



KBVF Multi-Speed Board Installation, Wiring, and Operating Instructions

This document is supplied with the KBVF Multi-Speed Board (Part No. 9503).

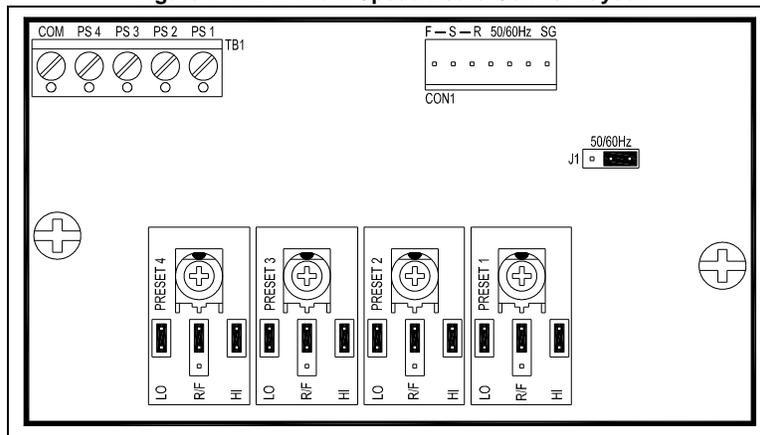


Warning! Before installing the Multi-Speed Board onto the KBVF, disconnect the AC power and wait until the "PWR" and "ST" LEDs are no longer illuminated.

IMPORTANT: The KBVF Multi-Speed Board Data Sheet D-802, KBVF Installation and Operation Manual, and these instructions must be read and understood before attempting to operate this control. For further assistance, contact our Sales Department at 954-346-4900 or Toll Free at 800-221-6570 (outside Florida).

Tools required: small wire cutter and small flat blade screwdriver.

Figure 1 - KBVF Multi-Speed Board Control Layout



1 Removing and Modifying the Finger-Safe Cover (FSC) on the KBVF - See Figure 2.

If using the FSC, it needs to be modified to install the MSB, as described below. If the FSC is not used, proceed to Section 2, on page 2.

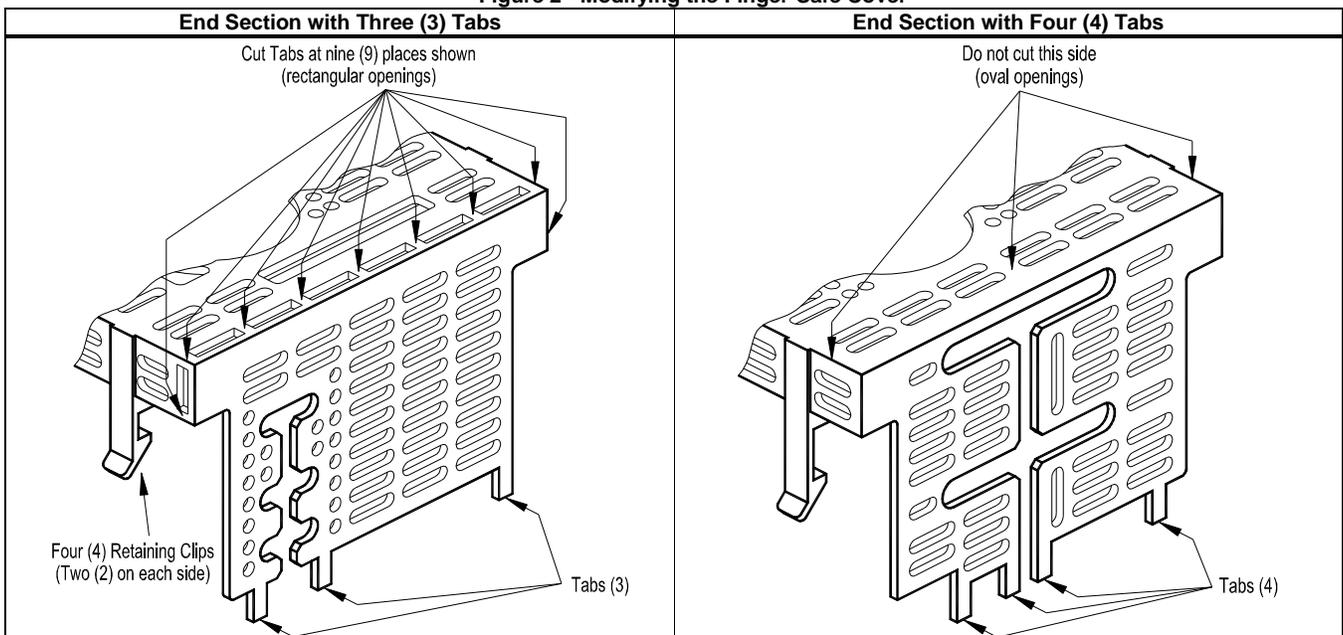
1.1 Remove the FSC, by gently lifting up on all four (4) retaining clips.

