

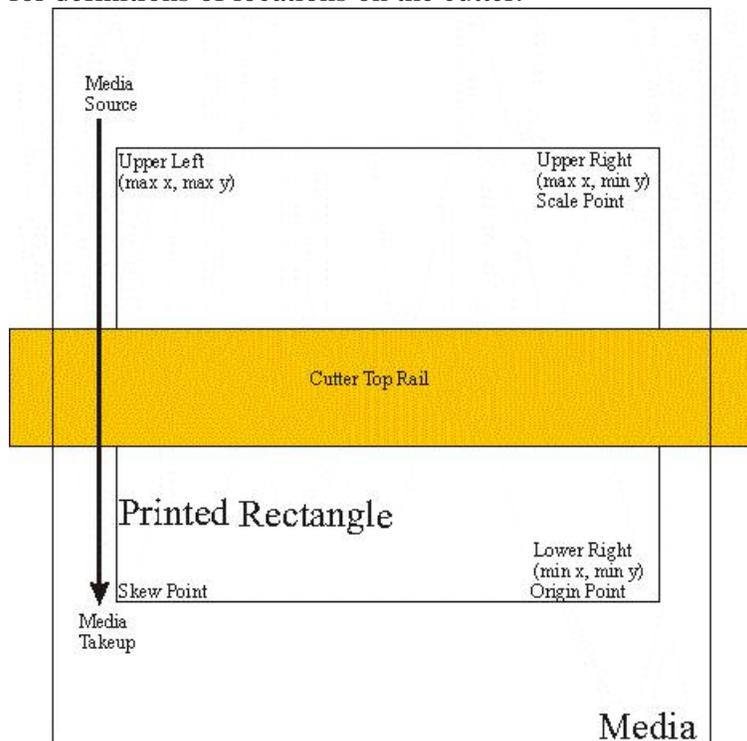
ALLEN DATAGRAPH

Technical Support Bulletin: Calibrate to Printer Sensor Offset/Size adjustment.

Last Updated June 18, 2004

Abstract: The printer and the cutter must agree on how large objects are when using the Smartmark feature. If the Cutter and Printer do not agree the cut lines will be farther away from where they should be cut the farther they are from the origin.

Requirements: These procedures require the Remote Panel program that comes on the CD that is shipped with your cutter. If you do not have this program on your computer you need to get the install from the CD that was shipped with your cutter, check the firmware web page to see if the install is online, or send a request to info@alldatagraph.com to get a copy of the install emailed to you. Refer to the drawing below for definitions of locations on the cutter.



There are two methods for getting the Cutter and the printer to agree on object size.

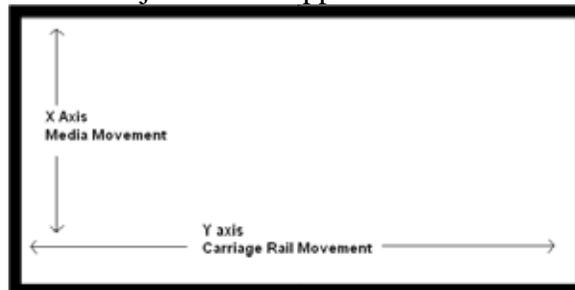
Method 1: If you have a digitizing site (Allen p/n PL-00-11-500) use the Diagnostic -> Calibrate to Printer followed by Diagnostic -> Smart Mark Setup procedures. See documentation displayed on the screen for instructions. With care, you can normally get alignment and scaling errors to less than 0.01 inch (0.25 mm) with this procedure.

Without a digitizing site this procedure does not produce satisfactory results. Note: calibration factors change the values required for Sensor Offset so it is important to get your calibration correct before setting up the sensor size and sensor offsets. If you need better accuracy you probably will need to use method 2 below.

Method 2: If you do not have a digitizing site you have to use the printer, the cutter, and a ruler to get the machines to agree.

Calibrate to Printer Adjustment

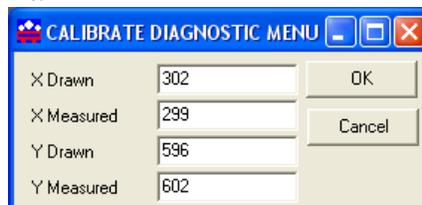
This procedure is a more manual procedure. First print 15-20 copies of the file C:\Program Files\Allen Datagraph\sample\6x3 rectangle.cdr. Note: orientation and make sure the long axis is across the media as it comes out of the printer. For more accurate calibration use a larger printed rectangle. This file is installed with the remote panel that comes with your machine. If you cannot open this file you can create the file by drawing two unfilled rectangles. One 6 x 3 and the other 5.5 by 2.5. Place the smaller rectangle inside the larger with even borders. Combine the two rectangles into a single object and fill the combined object. The object should appear as shown below.



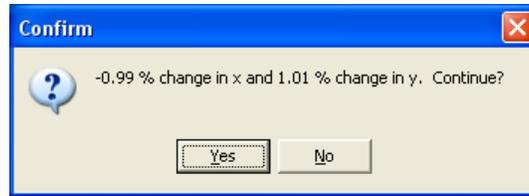
Measure the outside edge of the one of the printed rectangles. Call these measurements the drawn size. Eg. X Drawn = 3.02, Y Drawn = 5.96.

