

SPIROVENT® SPIROTRAP®
SPIROCOMBI® SPIROCROSS®

User Manual



User Manual

TABLE OF CONTENTS

1	<i>Preface</i>	2
2	<i>Introduction</i>	4
3	<i>Technical specifications</i>	6
4	<i>Safety</i>	8
5	<i>Installation and commissioning</i>	8
6	<i>Preventive maintenance</i>	11
7	<i>Failures</i>	13
8	<i>Guarantee</i>	14

1 PREFACE

1.1 About the device

This Spirotech product improves the quality of your complete installation.

- For an overview of the product, refer to section 2.1.
- For the intended use, refer to section 2.3.

This Spirotech product is designed and manufactured according to the Sound Engineering Practice as stated in the Pressure Equipment Directive (2014/68/EU).

This manual applies to product types starting with the codes shown below:

BA...XC	050...300	F - G - L	M
---------	-----------	-----------	---

Code	Description
BA	SpiroVent
HA	
BC	SpiroCombi
HC	
BD	
HD	
BE	SpiroTrap
HE	
BF	
HF	
XC	SpiroCross

Code	Description
...	Connections size (DN) code: <ul style="list-style-type: none"> • 050: DN50 • 065: DN65 • 080: DN80 • 100: DN100 • 125: DN125 • 150: DN150 • 200: DN200 • 250: DN250 • 300: DN300
F	Flanged
L	Welded ends
G	Victaulic (grooved)
M	Magnet



NOTE

Products with a product code ending with "S" (Special manual, e.g. BA050F) are excluded in this manual, if not otherwise mentioned.

1.2 About this document

Read the instructions before installation, commissioning and operation. Keep the instructions for future reference.

The original language of the document is English. All other available language versions are translations of the original instructions.




The illustrations in this document show a typical setup with relevant details for instructional use only. Differences between the illustrations and the device are possible but do not have an effect on the comprehensibility of this document.

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This manual has been composed with the utmost care. Should, however, this manual contain any inaccuracies, Spirotech bv cannot be held responsible for this.

