

NUCLEAR MEDICINE  
**HOT LAB**

A WORLD LEADER IN RADIATION SHIELDING

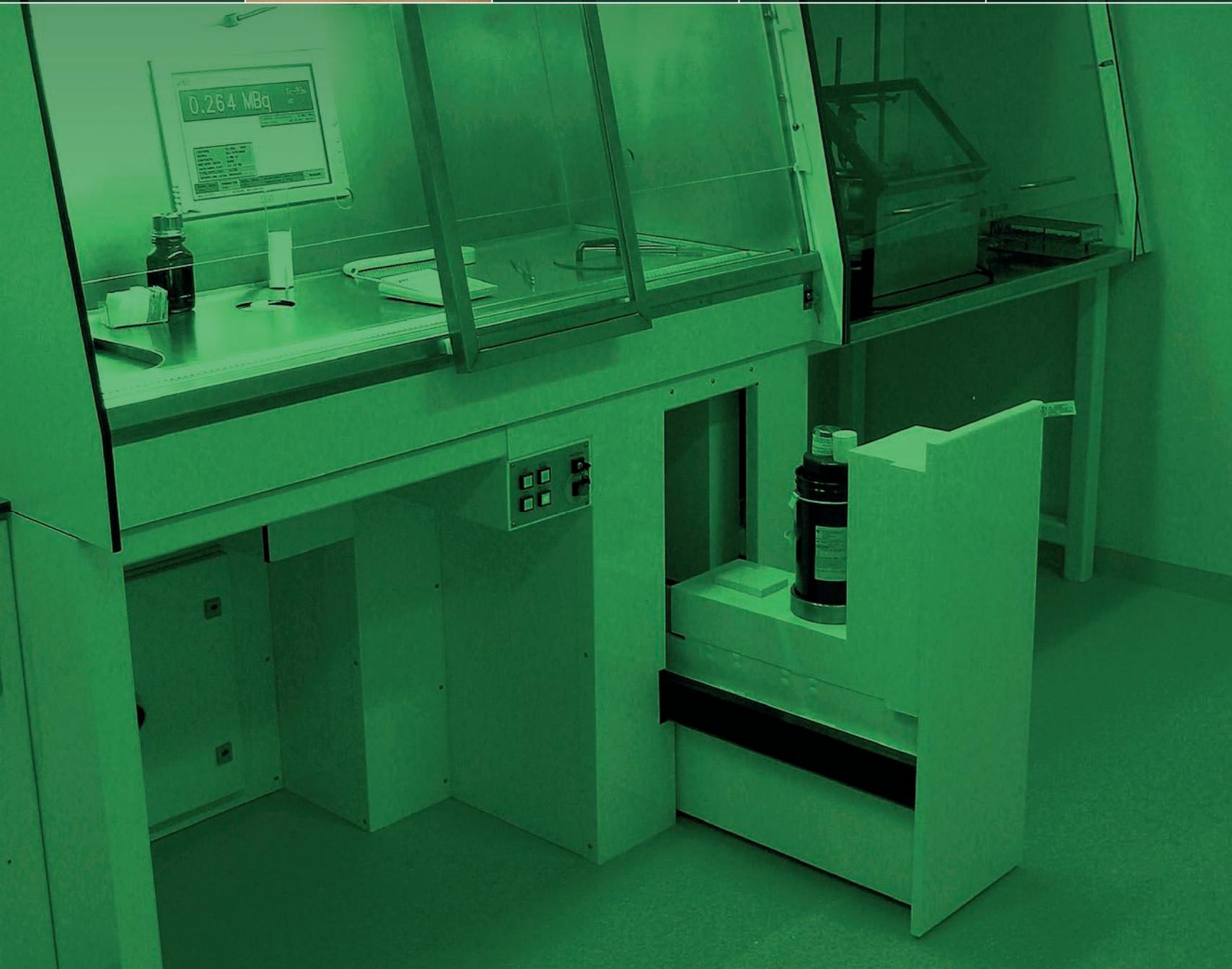
RADIATION SHIELDED  
SAFETY CABINET  
SHIELDED FUME HOOD



LEAD BRICK SYSTEMS  
LEAD BARRIERS  
STORAGE SAFES

SYRINGE SHIELDS  
SYRINGE CARRIERS  
WASTE CONTAINERS

PHANTOMS



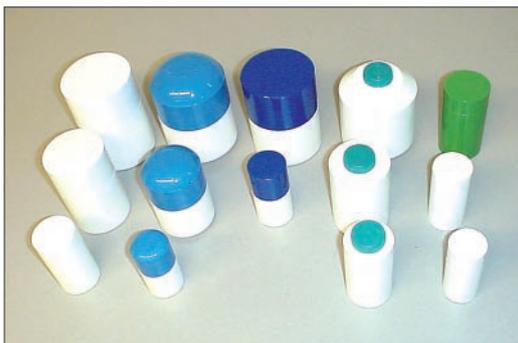


## INTRODUCTION

VON GAHLEN IS A MODERN STATE-OF-THE-ART MANUFACTURER OF LEAD SHIELDING PRODUCTS. SINCE ITS FOUNDING IN 1973, VON GAHLEN HAS BECOME THE INDUSTRY LEADER IN LEAD SHIELDING, PROVIDING THE NUCLEAR MEDICINE COMMUNITY WITH RELIABLE, HIGH QUALITY PRODUCTS THAT MEET OR EXCEED INDUSTRY STANDARDS AND SAFETY REQUIREMENTS. VON GAHLEN HOT CELL INSTALLATIONS MAY BE FOUND ALL OVER THE WORLD, INCLUDING MANY OF THE LARGEST TURNKEY INSTALLATIONS IN THE FIELD.



VON GAHLEN SUPPLIES BOTH STANDARD AND CUSTOM BUILT LEAD SHIELDED FURNITURE FOR THE HOT LABORATORY. THE VON GAHLEN MICROBIOLOGICAL LEAD SHIELDED SAFETY CABINET IS THE HEART OF THE HOT LABORATORY. FOR ISOTOPE HANDLING AND STORAGE VON GAHLEN PROVIDES VARIOUS CUPBOARDS AND DRAWERS IN MODULAR SYSTEMS. THE SYRINGE SHIELDS AND SYRINGE CARRIERS PROTECT THE EMPLOYEES IN THEIR DAILY ROUTINE.



MOST OF THE RADIOPHARMACEUTICALS RECEIVED IN THE NUCLEAR MEDICINE DEPARTMENTS IN EUROPE ARE PACKED IN A LEAD CONTAINER MANUFACTURED BY VON GAHLEN, WHICH RESULTS IN A PRODUCTION OF OVER 500.000 CONTAINERS PER YEAR.

VON GAHLEN IS PROUD TO BE IN THE FOREFRONT OF ADVANCING TECHNOLOGY.



