

BLISSTOOL

BLISSTOOL LTC48X



USER GUIDE

VERSION EN201008241400

2007 - 2010 © BLISSTOOL

CONTENTS

1. INTRODUCTION.....	3
2. FEATURES.....	4
3. VERSIONS.....	5
4. MODIFICATIONS.....	6
5. STANDARD PACKAGE.....	6
6. OPTIONAL ACCESSORIES.....	7
6.1. ARMY BACKPACKS (KITBAG).....	7
6.2. EXTERNAL POWER MODULE BLISSTOOL EBPO1B.....	7
6.3. STEREO HEADPHONES.....	7
7. DEVICE CONSTRUCTION.....	8
8. DEVICE ASSEMBLING AND DISASSEMBLING.....	10
9. CONTROL, ADJUSTMENT AND INDICATION APPLIANCES.....	11
9.1. VOLUME POTENTIOMETER.....	11
9.2. GROUND SWITCH.....	11
9.3. AUTO ZONES SWITCH.....	11
9.4. GROUND POTENTIOMETER.....	12
9.5. THRESHOLD POTENTIOMETER.....	13
9.6. DISCR LEVEL POTENTIOMETER.....	14
9.7. DISCR WIDTH POTENTIOMETER.....	14
9.8. DISCR DEPTH POTENTIOMETER.....	15
9.9. LOUDSPEAKER.....	16
9.10. PHONES CONNECTOR.....	16
9.11. BAT LOW LED.....	16
10. DEVICE ADJUSTMENT AND PREPARATION FOR WORK.....	18
11. SEARCH METHOD.....	18
12. BATTERY. BATTERY CHARGING.....	20
13. PRACTICAL RECOMMENDATIONS.....	21
14. INDICATIVE AND RECOMMENDED SETTINGS.....	22
14.1. INTRODUCTION. BSMD CODE	22
14.2. SETTINGS FOR MAXIMUM DEPTH OF DETECTION.....	23
14.3. SETTINGS FOR TERRAINS WITH LOW DEGREE OF MINERALIZATION.....	24
14.4. SETTINGS FOR TERRAINS WITH MIDDLE DEGREE OF MINERALIZATION.....	25
14.5. SETTINGS FOR TERRAINS WITH HIGH DEGREE OF MINERALIZATION.....	26
15. WARRANTY SUPPORT AND SERVICE.....	27
16. LEGISLATION.....	27
17. BLISSTOOL.....	27
18. CONTACT INFORMATION.....	27

1. INTRODUCTION

BLISSTOOL LTC48X is a modern professional metal detector, designed to be used on any type of terrains, including highly mineralized terrains, terrains with a high content of ore and highly contaminated terrains. Has perfect depth and discrimination and is outstanding for its high quality, easy user's adjustment and minimal maintenance need. This makes it equally suitable for beginners and experienced searchers.

Represents extended and improved version of the model BLISSTOOL LTC48, so that entirely replaces and supplemented it.

It is made of high quality electronics and components such as light and robust detachable carrier construction made of duraluminum and carbon, light and robust ABS boxes, and 28cm (11") DD waterproof search coil. They provide its consistent performance regardless of temperature changes of the environment and durability lined with 3 year worldwide warranty.

Available in two versions: a standard version and version adapted for heavy field conditions. Each of them is available in three modifications with rechargeable NiMH batteries in complete with automatic battery charger, and in one modification with alkaline disposable batteries. There are and two options for configuration of the battery: Solid package or Demountable package. These choices ensure that cost-beneficial option in accordance with customer preferences.

Has high detection speed and high recovery speed. This ensures its stability regardless of the speed of search and allows the efficient detection of deeper objects located near to the iron.

It features manual and automatic ground balance mode, as in automatic mode is available additional switch with 3 auto ground zones for soils with low, medium and high mineralization. These zones make use of the metal detector easily and effectively.

It discrimination contains 3 separate potentiometers (DISCR LEVEL, DISCR WIDTH и DISCR DEPTH) which allowing controlling of: detection/rejection level of iron, tin-foil and low-grade non-ferrous metals (usually pollutants); the width (range) of the discrimination area; and: the depth of discrimination. This provides more opportunities about the setting in contaminated areas, areas with hot rocks and mineralized areas, and are a prerequisite for even better results.

Has adjustable audio threshold, which allowing set its behavior to each particular area and fine tuning of its sensitivity.

Its audio discrimination, thanks to the perfect human abilities through their hearing to perceive and analyze in detail the sound signals, is the ideal solution for instant detection, analysis and recognition even and of the weakest signals by deeply buried objects.

As a concept, BLISSTOOL LTC48X is designed:

- to have excellent depth of detection in all conditions. This is leading to him!;
- to be used on any type of terrains;
- to successfully detect coin placed into ceramics;
- to successfully detect coins in highly mineralized terrains;
- to have good depth of detection, not only to copper but also to silver and gold objects;
- to have high detection speed and high recovery speed and at the same time to have good or at least satisfactory stability!

Before using your LTC48X for the first time, we recommend you to read detailed this user guide in order to optimally use all its capabilities.

2. FEATURES

- Technology: Induction balance (VLF)
- Working frequency: 8.5KHz
- Working mode: motion
- Sound discrimination of the metals
- Manual and Automatic ground balance mode
- Switch with 3 auto ground zones
- 28cm (11") DD search coil
- Designed to be used on any type of terrains
- Resistance in areas with heavy mineralized ground
- Adjustable detection/rejection level of iron, tin-foil and low-grade non-ferrous metals (usually pollutants)
- Adjustable width (range) of the discrimination
- Adjustable depth of discrimination
- High detection speed
- High recovery speed
- Adjustable audio threshold
- Adjustable audio volume control
- 3.5mm Stereo headphones outlet<
- 3.5mm to 6.35mm external stereo audio adapter for headphones
- Built-in battery (12V/2500mAh NiMH; 12V/1300mAh NiMH; 15V Alkaline)
- Single charge operating time: up to 50 working hours (*45, *25, depending on battery)
- Low battery indicator
- Consumption: min:35mA, max:100mA
- Automatic battery charger (*in modifications with NiMH battery*)
- Light and robust ABS boxes
- Detachable and adjustable carrier construction made of duraluminum and carbon
- Robust and comfortable handle and armrest
- Electronics shielded against electromagnetic interference
- High quality double shielded against electromagnetic interference cable for the search coil
- Weight in assembled mode (ready for work): 1.9kg
- RoHS compliant
- Developed and manufactured in Bulgaria
- 3 Year Worldwide Warranty

3. VERSIONS

BLISSTOOL LTC48X is available in two versions: version 1 (**LTC48X v1**) и version 2 (**LTC48X v2**).

On the front panel of the metal detector both versions are labeled LTC48X, but on the box with the electronics, additionally marked is the exact version of the metal detector.

LTC48X v1 is the standard version, LTC48X v2 is a version specially adapted for heavy field conditions.

LTC48X v1 differs from LTC48X v2 on this that **LTC48X v2 is optimized to work on:**

- highly contaminated terrains;
- highly mineralized terrains;
- terrains with a high content of ore.

Of the above described terrains, LTC48X v1 also works, but LTC48X v2 is additional optimized for such terrains.

For this purpose, compared with LTC48X v1, **LTC48X v2 contain the following optimizations:**

[1] Discrimination optimized for highly contaminated with iron, steel and other ancient and contemporary pollutants terrains:

- improved rejection of small heavily corroded iron and steel, small pieces of wire, heavily corroded pieces of sheet metal, small iron nails and steel nails, tack, slag and other ancient and contemporary pollutants;
- increased range of the discrimination level set by potentiometer DISCR LEVEL.

