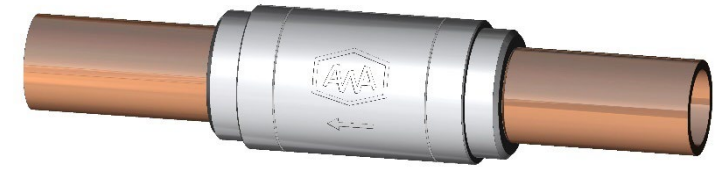
Operating Instructions
in compliance with
Pressure Equipment Directive 2014/68/EU
and
Pressure Equipment (Safety) Regulation 2016,
UK Statutory Instrument 2016 No. 1105

Series882 Check Valve RDL



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

Contents

Safety

The Series882 Check Valve RDL, hereinafter referred to as valve, is designed for use in refrigeration/air conditioning systems referred to as systems hereinafter. It may only be put into service if installed into the system unchanged in accordance with these instructions and being compliance with the statutory provisions in its entirety.

The valve incorporates state-of-the-art technology and has been built according to the applicable regulations. Great valve 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 valve.

Authorized personnel

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

Residual hazards

Unavoidable residual hazards may emanate from the valve. Every person working on this device shall therefore read these instructions carefully.

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 danger to persons.
Imminent most serious injuries or death as a possible consequence.
Any non-observance may lead to an immediate failure of the valve.

WARNING!
Instructions on preventing potential serious hazard to persons.
Avoidable serious to very serious injuries or death as a possible consequence.
Any non-observance can cause the valve to fail.

CAUTION!
Instructions on preventing a minor hazard to persons.
Minor, reversible injuries cannot be excluded.
Any non-observance may lead to a medium-term failure of the valve.

ATTENTION!
Instructions on preventing potential hazard to equipment.
Minor, reversible injuries cannot be excluded.
Any non-observance may lead to a medium-term failure of the valve.

General safety information

These operating instructions are based on the safety requirements of EN 378-2 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 the valve as transport, lifting or lashing point.

WARNING!
Any non-observance of the instructions may cause the valve 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. gloves, protective clothes).

ATTENTION!
Observe the flow direction of the valve.
Malfunction of the system.
The flow direction must correspond to the direction arrow.

Other information

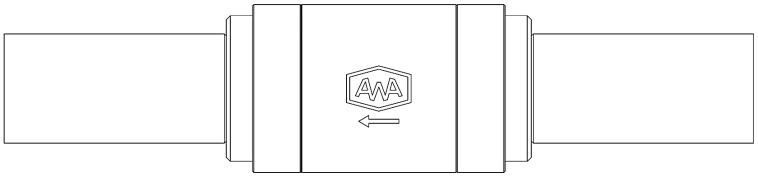
The information contained herein represents to the best of our belief our knowledge at the time when these instructions were prepared. It shall serve as code of practice to ensure a safe handling of the valve in transport, storage, installation, commissioning, maintenance and dismantling/disposal. A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

Any modification of the valve 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.

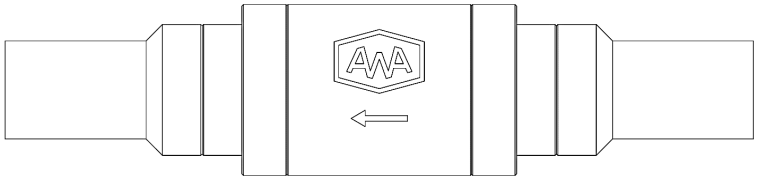
Description of Valve

Types and connections

Connection “A” – Valve with copper pipes for solder connections (ODS)

