

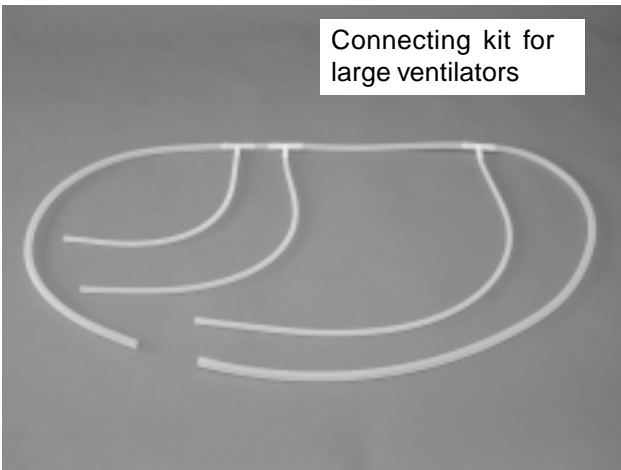
OPERATING INSTRUCTIONS

CONNECTING KIT FOR ANESTHESIA SYSTEM TO SMALL ANIMAL VENTILATOR

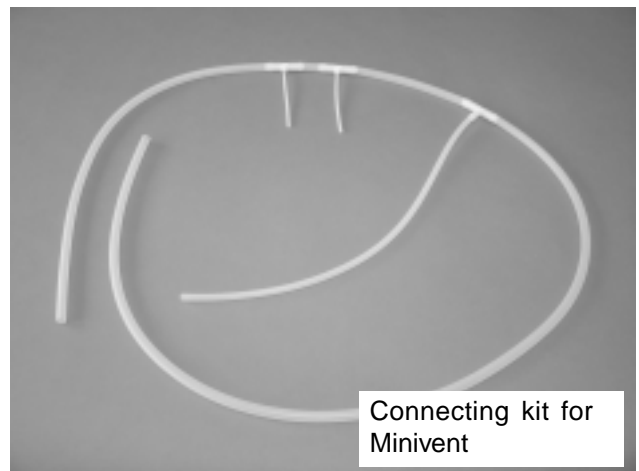
respectively

CONNECTING KIT FOR ANESTHESIA SYSTEM TO MINIVENT

Connecting kit for
large ventilators



Connecting kit for
Minivent



Operating Instructions for

**CONNECTING KIT FOR ANESTHESIA
SYSTEM TO SMALL ANIMAL VENTILATOR**
respectively
**CONNECTING KIT FOR ANESTHESIA
SYSTEM TO MINIVENT**

(Version 1 / 05/ 04 Zi)

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Introduction, manufacturer's details

These Operating Instructions describe the function and the use of the connecting kit for anesthesia system to small animal ventilator or connecting kit for anesthesia system to MINIVENT. They represent an essential part of the apparatus and must be kept close to the apparatus, accessible to all users.

All the information in these Instructions has been assembled after careful examination but does not represent any warranty of product properties. Alterations in line with technical progress are reserved.

Manufacturer

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Copyright

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Trademarks

PLUGSYS® is a registered trademark of Hugo Sachs Elektronik - HARVARD APPARATUS GmbH, March-Hugstetten, Germany. Other trademarks referred to in these Operating Instructions are the property of the corresponding applicants.

Do read these Operating Instructions!

We strongly recommend that you carefully read and observe these Operating Instructions. We do not taken any responsibility for any damage caused by inappropriate operation of the apparatus.

Application

This apparatus is intended to be used for connecting an anesthesia system to small animal ventilator or respectively connecting an anesthesia system to the MINIVENT in physiological and pharmacological research laboratories.

Summary of function

The connecting kits are used to connect the most usual rodent ventilators to anesthesia machine and evacuation systems.

Two kits are available, one for the larger ventilator like

Inspira, Small animal ventilator Model 683, Starling's Miniature Ideal Ventilator, UB-7025, mainly used for ventilating rats or guinea-pigs and a specific kit for the mouse ventilator Minivent or Microvent.

Safety notes

As flammable or explosive liquids and gases are used: fire hazard!

Any combustible material in the presence of oxygen represents a fire hazard.

Toxic substances!:

Where any toxic substances (gases, test substances, cleaning agents) are being used, it is essential to conform to the appropriate handling directions in order to prevent any health hazard to the user. Toxic substances must be disposed of in accordance with the appropriate regulations.

