



***INSTALLATION AND OPERATING
INSTRUCTIONS***

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

PROMINENCE
DC COMBINER BOXES

Document # A0990-I-001



REV.	ECRA#	DESC.	DATE	AUTHOR
F	08-433	ADDED PROMINENCE 6	5/15/08	J.S.
B	08-415	GENERAL REVISIONS	1/28/08	J.S.
C	08-419	UPDATES FOR UL1741 COMPLIANCE	3/3/08	J.S.
D	08-419	UPDATES FOR UL1741 COMPLIANCE	3/20/08	J.S.
E	08-419	UPDATES FOR UL1741 COMPLIANCE	3/21/08	J.S.

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-Proprietary Information-

SAVE THESE INSTRUCTIONS- THIS MANUAL CONTAINS IMPORTANT INSTRUCTIONS FOR MODELS **PROMINENCE 6, PROMINENCE 12, PROMINENCE 24, AND PROMINENCE 36** THAT SHALL BE FOLLOWED DURING INSTALLATION AND MAINTENANCE OF THE COMBINER BOXES.

YOU MUST FOLLOW THESE INSTRUCTIONS DURING INSTALLATION AND/OR MAINTENANCE OF THESE COMBINER BOXES

WARNING! THE INSTALLATION, ADJUSTMENT, OR REPAIR OF COMBINER BOXES INVOLVES RISK OF CONTACT WITH POTENTIALLY LETHAL VOLTAGES AND CURRENTS.

NO ATTEMPT TO INSTALL OR SERVICE THE SYSTEM SHOULD BE MADE BY ANYONE WHO IS NOT A QUALIFIED, TRAINED TECHNICIAN FAMILIAR WITH THIS TYPE OF ELECTRICAL EQUIPMENT.

Installers should be advised:

- These installation instructions are for use by qualified personnel only.
- The equipment contains lethal DC voltages.
- Site access is intended for authorized personnel only.
- The electrical quick-connects are not for current interrupt. Do not disconnect the quick-connects unless the system is open-circuited and has been checked for a short circuit.
- The inverters contain energy storage devices that require 15 minutes in order to safely discharge their lethal voltages.
- Don not install the combiner box in wet rooftop conditions (i.e. in the presence of rain, snow, or ice).
- Handle broken or damaged PV modules with extreme caution.
- Any system work that occurs within six feet of a roof edge must be performed by workers equipped with fall protection.
- Maximum Ambient temperature for guaranteed operation is 50°C.

Installers must reference the National Electric Code (NEC) sections 250 and 690 to ensure proper system wiring and grounding compliance. In addition, all state and federal Occupational Safety and Health Administration (OSHA) guidelines and regulations must be followed.

1. EXPLANATION OF SYMBOLS



ELECTRICAL SHOCK HAZARD- These labels are used to mark components where potentially lethal voltages exist.



GROUND- This identifies the equipment grounding points.

2. DESCRIPTION

PRODUCT DESCRIPTION

The DC combiner box provides a means of combining multiple source circuits from a PV array into a single DC source. Each source circuit is fused separately according to the requirements of the National Electric Code (NEC). The combiner box allows for fail-safe operation of the system in the unlikely event that a problem with a source circuit leads to abnormally high current. In addition, the combiner box provides a convenient means of diagnosing the DC portion of a PV system for routine maintenance and troubleshooting.

