# MTCLogic

**MCV3-47 Installation Instructions**

**Note: It is recommended that the installation be performed by a qualified technician familiar with Leslie amplifiers. Please read all of the instructions before attempting the installation! Do not connect any grounds to the circuits on this board such as a scope ground as the entire circuit is "hot" as in a hot chassis.**

In the 47 amp -

1. Snip off all the wires to the motor control relay. Tape off or remove the orange wire that goes to the brake circuit. It will not be used in the conversion. Remove the relay.
2. (Figure 1) Clean the chassis surface where the card is to mount. Attach the 4 rubber feet to the chassis in the position shown.
3. Remove the 0.1 uf capacitor across the motor sockets. Move all wiring going to the motor sockets over to the accessory socket. **It is extremely important that the motor sockets are connected <u>only</u> to the Gray wires coming from the controller.**
4. Attach the board to the chassis using a 6-32 screw with washer on the top side of the chassis through the grommet and board, and fasten the board with a 6-32 nut. Do not over tighten.
5. Check to make sure the card is not shorting against anything else in the chassis, and that the heatsinks are not bent so that they could touch the side of the amplifier.
6. A complete set of leads is provided. (Figure 2) Hookup is as follows:
   **Red** – To pin 2 of the 6-pin Leslie connector.
   **Violet** – To pin 5 of the 6-pin Leslie connector.

7. **Orange** – To the hot side of the AC input to the amplifier (before the fuse)
   **Blue** – To the common side of the accessory outlet.

8. **Gray** – To either side of the motor sockets. Polarity is not critical.

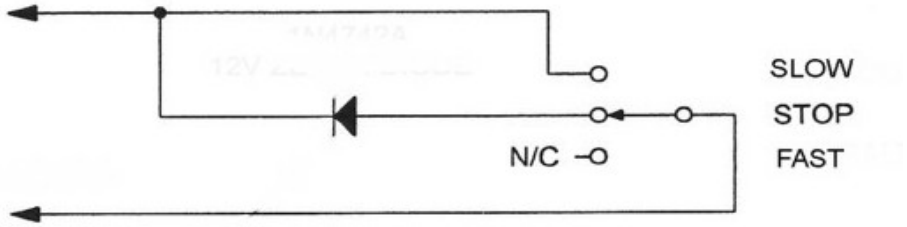
Operation:

The card will function just as the relay used to, only the “OFF” position will now function as “Chorale”. (figure 3) The slow speed adjust is a potentiometer that provides a range of slow speeds. It is suggested that you make this adjustment prior to installing the amplifier in the cabinet. Allow for around 15 minutes warmup time with the chassis sitting flat on a workbench before making the adjustment.

If the organ switch kit is equipped for Bob S's 3 mode switching system, the controller will work as follows:

1. No AC on pins 2/5 – Tremolo
2. Half-Wave AC (use a 1N4007 or Equiv) – Stop.
3. Full Wave AC on pins 2/5 – Chorale.

A 2-mode Brake/Coast function is provided to allow the user to select how the motors will behave when the stop position is selected:
Jumper out – Motors will coast to a stop, Brake cycle removed fast to slow.



