MAGIC SQUARE HELPER

7	12	1	14
2	**M**	8	11
16	3	**S**	5
9	**H**	6	4

CHANNING MOOS
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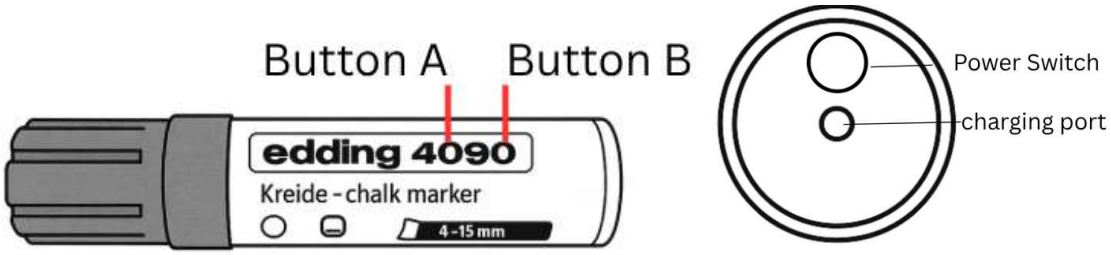
Overview of the device



Button usage overview

Here is a quick overview about the usage of the Buttons. Further details are explained later in this document.

Action	Button A	Button B
Single Click	Open or select menu item or decrease value	Cycle through menu items or increase value
Double Click (only possible within START and SETTINGS section)	Return to main menu	Calculate and display square (incl. weekday)
	Unlock / Lock Settings Menu	
Long Press	Go back (e.g. to menu) or reset	Move to next input step (within START section) or enter sleep mode (within main menu)
In Start Menu	Single Click: Decrease current digit Long Press: move cursor left Double Click with button B: Unlock / Lock Settings	Single Click: Increase current digit Long Press: move cursor right Double Click with button A: Unlock / Lock Settings
In Settings Menu	Single Click: Toggle Lefty Mode / Enter Square Submenu	Single Click: Switch between “Lefty” and “Square” options
In Square Submenu	Single Click: Select mode (Sum / Date)	Single Click: Toggle between Sum and Date mode
While showing square	Single Click: Navigate backward through lines	Single Click: Navigate forward Long Press: Show column/row sums

General information

This guide explains how to use the Magic Square Helper device and the marker. It includes information on turning the device on/off, entering numbers or dates, and showing the results on the display.

Using the marker to write

You can use the Magic Square Helper as a marker as well.
Usage:

- Shake the marker with the cap on
- Remove the cap
- Pump the marker with the nib downwards on e.g. a piece of scrap paper
- Carefully pump it up and down until ink fills the nib
- The marker is now ready to use
- Store horizontally

Turning on the Helper

Turn on the device by pressing the power button located at the bottom of the device. Use a pen or small object to press the button. You will hear a “click”.

Deep Sleep Mode

To enter Deep Sleep Mode, long-press Button B in the main menu. The device also enters this mode automatically after 10 minutes of inactivity to save power. To wake it, press Button B for about 3 seconds.

Charging the Helper

Charge the device via the charging port located in the small hole at the bottom center of the device. You can see the battery percentage in the upper right corner of the display.

Turning Off the device

Turn off the device by pressing the power button at the bottom of the device again. Use a pen or small object to press the button. You will hear a “click”.

Main Menu

After startup, the main menu appears on the display. Navigate with short presses on Button B to get to the next menu item. Select items with Button A, to go back to the previous menu long-press Button A.

The main menu contains:

- START
- SETTINGS
- CREDITS

START Section

Depending on the settings, enter sum or a date to create the Magic Square.

SETTINGS Menu

The Settings are locked by default. You have to unlock them by double-pressings buttons A & B simultaneously.
The Settings get locked again after leaving the Settings Menu.
In the Settings, you can change the following options (change to lefty mode/ change to sum or date). Navigate with short presses on Button B to get to the next menu item. Select items with Button A, to go back to the previous menu long-press Button A.

Dim the Screen:
The default option is Dim Screen OFF. If you want to have the Display less bright, you can dim the screen by pressing Button A. You can tell if dimming is active by the „>“ sign in front of the setting.

Change to lefty Mode:
The default option is lefty mode OFF. If you are left-handed, you can flip the display by activating the Lefty Mode by pressing Button A. You can tell if the mode is active by the „>“ sign in front of the setting. While in lefty mode the buttons won’t change their function.

Change the Set Square (sum or date):
The default option is sum.
Navigate with short presses on Button B to get to the next menu item. Select items with Button A. To go back to the previous menu long-press Button A.
You can tell which option is active by the „>“ sign in front of the setting.

Show the installed firmware version:
The last option in the Settings is to show the installed version.

CREDITS Section

Shows the credits of the inventors. To go back to the previous menu, long-press Button A.

Let’s start the performance

Entering numbers

Choose 'START' to input a sum or a date regarding your chosen setting.

Entering a sum

The maximum sum is 999.
Start with the first digit - the default value is 5:

- Button A decreases the digit by one.
- Button B increases the digit by one.
- Be careful when pressing the buttons – enter numbers one at a time. Pressing too quickly may trigger a double click and activate another function. (Information about double-click follows)
- To add another digit, long-press Button B.
- To delete the current digit or move to the previous digit, long-press Button A.
- If you're at the first digit, you return to the main menu by long-pressing Button A.
- To finish your input and calculate the Magic Square, double-click Button B.

Entering a Date

Start with the first digit of the day:

- Button A decreases the digit.
- Button B increases the digit.
- Long-press Button B to move to the next digit.
- Long-press Button A to return to the previous digit, or to the main menu if you're at the first digit.

