



## 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 Diagnostics 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 Diagnomatic subscription, all tests can be quickly and effortlessly automatically analysed online.

## Standard kit configuration:

- Pro-Dent CT MINI (01-303)
- Diagnomatic 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 Diagnostics subscription all tests can be quickly and effortlessly automatically analysed online.

## 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 5240-11
- CE certified
- the manual provides detailed guidelines for carrying out each test, results assessment and registration

# Pro-Dent All PRO kit



01-022



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**DIAGNOMATIC**

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 Diagnomatic subscription, all tests can be quickly and effortlessly automatically analysed online.

## Standard kit configuration:

- Pro-Dent set All (01-203)
- Pro-Dent CT mk II (01-501)
- Diagnomatic 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
- 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 (optional)

- cone for perpendicular X-Ray beam control in the range of  $0^\circ \div 1.5^\circ$
- 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

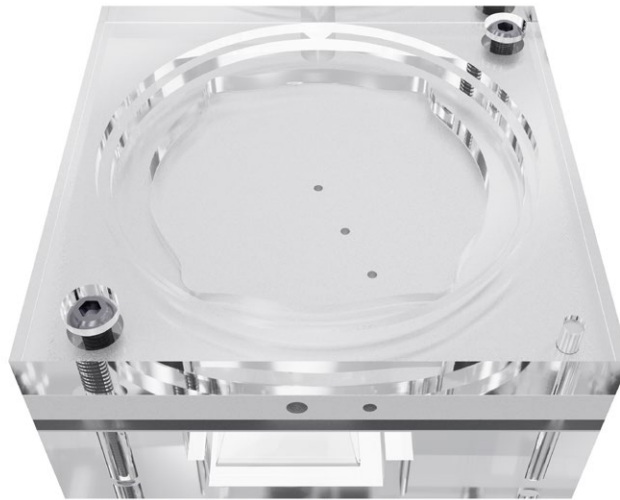
**Product features:**

- 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 %)

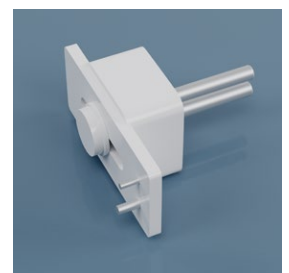
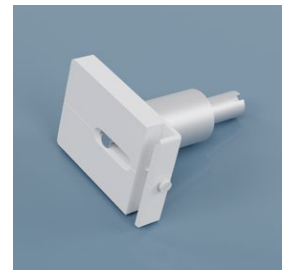
## Test Parameters

- 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
- the manual provides detailed guidelines for carrying out each test, results assessment and registration

## 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.

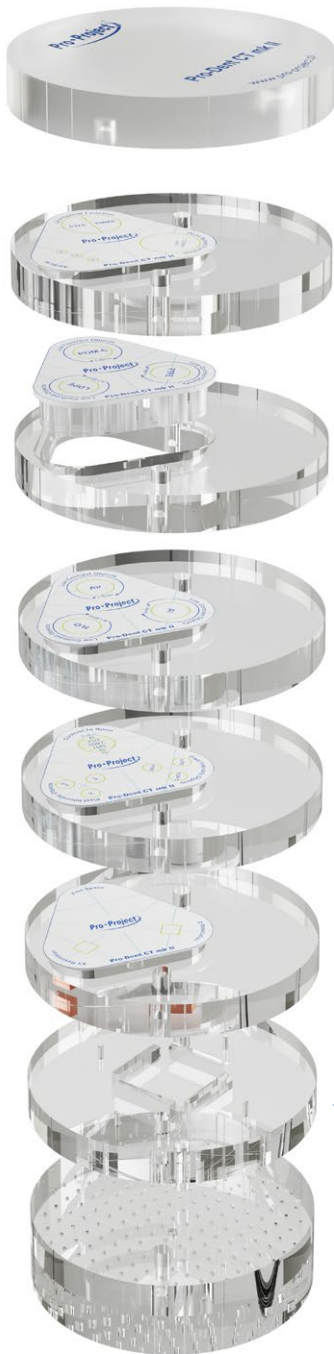


## Accessories

- 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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