

IMPORTANT:
Read Before Using

IMPORTANT :
Lire avant usage

IMPORTANTE:
Leer antes de usar



Operating/Safety Instructions

Consignes de fonctionnement/sécurité

Instrucciones de funcionamiento y seguridad

GMS 120



BOSCH

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& Service Locations

Pour obtenir des informations
et les adresses de nos centres
de service après-vente,
appelez ce numéro gratuit

Llame gratis para
obtener información
para el consumidor y
ubicaciones de servicio

For English Version
See page 5

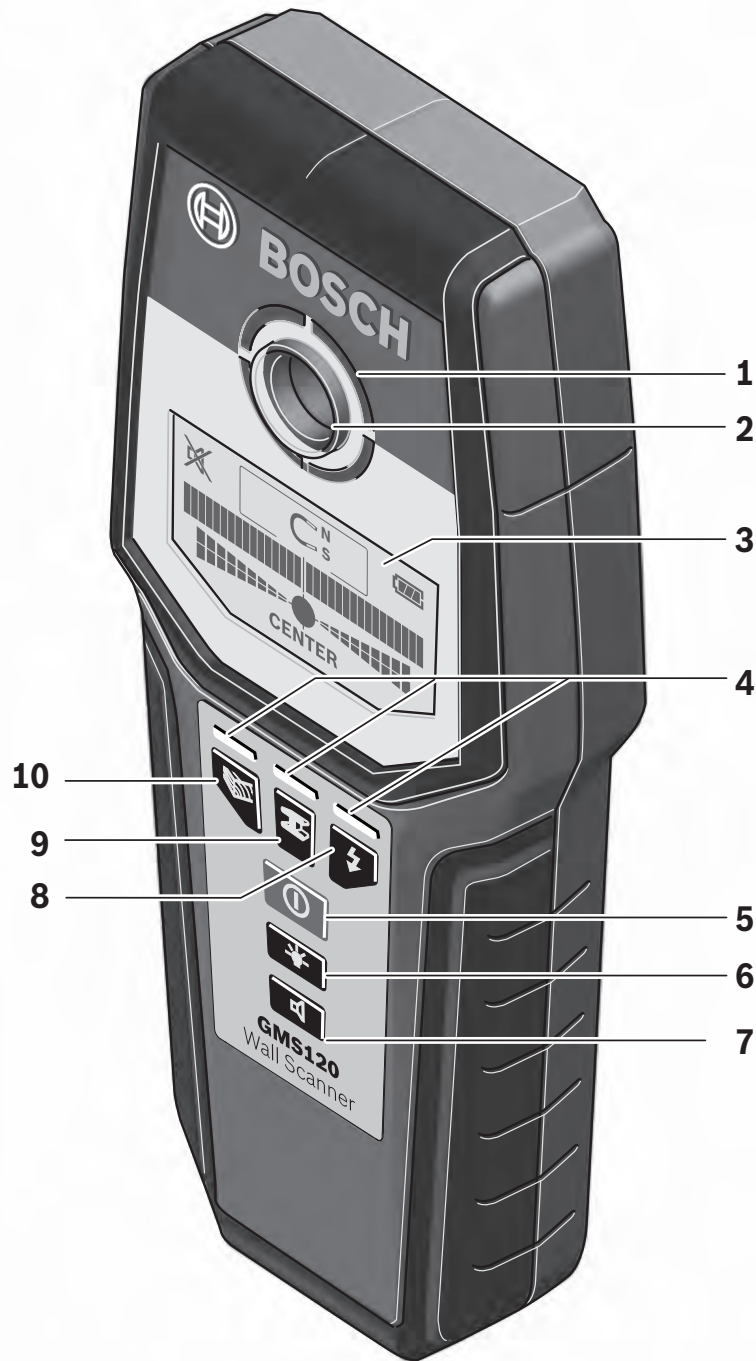


FIG. 1

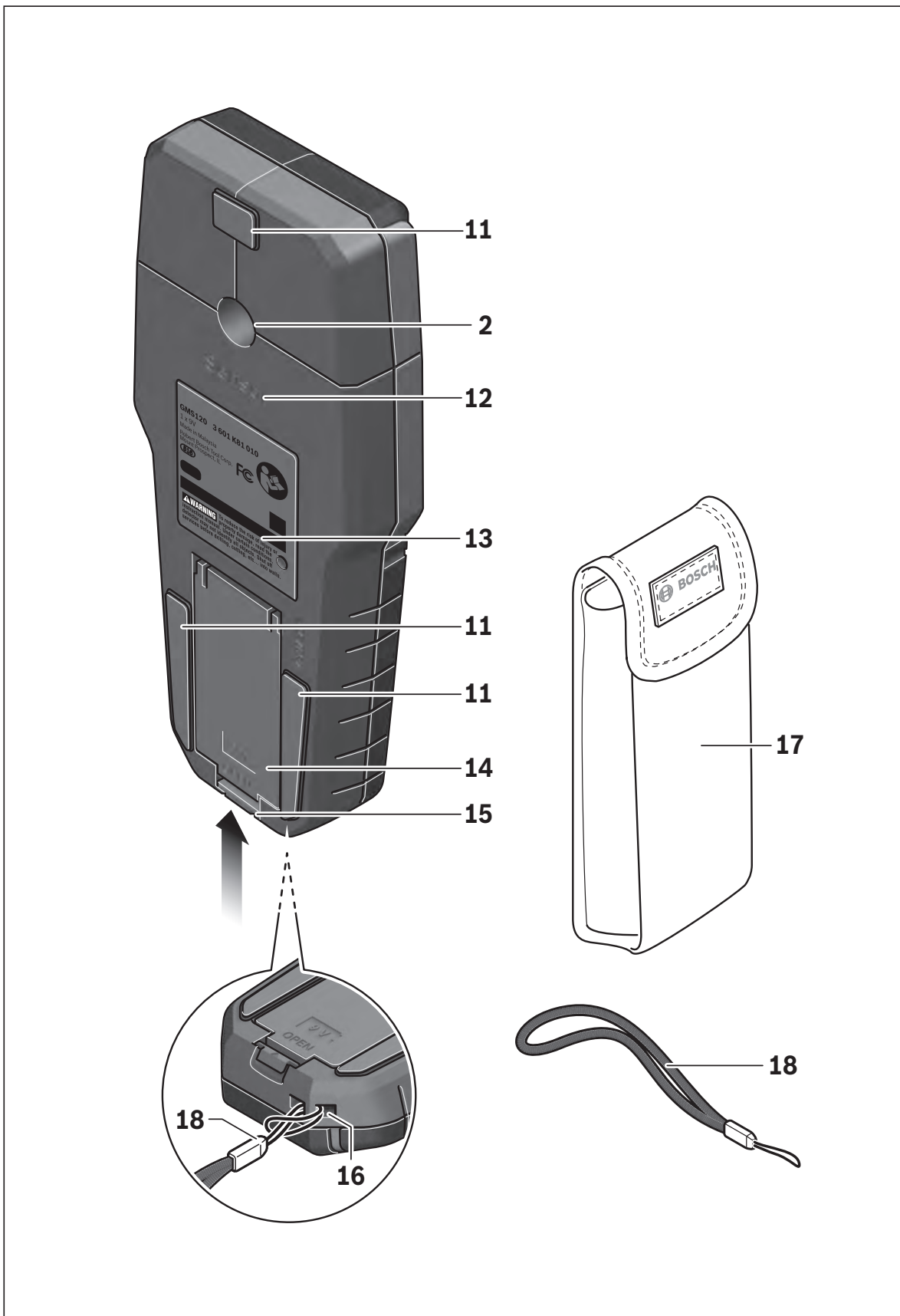
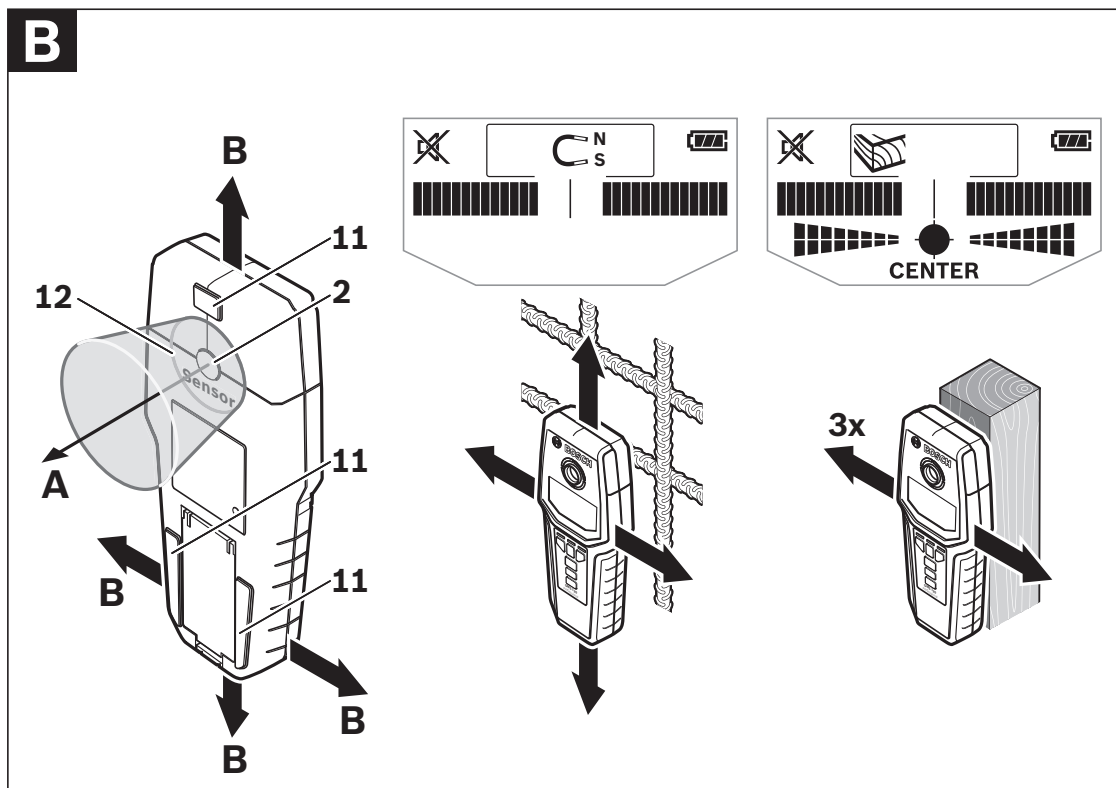
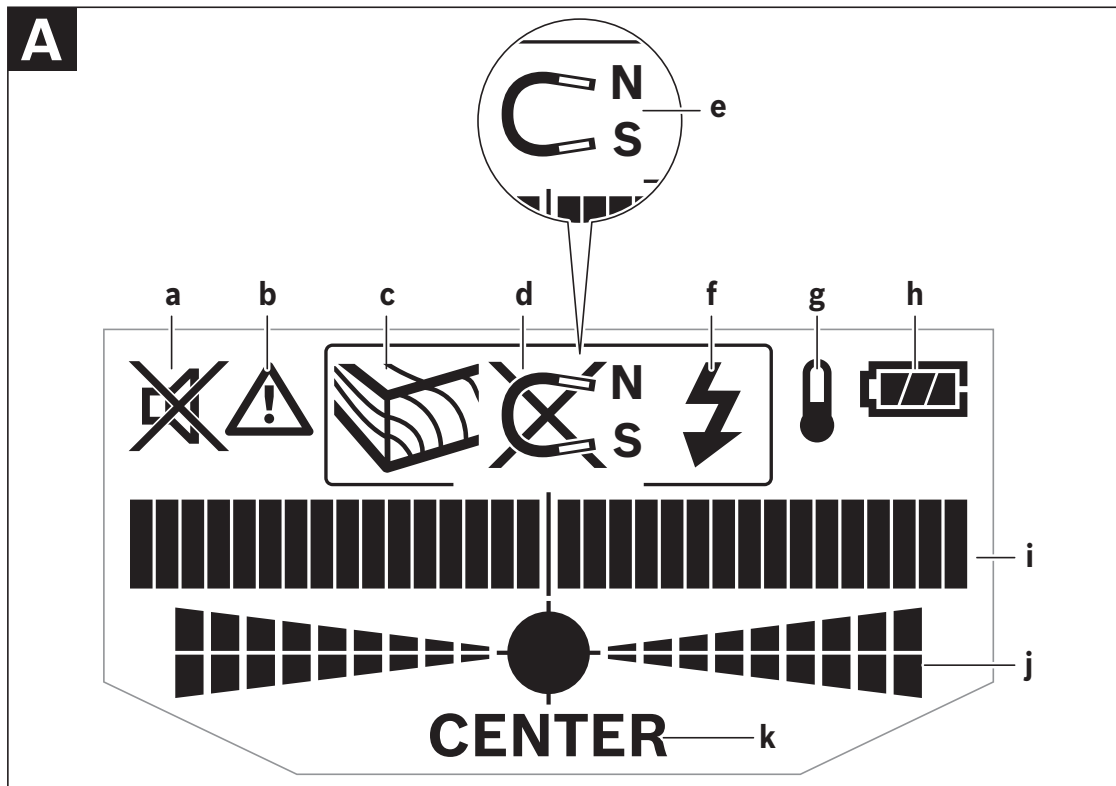


