



BY BITZER GROUP

Operating Instructions
in compliance with
Pressure Equipment Directive 2014/68/EU
and
Pressure Equipment (Safety) Regulation 2016,
UK Statutory Instrument 2016 No. 1105

Series883 Refrigerant Strainer



Please read these operating instructions carefully to ensure a safe operation and keep the same for further use.

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Safety

The Series883 refrigerant strainer, hereinafter referred to as strainer, is designed for use in refrigeration/air conditioning systems, hereinafter referred to as systems. It may only be put into service if installed in the system unchanged in accordance with these instructions and in its entirety is in compliance with the statutory provisions.

The strainer incorporates state-of-the-art technology and has been built according to the applicable regulations. Great value has been set upon the user's safety.

These operating instructions are integral part of the contract and shall be kept throughout the entire life of the strainer.

Authorized personnel

Only trained and instructed personnel shall be allowed to do any work on the strainer and system. As regards the qualification and expertise of the personnel the applicable rules and guidelines shall apply.

Residual dangers

Unavoidable residual dangers may emanate from the strainer. Every person working on this device shall therefore carefully read these instructions!

To be observed are for example:

- the generally accepted safety regulations,
- EC directives,
- Norms (e.g. EN 378) and all national provisions.

Symbols used for safety information

	DANGER! Instructions on preventing imminent serious dangers to persons. Imminent most serious injuries or death as a possible consequence. Any non-observance may lead to an immediate failure of the strainer.
	WARNING! Instructions on preventing potential serious danger to persons. Avoidable serious to very serious injuries or death a possible consequence. Any non-observance may cause the strainer to fail.
	CAUTION! Instructions on preventing a minor danger to persons. Minor, reversible injuries cannot be excluded. Any non-observance may lead to a medium-term failure of the strainer.
	ATTENTION! Instructions on preventing potential damage to equipment. Minor, reversible injuries cannot be excluded. Any non-observance may lead to a medium-term failure of the strainer.

General safety information

These operating instructions are based on the safety requirements of EN 378 and EN 21922.

Instructions to prevent hazards in all cycles of service life:

	DANGER! Risk of bursting if operated beyond the technical parameters. Most serious injuries and immediate system failure possible. Observe the technical parameters.
	WARNING! Damage due to improper handling. Serious injuries and system failure possible. Never use strainers as transport, lifting or lashing points.
	WARNING! Risk of bursting in an environment causing stress corrosion cracking. Most serious injuries and immediate system failure possible. Observe the environmental conditions for housing material 1.4308 / 1.4301.
	WARNING! Any non-observance of the instructions may cause the strainer to fail. Avoidable serious to very serious injuries or death possible. Installation, operation and maintenance by authorized personnel only.
	WARNING! Risk of service fluid to be released. Depending on the kind of service fluid serious to very serious injuries or death possible as a consequence. Wear personal protective equipment (e.g. respirators, gloves).
	CAUTION! Very cold or very hot surface temperatures possible. Frostbites/burns possible. Wear personal protective equipment (e.g. respirators, gloves).

Other information

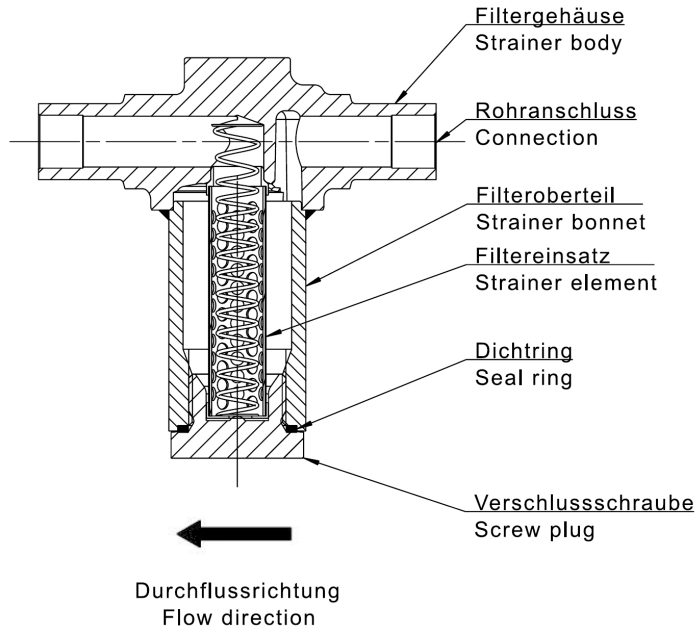
The information contained herein represents to the best of our belief our knowledge at the time when these instructions were prepared. It shall serve as code of practice to ensure a safe handling of the strainer in transport, storage, installation, commissioning, maintenance and dismantling/disposal. A final decision as to whether the strainer suits the purpose is to be taken by the user. This information shall not be deemed a warranty of quality.

