CAMALOT

Weight Scale

Xyflex and XyflexPro Applications
Part Number 725-1

Speedline Technologies
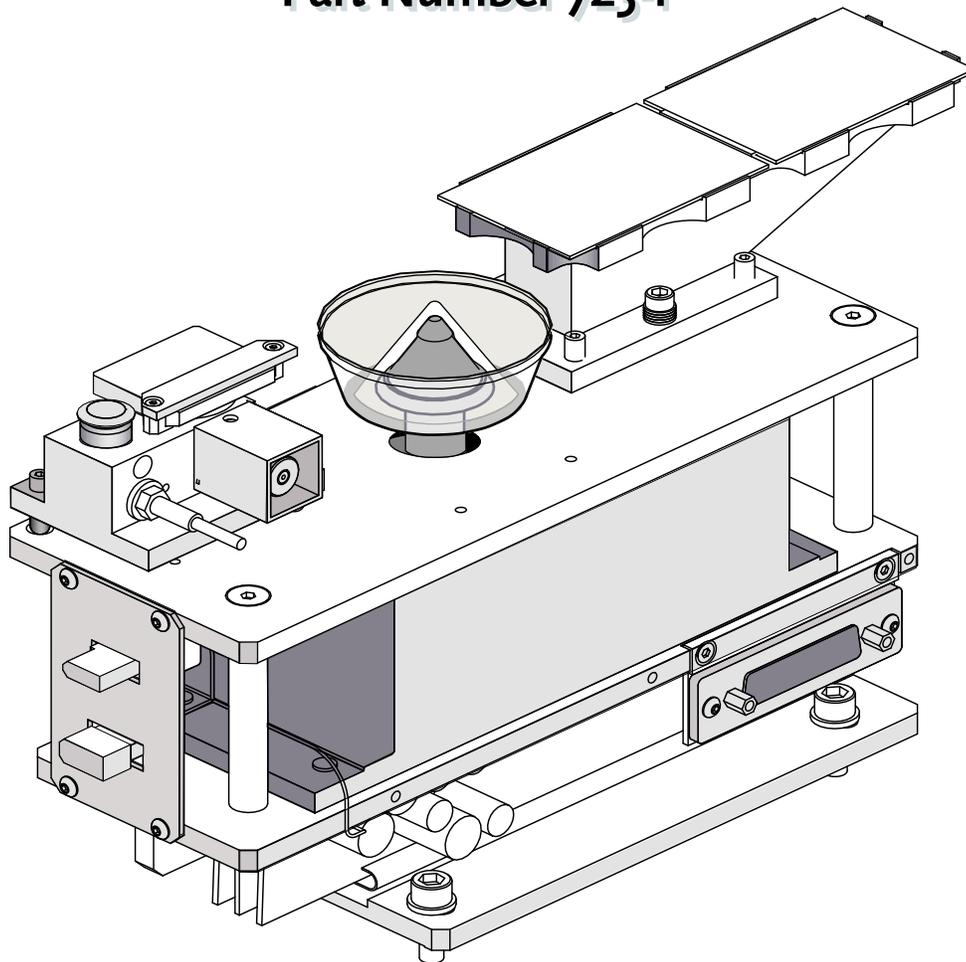
Speedline Technologies
A COOKSON ELECTRONICS COMPANY

725-1 Weight Scale

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Overview

Introduction

The optional Weight Scale is used to ensure exactness and consistency in the amount of material deposited. The system software performs the adjustments (by manipulating the line width) as required to meet a Target Weight (operator interface is not required).

Weight scales already installed in the system should be calibrated every six months or when a new scale is installed.

This option contains procedures to support the Xyflex and XyflexPro systems. Most information is common to both systems, when the procedures differ they will be identified.

Attention

Only those individuals assigned privileges are allowed to perform or change system calibrations and offsets. Refer to Chapter titled - **System Administration and Security**.

Attention

When performing any calibration procedure in this section, the command word **"Select"** refers to clicking the left trackball button.

Attention

Replacement and calibration of the weight scales should only be performed by a Speedline Field Service Engineer or a technician trained by Speedline.

In this Section

This section contains the following topics.

Process and Components

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Weighing Process

Description

The weighing process is described as follows:

The Z-axis moves over to a previously taught position (the opening of the sliding cover). The dispense unit will dispense material into this opening onto the disposable purge cup. The amount of material dispensed is taken from the program (command line) of the process program grid. The dispensed material is weighed by the weight scale. The weighed material is matched against the Target Weight in the template. If necessary, the system will adjust (through software) the dispense unit output to keep within the targeted weight.

When the program is run (from the process program Grid) and the BEGIN WEIGH is encountered the weigh scale template is read. The software will read the templates information to determine whether to perform a weigh (depending on times or minutes between weighs established in the template).

If a weigh is performed the head moves over the purge cup and dispenses a small amount of material (establishes a bead of material on the needle) to simulate an actual dispense. The small amount of material deposited into the purge cup tares the weight scale (resets the scale back to zero).

Attention

The weight scale requires a minimum of 100 mg of dispensed material to activate the scale. When the system performs the scaled down version of the process program selected, several passes of this process program may occur. This is a normal condition of the system.

The dispense unit dispenses a scaled down version of the process program selected in the process program grid (dots are not scaled down, when selected). The dispense unit may perform this process several times (this is normal) in order to meet the system minimum dispense weight of 100 mg.

The dispense unit dispenses the program (the scaled down version) until the weight of the sample falls within the tolerance of the Target Weight. The software achieves this desired weight by manipulating the line width (there is no operator interface required).

An optional predispense command maybe performed after converging. This command would be performed onto the predispense plates. The primary purpose is to eliminate any excess material from the needle tip.

Scale Location and Components

Assembly Location The Weight Scale is located in front of the front conveyor rail, and is mounted as an assembly with the Needle Calibrator and the Pre-dispense Station. See Figure 1.

Components Each dispense station consists of the following components, see Figure 1:

1. Scale (not visible, below weigh dish)
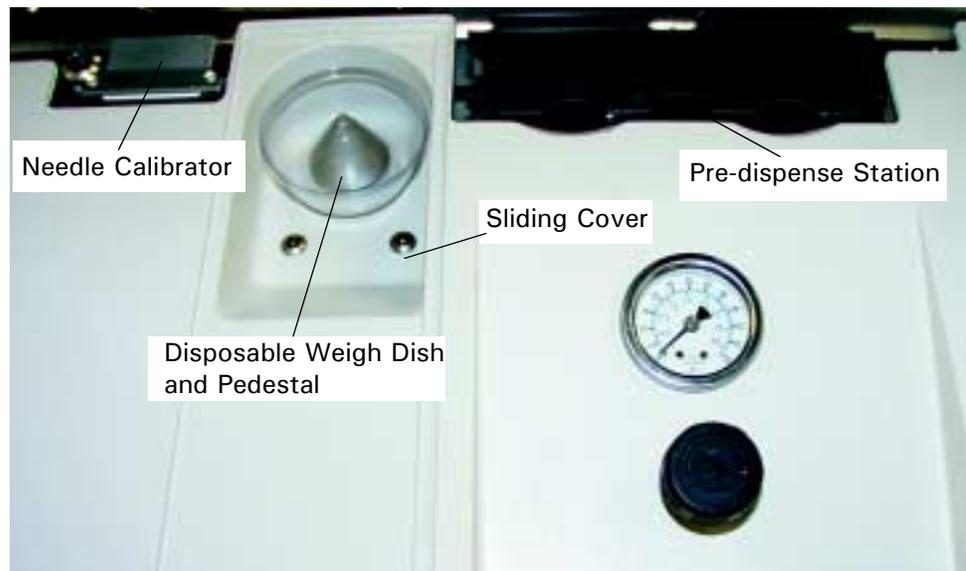2. Disposable Weigh Dish and Pedestal
3. Sliding Cover

Figure 1

The sliding cover is made of a Pyrex ® type material. This cover may be removed for cleaning and should be handled with care.

