

## CONTROLLED STOP MODIFICATION

(3306 KITS: MODEL 73452Q, MODEL 73497)

PCB 46S02277-0010 SCHEMATIC 45S02277-0010

### DESCRIPTION

This modification is one of a series available for Louis Allis Saber DC drives. It consists of components necessary for modifying the basic Controller for the controlled stop function. It also includes modification overlays for the basic schematic in the Controller instruction manual.

This modification operates in conjunction with the Linear Accel/Decel circuit of the Volt/Speed Main PCB (3306) or the Regulator PCB (3412). The modification consists of an auxiliary relay for holding in the run circuit and an electronically operated relay for monitoring the tachometer or armature voltage signal. When the STOP push button is pressed, the drive linearly decelerates from run speed (or thread speed if so equipped) to a preset low speed where the voltage sensitive relay trips and the drive coasts or brakes to a stop. The low speed trip point can be adjusted from zero to approximately 30% of rated drive speed. If an optional EMERGENCY STOP push button is pressed, the Controlled Stop circuit is bypassed and the drive stops immediately. If jog function is used, the Controlled Stop modification will operate from thread speed.

### INSTALLATION

#### WARNING

REMOVE ALL INPUT POWER TO DRIVE  
BEFORE INSTALLING MODIFICATION KIT.

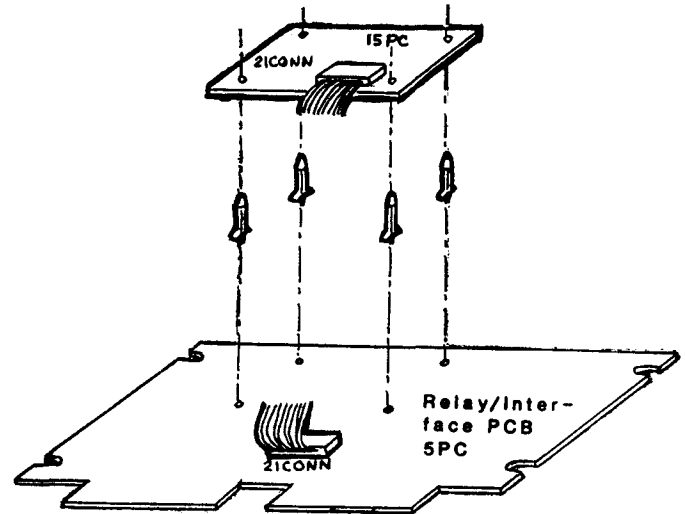


Figure 1.

The modification PCB is to be installed to the Relay/Interface PCB as shown in Figure 1. Installation instructions are contained in the Controller instruction manual.

This modification requires 2TB installed on Relay/Interface PCB. For Kit Model 73452Q, install cable 19CONN between Relay/Interface PCB and Volt/Speed Main PCB, following routing of cable 18CONN. The internal jumper from 5TB-1 to 1TB-18 must be removed, and a jumper installed from 5TB-1 to 2TB-2.

After installing the modification PCB, select and apply the appropriate overlays to the basic schematic diagram as described in the Controller instruction manual.

| CHANGE RECORD |          |             |  | DWG. NO. 02Y00025-0050<br>SHEET 1 OF 8<br>EFF. 10/10/80 (K) |
|---------------|----------|-------------|--|---|
| 1             | STD-1299 | 9/15/81     |  |   |
| 2             | STD-2666 | 2-3-87 RRR  |  |   |
| 3             | STD-2733 | 3-20-87 RRR |  |   |

Unused schematic overlays should be retained for possible future use.

### INTERCONNECTION

Separate interconnection procedures are provided for the Controlled Stop modification used alone or in conjunction with the Thread modification. Select the procedure which applies to the particular application.

#### A. Controlled Stop Without Thread

This modification requires that a normally closed EMERGENCY STOP push button be installed to the operator control station. Perform equipment interconnection according to the Controller instruction manual but substitute wiring in Figure 2 and Table 1 for operator control station wiring.

