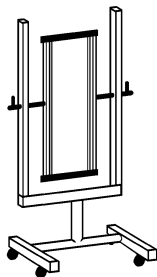


Spectra/Chrom[®]
Chart Recorder
from
Spectrum Chromatography

D20140 • 180296



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Introduction

The Spectra/Chrom chart recorders are general-purpose laboratory chart recorders. Both the 1 pen and the 2 pen chart recorders have 12 different selectable input sensitivities and 12 chart speeds. The total inaccuracy from all sources is less than 0.05%.

Specifications

Full Scale Span	1, 2, 5, 10, 20, 50 mV, .1, .2, .5, 1, 2, and 5 V
Chart Speeds	1, 2, 5, 10, 20, 30 cm/hr and cm/min
Full-Scale response	less than 0.5 sec
Power Requirements	115 VAC/0.1A or 230VAC/0.1 A
Pen Type	Disposable fiber tip
Paper Length	15 meters

Initial Setup

Remove the recorder and accessories from their packaging. You should receive a recorder, a roll of paper, a pen (2 pens with the 2 channel recorder), and a wall-mount transformer. The pen(s) will normally be shipped in the pen holder(s) with the tip up and the paper will normally be inside the recorder in the paper tray.

Carefully examine the transformer to be sure that it is correct for your mains voltage.

If the transformer is appropriate for your mains voltage use the following procedure to load the paper into the recorder:

1. The power switch has 2 positions, up and down. Pressing and releasing the button will allow it to change between the up and down position. If necessary, press and release the power switch to set it to the off (UP) position.
2. Push the pen lift slider on top of the chart recorder in the direction of the arrow. This will move the pen and holder away from the writing platen.
3. In line with the pen lift slider but near the paper sprockets is another slider. Slide this control, the hold down release, in the direction of the arrow as well. This will lift the writing platen out of the way.
4. Lightly grasp the clear plastic tear bar and rotate the front of the recorder out of the way.
5. Remove the packing material (Styrofoam and/or plastic wrap) from a new roll of paper.

6. Feed the leading edge of the paper around the sprockets so that it comes out face up. Be careful to have the paper aligned so that it is not skewed on the sprockets.
7. Drop the roll of paper into the cavity in the recorder and rotate the front of the recorder back into position. This paper should pass around the sprockets and on top of the front of the recorder. Slide the hold down release (from step 2) back to lock the front of the recorder in place.
8. If the excess paper is lying on top of the clear plastic tear bar, reposition the paper to slide under the tear bar. If the paper trailing from the recorder is not sufficiently long to reach the tear bar, be careful to direct the paper under the tear bar when starting the recorder.
9. Push the pen lift slider against the direction of the arrow. This will return the pen holder to the writing position.

After the paper has been loaded set the controls as follows: **CHART:** 30 cm/min and **OFF** (out); **PEN: REC** (out), **ATTEN** fully counterclockwise, 5 volt, **STBY** (out); **POWER: OFF** (out). Then connect mains power to the chart recorder by connecting the wall mount transformer first to the chart recorder and then to the power mains.

Turn the power on by pressing the releasing the **POWER** button so that it remains depressed (in). Pressing the **CHART** button so that it is in the **ON** (in) position should cause the paper to move. If the paper does not move check the mains power. Press and release the **CHART** button again to stop the chart paper.

The chart recorder is now ready to be connected to your instrumentation.

Connection to Spectrum Instruments

All of Spectrum's Chromatography instruments have 1 volt full-scale outputs. For this reason you would normally use the 1 volt range on the recorder.

A cable to connect Spectrum's instruments to the recorder is available as part number 123450. This cable has a dual banana plug on one end and 2 forked terminals on the other. Use a small slotted screwdriver to connect the forked terminals to the terminals on the rear of the recorder. The forked terminal on the clear or silver wire should be connected to the + terminal on the recorder. The forked terminal on the black wire should be connected to the - terminal on the recorder. No connection should be made to the event terminal on the recorder.

The end of the cable with the banana plug on it should be connected to the UV monitor or the gradient monitor. The side of the plug with the hump should be connected to the black terminal on the monitor and the other side of the plug should be connected to the red terminal.

This is the only connection necessary.

If you are using a 2 pen recorder you may use an additional 123450. cable to connect a second monitor or the other channel of the gradient monitor to the other recorder channel.

