



Nuclear Medicine



PRODUCT GUIDE

Introduction



Radimage Healthcare India Pvt. Ltd. an ISO 9001:2015 certified company has taken a giant leap with a humble beginning in 1979 as Meditronix Corporation. We specialise in radiation detection, Quality Assurance, Protection, Dosimetry and many more practical applications for safe patient treatment. We serve Radiation Oncology, Nuclear Medicine, Radiology and many government nuclear establishments. We strive to work closely with our customers to design and provide quality products and solutions that meet their need at reasonable cost.

We are one of the proprietary company recognised from Government agency Atomic Energy Regulatory Board (AERB) for calibration of any kind of Radiation measuring equipment from any Imaging and treatment centre. We have a base of more than 1600 satisfied users across the country. **Our calibration facility is accredited by NABL vide certificate no. CC-3072 dated 06.11.2019**

We have an excellent range of products for Nuclear Medicine setups, including, Radiopharmaceutical Synthesisers from **Trasis**, complete hot-lab setup including Dose Calibrators and Thyroid Uptake Systems from **Biodex**, Hotcells from **VF Nuclear**, Radiation Monitoring Instruments from **Ludlum**, QA Phantoms & Imaging Solutions from **CIRS**, Check Sources and a large variety of indigenously designed lead shielding products.

Radimage headquartered in Noida distributes its products and services throughout India and across the globe. Promotional efforts include tradeshow, visits, advertisements and regular bulletin.

We have the required expertise to undertake any kind of repairs in radiation monitoring instruments, including pressurised survey meters Biodex as we are equipped with necessary equipments and experience.

We have an ambitious plan to enhance the calibration facility for various other modalities of cancer diagnosis and treatment equipments and the production of new equipments.

We would appreciate an opportunity to provide you solutions for your needs. You may reach us at 0120-2406096, 4263270 or fax us at 2406097 or email us at radimagehealthcare@gmail.com



Radiation Detector Calibration & Services

Our radiation detector calibration service offers a calibration reminder service, industry leading support and speedy turnaround times for recalibrations.

Based on the recommendation of AERB, your instrument is calibrated, once in two years from the date it was placed in service.

We are the only organization in India to offer complete service, repairs, recalibration for any kind or brand of Radiation Monitoring Instrument. We are specialized and factory trained to repair Pressurized Ion Chamber survey meters. We have the required plant and machinery to repair these instruments, set the calibration factor and re-calibrate.

Our calibration facility has been recognized by Atomic energy Regulatory Board and accredited by NABL vide certificate no. CC-3072 dt. 06.11.2019

- Facility to calibrate any brand or type of Radiation Survey Meter, Area (Zone) Monitor and Pocket Dosimeters. Either analogue or digital
- Pick-up and drop can be arranged, if the need arise
- Routine turn-around calibration time is 5-6 days
- Instrument should be in working condition, to avoid delays
- Calibration validity TWO years



NABL Cert. No. CC-3072



Coming Shortly...
Calibration laboratory for
NM Dose calibrators
(AERB Recognised & NABL Accredited)



ALLINONE

PET Tracer Synthesizer

www.radiimageindia.com

AllinOne is the only platform which fully meets the needs and even exceeds the expectations of both research and production environments.

The cutting-edge solution for tracer production and development

- For ^{18}F , ^{11}C and radio-metals
- High yields
- Open software
- GMP compliant
- Plug and play operation

Dimensions and requirements

- 55 x 44 x 40 cm / 21,7 x 17,3 x 15,8 inch
- 100-240VAC, 50/60Hz, 600 Watts peak
- Compressed air: 6 to 10 bars (85 to 140 PSI)
- Nitrogen: 6 to 10 bars (85 to 140 psi)
- Network connection RJ-45



Main Features

- Synthesis, built-in radio HPLC and final formulation
- Requires only one small hot cell
- Disposable cassettes
- Consistent yields and affordable operating cost
- Tailored for research, process optimization
- Tailored for cGMP and for routine clinical tracer production
- Flexible graphical process sequence editing
- Small footprint, saves laboratory and hot cell space
- Controlled user access, extensive log book, version control
- Efficient remote diagnostic and support
- Dedicated team at your service

Configuration

AllinOne is configurable to match your current needs while remaining easily upgradable with simple plugins as your requirements increase, without any change in software or footprint.

AllinOne can be delivered, with 18 to 36 actuators that can spin the three-way valves to any position including fully closed and with up to 5 syringe drivers, featuring position, speed and pressure control/feedback, one or more heaters with fast cooling capability, strong pinch valves for high pressure reactions, several gas inlet and exhaust ports, freely positionable sub mCi sensitive radiation detectors and with external I/Os to control external instruments directly from the software.



Installed at:

- Atulaya Healthcare, Dera Bassi
- I.B.A., Noida
- Shreeji, Mumbai
- Shreeji, Manesar
- Apollo, Hyderabad
- GMC, Guwahati



$[^{18}\text{F}]\text{FCholine}$ PET Diagnosis
Radio Tracer



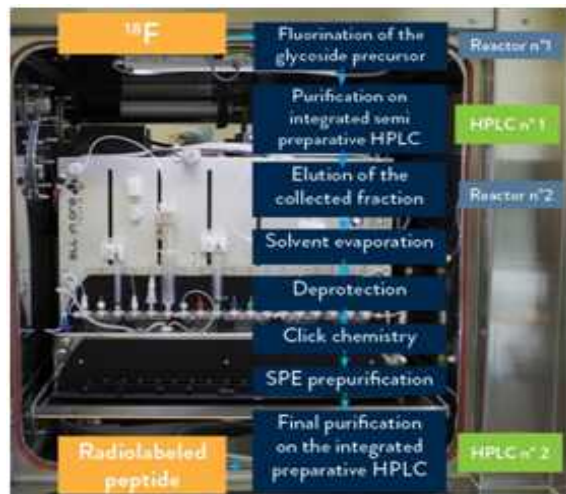
$[^{18}\text{F}]\text{FDG}$ QUAD
Synthesis Set



$[^{18}\text{F}]\text{FDOPA}$
Nucleophilic Process

HPLC

AllinOne can be equipped with an integrated HPLC system controlled by the synthesizer. An injection valve, a column selection valve, a radiation detector, and an optional UV detector are included within the synthesizer. The pump and the eluent selection box can be placed nearby or apart from the synthesizer. Up to three eluent solutions can be dispensed in isocratic or gradient mode.



