



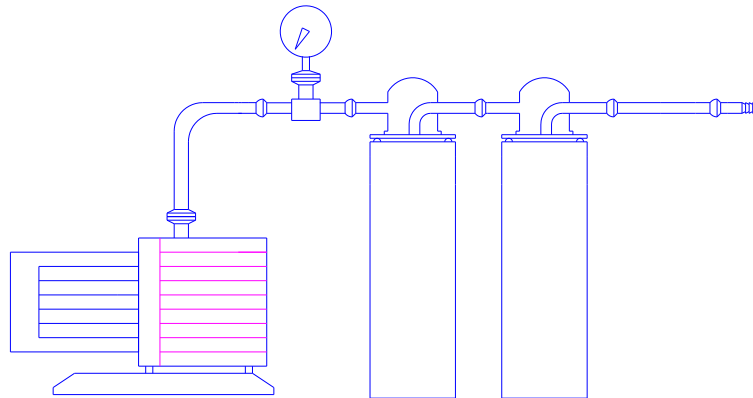
Cold traps out of glass or stainless steel for the vacuum technology



KGW-ISOTHERM
Karlsruher Glastechnisches Werk
76185 Karlsruhe Gablonzerstraße 6
Tel: 0721 / 95897-0 Fax: 0721 / 95897-77
Email: info@kgw-isotherm.de
Internet: www.kgw-isotherm.com

Cold traps: construction, operation and principles

Cold traps are used in conjunction with vacuum pumps to collect condensation produced from humidity or solvents and these cold traps can be used for many different tasks. The most common application is collecting condensation produced from humidity or solvents from rotating discs, vacuum pumps or high vacuum systems that use's oil diffusion or turbo-molecular pumps. In this case a common coolant such as liquid nitrogen (LN2) or dry-ice (CO2) with acetone is normally used.



Another application is the production of condensation from specific substances at a constant, predefined temperature. This can be realised by using a coolant at a constant, predefined temperature, a thermostat or a Kaltgas system.

Cold traps can be manufactured out of glass or metal. The use of glass is advantageous in the chemical sector and when producing condensation from solvents, due to its resistance to chemicals. All glass cold traps listed in this catalogue are produced solely from borosilicate glass 3.3, in compliance with DIN/ISO (DURAN made by Schott). The mechanical design takes into account the wall thickness for use under vacuum.

Material - glass

All the glassware produced by KGW - ISOTHERM are made of borosilicat glass 3.3 DIN/ISO 3585. The glass has the following characteristics:

Chemical characteristics	hydrolytic resistance	: according to DIN-ISO 719 (98°C)
	acid resistance	: according to DIN-ISO 1776
	alkaline resistance	: according to ISO 695-A2
Physical characteristics	linear expansion factor	: $3,3 \times 10^{-6}$ 1/K (at 20°C-300°C)
	density	: 2,23 g/cm ³
	specific thermal capacity	: 910 J/kg K
	transformation temperature	: 525 °C

Admissible Operation Conditions for cold traps made of glass

Temperature range	-200°C to +200 °C
Pressure range standard	vacuum to atm. pressure
Special pressure range	vacuum to + 1 bar

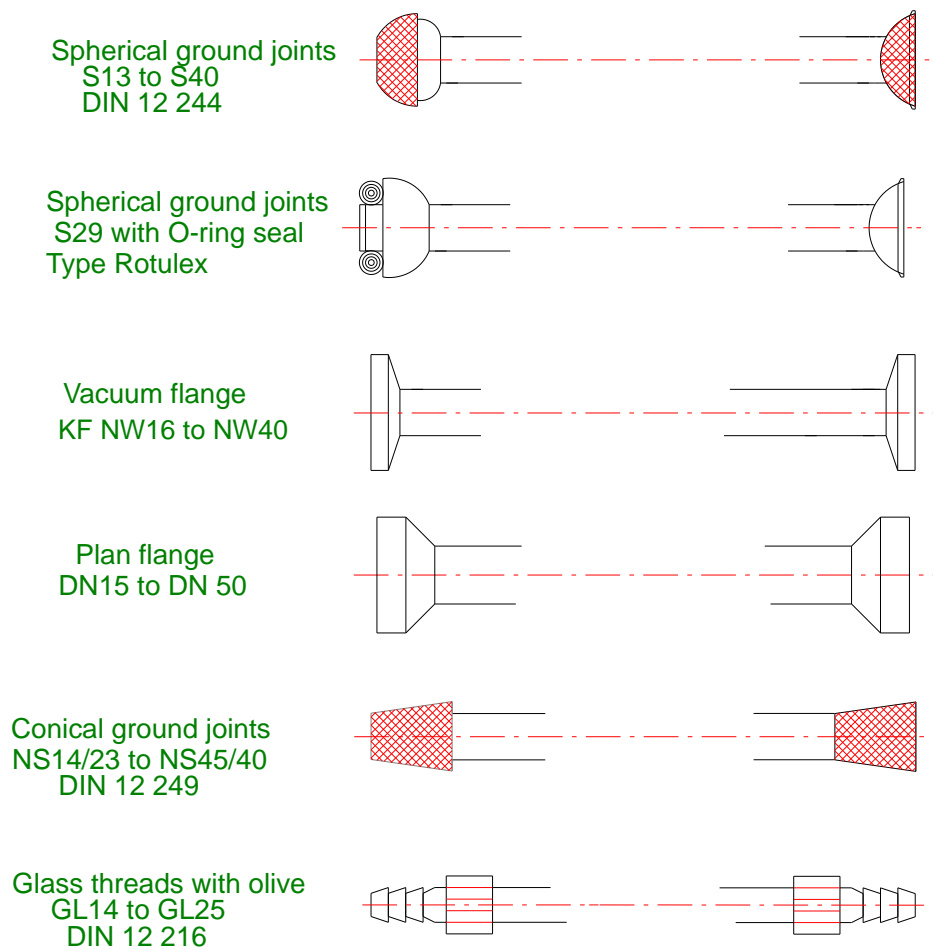
Standards and Guidelines

All of the KGW glassware are manufactured considering "Guideline of pressure devices", directive 97/23 EC and DIN 12492 "Equipment with vacuum insulation". Under the condition that there are any standards for joint parts such as spherical ground joints or conical ground joints, those will be utilised (e.g. DIN 12242-1 and DIN 12244-1).

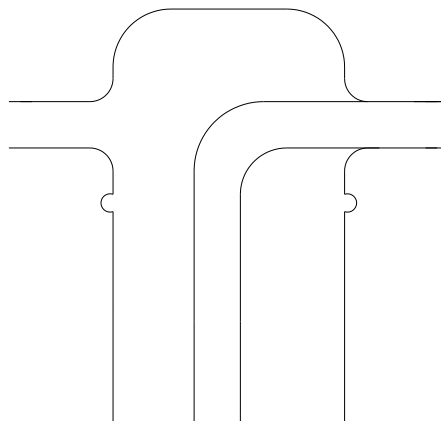
Vacuum connection Different versions

All cold traps out of glass can be manufactured with different connections. The types of connection listed here are subject to standards or norms, so that they are guaranteed to be compatible with other products and this presents the user with a variety of connection options. As the connection option product pallet is far too extensively for a standard pallet, only cold traps with a fitted connection are shown in this catalogue, however these can be altered without incurring any additional expenditure. The most common connections used in the vacuum sector with glass cold traps are vacuum flanges KF NW 16 to KF NW 40, glass threads GL 14 to GL 25 with screw-on cap and olive, spherical ground joints S 19 to S 40, conical ground joints NS 14/23 to NS 45/40 and spherical ground joints with O-ring seal S29 Rotulex. There are standard accessory parts available for all these types of connections.

Connection program for cold traps



Cold trap



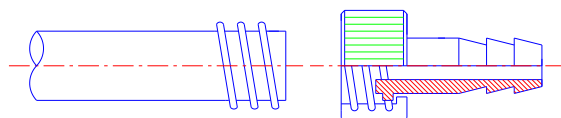
Accessories for vacuum connectors



Glass flange KF NW as vacuum connector

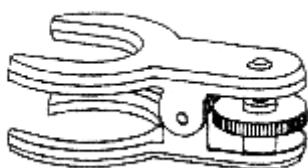
Vacuum flange	KF 10/16	KF 20/25	KF 32/40
Glass flange	17310	17311	17312
Pertinax clamp	17315	17316	17317
O-ring with centering	17320	17321	17322

PTFE olive with plastic screw on caps



Olive with screw-on cap	Olive diameter	Art.No.
GL 14	9	17330
GL18	10	17331
GL25	13	17332

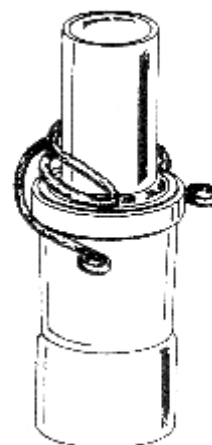
Fork clamps for spherical joints with locking device



Spherical ground joints	Art.No.
S19	17340
S29	17341
S40	17342

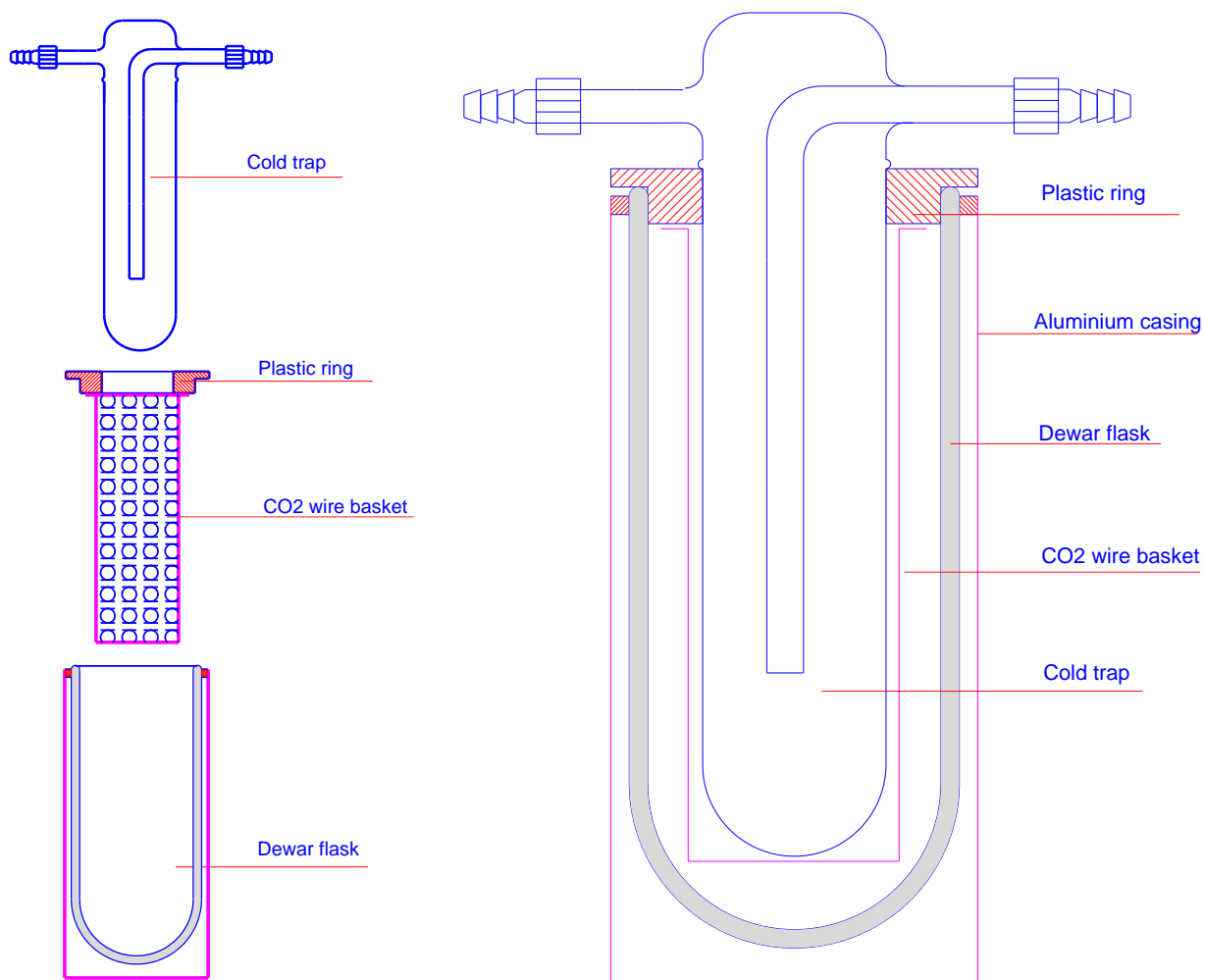
Clips for conical joints made of nichrome wire

Tapered joints	Art.No.
NS 14/23	17350
NS 19/26	17351
NS 29/32	17352
NS 45/40	17353



CO2 wire basket for cold traps

If dry ice (CO₂) is used as coolant, it might get difficult to exchange the glass cold trap. The CO₂ can fill up the existing space inside the Dewar flask. It is nearly impossible to replace the trap into the Dewar flask, then. Therefore we designed a wire basket for easily placing the cold trap into the already filled Dewar flask.



Order example :

Cold trap type KF 29 - GL, Art. No. 1740
with a CO₂ wire basket , Art. No. 17570

Art. No.: 1740 + 17570

CO ₂ -wire basket for	
Dewar flasks Type	Art. No.:
12 C	17570
18 C	17571

Drainer for cold traps with a tub for condensate water

To defrost cold traps safely, you can use a drainer. The frozen cold trap will be replaced from the Dewar flask into the drainer. The cold trap can defreeze in the rack safely. The water formed during defrosting through condensation on the outside of the cold trap can drain into the drainer and will be collected in the tub. The frame is useable for all KGW-Isotherm standard cold traps model series Type S29 and SL29 with a diameter of 50mm. Other sizes on request.