SPECIFICATIONS

Model	Maximum # Of Strings	Maximum Fuse Capacity Per String (DC)	Maximum Output Current (DC)	Maximum Output Wire Size	Number of Output Poles
PROM6	6	20 Amps	120 Amps	3/0 AWG	1
PROM12	12	15 Amps	180 Amps	350MCM	1
PROM24	24	15 Amps	360 Amps	350MCM	2
PROM36	36	15 Amps	540 Amps	350MCM	2

COMPONENTS

The combiner box is a pre-wired, wall or floor mounted electrical enclosure containing the following components:

- **Fuse blocks-** Dead front fuse holders
- **Positive Bus Bar-** Copper bar used to combine all positive inputs.
- **Negative Bus Bar-** Copper bar used to combine all negative inputs.
- **Ground Bus Bar-** Copper bar used to combine individual array grounds to system ground.
- **Plastic Shields-** Plastic guards acting as a means of safety to prevent incidental contact with live parts
- **Insulators-** Plastic standoffs used to isolate the electricity between the buss bars and the metal backplane and enclosure.
- **Mounting Kit-** Hardware used to secure enclosure to wall or ground.

3. REQUIRED TOOLS AND MATERIALS

TOOLS

Standard construction and electrical tools along with basic electrical safety and testing instruments are required for the installation of the combiner box. In addition to this, installation requires the following:

- **Multimeter**
- **Phillips Screwdriver**
- **Torque Wrench**
- **Electrical Safety Gloves**
- **Allen Wrench Set**
- **Wire Strippers**
- **Permanent Marking Device**
- **Level**

MATERIALS

- **Tie wraps**
- **Liquid tight conduit hubs**
- **Torque Seal (Optional)**

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NOTE: IN ADDITION TO TOOLS AND MATERIALS REQUIRED, INSTALLERS MUST REFERENCE THE SPECIFIC SITE SCOPE AND PROJECT DRAWINGS FOR ADDITIONAL INFORMATION AND CONSIDERATIONS, INCLUDING THE SYSTEM LAYOUT AND ANY RELATED ELECTRICAL DRAWINGS.

4. INSTALLATION PROCEDURE

1. PREPARING THE COMBINER BOX FOR MOUNTING

1.1 Refer to the project drawings to identify the mounting location and any specific combiner box location requirements or special instructions. You must mount the box in a position/location where the door is easily accessible.

1.2 Included with your Prominence Combiner Box are mounting brackets to be affixed to the enclosure.

1.3 Refer to the layout diagram of the array and secure the enclosure to a rigid substrate using a minimum of 1/4" stainless hardware.

1.4 Refer to the information nameplate on the front door of the enclosure to find the model number. Refer to the appendix in the rear of this manual to identify acceptable punchout locations. Use only water tight conduit fittings to connect the conduit to the punchouts. All hubs must comply with the requirements of UL 514B, "Standards for Fittings for Conduit and Outlet Boxes."

DO NOT INSTALL CONDUIT ON UPWARDS FACING SIDES OF THE ENCLOSURE. This is meant to reduce the likelihood of rainwater penetrating into the enclosure.

2. CONNECTING WIRES FROM THE ARRAY*

**In this section it is assumed that all arrays are negatively grounded. To positively ground arrays, route the negative conductors to the fuse blocks and the positive conductors to the bus bar without fuses (labeled as the negative bar).*

Class 1 wiring methods are to be used for field wiring connections to terminals of a Class 2 circuit.

- 2.1 Label each wire from the array with a reference number as well a polarity.
- 2.2 Run all wires into the combiner box through the watertight hub.
- 2.3 Strip ½” from all of the wires.
- 2.4 Terminate all positive wires on corresponding fuse block.
- 2.5 Terminate all negative wires on negative bus bar tap.
- 2.6 Use Tie wraps and bridge punching on backplate to secure incoming wireways onto backplate.
- 2.7 Use torque and wiring guidelines from Combiner Box Backplate or the Appendix in the back of this manual to torque components to proper specifications.*

****Due to the inherent expansion and contraction of metals when subjected to temperature changes, we suggest re-torquing all components on an scheduled basis.***

3. ATTACHING POSITIVE AND NEGATIVE TERMINALS TO THE INVERTER

- 3.1 After referring to the electrical drawings to determine which wire to use, connect all three conductors (positive, negative, and ground) to either the inverter or DC switch, depending on the system.
- 3.2 Use torque guidelines from Combiner Box Backplate or the Appendix in the back of this manual to torque output terminals to proper specifications.

