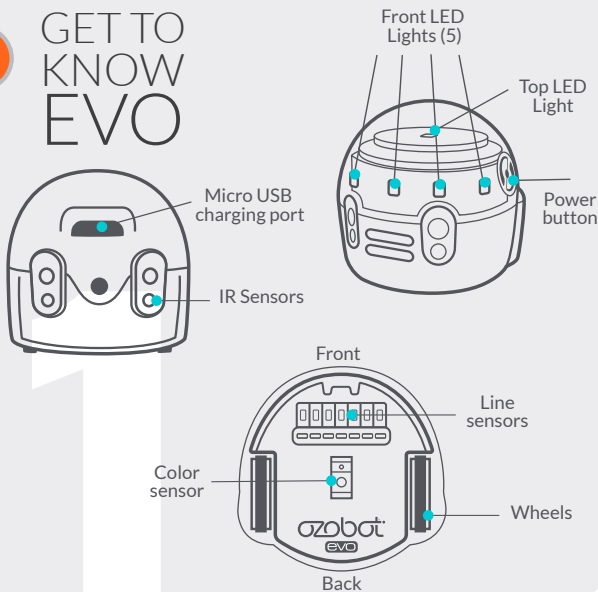


ozobot[®] edu

evo GUIDE

1

GET TO KNOW EVO



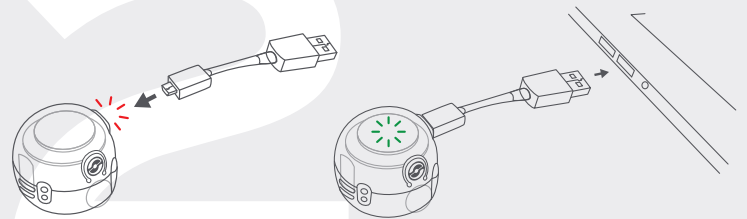
2

CHARGE

Evo comes partially charged. Get a full charge for maximum use.

1. Plug the USB Cable into Evo's Micro USB Port.
2. Plug the other end of the USB Cable into any USB port or power adapter.
3. Evo's lights turn solid **green** when fully charged.

When a **red** light flashes on Evo's back side, the battery is low and it is time to charge again.

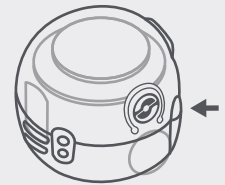


3

POWER ON/OFF

Press and quickly release Evo's power button to turn on. Evo will light up and wait for instruction. If Evo begins interacting with you, it may not be in Classroom Mode. See Step 7 for instructions on enabling Classroom Mode.

Press and quickly release the power button again to turn off.

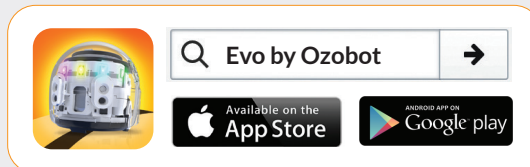


4

NAME EVO

Naming your Evos can help you keep track of multiple bots. Evo's name will show up on a device when it is connected via Bluetooth™ to the Evo App or the multi-bot EDU Utility Updater.

1. Make sure you have the most recent version of the Ozobot Evo companion app installed (v.1.1.89 or newer on both iOS and Android).



2. Enable Bluetooth™ on your device and make sure Ozobot is turned on (if you have multiple Evos, make sure the ones you are not naming are powered off).
3. From the home page of the Evo Companion app, your bot will show up in "Nearby Evo" at the bottom of the screen.
4. Tap on the Evo you wish to name and select "Connect."
5. Select "Ownership" and input your desired name into the text bar. Select "OK" to finalize.

5

CALIBRATE EVO ON PAPER

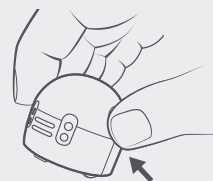
For proper functioning, Evo's sensors need to be calibrated before each use or after changing the playing surface or lighting conditions. To let Evo know what its surroundings are and enable it to properly follow lines and read codes, you must calibrate.

1.



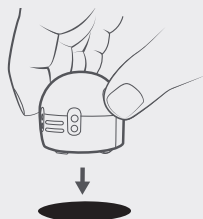
Draw a black circle slightly bigger than Evo (approx. 1.25 in or 35mm).

