

**FIELD INSTALLATION OF A16 RECTIFIER ASSEMBLY**  
 For Units Rated 75-100 Adc (EJ5139-02)

**BACKGROUND**

The AT30 Series battery charger features a Silicon-Controlled Rectifier Assembly (A16), providing six-pulse rectification of three-phase ac-to-dc power. The A16 assembly (charger manufacturer's p/n **PM5007-01**) features three (3) SCR modules, two (2) bus bars, and a mounting heatsink.

The PM5007-01 rectifier/heatsink assembly (A16) should ONLY be used in AT30s rated **75-100** Adc. If your AT30 is rated below or above these ratings, discontinue this procedure and acquire the proper field kit and instructions.

In older AT30s, rated 75Adc and housed in Style-5018 enclosures, a different rectifier assembly (charger manufacturer's p/n PM5007-00) may have been supplied. The newer PM5007-01 rectifier assembly supplied with this kit (although physically different) is the valid replacement for the now-discontinued PM5007-00. See sheet 6 of 6 for a representation of this difference.

**REFERENCE DOCUMENTATION**

- 1) AT30 *Operating and Service Instruction* manual ([JA0102-03](#))
- 2) AT10.1 or AT30 Standard Drawings, featured online (<http://www.ATSeries.net/>)
- 3) AT30 Battery Charger Outline & Internal Component Layout Drawings:

	12 Vdc	24 Vdc	48 Vdc	130 Vdc
75 Adc	<a href="#">JE5085-00</a> Style-5018	<a href="#">JE5085-00</a> Style-5018	<a href="#">JE5085-00</a> Style-5018	<a href="#">JE5085-00</a> Style-5018
	<a href="#">JE5088-00</a>	<a href="#">JE5088-00</a>	<a href="#">JE5088-00</a>	<a href="#">JE5088-00</a>
	<a href="#">JE5088-99</a>	<a href="#">JE5088-99</a>	<a href="#">JE5088-99</a>	<a href="#">JE5088-99</a>
100 Adc	<a href="#">JE5085-00</a> Style-5018	<a href="#">JE5085-00</a> Style-5018	<a href="#">JE5085-00</a> Style-5018	<a href="#">JE5086-00</a> Style-5030
	<a href="#">JE5088-00</a>	<a href="#">JE5088-00</a>	<a href="#">JE5088-00</a>	<a href="#">JE5089-00</a>
	<a href="#">JE5088-99</a>	<a href="#">JE5088-99</a>	<a href="#">JE5088-99</a>	<a href="#">JE5089-99</a>

**MATERIALS REQUIRED**

*Supplied with EJ5139-02 Field Retrofit Kit:*

- 1) PM5007-01 A16 rectifier/heatsink assembly
- 2) EH5034-00 3-piece snubber harness (pre-wired to PM5007-01)
- 3) JD5018-02 field service instructions (this sheet)

**TOOLS REQUIRED**

- 1) standard hand tools
- 2) work gloves

**PREPARATION**

**NOTE: Only qualified service technicians should perform this procedure. Follow all site and employer standard safety protocols.**

**PROCEDURE (shutdown)**

1. Identify your particular AT30 Series battery charger enclosure (Style-5018 or Style-5030), and refer to the appropriate standard drawings in Appendix C of your *Operating and Service Instructions*.
2. Shut down the AT30 per the *Operating and Service Instructions*, by opening the dc circuit breaker (CB2) and the ac circuit breaker (CB1). If the AT30 was supplied with fuses in lieu of breakers, disconnect ALL ac & dc power to the AT30 externally.
3. **WARNING: Remove ALL ac power to the battery charger, disconnect the batteries, and remove all signal contacts. Optional filtering capacitors (C1/C2) store powerful electrical potential. Wait several minutes for this potential to bleed off.**
4. Open the AT30 front panel door and remove the Plexiglas safety shield.
5. Using a voltmeter, make sure all power inside the charger, at the I/O panel (TB1), and remote alarms is at **ZERO** before continuing.
6. Refer to the standard internal component layout drawings ([JE5088-00](#) / [JE5089-00](#)) and identify the Rectifier/Heat Sink Assembly (A16), mounted to the back of the AT30, at the top.