Supporting ring
for cold traps

Cold Traps

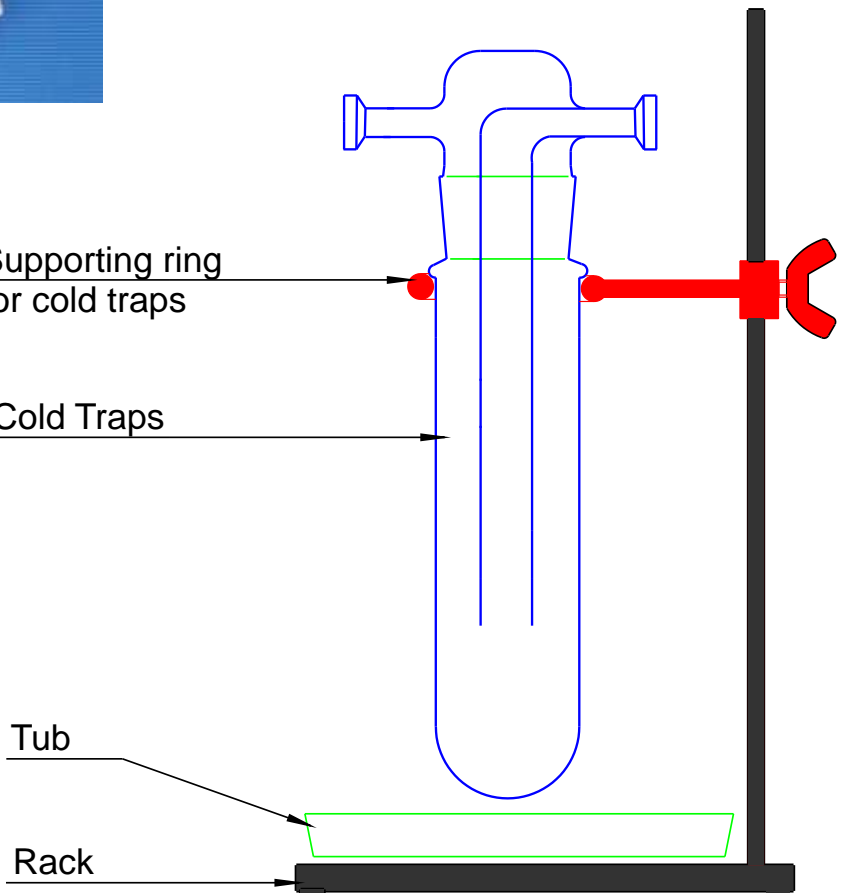
Tub

Rack

**Drainer for cold traps
consisting of:**

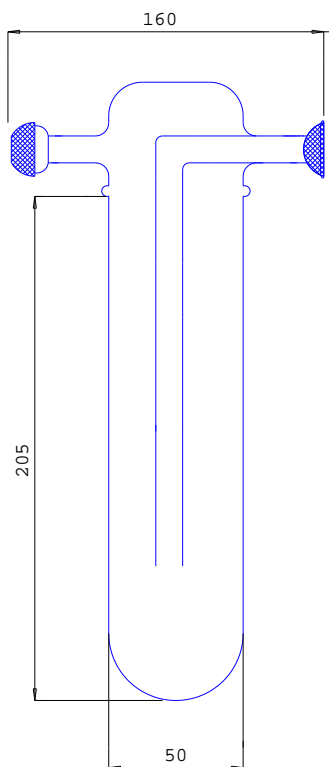
- 1) Rack (height = 400mm)
- 2) Tub
- 3) Supporting ring for cold traps

Order. No.: 17575-54

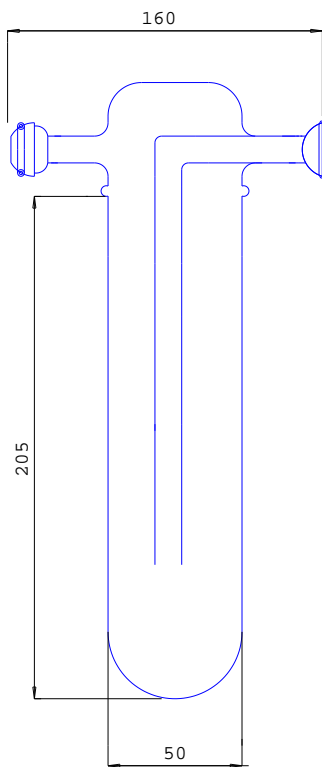


Cold Traps (cold finger condenser)

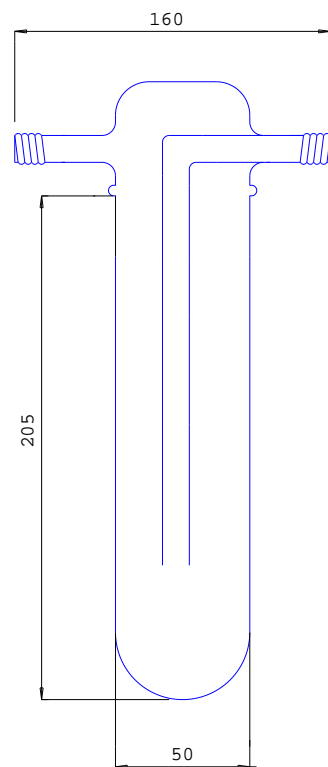
Simple cold traps, which are also known as cold finger condensers, are used in standard applications in conjunction with vacuum pumps and the condensation is forced out of the humidity or solvents used in the chemical applications. The cold trap is used to protect the vacuum pump in this case and the speciality of this type of construction is that the user does not need to use a stand to hold the cold trap. The cold trap has a rim, which is hung inside the Dewar-flask's support ring. The cold trap can be changed very quickly without any problems arising.



Cold trap S 29 with spherical joints S 29



Cold trap S 29 O with spherical joints S 29 and O-ring seal



Cold trap S 29 GL with threaded glass joint GL 18 and PTFE olive

Cold trap complete with Dewar and plastic ring	Condensate theoret.cap.	Coolant theoret.cap.	Art.No.
Type KF 29-K	150 ml	1000 ml	1731
Type KF 29-OK	150 ml	1000 ml	1735
Type KF 29-GL	150 ml	1000 ml	1740
Component parts			
Cold trap S 29	150 ml		1732
Cold trap S 29 O	150 ml		1736
Cold trap S 29 GL	150 ml		1741
Plastic ring			1733
Dewar Type 12 C			10214

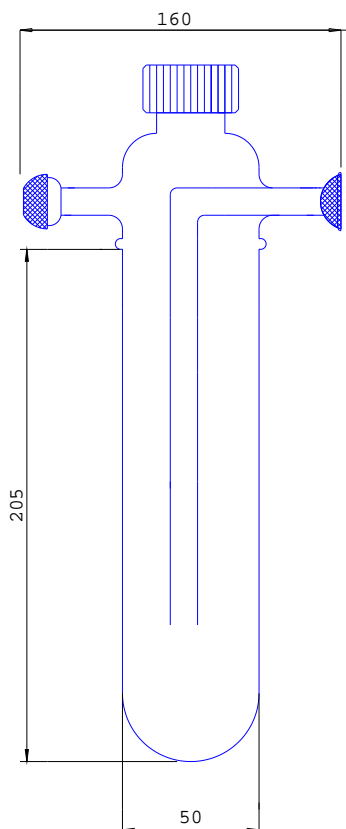
theoret. cap. = theoretical capacity



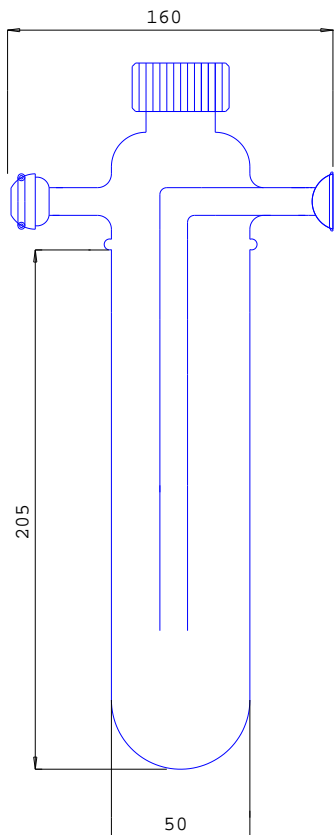
Cold trap complete Type KF 29-GL

Cold traps with a spout (cold finger condenser)

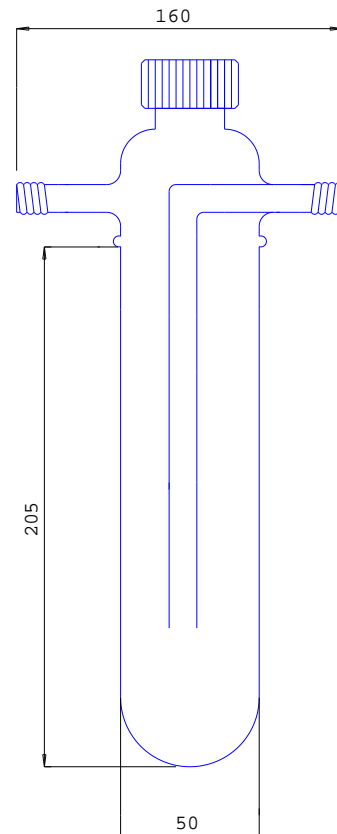
An upgraded version is a cold trap with an outlet. These cold traps are constructed in the same way as standard cold traps but have a GL 32 glass thread together with a screw-on cap, which is the actual spout. With the help of this spout the condensate can easily be poured out of the cold trap. Therefore the cold trap is easily to clean.



Cold trap S 29-A with spherical joints S 29



Cold trap S 29 O-A with spherical joints S 29 and O-ring seal



Cold trap S 29 GL-A with threaded glass joint GL 18 and PTFE olive

Cold trap complete with Dewar and plastic ring	Condensate theoret.cap.	Coolant theoret.cap.	Art.No.
Type KF 29-K-A	150 ml	1000 ml	17370
Type KF 29-OK-A	150 ml	1000 ml	17371
Type KF 29-GL-A	150 ml	1000 ml	17372
Component parts			Art.No.
Cold trap S 29-A	150 ml		17375
Cold trap S 29 O-A	150 ml		17376
Cold trap S 29 GL-A	150 ml		17377
Plastic ring			1733
Dewar Type 12 C			10214

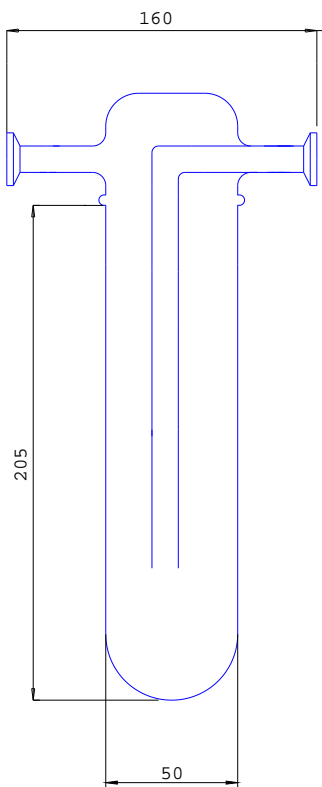
theoret. cap. = theoretical capacity



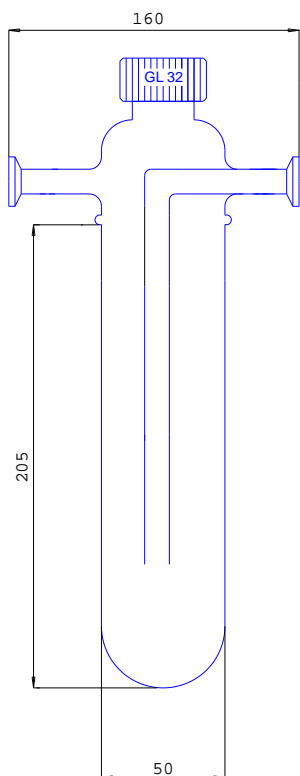
Cold trap KF 29 GL-A with Dewar and plastic ring

Cold Traps (cold finger condenser with KF NW flange)

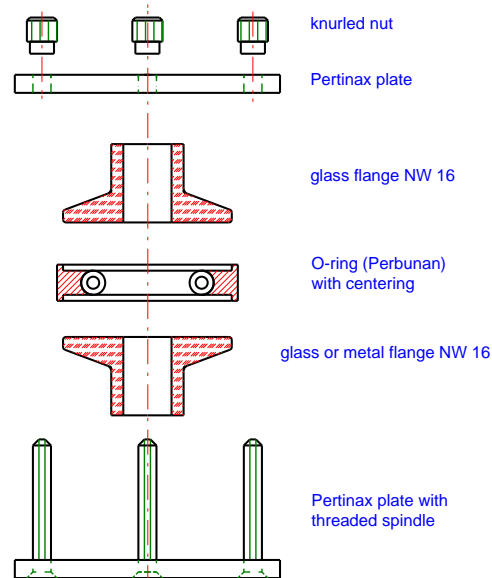
Simple cold traps, which are also known as cold finger condensers, are used in standard applications in conjunction with vacuum pumps and the condensation is forced out of the humidity or solvents used in the chemical applications. The cold trap is used to protect the vacuum pump in this case and the speciality of this type of construction is that the user does not need to use a stand to hold the cold trap. The cold trap has a rim, which is hung inside the Dewar flask's support ring. The cold trap can be changed very quickly without any problems arising. With glass vacuum flanges you are able to connect this cold trap directly to the metal flanges of a high vacuum pump.



Cold trap S 29 NW 16 or S 29 NW 25



Cold trap S 29 NW 16-A or S 29 NW 25-A



Configuration of the NW connection

Cold traps complete	Condensate	Coolant	Dewar	Cold trap	Art. No.
Type	theort.cap.	theort.cap.	Type	joints	
Typ KF 29-NW 16	150 ml	1000 ml	12 C	KF NW 16	1731-NW16
Typ KF 29-NW 25	150 ml	1000 ml	12 C	KF NW 25	1731-NW25
Typ KF 29-NW 16-A	150 ml	1000 ml	12 C	KF NW 16	17370-NW16
Typ KF 29-NW 25-A	150 ml	1000 ml	12 C	KF NW 25	17370-NW25

Cold trap	Art. No.
Cold trap S 29 - NW16	1732-NW16
Cold trap S 29 - NW25	1732-NW25
Cold trap S 29-NW16-A	17375-NW16
Cold trap S 29-NW25-A	17375-NW25

NW 16 = Vacuum flange KF NW 16
 NW 25 = Vacuum flange KF NW 25
 - A = cold trap fitted with a spout GL 32

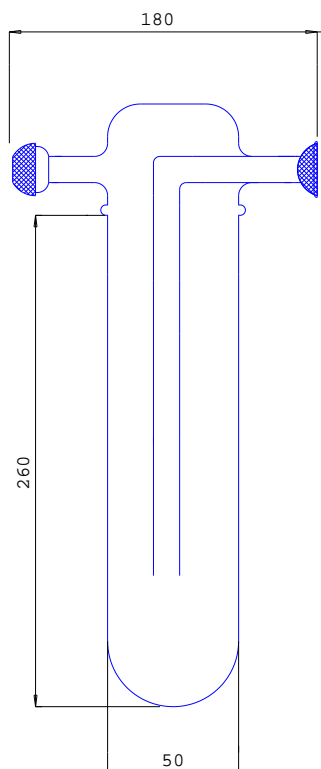


Cold trap KF 29 NW16 with Dewar and plastic ring

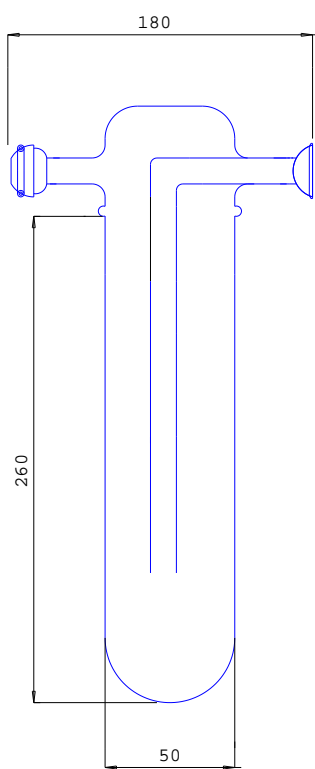
theoret. cap. = theoretical capacity

Cold traps long version (cold finger condenser)

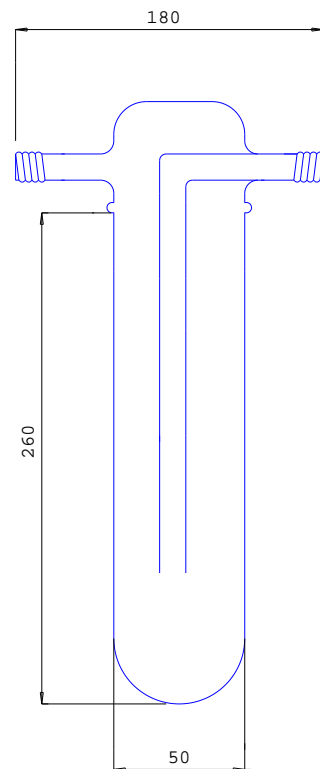
This cold traps are constructed in the same way as standard cold traps. The condensation area of cold traps has been extended in order to trap a more condensation. In addition to this, these complete cold traps also have a larger plastic ring and a bigger Dewar flask.



