DIAGNOMATIC

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Magnetic resonance

ISO 9001 ISO 13485 ISO 14001 ISO 45001 ISO 27001

Magnetic resonance

Quality Control kits

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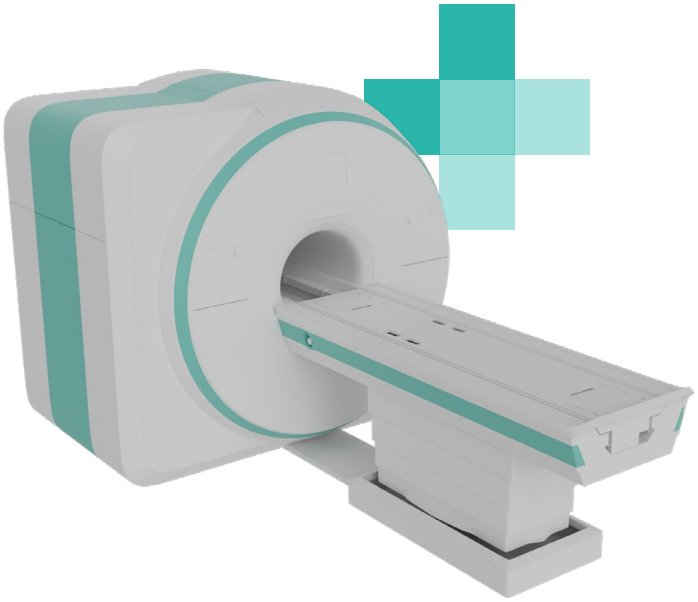

We have prepared several QA / QC kits consisting of must-have phantoms, accessories and software that you can use in different situations depending on your requirements.
These can be your go-to selections when you are not sure what to choose for tests of a given modality.
We have introduced gradation 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-MRI BASIC kit

09-001

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This kit is a versatile set of phantoms and software for carrying out constancy and acceptance tests of magnetic resonance units. Thanks to the Diagnomatic subscription, all tests can be quickly and effortlessly automatically analysed online.

Standard kit configuration:

- Pro-MRI (09-101)
- Pro-MRI - detachable spirit level (09-104)
- Diagnomatic BASIC annual subscription
- carrying case with dedicated foam inlay

The kit can be used to measure:

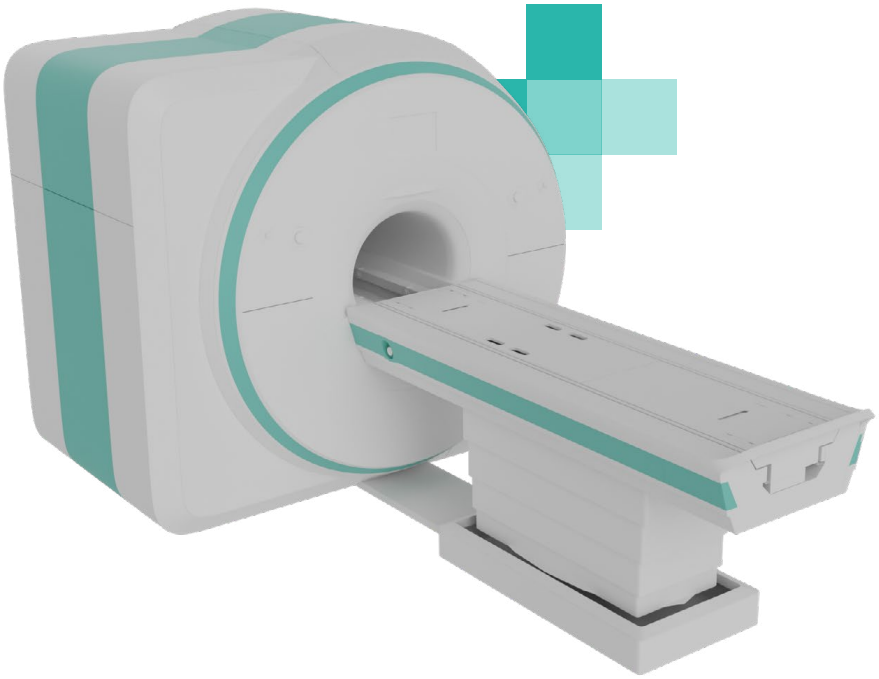
- geometric distortion
- spatial resolution
- slice thickness and position
- interslice gap
- T1 and T2 values
- image bandwidth
- low contrast detectability
- image uniformity
- Signal-to-Noise Ratio (SNR)
- physical and electronic slice offset
- point of reference
- bandwidth: water-fat shift

