TABLET AUTOSAMPLER ACCESSORY

User's Guide

PerkinElmer®
For the Better

Release History

Part Number	Release	Publication Date
L1050027	B	January 2009

Any comments about the documentation for this product should be addressed to:

User Assistance
PerkinElmer Ltd
Chalfont Road
Seer Green
Beaconsfield
Bucks HP9 2FX
United Kingdom

Or emailed to: info@perkinelmer.com

Notices
The information contained in this document is subject to change without notice.
Except as specifically set forth in its terms and conditions of sale, PerkinElmer makes no warranty of any kind with regard to this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.
PerkinElmer shall not be liable for errors contained herein for incidental consequential damages in connection with furnishing, performance or use of this material.

Trademarks
Registered names, trademarks, etc. used in this document, even when not specifically marked as such, are protected by law.

PerkinElmer is a registered trademark of PerkinElmer, Inc.
Spectrum is a trademark of PerkinElmer, Inc.
Spectralon is a trademark of Labsphere Ltd.

Contents

Warnings and Safety Information

The Tablet Autosampler Accessory forms part of the Spectrum 100N, which has been designed and tested in accordance with PerkinElmer specifications and in accordance with the safety requirements of the International Electrotechnical Commission (IEC). The Accessory conforms to IEC 61010-1 (Safety Requirements for electrical equipment for measurement, control and laboratory use) as it applies to IEC Class 1 (earthed) appliances and therefore meets the requirements of EC Directive 73/23/EEC.

Radiation Emitted by the Spectrum 100N

The Spectrum 100N quartz halogen bulb, which produces the near infrared beam, emits ultraviolet, visible and infrared radiation. The majority of this energy is in the infrared region. Do not stare into the beam produced by this bulb. For further safety and warning information see the *Spectrum 100 Series User's Guide*.

Measurements of the infrared radiation emitted from the accessory sampling aperture show that exposure limits recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) will not be exceeded during normal operation.

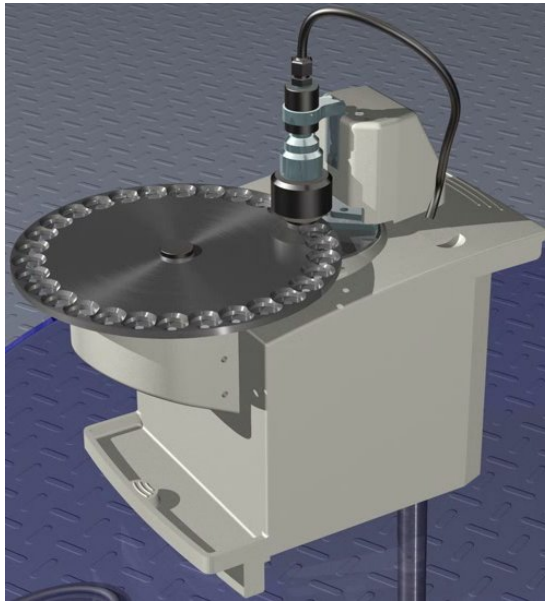|	
⚠ **WARNING**	*Do not look directly into the beam emitted from the sampling aperture. Prolonged exposure (> 10 seconds) may cause permanent eye damage.*

⚠ **WARNING**	*If the equipment is used in a manner not specified herein the protection provided by the equipment may be impaired.*

Introduction

Figure 1 The Tablet Autosampler

General Information

What is the Tablet Autosampler used for?

The Tablet Autosampler is used for collecting transmission and diffuse reflectance spectra of tablets. The technique is fast, automated and non-destructive, and there is no waste solvent. It can also be used for the automatic analysis of any other samples that can be fitted into the sample wheel. For example, vials of powder can be analyzed in reflectance mode using the vial holders provided.

If a single or larger sample needs to be analyzed, the sample wheel can be removed for non-automated sampling.

How it works

The Tablet Autosampler tests a number of tablets that are placed on the sample wheel. The wheel rotates and stops above the sample window on the top plate of the accessory. The infrared beam from the Spectrum 100N enters the accessory through the port on the left-hand side of the accessory and is focused and directed onto the sample. A transmission or reflectance measurement is then taken before the sample wheel rotates to the next sample. To allow a transmission measurement to be taken it is important that the detector is shielded from stray light. This is achieved by a light shroud that is raised before the sample wheel rotates and lowered before the measurement is taken, and by use of special tablet holders.

Parts List

The following parts are provided:

Part Number	Part	Quantity
L1240070	Tablet Autosampler Accessory	1
L1240054	NIRA Sampling Kit	1
L1241583	Vial Holder	30
L1245025	Tablet Custom Moulds Starter Kit	1
L1245026	Pre-defined Moulds Starter Kit	1

NIRA Sampling Kit

Part Number	Part	Quantity
L1240413	Loose Powder Sample Holder	1
L1241418	Powder Sampling Plate	1
L1245010	Sample Alignment Tool	1
L9001026	Cleaning Brush	1
04967843	Spatula	1
04968261	Tweezers	1
L1241632	Tablet Holder (Locating ring)	1
L1241628	Reflectance Tablet Holder Insert (5 mm aperture)	1
L1241629	Reflectance Tablet Holder Insert (7 mm aperture)	1
L1241630	Reflectance Tablet Holder Insert (9 mm aperture)	1
L1241634	Spectralon Reference	1
L1245009	Tutorial Sample	1
L9001029	4 ml glass vial and cap	10

Custom Moulds Starter Kit

Part Number	Item	Quantity
L1241559	4 mm setting pin	5
L1241555	6 mm setting pin	5
L1241558	4 mm tablet mould	5
L1241557	6 mm tablet mould	5
L1241556	Tablet mould base	10
L1245024	Custom tablet moulds resin kit	1
09200017	Spatula	1
04947633	Brush	1
09200010	1 ml syringe	10
09200011	10 ml syringe	10
09200012	Tri-corner beaker	10
09200013	Syringe nozzle	10

Pre-defined Moulds Starter Kit

Part Number	Item	Quantity
L1241751	8 mm tablet mould	3
L1241572	9 mm tablet mould	3
L1241573	10 mm tablet mould	3
L1241574	11 mm tablet mould	3
L1241575	12 mm tablet mould	3

Consumables

The following consumables can be ordered from PerkinElmer:

Part Number	Item	Quantity
L1241555	6 mm tablet setting pin	10
L1241559	4 mm tablet setting pin	10
L1241556	Tablet mould base	10
L1241557	Tablet mould for 6 mm pin	10
L1241558	Tablet mould for 4 mm pin	10
L9001029	4 ml glass vial with cap	100
L1245024	Custom tablet mould resin kit	1
L1241571	8 mm tablet mould	30
L1241752	9 mm tablet mould	30
L1241573	10 mm tablet mould	30
L1241574	11 mm tablet mould	30
L1241575	12 mm tablet mould	30
09200017	spatula	1
09200010	1 ml disposable syringe	100
09200011	10 ml disposable syringe	100
09200012	100 ml tri-corner beaker	100
09200013	Syringe nozzle	100
04947633	Large pencil brush	1

NOTE: For information about ordering large quantities of custom moulds, please contact your local PerkinElmer representative.
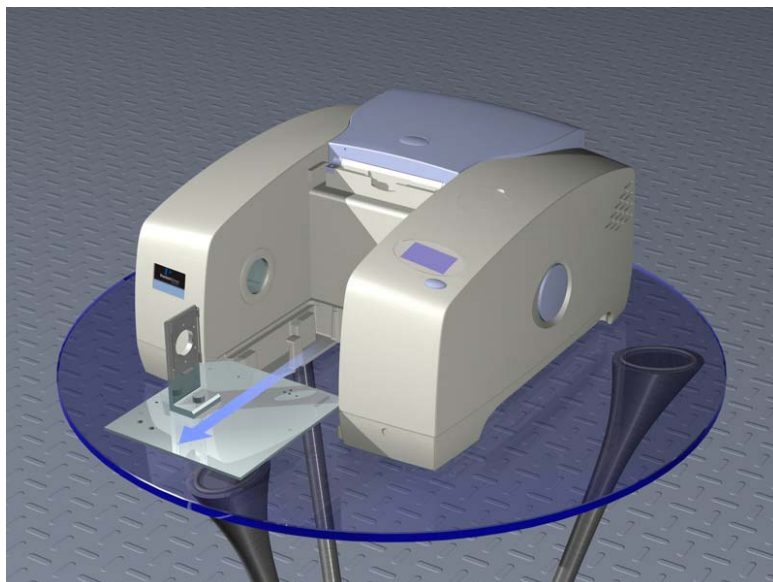
Fitting the Tablet Autosampler in the Spectrum 100N

To install the Tablet Autosampler, follow the procedure below:

NOTE: The tablet moulds and tablets should be fitted into the sample wheel before the wheel is fitted on the Tablet Autosampler. The procedure below describes fitting the Tablet Autosampler, without the sample wheel, into the Spectrum 100N. For information on how to fit the tablet moulds and tablets into the sample wheel, see *Fitting tablet moulds and tablets* on page 12.