The sliding cover serves two purposes:

a. The sliding cover is used to prevent any drafts or other air currents from disturbing the pan and measurements.

b. The cover must be kept in the closed position when the machine is in use to maintain the taught position of the hole location).

Static Protection

Introduction   Certain weight scale components may develop a static charge if left untreated. This static charge can develop at the sliding glass cover and/or at the plastic weigh dish. To prevent a static charge which in turn will deliver inaccurate readings at the scale the plastic weigh dish and sliding cover must be treated.

This procedure should be performed daily or when a new weigh dish is placed on the scale when prompted by the Benchmark software.

Procedure   The weight scale support kit includes a box of Staticide wipes which are used to treat the plastic weigh dish and sliding glass cover.

Treat the plastic weigh dish and sliding glass cover as follows:

1. Remove the sliding glass cover from the dash board.
2. Wipe a new plastic weigh dish with the supplied Staticide wipes. Wipe the entire top and bottom surface of the weigh dish.
3. Place treated weigh dish on weight scale pedestal.
4. Wipe the sliding glass cover with supplied Staticide wipes. Wipe the entire top and bottom surface of the cover.
5. Place treated sliding cover onto the dash board. Close sliding glass cover over the weight scale.
6. **Xyflex models**- Perform step one through step five at each dispensing location that contains a weight scale.

Initial Setup

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Teaching the Position of the Weight Scale

Introduction The Weight Scale cover has a hole cut through it which allows the dispense unit to dispense onto the scale. The location of this hole must be taught in the X-, Y-, and Z- axis. The taught position settings are normally required only on initial setup or whenever the weight scale assembly is moved.

Procedure Teach the hole position of each Weight Scale as follows:

Attention

The weight scale coordinates for the disposable purge cup must be taught at all four heads **(Xyflex only)**.

1. Select **Calibrate > Weight Scale Position** from the menu on the Machine screen. The first screen for teaching Weight Scale position appears. See Figure 2.
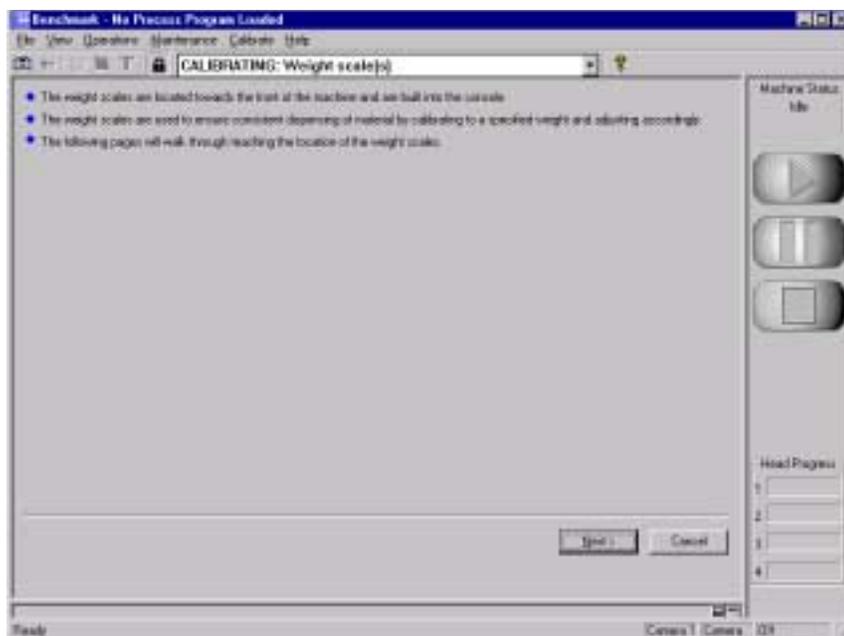

Figure 2

2. Read the on screen notes and select the **Next >** button.

Selecting the **Cancel** button aborts the process.

When the **Next >** button is selected, a second screen to select a Head appears. See Figure 3.
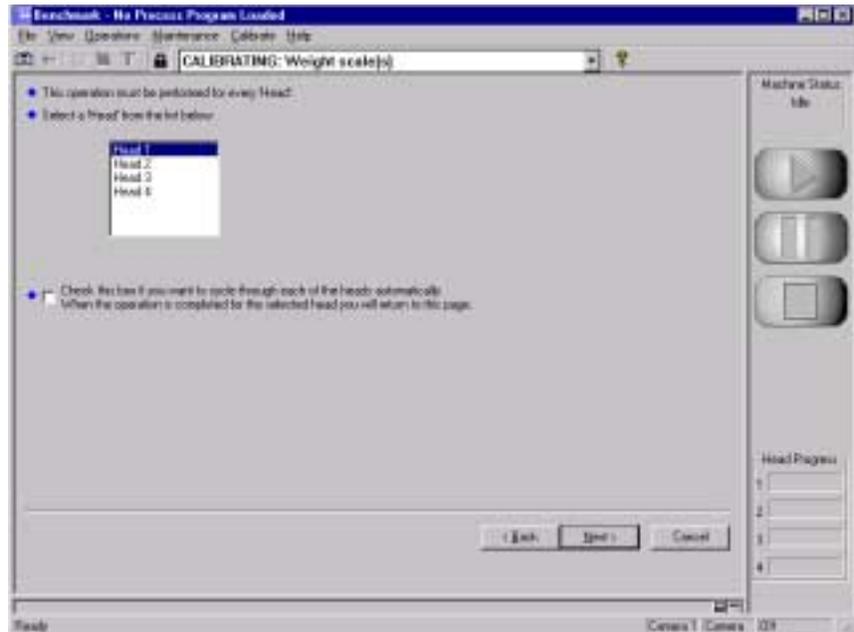
Figure 3

3. From the list, select a **Head** to teach the weight scale position.

4. Select the <u>N</u>ext > button and a screen with **Trackball** and **TrackballZ** buttons appears. See Figure 4.

Selecting the **Cancel** button aborts the process.

Figure 4

Attention

Prior to teaching any coordinates for the Weight Scale, be sure the sliding glass cover is in the closed position.

