Armature SCR Replacement
(for 1250 and 1650A 1395 DC Drives)

Contents

This document shows how to remove and replace armature SCRs in a 1250 or 1650A 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:
SCRs	2
bottle of silicone oil	1

Other Items Needed

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

- Tools needed for:
    - Loosening, removing, tightening, and torquing bolts (ratchet with extension, 9/16” and 1” sockets, torque wrench for 25 lb-ft)
    - Testing for voltages (multimeter)
    - Loosening and tightening screws (slotted screwdriver)
- 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:

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.

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 heatsink assembly, shut off the drive power, wait five minutes for the voltage to discharge, open the bridge bay door, and remove all Lexan™ guards shielding the heatsink assemblies.

Removing the Assembly

1. Using a voltmeter, test the voltage across the three phases, then across the heatsink 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.

2. Unplug the thermoswitch connector (upper assemblies only).

   Note: *Unplug thermoswitch connectors for any other assemblies if they are in the way.*

3. Unplug the gate lead connector from J1 on each armature-pulse transformer board. (For SD3100 drives, disconnect the pulse-gate amplifier boards.)

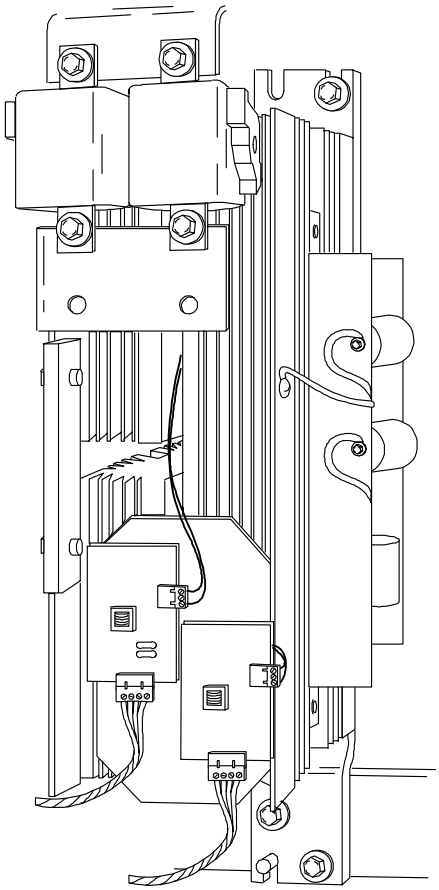
   Note: *Unplug gate lead connectors for any other assemblies if they are in the way.*

4. Remove the two fuses from the front of the assembly.
5. Remove the mounting bolts from the top and bottom of the assembly.

ATTENTION: Heatsink assemblies weight 60-75 lbs each. Take the necessary precautions (adhere to your company procedures for material handling) before lifting to avoid injury and equipment damage.

6. Lift the heatsink assembly out of the drive.

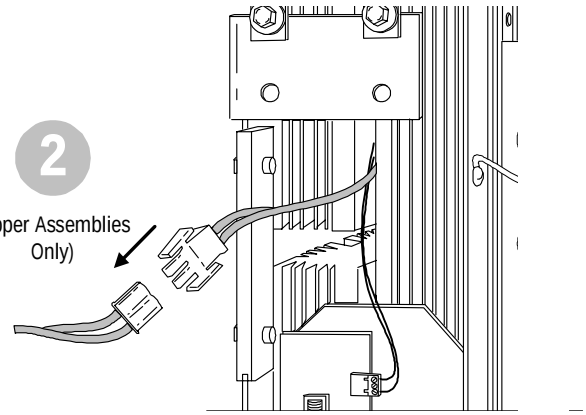
Heatsink Assembly
Negative (lower)
regenerative example



Removing The Assembly

2

(Upper Assemblies Only)



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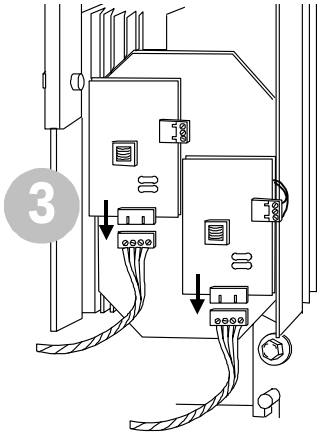

