

REMOTE LINK
OWNERS MANUAL
0995198_C

WARRANTY AND REGISTRATION VALMONT REMOTE LINK

Valmont warrants the Valmont **REMOTE LINK** against defects in material or workmanship for a period of two (2) years. This warranty shall begin at the date of purchase.

This two (2) year warranty is offered to the original purchaser and is not transferable.

The warranty does not apply in the case of:

- 1) loss or damage to the equipment due to abuse, mishandling, accident or failure to follow operating instructions;
- 2) if the equipment has been serviced or modified by other than an authorized Valley Dealer.

LIMITATIONS AND DISCLAIMERS

THE WARRANTIES GIVEN HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. IT IS AGREED THAT THE BUYER'S SOLE REMEDY SHALL BE LIMITED TO REPAIR OR EXCHANGE (AT VALMONT'S OPTION) OF DEFECTIVE PARTS AS SPECIFIED IN THE VALMONT LIMITED WARRANTY SECTION OF THIS CONTRACT.

IT IS AGREED THAT VALMONT AND SELLER ASSUME NO LIABILITY FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING CROP LOSS DAMAGES OR ANY WARRANTIES ARISING THEREFROM AND FOR SPECIAL OR GENERAL DAMAGES ARISING FROM ANY ACTS OF NEGLIGENCE OF VALMONT OR SELLER. NO WARRANTIES, EXPRESSED OR IMPLIED, OF FITNESS OR MERCHANTABILITY ARE MADE OR ARISE WITH RESPECT TO USED EQUIPMENT OR EQUIPMENT MANUFACTURED BY OTHERS. NO CLAIM BY BUYER OF ANY KIND SHALL BE GREATER IN AMOUNT THAN THE NET PURCHASE PRICE OF THE EQUIPMENT.

This device complies with the requirements in part of the FCC Rules for a "Class A" Computing Device. Operation is subject to the following two conditions: 1) this device may not cause harmful interference; 2) this device must accept any interference received, including interference that may cause undesired operation.

Any action concerning warranties must be commenced within ONE (1) YEAR after the cause of action accrues, and all actions shall be barred after such time.

To the extent that any of the foregoing provisions are contrary to a particular state law, then such provisions shall not be applicable to this agreement.

To the extent not inconsistent with the terms of this Warranty, it is agreed the validity, construction, interpretation and effect of these warranties shall be governed by the laws and the Uniform Commercial Code of the State of Nebraska. Any and all actions by or against Valmont in regard to or arising out of the terms and conditions hereof shall be instituted and litigated in the Courts in Douglas County, Nebraska, and in no other. In accordance herewith, the parties hereto submit to the jurisdiction of and do hereby enter their voluntary appearance to the Courts in Douglas County, Nebraska.

This Warranty Statement constitutes the entire agreement between the parties relative hereto and neither party shall be bound by any agreement, statement, or representation not incorporated herein. Buyer acknowledges that there are no verbal agreements or warranties collateral to or affecting this Warranty.

VALLEY REMOTE LINK WARRANTY REGISTRATION

Prior to any warranty settlements this form must be completed and received at Valmont Industries, Inc.

_____ Owner Name (Please Print)			
_____ Address			
_____ City	_____ State	_____ Zip	
_____ Phone No.			
_____ Owner Signature		_____ Date	
_____ Operator Name if Other Than Owner			
_____ Address			
_____ City	_____ State	_____ Zip	_____ Phone No.

_____ Dealer Name / (Dealer #)	
_____ Model #	_____ Serial #
_____ REMOTE LINK Serial #	

For warranty service contact...

Valmont Industries, Inc.
West Highway 275
Valley, NE 68064
(402) 359-2201

In Canada...

Oliver Industrial Supply, Ltd.
236-36 Street North
Lethbridge, Alberta T1J-4B2
(403) 327-1571

Valmont Industries, Inc.
West Highway 275
Valley, NE 68064

FEDERAL COMMUNICATIONS COMMISSION (FCC) REGULATIONS

You must comply with all Federal Communications Commission (FCC) regulations.

- 1) The FCC registration number and ringer equivalence number of this device must be reported to the telephone company, if so requested. The FCC Registration Number and the Ringer Equivalence Number are found in the label attached to this device.
- 2) The sum of Ringer Equivalence numbers for all devices connected to a single telephone line should not exceed 5 for reliable operation.
- 3) This device must not be installed on coin-operated telephone lines or party lines.
- 4) This device complies with the requirements in Part 15 of the FCC Rules for a "Class A" Digital Device. Operation is subject to the following conditions:
 - A. This device may not cause harmful interference.
 - B. This device must accept any interference received, including interference that may cause undesired operation.

* Warranty repair work on this device must be done by Valmont Irrigation or a Valmont Irrigation Authorized Dealer.

INDUSTRY CANADA REGISTRATION

The Industry Canada label identifies certified equipment. The certificate means that the equipment meets certain telecommunications network protective, operational and safety requirements. Industry Canada does not guarantee the equipment will operate to a user's satisfaction.

Before installing this equipment, make sure you are permitted to connect it to the facilities of the local telecommunications company. You must also install the equipment using an acceptable method of connection. In some cases, you may also extend the company's inside wiring for single line individual service by means of a certified connector assembly (telephone extension cord). You should be aware, however, that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by a user to this equipment, or equipment malfunctions, may give the telephone communications company cause to request the user to disconnect the equipment.

For your own protection, make sure that the electrical ground connections to the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Do not attempt to make electrical ground connections yourself; contact the appropriate electrical inspection authority or electrician.

The model number and load number are found on the label attached to the circuit card.

The load number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to the telephone loop used by the device, to prevent overloading. The termination of a loop may consist of any combination of devices, subject to the requirement that the total of the load numbers of all the devices not exceed 100.

CANADIAN COMPLIANCE NOTICE

This digital apparatus does not exceed the Class A limits for radio noise emissions for digital apparatus as set out in the Radio Interference Regulations of Industry Canada.

AVIS CANADIEN

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par l'Industrie Canada.

RADIO COMMUNICATIONS

Radios used in conjunction with the **REMOTE LINK** operate on frequency modulation (FM) communications frequencies.

The radio frequencies are VHF, Band Lengths: 30 MHz to 300 MHz, or UHF, Band Lengths 300 MHz to 3,000 MHz.

Radio communications are subject to the rules and regulations and licensing requirements of the governing bodies in which they operate. The governmental body may require the radio operator to obtain a license. Information concerning applying for an FCC license can be obtained by writing the governmental agencies below, or from your local Valley Dealer.

Federal Communications Commission
1270 Fairfield Road
Gettysburg, PA 17325
Telephone 717-337-1212 or 800-322-1117

Industry Canada
1241 Clyde Ave.
Ottawa, Ontario K2C 1Y3
Canada
Telephone 613-952-3200

After the application is on file with the FCC, the license, if granted, must go to the Frequency Coordination for Business Band Radios. The address for this agency is listed below:

Personal Communication Industry Assoc.
Frequency Coordination Dept.
Suite 200
1501 Duke St.
Alexandria, VA 22314
Telephone 800-759-0300

There will be a filing fee for the Frequency Coordination. Please contact the appropriate agency for fee charges.

**INFORMATION NECESSARY TO APPLY FOR FCC LICENSE
FOR VALMONT REMOTE LINK**

Name of Applicant _____
Mailing Address _____

Phone Number _____ - _____ - _____

- 1) Number of pivots being controlled: _____
- 2) The radius in miles of pivot operations: _____
- 3) Name to appear on license: _____
- 4) Description of the base station location. For example: 7 miles North of Fremont, NE on highway 77. Directions need to be given so somebody could find the base location especially if there is not street address.

- 5) Indicate the type of structure the antenna will be mounted on for the base station:

_____ Building
(if a building give height in feet) _____
(if tower on building give height of tower and height of building)
building _____ tower _____

- 6) Will the antenna at the base be mounted on a structure with an existing antenna?
_____ YES _____ NO If yes, give the call sign and radio service of existing licensee:

_____/_____

- 7) Give the name of the nearest aircraft landing area and the distance and direction to the nearest runway. For example: Fremont Municipal Airport, 2 miles SW from the base location.

Name of aircraft landing area: _____
Distance and direction: _____

- 8) State and county where the base will be located:

State: _____
County: _____

***** A county map must be included which identifies the location of the base station. This map will be used to determine the latitude and longitude of the base site from another map.**

CELLULAR COMMUNICATIONS

Cellular telephones used in conjunction with the Valley **REMOTE LINK** must be RJ11 Landline Connector Compatible.

The RJ11 means that it will be compatible with, or acting like, a telephone wall jack. You will be capable of connecting an answering machine or a facsimile at your home.

Your cellular phone must be able to sense DTMF Tone Dialing or provide a ring equivalent (85V RMS) when a call is received.

A cellular phone (RJ11 Compatible) can be found in two ways:

- 1) With the RJ11 Interconnect built into the transceiver, called a "Brick";
- 2) With the RJ11 Interconnects as a separate part of the cell phone.

Please contact your cellular telephone company to find out if your cellular telephone is RJ11 compatible.

REMOTE LINK OPERATING GUIDE

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Section 1 - General Information

REMOTE LINK is a technologically advanced irrigation management system. **REMOTE LINK** provides critical information about your pivot and allows you to make necessary adjustments from any remote location that is accessible to telephone or radio communication. There are some basic differences between the operating of the **REMOTE LINK** system with a telephone and with a radio, so be certain to use the instructions that apply to your particular application.

With **REMOTE LINK** you can turn your pivot on or off and control auxiliary systems. Additionally, with CAMs, you change directions and speed of the irrigation system and determine the precise position of the system. If a problem develops, **REMOTE LINK** can even call you and tell you what's wrong.

And, **REMOTE LINK** is easy to operate. Just follow the simple instructions detailed in this operating guide.

Valley REMOTE LINK Quick Reference Guide

MENU 1	1	To Check Alarm
		1 To Enable 0 To Disable 2 To Acknowledge
	2	To Check Status
	3	To Start Or Stop
		1 To Turn On 0 To Turn Off
	4	To Turn Water On/Off
		1 To Turn On 0 To Turn Off
	5	To Set Application Rate
		Enter Application Rate: Use * for decimal point
	6	To Set Percent Timer
	Set percent: Must terminate with #	
7	To Change Direction	
	1 For Reverse 0 For Forward	
8	To Set Auxiliary On/Off	
	1 For On 0 For Off	
9	To Go To Menu #2	
0	To Exit System	

MENU 2	2	To Check Additional Status
	3	To Clear Counter
		0 To Clear 1 To Retain Count
	4	To Set Password
		Enter Password — Must Terminate With #
	5	To Set Unit ID
		Enter Unit ID — Must Terminate With #
	6	To Set Phone #1
		Enter Number — Must Terminate With #
	7	To Set Phone #2
	Enter Number — Must Terminate With #	
9	To Go To Menu #1	
0	To Exit System	

Section 2 - Instructions For Operating The Remote Link By Telephone

Introduction

The **REMOTE LINK** can be effectively operated using either a standard or cellular telephone, but the telephone unit must be equipped with touch tone keypad.

**Only telephones operating in a touch tone mode
can be used to operate the REMOTE LINK**

Contacting the REMOTE LINK By Telephone

1. Using a standard or cellular telephone (in the touch tone mode) dial the telephone number of the **REMOTE LINK**.
2. Wait for **REMOTE LINK** to answer and identify its location.

Example Upon receiving a phone call, the **REMOTE LINK** will respond:
"This is location "XXX."

Entering Your Password

1. After identifying the **REMOTE LINK** location, **REMOTE LINK** will ask you to enter the password.
2. Enter password (up to five digits) slowly in order for the **REMOTE LINK** to identify the signal.
3. Press the **#** key on the telephone number pad to end the password entry. The **#** key is a signal that the password has been entered. The **REMOTE LINK** verifies the password automatically. You now have access to the **REMOTE LINK**.

Example When you hear the **REMOTE LINK** prompt, "**Please enter your password,**" press the appropriate buttons on your touch tone phone that correspond to your password number. Then, immediately press the **#** key on your telephone. You now have access to **REMOTE LINK**. If your password is 123, using your telephone touch pad **1 2 3 #**. If the system does not respond, re-enter your password followed by the **#** signal.

Immediately after your password is verified, **REMOTE LINK** will inform you as to the status of the "**Alarm,**" and then provide instructions which give you the option to listen to the **Menu 1 Options**, or to directly enter a command to the system.

Example After verifying your password, **REMOTE LINK** will respond:
"The Alarm is on" (or, "off," as the case may be). "**Enter Command Number or press pound for menu.**"

The prompt: “**Enter command number or press pound for menu**” is given after the proper password is entered, and is repeated each time a status check or alteration of the pivot is completed. Upon hearing the prompt, a command number from the **Menu 1 Options** may be pressed, or, the **#** key may be pressed, which will prompt **REMOTE LINK** to present the **Menu 1 Options**. Press **0** to exit.

Menu Options

The **REMOTE LINK** contains two menus, **Menu 1** and **Menu 2** as shown below.

Menu 1	
To Check Alarm Press	1
To Check Status Press	2
To Start or Stop Press	3
To Turn Water On/Off Press	4
To Set Application Press	5
To Set Percent Timer Press	6
To Change Direction Press	7
To Set Auxiliary Press	8
To Go To Menu 2 Press	9
To Exit System Press	0

Menu 2	
(Not Used At This Time)	X
Additional Status Press	2
To Clear Counter Press	3
To Set Password Press	4
To Set Unit ID Press	5
To Set Phone #1 Press	6
To Set Phone #2 Press	7
(Not Used At This Time)	X
To Go To Menu 1 Press	9
To Exit System Press	0

After entering your password, **REMOTE LINK** will prompt:
 “**Enter Command Number or press pound for menu**”

Entering the **#** signal notifies the **REMOTE LINK** Link to list the **Menu 1 Options** as shown above at left. You may listen to all of the options or enter a **Command Number**. At any time you may press the **#** key to cancel a command (except for phone number and application rate, where you must press the **#** key twice).

The Alarm Options

1. Either while **REMOTE LINK** is presenting the **Menu 1 Options**, or after all of the **Menu 1 Options** have been presented, pressing **1** will allow access to the Alarm Control options. Upon entering **1** the following prompt is given:
 “**Alarm is on (or, off). Press “1” to enable, “0” to disable, or “2” to acknowledge alarm.**”

“**Alarm is On**” means the automatic alarm announcement is enabled and one or more unacknowledged alarm conditions are active.

“**Alarm is Off**” means the automatic alarm announcement is “**Enabled**” and there are no active alarm conditions, or all active alarms have been acknowledged.

“**Alarm is Disabled**” means that the automatic alarm announcement is “**Disabled.**” Alarm conditions may or may not be active.

Pressing **0** will “**Disable**” Automatic Alarm Announcement.

Pressing **1** will “**Enable**” Automatic Alarm Announcement.

Pressing **2** will “**Acknowledge**” any current alarm conditions and cause the **REMOTE LINK** to stop making automatic alarm announcements unless a new alarm condition occurs, or a condition goes away and returns.

Example If the **Alarm** is “**Enabled**” and you wish to “**Disable**” the **Alarm**, upon hearing the prompt, press **0**. This will “**Disable**” the automatic alarm announcement. **REMOTE LINK** will then report:
“**The Alarm is disabled.**”

Example If the **Alarm** is “**Disabled**” and you wish to “**Enable**” the **Alarm**, press **1** to “**Enable**” the automatic alarm announcement. After entering **1** **REMOTE LINK** will report:
“**The Alarm is “On” (or “Off”).**”

Example If you have an automatic alarm announcement and wish to “**Acknowledge**” the current alarm condition, press **2**. **REMOTE LINK** will stop announcing the alarm condition, unless a new alarm occurs. **REMOTE LINK** will report:
“**The Alarm is “Off.”**”

After checking the status of the **Alarm**, or “**Acknowledging**,” “**Disabling**,” or “**Enabling**” **Alarm**, the prompt will be given:

“**Enter Command Number or press pound for menu**”

You may enter a **Command Number**, press **#** to return to the **Menu**, or press **0** to exit.

Entering a second **0** will prompt **REMOTE LINK** to respond:

“**Good-bye.**”

Menu #1 — Status

When in the **Menu 1 Options**, press **2** to access the current **Status** of the pivot. **REMOTE LINK** will scan the status of the pivot and respond with the current status:

“**Alarm is on/off/disabled.**”

“**Status is on/off.**”

“**Water is on/off.**”

“**Application is xx.xx.**” (xx.xx is the current “**Application Rate**” setting)

“**Percent is xxx.**” (xxx is the current **Percent Rate** setting. A value between 0 - 100%)

“**Direction is forward/reverse.**”

“**Position is xxx.**” (indicates current pivot position)

“**Pressure is xxx.**” (indicates current water pressure)

“**Auxiliary is on/off.**”

After reporting the current status of the pivot, the prompt will be given:

“**Enter Command Number or press pound for menu**”

You may enter a **Command Number**, press **#** to return to the Main Menu, or press **0** to exit.

Entering a second **0** will prompt **REMOTE LINK** to respond:

“**Good-bye.**”

Menu #1 — To Change The Status

When in the **Menu 1 Options**, press **3** to **Change the Status**. **REMOTE LINK** will scan the current status and respond:

“Status is on/off. Press one to start or zero to stop.”

If the status is **“OFF,”** and you wish to turn it **“ON,”** press **1** to turn the pivot **“ON.”**
If the status is **“ON,”** and you wish to turn it **“OFF,”** press **0** to turn the pivot **“OFF.”**

After the **Status** has been changed, **REMOTE LINK** will report the current status, and then prompt:

“Enter Command Number or press pound for menu”

NOTE: **REMOTE LINK** will wait to receive a command, but will “time out” after approximately 30 seconds if there is no command given. Therefore, if you are in a portion of the menu where you do not wish to take any action by entering commands, simply wait until the “time out” and **REMOTE LINK** returns to the **Main Menu**. You will then hear the prompt:

“Enter Command Number or press pound for menu.”

