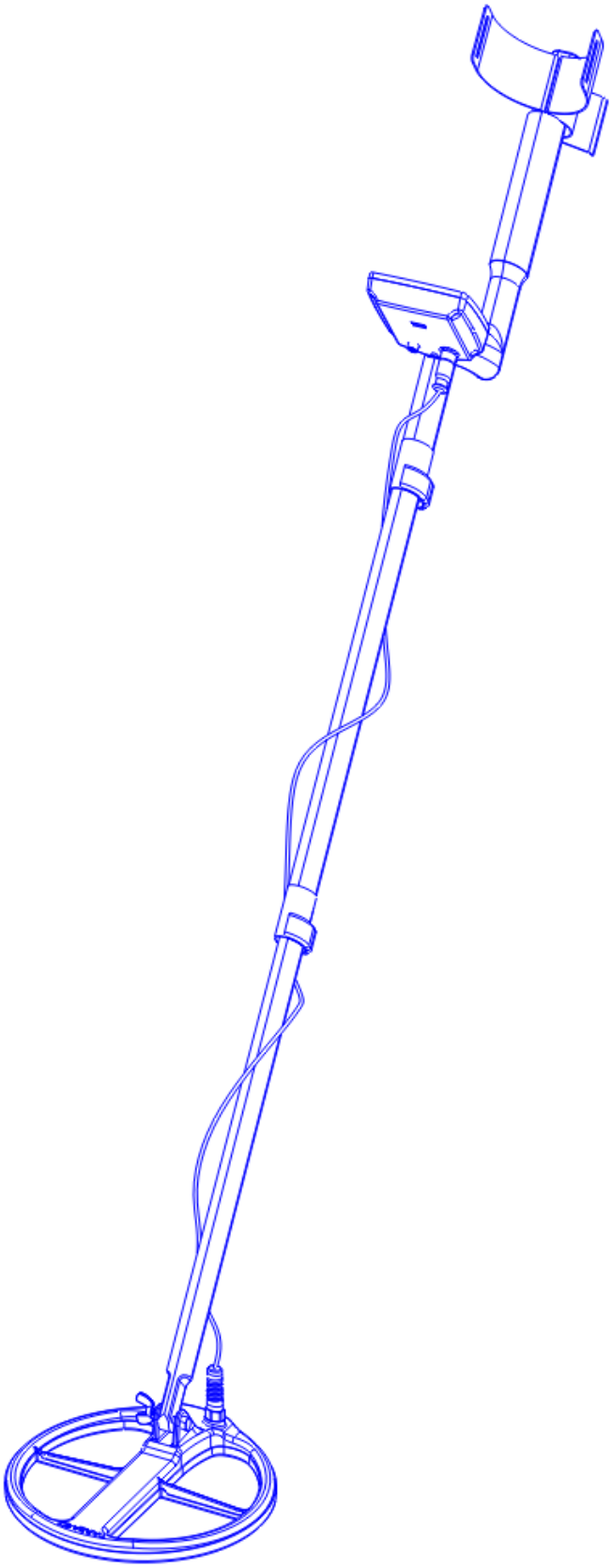
User Manual

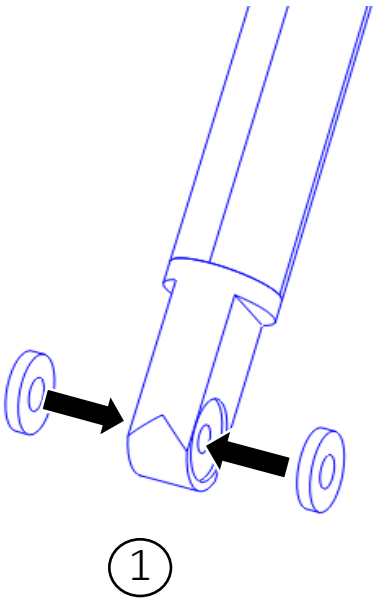
MDT 8000

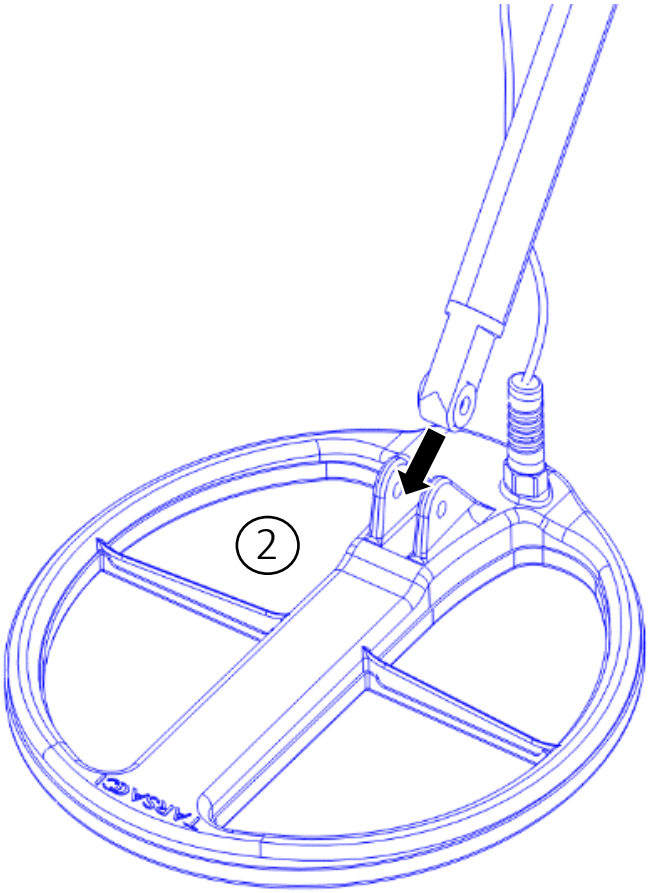
Contents

Assembly