#### B. Controlled Stop With Thread

This modification requires that a normally closed EMERGENCY STOP push button and a normally open THREAD push button be installed to the operator control station. Perform equipment interconnection according to the Controller instruction manual but substitute wiring in Figure 3 and Table 2 for operator control station wiring.

### ADJUSTMENTS

After performing the adjustments in the Controller instruction manual, adjust the modification PCB as follows:

1. Turn the TRIP SPEED potentiometer to midrange, turn the SPEED control to zero, and start the drive.
2. Turn the SPEED control fully clockwise. Press the STOP push button and note the low speed point. The trip point is the speed at which coasting or dynamic braking begins.
3. Adjust the TRIP SPEED potentiometer as required to obtain desired low speed

trip point. Turning the potentiometer clockwise causes trip at higher speed.

4. If desired settings cannot be obtained, perform modification kit troubleshooting procedures.

### MODIFICATION RECORDS

After completing installation of all modifications:

A. Modify the Controller identification number using Method 1 in the Controller instruction manual. Insert the appropriate designator in block 4.

B. If not already present, affix the OPTION ADJUSTMENTS label to the inside of the Power Cube cover, to the right of the STANDARD ADJUSTMENTS label.

C. On the OPTION ADJUSTMENTS label, record the final settings of all pots or switches on this modification.

D. Insert this instruction sheet immediately behind the front cover of the Controller instruction manual.

### TROUBLESHOOTING

Troubleshooting consists of checking the input and output voltages of the circuit.

If other mod boards have been installed, troubleshoot them thoroughly before discarding this board as faulty.

1. If braking action happens prematurely or does not occur at all, check the TRIP SPEED adjustment.
2. Apply AC input power to the Controller and press the RUN push button. Rotate the SPEED control potentiometer fully clockwise.
3. Refer to the schematic diagram of the Controlled Stop PCB and check contacts of 7CR as follows:

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a. Between 2TB-2 and 2TB-4, voltage is zero when RUN or THREAD push button is pressed.

b. Between 1TB-14 and 1TB-18, voltage is zero when RUN or JOG push button is pressed.

c. Between 2TB-11 and 2TB-12, voltage is zero.

If any of the above conditions (when applicable) is not met, replace the Controlled Stop PCB.

4. Check input voltage from 1TB on 15PC to 33TP (common) on the Volt/Speed Main PCB (3306) or 63TP (common) on the Regulator PCB (3412). Voltage should be approximately .9 VDC at rated speed, and should vary with drive speed. If voltage is incorrect, refer to the troubleshooting charts in the Controller instruction manual.

5. Check output voltage from 2TB-11 to 33TP or 63TP. Voltage should be approximately -10 VDC at max input from the speed control potentiometer, and should vary with the setting of the SPEED control potentiometer. If voltage is incorrect, check for faults in the speed control circuitry or replace the Controlled Stop PCB.

6. Press the STOP push button. Voltage from 2TB-11 to 33TP or 63TP should be zero VDC. If not, replace the Controlled Stop PCB.

