

SERVO CONNECTIONS FOR OLDER BOARDS

This document explains how to connect servo and LED indicator circuits to the older revisions of the BASIC Stamp HomeWork Board and Board of Education Listed below. Instructions for connecting more recent revisions are covered in Chapter 4 of What's a Microcontroller v3.0 and newer.

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- Page 1 – BASIC Stamp HomeWork Board Rev B
 - Page 5 – Board of Education Rev B
 - Page 7 – Board of Education Rev A
- √ If you have not already done so, follow the instructions in What's a Microcontroller v3.0, Chapter 1 for going to the BASIC Stamp Editor's Help file and determining your board revision.
- √ Double-check to make sure your particular board and revision is included in the list above.
- √ Skip to instructions for connecting the servo to the BASIC Stamp on your board:

BASIC Stamp HomeWork Board Rev B

If you are connecting your servo to a BASIC Stamp HomeWork Board Rev B, you will need these extra parts:


- (1) 3-pin male/male header (shown in Figure 1).
- (4) Jumper wires



Figure 1
Basic Stamp HomeWork Board
Rev B – Extra Parts

(1) 3-pin male/male header

Figure 2 shows a schematic of the servo and LED circuits for the BASIC Stamp HomeWork Board Rev B. The instructions that come after this figure will show you how to safely build this circuit.



Use only a 9 V battery when your Parallax Standard Servo is connected to the BASIC Stamp HomeWork Board Rev B. Do not use any kind of DC supply or “battery replacer” that plugs into an AC outlet. Improper use of these devices can cause the activity not to work, or even permanently damage the servo.

For best results, make sure your alkaline battery is new. If you are using a rechargeable battery, make sure it is freshly recharged. It should also be rated for 100 mAh (milliamp hours) or more.

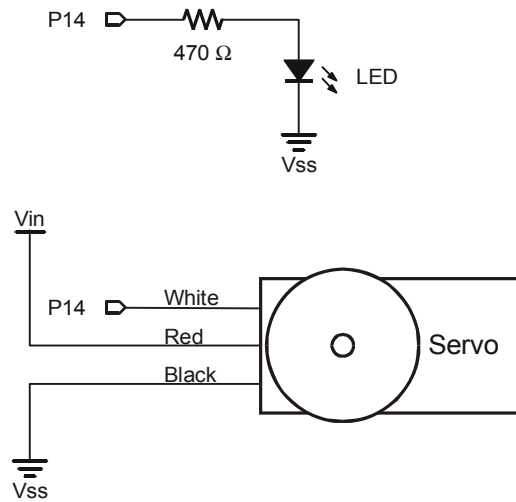


Figure 2
Servo and LED Indicator Schematic for the
BASIC Stamp HomeWork Board Rev B

- √ Disconnect your 9 V battery from your BASIC Stamp HomeWork Board Rev B.
- √ Build the LED indicator and servo header circuit shown in Figure 3.

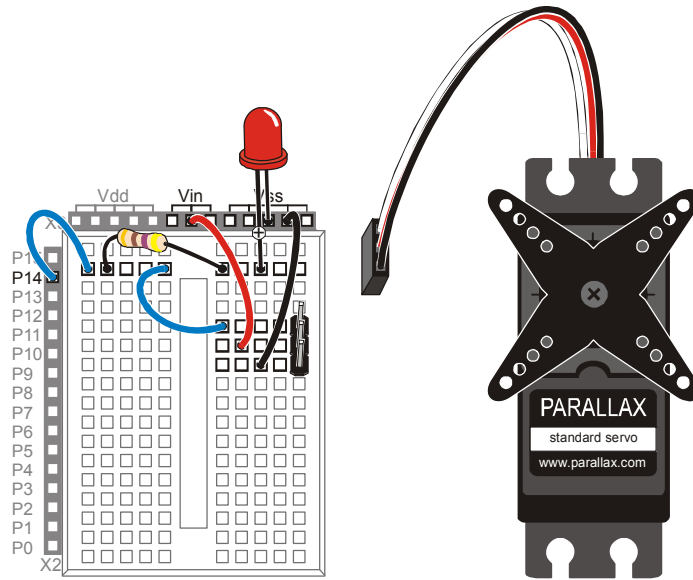


Figure 3
LED Indicator
and Servo
Header Circuits
on BASIC
Stamp
HomeWork
Board Rev B

- √ Connect the servo to the servo header as shown in Figure 4.
- √ Make sure that the colors on the servo's cable align properly with the colors labeled in the picture.
- √ Double check your wiring.
- √ Reconnect your 9 V battery to your HomeWork Board. The servo may move a bit when you make the connection.

