Technidyne Corporation

PROFILE/Plus Print Surf

Manual #MPPS04011000
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LIMITED WARRANTY

Except for degradable items including lamps, print ribbons and filter elements for which the warranty period is 30 days, Technidyne warrants all products of its manufacture to be free from defects in material and workmanship for a period of one year from the date of shipment from Technidyne's plant. Upon receipt of notification by the Purchaser, Technidyne at its option will correct any defects in equipment of its manufacture either by repair at its factory or by supply of replacement parts to the Purchaser. If the equipment is returned to Technidyne's plant for repair, it shall be the responsibility of the Purchaser to prepay all transportation charges.

If, at its option, Technidyne agrees to perform repairs at the Purchaser's plant, Technidyne will supply only parts (except for degradable items) and labor at no charge during the warranty period. It shall be the responsibility of the Purchaser to pay all reasonable travel and living expenses of Technidyne's personnel while performing repairs during the warranty period.

Technidyne does not warrant against any claim of infringement due to any claim, which arises out of compliance with Purchaser's specifications. TECHNIDYNE MAKES NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR OTHERWISE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE STATEMENTS IN THIS LIMITED WARRANTY.

If Technidyne determines that the equipment is defective or has developed malfunctions as a result of misuse, modification, improper installation by any other party, failure to perform normal maintenance (including but not limited to air filter replacement, print head cleaning), abnormal conditions of operation or acts of God, Technidyne shall not be liable for any loss or damage of any kind. Technidyne shall, in no event, be liable for any damage or loss due to delay in deliveries, delay in service, or use or interruption of use of business, or loss of profits or sales or any other consequential or incidental damages, and its liability shall in no case exceed the original purchase price of the equipment.

Certifications of Technidyne instrument and/or calibration standard accuracies are for informational purposes only and are not transferable to instrument user's product. Technidyne assumes no liability for product rejects or other consequential damages due to such certifications.

Technidyne reserves the right to discontinue the product and to make changes in design or construction of its product at any time without incurring any obligation to make any changes whatsoever on units previously purchased and Technidyne shall not be liable for any consequential or incidental damages due to such discontinuance or change in product. Repairs performed or attempted to be performed during the warranty period by personnel not employed by Technidyne Corporation or its authorized service vendors invalidate this warranty.

Repair of equipment by Technidyne shall not revive an otherwise expired warranty nor shall it extend this warranty. Component material or parts that are not manufactured by Technidyne are excluded from this warranty and are subject to any applicable warranties issued by the manufacturer of such material or parts.

The use of printer paper other than that recommended by Technidyne invalidates the warranty on the printer.

LIMITED LIABILITY

To the maximum extent permitted by applicable law, in no event, shall Technidyne or its suppliers be liable for any special, incidental, indirect, or consequential damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use or inability to use the product or the provision of or failure to provide support services, even if Technidyne has been advised of the possibility of such damages. In no case shall Technidyne's liability for money damages exceed the amount paid for the product out of which such claim arose. Certifications of Technidyne instruments and or calibrations standard accuracies are for informational purposes only and are not transferable to the user's product. Technidyne assumes no liability for product rejects or other consequential damages due to such certifications. Because some states and jurisdictions do not allow the exclusion or limitation of liability, the above limitation may not apply to you.

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Technidyne PROFILE/Plus PPS
1. Unpacking and Start-Up

Unpacking

As the instrument is carefully unpacked a visual inspection should be made to determine if any damage occurred in shipment. If the instrument is damaged, please report the damage immediately to the shipping company who delivered the instrument. Also check carefully to see that the following accessories were received with the instrument:

Parts List

The following materials are included with the instrument:

1. PROFILE/Plus PPS Test Instrument
2. Measurement Air Compressor (includes Air Line, fitting & filter) See section 1.1.1 for assembly instructions
3. Instrument Power Cord
4. 35 p.s.i. Air Line and Fitting
5. Paper Calibration Standards
6. Paper Drive Nip Air Pressure Gauge
7. Allen Wrench
8. PPS Manual

Options that may be included with your shipment as purchased:

A. Printer Assembly (includes printer, power cord w/ transformer, communications cable and spare paper rolls)
B. Additional manuals
C. Additional Calibration Rods (Set of 3)
D. Additional PPS Heads
E. Backings (soft or hard)
F. Paper Guide Assembly

Setting Up

THE INSTRUMENT SHOULD BE SET UP ON A SOLID TABLE OR BENCH WITH SUFFICIENT SPACE ON ALL SIDES SO THAT AIR CAN CIRCULATE FREELY FOR COOLING PURPOSES. DO NOT LOCATE THE INSTRUMENT DIRECTLY UNDER AN AIR CONDITIONING OR HEATING OUTLET.

ALLOW THE INSTRUMENT TO REACH ROOM TEMPRATURE BEFORE PLACING IT IN OPERATION. MOST TESTS ARE TEMPERATURE

SENSITIVE AND THEREFORE, THE INSTRUMENT MAY NOT OPERATE PROPERLY UNTIL IT HAS STABILIZED AT ROOM TEMPRATURE.

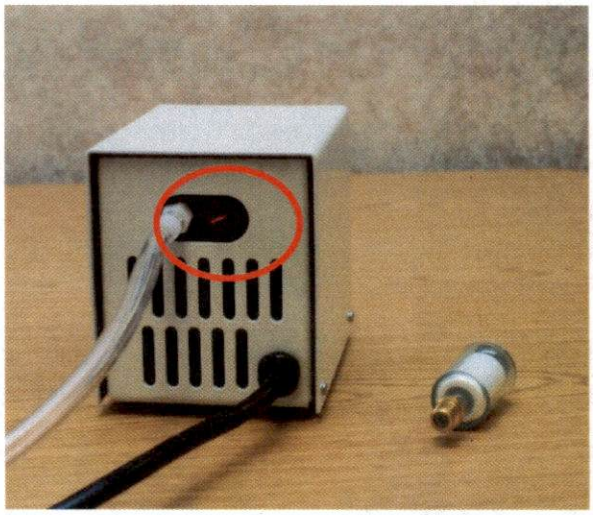
Like any equipment that must maintain operation it is important to provide clean uninterrupted power and/or air supply. The use of a line conditioning PC battery backup should be employed. The equipment uses a PC style mother board and therefore should be treated as a computer. Power spikes, sags, and noise can decrease the life of the mother board and/or cause corruption of the software.

Regulated clean dry air is very important to the life of the air cylinders, valves, and flow sensors. Purge, Vacuum, Puff, and Negative Pressure air are used throughout many of the PROFILE/Plus modules. A bulk airline from the mill must be provided. The bulk airline should have sufficient volume and stable pressure.

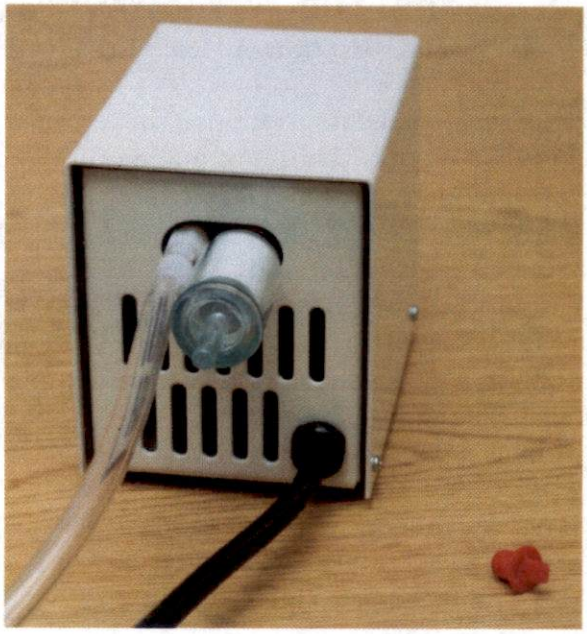
1.1 Measurement Air Compressor

The Measurement Air Compressor supplies clean and conditioned air to the PROFILE/Plus PPS instrument. This is for measurement purposes only. A mill air connection is required for the other pneumatic operations of the instrument.

The Measurement Air Compressor is shipped without the required intake filter installed. The image below shows the compressor with the red intake plug installed and the intake filter.



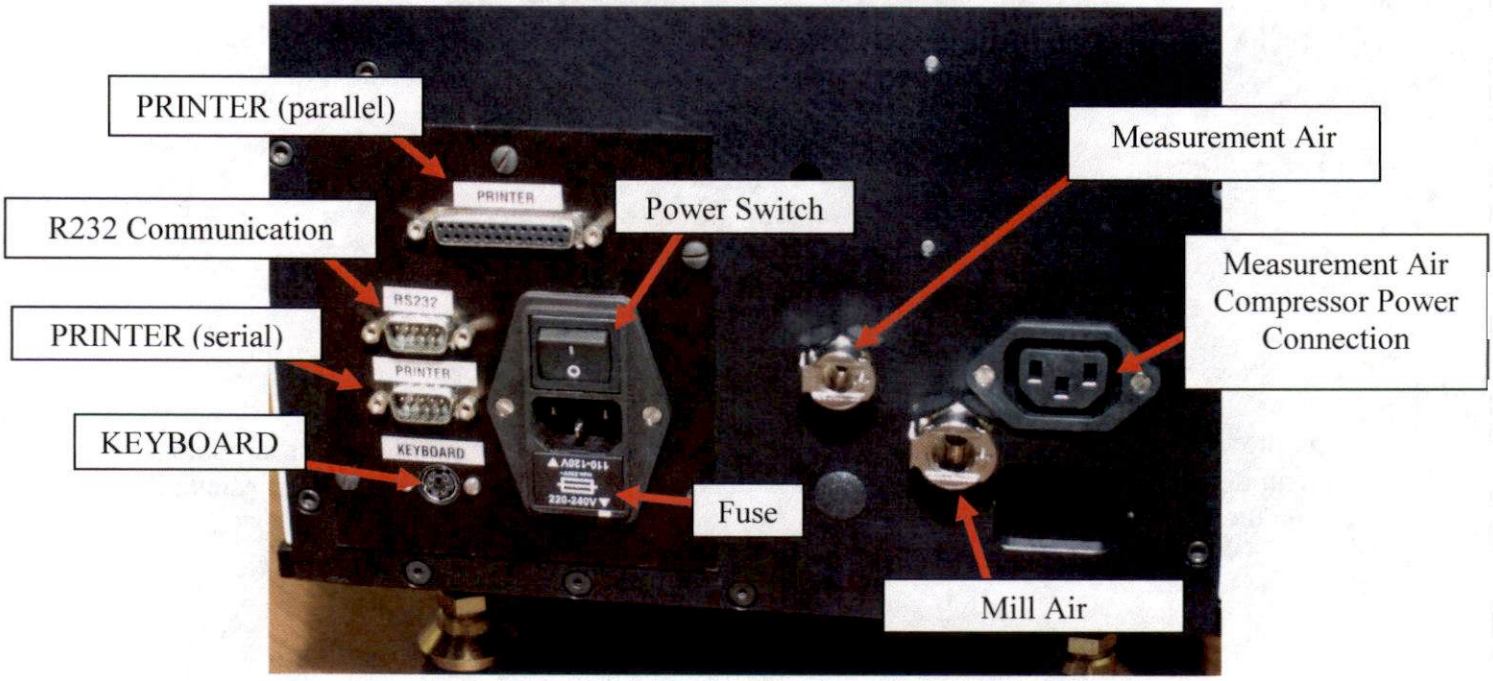
Remove the intake plug and screw the intake filter in place. A finger tight fit is all that is required for proper operation. The image that follows shows the intake filter installed and the red intake plug removed.



1.2 Connection Guide

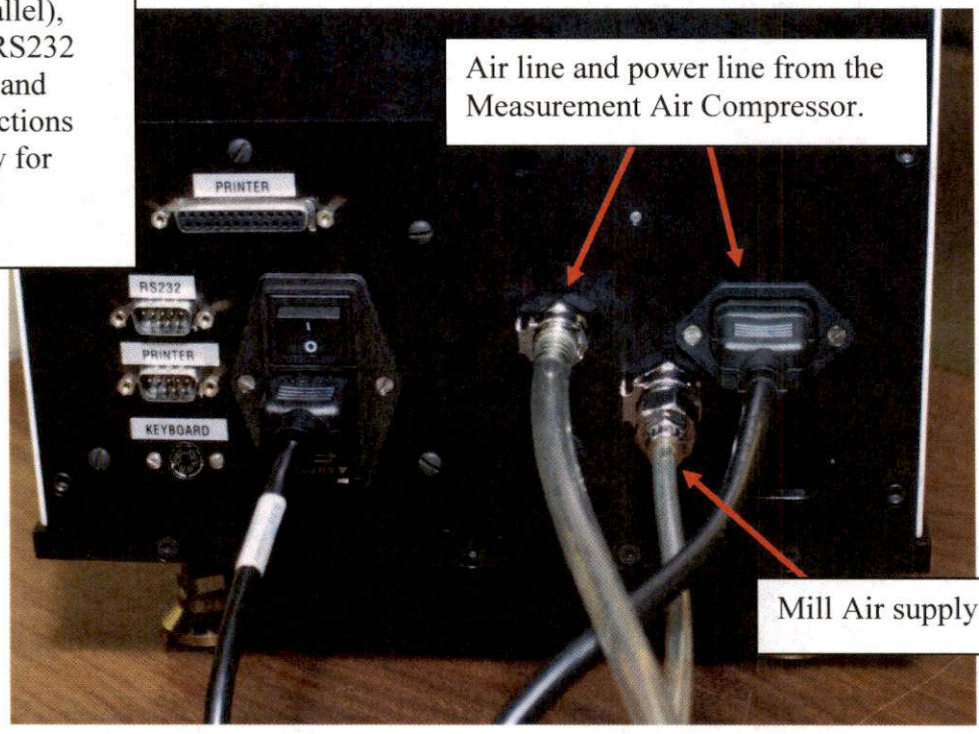
The Connection Guide shows the layout of the back panel. Use this layout in making communication, keyboard, printer, power, and air connections.

Back of the Instrument View Prior to Connections



Back of the Instrument View After Connections

The Printer (parallel), Printer (serial), RS232 Communication and Keyboard connections are not necessary for operation of the instrument.



Connect the Measurement Air Compress to the instrument. Next connect the Mill Air supply. See the prior images for location of the connectors. A Mill Air quick disconnect fitting with approximately 6 feet of air line is included with the instrument.

Plug the power cord into the back of the instrument. If the label on the back of the instrument indicates that it requires 115volts AC, plug the other end of the power cord into an appropriate 115 volt receptacle. THE RECEPTACLE SHOULD BE WELL GROUNDED FOR PROPER OPERATION.

If the instrument is marked for 220-240 volts AC operation, a power cord configured specifically to mate with the power service (mains) of a specific country should be supplied. If the power cord supplied with the instrument does not mate with your power service receptacle, contact Technidyne or your local representative for assistance.

WARNING

CONNECTION OF OTHER EQUIPMENT TO THE PPS INSTRUMENT WITHOUT PROPER ATTENTION TO GROUNDING (EARTH) COULD CAUSE ERRATIC READINGS OR EVEN PERMANENT DAMAGE TO THE THICKNESS INSTRUMENT OR THE CONNECTED EQUIPMENT. IT IS RECOMMENDED THAT RS232 EQUIPMENT AND EXTERNAL PRINTER DEVICES LOCATED REMOTELY FROM THE THICKNESS INSTRUMENT BE CONNECTED THROUGH ELECTRICAL ISOLATION DEVICES TO PREVENT PROBLEMS CAUSED BY GROUND (EARTH) DIFFERENTIALS AND NOISE PICKUP.

THINGS TO KNOW BEFORE STARTING OPERATION

1. Do not jab the membrane pad with a finger or any other object. A light short finger touch is sufficient for operation.

2. When operating this instrument in a PROFILE/Plus System, the instrument panel remains active unless a "System" test sequence is in progress. This allows an operator to perform single measurment testing on a specific substrate property.

3. Do not use liquid spray cleaners or abrasive wipes to clean the screen. See Appendix 5 for proper cleaning procedures.

4. The **HOME** key is always active on a stand-alone instrument. If for any reason you wish to discontinue operations and return to the main menu, you may do so via the **HOME** key.

WARNING

WHEN CONNECTING ANY PROFILE/PLUS INSTRUMENT VIA RS232 AN OPTICAL ISOLATOR MUST BE USED TO PREVENT DAMAGE TO THE INSTRUMENT.

Check List (before applying power)

After making all of the connections outlined above, please check the following before applying power. Failure to follow these steps could result in voiding the warranty.

Make sure the Internal Air Regulator has been set to 40 pounds per square inch $\pm$ 5 psi.

If the AC power supply has voltage spikes or large variances, connect the instrument to an uninterruptible power supply with line regulation.

Ensure the Measurement Air Compressor filter is in place and secure.

Start Up

Face the front of the instrument, reach around the right side of the instrument and press the rocker switch (on the lower rear panel) to apply power to the instrument. The display should illuminate within 30 seconds. Turn on printer if applicable.

The instrument normally requires 30 min warm-up time before operation is begun. If, however, the instrument has been subjected to hot or cold temperature before being turned on, the instrument should be allowed to run for 30-60 minutes before proceeding with operation. The instrument may be left running continuously (24 hours per day).

1.3 Home Screen Overview (Hard Keys & Soft Keys)

Upon start up the main menu screen will be displayed. There are two distinct types of interface buttons to push. The **Hard Keys** are the permanent keys whose functions do not change.

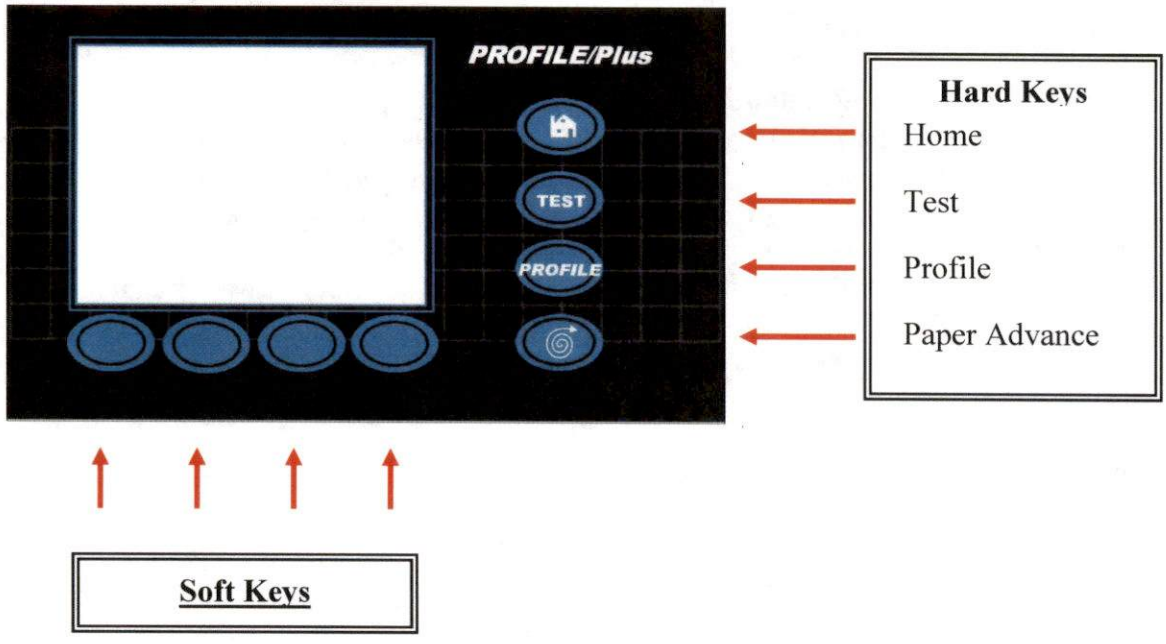
Home - Returns to this Home Screen. (Also serves as an abort key.)

Test - Perform single test. Average multiple samples automatically.

Profile - Starts the profile that is highlighted on the Home Screen.

Paper Advance - Manually Starts/Stops paper drive.

The **Soft Keys** are 4 keys located along the lower portion of the display panel whose function changes (within the software) to provide additional operational options (i.e. SCROLL, CHANGE, PRINT, etc.). Each specific function is explained further in the appropriate section of these instructions.



HOME

The **HOME** hard key is designed similarly to the escape key on your computer. Pushing the **HOME** key will remove you from whatever screen you may be working on and will return you to the **Home Screen**. If you have test data from previous testing, the software will ask you if you want to delete this data before returning to the **Home Screen.**

SINGLE TEST

The PPS **TEST** hard key is designed to let you walk up to the instrument insert a sample, push the **TEST** hard key and get a single measurement test result. The test conditions are displayed on the **Home Screen**. The test conditions can be changed by pushing the **SINGLE** soft key and revising the test conditions (see Section 3).

To average the results of several samples or several readings from the same sample, continue testing and the instrument will automatically keep a running average of the test results. A minimum of five readings must be taken to obtain a standard deviation reading.

Once the testing is completed the soft keys allow you to:

- Print your results.
- Send Data to a mill information system.
- Review and edit the statistic results.
- Edit the data in the present data set

The **STATISTICS** key allows you to review the average, high, low, and standard deviation values. **STATISTICS** also allows you to delete and restore individual results and see how this impacts the statistical results. You can include this reading in the results after deleting the reading by pushing the **RESTORE** soft key that appears whenever you have deleted a test result. Any reading deleted from the statistics is marked as not included in the statistics, but is still shown so a record of the test is always maintained.

Use the **HOME** key when you have completed your testing to return to the **Home Screen**.

PPS PROFILE

The PPS **PROFILE** hard key is designed to let you load a strip of paper, push one button and get a profile of the strip automatically. The test conditions are displayed on the **Home Screen**. You may select between the four profiles shown on the **Home Screen**, or choose a different profile stored in the instrument. (See Section 5, Profile Measurement Test Setup).

The average, high-test value, low-test value, and the standard deviation will all be calculated automatically. You must have a minimum of five tests for a standard deviation to be calculated. In addition, individual test values and their test position are displayed in table or graph form.

The soft keys allow for several options when testing is completed:

- **Print** – results are printed on the attached printer
- **Send Data** – the test data is sent to the RS232 connector located on the rear of the instrument
- **Edit** – remove or restore individual data points in the present data set
- **Resume** – resumes testing in the present data set

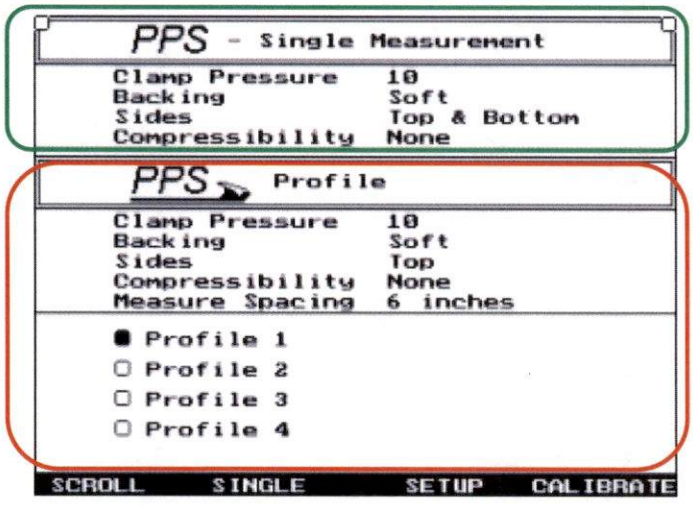
Section 5 of this manual gives directions on setting up and maintaining profile testing.

PAPER ADVANCE

The **PAPER ADVANCE** hard key allows you to advance a sample manually by pushing this hard key. To stop the sample, simply push the **PAPER ADVANCE** hard key again.