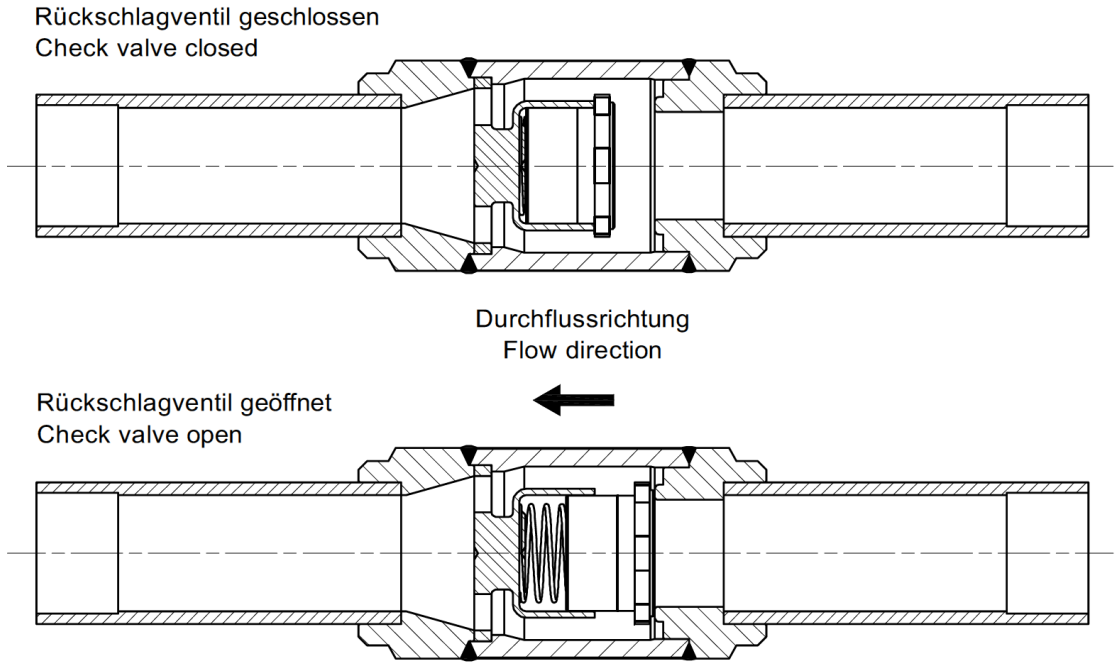


Connection “B” – Valve with stainless steel ends for welding/soldering connections W/ODS



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".

Operating principle



Product description

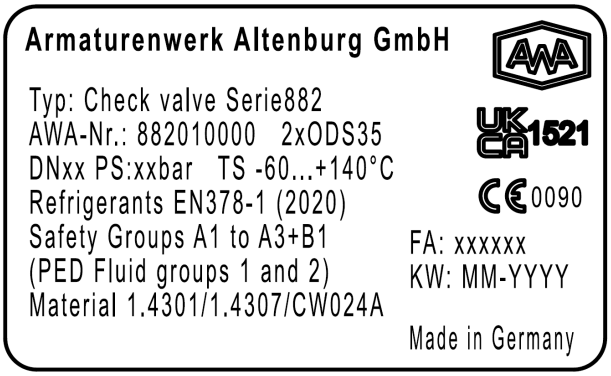
The valve is a damped check valve for refrigeration or air conditioning systems.

The prescribed flow direction is marked with a direction arrow on the housing.

The valve 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 valve is marked in accordance with EN 21922 by means of a type plate and embossing:



The direction arrow for the prescribed flow direction is embossed on the housing.

Technical parameters

Allowable pressure / temperature / service fluids / part numbers:
Maximum allowable pressure PS: PS [see table A and B].

Allowable temperature TS: TS -60 to 140°C

Table A: Valves with copper pipes for solder connections (ODS)
Permitted service fluids: Refrigerants acc. to EN378-1 (2020): Safety Group A1 to A3 and B1(PED Fluid Group 1 and 2)

Dimension Connection [mm] resp. [Inch]	Max. allow. pressure PS: 45bar Part number	Max. allow. pressure PS: 63bar Part number	Classification 2014/68/EU resp. PE(S)R
ODS 3/8“	882011000		Article 4 (3) / Part 1 Reg. 8
ODS 10	882012000		
ODS 12	882001000	882101000	
ODS 1/2"	882002000	882102000	
ODS 16 (5/8")	882003000	882103000	
ODS 18	882004000	882104000	
ODS 3/4"	882005000	882105000	
ODS 22	882006000	882106000	
ODS 7/8"	882007000	882107000	
ODS 28	882008000	---	
ODS 1 1/8"	882009000	---	
ODS 35 (1 3/8")	882010000	---	Category II

Table B: Valves with stainless steel ends for welding/soldering connections W/ODS
Permitted service fluids: Refrigerants acc. to EN378-1 (2020): PED Fluid Group 1 and 2

Dimension Welding connection [mm]	Dimension Soldering connection [mm] resp. [Inch]	Max. allow. pressure PS: 140bar Part number	Classification 2014/68/EU resp. PE(S)R
W 13,5 (DN8)	ODS 3/8“	882201000	Article 4 (3) / Part 1 Reg. 8
W 17,2 (DN10)	ODS 1/2"	882202000	
W 22 (DN15)	ODS 16 (5/8")	882203000	

Table C: Valves with stainless steel ends for welding connections WB
Permitted service fluids: Refrigerants acc. to EN378-1 (2020): PED Fluid Group 1 and 2

Dimension Welding connection [mm]	Max. allow. pressure PS: 100bar Part number	Max. allow. pressure PS: 140bar Part number	Classification 2014/68/EU resp. PE(S)R
WB 21,3 (DN15)	---	882404000	Artikel 4 (3) / Part 1 Reg. 8
WB 26,9 (DN20)	882405000	---	
WB 33,7 (DN25)	882406000	---	
WB 42,4 (DN32)	882407000	---	Kategorie II
WB 48,3 (DN40)	882408000	---	
WB 60,3 (DN50)	882409000	---	

Leakage test (external):
according to DIN 8964-3 (<4.1 g/a R-134a at 10bar)

Strength test:
according to EN 21922 at 1.5-fold PS

Cleanliness of interior:
according to DIN 8964-1

Classification pursuant to Pressure Equipment Directive 2014/68/EU and PE(S)R 2016:
See information in the technical documentation.

