3	105	20	2,0	136	M39 X 1,75	99	177
DF 5058	3	105	20	2,0	136	1"12-16UNF	99	177
DF 5056	4	140	20	2,0	136	M39 X 1,5	99	235
DF 5009	4	140	14	1,4	108	M32 X 1,5	93	260
DF 5025	4	140	14	1,4	108	M32 X 1,75	93	260
DF 5034	4	140	14	1,4	108	M33 X 1,5	93	260
DF 5043	4	140	14	1,4	108	1"3/8 16UNF	93	260
DF 5004	5,5	194	20	2,0	136	M39 X 1,5	99	303
DF 5045	5,5	194	20	2,0	136	1"1/2 - 16UNF	99	303
DF 5026	5,5	194	20	2,0	136	M39 X 1,75	99	303
DF 5041	6,4	225	20	2,0	136	M39 X 1,5	99	336

*The Nominal flow rate is indicative and based on 7 bar working pressure



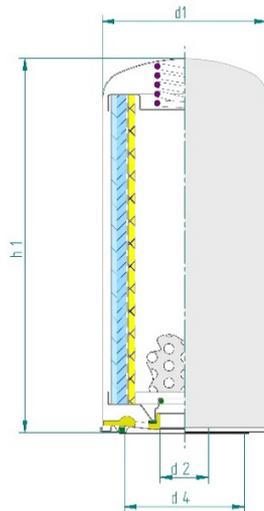
2.3. Biogas products and specifications

With the growing demand for biogas due to its significant contribution to reducing greenhouse gas emissions and enhancing environmental sustainability, SOTRAS offers a specific range of spin-on separators designed for biogas applications.

The following table presents a selection of spin-on separators suitable for compressed biogas applications:

Important note: gas composition and product compatibility must be evaluated and verified by the SOTRAS team and the use of these products require prior consent from SOTRAS.

For more information, please contact us.



Model	Nominal Flow Rate		Maximum Operation Pressure		Dimensions [mm]			
	[m3/min]	[cfm]	[bar]	[psi]	d1	d2	d4	h1
DF 5145	1	35	20	2,0	76	M22 X 1,5	62	123
DF 5144	1,5	53	20	2,0	96	M24 X 1,5	62	173
DF 5148	2	70	20	2,0	96	M24 X 1,5	62	210
DF 5143	3	105	20	2,0	136	M39 X 1,5	99	177
DF 5146	4	140	20	2,0	136	M39 X 1,5	99	235
DF 5125	5,5	194	20	2,0	136	M39 X 1,5	99	303
DF 5147	6,4	225	20	2,0	136	M39 X 1,5	99	336

*The Nominal flow rate is indicative and based on 7 bar working pressure



3. STORAGE

3.1. Storage recommendations

Improper storage such as storage for a long period or in a dirty or humid environment or open spaces can result in the entrance of contaminations or condensed water inside the separators and lead to the material corrosion and malfunctioning in which SOTRAS accept no liability.



4. SPIN-ON SEPARATOR MOUNTING

4.1. Personnel requirements and qualifications

In addition to the instructions presented in this manual, in order to ensure correct installation operation of the Spin-on separator, the user must:

- Be classified as skilled personnel or trained personnel with technical background knowledge and experience in the field of compressed air technology and maintenance.
- Be able to successfully carry out work assigned to them, recognize possible dangers independently and avoid injury to persons or damage to property due to their professional training, knowledge and experience as well as knowledge of the relevant regulations
- Have proper understanding of the compressor operating instructions provided by compressor OEMs



The use of personal protective equipment in accordance with the local regulations is obligatory.



4.2. Safety notes prior to installation



Before starting the installation of the spin-on separator, read the compressor safety information, operation and service manual carefully since compressors can cause serious personal risk and property damages. Furthermore, safety data sheets on lubricants used for the compressor need to be read and understood.

- This user Instructions manual must be read and kept in hand throughout the installation.
- Make sure that you have chosen a correct spin-on separator compatible with the compressor application.
- Ensure authorized and qualified personnel or appropriately trained service personnel only carry out replacement work, as described in section 4.1.
- The use of personal protective equipment in accordance with the local safety regulations is obligatory.
- Prior to starting the replacement of the spin-on separator, the compressor must be shut down.
- Make sure that the compressor has been depressurized and the system pressure display shows 0 bar.



