Package contents:
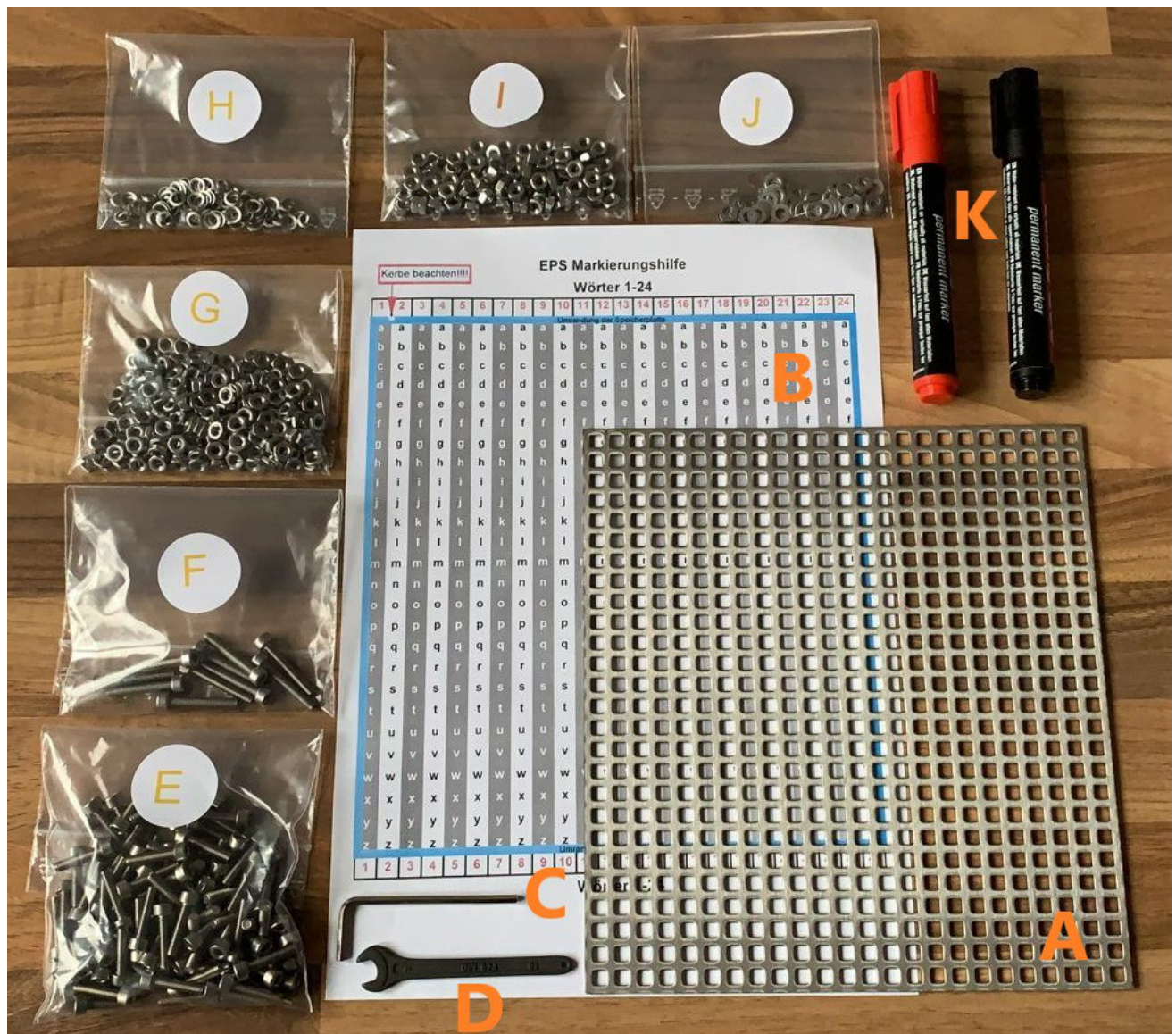
A: -   1 x perforated plate = **storage plate**
B: -   1 x pre-printed A4 sheet = **marking aid**
C: -   1 x Allen key
D: -   1 x open-end wrench
E: -   96 of screws (short)
F: -   10 of screws (long)
G: - 240 of nuts (flat design) = **reading nuts**
H: -   96 lock washers
I: -   96 of nuts (standard design) = **end nuts**
J: -   60 of slices **= cutting discs**
K: -   2 of waterproof marker pens (red / black)

Always use a pad (cardboard, for example) to keep the table from being scratched!

