



12 Vdc

**TP1 - ERROR
TP2 - COMMON
TP3 - FEEDBACK**

WHEN CHECKING VOLTAGES LISTED ON THIS DIAGRAM, PLACE YOUR (+) VOLTAGE METER LEAD ON THE TERMINAL SHOWN AND THE (-) VOLTAGE METER LEAD ON THE TP2 TERMINAL.

93°C
200°F

-12 Vdc

7 Vdc

BECK

TP3

TP1

1 Vdc

2.7 Vdc

R-IN RESISTOR

TP2

Conditions at Normal Operation – Group 11 Drives (Option 8)

1. **Checking input signal.** Voltage across R-in resistor with control signal energized: At 0%=1V, at 100%=5V. Shaft position has no effect on values.
2. **Checking triac outputs.** Voltage from R42 to common (TP1 to TP2) determines if the drive is balanced or driving. If the voltage is under a nominal 6 volts DC (plus or minus), the drive is balanced and the FWD and REV lamps will be on. (A lamp will be out if the drive position is on one of the end of travel limit switches.) If the voltage is +6 VDC to +13 VDC, the forward triac is triggered and the FWD lamp will be out. If the voltage is (-6) VDC to (-13) VDC, the reverse triac is triggered and the REV lamp will be out.
3. **Checking feedback signal at ESR.** Check feedback using the handswitch to position the output shaft. The voltage from R40 to common (TP3 to TP2) with a minimum control signal (4mA) at R-in and the drive at minimum position=0.455V. Voltage from R40 to common with a maximum control signal (20 mA) at R-in and the drive at maximum position=2.575V. If there is no control signal, the voltages will be approximately 0.6V and 3.5V.
4. **LED on ESR-4 Board.** When the input signal goes below the signal threshold for the loss of signal function (nominally 12% of span below signal range), the LED will illuminate.
5. **Neon lights – FWD & REV – on ESR-4 Board.** The neon lights will only illuminate when the handswitch is in automatic. When the input and feedback signals are equal (balanced), both lights are lit. When the drive is rotating toward the FWD direction, the light labeled FWD will go out. When the drive is rotating toward the REV direction, the REV light will go out. If the drive is in a loss of signal situation, both lights will remain lit. There is an occasion when one of the lights will be out but the shaft is not rotating. This occurs when the drive has reached an end of travel limit switch.
6. **LED on CPS-2 Monitor Board.** This light indicates that the CPS is powered and that the feedback at the monitor board is within its predetermined range of 0.377V to 2.655V.
7. **Testing Motors.** A simple test for Beck motors is to check the resistance through the motor windings. The resistance through each winding should be about equal. To test the resistance, disconnect power from the drive and, with an ohmmeter, check the resistive value from terminal U to B and V to B. The drive should be at an intermediate position for this test so that the RL and FL switches are closed.