3.3 After components have been properly torqued, permanently mark the hex nuts so that any change in the rotation will be easily discerned. Use either torque seal or a permanent marker. See backpan for torquing information.

3.4 Refer to the single-line drawings to identify the correct wire and conduit, then install the conduit and pull the wire from the combiner box to the inverter or DC switch.

4. INSTALL FUSES

4.1 Open all fuseblocks and insert a fuse into each. Be sure to use only fuses of the proper rating. Fuse sizing can be determined by $1.56 \times I_{sc}$ of the corresponding modules.

5. VERIFYING VOLTAGE, POLARITY

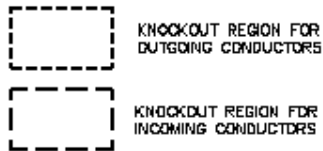
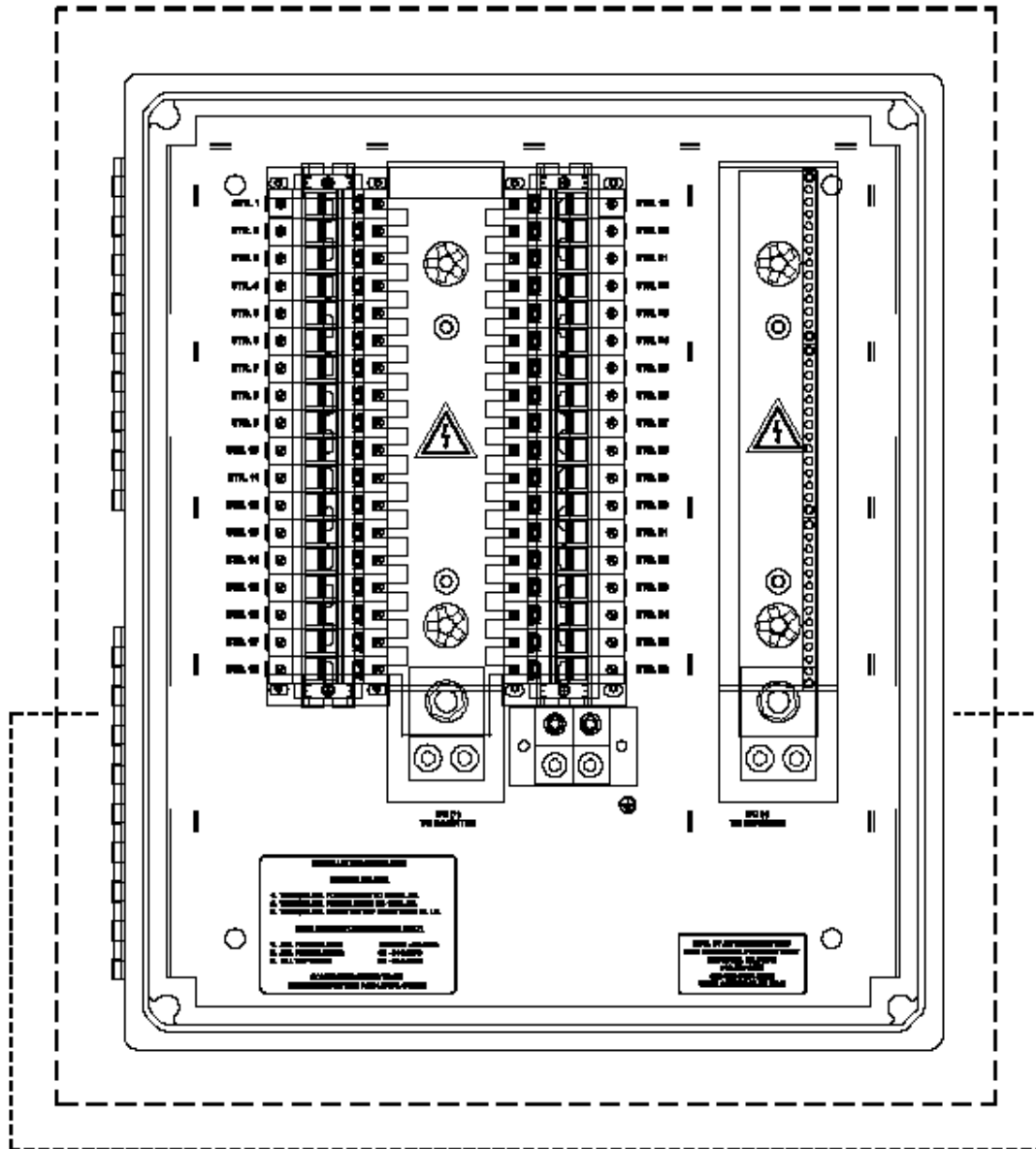
5.1 Using a multimeter, test the voltage of each string by measuring between the array side of the fuse block and the negative bus bar. Ensure that each string has the proper polarity.

