HOT SHOT

IRRIGATION
810-3T-PLUS
TRANSMITTER GUIDE

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Version : 1003

HOT SHOT OVERVIEW

CAUTION: **Never connect any voltage to the HOT SHOT Relay Input terminals. The Hot Shot supplies the voltage needed for sensor switching (use dry relay contacts only). Make sure the pivot's well kill terminals do not have voltage from previously wired configurations.**

ATTENTION: **Depending upon the style of system that your are going to control with the Hot Shot Wireless Controller you may need to supply additional parts. Such as relays, step-down transformers, Murphy switches etc. These items are suggested in the wiring guides that follow in this manual.**

HOW IT WORKS

Think of the HOT SHOT system as a 12-2 control wire going from the pivot to the irrigation pump. When the Hot Shot Transmitter's RELAY Input is activated, a 15 second delay timer is started. After the delay timer has expired, the transmitter will send the (turn ON) command to the receiver. This transmission will close the relay contacts at the pump to start water. When the pivot is done irrigating or when the safety is tripped, the pivot will open the Hot Shot Transmitter's RELAY Input contacts and send the (turn OFF) relay command to stop water. Battery backup in the transmitter will still allow the HOT SHOT to work in case of a pivot power outage. Each system is coded with its own four digit code so it will not interfere with other systems in the same area. The following manual has been prepared to provide details for Transmitter installation and Receiver installation on electric and engine driven wells.

MOUNTING

Cabinets are a weatherproof UV protected NEMA 4X cabinet with mounting ears on top and bottom. The transmitter/receiver control box can be mounted on the side of a control panel, pole or any other surface as long as the antenna does not have metal running within 12" of the antenna whip. If longer range is needed, an external long range antenna can be used. Do not mount the HOT SHOT receiver to the well engine or cover because the strong vibrations can be harmful to the unit.

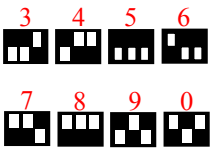
CODE SWITCH SETTINGS

All transmitters and receivers will be shipped from the factory with preprogrammed field codes. This ensures that your neighbor will not duplicate the same field code as your unit. Your field codes already match, so you do not need to program any codes. If you ever need to replace a unit due to servicing, the field code can be programmed to match the existing or new add on units. FOLLOW THE EXAMPLE BELOW…

FOR CODE QUESTIONS? CALL 785-623-1500

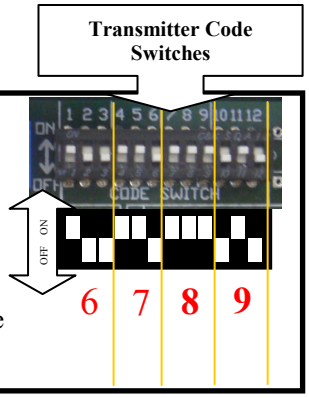
EXAMPLE: CODE 6789

KEY



Use the # KEY to the left to make each digit of the code. It takes three of the switches to make one number of the code.

Use switches 1,2,3 for the first # in the code. Switches 4,5,6 for the second #. Switches 7,8,9 for the third #. Switches 10,11,12 for the fourth #.



BATTERY BACKUP

During a power outage, a gel cell rechargeable battery will supply power to the transmitter for approximately 24 hours. This will allow the transmitter to send a shutdown signal to the receivers when the pivot has lost power. The Hot Shot Transmitter comes with a battery saver feature that will turn off the Hot Shot Transmitter if the voltage drops from 12vdc to 10vdc. This function will add years of life to the gel cell battery.

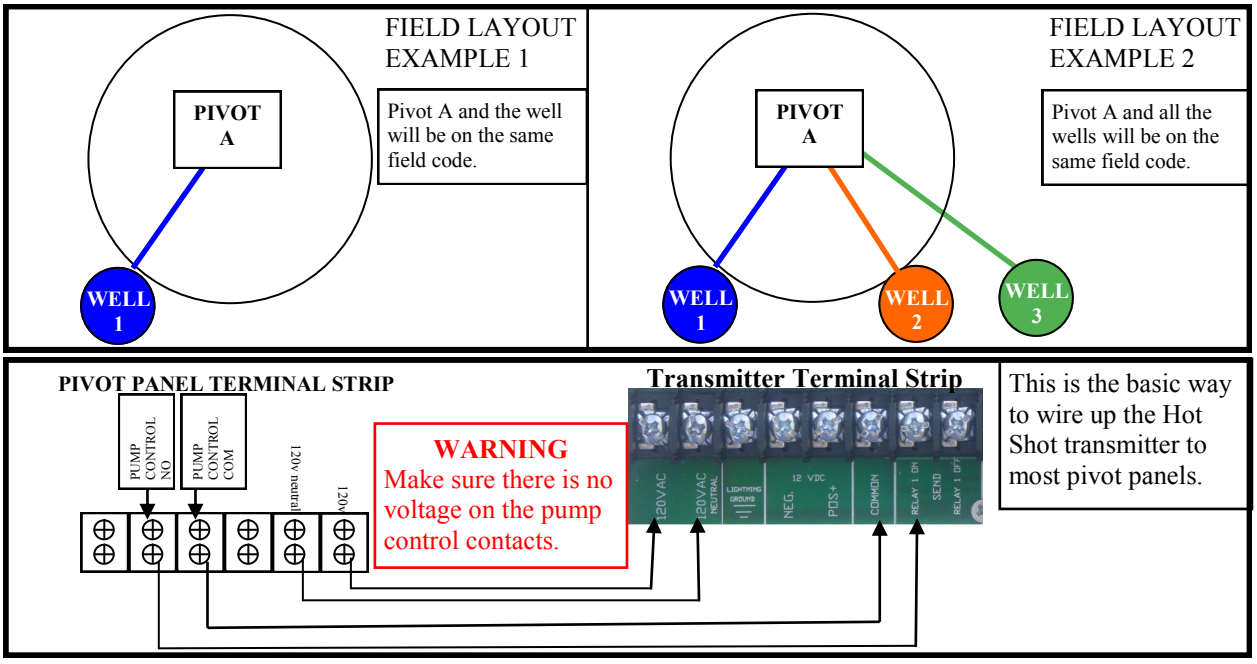
Important... When the battery has discharged, it will take approximately 15 to 20 minutes for the battery to charge enough to operate the transmitter in case of another power failure. The battery should be replaced every year for the best reliability during power outages. Call 785-623-1500 for replacement batteries.