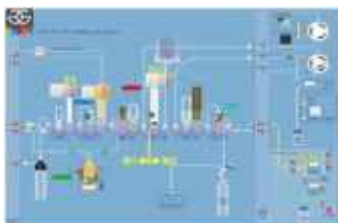
www.radimageindia.com

Consumables

The cassette is structured around zero dead volume three-way valves manifolds offering up to 36 positions freely assignable to reagent vials, SPE cartridges, syringes etc. All components have been designed from carefully chosen materials compatible with the most aggressive acids, bases and solvents. Perform up to several chemistry R&D runs per hour by avoiding cleaning and rinsing. All fluid pathway parts can be ordered from Trasis for R&D purpose or even with certificates when needed.

Software

The easy to use software allows the user to create his own fluid pathway layouts by simple drag and drop actions of cassette components selected from a virtual toolbox. These very realistic layouts will be the graphical support to create and edit the process sequences. Import and export functions allow sharing and exchanging developments in just a few clicks with collaborators worldwide. Features also include traceability of all changes during the development process, full records of previous runs, allowing to virtually replay these runs.



Six Different ^{18}F -labeled radiotracers

Positron Emission Tomography

A widely recognized online service

An online service team combining IT, mechanical and chemistry skills, will provide you with an outstanding service experience. Well over 90% of the questions can be answered remotely. Personalized training options allow to wisely use the advanced hardware and software features. These sessions can be performed on site, in our facilities or remotely.

The Theranostic Synthesizer

www.radimageindia.com

miniAllinOne is a unique compact synthesizer dedicated to the preparation of diagnostic and therapeutic radiotracers. You can use this synthesizer for the production of radio-tracers labelled with ^{68}Ga , ^{177}Lu , $^{99\text{m}}\text{Tc}$, ^{89}Zr , ^{64}Cu , ^{90}Y , ^{188}Re , ^{203}Pb among others, all on the same instrument to meet the evolving needs of the nuclear medicine department.

The synthesizer for diagnostic and therapeutic radiotracers

- Small footprint
- Full automation
- Matches with all generators
- Labelling of radiometals
- As easy to use as a coffee machine

Main Tracers

[^{68}Ga] DOTA, PSMA	
<i>Without pre-purification</i>	>75% 12 min.
<i>With pre-purification</i>	65%* 19 min.
[^{177}Lu], [^{64}Cu]	
<i>DOTA, PSMA</i>	>99% 30 min.
[^{18}F]	
<i>FDG</i>	> 55% 25 min.
<i>NaF</i>	

* From 60% to 70% depending on generator

Ready to Use Consumables

Cassettes and reagents for each tracer are available for miniAIO. The comprehensive reagent kits avoid the need of sourcing consumables from several suppliers. Cassettes are GMP manufactured and are provided in individually sealed pouches, fully assembled and ready to use. The RFID chip scanner system avoid manual transcription mistakes and warrants operators to work with the right reagents kits. Subsequent cassette rinsing eliminates most of the residual activity allowing a quick replacement for any upcoming production.



Installed at:

- Amrita Hospital, Kochi
- Max Hospital, New Delhi
- Ruby Hall Clinic, Pune
- Ambani Hospital, Mumbai



Routine Production

miniAllinOne is the best choice for easy and reliable routine delivery of radiopharmaceuticals thanks mainly to:

- Full automation
- Processes compatible with all ^{68}Ga generators
- Ready for use consumables
- Proven usage with ^{68}Ga , ^{177}Lu , ^{18}F

This platform allows radiotracers labelled with ^{18}F , ^{68}Ga , ^{177}Lu , $^{99\text{m}}\text{Tc}$, ^{89}Zr , ^{64}Cu , ^{90}Y , ^{188}Re , ^{203}Pb to all be prepared with the same instrument. A range of dedicated table-top and wheel-mounted compact hot cells ensures a perfect protection and ergonomic working condition.



- Yashoda Hospital, Hyderabad
- B.L. Kapoor, New Delhi
- DIFI, Delhi
- Artemis Healthcare, Delhi
- Medanta Healthcare, Delhi
- Jaslok Hospital, Mumbai
- Mahavir Cancer Sansthan, Jaipur
- Quadra Hospital, Kolkata
- INMAS, Delhi (under installation)



Setup of Trasis mini AIO module for the automated radio-synthesis of 18F-FHP-1-a



Set of ⁶⁸Ga Generator

Software

miniAllinOne includes a user-friendly graphical interface with flexible research-oriented features. It makes it easy for radio-chemists to design their own fluid pathway layout, program their processes graphically and even share their developments with other groups.

The software accurately records all parameters, which allows the process sequences to be fully analyzed and optimized. Data of each run is stored in a library making it even possible to replay any previous run in full detail.

The miniAllinOne software can be operated from anywhere on the LAN with customizable user-access rights.

Specifications

Dimensions (W×H×D)	21.5×41.2×40.8cm (8.5×16.6×16.1inch)
Weight	20 kg (44lbs)
User Interface software package	Included
Three way valve actuator, 6 positions, with position control	12
Syringe actuator with position, speed and force control	2
Reactor-Heater amb to 220°C	1
Radiation detector – High sensitivity, in with customizable positioning	3
Automated processes	<ul style="list-style-type: none"> • cartridge conditioning • dissolving of lyophilized precursors • synthesis phases • purification • final formulation • extensive rinsing at the end of the synthesis
Hot cell requirement	<p>The miniAllinOne can be housed in any shielded hot cells, as it has standard dimensions and there are no dissociated electronics.</p> <p>Trasis offers a wide range of dedicated hot cells in line with needs and conforming to local regulations</p>
Software	Open software with graphical interface, sequence edition, programmable access rights

A widely recognized online service

An online service team combining IT, mechanical and chemistry skills, will provide you with an outstanding service experience. Well over 90% of the questions can be answered remotely. Personalized training options allow to wisely use the advanced hardware and software features. These sessions can be performed on site, in our facilities or remotely.

miniAllinOne is also a very effective radiochemistry development tool.

Its unsurpassed versatility allows researchers to easily address emerging diagnostic and therapeutic procedures, exemplified by the increasing interest in theranostic.

Innovative processes with ¹⁸F, ⁶⁸Ga, ¹⁷⁷Lu, ^{99m}Tc, ⁸⁹Zr, ⁶⁴Cu, ⁹⁰Y, ¹⁸⁸Re, ²⁰³Pb as well as with other tracers have been quickly implemented.

Other Services

Trasis also offers custom services for the miniAllinOne.

Specific procedures and on-demand synthesis process developments can be implemented on the miniAllinOne for a very large range of applications. Trasis also designs and produces customized cassettes and dedicated reagents kits.