Cold trap SL 29 with spherical joints S 29



Cold trap SL 29 O with spherical joints S 29 and O-ring seal



Cold trap SL 29 GL with threaded glass joint GL 18 and PTFE olive

Cold trap complete with Dewar and plastic ring	Condensate theoret.cap.	Coolant theoret.cap.	Art.No.
Type KFL 29-K	250 ml	2000 ml	17360
Type KFL 29-OK	250 ml	2000 ml	17361
Type KFL 29-GL	250 ml	2000 ml	17362
Component parts			Art.No.
Cold trap SL 29	250 ml		17365
Cold trap SL 29 O	250 ml		17366
Cold trap SL 29 GL	250 ml		17367
Plastic ring L			1733-L
Dewar Type 18 C			10220

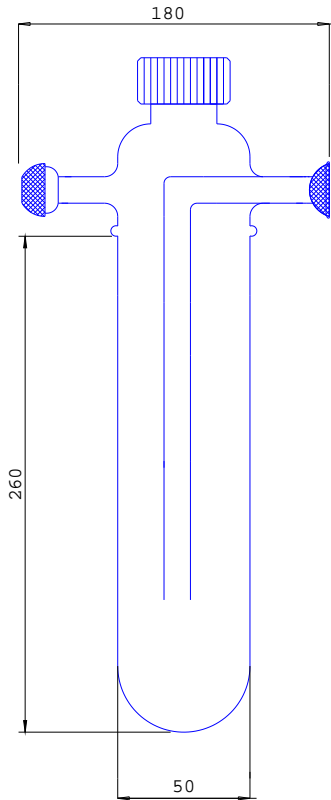
theoret. cap. = theoretical capacity



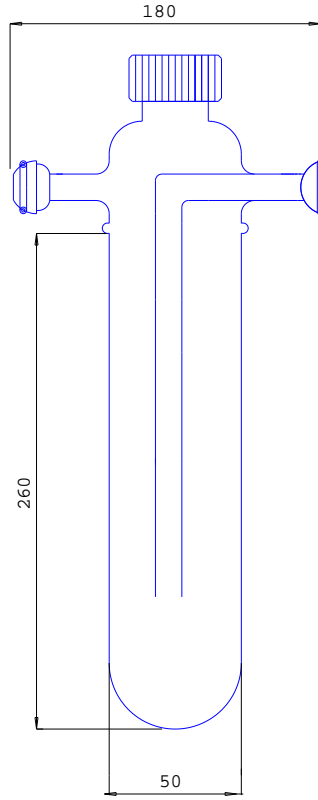
Cold trap SL 29 GL with threaded glass joint GL 18 and PTFE olive

Cold traps long version with spout (cold finger condenser)

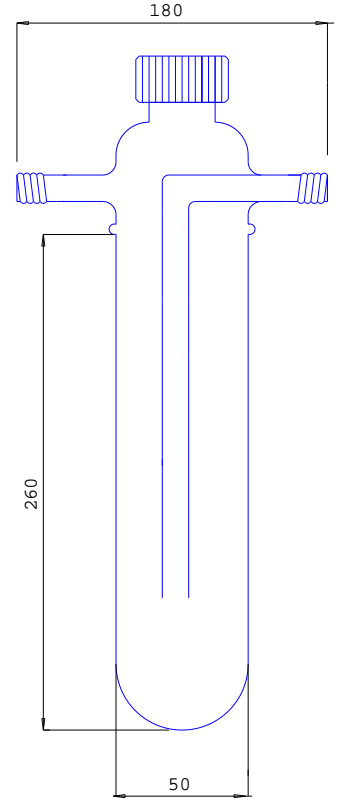
An upgraded version is a long version cold trap with an outlet spout. These cold traps are constructed in the same way as standard cold traps but have a GL 32 glass thread together with a screw-on cap, which is the actual spout. With the help of this spout the condensate can easily be poured out of the cold trap. Therefore the cold trap is easily to clean.



Cold trap SL 29-A with spherical joints S 29



Cold trap SL 29 O-A with spherical joints S 29 and O-ring seal



Cold trap SL 29 GL-A with threaded glass joint GL 18 and PTFE olive

Cold trap complete with Dewar and plastic ring	Condensate theoret.cap.	Coolant theoret.cap.	Art.No.
Type KFL 29-K-A	250 ml	2000 ml	17380
Type KFL 29-OK-A	250 ml	2000 ml	17381
Type KFL 29-GL-A	250 ml	2000 ml	17382
Component parts			Art.No.
Cold trap SL 29-A	250 ml		17385
Cold trap SL 29 O-A	250 ml		17386
Cold trap SL 29 GL-A	250 ml		17387
Plastic ring L			1733-L
Dewar Type 18 C			10220

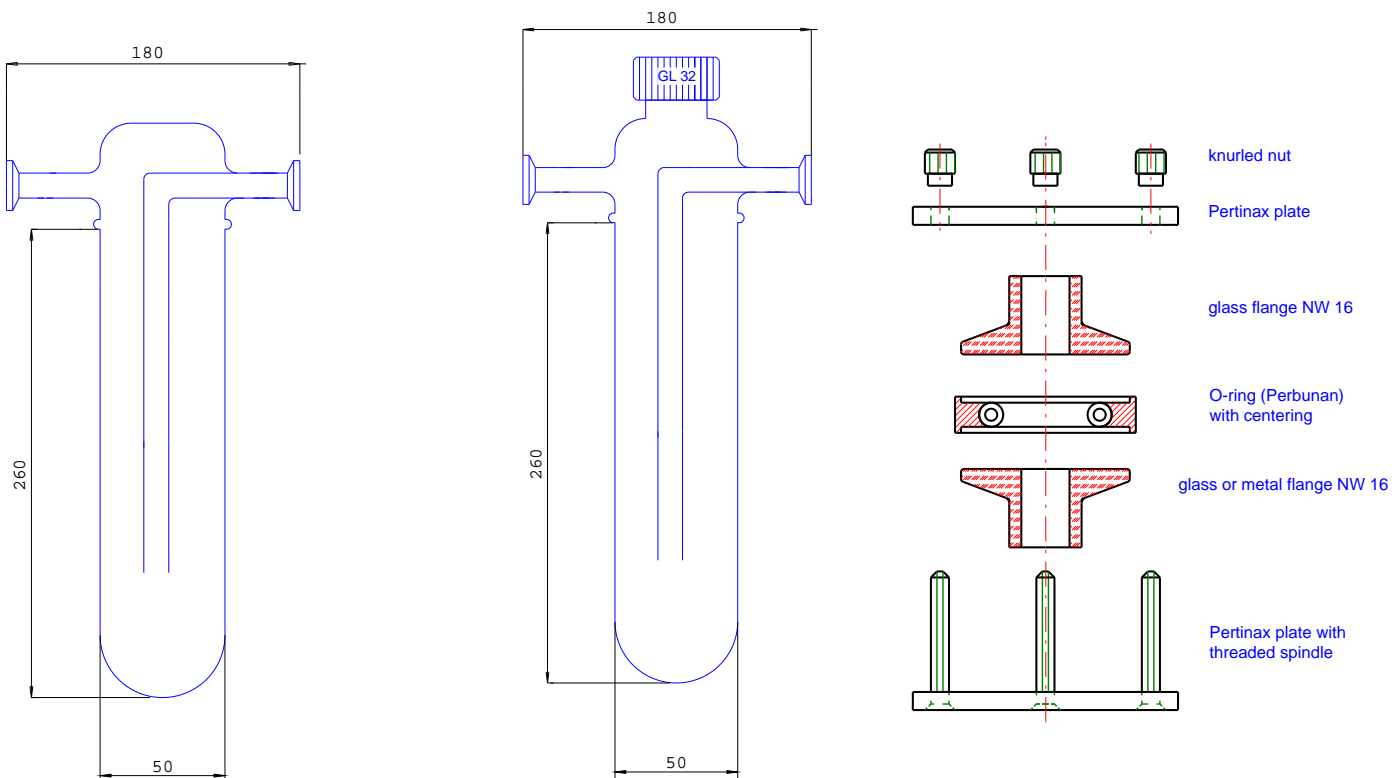
theoret. cap. = theoretical capacity



Cold trap KFL 29 - K with Dewar and plastic ring

Cold traps long version (cold finger condenser with KF NW flange)

Simple cold traps, which are also known as cold finger condensers, are used in standard applications in conjunction with vacuum pumps and the condensation is forced out of the humidity or solvents used in the chemical applications. The cold trap is used to protect the vacuum pump in this case and the speciality of this type of construction is that the user does not need to use a stand to hold the cold trap. The cold trap has a rim, which is hung inside the Dewar flask's support ring. The cold trap can be changed very quickly without any problems arising. With glass vacuum flanges you are able to connect this cold trap directly to the metal flanges of a high vacuum pump.



Cold trap SL 29 NW 16 or SL 29 NW 25

Cold trap SL 29 NW 16-A or SL 29 NW 25-A

Configuration of the NW connection

Cold traps complete	Condensate	Coolant	Dewar	Cold trap	Art. No.
Type	theort.cap.	theort.cap.	Type	joints	
Typ KFL 29-NW 16	250 ml	2000 ml	18 C	KF NW 16	17360-NW16
Typ KFL 29-NW 25	250 ml	2000 ml	18 C	KF NW 25	17360-NW25
Typ KFL 29-NW 16-A	250 ml	2000 ml	18 C	KF NW 16	17380-NW16
Typ KFL 29-NW 25-A	250 ml	2000 ml	18 C	KF NW 25	17380-NW25

Cold trap	Art. No.
Cold trap SL 29 - NW16	17365-NW16
Cold trap SL 29 - NW25	17365-NW25
Cold trap SL 29-NW16-A	17385-NW16
Cold trap SL 29-NW25-A	17385-NW25

NW 16 = Vacuum flange KF NW 16

NW 25 = Vacuum flange KF NW 25

- A = cold trap fitted with a spout GL 32

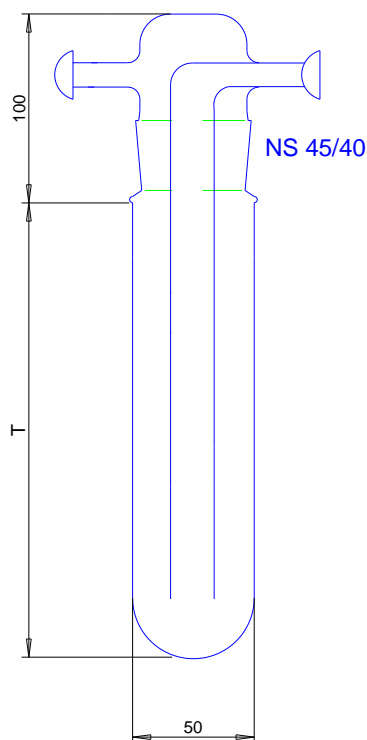
theoret. cap. = theoretical capacity



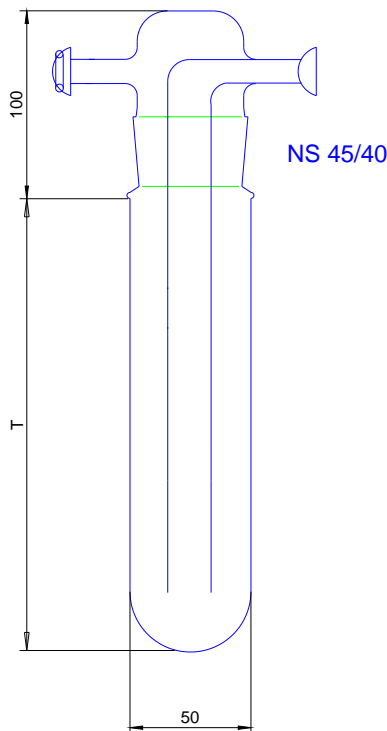
Cold trap KFL 29 NW16 with Dewar and plastic ring

Cold traps, two sections, in standard and long versions

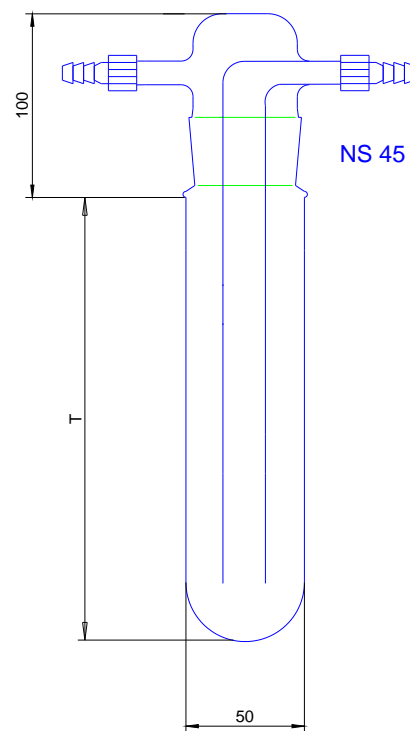
The two section cold trap is a special design available in both, standard and long version. It has a conical ground joint NS 45/40 as connection part. The condensation area can be separated from the upper section of cold trap. Therefore it is easy to pour out the condensate and to clean the whole cold trap. This version is also perfect, if the cold trap is permanently installed in an apparatus, since the upper section can stay, while the lower section is taken off for cleaning. The connection part NS 45/40 is secured by a spring clamp out of steel that is included in the scope of delivery.