FIG. 2



Safety Rules for Detector



WARNING Read all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.


SAVE THESE INSTRUCTIONS

The detector's ability to detect objects is affected by the proximity of other equipment that produce strong magnetic or electromagnetic fields, and by moisture, metallic building materials, foil-laminated insulation materials and/or conductive wallpaper.

The detector's ability to detect wood substructures (studs) is also affected by inconsistency on the thickness of the surface material, such as plaster and lath.

It is possible that there may be metal, wood or wiring or something else, such as plastic pipes, beneath the scanned surface that is not detected.



WARNING The detector alone should not be relied on exclusively to locate items below the scanned surface. The  on display may also represent water-filled plastic pipes. Use other information sources to help locate items before penetrating the surface. Such additional sources include construction plans, visible points of entry of pipes and wiring into walls, such as in a basement, and standard 16" and 24" stud spacing practices.



WARNING Before penetrating a surface (such as with a drill, router, saw or nail), always shut off the electrical power, gas and water supplies. Cutting, drilling, etc... into these items when operational can result in personal injury.

Functional Description

Optimal operation of the detector is possible only when the operating instructions and information are read completely, and the instructions contained therein are strictly followed.

SAVE THESE INSTRUCTIONS

INTENDED USE

The detector is intended for the detection of metals (ferrous and non-ferrous metals, such as pipes, metal studs and rebar), wood studs and joists, and "live" wires/conductors in walls, ceilings and floors.

PRODUCT FEATURES

The numbering of the product features shown refers to the illustration of the detector on the graphic page 2.

- 1 Illuminated ring
- 2 Marking opening
- 3 Display
- 4 Operating mode indication
- 5 On/Off button
- 6 Display-illumination button
- 7 Audio signal button
- 8 "Live" wire detection mode button
- 9 Metal detection mode button
- 10 Wood and metal detection mode
- 11 Contact pads

- 12 Sensor area
- 13 Name plate
- 14 Battery lid
- 15 Latch of battery Lid
- 16 Fixture for carrying strap
- 17 Protective pouch
- 18 Carrying strap

DISPLAY ELEMENTS

- a Switched-off audio signal indicator
- b Warning function indicator
- c Non-metal object indicator i.e. wood or water-filled plastic pipes
- d Non-magnetic metal indicator
- e Magnetic metal indicator
- f "Live" wire indicator
- g Temperature warning indicator
- h Battery indicator
- i Main detection indicator
- j Fine scale indicator
- k CENTER indicator

Technical Data

Wall Scanner GMS 120

Article number

3 601 K81 010

Maximum scanning depth*:

Ferrous metals

4-3/4" / 121 mm

Non-ferrous metals (copper)

3-1/8" / 80 mm

Live wires 110V / 230V (voltage applied)*

2" / 50 mm

Wood substructures (studs)

1-1/2" / 38 mm

Automatic switch-off

After approx. 5 min

Operating temperature

14 °F ~ 122 °F

(-10 °C ~ +50 °C)

Storage temperature

- 4 °F ~ +158 °F

(-20 °C ~ +70 °C)

Battery

1 x (9V) (6LR61)

Operating lifetime (alkali-manganese batteries)

Approx. 5 h

Weight according to EPTA-Procedure 01/2003

0.60 lbs / 0.27 kg

* Depends on material and size of objects as well as material and condition of structure.

