

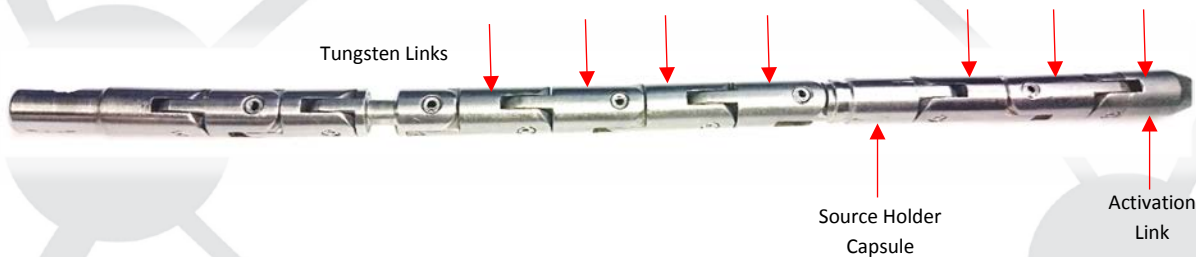
GammaSafe System

Exertus Selen Circa Projectors

Emergency Source Retrieval

The Exertus Selen Circa series of Se.75 Projectors consists of the Circa 40 / 80 / 120 models which are all Tungsten shielded and have straight source channels.

The Source Assembly is an articulated link-type design with Tungsten links strategically placed behind and in front of the Source Holder Capsule to prevent rear and forward “shine”.



The Source Assembly locking mechanism is designed to be triggered by an “activation link” at the front of the Source Assembly, thereby always assuring the Radiographer that the source has returned to the safe position inside the Projector. Failure of the locking mechanism to engage immediately alerts the Radiographer to a potential problem with the Source Assembly and possibly the source itself.

The design of the Projector safety interlocks means that, if the Source Assembly locking mechanism fails to engage, the Snap-On fitting, be it the Guide Tube Connector or CP Collimator cannot be disconnected from the Projector.

This Work Instruction deals with:

1. Failure of the locking mechanism to engage – Source Holder under control
2. Failure of the locking mechanism to engage – Source Holder uncontrolled – Collimator
3. Failure of the locking mechanism to engage – Source Holder uncontrolled – Guide Tube

NB!! The following procedures are based on the use of standard GammSafe equipment supplied by Gammatec NDT Supplies SOC Ltd only. We shall not be responsible for any injury or loss resulting from any modification, lack of maintenance, foreign or non-standard parts used in conjunction with our equipment, or lack of understanding of the operating procedures of the GammaSafe system by the radiographer.

1. Failure of the locking mechanism to engage – Source Holder under control.

NB!! There are three spring loaded ball bearings protruding into the source channel of the Circa which prevent the Source Assembly from moving out of the source channel under gravity. The following procedure is an additional precaution to prevent any movement of the Source Assembly due to the locking mechanism not activating.

In this scenario the radiographer has retracted the Source Assembly into the Projector and the locking mechanism has failed to engage.

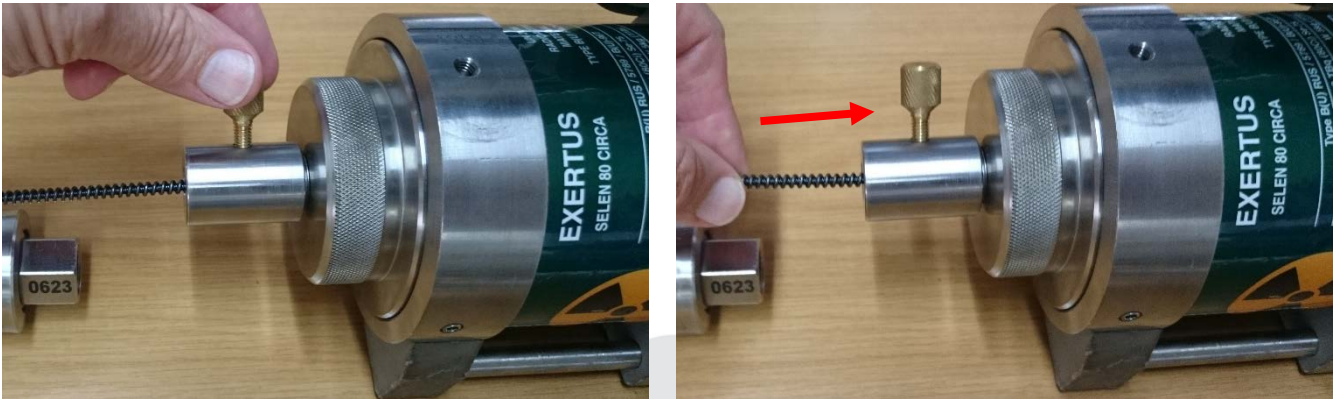
- 1.1 Have your assistant keep “retract” pressure on the winding mechanism crank handle.
- 1.2 Approach the Projector whilst monitoring radiation levels.
- 1.3 Carefully measure radiation levels at the front of the Projector and around the GammaSafe setup to determine whether the source is in or out of the Projector.
- 1.4 Having determined that the source has indeed returned to the safe position inside the Projector, proceed as follows:
 - 1.4.1 **If a Guide Tube is in use**, unscrew the Guide Tube from the Guide Tube Connector. (**Remember! The Guide Tube Connector cannot be disconnected from the Projector if the locking mechanism has not activated**).