Menu #1 — Water

When in **Menu 1 Options**, press **4** to turn the **Water “ON” or “OFF.”** **REMOTE LINK** will determine the status of the **Water** and respond:

“Water is on/off. Press one for water on or zero for water off.”

If the water is **“OFF,”** and you wish to turn the water **“ON,”** press **1** to turn the water **“ON.”**
If the water is **“ON,”** and you wish to turn the water **“OFF,”** press **0** to turn the water **“OFF.”**
After the status of the **Water** has been changed, **REMOTE LINK** will prompt:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — Application

When in **Menu 1 Options**, press **5** to change the **Application Rate**. **REMOTE LINK** will respond:

**“Application is xx.xx. Enter application followed by the pound sign.
Use star key for decimal location.”**

Example To set an **Application Rate** of 1.25 press **1 * 2 5 #**. Pressing the ***** key twice will cancel the command.

REMOTE LINK will respond with the current **Application Rate** and then prompt:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — Percent

When in **Menu 1 Options**, press **6** to change the **Percent**. **REMOTE LINK** will respond:
 “Percent is xxx. Enter percent setting followed by the pound sign.”

Example To set an **Percent** setting of 100% press **100#**. To enter a **Percent** setting of 50% press **050#**.

REMOTE LINK will respond with the current **Percent** setting and then prompt:
 “Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu # 1 — Direction

When in **Menu 1 Options**, press **7** to change the **Direction**. **REMOTE LINK** will respond:
 “Direction is forward/reverse. Press one for reverse, zero for forward.”

Example To set the **Direction** “forward” press **0**. To set “reverse” press **1**.

REMOTE LINK will respond with the current **Direction** and then prompt:
 “Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — Auxiliary

When in **Menu 1 Options**, press **8** to change the **Auxiliary**. **REMOTE LINK** will respond:
 “Auxiliary is ON/OFF. Press one for “ON,” zero for “OFF.”

Example To set the **Auxiliary** “ON” press **1**. To set the **Auxiliary** “OFF” press **0**.

REMOTE LINK will respond with the current **Auxiliary** status and then prompt:
 “Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — To Access Menu #2

Menu #2 contains additional status information and access to phone number settings and the password. To access **Menu #2** press **9**. **REMOTE LINK** will respond:
 “Enter Command Number or press zero to exit.”

Menu #2

To hear the list of options available through **Menu 2**, press **#**. **REMOTE LINK** will respond:

“For additional status press 2.”
 “To clear counter press 3.”
 “To set password press 4.”
 “To set unit ID press 5.”
 “To set phone number 1 press 6.”
 “To set phone number 2 press 7.”
 “For other commands press 9”
 “To exit press 0.”

Menu #2 — Additional Status

To gain access to **Additional Status** press **2**. **REMOTE LINK** will respond:

“Analog value is x.xxxx. Pulse rate is xxx. Pulse count is xxxxx.”
 “Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Clear Counter

To access the **Clear Counter** function press **3**. **REMOTE LINK** will respond:

“Counter is x. Press zero to clear. Press one to retain.”

To reset **Counter** press **0**. To retain current count press **1**. **REMOTE LINK** will respond with the current status of the **Counter** and then prompt:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Password

To access the **Password** function press **4**. **REMOTE LINK** will respond:

“The password is 000 (or whatever the current password is). Enter password followed by pound sign.”

To enter a new **Password** press the appropriate keys followed by **#**. **REMOTE LINK** will repeat the password that is entered and will then prompt:

“Enter Command Number or press pound for menu”

NOTE: The **Password** may be from 1 to 5 digits long. Only digits “0” through “9” are allowed. Entry of a new password must be terminated by pressing the **#** key and can be cancelled by pressing *****. **CAUTION:** Do not forget the password or you will not be able to access **REMOTE LINK** and give any commands.

Example To set the password 1234 enter **1234#**. **REMOTE LINK** will repeat the password after it has been entered, and then prompt:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Unit ID

To access the **Unit ID** function press **5**. **REMOTE LINK** will respond:
“Unit ID is 000 (or whatever the current Unit ID is). Enter Unit ID followed by pound sign.”

Each **Unit** in a system should be assigned a unique Unit ID. The Unit ID is three (3) digits long, but only digits “0” through “9” can be used. To enter a new **UNIT ID** press the appropriate keys followed by **#**. **REMOTE LINK** will repeat the **Unit ID** that is entered and will then prompt:
“Enter Command Number or press pound for menu”

Example To set a **Unit ID of 123** enter **123#**. **REMOTE LINK** will repeat the password after it has been entered, and then prompt:
“Enter command number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Set Phone 1

To access the **Set Phone 1** function press **6**. **REMOTE LINK** will respond:
“Phone 1 is 0000000 (or whatever the current Phone 1 number is). Enter Phone 1 number followed by pound sign.”

This is the first of two telephone numbers which will be called in case of a **REMOTE LINK** alarm activation. A telephone number may be 40 digits long. The phone number can contain the digits “0” through “9.” When entering a phone number, special characters may be used only as indicated below:

- “*” + “0” = insert a 2 second pause in the phone number
- “*” + “1” = insert a “*” in the phone number
- “*” + “2” = insert a “#” in the phone number
- “*” + “*” = cancel entry, retain current phone number

Entering a phone number must terminate by entering the **#** key. To blank out a telephone number press the **#** key by itself when **REMOTE LINK** prompts for entering a phone number. If no telephone numbers are entered into the system, **REMOTE LINK** can not make any calls in an Alarm situation.

Example To enter the number 123-4567, press **1234567#**. **REMOTE LINK** will repeat the **Phone 1** number that is entered and will then prompt:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Set Phone 2

To access the **Set Phone 2** function press **7**. To add or change a telephone number in **Set Phone 2**, follow the same procedure as above for **Set Phone 1**. When completed, **REMOTE LINK** will prompt:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **#** to exit.

Menu #2 — Return To Menu 1

To access the **Menu 1**, press **9**. Remote Link will then prompt from the **Menu 1**:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to listen to **Menu 1 Options**, or press **0** to exit.

In The Event Of An Alarm

When an **Alarm** Condition occurs for at least 1 minute, the **REMOTE LINK** will activate the Automatic Alarm Condition. When utilizing telephone communications, telephone numbers must be programmed, by the operator, into **REMOTE LINK**, in order for a call to be made. **REMOTE LINK** will place a phone call to the number programmed as **Phone #1** and make an Alarm Announcement. If the Alarm Condition is not corrected, or not "**Acknowledged,**" **REMOTE LINK** will wait for five minutes and then put through a phone call to the number programmed as **Phone #2**. **REMOTE LINK** will continue this sequence for one hour. After one hour, **REMOTE LINK** will discontinue calling.

Depending upon the control panel interfaced with **REMOTE LINK**, and the way in which **REMOTE LINK** is configured at installation, **REMOTE LINK** will deliver a voice message. The following are some examples of alarm condition messages:

"Pressure Alarm at location XXX" (where XXX is the **Unit ID**).

"Safety Alarm at location XXX."

"Voltage Alarm at location XXX."

To Acknowledge An Alarm

To acknowledge an alarm call, enter your password using the touchtone pad on your telephone (be sure to terminate the password with the **#** sign). **REMOTE LINK** will then provide access to the Menu 1 Options with the prompt:

"Enter Command Number or press pound for menu."

Upon hearing the **Menu 1 Options** prompt, press **1** on your touchtone key pad. Entering **1** accesses the Alarm Options Menu. **REMOTE LINK** will then prompt:

"The Alarm is On. Press one to enable, zero to disable, or two to acknowledge alarm."

Press **2** on your telephone key pad. **REMOTE LINK** will then repeat the same prompt as shown above.

Enter a new **Command Number**, press **#** to return to **Menu 1 Options**, or press **0** to exit.

Section 3 - Instructions For Operating The Remote Link By Radio

Introduction

The **REMOTE LINK** can be effectively operated using a business band radio equipped with an attached DTMF (dual-tone- multi-frequency) key pad.

**Radio systems to be used to communicate with
REMOTE LINK must have a DTMF key pad.**

Radio Licensing

Radio systems used with **REMOTE LINK** operate on the FM (Frequency Modulation) communications frequencies and they, and their operator, must be licensed in the United States and Canada. To apply for a license, contact the agencies indicated below:

In The United States:

Federal Communications Commission
Business Radio Service
1270 Fairfield Road
Gettysburg, PA 17325
Telephone: (717) 337-1212 or (800) 322-1117

In Canada:

Industry Canada
1241 Clyde Avenue
Ottawa, Ontario K2C-1Y3
Telephone (613) 952-3200

Contacting the REMOTE LINK System By Radio

1. To contact your **REMOTE LINK** it is only necessary that the installed radio system is ready to receive a radio transmission.
2. Key the transmitter on your radio system.

Entering Unit ID And Password

1. With the transmitter keyed, using the touch-tone key pad attached to the radio transmitter, transmit the **Unit ID** and **Password**, followed by the **#** sign. When **REMOTE LINK** identifies the signal, it will transmit the response:

“The Alarm is ON (or OFF). Enter command number or press pound for menu.”

Example If the **Unit ID** is **123**, and the **Password** is **456**, press the following keys on the touch-tone key pad: **1 2 3 4 5 6 #** . Release the Transmit Key and wait for **REMOTE LINK** to respond. If **REMOTE LINK** does not respond, key your transmitter and retransmit your **Unit ID** and **Password**, and then wait in the standy-by mode for the **REMOTE LINK** to respond.

Immediately after your password is verified, **REMOTE LINK** will inform you as to the status of the **“Alarm,”** and then provide instructions which give you the option to listen to the **Menu 1 Options**, or to enter a **Command Number** to **REMOTE LINK**.

Example After verifying your password, **REMOTE LINK** will respond:
“The Alarm is on” (or, **“off,”** as the case may be). **“Enter command number or press pound for menu.”**

The prompt: **“Enter Command Number or press pound for menu”** is given after the **Unit ID** and **Password** are entered. This prompt is repeated each time a status check or change to the system is completed. Upon hearing the prompt, a command number from the **Menu 1 Options** may be transmitted, or the **#** key may be transmitted, which will prompt the system to present the **Menu 1 Options**. Transmit **0** to exit.

Menu Options

The **REMOTE LINK** system contains two menus, **Menu 1** and **Menu 2** as shown below.

Menu 1	
To Check Alarm Press	①
To Check Status Press	②
To Start or Stop Press	③
To Turn Water On/Off Press	④
To Set Application Press	⑤
To Set Percent Timer Press	⑥
To Change Direction Press	⑦
To Set Auxiliary Press	⑧
To Go To Menu 2 Press	⑨
To Exit System Press	⑩

Menu 2	
(Not Used At This Time)	X
Additional Status Press	②
To Clear Counter Press	③
To Set Password Press	④
To Set Unit ID Press	⑤
To Set Phone #1 Press	⑥
To Set Phone #2 Press	⑦
(Not Used At This Time)	X
To Go To Menu 1 Press	⑨
To Exit System Press	⑩

After transmitting your **Unit ID** and **Password**, **REMOTE LINK** will prompt:
 “Enter Command Number or press pound for menu”

Transmitting the # signal notifies the **REMOTE LINK** Link to list the **Menu 1 Options** as shown above at left. **You must listen to all of the options and wait for the transmission to end before transmitting a command as the radio signal cannot be interrupted.** At any time you may press the # key to cancel a command (except for phone number and application rate, where you must press the # key twice).

Menu #1 — The Alarm Options

- To access the **Alarm Control options**, transmit ①. **REMOTE LINK** will prompt:
 “Alarm is on (or, off). Press “1” to enable, “0” to disable, or “2” to acknowledge alarm.”

“**Alarm is On**” means the automatic alarm announcement is enabled and one or more unacknowledged alarm conditions are active.

“**Alarm is Off**” means the automatic alarm announcement is “**Enabled**” and there are no active alarm conditions, or all active alarms have been acknowledged.

“**Alarm is Disabled**” means that the automatic alarm announcement is “**Disabled.**” Alarm conditions may or may not be active.

Pressing ⑩ will “**Disable**” Automatic Alarm Announcement.

Pressing ① will “**Enable**” Automatic Alarm Announcement.

Pressing ② will “**Acknowledge**” any current alarm conditions and cause the **REMOTE LINK** to stop making automatic alarm announcements unless a new alarm condition occurs, or a condition goes away and returns.

Example If the **Alarm** is “**Enabled**” and you wish to “**Disable**” the **Alarm**, upon hearing the prompt, press **0** . This will “**Disable**” the automatic alarm announcement. **REMOTE LINK** will then report:
 “**The Alarm is disabled.**”

Example If the **Alarm** is “**Disabled**” and you wish to “**Enable**” the **Alarm**, press **1** to “**Enable**” the automatic alarm announcement. After entering **1** **REMOTE LINK** will report:
 “**The Alarm is “On” (or “Off”).**”

Example If you have an automatic alarm announcement and wish to “**Acknowledge**” the current alarm condition, press **2** . **REMOTE LINK** will stop announcing the alarm condition, unless a new alarm occurs. **REMOTE LINK** will report:
 “**The Alarm is “Off.”**”

After checking the status of the **Alarm**, or “**Acknowledging**,” “**Disabling**,” or “**Enabling**” **Alarm**, the prompt will be given:

“**Enter Command Number or press pound for menu**”

You may enter a **Command Number**, press **#** to return to the **Menu**, or press **0** to exit. Entering a second **0** will prompt **REMOTE LINK** to respond:
 “**Good-bye.**”

Menu #1 — Status

When in the **Menu 1 Options**, press **0** to access the current **Status** of the pivot. **REMOTE LINK** will scan the status of the pivot and respond with the current status:

“**Alarm is on/off/disabled.**”

“**Status is on/off.**”

“**Water is on/off.**”

“**Application is xx.xx.**” (xx.xx is the current “**Application Rate**” setting)

“**Percent is xxx.**” (xxx is the current **Percent Rate** setting. A value between 0 - 100%)

“**Direction is forward/reverse.**”

“**Position is xxx.**” (indicates current pivot position)

“**Pressure is xxx.**” (indicates current water pressure)

“**Auxiliary is on/off.**”

After reporting the current status of the pivot, the prompt will be given:

“**Enter Command Number or press pound for menu**”

You may enter a number **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit the system. Entering a second **0** will prompt **REMOTE LINK** to respond:
 “**Good-bye.**”

Menu #1 — To Change The Status

When in the **Menu 1 Options**, press **3** to **Change the Status**. **REMOTE LINK** will scan the current status and respond:

“Status is on/off. Press one to start or zero to stop.”

If the status is **“OFF,”** and you wish to turn it **“ON,”** press **1** to turn the pivot **“ON.”**
If the status is **“ON,”** and you wish to turn it **“OFF,”** press **0** to turn the pivot **“OFF.”**

After the **Status** has been changed, **REMOTE LINK** will report the current status, and then prompt:

“Enter Command Number or press pound for menu”

NOTE: REMOTE LINK will wait to receive a command, but will “time out” after approximately 30 seconds if there is no command given. Therefore, if you are in a portion of the menu where you do not wish to take any action by entering commands, simply wait until the “time out” and the system returns to the **Main Menu**. You will then hear the prompt:

“ Enter command number or press pound for menu.”

Menu #1 — Water

When in **Menu 1 Options**, press **4** to turn the **Water “ON”** or **“OFF.”** **REMOTE LINK** will determine the status of the **Water** and respond:

“Water is on/off. Press one for water on or zero for water off.”

If the water is **“OFF,”** and you wish to turn the water **“ON,”** press **1** to turn the water **“ON.”**
If the water is **“ON,”** and you wish to turn the water **“OFF,”** press **0** to turn the water **“OFF.”**
After the status of the **Water** has been changed, **REMOTE LINK** will prompt:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — Application

When in **Menu 1 Options**, press **5** to change the **Application Rate**. **REMOTE LINK** will respond:

**“Application is xx.xx. Enter application followed by the pound sign.
Use star key for decimal location.”**

Example To set an **Application Rate** of 1.25 press **1 * 2 5 #**. Pressing the ***** key twice will cancel the command.

REMOTE LINK will respond with the current **Application Rate** and then prompt:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — Percent

When in **Menu 1 Options**, press **6** to change the **Percent**. **REMOTE LINK** will respond:
“Percent is xxx. Enter percent setting followed by the pound sign.”

Example To set an **Percent** setting of 100% press **100#**. To enter a **Percent** setting of 50% press **050#**.

REMOTE LINK will respond with the current **Percent** setting and them prompt:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu # 1 — Direction

When in **Menu 1 Options**, press **7** to change the **Direction**. **REMOTE LINK** will respond:
“Direction is forward/reverse. Press one for reverse, zero for forward.”

Example To set the **Direction** “forward” press **0**. To set “reverse” press **1**.

REMOTE LINK will respond with the current **Direction** and them prompt:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — Auxiliary

When in **Menu 1 Options**, press **8** to change the **Auxiliary**. **REMOTE LINK** will respond:
“Auxiliary is ON/OFF. Press one for “ON,” zero for “OFF.”

Example To set the **Auxiliary** “ON” press **1**. To set the **Auxiliary** “OFF” press **0**.

REMOTE LINK will respond with the current **Auxiliary** status and them prompt:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to the **Main Menu**, or press **0** to exit.

Menu #1 — To Access Menu #2

Menu #2 contains additional status information and access to the password. To access **Menu #2** press **9**. **REMOTE LINK** will respond:

“Enter Command Number or press zero to exit.”

Menu #2

To hear the list of options available through **Menu 2**, press **#**. **REMOTE LINK** will respond:

“For additional status press 2.”
 “To clear counter press 3.”
 “To set password press 4.”
 “To set unit ID press 5.”
 “To set phone number 1 press 6.”
 “To set phone number 2 press 7.”
 “For other commands press 9”
 “To exit press 0.”

Menu #2 — Additional Status

To gain access to **Additional Status** press **2**. **REMOTE LINK** will respond:

“Analog value is x.xxxx. Pulse rate is xxx. Pulse count is xxxxx.”
 “Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Clear Counter

To access the **Clear Counter** function press **3**. **REMOTE LINK** will respond:

“Counter is x. Press zero to clear. Press one to retain.”

