

# PGI-01

## Panoramic Gamma Irradiator



The PGI-01 irradiator is used as a source of panoramic gamma radiation for the calibration and testing of the dosimeters.

Depending on the configuration, a suitable source can be installed, for example,  $^{60}\text{Co}$  with activity up to 300 GBq, or  $^{137}\text{Cs}$  with activity of 3 TBq.

### Purpose

The PGI-01 irradiator, fitted with a suitable radionuclide source, is primarily intended for the calibration and testing of personal dosimeters with a non-collimated source, or as a general panoramic source of gamma radiation. One radionuclide source, for example,  $^{60}\text{Co}$  with activity up to 300 GBq (8.1 Ci), or  $^{137}\text{Cs}$  with activity of 3 TBq (81 Ci), can be installed into the irradiator.

### Description

The PGI-01 irradiator consists of the following basic parts: steel stand with four adjustable feet, cylindrical body, shielding, ionizing radiation source capsule and lifting mechanism for the source. Source is electro-mechanically ejected from the secured basic position to the working position.

The work station can be equipped with optional accessories:

- A table with the dosimeters holders is used for the convenient calibration of more dosimeters during one operational cycle. The rotary table eliminates the effect of possible radiation non-homogeneity and this increases the calibration accuracy.
- To calibrate the dosimeters correctly, one or two attenuators can be used. The attenuators are intended for the source shielding, i.e. a reduction of the dose rate. The source can be used without the attenuators, with one attenuator with the reduction coefficient of 10 or with two attenuators with the reduction coefficient of 100.
- The push-button control unit with LEDs is delivered for the control the device or the PGI-01 irradiator can be controlled by means of a PC via RS-485.
- The control is interconnected with the safety elements (i.e. motion sensors, doors locks, STOP push-buttons, etc.) and with optical-acoustic signalling unit.

### Main Advantages

- High maximum source activity thanks to suitably thick lead shield
- Badge of dosimeters calibration during one irradiation cycle (e.g. 20 pieces)
- Two shielding attenuators for dose and dose rate reduction (10x, 100x)
- Fast processing, easy operation
- Possible semi-automatic calibration mode
- High reliability

### Standards and Certifications

**ISO 4037-1: X and gamma reference radiation** for calibrating dosimeters and dose rate meters and for determining their response as a function of photon energy -- Part 1: Radiation characteristics and production methods

## Description

The operator receives information about the ionizing radiation source positions on the control panel or in a PC, i.e. if the source is in the safe basic position, if ejecting/inserting, and, finally, if in a working position.

The irradiator must be placed in the corresponding shielded room and the operator must be located outside the room.

Together, with the PGI-01 irradiator, the safety system is installed, which secures in case of any emergency (for example, motion in the exposed area – motion sensors, power failure, STOP button press, opened doors), the source cannot be ejected to the operating position; if it is ejected the source will automatically be inserted into the basic safe position. For the further safety improvements, it is possible to install a video camera system.

### Semi-automatic dosimeter calibration workplace:

It is also possible to setup an effective semi-automatic system for the busy workplaces which use the electronic readout of the values measured. The system records the exposure time of the dosimeters with the calculated exposure values. The irradiated dosimeters are one by one manually inserted into the reader, which identifies a dosimeter and records its value measured. The tolerance limits, data storage link, label print, and editing the next documents can be pre-set in the system.



*PGI-01 irradiator workplace with rotary table*

## Specification

Dose rate on irradiator surface, maximum (for source in basic position)	< 10 $\mu$ Sv/h (1 mRem/h)
Housing arrangement	steel vessel
Power	230 VAC, 50 Hz, 0.5 A
Dimensions (height x diameter)	up to 1200 x 538 mm (47¼ x 21¼ in)

Model	K1411	K1410
Pb shield thickness	150 mm (5⅞ in)	240 mm (9½ in)
Weight	<600 kg (1323 lb)	1300 kg (2866 lb)
Recommended sources	<sup>137</sup> Cs up to 3 TBq (81 Ci)	<sup>60</sup> Co up to 300 GBq (8.1 Ci)

## Models and Accessories

Model	Description
<b>K1411</b>	PGI-01 irradiator with 150 mm shield (5⅞ in)
<b>K1410</b>	PGI-01 irradiator with 240 mm shield (9½ in)
<b>Optional Accessories</b>	
-	Source (activity)
<b>K1413</b>	Fixed table diameter of 1.2 m (47¼ in)
<b>K1412</b>	Rotary table diameter of 1.2 m (47¼ in)
<b>K1415</b>	Attenuator 1
<b>K1414</b>	Attenuator 2
<b>K1416</b>	Control box
<b>S0201</b>	Control software
<b>Related products</b>	
<ul style="list-style-type: none"> <li>Security system</li> <li>Video camera monitoring system</li> <li>Dosimeter reader</li> </ul>	



Flexible solutions

[www.vf.eu](http://www.vf.eu)

### Contact Address

#### Czech Republic

VF, a.s., Svitavská  
CZ 679 21 Černá Hora  
tel. +420 516 428 611  
fax +420 516 428 610  
info@vf.eu

#### Slovak Republic

VF, s.r.o., M. R. Štefánika 9  
SK 010 02 Žilina  
tel. +421 415 072 411  
fax +421 415 072 410  
info@vf.eu

### Your supplier