7. With the STOP push button pressed, check contacts of 6CR as follows:

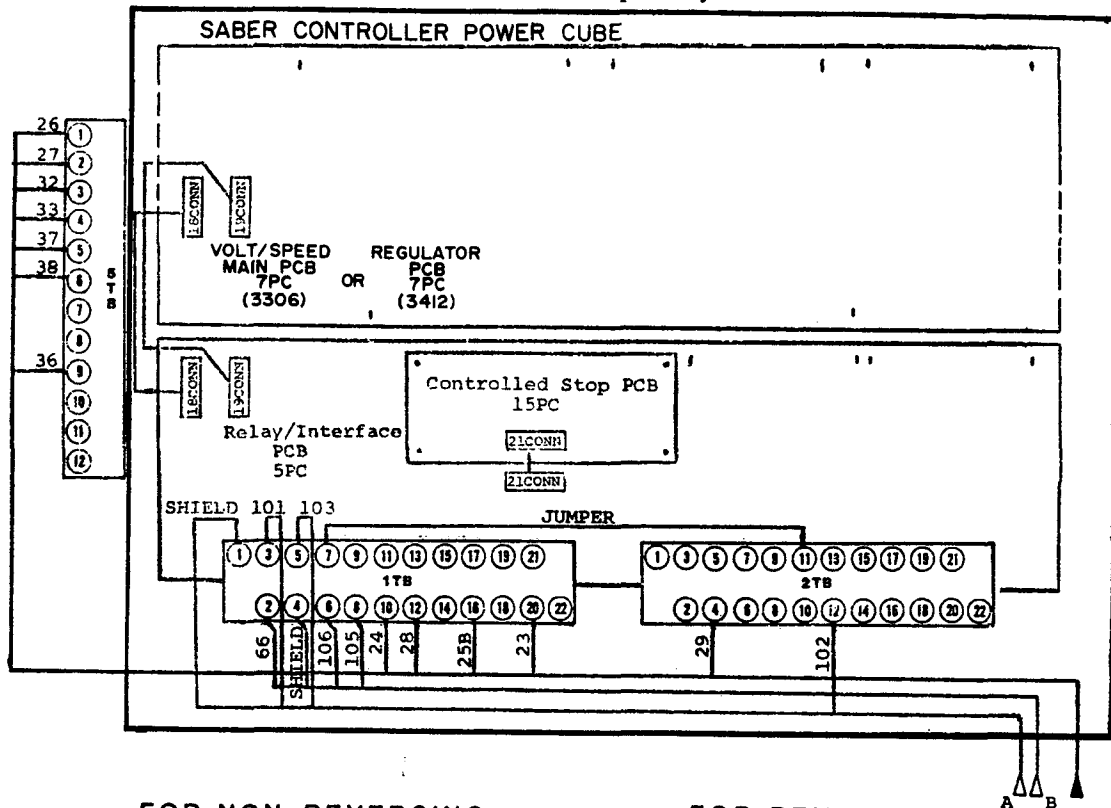
a. Turn TRIP SPEED potentiometer fully counterclockwise. Voltage between 1TB-16 and 1TB-18 should be 115 VAC.

b. Turn TRIP SPEED potentiometer fully clockwise. Voltage between 1TB-16 and 1TB-18 should be 0 VAC.

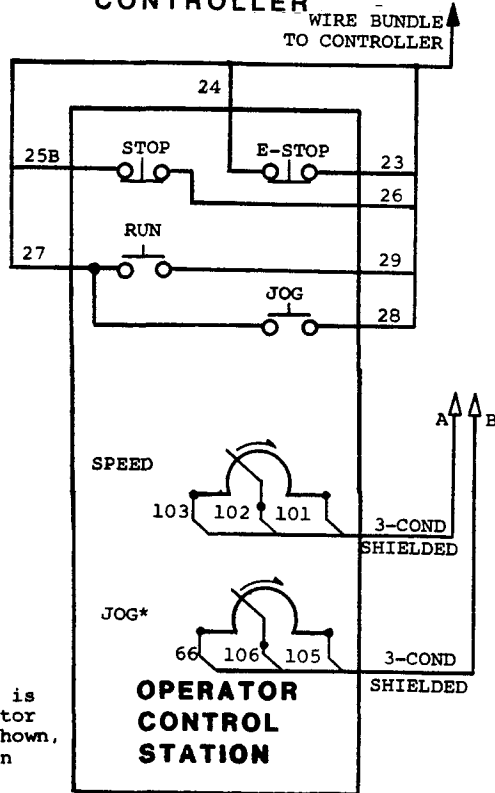
If either condition is not met, replace Controlled Stop PCB.