Cold trap S 29-Z with spherical joints S 29



Cold trap S 29 O-Z with spherical joints S 29 and O-ring seal



Cold trap S 29 GL-Z with threaded glass joint GL 18 and PTFE olive

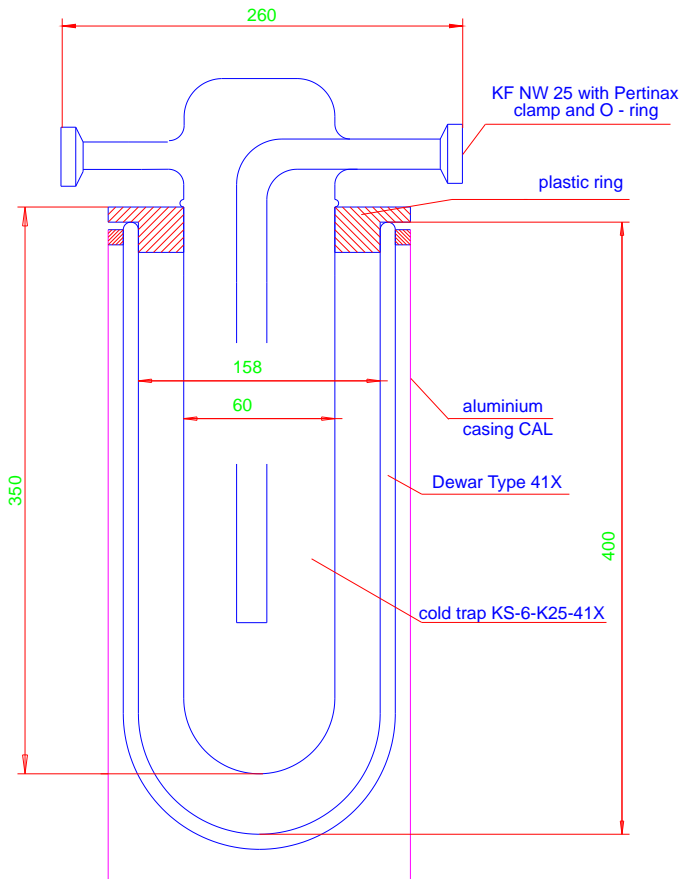
Cold traps in standard, two section with Dewar and plastic ring	length T	Condensate theoret. cap.	Coolant theoret. cap.	Art.No.
Type KF 29-K-Z	200	150 ml	1000 ml	17400
Type KF 29-OK-Z	200	150 ml	1000 ml	17401
Type KF 29-GL-Z	200	150 ml	1000 ml	17402
Component parts				
Cold trap S 29-Z	200	150 ml		17405
Cold trap S 29 O-Z	200	150 ml		17406
Cold trap S 29 GL-Z	200	150 ml		17407
Plastic ring				1733
Dewar Type 12 C				10214
Cold traps in long version, two section with Dewar and plastic ring				
Type KFL 29-K-Z	260	250 ml	2000 ml	17410
Type KFL 29-OK-Z	260	250 ml	2000 ml	17411
Type KFL 29-GL-Z	260	250 ml	2000 ml	17412
Component parts				
Cold trap SL 29-Z	260	250 ml		17415
Cold trap SL 29 O-Z	260	250 ml		17416
Cold trap SL29 GL-Z	260	250 ml		17417
Plastic ring				1733-L
Dewar Type 18 C				10220



Cold trap KF 29 GL-Z with Dewar and plastic ring

theoret. cap. = theoretical capacity

Bigger cold traps, produced to customer's specifications



Custom-made glass cold trap Type KFS-6-K25-41X

a cold trap KS6-K25-41X
a dewar flask Type 41X (CAL)
a plastic ring

Technical data

Cold trap

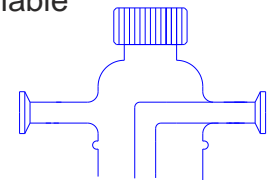
calculated condensate capacity: 0,6 litre at maximum
realistic condensate capacity: 0,3 litre

Dewar flask

maximum capacity of coolant: 5,2 litres

Option

Special cold traps available
with spout



Custom-made glass cold trap, Type KFS-8-G25-41X

a cold trap KS-8-G25-44X
a dewar flask Type 41X (CAL)
a plastic ring

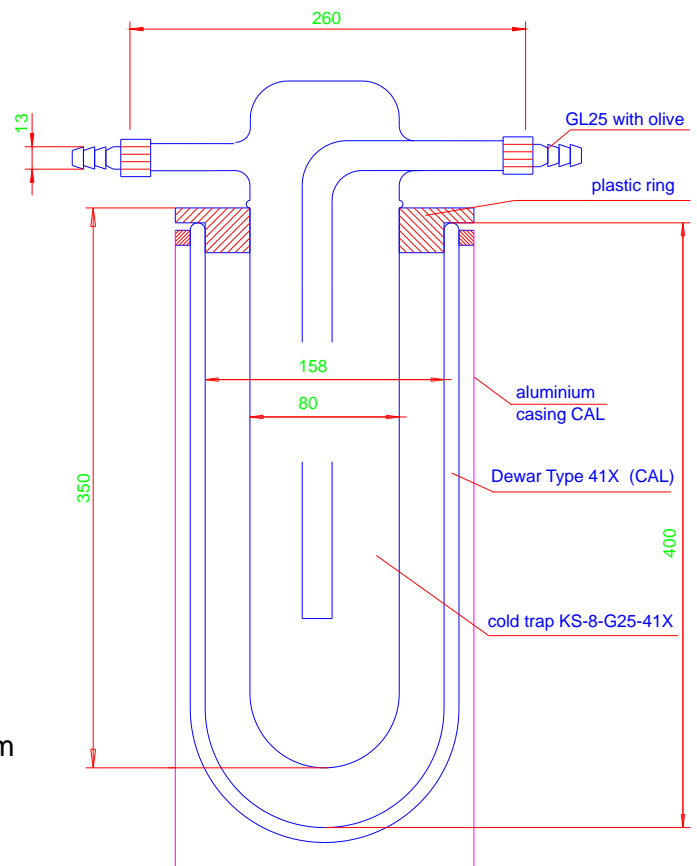
Technical data

Cold trap

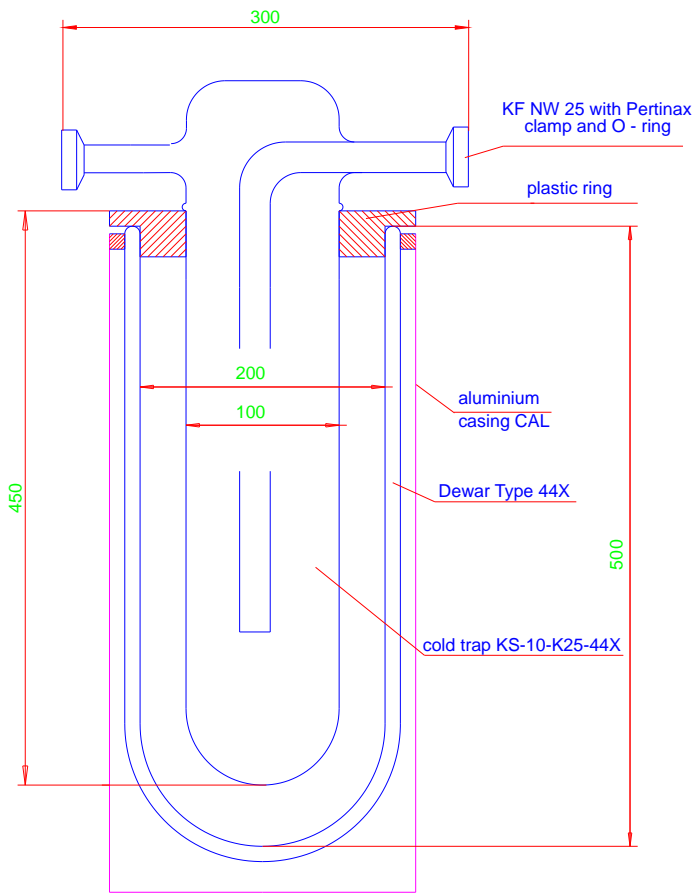
calculated condensate capacity: 1,2 litre at maximum
realistic condensate capacity: 0,6 litre

Dewar flask

maximum capacity of coolant: 4,6 litres



Bigger cold traps, produced to customer's specifications



Custom-made glass cold trap Type KFS-10-K25-44X

a cold trap KS-10-K25-44X
a dewar flask Type 44X (CAL)
a plastic ring

Technical data

Cold trap

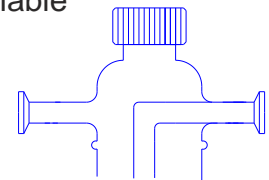
calculated condensate capacity: 2,2 litres at maximum
realistic condensate capacity: 1,1 litre

Dewar flask

maximum capacity of coolant: 8,1 litres

Option

Special cold traps available
with spout



Custom-made glass cold trap Type KFS-13-K25-44X

a cold trap KS-13-K25-44X
a dewar flask Type 44X (CAL)
a plastic ring

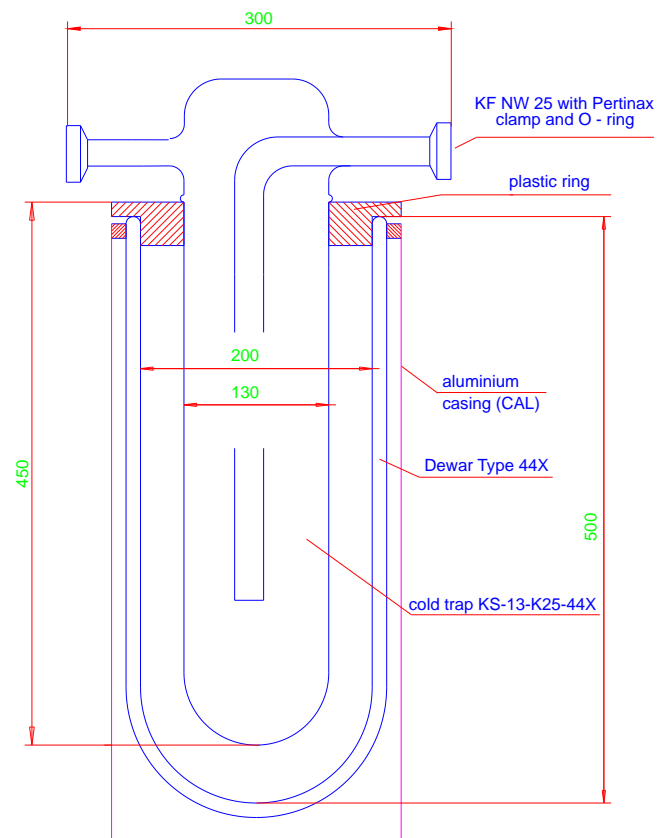
Technical data

Cold trap

calculated condensate capacity: 3,8 litres at maximum
realistic condensate capacity: 1,9 litre

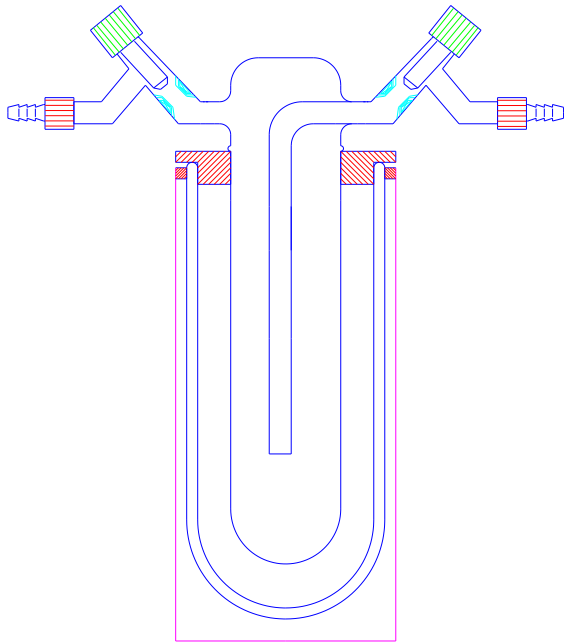
Dewar flask

maximum capacity of coolant: 6,5 litres

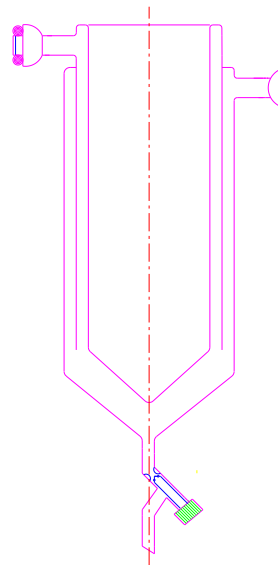


Cold traps, produced to customer's specifications

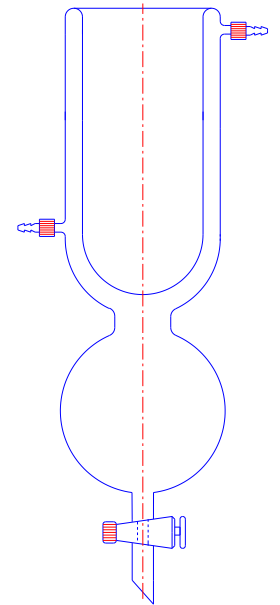
The speciality of cold trap out of glass is the available number of versions, that offers a multitude of design options, by taken the mechanical and thermal stresses into consideration. KGW-ISOTHERM is specialised in manufacturing cold traps according to customer's specifications. Please send us a simple hand drawing, or your specifications and we are going to make a proposal together with a drawing.



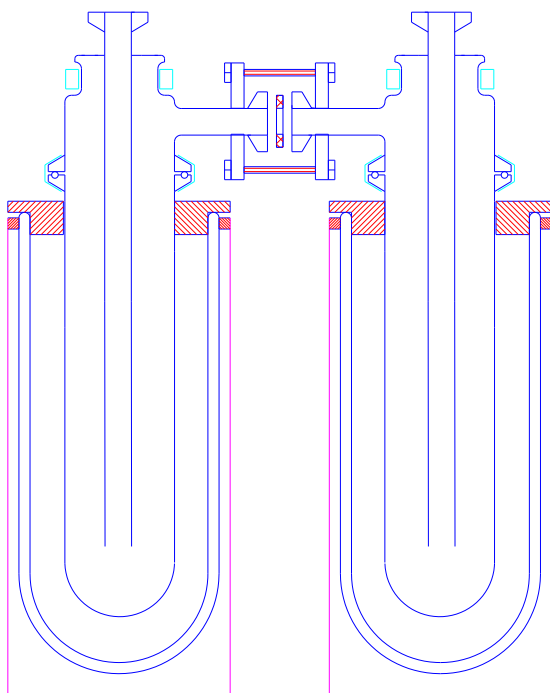
Type 1



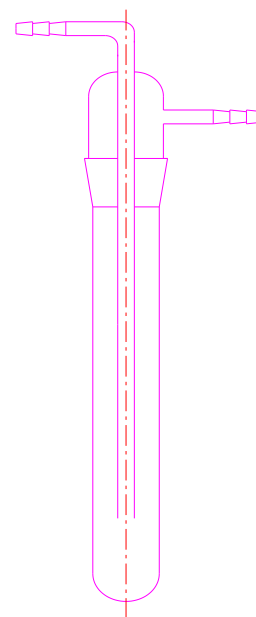
Type 2



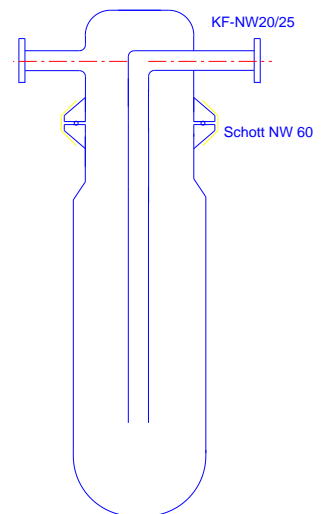
Type 3



Type 4



Type 5



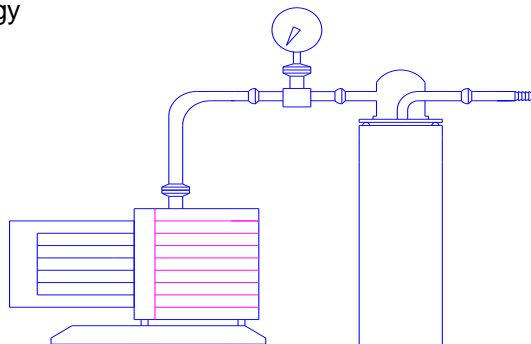
Type 6

Cold traps made of stainless steel Type KF54V with Dewar flask

Area of application

For condensing water, solvents or gases in connection with a vacuum pump

- laboratory technology
- medical technology
- biotechnology
- vacuum technology



Characteristics

- reliable and easy handling
- no stand material for holding the cold trap necessary
- Dewar flasks according to DIN 12492
- protective casing of Dewar flask made of blue coated metal, aluminum stucco or stainless steel
- for liquid cooling agents, e.g. LN₂
- for solid cooling agents CO₂ with solvent (CO₂-wire basket necessary)
- pressure-free cooling sphere inside the Dewar flask



