

Battery Charging Fuse Modification

30-60 kW “B” model Tactical Quiet Generator Sets

MEP-805B, MEP-815B, MEP-806B, MEP-816B

I. Scope:

The MEP-805B, MEP-815B, MEP-806B, MEP-816B, models of the Tactical Quiet Generator (TQG) family of generator sets have a problem with the battery charging fuse. The battery charging fuse has a high rate of blowing. This requires the soldier to keep many spare fuses on hand for replacements. A blown fuse caused two problems. The obvious problem is the loss of the ability to charge the batteries. The more critical problem is the loss of DC control power during mission operations.

The blown battery charging fuse problem is caused by the charging characteristics of the Optima battery. The Optima batteries have a low internal resistance enabling the battery to receive a higher than normal charging current. The alternator has a continuous current capacity of 45 Amps, with a peak of 60 Amps. With the Optima battery and this alternator, the battery charging current, at times, can exceed the maximum current capacity of the fuse therefore the fuse blows. The 6TMF, 6TL, etc., batteries have a higher internal resistance and will not accept current higher than the current capacity of the fuse. The solution to this problem is to replace the 30 A fuse and the 18 gauge wire with a 50 A circuit breaker and a 12 gauge wire. The procedures and materials are described below.

The control power loss problem is caused by the location of the control power circuit take off. The control power is connected to the battery terminal and not the battery charging alternator. While the generator set is operating, the battery charging alternator provides the DC control power through battery charging system. When the fuse blows, the source of generator set DC control power becomes the batteries until available battery power is consumed. With no DC control power, the generator set shuts down. There is another set of instructions to move the DC control power wire to the back of the alternator in order to prevent this failure mode.

The modification below is designed to replace the battery charging fuse circuit with a circuit breaker and a larger wire. We are including the instructions for the DC control power modification as an appendix. Both of these modifications must be accomplished in order to prevent mission failure due to dead batteries. These modification instructions are authority to modify the generator set until the formal design change documentation is approved and disseminated to the field.

II. Material Required:

QTY	Nomenclature	P/N	Source of Supply
2	Terminal, Lug, 14-16, 0.164 stud size	13226E0107-19	DLA
2	Terminal, Lug, 14-16, 3/8 stud size	13226E0107-23	DLA
1	Circuit breaker, 24 V, 50 A	W23-X1A1G-50	Tyco Electronics 720 Sherman Ave Hamdem, CT 06514-0340
1	Bracket, Current Transducer	96-23743	Make From
53”	Wire, Electrical, 12AWG	88-20540-6	DLA

III. Procedures:

The following procedures are designed to allow the soldier to disconnect and replace the battery charging circuit.

1. Disconnect the batteries in accordance with BATTERY CONNECTION INSTRUCTION PLATE, figure 1, located in the battery compartment.

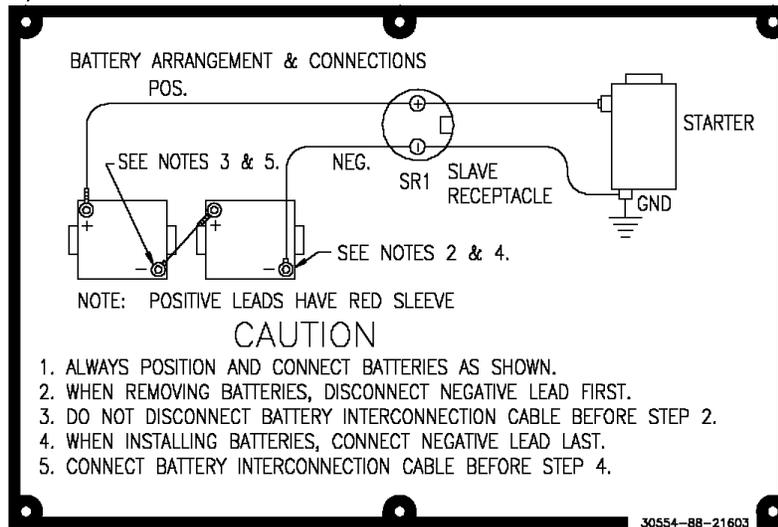


Figure 1 BATTERY CONNECTION INSTRUCTION PLATE

- 2 Remove wire # 310B16 from the positive terminal of the NATO slave receptacle (SR1) as shown in figure 2.

