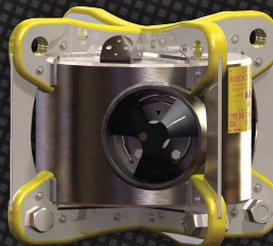


SENTRY

COBALT-60 GAMMA RAY PROJECTOR



Sentry 110



Sentry 330

Applications

SEN

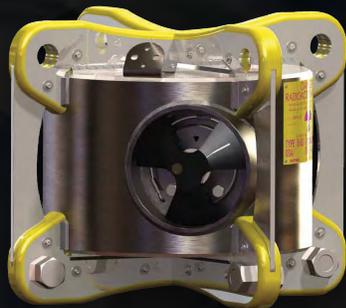
The Sentry series source projectors are used for industrial non-destructive testing applications of gamma radiography requiring a high energy Cobalt-60 source. Cobalt-60 is used to inspect materials with approximate thickness of 2 to 6 inches of Steel (50 to 150 mm); 1.5 to 7.5 inches of Light Alloys (40 to 190 mm); and 10 to 40 inches of Concrete (200 mm to 1 meter). A few examples of Cobalt-60 radiography applications are weld qualification, steel and alloy casting inspection, concrete inspection, and informational radiography.

Weld Qualification

Steel & Alloy Casting Inspection

Concrete Inspection

Informational Radiography



Exposure Device

The SENTINEL™ Sentry models 110 and 330 are mobile industrial radiography exposure devices for use in the field. The Sentry 110 and Sentry 330 incorporate a depleted uranium (DU) shield with an 'S' tube design contained within a welded stainless steel cylinder. These devices have an automatic securing mechanism that automatically secures the source assembly when retracted into the fully shielded position. Both devices include a handling rib assembly that helps to facilitate lifting and increases the ease of movement of the device. A key safety feature is that both the automatic securing mechanism and front port cover are protected by stainless steel tube extensions that are welded into the main body of device.



The rear plate port weldment is designed to provide easy access to the locking mechanism and source assembly connector for connection of the SENTINEL™ control assembly. The front plate port weldment is designed to provide easy access to the outlet port for the connection of the guide tube with bayonet assembly.

The stainless steel housing containing the depleted uranium (DU) shield, locking mechanism, outlet port, protective covers, and required labels comprise the radioactive material device which also serves as a Type B(U) transport package.

All images depicted



Sealed Source Assemblies

Sealed Source Assemblies:

SENTINEL™ Cobalt-60 radiography sources are manufactured using a compaction process and are doubly encapsulated. The Cobalt-60 is sealed within welded stainless steel or titanium capsules and prepared for shipment to you in our state-of-art laboratories. The sealed sources for use in the Sentry series are designed and tested to achieve an ISO/ANSI minimum classification of 77C64515 and comply with the IAEA and USDOT requirements for 'Special Form' radioactive material. This ISO/ANSI classification refers to the complete source capsule which is attached to the source assembly.

Model Sentry 110 Source Assembly: **Model A424-14**
Maximum Capacity: **110Ci (4 TBq)**

Model Sentry 330 Source Assembly: **Model A424-13**
Maximum Capacity: **330Ci (12 TBq)**

COMPACT SIZE

	Sentry 110	Sentry 330
Length	19 inches (48.3 cm)	19 inches (48.3 cm)
Width	19 inches (48.3 cm)	19 inches (48.3 cm)
Height	19 inches (48.3 cm)	19 inches (48.3 cm)
Exposure Device	580 lbs (261 kg)	780 lbs (351 kg)
DU Shield	295 lbs (133 kg)	485 lbs (218 kg)



Accessories

The Sentry series exposure devices are designed, manufactured, and approved for use with SENTINEL™ authorized controls and guide tubes.

Source Guide Tube Interface

Sentry 110

SENTINEL™ guide tubes are 7 ft. (2.1 m) in length and can be ordered with a fixed stop or as an extension. Extreme condition guide tubes are available and are rated for -76° F to 275° F (-60° C to 135° C). Other lengths are available upon request so please contact SENTINEL™ Customer Service for more information.

