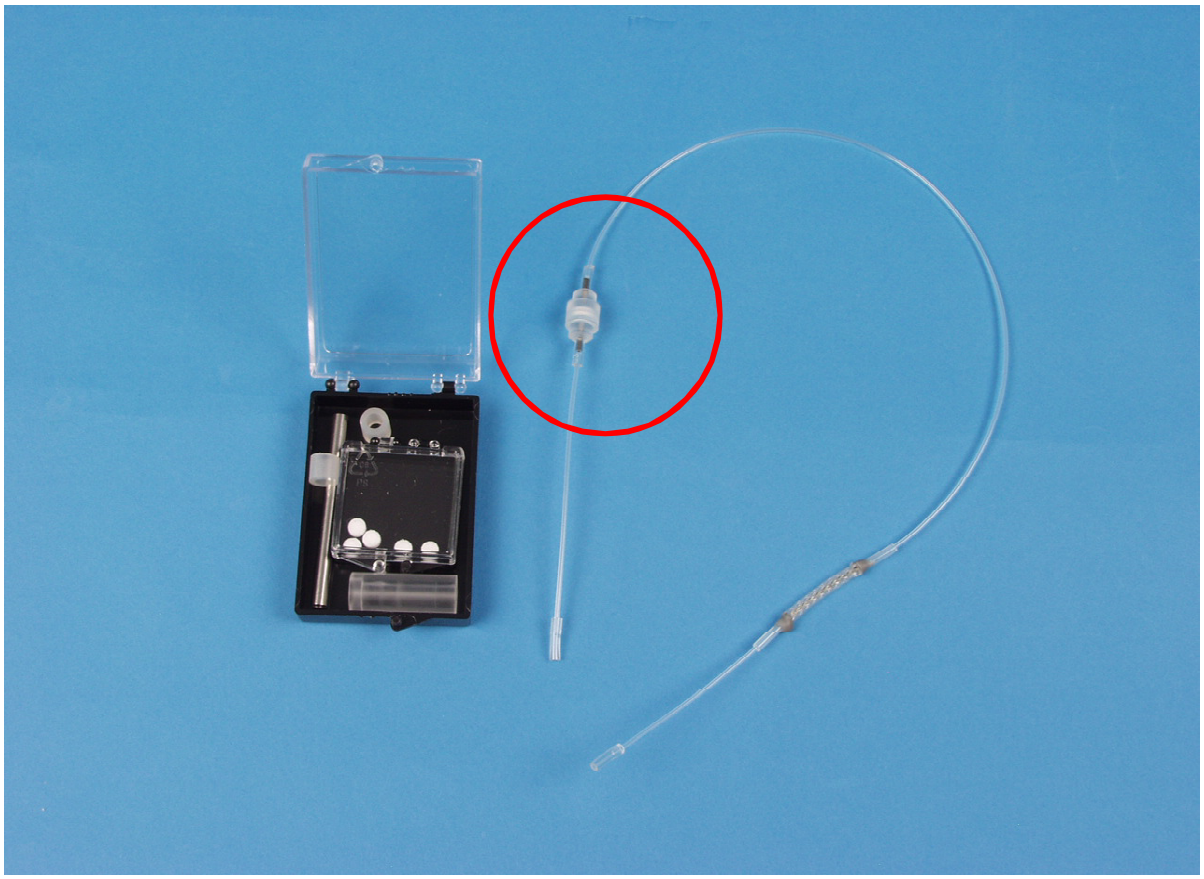
INSTRUCTIONS

FILTER ON CAPNOGRAPH INPUT TUBING

VERSION: 2.0 MAY 2017



73-4553 CO2 INLET TUBE SET FOR CAPNOGRAPH WITH FILTER AND DE-HUMIDIFIER

Filter only:
73-4554 LOW VOLUME FILTER FOR HSE CAPNOGRAPH TYPE 340

Not for human use

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Contents

1. Introduction, manufacturer's details

These Operating Instructions describe the function and use of the inlet tubing for the Capnograh Typ 340 .

All the information in these Instructions have been drawn up after careful examination but does not represent a warranty of product properties. Alterations in line with technical progress are reserved.

Manufacturer's address:

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1.1 Copyright

2. Safety notes

Warning:

- Be careful in working with aerosols, gases and gas mixtures. DANGER !
- The Capnograph Typ 340 is designed for use in general laboratories, light industrial and office environments.

