

HSE-Harvard Aerosol and Multi Gas Adapter stand alone

for isolated lung and other respiratory systems



Contents

1. Introduction, manufacturer's details	3
1.1 Copyright.....	3
2. Safety notes	3
3. General description, application	4
4. Basic description	5
Example 3: Isolated Mouse Lung System with Multi Gas Adapter with attached nebulizer	6
5. Cleaning the Perspex Multi gas adapter block	7
6. Recommended cleaning agents	7
7. Maintenance and servicing	8
8. Reply Form	9

1. Introduction, manufacturer's details

These Operating Instructions describe the function and use of the Multi Gas Adapter.



All the information in these Instructions has 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:

HUGO SACHS ELEKTRONIK-
HARVARD APPARATUS GmbH
Gruenstrasse 1,
79232 March-Hugstetten
Germany

Phone: 07665/9200-0
(int +49) 7665/9200-0

Fax: 07665/9200-90
(int +49) 7665-9200-90

eMail: sales@hugo-sachs.de

Internet: www.hugo-sachs.de or www.harvardappartus.com

1.1 Copyright

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2. Safety notes

Warning:



- Don't supply explosive gases to the Multi Gas Adapter, DANGER !
- Be carefully in working with gases and gas mixtures. Connect the outlet to the exhaust.
- Before you open the gas supply to Multi Gas Adapter check all connections carefully.
- The Multi Gas Adapter is designed for use in general laboratories, light industrial and office environments.

3. General description, application

The Multi Gas Adapter is an addition to any system requiring application of different gases or nebulized substances in the breathing pathway of a small animal. It can be a ventilator, a plethysmograph box, an isolated perfused lung system...

The Multi Gas Adapter is intended for use in a laboratory environment in physiological and/or pharmacological research.

By using the Multi Gas Adapter it is possible to apply nebulized substances and up to 4 different gases to the animal.

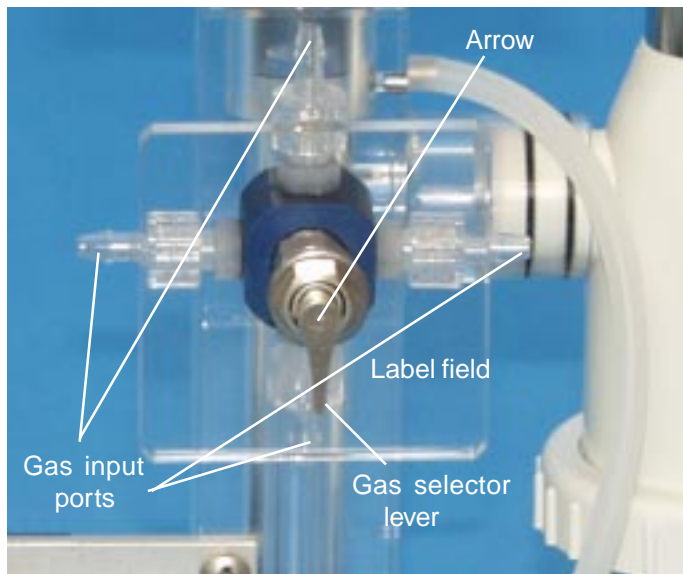


Multigas adapter and connection kit for isolated Mouse lung system IL1, without nebulizer