6. FINALIZING INSTALLATION

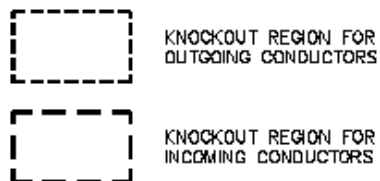
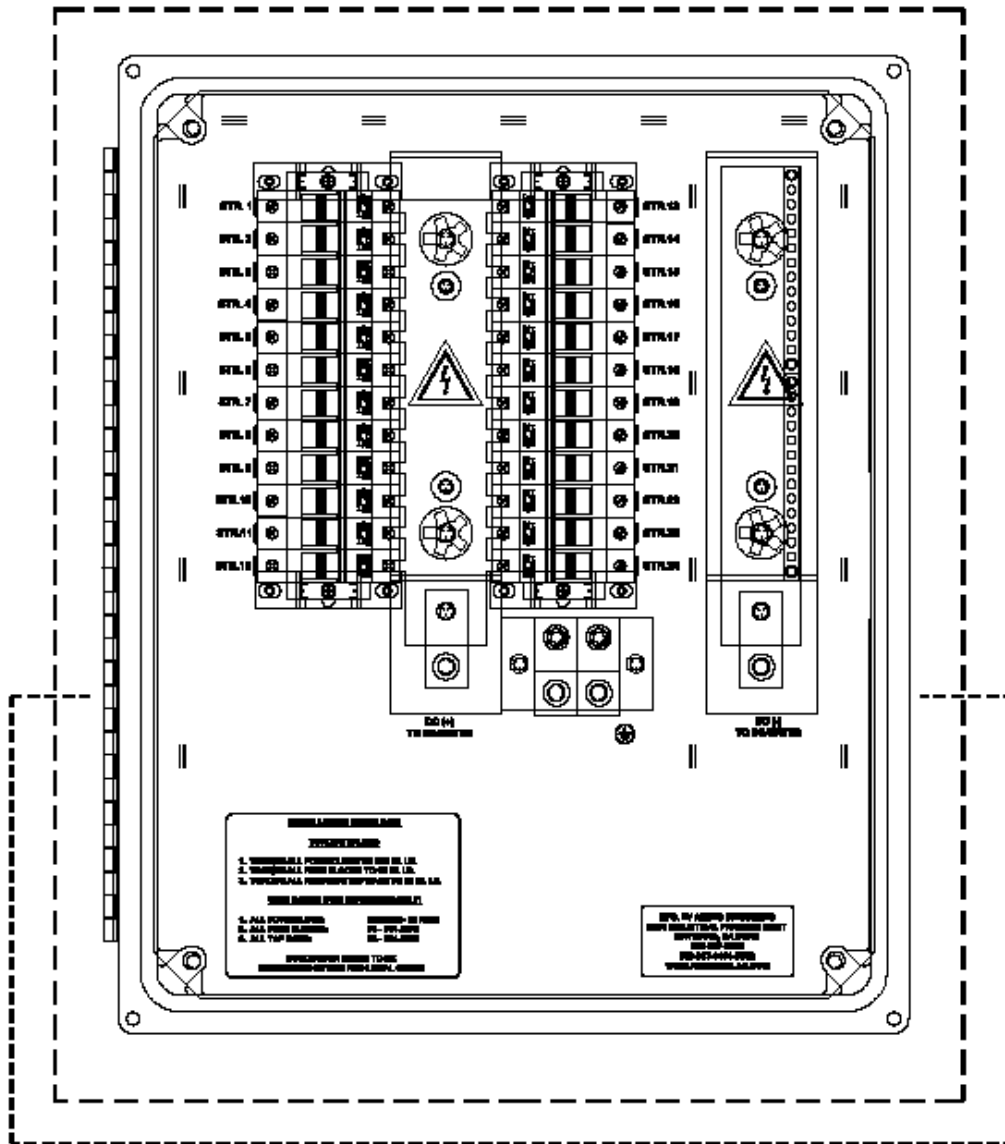
6.1 Be sure that the inverter has been turned off.

