KRUUSE

KRUUSE Anaesthesia Catalogue

KRUUSE Moduflex veterinary anaesthetic machines

For many years, KRUUSE has supplied veterinarians worldwide with an excellent selection of anaesthetic machines.
We have now expanded our range of anaesthetic equipment and are very proud to introduce our new KRUUSE Moduflex line. We set ambitious goals for our new line: We wanted high quality at a reasonable price.

At the same time, we wanted to offer our customers a wide variety of anaesthetic machines in order to cover the various demands from different types of practices. In our KRUUSE Moduflex line we have anaesthetic machines to suit all needs; from excellent entry-level models to very attractive high-end models, which in essence can be configured to suit the specific needs of the individual practice.

Several of the anaesthetic machines are available both as a wall-mounted model and as a trolley-based model.
We have also chosen to offer our customers an attractive selection of accessories in this line, such as the Bain system and a patient circuit alarm.
In short - KRUUSE Moduflex is the answer to the vast majority of needs when it comes to veterinary anaesthesia!

The KRUUSE Moduflex Anaesthesia systems have been on the market for more than 30 years

More than 30 years ago our manufacturer noticed recurring problems with veterinary anaesthesia machines. The units were frequently leaking, were difficult to operate due to bad design and the repairs of products of poor quality were costing time and money to veterinarians. In addition to all this, the health of the clinics employees was compromise by the gas leaks.

Hoping to improve the veterinarians work quality a decision was made to introduce a complete line of veterinary anaesthesia machines integrating the highest quality standards available in the market.

From the modest beginning in 1982 the Moduflex anaesthesia systems have become leaders in small animal anaesthesia systems, gaining a reputation for high quality products and technical excellence.
Developed in conjunction with veterinary faculties, the Moduflex systems are used in a growing number of research centers, universities, zoological parks and veterinary clinics around the world.The evolutionary technological approach built into each of the systems is what makes a Moduflex system unique by providing maximum flexibility and adaptability to your needs at all times.

Known worldwide, the Moduflex veterinary anaesthesia machines are used in the majority of universities across North America and numerous facilities around the world. The Moduflex line offers a wide variety of anaesthesia machines designed for all types of patients ranging from laboratory animals like mice all the way to 136 kg. All KRUUSE Moduflex units come with a 5 year warranty *.

*) Local variations in warranty conditions may apply. Please check with your local supplier.

Welcome to KRUUSE Moduflex!

Known worldwide, the Moduflex veterinary Anaesthesia machines are used in the majority of universities across North America and numerous facilities around the world.

References:

Concordia University	University of Guelph (17 units)	Université Laval
University of Manitoba	University of Missouri-Columbia	Université de Montréal (60 units)
University of Prince Edward Island	Université du Québec à Montréal	Université du Québec à Trois-Rivières
Université de Sherbrooke	University of Wisconsin in Milwaukee	Université du Québec à Chicoutimi
University of Ottawa	University Health Network	University of Toronto
University of Minnesota	University of Alberta	University of Saskatchewan
University of Western Ontario	University of Calgary	University of Waterloo
University of Ottawa	University of British-Columbia	University of Moncton
University of Florida	University of Kansas	University of Pennsylvania
Iowa State University	Purdue University	Kansas State University
Michigan State University	North Carolina State University	École Nationale Vétérinaire de Toulouse
École Nationale Vétérinaire de Nantes	École Nationale Vétérinaire d'Alfort	École Nationale Vétérinaire de Lyon
Louisiana State University	Ross University, St-Kitts (35 units)	University of Giorgia
Colorado State University	University of Minnesota	Oregon State University
McGill University	DMV Referal Center (18 units)	Rive-Sud Referral Center (10 units)

Before deciding on what Anaesthesia equipment you should consider there are a few questions that it might prove beneficial to ask yourself.

What space is available for the Anaesthesia machine?
Depending on the space available it might be a good idea to evaluate the foot print of the unit. If space is a concern you might want to consider the smallest foot print (like the KRUUSE Coaxial). If you have lots of space maybe you would prefer all the extra storage space of the KRUUSE Optimax Coaxial system

Would you prefer a mobile unit or a wall mount?
A wall mounted unit generally takes up a minimum of space but lacks the mobility of the trolley based units. The KRUUSE Access 2 is by default a trolley based system but you can add the optional wall mount arm and use it either way you want.

Do you use a veterinary monitor or an Anaesthesia ventilator during interventions?
If so you might want to consider units with at least one top shelf.

Do you plan to work with bottled oxygen or and oxygen concentrator?
If you plan to use the oxygen concentrator option make sure you get a concentrator that meets the requirements. We strongly advise you to add an optional backup oxygen bottle when using an oxygen concentrator.

What about scavenging?
Do you plan to connect to an existing scavenging system or are you looking to install a new scavenging solution?

Is hypothermia a concern during surgery?
Both the KRUUSE Coaxial and the KRUUSE Optimax Coaxial use the patented Coaxial system that ensures correct mounting, reduced dead space and moistering and heating of the inhaled gas by the exhaled gas.