**PROCEDURE (removal)**

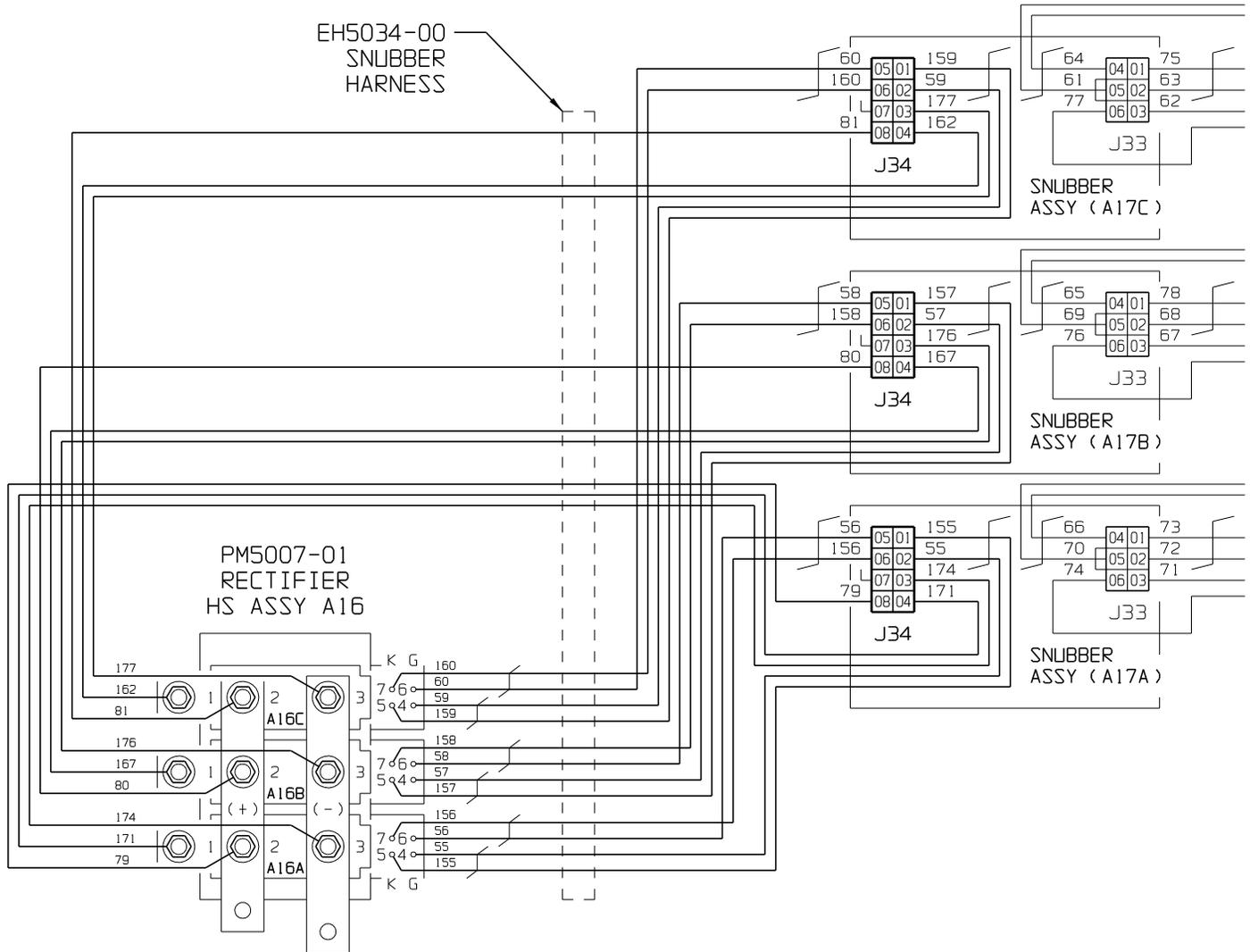
7. Identify the three (3) bundled wire harnesses running from the existing A16 assembly, and ending at the three (3) square SCR snubber pc boards (A17x).
8. Unplug these harnesses from A17x at the 8-pin connectors (J34). Leave the 6-pin connectors (J33) on A17x intact.
9. Refer to the connection diagrams supplied in this service instruction on Sheet 4 of 6 (signal wiring), and Sheet 5 of 6 (power wiring & mechanical orientation).
10. Identify the three (3) power wires (#07, #08 & #09), running from the power isolation transformer (T1), and remove them at the rectifier assembly (A16-ac).
11. Identify power wire #11, running from the main inductor (L1), and remove it at the rectifier assembly (A16-pos[+]).
12. Remove the main dc shunt (R1), which may be **mounted** to the negative bus bar of the rectifier assembly (A16). If the shunt is **wired** to the rectifier, remove this connection at the Rectifier/Heat Sink Assembly (A16-neg[-]).
13. Unbolt the **heatsink** of the rectifier from the pack panel of the AT30, and carefully remove the existing Rectifier/Heat Sink Assembly (A16).
14. Detach the free-wheeling diode (CR4) from the **removed** Rectifier/Heat Sink Assembly (A16), along with wire #15 (if present) at A16-pos[+]. See Sheet 5 of 6 for details.