Normal operation of the recorder would be with the controls set as follows:

PEN: 1 VOLT
REC (in)
ZERO As required
ATTN Fully counterclockwise (past the click)
REC (out)

CHART: speed as required (normally between 10 cm/hr and 2 cm/min)
ON (in)

POWER: ON (in)

GENERAL OPERATION

External Connections

There are 3 screw post terminals on the back of the recorder for each pen channel. These are labeled +, - and **EVENT**. The recorder signal should be connected between the + and - terminals.

An event blip can be superimposed upon the recorder trace by connecting the event terminal to the - terminal. A switch, open-collector, or TTL gate output can be used for this purpose. The **EVENT** terminal should never be driven more negative than the - terminal.

On the 2 pen recorders the two - terminals (1 for each pen) are isolated to several hundred volts so that even if the two inputs have a common ground you will need to make connections to both terminals.

Chart Controls

There are 2 controls which affect the paper movement; one to stop or start the movement and another to control the rate of movement. Then the on/off push-button is **OFF** (out) the paper will not move. This

allows you to make adjustments to the pen controls or other parts of your experiment without wasting paper. Then this control is **ON** (in) the paper will move at the speed set by the chart speed control next to it.

Pen Controls

The pen controls allow for the zero position and full-scale range of the pen to be set.

The **STBY/REC** switch controls whether the pen position indicates the input to the recorder or whether the pen is at the 0 position. When this button is in the **REC** (in) position, the pen will track the input to the recorder; this is the normal position. When this button is in the **STBY** (out) position the pen move to the position it would have if the input were 0. This allows you to set the absolute zero at a known location. If no input is connected to one pen on a 2 pen recorder, leave the unused pen in the **STBY** mode to minimize its movement and noise.

The **ZERO** knob allows you to set the 0 position of the pen. This is normally done at the start of an experiment and left untouched during the body of the experiment.

The knob marked from 1mV to 5V allows you to set the full-scale sensitivity of the recorder. Normally this will be set to the full-scale output range of the instrument connected to the recorder although some special circumstances may dictate otherwise. The full-scale indicated is only applied when the **ATTEN** control is fully counterclockwise.

Then **ATTEN** knob allows you to set the recorders full scale span to an intermediate value. When this knob is turned fully counterclockwise (past the click), the value indicated on the knob next to it is the actual full-scale of the recorder. Turning the knob clockwise gradually increases the recorders full-scale range.

The **REC/CAL** push-button can be used with the **ATTEN** knob to calibrate an intermediate range setting. When this button is in the **REC** (out) position, the pen will track the input to the recorder; this is the normal position. When this button is in the **CAL** (in) position, the pen will move as if the full-scale voltage indicated on the range switch is applied.

Power Control

The power button on top of the recorder controls the main power to the recorder. When this button is **ON** (in) power is supplied to the recorder and you may use it. When this button is **OFF** (out) the recorder will be

inoperative. When the recorder is first turned on the pen will remain stationary for about 1 second in order for the power supplies in the recorder to settle.

Care and Maintenance

1. To prolong pen life, cover the tip with its rubber boot when the recorder is not in use.
2. Do not oil or lubricate any part of the recorder. The plastic components are permanently lubricated and any additional oils may damage them.
3. If necessary, clean the recorder with a rag dampened with water or isopropyl alcohol only. Do not use other solvents as these may damage the recorder.
4. If dust or ink becomes lodged under the plastic tear bar, it may be removed by unscrewing the screws at both ends. Use only water or isopropyl alcohol to clean the tear bar.

Troubleshooting

Pen drifts and/or buzzes. Check the input to the recorder. These symptoms indicate that the recorder has no input. Check both ends of the cable to be sure that they are connected and that the cable has not been cut or broken.

Paper jams or doesn't feed. Check for dirt or particles under the clear plastic tear bar. If dirty remove the screw holding each end of the tear bar down, then clean and replace the tear bar. Check that the shiny metal writing platen is not bent and pinching the paper.

Paper runs at an angle. The paper is not squarely on the sprockets. Reload the paper in the recorder.

ORDERING INFORMATION

Part No.	Description
124700	Spectra/Chrom Chart Recorder, 1 pen, 115VAC
124705	Spectra/Chrom Chart Recorder, 2 pen, 115VAC
124701	Spectra/Chrom Chart Recorder, 1 pen, 230VAC
124706	Spectra/Chrom Chart Recorder, 2 pen, 230VAC
124710	Paper, 1 roll, for 124700 series chart recorder
124711	Red pen for pen 1 of 2 pen chart recorder
124712	Blue pen for pen 2 of 2 pen chart recorder
124714	Black pen for 1 pen chart recorder
123450	Cable, chart recorder to Spectrum detector