2.



Hold down the power button on Evo for 2 seconds until the LED light flashes white.

3.



Release the button. Wheels will rotate once. Quickly place Evo in the middle of the black calibration dot and let go.

4.






Evo will spin, move forward, and flash green, which means it has successfully calibrated. Start over if Evo flashes red.

6

LOAD PROGRAMS

To upload OzoBlockly programs from the editor (ozoblockly.com/editor) to Evo, follow these steps for flash loading:

1. Make sure Evo's firmware is updated to version 1.4 or newer.
2. Using the toggle on the top left, ensure the OzoBlockly editor is in "Evo Mode."  
3. From the OzoBlockly Editor page, click "Flashing"  in the lower left corner of the screen and follow the on-screen instructions to calibrate and load.
4. For troubleshooting, click "Help" in the pop-up screen.

App-enabled uploads are not recommended for Classroom Mode Evos. For more information on OzoBlockly, access the OzoBlockly Getting Started Guide at <http://files.ozobot.com/stem-education/ozoblockly-getting-started.pdf>.

7

CLASSROOM MODE

Classroom Kit Evos have Classroom Mode automatically enabled. Classroom Mode turns off the social aspects of Evo more suitable for activities outside school, like chattiness and animations (called "tricks"). To turn Classroom Mode on/off:

1. Make sure a recent version of the Ozobot Evo app is installed on your device (v.1.5 or newer on both iOS and Android).
2. Open the app. From the Home screen, connect to your Evo. When your Evo is connected, the robot's icon appears with a turquoise glow.
3. Once connected, tap the Evo icon and select "More Info."
4. The popup allows you to turn Classroom Mode on or off. It also allows you to mute all sounds and adjust the brightness of Evo's LEDs. Click "Apply" to finalize changes.

8

FIRMWARE UPDATES

Evos are updated to the latest firmware before being packed in Classroom Kits. Check for updates periodically to take advantage of bug fixes and new features. To update your Evos' firmware:

1. Go to the App Store to download and open the free Edu Updater Utility for iOS or Android.
2. Make sure Evos are fully charged.
3. Power on up to 6 Evos (make sure all other Evos are powered off and not charging.)
4. Select "Scan" on app.
5. The app will find and update Evos one at a time. Evos will move from the "Queued" to "Updated" section on your app. It should take approximately 5 minutes for a batch of 6 Evos to update.
6. Repeat updating 6 Evos at a time, until all Evos are updated. Be sure to turn off the Evos you have completed updating before updating the next set.

What is a Color Code?

A Color Code is a short sequence of 2 to 4 colors that Ozobot Evo can read and responds to. Evo uses optical sensors and respond with pre-programmed behaviors—by speeding up, slowing down, changing direction, or making cool moves (see Color Code Chart).



RGB: 73/183/73
CMYK: 72/0/100/0
HEX #49B749



RGB: 17/131/198
CMYK: 82/40/0/0
HEX #1183C6



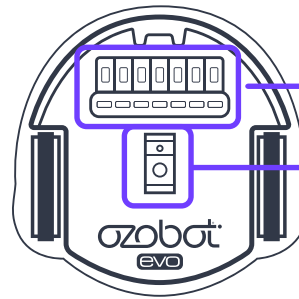
RGB: 236/32/39
CMYK: 0/99/97/0
HEX #EC2027



RGB: 0/0/0
CMYK: 30/30/30/100
HEX #000000

Ozobot Evo's Optical Sensors

Evo's optical sensors can read colors and line widths, enabling the bot to perform different movements.



Getting Started

It is important to calibrate your Evo before each session, when you change surfaces or when Evo is not following lines or reading codes as expected. Calibration helps improve code and line reading accuracy.

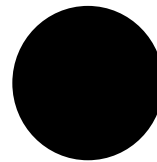
Evo will calibrate on a black circle (about the size of the robot's base). When drawing, you can create your own black circle with markers.



PSST! Helpful Hint:

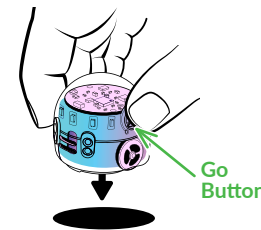
Print out the 5x5mm graph paper on the last page for practice!

