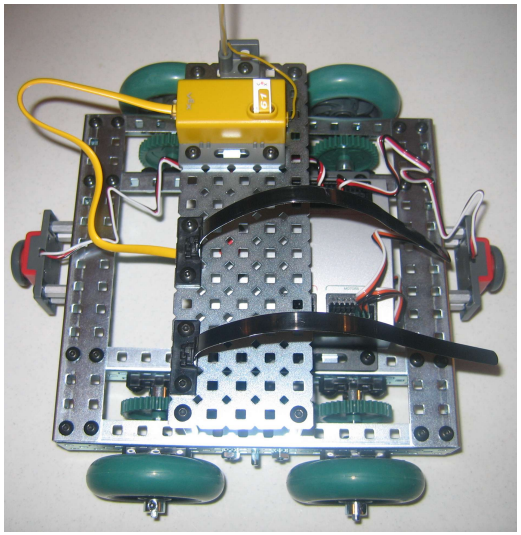
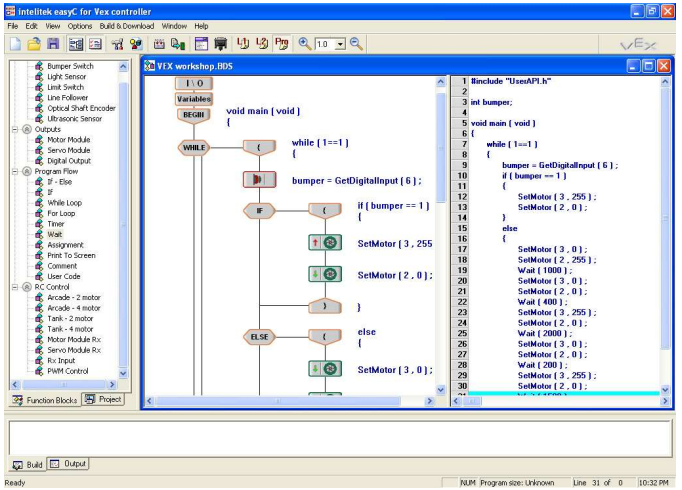
VEX Robotics Workshop





Supported By:

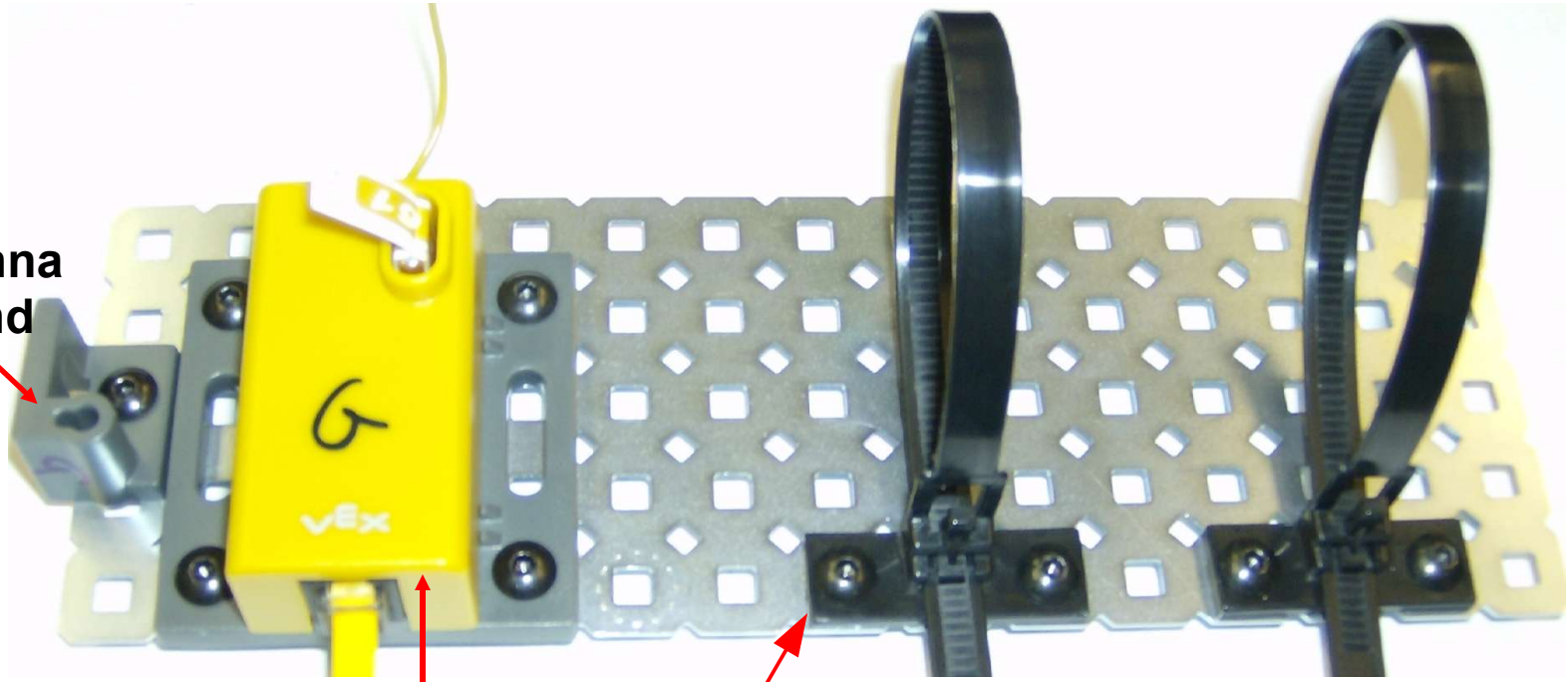
TECHPOINT FOUNDATION

Nurture • Inspire • Empower
Lafayette School Corporation

PURDUE UNIVERSITY

PURDUE FIRST PROGRAMS

Battery Strap
(included in rechargeable battery set)



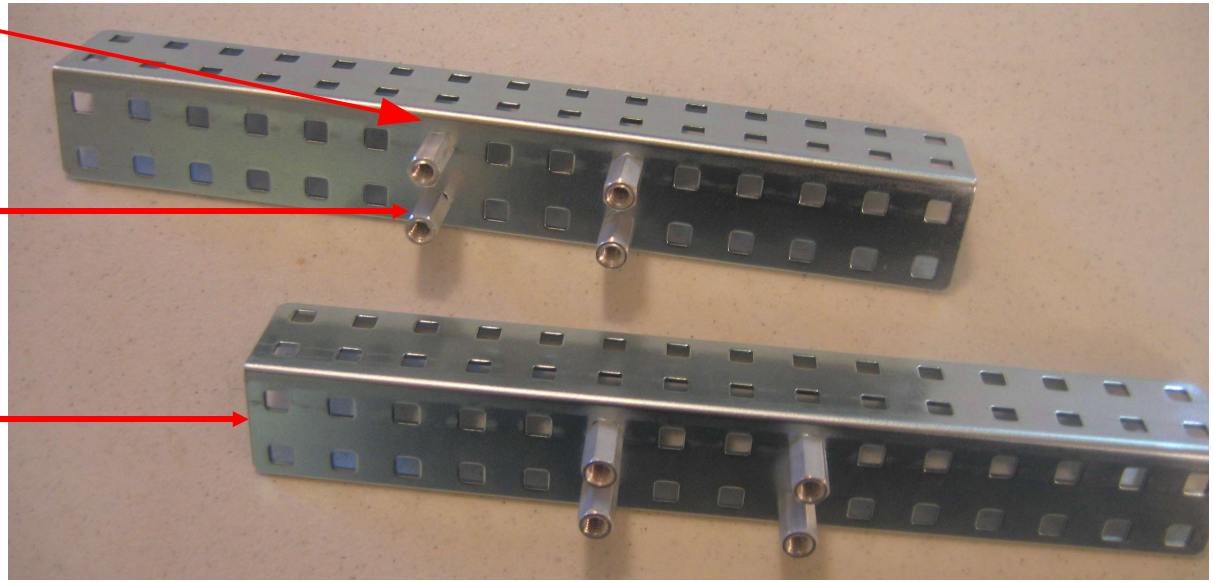
	Quantity	*Description*
STEP 1	1	5 x 15 Plate
	2	Black Battery Straps
	1	Yellow RF Receiver Module
	1	Grey Antenna Stand
	9	3/8" 8-32 Bolts
	9	Keps Nuts

