



Instructions for Mechanical Latch Attachment for Type SL Medium Voltage Vacuum Contactor

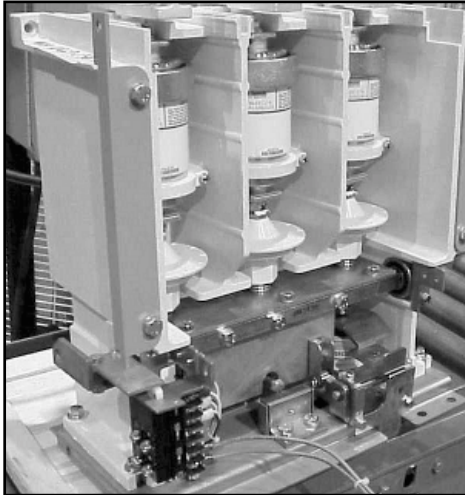


Figure 1: SL Contactor with mechanical latch installed.

Read and understand all instruction literature for the SL Contactor before performing any work on the contactor or the latch attachment.

DESCRIPTION

The SL Contactor in its standard configuration is a magnetically held device. A mechanical latch attachment can be added to the standard SL that will maintain the contactor in the closed position when power is removed from the main operating coil. A separate unlatch coil must then be energized to allow the contactor to open.

The unlatch coil is intermittently rated. Control power should be applied to the coil only long enough to allow the contactor to open. Two normally open auxiliary contacts (wired in parallel) on the contactor should be used to open the circuit to the unlatch coil.

Although the latch (closing) coil is continuously rated, power should be removed from the coil after the contactor is closed to insure that the contactor opens when the unlatch coil is energized. Make certain that the close pushbutton (or other device) is a momentary device that will apply power to the latch circuit for a short time only. Do not use a maintained device which will cause the contactor to stay closed even after the unlatch coil is energized. Do not wire a normally closed (NC) auxiliary contact directly into the coil closing circuit to remove power from the coil. To do so may result in a failure to latch since the contact may open before the coils have been powered sufficiently long enough to fully close the contactor.

A typical control schematic for a mechanically latched contactor is shown in Figure 2.



DANGER

HAZARDOUS VOLTAGE

Read and understand this manual in its entirety before installing or operating a mechanical latch or contactor. Qualified personnel must perform installation, adjustment, and maintenance of this equipment. A qualified person is one who is familiar with the construction and operation of the equipment and who is aware of the hazards involved. This instruction book should not be considered all-inclusive regarding installation, adjustment, and maintenance procedures.

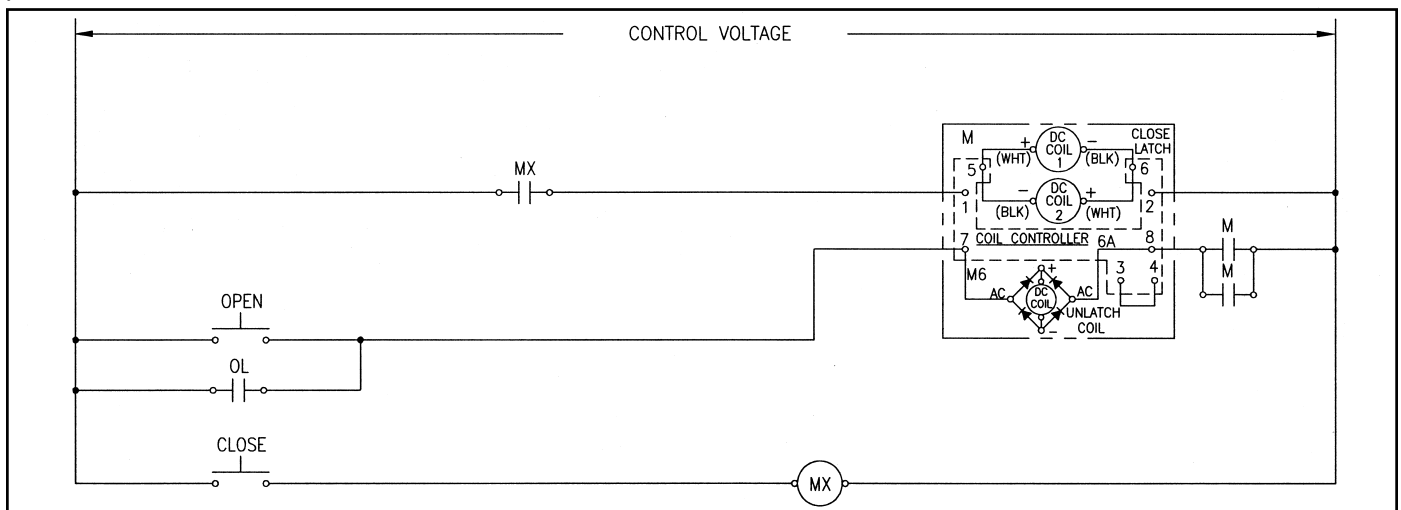


Figure 2: Typical schematic for latched contactor

INSTALLATION

The mechanical latch kit is supplied as shown in Figure 3. The kit consists of two main components: the main latch assembly and the roller bracket and bearing assembly. Hardware for bolting the assemblies to the SL contactor is also included. The contactor moving armature is not supplied with the kit. It is shown for illustration purposes only, to identify the mounting location of the roller bracket and bearing assembly.

