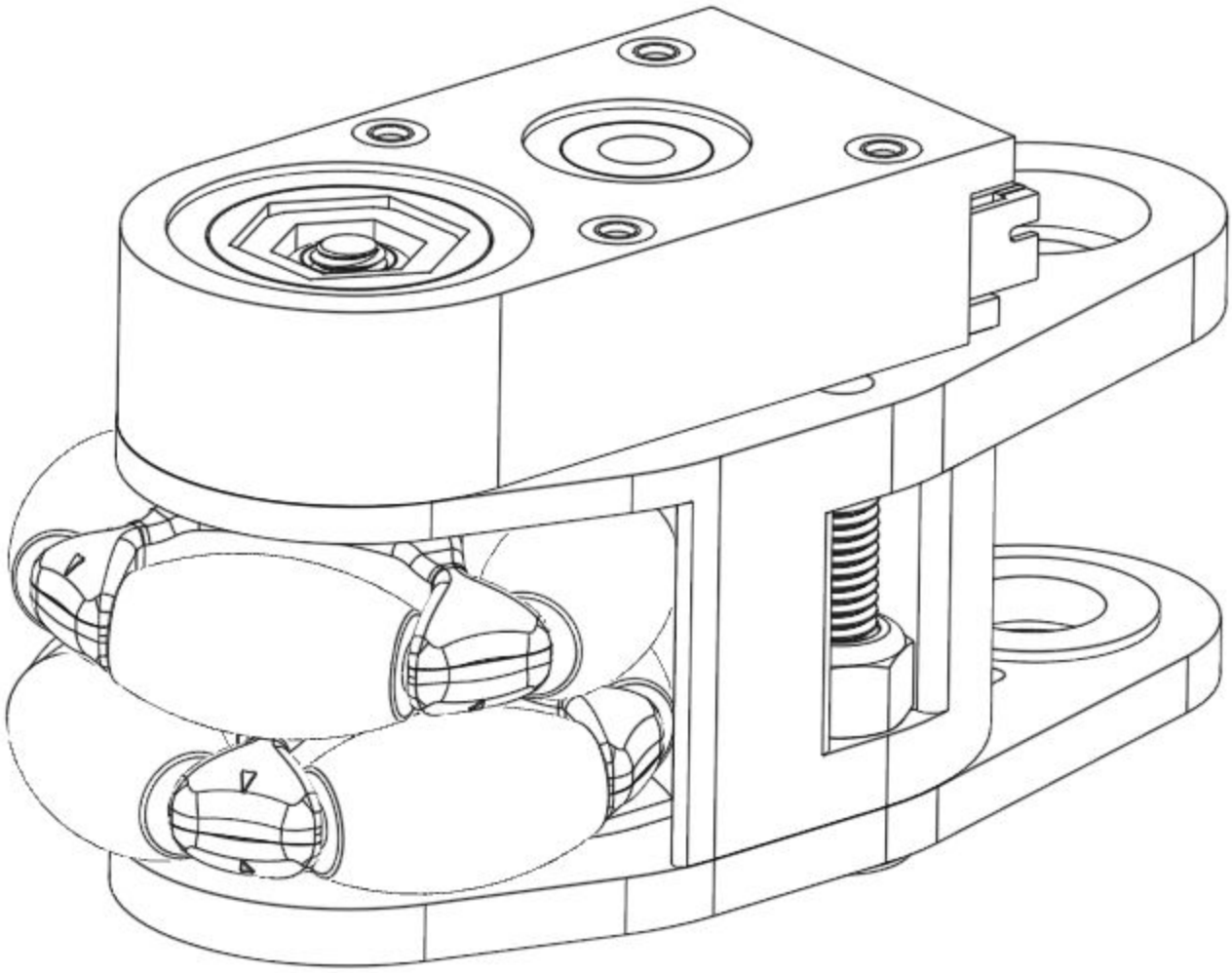
FULL ASSEMBLY INSTRUCTIONS



LoonyOdo V1.0

Designed by Alex

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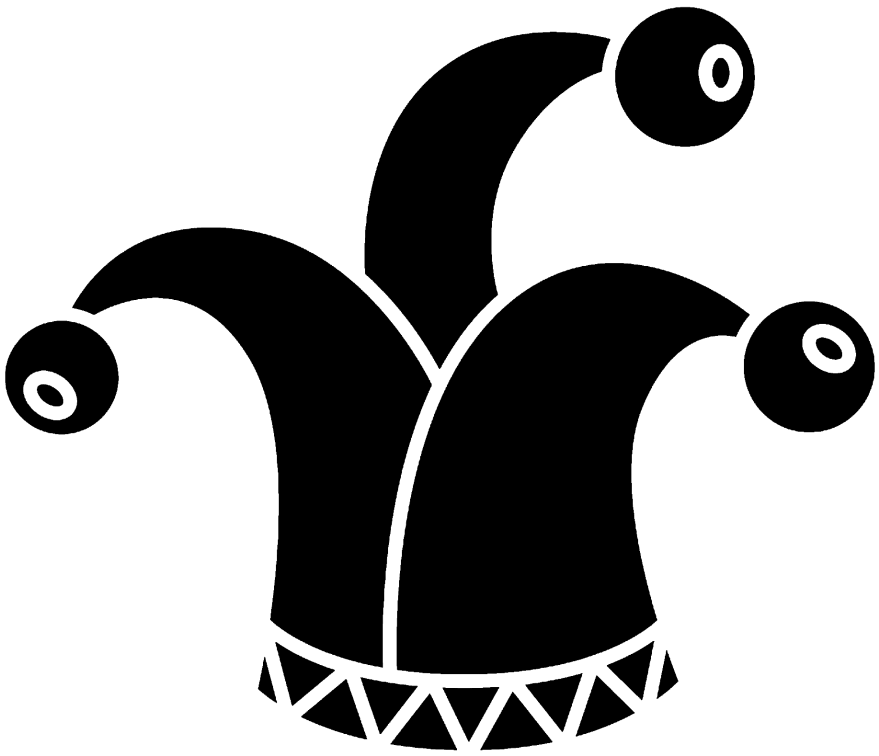
Check out our social media!

