

DANCER POSITION UNWIND OPTION ASSEMBLY

46S02371-0230 SCHEMATIC 45S02371-0230

DESCRIPTION

This option is one of a series available for the Louis Allis Saber DC drive. It consists of components necessary for modifying the basic controller to enable the drive to maintain position of a dancer on a moving process web or line.

The option compares an external DANCER potentiometer with the internal DANCER POSITION potentiometer setting and generates a current reference signal proportional to the difference in settings. The current reference signal varies the torque produced at the output shaft of the rotating equipment to maintain a constant dancer position.

In theory, the dancer position signal is the reference or desired normal maintained riding location of the dancer, whereas, the dancer signal is the

feedback or actual location. The closed control loop system of the regulator, motor and web keeps the actual dancer location close to the desired location. This modification circuit is used on center unwinds where the motor shaft speed (RPM) varies in inverse proportion to the diameter and is not basically constant like the web or line speed (FPM). In non-winding or surface winding applications, the Position Regulated Speed Follower (Dancer Trim) option is preferred for stability reasons.

An external TENSION ON relay logic switch allows switching the current reference signal between the output of the dancer position regulator and an external speed regulator. Turning on the TENSION ON relay logic switch enables the dancer position regulator. There is additional circuitry to allow

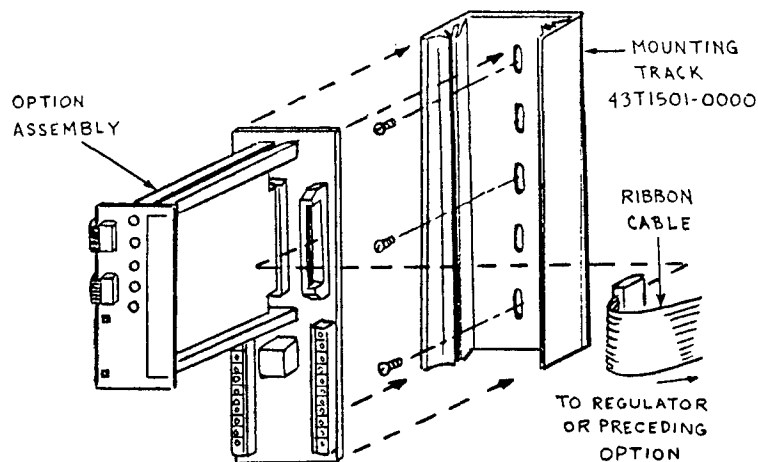


Figure 1.

CHANGE RECORD RRR					

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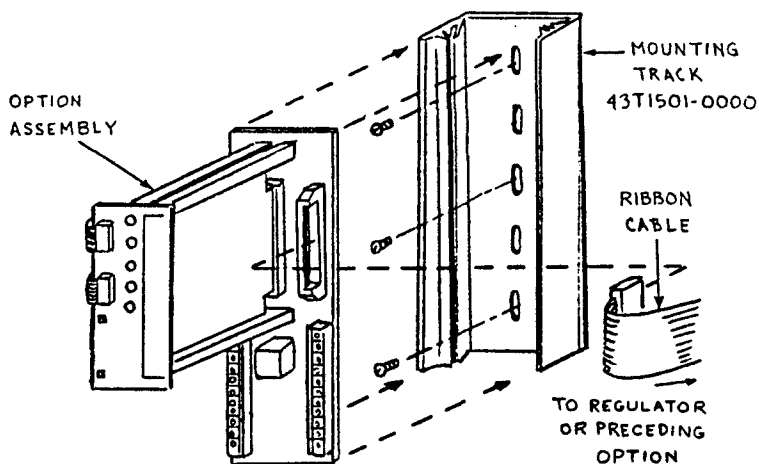


Figure 1.

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matching the speed of the unwind to the speed of the web or line and to different core size.