**PROCEDURE (installation)**

15. Mount the free-wheeling diode (CR4) to the **new** PM5007-01 replacement Rectifier/Heat Sink Assembly. See Sheet 5 of 6 for details.
16. Re-connect wire #15 (if present) at A16-pos[+] using 1/4-20 hardware.
17. Carefully place the **new** PM5007-01 replacement Rectifier/Heat Sink Assembly (A16) inside the AT30, utilizing the existing mounting holes.
18. If a older-style **PM5007-00** is being replaced by a PM5007-01 in a 75Adc unit, carefully place the **new** assembly inside the AT30, utilizing the mounting holes. See Sheet 6 of 6 for details.
19. Mount the new PM5007-01 replacement Rectifier/Heat Sink Assembly (A16) to the back panel of the AT30, utilizing the supplied six (6) pieces 5mm x 16mm metric hardware (PE5021-05).
20. Mount the **existing** main dc shunt (R1) to the **new** Rectifier/Heat Sink Assembly (A16), and replace any wire that may have been removed (from A16-neg[-]) back in Procedure Step 12.
21. For 75Adc units, reconnect power wire #11, running from the main inductor (L1), attaching it at the Rectifier/Heat Sink Assembly (A16-pos[+]).
22. For 100Adc units, reconnect power wire #11, running from the main inductor (L1), attaching it at the "flag" of the Free-Wheeling Diode (CR4-K).
23. Reconnect the three (3) power wires (#07, #08 & #09), running from the power isolation transformer (T1), attaching them to the rectifier assembly (A16-ac).
24. Run the three (3) bundled wire harnesses connected to the Rectifier/Heat Sink Assembly (A16) to the three (3) square SCR snubber pc boards (A17x).
25. Plug these harnesses into the empty 8-pin connectors (A17x-J34). Phase rotation is important, see Sheet 4 of 6 for wiring details.
- 26.

**PROCEDURE (inspection & restart)**

27. See Sheets 4 of 6 and 5 of 6 for connection diagrams, and check **ALL** new wiring.
28. Make sure that all power wires are connected with the correct **polarity** and **phase rotation**.
29. Double check your work, and make sure that all connections are tight and secure.
30. Replace the Plexiglas safety shield, and close the AT30 front panel door.
31. Reconnect the battery, dc loads, and ac power.
32. Re-energize the AT30 per the *Operating and Service Instructions*, by opening the dc breaker (CB2) **first**, followed by the ac breaker (CB1) **second**.
33. Check the AT30 for proper functionality, output voltage, and output current. Readjust your settings if needed.
34. Field installation of the PM5007-01 Rectifier/Heat Sink Assembly (A16) is now complete.