Product features:

- complies with:
  - IPEM Report 80 “Quality Control in MRI”, 1998
  - AAPM Rep. 28 “Quality Assurance methods & phantoms for MRI”, 1990
  - AAPM Rep. 34 “Acceptance testing of MRI systems”, 1992
  - AAPM Rep. 100 “Acceptance & Quality Assurance procedures for MRI facilities”, 2010
- this is not an ACR approved phantom for accreditation
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration

Magnetic resonance

Phantoms



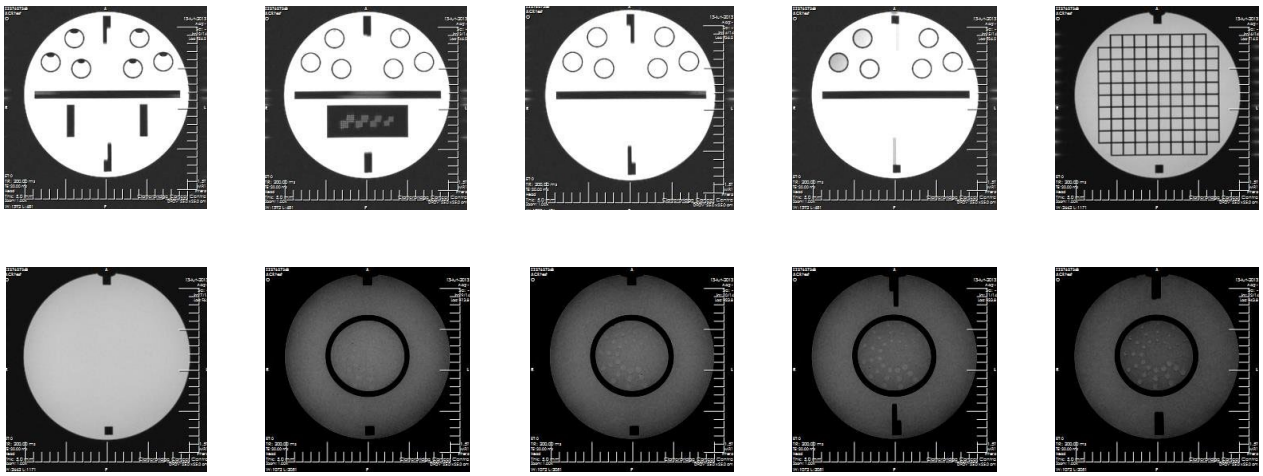
Pro-MRI

09-103 optional 6 removable vials for test samples - replacing the “T1 and T2 sample vials”, includes 6 additional vials (12 in total)
09-102 optional heavy duty carrying case
09-101

Phantom for comprehensive evaluation of critical imaging parameters of magnetic resonance imaging (MRI) in a time efficient manner. The phantom can be used for the measurement of absolute values for calibration purposes. However, its design is optimized for time efficient daily quality assurance too.

It can be used to measure:

- geometric distortion
- spatial resolution
- slice thickness and position
- interslice Gap
- T1 and T2 values
- image bandwidth
- low contrast detectability
- image uniformity
- signal-to-noise ratio (SNR)
- physical and electronic slice offset
- point of reference
- bandwidth: water-fat shift



Technical data (can be modified to customer specifications):