How to Calibrate



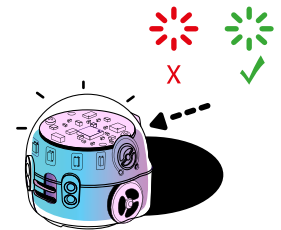
Step 1:

Draw a black circle, slightly bigger than your bot. Place Evo on it.



Step 2:

Press and hold Evo's Go Button for 2 seconds (or until its top LED flashes white), then release.



Step 3:

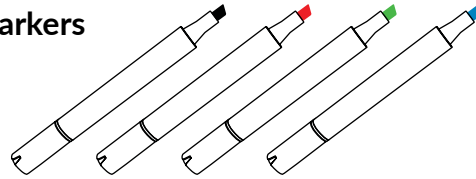
Evo will rotate left, right move outside the circle, and blink green when calibrated. If Evo blinks red, start over from Step 2 then release.

Markers & Paper

To draw Color Codes, you'll need black, red, green, and blue markers (included with your Evo).

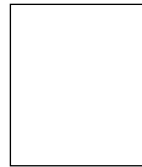
✓ YES

✓ Ozobot Markers

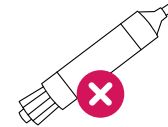


✓ Paper

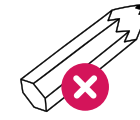
- White paper (multipurpose, non-photo/glossy)



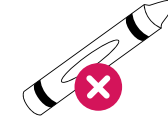
✗ NO



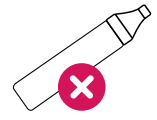
Dry-Erase



Color Pencil



Crayon



Highlighter



✗
Color Paper



✗
Construction Paper



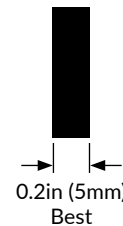
✗
Glossy or Photo Paper

Lines

✓ Draw a line Ozobot can follow

Line Thickness:

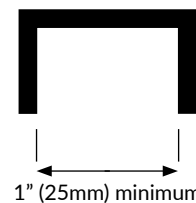
- Best: 0.2" (5mm)
- Min: 0.18" (4.5mm)
- Max: 0.24" (6mm)



Tip: The flat side of your Ozobot marker's chisel tip is the perfect thickness.

✓ Line Spacing

Lines should be at least 1" (25mm) from another line.



✗
Too thin



✗
Too thick



✗
Inconsistent line thickness

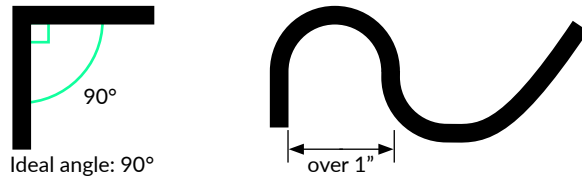


✗
less than 1" (25mm)