Related Products



Mini Hot Cell



Software



Final Product Container with Built-in Activity Sensor

UniDose - The Hospital Dispenser

Fully automatic dispensing system for any PET radiopharmaceuticals

- Fast setup
- Drastic exposure reduction
- Traceability
- Safe use in hospitals

UniDose, housed in a hotcell, is an automated dispenser dedicated to fragment radiotracers bulk vials into patient dose units. It addresses the needs of nuclear medicine departments in hospitals wishing to automatize the fragmentation from vial-conditioned radiotracers into patient doses units. Over and above a higher radio-protection, this system allows an access to a broad range of preparations, a full compliance with pharmaceutical regulations, a proven reliability together with decreased operational costs. It also offers especially flexible and safe injection conditions in nuclear medicine facilities.

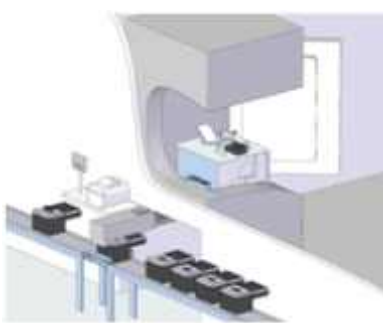
With Unidose you are sure to fulfill all the dispensing and injection needs in your nuclear medicine department. Along with the automatic filling machine, a wide range of accessories will help you cover all aspects related to dose preparation up to patient injection:

- Ergonomic hot cell
- Ready-to-use consumables
- Dose tungsten shield
- Mobile radiation protection screen



QuickFill-The Pharmacy Dispenser

QuickFill is an automated dispenser housed in a hotcell and dedicated to prepare batches of PET and SPECT patient doses for distribution from radiopharmacies. With Quickfill, the radiopharmacists can rely on a robust and fast tool to ensure quality preparations at the lowest cost. In the daily practice, QuickFill leads to a considerable reduction of the shipment containers weight and offers a particularly comfortable solution for secure and easy injections.



Dose Administration

Simplify the administration of SPECT and PET radiopharmaceuticals and reduce your exposure!

The Injection Set protects the medical staff and allows the complete transfer of the activity to the patient.

Hot Cells

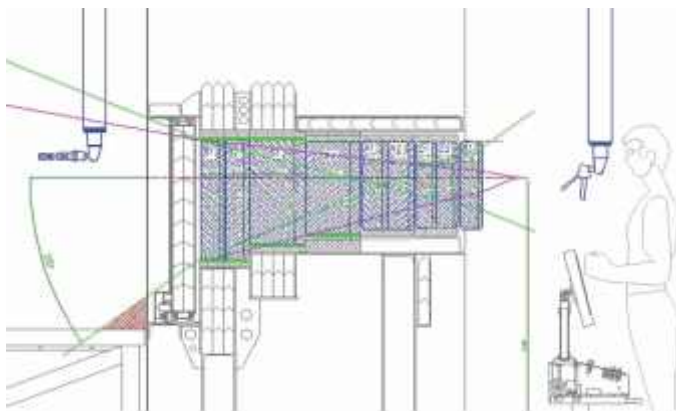
Main Advantages

- Shielding of the workplace for working with ionizing Radiation sources. High level automation
- Maintaining a safe dose rate in the space attended by personnel Minimizing the radiation release hazard
- Backup power supply for safety related elements
- Multiple-cell configuration including inter-cell connecting passages Optional technical equipment and specialized tools
- Dose rate measurements inside and outside the Hot

Purpose

The Hot Cell (HC) is intended for the safe handling of sealed radioactive sources up to a total activity of 2 000 TBq of ⁶⁰Co as standard. Typical activities include the reloading of sealed radioactive source (SRS) from one container to another container, uploading/unloading/reloading irradiators, acceptance tests of new SRS, status test and constancy test of SRS, handling SRS after the expiration of a certificate, and more. The basic concept of the Hot Cell is determined by its purpose, ie. the required inner dimensions of the cell modes of handling containers outside and their transport to the Hot Cell, and connected technological installations. The configuration of the Hot Cell comprises utensils and tools for the respective work with SRS as standard. They are special purpose handling devices, technical gas distribution systems, laboratory fixtures, and the like.

The particular spatial layout and equipment configuration of the workplace are made to the customer's specifications and addressed in detail during the design stage. Upon request, we can also deliver a multiple-cell configuration for parallel work in several workplaces installed next to each other



The main components of the Hot Cell are: Operator's console with display and controls panel

- Camera system
- Mechanical manipulators with working adapters
- allowing working with radiators inside the chamber from the outside Workbench for every type of work and stand
- for the container Specialized automated cutting, welding or soldering
- devices and others specialized machines and tools for mechanical for the mechanical treatment of sources and capsules Temporary storage for sources, embedded

- in a concrete wall, shielded by lead Inter-cell passages for multiple-cell configuration
- allowing move of unshielded sources Instruments for the inspection of capsule seal
- integrity, identification of a capsule's physical properties and the determination of activity Instruments for the identification of radionuclides
- and determination of activity Additional preparations and utensils (laboratory dishes, stands and more) Cranes and conveyors for handling of transport
- container Airflow control system with HEPA filter and dose rate
- monitoring Radiation monitoring system with local display unit.

Biodex Portable Shielded Isolator



The Cleanroom Solution

The Biodex Germfree Portable Shielded Isolator provides the ultimate in both product and operator protection. The shielded isolator functions as a "glovebox" using negative pressure to meet NIOSH recommendations while complying with USP<797> regulations for use outside a cleanroom.

HEPA filtered unidirectional (laminar) air bathes the work area to protect the product from contamination and removes any particulate generated by sample manipulation. The operator is provided a complete shielded barrier from materials being manipulated in the work area. The Biodex Germfree Shielded Isolator meets or exceeds ISO14644-1, ISO Class 5(Class 100 Air Quality)

- Small footprint
- Large, full-view shielded window
- Designed from the ground up for a Radiopharmacy
- Stainless Steel, inside and out
- Motorized height adjustable – 10 inch range
- Work sitting or standing with correct ergonomics

Radimage Fume Hood

An efficient system for your basic fume hood needs. Sturdy ergonomic design for uniform flow control to ensure clean and odor free working environment.

