

# Crimp Tooling

## *Crimp Tooling for Anderson Connectors*

The cross reference tables on the following pages list the recommended crimp tool to use for each of our connectors. They are organized by connector type and divided for Anderson's loose piece contacts and reeled contacts. Table A lists the hand tools and pneumatic tools recommend for the loose piece contacts and Table B lists the applicator and electric crimping press for the reeled contacts. Table C lists various spare parts for all crimp tools. Also listed in the cross reference tables are the appropriate wire stripping lengths for each connector.

Following the reference tables are detailed descriptions and pictures of each crimp tool. Each of these tools has been tested and qualified by Anderson Power Products specifically for use with Anderson connectors. Alternative tools are not recommended without Anderson approval due to potential effects upon the functionality of the connectors.

For recommended wire preparation and installation tips please see Section F of this catalog. For technical questions regarding crimping and crimp tools contact Anderson Power Products.



**Electro-Hydraulic Heavy Duty  
(Battery Operated)  
2-indent Style Crimp  
Non-cycle controlled  
Bench Mountable  
Includes 1 battery; dies ordered separately**

**Wgt: 8lbs. (includes dies)  
P/N 59006-00**



**Heavy Duty Pneumatic  
4-indent Style Crimp  
Cycle Controlled  
Bench Mountable  
Locators & Dies separate**

**Wgt: 17 lbs.  
P/N 1387G1**

**TABLE A**  
**CRIMP TOOLS FOR LOOSE PIECE CONTACTS**

	CONTACT P/N			CRIMP TOOL P/N				INSULATION STRIP LENGTH	
	Wire Size	Contact Number	Reducing Bushing (necessary)	Hand Tool	Pneumatic Tool			inches	mm
					Tool	Die	Locator		
PP10 (Pin)	#12-16	1203G1	----	1374	N/A			1/4	7
PP10 (Socket)	#12-16	1202G1	----						
PP15	#16-20	1332	----	1351G1	1353G1	N/A	N/A	5/16	8
PP30	#12-16	1331	----						
PP45	#10-14	261G2-LPBK	----	1351G2	N/A			5/16	8
PP75 SB50	#6 #8 #10/12 #10/12 #8 #14/16 #6 low detent	903G1/5900 5952 904G1/5915 903G1/5900 903G1/5900 903G1/5900 1307	----- ----- ----- 5910 5912 5913 -----	1352G1 or 59006-00*	1387G1	1388G6 1388G6 1388G7 1388G6 1388G6 1388G6 1388G6	1389G6 1389G6 1389G7 1389G6 1389G6 1389G6 1389G6	9/16	15
PP120	#2 #4 #6 #4 #6 #8	1319 1319G4 1319G4 1319 1319 1319	----- ----- ----- 5919 5920 5921	1368 or 59006-00*	1387G1	1388G4	1389G4	15/16	24
PP180 SB175	1/0 #2 #4 #6 #1 #2 #4 #10	944/1382 944/1383 944/1384 944/1382 944/1382 944/1382 944/1382 944/1382	----- ----- ----- 5663 5687 5690 5693 5648	1368 or 59006-00*	1387G1	1388G3 1388G3 1388G5 1388G3 1388G3 1388G3 1388G3 1388G3	1389G3 1389G3 1389G5 1389G3 1389G3 1389G3 1389G3 1389G3	1 1/8	29
SB350	2/0 4/0 300 MCM 3/0 1/0	907 908 910 916 907	----- ----- ----- ----- 5918	1368 or 59006-00*	1387G1 1387G1 N/A 1387G1 1387G1	1388G2 1388G1 N/A 1388G2 1388G2	1389G2 1389G1 N/A 1389G2 1389G2	1 3/8	35
SBE160 SBX175	1/0 #1 #2 #4 #6 #10	6384G1 6384G1 6384G1 6384G1 6384G1 6384G1	----- 5687 5690 5693 5663 5648	1368 or 59006-00*	1387G1	1388G3	1389G3	1 1/8	29
	35 SQ MM 16 SQ MM	6384G2 6384G2	----- 5920	1368	N/A	N/A	N/A		
SBE320 SBX350	2/0 3/0 4/0 1/0	6354 6355 6356 6354	----- ----- ----- 5918	1368	1387G1	1388G2 1388G2 1388G1 1388G2	TBD TBD TBD TBD	1 3/8	35
	35 SQ MM 50 SQ MM 70 SQ MM 95 SQ MM	6338G1 6338G2 6338G3 6338G4	----- ----- ----- -----	1368	N/A	N/A	N/A		

