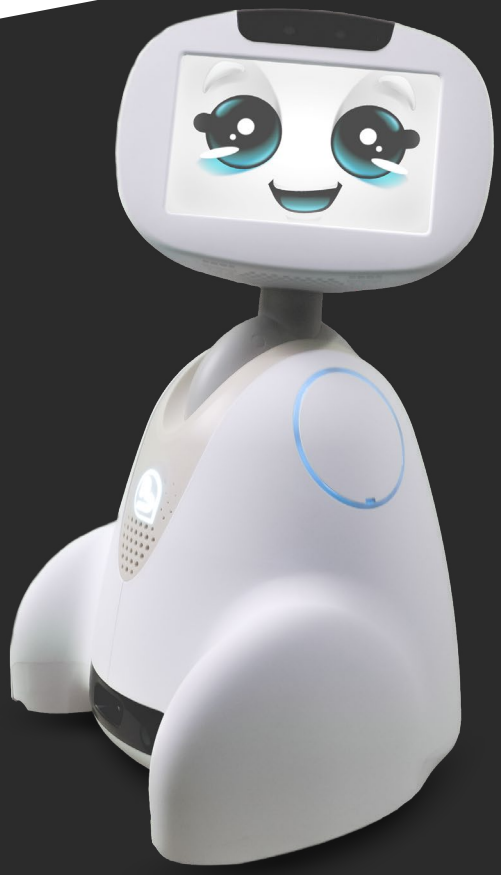
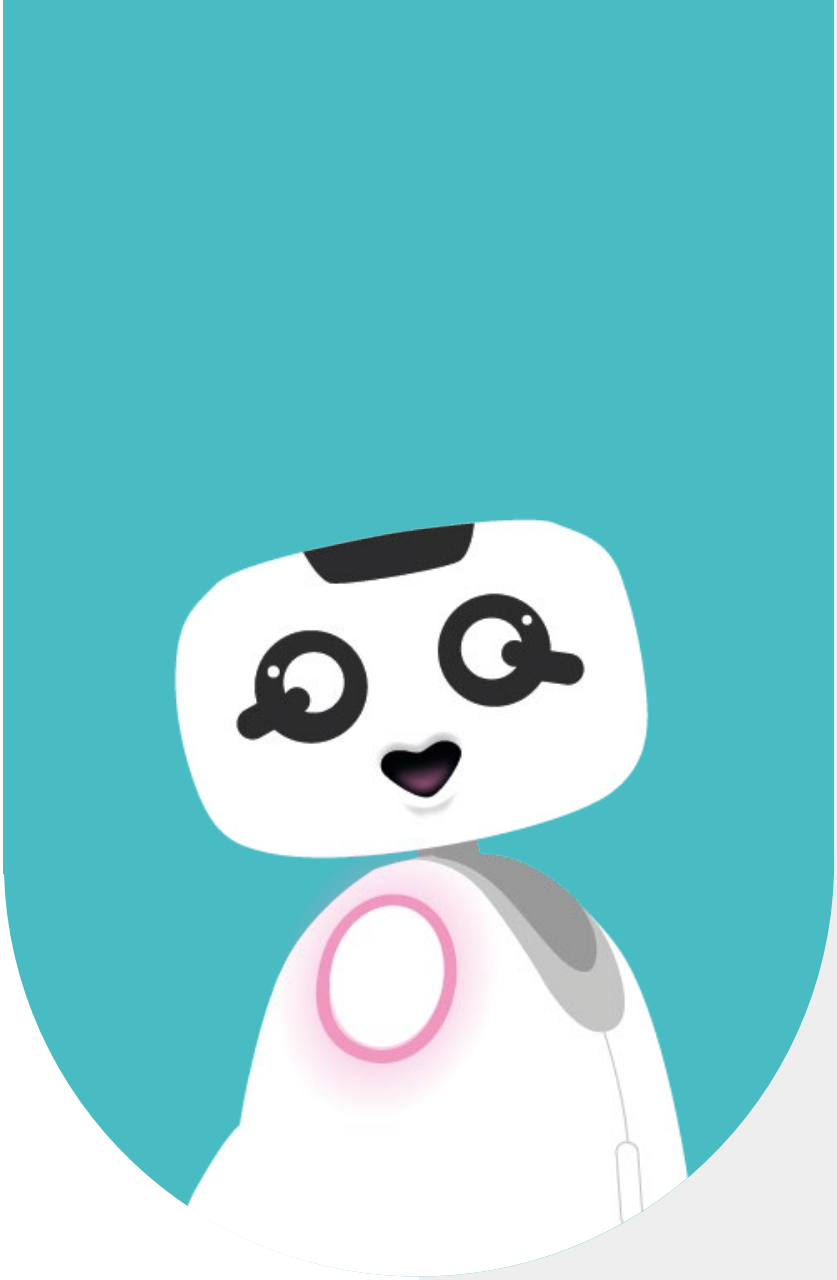
BUDDY WELCOMING ROTARY SUPPORT