Protect mains-operated electrical equipment against liquids!

Electrical equipment must be set up and operated in accordance with their Operating Instructions. Special care must be taken in positioning it so that no liquid can pass into it. Never store any liquid above the equipment.

Avoid operating the equipment with wet hands. Over longer periods, electrical contacts and perfusion solutions are incompatible. In addition the equipment will remain looking good and presentable for a longer time. Who likes the appearance of a salt-encrusted or dirty front panel?

Items required

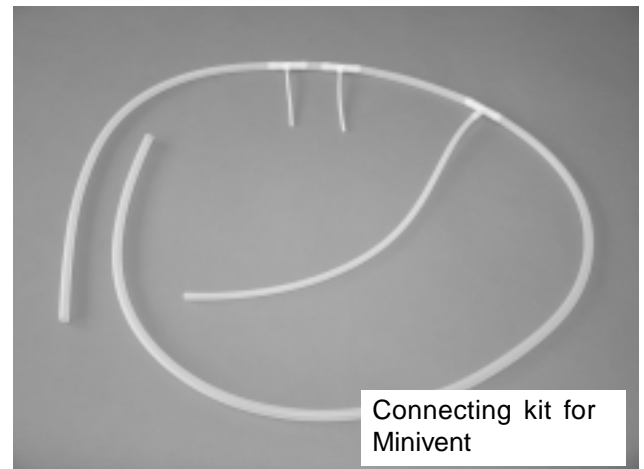
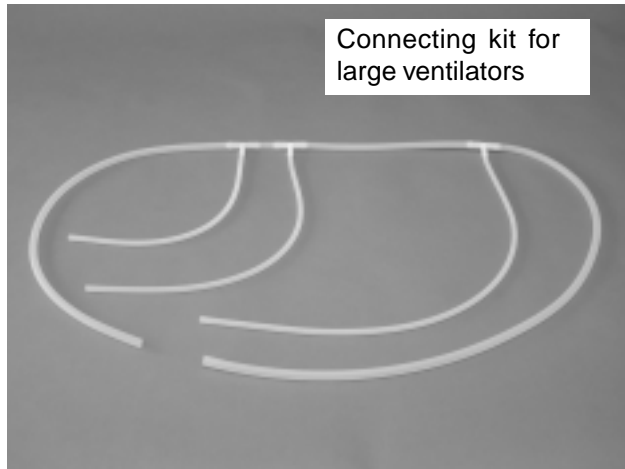
In addition to the connecting kit and the essential consumables (e.g. Oxygen, compressed air, N₂O, anesthetic agent) it is necessary to provide the following items and equipment to operate the system:

- Anesthesia machine, economical table top or high end system equipped with anesthetic vaporizer...
- Animal ventilator e.g. Inspira, Small animal ventilator Model 683, Starling's Miniature Ideal Ventilator, UB-7025, Minivent, Microvent...
- Anesthesia evacuation system e.g. evacuation hood, filter canister, active evacuation system, Fluovac System...

Unpacking

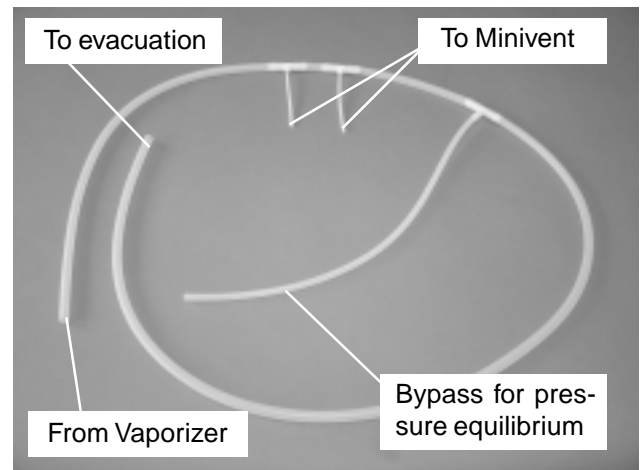
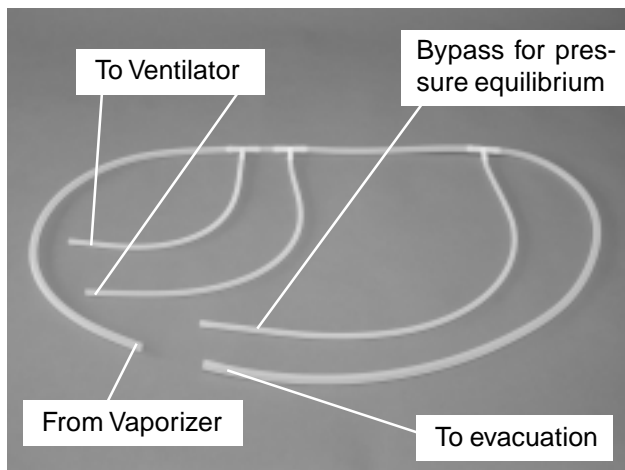
Careful packaging ensures that transport damage is largely excluded. If unexpectedly the apparatus appears damaged on delivery you should immediately