Any modification of the strainer and operation under other than the prescribed parameters shall not be allowed and will result in the loss of the conformity declaration and all liability claims.

Description of strainer

Types

Strainer for pipe installation in straight form with replaceable strainer element



The strainers come with the connection types 2x WB or 2x W / ODS.

Installation dimensions can be gathered from the AWA product catalogue and technical documents respectively. The connecting options are explained in more detail in "Design features".

Product description

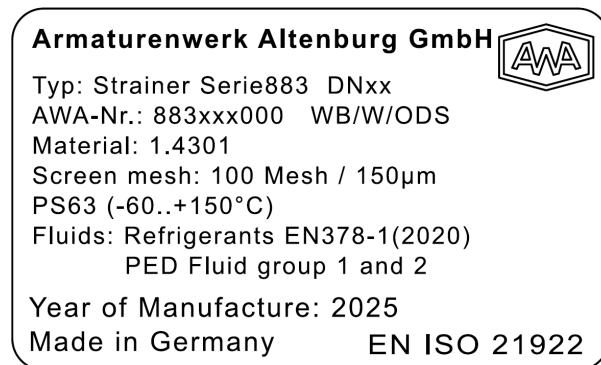
The strainer has been designed for installation in refrigeration and air-conditioning systems. The strainer is available for different pressure ranges and with different strainer cartridges.

The prescribed flow direction is marked with a direction arrow.

The strainer is in compliance with EN 21922, the Pressure Equipment Directive 2014/68/EU and the Pressure Equipment (Safety) Regulation 2016, UK Statutory Instrument 2016 No. 1105.

Identification

The strainer is marked in accordance with EN 21922 by marking and name plate. The arrow for flow direction has been marked into the strainer housing.



Technical parameters

Allowable pressure / temperature / service fluids / part numbers:

Maximum allowable pressure PS:	see tables below
Allowable temperature TS:	-60 ... 150°C
Permitted service fluids:	Refrigerant acc. to EN 378-1 (2020): PED Fluid group 1 and 2

Strainer with 2x WB connection Max. allowable pressure: 63bar		Strainer with 2x W/ODS connection Max. allowable pressure: 140bar	
Part number	Dimension	Part number	Dimension
883003000	WB 13,5	883103000	W13,5 / ODS 3/8"
		883104000	W13,5 / ODS 10
883005000	WB 17,2	883105000	W17,2 / ODS12
		883106000	W17,2 / ODS 1/2"
883008000	WB 21,3	883108000	W21,3 / ODS 5/8"
883010000	WB 26,9	883110000	W25,4 / ODS 3/4"
883013000	WB 33,7	883112000	W30 / ODS 7/8"

As regards part numbers not listed here see the technical documentation for the data of permitted service conditions.

Mesh size of strainer cartridges:

Standard: 150 mesh (100µm), other mesh sizes on request

Leakage test:

according to DIN 8964-3 (<4,1 g/a R-134a at 10bar)

Strength test:

according to EN 21922 at 1.5fold PS

Cleanliness of interior:

according to DIN 8964-1

Classification pursuant to Pressure Equipment Directive 2014/68/EU and PE(S)R 2016:

Article 4 (3) respectively Part 1 Regulation 8

Design features

- The material of the strainer components and the manufacturing method are selected in conformity with the EN 21922, the Pressure Equipment Directive 2014/68/EU, the Pressure Equipment (Safety) Regulation 2016 and the RoHS Directive 2011/65/EU thus guaranteeing the reliability for the operating range indicated.
- The housing material of stainless steel (1.4308 / 1.4301) provides for both a high degree of media compatibility and corrosion resistance.
- The use of heat-resistant materials and connecting elements obviates the need of dismantling the strainers when the system is installed.
- To facilitate the installation of the strainer cartridge of stainless steel, the housing comes with a spring inserted.
- The screw plug is metallically sealing provided with seal ring in the housing.
- The strainer has a housing foot with 2 mounting holes to fix the strainer.
- The service-friendly design makes it possible to purchase the strainer cartridge, seal ring and screw plug as spare part.

- Types of connection:

Because of the design principle the inlet and outlet of the strainer may feature different connections.

Connection "2x WB" – Butt welding according to EN 12627 to weld pipes according to EN 10220 for DN8 and DN25 and relevant inch-type dimensions.