Assembly Instructions EN V1.0



Buddy®
The Emotional Robot

1 - SUMMARY



2 - GENERAL

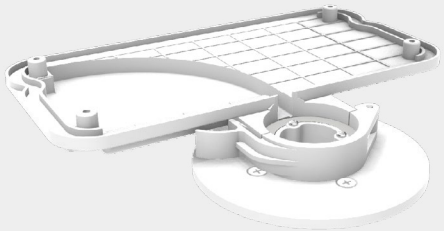
The use of the Buddy robot for welcoming customers and/or visitors is one of the many possible applications and is an integral part of the marketing verticals that Buddy can address.

In many cases, the complete mobility of the robot is not desired or is not possible, particularly if one wishes to place the robot at a height so that its screen is visible and accessible «at human height», without having to bend over.

The use of a platform wide enough to allow Buddy to move is possible. However, edges are necessary to prevent any risk of falling given the reliability of the cliff sensors equipping the robot, which is still insufficient. Moreover, a platform remains cumbersome if an acceptable range of movements is desired.

In addition, it may be difficult to keep the robot oriented facing an entrance for example.

The movements on the platform mean that it is not possible to leave the robot plugged in permanently, which requires charging the robot and interrupting the welcome function. Finally, freedom of movement will also be constrained if one wants to use an anti-theft device by cable, which is necessary in highly trafficked and poorly monitored locations. The proposed solution aims to overcome these “disadvantages” by offering a device that allows Buddy to be placed on a base of minimum size, while keeping it always plugged in and equipped with an anti-theft device.



3 - PROPOSED DEVICE

The proposed device consists of a vertical axis, under the Buddy robot, centered in the middle of the rotation axes of the 2 wheels.

This device allows to maintain the rotational movements of the robot on itself but prohibits all translational movements.
On the Buddy side, the axis is materialized by a housing, for the outer ring of a 42x30x7mm bearing, secured to the closing plate of the battery housing. A specific closing plate, 3D printable has been designed.

On the base side, the axis is fixed vertically and the bearing is centered on its inner ring. The inner diameter of the bearing is large enough (30 mm) to allow the passage of:

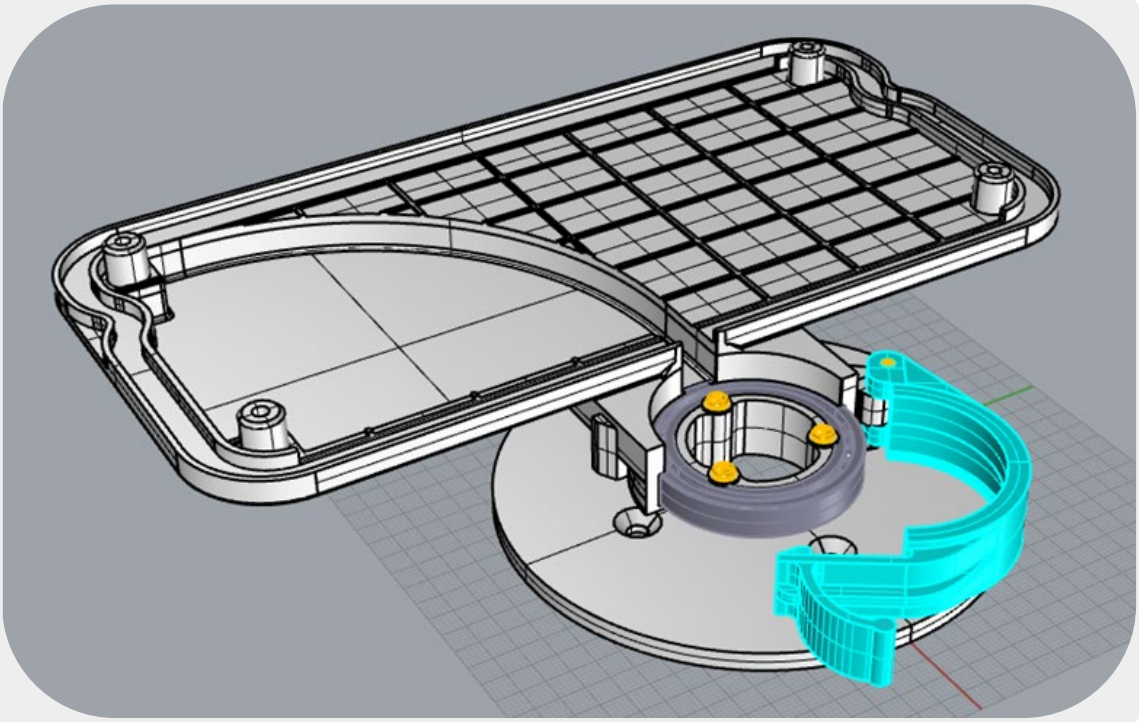
- A charging cable, connected to a free connector on the Power Board and passing through the Battery housing.
- An anti-theft cable surrounding one of the 4 fixing columns of the Battery closing plate.

3.1 - LOCKABLE VERSION (FINAL)

A variant was studied to meet the following 2 needs:

- Elimination of the anti-theft cable
- Easier assembly/disassembly

The initial device does not have an axial restraint. The robot can be detached from its axis by lifting it. In this case, an anti-theft cable is the only solution to prevent the risk of theft.
We have a lockable version:



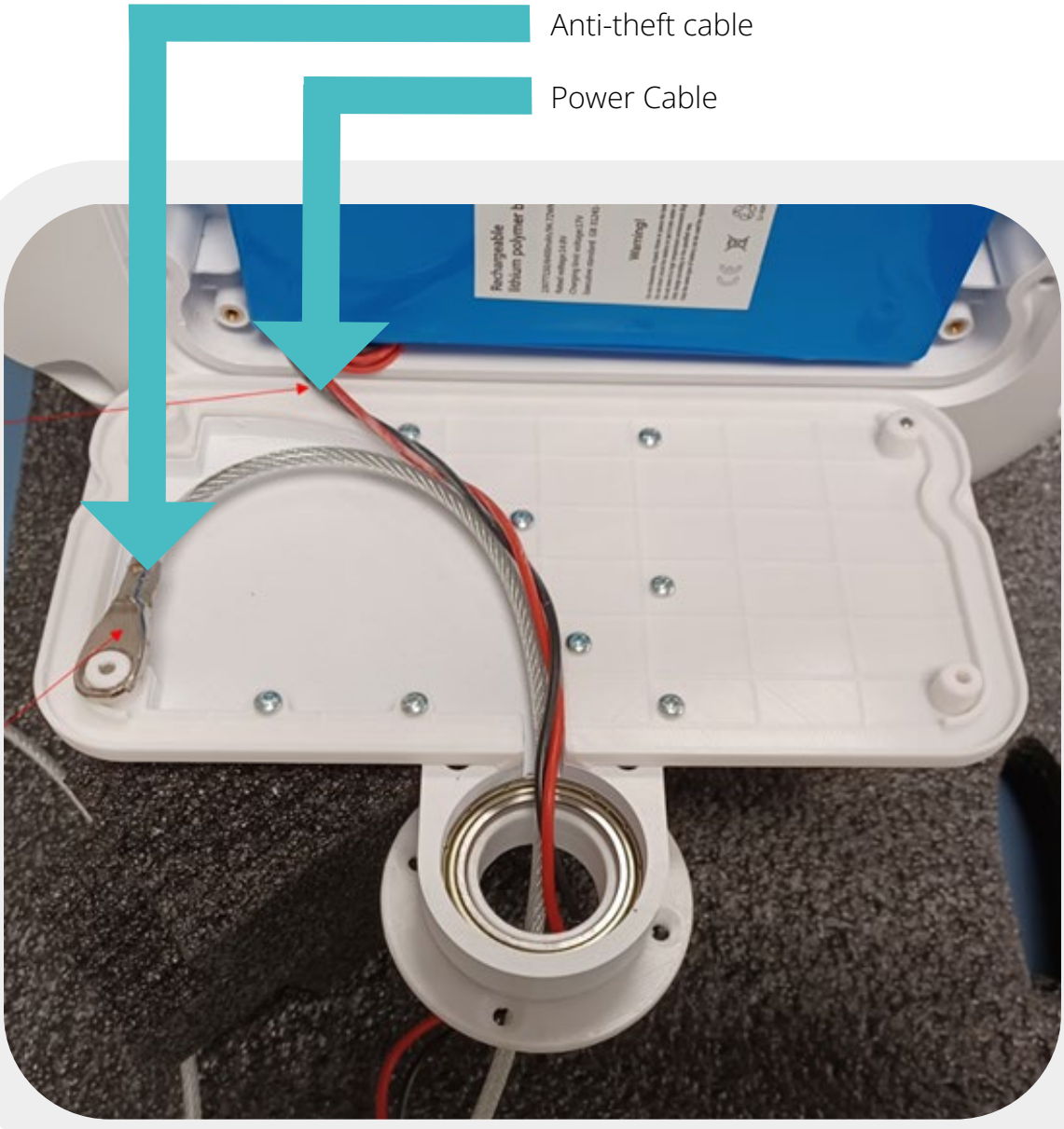
The inner ring of the bearing is held axially on the fixed axis on the base by means of 3 screws and washers.

The support plate holds the outer ring in a housing equipped with a clip-on pivoting flange (in cyan in the figure above). When the housing is closed, the bearing is also axially blocked. The flange is unclipped by pushing the flange tab to the left.

3.2 - HIDDEN POWER SUPPLY AND ANTI-THEFT CABLE

It is possible to run a power supply and an additional anti-theft cable through the pivot hole, so that they would be hidden when is mounted on its support.

Would you be interested please contact Blue Frog Robotics.