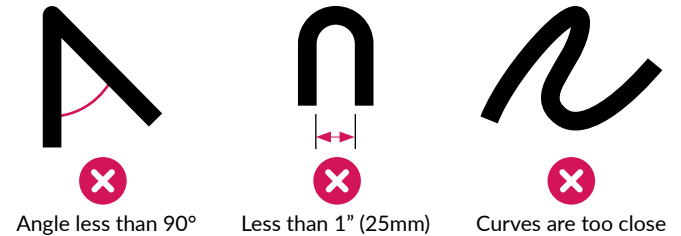
✓ YES

Corners & Curves

✓ Corners & Curves



✗ NO

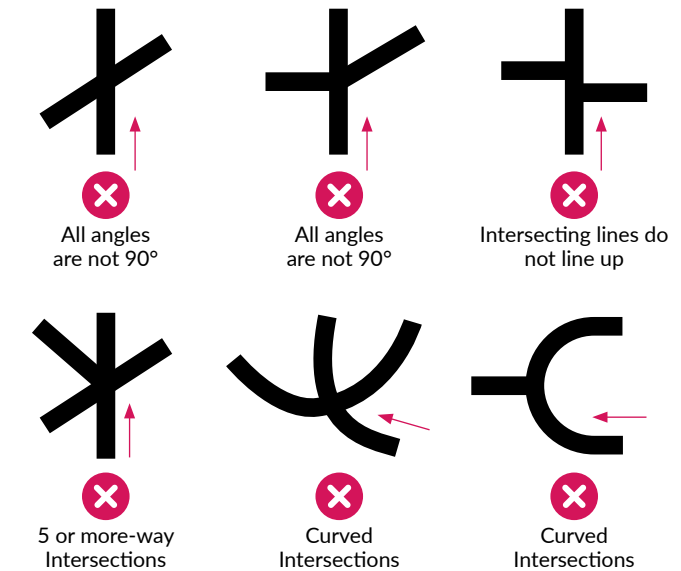
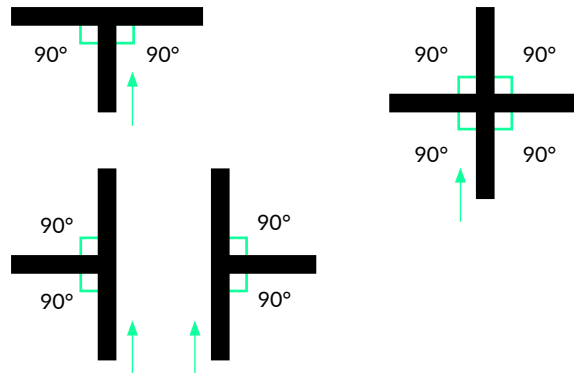


Intersections

✓ Intersections

Ideal angle for all intersections: 90°

- 3-Way intersections
- 4-Way intersections



Track Creation and Printing Guidelines

✓ Track Creation

When creating maps using programs like Illustrator, Google Sheets, etc., follow the guidelines above to create your optimal map. We suggest adding a calibration circle that will match the black track when printed.

✓ Printing

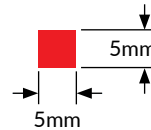
- White paper (multipurpose, non-photo/glossy)
- Color
- 100% scale
- Normal or High quality

✓ YES

Draw Color Codes



- Color Code square size:
- Best: 0.2" x 0.2" (5mm x 5mm)
 - Range: 4.5mm – 6mm



Line Thickness



Min: 0.18" (4.5mm)



Max: 0.24" (6mm)



Line Color



Do not include space between Color Codes with black lines before and after each Color Code, except for the Line-End Color Code (e.g., U-Turn, Win/Exit).

Nitro Speed



U-Turn



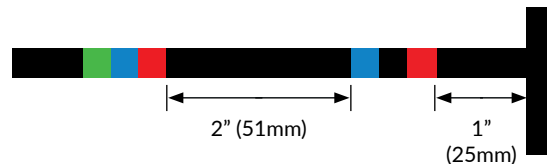
Win/Exit



Spacing



Keep a minimum of 2" (51mm) between Color Codes and 1" (25mm) from an intersection.



Safe Area



Leave 0.5" (~12mm) of white space on each side of the line.

HELLO
HELLO



0.5" (~12mm) 0.5" (~12mm)