notify the forwarding agent, the post office or the rail authority in order to have the damage recorded. Damaged packaging should always be kept as evidence.



Assembly

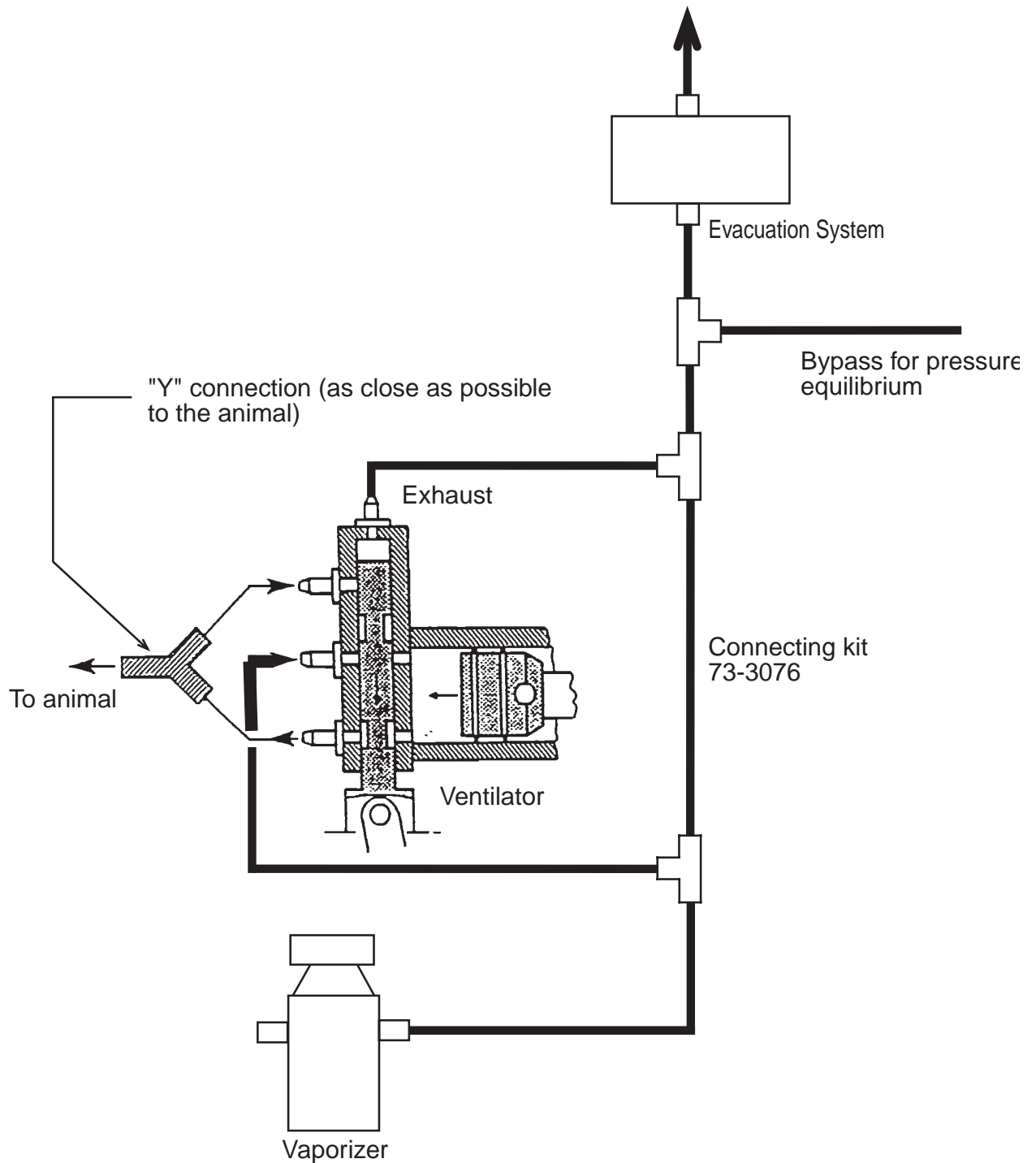
The connecting system is supplied assembled and must be connected to the ventilator and the evacuation system.



