# Greentronics

Electronic Controls for Agriculture

10 Riverside Drive West, Elmira, ON, N3B 1R1, Canada

Ph: (519)669-4698 E-mail: greentro@sentex.net


## Actuator Controller Calibration and Setup

Date: Feb 25, 1999

By: Bert Menkveld

Once the actuator controller is wired to a power supply and an actuator, it must be calibrated for the particular actuator it is connected to. To perform this calibration, apply power to the controller, and set switch 1 (labeled "ACT") to the ON position. Switch 2 should remain in the OFF position. The controller will completely retract the actuator, and then fully extend the actuator. It will then wait for switch 1 to be turned OFF again, at which point the controller stores actuator's range and returns to normal operation. If the actuator is not completely retracted and extended, check that the wiring to the actuator is correct.

A similar calibration procedure should be performed for the control potentiometer. To calibrate the control potentiometer range, first set the control potentiometer to a position roughly in the middle of its range. Then set switch 2 (labeled "CTRL") to ON to enable control potentiometer calibration (this disables normal controller operation). Now turn the control potentiometer down to the bottom of its range (fully counter-clockwise). Then turn the control potentiometer up to the top of its range (fully clockwise). Finally, turn off switch 2. The controller will store the new control potentiometer range and resume normal operation.

Once you have calibrated the controller, you should set its sensitivity and response delay by adjusting the two small trim potentiometers labeled "SENS" and "DELAY", respectively. Use a small screwdriver to adjust these potentiometers.

The "DELAY" potentiometer controls the delay time before the controller responds to an error between the control setting and the actuator position. If it is set fully counter-clockwise, the delay is effectively zero, causing the controller to respond instantaneously. When the DELAY potentiometer is set fully clockwise, the delay is 0.65 seconds. The DELAY adjustment essentially provides a way to trade off how quickly the controller responds against how often the relays and actuator are turned on and off. In practice, it is probably best to keep the DELAY setting above 25% of its range.

The "SENS" potentiometer controls the sensitivity of the controller to differences between the control setting and the actuator position. To put it another way, it controls the size of the "dead range" in which the controller will not correct the actuator position. When the SENS potentiometer is set fully counter-clockwise, the dead range is 0, meaning that the controller will attempt to zero in on the exact position set by the control potentiometer. This is nearly impossible, resulting in a lot of back-and-forth corrections before the desired position is reached. If the SENS potentiometer is set fully clockwise, the dead range is approximately 10% of the total range of the actuator. This means that there will be an error of up to +/-5% in the actuator position compared to the control setting. Like the DELAY setting, the SENS setting should be kept above 25% of its range. This ensures quick settling without excessive overshoot.

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## Actuator Controller Wiring Instructions

Date: Feb 25, 1999

By: Bert Menkveld

The Actuator Controller is provided with wiring for connection to external power, to the actuator, and to the control potentiometer.

The potentiometer is provided already connected to its wiring, with a connector that should be plugged into header J1 on the circuit board (labeled "CTRL").

The external power supply should be connected to the red (positive) and black (negative) wires of the four-pin connector, which is to be plugged into J3 on the circuit board.