## HOT LABORATORY FURNITURE

### MICROBIOLOGICAL RADIATION SHIELDED SAFETY CABINET

COMBINED WITH A

### RADIOISOTOPE FUME HOOD

RADIOISOTOPE FUME HOOD AVAILABLE WITH 6-50 MM LEAD SHIELDING



### SHIELDED GLOVE BOX FOR RADIOPHARMACEUTICAL PRODUCTION

- UP TO 50 MM OF LEAD SHIELDING
- STAINLESS STEEL AIRTIGHT GLOVE BOX
- STAINLESS STEEL OUTSIDE FINISH
- HEPA FILTERED AIR INLET, CLASS 100 INTERIOR
- VARIOUS DIMENSIONS AVAILABLE



### STORAGE AND WASTE CABINET

CABINET CONSISTING OF:

- WASTE COMPARTMENT FOR SOLID WASTE, SHIELDING 5 – 35 MM LEAD
- STORAGE COMPARTMENT WITH 5 MM LEAD SHIELDING FOR RADIOACTIVE PHANTOMS
- DRAWER COMPARTMENT FOR STORAGE OF RADIOISOTOPES. SHIELDING 10 – 30 MM LEAD
- TABLETOP HIGH QUALITY PHENOLIC RESIN OR STAINLESS STEEL



### STORAGE CABINET INCLUDING SHIELDED REFRIGERATOR

CABINET CONSISTING OF:

- REFRIGERATOR SHIELDED WITH 5 OR 10 MM LEAD
- DRAWER COMPARTMENT FOR RADIOISOTOPES. SHIELDING 10 – 30 MM LEAD
- TABLETOP HIGH QUALITY PHENOLIC RESIN OR STAINLESS STEEL

# MICROBIOLOGICAL RADIATION SHIELDED SAFETY CABINET CLASS II A

## MODEL VG-MSC-BSL

VON GAHLEN SUPPLIES A RADIATION SHIELDED SAFETY CABINET, SERIES VG-MSC-BSL II A, DESIGNED ESPECIALLY FOR THE PREPARATION OF  $^{99m}\text{Tc}$  LABELLING KITS. IT IS AVAILABLE IN THREE SIZES, EACH WITH AN INTEGRATED  $^{99m}\text{Tc}$  GENERATOR SAFE.

THIS SAFETY CABINET PROVIDES AN IDEAL STERILE ENVIRONMENT FOR THE PRODUCT, WHILE ALSO PROVIDING COMPLETE AND SAFE PERSONAL PROTECTION FOR THE OPERATOR. THE INTEGRATED  $^{99m}\text{Tc}$  GENERATOR SAFE CONSISTS OF A LEAD SHIELDED DRAWER IN WHICH ONE OR TWO  $^{99m}\text{Tc}$  GENERATOR(S) CAN BE PLACED. THE CLOSED DRAWER PROVIDES LEAD SHIELDING TO ALL SIDES. THE GENERATOR IS ELEVATED ABOVE THE WORKBENCH JUST ENOUGH TO ELUTE UNDER SAFE CIRCUMSTANCES.

THE CABINET PROVIDES PROTECTION ON THE FRONT OF THE WORK AREA BY MEANS OF A SLIDING LEAD GLASS WINDOW. THE WALLS AND WORKBENCH HAVE LEAD SHIELDING UP TO 10 MM THICK, TO PREVENT RADIATION LEAKS. AIR FLOWS WITH AN AVERAGE OF APPROX. 0,40 M/S FROM THE ABSOLUTE FILTER ON THE TOP OF THE WORK AREA TO THE WORKBENCH AND EXITS ON THE FRONT AND REAR OF THE WORKBENCH. AIR CIRCULATES THROUGH THE FRONT GRATE OF THE SAFETY CABINET INTO THE WORK AREA, FORMING A PROTECTIVE CURTAIN. AIR VOLUME AND SPEED CAN BE ADJUSTED TO MAXIMUM FLEXIBILITY. THE EC MOTOR IS BOTH ENERGY- AND COST-EFFICIENT.



## FEATURES

- TC GENERATOR SAFE INCLUDING ELEVATOR FOR 1 OR 2 99<sup>M</sup> TC GENERATOR(S) WITH 50 MM LEAD SHIELDING ON ALL SIDES
- SLIDING LEAD GLASS WINDOW
- BUILT-IN RECESSED WASTE COMPARTMENT
- SHIELDED COMPARTMENT FOR IONISATION CHAMBER
- INTEGRATION OF LCD-DISPLAY FOR DOSE CALIBRATOR IN REAR WALL

## ADVANTAGES

- CONTINUOUS AIR-VELOCITY MONITORING AND AUTOMATIC ADJUSTMENT AS NECESSARY
- SEAMLESS WORK AREA WITH ROUNDED CORNERS PROVIDES EASY STERILIZATION AND OPTIMAL DECONTAMINATION
- ABSOLUTE FILTERS (H14) WITH AN EFFICIENCY OF 99,998% MPPS (EN-1822)
- PERFECT AIR DISTRIBUTION
- ROUNDED ARMREST INTEGRATED INTO WORKBENCH
- FRONT WINDOW ANGLED 8 DEGREES, ALLOWING OPERATOR BETTER FIELD OF VIEW
- LOW NOISE LEVEL
- ENERGY SAVING EC-MOTOR
- MAIN FILTER CAN EASILY BE REPLACED WITH LOW CONTAMINATION RISK

## OPTIONAL

- UTILITY CONNECTIONS



TC GENERATOR SAFE



THE ELEVATED GENERATOR READY FOR ELUTION

## TECHNICAL SPECIFICATIONS AND DIMENSIONS

|                                      | VG-MSC-BSL-170                  |            | VG-MSC-BSL-200 |            |
|--------------------------------------|---------------------------------|------------|----------------|------------|
|                                      | 6 MM LEAD                       | 10 MM LEAD | 6 MM LEAD      | 10 MM LEAD |
| <b>TOTAL HEIGHT (MM)</b>             | 2780                            | 2784       | 2780           | 2784       |
| <b>TOTAL WIDTH EXTERNAL (MM)</b>     | 1645                            | 1655       | 1950           | 1960       |
| <b>HEIGHT WORKBENCH (MM)</b>         | 985                             | 989        | 985            | 989        |
| <b>WORKING SPACE (MM)</b>            |                                 |            |                |            |
| WIDTH                                | 1535                            | 1535       | 1840           | 1840       |
| DEPTH                                | 600                             | 600        | 600            | 600        |
| HEIGHT                               | 720                             | 720        | 720            | 720        |
| <b>FREE WORKING OPENING</b>          | 200                             | 200        | 200            | 200        |
| <b>WIDTH LEAD GLASS</b>              | 350                             | 350        | 350            | 350        |
| <b>AIR VOLUMES (M<sup>3</sup>/H)</b> |                                 |            |                |            |
| RECIRCULATION                        | 1320                            | 1320       | 1580           | 1580       |
| EXHAUST                              | 445                             | 445        | 530            | 530        |
| TOTAL                                | 1670                            | 1670       | 2010           | 2010       |
| <b>LIGHTING (W)</b>                  | 2X40                            |            |                |            |
| <b>POWER CONSUMPTION</b>             | 1150                            |            |                |            |
| <b>OPERATING VOLTAGE</b>             | 230V / 16 AMP                   |            |                |            |
| <b>TOTAL WEIGHT</b>                  | APPROXIMATELY 1400 – 2000 KILOS |            |                |            |