What kind of animals do you treat?
If you are planning to anesthetize a lot of small animals like toy breeds or cats you might want to consider adding a Bains adapter to your system. This is also ideal for situations where very fast control of the Anaesthesia is required.

Do you want to use more than one type of anaesthetic gas?
If you would find it beneficial to be able to easily switch between two anaesthetic agents (like isoflurane and sevoflurane) you might want to consider the KRUUSE Optimax coaxial solutions. Here you have two Selectatec mounts. This gives you the option to use isoflurane for all standard procedures and easily switch to the more expensive sevoflurane when you find that useful.

Model	Moduflex Optimax	Moduflex Coaxial	Moduflex Access2
Dimensions	Length 64.77 cm (25.50″) Width 49.53 cm (19.50″) Height 137.16 cm (54″)	Length 53.34 cm (21″) Width 49.53 cm (19.50″) Height 134.62 cm (53″)	Length 68.58 cm (27″) Width 68.58 cm (27″) Height 128.27 (50.5″)
Shelf for accessories	Length 49.53 cm (19.5″) Width 30.48 cm (12″)	Length 31.75 cm (12.5″) Width 19.68 cm (7.75″)	Length 35 cm (13.78″) Width 30 cm (11.81″)
Installation options	Mobile or wall-mount	Mobile	Mobile or wall-mount
Storage space	Yes	No	No
Coaxial circuit	Yes	Yes	No
Open circuit (Bain)	Optional	Optional	Optional
Semi-open circuit (absorber)	Yes	Yes	Yes
Warranty	5 years	5 years	5 years

ANAESTHESIA EQUIPMENT | Units

The KRUUSE Moduflex
Coaxial and Optimax
offer easy front placed access to the fresh gas connection. This ensures quick and easy switch from one circuit to another (eg. switching to the optional Bains adapter).

The KRUUSE Moduflex
units come with a standard 5 years warranty*.

*)Local variations in warranty may apply – please ask your local dealer

Convenient instrument and upper monitor shelf

0.1 to 4 lpm O_2 flowmeter. Rotary float and large scale for easy readability.

Circuit and line pressure gauges.

Coaxial CO_2 absorber.

Momentary closed feature integrated into our pop-off valve.

SELECTATEC™ compatiblity manifold for easy and quick installation of one or two vaporizers.

Recessed flush valve to prevent accidental activation.

Quick-connect fresh gas outlet for easy and secure switches between breathing circuits.

Drawer assembly.

KRUUSE Moduflex Optimax Coaxial trolley-based anaesthetic machine

KRUUSE Moduflex Optimax Coaxial is the flagship of the Moduflex line.
This trolley-based version is a real anaesthetic workstation, perfectly combining ingenuity, sophistication and common sense. The large, stable trolley gives a good overview of all the equipment and provides ample room for both monitoring equipment as well as a ventilator. The practical drawers facilitate easy access to all necessary equipment, which means that the work area never appears untidy and cluttered. KRUUSE Moduflex Optimax Coaxial comes with a SELECTATEC™ Tec3 vaporiser and the specially developed coaxial patient circuit, which ensures easy and correct connection to the

absorber, reduces heat loss from the patient and increases humidity in the inspired air. KRUUSE Moduflex Optimax Coaxial comes as standard model with an evaporator and a rotation oxygen flowmeter (0.1-4 lpm), but one of the many benefits of particularly the KRUUSE Moduflex Optimax Coaxial is the ability to configure the system to cover special needs. As standard for instance, there is room for two vaporizers with an interlocking device, which means that it is only possible to activate one vaporizer at a time.
Furthermore, the KRUUSE Moduflex Optimax Coaxial can be fitted with up to three flow meters (e.g. O_2, air, N_2O, etc.).

NB: Please note that special configurations will incur an additional fee depending on the chosen configuration. Additionally, a longer delivery time may occur.
Please contact your KRUUSE representative if you have specific requirements for your KRUUSE Moduflex Optimax Coaxial anaesthetic machine not met by our standard configuration.

Selected features of KRUUSE Moduflex Optimax Coaxial:

- 0.1 to 4 lpm rotation flow meter - large scale for precision and ease of reading
- Recessed flush valve to prevent accidental activation
- Flush flow between 40 and 60 lpm for increased safety
- Quick-connect mixed gas outlet for fast and easy change between e.g. a Bain system and a circle system
- SELECTATEC™ manifold for fast and easy installation of vaporizers
- CO_2 absorber with integrated coaxial breathing system which ensures correct connection, reduces heat loss from the patient, helps to increase humidity in the inspired air and provides better overview of tubes
- Convenient shelf for e.g. instruments
- Patient manometer
- Practical top shelf for either a monitor or a ventilator
- Pop-off valve with built-in quick-close function provides fast closure when need for manual ventilation arises and guards against forgetting re-opening upon cessation of manual ventilation
- 5 year warranty

Included with the KRUUSE Moduflex Optimax Coaxial:

- Tec3 isoflurane vaporizer
- Keyfill to Tec3 vaporizers
- Coaxial patient circuit
- 2 litre rebreathing bag
- 3 litre rebreathing bag
- Fresh gas tube
- Krytox grease
- Evacuation tube (150 cm)

Cat. No 270360

The flush button
on all Moduflex Anaesthesia machines is calibrated at 50 lpm. This is compared to most machines that are set at 80-100 lpm: This lower flow reduces the risk of accidental over inflation of the patient's lungs.