https://www.instagram.com/the_loony_squad/
https://twitter.com/the_loony_squad
https://www.youtube.com/channel/UCBaOt_nNzTs9vGdwq03uBAw



BILL OF MATERIALS

BASE PARTS (ALL VERSIONS)			
PART NAME	**SKU**	**QUANTITY**	**CHECK**
Wheel Insert		1	
35mm Rotacaster Omni	R2-0354-5701	1	
M4 Nut	2812-0004-0007	1	
35mm Rotacaster Omni	R2-0354-5701	1	
8mm ID 12mm OD Bearing	1601-0412-0006	3	
M4x35 Countersunk Bolt	91294A202	1	
M4x25 (**ONLY IF NOT USING CUSTOM SCREWS**)	2800-0004-0025	3	
REDUX ENCODER VERSIONS			
BaseCase (Redux)			
Encoder Insert (11mm)			
REV THROUGH BORE ENCODER VERSIONS			
BaseCase (REV)		1	
Encoder Insert (12.7mm)		1	

CUSTOM SCREWS			
M4 Nut		3	
3DP BACKPLATE or goBILDA BACKPLATE			
M4x22 Buttonhead	2802-0004-0022	3	
CNC BACKPLATE			
M4x22 Countersunk	91294A197	3	

VERSION-SPECIFIC PARTS			
goBILDA BACKPLATE			
goBILDA BaseCase shim		1	

NOTE: See next page for important information about wheel inserts

WHEEL INSERTS

Due to variances in the designs of the supported encoders and omni wheels for this design, there are 4 different wheel insert pairs to choose from. This chart will help you pick the correct one for your setup.

	REDUX	**REV Through Bore**
Keyed wheel	• Encoder Insert K (11mm) • Wheel Insert K	• Encoder Insert K (12.7mm) • Wheel Insert K
Non-keyed wheel	• Encoder Insert (11mm) • Wheel Insert	• Encoder Insert (12.7mm) • Wheel Insert

PRINTING PARAMETERS (PLA)

Here are the as-tested printing parameters for PLA. These were tested on a stock Ender 3. With MatterHackers MH Build PLA

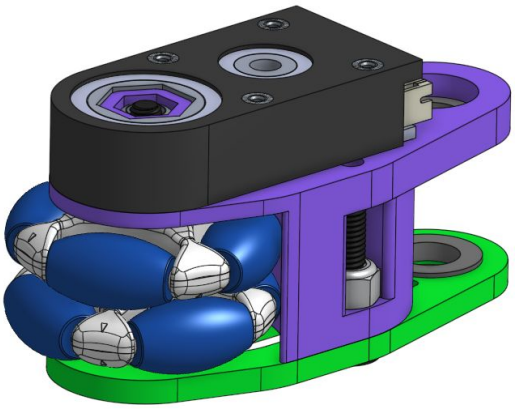
NOTE: Your printer or filament may vary. This is intended only as a starting point.

PART NAME	**INFILL (GYROID)**	**WALLS**	**TOP/BOTTOM**
0.4mm nozzle **0.2mm layers**			
BaseCase	30	4	6/4
3Dp Backplate	50	4	6/4
Wheel Insert	100		
Encoder Insert	100		
0.6mm nozzle **0.3mm layers**			
BaseCase	25	3	3
3Dp Backplate	50	3	3
Wheel Insert	100		
Encoder Insert	100		

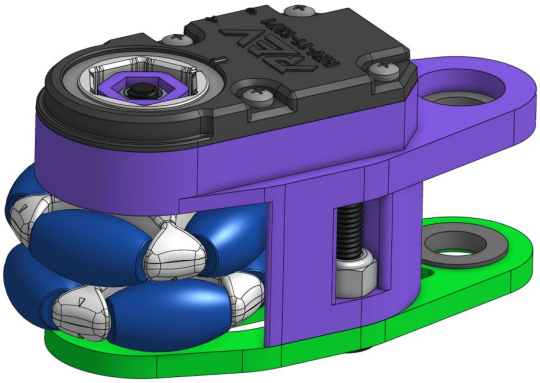
SELECT YOUR VERSION

LoonyOdo is designed to be configurable and customizable. There are 3 official versions, each with 4 combinations of screws and backplates:

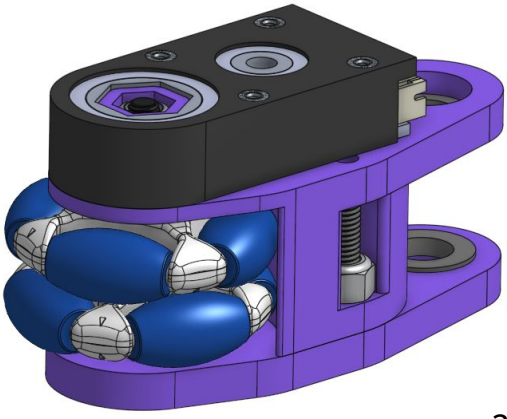
REDUX

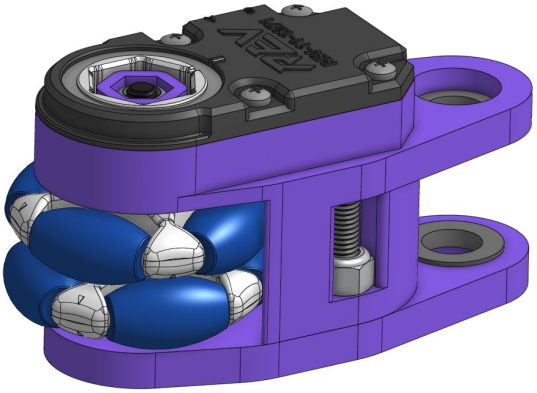


REV Through Bore

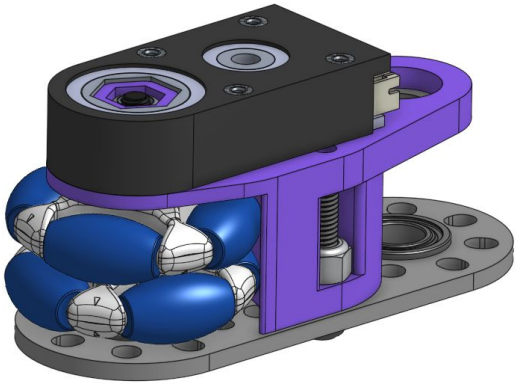


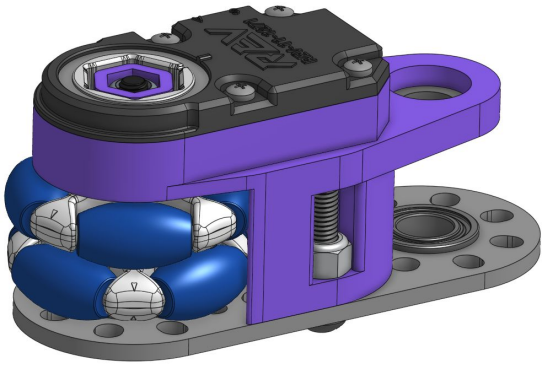
CNC backplate





3DD backplate



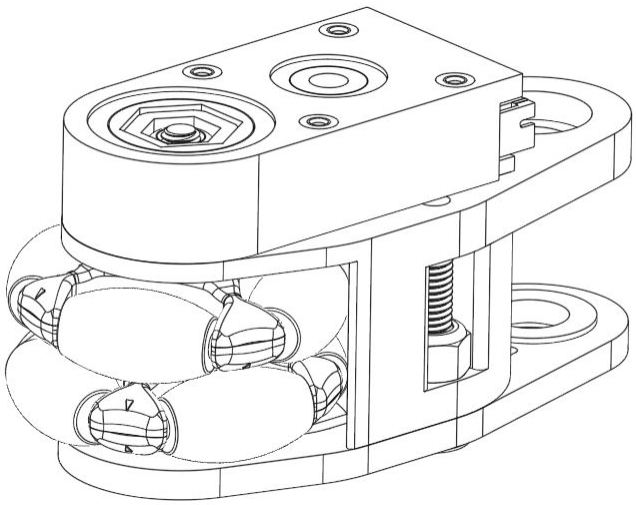


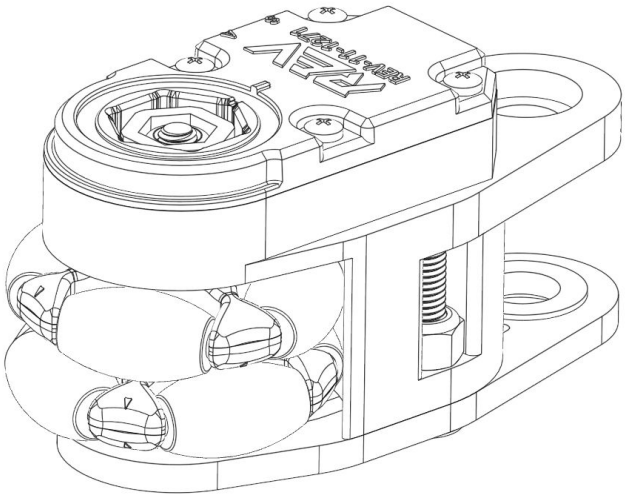
goBILDA backplate

Each version can be assembled with the stock M4x25 screws that come with the Codex odometry bundle or with custom M4 screws and nuts. The specific instructions for each will clarify length and head shape.

ENCODER COMPARISON

LoonyOdo supports both the Axon Redux encoder and the REV Through Bore encoder. Each system has its own advantages and drawbacks, some of which are listed here. The assembly for each encoder can be found on the next two pages.