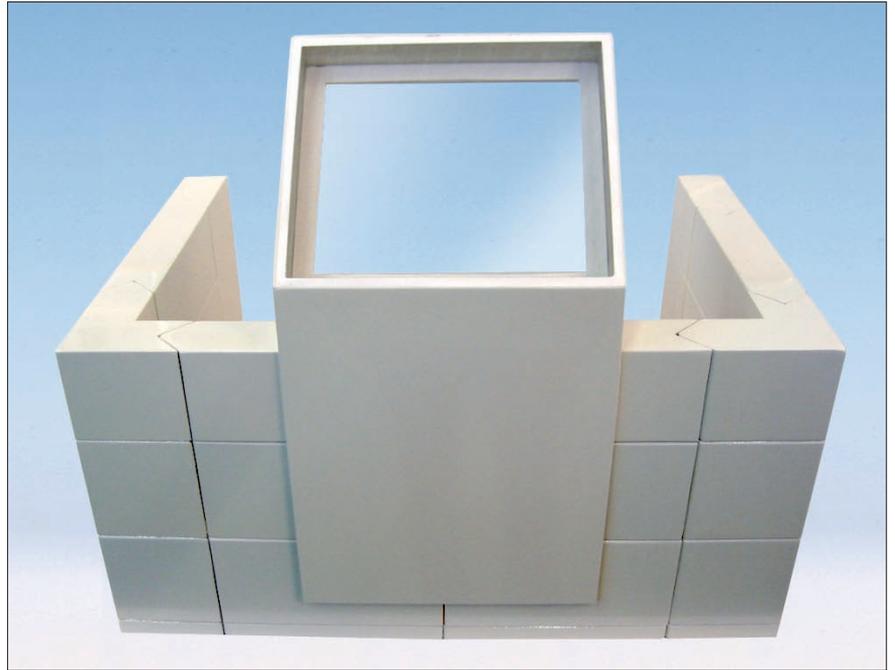
THE CONSTRUCTION OF THE WORKBENCH IS SUCH THAT IT CAN PASS THROUGH A DOOR OF 800 MM WIDTH

# ISOTOPE WORK STATION WITH LEAD GLASS WINDOW

VON GAHLEN SUPPLIES ISOTOPE WORK STATIONS IN U-FORM OR CLOSED CONFIGURATION, BUILT FROM LEAD BRICKS OF 50 MM, PBSB4, ACCORDING TO DIN 25407.

STANDARD COLOUR IS PEARL WHITE PER RAL 1013.

THE ISOTOPE WORK STATION CAN BE COMPLETED WITH A LEAD GLASS WINDOW.



## ISOTOPE WORK STATION U-FORM CONFIGURATION

### MODEL VG-BB-I/U

- SIZE I: WEIGHT APPROX. 220 KG
- INTERNAL DIMENSIONS: 500 X 350 X 300 MM (W X D X H)
- EXTERNAL DIMENSIONS: 600 X 400 X 300 MM (W X D X H)

### MODEL VG-BB-II/U

- SIZE II: WEIGHT APPROX. 255 KG
- INTERNAL DIMENSIONS: 700 X 350 X 300 MM (W X D X H)
- EXTERNAL DIMENSIONS: 800 X 400 X 300 MM (W X D X H)

### MODEL VG-BB-III/U

- SIZE III: WEIGHT APPROX. 290 KG
- INTERNAL DIMENSIONS: 900 X 350 X 300 MM (W X D X H)
- EXTERNAL DIMENSIONS: 1000 X 400 X 300 MM (W X D X H)

### BOTTOM PLATE WITH 20 MM (2X10) MM LEAD SHIELDING

- MODEL VG-BP-I/U                      SIZE I    WEIGHT APPROX. 40 KG
- MODEL VG-BP-II/U                     SIZE II   WEIGHT APPROX. 56 KG
- MODEL VG-BP-III/U                    SIZE III  WEIGHT APPROX. 72 KG

### STAINLESS STEEL TRAY FOR U-FORM CONFIGURATION

- MODEL VG-I/U-E                        SIZE I
- MODEL VG-II/U-E                        SIZE II
- MODEL VG-III/U-E                        SIZE III

## ISOTOPE WORK STATION CLOSED CONFIGURATION

### MODEL VG-BB-I/G

- SIZE I: WEIGHT APPROX. 375 KG
- INTERNAL DIMENSIONS: 500 X 500 X 300 MM (W X D X H)
- EXTERNAL DIMENSIONS: 600 X 600 X 300 MM (W X D X H)

### MODEL VG-BB-II/G

- SIZE II: WEIGHT APPROX. 443 KG
- INTERNAL DIMENSIONS: 700 X 500 X 300 MM (W X D X H)
- EXTERNAL DIMENSIONS: 800 X 600 X 300 MM (W X D X H)

### MODEL VG-BB-III/G

- SIZE III: WEIGHT APPROX. 510 KG
- INTERNAL DIMENSIONS: 900 X 500 X 300 MM (W X D X H)
- EXTERNAL DIMENSIONS: 1000 X 600 X 300 MM (W X D X H)

### BOTTOM PLATE WITH 20 MM (2X10) MM LEAD SHIELDING

- MODEL VG-BP-I/G                        SIZE I    WEIGHT APPROX. 57 KG
- MODEL VG-BP-II/G                        SIZE II   WEIGHT APPROX. 80 KG
- MODEL VG-BP-III/G                        SIZE III  WEIGHT APPROX. 102 KG

### STAINLESS STEEL TRAY FOR U-FORM CONFIGURATION

- MODEL VG-I/G-E                        SIZE I
- MODEL VG-II/G-E                        SIZE II
- MODEL VG-III/G-E                        SIZE III

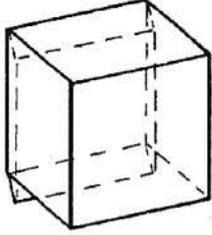
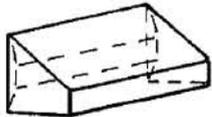
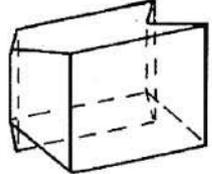
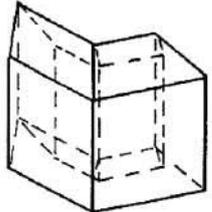
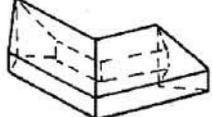
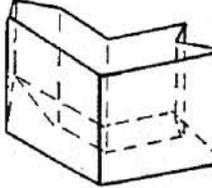
## LEAD GLASS WINDOW WITH STEEL FRAME FOR ISOTOPE WORK STATION

### MODEL VG-BLG(RW-36)-20

- MINIMUM HEIGHT OF ISOTOPE WORK STATION 300 MM, THICKNESS 50 MM
- THE WINDOW IS MOUNTED UNDER AN ANGLE OF 45°
- DIMENSIONS LEAD GLASS WINDOW 240 X 200 MM (W X H)
- LEAD GLASS PROTECTION 20 MM PB EQUIVALENT
- TWO-SIDED GRINDED AND POLISHED

