

# **Lung Ventilation** Systems and Accessories



ISO 13485:2016 CERTIFIED

# **Empowering Better, Safer Diagnosis & Treatment**

Our Nuclear Medicine products better the human condition by protecting people from exposure during potentially life-saving diagnosis and therapy.

From dose preparation to patient administration, we enhance safety and efficiency for technologists and physicists through top-quality solutions.







# Part of Mirion Medical

As part of Mirion Medical, the nuclear medicine and molecular imaging portfolios of Capintec and Biodex have come together under Capintec, A Mirion Medical Company. Together, we empower better, safer diagnosis and treatment by enhancing safety and efficiency for technologists and physicists through top-quality nuclear medicine solutions.

At Mirion Medical we partner with medical professionals to better the human condition - from diagnosis through treatment, we enhance the delivery and ensure the safety of healthcare.



# Pulmonex<sup>®</sup> II Xenon System

The Pulmonex II Xenon System is the best choice for the safe performance of all regional ventilation studies. This is a completely closed system that delivers maximum, reliable results, is simple to operate and reasonably priced.

#### **Resistance - Free Breathing**

The injected bolus of xenon will reach the patient exactly when desired. Oxygen may be added to the system any time during the study with the press of a button. An in-line cartridge containing Litholyme absorb  $CO_2$ , preventing acidosis. Large breathing passages, two 10-liter breathing bags (air-in and air-out) and motor-assisted airflow combine to provide resistance-free breathing.

#### Simple to Operate

All three steps of a Pulmonex II system study (start up, equilibrium imaging and washout) are controlled by a single valve handle on the front panel. The valve directs the motor-assisted flow of gases throughout the system. A manually adjusted 15-minute timer initiates all functions, then automatically shuts down the system to complete the study after patient and system washout. With controls conveniently located on the front panel, the user can operate the system and observe the patient and gamma camera from one position. Panel controls are clearly marked for each mode of the procedure with large viewing windows to make it easy to monitor the patient's breathing. A trim, clean design, large handles and total mobility permit easy positioning of the system for studies in both seated and supine positions.



Easy access to Litholyme and Drierite cartridges, supplied with the system. Xenon Convenience Kits, including pre-filled Litholyme and Drierite cartridges for single use only are sold separately.

See page 13.

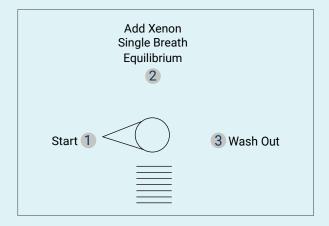


#### **Designed for Safety**

Internal systems of the Pulmonex II are shielded for patient and operator safety. The system features two built-in gas traps that operate with a blower fan. Exhaled xenon is pulled through activated charcoal housed within two .125" lead shielded "U"shaped traps. The double traps extend the life of the charcoal and provide a lengthy migration path for xenon effluent, allowing greater decay and absorption before exhaustion. A cartridge containing Drierite serves as a moisture absorber for air passing into the trap. The charcoal trap can then more effectively remove xenon effluent after each study. Airflow regulation of the trap blowers assures complete patient and system washout. Averaging 30-50 studies per month, the charcoal trap will last approximately one year; charcoal traps are easily replaced. A disposable bacteriostatic filter, used in conjunction with a disposable mask or mouthpiece, prevents system contamination.

## **Pulmonex II Xenon System**

## Easy to Operate 1-2-3 Three Simple Performance Positions



All three steps of a Pulmonex II study (start up, equilibrium imaging and washout) are controlled by a single valve handle on the front panel. The valve directs the motor-assisted flow of gases throughout the system.

- **Position One:** Start Patient breaths room air. System is charged with oxygen.
- **2 Position Two:** Single Breath and Equilibrium this is when you add Xe-133.
- 3 Position Three: Washout The patient is now breathing room air from a one-way valve through the delivery system and exhaling into the built-in charcoal trap. A manually adjusted 15-minute timer initiates all functions, then automatically shuts down the system to complete the study after patient and system washout.