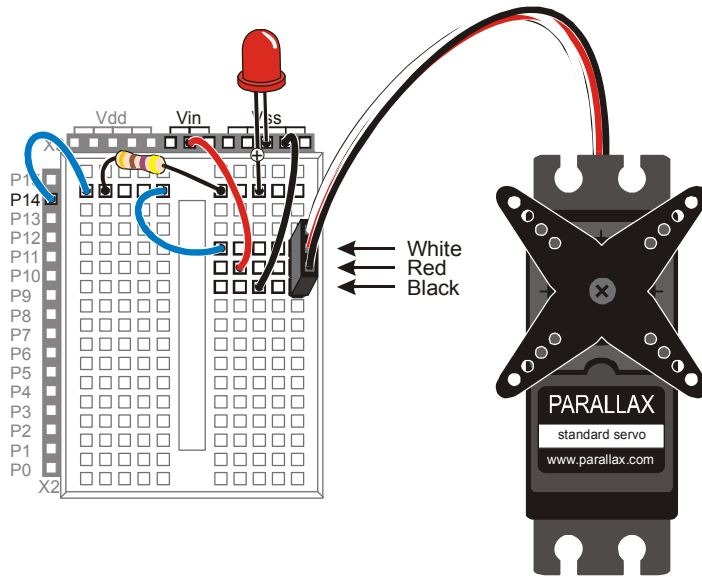


Figure 4
Connecting Servo to
Servo Header on a
BASIC Stamp
HomeWork Board
Rev B

- √ Continue in What's a Microcontroller v3.0 or newer, Chapter 4, Activity #2.

Board of Education Rev B

Figure 5 shows the schematic for the servo and LED circuits on the Board of Education Rev B. The instructions that come after this figure will show you how to safely build this circuit on your Board of Education Rev B.



Use only a 9 V battery when your Parallax Standard Servo is connected to the Board of Education Rev B. Do not use any kind of DC supply or “battery replacer” that plugs into an AC outlet. Improper use of these devices can cause the activity not to work, or even permanently damage the servo.

For best results, make sure your battery is new. If you are using a rechargeable battery, make sure it is freshly recharged. It should also be rated for 100 mAh (milliamp hours) or more.

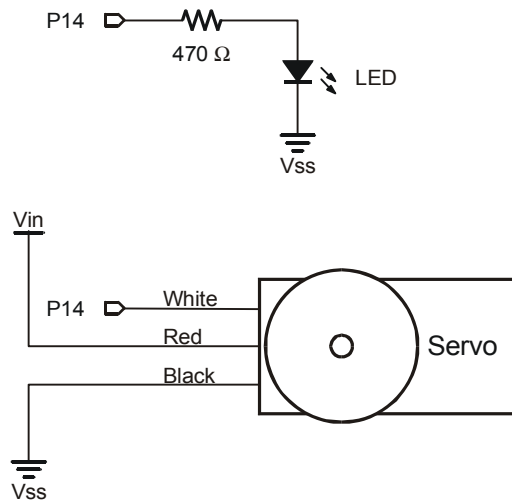


Figure 5
Schematic for Servo
and LED Indicator on
Board of Education
Rev B

- ✓ Disconnect your battery from your board.
- ✓ Build the LED and servo circuits shown in Figure 5, using Figure 6 as your guide.