5. Select the <u>**Trackball**</u> button. Be sure the sliding glass cover is in the closed position. Using the trackball, move the dispense unit over the center of the hole in the sliding glass cover. Position the needle tip over the center of the hole. See Figure 5.
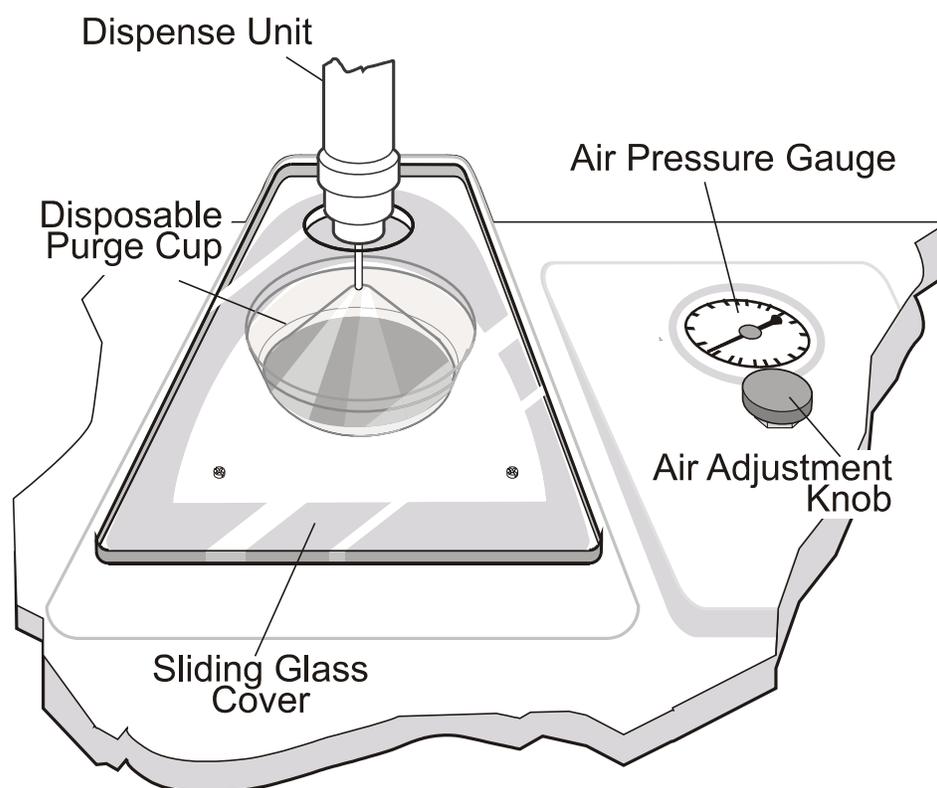
Dispense Unit

Air Pressure Gauge

Disposable
Purge Cup

Air Adjustment
Knob

Sliding Glass
Cover

Figure 5

6. Select the left button on the trackball, when the dispense units needle tip is in the desired location.

7. Select the **Trackball <u>Z</u>** button. Using the trackball, lower the needle of the dispense unit through the hole in the sliding glass cover. Lower the needle into the hole until the needle is below the top surface of the sliding glass. See Figure 6.
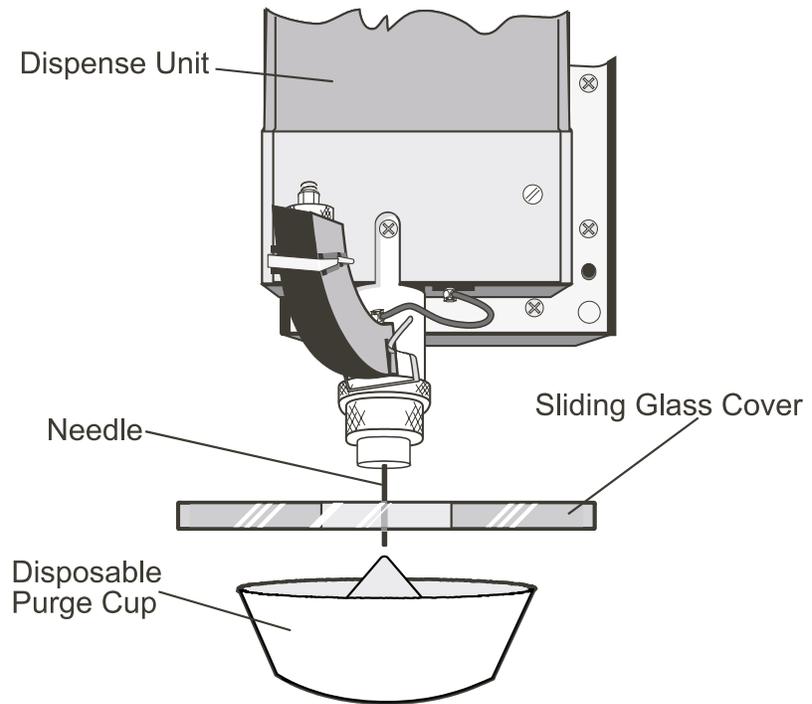
Figure 6

8. Select left button on trackball, when the dispense units needle tip is at the desired depth.

9. Select the **Next >** button after the desired settings for the Weight Scale are reached. Figure 7 appears.
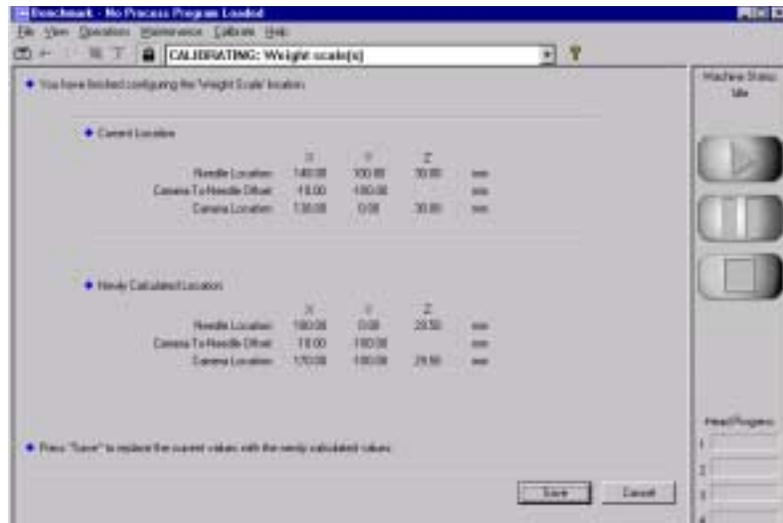

Figure 7

10. Select the **Save** button to accept the new calibration coordinates.

If the **Cancel** button is selected the process aborts.

11. Repeat step 1 through step 10 for each remaining head (**Xyflex only**).

This completes the Setup for the Weight Scale Location and you are returned to the Machine screen.

Weight Scale Templates

Template Description

Introduction
XyflexPro templates allow the convenience of storing and recalling dispense parameters used for dispense routines.

Included in the template software is the use of an optional Weight Scale, which is used to accurately ensure exactness and consistency in the amount of material deposited.

There are several application-based template styles:

- Dot
- Line
- Move
- Unfilled Rectangle
- Filled Rectangle
- Pre-Dispense Dot
- Pre-Dispense Line
- Array
- Weigh

All templates store a unique set of dispensing parameters, however:

- **Filled** and **Unfilled Rectangle** templates additionally store specific **X** and **Y** coordinates.
- **Predispense Dot** and **Pre-Dispense Line** templates store information related to the execution of the predispense.
- **Array** templates are used to create a process program of multiple dots within a defined space.

Apply a template to a specific command line by double clicking the left trackball while the pointer is in the **Name** field, and selecting a template from the list that appears. All parameters that are associated with that template are applied automatically.

Templates can be created during the programming process, or as a standalone function.

Refer to Chapter titled - **Creating and Managing Process Programs** for detailed description on **Templates**.

Creating the Weigh Template

If a process requires precise weighing and control of the dispense material the Weight Scale is used. The weight scale is programmed using the weight scale template.

To create a new weigh template:

1. Select **File > Templates**.

A list of previously created templates appears. See Figure 8.

Figure 8

2. Select **Weigh Template**, from the drop down **Filter** list, to assign a template type.

3. Select the file listed in the **Name** field.

4. Type a new file name of your choice over the existing file name.

The **New** button becomes enabled.