Always work in a calm and bright environment so that your words are 100% correct.

Introduction:

When installing a hardware wallet (Ledger Nano S, Ledger Nano X, Trezor One, Trezor T, etc.), a passphrase is generated from 24 English words, which can be used to calculate the private key for each crypto currency.

The system is called bip39 and contains a total of 2048 words. It is structured in such a way that 2 words never have more than 3 identical first letters. This means that each of the 2048 words can be uniquely identified by a maximum of 4 initial letters.

In practice, it looks like that in the Ledger Nano S, for example, you only have to enter a maximum of the first 4 letters to get the correct word displayed (similar to street names in navigation devices).

It is therefore completely sufficient to only remember the first 4 letters per word.

Operation manual:
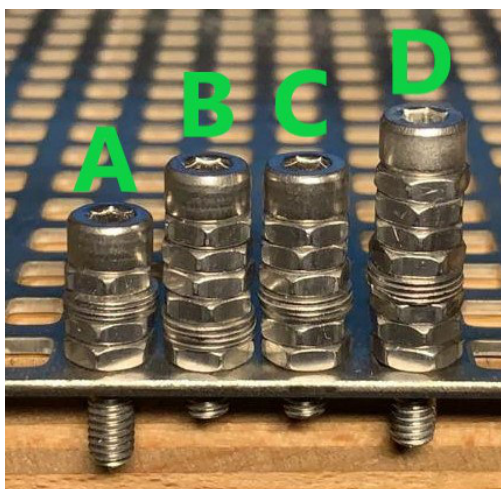
There are four specified standard shoring variants:
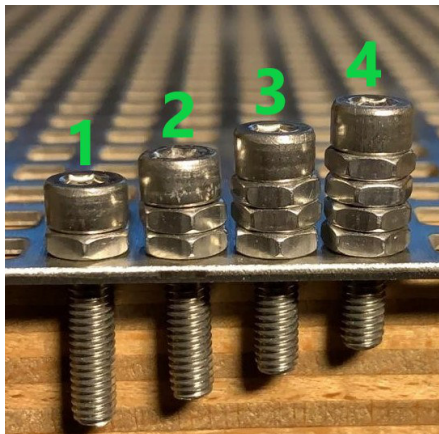
1 - **1x** flat **reading nut** = **letter 1**

2 - **2x** flat **reading nut** = **letter 2**

3 - **3x** flat **reading nut** = **letter 3**

4 - **4x** flat **reading nut** = **letter 4**

Since a word can also have 2 identical letters and therefore a double assignment is necessary in these rare cases, the following combinations can result:

Screw A = letters 1 and 2

Screw B = letters 1 and 4

Screw C = letters 2 and 3

Screw D = letters 3 and 4

These are only 4 example combinations. There are more possible combinations. The purpose of the washers is to show a visible separation.

Step 1: Align the reading page for words 1-24

Take the storage disk and place it on the marking aid. You have to put the perforated sheet down so that the corner with the notch is in the upper left corner (see picture). We refer to this position of the plate as the **reading side** in the following.

**Step 2: Marking for the letters 1-4 from the 1st word**

Mark the letters 1-4 (from top to bottom) with black lines of color (only max. The first four letters per word). This procedure is shown in the picture for the first word ("Calm").
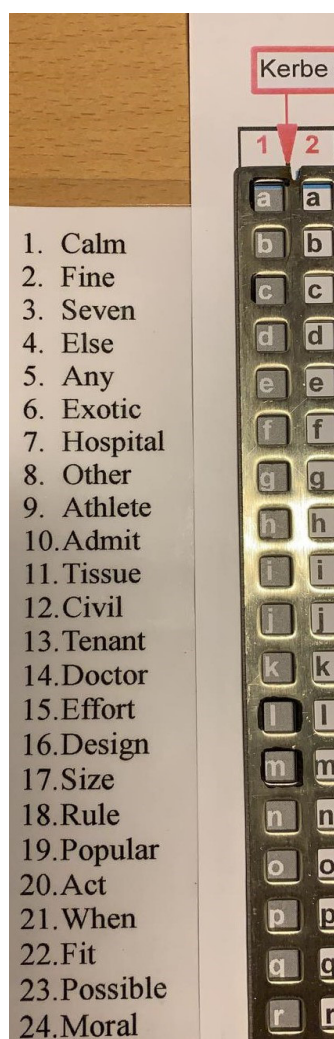

The first letter "C" is given a vertical line of paint on the left on the inside flank of the hole.