1. Remove the Tablet Autosampler and sample wheel from the box in which it was shipped.
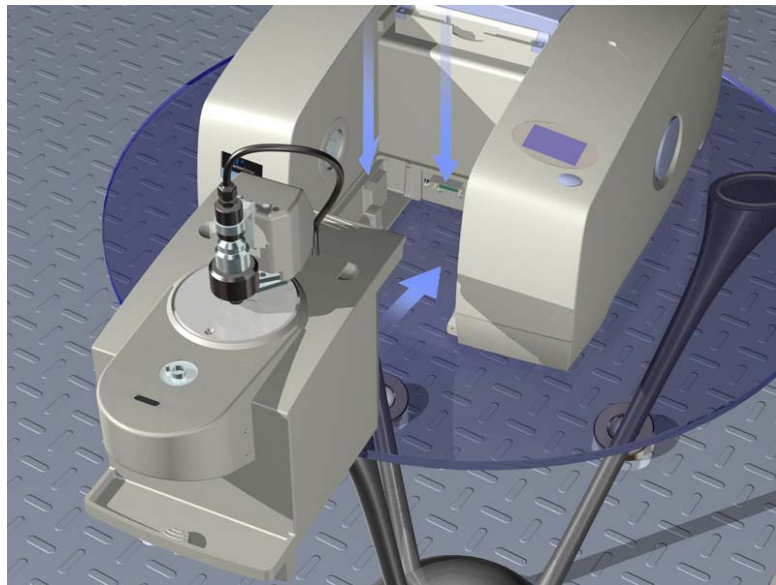
The Tablet Autosampler can be simply installed into the sample compartment of the Spectrum 100N, first removing any other sampling accessory presently fitted. Figure 2 shows the basic sample slide being withdrawn.

Figure 2 Removing the basic sample slide

To remove the present accessory and install the Tablet Autosampler:

2. Raise the sample cover to the vertical position, press the release clip and lift the cover upwards, clear of the Spectrum 100N.

   Store it in a safe place for future re-use.

3. Reach in under the base of the current accessory and pull the blue release handle towards you to release the accessory.

4. Now simply slide the accessory out of the sample area.

   Store it in a safe place for future re-use.

5. Slide in the Tablet Autosampler (without the sample wheel fitted) as shown in Figure 3, rest the back of it on the ledge in the sample area and slide it into position. Push it firmly home to ensure that the 15-way connector on the base of the inner face of the accessory engages properly with the Spectrum 100N connector.

Figure 3 Installing the accessory
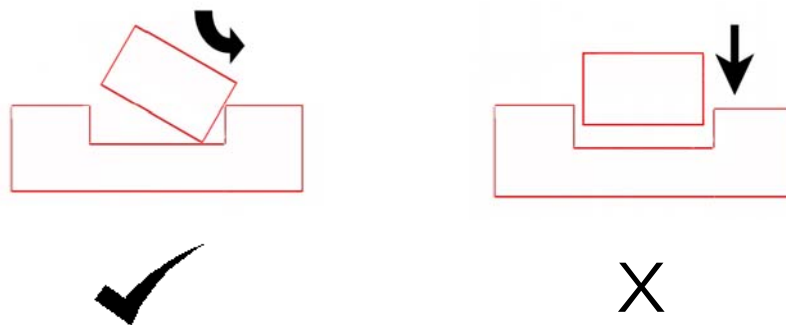
Fitting tablet moulds and tablets

Tablet moulds for circular tablets of diameter 8 mm, 9 mm, 10 mm, 11 mm, and 12 mm, are provided with the Tablet Autosampler. Further tablet moulds can be ordered from PerkinElmer. See *Consumables* on page 9.

1. Select the correct size tablet holder for the tablet(s) you wish to analyze.

NOTE: Gloves should be worn when placing tablets in the tablet moulds. Try to avoid handling the tablet as much as possible.

---

2. Hold the tablet at an angle and place it in the tablet mould towards the flat edge of the tablet mould. Then press down on the other edge of the tablet so that the tablet fits into the mould.

   Do not force the tablet straight down into the tablet mould as this may damage the tablet.

Figure 4 Fitting the tablet in the tablet mould

NOTE: If you are analyzing slotted or embossed tablets, all the tablets should be placed in the tablet moulds in the same orientation (for example the embossed side always facing upwards).

---

3. Place the tablet mould and tablet on a flat surface and press lightly on the tablet to ensure the tablet is seated firmly in the tablet holder.

   We recommend that you place a tissue over the tablet before pressing down. This helps to protect the tablet.

NOTE: Place the sample wheel on a flat, clean, non-abrasive surface before placing the tablet mould(s) in the sample wheel.

---

4. Place the tablet mould(s) in the first sample position in the sample wheel and press down to ensure the tablet holder is fitted securely.

   The tablet mould can be placed in other sample positions as required as their positions can be specified within the Spectrum (version 5.2 or later) and AssureID software (version 2.0 or later).
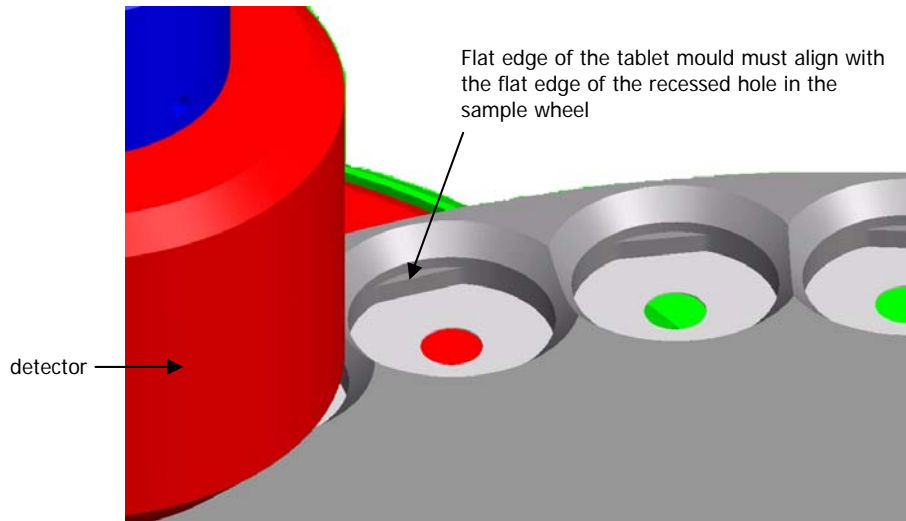
Flat edge of the tablet mould must align with the flat edge of the recessed hole in the sample wheel

detector

Figure 5 Sample positions in the sample wheel

Removing tablet moulds and tablets

➢ To remove the tablet mould from the sample wheel use your finger or a spatula to gently lever the tablet out from the flat edge of the tablet holder.

➢ To remove the tablet from the tablet mould, turn the tablet mould upside down and press the tablet out from the center of the mould.

Fitting the sample wheel to the Tablet Autosampler

Once the tablet moulds and tablets have been fitted in the sample wheel, the sample wheel can be fitted to the Tablet Autosampler. The tablet wheel has to be fitted onto the accessory and then the wheel has to be centered.

