



Issue date: April 28, 2003  
Revision 1

SIL No. 642

## CR105X auxiliary contact failure

SIL No. 642 was issued on June 14, 2002 to inform GE BWR owners of a CR105X auxiliary contact failure. The purpose of this Revision 1 to SIL 642 is to correct the recommended plunder arm torque value, to advise owners of GE BWRs of the potential for CR105X auxiliary contact failure and to provide recommendations to avoid this failure.

The SIL material is presented in its entirety with this correction. SIL 642 Revision 1 supercedes and voids SIL No. 642.

Recently at a BWR in the United States, a GE CR105X auxiliary contact failed to change state from the open to closed position. Plant troubleshooting revealed that the CR105X auxiliary contact was stuck in the open position. During repair, the auxiliary contact plunger arm was found disengaged from the T-Bar (see [Figure 1](#)), which caused the failure of the contact to change state. The cause of the disengaged plunger arm and loose plunger post was determined to be a missing #6 lock washer.

### Discussion

CR105X auxiliary contactors have been sold as either kits ([Figures 2 and 3](#)), or as part of an assembly. The CR105X auxiliary contacts sold as kits contain the #6 lock washer; however, the provided installation instructions did not contain guidance on where to install the #6 lock washer or the required torque to the plunger post. Assemblies shipped from the factory containing an auxiliary contact may not have the #6 lock washer installed. The plunger arm may disengage from the T-Bar causing the failure of the contact to change state if the plunger post is not properly torqued or if the #6 lock washer is not installed. There should be no gap between the steel plunger post and phenolic plunger (see [Figure 1](#)).

### Recommended action

GE Nuclear Energy recommends that all CR105X auxiliary contacts be inspected. GE-NE records indicate that there is not a high incidence of failure due to the loosening of the plunger post. Based on the infrequent occurrence of this event, inspection of installed CR105X auxiliary contacts should be conducted during the next scheduled service opportunity for these devices. CR105X auxiliary contacts

in stock should be inspected prior to use.

The inspection should include the following:

1. Visually verify that the #6 lock washer is installed between the plunger post and the plunger. There should be no gap between them.
2. If the #6 lock washer is missing, either install a new #6 lock washer or replace the auxiliary contact with a new one containing a #6 lock washer.
3. If the plunger arm is determined to be loose, tighten the plunger post to 4-7 in-lbs.

**Note:** The GE-NE safety related #6 lock washer part number is QN405P7B6.

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To receive additional information on this subject or for assistance in implementing a recommendation, please contact your local GE Nuclear Energy Service Representative.

This SIL pertains only to GE BWRs. The conditions under which GE Nuclear Energy issues SILs are stated in SIL No. 001 Revision 6, the provisions of which are incorporated into this SIL by reference.

**Product Reference:** C71/C72-Reactor Protection System, R24-Motor Control Centers  
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**Figure 1**

(References: GEJ-2877E and GEJ-2907B)

