SLOVENSKI STANDARD

SIST EN 61217:1998/A2:2008

01-maj-2008

Oprema za radioterapijo - Koordinate, gibanje in skale (IEC 61217:1996/A2:2007)

Radiotherapy equipment - Coordinates, movements and scales (IEC 61217:1996/A2:2007)

Strahlentherapie-Einrichtungen - Koordinaten, Bewegungen und Skalen (IEC 61217:1996/A2:2007)

Appareils utilisés en radiothérapie - Coordonnées, mouvements et échelles (CEI 61217:1996/A2:2007)

Ta slovenski standard je istoveten z: **EN 61217:1996/A2:2008**

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11.040.50

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SIST EN 61217:1998/A2:2008 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61217/A2

February 2008

ICS 11.040.50; 13.280

English version

Radiotherapy equipment - Coordinates, movements and scales
(IEC 61217:1996/A2:2007)

Appareils utilisés en radiothérapie - Coordonnées, mouvements et échelles (CEI 61217:1996/A2:2007)

Strahlentherapie-Einrichtungen - Koordinaten, Bewegungen und Skalen (IEC 61217:1996/A2:2007)

This amendment A2 modifies the European Standard EN 61217:1996; it was approved by CENELEC on 2008-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61217:1996/A2:2008 E

Foreword

The text of document 62C/418/CDV, future amendment 2 to IEC 61217:1996, prepared by SC 62C, Equipment for radiotherapy, nuclear medicine and radiation dosimetry, of IEC TC 62, Electrical equipment in medical practice, was submitted to the IEC-CENELEC parallel Unique Acceptance Procedure and was approved by CENELEC as amendment A2 to EN 61217:1996 on 2008-02-01.

The following dates were fixed:

– latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2008-11-01
– latest date by which the national standards conflicting with the amendment have to be withdrawn	(dow)	2011-02-01

Endorsement notice

The text of amendment 2:2007 to the International Standard IEC 61217:1996 was approved by CENELEC as an amendment to the European Standard without any modification.

IEC 61217

Edition 1.0 2007-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

Radiotherapy equipment – Coordinates, movements and scales

Appareils utilisés en radiothérapie – Coordonnées, mouvements et échelles

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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FOREWORD

This amendment has been prepared by subcommittee 62C: Equipment for radiotherapy, nuclear medicine and radiation dosimetry, of IEC technical committee 62: Electrical equipment in medical practice.

The text of this amendment is based on the following documents::

CDV	Report on voting
62C/418/CDV	62C/428/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This Amendment 2 extends the rotation of the patient support devices around the Z-axis in the IEC fixed coordinate system to two additional rotations – rolling around the patient's longitudinal axis and pitching around the patient's transversal axis.

The use of the two new additional degrees of freedom (pitch and roll) generalizes the coordinate systems to include systematically 3 rotations and 3 translations, therefore supporting 6 degrees of freedom in a systematic way. Modern patient support devices with 6 degrees of freedom can use a combined translation and rotation to get the same result as the eccentric table top rotation. When changing table position data using the new IEC systems, the definition of isocentric rotations is sufficient to transfer all treatment-related information. The eccentric table top coordinate system is however maintained for backward compatibility.

NOTE It is quite common in proton therapy to use a treatment chair, where the patient can be rotated and tilted, while the beam line has a fixed direction.

Page 19

2.1.101 *Replace the existing number and text of this subclause (introduced by Amendment 1) with the following:*

2.1.7 For rotational transformations involving more than one rotation the sequence of the rotations must be kept consistent. If the rotational sequence varies, the resulting transformation matrix and the orientation of the axis will be different.

The sequence in which the rotations shall be applied is the sequence in which these rotations are described in Clause 2 of this standard.

NOTE $M_{ab}^{-1} = M_{ba}$ (see Clause A.1).

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2.9 Table top coordinate system ("t") (figures 10 and 11)

Replace the existing title and text of this subclause with the following:

2.9 Table top coordinate system ("t") (Figures 10, 11, 18 and 19)

The "t" coordinate system is stationary with respect to the table top and its mother system is the "e" system. Its origin It is at the specified point located on the median axis of the table top, which is at the intersection of the median axis of the table top and the vertical axis Zs of the PATIENT SUPPORT coordinate system when the angle θe of the eccentric vertical rotation (if available) is zero and when the table top is:

– horizontal;

– laterally centred in the "e" system;

– longitudinally fully withdrawn away from Zs.

The coordinate axis Yt coincides with the longitudinal median axis of the table top and the coordinate axis Zt is normal to the table top.

