

2014-16 Field Commander Wiring Manual For Reinke Pivots

New Large Board Marked Comm6 FC V4.1

**THIS MANUAL CONTAINS MAJOR REVISIONS TO THE
PRO SERVICE WIRING SECTION!!**

Intro 1 – Pages 2 – New Features Overview
Wire Theft Monitor (without power),
Second End Gun Relay wiring

**Intro 2 – Page 3 – Unit Mounting,
Pressure Transducer Wiring**

Section 1 – Pages 4-6 – BASIC / ENHANCED SERVICE:
Pivot wiring NOT using start, theft
monitoring, or direction control

Section 2 – Pages 7-13 – PRO SERVICE:
Pivot wiring using start, theft
monitoring, or direction control
(if the pivot is capable of it)

**Section 3 – Page 14 – Example Wiring of Field Commander
with Pro Service on Reinke Pivot
(standard system with no corner-arm
or modified wiring.)**

Section 5 – Page 15-16 – Specs. and Warranty Information.

Introduction – The new 2014-15 Field Commander has a couple of new features. These new features required changing the position and purpose of some wires in the Field Commander unit.

The Black/Red Stripe wire (previously unused) is now required to be connected to the tower box earth ground bar on all pivots covered in this manual. This wire is used for wire theft detection, and to help eliminate static electricity issues.

New Features:

- 1. Wire Theft Monitor (without power)** – For many years, the PRO Field Commander has done Theft Monitoring based on power. If the unit sent an alert that power was lost, you knew to go check the pivot for wire theft. The new 2014 Field Commander still has this feature, **AND** now includes a method of detecting wire theft on all service levels when the pivot does not have power available. When the pivot has lost power (power outage, load control, gen-set, main disconnect turned off, etc...) the Field Commander will use the Black/Red Stripe wire (connected to the tower box earth ground bar) to check the wires of the pivot several times a minute to monitor if the wires have been cut. This wire theft feature requires good connections at each tower box ground bar and collector ring. Any poor/loose connections or bad spots in the collector ring could cause a false alarm to be sent.
- 2. Second End Gun Wiring** – A Second End Gun Relay has been added to the 2014-15 Field Commanders. Unfortunately, due to the new style of wiring PRO service on Reinke pivots, there are no wires available in the Field Commander unit for the Second End Gun – if you still wish to use that relay, you can add a separate 2 wire cable and connect the wires to the NO and C terminals of the ENDG2 relay inside the Field Commander (terminals 19 and 21). You must make sure that any added wires are running through the existing strain relief, or if a new strain relief is added, it must be well sealed to prevent any water from entering the unit – water damage is not covered under warranty.

Field Commander Mounting

The Field Commander can be mounted to the pivot two different ways:

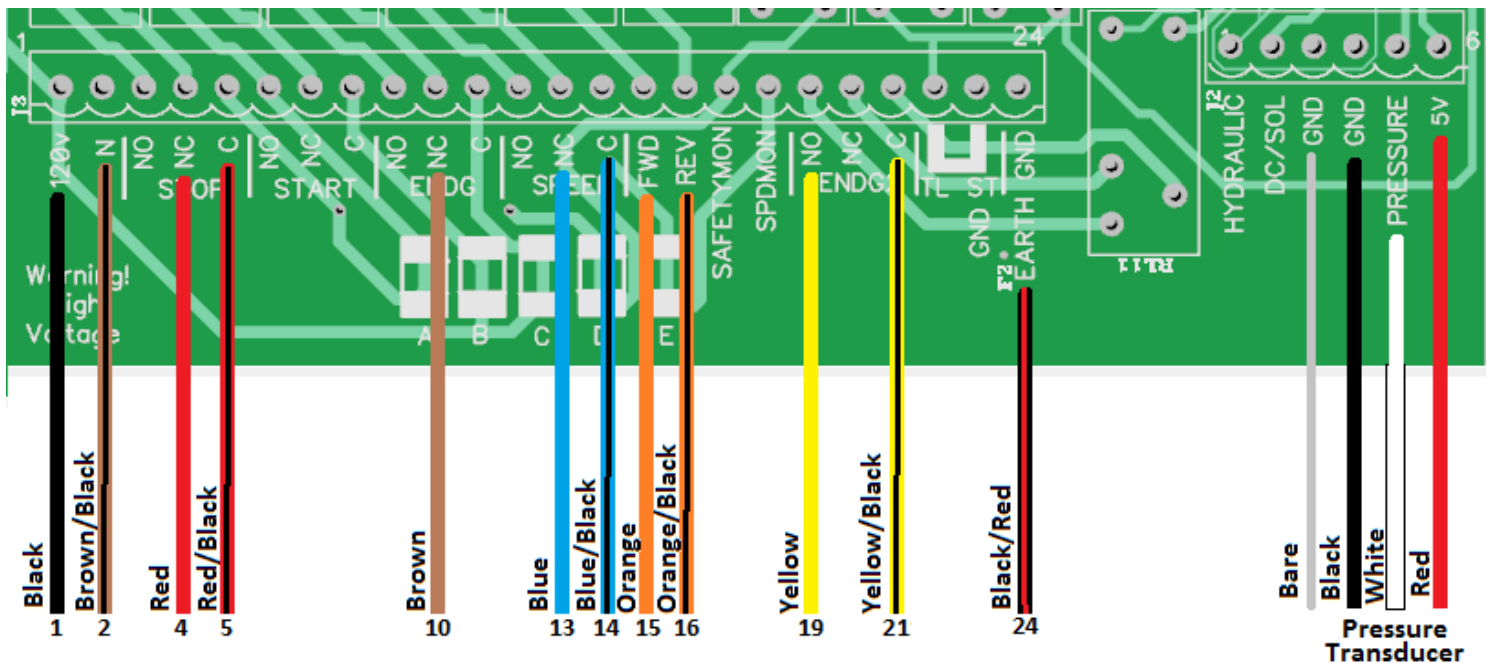
On pivots with truss cable supports (rabbit ears) on the end tower, mount the unit on the truss cable supports as high as possible using the supplied beam clamps that will still allow the cable to reach the end tower box.

On pivots without truss cable supports (rabbit ears), you can use the supplied beam clamps and two large hose clamps to clamp the Field Commander to the irrigation pipe at the last tower.

WARNING – the top of the Field Commander needs to be as flat (level) as possible with the sky, and must not have any obstructions keeping the GPS antenna from having a clear view of the sky in all directions!! If the unit is tilted too far in any direction, or obstructed, you may lose GPS signal.

Note: also be careful to keep the Field Commander out of the direct spray path of impact sprinklers or any other type of high pressure direct spray.

BASIC/ENHANCED WIRING - Field Commander Wire & Pressure Transducer Wire Locations (Standard Field Commander)



2014 Field Commander V4.1

Reinke - BASIC/ENHANCED WIRING

- Note - On some Reinke 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 WIRING BELOW.