To reset **Counter** press **0**. To retain current count press **1**. **REMOTE LINK** will respond with the current status of the **Counter** and then prompt:

“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Password

To access the **Password** function press **4**. **REMOTE LINK** will respond:

“The password is 000 (or whatever the current password is). Enter password followed by pound sign.”

To enter a new **Password** press the appropriate keys followed by **#**. **REMOTE LINK** will repeat the password that is entered and will then prompt:

“Enter Command Number or press pound for menu”

NOTE: The **Password** may be from 1 to 5 digits long. Only digits “0” through “9” are allowed. Entry of a new password must be terminated by pressing the **#** key and can be cancelled by pressing *****. **CAUTION:** Do not forget the password or you will not be able to access **REMOTE LINK** and give any commands.

Example To set the password **1234** enter **1 2 3 4 #**. **REMOTE LINK** will repeat the password after it has been entered, and then prompt:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Unit ID

To access the **Unit ID** function press **5**. **REMOTE LINK** will respond:
“Unit ID is 000 (or whatever the current Unit ID is). Enter Unit ID followed by pound sign.”

Each **Unit** in a system should be assigned a unique Unit ID. The Unit ID is three (3) digits long, but only digits “0” through “9” can be used. To enter a new **UNIT ID** press the appropriate keys followed by **#**. **REMOTE LINK** will repeat the **Unit ID** that is entered and will then prompt:
“Enter Command Number or press pound for menu”

Example To set a **Unit ID of 123** enter **1 2 3 #**. **REMOTE LINK** will repeat the password after it has been entered, and then prompt:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to return to **Menu 2**, or press **0** to exit.

Menu #2 — Return To Menu 1

To access the **Menu 1**, press **9**. Remote Link will then prompt from the **Menu 1**:
“Enter Command Number or press pound for menu”

Enter a new **Command Number**, press **#** to listen to **Menu 1 Options**, or press **0** to exit.

In The Event Of An Alarm

When the **Alarm** con occurs for at least one(1) minute, **REMOTE LINK** will activate the Automatic **Alarm Condition**. **REMOTE LINK** will transmit the Alarm Messages once every five minutes for one hour (if the condition which activated the alarm continues), or until the alarm condition is Acknowledged. After one hour, **REMOTE LINK** will discontinue transmitting the **Alarm Condition**.

Depending upon the control panel interfaced with **REMOTE LINK**, and the way in which **REMOTE LINK** is configured at installation, **REMOTE LINK** will transmit a voice message. The following are some examples of alarm condition messages:

“**Pressure Alarm at location XXX**” (where XXX is the **Unit ID**).

“**Safety Alarm at location XXX.**”

“**Voltage Alarm at location XXX.**”

To Acknowledge An Alarm

To acknowledge the alarm, wait until the alarm message transmission is completed, then transmit your Unit ID/Password as you would normally do to access **REMOTE LINK**. Upon receiving your transmission, **REMOTE LINK** will acknowledge your access and prompt:

“**Enter Command Number or press pound for menu.**”

Upon the prompt press **1** on your touchtone key pad. Entering **1** accesses the **Alarm Options Menu**. **REMOTE LINK** will then prompt:

“**The Alarm is On. Press one to enable, zero to disable, or two to acknowledge alarm.**”

Press **2** on your key pad. **REMOTE LINK** will then repeat the same prompt as shown above.

Enter a new **Command Number**, press **#** to return to **Menu 1 Options**, or press **0** to exit.

Section 4 - Troubleshooting

I can't log on: the system will not accept commands.

If you are using a radio system, make sure you transmit the Unit ID and Password together, followed immediately by the pound sign.

If you are using a telephone system, make sure you enter the Password followed immediately by the pound sign.

You are entering an incorrect Password, or Unit ID and Password, depending on which system you are using. Enter the correct Password, or Unit ID and Password.

My radio system will not accept commands.

The radio system can't receive command input while transmitting the voice messages. Wait for the voice message to stop, then log on or enter a command.

When playing the alarm message over the radio system, the unit switches from transmit to receive for five second between each repetition of the alarm message. Log on during that time when the unit is in the receive mode.

The unit does not call out when an alarm condition occurs.

Telephone numbers must be programmed in for phone #1, phone #2, or both. Otherwise, the unit can not call out. Enter correct telephone number(s).

The alarm has been disabled (turned off). Log on, and execute the **Alarm Status** command (Menu 1, Command 1), and enable (turn on) the alarm.

If the system does not have the battery backup option, it can not detect and report the loss of AC power.

When an alarm condition occurs, the unit plays the alarm message over the radio, but does not call out on the telephone.

If a radio is installed, the **REMOTE LINK** will use the radio in case of an alarm condition. If only the telephone is used, the telephone will be used to notify in case of an alarm. **REMOTE LINK** will not use both at the same time. Connect only one communication source: radio or telephone.

The REMOTE LINK doesn't seem to be working at all.

Make certain that there is power to the **REMOTE LINK**.

The LED on the power supply should be lit if AC power is present.

If the circuit board has power, the green LED on the board will be lit.

If the system has a battery backup option, the PWR IN LED on the battery charger board will be lit if the power supply is working.

The PWR OUT LED will be lit if the charger board is supplying power to the circuit board. If the PWR OUT LED stays off for several hours, the battery may need to be replaced. The battery life may be extended if not exposed to extreme temperatures.

The AC power was out for a while, but has been restored. I still can't access REMOTE LINK.

The backup battery must be charged up before it supplies power to the system. If the battery was discharged during the power outage it may take an hour or more for the system to be operational after an AC power outage.

Section 5 - Installation And Specifications

In The Event Of An Alarm

OVERVIEW

This section provides information that will assist in the installation of the **REMOTE LINK**.

Though the sequence of steps will vary with each installation it is usually best to program the **REMOTE LINK** (particularly the UNIT ID and Password) and install and adjust the radio in the workshop before installation in the field.

CAUTION: Connection of AC power and AC signal wires should be done only by qualified service personnel.

MOUNTING THE OPTIONAL ENCLOSURE

The **REMOTE LINK** enclosure options are NEMA 36 metal boxes that hold the **REMOTE LINK** circuit board and power supply, and provide room for mounting a radio or cellular phone.

The enclosure should always be mounted vertically with the door hinge to the left. Use all four mounting holes to secure the enclosure.

The bottom of the enclosure has a number of knockouts for connecting to 1/2" to 1-1/4" conduit. It is suggested that separate conduits be used for AC signals (power and relay lines) and DC signals (analog input, pulse counter, RS232 cable).

The enclosure should be grounded by connecting an earth ground wire to the grounding screw terminal block on the metal panel on the inside of the enclosure.

WIRING

Power Wiring

The **REMOTE LINK** board operates on 10.5 to 16 VDC and draws a maximum of 1A. If installing the **REMOTE LINK** without one of the enclosure options, an appropriate power supply must be acquired.

Both enclosure options contain a 30W power supply. 120 VDC power from an external source should be wired to the color coded DIN rail terminal block mounted on the metal panel inside the enclosure.

The black (hot) terminal of the block holds a replaceable 2.5A, slow blow 250V fuse which can be removed by lifting the terminal cover.

I/O Wiring

Relay inputs and outputs connections are located on connector P2 (see APPENDIX A).

The four output relays can switch up to 250VAC. Two terminals are provided on P2 for the contacts of each relay (pins 1-8). Contacts for relays 1, 2 and 4 are normally open. Relay 3 is normally closed.

The input relays must be driven by 120VAC signals. The coil of each relay is brought out to two terminals in P2 (pins 9-12).

RS232 Connection

If the **REMOTE LINK** is connected to a Select or PRO model pivot panel, an RS232 serial data cable needs to be attached to the **REMOTE LINK** at P4 and to the pivot panel. Only the transmit data, receive data and ground signals are required. See APPENDIX A for P4 pin assignments.

RADIO INSTALLATION

There is enough room on the inside of the enclosure options for the **REMOTE LINK** to mount most small radios. It may be necessary to remove the metal plane from the enclosure in order to drill holes for the radio mounting brackets.

If a hole is drilled in the top of the enclosure for the antenna, it should be well sealed to prevent infiltration of rain and dew.

Radio Power

In most cases, the radio can be powered from the same power supply used for the **REMOTE LINK** circuit board. The **REMOTE LINK** board draws less than 1A at 12VDC, and the remaining power can be used by the radio.

When using the enclosure option with battery backup, the power supplied to the **REMOTE LINK** circuit board actually comes from the battery and the 120VAC power supply is used to recharge the battery. The battery can supply much more current (up to 7.5A for short periods of time) than the power supply, so more powerful radios can be installed in this enclosure. The AC power supply can usually keep the battery charged since the radio is only drawing a high current when transmitting.

Power connections to the radio can be taken from one of two places. The radio connector (P6) on the PAC circuit board can provide a maximum of 2A at the power supply voltage. This is adequate for most handheld or telemetry radios. Larger radios should be connected in parallel with the power to the **REMOTE LINK** circuit board, or have a power supply of their own. The two enclosure options provide unterminated power wires for this connection.

Radio Signal Connections

Connector P6 on the **REMOTE LINK** circuit board contains all the radio signals. The radio power connections (pins 1 and 2) were discussed above. The remaining signals will be covered here.

Pins 3 and 4 are the PTT (Push To Talk) relay signals used to key up the radio during transmission. Whether only one or both of these pins will be used depends on the particular radio to be used. Pin 3 is named PTT OUT and Pin 4 PTT COM (common). PTT COM is always connected to ground through a 47K pull down resistor. When the PTT relay is off (radio is in receive mode), PTT OUT is connected to +5V through a 47K pull down resistor. When the PTT relay is on, PTT OUT is connected to PTT COM through the relay's contacts.

Pin 5 is a ground signal. Use this for ground connections between the radio and the remote link instead of pin 10 which has another purpose.

Pin 6 is TXAUD (transmit Audio). Transmitted voice and prompt tones are typically about 1Vp-p. Radio modem tones are about 2Vp-p. The radio is adjusted accordingly to give a good signal. If necessary, series resistance can be placed in the cable to reduce the signal level.

Pin 7 is RXAUD (receive audio) signal. The radio should be adjusted to provide approximately 0.5Vp-p output.

Note that the radio should provide flat audio signals if possible since there is no internal pre-emphasis or de-emphasis.

The COR (Carrier Operated Relay) signal from the radio is attached to pin 8 of P6. This signal indicates when the radio channel is busy. The polarity of the COR signal can be changed through programming, but the threshold is fixed at 2.0V. By default, a high voltage (>2.0V) indicates that the channel is busy and a low voltage (<2.0V) indicates the channels are available. If the radio does not have a COR signal, pin 8 should be connected to ground at pin 5 to allow the **REMOTE LINK** to key up the radio.

When using a radio with the **REMOTE LINK**, P6 pins 9 and 10 must always be connected to each other. The **REMOTE LINK** software continuously looks at these pins to determine if the radio has been installed or removed.

TELEPHONE INSTALLATION

The **REMOTE LINK** has a standard RJ11 type modular phone jack (J1) for connection to a phone line. It can use either a standard land line, or a cellular phone if it has a modular connector input.

The enclosure options for the **REMOTE LINK** have enough room inside for mounting a cellular phone. Mounting holes are provided for the Motorola Brick cell phone with its mounting bracket. Refer to the radio installation section for information about mounting the antenna and supplying power to the cell phone.

The enclosure options also have mounting holes for land surge protection which can be installed between the **REMOTE LINK** circuit board and a land line telephone connection to provide extra protection against lightning and power surge damage from the phone line.

APPENDIX A — Connector Pin Assignments

P1 68HC11 SP1 Expansion Bus (not installed)

1	-	PD5/SS
2	-	+5D
3	-	PD4/SCK
4	-	+5D
5	-	PD3/MOSI
6	-	GND
7	-	PD2/MISO
8	-	GND

P2 Relay I/O

1	-	Output relay 1 pin 1 (Normally Open)
2	-	Output relay 1 pin 2
3	-	Output relay 2 pin 1 (Normally Open)
4	-	Output relay 2 pin 2
5	-	Output relay 3 pin 1 (Normally Closed)
6	-	Output relay 3 pin 2
7	-	Output relay 4 pin 1 (Normally Open)
8	-	Output relay 4 pin 2
9	-	Input relay 1 pin 1 (120 VAC)
10	-	Input relay 1 pin 2
11	-	Input relay 2 pin 1 (120 VAC)
12	-	Input relay 2 pin 2

P3 Miscellaneous I/O

1	-	Pulse counter GND
2	-	Pulse counter
3	-	Analog input GND
4	-	Analog input (0-5V DC)

P4 RS232 Serial Port

1	-	RTS (Request To Send)
2	-	Receive data
3	-	GND
4	-	Transmit data
5	-	CTS (Clear To Send - not connected)

P5 Power

1	-	10.5 - 16VDC input
2	-	/ACOK (from optional battery charger)
3	-	GND

P6 Radio

- 1 - Power out (12VDC nominal, 2A max)
- 2 - Power GND
- 3 - PTT out (pulled up to +5VDC)
- 4 - PTT common
- 5 - Analog GND
- 6 - Transmit audio
- 7 - Receive audio
- 8 - COR (carrier detect)
- 9 - Radio select input
- 10 - Radio select GND

J1 Telco

- 1 - no connection
- 2 - no connection
- 3 - Ring
- 4 - Tip
- 5 - no connection
- 6 - no connection

HARDWARE SPECIFICATIONS

General

Operating Temperature	0 - 70 C
Storage Temperature	-40 to 80 C
Humidity	5 to 95% relative humidity non-condensing
Compliance	FCC part 15

Power

Input range	10.5 to 16.0 VDC
Current drain	3A (max) 1A PAC, 2A auxiliary power
Power status input	Low (power good) threshold 1.0V High (power fail) threshold 3.5V

Serial Communication Port, RS-232

Data Rate	1200 Baud
Bits	8
Stop Bits	1
Parity	None
Input Protection	+/- 30 VDC

Telephone Port

Compliance	Part 68, Industry Canada
Dialing	tone or pulse
Telephone Modem (option)	Bell 212A, 1200 Baud

Radio Port

Aux. power output voltage	input power +/- 1% VDC
Aux. power output current	2.0A (max)
PTT contacts	PTT IN, PTT OUT <10 ohms from OUT to IN when active 47K ohm pull-down resistor to ground 47K ohm pull-up resistor to +5 VDC when inactive
TX Audio level	impedance 540 ohms @ 1KHz +/- 5% 1.0Vpp for voice and prompt tones 2.0 Vpp for radio modem signals
RX audio level	impedance 50K ohm @ 1KHz +/- 5% 500 mVpp
COR input	contact closure (47K internal pull-up) 2.0V comparator threshold
Radio select input	contact closure (10K internal pull-up) LOW when cable is present
Input protection	COR,RX, PTT IN, PTT OUT +/- 50 VDC
Radio Modem (optional)	Minimum Shift Keying (MSK) 1200 Baud

Outputs

Control Relay Contacts	250 VAC, 5A (for resistive load) 250 VAC, 2A (for inductive load p.f. 0.4)
Control Relay Configuration	Relay 1 normally open Relay 2 normally open Relay 3 normally closed Relay 4 normally open UL508 spacing