Cable routing in the battery compartment cover plate

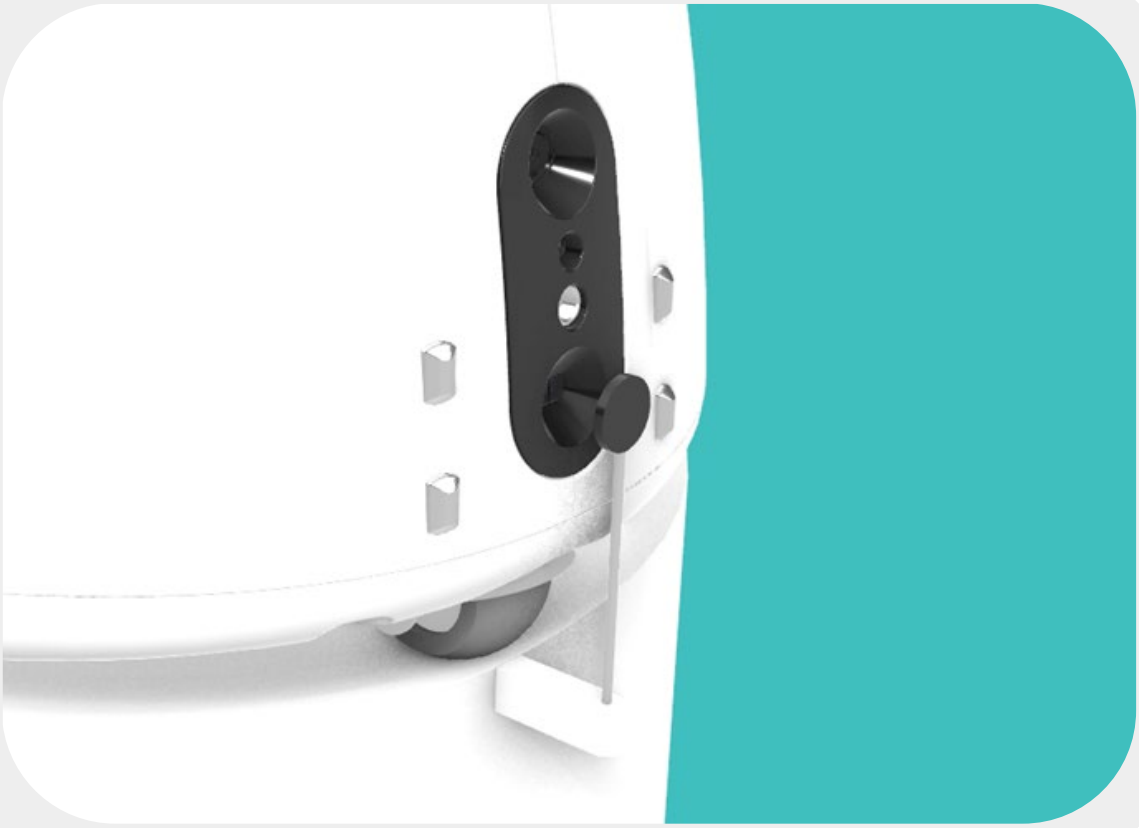
Thus the anti-theft and the charging cables are completely hidden, the robot can pivot on itself without constraint and also be permanently connected (theoretical operation 24 hours a day possible).

The base must have a minimum diameter of 400 mm allowing the two wheels and the rear caster to pivot.