** Less scanning depth for wires/conductors that are not "live".

Please observe the article number on the type plate of your detector.





Preparation

INSERTING/REPLACING THE BATTERY

Use only alkali-manganese batteries.

To open the battery lid **14**, press the latch **15** in the direction of the arrow and fold up the battery lid. Insert the supplied battery. Pay attention that the polarity is correct, according to the + and - symbols on the inside of the battery lid.

The battery indicator **h** always indicates the current battery status:

-  Battery fully charged
-  Battery has 2/3 of its capacity or less
-  Battery has 1/3 of its capacity or less
-  Please change battery

• **If the tool is not used for a long period of time, the battery must be removed.** The battery can corrode or discharge itself over long periods.

Operation

INITIAL OPERATION

- **Protect the tool against moisture and direct sunlight.**
- **Do not expose the tool to extreme temperatures or variations in temperature. In case of large variations in temperature, allow the measuring tool to adjust to the ambient temperature before switching it on.** Extreme and variations in temperature can impair the display and accuracy of the tool.
- **Use operation of transmitting systems,**

such as WLAN, UMTS, radar, transmitter masts or microwaves, in the close proximity can influence the measuring function.

RECOMMENDATIONS FOR PROPER SCANNING

Avoid wearing jewelry such as rings or watches when using the detector. The metal may cause inaccurate detection.

- Move the detector uniformly the surface without lifting it off or changing the applied pressure.

- During the scan, all three of contact pads **11** must always have contact with the surface.
- Make sure that your fingers of the hand holding the detector do not touch the surface being scanned, which could interfere with the tool's ability to effectively detect items below the surface.
- Do not touch the surface being scanned with your other hand or any other part of part of your body, because the moisture may affect the scanning.
- Always measure SLOWLY to achieve maximum sensitivity.

DETECTION THROUGH SPECIAL SURFACE MATERIALS

Lath and Plaster

Because of the uneven thickness of the plaster, it is difficult to detect wood studs using the wood detection mode. It will probably be easier to locate the studs by changing to the metal-detection mode to locate the nails that hold the lath to the studs.

Textured or Acoustic Walls and Ceilings

When scanning a wall or ceiling with an uneven surface, place thin cardboard on the surface to be scanned and scan over the cardboard. In wood-detection mode, calibrate with cardboard in place.

Wood Flooring, Wood Subflooring and Drywall Over Plywood Sheathing

Because of the thickness of these materials, it is difficult to detect wood joists or studs using the wood-detection mode. It will probably be easier to locate these items by changing to the metal-detection mode to locate the nails that hold the materials to the joists or studs.

Carpeting

The GMS 120 cannot detect wood studs and joists through carpeting. It might be possible to use the metal-detection mode to locate nails or screws that were used to attach the wood floor to the joist.

MARKING OBJECTS

Detected objects can be marked as required. Once you have found the limits or the center of an object, simply mark the sought after location through the marking opening **2**. It is a good idea to establish a consistent practice of making one type of mark over places in which you **do not** want to penetrate (drill, nail, cut), such as O, and a different symbol over places in which you do want to penetrate, such as an X.

Switching On and Off

Before switching the detector on, make sure that the sensor area 12 is not moist. If required, wipe the detector dry using a cloth.

If the detector is subject to an extreme temperature change, allow it to adjust to the ambient temperature before switching it on.

To switch the tool on/off press the on/off button **5**.

- If none of the buttons are pressed for approx. 5 minutes, the tool switches off automatically in order to extend the service life of the battery.

Switching the Display Illumination On/Off

The display illumination can be switched on/off with the display illumination button **6**.

