

BOSCH
Ideas that work.

WALLSCANNER D-TECT 100



PRODUCT INFORMATION

TYPICALLY PROFESSIONAL.

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Brief Instructions

Operation

1. Switch on the unit: Press the on/off button or the start button.
2. Move it horizontally over the area to be searched.
3. Read the first measurements results on the display (here: no object).
4. Rotate the unit by 90°.
5. Move it vertically over the area to be searched (here: display of an object).
6. To determine the exact position of the object, move the unit back without lifting it until the middle point of the object is aligned with the middle line of the D-TECT 100.

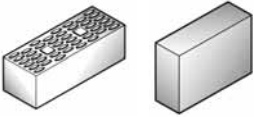
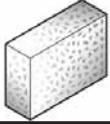



Important!!

- Always make two measurement (cross measurements, 90° to each other) to also be able to detect objects that run parallel to the direction of movement!
- Operating mode/Mode S = Standard; adapt the operating mode (mode button) to the wall material as required.

Brief Instructions

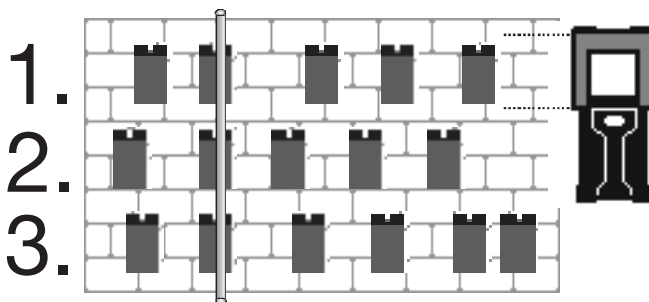
Operating Modes

S: <i>Standard mode, masonry</i>	
1: <i>Concrete</i>	
2: <i>Light construction, wood, floors, hollow blocks</i>	

Many signals in the display?

Tip:

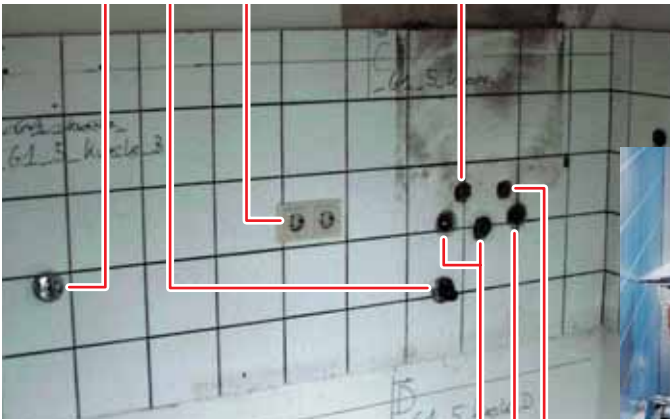
- Blank out the hollow spaces to a large extent with Mode 2.
- Hollow spaces can be distinguished from objects by making three measurements offset in height. As a result of the staggered laying of the stones, the associated hollow spaces will also be displayed offset. Only the vertically running line will be shown at the same position in all measurements:



To Drill or not to Drill?



Where do you think the lines are to be found in this empty kitchen?



Actual positions of various lines!
Would you have guessed?

See what you are doing instead of drilling blind!
With the D-TECT 100, you save yourself a cold shower!

Detectable Objects

The D-TECT 100 detects practically all objects and determines the allowable drilling depth.



Plastic pipes –
World innovation!



All electric lines (with and without voltage), low voltage lines, three phase lines