Axon Redux

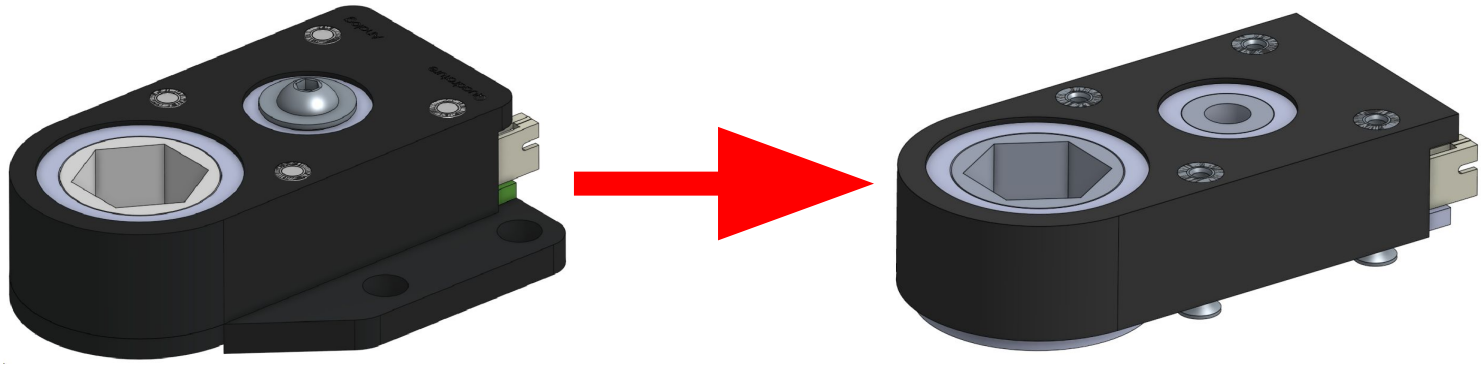
- $33.99
- Disassembles face-down, much easier to keep parts contained when taken apart
- 10.9mm height
- Quadrature or analog output
- Mounting screws come with threaded inserts
- Resolution: 4096 CPR
- 11mm hex bore

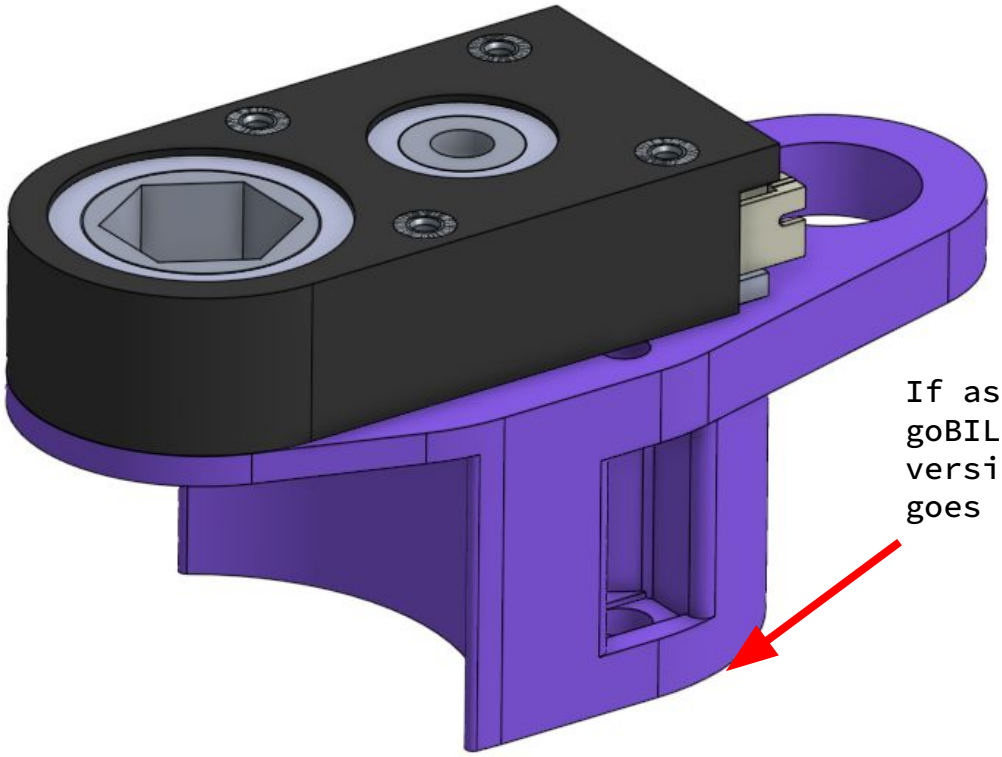
REV Through Bore

- $48.00
- Disassembles back-down
- 11.5mm height
- Quadrature output
- Screws thread into plastic of BaseCase
- Resolution: 8192 CPR
- 12.7mm hex bore

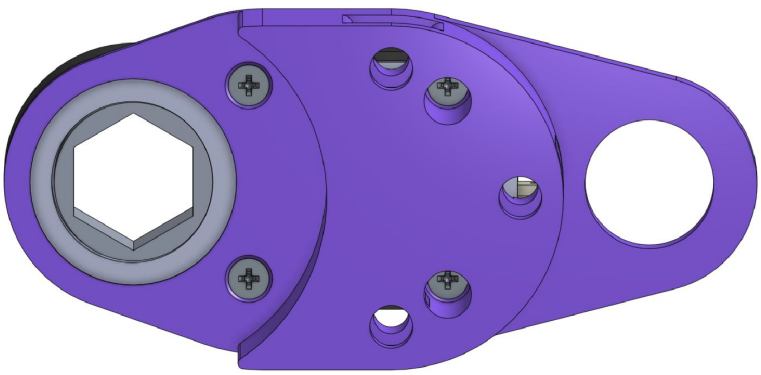
AXON ASSEMBLY INSTRUCTIONS

The first step requires the disassembly of the encoder. The backplate must be removed. The stock M2 bolts are then used to mount the encoder to the 3D printed BaseCase part.