Switching the Audio Signal On/Off

The audio signal can be switched on/off with the audio signal button **7**. When the audio signal is switched off, indication **a** appears on the display.

OPERATION METHOD (see figures A - B)

The tool checks the surface of sensor area **12** in measurement direction **A** to the max. detection depth (see "Technical Data").

Always move the tool in a straight line over the surface applying slight pressure, without lifting it off or changing the pressure. During the scan, the contact pads **11** must always have contact with the surface.

Detecting Procedure

Position the detector on the surface, and move it in direction **B**.

When the detector comes closer to an object, then the amplitude in indicator **i** increases and ring **1** lights up orange with no tone signal; when it moves away from the object, the amplitude decreases.

At the position of maximum amplitude, the object is located approximately below the center of the sensor. Illuminated ring **1** becomes red and a steady audio tone is emitted.

Note: The indications of illuminated ring **1** and amplitude indicators **i** and **j** may vary depending on other factors including width of the object below the surface, thickness of the surface materials, strong magnetic or electromagnetic fields, moisture, proximity

of metallic or electrically conductive building materials.

For more precise location of the object, move the detector repeatedly (3x) over the object. The fine scale **j** is automatically activated in all operating modes. Fine scale **j** indicates a full amplitude when the object is below the center of the sensor or when the maximum amplitude of indicator **i** is reached. In the operating modes “**Drywall**” and “**Metal**”, the indication “**CENTER**” **k** will also light up.

When an item is very small and deeply embedded, the indicator **i** reacts slightly. Also, ring **1** continues to light up orange with no sound signal. Move the detector repeatedly over the object in horizontal and vertical direction. Pay attention to the amplitude of fine scale **j** and “**CENTER**” indicator for precise detection.

If the wide object is detected with continuous high amplitude of indicators **i** and **j**, ring **1** lights up orange. The duration of the high amplitude corresponds approximately with the width of the object.




OPERATING MODES

The best results are achieved through the selection of the operating modes. The maximal detection depth for metal objects is achieved in the operating mode “**Metal**”. The maximal detection depth for “**live**” wires/ conductors is achieved in the operating mode “**live**”. The selected operating mode can be recognized at any time via the green illuminated operating mode indication **4**.


SCANNING IN WOOD-DETECTION MODE

The wood-detection mode actually detects more than just wood substructures (studs and joists). It may also detect metal and other dense materials such as water-filled pipes and plastic pipes near the back of the surface in the wall or ceiling. To help identify wood substructures, first conduct a metal scan and mark the location of any detected metal items. Then conduct a scan in the wood-detection mode. Items that are detected in the wood detection mode but not in the metal-detection mode are items that are possibly wood substructures.

In the operating mode “**Wood**” all object types are detected and indicated:

-  **Wood substructures**
-  **Magnetic metal, e.g. steel or iron**
-  **Non-magnetic metal, e.g. copper pipe**

-  “**Live**”, e.g. a “**live**” conductor

Notes: In the Non-metal object indicator i.e. wood or water-filled plastic pipes, water-filled plastic pipes may also be detected. The on  display **c** may shown on display **3**. Nails and screws on the surface may cause wood substructure to be indicated as a metal object on the display.

To Scan for Wood Objects:

- Press the wood detection mode button **10**. “**Wood**”. The operating-mode indication **4** above button **10** lights up green.
- Position the detector onto the surface to be scanned.
- Move the detector uniformly over the surface without lifting it off or changing the applied pressure. During the scan, the contact pads **11** must always have contact with the surface.
- When an object is detected, an amplitude is displayed in the main detection indicator **i**. Move the detector over the surface repeatedly to locate the object more precisely. After moving over the same area several times, the object can be indicated quite accurately: The illuminated ring **1** lights up red and a steady tone sounds as long as the detector is over the object. The main measuring indicator **i** has the greatest amplitude (as represented by the number of bars shown in the main detection indicator **i**) over the center of the object.

To detect the object more precisely, move the detector repeatedly (3x) back and forth over the object. The fine scale **j** is automatically activated in all operating modes. Fine scale **j** indicates a full amplitude when the object is below the center of the sensor or when the maximum amplitude of detection indicator **i** is reached. In the operating modes “**Wood**” and “**Metal**”, the “**CENTER**” indicator **k** lights up.