(WARNING) If the compressor has not been completely ventilated, air under high pressure can escape from pipelines or individual components and cause injuries. Ensure that the compressor has been completely depressurized

- Check that no voltage is present and all hot components have cooled down.



(CAUTION) Contact with hot surfaces or hot oil from the oil circuit may cause burns. Only start work when all hot components have cooled down and always wear protective goggles and gloves.

- Only operate the compressor within the permissible ambient conditions
- Do not operate in explosive areas or potentially explosive atmospheres
- Do not operate the compressor in rooms in which extreme dust, toxic or flammable vapors and gases may be produced.



(WARNING) Formation of condensed water or other forms of contaminations in the air/oil flow or any other operating conditions that potentially could result in reduction of lubricant oil or air intake in the compression system should be avoided. In fact, these factors could lead to the malfunctioning of the separator, high oil carry-over or sudden increase in pressure ratio and temperature in the system and in rare cases, a flash fire in the compressor.

- The spin-on separator must be operated within the technical limits of use. Observe section “Technical data and operating condition” on page 11.
- The spin-on separator lifespan specified in this manual is based on average operating and ambient conditions. Extreme conditions may require shorter replacement intervals.



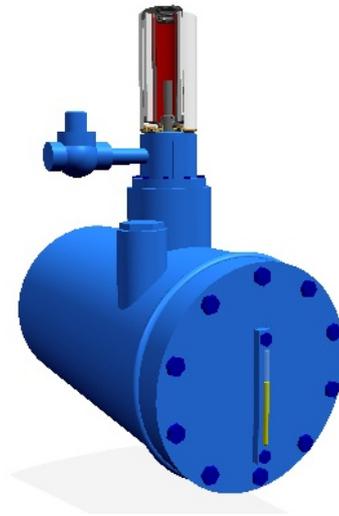
4.3. Mounting Instructions

1. Read the mounting instructions printed on the spin-on separator where applicable.



ATTENTION !!
DO NOT DISMANTLE AIR-OIL SEPARATOR BOX
WHILST COMPRESSORS IS PRESSURIZED

2. Unscrew the spin-on separator from the separator tank
3. Clean the contact surface of the filter head
4. Use a small portion of the compressor oil to lubricate the separator's O-ring and/or the gasket.
5. Screw the new spin-on separator onto the separator tank
6. Try to tighten the spin-on separator for about an additional ½ turn
7. Verify that the spin-on separator tightened correctly and there is no movement
8. Clean the area when the replacement is done
9. Start the compressor for a test run and slowly increase the pressure
10. If any leaks or other anomaly has been noticed during the test, stop the compressor and rectify the cause of the issue.





4.4. Technical data and operating conditions

The following data and operating conditions are related to our standard spin-on **air/oil separators**.



For the applications or uses in other compressed gases (other than compressed air) or different operating conditions than what have been mentioned in the below table please contact us for consultancy and approval.

Characteristics	Limited Value	Units	Notes
Working Temperature	-15 to +120	[°C]	Working constantly at a temperature higher than 100 [°C] could affect the spin-on separator's performance
Pressure drop (ΔP)	0,20	[bar]	
Oil carry over	≤ 3	[mg/m ³]	This value can be varied based on the compressor's pre-separation system
Max differential pressure	5	[bar]	
Max operating pressure	20 (14)	[bar]	Please check the indication printed on the spin-on separator
Oils	46	ISO VG	Data refers to the test oil. Compatible with common compressor oils.
Lifespan/Change intervals	Max 3000 hours or 1 year or when ΔP reaches 1 [bar]	[bar]	The spin-on separator lifespan specified in this table is based on average operating and ambient conditions. Extreme conditions may require shorter replacement intervals
Intended use	Compressed air applications	–	Separation of oil from compressed air flow in rotary screw compressors or similar compressors
Maintenance	Not required	–	Please replace the spin-on separator with a new one at the end of the separator's lifespan or in case of defect



Changing intervals will become shorter if the spin-on separators work in a dirty environment. When dirt becomes encrusted on the filter media the final compression temperature may increase above its set-point and the pressure drop may increase.