Sentry 330

The SENTINEL™ source guide tubes for the model Sentry 330 have a larger diameter to facilitate the movement of the source assembly (Model A424-13) through the guide tubes. The source guide tubes are 7 ft (2.1m) in length and can be ordered with a fixed stop or as an extension. Other lengths are available upon request so please contact SENTINEL™ Customer Service for more information.

Control Assembly Interface

The new SENTINEL™ Extreme Condition Control Assembly can be operated with both the Sentry 110 and the Sentry 330 exposure devices. Standard lengths of the control assemblies are 25 ft (7.6 m), 35 ft (10.7 m), and 50 ft (15 m). Please reference ALARA Principles suggested in the Sentry Operations Manual (MAN-038) regarding control assemblies.



...ed are simulated engineering renderings.

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Technical Specifications

SENTINEL™ Part Number:
SENTRY110

SENTRY330

Model Sentry 110 Authorized Contents:

Source Model Assembly Number: A424-14
Isotope: Cobalt-60
Half Life: 5.27 Years
Gamma Energy Range: 1.17 to 1.33 MeV
Approximate Working Thickness for Steel: 50 to 150 mm
Device/Source Maximum Capacity: 110 Ci / 4 TBq

Model Sentry 330 Authorized Contents:

Source Model Assembly Number: A424-13
Isotope: Cobalt-60
Half Life: 5.27 Years
Gamma Energy Range: 1.17 to 1.33 MeV
Approximate Working Thickness for Steel: 50 to 150 mm
Device/Source Maximum Capacity: 330 Ci / 12 TBq

Cobalt-60 Source Output

Isotope: Cobalt-60
Output: 1.3 R/hr at 1 meter per Curie
13.0 mSv/hr at 1 meter per 37 GBq
14 R/hr at 1 foot per Curie
140 mSv/hr at 1 foot per 37 GBq

Special Form Certifications for Cobalt-60 Source

Cobalt-60: USA/0377/S-96

Exposure Device Specifications

Primary Application

Industrial gamma radiography

Activity of Depleted Uranium Shield

Sentry 110: 48 mCi (1.8 GBq)

Sentry 330: 81 mCi (3 GBq)

Model Numbers

Model Sentry 110

Model Sentry 330

Device Operating Temperature

-40° F to 300° F (-40° C to 149° C)

Length 19 in (48.3 cm)

Width 19 in (48.3 cm)

Height 19 in (48.3 cm)

Type B(U) Certification

USA/9357/B(U)-96

Weight of Exposure Device

Sentry 110 Standard: 580 lbs (261 kg)

Sentry 330 Standard: 780 lbs (351 kg)

Type A Approval

All Models meet the Type A package requirements of 49 CFR 173.415 and IAEA TS-R-1 (1996 Revised)

Weight of Depleted Uranium Shield

Sentry 110: 295 lb (133 kg)

Sentry 330: 485 lb (218 kg)

Accreditation

The Model Sentry 110 and Sentry 330 exposure devices are designed, tested, and manufactured to meet the requirements of ANSI N432-1980, ISO 3999:2004(E), IAEA TS-R-1 (1996 Revised), USNRC 10 CFR34, 10 CFR 71 and 49 CFR 173 requirements. Additionally, these exposure devices are designed, manufactured and serviced under an ISO 9001 QA Program and a USNRC 10CFR71, Subpart H QA Program. The QA program also includes the reporting requirements of USNRC 10 CFR 21 for suppliers of source and byproduct materials.

Please note: source transfers for the Model Sentry 110 and Sentry 330 can be performed with either the new Model Sentry 867 or the Model 770 source changer. Please contact SENTINEL™ Customer Service for more information regarding licensing and transport containers.

The Model Sentry 110 and Sentry 330 are also registered for use with the Model 859 handling cart.