The POSITION potentiometer sets the neutral point about which the DANCER potentiometer operates. The PROPORTIONAL GAIN potentiometer (2RH) sets the amount of dancer droop required to provide rated torque. The TRANSFER POSITION potentiometer (4RH) is used (when the integral channel is enabled) to limit the integral channel gain in dual turret applications, in order to assure good tension on the first few wraps on a new roll, immediately after a flying splice transfer. The DANCER INTEGRATOR ENABLE switch (2SS on the Function PCB) disables the integral channel during setup, and if not required by the application. The integral channel integrates dancer error to prevent the dancer from moving its maintained (regulated) position as the roll builds down. The ANTI-HUNT potentiometer (5RH) adjusts compensation for system inertia to stabilize the drive. The MAX ANTI-HUNT potentiometer (10RH) sets the range of the ANTI-HUNT potentiometer. The FRICTION BIAS potentiometer (3RH) provides a torque reference for empty rolls.

INSTALLATION

WARNING

REMOVE ALL INPUT POWER TO THE DRIVE BEFORE INSTALLING OPTION COMPONENTS.

See Figure 1. Install the option in the following manner:

1. Install PVC mounting track (L.A. part no. 43T1501-0000) to panel where option is to be mounted, using appropriate hardware.
2. Install option assembly by pressing firmly into mounting track.
3. Using 40 conductor ribbon, fabricate and install a double-ended ribbon

cable of sufficient length to fit from 12CONN on the right side of the option to 12CONN on the Main PCB in the regulator power cube, or to 12CONN on the left side of a previously installed option.

Cable 12CONN provides the power and signal interface between this option and the Controller 40 pin data bus.

INTERCONNECTION

CAUTION

INSURE THAT ELECTRICAL PARTS OF THE DANCER POTENTIOMETER AND POSITION POTENTIOMETER AND POSITION POTENTIOMETER WHEN EXTERNALLY MOUNTED ARE ELECTRICALLY ISOLATED FROM THE CASE AND EARTH GROUND TO PREVENT DAMAGE TO THE EQUIPMENT.

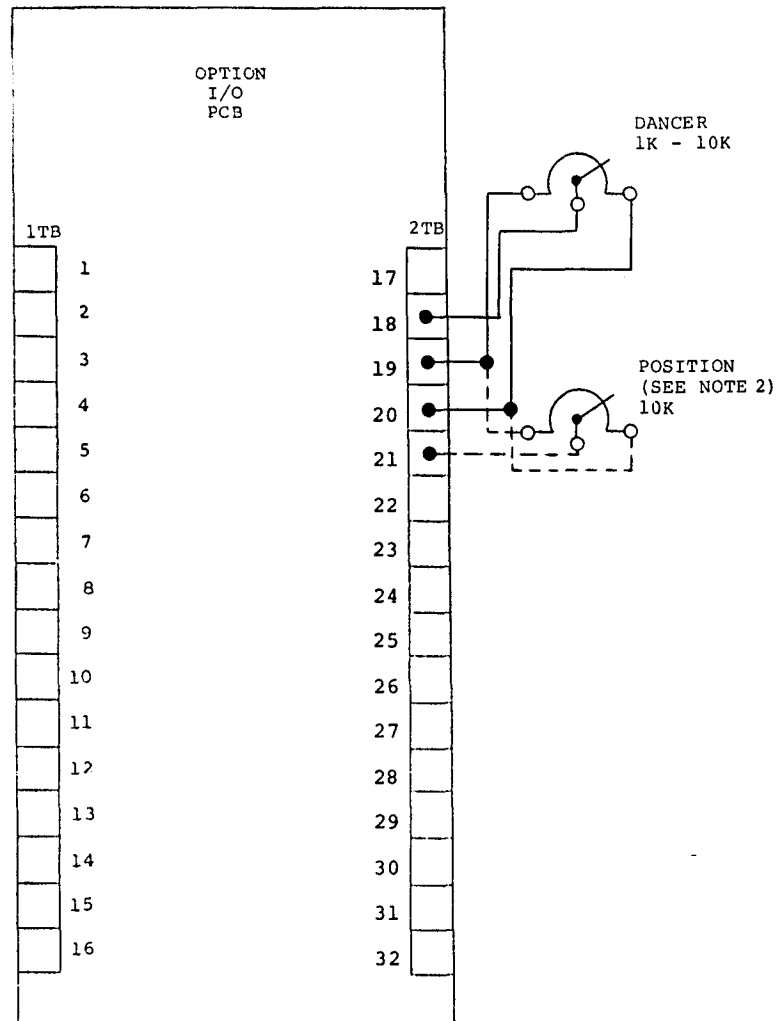
DO NOT INSTALL A POTENTIOMETER HAVING MECHANICAL ROTATIONAL STOPS AS THE DANCER POTENTIOMETER.