- Constructed entirely of mild steel with thick painted surface
- Working chamber constructed of Stainless Steel 304
- All joints covered and no sharp edges
- Height 72" from ground, width 48", depth 28" and chamber height 30"
- Mounted on four sturdy lockable wheels for ease of movement
- Height adjustable transparent acrylic sash in front
- Heavy duty centrifugal blower for exhaust
- Mirror on front wall of chamber
- A combination of Prefilter, HEPA and Charcoal filter is standard
- Sturdy chamber base to handle 'L' Bench and lead bricks
- White fluorescent and UV lights fitted
- Electrical point inside the working chamber
- Available models:
 - RH-FH-3 Lead Shielding 3mm; weight 150 Kg approx.
 - RH-FH-6 Lead Shielding 6mm; weight 200 Kg approx.
- Custom designed sizes available in mild steel and SS 304 models



Radio Isotope Fume Hood



Radimage Glove Box

Designed for storage and working inside shielded enclosure. Securely shielded with 12mm lead and equivalent lead glass window. Two side openable and lockable doors for movement of radioactive substance.

White fluorescent LED light and electrical socket inside the chamber.

- Weight 280 Kg approx.
- Lead shielding 12mm
- Lead glass window 10"x8"; 60mm thickness

ATOMLAB 960 Thyroid Uptake System

BIODEX

www.biodex.com

A complete, mobile, self-contained Medical Spectrometer System

The Atomlab 960 Thyroid Uptake System is an advanced multi-purpose spectrum analysis instrument designed for diverse nuclear medicine applications. Uptake studies, wipe tests, and other user-defined tasks are accomplished with speed and precision using this fully integrated computer-controlled instrument and its comprehensive selection of application software. The system's multichannel analyzer has 1024 channels, with individual MCAs for the probe and optional well counter. Engineered for mobility, durability and operational efficiency, the Atomlab 960 handles clinical tests, safety compliance tasks, and system administration procedures quickly and accurately. Intuitive menus follow conventionally established nuclear medicine procedures, providing step-by-step guidance throughout all defined procedures.

The system automatically performs calculations, stores patient information and test results, and outputs clear, concise reports. User-defined uptake protocols can be initiated.



www.radimageindia.com



Unique LED Positioning

- Unique Positioning LED for accurate thyroid centering – A First in Thyroid Uptake System Design
- Distance measurement rod with incremental markings (detector-to-patient)
- The combination of positioning LED and distance bar assure accurate, repeatable patient positioning and uptake measurements
- All-in-one flat panel PC with solid state hard drive featuring Windows® Operating System
- Count rate: 150,000 cps
- Color touch-screen adjustable height monitor - medical grade tactile touch
- Innovative multi-axis and height adjustable arm for easy patient positioning of seated or supine patients
- Convenient storage locations for Neck Phantom and Calibration/Constancy Fixture
- 1024-channel multichannel analyzer
- Software programs for Thyroid Uptake, Wipe Test, Quality Assurance, Manual MCA and Bioassay

Medical Spectrometer Software

Radionuclides

- Factory Programmed: Au-198, Ba-133, Ba-133 (well), Co-57, Co-57 (w), Co-58 (w), Co-60, Cr-51, Cs-137, Fe-59, F-18, Ga-67, Hg 197, I-123, I-125, I-131, In-111, Ir-192, K-42, Lu-177, Na-24, Pd-103, Ra-223, Se-75, Sr-85, Tc-99m, Tc-99m (w), Tc-99m/Tl-201, Tl-201, Yb-169, wide window
- User Set: Unlimited user defined isotopes, setting ROI, half life, name, efficiency and range
- Probe
- Computer

Dose Calibrator



NEW Atomlab™ 500 Dose Calibrator

The Atomlab 500 can be used for a wide variety of nuclear medicine, PET and radioimmunotherapy applications, with proven performance for fast, accurate measurements. The system consists of a low pressure ionization chamber, electrometer with extraordinary linearity, and an auto-ranging color touchscreen display. Additionally, there are advanced, but easy-to-use programs for nuclear pharmacy.

An extensive selection of quality assurance applications streamlines and simplifies hot lab administration requirements

- Windows® 10 Operating System
- Microsoft SQL Database
- Communicates with most commercially available NM management systems via Ethernet or Serial Port
- Pre-programmed for 97 most commonly used radionuclides; any 12 can be conveniently touch selected
- Extensive Isotope Libraries
- Automatic range selection up to 100 Curies of Tc-99m or 25 Curies of F-18



www.radimageindia.com



Operation

The system is easy to use. There are 12 isotope selection touch keys pre-programmed for the most commonly used radionuclides. Any of those keys can be reprogrammed by the user for a desired isotope. There are 97 isotope-specific dial values listed in the library. Dial values can easily be changed if required.

Activity is displayed on the color display in either Curie or Becquerel units. Background correction is performed at the touch of a button. Range selection is automatic, from .01 microcurie to 100 Curies of Tc-99m or 25 Curies of F-18.

Quality Assurance

The Atomlab 500 has been designed to make life easier. The extensive selection of quality assurance applications streamlines and simplifies hot lab administration requirements. The system stores and decay corrects multiple reference sources and compares the measured activity to the calculated activity for the daily constancy test.

Linearity tests can be performed in the traditional manual method or by a fully automated program that allows for readings from a source to be taken, and automatically recorded at specified intervals. The system will graph the results.

The attenuation tube test for linearity can be performed using software that will guide the user through the procedure, store the values and make all calculations.

SPECIFICATIONS

- All-In-One Flat Panel Display: 12.2" Touchscreen, Windows 10 Operating System and USB connectivity.
- Dimensions: 11.8" w x 8.1" d x .4" h (30 x 21 x 1 cm)
- Line Voltage: 100 to 240 VAC, auto selectable by the power supply
- Line Frequency: 50/60 Hz, detachable line cord, built-in EMI filter and transient suppression
- Auxiliary Port: Two USB ports, one RS-232 port
- Isotope Selection Keys: Twelve pre-programmed – Tc-99m, Tl-201, I-123, I-131, Cs-137, Co-57, Xe-133, Ga-67, In-111, F-18, Y-90s, Ba-133 and a full alphabetical list of 97 isotopes.
- Activity Range: 0.01 μ Ci to 100 Ci (.0004 MBq to 3700 GBq) of Tc-99m or 25 Ci of F-18
- Energy Range: 25 keV to 3 MeV photons

Dose Calibrator

NEW Atomlab™ 500Plus

The Atomlab 500 Plus Dose Calibrator and Wipe Test Counter have brought it all together - science, technology and application.

The Atomlab 500Plus combines the industry gold standard Atomlab 500 Dose Calibrator and Wipe Test Counter, offering you a complete and cost-effective solution for all of your molecular imaging needs. The intuitive Atomlab 500Plus provides fast, accurate radionuclide activity measurements with performance that complies with the most stringent regulatory requirements.

