Cartridge Genius

User's Manual

Introduction

Thank you for purchasing this CartridgeGenius and having confidence in this little hobby project. It will break free your litter box, putting you back in control. I am sure you will enjoy using it for a long time.

Description

CartridgeGenius is a drop-in replacement for the cartridge chip reader in your litter box. It simulates the presence of the both the original chip reader it replaces and the chip on the cartridge. This simulated chip will be referred to as 'virtual chip' throughout this manual.

This component enables you to repair your litter box in case the original tag reader broke down. It also allows you to manipulate the contents of the virtual chip it simulates. This gives you full control over your litter box and protects your investment in case cartridges are no longer available.
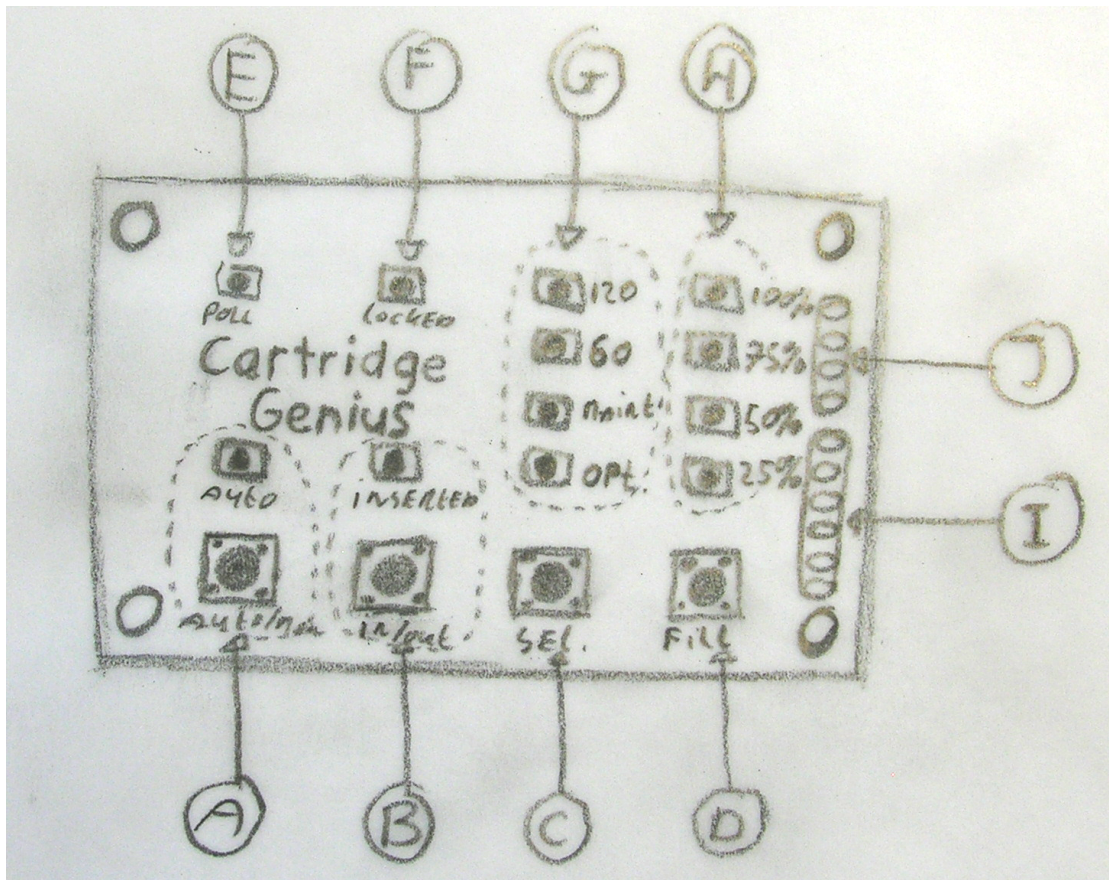
Features

* Simulates of both chip reader and cartridge chip at once.
* User selectable cartridge types:
  120 cycle cartridge
  60 cycle cartridge*
  Maintenance cartridge
* User selectable cartridge level
* User selectable automatic refilling
* Cat/child key lock

*Depending on your box' firmware revision it may treat a 60 cycle cartridge as a 120 cycle cartridge.

Controls and Indicators

Below is a sketch of what your CartridgeGenius looks like

A. Auto/manual control and indicator
B. In/Out control and indicator
C. Cartridge type select control
D. Cartridge level control
E. Poll indicator
F. Locked indicator
G. Cartridge type selected indicator
H. Cartridge level indicator
I. Programming connector (for manufacturing use only)
J. Debug connector (for development use only)

Operating CartridgeGenius

After installing this component in your litter box, you can verify it's operation with *Poll* indicator E. It should flash either red or green about once a second. This indicates your litter box making inquiries to CatGenius. If it doesn't flash, please check if CatGenius was installed correctly.