1. Insert the two rubber washers into the holes on either side of the lower shaft.



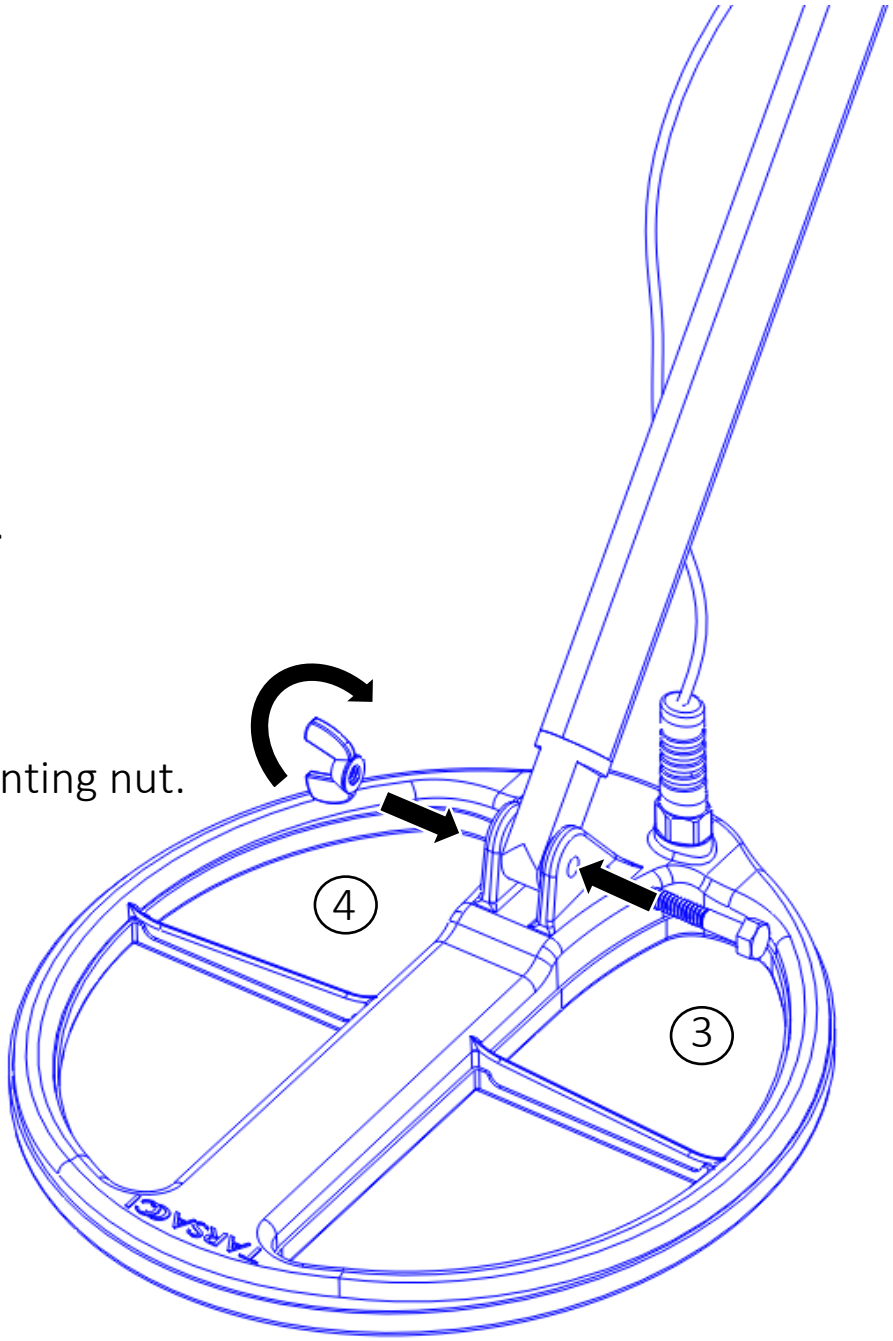


2. Slide the lower shaft into the search coil mounting bracket.