Cold trap with Dewar flask
Type KF54V-K16-Z-18C



Cold trap with Dewar flask
Type KF54V-K16-Z-DSS2000

Description of the Dewar flasks

Dewar flask Type 18 C

(DURAN) Borosilicate glass 3.3 ISO 3585 (DURAN)
pressure-free coolant sphere inside the Dewar flask

Dewar flask Type DSS 2000

stainless steel
pressure-free coolant sphere inside the Dewar flask

Plastic ring = PE, white, two-parted

Description of the cold trap

connectors of the cold trap = KF NW 16
cold trap two-parted with KF NW 50

Cold trap material

V2A / 1.4301

Pressure range of the cold trap

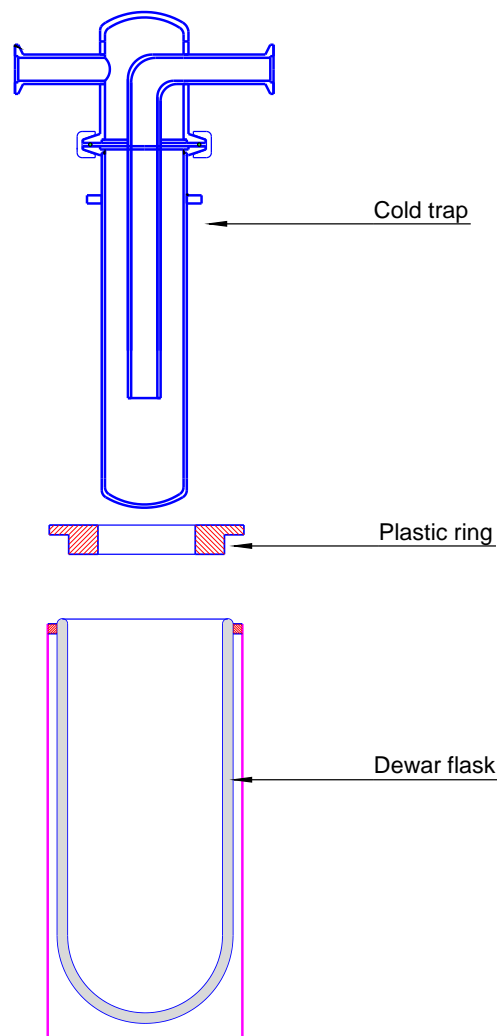
up to 3 bar excess pressure
vacuum up to 10⁻⁶ mbar

Technical data sheet for cold traps made of stainless steel Type KF54V with Dewar flask

Safety advises and regulations

- always wear protective glasses and protective gloves
- national regulations for laboratories
- company-internal regulations
- safety regulations for handling with liquid gases
- pressure calculation according to "AD Merkblätter"

Cold trap Type S 54V-K16



Technical and order data for cold traps

Cold traps complete	Condensate	Coolant	Dewar	Cold trap	Art. No.
Type	theoret. cap.	theoret. cap.	Type	joints	
Type KF 54V-K16-Z-18C	200 ml	1,6 Liter	18 C	KF NW 16	17110
Type KF 54V-K16-Z-DSS2000	200 ml	1,2 Liter	DSS 2000	KF NW 16	17111

Spare parts	Art. No.
Cold trap S 54V-K16-Z	17115
Dewar made of glass Type 18 C	10220
Plastic ring, two-parted for Type 18 C	17116
Dewar made of stainless steel Type DSS 2000	2103
Plastic ring, two-parted for Type DSS 2000	17117

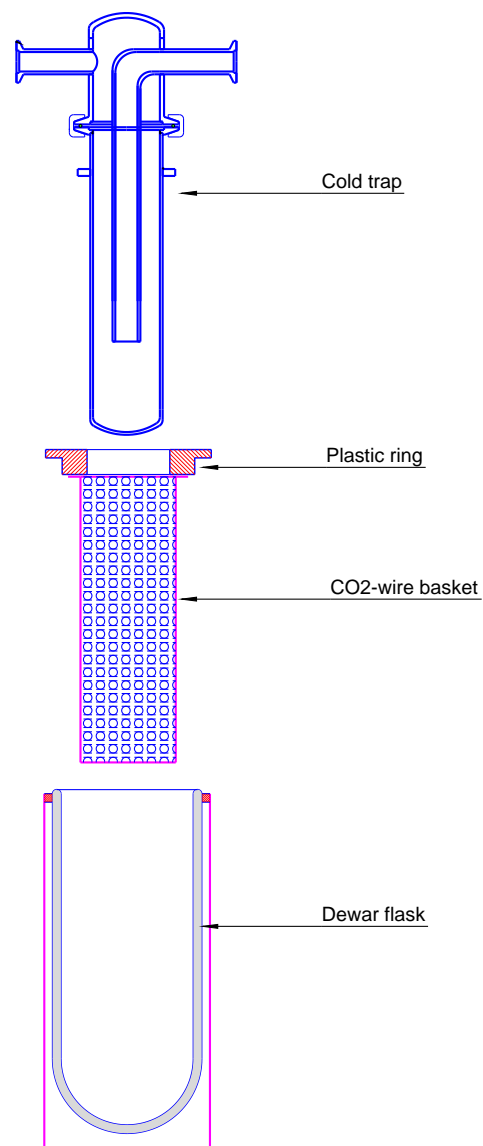
theoret. cap. = theoretical capacity

cold trap two-parted



Technical data sheet for cold traps made of stainless steel Type KF54V with Dewar flask

Dewar with CO2-wire basket and plastic ring



Cold traps complete with CO2 wire basket	Condensate	Coolant	Dewar	Cold trap	Art. No.
Type	theoret.cap.	theoret.cap.	Type	joints	
Type KF 54V-K16-Z-18C-CO2	200 ml	1,6 Liter	18 C	KF NW 16	17130
Type KF 54V-K16-Z-DSS2000-CO2	200 ml	1,2 Liter	DSS 2000	KF NW 16	17131

Spare parts	Art. No.
Cold trap S 54V-K16-Z	17115
Dewar made of glass Type 18 C	10220
Plastic ring, two-parted for Type 18 C with wire basket	17120
Dewar made of stainless steel Type DSS 2000	2103
Plastic ring, two-parted for Type DSS 2000 with wire basket	17121

CO2-wire basket with plastic ring (two-parted)



theoret. cap. = theoretical capacity

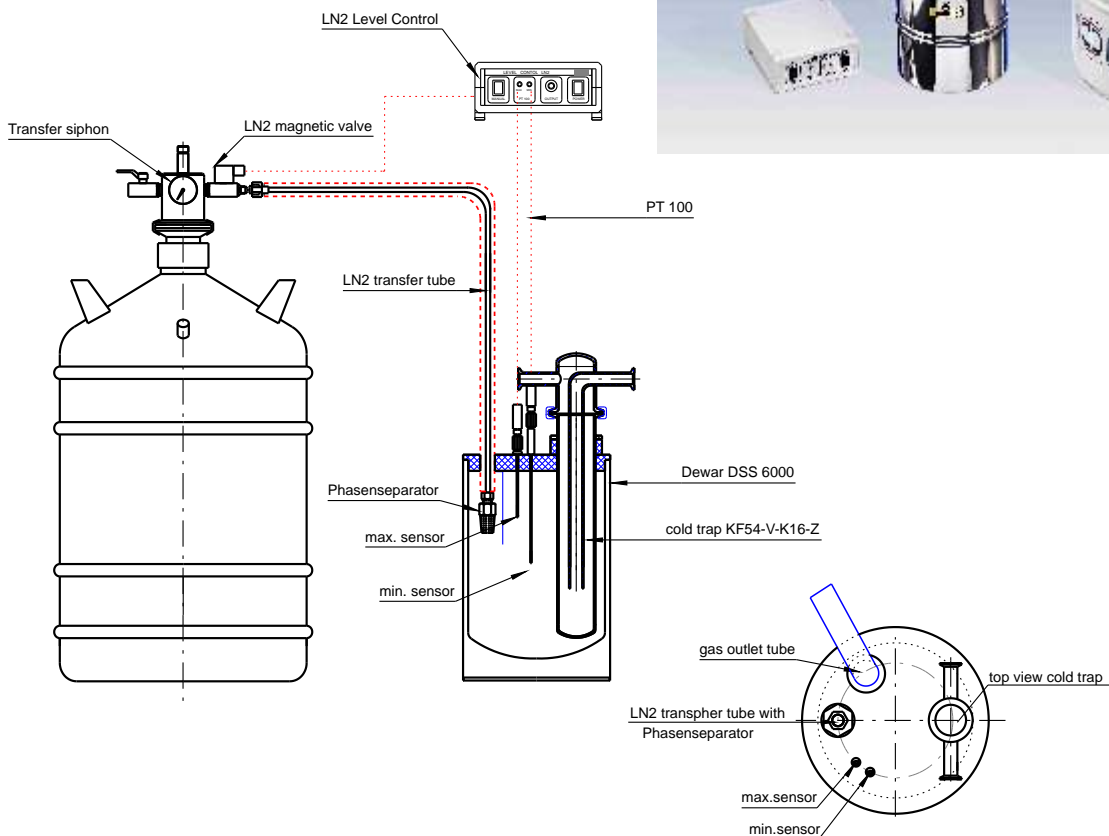
Automatic LN2 filling system with a cold trap KF54-V-K16-Z

consisting of:

- 1) LN2 Aluminium vessel with 35 Litre volume.
- 2) Transfer siphon with safety valve and LN2 magnetic valve.
- 3) LN2 transfer tube with phase separator and insulating.
- 4) LN2 level controller with cable and two PT100 sensors, metal covered.
- 5) Dewar vessel made of stainless steel DSS 6000.
- 6) Lid with screw connections and distance ring for cold trap.
- 7) Cold trap type KF54-V-K16-Z.
- 8) Gas outlet tube made of glass, vacuum insulated.

Best. Nr.: 2750-35

More volume and components available on request.



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.

Automatic LN2 filling system with a glass cold trap

consisting of:

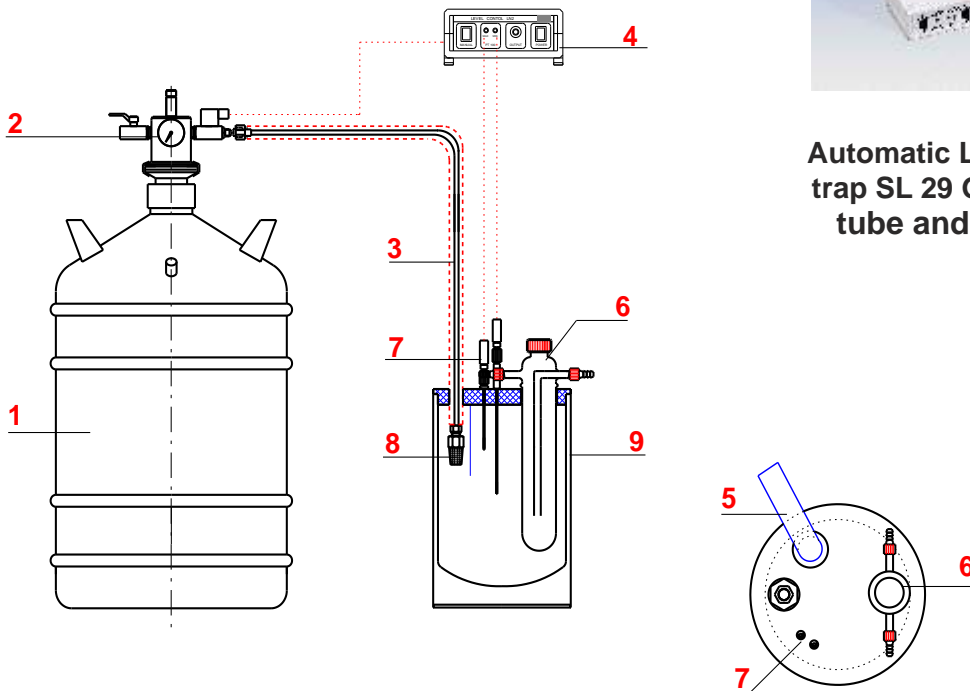
- 1) LN2 Aluminium vessel with 35 Litre volume.
- 2) Transfer siphon with safety valve and LN2 magnetic valve.
- 3) LN2 transfer tube with phase separator and insulating.
- 4) LN2 level controller with cable and two PT100 sensors, metal covered.
- 5) Dewar vessel made of stainless steel DSS 6000.
- 6) Lid with screw connections and distance ring for cold trap.
- 7) Cold trap type SL 29 GL-A.
- 8) Gas outlet tube made of glass, vacuum insulated.

Best. Nr.: 2755-25

More volume and components available on request.



Automatic LN2 - level control with a glass cold trap SL 29 GL-A, Dewar flask, lid, gas outlet tube and LN2 store vessel with 25 litre.
Art.No. 2755-25



- 1) LN2 Storage container
- 2) Siphon with magnetic valve
- 3) Transfer line
- 4) LN2 level control
- 5) Exhausting pipe
- 6) Cold tap
- 7) Min. max. sensor
- 8) Phase separator
- 9) Dewar flask

To secure the condensation performance of a cold trap, it is important to maintain a nearly constant LN2 liquid level inside the Dewar flask. With help of a constant LN2 level the entire condensate freeze wall of the cold trap will gain the function and the maximum useable capacity of the cold trap.

The LN2 level can be adjusted with the LN2 level control between a minimum and maximum sensor and will be able to hold the LN2 level constant.

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.

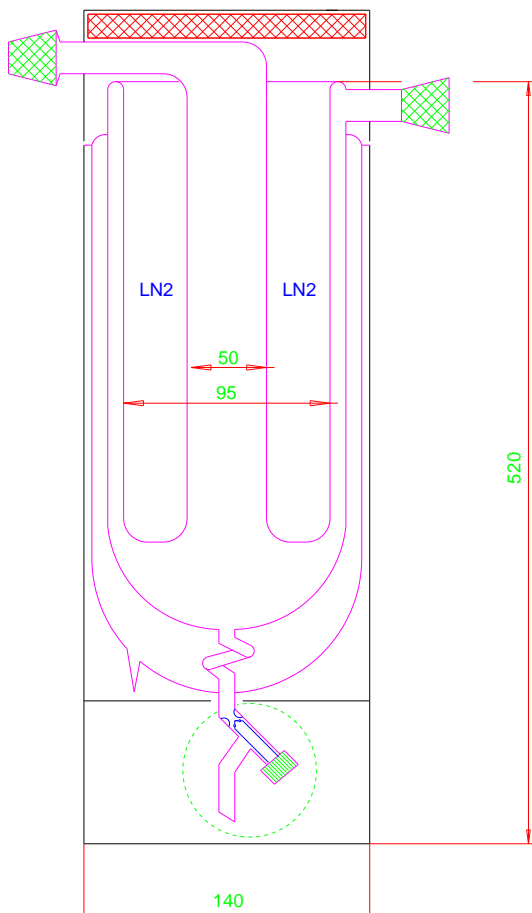
Cold traps with fused Dewar flask

A GKF cold trap is a complete version in which the Dewar flask is bonded to the cold trap. Because of its design, this version has got two free walls for condensation. It is therefore particularly suited for trapping a high level of condensate from humidity, or solvents. This cold trap is equipped with a valve for draining off the condensate. It has got viewing strips as standard so that the LN2 coolant level can easily be monitored. The standard cold trap is provided with conical ground joint connections NS 29/32.