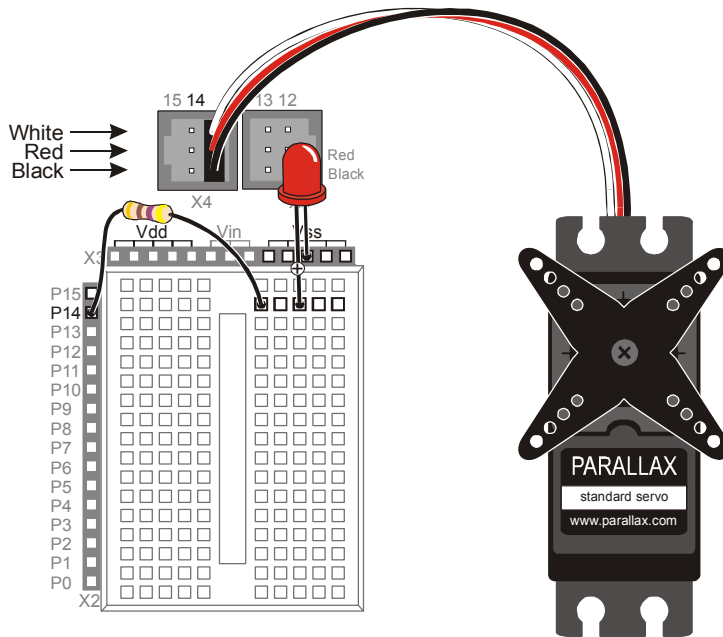


Figure 6
Connecting Servo to Servo Header on the Board of Education Rev B.

- ✓ Make sure that the colors on the servo's cable align properly with the colors labeled in the picture.
- ✓ Connect a 9 V battery to Board of Education Rev B. The servo may move a little bit when you make the connection.
- ✓ Continue in What's a Microcontroller v3.0 or newer, Chapter 4, Activity #2.

Board of Education Rev A

If you are connecting your servo to a Board of Education Rev A, you will need the extra parts listed below. Two of these parts have not yet been introduced, and they are shown in Figure 7:

- (1) 3-pin male header
- (1) Capacitor – 3300 μF
- (4) Jumper wires

Required Equipment: Safety Goggles.

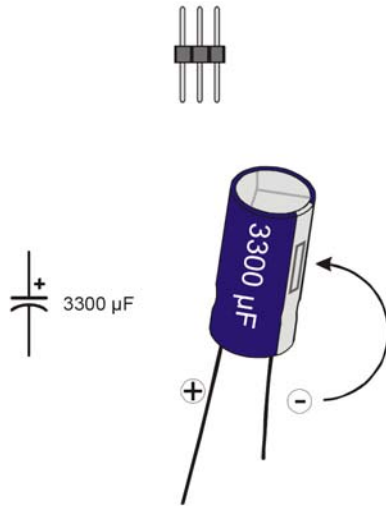



Figure 7
HomeWork Board – Extra Parts

- (1) 3-pin header (top)
- (1) 3300 μF Capacitor (bottom)

IMPORTANT: This capacitor has a positive and negative terminal. The negative terminal is the lead that comes out of the metal canister closest to the stripe with a negative (-) sign.

Figure 8 shows a schematic of the servo and LED circuits on the Board of Education Rev A. The instructions that come after this figure will show you how to safely build this circuit.



Use only a 9 V battery when your Parallax Standard Servo is connected to the Board of Education Rev A. Do not use any kind of DC supply or “battery replacer” that plugs into an AC outlet. Improper use of these devices can cause the activity not to work, or even permanently damage the servo.

For best results, make sure your battery is new. If you are using a rechargeable battery, make sure it is freshly recharged. It should also be rated for 100 mAh (milliamp hours) or more.