[2] Behavior optimized for working on highly mineralized terrains and terrains with a high content of ore. The ground and ground-specific background of such terrains, which makes the detector "noisy", are ignored in a better extent.

The depth of detection is theoretically better in LTC48X v1, but in practice with both versions are achieved excellent results. It which must be borne in mind, is that in LTC48X v2 because has increasing range of discrimination by potentiometer DISCR LEVEL, should not be set higher than the necessary level of discrimination. Otherwise, will be losing some of the maximum possible depth of detection! In LTC48X v1, in discrimination mode, of most terrains of practice may safely to work at levels of 6 to 10 of potentiometer DISCR LEVEL. In LTC48X v2, in discrimination mode, the optimum levels of potentiometer DISCR LEVEL are from level 4 to about level 6, and potentiometer DISCR WIDTH usually not used (is set at level NORM).

Which version is right for you to judge yourself according to your specific needs.

LTC48X v1 has a maximum depth of detection, but LTC48X v2 works better of highly contaminated terrains.

All other features are the same for both versions.

**BLISSTOOL
LTC48X v1**

**BLISSTOOL
LTC48X v2**

4. MODIFICATIONS

Both versions of BLISSTOOL LTC48X are offered with 4 different options for power (capacity and type of the battery, battery charger):

1/ Rechargeable battery **NiMH 12V, 2500mAh** (10x1.2V, GP NiMH) and automatic battery charger 12V, 250mA (Working with a single charge: up to 50 working hours; Long battery life: approximately 500 cycles of charge-discharge; Battery weight: 330 grams.);

2/ Rechargeable battery **NiMH 12V, 2200mAh, Low Self Discharge** (10x1.2V, TY NiMH LSD) and automatic battery charger 12V, 250mA (Working with a single charge: up to 45 working hours; Long battery life: approximately 500 cycles of charge-discharge; Battery weight: 315 grams; Low Self Discharge is a new technology which ensures low self-discharge of the battery even with prolonged stay.);

3/ Rechargeable battery **NiMH 12V, 1300mAh** (10x1.2V, GP NiMH) and automatic battery charger 12V, 130mA (Working with a single charge: up to 25 working hours; Long battery life: approximately 500 cycles of charge-discharge; Battery weight: 250 grams.);

4/ Alkaline battery 15V (10x1.5V, GP Ultra Alkaline) for disposable (Working with one set of elements: up to 50 working hours; Battery weight: 250 grams; Can be upgraded to NiMH modification, through additional purchases and adding thereto a NiMH battery and battery charger.).

and with two options for configuration of the battery:

1/ Solid package. It consists 10 spot welded elements 1.2V AA (R6). This option provides greater durability of the battery and need minimal maintenance. Available only for versions with NiMH battery;

2/ Demountable package. It consists 10 elements 1.2V AA (R6) put in battery holder for 10 elements AA (R6). This option allows easy replacement of any defective element or replacement of low elements with full elements in field conditions. Available for versions with NiMH battery and for version with Alkaline battery.

All other features are the same for all modifications.

The modifications with rechargeable NiMH battery can work and with an alkaline battery, and vice versa, the modification with alkaline battery can work with rechargeable NiMH battery.

5. STANDARD PACKAGE

1. Metal detector BLISSTOOL LTC48X with 28cm (11") DD search coil BLISSTOOL DD28SC1 and battery depending on its modification (12V/2500mAh NiMH; 12V/2200mAh NiMH LSD; 12V/1300mAh NiMH; 15V Alkaline)
2. Automatic battery charger BLISSTOOL DP12250 (12V, 250mA) or BLISSTOOL DP12130 (12V, 130mA) (*in modifications with NiMH battery*)
3. 3.5mm to 6.35mm external stereo audio adapter for headphones
4. User guide
5. Warranty card
6. Invoice
7. Transport and storage box
8. 3 Year Worldwide Warranty

6. OPTIONAL ACCESSORIES

6.1. ARMY BACKPACKS (KITBAG)

The army backpacks is soft backpack type bag in which can transport metal detector BLISSTOOL LTC48X.

The army backpacks carried as a rucksack on your back.

BLISSTOOL LTC48X be placed in the army backpacks after disassembling. For this purpose, its detachable carrier construction is divided into its three major parts through the unscrewed of the small and large fixing ring.

Dimensions in unfolded state: rectangle with a width of 46 centimeters and a height of 68 cm.



6.2. EXTERNAL POWER MODULE BLISSTOOL EBP01B

BLISSTOOL EBP01B is an external power module whereby the battery of BLISSTOOL LTC48X is exported outside from the metal detector to reduce its weight (*from 230 to 330 grams depending on battery*).

BLISSTOOL EBP01B has a metal clip type carbine for attachment to a belt and an adjustable strap to wear over the shoulder or waist.

Attaches to the metal detector through stretch and spiral wound flexible power cable and power jack which is included in the connector that lies on the front panel of the power supply module (*connector for inclusion of the automatic battery charger*).

The battery can be recharged without removing from BLISSTOOL EBP01B, thanks to the the connector for inclusion of the automatic battery charger which it has.



6.3. STEREO HEADPHONES

- PHILIPS SHP1900
- PLEOMAX PHS-2000
- GEMBIRD MHP-870
- WEILE WL-908MV

7. DEVICE CONSTRUCTION

BLISSTOOL LTC48X consists of the following basic elements:

1. Carrier rod
2. Large fixing ring
3. Electronic block with control and indication appliances
4. Handle
5. Armrest
6. Power supply module
7. Intermediate connecting rod
8. Small fixing ring
9. Lower connecting rod
10. Plastic bolt and nut
11. Search coil

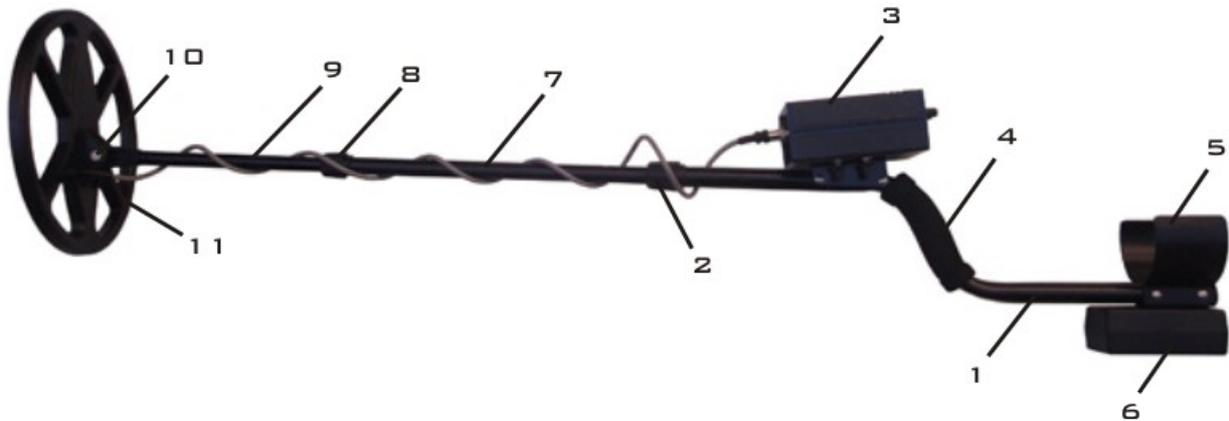


Fig.1 / Construction of metal detector BLISSTOOL LTC48X

For easy assembling and disassembling of the device, in the standard package:

- the carrier rod with the large fixing ring, the electronic block, the handle, the armrest and the power supply module are combined in a single component;
- the small fixing ring is mounted on the intermediate connecting rod;
- the lower connecting rod and the search coil are assembled together with the plastic bolt and nut.