3. Insert the search coil mounting bolt through the search coil mounting bracket.

4. Fasten the search coil mounting nut.

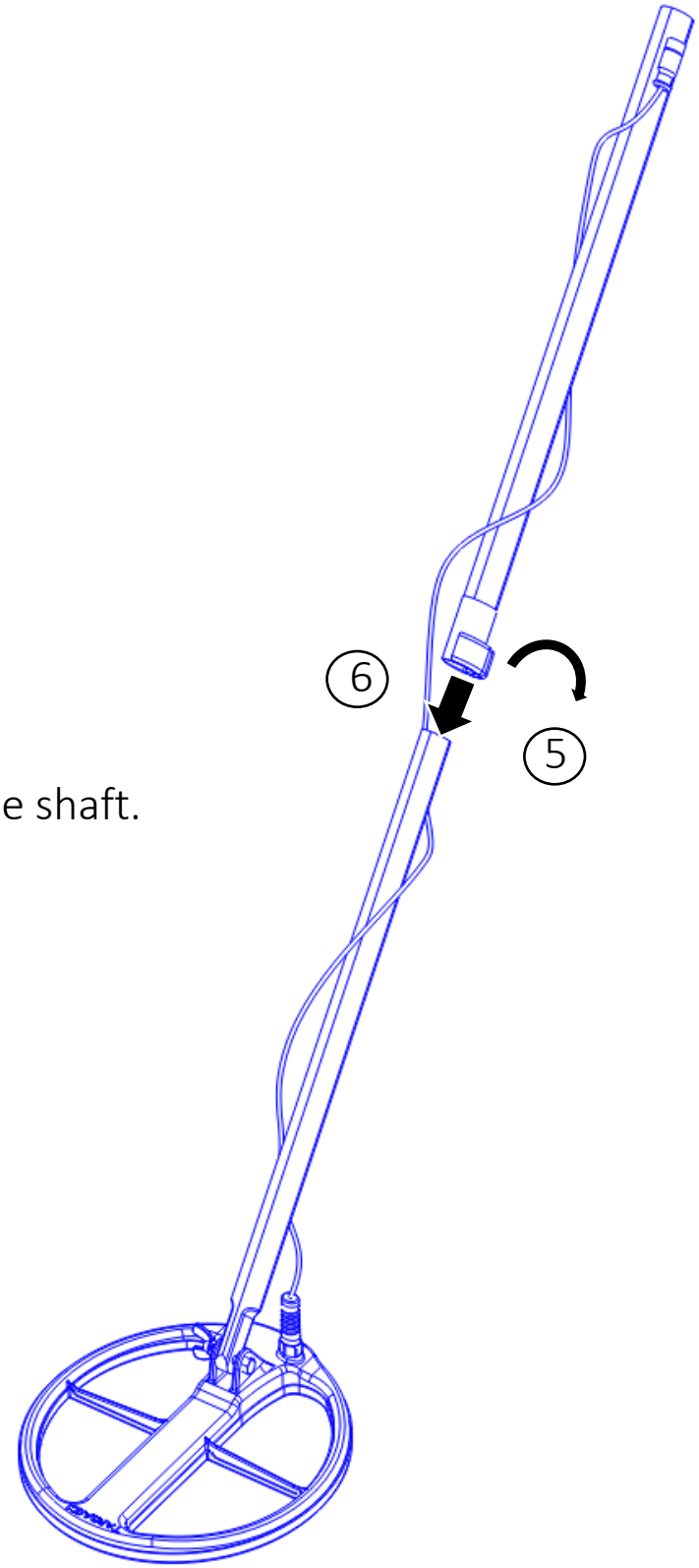
(Do not overtighten the nut)