The second letter "A" is given a second horizontal color line on top of the inside flank of the hole in addition to the vertical line of color.
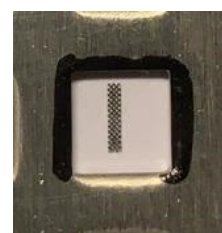
In addition to the vertical line of color (left) and the horizontal line of color (above), the 3rd letter "L" has a 3rd vertical line of color on the right on the inside flank of the hole.
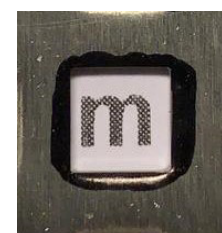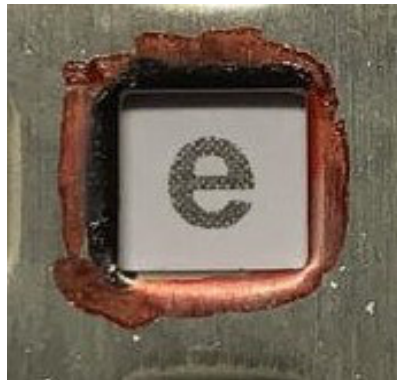
The 4th letter "M" is given a 4th horizontal color line at the bottom of the inner flank of the hole in addition to the vertical line of color (left) and the horizontal line of color (above) and the vertical line of color (right).

The number of colored strokes indicates the **position** in which the letter is in the word.

It is quite possible that a letter appears in two positions in the word. Here it is the case in the 3rd word "Seven". The "E" is in the 2nd and 4th position in the word.
The first "E" was marked by a black vertical line of color on the left and a black horizontal line of color at the top of the inner flanks of the hole (which means that this "E" is in the 2nd position in the word).

Now mark the second "E" in the word, which is in the 4th position, with the red felt pen. This is done with 4 red lines of color on the inner flanks of the hole. Since two inner flanks are already covered with black lines, place the red line next to the black color line.
Note: Now it also becomes clear why you should work with a delicate tip of the pen.

When you have selected all the words, your record should look something like this:

Step 3: screw on reading nuts

After you have marked all 24 words in color, you can now convert them into permanent marking by applying the so-called "**reading nuts**".
**Note: Only the flat nuts are read nuts!**

As is well known, there are four standard types of marking:
 - Marking on the left **= 1x reading nut = letter 1**
 - Marking left + above **= 2x reading nut = letter 2**
 - Marking left + top + right **= 3x reading nut = letter 3**
 - Marking left + above + right + below **= 4x reading nut = letter 4**

Note: As mentioned above, two markings can also be marked on one hole. This can be seen from the red / black markings. If this is the case, build in 4 washers as a visible separation between the reading nuts.