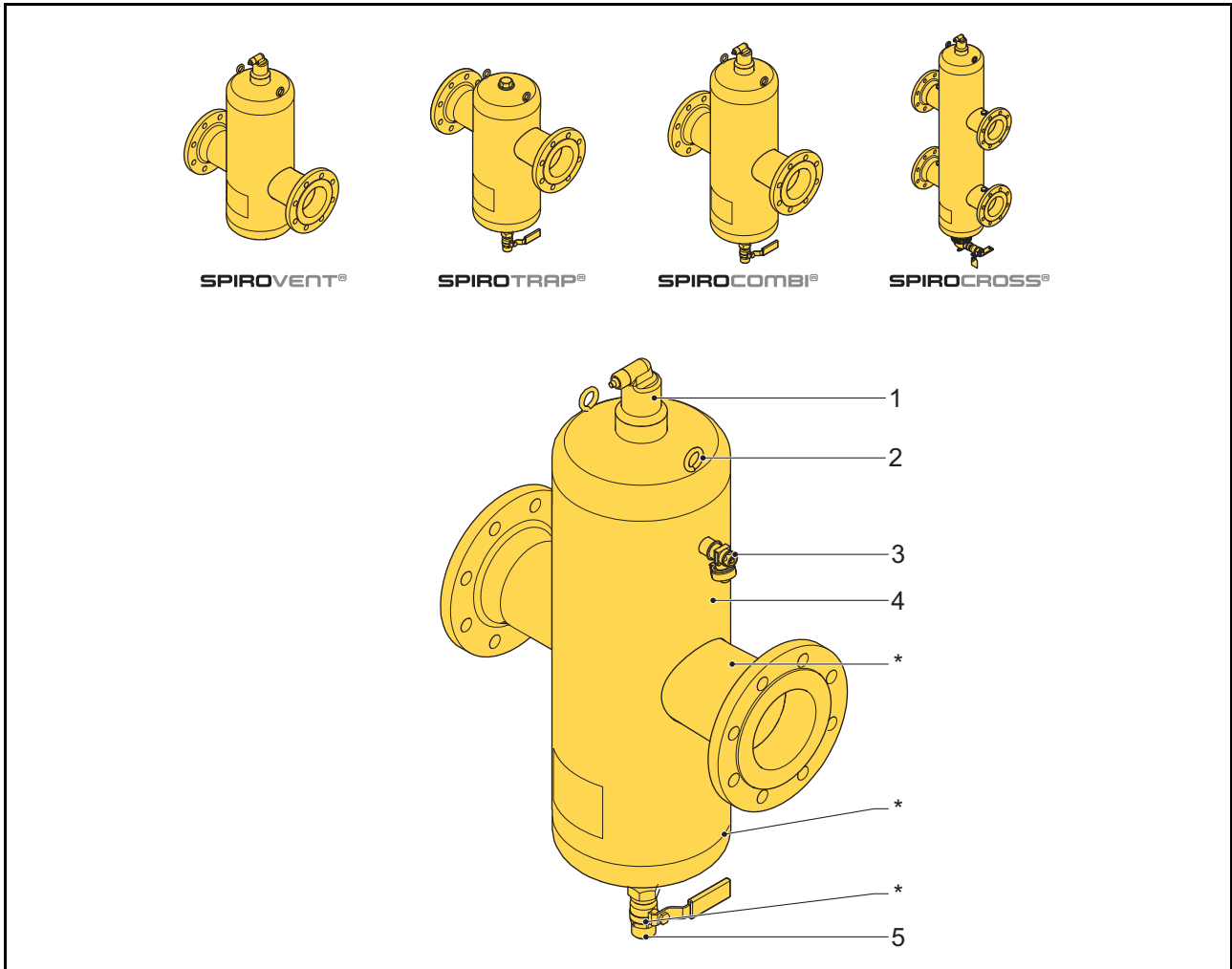
1.3 Symbols

Throughout the instructions the following symbols are used:

	Warning (risk of injury) or caution (risk of damage)
	Note
	Risk of burns

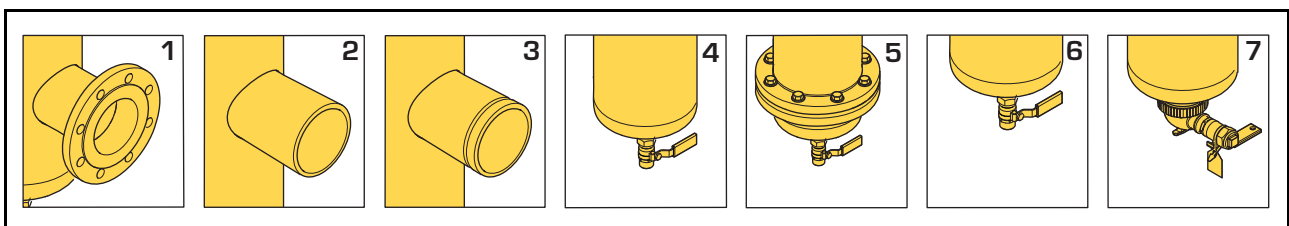
2 INTRODUCTION

2.1 Overview of the unit



- | | | | |
|---|---|---|--|
| 1 | Automatic air vent / manual air vent (SpiroTrap only) | 4 | Main body |
| 2 | Lifting lugs | 5 | Safety plug |
| 3 | Scum valve | | * Product variation. Refer to section 2.2. |

2.2 Overview of the product variations



- | | | | |
|---|----------------------|---|--|
| 1 | Flange | 5 | Demountable bottom |
| 2 | Welded ends | 6 | Drain valve |
| 3 | Victaulic connection | 7 | Rotatable dry pocket (with magnet and drain valve) |
| 4 | Fixed bottom | | |

2.3 Intended use

- **SpiroVent:** the unit (fully) automatically removes all available bubbles and microbubbles from the water and water/glycol mixtures.
- **SpiroTrap:** the unit (fully) automatically removes (magnetic) dirt that has a higher specific weight than the system fluid from the water and water/glycol mixtures.
- **SpiroCombi:** the unit (fully) automatically removes air, gasses, and (magnetic) dirt from water and water/glycol mixtures.
- **SpiroCross:** the unit hydraulically balances and separates the primary and secondary flow in the installation, in combination with the (fully) automatic removal of air, gasses, and (magnetic) dirt from water and water/glycol mixtures.