- Windows® 10 Operating System
- Microsoft SQL Database
- Communicates with most commercially available NM management systems via Ethernet or Serial Port
- Preprogrammed for 97 most commonly used radionuclides; any 12 can be conveniently touch selected
- Automatic range selection; up to 100 Curies of Tc-99m or 25 Curies of F-18
- Remote shielded ionization chamber
- Ultra-fast response
- Displays in Curies or Becquerels
- 64 Channel MCA
- NEW Manual MCA Program

Standard Apps for Atomlab 500Plus include:

- Automated Quality Assurance Apps
 - Constancy and Expanded Constancy
 - Linearity and Auto Linearity
 - Accuracy
 - Geometry
- Nuclear Pharmacy Apps
 - Future dose and volume computation
 - Moly Assay
 - NEW Manual MCA Program



www.radimageindia.com



Dose Calibrator Accessories



Moly Assay Shield



Vial / Syringe Dipper



Lineator



Copper Syringe Dipper



Well Insert



Shielding Rings

Tec - Control Chromatography Systems For radiopharmaceutical quality control

Tec-Control Chromatography tests the radiochemical purity of specific Tc-99m-labeled radiopharmaceuticals. The accompanying chart shows which strips and solvents are required to perform each individual test. Some solvents must be purchased separately (see Sigma-Aldrich chart) due to hazardous material shipping restrictions.

Detailed instruction manuals are packaged with each strip container, although our Radiopharmaceutical QC Procedure Manual (151-000) explains paper chromatography in greater detail.



Tec-Control Aluminum Breakthru Kit

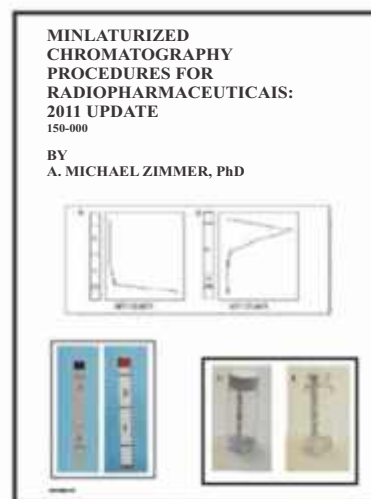
The Aluminum Break-thru Kit provides a rapid, easy and inexpensive way to test aqueous solutions, particularly per-technetate generator eluate, for trace quantities of aluminum. Aluminum forms an intense red precipitate with the indicator paper, and the intensity of the color is directly proportional to the amount of aluminum in the solution. The USP allows a concentration of aluminum ion in an injection 10 micrograms per milliliter (10 µg/ml) in technetium 99m eluate prepared from Molybdenum 99 formed as a result of uranium fission.

Simple Procedure: Place a drop of the eluate or solution to be tested on the indicator paper. The best procedure is to form a hanging drop using a 19-22G needle. Place a drop of the standard aluminum solution on the indicator paper. Use the same size drop. Compare the intensity of the red spot formed. If the eluate spot is less intense than the standard solution, the eluate contains less than 10µg/ml aluminum.

Radiopharmaceutical QC Manual

This detailed manual explains Paper Chromatography, a QC method for evaluating the radiochemical purity of currently used Tc-99m-labeled radiopharmaceuticals.

Procedures are quick and easy to use, a simple quality control solution for any nuclear medicine department.



Radiation Monitoring

ASU-50 Alarm Slave Unit

- Strong acoustic and optical signaling
- Connections directly to detection device
- Configuration of features by internal DIP switches
- Positive and negative control signal polarity

The ASU-50 alarm slave unit is intended for strong optical and acoustic alarm signaling when the thresholds limits of the parameters measured have been exceeded. The unit fulfils its function in connection with a host control system.



LZJ-22 Local Display Unit

Main Advantages

- Wide range of connectable probes
- User-friendly color touch screen
- Optical and acoustic signalization
- Wide range of communication interfaces

Purpose - LZJ-22 is a device intended for use in radiation control systems. The basic features of the device are:

- Displaying current and historical values
- Setting the parameters using the touch screen
- Local archiving of measured values from detection devices
- Signaling of failure and non-standard condition, warning of persons in case of danger of radiation hazard



Hand-Held Contamination Probes

SFP-100 - Standalone probes suitable for the detection of surface contamination by alpha, beta, and gamma emitting Radionuclides.

The detection part of the SFP-100 probe consists of a plastic scintillator, or scintillators, with a photomultiplier, able to detect alpha, beta and/or gamma surface contamination.

SPECIFICATION (Display unit)

- Dimension (H × W × D) 95 × 158 × 34 mm
- Power supply 4 pcs alkaline,
- AA size mains adapter

SPECIFICATION (Probe)

- Detector type : scintillator
- Active area : 100 cm²
- Dimensions : (W × H × D) 100 × 100 × 270 mm



FCM-11 Frisking Contamination Monitor

A quick check for personnel or object surface contamination. In combination with a suitable detector from the SFP-100 series, it can detect alpha, beta or gamma contamination.

The FCM-11 contamination monitor consists of a base unit with a user display and a handheld probe with an active detection area of 100 cm².

To measure contamination, the probe is removed from the cradle on the base and moved over the surface being checked. The probe is suitable for checking the contamination of such as persons, clothing, tools or materials.



SPECIFICATION

- Detector type : scintillator • Active area : 100 cm²
- Dimensions : (W x H x D) 374 × 212 × 109 mm

Floorscan Floor Contamination Monitor

A device intended for signalisation of floor surface contamination

The FloorScan series floor contamination monitors are intended for the measurement of surface contamination by alpha, beta and gamma emitting radionuclides on floors. The monitor can be used in nuclear power plants, radio-chemical plants, research institutes with reactors, PET centres, etc.

SPECIFICATION

Detector type

- Plastic scintillator
- Active area 525 cm² or 1050 cm²
- Effective energy range 0,2 - 2,5 MeV
- Dimensions (W x H x D)

FloorScan-525 FloorScan-1050 445 × 1070 × 898 mm 785 × 1090 × 962 mm



LCM-300 Laundry Contamination Monitors

A device intended for the detection of laundry contamination by alpha, beta, and gamma radionuclides. It can be also used for checking the contamination of other objects of a suitable size.

The Laundry Contamination Monitors LCM-300 series are primarily serve for checking contamination of washed, dried, and laid-out laundry originating from areas where it could have been in contact with alpha, beta and/or gamma radionuclides. They can also be used for checking contamination of other items of suitable size.



Radiation Monitoring

Ludlum Survey Meter with Pancake GM Probe (Model 14C)



The Model 14C Survey Meter meets the essential monitoring and surveying needs of most nuclear medicine facilities. The exposure filter flattens the response for energies between 33keV to 1.2MeV.