With controls conveniently located on the front panel, the user can operate the system and observe the patient and gamma camera from one position. Panel controls are clearly marked for each mode of the procedure with large viewing windows to make it easy to monitor the patient's breathing. A trim, clean design, large handles and total mobility permit easy positioning of the system for studies in both seated and supine positions.

#### Features:

- Resistance-free breathing with 25-liter capacity
- Complete .125" lead shielding in upper cabinet for patient and operator safety
- Easy access to replace Drierite and Litholyme cartridges
- Effortless mobility for easy patient positioning
- Stylish steel cabinet
- Convenient built-in stainless steel tray for holding disposables, xenon gun, syringe, etc.
- An assortment of Xenon Disposables Samples are included with every Pulmonex.

#### Specifications:

- Dimensions: 20.5" w x 22" depth x 48.5" h (52.1 x 55.9 x 123.2 cm)
- Motor: UL approved. 12 volt DC
- Electrical Requirements: 115 VAC, 1 amp, 50/60 Hz
- Casters: locking
- Shipping Weight: 375 lb (172.5 kg)
- Certifications: ETL and cETL listed to UL 60601-1 and CAN/CSA C22.2 No. 601.1.M90, EN 60601-1
- Warranty: one year parts and labor



**132-503** Xenon System, Pulmonex II, Double-Trap, 115 VAC Includes: A sampling of disposables required to complete a xenon study. Disposables are packaged individually or in Xenon Convenience Kits. **Currently not for sale in the USA** 

#### Related:

- **136-755** Xenon Trap Monitor
- 150-315 Dispenser, Xenon, Automatic
- Includes: 72" Flexible Tubing with Luer-Lock Adapter
- 130-900 Pulmonex Kit, Free Breathing Hose
- 132-504 Protective Cover, Pulmonex II

#### Replacement:

- **132-319** Charcoal Trap For any Pulmonex II
- **132-555** Cartridge, Refillable, Litholyme or Drierite

# **Pulmonex II Accessories**

## **Xenon Trap Monitor**

Mounts directly to the Pulmonex II Xenon System for continuous monitoring

The Xenon Trap Monitor continuously monitors trap effluent during an xenon study, meeting compliance requirements in most states. An exhaust hose connects from the Pulmonex II exhaust port to the Xenon Trap Monitor's intake port, making it the perfect complement to the Pulmonex II Xenon System to ensure a safe environment.

The Xenon Trap Monitor is simple to operate; all controls are located on the front panel. Counting results are displayed with both audible and visual signals to indicate when the xenon trap exhaust port exceeds the threshold of 99 pCi/mL. The unit can also check background levels and perform a self-test for proper operation using a check source. A 10  $\mu$ Ci Cs-137 check source is required to calibrate the monitor.

The Xenon Trap Monitor includes all the hardware necessary to mount the unit directly to the Pulmonex II Xenon System.





#### Specifications:

- Dimensions: 7" | x 6" w x 4" h (17.8 x 15.2 x 10.2 cm)
- Lead Shielding: .5" thick (1.3 cm)
- Input: 22 mm Hose Adapter
- Detector: Halogen Quenched GM Tube, 1.1 cm dia, 2 mg/cm<sup>2</sup> mica window
- Voltage: 500 volts regulated
- Buttons: On/Off, Next/Mute
- Display: 4 Digit LED, 4 RGB Function LEDs (Self Test, Background, Check Source or Count)
- Readings: pCi/ml or counts
- Speaker: Internal, beeps in alarm mode
- Background Count Time: 1 minute
- Power: 18 volts, UL approved, external; 115 VAC power adapter
- Weight: 5.25 lb (11.55 kg)
- Warranty: One year
- 136-755 Monitor, Xenon Trap Mounts to Pulmonex II Xenon Systems

#### Related:

**101-103** Check Source, Cs-137, 10 μCi Uncalibrated, 1" dia x .25" thick (2.5 x 64 cm)

## **Pulmonex II Accessories**

## Automatic Xenon Dispenser

Assures quick, accurate and easy delivery of xenon directly to the patient

The Automatic Xenon Dispenser is easily attached to the front of the Pulmonex System without the use of tools. Preload the xenon vial into the supplied plunger. At the precise moment you want the xenon delivered to the patient, simply press the dispense button.

