

## Reliability, Safety, and Performance in HDR Brachytherapy

### SagiNova®

The SagiNova® HDR afterloader was designed to address today's needs for HDR brachytherapy applications regarding safety, seamless work-flows, and cost efficiency.



Unique product features, paired with decades of brachytherapy experience, characterize the system.

### Miniaturized Iridium-192 and Cobalt-60 Source

BEBIG Medical provides the choice of two isotopes, Ir-192 and Co-60, according to individual institutional needs and preferences. Both sources are equivalent in size and have been in clinical use for more than 10 years. Due to the considerably longer half-life of five years and a certified 100,000 source transfers, more and more institutes choose the Co-60 source as it requires time to perform QA procedures related to source exchanges only every five years.



### Integrated Real-Time In-Vivo Dosimetry System

The unique In-Vivo Dosimetry System allows direct independent monitoring of doses to rectum and bladder at the control console alongside treatment information. Dose limit values can be defined via the SagiNova treatment control software and warnings are displayed if bladder or rectum dose limits are exceeded. The complete data is integrated in the treatment report for a convenient documentation. Since the system is operated directly from the SagiNova treatment control station, In-Vivo Dosimetry is easily integrated into the treatment process with no additional equipment or screens.



### QAssist – Guidance in Quality Assurance

The highly customizable tool QAssist supports physicists by defining and running site specific quality assurance protocols. Guiding the performance of these protocols, QAssist ensures streamlined and well documented quality assurance.



### Automatic Length Measurement

By choosing an applicator in SagiPlan, the length of the applicator and the overall length of the application are digitally transferred to the afterloader without requiring any manual input. Hence, the afterloader is able to validate the correct overall length per channel prior to each source movement. SagiNova measures the internal length of the catheter or applicator allowing the user to review and complete acceptance while the unit completes a verification of the length before the treatment is delivered. The ultimate benefits of the Automatic Length Measurement are



improved patient safety and peace of mind for clinicians when treating body sites such as head & neck, breast, and skin with flexible catheters or breast balloons.

### 50 Channel Support

As brachytherapy has evolved to more sophisticated applications, BEBIG Medical provides an afterloader to support even the most complex treatments with up to 50 channels.

### Round-the-Clock Service Excellence

The BEBIG Medical technical support, including real-time remote desktop assistance, is available globally to ensure a timely response and optimal clinic uptime. To meet individual institutional needs, tailor-made service and support plans as well as education and training programs are available.

### NEW in Version 2.1

BEBIG Medical is committed to providing regular updates to the SagiNova software in order to incorporate customer feedback in a timely manner. SagiNova version 2.1 is the latest update, adding editable test plans for quicker QA plan management, userdefined dwell position offsets for more individual quality control measures, editable user role names, user defined audio feedback for various system statuses, an integrated source decay table and a source dongle to speed up source exchanges.

## Main Features

- Ability to choose between widely used Ir-192 or long-lasting Co-60 source
- DICOM data import from brachytherapy planning system via network or USB flash drive
- Display and control of entire treatment process
- Recording and DICOM export of entire treatment protocol
- Synchronization of electronic timers in control and treatment unit with better than 50 ms accuracy
- Support of up to 100 dwell points for treatment length of 600 mm per channel (1400 mm drive-out length)
- Minimum stepping distance of 1 mm
- Source positioning accuracy of +/-1 mm and a resolution of 0.1 mm and 10 ms
- Continuation of interrupted treatments e.g. after an external power failure
- Support of up to 50 channels per fraction
- Optimized user-friendly GUI and intuitive design for streamlined workflow

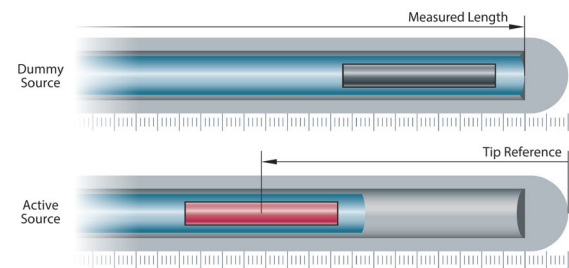
## Safety Features

- Highly customizable quality assurance system QAssist
- Video camera for source position verification (video and photo)
- Automatic length verification for precise measurement of applicator length
- Color coding for afterloader channels, applicators, and transfer tubes
- Battery backup system for safe source retraction in the event of a power failure
- Hand crank for power independent emergency source retraction
- Two independent monitoring systems for treatment times
- Integrated radiation detector
- Two-key authorization on treatment control panel
- User management incl. role concept and individual passwords
- Display of patient photo from treatment plan
- Internal shielding container for storage of up to 88.8 GBq Co-60 or 481 GBq Ir-192
- The ISO 2919 classification for BEBIG Co-60 source is 65444 which means provides the highest degree of security. The combination of high temperature (6) and impact (4) safety class means that the source already provides enough stability and safety without additional safety protection measures in the bunker.

## Technical Data

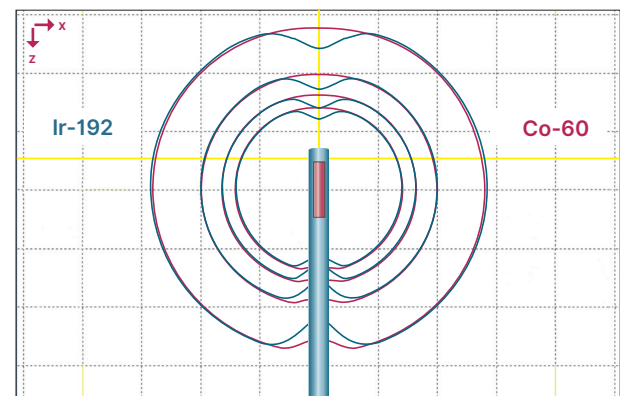
<b>Dimensions</b>	(W x D x H) 552 x 654 x 1000 mm
<b>Weight</b>	Co-60 / Ir-192 version 267 kg Ir-192 version 155 kg
<b>Voltage range</b>	100V-240V, 50/60 Hz, 1/N/PE
<b>Classification</b>	Class I, Type B equipment according to IEC 60601-1, Section 6
<b>Dose rate at 5cm distance</b>	For Co-60 < 0.1 mSv/h For Ir-192 < 0.01 mSv/h Radiation shielding for both sources fulfill IEC 60601-2-17
<b>Radioactive sources</b>	≤ 81.4 GBq Co-60 Ø 1.0 mm ≤ 481 GBq Ir-192 Ø 0.9 mm
<b>Active source component</b>	Ø 0.5 x 3.5 mm Co-60 Ø 0.6 x 3.5 mm Ir-192

## Automatic Length Measurement



The dummy source measures the length of the complete channel prior to each source movement to allow for the verification of the correct channel length. The precisely measured length of each individual channel is automatically used for an accurate positioning of the active source relative to the tip reference.

## Anisotropy



Anisotropy of Co-60 (red lines) and Ir-192 (blue lines)

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