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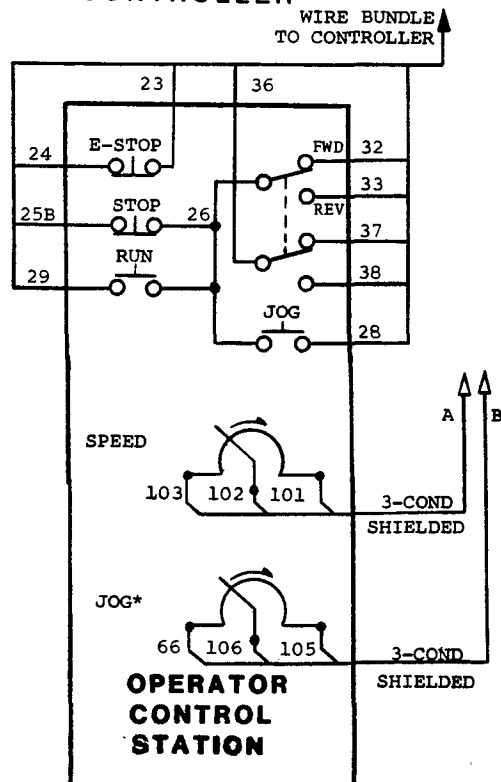
Figure 2. Installation/Interconnection Diagram  
Controlled Stop Only



FOR NON-REVERSING CONTROLLER



FOR REVERSING CONTROLLER



\* If JOG potentiometer is mounted in the Operator Control Station as shown, 2SS on 7PC must be in the OFF position.

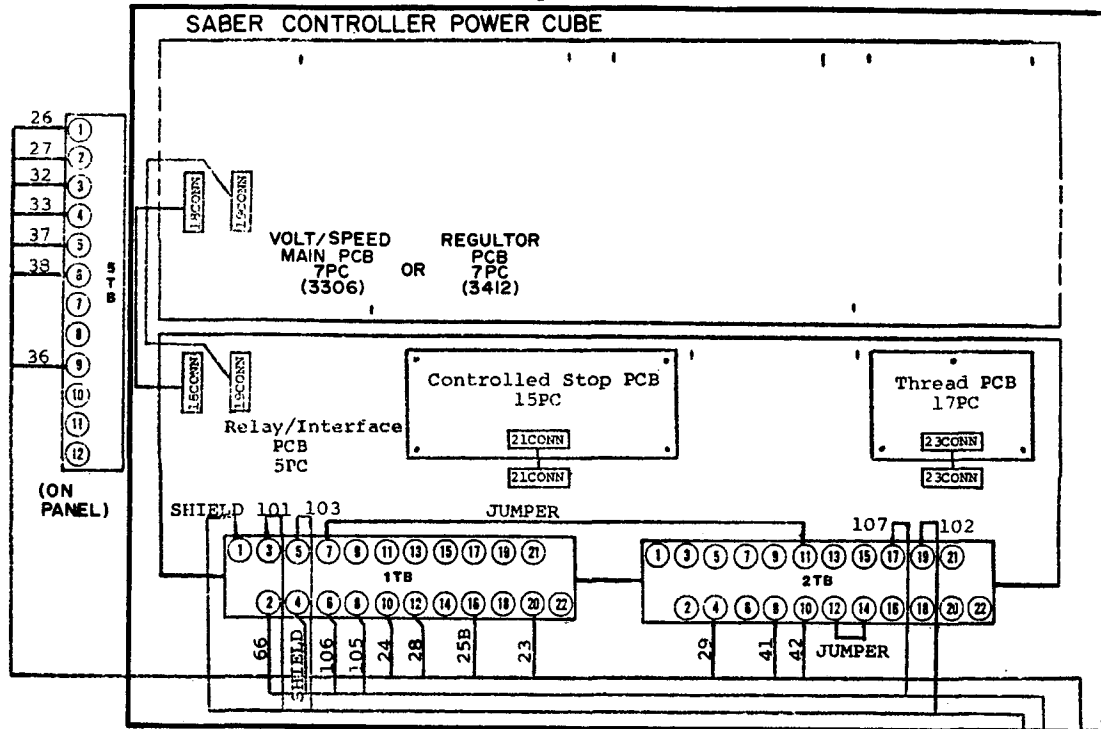
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Table 1. Interconnection Table  
Controlled Stop Only

