MagneTek Drives & Systems

For Saber 3202
DC Drives

VOLTAGE/CURRENT (V/I) FOLLOWER MODIFICATION

PCB P/N 46S02451-0010

INTRODUCTION

This modification PCB is one of a series available for the Saber 3202 drive. It consists of components necessary for modifying the basic controller for the Voltage/Current (V/I) Follower function. It also includes modification diagrams for the basic Saber 3202 manual.

DESCRIPTION

The V/I Follower modification translates an externally provided voltage or current signal (selected by switch 1SS-1; open for voltage, closed for current) to an output usable as a speed reference signal. The input signal is single ended and ranges from 5V to 220 VDC, or 5V to 220 VAC, and the maximum input current ranges from 5mA to 50mA.

When placed in the AUTO mode of operation, the DC motor speed will follow the external source at a ratio determined by the RATIO pot. When placed in the MANUAL mode of operation, the DC motor speed is controlled by the SPEED potentiometer. When the external source is AC, rectification and filtering are added to the circuit by the closure of switches 1SS-2 and 1SS-3.

Below is a listing of the potentiometers located on the V/I Follower modification PCB, and a description of their functions.

1. CALIBRATION FINE and CALIBRATION COARSE adjustments - provided to rescale the input signal to produce -7.50V at the output for maximum input. The range of these adjustments are:

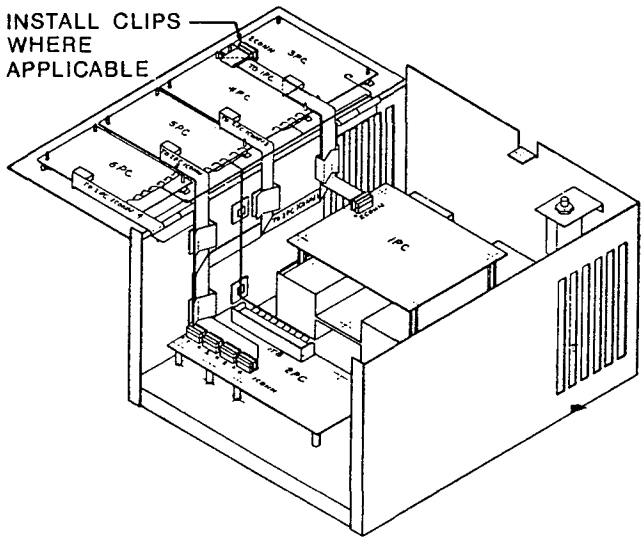

Figure 1. Layout

A. The CALIBRATION FINE potentiometer provides amplifier gains from 0 to .21.

B. The CALIBRATION COARSE potentiometer provides amplifier gains from 0 to 10.6.

2. OFFSET/TRACKING adjustment - sets the output to a minimum desired level with a minimum source input. The range of adjustment is from 0% to ±25% of the full scale input.

3. RATIO adjustment sets the drive speed to follow an external source. The

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range of this ratio adjustment is from 0% to 130% of top speed.

E-STOP: The E-STOP (Emergency Stop) push button is an optional feature. If present, it provides an alternate method of stopping the motor. The push button may be mounted either in the Operator's Control Station (OCS) or in any optimum location selected by the user.

DBR: The DBR (Dynamic Braking Resistor) is also an optional feature installed at time of manufacture.

When the STOP or E-STOP push button is pressed, relay switching places the DBR across the motor armature bringing the motor to a very rapid stop. During this period, the motor acts as a generator and the rotational energy is dissipated by the DBR in the form of heat.

INSTALLATION: (See Figure 1)

WARNING

REMOVE ALL INPUT POWER TO DRIVE BEFORE INSTALLING THIS MODIFICATION.

Install this modification PCB into any available modification position (4PC, 5PC, or 6PC) as shown in Figure 1, Layout.

If E-Stop is not present, the customer may install an E-Stop by removing the jumper between 7TB-7 and 7TB-8; and installing a normally closed push button between 7TB-7 and 7TB-8. The E-Stop push button may be supplied by the customer or else ordered from MagneTek Drives & Systems.

INTERCONNECTION

There are many combinations of modifications and optional features available with the V/I Follower modification. The relay logic and interconnection diagrams, as well as the jumpers on 1TB through 5TB, will change according to which combination you have.

