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Technical Specifications

880 Model Series Delta Elite Omega				
Primary Application Industrial Gamma Radiography				
Dimensions (All Models)		Weight		
Length	13.33 in (33.8 cm)	Delta	52 lb (23.6 kg)	
Width	7.5 in (19.1 cm)	Elite	42 lb (19.0 kg)	
Height	9 in (22.9 cm)	Omega	33 lb (15.0 kg)	
Activity of Depleted Uranium Shield Delta 5.4mCi (200MBq), Elite 3.8mCi (141MBq), Omega 2.7mCi (101MBq)				
Certification				
Delta, Elite	Type B(U) package, USNRC & USDOT Certification Number USA/9296/B(U)-96 Type B(U) package, CNSC CDN/E199-96			
Omega	Type A transport package, 49CFR173.415 and IAEA TS-R-1 (1996 Revised)			
Accreditation SENTINEL™ 880 Delta, Elite, and Omega models are designed, tested and manufactured to meet the requirements of ANSI N432-1980, ISO 3999:2004(E), IAEA TS-R-1 (1996), USNRC 10CFR34, 10CFR71, 49CFR173, MA-1059-D-334-S, and CNSC R-061-0001-2-2012. Additionally, the exposure devices are designed, manufactured and serviced under a QA program that has been accredited to ISO 9001 (2004) and approved in accordance with USNRC 10CFR71, Subpart H. The QA program also includes the reporting requirements of USNRC 10CFR21 for suppliers of source and by product materials.				
Removable Jacket One-piece, high impact resistant, plastic jacket incorporating a carrying handle and base				
Materials Titanium 'S' Tube, DU Shield, Stainless Steel Tubular Shell and Plates, Aluminum, Brass, Tungsten, and Polyurethane				
Source Assemblies and Authorized Contents USNRC Model Number: A424-9 source assembly with a double encapsulated Ir-192 sealed source. The IAEA/USDOT Special Form Certificate number is USA/0335/S. In addition, the following isotopes may also be utilized in the 880 series exposure devices: Se-75 (USA/0502/S-96), Yb-169 (USA/0597/S-96)				
Isotope	Se-75	Ir-192	Yb-169	
Assembly Model Number	A424-25W	A424-9	91810	
Gamma Energy Range	66-401 keV	206-612 keV	8-308 keV	
Half-Life	120 Days	74 Days	32 Days	
Approximate Steel Working Thickness	3-29 mm	12-63 mm	2-20 mm	
Device/Source Maximum Capacity				
880 Delta	150Ci 5.55TBq	150Ci 5.55TBq	30Ci 1.11TBq	
880 Elite	150Ci 5.55TBq	50Ci 1.85TBq	30Ci 1.11TBq	
880 Omega	80Ci 3.00TBq	15Ci 0.55TBq	30Ci 1.11TBq	
Controls and Guide Tubes 880 Series Projectors are designed, manufactured and approved for use with SENTINEL™ authorized controls and accessories only.				
Inspection Requirements Perform daily pre-operational inspection for any obvious damage to the system. See device operation and maintenance manual for detailed maintenance requirements.				
Maintenance Requirements Most national regulations require inspection and maintenance of the system at quarterly intervals. The complete annual servicing ensures the integrity of the system. Shorter frequencies of inspection and maintenance are required when the system is operated under severe operating environments. In some cases, the system should be serviced immediately after certain jobs in severe environmental working conditions. See device operation and maintenance manual for detailed maintenance requirements.				
Patent Numbers	United States	Canada	Europe	Korea
880	6781114	2425905	1325501B	10-0835460
Jacket	D453570S	N/A	N/A	N/A
Operating Temperature Range -40° F to 300° F (-40° C to 149° C)				



SERIES 880 SOURCE PROJECTOR



Se-75 Ir-192 Yb-169

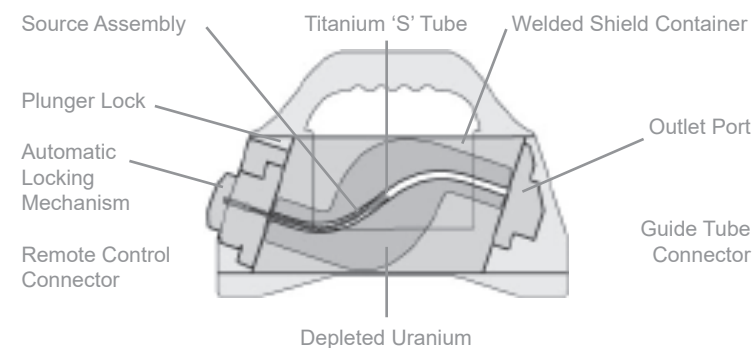
880

SERIES SOURCE PROJECTOR

Applications

Model 880 series exposure devices are used for industrial applications of gamma radiography, mainly with Iridium-192, to inspect materials and structures in the density range of approximately 2.71g/cm³ through 8.53g/cm³. Low energy isotopes can be accommodated to permit radiography of materials and structures of thin sections of steel and low-density alloys.