# INTERLOCKING LEAD BRICK SHIELDING SYSTEM

LEAD BRICKS WITH 50 MM SHIELDING MADE OF PBSB4, ACCORDING TO DIN 25407

|  |      |                               | L   | H   | T  | W     |
|--|------|-------------------------------|-----|-----|----|-------|
|    | NN1  | NORMAL BRICK                  | 100 | 100 | 50 | 5,60  |
|  | NB1  | NORMAL BASE BRICK             | 100 | 15  | 50 | 1,54  |
|  | NS1  | NORMAL TOP BRICK              | 100 | 85  | 50 | 4,06  |
| NN1  | DN1  | HALF NORMAL BRICK             | 50  | 100 | 50 | 2,80  |
|  | DB1  | HALF NORMAL BASE BRICK        | 50  | 15  | 50 | 0,77  |
|  | DS1  | HALF NORMAL TOP BRICK         | 50  | 85  | 50 | 2,03  |
|  | DN1N | QUARTER NORMAL BRICK          | 50  | 50  | 50 | 1,40  |
|    | LN1  | LONG BRICK                    | 200 | 100 | 50 | 11,20 |
|  | LB1  | LONG BASE BRICK               | 200 | 15  | 50 | 3,08  |
|  | LS1  | LONG TOP BRICK                | 200 | 85  | 50 | 8,12  |
|  | LS1N | LONG TOP BRICK, LOW           | 200 | 35  | 50 | 2,52  |
| NB1  | CN1  | START BRICK                   | 100 | 100 | 50 | 6,30  |
|  | CB1  | START BASE BRICK              | 100 | 15  | 50 | 1,73  |
|  | CS1  | START TOP BRICK               | 100 | 85  | 50 | 4,56  |
|  | CS1N | START TOP BRICK, LOW          | 100 | 35  | 50 | 1,42  |
|   | QN1  | SWITCH BRICK                  | 0   | 100 | 50 | 1,40  |
|  | QB1  | SWITCH BASE BRICK             | 0   | 15  | 50 | 0,39  |
|  | QS1  | SWITCH TOP BRICK              | 0   | 85  | 50 | 1,02  |
|  | QS1N | SWITCH TOP BRICK, LOW         | 0   | 35  | 50 | 0,32  |
| NS1  | XN1  | SWALLOW-TAIL BRICK            | 100 | 100 | 50 | 4,20  |
|  | XB1  | SWALLOW-TAIL BASE BRICK       | 100 | 15  | 50 | 1,16  |
|  | XS1  | SWALLOW-TAIL TOP BRICK        | 100 | 85  | 50 | 3,05  |
|  | EN1  | END BRICK                     | 100 | 100 | 50 | 4,90  |
|  | EB1  | END BASE BRICK                | 100 | 15  | 50 | 1,35  |
|  | ES1  | END TOP BRICK                 | 100 | 85  | 50 | 3,55  |
|  | ES1N | END TOP BRICK, LOW            | 100 | 35  | 50 | 1,10  |
| WN1  | AN1  | CORNER BRICK                  | 150 | 100 | 50 | 8,40  |
|  | AB1  | CORNER BASE BRICK             | 150 | 15  | 50 | 2,31  |
|  | AS1  | CORNER TOP BRICK              | 150 | 85  | 50 | 6,09  |
|  | AS1N | CORNER TOP BRICK, LOW         | 150 | 35  | 50 | 1,89  |
|  | ZN1  | PARTITION WALL BRICK          | 100 | 100 | 50 | 4,90  |
|  | ZB1  | PARTITION WALL BASE BRICK     | 100 | 15  | 50 | 1,35  |
|  | ZS1  | PARTITION WALL TOP BRICK      | 100 | 85  | 50 | 3,55  |
|  | ZS1N | PARTITION WALL TOP BRICK, LOW | 100 | 35  | 50 | 1,10  |
| WB1  | WN1  | ANGLE CORNER BRICK            | 100 | 100 | 50 | 8,40  |
|  | WB1  | ANGLE CORNER BASE BRICK       | 100 | 15  | 50 | 2,31  |
|  | WS1  | ANGLE CORNER TOP BRICK        | 100 | 85  | 50 | 6,09  |
|  | WN11 | ANGLE CORNER BRICK, LONG      | 150 | 100 | 50 | 14,00 |
|  | WB11 | ANGLE CORNER BASE BRICK, LONG | 150 | 15  | 50 | 3,85  |
|  | WS11 | ANGLE CORNER TOP BRICK, LONG  | 150 | 85  | 50 | 10,15 |

L = LENGTH (MM)

H = HEIGHT (MM)

T = THICKNESS (MM)

W = WEIGHT (KG)

## SCREW LOCK



# TUNGSTEN SYRINGE SHIELD WITH LEAD GLASS WINDOW

A RANGE OF HIGH QUALITY TUNGSTEN SHIELDS PRIMARILY DESIGNED TO REDUCE FINGER DOSE DURING DRAWING OR INJECTING RADIONUCLIDES. THE SYRINGE IS PLACED IN THE SHIELD WITH A SCREW OR TWIST LOCK. THE SHIELDS ARE AVAILABLE IN FOUR DIAMETERS (1CC, 2-3CC, 5CC & 10CC) TO SUIT DIFFERENT MANUFACTURERS' SYRINGES COMPLETE WITH NEEDLE AND QUARD.

THE BODY OF THE SHIELD IS MADE FROM TUNGSTEN ALLOY WITH A WALL THICKNESS OF 2 MM GIVING A REDUCTION FACTOR GREATER THAN 200 WHEN DISPENSING TECHNETIUM. A CLEAR VIEW OF THE SYRINGE IS ACCESSED THROUGH THE LEAD GLASS WINDOW AND IS AIDED BY THE INTERNAL YELLOW COATING OF THE BARREL. THE WINDOW PROVIDES COMPARABLE GAMMA ATTENUATION TO THE TUNGSTEN BARREL.

### STANDARD MODEL SCREW LOCK

- **MODEL VG-TSS- 1 (75)** FOR 1 ML SYRINGES
- **MODEL VG-TSS- 2 (53)** FOR 2 ML SYRINGES
- **MODEL VG-TSS- 3 (65)** FOR 3 ML SYRINGES
- **MODEL VG-TSS- 5 (65)** FOR 5 ML SYRINGES
- **MODEL VG-TSS- 10 (80)** FOR 10 ML SYRINGES

### TAPERED FRONT SCREW LOCK

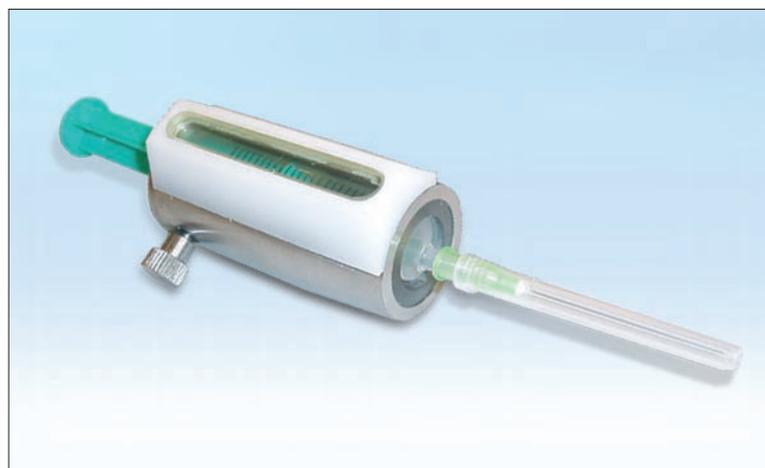
- **MODEL VG-TSS- 1/5 (75)** FOR 1 ML SYRINGES
- **MODEL VG-TSS- 2/5 (53)** FOR 2 ML SYRINGES
- **MODEL VG-TSS- 3/5 (65)** FOR 3 ML SYRINGES
- **MODEL VG-TSS- 5/5 (65)** FOR 5 ML SYRINGES
- **MODEL VG-TSS- 10/5 (80)** FOR 10 ML SYRINGES