5. Select the **New** button.
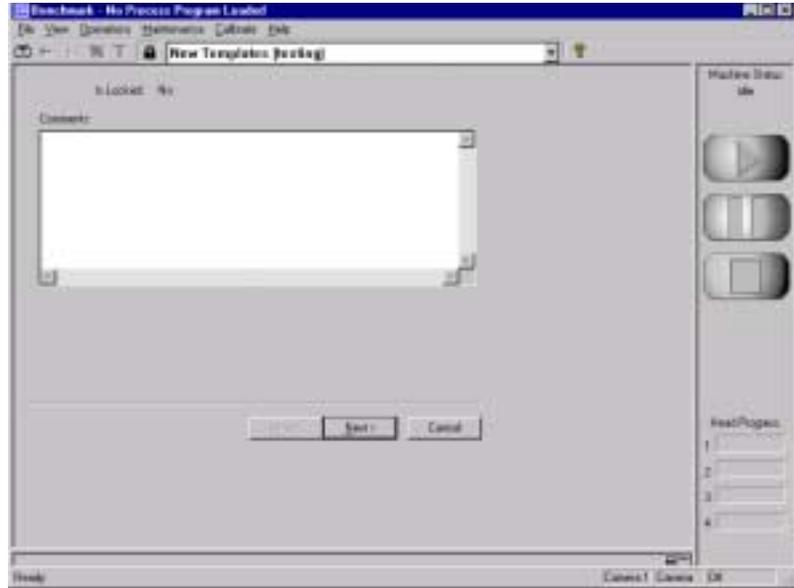
The view area changes to a comment box. See Figure 9.

Figure 9

6. Enter any relative information about this new file (Part Number, Board Size, Material, etc.) in the space provided.

7. Select the **Next** button.

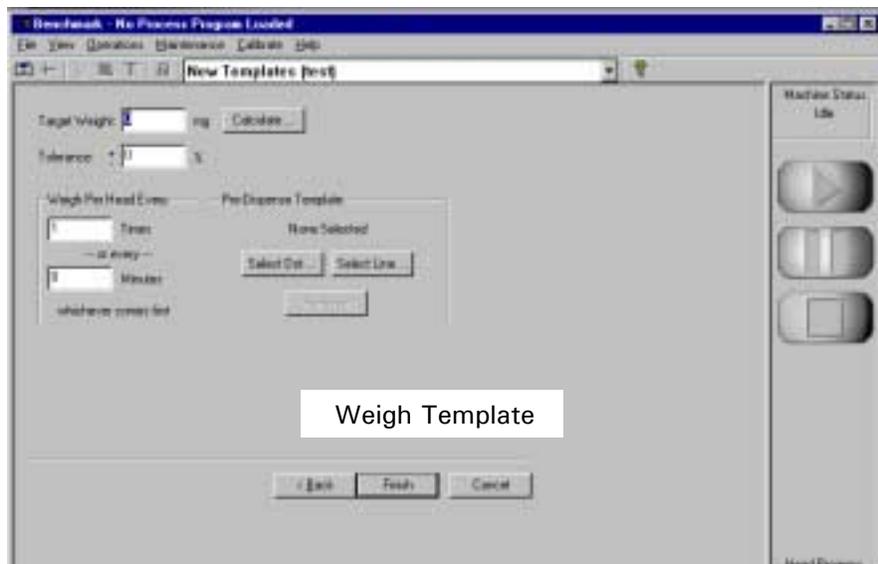The Weigh Template appears. See Figure 10.

Weigh Template

Figure 10

Template Fields

The weight scale parameters for Dot and Line templates both use the same software, the fields from Figure 10 are described as follows:

<u>T</u>arget Weight - This is the ideal weight to achieve and maintain for a particular process program. This weight is determined by performing a sample test (dispense and weigh) on your particular process coupon (user defined).

To<u>l</u>erance - The amount of deviation that the target weight can fall within and still be able to "Converge". This tolerance can be established when performing the sample test on your particular process coupon (user defined).

> *Converge* - This is when the dispense material (placed at the weight scale) meets the set goal (which includes the target weight and tolerance + or -).

<u>C</u>alculate… - A pop-up calculator appears which is used to determine a Target Weight. See Figure 11.

Figure 11

Calculator fields are described as follows:

Field	Description
Length	Length of a particular process program entity.
Height	Height of a particular process program entity.
Width	Width of a particular process program entity.
Density	Density of the material that is being dispensed.
Calculated Width	Calculated weight from the values entered in the above fields. This number automatically calculates when values are placed in fields for Length, Height, Width, or Density.

1. Select the Calculate button (see Figure 10), if the value in the **Calculated Weight** field is acceptable, select the **OK** button.
   If **Cancel** is selected, no updates will occur to the Calculated Weight.

Weigh per head every - This number establishes when and how many times a template should be weighed.

Times example: If a number 3 is entered, the sample will be weighed before dispensing the third line or dot.

A value of zero indicates that the user wants to ignore the number of times encountered and default to the timer (time factor in Minutes).

Minutes - This number specifies the number of minutes that should elapse between weighing a template.

A value of zero indicates that the user wants to ignore the timer encountered (time factor in Minutes) and default to the number of times (Times).

The Times and Minutes are synchronized with each other. Whichever occurs first triggers a weigh.

PreDispense Template - An optional predispense command may be executed after a successful converge. This ensures that there is no residual material on the needle prior to dispensing on the actual product. The predispense command will dispense onto the predispense plate.

2. If all values within the Weigh Template fields are acceptable, select the **Finish** button.

Selecting the **Cancel** button aborts the process.

The Weight Scale Template and the Process Program Grid

Introduction

Each template type is designed to impact specific fields in the process program grid. The displayed template on any line controls how that particular line command will be dispensed.

Procedure

To insert a weight scale template into the Process Program Grid:

1. With a process program loaded, select **View** > **Process Program** to display the Process Program Grid. The scrollbar at the bottom of the Process Program Grid is used to navigate to a desired column. See Figure 12.

2. Using the trackball, select the command lines where you want to apply the weight scale template (normally a string of dots or lines). This example has command lines 5 and 6 selected. The two lines selected will be subjected to the weigh process.
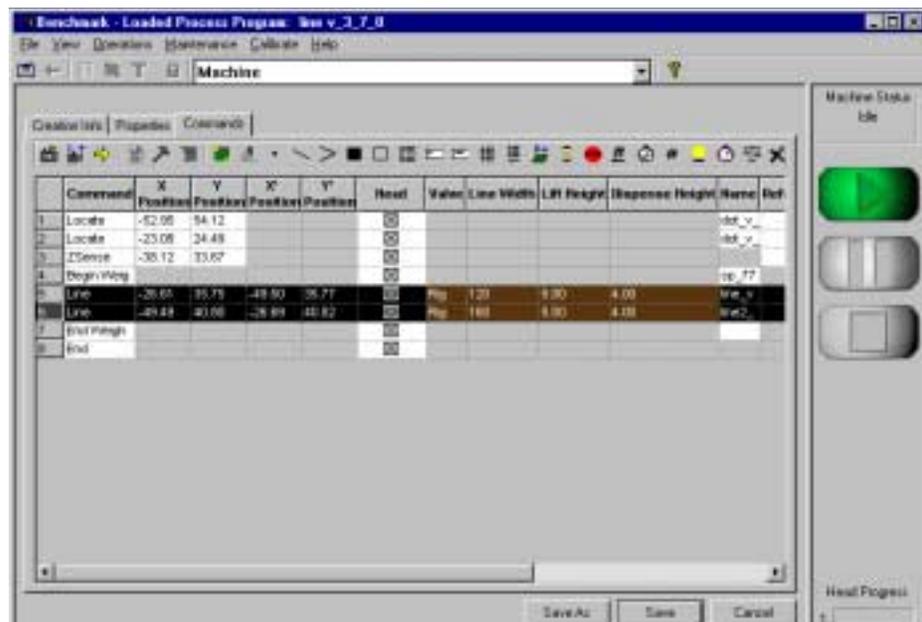

Figure 12

3. Select the Weight Selected Commands icon from the toolbar. A Begin Weigh and an End Weigh command will automatically appear before and after the selected lines to be weighed.