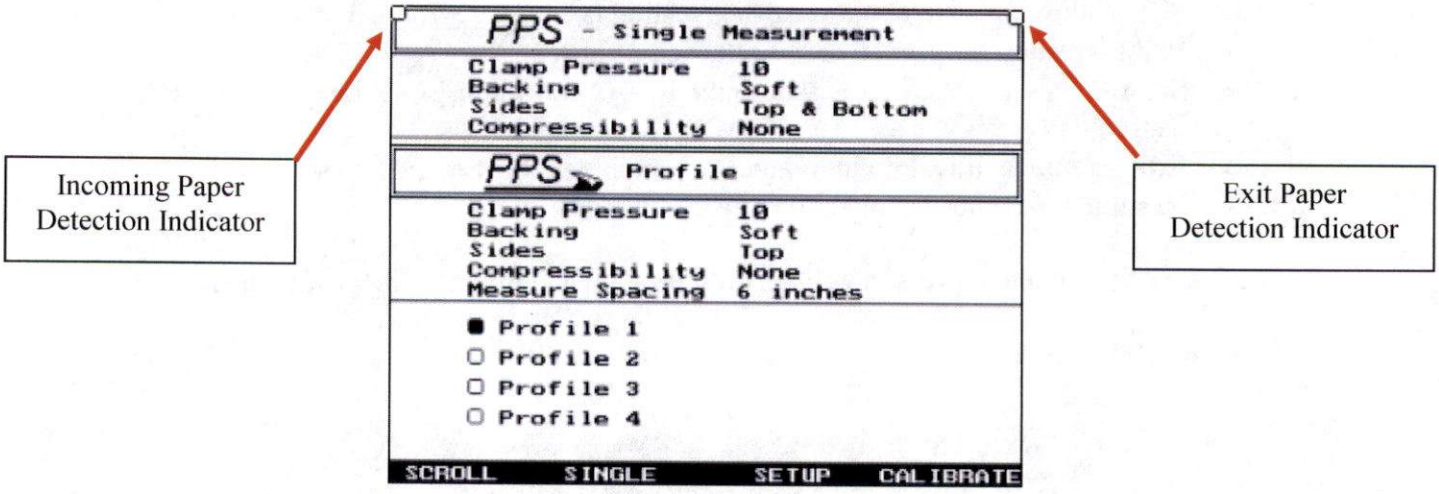
HOME SCREEN

The following image is the **Home Screen**. This screen shows the current parameters for Single Measurement testing and for the active Profile parameters. The Single Measurement section of the **Home Screen** is outlined in green. For an explanation of the Single Measurement operation see Section 3. The Profile section of the **Home Screen** is outlined in red. For an explanation of the Profile operation see Section 4.



The **Home Screen** contains Paper Detection Indicators. These are used by the instrument to determine the presence of paper to conduct profile testing. They also indicate paper jams and paper skews in certain situations.

The Paper Detection Indicators will become black with the presence of paper.



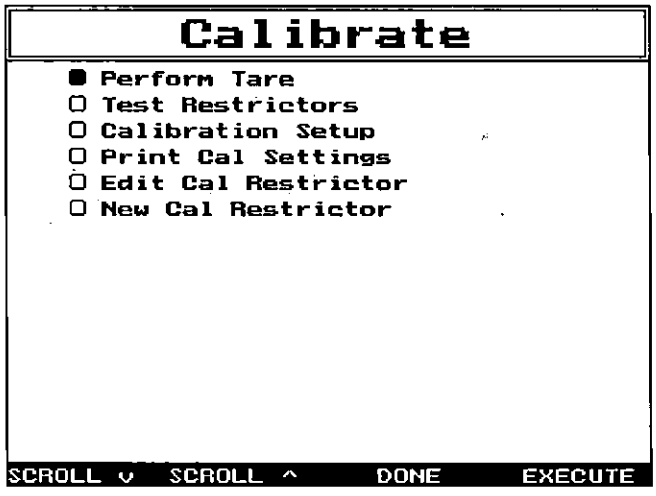
NOTE: the **PAPER ADVANCE** key only works when the Paper Detection Indicator on the sample exit side of the instrument is activated.

Technidyne PROFILE/Plus PPS
2. Calibration

Calibrate

To insure the measurement flow sensors are monitored accurately, each instrument is supplied with a set of flow restrictors. These restrictors have been certified to NIST and cover the range from low to high flow levels. The actual flow values and their tolerances will be documented on the accompanying Certificates of Calibration.

On the **Home Screen** select the **CALIBRATE** soft key. The following screen will appear.



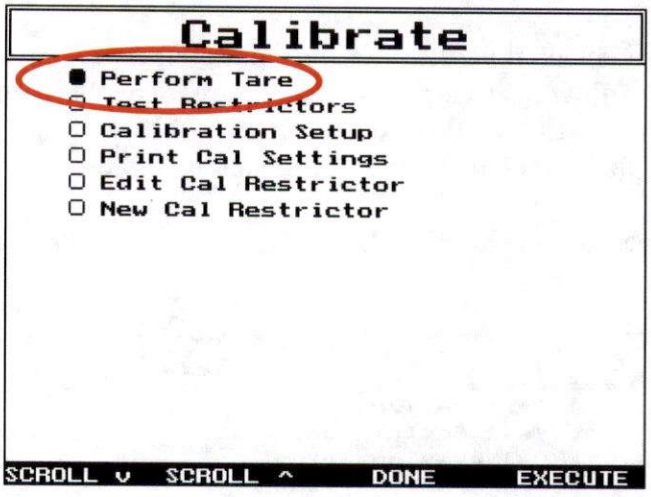
From this screen a number of calibration functions can be preformed. These functions are:

- **Perform Tare** – This command runs a check on the flow system, which ensures the zero flow point remains constant. This function will insure accurate measurements in the very low flow ranges.

  The Tare cycle is automatically evaluated whenever the instrument is powered up. Subsequent checks are done on timed intervals based upon the end users preference. This process will NOT interrupt a testing sequence.
- **Test Restrictors** – This function performs a calibration verification to ensure that the airflow measurement system is operating properly.
- **Calibration Setup** – Used in conjunction with the Calibration Adjust routine.
- **Print Cal Settings** – Prints the calibration settings.
- **Edit Cal Restrictor** – Allows for editing of calibration restrictor parameters.
- **New Cal Restrictor** – Allows for the entry of a new restrictor rod.

2.1 Perform Tare

Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the **Perform Tare** command on the **Calibrate** screen as indicated below.



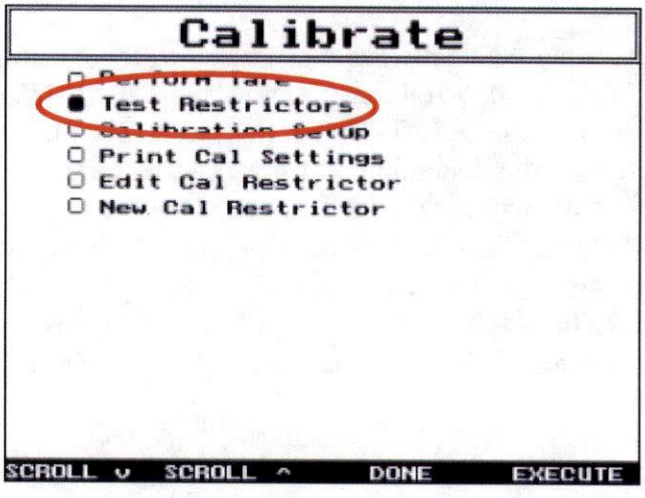
The instrument will begin the routine. During the Tare the screen will switch to indicate the progress. Once complete the instrument will return to the **Calibrate** screen.

Note: This function is also located in the Setup portion of the PROFILE/Plus PPS.

2.2 Test Restrictors

Warning – the flow restrictors are temperature sensitive. Do not attempt to verify calibration if your restrictors have been stored in extreme cold or hot conditions. Allow them to reach laboratory temperature before continuing.

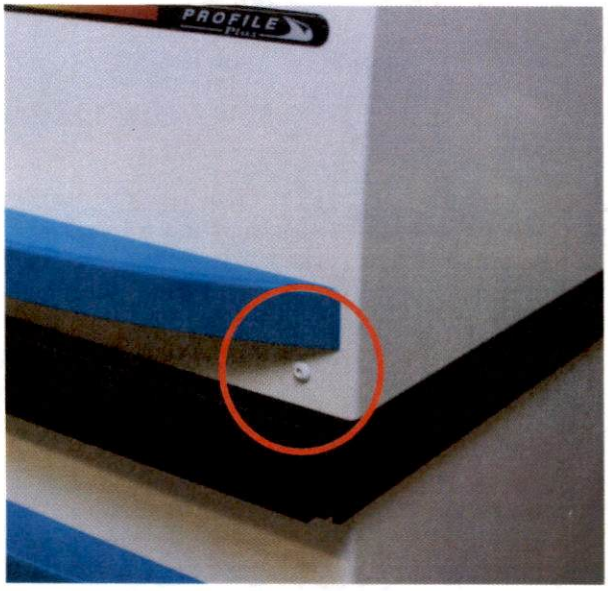
To Test Restrictors use the **SCROLL** v and **SCROLL** ^ soft keys on the Calibrate screen to highlight the Test Restrictors command. See the image below.



Note: The specific restrictor flow values and serial numbers will be programmed into the instrument at the factory. The menu on each screen will give instructions as to which

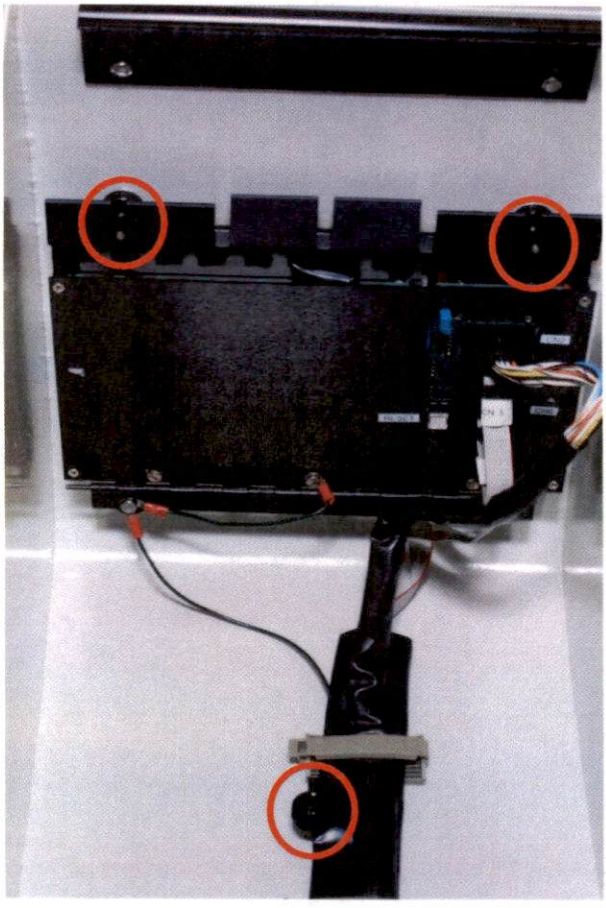
restrictor belongs in which port. (See also restrictor setup and edit instructions sections 2.5 and 2.6)

Raise the upper hood by removing the locking screw as indicated in the following image.



An Allen Wrench is supplied with the PROFILE/Plus PPS instrument. This Allen Wrench fits the locking screw.

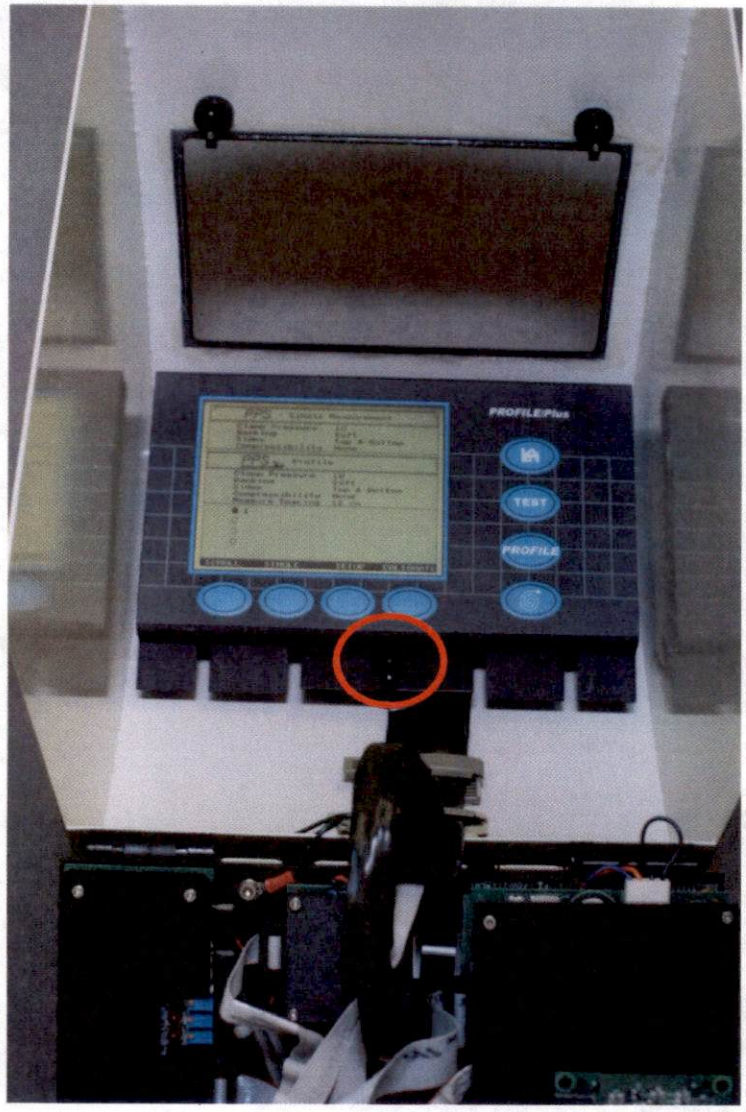
After the locking screw is removed lift the upper hood using the blue handle. The hood will rest on supports mounted on the back of the instrument.



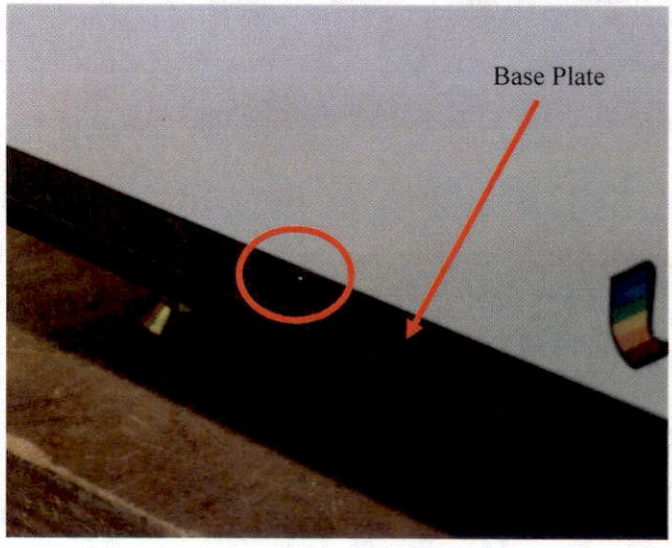
The display of the PROFILE/Plus PPS instrument is mounted on a hinge so that operations requiring the upper hood to be raised are capable of being conducted with ease.

The image to the left shows the upper hood in the raised position. The two upper circles indicate the location of the locking mechanisms that holds the display in place for normal operation. The bottom circle shows the locking mechanism for securing the display when the upper hood is open.

Loosen the two mechanisms holding the display and gently lower the display so that the lower lock slips through the cut out of the display frame. Tighten the lower mechanism to secure the display. The image that follows shows the display in this position.



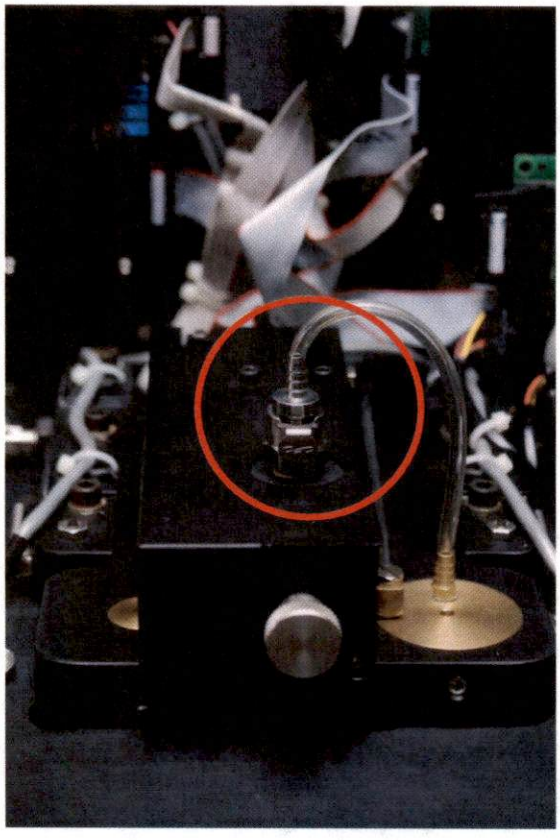
Remove the lower housing locking screw using the same Allen Wrench used on the upper locking screw. The screw is located at the front and center of base plate.



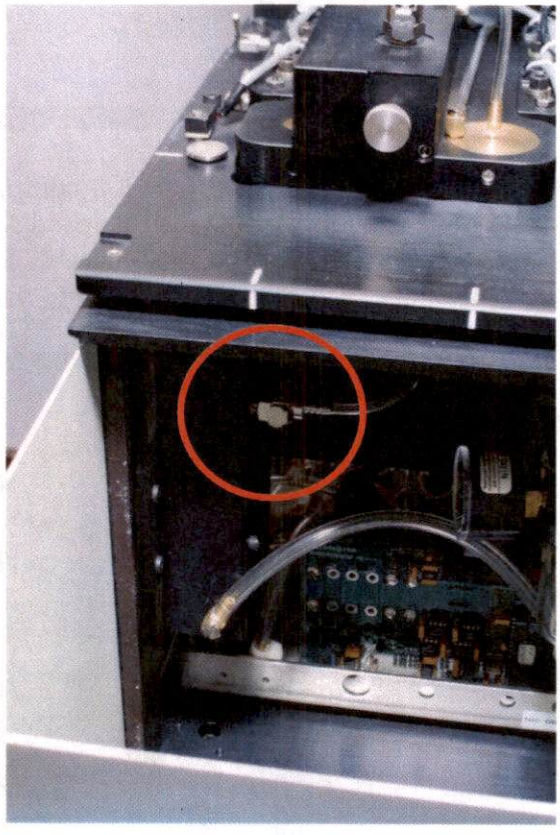
Use the blue handle to pull the lower housing cover out about half way. This is only necessary if the instrument is equipped with the capability to measure bottom side Print Surf roughness.

The PROFILE/Plus PPS uses quick disconnect ports for inserting the Calibration Restrictors. The following images show the location for the top and bottom quick disconnect ports.

Top

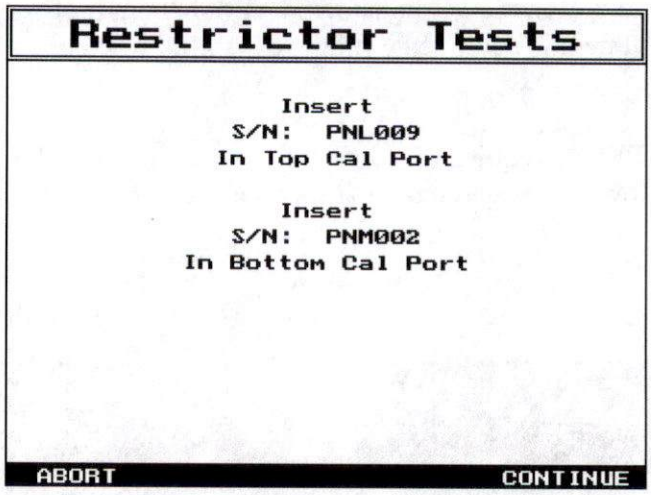


Bottom

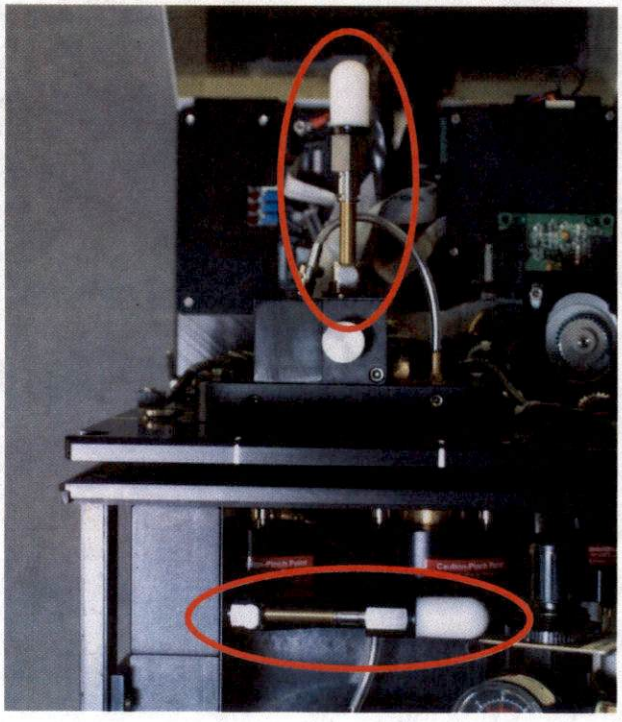


Remove the quick disconnect plug on the instrument and the red protective cap on the restrictor rod.

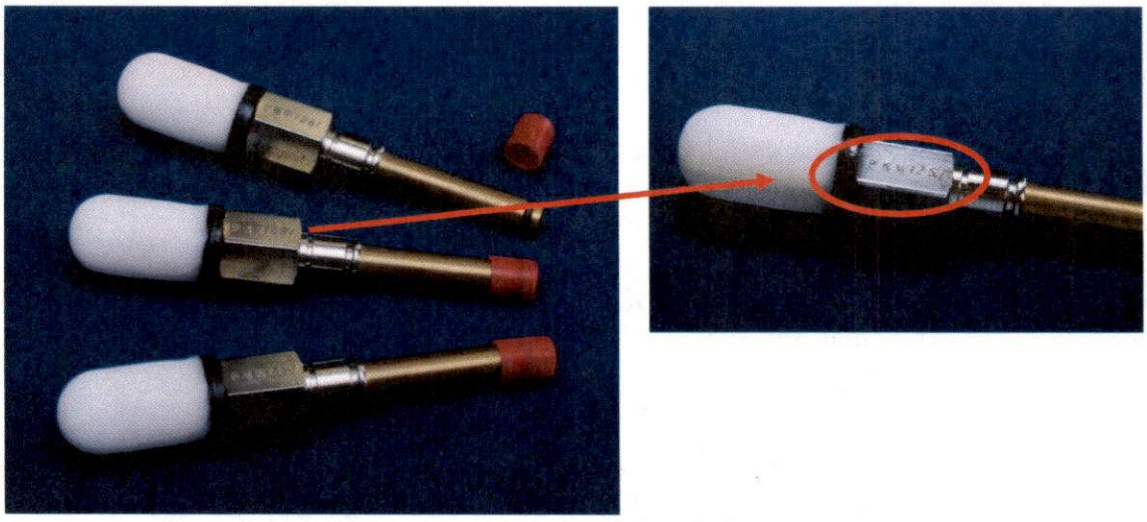
The following screen will be active on the PROFILE/Plus PPS instrument once the Test Restrictors routine is started. This screen gives instruction on which restrictor rods to insert in the appropriate quick disconnect port.



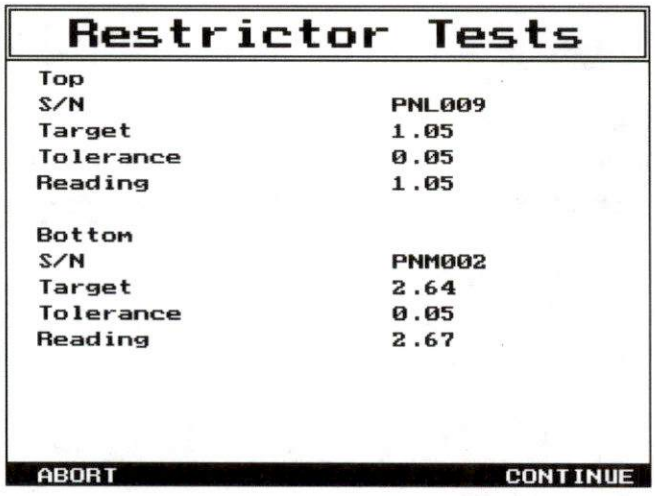
In the example above the instrument is equipped with both top and bottom side measurement capability. The restrictor rod serial number PNL009 should be inserted in the top port and restrictor rod serial number PNM002 in the bottom port. The following image shows the restrictor rods inserted in the ports.



Note: The serial number is engraved on the restrictor rod as indicated in the following images.



Press the **CONTINUE** soft key. The PROFILE/Plus PPS instrument will evaluate the restrictor rods and display the results as follows.



Carefully review the results to ensure the flow meters are functioning properly. Log any results that exceed the corresponding tolerances. Press the **CONTINUE** soft key to continue with the calibration verification routine. The screen will advance to display the next restrictor rod port configuration.

Repeat this process until all the restrictor rods have been evaluated. Press the **CONTINUE** soft key to return to the **Calibrate** screen.