Fig. 2 / Components of metal detector BLISSTOOL LTC48X

The carrier rod is made from duraluminum pipe. The large fixing ring that is mounted on its lower end is used for connecting the pipe with the intermediate connecting rod.

The electronic block consists of a plastic box in which is mounted the metal detector's electronics. The control and indication appliances lie on the front panel, the back panel and the bottom of the box.

The handle is part of the carrier rod and is coated with soft and solid foam.

For better stability, the armrest is made from duraluminum.

The power supply module consists of a plastic box in which is mounted the battery. On the front panel of the box is mounted connector for plugging of the battery to the battery charger (*is available in the standard package with NiMH modifications*), so that the charging of the battery could be carried out when needed.

The intermediate connecting rod is made from duraluminum pipe. At its upper end it is connected by the large fixing ring to the carrier rod – it fits into it, while at its lower end it is connected to the lower connecting rod by the small fixing ring.

The lower connecting rod is made from carbon, so that it does not interfere with the normal working mode of the metal detector. At its upper end it is connected by the small fixing ring to the intermediate connecting rod – it fits into it, while at its lower part ends with a plastic nozzle by which is connected to the search coil.

To not affect the intermediate connecting rod on the work of the metal detector because it is made from duraluminum, ie metal, it is recommended that the lower connecting rod to be inserted in the intermediate connecting rod to a situation in which remain at least 20-30 centimeters away from the top of the search coil to the small fixing ring.

To quickly and easily set the desired total length of the carrier construction, the intermediate connecting rod has openings at different levels, one of which, according to the user are inserts the fixed mechanism type bud, available on the lower connecting rod.

The search coil is connected to the plastic nozzle of lower connecting rod via the plastic bolt and nut. Between the ears of the search coil and the plastic nozzle of the lower connecting rod put emollient and fixed rubber type washer, which prevent ears of the search coil from deformation and breakage when tightening. Thus, the search coil can be installed and removed repeatedly from the lower connecting rod.

The search coil via the socket of the connecting shielded cable, is connecting to the connector mounted on the rear panel of the electronic block.

If necessary to change the position of the search coil to the lower connecting rod (change the working angle during working with the metal detector or folding to carry and transport) is necessary to loose coupling fixing by a plastic bolt and nut and after the new setting, it can be tight to be fix the search coil in the new position.

Changing the working angle in tight situation can lead to breakage of the ears of the search coil, deformation of the ears and the search coil or a fatal frustration of the search coil and changes its parameters.

When changing the working angle of the search coil to the lower connecting rod must be monitored for the presence of an advance of the bottom of the connecting shielded cable of the search coil to keep it stretched too much as this can cause damage its.

Recommended always to provide a small advance of the connecting shielded cable of the search coil in its lower part, just above the nozzle during which it comes out of the search coil.

For fixing the bottom of the connecting shielded cable of the search coil, is used included in the package fixing patches type velcro.

8. DEVICE ASSEMBLING AND DISASSEMBLING

The metal detector BLISSTOOL LTC48X is assembled in the following sequence:

1. The upper part of the lower connecting rod is attached to the lower part of intermediate connecting rod via the small fixing ring, and adjusted at the appropriate length.

It is recommended that the mounting of the lower connecting rod to the intermediate connecting rod should be carried out, following the sequence below:

- the small fixing ring has to be unscrewed loose from the intermediate connecting rod and put on the lower connecting rod;
- the lower connecting rod is inserted in the intermediate connecting rod at the appropriate length;
- the small fixing ring is tightened until it is fixed.

2. The upper part of the intermediate connecting rod is attached to the carrier rod via the large fixing ring, and adjusted at the appropriate height.

It is recommended that the mounting of the intermediate connecting rod to the carrier rod should be carried out, following the sequence below:

- the large fixing ring has to be unscrewed loose from the carrier rod and put on the intermediate connecting rod;
- the intermediate connecting rod is inserted in the carrier rod at the appropriate length;
- the large fixing ring is tightened until it is fixed.

3. The search coil has to be adjusted horizontally against the ground surface, while the user is in an upright (working) position and is holding the metal detector by the handle.

This adjustment is possible, if the plastic bolt and nut used for assembling the search coil with the lower connecting rod are not tightly fastened.

4. The connecting shielded cable of the search coil is wined uniformly up the lower and intermediate connecting rods and the end jack of the cable is plugged in and tightened on the connector that lies on the back panel of the electronic block.

The cable, at its lower end near the search coil, has to be slightly loose, so that it is not damaged when the search coil has been bent against the lower connecting rod, for example when the device is folded for carrying and transporting.

Additional, the cable can be fixed through patches type velcro included in the standard package.

The coil cable ends with a jack and there is a single correct position for it so that it could be plugged in the coil connector, which lies on the back panel of the electronic block. In this position, the hollow cursor of the jack falls in with flange cursor of the connector, and when inserted, the jack enters the connector into a depth of around 10 mm. After the jack is plugged in, it is screwed to the connector by the means of the available metal stopping nut, used as a shield.

The incorrect insertion and/or the application of a brute force while incorrectly inserting the jack could lead to damaging the metal detector.

The plugging in and out of the jack is done while the metal detector is switched off (VOLUME potentiometer is turned in "OFF" position (Fig.3)).

The disassembling of the device is carried in a reversed order.

9. CONTROL, ADJUSTMENT AND INDICATION APPLIANCES

The control, adjustment and indication appliances lie on the front panel, back panel and bottom of the electronic block (Fig.3).

Description of the various appliances:

9.1. VOLUME POTENTIOMETER



The VOLUME potentiometer serves as the on/off the metal detector (level "OFF POWER") and to regulate the audio volume (levels from "1" to "MAX").

The chosen position from the potentiometer scale (usually between levels "3" and "6") should correspond to pleasant sounds made by the metal detector, ie that are neither loud, nor quiet.

9.2. GROUND SWITCH



The GROUND switch serves for switching between the two working modes of the metal detector:

MANUAL: Manual ground balance

AUTO: Automatic ground balance

Those two working modes relate to the chosen technology for eliminating the ground (terrain) interference on the metal detector's work. This interference usually causes instability of the device and false signal registration (during the course of the search while the search coil is moving, the device is making sounds without necessarily detecting a real metal object).

When in a manual ground balance working mode (GROUND switch turned to the "MANUAL" position), the ground interference is eliminated by manual adjustment of the metal detector by the user, by following the procedure given in the description of the GROUND potentiometer below. This working mode is appropriate for terrains with homogeneous soil, where the metal detector would reach its full potential by a fine manual adjustment.

When in an automatic ground balance working mode (GROUND switch turned to the "AUTO" position), the metal detector's electronics automatically eliminates the ground interference and there is no further need for manual balance adjusting by the GROUND potentiometer from the user and no further relation with the chosen GROUND potentiometer level. This working mode is appropriate for terrains with a heterogeneous soil. In order to optimize and achieve the best possible balance, the automatic ground balance working mode is divided into 3 ground zones with a small area of correlation. They are selected by a switch AUTO ZONES as described below.

9.3. AUTO ZONES SWITCH



The AUTO ZONES switch serves to set one of three available automatic ground zones of work in automatic ground balance working mode.

The individual zones are numbered as zones "1", "2" and "3". This numbering corresponds to: soils with black and/or negative mineralization („1"); not mineralized or weakly mineralized soils („2"); soils with a color and/or positive mineralization („3").

To determine which of the three zones eliminates the best influence of soil is necessary:

- choose the auto ground balance working mode (GROUND switch turned to "AUTO" position);
- turn the DISCR LEVEL potentiometer to "GBS" position (Ground Balance Setting);
- turn THRESHOLD potentiometer to a level, just before the level where the metal detector starts slightly zoom sound made (issued torn sound, buzzing, whiz) or one or two levels before the level of zoom (recommended for beginners searchers).