Building 2 Bumpers

(4) 3/8” 8-32 bolts per bumper on back side

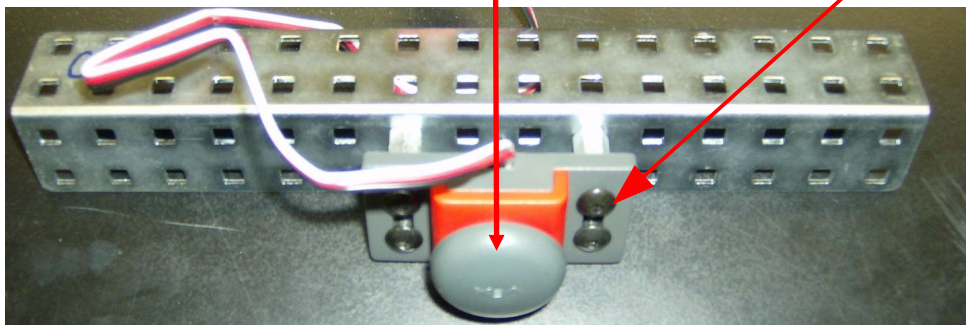
½” Threaded Riser

“L” Brackets

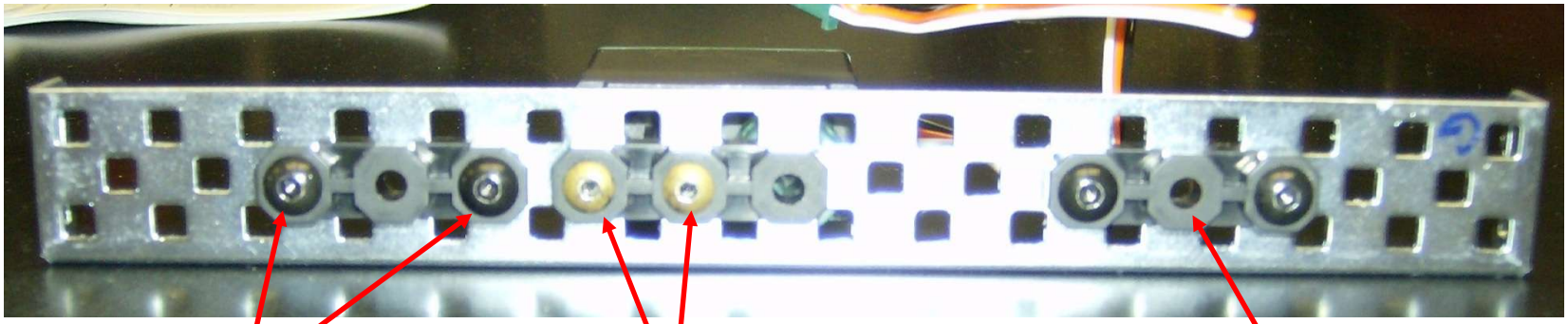


Bumper

(4) 1/4” 8-32 bolts



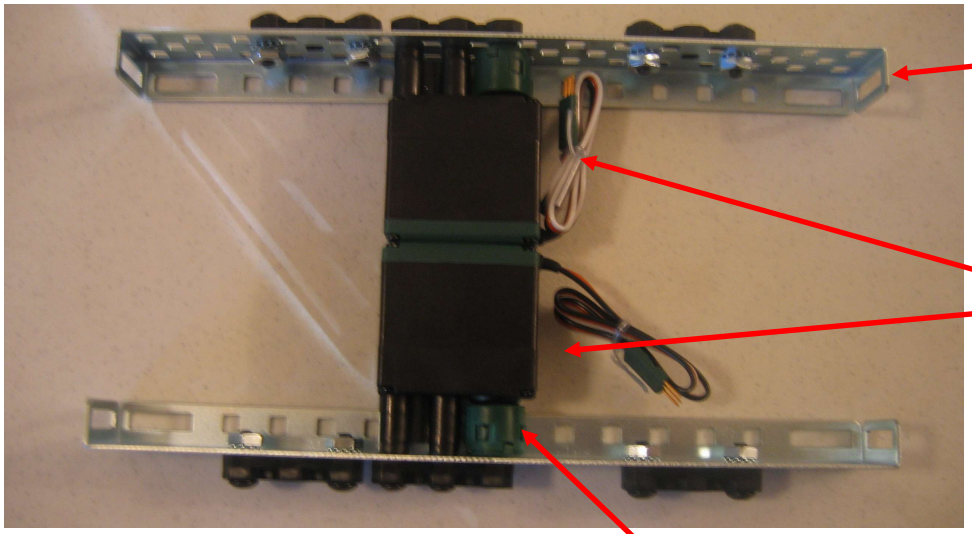
	Quantity	Description
STEP 2	8	3/8" 8-32 Bolts
	8	1/4" 8-32 Bolts
	2	Bumpers
	2	15 x 2 "L" Brackets
	8	1/2" Threaded Riser



(8) 1/2” 8-32 Bolts for Bearings

(4) 1/2” 6-32 Bolts for Motors
(*smaller diameter than most)*

Bearings



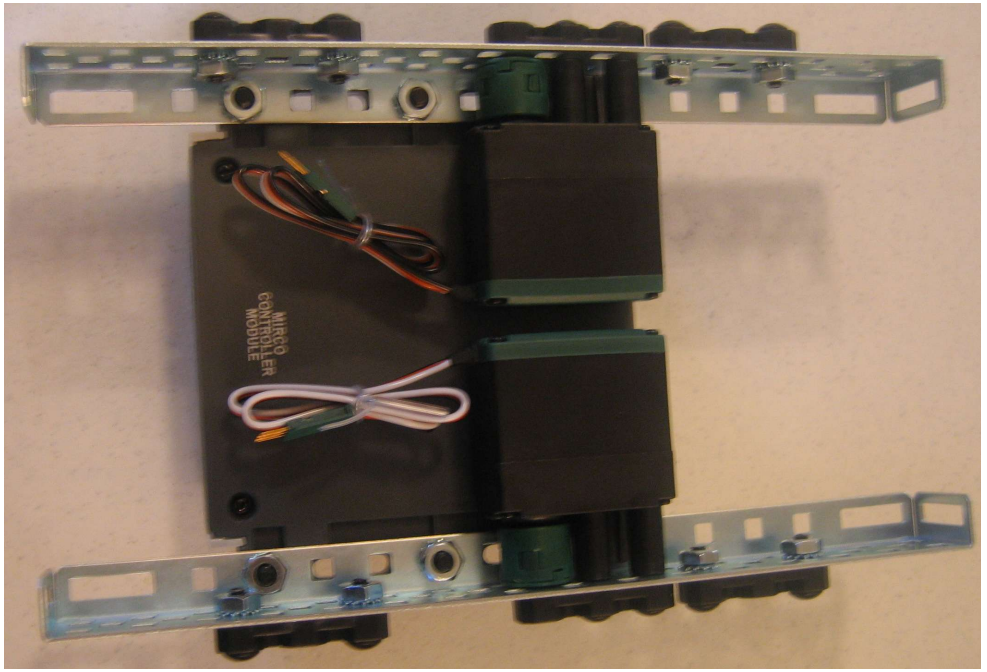
Chassis Rail

Motors NOT Servos

Make sure clutch is present

	Quantity	*Description*
STEP 3	2	Brackets
	2	Motors
	6	Bearings
	4	1/2" 6-32 Bolts
	8	1/2" 8-32 Bolts
	8	Keps Nuts