Inputs

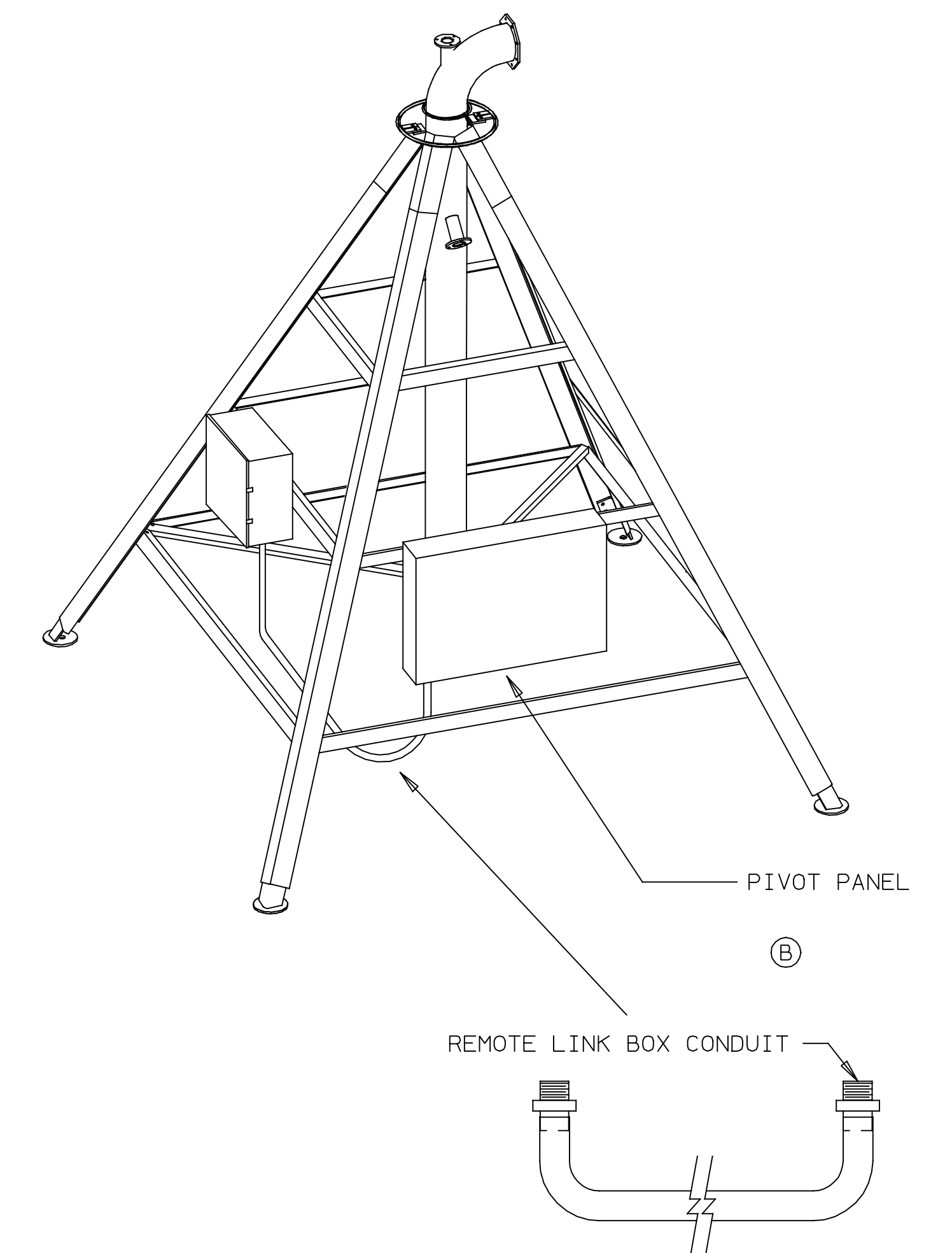
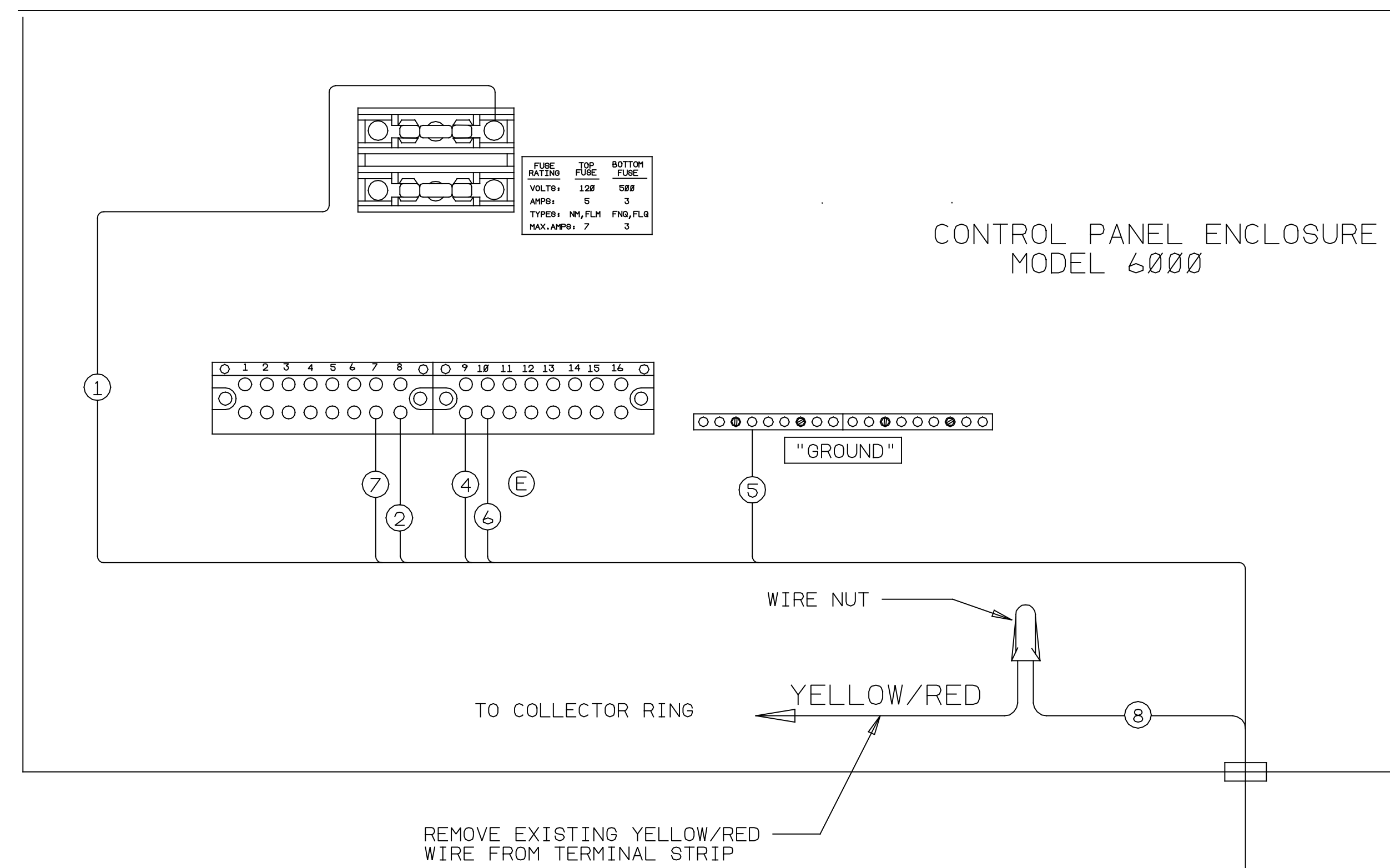
Input protection	+/- 50 VDC
Status and Aux Relays	120 VAC Coil, 0.9VA UL508 spacing
Analog Input	0.0 to 4.98 VDC 8 bits
Pulse Counter Input	10KHz max (for unfiltered signals) 100 Hz max (for software filtered signals) Signal level HIGH threshold 3.5 VDC min. Signal level LOW threshold 1.0 VDC max.

Packaging Options

Enclosure	NEMA 3R (Raintight) 20" wide x 20" high x 8" deep
Power	120VAC power supply only or 120VAC power supply with battery backup

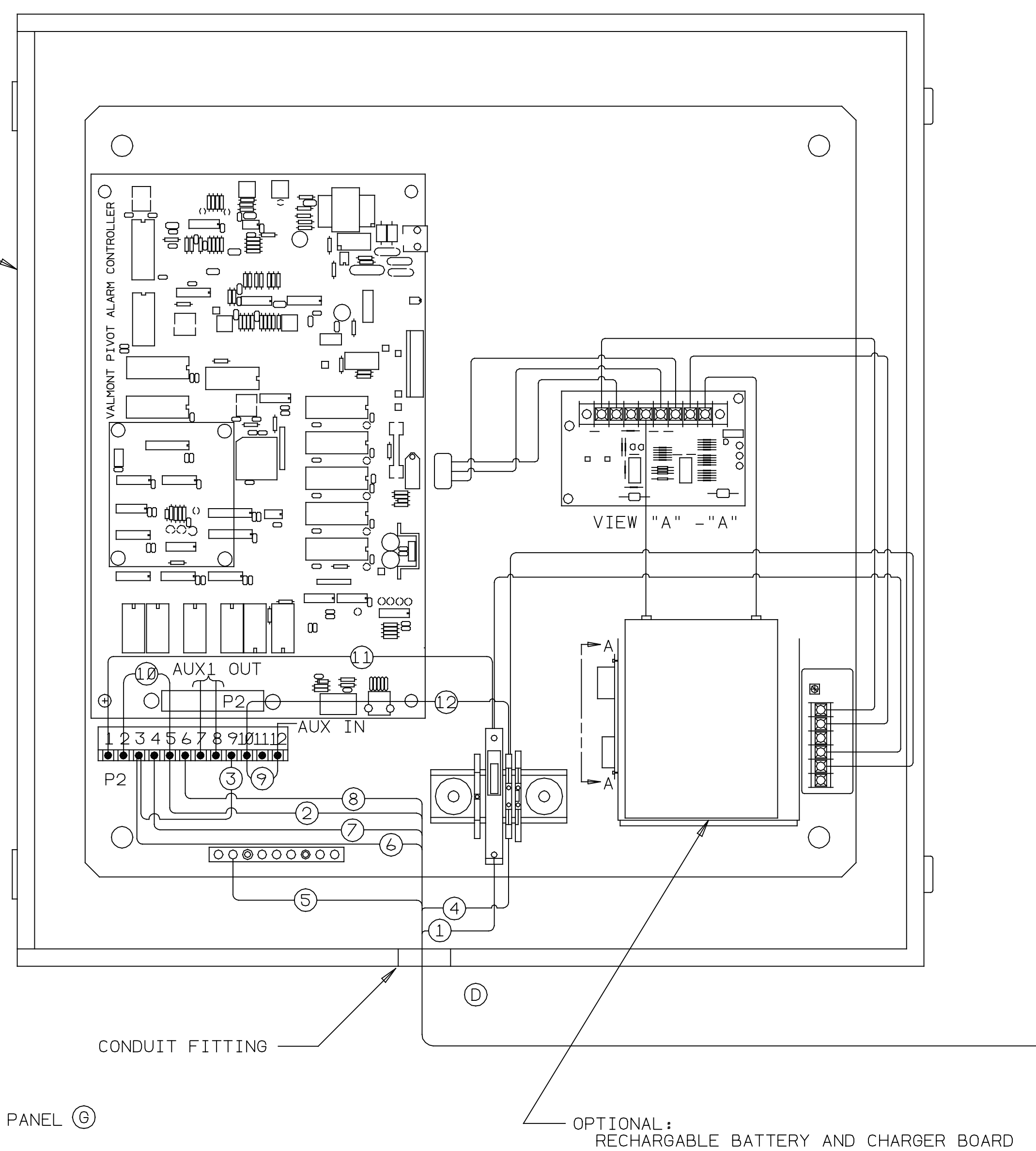
REMOTE LINK PART REFERENCE SHEET

	<u>Part #</u>
REMOTE LINK Box	931K288
Battery Back Up REMOTE LINK	931K295
Cellular Antenna	03E1681
Radio Antenna	03E1283
Telephone Land Surge Protection	KA01209
Mounting Hardware Pivot	KA01208
Remote Mounting Hardware	931K296
Antenna Mounting Hardware	931K049
Conduit Kit REMOTE LINK Box	KA01207
Radio Harness REMOTE LINK	KA01220
Cellular Plug REMOTE LINK	KA01221
STD 6000 Panel Link Wiring	KA01222
STD 8000 Panel Link Wiring	KA01211
Select Panel Link Wiring	KA01212
PRO 6000/8000 Link Wiring	KA01210



ⓑ

REMOTE LINK BOX



NOTE:
WIRES 1,4,5 ARE IN REMOTE LINK CONDUIT INSTALL KIT
ALL OTHER WIRES ARE IN STANDARD PANEL INSTALL KIT

WIRE NO.	COLOR	PART NO.	GA.
1	BLACK	1813924	18
2	YELLOW/RED	1813371	18
3	YELLOW	1812762	18
4	WHITE	1813923	18
5	GREEN/YELLOW	1813922	18
6	PINK	1813435	18
7	PINK	1813435	18
8	YELLOW/RED	1813371	18
9	WHITE	1812726	18
10	YELLOW/RED	1813507	18
11	BLACK	1811794	18
12	WHITE	1813320	18
13	YELLOW	1813373	18

Ⓓ

ⓐ

ⓑ

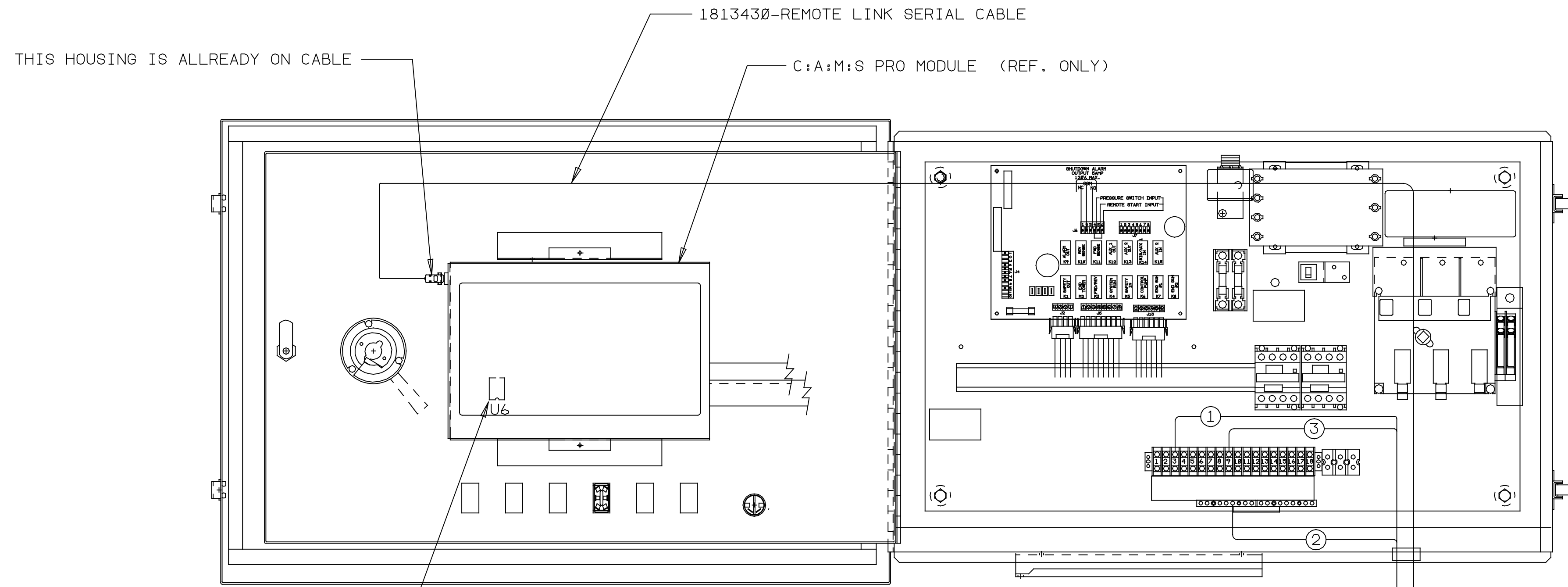
ⓒ

ⓓ

← USED ONLY FOR 8000 PANEL ⓐ

REV. G

PART NAME	PART NO.
FIELD WIRE REMOTE LINK STANDARD 6000	9310239

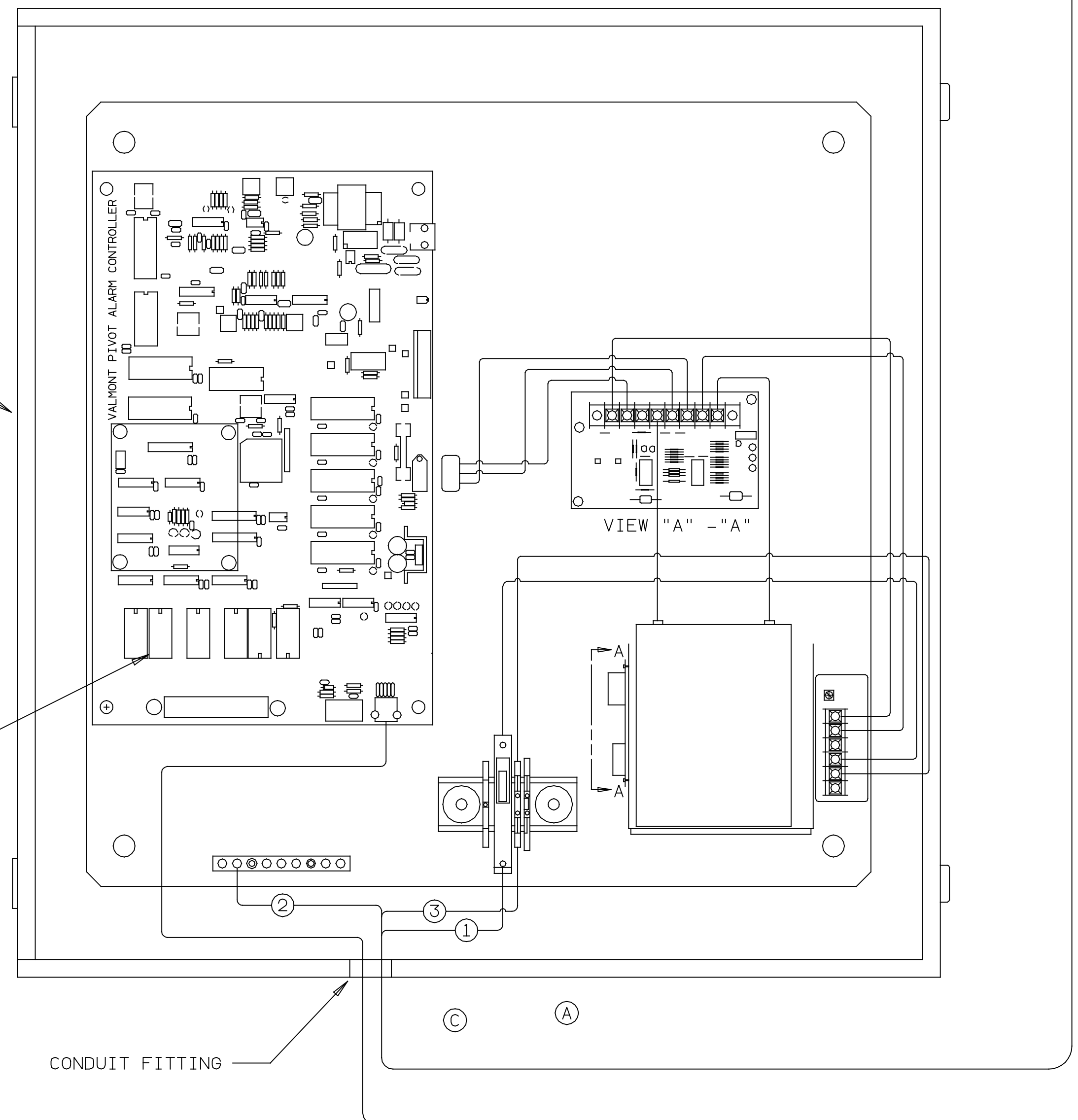


EPROM REPLACEMENT CHART

OLD EPROM	NEW EPROM	NEW KIT
4.1S	4.2S	KA01215
4.11S	4.2S	KA01215
4.1P	4.2P	KA01223
5.1S	5.2S	KA01214
5.11S	5.2S	KA01214
5.1	5.2	KA01216

REMOVE BACKCOVER FROM MODULE
 REMOVE EPROM LOCATED IN U6 POSITION
 REPLACE EPROM WITH CORRECT EPROM AS LISTED IN CHART
 REINSTALL BACKCOVER

THE REMOTE LINK 3 DIGIT I.D. MUST MATCH THE C:A:M:S MODULE 3 DIGIT PASSWORD. THIS ALLOWS THE REMOTE LINK TO COMMUNICATE WITH THE MODULE.