6.2 Close all fuse blocks.

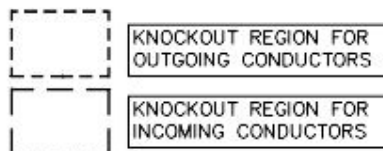
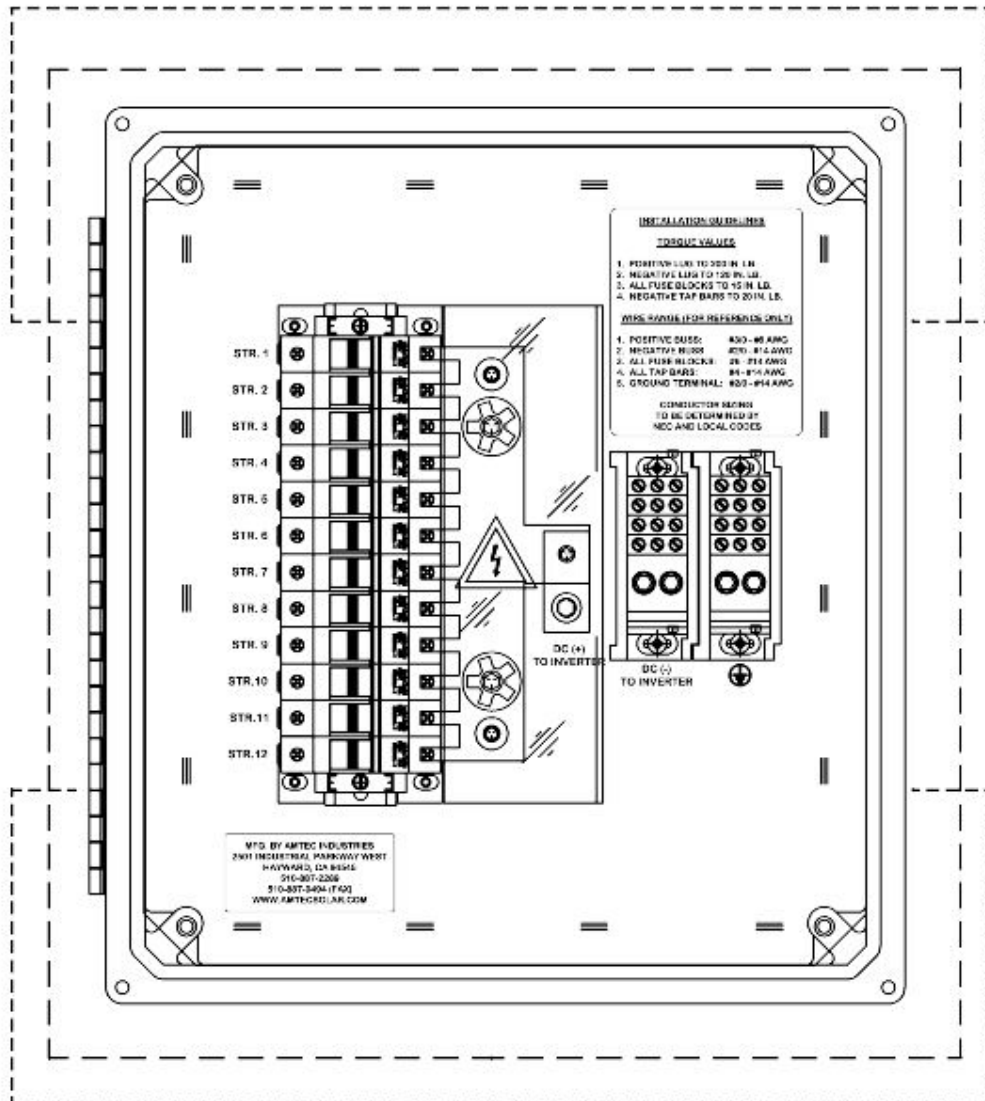
The system is now ready to be energized.