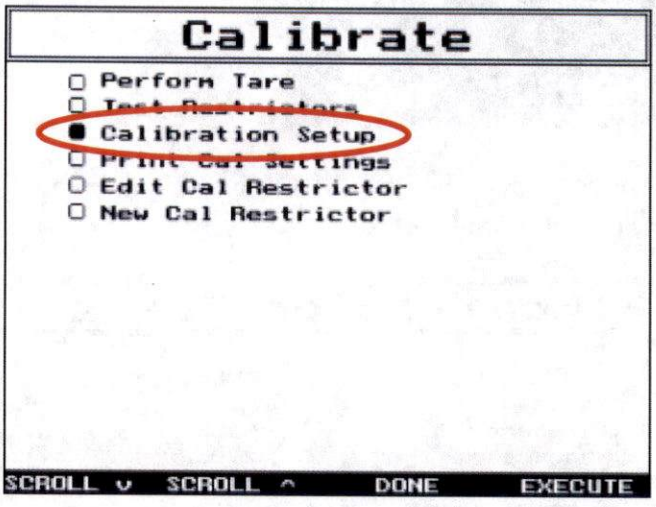
If any of the restrictor rods exceeded the corresponding tolerance contact Technidyne's Service department for assistance.

Warning – The chrome fitting connecting the measuring head tubing must be removed before inserting the restrictor. Handle the hose barb and tubing with care. If a kink develops in the tubing, non-laminar airflow can occur and introduce errors in airflow measurement during normal operation. Do not set the chrome hose barb on any exposed circuit boards as this can cause a short in the electronics.

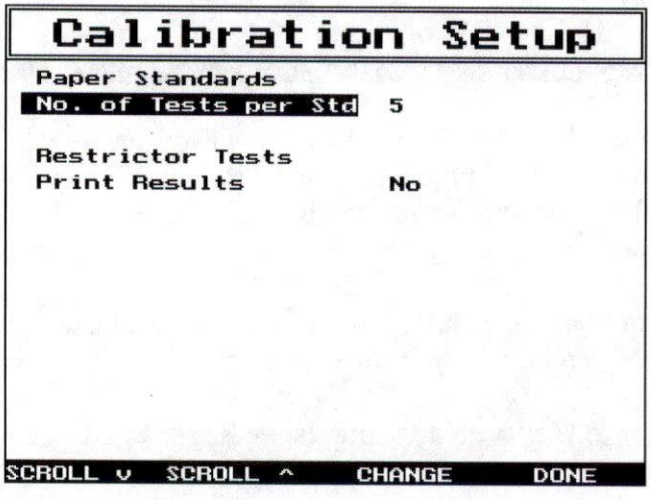
2.3 Calibration Setup

Calibration setup allows the designation of the number of test to conduct when utilizing the Calibration Adjust routine. It also allows for the activation or deactivation of the automatic print function associated with the Test Restrictors routine.

On the **Calibrate** screen use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the Calibration Setup command and press the **EXECUTE** soft key. See the image below.



Use the **SCROLL** v and **SCROLL** ^ soft keys on the Calibration Setup screen to highlight the available options. Use the **CHANGE** soft key to change the highlighted option and the **DONE** soft key when completed. See the image below.

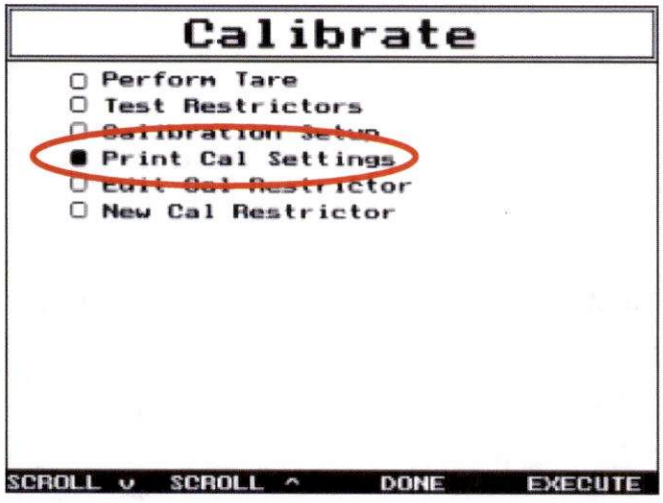


The **No. Of Tests per Std** option allows the user to set the number of readings to be utilized when using the Calibration Adjust routine.

The Print Results option activates or deactivates the automatic print function for the restrictor results. Use the scroll key to select Print Results.

2.4 Print Cal Settings

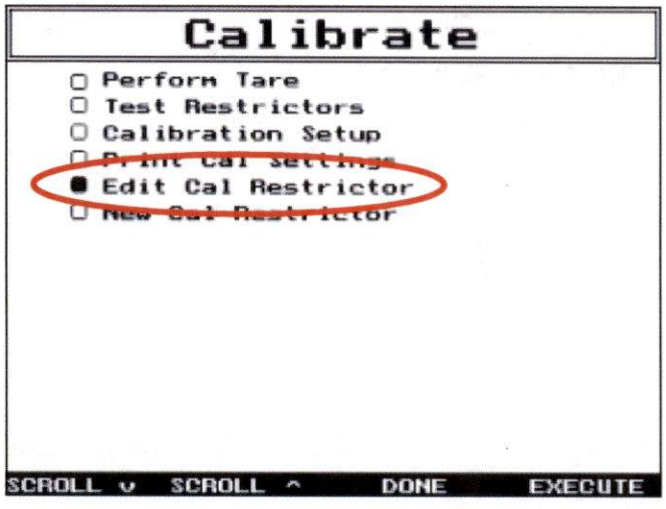
Executing this option prints the calibration settings used by the PROFILE/Plus PPS instrument. Make sure the printer is connected and on-line to receive this printout.



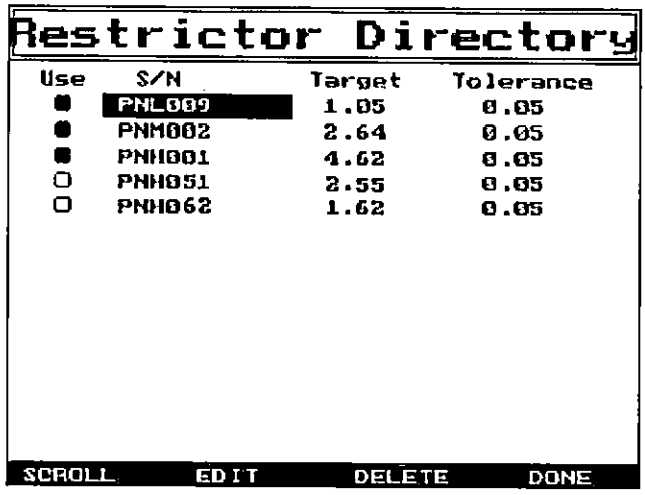
Use the **SCROLL** v and **SCROLL** ^ soft keys on the **Calibrate** screen to highlight the Print Cal Settings command and press the **EXECUTE** soft key. See the previous image.

2.5 Edit Cal Restrictor

Executing this command allows the user to Edit Restrictor identification, flow values and tolerances.



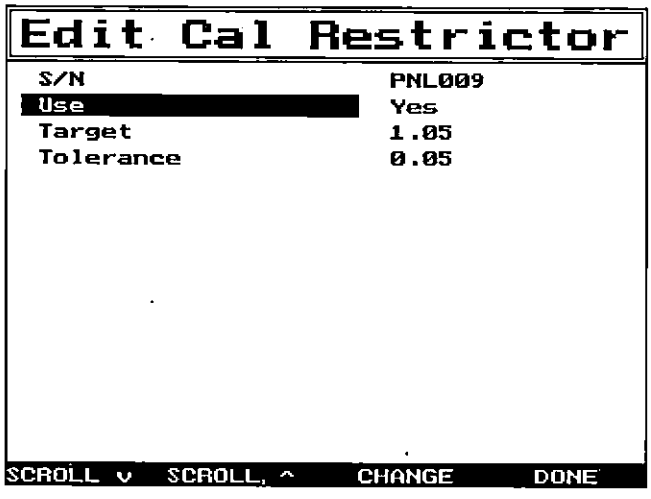
Use the **SCROLL** v and **SCROLL** ^ soft keys on the **Calibrate** screen to highlight the Edit Cal Restrictor command and press the **EXECUTE** soft key. See the previous image.



Scroll through this directory to **EDIT** or **DELETE** the restrictors already in your Restrictor Directory. Only the restrictors with the blackened boxes in the USE column will be used when a TEST RESTRICTORS sequence is preformed.

As the **SCROLL** soft key is pressed the serial number of the selected restrictor rod will highlight. In the previous image restrictor rod serial number PNL009 is highlighted. When the desired restrictor rod is highlighted press the **EDIT** soft key.

The Edit Cal Restrictor screen will appear with the information related to the selected restrictor rod. In the example that follows the restrictor rod serial number PNL009 was selected to be edited.



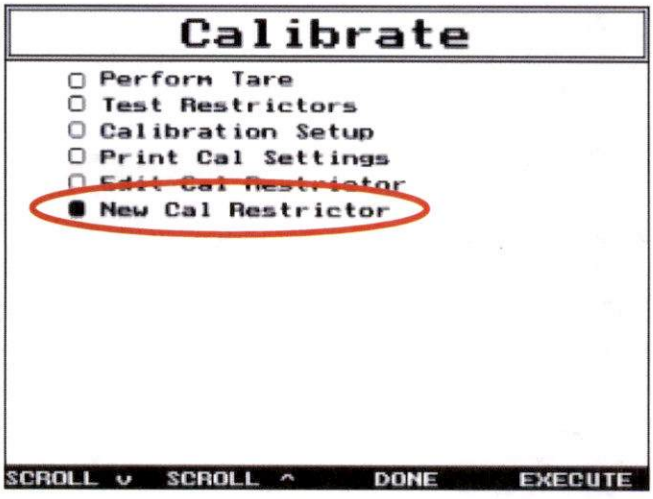
Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight: **S/N, Use, Target** or **Tolerance**. Any of these parameters can be edited by pressing the **CHANGE** soft key when it is highlighted. An explanation of these parameters is as follows:

- **S/N** – serial number
- **Use** – activate and deactivate the restrictor
- **Target value** – the assigned value found on the associated documentation
- **Tolerance** – the assigned tolerance found on the associated documentation

2.6 New Cal Restrictor

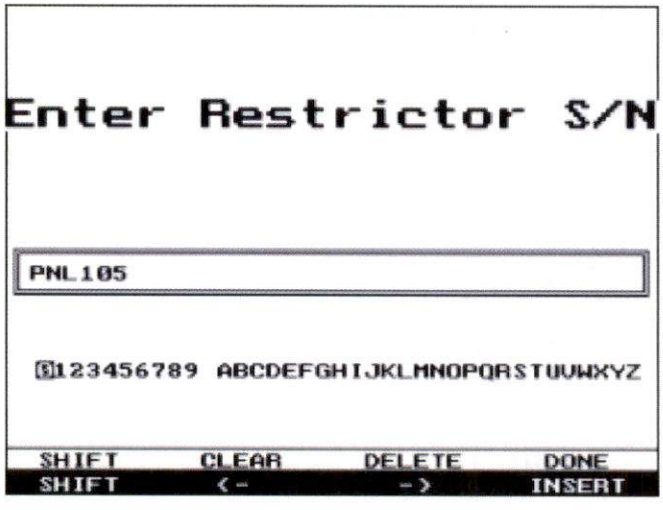
The New Cal Restrictor command allows for the entry of a new restrictor rod into the PROFILE/Plus PPS instrument.

Use the **SCROLL** v and **SCROLL** ^ soft keys on the **Calibrate** screen to highlight the New Cal Restrictor command and press the **EXECUTE** soft key. See the following image.

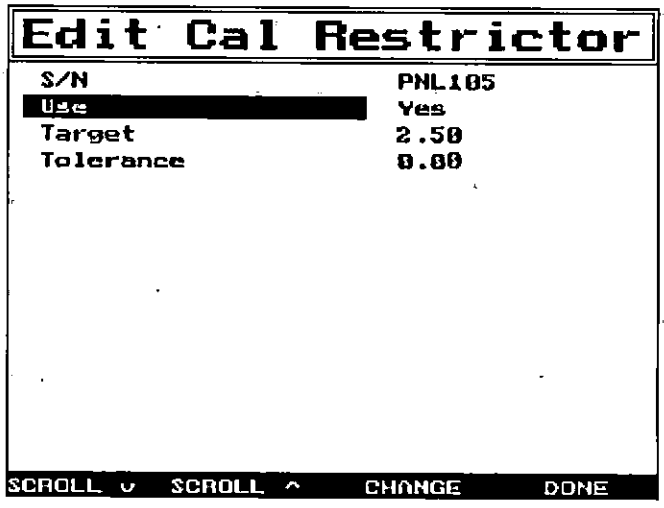


The following screen will appear. Use the **SHIFT** soft keys to toggle the function of the remaining soft keys and enter the serial number of the new restrictor rod.

NOTE: A keyboard could be used to enter the name of the profile. See Section 1 for the location of the keyboard connector.



After the serial number is entered use the **SHIFT** soft key to utilize the **DONE** soft key. The following screen will appear.

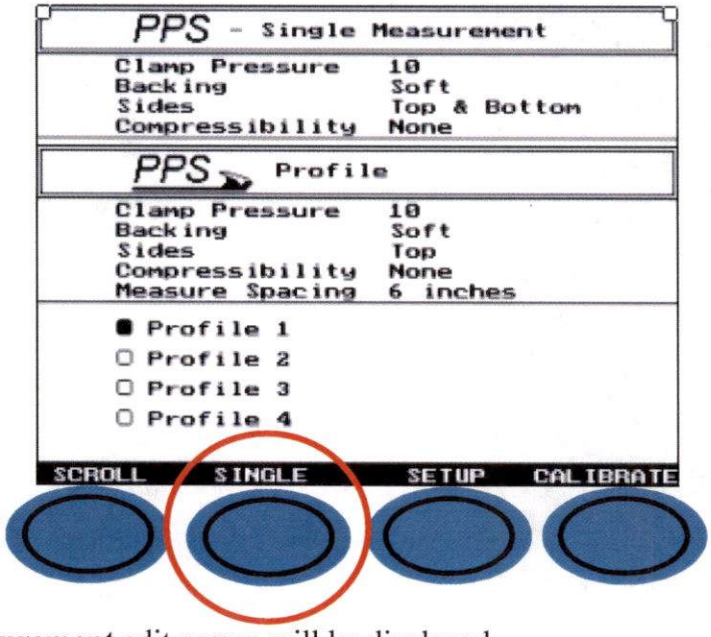


Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight: **Use**, **Target** or **Tolerance**. Any of these parameters can be edited by pressing the **CHANGE** soft key when it is highlighted. An explanation of these parameters is as follows:

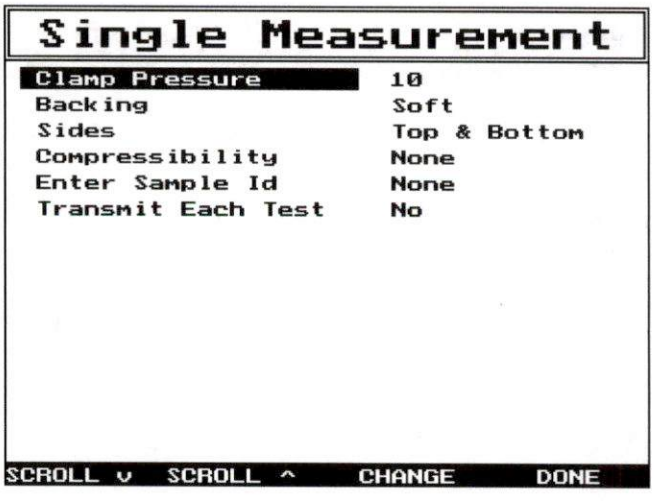
- **Use** – activate and deactivate the restrictor
- **Target value** – the assigned value found on the associated documentation
- **Tolerance** – the assigned tolerance found on the associated documentation

Technidyne PROFILE/Plus PPS
3. Single Measurement Test Set-Up

Press the **SINGLE** soft key on the **Home Screen** as displayed in the following image.



The **Single Measurement** edit screen will be displayed.



NOTE: If you do not wish to keep the changes made in the editing process, press the **HOME** key to return to the **Home Screen** without saving changes and then restart.

Use the **SCROLL** keys to highlight the object to be edited. Press the **CHANGE** key to toggle through the available options. Once the desired option is selected, use the **SCROLL** keys to move to the next object. When all of the editing is complete press the

DONE key to save the settings and return to the **Home Screen**. The changes will be reflected in the Single Measurement area on the **Home Screen.**

3.1 Clamp Pressure

The clamping pressures are predetermined pressure setting for clamping the sample between the measuring head and sample backing.

Parameters available:

- 5 kg/cm^2
- 10 kg/cm^2
- 20 kg/cm^2

3.2 Backing

Two backing types are available with the PROFILE/Plus PPS instrument. This setting is for display purposes only. It is not used in any calculation.

Parameters available:

- Soft Backing
- Hard backing

3.3 Sides

Depending on the configuration the PROFILE/Plus PPS instrument is capable of being programmed to measure different configurations. This is in regards to the top and bottom side of the sample.

Parameters available:

- Topside only – This option will perform a test on the sample side facing skyward
- Bottom side only – This option will perform a test on the sample side facing the floor
- Topside and Bottom – This option will perform Top and Bottom tests simultaneously

3.4 Compressibility

This is an indication of the compressibility of a substrate by measuring the ratio of airflow between two different clamping pressures.

For example: the PPS reading taken with clamping pressure of 5 Kg/sq.cm divided by the PPS reading taken with 10 Kg/sq.cm., or the PPS reading taken with 5 Kg/sq.cm. divided by the reading taken with 20 Kg/sq.cm., or the reading taken with 10 Kg/sq.cm. divided by 20 Kg/sq.cm., or none of the above.

The combinations available are:

- None
- 5/10 (5 Kg/sq.cm: 10 Kg/sq.cm.)
- 5/20 (5 Kg/sq.cm: 20 Kg/sq.cm.)
- 10/20 (10 Kg/sq.cm: 20 Kg/sq.cm.)

3.5 Enter Sample ID

The Sample ID is for identification of the current sample data set. The ID would be included in printed results or data transmission. The PROFILE/Plus Thickness instrument does not store data files.

Parameters available:

- Optional – Prompts the user to enter a Sample ID prior to each test.
- None – Eliminates the option to enter a Sample ID for single measurement testing.

NOTE: If sample identification is to be used on each sample tested a keyboard could be connected to the instrument to ease sample number entry.

3.6 Transmit Each Test

Each conducted test point is transmitted to the RS232 communications port. The data is transmitted after the test is completed automatically. This is useful for RS232 data collection applications.

Parameters available:

- Yes – Automatically transmits the data to the RS232 communications port once the test is completed.
- No – Does not automatically transmit the data to the RS232 communications port once the test is completed.

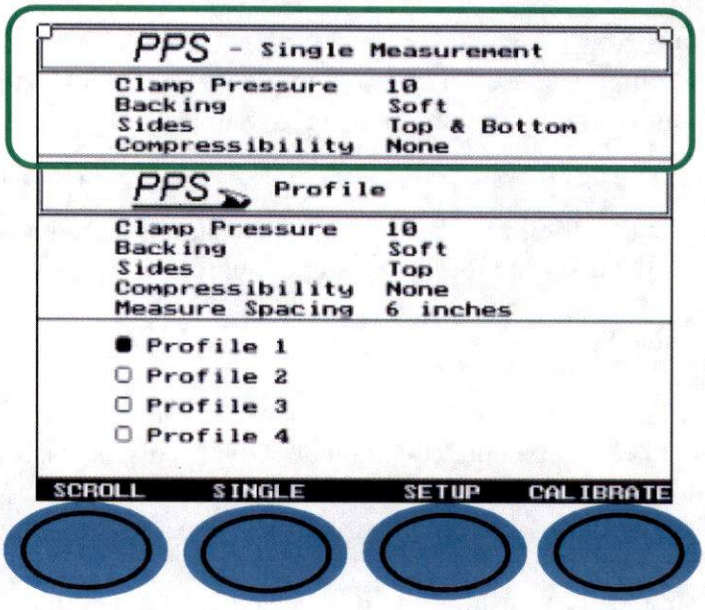
NOTE: If No is selected the user has the option to manually send the data to the RS232 communications port.

Technidyne PROFILE/Plus PPS
4. Single Measurement Operation and Testing

A single measurement is a single test made of a sample using the settings as defined on the screen. This measurement mode does not utilize the profiling capabilities of the instrument.

4.1 Single Measurement Screen Configuration

The following instructions assume the instrument to be configured with all options installed. Your instrument may not be configured with all options.



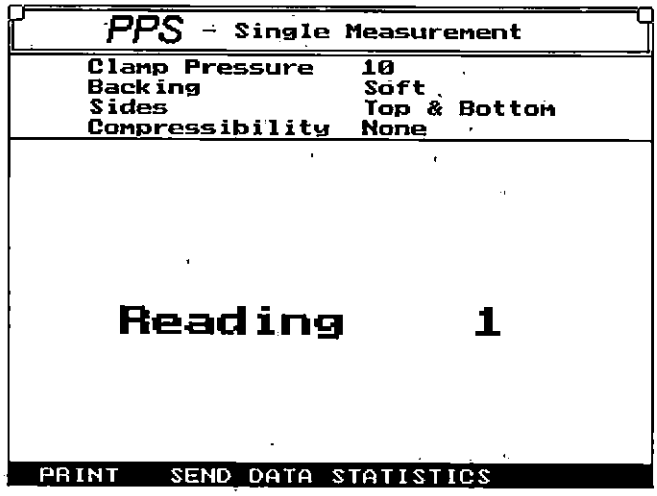
NOTE: The PROFILE/Plus PPS can be operated immediately upon arrival to gain familiarity with its operation, after initial set-up. However, before meaningful measurements are attempted, Calibration Verification should be conducted as described in Section 2.

The test conditions are displayed on the **Home Screen** as outline in green above. Test conditions can be changed by pressing the **SINGLE** soft key and revising the test conditions (see Section 3).

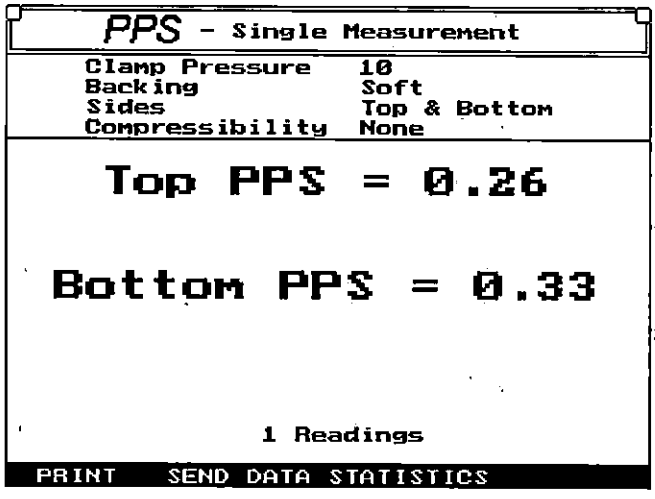
4.2 Conducting a Single Test

Press the **TEST** hard key to initiate the test sequence.

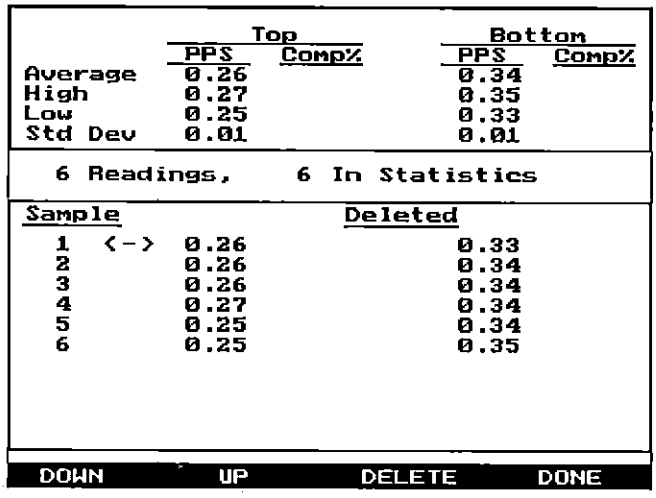
During the test a screen similar to the one below will be displayed.



Once the test sequence is complete the results screen will appear.



Pressing the **STATISTICS** soft key will transition the instrument to the statistics screen. The following image is an example of the statistics display after 6 readings.

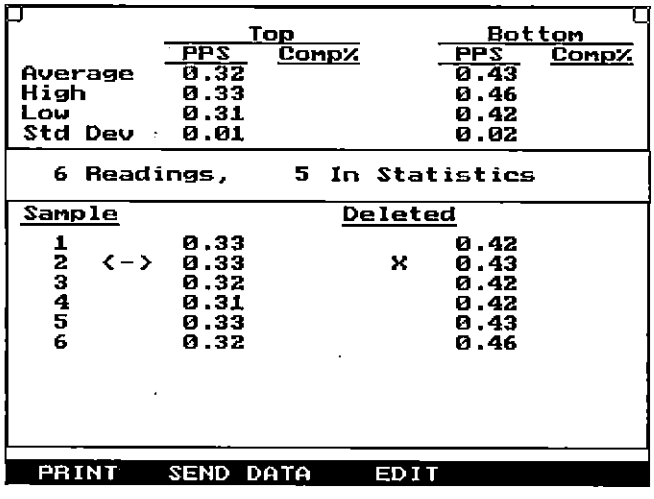


4.3 Averaging and Statistical Data Presentation

To obtain the average results of multiple samples or the average of multiple readings from a single sample, continue testing and the instrument will automatically keep a running average of the test results.