TRANSMITTER UNIT 810-3T-PLUS

STANDARD OPERATION MODE

The Standard Operation Mode is the default mode for all transmitters. Most pivot installations will use this method because they only have a single throw relay in their panel. (*Single throw relays only have a COM and NO contact.*) In Standard Operation Mode Function Switches 1-8 need to all be turned OFF. Standard Operation Mode only uses the **RELAY ON** side of the relay inputs on the transmitter. **The Standard Operation Mode does not use the RELAY OFF inputs.** When there is contact made between **RELAY ON** and **COMMON** (*when requesting water*) the transmitter will send out the ON code to the receiver. When contact is opened between **RELAY ON** and **COMMON** (*such as when the pivot is finished or stop water*) the transmitter will send out the OFF code. This is shown in detail later in the WIRING GUIDES. The transmitter is capable of using all three Relay Inputs in this mode. By using the extra (RELAY ON 1,2,3) inputs the transmitter can control wells that are shared with other pivots. See **Multi Pivot Operation** and **System Configurations** for more details. *This mode can also be used with the **PUMP SELECTOR KIT** when wanting to select an individual well or a group of wells. For different operations ,however, these wells can not be shared with another pivot. If they are you will need to use the **DISCRETE OPERATION MODE.***

Shown in the diagrams below is a generic diagram of how to wire a pivot panel to the Hot Shot Transmitter. This style is used for one pivot with one well or one pivot with multiple wells that will always operate at the same time.



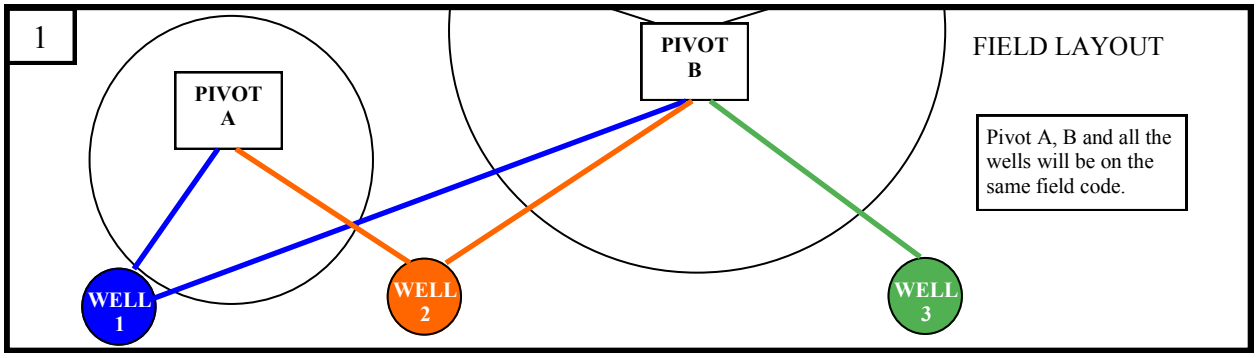
For wiring the Hot Shot receiver to the well refer to the Receiver wiring guide in this manual.

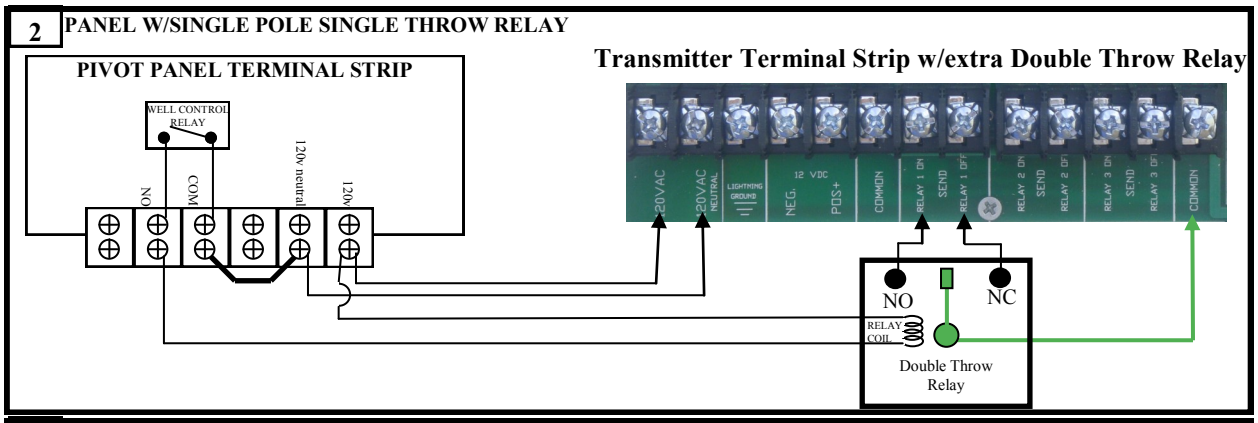
TRANSMITTER UNIT 810-3T-PLUS

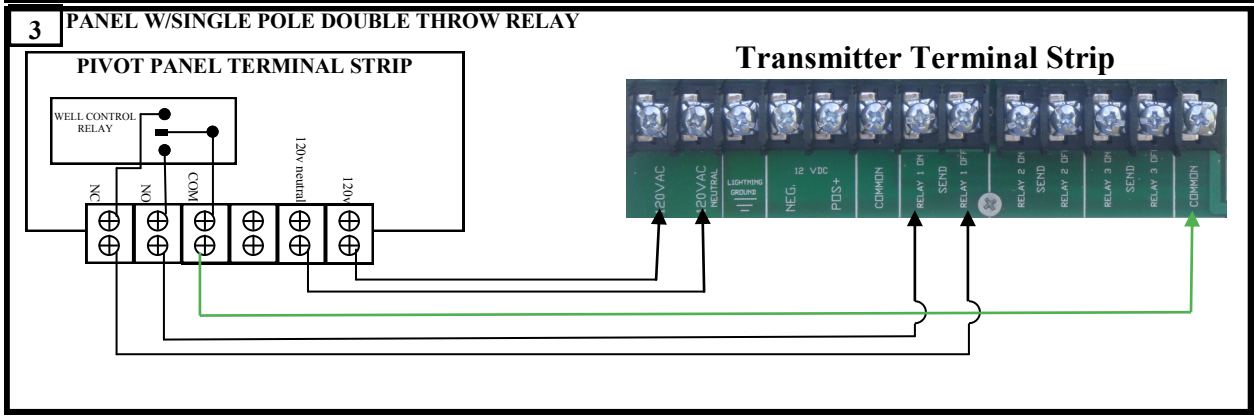
DISCRETE OPERATION MODE

This can be used when the pivot is hooked up to multiple wells that the pivot will use individually, in certain groups, and/or those wells are also hooked up to other pivots.