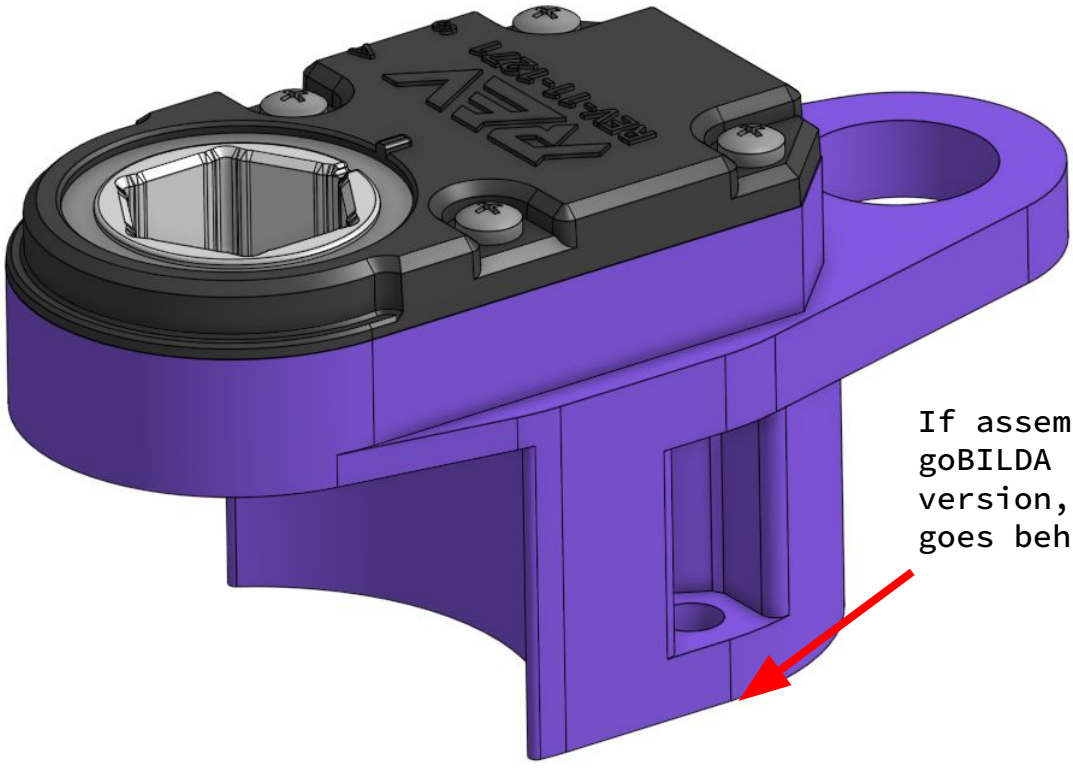
If assembling goBILDA backplate version, shim goes behind here



NOTE: Your encoder may look slightly different depending on when it was ordered, but all versions are functionally the same

REV ASSEMBLY INSTRUCTIONS

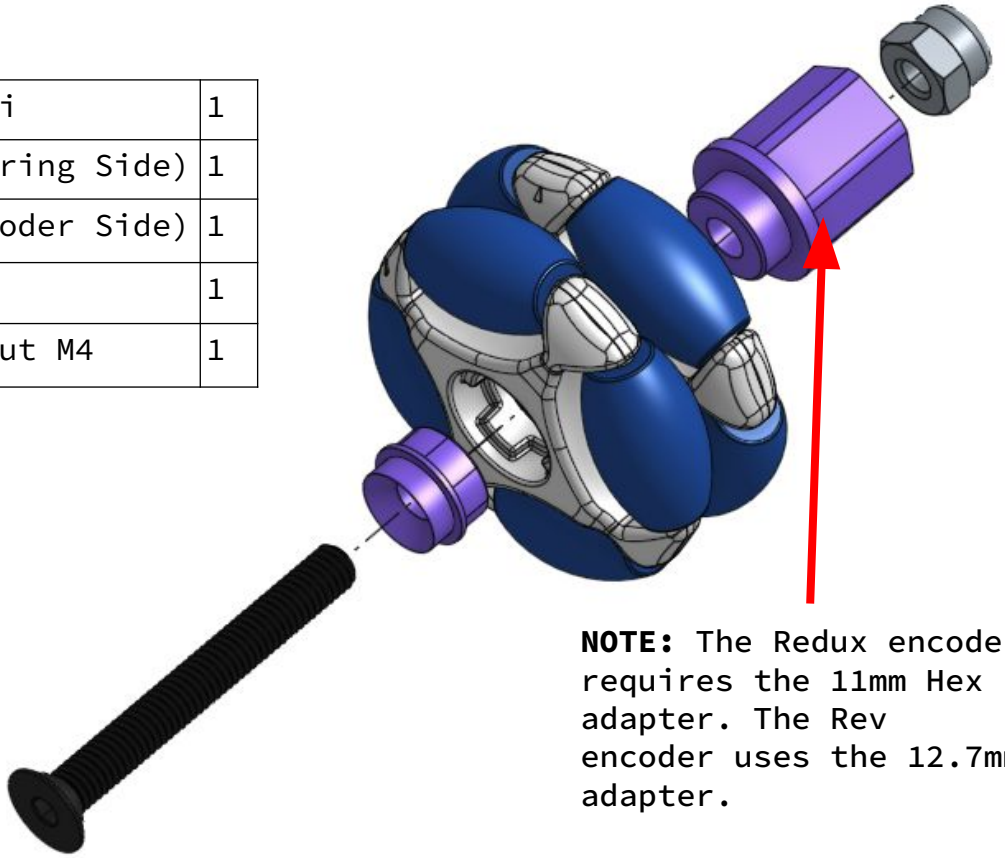
The first step requires the disassembly of the encoder. The back piece must be removed, and all the internal components must be transferred to the BaseCase. The bearing from the back piece of the encoder must also be transferred to the BaseCase. These pictures show the process.