When you compare the KRUUSE Moduflex units
with other units on the market there you will notice that the rebreathing bag is always inflated.
This is due to a special mechanism that keeps your bag constantly inflated to a pressure of approximately 0.5 cm H_2O.

This ensures that you are always ready for assisting with manual ventilation should this be needed.

KRUUSE Moduflex Optimax Coaxial wall-mounted anaesthetic machine

KRUUSE Moduflex Optimax Coaxial is the flagship of the Moduflex line. This wall-mounted version is a truly high-end anaesthetic machine taking up very limited space. The KRUUSE Moduflex Optimax Coaxial wall-mounted solution is an ideal choice both in a larger practice to fulfil the need for multiple installations and many functions, as well as in a smaller practice, where space limitations can be a problem. KRUUSE Moduflex Optimax Coaxial machine comes with a SELECTATEC™ Tec3 vaporiser and the specially developed coaxial patient circuit, which ensures easy and correct connection to the absorber, reduces heat loss from the patient and increases humidity in the inspired air.

The standard KRUUSE Moduflex Optimax Coaxial machine comes with an evaporator and a rotation oxygen flowmeter (0.1-4 lpm), but one of the many benefits of particularly the KRUUSE Moduflex Optimax Coaxial is the ability to configure the system to cover special needs. As standard for instance, there is room for two vaporizers with an interlocking device, which means that it is only possible to activate one vaporizer at a time. Furthermore, KRUUSE Moduflex Optimax Coaxial can be fitted with up to three flow metres (e.g. O_2, air, N_2O).

NB: Please note that special configurations will incur an additional fee depending on the chosen configuration. Additionally, a longer delivery time may occur.
Please contact your KRUUSE representative if you have specific requirements for your KRUUSE Moduflex Optimax Coaxial anaesthetic machine not met by our standard configuration.

Selected features of KRUUSE Moduflex Optimax Coaxial

- 0.1 to 4 lpm rotation flow meter - large scale for precision and ease of reading
- Recessed flush valve to prevent accidental activation
- Flush flow between 40 and 60 lpm for increased safety
- Quick-connect mixed gas outlet for fast and easy change between e.g. a Bain system and a circle system
- SELECTATEC™ manifold for fast and easy installation of vaporizers
- CO_2 absorber with integrated coaxial breathing system which ensures correct connection, reduces heat loss from the patient, helps to increase humidity in the inspired air and provides better overview of tubes
- Convenient shelf for e.g. instruments
- Patient manometer
- Practical top shelf for either a monitor or a ventilator
- Pop-off valve with built-in quick-close function provides fast closure when need for manual ventilation arises and guards against forgetting re-opening upon cessation of manual ventilation
- 5 year warranty

Included with the KRUUSE Moduflex Optimax Coaxial:

- Tec3 isoflurane vaporizer
- Keyfill to Tec3 vaporizers
- Coaxial patient circuit
- 2 litre rebreathing bag
- 3 litre rebreathing bag
- Fresh gas tube
- Krytox grease
- Evacuation tube (150 cm)

Cat. No 270365

The Quick Close pop
off valve adds speed and safety if you need to manually ventilate your patient. Simply press the valve and start ventilation pressing the always inflated rebreathing bag. When normal respiration has been achieved simply release the valve and you will be back to normal. No risk of accidentally leaving the valve closed.

Condensation base
integrated to the sodalime canister to allow the sodasorb to eliminate the moisture and solidify because of accumulation of condensation and then create an inspiration resistance.

0.1 to 4 lpm O_2 flowmeter. Rotary float and large scale for easy readability.

Convenient monitor shelf.

SELECTATEC™ compatibility manifold for easy and quick installation of vaporizer.

Quick-connect fresh gas outlet for easy and secure switches between breathing circuits.

CO_2 absorber with integrated coaxial breathing circuit reduces patient heat loss, helps to humidify the inspired gas and reduce clutter.

Recessed flush valve to prevent accidental activation.

Momentary closed feature integrated into our pop-off valve.

KRUUSE Moduflex Coaxial Anaesthetic Machine

KRUUSE Moduflex Coaxial anaesthetic machine is without doubt the most popular anaesthetic machine in the Moduflex line - and with good reason. Coaxial is a very solidly built anaesthetic machine that despite of of being on a trolley takes up minimal floor space. The four solid 4 inch wheels and sturdy trolley design ensure good and stable mobility of the unit. Coaxial is as standard equipped with a practical top shelf, which can be used for either a monitor or a ventilator. In addition, the Coaxial includes the specially developed coaxial patient circuit, which ensures easy and correct connection to the absorber, reduces heat loss from the patient and increases humidity in the inspired air.