**150-315** Dispenser, Xenon, Automatic Includes: 72" Flexible Tubing with Luer-Lock Adapter

#### Related:

150-317 Tubing, 72" Luer-Lock Adapter, 5/pk



## **Xenon Disposables**

## Simply choose the individual components you need or select from among the most popular combinations.

All of our xenon disposables were designed for use with the Pulmonex Xenon System. All components are available separately for you to select what you need for your facility.

The most popular disposable combinations have been packaged together as Xenon Convenience Kits. These kits bring all the necessary components together to complete a single xenon study. Xenon can be administered via direct dose administration, that conveniently luer locks without the use of a needle; or by injection port, which requires a syringe needle.

Easy to use, simple to order and disposable, Xenon Convenience Kits are more than a bargain, they are a sensible and time-saving investment. In fact, our complete kits can prolong the life of your xenon charcoal traps by ensuring that the pre-filled Drierite cartridges are fresh for every scan while the pre-filled Litholyme ( $CO_2$  absorber) cartridges eliminate possible breakdown of granules that can lead to a clogged system and hinder patient air flow.

For more information, call 800-631-3826 or email capintec@mirion.com.



# **Xenon Convenience Kits**

#### Featuring:

- Air-Cushioned Face Mask Kits with clear ultra-flex expandable tubing from 6" to 24"
- Mouthpiece Kits with Direct Dose Administration
   adapter for leak-proof Xenon delivery



## **Xenon Convenience Kits**

Air-Cushioned Face Mask

132-680	Convenience Kit, Face Mask ®
	Includes: Bacteria filter
132-681	Convenience Kit, Face Mask ®
	Includes: Bacteria filter and ultra-flex tubing (shown)
132-781	Convenience Kit, Face Mask ®
	Includes: Bacteria filter, ultra-flex tubing,
	Drierite and Litholyme cartridges
NOTE: Ead	ch kit is sold in multiples of 25.

Denotes Single Use Only

## Xenon Convenience Kits

Air-Cushioned Face Mask with Injection Port

- 132-690 Convenience Kit, Face Mask with Injection Port ® Includes: Bacteria filter (shown)
- 132-691 Convenience Kit, Face Mask with Injection Port ® Includes: Bacteria filter and ultra-flex tubing
- **132-784** Convenience Kit, Face Mask with Injection Port Includes: Bacteria filter, ultra-flex tubing, Drierite and Litholyme cartridges

NOTE: Each kit is sold in multiples of 25.

# Xenon Convenience Kits

No needle necessary

Air-Cushioned Face Mask with Direct Dose Administration

- 132-699 Convenience Kit, Face Mask with Direct Dose 
   *Includes: Bacteria filter* 
   132-692 Convenience Kit, Face Mask with Direct Dose 
   Image: Second Second
- Includes: Bacteria filter and ultra-flex tubing
- **132-793** Convenience Kit, Face Mask with Direct Dose Includes: Bacteria filter, ultra-flex tubing, Drierite and Litholyme cartridges (shown)

NOTE: Each kit is sold in multiples of 25.

## Face Mask or Mouthpiece Kits - your choice, your convenience.

## **Xenon Convenience Kits**

with Mouthpiece and Direct Dose Administration Adapter

- 132-770 Convenience Kit, Mouthpiece 
   *Includes: Bacteria filter and nose clip* 
   132-774 Convenience Kit, Mouthpiece
- and Administration Adapter Includes: Bacteria filter, nose clip and ultra-flex tubing
- **132-771** Convenience Kit, Mouthpiece and Administration Adapter ® Includes: Bacteria filter, nose clip, ultra-flex tubing, Drierite and Litholyme cartridges (shown)
- NOTE: Each kit is sold in multiples of 25.