Notes:

- When display **3** indicates a continuously high amplitude of detection indicator **i** and fine scale **j**, restart the measuring procedure again by positioning the measuring tool at a different location on the surface.
- During a wood scan, metal objects may also be detected. To help distinguish between wood and metal objects, switch to metal detection mode (see “scanning in metal detection mode”). When an object

is indicated at the same location in the metal-detection mode, then it is likely a metal object, wood stud or joist with nails or screws in it. To continue searching for wood objects, switch back to the wood-detection mode.

When the detection tool cannot properly detect the surface to be scanned, please perform the following actions:

- Press and hold button **10** until the illuminated ring lights up green.
- Start a new detecting procedure by positioning the detection tool onto a different wall or surface, briefly press button **10**.
- In rare cases, the detection tool may not be able to detect the surface because the side with the sensor area **12** and the name plate **13** is dirty. Clean the detection tool with a dry, soft cloth and restart the detecting procedure.

SCANNING IN METAL-DETECTION MODE

When scanning for metal objects, press the metal detection mode button **9**. The illuminated ring **1** and indication **4** above button **9** light up green.

Position the detector then move it uniformly across the surface.

- When the detector comes close to a metal object, then the amplitude increases, as represented by the number of bars shown in the main detection indicator **i**.
- When it moves away from the object, the amplitude and number of bars shown decreases.

At the position of maximum amplitude, the metal object is located below the center of the sensor (below the marking opening **2**).

As long as the detector is above the metal object, the illuminated ring **1** lights up red and a steady tone sounds.

To detect the object more precisely, move the detector repeatedly (3x) back and forth over the object. The fine scale **j** is automatically activated in all operating modes. Fine scale **j** indicates a full amplitude when the object is below the center of the sensor or when the maximum amplitude of detection indicator **i** is reached. In the operating modes “**Wood**” and “**Metal**”, the indication “**CENTER**” **k** lights up.

Notes:

- The ability to detect nails, screws, rebar

and other metal objects is somewhat dependent on their orientation. For example, at any given depth it is easier for the unit to detect the length of a screw or nail than it is to detect the end of a screw or nail.

- When a metal item is much narrower than the **SENSOR** area, the maximum signal might be displayed when the item is just to the left and right under the center hole, especially if the item is near the surface.
- Always measure **SLOWLY** to achieve maximum accuracy and sensitivity.
- If the metal object found is a magnetic (e.g. iron or steel), then the indicator for magnetic metals **e** is displayed. For non-magnetic metals, the indicator for non-magnetic metals **d** is displayed. In order for the multi-detector to differentiate between the metal types, it must be positioned above the detected metal object and the detection must be strong enough that the illuminated ring **1** lights up red.

When scanning over steel mesh in concrete, typically (but not always) the indicator for magnetic metals **e** is displayed directly above the rebar; the indicator for non-magnetic metals **d** is displayed between the rebar's.

SCANNING FOR “LIVE” WIRES

The “**live**” wire detection mode is suitable only for detecting “**live**” conductors (110–230 V).

Press button **8** to activate the “**LIVE**” wire detection mode. The illuminated ring **1** and indication **4** above button **8** light up green.

When a “**live**” wire/conductor is detected, the indicator **f** appears on the display **3**. Move the detector over the surface repeatedly in order to localize the “**live**” wire/conductor more precisely. After moving the detector over the surface several times, “**live**” wire/conductor can be located quite precisely. If the detector is very close to the wire/conductor, the illuminated ring **1** flashes red and the signal tone sounds with a rapid tone sequence.

- “**Live**” wires/conductors are indicated in any operating mode.
- “**Live**” wires/conductors can be detected more-easily when power consumers (e.g., lamps, appliances) are connected to the wire/conductor being sought and switched on.



WARNING Under certain conditions (such as when behind metalized or conductive surfaces, shielded in metal conduit or behind surfaces with high water content/moisture), “live” wires/conductors cannot be detected with certainty. These ranges may be recognized as metal objects. The signal strength of a “live” wire/conductor depends on the position of the cable. Therefore, apply further measurements in close proximity or use other information sources to check if a “live” wire/conductor exists.