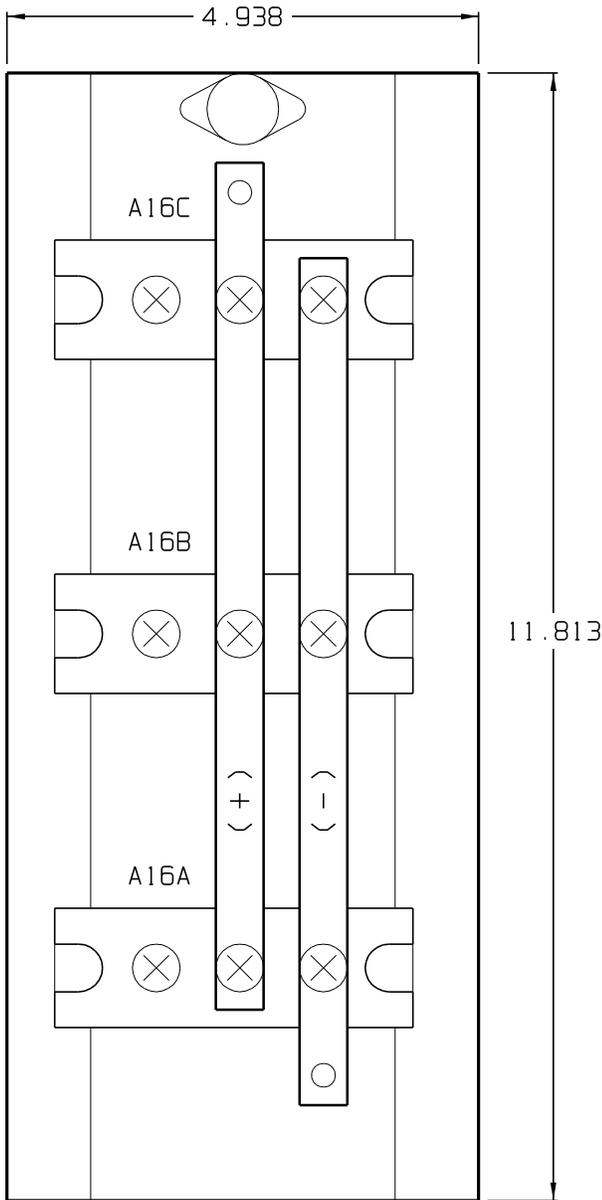
**EJ5139-02 FIELD INSTALLATION KIT CONTAINS:**

- 1) PM5007-01 A16 rectifier/heatsink assembly
- 2) EH5034-00 3-piece snubber harness (pre-wired to PM5007-01)
- 3) JD5018-02 field service instructions (this sheet)

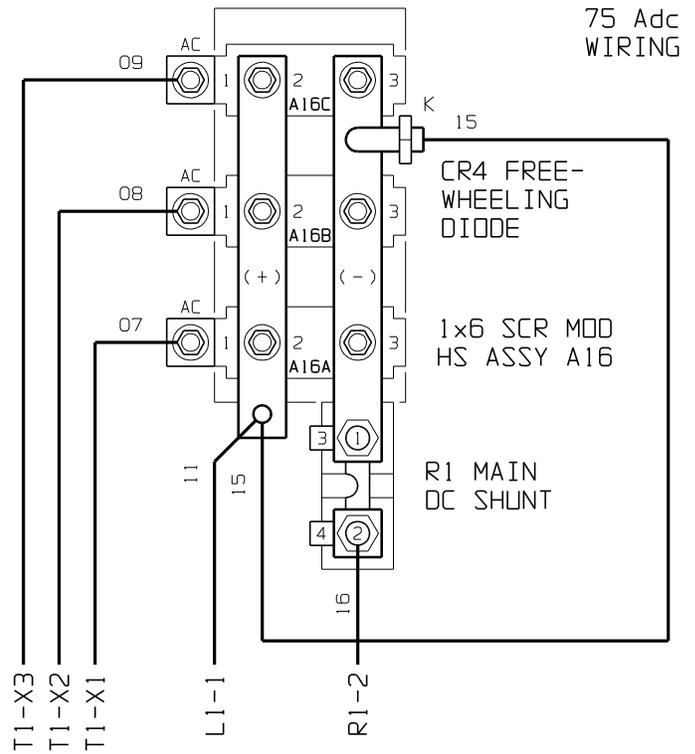
**NOTES:**

- A) PM5007-01 RECTIFIER HEAT SINK ASSEMBLY IS SUPPLIED WITH NEW 3-PIECE SNUBBER HARNESS (EH5034-00) PRE-WIRED TO A16.
- B) LEAVE EXISTING 6-PIN CONNECTORS AT A17x-J33 INTACT.
- C) RE-ESTABLISH SIGNAL WIRING EXACTLY PER DIAGRAM ABOVE WHEN INSERTING THREE (3) 8-PIN CONNECTORS OF NEW PRE-WIRED HARNESS INTO A17x-J34.