Discrete Operation Mode is when the **RELAY ON** and **RELAY OFF** commands are split apart. ***See diagram 1***. The Standard Operation Mode **CAN NOT** be used because pivot B will interfere with pivot A's wells by shutting them down and vice versa. The Discrete Operation Mode makes it so there has to be a connection between RELAY OFF and COM before it will send out the OFF signal to the well or wells. Most pivot panels only have NO and COM contacts for the well control so to achieve Discrete Operation Mode you will need to supply a 120v circuit to the well control relay (*NO and COM*) in the pivot panel. Then install a double throw relay that will be controlled by the pivot's well control relay. ***See diagram 2***. If the panel has a single pole double throw relay already, meaning the panel has NO, COM and NC terminals for the well control, then it will be able to be hooked up directly to the Hot Shot Transmitter. ***See diagram 3.***







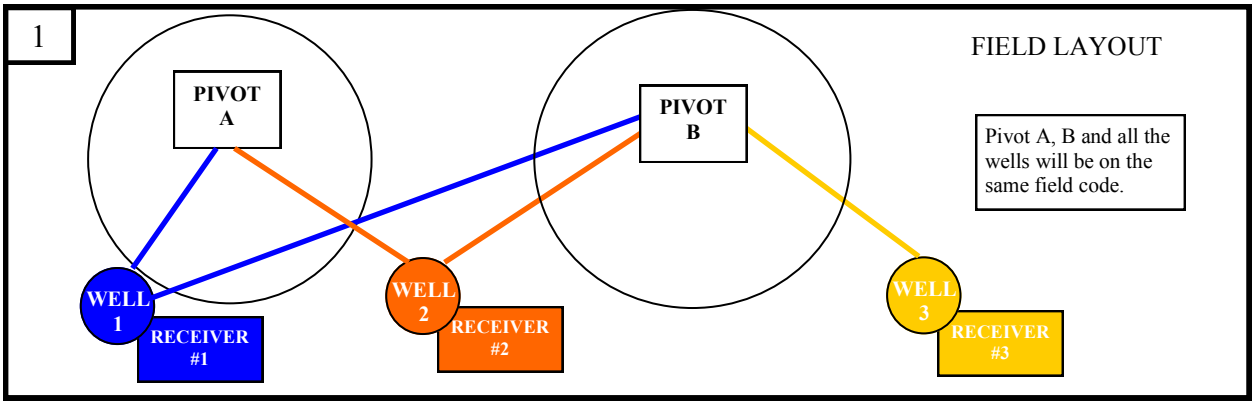
TRANSMITTER UNIT 810-3T-PLUS

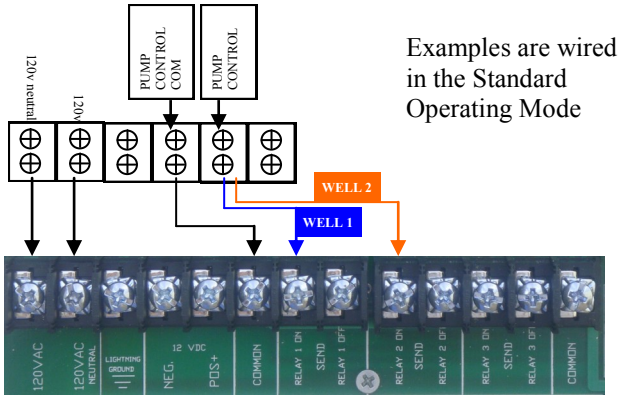
DISCRETE OPERATION MODE continued

For Discrete Operation Mode to work the FUNCTION SWITCH for each RELAY Input must be turned ON. Function Switch 1 for RELAY 1 inputs, Function Switch 2 for RELAY 2 inputs and Function Switch 3 for RELAY 3 inputs. Once these switches are turned on the transmitter will have to see a connection from any of the RELAY inputs to COMMON before it will transmit any signals. Simply removing the connection from RELAY ON to COMMON will not shut the pump down it must have a connection from RELAY OFF to COMMON for the transmitter to send a signal to the receiver to shut off the pump. ***See location of FUNCTION SWITCHES on page 6.***

HOW TO CONTROL AND SHARE MULTIPLE WELLS

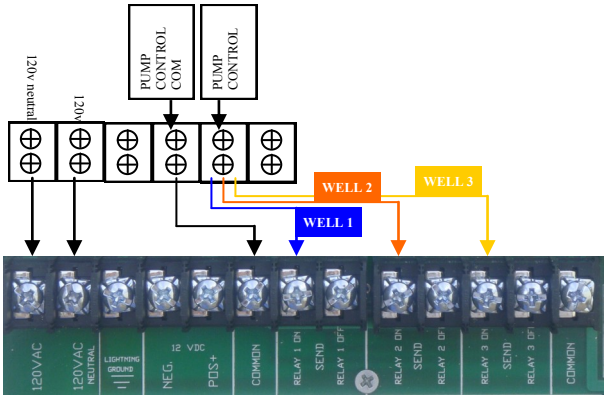
The Field Layout diagram below shows an example of how using the different relay inputs on the transmitter can help to split up the wells that will be used for each pivot. Pivot A can use well 1 and well 2 and share it with pivot B. Pivot A will use RELAY 1 to control well 1 and RELAY 2 to control well 2. Pivot B uses the same inputs to control well 1 and well 2 but will also use RELAY 3 to control well 3. The wiring diagram below shows a simple version of hooking up the pivot panel to the Hot Shot Transmitter. See the wiring guides later in this manual for brand specific wiring instructions.