Take the screws, the reading nuts (flat), the washers, the lock washers, the locking nuts and the tool and screw them together as follows:
-   Turn the appropriate number of "reading nuts" onto a short or long screw (long only if more than 4 reading nuts are to be expected) up to the screw head (well hand-tight). If you have a double assignment, install 4 washers as a visible separation between the respective number of reading nuts.
-   Insert the configured screw through the appropriately marked hole from the reading side towards the rear.
-   Hold the screw with one finger to prevent it from falling out and turn the plate on its back.
-   Take a lock washer and place it over the thread.
-   Take a locking nut and turn it until it rests against the sheet metal with the lock washer (hand-tight).
-   Take the Allen key and tighten the screw firmly (4-5 Nm).
-   As a rule, it is sufficient to tighten the screw in this way, since the nut and the lock washer "interlock" with one another. This is often only done after the 3-5 quick turn. However, should it happen that the locking nut turns permanently, take the open-ended spanner and hold the locking nut while you tighten the screw.
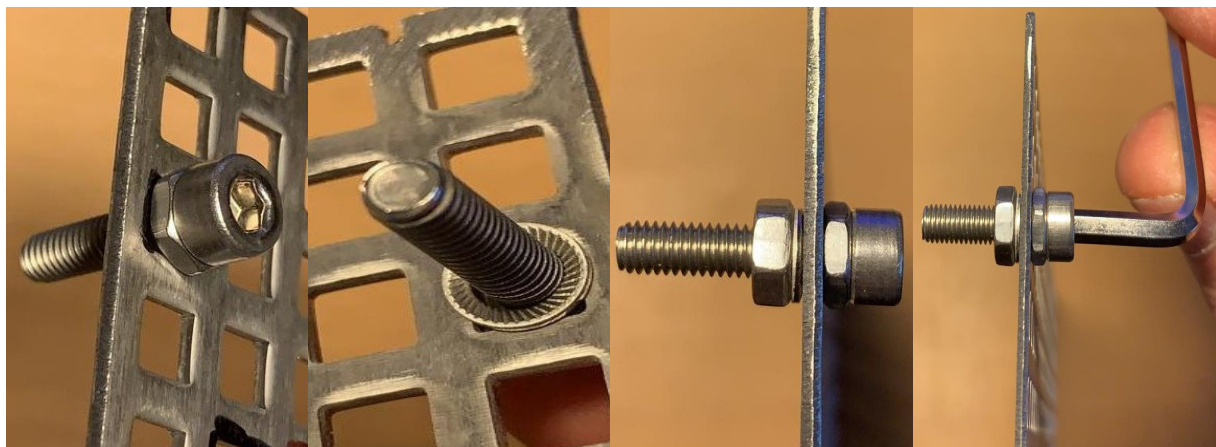
Step 4: Check the 24 words (!! important !!)

To check the correctness of the marked words proceed as follows:
- Place the ready-screwed storage plate with the reading side 1 onto the marking aid.
- Read the words from the record using the reading nuts and note the letters for the single words (max. 4 letters per word).
- Check your words read from the plate with your original ones (your passphrase).
- Correct any discrepancies
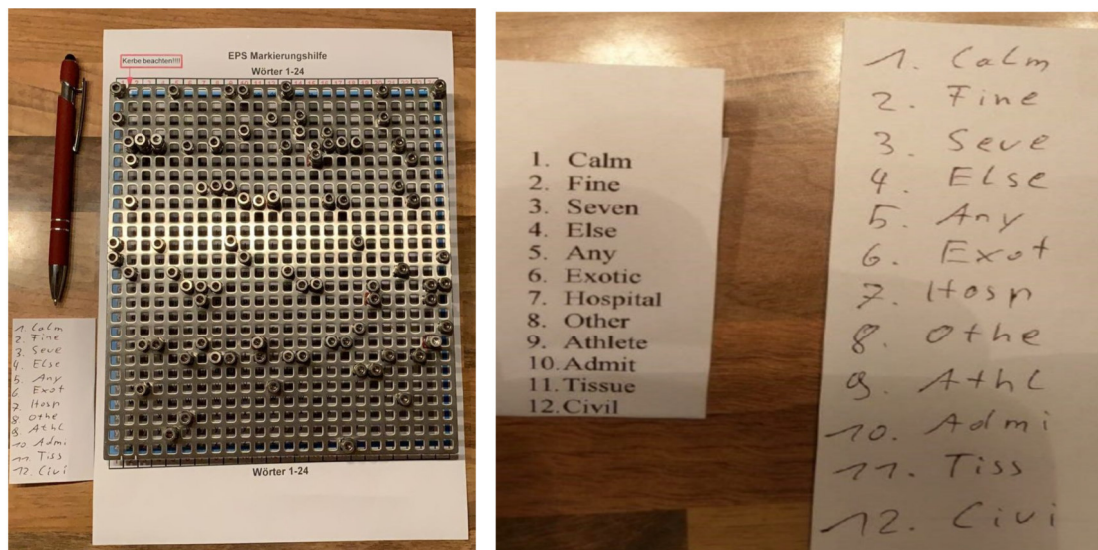
## Step 5 (optional): Destroy the threads