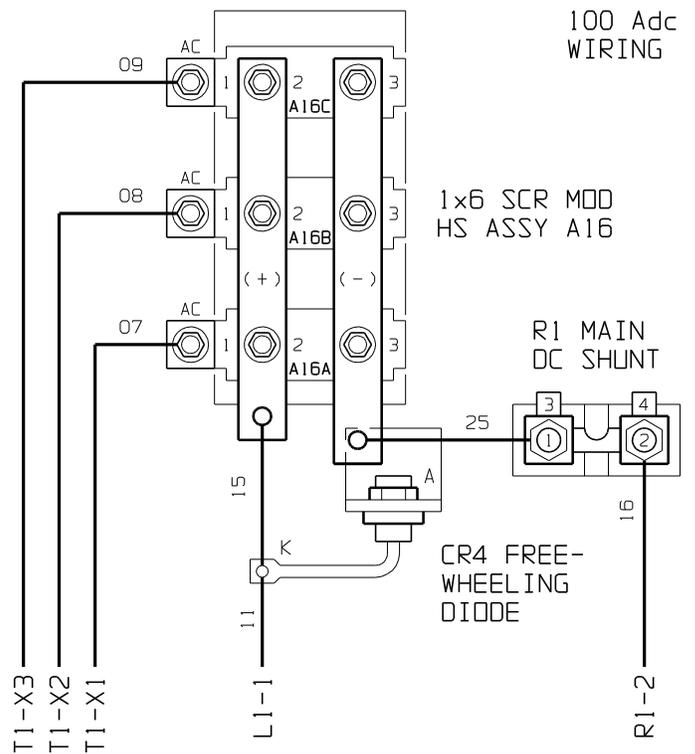
				<p>THIRD ANGLE PROJECTION</p>									
0	22358	011711	ND	DRAWN BY	MCR	120810	TITLE FIELD INSTALLATION INSTRUCTIONS AT30 RECTIFIER (A16) ASSEMBLY: EJ5139-02						
B	N/A	010711	N/A	APPROVED	ND	011711	DRAWING No		JD5018-02		REV	0	<b>A</b>
A	N/A	120810	N/A	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:			SCALE		NTS		PART No	JD5018-02	
REV	ECN No	DATE	APP	SHEET		4		OF		6			