Selected features of KRUUSE Moduflex Coaxial

- 0.1 to 4 lpm rotation flow meter - large scale for precision and ease of reading
- Recessed flush valve to prevent accidental activation
- Flush flow between 40 and 60 lpm for increased safety
- Quick-connect mixed gas outlet for fast and easy change between e.g. a Bain system, and a circle system
- SELECTATEC™ manifold for fast and easy installation of vaporizers
- CO_2 absorber with integrated coaxial breathing system which ensures correct connection, reduces heat loss from the patient, helps to increase humidity in the inspired air and provides better overview of tubes
- Patient manometer
- Practical top shelf for either a monitor or a ventilator
- Pop-off valve with built-in quick-close function provides fast closure when need for manual ventilation arises and guards against forgetting re-opening upon cessation of manual ventilation
- 5 year warranty

Included with the KRUUSE Moduflex Coaxial

- Tec3 isoflurane vaporizer
- Keyfill to Tec3 vaporizers
- Coaxial patient circuit
- 2 litre rebreathing bag
- 3 litre rebreathing bag
- Fresh gas tube
- Krytox grease
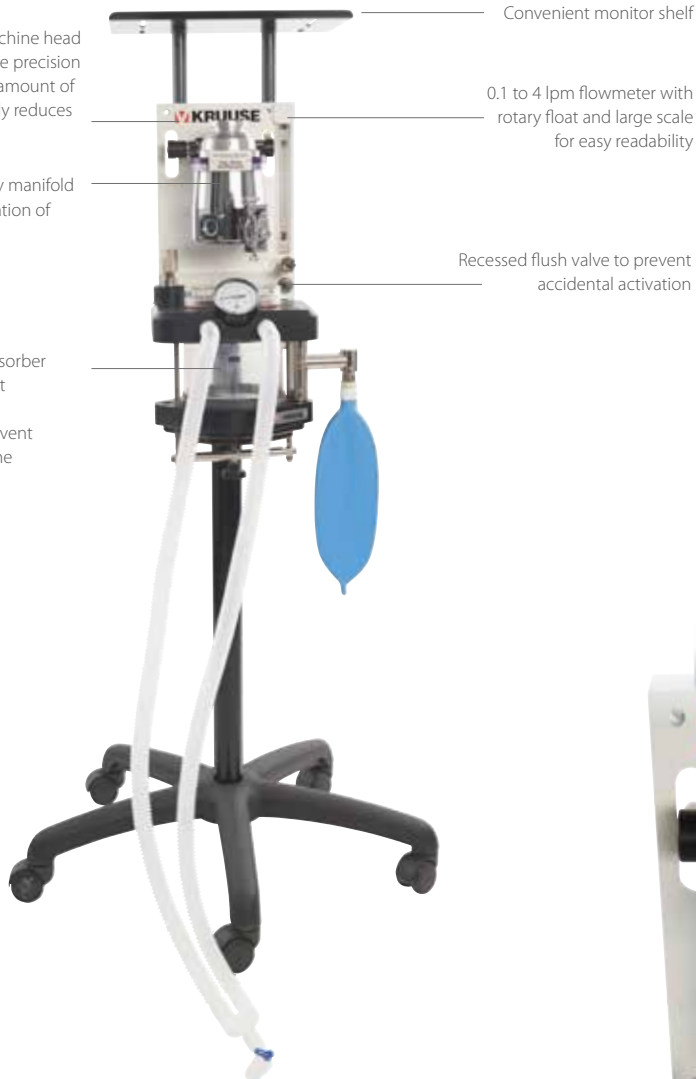- Evacuation tube (150 cm)

Cat. No 270355

Inspiration and exhalation
domes are positioned so that you can easily observe them during procedures.

The precision float flowmeter
allows for accurate administration of oxygen during the procedure. This type of flowmeter ensures an easier read and more accurate oxygen supply compared to the standard ball flowmeter.
The rotation of the float gives a quick indication of the actual flow and shows that the float is not stuck in position.

Both the Anaesthesia machine head and the absorber head are precision machined to reduce the amount of connections which greatly reduces the risk of leaks

Cagemount compatibility manifold for easy and quick installation of vaporizer

Standard 1500 ml CO_2 absorber designed for easy and fast replenishing of sodalime. Condensation trap to prevent water build-up in sodalime

Convenient monitor shelf

0.1 to 4 lpm flowmeter with rotary float and large scale for easy readability

Recessed flush valve to prevent accidental activation

KRUUSE Moduflex Access2 Anaesthetic Machine

KRUUSE Moduflex Access2 is the latest
addition in the Moduflex line. When choosing
KRUUSE Moduflex Access2, you get a high
quality anaesthetic machine that is as
compact as the price. Both the anaesthetic
machine head and the absorber head have
been specially designed to reduce the num-
ber of connections, thereby reducing the risk
of leaks. KRUUSE Moduflex Access2 comes
standard as a trolley-based model, but can
also be wall-mounted if desired, by using the
optional wall mount arm (270351).
KRUUSE Moduflex Access2 offers a wide
range of the same features as the larger
machines in the Moduflex line. In other
words, KRUUSE Moduflex Access2 is an ideal
entry-level anaesthetic machine.