Connecting Diagram

The connecting kit connects the anesthesia vaporizer to the Ventilator and the evacuating system. The anesthesia gas flows past the supply port of the ventilator to the evacuation system. The ventilator aspirates the gas and supplies it to the animal. The expired gas from the animal goes back into the same tubing. The gasflow across the line generates a low venturi effect

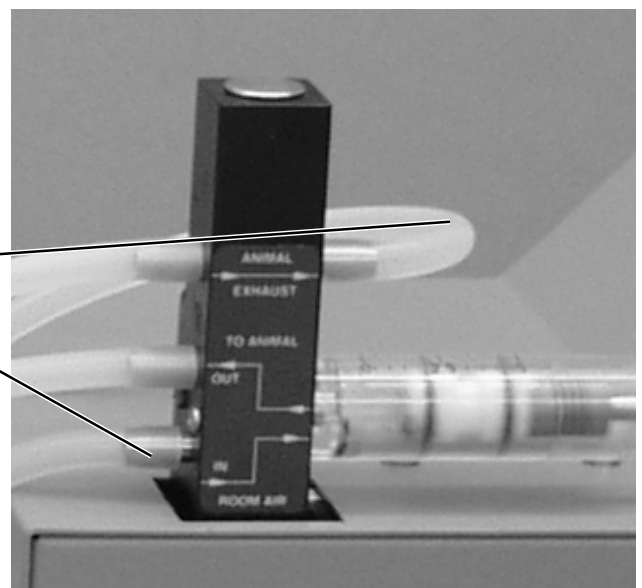
