



Prevost Coaches
Condenser Motor
150214-00 and
Evaporator Motor
150215-00



Service & Parts Manual
Model Numbers 150214-00 & 150215-00)

Rev. 10/2007

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Chapter 1: Getting Started

PRODUCT DESCRIPTION

Brushless DC condenser and evaporator motors for Prevost Coaches (PC) air conditioning systems with internal drive electronics are used to power the air conditioning system's condenser fan and evaporator blower. The motors use a brushless, electronically commutated direct-current motor (ECDC) designed for long product life. The brushless, direct-current motors operate on 27.6 volts DC. The motors contain no wearing components except for the bearings, which are designed for 60,000 hours of operation and are not subject to the life-reducing brush dust inherent in brush motors. ECDC motors have no brushes and are sealed to prevent contamination from salt, road chemicals, wash-down products and humidity. These advantages, coupled with life-cycle cost savings, result in superior performance from AMETEK ECDC motor products.

MOTOR COMPATIBILITIES


The PC condenser and evaporator motors are labeled with a numerical identifier. The identifier is an AMETEK part number (see table 1.1, p. 1-2).

Motor ID	Prevost Part No.	Product Description
150214-00	563585	Condenser Motor, 0.75 HP; CW Rotation Lead-Connection, Box End
150215-00	563586	Evaporator Motor, 1.4 HP; CCW Rotation Stud End

ABOUT THIS MANUAL

This manual provides step-by-step instructions and annotated diagrams for servicing PC condenser and evaporator motors. A parts list for each motor is provided in appendix A. Outline drawings for the two motors are provided in appendix B.

On the parts lists, each part is identified by part number, item number, quantity and description. The item numbers are used to annotate the drawings included in this manual (see, for example, figure 4.2, p. 4-4). Circled numbers on the drawings refer to the corresponding **item** numbers on the motor replacement-parts lists. For example:

	refers to item number 113 (bearing) and part number 522525000 on the condenser-motor replacement-parts list (see table A.1 in appendix A).
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These circled numbers also correspond to numbers in the maintenance procedures chapters (see chapters 4 and 5) of this manual. In the text of the steps,

the item numbers are enclosed in flat brackets and follow the part name being referenced. For example:

gasket [5] refers to item number 5 on the evaporator-motor replacement-parts list (see table A.2 in appendix A).

When a notation such as (2X) appears with a part name on an annotated drawing, the number refers to the quantity of that particular part that is needed. For example:

FLAT WASHER (4X) means that four such washers are needed.

If a part is referenced and/or shown on a drawing without an item number, that part is **not** an individually replaceable part.

The remaining sections of this manual are as follows:

- Chapter 2: Recommended Maintenance
- Chapter 3: Troubleshooting
- Chapter 4: Condenser-Motor Maintenance and Repair Procedures
- Chapter 5: Evaporator-Motor Maintenance and Repair Procedures
- Appendix A: Replacement-Parts Lists for PC Condenser and Evaporator Motors
- Appendix B: Specifications Outline Drawings for PC Condenser and Evaporator Motors

Five sets of multipart procedures are included in chapter 4:

- *Removing the Condenser Motor from the Bus*—includes detaching the condenser motor from its fasteners on the bus
- *Replacing the Bearings*—includes disassembling the condenser motor and reassembling the condenser motor with new bearings
- *Replacing the Endcap/Electronics Assembly*—includes removing the endcap/ electronics assembly and installing the new endcap/ electronics assembly
- *Timing the Condenser Motor*—includes taking amp meter readings to ensure that the condenser motor is working properly
- *Reattaching the Condenser Motor to the Bus*—includes hooking up the condenser motor to its fasteners on the bus

Four sets of multipart procedures are included in chapter 5:

- *Removing the Evaporator Motor from the Bus*—includes detaching the evaporator motor from its fasteners on the bus
- *Replacing the Shaft/Rotor Assembly*—includes disassembling the evaporator motor and reassembling the evaporator motor with a new shaft/ rotor assembly

- *Replacing the Electronics Assembly*—includes removing the electronics assembly and installing the new electronics assembly
- *Reattaching the Evaporator Motor to the Bus*—includes hooking up the evaporator motor to its fasteners on the bus

Chapter 2: Recommended Maintenance

INTRODUCTION

The primary advantage to using electronically commutated direct-current motor (ECDC) motor products is the life-cycle cost savings with regard to maintenance. The elimination of brushes and commutators (as in brush DC motors) makes ECDC motors more reliable because there are no brushes or commutators to replace or service. ECDC motors also are sealed to protect them from outside contamination.

MOTOR AND BEARINGS

Prevost Coaches (PC) condenser and evaporator motors do not require scheduled maintenance. The bearings are the only wearable parts and should be replaced after approximately 10 years of service. This is an estimate of useful bearing life, and the actual life may be longer depending on load and severity of use. Note that to replace the **evaporator-motor** bearings, you **must** replace the **entire** shaft/rotor assembly. The bearings are **not** available as a stand-alone part. For the **condenser motor**, the bearings alone may be replaced without replacing the entire shaft/rotor assembly. PC condenser and evaporator motors requires no other maintenance.

Chapter 3: Troubleshooting

INTRODUCTION

When using Prevost Coaches (PC) condenser and evaporator motors, you may encounter one or all of the following problems:

- The motor works, but there is no air flow.
- The motor works, but the air flow is low.
- The motor will not operate.

The no-air-flow and low-air-flow problems mean that something in the motor system is not operating properly. Causes may include an inoperable motor, a failed part or a blockage of some sort. An inoperable motor itself can have multiple causes.

The sections below tell you how to troubleshoot and find the cause of the problem you are experiencing.

NO/LOW AIR FLOW

If the motor (condenser or evaporator) does not turn on, follow the steps below to determine whether the motor has failed or if some other part of the system is causing the problem:

1. Check the operating speed of the propeller or the impeller, depending on which motor is not working properly.
2. Check the connection of the propeller or the impeller, depending on which motor is not working properly.
3. Check that the propeller or the impeller is rotating properly, depending on which motor is not working properly.
4. If the motor (condenser or evaporator) is operating but at a reduced speed, check the polarity of the leads. Be sure that the lead wires are connected properly. The polarity to the motor studs should be red (positive) and black (negative). If the polarity is reversed, the motor will not operate. The motor will short to the voltage source, and the electronics may be damaged as a result. Hook up the leads correctly, reset the circuit-protection device, and the motor will operate properly. Check that proper voltage has been applied to the center-terminal stud. The **condenser** motor will run at low speed only when 27.6 VDC is applied to the orange control lead. The **evaporator** motor will run at low speed only when 27.6 VDC is applied to the center white lead.



Different bus systems will operate at different set points. The amp reading for properly operating motors should remain fairly consistent throughout the same bus model and model year.

If the polarity is correct, take an ammeter reading. If the ammeter reading remains at 100 mA or less, you will need to remove the motor for repair or replacement of faulty, worn or damaged parts. Which option you choose will depend on the damage you find after disassembling the motor and inspecting the condition of the various parts of the motor. Instructions for removing the motor, making repairs, putting the motor back together and reattaching the motor to the bus mounting plate are provided in chapter 4 (condenser motor) and chapter 5 (evaporator motor).

An ammeter reading over 1.5 times the nominal amps may indicate that the motor's bearings are failing. Verify that the motor runs properly. If the current reading is greater than 1.5 times the nominal amps, the bearings should be replaced. To replace the bearings, see chapter 4 (condenser motor) or chapter 5 (evaporator motor), as appropriate.

If the ammeter reading is 100mA or less, check the supply voltage to verify that the proper voltage is being applied to the motor.



The proper ammeter reading will depend on the type of bus in which the motor was installed, as each type of bus will load the motor differently.

MOTOR WILL NOT OPERATE

If the motor (condenser or evaporator) will not operate, follow the steps below to determine the cause of the problem:

1. Check the connections to the motor studs to verify that the red (positive) and black (negative) leads are connected to the proper supply voltage. If the leads are reversed, the unit will not operate. The motor will short to the voltage source. Check the polarity connections, and reset the bus circuit-protection device.
2. Check the motor connections with a voltmeter to verify that the proper voltage is being supplied to the motor.



The proper voltage reading will depend on the type of bus in which the motor was installed. In general, though, the motor should draw approximately 3 to 4 amps at no-load.

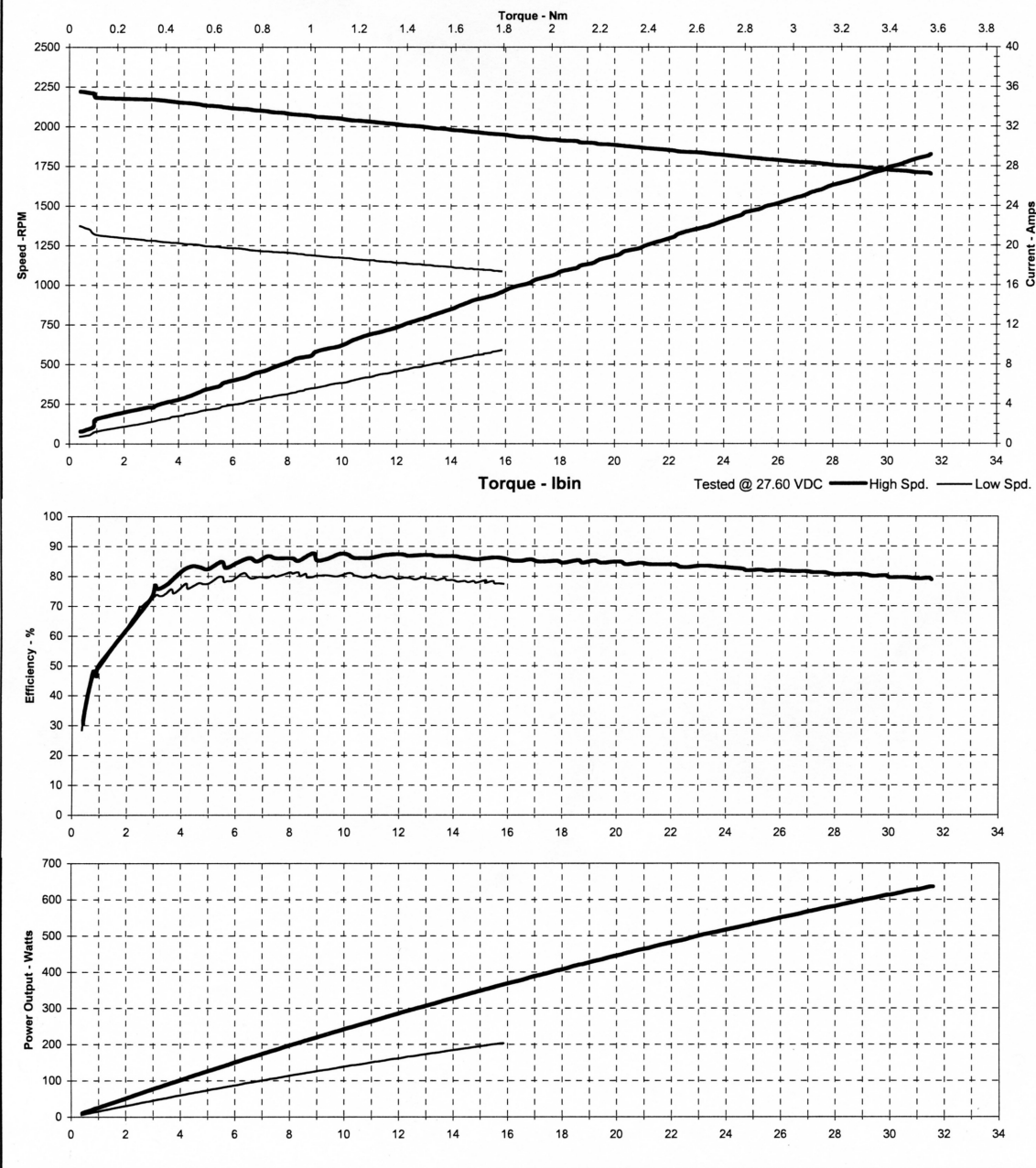
3. Check the connection of the signal lead coming from the bus to the motor stud. Be sure they are connected properly.
4. If the motor is receiving the proper voltage and still does not operate, the motor will need to be serviced by the transit operator's shop personnel, at an AMETEK-approved service facility or returned to AMETEK if the motor is still under warranty.

FIXING THE PROBLEM

After troubleshooting the problem and determining what needs to be fixed, follow the appropriate maintenance and repair procedures described in chapter 4 (condenser motor) and chapter 5 (evaporator motor) of this manual.

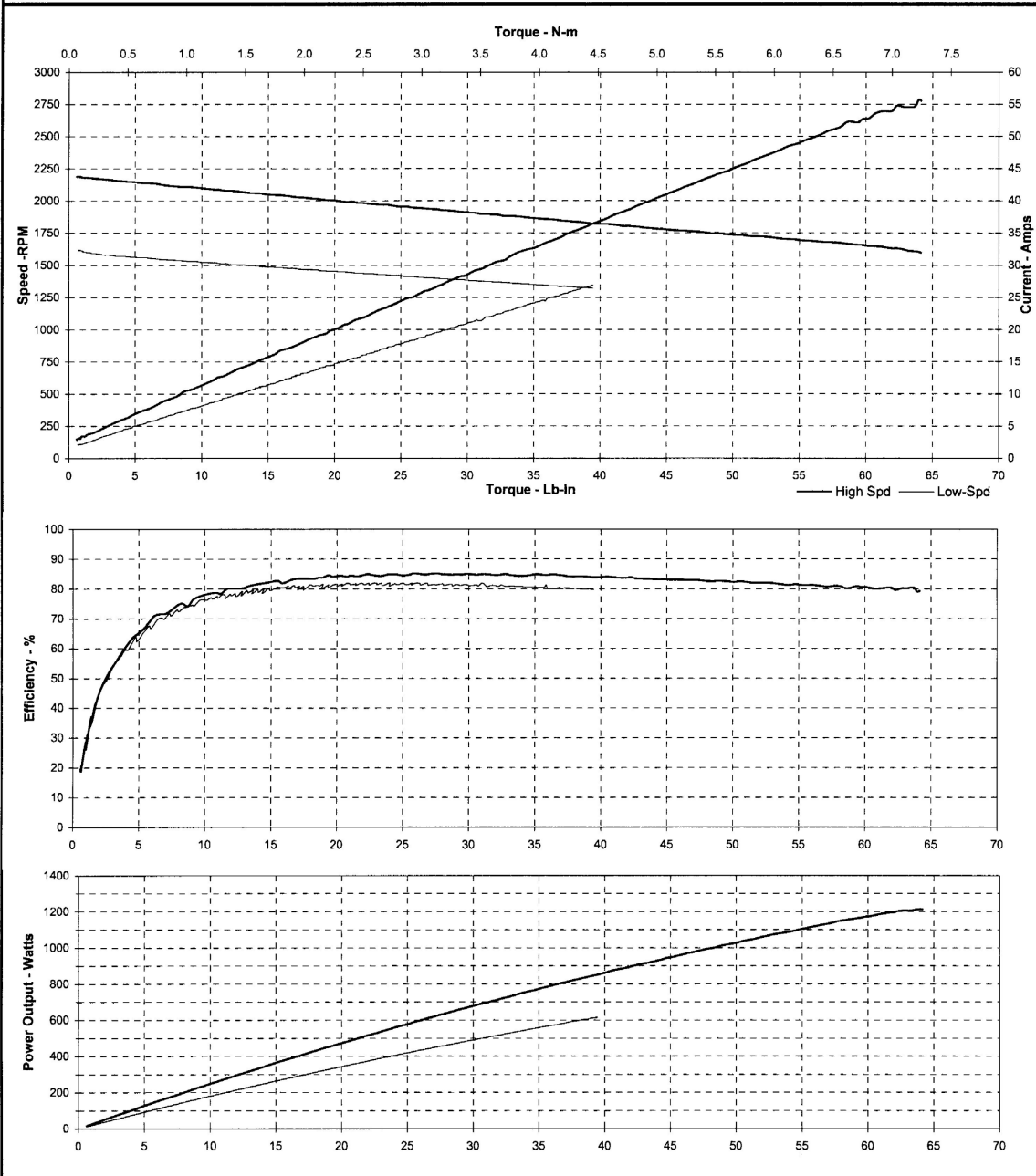
PERFORMANCE CURVES

The performance curve for the PC condenser motor is shown in figure 3.1 (p. 3-5); the performance curve for the PC evaporator motor is shown in figure 3.2 (p. 3-6).



This document is for informal purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions using AMETEK BLDC motor controllers. Actual performance will vary depending on the operating environment and application. Ametek Rotron products are not designed for and should not be used in medical and life support applications. Ametek reserves the right to revise its products without notification.

Figure 3.1 Performance Curves for the PC Condenser Motor.



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Figure 3.2 Performance Curves for the PC Evaporator Motor.

Chapter 4: PC Condenser-Motor Maintenance and Repair Procedures

INTRODUCTION

This chapter provides step-by-step instructions for the following Prevost Coaches (PC) condenser-motor maintenance and repair procedures:

- Removing and replacing the condenser motor
- Removing and replacing worn or defective bearings
- Replacing the endcap/electronics assembly

REMOVING THE CONDENSER MOTOR FROM THE BUS

To remove the condenser motor from the bus, follow the steps below, and refer to figure 4.1 (p. 4-3):

1. Turn off the power circuit-breaker to the condenser motor being removed.
2. Remove the two screws that secure the top and bottom halves of the junction box [208/204] to the top of the motor assembly [201].
3. Remove the top half of the junction box [208] and the junction-box gasket [207]. Set these parts aside.
4. Disconnect the condenser-motor connections from the bus voltage supply.
5. Remove the propeller.
6. Remove the bolts connecting the condenser motor to the bus.
7. Remove the condenser motor from the bus, and take it to a clean work area.
8. Remove the four socket-head screws [211] that fasten the base plate [210] to the motor assembly [201] **only** if you need to replace the base plate [210].
9. Remove the strain-relief [202] from the hole in the bottom half of the junction box [204] and the top of the motor assembly [201] **only** if you need to replace the condenser motor's endcap/electronics assembly.

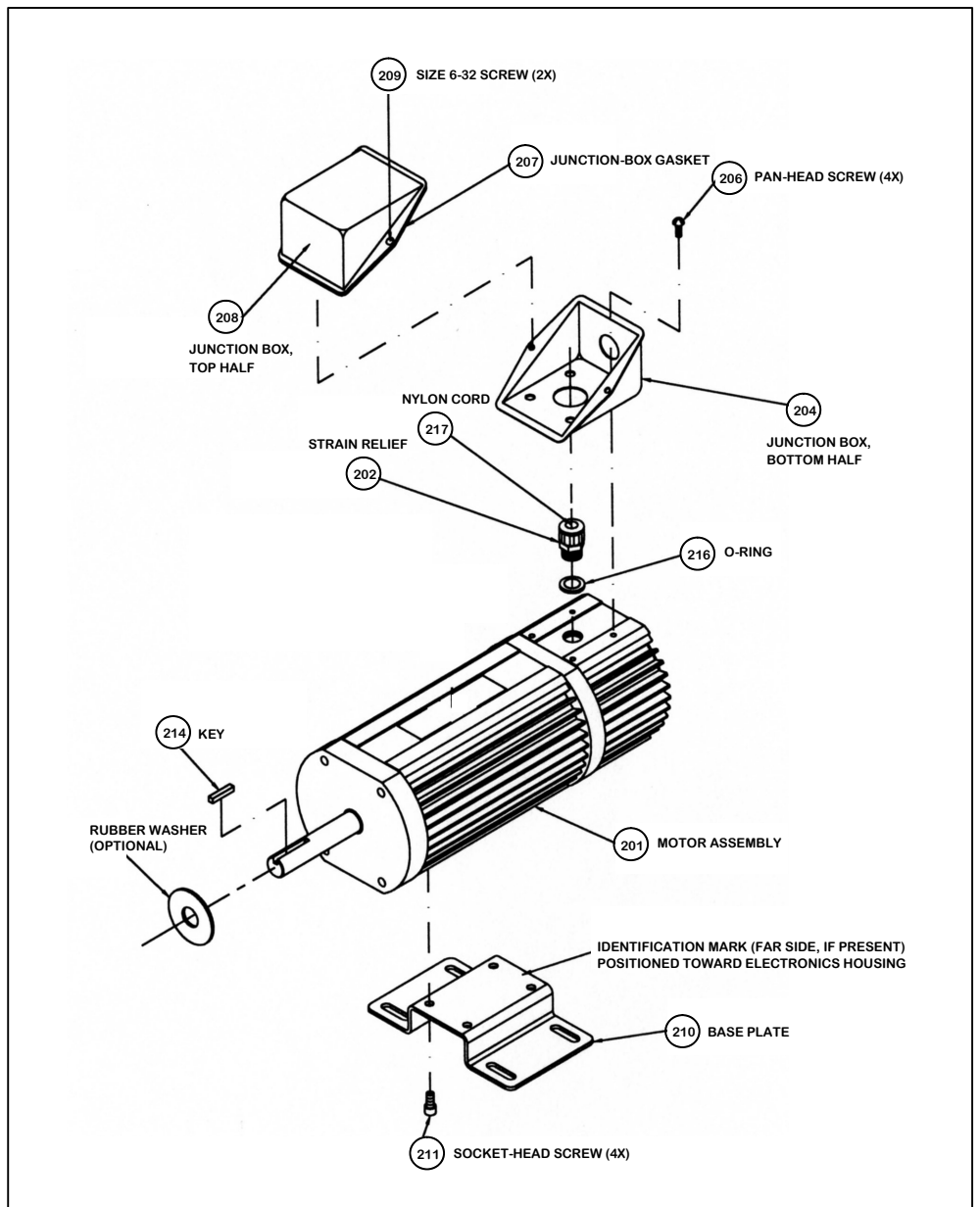


Figure 4.1. PC Condenser Motor with Mounting Parts Removed.

REPLACING THE BEARINGS

Disassembling the Condenser Motor

To access the bearings on the shaft/rotor assembly, the condenser motor must be disassembled. Access is gained through the rear endbell. Follow the steps below, and refer to figure 4.2 (p. 4-4) and other figures as indicated:

1. Remove the four fillister-head screws [106] from the rear endbell [103].



The rear endbell [103] is the endbell through which the motor shaft extends.

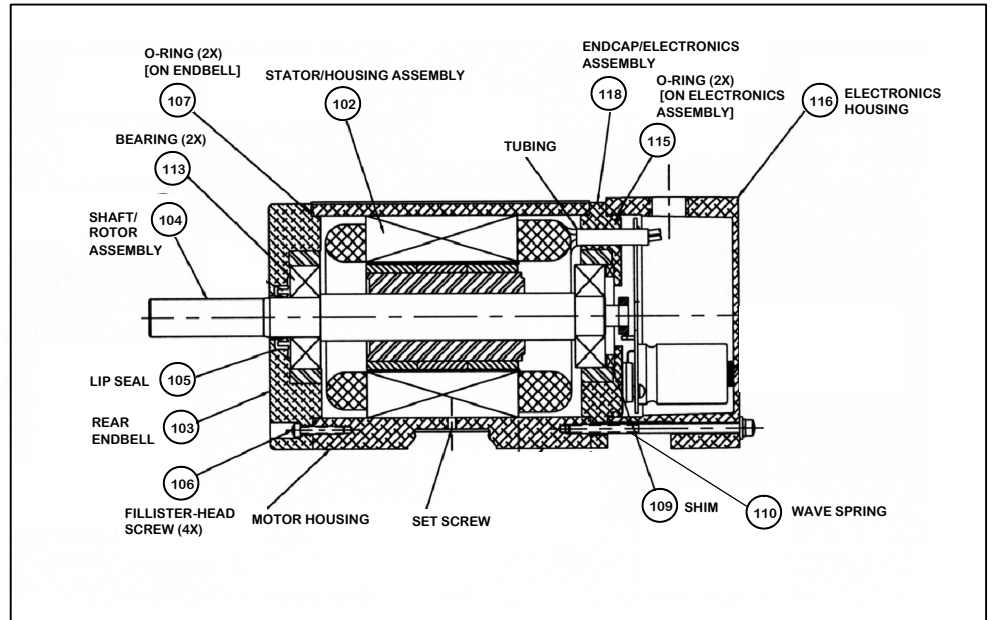


Figure 4.2. PC Condenser Motor.

2. Remove the rear endbell [103].
3. Note any shims [109] and their locations.



Be sure to note the location of any shims [109]. When you reassemble the rear endbell [103], the **shims** [109] must be installed in the **same position** they were in before you removed them. Be sure also that the stator/housing assembly [102] is secured **before** attempting to remove the shaft/rotor assembly [104].

4. Remove the shaft/rotor assembly [104] (see figure 4.3, p. 4-5).



Use **extreme caution** when removing the shaft/rotor assembly [104], as the **rotor** is strongly **magnetized**. Protect fingers from being pinched in the motor. Do **not** allow the rotor's encoder magnet to hit the motor. Doing so can chip the encoder magnet (see figure 4.3, p. 4-5).

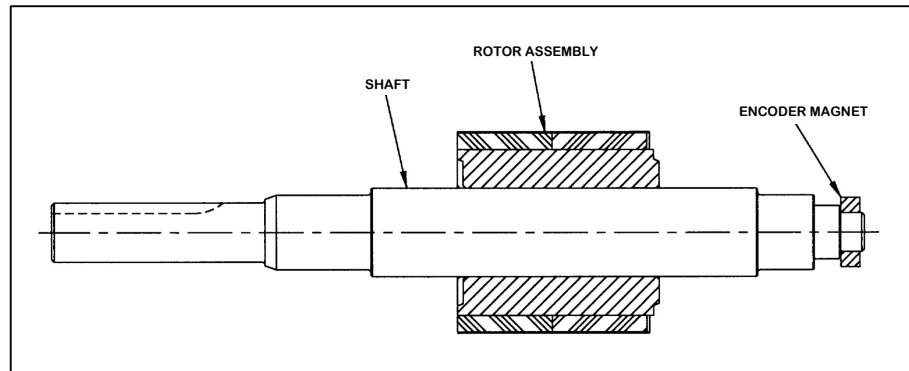


Figure 4.3. Close-Up View of the PC Condenser Motor Shaft/Rotor Assembly.

5. Remove the two bearings [113], one from each end of the shaft/rotor assembly [104]. The bearings are pressed on. You may need a puller to remove them.



Be sure that you do **not** damage the small encoder magnet opposite the shaft extension (see figure 4.3, p. 4-5).

6. Clean the bearing seats with No. 800 emery cloth to remove any dirt or rust.

Reassembling the Condenser Motor with New Bearings

To replace the old bearings in the old shaft/rotor assembly and reassemble the condenser motor with with a new shaft/rotor assembly and the bearings that come with it, follow the steps below, and refer to figure 4.2 (p. 4-4) and other figures as indicated:

1. Press a new bearing [113] onto each end of the shaft/rotor assembly [104].



Press **only** on the **I.D.** of the bearing. Pressing on the **O.D.** will damage the bearing.

2. Place the shaft/rotor assembly [104] into the opening on the stator/housing assembly [102].



Be **extremely careful** to avoid damaging the shaft on the shaft/rotor assembly [104] (see figure 4.3, p. 4-5).

3. Inspect the O-ring [107] on the rear endbell [103] for chips, cracks or other damage.
4. Replace the O-ring [107] if it has been damaged.
5. If the motor model you are using has one or more lip seals [105] on the motor shaft (see also figure 4.4, p. 4-6), inspect the lip seal [105] for damage and replace if damaged or worn.

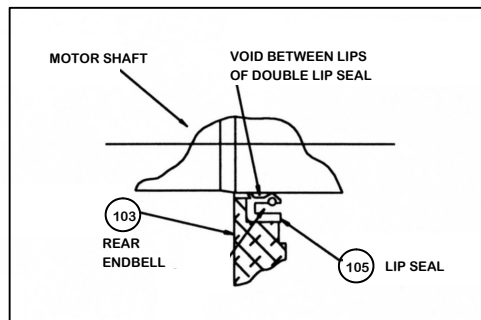


Figure 4.4. Dual Lip Seal on the Rear Endbell of the PC Condenser Motor.

6. If any shims [109] were removed when you disassembled the rear endbell [103], put them back **exactly** where they were before you removed them.



Be sure that the rear endbell [103] and any shims [109] are in the **same position** as they were before you removed them.

7. Slide the rear endbell [103] onto the shaft of the shaft/rotor assembly [104] (see figure 4.3, p. 4-5).
8. Insert the four fillister-head screws [106] into the holes on the rear endbell [103].
9. Torque the four fillister-head screws [106] to a **minimum** of 20 inch-pounds.
10. Verify that the shaft/rotor assembly [104] has spring in it by pushing on the end of the shaft (see figure 4.3, p. 4-5). The shaft should spring back if properly installed. If the shaft does **not** spring back, remove the rear endbell [103], and check the placement of the wave spring [110]. It should be positioned as shown in figure 4.2 (p. 4-4).

11. Connect the condenser motor to an input voltage of 28 VDC. The condenser motor should operate at the rated speed and draw approximately 3 amps with no load.
12. Check the rotation of the condenser motor to verify that it is rotating in the proper direction as indicated on the outline drawing in figure B.1 of appendix B.

REPLACING THE ENDCAP/ELECTRONICS ASSEMBLY

Removing the Endcap/ Electronics Assembly

To disassemble the area of the condenser motor that houses the endcap/ electronics assembly, follow the steps below, and refer to the figures indicated:

1. Disconnect the condenser motor from its power source (see REMOVING THE CONDENSER MOTOR FROM THE BUS, p. 4-2).
2. Move the condenser motor to a clean work area.
3. Remove the two long fillister-head screws [122] from the electronics housing [116] (see figure 4.5, p. 4-7).

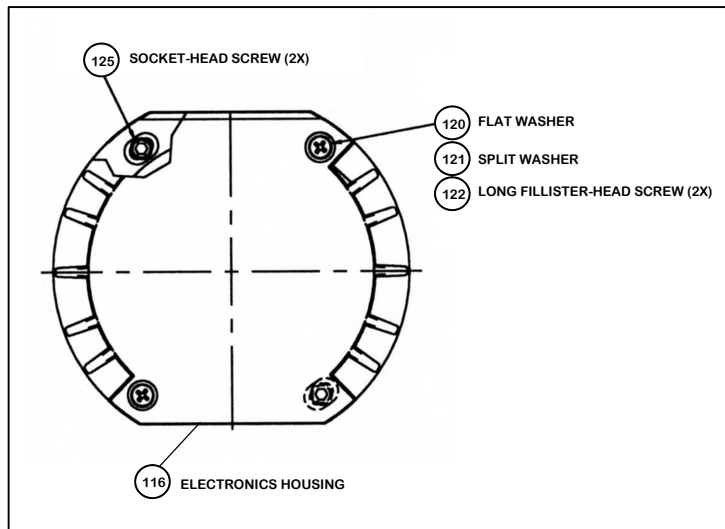


Figure 4.5. Electronics Housing on the PC Condenser Motor Showing Screws and Washers.



Some PC condenser-motor models also have a pair of **short** fillister-head screws [106]. Remove them also if the PC condenser-motor model you are working on has them.

4. Remove the endcap/electronics assembly [118] and the electronics housing [116] from the rest of the motor assembly (see also figure 4.6, p. 4-8).

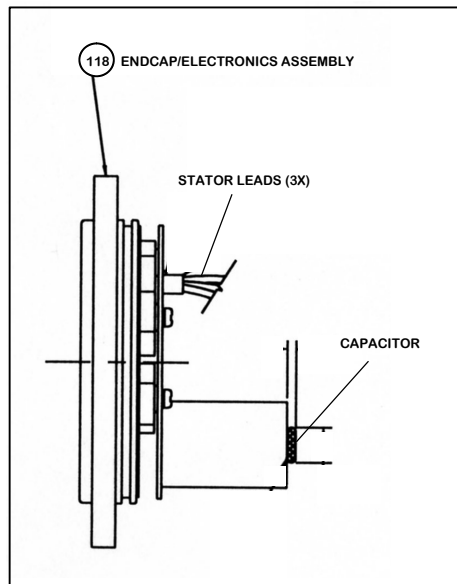


Figure 4.6. Endcap/Electronics Assembly for the PC Condenser Motor.

5. Press the endcap/ electronics assembly [118] out of the electronics housing [116].



If the endcap/electronics assembly has an O-ring [115], use of a press is **not** necessary.

6. Cut the three stator leads at the splice connection that protrudes from the endcap/ electronics assembly [118] (see figure 4.6, p. 4-8). The leads are white and have red, blue and yellow stripes .
7. Discard the old endcap/ electronics assembly [118].
8. Clean any RTV sealant and grime from the electronics housing [116].

Installing the New Endcap/ Electronics Assembly

To install the new endcap/ electronics assembly, follow the steps below, and refer to figure 4.2 (p. 4-4) and other figures as indicated:

1. Apply RTV sealant to a new O-ring [115] **before** placing the new O-ring [115] onto the endcap/ electronics assembly [118].
2. Install the new endcap/ electronics assembly [118] by orienting it so that the three stator leads are positioned as shown in figure 4.7, p. 4-9).

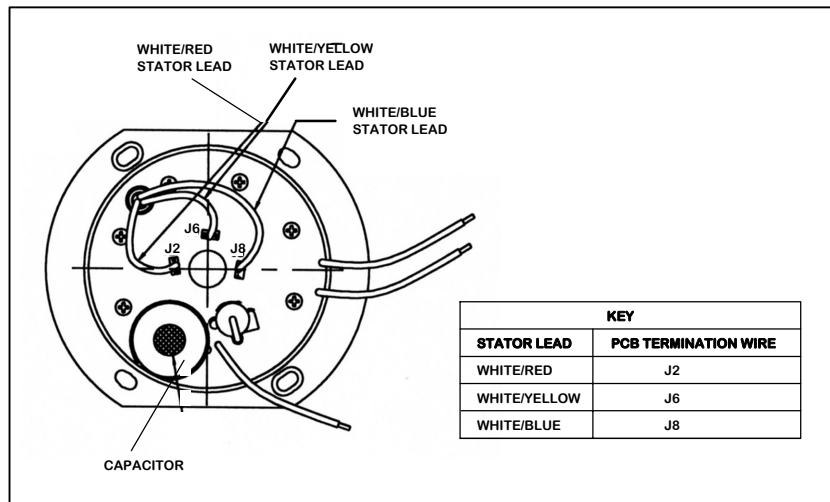


Figure 4.7. Endcap/Electronics Assembly Showing Placement of the Three Stator Leads to the Appropriate PCB Termination Wires on the PC Condenser Motor.

3. Reconnect the three stator leads.
4. Crimp and solder the three stator leads to the endcap/ electronics assembly [118] leads (see figure 4.7, p. 4-9). Use a butt splice for this reconnection (see figure 4.8, p. 4-9).

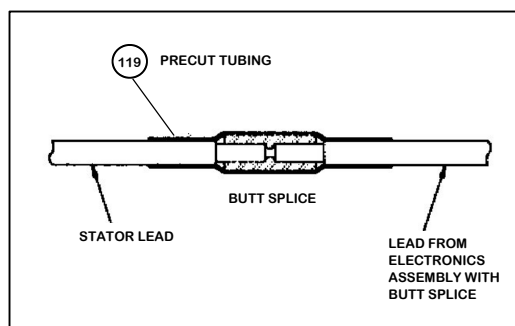


Figure 4.8. Butt Splice of the Stator and Endcap/Electronics Assembly Leads on the PC Condenser Motor.



The connections should be white/yellow to white/yellow and white/blue to white/blue.

5. Tuck the connected stator leads behind the capacitor (see figure 4.7, p. 4-9) on the endcap/electronics assembly [118] (see figure 4.2, p. 4-4) to prevent the leads from rubbing on the encoder magnet (see figure 4.3, p. 4-5).



Do **not** allow the stator leads to be pinched.

6. Insert the two long fillister-head screws [122] into the holes in the electronics housing [116], but do **not** tighten the screws (see figure 4.5, p. 4-7).



Some PC condenser-motor models also have a pair of **short** fillister-head screws [106]. Insert the screws that are used with the PC condenser-motor model you are working on.

7. Time the rotation of the motor (see TIMING THE CONDENSER MOTOR, p. 4-10).

TIMING THE CONDENSER MOTOR

After the new endcap/electronics assembly has been installed, the condenser motor needs to be timed to ensure that it works properly. To time the condenser motor, follow the steps below, and refer to the figures indicated:

1. If they are not already loose, loosen—but **do not remove**—the two long fillister-head screws [122] (see figure 4.5, p. 4-7).



Some PC condenser-motor models also have a pair of **short** fillister-head screws [106]. Loosen the screws that are used with the PC condenser-motor model you are working on.

2. Attach the clamp of an amp meter to the red (positive) power lead.
3. Use 24 VDC to energize the motor without a load.
4. Record the no-load current reading shown on the amp meter.
5. Slowly rotate the endcap/electronics assembly [118] either left or right but no more than 15° in each direction (see figure 4.6, p. 4-8).

6. Check the current on the amp meter as you rotate the endcap/electronics assembly [118].



The current reading should be **decreasing**. If the current reading is **increasing**, reverse the direction of rotation. The condenser motor is properly timed when you have found the lowest current reading.

7. Note the proper orientation of the endcap/electronics assembly [118]. The electronics assembly is properly oriented when the current reading is at its lowest value.
8. Check the O-ring [115] (on motor models equipped with one) on the endcap/electronics assembly [118] (see figure 4.2, p. 4-4). Replace the O-ring [115], if needed.
9. For motor models **without** an O-ring [115], apply RTV sealant around the inside of the endcap/electronics assembly [118] where it mounts to the electronics housing [116]. For motor models **with** an O-ring [115], sealant is not needed (see figure 4.2, p. 4-4).



Be sure to apply enough sealant to ensure a tight seal of the endcap/electronics assembly [118] to the electronics housing [116].

10. Reinstall the endcap/electronics assembly [118], and torque the two long fillister-head screws [122] (see figure 4.5, p. 4-7) to 22 to 24 inch-pounds. If your condenser-motor model has them, torque the two short fillister-head screws [106] to 22 to 24 inch-pounds also (see figure 4.2, p. 4-4).
11. Reenergize the motor, and check for **counterclockwise** rotation and a current level of 3 amps.

REATTACHING THE CONDENSER MOTOR TO THE BUS

To reattach the condenser motor to the bus, follow the steps below, and refer to figure 4.1 (p. 4-3):

1. Insert the strain relief [202] into the hole in the middle of the bottom half of the junction box [204] and the hole on the top of the motor assembly [201] if they had been removed when you detached the condenser motor from the bus.
2. Place the junction-box gasket [207] between the top and bottom halves of the junction box [208/204].
3. Place the junction-box halves [208/204] on top of the motor assembly [201], lining up the holes for the two size 6-32 screws [209], one on each side of the junction-box halves [208/204].

4. Connect the lead wires from bus to the lead wires on the condenser motor.
5. Insert the two size 6-32 screws [209] into the hole on each side of the junction box halves [208/204], and torque each screw [209] to 10 inch-pounds.
6. Attach the propeller to the condenser motor shaft.
7. If needed, place the motor base-plate [210] onto the bottom of the motor assembly [201], lining up the holes for the four socket-head screws [211].
8. Reattach the bolts connecting the condenser motor to the bus.
9. Turn on the bus circuit-protection device.

Chapter 5: PC Evaporator-Motor Maintenance and Repair Procedures

INTRODUCTION

This chapter provides step-by-step instructions for the following Prevost Coaches (PC) evaporator-motor maintenance and repair procedures:

- Removing and replacing the evaporator motor
- Removing and replacing the evaporator's shaft/rotor assembly (to replace worn or defective bearings)
- Removing and replacing the evaporator's stator/housing assembly
- Replacing the electronics assembly

REMOVING THE EVAPORATOR MOTOR FROM THE BUS

To remove the evaporator motor from the bus, follow the steps below:

1. Turn off the power circuit-breaker to the evaporator motor being removed.
2. Disconnect the evaporator motor connections from the bus voltage supply.
3. Remove the evaporator motor. Follow the manufacturer's instructions for doing so.
4. Remove the bolts connecting the evaporator motor to the bus.
5. Remove the six socket-head screws [21] that fasten the base plate [20] to the motor assembly **only** if you need to replace the base plate [20] (see figure 5.1 (p. 5-2)). Otherwise, go to step 6.

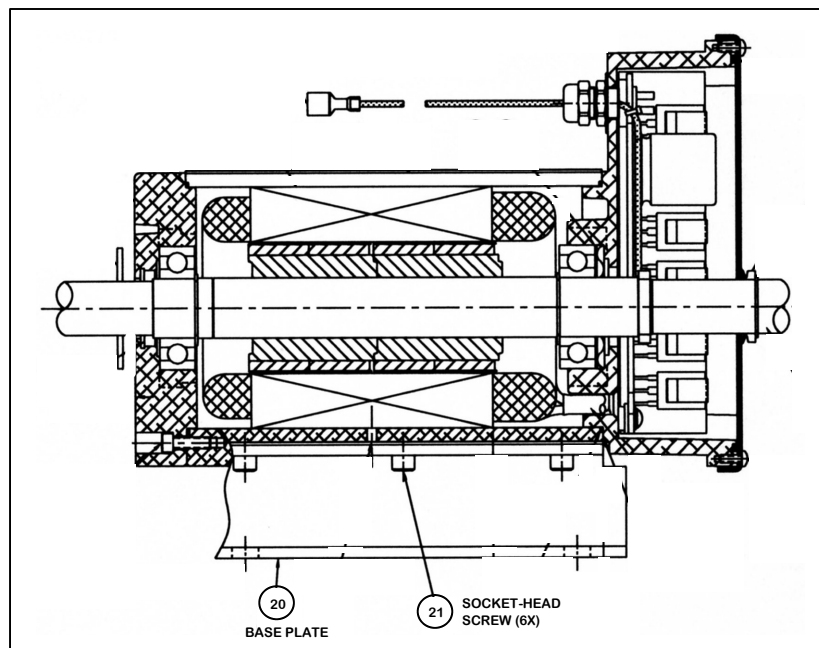


Figure 5.1. PC Evaporator Motor with Mounting Parts Attached.

6. Remove the motor from the bus, and take it to a clean work area.

REPLACING THE SHAFT/ROTOR ASSEMBLY

Disassembling the Evaporator Motor

To access the shaft/rotor assembly, the evaporator motor must be disassembled. Access is gained through the endbell. Follow the steps below, and refer to the figure 5.2 (p. 5-4) and other figures as indicated:

1. Remove the four fillister-head screws [13] from the endbell [12].
2. Remove the endbell [12].
3. Note the location of the shim [10] and wave spring [9] on the electronics end of the evaporator motor.



Be sure to note the location of any O-rings [6], shim [10] and wave spring [9]. When you reassemble the endbell [12], the **O-rings** [6], **shim** [10] and **wave spring** [9] **must** be installed in the **same position** they were in before you removed them. Be sure also that the stator/housing assembly [1] is secured **before** attempting to remove the shaft/rotor assembly [11].

4. Remove the shim [10] and wave spring [9], if needed, from the electronics end of the evaporator motor.
5. Remove the shaft/rotor assembly [11] (see also figure 5.3, p. 5-5).



Use **extreme caution** when removing the shaft/rotor assembly [11], as the **rotor** is strongly **magnetized**. Protect fingers from being pinched in the motor. Do **not** allow the rotor's encoder magnet to hit the motor. Doing so can chip the encoder magnet (see figure 5.3, p. 5-5).

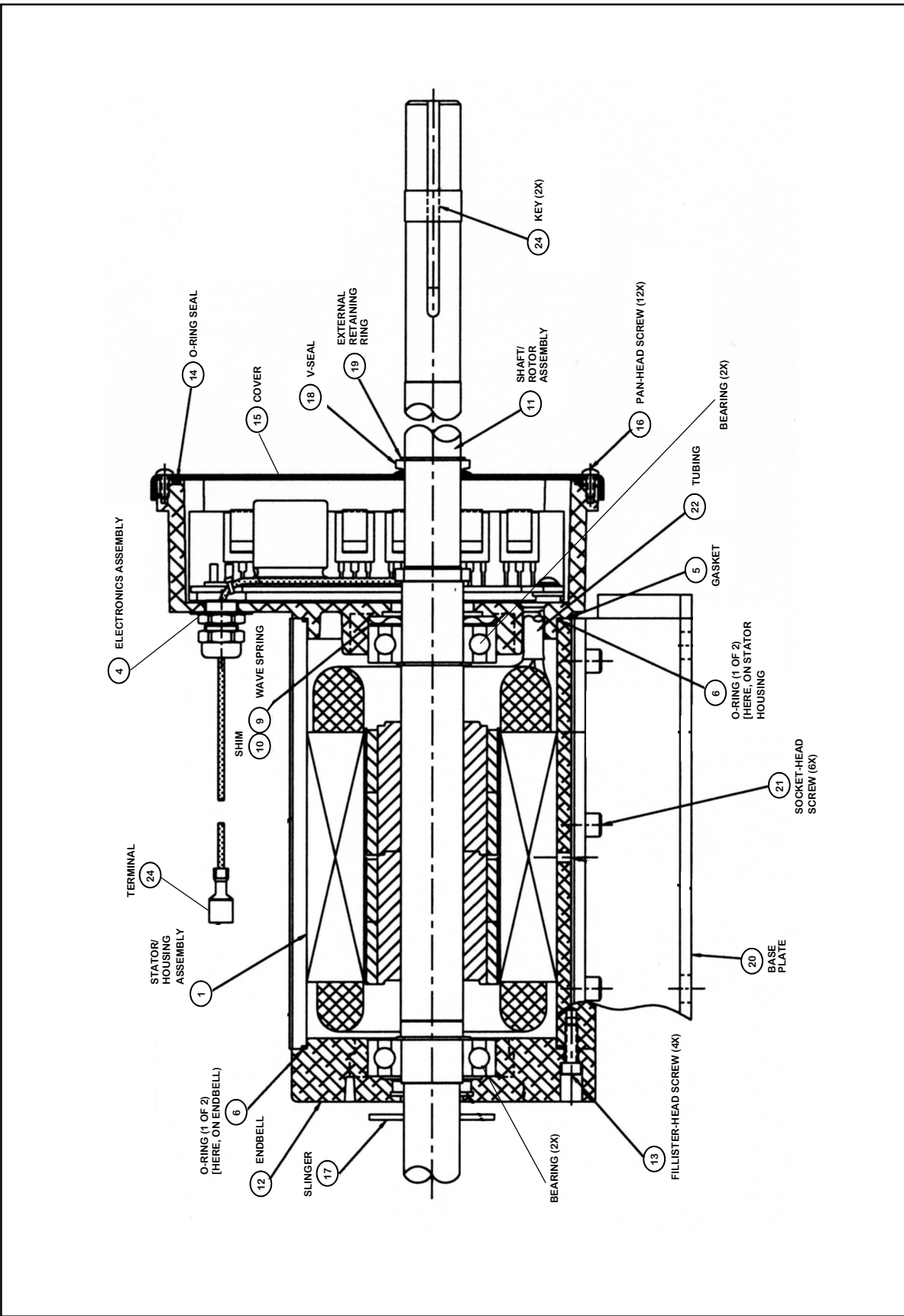


Figure 5.2. PC Evaporator Motor.

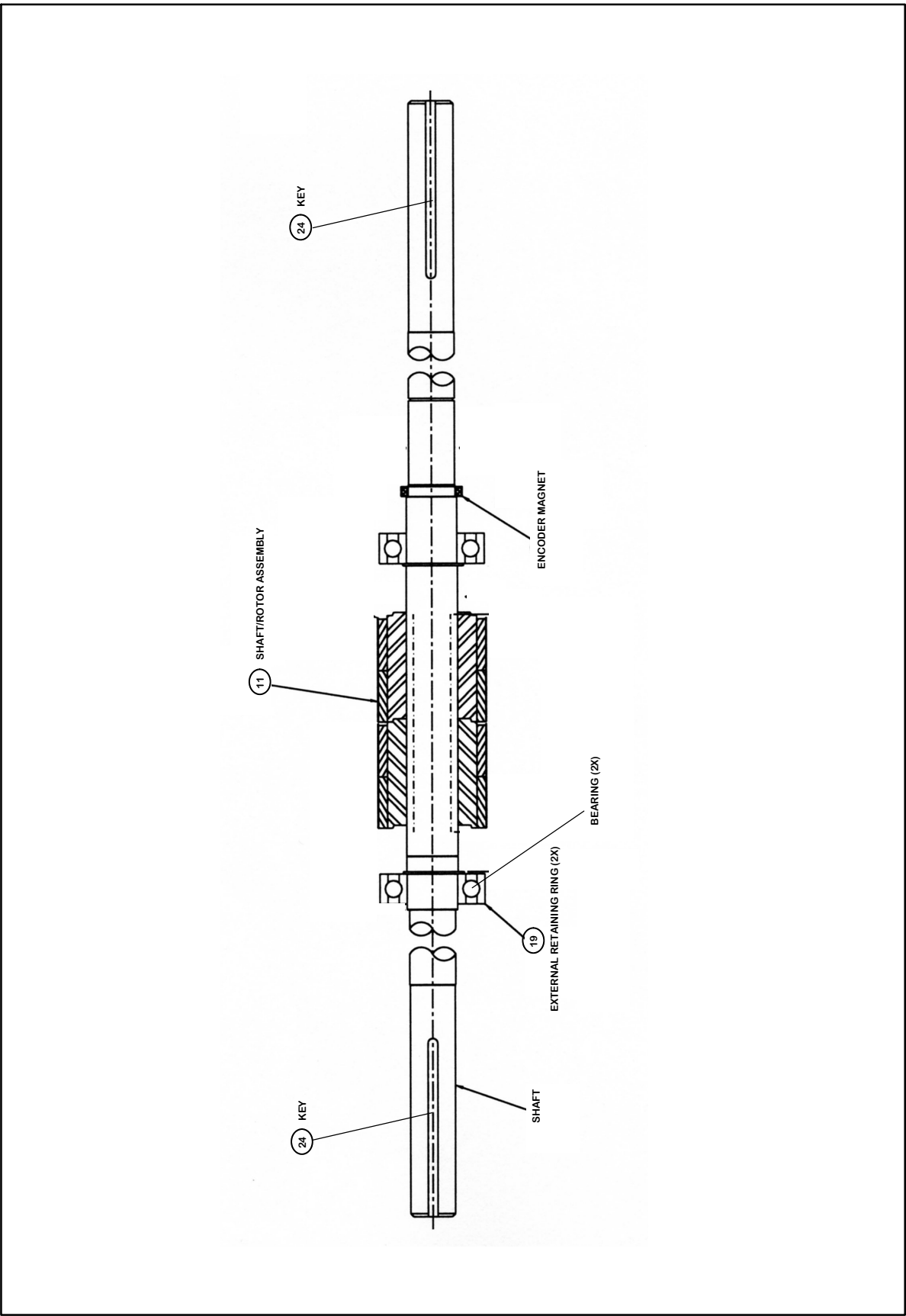


Figure 5.3. Close-Up View of the Shaft/Rotor Assembly for the PC Evaporator Motor.

Reassembling the Evaporator Motor with a New Shaft/Rotor Assembly

To reassemble the evaporator motor with with a new shaft/rotor assembly, follow the steps below, and refer to figure 5.2 (p. 5-4) and other figures as indicated:



Be sure that any **shims** [10] are in the **same position** as they were in before you removed them.

1. Replace the wave spring [9] and shim [10] that had been removed from the electronics end cap. The end cap is located on the electronics side of the evaporator motor and is cast into the electronics housing as one piece.



Be sure that the wave spring [9] and shim [10] are properly seated.

2. Fill the void between the endbell [12] and the bearing with Rheotemp 500S grease.
3. Place the new shaft/rotor assembly [11] into the opening on the stator/housing assembly [1].



Be **extremely careful** to avoid damaging the shaft/rotor assembly [11]. The rotor will be pulled into the motor by strong magnetic forces. Be sure to keep your fingers away from this area.

4. Inspect the O-ring [6] on the endbell [12] for chips, cracks or other damage.
5. Replace the O-ring [6] if it has been damaged.
6. Apply a thin coat of retaining compound to the end cap bearing-bore before inserting the shaft/rotor assembly [11] into the end cap.



Be sure that the front bearing is fully seated against the front shoulder as the adhesive cures.

7. Slide the endbell [12] onto the shaft of the shaft/rotor assembly [11].
8. Apply Loctite 272 to the threads of the four fillister-head screws [13] you removed earlier.
9. Insert the four fillister-head screws [13] into the holes on the endbell [12].
10. Torque the four fillister-head screws [13] to 20 to 25 inch-pounds.

11. Verify that the shaft/rotor assembly [11] has spring in it by pushing on the end of the shaft. The shaft should spring back if properly installed. If the shaft does **not** spring back, remove the endbell [12], and check the placement of the wave spring [9]. It should be positioned as shown in figure 5.2 (p. 5-4).
12. Connect the evaporator motor to an input voltage of 28 VDC. The evaporator motor should operate at the rated speed and draw approximately 3 amps with no load.
13. Check the rotation of the evaporator motor to verify that it is rotating in the proper direction as indicated in figure B.1 of appendix B.

REPLACING THE ELECTRONICS ASSEMBLY

Removing the Electronics Assembly

To disassemble the area of the evaporator motor that houses the electronics assembly, follow the steps below, and refer to the figures indicated:



The electronics assembly [4] consists of the electronics housing, the assembly cover [15] and the electronics circuit board (see figure 5.2, p. 5-4).

1. Disconnect the motor from its power source (see REMOVING THE EVAPORATOR MOTOR FROM THE BUS, p. 5-2).
2. Move the evaporator motor to a clean work area.
3. Remove the 12 size 6-32 pan-head screws [16] from the cover [15] for the electronics housing (see figure 5.4, p. 5-7).

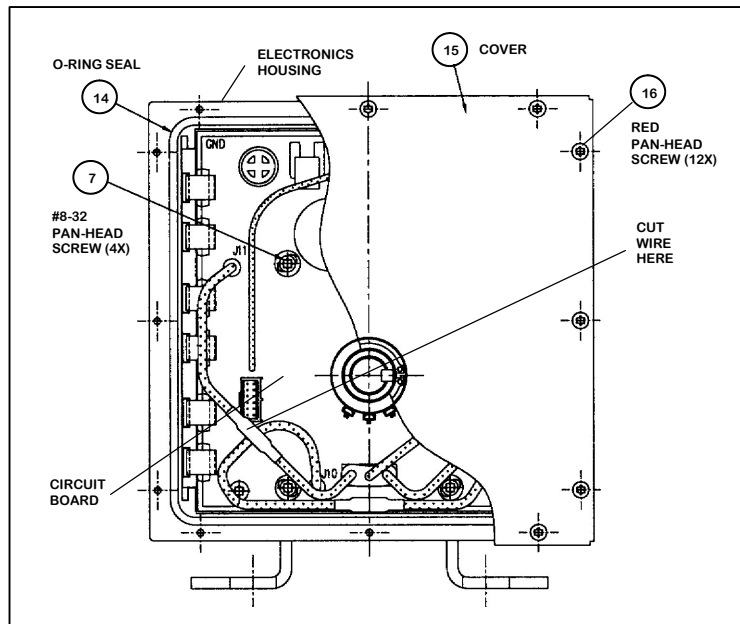


Figure 5.4. Cutaway View of the Cover for the PC Evaporator Motor Electronics Assembly.

4. Remove the cover [15] and the O-ring seal [14], and set both aside (see figure 5.4, p. 5-7).
5. Remove the four size #8-32 pan-head screws [7] from the back of the electronics assembly [4] (see figure 5.2, p. 5-4).
6. Cut the three stator leads at the splice connection that protrudes from the electronics assembly [4]. The leads are red, blue and yellow (see figure 5.4, p. 5-7, and figure 5.5, p. 5-8).



Do **not** cut the stator lead shorter than 4.5 inches long as measured from the circuit board.

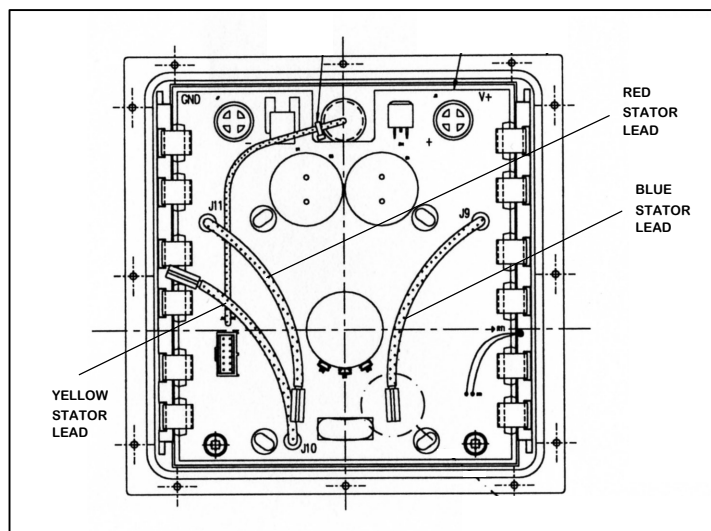


Figure 5.5. Circuit Board Inside the PC Evaporator Motor Electronics Assembly Showing the Three Stator Leads.

7. Remove the electronics assembly [4] and the electronics housing from the rest of the motor assembly (see figure 5.4, p. 5-7, and figure 5.6, p. 5-9).

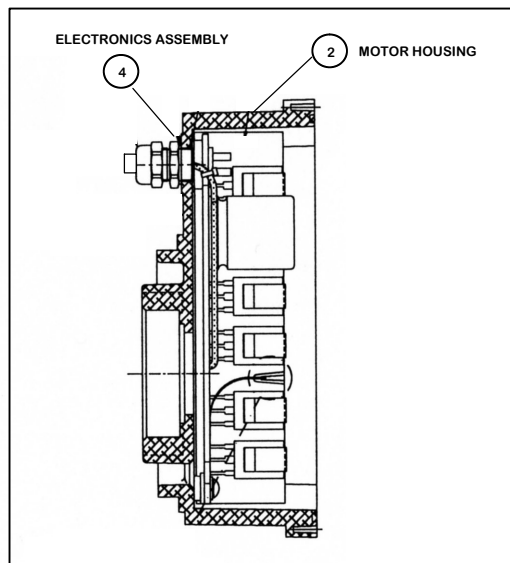


Figure 5.6. Cutaway View of the Electronics Assembly for the PC Evaporator Motor.

8. Pull the electronics assembly [4] from the motor housing [2] (see figure 5.6, p. 5-9).
9. Discard the old electronics assembly [4] (see figure 5.6, p. 5-9).

Installing the New Electronics Assembly

To install the new electronics assembly, follow the steps below, and refer to the figures indicated:

1. Install the new electronics assembly [4] by orienting it with the stator/housing assembly [1] (see figure 5.6, p. 5-9).



Be sure the wave spring [9] and any shims [10] are properly installed in the electronics end cap **before** installing the electronics into the motor housing [2] (see figure 5.2, p. 5-4).

2. Check the location of the manufacturing mark (the X stamp). It should be at the bottom center of the stator (see figure 5.7, p. 5-10).

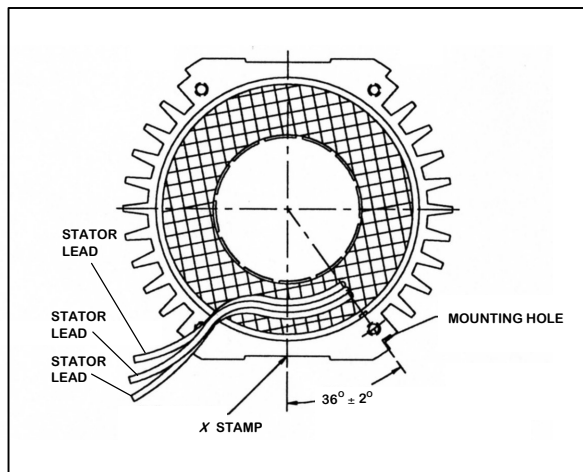


Figure 5.7. Stator Placement for the PC Evaporator Motor. (Note: This is a reference view. The stator will be in this position as part of the stator/housing assembly [1].)



The X stamp indicates the bottom motor flat and the lead-wire end of the motor housing.

3. Insert a new O-ring [6] and a new gasket [5] onto the stator housing assembly [1] (see figure 5.2, p. 5-4).
4. Use a butt splice to reconnect the three stator leads to the electronics assembly lead (see figure 5.8, p. 5-10).



Be sure that the heat-shrink tubing covers the connection (see figure 5.8, p. 5-10).

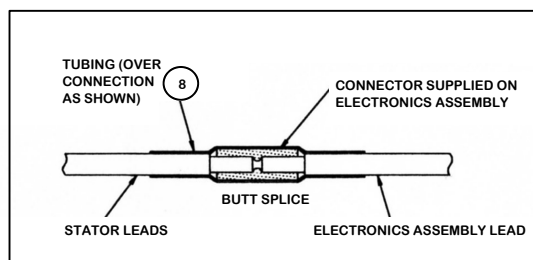


Figure 5.8. Butt Splice of the Stator and Electronics Assembly Leads on the PC Evaporator Motor.

5. Press the electronics assembly [4] into the electronics housing (see figure 5.4, p. 5-7, and figure 5.6, p. 5-9).

6. Insert the four size #8-32 pan-head screws [7] into the holes on the back of the electronics assembly [4] (see figure 5.4, p. 5-7).
7. Torque the four size #8-32 pan-head screws [7] to 20 to 25 inch-pounds.
8. Insert a new O-ring seal [14] for the electronics assembly [4] (see figure 5.4, p. 5-7).
9. Place the cover [15] onto the back of the electronics housing, lining up the 12 size #6-32 pan-head screw [16] holes on both parts (see figure 5.4, p. 5-7).
10. Apply Loctite 222 to the threads of the 12 size #6-32-pan-head screws [16].
11. Insert the 12 size #6-32 pan-head screws [16].
12. Torque the 12 size #6-32 pan-head screws [16] to 20 inch-pounds.

REATTACHING THE EVAPORATOR MOTOR TO THE BUS

To reattach the evaporator motor to the bus, follow the steps below, and refer to figure 4.1 (p. 4-3):

1. If you replaced the base plate [20], insert the six socket-head screws [21] that fasten the base plate [20] to the motor assembly. If you did not replace the base plate [20], go to step 2.
2. Insert the bolts that connect the evaporator motor to the bus.
3. Install the impeller onto the evaporator-motor shaft.
4. Reattach the evaporator-motor connections to the bus voltage supply.



Be sure the polarity of each connection is correct to the proper terminal studs. Reverse polarity may damage the electronics.

5. Turn on the power circuit-breaker to the evaporator motor.
6. Energize the evaporator motor, and verify that performance is within specifications.

**Appendix A:
Replacement-Parts Lists
for the PC Condenser
and Evaporator Motors**

Appendix A.1. Replacement-Parts List for PC Condenser Motor 150214-00			
Part #	Item #	Quantity	Description
150214-00	—	1	Motor Assembly, Complete
5-44380	102	1	Stator/Housing Assembly
5-6516	103	1	Rear Endbell
5-44381	104	1	Shaft/Rotor Assembly with Bearings & Key
5-4178	105	1	Lip Seal
251651000	106	4	Fillister-Head Screw (8-32 x .875" Long)
122125000	107	2	O-Ring (3.989" x .070")
521434000	109	1	Shim (1.56" I.D. x 2.04" O.D.)
521755000	110	1	Wave Spring
522525000	113	2	Bearing
122126000	115	2	O-Ring (3.737" x .103")
5-6688	116	1	Electronics Housing
5-44367	118	1	Endcap/Electronics Assembly
120977000	120	4	Flat Washer (#10)
120964000	121	2	Split Washer (#10)
5-7825	122	2	Fillister-Head Screw (#10 x 3.5" Long)
15-7974	125	2	Socket-Head Screw (#10-24 x 0.62" Long)
5-44382	202	1	Strain-Relief Kit
524598000	204	1	Junction Box (Bottom Half)
251246000	206	4	Pan-Head Screw (10-24)
121808000	207	1	Junction-Box Gasket
524464000	208	1	Junction Box (Top Half)
251163000	209	2	Screw (6-32)
5-7503	210	1	Base Plate
5-7855	211	4	Socket-Head Screw (1/4-20)
121582000	214	1	Key

Appendix A.2. Replacement-Parts List for PC Evaporator Motor 150215-00			
Part #	Item #	Quantity	Description
150215-00	—	1	Motor Assembly, Complete
5-44383	1	1	Stator/Housing Assembly
5-44385	4	1	Electronics Assembly with Labels, Tag, Hardware & Cover Installed
5-5457	5	1	Gasket
122125000	6	2	O-Ring
15-7953	7	4	Pan-Head Screw (#8-32)
5-3814	8	3	Heat-Shrink Tubing
521755000	9	1	Wave Spring
521434000	10	1	Shim
5-44384	11	1	Shaft/Rotor Assembly with Keys
5-6670	12	1	Endbell
251651000	13	4	Fillister-Head Screw (#8-32)
5-6381	14	1	O-Ring Seal
5-4141-3	15	1	Cover
15-7952	16	12	Pan-Head Screw (#6-32)
5-2405	17	1	Slinger
121950000	18	1	V-Seal
5-3519	19	1	External Retaining Ring
5-4168	20	1	Base Plate
251493000	21	6	Socket-Head Screw (1/4-20)
121795000	22	1	Tubing
40-5123	23	1	Terminal (0.032 x 0.25)
121591000	24	2	Key (3/16SQ x 3)

**Appendix B:
Specifications Outline Drawings
for the PC Condenser
and Evaporator Motors**

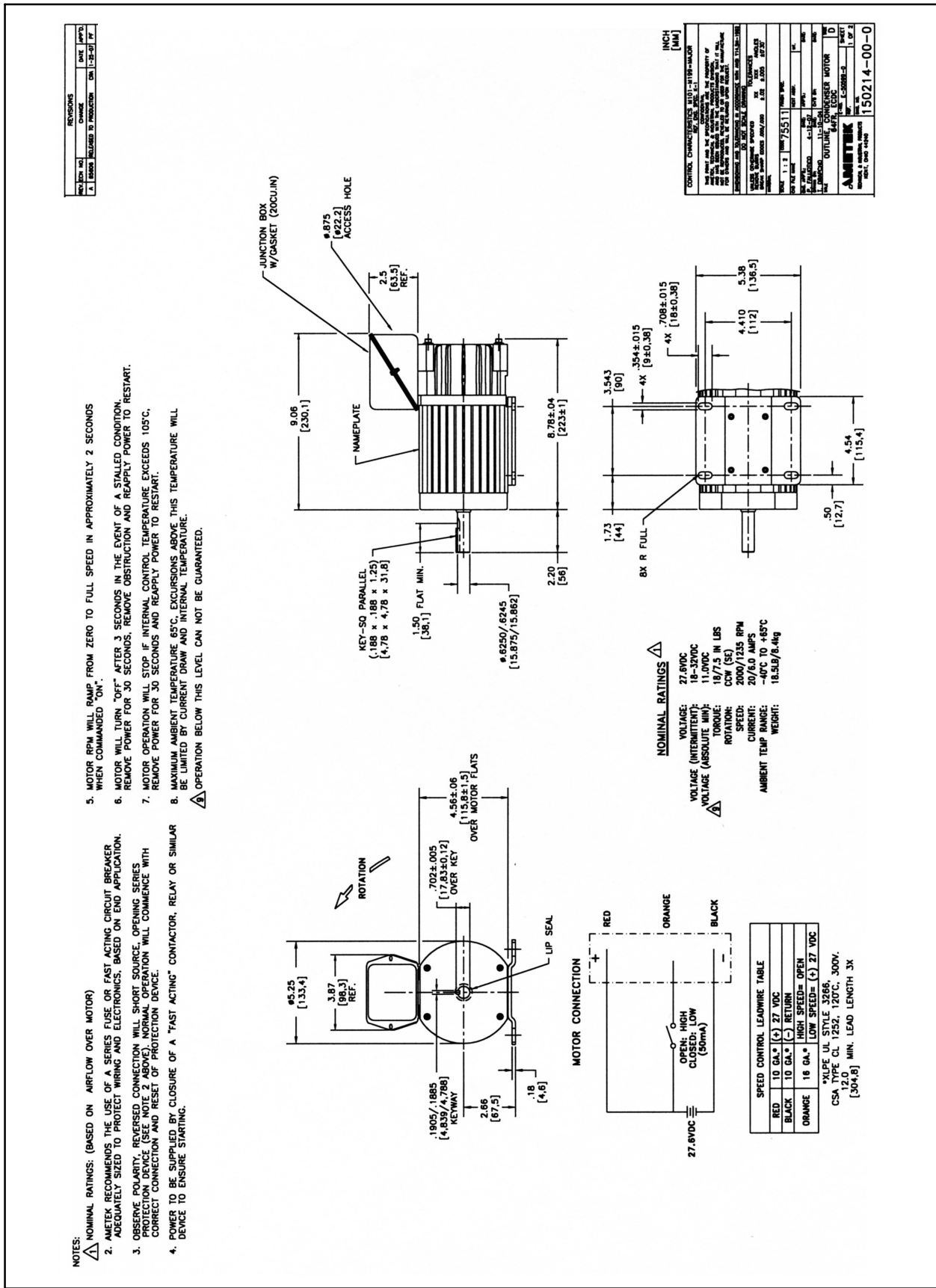


Figure B.1. Specifications Outline Drawing for PC Condenser Motor 150214-00.

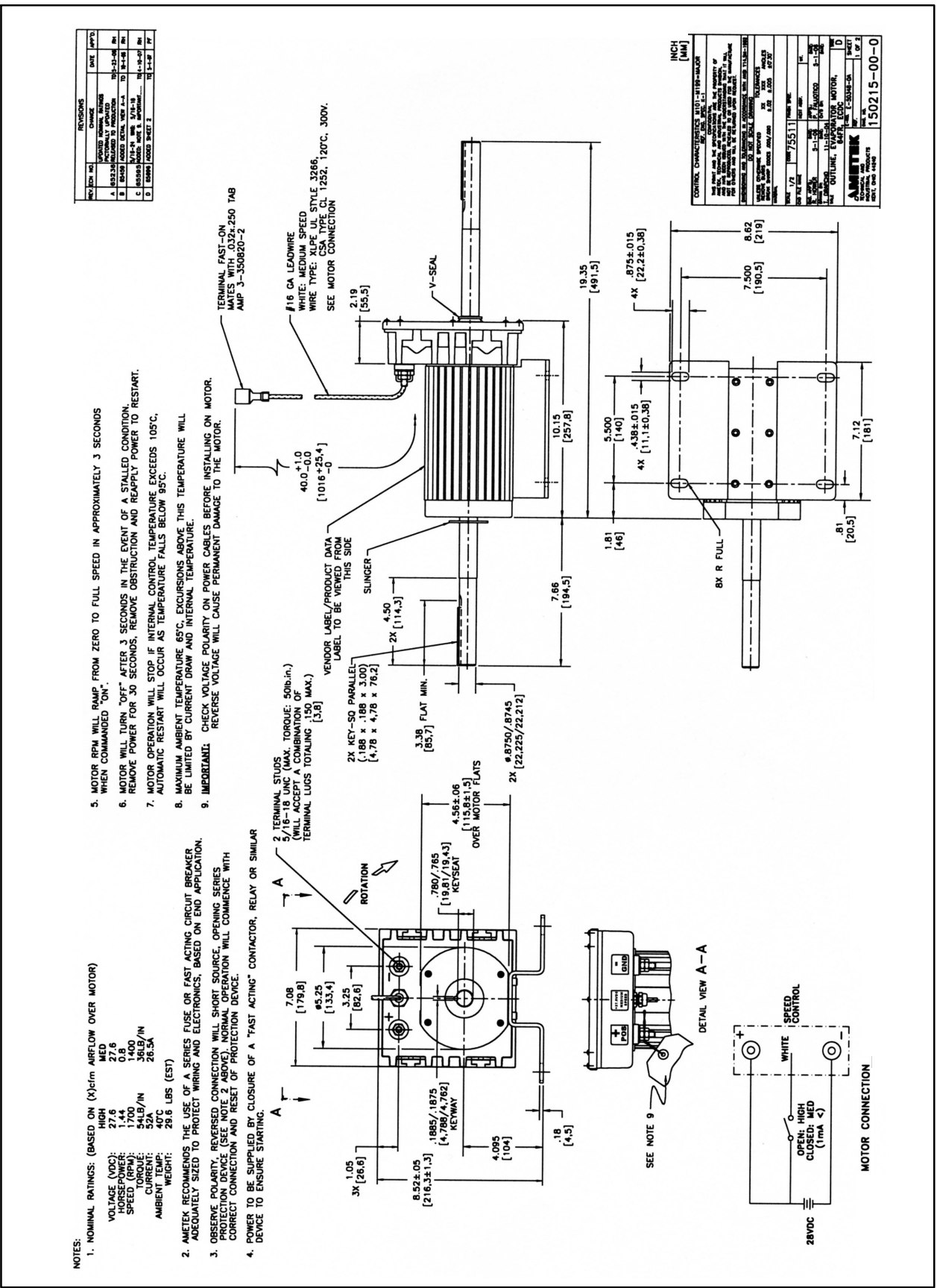


Figure B.2. Specifications Outline Drawing for PC Evaporator Motor 150215-00.