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No needle necessary

## Xenon Convenience Kit

Air-Cushioned Face Mask and Direct Dose Administration Adapter

**134-772** Convenience Kit, Face Mask and Administration Adapter ® Includes: Bacteria filter and ultra-flex tubing NOTE: Each kit is sold in multiples of 25.

## Xenon Convenience Kit

Air-Cushioned Face Mask with Luer-Lock Injection Port

**132-684** Convenience Kit, Face Mask with Luer-Lock Injection Port ® Includes: Bacteria filter, ultra-flex tubing, and 90° luer-lock injection port NOTE: Each kit is sold in multiples of 25.





## **Air-Cushioned Face Mask**

The air-cushioned face mask has a pre-filled air-cushion (medium inflation pressure) that molds to the contour of the patient's face providing a tight, leak-proof and comfortable seal. Cushion pressure is easily adjusted by inserting a standard syringe without needle in the two-way valve located on the mask bottom. The flexibility of cushion pressure allows optimum surface contact for every patient. Transparency of the entire mask allows continuous visual identification of the patient's vital signs.

**132-685** Face Mask without Injection Port, Adult *NOTE: Each kit is sold in multiples of 25.* 

# Air-Cushioned Face Mask with Direct Dose Administration

In addition to the patient comfort provided by the soft, pliable air cushion of the disposable face mask, the direct dose feature reduces patient anxiety because no needle is used. The syringe luer locks tightly to the direct dose tube, away from the patient's face. The one-way valve prevents the gas from reversing through the mask's luer connector, allowing the technologist to disconnect immediately after injecting.

**132-698** Face Mask with Direct Dose Administration, Adult *NOTE: Each kit is sold in multiples of 25.* 

# Air-Cushioned Face Mask with Injection Port

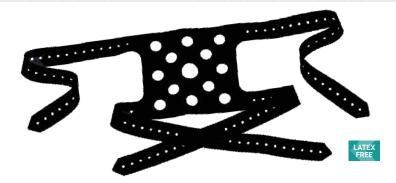
The air-cushioned face mask has a pre-filled air-cushion (medium inflation pressure) that molds to the contour of the patient's face providing a tight, leak-proof and comfortable seal. Cushion pressure is easily adjusted by inserting a standard syringe without needle in the two-way valve located on the mask bottom. The flexibility of cushion pressure allows optimum surface contact for every patient. Transparency of the entire mask allows continuous visual identification of the patient's vital signs. The injection port is attached directly to the face mask and requires a syringe with a needle.

Denotes Single Use Only



**132-695** Face Mask with Injection Port, Adult *NOTE: Each kit is sold in multiples of 25.* 

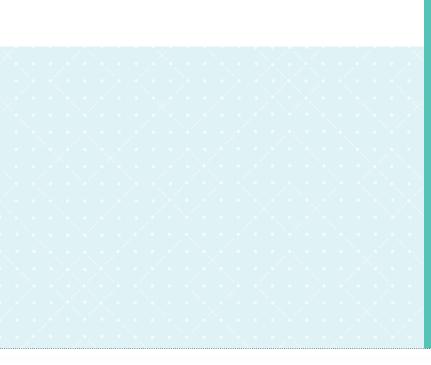
## Choose the components to assemble your own "kit."



## **Face Mask Harness**

This traditional face mask harness is made of soft rubber and can be adjusted for any head size. The square rubber base is comfortably positioned on the back of the patient's head and the harness tails are brought around to the front. The small holes provide a snug fit on the hook ring and hold the mask firmly in place.

139-677 Face Mask Harness





## **Disposable Nose Clip**

Economical, this nose clamp is all plastic for single patient use. Used with any mouthpiece.