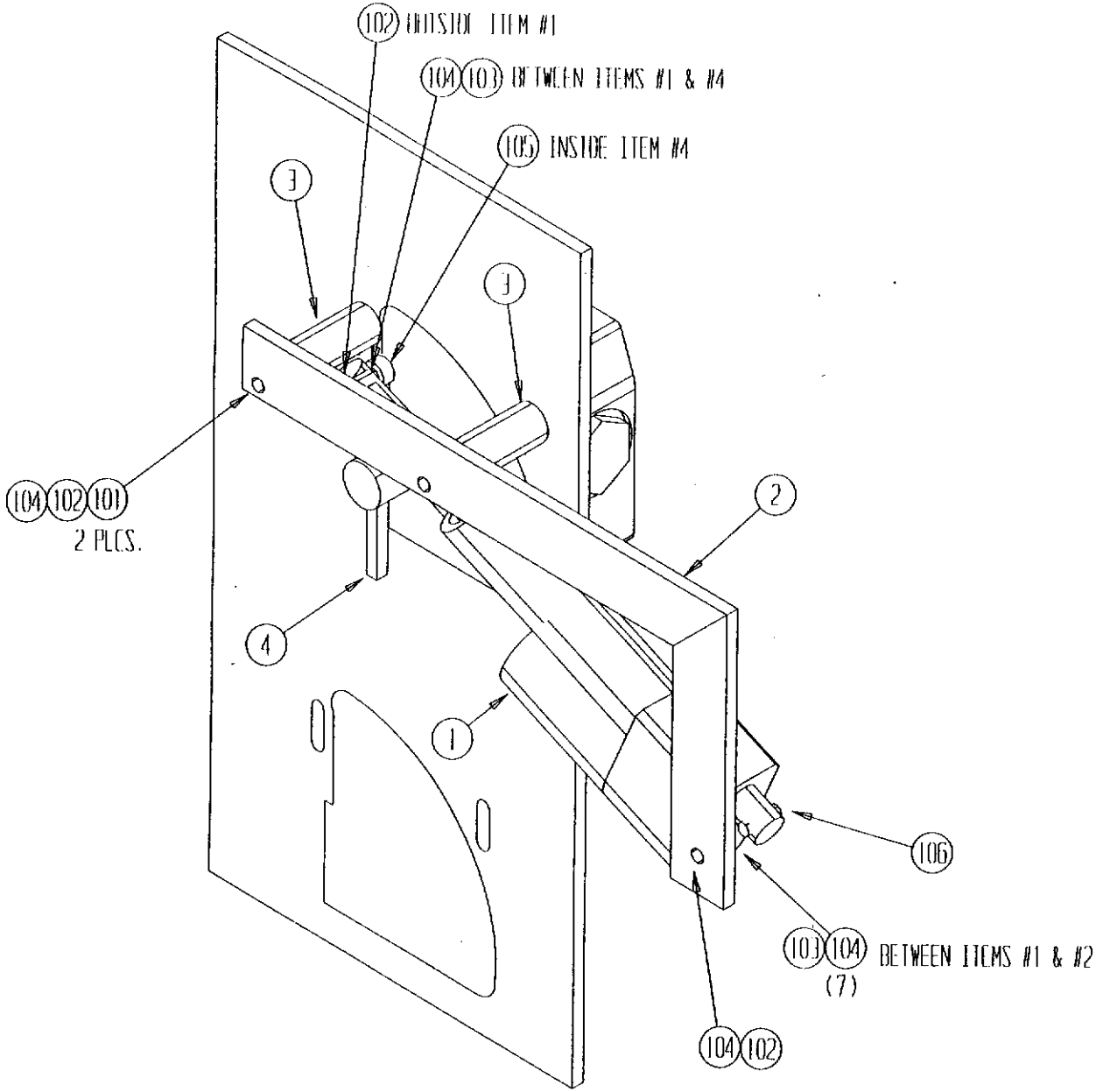
The motor connections of the actuator should be connected to the green and white wires of the same four-pin connector used to connect power. The white wire of the circuit board connector should be connected to the yellow wire of the actuator motor. The green wire of the circuit board connector should be connected to the black wire of the actuator motor.