Each unit is installed within a system. The system controls the unit, so the unit does not operate on its own.

2.4 Operating conditions

The unit is suitable for use in systems filled with water or mixtures of water and glycol up to 50%. The unit can be used in combination with chemicals / inhibitors approved according to local directives. Please check that the materials in the unit are compatible with the materials and fluid used in your system. For more information contact your supplier. Operation in combination with other fluids may result in irreparable damage.



WARNING

The unit cannot be used for drinking water, and dangerous or flammable substances.

The unit should be used within the limits of the technical specifications as given in chapter 3. In case of doubt, always contact the supplier.

The unit is not suited for outdoor use.

2.5 Scope of delivery

- 1x Unit
- 1x Quick reference guide*

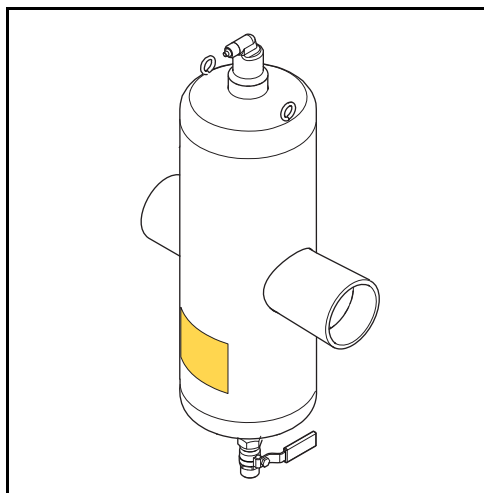
Additional for units with a (magnetic) dirt separator (BE/BC/XC...M):

- 1x Drain valve for the dry pocket
- 1x Draining instructions label

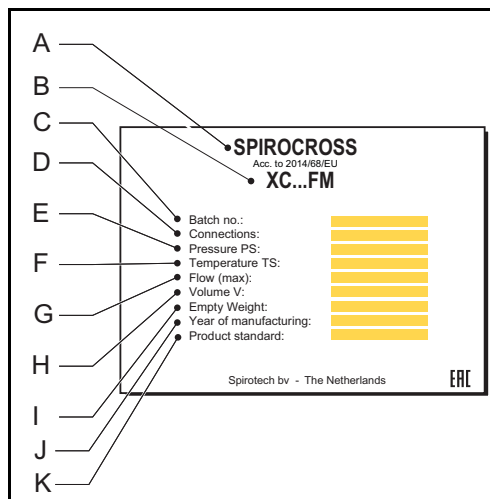
* Each Quick reference guide has a QR-scan code with a direct link to this user manual.

2.6 Identification sticker

Example:



Example:



- A Product family
- B Article number
- C Batch number
- D Connections
- E Maximum pressure PS
- F Temperature TS
- G Flow (max)
- H Volume V
- I Empty weight
- J Year of manufacturing
- K Produced according to standard

3 TECHNICAL SPECIFICATIONS

3.1 General specifications

Product	Code	Connections (inlet / outlet) [DN]								
		50	65	80	100	125	150	200	250	300
		Empty weight [kg]								
SpiroVent	BA...L	9	9	18	18	42	42	-	-	-
	BA...F	14	15	25	27	54	57	106	171	251
	HA...L	12	12	24	24	59	59	-	-	-
	HA...F	17	19	32	33	71	74	137	212	392
SpiroTrap	BE...LM	8	8	16	16	47	48	-	-	-
	BE...FM	13	14	24	28	58	61	107	162	261
	BE...L	9	9	17	17	41	42	-	-	-
	BE...F	13	15	25	26	54	56	105	170	252
	BF...L	28	9	17	17	41	42	-	-	-
	BF...F	33	34	48	50	103	106	195	319	499
	HE...L	12	12	23	24	58	59	-	-	-
	HE...F	17	18	31	33	71	73	136	213	393
	HF...L	30	30	50	50	110	110	-	-	-
	HF...L	35	36	58	60	123	126	225	380	599
SpiroCombi	BC...LM	12	12	24	24	58	58	-	-	-
	BC...FM	16	18	31	32	71	74	133	197	319
	BC...L	12	12	24	24	59	59	-	-	-
	BC...F	17	18	31	33	70	73	135	252	325
	BD...L	30	30	50	50	110	110	-	-	-
	BD...F	35	36	58	60	123	126	225	364	563
	HC...L	18	18	36	36	90	90	-	-	-
	HC...F	23	24	43	45	102	105	195	343	484
	HD...L	38	38	60	60	140	140	-	-	-
	HD...F	43	44	68	70	153	156	295	573	1018
SpiroCross	XC...FM	26	31	46	57	114	125	245	372	578
	XC...L	13	19	33	43	95	110	-	-	-
	XC...F	26	31	49	60	119	140	274	501	656