Selected features of KRUUSE Moduflex Access2

- 0.1 to 4 lpm rotation flow meter - large scale for precision and ease of reading
- Recessed flush valve to prevent accidental activation
- Flush flow between 40 and 60 lpm for increased safety
- Quick-connect mixed gas outlet for fast and easy change between e.g. a Bain system and a circle system
- Cage mount manifold for installation of vaporizer
- 1500ml CO_2 absorber designed for fast and easy change of soda lime. Condensation trap to prevent water in the soda lime. Easy and efficient gas sealing.
- Patient manometer
- Practical top shelf for either a monitor or a ventilator
- 5 wheel spider base
- 5 year warranty

Included with the KRUUSE Moduflex Access2

- Tec3 isoflurane vaporizer
- Keyfill to Tec3 vaporizer
- Y patient circuit
- 2 litre rebreathing bag
- 3 litre rebreathing bag
- Fresh gas tube
- Krytox grease
- Evacuation tube (150 cm)

Cat. No 270350

Accessories to KRUUSE Moduflex anaesthetic machines

KRUUSE Moduflex Bain 25 System

The KRUUSE Moduflex Bain circuit adaptor is definitely the number 1 accessory for Anaesthesia machines. Easy and efficient, it can be installed on all brands of Anaesthesia machines. Used in a number of veterinary hospitals and clinics, the Bain circuit adaptor can help increase the quality of your practice.

- Reduces breathing resistance
- Includes a momentary pop off valve
- Includes a pressure gauge
- 5 year warranty
- Easy to install

Ideal for Small Animals

The KRUUSE Moduflex Bain circuit adaptor is mostly used with animals of 5 kg or less because of its lower breathing resistance. There are no check valves or carbon dioxide absorbent granules in the circuit to increase resistance. This makes it the ideal accessory for small patients and those with breathing difficulties.

Immediate Ventilation

A KRUUSE Moduflex Bain circuit adaptor on a veterinary Anaesthesia machine allows you to have more control during interventions. Since the breathing bag is always inflated, the patient can be ventilated immediately, contrary to using other open circuits (e.g. Ayres T-piece, Jackson-Rees), where ventilation can only be done once the bag reaches a certain level of inflation. The KRUUSE Moduflex Bain circuit adaptor contains a momentary pop-off valve which allows you to close the valve quickly by simply pushing down on the valve and holding it. You can then ventilate immediately. This feature of the KRUUSE Moduflex Bain circuit adaptor solves the problem of forgetting to reopen the valve. As with Jackson Rees and Ayres T-Piece open circuits, the KRUUSE Moduflex Bain adaptor includes a pressure gauge which allows you to monitor the patient's breathing pressure.

Efficient Quick Fix

The KRUUSE Moduflex Bain circuit adaptor can replace the CO_2 absorber in case of breakage, thus eliminating downtime of the Anaesthesia machine. When using the KRUUSE Moduflex Bain circuit adaptor, the patient's temperature should be monitored closely as it can decrease more rapidly.

A Bain type open circuit on an Anaesthesia machine gives you better control during surgery. The breathing bag is always inflated, no need to wait for it to have reached a certain size before ventilating the patient. Compared to other open circuits, such as the Jackson Rees and the Ayres T- Piece, the Moduflex Bain is equipped with a pressure gauge that gives you the possibility to check the animal's lung pressure. The Bain adaptor is equipped with a momentary valve to avoid forgetting the valve in a closed position, which could cause pulmonary trauma to the animal.

- Integrated gas evacuation valve with a momentory push feature for a rapid transfer between spontaneous and controlled ventilation.
- Integrated gas evacuation exhaust port is built into the mounting bracket, eliminating the risk of obstruction in the tube.
- Integrated 0.5 cm H_2O check valve built into the adaptor to reduce the possibility of a faulty evacuation system drawing out into the patient's fresh gas supply.
- A pressure gauge offers excellent visibility of circuit pressure.
- 5 year warranty.

Included with the Moduflex Bain circuit adaptor

- 1 x 1 litre rebreathing bag
- 1 x bain circuit
- 1 x Moduflex anaesthesia machine installation kit
- 1 x fresh gas tubing
- 1 x fresh gas outlet

270370 KRUUSE Moduflex Bain 25 system til Moduflex Access2
270371 KRUUSE Moduflex Bain 25 system til Moduflex Coaxial+Optimax

KRUUSE Moduflex Patient Circuit Alarm

A KRUUSE Moduflex circuit alarm added to your Anaesthesia machine will alert you if the patient's pressure approaches a dangerous level.

- Easy installation
- Standard 9 volt battery
- Can be installed on any brand of Anaesthesia machine
- Factory pre-set at 15cm H_2O
- 5 year warranty (with the exception of the battery)

Assisted Ventilation

When assisted ventilation is necessary, it is difficult to determine the airway pressure. Adding a circuit alarm to your Anaesthesia machine can reduce the risk of an elevated pressure. The alarm will alert you if the pressure approaches a dangerous level.

Evacuation Valve

If you happen to forget to re-open the evacuation valve after ventilating your patient, the circuit alarm will warn you at the approach of a dangerous level.

