

## Accurate Diagnostics **for** Busy Healthcare



**Dentistry**

**UNMATCHED  
SOLUTIONS  
**FOR** QUALITY  
CONTROL**





# Dentistry

## Quality Control Kits

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DIAGNOMATIC



We have prepared several QA / QC kits consisting of must-have phantoms, accessories and software that you can use in different situations depending on your requirements.

These can be your go-to selections when you are not sure what to choose for tests of a given modality.

We have introduced gradation of kits depending on the purpose and level of sophistication required:

**BASIC:** these sets are meant for constancy level testing purposes - tests that can be done practically by everyone who can use a diagnostic device

**PRO:** sets meant for acceptance and specialized testing - performed by specialized personnel, for example a medical physicist



# Pro-Dent 2D BASIC kit

01-001



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This kit is a versatile set of phantoms and software for carrying out constancy tests of intra-oral and OPG dental X-ray units. Thanks to the Pro-Control.online subscription, all tests can be quickly and effortlessly automatically analysed online.

## Standard kit configuration:

- Pro-Dent set All (01-203)
- Diagnostics ECO annual subscription
- carrying case with foam inlay

## The kit can be used to measure:

- dose reproducibility
- development process stability
- alignment and beam geometry
- spatial resolution
- low contrast resolution

## Product features:

- Complies with:
  - OEC 61223-2-7 and IEC 61223-3-4
  - DIN 6868-5 and DIN V 6868-151
  - ÖNORM S 5240-5 and ÖNORM S 5240-11
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration



# Pro-Dent 3D BASIC kit

01-011



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This kit is a versatile set of phantoms and software for carrying out constancy tests of CBCT, DVT and other 3D imaging devices. Thanks to the Pro-Control.online subscription, all tests can be quickly and effortlessly automatically analysed online.

## Standard kit configuration:

- Pro-Dent CT MINI (01-303)
- Diagnostics ECO annual subscription
- carrying case

## The kit can be used to measure:

- image geometry
- pixel (matrix) size
- artefacts, noise
- homogeneity
- linearity
- contrast
- high-contrast resolution
- low-contrast resolution (contrast sensitivity) dose reproducibility

## Product features:

- Complies with:
  - IEC 61223-3-4 and IEC 61223-3-5
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration



# Pro-Dent All BASIC kit

01-021



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This kit is a versatile set of phantoms and software for carrying out constancy and acceptance tests of Intra-oral, OPG, CBCT, DVT and other 3D imaging devices. Thanks to the Pro-Control.online subscription all tests can be quickly and effortlessly automatically analysed online and with the desktop app.

## Standard kit configuration:

- Pro-Dent set All (01-203)
- Pro-Dent CT MINI (01-303)
- Diagnostics BASIC annual subscription
- carrying case with dedicated foam inlay

## The kit can be used to measure:

- dose reproducibility
- development process stability
- alignment and beam geometry
- image geometry
- pixel (matrix) size
- artefacts, noise
- homogeneity
- linearity
- contrast
- low-contrast resolution (contrast sensitivity)

## Product features:

- Complies with:
  - IEC 61223-3-4, IEC 61223-3-5 and IEC 61223-2-7
  - DIN 6868-5 and DIN V 6868-151
  - ÖNORM S 5240-5 and ÖNORM S 5240-11CE certified
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration



# Pro-Dent All PRO kit

01-022

This is a versatile set of phantoms and software for carrying out constancy and acceptance tests of intra-oral, OPG, CBCT, DVT and other 3D imaging devices. Thanks to the Pro-Control.online subscription, all tests can be quickly and effortlessly automatically analysed online and with the desktop app.