- 1.4.2 Insert the Emergency Shipping Plug (short cable) through the Guide Tube Connector and screw it into place.



- 1.4.3** Loosen the thumbscrew holding the Plug cable and ensure that the cable is pushed in as far as possible. Re-tighten the thumbscrew.



- 1.4.4** **If a CP Collimator is in use**, unscrew the Securing Screw and Nut from the front of the Collimator. (Remember! The Collimator cannot be disconnected from the Projector if the locking mechanism has not activated).



- 1.4.5** Insert the Emergency Shipping Plug (long cable) through the Collimator and screw it into place.



- 1.4.6** Loosen the thumbscrew holding the Plug cable and ensure that the cable is pushed in as far as possible. Re-tighten the thumbscrew.



- 1.4.7** Disconnect the Winding Mechanism Drive Hose Coupling from the Projector and disconnect the Drive Cable Ballpoint from the Source Assembly female connector.



- 1.4.8** Secure the Projector and **contact Gammatec for further instructions.**
- 1.4.9** Observe all local health and safety regulations and incident reporting requirements.

2. Failure of the locking mechanism to engage - Source Holder uncontrolled - Collimator

In this scenario the source holder capsule has become detached from the Source Assembly. The radiographer has retracted part of the Source Assembly into the Projector and the locking mechanism has failed to engage. A CP Collimator is directly attached to the Projector.

- 2.1** Have your assistant keep “retract” pressure on the winding mechanism crank handle.
- 2.2** Approach the Projector whilst monitoring radiation levels.
- 2.3** Carefully measure radiation levels at the front of the Projector and around the collimator to determine whether the source is in or out of the Projector.
- 2.4** Having determined that the source has **NOT** returned to the safe position inside the Projector, proceed as follows:
- 2.4.1** Shield the projection port of the collimator with lead sheets / lead shot / mats if necessary.



- 2.4.2** Unscrew the Securing Screw and Nut from the front of the Collimator. (**Remember! The Collimator cannot be disconnected from the Projector if the locking mechanism has not activated).**



- 2.4.3** Insert the Emergency Shipping Plug (long cable) through the Collimator and use it to push the broken section of the Source Assembly back into the Projector source channel. Screw the Plug into place on the front of the collimator.



- 2.4.4** Loosen the thumbscrew holding the Plug cable and ensure that the cable is pushed in as far as possible. Re-tighten the thumbscrew.



- 2.4.5** If the broken section of the Source Assembly cannot be pushed all the way back into the Projector source channel, loosen the thumbscrew holding the Plug cable, push the fitting forward and screw it onto the front of the collimator, then re-tighten the thumbscrew.
- 2.4.6** Disconnect the Winding Mechanism Drive Hose Coupling from the Projector and disconnect the Drive Cable Ballpoint from the Source Assembly female connector.



- 2.4.7** Secure the Projector using whatever shielding is necessary to reduce the radiation dose rate to acceptable levels and **contact Gammatec for further instructions**.
- 2.4.8** Observe all local health and safety regulations and incident reporting requirements.