Adjustment

The circuit alarm is adjustable, allowing you to set the pressure at a level, which is comfortable for you, (preset to 15 cm H_2O).

Cat. No 270372

KRUUSE Moduflex Scavenger Interface

Ensures smooth and controlled suction when using e.g. the KRUUSE Moduflex evacuation ventilator (270382).

Use of this scavenger interface ensures a constant suction that does not affect the patient's access to anaesthetic gas.
The scavenger interface can handle multiple connections concurrently, which means that it is not necessary to change connection when changing between e.g. a Bain system and a circle system.

During surgery the unused gas should be evacuated outside of the building to avoid it being inhaled by your employees and patients. Connected to a gas evacuation ventilator, the scavenger interface controls the flow of suction and maintains the balance with the quantity of unused gas. If you don't use a scavenger interface, you have to either adjust the flow of suction from the gas evacuation ventilator so it doesn't draw up the gas intended for the patient, or you have to increase the gas flow.

Advantages of the KRUUSE Moduflex Scavenger Interface

The KRUUSE Moduflex scavenger interface is designed so that you don't have to disconnect one system in order to connect another. Whether you use the Bain circuit adapter or the absorber, both systems remain connected thus avoiding a connection error which could leave the gas in the room. The interface also allows you to control the inhalation flow and avoid depletion of the breathing bag or an increase in the breathing resistance. We recommend one scavenger interface per veterinary Anaesthesia machine for an efficient evacuation system.

In the case of a defect in the ventilation system, the scavenger interface contains an automatic check valve that will evacuate excess pressure and protect the patient. If you are renovating and have opted to install a gas evacuation ventilator, you will need a scavenger interface in order to ensure the proper functioning of the system.

Precautions to ensure proper Functioning of the Gas Evacuation System

Make sure the scavenger bag is not perforated.
It is frequent to see cracks at the base of the evacuation bag connector.
These bags tear easier than breathing bags since the Anaesthetic remains stagnant in the bag.

Cat. No 270380

KRUUSE Moduflex gas evacuation ventilator

Semi active exhaust ventilation system for use with KRUUSE Moduflex anaesthetic machines.
This system requires the installation of KRUUSE Moduflex scavenger interface (270380) on your KRUUSE Moduflex anaesthetic machine.
The system has a capacity of 3964 liters/min and can be used with up to 8 anaesthetic machines connected via their individual scavenger interface (depending of the quality of the scavenging hose installation).

NB: Must be ordered with power plug! For DK power plug order item no. 391095, for UK power plug order item no. 391128, for EU power plug (Schuko) order item no. 29036

Cat. No 270382

Hallowell2002 Ventilator

Ventilator for use with the KRUUSE Moduflex line where controlled ventilation is desired.
The Hallowell EMC 2002 is an electronically controlled, time-cycled, pressure limited ventilator.

Electronic Control

Eliminates the substantial driving gas required to operate pneumatically controlled ventilators.

Time Cycled

Insures consistently spaced breaths.
The possibility of stacking breaths or auto-PEEP is eliminated by keeping the I:E ratio constant at 1:2. This means that regardless of the respiratory rate setting two-thirds of each breath will remain for expiration.
The respiratory rate is adjustable from 6 - 40 breaths per minute (BPM).

Volume Constant

Insures that each delivered breath will have essentially the same volume, independent of changes in patient compliance and airway resistance.

Pressure Limited

Equipped with dual airway pressure alarms that monitor and sound when the peak inspiratory pressure (PIP) of any breath either exceeds the preset maximum working pressure limit (MWPL) or fails to reach 6 cm H_2O as in the case of a disconnect.

Warranty

One year

NB: Must be ordered with power plug! For DK power plug order item no. 391095, for UK power plug order item no. 391128, for EU power plug (Schuko) order item no. 29036

Cat. No 270390

KRUUSE Moduflex patient circuit for Coaxial and Optimax anaesthetic machines

Patient circuit for KRUUSE Moduflex Coaxial and KRUUSE Moduflex Optimax Coaxial anaesthetic machines.

The coaxial patient circuit ensures easy and correct connection to the absorber, reduces heat loss from the patient and increases humidity in the inspired air.

Cat. No 270373

KRUUSE Moduflex Induction Chamber, small

Induction chamber for small rodents and exotics. This induction chamber makes it possible to anesthetize small rodents and exotics without the stress often associated with induction by injection and handling in connection with this.
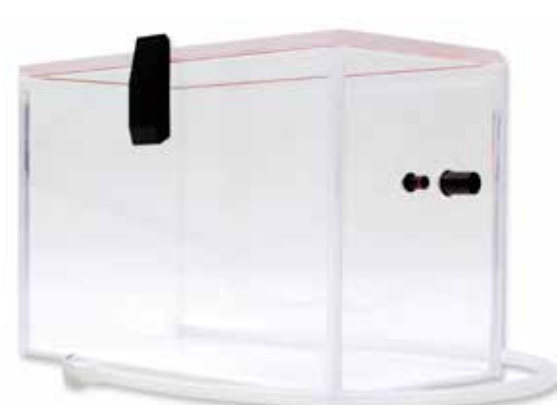
Cat. No 270395

KRUUSE Moduflex Induction Chamber, large

Induction chamber for larger rodents and exotics. This anaesthetic induction chamber makes it possible to anesthetize larger rodents, small rabbits, small cats, kittens and exotics without the stress often associated with induction by injection and handling in connection with this.