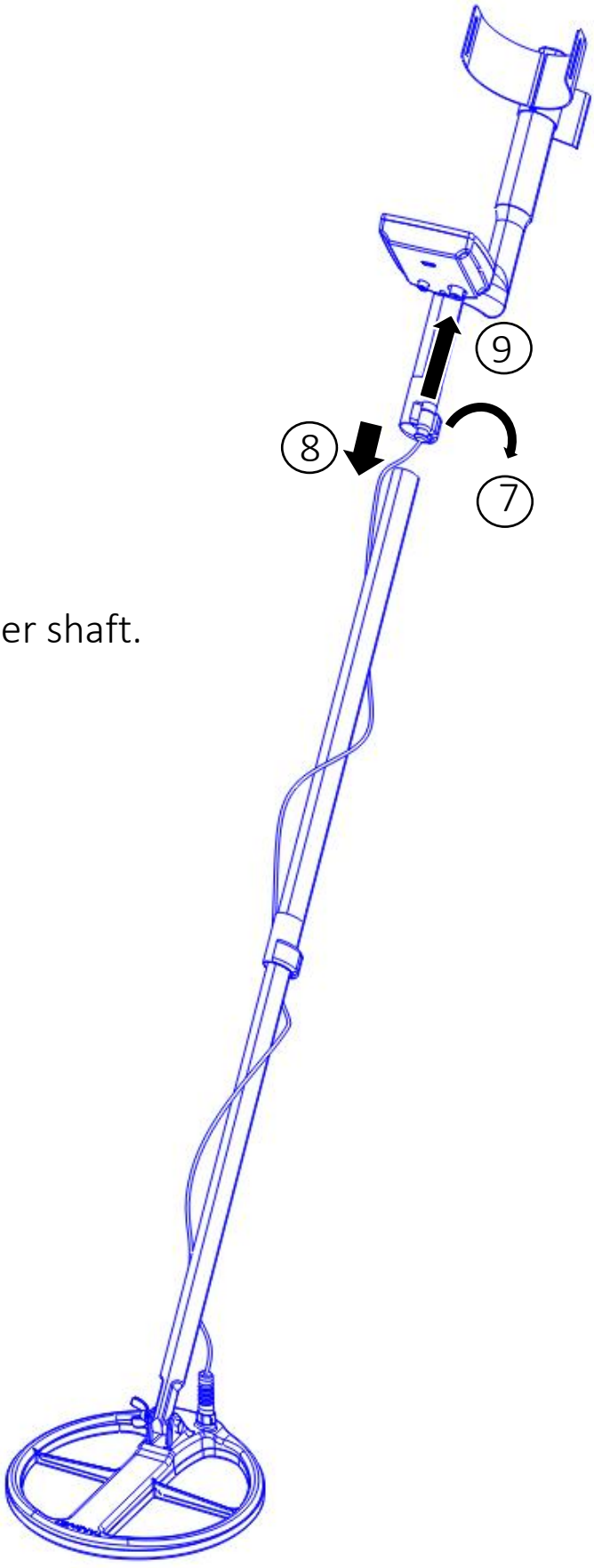


5. Loosen the middle shaft clamp.

6. Insert the lower shaft into the middle shaft.

   Lock the clamp.





7. Loosen the upper shaft clamp.

8. Insert the middle shaft into the upper shaft.
Lock the clamp.

9. Connect the coil cable connector
to the control housing coil connector
and tighten the retaining ring.

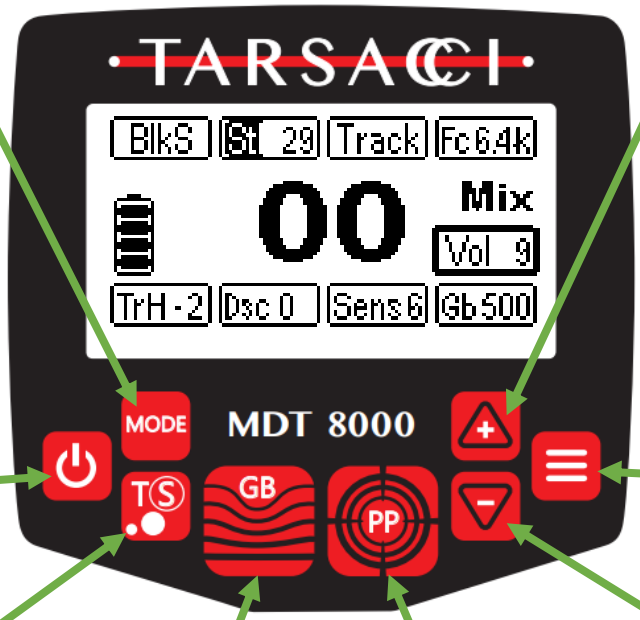
Control Panel

MODE Button

If the cursor highlights the **BlkS** or **St/Salt** icons, the **MODE** button activates or deactivates black sand or salt mode.
If none of these icons are highlighted by the cursor, the **MODE** button toggles between: "**Mix**" **(Mix Mode)**, "**Disc" (Discrimination mode)** and "**All M" (All Metal Mode)**.

Plus Arrow Button

Increment the setting icon highlighted by the cursor. Press and release the button to increment the setting by "1".Press and hold the button to increment the setting sequentially.



Power Button

Turn on/off the Metal Detector.
When the metal detector is powered off, it will retain all current settings.

Menu Button

Press and release the **Menu** button to highlight and also moves the cursor to: "**Trh**", **"Dsc"**, **"Sens"**, or **"Gb"** icons. Press and hold the **Menu** button for more than 3 seconds then the cursor highlights the "**Fc**" icon.

TS (Terrain Select) Button

Press and release toggles the cursor between "**BlkS"** and **"St/Salt"**. Press and hold the **"TS"** button for more than 3 seconds to activate or deactivate the **Tracking**.

Minus Arrow Button

Decrement the setting icon highlighted by the cursor. Press and release the button to decrement the setting by "1".Press and hold the button will decrement the setting sequentially.

GB (Ground Balance) Button

Automatic ground balance. Please refer to the "**Auto Ground Balance Procedure**" section for more details.

PP (Pin Point) Button

Press and hold the Pin Point button to activate Pin Point mode.

Display

BlkS (Black Sand)

Indicates when the Black sand mode is activated or deactivated.

Dark = Activated

Light = Deactivated

St/Salt

Salinity range 0 to 50.

When it is deactivated, it will display "**Salt**". When it is activated, it will display "**St**" and the salinity level.

When the cursor highlights the "**St/Salt**" icon, the salinity level can be adjusted by using the "**Plus Arrow**" and "**Minus Arrow**" buttons.

Track (Tracking)

Displays if the tracking is activated or deactivated.

Dark = Activated

Light = Deactivated

Fc

Frequency select displays the current operating frequency.