NOTE

The table shows the minimal weight of the unit. The weight can be marginally higher due to options or product variations.

3.2 Operating characteristics

Item	All types
Working pressure [bar-g]	0 - 10
Working temperature [°C]	0 - 110
Nominal flow velocity [m/s]	1.5
Maximum flow velocity of high-flow speed units [m/s]	3.0
Flange type of flanged units	PN16 (DIN2633) (EN1092)



NOTE

These specifications are valid, unless indicated otherwise on the unit.

3.3 Quality control specifications



NOTE

These are the specifications of the quality control at Spirotech.

3.3.1 Leak test specifications

Item	All types
Test pressure [bar-g]	>7
Test medium	Air
Test time [sec.]	60
Approval criterion	No leakage

3.3.2 Functional test of the automatic air vent

Item	All types (except for BE / HE & BF / HF ...)
Valve opening test	Full bore venting
Valve closing test	Positive valve closure

3.3.3 Standards

Item	All types
Construction	Pressure Equipment Directive 2014/68/EU - Sound Engineering Practice
Quality, safety and environmental aspects	NEN-EN-ISO 9001
	NEN-EN-ISO 14001
	NEN-EN-ISO 45001

3.4 Dimensions

Refer to the separate technical datasheet. Go to www.spirotech.com for further information.

3.5 Torque values

3.5.1 All units

Item	All types
Drain valve [Nm], min. - max.	40 - 80
Deaeration cap	Handtight
Ring nut of the dry pocket [Nm], min. - max. (only fo BE...M BC ...M & XC...M)	15 - 40

3.5.2 Bolts for demountable bottom (for units BD/HD and BF/HF)

Diameter [DN]	Size	Torque value [Nm]
DN 050/065	M20	300
DN 080/100	M20	300
DN 125/150	M24	500
DN 200	M24	500
DN 250	M24	500
DN 300	M27	700

4 SAFETY

4.1 Safety instructions



WARNING

- Installation and maintenance may only be carried out by a qualified installer.
- When working on the unit, always ensure there is no pressure in the unit, let it cool down and remove the water from the unit. This is not applicable when draining dirt from the unit.



WARNING

Do not touch the unit or the pipework when the system is in operation. The surfaces may be hot and touching them may cause burns.



CAUTION

- Do not use the scum valve or drain valve for (re)filling.
- Always install the unit body vertically, with the automatic air vent (if available) on top and the dry pocket or drain valve (if available) at the bottom.

5 INSTALLATION AND COMMISSIONING

5.1 Installation conditions

- Install the unit in a frost-free, well-ventilated place.
- Install the unit in accordance with the local guidelines and rules.
- Install the unit stress free and with the body in vertical position.
- Do not use the unit as a support for pipework.
- It is not allowed to weld the unit to the pipework or other external items unless the unit is specifically designed to be welded into the pipework.
- It is not allowed to modify the unit.
- Apply the separately supplied product labels if the labels on the product are not visible; for instance after the unit has been insulated.
- Only for BE...M, BC...M, and XC...M: make sure that there is enough space to replace the demountable top/bottom or the dry pocket at the bottom (X_r). Refer to section 3.4.
- The lifting lugs may only be used during the installation.
- The unit operates independent of the flow direction.
- Do not obstruct the automatic air vent (if available) and make sure that the automatic air vent is always easily accessible.
- A tube can be fitted to the air vent (1/2" female thread on the outlet) to lead away the released (smelly) air. Excessive dirt particles or foam forming might cause a temporary leakage of the automatic air vent.
- For SpiroCross XC...M: the unit (except DN50 and DN65) has a sensor port (G1/2") at every branch. These sensor ports are blinded. Sensors can be mounted by removing the blind plug from the ports. Make sure there is enough space for mounting a sensor. The sensor can only be fitted leak-proof with a thread sealant.
- If a drain pipe is fitted, make sure that this pipe is fitted stress and vibration free to the drain valve. Preferably, a flexible pipe or pipe parts should be used (e.g. a hose).
- Do not obstruct the vent valve and keep all valves accessible.
- The scum valve and the manual air valve are designed to blow off and let in large quantities of air during the filling and emptying of the installation and to remove floating dirt.
- It is advisable to fit shut off valves at both sides of the separator, especially for BD/HD, and BF/HF.