Then is done vertical (up-down) movement of the search coil ranging from 2-3 cm to 20-25 cm above the terrain and simultaneously switch AUTO ZONES switches alternately between the three available positions (zones).

Most appropriate for use is the zone where the descriptions in the way of movement of the metal detector search coil does not beeps or issue possible weak sound, or at least to pre-set audio threshold level did not change significantly.

In mineralized terrains, if has a strong responsive signal from the terrain and selection of most appropriate auto ground zone is difficult or the seeker has small practical experience, is recommended THRESHOLD potentiometer to return with one or two levels back at the level where the metal detector starts to slightly zoom, then proceeding to the descriptions above balancing. In addition, in order to reduce the response signal from the ground, can be set in advance desired level of discrimination (DISCR LEVEL potentiometer from level "GBS" is placed in the desired operating level) and then performed described above choice of zone.

Described above, vertical movement of the search coil, to the choice of most appropriate auto ground zone, should be carried at an area with no metal objects near the search coil, ie the piece of land on which it is described vertical movement of the search coil should not contain metal objects.

Otherwise they would interfere the selection process zone therefore can not be selected most appropriate auto ground zone. Whether the area is clean is easily established, when the search coil is moved horizontally above the terrain, ie without changing its distance towards the ground. When there are no metal objects, the predefined from the THRESHOLD potentiometer sound would not be changed.

After the choosing of auto ground zone has been finished, the GROUND switch remains in "AUTO" position (auto ground balance), while the DISCR LEVEL and THRESHOLD potentiometers are turned to the desired levels.

When changing the terrain with another, significantly different from the previous (changing the soil characteristics), to the device remain stable, necessary as described above, again to assess what is most appropriate in cases where auto ground zone.

9.4. GROUND POTENTIOMETER



The GROUND potentiometer serves for suppressing the ground interference while in a manual ground balance working mode.

For manual adjustment of the ground balance is needed:

- to be chosen the manual ground balance working mode (GROUND switch turned to "MANUAL" position);
- the DISCR LEVEL potentiometer to be turned at "GBS" position (Ground Balance Setting);
- the THRESHOLD potentiometer to be turned at a level, just before the level where the metal detector starts slightly zoom sound made (issued torn sound, buzzing, whiz) or one or two levels before the level of zoom (recommended for beginners searchers).

Then is done vertical (up-down) movement of the search coil ranging from 2-3 cm to 20-25 cm above the terrain, simultaneously with turning the GROUND potentiometer. At some levels of the GROUND potentiometer scale, the sound is louder when the search coil is near the ground, while at others the sound is louder when the search coil is high above the ground.

The balancing is actually finding the level (position) from the GROUND potentiometer, in which the descriptions in the way of movement of the metal detector search coil does not beeps or issue possible weak sound, or at least to preset audio threshold level did not change significantly.

In mineralized terrains, if has a strong responsive signal from the terrain and the manual balancing is difficult or the seeker has small practical experience, is recommended THRESHOLD potentiometer to return with one or two levels back at the level where the metal detector starts to slightly zoom, then proceeding to the descriptions above balancing. In addition, in order to reduce the response signal from the ground, can be set in advance desired level of discrimination (DISCR LEVEL potentiometer from level "GBS" is placed in the desired operating level) and then carry the balancing process of the device according to the above description.

The balancing should be carried at an area with no metal objects near the search coil, ie the piece of land on which it is described vertical movement of the search coil should not contain metal objects.

Otherwise they would interfere the balancing process and the metal detector can not be balanced or will be balanced incorrectly. Whether the area is clean is easily established, if the GROUND potentiometer is turned to a middle position and the search coil is moved horizontally above the terrain, ie without changing its distance towards the ground. When there are no metal objects, the predefined from the THRESHOLD potentiometer sound would not be changed. One other possibility is the chosen balancing area to be searched for metal objects in advance while using the automatic ground balance working mode (GROUND switch turned to "AUTO" position).

After the balancing has been finished, the GROUND switch remains in "MANUAL" position (manual ground balance), while the DISCR LEVEL and THRESHOLD potentiometers are turned to the desired levels.

When changing the terrain with another, significantly different from the previous (changing the soil characteristics) the device should be balanced again following the above-described way, so that it remains stable.

9.5. THRESHOLD POTENTIOMETER



The THRESHOLD potentiometer serves for assigning the necessary audio threshold and sensitivity of the metal detector.

It is adjusted with no metal objects around the metal detector's search coil and depends on the terrain.

The best depth for finding metal objects is achieved, when the THRESHOLD potentiometer is turned in a position, corresponding to a quiet zoom sound made by the metal detector in working mode (issued torn sound, buzzing, whiz).

Quiet zoom sound mode is suitable for experienced seekers. The beginners should work at lower levels.

When working in manual ground balance mode, is necessary the final audio threshold level to be set only after the unit is balanced.

The maximal audio threshold corresponding to a stable device condition depends on the terrain's characteristics, the device balancing (in the manual ground balance working mode) and the user search speed.

9.6. DISCR LEVEL POTENTIOMETER



The DISCR LEVEL serves for adjusting the detection/rejection level of iron, tin-foil and low-grade non-ferrous metals (usually pollutants), and for baseline exclusion of the discrimination (All metals mode) when it is set to level "0".

In level "0" the discrimination is excluded, ie the metal detector makes unaltered sound for all metals, ie it does not distinguish them. That is why this position is the same as the "GBS" position, in which it is recommended to carry out precision choice of auto ground zone and/or manual balancing of the device, with the aim of achieving the maximal balance for a particular terrain.

For a complete exclusion of discrimination may also further described below DISCR WIDTH and DISCR DEPTH potentiometers to be placed at its minimum level (DISCR WIDTH at a level "NORM", DISCR DEPTH at level "0").

When increasing the level of the DISCR LEVEL potentiometer, the metal detector starts to distinguish the metals (Discrimination mode), and each successive level betters the discrimination, ie the metal detector rejected to a greater extent iron, tin-foil and low-grade non-ferrous metals

When detecting non-ferrous metals (copper, bronze, silver, gold) it makes deep-toned, non-pausing sound, while for the ferrous metals (iron) the sound is pausing (recurring).

For levels from "4" to "10", the metal detector rejects at a different level iron objects, tin-foil and low-grade non-ferrous metals, ie when detecting them it is making either no sound or a quiet pop sound.

For practical use when searching for non-ferrous metals are recommended operating with the following levels of DISCR LEVEL:

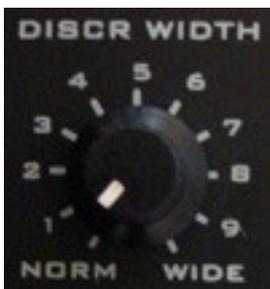
- For LTC48X v2: from „4“ to „6“.

- For LTC48X v1: from „6“ to „10“.

When detecting vibratory (dubious) signal, usually for heavily corroded iron, iron with alloys or deeply buried object, the level could be increase more in order to get more accurate signal discrimination. The surface sweeping of the particular terrain could contribute to the further improvement of the detecting, because it results in shortening the distance to the buried detected object.

DISCR LEVEL potentiometer is the main potentiometer for the discrimination. In order to convenience, it is available on the front panel of the electronic block. Described below DISCR WIDTH and DISCR DEPTH potentiometers (available at the bottom of the electronic block) are complementary and can be set to a single specified levels in accordance with instructions for their use.

9.7. DISCR WIDTH POTENTIOMETER



The DISCR WIDTH potentiometer serves for adjusting of the width (range) of the discrimination area:

- iron and tin-foil (level NORM = LTC48 discrimination);

- iron, tin-foil and low-grade non-ferrous metals (levels from "1" to "9" and level "WIDE").