The following table summarizes the connections to J3 on the circuit board:

| Wire from J3 on Circuit Board | Connect to |
|---|---|
| Black | Power negative |
| Red | Power positive |
| Green | Actuator motor black wire |
| White | Actuator motor yellow wire |

The feedback potentiometer of the actuator should be connected to the 3-wire connector that plugs into J2 (labeled "ACT") on the circuit board. The wires should be connected as follows:

| Wire from J2 on Circuit Board | Actuator Feedback Wire |
|---|---|
| Red | Black |
| Green | White |
| Black | Red |

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PIK RITE

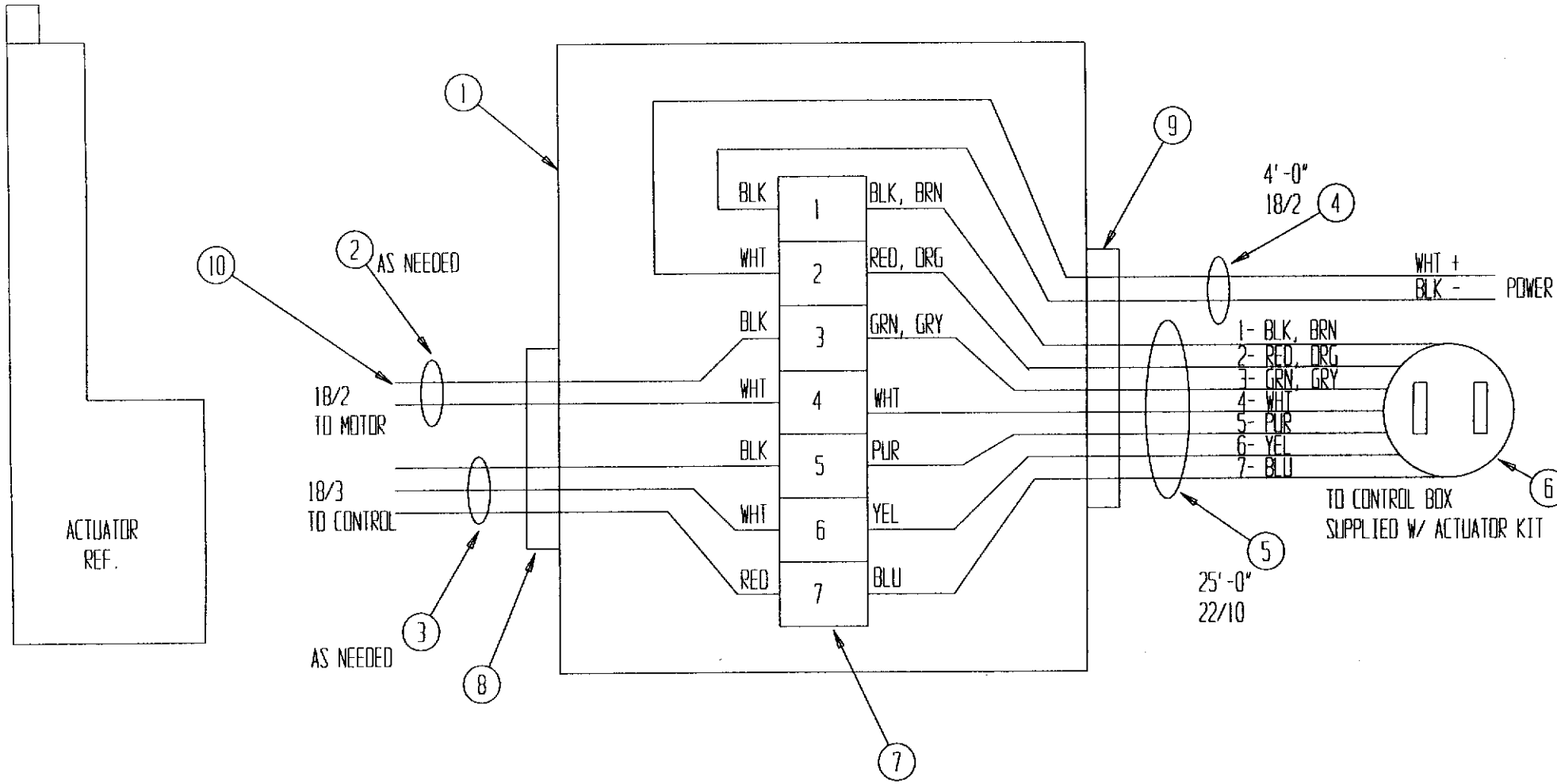
PIK RITE INC.
101 FAIRFIELD RD. LEWISBURG PA 17837
PHONE: 570-523-8174 FAX: 570-523-8175