Note:

- Selecting '3' as the first digit of the day automatically sets the second digit to '0'.
- Selecting '2' as the first digit of the year automatically sets the following digits to '0'.
- To calculate the Magic Square, double-click Button B.

Showing the Magic Square on the display

If you double-click Button B after entering the sum or date, the display shows you the calculated magic square line by line, starting at row 1 with the first pair of numbers:

- Click Button B to move to the next pair.
- Click Button A to move to the previous pair.
- Long-press Button A to return to the input screen.

Showing additions on the display

You can get help with the additions after viewing the last numbers on the display of the Magic Square (row 4, pair 2) by long-pressing Button B. The additions are displayed sequentially. Long-press Button B to get the next addition:

- Columns (top to bottom)
- Rows (left to right)
- Diagonals (first from top-left; then from top-right)

Note: If the sum exceeds 100, the first summand will be shown on the display as X (e.g.: 169 + 104 = 273 → display shows X+104 =273).

Resetting the device

You can reset the device to set all the numbers and calculations to its defaults, because normally the device remembers what you entered last time.
To reset the device, long press Button A while you are located in the Main Menu.

How to Update the firmware of the device

To update the device (via USB-C), just follow these simple steps:

Step-by-Step Instructions

1. **Open the marker**
   Hold the marker upright and unscrew the complete black top part.
2. **Remove the Ink Cartridge**
   Inside, you will find the ink tank.
   Pull it out carefully – you don't need any tools - and put it aside.
3. **Find the USB-C Port**
   Under the ink cartridge, you see a USB-C connector inside the device.
4. **Connect the device to your Computer**
   Plug in a USB-C cable (Use your finger to push it in the USB-C connector. It’s tricky, but doable). Plug the other end of the USB-C cable into your computer.
5. **Open the Web Updater**
   Go to:
   https://timholzhausen.github.io/Webflasher
   Follow the instructions on the page to flash the new firmware.
   (You may need to select the correct COM port and allow access when your browser asks. If you are unsure, which COM Port is the correct one, unplug the USB cable. Press the upload button and the plug it back in again. You will now see a new device in the pop-up window. This is the correct COM Port)
6. **Reassemble**
   After updating, remove the USB cable, reinsert the ink cartridge, and screw the top back on.

Tips & Warnings

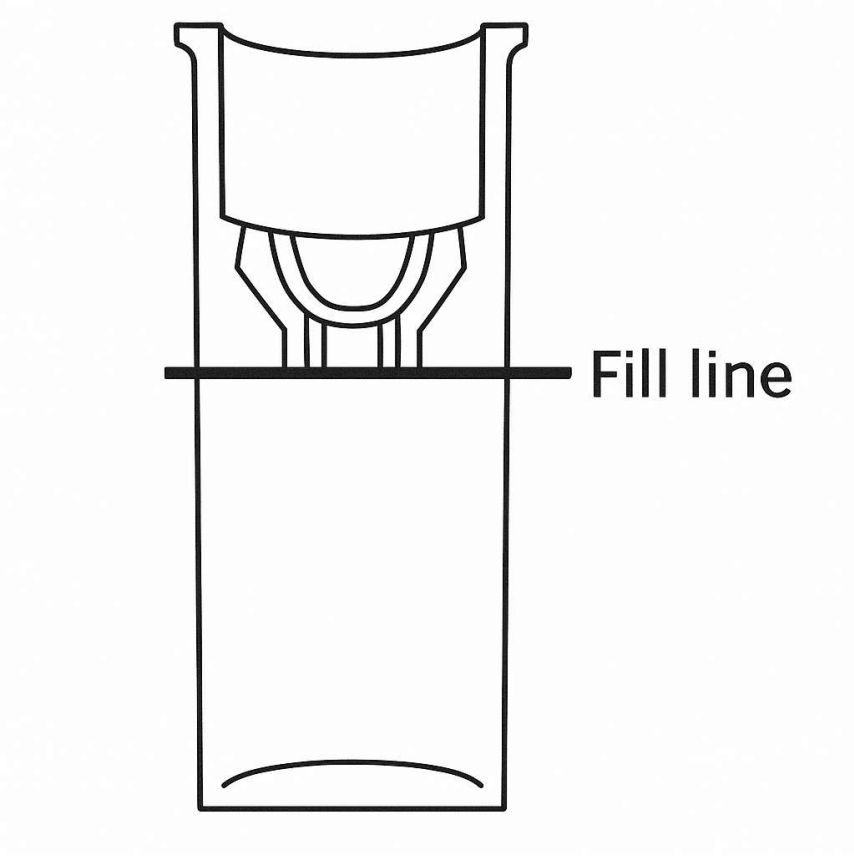
- Don’t force anything – the parts should come apart easily.
- Make sure the USB cable is firmly connected.
- If the device doesn't show up: try another cable or USB port.

Ink refill instructions

Yes – the marker is refillable! Just follow these steps:

What you need:

- A blunt knife (or flat screwdriver)
- Whiteboard marker refill ink (Edding BT 30 - https://www.google.com/search?q=edding+BT+30+black)
- Gloves and paper towels (recommended)

How to refill:

1. **Open the marker**
   Hold the marker upright and unscrew the complete black top part.
2. **Remove the Ink Cartridge**
   Inside, you will find the ink tank.
   Pull it out carefully – you don't need any tools.
3. **Open the ink tank**
   At the end of the tank is a plastic cap.
   Use a blunt knife to carefully lever it off and remove the transparent parts and the spring.
4. **Add new ink**
   Slowly refill with whiteboard marker refill ink.
   Do not overfill – just enough to refill the internal space up to the marking.
5. **Reassemble**
   Put the spring and the transparent parts back. Press the cap back on firmly, and reinsert the tank into the marker.
   Screw the complete black top part on.