VF NUCLEAR

CALIBRATION LABORATORIES

NUCLEAR POWER PLANTS

RESEARCH CENTRES

GI-B2

GAMMA CALIBRATION BOX

KEY FEATURES

- Two different Cs-137 sources
- Provides homogeneous collimated beam with dose rate of up to 150 Gy/hr
- Integrated safety system
- The sources do not rotate in the transport system

DESCRIPTION

The GI-B2 Calibration Box, when fitted with one or two appropriate radionuclide sources, and equipped with an attenuator set, serves for the calibration of gamma dose rate and dose meters from µGy/hr to 150 Gy/hr.

The GI-B2 Calibration Box consists of:

- an irradiator with a collimator and attenuators,
- an irradiation chamber,
- a positioning system with a worktable,
- a control unit,
- optionally, castor wheels for easy local transport.

The irradiator contains one or two Cs-137 gamma radiation sources and the mechanism for lifting them into the collimator opening.

The attenuator set contains three independently controlled lead screens with different shielding factors. When used simultaneously, a shielding factor of up to 3000 times can be achieved.

The irradiation chamber is intended for irradiation of calibrated instruments. It is shielded by lead sheets.

The positioning system with a worktable moves inside the irradiation chamber. It allows the distance to be set between the irradiated instrument and the source (X axis) and the height to be set in the Z axis perpendicular to the X axis.

The worktable has fixing holes to facilitate mounting of the calibrated instruments.

A shielded door is installed in the irradiation chamber, through which the irradiated instruments are inserted. The door is secured shut by an electric safety lock and cannot be opened unless the source is in the fully shielded position. Likewise, with the door open, it is not possible to start to expose the source inside the chamber.

For non-standard or emergency situations, the irradiator is equipped with a safety system that ensures automatic irradiation stops. In the event of a power failure, the exposed source returns to the fully shielded position by gravity.

Two shielded bushings for connecting cables to calibrated instruments are situated next to the entrance door.

Lead glass visors are installed at the top of the chamber, thanks to which it is possible to read values from calibrated instruments.

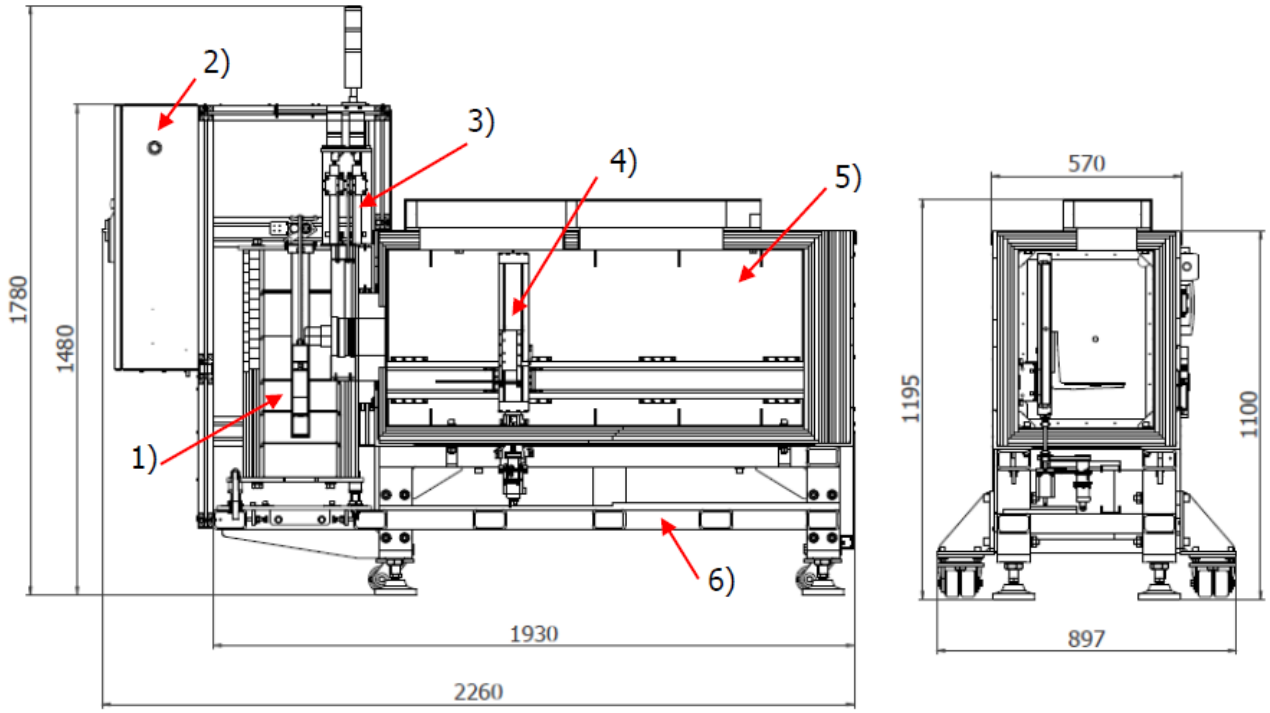
The calibration box contains an integrated measurement of environmental conditions during calibration (temperature, pressure, humidity). The current values are displayed in the control software.

