


**MAINTENANCE
INFORMATION**

MI15-24B

DATE :	MAY 2015	SECTION: 06 - Electrical
SUBJECT :	POWER CABLES INSPECTION GUIDELINES	

Revision: B Added: Power cables for L.H. side alternator & fan drive breaker box
 March 25, 2020

APPLICATION

Model	VIN	 <small>V.I.N. #XXXXXXXXXXXX PREVOST CAR INC. 875 CLARE DRIVE, ST. LOUIS, MO 63105</small>
All PrevoSt models		

DESCRIPTION

It is important to carry out a regular inspection of the vehicle power cables. Power cables in poor condition can be the cause of failures and serious damage in the engine compartment.

Please note that some images in this document may represent arrangements different from those found on vehicles of former generations. However, inspection criteria and points to check presented in this document remain applicable in essence for all models of PrevoSt vehicles.

POWER CABLES MAINTENANCE SCHEDULE	
DESCRIPTION	INTERVAL
Perform power cables inspection	Every 3 months

POWER CABLES

– The power cables are those through which flow the highest currents. These cables are those with the largest electrical conductor diameters on the vehicle.

– The power cables are 1/0, 2/0, 3/0 wire gauges respectively Ø0.325in, Ø0.365in, Ø0.409in.

Note: not to be confused with the 1, 2, 3 wire gauges that are actually smaller.

– There are power cables at the following locations:

- On the **alternators positive (+) stud terminal** and from there, up to junction block in the electrical compartment (Figure 1 to 5).

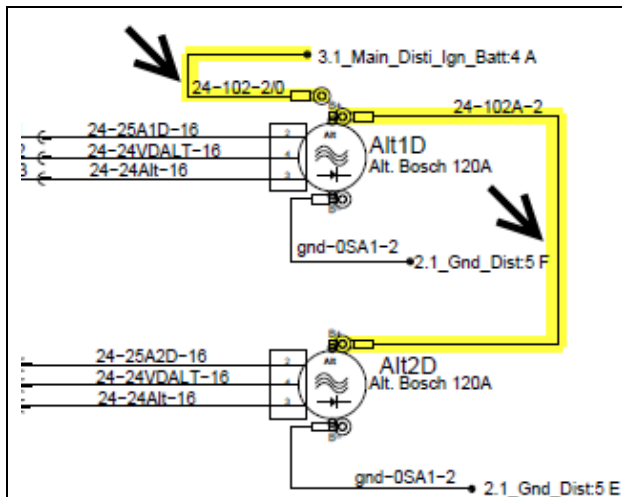


Figure 1 – R.H. SIDE ALTERNATORS (2x BOSCH)
MECHANICAL COOLING FAN DRIVE CONFIGURATION

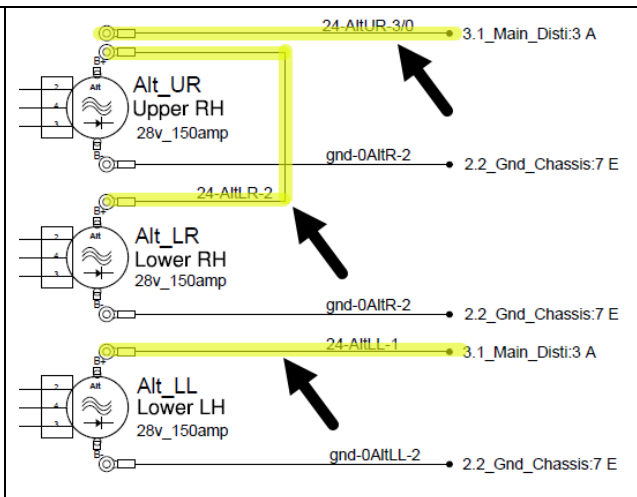


Figure 2 – L.H. + R.H. SIDE ALTERNATORS (3x BOSCH)
ELECTRIC FAN DRIVE CONFIGURATION

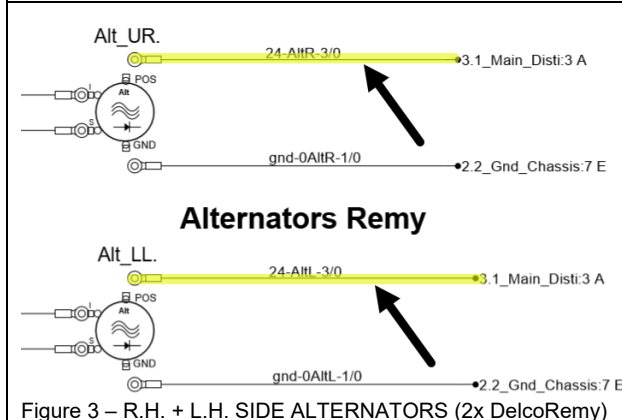


Figure 3 – R.H. + L.H. SIDE ALTERNATORS (2x DelcoRemy)

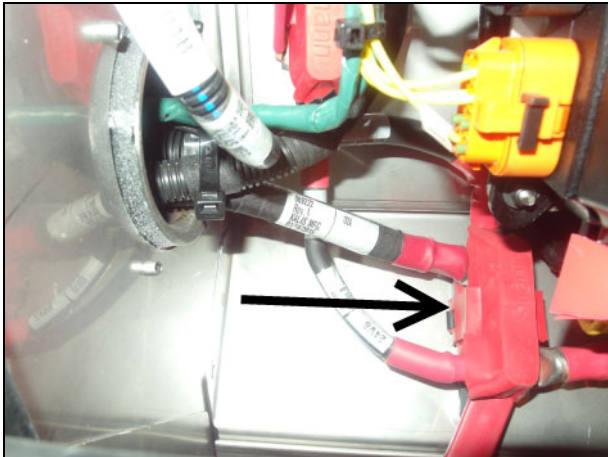


Figure 4: Bussman Junction Block - X3 Series.



Figure 5: Bussman Junction Block - H3 Series.

- On the **starter positive (+) stud terminals** and from there, up to Bussman junction block in the electrical compartment (Figure 6, Figure 7).

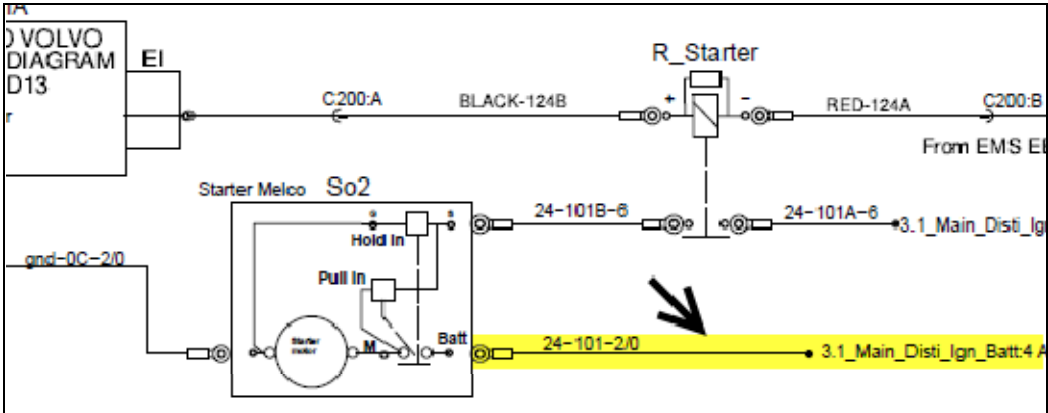


Figure 6



Figure 7: starter cables

- In the electrical compartment, **connected to the junction block** (Figure 8).

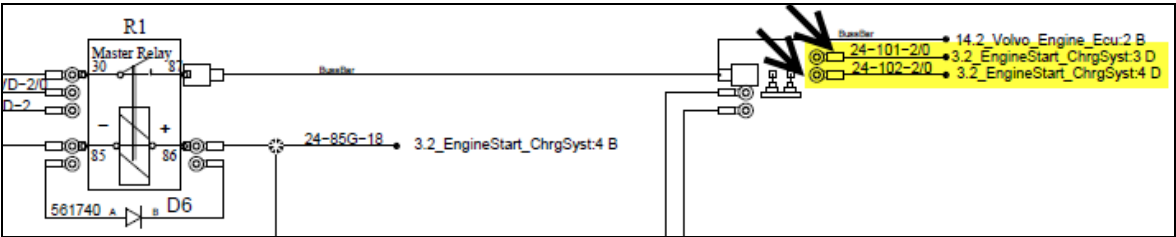


Figure 8

- In the **battery compartment** between **battery and master relay R1** (Figure 9).

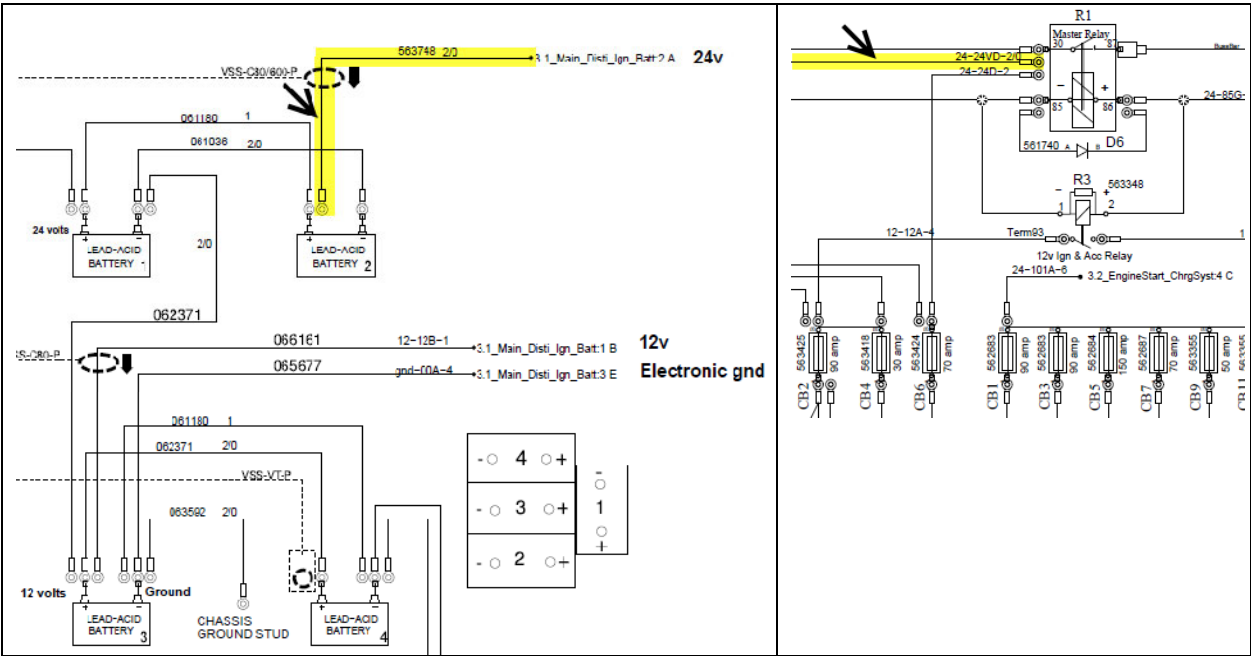


Figure 9

- Between **Bussman junction block** and **main circuit breaker bus bar** (Figure 10 & Figure 11).

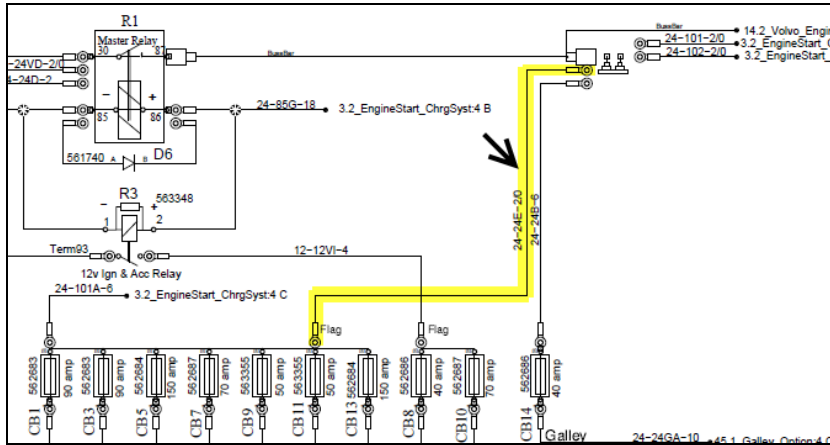


Figure 10

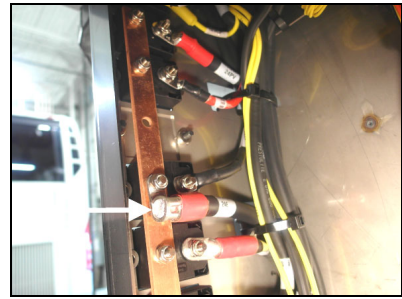


Figure 11: Power cable on main circuit breakers' bus bar.

- From the electric fan drive breaker box up to fuse F199 in main power compartment (Figure 12)

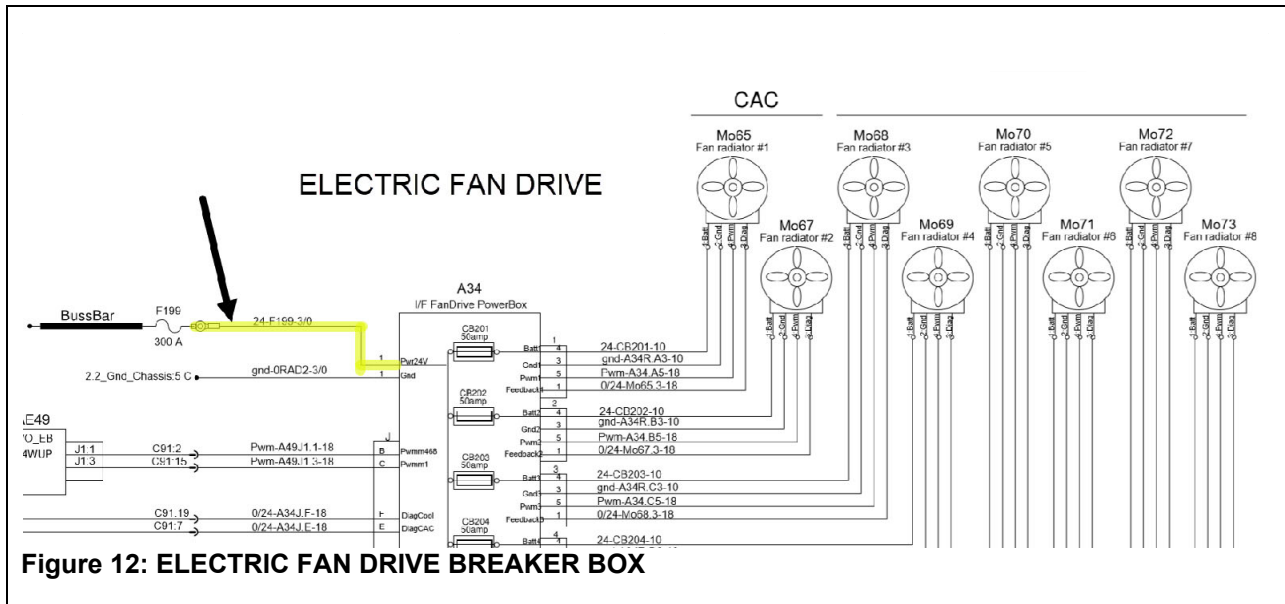


Figure 12: ELECTRIC FAN DRIVE BREAKER BOX

PROCEDURE



DANGER

Park vehicle safely, apply parking brake, stop engine. Prior to working on the vehicle, set the ignition switch to the OFF position and trip the main circuit breakers equipped with a trip button. On Commuter type vehicles, set the battery master switch (master cut-out) to the OFF position.

POWER CABLES GENERAL INSPECTION CRITERIA

1. **Make sure that the power cables are properly secured with appropriate fasteners so that they do not move. Movement of the cables can cause wear of the extruded protective sheath, strains on stud terminals and ring cable lugs.**
2. **Ensure that the power cables do not rub on other cables or other components.**
3. **Make sure ring cable lugs are securely attached to the stud terminals, that the retaining nut is tightened. Also, make sure that cable lug crimping holds firmly on copper conductor.**

OTHER THINGS TO CHECK

- Check for damages caused by electric arcs with loss of material along the copper conductor.
- Check for damaged cable extruded sheath and having lost its insulating properties.
- Bosch T1 alternator: ensure that the rubber grommets at the rear cap of the alternator are present.
- P-clamp type cable clamps must be suitable for cable diameter. The cable must remain in the P-clamp without moving or rubbing, thus oversized P-clamps are not allowed. Inspect the corrugated protective sheath passing through the P-clamp for signs of wear.
- At certain locations, power cables are protected by a corrugated protective sheath and should remain as such.

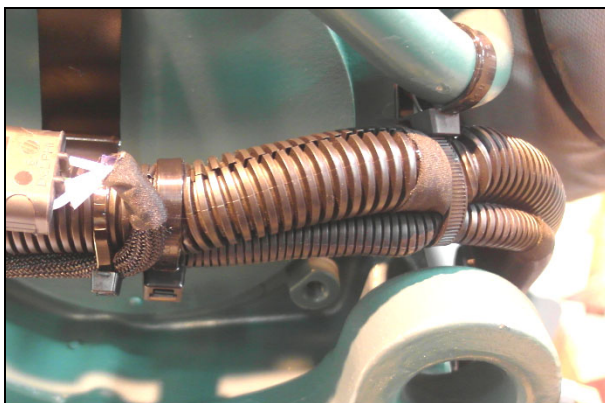


Figure 13: starter cables in a corrugated protective sheath.

- Ensure that the power cables do not rub on bolt heads or sharp metal edges that can cut or wear the cable extruded sheath.

- For power cables passing through a corrugated protective sheath, it is recommended to apply two layers of fabric tape every 3 to 6 inches minimum to prevent the cable from coming out of the corrugated protective sheath (Figure 14). The ends of the corrugated protective sheath should be covered with fabric tape (figure 15).

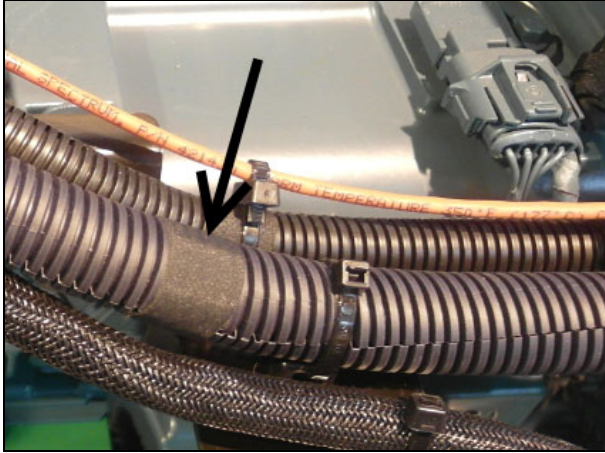


Figure 14: Two layers of fabric tape applied every 3 to 6 inches to prevent the cable from coming out of the corrugated protective sheath.

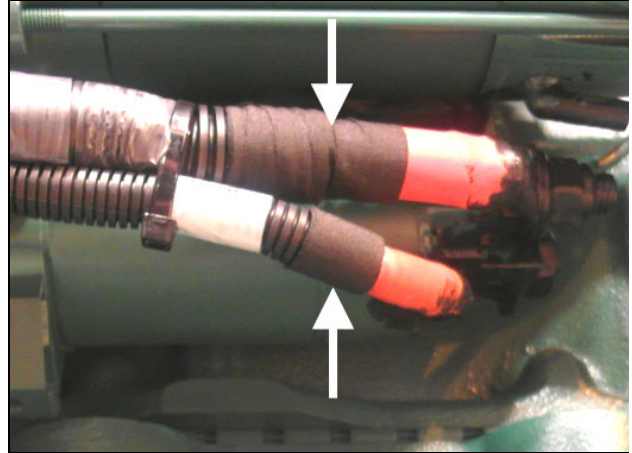


Figure 15: The ends of the corrugated protective sheath should be covered with fabric tape.

- Stud terminal nuts properly tightened. Use a nut with nylon insert to replace a similar nut where applicable. Protect ring cable lugs against tightening force by placing a flat washer between nut and ring cable lug.



RING CABLE LUGS

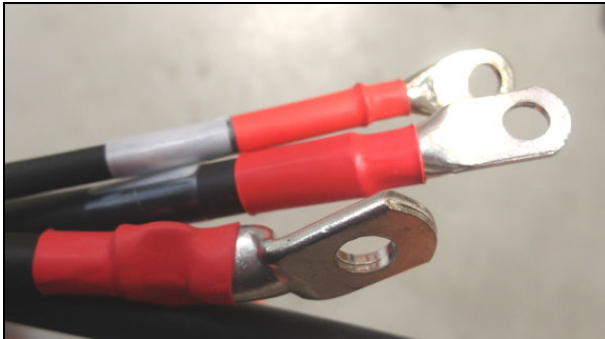


Figure 16: Cable lugs must be closed type, crimped or welded.

- Ring cable lugs should not be distorted.
- Ring cable lugs should not suffer strains that can deform.
- Ring cable lugs must be installed with smooth washers and nuts to prevent damage to the cable lug when tightening.



Figure 17: Power cable shouldn't be bent just next to the cable lug. Angled cable lugs are used to avoid mechanical stress.

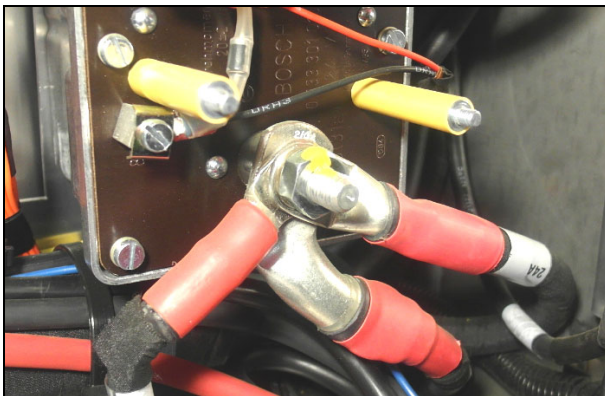


Figure 18: When several terminals are connected on a single stud terminal, the largest cable lug must be placed first, followed by the second larger and so on. Cable lugs should be distributed around the stud terminal in a way that no cable lug is distorted when tightening the nut.

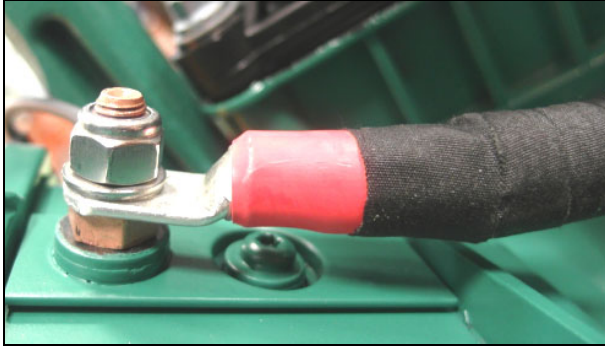


Figure 19: No exposed or broken copper strands.

- A shrink tubing (or fabric tape) should cover the copper strands.
- Ensure that the power cables and ground wire are not stretched tight.
- Ensure that the cable lugs are still properly crimped on the copper conductor, that the conductor strands are not broken so that the power cable retain its capacity and ensure unrestricted current flow.

BATTERY CABLES

- Battery interconnection cables must be checked too :
 - Ensure the cables are properly fastened to battery posts and that the cables are in good condition (consult battery manufacturer documentation for appropriate tightening torque).
 - No corroded or cut copper strands. No apparent copper strands. Protective sheath in good condition, no cuts, no rubbing against metal edges.

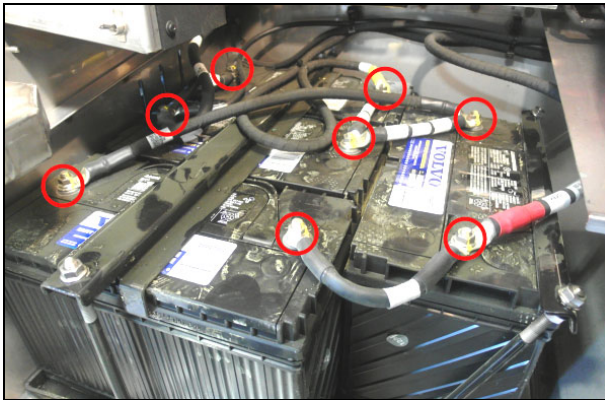


Figure 20: battery bank

STEEL P-CLAMPS



Figure 21: P-clamps are no longer used to secure power cables, but they can nevertheless be found on coaches of older generations. The piece of rubber that protects cable against the P-clamp steel loop must absolutely be in place. Replace any P-clamps where the rubber piece is missing, broken or likely to separate from the steel loop.

NOTE

*Unlike steel P-clamps, plastic clamps have the advantage of being not conductive. A good practice would be to replace P-clamps **securing power cables** with appropriate nylon cable ties like the following:*

#507664 CABLE TIE, DOUBLE LOOP

#509491 CABLE TIE, WIDE

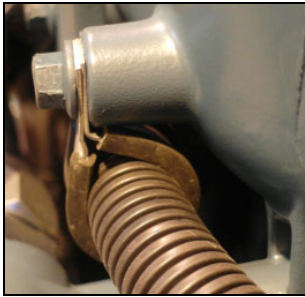


Figure 22: P-clamp with appropriate diameter prevents the power cable or corrugated protective sheath from moving and rubbing inside the clamp.

ALTERNATORS

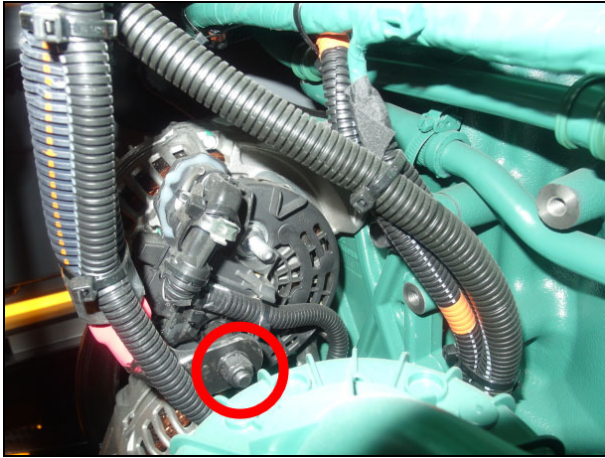


Figure 23: Make sure power cables/positive cables (+) are properly connected to alternator, that stud terminal nuts are properly tightened.

TERMINAL NUT PRESCRIBED TORQUE

Delco Remy 55SI

- Ground : 50-60 lb-in
- Positive (+): 80-125 lb-in
- Sense (S) 25-45 lb-in
- Indicator (I) 25-45 lb-in

Bosch HD10

- B1(+) terminal: 10 lbf-ft
- ground: 6 lbf-ft

Bosch T1

- D+: 21-28 lbf-in
- B+, B-: 88-115 lbf-in
- W: 36-48 lbf-in

Delco 50DN

- DC Output: 30-35 lbf-ft
- F1, F2, Relay: 6 lbf-ft



Figure 24: Bosch T1 alternator with the two required rubber grommets. Alternator cables connected to the alternator stud terminals must be protected against metal edges with rubber grommets.



Figure 25: Fire in engine compartment caused by rubbing of power cable against metal edge of Bosch T1 alternator rear cover. Lower rubber grommet was missing when fire occurred. Evidence of electrical arc can be seen.

CORROSION PROTECTION

- Power cable connections on alternators, starter and ground connections exposed to water, dust, etc. should be protected against corrosion with Loctite Color Guard rubber coating (**Figure 26**) (Prevost p/n: 684013).



Figure 26: Loctite Color Guard.

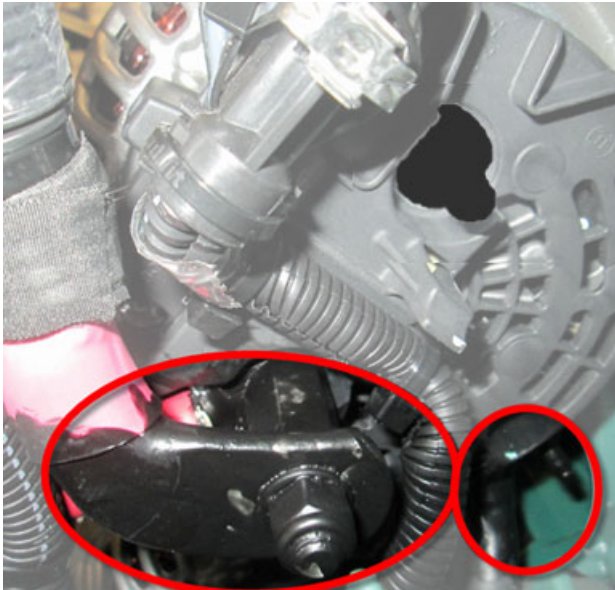


Figure 27: Upper R.H. side Bosch alternator power cable lug protected with Color Guard rubber coating.

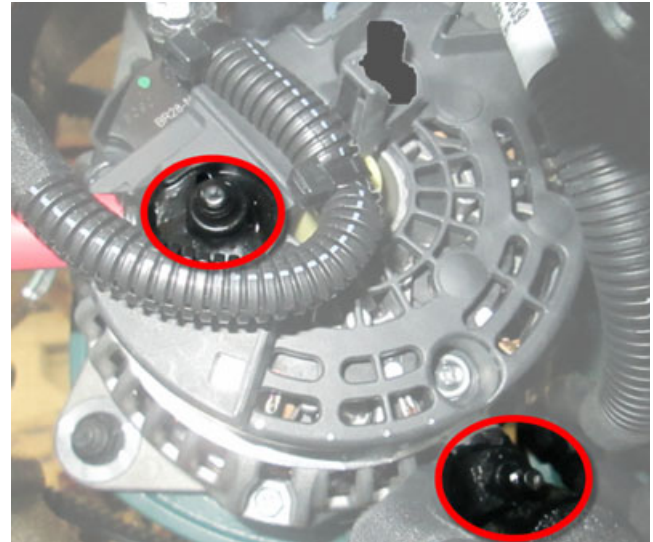


Figure 28: Lower R.H. side Bosch alternator power cable lug protected with Color Guard rubber coating.

Protect the cable lug similarly on the L.H. side alternator (with electric fan drive)

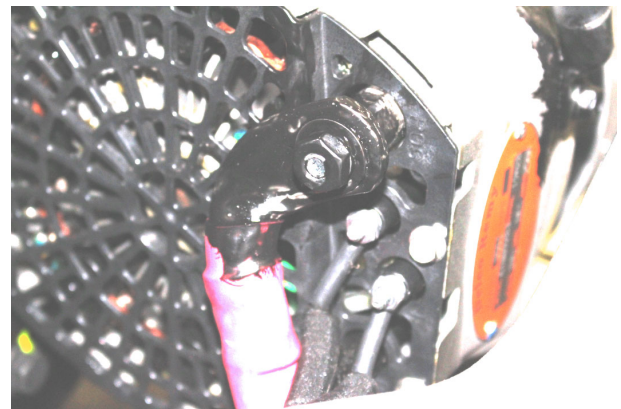


Figure 29: DELCO REMY ALTERNATOR

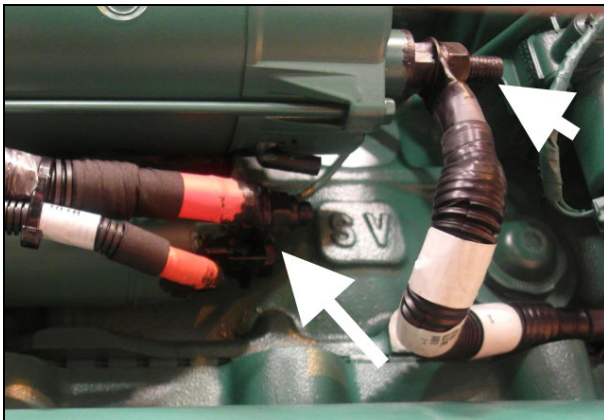


Figure 30: Starter power cable and ground cable lugs protected with Color Guard rubber coating.

PARTS / WASTE DISPOSAL

Discard according to applicable environmental regulations (Municipal/State[Prov.]/ Federal)



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