

## CONVERSION TO TWIN BOSCH ALTERNATORS

Revision C :

Page 13 step 3: *pin 21* replaced by *pin 11*. Page 18 step 7: *C505* replaced by *C508*.

**Note:** These instructions explain the conversion to twin Bosch alternators for H3 series and XL series coaches. Refer to the table below to determine which kits and instructions apply to your coach.

Step	Kit/Part #	Application	Description	Page
1	510616	All (*)	Relocation and replacement of engine oil filler cap.	5
2	See page 4	All (**)	Installation of an automatic belt tensioner.	5
3	N/A	All	Removal of old alternator.	6
4	032254	All (***)	Installation of a bracket for the electrical fuel pump.	8
5	510666	All	Installation of the twin Bosch alternators.	9
6	065515	H3 models R012 to V1778 except V1718	Electrical modifications.	10
	065210	H3 models V1718 and from V1779 to X2901 except X2831		
	065239	XL models		19
7	065245	H3 models	Installation of accessories.	22
	065244	XL models		24

\* The oil filler cap must be installed on the left side of the engine, such as shown in figure 1. The type of filler must be as shown in figure 2. Check before ordering/replacing.

\*\* If not equipped with an automatic belt tensioner, as shown in figure 1.

\*\*\* For coaches equipped with an electrical fuel pump only.

**In addition, included are the following documents of interest:**

- Instructions for installing the “limp-home” belt in case of an alternator failure, page 25;
- Wiring diagram D060872, P1A, Delco to Twin Bosch Alternator Conversion XL Model;
- Wiring diagram D060812 & D060869, P4.4, Delco to Twin Bosch Alternator Conversion H3 Model R012 to V1778 except V1718;
- Wiring diagram D060882, P4.4, Delco to Twin Bosch Alternator Conversion H3 Model V1718, V1779 to W2283 except W2234;

- Wiring diagram D060902, P4.4, Delco to Twin Bosch Alternator Conversion H3 model W2234, W2285 to X2901 except X2831;
- Detroit Diesel Service Information Bulletin (SIB) 9-60-98, provides additional information on the automatic belt tensioner;
- Detroit Diesel SIB 9-60-99, concerning the release of the Bosch alternator for motor coach applications;
- Detroit Diesel SIB 9-60-99 attachment, for insertion in the Detroit Diesel Series 60 Service Manual;
- Repair and Testing Instructions for Bosch T1 Alternator, for insertion in the Maintenance Manual.

## MATERIAL

Kit #065210 contains the following parts:

Part No.	Description	Qty
064740	Cable 102A, 24 volts, Bosch alternator	2
064942	Cable assy, 25A1, 25A2 for terminal D+ on Bosch alternator	1
065027	Cable 0SA, ground, Bosch alternator	2
065150	Cable harness, H3 dashboard	1
065151	Cable harness, pre-driving signal	1
065152	Cable harness, alternator signal module	1
562947	Alternator signal module	1
562958	Insert strip, 2 <sup>nd</sup> alternator	1
561707	Relay, 24 volts	1
IS-99053	Instruction Sheet	1
FI-99053	Feuille d'instructions	1

Kit #065239 contains the following parts:

Part No.	Description	Qty
064740	Cable 102A, 24 volts, Bosch alternator	2
064942	Cable harness, 25A1, 25A2 for terminal D+ on Bosch alternator	1
065027	Cable 0SA, ground, Bosch alternator	2
065240	Cable harness, XL dashboard	1
065151	Cable harness, pre-driving signal	1
065241	Cable harness, rear junction box	1
562113	Indicator light module, 24V, blank	1
391028	Insert strip, battery symbol	1
561707	Relay, 24 volts	4
IS-99053	Instruction Sheet	1
FI-99053	Feuille d'instructions	1

Kit #065244 contains the following parts:

Part No.	Description	Qty
065238	Bracket	1
065246	Hose, 1068 mm long	2
5011044	Copper plug, 1 in.	1
501305	Copper plug, 3/8 in.	1
501303	Copper plug, 1/8 in.	1
502564	Lock washer, split, zinc plated, 6.1 x 11.8 x 1.6	8
502573	Washer, stainless steel, 6.4 x 12.5 x 1.6	8
502581	Nut, zinc plated, M6-1	8
504025	Hose clamp, 3-1/4 in.	2
504026	Hose clamp, 3-3/4 in.	2
506669	Belt, poly V 12/73, single alternator "limp home"	1
506864	Belt, poly V, BX100 (set of 2)	1
506865	Belt, poly V 12/82, twin alternator, normal use	1
562851	Air inlet cover	2

Kit #065245 contains the following parts:

Part No.	Description	Qty
065246	Hose, 1068 mm long	1
065247	Hose, 820 mm long	1
065248	Bracket	1
5011044	Copper plug, 1 in.	1
501305	Copper plug, 3/8 in.	1
501303	Copper plug, 1/8 in.	1
502564	Lock washer, split, zinc plated, 6.1 x 11.8 x 1.6	8
502573	Washer, stainless steel, 6.4 x 12.5 x 1.6	8
502581	Nut, zinc plated, M6-1	8
504025	Hose clamp, 3-1/4 in.	2
504026	Hose clamp, 3-3/4 in.	2
506669	Belt, poly V 12/73, single alternator "limp home"	1
506865	Belt, poly V 12/82, twin alternator, normal use	1
506864	Belt, BX100 (set of 2)	1
562851	Air inlet cover	2
405302	Deflector	1
500642	Screw, #10 x 3/4	1
5001147	Washer	1

Kit #065515 contains the following parts:

Part No.	Description	Qty
064740	Cable 102A, 24 volts, Bosch alternator	2
064942	Cable assy, 25A1, 25A2 for terminal D+ on Bosch alternator	1
065027	Cable 0SA, ground, Bosch alternator	2
065150	Cable harness, H3 dashboard	1
065151	Cable harness, pre-driving signal	1
065152	Cable harness, alternator signal module	1
560081	Terminal	2
562947	Alternator signal module	1
065524	Decal, Dashboard	1
830123	LED, Red	2
561539	Terminal	6
561540	Terminal	6
561707	Relay, 24VDC	1
561183	Base, Relay	1
563061	Fuse, ATO 3A	1
562599	Fuse Holder	1
561108	Terminal, Relay wire	5
562587	Wire, Black electrical	6
562593	Wire, Yellow electrical	6
562935	Terminal, Butt Splice	6
562953	Terminal, Butt Splice	6
561626	Terminal, Receptacle	4
IS-99053	Instruction Sheet	1
FI-99053	Feuille d'instructions	1

The following parts are necessary to install an automatic belt tensioner:

Part No.	Description	Qty
012103	Mount	1
012104	Automatic belt tensioner	1
975104	Bolt, M10 x 1.5 x 30	1
969445	Bolt, M10 x 1.5 x 85, hex flanged, phosphor coated	1

Kit #510666 contains the following parts:

Part No.	Description	Qty
562752	Alternator, Bosch T-1 24V, 140 Amps	2
012065	Idler pulley, for alternator drive belt	1
510663	Alternator mounting bracket	1
065465	Alternator pulley	2
012058	Idler pulley assembly	1
012064	Snubber adapter	1
012063	Snubber assembly	1
510642	Stud, M14 x 2.0 x 92.0, grade 10.9, clockwise threads	1
510637	Bolt, M12 x 1.75 x 50.0	4
510639	Bolt, M12 x 1.5 x 80.0	1
510640	Bolt, M12 x 1.5 x 150.0	1
975124	Bolt, M14 x 2.0 x 80.0, hex, flanged, phosphor coated	1
975111	Bolt, M12 x 1.75 x 47.0, hex, flanged	1
510641	Bolt, M8 x 1.25 x 30.0, hex, flanged	1
510635	Bolt, 7/16-14 x 5.5, hex, fanged, zinc coated	4
975104	Bolt, M10 x 1.5 x 85.0, hex, flanged, phosphor coated	2
975121	Bolt, M14 x 2.0 x 50.0, hex, flanged, phosphor coated	1
510644	Bolt, M8 x 1.25 x 25.0, hex, flanged	3
975102	Bolt, M10 x 1.50 x 60.0, hex, flanged	3
510636	Nut, 7/16-14, hex, flanged, zinc plated	4
510643	Nut, M14 x 2.0, hex, flanged	1
510638	Washer	6
506865	Belt, poly-V, 12/82, twin alternator (spare)	1

## PROCEDURE

**Warning :** Park vehicle safely, apply parking brake, stop engine and set battery master switch(es) to the OFF position prior to working on the vehicle.

### INSTALLATION OF A LEFT-OFFSET OIL FILLER CAP

Refer to figure 1 and 2. If the oil filler cap is different from the one shown on these illustrations, replace with a left-offset oil filler cap (#510616).

### INSTALLATION OF AN AUTOMATIC BELT TENSIONER

If the belt tensioner is different from the one shown in figure 1, replace with an automatic belt tensioner (Order parts #012103, 012104, 975104 and 969445).

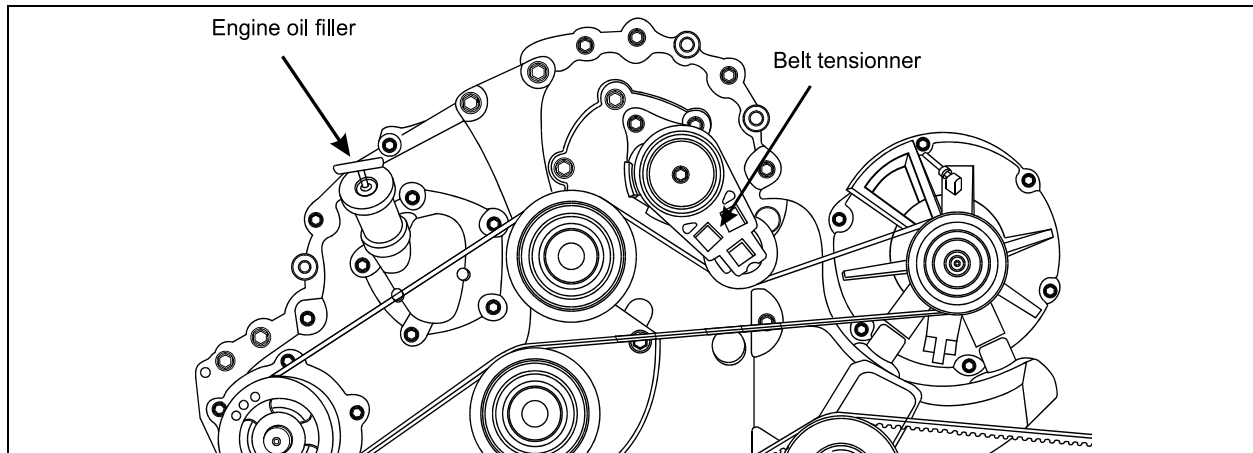


FIGURE 1: AUTOMATIC BELT TENSIONER ASSEMBLY AND LEFT-OFFSET BOTTLE STOPPER OIL FILLER

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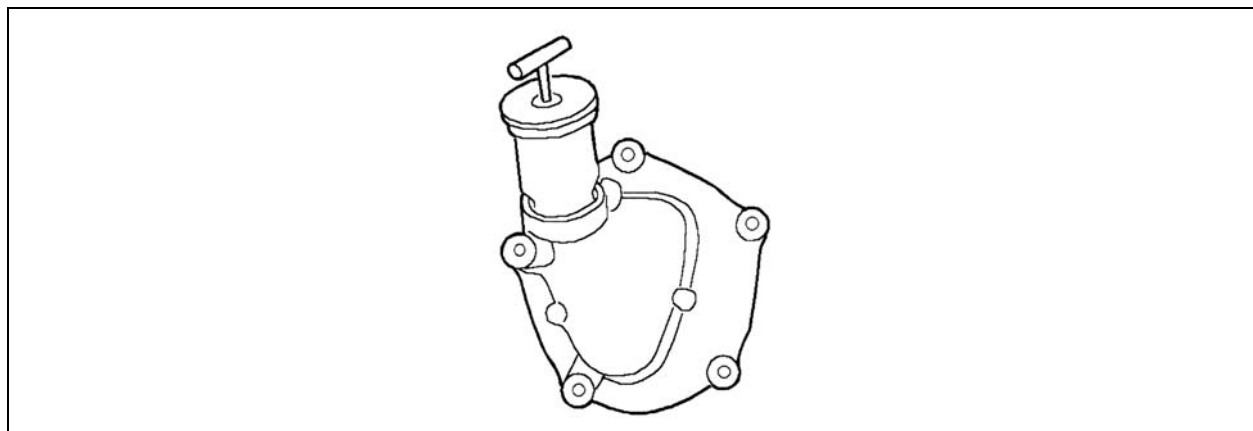


FIGURE 2: LEFT-OFFSET BOTTLE STOPPER OIL FILLER

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## REMOVAL OF OLD ALTERNATOR (ALL COACHES)

1. Disconnect the cables at the batteries;

**Warning:** With the exception of the DDEC system, never attempt to service any engine electrical systems unless the batteries have been disconnected. When working on engine components, be careful not to come in contact with the exhaust manifold or turbocharger. These components may be hot.

2. If the alternator has more than the output cable lead, disconnect all other leads from the alternator;
3. Remove the alternator output cable;
4. Release pressure in the pneumatic belt tensioners and remove drive belts;
5. If an automatic belt tensioner assembly is installed (such as item 7, figure 4), use a breaker bar with a  $\frac{3}{4}$  inch drive to rotate the tensioner pulley upward to relieve alternator belt tension. Remove the belt;

**Warning:** When replacing the drive belt on an engine with an automatic belt tensioner, do not cut the belt to remove it. Doing so will allow the spring-loaded pulley to snap back violently. This may damage or shear the pulley stop and render the automatic belt tensioner unusable. If a hand is positioned between the tensioner pulley and top idler pulley when this occurs, severe hand or finger injury will result.

6. If an automatic belt tensioner is not installed, loosen the alternator mounting bolts and adjusting rod nut to allow slack in the drive belts. See figure 3 for former Delco alternator installation and figure 4 for current Delco alternator installation;

7. Disconnect the oil supply, return and vent lines. Plug the oil inlet, outlet and breather vent on the engine (use the three copper plugs included in kit #065244 for XL coaches or kit #065245 for H3 coaches);
8. While supporting the alternator, remove the adjusting rod bolt and hardened washer;
9. Remove the nut and washer at the alternator rear mounting flange;
10. While supporting the alternator to prevent it from falling, remove the alternator-to-bracket bolts;
11. Remove the alternator;
12. Remove the two Woodruff keys, if equipped;
13. Remove the alternator bracket support and alternator bracket.