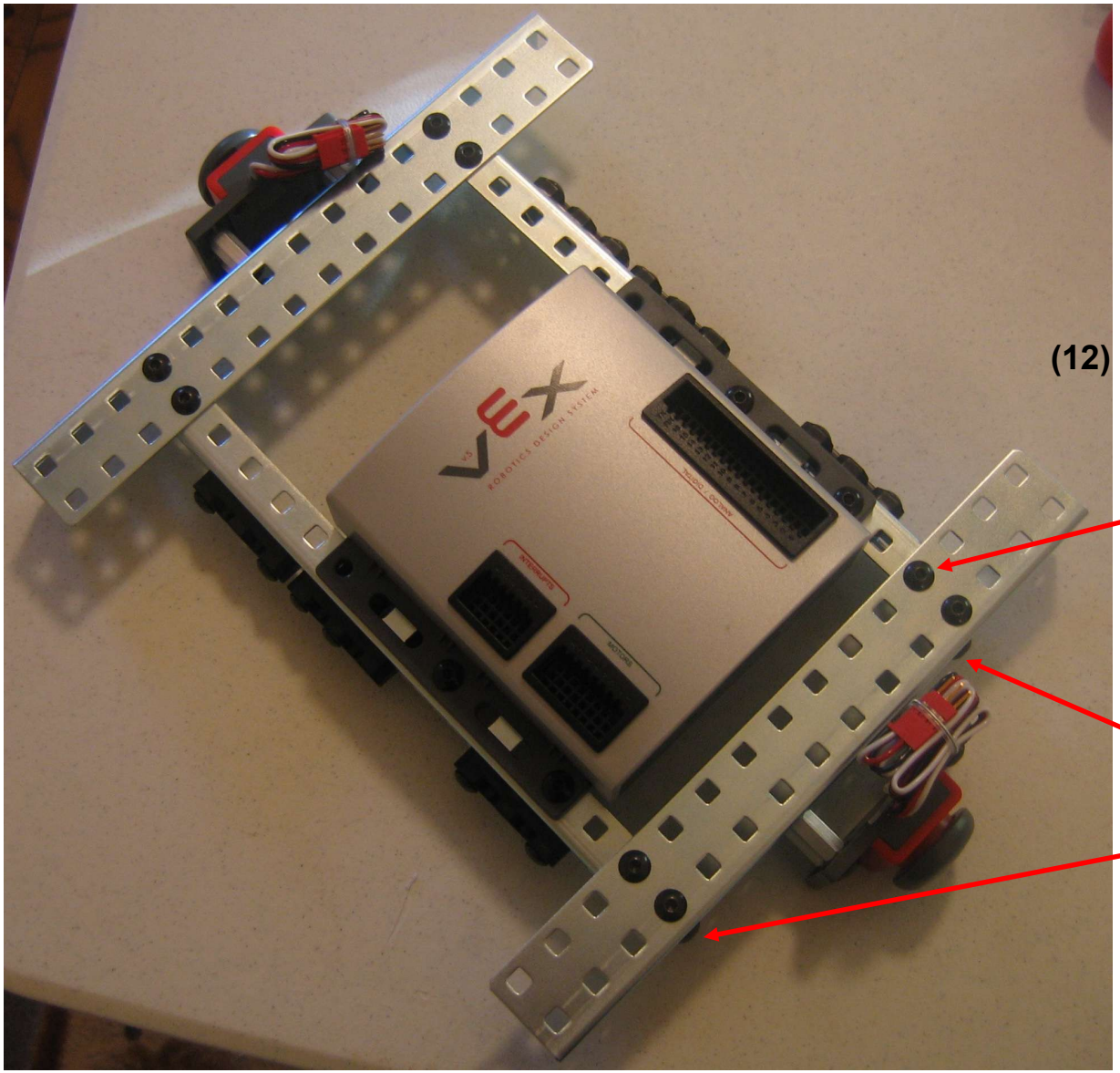
Bottom



Top

(4) 1/2” 8-32 bolts and nuts

	Quantity	*Description*
STEP 4	1	Microcontroller Module
	4	1/2" 8-32 Bolts
	4	Keps Nuts

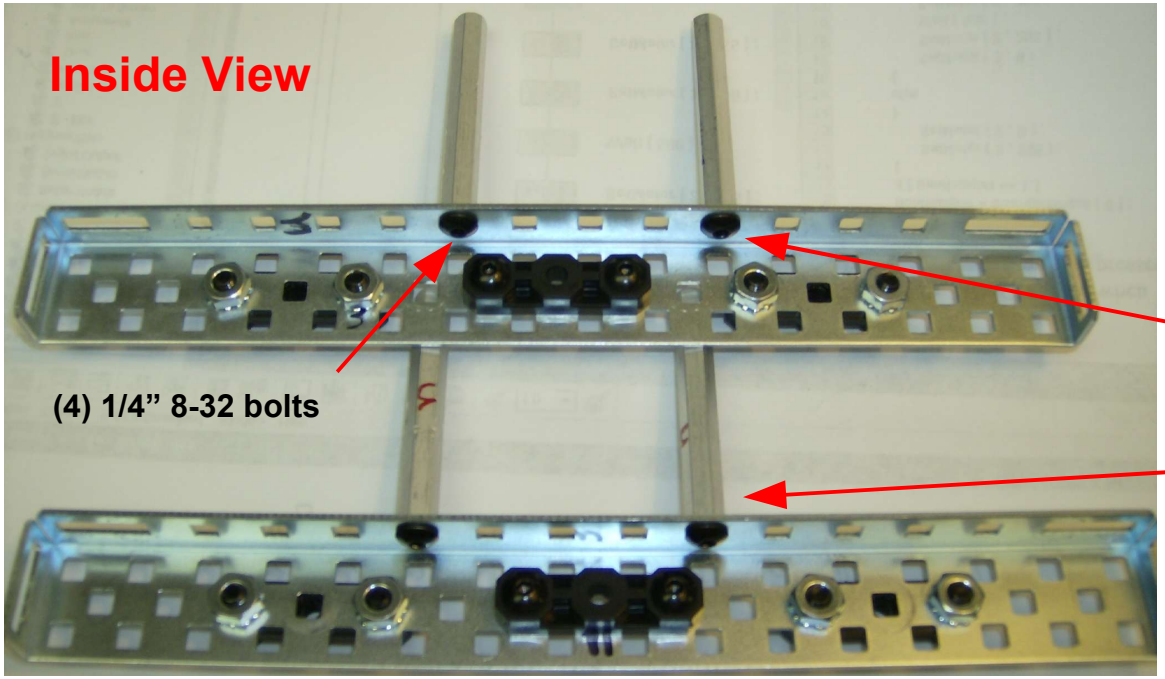


(12) 1/4” 8-32 bolts and Keps nuts

8 Bolts on top
(2 at each intersection)

4 Bolts on the ends
(1 at each end)

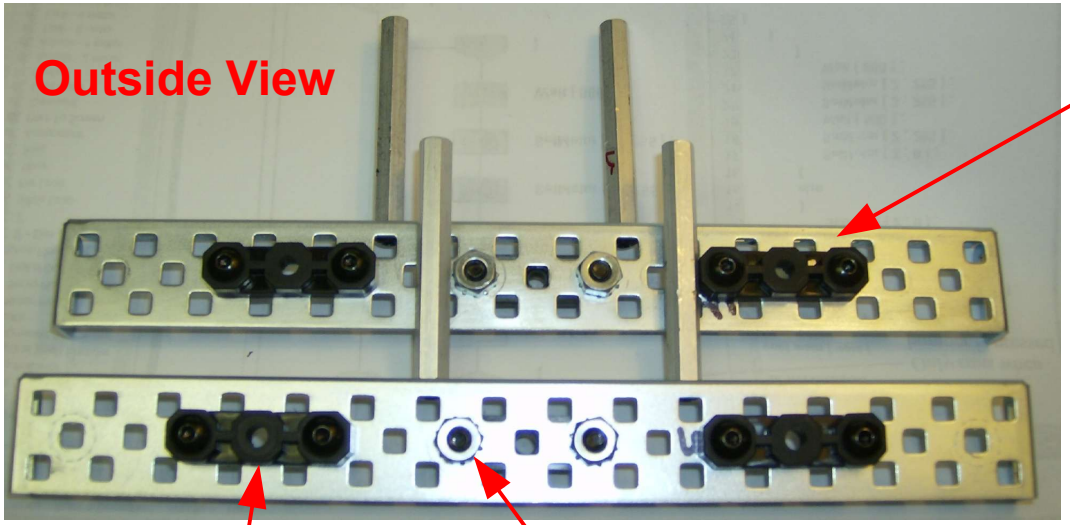
	Quantity	*Description*
STEP 5	12	1/4" 8-32 Bolts
	12	Keps Nuts



Notice that the posts are <u>NOT</u> put in the same place for both sides. They are mirror images of each other.