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## Standard kit configuration:

- Pro-Dent set All (01-203)
- Pro-Dent CT mk II (01-501)
- Pro-Slit (05-101)
- Pro-Stand RF (05-102)
- Pro-Stand ALIGN (05-104)
- Diagnostics PRO annual subscription
- carrying cases with dedicated foam inlay



## The kit can be used to measure:

- dose reproducibility
- development process stability
- alignment and beam geometry
- image geometry
- pixel (matrix) size
- artefacts, noise
- beam hardening artefacts
- homogeneity
- linearity
- contrast
- high-contrast resolution in XY and Z plane
- low-contrast resolution (contrast sensitivity)
- line spread function
- point spread function
- MTF
- contrast to noise for different materials
- focal spot size

## Product features:

- Complies with:
  - IEC 61223-3-4, IEC 61223-3-5 and IEC 61223-2-7
  - DIN 6868-5 and DIN V 6868-151
  - ÖNORM S 5240-5 and ÖNORM S 5240-11
  - IEC 60336:2005CE certified
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration



**Dentistry**

# **Phantoms**



# Pro-Dent Set

01-201 - intra-oral devices  
01-203 - intra-oral and OPG devices



The Pro-Dent set is a universal set of phantoms for carrying out constancy and acceptance tests of conventional and digital dental X-ray units (intra-oral, panoramic and cephalometric).

This is not an all-in-one device where results of tests blur each other out. This is the only solution on the market that makes it possible to measure the X-ray beam collimation with a dental film or a digital detector.

## Technical data (can be modified to customer specifications)



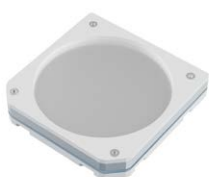
### Pro-Dent Alpha phantom

- 3 step wedge (first step made of copper foil 0.3 mm thick, the next ones are made of polytetrafluoroethylene 8 mm and 16 mm thick)
- cover made of PMMA



### Pro-Dent Beta phantom

- cone for perpendicular X-Ray beam control in the range of  $0^\circ \pm 1.5^\circ$
- pattern for beam radius estimation
- cover made of PMMA



### Pro-Dent Gamma phantom

- pattern for line pair resolution evaluation (from 4 to 8 LP/mm)
- optional second pattern for line pair resolution evaluation (from 1.6 to 3 LP/mm) – OPG units
- four holes in 0.5 mm Al foil for low contrast resolution tests
- additional 6 mm aluminium filter
- cover made of PMMA





**With the Pro-Dent set you can do the following tests:**

- dose reproducibility
- development process stability
- perpendicular X-ray beam (range  $0^\circ \div 1.5^\circ$ )
- limitation and alignment of the X-Ray beam (including beam radius measurement)
- spatial / line pair resolution (perpendicular, parallel and rotated  $45^\circ$  to anode-cathode line)
- low contrast resolution

**Accessories:**

- 0.8 mm copper filter – patient's head equivalent
- positioning stand with a space for an analogue film or a digital detector
- band for firm, perpendicular attachment of the phantom to the X-Ray unit's beam applicator
- rings for centering phantoms on the X-Ray unit's beam applicator
- CD with documentation
- elegant and convenient box for storing phantoms

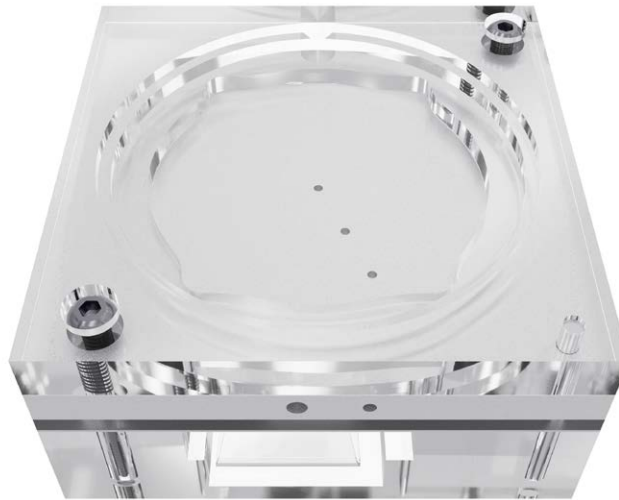
**Product features:**

- Complies with:
  - OEC 61223-2-7 and IEC 61223-3-4
  - DIN 6868-5 and DIN V 6868-151
  - ÖNORM S 5240-5 and ÖNORM S 5240-11
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration



# Pro-Dent DIN 2D

01-220



The Pro-Dent DIN 2D is a universal phantom for carrying out constancy and acceptance tests of conventional and digital dental X-ray units (intra-oral, panoramic and cephalometric).