- Three-phase wiring is possibly not detected as “live” conductor.
- Wires that are not “live” may be detected as metal objects or may not be detected. This includes solid copper cables, however stranded copper cables are not detectable.
- Static electricity can lead to inaccurate detection of electrical wires, especially, over a large range. It may help to put a hand on the wall next to the detector and measure again in order to help remove the static electricity.



WARNING Detection values can be impaired through certain ambient conditions. These include, but are not limited to, the proximity of other equipment that produces strong magnetic or electromagnetic fields, moisture, metallic building materials, foil-laminated insulation materials or conductive wallpaper or tiles. Therefore, please also consult other information sources (e.g. construction plans) before drilling, sawing or routing into walls, ceilings or floors.



WARNING Before penetrating surface (such as with a drill, router, saw or nail), always shut off the electrical power, gas and water supplies. Cutting, drilling, etc. into these items when operational can result in personal injury.

Temperature Warning

The detector is equipped with a temperature warning indicator, as accurate measurements are only possible as long as the temperature within the measuring tool remains constant.

When the temperature warning indicator **g** lights up, the measuring tool is not within the operating temperature range or was subject to large variations in temperature. Switch the detector off and allow it to adjust to the ambient temperature before switching it on again.

Warning Function

When indicator **b** lights up on display **3** and indication **4** flashes above button **10**, the detection must be restarted. Remove the detector from the wall and place it on the surface at a different location.

When indicator **b** flashes on display **3**, send the detector to an authorized Bosch service center.

Maintenance and Service

RECALIBRATION

If the main detection indicator **i** continuously shows an amplitude even though there is no metal object in the vicinity of the detector, the detector can be calibrated manually:

- Switch the detector off.
- Remove all objects in the vicinity of the detector (including wrist watches or metal rings) and hold the tool up in the air. Pay attention the battery indicator **h** is at least 1/3 capacity. Hold the measuring tool so the name plate **13** faces toward the ground. Avoid bright light or direct sunlight from shining on the area **12** and **13**, without covering this area.
- Press and hold buttons **5** and **7** until the illuminated ring **1** lights up red. Then release both buttons. When the calibration process is successful, the detector will start over after a few seconds and is then ready for operation.

MAINTENANCE AND CLEANING

Check the measuring tool each time before use. In case of visible damage or loose components inside the measuring tool, safe function can no longer be ensured.

- Keep the measuring tool clean and dry at all times to ensure proper and safe working.
- Do not immerse the measuring tool in water or other fluids.
- Wipe away debris or contamination with a dry, soft cloth. Do not use cleaning agents or solvents.
- In order not to affect the detection ability of the detector, decals/stickers or name plates, especially metal ones, may not be attached in the sensor area **12** on the front or back side of the detector.
- Do not remove the contact pads **11** on the back side of the detector.
- Store and transport the detector only in the supplied protective case.
- In all correspondence and spare parts orders, please always include the 10-digit article number given on the name plate of the detector.

DISPOSAL

Tools, accessories and packaging should be sorted for environmental-friendly recycling.

FCC Part 15 Class B Registration Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC

Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- (1) Reorient or relocate the receiving antenna.
- (2) Increase the separation between the equipment and receiver.
- (3) Connect the equipment into an outlet on a circuit, different from that which the receiver is connected (if applicable).
- (4) Consult the dealer or an experienced radio/TV technician for help.

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- **First Year– OTC Warranty.** BOSCH will replace your laser or measuring tool product that has failed when used in conformance with product instructions and warnings, with a new laser or measuring tool product of comparable features, for free, any time during the first year after purchase. This warranty does not apply if your laser or measuring tool product fails solely due to the need for recalibration.
- **2- and 3-Year Exchange.** BOSCH will replace your laser or measuring tool product that has failed when used in conformance with product instructions and warnings, with a new or reconditioned laser or measuring tool product of comparable features, for an exchange cost. This warranty does not apply if your laser or measuring tool product fails solely due to the need for recalibration.

For details to make a claim under this Limited Warranty please visit

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