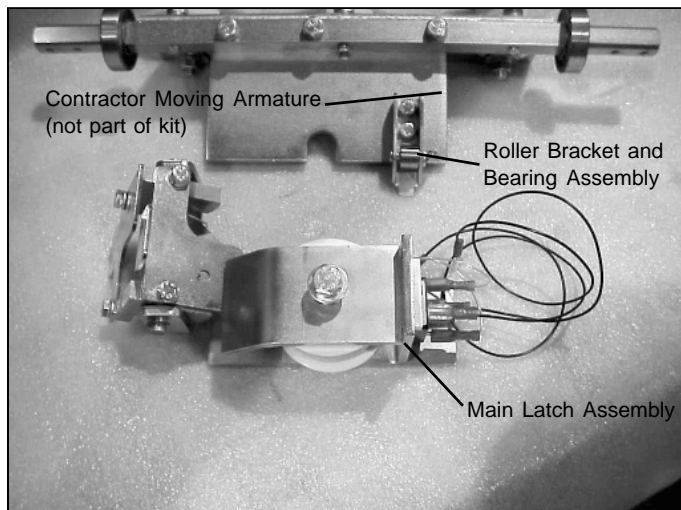


Figure 3: Mechanical latch kit

Steps for Installation

1. Remove the existing roller bracket from the contactor moving armature, if one is attached.
2. Secure the new roller bracket and bearing assembly with two 6mm x 25mm bolts with lock washers and torque to 85 in-lb (9.6 N-m). Insure that the side flanges of the roller bracket are parallel with the end of the armature plate. Note: If bolts longer than 25mm are used, they will extend through the armature plate and prevent the contactor from closing and sealing when the main coils are energized.
3. Locate latch assembly into contactor, see Figure 4
4. Install four 8mm x 1.25 bolts 16mm long, with lock and flat washers through the bottom of the contactor base plate into the latch base plate, do not tighten at this time.
5. With contactor energized, place a 0.5mm (0.020 in.) feeler gage between roller bearing and rotating cam on latch assembly, see Figure 5



DANGER

Follow necessary precautions including insuring that all transformers are properly isolated before applying power to contactor coil. If voltage is back fed into a transformer, high voltages will be generated on the transformer primary. High voltage can cause serious injury or death.

6. Apply force to latch assembly, sliding cam towards roller bearing, and tighten four mounting bolts through contactor baseplate. Torque to 200 in-lb (22.6 N-m).
7. Release the latch by depressing the latch release tab on the latch assembly. Refer to Figure 5.



WARNING

When releasing the latch several parts of the contactor will move with considerable force. Use caution to insure fingers are not pinched as the contactor is forced open by the return spring.

8. Route the two control wires from the full bridge diode across the main coils, connecting them to the main coil control wires with tie straps, and terminate them at terminals 7 & 8 on the control board.

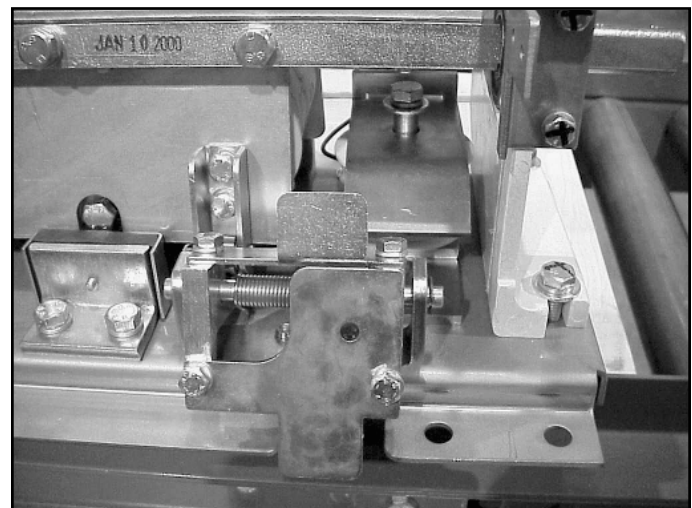


Figure 4: Location of latch assembly on contactor base plate



Figure 5: Set gap between roller bearing and cam to .5mm (.020 in.)

LATCH REMOVAL

1. Remove latch control wires from terminals 7 & 8 on contactor coil control board.
2. Remove the four 8mm x 1.25 bolts from the underside of the base plate that secure the latch assembly to the base plate.
3. Remove the two 6mm x 1.0 bolts from the front of the contactor that secure the roller bracket assembly to the armature plate.