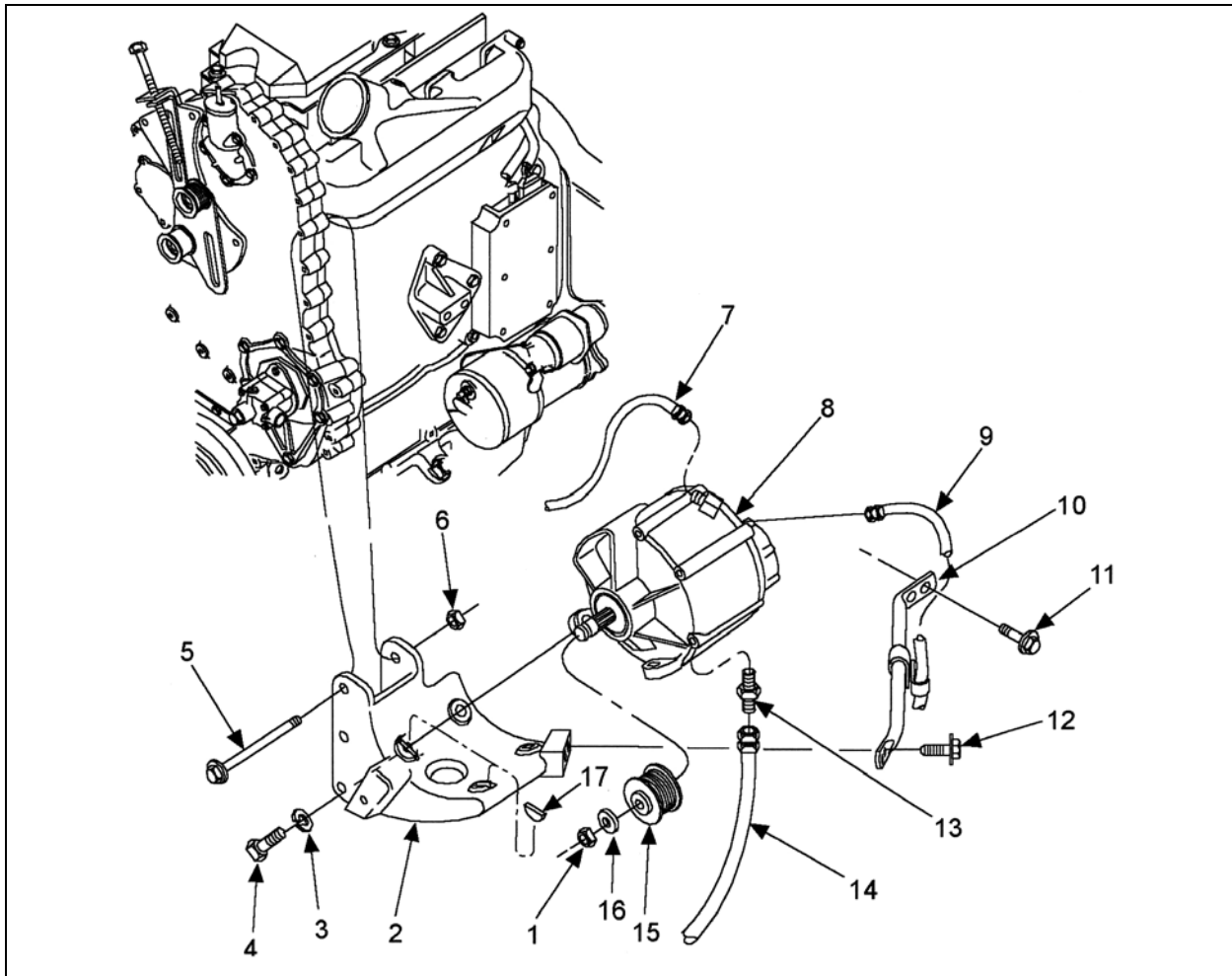


FIGURE 3: DELCO ALTERNATOR, FORMER INSTALLATION

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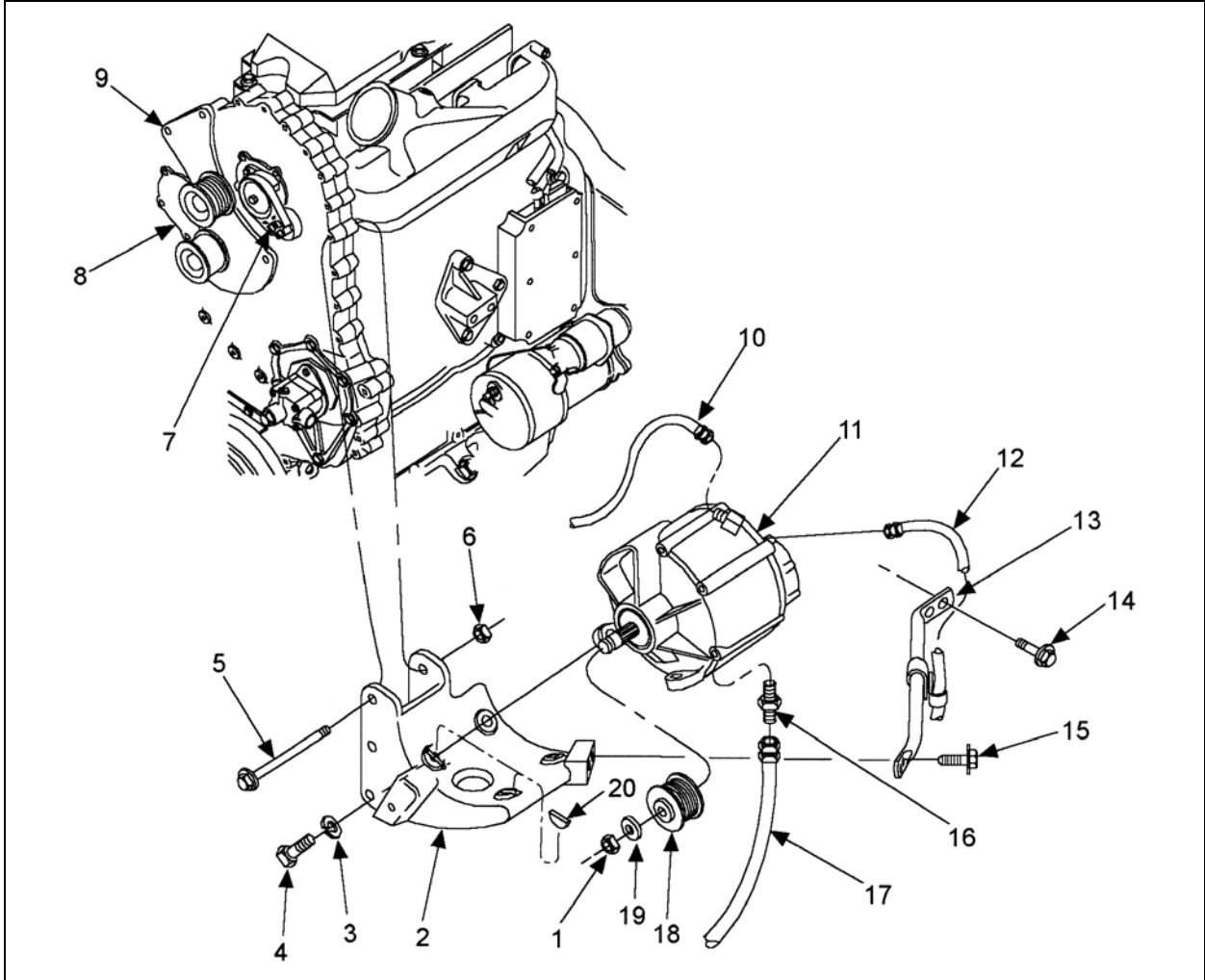


FIGURE 4: DELCO ALTERNATOR, CURRENT INSTALLATION

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### INSTALLATION OF FUEL PUMP BRACKET (FOR ELECTRICAL FUEL PUMP ONLY)

If the coach is equipped with an electrical fuel pump, install bracket #032254 as shown:

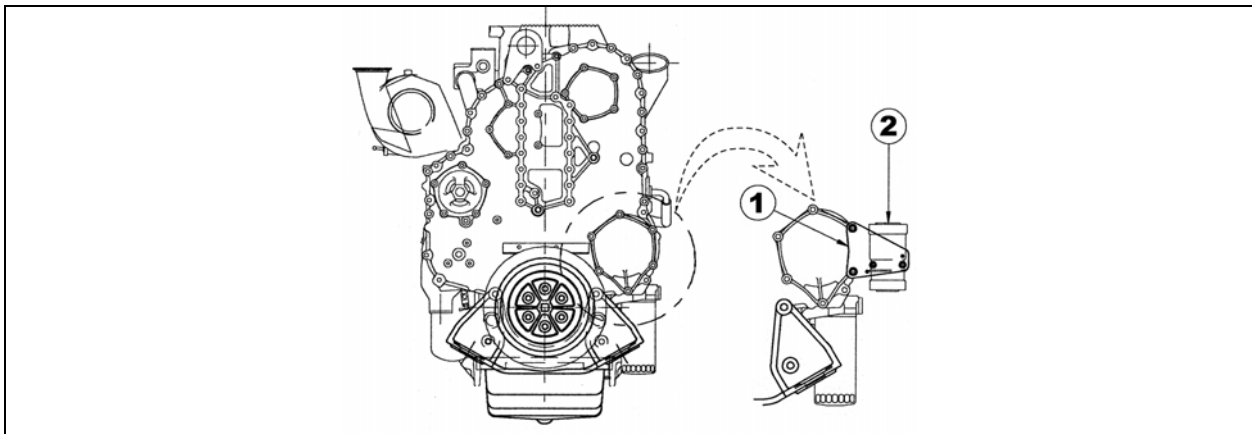


FIGURE 5: FUEL PUMP BRACKET (1), ELECTRICAL FUEL PUMP (2)

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## INSTALLATION OF TWIN BOSCH ALTERNATORS (KIT #510666, ALL COACHES)

Install alternators as follows. Refer to figure 6 for installation and to figure 7 for tightening specifications:

1. Install alternator mounting bracket (1, figure 5) to the gear case. Use the four flanged phosphor alloy bolts on the pulley end of the bracket and the flanged nuts at the transmission end of the bracket;
2. Bolt the alternators to the bracket using the three inch bolt at the top of the upper alternator (2, fig 6) and flanged bolts at the other mounting bosses (3 and 4, figure 6). Tighten the bolts in the sliding sleeves (4, figure 6) last as they will adjust to prevent breaking the alternator mounting bosses upon final tightening. Repeat for the second alternator;

**Note:** In some cases, the air intake pipe may have to be bent somewhat to clear the top alternator. If preferred, a replacement pipe (Prevost #032269) designed for such an installation is available.

3. Remove the alternator pulley nut, spring washer and cardboard spacer on both alternators;
4. On the drive shafts of both alternators, install key, pulley, spring washer and nut. Tighten to 220 lbs•ft (300 Nm);

**Note:** Final tightening of the pulleys can be performed once the belt is installed. This will help keep the pulley from turning when tightening.

5. Install the snubber bracket (5, figure 6) using three flanged bolts. Do not tighten the adjustment bolts on the snubber until after installing kit #065244 (for XL coaches), or kit #065245 (for H3-41 and H3-45 coaches);
6. Install the compressor belt idler pulley 012058 ( 6, figure 6) as shown. A stud inserts into one of the mounting holes of the pulley assembly. Fasten this one using a nut and bolts for the other two.