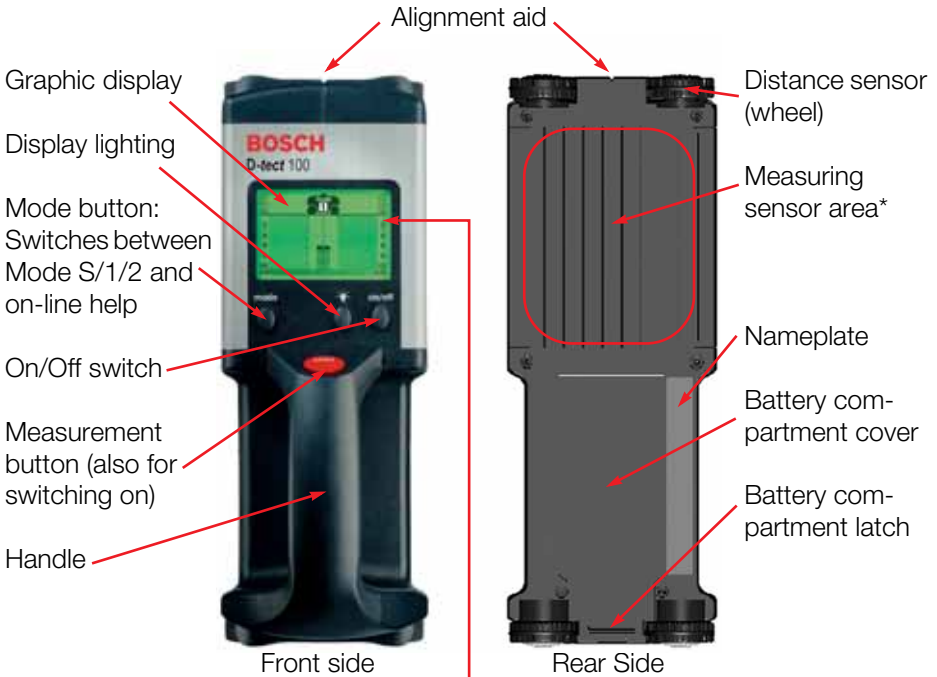


Copper, steel and aluminium pipes

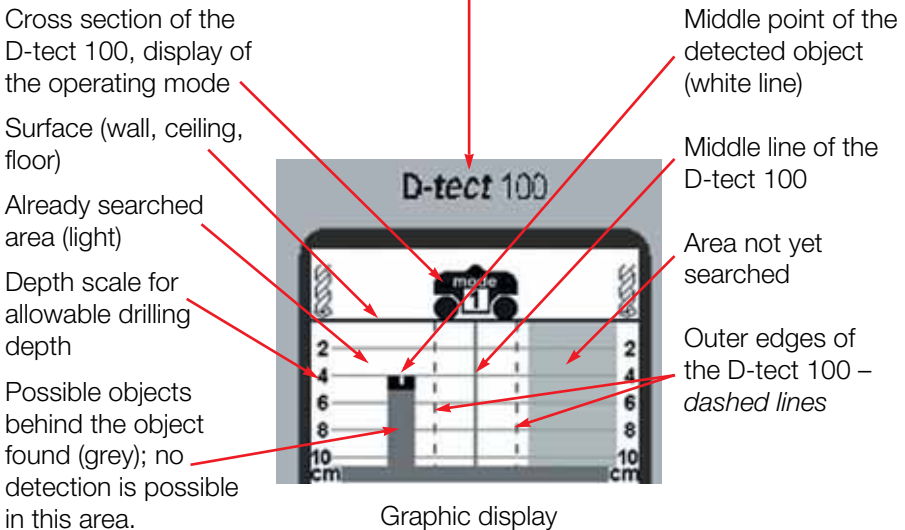


Reinforcement iron and wooden or metal studs in light construction walls and ... and ... and

Product Elements

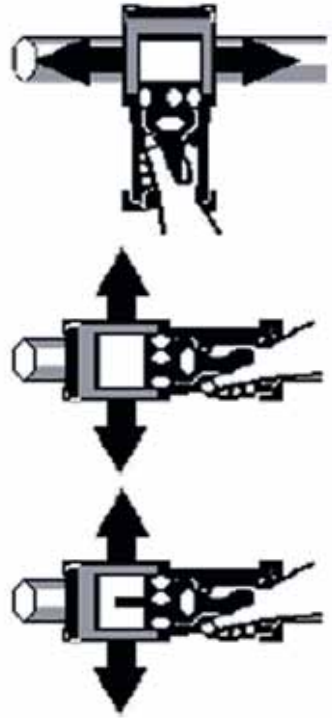


*Caution! Do not attach (company) stickers in the sensor area!



Operation

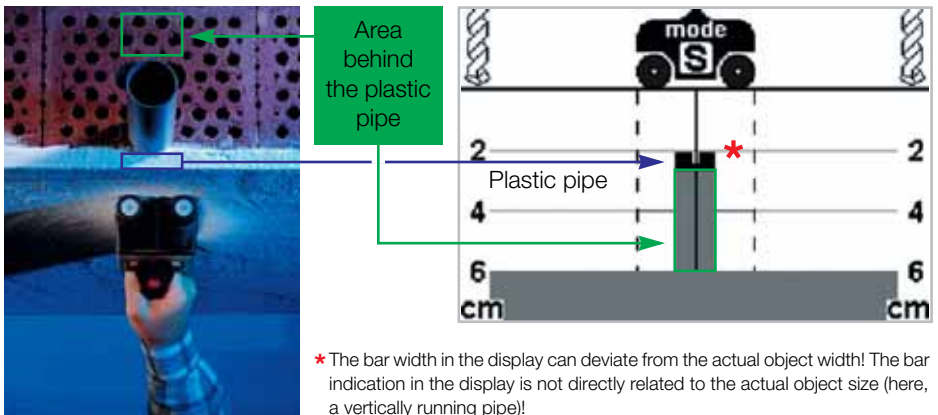
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5. Move it vertically over the area to be searched (here: display of an object).
6. To determine the exact position of the object, move the unit back without lifting it until the middle point of the object is aligned with the middle line of the D-TECT 100.



Important!

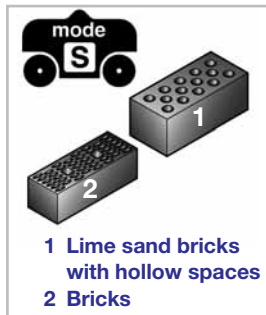
Always make two measurement (cross measurements, 90° to each other) to also be able to detect objects that run parallel to the direction of movement!

Actual plastic pipe and how it is indicated on the display:



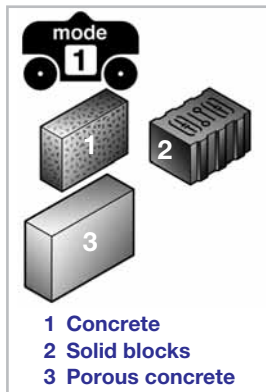
Mode Button: Functions

Which mode for which application?



Mode S: Suitable for lime sand bricks, bricks with hollow spaces, building bricks, etc.

The standard setting after switching on the unit is suitable for the most applications. Objects are displayed to a depth of **6 cm**. Hollow space structures in building bricks or empty plastic pipes with a diameter of less than 2.5 cm will possibly not be indicated. Switching to another mode of operation should be done only when deeper drillings must be made (Mode 1) or the wall is built up in layers or of hollow blocks (Mode 2).