For products of category II components are provided with CE 0090 and UKCA 1521 mark with indication of the notified body.

Opening differential pressure (OPD):
As standard the opening differential pressure is about 0,03bar.

Different opening differential pressure are possible on request.

Maximum closing differential pressure (MCPD):

Valve size	≤ DN15 / ODS 3/4	> DN20 / ODS 22
Max. closing differential pressure (operating)	40bar	25bar
Max. closing differential pressure (testing)	80bar	50bar

Design features

- The material of the valve 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 stainless steel (double certification 1.4301 and 1.4307) ensures a maximized media compatibility and corrosion resistance. Depending on the version, the connections are made of copper or stainless steel tubes.
- The hermetic connection of the pressure-bearing housing and connection parts ensures a maximum protection against external leaks.
- The prescribed flow direction is marked with a direction arrow on the housing.
- The valve comes with aplastic to metal sealing and the sealing surfaces are finely machined to achieve good internal tightness and a long service life.
- The valve piston is spring-loaded and has an absorption component. The vibration of the valve is thus largely avoided when pulsating media are used.
- Very low opening differential pressures result in a high response sensitivity during opening and closing processes as well as low pressure losses in the flow-through state.
- Types of connection:

Connection "A" – Brazed capillary connection to render a brazed joint with copper pipes according to EN 12735-1 for dia. 10 to 35mm and relevant inch dimensions. Designed as connection for insertion of a copper pipe (ODS).

Abbreviated designation: Check valve RDL Series882 - ODS xx (xx stands for relevant size of copper tube in mm or inch).

Connection "B" – Welded connection for use of pipes according to EN 10220 and relevant inch-type dimensions. Designed as a combined welding/soldering connection (W/ODS) for the optional making of a brazed joint with copper pipes according to EN 12735-1.

Abbreviated designation: Check valve RDL Series882 - Wxx ODS yy (xx stands for relevant outside diameter of welding tube in mm and yy stands for relevant size of copper tube in mm or inch).

- Other connections can be agreed separately and are described in the relevant technical documents of the product.

Transport and Storage

Transport the valve by closed means of transport in the original packing protected against weather influences, and store it in a dry place.

Mounting

Principles

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

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

- The prescribed flow direction of the valve must be strictly adhered to during installation.

ATTENTION!
Observe the flow direction of the valve.
Malfunction of the system.
The flow direction must correspond to the direction arrow.

- An optimal functionality of the shut-off action is achieved in vertical mounting position with incident flow from below. A horizontal mounting position of the check valve is also possible.
- The valve 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 valve.

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

- No modifications of the valve are permitted. If modifications become necessary, they have to be agreed with the manufacturer beforehand.

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

Mounting preparation

- When supplied the valve can be closed and may come with additional protective means for transport. To avoid corrosion inside the valve and contamination, such protective means should be removed shortly before mounting.

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

- The pipe must be of a dimension that fits the valve. 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 valve 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 valves observe the general rules to maintain the material properties (e.g. cleaning, passivation, tool selection).

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

WARNING!
Damage of valve (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.

- If the assembly is a subassembly, the pipe ends must be sealed with dust protection caps until further use.

Commissioning

Principles

- The valve has already been tested for leakage and strength by the manufacturer.
- The valve 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 before initial start-up according to EN 378-2 check again for leakage and strength and an effective corrosion protection.

Steps of commissioning

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

DANGER!
Danger of bursting.
Most serious injuries possible.
The maximum allowable pressure (PS) must not be exceeded!
Strictly observe the safety information (e.g. DIN 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).

- The application of an anticorrosive coating that suits the operating conditions is may be necessary for stainless steel valves. Make sure that the fabrication data remain legible.

CAUTION!
Delayed failure due to corrosion possible.
Serious injuries and failure of system during operation possible.
Apply a suitable anticorrosive coating.

ATTENTION!
Loss of product conformity due to loss of lettering.
Loss of warranty.
Lettering must be legible.

- Evacuating and filling the system with refrigerant.

DANGER!
Danger of bursting if operated beyond the technical parameters.
Most serious injuries possible.
Observe the technical parameters of the valve.
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 valve 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 valve is maintenance-free.
- As part of the regular system inspection it should be checked for corrosion/damage/tightness 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.

Repair

- If a repair of the valve is necessary, the system must be switched 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.

- If the intended function of the valve is no longer guaranteed, it must be removed from the system and replaced with a new valve. The installation / commissioning must be carried out according to the instructions in this operating manual. It is essential to carry out a new tightness and strength test.

Dismantling and Disposal

Principles

- To dismantle the valve, 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 valve and its components can be recycled:

Valve body:	stainless steel scrap
Copper pipes:	copper scrap
Internal parts of valve:	stainless steel / aluminium scrap
Dust caps:	plastics (PE)

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