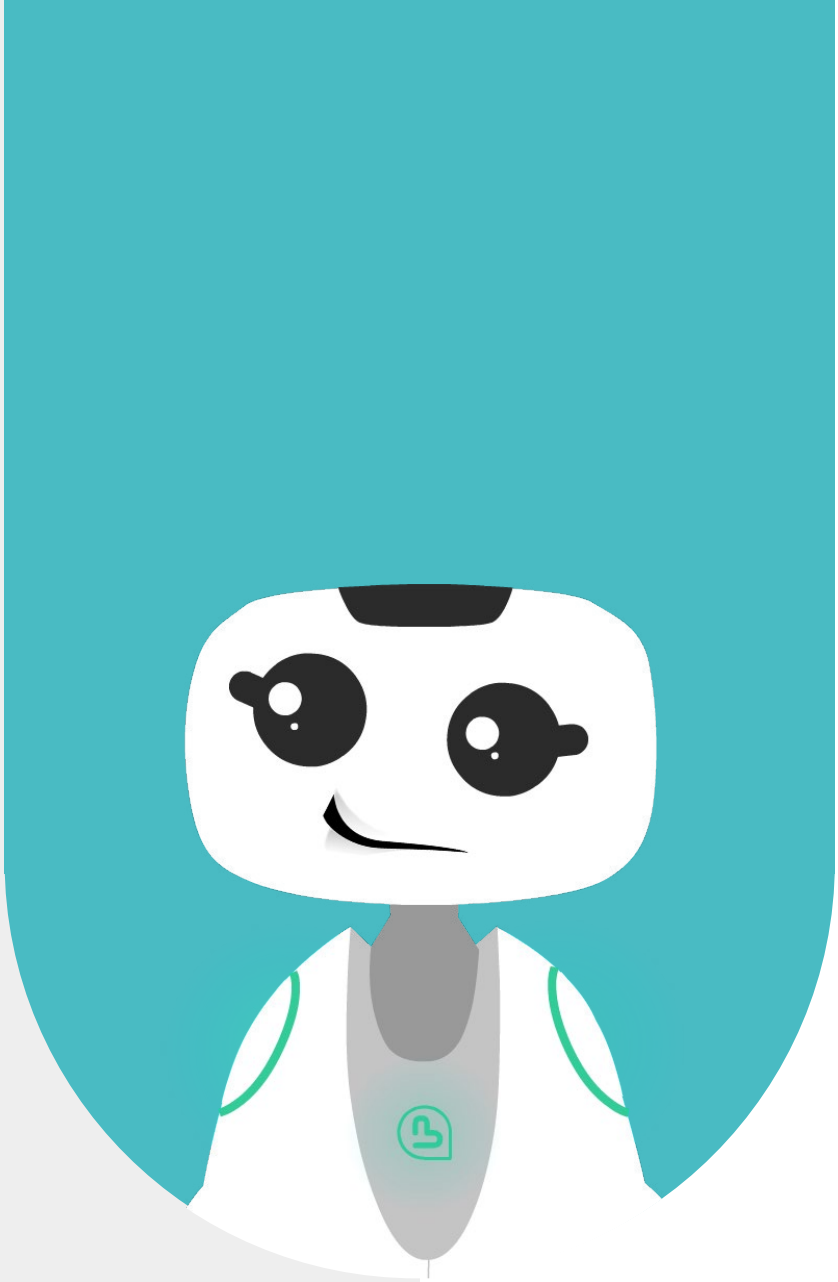
With a diameter of 400 mm, the 2 cliff sensors (on either side of the caster) must be inhibited (feature to be added in Buddy OS on 05/07/2024) or discreetly hidden with white adhesive.

With a diameter greater than or equal to 500 mm, it is not necessary to inhibit or mask the two cliff sensors.

The base can integrate a target facing the LRS sensor at the back of Buddy to provide a discreet orientation marker for the robot.