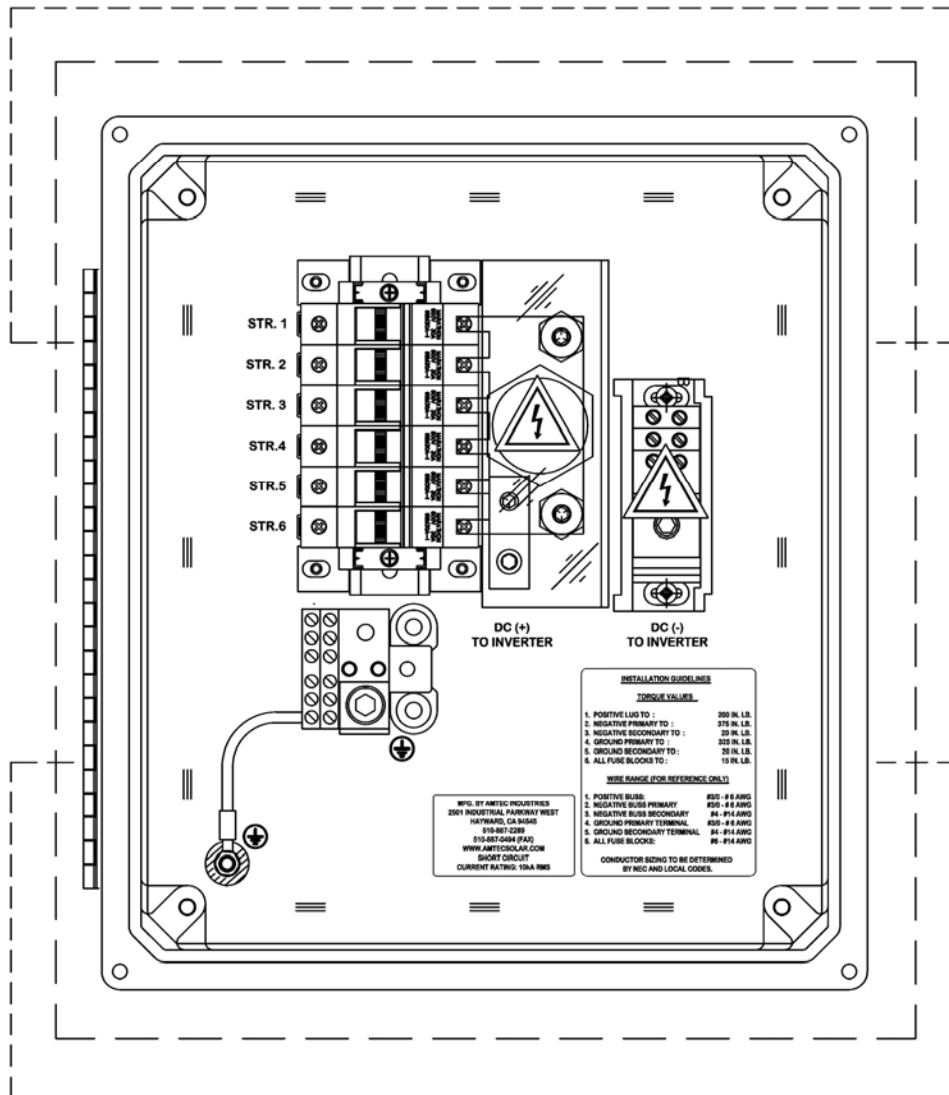
PROMINENCE 36 KNOCKOUT LOCATIONS



PROMINENCE 24 KNOCKOUT LOCATIONS



PROMINENCE 12 KNOCKOUT LOCATIONS



MFG. BY AMTEC INDUSTRIES
 2501 INDUSTRIAL PARKWAY WEST
 HAYWARD, CA 94545
 P/O BOX 1289
 (510) 887-5942
 WWW.AMTECSOLAR.COM
 SHORT CIRCUIT
 CURRENT RATING: 100A RMS

INSTALLATION GUIDELINE
TORQUE VALUES
 1. POSITIVE LUG TO : 200 IN. L.B.
 2. NEGATIVE PRIMARY TO : 275 IN. L.B.
 3. NEGATIVE SECONDARY TO : 25 IN. L.B.
 4. GROUND PRIMARY TO : 200 IN. L.B.
 5. GROUND SECONDARY TO : 35 IN. L.B.
 6. ALL FUSE BLOCKS TO : 15 IN. L.B.

WIRE RANGE (FOR REFERENCE ONLY)
 1. POSITIVE BUSS : #00 - # 6 AWG
 2. NEGATIVE BUSS PRIMARY : #00 - # 6 AWG
 3. NEGATIVE BUSS SECONDARY : #4 - #14 AWG
 4. GROUND PRIMARY TERMINAL : #00 - # 6 AWG
 5. GROUND SECONDARY TERMINAL : #4 - #14 AWG
 6. ALL FUSE BLOCKS : #6 - #14 AWG

CONDUCTOR SIZING TO BE DETERMINED