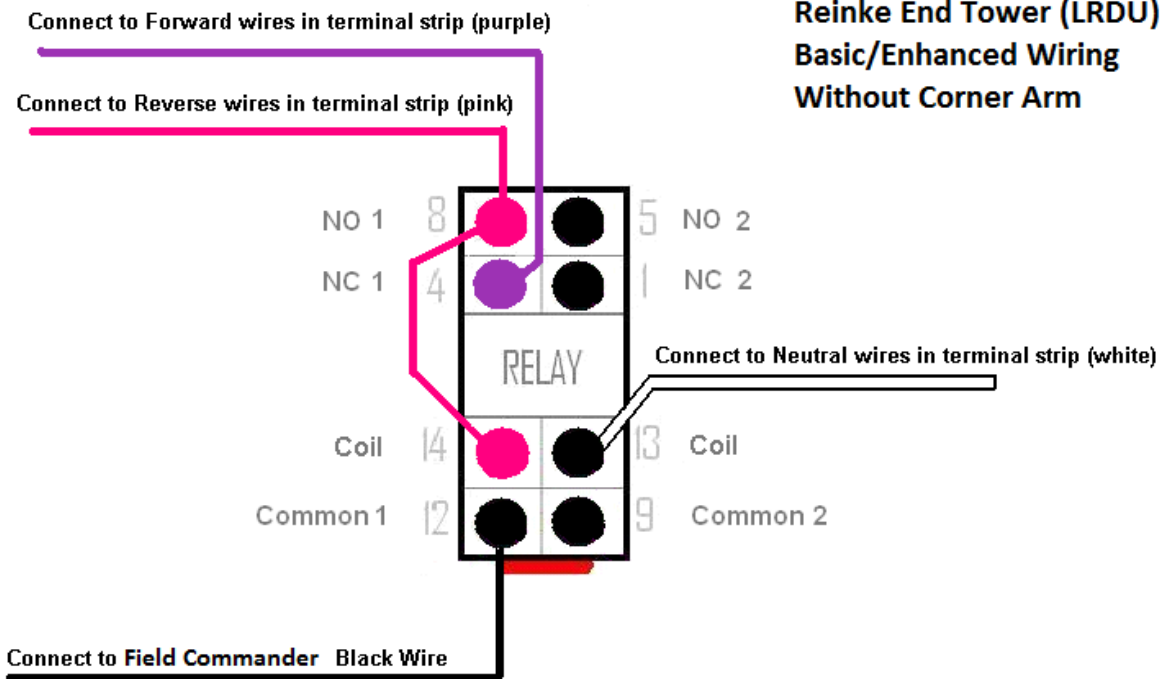
Only do Steps 1 – 8 for basic stop feature and tape off unused wires

Add Steps 9 – 10 for speed control

Add Steps 11 – 12 for endgun control

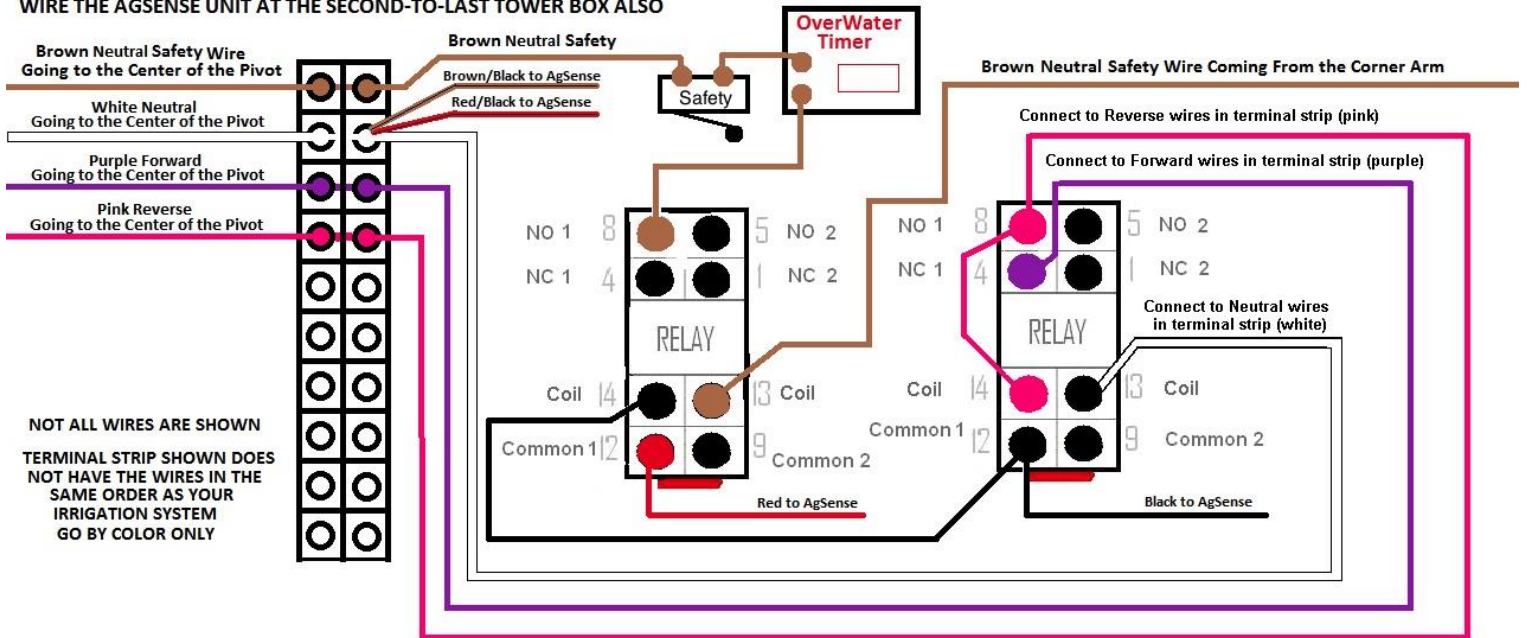
1. Remove the Reinke brown (safety) wire from the terminal strip in the end tower box (Span cable wire coming from the center) and install our Red/Black Stripe wire in its place. - See Note at top of page -
2. Use a wire nut to connect our Red wire to the Reinke brown (safety) wire that was removed from the terminal strip in step 1.
3. Install our Brown/Black Stripe wire into the terminal strip with the other white Neutral wires.
4. Install our Black/Red Stripe wire into the Earth Ground bar with the Reinke Green Wires.
5. 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
6. 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 Field Commander 120v on the black wire no matter which direction the pivot is moving)
7. Install our Orange wire into the tower terminal strip with the Reinke purple wire. (Forward Run)
8. Install our Orange/Black wire into the tower terminal strip with the Reinke pink wire. (Reverse Run)
9. Remove the Reinke orange (percent timer) wire from the terminal strip in the end tower box (Span cable wire coming from the center) and install our Blue wire in its place.
10. Use a wire nut to connect our Blue/Black wire to the Reinke orange (percent timer) wire that was removed from the terminal strip in step 9
11. Remove the Reinke yellow (endgun) wire from the terminal strip in the end tower box (Span cable wire coming from the center) and install our Brown wire in its place.
12. Install a wire nut onto (to cap off) the Reinke yellow wire that was removed in step 11.