✗ NO



Squares should be approximately the same size



Lines should be consistent in height



Codes should be in the same height as the line



Black lines before and after each Color Code only



Too dark



Squares should not have space in between them



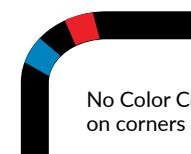
Squares should not overlap



Two-color codes need to be at the line end



Codes should be at least 2" (51mm) apart



No Color Codes on corners

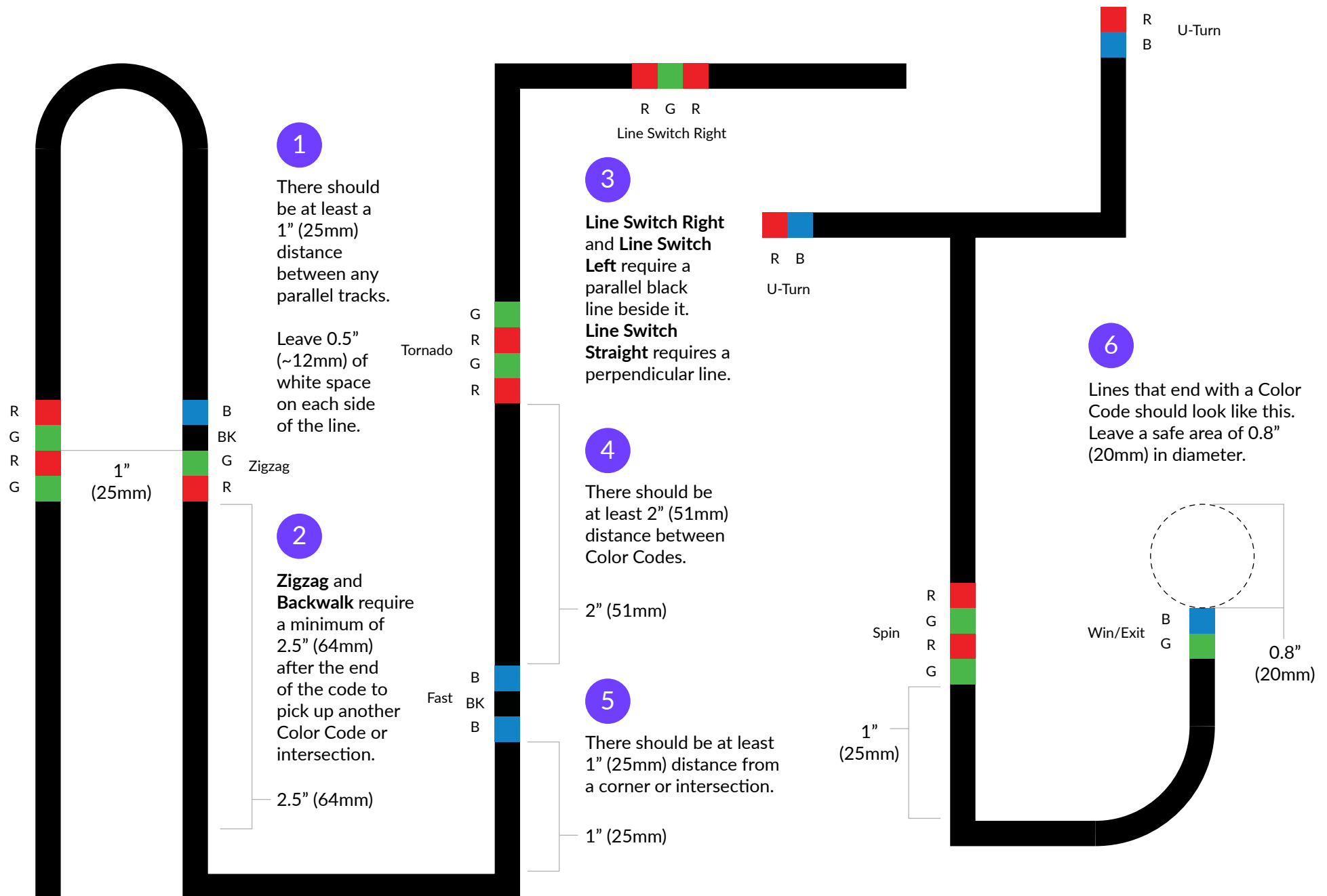


Color Codes should be at least 1" (25mm) from intersections

HELLO
HELLO
HELLO
HELLO



























Not enough white space on each side of the line



Speed

					
Short Super Slow	Slow	Cruise	Fast	Turbo	Nitro Boost
					
R G B	R BK R	G BK G	B BK B	B G B	B G R





Direction & Special Moves

					
Left at Intersection	Straight at Intersection	Right at Intersection	Line Switch Left	Line Switch Straight	Line Switch Right
					
G BK R	B BK R	B R G	G R G	G B G	R G R
					
U-Turn	U-Turn (line end)	Tornado	Zigzag	Spin	Backwalk
					
B R B	B R	R G R G	B BK G R	G R G R	R G BK B

Timers

		
Pause (3 sec.)	Timer on (30 sec. to stop)	Timer off
		
R B R	R BK B G	G B BK R

Wins/Exits

	
Win/Exit (Play Again)	Win/Exit (Game Over)
	
G B	G R

Counters


					
Enable X-ing Counter	Enable Turn Counter	Enable Path Color Counter	Enable Point Counter	Point +1	Point -1
					
G R B G	R B G B	R G B R	R B R G	R B G	G B R

Key: BK = Black B = Blue G = Green R = Red


Speed


Speed codes change your Ozobot's velocity from Short Super Slow (slowest) to Nitro Boost (fastest).


Short Super Slow 
A three-second dose of super slow speed.