To cover all possibilities, each modification kit consists of separate and unique relay logic and interconnection diagrams for each possible combination. The V/I Follower modification kit contains the interconnection diagrams listed below. Place a check alongside the one which pertains to your drive.

IMPORTANT

Use only the diagram which illustrates your drive with BOTH new and previously installed modifications. Remaining diagrams may be set aside for future use or discarded.

☐	V/I FOLL, E-STOP	02Y00025-0324
☐	THREAD, V/I FOLL, E-STOP	02Y00025-0310
☐	THREAD, V/I FOLL, CONTR STOP, E-STOP *	02Y00025-0311
☐	JOG, V/I FOLL, E-STOP	02Y00025-0314
☐	JOG, V/I FOLL, CONTR STOP, E-STOP *	02Y00025-0315
☐	THREAD/JOG, V/I FOLL, E-STOP	02Y00025-0319
☐	THREAD/JOG, V/I FOLL, CONTR STOP, E-STOP *	02Y00025-0320
☐	CONTR STOP, V/I FOLL, E-STOP	02Y00025-0323
☐	THREAD, JOG, V/I FOLL, E-STOP **	02Y00025-0328

* These combinations cannot be used in a reversing Controller, due to the Anti-Plug PCB.

** To use this combination in a reversing Controller, the Thread/Jog modification must be used in place of the separate Thread and Jog modifications.

There are two types of interconnections to be made; Internal and External. Internal connections consist of wiring within the Saber 3202 controller. External connections consist of wiring between the controller and Operator Control Station (OCS). The interconnections are described below.

Internal

Route and dress the ribbon cable as shown in Figure 1 - Layout, and connect it to 2PC-1CONN (position 2, 3, or 4). Install locking clip.

Route and dress the individual wires (E1, E2, E3,) as indicated, and connect as described below.

WIRE NUMBER	CONNECT TO
E1	ENCLOSURE 8TB-4
E2	2PC-1TB-11
E3	2PC-2TB-5

IMPORTANT

Both internal and external connections must be completed as illustrated in the Relay Logic and Interconnection diagram for your drive. Installation of multiple modification kits may require the REMOVAL of various terminal jumpers. Always verify that the wire/jumper connections are completed as illustrated in the interconnection diagram specific to your drive before applying input power.

External

Connect the OCS to the controller as shown on the appropriate interconnection diagram.

ADJUSTMENTS

After performing the adjustments in the Saber 3202 manual, adjust the modification PCB as follows:

IMPORTANT

Adjust the Manual Speed mode of operation before the Auto Speed mode.

1. Place the MANUAL/AUTO switch to AUTO and set the following pots:

CALIBRATION FINE	fully CCW
CALIBRATION COARSE	5% CW
OFFSET/TRACKING	mid range
RATIO	75% CW

2. Place switches 1SS-1, 1SS-2 and 1SS-3 according to the Reference Input at terminal E1 as stated in the table below:

	1SS-1	1SS-2	1SS-3
Voltage Input	OPEN		
Current Input	CLOSE		
AC Input		CLOSE	CLOSE
DC Input		OPEN	OPEN

3. Apply power to the drive and adjust the OFFSET/TRACKING pot for 0 VDC at wire E4 relative to 2TP (common).

4. Start the drive and apply the normal maximum operating input signal to the modification and adjust the CALIBRATION COARSE pot for just below +3.75 VDC at 1TP relative to 2TP (common).

5. Slowly adjust CALIBRATION FINE pot for +3.75 VDC at 1TP. Now set RATIO pot for maximum desired speed.

CAUTION

DO NOT EXCEED MAXIMUM DRIVE SPEED RATING.

MODIFICATION RECORDS

Place this instruction sheet, with the appropriate relay logic and interconnection diagram, in the back of your Saber 3202 manual.

TROUBLESHOOTING

If other modifications have been installed, be sure to troubleshoot them thoroughly before discarding this option as faulty.

1. Start the drive and place the MANUAL/AUTO switch to AUTO.

2. Refer to the schematic diagram. If a DC signal input is applied at terminals 8TB-4 and 8TB-3, check for proper polarity. If polarity is wrong, correct as required.

3. Check ribbon cable from 1CONN on 2PC to the modification PCB. Relay 7CR should not be energized when in the Auto mode.

4. Are 1SS settings correct? If drive operation is still not correct, replace the V/I Follower PCB.