Connections on request:

- screw connections GL25 with 13 mm PTFE olives, type GKF-GL25 (part no. 1702-GL25)
- vacuum flanges KF NW25 with clamp and NBR-O ring, type GKF-NW25 (part no. 1702-NW25)
- spherical ground joints S29, type GKF-S29 (part no. 1702-S29)

Cold trap type GKF



Construction details

- Two LN2 condensation walls
- Integrated Dewar flask
- Viewing stripes for observing the LN2 level
- Condensate outlet with O-ring seal
- Protective casing out of aluminium
- Standard joints NS 29/32
- Supplied with a lid
- On request vacuum flange, spherical joints or glass threads with olive.

Technical data

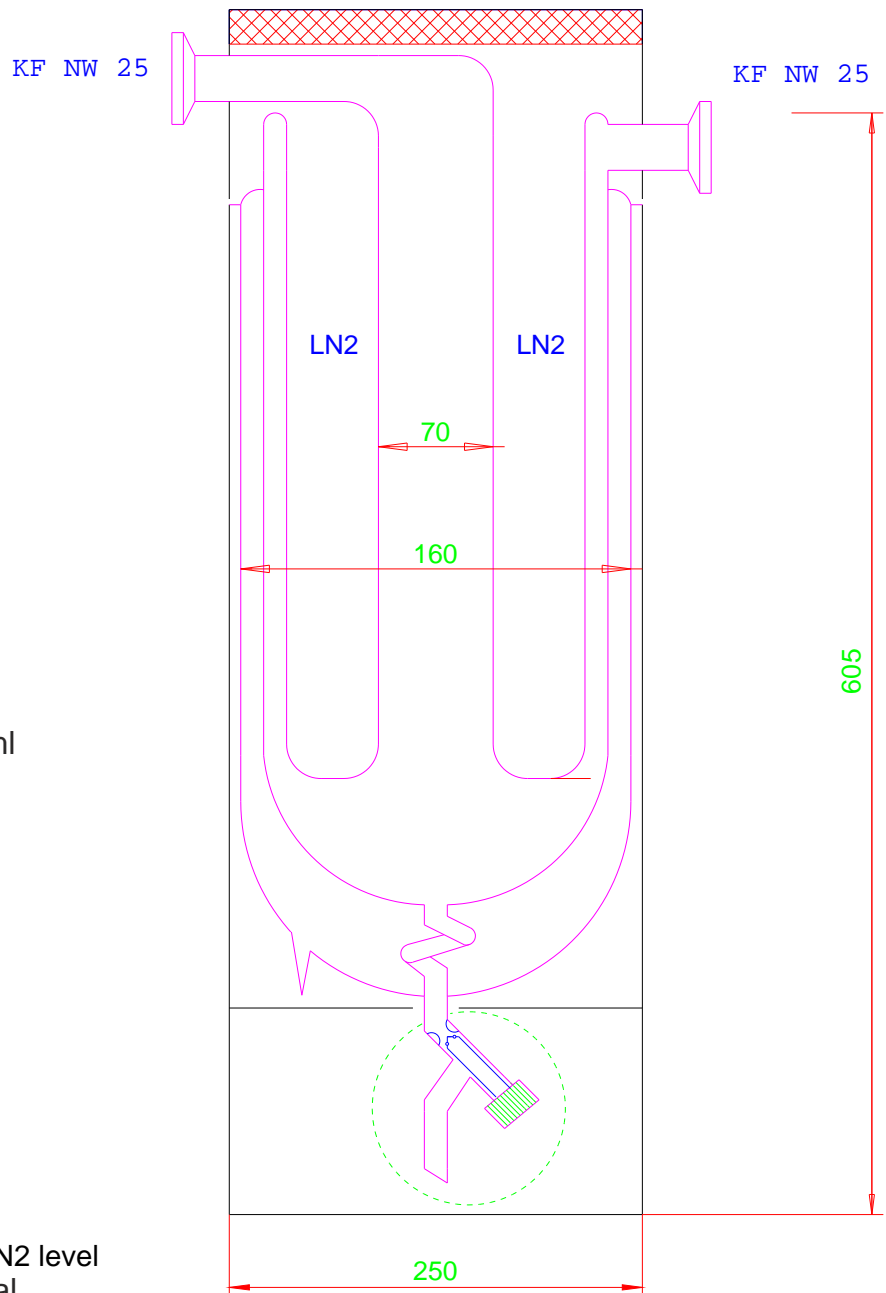
- Ground joint NS 29/32 (cone) to the pump
- Ground joint NS 29/32 (socket) to the plant
- Coolant capacity approx. 1 Litre
- Theoret. condensate capacity 250ml

Art. No. 1702

Cold traps with fused Dewar-flask

This type of cold trap is constructed in the same way as the GKF model and is also a complete version that has a Dewar flask bonded to the cold trap. Because of its design, this version has got two free walls for condensation. It is therefore particularly suited for trapping a high level of condensate from humidity, or solvents. This cold trap is equipped with a valve for draining off the condensate. It has got viewing strips as standard so that the LN2 coolant level can easily be monitored. The standard cold trap is provided with vacuum flanges KF NW 20/25 inclusive Pertinax clamps and O-ring with centering.

Cold trap type GKF-10



Technical data

- Joint to pump is KF NW 25 vacuum flange
- Joint to plant is KF NW 25 vacuum flange
- Coolant capacity approx. 4,2 Litre
- Theoret. condensate capacity 550ml

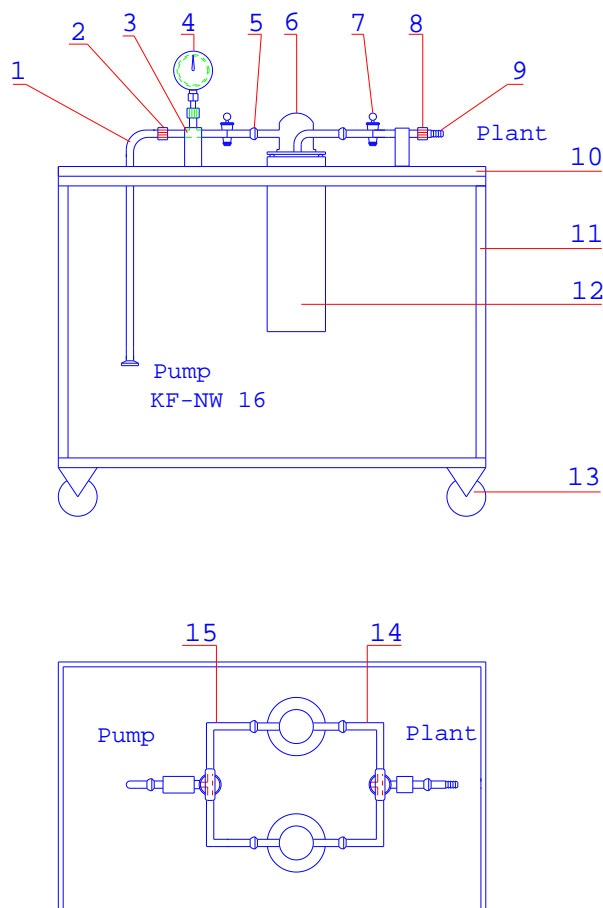
Art. No. 1702-G

Construction details

- Two LN2 condensation walls
- Integrated Dewar flask
- Viewing stripes for observing the LN2 level
- Condensate outlet with O-ring seal
- Protective casing out of aluminium
- Standard KF NW 25 vacuum flange
- Supplied with two Pertinax clamps, two O-ring with centering and a lid

CP 1 and CP 2 pump stands with two cold traps

The CP1 and CP 2 pump stands are movable chemical pump stands with two S29-OK cold traps and associated special Dewar flasks, which enables the cold traps to be used in alternate as well as in parallel operation. Turning the 3-way stopcock through its three positions enables the left one to be switched in first and then right one afterwards or both cold traps can operate in parallel. The pump stand's carriage is made from aluminium with plastic plates used as table supports. Model CP 1 has got an additional vacuum flange NW 16 with a vacuum gauge. Model CP 2 does not have any vacuum display. A vacuum pump is not included in the scope of delivery for both models, as standard.



Component parts

- 1) Vacuum tube with pump flange KF-NW16
- 2) Glass screw GL18 with PTFE olive and screw-on cap
- 3) Holding device
- 4) Vacuum gauge (CP1)
- 5) Glass pipe with spherical joint and 3-way stopcock
- 6) Cold trap with Rotulex joints and holding device
- 7) 3-way stopcock out of glass for switching cold traps
- 8) Glass screw GL 18 with plastic screw on cap
- 9) PTFE olive for GL 18
- 10) PE-table plate
- 11) Aluminium rack
- 12) Dewar flasks 12CAL-S (17071)
- 13) Four lockable guide rolls
- 14) Glass pipe with 3-way stopcock for plant
- 15) Glass pipe with 3-way stopcock for pump

**Type CP 1 with vacuum gauge (Nr.4)
Art. No. 1707**

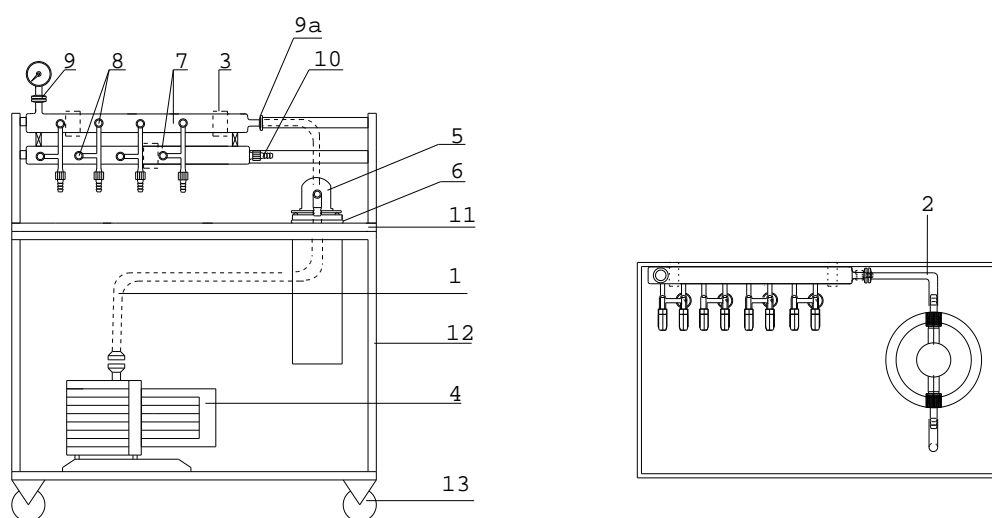
**Typ CP 2 without vacuum gauge (Nr.4)
Art. No. 1708**

Chemistry pump device GP3 with cold trap and pump fork with aeration

Type GP3 is a mobile chemistry pump stand with a cold trap and a pump fork with a separate aeration cell.

The pump fork has four independently switched vacuum valves and additionally four independently switched aeration valves, so that every sample holder can get individually evacuated or aerated. Through this type of assembling, every sample holder can get disconnected or aerated separately without affecting the vacuum of the other sample holders.

Type GP3 has a small flange KF-NW 16 with vacuum manometer. Instead of the vacuum manometer you can also connect an electronic vacuum gauge. The pump stand will be delivered as standard without suitable vacuum pump.



Component parts

- 1) Rubber hose with small flange KF-NW 16
- 2) Rubber hose for 10mm-olives
- 3) Pump-fork support
- 4) Vacuum pump (not included in scope of delivery)
- 5) Cold trap type KFL 29-GL (SP)
- 6) Bulge on Dewar flask's casing
- 7) Pump fork with aeration cell
- 8) 6mm-Produran valve with O-ring seal and GL18-glass screw thread with 10mm-PTFE-olive
- 9) Vacuum flange with manometer
- 9a) KF-NW 16 with 10mm-olive
- 10) Aeration port GL18-glass screw thread with 10mm-PTFE-olive (angled)
- 11) PE-table plate
- 12) Aluminum-rack
- 13) Four lockable guide rolls

Technical data

Dewar type 18 CAL-S with bulge (17072)
Effective capacity with cold trap: 2000ml
Condensate capacity of cold trap: 250ml at maximum

Type GP 3 with manometer

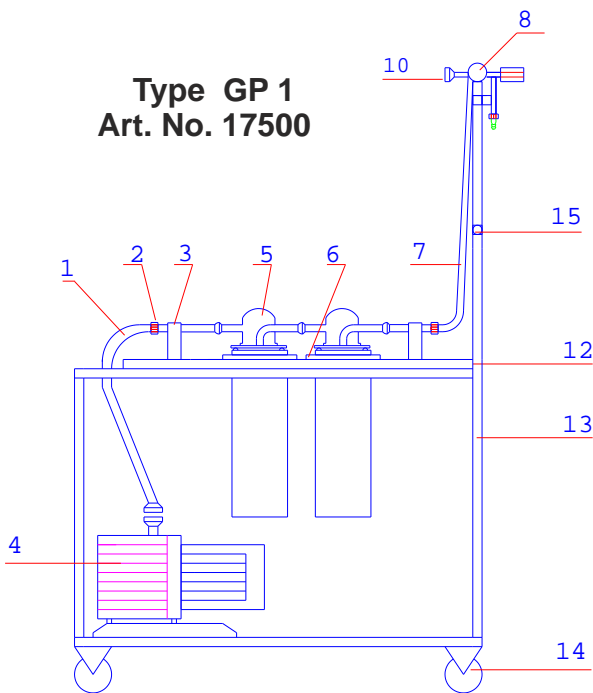
Art. No. 17530



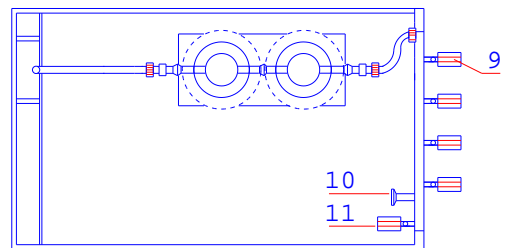
Portable pump stand with two cold traps and a pumping fork

The GP1 and GP 2 pump stands are movable chemical pump stands with two S29-OK cold traps and associated special Dewar flasks, connected in series. The mounted pump fork enables the user to choose any of the five application valves for evacuation, since all valves are working independently. The construction and the connections can be altered without any problems. The pump stand's carriage is made from aluminium with plastic plates used as table supports. Model GP 1 has got a transversally mounted pump fork. The pump fork of model GP2 is mounted longitudinally. A vacuum pump is not included in the scope of delivery for both models, as standard.