# Crimp Tooling

**TABLE B**  
**CRIMP TOOLS FOR REELED CONTACTS**

CONNECTOR	CONTACT P/N		CRIMP TOOL P/N					INSULATION STRIP LENGTH	
	Wire Size	Contact Number	110v & 220v	110v, 60 Hz		220v, 50 Hz		Inches	mm
			Applicator Only	Applicator & Press	Press Only	Applicator & Press	Press Only		
PP10 (Pin)	#12-16	263G1	260G3	280G2	250G1	-----	250G2	1/4	7
PP10 (Socket)	#12-16	264G1							
PP15	#16-20	262G1	260G1 or 260G14* or 260G15*	280G1	250G1	280G4	250G2	5/16	8
PP30	#12-16	261G1							
PP45	#10-14	261G2							
PP25 (PCB Type)	-----	266G1	260G17	281G1	250G6	-----	-----	-----	-----
PP75 SB50	#6-8 #1012 #6 -8 #10-12	265G1 265G2 265G3 265G4	260G16	284G1	250G5	-----	-----	9/16	15

\* mini-style applicator to use with existing "K" or "T" press

**TABLE C**  
**ACCESSORIES & SPARE PARTS**

TOOL USED WITH:	ACCESSORY/SPARE PART DESCRIPTION	PART NUMBER	TOOL USED WITH:	ACCESSORY/SPARE PART DESCRIPTION	PART NUMBER
59006-00	Die Set for #6 Contact	69874-21	1368	SB & EC Contact Locator	B00508G1
	Die Set for 1/0 Contact	69874-10		SBX, SBE, & EC Contact Locator	B00792G1
	Die Set for 2/0 Contact	69874-11	260G16	Cut Off Die Cut Off Punch Anvil (#6 thru #8 AWG) Anvil (#10 thru #12 AWG) Rolling Tool (#6 thru #8 AWG) Rolling Tool (#10 thru #12 AWG)	270P6
	Die Set for 3/0 Contact	69874-12			272P6
	Die Set for 4/0 Contact	69874-13			271P9
	Die Set for #2 Contact PP120	69874-30			271P10
	Die Set for 10/16 Sq. MM	69865-00			273P9
	Die Set for 25 Sq. MM	69867-00			273P10
	Die Set for 35/50 Sq. MM	69869-00	260G1	Cut Off Die Plate Anvil Cut Off Punch Wire Rolling Tool Wire Applicator Guard Wire Stop Rear Guide Tool Set (270P1, 271P1, 272P1, & 273P1)	270P1
	Die Set for 16/70 Sq. MM	69871-00			271P1
	Die Set for 120 Sq. MM	69873-00			272P1
	Die Set for 150 Sq. MM	69874-00			273P1
	12 Volt NiCad Battery	59006-96			274P1
	Carrying Case	59006-97			275P1
	110 Volt, 60 HZ, 1-Hour Charger	59006-98			277P1
	230 Volt, 50 HZ, 1-Hour Charger	59006-94			270G1
	230 Volt, 50 HZ, 15 Minute Charger	59006-95			
	Tool Package: Consisting of 59006-00, 59006-96, 59006-97 & 59006-98	59006-92			
	Tool Package: Consisting of 59006-00, 59006-96, 59006-97 & 59006-94	59006-91			

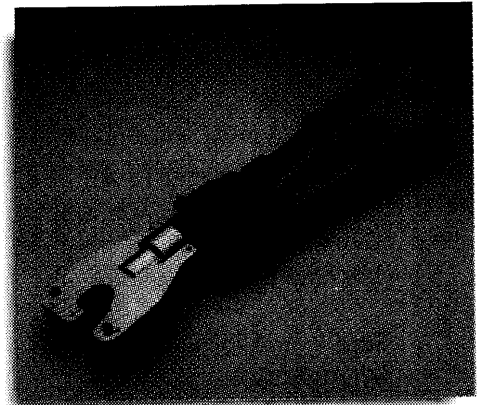
# Crimp Tooling

## DESCRIPTION

## TOOL

Hydraulic Heavy Duty  
4-Indent Style Crimp  
Non-Cycle controlled  
Includes B00508G1 Locator