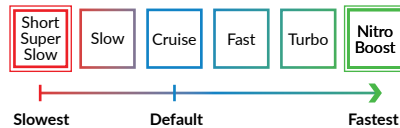
Slow 
A slow speed command is effective until the bot reads a new speed code or is turned off.

Cruise 
The default speed command.

Fast 
A high speed command effective until the bot reads a new speed code or is turned off.

Turbo 
An extra high speed command effective until the bot reads a new speed code or is turned off.


Nitro Boost 
A three-second dose of Ozobot's highest speed.




Direction

Direction codes tell your Ozobot what to do at an intersection.

Left at Intersection 
A command to turn left at the next intersection.


Straight at Intersection 
A command to continue straight at the next intersection.

Right at Intersection 
A command to turn right at the next intersection.

Line Switch Left 
A command to immediately turn 90-degrees to the left, move forward to a new line, then make a random turn to follow along the new line.

Line Switch Straight 
A mid-line command to continue straight after the line ends. The code will not work if Ozobot encounters an intersection before the line ends.

Line Switch Right 
A command to immediately turn 90-degrees to the right, move forward to a new line, then make a random turn to follow along the new line.


U-Turn 
A mid-line command to turn around 180-degrees and follow the same line in the opposite direction.


U-Turn (Line End) 
A line-end command to turn around 180-degrees and follow the line in the opposite direction.


Ozobot's default intersection behavior is random. If a given turn, i.e. 'Go Left' is not possible, Ozobot defaults back to random behavior.


Counters



Counter codes tell your Ozobot to count five intersections, turns, or line color changes.

Enable X-ing Counter 
A command to make your Ozobot stop following lines after it crosses five intersections ('T' or '+' intersections). After the fifth intersection, Ozobot executes a "done" maneuver, stops following the line, and blinks red.

Enable Turn Counter 
A similar command to the Enable X-ing Counter, except that Ozobot only counts intersections where it makes a turn. It will not count intersections where it continues straight. Ozobot can randomly choose to go straight at an intersection, or be commanded to go straight with a "Straight at Intersection" code.

Enable Path Color Counter 
A command to make your Ozobot stop following lines after it reads five color changes in the line. If the line Ozobot is following transitions from red to green, it counts as one color change. Transitions to and from black lines are not counted, and color segments less than two centimeters in length are not counted.


Enable Point Counter 
A command that tells your Ozobot to count point codes down from five. Each time Ozobot reads a "Point -1" code it counts down. After the fifth "Point -1" code Ozobot will make a "done" maneuver, stop following lines, and blink red. You can add more to the total count (not to exceed five) with "Point +1" codes. You can reset Ozobot by turning it off, then on.


- **Point +1** 
- **Point -1** 

Timer

Timer codes tell your Ozobot to pause or count seconds.


Pause (3 sec.) 
A command to stop moving for three seconds, then continue with default behavior.


Timer On (30 sec. to stop) 
A command to make your Ozobot countdown from 30 sec., but continue to move and read codes while counting down. Ozobot will flash its light(s) at a rate of one flash/sec., flash rapidly to signify time is up, then shut off.

Timer Off 
A command to stop counting down seconds and return to default behavior.

Wins/Exits


Win/Exit codes tell your Ozobot to celebrate its success, then either start over or stop.


Win/Exit (Play Again) 
A command to perform a "success" animation, then continue to follow the line.


Win/Exit (Game Over) 
A command to perform a "success" animation, then stop following the line.


Cool Moves

Cool Move codes tell your Ozobot to bust a move!

Tornado 
A command to spin around four times at increasing speed, then continue following the line in the same direction.

Zigzag 
A command to sway right-left-right-left while moving forward, then continue moving straight.


Spin 
A command to spin around twice at a consistent speed, then continue following the line in the same direction.

Backwalk 
A command to quickly turn 180-degrees, wiggle backwards for one second, then turn 180-degrees again and continue following the line in the same direction.


