

For use with Saber DC drives.

# DIFFERENTIAL TRIP OPTION ASSEMBLY

## 46S02371-0070 SCHEMATIC 45S02371-0070

### DESCRIPTION

This option is one of a series available for Louis Allis Saber DC drive. The option is an electronically operated relay, which monitors the difference between one of the following signal pairs, selectable by switches:

speed/voltage feedback calibrated  
speed/voltage reference

or

custom differential input #1  
custom differential input #2

The relay will pick up when the first signal of the pair (or its scaled value) exceeds the second signal (or its scaled value) by a presettable amount determined by pick-up potentiometer 2RH. A separate drop-out potentiometer, 1RH, determines the relay drop-out threshold.

### INSTALLATION

#### WARNING

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

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.

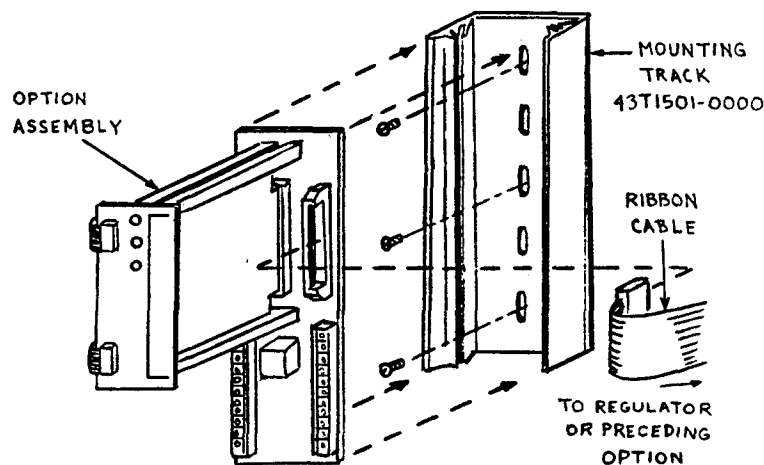


Figure 1.

#### HANGE RECORD

1	STD-2666	2-3-87	RRR
2	STD-2718	3-17-87	RRR

DWG. NO. 02Y00025-0063  
SHEET 1 OF 3  
EFF. 7/19/82 (K)

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

INTERCONNECTION

Set up switches 1SS thru 4SS on the Function PCB as listed below, depending on which signal pair is being used.

SIGNAL PAIR	SELECTOR SWITCHES	
	1SS & 2SS	3SS & 4SS
SPEED/VOLTAGE	ON	OFF
CUSTOM DIFF.	OFF	ON

No further interconnections are needed for the speed/voltage signals.

For the custom differential signals, the following steps must be performed:

1. On the Option I/O PCB, connect custom differential input #1 at 1TB (1) (-) and 1TB (2) (+). Connect custom differential input #2 at 1TB (3) (-) and 1TB (4) (+).

2. Connect jumpers or external resistors at locations 1R, 2R, 3R, and 4R on the Option I/O PCB as indicated below, depending on the voltage range of each input signal.

NOTE

1R and 2R are calculated from the value of input #1, and 3R and 4R from the value of input #2.

CUSTOM DIFFERENTIAL INPUT SIGNAL RANGE	VALUE OF EXTERNAL RESISTORS (1R & 2R or 3R & 4R)
0 to 10 VDC	Jumpers
0 to 20 VDC	49.9K ohms, 1/4W, 1%
0 to 40 VDC	150K ohms, 1/4W, 1%
0 to 50 VDC	200K ohms, 1/4W, 1%
0 to 100 VDC	449K ohms, 1/4W, 1%

For signal ranges not listed, the resistor value, in K ohms, is determined by the following formula:

$$R = \frac{49.9(V_{max} - 10)}{10}$$

ADJUSTMENTS

A. When the drop-out pot, 1RH, is turned to minimum (0%), the ratio  $\frac{\text{voltage drop-out}}{\text{voltage pick-up}}$  is approximately 50%.

Verify this by following these steps:

1. Close 3SS and 4SS only. Set 1RH at 0% and 2RH at 100%.

2. Connect a variable DC supply at 1TB (1) (-) and 1TB (2) (+).

DWG. NO. 02Y00025-0063  
 SHEET 2 OF 3  
 EFF. 7/19/82 (K)

3. Apply power to the drive.

4. Adjust the DC supply for -8.00 VDC at 6TP.

5. Turn 3RH slowly counterclockwise until 3LED comes on, i.e., relay 1CR picks up.

6. Slowly reduce the DC supply until 3LED goes off, i.e., relay drops out. At this point, the voltage at 6TP is approximately -4.00 VDC  $\pm$ 10%. Therefore, the ratio is about  $\frac{4.00}{8.00}$  or 50%.

B. If a pick-up point other than -8.00 VDC signal difference is desired (-10.00 VDC max.), reset 2RH as follows:

1. If desired value is greater than -8.00 VDC, first increase 2RH setting to 100%. Then set DC supply at desired level, and turn 2RH slowly counterclockwise until 3LED comes on.

2. If desired value is less than -8.00 VDC, first set DC supply to desired value, then turn 2RH slowly counterclockwise from position set in A above, until 3LED comes on.

C. With 1RH still at 0%, the new drop-out threshold will be at 50% of the level set in B above. Verify this by decreasing the DC supply and noting the point at which 3LED goes out. If a larger ratio (i.e., higher threshold) is desired, increase the DC supply to the pick-up point (3LED comes on), then reduce it to the desired drop-out point. Turn 1RH slowly clockwise until 3LED goes off.

## TROUBLESHOOTING

If other options or modifications have been installed, troubleshoot them thoroughly before discarding this option as faulty.

If the desired function cannot be obtained, perform the following troubleshooting steps.

1. Refer to the interconnection section of this instruction sheet and check for proper jumper installations.

2. Insure that proper polarities have been applied at custom differential input terminals.

3. On the Function PCB, measure the following voltages with respect to common, 3TP.

+15 VDC  $\pm$ 5% at 1TP

-15 VDC  $\pm$ 5% at 2TP

+24 VDC  $\pm$ 20% at 4TP

## OPTION RECORDS

After completing installation of this option, insert this instruction sheet immediately behind the front cover of the Controller instruction manual.

DWG. NO. 02Y00025-0063  
SHEET 3 OF 3  
EFF. 7/19/82 (K)