Mode 1: Suitable for concrete and solid blocks

Mode 1 is suitable for measuring in homogenous wall materials. Objects are indicated to a depth of **10 cm**. For wall construction that are not homogenous, (e.g., light construction), Mode 1 would lead to confusing indication since hollow spaces are indicated.

Mode 2: Suitable for light construction scenarios and layer construction (floors, wooden ceilings, hollow blocks)

Modus 2 is suitable for measuring in materials with several layer one on the other (e.g. light construction, floors) or many hollow spaces (e.g. plasterboard, hollow blocks). Electrical lines, metal and water-filled pipes are indicated to a depth of **4 cm**. Wood is indicated in Mode 2 only.



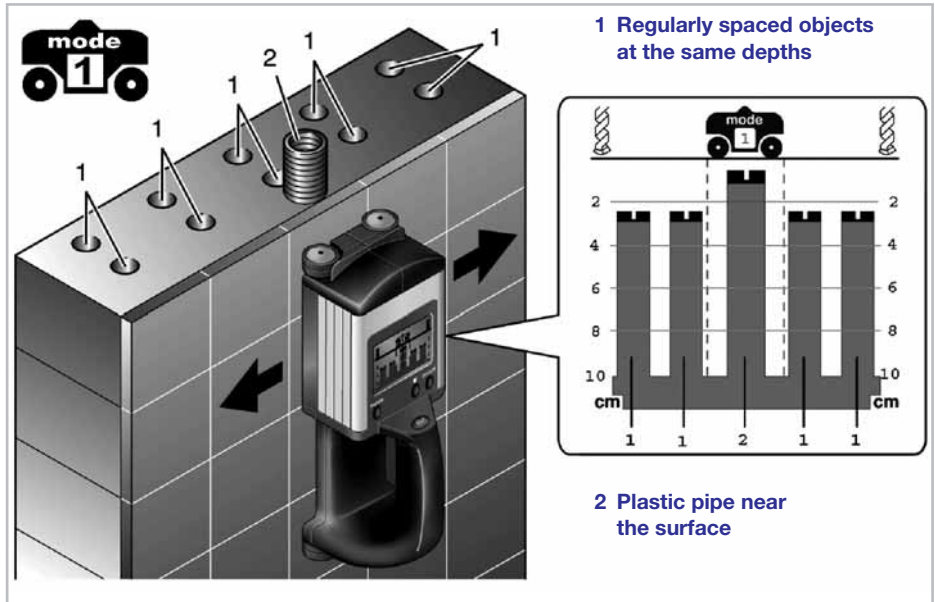
Remarks:

Hollow space are blanked out to a large extent. Before beginning the measurement or as long as the symbol "i" appears in the lower left of the display, an explanation of the functional methods of the unit can be called up by pressing the mode button (approx. 1 minute duration). By pressing the start button, the measuring can be started at any time.

Wall Scenario: Hollow Blocks

Example of a wall construction of hollow blocks:

- Building bricks with hollow spaces
- Plastic pipe
- Plaster



Indication:

For wall materials with distinct hole structures (e.g., hollow blocks), large hollow spaces are also displayed as objects in **Mode 1**. In the display, four regularly spaced objects are indicated with a possible drilling depth of approx. 2.5 cm as well as an object directly below the surface. It can be concluded from the regularity of the deeper objects that a hole structure is present.

Tip:

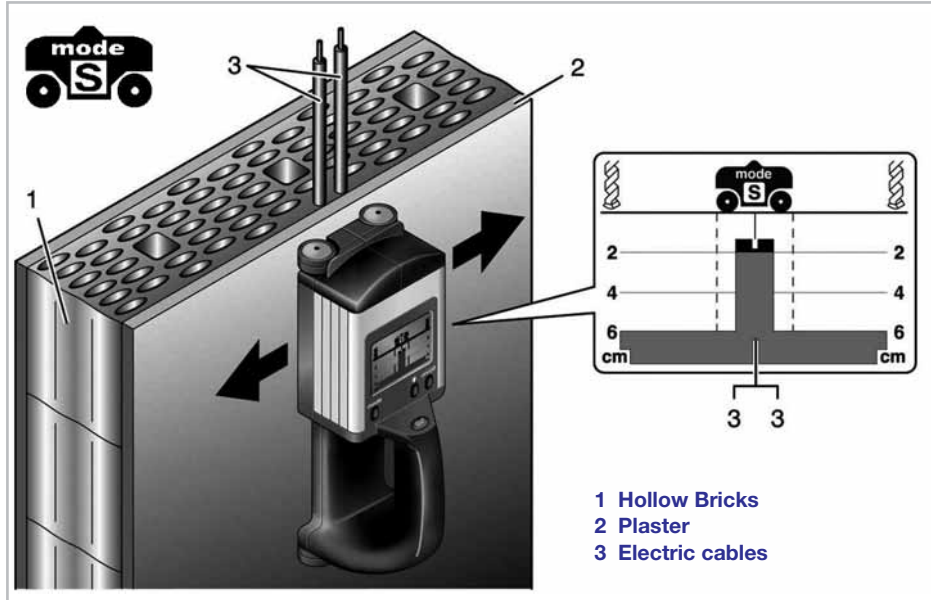
In this case, use **Mode S** since the small hollow spaces will be blanked out. Switching to **Mode 2** is possible to blank out large hollow spaces.

Hollow spaces can be distinguished from objects by making three offset measurements. As a result of the staggered laying of the bricks, the associated hollow spaces will also be displayed staggered. Only the vertically running line will be shown at the same position in all measurements.

