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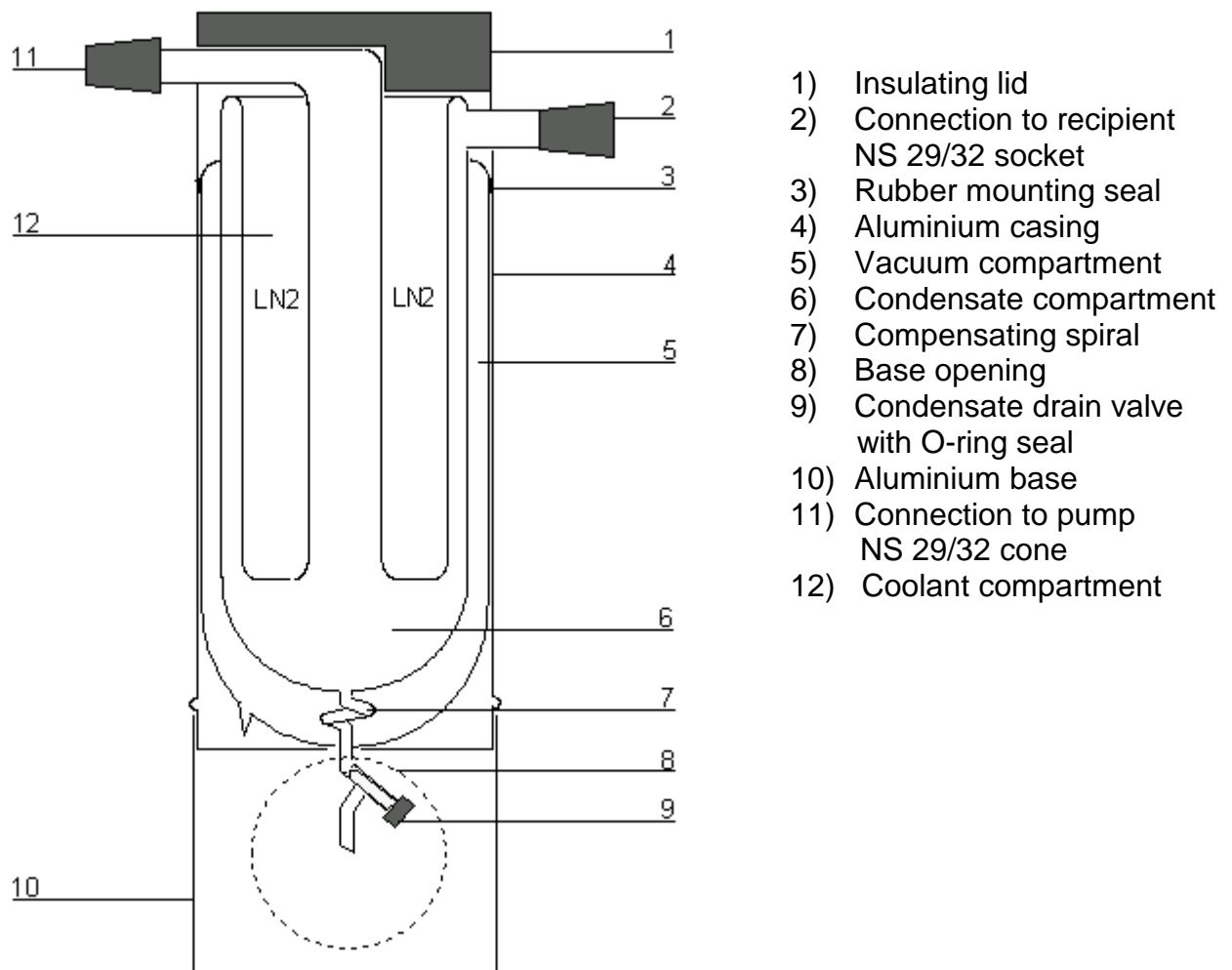
**Manual Cold trap
Type GKF**

Cold Trap GKF

The cold trap GKF can be used for any application where gases from undesirable substances or moisture must be removed.