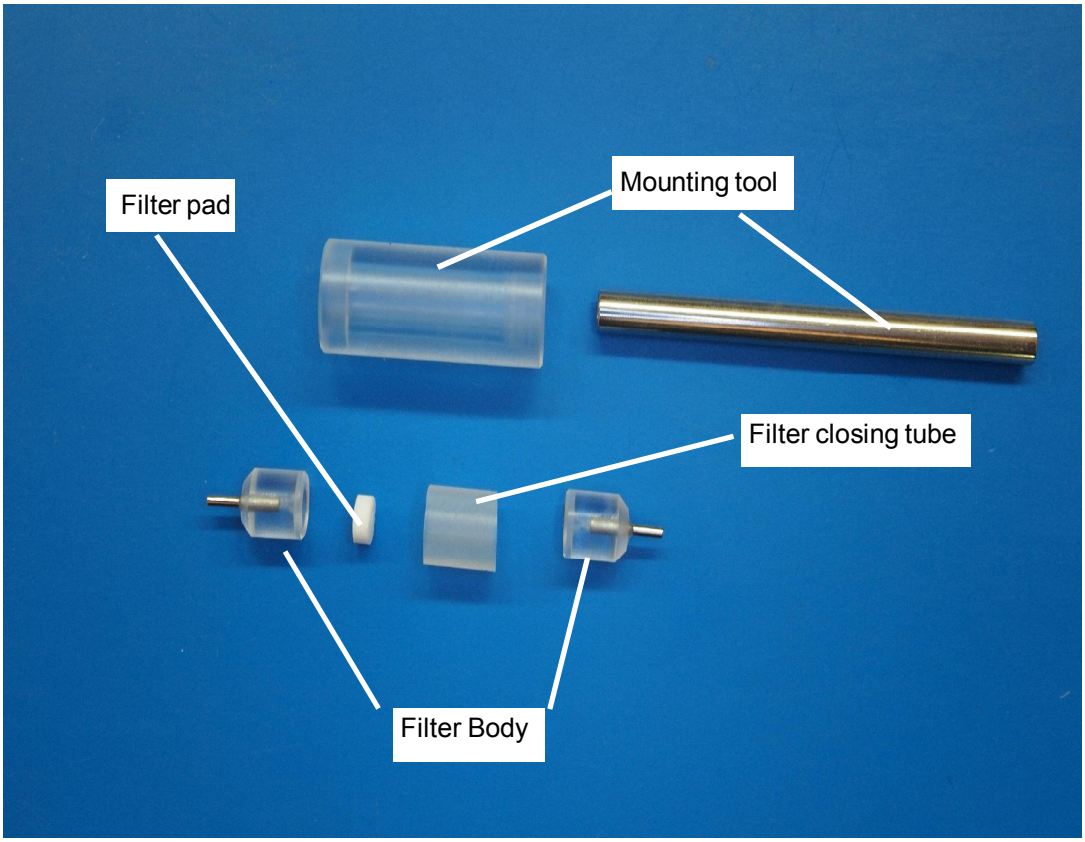
3. General description, application

The filter inline with the dehumidifier is used to avoid to have dust and mucus entering the CO2 sensor. The filter pad can be exchanged if required. It is delivered with five filter pads additional pads are deliverable in set of five.

4. Deliverables

The delivery consits of:

- The filter body in two parts
- The body closing tube
- Filter pads (set of 5)
- The mounting tools
- The instruction sheet