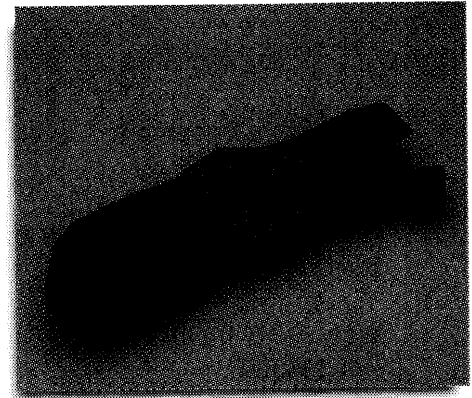
Wgt = 12 lbs.  
P/N 1368



59006-00

Mechanical Hand Tool  
"F" Style Crimp  
Cycle controlled  
Includes Locator for 15A & 30A

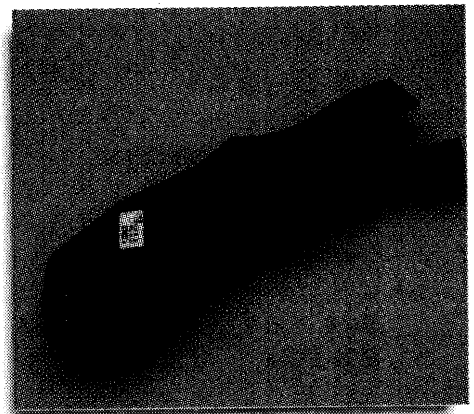
Wgt = 1 lb.  
P/N 1351G1



1351G1

Mechanical Hand Tool  
"F" Style Crimp  
Cycle Controlled  
Includes Locator for 45A

Wgt = 1-1/4 lb.  
P/N 1351G2



1351G2

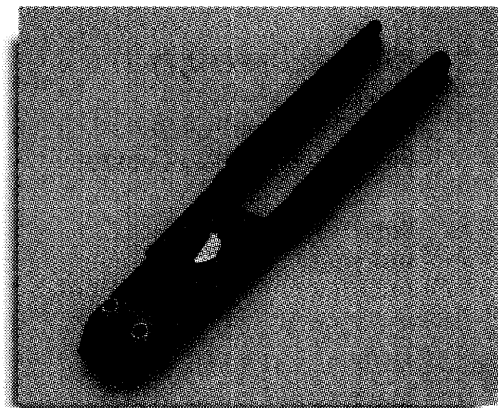
# Crimp Tooling

## DESCRIPTION

## TOOL

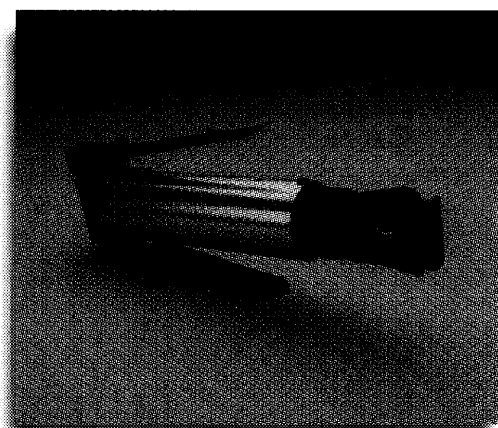
**Mechanical Hand Tool  
"U" Style Crimp  
Cycle controlled  
Locator not applicable**

**Wgt = 1 lb.  
P/N 1352G1**



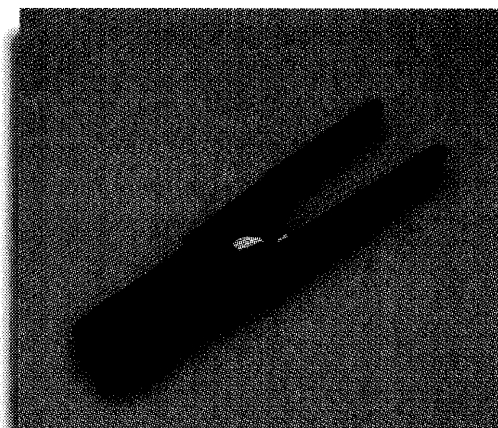
**Light Duty Pneumatic  
"F" Style Crimp  
Cycle controlled  
Includes Bench Mountable Locator  
for 15A & 30A**