## Technical data (can be modified to customer specifications):

- Size 80 x 80 x 36 mm
- 3 centring rings with different diameters to fit standard tubes
- Slots for digital storage screen, intra-oral sensor, dose detector
- 45° Line Pair test (2.5 / 2.8 / 3.1 / 5.0 / 5.8 / 6.3 LP/mm; 0.05 Pb)
- 4 Low Contrast objects (Ø 2.5/2/1.5/1 mm)
- Integrated filtration 6 mm Al (purity 99.5 %)

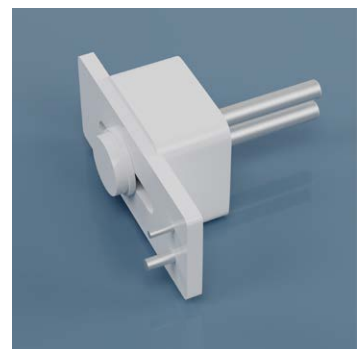
## Test Parameters

- spatial resolution
- low-contrast resolution
- radiation field alignment
- image homogeneity
- dose equivalency check
- artefacts, image flaws, etc.

## Product features:

- complies with:
  - IEC 61223-2-7 and IEC 61223-3-4
  - DIN 6868-5 and DIN V 6868-151
  - ÖNORM S 5240-5 and ÖNORM S 5240-11
- CE certified

## Accessory holders



# Pro-Dent CT MINI

01-303



Pro-Dent CT MINI phantom is a versatile quality control tool of dental Cone-Beam CT, Dental Volume Tomography (DVT), and other 3D imaging devices with even the smallest FOV (Field Of View).

The phantom consists of a main PMMA cylinder that houses modules with different test objects.



It allows performing most important imaging quality tests such as

- image geometry
- slice geometry
- pixel (matrix) size
- artefacts, noise
- homogeneity
- linearity
- contrast
- high-contrast resolution
- low-contrast resolution (contrast sensitivity)

#### Accessories

- test stand with spirit level for accurate placing of the phantom in the test position
- convenient, portable case for storing and transporting the phantom



## Technical data (can be modified to customer specifications)



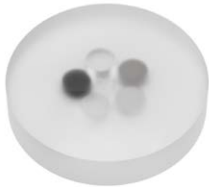
### Main cylinder

- contains markings for easy positioning in the dental unit and geometric distortion section
- an array of 2.0 mm diameter, 3.0 mm long holes uniformly pitched at 10.0 mm intervals
- diameter: 110 mm
- length: 130 mm
- made of PMMA (1.19 g/cm<sup>3</sup>)



### Noise / uniformity module

- 20 mm thick



### Linearity module

- containing 15 mm rods made of PTFE, poliamid, PE-300, air and water emulating epoxy embedded PMMA - pixel intensity / HU values samples



### High contrast resolution module

- containing 7 objects for resolution evaluation: 10, 11, 12, 13, 14, 15, 16 LP/cm
- 0.3 mm bead for Modular Transfer Function (MTF) calculation



### Low contrast section

- containing rods of a different diameter: 2, 3, 4, 6, 8, 10, 12 mm, filled with a substance whose density is 3% different from the body of the module



### Slice geometry module

- 4 air rods, 3mm in diameter, placed in vertices of the 30mm square
- two aluminium wire ramps

### Product features:

- complies with:
  - IEC 61223-3-4 and IEC 61223-3-5
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration

# Pro-Dent CT mk II

01-501



The new Pro-Dent CT mk II phantom is a versatile quality control tool of dental Cone-Beam CT, Dental Volume Tomography (DVT) and other 3D imaging devices according to the Radiation Protection Report no 172 by SEDENTEXCT.

The phantom consists of a main PMMA cylinder that houses modules with different test objects. Thanks to this design, you can perform tests with devices with a small FOV at different positions in the 160mm phantom.