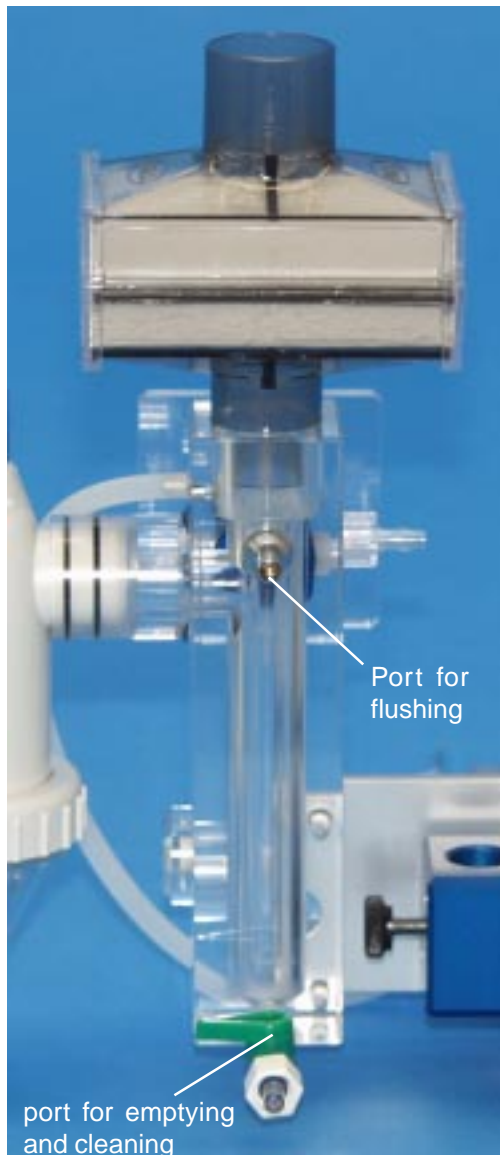
Multigas adapter and connection kit for isolated Mouse lung system IL1, equipped with nebulizer

4. Basic description



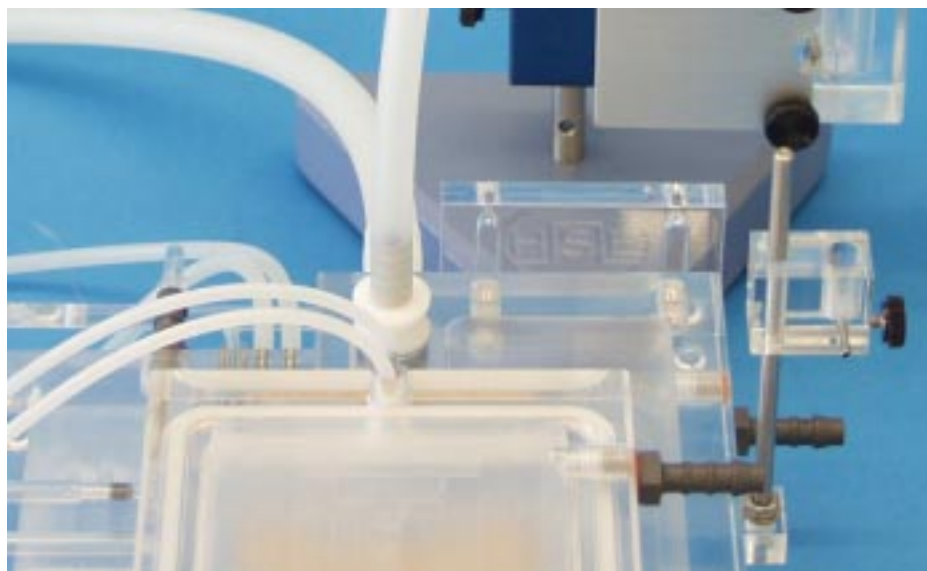
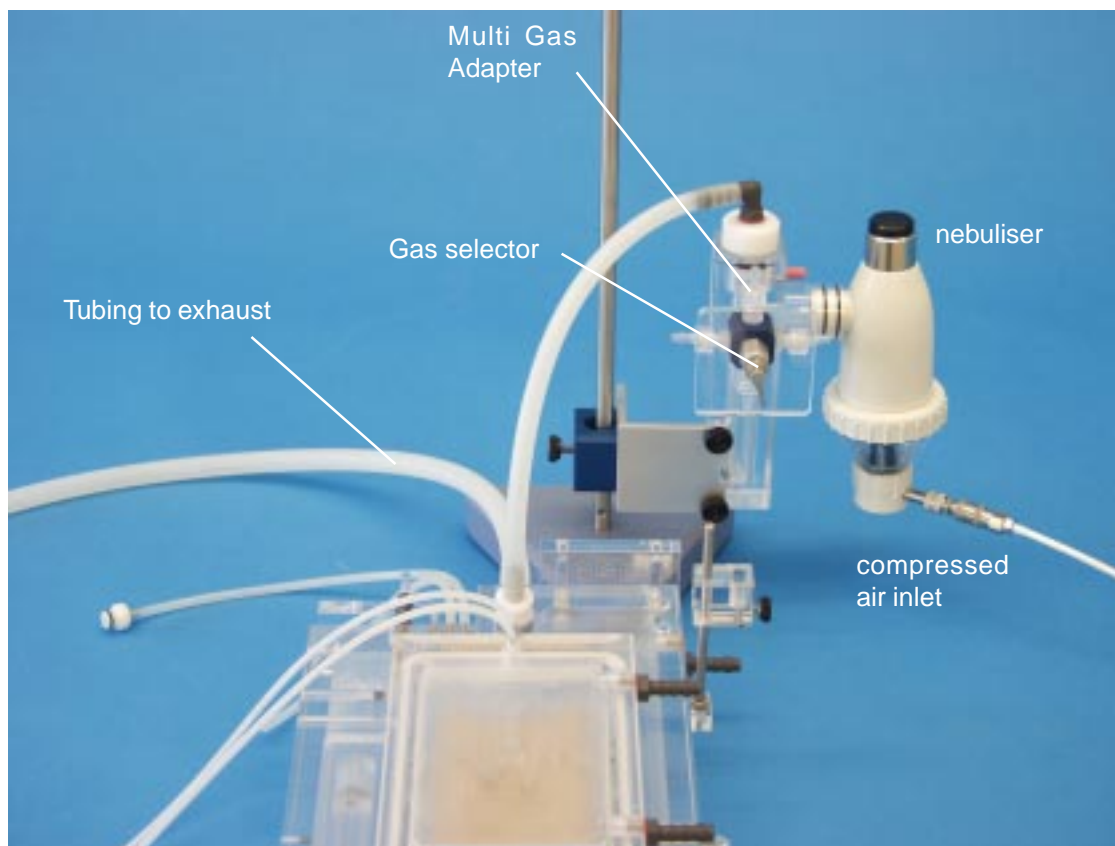
The different gases are connected to the gas selector. An arrow on the selector marks the selected input. The gases should be supplied at low pressure. Be sure the gases are not supplied at a pressure exceeding 0.5 bar. To control and show the flow through the system we recommend to connect a rotameter in-line with each gas line. The selector is equipped with a perspex marking field to label the inputs.