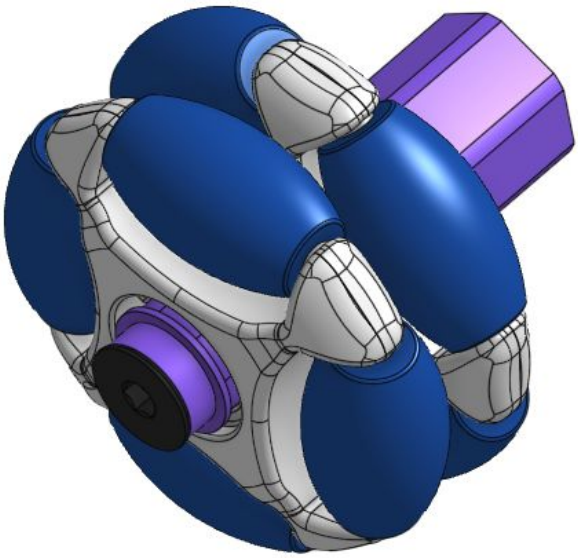
If assembling goBILDA backplate version, shim goes behind here

AXLE ASSEMBLY

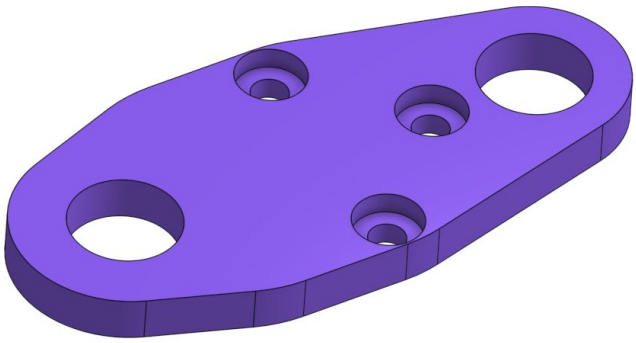
Rotacaster 35mm Omni	1
Wheel Insert 1 (Bearing Side)	1
Wheel Insert 1 (Encoder Side)	1
M4x35 countersunk	1
Prevailing torque nut M4	1



NOTE: The Redux encoder requires the 11mm Hex adapter. The Rev encoder uses the 12.7mm adapter.



BACKPLATE ASSEMBLIES

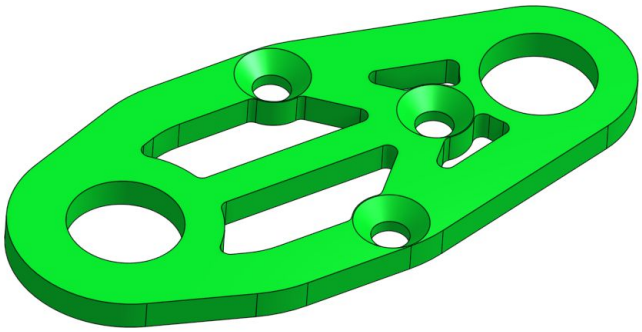


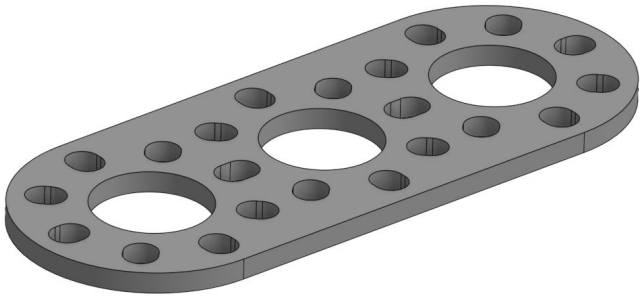
3Dp Backplate

- Weakest solution
- Least expensive
- Least clearance
- No custom parts required

CNC Backplate

- Stronger than 3DP
- Allows for wide range of materials
- Best clearance due to countersunk screws
- Only custom parts required are screws and nuts





goBILDA Backplate

- Commercial solution
- Requires no custom manufacturing
- Requires 14mm OD bearings in addition to custom screws and nuts