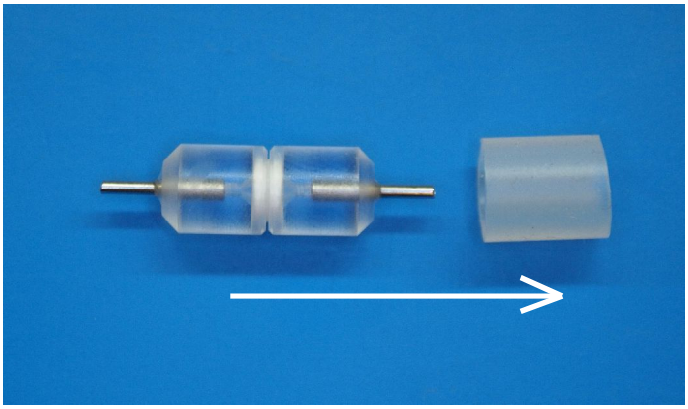


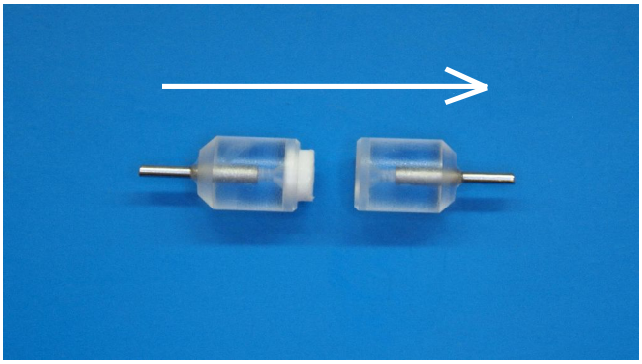
5. Assembling the Filter

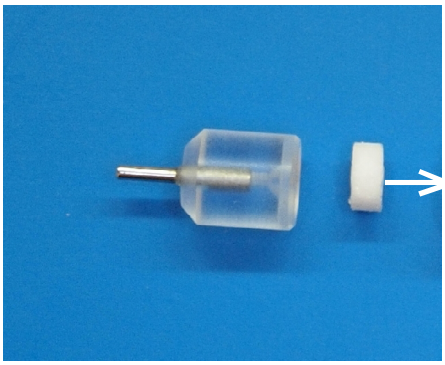
5.1 Disassembling the filter core and removing the filter pad

The filter is delivered assembled with a filter pad already installed. After having used the filter fo a while the pad get dirthy or mucus has entered the filter and the pad requires to be replace. Before installing the new pad you need to disassemble it. To do so, disconnect the filter from the inlet tubing and remove the silicone tubing assembling the body.

Separate both body parts and remove the old filter pad.

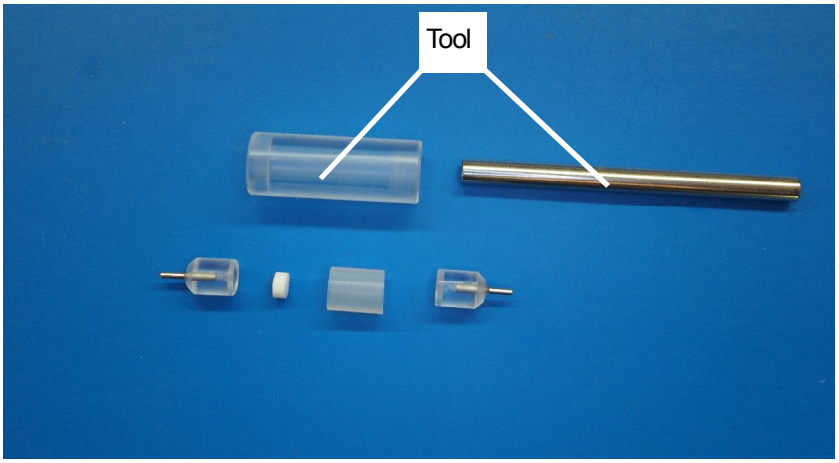






5.2 Installing a new filter pad

With the filter a tools for installing a new pad is supplied



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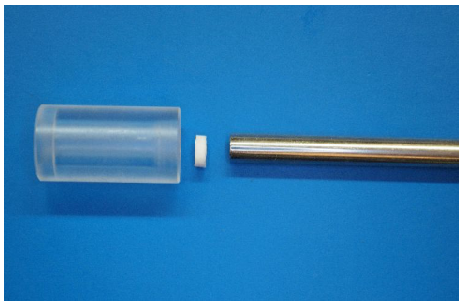
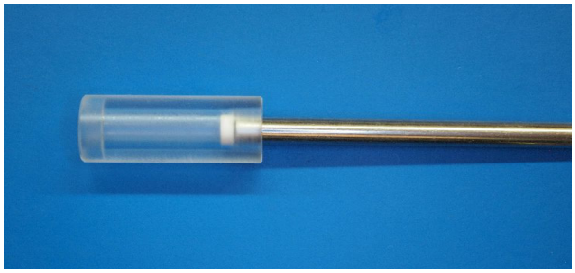
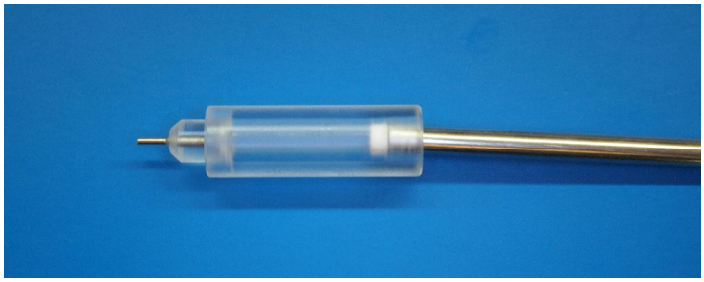
Step 1: Prepare the pad and the tool