Wall Scenario: Objects Lying Close Together

Example of a wall construction with hollow bricks:

- Building bricks with hollow spaces
- Two very closely laid lines under the plaster
- Plaster



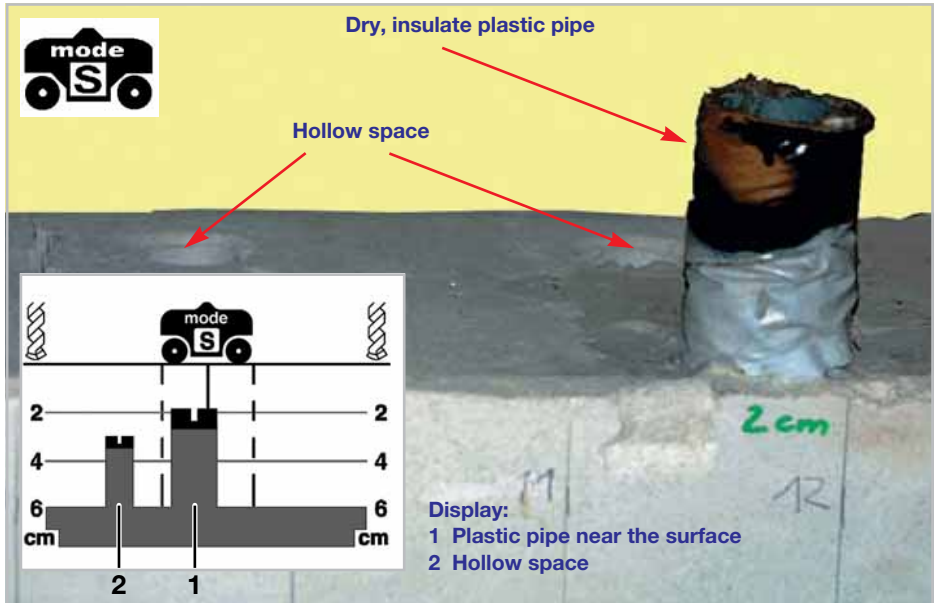
Indication:

Since the spacing of the two lines is less than 40 mm, the lines will be indicated in the display as **one** object. As a result of the closeness of the two objects and the associated danger, the D-TECT 100 gives no drilling recommendation between the two lines.

Wall Scenario: Limestone bricks

Example of a wall construction of hollow limestone bricks:

- Building bricks with hollow spaces
- Plastic pipe (empty and dry)
- Plaster



Remark:

The D-tect 100 gives an allowable drilling depth only to the first object – **here the plastic pipe**.

Indication:

In **Mode S** or **1**, the plastic pipe and the hole structure are indicated. Distinguishing of the plastic pipe is possible by the deviation from the regularity of the hollow space structure or by offset measurements (**see Page 11**).

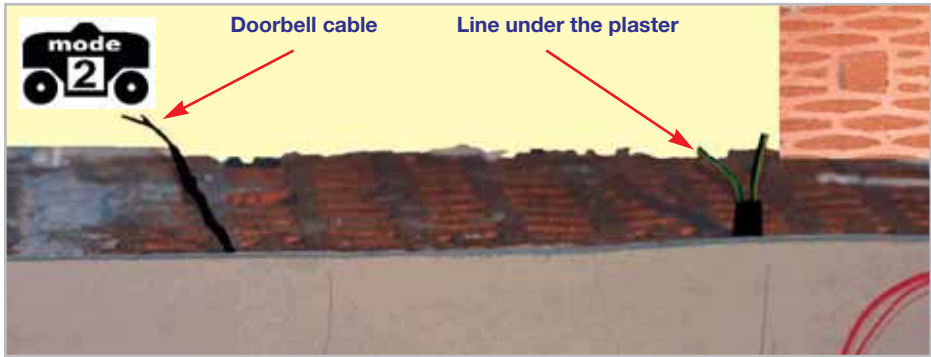
In **Mode 2**, the hollow spaces or the empty plastic pipes would be blanked out up to a diameter of approx. 40 mm. However, if the pipe is damp or water-filled, it will be indicated in **Mode 2** also for a diameter of **less than 40 mm**.

Wall Scenario: Layered Construction

Example of a wall construction with hollow bricks:

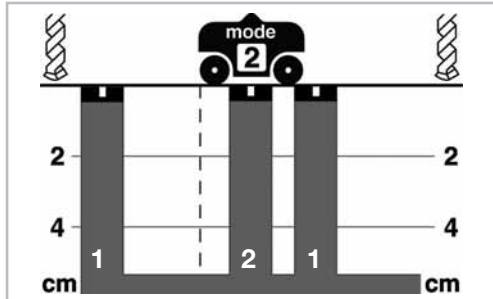
- Building bricks
- Lines under the plaster (doorbell cable on the left)
- Plasterboard attached with individual glued points

For such scenarios with boundary layers and enclosed air spaces (**here, transition plasterboard – air – brick wall**), **Mode 2** should be used.