The 880 series exposure devices are also designed for use with low activity sources with high photon energies for mass absorption (gamma scanning) studies of high-density materials up to 18.7g/cm³.



Exposure Device

SENTINEL™ Model 880 Delta, Elite and Omega source projectors are portable, lightweight and compact industrial radiographic exposure devices. The exposure device body consists of a titanium 'S' tube and cast Depleted Uranium (DU) shield contained within a 300 series stainless steel tube with stainless steel discs welded at each end forming a cylinder shaped housing. The discs are recessed to provide protection for the rear mounted locking mechanism and front mounted outlet port.

The horizontally oriented design allows the locking mechanism, source assembly connector and outlet port to be easily operated, simplifying the connection of source guide tubes and projection sheaths.

The internal void space of the housing is filled with rigid foam to prevent the ingress of water or foreign material, but is open to atmospheric pressure.

The exposure device body, containing the DU shield, locking mechanism, outlet port, protective covers and required labels, comprises the radioactive material transport Type B package*.

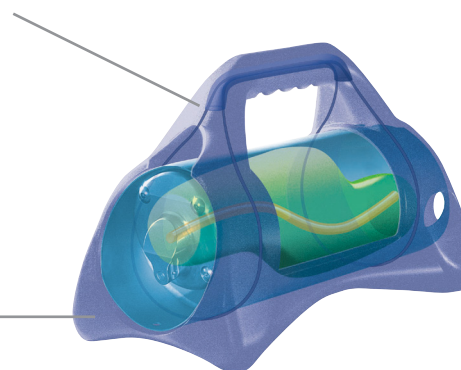
The welded main body houses the source assembly safely stored inside a titanium 'S' tube within a depleted uranium shield



Comfortable carrying handle with slip-resistant contoured grip

Resilient one-piece plastic jacket protects the main body, outlet port, lock mechanism and labels from wear and accidental damage

Shaped base and feet, and low center of gravity provide greater stability on convex and concave surfaces



The exposure device, alone, continues to be a compliant Type B package even if the jacket has been removed*



DELTA

150 Ci

The lightest 150 Ci device currently available

ELITE

50 Ci

Ideal for use with low-energy isotopes and lower activity Ir-192 sources

OMEGA

15 Ci

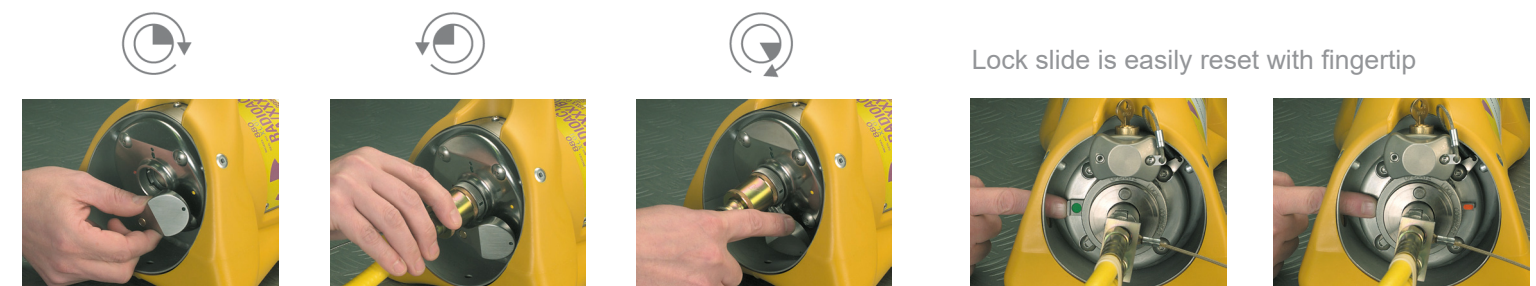
Designed to minimize weight and maximize offshore capability with Ir-192 and Se-75



Removable Jacket

An impact resistant plastic jacket surrounds the exposure device to protect labels and provide the means for carrying and placement during radiographic operations. The jacket incorporates a contoured handle and a quadruped base for stable positioning.

The three models are differentiated by device labels and jacket color; yellow for the 880 Delta, blue for the 880 Elite, and orange for the 880 Omega.



Guide Tube Interface

Unique outlet port design simplifies the guide tube connection/disconnection without an elevation of radiation levels, and prevents the source assembly from being projected unless a guide tube is safely attached. An integral outlet port shield minimizes operator hand dose in compliance with ISO 3999, thus eliminating the need for an additional shipping plug.

880 Series Projectors are designed, manufactured and approved for use with SENTINEL™ authorized controls and accessories only.

Control Interface

The locking mechanism prevents unintentional remote control operation and automatically secures the source assembly in the locked and fully shielded position when fully retracted into the device.

Disconnection of the remote control is prevented unless the source assembly is fully secured and shielded.

*880 Omega is a Type A package only.