Additional Relay/s for Reinke – (other neutral safety type pivots similar)

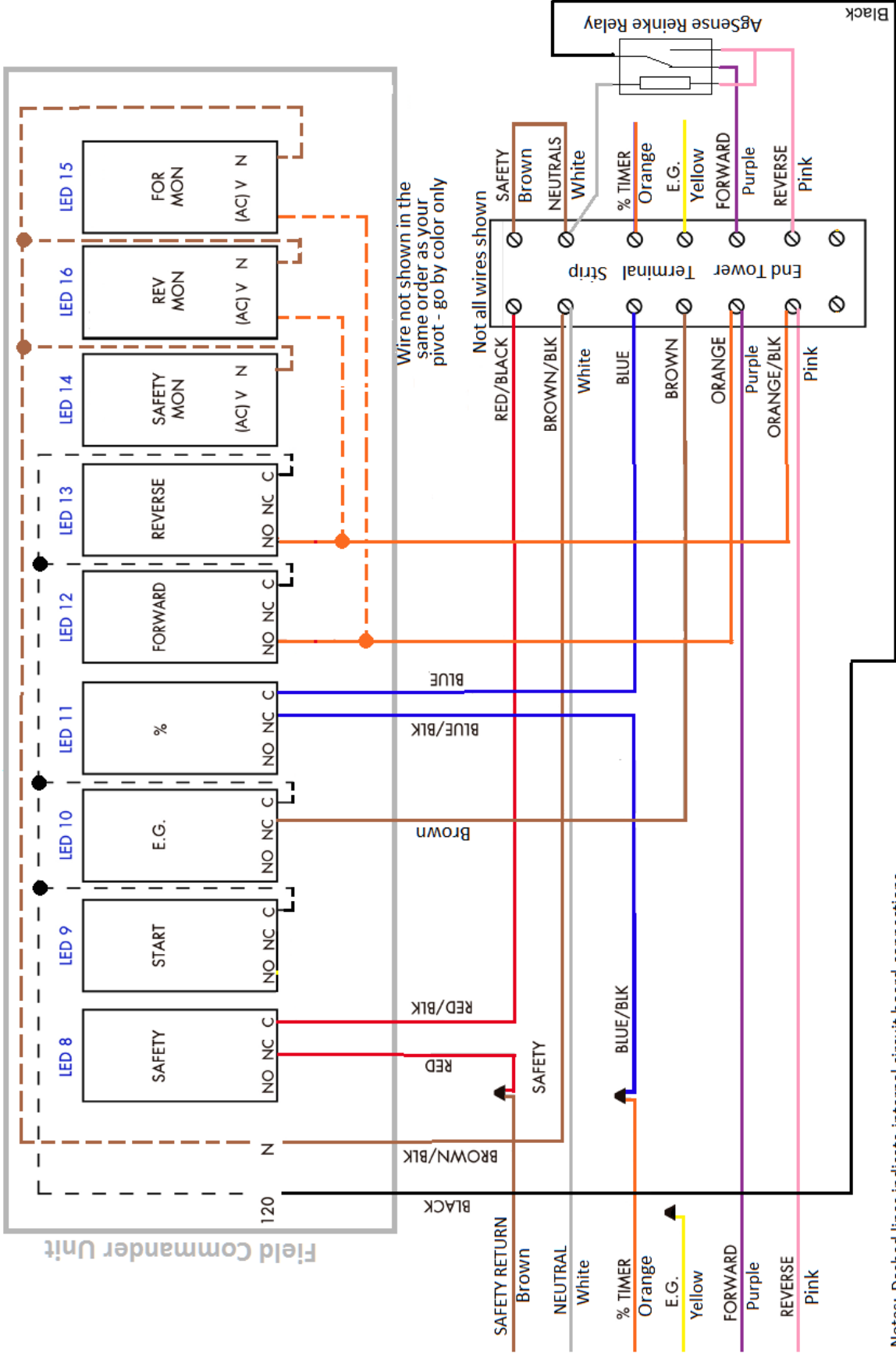


REINKE CORNER ARM

ADDITIONAL RELAY REQUIRED FOR REINKE NEUTRAL SAFETY (Basic/Enhanced Wiring) ON SYSTEMS WITH A CORNER ARM
SECOND-TO-LAST TOWER BOX (BEFORE THE CORNER ARM)
WIRE THE AGSENSE UNIT AT THE SECOND-TO-LAST TOWER BOX ALSO



Example: Wiring of Field Commander with "Enhanced" service to Reinke End Tower Box



REINKE - PRO WIRING

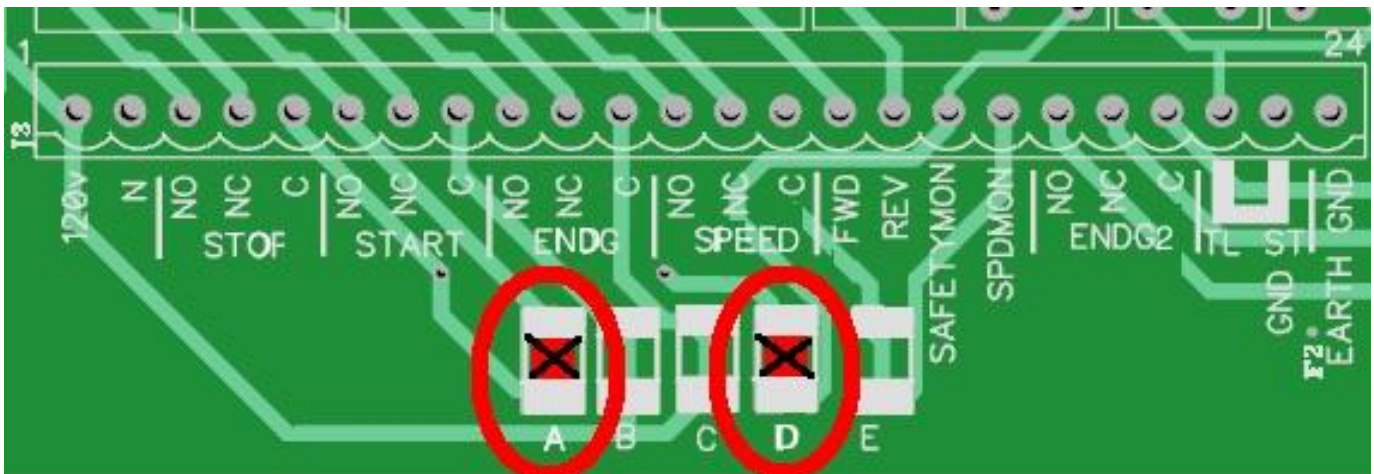
WARNING!! READ THIS SECTION CAREFULLY!!! THERE ARE MANY WIRING CHANGES IN THE FOLLOWING PAGES COMPARED TO PAST YEARS/MANUALS!!