5.2 Unpack



WARNING

To prevent damage to the unit, it is strictly recommended to hoist the unit as indicated in section 5.3.

The unit is delivered in a crate or a box.

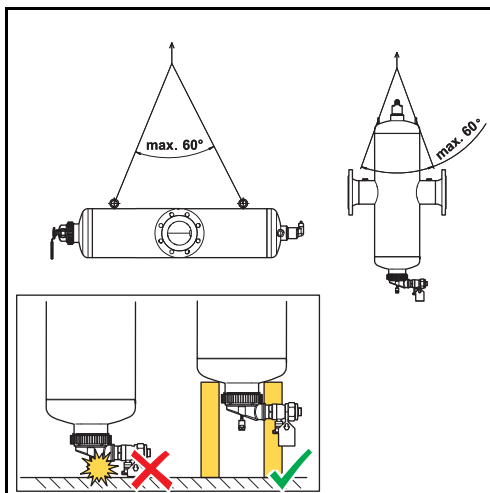
1. Open the crate or the box.
2. If applicable, remove the plastic seal bag.
3. Check the unit for transport damage.

5.3 Lift the unit



- Use approved lifting chains or straps with safety hooks.
- Use lifting equipment that can carry the weight of the unit (WLL). Refer to section 3.1.

Example:



1. Connect the safety hooks to the lifting lugs.
2. Make sure that the lifting chains (or straps) are tight.



CAUTION

The hoist angle may not exceed 60°.

3. Lift the unit.



WARNING

Do not stand under the load.



CAUTION

Make sure that the unit can move freely.

4. If it is necessary to temporarily put down the unit, put a support under the unit and make sure the unit rests with the main body on the supports to prevent damage to the unit.



CAUTION

For units with a magnetic dirt separator: Do not let the unit stand on its bottom. The dry pocket may get damaged when it rests on the floor. Use the supports.

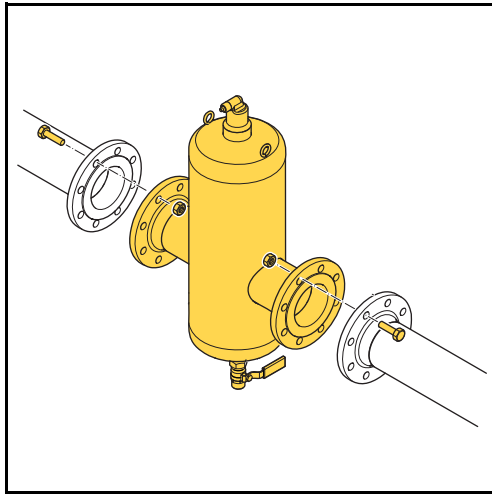
5.4 Install the unit

5.4.1 The best position of the unit in the installation

- For maximum deaeration, both the deaerator and the combined deaerator / dirt separator should be installed at the hottest point of the installation. For instance, in the main flow of a central heating system or in the main return line of a cooling system.
- Preferably, the dirt separator must be installed directly before the components that need to be protected. For instance in the main return.
- The SpiroCross must be installed as a separator of the primary side and secondary side of the system. This way the SpiroCross decouples the primary pumps from the secondary pumps.

5.4.2 Mount the unit

Example:



1. Attach the pipework to the to the unit. Make sure that the unit is installed stress free.



NOTE

For SpiroCross XC only: Make sure that the warmest water enters the unit at the top flanges. The coldest water should enter the unit at the lower flanges. This is necessary to prevent unwanted mixing of warm and cold water.