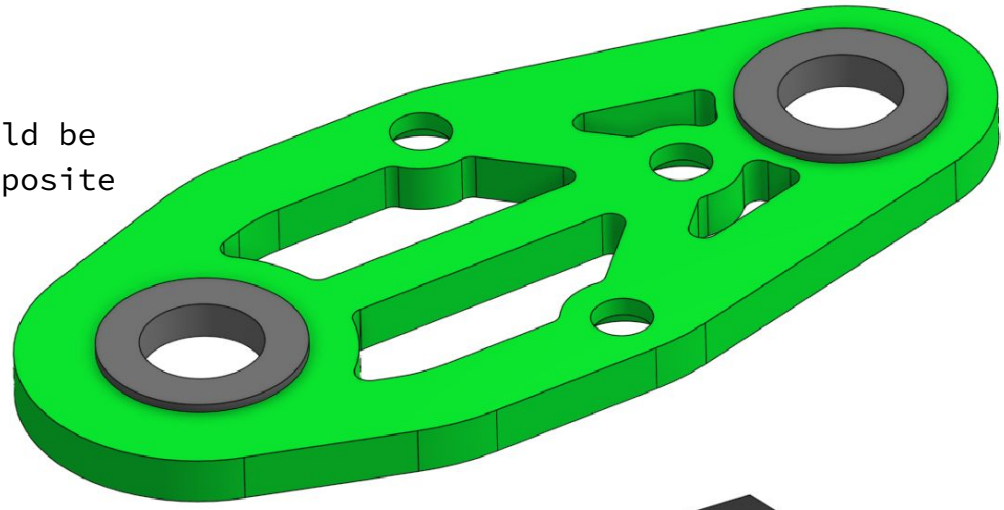
SCREW SELECTION

All versions of LoonyOdo can be assembled with the stock screws from the Codex odometry bundle. Better clearance can be achieved by using custom screws. Here is a table with the correct custom screws for each type of backplate. Each set of custom screws also requires 3 M4 nuts.

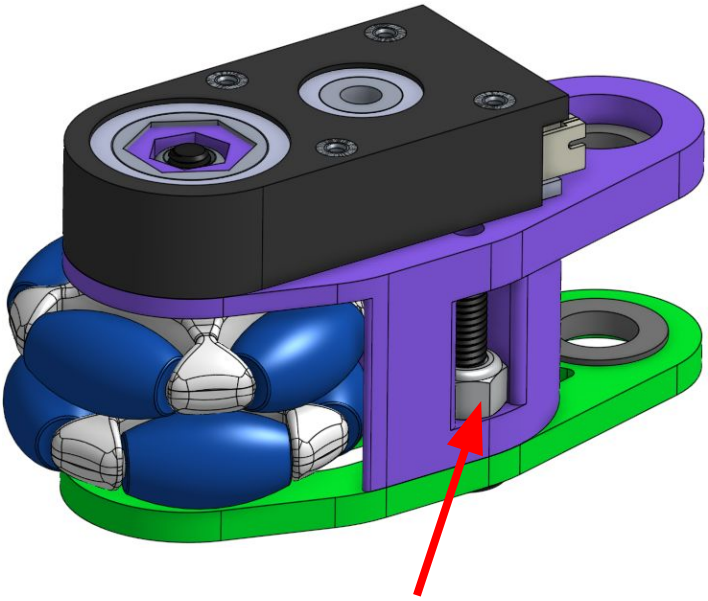
BACKPLATE	SCREW SIZE/LENGTH	HEAD TYPE	QUANTITY
3Dp	M4x22	Buttonhead	3
CNC	M4x22	Countersunk	3
goBILDA	M4x22	Buttonhead	3

BACKPLATE ASSEMBLIES

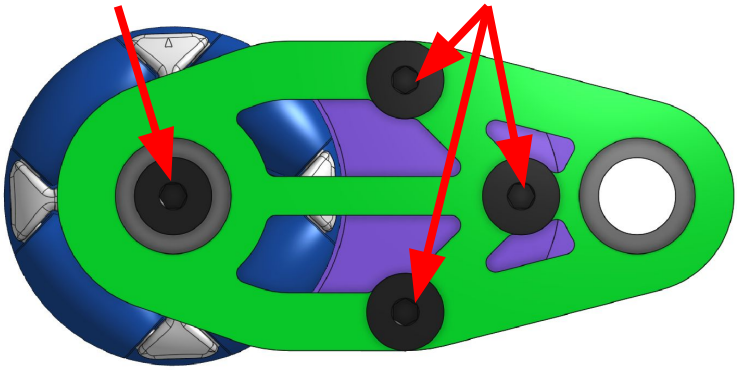
NOTE: Bearings should be inserted on side opposite countersinks