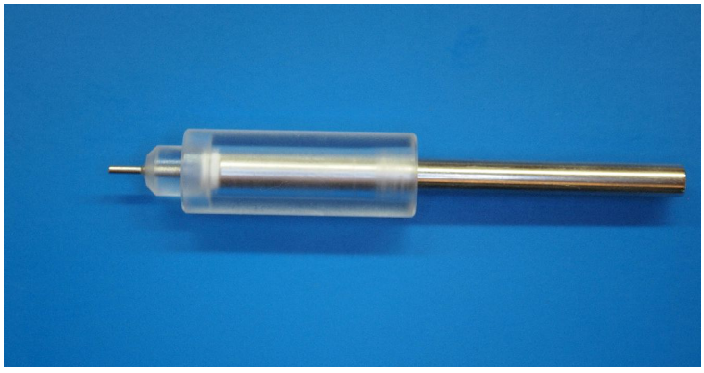
Step 2: Introduce the pad into the tool sleeve using the rod



Step 3: Put in place the filter body half, insert it into the sleeve



Step 4: Push the pad into the filter body using the rod

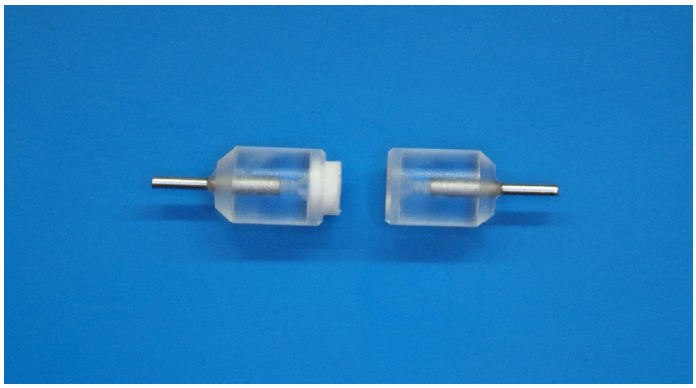


Step 5: Continue to push until the filter body with the pad installed comes out of the tool sleeve

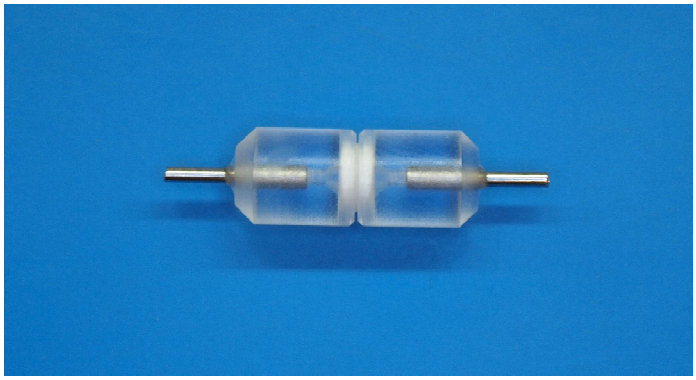
5.3 Reassembling the filter

The filter body half including the pad and the other half are reassembled using the silicone tubing delivered. Be sure both filter body halfs are mounted without any gap in between. That would create a dead space which could minimize your reading.