There are 4 frequencies **6.4k**, **9k**, **12k**, and **18k**. The frequency can be adjusted by using the "**Plus Arrow**" and "**Minus Arrow**" buttons when the cursor highlights the Fc icon

Battery Icon

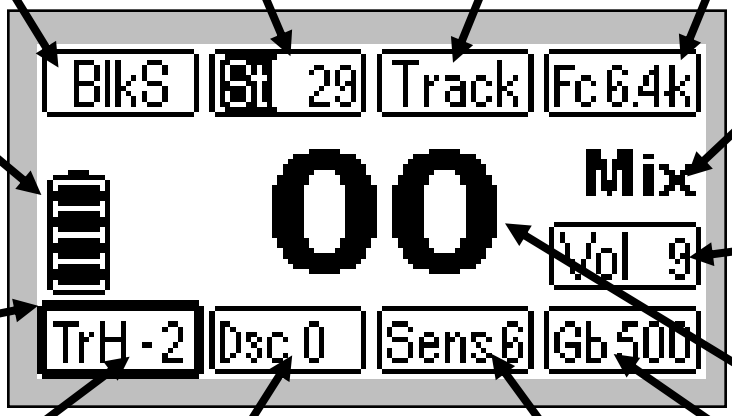
Battery gauge
4 bars --- Battery Full
3 bars ---75% capacity
2 bars ---50% capacity
1 bar ---25% capacity

Sound Mode

Displays the current mode: **Mix**, **Disc**, or **All M**

Volume

Volume range: 1 to 15. If the Vol cursor is not highlighted, press and release the "**PP**" button to quickly go to Volume setting



Cursor

Highlights the border of the currently selected icon.

Target ID

Range -30 to 30 **OR**

Signal Strength when in "**PP**" mode Rage 0-99

TrH (Threshold)

Range 0 to -9.

When the cursor highlights the "**TrH**" icon, the Threshold can be adjusted by using the "**Plus Arrow**" and "**Minus Arrow**" buttons.

Dsc (Discrimination)

Range -30 to +30.

When the cursor highlights the "**Dsc**" icon, the Discrimination Set Point can be adjusted by using the "**Plus Arrow**" and "**Minus Arrow**" buttons.

Sens (Sensitivity)

Range 1 to 9.

When the cursor highlights the "**Sens**" icon, the Sensitivity can be adjusted by using the "**Plus Arrow**" and "**Minus Arrow**" buttons.

Gb (Ground Balance)

Range 0 to 999.

When the cursor highlights the "**Gb**" icon, the Ground Balance can be adjusted by using the "**Plus Arrow**" and "**Minus Arrow**" buttons.

Metal Detector Modes and Settings

BlkS (Black Sand): To activate Black Sand Mode:

1. Press and release the "**TS**" button until the cursor highlight's "**BlkS**" icon.

Fig. 1: The BlkS icon is highlighted

2. While the cursor highlights the "**BlkS**" icon, press and release the "**Mode**" button to activate or deactivate black sand mode. The "**BlkS**" icon will turn black when Black Sand mode is activated. Press and Release the "**Mode**" button again to deactivate it.

Fig. 2: Black Sand mode is activated

St/Salt: To activate or deactivate Salt Mode and adjust the salinity level:

Fig. 3: St/Salt icon is highlighted.

1. Press and release the "**TS**" button until the cursor highlight's the "**St/Salt**" icon. Press and release the "**Mode**" button to activate salt mode. '**St**' in black and a number representing the salinity level will appear in the "**St/Salt"** icon. Press and release the "**Mode**" button again to deactivate salt mode.
2. While the cursor highlights the "**St/Salt**" icon, and the Salt mode is activated, adjust the salinity level with "**Plus Arrow**" or "**Minus Arrow"** buttons.

Fig. 4: Salt mode is activated and the salinity level is set to 29

Track: To activate or deactivate Tracking mode:

1. Press and hold the "TS" button for more than 3 seconds.

Fig. 5: Tracking is activated

Fc: To change the Frequency:

1. Press and hold the "**Menu**" button for more than 3 seconds. The cursor will highlight the '**Fc**' icon.

Fig. 6: Frequency select is highlighted and the frequency can be changed

2. While the cursor highlights the "**Fc**" icon, adjust the frequency with "**Plus Arrow**" or "**Minus Arrow**" buttons to change the frequency.
   (**The 4 Frequencies available are 6.4 KHz, 9 KHz, 12 KHz, and 18 KHz)**

TrH: To adjust the Threshold:

1. Press and release the "**Menu**" button until the cursor highlights the "**Trh**" icon.

Fig. 7: Threshold is highlighted and can now be adjusted.

2. While the cursor highlights the "**TrH**" icon, adjust the Threshold level with "**Plus Arrow**" or "**Minus Arrow"** buttons.

Disc: To adjust the discrimination set point:

1. Press and release the "**Menu**" button until the cursor highlights the "**Dsc**" icon.

Fig. 8: The Discrimination Set Point is highlighted and can be adjusted

2. While the cursor highlights the "**Dsc**" icon, adjust the Discrimination Set Point with "**Plus Arrow**" or "**Minus Arrow"** buttons.

(**Refer to "Discrimination Breakdown Visuals" for a visual representation.)**

Sens: To adjust the Sensitivity:

1. Press and release the "**Menu**" button until the cursor highlights the "**Sens**" icon.

Fig. 9: Sensitivity is highlighted and can be adjusted

2. While the cursor highlights the "**Sens**" icon, adjust the Sensitivity with "**Plus Arrow**" or "**Minus Arrow"** buttons.

GB: To Adjust the Ground Balance:

1. Press and release the "**Menu**" button until the cursor highlights the "**Gb**" icon.

Fig. 10: Ground balance is highlighted and can be adjusted accordingly.