The control unit, the interface for communication with the individual components of the calibration box and with the host system, and the power and safety elements, are located in the control cabinet. The main switch, the indication lamp of the switched on device and the button for emergency stop of all operations and hiding of the source in the shielded position are located on the door and sides of the control cabinet. An external acoustic and optical alarm unit is connected to the control cabinet.

The GI-B2 calibration box is remotely controlled from a connected PC using the control software.

There is a folding shelf on the side of the chamber, which makes it convenient for the operator to control the calibration box locally using a connected laptop.

GI-B2
GAMMA CALIBRATION BOX



Calibration box cross section:
1 - irradiator, 2 - control cabinet, 3 - attenuator, 4 - positioning system, 5 - irradiation chamber, 6 - supporting frame

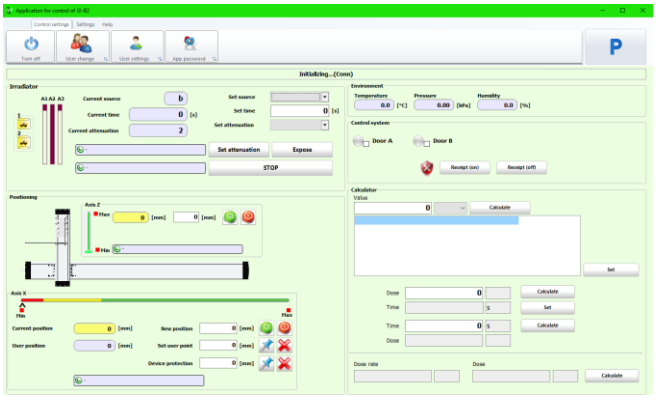
SPECIFICATIONS

Number of sources	2
Total maximum activity	1E14 Bq
Max. source dimension (ø × h)	(44 × 55) mm
Number of attenuator screens	3
Dose rate for the calibration	5 µGy/h - 150 Gy/h
Dose rate in the vicinity	max. 100 µSv/h at surface max. 1 µSv/h at 1 m from surface
Inner dimensions of the irradiator box (w x h x l)	(404 x 528 x 1250) mm
Door dimensions	(400 x 400) mm
Overall dimensions (w x h x l)	(570 x 1,480 x 2,260) mm
Total weight	approximately 3,850 kg
Power supply	110 / 230 V AC
Communication interface	Ethernet

OPTIONAL ACCESSORIES

- Castor wheels for easy local transport
- External lock of the shielded door
- External camera with a tripod

CONTROL SOFTWARE



The main window of the control software

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