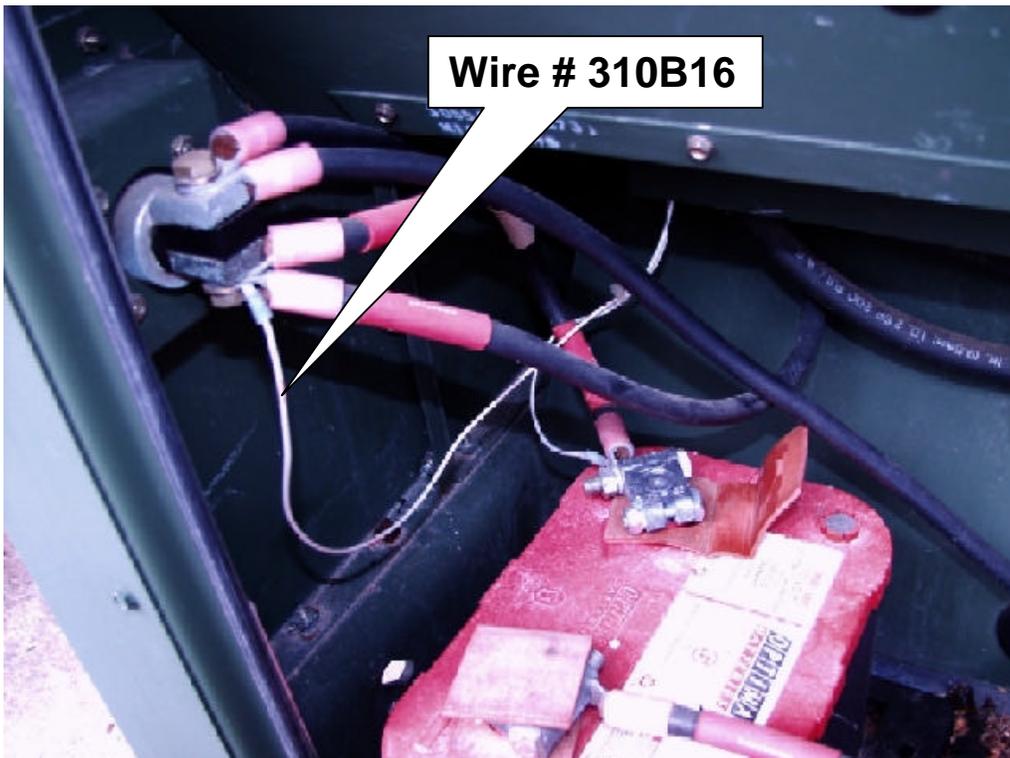


Figure 2 Battery Compartment

3 Disconnect wire #310B16 from the positive terminal on the battery charging alternator, cut off the terminal lug and remove the wire and fuse holder from the harness, see figure 3. If wire #165C16 has not been removed from the current transformer, perform the procedure in appendix A to move the DC control power wire.