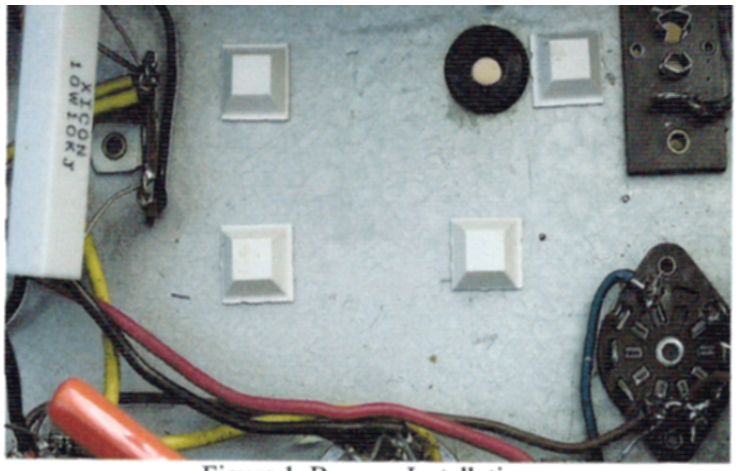
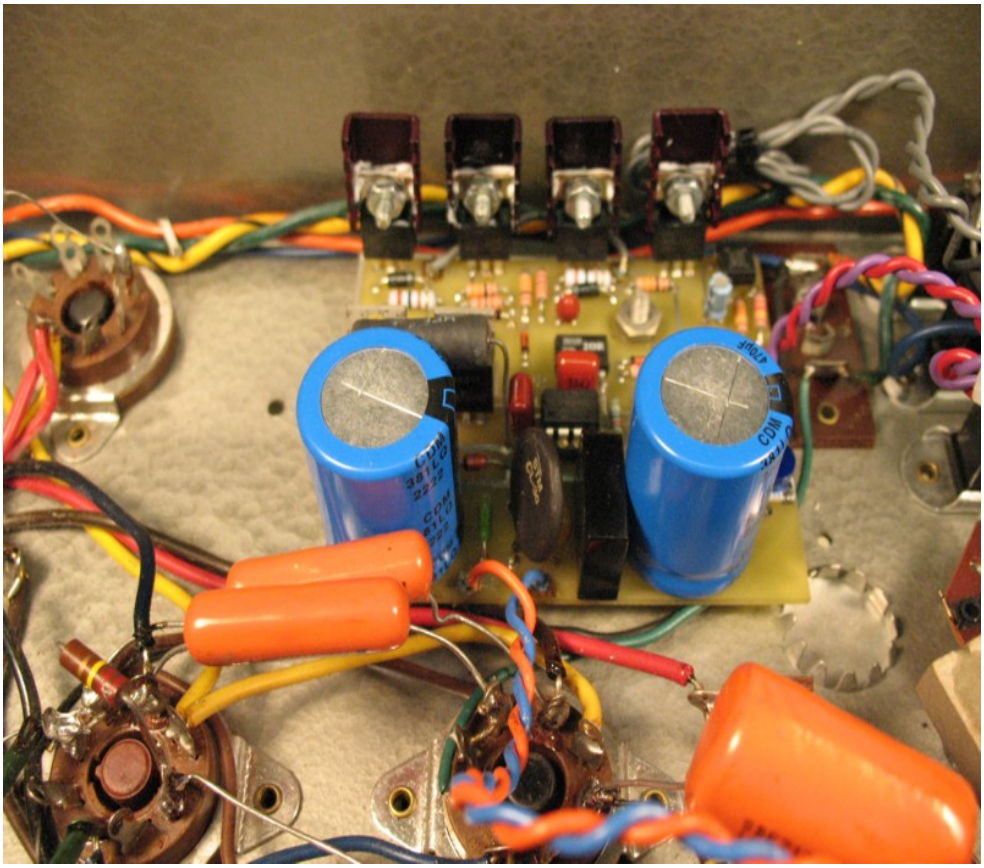



Figure 1. Bumper Installation

Jumper in – Motors will have a hard DC brake applied for 8 seconds, then power is removed from the motors until the next mode change. 1 Second brake cycle from fast to slow enabled.