4. Select the **Save** button.

Viewing Weight Scale Data

The weight scale Data may be viewed as the process is running.

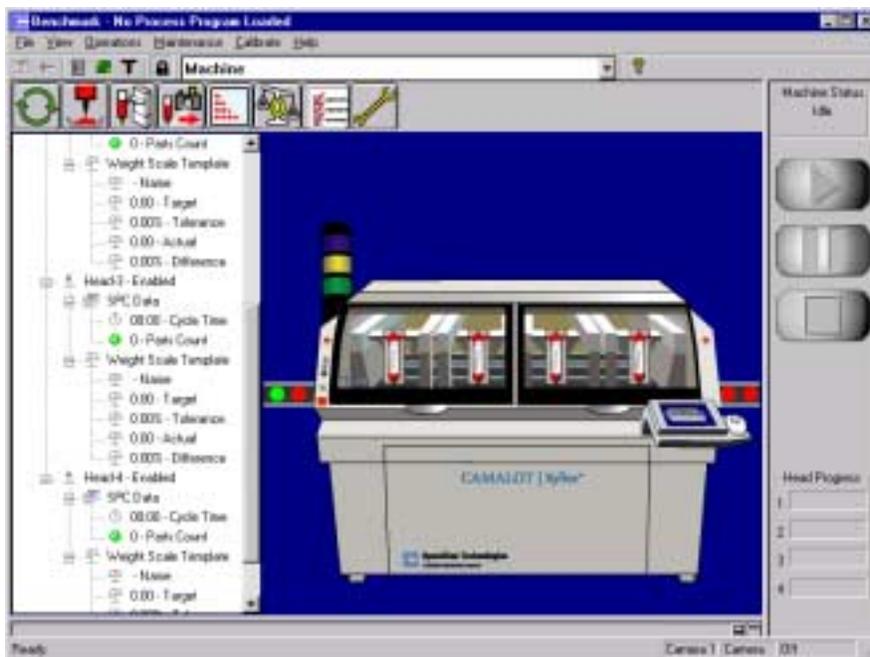To display the weight scale Data, select **View** > **Data** from the menu bar. See Figure 13.

Figure 13

This information view may be toggled On and Off depending on operator preference by selecting the **View** > **Data** from the menu bar.

The Weight Scale Information view shows the following fields per head.

Name - Name of the template that was just weighed.

Target Weight - Weight specified in the weight template as specified by the user.

% Tolerance - Percent difference the dispensed material can drift from the specified target weight and still be within spec.

Actual Weight - Weight of the last sample on the weight scale.

% Difference - The actual percent difference the dispensed material is from the specified target weight.

Weight Scale Alarms

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Alarm Conditions

Introduction

There are several conditions created by the day to day operation of the system that require operator intervention. These conditions trigger one of several system alarms. In most cases the alarm will cause the yellow or blue light tree indicator to illuminate. In addition, an **Alarm Status** screen appears with a message indicating the nature of the error. Most alarm conditions require operator intervention.

Troubleshooting Weight Scale Alarms

The following table is provided as a reference to assist in determining alarm causes and possible remedies related to the weight scale.

Alarm Condition	Description	Possible Remedy
Weight scale communications error	Weight scale is not talking to the computer / Com port.	Check weight scale data cable connections. Check the Inside Out Network Utilities configuration.
Weight scale error	The weight scale failed to zero.	Check connections to the scale. Check that the dispense cup has not overflowed into the scale.
Weight scale head not okay	Identifies the head where the weight scale failed.	Check all communications.
Weight scale dispense error	No material was dispensed into the cup.	Check or purge DU.
Weight scale no pre-dispense template	A predispense template was defined within the weight scale template. This template was later deleted prior to running the weight scale template.	Identify a different predispense template or create a predispense template with the same name in the weight scale template.
Weight scale global tolerance exceeded	The dispense weight has exceeded the tolerance set in the template.	Change weight scale purge cup and zero out scale.

Alarm Condition	Description	Possible Remedy
Weight scale uninitialized request	Attempting to use a weight scale that has not been initialized.	Check comport connections and initialize machine.
No Weigh Template selected	BEGIN_WEIGH command is missing a template selection.	Select a template or delete the BEGIN_WEIGH command.
Missing matching END_WEIGH command	BEGIN_WEIGH command without a matching END_WEIGH command.	Place an END_WEIGH command in the patter.
Nested Weigh Blocks	Missing dispensing command between BEGIN_WEIGH and END_WEIGH commands.	Insert a dispensing command between the BEGIN_WEIGH and END_WEIGH command.

Refer to Chapter titled - **Alarms and Troubleshooting** for detailed description on dealing with system **Alarms**.

Maintenance

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Maintenance Overview

Introduction

Attention

Replacement and calibration of the weight scales should only be performed by a Speedline Field Service Engineer or a technician trained by Speedline.

Attention

The Xyflex or XyflexPro System must be powered up for a minimum of 30 minutes prior to calibration.

If a new Weight Scale is being installed into the system it must have the proper software parameters setup prior to calibration. This is only required during the initial installation.

The new Weight Scale must be calibrated after the initial software parameters are installed.

Weight scales already installed in the Xyflex or XyflexPro system should be calibrated every six months.

Initial Setup of a Newly Installed Scale

Special Tools

The initial setup process requires the following:

- Calibration and Setup disk (Sartorious software, part of Calibration Kit)
- 50 gram mass (weight) and protective glove (part of Calibration Kit)
- DB9 cable (part of Calibration Kit, **Xyflex only**)

Setup of Communication Cables (Xyflex only)

1. Open the front drop down door.
2. Slide the computer draw out.
3. Connect the supplied DB9 serial cable (part of Calibration Kit) to Com 2 at the rear of the computer. See Figure 14.