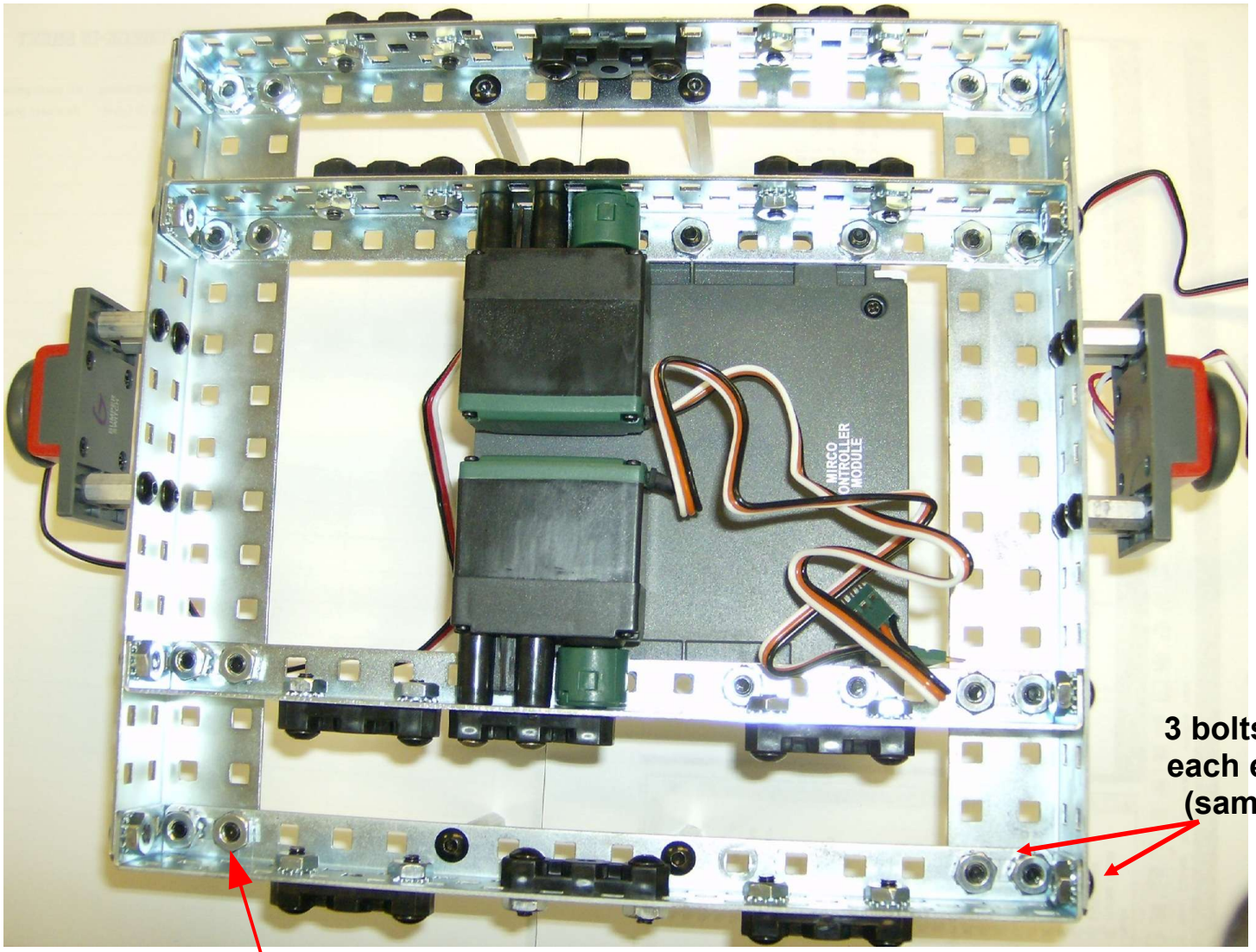
This post is put in on the 3rd hole from the right

This post is put in on the 4th hole from the right



Notice that the bearings are put exactly the same for both sides.

	Quantity	*Description*
STEP 6	2	Chassis Rails
	4	2” Standoffs
	4	1/4" 8-32 Bolts
	6	Bearings
	12	½" 8-32 Bolts
	12	Keps Nuts



3 bolts and nuts at each end – 12 total (same as Step 5)

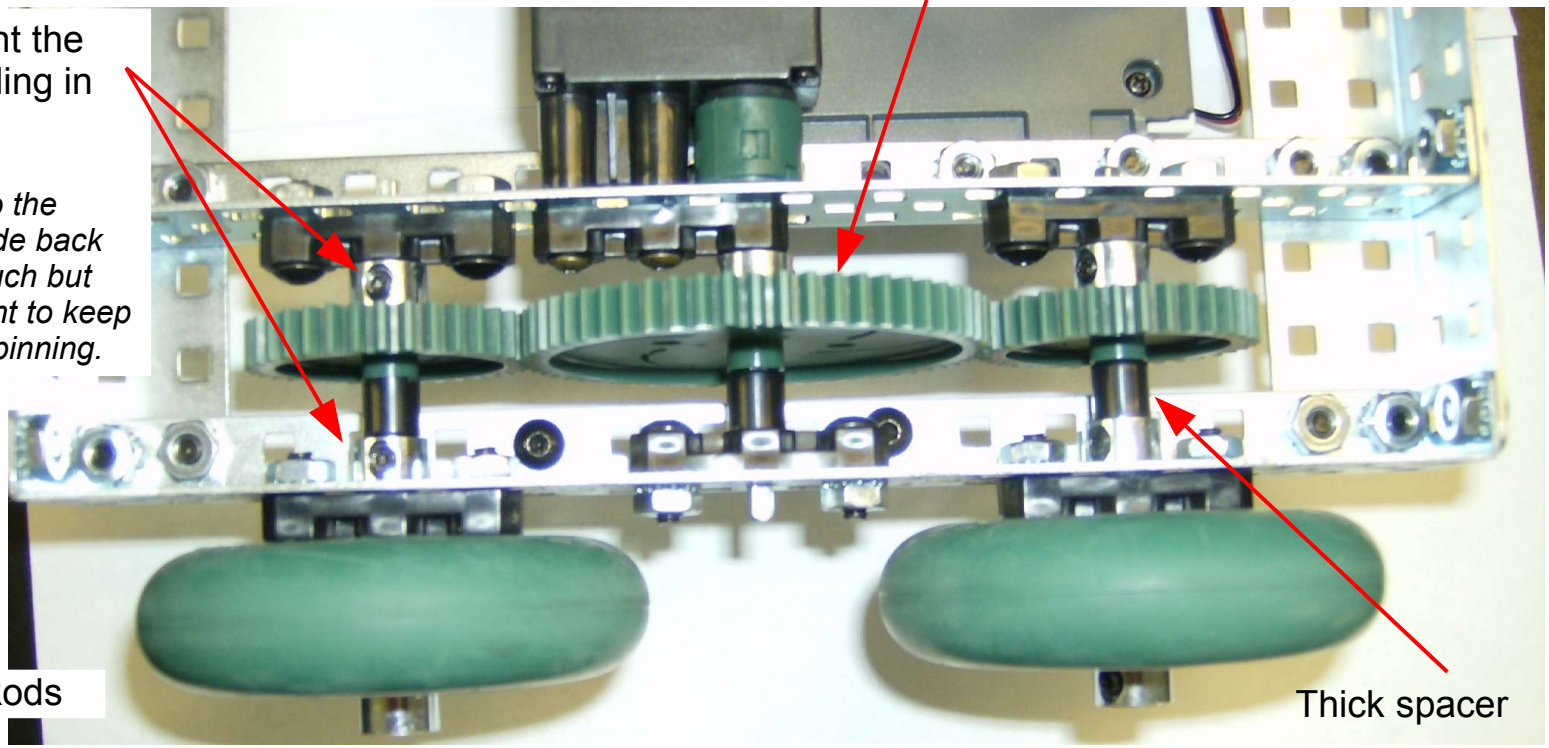
(12) 1/4” 8-32 bolts and nuts

	Quantity	*Description*
STEP 7	12	1/4" 8-32 Bolts
	12	Keps Nuts

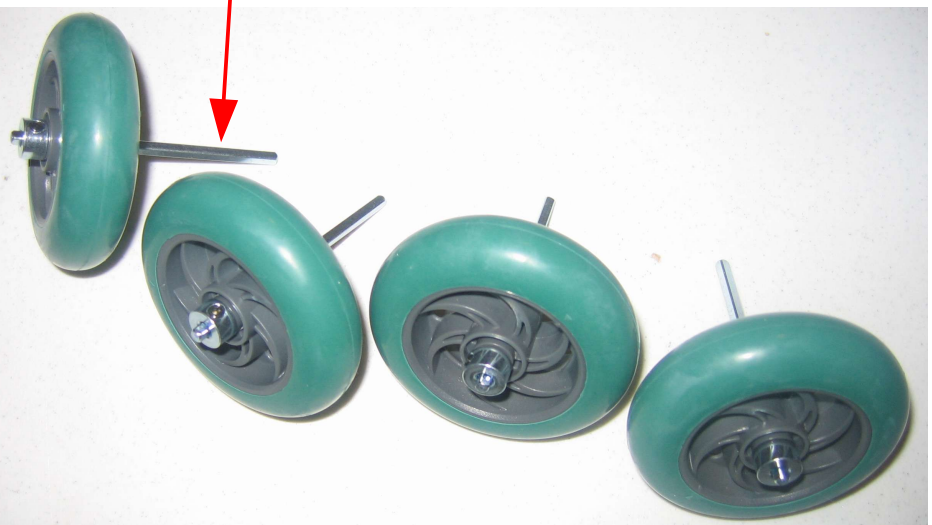
Large Gear - 60pt

Collars prevent the shaft from sliding in or out.

Adjust collars so the shaft doesn't slide back and forth too much but also isn't too tight to keep the shaft from spinning.