### STANDARD MODEL TWIST LOCK

- **MODEL VG-TSS- 1/B (72)** FOR 1 ML SYRINGES
- **MODEL VG-TSS- 1/B (75)** FOR 1 ML SYRINGES
- **MODEL VG-TSS- 1/B (77)** FOR 1 ML SYRINGES
- **MODEL VG-TSS- 2/B (53)** FOR 2 ML SYRINGES
- **MODEL VG-TSS- 2/B (59)** FOR 2 ML SYRINGES
- **MODEL VG-TSS- 3/B (65)** FOR 3 ML SYRINGES
- **MODEL VG-TSS- 3/B (68)** FOR 3 ML SYRINGES

- **MODEL VG-TSS- 3/B (76)** FOR 3 ML SYRINGES
- **MODEL VG-TSS- 5/B (60)** FOR 5 ML SYRINGES
- **MODEL VG-TSS- 5/B (65)** FOR 5 ML SYRINGES
- **MODEL VG-TSS- 5/B (68)** FOR 5 ML SYRINGES
- **MODEL VG-TSS- 10/B (75)** FOR 10 ML SYRINGES
- **MODEL VG-TSS- 10/B (80)** FOR 10 ML SYRINGES
- **MODEL VG-TSS- 10/B (85)** FOR 10 ML SYRINGES

## TWIST LOCK



### BETA SYRINGE SHIELD

WITH 5 MM ACRYLIC GLASS

- **MODEL VG-PG/N- 1 (75)** FOR 1 ML SYRINGES
- **MODEL VG-PG/N- 2 (53)** FOR 2 ML SYRINGES
- **MODEL VG-PG/N- 3 (65)** FOR 3 ML SYRINGES
- **MODEL VG-PG/N- 5 (65)** FOR 5 ML SYRINGES
- **MODEL VG-PG/N-10 (80)** FOR 10 ML SYRINGES

### BETA-GAMMA SYRINGE SHIELD

WITH 5 MM ACRYLIC GLASS AND 2 MM TUNGSTEN

WITH LEAD GLASS WINDOW AND SIDE SCREW TO FIX THE SYRINGE

- **MODEL VG-PG(5)/W(2)- 1 (75)** FOR 1 ML SYRINGES
- **MODEL VG-PG(5)/W(2)- 2 (53)** FOR 2 ML SYRINGES
- **MODEL VG-PG(5)/W(2)- 3 (65)** FOR 3 ML SYRINGES
- **MODEL VG-PG(5)/W(2)- 5 (65)** FOR 5 ML SYRINGES
- **MODEL VG-PG(5)/W(2)- 10 (80)** FOR 10 ML SYRINGES

## TUNGSTEN SYRINGE SHIELD FOR PET

WITH SIDE SCREW TO FIX THE SYRINGE

WALL THICKNESS OF THE SYRINGE SHIELDS: 8 MM

WITHOUT LEADGLASS WINDOW

- **MODEL VG-TSS/8- 1 (75)** FOR 1 ML SYRINGES
- **MODEL VG-TSS/8- 2 (53)** FOR 2 ML SYRINGES
- **MODEL VG-TSS/8- 3 (65)** FOR 3 ML SYRINGES
- **MODEL VG-TSS/8- 5 (65)** FOR 5 ML SYRINGES
- **MODEL VG-TSS/8-10 (80)** FOR 10 ML SYRINGES

WITH LEADGLASS WINDOW

- **MODEL VG-TSS/8/LG- 1 (75)** FOR 1 ML SYRINGES
- **MODEL VG-TSS/8/LG- 2 (53)** FOR 2 ML SYRINGES
- **MODEL VG-TSS/8/LG- 3 (65)** FOR 3 ML SYRINGES
- **MODEL VG-TSS/8/LG- 5 (65)** FOR 5 ML SYRINGES
- **MODEL VG-TSS/8/LG-10 (80)** FOR 10 ML SYRINGES



## A SHIELDING DEVICE

FOR THE PREPARATION, TRANSPORT AND ADMINISTRATION OF PATIENT DOSES OF  $^{18}\text{F}$ -FDG

**MODEL VG-SAE(PET)-1599**

E.B. KOENDERS, F.H.M. CORSTENS



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## INTRODUCTION

THE CLINICAL USE OF  $^{18}\text{F}$ -DEOXYGLUCOSE (FDG) FOR POSITRON EMISSION TOMOGRAPHY (PET) IS THE FASTEST GROWING IMAGING MODALITY OF ALL RADIOLOGIC SCIENCES. IN OUR DEPARTMENT, 1000-1200  $^{18}\text{F}$ -FDG (250 MBQ) SCANS ARE CARRIED OUT ANNUALLY. RADIOPHARMACEUTICALS SHOULD BE PREPARED IN A MANNER WHICH SATISFIES BOTH RADIATION SAFETY AS WELL AS PHARMACEUTICAL QUALITY REQUIREMENTS. PROPER SHIELDING OF  $^{18}\text{F}$  DURING HANDLING IS DIFFICULT, SINCE THE HIGH ENERGY GAMMA IRRADIATION (511 KEV) REQUIRES RELATIVELY THICK AND HEAVY SHIELDING DEVICES.

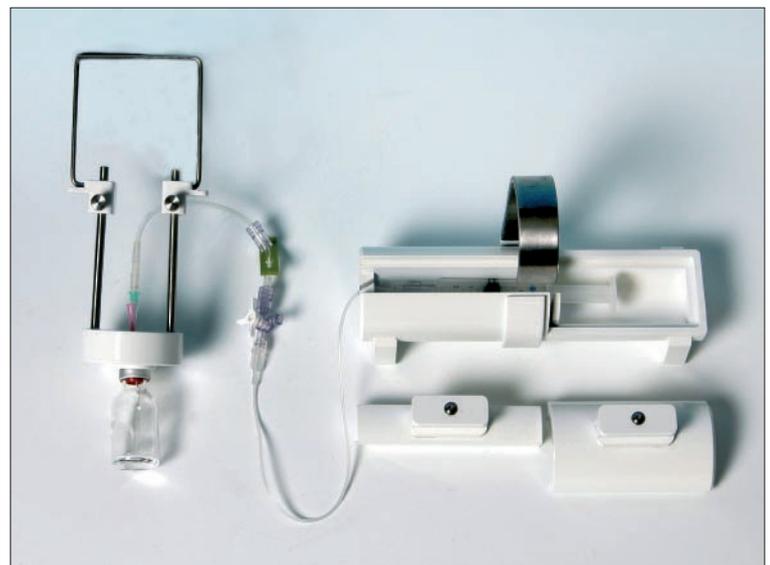
HERE, WE PRESENT THE DEVELOPMENT AND CHARACTERIZATION OF A SYRINGE-SHIELDING DEVICE FOR THE PREPARATION OF CALIBRATED AND PRE-CALIBRATED PATIENT DOSES FDG AND ITS ADMINISTRATION TO PATIENTS. THIS SYSTEM IS NOW COMMERCIALY AVAILABLE. (PATENT PENDING).

## MATERIALS, METHODS & MEASUREMENTS

THE FDG STOCK SOLUTION IS PLACED IN THE DOSE CALIBRATOR USING A SPECIAL LID, WHICH IS SHIELDED WITH 20 MM LEAD. THE SYRINGE IS PUT INSIDE A 20 MM LEAD SHIELDED HOLDER AND CONNECTED TO THE STOCK SOLUTION VIA A STERILE TUBING. AS A RESULT, THE FDG DOSE DRAWN UP IN THE SYRINGE CAN BE READ FROM THE DOSE CALIBRATOR. DOSE RATE MEASUREMENTS WERE CARRIED OUT DURING THE FDG DOSE (250 MBQ) PREPARATION AND ADMINISTRATION TO THE PATIENT WITH AN ELECTRONIC DOSIMETER, WHILE THE HAND DOSES WAS MEASURED WITH RING TLDS. IN ADDITION, THE WHOLE BODY DOSE OF THE TECHNICIAN WAS DETERMINED USING A TLD.