PIVOT A TRANS TERMINAL STIP

Examples are wired in the Standard Operating Mode

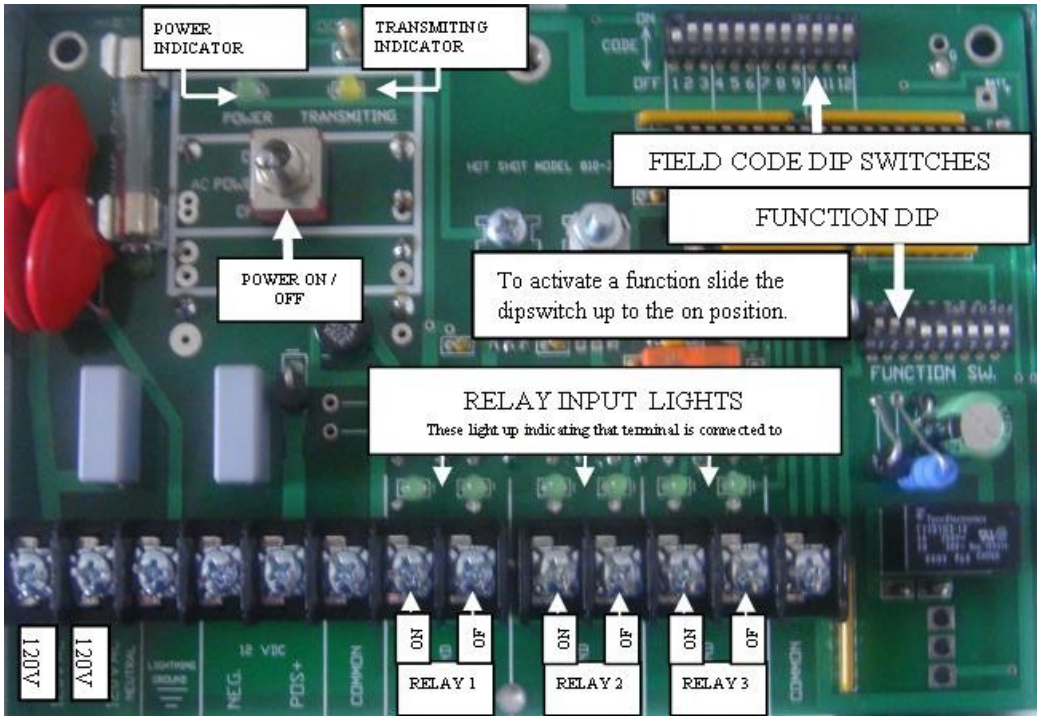


PIVOT B TRANS TERMINAL STIP

TRANSMITTER UNIT 810-3T-PLUS

TRANSMITTER FUNCTION SWITCH SETTINGS

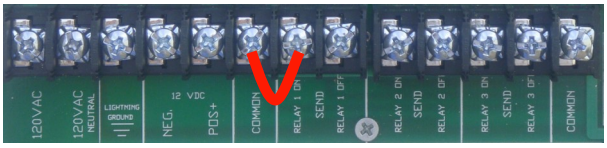
SWITCH#		
1	**ON**	SENSOR 1 DISCRETE OPERATING MODE (see page #4)
	OFF	SENSOR 1 STANDARD OPERATING MODE (see page #3)
2	**ON**	SENSOR 2 DISCRETE OPERATING MODE (see page #4)
	OFF	SENSOR 2 STANDARD OPERATING MODE (see page #3)
3	**ON**	SENSOR 3 DISCRETE OPERATING MODE (see page #4)
	OFF	SENSOR 3 STANDARD OPERATING MODE (see page #3)
4-7	**NOT USED**	
8	**ON**	ACTIVATES THE TEST BEACON (Used for testing and range finding only. When activated the transmitter will send a code every 10sec cycling the receivers relay. **To activate this feature put a jumper wire from the RELAY ON to COMMON on the relay input you want to test. DO NOT have the receiver wired to the pump during this test. This function must be turned off for normal operation. See description on the next page.**
	OFF	NORMAL OPERATION MODE
9	**ON**	REFRESH (This function will retransmit the code once every hour.)
	OFF	NO REFRESH (Transmits the code only when there is a change of state on the Relay Inputs.)



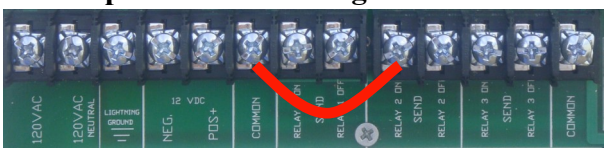
TRANSMITTER UNIT 810-3T-PLUS

OPERATING THE TEST BEACON

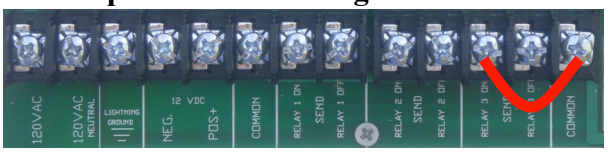
The Test Beacon function is turned on and off by using FUCNTION SWITCH #8 (see above). **This feature is used for testing and range finding purposes only.** To activate the Test Beacon first turn OFF the power to the transmitter. Turn function switch #8 on and connect a small jumper wire from the **RELAY 1 ON** terminal to the **COMMON** terminal and then turn the power back ON to the transmitter. *See diagrams below.* When turned ON the Transmitting Light will blink and the code will be transmitted every 10 seconds cycling the receiver's relay. Testing a receiver that is either a #2 receiver or a #3 receiver is done the same as above except that your connect the jumper wire to **RELAY #2 ON and COMMON** for testing a #2 receiver or **RELAY #3 ON and COMMON** for testing a #3 receiver. *See diagrams below.* **DO NOT have the receiver wired up to the pump** during this procedure because it will continually open the relay for 10 seconds and then close the relay for 10 seconds causing damage to the pump.



Jumper wire for testing a #1 Receiver



Jumper wire for testing a #2 Receiver



Jumper wire for testing a #3 Receiver

Function switch #8 must be turned OFF and the jumper wire removed for the transmitter to operate normally.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

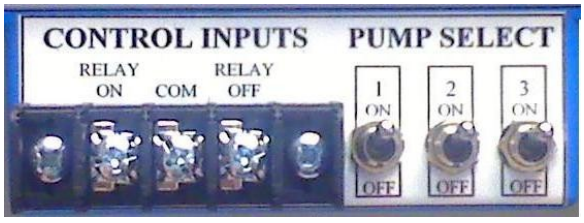
- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect the equipment into an outlet on a circuit different from that to which the**
- **receiver is connected.**
- **Consult the dealer or an experienced radio/TV technician for help.**

15.21 INFORMATION to USER:
The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

TRANSMITTER UNIT 810-3T-PLUS

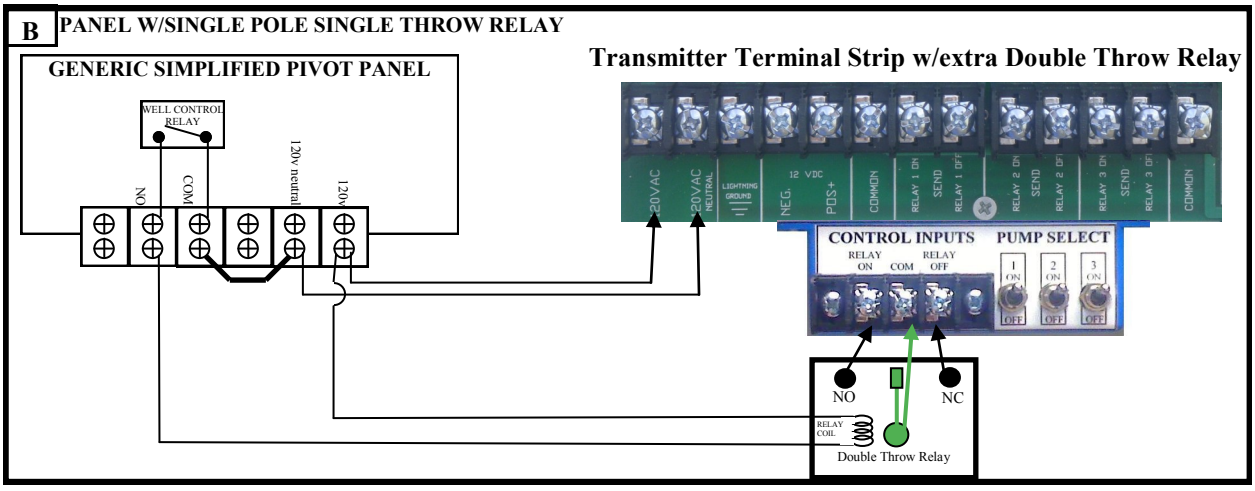
PUMP SELECTOR KIT

This kit is an extra option that can be purchased with your order. This kit allows the operator to choose a specific well or group of wells to have the pivot use for each operation. When using this kit you must use the **Discrete Mode of Operation**. This is done by wiring up the pivot's well control relay, which must have a single pole double throw relay installed, to the RELAY ON, COM and RELAY OFF inputs on the kit. The rest is all prewired to the transmitter as follows. The Pump Select switch number 1 uses the RELAY INPUT #1 on the transmitter, Pump Select switch number 2 uses the RELAY INPUT #2 and Pump Select switch number 3 uses the RELAY INPUT #3. At the wells you will need to have each receiver selected as a #1, #2 or #3 according to which switch # on the Pump Selector Kit that you want it to be on. ***See ASSIGNING RECEIVER NUMBER in the receiver section***.