The items in this PRO section should ONLY BE PERFORMED BY A QUALIFIED REINKE DEALER/TECHNICIAN!!

The re-wiring of the Field Commander for these Reinke pivots greatly simplifies installation, allows the safety to remain a Neutral safety, and also allows the Field Commander to remotely change direction of the pivot (provided the pivot panel has the newer “pulse the safety for less than a second” style of auto reverse. (this newer style of Reinke auto reverse can be added to most Reinke panels if it doesn’t already have it installed) This new wiring does however require that all pivot speed control be done via the Field Commander – the pivots percent timer will no longer control the speed of the pivot when wired PRO.

Note: Pro not available on RAMS panels.

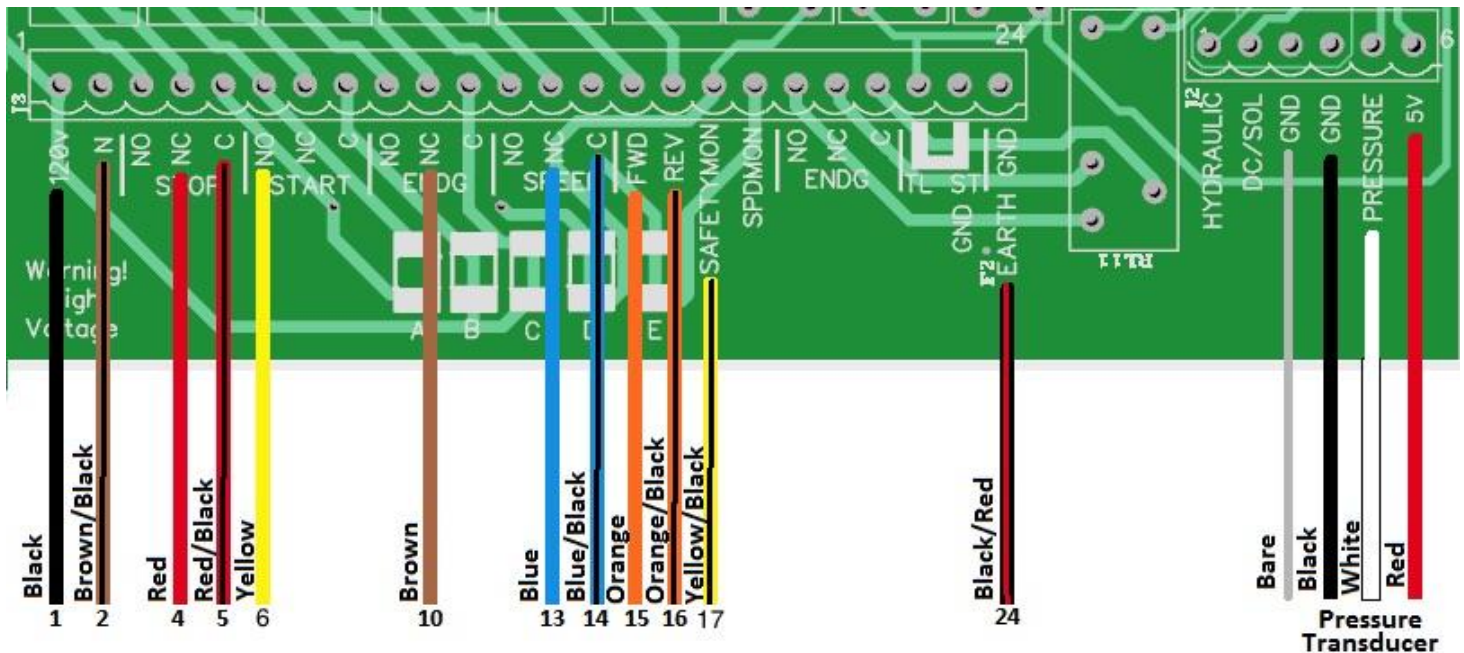
THE TWO TRACES ON THE FIELD COMMANDER BOARD SHOWN IN THE PICTURES BELOW MUST BE CUT OUT, AND THE WIRING INSIDE THE FIELD COMMANDER UNIT MUST BE CHANGED TO MATCH THE PICTURES BELOW BEFORE INSTALLING THE UNIT!!! FAILURE TO DO SO WILL CAUSE THE FIELD COMMANDER UNIT TO BE DAMAGED.



Completely cut out the traces within box A and box D as shown above with a utility knife

Do not do a single slice, please cut out the whole trace area inside each box

CHANGE THE FIELD COMMANDER WIRING TO MATCH THIS PICTURE



Reinke Pro 2014 + Field Commander V4.1

BEFORE MAKING ANY WIRING CHANGES TO THE PIVOT, YOU MUST TEST THE PIVOT, MAKE SURE THE PIVOT MOVES IN BOTH DIRECTIONS, AND MAKE SURE THE SAFETY WILL STOP THE PIVOT CORRECTLY. ONCE THESE HAVE BEEN TESTED, YOU CAN START MAKING WIRING CHANGES TO THE PIVOT.

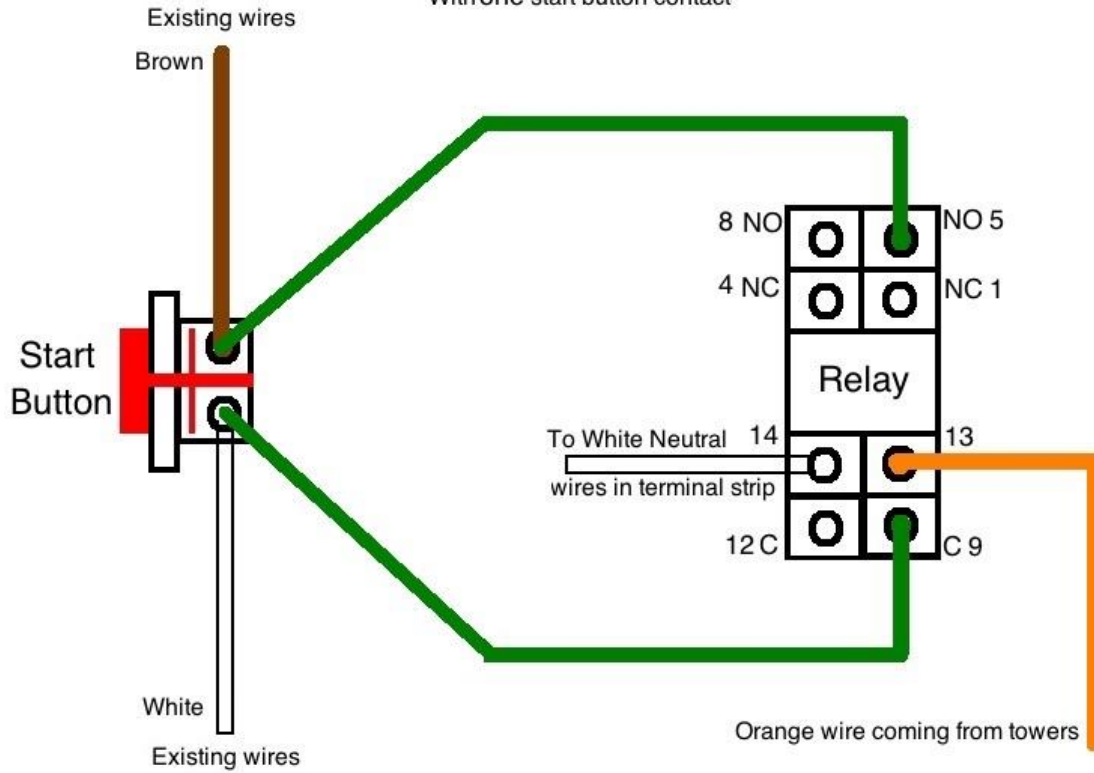
Changes to make inside the main control panel:

1. At the Reinke Control Panel, remove the Reinke Yellow (goes out to the towers) wire from the terminal strip and connect it to 120v directly from the transformer. (after the 120v fuse, or add a fuse as necessary) Also, remove any endgun stops/ramps/shutoffs. (End gun wire will have 120v at all times, even when pivot is idle)
2. At the Reinke Control Panel, remove the Reinke Orange (goes out to the towers) wire from the terminal strip and connect it to the relay assy as shown in the picture below that matches your panel.
3. At the Reinke Control Panel, run jumper wires from the relay assy as shown in the picture below that matches your panel.

NOTE: On panels with a pressure switch, when using the Field Commander to start the pivot WET, you may need to bypass the pressure switch with a jumper wire (completely bypasses the pressure switch, no low pressure shutdown) or with a One-Shot timer (bypasses the pressure switch for xx amount of minutes so the system can pressure up, then lets the pressure switch take control again.)

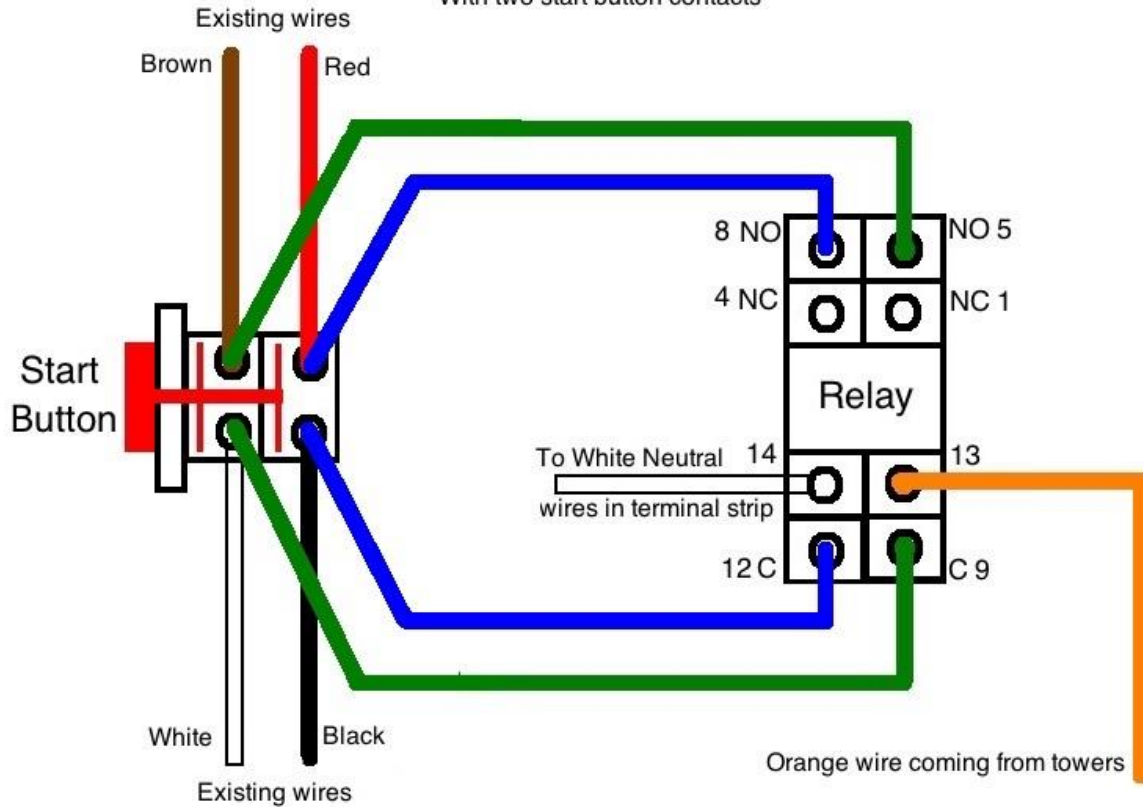
Reinke Grey Mechanical Panels

With one start button contact



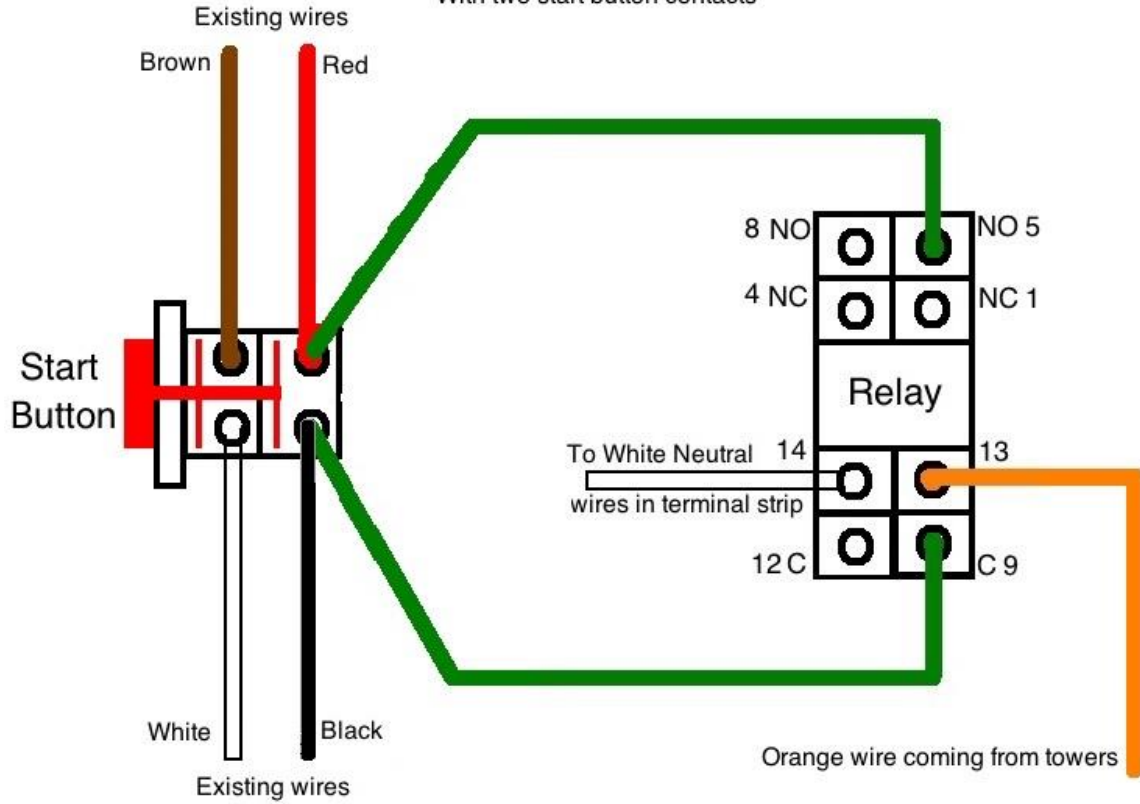
Reinke Grey Mechanical Panels

With two start button contacts