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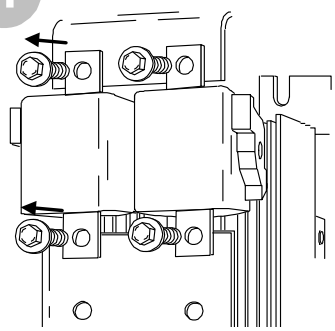
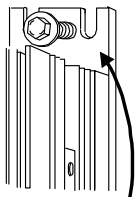


One bolt for Glastic mount



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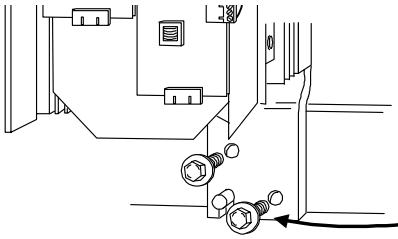


Two bolts for busbar connection

Use the following procedures to remove and replace each SCR.

Removing SCRs

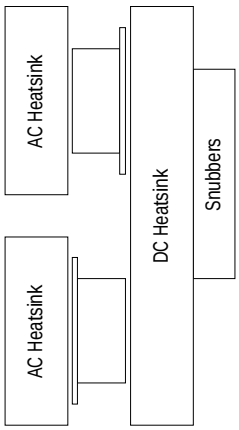
1. Disconnect the SCR leads from the armature-pulse transformer board terminals (not necessary for SD3100 drives).
2. Remove the two clamp nuts.
3. Pull apart the heatsinks and remove the SCR.

Replacing SCRs

1. Apply silicone oil to the contact surfaces of the new SCR.
2. Properly position the new SCR securely between the heatsinks.
3. Fit rollpins into the SCR indentations (take care not to damage the SCR). The gate leads should extend out through the front of the assembly to the armature-pulse transformer boards, as shown in the heatsink assembly diagram on the previous page.

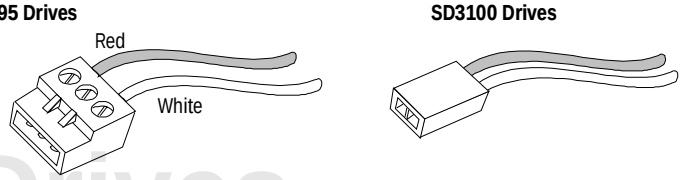
ATTENTION: Ensure that the SCRs are installed with the proper polarity (as shown in the following diagram). Improper installation will result in damage to the power bridge and may damage other externally connected equipment.

SCR Polarity (Front View)



4. Fasten the two clamp nuts. Torque the clamp nuts to 10,000 lb-ft (10 on the clamp indicator).
5. Connect the SCR leads to the armature-pulse transformer board terminals. (For SD3100 drives, crimp connectors onto the gate leads and plug the connectors onto the pulse-gate adapter boards.) Verify all wiring.

1395 Drives **SD3100 Drives**



Replacing the Heatsink Assembly

1. Place the new assembly into the drive (with the snubbers to the right), and rest the lower bracket (or busbar) on the mounting peg.
2. Mount the assembly, securing the three mounting bolts to the top and bottom of the assembly. Torque the Glastic™ surface to 25 lb-ft and the busbar mounting surface to 25 lb-ft.
3. Mount the two fuses with the label text upright, and the black indicators away from each other. Torque the fuse bolts to 25 lb-ft.
4. Connect the gate lead connector to J1 on each armature-pulse transformer board. Ensure that the connectors for all six assemblies in the drive are secure.

   Note: *Match the board names (i.e. A14R) with the wire labels (i.e. A14R-J1) to verify proper connections.*
5. Connect the thermoswitch plug to the incoming thermoswitch lead (upper assemblies only). Ensure that the connectors for the three upper assemblies are secure.

Concluding Steps

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

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Glastic is a trademark of Glastic, Inc.

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