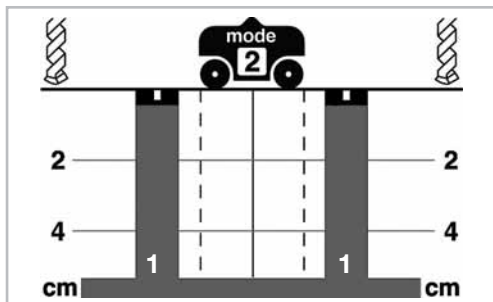
Display indication in Mode 2:

- 1 Doorbell cable and line under plaster
- 2 Glue point of the plasterboard (plaster patch; not shown)



Remark:

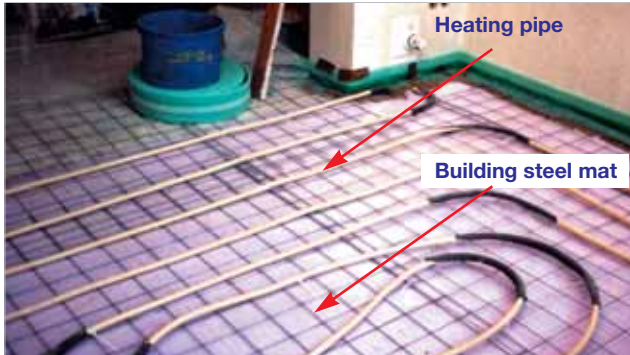
If the same measurement is made again a few **cm lower**, the glue point disappears and only the two cables are indicated.



Floor Scenario: Floor heating 1

Example of the construction of a floor heater:

- Insulation material
- Building steel mat
- Heating pipes of copper or plastic
- Poured flooring and floor tiles



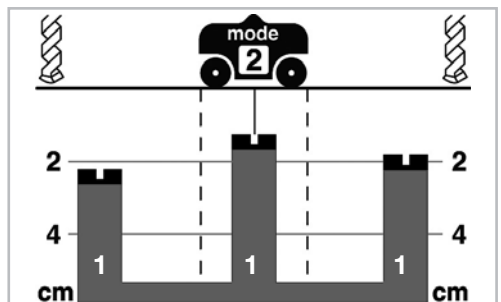
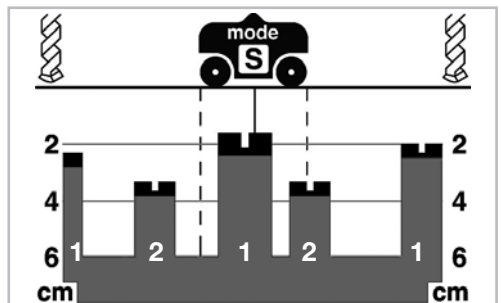
Display indication in Mode S and 2:

- 1 Heating pipe
- 2 Building steel mat

Indication:

The D-TECT 100 shows the building steel mat as a regularly reoccurring structure with a possible drilling depth of 3 cm. The higher lying heating pipe (**possible drilling depth 1.5 cm**) stands out.

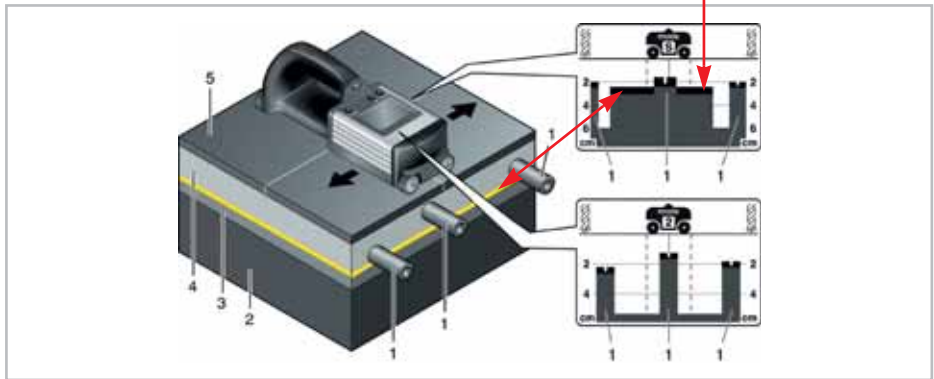
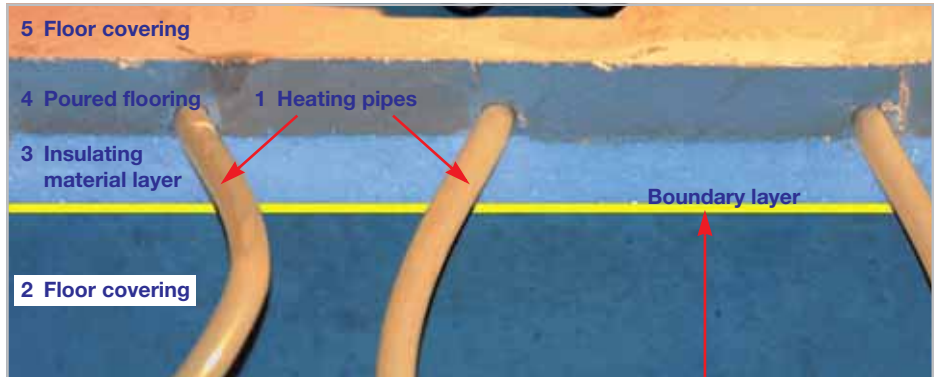
If a thin poured floor or a light construction steel mat is used over the heating pipes instead of the heavy building steel mat placed underneath the heating pipes, the D-TECT 100 can still detect the water pipes lying underneath as a rule.



Floor Scenario: Floor heating 2

Example of the construction of a floor heater:

- Concrete
- Insulation material
- Heating pipes of plastic
- Poured flooring



Display indication in Mode S:

For the examination of this multi-layer construction in the standard setting, the first poured floor – insulation boundary layer will be indicated as a flat object. The heating pipes are detectable since they are somewhat higher.