Satisfies NRC requirements for nuclear medicine departments

- Monitoring alpha, beta and gamma
- 0-2 R/hr range
- External pancake GM probe with exposure filter (39" cable included)

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Survey-cum-Contamination Monitor (Model Ranger)

The Ranger offers maximum performance in a lightweight, rugged solution for surveying at the facility or in the field. Internal Halogen-quenched detector, uncompensated GM tube with thin mica window, 1.4-2.0 mg/cm² areal density. Effective diameter of window is 45 mm (1.77 in.).

Operating Range

- mR/hr - .001 (1μR) to 100
- CPM - 0 to 350,000
- μSv/hr - .01 to 1000
- CPS - 0 to 5000
- Total Counts- 1 to 9,999,000 counts



Ludlum Contamination Monitor (Model 26)



The new cable-less Ludlum M26 consolidates the electronics and the detector into one ergonomic housing. This optimized configuration incorporates a standard GM pancake probe, loud audio "click" output and large auto-ranging LCD display with automatic back lighting into one convenient package, making it easier than ever to detect contamination.

- Range 1cpm to 99.9 kcpm
- Count Rate and Scaler Alarms



Ludlum Hand & Foot Monitor (Model 3276 H&F)



- Simple Setup and Use
- User-Adjustable Alarms
- User-Programmable Units of Measurement, Either English or SI Units
- Standard Alkaline (4) "AA" Battery Power
- Measure Alpha, Beta, and Gamma Contamination

The Model 3276 is a versatile instrument that can be used for multiple radiation detection purposes. In this configuration the Model 3276 is connected to both a Model 44-25 Hand Monitor Detector and a Model 44-26 Foot Monitor Detector to monitor personnel for alpha, beta, and gamma contamination. An optional Model 44-9 Detector can also be included for frisking.

The instrument features a large backlit LCD (liquid crystal display), an audio warning, and intuitive design.

Digital Area Monitor (Model 375)

The digital area monitor with built-in GM gamma detector provides continuous gamma radiation monitoring of rooms where radionuclides are received, stored, or dispensed, and in waste management areas where there is the possibility of radioactive contamination. The monitor is wall-mountable.

With built-in GM gamma detector for continuous monitoring

- Detects gamma radiation
- LOW and HIGH alarms with yellow and red lights, adjustable audible tones
- 0.1mR/hr - 1000 mR/hr or $\mu\text{Sv/h}$ - 9999 $\mu\text{Sv/h}$ (Different Models)
- Internal detector: halogen quenched GM gamma detector, sensitivity: 1000 cpm/mR/hr (Cs-137 gamma), energyresponse (60 keV-3MeV) : within $\pm 25\%$ of true value
- Display: four-digit LED display with 0.8" (2cm) character height
- Display units: available in mR/hr or $\mu\text{Sv/h}$



Electronic Personal Dosimeter (Model 23)

The Model 23 Electronic Personal Dosimeter (Ludlum) is a solid and lightweight (55.9 g/2 oz) pen-type personal dosimeter. It can be used for measuring gamma or X-ray radiation in medical and laboratory environments or other areas where personal radiation monitoring is desired or required.

- 600 record data logging option available
- Audio alarm
- Gamma and X-ray (35 keV to 3 MeV)
- Low weight and slim design
- Silicon semiconductor detector



Personal Radiation Monitor (Model 25)

The Model 25 is a conveniently small-sized device designed to warn users any time they are in a potentially harmful radiation environment. The unit will automatically alarm with a loud audible signal and blinking display when either the dose rate (0.01 mSv/h to 9.99 Sv/h) or accumulated dose (0 to 999 Sv) setpoints are exceeded.



Ludlum Stretch Scope Survey Meter (Model 78)

- Range: 0.1 mR/hr to 1000 R/hr
- Telescoping Stainless Steel Pole Extends Reach to 377.2 cm (148.5 in.)
- Dual Analog/Digital Display
- Splashproof Buttons
- Energy Compensated GM Detectors
- Clip-On Adjustable Shoulder Strap



Radiation Shielding

Lead Bricks Cave (Interlocking Type)

Interlocking Lead Bricks make it easy to erect, modify and relocate protective walls and caves of any size. Their V-shaped edges eliminate the danger of leakage, common to all straight-edged bricks. Interlocking Lead Bricks create sturdy walls for a safe, protective enclosure.

- Generally lead bricks are constructed in 4"x4"x2" and 4"x2"x2" sizes. Thickness 2"
- Classified into many types like, standard, base, top, corner and end brick
- Available in the form of a cave with each arm of 16"
- Total 48 bricks to make this cave
- Made of 99.99% pure (first grade) lead
- Fully painted surface for long lasting finish
- Available with a metal top cover to maintain smooth shape of cave and ease of cleaning and gives cosmetic looks
- No exposure of lead to environment



Decay Drum



The Shielded Decay Drum provides safe handling and storage of radioactive waste material. The drum features a top-loading, handled lid with a 6" x 6" drop port.

- Round shaped structure constructed of sturdy mild steel with paint. SS model also available
- Height 24" from ground; diameter 15"
- Handles on sides ensure ease of handling
- Made of 99.99% pure (first grade) lead sheet
- Mounted on four sturdy wheels (two lockable) for ease of maneuvering
- Custom designs possible

Available models

- RH-DD-3 Lead Shielding 3mm; weight 70 Kg approx.
- RH-DD-6 Lead Shielding 6mm; weight 130 Kg approx.
- RH-DD-12 Lead Shielding 12mm; weight 240 Kg approx.
- RH-DD-25 Lead Shielding 25mm; weight 470 Kg approx.

Waste Bin (Foot Operated)

This Shielded Waste Container is used in facilities that generate low-energy beta and gamma radiation waste.

- Constructed entirely of mild steel with thick paint. SS model also available
- Easily maneuverable foot operation, for lesser effort
- Height 18" from ground; diameter 12"
- Mounted on four sturdy wheels (two lockable) for ease of movement
- Handles on sides ensure ease of handling
- Made of 99.99% pure (first grade) lead sheet
- Custom designs possible

Available models

- RH-WB-3 Lead Shielding 3mm; weight 55 Kg approx.
- RH-WB-6 Lead Shielding 6mm; weight 100 Kg approx.
- RH-WB-12 Lead Shielding 12mm; weight 200 Kg approx.
- RH-WB-25 Lead Shielding 25mm; weight 420 Kg approx.



Syringe Carrier



Shielded Syringe Carriers reduce exposure while storing or transporting radioactive material. Large handle for ease of carrying.

Constructed entirely of mild steel with thick painted surface and large handle
Dimensions :10" (length), 5" (width) and 4" (height). SS 304 model also available

Available models:

- Lead shielding 5mm on all walls; weight 5 Kg approx.
- Lead shielding 12mm on all walls; weight 10 Kg approx.