2. Tighten the fasteners to the correct torque value of the pipework.

5.4.3 Install the drain valve (not for BA / HA units)



NOTE

For units with a drain valve and / or magnetic dirt separator: Make sure that there is enough space to operate the valve. In case there is not enough space and the unit has a rotatable dirt separator, rotate the dry pocket. Refer to section 7.3.

1. Remove the blind plug.
2. Install the drain valve. Torque the drain valve to the correct torque value. Refer to section 3.5.
3. If required, use suitable sealing material.

5.4.4 Finish the installation

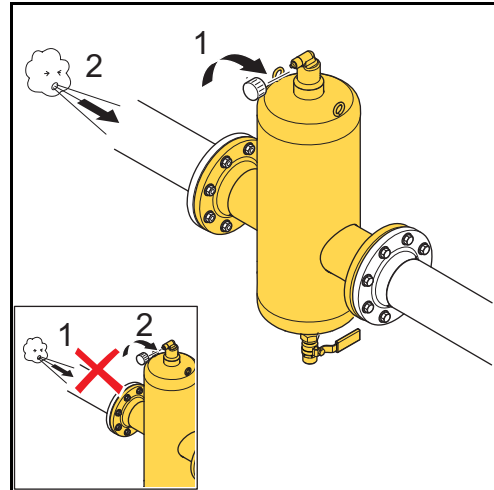
1. Make sure that the drain valve, scum valve, and/or manual vent valve are closed.
2. Install the safety plug and protective cap.
3. Remove the protective tape.
4. Only for magnetic dirt separators: attach the label with drain instructions to the dry pocket, near the drain valve.

5.4.5 Test the system



CAUTION

The maximum allowable hydraulic/ pneumatic test pressure: 1.5 x maximum working pressure. Refer to section 3.2.



1. If the installation is tested with compressed air, temporarily shut off the automatic air vent with a cap R¹/₂ (not supplied).
2. For units ≥ DN300: Close the valve between air vent and unit before you do the pressure test.
3. Do the test.
4. If a cap R¹/₂ is installed, remove the cap R¹/₂.

5.5 Commissioning



CAUTION

If a cap R¹/₂ was installed on the automatic air vent for the system test, make sure that cap R¹/₂ is removed before the commissioning of the system.

The system must be commissioned and running to verify if the unit works properly.

At the first use, the automatic air vent (if applicable) might temporarily drip a bit of moist, but that is not a problem.

When the system is running, do the checks as follows:

- Leak check
- For XC..M/ BE..M/ BC..M only: Carefully pull and return the handle of the dry pocket to see if the magnet can be pulled down and returns to its correct position.

6 PREVENTIVE MAINTENANCE

6.1 Maintenance schedule for XC..M/ BE..M/BC..M.

Task	Interval	Section
Drain the dirt from the unit	The first month after installation and after that on a regular basis, dependent on the amount of dirt in the system: <ul style="list-style-type: none"> • Normal amount of dirt: every 6 months • Heavy amount of dirt: every 1 or 2 months 	6.2

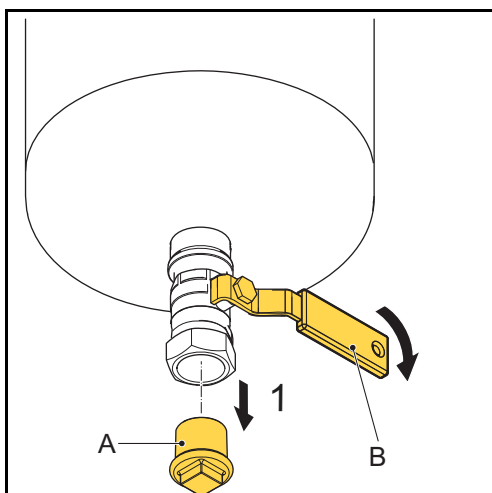
6.2 Drain the dirt from the unit

6.2.1 Drain the dirt from the unit (for units with a standard drain valve)



WARNING

- The main body and the piping may be hot.
- Hot water or steam may escape during the procedure.



1. Remove the safety plug (A).

2. Connect a hose to the drain valve. Make sure that the hose is connected to a drain or leads to a suitable place to collect the drained dirt.



NOTE

For the screw thread size, refer to section 3.4.

3. Gradually open the drain valve fully until the dirt is drained out. An indication is when clear water comes out of the unit.



