



Certificate

for Radiation Device

Certificate Number R-061-0002-3-2024	Date of Issue June 06, 2016	Date of Expiry February 29, 2024
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The radiation device identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and section 12 of the *Nuclear Substances and Radiation Devices Regulations*.

Manufacturer: QSA Global, Inc.

Make and Model: QSA Global Model 989

Prev. Mfr. Name: AEA QSA Inc. Technology

Device Type: EXPOSURE DEVICE

Description: Reference CNSC Application No. 49292.

The radiation device QSA Global Model 989 Gamma Projector consists of a stainless steel housing which contains a tungsten shield. The radioactive source assembly attaches to the pneumatic actuator or remote control safety plug assembly at the rear of the device. There is no shutter and the source never leaves the device. In the exposed position, the emergent beam is restricted to the assigned angles as manufactured. In Canada, collimation is limited to lead collimation with emergent beams of 30 X 60 degrees or 40 X 40 degrees.


The Model 989 exposure device is authorized to contain one QSA Global Model X540-1 capsule used in either the QSA Global Model 97941 or Model 98940 source assemblies.

The overall dimensions of the device are 202 mm x 89 mm and a mass without the transport case is 7.3 kg.

Refer to the Summary Evaluation for additional information. (CNSC Document No. 5012100)

The radiation device may contain any of the following nuclear substances in a quantity not exceeding the corresponding quantity indicated:

Nuclear Substance	Maximum Quantity
Selenium 75	740 GBq



Designated Officer pursuant to paragraph 37(2)(a) of the *Nuclear Safety and Control Act*





Summary Evaluation

For certificate number R-061-0002-3-2024

1. Identification of Radiation Device

Device Type: Exposure Device
Manufacturer: QSA Global, Inc.
Model(s): Model 989

2. Description

The radiation device QSA Global Model 989 Gamma Projector consists of a stainless steel housing which contains a tungsten shield. The radioactive source assembly attaches to the pneumatic actuator or remote control safety plug assembly at the rear of the device. There is no shutter and the source never leaves the device. In the exposed position, the emergent beam is restricted to the assigned angles as manufactured. In Canada, collimation is limited to lead collimation with emergent beams of 30 X 60 degrees or 40 X 40 degrees.

The Model 989 exposure device is authorized to contain one QSA Global Model X540/1 capsule used in either the QSA Global Model 97941 or Model 98940 source assemblies.

The overall dimensions of the device are 202 mm x 89 mm and a mass without the transport case is 7.3 kg.

3. Assembly Drawing

An illustration of the device is shown in item 15 below.

4. Intended Use

The QSA Global Model 989 Gamma Projector is used to perform directional beam radiography of welds. It is specifically designed for small controlled area radiography (SCAR).

5. Authorized Nuclear Substances

The Model 989 exposure device is authorized to contain one QSA Global Model X540/1 capsule used in the QSA Global Model 97941 or Model 98940 source assemblies. The device is authorized to contain one of the following nuclear substances and corresponding activity within the listed source assemblies:

Nuclear Substance	Maximum Activity	Source Assembly	Source Model	Special Form certificate	Source Assembly Manufacturer
Se-75	740 GBq	97941	X540/1	USA/0502/S-96	QSA Global Inc.
Se-75	740 GBq	98940	X540/1	USA/0502/S-96	QSA Global Inc.

6. Maximum Expected Radiation Dose

The dose rate on the surface of the device is less than 2 mSv/h when the device contains the maximum activity of Se-75 authorized for use.

Isotope	Activity	Dose rate (mSv/h)					
		@ 5 cm		@ 30 cm		@ 100 cm	
		OFF	IRRADIATE	OFF	IRRADIATE	OFF	IRRADIATE
Se-75	740 GBq	0.5 (at surface)	16,200	0.03	450	0.01	40.6

7. Conditions of Use and Storage

The device is designed to be used at temperature range of -40 °C to 149 °C and in accordance with QSA Global document, “*Operating and Maintenance Instruction Manual for Model 989*” [6]. The exposure device is not to be submerged in liquids during use.

8. Leak Test

Leak testing is to be performed at intervals not to exceed 12 months using techniques capable of detecting 200 Bq of removable contamination and in accordance with the CNSC *Nuclear Substances and Radiation Devices Regulations* and QSA Global document, “*Operating and Maintenance Instruction Manual for Model 989*” [6].