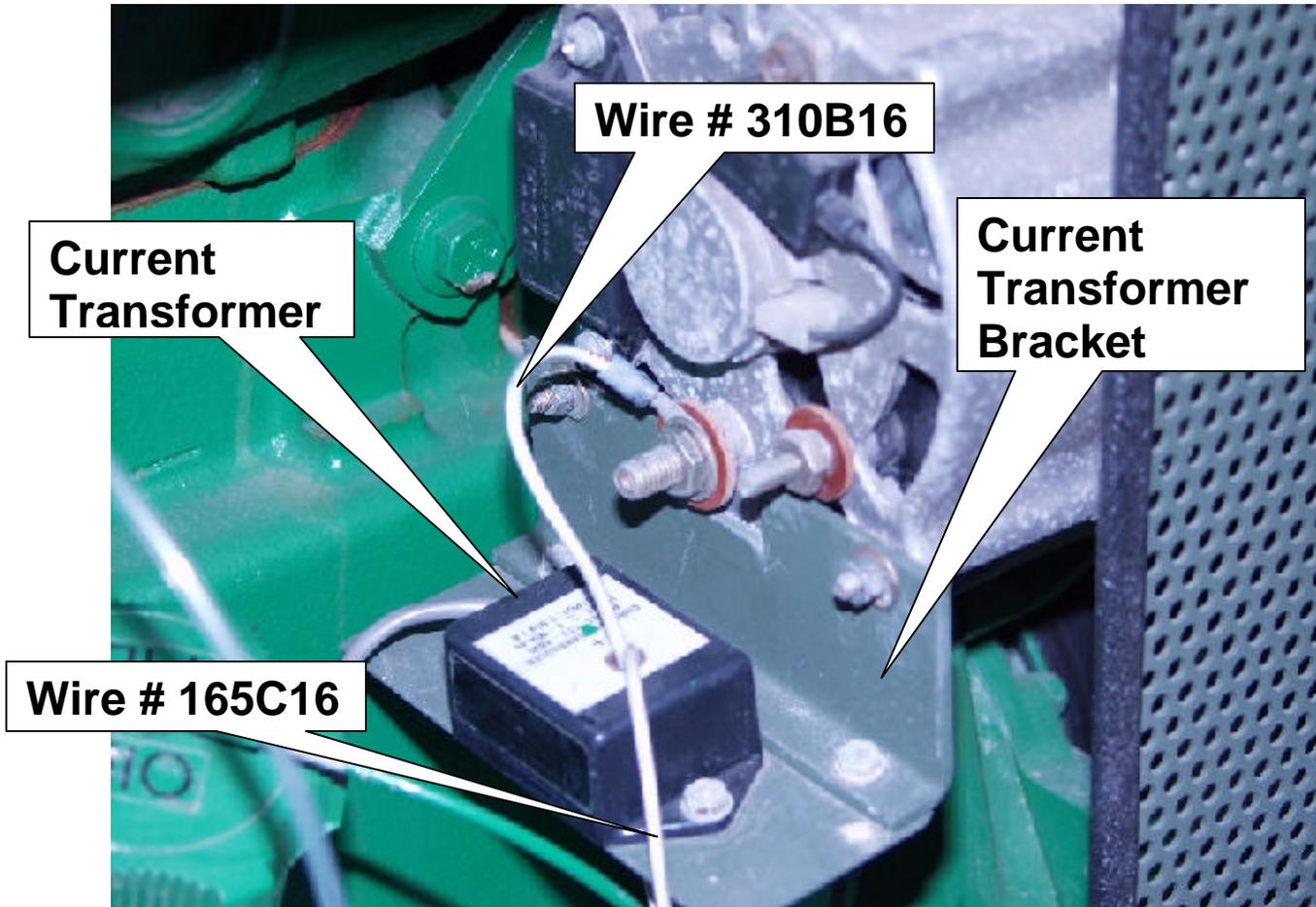


Figure 3 Alternator compartment

4. Remove the current transformer bracket from the back of the alternator, see figure 3. Remove the battery charging current transformer from the bracket and discard the bracket.
5. Using the drawing in appendix B, fabricate the new bracket. Install the battery charging current transformer, in the same orientation, on the new bracket.
6. Measure and cut a 41 inch piece of 12 gauge wire (88-20540-6). Label wire “310B12” close to both ends. On one end, install a 10-12 gauge, 0.164 inch stud size lug terminal. On the other end, install a 10-12 gauge, 3/8 inch stud size lug terminal.
7. Install the 0.164 inch stud size lug terminal of wire # 310B12, on the load terminal of the circuit breaker (CB1) so that the lug terminal is parallel to CB1 on the label side as shown in figure 4.
8. Install a 10-12 gauge 0.164 inch stud size lug terminal to one end of the 12 inch wire. Label wire “310A12” close to both ends.

9. Install the 0.164 inch stud size lug terminal of wire #310A12, on the line terminal of CB1 so that the lug terminal is perpendicular to CB1 on the label side, as shown in figure 4.
10. Install CB1 into side hole of the battery charging current transformer bracket as shown in figure 4.