Insertion and removal of the virtual chip

In/Out control B allows you to insert and remove the virtual chip and hence the cartridge. The corresponding inserted indicator shows if the cartridge is currently inserted (lit green) or removed (not lit).
It is necessary to remove the virtual chip before it's contents are manipulated to make sure the litter box is not getting confused. Since the litter box checks the virtual chip's presence every second, it may take up to one second before the litter box actually notices the virtual chip being removed. The same goes for insertion. After inserting the virtual chip, it may take up to a second to detect it's presence as well. During this second, both for insertion as well as for removal, the inserted indicator will blink rapidly.

If the virtual chip is inserted, *Poll* indicator E will flash green. If the virtual chip is removed, it will flash red.

The virtual chip cannot be removed when *Auto* filling is enabled. Auto filling is described later in this manual.

Selecting a cartridge type

If the virtual chip is removed, the virtual chip's cartridge type can be changed using *Select* control C. Indicator G indicates the cartridge type currently selected.

Altering the cartridge level

If the virtual chip is removed, the virtual chip's cartridge level can be changed using *Select* control D. Indicator H indicates the current cartridge level. Selectable levels are 100%, 75%, 50%, 25% and 0% for testing purposes. The litter box decreases this level when the cartridge is being used.

Level indicator H show the number of washing cycles left in the virtual chip. Where the litter box indicates an absolute number of washes left (eg. 50+ washes), CartridgeGenius indicates a relative number of washes left (eg. 50% of a 120 cycle cartridge is 60 washes left). To indicate 100%, all 4 indicators are lit. To indicate 75%, only the lower 3 indicators are lit. To indicate 50%, only the lower 2 indicators are lit. To indicate 25%, only the lowest indicator is lit. And to indicate 0%, none of the indicators are lit.

Every cartridge type remembers it's own level. So when the maintenance cartridge is selected when the 120 cycle cartridge was half full, it come right back at this level once the 120 cycle cartridge is selected again. This makes it easier to work with different physical cartridges.

Advance level indication

Besides levels of 100%, 75%, 50%, 25% and 0%, level indicator H can also indicate a number of levels in between. This is particularly handy when the level gets close to 0%. These in-between levels are indicated by blinking the top indicator. For example: a level of 100% is indicated by all 4 indicators lit and a level of 75% is indicated by the lower 3 indicators lit. When the level is somewhere in between 75% and 100%, the lower 3 indicators are lit and the 100% indicator blinks.

The blinking pattern even indicates if the level is closer to 100% or to 75% using an on/off ration: If the top indicator is almost continuously but briefly intermitted, the level is closer to 100%. If it's not lit but flashes briefly, the level is closer to 75%.

Auto refill

When your litter box is washing, it will use up the cartridge's contents and it will decrease the level stored in the virtual chip. When the level in the virtual hits 0, your litter box will notice and stop working. CartridgeGenius is deliberately designed this way, so you will know when it is time to refill your cartridge.

If you don't use any cleaning fluid in your cartridges, or you are using a large external reservoir instead of cartridges, we have created the *Auto refill* feature for you. When enabled, the Auto refill feature automatically removes the virtual chip, resets the level back to 100% and reinserts the virtual chip again.

The *Auto refill* feature is enabled or disable by *Auto/Man* control A. The corresponding indicator show whether the feature is enabled (indicator lit) or disabled (indicator not lit). When *Auto refill* is in the process of actual refilling, the indicator will blink. You can test this feature by selecting a cartridge level of 0%, followed by enabling *Auto refill.*

Please note that enabling this feature automatically inserts the virtual chip and disables all other controls except for cat/child key lock.
We do not recommend using this feature in combination with a maintenance cartridge.

Child/cat key lock

To prevent unintended operation of CartridgeGenius, a *cat/child key lock* is implemented. Indicator F indicates the status of this lock. When enabled, indicator F is lit and any key press is ignored except for unlocking.

To activate the *cat/child key lock*, press and hold both control B and C simultaneously until indicator F starts flashing. When releasing both controls, indicator F will be lit and the lock will be active.

When the lock is active, pressing any control will result in indicator F flashing, to remind you about the activated lock.

To deactivate *cat/child key lock*, press and hold both control B and C simultaneously until indicator F stops flashing and goes off.