9. Emergency and Accident Response

Emergency and accident response are to be dealt with in accordance with the emergency procedure provided in the QSA Global document, “*Operating and Maintenance Instruction Manual for Model 989*” [6] and the *Nuclear Substances and Radiation Devices Regulations*.

10. Design, Testing and Manufacturing Quality Assurance

The design, testing and manufacture of the exposure device are made in accordance with a quality assurance program that meets the ISO 9000 requirements. The exposure device has been demonstrated to meet the requirements of Category X, Class “P” of ISO 3999:2004 standards [5].

11. Inspection, Maintenance and Servicing

Compliance with this certificate requires that the exposure device be inspected and maintained in accordance with the requirements set out in the QSA Global document, “*Operating and Maintenance Instruction Manual for Model 989*” [6].

12. Transport Packaging

The exposure device with its key-lockable protective cover and reusable shipping case serve as the storage and transport package for the radioactive source. The device when placed in its plastic case meets Type A package requirement.

13. Authorized Accessories and Configurations

The following associated equipment is authorized for use with this device:

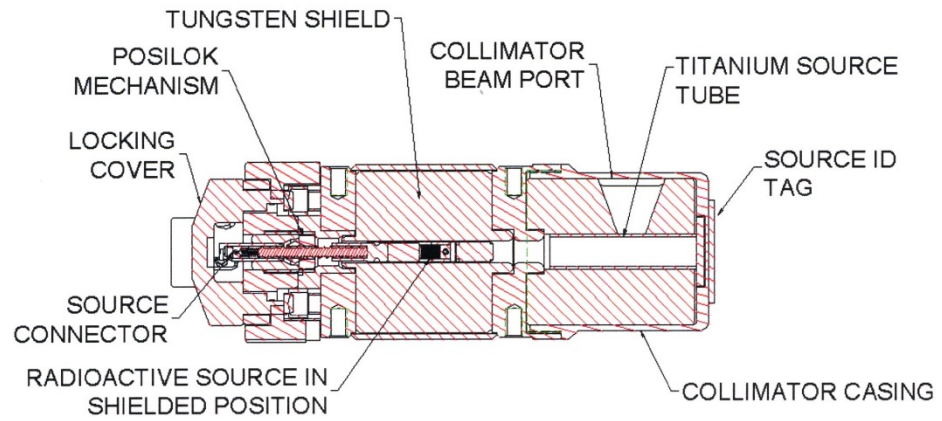
QSA Global authorized pneumatic actuator (part number ELE 027) and QSA Global authorized air pump controls are to be used when performing radiographic operations in the pneumatic actuation mode. When a crank-out remote control is used, only QSA Global manufactured crank-out controls are to be used.

Associated Equipment	Model No.	Manufacturer
Control Tube	591XX Series	QSA Global Inc.
Remote Control Assembly – Reel and Pistol Grip with Odometer	693/XX 664/XX (Reel) 657 957	QSA Global Inc.
Remote Control Assembly – Pistol Grip <u>without</u> Odometer	692/XX	QSA Global Inc.
Remote Control Assembly (Extreme remote control assembly) (Handle style)	SAN882, SAN882R	QSA Global Inc.
Remote Control Assembly (Extreme remote control assembly) (reel style)	SAN885, SAN885R	QSA Global Inc.
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Remote Control Assembly – Reel and Pistol Grip with Odometer	693/XX 664/XX (Reel) 657 957	QSA Global Inc.
Remote Control Assembly – Pistol Grip <u>without</u> Odometer	692/XX	QSA Global Inc.
Remote Control Assembly (Extreme remote control assembly) (Handle style)	SAN882, SAN882R	QSA Global Inc.
Remote Control Assembly (Extreme remote control assembly) (reel style)	SAN885, SAN885R	QSA Global Inc.

14. Reference Documents

No.	Document Description	Date	CNSC Document No.
1.	Application (Amendment Request)	2015-05-14	4767499
2.	Application (Original)	2008-09-05	3284525
3.	Source assembly drawings	2013-05-06	4132435
4.	CNSC Assessment Sheet (For Amendment)	2016-06-02	4901642
5.	CNSC Assessment sheet for compliance to ISO 3999:2004	2013-05-10	4134765
6.	QSA Global Operations and Maintenance Instruction Manual for the Model 959, MAN-037, December 2012	2013-01-08	4064063

15. Illustration of Device



Cutaway View of Model 989 Device with Typical Beam Port Collimator Installed

Figure 1: Illustration of model 989 exposure device