NOTE: Never attempt to fit the sample wheel if the motor of the Tablet Autosampler is moving.
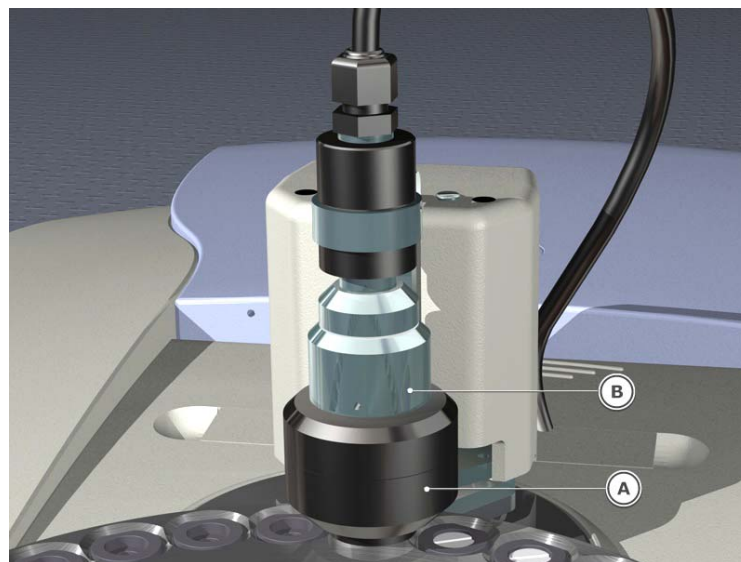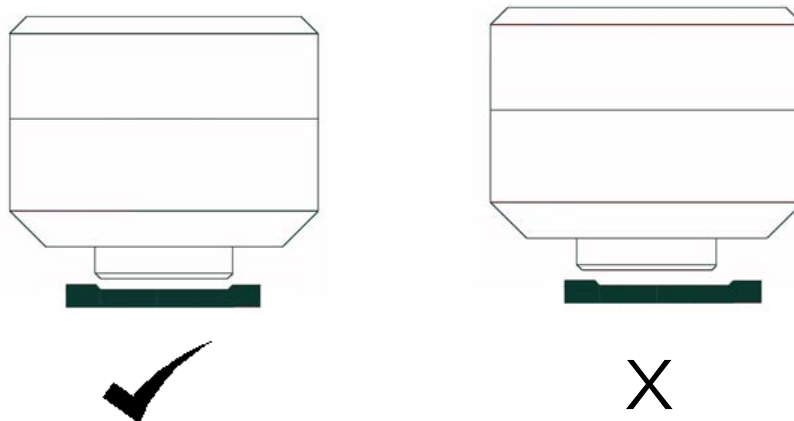

Figure 6 Tablet Autosampler detector assembly

1. Push the shroud (A) up and hold in the raised position.

2. With your other hand, turn the locking collar (B) anti-clockwise approximately 10°.
   The locking collar cannot be turned further than this. The shroud is now held in place by the locking collar.

3. Rotate the detector assembly approximately 45° anti-clockwise away from the sample wheel.
   The detector assembly cannot be moved any further.

4. Place the sample wheel on the Tablet Autosampler so that the pin on the Tablet Autosampler aligns with the small hole near the center of the sample wheel.

5. Hold onto the sample wheel and fit the black screw in the center of the sample wheel.
   Turn the screw approximately 3 to 4 turns so that the sample wheel is held loosely in place. The screw must not be fully tightened as this will prevent proper centering of the wheel.

6. Move the detector anti-clockwise until it clicks in place over the tablet.

NOTE: If it is necessary to move the wheel to position the tablet beneath the detector, use the Spectrum software to rotate the wheel.

7. Turn the locking collar clockwise approximately 10° to release the shroud.

8. Position the wheel so the shroud falls centrally into a wheel tablet position.

Figure 7 Correct and incorrect shroud positions

9. Tighten the black screw in the center of the sample wheel so that it is finger tight.

Removing the sample wheel

1. Push the shroud up and hold in the raised position.

2. With your other hand, turn the locking collar anti-clockwise approximately 10°.

   The locking collar cannot be turned further than this. The shroud is now held in place by the locking collar.

3. Rotate the detector assembly approximately 45° anti-clockwise away from the sample wheel.

   The detector assembly cannot be moved any further.

4. Hold the edge of the sample wheel in one hand and undo the black locking screw (A) in the center of the sample wheel, as shown in Figure 8.
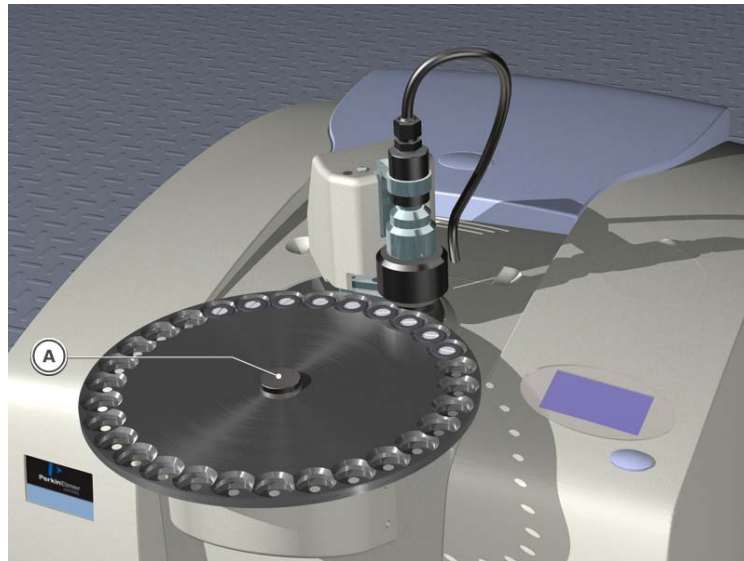
**Figure 8 Sample wheel locking screw**

5. Remove the sample wheel and store the locking screw and sample wheel safely.

6. To return the detector assembly back to its original position, rotate it approximately 45° clockwise.

7. Turn the locking collar clockwise approximately 10° to release the shroud.

Setting the detector height

The position of the sample wheel and the height of the detector are important to ensure reproducibility of results.

NOTE: When setting the height of the detector, it is assumed that all tablets in the sample wheel at any one time are the same size and shape.

1. Push the shroud up and hold in the raised position.

2. With your other hand, turn the locking collar anti-clockwise approximately 10 ^{o}.
   The locking collar cannot be turned further than this. The shroud is now held in place by the locking collar.

3. In Spectrum, from the Setup menu select **Instrument**.
   The Scan and Instrument Setup dialog is displayed.

4. Select the **Scan** tab.
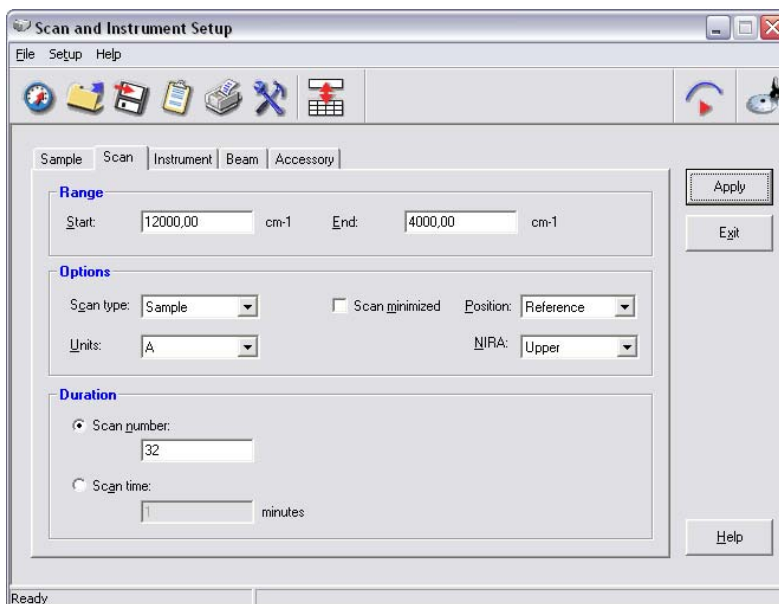
5. Select the **Position** of the tablet in the sample wheel from the drop-down list.
   The sample wheel moves to position the selected tablet position beneath the detector.

6. Rotate the black nut (A) on the top of the detector to lower the detector towards the sample.
   The bottom of the shroud (B) should be no less than 1 mm above the top of the sample. One complete rotation of the black nut corresponds to approximately 1 mm vertical movement of the detector.