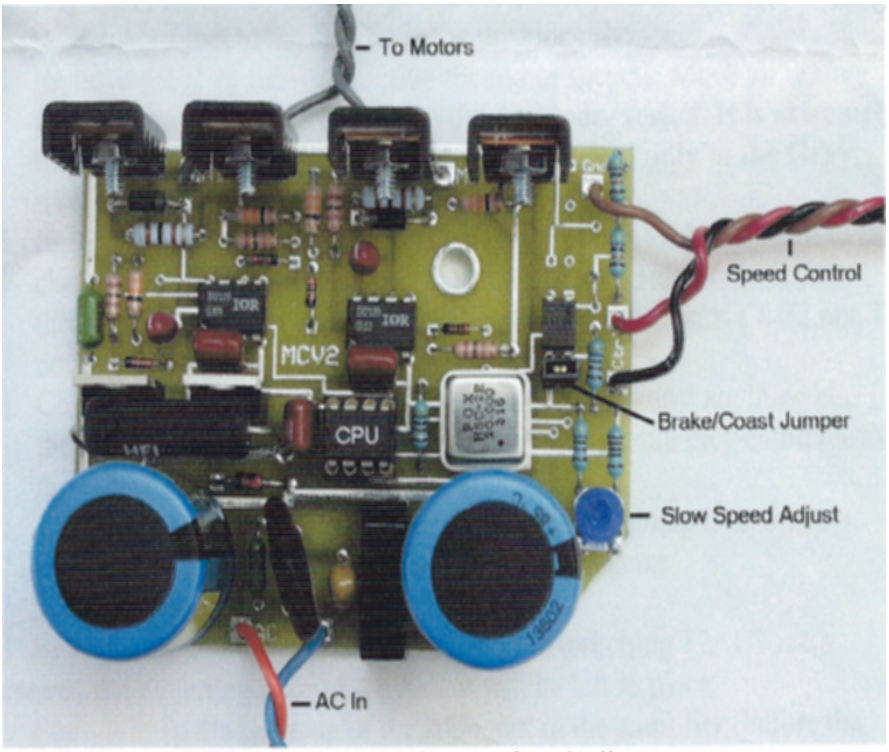



Figure 3. MCV2-22 Connections/Adjustments

TIPS on noise reduction and smooth running motors.

In order to get the optimum performance from a Leslie using an electronic 2-speed controller you should check the following.

1) Motors:
I recommend removing the motors and servicing them. Clean thoroughly. Oil attracts dust and turns to gunk. I suggest opening the motors and cleaning them internally as well. Once this is done, they will be good for years.

Second, oil the bearings. While out and possibly apart, oil the shafts and sleeves. (bearings) Also, it's very important to oil the felt that surrounds the sleeve. This will feed oil into the porous sleeve for a long time. Soak it well.

Make sure they turn freely before re-installing them.

NOISE REDUCTION: While you have the motors out you may want to inspect the rubber grommets. They will likely be flat where they mount to the cabinet. You should replace them but you can turn them over for more life. The top of the grommets are usually still normally formed so by turning them over you get a fresh surface to the cabinet.

2) Rotors:
Remove the **upper rotor** and clean the bearing assembly. Oil the bearing surfaces and add oil to the oiling hole at the base of the rotor. While you have the upper rotor out inspect the grommets on the mounting plate. They tend to get oil soaked and turn very soft. This allows the plate to wobble while the rotor is spinning. Replace if necessary.

On the **lower rotor**, check the condition of the grommets and rubber parts. The bearings have a rubber insert that can go bad causing the rotor spindle to wobble and make noise. Grommets on both top and bottom of the rotor. This is a good time to check for play where the spindle pulley touches the rotor brace. Try to remove all slack here by inserting some felt between the loose parts. This is a big noise maker in some Leslies.

The lower rotor has two bearings. These need to be in good shape. It takes a little more dis-assembly to get to them but for a well oiled working rotor it's worth it. Remove the woofer exposing the upper bearing. Remove the bracket holding the bearing in place. Try turning the bearing with your finger. See if it turns smoothly and freely. They can be soaked in oil which can help if it isn't too worn.

Otherwise, these are fairly easy to come by automotive bearings and should be replaced. The lower bearing will come off from the bottom of the Leslie. It has a similar bracket holding it in place.

NOISE REDUCTION: Again

3) Idler bearing:
The upper rotor has an Idler bearing on a spring. The bearing should be cleaned and oiled. Check to make sure it turns freely. Make sure it rides properly on the belt and just touches the rubber pad under it. This can be accomplished by bending the spring until it rides properly.

I recommend adding a piece of felt between the idler pulley and cabinet. While running slow, it's common for the pulley to bounce some as the motor is being pulsed. Adding felt will reduce any noise effect this may cause.

Remember, these older single speed Leslies are many decades old and the rubber parts will be old, dried out and possibly flattened out where there is weight applied to them. They are well past due for changing. The bearings as well need cleaning and oiling. These things are needed without an electronic controller, it's just that the controller will expose weaknesses that otherwise may be ignored, but still present.

Since the loads of upper and lower rotors are different, you may experience one rotor spinning faster than the other when running slow. Try swapping the motors with each other. They mount exactly the same you just have to swap the pulleys. In most cases, you will get better performance.

The lower rotor can be reversed by removing the motor, opening it up, taking the field (middle part with wires) and flipping it 180 degrees. Put it back together and the motor now runs in the opposite direction.

Good luck!

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