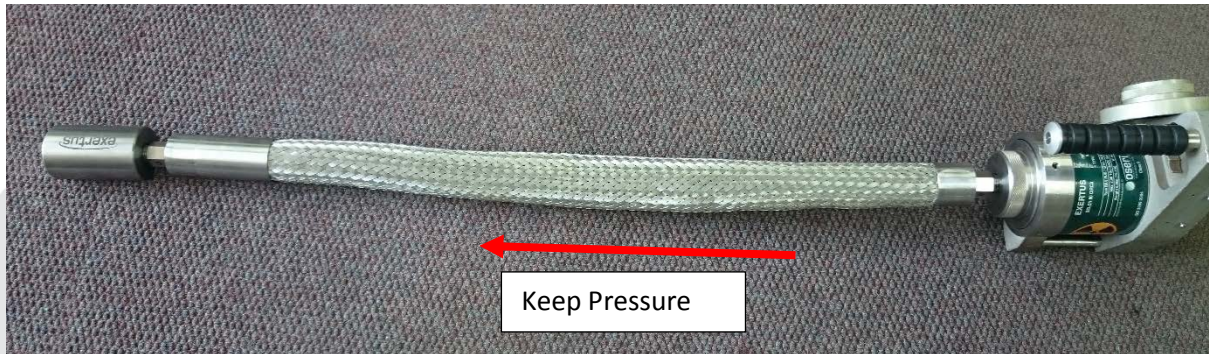
3. Failure of the locking mechanism to engage - Source Holder uncontrolled - Guide Tube

In this scenario the Source Holder Capsule has become detached from the Source Assembly. The radiographer has retracted part of the Source Assembly into the Projector and the locking mechanism has failed to engage. A Shielded Guide Tube and Directional Collimator are in use.

- 3.1** Have your assistant keep “retract” pressure on the winding mechanism crank handle.
- 3.2** Approach the Projector whilst monitoring radiation levels.
- 3.3** Carefully measure radiation levels at the front of the Projector and around the GammaSafe setup to determine whether the source is in or out of the Projector.

3.4 Having determined that the source has **NOT** returned to the safe position inside the Projector, proceed as follows:

3.4.1 Wind out the Source Assembly again and make sure that the Source Holder Capsule is pushed forward into the collimator.

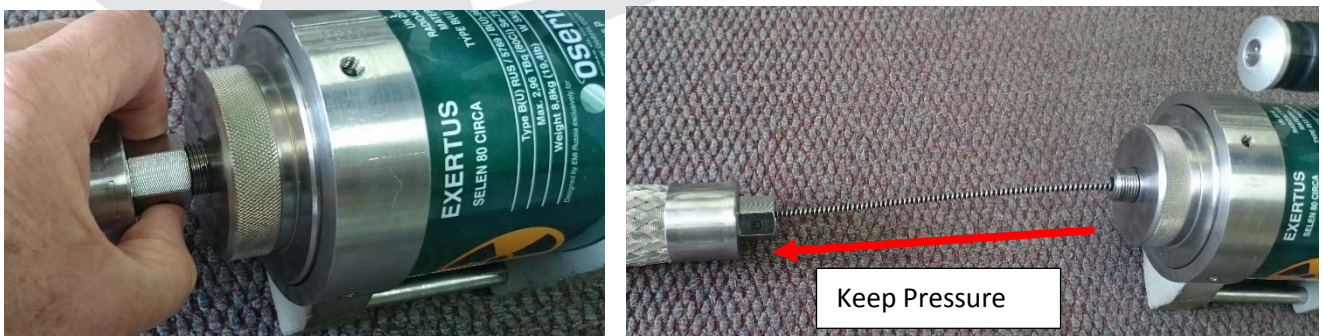


3.4.2 Have your assistant keep “expose” pressure on the winding mechanism crank handle. This will reduce “shine” from the rear of the Source Holder Capsule.

3.4.3 Shield the projection port and the collimator with lead sheets / lead shot / mats and move the assembly onto a flat surface.



3.4.4 Unscrew the Guide Tube from the Guide Tube Connector on the Projector. **(Remember! The Guide Tube Connector cannot be disconnected from the Projector if the locking mechanism has not activated).**



3.4.5 Carefully retract the drive cable from the Guide Tube whilst monitoring radiation levels.



3.4.6 Position the open end of the Guide Tube inside the Emergency Storage Cavity Pot.



3.4.7 Remove the shielding from the collimator and, using Tongs, lift the collimator and Guide Tube causing the Source Holder Capsule to slide into the Cavity Pot.





- 3.4.8** Disconnect the remaining section of the Source Assembly from the Drive Cable and keep safe for investigation of the incident.
- 3.4.9** Secure the Emergency Storage Pot and **contact Gammatec for further instructions.**
- 3.4.10** Observe all local health and safety regulations and incident reporting requirements.