2. While the cursor highlights the "**Gb**" icon, adjust the Ground Balance with "**Plus Arrow**" or "**Minus Arrow"** buttons.

Sound Modes: Press and release the "**Mode**" button to toggle between the 3 available sound modes

(**If the cursor is highlighting the "St/Salt" or "BlkS" icons, the Sound Modes cannot be toggled)**

Fig. 11: All Metal Mode is active

Fig. 12: Disc Mode is active

Fig. 13: Mix Mode is active

Vol: To adjust the Volume:

1. If one of the settings is activated, and idling for more than 8 seconds, the cursor will automatically highlight Volume.
    a. For quick Volume adjustment, press and release "**PP**".
2. While the cursor highlights "**Vol**" icon, adjust the Volume with "**Plus Arrow**" or "**Minus Arrow**" buttons.

Fig. 14: Volume is highlighted and can be adjusted

Pin Point Procedure:

MDT 8000 metal detector has a Double–D search coil configuration. The search coil's most sensitive area is along the search coil longitudinal centerline. The metal detector will give the loudest response when a target is directly beneath it.
MDT 8000 has a high resolution, numerical signal strength indicator with range from 0-99 and amplitude and frequency modulated sound associated with the target signal strength.

Pin Point:
1. Lower the search coil approximately 1" above the ground surface, 10"-12" from the estimated target position.
2. Press and hold the "PP" button.
3. Holding the search coil parallel to the ground surface, sweep it across the target.
4. The detector will produce the loudest sound, highest tone, and the largest signal strength numbers when the target is beneath the center line of the search coil.

Target ID and Sound Modes

Numerical Target ID Display: Represents the Target conductivity and it is always displayed. Non-ferrous Targets have positive numbers and ferrous Targets have negative numbers. The target ID number range is from -30 to +30 and is a function of the target shape, thickness and the target metal conductivity. The lower the ID number, the lower the target conductivity; the higher the ID number, the higher the target conductivity.

Sound Modes: There are 3 sound profiles (All Metal, Discrimination, and Mix Mode) with 4 tones total. The graph provided in section **Discrimination Breakdown Visuals** gives a visual representation when one of the 4 tones is heard based on one of the 3 sound profiles being used. The 4 tones are as indicated:

1. **Low Tone**: Represents ferrous Targets.
   (Only heard in **Discrimination** and **Mix Mode**)
2. **Low-High Tone**: Represents All Metal Mode.
   (Only heard in **All Metal Mode** and **Mix Mode**)
3. **High-low Tone**: Represents low conductivity non-ferrous Targets.
   (Only heard in **Discrimination** and **Mix Mode**)
4. **High Tone**: Represents high conductivity non-ferrous Targets.
   (Only heard in **Discrimination** and **Mix Mode**)

1. **All M (All metal)**: Only the Low-High tone will be heard when a Target is located.
   (Numerical Target ID is always present in All Metal Mode)
2. **Disc (Discrimination)**: This mode allows 3 different tones associated with the target ID and for the sound to be silent based on the target ID and discrimination settings:

   2a. If the Discrimination set point lies within the range of -30 to 0, any Target with a Target ID lower than the set point will be silenced.
   (Numerical Target ID is always present)
   2b. If the Discrimination set point lies within the range of 0 to +30, any Target with a Target ID lower than 0 shall be silenced and any Target within the range of +/-2 of the Discrimination set point shall also be silenced.
   (Numerical Target ID is always present)

3. **Mix (Mix Mode)**: This mode combines both All Metal Mode and Discrimination Mode reporting in sequence. The first tone is the All Metal sound. The second tone is the Discrimination sound. (The disc sound may be silenced based on the discrimination settings and target ID)

Pin Point Sound: The sound's magnitude and frequency are modulated depending on the target signal strength. The stronger the signal, the higher the audio frequency and louder the audio report will be (i.e. VCO style).

Discrimination Breakdown Visuals

The following figures give a visual breakdown of Discrimination sounds related to the Target ID numbers.

- *-30 to 0 = Low Tone, ferrous Target*
- *1 to +15 = High-Low Tone, Low Conductivity, non-ferrous Target*
- *+15 to +30 = High Tone, High Conductivity, non-ferrous target*

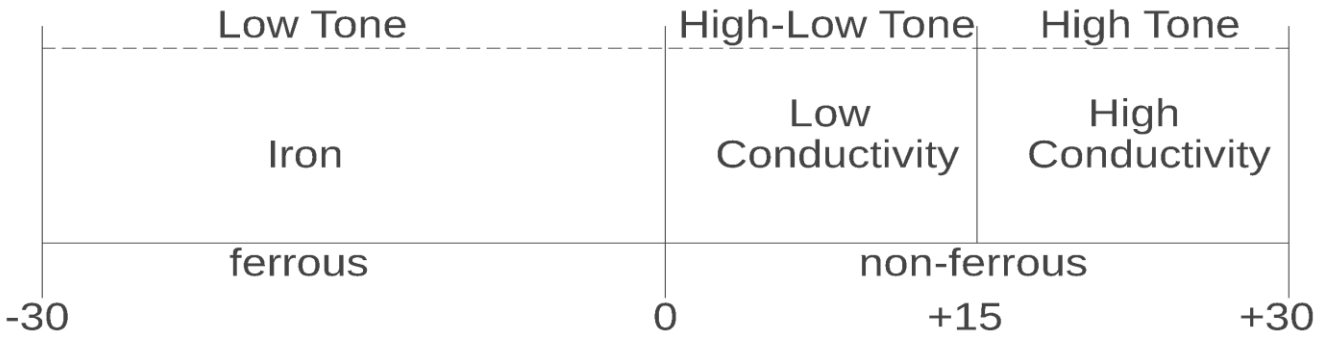


Fig. 15: Displays the tone and conductivity of the metal based on the Target ID being displayed (The Disc is set to -30).