- outside cylinder diameter: 220 mm (180 mm)
- outside cylinder height: 150 mm
- inside cylinder diameter: 204 mm (173 mm)
- inside cylinder height: 130 mm
- filled with 10 mmol nickel chloride solution containing
- sodium chloride 75 mmol
- **T1 and T2 sample vials**
  - 6 cylindrical vials Ø19 x 41 mm
  - refillable from outside
  - filled with different configurations of nickel chloride and sodium chloride solution, precise information to be found in the manual
- **resolution insert:**
  - four matrices of holes, diameters: 0.8, 0.9, 1.0 and 1.1 mm
  - spaces between the holes are equal to hole diameters
  - two small containers with water and fat for water-fat shift evaluation
- **slice thickness insert:**
  - 180 x 46 x 10 mm PMMA plate
  - 1mm wide and 5mm deep counter-descending slits on both sides
  - slits form two ramps descending at 1:10 geometric distortion insert:
  - 10 x 10 array of squares
  - 148 mm on a side
  - 10 mm thick
- **low contrast insert:**
  - 4 polycarbonate discs 0.05, 0.1, 0.15 and 0.2 mm in thickness
  - partial volume contribution of these sheets and filling solution produce contrasts: 1.4, 2.5, 3.6 and 5.1%
  - each disc contains 12 groups of 3 holes arranged in spokes
  - each spoke has the same diameter
  - diameters range from 7.0 to 1.5 mm (0.5 mm step)
- four sets of paired 45° wedges are located on both sides of the phantom. The lower pairs are 30 x 30 mm, and the upper ones are 40 x 40 mm. The distance between intersection points of the lower and upper pairs is 90 mm
- optional 6 removable vials for test samples - replacing the "T1 and T2 sample vials", includes 6 additional vials (in 12 total) (09-103)
- optional heavy duty carrying case (09-102)

Product features:

- Complies with:
  - IPEM Report 80 "Quality Control in MRI", 1998
  - AAPM Rep. 28 "Quality Assurance methods & phantoms for MRI", 1990
  - AAPM Rep. 34 "Acceptance testing of MRI systems", 1992
  - AAPM Rep. 100 "Acceptance & Quality Assurance procedures for MRI facilities", 2010
- this is not an ACR approved phantom for accreditation
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration

Pro-MRI ACR Medium

09-301

ACR accredited Medium MRI phantom for comprehensive evaluation of critical imaging parameters of magnetic resonance imaging (MRI) in a time efficient manner. The phantom can be used for the measurement of absolute values for calibration purposes. However, its design is optimized for time efficient daily quality assurance too.

It can be used to measure:

- geometric distortion
- spatial resolution
- slice thickness and position
- interslice Gap
- image bandwidth
- low contrast detectability
- image uniformity
- signal-to-noise ratio (SNR)
- physical and electronic slice offset
- point of reference
- bandwidth: water-fat shift

Technical data:

- outside cylinder diameter: 178 mm (7")
- outside cylinder height: 157 mm
- inside cylinder diameter: 165 mm (6,5")
- inside cylinder height: 134 mm
- the phantom is filled with 10 millimolar (mmol) nickel chloride solution containing 0.45% by weight sodium chloride
- the outside of each phantom has the words "NOSE" and "CHIN" etched into it as an aid to orienting the phantom for scanning, as if it were a head

resolution insert:

- four matrices of holes, diameters: 0.8, 0.9, 1.0 and 1.1 mm
- spaces between the holes are equal to hole diameters
- two small containers with water and fat for water-fat shift evaluation

slice thickness insert:

- 1 mm wide counter-descending slits on both sides
- slits form two ramps descending at 1:10

geometric distortion insert:

- 3x3 holes array, 40 mm spacing,
- 2 mm diameter
- 120 mm on a side
- 10 mm thick

low contrast insert:

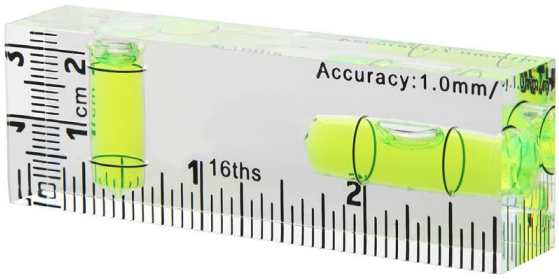
- partial volume contribution of these sheets and filling solution produce contrasts: 1.4, 2.5, 3.6, and 5.1%
- each disc contains 10 groups of 3 holes arranged in spokes
- each spoke has the same diameter
- diameters range from 7.0 to 1.5 mm

slice position accuracy:

- one set of paired 45° wedges. The distance between the intersection of the wedges is 100 mm

product included:

- heavy duty carrying case (09-102)
- optional 2-axis spirit level (09-104-1)



Product features:

- ACR Accredited
- Complies with:
  - ACR MRI Accreditation Program
  - IPEM Report 80 "Quality Control in MRI", 1998
  - AAPM Rep. 28 "Quality Assurance methods & phantoms for MRI", 1990
  - AAPM Rep. 34 "Acceptance testing of MRI systems", 1992
  - AAPM Rep. 100 "Acceptance & Quality Assurance procedures for MRI facilities", 2010
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration

Pro-MRI ACR Large

09-302

Large MRI phantom for comprehensive evaluation of critical imaging parameters of magnetic resonance imaging (MRI) in a time efficient manner. The phantom can be used for the measurement of absolute values for calibration purposes. However, its design is optimized for time efficient daily quality assurance too.

It can be used to measure:

- geometric distortion
- spatial resolution
- slice thickness and position
- interslice Gap
- image bandwidth
- low contrast detectability
- image uniformity
- signal-to-noise ratio (SNR)
- physical and electronic slice offset
- point of reference
- bandwidth: water-fat shift

Technical data:

- outside cylinder diameter: 203 mm (8")
- outside cylinder height: 165 mm
- inside cylinder diameter: 190 mm (7,5")
- inside cylinder height: 150 mm
- the phantom is filled with 10 millimolar (mmol) nickel chloride solution containing 0.45% by weight sodium chloride
- the outside of each phantom has the words "NOSE" and "CHIN" etched into it as an aid to orienting the phantom for scanning, as if it were a head

resolution insert:

- four matrices of holes, diameters: 0.9, 1.0 and 1.1 mm
- spaces between the holes are equal to hole diameters
- two small containers with water and fat for water-fat shift evaluation

slice thickness insert:

- 1 mm wide counter-descending slits on both sides
- slits form two ramps descending at 1:10

geometric distortion insert:

- 3x3 holes array, 60 mm spacing,
- 1.5 mm diameter
- 120 mm on a side
- 10 mm thick

low contrast insert:

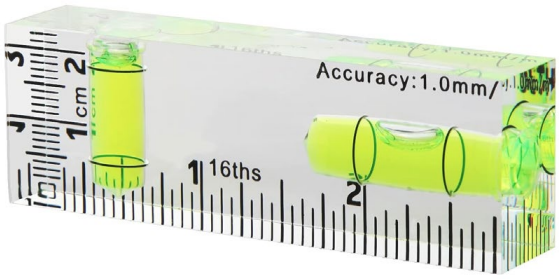
- partial volume contribution of these sheets and filling solution produce contrasts: 1.4, 2.5, 3.6, and 5.1%
- each disc contains 10 groups of 3 holes arranged in spokes
- each spoke has the same diameter
- diameters range from 7.0 to 1.5 mm

slice position accuracy:

- one set of paired 45° wedges. The distance between the intersection of the wedges is 100 mm

product included:

- heavy duty carrying case (09-102)
- optional 2-axis spirit level (09-104-1)



Product features:

- Complies with:
  - Large and Medium Phantom Test Guidance for the MRI Accreditation Program, 2022 (ACR)
  - MRI Quality Control Manual, 2015 (ACR)
  - AAPM Rep. 100 "Acceptance & Quality Assurance procedures for MRI facilities", 2010
- CE certified
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration

Pro-MRI Agar

09-202

This stability (agar) phantom consists of a cylindrical phantom and agar material inside. Using this phantom a Signal to Noise Ratio, Signal Fluctuation to Noise Ratio, drift, and other imaging measures over a 100-volume or 200-volume fMRI scan can be performed. The agar phantom has characteristics similar to the T2 measures of a human head, but provides no change in signal. The T1 and T2 characteristics of the agar phantom at 3T are ~900 ms T1 and 30 ms T2.