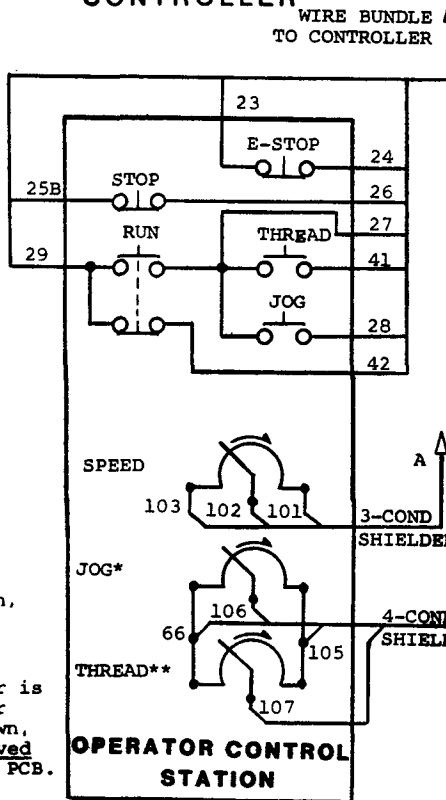
| WIRE NO.                     | FROM                       |                     | TO          |                     | REMARKS  |
|------------------------------|----------------------------|---------------------|-------------|---------------------|--|
|                              | EQUIPMENT                  | TB OR OTHER MARKING | EQUIPMENT   | TB OR OTHER MARKING |  |
| - NON-REVERSING CONTROLLER - |                            |                     |             |                     |  |
| 23                           | E-STOP PB                  |                     | Controller  | 1TB (20)            |  |
| 24                           |                            |                     |             |                     |  |
| 25B                          | STOP PB                    |                     | Controller  | 1TB (16)            |  |
| 26                           |                            |                     |             |                     |  |
| 27                           | RUN PB                     |                     | Controller  | 5TB (2)             |  |
|                              | JOG PB                     |                     |             | Run PB              |  |
| 28                           | JOG PB                     |                     | Controller  | 1TB (12)            |  |
| 29                           | RUN PB                     |                     | Controller  | 2TB (4)             |  |
| 101                          | SPEED Potentiometer        | CW                  | Controller  | 1TB (3)             |  |
| 102                          |                            | Wiper               |             | 2TB (12)            |  |
| 105                          |                            | CCW                 |             | 1TB (5)             |  |
| SHIELD                       | NO CONNECTION              |                     |             | 1TB (1)             | 3-Conductor shielded. See note in Controller manual for connecting shielded cable. |
| 66                           | External JOG Potentiometer | CCW                 | Controller  | 1TB (2)             | 3-Conductor shielded. See note in Controller shielded cable.                       |
| 105                          |                            | CW                  |             | 1TB (8)             |  |
| 106                          | Wiper                      | 1TB (6)             |             |                     |  |
| SHIELD                       | NO CONNECTION              |                     |             | 1TB (4)             |  |
| JUMPER                       | Controller                 | 1TB (7)             | Controller  | 2TB (11)            |  |
| - REVERSING CONTROLLER -     |                            |                     |             |                     |  |
| 23                           | E-Stop PB                  |                     | Controller  | 1TB (20)            |  |
| 24                           |                            |                     |             |                     |  |
| 25B                          | STOP PB                    | Controller          |             | 1TB (16)            |  |
| 26                           | STOP PB                    |                     | FWD/REV Sw. |                     |  |
|                              | RUN PB                     |                     | STOP PB     |                     |  |
|                              | JOG PB                     |                     | RUN PB      |                     |  |
| 28                           | JOG PB                     |                     | Controller  | 1TB (12)            |  |
| 29                           | RUN PB                     |                     | Controller  | 2TB (4)             |  |
| 32                           | FWD/REV Switch             |                     | Controller  | 5TB (3)             |  |
| 33                           |                            |                     |             | 5TB (4)             |  |
| 36                           |                            |                     |             | 5TB (9)             |  |
| 37                           |                            |                     |             | 5TB (5)             |  |
| 38                           |                            |                     |             | 5TB (6)             |  |
| JUMPER                       |                            | Controller          |             | 1TB (7)             | Controller   |
| 101                          | SPEED Potentiometer        | CW                  | Controller  | 1TB (3)             | 3-Conductor shielded. See note in Controller manual for connecting shielded cable. |
| 102                          |                            | Wiper               |             | 2TB (12)            |  |
| 103                          |                            | CCW                 |             | 1TB (5)             |  |
| SHIELD                       | NO CONNECTION              |                     |             | 1TB (1)             |  |
| 66                           | External JOG Potentiometer | CCW                 | Controller  | 1TB (2)             | 3-Conductor shielded. See note in Controller manual for connecting shielded cable. |
| 105                          |                            | CW                  |             | 1TB (8)             |  |
| 106                          | Wiper                      | 1TB (6)             |             |                     |  |
| SHIELD                       | NO CONNECTION              |                     |             | 1TB (4)             |  |