DSB9 cable to Com 2 port
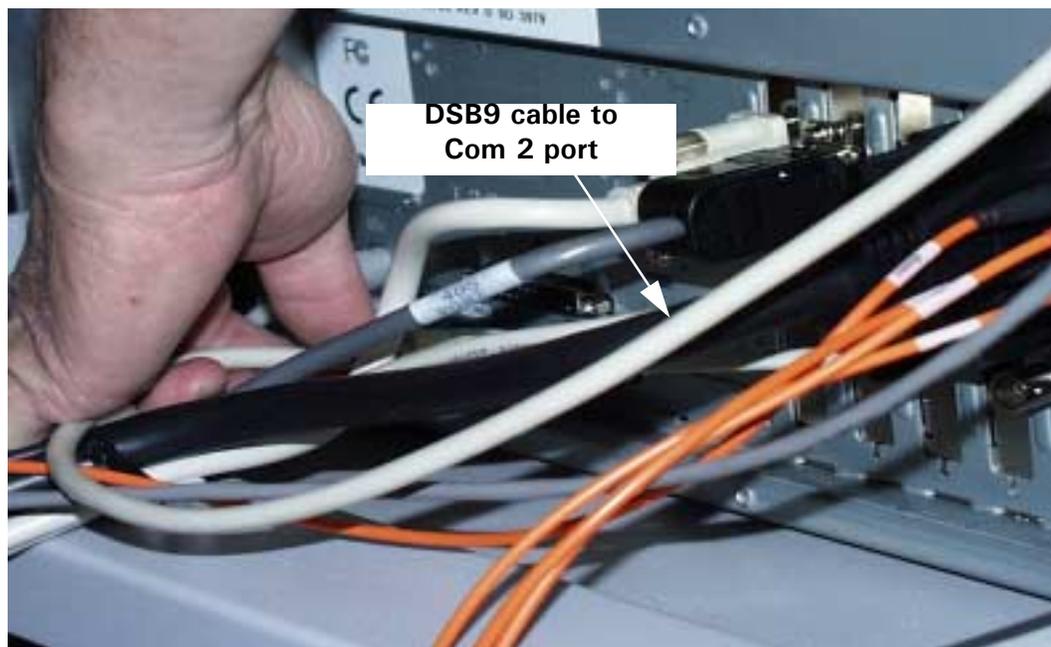
Figure 14

4. Locate the USB serial hub on the right-hand side panel. See Figure 15. Remove the (applicable) cable of the newly installed weight scale from the hub. Connect the cable to the DB9 serial cable. This setup shows the connection for Head 4.
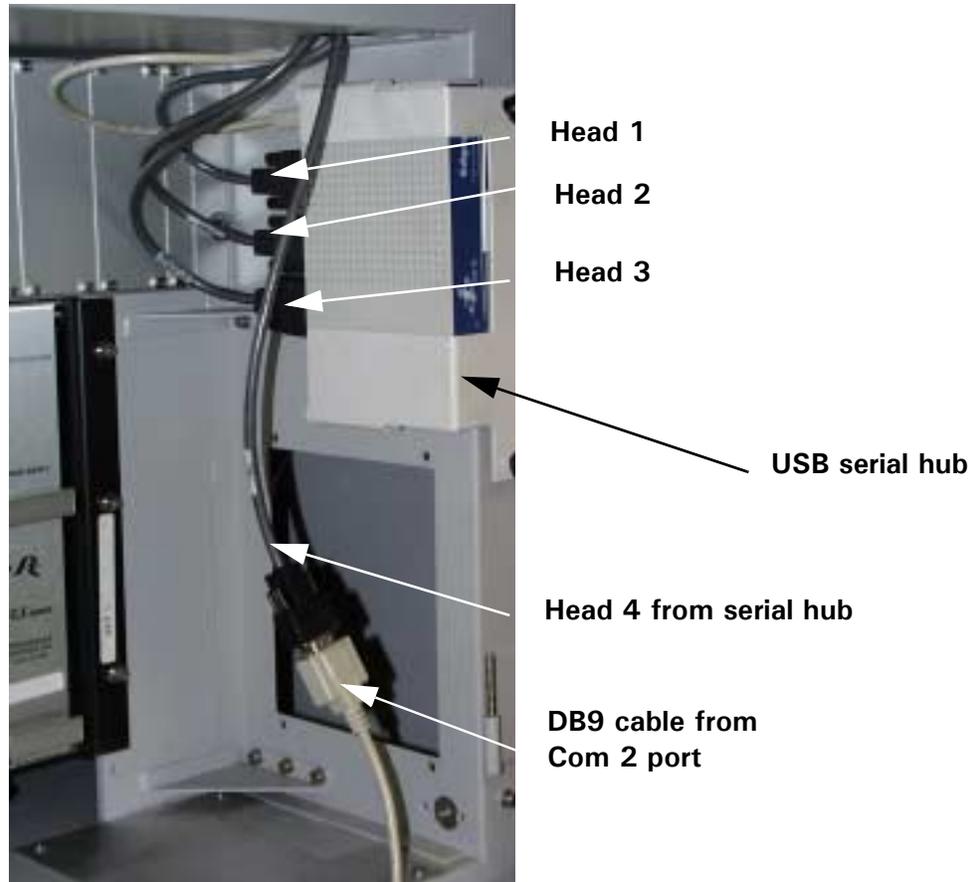
Head 1

Head 2

Head 3

USB serial hub

Head 4 from serial hub

DB9 cable from Com 2 port

Figure 15

Software Installation

Attention

The Sartorius program file will not work with Windows NT® Operating System, the supplied bootable floppy (part of Calibration Kit) must be used.

1. Insert the calibration and setup disk (part of Calibration Kit) into the computer. Close NT and Restart the computer. The Sartorious screen appears. See Figure 16.
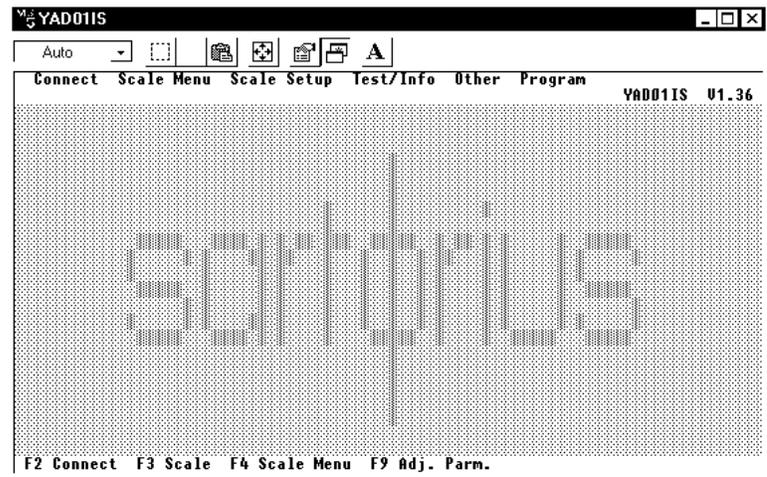
Figure 16

2. Using the keyboard, press **F2** to connect to the weight scale.

A delay of approximately 10 seconds will occur to complete communication to the weight scale. Do not press F2 more than once. Figure 17 appears.
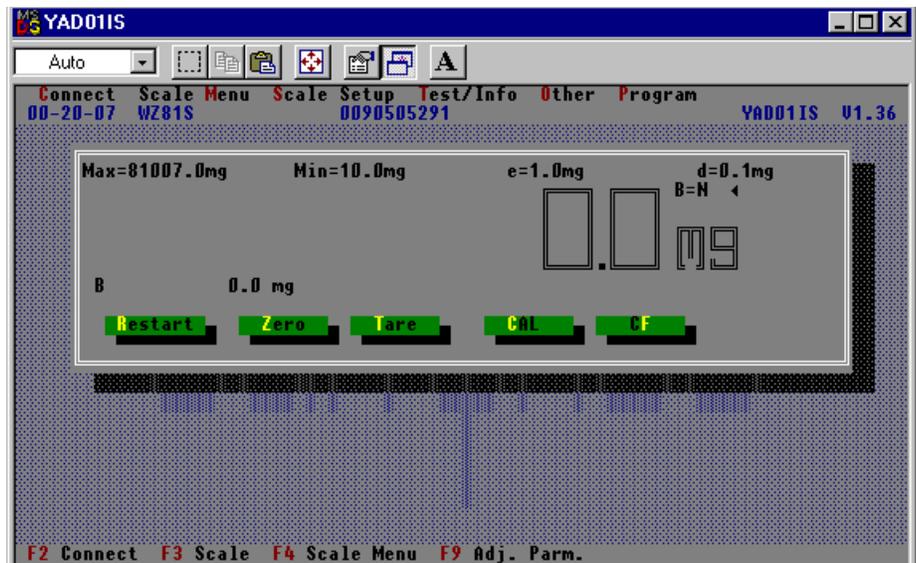