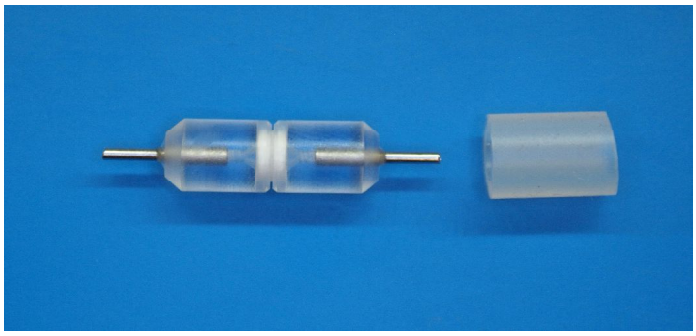
Step 1: Present both body halfs



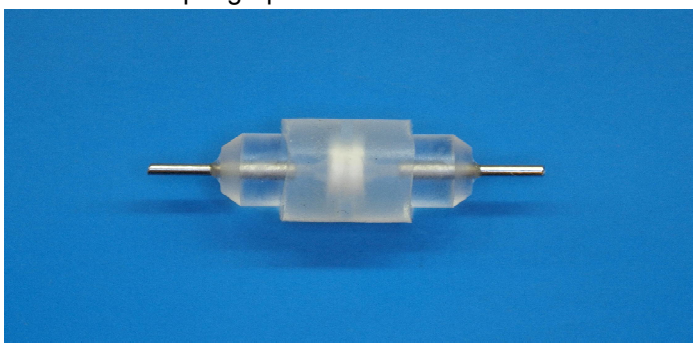
Step 2: Press it firmly, there should not be a gap in between



Step 3: Present the silicone tubing and move it over the body halfs by taking care they are not separated.