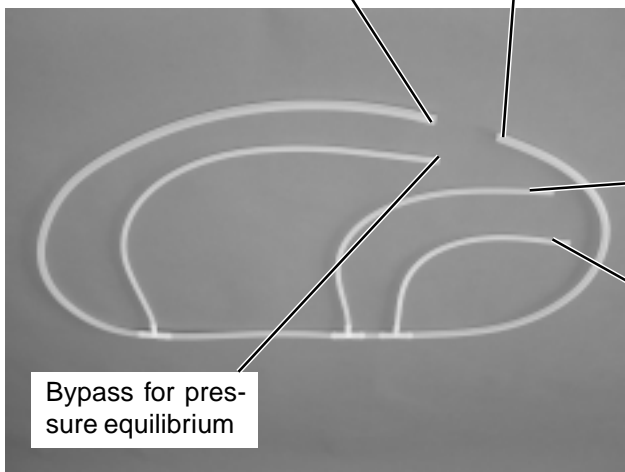
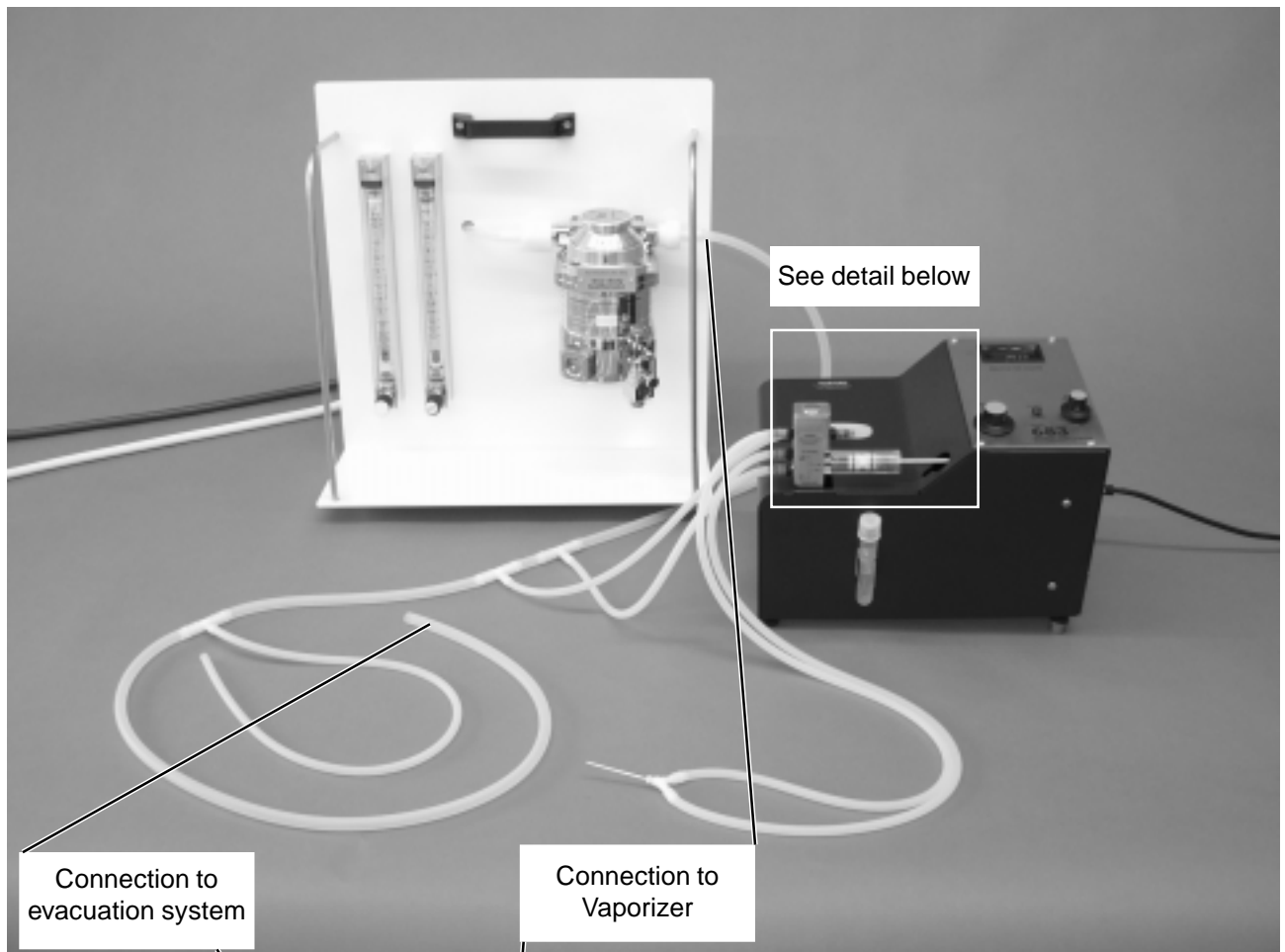
to flush the expiration line. If an active evacuation system like the IMS-fluovac or the AES-System is used it is necessary to have the Bypass for pressure equilibrium installed to avoid negative pressure (suction) during expiration. If a non active system like ventilation hood or Air filters is used, the bypass needs to be removed.