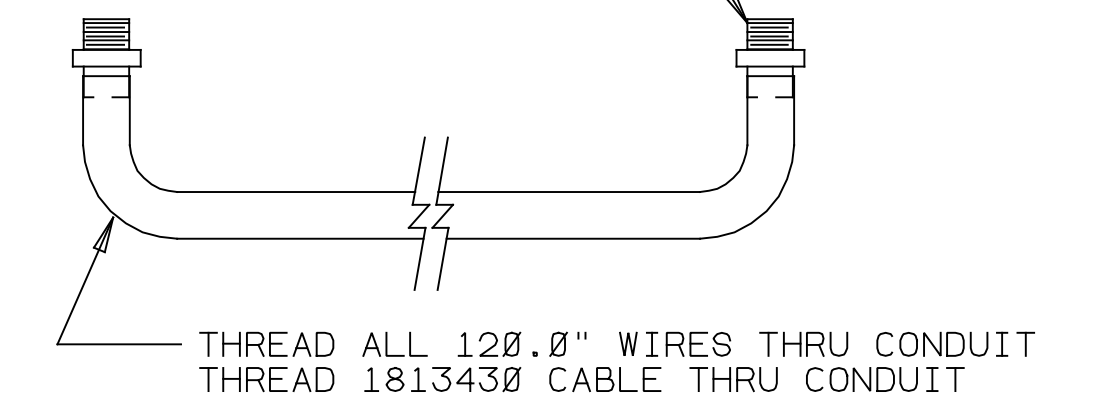
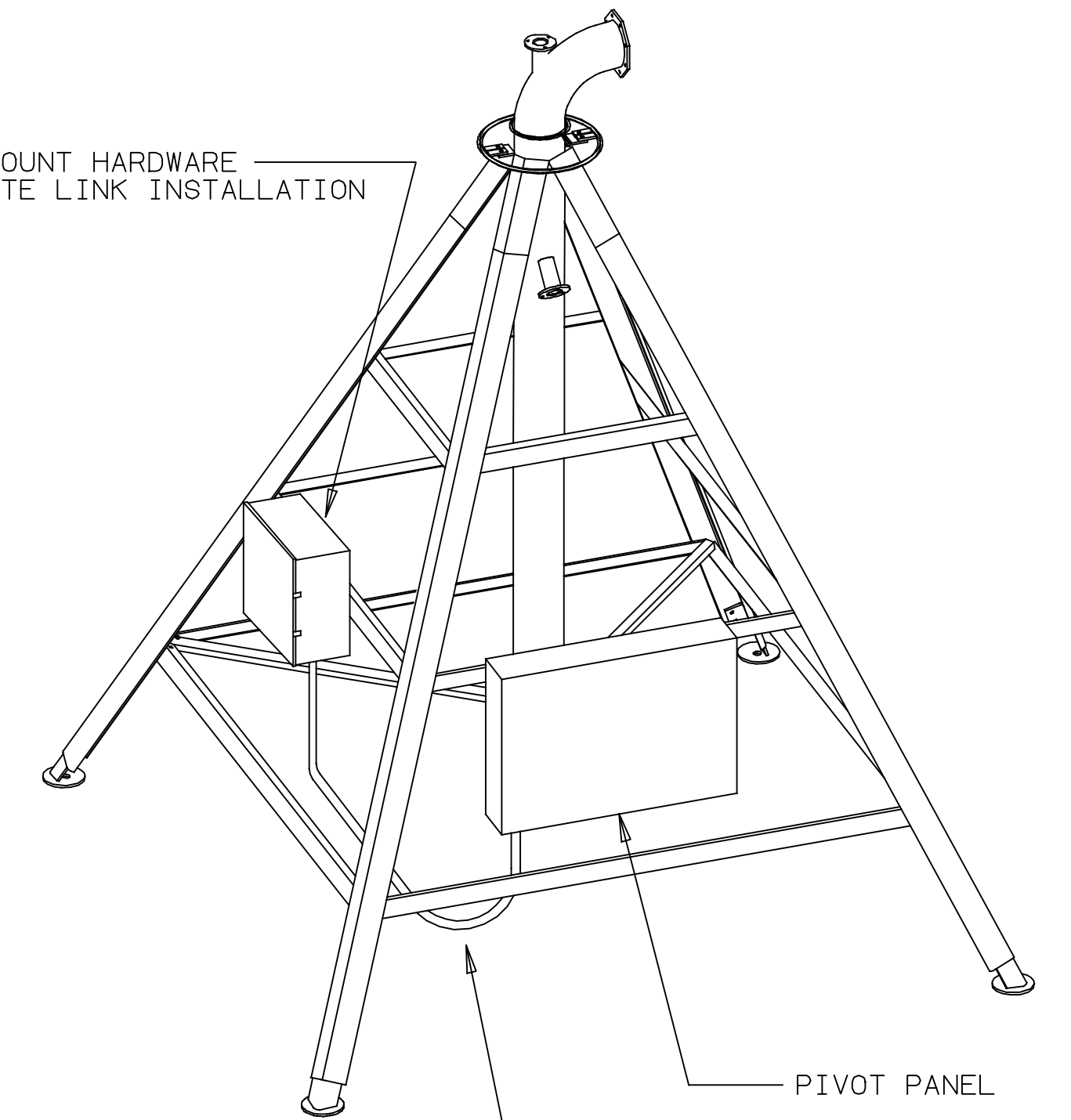
03E1771-VALLEY REMOTE LINK
 OR
 03E1775-VALLEY REMOTE LINK W/BATTERY

PIN	COLOR
1	BLUE
2	GREEN
3	BLACK
4	RED
5	WHITE

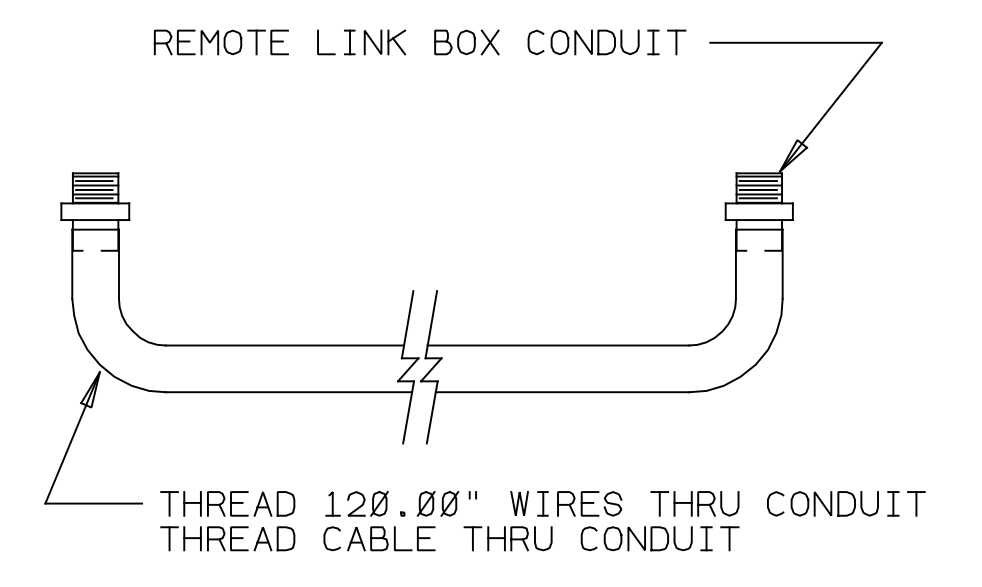
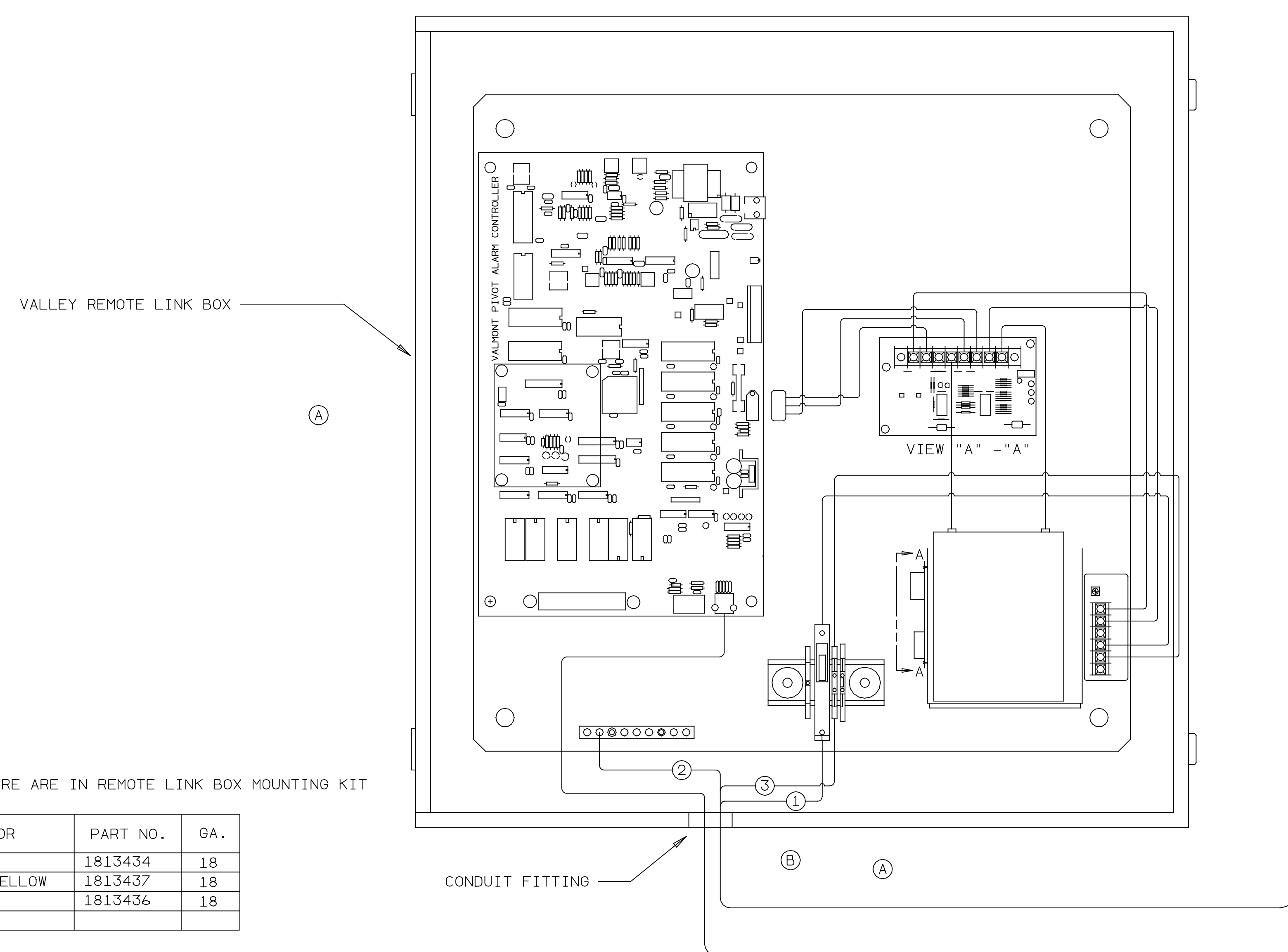
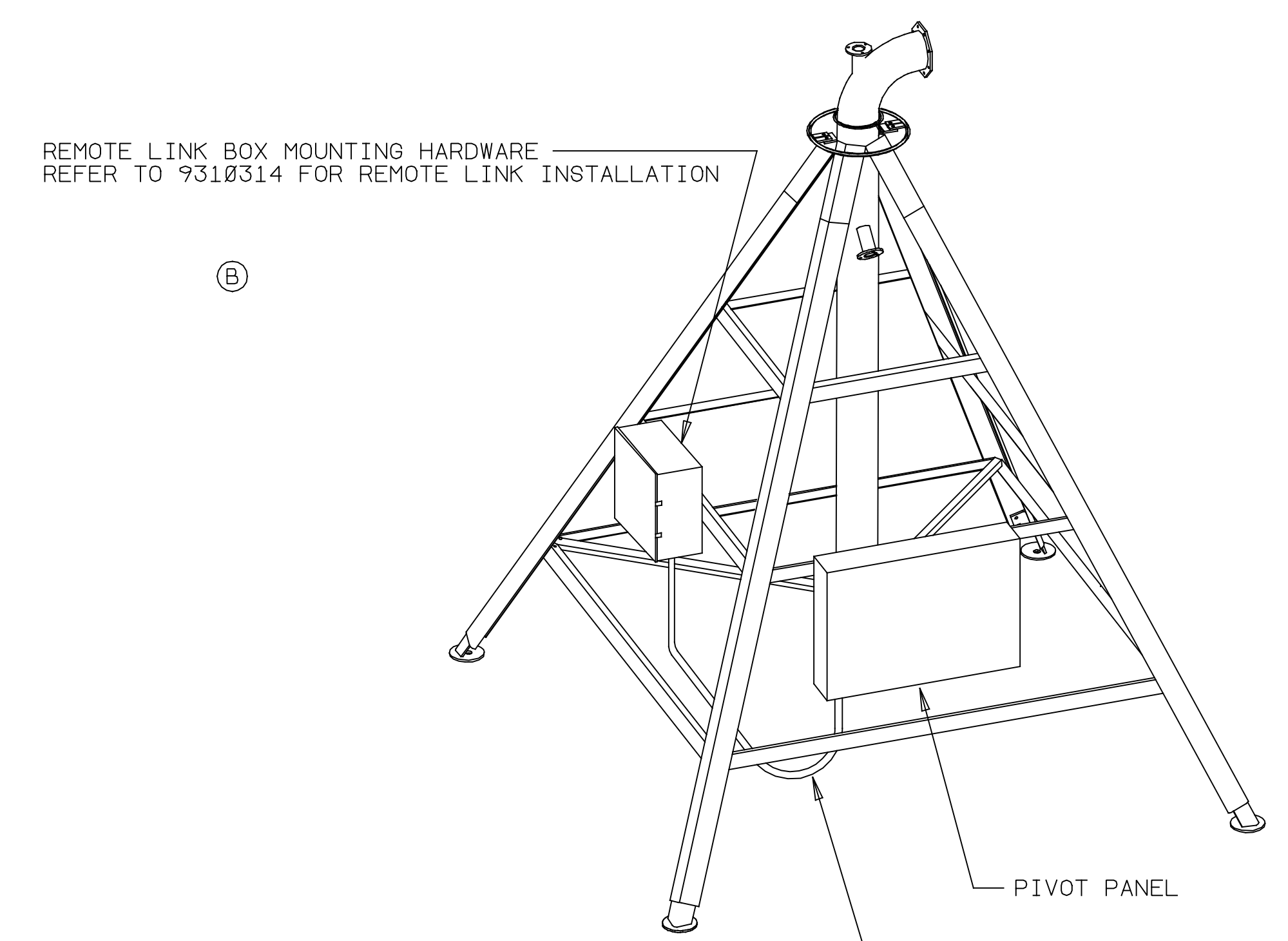
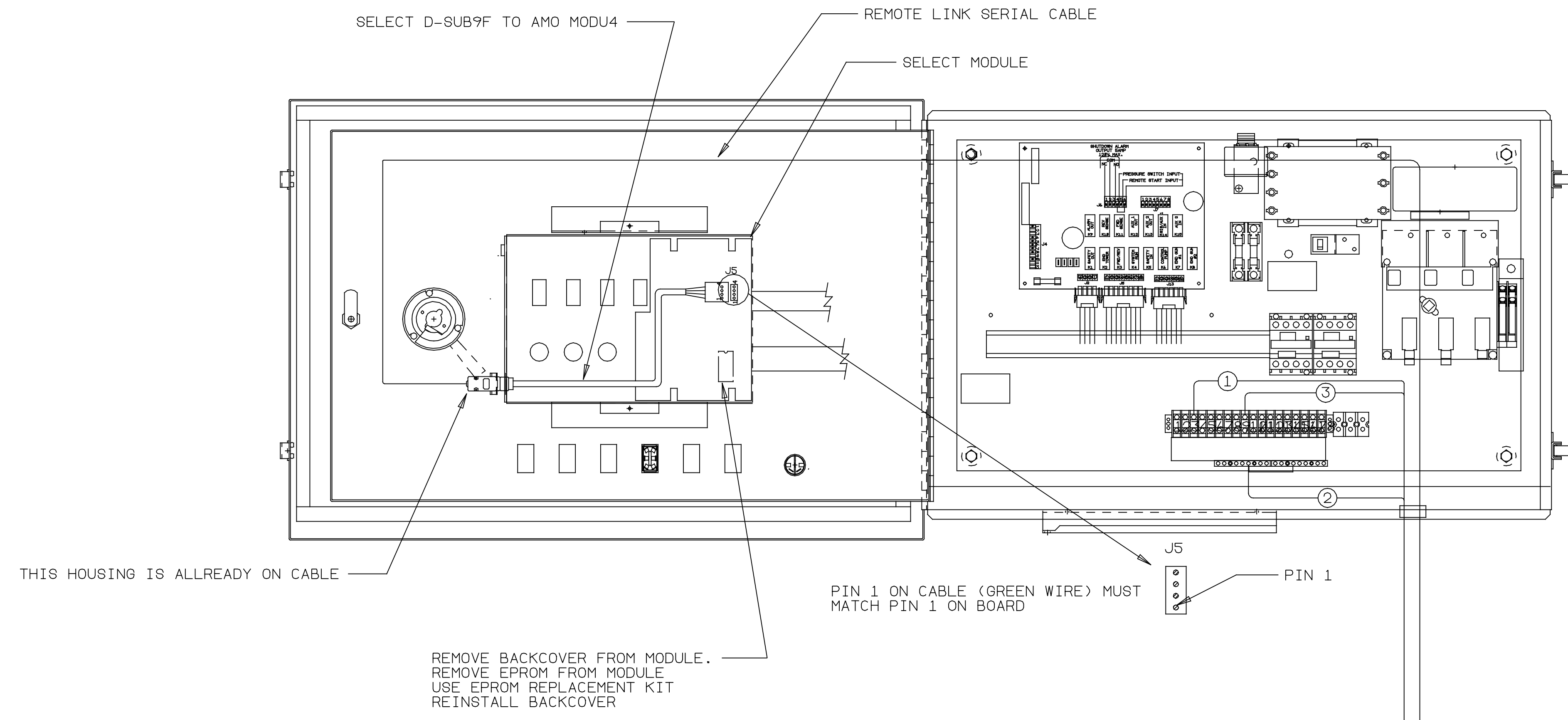
NOTE: WIRES LISTED HERE ARE IN KA01207