Display indication in Mode 2:

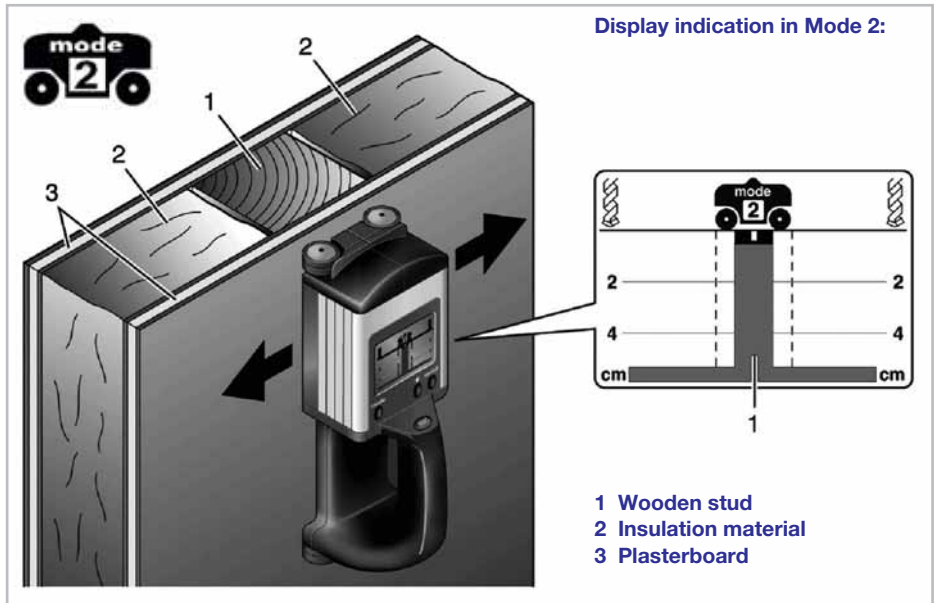
More distinct is the display of this layered construction in Mode 2. The D-TECT 100 located the water pipes and blanks out the boundary layer. This leads to a clear indication.

Wall Scenario: Light Construction Walls

Example of wall construction with wooden or metal studs:

- Plasterboard
- Space filled with insulation
- Supporting structure, here a wooden stud

For light constructed walls, always use **Mode 2** to blank out the hollow spaces/insulation material.



Remark:

In light construction walls, the studs must be located. The supporting structure can be distinguished from the lines, for example, by the regular spacing of the studs or by their width in relation to the lines.

Note to the display indication:

In the display, only the wooden stud is indicated and the hollow space/insulation material is blanked out. The middle of the wooden stud is indicated precisely, however, the stud width in the display can deviate from the actual object width for wood. For metal studs, the width is indicated exactly.

Questions and Answers

General Functions and Data

How does the D-TECT 100 function?

The D-TECT 100 functions according to a new capacitive principle developed by Bosch with a high frequency electromagnetic field. With a frequency in the gigahertz range, high sensitivity is achieved so that even empty plastic pipes or hollow spaces in walls can be detected. By moving over enclosures in the wall with different electrical characteristics, the field strength changes which is evaluated in conjunction with the movement of the unit by a micro-processor.

High frequency electromagnetic field – in which frequency range?

The working frequency of the sensor is approx. 2.5 GHz, i.e., in the same order of magnitude as mobile telephones.

What examples are there for electric fields?

Between two electrodes to which a voltage is applied, an electrical field is formed (condenser). Coating thickness measuring instruments frequently work with electrical fields.

Is a magnetic field generated during a measuring procedure?

During the build-up and collapse of the electrical field, current flows which will generate a magnetic field, however, this field is not used for measuring.

Where is the measuring surface?

Where exactly does the measuring take place?

If one turns the unit over, a ribbed area can be seen. This is the sensor area (see operating instructions).

How hard must the D-TECT 100 be pressed against the wall when measuring?

Important is a uniform distance of the sensor to the wall during the procedure. Therefore, the measurement should be performed with a moderate, uniform application pressure that provides slip-page-free contact of the wheels which ensures correct path measurement.

Must the direction of movement be defined before the measurement?

No. Simply place the unit on the wall and begin moving.

What is with objects that run in the direction of movement?

The D-TECT 100 locates objects that are perpendicular to the direction of movement. Objects that are parallel to the direction of movement cannot be detected. Therefore, a cross measurement must be made, i.e., a horizontal and a vertical measurement must be made.

Questions and Answers

General Functions and Data

How long is the measuring length?

Unlimited. However, the unit stores the data of only the last three meters.

What is the minimum distance between two objects? Does the unit also function at distances that are less than 2.5 cm?

The D-TECT 100 can display separately objects near the surface that are up to 40 mm apart. At increasing depths, this value increases depending on the wall material and the type of object in a manner still to be determined.

What safety margin is added to the indicated drilling depth (between object and indicated drilling depth)?

Safety margin: 1–2 cm. In addition, the tolerance of the unit of ± 5 mm (in concrete) must be considered.

Does the D-TECT 100 show the width or the spacing between the objects? Is the width on the display identical with the actual width? For example, is the thickness of reinforcement steel indicated?

The D-TECT 100 indicates primarily the middle of a objects. The bar width corresponds to the object width only for metallic objects (with a diameter of more than 4 cm). A safety margin to the left and right is included that may not be adequate for larger non-metallic objects (diameter greater than 5 cm), however.

Is the actual width of metal studs indicated?