The set level of this potentiometer, sets the maximum width of the area of discrimination for DISCR LEVEL potentiometer.

In the level "NORM", the discrimination has the same width as the base version (LTC48). All other levels (from "1" to "9" and level "WIDE") provide a wide area, ie greater discrimination.

It is recommended that work on possible small levels of DISCR WIDTH potentiometer.

In light and clean terrains is advisable to work at level "NORM". In polluted terrains, terrains with hot rocks and mineralized terrains is desirable to operate at levels between:

- For LTC48X v2: from „NORM“ to „4“.
- For LTC48X v1: from „NORM“ to „6“.

Higher levels should be set only in extreme necessity.

Set higher of real necessary level of DISCR WIDTH potentiometer (the width discrimination), in combination with a set of higher level of DISCR LEVEL potentiometer (degree of discrimination) may result in the rejection of weak color signals of small or deep buried ferrous metals.

In LTC48X v2 because has increasing range of discrimination by DISCR LEVEL potentiometer, DISCR WIDTH potentiometer usually not used (set to level NORM).

9.8. DISCR DEPTH POTENTIOMETER



The DISCR DEPTH potentiometer serves for adjusting the depth of discrimination (the maximum depth to which the metal detector distinguish the metals).

In position "0" depth of discrimination is practically equal to 0 cm, ie the metal detector issue the same sound (single solid signal) for all metals and consequently do not distinguish and reject them.

With increasing the level, depth of discrimination begins to grow, and increasing from the minimum 0 cm to a peak of about 30-40 cm, while each successive level the depth of discrimination is greater, ie at a level "10", the depth of discrimination is most appropriate and at this level the metal detector distinguish the metal at greater depth. As a result, on detection of non-ferrous metals (copper, bronze, silver, gold) can hear a deep-toned, continuous non-pausing sound, but for ferrous metals (iron) the sound is pausing (recurring). The specific behavior depends on the current levels of DISCR LEVEL and DISCR WIDTH potentiometers.

Should not be working with more than the required depth of discrimination set by DISCR DEPTH potentiometer. Otherwise, will be losing some of the greatest possible depth of detection!

For practical use, in light and clean terrains, when searching for non-ferrous metals, are recommended operating at levels from "5" to "7". In polluted terrains, terrains with hot rocks and mineralized terrains are recommended work at levels between "9" and "10". These levels may be used in cases where targets the maximum depth of discrimination.

In the terrains strewn with pottery, it is desirable to work with smaller levels of DISCR DEPTH potentiometer to more effective detection of non-ferrous metal located to the individual ceramics pieces.

In this case, the metal detector is desirable to be advance balanced and tuned to the specific ceramics, as described in 9.3 and 9.4 ways (manual and auto ground balance).

In the discrimination mode, intentional interception through the same signal at different levels of DISCR DEPTH potentiometer can be made estimations about the type of the detected metal (ferrous or non-ferrous), the depth of the detected metal (mainly for ferrous metals), the quality of detected metal (low or high) and size of the detected metal (small or large), or at least to gain additional data for the detected signal in order to judge it worth to be excavated (uncovered):

- If the detected signal is from high quality and/or large non-ferrous metal and/or shallow buried non-ferrous metal, then with increasing the levels of DISCR DEPTH potentiometer from level "0" to about level "6", the sound produced by the device will not change or will be changed slightly;
- If the detected signal is from low quality and/or small non-ferrous metal and/or deeply buried ferrous metal, then with increasing the levels of DISCR DEPTH potentiometer from level "0" to about level "7", the sound produced by the device will significantly change as will be blunt and/or will occur the first signs of rejection;

- If the detected signal is from ferrous metal (iron), then with increasing the levels of DISCR DEPTH potentiometer from level "0" to about level "10", at high levels will lead to the emergence of the typical for ferrous metals double pulled sound and/or to the level of total rejection, or at least pop of the signal. Actual level at which rejection begins (the pop) is in direct proportion dependence on the depth of which is buried the ferrous metal.

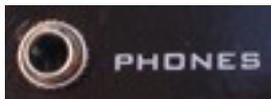
Actual behavior of the device in the above described situations are largely determined by the given current levels of DISCR LEVEL and DISCR WIDTH potentiometers.

9.9. LOUDSPEAKER

The Loudspeaker serves for producing a sound when an object is detected. The sound is deep-toned and non-pausing for non-ferrous metals and recurring (repeating) for ferrous metals (iron).

The loudspeaker lies on the back panel of the electronic block.

9.10. PHONES CONNECTOR



The PHONES connector serves for plug to metal detector, if necessary, stereo headphones with 3.5mm stereo jack. When the headphones are plugged in, the loudspeaker is switched off automatically and the metal detector's sound could be heard only in the headphones.

To the PHONES connector, may also include a 6.35mm stereo headphone jack means available in the standard package a 3.5mm to 6.35mm external stereo audio adapter for headphones.

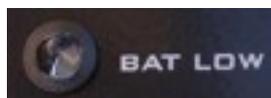
To protect your hearing, it is desirable before turning stereo headphones to BLISSTOOL LTC48X, to reduce the volume of the metal detector by VOLUME potentiometer, as put it between levels "2" and "3".

The use of stereo headphones with high-set volume of the VOLUME potentiometer can seriously damage your hearing!

The use of stereo headphones while using the metal detector has many advantages:

- stereo headphones block outside noise such as wind and traffic and allow you to hear better, even the weakest signals from deeply buried metal objects;
- through their use, the sound of your metal detector will not interfere with other searchers around you;
- their use, provides reduced power consumption from the battery of the metal detector, leading to an extension of its life.

9.11. BAT LOW LED



The BAT LOW LED shows the available charge in the battery. When this LED lights up, it is a signal that the battery is exhausted. In very low battery, from the loudspeaker of the metal detector began to hear periodic pulled sounds and the metal detector stops working or not working correctly.

The charging of the battery (for modifications with NiMH battery) or replacement with a new battery (for modification with alkaline battery) should be carried according to the description in 12.



Fig. 3 / Control, adjustment and indication appliances of BLISSTOOL LTC48X

10. DEVICE ADJUSTMENT AND PREPARATION FOR WORK

The metal detector is ready for use when the battery is charged and intact (the BAT LOW LED is not lit up).

Before initial use, to the modifications with NiMH battery, please charge the battery at least 8 hours (from 8 to 16 hours) through the automatic battery charger available in the standard package, as described in 12. The NiMH battery reaches full capacity and respectively toughness, after at least about 5 cycles of charge-discharge.

After the metal detector is assembled according to the description in 8, it can be turned on via turning the VOLUME potentiometer from left (level "OFF POWER") to right. This potentiometer also serves for adjusting the desired audio volume (levels from "1" to "MAX").

The choice of manual or automatic mode to eliminate the influence of land is done by GROUND switch described in 9.2, and the optimal way of tuning and balance, according to the selected mode are made according to the description available in 9.3 and 9.4.

The setting of the desired degree of discrimination (distinction of the metals) is performed by DISCR LEVEL potentiometer as description in 9.6. The width of the discrimination is set by DISCR WIDTH potentiometer as description in 9.7, and the depth of discrimination is set by DISCR DEPTH potentiometer as description in 9.8.

If the target is detection of any type of metals is necessary DISCR LEVEL potentiometer to be set at level "0". For a complete exclusion of the discrimination, DISCR WIDTH potentiometer and DISCR DEPTH potentiometer should be placed at its minimum level (DISCR WIDTH at a level "NORM", DISCR DEPTH at level "0").