**Wgt = 3-1/2 lbs.  
P/N 1353G1**



**Mechanical Hand Tool  
"U" Style Crimp  
Cycle Controlled  
Locator Not Applicable**

**Wgt = 1 lb.  
P/N 1374**



E

# Crimp Tooling



250G1/250G2

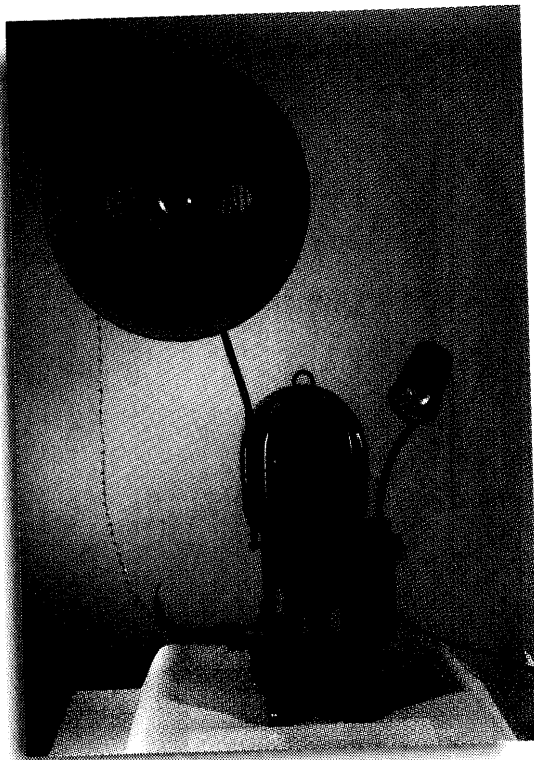
PRESS

280G1/280G2

PRESS &  
APPLICATOR

260G1/260G3

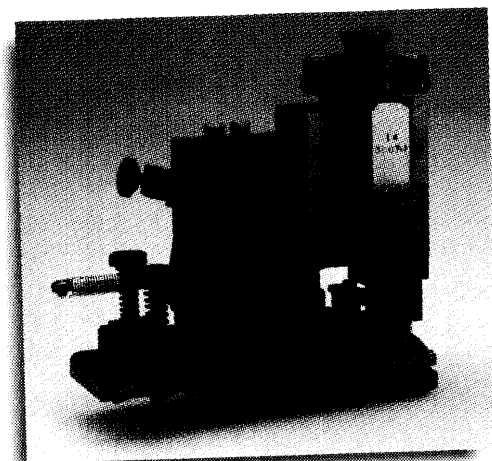
APPLICATOR



**ELECTRIC CRIMPING PRESS**  
260G16      **APPLICATOR**  
250G5      **PRESS**  
284G1      **APPLICATOR &  
PRESS**



**APPLICATOR 260G16**



**MINI APPLICATOR**  
260G14 (for "K" Press)  
260G15 (for "T" Press)

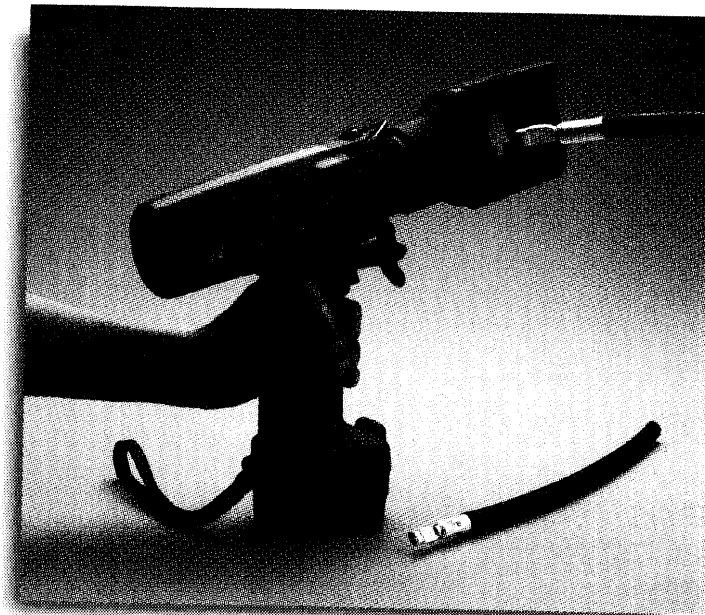
# **Crimping**

## ***Suggestions for Crimping/Soldering Methods and Preventive Maintenance of Connectors***

The following are a series of procedures that Anderson Power Products suggests for maintaining and extending the performance life of connectors. Follow them carefully and the results can be reflected in lower connector operating costs as well as greater efficiency and productivity.

The following pages are presented in two sections:

- 1 The first describes the correct methods for crimping and soldering connectors
- 2 The second lists and briefly describes preventive maintenance checks and corrective procedures that extend connector performance life.



## **Connector Installation Tips**

The following guidelines are recommended for optimizing the assembly of Anderson connectors.

1. Contact Anderson Power Products or authorized representative to obtain the proper assembly tools.
2. Reference the assembly instructions specific to the connector. Assembly instructions for a connector can be obtained from Anderson Power Products or representative.
3. Reference all applicable electrical standards requirements such as NEC, UL, CSA etc.
