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Magnes Co-board

Magnetic Cooking Board Holder



V1 (Jan 2023)



PRODUCT SUMMARY

	Individuals who need help steadying a mixing bowl.
WHO	<i>Before using any device made using these instructions, it is your responsibility to obtain independent professional advice in relation to the safety and suitability for your personal situation.</i>
WHAT	Magnetic base which enables an individual to keep a cooking bowl stationary
WHY	Assists individuals mixing ingredients in a bowl so that they may mix in the bowl without use of both hands
HOW	Layers making up the base were designed through CAD. Designs were cut using a laser cutter. Magnets and weights were added. Bowl bottoms were magnetised. Welding was used for this prototype, but can be replaced using adhesive.
COST	~\$100 AUD
TIME	One to two days to manufacture, including drying time


GENERAL WARNINGS


-  Read through the entire manual before attempting to build this device.
-  Do not attempt a step if you are unsure of what you are doing. Certain steps in this manual require experience with fabrication tools.


For assistance or clarification of any step, contact TOM: Melbourne
info@tommelbourne.com.au


ICON GLOSSARY

The following icons may be used throughout this manual—each with its own purpose.

 **Caution:** The caution icon is used to signify whenever someone attempting the procedure may injure themselves or damage their equipment.

 **Note:** The note icon is used to signify useful bits of information that complement the instructions.

 **Reminder:** The reminder icon is used to provide information for after the procedure is completed, such as tips for disassembly.

 **Need-Knowers Specific:** This part or method of manufacture has been designed specifically for a local Need-Knowers.

DEVELOPMENT PROCESS

Key Requirements:

1. Steady the bowl so that it does not slide around during mixing. i.e. does not require holding by hand
2. Utilise materials that can be cleaned easily in a commercial kitchen
3. Low cost
4. Allow use of different shape/size bowls
5. Design does not single out one user
6. Allow for colour coding e.g. green for vegetables, red for meat etc.

Previous Iterations

The first iteration consisted of three layers: a top and bottom layer to encase the magnet holding layer. These layers were to be held together by a 3D-printed cap. However, the cap was unable to hold the layers together due to the resolution and dimensions of the 3D print itself. Also the material was also considered not to be food grade.

Brainstormed and Untested Ideas

The original design remained, but the idea on how the product would adhere to a stainless bowl and base to remain stationary whilst in use was discussed. For example, magnets, suction cups, weights - were ideas to help secure a bowl in place.

With those ideas in mind alongside the main concept remained the same of encasing plastic with the above in mind - we tested the ideas with our design specification to produce a device that would render a bowl stationary when in use.

How the solution was developed

The solution was inspired by a mobile phone car vent holder that magnetically connects to a phone. The product simply followed the same process of having a securing base e.g. the phone holder and magnetic strip that adheres to the item that would remain stationary e.g. the bowl in our design specification.

BILL OF MATERIALS

Estimated total cost: ~\$100 AUD

Part No.	Part name / description	QTY	Material + Dimensions	Production tech	Unit Cost (AUD)	Supplier link / digital part file	Image
MB-01_Plate_02	Top/Bottom Plate	2	Acrylic plastic 180mm X 220mm X 3mm	Onshape .dxf file	~\$3.50 each	Top and base 2x 3mm acrylic	Refer to technical drawing on the page 11 of this document
MB-02_Holder_02	Magnet Holder (houses 8 magnets)	1	Acrylic plastic 180mm X 220mm X 6mm	Onshape .dxf file	~\$7.50 each	Magnet Holder 6mm clear	Refer to technical drawing on the page 11 of this document
NA	Magnets	8	Rare earth metal Circular magnets : 40mm diameter		~\$10.00 total		
MB-03_Border_02	Metal Holder Border	3	Acrylic plastic Outer: 180mm X 220mm X 3mm Inner: 154mm X 204mm x 3mm	Onshape .dxf file	~\$3.50 each	Metal holder border 1x 6m and 1 x 3mm	Refer to technical drawing on the page 11 of this document
MB-04	Metal plate	2	150mm X 200mm x 4mm				
NA	M5 Phillips Countersunk Screws	8	M5 Length: 25mm		~\$5.00 total		
NA	M5 Thread Locking Nut	8	M5		~\$4.00 total		

TOOLS REQUIRED

Welding Bay - Part 1

! Caution: Welding should only be performed by someone who is trained and experienced in welding wearing the appropriate personal protective safety equipment

1. Before any welding occurs, you will need tin snips to cut out a circle from a sheet of steel
2. Welding bay is required to weld a steel sheet to a stainless steel bowl (if a welding bay is not accessible the alternative would be to use a strong, food safe adhesive) Please ensure it is cured for over 24 hour period to avoid the base detaching with the magnets.





