

**CALIBRATION PROCEDURE  
FOR PARKS FLO-LABS  
MODEL 2016**

## 2016 CHECK-OUT PROCEDURE (in field) Rev. 1.1

These procedures are to aid in checking each function of the Flo-Lab.

Important: Before you get started you should make a note of the positions of all controls so that when you are finished with these procedures you can put them back where you had them.

### 1. Chart recorder model 2302-A and computer interface:

This unit is used to measure all of the functions so it must be checked first. If the check-out does not pass this section then the other sections cannot be checked.

This test will require a test fixture that is available through the factory.

- a. Connect the test cable from the test fixture to the jack located on the back panel of the Flo-Lab labeled (3) AUX IN. (Refer to the diagram of the Model 2016 back panel on the last page of this document.)
- b. Adjust the INPUT SELECT switch located on the recorder module to position labeled 3.
- c. Adjust the SIZE control to the position labeled 0 (full CCW).
- d. Power up the Flo-Lab, and turn the recorder power switch to ON.
- e. Turn the CHART SPEED switch to 5mm/sec.
- f. Adjust POSITION controls on the recorder so that each trace is centered on its own grid.
- g. Adjust the SIZE control to the position marked 10 (full CW).
- h. Press the SQUARE WAVE button on the test fixture for 3-4 seconds.
- i. There should be a square wave signal coming out on the paper that is approximately 5 major divisions in amplitude going up from baseline on both channels.
- j. If the squarewave is not the right amplitude please replace the 9 volt battery inside the test fixture. If the trace looks too thick you will need to adjust the PEN HEAT control, which is located inside the chart recorder. Please call the factory and we will assist you in making the adjustment.
- k. Turn the CHART SPEED to the center position (standby). Disconnect the test cable from the jack marked (3) AUX IN.

## 2. Doppler Module model 2109:

Set-up: Locate and adjust the following controls as listed. CALIBRATION cm/sec at 10, OUTPUT SELECT at A/B, OUTPUT FILTER at 7, VOLUME at 0, METER MULTIPLIER at 1.

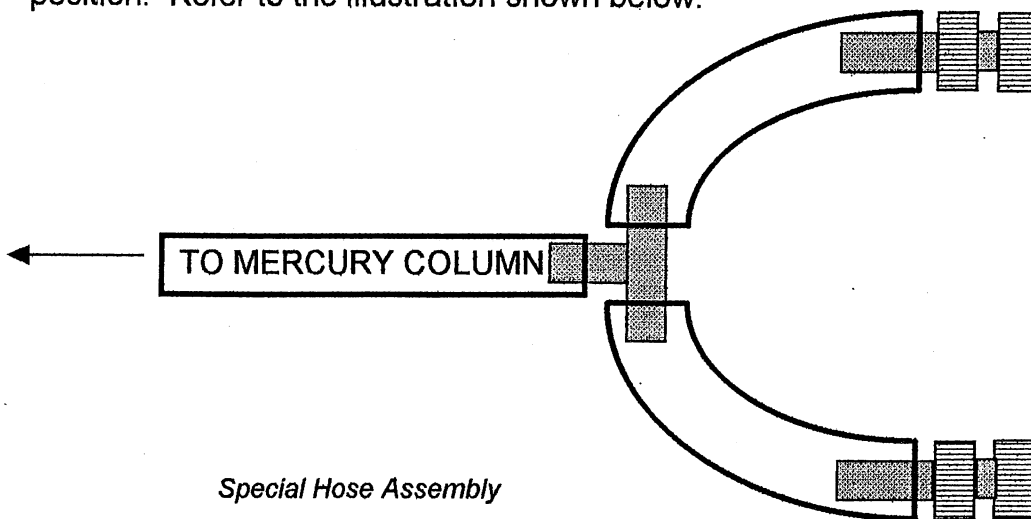
- a. Set the INPUT SELECT switch on the chart recorder to the #1 or DOP position.
- b. Turn the CHART SPEED on the recorder to the 5mm/sec position.
- c. Adjust the SIZE control to 10 (fully CW)
- d. Adjust the POSITION controls on the recorder above each trace so that the trace is positioned at the bottom edge of the grid (to the right edge).
- e. Turn the HI, OFF, LO switch on the doppler to the LO position.
- f. Push and hold the CAL. switch on the doppler module to the CAL A position.
- g. The A strip on the recorder should move up on the grid approximately 1 major division per 1 MHz. E.g., if the LO probe is 4.1 the line on the strip should move up approximately 4 major divisions. Now push down on the CAL B switch and the B strip should do the same as A did. Let go of the switch.
- h. Turn the HI, OFF, LO switch on the doppler module to the HI position.
- i. Push and hold the CAL. A switch and the line on the recorder should move up on channel A, approximately 1 major division per 1MHz. E.g., if the HI probe is marked with 8.1 the line should move up 8 major divisions. Now push down on the CAL B switch and the line on the B grid should move up as it did on A.
- j. Set the CHART SPEED to the STANDBY position. This completes the doppler section.