Figure 17

3. Using the keyboard, press and hold the **Alt** key and the letter **M** (**Alt + M**).

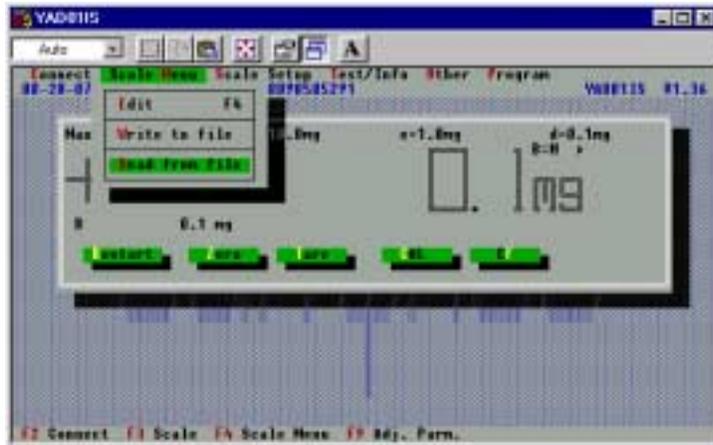A drop down menu appears. See Figure 18.

Figure 18

4. At the drop down menu, use the keyboard down arrow, and scroll down the menu until **Read from file** is highlighted. Press the **Enter** key.

5. Press the **Tab** key until **SETUP.PRN** file is highlighted. Press the **Enter** key. See Figure 19.
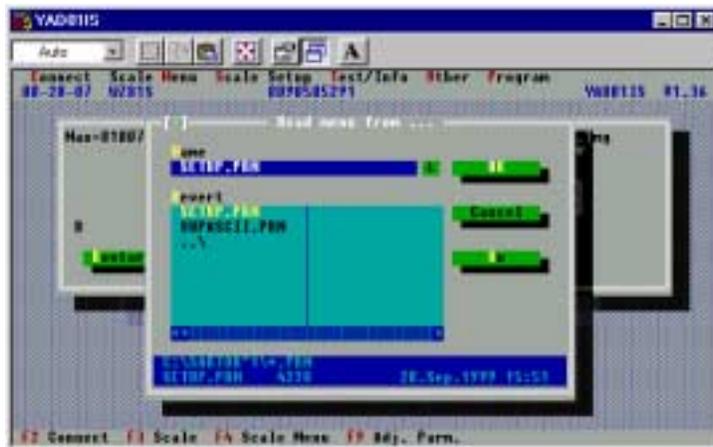

Figure 19

6. Press the **Tab** key until the **OK** button is highlighted. Press the **Enter** key.

The parameters contained in the SETUP.PRN file will flash by in the window as the file loads. See Figure 20.
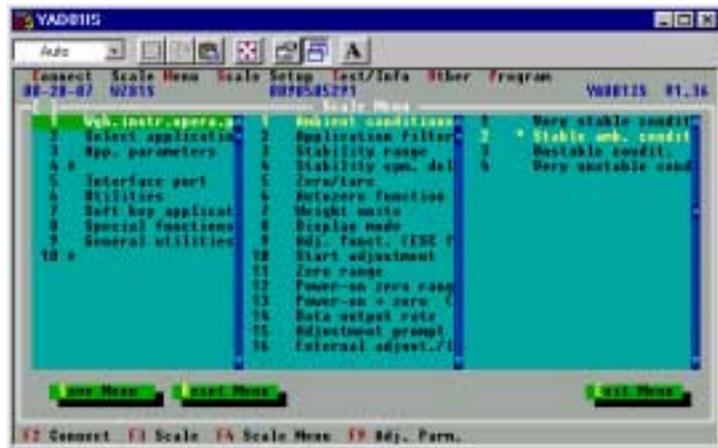
Figure 20

7. Using the keyboard, press and hold the **Alt** key and the letter **M** **(Alt + M)**. A drop down menu appears.

8. At the drop down menu, use the keyboard down arrow, and scroll down the menu until **Edit** is highlighted. Press the **Enter** key.

Do not change (Edit) any of the values displayed. The setup file with the correct parameters is now loaded.

Attention

If the setup file is not saved, the data will be lost when the weight scale is powered up again.

9. Using the keyboard, press the letter **S** to **Save** the setup file which was just loaded. See Figure 20.

10. Using the keyboard, press **F2** to connect to the weight scale.

11. Repeat step 1 through step 10 for each new weight scale installed. This is only required during the initial installation.

Scale Calibration

Introduction   Weight scales already installed in the Xyflex or XyflexPro system should be calibrated every six months or when a new scale is installed.

Special Tools   The calibration process requires the following:

- Calibration and Setup disk (Sartorious software, part of Calibration Kit)
- Master weight (50 gram mass) (part of Calibration Kit)
- Cotton glove (or equivalent) (part of Calibration Kit)
- DB9 cable (part of Calibration Kit, **Xyflex only**)

Setup of Communication Cables (Xyflex only)

1. Open the front drop down door.
2. Slide the computer draw out.
3. Connect the supplied **DB9 serial cable** to **Com 2** at the rear of the computer. See Figure 15.
4. Locate the USB serial hub on the right-hand side panel. Remove the (applicable) cable of the newly installed weight scale from the hub or scale to be calibrated. Connect the **cable** to the **DB9 serial cable**. This setup shows the connection for Head 4. See Figure 15.

Software Installation

Attention

The Sartorius program file will not work with Windows NT® Operating System, the supplied bootable floppy must be used.

1. Insert the calibration and setup disk (part of Calibration Kit) into the computer. Close NT and Restart the computer. The Sartorious screen appears. See Figure 16.
2. Remove the dispense cup from the scale pan. Be sure scale pan is clean.
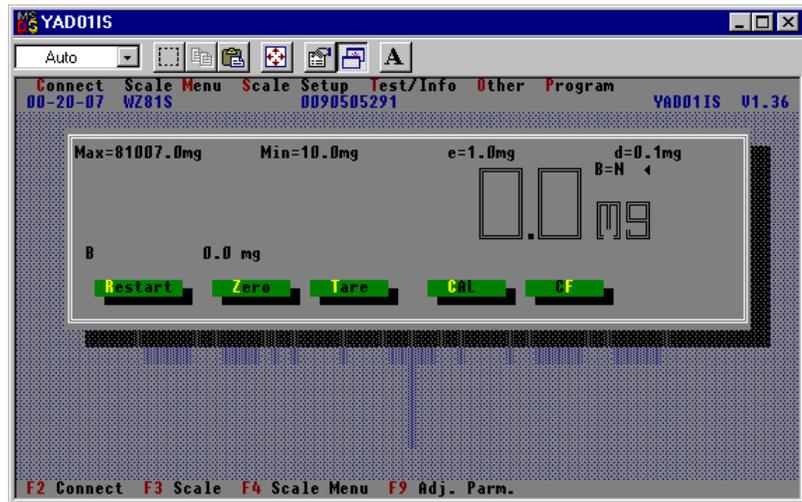3. Using the keyboard, press **F2** to connect to the weight scale. See Figure 21.

