

2009 Pivot Point Wiring Manual

(single circuit board design – board label “Comm4” – Software Version 40+)

Section 1 – Pages 2-5 – Pivot wiring NOT using start, theft monitoring, or direction control

Section 2 – Pages 6-9 – Pivot wiring using start, theft monitoring, or direction control

Section 3 – Page 10 – Simple on/off monitor only – no control features

Section 1 - For pivots NOT using start, power monitoring, or direction:

Warning: unused wires must be capped or taped off individually to avoid damage to unit.

Each Feature AND Safety circuit must be tested by the installer before AND after installation is finished.

Only do steps 1-3 for basic stop feature and tape off unused wires.

Add steps 4 and 5 for speed control

Add steps 6 and 7 for end gun control

***NOTE* ON ALL UNITS – BLACK WIRE WITH RED STRIPE IS NOT USED**

Zimmatic:

1. Remove the Zimmatic brown (safety) wire from the terminal strip in the end tower box (Span Cable Side) and install our Black wire AND Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the Zimmatic brown (safety) wire that was removed from the terminal strip in step 1.
3. Install our Brown/Black wire into the terminal strip with the other white (neutral) wires.
4. Remove the Zimmatic orange (percent timer) wire from the terminal strip in the end tower box (Span Cable Side) and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Zimmatic orange (percent timer) wire that was removed from the terminal strip in step 4.
6. Remove the Zimmatic purple (end gun) wire from the terminal strip in the end tower box (Span Cable Side) and install our Brown wire in its place.
7. Use a wire nut to cap the Zimmatic purple (end gun) wire that was removed from the terminal strip in step 6.

Valley:

1. Remove the Valley yellow (safety) wire from the terminal strip in the end tower box (Span Cable Side) and install our Black wire AND Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the Valley yellow (safety) wire that was removed from the terminal strip in step 1.
3. Install our Brown/Black wire into the terminal strip with the other white (neutral) wires.
4. Remove the Valley purple (percent timer) wire from the terminal strip in the end tower box (Span Cable Side) and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Valley purple (percent timer) wire that was removed from the terminal strip in step 4.
6. Remove the Valley pink (end gun) wire from the terminal strip in the end tower box (Span Cable Side) and install our Brown wire in its place.
7. Use a wire nut to cap the Valley pink (end gun) wire that was removed from the terminal strip in step 6.

Olson: (After 1980)

1. Remove the yellow (safety) wire from the terminal strip in the end tower box (Span Cable Side) and install our Black wire AND Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the yellow (safety) wire that was removed from the terminal strip in step 1.
3. Install our Brown/Black wire into the terminal strip with the other white (neutral) wires.
4. Remove the Olson grey (percent timer) wire from the terminal strip in the end tower box (Span Cable Side) and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Olson grey (percent timer) wire that was removed from the terminal strip in step 4
6. Remove the Olson purple (end gun) wire from the terminal strip in the end tower box (Span Cable Side) and install our Brown wire in its place.
7. Use a wire nut to cap the Olson purple (end gun) wire that was removed from the terminal strip in step 6.

Lockwood with 16v safety system:

1. Remove the 120v wire going to the safety transformer and connect our Black wire AND Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the wire that was removed from the transformer in step 1.
3. Install our Brown/Black wire in with the other neutral (white) wires. **-see note-**
4. Remove the Lockwood purple (percent timer) wire from the terminal strip in the end tower box and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Lockwood purple (percent timer) wire that was removed from the terminal strip in step 4.
6. Remove the Lockwood brown (end gun) wire from the terminal strip in the end tower box and install our Brown wire in its place.
7. Use a wire nut to cap the Lockwood brown (end gun) wire that was removed from the terminal strip in step 6.

-note- on older Lockwood systems, the power to the safety transformer is flip-flopped depending on which direction the system is moving. **On these, change step 3 to this:**

Install our Brown/Black wire into the other 120v terminal on the safety transformer. (with the wire that was not disturbed in step 1 or 2)

-With the unit wired this way, the pivot point end gun control may only work in one direction-

Reinke/Neutral Safety Wiring

Rienke – And Similar Neutral Safety Systems

- **Note** - On some Rienke pivots, the safety circuit begins at the second-to-last tower instead of at the end tower. (where the Brown Safety wire connects to the White Neutral wires) On these systems you will need to change the second-to-last tower and the end tower. **In the end tower**, make a jumper to connect the white neutral wires to the brown safety wire. **At the second-to-last tower**, locate the white wire that connects the overwatering timer contact (#10 on most) to the neutral wires on the terminal strip. Remove this white wire from the terminal strip, but leave it connected to the overwatering timer contact. Then, connect that white wire to the brown safety wire that goes out to the end tower. (this wire most likely is capped or not hooked up to anything in this second-to-last tower box)