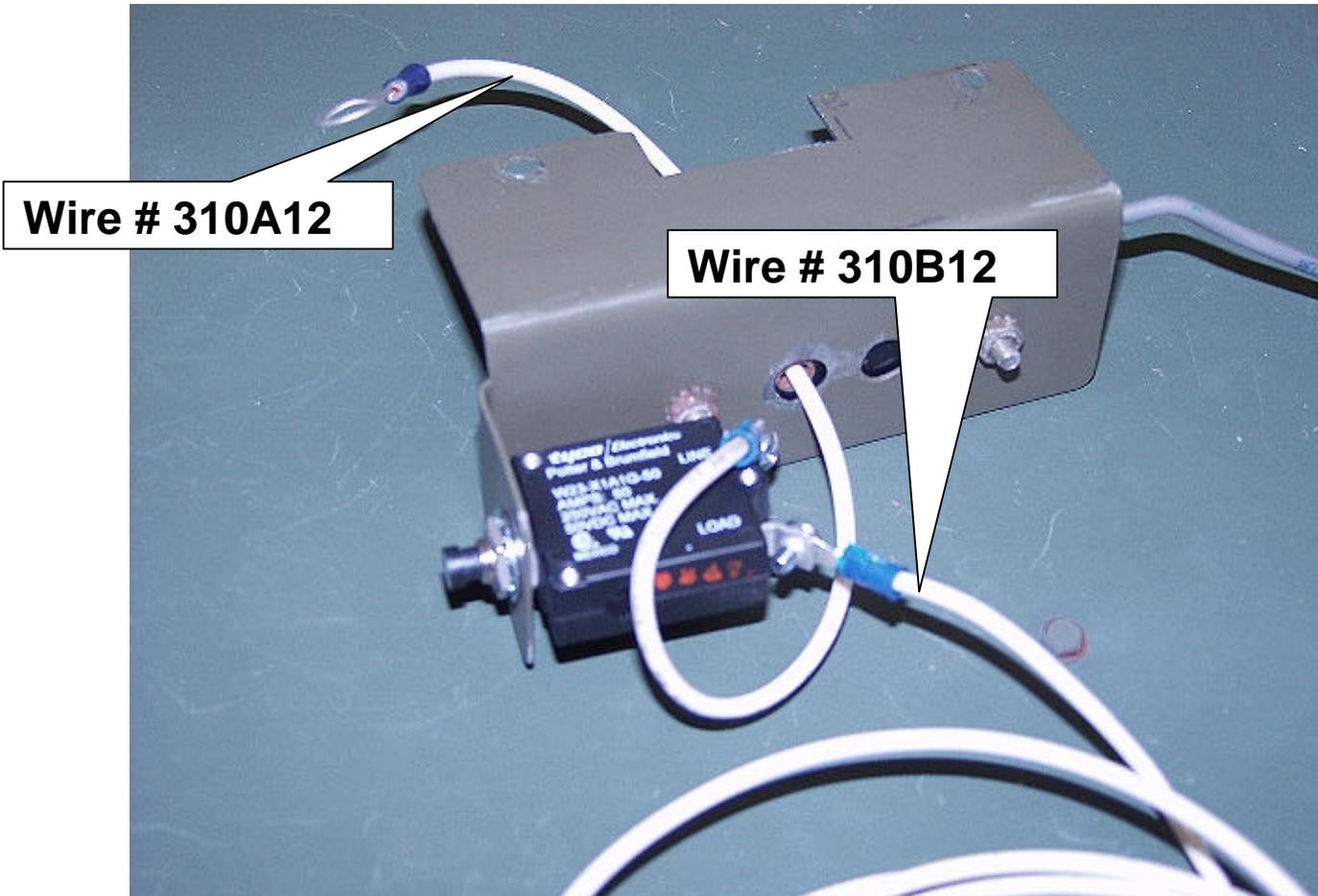


Figure 4 CB1/BCT Bracket Assembly

11. Fish the other end of the wire # 310A12 through the bracket into the battery charging current transformer as shown in figure 4. Install 10-12 gauge, 3/8 inch stud size lug terminal to the end of the wire.
12. Attach CB1/BCT bracket assembly to the alternator using the existing hardware as shown in figure 5.
13. Install 3/8 inch stud size, lug terminal to the positive terminal on the battery charging alternator, as shown in figure 5. If both procedures have been followed properly, then there should be two wires, wire #165C16 and wire #310A12, attached to the positive terminal of the battery charging alternator.

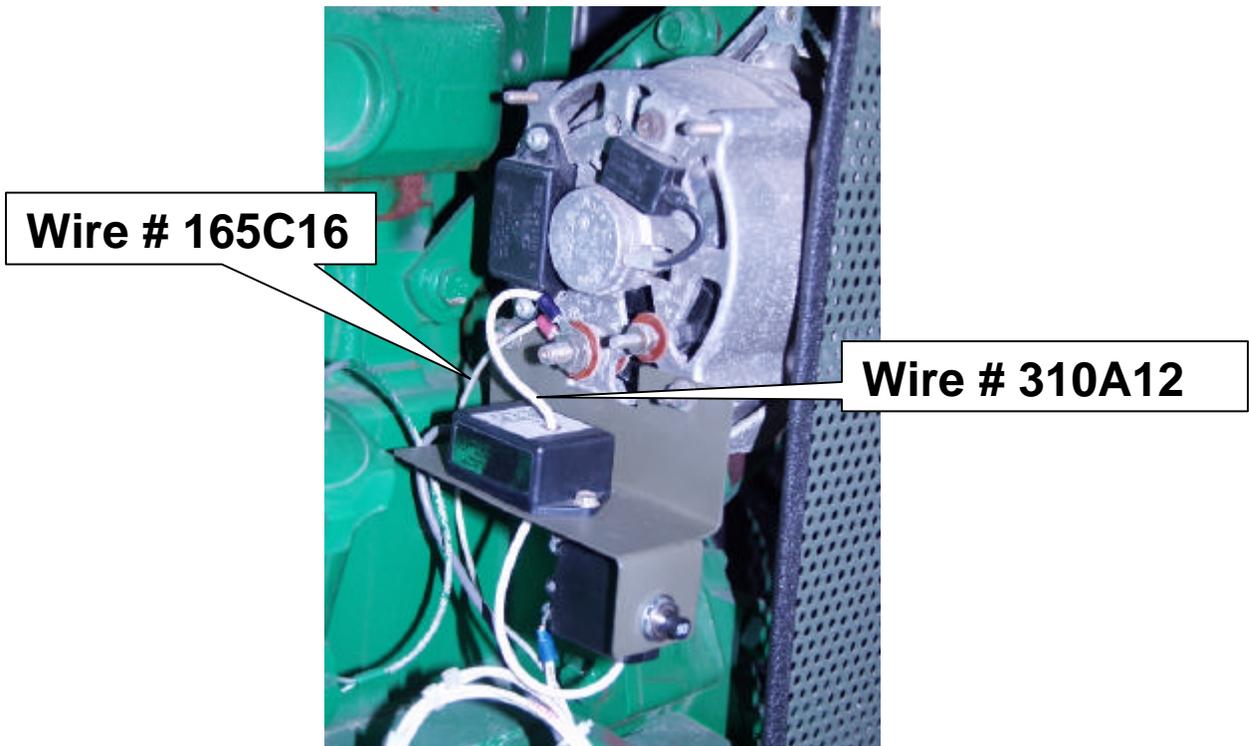


Figure 5 Final Assembly

14. Following the wire harness as much as possible, attach the 3/8 inch lug terminal of wire # 310B12 to the positive terminal of the NATO slave receptacle (SR1) as shown in figure 6. Add wire ties as necessary.

