MagneTek Drives & Systems

For Saber 3202
DC Drives

THREAD/JOG MODIFICATION

PCB P/N 46S02445-0030

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 Thread and Jog functions. It also includes modification diagrams for the basic Saber 3202 manual.

DESCRIPTION

The Thread/Jog modification enables the DC motor to rotate at either a Jog speed or a Thread speed. The Jog and Thread functions are described below.

Jog Function

The Jog modification enables the DC motor to accelerate rapidly (without LAC control) to the speed set by the JOG ADJUST pot and rotate at that speed as long as the JOG push button on the Operator Control Station (OCS) is held depressed. The motor will continue to run at Jog speed until the JOG push button is released, at which time the motor will coast to a stop. Normal motor speed may then be obtained by pressing the RUN push button. If the drive is the reversing type, the motor must coast to a complete stop in order for the RUN push button to have any effect.

In the Jog mode of operation, the Jog output replaces the LAC output reference voltage to the Tach Feedback Speed Regulator or Armature Voltage Regulator (3PC). The JOG ADJUST setting determines the amount of reference voltage supplied to the voltage comparator node. Component values for the Jog modification have been selected so Jog speed may be adjusted from zero to 45% of top speed.

This modification circuit operates through the contacts of two relays (3R and 3RA) on the modification PCB. As long as the JOG push button is held depressed, relay 3RA contacts inject the Jog output as a speed reference into the voltage comparator node. Relay 3CR acts as an auxiliary Run relay, to apply the SPEED pot reference signal to the regular LAC circuit.

Thread Function

The Thread modification enables the DC motor to accelerate under LAC control to the speed set by the THREAD ADJUST pot after the THREAD push button on the Operator Control Station (OCS) has been pressed, and continue to rotate at Thread speed until the RUN or STOP push button is pressed. If the STOP push button is pressed, the motor will coast to a stop.

If the drive is non-reversing, when the RUN push button is pressed, normal motor speed will be obtained.

If the drive is the reversing type, when the STOP push button is depressed, the motor will coast to a stop. Normal motor speed may then be obtained by pressing the RUN push button after the motor has come to a complete stop.

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In the Thread mode of operation, the Thread output replaces the SPEED pot LAC input reference voltage to the Tach Feedback Speed Regulator or Armature Voltage Regulator (3PC). The THREAD ADJUST setting determines the amount of reference voltage supplied to the regulator LAC circuit. Component values for the Thread modification have been selected so Thread speed may be adjusted from zero to 45% of top speed.

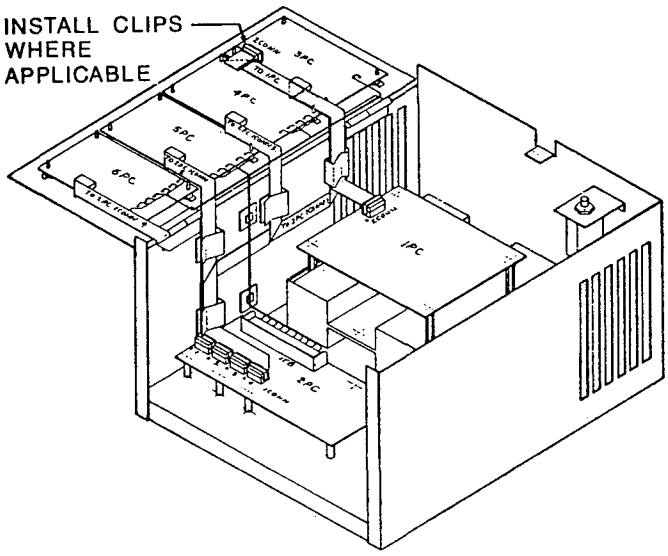

Figure 1. Layout

This modification circuit operates through the contacts of relay 2CR on the modification PCB. When the THREAD push button is pressed, relay contacts interrupt the SPEED pot reference input and apply the Thread output as LAC input reference, and latch the relay to keep the Thread reference applied until the STOP or RUN push button is pressed to break the latching circuit.

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 Thread/Jog 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 Thread/Jog 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.

_	THREAD/JOG, E-STOP	02Y00025-0318
_	THREAD/JOG, V/I FOLL, E-STOP	02Y00025-0319
_	THREAD/JOG, V/I FOLL, CONTR STOP, E-STOP *	02Y00025-0320
_	THREAD/JOG, CONTROLLED STOP, E-STOP	02Y00025-0321

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

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 as indicated, and connect per the following listing.

WIRE NUMBER	CONNECT TO
A1	2PC-1TB-8
A3	2PC-1TB-3
A4	2PC-1TB-9
A5	2PC-1TB-6
A6	2PC-1TB-11
A7	2PC-3TB-4
A8	2PC-1TB-1
A9	2PC-1TB-7
A10	2PC-2TB-2
A11	2PC-1TB-2

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:

Jog Function

1. Turn the SPEED pot fully counter-clockwise (CCW) and apply power to the drive.

2. Turn the JOG ADJUST pot fully CCW, then press and hold the JOG push button.

NOTE

The drive will continue to run at Jog speed until the JOG push button is released.

3. While holding the JOG push button, adjust the JOG ADJUST pot clockwise (CW) as required to obtain desired Jog speed.

4. Release the JOG push button, press the RUN push button, and advance the SPEED pot to accelerate the drive to run speed.

5. If the desired action cannot be obtained, perform the troubleshooting procedure.

Thread Function

1. Turn the SPEED pot fully counter-clockwise (CCW) and apply power to the drive.

2. Turn the THREAD ADJUST pot fully CCW and press the THREAD push button.

3. Adjust the THREAD ADJUST pot clockwise (CW) as required to obtain desired THREAD speed.

4. Press the RUN push button and then advance the SPEED pot to accelerate the drive to run speed.

5. If the desired action cannot be obtained, perform the troubleshooting procedure.

MODIFICATION RECORDS

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

TROUBLESHOOTING

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

Jog Function

1. REMOVE INPUT POWER, and then insure all required interconnections and jumpers are properly installed. Check the ribbon cable from 1CONN on 2PC to the modification PCB.

2. Place a DC voltmeter between 3CRA pin(8) and common (2PC-4TB-1). Turn JOG ADJUST pot (2RH) fully clockwise.

3. Apply power and depress and hold the JOG push button. Relay 3CR should energize. As long as the JOG push button is depressed, relay 3CRA should be energized. Verify this by reading +10 VDC ±5% on the meter connected in Step 2. If voltage is incorrect, replace the Thread/Jog PCB.

4. If drive run mode does not work after the Thread/Jog modification is installed, place the meter in Step 2 between 2PC-4TB-4 and common. Set SPEED pot at 100% and press the RUN push button. Relay 3CR should be energized. Verify this by reading +10 VDC ±5% on the meter. If incorrect, replace the Thread/Jog PCB.

Thread Function

1. REMOVE INPUT POWER, and then insure all required interconnections and jumpers are properly installed. Check the ribbon cable from 1CONN on 2PC to the modification PCB.

2. Place a DC voltmeter, capable of measuring -10 VDC, across the wiper of the THREAD ADJUST pot and common (2PC-4TB-1).

3. Apply power and then press the THREAD push button; relay 2CR should energize. Adjust the THREAD ADJUST pot from fully CCW to fully CW; at fully CCW, the DC voltmeter (Step 2) will measure 0 VDC. As the pot is turned CW, the voltage will change in a negative direction, until at the full CW position, a voltage of -10 VDC ±5% is attained.

4. If the conditions of Step 3 are not attained, replace the Thread/Jog PCB.