4. Perform a sample assembly of a few pieces for assembly verification testing. Test these samples for proper crimp dimensions, secureness, crimp resistance, connected resistance, and operating temperature. Contact the Anderson Power Products Application Engineering Department for the recommended specifications for these parameters.
5. Perform periodic assembly verification testing to assure assembly process and tooling are performing correctly. Normally, crimp dimensions are checked at shorter intervals and crimp resistance and secureness are checked at longer intervals. The intervals are dependent upon the tooling, the wire and the connector being used.

### **Important Assembly Notes:**

Proper crimping and cleaning of the wire is essential for optimizing connector service.

If the proper crimp has been performed, the secureness is satisfactory but the crimp resistance is high (which may cause high operating temperatures) the wire may have surface contamination. A light abrasive such as the 3M Scotch Bright (TM) is recommended for cleaning the wire.

**Please note:** tin plated wire resists surface contamination caused by oxidation.

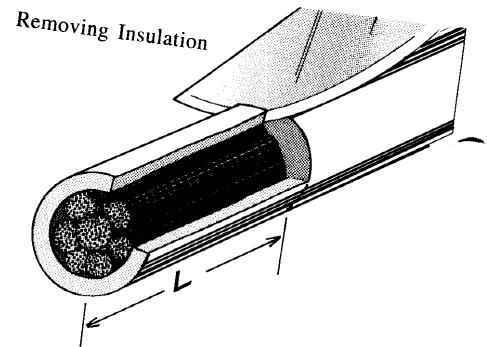
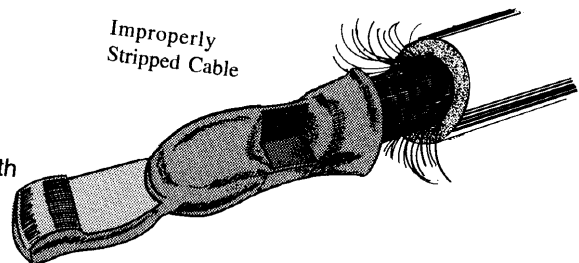


# Crimping

## *Connector Crimping & Soldering*

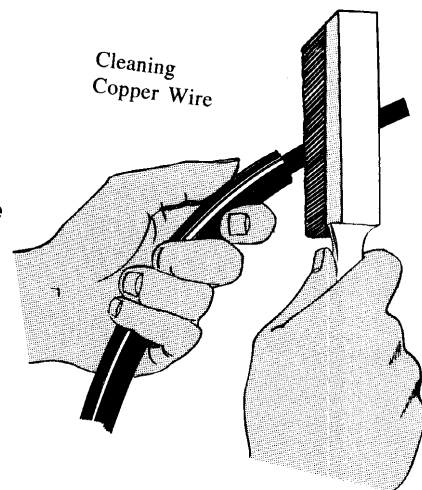
### 1. Stripping Cable Insulation

Problems with cable harness and connector systems often begin with improper or accidental cutting of wire strands when stripping cable insulation. Each strand is important, and all of them must be included in the contact barrel to avoid unnecessary hot spots during later operation. When removing insulation, position a sharp blade at a right angle and apply steady, controlled pressure, cutting only the cable insulation, not the copper wire. Strip cable to the right length for the contact being crimped. Proper lengths are listed in the instruction sheet that accompanies each Anderson SB Connector.



