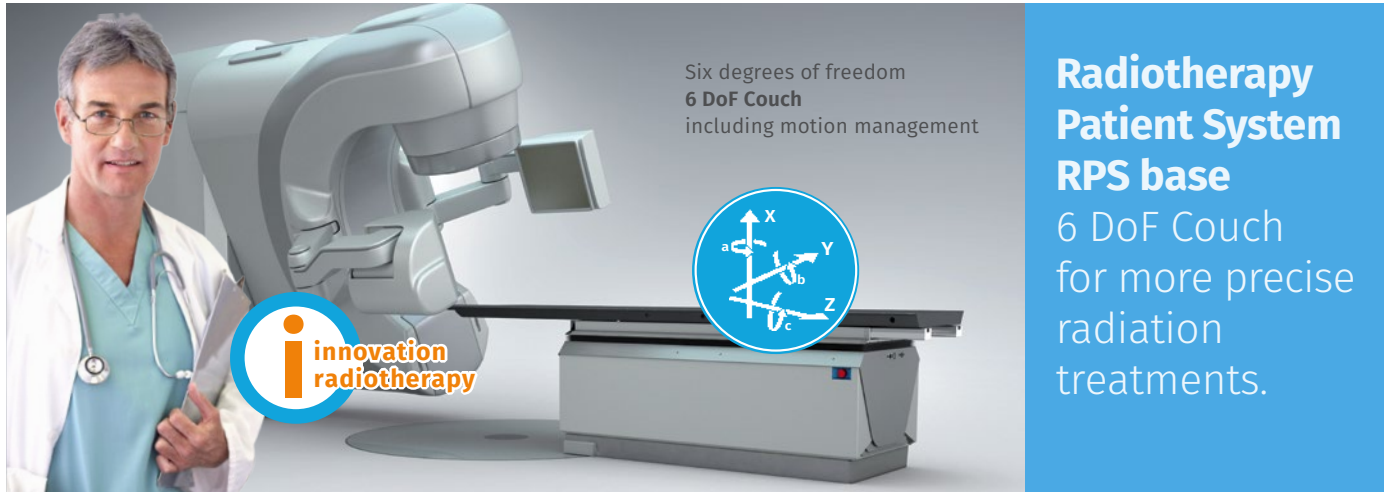


Radiotherapy Patient System „RPS base“ by gKteso: 6-DoF Robotic Couch System for Radiology Cancer Treatments



Description and essential performance features of the 6DoF couch system.

The RPS base features a robotic patient-positioning platform with six degrees of freedom. It enables accurate and remote geometric correction of any misalignments detected by state-of-the-art image guidance systems, thereby closing the gap in the 6DOF-chain of IGRT localisation and tumour isocentre targeting.

The RPS base allows sub-millimetre patient positioning accuracy in six degrees of freedom, improving clinical workflow and patient confidence. 6D means that the system can correct translational errors (x, y, z) in patient positioning as well as rotational errors (roll, pitch and yaw).

An internal sensor system which monitors the couch's position is also part of RPS base system, allowing closing the control loops for patient positioning.

All movements can be controlled either by the handheld controller next to the couch in the treatment room or by a software application.

The RPS base features the latest carbon fibre composite tabletop solutions.

Intended use and intended user

The RPS base is intended to be used for accurate patient positioning within a radiation therapy treatment environment. It comprises of:

- The RPS base to support and aid in positioning a patient,
- Software to control the RPS base position.

Indications:

The intended use of the RPS base is to support aid and control in positioning a patient during radiation therapy of various body regions. The system is not restricted to certain subpopulations (e.g., those defined by age, sex, ethnicity and organ function and disease severity or similar).

Couchtop specifications

Material	non-conductive Carbon fiber
Length	260cm / 102"
Width	53cm / 21"
Indexing system	14cm / 0.55"
Attenuation (% by 6MV)	<2,4
Changable	yes / custom specified
Accessoires	metal side rails

6 DoF Couch motions

Axis	Range	Speed	Absolute positioning accuracy	Corrective positioning accuracy
Vertical movement	64 - 151cm 25" - 59"	0 - 50mm/s 0 - 2"	+/- 0.5mm (+/- 0.02")	+/- 0.1mm +/- 0.004"
Lateral movement	+/- 250mm +/- 10"	0 - 50mm/s 0 - 2"	+/- 0.5mm +/- 0.02"	+/- 0.1mm +/- 0.004"
Longitudinal movement	+/- 570mm +/- 22"	0 - 80mm/s 0 - 3"	+/- 0.5mm +/- 0.02"	+/- 0.1mm +/- 0.004"
Pitch rotation	+/- 5°	0 - 1°/s	+/- 0.1°	+/- 0.05°
Roll rotation	+/- 5°	0 - 1°/s	+/- 0.1°	+/- 0.05°
Yaw rotation	+/- 5°	0 - 1°/s	+/- 0.1°	+/- 0.05°
Isocenter rotation (optional)	+/- 100°	0 - 5°/s	+/- 0.1°	+/- 0.05°

Couch specifications

Mode of operation	continuous
6D translations and rotations corrections	simultaneously
Isocentre accuracy at isocentric height	<2,0mm (<0.1")
Typical couch deflection (IEC60976)	<2,0mm (<0.1")
Maximum weight of patient	250kg (550lbs)
Dynamic isocenter	yes / patient unique
Internal auto-calibration	yes
External reference system (camera system)	no
Side panels	Motor STOP Power failure lowering