NOTE

Restrict the amount of water that gets drained off.

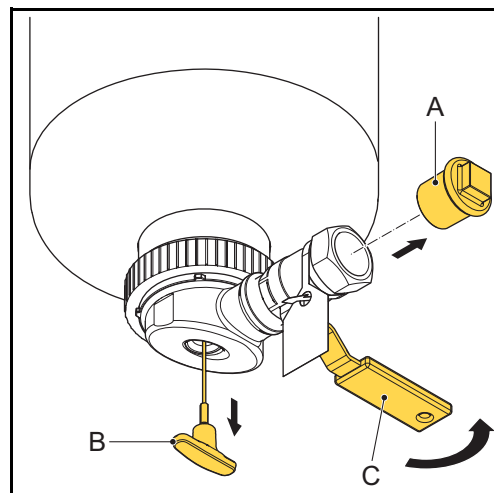
4. Close the drain valve.
5. Disconnect the hose from the drain valve.
6. Install the safety plug.
7. Check the system pressure. If it is necessary, refill the system.

6.2.2 Drain the dirt from the unit (for units with a rotatable magnetic dirt separator)



WARNING

- The main body and the piping may be hot.
- Hot water or steam may escape during the procedure.



1. Remove the safety plug (A).
2. Connect a hose to the drain valve. Make sure that the hose is connected to a drain.



NOTE

For the screw thread size, refer to section 3.4.

3. Move the magnet through the unit.
 - a Gradually pull down the magnet in the dry pocket.



CAUTION
Do not use force.

- b Gradually let the handle return to the original position.
 - c Repeat the steps one or two times for the best result.
4. Gradually open the drain valve (C) for a short period.



NOTE
Restrict the amount of water that gets drained off.

5. Close the drain valve.
6. Disconnect the hose from the drain valve.
7. Install the safety plug.
8. Check the system pressure. If it is necessary, refill the system.

6.3 Clean or replace the SpiroTube bundle (only for BD/HD and BF/HF)



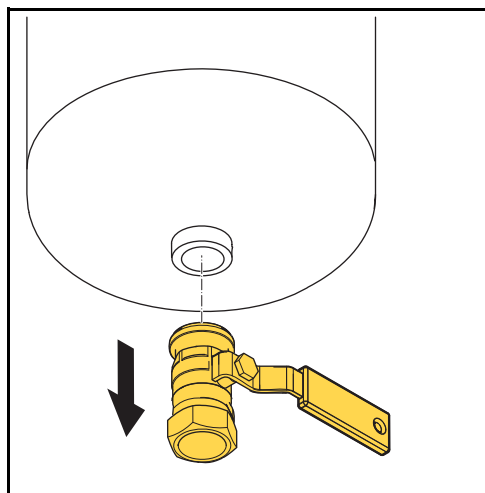
CAUTION

- Make sure that there is no pressure in the unit.
- Make sure that the unit is cooled down.
- Make sure that the unit is drained prior to opening the unit.
- Do not use corrosive chemicals.
- Make sure that the unit is correctly supported.
 - The SpiroTube is supported by the bottom of the separator.
 - The SpiroTube bundle may tumble over.
 - In some cases the SpiroTube bundle may be affected by corrosion or fouling, which may reduce the mechanical strength.
 - SpiroTube bundles and bottoms of the separator may be considerably heavier due to clogging dirt.

6.3.1 Prepare the unit for cleaning or replacement

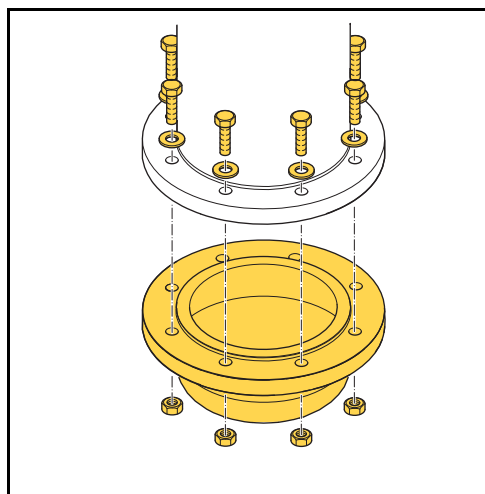
1. Remove the pressure from the unit.
2. Let the unit cool down.
3. Support the bottom and SpiroTube bundle with appropriate supports, hoisting or lifting devices.