This modification requires that a DANCER potentiometer be installed to the machinery for process control. The ohmic value of the DANCER potentiometer should be 1K to 10K ohms. A good choice for this potentiometer is Louis Allis part number 05P00040-0192 (1K).

An external POSITION potentiometer may be remotely installed to operate in place of 2RH on the Dancer Position Winder assembly. This external potentiometer should be 10K ohms. Louis Allis part no. 43T00572-1033 is recommended. When installing this external pot, 1SS on the Function PCB MUST BE OPENED by removing the self-tapping screw. The external POSITION potentiometer is then wired according to Figure 2.

Perform equipment interconnections according to the Controller instruction manual. Then wire switches and DANCER potentiometer according to Figure 2.

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NOTES:

1. * Indicates relay logic switch.
2. If external position pot is used, 1SS on function PCB MUST BE open.

Figure 2. Interconnection Diagram

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ADJUSTMENTS

After performing the adjustments in the Controller instruction manual, adjust the option assembly as follows:

1. Preset the pots and 2SS as follows:

1RH (or ext) POSITION	50%
2RH PROPORTIONAL GAIN% ...	50%
5RH ANTI-HUNT	50%
10RH MAX ANTI-HUNT	50%
3RH FRICTION BIAS	0%
4RH TRANSFER POSITION ...	100%
2SS (DANCER INTEGRATOR ENABLE) ...	OPEN (OFF)

NOTE

Perform Step 2 only if the armature power unit is bidirectional.

2. Close the TENSION ON relay logic switch. With no roll on, start the drive and short 2TP to common. Increase the setting on FRICTION BIAS (3RH) until the rewind just starts to move, then back off slightly. Remove the common-to-2TP connection.

3. With the web in the dancer loop, run the line slowly and adjust POSITION potentiometer (1RH or external) so that the dancer maintains a position near its center of travel.

4. Adjust the PROPORTIONAL GAIN potentiometer (2RH) to make the drive as sensitive to DANCER potentiometer movement as desired. If the drive becomes unstable at higher settings, turn the ANTI-HUNT potentiometer (5RH) CW or reduce the PROPORTIONAL GAIN potentiometer setting to maintain a stable condition.

5. Increase the setting on the ANTI-HUNT potentiometer until the dancer fluctuations stop. If hunting persists at 100% setting, reduce setting to 50% and increase MAX ANTI-HUNT (10RH) until the fluctuations stop. Whenever the PROPORTIONAL GAIN potentiometer is adjusted, the ANTI-HUNT pot may require re-adjustment.

6. Check the stability over the entire rewind roll diameter range, from full roll to core.

7. As the roll expires, the dancer may move significantly off its maintained (regulated) position as set at full roll, especially if PROPORTIONAL GAIN had to be set low. This can easily be corrected by closing 2SS to enable the integral channel. Usually this will not interfere with any previous adjustments. In some cases, however, re-adjustment of PROPORTIONAL GAIN and ANTI-HUNT may be necessary. In rare cases, 2SS may need to be left open to assure stability.

8. In dual turret applications, the use of 2SS and the integral channel may cause loose tension after a flying splice transfer. If this occurs, perform the following procedure. a) Open 2SS, run the drive in TENSION at core, and measure and record the voltage at 6TP. b) Close 2SS and unwind a roll on the other spindle to approximately 2/3 of full roll diameter. c) Then slowly adjust the TRANSFER POSITION pot on the other rewind assembly until 6TP (on the first rewind assembly) measures the same as the previously recorded value. d) Repeat for both rewinds.

9. If desired action cannot be obtained, perform option troubleshooting procedures.

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