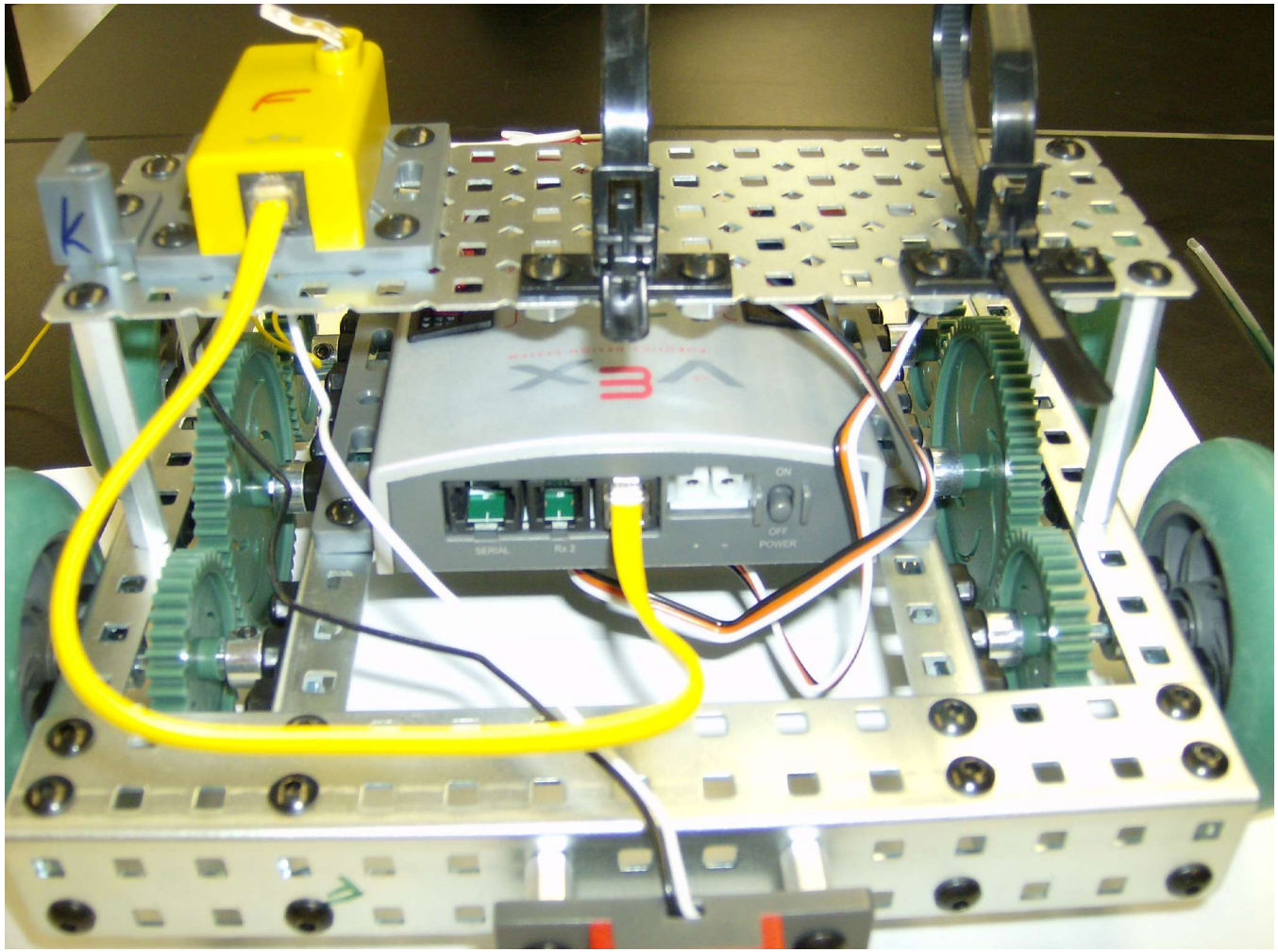


3” Square Rods



	Quantity	Description
STEP 8	4	3" Square Rods
	2	2” Square Rods
	14	Set-screw Collars
	4	Wheels
	4	Medium Gears – 36 pt
	2	Large Gears – 60 pt
	6	Thick spacers

Install Top Plate – 1 screw at each corner



STEP 9	*Quantity*	*Description*
	4	1/4" 8-32 Bolts

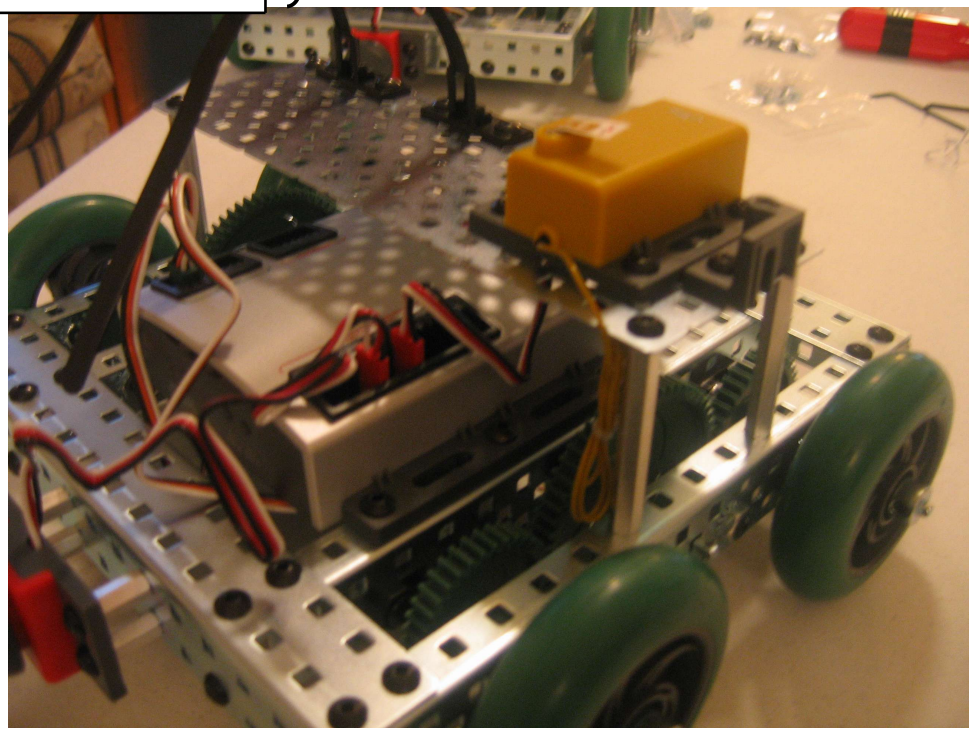
Plug wires into the microcontroller – be CAREFUL, they only go in one way and be careful not to bend the little pins.

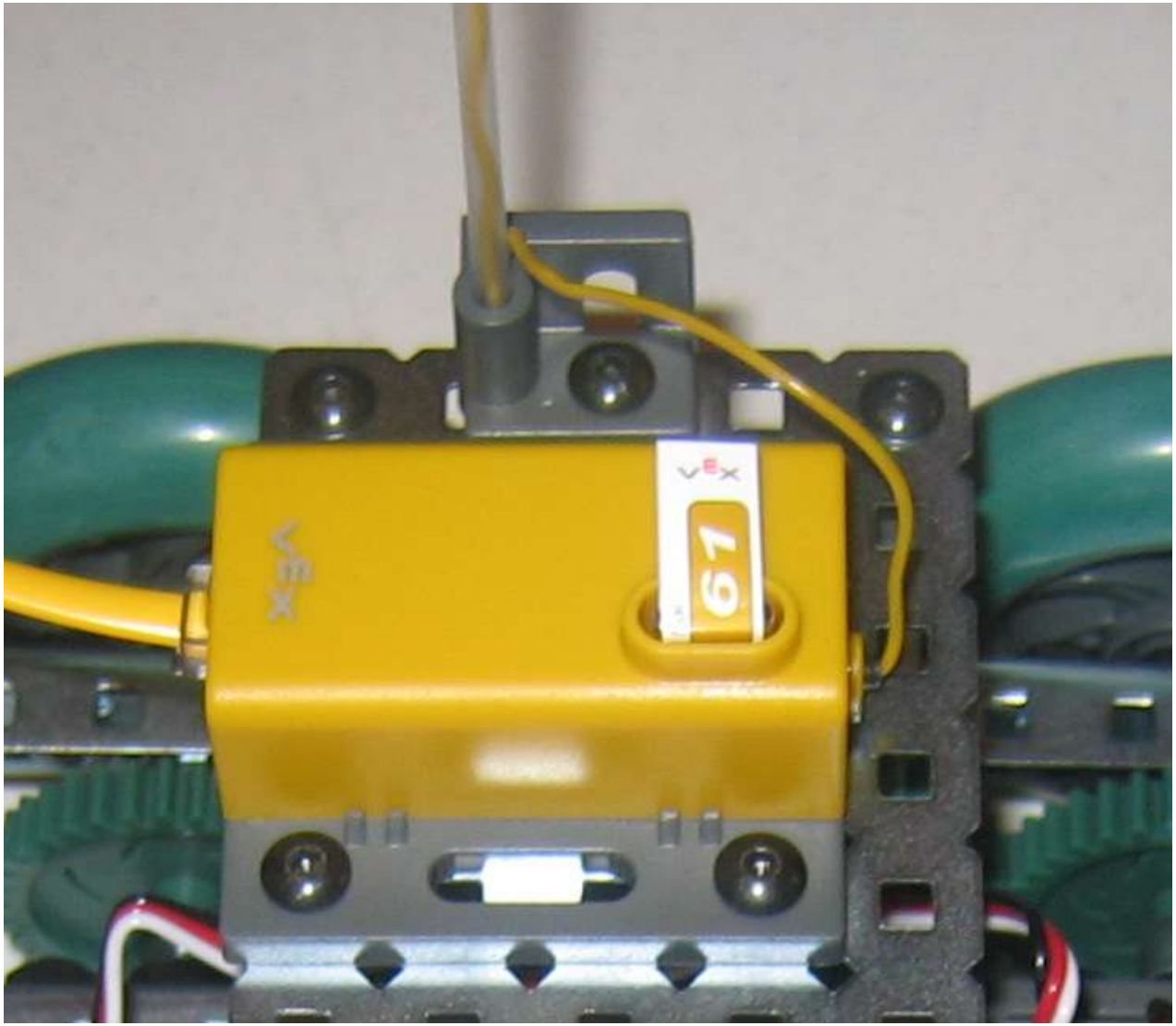
Cable from…	***Plugs into…***
Right Drive Motor	Motor Port 3
Left Drive Motor	Motor Port 2
Front Bumper	Analog/Digital Port 6
Back Bumper	Analog/Digital Port 10