## RESULTS

DRAWING UP AND ADMINISTRATION OF A PATIENT DOSE OF FDG CAUSED A RADIATION DOSE OF  $0.7 - 2 \mu\text{Sv}$ . THE 2-CM LEAD MANTLE OF THE SYRINGE REDUCED THE RADIATION DOSE TO 6% THEREOF. THE HAND DOSE PER DOSE PREPARATION AMOUNTED TO 5-10  $\mu\text{Gy}$  (1 MGy WITHOUT ANY SHIELDING).



## CONCLUSION

THE RADIATION DOSE TO THE TECHNICIAN DURING FDG DOSE PREPARATION AND ADMINISTRATION TO THE PATIENT CAN BE REDUCED SIGNIFICANTLY (FACTOR 50-100) WITH THIS EASY HANDLING SHIELDING DEVICE.

# SYRINGE CARRIERS

CONSTRUCTED FROM STAINLESS STEEL FOR TRANSPORT OF LOADED SYRINGES OR SMALL RADIOACTIVE SOURCES. THE INTERNAL SURFACES OF THE CARRIERS HAVE EASY TO CLEAN PLASTIC LININGS. THE SYRINGE CARRIERS ARE AVAILABLE IN TWO SIZES WITH A CHOICE OF 3 MM OR 6 MM LEAD SHIELDING.

MODEL FOR PET RADIOPHARMACEUTICALS AVAILABLE ON REQUEST.



## TECHNICAL SPECIFICATIONS AND DIMENSIONS

|   | <b>MODEL VG-TB-S/3-E</b><br>SMALL MODEL | <b>MODEL VG-TB-S/6-E</b><br>SMALL MODEL | <b>MODEL VG-TB-L/3-E</b><br>LARGE MODEL | <b>MODEL VG-TB-L/6-E</b><br>LARGE MODEL |
|---|---|---|---|---|
| INSIDE DIMENSIONS OF THE REMOVABLE PLASTIC TRAY APPROX. (W X D X H) | 213 X 39 X 40 MM                        | 213 X 39 X 40 MM                        | 213 X 82 X 40 MM                        | 213 X 82 X 40 MM                        |
| LEAD SHIELDING  | 3 MM                                    | 6 MM                                    | 3 MM                                    | 6 MM                                    |
| WEIGHT APPROX.  | 4 KG                                    | 7,5 KG                                  | 5 KG                                    | 9 KG                                    |

# VIAL HANDLING TONGS AND SYRINGE HOLDERS

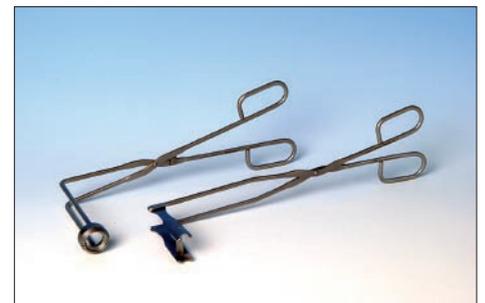
## VIAL HANDLING TONG

### MODEL VG-Z-25/10/SP

FOR A FIRM AND REMOTE HOLD OF ISOTOPE VIALS. LENGTH 250 MM, HEIGHT 100 MM

### MODEL VG-Z-28/7/SC

TO GRIP VIALS OUT OF A CONTAINER WITH A SMALL INSIDE DIAMETER. LENGTH 280 MM, HEIGHT 70 MM



## SYRINGE HOLDER

THE LEAD SHIELDED SYRINGE HOLDER CAN ACCOMMODATE SYRINGES FROM 2 ML TO 10 ML. WIDE BASE FOR STABILITY. LEAD SHIELDING IS 8 MM.

### MODEL VG-ZT-E

MODEL WITH A STAINLESS STEEL COVER  
WEIGHT: APPROX. 1,8 KG

### MODEL VG-ZT-L

COLOUR: RAL 1013 (PEARL WHITE)  
WEIGHT: APPROX. 1,6 KG

|                             |        |
|-----------------------------|--------|
| INNER DIAMETER              | 20 MM  |
| INNER HEIGHT                | 140 MM |
| OUTER DIAMETER              | 40 MM  |
| OUTER HEIGHT                | 150 MM |
| OUTER DIAMETER GROUND PLATE | 65 MM  |
| HEIGHT GROUND PLATE         | 10 MM  |





## SHARPS CONTAINER SHIELD

FOR THE STORAGE OF A SHARPS CONTAINER (E.G. RIGI-BOX TWIN 1800) WITH 3 MM LEAD SHIELDING ACCORDING TO DRAWING A4/924-4C

**MODEL VG-B/3-R/1800**

WEIGHT: APPROX. 12 KG

COLOUR: RAL 1013 (PEARL WHITE)

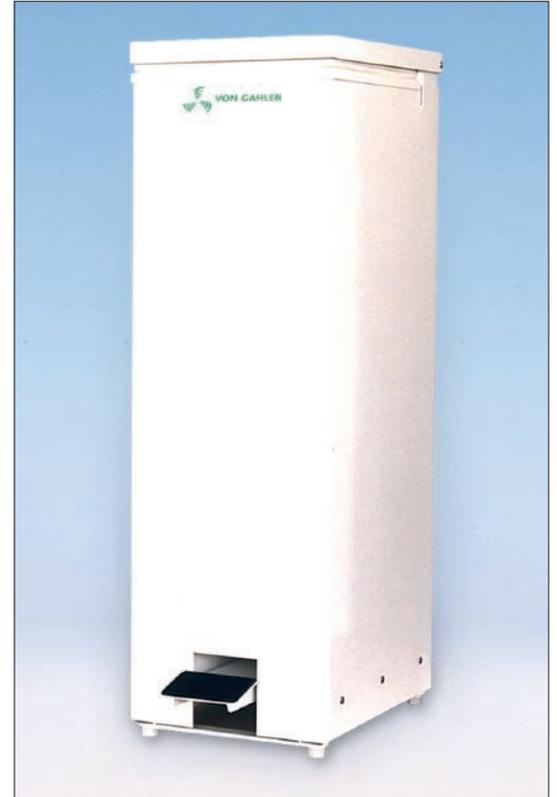
## FLOOR STANDING WASTE CONTAINER

WHITE ENAMELLED PEDAL BIN AVAILABLE WITH A CHOICE OF 3 MM OR 6 MM LEAD SHIELDING.