NOTE: A minimum of five readings must be taken to obtain a standard deviation reading.

The **Statistics** screen allows for review of the average, high, low, and standard deviation values. Deletion of suspect data is possible on this screen. Scroll through the data by pressing the **DOWN** or **UP** soft keys and pressing **DELETE** soft key. Pressing the **RESTORE** soft key that appears whenever a test result is highlighted, will retrieve deleted data. Deleted data remains visible for record but is not included in the statistical analysis.



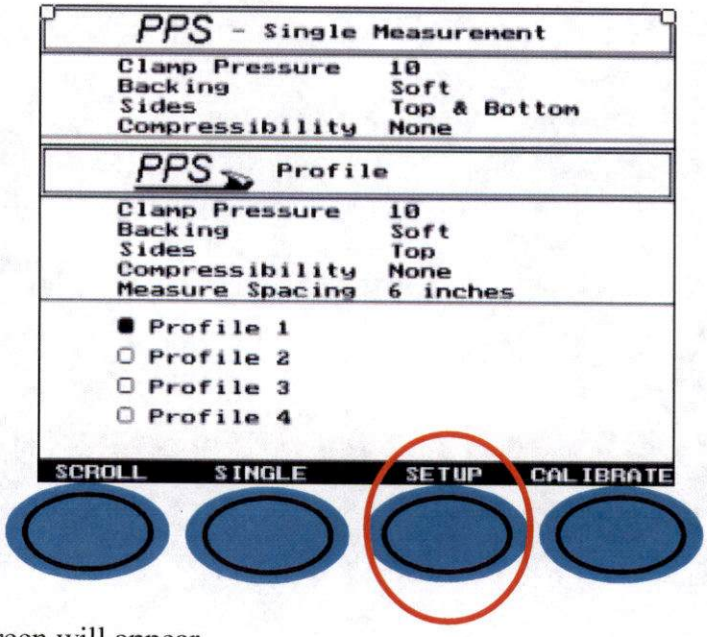
Press the **DONE** soft key once the data has been reviewed and points deleted or accepted.

Press the **PRINT** or **SEND DATA** soft key to print data or send data to internal collection system. (See Section 7.2 and/or Appendix 12 for Printer and Communication Set-up if you have not already completed these steps.)

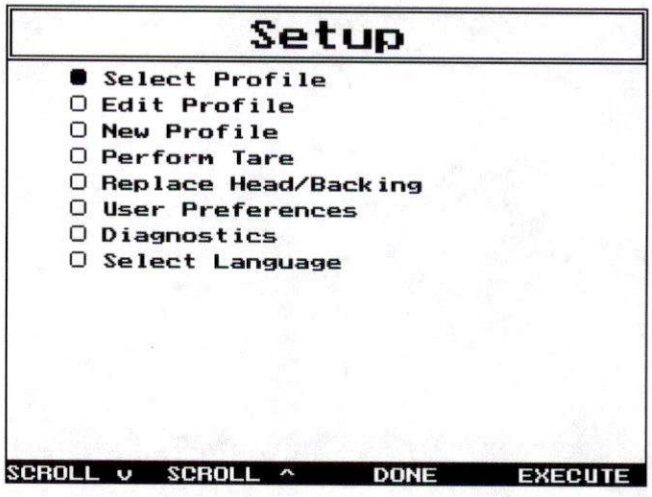
Use the **HOME** key to return to the **Home Screen** when testing is completed. The instrument will prompt you to delete the data yes or no. Press the **YES** soft key to clear the data and return to the **Home Screen**. Press the **NO** soft key to return to the **Statistics** screen.

Technidyne PROFILE/Plus PPS
5. Profile Measurement Set-Up

Press the **SETUP** soft key on the **Home Screen** to establish the parameters for profile measurement testing.



The following screen will appear.



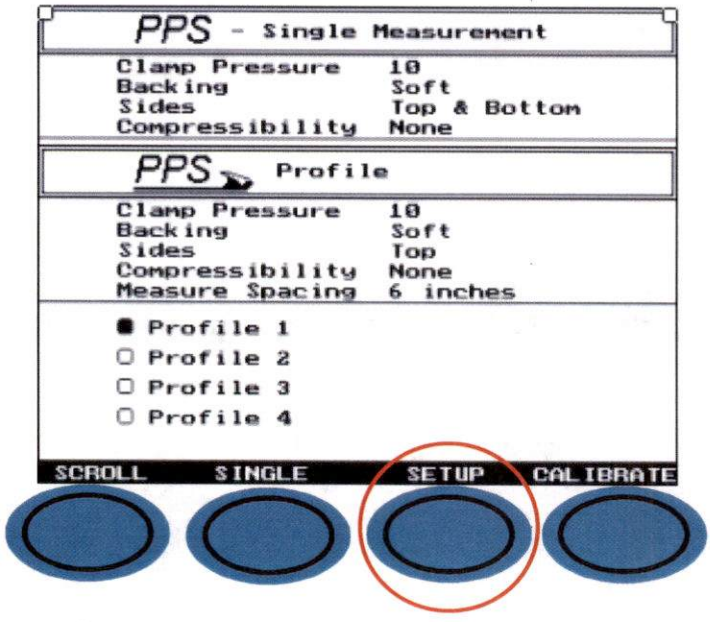
Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the desired routine. Use the **EXECUTE** soft key to begin a highlighted routine. The **DONE** soft key will return to the **Home Screen**.

The routines available are:

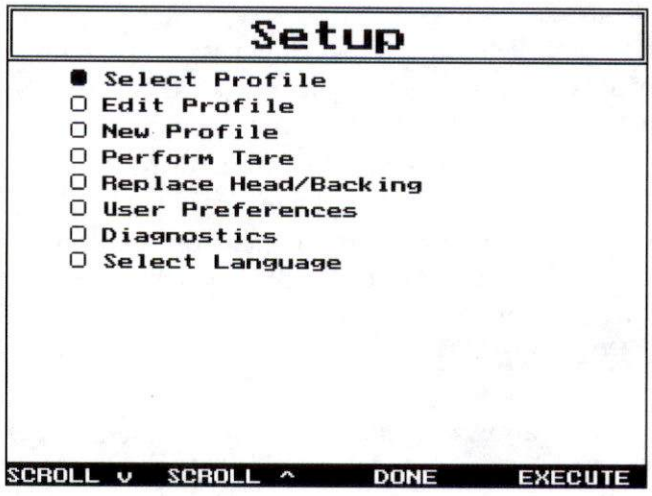
- **Select Profile** – the PROFILE/Plus Thickness instrument is capable of storing numerous profiles with four active profiles on the **Home Screen**. This routine allows for the selection of the active profiles.
- **Edit Profile** – allows an existing profile to be edited.
- **New Profile** – allows the creation of a new profile.
- **Perform Tare** – This command runs a check on the flow system, which ensures the zero flow point remains constant. This function will insure accurate measurements in the very low flow ranges.
- **Replace Head/Backing** – This routine allows for the exchanging of measurement heads and/ or backings.
- **User Preferences** – allows for the setting of parameters such as Printer Options, Communications and Password Options etc.
- **Diagnostics** – contains various logs and reports, as well as, Component Test, Profile Recovery and Update Software routines.
- **Select Language** – allows selection of a stored language.

5.1 Creating a New Profile

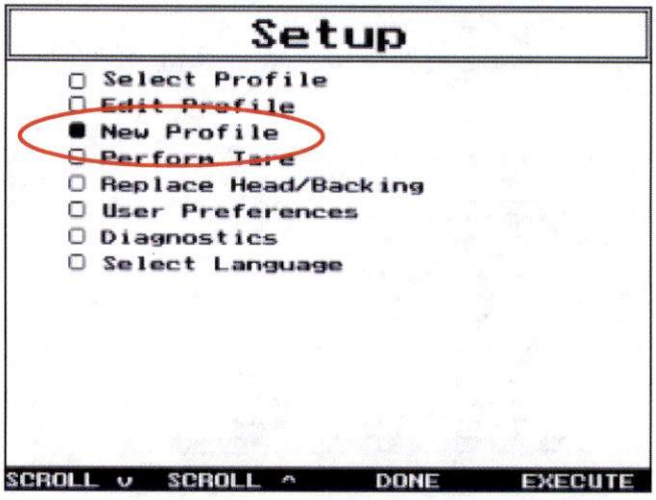
Press the **SETUP** soft key on the **Home Screen** to establish the parameters for profile measurement testing.



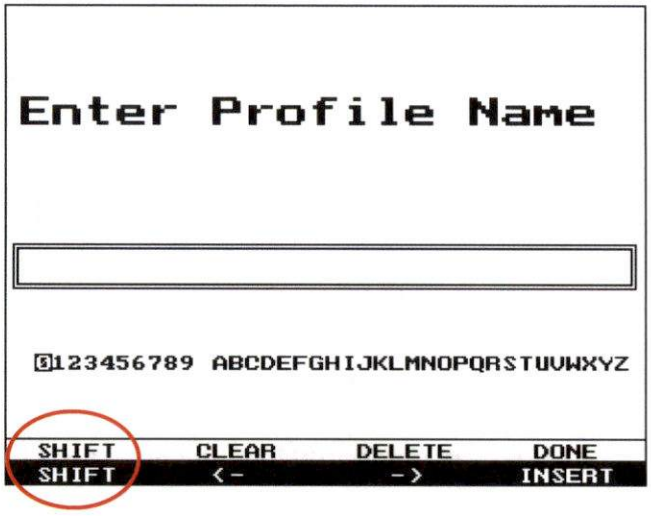
The following screen will appear.



Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight New Profile as illustrated in the following image. Press the **EXECUTE** soft key to enter the routine.



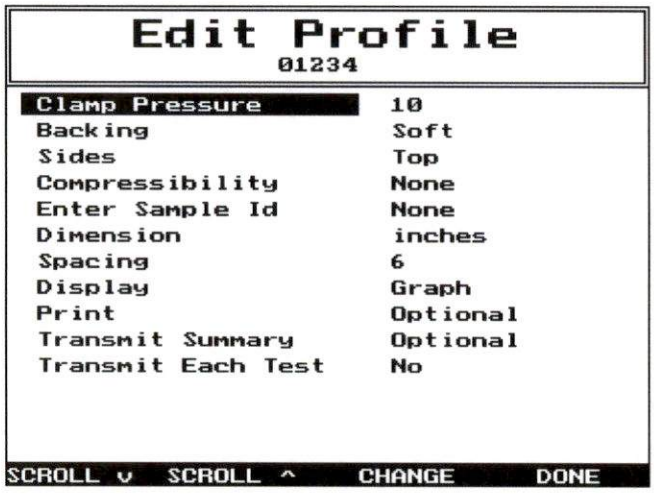
The following screen will appear. Use the soft keys to enter a name for the profile to be created. The profile name could be a particular grade or the distance of the testing intervals.



Use the **SHIFT** soft keys to toggle the function of the remaining soft keys.

NOTE: A keyboard could be used to enter the name of the profile. See Section 1 for the location of the keyboard connector.

Select and press the **DONE** soft key when the profile name has been entered. The following screen will appear.



Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the profile characteristics.

Use the **CHANGE** soft key to set the parameters for the characteristics.

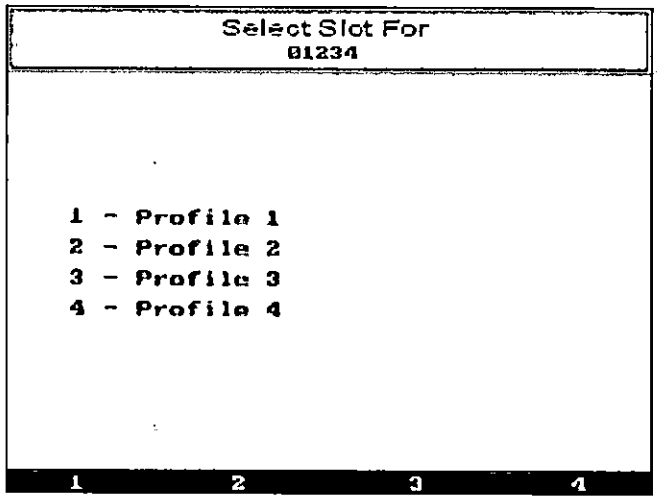
The profile characteristics available for programming are:

- **Clamp Pressure** – Designates the clamping pressure used during the profile testing. Options available: 5 kg/cm^2, 10 kg/cm^2 and 20 kg/cm^2
- **Backing** – Designates the type of backing that is used during the profile testing. This information will be printed and/or transmitted with the results of the profile testing. Options available are: Hard and Soft.
- **Sides** – Designates the sides to be tested during the profile testing. This relates only to instruments that are equipped with the capability to measure both the top and bottom side of a sample. Options available: Top, Bottom and Top and Bottom.
- **Compressibility** – Indicates if the compressibility will be calculated or not. This is an indication of the compressibility of a substrate by measuring the ratio of airflow between two different clamping pressures. The compressibility calculation is the PPS reading taken with clamping pressure of 5 Kg/sq.cm divided by the PPS reading taken with 10 Kg/sq.cm., or the PPS reading taken

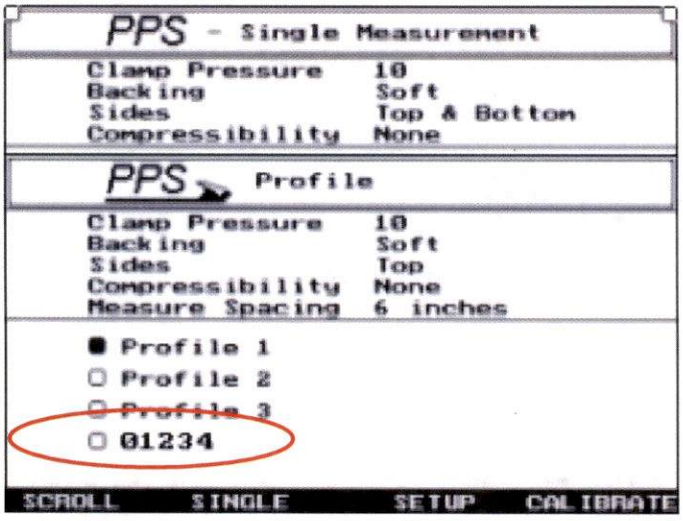
with 5 Kg/sq.cm. divided by the reading taken with 20 Kg/sq.cm., or the reading taken with 10 Kg/sq.cm. divided by 20 Kg/sq.cm. The options available are: None, 5/10 (5 Kg/sq.cm: 10 Kg/sq.cm.), 5/20 (5 Kg/sq.cm: 20 Kg/sq.cm.) and 10/20 (10 Kg/sq.cm: 20 Kg/sq.cm.)

- **Enter Sample I.D.** – The Sample ID is for identification of the current sample data set. The ID would be included in printed results or data transmission. The PROFILE/Plus Thickness instrument does not store data files.
- **Dimension** – Inches or Centimeters.
- **Spacing** – Desired distance between measurements.
- **Display** – Designates how the results will be displayed after the profile is complete.
- **Print** – Designates if the data will be printed automatically or if the operator will have the option to print.
- **Transmit Summary** - Designates if the data summary will be transmitted automatically or if the operator will have the option to transmit.
- **Transmit Each Test** – Each conducted test point is transmitted to the RS232 communications port. The data is automatically transmitted after the profile is complete. This is useful for RS232 data collection applications.

Press the **DONE** soft key after all parameters are set as desired. The **Select Slot For** screen will appear.

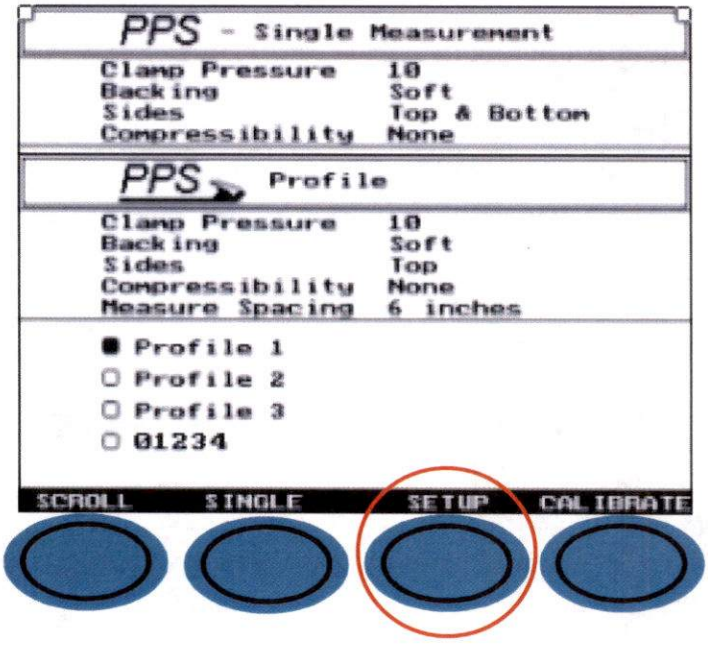


Press the soft key for the desired slot. The instrument will return to the **Home Screen** with the newly created profile in the assigned slot. In the example that follows the profile 01234 is now in the number 4 slot.

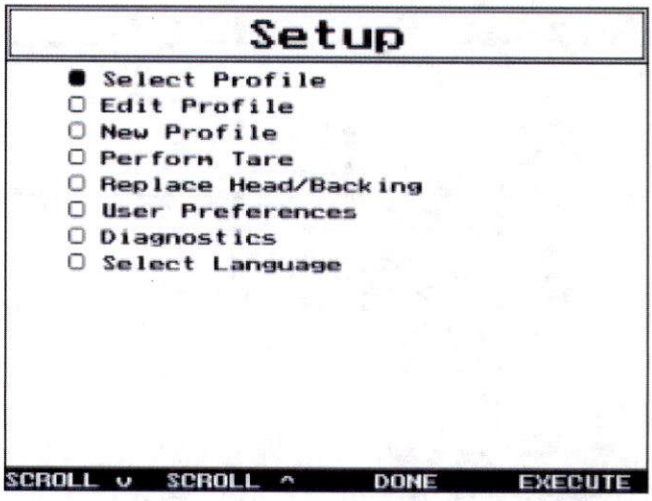


5.2 Editing an Existing Profile

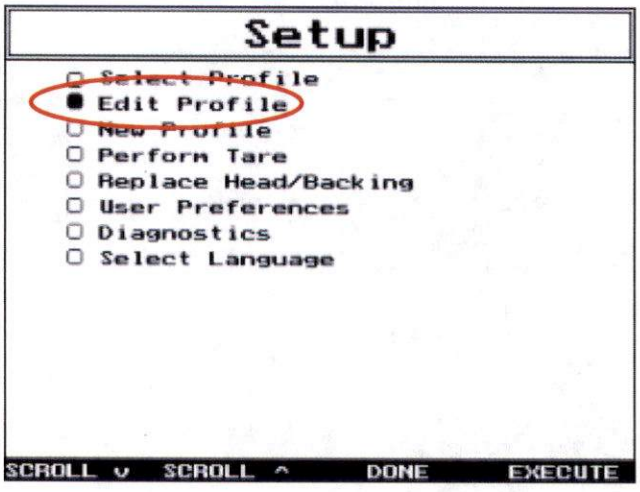
Press the **SETUP** soft key on the **Home Screen**.



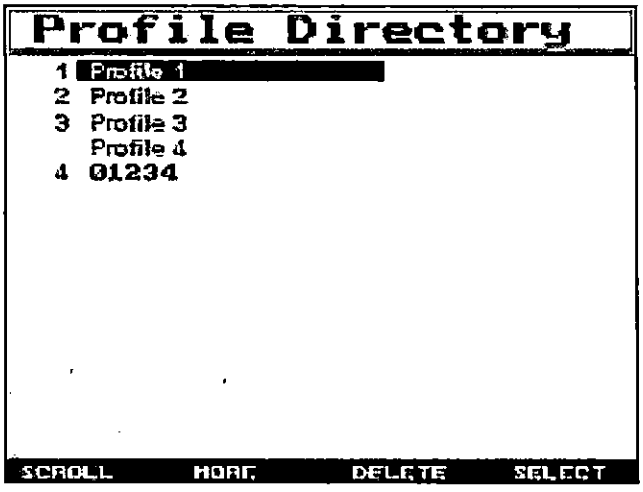
The following screen will appear.



Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight **Edit Profile** as illustrated in the following image. Press the **EXECUTE** soft key to enter the routine.



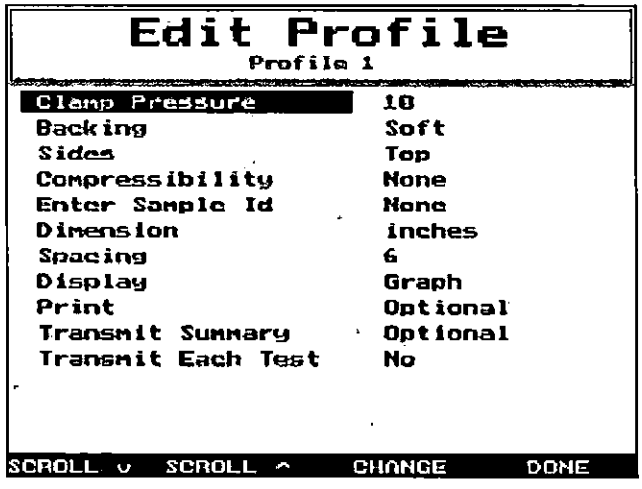
The Profile Directory screen will appear. This screen will list all the profiles saved on the instrument. The active profiles will have their corresponding slot listed beside the profile name. In the example that follows Profile 1, Profile 2, Profile 3 and GRADE 123 are the active profiles. Use the **SCROLL** soft key to highlight the profile to be edited.



The **MORE** soft key will advance to the next page of profiles if appropriate.

The **DELETE** soft key will delete the highlighted profile from the instrument. There is no prompt prior to deletion. A deleted profile cannot be retrieved.

Press the **SELECT** soft key when the name of the profile to be edited is highlighted. The **Edit Profile** screen will appear. In the following example Profile 1 will be edited.



Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the profile characteristics.

Use the **CHANGE** soft key to set the parameters for the characteristics.

The profile characteristics available for programming are:

- **Clamp Pressure** – Designates the clamping pressure used during the profile testing. Options available: 5 kg/cm^2, 10 kg/cm^2 and 20 kg/cm^2
- **Backing** – Designates the type of backing that is used during the profile testing. This information will be printed and/or transmitted with the results of the profile testing. Options available are: Hard and Soft.
- **Sides** – Designates the sides to be tested during the profile testing. This relates only to instruments that are equipped with the capability to measure both the top and bottom side of a sample. Options available: Top, Bottom and Top and Bottom.
- **Compressibility** – Indicates if the compressibility will be calculated or not. This is an indication of the compressibility of a substrate by measuring the ratio of airflow between two different clamping pressures. The compressibility calculation is the PPS reading taken with clamping pressure of 5 Kg/sq.cm divided by the PPS reading taken with 10 Kg/sq.cm., or the PPS reading taken

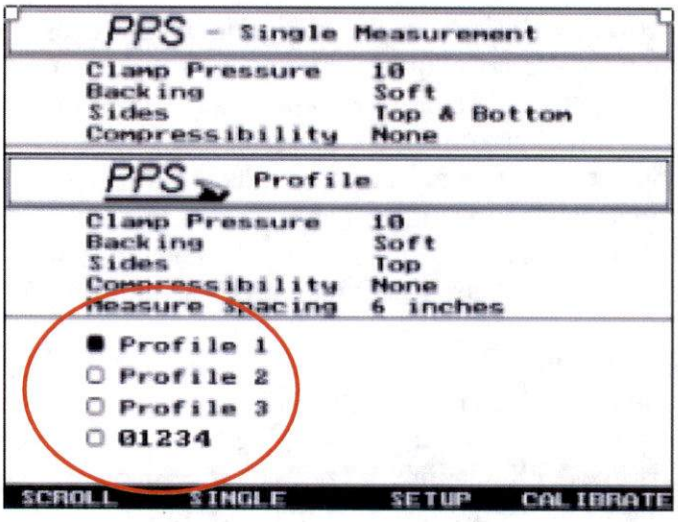
with 5 Kg/sq.cm. divided by the reading taken with 20 Kg/sq.cm., or the reading taken with 10 Kg/sq.cm. divided by 20 Kg/sq.cm. The options available are: None, 5/10 (5 Kg/sq.cm: 10 Kg/sq.cm.), 5/20 (5 Kg/sq.cm: 20 Kg/sq.cm.) and 10/20 (10 Kg/sq.cm: 20 Kg/sq.cm.)