Yes, for metal studs, the exact width is indicated.

Can the D-TECT 100 also be used for locating heating pipes in floors and walls?

Conditionally yes. The electro-magnetic field of the D-TECT 100 is strongly influenced by the various layers of material such as concrete, Styrofoam, poured flooring, etc. and their different physical densities. Heating pipes can therefore not be clearly identified in some cases. The same applies for heating coils and grills located near the surface and next to each other in walls. Also see information regarding the minimum spacing of objects next to each other and “Special Measuring Cases” in the operating instructions.

Is locating possible also through tiles?

The D-TECT 100 works flawlessly also for tiles with reddish ceramic backing containing iron oxide as opposed to other presently available detectors. However, it must be observed that, for thick bed laying, enclosed air behind the tiles can appear as objects.

Questions and Answers

General Functions and Data

What happens with bricks, porous concrete, hollow brick, sandstone (approx. 70 % of the applications)?

Generally for wall materials with pronounced hole structure (e.g., hollow bricks), holes are displayed as objects and, in some cases, makes the distinguishing of relevant objects from non-relevant holes difficult. However, as a result of their regularity and uniformity of depth, the holes are as a rule easily distinguishable from the enclosed objects that do not fit in the pattern. For small hollow spaces, the use of Mode S is recommended; for larger hollow spaces, Mode 2.

What happens with metal walls?

Metal surfaces are indicated as large, continuous objects behind which no further objects can be detected. Caution: As a result of the application of wood panels, the metal can be indicated at a depth that is too large.

How are metal grills indicated?

How is a close-meshed steel grill/expanded metal indicated?

Depending on the size of the mesh, either a continuous signal is indicated (close-meshed grill) or individual, regular signals at the same depth. A very thin wire grill is sometimes blanked out and is not indicated (rare).

How does the D-TECT 100 react to moisture?

The D-TECT 100 responds to water. Moist locations that stand out from dry surroundings are therefore indicated as objects. Large moist areas (fresh concrete) make the detection of enclosed objects considerably more difficult.

How dry must a wall be for reliable detection?

Specifying a limiting value of moisture content for reliable detection is not possible and also not helpful since it cannot be measured by the user. Recommended is a plausibility check at a position with a known object.

How wet must a plastic pipe be so that it is detected?

Starting with approx. 3.5 cm diameter, empty plastic pipes are detected. If the interior of the plastic pipes are moist or coated with a rust film, smaller pipes can also be detected. However, 6 mm hoses filled with water are no longer found.

Questions and Answers

General Functions and Data

How can an uneven surface be examined?

With the use of cardboard, for example. Care must be taken that no air gap exists and a certain pressure must be exerted on the cardboard. The thickness of the cardboard must be deducted from the reliable drilling depth before drilling.

Can the D-tect 100 detect behind mirrors?

No! As a result of their metal coating, mirrors are themselves wide objects behind which no further objects can be detected.

How does one mark an allowed drilling point?

By the intersection of two lines that were determined by cross measurements.

Can the D-tect 100 also be used outdoors in rain?

Water has a basic effect on the Sensor. Therefore, direct rainfall on the unit or the area to be examined must be avoided for correct operation of the D-tect 100. The unit itself is not affected by rain (IP 54).

Does the D-tect 100 react to temperature variations? Do problems occur when the D-tect 100 is left in a vehicle over night (moist and cold)?

The allowable temperature range is specified in the operating instructions. Small sensitivity changes as a result of temperature can lead to differences in the indication for border-line case with weak or deep-lying objects.

Can dowel plugs that are under the surface be detected? Can objects that are in the form of a point be detected (reinforcement iron aligned in the measuring direction, screws, clinker anchors)?

Dowel plugs (although fairly large and of metal) are found only when the dowel is acquired exactly in the middle of the sensor area of the D-tect 100. The same applies also for screws, nails, etc. Point-shaped objects smaller than 2.5 cm will not be found.

How is a slanted object detected/indicated?

The intersection point of the object and unit is indicated. A bar appears at the corresponding depth.

Does the unit function in old buildings?

Yes, however basic knowledge of the building materials used and building structures are important (e.g., walled-up open timber construction with expanded metal under the timbers). Use Mode S or Mode 2.

Questions and Answers

General Functions and Data

Will wooden beams or wooden constructions in general be found.? Can the D-TECT 100 find wood behind wood, for example, for flat roof renovation or beam searches?

Wooden beams can be found only in Mode 2 and only when the unit does not move across a strong object such as, for example, an aluminium beam. The unit adapts itself to the wall and “weaker” objects are classified as “not so important” and retreat into the background. With this technique, holes in porous concrete or enclosed air behind plasterboard walls are effectively filtered out. For wooden panelling up to 20 mm thickness, the underlying construction can be easily found in Mode 2 as a rule. For thicker panelling, it can happen that the wooden beams no longer stand out to an adequate degree so that they can be indicated.

Is the middle of wooden beams exactly indicated?

Yes, the middle is indicated but not the width. The width on the display does not correspond to the actual width of the wooden beam.

How does the D-TECT 100 react for half-timber construction (wood in masonry)? Will a slanting beam in an old building be found?

Whether the beam is slanting or vertical is of no consequence. Wooden beams are found primarily in Mode 2. However, if the surroundings of the wooden beam

are physically similar to wood, the beam cannot be found. In this case, only trial and error helps.

What is the service life of the batteries, with and without backlighting?