Port is another word for socket.

Go into motor ports

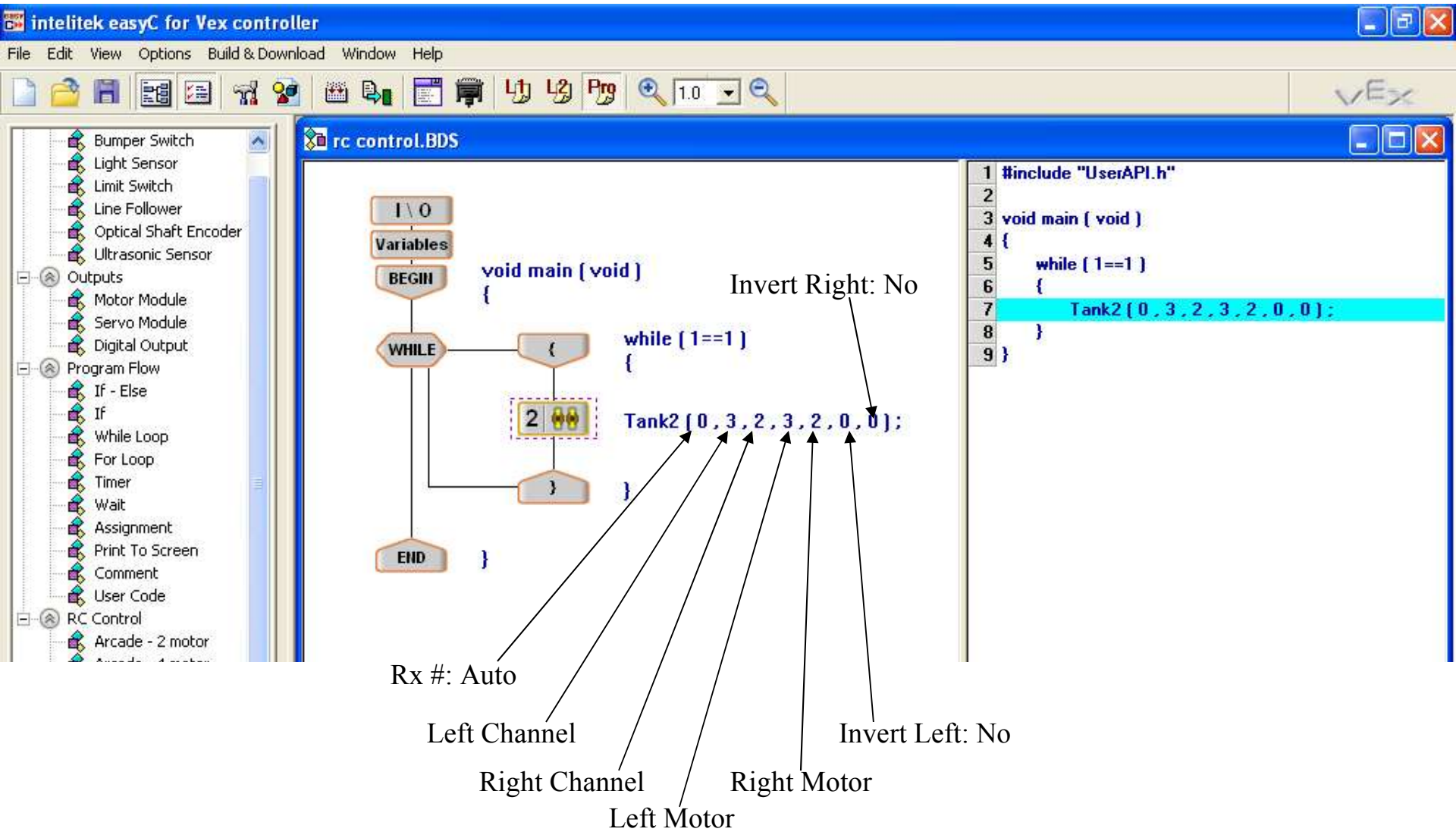
Go into analog/digital ports





Slide the antenna wire into antenna tube and mount as shown – the antenna wire slides into the little groove near the hole for the mast.