In the case of ignoring the whole black metal (detection of non-ferrous metals only), ie this is a discrimination mode, it is necessary DISCR LEVEL, DISCR WIDTH and DISCR DEPTH to be set at the following recommended levels:

1. DISCR LEVEL potentiometer:

- **For LTC48X v2:** from „4“ to „6“.
- **For LTC48X v1:** from „6“ to „10“.

2. DISCR WIDTH potentiometer:

- **For LTC48X v2:** „NORM“.
- **For LTC48X v1:** „NORM“.

3. DISCR DEPTH potentiometer:

- **For LTC48X v2:** from „6“ to „10“.
- **For LTC48X v1:** from „6“ to „10“.

And lastly, with the THRESHOLD potentiometer are adjusts the audio threshold to the desired level.

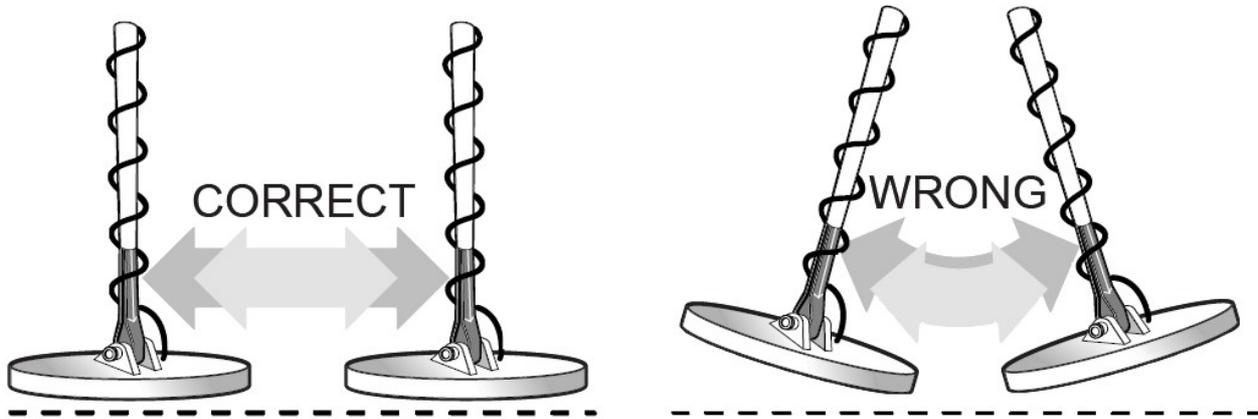
With this, the metal detector is adjusted and ready for work.

11. SEARCH METHOD

Metal detector BLISSTOOL LTC48X works in motion mode, ie it reacts to a metal object buried in the ground only when the search coil is swung above it.

The searching for metal objects is actually by moving the search coil above the ground surface.

While doing this, the search coil has to be held parallel towards the ground surface and at a minimum distance above it. The raising reduces the search depth.



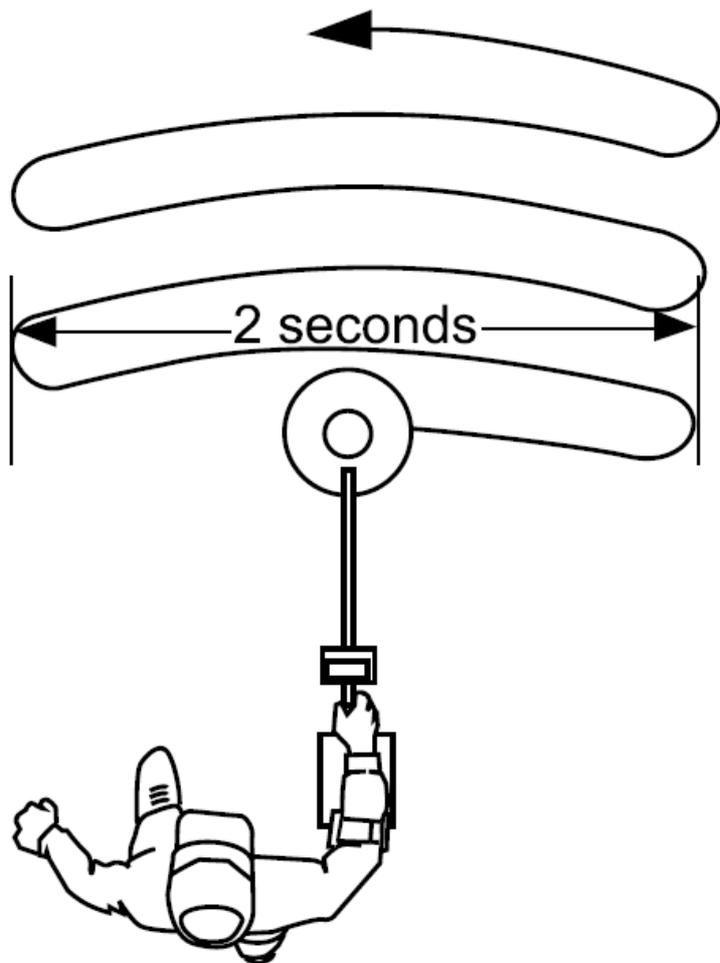
The search consists of a uniform and slow swinging of the coil one side to another, while the user holds the metal detector's handle and uses the armrest for support.

Too fast or too slow moving of the coil could result in shortening the search depth, especially for deeply buried or small objects.

The search coil path during the search resembles a zigzag movement, which is a result from the uniform and slow swinging of the coil one side to another while the user is moving forward.

The swing's breadth and the user's speed are chosen according to the terrain, the sloping and the size of the terrain to be searched.

During swinging the user should avoid hitting the search coil in the available objects on the terrain (stones, roots and parts from tree and shrubs, uneven ground).



The precise location of the detected object (centering of the signal) is determined by moving the search coil in two perpendicular axes, while the user stands still or turns round for detecting the signal from different sides.

To gain an idea for the depth of which is the detected object, the search coil gradually lifted in the air above the ground and monitor height to which the metal detector still detect the object. This, together with specific particular sound (power, duration, purity) is sufficient in most cases to determine whether it is a shallow or deep object, respectively large or small object. For this purpose, helps the already described above centering of the signal to study the area of detection: whether it is narrow or wide.

12. BATTERY. BATTERY CHARGING

BLISSTOOL LTC48X is available in several modifications according to type, capacity and configuration of the battery. Please before you continue with this point read detailed the information available in 4.

The battery is located in the power supply module and is connected to a metal detector electronics via a standard 6F22 battery connector, which creates an opportunity, if necessary, easily be on, off, replaced. In order to better safety and prevent injuries, BLISSTOOL LTC48X has the protection from high voltage and erroneous inclusion of the battery (confusion of the poles).

To access the battery is required by screwdriver or other suitable tool to be uncovered four screws available on the lid of the power supply module.

The NiMH batteries has around 500 charging/discharging cycles (battery life), after which its capacitance drops sharply and must be replaced with a new battery. When the NiMH battery is exhaust, it can be recharged via a battery charger.

The alkaline batteries are disposable and after being exhausted must be replaced with new ones.

If your BLISSTOOL LTC48X is modification with alkaline batteries, if no longer using it, remove the alkaline batteries from the metal detector.

The following instructions about the recharging refer to modifications with NiMH battery. These modifications are standard equipped with an automatic battery charger.

Do not attempt to recharge alkaline batteries. They are disposable and the attempt to recharge them can cause explosion, fire or damage of the battery charger and the metal detector.

The battery charging has to be done only by the automatic battery charger that is included in the standard package. It is designed to ensure the quality and safety during the battery charging process.

To charge the battery, plug in the battery charger jack into the connector that lies on the front panel of the power supply module. Then the battery charger contact-plug is plugged into the ~220V circuit.

The charging continues from 3 to 16 hours, depending on the battery level of discharge. It is not required to keep a close watch on the charging process, as the battery charger is automatic and after the battery charging is finished it switches to a stand-by mode, which protects the battery from over-charging.

