



# Allen-Bradley Power Transistor Enable Option

(Cat. No. 1388-K-A06)

## Instructions

### Objectives

The purpose of this publication is to provide the information needed to properly add the Power Transistor Enable option (catalog no. 1388-K-A06) to 1388 Series A (1388-AV60 Only) and Series B (1388B-AV10, 20, 40) DC Servo Controllers. The option is added to the controller through conversions made to the Logic Control Board.

**Important:** This kit must be installed by Allen-Bradley Service Division personnel only. Installation by unauthorized personnel will void warranty, and if improperly installed, could cause controller damage.

**Important:** This option cannot be installed if the A01, A03, A05 or A07 option already exists on the Logic Control Board.

### Description

The option provides user control of the power output stage, saving contactor wear in applications that require frequent cycling (more than twice an hour).

The kit contains the following components:

- (1) Wire Harness with Auxiliary Plug #148285
- (1) PCB Connector (Header), 4 Pin, Right Angle #148369
- (2) Resistor, R1 & R2, 10 Ohm, 0.5 Watt, 1% #105957
- (1) Resistor, R3, 634 Ohm, 0.5 Watt, 1% #105313
- (1) Capacitor, Ceramic, C1, 0.1 $\mu$ F #106872
- (1) Wire, Red Wire Wrap, 1 Foot (304.8 mm) #110987
- (1) Wire, Blue Wire Wrap, 1 Foot (304.8 mm) #110986
- (1) Label, Field Mod #122931
- (1) Label, Spare Parts Kit #122933
- (1) Label, Field Mod #122932
- (1) Label, Spare Parts Kit #122934
- (1) Foam Tape, Double Sided, 1 inch (25.4 mm) #131083

**Required Tools and Materials**

The following items will be required to perform the conversion:

Knife/Razor Blade  
Grounded Soldering Iron (30 Watts Maximum)  
De-soldering Tool  
Wire Cutters  
Needle Nose Pliers  
Adhesive (RTV or equivalent)

**Operation**

When the 1388 is configured with the A06 option, the power output stage is controlled by a user supplied contact wired between terminals A3J2-1 and A3J2-2. Closing this contact causes the controller to operate normally. Opening the contact will cause the 150V DC bus to remain energized, without producing torque at the motor. If the motor is running when this contact is opened, the motor will coast (no dynamic braking) to a stop. Dynamic braking can be performed by opening the Enable input at A3TB1-12 and 13. Therefore, any hardwired stop circuitry may be connected to terminals 12 and 13 of A3TB1.



**WARNING:** The Power Transistor Enable option does not completely disconnect the motor from the incoming power source. Hazard of electric shock or unintended machine motion exists. Remove power at the branch circuit disconnect before servicing the controller or motor.



**WARNING:** Verify that the power bus has decayed to 0V DC by connecting a voltmeter to test point “NB” and “COM” on the Logic Control Board. This verification **must** be done prior to performing the following procedure. Also verify that all power and signal voltage sources have been disconnected and locked out. A hazard of electric shock exists if accidental contact is made with “energized” power components.



**CAUTION:** This controller contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference A-B publication 8000-4.5.2, *Guarding Against Electrostatic Damage* or any other applicable ESD protection handbook.