Next send the cut file C:\Program Files\Allen Datagraph\sample\6x3 rectangle.plt and cut the two rectangles. Do not cut on your printed rectangles yet. Measure the size of the cut rectangles. Call these measurements Measured. Eg. X Measured = 2.99, Y Measured = 6.02

Run diagnostic -> calibrate 07. Enter the values on the screen making sure that there are no significant digits after the decimal point. Multiply all the measurements by 10 until there are no decimal points left. I multiplied all the measurements by 100 to put all the digits before the decimal point.



Click on OK and the remote panel will display



Check that the % change in measurements is small. If you have a large % change you probably entered the values wrong. Clicking on yes will update the cutter to cut the same size as the printer.

Reload the media and send the cut file C:\Program Files\Allen Datagraph\sample\6x3 rectangle.plt and cut the two rectangles. Measure the outside cut rectangle. Verify that they measure the same as the X Drawn size. If they do not agree use the two new measured values and run diagnostic -> calibrate 07 again and cut the rectangles. Repeat until the cut rectangle's size equals the printed rectangle's size.

At this point in the procedure your cutter and the printer are cutting and printing objects the same size.

Manual Sensor size adjustment:

Calibrate to printer must be performed before sensor size adjustment. If you do not plan to use 3-point (origin, skew, and scale) target scanning then:

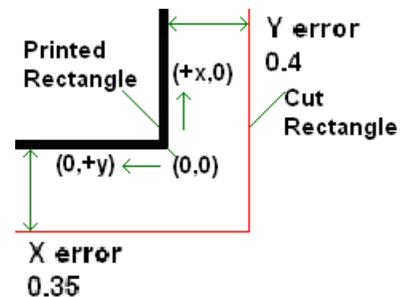
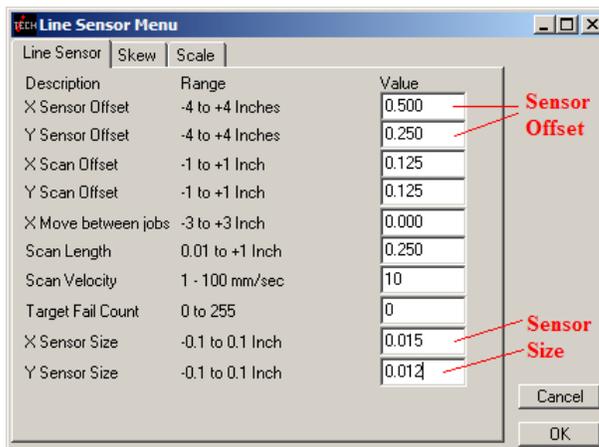
1. Set the sensor size to 0, (See smart mark sensor dialog below)
2. Open the file C:\Program Files\Allen Datagraph\sample\6x3 rectangle.plt with Wordpad and change the first line of the file from `BJ1;f03048,6096;` to `BJ1;f0;` This will turn off the skew and scale target scanning when using this file,
3. Skip to the sensor offset alignment in the next section.

If you plan to use 3-point target scanning you must calculate the sensor size using the method described below. Load the printed rectangles into the cutter. Align the smart mark sensor to the lower left corner. Send the cut file C:\Program Files\Allen Datagraph\sample\6x3 rectangle.plt and cut the two rectangles. Make sure the x and y led's do not turn on during the target scanning. Do not be concerned with the placement of the cut rectangle at this time. We are only changing the size. Measure the x and y cut distance. Calculate the error between the cut distance and the Drawn distance measured above. E.g. $(\text{Cut size in } x - \text{Printed size in } x) + (\text{Cut size in } y - \text{Printed size in } y)$. If the value of this expression is greater than zero we have to decrease the sensor size. If the sum of the errors is less than zero we have to increase the sensor size. Repeat the cut measure and adjust sensor size until the sum of the errors is less than 0.01 inch (0.25 mm).

Newer versions of software have a separate x and y sensor size. This allows better correction of x and y scaling. Adjust the x sensor size to change the rectangle size in x and the y sensor size to change the rectangle size in y.

Manual Sensor offset alignments:

Calibrate to printer and Sensor Size adjustment must be performed before sensor offset adjustments. Load the printed rectangles into the cutter. Align the smart mark sensor to the lower left corner of the printed rectangle. Now send the file C:\Program Files\Allen Datagraph\sample\6x3 rectangle.plt and cut the two rectangles. Measure the x error and y error between the origin points of the cut rectangle and origin point of the printed rectangle (see drawing below). Assume you have a measured x error of 0.35 cm and y error of 0.4 cm as shown below. Since we want to move the cut lines in both positive x and positive y directions we add 0.35 to the x sensor offset ($0.5 + 0.35 = 0.85$) and 0.4 to the y sensor offset ($0.8 + 0.4 = 1.2$)



Repeat align, cut and measure until the origin of the plot cuts on top of the origin of the rectangle. Your rectangle should now be cutting on the edges of your printed rectangle.

You should now save the calibrator using Action -> save calibration and record the sensor offset and sensor size calculated here. (Note: You can use Action -> Save Settings to save the other values on this page).

If you have multiple printers you will have to repeat this procedure for each printer.