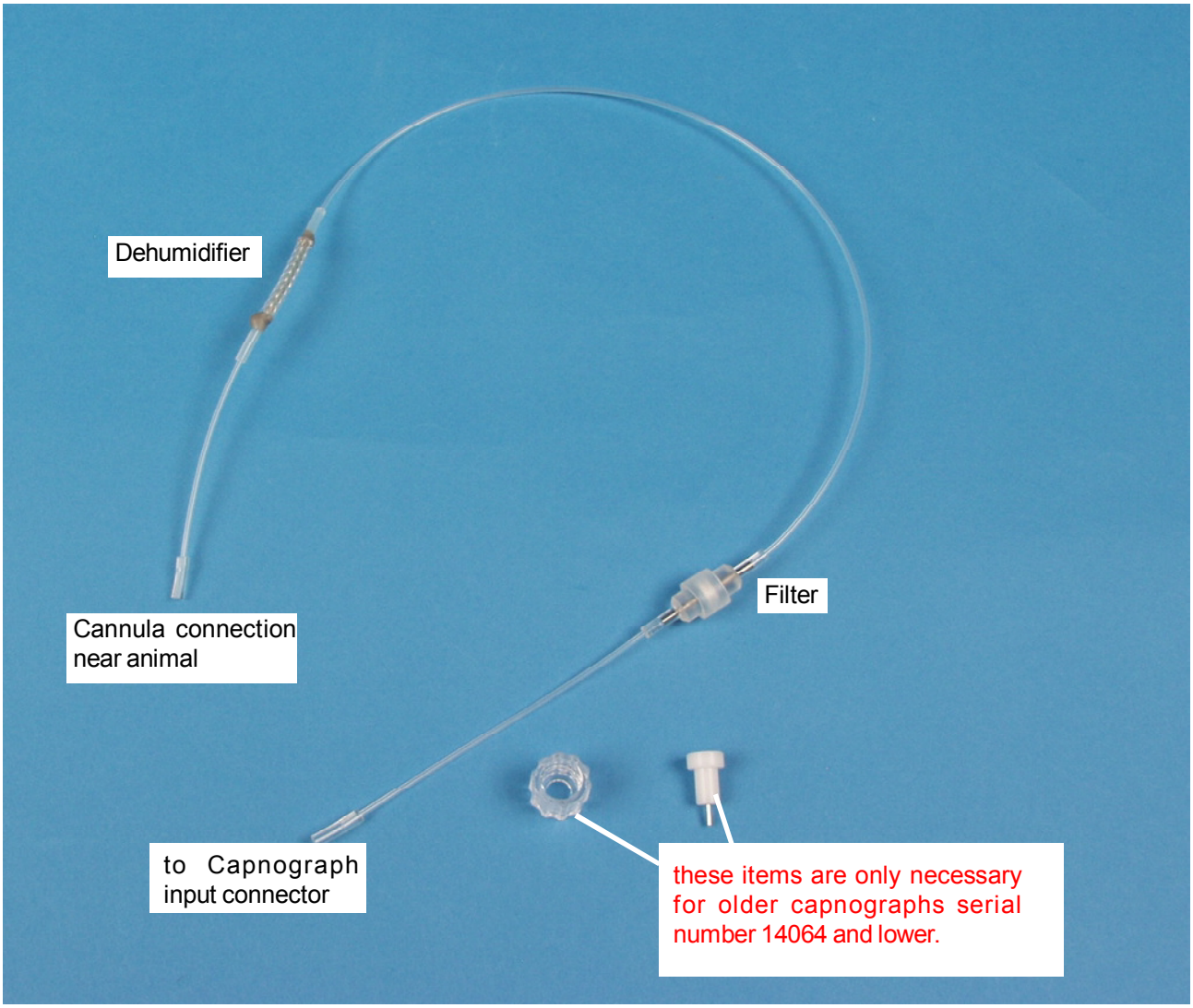


Step 4: The filter is ready to be installed in the input line of the capnograph

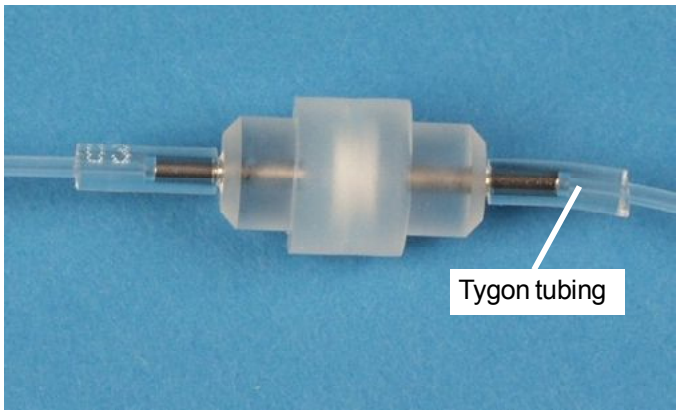


5.4 Inserting the filter into the Capnograph input line

The filter body filter is place between the Capnograph connection and the dehumidifier element. It should be placed close to the capnograph input connection



The inlet tubing to the Capnograph is a very narrow PE tubing, as it requires the dead volume to be as small as possible. The connection between filter and PE tubing must therefore be made mediculously.
Short pieces of Tygon tubing are place on the filter metallic ports and the PE tubing is inserted into the Tygon tubing in a way it touches the metallic port.



7. Cleaning the filter body

To clean the filter body we recommend to use a towel and soap water.
The filter body is made of Plexiglas. See the attached compatibility list of Plexiglas on &14. before using any cleaning agent. Verify the contents of you cleaning agent.
Do not use any corrosive agent.
We recommend to clean the connecting ports use using dental floss

8. Maintenance and servicing

There is no special maintenance or service required.
The filter body is made of translucent Plexiglas. That allows to control the flow through channel as well as the connections to the PE tubing. It may happen that during an experiment the animal has abundant mucus secretion and that mucus comes up into the filter.
We highly recommend to control often the filter and locate in time mucus. As long at it is not dry it can be removed easily in the flow through channel. See cleaning procedure above.
If mucus has entered the filter and has dried out we recommend to use an ultrasonic bath to try to remove it. Be sure there is no alcohol in it

9. Chemical Behavior of PLEXIGLAS®

The data given refer to a test temperature of 23° C and presuppose stressfree installation. The behavior of the material in practice depends largely on the temperature in use. In case of doubt, we advise you to consult us as to the chemical resistance for particular applications.
The results obtained for all products, especially the branded ones, refer to the production batch tested in each case.