Please note: The arrow points in opposite to the switching lever



On the rear there are two ports. The lower port is equipped with a stopcock. If a nebulizer is used, condensation can result in small drops running down the cavity wall. The accumulation of the liquid in the bottom of the chamber can be removed using this port.

The upper port is dedicated for flushing the chamber. It is equipped with a "quick connect" connector. The line connected to the nebulizer can be removed from the nebulizer and connected to this port. This will stop nebulization and starts flushing the chamber. A compressed air pressure of 2 bar gives a flushing flow of about 1 L/min.

Example 3: Isolated Mouse Lung System with Multi Gas Adapter with attached nebulizer

In this example the Multi Gas Adapter is attached to the Isolated Lung System for Mouse Lung IL1. It is equipped with a nebulizer. If the nebulizer is not used, a white stopper must be used to close the nebulizer port of the Multi Gas Adapter block. The connecting tubing to the IL1 is replacing the air humidifier in the IL1. The IL1 is additionally equipped with a tubing to be connected to the exhaust.

Please note: The air pressure in the system "Multi Gas Adapter-connecting tubing to IL1" should be normal room air pressure, no increased pressure. Check that exhaust tubing is not kinked or blocked.

Important: Before nebulizing any substance all ports on the rear of the Multi Gas Adapter must be closed with stoppers or stopcocks. After nebulizing a substance flush the cavity of the Multi Gas Adapter with fresh (compressed) air.

5. Cleaning the Perspex Multi gas adapter block

Depending on the nebulised substances cleaning is very important. If you don't clean daily it can happen that the outlet port becomes dirty and cloggs. Also it is possible that some particles of the nebulised substances remain in the cavity which can lead to side effects on later experiments.

WARNING: use only the recommended cleaning agents (see Section 5).

Don't use alcohol to clean perspex. Alcohol attacks perspex which leads to cracks.