The service life of the batteries is approx. 13 hours of continuous operation for the recommended alkali-manganese cells. The use of commercially available rechargeable batteries (NiCd, NiMH) is possible but therefore not necessary. With the backlighting switched on, the current consumption is increased by approx. 7 %.

Does the D-TECT 100 switch itself off automatically when accidentally dropped?

Automatic switch off takes place after 5 minutes without activity. When dropped or subjected to impact, the battery supply can be briefly interrupted by breaking of contact and the unit is thereby switched off.

For an unexpected indication, how can I help myself find the correct interpretation?

The unit requires some experience and practice for the complete utilisation of its performance capabilities, especially for complex applications. It is important to make several offset measuring passes to verify and follow the path of a found object.

Questions and Answers

Can the D-TECT 100 differentiate between the materials of found objects?

For reasons of safety, all detected objects that could be dangerous for drilling are indicated without variation. Basically, distinguishing between the various materials of the objects is not possible.

Material Differentiation and Voltage Indication

Can the D-TECT 100 indicate the material of found objects or the voltage encountered?

The D-TECT 100 was developed to give drilling the highest possible degree of safety. As a result of the principle involved, it cannot distinguish between materials. It always indicated the allowed drilling depth, also for previously non-detectable objects such as plastic pipes and lines without voltage as well as three-phase and low-voltage lines.

This is unique world-wide.

Can voltage-carrying lines be separately recognised? Can the D-TECT 100 differentiate between current sources?

No, it cannot indicate whether a line is under voltage. As opposed to the conventional metal search equipment, however, the D-TECT 100 detects lines that are not voltage-carrying with the same reliability as those that are voltage-carrying.

Can the D-TECT 100 be used as a line search unit?

With several offset measuring passes, the path of a line can be followed.

Can the D-TECT 100 detect fibre-optics cables?

When the fibre-optics cable is laid in a pipe, it can be indirectly detected via the pipe.

Can empty plastic pipes without cables also be found?

Yes, as long as they are surrounded by solid material (stone, plaster, concrete), they will be detected as hollow space.

What happens with large hollow spaces? How does the D-TECT 100 react to brick walls (with mortar or bottle filled chambers) from the 1960s? Which mode must be selected?

Fundamentally, wall materials with distinct hole structures (e.g., bricks with holes) and also other holes can be indicated on the display as objects. By means of the regularity and uniform depth, the hole structures are distinguishable from lines, pipes, etc. With the standard Mode S (6 cm measuring depth) or Mode 2 (4 cm measuring depth), deep lying hole structures will not be indicated.

Questions and Answers

Can plastered over wall sockets/distribution boxes and their hollow space be found?

Yes, as long as the socket clearly stand out from the surrounding material. Critical: porous concrete or other materials containing large amounts of air.

What happens with cold water pipes that have no insulation?

The temperature of the pipes or their contents have no influence. Cold water pipes without insulation in light construction walls can be covered with condense water in humid weather but an influence on the locating is not to be expected. Frozen water cannot be detected.

Mode Switching

How do the modes function? When must which mode be selected? Why is there not only a single mode?

The very different wall materials and structures make an adapted evaluation of the measured data unavoidable. With an manageable number of mode settings, the sensor function that is always the same is evaluated differently and displayed.

Where is the operating mode indicated?

On the display at the top in the D-tect unit symbol as "S", "1" or "2".

Why is the unit in the Mode S after it is switched on?

This setting is suitable for the most frequently occurring wall construction such as limestone, bricks with holes, blocks with hollow spaces, building bricks, etc. The typical wall installations (lines, pipes, etc.) are located in a depth zone of up to 6 cm which can be reliably detected in the Modus S.

Why are the sensitivity and the depth scale changed at the same time?

The more sensitive that the unit measures, the farther the range and therefore the more quickly small non-homogeneous spots in the wall such as air holes are detected.

When does it make sense to use Mode 1?

Only when drillings deeper than 6 cm must be made and the wall is homogeneous. Small air holes and small empty plastic pipes are detected better in Mode 1 as in Mode 2.

Which mode should be selected for porous concrete?

Normally, the standard mode. However, since this is a homogeneous material, Mode 1 can also be selected when drillings of up to 10 cm must be made.

Questions and Answers

Radiation, Malfunctions, Safety

Safety – notice of interference radiation – is the unit dangerous?

The unit is not dangerous. As is the case for all measuring instruments, e.g., laser distance measuring instruments, it is subject to the relevant EMV standards and complies with the limiting values contained therein.

Can the D-tect 100 be influenced by a heart pacemaker or conversely?

The mutual influencing of a heart pacemaker and the D-tect 100 can be excluded when compliance with the relevant EMV standards are maintained.

Will an mobile telephone have an influence on the D-tect 100 or conversely?

Mobile telephones with their radiated power are a potential source of interference for the D-tect 100. As a result of the intermittent transmissions of the mobile telephones, the D-tect 100 finds adequate time between the individual transmission sequences to make measurements without interference. However, an accumulation of mobile telephones in active use can lead to the degradation of the detection function of the D-tect 100 and to a corresponding error message on the display. Conversely, an influence of the D-tect 100 on mobile telephones is with compliance with the EMV standard practically excluded.

Does the radiation of the D-tect 100 form a closed field?

The D-tect 100 does not transmit radiation. The sensor produces an electrical field with closed field lines.

Service, Advice, Support

Which error message appears for a defect?

There is no definite error message for a defect of the unit!

BOSCH
Ideas that work.



**SEE WHAT YOU ARE
DOING INSTEAD OF
DRILLING BLIND**



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