Technical data (can be modified to customer specifications):

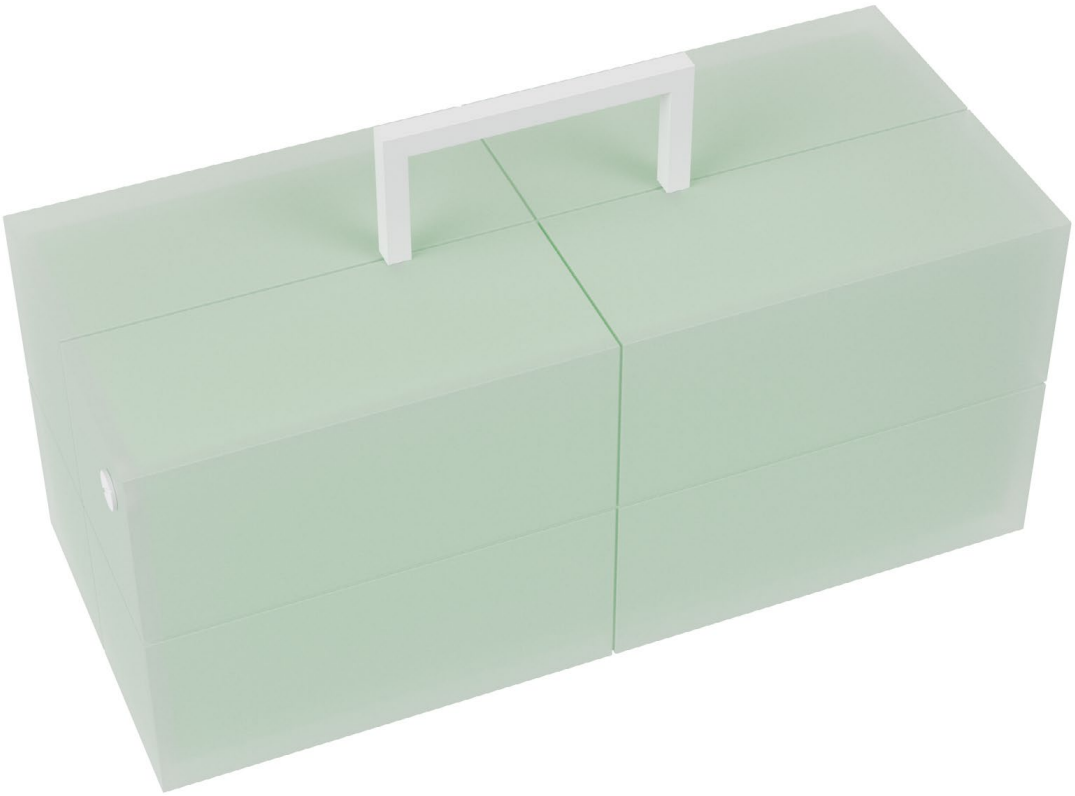
- overall cylinder dimensions: 140 mm in diameter, 150 mm in height
- cylinder made of PMMA
- filled with agar gel with T1 and T2 characteristic at 3T of ~900 ms T1 and 30 ms T2.
- optional carrying case (09-102)

Product features:

- Complies with:
  - ACR MRI Accreditation Program
  - IPEM Report 80 “Quality Control in MRI”, 1998
  - AAPM Rep. 28 “Quality Assurance methods & phantoms for MRI”, 1990
  - AAPM Rep. 34 “Acceptance testing of MRI systems”, 1992
  - AAPM Rep. 100 “Acceptance & Quality Assurance procedures for MRI facilities”, 2010
- CE certified
- this is not an ACR approved phantom for accreditation
- the Manual provides detailed guidelines for carrying out each test, results assessment and registration

Pro-MRI SpineRect

09-201



Rectangular MRI phantom simulating attenuation of the human spine.

Technical data (can be modified to customer specifications):

- inner dimensions: 372 x 150 x 148 mm
- made of PMMA
- filled with nickel chloride and sodium chloride solution
- markings on the surface to show middle axes of the phantom
- carrying handles for easy transportation

Product features:

- Complies with:
  - ACR MRI Accreditation Program
  - IPEM Report 80 “Quality Control in MRI”, 1998
  - AAPM Rep. 28 “Quality Assurance methods & phantoms for MRI”, 1990
  - AAPM Rep. 34 “Acceptance testing of MRI systems”, 1992
  - AAPM Rep. 100 “Acceptance & Quality Assurance procedures for MRI facilities”, 2010
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