It is often used in vacuum systems upstream of the vacuum pump to prevent the pump from becoming damaged from the ingress of moisture or solvents. The cold trap can also protect the recipient in the opposite direction by condensing the penetrating oil molecules from the vacuum pump using back diffusion.

The cold trap works on the principle of condensation. The gas to be cleaned is conveyed past two walls chilled with coolant. The substances are condensed to the walls and frozen solid in the process. The cold trap is made of borosilicate glass 3.3 DIN ISO 3585 and is therefore resistant to a large number of aggressive, chemical media (see technical data for borosilicate glass)



1. Unpacking

Carefully unpack the cold trap and check for any damage. It is important that any potential transport damage is identified during the unpacking process. An immediate assessment of any damage is required, where applicable. Please contact the manufacturer to this end.

- Take the technical data from the valid operating instructions.
- Only approved spare parts should be used.

2. Assembly

Always ensure that the conical ground joints are lubricated prior to assembly. This way you ensure that the joints are easy to release after use.

Adhere to the following sequence when assembling the cold trap:

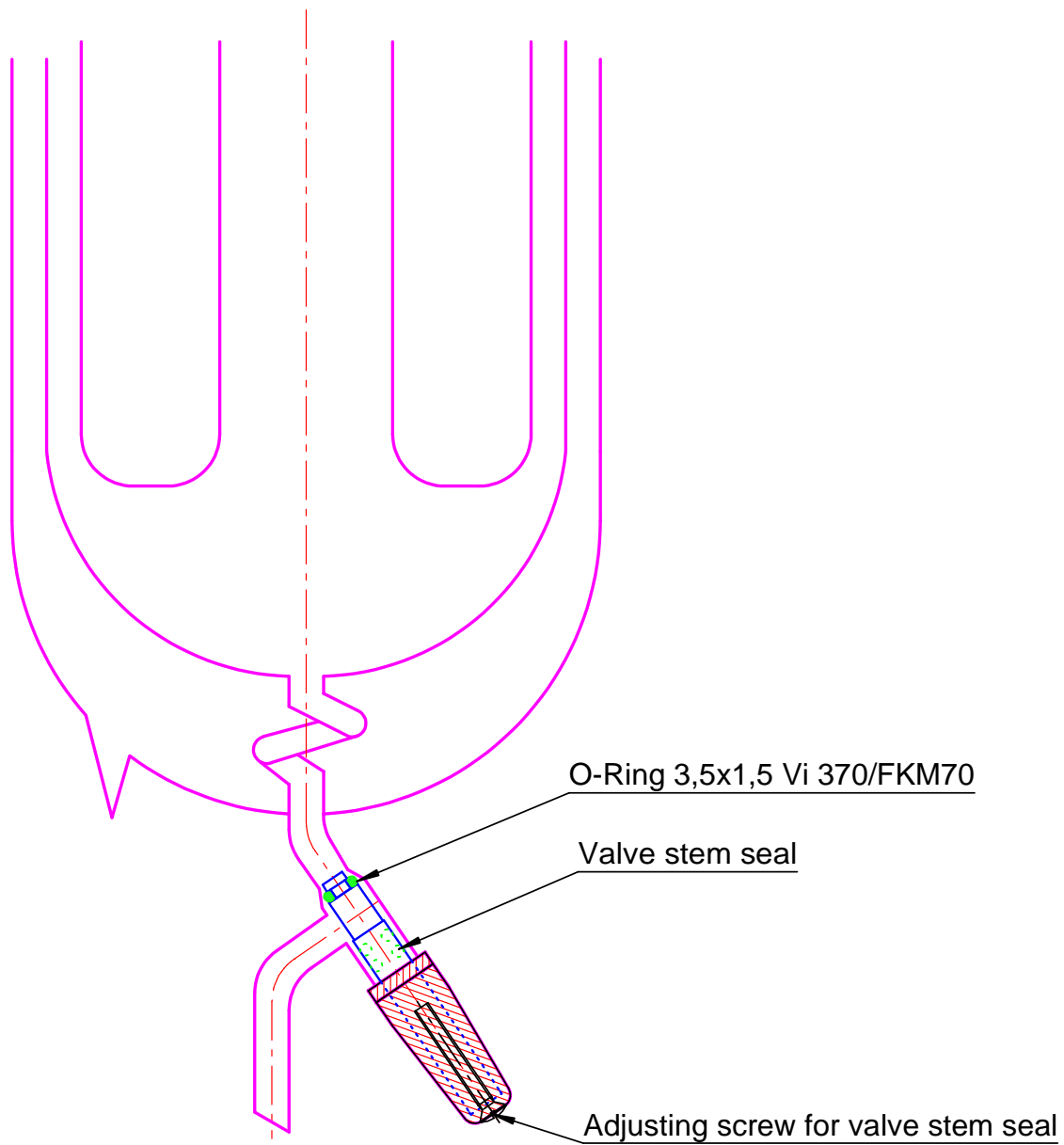
- 1) Set up the cold trap at its place of use and fix in place using a stand if necessary.
- 2) Establish a link between the connection NS 29/32 cone and the vacuum pump.
Ensure that no mechanical tension can have an impact on the connection due to the tensile load or vibration. The contraction (shrinkage) of the hose under vacuum must be taken into account when using a corrugated hose.
- 3) Establish a link between the connection NS 29/32 socket and the recipient (build-up to be evacuated, vessel). Plastic or metal clamps can be used to fix the ground joints in place.
- 4) Close the condensate drain valve.