WIRE NO.	COLOR	PART NO.	GA.
1	BLACK	1813434	18
2	GREEN/YELLOW	1813437	18
3	WHITE	1813436	18
4			

KA01208-REMOTE LINK BOX MOUNT HARDWARE
 REFER TO 9310314 FOR REMOTE LINK INSTALLATION

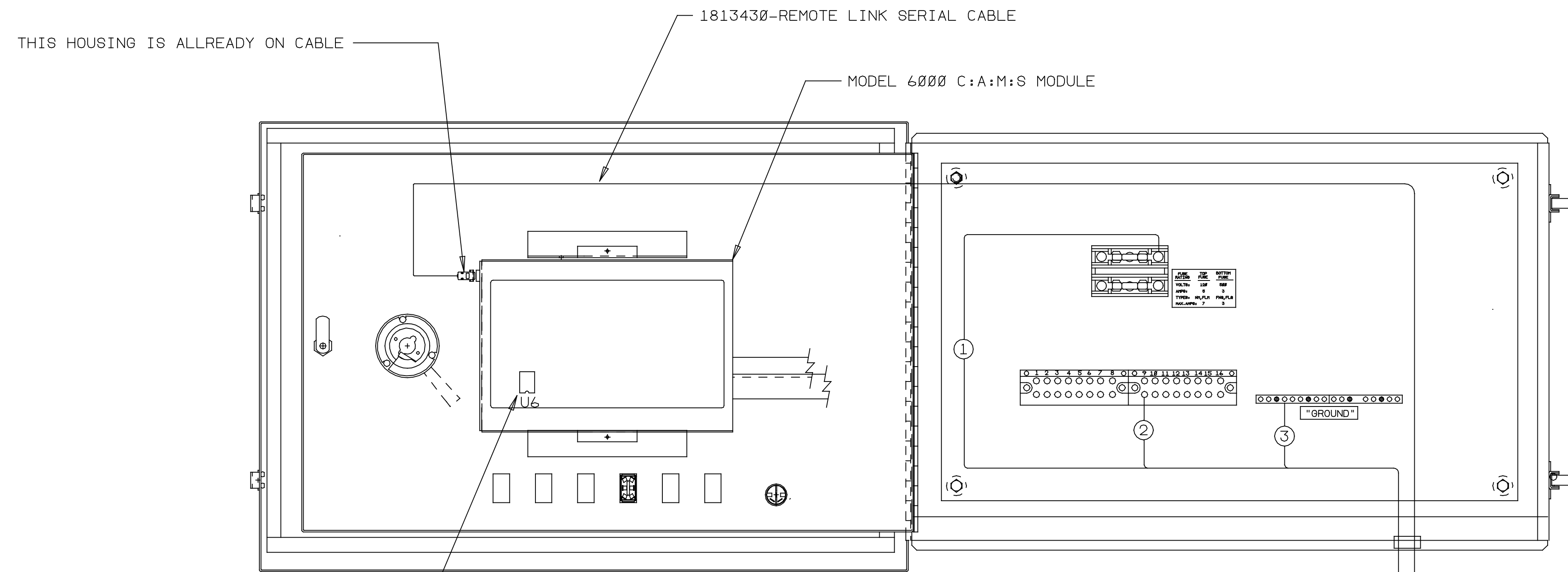


NOTE ALL PART NUMBERS LISTED ARE FOR REFERENCE ONLY



WIRES LISTED HERE ARE IN REMOTE LINK BOX MOUNTING KIT

WIRE NO.	COLOR	PART NO.	GA.
1	BLACK	1813434	18
2	GREEN/YELLOW	1813437	18
3	WHITE	1813436	18
4			



REMOVE BACKCOVER FROM MODULE
 REMOVE EPROM LOCATED IN U6 POSITION
 REPLACE EPROM WITH 4.2P EPROM
 REINSTALL BACKCOVER

THE REMOTE LINK 3 DIGIT I.D. MUST MATCH THE C:A:M:S MODULE
 3 DIGIT PASSWORD. THIS ALLOWS THE REMOTE LINK TO COMMUNICATE
 WITH THE MODULE.

ⓑ

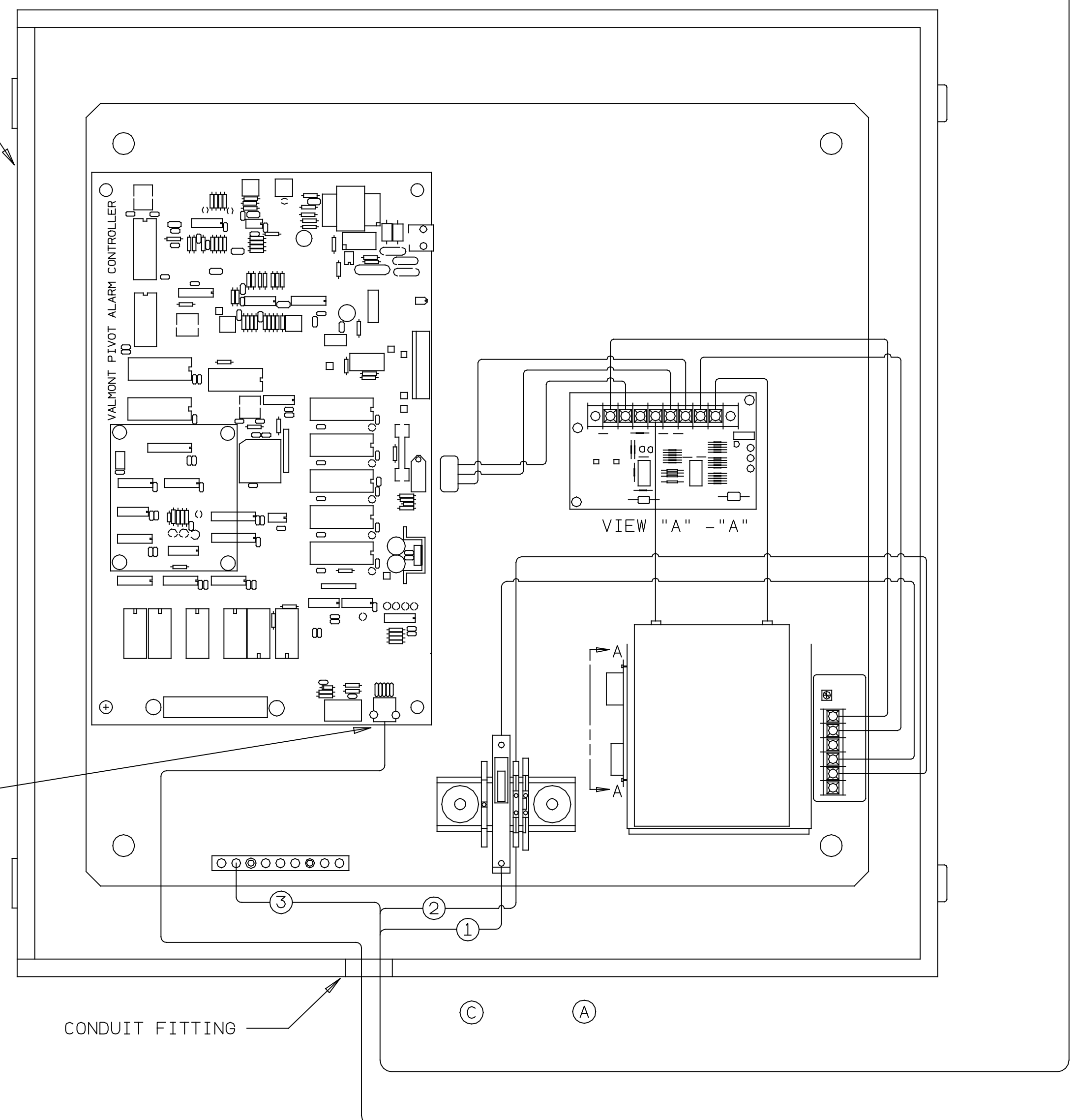
03E1771-VALLEY REMOTE LINK
 OR
 03E1775-VALLEY REMOTE LINK W/BATTERY

Ⓐ

PIN	COLOR
1	BLUE
2	GREEN
3	BLACK
4	RED
5	WHITE

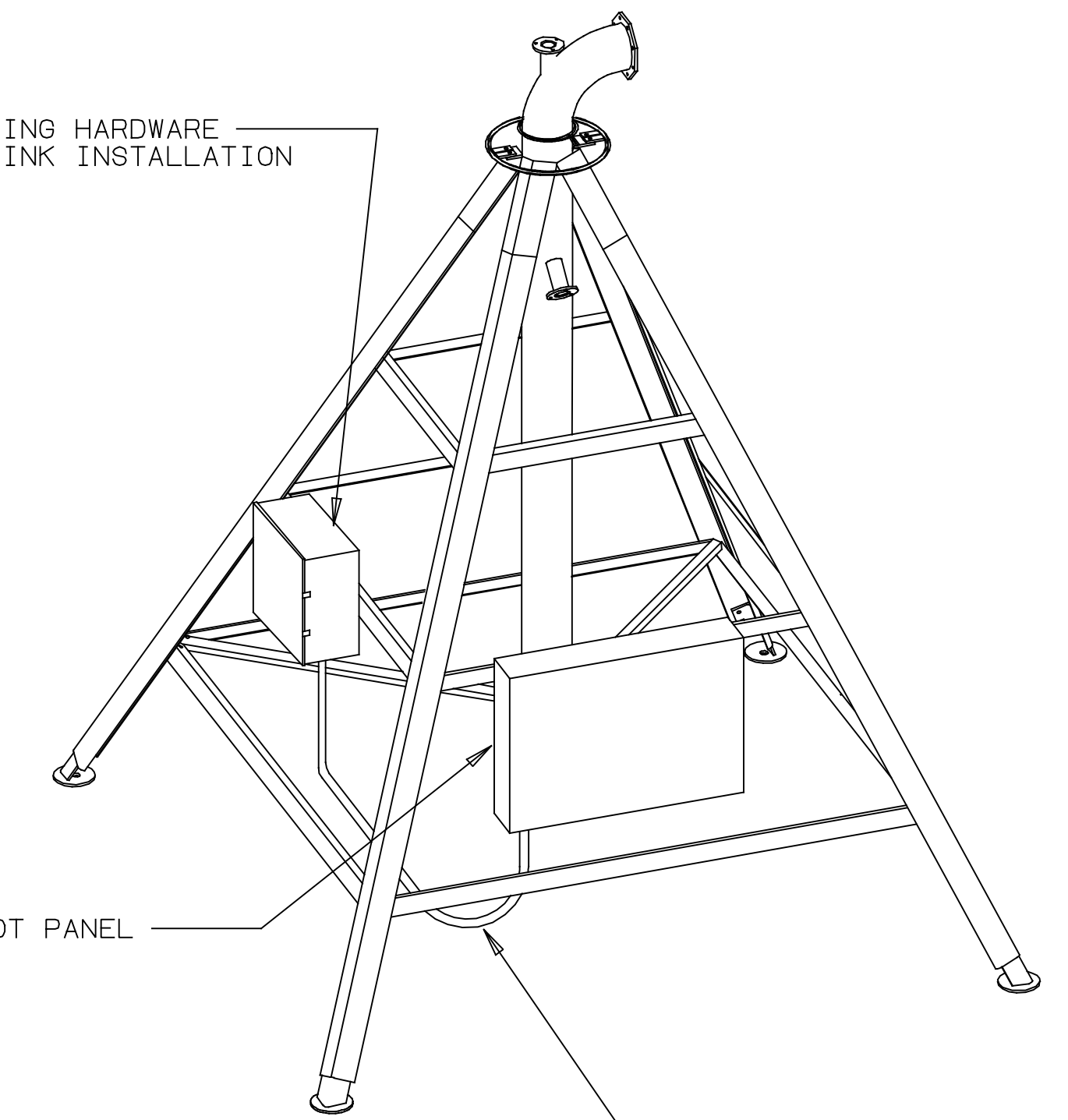
NOTE: WIRES ARE IN KA01207

WIRE NO.	COLOR	PART NO.	GA.
1	BLACK	1813434	18
2	WHITE	1813436	18
3	GREEN/YELLOW	1813437	18



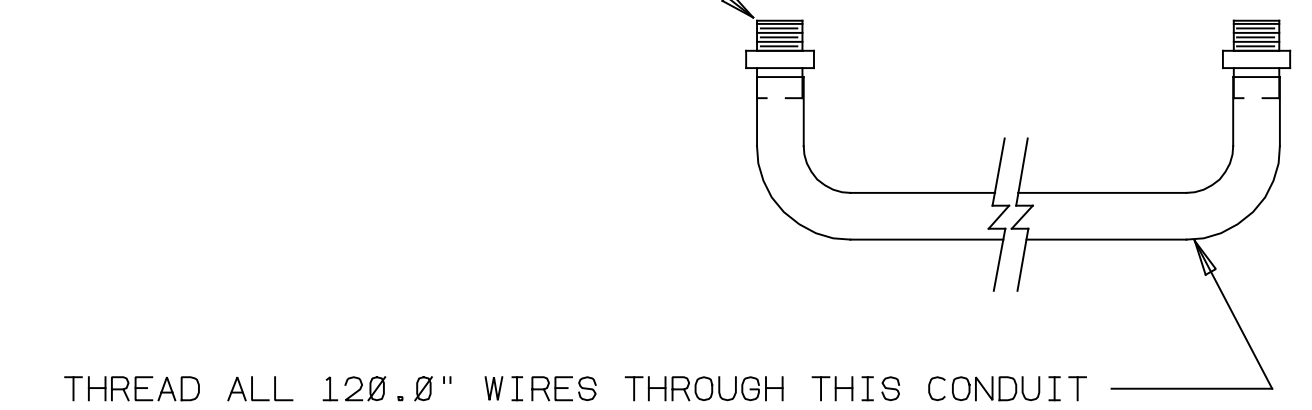
KA01208-REMOTE LINK BOX MOUNTING HARDWARE
 REFER TO 9310314 FOR REMOTE LINK INSTALLATION