Abbreviated designation: WB xx (xx stands for relevant size in mm or inch).

Connection "2x W/ODS" – Butt welding according to EN 12627 to weld pipes according to DIN EN 10220 for diameter 13.5 to 30mm and relevant inch-type dimensions. Additional with brazed capillary connection to render a brazed joint with copper pipes according to EN 12735-1 for diameter 3/8" to 7/8" (ODS).

Abbreviated designation: Wxx / ODSyy (xx stands for relevant outside diameter of the steel pipe and yy stands for relevant outside diameter of copper pipe in mm or inch)

Other connections can be agreed separately and are described in the relevant technical documents of the product. Suitable adapters for other connections are available in the AWA product range.

Transport and Storage

Transport the strainer by closed means of transport in the original packing protected against weather influences and store it in dry rooms.

Mounting

Principles

- The strainer shall be arranged in the system so that it can be properly operated and maintained.



DANGER!

Damage to strainer possible.
Serious injuries and system failure during operation possible.
Strainer to be installed without additional loads (forces, vibrations etc.). Never use the strainer as fixing points of pipes.

- The removal space for cleaning or replacement of strainer cartridges shall be minimum 150mm. It must be possible to apply the necessary torques in a safe manner.
- Mount the strainer with the screw plug showing downwards.
- The flow direction is marked by an arrow.
- The strainer must be integrated into the pipe on both sides. An outlet side open to the outside is not permitted!
- Only authorized personnel shall be allowed to mount the strainer.



DANGER!

Any non-observance of these instructions may cause the strainer/system to fail.
Most serious injuries and death possible.
Mounting and operation by personnel trained in refrigeration systems only.

- No modifications of the strainer permitted. If modifications become necessary, they have to be agreed with the manufacturer in writing prior to mounting.



WARNING!

Product features may change.
Avoidable serious to very serious injuries or death possible.
Any modification of the strainer has to be agreed with manufacturer in advance.

Mounting preparation

- When supplied the strainer comes with additional protective means for transport. To avoid corrosion inside the strainer and contamination, such protective means should be removed shortly before mounting.
- The strainer is supplied ready for mounting. It is not necessary to remove the strainer cartridge.



ATTENTION!

Damage to interior components possible.
Malfunction due to oxidation/contamination of interior components.
Wait to remove the transport protection until shortly before mounting.

Connecting the pipe

- Make the connection of the inlet and the outlet in compliance with the following connection-specific principles:

The pipe must be of a dimension that fits the strainer. If not, use adapters.

Make sure there is no mechanical restraint.

- **For soldered/welded connections:**

Prepare the system connections so (bare metal and grease-free) that a high-quality joint can be achieved.

Scavenge the relevant pipe sections with shielding gas during soldering / welding. A cooling of the strainer body is recommended.

Then, cool down the system connection in the air.

Clean the pipe connection made. Flux material residues from the soldering process are very corrosive and may cause long-term damage.

For stainless steel products observe the general rules to maintain the material properties (e.g. cleaning, passivation, tool selection).



WARNING!

Damage of strainer due to excessive heating possible.
Serious injuries and system failure possible during operation.
Direct the heat source away from strainer (soldering temperature max. 850°C)!



WARNING!

Damage of strainer (e.g. cracking) due to rapid cooling possible.
Serious injuries and system failure possible during operation.
Allow joint to cool down in the air.



CAUTION!

Risk of increased corrosion and component damage.
Serious injuries and system failure possible during operation.
Properly clean the joint after joining.

- For connection variants or connection sizes not listed here, the tightening torques or a description of the installation procedure are listed in the technical documentation or in a separate supplementary sheet.

Commissioning

Principles

- The strainer has already been tested for leakage and strength by the manufacturer.
- The strainer and the system into which it is installed, may only be commissioned if they have been checked, with due regard to the intended mode of operation, for proper condition as to assembly, installation, set-up conditions and safe functioning.
- After mounting and initial start-up according to EN 378-2 by check again for leakage and strength and effective corrosion protection.

Steps of commissioning

- Check the system for leakage and pressure resistance by suitable means (e.g. helium, dry nitrogen).



DANGER!

Risk of strainer bursting.
The maximum allowable pressure (PS) must not be exceeded!
The test pressure must not exceed the maximum allowable pressure (PS).
Strictly observe the safety information (e.g. EN 378).

Exception: Exceeding a maximum of 1.1 x PS for a short period of time until the pressure relief device responds (see EN378-2, ISO 5149-2).

- For stainless steel strainers it may be necessary to apply a corrosion protection that is suitable for the operating conditions. Make sure that the manufacturer's information is kept legible.