### 3. Plethysmograph model 2203/2205:

Note: Some of the earlier models of plethysmographs did not have the absolute pressure option. If you have a plethysmograph model 2203 it does not have an IPG section but it has 2 channels of MSG. So some of the checks will not apply to all plethysmographs.

Caution: DO NOT USE THE BUILT IN INFLATOR WHEN THE MERCURY COLUMN IS ATTACHED. Doing so will cause permanent damage to the mercury column and force mercury outside its column.

Set-up: Disconnect the red and yellow hoses from the front of the plethysmograph. Disconnect the cable from the IPG ELECTRODES jack. Connect the special 'Y' hose assembly to the hose connectors. You will need to connect your mercury column to the 'Y' hose assembly. Turn the INPUT SELECT switch on the recorder to the 2 or PLETH. position. Refer to the illustration shown below:

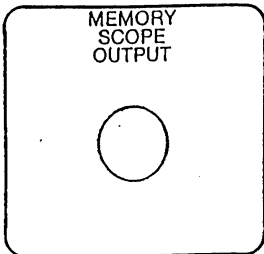
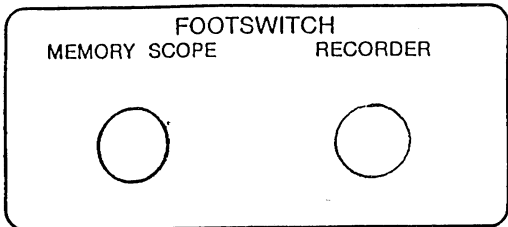
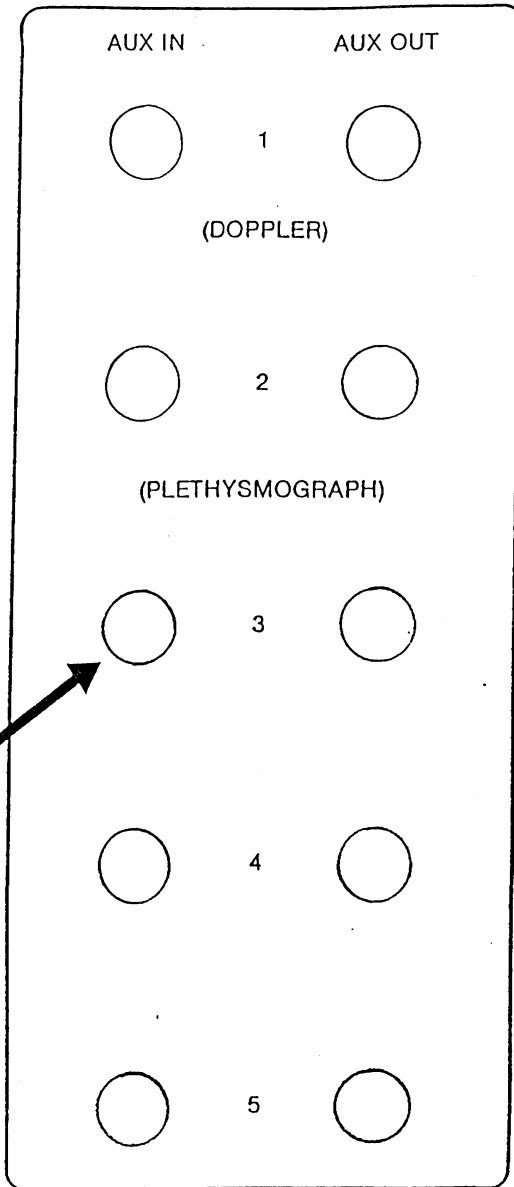