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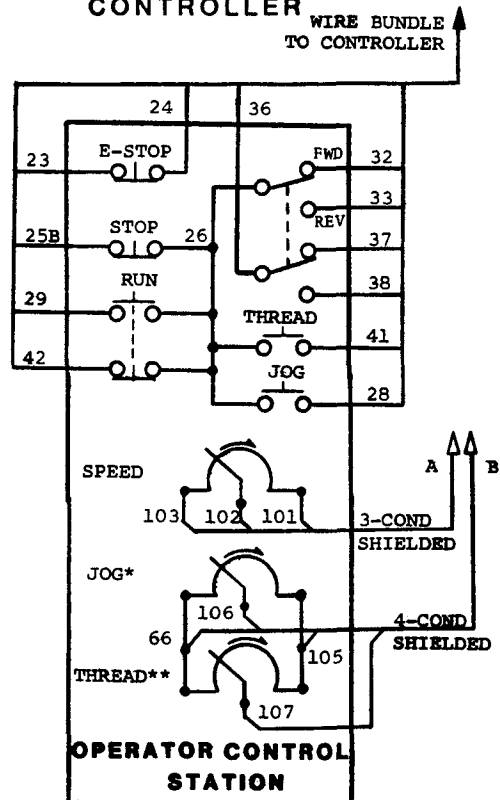
Figure 3. Installation/Interconnection Diagram  
Controlled Stop With Thread



FOR NON-REVERSING CONTROLLER



FOR REVERSING CONTROLLER



\* If JOG potentiometer is mounted in the Operator Control Station as shown, 2SS on 7PC must be in the OFF position.

\*\* If THREAD potentiometer is mounted in the Operator Control Station as shown, the screw must be removed from 1SS on the Thread PCB.

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Table 2. Interconnection Table  
Controlled Stop With Thread

| WIRE NO.                     | FROM                        |                     | TO          |                     | REMARKS |
|------------------------------|-----------------------------|---------------------|-------------|---------------------|---------|
|                              | EQUIPMENT                   | TB OR OTHER MARKING | EQUIPMENT   | TB OR OTHER MARKING |         |
| - NON-REVERSING CONTROLLER - |                             |                     |             |                     |         |
| 23                           | E-STOP PB                   |                     | Controller  | 1TB (20)            |         |
| 24                           |                             |                     |             |                     |         |
| 25B                          | STOP PB                     |                     | Controller  | 1TB (16)            |         |
| 26                           | STOP PB                     |                     | Controller  | 5TB (1)             |         |
| 27                           | RUN PB                      | N.O.                | Controller  | 5TB (2)             |         |
|                              | THREAD PB                   |                     | RUN PB      | N.O.                |         |
|                              | JOG PB                      |                     | THREAD PB   |                     |         |
| 28                           | JOG PB                      |                     | Controller  | 1TB (12)            |         |
| 29                           | RUN PB                      | N.O.                | Controller  | 2TB (4)             |         |
|                              | RUN PB                      | N.C.                | RUN PB      | N.O.                |         |
| 41                           | THREAD PB                   |                     | Controller  | 2TB (8)             |         |
| 42                           | RUN PB                      | N.C.                | Controller  | 2TB (10)            |         |
| JUMPER                       | Controller                  | 1TB (7)             | Controller  | 2TB (11)            |         |
| JUMPER                       |                             | 2TB (12)            |             | 2TB (14)            |         |
| 101                          | SPEED<br>Potenti-<br>ometer | CW                  | Controller  | 1TB (3)             |         |
| 102                          |                             | Wiper               |             | 2TB (19)            |         |
| 103                          |                             | CCW                 |             | 1TB (5)             |         |
| SHIELD                       | NO CONNECTION               |                     |             |                     | 1TB (1) |
| 66                           | Ext JOG Pot                 | CCW                 | Controller  | 1TB (2)             |         |
|                              | Ext THREAD Pot              | CCW                 | Ext JOG Pot | CCW                 |         |
| 105                          | Ext JOG Pot                 | CW                  | Controller  | 1TB (8)             |         |
|                              | Ext THREAD Pot              | CW                  | Ext JOG Pot | CW                  |         |
| 106                          | Ext JOG Pot                 | Wiper               | Controller  | 1TB (6)             |         |
| 107                          | Ext THREAD Pot              | Wiper               |             | 2TB (17)            |         |
| SHIELD                       | NO CONNECTION               |                     |             |                     | 1TB (4) |