Hand Held Controller	Digital display absolute Motion enabling Speed selection Home position Preset position RFID function
Operating from outside room	Software interface
Remote Enable Controller	Motion enabling
Interlocks	Touch guide HT Illegal motion Couchtop locked (optional) Motor STOP
Operating with record and verify system	optional

Power Supply

Mains	
(VAC)	100 – 230 ±15%
(Hz)	50 / 60
(A)	20A / 100V 10A / 240V

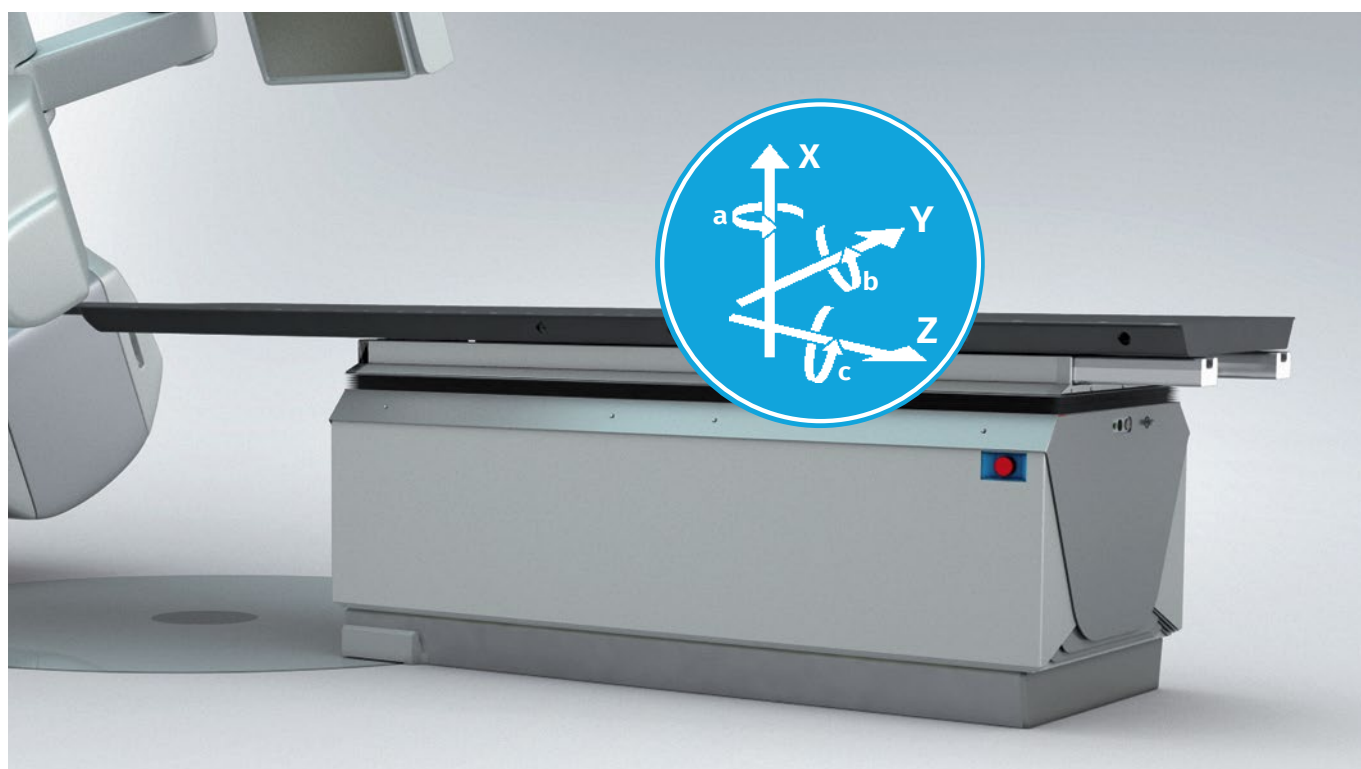
Internal Power	
(VDC)	max. 48
(A)	max. 20

Conformity

The RPS base complies with the fundamental requirements of European Regulation 93/42 EEC for class I medical products and has been developed and tested in accordance with the following standards:

EN980:2008	EN 60601-1-2:2007
EN1041:12008	EN 60601-1-4: 1996
EN ISO 10993-1	EN 60601-1-6: 2010
EN ISO 13485:2012 + AC:2012	EN 60601-1-8:2007
EN ISO14971:2012	EN 60601-2-1:1998 +A1:2002
EN ISO 19054:2006	EN 61217:2012
EN 60601-1:2006 +AC:2010+A1:2013	EN 62304:2006
EN 60601-1-1:2001	EN 62366:2008





Key Features

- **One integrated device** – a true 6DoF robotic system, with no external cables
- **Optional integrated isocenter movement** – for automatic full patient positioning
- **High accuracy** – due to build-in redundant sensor system.
- **No need for external camera system**
- **Optional integration of Gantry control** – for movement in non-coplanar treatment
- **Custom specified tabletop** – or standard 14cm indexed tabletop with side rails
- **Low patient entrance high** – 64cm
- **Patient weight** – 250kg
- **Dynamic isocenter** – all rotation about patient unique fixed or virtual isocenter
- **One software interface** – for simple workflow integration
- **Simultaneous 6DoF translations and rotations corrections**
- **Large 6DoF movement range** – ± 5 Degrees
- **Highspeed movements** – prepared for motion management solutions