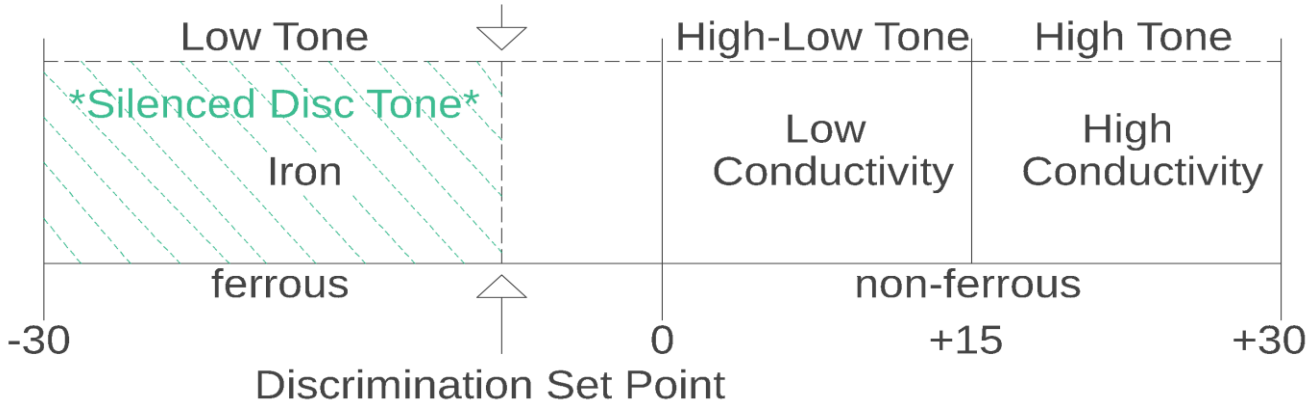


Fig. 16: When the Discrimination Set Point is set at a value less than 0, any Target ID lower than the set value will be silenced. The dashed lines indicate the silenced region.

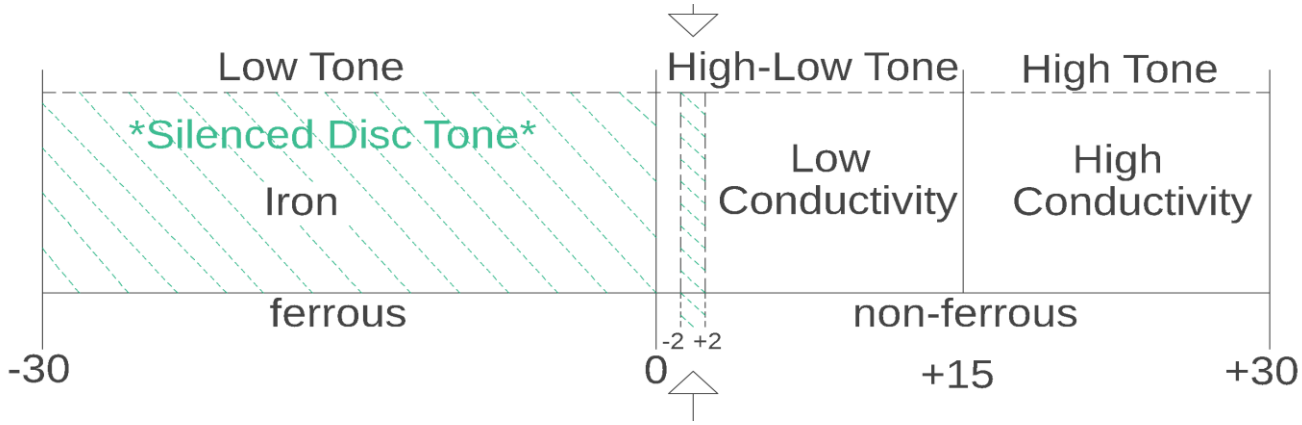


Fig. 17: When the Discrimination Set Point is set at a value greater than 0, any Target ID lower than 0 will be silenced; any Target ID within +- 2 of the Discrimination Set Point will be silenced. The dashed lines indicate the silenced regions (i.e. Notching option).

Manual Ground Balance

The metal detector ground balance has to be performed on ground free of any metals; otherwise, the ground balance will be incorrect if performed while metal is present. This will generate undesirable false signals.

Procedure:

1. Activate the Manual Ground Balance function.
2. Move the search coil up and down starting from 1 inch above ground level, up to approximately 4 to 5 inches while keeping the coil parallel to the ground.
3. Increase or decrease the ground balance level until the metal detector is silent (The **GB** icon must be highlighted).