The symbols signity:

+ resistant
- not resistant
o limited resistance

Antistatics :

+ HB 155
+ Antistatic fluid and cleaning agent

Technical baths :

+ Electroplating baths
+ Photochemical baths

Chemicals, solvents, etc.
a) General

- Acetic acid, concentrated
o Acetic acid, up to 25 %
- Acetone
+ Alum
+ Aluminium chloride
+ Aluminium oxalate
+ Aluminium sulphate
- Ammonia water
+ Ammonium sulphate
- Amyl acetate
- Aniline
+ Arsenic
+ Arsenic acid

+ Battery acid
- Benzaldehyde
+ Benzine, pure
- Bromine
- 1-Butanol
- Butyl lactate
+ Butyric acid, up to 5 %

+ Calcium chloride
+ Calcium hypochlorite
- Carbon disulfide
- Carbon tetrachloride
- Chlorinated hydrocarbons
- Chlorine, liquid
o Chlorine water
- Chloroethyl ether
- Chlorophenol
o Chromic acid
+ Citric acid, up to 20 %
+ Copper sulphate
- Cresol
+ Cyclohexane

- Diacetone alcohol
o Diamyl phthalate
- Dibutyl phthalate

+ Diethylene glycol
- Dioxane
- Ether
- Ethyl acetate
- Ethanol, concentrated
o Ethanol, up to 30 %
- Ethyl bromide
- Ethyl butyrate
- Ethylene bromide

+ Ferric chloride
+ Ferrous chloride
+ Ferrous sulphate
+ Formic acid, up to 2 %
o Formic acid, up to 40 %

+ Glycerol
+ Glycol

+ Heptane
+ Hexane
+ Hydrochloric acid
+ Hydrofluoric acid, up to 20 %
+ Hydrogen peroxide, up to 30 %

+ Iodine, metallic
+ Lactic acid, up to 20 %

+ Magnesium chloride
+ Magnesium sulphate
+ Manganese sulphate
+ Mercury
- Methanol, concentrated
o Methanol, up to 30 %
- Methyl ethyl ketone
- Methylated spirits
+ Milk of lime
+ Monobromonaphthalene

+ Nickel sulphate
+ Nitric acid, up to 40 %
+ Nitric acid, over 40 %

+ Oxalic acid

- Perchloroethylene
+ Petroleum
+ Petroleum ether
- Phenols
+ Phosphoric acid, up to 50 %
- Phosphorus trichloride
- Phosphorus, white
+ Picric acid, 1 % in water
+ Potassium bichromate
+ Potassium carbonate
+ Potassium chloride
+ Potassium cyanide
+ Potassium hydroxide solution
+ Potassium nitrate
+ Potassium permanganate
o 2-Propanol
+ Propylene
- Pyridine

- Silicon tetrachloride
+ Silver nitrate
+ Sodium bisulfite
+ Sodium carbonate
+ Sodium chlorate
+ Sodium chloride
+ Sodium hydroxide solution, 30 %
+ Sodium hypochlorite
+ Sodium sulphate
+ Sodium sulphide
+ Stannous chloride
+ Stearic acid
+ Sulphur
- Sulphur dioxide, liquid
+ Sulfuric acid, up to 30 %
o Sulphurous acid, conc.
+ Sulphurous acid, up to 5 %
+ Sulfuryl chloride

+ Tartaric acid, up to 50 %
- Thionyl chloride
- Toluene
+ Triethylamine
- Trichloroacetic acid
+ Turpentine
+ Turpentine substitute

+ Urea, up to 20 %

- Xylene

+ Zinc sulphate, aqueous
+ Zinc sulphate, solid

b) Branded products:

+ ® CLOPHEN T 55,A60
o ® DEKALIN
o ® FRIGEN A 12(CF_2 CL_2)
- ® GLYBAL A
+ ® PALATINOL K
o ® PALATINOL O, BB new
+ ® SANGAJOL
+ ® TERAPIN
- ® TETRALIN

Disinfectants
a) General

- Carbolic acid
+ Chlor. lime paste
- Hydrogen peroxide, up to 40 %
o Hydrogen peroxide, over 40 %
- Iodine tincture, 5 %
+ Lugol solution
- Methylated spirits
+ Sublimate

b) Branded products

o ® ÄTHROL, up to 5 %
+ ® BAKTOLAN, up to 5 %
- ® BAKTOLAN, conc.
+ ® CHINOSOL, up to 1 %
- ® CHLORAMIN, suspension
+ ® CHLORAMIN; solution
+ ® ELMOCID GAMMA, up to 2 %
- ® LYSOFORM
+ ® MEFAROL, up to 1 %
+ ® MERCKOJOD, up to 1 %
+ ® MERFEN
+ ® PERHYDROL
+ ® PERODIN
+ ® SAGROTAN, up to 2 %
o ® SAGROTAN, up to 5 %
o ® VALVANOL, up to 2 %
+ ® ZEPHIROL; up to 5 %

Fats, oils, waxes :

+ Animal
+ Mineral
o Silicone oil
+ Vegetable

Gases and vapours

+ Ammonia
o Bromine vapours, dry
+ Carbon dioxide
+ Carbon monoxide
+ City gas
o Chlorine vapours, dry
+ Exhaust gases containing HCl
+ Exhaust gases containing HF
+ Exhaust gases containing H_2SO_4
+ Hydrogen sulphide
+ Methane
+ Nitrogen dioxide
+ Nitrogen monoxide
+ Oxygen
+ Ozone
+ Sulphur dioxide, dry

Beverages, etc.