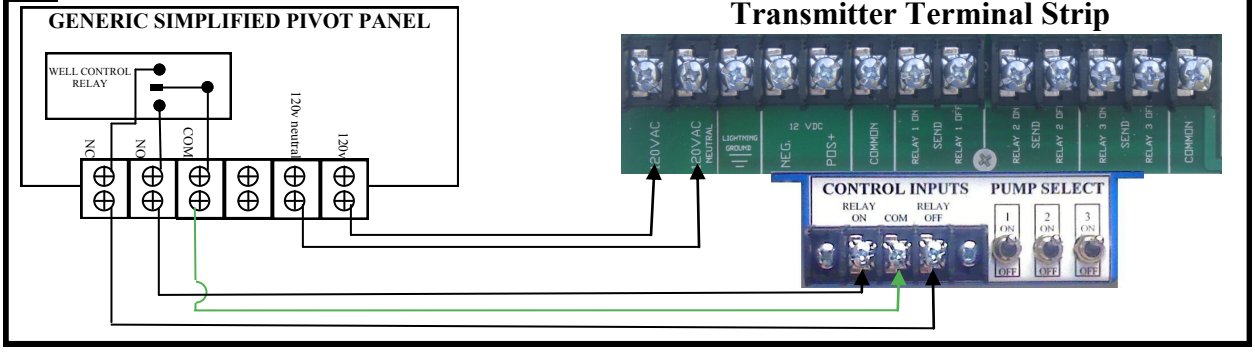


Now you can select any well or group of wells that you have for this system by flipping ON the Pump Select switch to include the well; or, by flipping OFF the Pump Select switch to exclude that well from the pivot's current operation. **Just flipping the Pump Select switch to ON or OFF will not turn on or off the well.** You MUST use the CONTROL INPUTS that come from your pivot's well control relay to turn the well on or off. *See diagrams B and C below for wiring options.*

B **PANEL W/SINGLE POLE SINGLE THROW RELAY**



C **PANEL W/SINGLE POLE DOUBLE THROW RELAY**



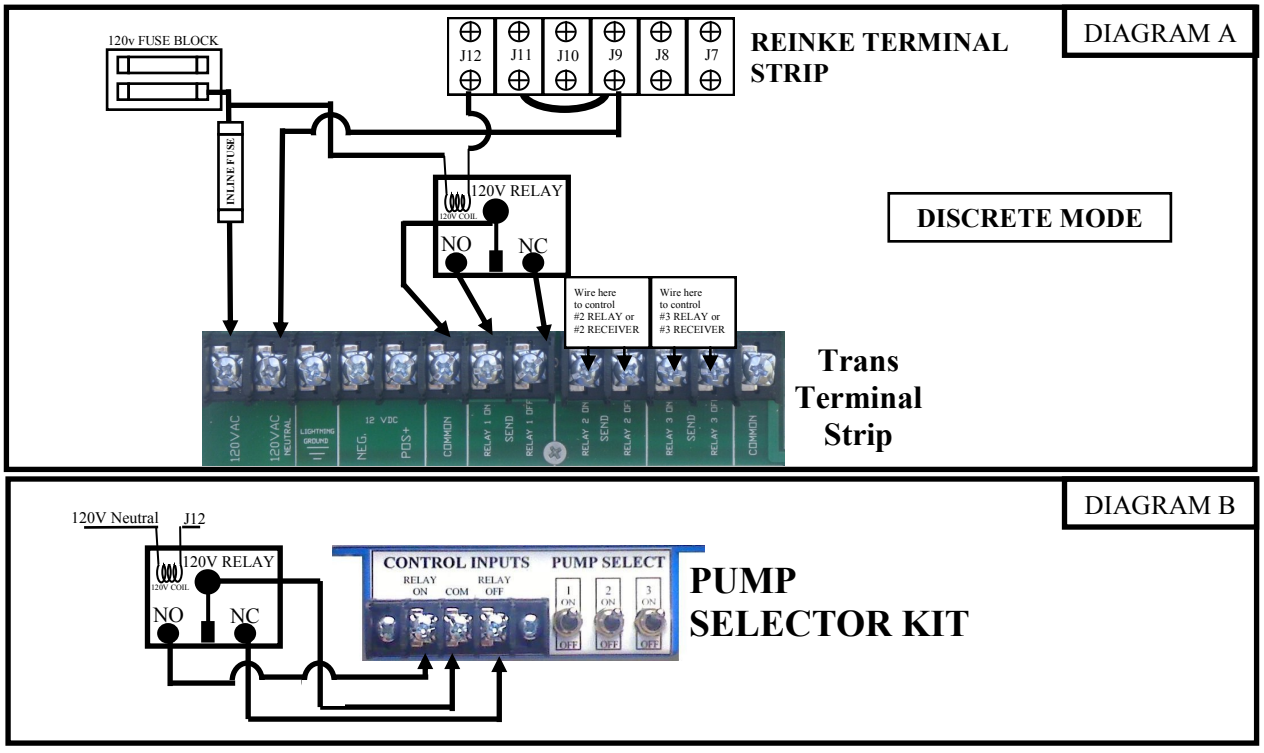
REINKE PIVOTS

WIRING INSTRUCTIONS FOR DISCRETE OPERATION MODE

FIRST make sure all the function switches on the transmitter are in the correct position for this style of operation. See Discrete Operation Mode on page 4.

Supplying the 120v to the Hot Shot Transmitter is the same as above. For these panels you will need to install in the panel (or close to it) at least a single pole double throw 120v ice cube relay to make it work properly. Run a jumper wire from the pivot panel's neutral terminal (usually #J9) to terminal #J11. Then run a wire from Terminal #J12 to one side of the relay's coil. Run another wire from the 120v fuse block (the hot side) to the other side of the relay's coil. Then run a wire from the 120v relay's common terminal to the Hot Shot Transmitter's COMMON input. Run a wire from the 120v relay's N.C. terminal to the transmitter's RELAY OFF input. Run another wire from the 120v relay's N.O. terminal to the transmitters RELAY ON input. See diagram A below. *Now, when the pump is selected to run this will close #J12 with #J11 and energize the 120v relay making contact between RELAY ON and COMMON on the transmitter. This will then send the ON signal to the receiver. When the pivot is finished, terminals #J12 and #J11 will open and "de-energize" the 120v relay making the connection between RELAY OFF and COMMON on the transmitter. This sends the OFF signal the receiver.*

Use the same wiring directions when using the PUMP SELECTOR KIT. *See diagram B below*. When needing to move the pivot with out turning on the pump simply flip the Hot Shot Transmitter's power switch to OFF then power up the pivot and move it.