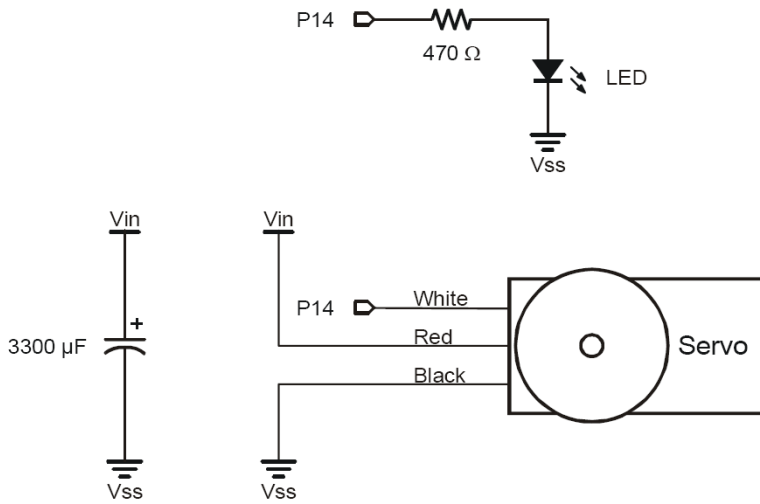


Figure 8

Schematic for Servo and LED Indicator on a Board of Education Rev A.

WARNING: The 3300 μF capacitor can rupture or explode if it is connected improperly.

Never reverse the polarity on the 3300 μF or any other polar capacitor. The voltage at the capacitor's (+) terminal must always be higher than the voltage at its (-) terminal.



Wear safety goggles.

Always disconnect power before you build or modify circuits.

Observe polarity when connecting the 3300 μF capacitor. Your 3300 μF capacitor will work fine so long as you make sure that the positive (+) terminal is connected to V_{in} and the negative (-) terminal is connected to V_{ss} before reconnecting power.

Keep your hands and face away from this capacitor when power is connected.

√ Build the LED indicator and servo header circuit shown in Figure 9.

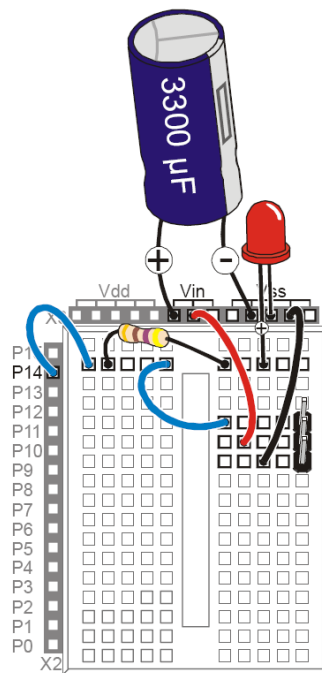


Figure 9
LED Indicator and
Servo Header
Circuits for Board of
Education Rev A

- ✓ Connect the servo to the servo header as shown in Figure 10.
- ✓ Make sure that the colors on the servo's cable align properly with the colors labeled in the picture.
- ✓ Double check your wiring before moving on.

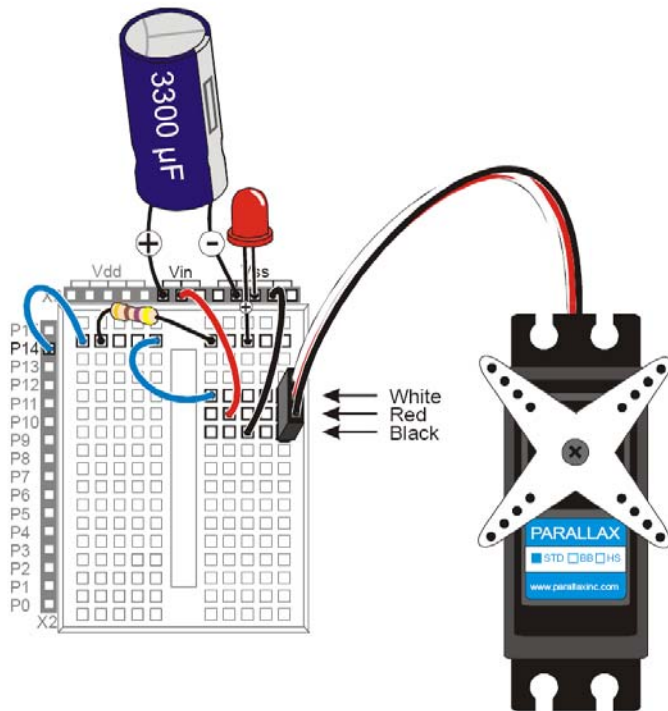


Figure 10
Connecting Servo to
Servo Header on a
Board of Education
Rev A

- ✓ Continue in What's a Microcontroller v3.0 or newer, Chapter 4, Activity #2.