130-100 Nose Clip, Disposable,100/pkg (8)





## **Tubing Splice**

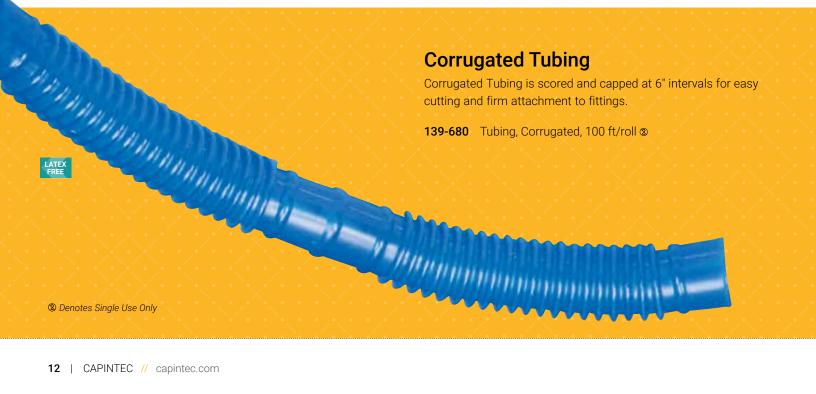
Tubing Splice is used to connect sections of 22 mm corrugated tubing to individual mask and filter.

130-639 Tubing Splice, 22 mm Male, 10/pkg &

#### "Y " Connector

The "Y" Connector has a one-way valve and plug. It is used to connect two 22 mm tubes to a mouthpiece, face mask or bacteria filter.

185-302 "Y" Connector, luer plug ® 139-102 "Y" Connector, solid plug ® NOTE: Not for use with the Pulmonex II.









## Drierite

Moisture absorber - new blue and white blend

Drierite serves as a moisture trap for the air going into the charcoal trap of the Pulmonex Xenon System. Drierite is blue and white when dry and turns pink when it has absorbed maximum moisture. Available in two convenient sizes, Drierite is packaged in an air-tight container with a wide-access mouth.

139-101	Drierite, 1 lb
139-104	Drierite, 4.5 lb
132-772	Drierite, Disposable Cartridge ®

## Litholyme

## CO<sub>2</sub> Absorber

Litholyme, a highly efficient  $CO_2$  absorber, prevents patients from re-breathing carbon dioxide and subsequent acidosis. Available in two convenient sizes, Litholyme is packaged in an air-tight container with a wide-access mouth.

130-019 Litholyme, 1 lb130-020 Litholyme, 4.5 lb132-773 Litholyme, Disposable Cartridge (\$)

## **Disposable Bacteria/Viral Filter**

Bacteria filters are used to reduce the possibility of cross contamination. The single-use filter is placed in line between a delivery tube and disposable mouthpiece or face mask. Electrostatically charged filter media is 99.9% effective in bacteria/ virus retention while maintaining low breathing resistance. Two filters can be piggy-backed together for potential high-risk studies.

**132-750** Bacterial/Viral Filter **(a)** NOTE: Each kit is sold in multiples of 25.







Shown with Air-Cushioned Face Mask with Direct Dose Administration.

## Free-Breathing Pulmonex Hose Kit

When unrestricted breathing is critical

The Free-Breathing Pulmonex Hose Kit features large bore tubing, which allows for minimal breathing resistance. This inexpensive, high quality, "free breathing" hose kit includes all required components and adapters.

The kit contains two 130-901 "Clean-Bore" hoses (36" l x 1 1/8" dia), two 130-904 hose clamps, and a 130-902 nonrebreathing anesthesia valve (inlet and outlet 7/8" O.D.), which permits the use of standard disposable bacteria filters and masks while providing unrestricted airway.

## Xenon-133 Rebreathing System

Disposable pre-packaged kits

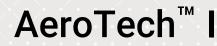
A simple, safe and inexpensive method of administering Xenon-133 to perform perfusion steady state and wash out studies. Each kit comes as a complete disposable system, including a pre-filled Litholyme absorber cartridge and a 35-liter bag to ample volume for patient maintenance and collection of expired Xenon-133. Made of a non-permeable plastic, the disposable system precludes xenon absorption or transfer through the device's components. The system is designed to accept any xenon syringe/gun administration system. The entire rebreathing system is disposed of in accordance with NRC regulations.