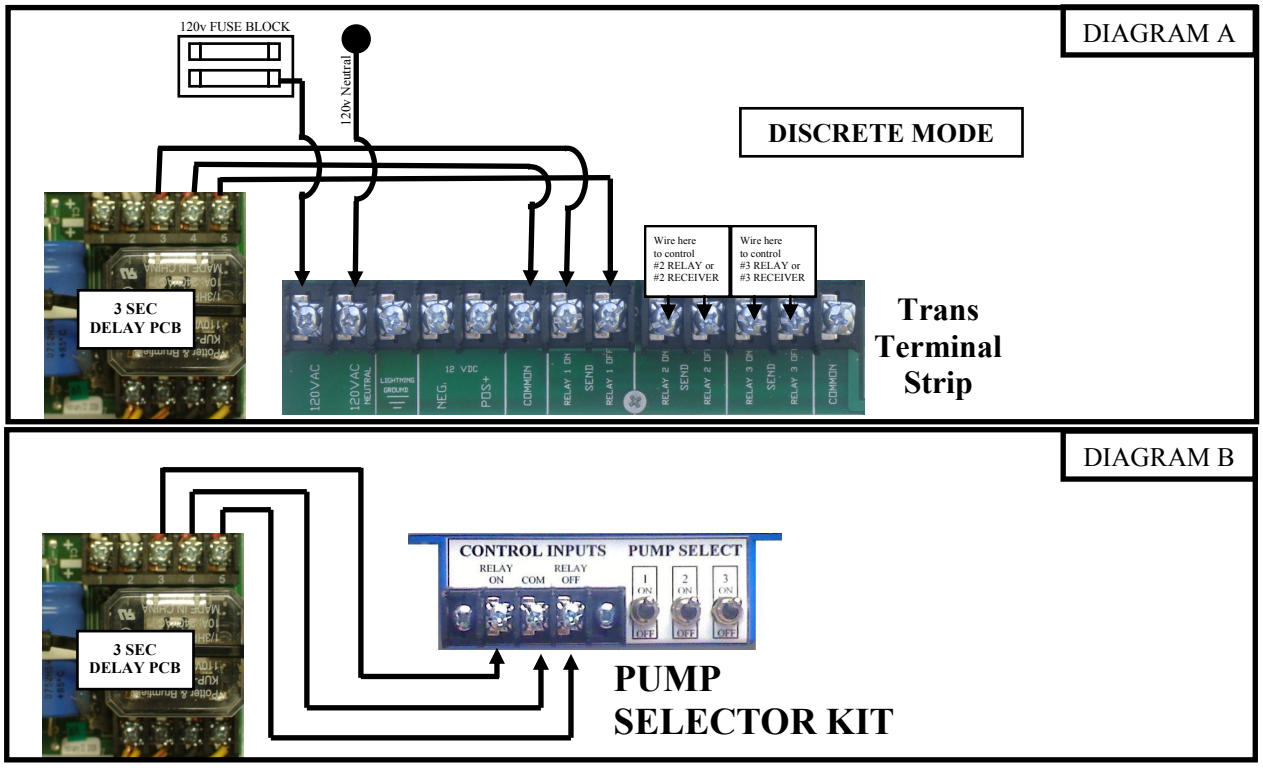
VALLEY MODELS
4000, 6000, & PANELS WITH 3 SEC DELAY PCB.

WIRING INSTRUCTIONS FOR DISCRETE OPERATION MODE

FIRST make sure all the function switches on the transmitter are in the correct position for this style of operation. See Standard Operation Mode on page 3.

To supply the 120v needed for the Hot Shot Transmitter to operate run a wire from the pivot panels 120v fuse block through a inline fuse holder (Valley part #1811175) with a 1 1/2 amp fuse to the first 120v input on the transmitter. Run another wire from the pivot panels neutral terminal (usually wired with white wires) to the second 120v input (neutral) on the transmitter.

With these models we recommend that you use terminal #3, #4 and #5 on the 3 Sec Delay PCB to control the Hot Shot Transmitter. Remove the wires that currently go into them and cap them off. Run a wire from terminal #3(NO) on the 3 Sec Delay PCB to the RELAY ON input on the transmitter. Run a wire from terminal #4 (COM) on the 3 Sec Delay PCB to the COMMON input on the transmitter. Run a wire from terminal #5(NC) on the 3 Sec Delay PCB to the RELAY OFF input on the transmitter. *See diagram A below.* Use the same wiring directions when using the PUMP SELECTOR KIT. *See diagram B below*. When needing to move the pivot with out turning on the pump simply flip the Hot Shot Transmitter's power switch to OFF then power up the pivot and move it.



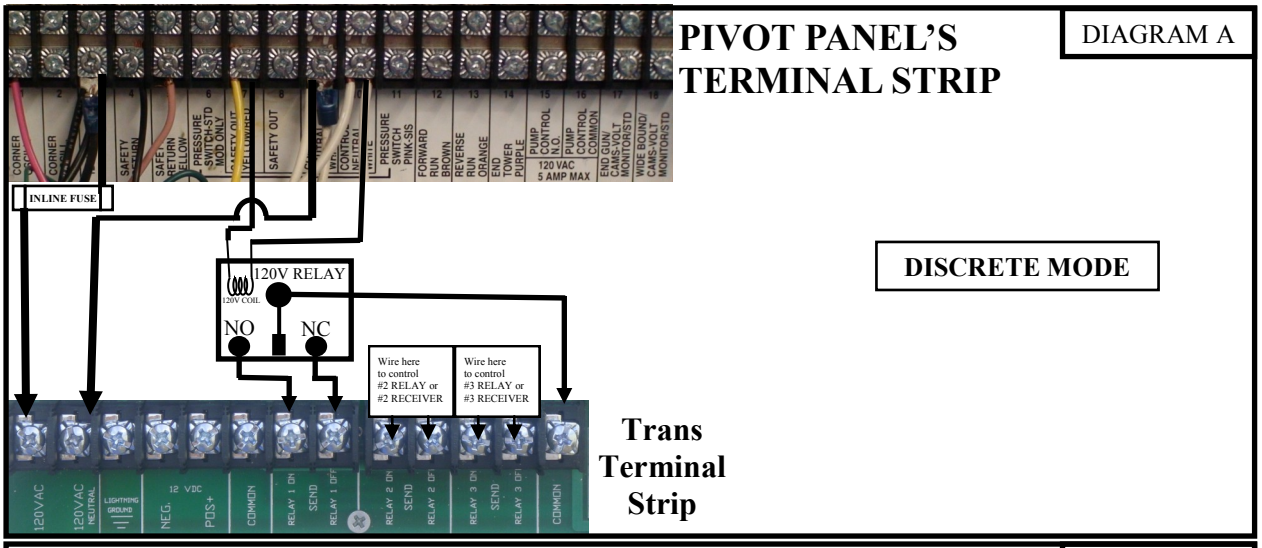
VALLEY MODELS
8000, PRO PANEL, SELECT PANEL & SIMILAR

WIRING INSTRUCTIONS FOR DISCRETE OPERATION MODE

FIRST make sure all the function switches on the transmitter are in the correct position for this style of operation. See Discrete Operation Mode on page 4.