NOTE: If the height is to be changed subsequently, use a spacer (for example, 2 mm spacer) to set the distance between the top of the tablet and the bottom of the shroud. This will help with resetting of the detector height for this product, should the detector position be changed.
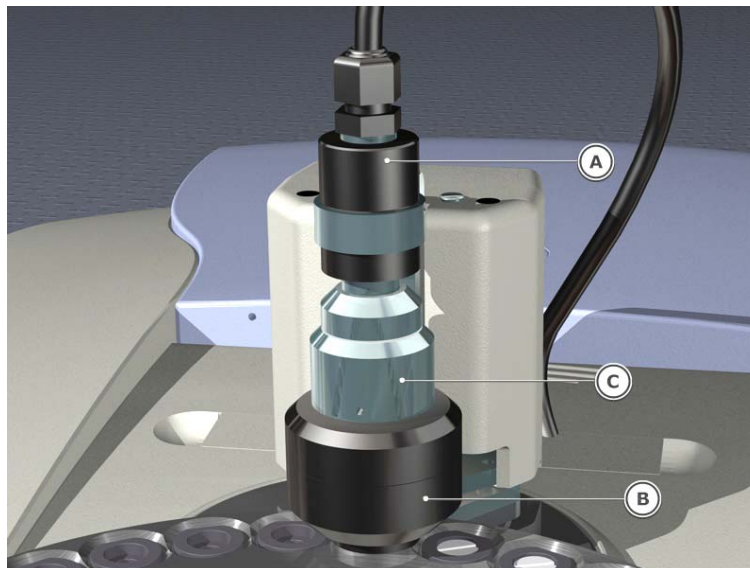
**Figure 9 Tablet Autosampler detector assembly**

7. Turn the locking collar (C) clockwise to lower the shroud.
   The detector height is now set.

NOTE: Once the detector height has been set, it is advisable NOT to change it.

# *Using the Tablet Autosampler Accessory*

Spectrum Software update

When the Tablet Autosampler is installed, Spectrum software detects the presence of the accessory and updates the Scan and Instrument Setup dialog to show that you now have the Tablet Autosampler in position (Figure 10).
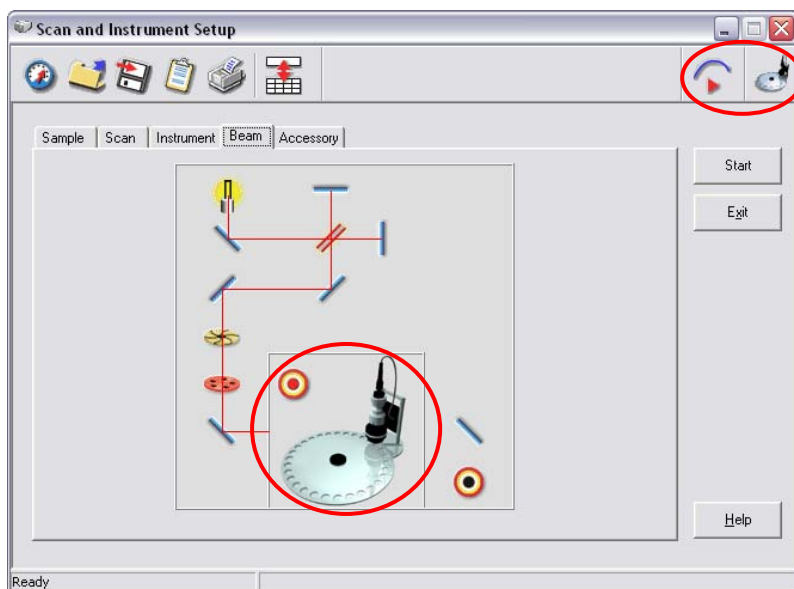
Figure 10 Scan and Instrument Setup dialog with Tablet Autosampler icons circled

Scanning a background and a sample

1. Setup the Tablet Autosampler with your samples as described in *Fitting tablet moulds and tablets* on page 12.

2. From the Setup menu in Spectrum select **Instrument**.
   The Scan and Instrument Setup dialog is displayed.

3. Select the **Accessory** tab.
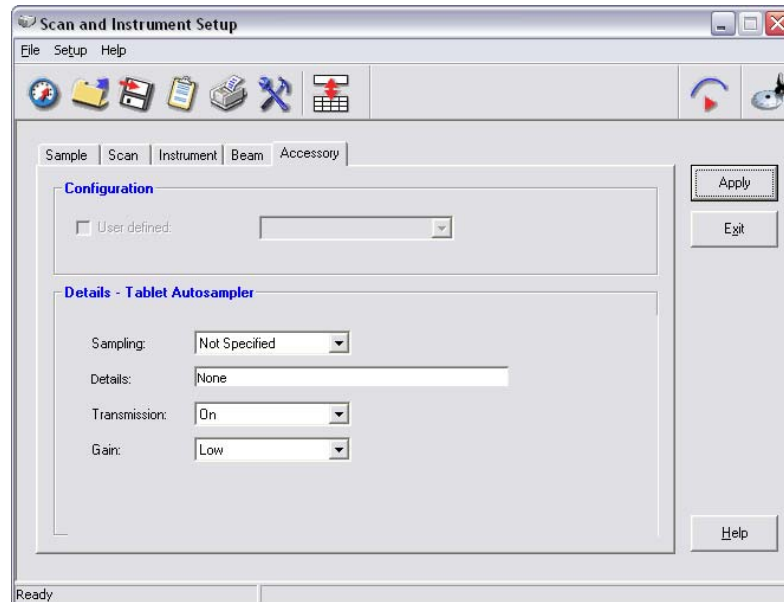
4. Set the **Transmission** to **On**.
   When the Transmission is set to **On**, a Gain setting option appears on the dialog.

NOTE: If the **Transmission** is set to **Off** this is normal NIRA (reflectance) operation. See *How to use the Tablet Autosampler as a NIRA* on page 35.

---

5. If you are running a background using air as the reference, set the **Gain** to **Low**.

   OR

   If you are running a background using an attenuating sample as the reference (for example, Spectralon or a placebo tablet), set the **Gain** to **High**.

NOTE: There are two detector gain settings available for the Tablet Autosampler to get the best signal to noise ratio from highly attenuating samples. For relatively clear capsules it may be suitable to use a low gain setting. For highly attenuating (thicker) tablets, high gain should be used. It is often only possible to determine the required setting by trial and error.

---

6. Select the **Instrument** tab.

7. Ensure the following settings are defined:

CO2/H2O , AVI, Look Ahead	All switched off
Quality Checks	Switched off
Resolution	16 cm^{-1}
Apodization	Strong
Scan speed	0.2 cm/s
Abscissa units	cm^{-1}

8. Select the **Scan** tab.

9. Ensure the following settings are defined:

Scan range	12000 - 6000 cm^{-1}
Scan type	Background
Position	Reference
NIRA	Upper
Scan time	1 minute

    Many tablets are opaque at 6000 cm^{-1} so you may wish to set the End of the scan range higher than 6000 cm^{-1}.

10. Click **Apply** and then click **Start**.

    A background spectrum is collected.

11. To collect a sample scan, repeat steps 2 to 10 with the following differences:

    Scan tab

Scan type	Sample
Position	Select the position of the sample in the sample wheel from the drop-down list.
Units	A

    Accessory tab

Gain	High

NOTE: If you are using low Gain for the background but high Gain for the sample, the ordinate units are not true absorbance units. The absorbance is offset by a constant factor which is derived from the difference in gain between the sample and the background. This will not affect the quantitative accuracy providing all samples are run under the same conditions.

Collecting spectra of small tablets

The standard diameter beam in the Tablet Autosampler is 6 mm. If you are using tablets that are less than 6 mm in diameter you should use an additional aperture mask.

Three different size aperture masks are provided. The appropriate mask must be placed over the NIRA window before the sample wheel is fitted. The mask should be placed over the NIRA window with the **black side of the mask facing down.**

AssureID Software

The Tablet Autosampler can be used with the AssureID software to obtain qualitative and quantitative information about your tablets. Five types of quantitative calculations are possible – Spectrum Quant+, Spectrum Beer's Law, Peak Area, Maximum Peak Height, and Peak Height. For more information on these calculations and all other aspects of the AssureID software please refer to the on-screen Help provided with AssureID.