+ Beer, Wine
+ Camomile extract
+ Chocolate
+ Fruit juice, milk, coffee
o Spirits, up to 30 %
+ Vinegar
+ Water, mineral water

Cosmetics, etc.

- Camphor
+ ® DIPLONA -hair oil
+ Face tonic
+ Glycerine
+ Hair setting lotion (PRIMAWELL)
- Nail varnishes
- Nail varnish removers
+ Ointments
+ Peat water
+ ® POLYCOLOR
+ Seawater
+ Soaps
o Sprays

Plastics

+ Foam plastics
- Foam plastics, plasticised
+ Polyamide
+ Polyethylene
+ PVC
- PVC, plasticised
+ Rubber
- Rubber, plasticised

Foods and spices

+ Aniseed, bay leaf, nutmeg
- Cloves
+ Common salt
+ Honey, pure
+ Ice cream
+ Meat, fish
+ Pepper, cinnamon, onions
+ Pickles

Cleaning agent
a) General

Acids, see under chemicals
- Alcohol, concentrated
o Alcohol, up to 30 %
Alkalis, see under chemicals
+ Ammonia solution
- Benzine, mixture, containing aromatics
+ Benzine, non-aromatic
+ Bleach
- Carbon tetrachloride
- Methylated spirits
- Perchloroethylene
+ Petroleum
+ Petroleum ether
+ Soap solution
+ Soda water
- Stain remover
- Trichloroethylene
+ Turpentine
+ Turpentine substitute

b) Branded products

+ ® AJAX
+ ® Antistastischer KUNSTSTOFF REINIGER und Pfleger
+ ® BFK cleanser
+ ® BOLIMENT
+ ® BÖTTCHERIN
+ ® BURMAT
+ ® BURNUS
+ ® CILLIT-GRÜN
+ ® DOR
+ ® DOSYL
+ ® DOSYLAN
+ ® FAKO-Polish
+ ® FAKO-Polishing paste
+ ® FEWA
+ ® FRAPPIN
+ ® FÜLLBOX
+ ® LAWAPLEX
+ ® NULL-NULL
+ ® PERSIL
+ ® PLEXIKLAR
+ ® PRIL
+ ® REI
+ ® SEIFIX
- ® SIDOLIN
- ® SPECTROL
+ ® SPÜLI
+ ® WC-00

c) Cleaning agents for pipes and tanks

+ ® CALGONIT D, DA, S
+ ® NEOMOSCAN M, M powder
+ ® NIROKLAR GR liquid
+ ® NIROKLAR GR powder
+ ® P 3
o ® P 3 basic cleaner
+ ® P 3- dix

Pesticides

- Sprays (applied directly)
o Sprays (applied in the air)
o Pesticides in aqueous solutions
+ ® NEXION stable spray
+ ® RABOND stable spray

Protective coatings (strippable)

+ ® DIEGEL liquid film 23922
+ ® KOPPERSCHMIDT covering paste
o ® SPRAYLAT

Other substances

+ Urine
- Fuel for petrol engines
o Fuel for diesel engines

10. Reply Form

Please take a few minutes of your time in order to write to us on any difficulties in understanding the Operating Instructions or in the use of the apparatus. With your feedback you will help to improve our products and the system documentation and make them more user-friendly.

Please tell us

- where you have found mistakes,
- where the arrangement was not clear and what you did not understand,
- and where you would like to see improvements.

Many thanks for your *kind assistance.*
Yours HUGO SACHS ELEKTRONIK-
HARVARD APPARATUS GmbH.

Your name _____

Organisation _____

Street _____

Town _____

Phone / Fax _____

eMail _____

Please send this sheet or a copy to:

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