(Table Continued)

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Table 2. Interconnection Table  
Controlled Stop With Thread  
(Continued)

| WIRE NO.                 | FROM                |                     | TO          |                     | REMARKS  |
|--------------------------|---------------------|---------------------|-------------|---------------------|--|
|                          | EQUIPMENT           | TB OR OTHER MARKING | EQUIPMENT   | TB OR OTHER MARKING |  |
| - REVERSING CONTROLLER - |                     |                     |             |                     |  |
| 23                       | E-STOP PB           |                     | Controller  | 1TB (20)            |  |
| 24                       |                     |                     |             |                     |  |
| 25B                      | STOP PB             |                     | Controller  | 1TB (12)            |  |
| 26                       | STOP PB             |                     | FWD/REV Sw. |                     |  |
|                          | RUN PB              | N.O.                | STOP PB     |                     |  |
|                          | RUN PB              | N.C.                | RUN PB      | N.O.                |  |
|                          | THREAD PB           |                     | RUN PB      |                     |  |
|                          | JOG PB              |                     | RUN PB      |                     |  |
| 28                       | JOG PB              |                     | Controller  | 1TB (12)            |  |
| 29                       | RUN PB              | N.O.                | Controller  | 2TB (4)             |  |
| 32                       | FWD/REV Switch      |                     | Controller  | 5TB (3)             |  |
| 33                       |                     |                     |             | 5TB (4)             |  |
| 36                       |                     |                     |             | 5TB (9)             |  |
| 37                       |                     |                     |             | 5TB (5)             |  |
| 38                       |                     |                     |             | 5TB (6)             |  |
| 41                       | THREAD PB           |                     | Controller  | 2TB (8)             |  |
| 42                       | RUN PB              | N.C.                | Controller  | 2TB (10)            |  |
| JUMPER                   | Controller          | 1TB (7)             | Controller  | 2TB (11)            |  |
| JUMPER                   |                     | 2TB (12)            |             | 2TB (14)            |  |
| 101                      | SPEED Potentiometer | CW                  | Controller  | 1TB (3)             | 3-Conductor shielded. See note in Controller manual for connecting shielded cable. |
| 102                      |                     | Wiper               |             | 2TB (19)            |  |
| 103                      |                     | CCW                 |             | 1TB (5)             |  |
| SHIELD                   | NO CONNECTION       |                     |             | 1TB (1)             |  |
| 66                       | Ext JOG Pot         | CCW                 | Controller  | 1TB (2)             | 4-Conductor shielded. See note in Controller manual for connecting shielded cable. |
|                          | Ext THREAD Pot      | CCW                 | Ext JOG Pot | CCW                 |  |
| 105                      | Ext JOG Pot         | CW                  | Controller  | 1TB (8)             |  |
|                          | Ext THREAD Pot      | CW                  | Ext Jog Pot | CW                  |  |
| 106                      | Ext JOG Pot         | Wiper               | Controller  | 1TB (6)             |  |
| 107                      | Ext THREAD Pot      | Wiper               |             | 2TB (17)            |  |
| SHIELD                   | NO CONNECTION       |                     |             | 1TB (4)             |  |

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