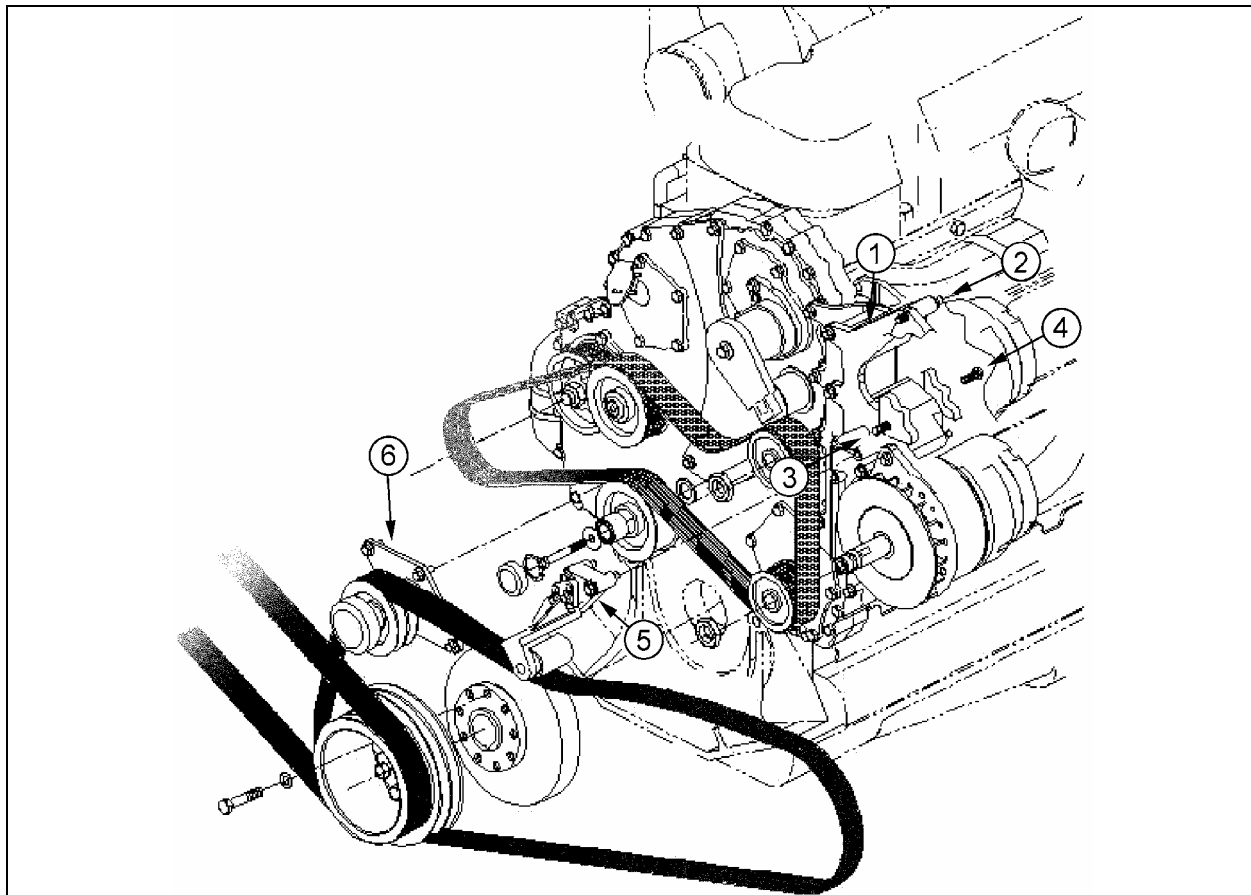


FIGURE 6: TWIN BOSCH ALTERNATORS INSTALLATION, EXPLODED VIEW

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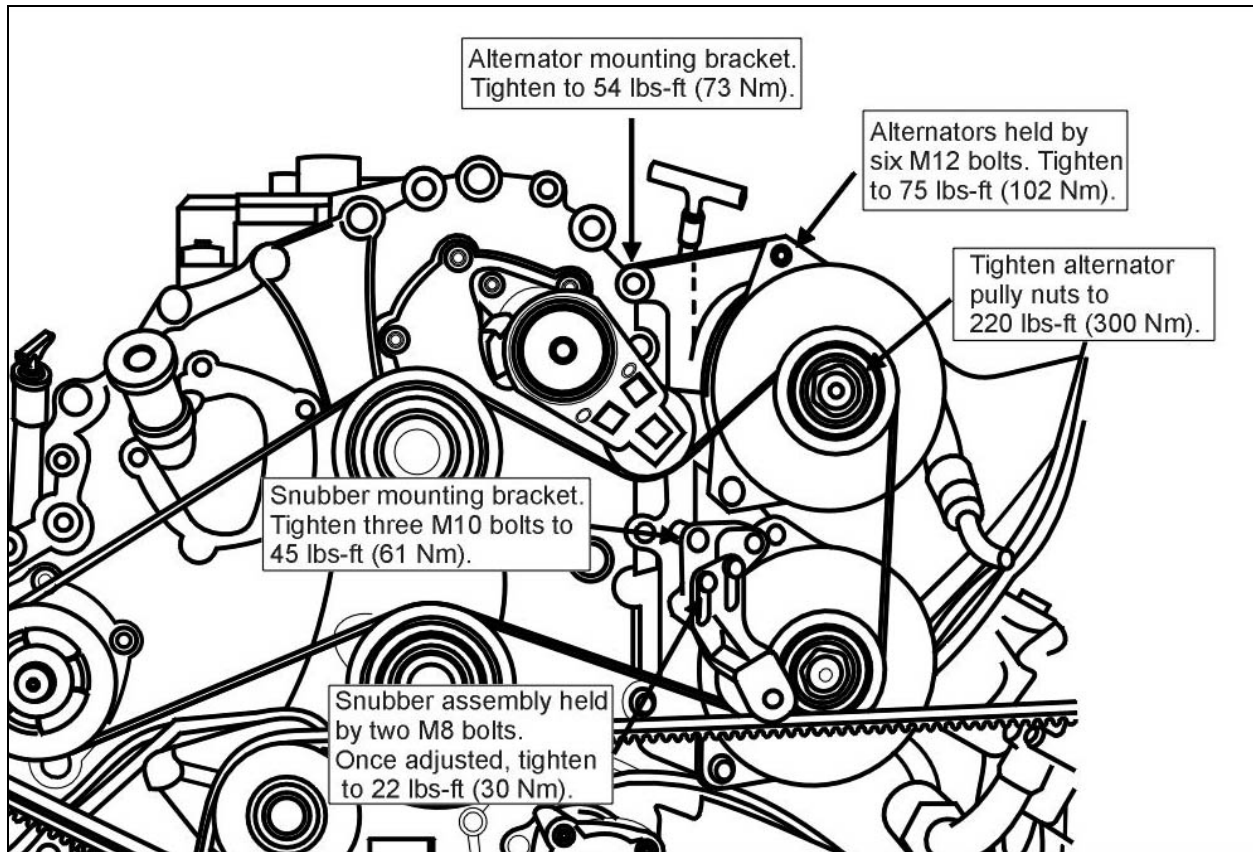


FIGURE 7: ALTERNATORS AND ACCESSORIES TIGHTENING TORQUES

01094

### INSTALLATION KIT #065515 AND #065210 (H3-41 AND H3-45 COACHES)

Refer to the table below to determine which parts apply to your coach.

<b>VIN</b>	<b>To do</b>
From 2P9H33495R <u>1001012</u> up to 2PCH33498V <u>1011778</u> <b>except</b> 2PCH33419V <u>1011718</u>	<b>Parts A and D</b>
2PCH33419V <u>1011718</u> <b>and</b> From 2PCH3349XV <u>1011779</u> up to 2PCH33496W <u>1012283</u> <b>except</b> 2PCH33494W <u>1012234</u>	<b>Parts B and E</b>
2PCH33494W <u>1012234</u> <b>and</b> From 2PCH3349XW <u>1012285</u> up to 2PCH33494X <u>1012901</u> <b>except</b> 2PCH33416X <u>1012831</u>	<b>Parts C and E</b>

## Part A:

### INSTALLATION KIT #065515 (H3-41 AND H3-45 COACHES)

Coaches R012 to V1778 except V1718

**Note:** Refer to electrical diagram **D060812 & D060869 page 4.4**, annexed at the end of this instruction sheet.

1. Remove dashboard cover;
2. Locate spare wires SP4 & SP3 located near connector C72;
3. Choose best position (refer to figures 8 and 9) and affix new decal (Prévost #065524);

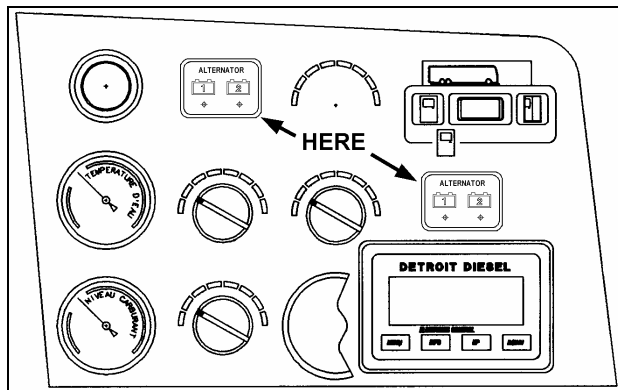


FIGURE 8: INSTALLATION OF DECAL ON R.H. SIDE PANEL

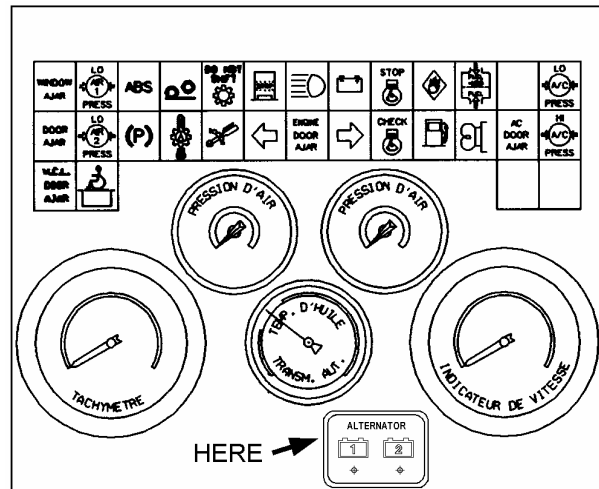


FIGURE 9: INSTALLATION OF DECAL ON CENTER PANEL

4. Using the decal as a reference for centering, drill two – 3/16” holes;
5. Insert one LED into each hole, use plastic glue if required;
6. Crimp one receptacle terminal (561626) to each wire of TTLT LED wiring as per figure 10;
7. 1<sup>st</sup> choice: If the center panel was chosen, connect terminal 25D with a black wire or use a grounded metal part inside the dashboard. Connect terminals 25K & 25A to spare wires SP3 and SP4. If these spare wires are not available, you must use cable harness (065150) to connect the TTLT LED wiring to spare wires SP39 & SP40 located inside the alarm box;  
2<sup>nd</sup> choice: If the R.H. side panel was chosen, connect terminal 25D with a black wire or use a grounded metal part inside the dashboard. Connect terminals 25K & 25A to spare wires SP83 and SP84. If these spare wires are not available, you must use cable harness (065150) to connect the TTLT LED wiring to spare wires SP39 & SP40 located inside the alarm box;

**Caution:** Do not forget to connect LED wire 25D to a ground whether inside the dashboard, in the alarm box or in the front junction box.

8. Replace dashboard cover.

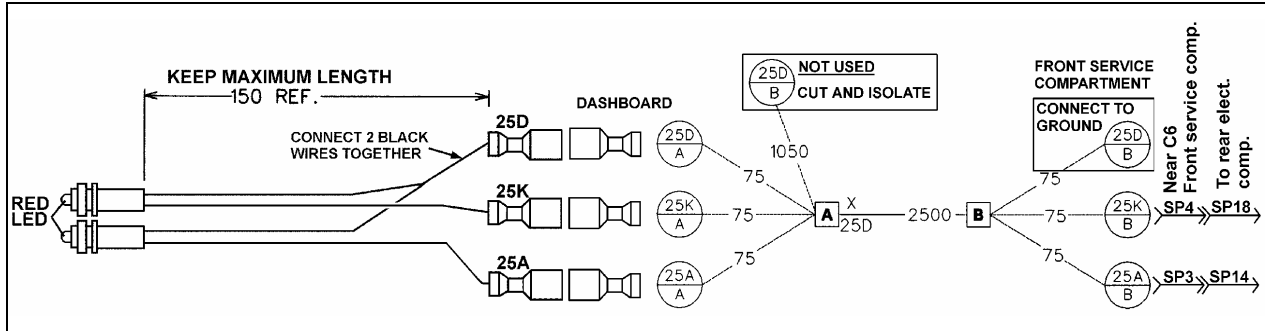


FIGURE 10 : 065150

## Part B:

### INSTALLATION KIT #065210 (H3-41 AND H3-45 COACHES)

Coaches V1718, V1779 to W2283 except W2234

**Note:** For part B, refer to electrical diagram **D060882 page 4.4** annexed to this instruction sheet.

1. Remove dashboard cover;
2. The blank telltale identified in figure 11 will serve to indicate that an alternator is not charging. Unfortunately, the film supplied cannot be inserted in this type of telltale module. Identify the blank with a homemade label applied nearby [Alt. 2];
3. Use cable harness #065150, connect wire 25A to connector C517, pin 7 (insulate old wire) and connect wire 25K to connector C517, pin 6 (insulate old wire) (refer to figure 12);
4. Cut off and insulate wires 25D as shown in figure 12;
5. Route the other end of the cable down to the front service compartment;

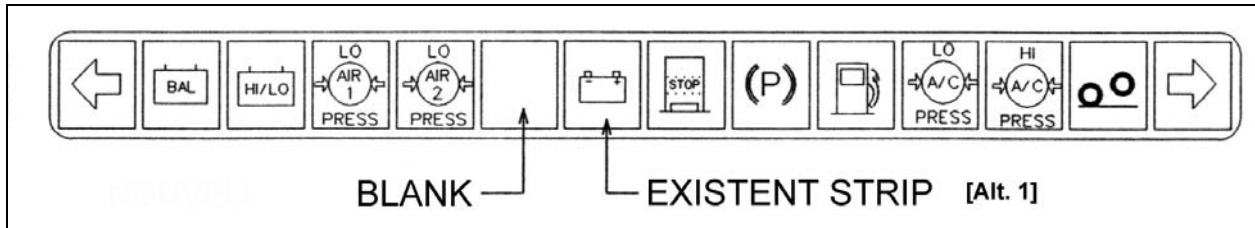


FIGURE 11: TELLTALE LIGHT MODULE

06434

6. Connect wire 25A to spare wire SP11 and connect wire 25K to spare wire SP14 as shown in figure 12. These spare wires are located near connector C3 in the front service compartment;
7. Locate spare wires SP11 and SP14 near connector C20 in rear electrical compartment.

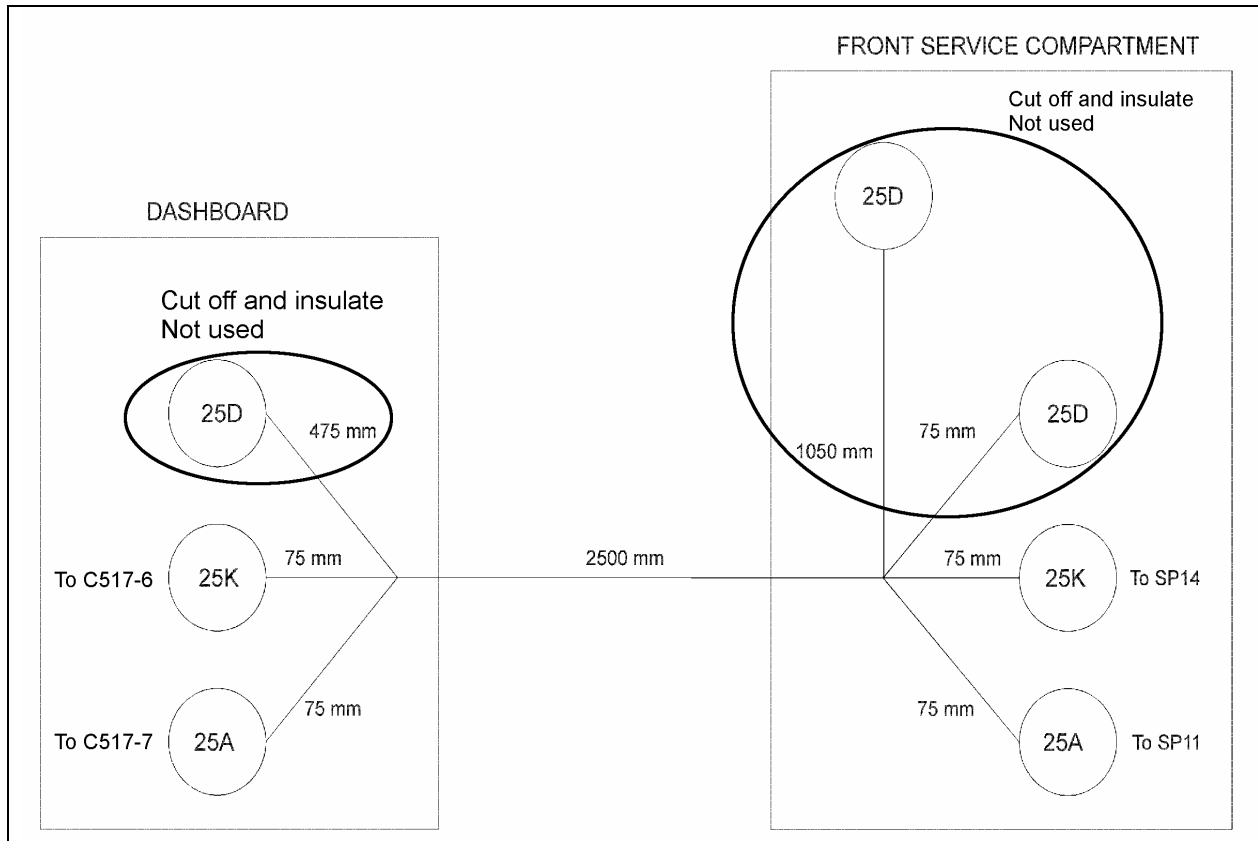


FIGURE 12: INSTALLATION OF CABLE HARNESS #065150

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## Part C:

### INSTALLATION KIT #065210 (H3-41 AND H3-45 COACHES)

Coaches W2234, W2285 to X2901 except X2831

**Note:** For part B, refer to electrical diagram **D060902 page 4.4**, annexed to this instruction sheet.

1. Remove dashboard cover;
2. Perform a telltale light test using toggle switch "TEST" (refer to Operator's Manual). If there is no secondary alternator strip already installed (location shown on figure 13), loosen the telltale light panel and insert strip #562958 as shown. Make sure to install it properly then fasten telltale light panel;
3. Use cable harness #065150, connect wire 25D to connector C540 pin 11 (insulate old wire), connect wire 25A to connector C571, pin 5 (insulate old wire) and connect wire 25K to connector C571, pin 15 (insulate old wire). Refer to figure 14;

**Note:** Connector C540 is hidden from view, it connects to the back of the HVAC control panel on the dashboard. You must loosen nut at the back of module in order to remove it.

4. Route the cable down to the front service compartment;
5. Replace dashboard cover;



## Part D:

### INSTALLATION KIT #065515 (H3-41 AND H3-45 COACHES)

All coaches

1. In the rear electrical compartment, fasten the alternator signal module (#562947) to the rear junction box support. Use the module as a template to drill holes (1/8 in). Fasten using #8 screws;

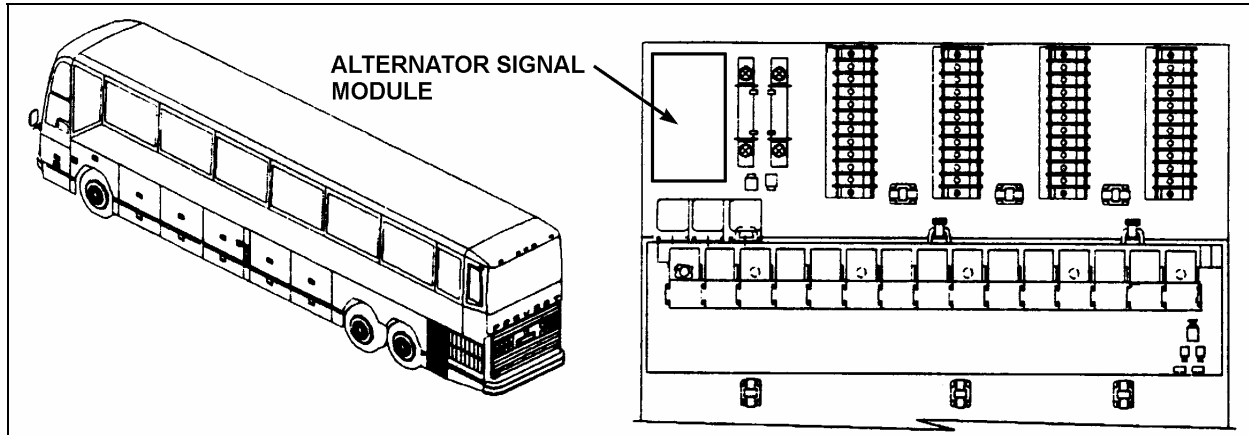


FIGURE 15: REAR ELECTRICAL COMPARTMENT

2. Set the switch on the signal module to 2-alternators;

**Note:** Placing the switch to 2-alternator mode will allow to illuminate telltale light in case of an alternator failure. A careful driver could then switch to 1 alternator mode and drive with some ventilation. When choosing this option however, the driver must watch the voltage display very carefully and keep the load on the remaining alternator low enough to prevent the batteries from discharging.

3. Plug connector C274 (from cable #065152, included in kit) to the electronic module (refer to figure 16);
4. Install relay R100 in a convenient location such as the end of a series of relay. Connect wire 25 from cable #065152 to pin 86 of R100 then connect pin 85 to ground using supplied black wire (use supplied terminals 561108);
5. Add fuse holder and 3A fuse. Connect one end with wire 12Vi from pin B, insert the other end into relay R100, pin 30. Remove wire 25 from connector C15, pin 1 (rear electrical comp.) and insert into relay R100, pin 87;
6. Insert wire 25A1 to connector C15, pin 1 (socket side). Cut and insulate existing wire;
7. Connect wire 25A2 to spare wire SP13 (located near the top on inner wall, close to connector C15);
8. Locate wire 85 on connector C505, pin 5. Cut and splice each end to wires 85F from cable #065152;
9. Connect wire 0 to junction M and connect wire 25B to junction B;
10. Connect wire 25A to spare wire SP14, connect wire 25K to spare wire SP18 (spare wires are located near connector C21);
11. Indicate 24 volts on relay R100 base and decals and make sure you're using 24 volt relay (#561707) included in the kit;
12. In the engine compartment, with the alternators installed, connect one of two 102A wires to the B+ terminal on each alternator and tighten the terminal nut to 88 – 115 lbs-in (10.0 – 13.0 Nm), (refer to figure 17). Connect the other end to the battery terminal on the starter solenoid and tighten the terminal nut to 180 – 240 lbs-in (20 – 27 Nm);

- Connect one of the two OSA wires to the B- terminal of each alternator and tighten the terminal nut to 88 – 115 lbs-in (10.0 – 13.0 Nm). Connect the other end to the ground stud in the engine compartment and tighten the terminal nut to 180 – 115 lbs-in (10.0 – 13.0 Nm);

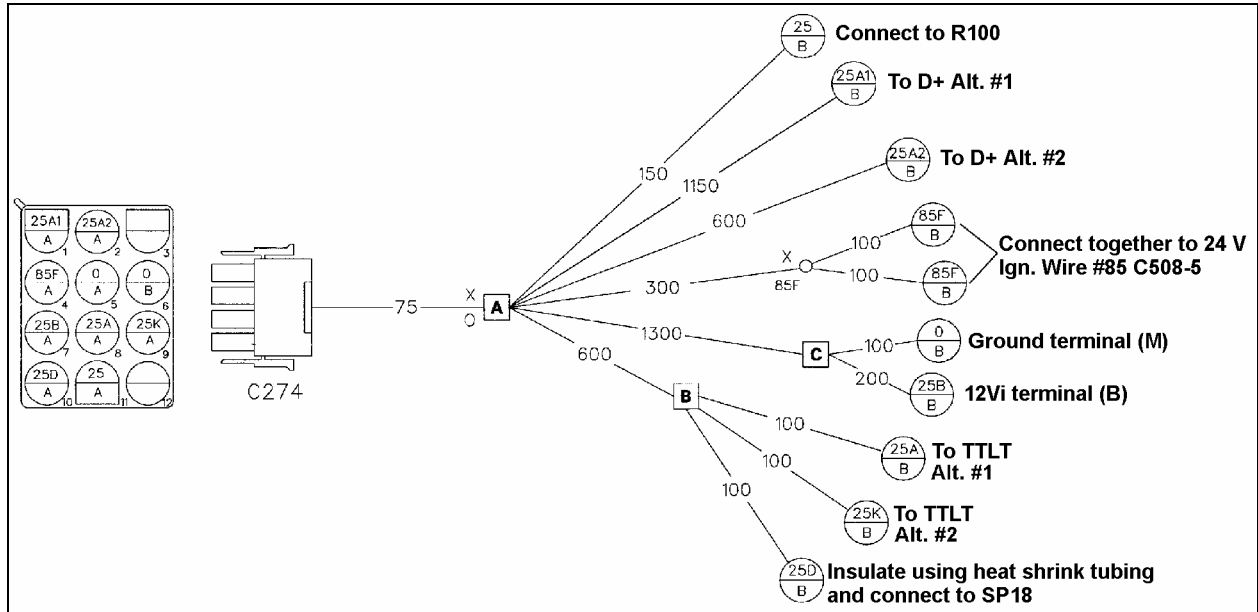


FIGURE 16: INSTALLATION OF CABLE HARNESS #065152 IN REAR ELECTRICAL COMPARTMENT

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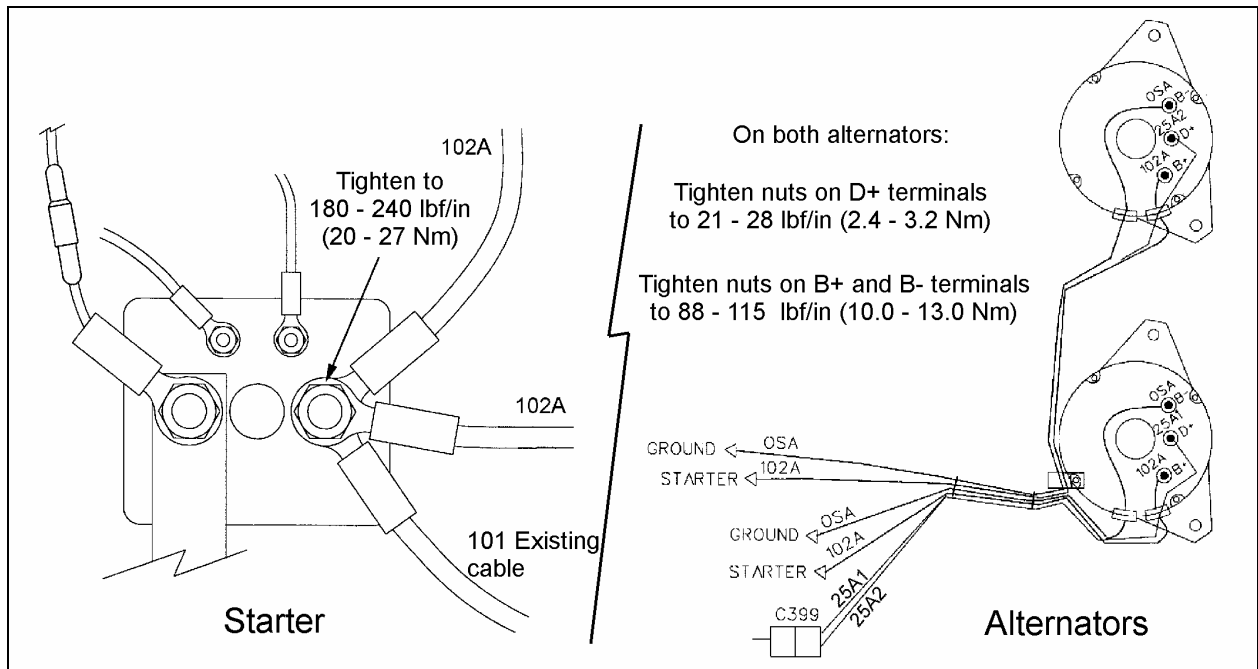


FIGURE 17: INSTALLATION OF WIRES ON THE STARTER AND ALTERNATOR

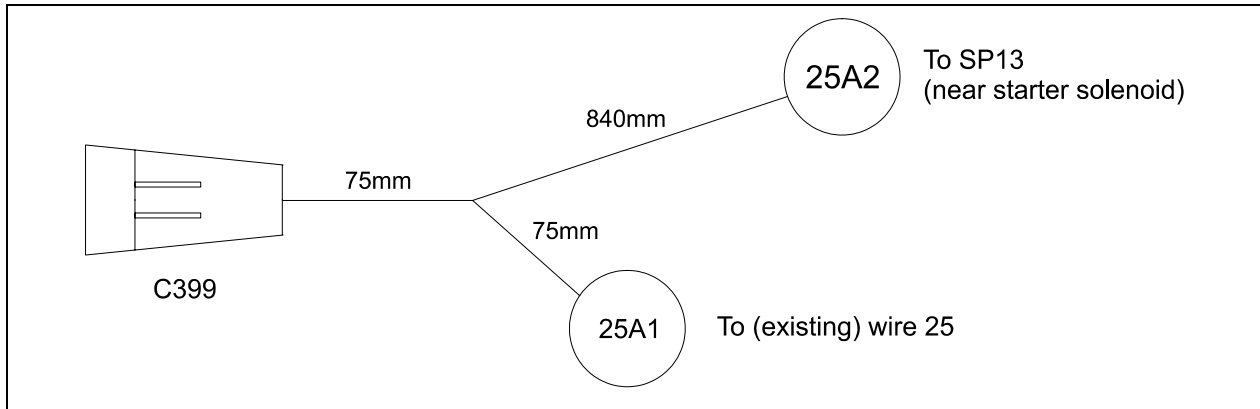
06458

- Feed wire 25A1 (from cable harness #064942) through grommet on wire 102A of the top alternator, connect to terminal D+ and tighten the terminal nut to 21 – 28 lbs-in (2.4 – 3.2 Nm). Repeat with wire 25A2 on the lower alternator;

- Connect wire 25A1 of cable #065151 to existing wire 25 from previous alternator installation (refer to figure 18);



16. Connect wire 25A2 of cable #065151 to spare wire SP13, located over the starter solenoid and heat the heat shrinkable tubing over the connection;
17. Connect cable #064942 to #065151 via connector C399;
18. Coat the connections on the alternators, the ground stud and the solenoid terminal with electrical connection protector or with "Color Guard" protector (Prevost part #684013);
19. Attach wires and cables securely using cable ties.



**FIGURE 18: INSTALLATION OF CABLE HARNESS #065151 IN ENGINE COMPARTMENT**

06438

## Part E:

### INSTALLATION KIT #065210 (H3-41 AND H3-45 COACHES)

All coaches

1. In the rear electrical compartment, fasten the alternator signal module (#562947) to the rear junction box support. Use the module as a template to drill holes (1/8 in). Fasten using #8 screws;

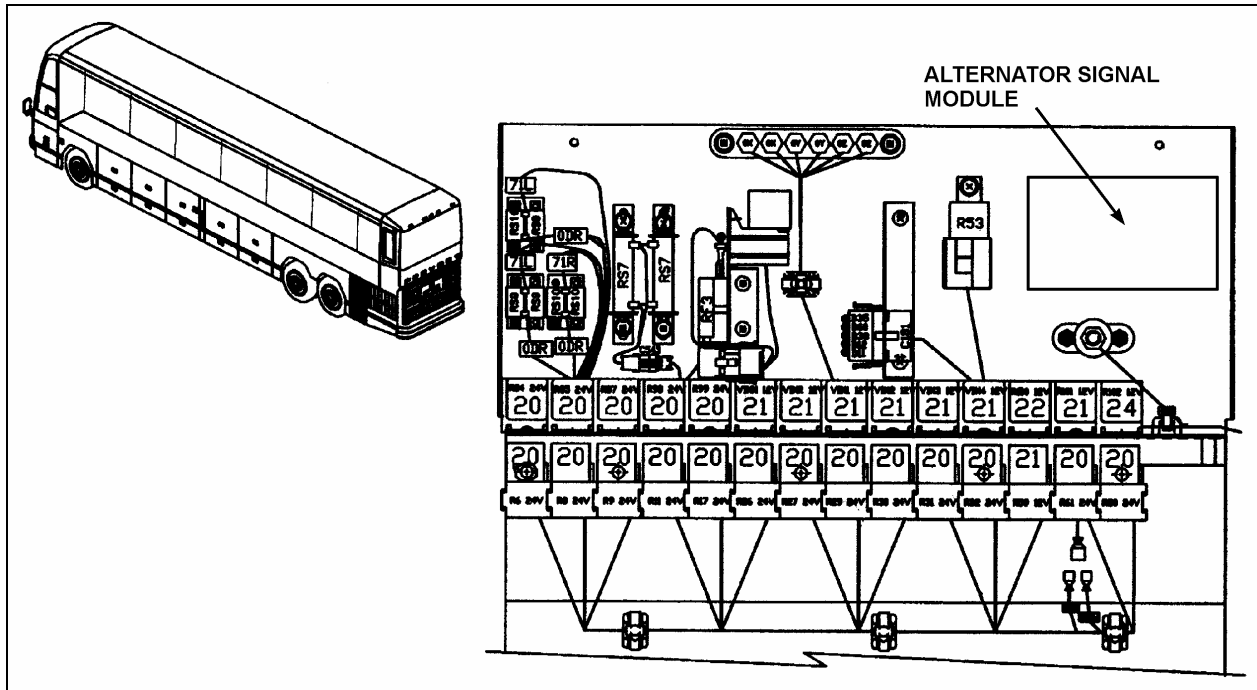


FIGURE 19: REAR ELECTRICAL COMPARTMENT

2. Set the switch on the signal module to 2-alternators;

**Note:** Placing the switch to 2-alternator mode will allow to illuminate telltale light in case of an alternator failure and in the case of vehicle W-2234 and following, it will also automatically shutdown the HVAC system. A careful driver could then switch to 1 alternator mode and drive with some ventilation. When choosing this option however, the driver must watch the voltage display very carefully and keep the load on the remaining alternator low enough to prevent the batteries from discharging.

3. Plug connector C274 (from cable #065152, included in kit) to the electronic module (refer to figure 16);
4. Replace existing wire at pin 86 of R100 with wire 25 from cable #065152;
5. Insert wire 25A1 into connector C15, pin 1 (socket side). Cut and insulate existing wire;
6. Connect wire 25A2 to spare wire SP13 (located near the top on inner wall, close to connector C15);
7. Locate wire 85F on connector C508, pin 5. Cut and splice each end to wires 85F from cable #065152;
8. Connect wire 0 to junction M and connect wire 25B to junction B;
9. Connect wire 25A to spare wire SP11, connect wire 25K to spare wire SP14 and connect wire 25D to spare wire SP18 (spare wires SP11, SP14 and SP18 are located near connector C20);

**Caution:** Replace 12 Volt relay with 24 Volt relay (561707) included in the kit.

- 
10. Indicate 24 volts on relay R100 base and decal;
  11. In the engine compartment, with the alternators installed, connect one of two 102A wires to the B+ terminal on each alternator and tighten the terminal nut to 88 – 115 lbs-in (10.0 – 13.0 Nm), (refer to figure 17). Connect the other end to the battery terminal on the starter solenoid and tighten the terminal nut to 180 – 240 lbs-in (20 – 27 Nm);
  12. Connect one of two 0SA wires to the B- terminal of each alternator and tighten the terminal nut to 88 – 115 lbs-in (10.0 – 13.0 Nm). Connect the other end to the ground stud in the engine compartment and tighten the terminal nut to 180 – 115 lbs-in (10.0 – 13.0 Nm);
  13. Feed wire 25A1 (from cable harness #064942) through grommet on wire 102A of the top alternator, connect to terminal D+ and tighten the terminal nut to 21 – 28 lbs-in (2.4 – 3.2 Nm). Repeat with wire 25A2 on the lower alternator;
  14. Connect wire 25A1 of cable #065151 to existing wire 25 from previous alternator installation (refer to figure 18);
  15. Connect wire 25A2 of cable #065151 to spare wire SP13, located over the starter solenoid and heat the heat shrinkable tubing over the connection;
  16. Connect cable #064942 to #065151 via connector C399;
  17. Coat the connections on the alternators, the ground stud and the solenoid terminal with electrical connection protector or with “Color Guard” protector (Prevost part #684013);
  18. Attach wires and cables securely using cable ties.

## **INSTALLATION KIT #065239 (ALL XL COACHES)**

**Note:** Refer to electrical diagram **D060872 page 1A**, annexed at the end of this instruction sheet.

1. Loosen the front dashboard cover;
2. Find a blank indicator light on the dashboard and insert the battery symbol strip (#391028). If there are no blanks, drill a hole and install the blank indicator light module (#562113) included in the kit;
3. From cable harness #065240, connect wire 87D and 25A1 to the existing “not charging” indicator light (refer to figure 20);
4. Connect wire 87D and 25A2 to new indicator light;
5. Route the cable harness to the junction box in the front service compartment;
6. In the front service compartment junction box (refer to figure 20), connect wire 87C to terminal 45;
7. Connect wire 25A1 to spare wire SP21;
8. Connect wire 25A2 to spare wire SP22;
9. Connect wire 25A3 to spare wire SP23;
10. Connect wire 25A2 to pin 86 on relay 33;
11. Replace relays R33, R60 and R85 by 24 volt units (#561707) included in the kit;
12. Identify above relays as being 24 volts on identification tabs and decals;
13. In the rear junction box (refer to figure 20), connect wire 25A4 from cable harness #065241 to terminal 45;
14. Connect wire 0 to terminal 68;
15. Connect wire 25A1 to spare wire SP21;
16. Connect wire 25A2 to spare wire SP22;

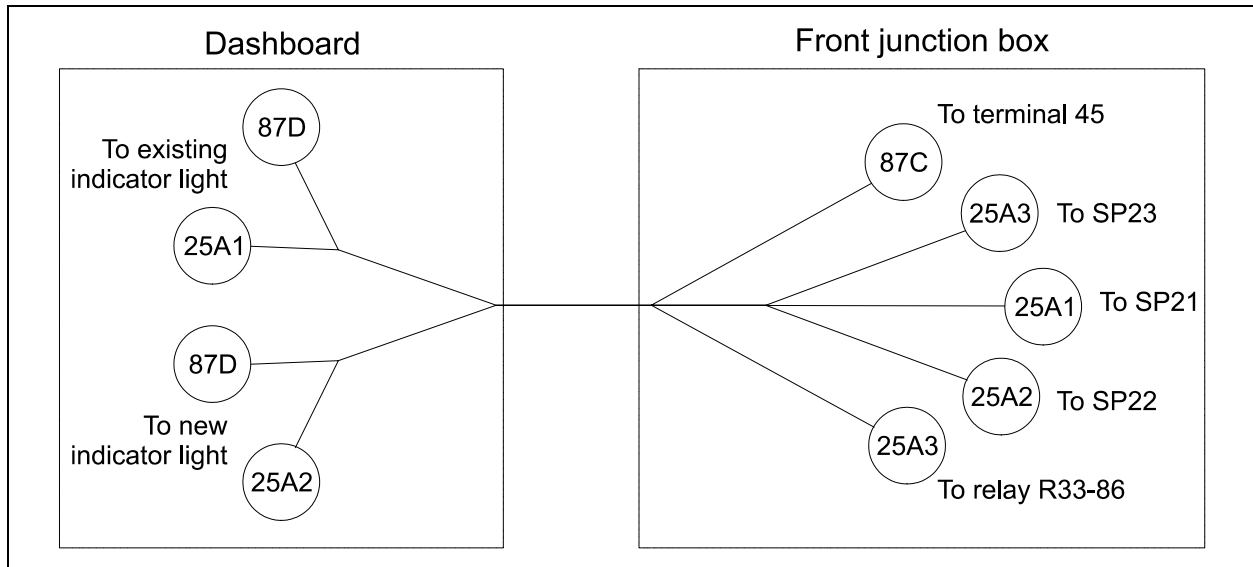


FIGURE 20: INSTALLATION OF CABLE HARNESS #065240

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17. Connect wire 25A3 to spare wire SP23;
18. Connect other end of wire 25A2 to spare wire SP13;
19. Remove relay R37, cut and insulate all wires except wire 25;
20. Install relay RA1 and base in place of relay R37;
21. Connect other end of wire 25A1 to wire 25 (from old relay R37);

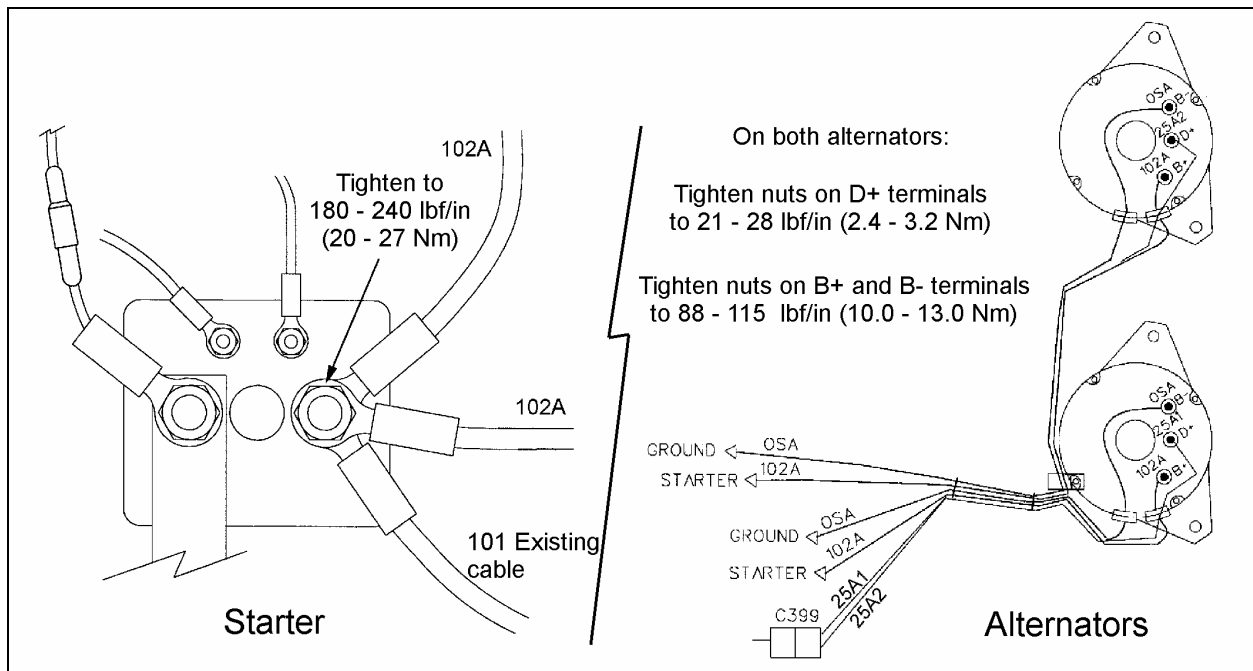
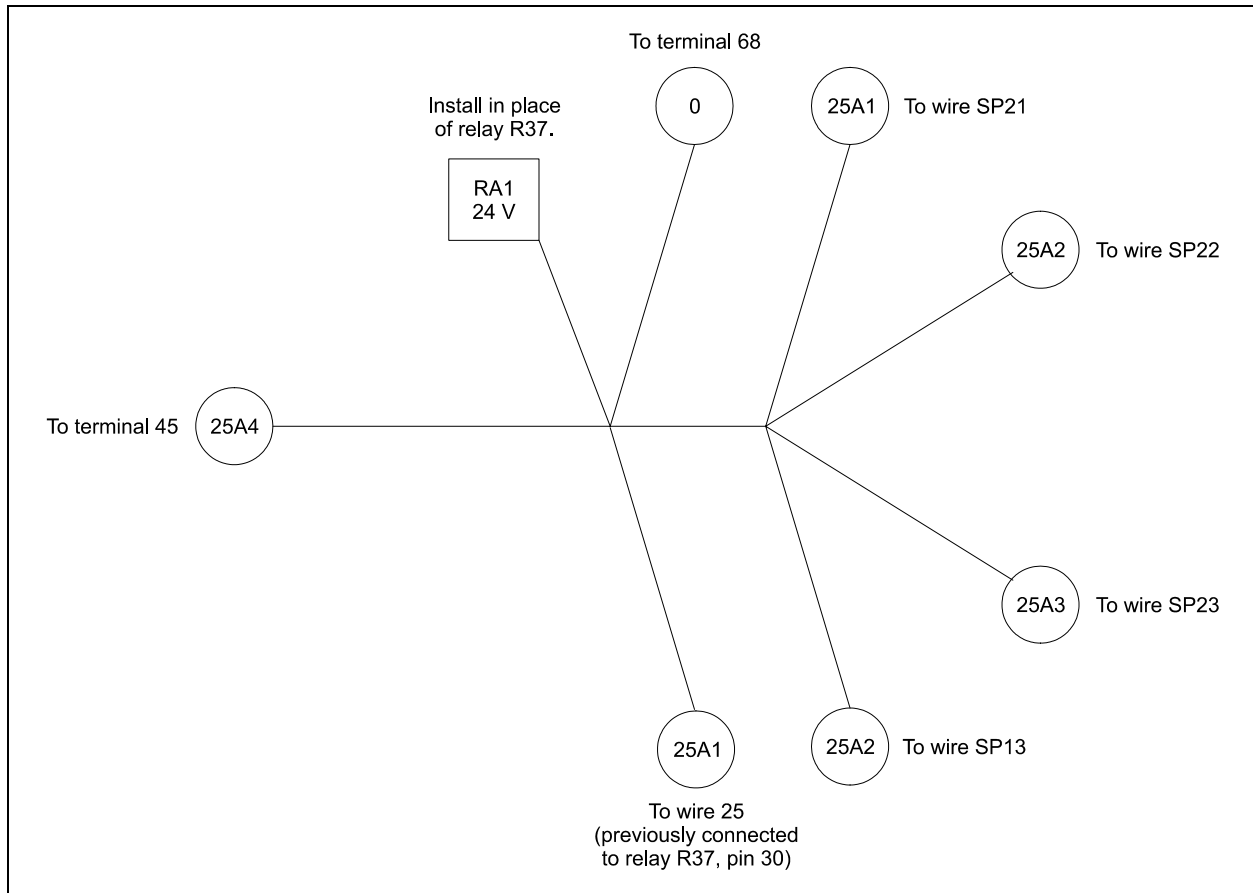


FIGURE 21: INSTALLATION OF WIRES ON THE STARTER AND ALTERNATOR

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**FIGURE 22: INSTALLATION OF CABLE HARNESS 065241 IN REAR JUNCTION BOX**

06440

22. In the engine compartment, with the alternators installed, connect one 102A wire to the B+ terminal on each alternator and tighten the terminal nut to 88 – 115 lbs-in (10.0 – 13.0 Nm), (refer to figure 21). Connect the other end to the battery terminal on the starter solenoid and tighten the terminal nut to 180 – 240 lbs-in (20 – 27 Nm);
23. Connect one 0SA wire to the B- terminal of each alternator and tighten the terminal nut to 88 – 115 lbs-in (10.0 – 13.0 Nm). Connect the other end to the ground stud in the engine compartment and tighten the terminal nut to 180 – 115 lbs-in (10.0 – 13.0 Nm);
24. Feed wire 25A1 (from cable harness #064942) through grommet on wire 102A of the top alternator, connect to terminal D+ and tighten the terminal nut to 21 – 28 lbs-in (2.4 – 3.2 Nm). Repeat with wire 25A2 on the lower alternator;
25. Connect wire 25A1 of cable #065151 to existing wire 25 from previous alternator installation (refer to figure 22);
26. Connect wire 25A2 of cable #065151 to spare wire SP13, located over the starter solenoid and heat the heat shrinkable tubing over the connection (refer to figure 22);
27. Connect cable #064942 to #065151 via connector C399;
28. Coat the connections on the alternators, the ground stud and the solenoid terminal with electrical connection protector or with “Color Guard” protector (Prevost part #684013);
29. Attach wires and cables securely using cable ties.

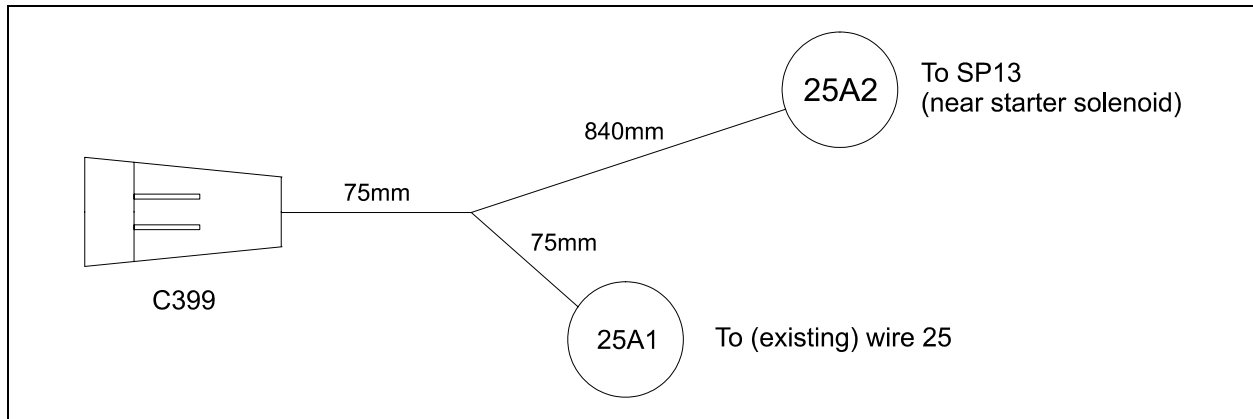


FIGURE 23: INSTALLATION OF CABLE HARNESS #065151 IN ENGINE COMPARTMENT

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### INSTALLATION KIT #065245 (H3-41 AND H3-45 COACHES)

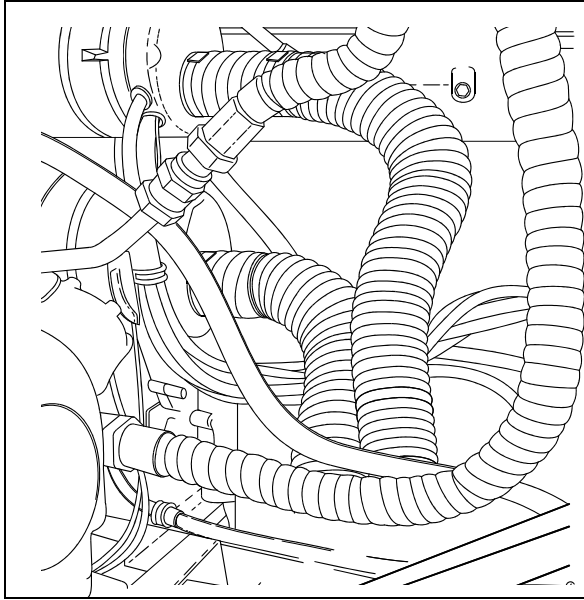
Ensure kit #065515 or #065210 is installed before continuing;

1. Make sure that wires are properly routed through grommets then fasten the air inlet covers (#562851) to the alternators using flat washers (#502573), lock washers (#502564) and nuts (#502581);
2. Install the hoses to the inlet covers and clamp in place using hose clamps (#504025) (refer to figure 24);
3. Cut 4 wire rings at the other end as per figure 25. Feed hose between lavatory fan and engine air filter so that the end is visible underneath fan. Fasten hose lip using washer #5001137 and screw #500642 (refer to figure 26);
4. Remove two upper fixing bolt and nuts from lavatory fan support bracket, install deflector and fasten using bolt and nuts (refer to figure 27);
5. If necessary, fasten the air inlet hoses to any solid surrounding components or to vehicle frame, using cable ties;
6. Loosen the bolts retaining the A/C compressor mount and slide the complete assembly by 5/16 inch (8 mm). It may be necessary to enlarge the slots on the bracket or on the vehicle frame to allow for the displacement (refer to figure 28);

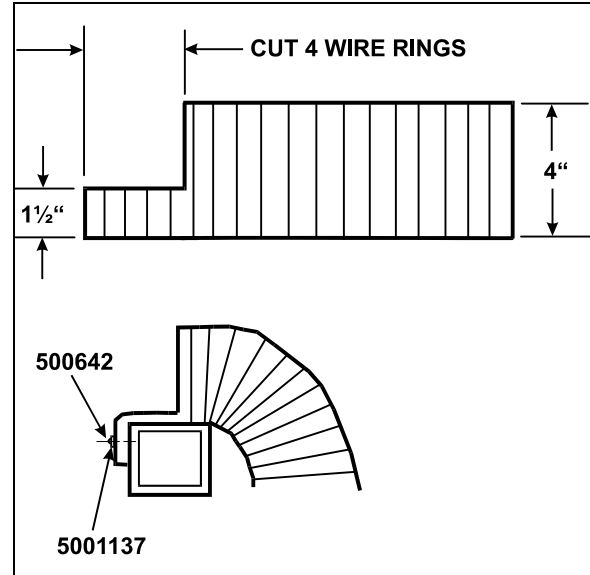
**Caution:** To minimize belt wear, align the compressor so the drive pulley is parallel and in the same plane as the drive belts. Refer to Maintenance Manual, section 22 for more information.

7. Tighten the A/C compressor bracket retaining bolts;
8. Install the compressor drive belts, the alternator belt and fan belt carefully over the pulleys. Ensure the grooved and smooth faces of the belt are properly positioned on the pulleys before taking up slack;

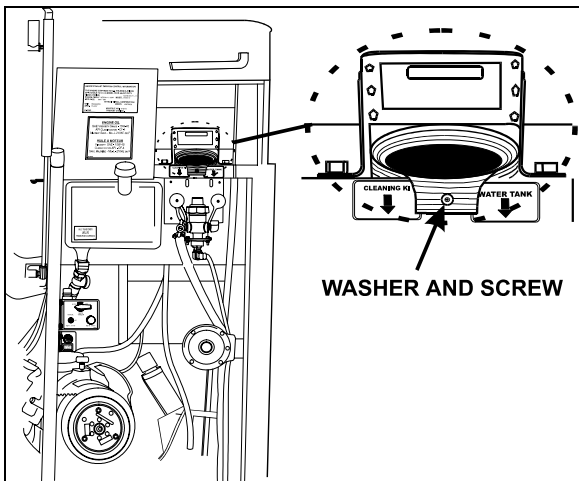
**Caution:** Failure to properly orient the drive belt when installing over the pulleys may result in belt damage at engine startup.



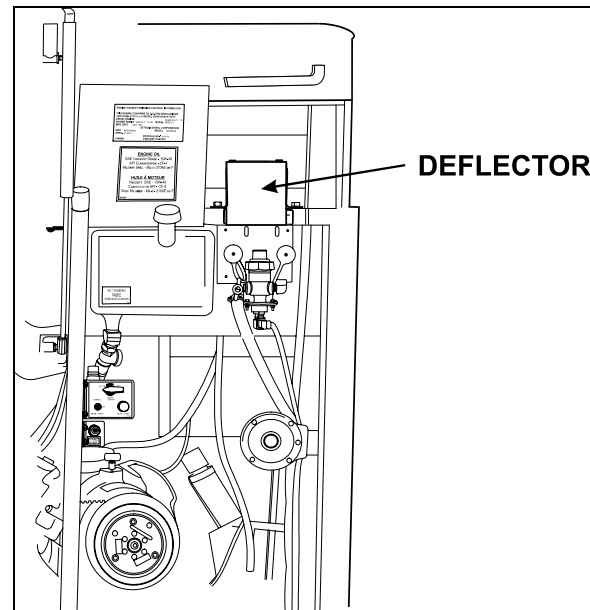
**FIGURE 24: FASTENING AIR BREATHER HOSES TO ALTERNATORS**



**FIGURE 25 : CUTTING WIRE RINGS**



**FIGURE 26: FASTENING AIR BREATHER HOSE**



**FIGURE 27 : INSTALLATION OF DEFLECTOR**

9. Pressurize the belt tensioner;
10. Set the snubber height so it almost touches the belts (the snubber prevents the belts from shaking off of the pulley);
11. Adjust the height of the belt protector so it almost touches the belts.

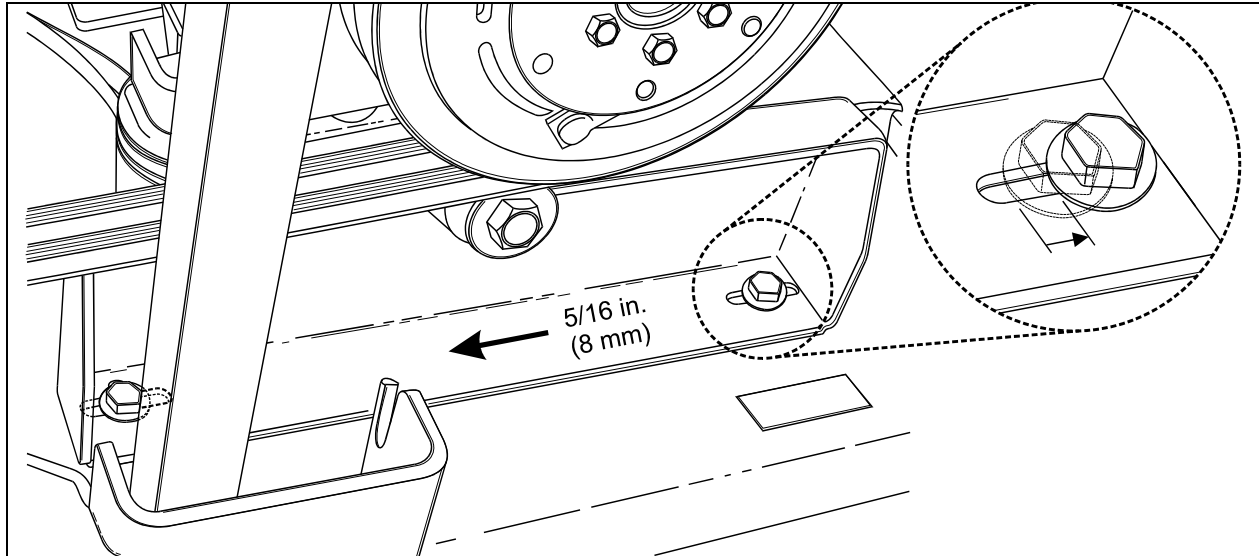


FIGURE 28: MOVING THE A/C COMPRESSOR TOWARDS THE ENGINE

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### INSTALLATION KIT #065244 (XL COACHES)

Ensure kit #065239 is installed before continuing.

1. Make sure that wires are properly routed through grommets then fasten the air inlet covers (#562851) to the alternators using flat washers (#502573), lock washers (#502564) and nuts (#502581);
2. Install the hoses to the inlet covers and clamp in place using hose clamps (#504025);
3. Locate and replace the toilet sump tank and fresh water fill connection bracket (figure 29) with the bracket #065238 included in the kit;
4. Attach the bottom part of the air inlet hoses to the bracket using the hose clamps (#504026);
5. Loosen the bolts retaining the A/C compressor mount and slide the complete assembly by 11/16 inch (18 mm). It may be necessary to enlarge the slots on the bracket or on the vehicle frame to allow for the displacement (refer to figure 30);

**Caution:** To minimize belt wear, align the compressor so the drive pulley is parallel and in the same plane as the drive belts. Refer to Maintenance Manual, section 22 for more information.

6. Tighten the A/C compressor bracket retaining bolts;
7. Install the compressor drive belts, the alternator belt and fan belt carefully over the pulleys. Ensure the grooved and smooth faces of the belt are properly positioned on the pulleys before taking up slack;

**Caution:** Failure to properly orient the drive belt when installing it over the pulleys may result in belt damage at engine start-up.

8. Pressurize the belt tensioner;
9. Set the snubber height so it almost touches the belts (the snubber prevents the belts from shaking off of the pulley);
10. Adjust the height of the belt protector so it almost touches the belts.



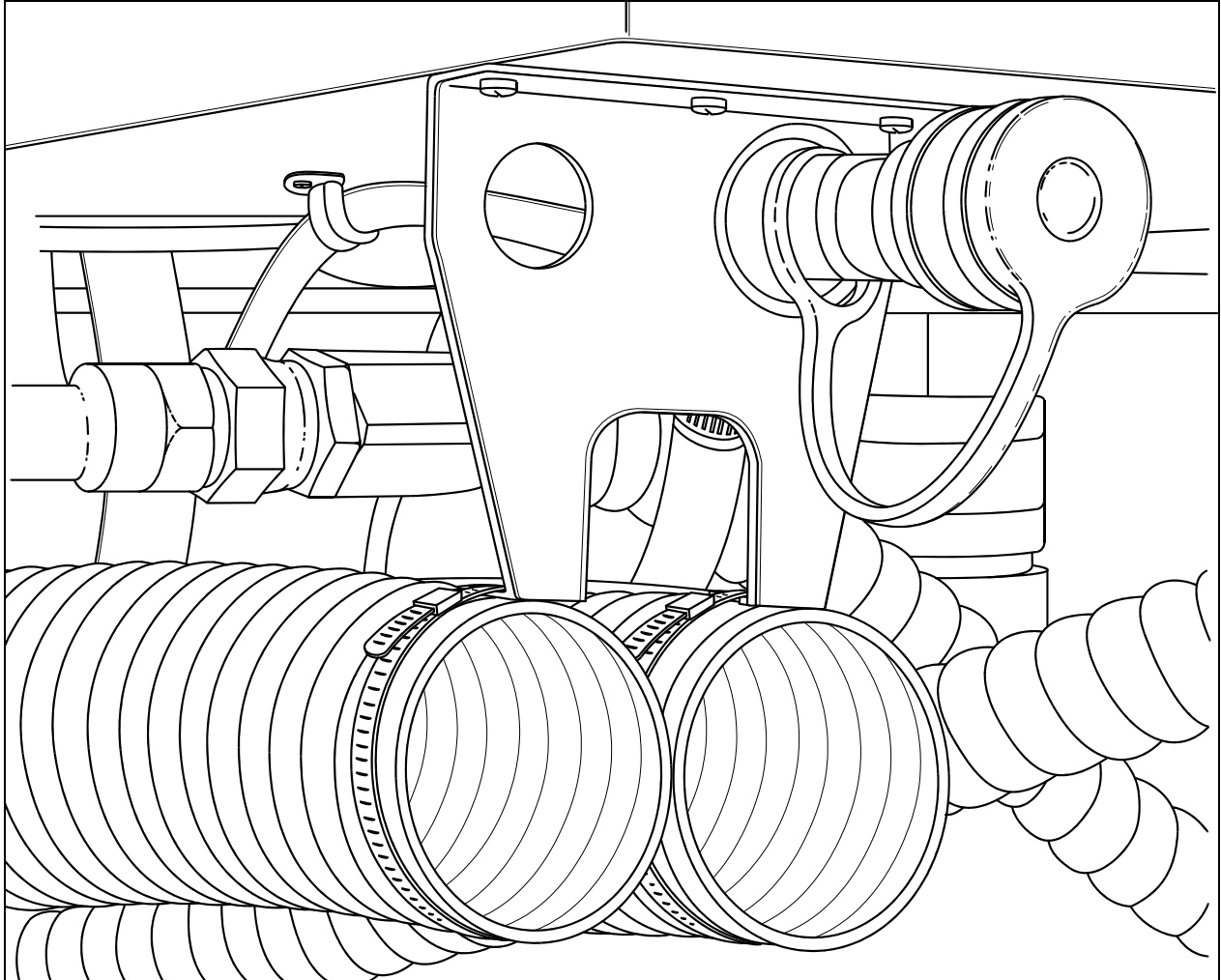


FIGURE 29: HOLDING BRACKET FOR ALTERNATOR AIR HOSES

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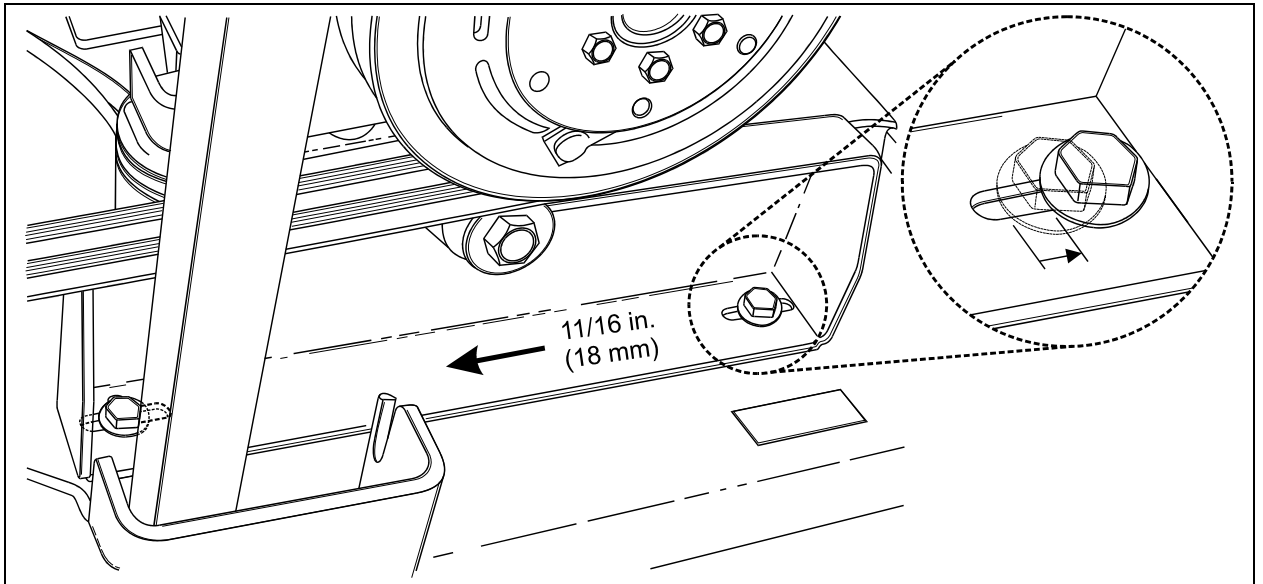


FIGURE 30: MOVING THE A/C COMPRESSOR TOWARDS THE ENGINE

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## INSTALLING “LIMP-HOME” BELT (ALL COACHES)

In case of an alternator failure where the alternator rotor cant turn normally, install the limp-home belt on the remaining “good” alternator. The installation of the belt allows the coach to be driven to a repair facility after only minor manipulations.

### Lower alternator failure:

1. Remove alternator drive belt;
2. Install the limp-home drive belt (#506669) on the drive and top alternator pulleys first;
3. Raise the belt tensioner and install the belt on the top idler pulley;
4. Slide the belt on the lower idler pulley. Use a screwdriver or even a quarter to ease clearing the pulley lip (the lower pulley is devoid of grooves, making it easier to slide the belt in place);
5. Release the belt tensioner. Refer to figure 31.

**Note:** On H3-41 and H3-45 coaches, an electronic module in the rear electrical compartment controls the distribution of power. Placing the switch to 2 alternator mode will allow automatic shutdown of the HVAC system in case of an alternator failure. A careful driver could then switch to 1 alternator mode and drive with some ventilation. When choosing this option however, the driver must watch the voltage display very carefully and keep the load on the remaining alternator low enough to prevent the batteries from discharging. XL models do not have this option.

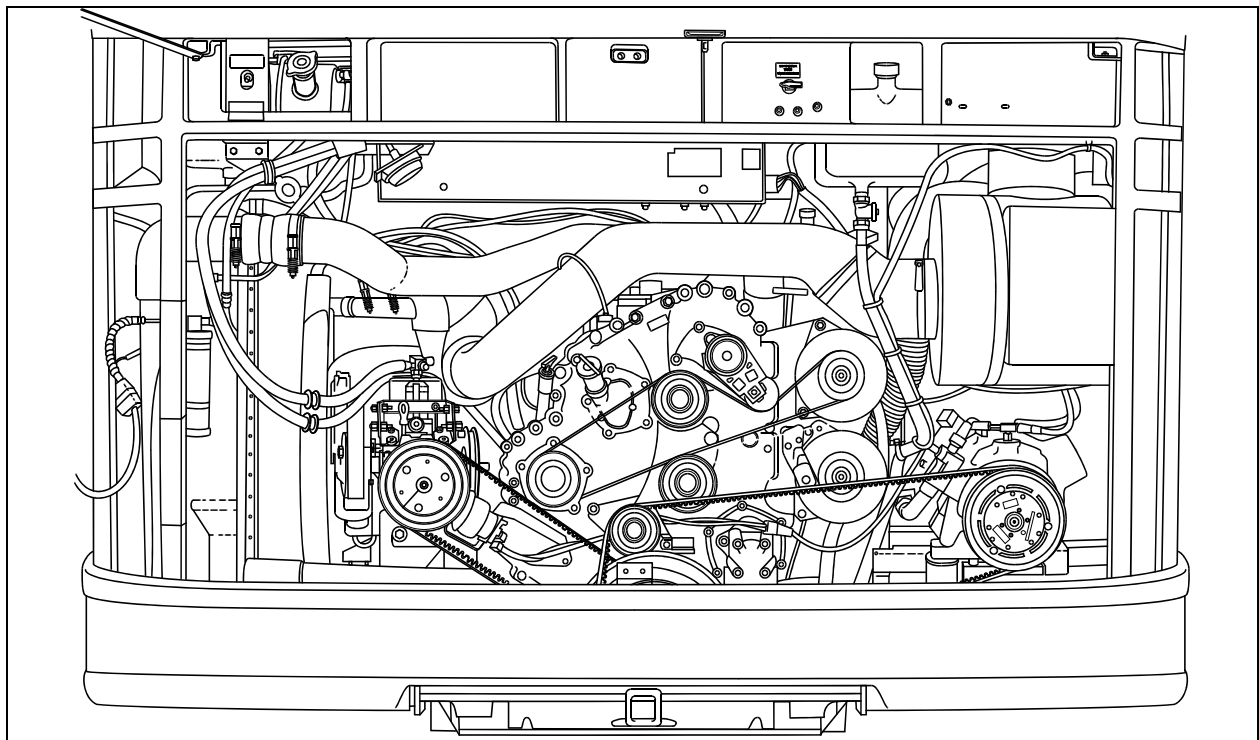


FIGURE 31: LIMP-HOME DRIVE BELT ON TOP ALTERNATOR

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### Top alternator failure:

1. Remove alternator drive belt;
2. Remove the snubber assembly and bracket;
3. Install the limp-home drive belt (#506669) on the drive and lower alternator pulleys first;
4. Raise the belt tensioner and install the belt on the top idler pulley;
5. Slide the belt on the lower idler pulley. Use a screwdriver or even a quarter to ease clearing the pulley lip (the lower pulley is devoid of grooves, making it easier to slide the belt in place);
6. Release the belt tensioner. Refer to figure 32.

**Note:** On H3-41 and H3-45 coaches, an electronic module in the rear electrical compartment controls the distribution of power. Placing the switch to 2 alternator mode will allow automatic shutdown of the HVAC system in case of an alternator failure. A careful driver could then switch to 1 alternator mode and drive with some ventilation. When choosing this option however, the driver must watch the voltage display very carefully and keep the load on the remaining alternator low enough to prevent the batteries from discharging. XL models do not have this option.

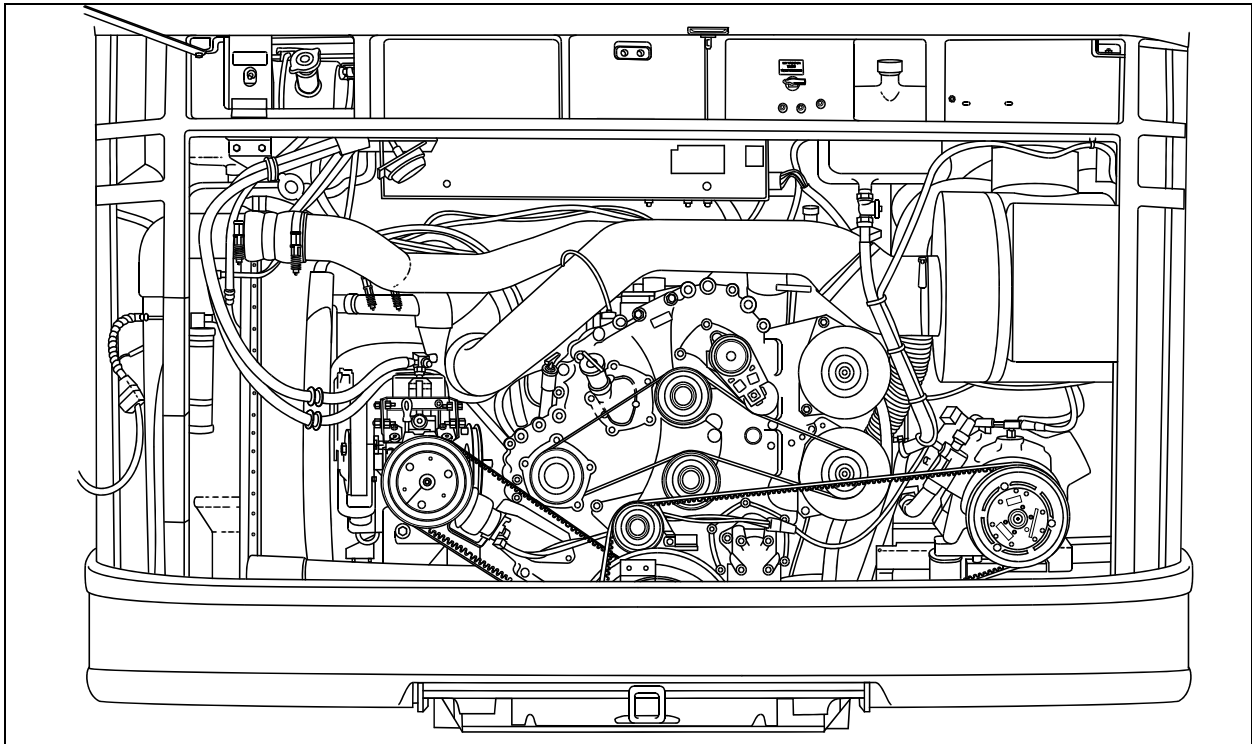
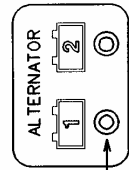
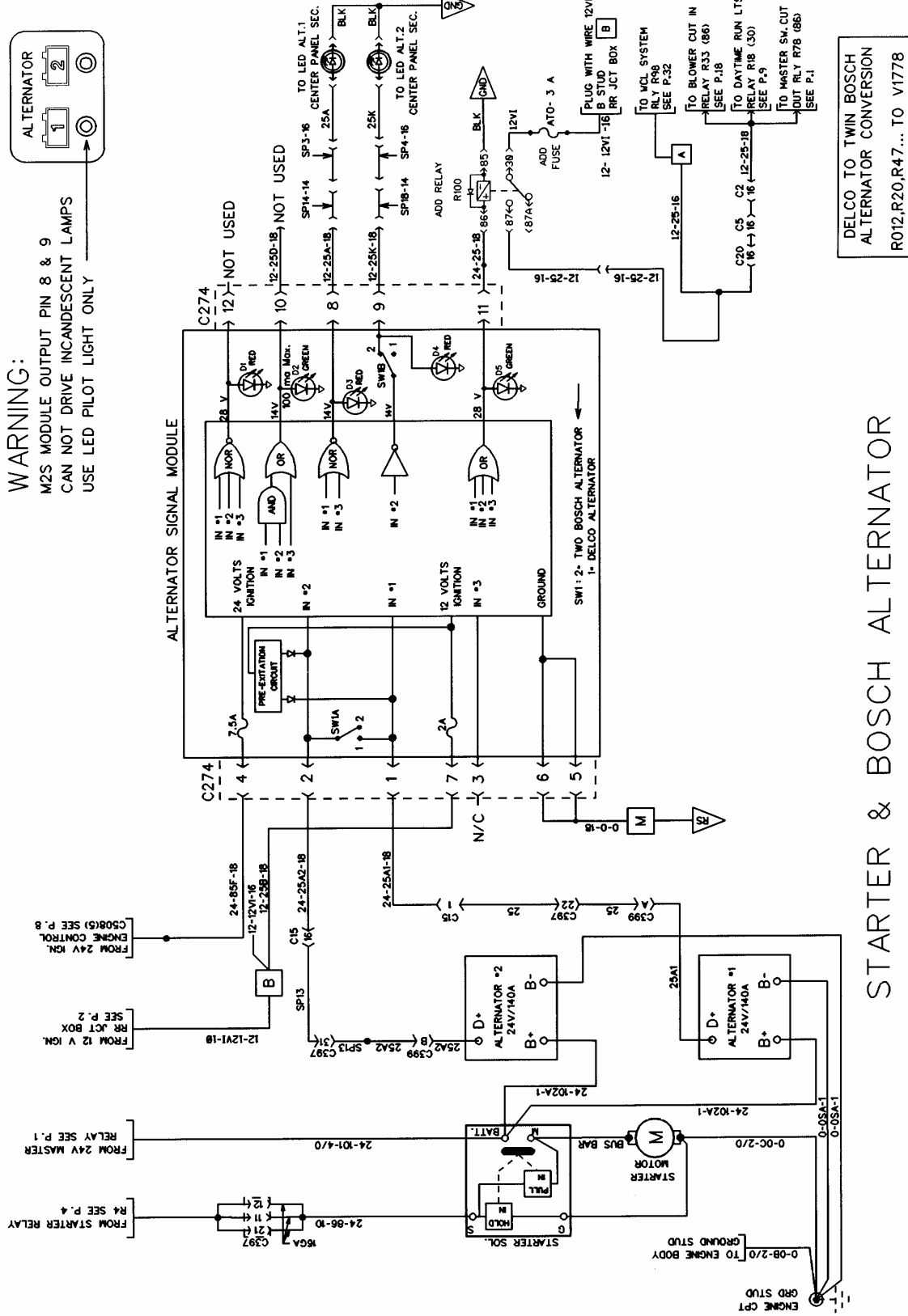


FIGURE 32: LIMP-HOME DRIVE BELT ON LOWER ALTERNATOR

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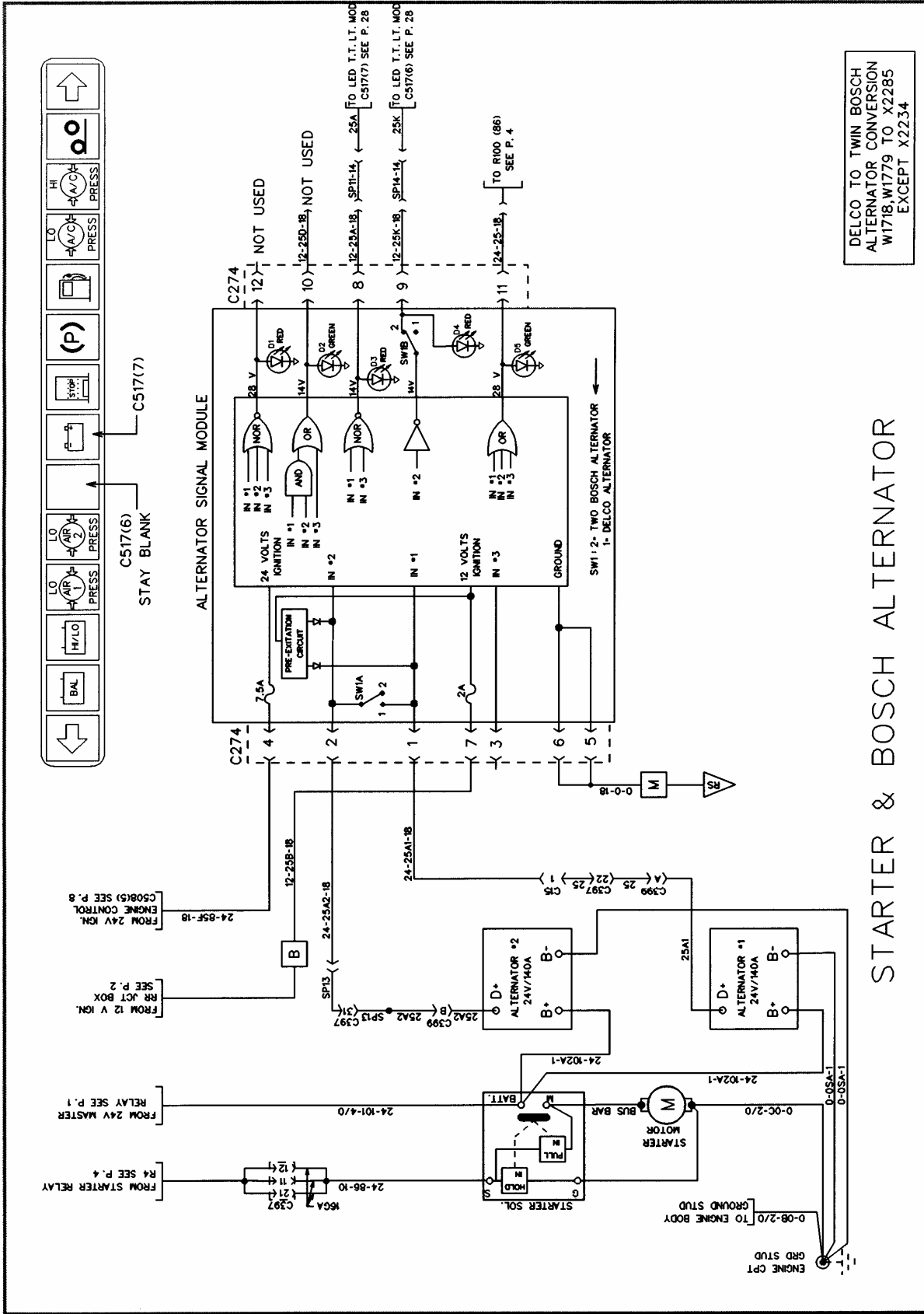


**WARNING:**  
 M2S MODULE OUTPUT PIN 8 & 9  
 CAN NOT DRIVE INCANDESCENT LAMPS  
 USE LED PILOT LIGHT ONLY



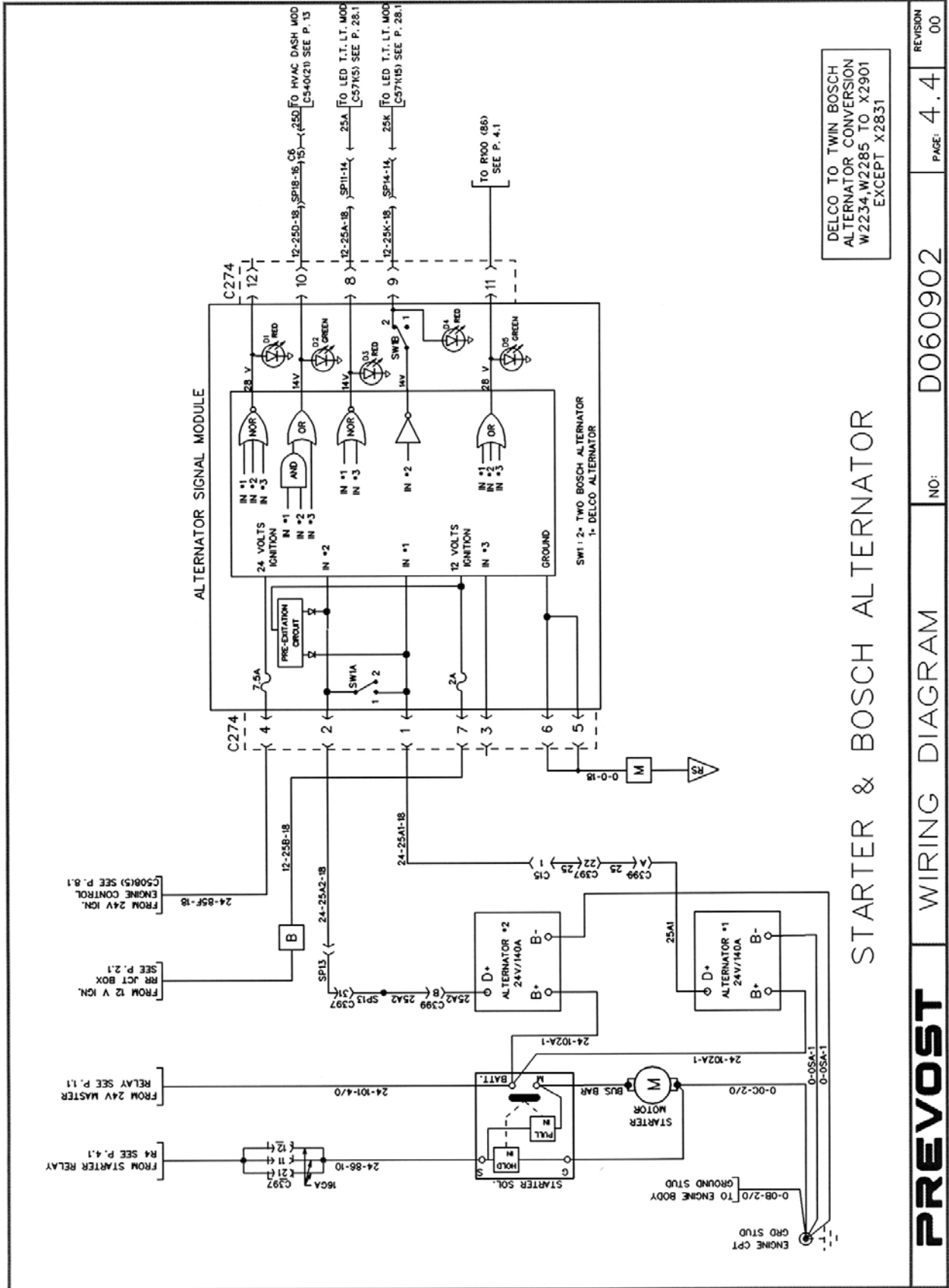
DELCO TO TWIN BOSCH  
 ALTERNATOR CONVERSION  
 R012,R20,R47... TO V1778

STARTER & BOSCH ALTERNATOR



DELCO TO TWIN BOSCH  
ALTERNATOR CONVERSION  
W1718, W1779 TO X2285  
EXCEPT X2234

# STARTER & BOSCH ALTERNATOR



DELCO TO TWIN BOSCH  
ALTERNATOR CONVERSION  
W2234, W2285 TO X2901  
EXCEPT X2831

STARTER & BOSCH ALTERNATOR

**PREVOST CAR inc. WIRING DIAGRAM NO. D060872 P. 1A**

**CHARGING SYSTEM DELCO TO TWIN BOSCH ALTERNATOR CONVERSION XL MODEL**