CAUTION!

Delayed failure due to corrosion possible.
Serious injuries and system failure during operation possible.
Apply a suitable anticorrosive coat.



ATTENTION!

Loss of product conformity due to loss of name plate/markings.
Loss of warranty.
Marking must be legible.

- Evacuating and filling the system with refrigerant.



DANGER!

Risk of bursting if operated beyond the technical parameters.
Most serious injuries possible.
Observe the technical parameters of the strainer.
Avoid excessive filling of the system with refrigerant.

- Upon initial commissioning check the pipes for any abnormal vibration and record the operating data.



CAUTION!

Cracks of the piping and the strainer due to dynamic loads possible.
Injuries and system failure during operation possible.
Avoid heavy vibrations. Take safety measures if need be.

Operation, Maintenance and Repair

Principles

- The strainer is maintenance-free.
- As part of the regular system inspection it should be checked for corrosion/damage and operability and its proper condition restored if necessary.



WARNING!

Media contact possible, contact with hot/cold surfaces.

Burns, frostbites.

Wear personal protective equipment during maintenance and inspections as prescribed by national regulations.

Replacing the strainer cartridge

- If the strainer cartridge needs to be cleaned or replaced, switch the system off, remove the refrigerant from the system (or system section) in an eco-friendly manner and vent the system (or section of system).
- Carefully open the screw plug. Because of the installation position of the strainer it cannot be avoided that contaminations and oil escape when the screw is removed. Collect and dispose the same in a proper manner.



DANGER!

Refrigerant may escape.

Leaking refrigerant may lead to most serious injuries.

For repairs the system must have the right temperature, be refrigerant-free and sufficiently ventilated system.

- Depending on the degree of contamination the strainer cartridge can be cleaned. Otherwise, use new original spare parts.



ATTENTION!

Avoid damage to strainer cartridge.

Malfunction or failure of system possible.

Use intact strainer cartridges only.

- Cleaning the strainer interior and screw plug.



ATTENTION!

Any remaining contaminations may cause damage.

Malfunctions, leakages or failure of the system possible.

Thoroughly clean the thread and strainer interior.

- Install the strainer cartridge together with the spring through the screw plug and a new seal in the strainer casing. To avoid fretting, wet the thread of the screw plug with a assembly paste.
- Initially screw the screw plug hand-tight and check for proper seating of the cartridge. Then, tighten the screw at the necessary torque (see mounting principles).

The following torques apply to the strainer assembly (Nm):

Width across flats [mm]	30 resp. 32	46	50
Torque [Nm]	140 +20	180 +20	250 +20



WARNING!

Exceeding the tightening torques can lead to damage.

Serious injuries and system failure during operation possible.

Observe the torques.


ATTENTION!

Faulty installation of the strainer cartridge leads to irreparable damage.
Malfunctions or system failure possible.
Make sure the strainer cartridge sits properly.

Before the system is started again, perform the steps described for commissioning.

Repairs

- If a proper functioning of the strainer is no longer guaranteed, switch the system off, drain the refrigerant from the system (or system section) in an eco-friendly manner and vent the system (or system section)


DANGER!

Refrigerant may escape.
Leaking refrigerant may cause most serious injuries.
For repairs the system must have the right temperature, free from refrigerant and sufficiently ventilated.

- The strainer housing is beyond repair. A faulty strainer housing must be removed from the system and replaced by a new one.
- For repairs (strainer housing, strainer insert, gasket, and screw plug) use no other than original spare parts. When removing/installing the bonnet from the strainer, insert a new bonnet gasket.


WARNING!

Strainer damage due to defective spare parts/mounting.
Avoidable serious injuries and system failure possible.
Use no other than original spare parts for repairs.

- Install/commission according these instructions. It is imperative to carry out another leakage and strength test. No warranty is accepted by AWA for tightness in case of repair.

Dismantling and Disposal

Principles

- To dismantle the strainer, shut off the system, remove the refrigerant from the system (or system section) in an environmentally friendly manner and sufficiently vent the system (or system section).


DANGER!

Refrigerant may escape.
Leaking refrigerant may cause most serious injuries.
For repairs the system must have the right temperature, free from refrigerant and sufficiently ventilated.


WARNING!

Media contact possible, contact with hot/cold surfaces.
Burns, frostbites.
Wear personal protective equipment during maintenance and inspection as prescribed by national regulations.

- The strainer and its components can be recycled:

Strainer	stainless steel scrap
Internal parts of strainer:	stainless steel scrap
Dust caps:	plastics (PE)



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