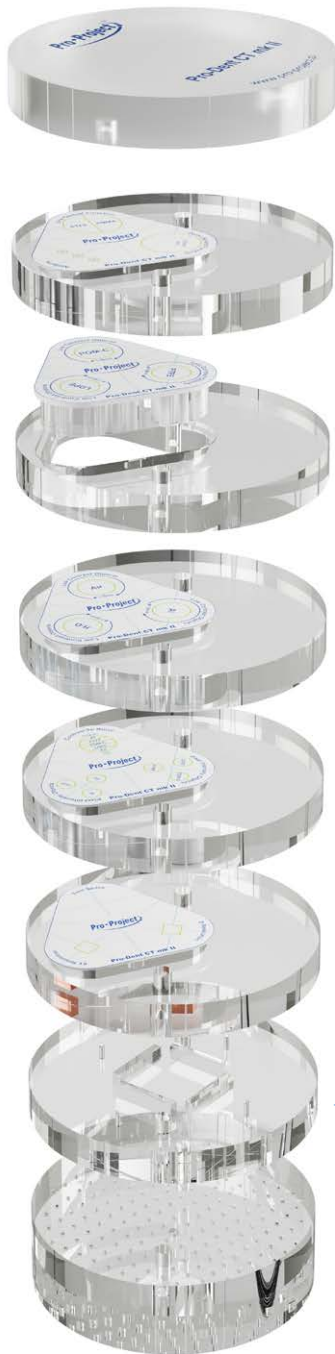


## Accessories

- test stand with spirit level for accurate placing of the phantom in the test position
- folding base for test stand positioning on the X-ray unit's chair
- convenient, portable case for storing and transporting the phantom
- optional additional homogeneity disc



## Technical data (can be modified to customer specifications)



### General

- diameter: 160 mm
- made of PMMA (1.19 g/cm<sup>3</sup>)
- total length: 170 mm
- positioning aids on the outside surface of the phantom

### Noise / uniformity section

- uniform PMMA part of the phantom

### 5 layer modules section with modules containing

- Linear Spread Function (LSF) PTFE / PMMA interface
- Point Spread Function (PSF) - 0.25 mm tungsten steel wire in air
- XY high contrast resolution (aluminum/polymer) - 1.0, 1.7, 2.0, 2.5, 2.8, 4.0, 5.0 LP/mm
- Z high contrast resolution (aluminum/polymer) - 1.0, 1.7, 2.0, 2.5, 2.8, 4.0, 5.0 LP/mm
- 6 low-contrast groups of 1.0, 2.0, 3.0, 4.0, 5.0, 6.0 mm rods made of: aluminum, PTFE, POM-C (delrin), PE-300, air and water emulating epoxy; background made of PMMA
- 10 mm rods made of aluminum, PTFE, POM-C (delrin), PE-300, air and water emulating epoxy suspended in PMMA - pixel intensity / HU values samples
- stacked 20 mm diameter contrast-to-noise discs made of aluminum, PTFE, POM-C (delrin), PE-300 and air suspended in PMMA
- three 5.0 mm diameter titanium rods embedded in PMMA - beam hardening artefacts

### Slice geometry section

- 20 mm thick module with two pairs of aluminum ramps and empty rods in vertexes of a square for detailed evaluation of slice thickness and geometry and laser position verification

### Geometric distortion section

- an array of 2.0 mm diameter, 3.0 mm long holes uniformly pitched at 10.0 mm intervals

### Product features:

- complies with:
  - Radiation Protection no 172 report by the SEDENTEXCT
  - IEC 61223-3-4 and IEC 61223-3-5
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration

# Pro-Dent CT 161



01-401

Phantom for acceptance and constancy testing of 3D function of dental Cone-Beam CT, Dental Volume Tomography (DVT) and 3D imaging devices according to DIN 6868-161 and QS-RL.



## Technical data (can be modified to customer specifications):

- diameter: 160 mm
- 20 mm thick main module containing:
  - test object containing equivalents of air, soft tissue and bone
  - positioning markers
  - bubble level
- 20 mm, 50 mm and 60 mm thick PMMA modules with positioning aids
- test stand with a table for placing the phantom in the test position
- convenient, portable case for storing and transporting the phantom

## Product features:

- complies with:
  - Radiation Protection no 172 report by the SEDENTEXCT
  - IEC 61223-3-4 and IEC 61223-3-5
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration



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