

## PerfectPitch 6 degrees of freedom couch

### Advanced robotics for accurate patient setup

Accurate and reproducible patient setups can potentially reduce harm to critical organs during radiation treatment. Patient set-up accuracy is especially critical for high-intensity treatments, such as intensity-modulated radiation therapy (IMRT), stereotactic radiosurgery (SRS) and stereotactic body radiotherapy (SBRT)<sup>1-3</sup>. Increasing clinical evidence suggests that a robotic couch with 6 degrees of freedom used in conjunction with cone-beam computed tomography (CBCT) may reduce patient set-up errors and improve target positioning for high-dose stereotactic treatments and IMRT<sup>4-6</sup>.

The Varian PerfectPitch™ 6 degrees of freedom (6DoF) couch is designed to deliver advanced radiation therapy techniques with a high level of accuracy and reproducibility. Allowing for two additional axes of rotation, pitch and roll, the 6DoF couch adjusts seamlessly on six axes, facilitating isocenter-focused shifts. With the 6DoF couch, CBCT image-guided target location, isocenter correction, treatment review, treatment delivery, and axes recording can all be accomplished without re-entering the treatment room or changing the control console. As a result, it may be possible to treat more patients with a higher degree of accuracy and reduce treatment margins in selected clinical cases.

#### Full system integration and easy workflow

When the PerfectPitch 6DoF couch is used with the Varian TrueBeam™ system, the TrueBeam STx™ system, or the Varian Edge™ radiosurgery system, couch operation and verification are fully integrated into the system user interface, enabling a seamless workflow. The patient shift can be calculated based on a CBCT or on two planar radiographs. Remote patient re-positioning can be performed in all six degrees. All shifts are saved and automatically recorded in the ARIA® oncology information system.





### User-friendly design for both clinician and patient

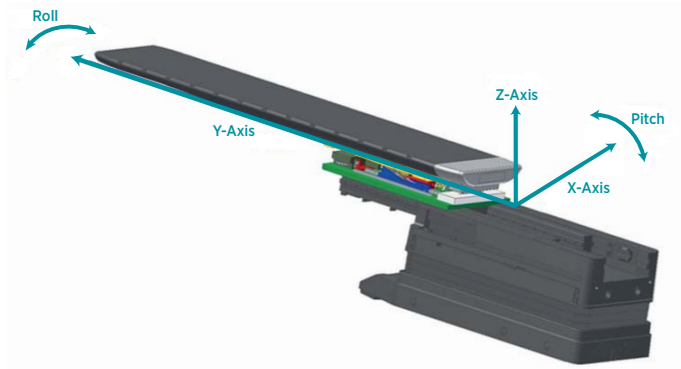
The Varian 6DoF couch is designed with both clinicians and patients in mind. The isocenter-focused couch movement reduces position correction and streamlines setup, which may contribute to increased treatment throughput. More importantly, with fast positioning, patients may spend less time on the treatment couch.

### References

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2. Kim, Siyong, et al. A Study on Target Positioning Error and its Impact on Dose Variation in Image-Guided Stereotactic Body Radiotherapy for the Spine. *Int J Radiat Oncol* 73, no. 5, (2009): 1574-79.
3. Hong, Theodore, et al. The Impact of Daily Setup Variations on Head-and-Neck Intensity-Modulated Radiation Therapy. *Int J Radiat Oncol Biol Phys* 61, no. 3, (2005): 779-88.
4. Gevaert, Thierry, et al. Clinical Evaluation of a Robotic 6-Degree of Freedom Treatment Couch for Frameless Radiosurgery. *Int J Radiat Oncol Biol Phys* 83, no. 1, (2012): 467-74.
5. Guckenberger, Matthias, et al. Precision of Image-Guided Radiotherapy in Six Degrees of Freedom and Limitations in Clinical Practice. *Strahlenther Onkol* 183, (2007): 307-13.
6. Meyer, Juergen, et al. Positioning Accuracy of Cone-Beam Computed Tomography in Combination With a HexaPOD Robot Treatment Table. *Int J Radiat Oncol Biol Phys* 67, no. 4, (2007): 1220-28.

## SPECIFICATIONS

- Travel range: pitch and roll  $\pm 3$  degrees
- Velocity: up to 1.0 degrees/second
- 6DoF positioning accuracy:  $\leq 0.5$  mm (within precision load range) and  $\leq 0.7$  mm (full load range)
- Longitudinal and lateral couch range: same as standard TrueBeam couch
- Safe working load (using the integrated image-guided radiation therapy (IGRT) couchtop): 200 kg/440 lbs.
- Couchtop compatibility: Integrated IGRT, kVue™ IGRT couchtop and kVue™ Calypso® couchtop, including Pivotal™ treatment solution for prone breast care



The 6DoF couch adjusts seamlessly on six axes, facilitating isocenter-focused shifts.

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