The base of the cold trap can turn freely. Align the base in such a way that the valve is easy to use through the lateral opening.

- a) Valve stem with O-ring seal (standard / Viton)
The valve is sealed by the O-ring with limited contact pressure from the valve stem.

Option

- b) Valve stem with special O-ring seal made of silicone or another sealing material by arrangement.



- c) Seals incorporated into the side of the valve stem are used to seal the valve stem. Should a leak occur between the glass part and the valve stem, this can be rectified by tightening the adjusting screw.

3. Start-up

IMPORTANT !! Wear protective goggles and gloves !!

Please adhere to the following sequence during the start-up to ensure that everything runs smoothly:

1. Fill the coolant compartment with coolant.

Ensure that there is always sufficient coolant in the coolant compartment during operation. The cold trap can either be run with liquid nitrogen or with a dry ice - acetone mixture.

2. Switch on the vacuum pump.

Switch on the pump immediately after the coolant has been inserted. If the cold trap in the condensate compartment is not evacuated, this results in a higher consumption of coolant.

3. Attach the insulating lid (accessory).

The lid is used to insulate the heat penetrating in from above and thus minimises the coolant consumption.

4. Condensate - Emptying the Cold Trap

The cold trap can only accommodate a limited amount of condensate. Ensure that not too much condensate gathers on the cold walls during operation. (Empty condensate out of the cold trap as necessary).

Proceed as follows when emptying the condensate:

- 1) Switch off the vacuum pump.
- 2) Wait until the condensate and cold trap have become warm enough that the condensate has liquefied.
- 3) Open the condensate drain valve and remove the condensate.

Ensure that the condensate drain line and the collection tank are sufficiently chemically resistant to the condensate. (e.g. with solvents)

5. Maintenance and Cleaning

The cold trap requires no maintenance. Please contact the manufacturer in case of repairs.

5.1. Cleaning

5.1.1 Exterior

The exterior of the cold trap should only be cleaned with water and a surfactant-based detergent additive. Use a damp cloth for this and ensure that no damage occurs to the glass (e.g. scratches).

5.1.2 Coolant compartment and condensate compartment

The coolant compartment and condensate compartment should be rinsed with surfactant-based water or solvent (See Chapter 7.1, Chemical Resistance).

Unscrew the valve prior to rinsing with solvent in order to avoid solvent damage to the valve.

Ensure that the solvent does not come into contact with the casing and its accessories.

(Dismantle the glass insert from the casing to clean it if necessary. It is essential to wear protective goggles and gloves when doing this!)