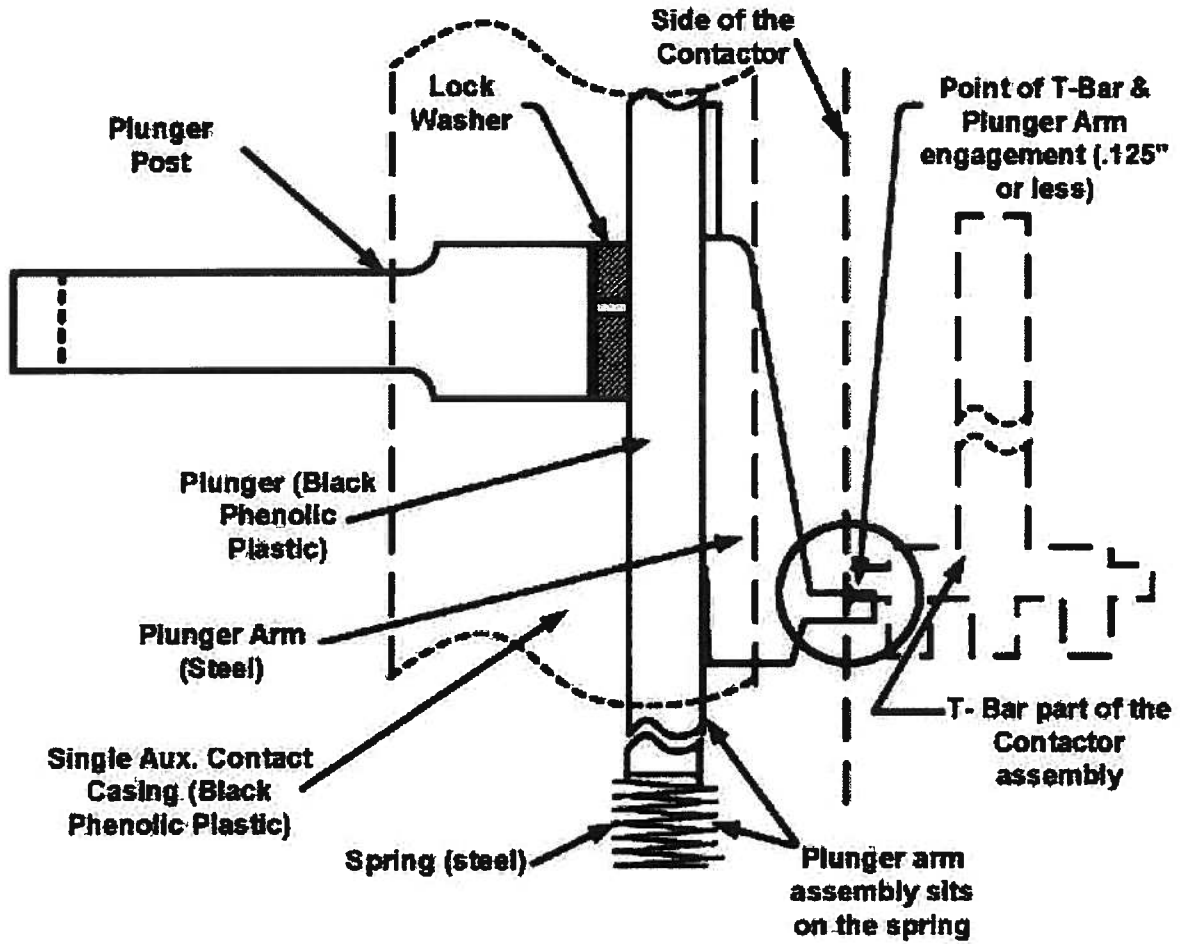
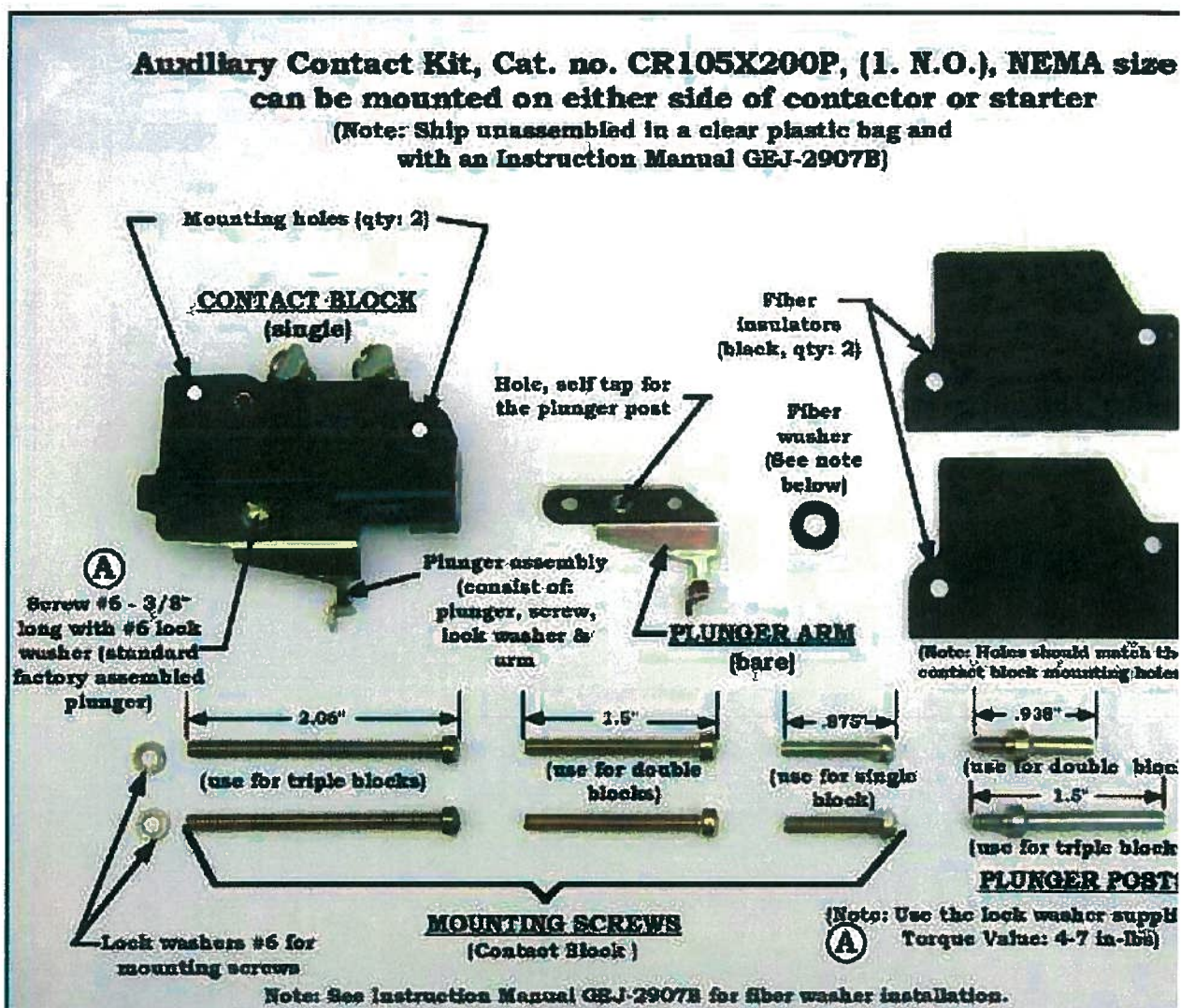