For general cleaning the cavity use distilled water. On the rear at the bottom of the cavity you will find a LUER connector to attach a syringe. These ports also can be used to remove condensated substances during the experiment.

Inside the cavity there is a barrel. This barrel can easily be taken out for cleaning. Therefore remove the connection tubing and turn the gas adapter upside down. The barrel as well as the inside of the cavity are than easily accessible for cleaning.

6. Recommended cleaning agents

IMPORTANT: not all cleaning agents used in the laboratory are suitable for cleaning Plexiglass parts. For example, MucocitF manufactured by Merz (Frankfurt) attacks Plexiglass.

NOTE: the Multi Gas Adapter block is made from Plexiglass

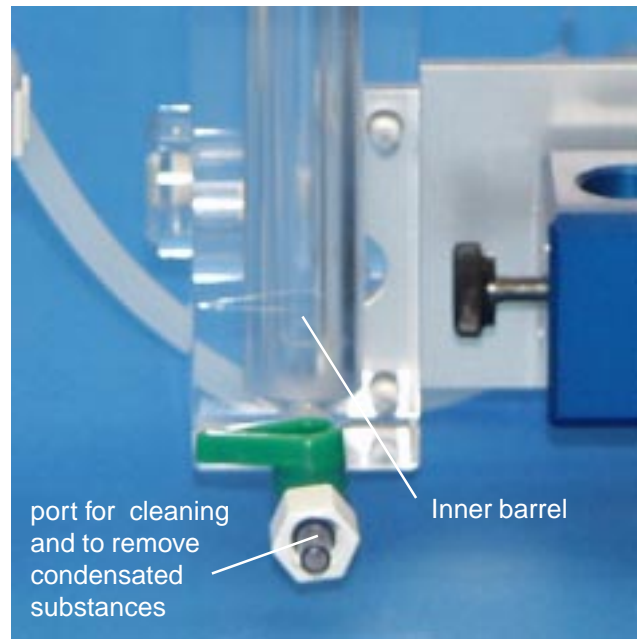
In order to avoid damage you must use only the recommended cleaning agents. Never use organic solvents, they usually attack Plexiglass.

If for certain reasons you require a different cleaning agent you have to carry out a compatibility test before using it. In case of doubt contact HSE-Harvard.

5% acetic acid solution can also can be used for cleaning the Multi Gas Adapter

WARNING: allow the acetic acid to act only for a few minutes!

In order to avoid damage you must allow the 5% acetic acid to act only briefly. More concentrated acetic acid solution must never be used!



Other cleaning solutions compatible with Plexiglas:**RBS 50 or RBS 35**

produced and

supplied by:

Carl Roth GmbH + Co KG, Chemische Fabrik,
Schoemperlenstr. 1-5, D-76185 Karlsruhe 21, Germany
Phone: (+49) (0)721/5606-0,
Fax: (+49) (0)721/5606-49,
e-mail: Carl@t-online.de
Internet: <http://www.Carl-Roth.de>

MUCASOL

produced by:

Merz + Co. GmbH & Co. Bereich
Dr.Kramer,
Eckenheimer Landstrasse 100-104,
D-60318 Frankfurt/Main 1, Germany
Phone: 069/15031, Telex: 414 031

Supplier:

Firma Rudolf BRAND GmbH & Co.
P. O. Box 11 55, D-97861 Wertheim, Germany
Phone :(+49) (0)9342/808-0, Fax: (+49) (0)9342/808-236

USA,

Supplier:

Brand Tech. Scientific, 25 Middlesex Turnpike, Essex, CT 06426-1479
Phone 860-767 2562

7. Maintenance and servicing

The most important maintenance operation consists of keeping the Multi Gas Adapter system clean. After each experiment you should check immediately that no substance has entered the system. If you note any contamination you should clean the system immediately. Do not wait until the mucus has dried out !

Clean also immediately the cavity of the Multi Gas Adapter system. Do not wait until substances or saline solutions have dried out or formed a layer inside the cavity.

It is obvious that any external contamination through blood or saline solutions must be removed immediately. Use a cloth moistened with water. If removal proves difficult, add a little detergent.

During all cleaning procedures take care that no liquid can pass into the interior. Do not use a wet cloth for cleaning, only a moist cloth!