COIL CHECKOUT AND REPLACEMENT

If the contactor fails to open when the unlatch coil is energized, the coil may be faulty. To determine if the coil has the proper resistance, connect an ohmmeter across the coil leads where they are connected to the bridge rectifier. Refer to table I for the correct impedance for the different voltage coils.

TABLE I: UNLATCH COIL IMPEDANCE	
Coil Volts	Impedance
24	0.77 – 0.95
48	2.95 – 3.55
110/120/125	10.97 – 11.19
220/240	44.57 – 54.57

If the coil impedance is not within the ranges in table I, it must be replaced. Follow the steps below for replacement.

1. Remove latch control wires from terminals 7 & 8 on contactor coil control board.
2. Remove the four 8mm x 1.25 bolts from the underside of the base plate that secure the latch assembly to the base plate.
3. Remove latch coil core retaining bolt (8mm x 1.25), Figure 6, and remove all components secured by this bolt.
4. Remove the 4mm x .7 screw securing full bridge diode to latch coil bracket.
5. Remove old coil from core.
6. Insert coil core into new coil, insuring rubber gasket is between core and coil bobbin.
7. Install 4mm x .7 screw securing diode to latch coil bracket and tighten to 9 lb-in. Do not over tighten, cracking of diode housing could result.
8. Reassemble all components removed in step 3, insuring steel shim is between coil core and coil core bracket, and secure 8mm x 1.25 bolt to latch base plate. Insure all components are correctly aligned and the coil wires are not binding or pinched, Figure 7.
9. Reinstall latch assembly and adjust as described in steps 3 to 8 in section on **Installation**.

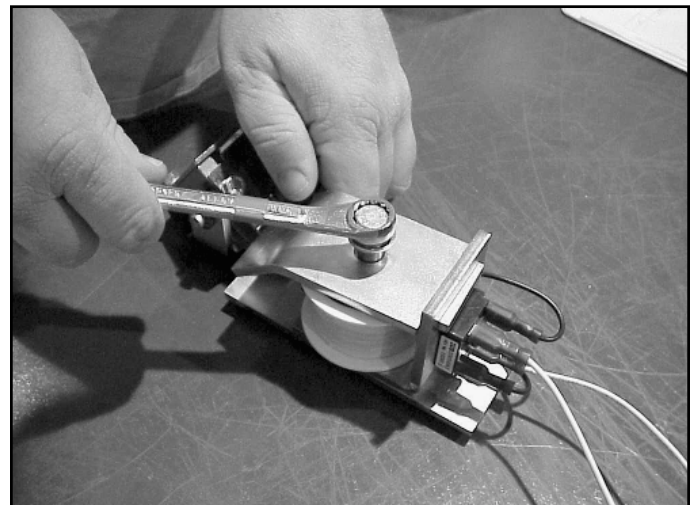


Figure 6: Coil core retaining bolt

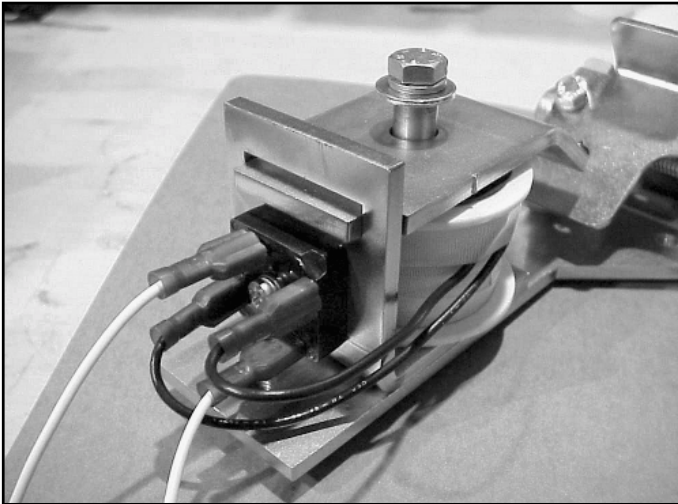


Figure 7: Alignment of latch components

LATCHED CONTACTOR IN AMPGARD® MEDIUM VOLTAGE STARTER

When a latched contactor is installed in an Ampgard starter, the contactor is mounted with the baseplate facing the front of the enclosure. A reset mechanism is attached to the rear of the medium voltage door to allow the contactor to be manually unlatched. Refer to Figures 8,9 and 10 for more details.



Figure 9: Latch Release Button (Front of Medium Voltage Door)

The reset mechanism is factory set. Field adjustments can be made by loosening the lock nut on the reset button shaft and extending or retracting the black phenolic plunger.



Figure 8: Mechanical Release Lever



Figure 10: Latch Release Mechanism (Rear of Medium Voltage Door)

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