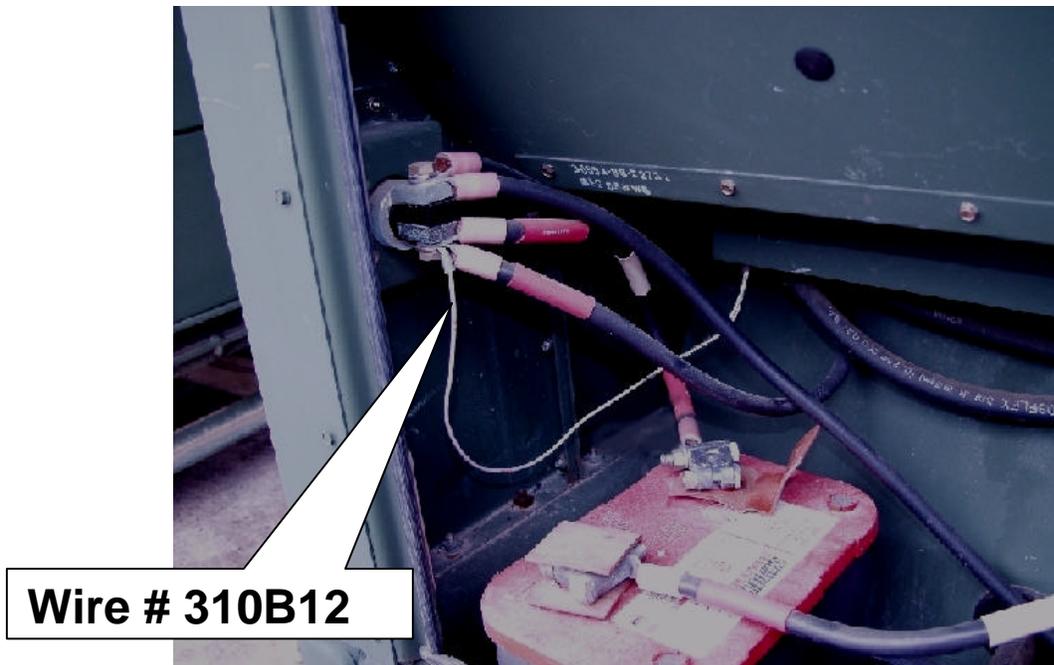


Figure 6 Modified Battery Compartment

15. Re-connect batteries in accordance with the Battery Connection Instruction Plate, figure 1.

Control Power Circuit modification

30-60 kW “B” model Tactical Quiet Generator Sets MEP-805B, MEP-815B, MEP-806B, MEP-816B

I. Scope:

The MEP-805B, MEP-815B, MEP-806B, MEP-816B, models of the Tactical Quiet Generator (TQG) family of generator sets have a readiness problem. The problem is the loss of DC control power during mission operations. The power loss is caused by a blown fuse located in battery charging circuit between the alternator and the batteries. While the generator set is operating, the source of the DC control power is the battery charging alternator. When the fuse blows, the source of generator set DC control power becomes the batteries until available battery power is consumed. With no DC control power, the generator set shuts down. This modification is designed to eliminate the battery charging fuse from the DC control power circuit. This will prevent generator set shutdown and mission failure due to drained batteries. These modification instructions are authority to modify the generator set until the formal design change documentation is approved and disseminated to the field.

II. Material Required:

QTY	Nomenclature	NSN
(1)	Terminal, Lug	5940-00-143-4773

III. Procedures:

The following procedures are designed to allow the soldier to disconnect the control power from its current location and move it to the positive terminal on the battery-charging alternator.

1. Disconnect the batteries in accordance with BATTERY CONNECTION INSTRUCTION PLATE, figure 1, located in the battery compartment.