DESIGNED FOR STORAGE OF CONTAMINATED GENERAL WASTE WHEN USED IN CONJUNCTION WITH DISPOSABLE PLASTIC LINERS. SPECIAL FEATURES INCLUDE A GAS SPRING ASSISTED LID FOR SMOOTH AND CONTROLLED ACTION. THE TOTAL CAPACITY OF THE BIN IS APPROX. 15 LITRES

### TECHNICAL SPECIFICATIONS AND DIMENSIONS

|                                | MODEL VG-AB-15/3         | MODEL VG-AB-15/6         |
|--------------------------------|--------------------------|--------------------------|
| LEAD SHIELDING                 | 3 MM                     | 6 MM                     |
| CAPACITY                       | APPROX. 15 L             | APPROX. 15 L             |
| INSIDE DIMENSIONS (W X D X H)  | 170 X 170 X 530 MM       | 170 X 170 X 530 MM       |
| OUTSIDE DIMENSIONS (W X D X H) | 230 X 330 X 690 (950) MM | 230 X 330 X 690 (950) MM |
| WEIGHT                         | APPROX. 33 KG.           | APPROX. 52 KG.           |
| COLOUR                         | RAL 1013 (PEARL WHITE)   | RAL 1013 (PEARL WHITE)   |



## TRANSPORT CONTAINER WITH CART FOR PET ISOTOPES

**MODEL VG-TR(PET) - 1482A**

TRANSPORT CART DESIGNED TO USE IN A CLEAN ROOM FACILITY. OUTER LEAD SHIELD FIXED IN CART AND PROVIDES 35 MM PB SHIELDING. INNER LEAD SHIELD, WHICH IS REMOVABLE AND HAS A CARRYING GRIP, PROVIDES 15 MM PB SHIELDING.

INT. DIMENSIONS: 45 MM DIAMETER X 80 MM HIGH

WIDE WHEEL BASE FOR EASE OF MOBILITY. SIMPLE ERGONOMIC DESIGN. CONTAINER IS EPOXY PAINTED IN BLUE. CART OUT OF STAINLESS STEEL.



ISOTOPE WORKING PLACE WITH STAINLESS STEEL COVER AND SLIDING LEAD BARRIER. DIMENSIONS ACCORDING TO CUSTOMERS' SPECIFICATIONS.  
LEAD BARRIER DIMENSIONS: 360 MM WIDTH, LEAD GLASS WINDOW 300 X 200 MM, LEAD SHIELDING 30 OR 50 MM.



## SLIDING DRAWER ISOTOPE STORAGE SAFE

INSIDE DIMENSIONS:

- **MODEL VG-T-D/A** 200 X 200 X 250 MM (W X D X H)
- **MODEL VG-T-D/B** 300 X 300 X 300 MM (W X D X H)
- **MODEL VG-T-D/C** 300 X 400 X 400 MM (W X D X H)

LEAD SHIELDING IS AVAILABLE IN THICKNESSES OF EITHER 25 MM OR 50 MM. PAINTED IN RAL-COLOUR 1013 (PEARL WHITE). THE SAFE IS FABRICATED OF LEAD, ENCASED IN PROTECTIVE STEEL.



## ISOTOPE STORAGE SAFE

INSIDE DIMENSIONS:

- **MODEL VG-T-E/A** 200 X 200 X 200 MM (W X D X H)
- **MODEL VG-T-E/B** 300 X 300 X 300 MM (W X D X H)
- **MODEL VG-T-E/C** 300 X 400 X 400 MM (W X D X H)

LEAD SHIELDING IS AVAILABLE IN THICKNESSES OF EITHER 25 MM OR 50 MM. PAINTED IN RAL-COLOUR 1013 (PEARL WHITE). THE SAFE IS FABRICATED OF LEAD, ENCASED IN PROTECTIVE STEEL.



## TABLE TOP BARRIER WITH LEAD GLASS WINDOW

TO PROTECT AGAINST RADIATION DURING PREPARATION AND HANDLING OF RADIOPHARMACEUTICALS

|                          |                      |                     |                        |
|--------------------------|----------------------|---------------------|------------------------|
| <b>BASE</b>              | 360 X 430 MM (W X D) | <b>TOTAL HEIGHT</b> | APPROX. 480 MM         |
| <b>LEAD GLASS WINDOW</b> | 350 X 280 MM (W X H) | <b>COLOUR</b>       | RAL 1013 (PEARL WHITE) |
| <b>FRONT</b>             | 360 X 250 MM (W X H) |                     |                        |

LEAD SHIELDING

- |                                 |       |                                |       |
|---------------------------------|-------|--------------------------------|-------|
| • <b>MODEL VG-TTB(RD-50)-5</b>  | 5 MM  | • <b>MODEL VG-TTB(5.2D)-20</b> | 20 MM |
| • <b>MODEL VG-TTB(RD-50)-10</b> | 10 MM | • <b>MODEL VG-TTB(5.2D)-30</b> | 30 MM |
|                                 |       | • <b>MODEL VG-TTB(5.2D)-50</b> | 50 MM |

## MOBILE PROTECTIVE SCREEN

THIS MOBILE SCREEN IS DESIGNED FOR NUCLEAR MEDICINE PROCEDURES AND CAN BE PLACED BETWEEN THE GAMMA CAMERA OR PATIENT AND PERSONNEL TO REDUCE RADIATION EXPOSURE. THE PROTECTIVE SCREEN IS ALSO AVAILABLE WITH A LEAD GLASS WINDOW IN THE UPPER SECTION. THE COLOUR OF THE LEAD SCREEN IS WHITE. THE COLOUR OF THE STEEL FRAME IS RAL 1013 (PEARL WHITE).



### MODEL VG-FW-12/7,5/2

LEAD SHIELDING: 2 MM

DIMENSIONS: 1.200 X 750 X 700 MM (H X W X D)

WEIGHT: APPROX. 65 KG

### MODEL VG-FW/5-15/6/10/2

LEAD SHIELDING: 2 MM WITH LEAD GLASS WINDOW

DIMENSIONS: 1.500 X 1.000 X 700 MM (H X W X D)

DIMENSIONS LEAD GLASS WINDOW:

600 (575) X 1000 (975) MM (H X W)

WEIGHT: APPROX. 82 KG

### MODEL VG-FW-15/10/2

LEAD SHIELDING: 2 MM

DIMENSIONS: 1.500 X 1.000 X 700 MM (H X W X D)

WEIGHT: APPROX. 80 KG

### MODEL VG-FW-15/10/10

LEAD SHIELDING: 10 MM; STEEL PLATED 5 MM ON 2 SIDES

DIMENSIONS: 1.500 X 1.000 X 700 MM (H X W X D)

WEIGHT: APPROX. 280 KG

## PHANTOMS

### FLOOD PHANTOM WITH UNIQUE MIXING SYSTEM

VON GAHLEN HAS DEVELOPED A FLOOD PHANTOM TO PERFORM UNIFORMITY STUDIES IN YOUR DESIRED ENERGY RANGE. THE PHANTOM PROVIDES A NUMBER OF ADVANTAGES.

- THE PHANTOM COMES COMPLETE WITH A CART.
- THE PHANTOM CAN BE EASILY ROTATED FOR HOMOGENEOUS MIXING.
- ANY AIR BUBBLES ARE COLLECTED IN A TRAP OUTSIDE THE FIELD OF VIEW.
- THE PHANTOM CAN BE POSITIONED ABOVE OR BELOW THE GAMMA CAMERA.

THIS FLOOD PHANTOM IS EASY AND SIMPLE TO USE.