6. Available Accessories and Spare Parts

- Insulating lid
- Set of transition pieces NS 29/32 to the olive (\varnothing 10 mm)
- Set of transition pieces NS 29/32 to the glass flange KF NW 20/25
- Bracket for the glass flange KF NW 20/25
- Perbunan O-ring seal with centring ring for the glass flange KF NW 20/25
- PTFE stem for the drain valve
- O-ring seal (standard: Viton) for the drain valve
- Special O-ring seal (silicon) for the drain valve

7. Technical Data

External diameter:	approx. 140 mm	(assembly, see diagram on page 2)
External height:	approx. 520 mm	
Weight:	approx. 3.5 kg	
Material:	borosilicate glass 3.3 DIN ISO 3585	
Evaporation rate: LN2	approx. 75 ml/h	(measured with insulating lid attached)
Standby time: LN2	approx. 12 h (at an operating pressure: 10^{-3} mbar) (ambient temperature: 23 °C)	
Coolant content:	approx. 1,000 ml	
Condensate volume:	approx. 250 ml	
Connections:	to the pump:	NS 29/32 cone
	to the recipient:	NS 29/32 socket
	condensate outlet:	valve with O-ring seal (standard - Viton)

7.1 Acceptable operating conditions

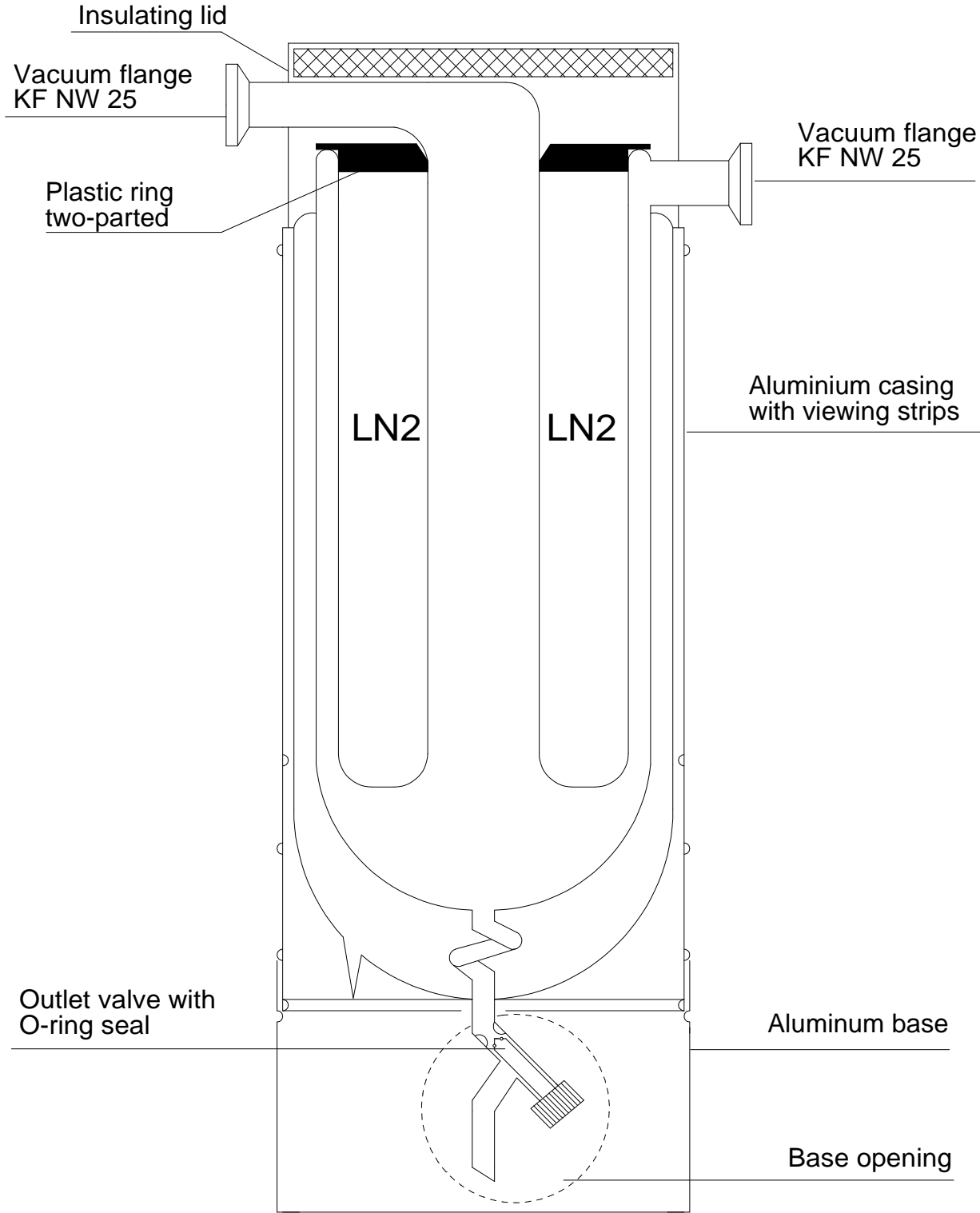
Operational overpressure	vacuum or overpressure up to max. 1 bar
Ambient temperature	0°C to 50°C
Coolant	: - liquid nitrogen (LN2) - acetone / dry ice (CO2) mixture
Chemical resistance	in accordance with DIN 12111, DIN 12116, DIN 52322 does the glass comply with the conditions of - hydrological class 1 - acid class 1 - leaching class 2