Installation

The system is supplied completely assembled so that installation is limited to connecting up the Ventilator, the Evacuation system and the vaporizer

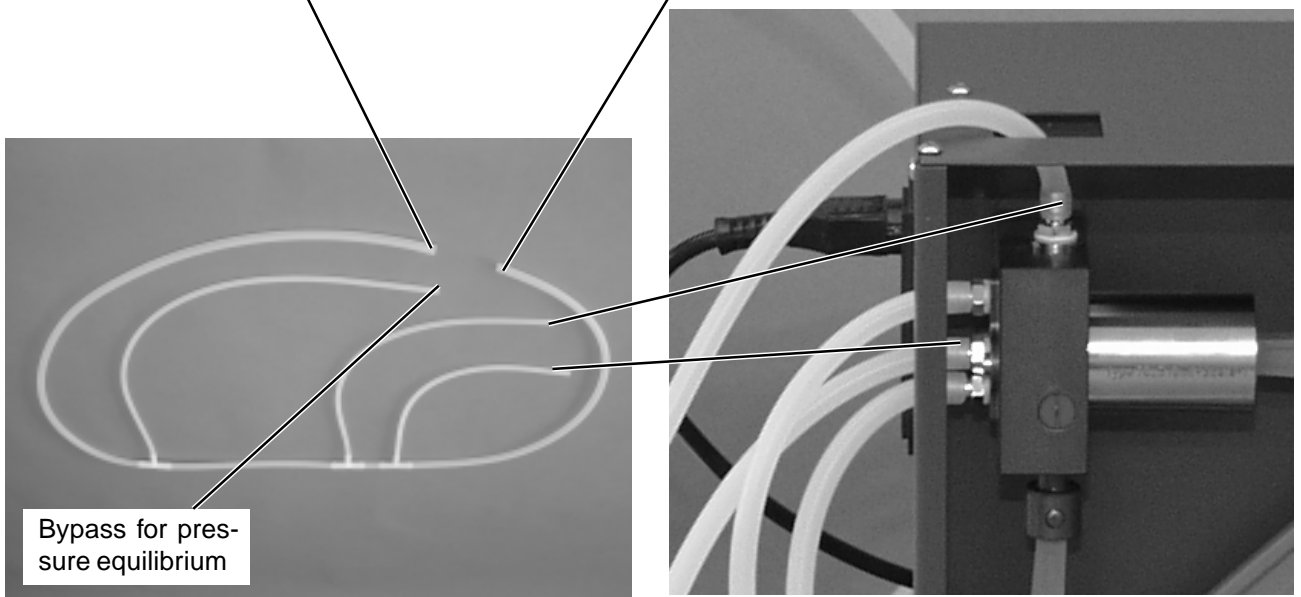
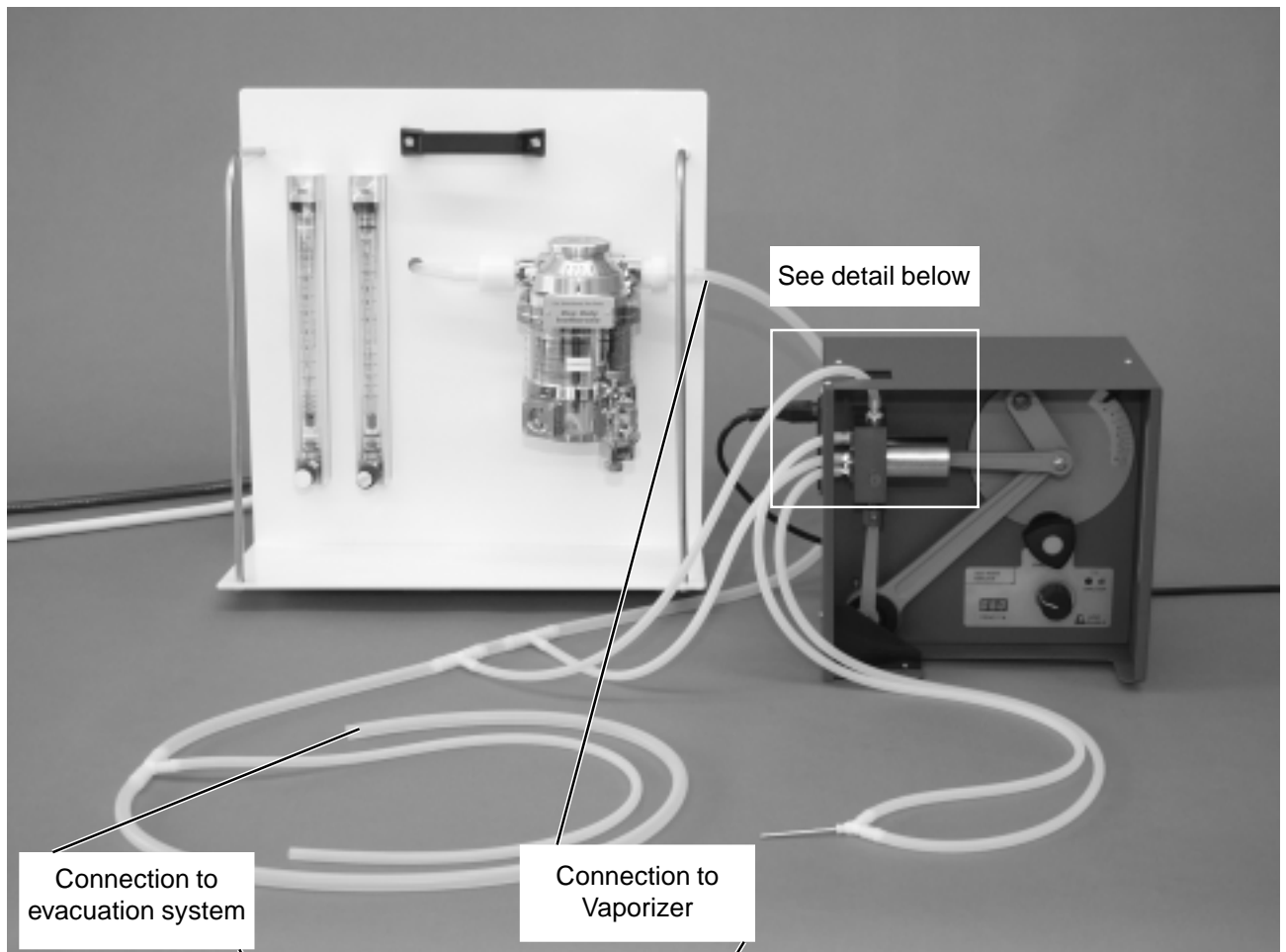
Connecting kit for large ventilators using a Ventilator 683