PM5007-01 RECTIFIER  
HEAT SINK ASSY A16



75 Adc  
WIRING

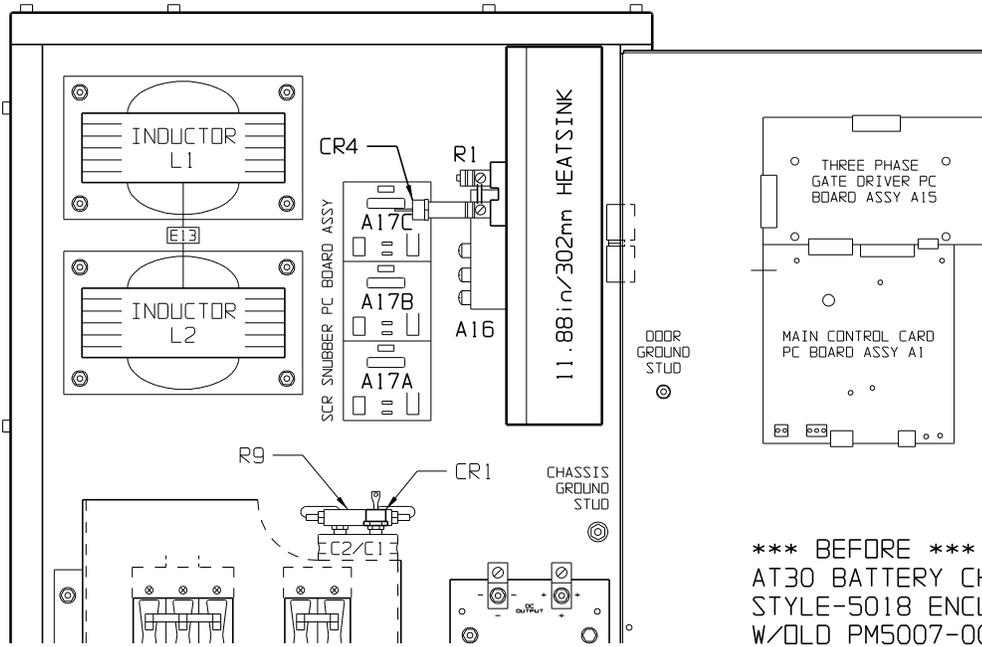


100 Adc  
WIRING

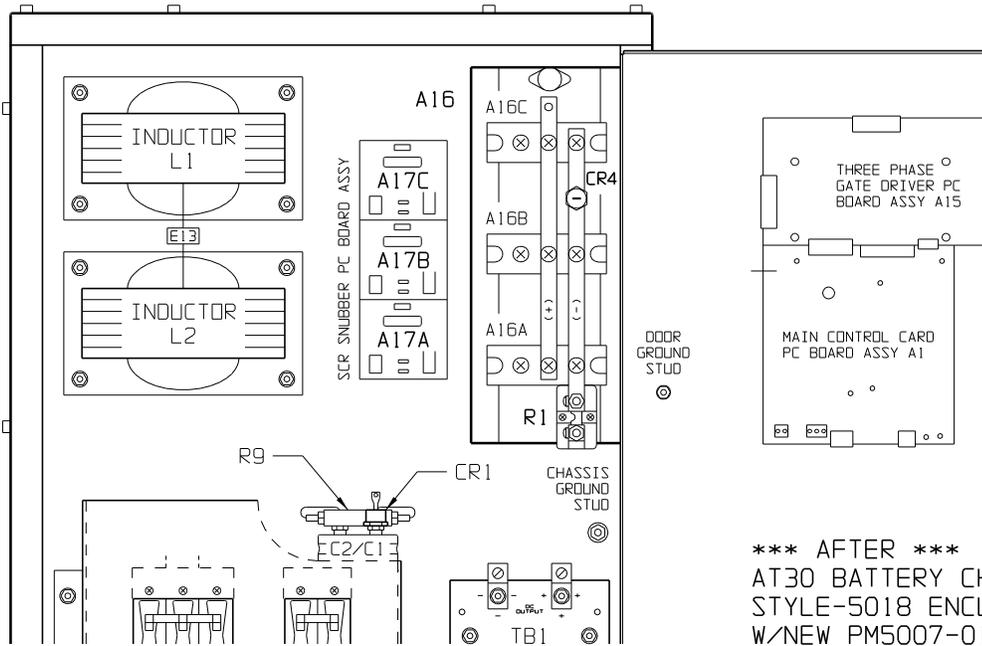
				THIRD ANGLE PROJECTION	
0	22358	011711	ND	DRAWN BY	MCR 120810
B	N/A	010711	N/A	APPROVED	ND 011711
A	N/A	120810	N/A	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:	
REV	ECN No	DATE	APP		

TITLE				FIELD INSTALLATION INSTRUCTIONS	
TITLE				AT30 RECTIFIER (A16) ASSEMBLY: EJ5139-02	
DRAWING No		JD5018-02		REV	0
SCALE		PART No		SHEET	
NTS		JD5018-02		5 OF 6	

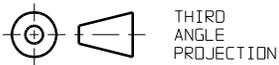
SYM	STANDARD COMPONENT DESCRIPTION
A1	MAIN CONTROL PC BOARD
A15	THREE PHASE GATE DRIVER PC BRD
A16x	3PH SCR MODULES (3x2 Q1-Q6)
A17x	SCR SNUBBER PC BOARD - QTY. (3)
CB1	AC INPUT CIRCUIT BREAKER (C03)
CB2	DC OUTPUT CIRCUIT BREAKER (C02)
CR4	FREE-WHEELING DIODE
L1	MAIN INDUCTOR
R1	MAIN DC SHUNT
TB1	I/O TERMINAL BOARD



\*\*\* BEFORE \*\*\*  
 AT30 BATTERY CHARGER  
 STYLE-5018 ENCLOSURE ASSY  
 W/OLD PM5007-00



\*\*\* AFTER \*\*\*  
 AT30 BATTERY CHARGER  
 STYLE-5018 ENCLOSURE ASSY  
 W/NEW PM5007-01



THIRD  
 ANGLE  
 PROJECTION

0	22358	011711	ND	DRAWN BY	MCR	120810	TITLE			FIELD INSTALLATION INSTRUCTIONS AT30 RECTIFIER (A16) ASSEMBLY: EJ5139-02		
B	N/A	010711	N/A	APPROVED	ND	011711	DRAWING No			JD5018-02		
A	N/A	120810	N/A	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:			REV			0		
REV	ECN No	DATE	APP	SCALE			NTS			PART No		
							JD5018-02			SHEET 6 OF 6		