### SYSTEM SPECIFICATIONS

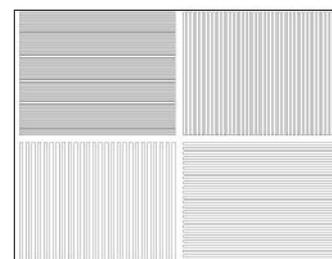
#### MODEL VG-P/K-T-600/450/41 (AS SHOWN)

- THE ACRYLATE PHANTOM IS SUITABLE FOR LARGE FIELD OF VIEW CAMERAS
- INSIDE DIMENSIONS OF THE ACRYLATE PHANTOM: 600 X 450 X 41 MM (H X W X D)
- WALL THICKNESS OF THE ACRYLATE PHANTOM: TOP/BOTTOM: 20 MM, SIDEWALLS: 25 MM ACCORDING TO DIN 6855
- THREE TYPES OF CARTS ARE AVAILABLE: ADJUSTABLE OR NON ADJUSTABLE HEIGHT AND WITH A REVOLVING SUPPORT
- FOR OTHER DIMENSIONS PLEASE CONTACT US

### BAR PHANTOM, WITH BAR WIDTHS OF 2, 3, 4 AND 5 MM

#### MODEL VG-BP-560X420

- OUTSIDE DIMENSIONS: 600 X 460 X 16 MM (H X W X D)
- TOTAL USEFUL FIELD OF VIEW (UFOV): 560 X 420 MM
- WEIGHT: APPROX. 9,5 KG



## MOBILE PROTECTIVE SCREEN FOR PET

### MODEL VG-FW/PET-14/6/30

LEAD SHIELDING: 30 MM WITH LEAD GLASS WINDOW (5,2D)

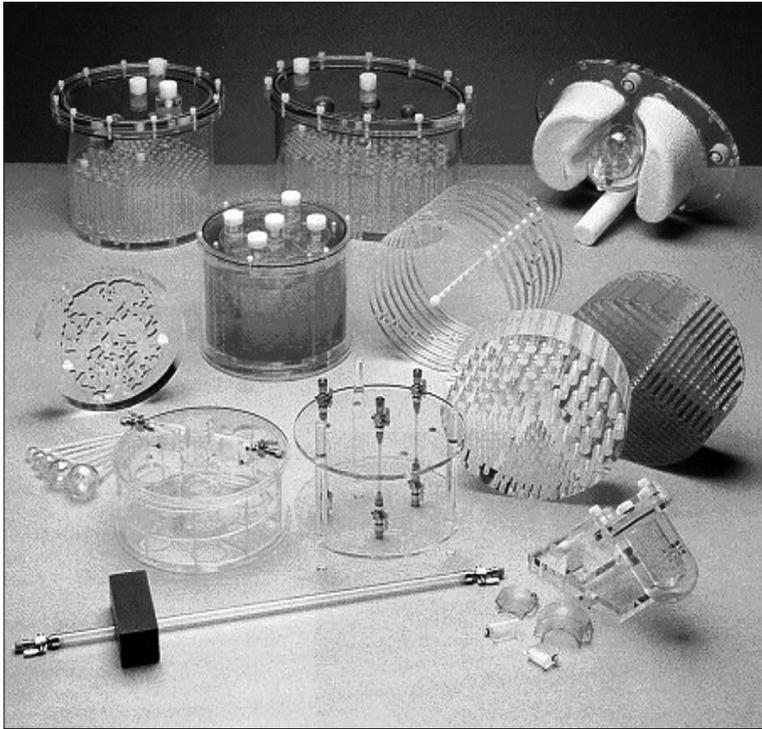
DIMENSIONS: 1.435 X 610 X 630 MM (H X W X D)

WIDTH OF SCREEN: 415 MM

DIMENSIONS LEAD GLASS WINDOW: 300 X 200 X 80 MM

WEIGHT: APPROX. 208 KG

## DATA SPECTRUM PHANTOMS

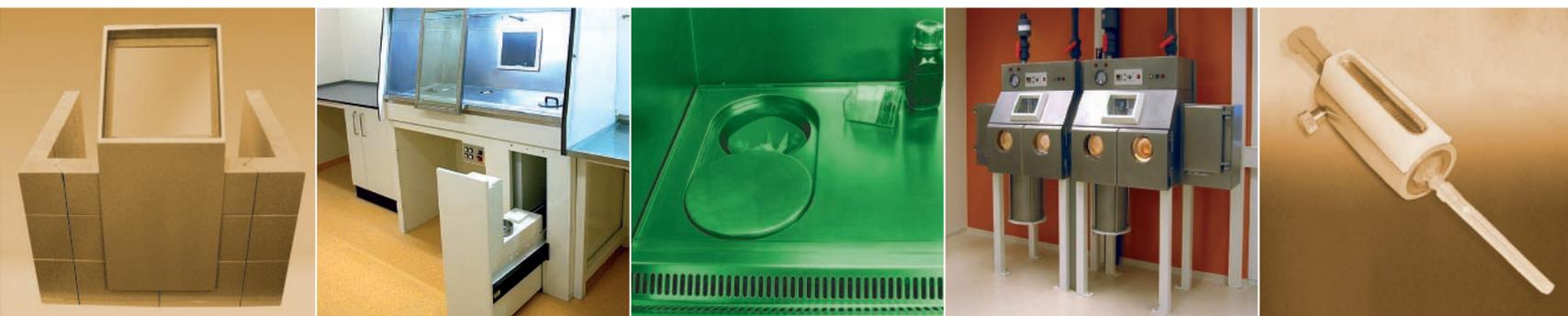


## ECT PHANTOMS

|   |                     |
|---|---------------------|
| • ULTRA DELUXE JASZCZAK PHANTOM                         | ECT / UL-DLX / P    |
| • DELUXE JASZCZAK PHANTOM                               | ECT / DLX / P       |
| • STANDARD JASZCZAK PHANTOM                             | ECT / STD / P       |
| • BENCHMARK JASZCZAK PHANTOM                            | ECT / BEN / P       |
| • FLANGELESS DELUXE JASZCZAK PHANTOM                    | ECT / FL-DLX / P    |
| • FLANGELESS PET PHANTOM                                | PET / FL / P        |
| • FLANGELESS PET PHANTOM, 2ND DELUXE ECT LID            | PET / FL-X2 / P     |
| • ELLIPTICAL JASZCZAK PHANTOM                           | ECT / ELP / P       |
| • ELLIPTICAL LUNG-SPINE BODY PHANTOM                    | ECT / LUNG / P      |
| • ANTHROPOMORPHIC TORSO PHANTOM (LIVER, LUNG AND SPINE) | ECT / TOR / P       |
| • HOFFMAN 2-D BRAIN PHANTOM                             | BR / 2D / P         |
| • HOFFMAN MULTI -COMPARTMENT 2D BRAIN PHANTOM           | BR / 2D-MC / P      |
| • HOFFMAN 3-D BRAIN PHANTOM                             | BR / 3D / P         |
| • DYNAMIC CARDIAC PHANTOM                               | ECT / DY-CAR / P    |
| • NEMA PET PHANTOM (NU2-1994)                           | PET / NEMA94 / P    |
| • NEMA SPECT SCATTER PHANTOM (NU2-1994)                 | ECT / SPECT-SCT / P |
| • NEMA SPECT TRIPLE LINE SOURCE PHANTOM (NU1-1994)      | ECT / NEMA-TRI / P  |
| • NEMA PET SCATTER PHANTOM (NU2-2001)                   | PET / NEMA-SCT / P  |
| • NEMA IEC PET BODY PHANTOM (NU2-2001)                  | PET / IEC-BODY / P  |
| • NEMA PET SENSITIVITY PHANTOM (NU2-2001)               | PET / NEMA-SEN / P  |
| • NEMA PACKAGE (3 ABOVE)                                | PET / NEMA / SET3   |
| • EXTENDED PET OVAL PHANTOM                             | PET / EX-OV / P     |



VON GAHLEN



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