TITLE REMOTE ACTIVATED
FLOW CONTROL. MOST SINGLE STACKS

# KIT-0087 Remote Activated Flow Cntrl, 1, Most Single Stacks

6/24/99

| Ref | Part No. | Description | Parts - Asmbly | Will Fit SN | Remarks |
|---|---|---|---|---|---|
| 0 | BL-5-300-TS | 5/16 x 3" Heat Treated Threaded Swing Bolt | 1 | | |
| 1 | ACT-042 | Actuator | 1 | | |
| 2 | MOU-ACT2 | Mount, Actuator, Most Single Stacks, Flow Control | 1 | | |
| 3 | SPA-MOUACT2 | Spacer, Actuator Mount | 2 | | |
| 101 | BL-4-500-H | 1/4-20 X 5 HEX CAP G5 ZC | 2 | | |
| 102 | BL-4-LN | 1/4-20 HEX LN NE ZC | 4 | | |
| 103 | BL-4-N | 1/4-20 HEX FIN NUTS ZC | 2 | | |
| 104 | BL-4-FW | 1/4 USS FW ZC | 11 | | |
| 105 | BL-4-175-HFT | 1/4-20 X 1-3/4 HEX CAP G5 ZC, Fully Threaded | 1 | | |
| 106 | BL-4-200-HFT | 1/4-20 X 2 HEX CAP G5 ZC, Fully Threaded | 1 | | |

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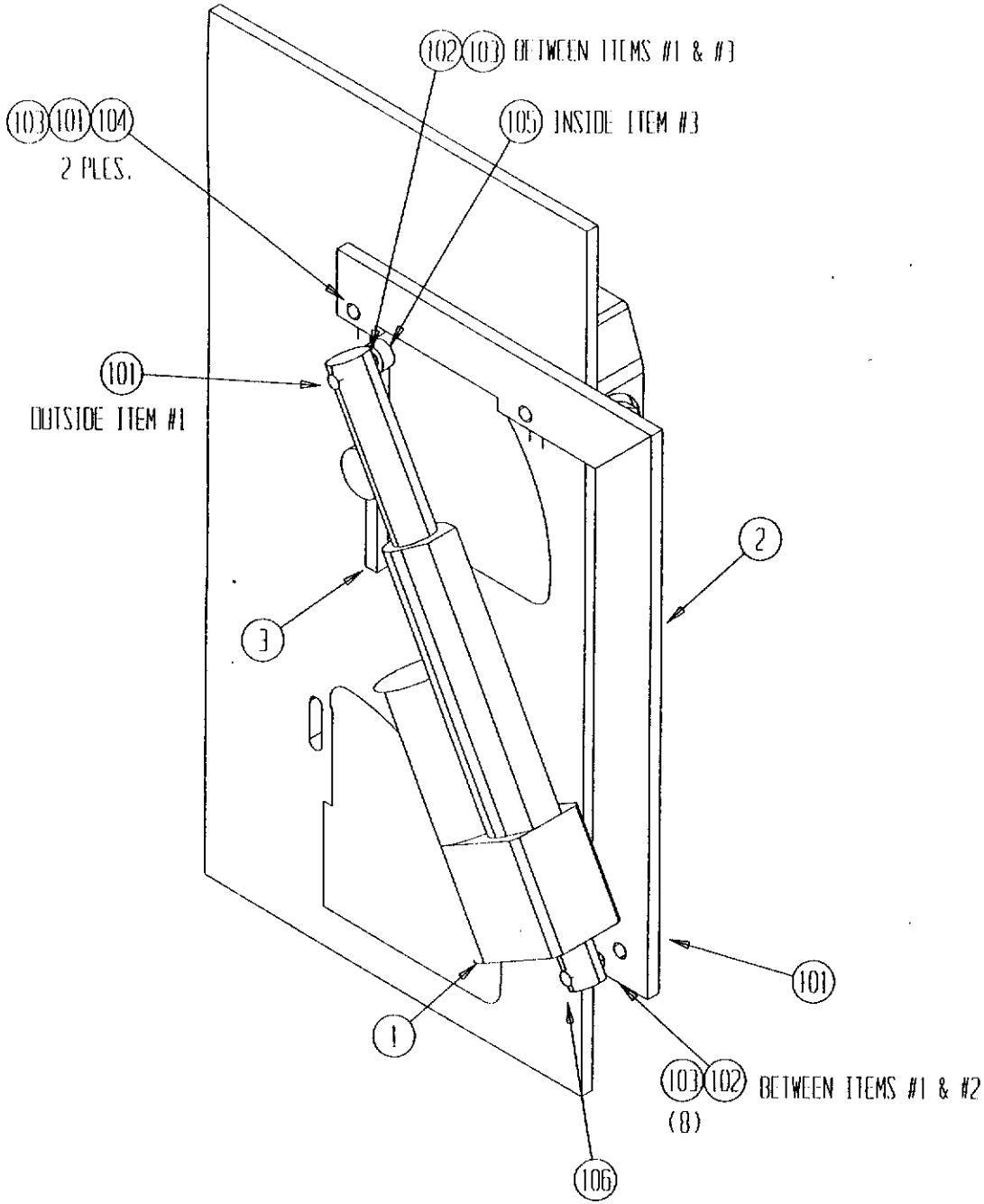
PIK RITE, INC.
101 FAIRFIELD RD. SATSBURG PA 17837
PHONE: 570-523-0134 FAX: 570-523-0175