The glass is only affected by:

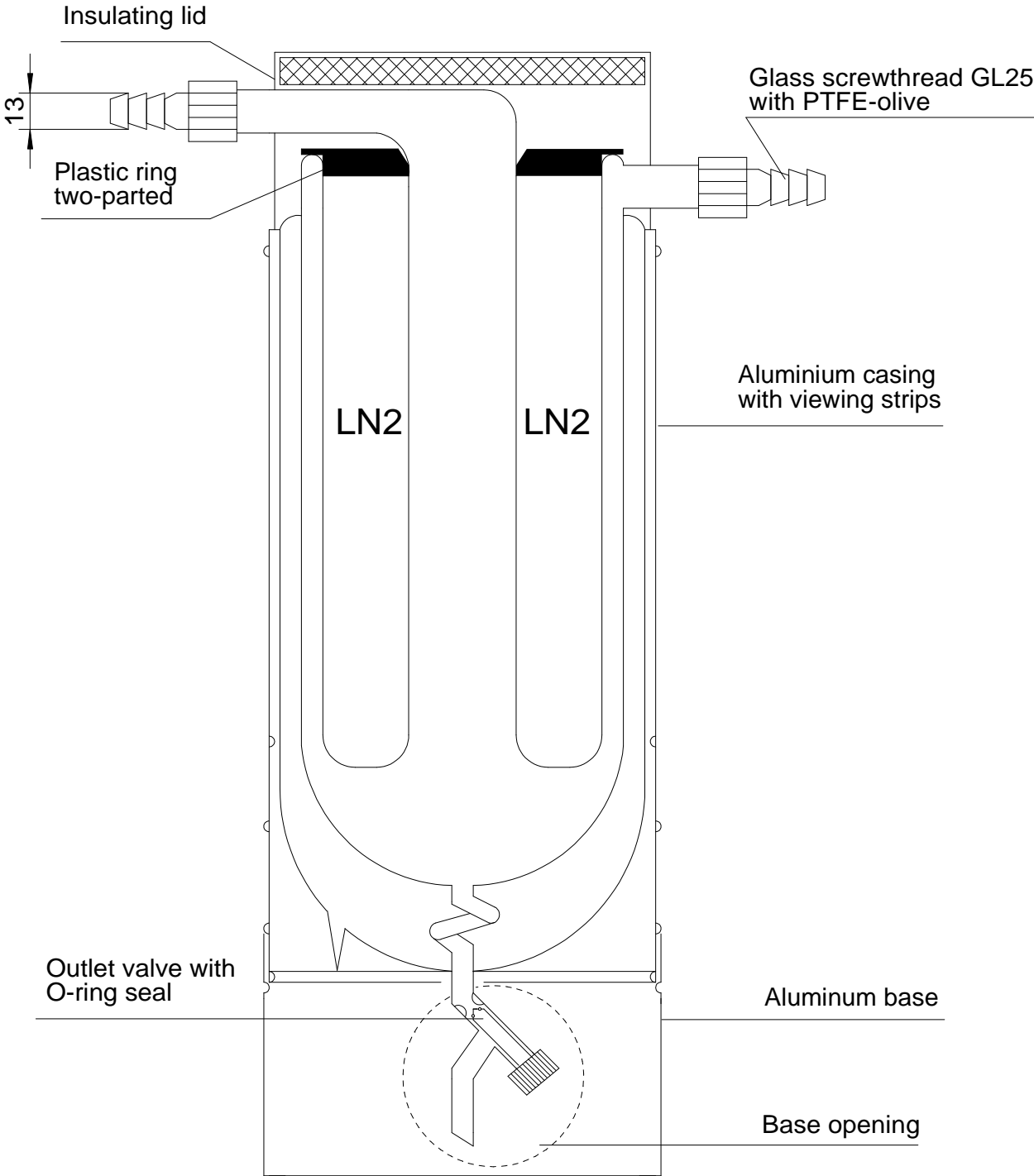
- hydrofluoric acid
- hot phosphoric acid
- highly concentrated alkaline solutions