Creating the Tablet Mould

The technique described below can be used to make a few moulds. However, large numbers of moulds can be ordered from PerkinElmer. See *Consumables* on page 9.
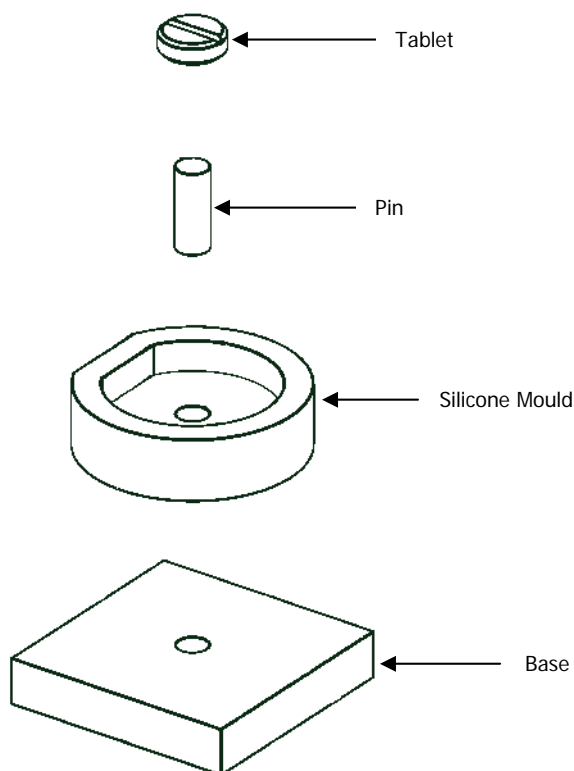
Figure 11 Tablet mould kit and tablet

The tablet mould provides a means of holding similar tablets in a reproducible manner on the Tablet Autosampler. The mould which is specific to a particular type of tablet ensures that all tablets of this type are presented in the same position and orientation.

A combination of the length of the pin, the thickness of the base, and the thickness of the silicone molding control the height of the tablet from the bottom of the holder.

Creation of 4-5 tablet moulds takes approximately 45 minutes excluding the time taken for the resin to cure.

1. Attach the tablet to the pin using an instant adhesive (for example a cyanoacrylate) and leave it to set.

   The tablet should be positioned centrally on the pin.

> **NOTE:** The position of the tablet fixing on the pin will dictate where the beam enters the sample.

2. Coat the tablet with the release agent provided.

   Ensure all of the tablet is covered with the release agent.

3. Wipe the tablet with a tissue to remove any excess release agent.

   This ensures that the tablet is only covered with a thin layer of release agent.

4. Push the pin into the silicone mould so that the pin just protrudes from the underside of the silicone mould.
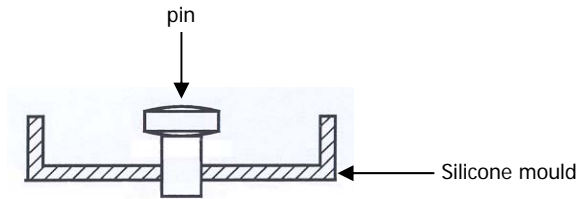
5. If you are not already wearing gloves, you must put gloves on before proceeding with making the resin.

NOTE: Only a small quantity of resin is needed to fill the silicone mould. The actual amount will depend on the size of the tablet. The minimum practical quantity is 13.2 g of resin and 3 g of accelerator.

6. To make the resin, follow the instructions provided with the chemicals.

7. Put some of the resin mixture into a syringe.
   Ensure air bubbles are not introduced into the syringe as any air bubbles in the mould may affect measurements.

8. Carefully syringe some resin around the top of the pin and underside of the tablet.

9. Syringe resin into the silicone mould until the bottom of the mould is covered in resin.

10. Position the protruding pin into the hole in the base, and carefully push the tablet/pin assembly down until the pin is flush with the base.

11. Syringe in more resin until the level of the resin is just over halfway up the tablet.
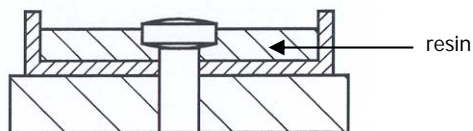
12. Leave the resin to cure for 8 to 10 hours.
    Dispose of any remaining resin in accordance with local Health and Safety regulations.

13. Remove the silicone mould from the base and push the tablet/pin assembly out of the silicone mould.

14. Remove the newly created tablet holder from the silicone mould.
    The holder has a depression that matches the shape of the tablet, and a hole to allow the tablet to be exposed to the beam.

15. Clean the silicone mould and pin so that they can be used again.
    The tablet can be re-used 3 to 4 times before it needs re-coating with the release agent.
    The tablet can be easily removed from the pin if you wish to make a mould for a different tablet.

NOTE: Ensure all the glue is removed from the top of the pin as the length of the pin is critical and any excess glue may affect future measurements.

Cleaning

Cleaning the Sample Wheel and Moulds

• Brush away all loose powders using the brush provided.

• If necessary, the tablet wheel can be wiped with a tissue moistened with isopropyl alcohol.

• The tablet moulds can be gently cleaned using a cotton bud moistened with isopropyl alcohol and dried with an air brush.

• Ensure all surfaces are dry before presenting samples to the accessory.

Cleaning the Cover of the Tablet Autosampler

CAUTION	*Ensure that the Tablet Autosampler accessory is removed from the Spectrum 100N before cleaning the cover. See* Fitting the Tablet Autosampler in the Spectrum 100N *on page 10 for further information.*

You can clean the outside of the Tablet Autosampler using a damp cloth. Mild detergent may be used, if necessary. Always perform a patch test on an inconspicuous area, before you clean the entire accessory.

Avoid spilling liquid into the Tablet Autosampler or onto the 15-way connector.

Setting up System Suitability Checks for the Tablet Autosampler

System Suitability is the procedure of demonstrating that your complete system is performing fit-for-purpose; a common requirement for regulatory compliance. System Suitability checks can be setup for use in either reflectance or transmission operation. The setup needs to be performed separately for each operation. The setups below are examples of basic checks that can be setup in Reflectance or Transmission for the Tablet Autosampler. For further information on setting up System Suitability checks and for information about Instrument Validation please refer to the Spectrum on-screen Help.

> **NOTE:** More comprehensive checks can be setup and performed in the AssureID software. Please refer to the AssureID on-screen Help for further information.
>
> **NOTE:** We recommend that the sample wheel is removed before performing the System Suitability checks. Please see *Removing the sample wheel* on page 15 for information on how to remove the sample wheel.

Setting up System Suitability Checks in Reflectance

The System Suitability checks provide a basic test of wavenumber precision and a check on noise. In the checks described below, the internal polystyrene sample in the Spectrum 100N is used.

> **NOTE:** Before setting up the checks, select **Instrument** from the Setup menu and ensure that on the Accessory tab **Transmission** is **Off** and that on the Scan tab the **NIRA** is set to **Lower**.

1. From the Setup menu select **Validation**, and select **System Suitability** from the sub-menu.
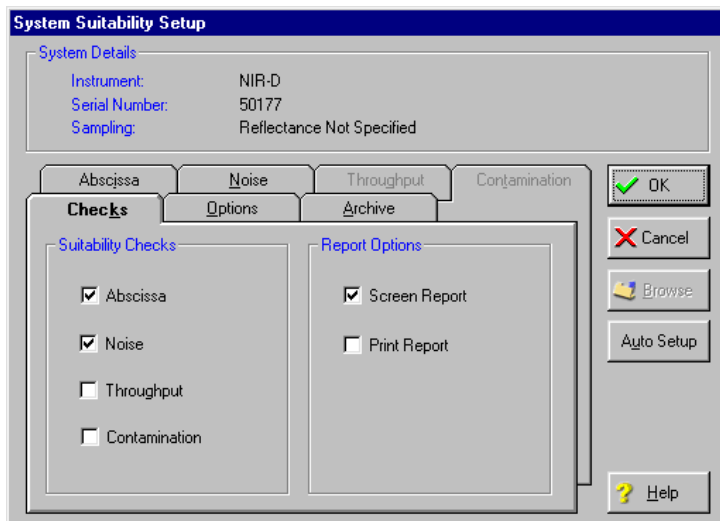
   The following message is displayed if a setup for the sampling configuration has never been performed:
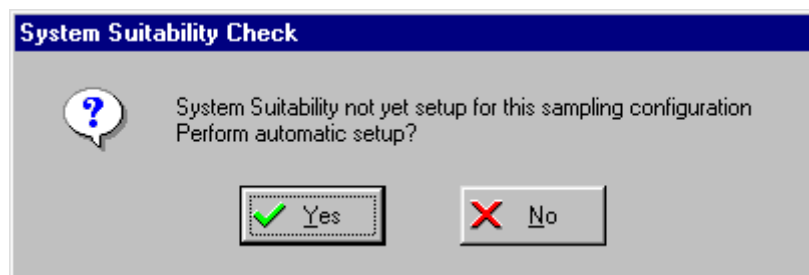
2. Click **No**.