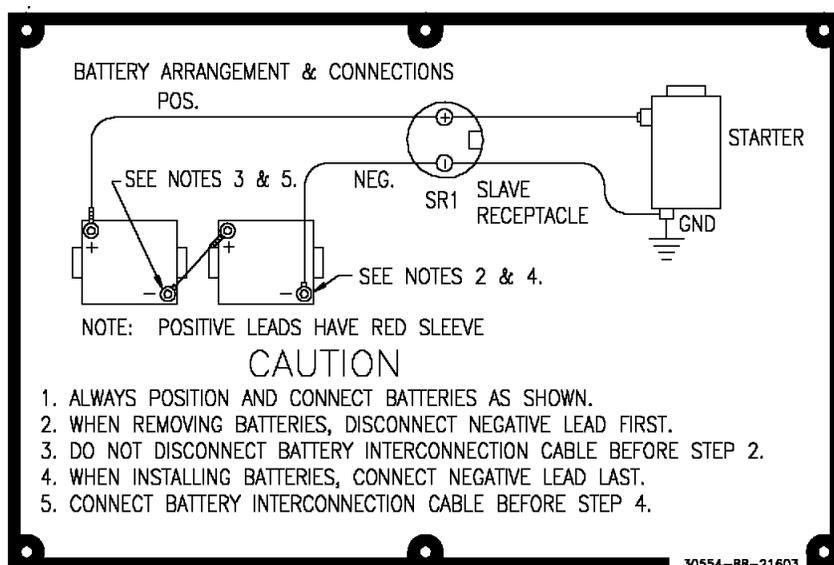


Figure 1 BATTERY CONNECTION INSTRUCTION PLATE

Appendix A

2 Remove wire # 165C16 from the positive terminal of batteries as shown in figure 2.

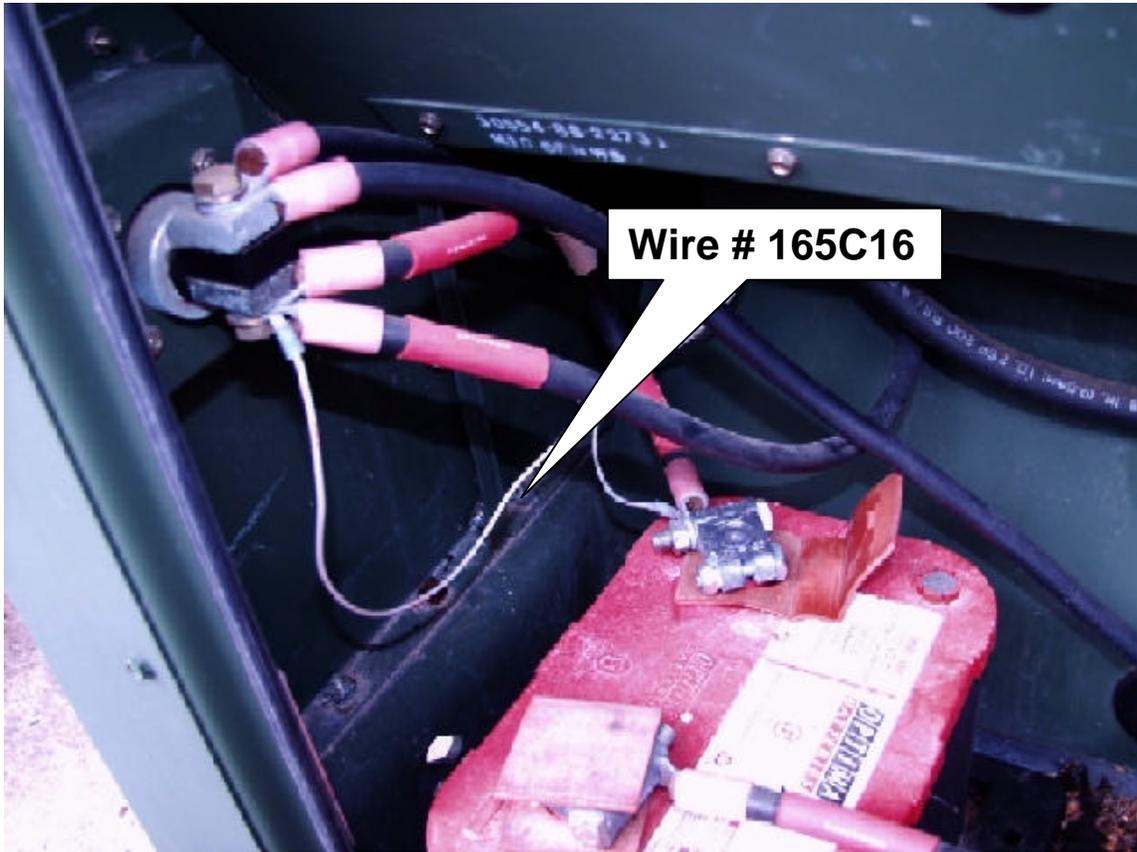


Figure 2 Battery Compartment

3 Remove wire #165C16 from harness and battery current transformer (BCT), see figure 3.

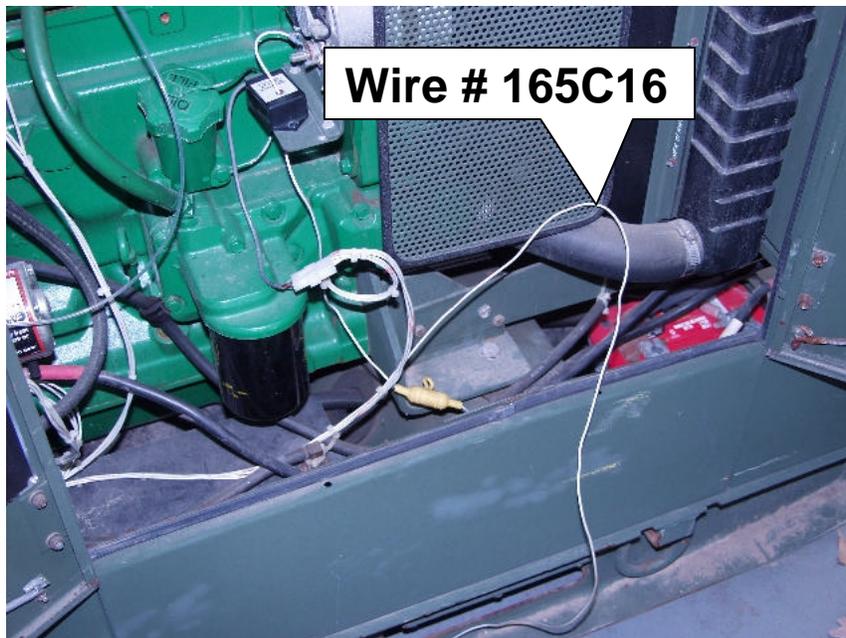


Figure 3 Alternator compartment

Appendix A

4. Measure and cut wire # 165C16 with enough slack to reach the positive terminal of the battery charging alternator as shown in figure 4. Add a new lug terminal, 18-22 gauge, 3/8 stud size (NSN 5940-00-143-4773, pkg of 100), to the end of the wire # 165C16.