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## Conversion Procedure

- ❑ 1. Remove all power supplying the servo controller and system.
- ❑ 2. Remove the protective plastic front cover.
- ❑ 3. Remove the Logic Control Board as outlined below:
  - a) Disconnect connectors, A3TB1, A3TB2 and A3J1.
  - b) Remove the two screws shown in Figure 2.
  - c) Depress the locking tab on each nylon standoff supporting the Board and pull up slightly. Remove the board.
- ❑ 4. Locate the area on the bottom (foil) side of the board under R37. Using a knife/razor blade, carefully cut a 1/16" (1.6 mm) gap in the foil near the feedthru hole (see Detail B, Figure 3). Remove the solder from the feedthru hole.
- ❑ 5. Remove the four (4) spare jumper pins near A3J2 (J2) by unsoldering both the top and bottom sides of the pins. Remove excess solder from the holes. See Figure 2 and Detail A of Figure 3. Remove the solder from the feedthru hole in the thick foil path under A3J1 (J1).
- ❑ 6. Locate the position for connector A3J2 (see Figure 2). Remove the solder from the holes in the board. While viewing the top (component) side of the board, position the right angle PCB connector (supplied) so that the pins point toward the center of the board. Using the supplied foam tape, cut a spacer to be added between the plastic foot of the connector and the circuit board (see Detail D of Figure 3). Insert connector in holes and solder in place.
- ❑ 7. Solder the supplied 10 ohm resistors, R1 and R2 in the locations specified in Detail A of Figure 3. R1 will go from A3J2, pin 1 to the leftmost spare jumper pin hole. R2 goes from A3J2, pin 2 to the second spare jumper pin hole.
- ❑ 8. Solder one end of C1 to R3 (supplied). Solder the components in the locations shown in Detail A of Figure 3. These components go from the leftmost spare jumper pin hole to the hole in the thick foil under A3J1.
- ❑ 9. Solder a piece of supplied wire from the junction of R1 and R3 to the feedthru hole under R37. Refer to Details A and B of Figure 3.

**Important:** To guard against damage to the jumper wire, Do Not route the wire over components or through holes.
- ❑ 10. Remove the solder from the feedthru hole located near the number "8" of the D68 component designator. Refer to Figure 2 and Detail C of Figure 3.

- ❑ 11. Solder a piece of the supplied wire from the spare jumper pin end of R2 to the feedthru hole unsoldered in the previous step. See Details A and C of Figure 3.

**Important:** To guard against damage to the jumper wire, Do Not route the wire over components or through holes.

- ❑ 12. Using a small amount of adhesive, attach the wires to the bottom side of the board at the locations shown in Figure 3.
- ❑ 13. Viewing the top side of the board, locate the label with the Board Part Number. Using the table below, select the proper new label and place it over the existing label. Repeat for the Spare Parts board number.

	1388B-AV10	1388B-AV20, 40	1388-AX60
Existing Board Number	113247	112273	112273
"New" Board Number	122931	122932	122932
Existing Spare Parts Number	112360	113325	110368
"New" Spare Parts Number	122933	122934	122934

- ❑ 14. Modify the controller nameplate to signify the A06 option by adding "-A06" to the model number with a permanent type marking pen.  
Example: 1388B-AV40-A06
- ❑ 15. Replace and secure board. Replace connectors and front panel. Check for proper operation.