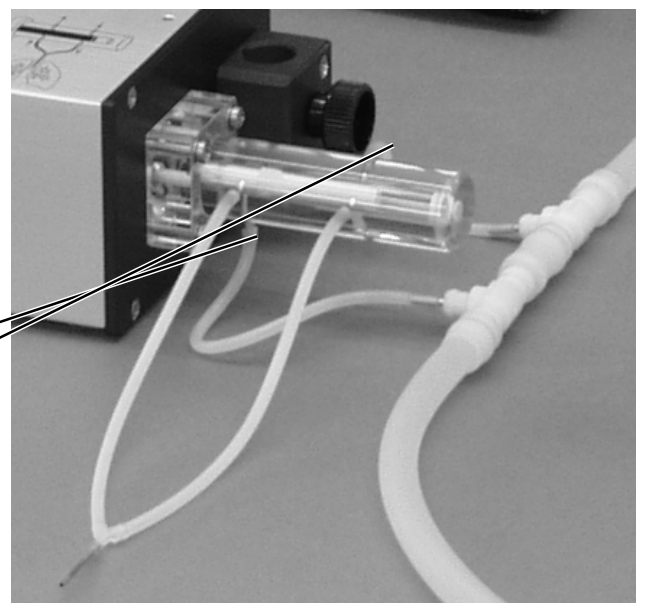
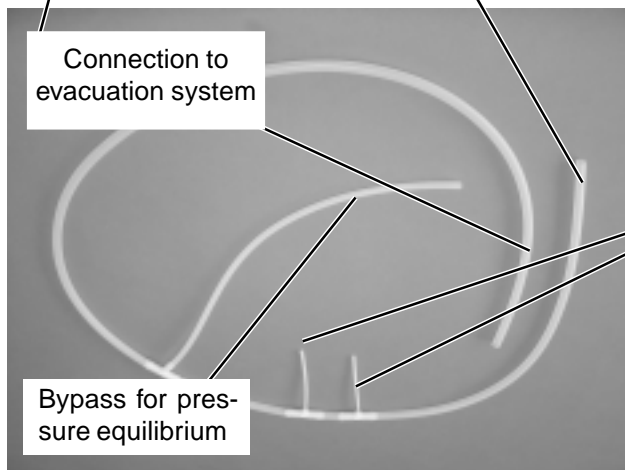
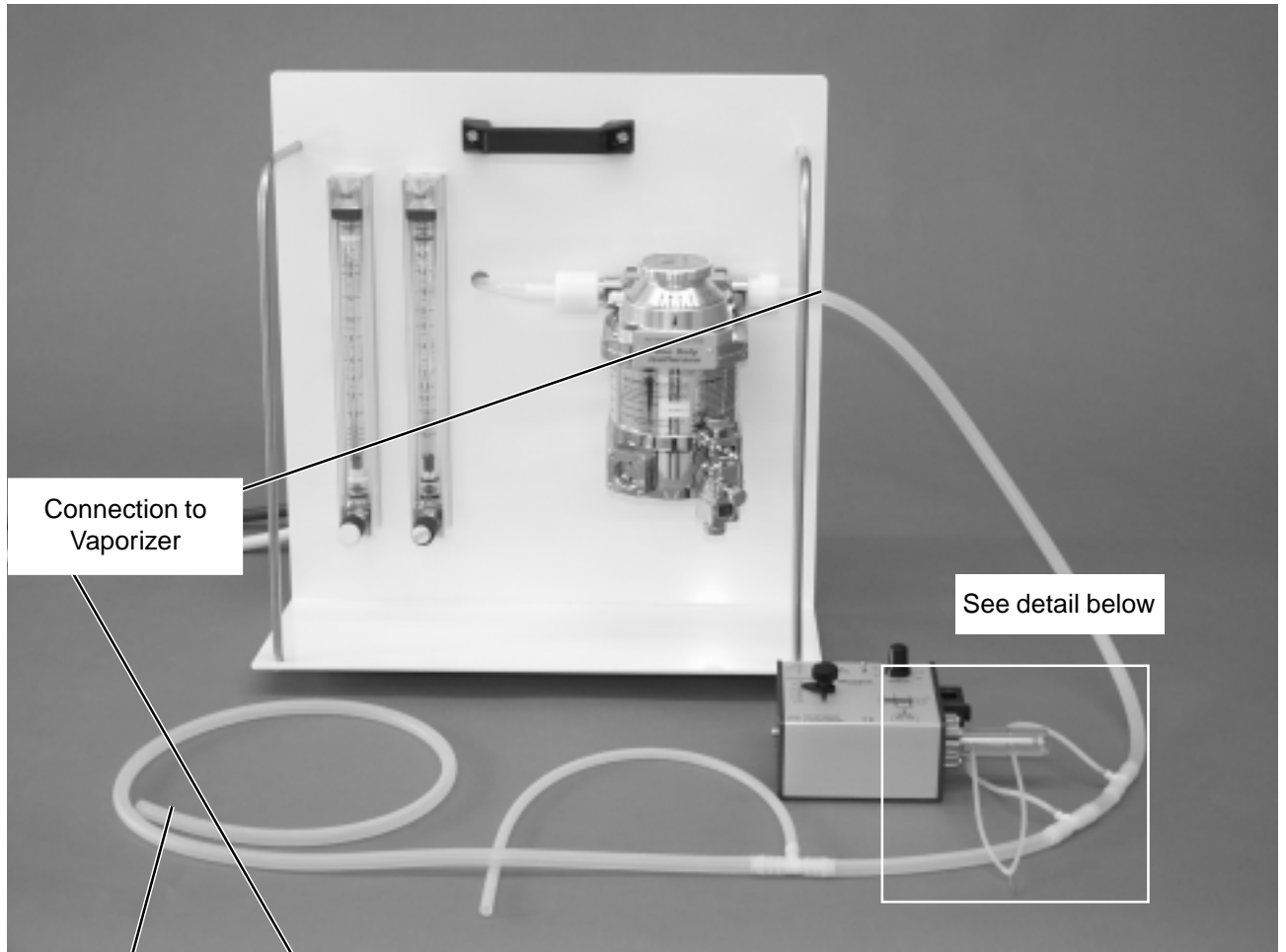
Installation