You should now have a safety circuit that starts in the end tower box where the brown wire is connected to neutral, and then travels to the second-to-last tower box on the brown wire, goes to the overwatering timer contact #10, then exits the overwatering timer on terminal #8, goes to the limit switch, then leaves the limit switch and goes to the next tower closer to the main panel.

AFTER COMPLETING THIS, YOU MUST TEST THE SAFETY TO BE CERTAIN THE SYSTEM WORKS CORRECTLY. WITH THE SYSTEM RUNNING, DISCONNECT THE BROWN SAFETY WIRE FROM THE TERMINAL STRIP IN THE END TOWER BOX – THIS SHOULD SAFETY THE SYSTEM OFF IF THE RE-WIRING WAS DONE CORRECTLY.

ONLY AFTER THIS SAFETY TEST PASSES, THEN PROCEED TO STEP 1 OF THE PIVOT POINT WIRING BELOW.

Only do Steps 1 – 4 for basic stop feature and tape off unused wires

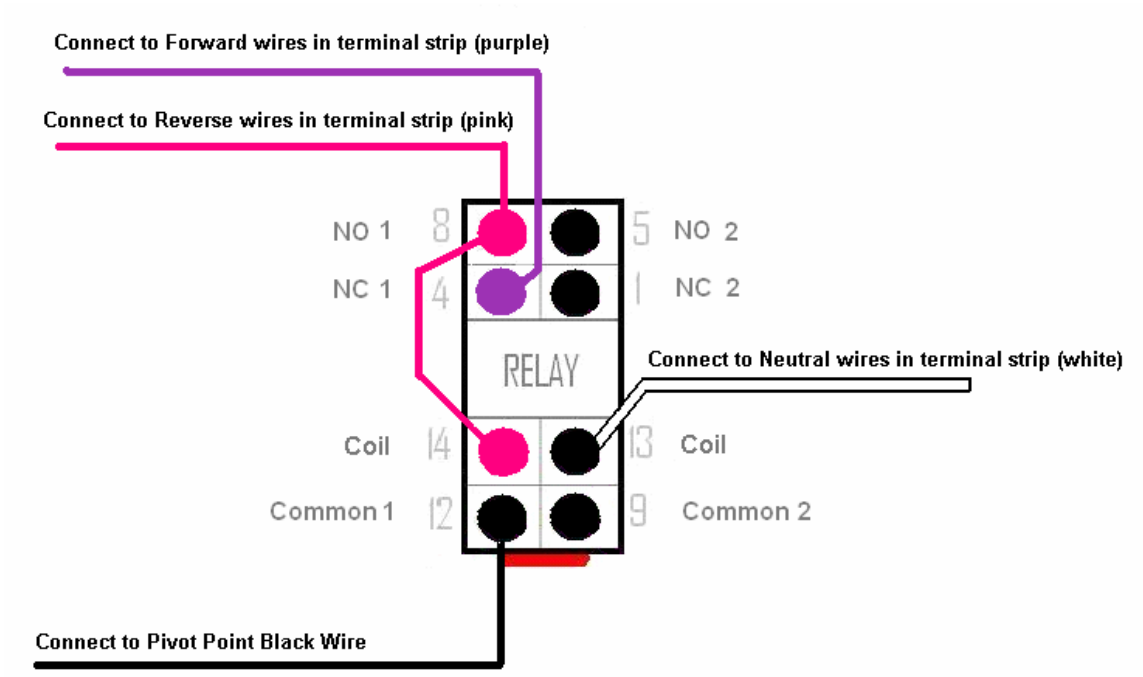
Add Steps 5 – 6 for speed control

Add Steps 7 – 8 for endgun control

***NOTE* ON ALL UNITS – BLACK WIRE WITH RED STRIPE IS NOT USED**

1. Remove the Rienke brown (safety) wire from the terminal strip in the end tower box (Span Cable Side) and install our Red/Black AND Brown/Black wires in its place. - See Note -
2. Use a wire nut to connect our Red wire to the Rienke brown (safety) wire that was removed from the terminal strip in step 1.
3. Install our Black wire into the relay assembly as shown (see Picture 1 below) Relay part number - W78ARCSX-11, and Base part number – 70-459-1
4. Run jumper wires from the forward and reverse on the terminal strip and install them into the relay as shown (see Picture 1 below - this gives the Pivot Point 120v on the black wire no matter which direction the pivot is moving)
5. Remove the Rienke orange (percent timer) wire from the terminal strip in the end tower box (Span Cable Side) and install our Blue wire in its place.
6. Use a wire nut to connect our Blue/Black wire to the Rienke orange (percent timer) wire that was removed from the terminal strip in step 5
7. Remove the Rienke yellow (endgun) wire from the terminal strip in the end tower box (Span Cable Side) and install our Brown wire in its place.
8. Install a wire nut onto (to cap off) the Rienke yellow wire that was removed in step 7.

Picture 1 – Additional Relay for Rienke – (other neutral safety type pivots similar)



Section 2 - Start, Power Monitoring and Direction Wiring:

For pivots using Start, Power Monitoring, or Direction Control:

Warning: unused wires must be capped or taped off individually to avoid damage to unit.

Each Feature AND Safety circuit must be tested by the installer before AND after installation is finished.

Start Feature applies 120v to the safety circuit for 10 seconds to start the pivot – this may not work on all pivots to be able to start the pivot. Example: start works well on most Valley pivots, Zimmatic, and various others.

In the Pivot Control Panel, remove end gun wire that goes out to the tower boxes and connect it to 120v at the transformer.

(End gun wire will have 120v at all times)