Robot orientation target detected by the Long Range TOF at the back of Buddy

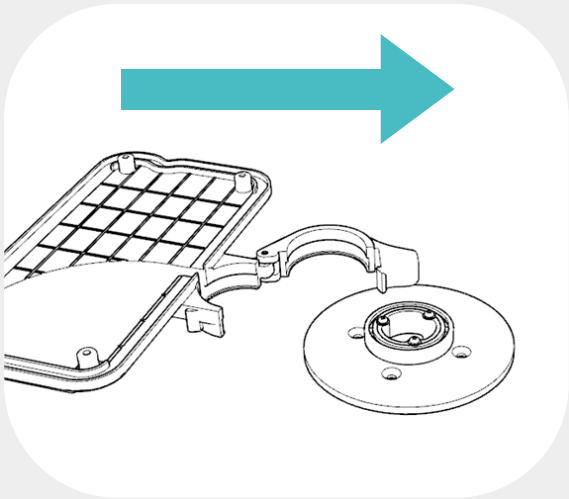


4 - BLOCKING/ UNBLOCKING PROCEDURE

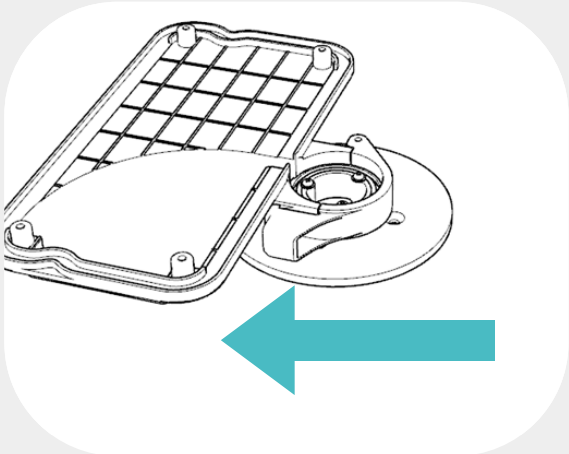
4.1 - BLOCKING PROCEDURE

Push the robot from the back towards the bearing fixed on the desk or column.

Fold the flange, push the flange with the index finger.

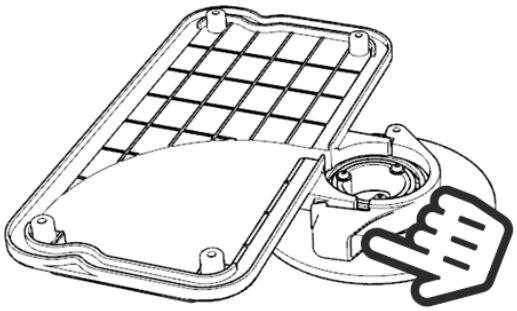


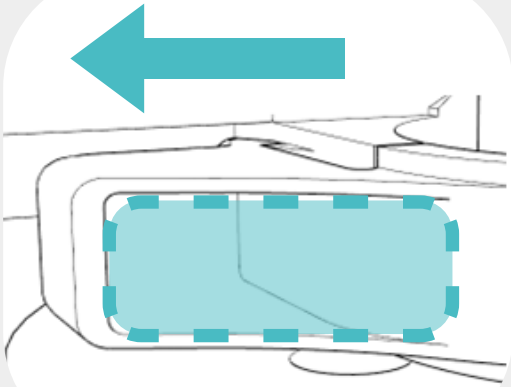
The lock is effective when you hear or feel a “Click”



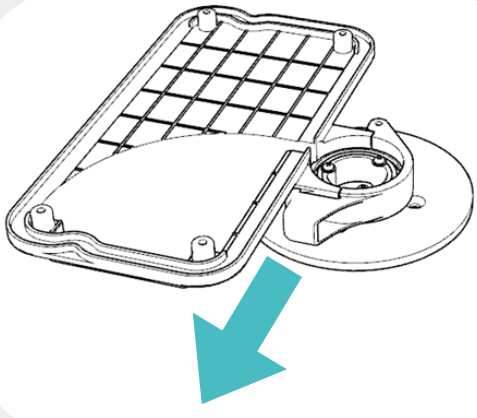
4.2 - UNBLOCKING PROCEDURE

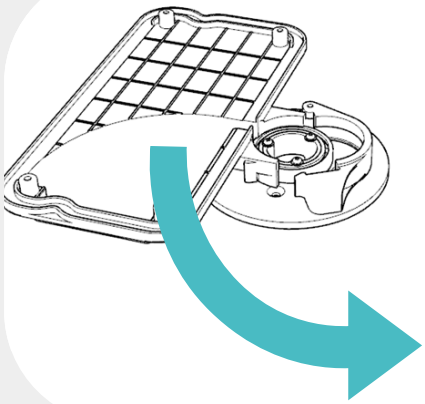
Push the flange to the left with your index finger, pressing against the inside of the cavity.

