

# Karlsruher Glastechnisches Werk ISOTHERM

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**User's manual cold trap  
Type KF29-GL, KGW Nr. 1740**

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The cold trap type KF29-GL can be used anywhere where gases or undesirable substances or moisture should be withheld through LN2 or other coolant.

The cold trap is switched in a vacuum assembly or in a gas cycle, to avoid that the pump can be damaged by penetration of gases or liquids

Likewise according to the coolant and the condensate temperature of the substances, the cold trap could also be used as a collecting tank within a gas circle. According to the working temperature and the coolant the cold trap can either protect the vacuum jar through re-diffusion of penetrating oil moisture of the vacuum pump. The cold trap operates according to the principle of condensation.

The gas that has to be cleaned will guide to the cooled walls of the cold trap. Through that the gases or substances will be cooled down on the walls and they will condense and cached through the cold trap. The cold trap is made of Borosilicat glass 3.3 DIN/ISO 3585. The cold trap is one parted and has GL18 glass thread with plastic screw cap and PTFE olives.



**One parted cold trap S29-GL**

**Support ring two-piece for easier refilling of coolant**



### **Dewar flask type 12C for cold trap type S29-GL**

The Dewar 12C for the cold trap S29-GL is made of Borosilicat glass and especially designed for liquid nitrogen.

The capacity of the Dewar vessel without cold trap is 1,5 litres. With the cold trap the capacity for the coolant amounts to approx. 1 litres



## 1. Unpack

Carefully unpack the individual parts of 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 KGW-ISOTHERM to this end.

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

## 2. Mounting

Always make sure that when assembled, the GL 18 screw caps are tightly and tightly tightened with the PTFE olives.

**If the screw cap is not properly tightened, the cold trap can attract air from the environment and is therefore no longer functional (saturated).**

While mounting the cold trap, please stick to the following steps

- 1) Place the Dewar flask type 12 C on a fix plate. Optionally secure with a stand rack
- 2) Place supporting ring on the Dewar flask
- 3) Check the cold trap to gain a correct assembling
- 4) Connect your vacuum lines to the PTFE olives of the cold trap (GL18-PTFE Olives)
- 5) Place the cold trap carefully into the supporting ring, which is already placed on the Dewar flask.

### 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. Check the GL18 glass thread connections of the cold trap before startup.
2. Place Dewar flask and secure.
3. Place supporting ring on the Dewar flask.
4. Place the cold trap into the supporting ring carefully. Till the cold trap will sit on the ring
5. Connect the cold trap with the vacuum pump (Vacuum pump – recipient).
6. Remove the smaller part of the supporting ring.
7. Fill LN2 slowly into the Dewar flask, that no LN2 will squirt or flow out.
8. Wait for 3 to 5 minutes, until the Dewar flask and the cold trap will be cooled down. After 5 minutes please refill.
9. Now switch on the vacuum pump.
  
10. Please be aware that there will be always enough LN2 or other coolant inside the Dewar flask. When the subpart will be dipped less than 2/3 into the LN2 condensate performance will decrease perceptibly.

**Attention – when handling LN2 there will be always the risk of burns!**

## 4. Condensate - Emptying the Cold Trap S29-GL

The cold trap can only gather a limited quantity of condensate. Ensure that not too much condensate gathers on the cold walls during the operation. Empty condensate out of the cold trap, if necessary.

Proceed as follows when emptying the cold trap:

1. Switch off the vacuum pump.
2. Interrupt the supply of coolant (LN2)
3. Take out the cold trap of the Dewar
4. Remove GL18 screw caps with PTFE olives. The condensate can be released via the GL18 glass thread.

## 5. Maintenance and Cleaning

The cold trap requires no maintenance. Only if necessary, the GL 18 screw caps must be replaced with the PTFE olives. Please contact the manufacturer in case of repairs.

**Make sure that the cold trap has no surface damage or scratches. If this is the case, then the cold trap must be replaced and must never be used again.**

### 5.1 Cleaning

#### 5.1.1 Exterior

The exterior of the cold trap should only be cleaned with water and a tenside-based detergent additive. Pay attention that the surface of the flanges will not show any damages (e.g. scratches)

#### 5.1.2 Coolant compartment and condensate compartment

The coolant compartment and condensate compartment should be rinsed with tenside-based detergent additive or solvent

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

**It is essential to wear protective goggles and gloves while doing this!**

## 6. Available Accessories and Spare Parts

- Screw cap with PTFE olive = No. 17331
- Replacement supporting ring = Nr. 1733
- Dewar Flask type 12 C = Nr. 10214
- Cold trap S29-GL = Nr. 1741

## 7. Technical Data

Cold trap one piece	: distance between the Glass thread = 160 mm
Condensate volume	: max. about 0.15 liters
Cold trap connections	: GL 18 glass thread
Cold trap Vacuum connections	: PTFE olive for vacuum hose with 8 to 10mm inner diameter
Material	: borosilicate glass 3.3 DIN / ISO 3585

### Acceptable operating conditions of the cold trap

Operational overpressure	: vacuum or overpressure up to max.0,5 bar
Chemical resistant	: see general material specification of borosilicate glass 3.3 DIN / ISO 3585

## Technical data Dewar flask

Dewar flask 12 C	: Di = 90 mm : Hi = 245mm
Dewar flask standard	: DIN EN ISO 16496
Material	: borosilicate glass 3.3 DIN / ISO 3585
Coolant	: LN2 aprox.1 Litre with dipped cold trap

## 8. 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 no overpressure is build-up when condensing gaseous substances (such as solvents).  
Loosen the connection to the pump.



# 9. Drawing