Figure 21

4. Using the keyboard, press the letter **Z** to Zero out the scale. If a negative weight is displayed, press the letter **R** to Restart the scale.

Attention

The 50 gram mass (part of Calibration Kit) is a Class I Standard and must never be handled with bare hands. Always wear the supplied cotton glove (or equivalent) to maintain accuracy when calibrating the scale.

5. Using a cotton glove (or equivalent), place the 50 gram mass on the scale pan. Do not handle the mass with bare hands. See Figure 22.

Figure 22

6. Remove the 50 gram mass and if the display does not read zero, press the letter **Z** to zero the scale prior to calibration.

7. Using the keyboard, press the letter **C** to start the calibration. To abort the calibration at any point, press the letter **F** for clear function.

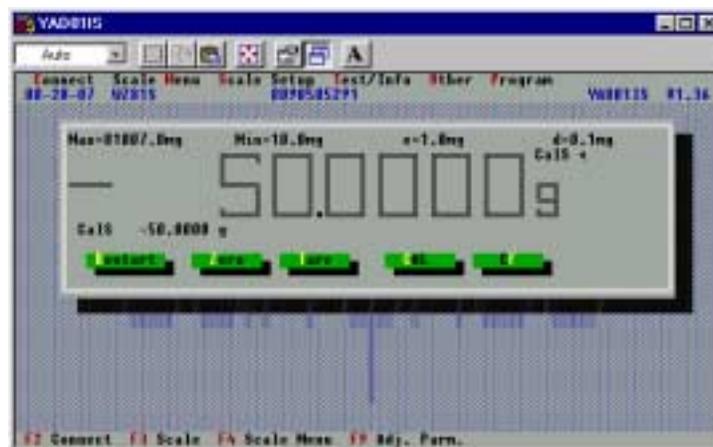A value of **CalS - 50.0000 g** is displayed. See Figure 23.

Figure 23

Using a cotton glove (or equivalent), place the 50 gram mass back onto the scale pan. Do not handle the mass with bare hands. Slide the glass cover over the mass.

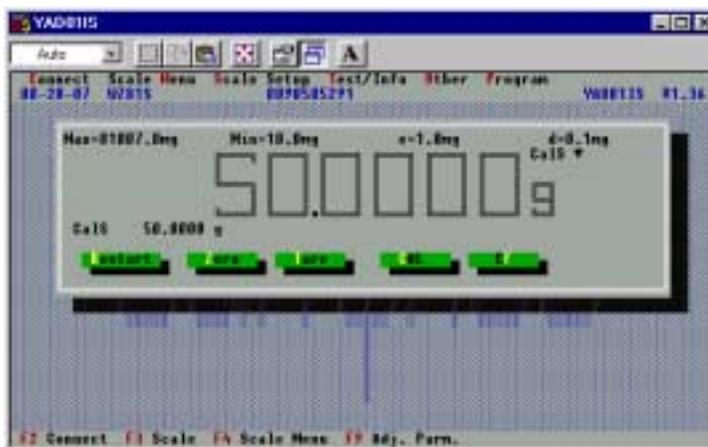The display will change and **CalS 50.0000 g** is displayed. See Figure 24.

Figure 24

After a delay of approximately 10 seconds the difference in the mass and the reference value will be displayed.

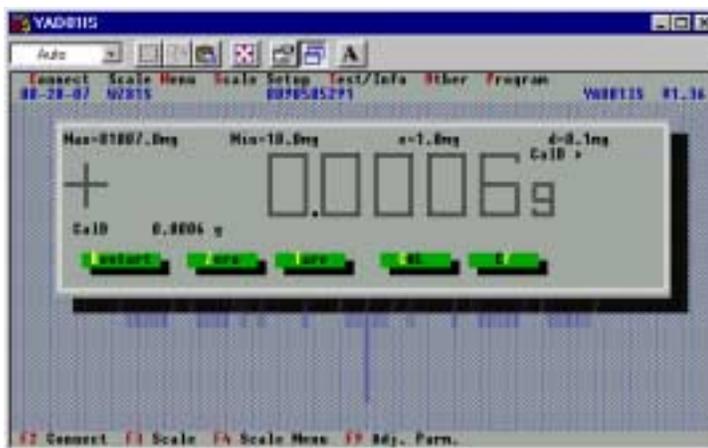The following example is showing **CalD +0.0006 g** displayed as the difference. See Figure 25.

Figure 25

8. Press the letter **C** again to finish the calibration.

   The display will change to **50000.0 mg** (without any CALS or CALD being displayed). This value is stored in the scales EEPROM. See Figure 26.
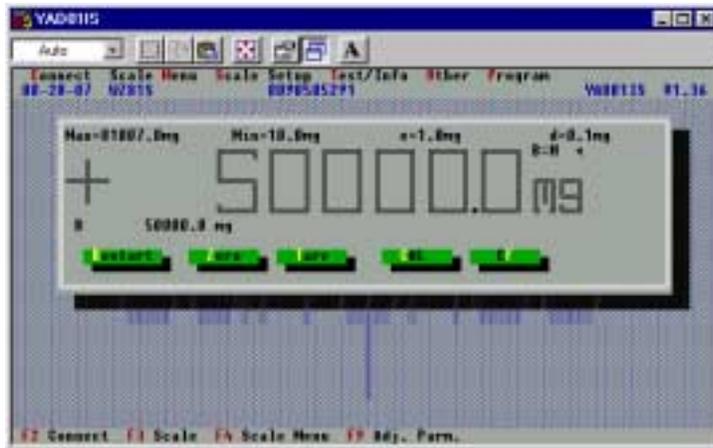

Figure 26

9. Remove the 50 gram mass from the scale pan and rezero if necessary.
10. Place the 50 gram mass onto the scale pan. The scale should repeat to within tenths of a milligram.
11. Repeat step 1through step 10 for the remaining three heads (**Xyflex only**).

Spare Parts And Support Information

Support And Calibration Kits And Spare Parts

Support Kit

A support kit is provided and consists of spare draft Cover shields
- Recommended spare parts, materials and/or lubricants that are required for preventive maintenance.

Calibration Kit

A weight scale calibration kit is provided which includes

- A calibration weight
- Sartorious calibration software

Spare Parts

Speedline Camalot provides an "As-Built" document package.
The package includes:
- This document
- A set of assembly drawings and schematics (where applicable)
- Spare parts lists

If you are missing any of the above items, please contact the Speedline Camalot Technical Publications department (see below) for replacements.

Technical Support

Getting Support

Speedline Technologies provides a 24 hour customer support line that is available 365 days a year. Support technicians are available to assist you in operating and maintaining the weight scale.

They can also troubleshoot any problems that may occur, assist you in obtaining replacement parts, and arrange for training on your Camalot equipment.

To contact customer support, dial **1-800-737-8110 and follow the prompts.**

Technical Publications

Every effort has been made to provide accurate and up-to-date information regarding your weight scale.

You may contact Speedline Technical Publications via E-mail to address any errors or discrepancies within this document.

The E-mail address is **campubs@speedline.cookson.com**

You may also contact us by phone @ 1-978-521-7337