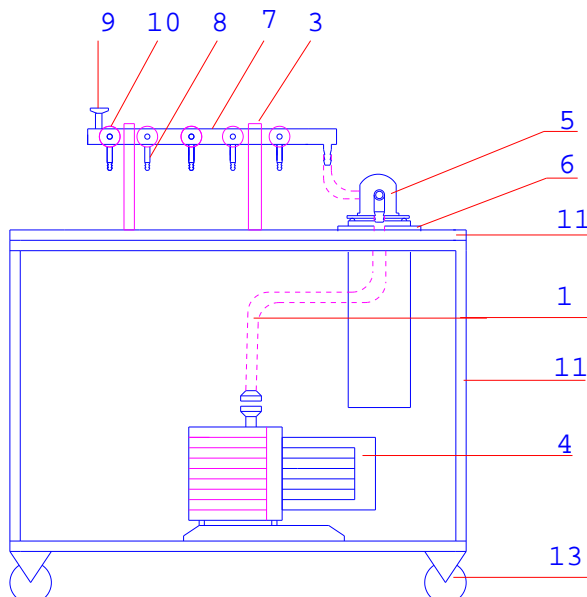
Type GP 1
Art. No. 17500



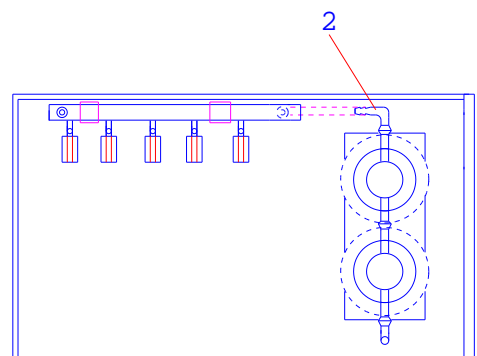
- 1) Rubber vacuum tube D.i.=8mm
- 2) GL18 - screw connection
- 3) Holding device for glass pipe
- 4) Vacuum pump
- 5) Cold trap KF 29 - OK
- 6) Plastic ring for Dewar 12-S with longitudinal shift
- 7) Rubber tube with screw connection
- 8) Pumpe fork with valves
- 9) Produran valve with O-ring seal and GL18 olive
- 10) Vacuum flange NW 16 for vacuum gauge
- 11) Aeration valve with 6mm O-ring seal and 6mm olive
- 12) PE table plate
- 13) Aluminium profil rack
- 14) Four lockable guide rolls
- 15) Aluminium profil



Type GP 2
Art. No. 17505



- 1) Rubber vacuum tube D.i.=8mm
- 2) Adapter 90° to glass olive 10-16mm
- 3) Holding device for glass pipe
- 4) Vacuum pump
- 5) Cold trap KF 29 - OK
- 6) Plastic ring for Dewar 12-S with longitudinal shift
- 7) Pump fork
- 8) Produran valve with O-ring seal and GL18 olive
- 9) Vacuum flange NW 16 for vacuum gauge
- 10) Aeration valve with 6mm O-ring seal and 6mm olive
- 11) PE table plate
- 12) Aluminium profil rack
- 13) Four lockable guide rolls



Pump stands, produced to customer's specifications

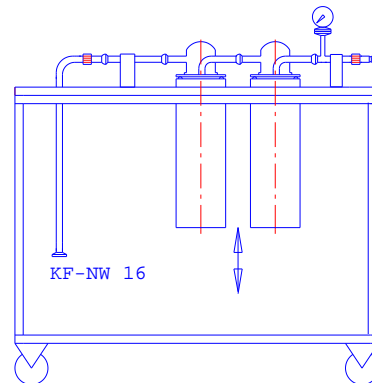
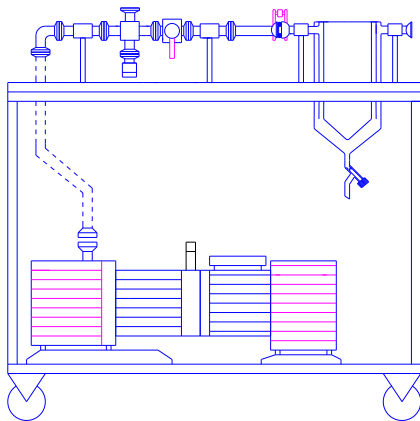
The speciality of KGW-ISOTHERM pump stands is the available number of versions, that offers a multitude of design options, by taken the mechanical and thermal stresses into consideration. KGW-ISOTHERM is specialised in manufacturing pump stands according to customer's specifications. Please send us a simple hand drawing, or your specifications and we are going to make a proposal together with a drawing. Our great depth of manufacturing options (glass forming, metal construction and sheet-metal working) enables virtually all requirements to be met without incurring great expenditure and additional costs.

Please send us a drawing or a description of the pump stand that you need and we will work out a proposal together with a drawing.

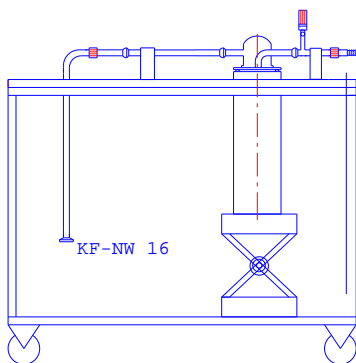
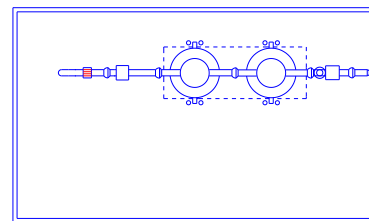
Fax: 0049 721 95897-77 or per Email info@kgw-isotherm.de

Examples

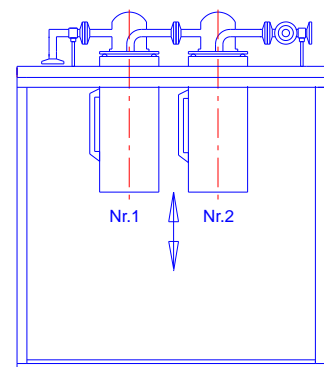
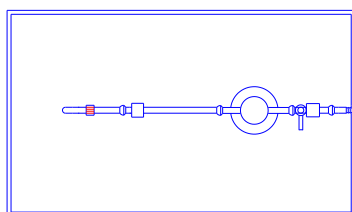
Type CP GKL 1
Art.No. 17510



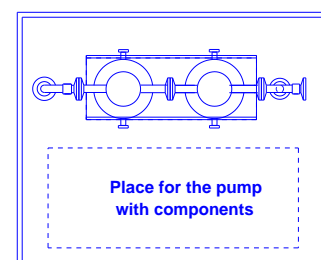
Type CP2-S3
Art.No. 17520



Type CP2-S2
Art.No. 17515



Type CP2-S5
Art.No. 17525

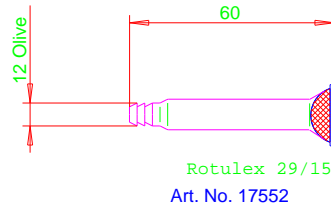
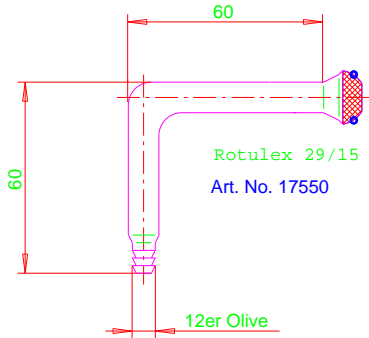


Cold trap adapters

In addition to the standard cold trap adapters offered here, KGW-ISOTHERM is able to provide you with a variety of adapter options for use as special connecting parts and there are also a wealth of connecting options that cannot be listed here. KGW -ISOTHERM specialises in producing customer specific adapters and pump forks.

Please send us a drawing or a description of the part that you need and we will work out a proposal together with a drawing.

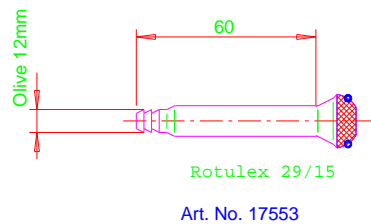
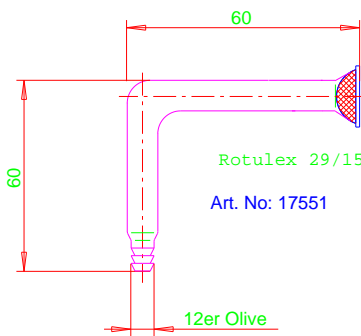
Fax: 0049 721 95897-77 or per Email info@kgw-isotherm.de



System generating program for adapter with Rotulex

- Rotulex to KF NW 16
- Rotulex to DN 15
- Rotulex to spherical joint S 29
- Rotulex to GL 18 with PTFE Olive
- Rotulex to glass Olive 6,7,8,9,oder 10mm
- Rotulex to tapered joint NS 29/32

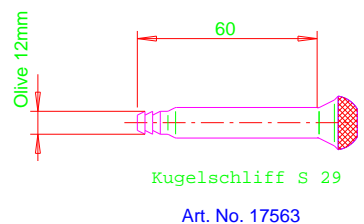
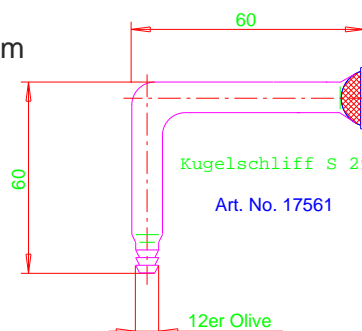
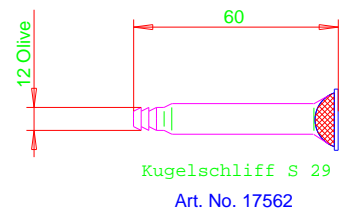
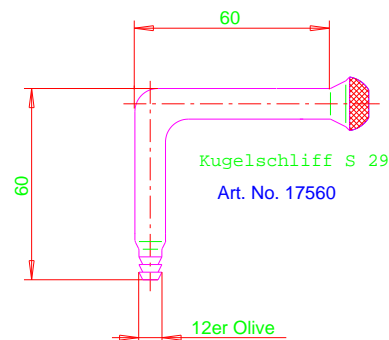
or adapter modification on customer request



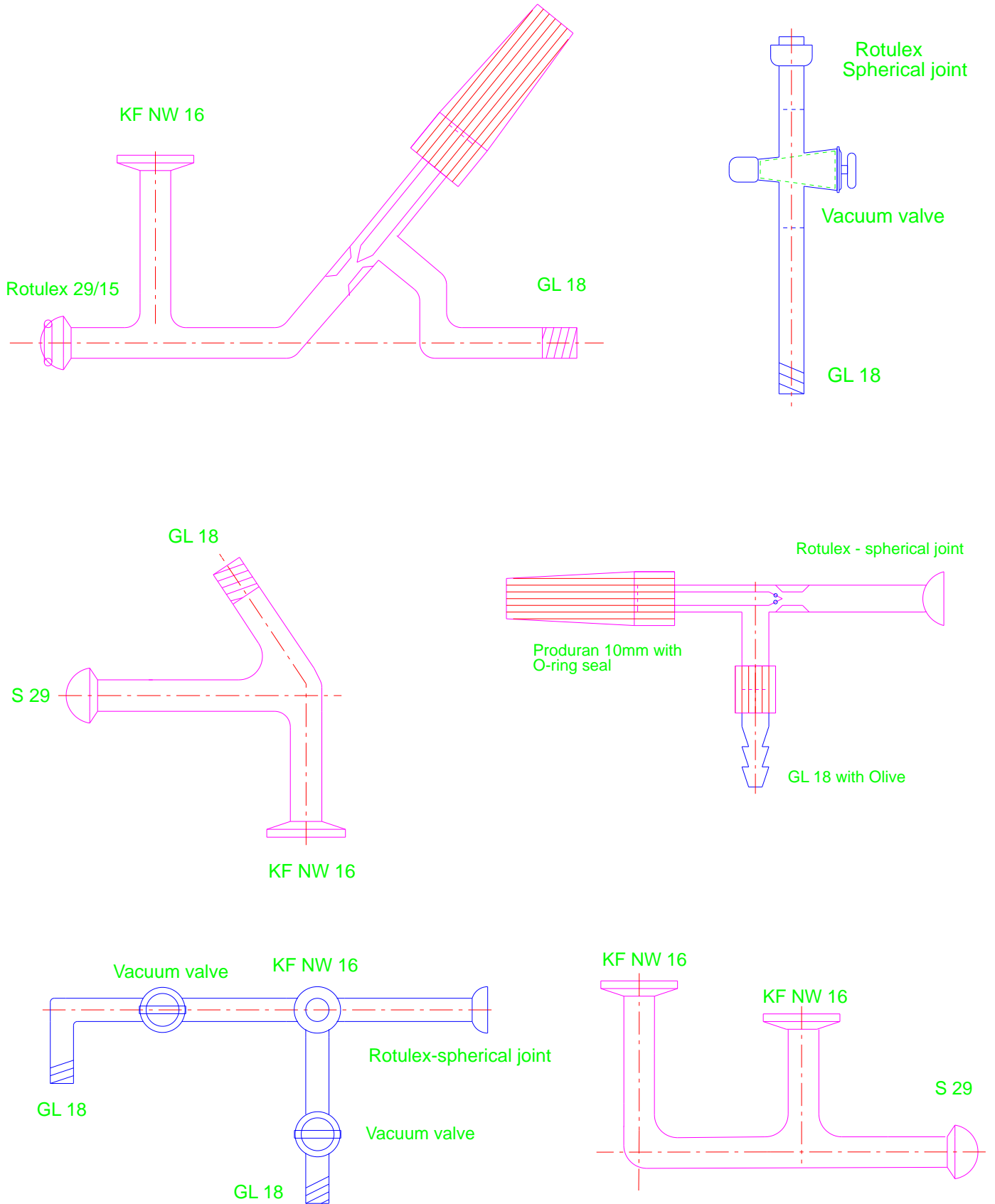
System generating program for adapter with spherical joints

- Spherical joint to KF NW 16
- Spherical joint to DN 15
- Spherical joint to GL 18 with PTFE Olive
- Spherical joint to glass Olive 6,7,8,9,oder 10mm
- Spherical joint to tapered joint NS 29/32

or adapter modification on customer's request



Example of a cold trap adapter produced in accordance with customer's specifications



Pump fork for chemical pumps

Pump forks for chemical pump stands are customer's specific accessories, the construction of which depends on the user's requirements. The user stipulates the number of drainage valves as well as the position of the vacuum-measuring flange and fumigating or ventilation valves can also be fitted. Normal 'Produran' valves made by Schott are used as valves. This valve can have an additional O-ring seal in the valve seat in order to increase the vacuum sealing. Vacuum stopcocks can also be used as an alternative to valves but sometimes the use of a sliding part between the stopcock seating and the stopcock taper plug can interfere with the vacuum stopcocks.