(IF THE METAL DETECTOR CAN NOT BE BALANCED, THE METAL DETECTOR SENSITIVITY HAS TO BE REDUSED)

Auto Ground Balance Procedure

The metal detector ground balance has to be performed on ground free of any metals; otherwise, ground balance will be incorrect if performed while metal is present. This will generate undesirable false signals.

Procedure:

1. Lower the search coil approximately 1 inch above the ground and keep the coil parallel to the ground surface.
2. Press and hold the ground balance button. While holding the ground balance button, raise the coil 4-5 inches above the ground while keeping the coil parallel to the ground, then release the ground balance button.
3. To verify if the metal detector is properly ground balanced, bob the coil up and down several times to verify if there are any false signals. If the metal detector is still noisy while searching, there can be two reasons.
    - 3a. The ground balance is performed incorrectly and the process has to be repeated starting from step 1.
    - 3b. The ground mineralization is too high and the sensitivity has to be reduced by 1 or 2 increments.

Salinity Balance

(This Process is similar to manual ground balance)
1. Ground Balance the metal detector on the dry sand of the beach with **Salt Mode** activated.
(If the beach is not mineralized, like white sand beaches, ground balance is not necessary, then manually set the ground balance to 500.)
2. Activate the **Salt Mode** adjustment (cursor highlights "**St/Salt**" icon (Fig.4)).
3. If the salinity is unknown, set the salinity level to **27**.
4. Choose a place in the water that approximately 18" deep.
(BE CAUTIOUS OF TIDES, CURRENTS, SINK HOLES, ETC… WHEN DOING STEP 4. YOUR SAFETY SHOULD ALWAYS COME FIRST)
5. Pump the search coil approximately 1 inch above the water, up to approximately 8 inches while keeping the search coil parallel to the water level and adjusting the salinity level, increasing or decreasing salinity. Find the salinity setting with which zero or minimum sound is produced when pumping the coil up and down (The salinity level can be adjusted only if the"**St/Salt**" icon is highlighted).

(THE METAL DETECTOR IS LESS SENSITIVE TO THE SALINITY ON THE LOWEST FREQUNECY-THE HIGHER THE FREQUENCY, THE MORE SENSITIVE THE DETECTOR BECOMES TO THE SALINITY AND LOW CONDUCTIVITY TARGETS)
(IF HIGHER SENSITIVITY IS UTILIZED, SMALL SALINITY IMBALANCE CAN BE TOLERATED-THE DETECTOR WILL BE CHATTERY)

Threshold

Threshold ranges from -9 up to 0. When using a negative threshold, the value is subtracted from the target signal. A Threshold of zero does not affect the signal. To increase the ability to hear faint signals, it is recommended to set the **TrH** to -1 or 0. If the detector becomes too noisy, and quiet work is desirable, a more negative threshold may be used to reduce detector chatter.

Suggested Settings for Stable Metal Detector Work

Suggested Initial Settings for mineralized (black sand) wet salt water beach

- Set the threshold to -2.
- Set the Sensitivity 5.
- Black Sand (**BlkS**) ON.
- Salt Mode (**St**) ON.
- Choose the desired Frequency.
- Set the salinity level, if unknown to **27**.
- Ground Balance the Detector(on dry sand)
- Salinity Balance the Detector

Suggested Initial Settings for wet salt water beach

- Set the threshold to -2.
- Set the Sensitivity 7.
- Black Sand (**BlkS**) OFF.
- Salt Mode (**St**) ON.
- Choose the desired Frequency.
- Set the salinity level, if unknown to **27**.
- Ground Balance the Detector or preset the GB to 500.
- Salinity Balance the Detector

Specification

Technical Specifications

Technology : Mixed Domain (Patented)

Operating Frequency : 6.4kHz/9kHz/12kHz/18kHz

Ground Balance : Manual / Fast Auto

Tracking : Yes

Black Sand Mode : Yes

Salt Mode : Yes

Salinity Balance : Manual

Salinity Level : 0 to 50

Target Identification : Ferrous -30 to 0 / Non-ferrous 1 to 30

Sensitivity : 1 to 9

Threshold Level : -9 to 0

Target Volume : 1 to 15

Target Tones : 4

Tone Break : Ferrous and Non-ferrous with adjustable notch filter

Audio Modes : All Metal / Discrimination / Mix

Audio Output : Speaker / Headphones

Display : 128X64 Graphic LCD

LCD Backlight : Yes

Battery : 26650 Rechargeable Lithium-ion battery (3.7V @ 5000mAh)

Battery Life : Up to 18h@6.4kHz/24h@9kHz/30h@12kHz/36h@18kHz

Operating Temperature :-10C to +50C (+14F to +122F)

Search Coil : Tarsacci MDT 11X9 DD

Shaft : Telescopic 3K carbon fiber with molded 3K carbon fiber “S” rod and armrest

Length : 965cm to 1346cm (38” to 53”)

Weight : 1280g (2.82lb) including the battery

Waterproof : IP68 (Up to 1.5 meters for up to 30 minutes in still water).

Headphones (Included) : Wired 3.5mm non-waterproof