To supply the 120v needed for the Hot Shot Transmitter to operate run a wire from the pivot panels terminal #3 through a inline fuse holder (Valley part #1811175) with a 1 1/2 amp fuse to the first 120v input on the transmitter. Run another wire from the pivot panels terminal #9 or #10 (CONTROL NEUTRAL) to the second 120v neutral input on the transmitter.

For these panels you will need to install at least a single pole double throw 120v ice cube relay to make it work properly. Run a wire from terminal #7 or #8 (SAFETY OUT) on the pivot panels terminal strip to one side of the relays coil. Run a wire from terminal #9 or #10 (CONTROL NEUTRAL) to the other side of the relay coil. Then connect the ice cube relays common terminal to one of the Hot Shot Transmitters COMMON terminals, the NO terminal to the Hot Shot transmitter's RELAY ON terminal and the NC terminal to the Hot Shot Transmitter's RELAY OFF terminal. *See diagram A below*. Use the same wiring directions when using the PUMP SELECTOR KIT. *See diagram B below*. When needing to move the pivot with out turning on the pump simply flip the Hot Shot Transmitter's power switch to OFF then power up the pivot and move it.

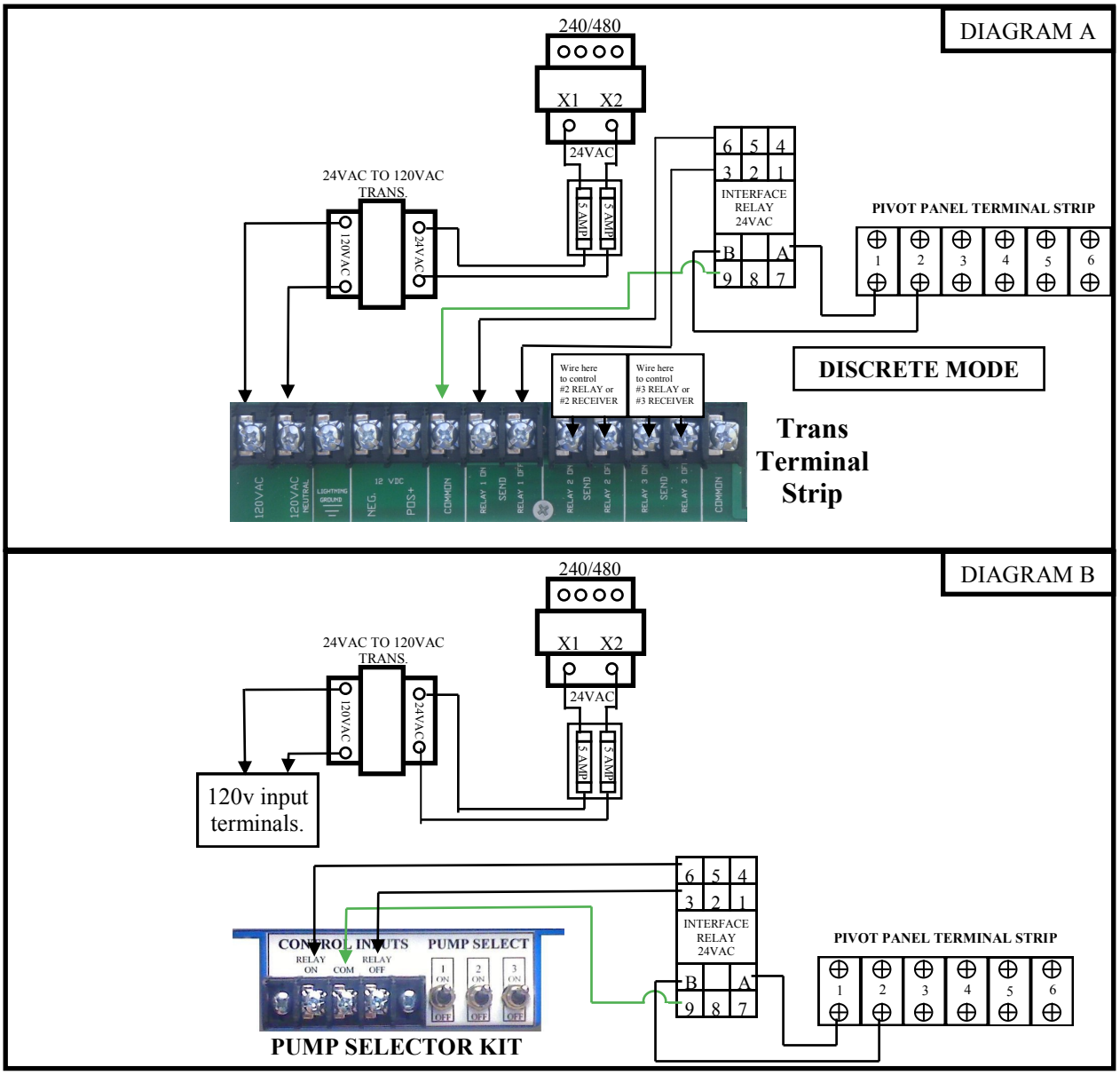


T-L ELECTRIC PANEL

WIRING INSTRUCTIONS FOR DISCRETE OPERATION MODE

FIRST make sure all the function switches on the transmitter are in the correct position for this style of operation. See Discrete Operation Mode on page 4.

To supply the 120v needed for the Hot Shot Transmitter to operate install a 24VAC to 120VAC step up transformer. These are available to purchase from Hot Shot Systems. Run two wires from the 24 VAC transformer through inline fuse's (at least 5 amp) to the 24VAC to 120VAC step up transformer. Then take the 2 wires from the 120VAC side and run them to the transmitters two 120V inputs. Use the 24VAC Interface Relay (Relay Part#EC52201 Base Part#EC53152) to control the RELAY inputs on the transmitter. Power the Interface Relay by running a wire from the pivot panels Water Pump Control terminals (usually terminal #1 and #2) to each side of the Interface Relays coil terminals A and B. Run a wire to connect the COM terminal #9 on Interface Relay to the COM input on the transmitter. Wire up the NO terminal #6 on Interface Relay to the RELAY ON input on the Transmitter. Run a wire to connect the NC terminal #3 on Interface Relay to the RELAY OFF input on the transmitter. *See diagram A below*. Use the same wiring directions when using the PUMP SELECTOR KIT. *See diagram B below*.