Ⓒ



KA01207-REMOTE LINK BOX CONDUIT INSTALL

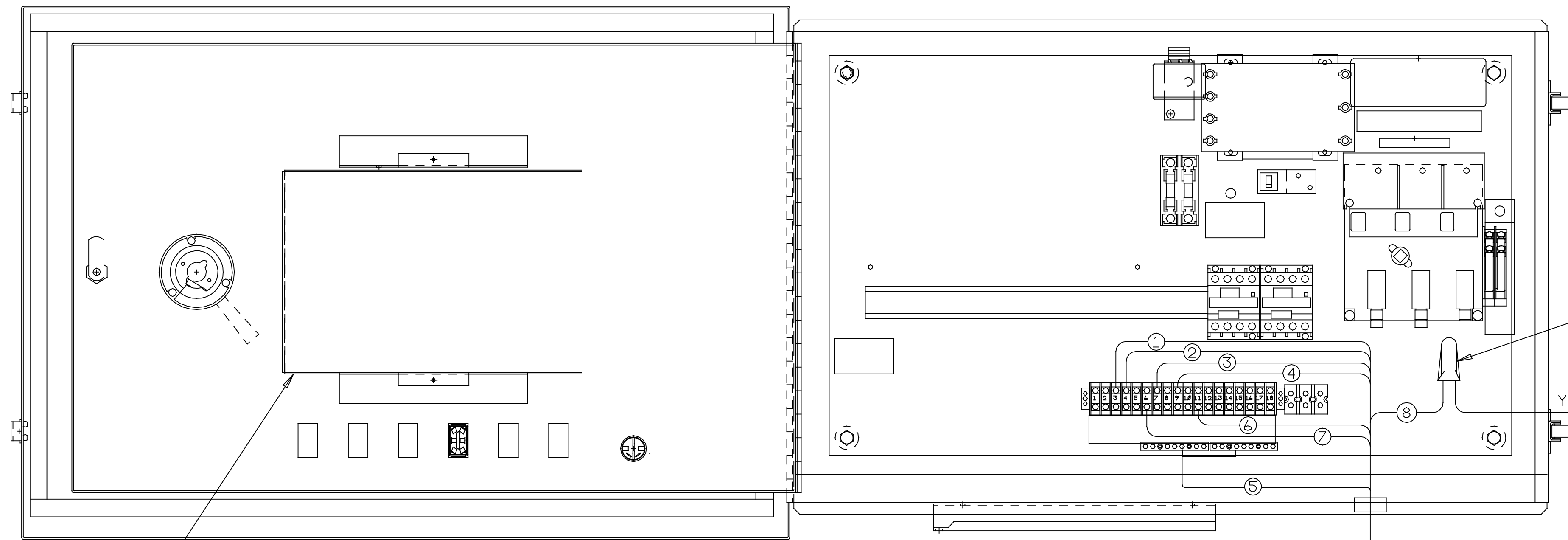
Ⓒ



NOTE: ALL PART NUMBERS LISTED ON
 THIS BOX ARE FOR REFERENCE ONLY

REV. D

PART NAME	PART NO.
FIELD WIRE REMOTE LINK CAM 6000	9310219

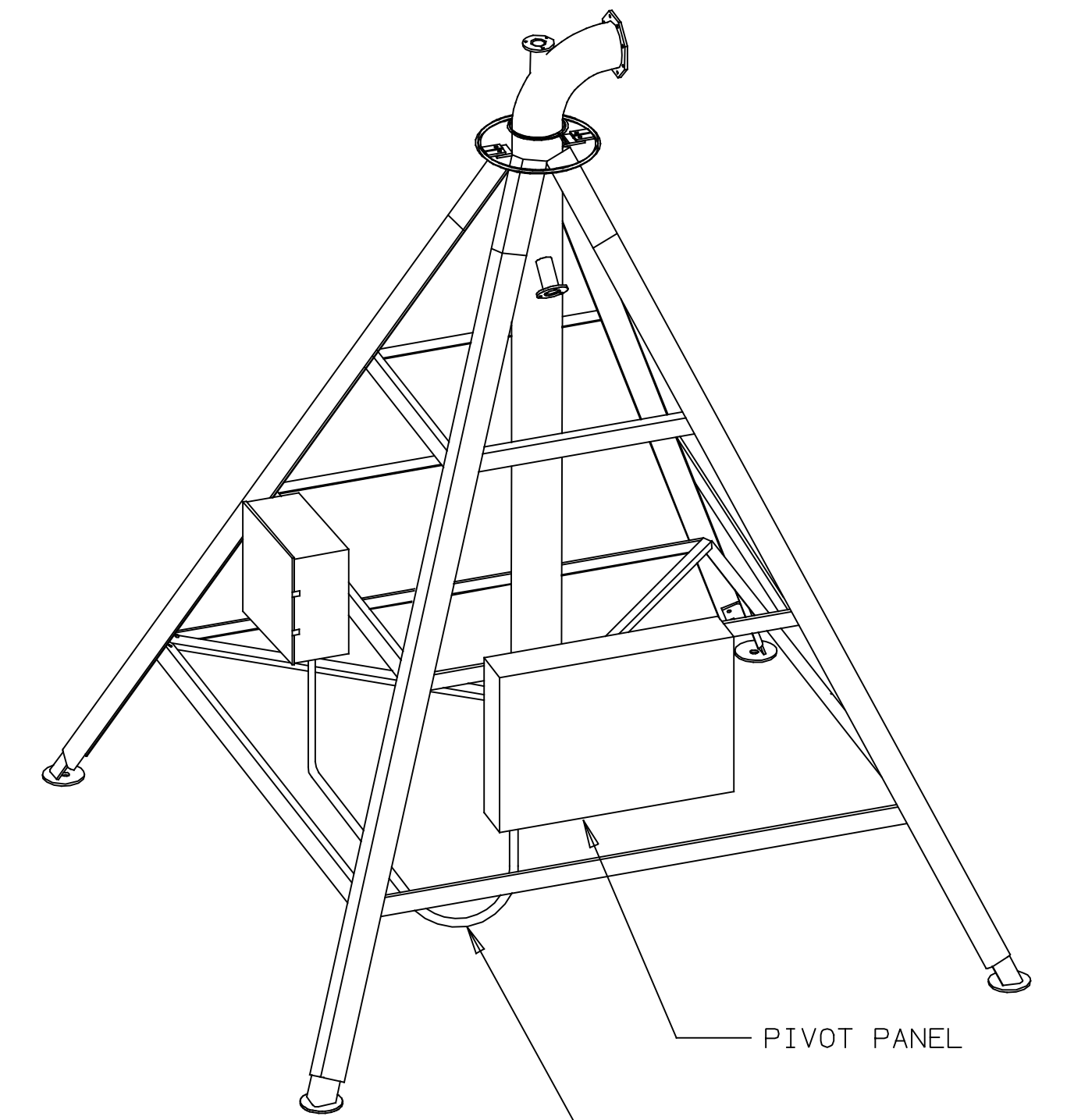


MODULE

WIRE NUT

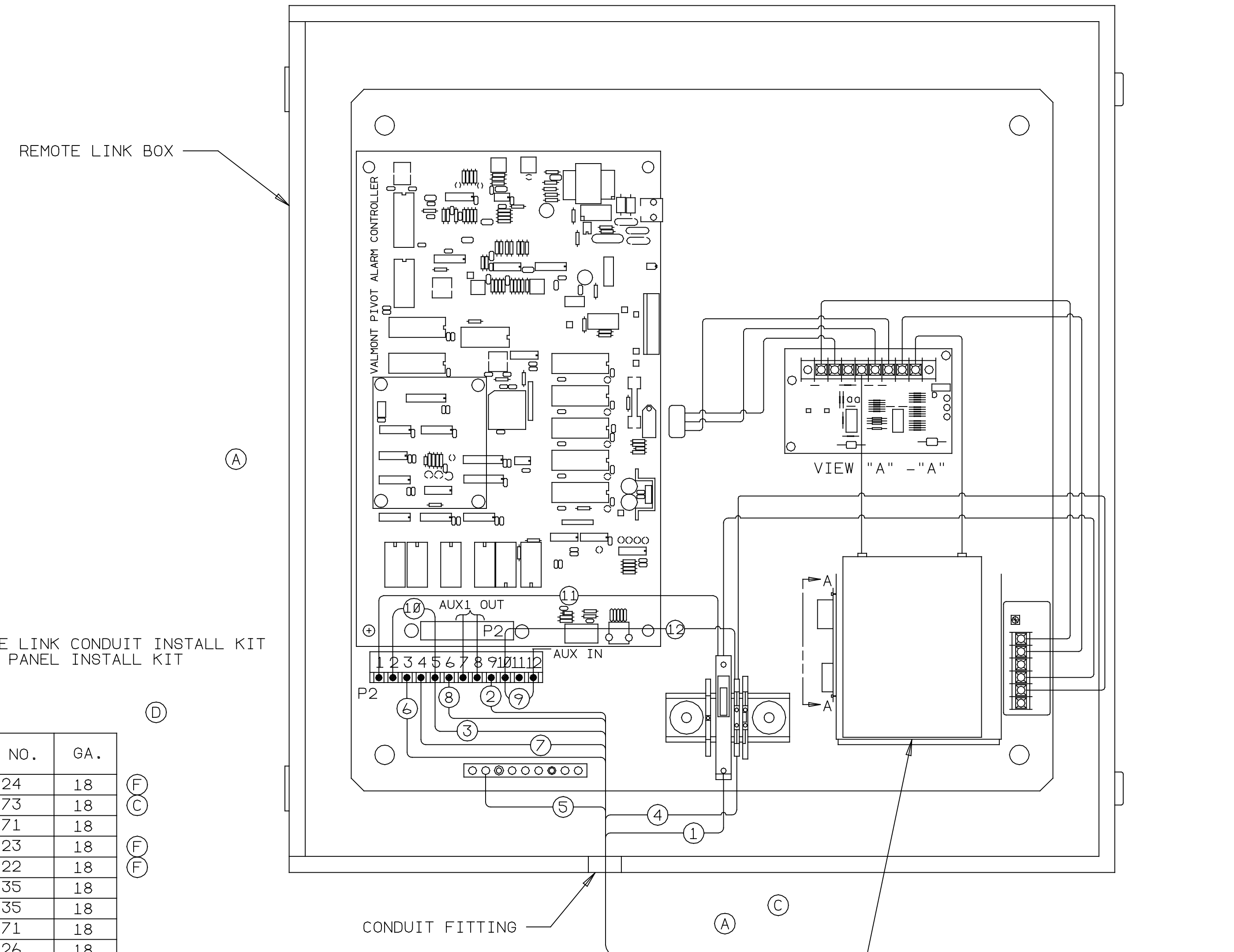
YELLOW/RED TO COLLECTOR RING

REMOVE EXISTING YELLOW/RED WIRE FROM TERMINAL STRIP



PIVOT PANEL

REMOTE LINK CONDUIT

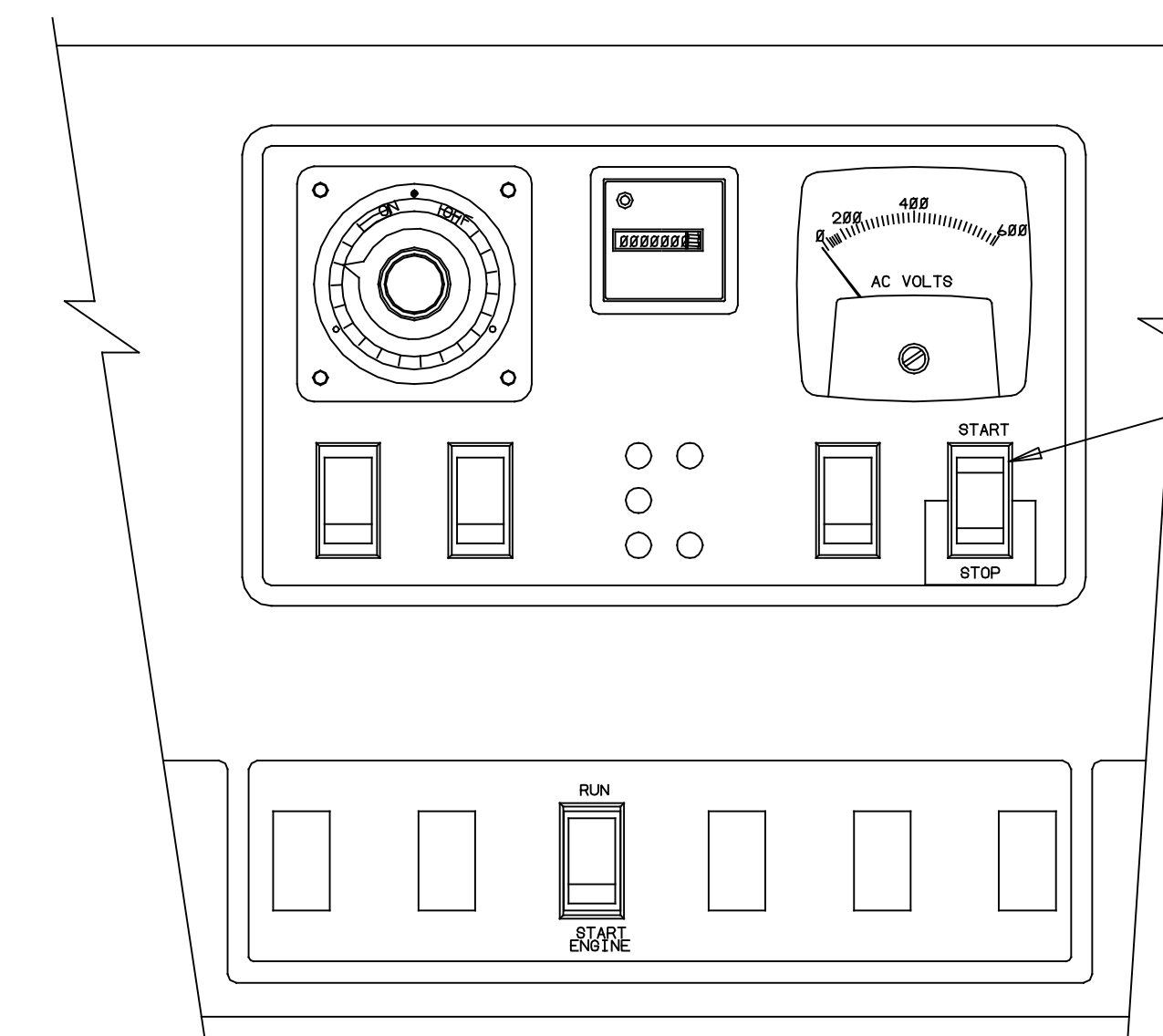


REMOTE LINK BOX

VIEW "A" - "A"

CONDUIT FITTING

OPTIONAL: RECHARGABLE BATTERY AND CHARGER BOARD



DETAIL OF INNER DOOR OF ENCLOSURE

START/STOP SWITCH ON STANDARD MODULE.

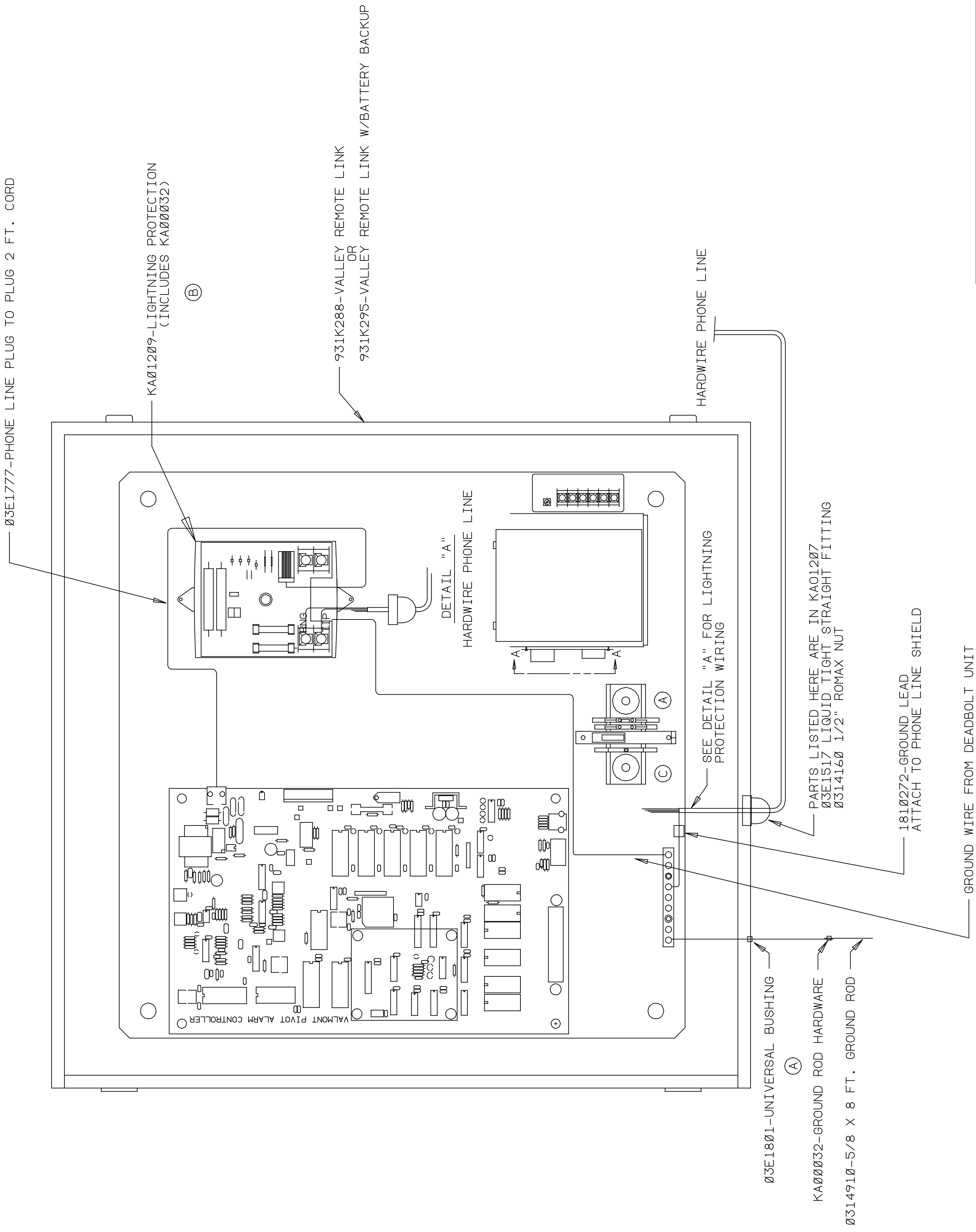
NOTE: LEAVE START/STOP SWITCH IN RUN POSITION FOR REMOTE CONTROL.