- **Enter Sample I.D.** – The Sample ID is for identification of the current sample data set. The ID would be included in printed results or data transmission. The PROFILE/Plus Thickness instrument does not store data files.
- **Dimension** – Inches or Centimeters.
- **Spacing** – Desired distance between measurements.
- **Display** – Designates how the results will be displayed after the profile is complete.
- **Print** – Designates if the data will be printed automatically or if the operator will have the option to print.
- **Transmit Summary** - Designates if the data summary will be transmitted automatically or if the operator will have the option to transmit.
- **Transmit Each Test** – Each conducted test point is transmitted to the RS232 communications port. The data is automatically transmitted after the profile is complete. This is useful for RS232 data collection applications.

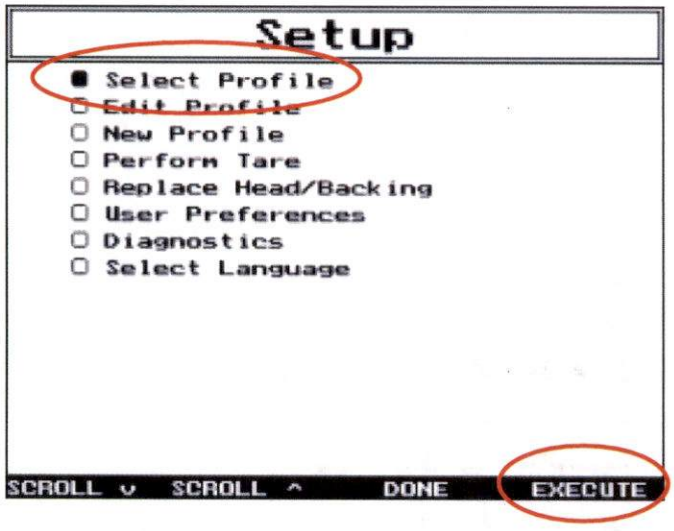
Press the **DONE** soft key after all parameters are set as desired. The **Select Slot For** screen will appear. Press the soft key for the desired slot. The instrument will return to the **Home Screen**. The changes have now been saved to the profile.

5.3 Selecting Active Profiles

An active profile is one of the four profiles available on the **Home Screen**. These four profiles can be utilized by the operator for testing purposes. The PROFILE/Plus PPS instrument is capable of storing numerous profiles in memory. However, only the four profiles displayed on the **Home Screen** are active. In the following example Profile 1, Profile 2, Profile 3 and 01234 are the active profiles.



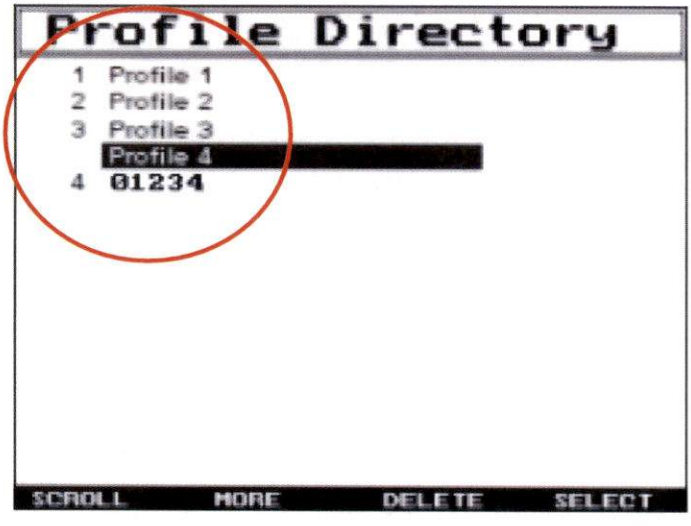
To select the active profiles press the **SETUP** soft key on the **Home Screen**. The Setup screen will appear as below.



Press the **EXECUTE** soft key with Select Profile highlighted as in the above image. The Profile Directory screen will appear. This screen will list all the profiles saved on the instrument. The active profiles will have their corresponding slot listed beside the profile name. In the example that follows Profile 1, Profile 2, Profile 3 and GRADE 123 are the active profiles.

The **MORE** soft key will advance to the next page of profiles if appropriate.

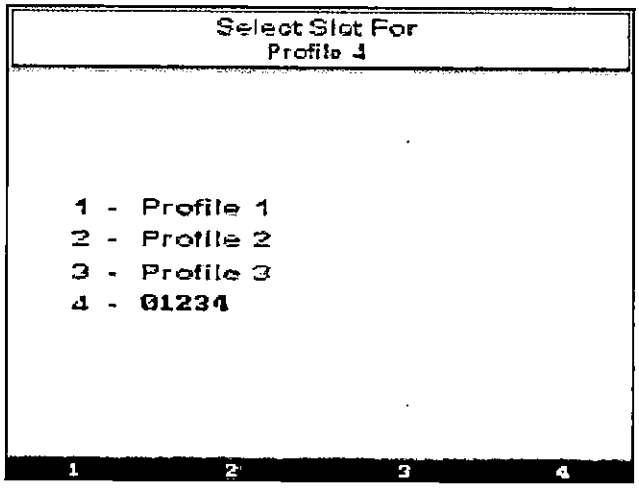
The **DELETE** soft key will delete the highlighted profile from the instrument. There is no prompt prior to deletion. A deleted profile cannot be retrieved.



In this example Profile 1, Profile 2, Profile 3 and 01234 are the active profiles indicated by the red circle.

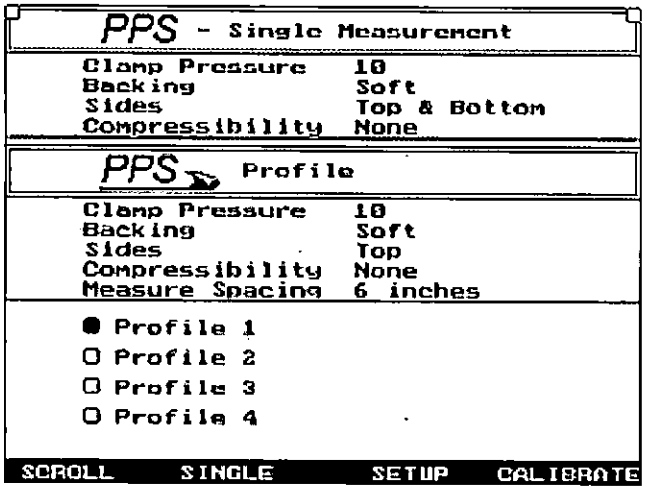
Use the **SCROLL** soft key to highlight the profile to be activated. In the image to the left Profile 4 is highlighted.

Press the **SELECT** soft key to advance to the **Select Slot For** screen as below.



Press the soft key that corresponds to the desired slot for the profile to be activated.

In this example, slot 4 will be pressed. The instrument will advance to the **Home Screen** displaying the updated list of active profiles.



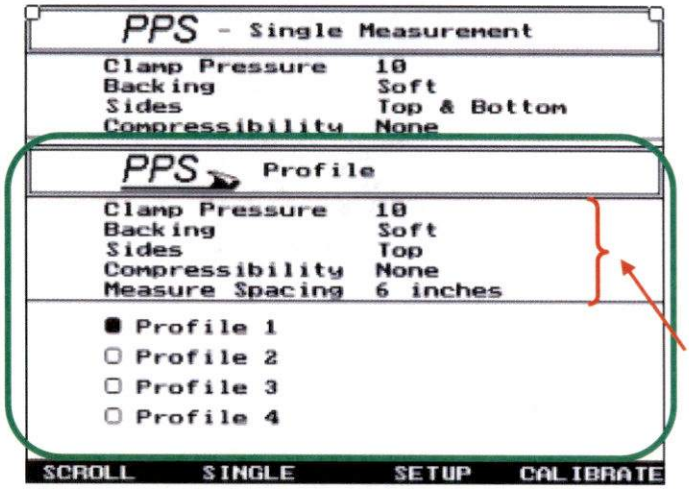
The updated list of active profiles is now displayed.

Technidyne PROFILE/Plus PPS
6. Profile Measurement Operation and Testing

Profile measurement gives the capability to measure a strip sample from the reel at predetermined intervals. This test utilizes the paper feed mechanism, which moves the sample as defined by the profile set-up.

6.1 Profile Measurement Screen Configuration

Up to four saved profiles can be active at any given time. The names associated with the active profiles are displayed in the profile section of the **Home Screen**. The profile section of the **Home Screen** is outlined in green in the following image.



In the example to the left the active profiles are Profile 1, Profile 2, Profile 3 and Profile 4.

Profile 1 is selected to run. This is indicated by the black dot.

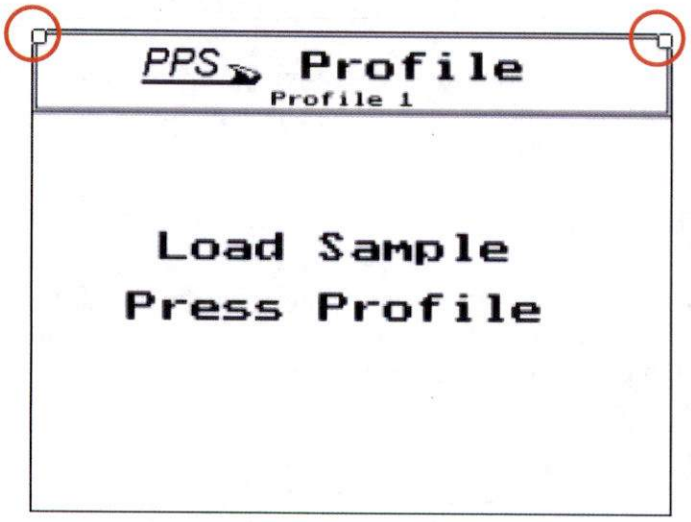
The test conditions for a profile selected to run are displayed in the profile section of the **Home Screen**.

By pressing the **SCROLL** soft key on the **Home Screen** any of the active profiles can be selected to run. As the profile is selected the test conditions will be displayed.

6.2 Conducting a Profile Measurement

Press the **PROFILE** hard key to initiate the test sequence.

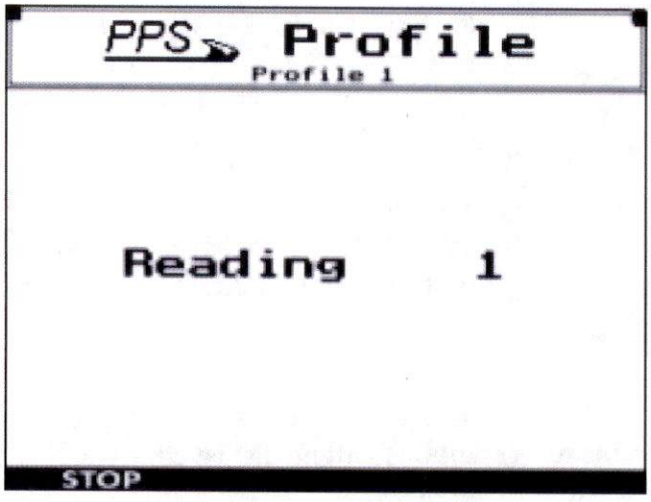
If a sample is not present as determined by the Paper Detection Indicators, the following screen will be displayed on the instruments.



The Paper Detection Indicators will become black when a sample is in the measurement path.

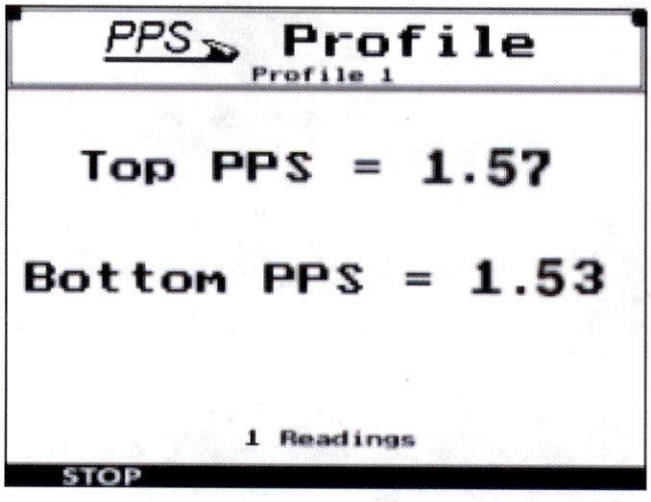
The indicators are marked in the image to the left by red circles.

If a sample is detected by the indicators the instrument will engage the paper drive mechanism and begin the first test.



As the test is being conducted the screen to the left will be displayed.

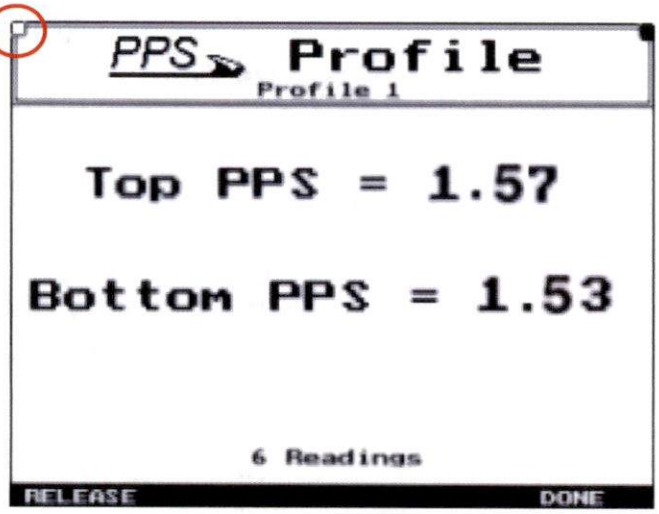
Notice the paper detectors are blackened.



As each measurement is completed, the individual data point will be displayed temporarily on the screen until the next measurement begins.

After the measurement, the instrument will advance the sample the designated distance and begin the measurement process again.

This sequence will repeat until the Incoming Paper Detector (left side) indicates that no sample is present.

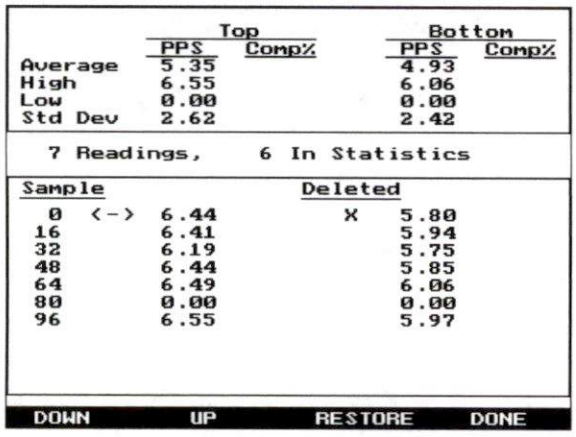


The last completed measurement will be displayed on the instrument.

The **RELEASE** soft key will disengage the paper drive mechanism so that in the instance of a paper skew the sample can be repositioned. After the sample has been repositioned press the **RESUME** soft key to begin testing.

Press the **DONE** soft key at the end of the profile measurement. The test results will be displayed as prescribed by the parameters of the profile being run.

Representations of the table and graphical displays are as follows:

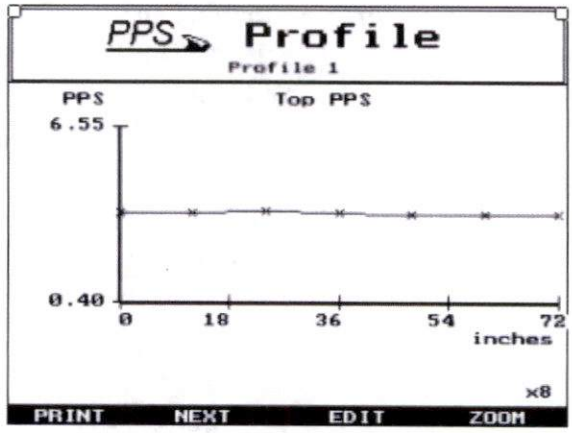


	Top PPS	Top Comp%	Bottom PPS	Bottom Comp%
Average	5.35		4.93	
High	6.55		6.06	
Low	0.00		0.00	
Std Dev	2.62		2.42	

7 Readings, 6 In Statistics

Sample		Top PPS	Deleted	Bottom PPS
0	<->	6.44	X	5.80
16		6.41		5.94
32		6.19		5.75
48		6.44		5.85
64		6.49		6.06
80		0.00		0.00
96		6.55		5.97

DOWN UP RESTORE DONE

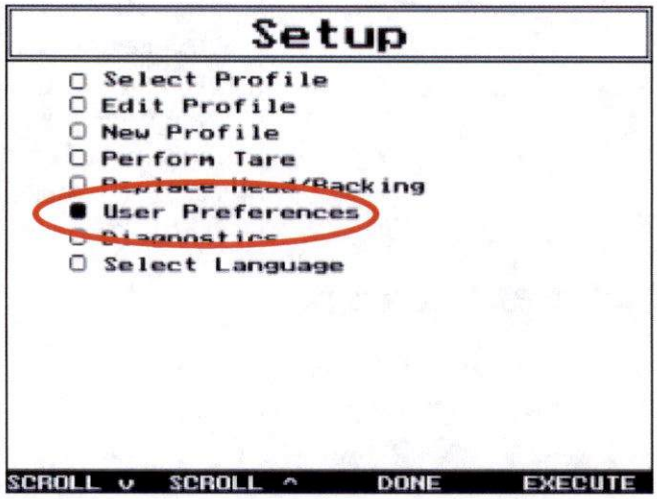


The soft keys associated with these screens will vary depending on the mode of operation. These soft keys can be used to print data, send the data to the RS232 port, delete erroneous data and resume testing for example.

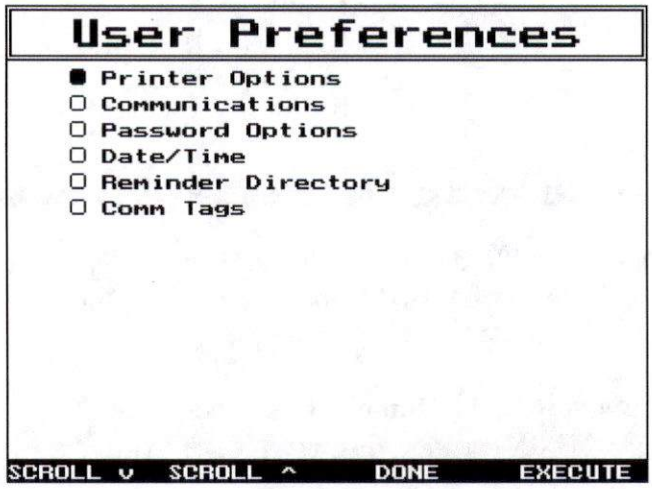
Use the **HOME** key to return to the **Home Screen** when testing is completed.

Technidyne PROFILE/Plus PPS
7. User Preferences

Press the **SETUP** soft key on the **Home Screen** to advance to the **Setup** screen. Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight **User Preferences** as illustrated below. Press the **EXECUTE** soft key to enter the **User Preferences** section of the software.

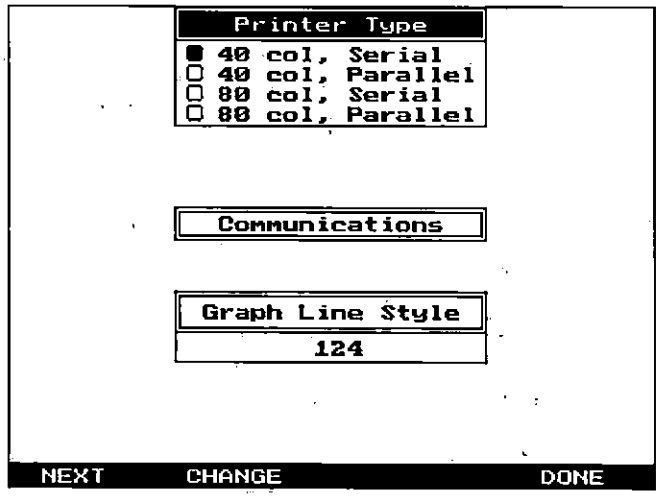


The **User Preferences** options allow for the setting of a number of powerful tools for the operation of the PROFILE/Plus PPS. Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the desired routine. Press the **EXECUTE** soft key to initiate the routine. Press the **DONE** soft key to return to the **Setup** screen.



7.1 Printer Options Routine

Selecting **Printer Options** on the **User Preferences** screen allows the settings for the printer to be used with this PROFILE/Plus Thickness instrument. Below is the **Printer Options** screen. Use the **NEXT** and **CHANGE** soft keys to make the required changes. Press the **DONE** soft key to save the changes and return to the **User Preferences** screen.

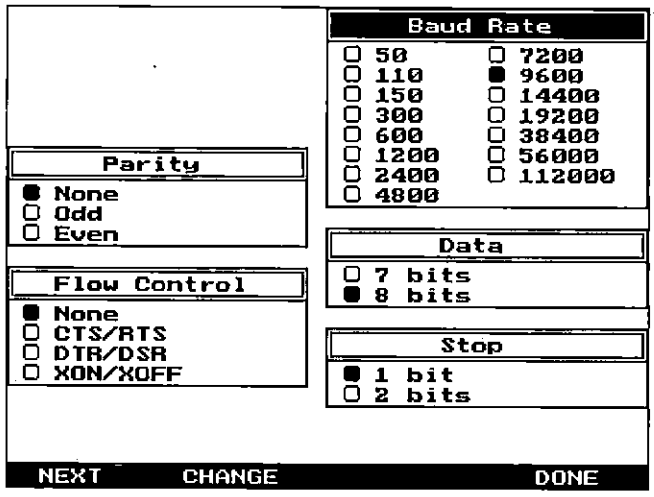


The available printer options are:

- **Printer Type.**
- **Printer Communications** - Settings available are (the standard thermal printer default settings are in parenthesis):
  - Parity (none)
  - Flow Control (CTS/RTS)
  - Baud Rate (9600)
  - Data (8 bits)
  - Stop (1 bit)
- **Graph Line Style** - This area defines how the graph will look on the printer (either a serial or parallel printer). These are the characters used by the selected printer to print the "line character". Please refer to the individual printer manual to determine the character required for the specific printer.

7.2 Communications (Host)

Selecting **Communications** on the **User Preferences** screen allows the setting of communications parameters for connection to an external mill information system. Below is the **Communications** screen. Use the **NEXT** and **CHANGE** soft keys to make the required changes. Press the **DONE** soft key to save the changes and return to the **User Preferences** screen.



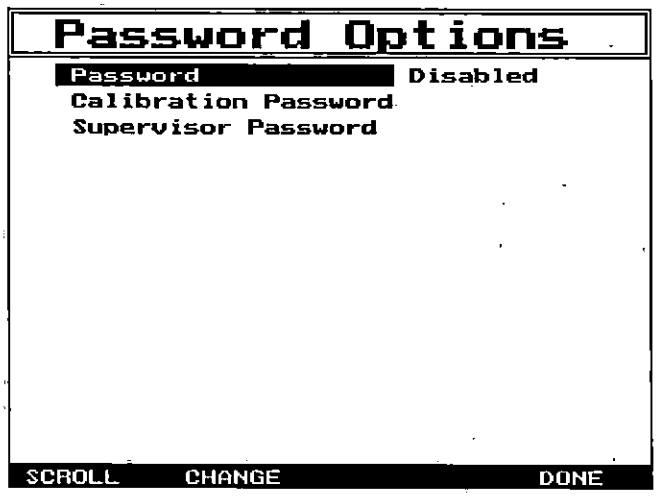
CAUTION: This is not to be mistaken for the communications within the printer set-up function (see 7.1 Printer Options). This section is also used for setting the communications parameters for the PROFILE/Plus Thickness when it is part of a PROFILE/Plus system. The settings must match those set in the System Controller Software.

Settings available are (the default settings are in parenthesis):

- Parity (none)
- Flow Control (CTS/RTS)
- Baud Rate (9600)
- Data (8 bits)
- Stop (1 bit)

7.3 Password Options

Selecting **Password Options** on the **User Preferences** screen allows the setting of passwords for different sections of the PROFILE/Plus Thickness instrument. Below is the **Password Options** screen. Use the **SCROLL** and **CHANGE** soft keys to make the required changes. Press the **DONE** soft key to save the changes and return to the **User Preferences** screen.



These passwords allow for protection of certain settings to prevent accidental changes. Any changes made to the software can be found in the Diagnostics Logs (See Diagnostics in Section 8).