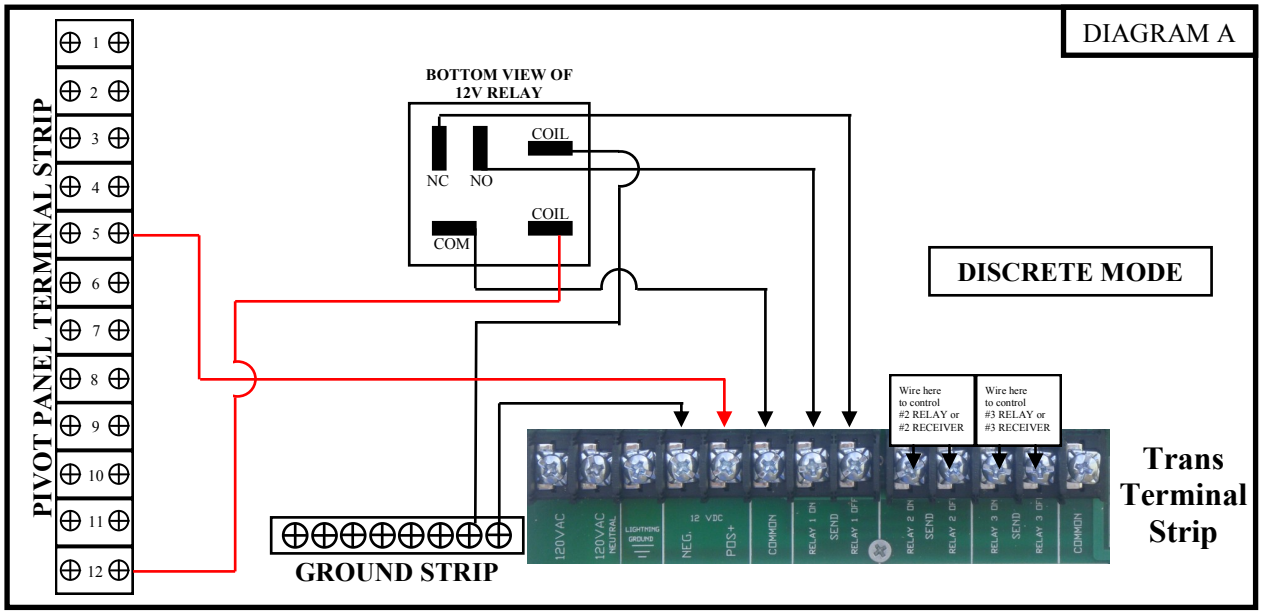


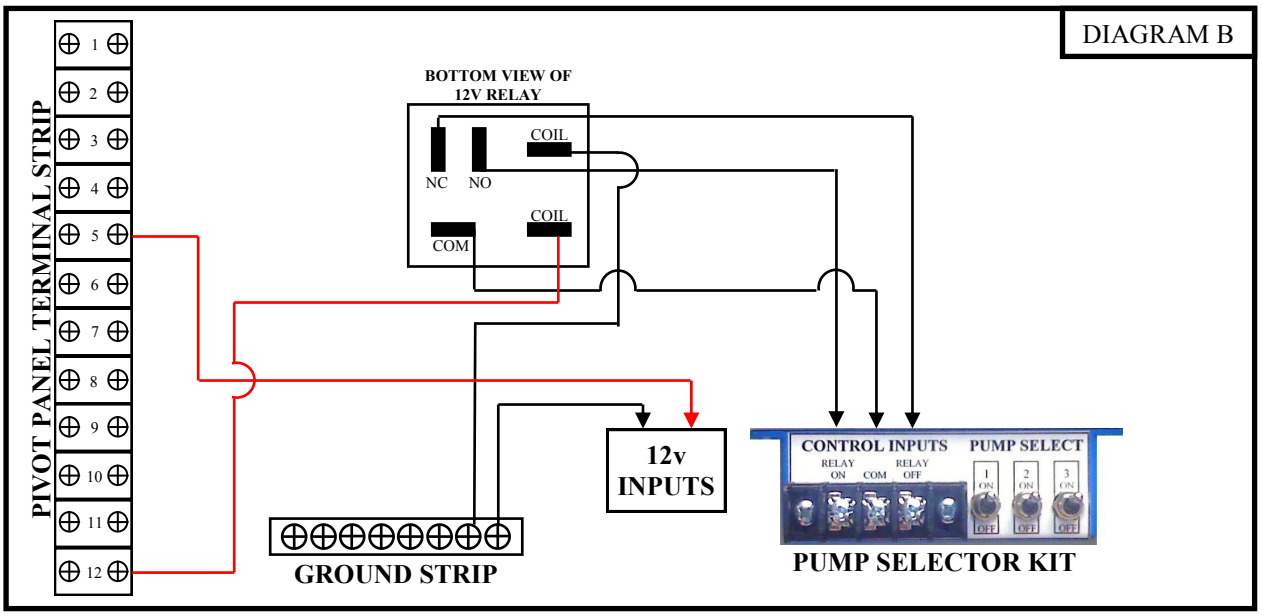
T-L ENGINE PIVOT (*ISUZU PANEL*)

WIRING INSTRUCTIONS FOR DISCRETE OPERATION MODE

FIRST make sure all the function switches on the transmitter are in the correct position for this style of operation. See Standard Operation Mode on page 3.

Run a wire from the +12v dc terminal on the pivot panels terminal strip (usually terminal #4 or #5) to the +12v dc input on the transmitter. Run a wire from the pivot panels Ground Strip to the NEG input on the transmitter. Now install a 12v dc Interface Relay (part# EC52125) to control the RELAY inputs on the transmitter. To control the 12v Interface Relay run a wire from the pivot panels terminal #12 to one side of the relays coil terminals. Run another wire from the pivot panels ground strip to the other coil terminal on the 12v Interface Relay. Now run a wire from the 12v Interface Relay's NO terminal to the RELAY ON input on the transmitter Run another wire from the 12v Interface Relay's COM terminal to one of the COMMON inputs on the transmitter. Run a wire to connect the NC terminal on the 12v Interface Relay to the RELAY OFF input on the transmitter. *See diagram A below*. Use the same wiring directions when using the PUMP SELECTOR KIT. *See diagram B below*.





ZIMMATIC PIVOTS

WIRING INSTRUCTIONS FOR DISCRETE OPERATION MODE

FIRST make sure all the function switches on the transmitter are in the correct position for this style of operation. See Discrete Operation Mode on page 4.

To supply the 120v needed for the Hot Shot Transmitter to operate run a wire from the pivot panels 120v X3 terminal through a inline fuse holder with at least a 1 1/2 amp fuse to the first 120v input on the transmitter. Run another wire from the 120v X1 terminal through a inline fuse holder with at least a 1 1/2 amp fuse to the second 120v input on the transmitter. Install a 24vac relay in the panel (part# 09-88907). Wire one side of the relay coil to terminal #65 and connect the other side of the relay coil to terminal #4. Wire the N.O. side of the 24v relay to the RELAY ON input on the transmitter. Wire the COM terminal of the 24v relay to the COMMON input on the transmitter. Run a wire to connect the NC terminal on the 24v Relay to the RELAY OFF input on the transmitter. *See diagram A below.* Use the same wiring directions when using the PUMP SELECTOR KIT. *See diagram B below*.