Cat. No 270396

KRUUSE Anaesthetic Filter

Convenient filter to collect organic anaesthetic gases. Lets oxygen and carbon dioxide through. The lifetime of the filter is approx. 20 hours depending on gas concentration and evaporation. The filter is saturated and must be replaced when the filter weight has increased by 200 g. Delivered complete with 2 m x 22 mm tubing and standard fitting (fits all anaesthesia machines).

KRUUSE anaesthetic filter, 2 m x 22 mm
Cat. No 271559

Spare filter for KRUUSE anaesthetic filter
Cat. No 271558

Connection piece f/scavenging tube f/Komesaroff
Cat. No 271561

Scavenge tube (per meter)
Cat. No 271579

Re-breathing Bags

Re-breathing bags. Black antistatic rubber. Sizes 15 l and 30 l are for large animals.

Re-breathing bag 0.5 l	Cat. No 271600
Re-breathing bag 0.75 l	Cat. No 271603
Re-breathing bag 1.0 l	Cat. No 271610
Re-breathing bag 1.5 l	Cat. No 271620
Re-breathing bag 2.0 l	Cat. No 271630
Re-breathing bag 3.0 l	Cat. No 271640
Re-breathing bag 6.0 l	Cat. No 271642
Re-breathing bag 4.0 l	Cat. No 271645
Re-breathing bag 5.0 l	Cat. No 271646
Re-breathing bag 15 l	Cat. No 271647
Re-breathing bag 30 l	Cat. No 271648

1.5 l

1.0 l

0.5 l

Endotracheal PVC Tube, disposable

Endotracheal tube used to deliver anaesthetic gases after oral intubation into the desired position. Those with inflated balloon cuff prevent gas loss during assisted respiration.

- Very strong and durable quality
- Transparent PVC - visible line during X-ray
- Sterile, individual packaging
- Very cost effective
- Sterile packed, complete with connector
- Softens at body temperature, reducing postoperative irritation

Endotracheal PVC tube without cuff 2.5 mm	Cat. No 272000
Endotracheal PVC tube without cuff 3.0 mm	Cat. No 272001
Endotracheal PVC tube without cuff 3.5 mm	Cat. No 272002
Endotracheal PVC tube without cuff 4.0 mm	Cat. No 272003
Endotracheal PVC tube with cuff 3.5 mm	Cat. No 272083
Endotracheal PVC tube with cuff 4.0 mm	Cat. No 272084
Endotracheal PVC tube with cuff 4.5 mm	Cat. No 272004
Endotracheal PVC tube with cuff 5.0 mm	Cat. No 272085
Endotracheal PVC tube with cuff 5.5 mm	Cat. No 272086
Endotracheal PVC tube with cuff 6.0 mm	Cat. No 272087
Endotracheal PVC tube with cuff 6.5 mm	Cat. No 272088
Endotracheal PVC tube with cuff 7.0 mm	Cat. No 272089
Endotracheal PVC tube with cuff 7.5 mm	Cat. No 272090
Endotracheal PVC tube with cuff 8.0 mm	Cat. No 272091
Endotracheal PVC tube with cuff 8.5 mm	Cat. No 272092
Endotracheal PVC tube with cuff 9.0 mm	Cat. No 272093
Endotracheal PVC tube with cuff 9.5 mm	Cat. No 272094
Endotracheal PVC tube with cuff 10.0 mm	Cat. No 272095
Endotracheal PVC tube with cuff 10.5 mm	Cat. No 272096
Endotracheal PVC tube with cuff 11.0 mm	Cat. No 272017

Vital Sign Monitoring

Vet Trends® 6400
Multiparameter Monitor Series

Key Features:

From the manufacturer of Vet Trends V – the preferred veterinary vital signs monitor in most US veterinary schools – come these new series of vital signs monitors specifically designed for optimal performance in the veterinary world.

Throughout the series of monitors various technologies have been handpicked for their excellent performance in the veterinary environment.

The colour touch screen combined with a highly intuitive user interface ensures optimal ease of use in the clinic.

- Covers all relevant parameters in veterinary Anaesthesia monitoring
- All patient parameters used are uniquely gold standard technology and veterinary patient specific
- Intuitive user interface and colour touch screen with quick access front panel buttons
- Anaesthesia report file output via USB
- Optional User replaceable easy "Snap Out" rechargeable litium battery
- 24 hour tabular trends and graphical approvals viewed 5 min, 30 min, 1 hour, 2 hours, 4 hours or 8 hours
- Meets all UL and CE Approvals

The three Models will cover all relevant Monitoring in the Veterinary Clinic

Vet Trends® 6430
Good Entry Level model at a reasonable Price Point

Vet Trends® 6440
Probably the best fit for most veterinary clinics

Vet Trends® 6460
Fully equipped multi Parameter Monitor with all relevant Parameters for Anaesthesia Monitoring