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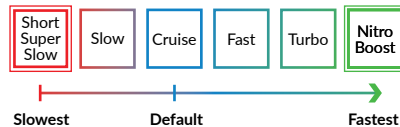
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- **Point +1** 
- **Point -1** 

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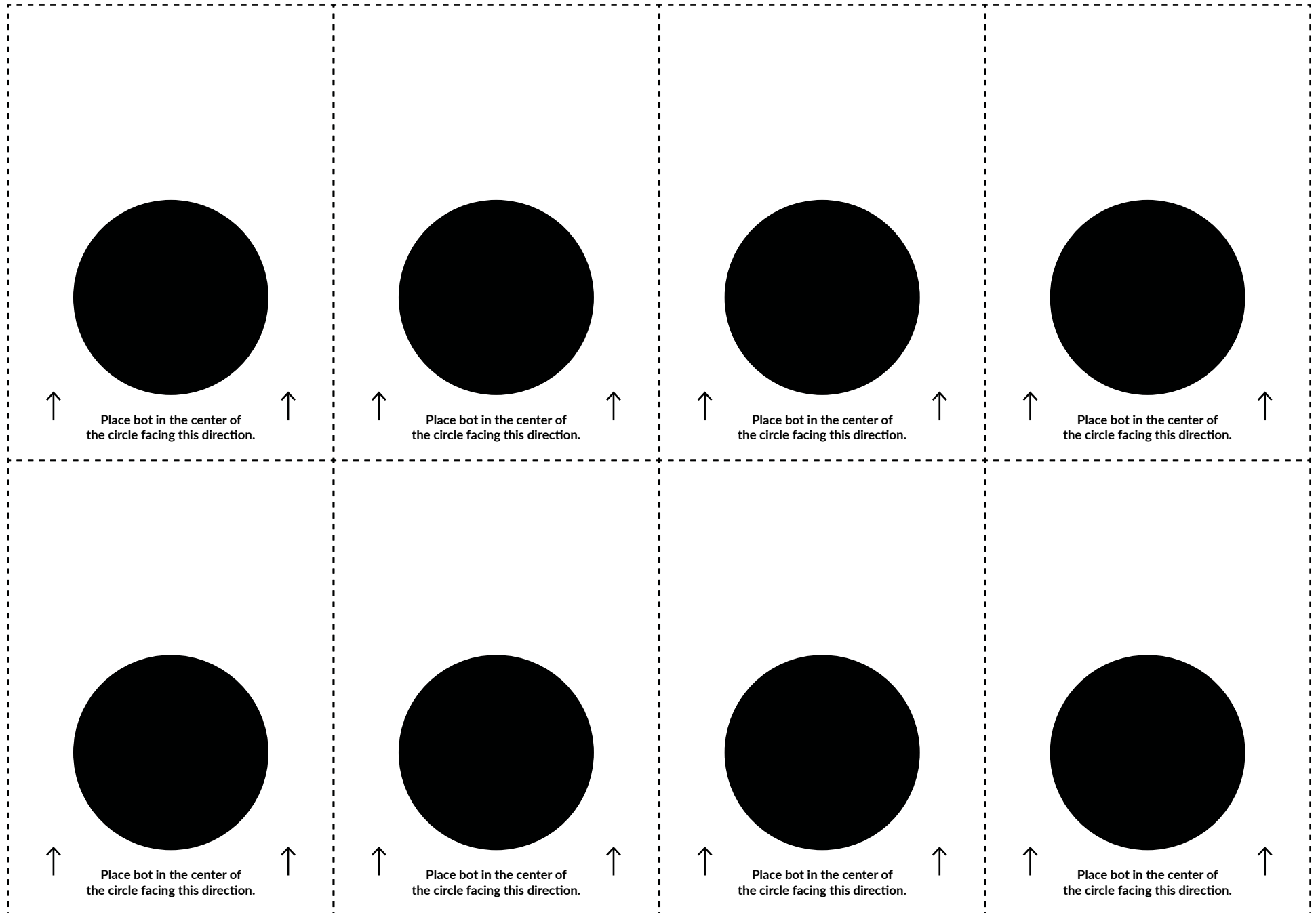
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Spin 
A command to spin around twice at a consistent speed, then continue following the line in the same direction.

Backwalk 
A command to quickly turn 180-degrees, wiggle backwards for one second, then turn 180-degrees again and continue following the line in the same direction.

Calibrate Your Bot!

Use these circles to calibrate bots when using them on pre-filled, printed tracks.



Calibrate Your Bot!

Fill in the circles with black Ozobot marker. Use these circles to calibrate bots when using markers to create your own tracks.