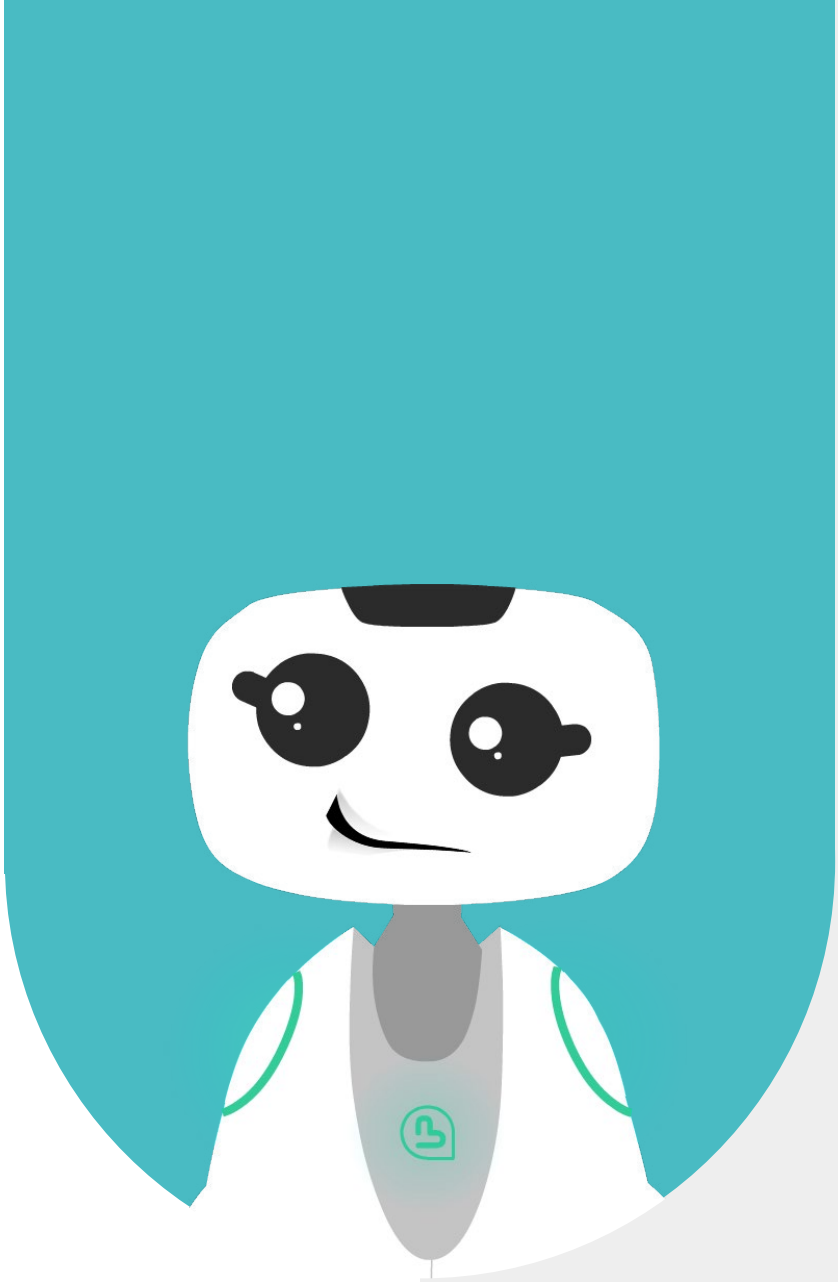




After unlocking, pull the flange towards the front of the robot with your index finger.







5 - SOFTWARE IMPLEMENTATION

5.1 - INHIBITION OF TRANSLATION MOVEMENTS

Since translation movements are made impossible, it is necessary to be able to inhibit them. With the device, translation movements would result in slippage and significant efforts on the wheel motors with risk of damage.

A function in BuddyCore must be developed to inhibit translation movements.

5.2 - ORIENTATION TARGET DETECTION

Welcoming applications can integrate detection of the robot's orientation target. The SDK has the necessary functions. Alternatively, it is possible to orient the robot by an April Tag placed at a distance of less than 4m.

6 - CONTACT

6.1 - CONTACT INFORMATION

If you wish to contact us for more information, please refer to the following addresses.

SUPPORT
support@bluefrogrobotics.com

GENERAL INFORMATION
info@bluefrogrobotics.com