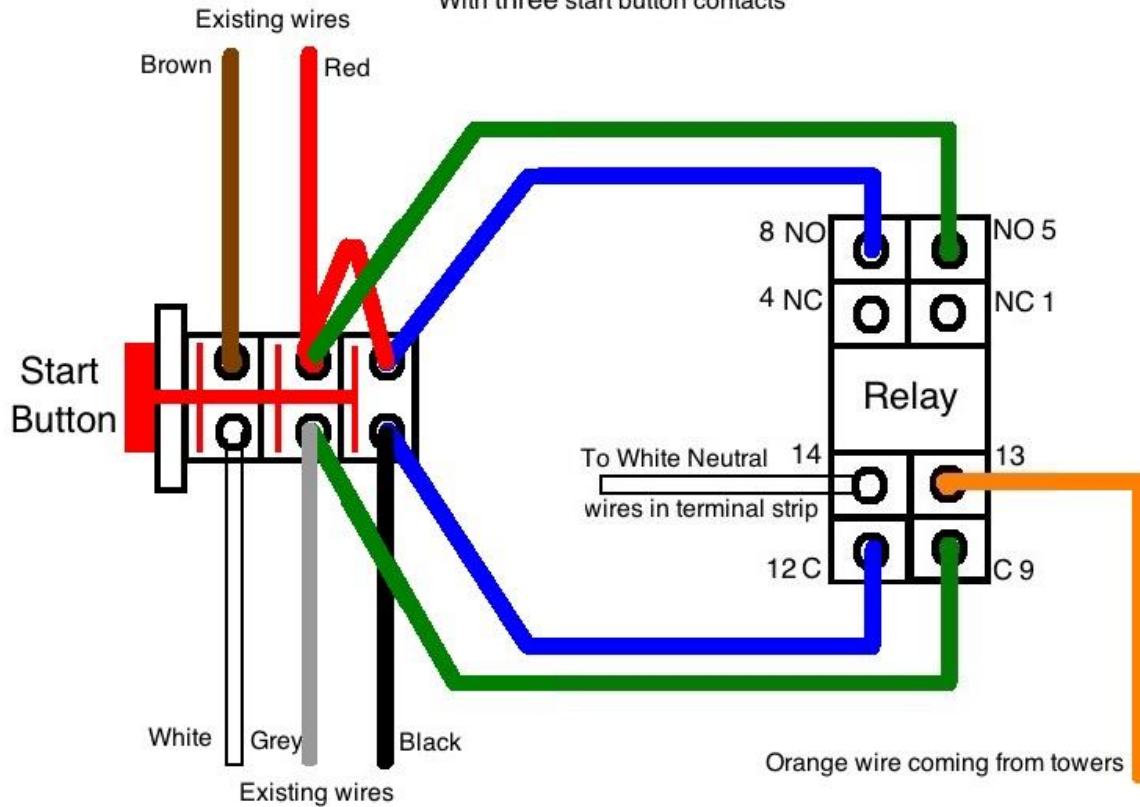
Reinke Blue Mechanical Panels

With two start button contacts

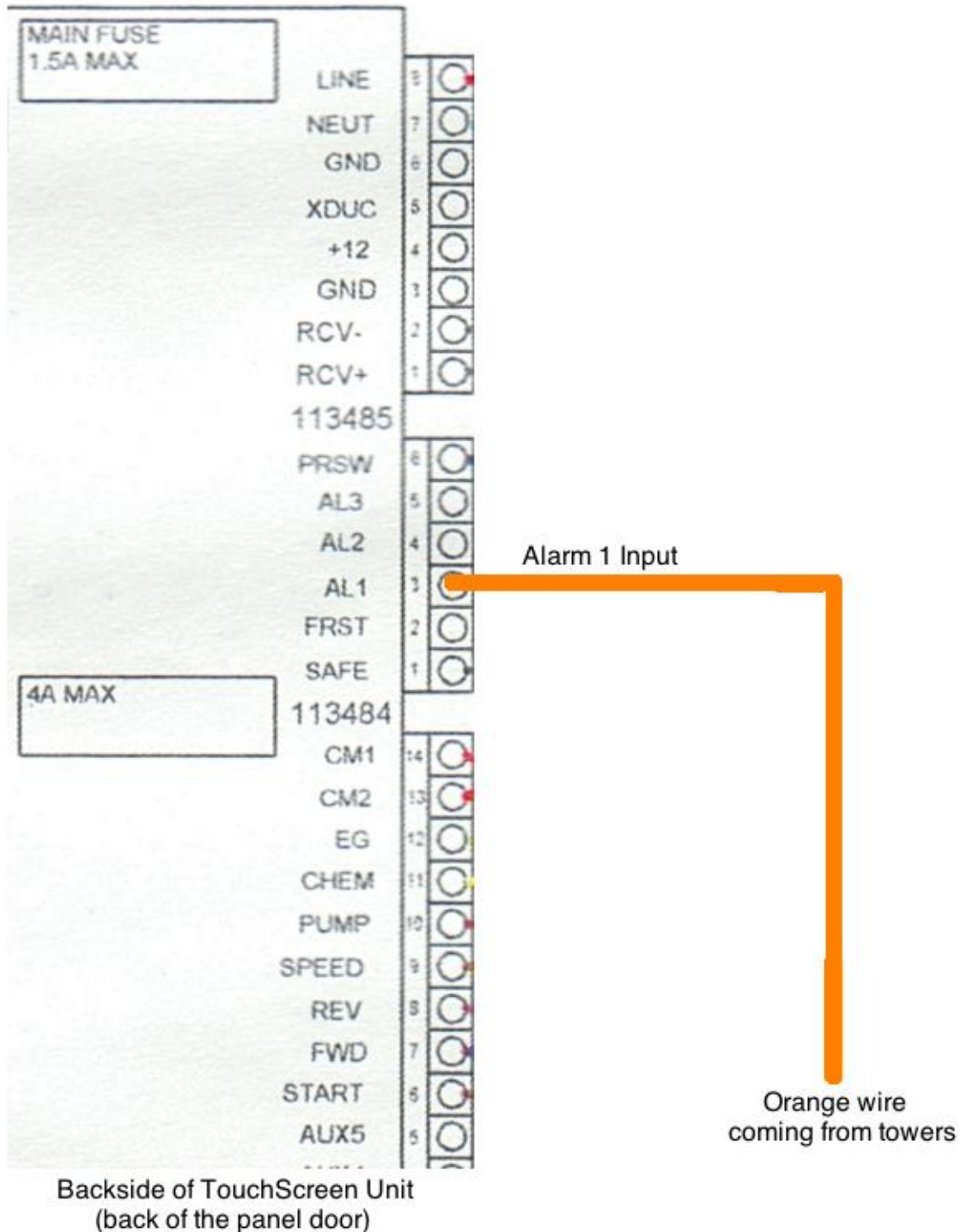


Reinke Blue Mechanical Panels

With three start button contacts



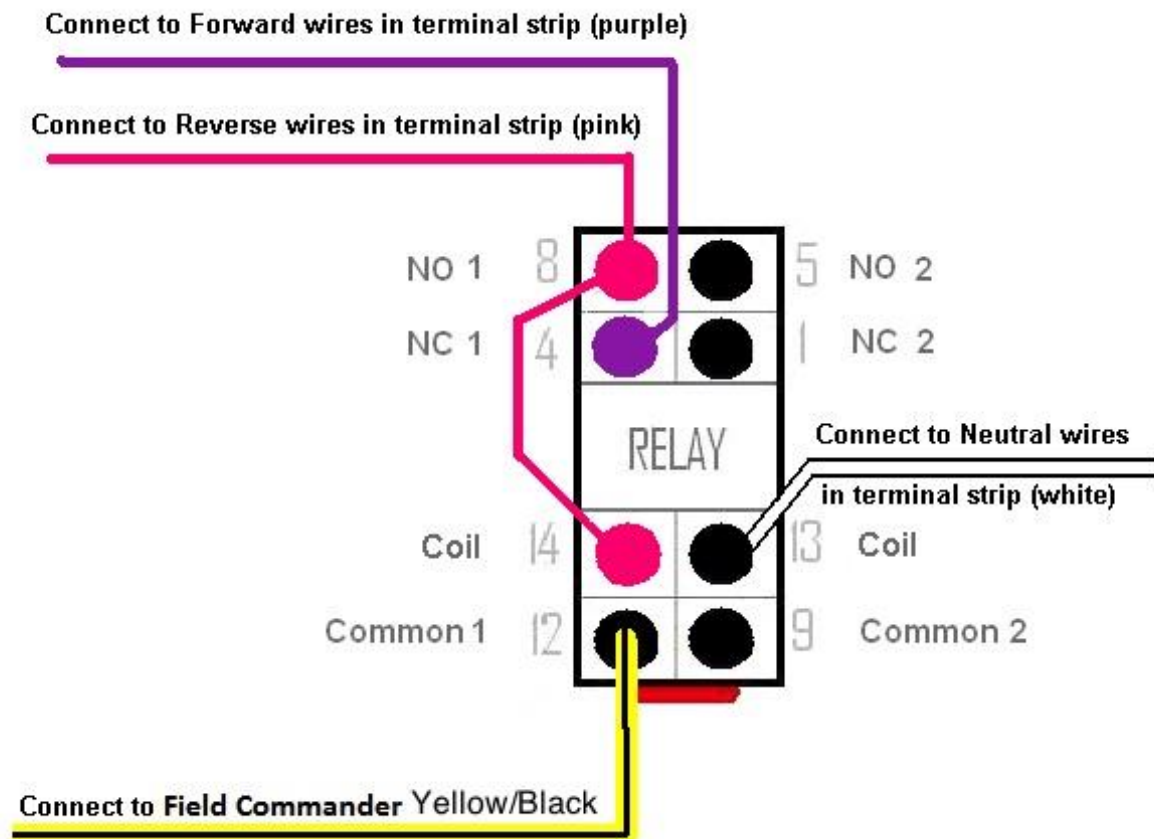
Reinke Blue Touchscreen Panels



The Touchscreen panels must be configured to use Alarm1 to start the pivot by setting it to trigger a start when Alarm 1 goes from Cold (0 volts) to Hot (120v)

Reinke PRO wiring at the end of the pivot (End tower box typically, or Second to last tower box if pivot has corner system – never mount unit out on the corner system)