### 2. Cleaning Copper Wire

Aged and badly tarnished copper wire should be thoroughly scraped with a stiff wire brush that penetrates the entire bundle and cleans every strand. The wires are ready for insertion into the contact barrel when they are burnished to their original bright copper finish. Contact barrels are lined with silver plating to assure consistently high conductivity, which will be reduced if the barrel is crimped around aged or tarnished copper wire.



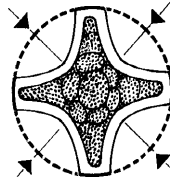
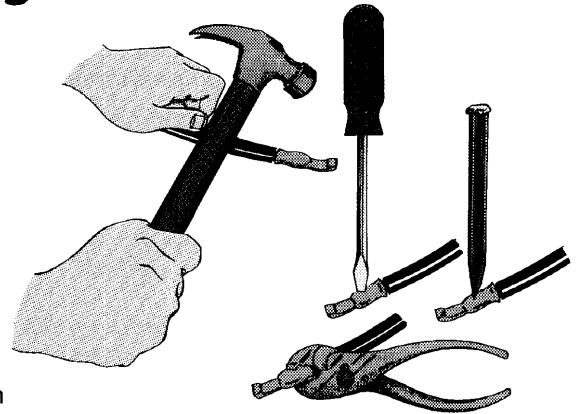
## Connector Crimping & Soldering

### 3. Crimping

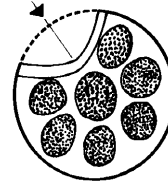
The best preparation will be defeated if inadequate tools or improper crimping procedures are employed. Never use a hammer and chisel or the "squeeze-in-a-vise" method. They won't do the job, and will lead directly to substantial reduction in connector life.

Use a crimping tool. It effectively compresses the contact barrel tightly around the cable strands so that all of them are pressed tightly against each other and the inside wall of the contact barrel. Doing this requires that the stripped cable be inserted all the way into the barrel of the contact, and that the contact point is centered in the crimping tool.

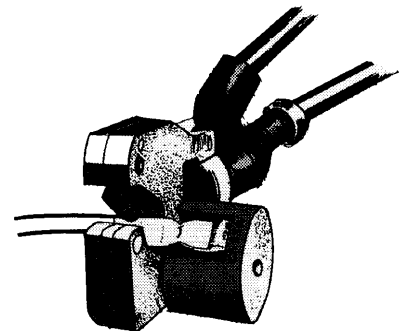
When the crimp has been completed, check the appearance of the contact. A properly crimped contact barrel is compacted tightly with the outer strands. The outer strands on an improperly crimped barrel will be loose and will not have adequate clamping force. Test for low pull-out force by giving the cable a tug. If the cable can be loosened, recrimp until it is tight.



Properly Crimped



Improperly Crimped  
(Contains air pockets)



Pneumatic Crimp

### 4. Soldering

The alternative to crimping is to solder all cable strands within the contact barrel. The right proportion of solder is essential if this procedure is employed. Use a quality 60/40 solder (60 percent tin, 40 percent lead) in wire form with a rosin flux core. Cable strands should be separately fluxed with rosin paste, and the contact should be held in a vise with the barrel entrance facing up. Apply heat to the outside of the barrel while the solder flows in beside the wire strands.

Here are some things to avoid when soldering.

- Don't use too much solder- to the point that it flows out of the contact barrel.
- Don't allow flux or solder on the outside of the contact. This will interfere with contact mounting within the installation or with the contact connection to a mating connector.
- Don't overheat and cause excessive solder to "wick" up into the cable and stiffen it. This could interfere with contact flexibility when connectors are mated.
- Don't solder when contact is in the connector housing. Solder away from the housing and then insert the contact into the housing.

**NOTE:** Underwriters Laboratories (UL) requires the use of a cable clamp for soldered connections to unsupported leads.

### 5. Inserting Contact into Housing

Contacts should never be forced into housing. If the contact does not fit easily, check the contact barrel for distortion. Replace the barrel if it is distorted or shows signs of wear or damage.

# Crimping

## Preventive Maintenance

Damaged connectors, contacts and cables may present hazards, resulting in inefficient battery and charger operation. To avoid these problems, conduct the following maintenance checks at least once annually. When you see a problem, *take corrective action immediately*.

### 1. Dirty Connectors

When engaged and disengaged, the crown contact surfaces of Anderson SB Connectors "over wipe," thus providing a self-cleaning action. To ensure the continued benefit of this feature, clean the contact surfaces and lubricate the connector. Use a "white" lithium grease, which may be obtained from hardware stores and automotive parts suppliers.

### 2. Melting Connectors

Connector housings overheat and melt for many reasons. To prevent this:

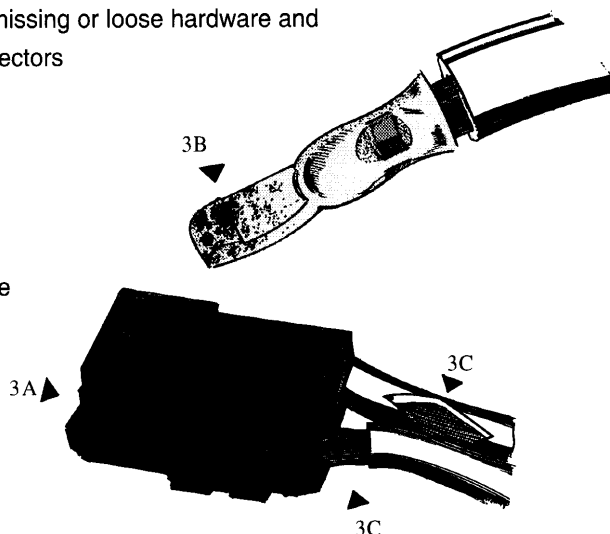
- A. Examine the crimp between cable and contact. Improper crimping, corrosion, and broken wires result in unnecessary resistance causing the contact to heat up like a toaster.
- B. Check contact crown surfaces for signs of "pitting" caused by dirt or disengaging connectors under load. One badly pitted contact, particularly in a connector attached to a battery charger, can lead to pitting on crown surfaces of other contacts. If not corrected, this can result in an epidemic of bad connectors throughout a fleet of electric vehicles and in chargers and batteries.
- C. Check to see if batteries are being disconnected while the charger is still on. This causes the contacts to arc at the tips, with progressive pitting and silver removal from tip to crown. If this practice is occurring, discontinue it now to avoid major repairs in the future.

### 3. Other Conditions

If any of the following conditions exist, the connector housing, contact and/or cable should be replaced immediately.

- A. **Housing:** Cracks, missing pieces, evidence of excessive heat, discoloration.
- B. **Contacts:** Pitting, burns, corrosion, excessive wear, cracked crimp barrels, discoloration
- C. **Cable:** Exposed copper near housing, cracked cable, peeling or frayed insulation
- D. **Handles:** Loose attachment and such signs of damage as missing or loose hardware and cracked or broken plastic (Handles should be used for connectors that are hard to reach or move.)
- E. **Cable Clamps:** Loose attachments, signs of abraded cable jacket, missing or loose hardware. (Cable clamps should be used to relieve strain on unmounted cable.)

**NOTE:** See the enclosed connector maintenance checklist. Make copies to have a supply whenever maintenance procedures are conducted.



## CONNECTOR CHECKLIST

EQUIPMENT IDENTIFICATION NUMBER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

### HOUSING

- Cracks
- Breakage
- Excessive Heat - Touch
- Excessive Heat- Discoloration
- Excessive Heat - Melting


### CONTACTS

- Pitting
- Discoloration
- Wear
- Corrosion
- Improper Crimp


### CABLE CLAMP

- Present
- Missing Hardware
- Tight Connections
- Frayed Cable
- Damage


### HANDLE

- Present
- Missing Hardware
- Tight Connections
- Damage


### CABLES

- Exposed Copper
- Cracks/Cuts
- Excessive Heat
- Cut Strands
- Corrosion
- Damage