The Calibration Password allows access to only the following areas:

- Selecting Profiles
- Single Measurement Set-Up

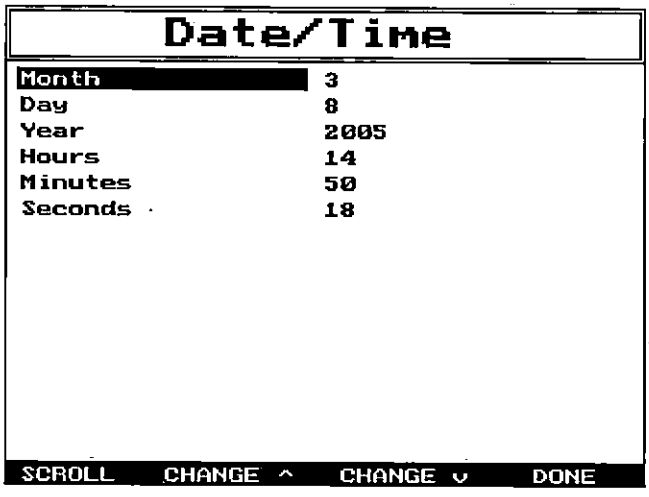
The Supervisor Password allows access to all areas except the following:

- Error Log
- Factory Settings

NOTE: for access to these functions please call a Technidyne Service representative.

7.4 Date / Time

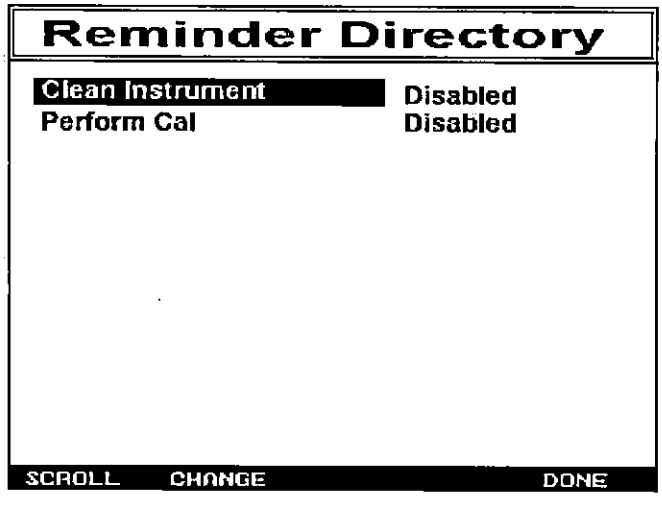
Selecting **Date / Time** on the **User Preferences** screen allows the setting of the date and time on the PROFILE/Plus Thickness instrument. Below is the **Date / Time** screen. Use the **SCROLL** and **CHANGE** soft keys to make the required changes. Press the **DONE** soft key to save the changes and return to the **User Preferences** screen.



The Date / Time option allows the date and the time to be set on the PROFILE/Plus Thickness instrument.

7.5 Reminder Directory

Selecting **Reminder Directory** on the **User Preferences** screen allows the setting of reminders for certain activities on the PROFILE/Plus Thickness instrument. Below is the **Reminder Directory** screen. Use the **SCROLL** and **CHANGE** soft keys to make the required changes. Press the **DONE** soft key to save the changes and return to the **User Preferences** screen.



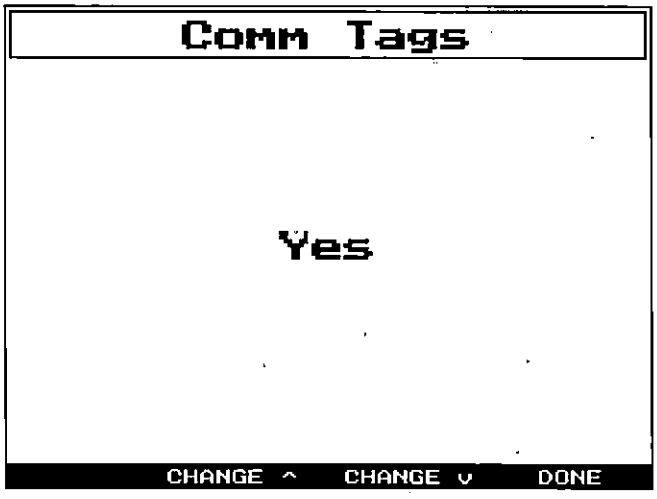
When activated a reminder will pop-up according to the time or test interval set for the following activities:

- Clean Instrument
- Perform Cal

The frequency of notification can be set to a time (weeks, days, hours) or a specified number of tests.

7.6 Communication Tags

The **COMM TAGS** option allows the RS-232 communication to the mill information system to have unique tags on all of the information sent.



Available Options:

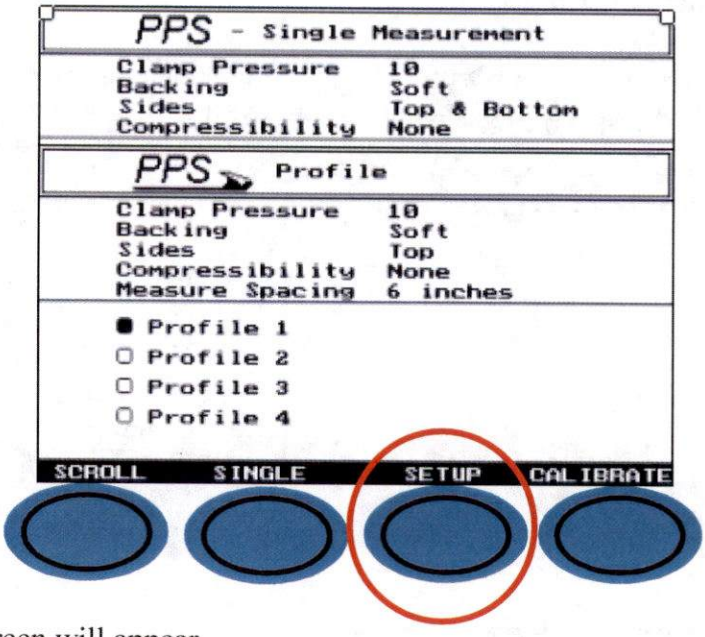
- YES – COMM TAGS will be used in the RS-232 communication
- NO – COMM TAGS will not be used in the RS-232 communication

Note: The person responsible for receiving these RS-232 communications should be contacted to set this properly.

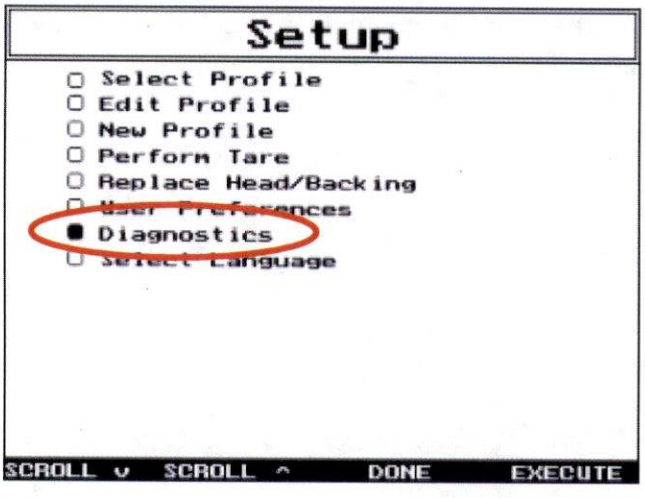
Technidyne PROFILE/Plus PPS
8. Diagnostics

The **Diagnostics** section of the software allows for a wide variety of service options, troubleshooting capabilities, and review of logged events such as calibrations or error messages.

To get to Diagnostics press the **SETUP** soft key on the **Home Screen**.

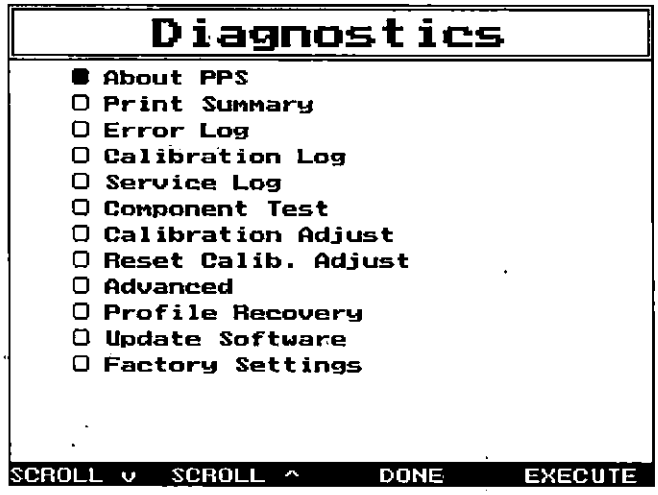


The following screen will appear.



Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the **Diagnostics** routine as indicated in the previous image. Use the **EXECUTE** soft key to begin the routine. The **DONE** soft key will return to the **Home Screen**.

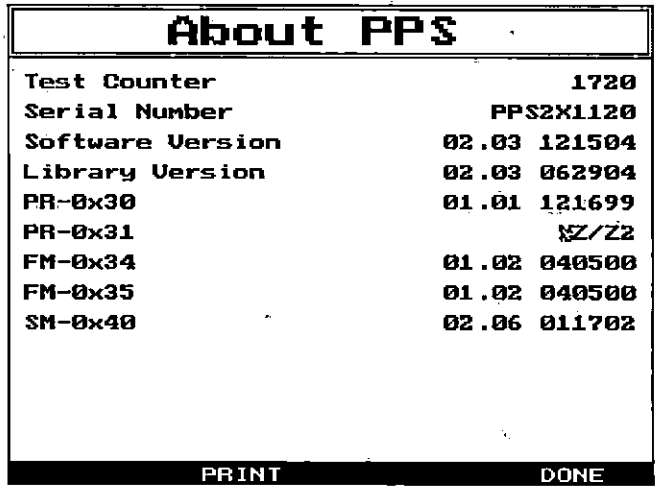
Below is the **Diagnostics** screen.



Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the desired routine. Use the **EXECUTE** soft key to begin the routine. The **DONE** soft key will return to the **Setup** screen.

8.1 About PPS

The About PPS screen will list various items that may be useful in troubleshooting any problems. Examples of the type of information listed are the Test Count, Serial Number, Software Version and Library Version.



8.2 Print Summary

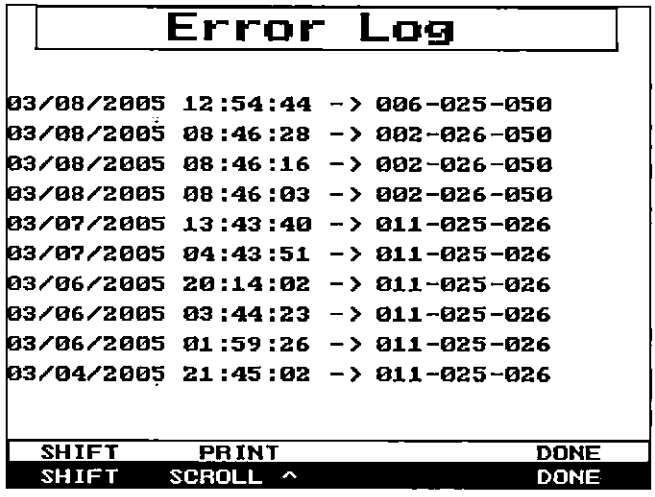
Executing the **Print Summary** will print (if a printer is connected to the instrument) the Thickness systems settings. This should be kept with your manual as a reference for the future.

By pushing the **EXECUTE** soft key for **Print Summary** the following items will be printed:

- Printer Type
- Communication settings
- Tare Timer settings
- Communication Tags settings
- Cleaning Frequency settings
- System Configuration Settings

The **DONE** soft key will return to the **Diagnostics** screen.

8.3 Error Log

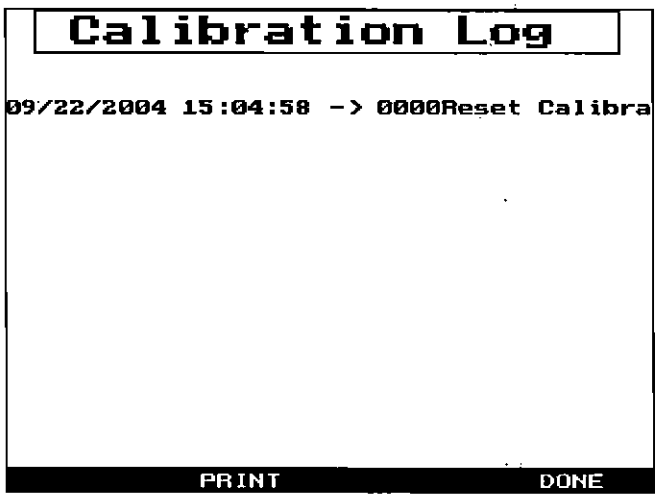


The Error Log documents when the unit has experienced problems and where the cause of the problems originated.

Pressing **DELETE** will empty the Error Log. Technidyne recommends printing the Error Log and keeping this in your documentation manual before deleting the Error Log.

The **DONE** soft key will return to the **Diagnostics** screen.

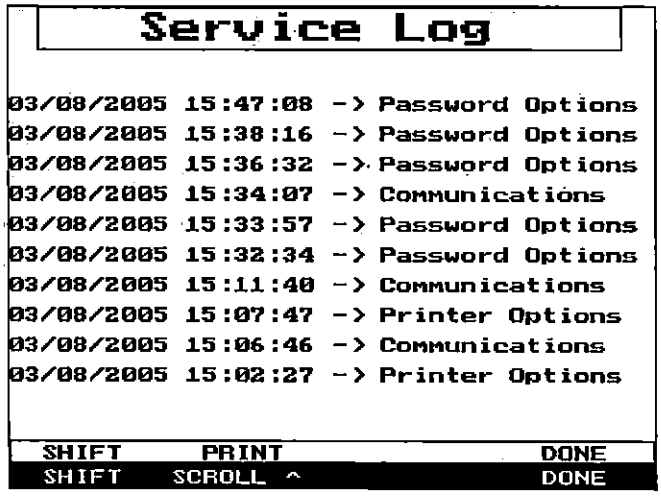
8.4 Calibration Log



The Calibration Log records all calibration work and revisions to the calibration settings for easy referral.

The **DONE** soft key will return to the **Diagnostics** screen.

8.5 Service Log



The Service Log documents when service has been performed and what type of service was done. This includes cleaning, calibration, and configuration changes.

The **DONE** soft key will return to the **Diagnostics** screen.

8.6 Component Test

The Component Test allows the individual components to be tested for preventative maintenance work and troubleshooting.

NOTE: Caution should be taken when doing component tests as moving parts are involved. Should the need arise to change these settings, please contact Technidyne's Service department.

The **DONE** soft key will return to the **Diagnostics** screen.

8.7 Calibration Adjust

Contact a Technidyne representative for assistance with this routine.

8.8 Reset Calibration Adjust

Contact a Technidyne representative for assistance with this routine.

8.9 Advanced

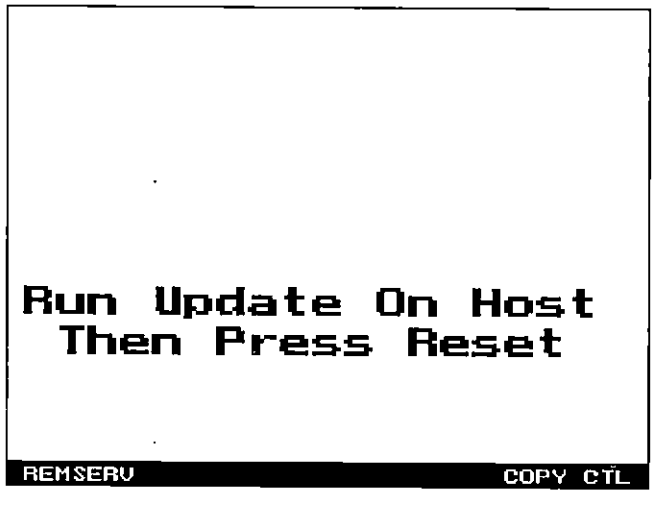
Contact a Technidyne representative for assistance with this routine.

8.10 Profile Recovery

If the profile directory gets corrupted, this feature allows recall of the lost profile. Scroll to the profile name and press **SELECT**.

The **DONE** soft key will return to the **Diagnostics** screen.

8.11 Update Software



The Update Software in diagnostics allows for easy updates of the instrument software from any PC. This can be accomplished during normal Preventative Maintenance visits to be confident you are getting the most advanced capabilities possible from your investment in the Technidyne PROFILE/Plus Thickness. If you are not currently enrolled

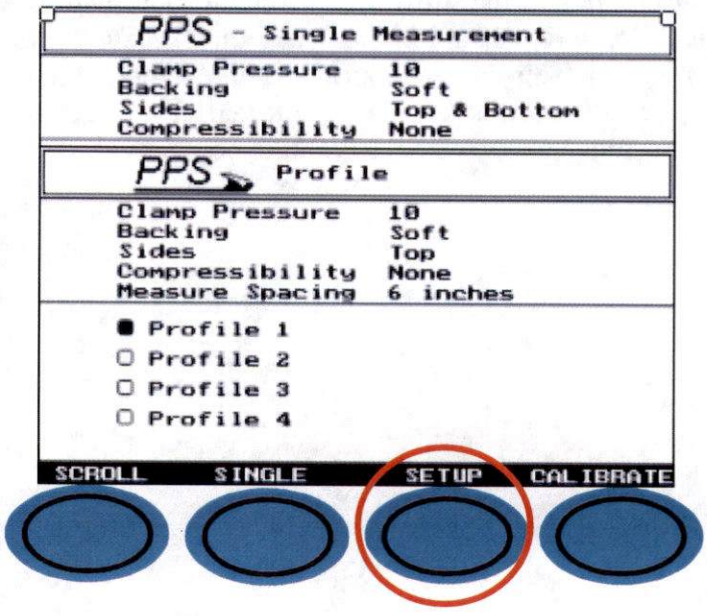
to receive preventative maintenance from factory trained Technidyne service technicians, please call today to sign up for this service to keep your Thickness unit certified and in optimum operating condition.

8.12 Factory Settings

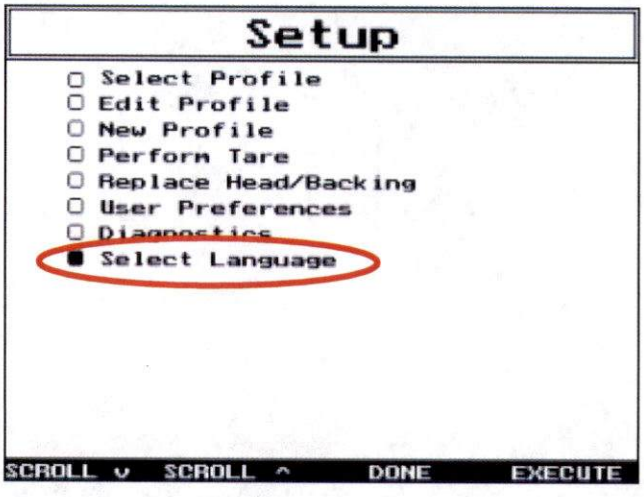
The **Factory Settings** section of the software is set in the factory to set the proper settings such as Measurement Pressure, Clamping Pressures, Line Frequency (50 or 60 Hz), Sides Installed (Top, Bottom or Top and Bottom), and the Slope settings for the pressure measurements. These settings are password protected at the factory. Should the need arise to change these settings please contact Technidyne's Service department.

Technidyne PROFILE/Plus PPS
9. Select Language

Press the **SETUP** soft key on the **Home Screen**.



The following screen will appear.

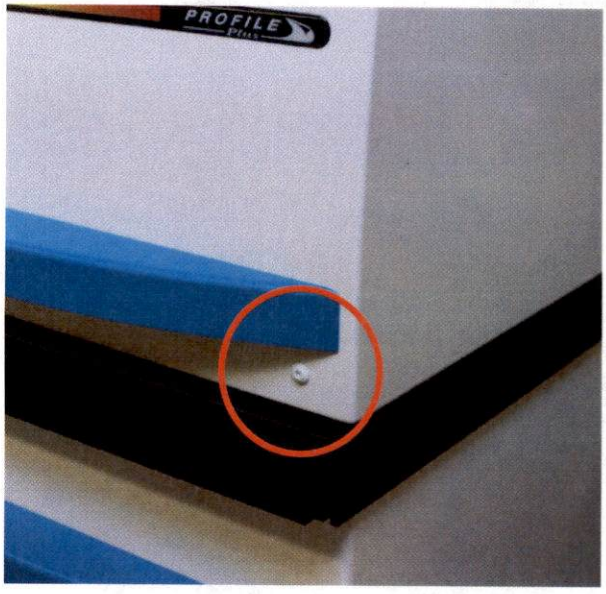


Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the **Select Language** routine as indicated in the previous image. Use the **EXECUTE** soft key to begin a highlighted routine. The **DONE** soft key will return to the **Home Screen**.

Use the **SCROLL** ∨ and **SCROLL** ∧ soft keys to highlight the desired language. Use the **SELECT** soft key to select the highlighted language.

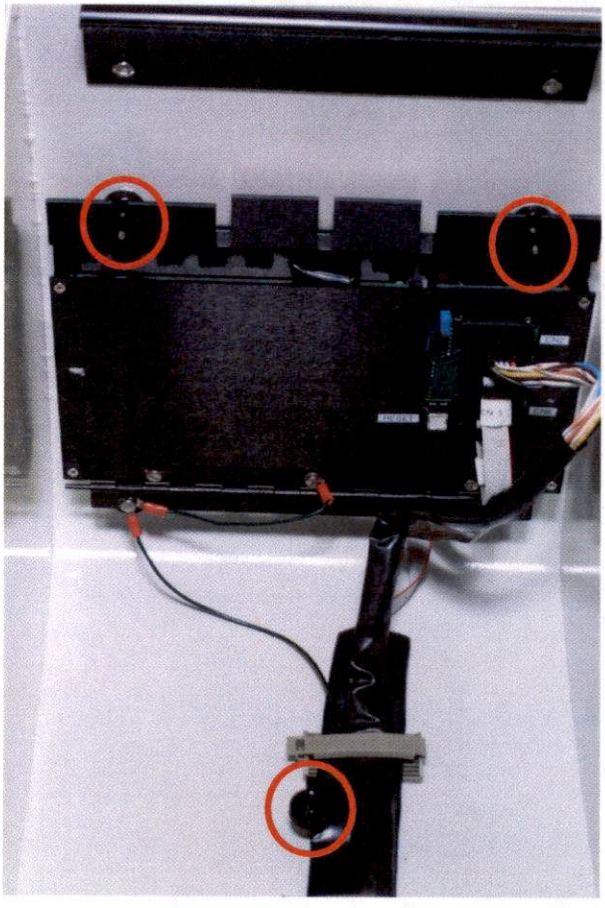
Technidyne PROFILE/Plus PPS
10. Replace Head/ Backing

Raise the upper hood by removing the locking screw as indicated in the following image.



An Allen Wrench is supplied with the PROFILE/Plus PPS instrument. This Allen Wrench fits the locking screw.

After the locking screw is removed lift the upper hood using the blue handle. The hood will rest on supports mounted on the back of the instrument.



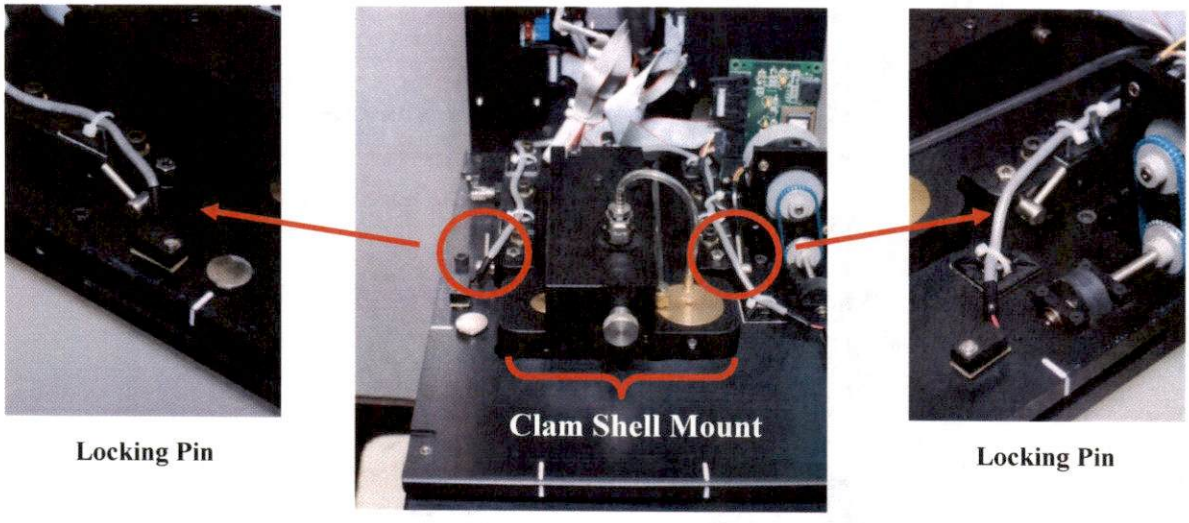
The display of the PROFILE/Plus PPS instrument is mounted on a hinge so that operations requiring the upper hood to be raised are capable of being conducted with ease.