   The System Suitability Setup dialog is displayed.

   The Throughput and Contamination tabs are grayed as these tests are not applicable to the first time checks.

3. Ensure that **Abscissa** and **Noise** are selected, but **Throughput** and **Contamination** are not selected.

4. Select **Screen Report** and/or **Print Report**.

    You must have a printer attached to the PC to print the report.

    If there are errors reported by the test, the report is displayed on the screen whether this option was selected or not.

> **NOTE:** You must have a default printer specified within Windows even if a printer is not attached. If there is not a default printer, an error message will be displayed when the System Suitability checks are run. For information on setting a default printer see the Help file within Windows.

5. Choose the **Options** tab.

6. Ensure **Internal APV** is selected.

7. Choose the **Archive** tab.

    The default **Log Filename** path, **Archive Prefix** and **Directory** where the spectra are stored are displayed.

8. If required, enter an alternative **Log Filename**, **Archive Prefix** or **Directory**.
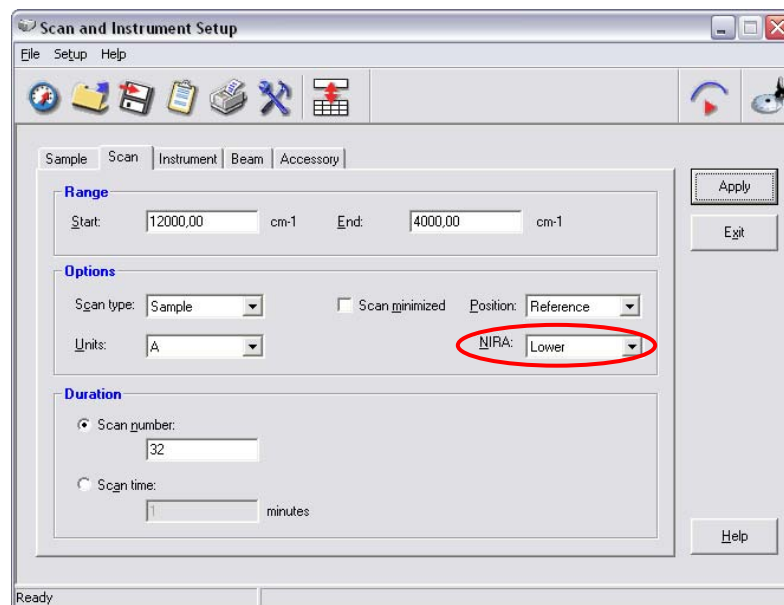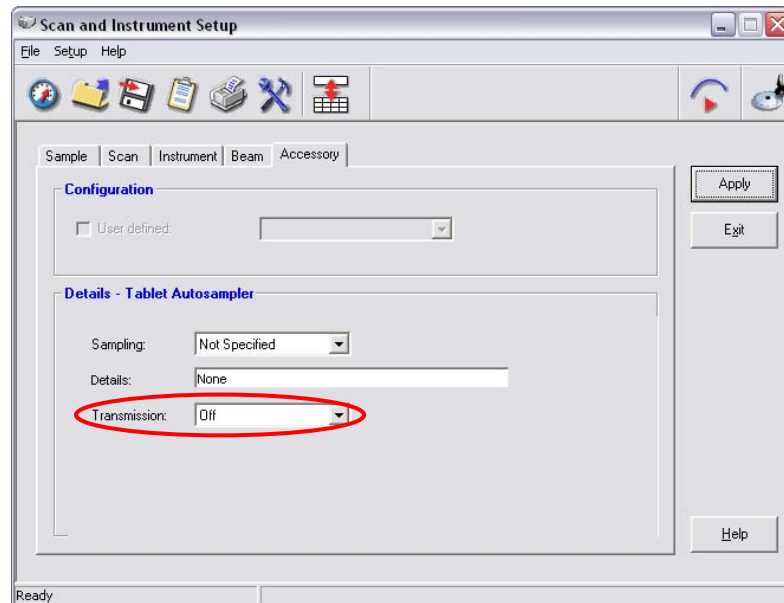
    We suggest that you use the defaults.

9. Click **OK**.

    The System Suitability checks for your Spectrum 100N when fitted with the NIRA have been set up.

The Abscissa and Noise tabs contain the default values for the System Suitability checks. For further information about these checks and also for information about **Throughput** and **Contamination** checks see the on-screen Help.
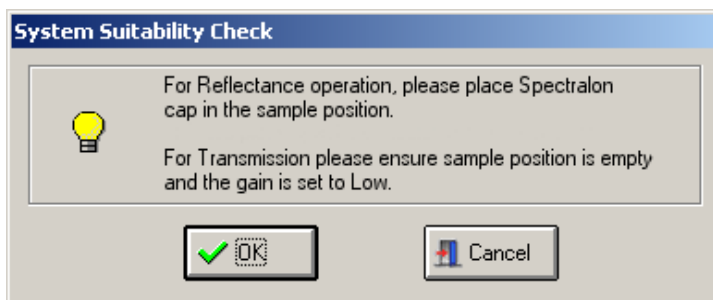
Performing System Suitability Checks in Reflectance

NOTE: Before performing the checks, select **Instrument** from the Setup menu and ensure that on the Accessory tab **Transmission** is **Off** and that on the Scan tab the **NIRA** is set to **Lower**.

1. From the Instrument menu choose **Validate** and then select **System Suitability** from the sub-menu.
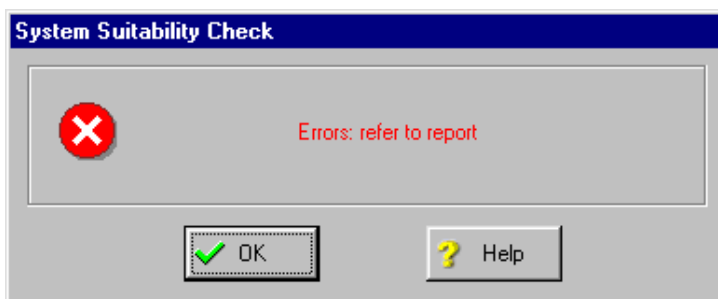
The following dialog is displayed:

2. Ensure the Spectralon cap is placed in the sample position and click **OK**.

   The validation is performed using the current System Suitability setup.

   When the validation is complete the report is displayed, either on-screen and/or printed, as selected during the set up.

Your Tablet Autosampler is now ready for use.

If the System Suitability checks fail the following message is displayed:

and the report is displayed on the screen.

The errors described below are errors that may be expected, caused, and potentially remedied by the user. Other errors are system problems and the user should contact PerkinElmer.

Abscissa Test

Nominal position not within the abscissa range of the abscissa reference spectrum - This means that an abscissa position specified for the test was outside the range of the generated spectrum. This can occur in a System Suitability check if the default scan range for the sampling configuration has been modified since the System Suitability for that sampling configuration was setup.

Peak not found - This means that no peak (or at least no peak greater than the abscissa test threshold) was found near to the nominal position specified. To correct this, either check that the material used produces the peak expected at the required threshold, re-specify the position, or switch off that element of the test.

Noise test

Specified abscissa range is not encompassed by the noise spectrum - This means that the abscissa range over which the noise is to be measured is not covered by the scan range of the collected spectrum. This can occur in a System Suitability check if the scan range for the sampling configuration has been modified since the System Suitability for that sampling configuration was setup.

Setting up System Suitability Checks in Transmission

The default System Suitability checks provide a basic test of wavenumber precision and a check on noise. For further information on setting up other System Suitability checks or altering the default settings, please refer to the Spectrum on-screen Help.

NOTE: Before setting up the checks, select **Instrument** from the Setup menu and ensure that on the Accessory tab **Transmission** is **On** and the **Gain** is **Low**, and that on the Scan tab the **NIRA** is set to **Upper**.