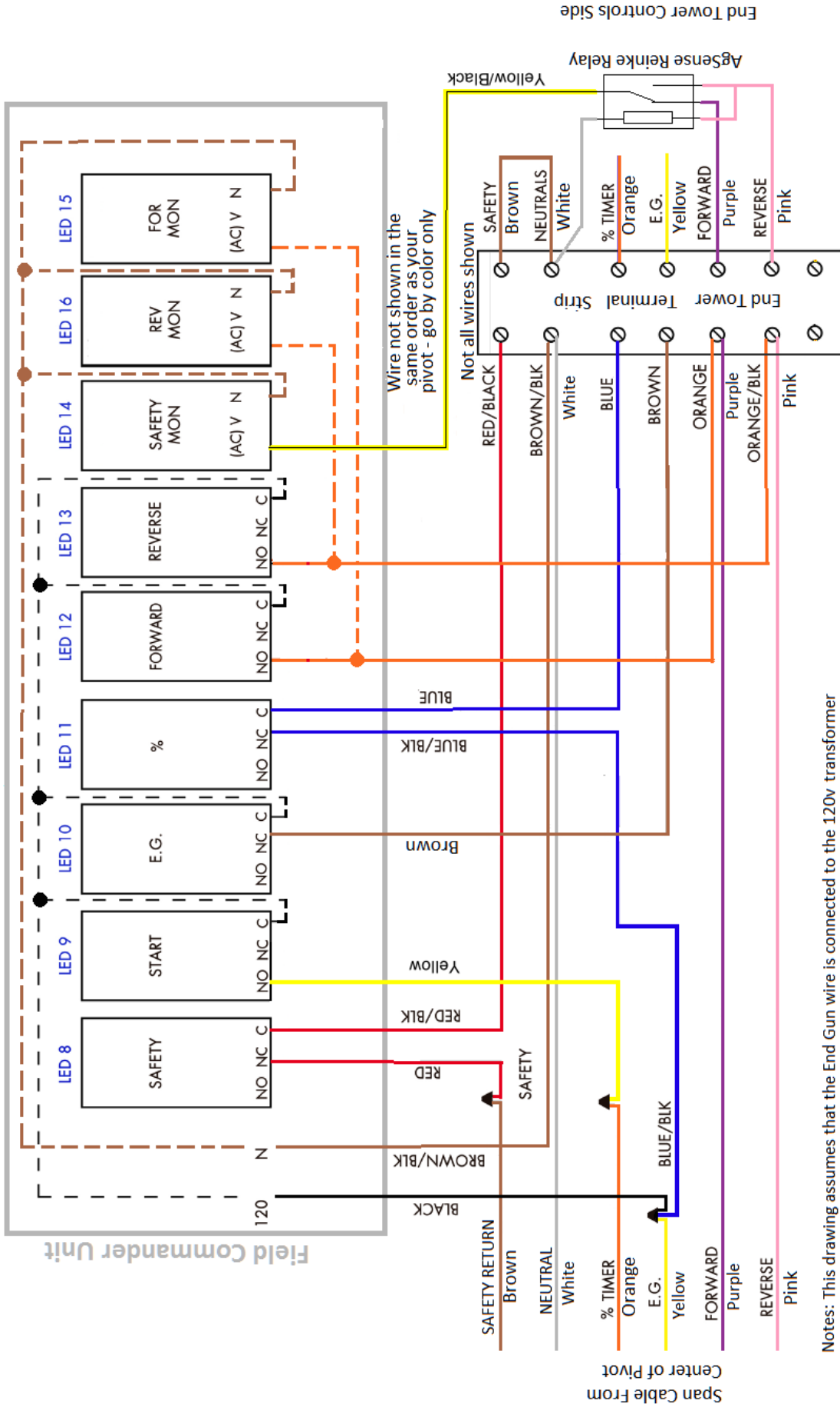
1. In the tower box, remove the Reinke Yellow (end gun) wire (Span cable wire coming from the center) from the terminal strip in the end tower box and install our Brown wire in its place.
2. Use a wire nut to connect our Black wire and Blue/Black wire to the Reinke Yellow wire that was removed from the terminal strip in step 1.
3. Remove the Reinke brown (safety) wire from the terminal strip in the end tower box (Span cable wire coming from the center), and install our Red/Black Stripe wire in its place.
4. Use a wire nut to connect our Red wire to the Reinke brown (safety) wire that was removed from the terminal strip in step 3.
5. Install our Brown/Black Stripe wire into the terminal strip with the other Reinke Neutral (white) wires.
6. Install our Black/Red Stripe wire into the Earth Ground bar with the Reinke Green wires.
7. Remove the Reinke orange (percent timer) wire from the terminal strip in the end tower box (Span cable wire coming from the center), and install our Blue wire in its place.
8. Use a wire nut to connect our Yellow wire to the Reinke orange (percent timer) wire that was removed from the terminal strip in step 7.
9. Install our Orange wire into the tower terminal strip with the Reinke Purple wire. (Forward Run)
10. Install our Orange/Black wire into the tower terminal strip with the Reinke Pink wire. (Reverse Run)
11. Add an isolation relay as shown, and install our Yellow/Black wire into that relay assy as shown in the image below.



*Please continue to the next page *

12. Please call AgSense at 605-352-8350 to have the remote programming of this unit changed to make sure its set as PRO service, and also make sure it has Reinke Direction Control selected. – you must do this for this unit to work correctly.
13. AFTER calling AgSense to set up the unit correctly, you then need to test every function of the pivot again to make sure it runs both directions, and safety works correctly. You can then test starting, stopping, endgun, speed, and direction control from the wagnet.net website or app to make sure the unit is working correctly.

Example: Wiring of Field Commander with "PRO" service to Reinke End Tower Box



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 5A, 3A constant (at a max voltage of 120vAC, or 30vDC).

Warranty Information:

All warranty service provided by the AgSense service center, or an authorized technician.

**Warranty repairs require a Return Merchandise Authorization Number (RMA);
Have your dealer contact AgSense to obtain this RMA number.**

For the Period of :	AgSense will:
60 Days	Money back Guarantee if not satisfied with product.
2 Years	Repair on any unit that fails due to defect in materials or workmanship. AgSense labor and parts would be provided free of charge during the warranty period. (This does not include dealer labor.)

What is not covered:

- Service trips to your home to teach you how to use the product.
- Improper installation, delivery or maintenance. If you have an installation problem contact your dealer or installer.
- Failure of product resulting from modification to product or due to unreasonable failure to provide reasonable and necessary maintenance.
- Labor necessary to move device from one location to another.
- Improper installation of battery.
- Failure due to corrosion or water damage.
 - Units installed in direct contact with sprinklers require a tower box or other watertight protection.
- Damage to the product caused by improper power supply voltage, accident, fire, floods or acts of God.
- Damage caused after delivery.

Exclusion of implied warranties – Your sole and exclusive remedy is product repair as provided in this Limited Warranty. Any implied warranties, including the implied warranties of merchantability or fitness for a particular purpose, are limited to two years or the shortest period allowed by law.

This warranty is extended to the original purchaser and any succeeding owner for the products purchased for use within the USA.

Some states do not allow the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights, and you may also have the other rights which vary from state to state. To know what your legal rights are, consult your local or state consumer affairs office or your state's Attorney General.

DISCLAIMER: The use of Field Commander/Crop Link/Aqua Trac shall not be utilized by customer as a substitute for the Customer's personal observation of the manner in which Customer's irrigation equipment is functioning. AgSense specifically advises Customer that this product is designed to enhance Customer's ability to control existing irrigation equipment and to provide the Customer with additional information about existing irrigation equipment. Field Commander/Crop Link/Aqua Trac relies upon GPS, Satellite and Internet technology which not always functions properly, accordingly, AgSense disclaims any and all responsibility for the reliability of this technology. Customer acknowledges that AgSense does not have the ability to control the reliability of GPS, Satellite and Internet Technology. AgSense specifically disclaims any and all liability for Customer's failure to personally determine whether or not the irrigation equipment that belongs to Customer is functioning properly. AgSense, its agents, members or officers will not be liable for Customer's loss of profits, business interruption, or any other type of consequential damages arising because of the failure to Customer's equipment, GPS, Satellite or Internet to function properly.

CUSTOMER'S RESPONSIBILITIES: Customer agrees to keep the irrigation equipment upon which Field Commander/Crop Link/Aqua Trac is installed in good repair and maintenance. Customer acknowledges the importance of and agrees to keep all safety devices which came with Customer's irrigation equipment in working order. Customer agrees to keep an end field stop and barricades in place to prevent damage to the irrigation equipment in the event that Field Commander/Crop Link/Aqua Trac malfunctions. Customer agrees that Field Commander/Crop Link/Aqua Trac cannot solely replace the personal monitoring of the operation of irrigation equipment.

REMEDY: Customer acknowledges that Field Commander/Crop Link/Aqua Trac's sole obligation and Customer's exclusive remedy in the event of any material and continuing nonconformity, defect, or error in the information service shall be to take reasonable corrective actions upon discovery of the problem.