The system is supplied completely assembled so that installation is limited to connecting up the Ventilator, the Evacuation system and the vaporizer

Connecting kit for large ventilators using a ventilator UB-7025



Connecting kit for Minivent or Microvent



Practical and Safety information

You should make a regular inspection of the tubing. It is also important to verify before each experiment if there is not any part obstructing the tubing going to the evacuation system, and that the evacuation system is working properly. The vaporizer should never be switched on before the evacuation system is connected and started

Maintenance and cleaning of the system

No regular cleaning is requested. If for any reason the animal has released mucus, and the mucus has reached the tubing system, we recommend to replace the tubings and clean all the connecting parts (T-Connectors, ventilator ports...) by using distilled water.

WARNING: Use only the cleaning agents recommended which are compatible with Plexiglass! Several ventilators include Plexiglass

IMPORTANT: not all cleaning agents used in the laboratory are suitable for cleaning components made from Plexiglass.

If for any special reasons you require to use a cleaning agent you must before using it carry out a compatibility test with the components of the apparatus. Note in this connection the compatibility list for Plexiglass at the end of these Instructions. In case of doubt contact the manufacturer of the apparatus.

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 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(CF₂ CL₂)
- ® 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 H₂SO₄
- + 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

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 device. 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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Gruenstrasse 1, D-79232 March-Hugstetten, Germany

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