1. From the Setup menu select **Validation**, and then select **System Suitability** from the sub-menu.
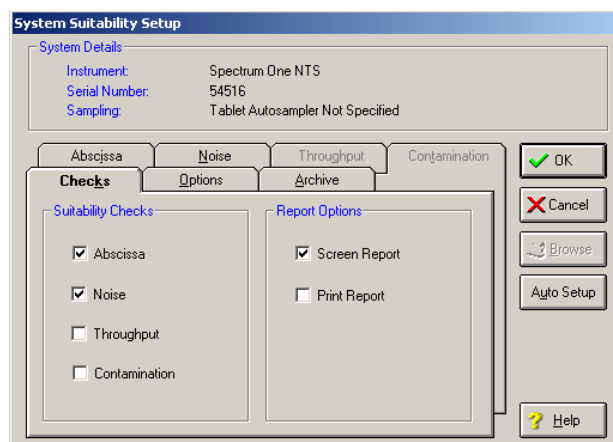
   The following message is displayed if a setup for the sampling configuration has never been performed:
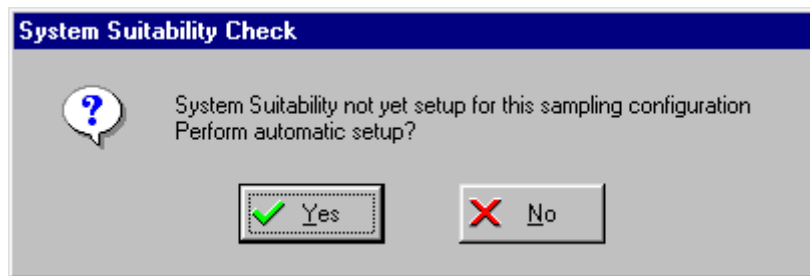
2. Click **No**.

   The System Suitability Setup dialog is displayed.

   The Throughput and Contamination tabs are grayed as these tests are not applicable to the first time checks.

3. Ensure that only **Noise** and **Abscissa** are selected.

4. Select **Screen Report** and/or **Print Report**.

   You must have a printer attached to the PC to print the report.

   If there are errors reported by the test, the report is displayed on the screen whether this option was selected or not.

NOTE: You must have a default printer specified within Windows even if a printer is not attached. If there is not a default printer, an error message will be displayed when the System Suitability checks are run. For information on setting a default printer see the Help file within Windows.

5. Choose the **Options** tab.

6. Choose the **Archive** tab.

   The default **Log Filename** path, **Archive Prefix** and **Directory** where the spectra are stored are displayed.

7. If required, enter an alternative **Log Filename**, **Archive Prefix** or **Directory**.

   We suggest that you use the defaults.

8. Choose the **Abscissa** tab.

9. Ensure that only **Peak 1** is selected.

10. Enter a **Nominal** value of **8743**, a **Lower** limit of **8735**, and an **Upper** limit of **8748** cm^{-1}.
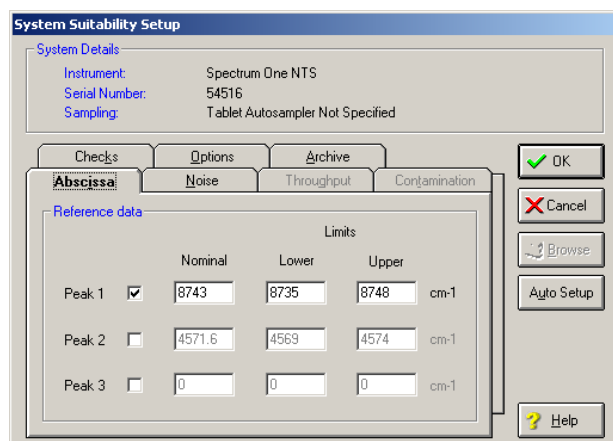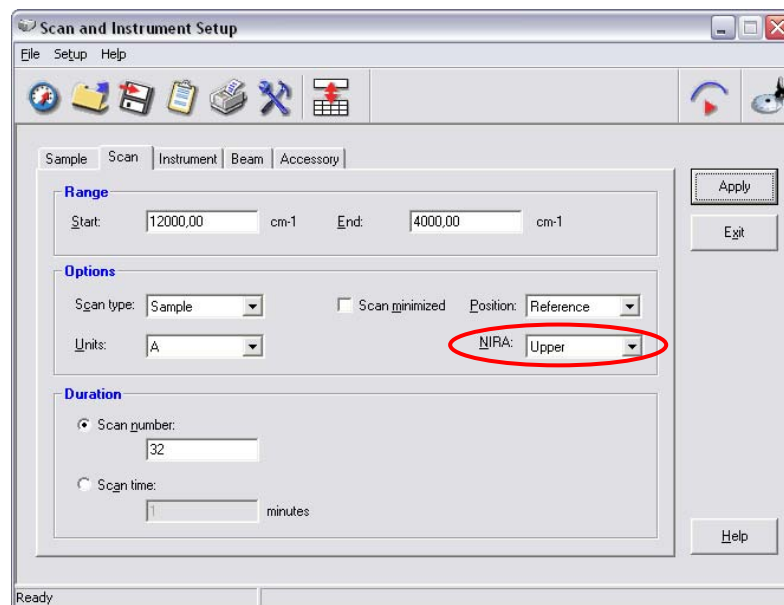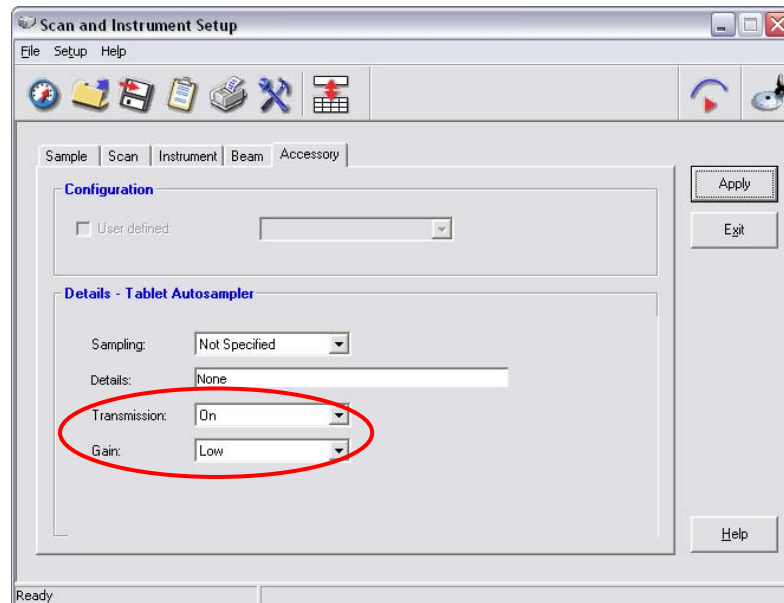

11. Click **OK**.

    The System Suitability checks for your Spectrum 100N when fitted with the Tablet Autosampler have been set up.

The Abscissa and Noise tabs contain the default values for the System Suitability checks. For further information about these checks and also for information about **Throughput** and **Contamination** checks see the on-screen Help.
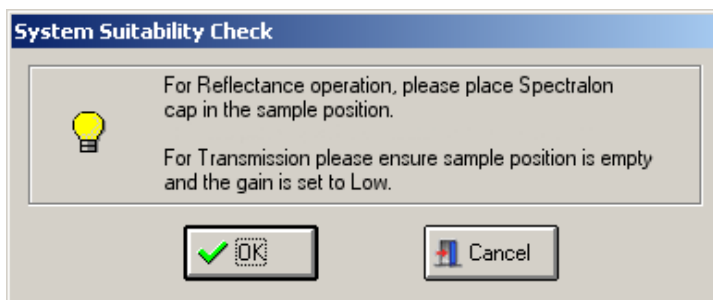
Performing System Suitability Checks in Transmission

NOTE: Before performing the checks, select **Instrument** from the Setup menu and
ensure that on the Accessory tab **Transmission** is **On** and the **Gain** is **Low**, and
that on the Scan tab the **NIRA** is set to **Upper**.

1. From the Instrument menu choose **Validate** and then select **System Suitability**
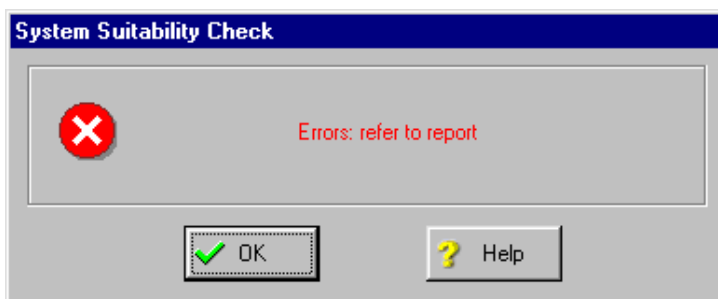from the sub-menu.