If you are really sure that everything is correct, you can cut off the remaining threads with pliers. This way you make sure the nuts can only be unscrewed with force.
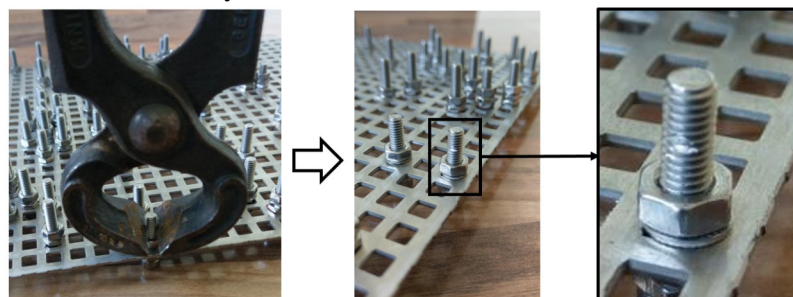
Step 8: Safely store the disk

After a successful check, you should secure your storage disk against theft and against unintentional disposal. Whether you just hide the record at the end, put it in a safe or in a safe deposit box is up to you.

In the end, your plate should look alike this:
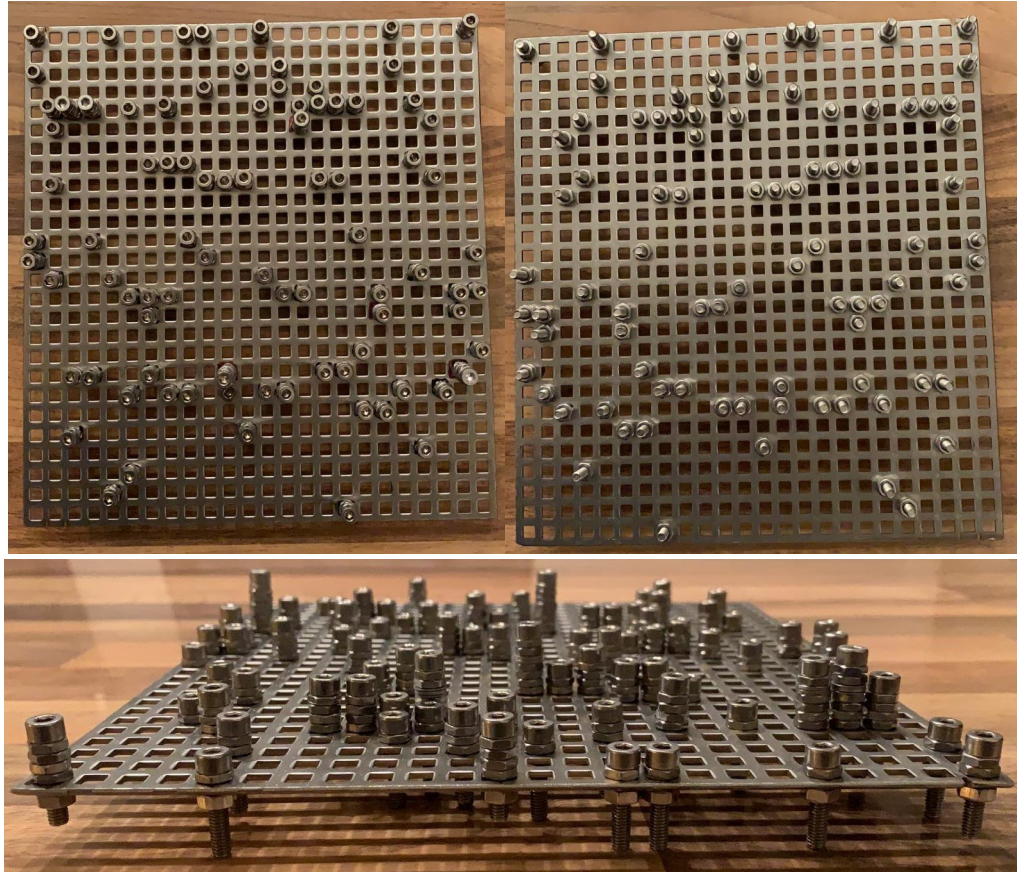
Legal notice:
- No liability for the correctness of your created passphrase!
- ONLY YOU ARE ALONE RESPONSIBLE FOR YOUR ACTIONS