The green LED lits up when the battery charger is plugged in ~220V circuit, which indicates that the charger is working properly.

The charging process and the charging stages are indicated with the different light intensity of the red LED – when the battery is discharged, it is either out or is dimly lit up, while during the charging process the intensity is increased, resulting in a bright intensity when fully charged.

After the charging process has been finished, the battery charger should be switched off following the reversed order: plugging off the ~220V circuit by pulling out the power supply contact-plug from the wall-plug, then the battery charger jack is plugged off.

During charging, the metal detector should be switched off. Switching on the detector while being charged could cause serious damage to the electronic block or to decrease its quality.

The built-in rechargeable NiMH battery does not need any further maintenance besides being charged.

13. PRACTICAL RECOMMENDATIONS

The metal detector BLISSTOOL LTC48X is designed to find metal objects buried in the ground. It does not work well in residential areas and rich urban environment because it is highly sensitive electronic device and is troubled by surrounding electric devices, systems with electricity and metal objects (metal parts of the structure of the property, equipment and furnishings of the property). Therefore, when working in residential areas, the metal detector may be unstable, nervous, to give false signals. Typically in such conditions can not be demonstrated and measured its maximum parameters. If you want to measure the maximum parameters of your metal detector, do the test in terrain outside the settlement, ie where you will search for buried metal objects. There, the metal detector has maximum appropriate behavior and parameters.

When working with the metal detector near another metal detector, they can interfere with each other. This is inevitable in cases where the metal detectors operate on the same or similar operating frequency. Such are the metal detectors from the same brand and model, but not limited, because at the same operating frequency able to work and other than their metal detectors. Disturbance is expressed in the issuing of periodicals, evenly and pulled sounds from the metal detector.

If during work with the metal detector, you on the call via mobile phone or your mobile phone rings, is possible the metal detector to be troubled by it. Usually the metal detector does not interfere with mobile phone in standby mode, except where the terrain on which you are, a mobile operator's signal is weak or lost. In this case, even in standby mode, your mobile phone periodically tries to connect to the nearest mobile cell of the used by you mobile operator, with the result that it can cause a periodic disturbance of the metal detector.

One of the most important components of the metal detector is the search coil, which to a great extend determines the device's sensitivity.

When the metal detector is carried, for example in a rucksack or a traveling bag, an exceptional care should be taken to avoid the bending of the coil cable near the nozzle at the base of the search coil. That may result in tearing the cable connecting cores and damaging of the search coil and the metal detector.

When necessary, the search coil, the electronic block box and the power supply module box could be cleaned with wet cloth. Do not use detergents as they may damage the plastic parts or the inscription on the front panel of the electronic block.

The electronic block and the search coil are very sensitive towards sudden environmental temperature alterations. When there is a sudden temperature change, the user should wait usually 25-30 minutes before switching on the metal detector.

The inclusion of non air-conditioned and non tempered metal detector can cause its damage.

Signs of non tempering are: frustration, inability to regulate or evenness of the sound threshold; a general lack of sound. In the presence of at least one of these signs, to prevent injury, it is necessary metal detector immediately be power off and left off a few minutes to temper and/or air conditioning (in high humidity, the transition from warm to cold and vice versa).

While working with the metal detector, the search coil should be protected from damage (hit).

The usage of the metal detector in a rainy day may result in its damage.

The metal detector could be safely and properly used, if there is morning dew (because of the watertight search coil). An extensive care should be taken, if the detector is put on the ground, especially on a wet grass, as the water should not be allowed to get inside the electronic block box and the power supply module box. The electronic block and the power supply module are not watertight and a serious damage would be caused to the metal detector, if water gets inside them.

If you are searching in areas, where ammunitions or other explosive substances may be detected, be extremely careful when excavating, because we do not carry the responsibility for your actions and behavior.

Do not open the electronic block box and the power supply module box. If this is necessary, please contact us, using the contact information, given in 18, so that we could provide the

appropriate technical support.

14. INDICATIVE AND RECOMMENDED SETTINGS

14.1. INTRODUCTION. BSMD CODE

Available below indicative and recommended settings are set from the indicative and recommended levels for adjustment of the individual adjustment appliances of metal detector BLISSTOOL LTC48X (potentiometers and switches).

They aim should be to help the beginner searchers. Furthermore, they can serve as a base at learning how to set the metal detector BLISSTOOL LTC48X.

It is advisable to use them as a basis, but you yourself by testing and accumulation of practical experience with BLISSTOOL LTC48X need to find the optimum settings for the terrains on which you work.

Presented are 16 specialized settings optimized for different purposes as: work in terrain with low, medium or high degree of mineralization; work in no contaminated and contaminated terrain; work with a maximum depth of detection.

To quickly and intuitively distinguish and learning of the various specialized settings, they besides named with words which explains their purpose, has and short abbreviated name. It consists from five letters placed between the characters: <>, for example: **<TDACL>**

This formal encoding for the formation of short abbreviated name indicating the purpose of the indicative and recommended settings is called from BLISSTOOL: **BSMD** code (**BLISSTOOL Settings for Metal Detectors**).

In order, from left to right, adopted by BLISSTOOL importance of the individual characters is:

- *The first symbol indicates **the type of the setting**:*
 - letter **P** for: setting for maximum depth of detection / P from Penetration /
 - letter **T** for: terrain optimized setting / T from Terrain /
- *The second symbol indicates **the detection mode**:*
 - letter **E** for: all metals mode / E from Everything /
 - letter **D** for: discrimination mode / D from Discrimination /
- *The third symbol indicates **the mode for eliminating the ground interference**:*
 - letter **A** for: automatic ground balance / A from Auto /
 - letter **G** for: manual ground balance / G from Ground /
- *The fourth symbol indicates **the contamination of the terrain**:*
 - letter **V** for: no contaminated terrain / V from Virgin /
 - letter **C** for: contaminated terrain / C from Contaminated /
- *The fifth symbol indicates **the mineralization of the terrain**:*
 - letter **L** for: terrain with low degree of mineralization / L from Low /
 - letter **M** for: terrain with middle degree of mineralization / M from Middle /
 - letter **H** for: terrain with high degree of mineralization / H from High /

If for any of the above described meanings, the setting applies to all of its possible characteristics, in place of the symbol responsible for this matter, is place letter **U** / U from Universal /.

1 4.2. SETTINGS FOR MAXIMUM DEPTH OF DETECTION

<PEGUU> Setting for maximum depth of detection in all metals mode and manual ground balance:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: of level „0“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of level „0“

<PEAUU> Setting for maximum depth of detection in all metals mode and automatic ground balance:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „AUTO“

AUTO ZONES switch: position at which the metal detector is balanced to the terrain (position „3“, „2“ or „1“)

DISCR LEVEL potentiometer: of level „0“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of level „0“

<PDGUU> Setting for maximum depth of detection in discrimination mode and manual ground balance:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: at LTC48X v2 of level „4“, while at LTC48X v1 of level „6“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of level „5“

<PDAUU> Setting for maximum depth of detection in discrimination mode and automatic ground balance:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „AUTO“

AUTO ZONES switch: position at which the metal detector is balanced to the terrain (position „3“, „2“ or „1“)

DISCR LEVEL potentiometer: at LTC48X v2 of level „4“, while at LTC48X v1 of level „6“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of level „5“

1 4.3. SETTINGS FOR TERRAINS WITH LOW DEGREE OF MINERALIZATION

<TDAVL> Terrain optimized setting in discrimination mode and automatic ground balance for no contaminated terrains with low degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „AUTO“

AUTO ZONES switch: position „3“ or „2“

DISCR LEVEL potentiometer: at LTC48X v2 of level „4“, while at LTC48X v1 of level „7“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of levels from „6“ to „10“