TITLE: ELECTRICAL SCHEMATIC
ACTUATOR KIT, DISCHARGE, TOMATO

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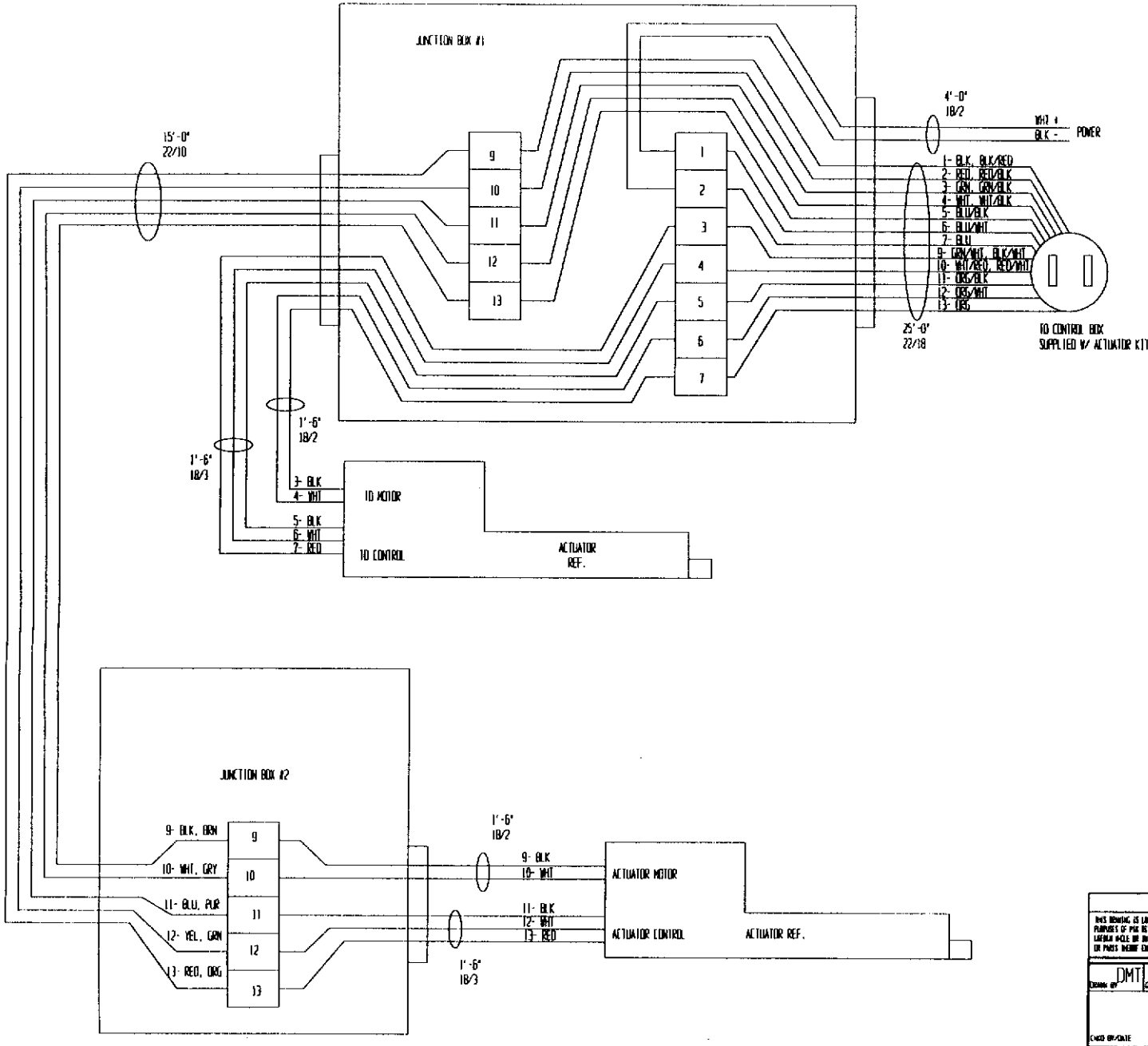
PIK RITE

PIK RITE INC.
101 FAIRFIELD RD. LEWISBURG PA 17837
PHONE: 570-523-8174 FAX: 570-523 8175

TITLE: REMOTE ACTIVATED FLOW CONTROL. MOST MULTI STACKS

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PIK RITE, INC.
101 FAIRFIELD RD. LEITERSBURG PA 17627
PHONE: 570-523-0174 FAX: 570-523-0175

TITLE: ELECTRICAL SCHEMATIC
ACTUATOR KIT, HEADER & PRE-SORT TABLE
TOMATO HARVERSTER

DRAWING NO.: ELE-0010 | LAYOUT: A

# KIT-0066 Remote Activated Flow Cntrl, 1, Most Multi Stacks

6/24/99

| Ref | Part No. | Description | Parts - Asmbly | Will Fit SN | Remarks |
|---|---|---|---|---|---|
| 1 | ACT-042 | Actuator | 1 | | |
| 2 | MOU-ACT1 | Mount, Actuator, Most Multi Stacks, Flow Controls | 1 | | |
| 3 | BL-5-300-TS | 5/16 x 3" Heat Treated Threaded Swing Bolt | 1 | | |
| 101 | BL-4-LN | 1/4-20 HEX LN NE ZC | 4 | | |
| 102 | BL-4-N | 1/4-20 HEX FIN NUTS ZC | 2 | | |
| 103 | BL-4-FW | 1/4 USS FW ZC | 11 | | |
| 104 | BL-4-250-H | 1/4-20 X 2 1/2 HEX CAP G5 ZC | 2 | | |
| 105 | BL-4-175-HFT | 1/4-20 X 1-3/4 HEX CAP G5 ZC, Fully Threaded | 1 | | |
| 106 | BL-4-200-HFT | 1/4-20 X 2 HEX CAP G5 ZC, Fully Threaded | 1 | | |