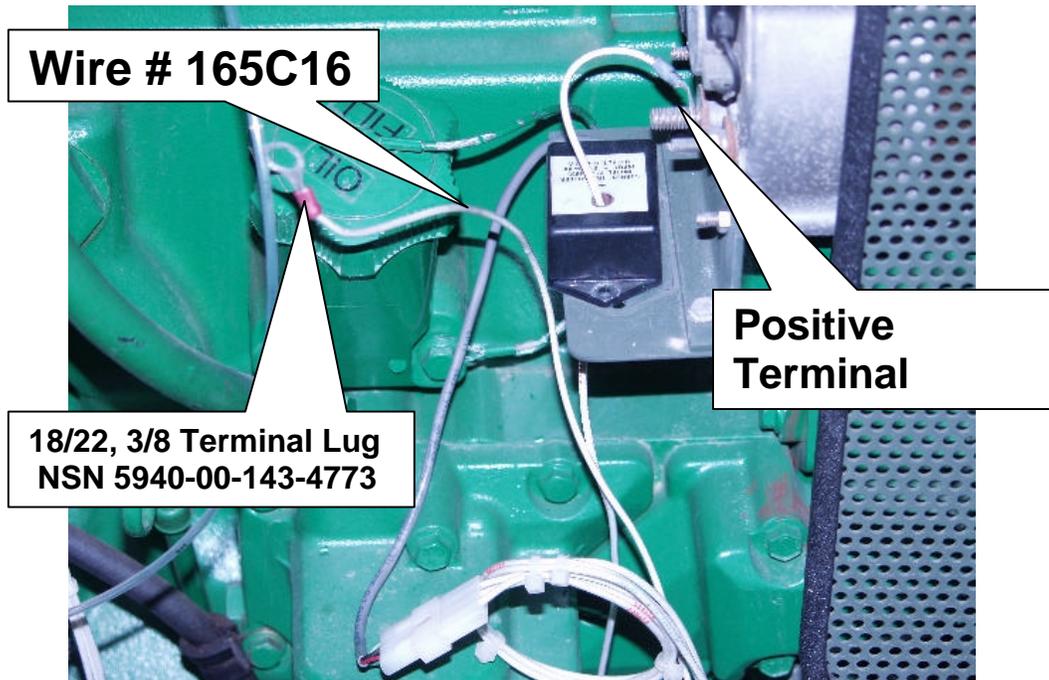


Figure 4 Terminal Lug

5. Connect wire # 165C16 to the positive terminal alternator as shown in figure 5.

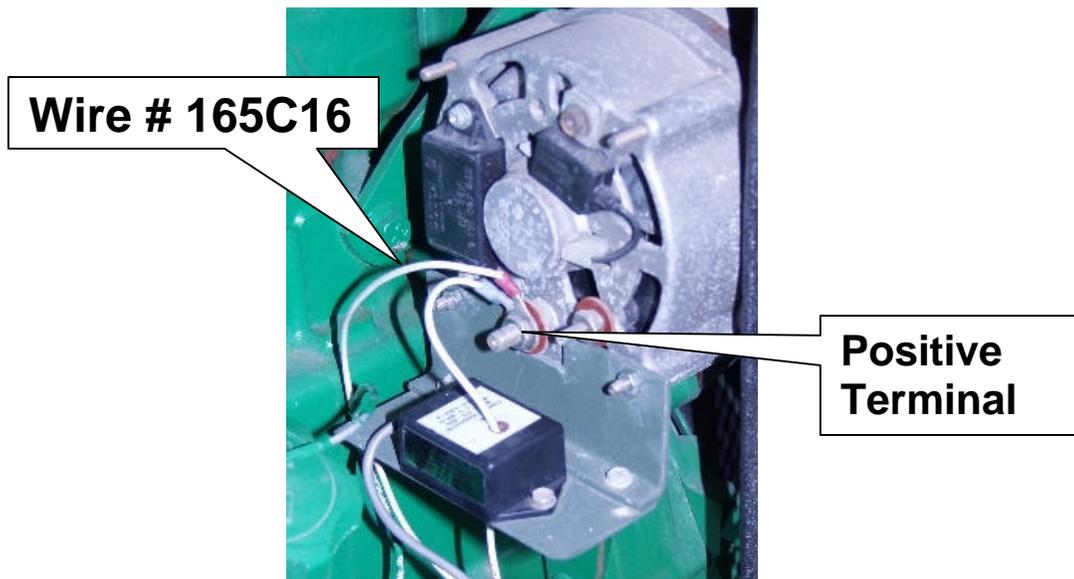
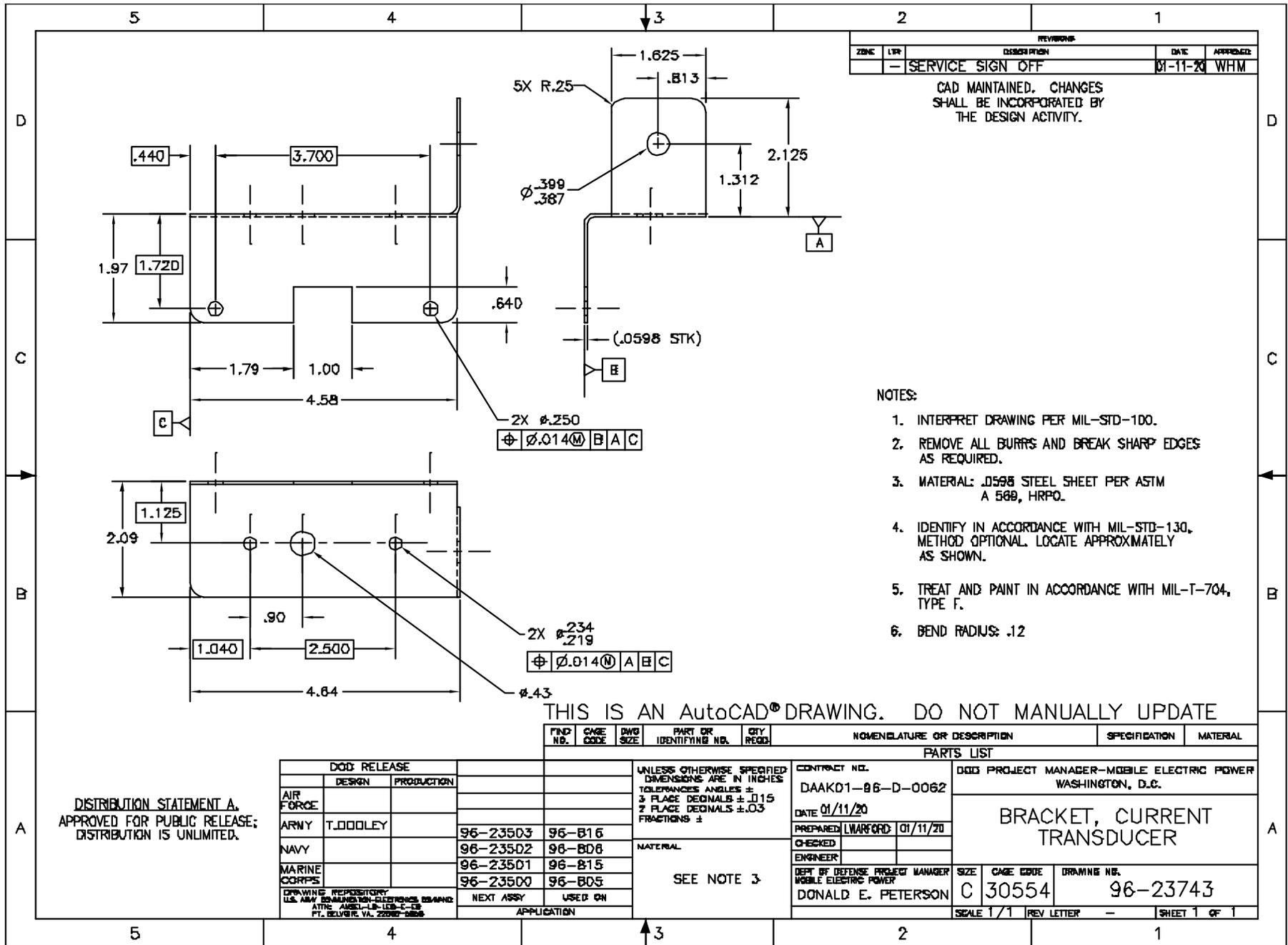