Figure 2



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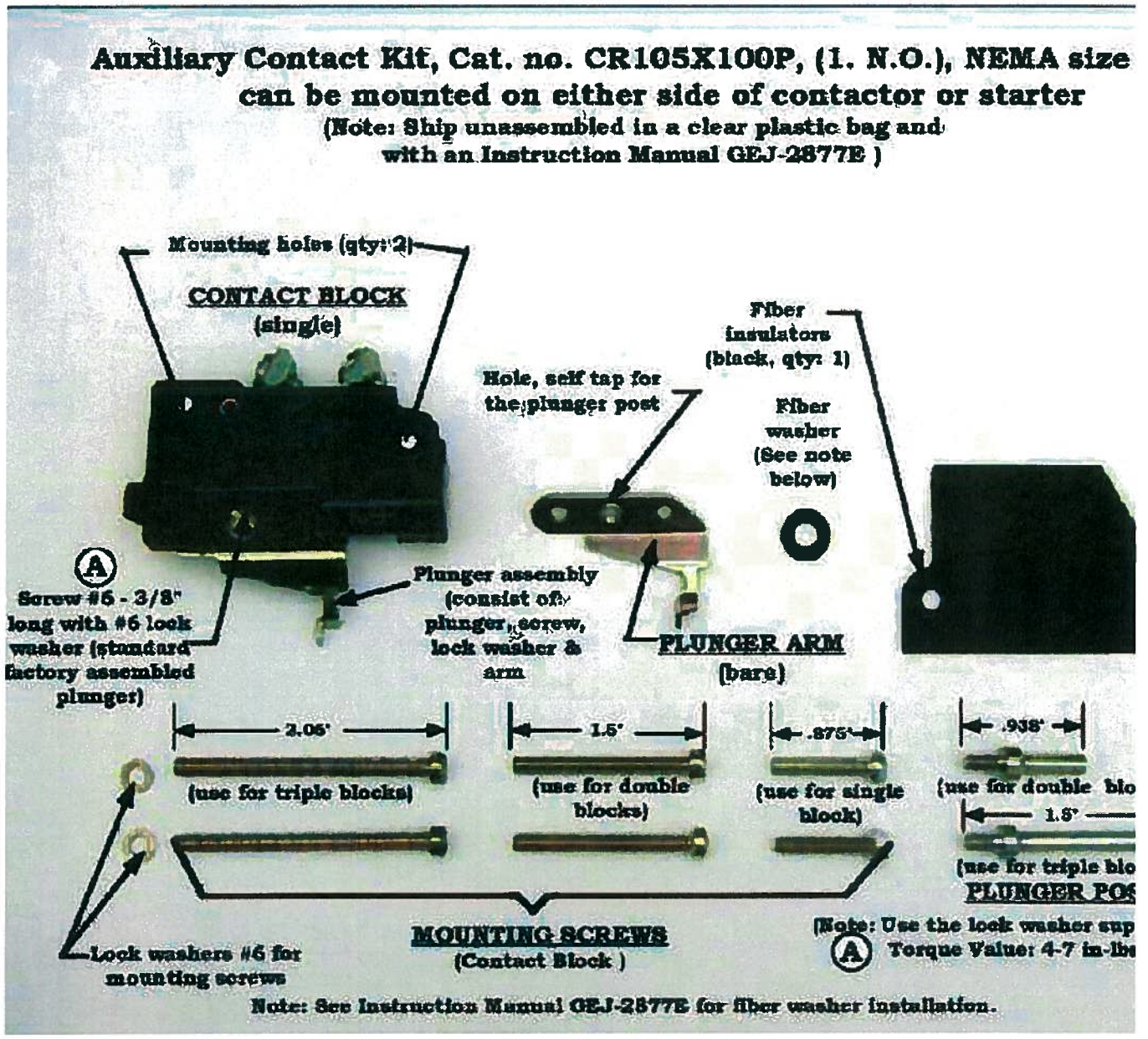


Figure 3