1.2 Using cutters, cut off the end section with three (3) Tabs at nine (9) places. Do not cut off the end section with four (4) Tabs.

1.3 Before installing the FSC onto the KBVF, make all connections from the MSB to the KBVF, as described in Section 3, on page 2.

Note: On some KBVF models, the FSC is supplied with a separate side panel which is already removed.

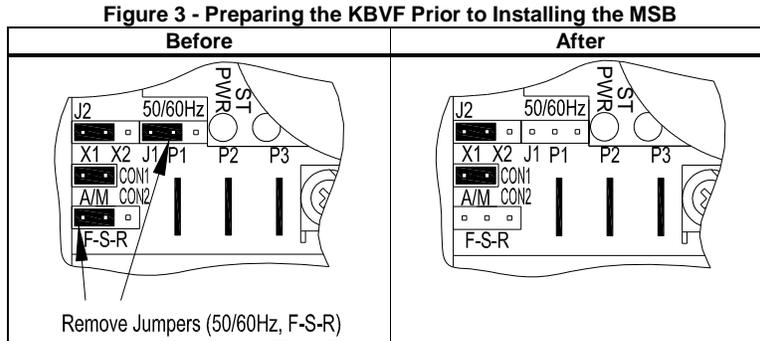
Figure 2 - Modifying the Finger-Safe Cover



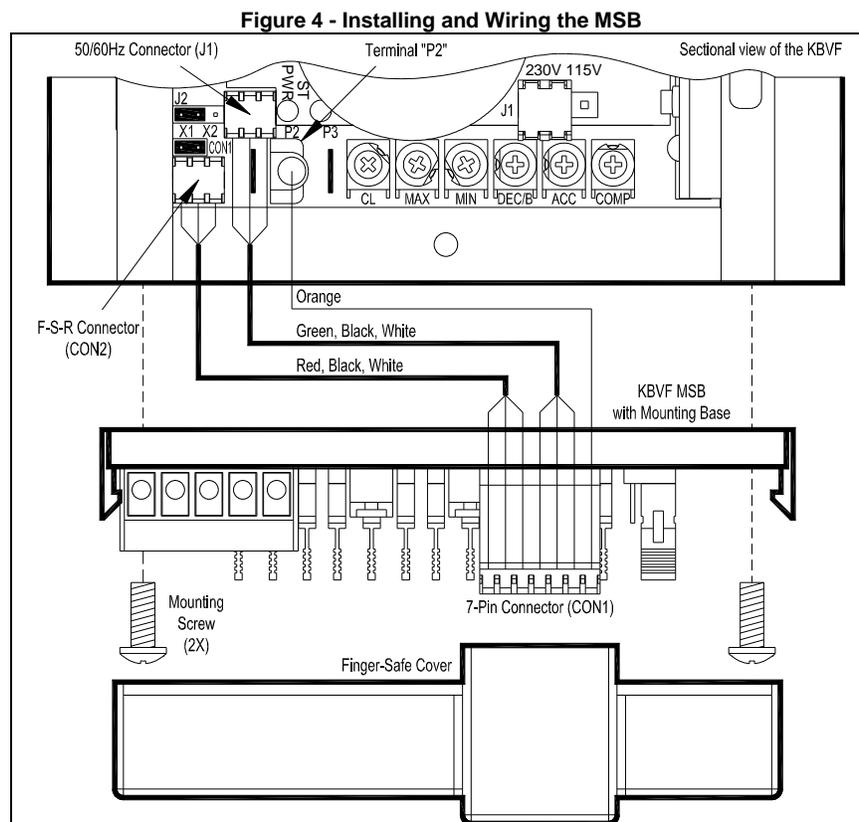


KBVF Multi-Speed Board Installation, Wiring, and Operating Instructions

- 2 Preparing the KBVF Prior to Installing the MSB - See Figure 3.**
Remove and discard the jumpers that are installed on J1 (50/60Hz) and CON2 (F-S-R) on the KBVF.



- 3 Installing and Wiring the MSB - See Figure 4.**
- 3.1 Insert the two 6-32 X 1/2" screws (provided) through the mounting holes on the MSB and align them with the threaded mounting holes on the side of the heat sink of the KBVF (located on the side nearest the trim pots).
 - 3.2 Using the flat blade (or Phillips) screwdriver, gently tighten the two screws to secure the MSB to the heat sink (8 in-lbs max.). Do not overtighten.
 - 3.3 Install the connector with green/black/white wires onto J1 (50/60Hz).
 - 3.4 Install the connector with red/black/white wires onto CON2 (F-S-R).
 - 3.5 Install the terminal with orange wire onto Terminal "P2".