RC Control



Invert Right: No

Rx #: Auto

Left Channel

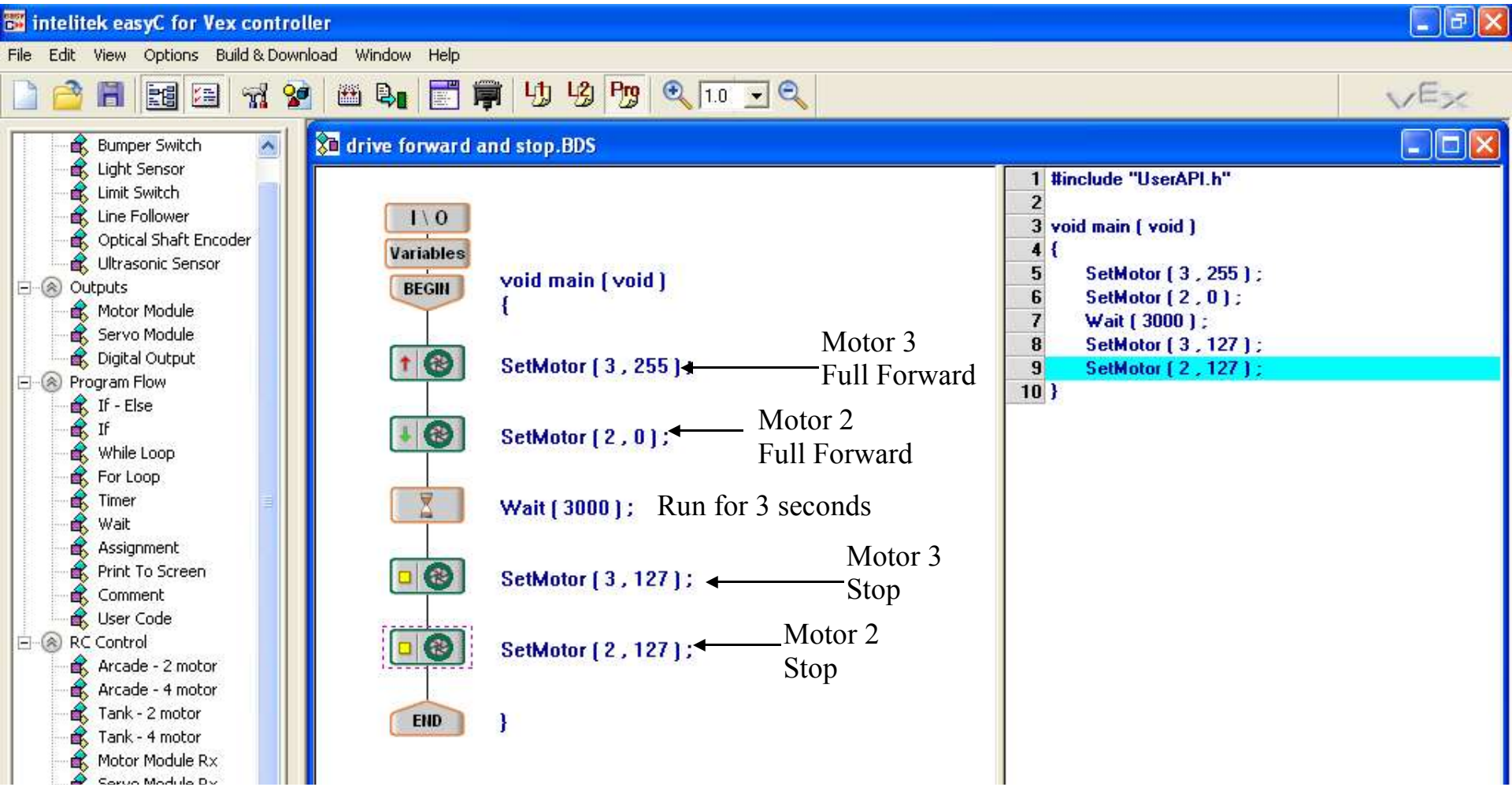
Right Channel

Left Motor

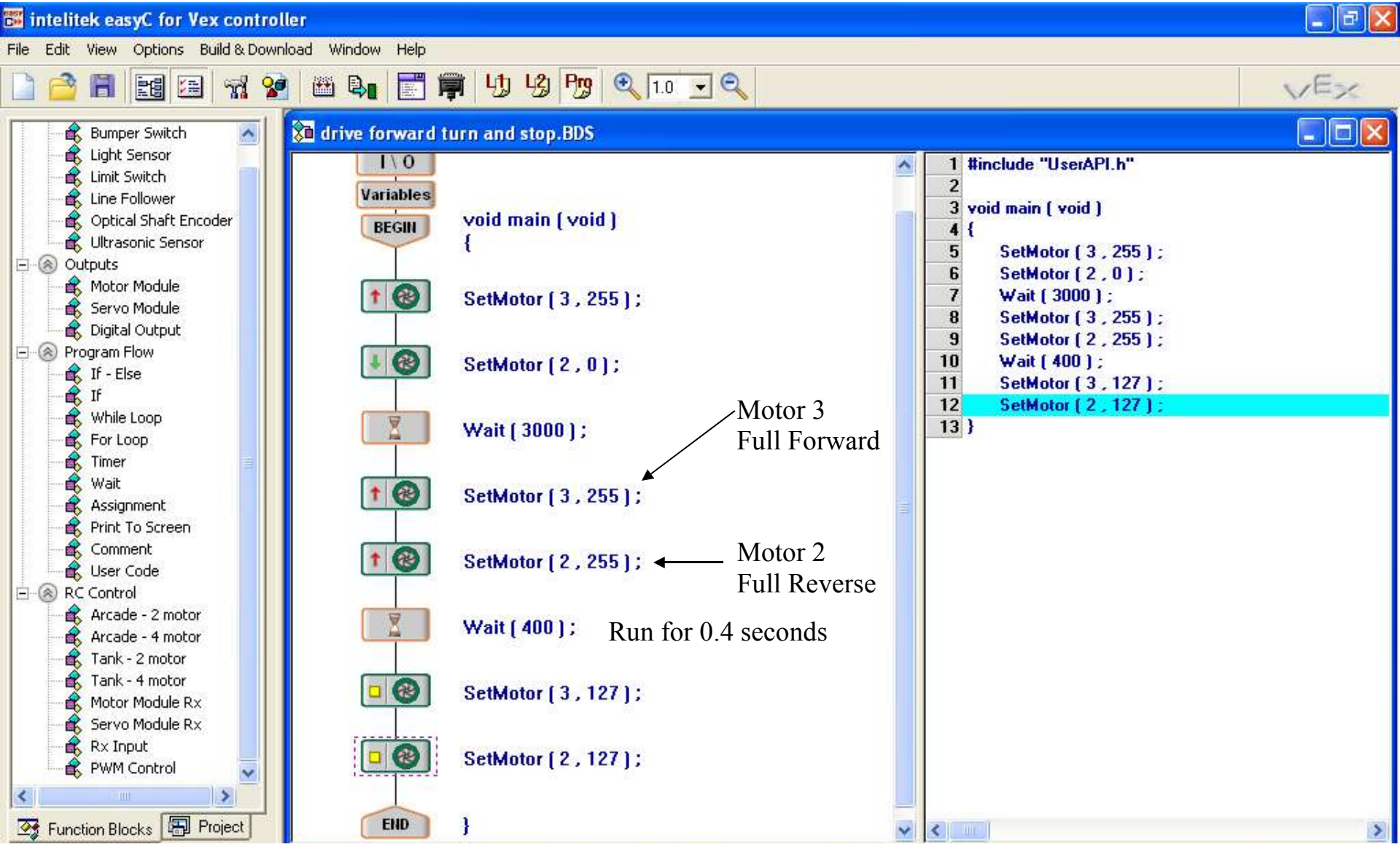
Right Motor

Invert Left: No

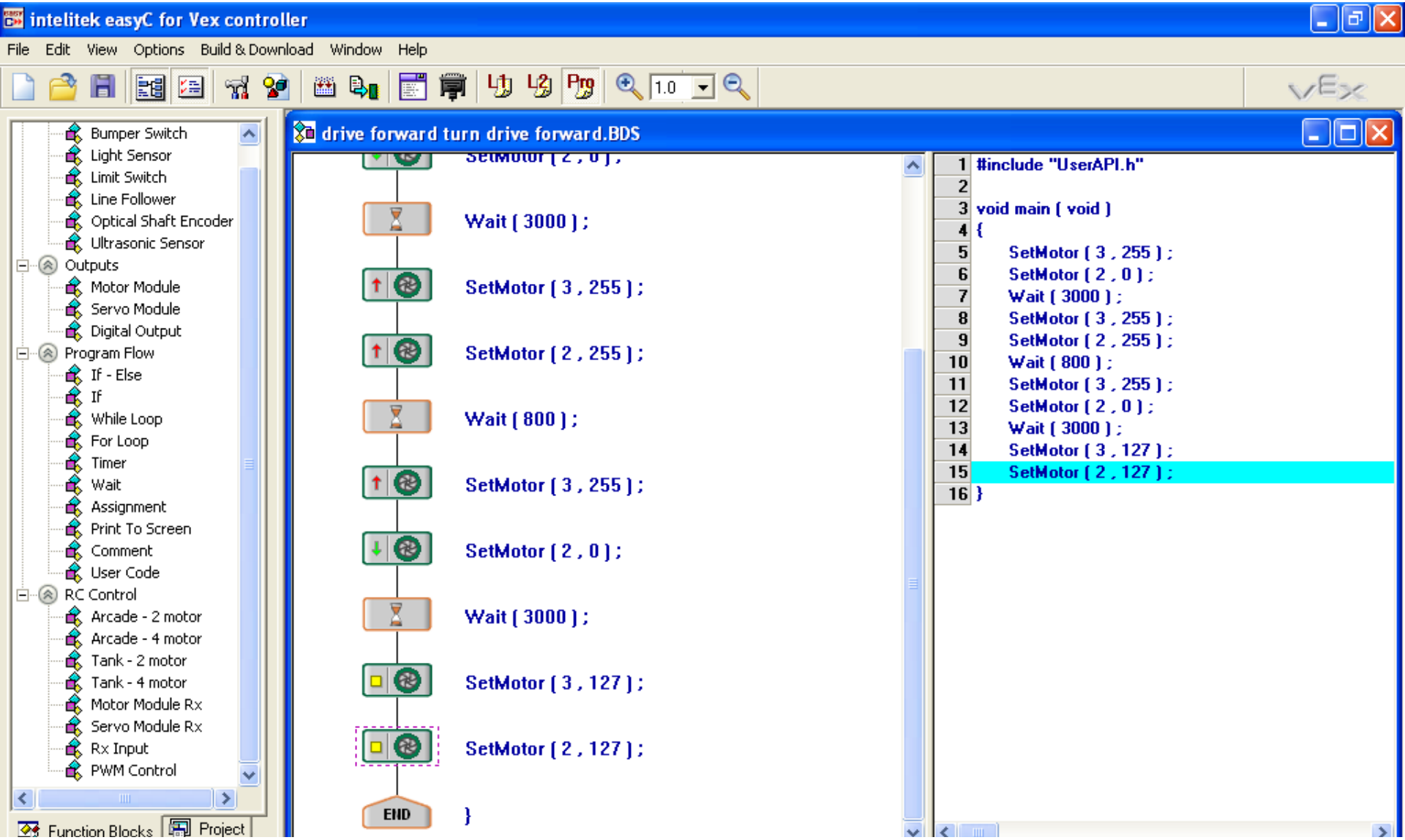
Drive Forward and Stop



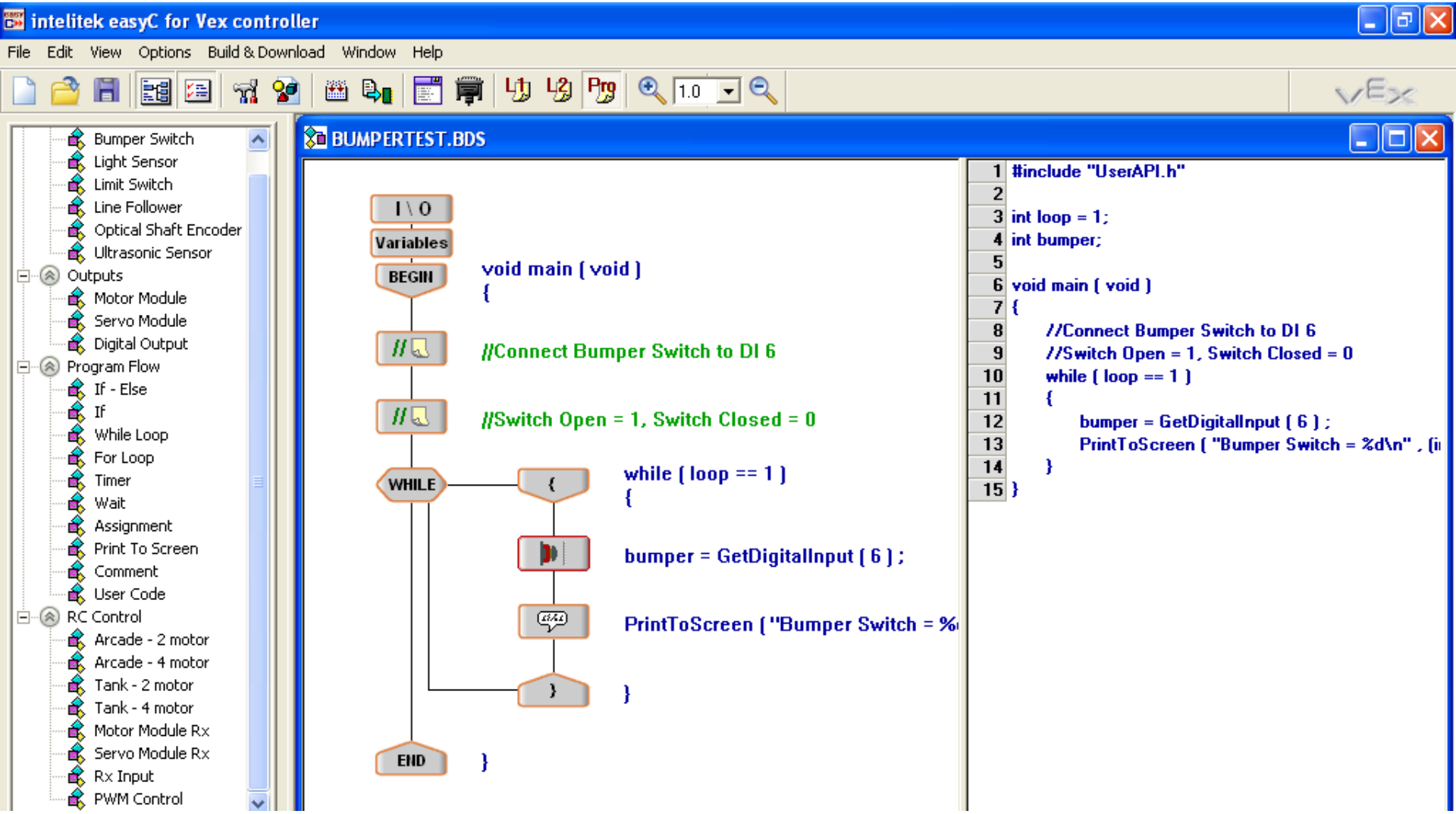
Drive Forward, Turn and Stop



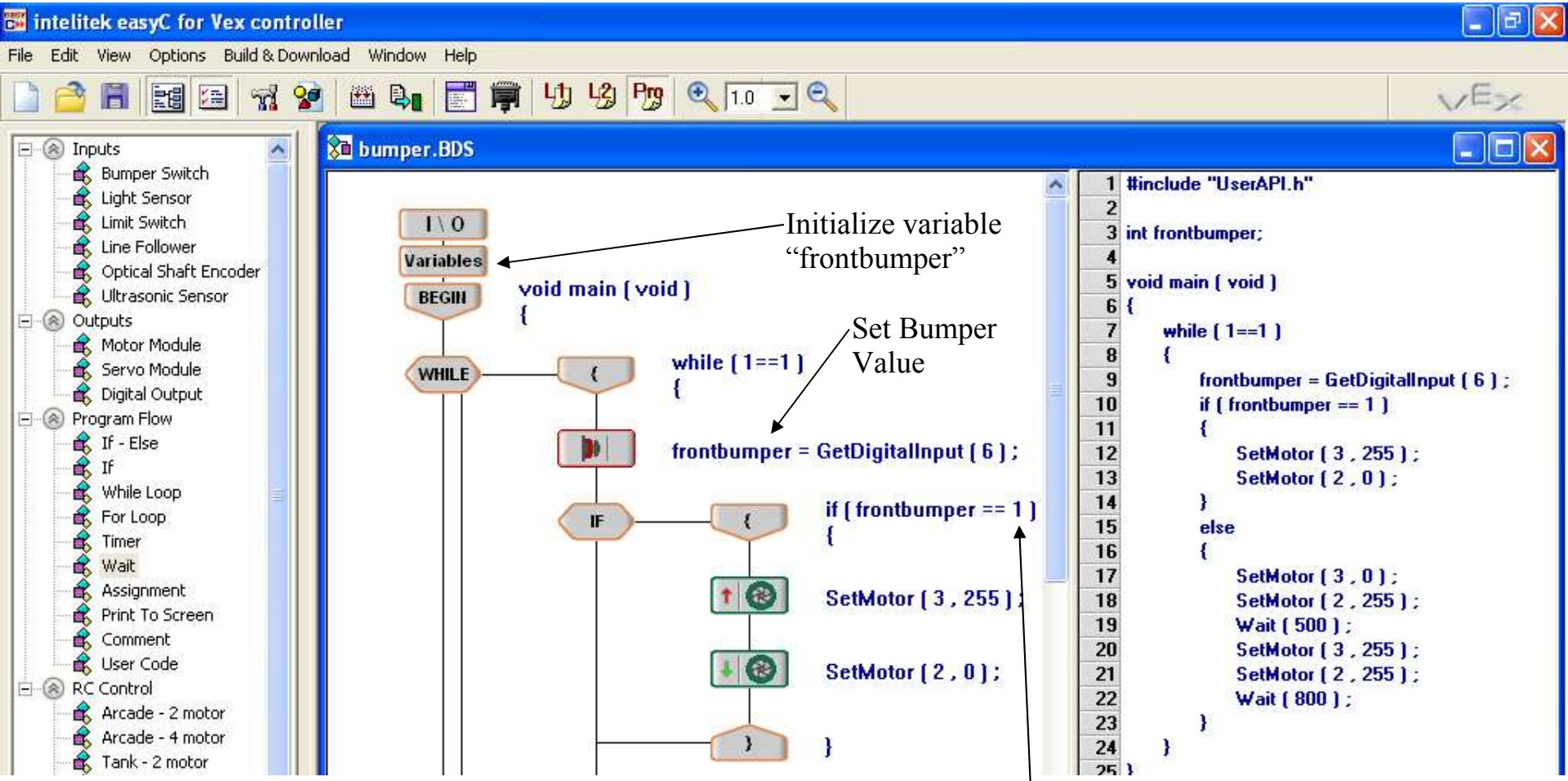
Drive Forward, Turn, Drive Forward



Bumper Test


intelitek easyC for Vex controller
File Edit View Options Build & Download Window Help
Bumper Switch
Light Sensor
Limit Switch
Line Follower
Optical Shaft Encoder
Ultrasonic Sensor
Outputs
Motor Module
Servo Module
Digital Output
Program Flow
If - Else
If
While Loop
For Loop
Timer
Wait
Assignment
Print To Screen
Comment
User Code
RC Control
Arcade - 2 motor
Arcade - 4 motor
Tank - 2 motor
Tank - 4 motor
Motor Module Rx
Servo Module Rx
Rx Input
PWM Control
BUMPERTEST.BDS
I \ O
Variables
BEGIN
void main (void)
{
//Connect Bumper Switch to DI 6
//Switch Open = 1, Switch Closed = 0
WHILE
while (loop == 1)
{
bumper = GetDigitalInput (6) ;
PrintToScreen ("Bumper Switch = %
}
}
END
1 #include "UserAPI.h"
2
3 int loop = 1;
4 int bumper;
5
6 void main (void)
7 {
8 //Connect Bumper Switch to DI 6
9 //Switch Open = 1, Switch Closed = 0
10 while (loop == 1)
11 {
12 bumper = GetDigitalInput (6) ;
13 PrintToScreen ("Bumper Switch = %d\n" , (i
14 }
15 }

Bumper Driving (part 1)



Bumper not pushed in

Bumper Driving (part 2)