8. Weitere Kühlfallen Ausführungen

8.1 Type GKF- NW 25 (Art.No. 1702-NW25)

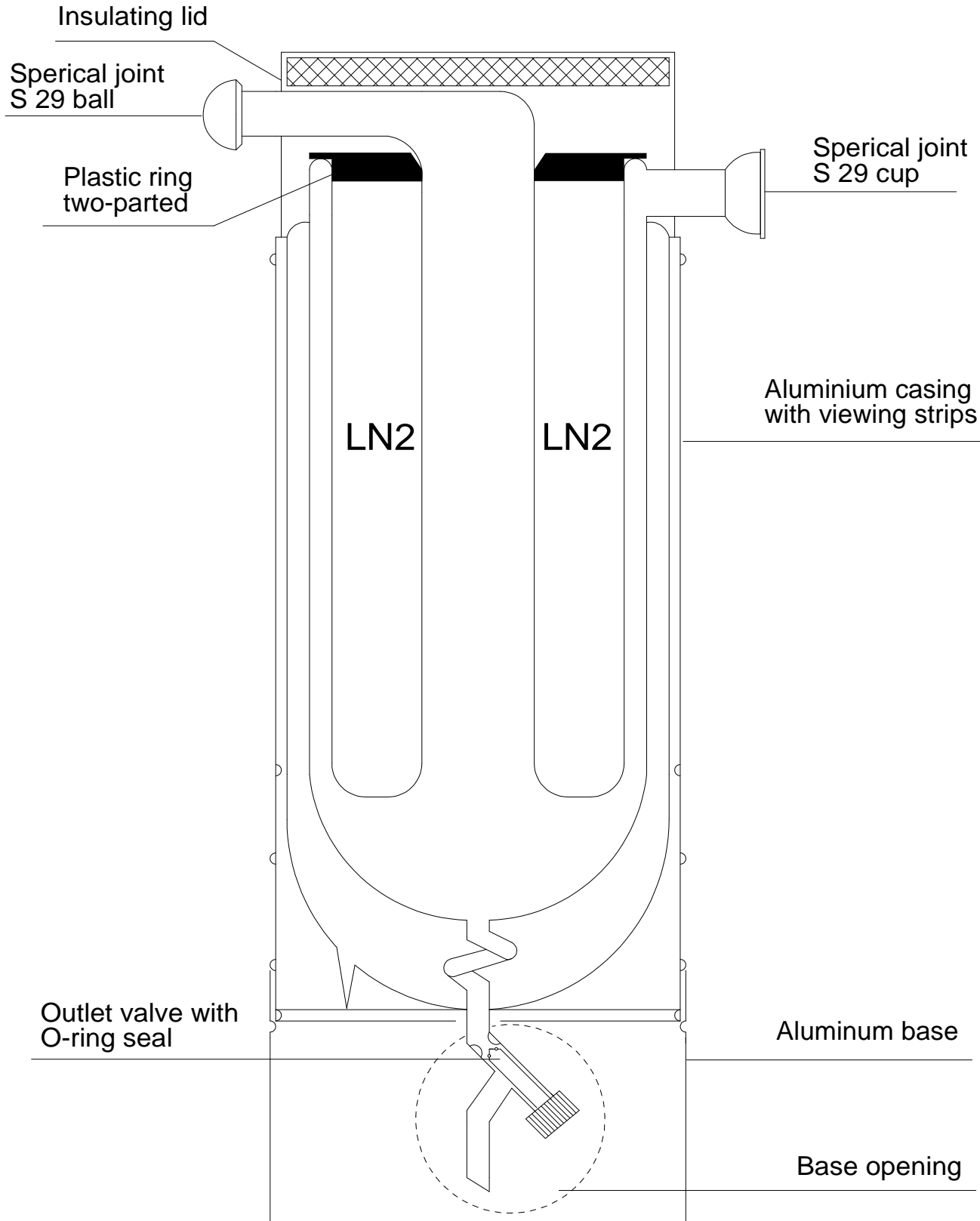


8.2 Type GKF- GL 25 (Art.No. 1702-GL25)



8.3 Type GKF- S29

(Art.No. 1702-S29)



9. Safety Information

- Only operate the cold trap under supervision!
- The cold trap should only be operated if it is filled with sufficient liquid nitrogen!
- Work on the cold trap should only be carried out by skilled workers!
- Observe the safety regulations when handling liquid nitrogen, see the EC safety data sheet pursuant to TRGS 220 (Technical Rules on Hazardous Substances) from AIR LIQUIDE dated 29.08.2002 (Wear protective goggles and gloves!)
- Cold traps that contain liquid nitrogen or other gaseous substances should not be sealed gas tight!
- Observe the safety information in the vacuum pump operating instructions!
- When the cold trap operation is completed, ensure that overpressure is not produced when condensing the gaseous substances (such as solvents). Loosen the connection to the pump.

10. Warranty

You have purchased an original KGW cold trap.

We offer a warranty of 12 months (from delivery by the manufacturer) when handled properly. The warranty covers a maximum of the purchase value of the device. Please contact the manufacturer in the case of any warranty claim.

11. Special option

Automatic LN2 filling of cold traps