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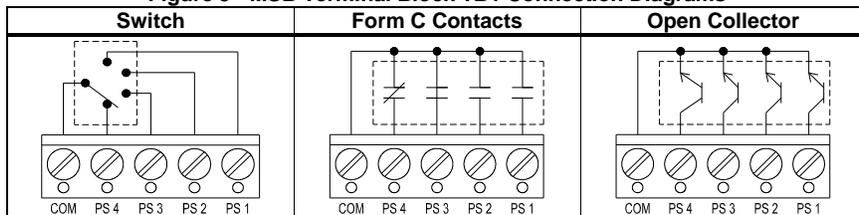
4 MSB Operating Instructions

4.1 A preset speed is selected with a contact closure or open collector wired between "COM" and either "PS 1", "PS 2", "PS 3", or "PS 4" of Terminal Block TB1. Wire the contact or open collector as shown in Figure 5.

Wire Gauge Range (AWG - Cu): 24 - 14. Maximum Tightening Torque: 3.5 in-lbs.

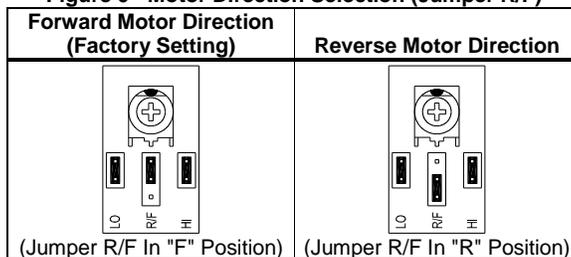
(Note: The maximum operating current for each preset is 1.5 mA DC.)

Figure 5 - MSB Terminal Block TB1 Connection Diagrams



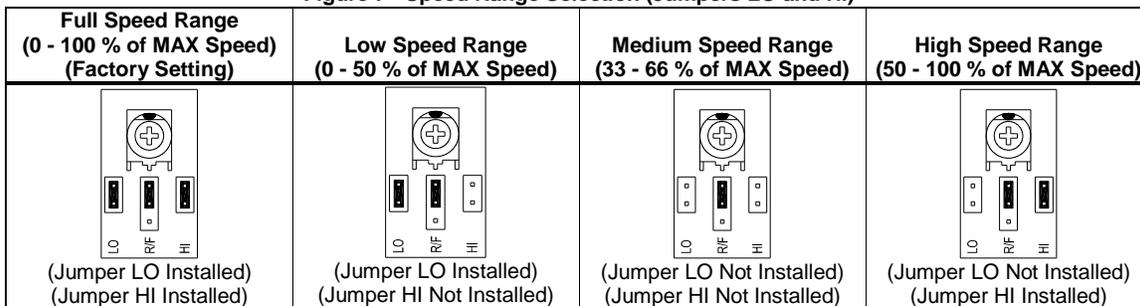
4.2 Motor direction for each preset is selected by the position of Jumper R/F (Reverse/Forward). All presets have been factory set for Forward Motor Direction (Jumpers R/F set to the "F" position). See Figure 6.

Figure 6 - Motor Direction Selection (Jumper R/F)



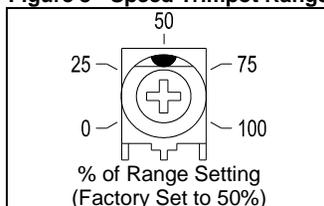
4.3 To improve the resolution of the trim pots, several ranges are provided. The motor speed range for each preset is selected with Jumpers HI and LO. All speed range jumpers have been factory set for Full Speed Range (Jumpers LO and HI installed). See Figure 7. **(Note: The maximum speed is based on the MAX Trimpot setting.)**

Figure 7 - Speed Range Selection (Jumpers LO and HI)



4.4 The speed for each preset can be fine tuned using the adjustable trim pots. All trim pots have been factory set for 50% speed. See Figure 8. **(Note: The maximum speed is based on the MAX Trimpot setting.)**

Figure 8 - Speed Trimpot Range





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4.5 Motor frequency is selected using J1 (50/60Hz) on the MSB **and** J2 (X1, X2) on the KBVF. The control is factory set to operate 60 Hz motors (J1 is factory set to the "60Hz" position and J2 is factory set to the "X1" position). See Figure 3. To operate 50 Hz motors, set J1 to the "50Hz" position. (Be sure that J2 is set to the "X1" position.) See Figure 9.

Overspeed Mode: To operate 60 Hz motors up to 120 Hz, be sure that J1 is set to the "60Hz" position and set J2 to the "X2" position. To operate 50 Hz motors up to 100 Hz, set J1 to the "50Hz" position and set J2 to the "X2" position.

Note: In Overspeed Mode, the motor will produce full rated torque up to the motor's rated frequency. Operating the motor above it's rated frequency will linearly reduce the motor torque to 50% at full output frequency (120 Hz for 60 Hz motors and 100 Hz for 50 Hz motors).

Figure 9 - Motor Frequency Selection

Motor Frequency Rating	J1 on the MSB	J2 on the KBVF
60 Hz *	50/60Hz 	 X1 X2
50 Hz	50/60Hz 	 X1 X2
120 Hz	50/60Hz 	 X1 X2
100 Hz	50/60Hz 	 X1 X2

* Factory setting.