6.3.2 Remove the drain valve



1. Drain the unit.
2. Remove the drain valve.

6.3.3 Remove the demountable bottom / demountable top



1. Remove the fasteners.
2. Remove the demountable bottom / demountable top.
3. Make sure that the bottom is supported and cannot fall.

6.3.4 Clean the SpiroTube bundle

1. Clean the SpiroTube bundle. Use hot water or low pressure steam.
2. Examine the the SpiroTube bundle.
3. If it is necessary, replace the SpiroTube bundle. Contact your supplier for spare parts.
4. Clean the flange faces.

6.3.5 Install the SpiroTube bundle

1. Replace the flange gaskets.



CAUTION

Always use a new flange gasket to prevent leakages.

2. Position the SpiroTube bundle and demountable bottom.
3. Install the SpiroTube bundle in the correct position.



NOTE

For a unit with a demountable combined deaerator / dirt separator (BD/HD): Make sure that the position of the scum valve at the top of the unit is in the correct position. Use the cut-out of the SpiroTube.

4. Install the bolts, nuts, and washers through the top and bottom flange and tighten the fasteners crosswise to the correct torque. Refer to section 3.5.2.
5. Install the drain valve and the safety plug. Refer to section 3.5.1.
6. Fill the installation. Do a check for leakages.

7 FAILURES

7.1 Remedy failures



WARNING

In case of a failure always warn the qualified or responsible installer

1. Use the failure table in § 7.2 to find the cause.
2. If necessary, stop the system.
3. Remedy the failure.
4. If required, start the system.

7.2 Failure table

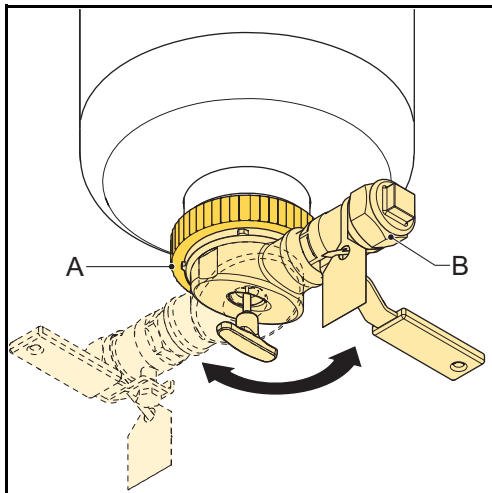
Problem	Possible cause	Correction
Automatic air vent drips at first use (not applicable for BE/HE or BF/ HF)	Normal at first use	No problem
Leakage at automatic air vent (not applicable for BE/HE or BF/ HF)	The deaeration cap is worn or damaged	Replace the deaeration cap.
Leakage at the dry pocket (only for BE...M/BC...M/XC..M)	The dry pocket or O-ring is damaged	Replace the dry pocket or O-ring. Refer to the the dry pocket replacement manual.
Handle of the dry pocket is not in the closed position (only for BE...M/BC...M/XC..M)	The dry pocket is damaged	Replace the dry pocket. Refer to the the dry pocket replacement manual.

7.3 Rotate the dry pocket (for units with a rotatable magnetic dirt separator)



NOTE

It is only possible to rotate the magnetic dirt separator when the unit is empty and not under pressure.



1. Loosen the ring nut (A).



NOTE

A few turns is enough. It is not necessary to completely unscrew the ring nut of the dry pocket.

2. Rotate the complete dry pocket (B) to the desired position.



NOTE

It is possible to rotate the dry pocket 360°.

3. Tighten the ring nut to the correct torque. Refer to section 3.5.1.

8 GUARANTEE

8.1 Terms of guarantee

- The guarantee for Spirotech products is valid until 5 years following the purchasing date.
- The guarantee may be rendered invalid in cases of faulty installation, incompetent use and/or non-authorized personnel trying to make repairs.
- Consequential damage or losses due to failures are not covered by the guarantee.
- Normal wear and tear are excluded from the guarantee.



The manufacturer reserves the right to make changes without prior notification.

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Spirotech bv

The Netherlands