The image to the left shows the upper hood in the raised position. The two upper circles indicate the location of the locking mechanisms that holds the display in place for normal operation. The bottom circle shows the locking mechanism for securing the display when the upper hood is open.

Loosen the two mechanisms holding the display and gently lower the display so that the lower lock slips through the cut out of the display frame. Tighten the lower mechanism to secure the display.

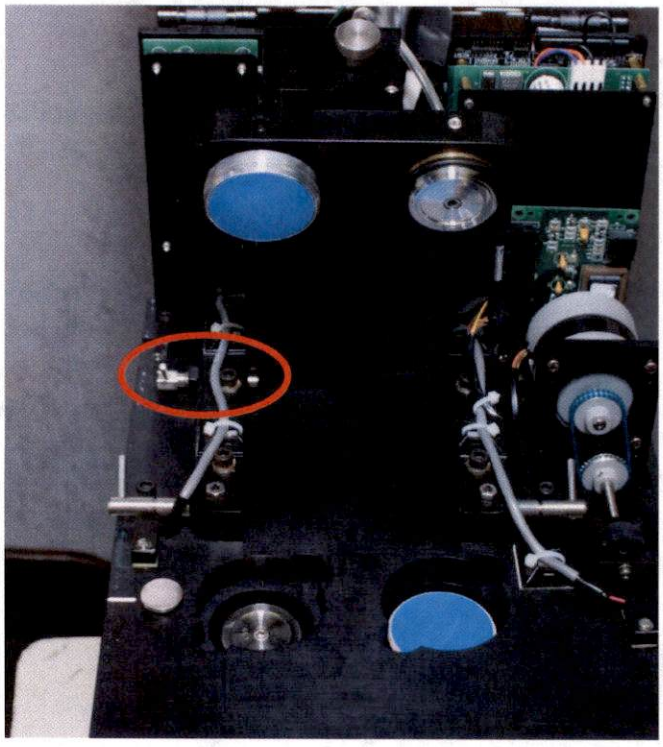
This is the display in the lowered position and locked in place. The red circle indicates the locking mechanism.

Raise the clam shell mount by pulling the locking pins, located on either side of the mount, toward the sides of the instrument.



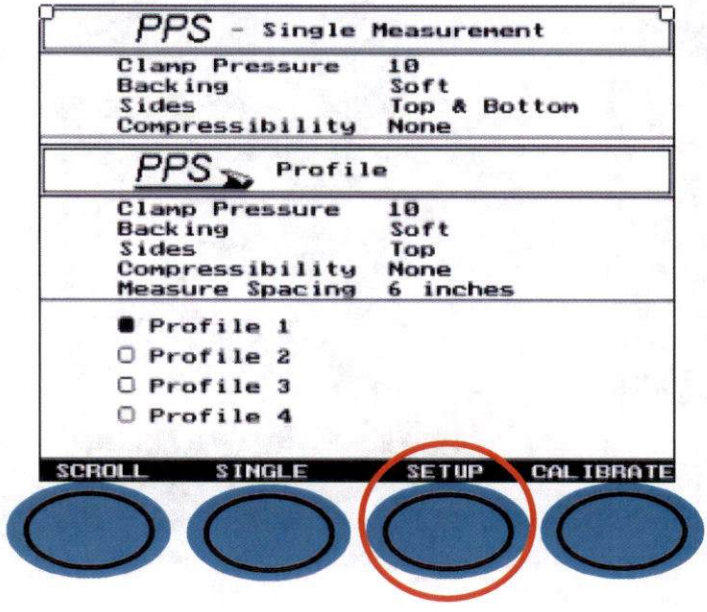
Locking Pin **Locking Pin**

After the clam shell mount is raised, lock it into place with the locking mechanism as indicated in the image that follows.

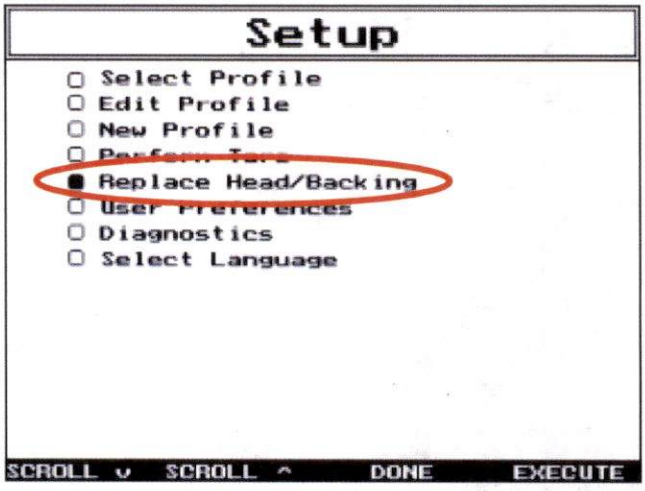


The clam shell mount is raised and locked in position. The locking mechanism is indicated by the red circle.

Press the **SETUP** soft key on the **Home Screen**.

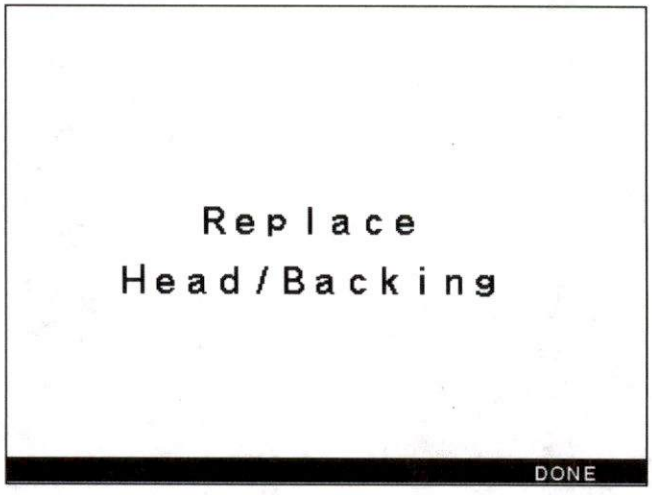


The following screen will appear.



Use the **SCROLL** v and **SCROLL** ^ soft keys to highlight the **Replace Head/Backing** routine as indicated in the previous image. Use the **EXECUTE** soft key to begin the highlighted routine. The **DONE** soft key will return to the **Home Screen**.

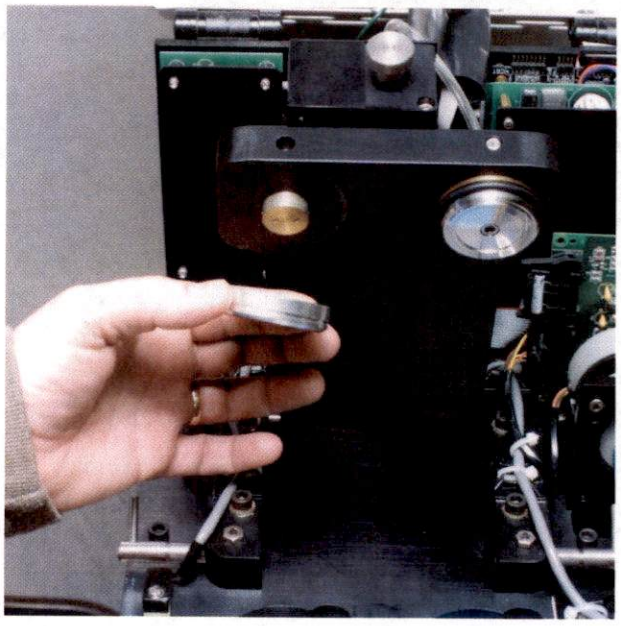
After executing the **Replace Head/Backing** routine the PROFILE/Plus PPS instrument will display the following screen.



As part of the **Replace Head/Backing** routine the lower portion of the measurement assembly will raise. This is done so that the backing and/or head are more accessible.

Backing Replacement

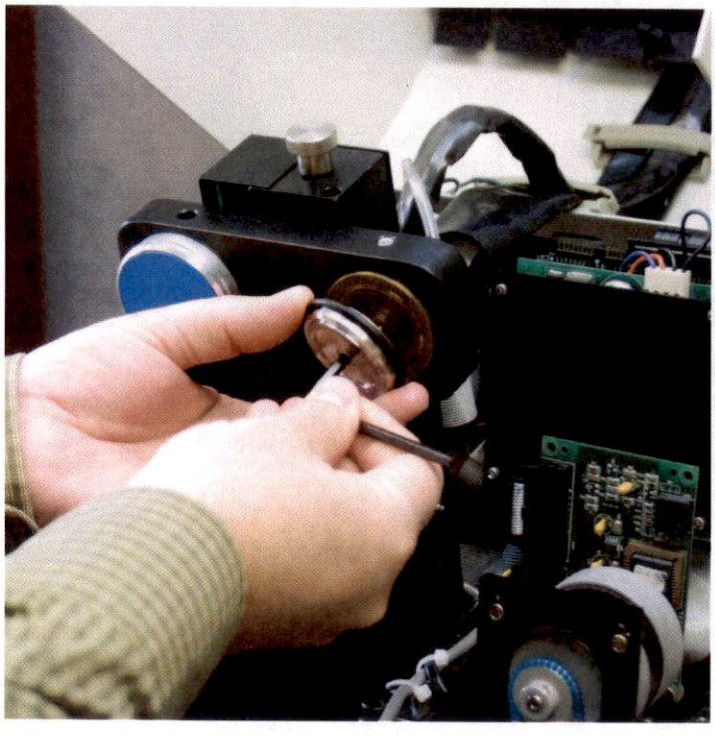
The backing pads are part adhered to an aluminum puck. The puck has been machined so that it snaps on to a mounting post. To remove a backing assembly pull firmly on the puck. See following image.

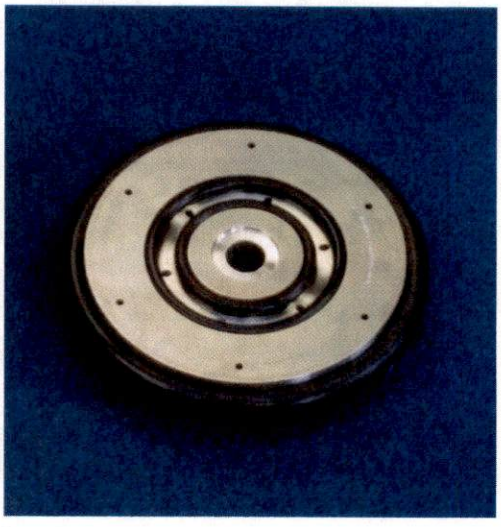


Replace the backing pad by firmly pushing the new puck assembly on to the mounting post. The assembly should snap into place.

Head Replacement

The measuring head is mounted using a hex socket head screw. To replace the head use an Allen wrench that properly fits the socket of this screw. Remove the screw while holding the measuring head so that it will not fall. See the following image.





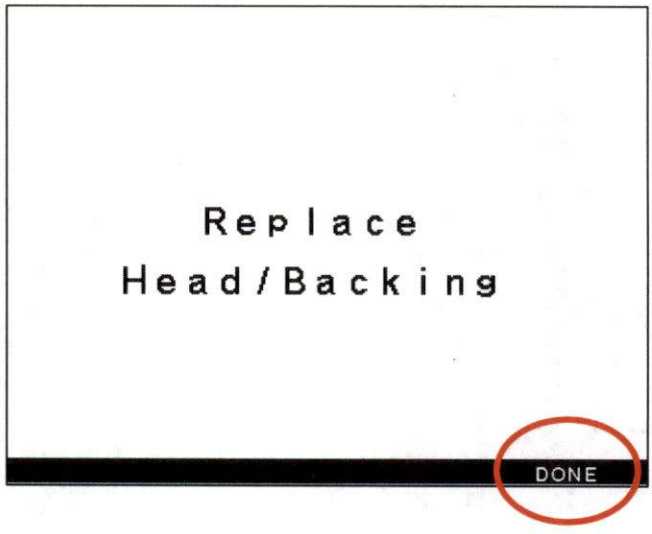
The image above displays the three o-rings of the measuring head.

Inspect the o-ring on the measuring head for any damage and if any damage is detected contact Technidyne's Service department for a replacement part. Place the o-rings on the replacement measuring head. Replace the measuring head using the original socket head screw.

Return the clam shell mount to the normal operating position by pulling the locking mechanism to the left while holding the clam shell mount. Gently lower the clam shell mount and lock it into place with the two locking pins located on either side of the clam shell mount.

Return the display to the normal operating position. Lower the upper hood and secure with the locking screw.

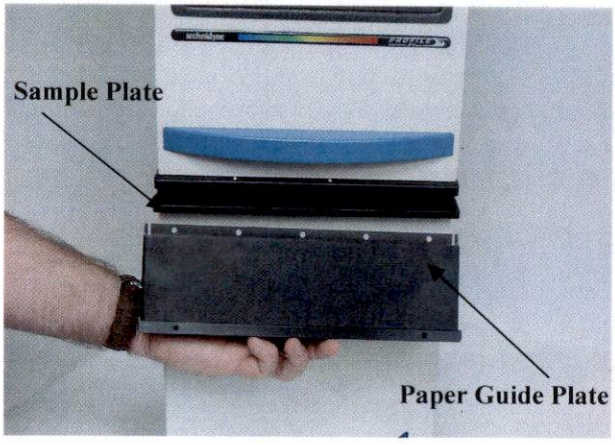
Press the **DONE** soft key as indicated below. The instrument will return to the **Setup** screen. Press the **DONE** soft key or the **Home** hard key to return the **Home Screen**.

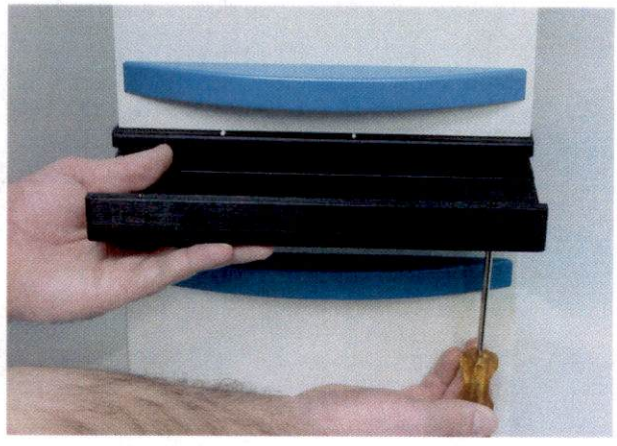


Technidyne PROFILE/Plus PPS
11. Paper Guide Installation (Optional)

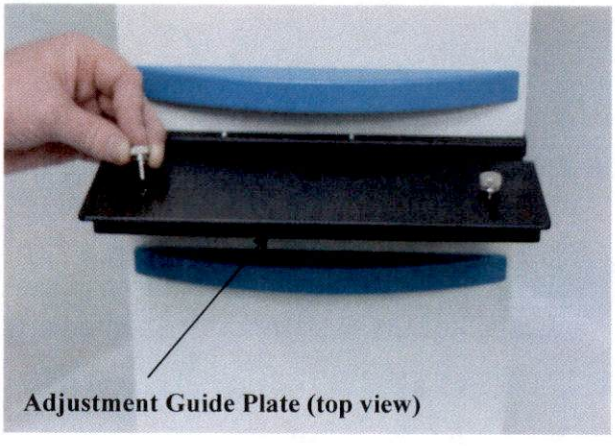
Paper Guide Installation (Optional)

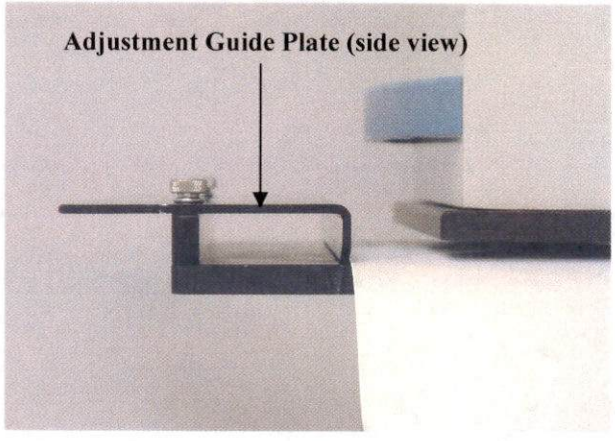
For shipping purposes the Paper Guide Assembly was not installed at Technidyne Corporation. Please use the following instructions for proper installation.





Attach the Paper Guide Plate to the bottom of the Sample Plate with the 5 mounting screws that have been provided. Please note that the top of the Paper Guide Plate and the bottom of the Sample Plate have been machined to guide proper installation.





Install the Adjustment Guide Plate as shown above using the knurled head thumbscrews which have been provided.

Appendices

Safety First

When working on any electronic equipment pay close attention to Warning, Caution, Pinch Point, High Voltage, and any other labeling on the equipment. Use lock-out tag-out procedures when replacing power supplies, harness modification, and circuit boards. Some adjustments will have to be done while the equipment is on. Use extreme care in making adjustments wherein the power must be on. It is the recommendation of Technidyne that **only trained personnel** work on the equipment. Technidyne offers training on all makes and models of Technidyne equipment. Customized classes at Technidyne or your facility are available. Contact the Technidyne Service Department for scheduling or more information at phone number +1 (812) 948-2884.

1. Maintenance

The implementation of a sound maintenance program will increase the longevity and reliability of any equipment. Technidyne offers a wide range of services to help you maintain a healthy maintenance program. Technidyne has regularly scheduled Preventative Maintenance visits throughout the United States and Canada. Technidyne offers Calibration Standards Subscriptions, Standard Recertification and customized seminars for optical and physical properties. When putting together a maintenance plan, make Technidyne your partner.

2. Spare Parts List

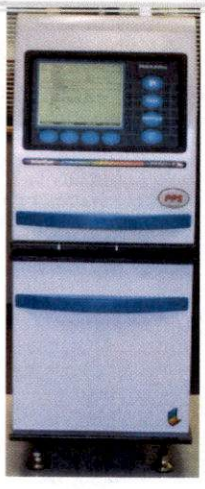
Part Number	Description
APPS0029	PPS Measuring Head
APPS0002	Backing Assm, Soft
APPS0001	Backing Assm, Hard
PAGTPNE0090	KNF Air Filter
AAOT0036	Air Compressor
PABTPWS0010	Power Supply, Std. P+
PPROMEC0020	Key Pad / Screen Overlay
PABTHDW0080	Belt, Paper Drive
PABTHDW0130	Bearing, Paper Drive (4 each in the instrument, the p/n is for 1 each)
PABTMEC0070	Motor, Paper Drive
PABTMAC1410	Rubber Roller, Paper Drive
PPPSPNE0140	Hose End (Air Fitting)
PPPSGAS0030	Large. Measuring Head O-ring
PPPSGAS0040	Small. Measuring Head O-ring
PPPSGAS0050	Outer. Measuring Head O-ring
PPRTHDW0110	O-Ring, Small Cal Rod
APRO0003	LED / Sensor PC Bd. Assm.

Spare Parts Continued	
Part Number	Description
APRO0006	Photo-Detector PC Bd. Assm.
PPTETB85	PPS Paper Calibration Std.
CFREPPCS	PPS Calibration Restrictor Set
ACTH0111	Printer Cable, Serial
PCTHASR0150	Star Printer Paper, 1 Box of 4 Rolls
PPROPRN0010	Thermal, Star Printer
PPROPWS0010	PWR Supply, Star Printer

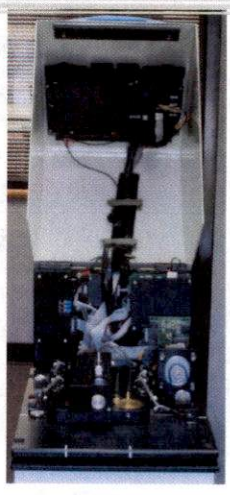
3. Hood and Display

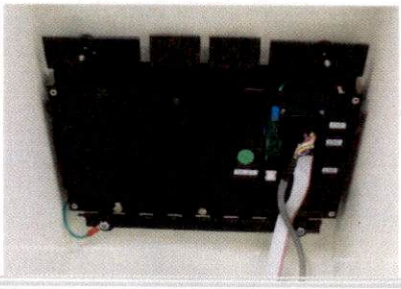
The display of the instrument is designed to be used when the hood is open and closed. Secure the hood in each location to prevent damage.

With the hood closed, there are two locks to hold the screen securely.

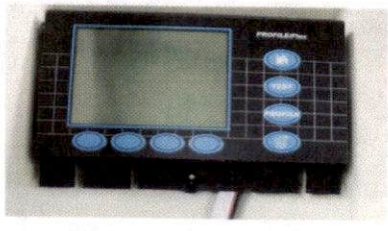


With the hood open there is one lock to hold the screen securely.





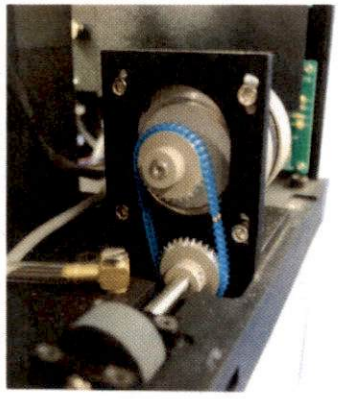
The hood must be open to access the locks. A half turn of the locks will allow the screen to be lowered as shown in the photograph above.

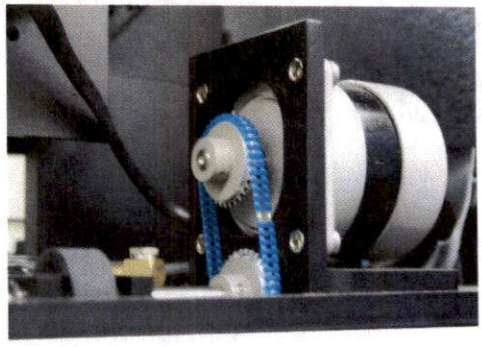


For operation with the hood open the screen may be lowered and held in place with a single lock as shown in the above photograph. A half turn of the lock will lock and release the screen.

4. Paper Drive

The paper drive is very simple in design. There is a motor, a belt, two pulleys, two wheels, and an air cylinder. The air cylinder comes up to hold the paper between the wheels and the motor turns the top wheel. Other than normal cleaning, the belt is the only regular maintenance item that should be checked for wear. If you do replace a belt, the belt should not be stretched tight between the pulleys but should only be tight enough to allow the belt to be easily pushed with a finger and get approximately ½" of play.





5. Cleaning

Weekly, blow clean dry air, preferably with canned air, the length of the paper path. Avoid the use of a rag or inserting something in the paper path, the measuring head could get damaged. Damage and defective test results could also occur if sprays such as furniture polish and/or glass cleaner are sprayed into the paper path. Monthly the hood should be raised and the lower electronics cover pulled forward so that dust can be blown out, with clean dry air. Spray glass cleaner on a rag and wipe the display/keypad off once a month. The outside of the instrument cabinetry may be cleaned with glass cleaner or furniture polish.

6. Lubrication of Mechanical Parts

No lubrication of mechanical parts is required.

7. Mill Air Filter Replacement

The instrument uses Mill Air. This air line should have a moisture trap and air filter. Drain the moisture trap and replace the air filter on a regular basis. The frequency will vary based on the condition of the mill air line.

8. Air Lines and Hoses

The Thickness instrument is equipped with an air regulator and moisture trap. The moisture trap should be drained any time moisture accumulates. This airline is used throughout the Thickness instrument for movement of samples and pneumatic components. Moisture and sediment can greatly decrease the life of the sample backing air cylinders.

9. Paper Detection Optics

All of the adjustments and procedures listed below are made to the 'Paper Detection Board' located under the hood on the left hand side of the back plate.

1 With nothing in the paper path, adjust '*PO1*' (*located on the paper detection board*) until the '*D1*' LED is flashing.
2 Document the voltage at '*pin 3*' of '*U5*' (*the upper end of 'R16' can be used as a ground reference*). This measured voltage is called the "*Paper in Threshold*".
3 Insert paper into the paper path (*this will block the photo-optics*). If possible use a paper sample that will be tested on this instrument. Try to get a grade of paper that will be the least opaque that the customer will test.
4 Adjust '*PO1*' counterclockwise until '*D1*' is flashing.
5 Document the voltage at '*pin 3*' of '*U5*'. This measured voltage is called the "*Paper out Threshold*".
6 If the difference between the two thresholds is less than 2VDC there may be a problem. Check to make sure that paper dust or dirt is not obstructing the paper detection device.
7 Adjust '*PO1*' until the voltage at '*pin 3*' of '*U5*' is close to the average of the two thresholds.

Repeat steps 1 through 7 using '*PO2*', '*D2*' and '*pin 5*' of '*U5*'.