The following dialog is displayed:

2. Ensure the Spectralon cap is placed in the sample position and click **OK**.

   The validation is performed using the current System Suitability setup.

   When the validation is complete the report is displayed, either on-screen and/or printed, as selected during the set up.

Your Tablet Autosampler is now ready for use.

If the System Suitability checks fail the following message is displayed:

and the report is displayed on the screen.

The errors described below are errors that may be expected, caused, and potentially remedied by the user. Other errors are system problems and the user should contact PerkinElmer.

Abscissa Test

Nominal position not within the abscissa range of the abscissa reference spectrum - This means that an abscissa position specified for the test was outside the range of the generated spectrum. This can occur in a System Suitability check if the default scan range for the sampling configuration has been modified since the System Suitability for that sampling configuration was setup.

Peak not found - This means that no peak (or at least no peak greater than the abscissa test threshold) was found near to the nominal position specified. To correct this, either check that the material used produces the peak expected at the required threshold, respecify the position, or switch off that element of the test.

Noise test

Specified abscissa range is not encompassed by the noise spectrum - This means that the abscissa range over which the noise is to be measured is not covered by the scan range of the collected spectrum. This can occur in a System Suitability check if the scan range for the sampling configuration has been modified since the System Suitability for that sampling configuration was setup.

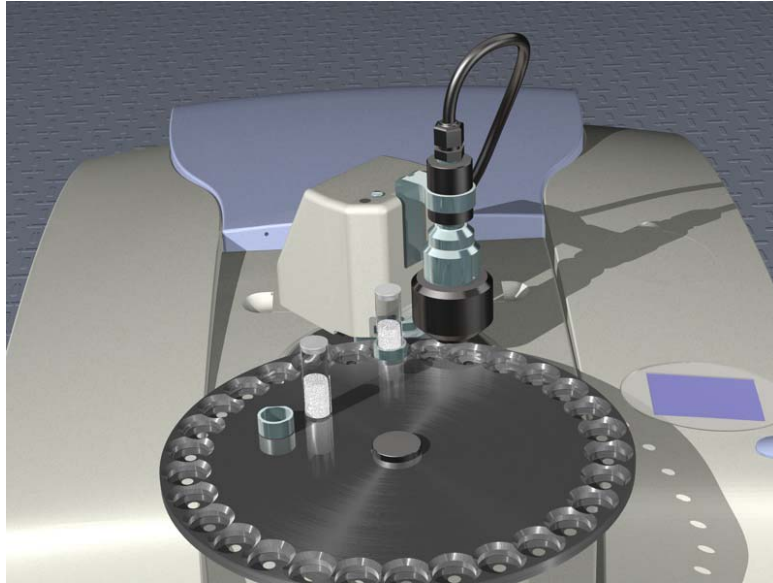# *How to use the Tablet Autosampler for Vials*

The Tablet Autosampler can also be used to perform reflectance measurements of samples in vials.

1. Push the detector shroud up and hold in the raised position.

2. With your other hand, turn the locking collar anti-clockwise approximately 10°.
    The locking collar cannot be turned further than this. The shroud is now held in place by the locking collar.

3. Rotate the detector assembly approximately 45° anti-clockwise away from the sample wheel.
    The detector assembly cannot be moved any further.

4. From the Setup menu in Spectrum select **Instrument**.
    The Scan and Instrument Setup dialog is displayed.

5. Select the **Accessory** tab and then set the **Transmission** to **Off**.

6. Select the **Instrument** tab and then set the **Scan speed** to **1.0 cm/s**, if it is not already selected.

7. Select the **Scan** tab and set the **NIRA position** to **Upper** or **Lower** for the background, and the **Scan type** to **Background**.
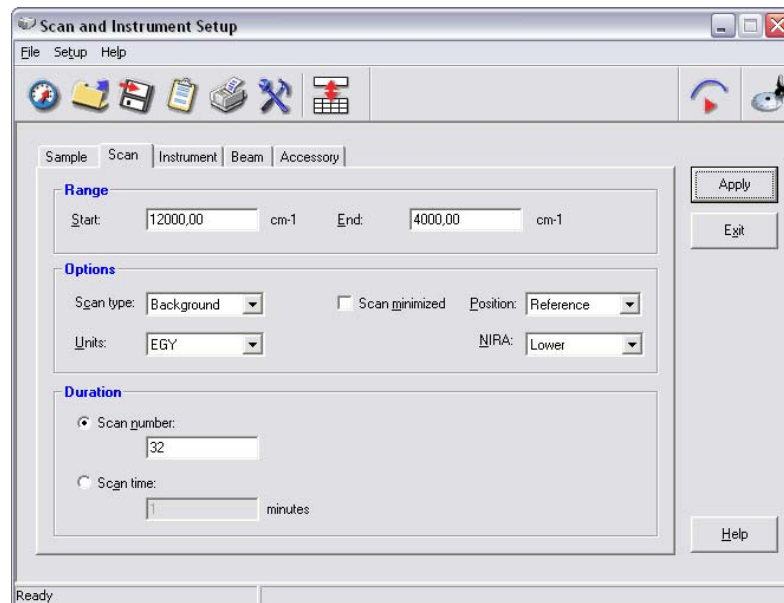
8. Select the **Position** of the background.

9. Click **Apply** and then **Scan**.
    The background scan is collected.

10. Place a vial holder on the sample wheel in one of the sample positions.
    To achieve the best results, we recommend that you use the vials provided.

11. Place the vial containing the sample inside the vial holder.

Figure 12 Measuring samples in vials

12. Repeat steps 4 to 7, but set the **Scan type** to **Sample**.

13. Select the **Position** of the sample.

14. Click **Apply** and then **Scan**.
    The spectrum of the sample is collected.

15. To return the detector assembly for the Tablet Autosampler back to its original position, rotate it approximately 45° clockwise.

16. Turn the locking collar clockwise approximately 10° to release the shroud.

How to use the Tablet Autosampler as a NIRA

The Tablet Autosampler can also be used as a NIRA.

1. Push the detector shroud up and hold in the raised position.

2. With your other hand, turn the locking collar anti-clockwise approximately 10°.
   The locking collar cannot be turned further than this. The shroud is now held in place by the locking collar.

3. Rotate the detector assembly approximately 45° anti-clockwise away from the sample wheel.
   The detector assembly cannot be moved any further.

4. Hold the edge of the sample wheel in one hand and undo the black locking screw in the center of the sample wheel.

5. Remove the sample wheel and store the locking screw and sample wheel safely.
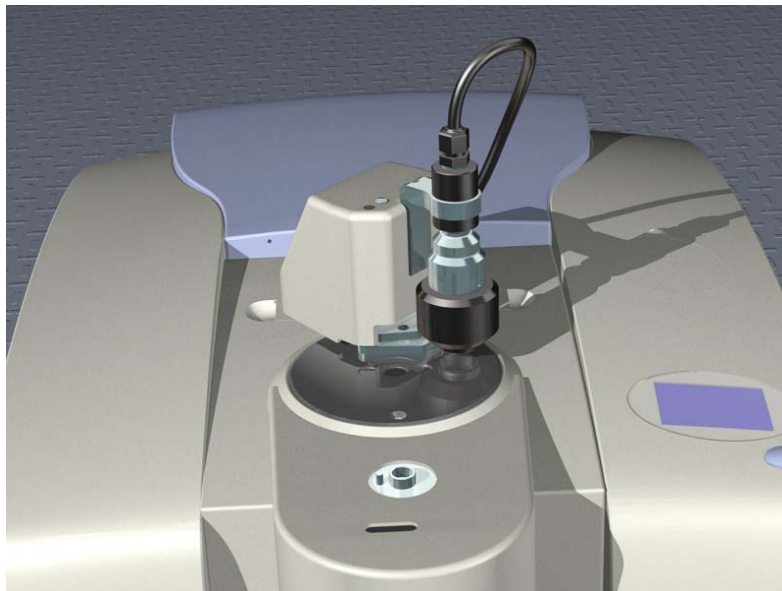
Figure 13 Tablet Autosampler as a NIRA

You can now use the system as if it was a NIRA. For more information see the *Near Infrared Reflectance Accessory User's Guide* and the NIRA tutorial on the *Spectrum Multimedia CD*.