 BY NEC AND LOCAL CODES.



KNOCKOUT REGION FOR
OUTGOING CONDUCTORS



KNOCKOUT REGION FOR
INCOMING CONDUCTORS

PROMINENCE 6 KNOCKOUT LOCATIONS

APPENDIX

TORQUE VALUES

All Values Given in In-Lbs.

	PROM6	PROM12	PROM24	PROM36
FUSE BLOCKS	15	15	15	15
POSITIVE LUGS	200	325	325	325
NEGATIVE/GND TAP BARS	N/A	N/A	35	35
NEGATIVE PRIMARY	325	325	325	325
NEGATIVE/GND SECONDARY	45	45	N/A	N/A
GROUND PRIMARY	120	120	325	325

WIRE RANGES

For Reference Only

All Values in A.W.G. (Unless Otherwise Noted)

	PROM6	PROM12	PROM24	PROM36
FUSE BLOCKS	6-14	6 - 14	6 - 14	6 - 14
POSITIVE LUGS	3/0 - 6	350MCM – 6	350MCM – 6	350MCM – 6
NEG/GND TAP BARS	N/A	N/A	4-14	4-14
NEGATIVE PRIMARY	3/0 - 6	350MCM - 6	350MCM - 6	350MCM - 6
NEGATIVE/GND SECONDARY	4-14	4-14	N/A	N/A
GROUND PRIMARY	3/0 - 14	2/0 - 14	350MCM – 6	350MCM – 6

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