10. Return Authorization (sending in an instrument for repair)

Call the Technidyne Service Department + 1 (812) 948-2884 to obtain a Return Authorization Number. Please have the serial number of the instrument, description of the problem, an address for sending the instrument back after repair, a contact name at your facility, phone number and fax number. Write the RA# issued for the repair on the outside of the shipping container. Technidyne strongly recommends that the instrument be double boxed and placed on a pallet for shipping. Always insure the package. Many shipping companies will not cover the replacement or repair of an instrument that was incorrectly packaged.

11. Record Keeping

Appendix A contains two pages that are for your mills records. Provided is a Maintenance Log Sheet and a Calibration Work Sheet. The Maintenance Log Sheet is a simple log for keeping track of when and who has performed service. A place has also been provided to show when a service (such as calibration or lamp replacement) may expire, if applicable. A Calibration Work Sheet has also been provided to show the state of the instruments last calibration. Keeping a log of calibration and services performed on the equipment can be of great help when it comes to solving problems and/or discrepancies in test results. Feel free to modify these sheets to fit your mills needs and/or ISO requirements.

Appendix 11.1
Maintenance Log Sheet

Instrument Model: _____ **Instrument Serial Number:** _____
Lab/Location: _____

Maintenance Action	Action Date	Expiration Date	Technicians Initials

Appendix 11.2

Technidyne
PROFILE/Plus PPS
Calibration Work Sheet

Calibration Restrictor Verification			
Standard Range	**Target Value**	**Measured Value**	**Tolerance**
Low			
Medium			
High			

*** The tractability certificate supplied with the standards will have the listed tolerances.**

Paper Standard Verification				
Standard Range	**Target Value**	**Measured Value Top**	**/ Bottom**	**Tolerance**
1 micron				**+/- 0.12**
1.5 to 2.5 micron				**+/- 0.15**
3.5 to 4 micron				**+/- 0.18**
5+ micron				**+/- 0.22**

Measured Zero Film Reading: _____ (should read .5 or less)

Technician: _____ Date: _____

Comments: _____

_____

_____

_____

_____

Appendix 11.3
Profile/Plus Instrument Error Code Listing

Technidyne has provided a listing of Error Codes. The Error codes are broken into three sets of numbers.

For example: 001-014-005

The first set of numbers is **"001"** in our example is the type of "**Operation**" that was being performed. In this case it is a "Measurement" that was being performed.

The second set of numbers is **"014"** in our example is the "**Source**" of the problem. In this case it is a problem with the "Zero" executing.

The third and last set of numbers is **"005"** in our example is the "**Error Type**" that exists. In this case a "**Timed Out**" error type occurred.

The error codes that have been logged on the instrument can be viewed by starting from the **Home Screen**, press the **SETUP** soft key – select **DIAGNOSTICS**– select **Error Log**. This will bring up a password prompt. A random number will appear in the upper right hand corner of the display. The random number will change each time the password screen comes up. Contact the Technidyne Service Department with the random number at phone number +1(812) 948-2884 for the password, or contact your local Technidyne Service Representative.

The following pages contain the listing of all the error codes for **all** PROFILE/Plus Instruments.

Operation

Operation	Code
Measure	1
Single	2
Motion	3
Print	4
Remote Control	5
Profile	6
Configuration	7
Calibration	8
Start-Up	9
Component Test	10
Tare	11
Diagnostics	12
Setup	13
Swing-In Calibration	14
Backup	15
Restore	16
Home Screen	17
Initialization	18

Appendix A-3 (continued)
Profile/Plus Instrument Error Code Listing

Source

Source	Code
Puff Solenoid	1
Weight Control	2
Idler Roller	3
AC Power Inverter	4
Paper Sensor	5
Analog Input	6
Paper Drive	7
Print Summary	8
About	9
Print Settings	10
Communications	11
Save Configuration	12
Calibration Source	13
Zero	14
Parallelism	15
Scale Measurement	16
Clamping Valves	17
Purge Valves	18
Selector Valve	19
Roughness Measurement Air Regulator	20
Porosity Measurement Air Regulator	21
Clamping Air Regulator	22
Top Measurement Module	23
Bottom Measurement Module	24
Roughness Measurement Module	25
Porosity Measurement Module	26
Unknown	27
File Access	28
Temperature & Barometric Pressure Module	29
Backing Selector Drive	30
Backing Selector Solenoid	31
Swing-In Drive	32
UV-Cutoff Drive	33
UV-Adjust Drive	34
Floppy Drive	35
Read Spectrum	36
Process Raw Data	37
Read Analog	38
Voltage Test	39
Profile Setup	40

Appendix A-3 (continued)
Profile/Plus Instrument Error Code Listing

User Preferences	41
Verify Calibration	42
Read 950	43
UV Test	44
IO-Comm	45
Stability Test	46
Do_Calib	47
Do_Read_ERIC	48
Do_Read	49
Do_Read_Swingin	50
AIC Calib Verify	51
Measure Setup	52
Eric Function	53
Lamp Control	54
Stored Standards	55
Repeatability Test	56
All I/O Motors	57
Air Valves	58
Index File Recovery	59
Start Single	60
Build List	61
Primary Cal Test	62
Init Cal Dat	63
Insert Cal Node	64
Punch Solenoid	65
Release Solenoid	66
Hard Drive	67
Printer	68
Remote Control Init	69
Door Solenoid	70
Tilt Solenoid	71
Eject Solenoid	72
Save Factors	73
Moisture Curves	74
Retract Solenoid	75
TSA Read	76
TSA Clamp	77
TSA Measure	78
Load Cell	79
Tensile Motor	80

Appendix A-3 (continued)
Profile/Plus Instrument Error Code Listing

Select High Low Solenoid	81
Select High Exhaust Solenoid	82
Bottom Clamp Solenoid	83
Shear Solenoid	84
CD Exhaust Air Solenoid	85
MD Exhaust Air Solenoid 1	86
MD Exhaust Air Solenoid 2	87
Tensile Clamp Release Solenoid	88
Slide 2 Solenoid	89
Top Clamp Release Solenoid	90
Slide 1 Solenoid	91
Pressure Transducer	92
Burst Motor	93
Clamp Up Solenoid	94
Pressure Regulator	95
Error Recovery	96
Position Sensor	97
MD Shear Die Sensor	98
MD Shear Clamp Sensor	99
MD Shear Sensor	100
MD Tensile Clamp Sensor	101
CD Shear Die Sensor	102
CD Shear Clamp Sensor	103
CD Shear Sensor	104
CD Tensile Clamp Sensor	105
Shear Die Solenoid	106
Shear Clamp Solenoid	107

Appendix A-3 (continued)
Profile/Plus Instrument Error Code Listing

Error Type	Code
No error to Report	0
Memory Allocation	1
Slave not Ack	2
NOT USED	3
NOT USED	4
Timed out	5
NOT USED	6
Command Not Completed	7
No Object	8
No A/D Object	9
Data Not Ready	10
A/D Data Error	11
Too Many A/D read	12
A/D Hardware	13
A/D Software	14
A/D Config	15
Force Not Achieved	16
No Break Detected	17
No Stretch Detected	18
Bad File Name	19
File Error	20
Print Off Line	21
Print Out of Paper	22
Print Other	23
Print Buffer Full	24
Com Buffer Full	25
Tare Range	26
Config Error	27
NOT USED	28
Remote Invalid Inst Type	29
Remote Invalid Corr	30
Remote Communications	31

Appendix A-3 (continued)
Profile/Plus Instrument Error Code Listing

Rmt File not found	32
Rmt wrong mode	33
Rmt sequence	34
Rmt bad command	35
Rmt timeout	36
Rmt Checksum	37
Rmt I2C Bus Comm	38
Rmt measure	39
Rmt file open	40
Module not initialized	41
Requested pressure out of range	42
New/Uncalibrated Pressure	43
Requested pressure not yet stable	44
Sensor # 1 out of tolerance	45
Sensor # 2 out of tolerance	46
Both sensors (#1 & #2) out of tolerance	47
No tare performed since reset	48
Samp. variations exceeded "tolerance" setting	49
Data out of Range	50
Cannot Process Raw Data	51
Swing in data range error	52
Channel Busy	53
Failed after 20 tries	54
BlackCup Reading out of Range	55
Cannot Initialize	56
Standards Checksum	57
BlackCup Name	58
Station Number Range	59
Bad Profile	60
Stored Standard Error	61
Invalid Backing Name	62
MoistureCurve Name File	63
Scale Read Error	64
Units Invalid	65
Reference Error	66
Not used	67
Not used	68
Not used	69
Not used	70

Appendix A-3 (continued)
Profile/Plus Instrument Error Code Listing

RS232 Communications	71
RS232 Memory Allocation	72
NOT USED	73
NOT USED	74
Bad Command	75
Timed Out	76
RS232 Bad Format	77
RS232 Buffer Overflow	78
RS232 Measure Data	79
NOT USED	80
UV Cutoff Home	81
UV Adjust Home	82
Swing-In Tolerance	83
Swing-In Home	84
Bad Command	85
Buffer Overflow	86
NOT USED	87
NOT USED	88
NOT USED	89
Invalid Standard	90
Restrictor Missing	91
Diaphragm Curve Missing	92
NOT USED	93
NOT USED	94
NOT USED	95
Cancel Op	96
Get Status	97
NOT USED	98-112
UV Cutoff Move	113
UV Adjust Move	114
NOT USED	115
Swing-In Move	116
Black Cup Not Selected	117
Home	118
Home Error	119
Motor Number Range	120

Appendix A-3 (continued)
Profile/Plus Instrument Error Code Listing

Backing Not Selected	121
Backing Out of Date	122
Backing Name File	123
Eric Data Calc. Error	124
Profile Spec. Error	125
All I/O Motors Home	126
Not Calibrated	127
Directory Error	128
Stepper Motor Error	129
No Maximum Travel	130
Unrecoverable Error	131
Break Not Detected	132
Teat Aborted	133
Maximum Force Exceeded MD	134
Maximum Force Exceeded CD	135

12. Specification for Communications

Technidyne Corporation
Specification for Communications
PROFILE/Plus – PPS Instruments
07-DEC-99
Revised 13-MAR-00
Revised 08-NOV-00

Each Technidyne PROFILE/Plus instrument provides serial (RS232) and parallel output communications for connection to 40 and 80 column printers. Printer communications is provided through a dedicated parallel port and a dedicated RS232 serial port both brought to the instrument back panel.

A second RS232 port is routed to the back panel and is intended to provide communications with an external computer. There are currently three uses defined for this port in addition to the connection of a remote debug program used during software development. In a service or setup mode, system information may be transferred to and from the instrument through this channel. For example, the instrument operating software may be updated through this port using special utilities running on a PC. When operated as a 'stand-alone' instrument, test result data will be transmitted through this port. When the instrument is part of an integrated PROFILE/Plus system, this port is used for control and result data communications with the system host computer.

This document describes the specific PROFILE/Plus – PPS instance of this general communications. Although the general format and content are similar between instruments in the PROFILE/Plus line, each instrument has specific characteristics that require explanation. This specification describes the 'stand-alone' data communications. Remote Control communications for incorporation of the instrument in a PROFILE/Plus system is described in the Technidyne document "*Specification for Communication, PROFILE/Plus – Remote Control*". Data is comma delimited and transmitted in packets bracketed by <STX>...<ETX>. Note that a "trailing comma" is included. The first character following the <STX> character identifies the type of the packet.

PACKET IDENTIFIER	PACKET DESCRIPTION
B	Header at beginning of profile run
b	Header packet at beginning of single (manual) measurements
p	Individual measurement data during a profile run
s	Individual measurement data from single (manual) measurements
P	Summary after completion of profile run
S	Summary after completion of single measurements
E	End of measurement sequence, profile or single

Header Packet

If the individual measurement option is selected for single or profile measurements or the 'comm' option set to TRUE in the selected profile definition, a header

packet will be transmitted when the sequence is first started. The header packet is illustrated below.

<STX>	- Start of packet
type,	- Type of packet (B = begin profile, b = begin single)
<*profile*>,	- Profile Name (ASCII string – NULL if Single Measurement)
<*i.d.*>,	- Sample Identification (ASCII string – NULL if not entered)
CP,	- Clamp Pressure (5,10,20)
BK,	- Backing ('S' – soft, 'H' – hard)
COMP,	- Compressibility ('N' – none, "5/10", "5/20", "10/20")
SIDES,	- Sides included in readings("T&B", 'T', 'B')
NULL,	- Spare
NULL,	- Spare
SPACING,	- Profile measurement increment (xxx) – NULL if Single
DIM,	- Dimension for spacing ('C' = cm, 'I' = in) – NULL if Single
<ETX>	- End of packet

Data Identification Tags

If the instrument is configured to send data tags, the comma delimited data fields are divided into two sub-fields. The first sub-field is a "data identifier tag" for the numeric data in the second sub-field. A space character separates the two sub-fields. The tags will have a common format for all PROFILE/Plus data. As instrument development continues the list of data tags will be expanded and published to allow programmers to set up data collection software. The first three characters will identify the instrument, for instance "PPS". An underscore character and additional information will follow. For instance, three letters to identify the side the measurement was taken (TOP or BOT, for top side or bottom side). More characters will be added as needed to uniquely identify the data.

nnn_sss_xxxx...

nnn = Instrument identifier (PPS, AGT, ...)
sss = Side measurement taken from (TOP for top side, BOT for bottom side)
xxxx = additional information needed to identify data

Example

AGT_TOP_MD_AVG

This represents the average gloss reading in the machine direction on the topside from an Automatic Gloss Instrument.

Tags Currently Defined for the PPS Instrument

PPS_NUM_READINGS	- Total number of readings in this sequence
PPS_NUM_IN_STATS	- Number of readings included in statistics for this sequence
PPS_TOP_AVG	- Average of top PPS readings for this sequence
PPS_TOP_HIGH	- Highest top PPS reading for this sequence
PPS_TOP_LOW	- Lowest top PPS reading for this sequence
PPS_TOP_STDEV	- Standard deviation of top PPS reading for this sequence
PPS_TOP_COMP_AVG	- Average of top compressibility readings for this sequence
PPS_TOP_COMP_HIGH	- Highest top compressibility reading for this sequence
PPS_TOP_COMP_LOW	- Lowest top compressibility reading for this sequence
PPS_TOP_COMP_STDEV	- Standard deviation of top compressibility reading for this sequence
PPS_BOT_AVG	- Average of bottom PPS readings for this sequence
PPS_BOT_HIGH	- Highest bottom PPS reading for this sequence
PPS_BOT_LOW	- Lowest bottom PPS reading for this sequence
PPS_BOT_STDEV	- Standard deviation of bottom PPS reading for this sequence
PPS_BOT_COMP_AVG	- Average of bottom compressibility readings for this sequence
PPS_BOT_COMP_HIGH	- Highest bottom compressibility reading for this sequence

PPS_BOT_COMP_LOW	- Lowest bottom compressibility reading for this sequence
PPS_BOT_COMP_STDEV	- Standard deviation of bottom compressibility reading for this sequence
PPS_READING_NUM	- Reading number for this individual reading
PPS_READING_IN_STATS	- 'Y/N' indicator for inclusion of this reading in statistics
PPS_TOP	- Individual top PPS reading
PPS_TOP_COMP	- Individual top compressibility reading
PPS_BOT	- Individual bottom PPS reading
PPS_BOT_COMP	- Individual bottom compressibility reading
PPS_READINGS_SUSPECT	- Data may be invalid due to instrument malfunction

Individual Data Packet

The format for the individual test packet is indicated here. Notice the inclusion of Data Identification Tags.

<STX>	- START	
type,	- Type of packet (p = profile test, s = single test)	
PPS_TOP *top_pps*,	- Top PPS value for this reading	(xxx.xx)
PPS_TOP_COMP *top_comp*,	- Top Compressibility for this reading	(xxx.xx)
PPS_BOT *bot_pps*,	- Bottom PPS value for this reading	(xxx.xx)
PPS_BOT_COMP *bot_comp*,	- Bottom Compressibility for this reading	(xxx.xx)
<ETX>		

Summary Packet

The packet transmitted for the complete profile (a set of "Single Measurements" or a "PROFILE" run) is sent automatically at the completion of a profile run when the HOME button is pressed if the "COMMUNICATIONS" option in the profile definition is set to "Send Data". If it is set to "OPTIONAL", the packet will only be sent when the "Send Data" button is pressed on the results screen for either the Single Measurement or Profile. This packet includes a header section, an instrument configuration section indicating how the instrument is set up for this particular test, a statistics section, and the individual readings. The format for the packet is illustrated below. Notice the tags in data fields.

<STX>	- Start of packet
Header	
type,	- Type of packet (P = profile summary, S = single summary)
<*profile*>,	- Profile Name (ASCII string – NULL if Single Measurement)
<*i.d.*>,	- Sample Identification (ASCII string – NULL if not entered)
M,	- Month ('1'.."12")
D,	- Day ('1'.."31")
Y,	- Year ("xxxx")
H,	- Hour ("00".."23")
M,	- Minute ("00".."59")
S,	- Second ("00".."59")
Configuration for this profile	
CP,	- Clamp Pressure (5,10,20)
BK,	- Backing ('S' – soft, 'H' – hard)
COMP,	- Compressibility ('N' – none, "5/10", "5/20", "10/20")
SIDES,	- Sides included in readings ("T&B", 'T', 'B')
NULL,	- Spare
NULL,	- Spare
SPACING,	- Profile measurement increment (xxx) – NULL if Single
DIM,	- Dimension for spacing ('C' = cm, 'I' = in) – NULL if Single

Statistics for this profile	
PPS_READINGS_SUSPECT *QUALITY*,	- Quality of data (0=data OK, 1=data questionable)
PPS_NUM_READINGS *NUM_READ*,	- Total Readings taken (xxx)
PPS_NUM_IN_STATS *NUM_IN_STAT*,	- Number of readings included in statistics (xxx)
PPS_TOP_AVG *AVG_TOP_PPS*,	- Average top PPS value (xxx.xx)
PPS_TOP_HIGH *HIGH_TOP_PPS*,	- Maximum top PPS value (xxx.xx)
PPS_TOP_LOW *LOW_TOP_PPS*,	- Minimum top PPS value (xxx.xx)
PPS_TOP_STDEV *STDEV_TOP_PPS*,	- Standard Deviation of top PPS value (xxx.xx)
PPS_TOP_COMP_AVG *AVG_TOP_COMP*,	- Average top compressibility value (xxx.xx)
PPS_TOP_COMP_HIGH *HIGH_TOP_COMP*,	- Maximum top Compressibility value (xxx.xx)
PPS_TOP_COMP_LOW *LOW_TOP_COMP*,	- Minimum top compressibility value (xxx.xx)
PPS_TOP_COMP_STDEV *STDEV_TOP_COMP*,	- Standard Deviation of top comp (xxx.xx)
PPS_BOT_AVG *AVG_BOT_PPS*,	- Average bottom PPS value (xxx.xx)
PPS_BOT_HIGH *HIGH_BOT_PPS*,	- Maximum bottom PPS value (xxx.xx)
PPS_BOT_LOW *LOW_BOT_PPS*,	- Minimum bottom PPS value (xxx.xx)
PPS_BOT_STDEV *STDEV_BOT_PPS*,	- Standard Deviation of bottom PPS value (xxx.xx)
PPS_BOT_COMP_AVG *AVG_BOT_COMP*,	- Average bottom compressibility value (xxx.xx)
PPS_BOT_COMP_HIGH *HIGH_BOT_COMP*,	- Maximum bottom compressibility value (xxx.xx)
PPS_BOT_COMP_LOW *LOW_BOT_COMP*,	- Minimum bottom compressibility (xxx.xx)
PPS_BOT_COMP_STDEV *STDEV_BOT_COMP*,	- Standard Deviation of bottom comp (xxx.xx)
Readings – repeated NUM_READ times	
PPS_READING_NUM *SAMPLE #*,	- Sequence number for this sample (xxx)
PPS_READING_IN_STATS *IN_STATS*,	- Reading included in statistics ('Y' = yes, 'N' = no)
PPS_TOP *TOP_PPS*,	- Top PPS value for this sample (xxx.xx)
PPS_TOP_COMP *TOP_COMP*,	- Top compressibility for this sample (xxx.xx)
PPS_BOT *BOT_PPS*,	- Bottom PPS for this sample (xxx.xx)
PPS_BOT_COMP *BOT_COMP*,	- Bottom compressibility for this sample (xxx.xx)
<ETX>	- End of packet

End of Sequence Packet

If any transmission has been made during a test sequence, a packet to indicate the end of a sequence will be sent when the instrument is returned to the main menu terminating the sequence.

<STX>	- Start of packet
E,	- Type of packet (E = end)
<ETX>	

EXAMPLES

The operator pressing the profile button initiates a profile run. The profile selected has the individual data transmission option set to TRUE. The 'B' indicates the start of a profile run. The profile name selected is "profile 1" and the sample I.D. is entered as "run 5". The Clamp Pressure is 10, Soft Backing, no Compressibility, both Top and Bottom sides. The spacing for readings is 25 cm. The following sequence is sent before the first reading is taken.

<STX>B,profile 1,run 5,10,S,N,T&B,,,25,C,<ETX>

This packet will be transmitted after each individual reading. Note the NULL fields for compressibility results.

<STX>p,PPS_TOP 3.45,,PPS_BOT 3.78,,<ETX>

Below is an example of a profile taken November 9, 1999, at 1:47:25 PM. The profile name was "Machine 1" and the sample ID was entered as "Sample 20". The clamp pressure was 10, soft backing, no compressibility, top only. Seven readings were taken at 24-inch intervals and readings 4 & 7 were removed from the statistics.

```
<STX>P,Machine 1,Sample 20,11,9,1999,13,47,25,10,S,N,T,,,24,I,
PPS_NUM_READINGS 7,PPS_NUM_IN_STATS 5,
PPS_TOP_AVG 3.57,PPS_TOP_HIGH 3.8,PPS_TOP_LOW 3.35,PPS_TOP_STDEV 0.16,
,,,,
,,,,
,,,,
PPS_READING_NUM 1,PPS_READING_IN_STATS Y,PPS_TOP 3.35,,,,
PPS_READING_NUM 2,PPS_READING_IN_STATS Y,PPS_TOP 3.8,,,,
PPS_READING_NUM 3,PPS_READING_IN_STATS Y,PPS_TOP 3.6,,,,
PPS_READING_NUM 4,PPS_READING_IN_STATS N,PPS_TOP 3.9,,,,
PPS_READING_NUM 5,PPS_READING_IN_STATS Y,PPS_TOP 3.5,,,,
PPS_READING_NUM 6,PPS_READING_IN_STATS Y,PPS_TOP 3.6,,,,
PPS_READING_NUM 7,PPS_READING_IN_STATS N,PPS_TOP 3.9,,,,
<ETX>
```

A typical profile sequence:

<STX>B, ...,<ETX>	*Begin profile sequence with individual readings*
<STX>p, ...,<ETX>	*First reading*
<STX>p, ...,<ETX>	
<STX>p, ...,<ETX>	
<STX>p, ...,<ETX>	
<STX>p, ...,<ETX>	
<STX>p, ...,<ETX>	*Last reading (end of paper sample)*
<STX>P, ...,<ETX>	*Operator deletes items and presses send data button*
<STX>P, ...,<ETX>	*Operator presses HOME button, Automatic transmission of*
<STX>E,<ETX>	*results if 'comm' is TRUE in profile definition, then end packet*

In the example below, the Single Option for transmission of individual data is set to FALSE. The operator takes several Single readings, deletes some of the readings from the statistics and presses the send data button followed by the HOME button.

```
<STX>S, .....,<ETX>
<STX>E,<ETX>
```

Start Profile

This command starts the indicated profile when the instrument is in 'local mode'. The indicated profile need not be selected on the main menu. If the named profile is not in the instrument memory, error code 2 (file not found) is returned. Otherwise, the profile is loaded and executed the same as if the PROFILE button were pressed. If the sample is not loaded (both paper sensors covered) a prompt to load the sample and press the PROFILE button is displayed. If the communications options are selected in the profile setup, data will be sent to the host serial port. The instrument will operate otherwise as in the normal local mode.

Transmit to/from Instrument

Command:	0x30
Data:	"filename" – 1 to 20 characters

Example
Run profile named TEST.

Host sends to instrument:
(see Specifications for Communication, PROFILE/Plus – Remote Control)

<STX> 0x30 0x00 0x04 0x54 0x45 0x53 0x54 0x01 0x74<ETX>

If a profile named "TEST exists and the instrument is in local mode, it is loaded and started.

Otherwise, if the instrument is in local mode but the file does not exist, the instrument responds:

<STX> 0x28 0x00 0x01 0x02 0x00 0x2B <ETX>

If the instrument is not in local mode, the instrument responds:

<STX> 0x28 0x00 0x01 0x05 0x00 0x2E <ETX>