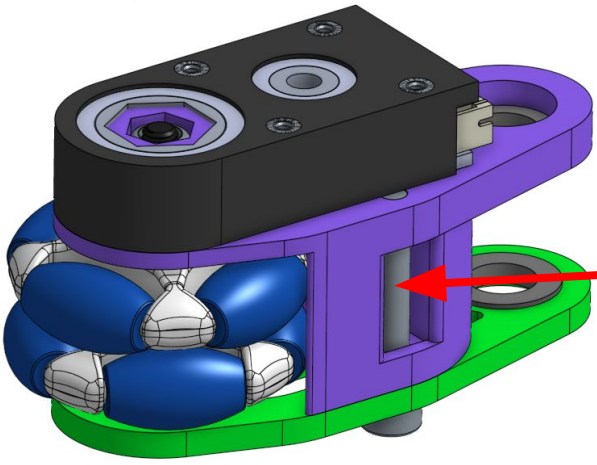
Countersunk M4x22	3
Countersunk M4x35	1
M4 Nut	3



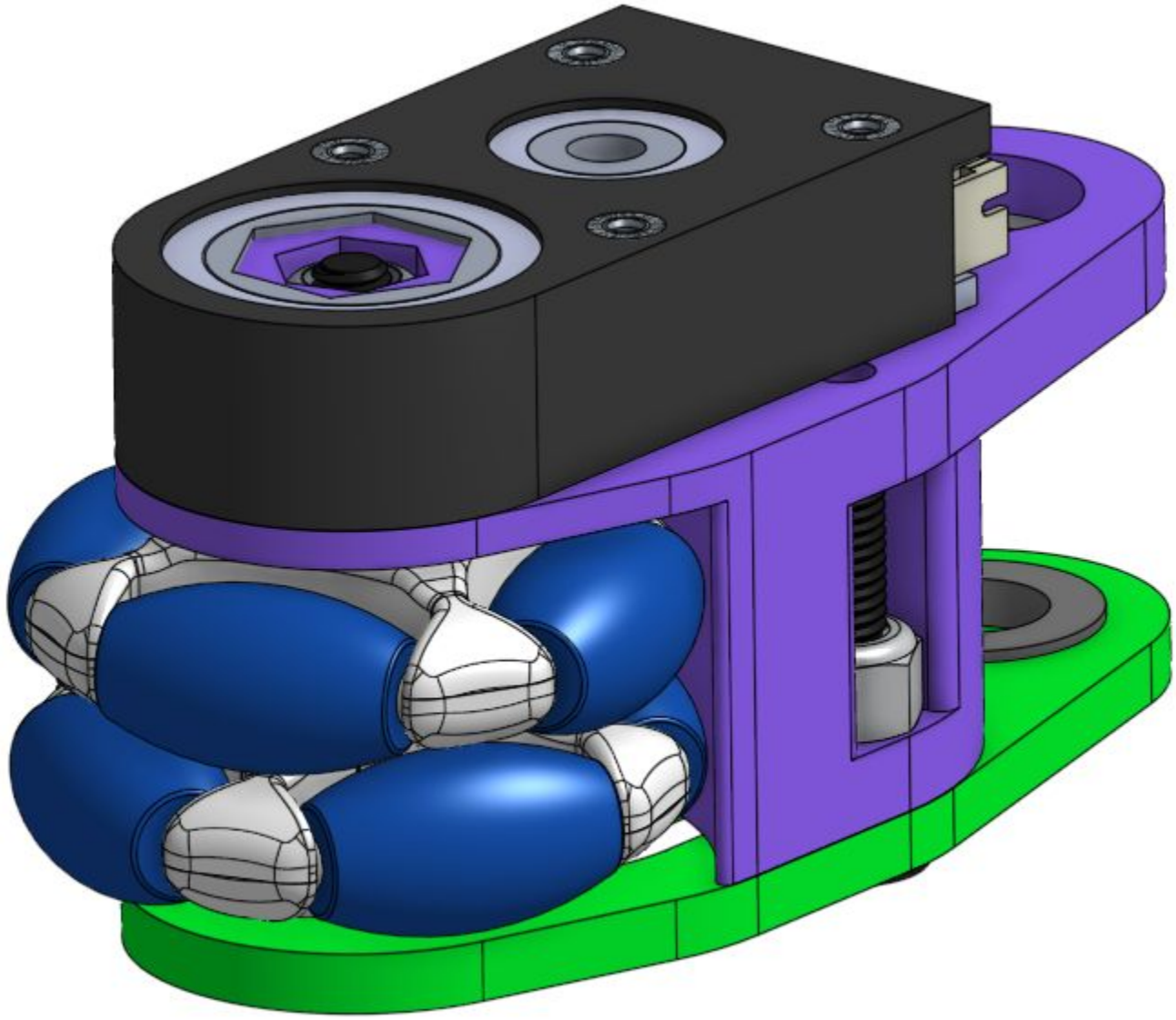
M4x35 M4x22



M4 nuts should be inserted into the nex-shaped pockets around the BaseCase. The protruding screw can be used to spring the odometry pod later.



NOTE: This design can also be built using the stock M4x25 socket head bolts from the Codex odometry kit. Using these does not require nuts in the hex-shaped pockets because the screws thread into the plastic.



ADDITIONAL INFORMATION

CAD:
https://cad.onshape.com/documents/d3f71dd21473f1f7cb90f46a/w/c442869b72fff7747c68e8ef/e/66b8575e64647fa3550fca9c

CONTACT: b1nary#7727, G-Force#5900 on Discord

LATEST STLs and INSTRUCTIONS:
https://github.com/The-Loony-Squad/LoonyOdo

NEW PROJECTS: https://twitter.com/the_loony_squad
https://www.instagram.com/the_loony_squad/