<TDGVL> Terrain optimized setting in discrimination mode and manual ground balance for no contaminated terrains with low degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: at LTC48X v2 of level „4“, while at LTC48X v1 of level „7“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of levels from „6“ to „10“

<TDAVL> Terrain optimized setting in discrimination mode and automatic ground balance for contaminated terrains with low degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „AUTO“

AUTO ZONES switch: position „3“ or „2“

DISCR LEVEL potentiometer: at LTC48X v2 of level „5“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of levels from „6.5“ to „10“

<TDGVL> Terrain optimized setting in discrimination mode and manual ground balance for contaminated terrains with low degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: of the zoom level (usually between levels from „4“ to „6“)

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: at LTC48X v2 of level „5“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of levels from „6.5“ to „10“

1 4.4. SETTINGS FOR TERRAINS WITH MIDDLE DEGREE OF MINERALIZATION

<TDAVM> Terrain optimized setting in discrimination mode and automatic ground balance for no contaminated terrains with middle degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: one level before the zoom level

GROUND switch: position „AUTO“

AUTO ZONES switch: position „2“ or „1“

DISCR LEVEL potentiometer: at LTC48X v2 of level „4.5“, while at LTC48X v1 of level „9“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of levels from „7“ to „10“

<TDGVM> Terrain optimized setting in discrimination mode and manual ground balance for no contaminated terrains with middle degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: one level before the zoom level

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: at LTC48X v2 of level „4.5“, while at LTC48X v1 of level „9“

DISCR WIDTH potentiometer: of level „NORM“

DISCR DEPTH potentiometer: of levels from „7“ to „10“

<TDACM> Terrain optimized setting in discrimination mode and automatic ground balance for contaminated terrains with middle degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: one level before the zoom level

GROUND switch: position „AUTO“

AUTO ZONES switch: position „2“ or „1“

DISCR LEVEL potentiometer: at LTC48X v2 of level „5.5“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: at LTC48X v2 of level „1“, while at LTC48X v1 of level „3“

DISCR DEPTH potentiometer: of levels from „8“ to „10“

<TDGCM> Terrain optimized setting in discrimination mode and manual ground balance for contaminated terrains with middle degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: one level before the zoom level

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: at LTC48X v2 of level „5.5“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: at LTC48X v2 of level „1“, while at LTC48X v1 of level „3“

DISCR DEPTH potentiometer: of levels from „8“ to „10“

14.5. SETTINGS FOR TERRAINS WITH HIGH DEGREE OF MINERALIZATION

<TDAVH> Terrain optimized setting in discrimination mode and automatic ground balance for no contaminated terrains with high degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: two levels before the zoom level

GROUND switch: position „AUTO“

AUTO ZONES switch: position „1“ or „3“

DISCR LEVEL potentiometer: at LTC48X v2 of level „5“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: at LTC48X v2 of level „NORM“, while at LTC48X v1 of level „2“

DISCR DEPTH potentiometer: of levels from „9“ to „10“

<TDGVH> Terrain optimized setting in discrimination mode and manual ground balance for no contaminated terrains with high degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: two levels before the zoom level

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: at LTC48X v2 of level „5“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: at LTC48X v2 of level „NORM“, while at LTC48X v1 of level „2“

DISCR DEPTH potentiometer: of levels from „9“ to „10“

<TDACH> Terrain optimized setting in discrimination mode and automatic ground balance for contaminated terrains with high degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: two levels before the zoom level

GROUND switch: position „AUTO“

AUTO ZONES switch: position „1“ or „3“

DISCR LEVEL potentiometer: at LTC48X v2 of level „6“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: at LTC48X v2 of level „2“, while at LTC48X v1 of level „4“

DISCR DEPTH potentiometer: of level „10“

<TDGCH> Terrain optimized setting in discrimination mode and manual ground balance for contaminated terrains with high degree of mineralization:

VOLUME potentiometer: of level from „4“ to „8“

THRESHOLD potentiometer: two levels before the zoom level

GROUND switch: position „MANUAL“

GROUND potentiometer: level at which the metal detector is balanced to the terrain (usually between levels from "3" to "7")

DISCR LEVEL potentiometer: at LTC48X v2 of level „6“, while at LTC48X v1 of level „10“

DISCR WIDTH potentiometer: at LTC48X v2 of level „2“, while at LTC48X v1 of level „4“

DISCR DEPTH potentiometer: of level „10“

15. WARRANTY SUPPORT AND SERVICE

The metal detector BLISSTOOL LTC48X has a 3 Year Worldwide Warranty for the quality of the produced components and in case of any factory flaws.

The warranty excludes the battery and is not valid for mechanical damages of the respective components and for damages done by an incorrect usage or unauthorized access and repair (opening the electronic block; opening the power supply module; wearing, force opening or damaging of the carrier construction, the search coil, the cable or the jack for the coil; incorrect plugging of the search coil; damaging the detector due to connecting to incompatible search coils, batteries, battery chargers and headphones).

To be a subject of a repair under warranty, a device should be delivered to any of our authorized service support offices. The customer must pay all delivery and transport expenses.

In order to protect the metal detector from a damage, it is desirable that the transport of the device should be carried out in its original purchase box (included in the standard kit), since it is optimized for a safe storage and transport.

The serial number and the purchase date, written on the warranty card, verify the warranty.

For further details and information about warranty and after warranty support and service, please contact us by using the contact information, given in 18.

16. LEGISLATION

Possession of a metal detector is completely legal as long as they comply with existing legislative framework. For this purpose, please check the specific laws that relate to metal detecting in your country.

17. BLISSTOOL

BLISSTOOL is a Bulgarian manufacturer of professional metal detectors and metal detecting accessories.

All BLISSTOOL metal detectors are developed, tested and manufactured in Bulgaria, in close cooperation with professional treasure hunters, and have a 3 Year Worldwide Warranty for the quality of the produced components and in case of any factory flaws.

The BLISSTOOL team has years of experience in metal detecting and design of metal detectors. BLISSTOOL thoroughly test each metal detector before send it to the final customer and are confident in the quality of our products.

BLISSTOOL offer professional products at an affordable price.

18. CONTACT INFORMATION

BLISSTOOL

web site: www.blisstool.com

Email: info@blisstool.com

GSM: +359883450667

Skype: blisstool

BLISSTOOL LTC48X is RoHS compliant



When RoHS compliant symbol is marked on your product means that it is compatible with European Directive 2002/95/EC (RoHS, Restriction of Hazardous Substances Directive).

With this directive, the EU recommended limiting the use and incorporation of harmful materials, such as lead, in the manufacture of electrical and electronic products.

In order RoHS compliance, in the electronics of BLISSTOOL LTC48X are used high quality electronic components, unleaded tino for soldering and pcb board with a final coating nickel-gold. These green technologies ensure of your metal detector high quality and a long life. For comparison, the standard and cheaper technology that is not RoHS compliant, includes the use of tino with a high content of lead and pcb board with a final coating tin-lead.



BLISSTOOL LTC48X falls under the WEEE directive

When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC (WEEE, Waste Electrical and Electronic Equipment).

This EU directive governs matters relating to the collection, storage and recycling of waste from electrical and electronic products.

BLISSTOOL LTC48X is designed and manufactured with high quality materials and components, which can be recycled and reused.

Please inform yourself about the local separate collection system for electrical and electronic products.

Please act according to your local rules and do not dispose of your old products with your normal household waste. The correct disposal of your old product will help prevent potential negative consequences for the environment and human health.

In order to improve the product, BLISSTOOL reserves the right to make changes without notice.

**2007 - 2010 © BLISSTOOL
ALL RIGHTS RESERVED**