The alternative way to glue down the steel base with some adhesive, whilst using makeshift clamp (shown below).



CO2 Laser cutter - Part 2

! Caution: Welding should only be performed by someone who is trained and experienced in using a laser cutter and wearing the appropriate personal protective safety equipment

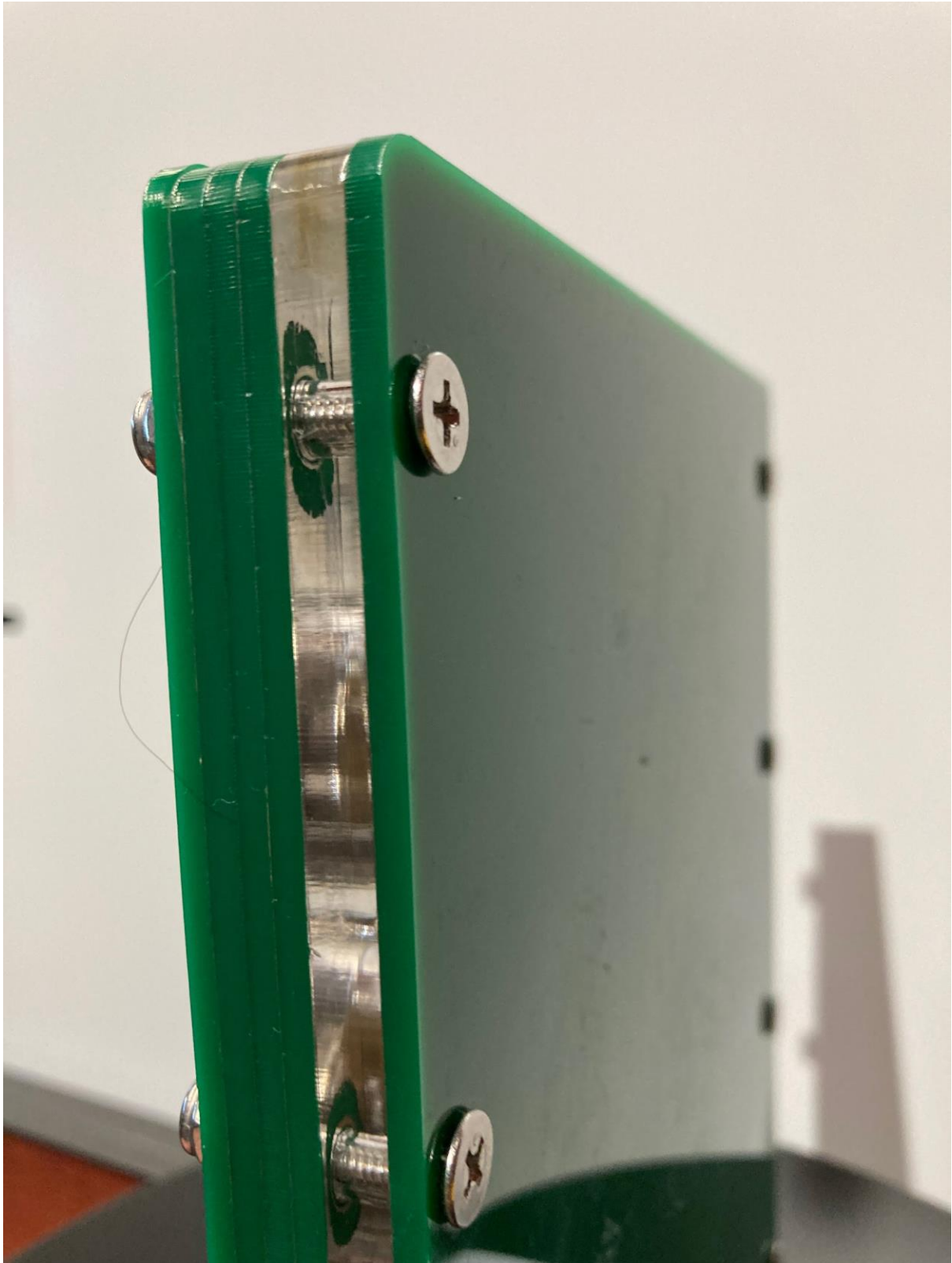
1. An accessible laser cutter will be required to cut out the acrylic sheet accurately
2. All you will need is to purchase two sheets of acrylic one at 3mm (for parts MB-01_Plate_02 and MB-03_Border_02) and another at 6mm (for part MB-02_Holder_02)
3. Download DXF file and laser cut the pieces



Assembly - Part 3

1. All you will need is a screw driver and spanner to fully assemble and the pieces together in order to use this kitchen aid.