130-900 Pulmonex Kit, Free-Breathing Hose

#### **Replacement:**

130-901	Hose, "Clean-Bore"
	36" l x 1.125" dia (91.4 x 2.9 cm)
130-902	Valve, Anesthesia
	Hans Rudolph, non-rebreathing
130-903	Adapter, Hose
	.875" x 1.125" dia (2.2 x 2.9 cm)
130-904	Clamp, Hose

060-133 Xenon-133 Rebreathing System, Mouthpiece (© Kit includes: Mouthpiece (130-551)
060-137 Xenon-133 Rebreathing System, Mask (© Kit includes: Air-Cushioned Face Mask with Direct Dose Administration (132-698)
NOTE: Each kit is sold in multiples of 25.



Shown with kit# 177-124, sold separately.

## AeroTech I Radioaerosol Administration System

The original Cadema Radioaerosol System

Aerosol inhalation for radioimaging studies is an important tool for use in the localization and diagnosis of lung disease. AeroTech I puts information in the hands of the user to assist in diagnosis of a variety of lung diseases.

#### **Enhanced Imaging**

The AeroTech I delivers an even distribution of radioaerosol throughout the lungs, reaching the respiratory bronchioles and alveolar ducts and sacs. Excellent aerosol deposition allows the acquisition of multiple views from each diagnostic study. The end result is high quality imaging for confidence in patient diagnosis.

#### **Respirator Compatible**

For patients on a respirator, AeroTech I is easily adapted to fit on line using a single accessory tube.

#### **Designed for Patient Comfort**

Aerosol inhalation studies allow the patient to breathe normally throughout the procedure, minimizing the likelihood of patient non-compliance.

#### Superior Safety

Shield construction, disposable components and rapid aerosol delivery time combine to minimize radiation exposure to the patient and technologist. AeroTech I helps meet ALARA radiation protection objectives.

#### Flexibility

AeroTech I is available with a choice of designs. The 177-324 Delivery System generates a smaller MMAD particle than the standard 177-124 Delivery System. Use the 177-324 model for procedures where delivery time is not significantly restricted.

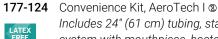
177-325 Venti-Pak for ventilator assisted patients.



- Enhanced Imaging
- Multiple views from one diagnostic study
- Completely portable and respirator compatible
- Completely Shielded

#### 177-095 AeroTech I Shield

#### **Radioaerosol Convenience Kits**



Includes 24" (61 cm) tubing, standard nebulizer delivery system with mouthpiece, bacteria filter, nose clip and disposal bag

177-324 Convenience Kit, AeroTech I



with small particle delivery system ® Includes 24" (61 cm) tubing, small particle nebulizer delivery system with mouthpiece, bacteria filter, nose clip and disposal bag

NOTE: Each kit is sold in multiples of 5.

### Related:

177-325 Convenience Kit, Venti-Pak for AeroTech I, 5/pkg & (adapter kit for ventilator assisted patients)

# Venti-Scan<sup>™</sup> IV

The Venti-Scan IV Radioaerosol Administration System is a self-contained single-use delivery system for Technetium DTPA.

#### Sharp, Clear Images - Easy Breathing

The Venti-Scan IV Radioaerosol Delivery System features a small baffle within the nebulizer to produce an optimal particle size, resulting in a sharp image, quickly. In addition, the kit includes a contoured filter for trapping moisture. This makes it ideal for radioaerosol studies by impeding humidified radiation from passing through. The filter's contour increases surface area to decrease breathing resistance, making it virtually resistance-free with exceptional trapping efficiency.