Direction Control will not work on all pivots! The direction control works by applying 120v to the wire opposite of the direction the pivot is currently moving for 10 seconds. – this will not work on all pivots and MUST be tested by the installer before adding this feature - Simply test by using a fused jumper wire to connect 120v to the direction wire opposite the direction the pivot is currently moving for 10 seconds. Test this for both directions. If the pivot changes direction and stays moving that direction, then proceed with adding this feature.

Perform steps 1 - 3 and 6 – 7 for basic features and tape off unused wires.

Add steps 4 – 5 for speed control

Add steps 8 – 9 for direction control

***NOTE* ON ALL UNITS – BLACK WIRE WITH RED STRIPE IS NOT USED**

Zimmatic: (Read beginning of Section 2 before proceeding)

1. Remove the Zimmatic brown (safety) wire from the terminal strip in the end tower box (Span Cable Side) and install our Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the Zimmatic brown (safety) wire that was removed from the terminal strip in step 1.
3. Install our Brown/Black wire into the terminal strip with the other white (neutral) wires.
4. Remove the Zimmatic orange (percent timer) wire from the terminal strip in the end tower box (Span Cable Side) and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Zimmatic orange (percent timer) wire that was removed from the terminal strip in step 4.
6. Remove the Zimmatic purple (end gun) wire from the terminal strip in the end tower box (Span Cable Side) and install our Brown wire in its place.
7. Use a wire nut to connect our Black wire to the Zimmatic purple (end gun wire coming from the control panel (120v all the time)) wire that was removed from the terminal strip in step 6.
8. Install our Orange wire into the tower terminal strip with the Zimmatic yellow wire. (Forward Run) – Note: Zimmatic wire color may differ depending on age of system.
9. Install our Orange/Black wire into the tower terminal strip with the Zimmatic pink wire. (Reverse Run) – Note: Zimmatic wire color may differ depending on age of system.

Valley: (Read beginning of Section 2 before proceeding)

Note - On some Red-Panel Valley pivots, moving the pink end gun wire to 120v all the time in the panel will cause the pivot to start without hitting the start button on the panel, and will cause the safety system to be hot all the time (pivot wont safety) To correct this, these pivots will need to have the wiring changed in the collector ring to disconnect the stop-in-slot (the source of the 120v backfeed onto the safety) and to allow the end gun (pink) wire coming from the panel to have 120v going out to the end tower all the time. This change requires disconnecting and capping two wires going to the stop-in-slot/endgun switch (labeled as wire #2 and wire #3 at the endgun control box on valley schematics) in the collector ring box. Then connect the pink wires into the collector ring so that the pink end gun wire has a continuous connection from the irrigation panel – through the collector ring - and out to the span cable.

After completing this change, TEST THE SAFETY AGAIN before continuing to step 1.