Key Features

ECG (IVY)
Non-invasive blood pressure (NIBP) from Suntech
Pulse oximetry (SpO$_2$) Nellcor intuitiveuser interface
Tabular trend storage (24 hrs)
Graphical trend viewing in 5 min, 30 min, 1 hr, 2 hr, 4 hr, or 8 hr intervals
Anaesthesia report file output
Accessory starter kit included
colour touch screen with quick access buttons on front panel
Anaesthesia report via USB export
Meets UL & CE approvals

Cat. No 291043

Key Features

ECG (IVY)
Non-invasive blood pressure (NIBP) from Suntech
Pulse Oximetry (SpO$_2$) Nellcor
Endtidal CO2 (EtCO2) Oridion Microstream
Intuitive User Interface
Tabular trend storage (24 hrs)
Graphical trend viewing in 5 min, 30 min, 1 hr, 2 hr, 4 hr, or 8 hr intervals
Anaesthesia report file output
Accessory starter kit included
Colour touch screen with quick access buttons on front panel
Anaesthesia report via USB export
Meets UL & CE approvals

Cat. No 291044

Key Features

ECG (IVY)
Non-invasive blood pressure (NIBP) from Suntech
Pulse Oximetry (SpO$_2$) Nellcor
Endtidal CO2 (EtCO2) Oridion Microstream
Invasive blood pressure (IBP)
Temperature (Temp) YSI
Intuitive User Interface
Tabular trend storage (24 hrs)
Graphical trend viewing in 5 min, 30 min, 1 hr, 2 hr, 4 hr, or 8 hr intervals
Anaesthesia report file output
Accessory starter kit included
Colour touch screen with quick access buttons on front panel
Anaesthesia report via USB export
Meets UL & CE approvals

Cat. No 291045

Oxygen Concentrators

Using Oxygen concentrators often proves to be a very economical alternative to bottled oxygen.

It is, however, always recommended to mount a backup solution (e.g. a 4 L Oxygen cylinder) when running Anaesthesia from an oxygen concentrator as this will require constant power in order to function.

KRUUSE NewLife Intensity Oxygen Concentrator

Economic oxygen concentrator supplying up till 8 litres of oxygen by 90% oxygen content at a pressure of 1.37 bar (20 psig/138 kPa). A user-friendly machine with an EcoCheck® Oxygen Monitor; a system monitors that the oxygen content stays above 85%. An alarm indicates if any problems with oxygen content, drop of pressure or power supply.

Cat. No 271609

KRUUSE NewLife Elite Oxygen Concentrator

Economic oxygen concentrator supplying up till 5 litres of oxygen by 90% oxygen content at a pressure of 0.62 bar. A user-friendly unit with an EcoCheck® Oxygen Monitor; which is a system monitoring that the oxygen content stays at a level above 85% and if this is not the case it gives and audio/visual alarm. Primarily recommended for oxygen therapy use. For use with Anaesthesia machines we recommend the KRUUSE Newlife Intensity Oxygen Concentrator (271609).

Cat. No 271608

Information about dead space in breathing circuit

A lot of confusion exists in veterinary practices as to the definition of dead space in a breathing circuit.

There are 2 types of dead space:

1. Anatomical dead space
2. Mechanical dead space

Nothing can be done about anatomical dead space, as this is the patient. Mechanical dead space, however, must be kept to a minimum.

Understanding Dead Space

Dead space in the breathing circuit is the space where inhalation and exhalation coincide.

Since the patient breathes in and out of the same tube, he could inhale unfiltered (containing CO_2) exhaled gas.

There are four critical Places where you can find dead Space

1. The portion of the endotracheal tube which extends out of the trachea (from the mouth to the breathing circuit)
2. The elbow on the breathing circuit
3. Any connector used between the endo tube and the breathing circuit (e.g. CO_2 adaptors, apnea alarm adaptors etc.)
4. The Y piece at the end of a Y circuit

Y Patient Circuit

The tubes on the Y circuit do not cause dead space because of the check valves on the absorber. The inhalations of the patient pass through one tube and exhalations through the other. Using tubes with a smaller diameter does not reduce dead space.

Bain Patient Circuit

In addition to the dead space shown in the picture, if insufficient flow is used with a Bain tube then the patient will be re-breathing CO_2. The fresh gas flow must be greater than the tidal volume that the patient breathes otherwise there will be CO_2 build-up and the difference between tidal volume and fresh gas flow will essentially be additional dead space.

Universal F Patient Circuit

The Universal F circuit has gained in popularity on the veterinary market. It was originally designed as a single patient use circuit in human Anaesthesia. Its advantages are better heat recovery and better humidification of the gas. Its disadvantage is that it can be easily connected to the wrong ports therefore losing all of its advantages. On some models the inhalation tube is not attached to the connector, which can cause increased dead space.

Coaxial Patient Circuit

The Coaxial tube used on re-breathing circuits (not to be confused with Bain tubes) is similar to the Universal F but without the disadvantages. It has an inhalation tube attached and cannot be connected backwards. It was designed as an improvement to the Universal F.