NOTE: WIRES 1,4,5 ARE LISTED IN REMOTE LINK CONDUIT INSTALL KIT
REMAINING WIRES ARE IN STANDARD PANEL INSTALL KIT

WIRE NO.	COLOR	PART NO.	GA.
1	BLACK	1813924	18
2	YELLOW	1813373	18
3	YELLOW/RED	1813371	18
4	WHITE	1813923	18
5	GREEN/YELLOW	1813922	18
6	PINK	1813435	18
7	PINK	1813435	18
8	YELLOW/RED	1813371	18
9	WHITE	1812726	18
10	YELLOW/RED	1813507	18
11	BLACK	1811794	18
12	WHITE	1813320	18
13	YELLOW	1812762	18

← USED ONLY FOR 6000 PANEL

NOTE: DOOR LEFT OFF FOR CLAIRITY



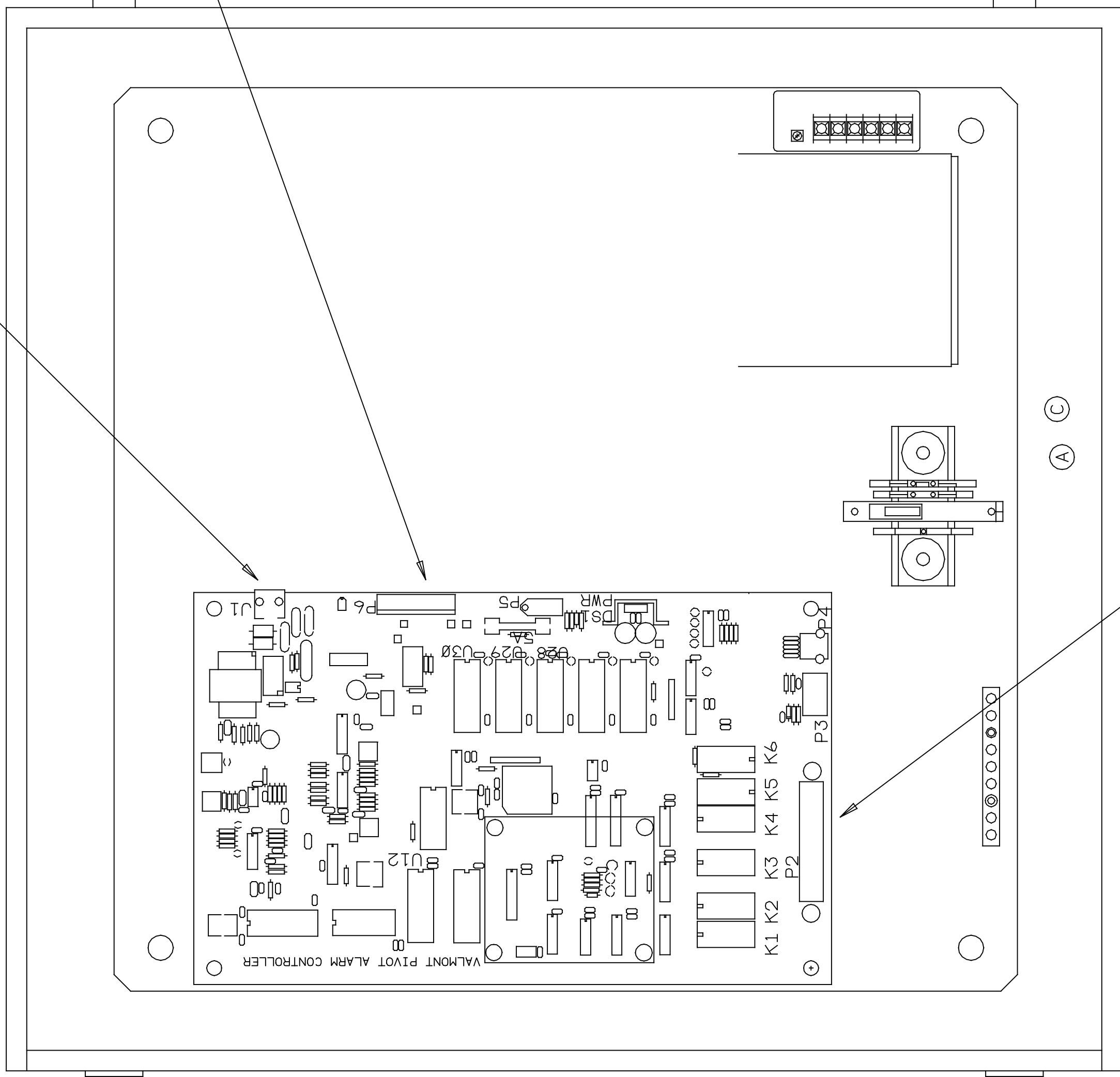
REV. C

PART NAME
FIELD WIRE REMOTE LINK
HARDWARE OPTION

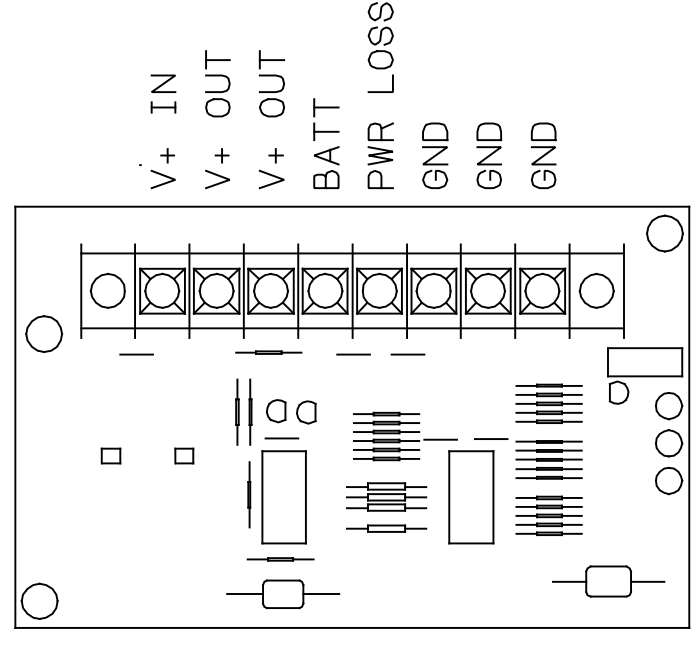
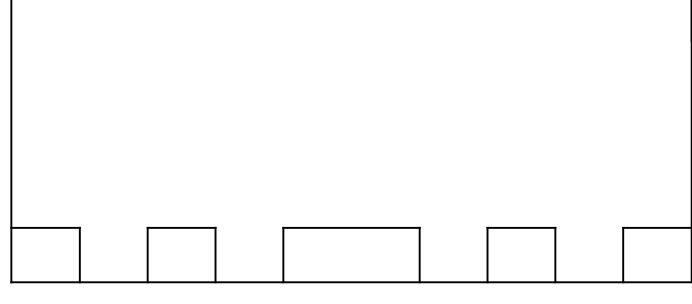
PART NO.
9310234

VALLEY REMOTE LINK BOX

RJ11 CONNECTOR

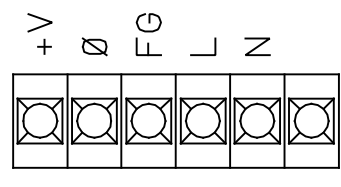


- GROUND BLACK
- RADIO SEL BROWN
- COR WHITE (ACTIVE LOW)
- RXAUD ORANGE (0.5 VOLTS PEAK TO PEAK)
- TXAUD BLUE (2.0 VOLTS PEAK TO PEAK)
- GROUND BLACK
- PTT COM YELLOW (NORMALLY OPEN)
- PTT OUT VIOLET (NORMALLY OPEN)
- POWER GROUND BLACK
- POWER (12VDC 2A MAX) RED

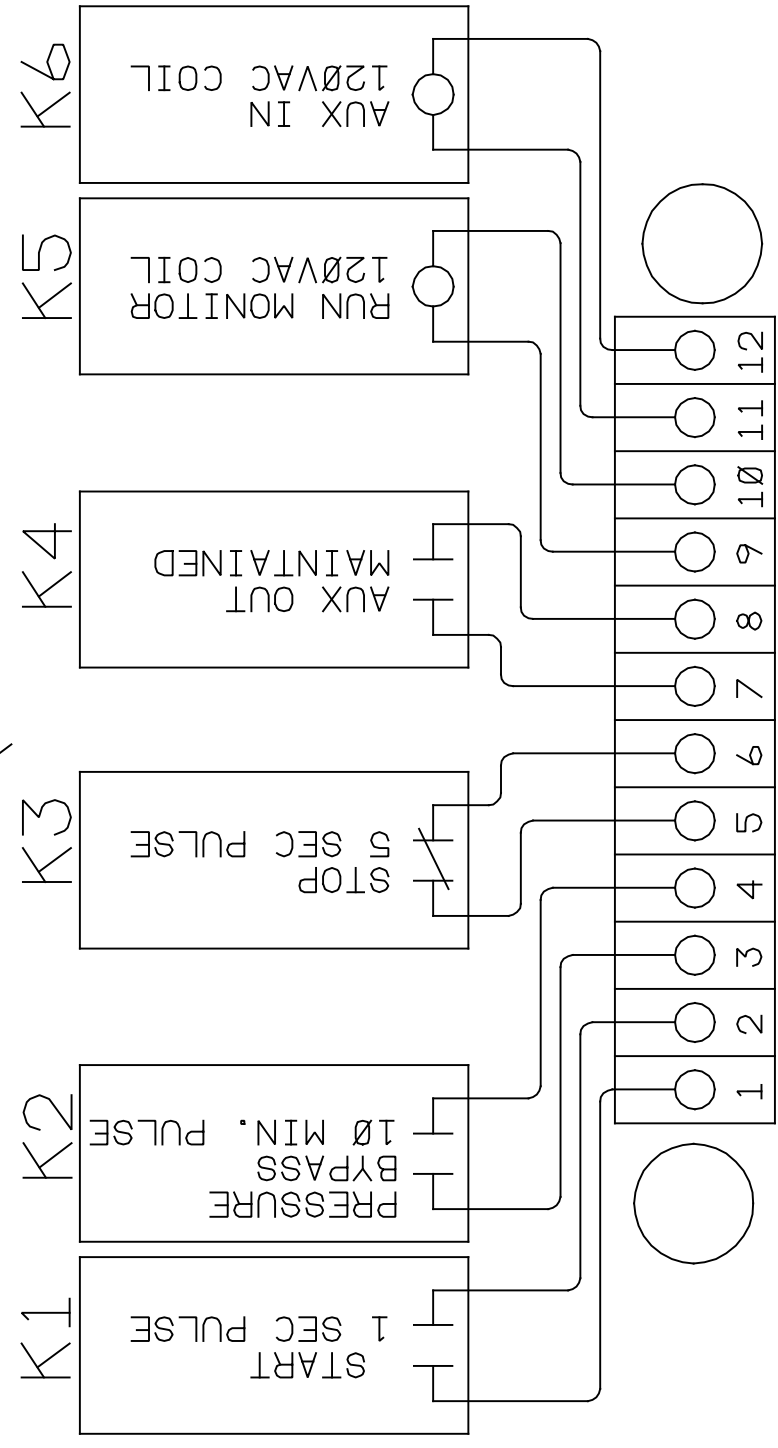


CHARGER BOARD

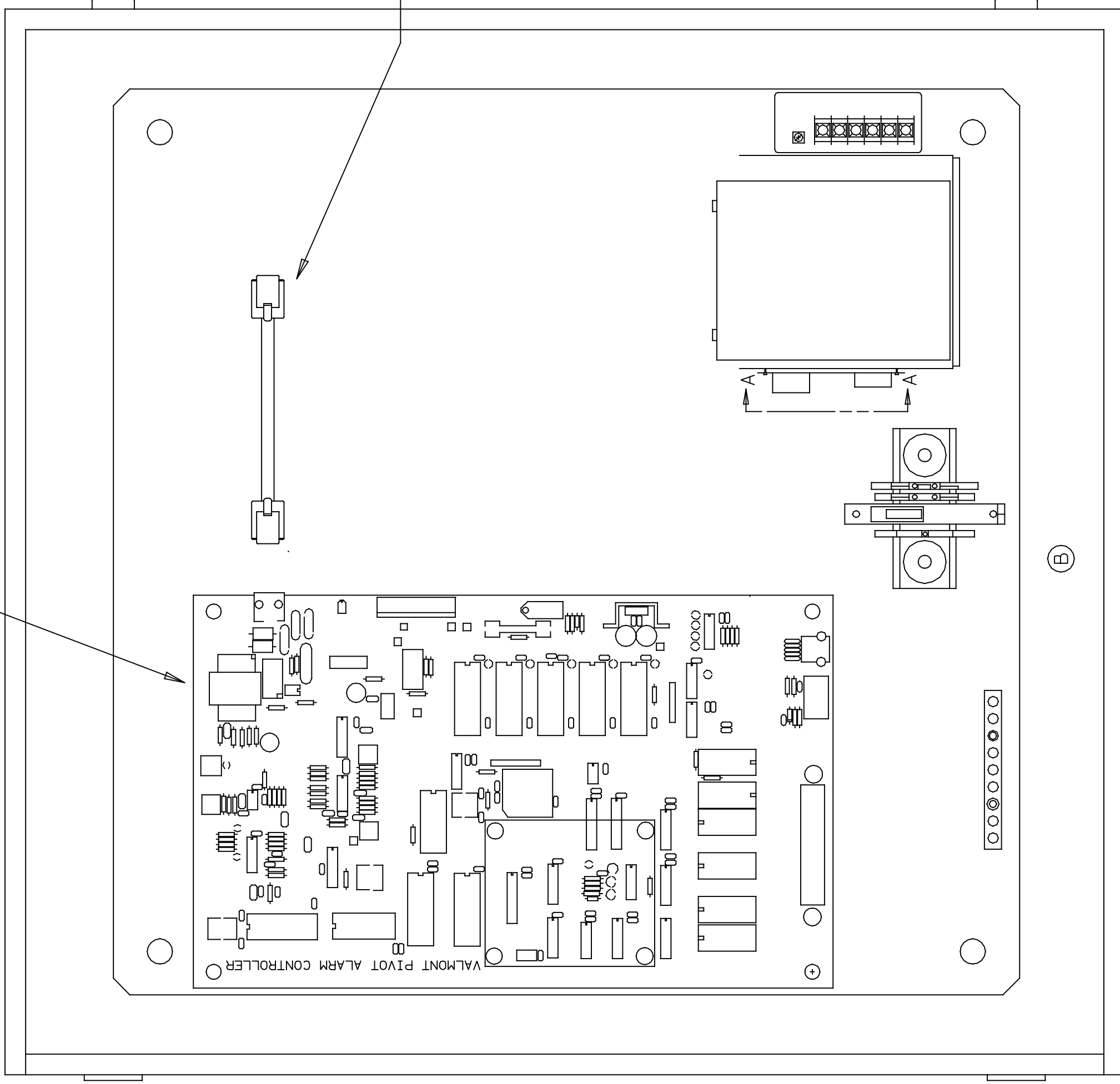
CONNECT RADIO OR PHONE POWER TO V+ OUT



POWER SUPPLY



Ø3E1776-PIVOT ALARM CONTROLLER BOARD
REF. ONLY



Ø3E1777-PHONE LINE PLUG TO PLUG 2 FT. CORD
TO CELLULAR PHONE DATA INTERFACE
REF. ONLY

(A)

(B)

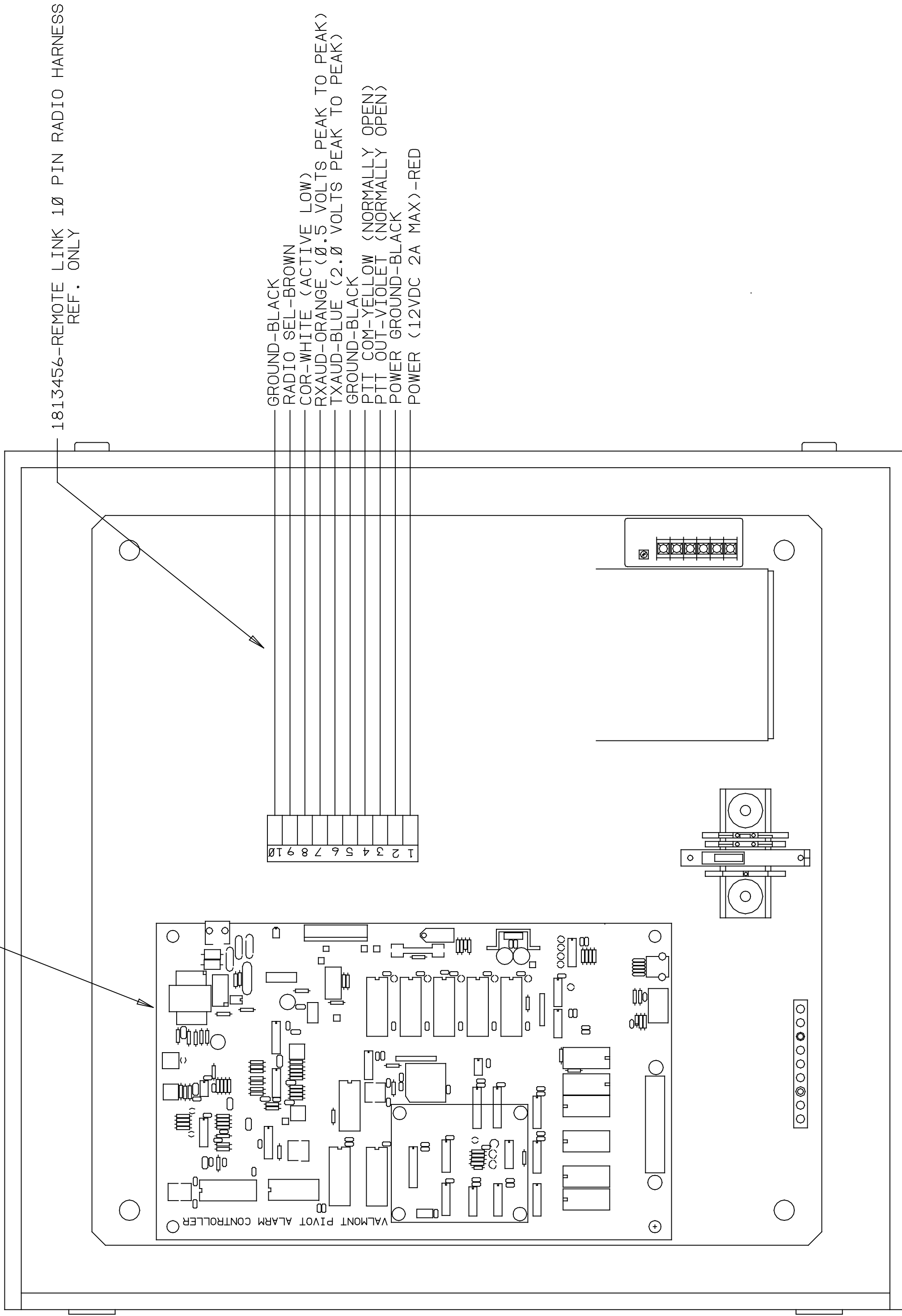
REV. B

PART NAME
FIELD WIRE REMOTE LINK
CELLULAR

PART NO.
931Ø236

Ø3E1776-PIVOT ALARM CONTROLLER BOARD
REF. ONLY

1813456-REMOTE LINK 1Ø PIN RADIO HARNESS
REF. ONLY



(B) (A)

PART NAME

FIELD INSTALL REMOTE
LINK RADIO OPTION

PART NO.

931Ø237

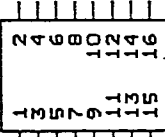
REV. B

POWER

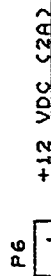


+12 VDC.
GROUND

EXPANDED ACCESSORY CONNECTOR



MIC PTT
150mV AUDIO IN
600mV AUDIO OUT



P6

+12 VDC (2A)
GROUND
PTT OUT
PTT COMMON
GROUND
TX AUDIO
RX AUDIO
ZCOR
RADIO SELECT
GROUND

MOTOROLA RADIUS M120

REMOTE LINK

Valmont Industries, Inc.
P.O. BOX 358
HIGHWAY 275
VALLEY, NE 68064

Remote Link Radio Cable Motorola Radius M120

SIZE	F5CH NO	DWG NO	REV
A	9310237M.5CH	9310237M	A

February 16, 1996	SCALE NONE	SHEET	1 OF 1
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