1. Remove the Valley yellow (safety) wire from the terminal strip in the end tower box (Span Cable Side) and install our Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the Valley yellow (safety) wire that was removed from the terminal strip in step 1.
3. Install our Brown/Black wire into the terminal strip with the other white (neutral) wires.
4. Remove the Valley purple (percent timer) wire from the terminal strip in the end tower box (Span Cable Side) and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Valley purple (percent timer) wire that was removed from the terminal strip in step 4.
6. Remove the Valley pink (end gun) wire from the terminal strip in the end tower box (Span Cable Side) and install our Brown wire in its place.
7. Use a wire nut to connect our Black wire to the Valley pink (end gun wire coming from the control panel (120v all the time)) wire that was removed from the terminal strip in step 6.
8. Install our Orange wire into the tower terminal strip with the Valley brown wire. (Forward Run)
9. Install our Orange/Black wire into the tower terminal strip with the Valley Orange wire. (Reverse Run)

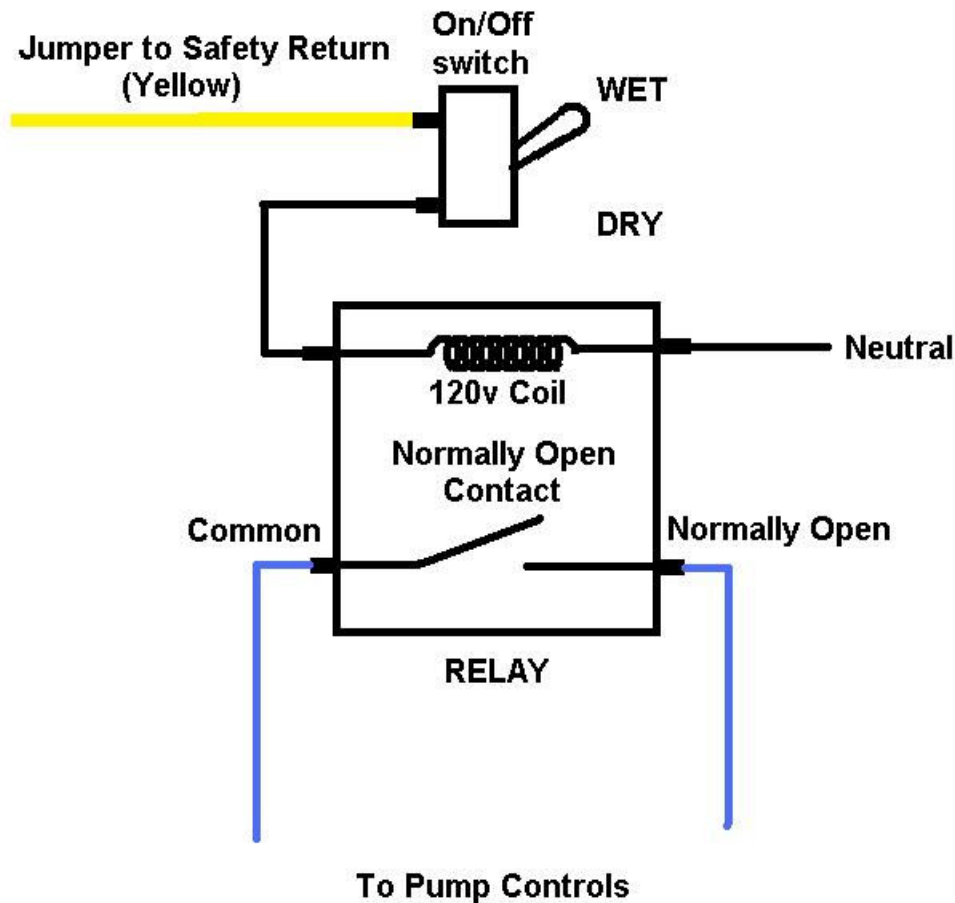
NOTE – ON SOME VALLEY SELECT PANELS:

On some Valley Select panels – the Pivot Point start feature does not start the pivot if the panel is set to “wet”

Use these steps to make these panels work correctly:

1. At the Panel, run a jumper wire from Safety Return to an on/off switch. (see drawing below)
2. Run another wire from that on/off switch to the coil terminal of a new relay with Normally Open contacts – 120v coil. (see drawing below)
3. Run a jumper wire from the other coil terminal to Neutral.
4. Remove the pump control wires from the panel terminal strip labeled “Pump Control N.O.” and “Pump Control Common” and install them into the Common and Normally Open contacts of the new relay. (see drawing below)
5. Set the digital portion of the panel to “Dry” and leave it that way. – then use the new toggle switch to control wet/dry.