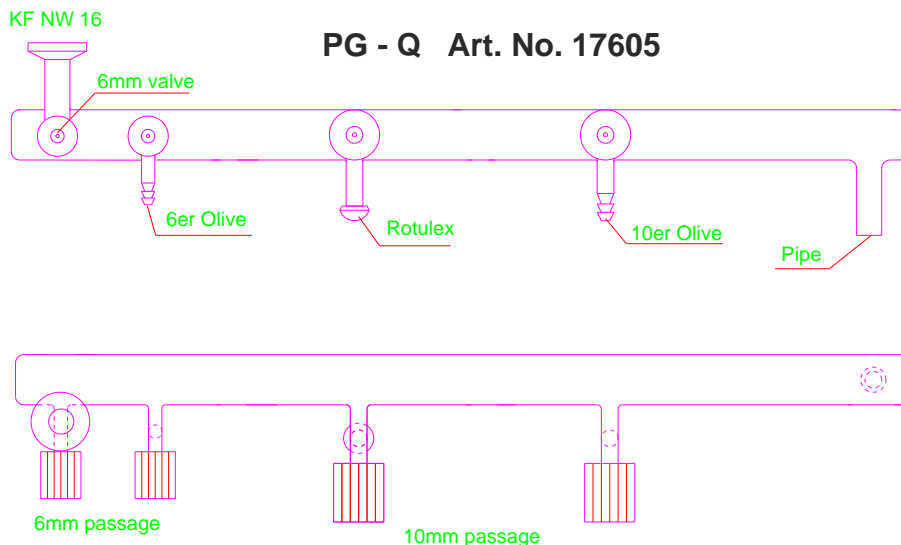
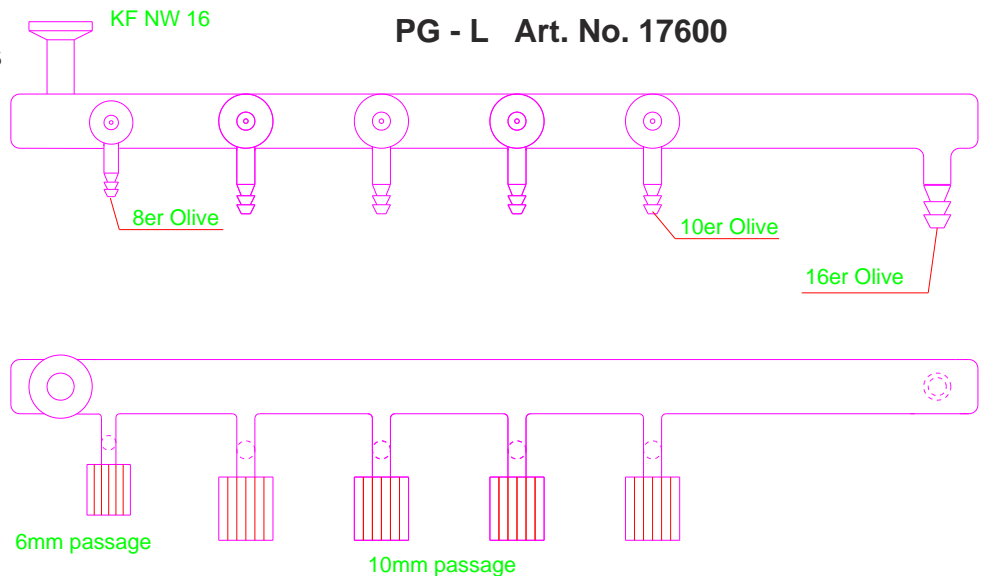
Please send us a drawing or a description of the part that you need and we will work out a proposal together with a drawing.

Fax: 0049 721 95897-77 oder per Email info@kgw-isotherm.de

Example for a pump fork

Connection components

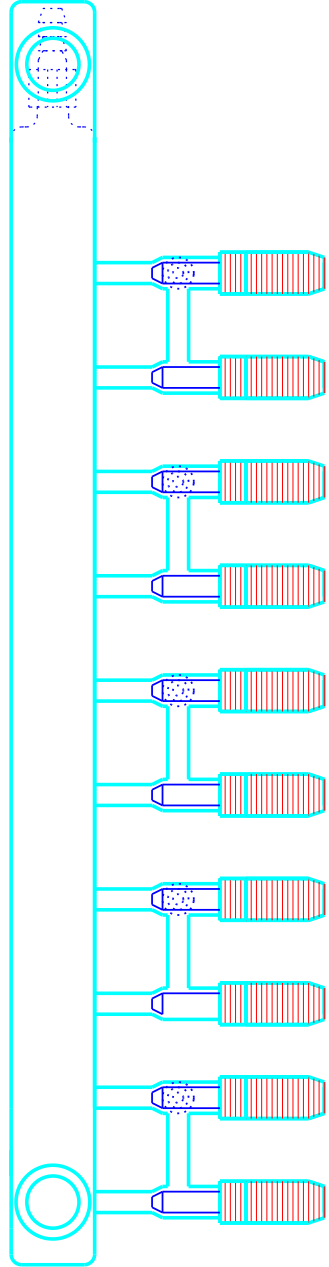
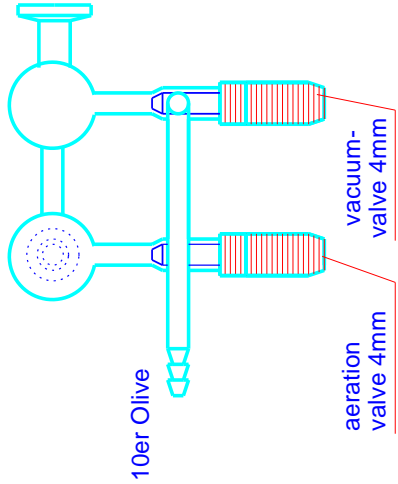
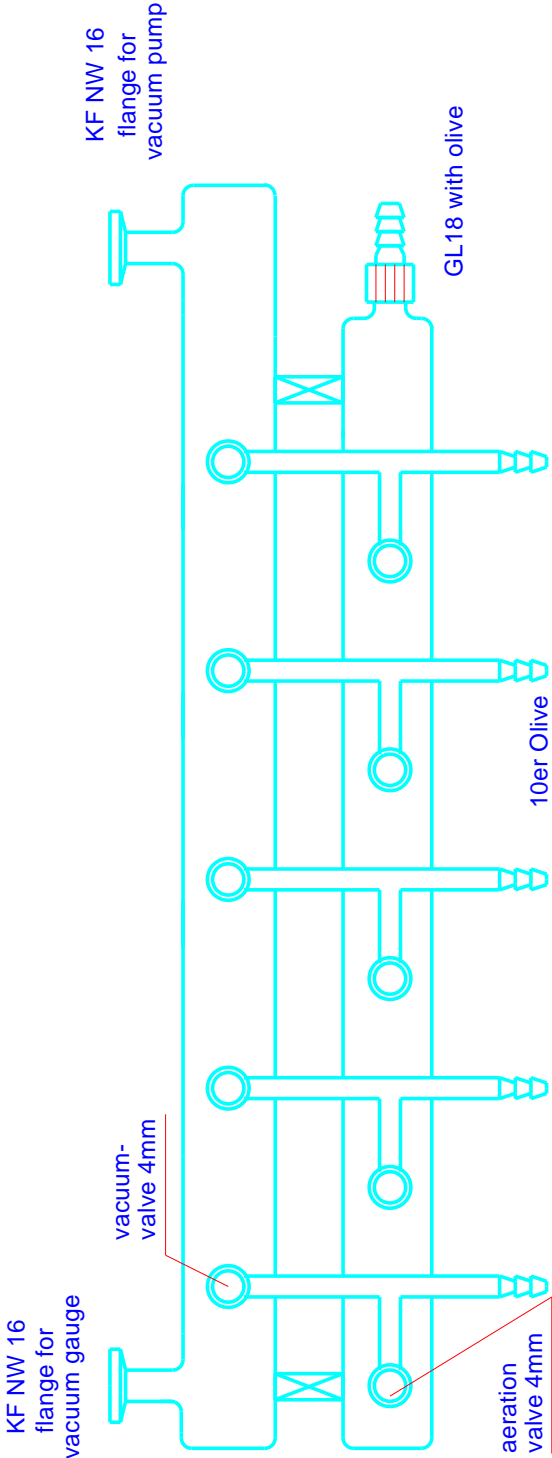
- Vacuum flange NW 16
- Spherical joints
- Rotulex - spherical joints
- Flange DN 15
- Tapered joint
- Oliven
- Glass tube



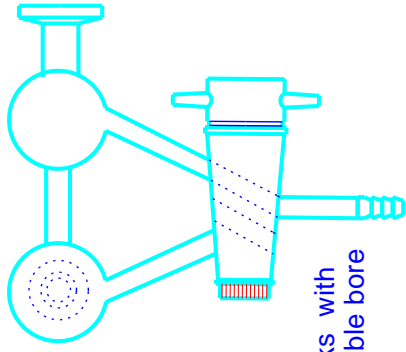
vacuum valve or vacuum stopcocks

- Produran-valve with 6 or 10mm passage
- Produran - valve with O - ring seal
- Vacuum stopcock

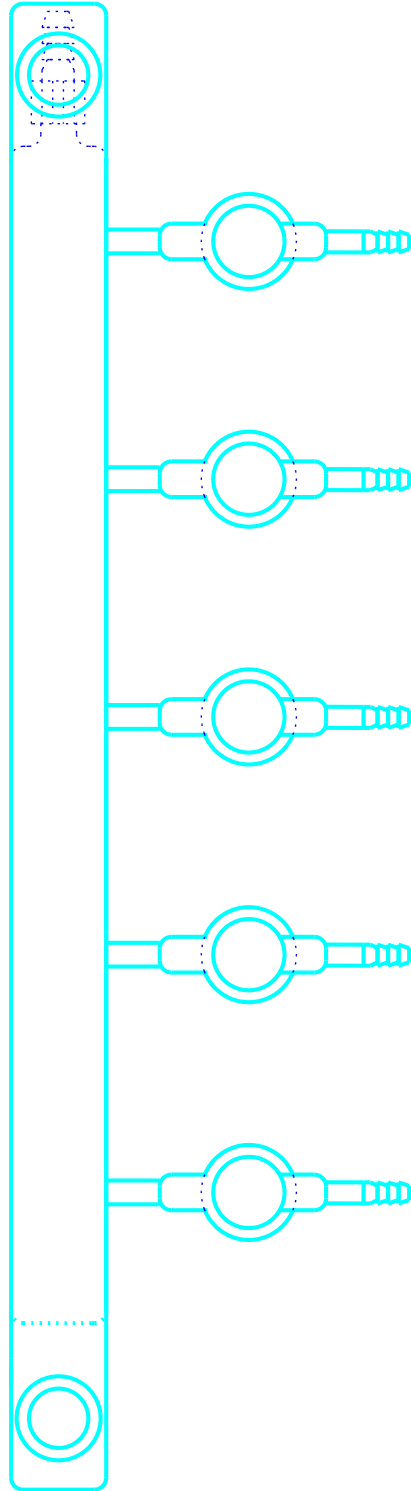
Example for a pump fork with aeration cell



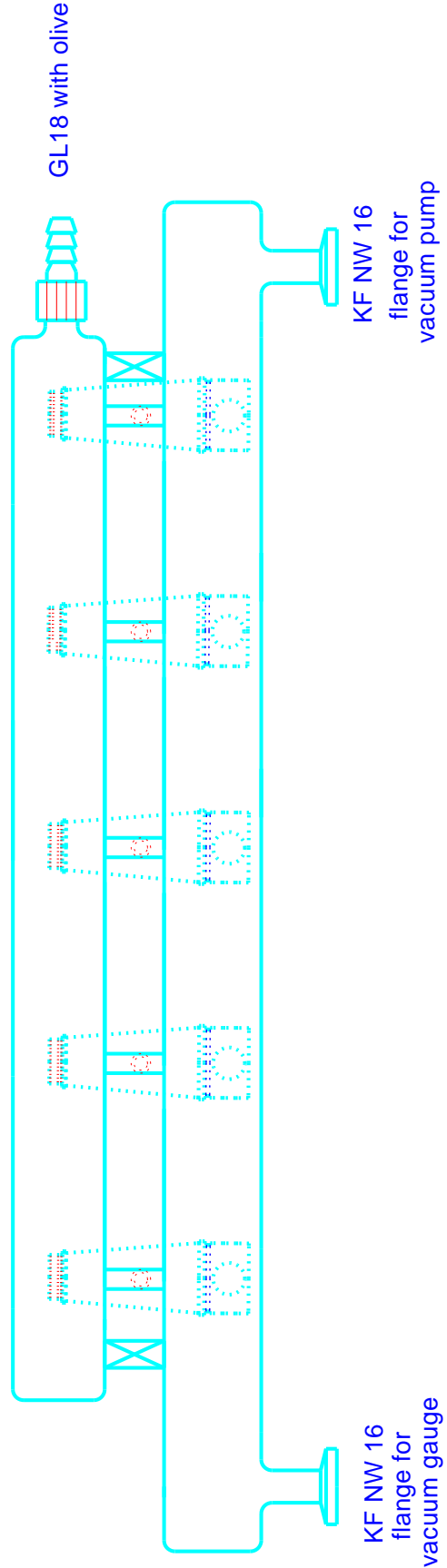
Example for a pump fork with aeration stopcocks



stopcocks with 4mm double bore



10er olive



GL18 with olive

KF NW 16 flange for vacuum pump

KF NW 16 flange for vacuum gauge

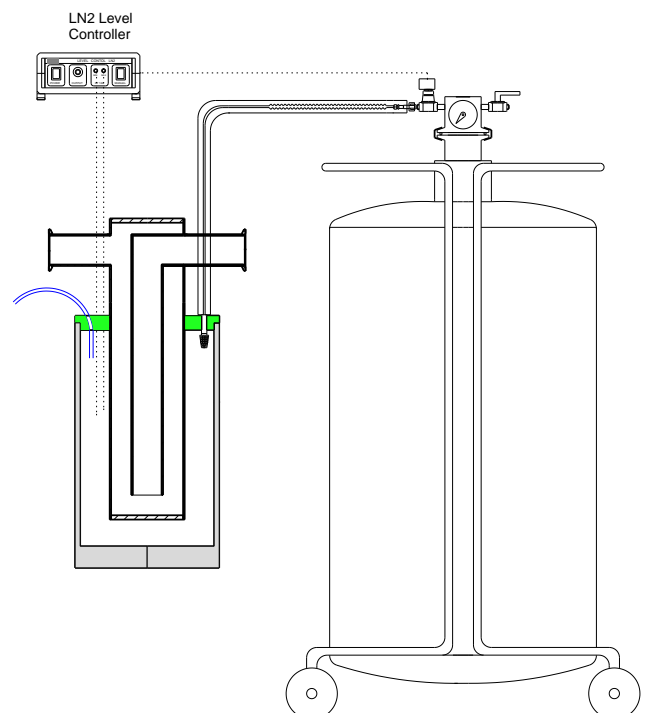
Automatic LN2 filling of cold traps

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 the minimum sensor again.



Questionnaire concerning the technical requirements of a cold trap

Please answer the questions and fax the filled out questionnaire to us. In consideration of your information we will work out an offer with a drawing and send it to you as soon as possible.

1) Condensate

- a) Condensate material
- b) Condensate temperature max.°C
- c) Amount of condensate ml

2) Kind of cold trap

- a) Cold trap with Dewar ()
- b) Cold trap (similar to type GKF) ()

3) Joints

- a) Spherical joint () Size b) Spherical joint with O-ring (Rotulex) () Size
- c) Standard ground joint () Size d) Glass olive () Size
- e) GL with plastic olive () Size f) Schott flange () Size
- g) Small size flange NW () Size h) Saddle flange DN () Size

4) Coolant

- a) Liquid nitrogen () b) Dry ice ()
- c) Other coolant ()

5) Frame

- a) Driveable pump device () b) Stationary frame ()

6) Room for notes or additional customer requirements

.....

.....

.....

.....

.....

Sender: Company

Street

Town

Contactperson

Division

Phone Fax

Please fax to KGW-ISOTHERM, your contact-person is Mr. Wolfgang Schieder.

Fax Number: 00 49 / 721 / 958 97-77