In the zero position of the "t" system:

– the origin It is at minimum distance from Ie (table top fully withdrawn);

– Yt and Ye coincide and are in the same direction;

– coordinate axes Xt and Zt are parallel to and in the same direction as the corresponding axes Xe, Ze.

NOTE 1 When the isocentric and eccentric angular position angles θs and θe are zero (or the eccentric movement is not available) and the "t" system is in its zero position, the coordinate axes Xt, Yt, Zt coincide with coordinate axes Xf, Yf and Zf of the fixed system.

Tx, Ty and Tz are the lateral, longitudinal and vertical displacements of the origin It of the table top system corresponding to movement along the three corresponding coordinate axes Xe, Ye, Ze, in the eccentric system, or Xs, Ys, Zs in the PATIENT SUPPORT system if eccentric rotation is not available.

NOTE 2 The purpose of defining the coincidence of the origin It with the ISOCENTRE with the table top fully withdrawn is to ensure that the longitudinal position of the table top in the “s” or “e” system is expressed by a positive number for all patient treatments. It is not necessary that this origin be actually marked on the table top at the isocentre position, since this may not be practical with removable panels, table top extensions, etc. It is only necessary that the origin It be obtainable from a known distance to an accessible and visible marked point on the table top.

NOTE 3 Table tops with different possible ranges of longitudinal mechanical motion, e.g. made by different MANUFACTURERS, could have different positions for the table top origin It.

The rotation of the "t" system about the axis Xt (pitch of the table top) is defined as rotation angle ψt.

An increase in the value of ψt corresponds to clockwise rotation of the table top as viewed from the table top coordinate system origin along the positive Xt axis.

The rotation of the "t" system about axis Yt (roll of the table top) is defined as rotation angle φt.

An increase in the value of φt corresponds to a clockwise rotation of the table top as viewed from the table top coordinate system origin along the positive Yt axis.

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2.101 PATIENT coordinate system ("p") (figures 101a and 101b)

Replace the existing number and title of this subclause (introduced by Amendment 1) with the following:

2.10 PATIENT coordinate system ("p") (Figures 17a and 17b)

Replace, in the second paragraph, the reference to "Figure 101a" by "Figure 17a".

Page 41

6.7 Table top linear movements

Modify the title of this subclause as follows:

6.7 Table top linear and angular movements

Add the following new subclauses:

6.7.4 Pitch of the table top

Reading increases from 0° to 359° in a clockwise direction when viewed from the table top coordinate system origin along the positive Xt axis.

Designation: table top pitch

ψt = _____

6.7.5 Roll of the table top

Reading increases from 0° to 359° in a clockwise direction when viewed from the table top coordinate system origin along the positive Yt axis.

Designation: table top roll

φt = _____

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Replace the existing Table 2 with the following:

Table 2 – Individual coordinate systems

System designation	Mother system	System origin	Device rotation about axis by angle	Device linear displacement
f – Fixed	None	If	None (reference system)	None (reference system)
g – GANTRY	f	Ig ISOCENTRE	ISOCENTRIC GANTRY about Yg by φg	RADIATION SOURCE along Zg X-ray IMAGE RECEPTOR Rx Ry Rz along Xg Yg Zg
b – BEAM LIMITING DEVICE or DELINEATOR	g	Ib RADIATION SOURCE	BEAM LIMITING DEVICE or DELINEATOR about Zb by θb	Plane at NORMAL TREATMENT DISTANCE along Zb RADIATION FIELD or DELINEATED RADIATION FIELD edges along Xb and Yb WEDGE FILTER along Xb and Yb
w – WEDGE FILTER	b	Iw Selected point on WEDGE FILTER	WEDGE FILTER about Zw by θw	
r – X-RAY IMAGE RECEPTOR	g	Ir Centre of IMAGE RECEPTION AREA	X-RAY IMAGE RECEPTOR about Zr by θr	
s – PATIENT SUPPORT	f	Is On rotation axis of the turntable	PATIENT SUPPORT about Zs by θs	
e – Table top eccentric rotation	s	Ie On eccentric axis of rotation	Table top about Ze by θe	Table top along Xe Ye Ze
t – Table top	e	It On the median axis of the table top	Table top about Xt by ψt Table top about Yt by φt	PATIENT along Xt Yt Zt
p – PATIENT	t	Ip Selected point in relation to PATIENT	PATIENT about Xp by ψp, Yp by φp and Zp by θp	

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Renumber Figures 101a and 101b as "Figure 17a" and "Figure 17b".

Add, after Figure 17b, the following new Figures 18 and 19: