

# Armature Heatpipe Assembly Replacement (for 3000A 1395 Drives)

## Contents

This document shows how to remove and replace an armature heatpipe assembly in a 3000A 1395 DC drive.

## What This Kit Contains

Using the table below, verify that you have received the appropriate items in your kit:

For this part:	You should receive this quantity:
armature heatpipe assembly	1

## Other Items Needed

Before you begin, be sure you also have the following:

- Tools needed for:
  - Removing, tightening, and torquing nuts and bolts (ratchet with extension, 9/16" socket, torque wrench for 25 lb-ft)
  - Loosening and tightening screws (slotted screwdriver)
  - Testing for voltage (multimeter)
- Documentation:
  - Your drive system schematics
  - Publication 1395-5.40, *Bulletin 1395 Digital DC Drive—User Manual*
  - Publication 2361-5.01, *Bulletin 1395 Digital DC Drive in Bulletin 2361 Motor Control Center for Drive Systems—User Manual*

## Safety Precautions

The following general precautions apply when working on drives:

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**ATTENTION:** Only those familiar with the drive system, the products used in the system, and the associated machinery should plan or implement the installation, startup, and future maintenance of the system. Failure to comply can result in personal injury and/or equipment damage.

**ATTENTION:** Verify that all sources of AC and DC power are deenergized and locked out or tagged out in accordance with the requirements of ANSI/NFPA 70E, Part II.

**ATTENTION:** The system may contain stored energy devices. To avoid the hazard of electrical shock, verify that all voltage on capacitors has been discharged before attempting to service, repair, or remove a drive system or its components. You should only attempt the procedures in this manual if you are qualified to do so and are familiar with solid-state control equipment and the safety procedures in publication NFPA 70E.

**ATTENTION:** When servicing any unit, do not drop any nuts, bolts, washers, etc. inside the unit, as they may cause a short circuit on power up.

**ATTENTION:** This drive system contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, or repairing this assembly. Component damage can result if ESD control procedures are not followed. If you are not familiar with static control procedures, refer to Rockwell Automation publication 8000-4.5.2, *Guarding Against Electrostatic Damage* or any other applicable ESD protection handbook.

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## Special Instructions

**Important:** You will need to reuse parts that are removed from the drive. Place parts, in the order removed, on a clean surface.

**Important:** Some washers, such as clamp and Belleville washers, have only one correct orientation.

## Preliminary Steps

Before replacing the armature heatpipe assembly, shut off the drive power, wait five minutes for the voltage to discharge, open the bridge bay door, and remove the Lexan™ shielding.

## Removing the Heatpipe Assembly

1. Using a voltmeter, test the voltage across the three phases, then across the heatpipe assembly components (including the SCRs).



**ATTENTION:** If there is any voltage present, remove the source of the voltage and check for voltages again before proceeding to the next step.

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2. Unplug the SCR leads from all the armature-pulse transformer boards. (For SD3100 drives, tag and disconnect the SCR leads from all the pulse-gate amplifier boards.)
3. Remove the armature-pulse transformer board panel by releasing the black latches on the left and right sides of the panel.
4. Disconnect the three thermal switches and remove the wiring from the mounting clips.
5. Remove the two bolts which connect the assembly to the output busbar.
6. Remove the two bolts which connect the center heatpipe to the incoming AC busbar.
7. Remove the two screws from the top of the assembly where the Glastic™ shroud is mounted to the back plane.

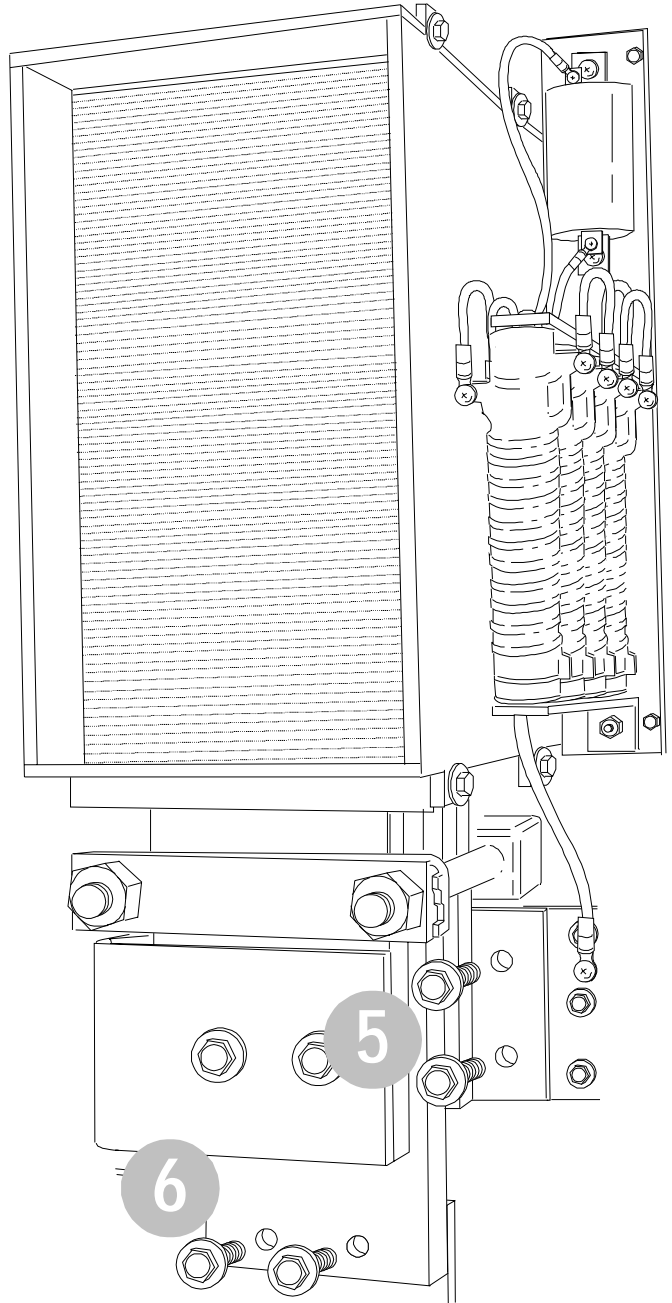
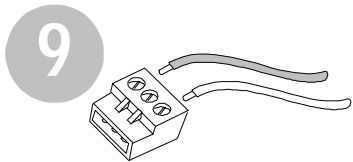
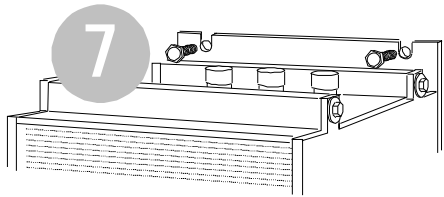
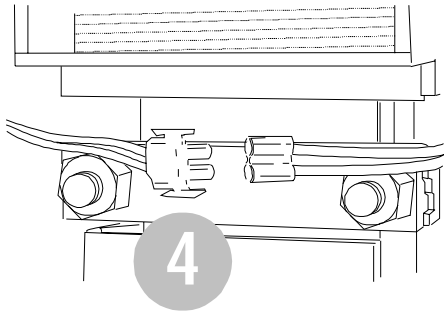
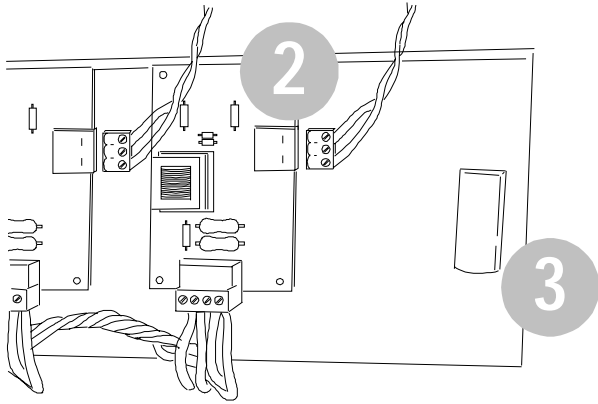


**ATTENTION:** The heatpipe assembly weighs over 70 pounds. Take appropriate measures (adhere to proper lifting procedures and/or use a lifting device) when removing the assembly to prevent personal injury and equipment damage.

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8. Lift the assembly out from the drive.
9. With the removed heatpipe assembly, disconnect the armature-pulse transformer boards from the SCR leads (not necessary for SD3100 drives).

Figure 1  
Removing the Heatpipe Assembly



## Replacing the Heatpipe Assembly

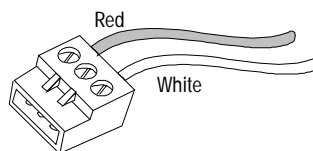
1. Ensure that the assembly is arranged for the proper polarity. Positive leg assemblies (with the large side of the SCR to the back) are to be installed on top, and negative leg assemblies (with the large side of the SCR to the front) are to be installed on the bottom.



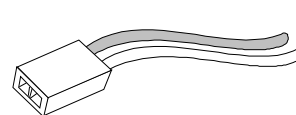
**ATTENTION:** The heatpipe assembly weighs about 75 pounds. Take appropriate measures (adhere to your company's procedures for material handling) when installing the assembly to prevent personal injury and equipment damage.

2. Attach the armature-pulse transformer board connectors to the SCR leads. (SD3100 drives will need to have pulse-gate amplifier board connectors crimped onto the SCR leads).

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SD3100 Drives



3. Lift the assembly into the drive and set it onto the support pegs. Take care not to damage the assembly.
4. Replace the two bolts to the top of the assembly, mounting the Glastic to the drive.
5. Connect the three thermal switch couplings and clip the wires into the brackets.
6. Screw in the two bolts which connect the center heatpipe to the incoming AC busbar. Torque to 25 lb-ft.
7. Screw in the two bolts which connect the assembly to the output busbar. Torque to 25 lb-ft.
8. Mount the armature-pulse transformer board panel, securing with the black latches on the left and right sides of the panel.
9. Connect all the SCR leads to the respective armature-pulse transformer boards. (For SD3100 drives, connect all the SCR leads to the pulse-gate amplifier boards.)
10. Verify that the SCRs are connected to the proper boards. Red leads connect to terminals labeled R, and white leads connect to terminals labeled W.

Figure 2  
SCR Orientation (Positive)

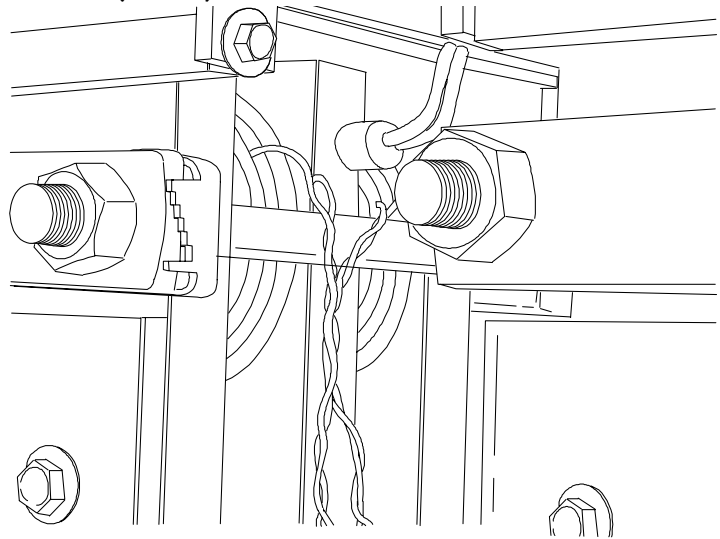
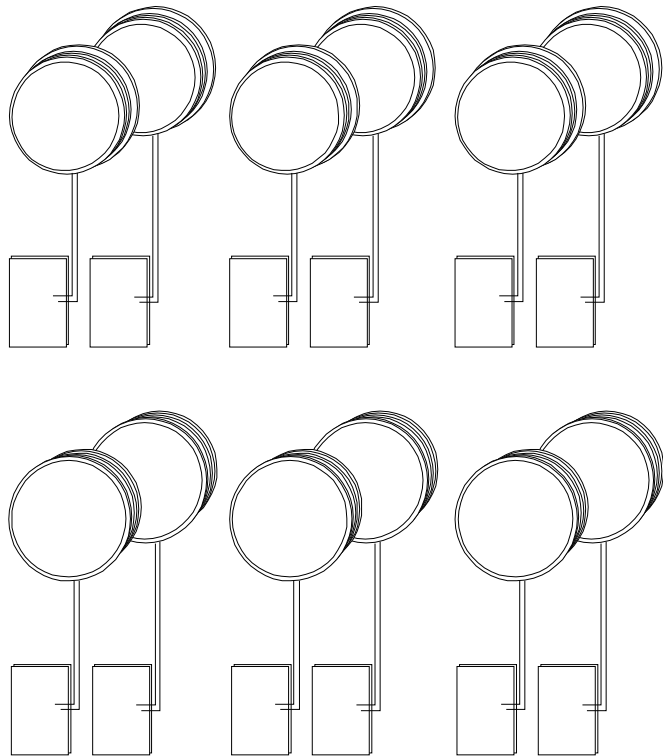


Figure 3  
SCR to Board Wiring



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## Concluding Steps

After installing the heatpipe assembly, replace all Lexan shielding and secure the bridge bay door. Dispose of the old parts according to your company procedures and local codes.

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Glastic is a trademark of Glastic, Inc.



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