Lead Pots

Designed to handle variety of radioactive materials within the department. Can be custom designed to any dimension, shape, lead thickness. Appropriate lid on the top for shielding ease of carrying. Constructed of mild steel exteriors with thick painted surface. With or without lid handle and screwed cap.



Standard Models

- 6" height, 2" ID and 0.5" lead shielding; weight 18 Kg approx.
- 6" height, 2" ID and 1" lead shielding; weight 35 Kg approx.
- 6" height, 3" ID and 0.5" lead shielding; weight 20 Kg approx.
- 6" height, 3" ID and 1" lead shielding; weight 38 Kg approx.



'L' Bench

For Handling Unit Doses of High-Energy Radionuclides

Designed for receiving and preparing unit doses of high-energy radionuclides, these L-Blocks provide a choice of size and lead thickness. An optional Lead Brick Cave may be added to provide lateral shielding around the full perimeter of the L-Block's base.

Constructed of mild steel with thick layer of paint. Made from a continuous layer of 99.99% pure (first grade) lead sheet. No porosity for radiation leakage. Fitted with lead glass of appropriate thickness. Supplied with a 5W LED light for better visibility.

Size : Base 12"x15", vertical wall 12"x15", tapered wall 14"x15" at 45°

Lead glass : 8"x8" window with variable thicknesses

Available standard models :

- RH-LB-2 Lead shielding 2mm with 10mm lead glass; weight 16 Kg approx.
- RH-LB-3 Lead shielding 3mm with 10mm lead glass; weight 18 Kg approx.
- RH-LB-5 Lead shielding 5mm with 25mm lead glass; weight 30 Kg approx.
- RH-LB-6 Lead shielding 6mm with 30mm lead glass; weight 35 Kg approx.
- RH-LB-12 Lead shielding 12mm with 50mm lead glass; weight 72 Kg approx.
- RH-LB-25-PET - Lead shielding 25mm Base, 40mm Front with 100mm; Single piece lead glass window; weight 140 Kg approx.



PET Unit Dose Cabinet

Designed for PET hot labs with limited space to help maximize the work area and the protection. The cabinet includes the RH-LB-25-PET L Bench, built-in Dose Calibrator shield and Waste bin.

Dimensions:

- Table Top: 36" long, 24" wide, 36" from ground
- L-Bench RH-LB-25-PET - Lead shielding 25mm Base, 40mm Front with 100mm lead glass window
- Support arm to place Dose Calibrator near L Bench
- Dose Calibrator and Dispensing boxes are not part of supply
- Approx weight 650 Kg; including table, two well shields and L Bench
- Lead Lined Well shield; 1" thick, 12" height, 9" dia; one below the table and one inside the L Bench Lockable Cabinet
- Custom designs possible



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Lead-Lined Storage Safe



Conveniently loaded from the front, this Storage Safe is ideal for storing large quantities of high activity radioisotopes. Shielded with a thickness of 2" of lead. The lead-lined door is hung with heavy duty non-sagging hinges and is key-locked to prevent unauthorized access.

Transporting this half-ton safe is made easier with the built-in lifting handles on top, for use with a hoist or other means.

- Dimensions: 17" w x 17" depth x 19" h (I.D.: 12" w x 12" depth x 12" h)
- Lead Shielding: 2" thick (5 cm)
- Weight: 500 kg approx.
- Custom designs possible

Mobile Lead Barrier

The Adjustable Height Mobile Radiation Shield puts shielding where it is needed. Roll into place, secure the wheels and adjust to the desired height. Panel can be height adjusted within a 6" range. Wheel and swivel locks on each caster provide secure placement. Mild steel construction with rich paint surface.



- Dimensions: Shield: 36" w x 24" h; 60" from ground; Height Adjustment: 6"
- Lead Shielding: 1" thick (2.5 cm)
- Finish: Pint
- Weight: 200 kg approx.
- Fixed height Lead Barrier with similar dimensions also available
- Custom designs possible



Syringe Holder

Designed to hold unshielded syringes. Constructed of lead shielding, encased in mild steel. Metal flap to securely hold the syringe.

- Dimensions: 6.5" height, 1" dia
- Lead Shielding: 0.5" thick
- Weight: 4 Kg approx.





Syringe Recapper

The Syringe Recapper is a safe and inexpensive way to protect yourself when recapping a used syringe. Used either hand-held or placed on a flat surface, such as a procedure tray, the Recapper is made of a lightweight plastic that is easily carried anywhere. Dimensions : 4"x4" base

Veinlite LED

- Portable & avoid multiple needle prick
- No treatment delays & reduces patients discomfort
- Improves site selection by identifying vein bifurcation
- Avoid vein punctures by highlighting exact angle of vein puncture
- Application: Obese/Dark skin patients. Agitated & restless patients. Thalassemia patients. Hemophiliac patients. Renal failure patients. Multiorgan failure patients. Carcinoma patients. geriatrics patients. Pediatric patients



Injection Resting Chair

A Comfortable Rest between Injection and Imaging

Most protocols require that prior to imaging, a patient rest for up to one hour after an injection of FDG F-18. Typical injection chairs are not designed for comfort, making rest difficult.

The Injection/Resting Chair is a comfortable resting spot for patients to wait between injection and imaging. The chair achieves recline positions and features an infinitely adjustable back and a comfortable arm rest.



Lead Shielded Refrigerator

Single Door Refrigerator with a capacity of 45 Liters designed to accommodate large quantities of Radiopharmaceuticals, Tagged Biologicals and other Radioactive materials in fully shielded conditions.

- Refrigerator dimensions : 46x46x80(h) cm
- Lead shielding : 6mm. 52x52x100(h) cm
- External ports for power supply and water drain
- Exhaust for hot air removal



Decontamination Kit

Decontamination Kit contains all the equipment needed to cope with a radioactive spill or routine decontamination problem in the laboratory. The drum serves as a container for the kit components and as a waste transfer/storage vessel.

- | | |
|---------------------------------------|---------------------------------------|
| • Leakproof Stainless Steel Drum – 1 | • Shoe Covers – 100 |
| • Gloves – 100 | • Respirators with Filters – 2 |
| • Radiacwash liquid – 2 liters | • Radiacwash Spray Bottle (empty) – 1 |
| • Absorbent Paper Roll with stand – 1 | • Area Demarcation Tape – 1 |
| • Polybags – 30 | • Pail, Rope, Assorted Sign – 1 each |
| • Sponge, Mop, Scrubber – 1 each | • 12" Niptong – 1 |



Dose Drawing System

BIODEX

www.biodex.com

The Dose Drawing System is used to draw FDG F-18 doses from a vial. It consists of a specially designed Dose Drawing Syringe Shield, vial shield and stand.