Figure 5 Control Power Hook-up

6. Re-connect batteries in accordance with the Battery Connection Instruction Plate, figure 1.

Appendix B Drawings

DW 96 37 30 00 - 00 01 01 U DA T N C 4



REVISIONS				
ZONE	LR	DESCRIPTION	DATE	APPROVED
-	-	SERVICE SIGN OFF	01-11-20	WHM

CAD MAINTAINED. CHANGES SHALL BE INCORPORATED BY THE DESIGN ACTIVITY.

- NOTES:
1. INTERPRET DRAWING PER MIL-STD-100.
 2. REMOVE ALL BURRS AND BREAK SHARP EDGES AS REQUIRED.
 3. MATERIAL: A588 STEEL SHEET PER ASTM A 588, HRPO.
 4. IDENTIFY IN ACCORDANCE WITH MIL-STD-130, METHOD OPTIONAL. LOCATE APPROXIMATELY AS SHOWN.
 5. TREAT AND PAINT IN ACCORDANCE WITH MIL-T-704, TYPE F.
 6. BEND RADIUS: .12

THIS IS AN AutoCAD® DRAWING. DO NOT MANUALLY UPDATE

DISTRIBUTION STATEMENT A.
APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED.

DDO RELEASE		DESIGN		PRODUCTION	
AIR FORCE					
ARMY	T. DOOLEY			96-23503	96-816
NAVY				96-23502	96-808
MARINE CORPS				96-23501	96-815
				96-23500	96-805

FIND NO.	CAGE CODE	DWG SIZE	PART OR IDENTIFYING NO.	QTY REQD	NOMENCLATURE OR DESCRIPTION	SPECIFICATION	MATERIAL
					PARTS LIST		
					CONTRACT NO. DAAKD1-86-D-0062	DDO PROJECT MANAGER-MOBILE ELECTRIC POWER WASHINGTON, D.C.	
					DATE 01/11/20	BRACKET, CURRENT TRANSDUCER	
					PREPARED L. WARFORD 01/11/20		
					CHECKED		
					ENGINEER		
					DEPT OF DEFENSE PROJECT MANAGER MOBILE ELECTRIC POWER	SIZE C	CAGE CODE 30554
					DONALD E. PETERSON	DRAWING NO. 96-23743	
					SCALE 1/1	REV LETTER -	SHEET 1 OF 1