Valley Select Panel - Change for using Start Pivot Point



Olson: (After 1980) (Read beginning of Section 2 before proceeding)

1. Remove the yellow (safety) wire from the terminal strip in the end tower box (Span Cable Side) and install our Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the yellow (safety) wire that was removed from the terminal strip in step 1.
3. Install our Brown/Black wire into the terminal strip with the other white (neutral) wires.
4. Remove the Olson grey (percent timer) wire from the terminal strip in the end tower box (Span Cable Side) and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Olson grey (percent timer) wire that was removed from the terminal strip in step 4
6. Remove the Olson purple (end gun) wire from the terminal strip in the end tower box (Span Cable Side) and install our Brown wire in its place.
7. Use a wire nut to connect our Black wire to the Olson purple (end gun wire coming from the control panel (120v all the time)) wire that was removed from the terminal strip in step 6.
8. Install our Orange wire into the tower terminal strip with the Olson brown wire. (Forward Run)
9. Install our Orange/Black wire into the tower terminal strip with the Olson white/black wire. (Reverse Run)

Lockwood with 16v safety system: - only works on newer systems that do not flip-flop the 120v and Neutral going to the safety transformer. (Read beginning of Section 2 before proceeding)

1. Remove the 120v wire going to the safety transformer and connect our Red/Black wire in its place.
2. Use a wire nut to connect our Red wire to the wire that was removed from the transformer in step 1.
3. Install our Brown/Black wire in with the Neutral wire that goes to the safety transformer.
4. Remove the Lockwood purple (percent timer) wire from the terminal strip in the end tower box and install our Blue wire in its place.
5. Use a wire nut to connect our Blue/Black wire to the Lockwood purple (percent timer) wire that was removed from the terminal strip in step 4.
6. Remove the Lockwood brown (end gun) wire from the terminal strip in the end tower box and install our Brown wire in its place.
7. Use a wire nut to connect our Black wire to the Lockwood brown (end gun wire coming from the control panel (120v all the time)) wire that was removed from the terminal strip in step 6.
8. Install our Orange wire into the tower terminal strip with the Lockwood yellow wire. (Forward Run)
9. Install our Orange/Black wire into the tower terminal strip with the Lockwood orange wire. (Reverse Run)

Section 3

Simple Power On/Off Monitor Wiring:

This is only to monitor if Power to a device is on or off – there are no controls.

***NOTE* ON ALL UNITS – BLACK WIRE WITH RED STRIPE IS NOT USED**

120v AC Device Monitor system:

Brown/Black – Neutral
Black Wire – 120v AC

OR

7-40v DC Device Monitor system:

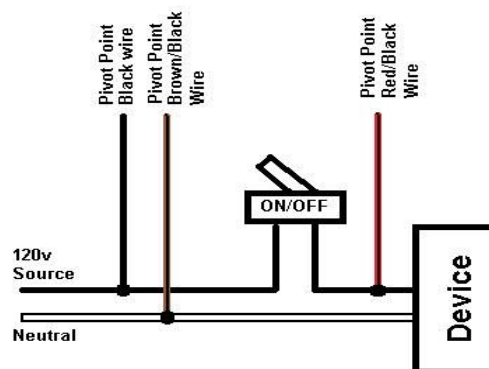
Yellow/Black – Ground
Yellow – 7-40v DC

Monitor Incoming Power AND Device On/Off Wiring:

This is to monitor the incoming power to a device, and to monitor if the device is on or off – there are no controls.

NOTE: The power being monitored and the power from the device being monitored as on/off must be coming from the same source / same phase and share a common neutral.
(see drawing below)

1. Connect our Black wire to the 120v source being monitored.
2. Connect our Brown/Black wire to the Neutral of the 120v source being monitored.
3. Connect our Red/Black wire to the 120v from the device that is being turned on/off.



Power Requirements for these units:

DC Powered Unit 7-40V DC:

At 12v DC: 1.0A MAX

0.1A - 0.5A during normal operation

120vAC Powered Unit:

At 120v AC: 0.25A MAX

0.05A - 0.15A during normal operation

The above numbers are the current required for our unit to operate. Below is the current the relays in our box can control:

On both AC and DC units, each relay can handle a peak max of 10A, 5A constant (at a max voltage of 120vAC, or 30vDC).