*Special Hose Assembly*

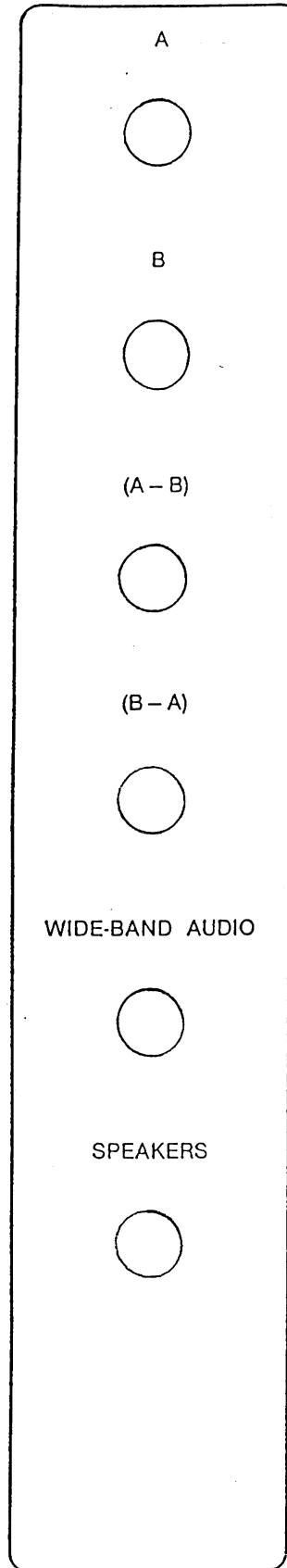
- a. Boot up the VIP software. When the monitor screen displays the first "choices menu" push the F3 key on the computer keyboard. This command will cause the dual scope mode to appear on the screen.
- b. Pump the mercury column up by hand to 40 mmHg. Check the computer display and compare the digital display to the mercury column. If they are within 5 % it's O.K.. If not please notify the factory and we will give instruction on recalibration.
- c. Pump the mercury column up by hand to 200 mmHg. Check the computer display and compare the digital display to the mercury column. If they are within 5% it's O.K.. If not please notify the factory and we will give instructions on recalibration.
- d. Check the PPG section by placing the sensor on your thumb and see if there is a signal. Do this with the MODE switch at the PPG position, the GAIN switch at the X1 position, the TIME CONSTANT switch at the SHORT position. Push the RESET switch and wait for READY light. When the READY light is on there should be a waveform present on the screen. Do this for both A and B channels.

- e. The MSG section will require a test fixture. Connect the MSG leads on the test fixture to the gage terminals on the plethysmograph. If the plethysmograph has 2 channels do channel A first, then do channel B.
- f. Set the GAGE LENGTH switch to the LONG position, The MODE switch to the MSG position and the TIME CONSTANT switch to the D.C. position.
- g. Press the RESET switch and wait for the READY light to come back on. Then momentarily press the MSG button on the test fixture. The trace on the screen should move up approx. 5 major divisions.
- h. If this unit has 2 channels of MSG you will need to check the B channel as you did the A channel.
- i. To check the IPG section you will need to connect the test fixture to the IPG electrodes connector.
- j. Set the MODE switch to the IPG position, the TIME CONSTANT switch to the D.C. position, and the GAIN switch to the X1 position.
- k. Press the RESET switch and wait for the READY light. Now press the CAL 0.8 % switch on the plethysmograph. The line on the strip should move up approx. 5 major divisions. The BASELINE IMPEDANCE display should read between 41 and 45 ohms.
- l. Disconnect the test fixture and mercury column. This test is complete.

DISPLAY I/O



DOPPLER



**WARNING:** Do not connect this instrument to any other power-line operated equipment which does not comply with UL/544 patient connect standard (27.6). Specifically, do not connect to a computer unless the computer and printer are powered through a medical-grade isolation transformer that meets the maximum leakage current specification of UL/544 which is 20 microamperes. Severe electrical shock to the patient may otherwise occur.

005-0056