**Figure 1**  
**Schematic Diagram of Conversion**

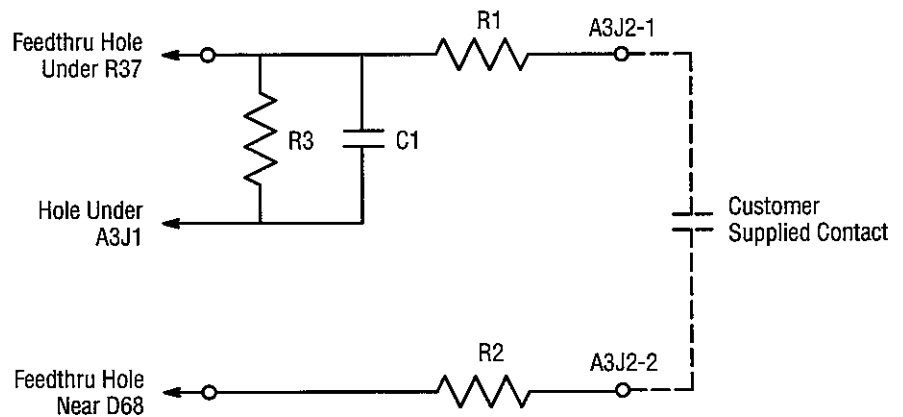
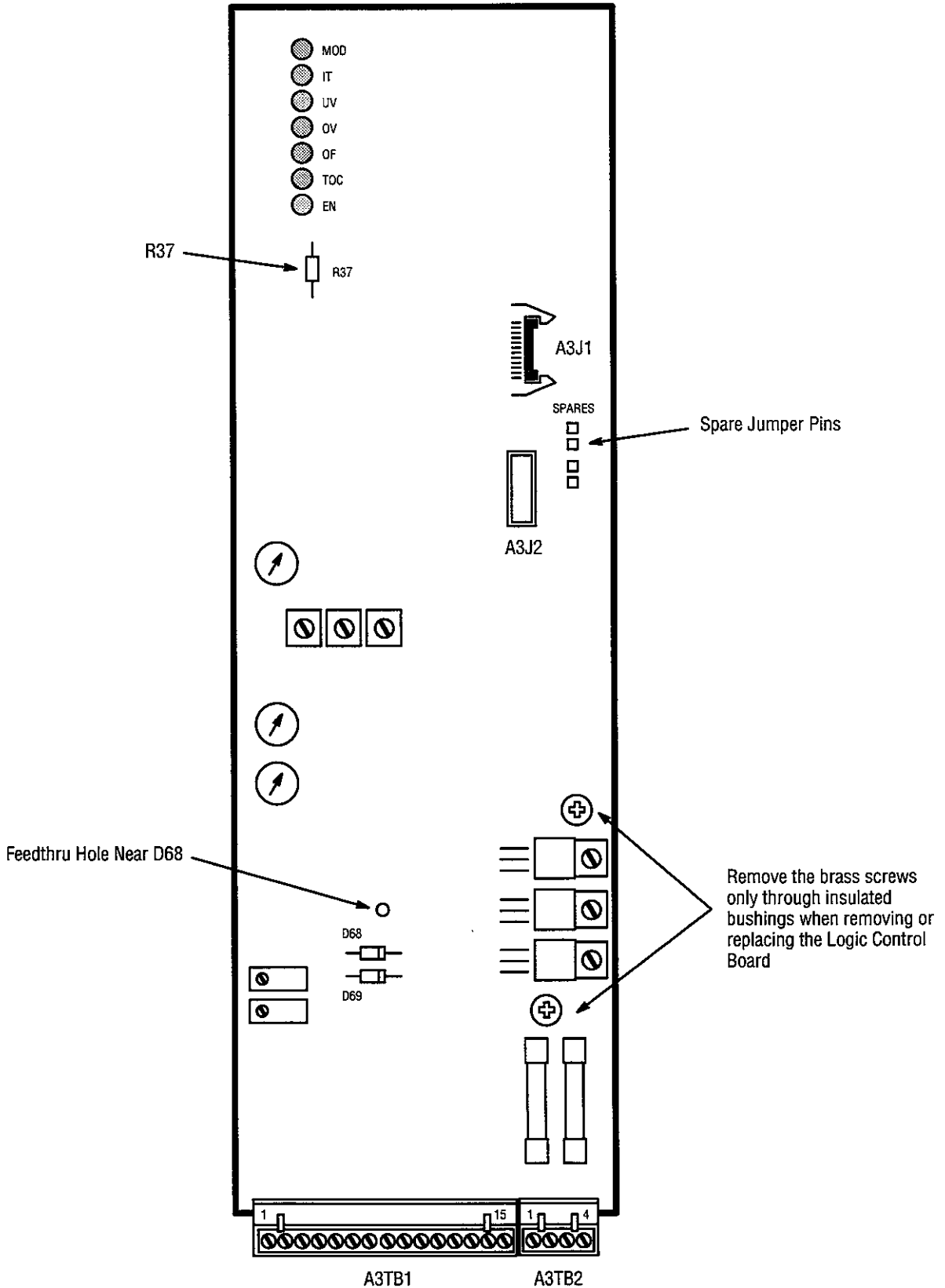
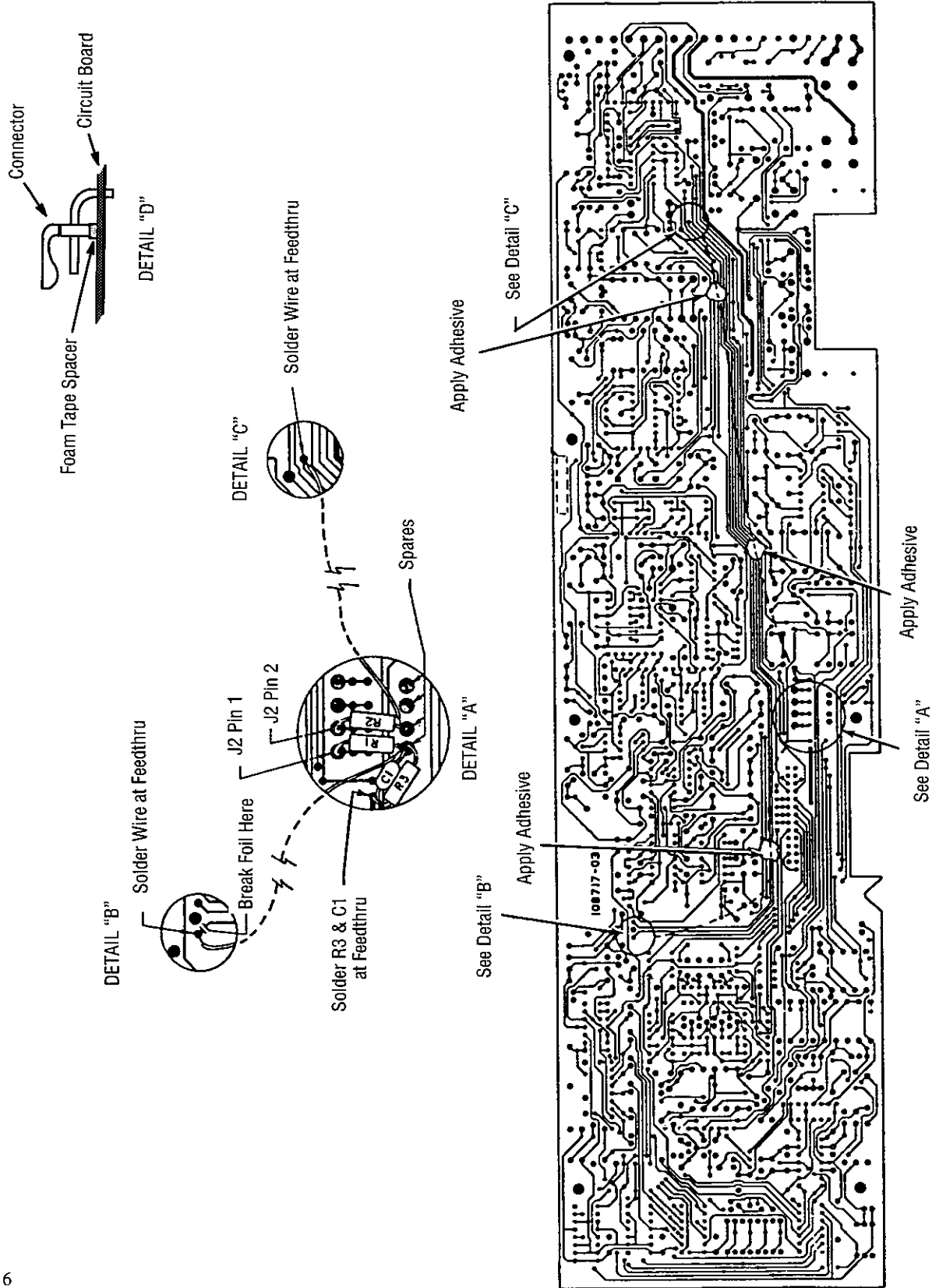


Figure 2  
Logic Control Board, Component Side



**Figure 3**  
 Logic Control Board, Foil Side



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