SDX™ Spirometric Motion Management System

Inspire confidence.
The SDX System’s unique ability to pair a patient’s inspiration rate and lung volume measurement with clear visual biofeedback makes it possible to maximize the stability of internal organs and the tumor treatment zone. This allows for increased dose to the tumor with decreased toxicity to vital organs. SDX is a voluntary breath hold system for managing thoracic and abdominal tumor motion during imaging and radiation therapy.

- Reduces tumor motion during imaging and treatment \(^{1-3}\)
- Enhances tumor imaging and visualization \(^{4}\)
- Reduces treatment margins \(^{6-8}\)
- May allow increased dose with decreased toxicity to vital organs \(^{8-10}\)
- Can reposition vital organs out of the high dose region \(^{6,8,10}\)

SDX with Deep Inspiration Breath Hold allows dose escalation while reducing both lung and cardiac toxicity. \(^{6,8,10}\)

SDX with DIBH is a highly effective cardiac sparing technique to treat left-sided breast cancer. DIBH allows for the displacement of the heart during the isocenter planning process, thus allowing greater reduction in dose to the heart. With the use of this technique tangent radiation beams can effectively treat tumors while reducing dose to the heart. The liver can be spared to a larger extent with DIBH for right sided breast cancer. \(^{11}\)
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**Patient Training**
The initial patient training session includes a detailed explanation of the procedure and verbal coaching on DIBH. The patient is then introduced to the SDX System and breathes freely through the spirometer until instructed to take a full inspiration. The SDX calculates a target inspiration zone, which is a percentage of the patient’s maximum inspiration capacity. This ensures the patient can comfortably maintain repeated breath holds of 20-25 seconds. The result is a repeatable breath hold, taken with the same inspiration volume every time.

**CT Scanning & Treatment Planning**
After training, the patient proceeds to the CT scanner for treatment planning imaging. With the use of the video goggles, the patient is able to visualize the target inspiration zone. CT images are taken while the patient performs the breath hold, thereby reducing artifacts. SDX with DIBH decreases the movement of organs within the thoracic cavity, allowing for enhanced tumor imaging and visualization. The acquired CT images are used to develop the treatment plan.

**Treatment using the SDX™ System**
The process for treatment is the same as CT Scanning. With the SDX System, the patient remains in control by voluntarily repeating breath holds during the course of treatment. The clinician monitors the breathing pattern to determine the optimal moment for delivering the radiation.

**Automatic Gating Module**
With the Automatic Gating Module, radiation is triggered automatically when the patient’s breathing curve reaches the breath hold zone. If the patient relaxes their breath hold, the Automatic Gating Module triggers the radiation therapy equipment to immediately stop the radiation. The patient may return to the Breath Hold Level as many times are required in order to complete the radiation.
## References


### Ordering Information

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<th>Code</th>
<th>Description</th>
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<td>SDX Starter Package &amp; Video Package</td>
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<tr>
<td>RT-4410-EXTGAR1</td>
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<td>SDX Module Guarantee Extension + 3 yrs</td>
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<td>Automatic Gating Module (IBA)*</td>
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<td>Automatic Gating Module (Varian)*</td>
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<td>RT-4410-MP-01</td>
<td>Mouthpiece Batch of 500</td>
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<td>RT-4410-NC-01</td>
<td>Nose Clip Batch of 200</td>
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*Please contact Qfix for assistance in determining the prerequisites required to install the Automatic Gating Module with Varian’s MMI for SDX or IBA interfaces.