#### **Designed For Efficiency**

The Venti-Scan IV is designed to make performing a study more convenient for the technologist while providing superior images. When the kit is inserted into the Venti-Scan IV canister it automatically locks securely into position, assuring all port alignments. Oxygen connection is a simple attachment to a dedicated external port. The injection site on the kit is precisely angled to align with the canister port. They are positioned perfectly for a bull's-eye every time. The system also offers a quick, safe disposal method. Unplug the oxygen hose, invert the canister over a shielded waste container and push the release button to free the contaminated kit. This minimizes handling and exposure.

#### **Full Technologist Protection**

The Venti-Scan IV shield is completely enclosed providing lead-shielded protection from top to bottom. The Venti-Scan IV Disposable Kit includes everything needed for a single study including a comfortable, natural contour mouthpiece, filter, nose clip and disposal bag. The system uses clean-bore straight path tubing (superior to corrugated) to ensure that particles cannot get trapped in any internal ridges that typically cause clumping. The top of the canister has a shielded sliding port to accommodate the Venti-Pak Accessory Kit for ventilator-assisted patients. An IV pole mount is included with the shield for convenient positioning and administration. Patients and technologists have always been comfortable and confident with the Venti-Scan system. And, when the patient is comfortable, the procedure goes smoothly, without interruption. The end result is a superior study.



## Radioaerosol Administration System

#### Simple Steps to Perform a Study

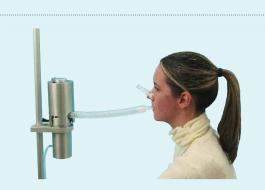


Insert Venti-Scan IV Kit in canister.



Inject Tc-99m DTPA.

3



Connect to O<sub>2</sub> supply; position patient comfortably for resistance-free breathing.

#### Features:

- System design reduces setup time: Kit automatically locks into position One step oxygen connection to dedicated external port Precise injection port alignment Push button disposal of used kit
- Fully enclosed lead shielding from top to bottom
- · Contoured filter for increased trapping efficiency and resistance-free breathing
- Trapping efficiency greater than 99.9%
- Small baffle design ensures homogeneous distribution
- Mean particle size = 0.50 microns
- Lightweight and portable, weighs only 8 lb (3.7 kg)

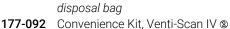


#### 177-090 Venti-Scan IV

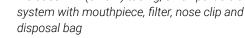
Includes: Shielded canister with IV pole mount

#### Radioaerosol Convenience Kits

177-091 Convenience Kit, Venti-Scan IV ® Includes: 12" (30.5 cm) tubing, small particle delivery system with mouthpiece, filter, nose clip and



Includes: 24" (61 cm) tubing, small particle delivery



NOTE: Each kit is sold in multiples of 10 and 25.

#### Related:

LATEX

177-075 Convenience Kit, Venti-Pak for Venti-Scan IV & (adapter kit for ventilator assisted patients)

NOTE: Each kit is sold in multiples of 5.

# **Driving the Science of Better.**

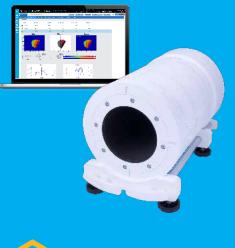
At Mirion Medical, we partner with medical professionals to better the human condition. From diagnosis through treatment, our diverse solutions enhance the delivery and ensure the safety of healthcare.

For additional information, visit mirion.com/medical

MIRION MEDICAL

## Better Quality Management, Better Care

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间 BIODEX

## Delivering Better Tools for Safer Workspaces

Our **Occupational Dosimetry** products and services remove the worry of radiation from the daily routines of those who are exposed at work.

## Empowering Better, Safer Diagnosis & Treatment

From dose preparation to patient administration, our **Nuclear Medicine** solutions and supplies enhance safety and accuracy to aid potentially life-saving imaging and therapy.









## **Superior Lung Imaging**

Xenon or Radioaerosol - Your Choice

#### Capintec, Inc.

Phone +1 (800) 631-3826 +1 201 825-9500

Address 7 Vreeland Road, Florham Park, New Jersey 07932 capintec@mirion.com



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