5. TROUBLE SHOOTING

5.1. Common failures

In the following table, some of the common failures along with our recommendations are presented. In case the issue repeats, please contact us.

Observations	Possible Causes	Rectifications
Oil carry over	Incorrect separator	Check the compatibility of the separator with the compressor model
	Contamination	Check the oil quality – change the air filter and oil filter – replace the separator with a new one
	Saturation	Check the oil quality and oil level and replace the separator with a new one
	Manufacturing defect	Replace the separator with a new one
Oil leakage	Separator not mounted correctly	Try to tighten the separator for an additional ½ turn
	The gasket has not been lubricated	Lubricate the O-ring and the gasket and try to mount the separator again
	The gasket has damages	Replace the separator with a new one
	Manufacturing defect	Replace the separator with a new one
High ΔP	Incorrect separator	Check the compatibility of the separator with the compressor model
	Contamination	Check the oil quality – change the air filter and oil filter – replace the separator with a new one
	Saturation	Check the oil quality and oil level and replace the separator with a new one
	Manufacturing defect	Replace the separator with a new one



6. WARRANTY AND LIABILITY

6.1. Warranty

SOTRAS filters undergo stringent quality control and are frequently tested in order to ensure satisfactory operation in the application of which they are designed. Evidence of the high quality of our products lies in the fact that SOTRAS manufactures original equipment for some of the most important compressor manufacturers, to some of which SOTRAS guarantees product exclusivity. We guarantee that filters produced by SOTRAS are free from defects either in materials or construction, always provided that the machinery is maintained in accordance with manufacturer's recommendations and filters are correctly installed and changed. SOTRAS will replace any item found to be defective as described above but will not be held responsible for any other replacement or contingencies or consequential loss

The guarantee and warranty are void if:

- Changes are made to the product,
- The Installation and Instructions Manual is not complied with,
- Accessories other than those specified by the manufacturer are used,
- The product is used or treated improperly and/or contrary to the intended use

For more information regarding the warranty's terms and conditions please check our website:
www.sotras.com.



6.2. Limitations of liability

- SOTRAS accepts no liability for direct or consequential damages due to improper operation or servicing carried-out not in compliance with the information contained in this instructions manual.
- SOTRAS accepts no liability for breakage or damage during transport. Please check the item immediately after delivery and if suspecting any possible damage even if the packaging is not damaged, please do not use the item and make a complaint to the carrier.
- SOTRAS reserves the right to make technical improvements to the products described in this Manual without notification.
- This Manual is compiled to the best of the SOTRAS's knowledge. SOTRAS has no influence on the function of this product in its ultimate application. Operators should follow the compressor OEM instruction and conduct their own tests to approve the product for their application. Therefore, the SOTRAS shall not be held liable for downtime, damage or personal injury resulting from a failure of the product in the application.



7. ADDITIONAL INFORMATION

7.1. Guidelines and standards

The Spin-on separator produced by Sotras conforms to the following guidelines and standards:

- ISO 12100 Safety of machinery - General principles for design - Risk assessment and risk reduction
- ISO 9001 Quality Systems
- ISO 8573-2 Defines the sampling and quantitative measurements of oil aerosols
- ISO 12500 1-2 Test methods for coalescing filters
- DIRECTIVE 2014/68/EU Harmonization of the laws of the Member States relating to the making available on the market of pressure equipment
- UNI-pdr-55 Guidelines on pressure equipment

7.2. Application of the Pressure Equipment Directive:

Model	Nominal Flow Rate		Maximum Operation Pressure		CE Marking
	[m ³ /min]	[cfm]	[bar]	[psi]	
DF 5004	5,5	194	20	2,0	Applicable
DF 5045	5,5	194	20	2,0	Applicable
DF 5026	5,5	194	20	2,0	Applicable
DF 5041	6,4	225	20	2,0	Applicable
DF 5143	3	105	20	2,0	Applicable
DF 5146	4	140	20	2,0	Applicable
DF 5125	5,5	194	20	2,0	Applicable
DF 5147	6,4	225	20	2,0	Applicable

*The Nominal flow rate is indicative and based on 7 bar working pressure