For many cryo technical applications, e.g. cooling cold traps with LN2, it is importantly to hold a nearly constant LN2 fluid level. This can be realised with the LN2 Level Control of KGW-ISOTHERM. The LN2 level can be adjusted in between a minimum and a maximum sensor with the help of this Controller and kept constantly. That KGW-ISOTHERM LN2 Level Control can be used with any LN2 container that has a top flange KF NW 50.



The level control works as follows:

The minimum sensor sends a signal to the Level Control as soon as the LN2 level sinks below it. The Control opens the 24 Voltage solenoid valve, then. LN2 will be withdrawn by existing over pressure inside of the LN2 storage container and is led through a transfer line into the cold trap Dewar flask. LN2 is now running into the cold trap Dewar flask until the maximum sensor dives into it. Then, the maximum sensor will be cooled down and sends signal to the Level Control. It will interrupt the power supply of the solenoid valve. It closes automatically. The LN2 supply is now stopped. This above mentioned procedure will be repeated after some time as soon as the level sinks under the minimum sensor again.

- Nr. 1 = LN2 storage vessel**
- Nr. 2 = Cold trap Type GKF**
- Nr. 3 = LN2 transfer siphon with LN2 - magnetic valve and over pressure valve 0,5 bar**
- Nr. 4 = LN2 transfer hose with phase separator**
- Nr. 5 = LN2 Level Controller**
- Nr. 6 = Min.Max. sensor, metal covered with clamp and splash guard**
- Nr. 7 = Sensor holder**