BUILD INSTRUCTIONS

PART 1

- Purchase sheet metal; a thin sheet of steel about 1mm thick (for attaching to the bowls) and another about 4mm in thickness (Steel or Aluminium) for the weight inside the base board.
- Roughly measure the bottom of each bowl and transfer those measurement onto the 1mm steel sheet using a compass
- Then cut out circles from the 1mm steel sheet that will be used to stick to the bottom of each stainless steel base using tin snips, grinder or any accessible electric tool that cuts steel.
- Then cut your two 4mm sheets, into large square to place inside the base. Size these parts so that that they sit inside the part MB-03_Border_02 Metal Holder Border
- After you have cut the steel, please take off any burs or rough edges using a grinder or wet and dry sandpaper
- Weld base or use a strong adhesive to stick each plate at the bottom of each bowl that you will use.
- If using an adhesive ensure you wait the allowed period for the glue to fully cure - to avoid the base detaching when attached to magnet.

PART 2

- Download dxf. file and laser cut files from google drive and purchase a large sheet of Acrylic sheet that 3mm and and one that is 6mm in thickness
- Cut two 4mm sheets of metal (e.g. Aluminium or Steel) and cut them out with a grinder or if possible laser cut to size to fit inside the acrylic border pieces

PART 3

- Assemble all the parts, by layering them accordingly to the exploded view

SAFETY & USE INSTRUCTIONS

Safety Information:



WARNING: This product contains strong magnets

Magnetic safety instructions:

- People with pacemakers **must** avoid handling or being in proximity to magnets.
- Magnets with a strong magnetic field may cause permanent damage to credit cards, computer hard drives, watches, TVs, data storage media and other electronic devices and objects.
- Take care to keep hands and fingers free from magnetic base board when connecting and removing the bowls.

General safety information:

- Any food that spills on the magnetic base board or the steel disk and surrounding glue area on the underside of the bowl should not be consumed. The materials used for these components are not food safe.
- The magnetic base board is heavy. Please take care not to drop it during handling as it may cause injuries.
- If you notice any damage to the base board, including loss of magnet strength, please stop using it.
- If you have any questions or concerns about the safety of the prototypes, please contact TOM: Melbourne
- The Magnetic Base should not require disassembly if care is taken to protect it from food spills. Avoid disassembling the magnetic base board.
- This product is not intended to be used by children. If disassembled, small parts may pose a choking hazard.
- If the disk at the base of the bowls appears to be coming loose, please discontinue use.

Setup instructions:

- Determine most appropriate location for set up of board and bowl to avoid/minimise need to relocate board during use
- Place the magnetic board on top of a non-slip mat on a table or bench
- Cover the magnetic board with a disposable plastic bag/ cling wrap / reusable silicon to maintain waterproofing and the cleanliness of the base.
- Take care when connecting the bowl onto the magnetic base to keep fingers free as they may get pinched. A safe way to connect the bowl is to touch the curved side of the bowl to the magnetic base board and gently roll it onto its flat base until the magnet takes. See image below.
- The bowl can be removed in the same manner.

**Cleaning instructions:**

- This product should NOT be washed in a dishwasher
- The magnetic base should be used with a protective cover to prevent food spills on hard to clean surfaces.
- To clean the magnetic base board, please wipe down with soap and water. Please do not submerge the board.
- The bowls can be washed by hand with soap and water. Please note, the steel disk at the base of the bowl may rust. If significant rusting occurs, please discontinue use.
- Avoid disassembly of the magnetic board base where possible. If required, ensure disassembly is performed in a location that will not interfere with the magnets within the board.

THANKS FOR MAKING WITH US!

Send us your feedback at info@tommelbourne.com.au

Product Page: <LINK>

Designed by TOM: Melbourne