When drawing FDG F-18, the vial shield and syringe shield remain on the stand. The stand allows the vial shield to rotate and has a fixed stop at the 45-degree downward angle. The vial shield is constructed of 1" lead encased in steel. The shield's top is threaded to allow quick insertion and removal of vials. The top cover incorporates a pivoting shield for septum access that allows the use of a vent needle, if desired, along with the needle from a 5 cc syringe.





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The tungsten syringe shield mounts on a stainless steel rotating platform that slides the syringe into the vial and locks in position. The dose can then be drawn with forceps to minimize hand exposure. The syringe shield is constructed of .55" tungsten. A high-density lead glass window allows viewing up to the 5 cc mark on a 5 cc syringe.

The PET Dose Drawing System provides a safe and shielded environment while making it easy to draw a FDG F-18 dose.

- 

1 If transported in a Biodex PET Vial Shipping System, the vial shield is placed in the stand
- 

2 Vial shield shipping cover is replaced with the drawing shield cover
- 

3 Syringe is placed in the Dose Drawing Syringe Shield. The vial shield rotates to 45-degree downward angle. Swing open the cover for vial septum access
- 

4 Syringe shield slides upward, allowing the syringe to puncture the vial septum Dose is drawn

Associated Shielding and Handling Devices



Lead Gloves



Forceps
(6", 12", 18")



Niptongs
(12", 18", 36")



Lead Apron



Lead Goggles



Lead Storage Box



Lead Storage Container



Rotund Lead Container



Nuclear Medicine Work Cabinet



Stainless Steel Lead Cabinet



Unit Dose Pig Wall Rack



Lead Vial Shield with Magnetic Cap



**Radioactive Material Container
with Cart (Custom Designs)**

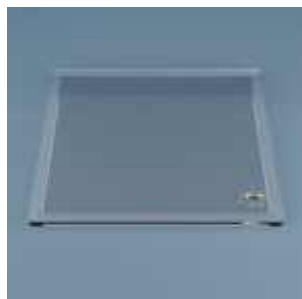


**Lead Pig Cart with Two
4.2" Square Holes**



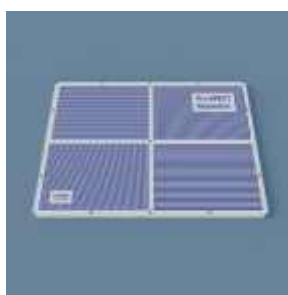
Vial Pig Trolley

QA Phantams & Tools



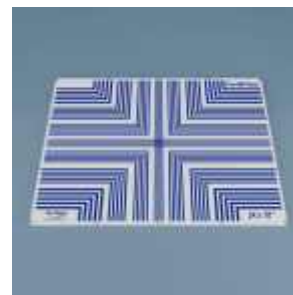
Pro-NM FloodRECT

08-401 - Pro-NM FloodRECT
08-402 - Pro-NM FloodRECT XL
Flood phantoms provide a simple and efficient means of obtaining optimum camera performance with respect to uniformity of response over the entire crystal area.



Pro-NM Resolution

08-301
The bar phantom for determination of resolution of Scintillation Cameras. Four-quadrant phantom offers precise determination of camera intrinsic resolution, collimator spatial resolution, field size and linearity.



Pro-NM PETsensi

08-801
The PET sensitivity phantom is used to measure the sensitivity or ability of positron emission tomographs to detect positrons.



Pro-NM ResL

08-303 - 21" x 21" version
08-305 - 24" x 18" version
Pro-NM ResL for determination of resolution of Scintillation Cameras. The phantom offers precise determination of camera intrinsic resolution, collimator spatial resolution, field size and linearity. Apart from this standard size phantoms, we offer different sizes and configurations manufactured to the highest quality standards.



Pro-NM Slits

08-302
Slits phantom for Intrinsic Spatial Resolution evaluation (Quantitative technique) according to NEMA Standards Publication NU 1-2012.



Pro-NM NEMA NU 2 Resolution

08-109
A phantom for evaluation of spatial resolution of positron emission tomographs (PET).

Check Sources



FeatherLite™ Cobalt-57
Rectangular Flood Source



Cs-137 Check Source



Dose Calibrator
Vial Reference Sources

QA Phantoms



PET Phantoms



Gillion QAPhantom
Compatible with SPECT/CT,
PET/CT and CT/MRI



Flangeless Deluxe PET
and SPECT Phantoms



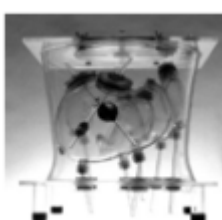
PET CT Phantoms



ECTphan™ Phantom
A liquid phantom
for SPECT



Liqui-Phil™ Hollow
Tumors Phantom



Liqui-Phil™ Organ
Scanning Phantom



Liqui-Phil™
Head Phantom



Hoffman 3D Phantoms

Anthropomorphic Sectional Phantoms



Dose Administration (Dose Dispensing)



Tungsten Syringe Shields



PET Tungsten Syringe Shields



High Density Lead Glass Syringe Shield

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Unit Dose Pig



Pig Shipping Bag



PET Shipping Box



VIAL Pig PET Shipping Box

Imaging Tables



Econo Ultrasound Table



Sound Pro™ Combination Table



MRI Stretcher

Radioaerosol Administration System

Venti-Scan™ Radioaerosol Administration System

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 pleated hydrophilic HEPA filter which traps moisture. This makes it ideal for radioaerosol studies by impeding humidified radiation from passing through. Tried and tested, the pleated contour increases surface area to decrease breathing resistance, making it virtually resistance-free with exceptional trapping efficiency.



Simple Steps to Perform a Study



Step 1: Insert Venti-Scan™ IV Kit in canister



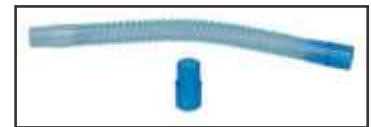
Step 2: Inject Tc-99m DTPA



Step 3: Connect to O2 supply; position patient comfortably for resistance-free breathing

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

- Uses HEPA 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)



Full Technologist Protection

The Venti-Scan IV shield is an enclosure providing lead-shielded protection from top to bottom. The 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, HEPA 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. IV pole is not part of supply.

Patients and technologists have always been comfortable and confident with the Venti-Scan. And, when the patient is comfortable, the procedure goes smoothly, without interruption. The end result is a superior study.

Development dictates that from time to time the data shown, is subject to change without notice, please obtain a quotation.



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